

Wednesday, February 17, 2010

Page 1 of 2  
REQUEST NUMBER: 10-1907

**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: 10-1907

Per Agreement Number: 126310011

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/17/2010

TURNAROUND/REPORT DUE: 3/19/2010

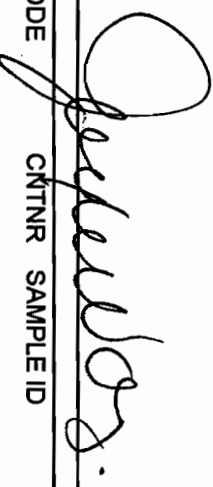
TURNAROUND REQ'D: 30 Days

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	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
EPA:906.0		1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	

Wednesday, February 17, 2010

REQUEST NUMBER: 10-1907

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PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA:906.0						
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
HASL-300:AM-241						
		1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
HASL-300:ISOPU						
		1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
HASL-300:ISOU						
		1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	

Wednesday, February 17, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1907

**LOS ALAMOS**

REQUEST NUMBER: 10-1907

**NATIONAL LABORATORY**

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/19/2010

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
RE15-10-8346	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8346	1	POLY	H3	Ice	R
RE15-10-8347	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8347	1	POLY	H3	Ice	R
RE15-10-8344	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8344	1	POLY	H3	Ice	R
RE15-10-8345	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8345	1	POLY	H3	Ice	R
RE15-10-8342	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8342	1	POLY	H3	Ice	R
RE15-10-8343	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8343	1	POLY	H3	Ice	R
RE15-10-8377	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8377	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: 2507

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

SAMPLE ID: RE15-10-8342

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3	JR 2/12/10	Fill
TIME COLLECTED(HH:MM)		0945		SUB-MEDIA:	TUFF 1	NA	
PRS ID:	15-009(c)	OK		SAMPLE TECH CODE:	HA	DL	
LOCATION ID:	15-610841	OK		FIELD QC TYPE:	NA	OK	
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA	OK	
TOP DEPTH:	0	3.0		SAMPLE USAGE:	INV	OK	
BOTTOM DEPTH:	0	3.5		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	S		EXCAVATED:	YES/NO/NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
				WATER FLOWING:	YES/NO/NA		
BOREHOLE:	YES/NO/NA			BOREHOLE DECLINATION:	NA		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	normal	8082+8270+NME D-EXP	500 ML AMBER GLASS	Ice	Y	
1		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: brown soil and tuff mix

SAMPLE COMMENTS: base of inlet to R44 tank

LOCATION DESC: base of inlet to R44 tank

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  11 dpm  
 Beta/Gamma  $\leq$  2170 dpm

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

COLLECTED BY (PRINT)

REVIEWED BY (PRINT)

RELINQUISHED BY

(Printed Name) Jon Roberson

(Signature) *Jon Roberson*

Date/Time

2/12/10

1635

RECEIVED BY

(Printed Name) S. MARCHAY

(Signature) *SM*

Date/Time

2/12/10

1635

RELINQUISHED BY

Date/Time

RECEIVED BY

Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2507

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

SAMPLE ID: RE15-10-8343

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3		A11
TIME COLLECTED(HH:MM)		11:15		SUB-MEDIA:	TUFF 1		NA
PRS ID:	15-009(c)	OK		SAMPLE TECH CODE:	HA		DC
LOCATION ID:	15-610841	OK		FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA		OK
TOP DEPTH:	0	8.0		SAMPLE USAGE:	INV		OK
BOTTOM DEPTH:	0	8.5		SCREEN/PORT DESC:	NA		
FIELD MATRIX:	R	S		EXCAVATED:	YES/NO/NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES/NO/NA
BOREHOLE: YES/NO/NA	NO			BOREHOLE DECLINATION:	NA		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	Y	
1		AM241+GS+ISO PU+ISOU	1 LITER POLY	None	Y	
1		H3	500 ML POLY	Ice	Y	
1		METALS+U-GEL	125 ML POLY	Ice	Y	
1		Perchlorate+CN+ NO3+pH	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC: Brown Soil with some tuff - some roots

Finside collected: RE15-10-8379

SAMPLE COMMENTS: Base of inlet to R-44 tank location

LOCATION DESC: 5 feet below inlet to R44 tank

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 11 dpm  
Beta/Gamma = 2240 dpm

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

COLLECTED BY (PRINT)

LARRY A. COPELAND

REVIEWED BY (PRINT)

Jon Roberson

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Jon Roberson	2/12/10	S. MARCUM	2/12/10
(Signature) Jon Roberson	1635	(Signature)	1635
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2507

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

SAMPLE ID: RE15-10-8344

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	OBT3		5:11
TIME COLLECTED (HH:MM)		10:35		SUB-MEDIA:	TUFF 1		NA
PRS ID:	15-009(c)	OK		SAMPLE TECH CODE:	HA		DC
LOCATION ID:	15-610842	OK		FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA		OK
TOP DEPTH:	0	7.0		SAMPLE USAGE:	INV		OK
BOTTOM DEPTH:	0	7.5		SCREEN/PORT DESC:	NA		
FIELD MATRIX:	R	S		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES/NO/NA
BOREHOLE: YES/NO/NA				BOREHOLE DECLINATION:	NA		BOREHOLE DIRECTION:
					NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	normal	8260B	125 ML SEPTUM AMBER GLASS	Ice	y	
1		8270C+NMED Exp	500 ML 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: brown soil w pinkish gray tuff fragments  
dupe collected: RE15-10-8377

SAMPLE COMMENTS: none

LOCATION DESC: 5 feet below outlet to R44 tank

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 5 dpm  
Beta/Gamma = 2270 dpm

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

COLLECTED BY (PRINT)

REVIEWED BY (PRINT)

Jon Roberson  
(Printed Name)  
(Signature)

Lorey A. Lopez  
(Signature)

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Jon Roberson	2/12/10	S. MAROZAN	2/12/10
(Signature)	1635	(Signature)	1635
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2507

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

SAMPLE ID: RE15-10-8345

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	OBT3	JP 2/12/10	Att F.11
TIME COLLECTED (HH:MM)		0950		SUB-MEDIA:	TUFF 1		NA
PRS ID:	15-009(c)	OK		SAMPLE TECH CODE:	HA		DC
LOCATION ID:	15-610842	OK		FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA		↓
TOP DEPTH:	0	2.0		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	2.5		SCREEN/PORT DESC:	NA		
FIELD MATRIX:	R	S		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES/NO/NA
BOREHOLE: YES/NO/NA	NO			BOREHOLE DECLINATION:	NA		BOREHOLE DIRECTION: NA

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8260B	125 ML SEPTUM AMBER GLASS	Ice	Y	
1		8270C+NMED Exp	500 ML 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: brown soil and tuff mix

SAMPLE COMMENTS: none

LOCATION DESC: below outlet to R44 tank

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 22 dpm  
Beta/Gamma = 2260 dpm

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

COLLECTED BY (PRINT)

Jon Roberson

REVIEWED BY (PRINT)

Larry A. Lopez

RELINQUISHED BY (Printed Name) Jon Roberson (Signature)	Date/Time 2/12/10 1635	RECEIVED BY (Printed Name) S. M. Lopez (Signature)	Date/Time 2/12/10 1635
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2507

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

SAMPLE ID: RE15-10-8346

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:		OBT3	
TIME COLLECTED (HH:MM)		955		SUB-MEDIA:		TUFF 1	
PRS ID: 15-009(c)		OK		SAMPLE TECH CODE:		HA	
LOCATION ID: 15-610843		OK		FIELD QC TYPE:		NA	
LOCATION TYPE: GENERIC		OK		FIELD PREP:		NA	
TOP DEPTH: 0		10.5		SAMPLE USAGE:		INV	
BOTTOM DEPTH: 0		11		SCREEN/PORT DESC:		NA	
FIELD MATRIX: R		OK 2/12/10 OK S		EXCAVATED: YES/NO/NA		YES	
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA		WATER FLOWING: YES/NO/NA		YES	
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION: NA		BOREHOLE DIRECTION: NA		NA	

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	normal	8260B	125 ML SEPTUM AMBER GLASS	Ice	Y	
1		8270C+NMED Exp	500 ML 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: Dark brown soil and tuff mix

FTB  
 +insala collected: RE15-10-8385  
 JR 2/12/10

SAMPLE COMMENTS: none

LOCATION DESC: base of tank

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 5 dpm  
 Beta/Gamma = 2160 dpm

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

COLLECTED BY (PRINT)

Jon Roberson

REVIEWED BY (PRINT)

Larry A. Lopez

RELINQUISHED BY (Printed Name) Jon Roberson (Signature) <i>Jon Roberson</i>	Date/Time 2/12/10 1635	RECEIVED BY S. MACKAY (Printed Name) (Signature) <i>SM</i>	Date/Time 2/12/10 1635
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2507

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

SAMPLE ID: RE15-10-8347

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010	MEDIA:	QBT3		OK	
TIME COLLECTED(HH:MM)		1020	SUB-MEDIA:	TUFF 1		OK	
PRS ID:	15-009(c)	OK	SAMPLE TECH CODE:	HA		DC	
LOCATION ID:	15-610843	OK	FIELD QC TYPE:	NA		OK	
LOCATION TYPE:	GENERIC	OK	FIELD PREP:	NA			
TOP DEPTH:	0	15.5	SAMPLE USAGE:	INV			
BOTTOM DEPTH:	0	16	SCREEN/PORT DESC:	NA			
FIELD MATRIX:	R	OK	EXCAVATED:	YES/NO/NA			
COMPOSITE TYPE:	NA	COMPOSITE TIME INTERVAL:	NA	WATER FLOWING:	YES/NO/NA		
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION:	NA	BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8260B	125 ML SEPTUM AMBER GLASS	Ice	Y	
1		8270C+NMED Exp	500 ML 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 pink ash flow tuff

SAMPLE COMMENTS: none

LOCATION DESC: 5 feet below base of tank

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 27 dpm  
Beta/Gamma = 2140 dpm

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

COLLECTED BY (PRINT)

Jon Roberson

REVIEWED BY (PRINT)

Larry A. Lopez

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Jon Roberson	2/12/10	G. MARCZAK	2/12/10
(Signature) <i>Jon Roberson</i>	1635	<i>GM</i>	1635
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2507

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

SAMPLE ID: RE15-10-8377

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3		fill
TIME COLLECTED(HH:MM)		10:35		SUB-MEDIA:	TUFF 1		NA
PRS ID:	15-009(c)	OK		SAMPLE TECH CODE:	HA		DC
LOCATION ID:	UNK	15-610842		FIELD QC TYPE:	ED		OK
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA		OK
TOP DEPTH:	0	7.0		SAMPLE USAGE:	QC		OK
BOTTOM DEPTH:	0	7.5		SCREEN/PORT DESC:	NA		
FIELD MATRIX:	R	S		EXCAVATED:	YES/NO/NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES/NO/NA
BOREHOLE: YES/NO/NA	NO/NA			BOREHOLE DECLINATION:	NA		BOREHOLE DIRECTION: NA

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	normal	8082+8270+NME D-EXP	500 ML AMBER GLASS	Ice	y	
1		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 RE15-10-8344  
Brown Soil with pinkish gray tuff fragments

SAMPLE COMMENTS: none

LOCATION DESC: 5 feet below outlet to R44 tank

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 5 dpm  
Beta/Gamma = 2270 dpm

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

COLLECTED BY (PRINT)

Jon Roberson

REVIEWED BY (PRINT)

Larry A. Lopez

RELINQUISHED BY (Printed Name) Jon Roberson (Signature) <i>Jon Roberson</i>	Date/Time 2/12/10 1635	RECEIVED BY S. M. ROTH (Printed Name) (Signature) <i>SMR</i>	Date/Time 2/12/10 1635
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2507

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

SAMPLE ID: RE15-10-8379

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010	MEDIA:	NA		NA	
TIME COLLECTED(HH:MM)		11:45	SUB-MEDIA:	OTHER		OK	
PRS ID:	15-009(c)	OK	SAMPLE TECH CODE:	DC			
LOCATION ID:	UNK		FIELD QC TYPE:	ER			
LOCATION TYPE:	GENERIC		FIELD PREP:	UF			
TOP DEPTH:	0		SAMPLE USAGE:	QC			
BOTTOM DEPTH:	0		SCREEN/PORT DESC:	NA			
FIELD MATRIX:	W		EXCAVATED: YES/NO	NA			
COMPOSITE TYPE:	NA		COMPOSITE TIME INTERVAL:	NA			
BOREHOLE: YES/NO	NA		BOREHOLE DECLINATION:	NA			
			BOREHOLE DIRECTION:	NA			

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

SAMPLE DESC: QC Sample of RE 15-10-8343

SAMPLE COMMENTS: none

LOCATION DESC: RU4 septic tank

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

Jon Roberson

REVIEWED BY (PRINT)

Larry A. Lopez

RELINQUISHED BY (Printed Name) Jon Roberson (Signature) <i>Jon Roberson</i>	Date/Time 2/12/10 1635	RECEIVED BY (Printed Name) S. MARCAY (Signature) <i>W</i>	Date/Time 2/12/10 1635
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

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

EVENT ID: 2507

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

SAMPLE ID: RE15-10-8385

WORK ORDER:

<u>AS PLANNED</u>		<u>AS COLLECTED</u>	<u>AS PLANNED</u>		<u>AS COLLECTED</u>
DATE COLLECTED(MM/DD/YYYY):		02/12/2010	MEDIA:	FILL	OK
TIME COLLECTED(HH:MM)		10:10	SUB-MEDIA:	SOIL	
PRS ID:	15-009(c)	OK	SAMPLE TECH CODE:	DC	
LOCATION ID:	UNK		FIELD QC TYPE:	ETB	
LOCATION TYPE:	GENERIC		FIELD PREP:	NA	
TOP DEPTH:	0		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	0		SCREEN/PORT DESC:	NA	
FIELD MATRIX:	S		EXCAVATED: YES/NO	NA	
COMPOSITE TYPE:	NA		COMPOSITE TIME INTERVAL:	NA	
			WATER FLOWING: YES/NO	NA	
BOREHOLE: YES/NO	NA		BOREHOLE DECLINATION:	NA	
			BOREHOLE DIRECTION:	NA	

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

SAMPLE DESC: QC Sample of RE15-10-8346

SAMPLE COMMENTS: none

LOCATION DESC: R44 Septic tank

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

Jon Roberson

REVIEWED BY (PRINT)

Larry A. Lopez

RELINQUISHED BY (Printed Name) Jon Roberson (Signature) <i>Jon Roberson</i>	Date/Time 2/12/10 1635	RECEIVED BY (Printed Name) S. Martinez (Signature) <i>S. Martinez</i>	Date/Time 2/12/10 1635
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

## Rad Screening Data Release Form

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

REIS-10-8343  
REIS-10-8342  
REIS-10-8346  
REIS-10-8347  
REIS-10-8345  
REIS-10-8377  
REIS-10-8344

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

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

REIS-10-8346 - FTB  
REIS-10-8379 - rinseade

Reason:

.....  
Print Last Name Roberson Signature  Date 2/12/10

## DATA VALIDATION COVER SHEET

5119-1

## Data Validation Cover Sheet

Records Use only



## Section I.

REQUEST NUMBER: 10-1907 VALIDATION DATE: 04/01/10 LAB CODE: GEL

CONTRACT LABORATORY NAME: GEL Laboratories LLC

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

ANALYTICAL SUITE (CHECK ALL THAT APPLY):

- |  |  |   |  |
|--|--|---|--|
| <input type="checkbox"/> TPH-GRO                 | <input type="checkbox"/> HIGH EXPLOSIVES           | <input type="checkbox"/> DIOXIN FURANS          | <input type="checkbox"/> LCMSMS PERCHLORATES |
| <input type="checkbox"/> TPH-DRO                 | <input type="checkbox"/> METALS                    | <input type="checkbox"/> PCB CONGENERS          | <input type="checkbox"/> ORGANOCHLORINE      |
| <input type="checkbox"/> GENERAL CHEMISTRY       | <input checked="" type="checkbox"/> RADIOCHEMISTRY | <input type="checkbox"/> LCMSMS HIGH EXPLOSIVES | PESTICIDES/POLYCHLORINATED BIPHENYLS         |
| <input type="checkbox"/> 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. The gamma spec results that were rejected by the laboratory due to high peak width, interference, or low abundance were qualified R,R5a.
2. An MS was not analyzed for tritium. However, an LCS was analyzed, met acceptance criteria and, thus, no sample results were qualified.
3. It should be noted that the parent sample for all QC analyses except tritium were LANL samples from other RNs. No sample data were qualified as a result.

Reviewed by: Mary Donovan Level: I Date: 04/02/10


VALIDATOR'S SIGNATURE: \_\_\_\_\_

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

DATE: 04/01/10


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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. The analyte should be regarded as rejected because spectral interferences prevent positive identification of the analytes.	R, R5a	R, R5a
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5. The MDC and/or TPU documentation is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R5b	J-, R5b
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	6. The results for the affected analytes should be regarded as not detected (U) because the associated sample concentration was less than 3X the 1 sigma TPU.	U, R11	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7. The sample result is ≤5X the concentration of the related analyte in the method blank.	U, R4	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8. The affected analytes are considered estimated and biased high because this analyte was identified in the method blank but was >5X.	N/A	J, R4a
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. The sample result is ≤5X the concentration of the related analyte in the trip blank, rinsate blank, or equipment blank.	U, R4d	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10. Required method blank information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R4e	R, R4e
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	11. The tracer is <10%R. Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	R, R3	R, R3

RAD ANALYTICAL DATA VALIDATION CHECKLIST	
5119-2	Records Use only
<div style="display: flex; justify-content: space-between; align-items: center;"> <div>Rad Analytical Data Validation Checklist</div> <div>  </div> </div>	

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"/>	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 checked="" type="checkbox"/>	<input type="checkbox"/>	13. The Tracer%R value is > the Upper Acceptance Limit (UAL). Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	N/A	J+, R3b
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	14. Required tracer information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information. Tracer%R is not applicable for Gamma Spectroscopy.	R, R3d	R, R3d
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	15. The LCS percent recovery was <10%. Follow the external laboratory limits located within the associated data package.	R, R12	R, R12
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16. The LCS percent recovery was < the LAL but >10%. Follow the external laboratory limits located within the associated data package.	UJ, R12a	J-, R12a
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17. The LCS percent recovery was > the UAL. Follow the external laboratory limits located within the associated data package.	N/A	J+, R12b
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	18. The LCS documentation is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R12c	R, R12c
<input type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	20. The duplicate sample was not prepared and/or analyzed with the samples for unspecified reasons. The duplicate information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R6	R, R6



RAD ANALYTICAL DATA VALIDATION CHECKLIST	
5119-2	Records Use only
<div style="display: flex; justify-content: space-between;"> <div>Rad Analytical Data Validation Checklist</div> <div>  </div> </div>	

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

# GEL LABORATORIES LLC

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

## Certificate of Analysis

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8346  
Sample ID: 247337001  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 10.5%

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>												
<i>AM241 "Dry Weight Corrected"</i>												
Americium-241	U	0.000439	0.0319	+/-0.00225	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00417	0.0196	+/-0.00312	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00973	0.0165	+/-0.00371	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.23	0.162	+/-0.134	0.100	pCi/g		JXH2	03/06/10	1214	957101	4
Uranium-235/236		0.108	0.105	+/-0.0323	0.100	pCi/g						
Uranium-238		2.22	0.111	+/-0.213	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.108	0.238	+/-0.0765	0.200	pCi/g		MXR1	03/04/10	1015	955027	5
Bismuth-211	UI	4.22	R,R5a	+/-0.265		pCi/g						
Bismuth-214		1.28		+/-0.103	0.200	pCi/g						
Cadmium-109	UI	2.44	R,R5a	+/-0.486		pCi/g						
Cerium-139	U	0.0037		+/-0.0159	0.050	pCi/g						
Cesium-134	UI	0.096	R,R5a	+/-0.0261	0.100	pCi/g						
Cesium-137	U	0.0387		+/-0.0222	0.100	pCi/g						
Cobalt-60	U	0.0214		+/-0.0195	0.100	pCi/g						
Europium-152	U	0.00414		+/-0.0594	0.200	pCi/g						
Lanthanum-140	U	0.0549		+/-0.0589		pCi/g						
Lead-212		1.86		+/-0.0893	0.100	pCi/g						
Lead-214		1.53		+/-0.105	0.100	pCi/g						
Mercury-203	U	0.00148		+/-0.0207	0.100	pCi/g						
Potassium-40		32.1		+/-1.49	1.00	pCi/g						
Radium-223	U	0.0941		+/-0.363		pCi/g						
Radium-224	UI	4.56	R,R5a	+/-0.605		pCi/g						
Radium-226		1.28		+/-0.103		pCi/g						
Radium-228		2.02		+/-0.212	0.500	pCi/g						
Ruthenium-106	U	0.207		+/-0.159	0.800	pCi/g						
Sodium-22	U	0.00327		+/-0.0218	0.080	pCi/g						
Strontium-85	UI	0.0877	R,R5a	+/-0.0217		pCi/g						

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

Report Date: March 17, 2010

Client Sample ID:  
Sample ID:

RE15-10-8346  
247337001

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		0.621	0.0558	+/-0.0444	0.080	pCi/g						
Thorium-227	U	0.00354	0.411	+/-0.119		pCi/g						
Thorium-231	U	0.0941	1.09	+/-0.363		pCi/g						
Thorium-234		2.43	2.01	+/-0.948	2.00	pCi/g						
Tin-113	U	-0.0424	0.079	+/-0.0245	0.100	pCi/g						
Uranium-235	U	0.133	0.364	+/-0.108	0.500	pCi/g						
Yttrium-88	U	0.0255	0.0626	+/-0.0171	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		301	117	+/-48.7	250	pCi/L		KXK2	03/04/10	1016	956741	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"	80.8	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	76.4	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	98.2	(50%-105%)

### Notes:

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

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8347  
Sample ID: 247337002  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector:  
Moisture: 2.74%

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	-0.00395	0.0299	+/-0.00259	0.050	pCi/g		JXH2	03/06/10	1207 957096	1
<i>ISOPU "Dry Weight Corrected"</i>											
Plutonium-238	U	0.00626	0.0221	+/-0.00314	0.050	pCi/g		JXH2	03/13/10	1427 957099	2
Plutonium-239/240	U	0.00938	0.0186	+/-0.00386	0.050	pCi/g					
<i>ISOU "Dry Weight Corrected"</i>											
Uranium-233/234		0.761	0.171	+/-0.0969	0.100	pCi/g		JXH2	03/06/10	1214 957101	4
Uranium-235/236	U	0.0285	0.111	+/-0.0166	0.100	pCi/g					
Uranium-238		0.900	0.118	+/-0.109	0.100	pCi/g					
<b>Rad Gamma Spec Analysis</b>											
<i>GAMMA SPEC "Dry Weight Corrected"</i>											
Americium-241	U	0.0508	0.117	+/-0.0351	0.200	pCi/g		MXR1	03/04/10	1016 955027	5
Bismuth-211	UI	4.02	R,R5a 0.389	+/-0.311		pCi/g					
Bismuth-214		1.43	0.138	+/-0.115	0.200	pCi/g					
Cadmium-109	UI	4.40	R,R5a 1.02	+/-0.527		pCi/g					
Cerium-139	U	-0.0134	0.0518	+/-0.0156	0.050	pCi/g					
Cesium-134	U	0.0248	0.107	+/-0.0307	0.100	pCi/g					
Cesium-137	U	-0.0331	0.0822	+/-0.0269	0.100	pCi/g					
Cobalt-60	U	0.0343	0.094	+/-0.026	0.100	pCi/g					
Europium-152	U	-0.00677	0.178	+/-0.0538	0.200	pCi/g					
Lanthanum-140	U	-0.13	0.146	+/-0.0593		pCi/g					
Lead-212		1.79	0.108	+/-0.111	0.100	pCi/g					
Lead-214		1.46	0.141	+/-0.120	0.100	pCi/g					
Mercury-203	U	0.00436	0.0795	+/-0.0226	0.100	pCi/g					
Potassium-40		34.8	0.632	+/-1.93	1.00	pCi/g					
Radium-223	U	0.350	1.26	+/-0.400		pCi/g					
Radium-224	UI	4.22	R,R5a 1.16	+/-0.654		pCi/g					
Radium-226		1.43	0.138	+/-0.115		pCi/g					
Radium-228		2.27	0.316	+/-0.239	0.500	pCi/g					
Ruthenium-106	U	0.312	0.713	+/-0.204	0.800	pCi/g					
Sodium-22	U	0.0164	0.104	+/-0.0312	0.080	pCi/g					
Strontium-85	U	0.0182	0.0785	+/-0.0259		pCi/g					
Thallium-208		0.652	0.0683	+/-0.0587	0.080	pCi/g					

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID:  
Sample ID:

RE15-10-8347  
247337002

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	-0.0332	0.466	+/-0.143		pCi/g						
Thorium-231	U	0.350	1.26	+/-0.400		pCi/g						
Thorium-234		2.08	1.14	+/-0.544	2.00	pCi/g						
Tin-113	U	0.0377	0.0926	+/-0.026	0.100	pCi/g						
Uranium-235	U	0.020	0.359	+/-0.106	0.500	pCi/g						
Yttrium-88	U	-0.00431	0.0739	+/-0.0232	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		249	116	+/-45.4	250	pCi/L		KXK2	03/04/10	1119	956741	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"	85.2	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	68.1	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	90.1	(50%-105%)

### Notes:

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

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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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## 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 17, 2010

Client Sample ID: RE15-10-8344  
Sample ID: 247337003  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 5.43%

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	0.0029	0.0334	+/-0.00262	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0134	0.0211	+/-0.00982	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00597	0.0178	+/-0.00473	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.07	0.179	+/-0.126	0.100	pCi/g		JXH2	03/06/10	1214	957101	4
Uranium-235/236	U	0.0498	0.116	+/-0.0226	0.100	pCi/g						
Uranium-238		1.20	0.123	+/-0.137	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.067	0.294	+/-0.0821	0.200	pCi/g		MXR1	03/04/10	1017	955027	5
Bismuth-211	UI	4.19	R,R5a 0.299	+/-0.222		pCi/g						
Bismuth-214		1.19	0.094	+/-0.0863	0.200	pCi/g						
Cadmium-109	UI	3.34	R,R5a 1.08	+/-0.504		pCi/g						
Cerium-139	U	-0.00351	0.0459	+/-0.0131	0.050	pCi/g						
Cesium-134	UI	0.119	R,R5a 0.0735	+/-0.028	0.100	pCi/g						
Cesium-137	U	-0.0105	0.049	+/-0.0147	0.100	pCi/g						
Cobalt-60	U	0.0187	0.0537	+/-0.0155	0.100	pCi/g						
Europium-152	U	-0.0684	0.127	+/-0.0468	0.200	pCi/g						
Lanthanum-140	U	0.0452	0.136	+/-0.0439		pCi/g						
Lead-212		1.87	0.0792	+/-0.0841	0.100	pCi/g						
Lead-214		1.52	0.104	+/-0.0907	0.100	pCi/g						
Mercury-203	U	0.0363	0.0607	+/-0.0173	0.100	pCi/g						
Potassium-40		34.0	0.426	+/-1.49	1.00	pCi/g						
Radium-223	U	0.429	0.898	+/-0.297		pCi/g						
Radium-224	UI	4.35	R,R5a 0.848	+/-0.554		pCi/g						
Radium-226		1.19	0.094	+/-0.0863		pCi/g						
Radium-228		1.90	0.189	+/-0.173	0.500	pCi/g						
Ruthenium-106	U	0.0367	0.441	+/-0.133	0.800	pCi/g						
Sodium-22	U	-0.0023	0.0618	+/-0.0188	0.080	pCi/g						
Strontium-85	U	0.0439	0.0599	+/-0.0192		pCi/g						
Thallium-208		0.553	0.047	+/-0.0399	0.080	pCi/g						

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8344  
Sample ID: 247337003  
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	-0.131	0.328	+/-0.0999		pCi/g						
Thorium-231	U	0.429	0.898	+/-0.297		pCi/g						
Thorium-234	U	0.452	2.60	+/-0.736	2.00	pCi/g						
Tin-113	U	0.00839	0.060	+/-0.0172	0.100	pCi/g						
Uranium-235	U	0.156	0.304	+/-0.0909	0.500	pCi/g						
Yttrium-88	U	0.0288	0.051	+/-0.0137	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		350	116	+/-51.5	250	pCi/L		KXK2	03/04/10	1221	956741	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"	77.4	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	76.7	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	86.7	(50%-105%)

### Notes:

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

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- 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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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8345  
Sample ID: 247337004  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 6.26%

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	0.00034	0.0305	+/-0.00216	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0106	0.0276	+/-0.00625	0.050	pCi/g		JXH2	03/16/10	1032	965246	2
Plutonium-239/240	U	0.00202	0.0234	+/-0.00349	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.53	0.157	+/-0.156	0.100	pCi/g		JXH2	03/06/10	1214	957101	5
Uranium-235/236	U	0.0873	0.102	+/-0.0284	0.100	pCi/g						
Uranium-238		1.71	0.108	+/-0.171	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.0151	0.0874	+/-0.0276	0.200	pCi/g		MXR1	03/04/10	1018	955027	6
Bismuth-211	UI	4.91	R,R5a	+/-0.343		pCi/g						
Bismuth-214		1.58		+/-0.141	0.200	pCi/g						
Cadmium-109	UI	4.51	R,R5a	+/-0.435		pCi/g						
Cerium-139	U	-0.00868	0.0467	+/-0.0135	0.050	pCi/g						
Cesium-134	UI	0.272	R,R5a	+/-0.047	0.100	pCi/g						
Cesium-137	U	-0.00957	0.0835	+/-0.0258	0.100	pCi/g						
Cobalt-60	U	-0.00392	0.0883	+/-0.0266	0.100	pCi/g						
Europium-152	U	0.0653	0.180	+/-0.0526	0.200	pCi/g						
Lanthanum-140	U	-0.163	0.223	+/-0.0836		pCi/g						
Lead-212		2.16	0.088	+/-0.125	0.100	pCi/g						
Lead-214		1.78	0.132	+/-0.134	0.100	pCi/g						
Mercury-203	U	-0.00329	0.0643	+/-0.0216	0.100	pCi/g						
Potassium-40		35.2	0.706	+/-1.91	1.00	pCi/g						
Radium-223	U	-0.252	1.06	+/-0.374		pCi/g						
Radium-224	UI	5.75	R,R5a	+/-0.802		pCi/g						
Radium-226		1.58	0.135	+/-0.141		pCi/g						
Radium-228		2.23	0.306	+/-0.244	0.500	pCi/g						
Ruthenium-106	U	0.243	0.692	+/-0.198	0.800	pCi/g						
Sodium-22	U	-0.0346	0.105	+/-0.0348	0.080	pCi/g						
Strontium-85	U	-0.000791	0.0775	+/-0.0262		pCi/g						
Thallium-208		0.698	0.068	+/-0.068	0.080	pCi/g						



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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8345  
Sample ID: 247337004  
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	0.0955	0.425	+/-0.123		pCi/g						
Thorium-231	U	-0.252	1.06	+/-0.374		pCi/g						
Thorium-234		1.64	0.900	+/-0.414	2.00	pCi/g						
Tin-113	U	0.0382	0.0926	+/-0.0272	0.100	pCi/g						
Uranium-235	U	0.165	0.314	+/-0.0951	0.500	pCi/g						
Yttrium-88	U	0.0227	0.0936	+/-0.0264	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		173	117	+/-41.3	250	pCi/L		KXK2	03/04/10	1324	956741	7

### 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, Pu-11-RC Modified
5	DOE EML HASL-300, U-02-RC Modified
6	DOE HASL 300, 4.5.2.3/Ga-01-R
7	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	83.2	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	86.2	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	96.0	(50%-105%)

### Notes:

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

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- 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 17, 2010

Client Sample ID: RE15-10-8342  
Sample ID: 247337005  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 5.4%

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	0.00236		0.0297	+/-0.00223	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>													
Plutonium-238	U	0.00773		0.0218	+/-0.00411	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00773		0.0184	+/-0.00411	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>													
Uranium-233/234		0.949		0.163	+/-0.112	0.100	pCi/g		JXH2	03/06/10	1214	957101	4
Uranium-235/236	U	0.0634		0.106	+/-0.0245	0.100	pCi/g						
Uranium-238		1.10		0.112	+/-0.125	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>													
<i>GAMMA SPEC "Dry Weight Corrected"</i>													
Americium-241	U	0.168		0.200	+/-0.0602	0.200	pCi/g		MXR1	03/04/10	1019	955027	5
Bismuth-211	UI	4.64	R,R5a	0.324	+/-0.307		pCi/g						
Bismuth-214		1.43		0.0985	+/-0.112	0.200	pCi/g						
Cadmium-109	UI	5.35	R,R5a	1.17	+/-0.743		pCi/g						
Cerium-139	U	-0.0144		0.0469	+/-0.0145	0.050	pCi/g						
Cesium-134	UI	0.110	R,R5a	0.0913	+/-0.0331	0.100	pCi/g						
Cesium-137	U	-0.000757		0.059	+/-0.0172	0.100	pCi/g						
Cobalt-60	U	0.00663		0.063	+/-0.0191	0.100	pCi/g						
Europium-152	U	-0.0731		0.147	+/-0.0453	0.200	pCi/g						
Lanthanum-140	U	-0.0438		0.169	+/-0.0632		pCi/g						
Lead-212		1.96		0.087	+/-0.119	0.100	pCi/g						
Lead-214		1.69		0.113	+/-0.121	0.100	pCi/g						
Mercury-203	U	0.0595		0.062	+/-0.0317	0.100	pCi/g						
Potassium-40		33.1		0.496	+/-1.69	1.00	pCi/g						
Radium-223	U	0.502		1.04	+/-0.330		pCi/g						
Radium-224	UI	5.11	R,R5a	0.933	+/-0.722		pCi/g						
Radium-226		1.43		0.0985	+/-0.112		pCi/g						
Radium-228		2.22		0.214	+/-0.213	0.500	pCi/g						
Ruthenium-106	U	0.00263		0.530	+/-0.163	0.800	pCi/g						
Sodium-22	U	-0.0278		0.066	+/-0.0218	0.080	pCi/g						
Strontium-85	UI	0.0684	R,R5a	0.0669	+/-0.0202		pCi/g						
Thallium-208		0.616		0.0534	+/-0.0522	0.080	pCi/g						

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8342  
Sample ID: 247337005  
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	-0.167	0.405	+/-0.121		pCi/g						
Thorium-231	U	0.502	1.04	+/-0.330		pCi/g						
Thorium-234		2.36	1.66	+/-0.791	2.00	pCi/g						
Tin-113	U	-0.0218	0.0692	+/-0.0212	0.100	pCi/g						
Uranium-235	U	-0.0116	0.335	+/-0.102	0.500	pCi/g						
Yttrium-88	U	0.00856	0.0523	+/-0.0151	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		311	115	+/-48.7	250	pCi/L	KXK2	03/04/10	1426	956741	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"	88.8	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	66.3	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	91.4	(50%-105%)

### Notes:

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

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- 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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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8343  
Sample ID: 247337006  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 4.13%

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	0.000796	0.0369	+/-0.00261	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00718	0.0202	+/-0.00323	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00861	0.0171	+/-0.00354	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.862	0.157	+/-0.103	0.100	pCi/g		JXH2	03/06/10	1214	957101	4
Uranium-235/236	U	0.0568	0.102	+/-0.0239	0.100	pCi/g						
Uranium-238		1.08	0.108	+/-0.120	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0124	0.329	+/-0.105	0.200	pCi/g		MXR1	03/04/10	1046	955027	5
Bismuth-211	UI	4.29	R,R5a	0.439	+/-0.336	pCi/g						
Bismuth-214		1.34		0.128	+/-0.112	0.200	pCi/g					
Cadmium-109	UI	4.27	R,R5a	1.56	+/-1.01	pCi/g						
Cerium-139	U	-0.0122		0.0581	+/-0.018	0.050	pCi/g					
Cesium-134	U	0.116		0.117	+/-0.0316	0.100	pCi/g					
Cesium-137	U	-0.0122		0.0776	+/-0.0237	0.100	pCi/g					
Cobalt-60	U	0.00569		0.0862	+/-0.026	0.100	pCi/g					
Europium-152	U	-0.106		0.186	+/-0.0684	0.200	pCi/g					
Lanthanum-140	U	-0.0327		0.224	+/-0.0695	pCi/g						
Lead-212		1.94		0.114	+/-0.121	0.100	pCi/g					
Lead-214		1.56		0.153	+/-0.129	0.100	pCi/g					
Mercury-203	U	0.0596		0.0922	+/-0.0259	0.100	pCi/g					
Potassium-40		34.6		0.681	+/-1.97	1.00	pCi/g					
Radium-223	U	-0.088		1.30	+/-0.444	pCi/g						
Radium-224	UI	5.16	R,R5a	1.22	+/-0.694	pCi/g						
Radium-226		1.34		0.128	+/-0.112	pCi/g						
Radium-228		2.18		0.262	+/-0.222	0.500	pCi/g					
Ruthenium-106	U	-0.147		0.618	+/-0.190	0.800	pCi/g					
Sodium-22	U	-0.0151		0.0888	+/-0.0278	0.080	pCi/g					
Strontium-85	U	0.0785		0.0866	+/-0.0259	pCi/g						
Thallium-208		0.551		0.0692	+/-0.0487	0.080	pCi/g					

# GEL LABORATORIES LLC

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

## Certificate of Analysis

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8343  
Sample ID: 247337006  
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	-0.0525	0.486	+/-0.143		pCi/g						
Thorium-231	U	-0.088	1.30	+/-0.444		pCi/g						
Thorium-234	U	2.47	2.72	+/-1.16	2.00	pCi/g						
Tin-113	U	-0.0595	0.0847	+/-0.0278	0.100	pCi/g						
Uranium-235	U	0.215	0.402	+/-0.120	0.500	pCi/g						
Yttrium-88	U	-0.034	0.0445	+/-0.018	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		252	114	+/-45.0	250	pCi/L		KXK2	03/04/10	1529	956741	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"	70.0	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	69.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	94.5	(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

# GEL LABORATORIES LLC

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

## Certificate of Analysis

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8377  
Sample ID: 247337007  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 5.35%

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	-0.00182	0.0365	+/-0.00258	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0155	0.0243	+/-0.00523	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00862	0.0205	+/-0.00458	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.20	0.194	+/-0.140	0.100	pCi/g		JXH2	03/06/10	1215	957101	4
Uranium-235/236	U	0.0753	0.125	+/-0.0291	0.100	pCi/g						
Uranium-238		1.39	0.133	+/-0.157	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0361	0.220	+/-0.070	0.200	pCi/g		MXR1	03/04/10	1240	955027	5
Bismuth-211	UI	4.26	R,R5a	0.299	+/-0.301	pCi/g						
Bismuth-214		1.29		0.105	+/-0.103	0.200	pCi/g					
Cadmium-109	UI	4.06	R,R5a	1.09	+/-0.529	pCi/g						
Cerium-139	U	-0.0171	0.0445	+/-0.0132	0.050	pCi/g						
Cesium-134	UI	0.181	R,R5a	0.0935	+/-0.0314	0.100	pCi/g					
Cesium-137	U	-0.00135	0.0609	+/-0.0184	0.100	pCi/g						
Cobalt-60	U	0.0316	0.0641	+/-0.0179	0.100	pCi/g						
Europium-152	U	0.0153	0.148	+/-0.0431	0.200	pCi/g						
Lanthanum-140	U	-0.089	0.159	+/-0.0537	pCi/g							
Lead-212		1.96	0.0808	+/-0.129	0.100	pCi/g						
Lead-214		1.55	0.106	+/-0.117	0.100	pCi/g						
Mercury-203	U	-0.0143	0.0624	+/-0.0191	0.100	pCi/g						
Potassium-40		33.8	0.450	+/-1.71	1.00	pCi/g						
Radium-223	U	0.160	0.915	+/-0.306	pCi/g							
Radium-224	UI	4.70	R,R5a	0.866	+/-0.637	pCi/g						
Radium-226		1.29	0.105	+/-0.103	pCi/g							
Radium-228		1.99	0.218	+/-0.184	0.500	pCi/g						
Ruthenium-106	U	-0.0393	0.467	+/-0.142	0.800	pCi/g						
Sodium-22	U	-0.0142	0.0674	+/-0.0213	0.080	pCi/g						
Strontium-85	U	0.0463	0.0593	+/-0.0179	pCi/g							
Thallium-208		0.589	0.0523	+/-0.0467	0.080	pCi/g						

# GEL LABORATORIES LLC

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

## Certificate of Analysis

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8377  
Sample ID: 247337007  
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	-0.14	0.363	+/-0.112		pCi/g						
Thorium-231	U	0.160	0.915	+/-0.306		pCi/g						
Thorium-234		2.60	1.82	+/-0.872	2.00	pCi/g						
Tin-113	U	-0.0106	0.0666	+/-0.0194	0.100	pCi/g						
Uranium-235	U	0.216	0.324	+/-0.0913	0.500	pCi/g						
Yttrium-88	U	-0.00181	0.0363	+/-0.0113	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		228	117	+/-44.5	250	pCi/L		KXK2	03/04/10	1632	956741	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"	71.0	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	60.1	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	82.2	(50%-105%)

### Notes:

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

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample

Wednesday, February 17, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1907

LOS ALAMOS

REQUEST NUMBER: 10-1907

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/19/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

2473371

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8346	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8346	1	POLY	H3	Ice	R
RE15-10-8347	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8347	1	POLY	H3	Ice	R
RE15-10-8344	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8344	1	POLY	H3	Ice	R
RE15-10-8345	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8345	1	POLY	H3	Ice	R
RE15-10-8342	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8342	1	POLY	H3	Ice	R
RE15-10-8343	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8343	1	POLY	H3	Ice	R
RE15-10-8377	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8377	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



Wednesday, February 17, 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: 10-1907

Per Agreement Number: 128310011

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/17/2010

TURNAROUND/REPORT DUE: 3/19/2010

TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature: 

PRIORITY	METHOD CODE	CNTR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:901.1	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
	EPA:906.0	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	

Wednesday, February 17, 2010

REQUEST NUMBER: 10-1907

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA-906.0	1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
	HASL-300:AM-241	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
	HASL-300:ISOPU	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
	HASL-300:ISOU	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	

Final Page of REQUEST NUMBER 10-1907



February 22, 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: 247337  
SDG: 10-1907

Dear Ms. Valdez:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on February 18, 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: 10-1907  
Enclosures

**Los Alamos National Laboratory (72733-001-09)**  
**LANL ER Project**  
**Work Order #: 247337**  
**SDG: 10-1907**

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# Case Narrative

**Case Narrative for  
Los Alamos National Laboratory (72733-001-09)  
LANL ER Project  
Workorder #: 247337  
SDG # : 10-1907**

**February 22, 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 18, 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 10C temperature. Shipping container temperature was within specification (0 - 6C).

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

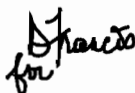
<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
247337001	RE15-10-8346
247337002	RE15-10-8347
247337003	RE15-10-8344
247337004	RE15-10-8345
247337005	RE15-10-8342
247337006	RE15-10-8343
247337007	RE15-10-8377

**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 22 February 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**

Wednesday, February 17, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1907

LOS ALAMOS

REQUEST NUMBER: 10-1907

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/19/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

2473371

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8346	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8346	1	POLY	H3	Ice	R
RE15-10-8347	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8347	1	POLY	H3	Ice	R
RE15-10-8344	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8344	1	POLY	H3	Ice	R
RE15-10-8345	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8345	1	POLY	H3	Ice	R
RE15-10-8342	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8342	1	POLY	H3	Ice	R
RE15-10-8343	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8343	1	POLY	H3	Ice	R
RE15-10-8377	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8377	1	POLY	H3	Ice	R

Relinquished By:

Date

Time

Received By:

Date

Time

*[Signature]* 2/17/10 1400 Mercedes Simmons *[Signature]* 2/18/10 0845  
 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

Wednesday, February 17, 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: 10-1907  
Per Agreement Number: 126310011  
Project Cost Code: MR3A05529E00

**Please analyse the enclosed samples according to the schedule indicated:**

SHIP DATE: 2/17/2010

**TURNAROUND/REPORT DUE: 3/19/2010**

**TURNAROUND REQ'D: 30 Days**

**RAD SCREENING: Yes, Below Background**

**LAB REQUEST COMMENTS:**

**LANL ER SMO CONTACT:**

**Signature:**

*[Signature]*

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:901.1	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
	EPA:906.0	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	

Wednesday, February 17, 2010

Page 2 of 2

REQUEST NUMBER: 10-1907

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
	HASL-300:AM-241	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
	HASL-300:ISOPU	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	
	HASL-300:ISOU	1	RE15-10-8342	R	2/12/2010	
		1	RE15-10-8343	R	2/12/2010	
		1	RE15-10-8344	R	2/12/2010	
		1	RE15-10-8345	R	2/12/2010	
		1	RE15-10-8346	R	2/12/2010	
		1	RE15-10-8347	R	2/12/2010	
		1	RE15-10-8377	R	2/12/2010	

Final Page of REQUEST NUMBER 10-1907

Client: LANL			SDG/ARCOC/Work Order: 10-1907	
Received By: Mercedes Simmons			Date Received: 2/18/10	
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*: 60cpm	
Classified Radioactive II by RSO?		X		
COC/Samples marked containing PCBs?		X		
Shipped as a DOT Hazardous?		X	Hazard Class Shipped:	UN#:
Samples identified as Foreign Soil?		X		

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	X			Circle Applicable: seals broken    damaged container    leaking container    other (describe)
2	Samples requiring cold preservation within $0 \leq 6$ deg. C?	X			Preservation Method: ice bags    blue ice    dry ice    none    other 1,2    10
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: <b>No time on Chain of Custody.</b>
11	Number of containers received match number indicated on COC?	X			Sample ID's affected:
12	COC form is properly signed in relinquished/received sections?	X			

**Comments:****Fed Ex Tracking Numbers:**

7209 7850 1047	1C
7209 7850 1014	2C
7209 7850 1036	2C
7209 7850 1025	2C
7209 7850 0990	10C
7209 7850 1003	10C

ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR3A05529E00

SHIP DATE: 17FEB10  
ACTMGT: 51.0 LB MAN  
CAD: 0014176/CAFE2450

SHIP DATE: 17FEB10  
ACTMGT: 51.0 LB MAN  
CAD: 0014176/CAFE2450

BILL SENDER

TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR2A0515BYDO

SHIP DATE: 17FEB10  
ACTMGT: 51.0 LB MAN  
CAD: 0014176/CAFE2450

FedEx  
Express



FedEx  
Express



THU - 18FEB A1  
PRIORITY OVERNIGHT

TRKH 7209 7850 1047  
0201

XX CHSA

29407  
SC-US  
CHS



LOS ALAMOS, NM 87545  
UNITED STATES US

BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR3A05529E00

SHIP DATE: 17FEB10  
ACTMGT: 51.0 LB MAN  
CAD: 0014176/CAFE2450

FedEx  
Express



FedEx  
Express



THU - 18FEB A1  
PRIORITY OVERNIGHT

2 of 2  
MPSH 7209 7850 1036  
0201

TRKH 7209 7850 1025 0201

XX CHSA

29407  
SC-US  
CHS

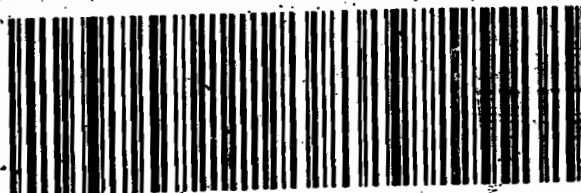


TRKH 7209 7850 1014  
0201

THU - 18FEB A1  
PRIORITY OVERNIGHT

29407  
SC-US  
CHS

XX CHSA



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

SHIP DATE: 17FEB10  
ACTMGT: 57.0 LB MAN  
CAD: 0014176/CAFE2450

BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR3A05529E00

SHIP DATE: 17FEB10  
ACTMGT: 51.0 LB MAN  
CAD: 0014176/CAFE2450

FedEx  
Express



THU - 18FEB A1  
PRIORITY OVERNIGHT

1 of 2  
TRKH 7209 7850 1025  
0201  
NN MASTER NN

XX CHSA

29407  
SC-US  
CHS



ORIGIN ID: SAFA (805) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DRI 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 17FEB10  
ACTNGT: 87.0 LB MAN  
CAD: 0014175/CAFE2450

BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
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CHARLESTON SC 29407

(843) 656-8171

REF: 68010AMR2A0515BYDO

10°

MAIL TO: VALERIE DAVIS, GENERAL ENGINEERING LAB, 2040 SAVAGE RD, CHARLESTON, SC 29407



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Express



9820091138223

2 of 3  
NPSN 7209 7850 0990

Matr# 7209 7850 0990 0201

THU - 18FEB A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US  
CHS

Part # 156146-434 Nmt V3 00-09



ORIGIN ID: SAFA (805) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DRI 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 17FEB10  
ACTNGT: 82.0 LB MAN  
CAD: 0014175/CAFE2450

BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 656-8171

REF: 68010AMR2A0515BYDO

10°



FedEx  
Express



9820091138223

3 of 3  
NPSN 7209 7850 1003

Matr# 7209 7850 0990 0201

THU - 18FEB A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US  
CHS

# **Data Review Qualifier Flag Definition Sheet**



## Data Review Qualifier Definitions

Qualifier    Explanation

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

# RADIOLOGICAL ANALYSIS

**Radiochemistry Case Narrative  
Los Alamos National Laboratory (LANL)  
SDG 10-1907**

**Method/Analysis Information**

**Product:** AM241  
**Analytical Method:** DOE EML HASL-300, Am-05-RC Modified  
**Prep Method:** Dry Soil Prep  
**Analytical Batch Number:** 957096  
**Prep Batch Number:** 954973

<b>Sample ID</b>	<b>Client ID</b>
247337001	RE15-10-8346
247337002	RE15-10-8347
247337003	RE15-10-8344
247337004	RE15-10-8345
247337005	RE15-10-8342
247337006	RE15-10-8343
247337007	RE15-10-8377
1202052134	Method Blank (MB)
1202052135	247360001(RE36-10-7427) Sample Duplicate (DUP)
1202052136	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 1202052134 (MB) was changed to 1.0 per client request.

**Designated QC**

The following sample was used for QC: 247360001 (RE36-10-7427). The QC was from LANL work order 247360.

**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 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**

**Product:** ISOPU

**Analytical Method:** DOE EML HASL-300, Pu-11-RC Modified

**Prep Method:** Dry Soil Prep

**Analytical Batch Number:** 957099

**Prep Batch Number:** 954973

<b>Sample ID</b>	<b>Client ID</b>
247337001	RE15-10-8346
247337002	RE15-10-8347
247337003	RE15-10-8344
247337005	RE15-10-8342
247337006	RE15-10-8343
247337007	RE15-10-8377
1202052141	Method Blank (MB)
1202052142	247360001(RE36-10-7427) Sample Duplicate (DUP)
1202052143	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 1202052141 (MB) was changed to 1.0 per client request.

##### **Designated QC**

The following sample was used for QC: 247360001 (RE36-10-7427). The QC was from LANL work

order 247360.

**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 were given additional clean-up steps and recounted in order to remove suspected interferences. Sample 1202052142 (RE36-10-7427) was recounted to verify results.

**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**

Manual integration of alpha spectroscopy spectra 1202052143 (LCS) was performed to fully separate counts in Regions of Interest which would have been biased.

**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>	ISOPU
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	965246
Prep Batch Number:	954973

Sample ID	Client ID
247337004	RE15-10-8345
1202071011	Method Blank (MB)
1202071012	247337004(RE15-10-8345) Sample Duplicate (DUP)
1202071013	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 1202071011 (MB) was changed to 1.0 per client request.

##### **Designated QC**

The following sample was used for QC: 247337004 (RE15-10-8345). The QC was from LANL work order 247337.

##### **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**

Sample 247337004 (RE15-10-8345) was reprepared to verify results.

### **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**

Manual integration of alpha spectroscopy spectra 1202071013 (LCS) was performed to fully separate counts in Regions of Interest which would have been biased.

#### **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:	957101
Prep Batch Number:	954973

<b>Sample ID</b>	<b>Client ID</b>
247337001	RE15-10-8346
247337002	RE15-10-8347
247337003	RE15-10-8344
247337004	RE15-10-8345
247337005	RE15-10-8342
247337006	RE15-10-8343
247337007	RE15-10-8377
1202052148	Method Blank (MB)
1202052149	247360001(RE36-10-7427) Sample Duplicate (DUP)
1202052150	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 1202052148 (MB) was changed to 1.0 per client request.

**Designated QC**

The following sample was used for QC: 247360001 (RE36-10-7427). The QC was from LANL work order 247360.

**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 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:	955027
Prep Batch Number:	954973

<b>Sample ID</b>	<b>Client ID</b>
247337001	RE15-10-8346
247337002	RE15-10-8347
247337003	RE15-10-8344
247337004	RE15-10-8345
247337005	RE15-10-8342
247337006	RE15-10-8343
247337007	RE15-10-8377
1202047453	Method Blank (MB)
1202047454	247360001(RE36-10-7427) Sample Duplicate (DUP)
1202047455	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, April 2009, July 2009, August 2009, November 2009, December 2009, January 2010 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: 247360001 (RE36-10-7427). The QC was from LANL work order 247360.

**QC Information**

All of the QC samples met the required acceptance limits.

**CSU**

The method blank 1202047453 (MB) result is greater than 1.65 times the CSU but less than the MDC for Hg-203 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 method blank 1202047453 (MB) result is greater than the decision level but less than the MDC for Hg-203 and Y-88.

**Qualifier information**

Qualifier	Reason	Analyte	Sample	Client Sample
-----------	--------	---------	--------	---------------

UI	Data rejected due to high peak-width.	Cadmium-109	247337006	RE15-10-8343
UI	Data rejected due to interference.	Bismuth-211	247337001	RE15-10-8346
			247337002	RE15-10-8347
			247337003	RE15-10-8344
			247337004	RE15-10-8345
			247337005	RE15-10-8342
			247337006	RE15-10-8343
			247337007	RE15-10-8377
			1202047454	RE36-10-7427(247360001DUP)
		Cadmium-109	247337001	RE15-10-8346
			247337002	RE15-10-8347
			247337003	RE15-10-8344
			247337004	RE15-10-8345
			247337005	RE15-10-8342
			247337007	RE15-10-8377
		Radium-224	247337001	RE15-10-8346
			247337002	RE15-10-8347
			247337003	RE15-10-8344
			247337004	RE15-10-8345
			247337005	RE15-10-8342
			247337006	RE15-10-8343
			247337007	RE15-10-8377
			1202047454	RE36-10-7427(247360001DUP)
		Strontium-85	1202047454	RE36-10-7427(247360001DUP)
UI	Data rejected due to low abundance.	Cadmium-109	1202047454	RE36-10-7427(247360001DUP)
		Cesium-134	247337001	RE15-10-8346
			247337003	RE15-10-8344

	247337004	RE15-10-8345
	247337005	RE15-10-8342
	247337007	RE15-10-8377
Strontium-85	247337001	RE15-10-8346
	247337005	RE15-10-8342

### **Method/Analysis Information**

**Product:** H3

Analytical Method: GL-RAD-A-002

Analytical Batch Number: 956741

<b>Sample ID</b>	<b>Client ID</b>
247337001	RE15-10-8346
247337002	RE15-10-8347
247337003	RE15-10-8344
247337004	RE15-10-8345
247337005	RE15-10-8342
247337006	RE15-10-8343
247337007	RE15-10-8377
1202051378	Method Blank (MB)
1202051379	247337001(RE15-10-8346) Sample Duplicate (DUP)
1202051380	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.

#### **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: 247337001 (RE15-10-8346). The QC was from LANL work order 247337.

**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 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**

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:** Kath Bell 3/17/10

# SAMPLE DATA SUMMARY



## GEL LABORATORIES LLC

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

### Certificate of Analysis Report for

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

Client SDG: 10-1907 GEL Work Order: 247337

**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

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

## Certificate of Analysis

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8346  
Sample ID: 247337001  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 10.5%

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>												
<i>AM241 "Dry Weight Corrected"</i>												
Americium-241	U	0.000439	0.0319	+/-0.00225	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00417	0.0196	+/-0.00312	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00973	0.0165	+/-0.00371	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.23	0.162	+/-0.134	0.100	pCi/g		JXH2	03/06/10	1214	957101	4
Uranium-235/236		0.108	0.105	+/-0.0323	0.100	pCi/g						
Uranium-238		2.22	0.111	+/-0.213	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.108	0.238	+/-0.0765	0.200	pCi/g		MXR1	03/04/10	1015	955027	5
Bismuth-211	UI	4.22	0.332	+/-0.265		pCi/g						
Bismuth-214		1.28	0.113	+/-0.103	0.200	pCi/g						
Cadmium-109	UI	2.44	1.36	+/-0.486		pCi/g						
Cerium-139	U	0.0037	0.0533	+/-0.0159	0.050	pCi/g						
Cesium-134	UI	0.096	0.095	+/-0.0261	0.100	pCi/g						
Cesium-137	U	0.0387	0.0771	+/-0.0222	0.100	pCi/g						
Cobalt-60	U	0.0214	0.0682	+/-0.0195	0.100	pCi/g						
Europium-152	U	0.00414	0.166	+/-0.0594	0.200	pCi/g						
Lanthanum-140	U	0.0549	0.187	+/-0.0589		pCi/g						
Lead-212		1.86	0.0958	+/-0.0893	0.100	pCi/g						
Lead-214		1.53	0.121	+/-0.105	0.100	pCi/g						
Mercury-203	U	0.00148	0.0715	+/-0.0207	0.100	pCi/g						
Potassium-40		32.1	0.444	+/-1.49	1.00	pCi/g						
Radium-223	U	0.0941	1.09	+/-0.363		pCi/g						
Radium-224	UI	4.56	1.03	+/-0.605		pCi/g						
Radium-226		1.28	0.113	+/-0.103		pCi/g						
Radium-228		2.02	0.241	+/-0.212	0.500	pCi/g						
Ruthenium-106	U	0.207	0.550	+/-0.159	0.800	pCi/g						
Sodium-22	U	0.00327	0.0725	+/-0.0218	0.080	pCi/g						
Strontium-85	UI	0.0877	0.0729	+/-0.0217		pCi/g						

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID:  
Sample ID:

RE15-10-8346  
247337001

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		0.621	0.0558	+/-0.0444	0.080	pCi/g						
Thorium-227	U	0.00354	0.411	+/-0.119		pCi/g						
Thorium-231	U	0.0941	1.09	+/-0.363		pCi/g						
Thorium-234		2.43	2.01	+/-0.948	2.00	pCi/g						
Tin-113	U	-0.0424	0.079	+/-0.0245	0.100	pCi/g						
Uranium-235	U	0.133	0.364	+/-0.108	0.500	pCi/g						
Yttrium-88	U	0.0255	0.0626	+/-0.0171	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		301	117	+/-48.7	250	pCi/L	KXX2	03/04/10	1016	956741	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"	80.8	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	76.4	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	98.2	(50%-105%)

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).  
The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8346  
Sample ID: 247337001

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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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8347  
Sample ID: 247337002  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 2.74%

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	-0.00395	0.0299	+/-0.00259	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00626	0.0221	+/-0.00314	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00938	0.0186	+/-0.00386	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.761	0.171	+/-0.0969	0.100	pCi/g		JXH2	03/06/10	1214	957101	4
Uranium-235/236	U	0.0285	0.111	+/-0.0166	0.100	pCi/g						
Uranium-238		0.900	0.118	+/-0.109	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0508	0.117	+/-0.0351	0.200	pCi/g		MXR1	03/04/10	1016	955027	5
Bismuth-211	UI	4.02	0.389	+/-0.311		pCi/g						
Bismuth-214		1.43	0.138	+/-0.115	0.200	pCi/g						
Cadmium-109	UI	4.40	1.02	+/-0.527		pCi/g						
Cerium-139	U	-0.0134	0.0518	+/-0.0156	0.050	pCi/g						
Cesium-134	U	0.0248	0.107	+/-0.0307	0.100	pCi/g						
Cesium-137	U	-0.0331	0.0822	+/-0.0269	0.100	pCi/g						
Cobalt-60	U	0.0343	0.094	+/-0.026	0.100	pCi/g						
Europium-152	U	-0.00677	0.178	+/-0.0538	0.200	pCi/g						
Lanthanum-140	U	-0.13	0.146	+/-0.0593		pCi/g						
Lead-212		1.79	0.108	+/-0.111	0.100	pCi/g						
Lead-214		1.46	0.141	+/-0.120	0.100	pCi/g						
Mercury-203	U	0.00436	0.0795	+/-0.0226	0.100	pCi/g						
Potassium-40		34.8	0.632	+/-1.93	1.00	pCi/g						
Radium-223	U	0.350	1.26	+/-0.400		pCi/g						
Radium-224	UI	4.22	1.16	+/-0.654		pCi/g						
Radium-226		1.43	0.138	+/-0.115		pCi/g						
Radium-228		2.27	0.316	+/-0.239	0.500	pCi/g						
Ruthenium-106	U	0.312	0.713	+/-0.204	0.800	pCi/g						
Sodium-22	U	0.0164	0.104	+/-0.0312	0.080	pCi/g						
Strontium-85	U	0.0182	0.0785	+/-0.0259		pCi/g						
Thallium-208		0.652	0.0683	+/-0.0587	0.080	pCi/g						

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8347  
Sample ID: 247337002

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	-0.0332	0.466	+/-0.143		pCi/g						
Thorium-231	U	0.350	1.26	+/-0.400		pCi/g						
Thorium-234		2.08	1.14	+/-0.544	2.00	pCi/g						
Tin-113	U	0.0377	0.0926	+/-0.026	0.100	pCi/g						
Uranium-235	U	0.020	0.359	+/-0.106	0.500	pCi/g						
Yttrium-88	U	-0.00431	0.0739	+/-0.0232	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		249	116	+/-45.4	250	pCi/L		KXK2	03/04/10	1119	956741	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"	85.2	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	68.1	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	90.1	(50%-105%)

### Notes:

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

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- < 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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Report Date: March 17, 2010

Client Sample ID: RE15-10-8347  
Sample ID: 247337002

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 17, 2010

Client Sample ID: RE15-10-8344  
Sample ID: 247337003  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 5.43%

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	0.0029	0.0334	+/-0.00262	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0134	0.0211	+/-0.00982	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00597	0.0178	+/-0.00473	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.07	0.179	+/-0.126	0.100	pCi/g		JXH2	03/06/10	1214	957101	4
Uranium-235/236	U	0.0498	0.116	+/-0.0226	0.100	pCi/g						
Uranium-238		1.20	0.123	+/-0.137	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.067	0.294	+/-0.0821	0.200	pCi/g		MXR1	03/04/10	1017	955027	5
Bismuth-211	UI	4.19	0.299	+/-0.222		pCi/g						
Bismuth-214		1.19	0.094	+/-0.0863	0.200	pCi/g						
Cadmium-109	UI	3.34	1.08	+/-0.504		pCi/g						
Cerium-139	U	-0.00351	0.0459	+/-0.0131	0.050	pCi/g						
Cesium-134	UI	0.119	0.0735	+/-0.028	0.100	pCi/g						
Cesium-137	U	-0.0105	0.049	+/-0.0147	0.100	pCi/g						
Cobalt-60	U	0.0187	0.0537	+/-0.0155	0.100	pCi/g						
Europium-152	U	-0.0684	0.127	+/-0.0468	0.200	pCi/g						
Lanthanum-140	U	0.0452	0.136	+/-0.0439		pCi/g						
Lead-212		1.87	0.0792	+/-0.0841	0.100	pCi/g						
Lead-214		1.52	0.104	+/-0.0907	0.100	pCi/g						
Mercury-203	U	0.0363	0.0607	+/-0.0173	0.100	pCi/g						
Potassium-40		34.0	0.426	+/-1.49	1.00	pCi/g						
Radium-223	U	0.429	0.898	+/-0.297		pCi/g						
Radium-224	UI	4.35	0.848	+/-0.554		pCi/g						
Radium-226		1.19	0.094	+/-0.0863		pCi/g						
Radium-228		1.90	0.189	+/-0.173	0.500	pCi/g						
Ruthenium-106	U	0.0367	0.441	+/-0.133	0.800	pCi/g						
Sodium-22	U	-0.0023	0.0618	+/-0.0188	0.080	pCi/g						
Strontium-85	U	0.0439	0.0599	+/-0.0192		pCi/g						
Thallium-208		0.553	0.047	+/-0.0399	0.080	pCi/g						



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Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8344  
Sample ID: 247337003

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	-0.131	0.328	+/-0.0999		pCi/g						
Thorium-231	U	0.429	0.898	+/-0.297		pCi/g						
Thorium-234	U	0.452	2.60	+/-0.736	2.00	pCi/g						
Tin-113	U	0.00839	0.060	+/-0.0172	0.100	pCi/g						
Uranium-235	U	0.156	0.304	+/-0.0909	0.500	pCi/g						
Yttrium-88	U	0.0288	0.051	+/-0.0137	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		350	116	+/-51.5	250	pCi/L		KXX2	03/04/10	1221	956741	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"	77.4	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	76.7	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	86.7	(50%-105%)

Notes:  
TPU is calculated at the 67% confidence level (1-sigma).  
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- > Result is greater than value reported
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- 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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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8344  
Sample ID: 247337003

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8345  
Sample ID: 247337004  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 6.26%

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	0.00034	0.0305	+/-0.00216	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0106	0.0276	+/-0.00625	0.050	pCi/g		JXH2	03/16/10	1032	965246	2
Plutonium-239/240	U	0.00202	0.0234	+/-0.00349	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.53	0.157	+/-0.156	0.100	pCi/g		JXH2	03/06/10	1214	957101	5
Uranium-235/236	U	0.0873	0.102	+/-0.0284	0.100	pCi/g						
Uranium-238		1.71	0.108	+/-0.171	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.0151	0.0874	+/-0.0276	0.200	pCi/g		MXR1	03/04/10	1018	955027	6
Bismuth-211	UI	4.91	0.362	+/-0.343		pCi/g						
Bismuth-214		1.58	0.135	+/-0.141	0.200	pCi/g						
Cadmium-109	UI	4.51	0.815	+/-0.435		pCi/g						
Cerium-139	U	-0.00868	0.0467	+/-0.0135	0.050	pCi/g						
Cesium-134	UI	0.272	0.119	+/-0.047	0.100	pCi/g						
Cesium-137	U	-0.00957	0.0835	+/-0.0258	0.100	pCi/g						
Cobalt-60	U	-0.00392	0.0883	+/-0.0266	0.100	pCi/g						
Europium-152	U	0.0653	0.180	+/-0.0526	0.200	pCi/g						
Lanthanum-140	U	-0.163	0.223	+/-0.0836		pCi/g						
Lead-212		2.16	0.088	+/-0.125	0.100	pCi/g						
Lead-214		1.78	0.132	+/-0.134	0.100	pCi/g						
Mercury-203	U	-0.00329	0.0643	+/-0.0216	0.100	pCi/g						
Potassium-40		35.2	0.706	+/-1.91	1.00	pCi/g						
Radium-223	U	-0.252	1.06	+/-0.374		pCi/g						
Radium-224	UI	5.75	0.946	+/-0.802		pCi/g						
Radium-226		1.58	0.135	+/-0.141		pCi/g						
Radium-228		2.23	0.306	+/-0.244	0.500	pCi/g						
Ruthenium-106	U	0.243	0.692	+/-0.198	0.800	pCi/g						
Sodium-22	U	-0.0346	0.105	+/-0.0348	0.080	pCi/g						
Strontium-85	U	-0.000791	0.0775	+/-0.0262		pCi/g						
Thallium-208		0.698	0.068	+/-0.068	0.080	pCi/g						

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## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
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Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8345  
Sample ID: 247337004

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	0.0955	0.425	+/-0.123		pCi/g						
Thorium-231	U	-0.252	1.06	+/-0.374		pCi/g						
Thorium-234		1.64	0.900	+/-0.414	2.00	pCi/g						
Tin-113	U	0.0382	0.0926	+/-0.0272	0.100	pCi/g						
Uranium-235	U	0.165	0.314	+/-0.0951	0.500	pCi/g						
Yttrium-88	U	0.0227	0.0936	+/-0.0264	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		173	117	+/-41.3	250	pCi/L		KXK2	03/04/10	1324	956741	7

### 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, Pu-11-RC Modified
5	DOE EML HASL-300, U-02-RC Modified
6	DOE HASL 300, 4.5.2.3/Ga-01-R
7	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	83.2	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	86.2	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	96.0	(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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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8345  
Sample ID: 247337004

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8342  
Sample ID: 247337005  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 5.4%

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	0.00236	0.0297	+/-0.00223	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00773	0.0218	+/-0.00411	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00773	0.0184	+/-0.00411	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.949	0.163	+/-0.112	0.100	pCi/g		JXH2	03/06/10	1214	957101	4
Uranium-235/236	U	0.0634	0.106	+/-0.0245	0.100	pCi/g						
Uranium-238		1.10	0.112	+/-0.125	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.168	0.200	+/-0.0602	0.200	pCi/g		MXR1	03/04/10	1019	955027	5
Bismuth-211	UI	4.64	0.324	+/-0.307		pCi/g						
Bismuth-214		1.43	0.0985	+/-0.112	0.200	pCi/g						
Cadmium-109	UI	5.35	1.17	+/-0.743		pCi/g						
Cerium-139	U	-0.0144	0.0469	+/-0.0145	0.050	pCi/g						
Cesium-134	UI	0.110	0.0913	+/-0.0331	0.100	pCi/g						
Cesium-137	U	-0.000757	0.059	+/-0.0172	0.100	pCi/g						
Cobalt-60	U	0.00663	0.063	+/-0.0191	0.100	pCi/g						
Europium-152	U	-0.0731	0.147	+/-0.0453	0.200	pCi/g						
Lanthanum-140	U	-0.0438	0.169	+/-0.0632		pCi/g						
Lead-212		1.96	0.087	+/-0.119	0.100	pCi/g						
Lead-214		1.69	0.113	+/-0.121	0.100	pCi/g						
Mercury-203	U	0.0595	0.062	+/-0.0317	0.100	pCi/g						
Potassium-40		33.1	0.496	+/-1.69	1.00	pCi/g						
Radium-223	U	0.502	1.04	+/-0.330		pCi/g						
Radium-224	UI	5.11	0.933	+/-0.722		pCi/g						
Radium-226		1.43	0.0985	+/-0.112		pCi/g						
Radium-228		2.22	0.214	+/-0.213	0.500	pCi/g						
Ruthenium-106	U	0.00263	0.530	+/-0.163	0.800	pCi/g						
Sodium-22	U	-0.0278	0.066	+/-0.0218	0.080	pCi/g						
Strontium-85	UI	0.0684	0.0669	+/-0.0202		pCi/g						
Thallium-208		0.616	0.0534	+/-0.0522	0.080	pCi/g						

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8342  
Sample ID: 247337005

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	-0.167	0.405	+/-0.121		pCi/g						
Thorium-231	U	0.502	1.04	+/-0.330		pCi/g						
Thorium-234		2.36	1.66	+/-0.791	2.00	pCi/g						
Tin-113	U	-0.0218	0.0692	+/-0.0212	0.100	pCi/g						
Uranium-235	U	-0.0116	0.335	+/-0.102	0.500	pCi/g						
Yttrium-88	U	0.00856	0.0523	+/-0.0151	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		311	115	+/-48.7	250	pCi/L		KXK2	03/04/10	1426	956741	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"	88.8	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	66.3	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	91.4	(50%-105%)

### Notes:

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

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8342  
Sample ID: 247337005

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8343  
Sample ID: 247337006  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 4.13%

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	0.000796	0.0369	+/-0.00261	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00718	0.0202	+/-0.00323	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00861	0.0171	+/-0.00354	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.862	0.157	+/-0.103	0.100	pCi/g		JXH2	03/06/10	1214	957101	4
Uranium-235/236	U	0.0568	0.102	+/-0.0239	0.100	pCi/g						
Uranium-238		1.08	0.108	+/-0.120	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0124	0.329	+/-0.105	0.200	pCi/g		MXR1	03/04/10	1046	955027	5
Bismuth-211	UI	4.29	0.439	+/-0.336		pCi/g						
Bismuth-214		1.34	0.128	+/-0.112	0.200	pCi/g						
Cadmium-109	UI	4.27	1.56	+/-1.01		pCi/g						
Cerium-139	U	-0.0122	0.0581	+/-0.018	0.050	pCi/g						
Cesium-134	U	0.116	0.117	+/-0.0316	0.100	pCi/g						
Cesium-137	U	-0.0122	0.0776	+/-0.0237	0.100	pCi/g						
Cobalt-60	U	0.00569	0.0862	+/-0.026	0.100	pCi/g						
Europium-152	U	-0.106	0.186	+/-0.0684	0.200	pCi/g						
Lanthanum-140	U	-0.0327	0.224	+/-0.0695		pCi/g						
Lead-212		1.94	0.114	+/-0.121	0.100	pCi/g						
Lead-214		1.56	0.153	+/-0.129	0.100	pCi/g						
Mercury-203	U	0.0596	0.0922	+/-0.0259	0.100	pCi/g						
Potassium-40		34.6	0.681	+/-1.97	1.00	pCi/g						
Radium-223	U	-0.088	1.30	+/-0.444		pCi/g						
Radium-224	UI	5.16	1.22	+/-0.694		pCi/g						
Radium-226		1.34	0.128	+/-0.112		pCi/g						
Radium-228		2.18	0.262	+/-0.222	0.500	pCi/g						
Ruthenium-106	U	-0.147	0.618	+/-0.190	0.800	pCi/g						
Sodium-22	U	-0.0151	0.0888	+/-0.0278	0.080	pCi/g						
Strontium-85	U	0.0785	0.0866	+/-0.0259		pCi/g						
Thallium-208		0.551	0.0692	+/-0.0487	0.080	pCi/g						

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

Report Date: March 17, 2010

Client Sample ID: RE15-10-8343  
Sample ID: 247337006

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	-0.0525	0.486	+/-0.143		pCi/g						
Thorium-231	U	-0.088	1.30	+/-0.444		pCi/g						
Thorium-234	U	2.47	2.72	+/-1.16	2.00	pCi/g						
Tin-113	U	-0.0595	0.0847	+/-0.0278	0.100	pCi/g						
Uranium-235	U	0.215	0.402	+/-0.120	0.500	pCi/g						
Yttrium-88	U	-0.034	0.0445	+/-0.018	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		252	114	+/-45.0	250	pCi/L		KXX2	03/04/10	1529	956741	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"	70.0	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	69.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	94.5	(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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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 17, 2010

Client Sample ID: RE15-10-8343  
Sample ID: 247337006

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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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 17, 2010

Client Sample ID: RE15-10-8377  
Sample ID: 247337007  
Matrix: R  
Collect Date: 12-FEB-10  
Receive Date: 18-FEB-10  
Collector: Client  
Moisture: 5.35%

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	-0.00182	0.0365	+/-0.00258	0.050	pCi/g		JXH2	03/06/10	1207	957096	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0155	0.0243	+/-0.00523	0.050	pCi/g		JXH2	03/13/10	1427	957099	2
Plutonium-239/240	U	0.00862	0.0205	+/-0.00458	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.20	0.194	+/-0.140	0.100	pCi/g		JXH2	03/06/10	1215	957101	4
Uranium-235/236	U	0.0753	0.125	+/-0.0291	0.100	pCi/g						
Uranium-238		1.39	0.133	+/-0.157	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0361	0.220	+/-0.070	0.200	pCi/g		MXR1	03/04/10	1240	955027	5
Bismuth-211	UI	4.26	0.299	+/-0.301		pCi/g						
Bismuth-214		1.29	0.105	+/-0.103	0.200	pCi/g						
Cadmium-109	UI	4.06	1.09	+/-0.529		pCi/g						
Cerium-139	U	-0.0171	0.0445	+/-0.0132	0.050	pCi/g						
Cesium-134	UI	0.181	0.0935	+/-0.0314	0.100	pCi/g						
Cesium-137	U	-0.00135	0.0609	+/-0.0184	0.100	pCi/g						
Cobalt-60	U	0.0316	0.0641	+/-0.0179	0.100	pCi/g						
Europium-152	U	0.0153	0.148	+/-0.0431	0.200	pCi/g						
Lanthanum-140	U	-0.089	0.159	+/-0.0537		pCi/g						
Lead-212		1.96	0.0808	+/-0.129	0.100	pCi/g						
Lead-214		1.55	0.106	+/-0.117	0.100	pCi/g						
Mercury-203	U	-0.0143	0.0624	+/-0.0191	0.100	pCi/g						
Potassium-40		33.8	0.450	+/-1.71	1.00	pCi/g						
Radium-223	U	0.160	0.915	+/-0.306		pCi/g						
Radium-224	UI	4.70	0.866	+/-0.637		pCi/g						
Radium-226		1.29	0.105	+/-0.103		pCi/g						
Radium-228		1.99	0.218	+/-0.184	0.500	pCi/g						
Ruthenium-106	U	-0.0393	0.467	+/-0.142	0.800	pCi/g						
Sodium-22	U	-0.0142	0.0674	+/-0.0213	0.080	pCi/g						
Strontium-85	U	0.0463	0.0593	+/-0.0179		pCi/g						
Thallium-208		0.589	0.0523	+/-0.0467	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 17, 2010

Client Sample ID: RE15-10-8377  
Sample ID: 247337007

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	-0.14	0.363	+/-0.112		pCi/g						
Thorium-231	U	0.160	0.915	+/-0.306		pCi/g						
Thorium-234		2.60	1.82	+/-0.872	2.00	pCi/g						
Tin-113	U	-0.0106	0.0666	+/-0.0194	0.100	pCi/g						
Uranium-235	U	0.216	0.324	+/-0.0913	0.500	pCi/g						
Yttrium-88	U	-0.00181	0.0363	+/-0.0113	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		228	117	+/-44.5	250	pCi/L		KXK2	03/04/10	1632	956741	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"	71.0	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	60.1	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	82.2	(50%-105%)

### Notes:

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

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample

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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 17, 2010

Client Sample ID: RE15-10-8377  
Sample ID: 247337007

Project: LANL01004  
Client ID: LANL010

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

# QUALITY CONTROL DATA

# GEL LABORATORIES LLC

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## QC Summary

Report Date: March 17, 2010

Page 1 of 7

Client : Los Alamos National Laboratory  
PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico  
Contact: Ms. Joylene Valdez  
Workorder: 247337

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	957096										
QC1202052135	247360001	DUP									
Americium-241		U	0.0296	U	0.00383	pCi/g	0.889	(0-1)	JXH2	03/06/10	12:08
		TPU:	+/-0.00915		+/-0.00535						
		Yield:	73.0		80.3						
QC1202052136	LCS										
Americium-241	33.2				31.4	pCi/g	94.8	(75%-125%)		03/06/10	12:08
		TPU:			+/-2.42						
		Yield:			97.5						
QC1202052134	MB										
Americium-241		U		-0.00231	pCi/g					03/06/10	12:08
		TPU:		+/-0.00335							
		Yield:		81.1							
Batch	957099										
QC1202052142	247360001	DUP									
Plutonium-238		U	-2.68E-05	U	0.006	pCi/g	0.399	(0-1)	JXH2	03/15/10	12:59
		TPU:	+/-0.00329		+/-0.00426						
		Yield:	83.9		75.5						
Plutonium-239/240			0.087		0.039	pCi/g	0.865	(0-1)			
		TPU:	+/-0.0161		+/-0.0116						
		Yield:	83.9		75.5						
QC1202052143	LCS										
Plutonium-238					7.03	pCi/g		(75%-125%)		03/13/10	14:27
		TPU:			+/-0.557						
		Yield:			60.5						
Plutonium-239/240	41.8				37.8	pCi/g	90.4	(75%-125%)			
		TPU:			+/-2.37						
		Yield:			60.5						
QC1202052141	MB										
Plutonium-238		U		0.0136	pCi/g						
		TPU:		+/-0.00487							
		Yield:		74.9							
Plutonium-239/240		U		0.00341	pCi/g						
		TPU:		+/-0.00418							
		Yield:		74.9							
Batch	957101										
QC1202052149	247360001	DUP									
Uranium-233/234			1.51		1.42	pCi/g	0.140	(0-1)	JXH2	03/06/10	12:15
		TPU:	+/-0.170		+/-0.156						
		Yield:	75.1		86.7						
Uranium-235/236		U	0.0228	U	0.0307	pCi/g	0.0898	(0-1)			
		TPU:	+/-0.0216		+/-0.0219						
		Yield:	75.1		86.7						
Uranium-238			1.93		1.48	pCi/g	0.611	(0-1)			
		TPU:	+/-0.205		+/-0.161						



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## QC Summary

Workorder: 247337

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
<b>Rad Alpha Spec</b>											
Batch	957101										
QC1202052150	LCS	Yield:	75.1	86.7							
Uranium-233/234				6.55	pCi/g					03/06/10	12:15
		TPU:		+/-0.741							
Uranium-235/236		Yield:		90.6							
			U	0.471	pCi/g						
		TPU:		+/-0.154							
Uranium-238	5.75	Yield:		90.6							
				5.16	pCi/g		89.7	(75%-125%)			
		TPU:		+/-0.619							
		Yield:		90.6							
QC1202052148	MB										
Uranium-233/234			U	0.0108	pCi/g					03/06/10	12:15
		TPU:		+/-0.00849							
Uranium-235/236		Yield:		98.1							
			U	0.00457	pCi/g						
		TPU:		+/-0.00459							
Uranium-238		Yield:		98.1							
			U	-0.00561	pCi/g						
		TPU:		+/-0.00492							
		Yield:		98.1							
Batch	965246										
QC1202071012	247337004	DUP									
Plutonium-238		U	0.0106	U	0.00135	pCi/g	0.327	(0-1)	JXH2	03/16/10	10:32
		TPU:	+/-0.00625		+/-0.00784						
		Yield:	86.2		93.3						
Plutonium-239/240		U	0.00202	U	-0.0026	pCi/g	0.353	(0-1)			
		TPU:	+/-0.00349		+/-0.00305						
		Yield:	86.2		93.3						
QC1202071013	LCS										
Plutonium-238				4.40	pCi/g			(75%-125%)			
		TPU:		+/-0.455							
Plutonium-239/240	41.8	Yield:		86.8							
				40.2	pCi/g		96.3	(75%-125%)			
		TPU:		+/-2.94							
		Yield:		86.8							
QC1202071011	MB										
Plutonium-238			U	0.0262	pCi/g						
		TPU:		+/-0.0156							
		Yield:		87.0							
Plutonium-239/240			U	0.00133	pCi/g						
		TPU:		+/-0.00327							
		Yield:		87.0							
<b>Rad Gamma Spec</b>											
Batch	955027										
QC1202047454	247360001	DUP									
Americium-241		U	-0.191	U	0.262	pCi/g	0.916	(0-1)	MXR1	03/04/10	16:10
		TPU:	+/-0.0841		+/-0.163						
Bismuth-211		UI	4.56	UI	3.95	pCi/g	0.460	(0-1)			

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## QC Summary

Workorder: 247337

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch 955027											
		TPU:									
Bismuth-214		+/-0.376		+/-0.286							
		1.31		1.48	pCi/g	0.333		(0-1)			
		TPU:		+/-0.122							
Cadmium-109		+/-0.130									
		UI 2.86	UI	2.92	pCi/g	0.0258		(0-1)			
		TPU:		+/-0.644							
Cerium-139		+/-0.575									
		U -0.0135	U	0.00679	pCi/g	0.255		(0-1)			
		TPU:		+/-0.0204							
Cesium-134		+/-0.0195									
		UI 0.110	U	0.0975	pCi/g	0.0985		(0-1)			
		TPU:		+/-0.031							
Cesium-137		+/-0.0301									
		1.24		1.24	pCi/g	0.00		(0-1)			
		TPU:		+/-0.0717							
Cobalt-60		+/-0.0914									
		U -0.0452	U	-0.0556	pCi/g	0.106		(0-1)			
		TPU:		+/-0.0269							
Europium-152		+/-0.0223									
		U 0.0444	U	0.00569	pCi/g	0.143		(0-1)			
		TPU:		+/-0.0661							
Lanthanum-140		+/-0.0688									
		U -0.124	U	-0.15	pCi/g	0.0756		(0-1)			
		TPU:		+/-0.0978							
Lead-212		+/-0.0782									
		1.75		1.82	pCi/g	0.142		(0-1)			
		TPU:		+/-0.104							
Lead-214		+/-0.136									
		1.65		1.43	pCi/g	0.434		(0-1)			
		TPU:		+/-0.111							
Mercury-203		+/-0.144									
		U 0.0703	U	0.030	pCi/g	0.358		(0-1)			
		TPU:		+/-0.0278							
Potassium-40		+/-0.0283									
		27.0		25.8	pCi/g	0.204		(0-1)			
		TPU:		+/-1.53							
Radium-223		+/-1.52									
		U -0.229	U	-0.622	pCi/g	0.223		(0-1)			
		TPU:		+/-0.442							
Radium-224		+/-0.439									
		UI 4.55	UI	4.40	pCi/g	0.0488		(0-1)			
		TPU:		+/-0.728							
Radium-226		+/-0.780									
		1.31		1.48	pCi/g	0.333		(0-1)			
		TPU:		+/-0.122							
Radium-228		+/-0.130									
		1.63		1.49	pCi/g	0.156		(0-1)			
		TPU:		+/-0.220							
Ruthenium-106		+/-0.218									
		U 0.0822	U	-0.0805	pCi/g	0.202		(0-1)			
		TPU:		+/-0.208							
Sodium-22		+/-0.195									
		U -0.0352	U	0.0271	pCi/g	0.573		(0-1)			
		TPU:		+/-0.0305							
Strontium-85		+/-0.0239									
		UI 0.247	UI	0.155	pCi/g	0.431		(0-1)			
		TPU:		+/-0.0722							
Thallium-208		+/-0.0338									
		0.515		0.457	pCi/g	0.281		(0-1)			
		TPU:		+/-0.0503							
Thorium-227		+/-0.0531									
		U -0.0804	U	-0.129	pCi/g	0.0719		(0-1)			
		TPU:		+/-0.170							
Thorium-231		+/-0.170									
		U -0.229	U	-0.622	pCi/g	0.223		(0-1)			
		TPU:		+/-0.442							
Thorium-234		+/-0.439									
		U 0.585		4.01	pCi/g	0.717		(0-1)			
		TPU:		+/-1.59							
Tin-113		+/-0.798									
		U 0.0303	U	-0.041	pCi/g	0.575		(0-1)			
		TPU:		+/-0.0318							
Uranium-235		+/-0.0302									
		U 0.133	U	0.235	pCi/g	0.181		(0-1)			
		TPU:		+/-0.140							

# GEL LABORATORIES LLC

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## QC Summary

Workorder: 247337

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>											
Batch	955027										
Yttrium-88	U	0.0188	U	-0.0164	pCi/g	0.423		(0-1)			
	TPU:	+/-0.0185		+/-0.0231							
QC1202047455 LCS											
Americium-241	15.9			13.3	pCi/g		83.8	(75%-125%)		03/04/10	12:48
	TPU:			+/-0.642							
Bismuth-211				2.54	pCi/g						
	TPU:			+/-0.297							
Bismuth-214				0.737	pCi/g						
	TPU:			+/-0.107							
Cadmium-109				34.3	pCi/g						
	TPU:			+/-1.91							
Cerium-139			U	0.0233	pCi/g						
	TPU:			+/-0.0182							
Cesium-134			U	-0.00594	pCi/g						
	TPU:			+/-0.0347							
Cesium-137	5.55			5.61	pCi/g		101	(75%-125%)			
	TPU:			+/-0.241							
Cobalt-60	6.36			6.45	pCi/g		101	(75%-125%)			
	TPU:			+/-0.277							
Europium-152			U	-0.046	pCi/g						
	TPU:			+/-0.0824							
Lanthanum-140			U	0.0277	pCi/g						
	TPU:			+/-0.0396							
Lead-212				1.29	pCi/g						
	TPU:			+/-0.0855							
Lead-214				0.922	pCi/g						
	TPU:			+/-0.111							
Mercury-203			U	0.0484	pCi/g						
	TPU:			+/-0.0264							
Potassium-40				1.13	pCi/g						
	TPU:			+/-0.249							
Radium-223			U	-0.726	pCi/g						
	TPU:			+/-0.473							
Radium-224				2.05	pCi/g						
	TPU:			+/-0.593							
Radium-226				0.737	pCi/g						
	TPU:			+/-0.107							
Radium-228				1.48	pCi/g						
	TPU:			+/-0.234							
Ruthenium-106			U	-0.0291	pCi/g						
	TPU:			+/-0.234							
Sodium-22			U	-0.0095	pCi/g						
	TPU:			+/-0.0223							
Strontium-85			U	-0.142	pCi/g						
	TPU:			+/-0.0304							
Thallium-208				0.421	pCi/g						
	TPU:			+/-0.0569							
Thorium-227			U	0.146	pCi/g						
	TPU:			+/-0.178							
Thorium-231			U	-0.726	pCi/g						
	TPU:			+/-0.473							

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## QC Summary

Workorder: 247337

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Parmname	NOM	Sample Qual	QC	Units	RER	REC %	Range	Anlst	Date Time
<b>Rad Gamma Spec</b>									
Batch	955027								
Thorium-234		U	0.254	pCi/g					
	TPU:		+/-1.20						
Tin-113		U	-0.0421	pCi/g					
	TPU:		+/-0.0321						
Uranium-235		U	0.260	pCi/g					
	TPU:		+/-0.135						
Yttrium-88		U	-0.00975	pCi/g					
	TPU:		+/-0.0197						
QC1202047453 MB									
Americium-241		U	0.00686	pCi/g					03/04/1012:46
	TPU:		+/-0.0133						
Bismuth-211		U	-0.00423	pCi/g					
	TPU:		+/-0.0612						
Bismuth-214		U	-0.0129	pCi/g					
	TPU:		+/-0.0279						
Cadmium-109		U	0.0104	pCi/g					
	TPU:		+/-0.135						
Cerium-139		U	-0.0054	pCi/g					
	TPU:		+/-0.00687						
Cesium-134		U	0.00397	pCi/g					
	TPU:		+/-0.0136						
Cesium-137		U	-0.0257	pCi/g					
	TPU:		+/-0.0124						
Cobalt-60		U	-0.00983	pCi/g					
	TPU:		+/-0.0125						
Europium-152		U	0.000391	pCi/g					
	TPU:		+/-0.0301						
Lanthanum-140		U	-0.0126	pCi/g					
	TPU:		+/-0.0228						
Lead-212		U	-0.0134	pCi/g					
	TPU:		+/-0.0194						
Lead-214		U	0.00921	pCi/g					
	TPU:		+/-0.0219						
Mercury-203		U	0.0245	pCi/g					
	TPU:		+/-0.009						
Potassium-40		U	-0.0975	pCi/g					
	TPU:		+/-0.138						
Radium-223		U	-0.113	pCi/g					
	TPU:		+/-0.181						
Radium-224		U	-0.672	pCi/g					
	TPU:		+/-0.217						
Radium-226		U	-0.0129	pCi/g					
	TPU:		+/-0.0279						
Radium-228		U	-0.0408	pCi/g					
	TPU:		+/-0.0496						
Ruthenium-106		U	-0.146	pCi/g					
	TPU:		+/-0.110						
Sodium-22		U	0.00514	pCi/g					
	TPU:		+/-0.00986						
Strontium-85		U	-0.121	pCi/g					
	TPU:		+/-0.0192						

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## QC Summary

Workorder: 247337

Page 6 of 7

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	955027										
Thallium-208			U	-0.00755	pCi/g						
	TPU:			+/-0.0144							
Thorium-227			U	-0.0798	pCi/g						
	TPU:			+/-0.0689							
Thorium-231			U	-0.113	pCi/g						
	TPU:			+/-0.181							
Thorium-234			U	0.0933	pCi/g						
	TPU:			+/-0.161							
Tin-113			U	-0.0105	pCi/g						
	TPU:			+/-0.0133							
Uranium-235			U	0.013	pCi/g						
	TPU:			+/-0.0497							
Yttrium-88			U	0.0318	pCi/g						
	TPU:			+/-0.0147							
Rad Liquid Scintillation											
Batch	956741										
QC1202051379	247337001	DUP									
Tritium			301	272	pCi/L	0.151		(0-1)	KXK2	03/04/1018:37	
	TPU:		+/-48.7	+/-46.2							
QC1202051380	LCS										
Tritium	5540			5950	pCi/L		107	(80%-120%)		03/04/1019:40	
	TPU:			+/-489							
QC1202051378	MB										
Tritium			U	3.31	pCi/L					03/04/1017:35	
	TPU:			+/-32.5							

### 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

## GEL LABORATORIES LLC

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### QC Summary

Workorder: 247337

Page 7 of 7

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
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# 9570916 Product: Am Date: 8/8/10

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.			N/A
Samples have been blank corrected (if required)	✓		
If activity less 10* MDA/ MDC, error is 150% or less of sample activity. If greater 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay.	✓		
Instrument source check is within limits.	✓		
Instrument bkg check is within limits.	✓		
Method RDL/ LLD has been met.	✓		
If duplicate activities are less 5* MDA/ MDC, then RPD is 100% or less. If greater 5* MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.	✓		
Or meets the client's required RER acceptance criteria.	✓		
Tracer yield is 15-125% . Carrier yield 25-125%.	✓		
Or meets the client's contract acceptance criteria.	✓		
Method blank is less than the RDL/ LLD.	✓		
(If rad samples, < 5% of lowest activity)	✓		
Sample was run within hold time.	✓		
Sample was correctly preserved if required.			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.			N/A
Aux data is correct.			N/A
Client Special requirements page has been checked.	✓		
Raw Data and/ or spectrum are included and properly statused.	✓		
QC data entered into QC database and batch is in REVW	✓		
Hlt 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:

Denise Brown 3/8/10

Secondary Review Performed By:

Kath Bell 3/9/10





# Blank Correction Report

**Batch ID 957096**

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202052135	DUP	Americium-241	1.26 g	0.00383	0.00535	0.0323	-.00183333	pCi/g	NO
1202052136	LCS	Americium-241	0.109 g	31.4	2.42	0.302	-.02119266	pCi/g	NO
1202052134	MB	Americium-241	1.00 g	-0.00231	0.00335	0.0386	-.00231	pCi/g	NO
247323001	RE46-10-12942	Americium-241	1.25 g	-0.00083	0.00225	0.0285	-.001848	pCi/g	NO
247323002	RE46-10-12944	Americium-241	1.26 g	0.00737	0.00415	0.0326	-.00183333	pCi/g	NO
247323003	RE46-10-12941	Americium-241	1.25 g	0.0032	0.00284	0.0356	-.001848	pCi/g	NO
247323005	RE46-10-12943	Americium-241	1.25 g	0.000828	0.00266	0.0375	-.001848	pCi/g	NO
247323006	RE46-10-12952	Americium-241	1.27 g	-0.005	0.00281	0.0299	-.00181890	pCi/g	NO
247323007	RE46-10-13189	Americium-241	1.26 g	0.00258	0.00239	0.0312	-.00183333	pCi/g	NO
247325001	RE46-10-12661	Americium-241	1.28 g	-0.0075	0.00421	0.0318	-.00180469	pCi/g	NO
247327002	WST15-10-8941	Americium-241	1.26 g	0.000384	0.00219	0.031	-.00183333	pCi/g	NO
247337001	RE15-10-8346	Americium-241	1.26 g	0.000439	0.00225	0.0319	-.00183333	pCi/g	NO
247337002	RE15-10-8347	Americium-241	1.25 g	-0.00395	0.00259	0.0299	-.001848	pCi/g	NO
247337003	RE15-10-8344	Americium-241	1.26 g	0.0029	0.00262	0.0334	-.00183333	pCi/g	NO
247337004	RE15-10-8345	Americium-241	1.26 g	0.00034	0.00216	0.0305	-.00183333	pCi/g	NO
247337005	RE15-10-8342	Americium-241	1.25 g	0.00236	0.00223	0.0297	-.001848	pCi/g	NO
247337006	RE15-10-8343	Americium-241	1.26 g	0.000796	0.00261	0.0369	-.00183333	pCi/g	NO
247337007	RE15-10-8377	Americium-241	1.25 g	-0.00182	0.00258	0.0365	-.001848	pCi/g	NO
247360001	RE36-10-7427	Americium-241	1.25 g	0.0296	0.00915	0.0356	-.001848	pCi/g	NO
247360003	RE36-10-7428	Americium-241	1.26 g	-0.000709	0.0025	0.0316	-.00183333	pCi/g	NO
247360004	RE36-10-7424	Americium-241	1.26 g	0.00175	0.00292	0.0339	-.00183333	pCi/g	NO

CHAMBER : 220  
DETECTOR S/N : 79413  
AVERAGE %EFFICIENCY : 38.9430  
COUNT DATE : 6-MAR-2010 12:07:31  
ELAPSED LIVE TIME(SEC) : 30300.00

```
LIB FILE      : ENV_ALPHA_AM
BKG FILE     : B220.CNF;85
BKG DATE     : 28-FEB-2010
BKG LIVE TIME(SEC) : 60000.00
EFF FILE     : W220.CNF;32
CAL DATE     : 28-FEB-2010
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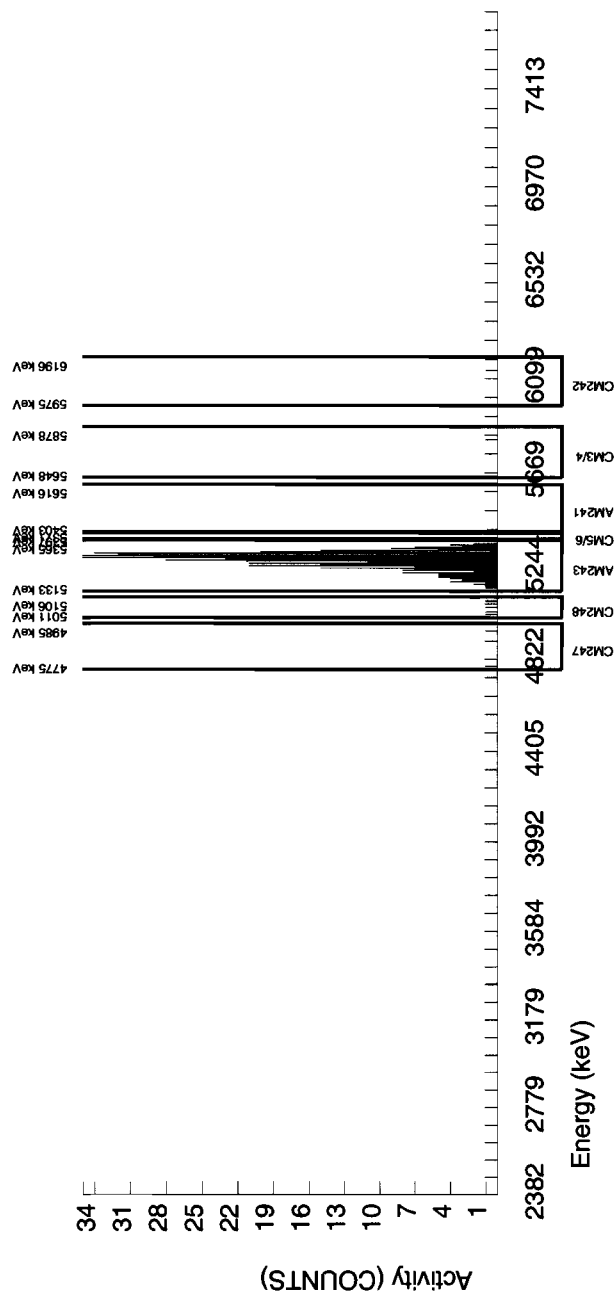
MS/MSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3154E+01 pCi/G

LCS/LCSD	
ID	: 0244-B
NUCLIDE	: AM-241
NOMINAL	: 3.3154E

## 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	5503.634	4.926	1.000	0.195	0.000	2.8409	99.94000	4.39E-04	2.25E-03	1.29E-02	3.19E-02	2.25E-03
AM243	5270.000	5279.706	62.635	463.000	462.495	0.505	0.7106	99.78000	1.04E+00	8.67E-02	3.23E-03	1.26E-02	4.84E-02
CM-242	6102.000	6141.827	4.926	1.000	1.000	0.000	4.3413	100.0000	2.47E-03	2.48E-03	1.97E-02	4.54E-02	2.47E-03
CM-3/4	5795.020	5824.256	4.926	1.000	0.495	0.505	5.1799	100.0000	1.11E-03	2.53E-03	2.35E-02	5.30E-02	2.52E-03
CM-5/6	5386.000	5376.044	6.568	6.000	6.000	0.000	14.2480	86.09000	1.57E-02	6.48E-03	7.50E-02	1.57E-01	6.39E-03
CM-247	4946.000	4830.120	171.782	4.000	2.990	1.010	13.7917	79.30000	8.47E-03	6.04E-03	7.88E-02	1.65E-01	6.01E-03
CM-248	5078.600	5067.497	64.034	6.000	6.000	0.000	19.5980	91.00000	1.48E-02	6.13E-03	9.72E-02	2.01E-01	6.05E-03

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)
- \* BKG Sg of AM243 calculated as  $\sqrt{\text{BKG AREA}}$ .
- \* Corrections made to the following net area  
due to tracer impurity:  
AM-241



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

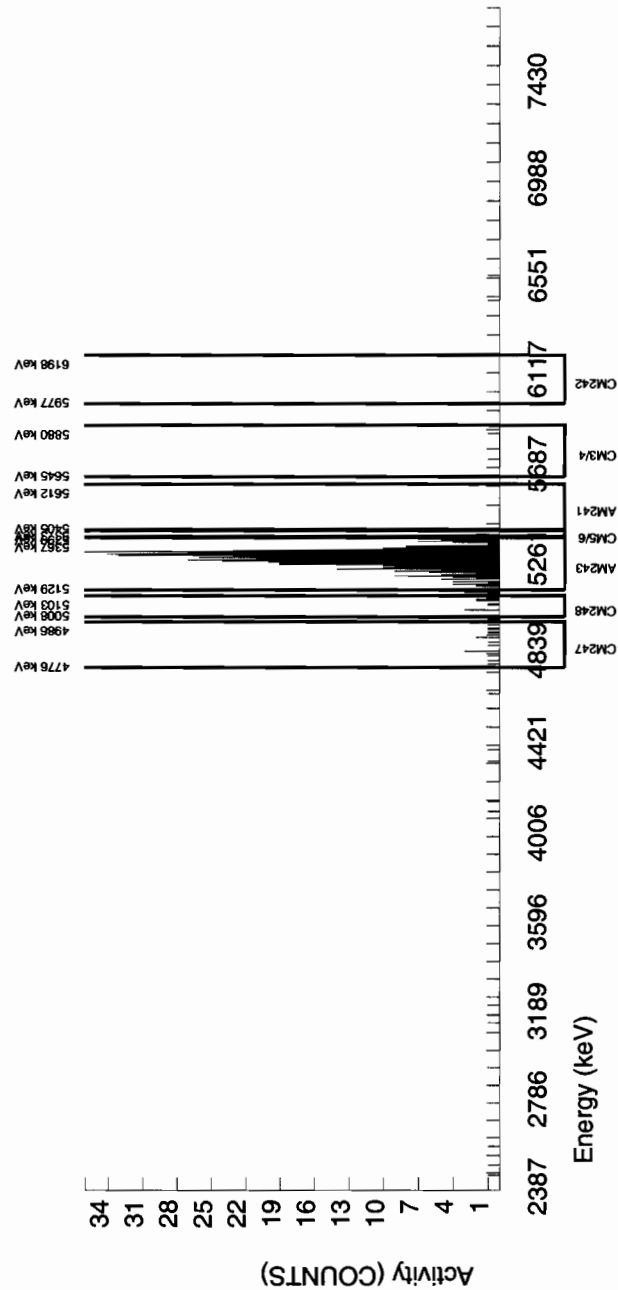
<p>BATCH NUMBER : 957096  SAMPLE ID : S0247337002_AM  SAMPLE QTY : 1.252 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 85.206</p>	<p>CHAMBER : 221  DETECTOR S/N : 79414  AVERAGE %EFFICIENCY : 39.7297  COUNT DATE : 6-MAR-2010 12:07:33  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_AM  BKG FILE : B221.CNF;85  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W221.CNF;30  CAL DATE : 28-FEB-2010</p>
<p>TRACER  ID : 445-96-2-SS  NUCLIDE : AM243  NOMINAL : 2.9166E+00 dpm  RESULTS : 2.4851E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3154E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3154E+01 pCi/G</p>

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	5508.437	0.000	0.000	-1.876	1.010	2.8409	99.94000	-3.95E-03	2.59E-03	1.21E-02	2.99E-02	2.59E-03
AM243	5270.000	5275.337	65.029	498.000	497.495	0.505	0.7106	99.78000	1.05E+00	8.55E-02	3.02E-03	1.18E-02	4.71E-02
CM-242	6102.000	6087.438	0.000	0.000	0.000	0.000	4.3413	100.0000	0.00E+00	2.32E-03	1.84E-02	4.26E-02	2.32E-03
CM-3/4	5795.020	5785.451	114.200	3.000	3.000	0.000	5.1799	100.0000	6.33E-03	3.68E-03	2.20E-02	4.97E-02	3.68E-03
CM-5/6	5386.000	5380.718	0.000	6.000	6.000	0.000	14.2480	86.09000	1.47E-02	6.07E-03	7.03E-02	1.47E-01	5.99E-03
CM-247	4946.000	4880.249	63.306	17.000	17.000	0.000	13.7917	79.30000	4.51E-02	1.14E-02	7.39E-02	1.55E-01	1.09E-02
CM-248	5078.600	5061.798	49.652	14.000	14.000	0.000	19.5080	91.00000	3.24E-02	8.93E-03	9.10E-02	1.88E-01	8.65E-03

NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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

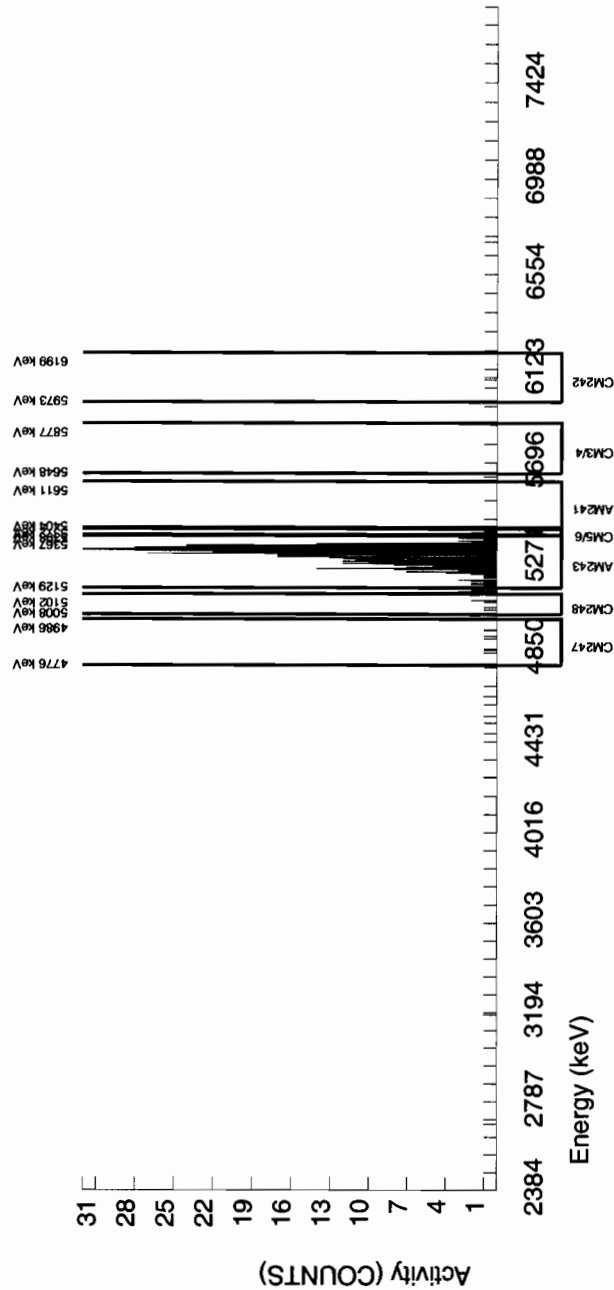
<p>BATCH NUMBER : 957096  SAMPLE ID : S0247337003_AM  SAMPLE QTY : 1.256 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 77.371</p>		<p>CHAMBER : 222  DETECTOR S/N : 79415  AVERAGE %EFFICIENCY : 38.9602  COUNT DATE : 6-MAR-2010 12:07:37  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_AM  BKG FILE : B222.CNF:85  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W222.CNF:30  CAL DATE : 28-FEB-2010</p>
<p>TRACER  ID : 445-96-2-SS  NUCLIDE : AM243  NOMINAL : 2.9166E+00 dpm  RESULTS : 2.2566E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3154E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3154E+01 pCi/G</p>	

## 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	5408.976	0.000	2.000	1.229	0.000	2.8409	99.94000	2.90E-03	2.62E-03	1.35E-02	3.34E-02	2.61E-03
AM-243	5270.000	5283.931	55.084	443.000	443.000	0.000	0.0000	99.78000	1.05E+00	8.83E-02	0.00E+00	6.40E-03	4.97E-02
CM-242	6102.000	6085.910	15.074	2.000	2.000	0.000	4.3413	100.0000	5.19E-03	3.69E-03	2.06E-02	4.77E-02	3.67E-03
CM-3/4	5795.020	5762.488	0.000	0.000	-0.505	0.505	5.1799	100.0000	-1.19E-03	2.65E-03	2.46E-02	5.56E-02	2.65E-03
CM-5/6	5386.000	5380.034	7.537	13.000	13.000	0.000	14.2480	86.09000	3.56E-02	1.02E-02	7.87E-02	1.65E-01	9.87E-03
CM-247	4946.000	4889.692	105.519	5.000	5.000	0.000	13.7917	79.30000	1.49E-02	6.72E-03	8.27E-02	1.73E-01	6.64E-03
CM-248	5078.600	5067.200	7.380	6.000	6.000	0.000	19.5080	91.00000	1.55E-02	6.43E-03	1.02E-01	2.11E-01	6.34E-03

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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**

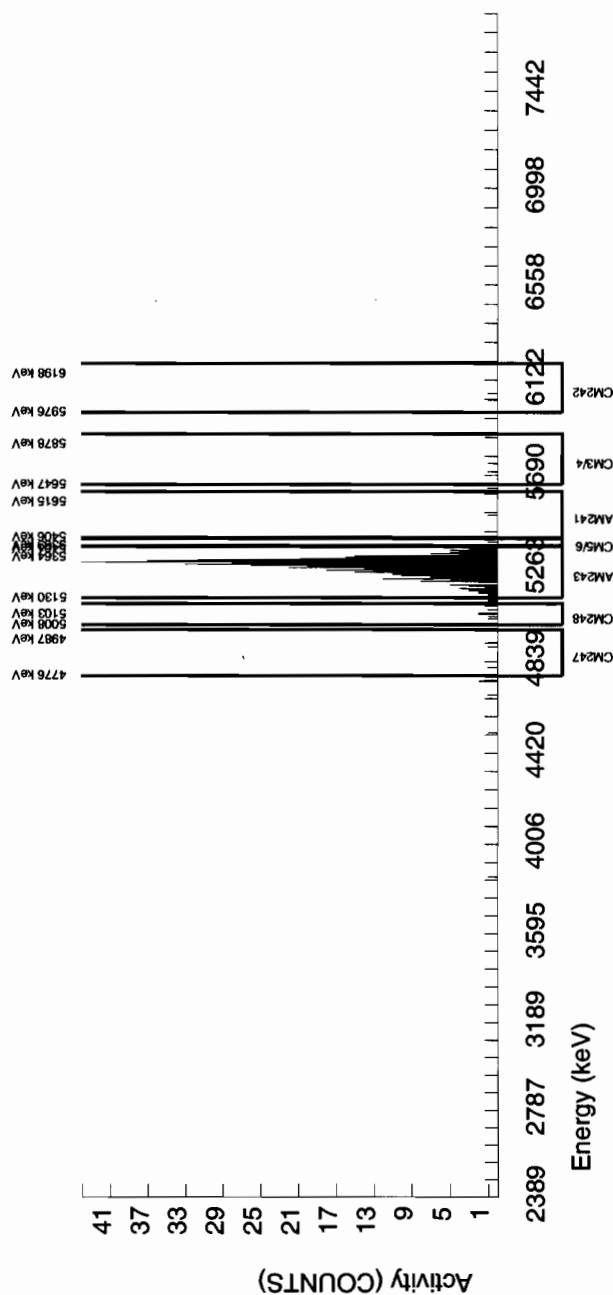
BATCH NUMBER : 957096 SAMPLE ID : S0247337004_AM SAMPLE QTY : 1.258 G SAMPLE DATE : 12-FEB-2010 00:00:00 ANALYST : JXH2 % YIELD : 83.183				CHAMBER : 223 DETECTOR S/N : 79416 AVERAGE %EFFICIENCY : 39.5920 COUNT DATE : 6-MAR-2010 12:07:40 ELAPSED LIVE TIME(SEC) : 30300.00				LIB FILE : ENV_ALPHA_AM BKG FILE : B223.CNF;87 BKG DATE : 28-FEB-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W223.CNF;30 CAL DATE : 28-FEB-2010					
TRACER ID : 445-96-2-SS NUCLIDE : AM243 NOMINAL : 2.9166E+00 dpm RESULTS : 2.4261E+00 dpm				MS/MSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3154E+01 pCi/G				LCS/LCSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3154E+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
AM-241	5479.150	5513.204	4.946	1.000	0.158	0.000	2.8409	99.94000	3.40E-04	2.16E-03	1.24E-02	3.05E-02	2.15E-03
AM-243	5270.000	5279.355	31.877	484.000	484.000	0.000	0.0000	99.78000	1.04E+00	8.57E-02	0.00E+00	5.85E-03	4.75E-02
CM-242	6102.000	6051.228	34.622	2.000	2.000	0.000	4.3413	100.0000	4.74E-03	3.37E-03	1.89E-02	4.36E-02	3.35E-03
CM-3/4	5795.020	5730.309	39.568	2.000	2.000	0.000	5.1799	100.0000	4.32E-03	3.07E-03	2.25E-02	5.08E-02	3.05E-03
CM-5/6	5386.000	5373.866	0.000	10.000	10.000	0.000	14.2480	86.09000	2.50E-02	8.09E-03	7.19E-02	1.51E-01	7.91E-03
CM-247	4946.000	4888.581	113.758	3.000	3.000	0.000	13.7917	79.30000	8.14E-03	4.74E-03	7.56E-02	1.58E-01	4.70E-03
CM-248	5078.600	5062.837	0.000	12.000	11.495	0.505	19.5080	91.00000	2.72E-02	8.49E-03	9.31E-02	1.93E-01	8.28E-03

## NOTES:

\* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)

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

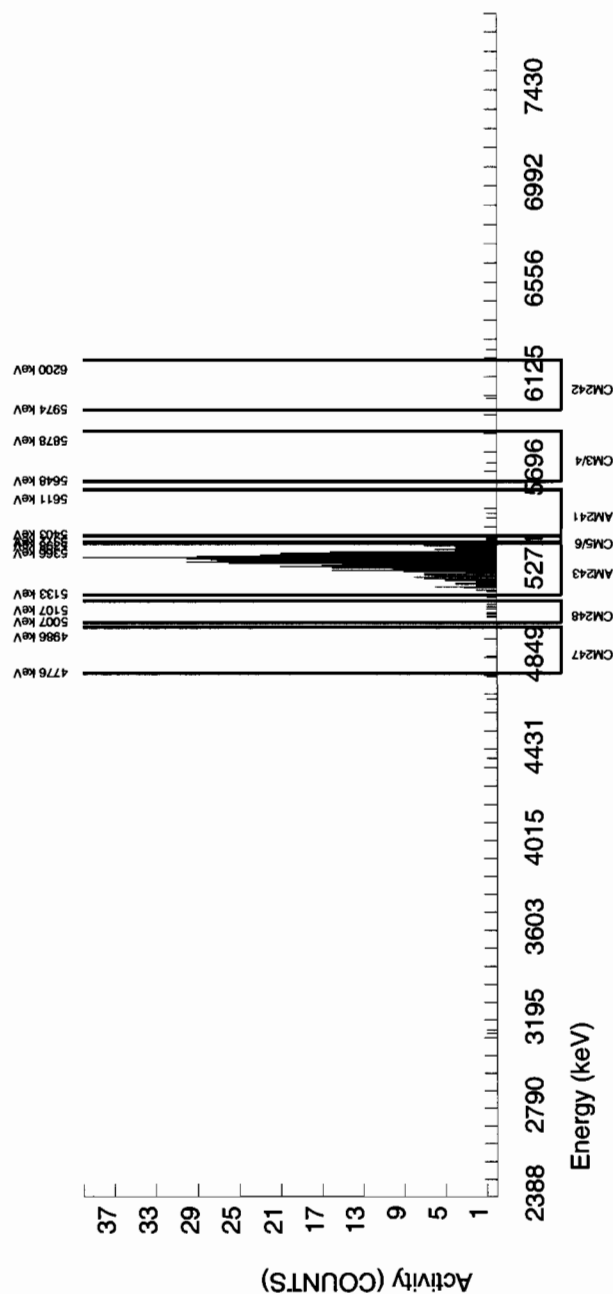
\* Corrections made to the following net area due to tracer impurity:  
AM-241



BATCH NUMBER : 957096 SAMPLE ID : S0247337005_AM SAMPLE QTY : 1.250 G SAMPLE DATE : 12-FEB-2010 00:00:00 ANALYST : JXH2 % YIELD : 88.766				CHAMBER : 224 DETECTOR S/N : 79417 AVERAGE %EFFICIENCY : 38.4049 COUNT DATE : 6-MAR-2010 12:07:43 ELAPSED LIVE TIME(SEC) : 30300.00				LIB FILE : ENV_ALPHA_AM BKG FILE : B224.CNF;85 BKG DATE : 28-FEB-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W224.CNF;30 CAL DATE : 28-FEB-2010					
TRACER ID : 445-96-2-SS NUCLIDE : AM243 NOMINAL : 2.9166E+00 dpm RESULTS : 2.5889E+00 dpm				MS/MSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3154E+01 pCi/G				LCS/LCSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3154E+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
AM-241	5479.150	5499.053	25.010	2.000	1.128	0.000	2.8409	99.94000	2.36E-03	2.23E-03	1.20E-02	2.97E-02	2.22E-03
AM-243	5270.000	5283.792	58.514	501.000	501.000	0.000	0.0000	99.78000	1.05E+00	8.54E-02	0.00E+00	5.69E-03	4.70E-02
CM-242	6102.000	6033.293	5.002	1.000	1.000	0.000	4.3413	100.0000	2.31E-03	2.31E-03	1.83E-02	4.23E-02	2.31E-03
CM-3/4	5795.020	5738.817	5.002	1.000	1.000	0.000	5.1799	100.0000	2.10E-03	2.10E-03	2.19E-02	4.94E-02	2.10E-03
CM-5/6	5386.000	5389.292	7.347	3.000	3.000	0.000	14.2480	86.09000	7.29E-03	4.24E-03	6.99E-02	1.46E-01	4.21E-03
CM-247	4946.000	4859.581	5.002	1.000	1.000	0.000	13.7917	79.30000	2.64E-03	2.65E-03	7.35E-02	1.54E-01	2.64E-03
CM-248	5078.600	5054.899	79.408	9.000	9.000	0.000	19.5080	91.00000	2.07E-02	7.04E-03	9.06E-02	1.87E-01	6.90E-03

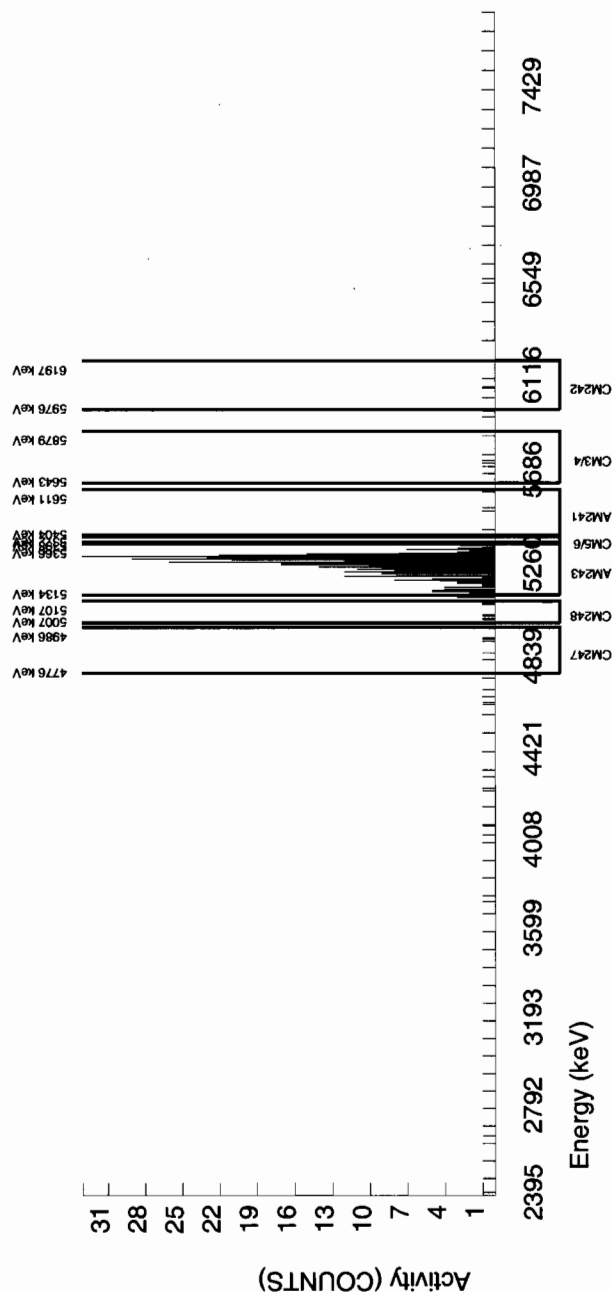
## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)
- \* BKG Sg of AM243 calculated as  $\sqrt{\text{BKG AREA}}$ .
- \* Corrections made to the following net area  
due to tracer impurity:  
AM-241



NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)
- \* BKG Sg of AM243 calculated as  $\sqrt{\text{BKG AREA}}$ .
- \* Corrections made to the following net area  
due to tracer impurity:  
AM-241





# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

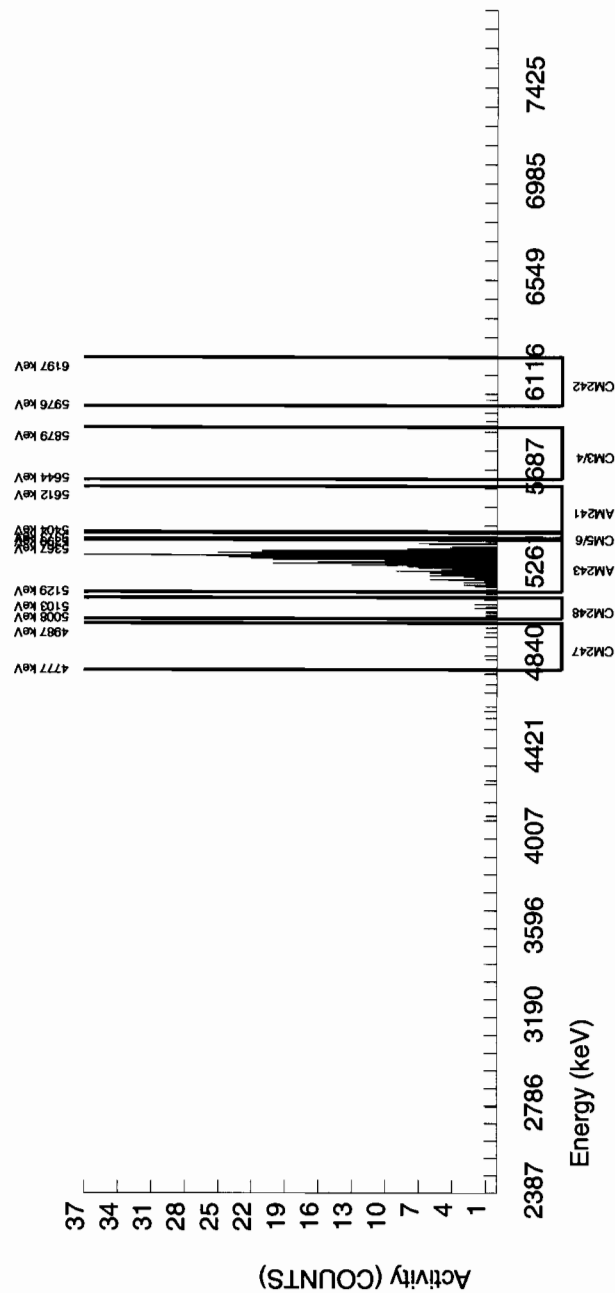
<p>BATCH NUMBER : 957096  SAMPLE ID : S0247337007_AM  SAMPLE QTY : 1.254 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 70.976</p>		<p>CHAMBER : 226  DETECTOR S/N : 79419  AVERAGE %EFFICIENCY : 38.9218  COUNT DATE : 6-MAR-2010 12:07:49  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_AM  BKG FILE : B226.CNF;85  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W226.CNF;30  CAL DATE : 28-FEB-2010</p>
<p>TRACER  ID : 445-96-2-SS  NUCLIDE : AM243  NOMINAL : 2.9166E+00 dpm  RESULTS : 2.0700E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3154E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3154E+01 pCi/G</p>	

## 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	5508.108	0.000	0.000	-0.706	0.000	2.8409	99.94000	-1.82E-03	2.58E-03	1.48E-02	3.65E-02	2.58E-03
AM243	5270.000	5280.394	56.349	408.000	405.980	2.020	1.4213	99.78000	1.05E+00	9.12E-02	7.40E-03	2.18E-02	5.22E-02
CM-242	6102.000	6008.207	4.971	1.000	1.000	0.000	4.3413	100.0000	2.84E-03	2.84E-03	2.26E-02	5.21E-02	2.84E-03
CM-3/4	5795.020	5761.538	0.000	0.000	0.000	0.000	5.1799	100.0000	0.00E+00	2.59E-03	2.69E-02	6.08E-02	2.58E-03
CM-5/6	5386.000	5382.544	0.000	8.000	8.000	0.000	14.2480	86.09000	2.39E-02	8.63E-03	8.60E-02	1.80E-01	8.46E-03
CM-247	4946.000	4885.747	173.984	5.000	4.495	0.505	13.7917	79.30000	1.46E-02	7.52E-03	9.04E-02	1.90E-01	7.44E-03
CM-248	5078.600	5057.325	19.780	10.000	10.000	0.000	19.5080	91.00000	2.83E-02	9.17E-03	1.11E-01	2.30E-01	8.95E-03

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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 : 957096  
 SAMPLE ID : S0247360001\_AM  
 SAMPLE QTY : 1.254 G  
 SAMPLE DATE : 12-FEB-2010 00:00:00  
 ANALYST : JXH2  
 % YIELD : 73.032

CHAMBER : 227  
 DETECTOR S/N : 79420  
 AVERAGE %EFFICIENCY : 38.7585  
 COUNT DATE : 6-MAR-2010 12:07:52  
 ELAPSED LIVE TIME(SEC) : 30300.00

LIB FILE : ENV\_ALPHA\_AM  
 BKG FILE : B227.CNF:85  
 BKG DATE : 28-FEB-2010  
 BKG LIVE TIME(SEC) : 60000.00  
 EFF FILE : W227.CNF:30  
 CAL DATE : 28-FEB-2010

TRACER  
 ID : 445-96-2-SS  
 NUCLIDE : AM243  
 NOMINAL : 2.9166E+00 dpm  
 RESULTS : 2.1300E+00 dpm

MS/MSD  
 ID : 0244-B  
 NUCLIDE : AM-241  
 NOMINAL : 3.3154E+01 pCi/G

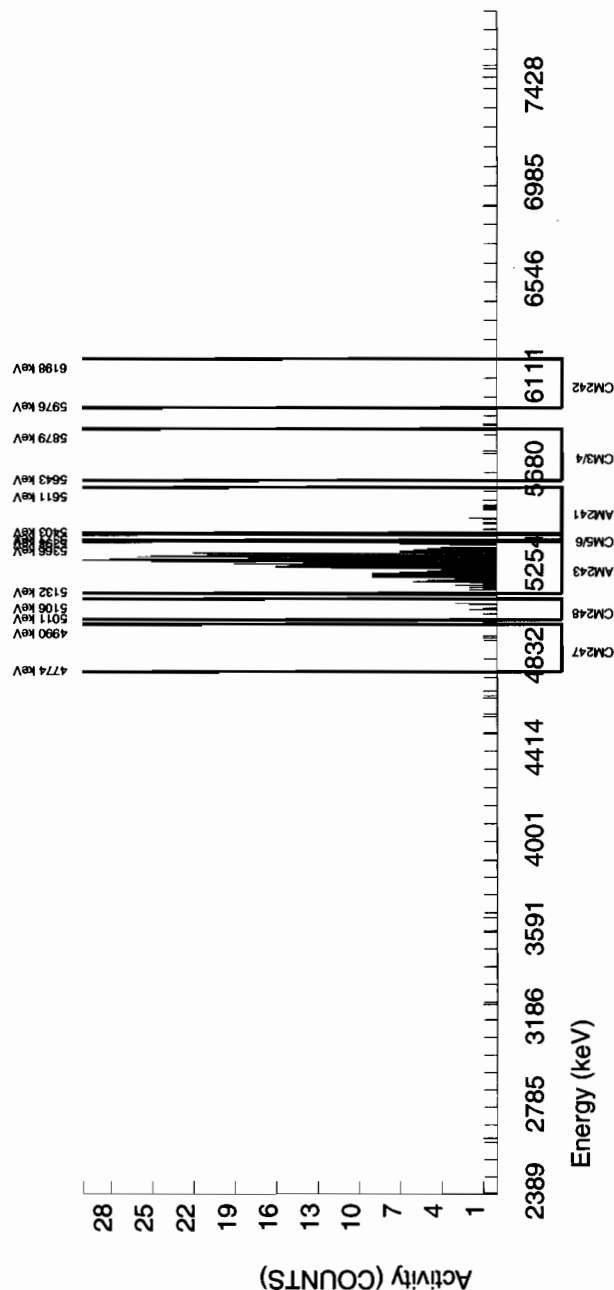
LCS/LCSD  
 ID : 0244-B  
 NUCLIDE : AM-241  
 NOMINAL : 3.3154E+01 pCi/G

## 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
AM-241	5479.150	5504.110	7.240	13.000	11.771	0.505	2.8409	99.94000	2.96E-02	9.15E-03	1.44E-02	3.56E-02	8.90E-03
AM243	5270.000	5275.199	62.561	417.000	415.990	1.010	1.0050	99.78000	1.05E+00	9.03E-02	5.11E-03	1.70E-02	5.15E-02
CM-242	6102.000	6086.763	0.000	0.000	-0.505	0.505	4.3413	100.0000	-1.40E-03	3.11E-03	2.20E-02	5.08E-02	3.10E-03
CM-3/4	5795.020	5777.009	14.788	2.000	2.000	0.000	5.1799	100.0000	5.04E-03	3.58E-03	2.63E-02	5.93E-02	3.56E-03
CM-5/6	5386.000	5374.514	0.000	3.000	3.000	0.000	14.2480	86.09000	8.76E-03	5.09E-03	8.39E-02	1.76E-01	5.06E-03
CM-247	4946.000	4937.183	14.788	2.000	2.000	0.000	13.7917	79.30000	6.34E-03	4.50E-03	8.82E-02	1.85E-01	4.48E-03
CM-248	5078.600	5075.414	28.088	9.000	9.000	0.000	19.5080	91.00000	2.49E-02	8.47E-03	1.09E-01	2.25E-01	8.28E-03

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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

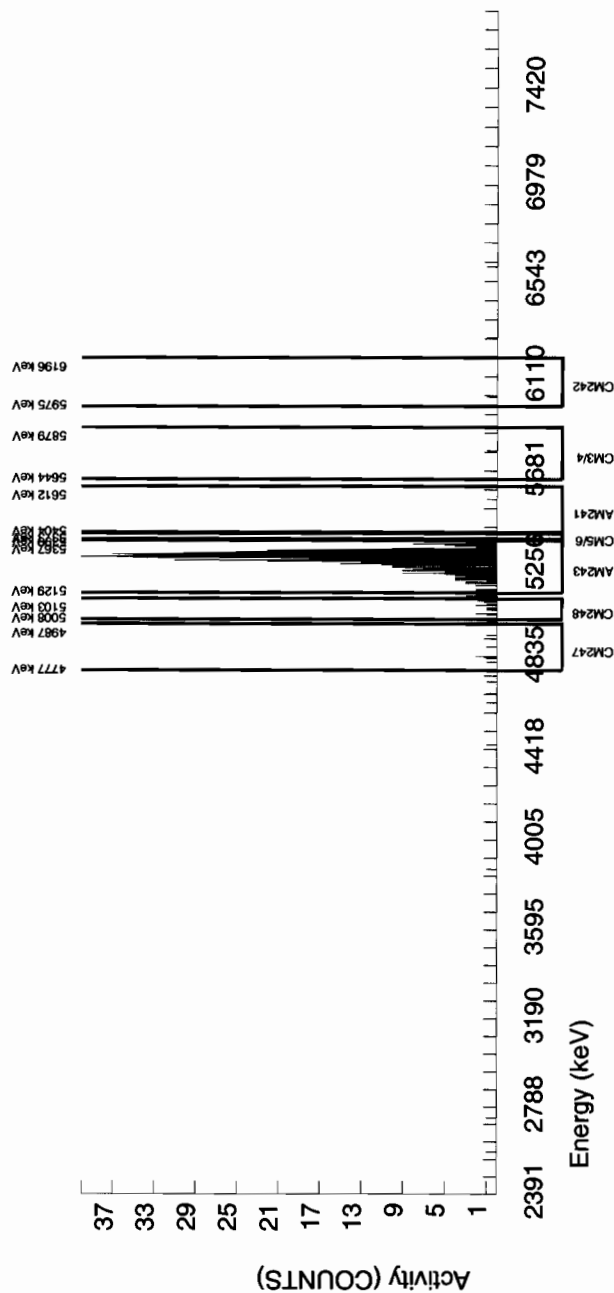
<p>BATCH NUMBER : 957096  SAMPLE ID : S1202052134_AM  SAMPLE QTY : 1.000 G  SAMPLE DATE : 3-MAR-2010 00:00:00.  ANALYST : JXH2  % YIELD : 81.111</p>		<p>CHAMBER : 231  DETECTOR S/N : 79424  AVERAGE %EFFICIENCY : 40.4350  COUNT DATE : 6-MAR-2010 12:08:05  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_AM  BKG FILE : B231.CNF;85  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W231.CNF;30  CAL DATE : 28-FEB-2010</p>
<p>TRACER  ID : 445-96-2-SS  NUCLIDE : AM243  NOMINAL : 2.9165E+00 dpm  RESULTS : 2.3656E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3151E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3151E+01 pCi/G</p>	

## 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	5558.424	4.945	1.000	-0.849	1.010	2.8409	99.94000	-2.31E-03	3.35E-03	1.56E-02	3.86E-02	3.34E-03
AM243	5270.000	5285.781	47.248	483.000	481.990	1.010	1.0050	99.78000	1.31E+00	1.08E-01	5.53E-03	1.84E-02	5.99E-02
CM-242	6102.000	6023.809	4.945	1.000	0.495	0.505	4.3413	100.0000	1.37E-03	3.10E-03	2.38E-02	5.50E-02	3.09E-03
CM-3/4	5795.020	5777.167	4.945	1.000	1.000	0.000	5.1799	100.0000	2.72E-03	2.73E-03	2.84E-02	6.42E-02	2.72E-03
CM-5/6	5386.000	5380.458	0.000	4.000	4.000	0.000	14.2480	86.09000	1.26E-02	6.38E-03	9.08E-02	1.90E-01	6.32E-03
CM-247	4946.000	4879.889	4.945	7.000	4.980	2.020	13.7917	79.30000	1.71E-02	9.78E-03	9.55E-02	2.00E-01	9.71E-03
CM-248	5078.600	5069.135	64.074	12.000	12.000	0.000	19.5080	91.00000	3.59E-02	1.06E-02	1.18E-01	2.43E-01	1.04E-02

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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

LIB FILE	:	ENV_ALPHA_AM
BKG FILE	:	B232.CNF;87
BKG DATE	:	28-FEB-2010
BKG LIVE TIME(SEC)	:	60000.00
EFF FILE	:	W232.CNF;30
CAL DATE	:	28-FEB-2010

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
14	137Cs	1000
15	137Cs	1000
16	137Cs	1000
17	137Cs	1000
18	137Cs	1000
19	137Cs	1000
20	137Cs	1000
21	137Cs	1000
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91	137Cs	1000
92	137Cs	1000
93	137Cs	1000
94	137Cs	1000
95	137Cs	1000
96	137Cs	1000
97	137Cs	1000
98	137Cs	1000
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
AM-241	5479.150	5488.576	139.670	5.000	1.680	2.525	2.8409	99.94000	3.83E-03	5.35E-03	1.31E-02	3.23E-02	5.34E-03
AM243	5270.000	5284.418	52.748	458.000	456.990	1.010	1.0050	99.78000	1.04E+00	8.74E-02	4.63E-03	1.55E-02	4.89E-02
CM-242	6102.000	6057.448	9.353	2.000	2.000	0.000	4.3413	100.0000	5.02E-03	3.57E-03	2.00E-02	4.61E-02	3.55E-03
CM-3/4	5795.020	5800.299	59.858	2.000	2.000	0.000	5.1799	100.0000	4.57E-03	3.25E-03	2.38E-02	5.39E-02	3.23E-03
CM-5/6	5386.000	5379.775	0.000	10.000	10.000	0.000	14.2480	86.09000	2.65E-02	8.57E-03	7.62E-02	1.59E-01	8.38E-03
CM-247	4946.000	4897.964	114.729	5.000	3.990	1.010	13.7917	79.30000	1.15E-02	6.80E-03	8.00E-02	1.68E-01	6.75E-03
CM-248	5078.600	5086.354	0.000	9.000	9.000	0.000	19.5080	91.00000	2.26E-02	7.68E-03	9.86E-02	2.04E-01	7.52E-03

## NOTES:

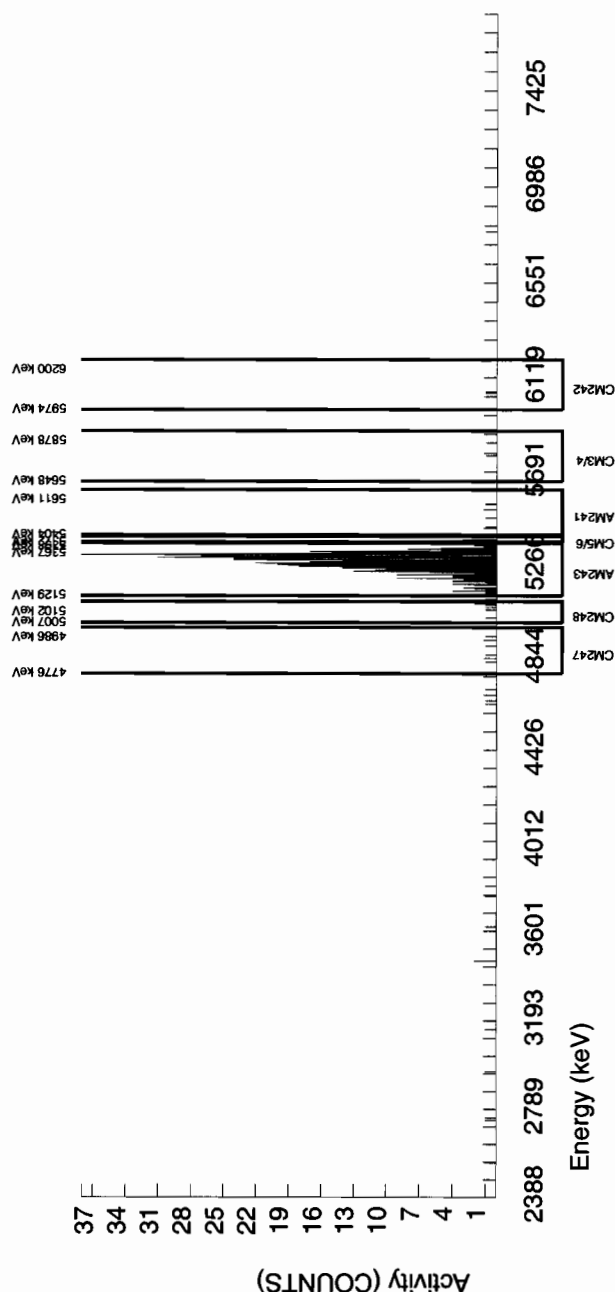
\* BKG Sg calculated via blank population.

Price Sg calculated via B  
(Sg updated 10-FEB-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

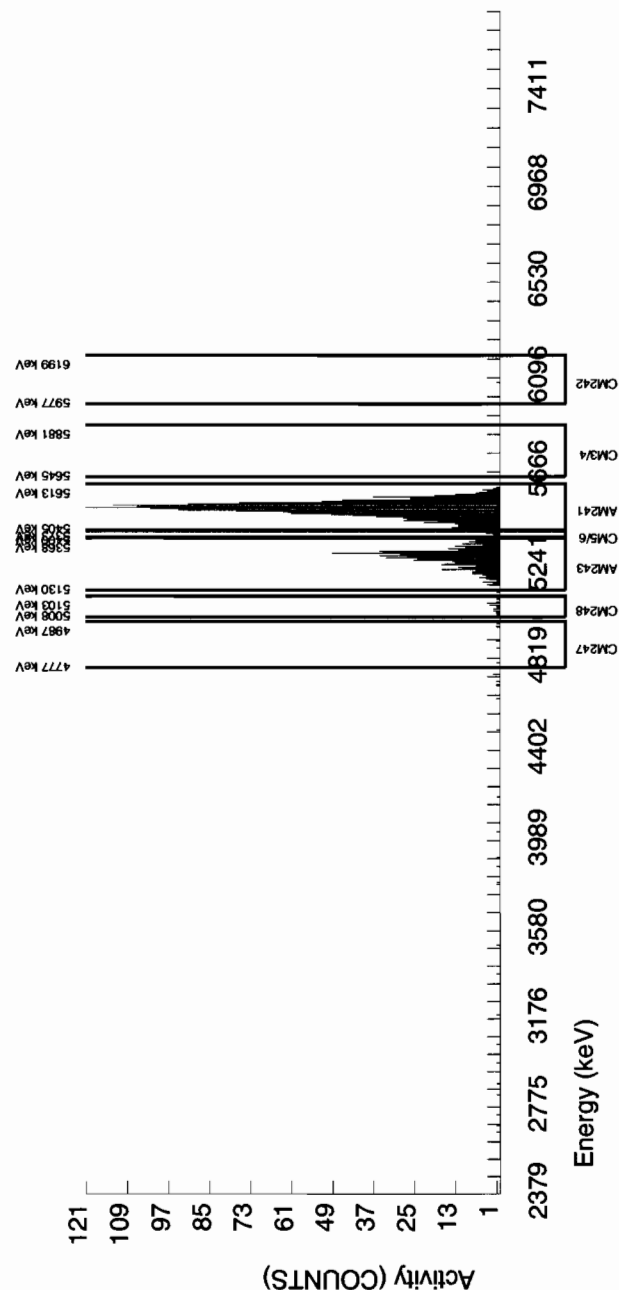
<p>BATCH NUMBER : 957096  SAMPLE ID : S1202052136_AM  SAMPLE QTY : 0.109 G  SAMPLE DATE : 3-MAR-2010 00:00:00.  ANALYST : JXH2  % YIELD : 97.483</p>	<p>CHAMBER : 233  DETECTOR S/N : 79426  AVERAGE %EFFICIENCY : 39.4029  COUNT DATE : 6-MAR-2010 12:08:11  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_AM  BKG FILE : B233.CNF;86  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W233.CNF;31  CAL DATE : 2-MAR-2010</p>
<p>TRACER  ID : 445-96-2-SS  NUCLIDE : AM243  NOMINAL : 2.9165E+00 dpm  RESULTS : 2.8431E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3151E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3151E+01 pCi/G</p>

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	5504.814	47.713	1476.000	1474.513	0.505	2.8409	99.94000	3.14E+01	2.42E+00	1.22E-01	3.02E-01	8.19E-01
AM243	5270.000	5281.159	41.845	565.000	564.495	0.505	0.7106	99.78000	1.21E+01	1.01E+00	3.06E-02	1.19E-01	5.08E-01
CM-242	6102.000	6079.750	4.925	1.000	0.495	0.505	4.3413	100.0000	1.07E-02	2.43E-02	1.87E-01	4.31E-01	2.42E-02
CM-3/4	5795.020	5762.480	0.000	0.000	0.000	0.000	5.1799	100.0000	0.00E+00	2.14E-02	2.23E-01	5.03E-01	2.13E-02
CM-5/6	5386.000	5385.884	0.000	44.000	44.000	0.000	14.2480	86.09000	1.09E+00	1.82E-01	7.12E-01	1.49E+00	1.64E-01
CM-247	4946.000	4926.353	0.000	7.000	7.000	0.000	13.7917	79.30000	1.88E-01	7.24E-02	7.48E-01	1.57E+00	7.11E-02
CM-248	5078.600	5059.384	39.279	17.000	17.000	0.000	19.5080	91.00000	3.98E-01	1.01E-01	9.22E-01	1.91E+00	9.65E-02

NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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# 957099 Product: PU Date: 3/14/10

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.			NA
Samples have been blank corrected (if required)	/		
If activity less 10* MDA/ MDC, error is 150% or less of sample activity. If greater 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay.	/		
Instrument source check is within limits.	/		
Instrument bkg check is within limits.	/		
Method RDL/ LLD has been met.	/		
If duplicate activities are less 5* MDA/ MDC, then RPD is 100% or less. If greater 5* MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.	/		
Or meets the client's required RER acceptance criteria.	/		
Tracer yield is 15-125% . Carrier yield 25-125%.	/		CASE NARRATIVE
Or meets the client's contract acceptance criteria.	/		CASE NARRATIVE
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 fine outs initialed and dated.	/		
No transcription errors are apparent.	/		NA
Aux data is correct.	/		
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

RADcheckdistrev10, revised 1/13/2010

Primary Review Performed By: Opur On 3/16/10

Secondary Review Performed By: Jep ML - 3/16/10

3/1 (3/18)

CAM

# Plutonium Que Sheet

24-FEB-10

Batch #: 957099 Pu-238 3-3-10 Analyst: JXH2 First Client Due Date: 11-MAR-10 Internal Due Date: 01-MAR-10

Tracer Isotope(s): Pu-242/Pu-238 Tracer Code: 1430-B Expiration Date: 1-27-11 Vol: 0.1

LCS Isotope(s): Pu-239/Pu-238 LCS Code: — Expiration Date: — Vol: —

Spike Isotope(s): Pu-239/Pu-238 Spike Code: — Expiration Date: — Vol: —

Prep Date: 3-3-10 Initials: JEH Pipet ID: 297058 Balance ID: 80410272

Witness: ARB3/3/10

Sample ID	Client Description	Type	Hazard Code	Min CRDL	Matrix	Client	Collection Date	Pos.	Label #	Aliquot (g/l)	Pu Det #
247323001-1	RE46-10-12942	SAMPLE	.05 pCi/g		SOIL	LANL010	16-FEB-10	1	1	1.251	79 234
247323002-1	RE46-10-12944	SAMPLE	.05 pCi/g		SOIL	LANL010	16-FEB-10	2	2	1.255	79 235
247323003-1	RE46-10-12941	SAMPLE	.05 pCi/g		SOIL	LANL010	16-FEB-10	3	3	1.250	80 236
247323004-1	RE46-10-12951	SAMPLE	.05 pCi/g		SOIL	LANL010	16-FEB-10	4	4	1.274	81 237
247323005-1	RE46-10-12943	SAMPLE	.05 pCi/g		SOIL	LANL010	16-FEB-10	5	5	1.254	82 238
247323006-1	RE46-10-12952	SAMPLE	.05 pCi/g		SOIL	LANL010	16-FEB-10	6	6	1.267	89 239
247323007-1	RE46-10-13189	SAMPLE	.05 pCi/g		SOIL	LANL010	16-FEB-10	7	7	1.254	90 240
247325001-1	RE46-10-12661	SAMPLE	.05 pCi/g		SOIL	LANL010	16-FEB-10	8	8	1.279	91 241
247327002-1	WSTIS-10-8941	SAMPLE	.05 pCi/g		SOIL	LANL010	16-FEB-10	9	9	1.264	92 242
247337001-1	RE15-10-8346	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	10	10	1.262	93 243
247337002-1	RE15-10-8347	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	11	11	1.252	94 244
247337003-1	RE15-10-8344	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	12	12	1.256	95 245
247337004-1	RE15-10-8346	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	13	13	1.258	99 246
247337005-1	RE15-10-8342	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	14	14	1.250	99 247
247337006-1	RE15-10-8343	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	15	15	1.263	100 248
247337007-1	RE15-10-8377	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	16	16	1.254	101 249
247360001-1	RE36-10-7427	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	17	17	1.254	102 250
247360002-1	RE36-10-7423	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	18	18	1.250	103 251
247360003-1	RE36-10-7428	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	19	19	1.259	105 252
247360004-1	RE36-10-7424	SAMPLE	.05 pCi/g		SOIL	LANL010	12-FEB-10	20	20	1.257	107 253
1202052141-1	MB for batch 957099	MB	.05 pCi/g		SOIL	QC ACCOUNT		21	21	1.00	108 254
1202052142-1	RE36-10-7427(247360001DUP)	DUP	.05 pCi/g		SOIL	QC ACCOUNT		22	22	1.258	109 255
1202052143-1	LCS for batch 957099	LCS	.05 pCi/g		SOIL	QC ACCOUNT		23	23	0.009	112 256

exp 4/30/20

Choose SOP Used: GL-RAD-A-011, GL-RAD-A-036, GL-RAD-A-045, GL-RAD-A-043

Data Reviewed By:

# Blank Correction Report

Batch ID 957099

GEL Sample ID	Client sample ID	Parameter	Allquot	Result	TPU	MDA	Allquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202052142	DUP	Plutonium-238	1.26 g	0.006	0.00426	0.0378	.010793651	pCi/g	YES
		Plutonium-239/240	1.26 g	0.039	0.0116	0.032	.002706349	pCi/g	NO
1202052143	LCS	Plutonium-238	0.109 g	7.03	0.557	0.287	.124770642	pCi/g	NO
		Plutonium-239/240	0.109 g	37.8	2.37	0.242	.031284404	pCi/g	NO
1202052141	MB	Plutonium-238	1.00 g	0.0136	0.00487	0.024	.0136	pCi/g	YES
		Plutonium-239/240	1.00 g	0.00341	0.00418	0.0203	.00341	pCi/g	YES
247323001	RE46-10-12942	Plutonium-238	1.25 g	0.00871	0.00645	0.0189	.01088	pCi/g	YES
		Plutonium-239/240	1.25 g	0.00871	0.00302	0.016	.002728	pCi/g	YES
247323002	RE46-10-12944	Plutonium-238	1.26 g	0.0137	0.00562	0.0321	.010793651	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00911	0.0056	0.0271	.002706349	pCi/g	YES
247323003	RE46-10-12941	Plutonium-238	1.25 g	0.00587	0.00416	0.0207	.01088	pCi/g	YES
		Plutonium-239/240	1.25 g	0.00734	0.0039	0.0175	.002728	pCi/g	YES
247323004	RE46-10-12951	Plutonium-238	1.27 g	0.00421	0.00372	0.0198	.010708661	pCi/g	YES
		Plutonium-239/240	1.27 g	0.00701	0.00316	0.0167	.002685039	pCi/g	YES
247323005	RE46-10-12943	Plutonium-238	1.25 g	0.0163	0.00513	0.0191	.01088	pCi/g	YES
		Plutonium-239/240	1.25 g	0.00135	0.00406	0.0161	.002728	pCi/g	YES
247323006	RE46-10-12952	Plutonium-238	1.27 g	0.00918	0.00377	0.0216	.010708661	pCi/g	YES
		Plutonium-239/240	1.27 g	0.00611	0.00307	0.0182	.002685039	pCi/g	YES
247323007	RE46-10-13189	Plutonium-238	1.26 g	0.00876	0.0036	0.0206	.010793651	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00876	0.0036	0.0174	.002706349	pCi/g	YES
247325001	RE46-10-12661	Plutonium-238	1.28 g	0.0114	0.00454	0.0201	.010625	pCi/g	YES
		Plutonium-239/240	1.28 g	0.00589	0.00286	0.0169	.002664063	pCi/g	YES
247337001	RE15-10-8346	Plutonium-238	1.26 g	0.00417	0.00312	0.0196	.010793651	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00973	0.00371	0.0165	.002706349	pCi/g	YES
247337002	RE15-10-8347	Plutonium-238	1.25 g	0.00626	0.00314	0.0221	.01088	pCi/g	YES
		Plutonium-239/240	1.25 g	0.00938	0.00386	0.0186	.002728	pCi/g	YES
247337003	RE15-10-8344	Plutonium-238	1.26 g	0.0134	0.00982	0.0211	.010793651	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00597	0.00473	0.0178	.002706349	pCi/g	YES
247337005	RE15-10-8342	Plutonium-238	1.25 g	0.00773	0.00411	0.0218	.01088	pCi/g	YES
		Plutonium-239/240	1.25 g	0.00773	0.00411	0.0184	.002728	pCi/g	YES
247337006	RE15-10-8343	Plutonium-238	1.26 g	0.00718	0.00323	0.0202	.010793651	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00861	0.00354	0.0171	.002706349	pCi/g	YES
247337007	RE15-10-8377	Plutonium-238	1.25 g	0.0155	0.00523	0.0243	.01088	pCi/g	YES
		Plutonium-239/240	1.25 g	0.00862	0.00458	0.0205	.002728	pCi/g	YES
247360001	RE36-10-7427	Plutonium-238	1.25 g	-2.68E-05	0.00329	0.0337	.01088	pCi/g	YES
		Plutonium-239/240	1.25 g	0.087	0.0161	0.0286	.002728	pCi/g	NO
247360002	RE36-10-7423	Plutonium-238	1.25 g	0.00876	0.0048	0.0426	.01088	pCi/g	YES
		Plutonium-239/240	1.25 g	0.0895	0.0188	0.0361	.002728	pCi/g	NO
247360003	RE36-10-7428	Plutonium-238	1.26 g	0.00741	0.00333	0.0209	.010793651	pCi/g	YES

20m  
3/16/10



## Blank Correction Report

GEL Sample ID	Client sample ID	Parameter	Allquot	Result	TPU	MDA	Allquot Corrected Blank Result	Units	Activity <5X Corrected Blank
247360003	RE36-10-7428	Plutonium-239/240	1.26 g	0.00148	0.00392	0.0176	.002706349	pCi/g	YES
247360004	RE36-10-7424	Plutonium-238	1.26 g	0.00147	0.00487	0.0207	.010793651	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00294	0.00415	0.0175	.002706349	pCi/g	YES

# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

Alpha Spectroscopy Software Version 2.1  
Effective date: 01-Feb-2010

<p>BATCH NUMBER : 957099 SAMPLE ID : S1202052143_PU SAMPLE QTY : 0.109 G SAMPLE DATE : 3-MAR-2010 00:00:00. ANALYST : JXH2 % YIELD : 60.546</p>	<p>CHAMBER : 112 DETECTOR SN : 78261 AVERAGE %EFFICIENCY : 33.5504 COUNT DATE : 13-MAR-2010 14:27:44 ELAPSED LIVE TIME(SEC) : 60000.00</p>	<p>LIB FILE : ENV_ALPHA_PU BKG FILE : B112.CNF:694 BKG DATE : 7-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W112.CNF:223 CAL DATE : 12-MAR-2010</p>
<p>TRACER ID : 1430-B NUCLIDE : PU-236 NOMINAL : 6.5159E+00 dpm RESULTS : 3.9451E+00 dpm</p>	<p>MS/MSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G</p>

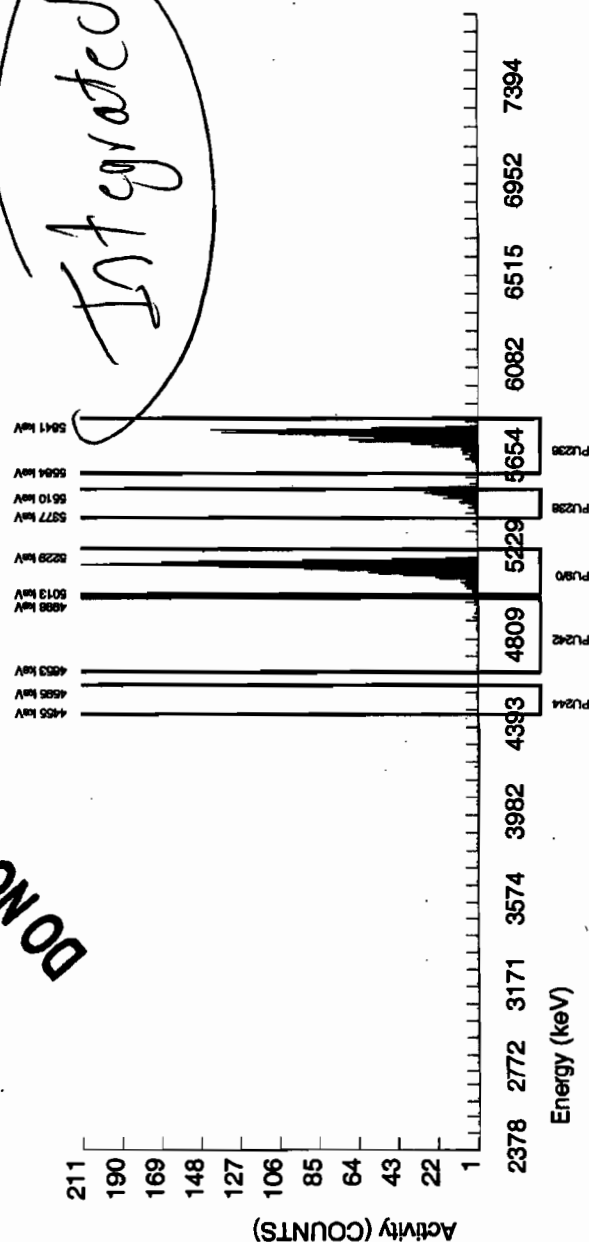
## NUCLIDE ACTIVITY SUMMARY

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	5766.128	31.313	1314.000	1314.000	0.000	0.0000	100.0000	2.69E+01	1.73E+00	0.00E+00	5.51E-02	7.43E-01
PU-238	5498.000	5480.449	0.000	237.000	237.000	0.000	2.4495	99.900000	4.83E+00	4.21E-01	1.16E-01	2.87E-01	3.14E-01
PU-9/0	5155.000	5149.716	35.256	1859.000	1857.000	2.000	1.9732	99.900000	3.78E+01	2.37E+00	9.35E-02	2.42E-01	8.79E-01
PU-242	4890.000	4888.286	0.000	34.000	31.000	3.000	*****	100.0000	6.31E-01	1.29E-01	5.90E+00	1.19E+01	1.24E-01
PU-244	4589.000	4530.854	0.000	7.000	5.000	2.000	6.4609	99.900000	1.02E-01	6.14E-02	3.06E-01	6.67E-01	6.11E-02

DO NOT REPORT

## 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

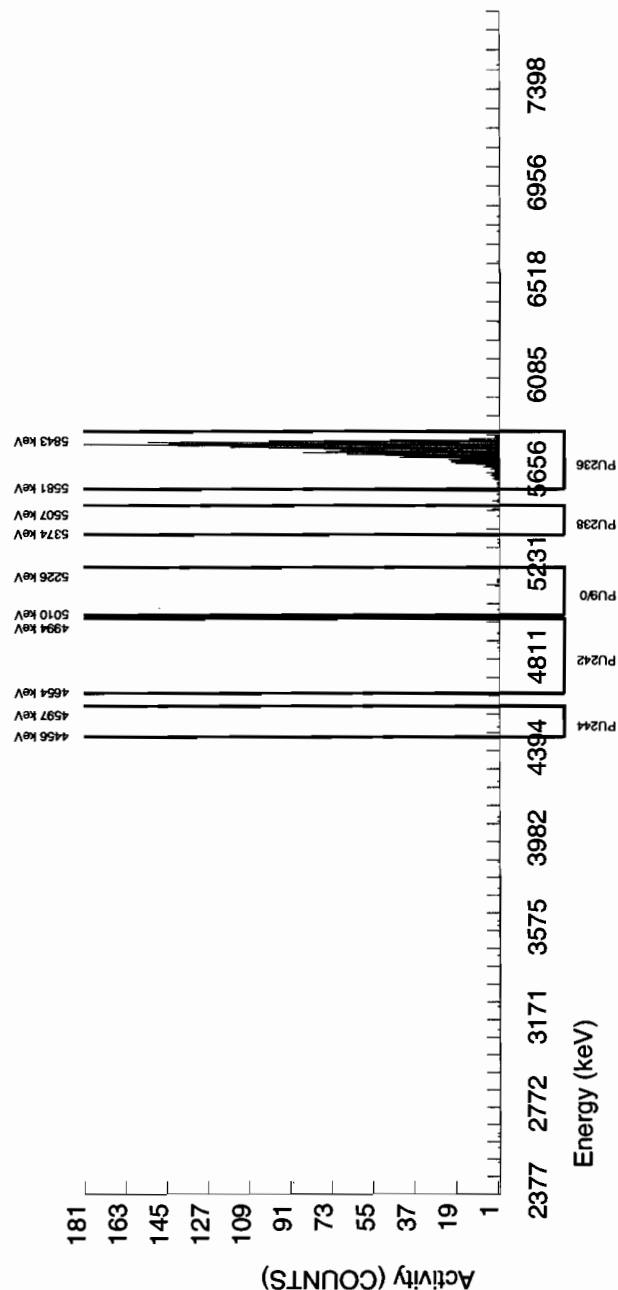
<p>BATCH NUMBER : 957099  SAMPLE ID : S0247337001_PU  SAMPLE QTY : 1.262 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 76.385</p>		<p>CHAMBER : 093  DETECTOR S/N : 33206  AVERAGE %EFFICIENCY : 33.6363  COUNT DATE : 13-MAR-2010 14:27:41  ELAPSED LIVE TIME(SEC) : 60000.00</p>	<p>LIB FILE : ENV_ALPHA_PU  BKG FILE : B093.CNF;722  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W093.CNF;203  CAL DATE : 12-MAR-2010</p>
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5986E+00 dpm  RESULTS : 5.0403E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	

## 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	5770.329	32.450	1662.000	1662.000	0.000	0.0000	100.0000	2.36E+00	1.28E-01	0.00E+00	3.76E-03	5.78E-02
PU-238	5499.000	5488.023	4.909	4.000	3.000	1.000	2.4495	99.900000	4.17E-03	3.12E-03	7.92E-03	1.96E-02	3.11E-03
PU-9/0	5155.000	5145.067	4.909	7.000	7.000	0.000	1.9732	99.900000	9.73E-03	3.71E-03	6.38E-03	1.65E-02	3.68E-03
PU242	4890.000	4906.063	68.726	4.000	3.000	1.000	*****	100.0000	4.17E-03	3.11E-03	4.03E-01	8.09E-01	3.11E-03
PU-244	4589.000	4508.313	4.909	1.000	1.000	0.000	6.4609	99.900000	1.39E-03	1.39E-03	2.09E-02	4.56E-02	1.39E-03

## NOTES:

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

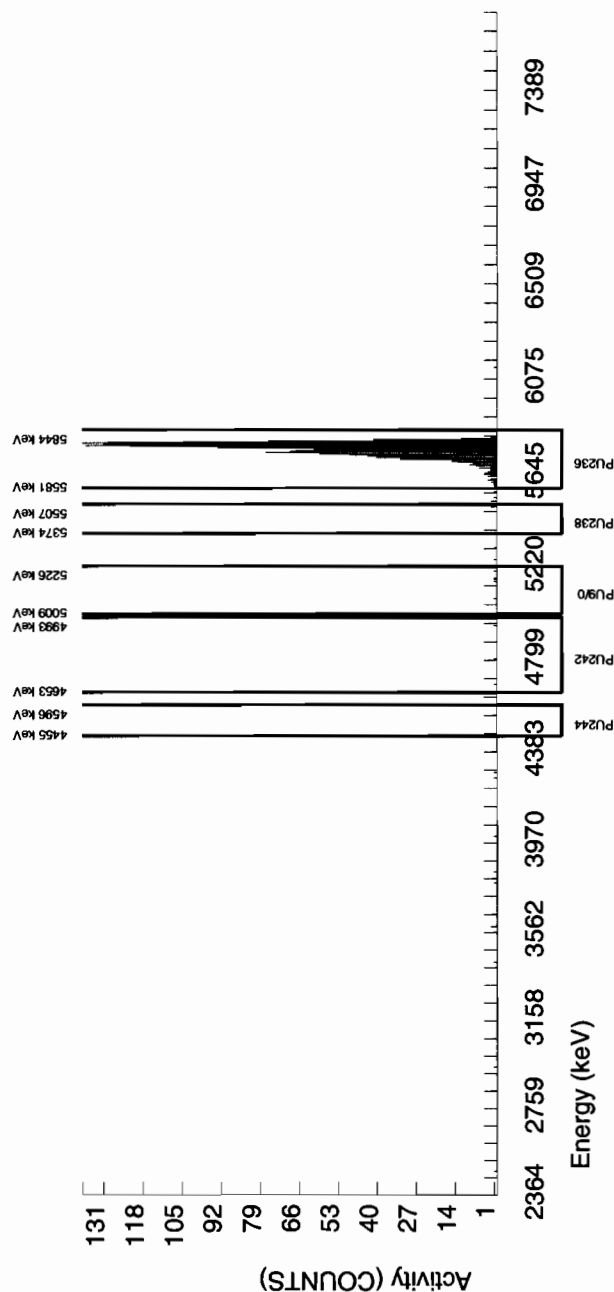


LIB FILE : ENV\_ALPHA\_PU  
BKG FILE : B094.CNF;723  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W094.CNF;195  
CAL DATE : 12-MAR-2010

LCS/LCSD ID	NUCLIDE	NOMINAL
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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	5764.336	52.266	1493.000	1490.000	3.000	1.7321	100.0000	2.37E+00	1.32E-01	6.29E-03	1.68E-02	6.16E-02
PU-238	5499.000	5490.844	24.567	4.000	4.000	0.000	2.4495	99.90000	6.26E-03	3.14E-03	8.91E-03	2.21E-02	3.13E-03
PU-9/0	5155.000	5170.923	132.661	6.000	6.000	0.000	1.9732	99.90000	9.38E-03	3.86E-03	7.18E-03	1.86E-02	3.83E-03
PU242	4890.000	4769.999	284.976	5.000	4.000	1.000	*****	100.0000	6.25E-03	3.84E-03	4.53E-01	9.10E-01	3.83E-03
PU-244	4589.000	4470.820	4.913	1.000	1.000	0.000	6.4609	99.90000	1.56E-03	1.57E-03	2.35E-02	5.12E-02	1.56E-03

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



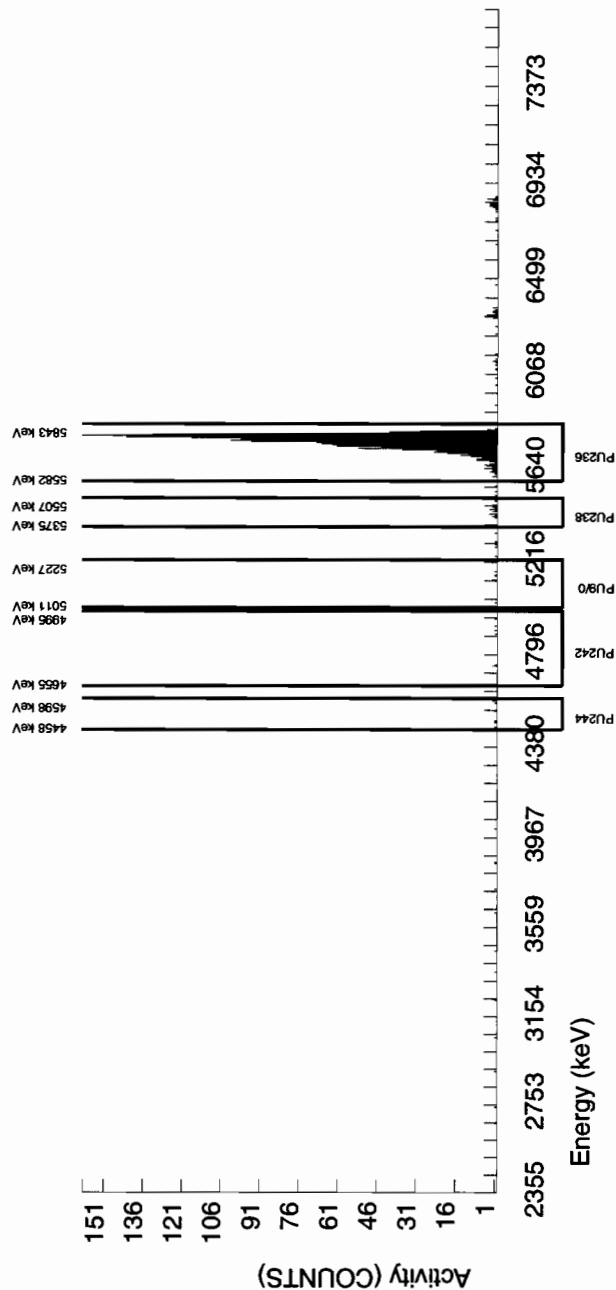
LIB FILE	:	ENV_ALPHA_PU
BKG FILE	:	B095.CNF:688
BKG DATE	:	7-MAR-2010
BKG LIVE TIME(SEC)	:	60000.00
EFF FILE	:	W095.CNF:211
CAL DATE	:	12-MAR-2010

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

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	NUCLIDE ACTIVITY SUMMARY			ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
						BKG AREA	BKG Sg	%ABUN					
PU-236	5749.000	5769.962	39.541	1577.000	1555.000	22.000	4.6904	100.0000	2.37E+00	1.31E-01	1.63E-02	3.66E-02	6.09E-02
PU-238	5499.000	5447.208	92.608	26.000	9.000	17.000	2.4495	99.90000	1.34E-02	9.82E-03	8.51E-03	2.11E-02	9.80E-03
PU-9/0	5155.000	5137.190	7.262	7.000	4.000	3.000	1.9732	99.90000	5.97E-03	4.73E-03	6.86E-03	1.78E-02	4.72E-03
PU242	4890.000	4834.126	7.262	8.000	4.000	4.000	*****	100.0000	5.97E-03	5.18E-03	4.33E-01	8.69E-01	5.17E-03
PU-244	4589.000	4535.620	4.944	8.000	7.000	1.000	6.4609	99.90000	1.05E-02	4.51E-03	2.24E-02	4.89E-02	4.48E-03

\* 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

<p>BATCH NUMBER : 957099  SAMPLE ID : S0247337005_PU  SAMPLE QTY : 1.250 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 66.334</p>	<p>CHAMBER : 099  DETECTOR S/N : 70317  AVERAGE %EFFICIENCY : 35.1904  COUNT DATE : 13-MAR-2010 14:27:42  ELAPSED LIVE TIME(SEC) : 59999.99</p>	<p>LIB FILE : ENV_ALPHA_PU  BKG FILE : B099.CNF;685  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W099.CNF;195  CAL DATE : 12-MAR-2010</p>
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5986E+00 dpm  RESULTS : 4.3771E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>

NUCLIDE ACTIVITY SUMMARY

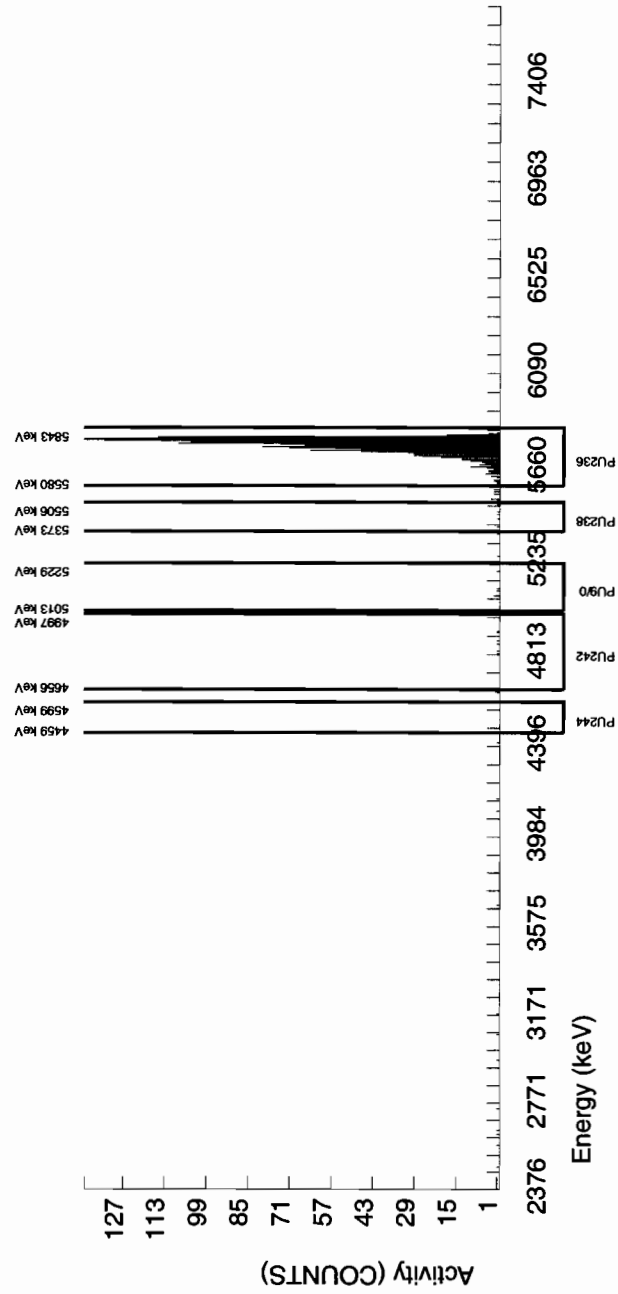
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5769.155	49.125	1513.000	1510.000	3.000	1.7321	100.0000	2.38E+00	1.32E-01	6.22E-03	1.66E-02	6.13E-02
PU-238	5499.000	5459.428	98.309	6.000	5.000	1.000	2.4495	99.900000	7.73E-03	4.11E-03	8.81E-03	2.18E-02	4.09E-03
PU-9/0	5155.000	5102.554	4.915	6.000	5.000	1.000	1.9732	99.900000	7.73E-03	4.11E-03	7.09E-03	1.84E-02	4.09E-03
PU242	4890.000	4881.500	161.596	8.000	6.000	2.000	*****	100.0000	9.26E-03	4.90E-03	4.48E-01	8.99E-01	4.88E-03
PU-244	4589.000	4528.731	0.000	1.000	1.000	0.000	6.4609	99.900000	1.55E-03	1.55E-03	2.32E-02	5.06E-02	1.55E-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

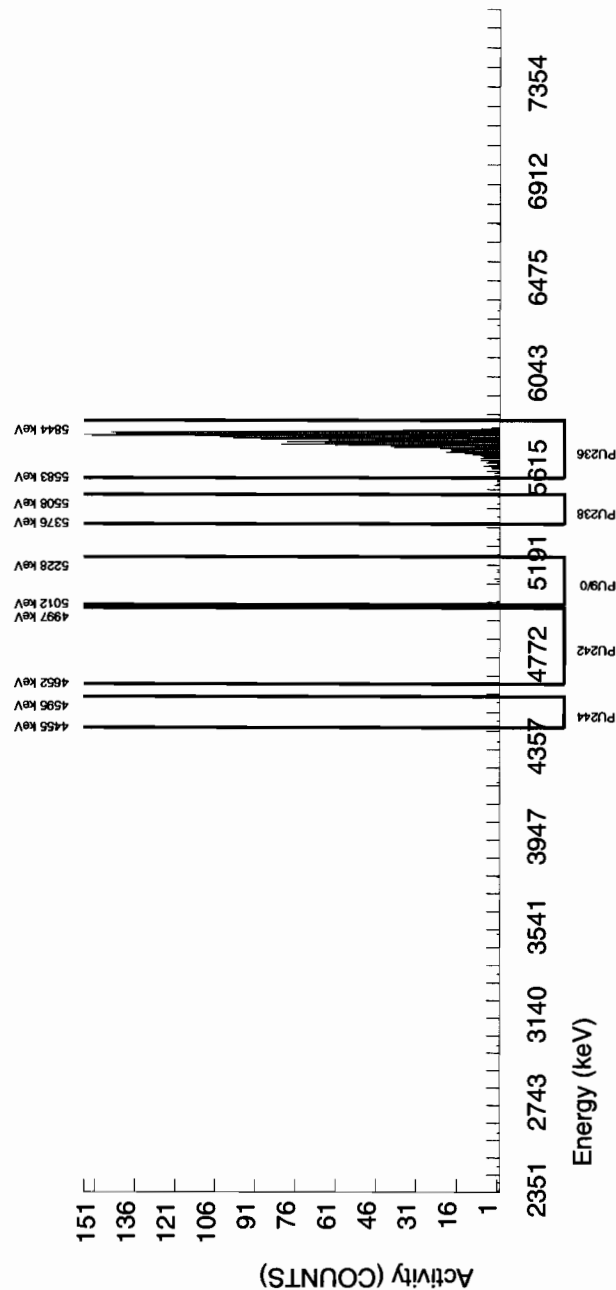
<p>BATCH NUMBER : 957099  SAMPLE ID : S0247337006_PU  SAMPLE QTY : 1.263 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 69.485</p>		<p>CHAMBER : 100  DETECTOR S/N : 79456  AVERAGE %EFFICIENCY : 35.7974  COUNT DATE : 13-MAR-2010 14:27:42  ELAPSED LIVE TIME(SEC) : 59999.99</p>	<p>LIB FILE : ENV_ALPHA_PU  BKG FILE : B100.CNF:686  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W100.CNF:203  CAL DATE : 12-MAR-2010</p>
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5986E+00 dpm  RESULTS : 4.5850E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	

## 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	5764.447	55.118	1610.000	1609.000	1.000	1.0000	100.0000	2.35E+00	1.29E-01	3.34E-03	1.06E-02	5.87E-02
PU-238	5499.000	5429.945	0.000	5.000	5.000	0.000	2.4495	99.90000	7.18E-03	3.23E-03	8.18E-03	2.02E-02	3.21E-03
PU-9/0	5155.000	5127.139	4.877	6.000	6.000	0.000	1.9732	99.90000	8.61E-03	3.54E-03	6.59E-03	1.71E-02	3.52E-03
PU242	4890.000	4824.186	0.000	0.000	-1.000	1.000	*****	100.0000	-1.43E-03	2.03E-03	4.16E-01	8.35E-01	2.03E-03
PU-244	4589.000	4533.051	82.909	2.000	1.000	1.000	6.4609	99.90000	1.44E-03	2.49E-03	2.16E-02	4.70E-02	2.49E-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

<p>BATCH NUMBER : 957099  SAMPLE ID : S0247337007_PU  SAMPLE QTY : 1.254 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 60.104</p>	<p>CHAMBER : 101  DETECTOR S/N : 64253  AVERAGE %EFFICIENCY : 34.6974  COUNT DATE : 13-MAR-2010 14:27:43  ELAPSED LIVE TIME(SEC) : 59999.99</p>	<p>LIB FILE : ENV_ALPHA_PU  BKG FILE : B101.CNF;690  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W101.CNF;182  CAL DATE : 12-MAR-2010</p>
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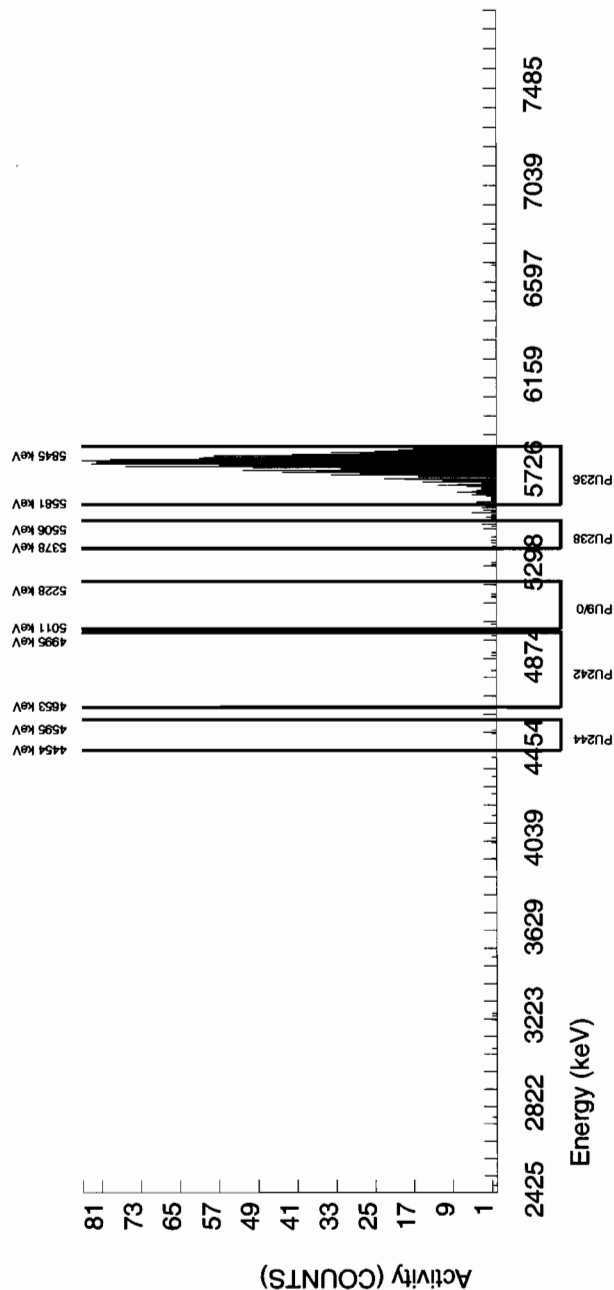
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5986E+00 dpm  RESULTS : 3.9660E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>
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## 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
PU-236	5749.000	5764.656	74.245	1350.000	1349.000	1.000	1.0000	100.0000	2.37E+00	1.35E-01	4.01E-03	1.27E-02	6.46E-02
PU-238	5499.000	5445.280	4.932	9.000	9.000	0.000	2.4495	99.900000	1.55E-02	5.23E-03	9.83E-03	2.43E-02	5.18E-03
PU-9/0	5155.000	5094.761	0.000	6.000	5.000	1.000	1.9732	99.900000	8.62E-03	4.58E-03	7.91E-03	2.05E-02	4.56E-03
PU242	4890.000	4904.204	152.883	5.000	3.000	2.000	*****	100.0000	5.17E-03	4.56E-03	4.99E-01	1.00E+00	4.56E-03
PU-244	4589.000	4545.526	19.727	2.000	2.000	0.000	6.4609	99.900000	3.45E-03	2.44E-03	2.59E-02	5.65E-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

<p>BATCH NUMBER : 957099  SAMPLE ID : S0247360001_PU  SAMPLE QTY : 1.254 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 83.878</p>	<p>CHAMBER : 074  DETECTOR S/N : 78266  AVERAGE %EFFICIENCY : 31.7138  COUNT DATE : 15-MAR-2010 12:59:28  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>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</p>
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5990E+00 dpm  RESULTS : 5.5350E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>

NUCLIDE ACTIVITY SUMMARY

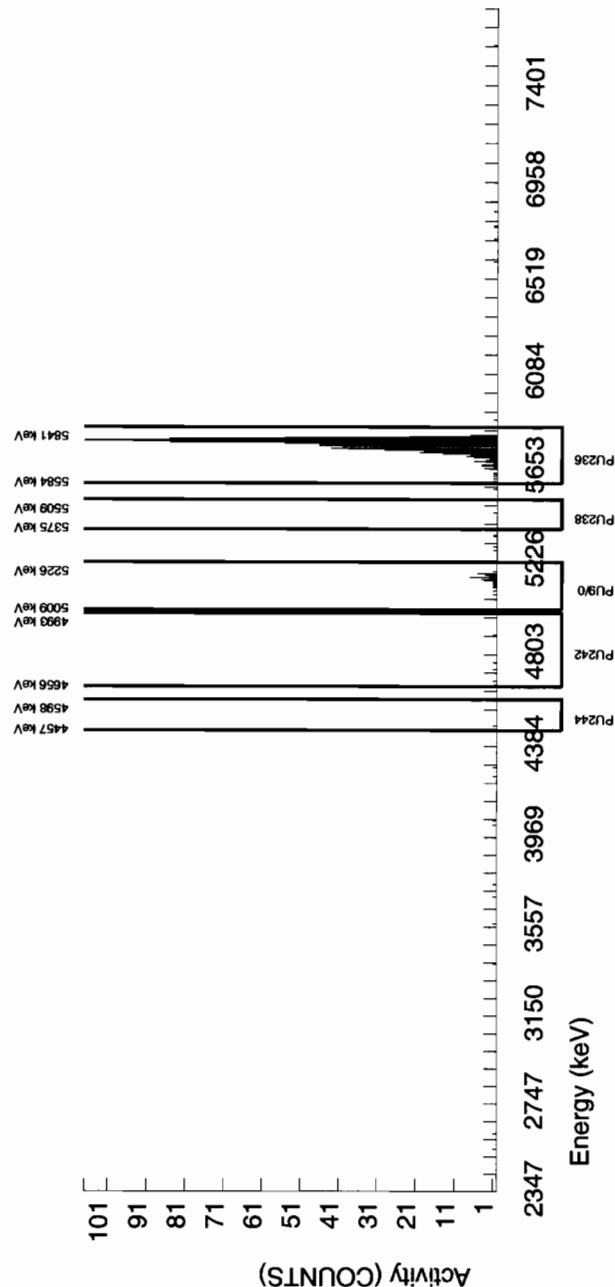
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5767.411	25.352	869.000	867.990	1.010	1.0050	100.0000	2.37E+00	1.51E-01	5.42E-03	1.81E-02	8.05E-02
PU-238	5499.000	5455.231	4.968	1.000	-0.010	1.010	2.4495	99.900000	-2.68E-05	3.29E-03	1.32E-02	3.37E-02	3.29E-03
PU-9/0	5155.000	5151.708	26.950	33.000	32.495	0.505	1.9732	99.900000	8.70E-02	1.61E-02	1.07E-02	2.86E-02	1.54E-02
PU242	4890.000	4739.107	222.928	6.000	4.990	1.010	*****	100.0000	1.33E-02	6.86E-03	6.73E-01	1.35E+00	6.82E-03
PU-244	4589.000	4483.150	4.968	1.000	-0.515	1.515	6.4609	99.900000	-1.38E-03	3.56E-03	3.49E-02	7.71E-02	3.56E-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

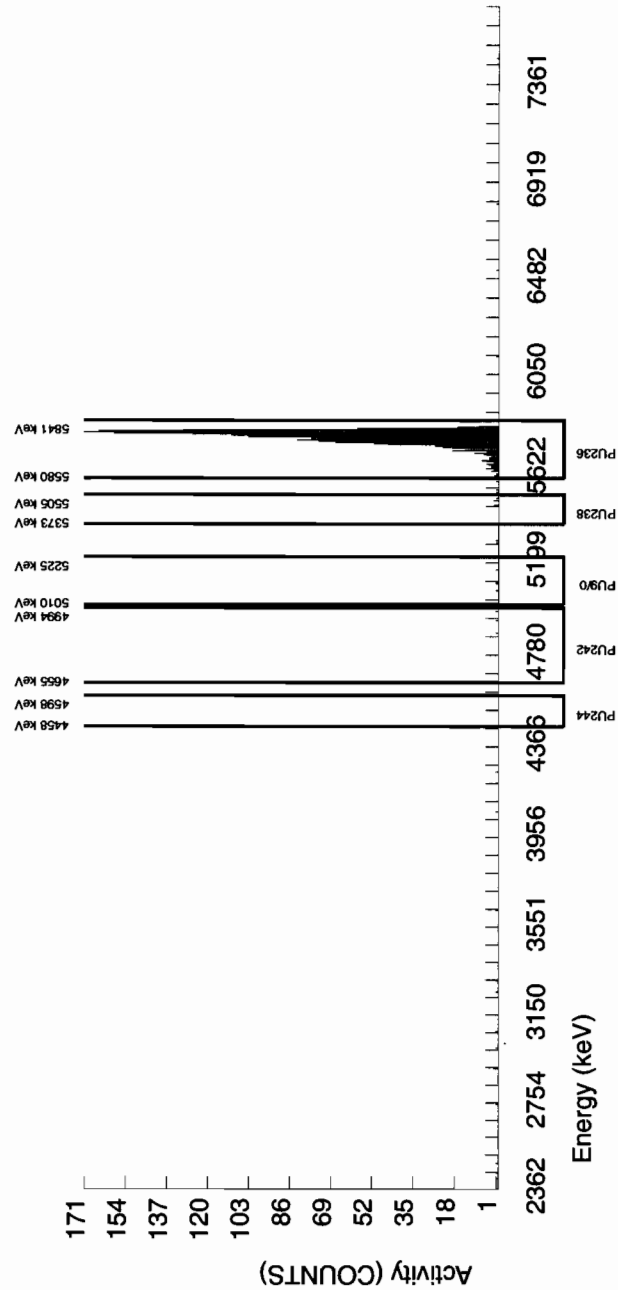
<p>BATCH NUMBER : 957099  SAMPLE ID : S1202052141_PU  SAMPLE QTY : 1.000 G  SAMPLE DATE : 3-MAR-2010 00:00:00.  ANALYST : JXH2  % YIELD : 74.894</p>		<p>CHAMBER : 108  DETECTOR S/N : 78778  AVERAGE %EFFICIENCY : 35.3171  COUNT DATE : 13-MAR-2010 14:27:44  ELAPSED LIVE TIME(SEC) : 60000.00</p>	<p>LIB FILE : ENV_ALPHA_PU  BKG FILE : B108.CNF;689  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W108.CNF;215  CAL DATE : 12-MAR-2010</p>
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5159E+00 dpm  RESULTS : 4.8800E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	

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	5769.512	35.901	1711.000	1711.000	0.000	0.0000	100.0000	2.94E+00	1.58E-01	0.00E+00	4.82E-03	7.10E-02
PU-238	5499.000	5449.584	26.614	8.000	8.000	0.000	2.4495	99.900000	1.36E-02	4.87E-03	9.71E-03	2.40E-02	4.82E-03
PU-9/0	5155.000	5118.573	92.466	4.000	2.000	2.000	1.9732	99.900000	3.41E-03	4.18E-03	7.83E-03	2.03E-02	4.18E-03
PU242	4890.000	4867.250	306.596	4.000	2.000	2.000	*****	100.0000	3.41E-03	4.17E-03	4.94E-01	9.92E-01	4.17E-03
PU-244	4589.000	4528.223	0.000	0.000	0.000	0.000	6.4609	99.900000	0.00E+00	1.71E-03	2.56E-02	5.59E-02	1.70E-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

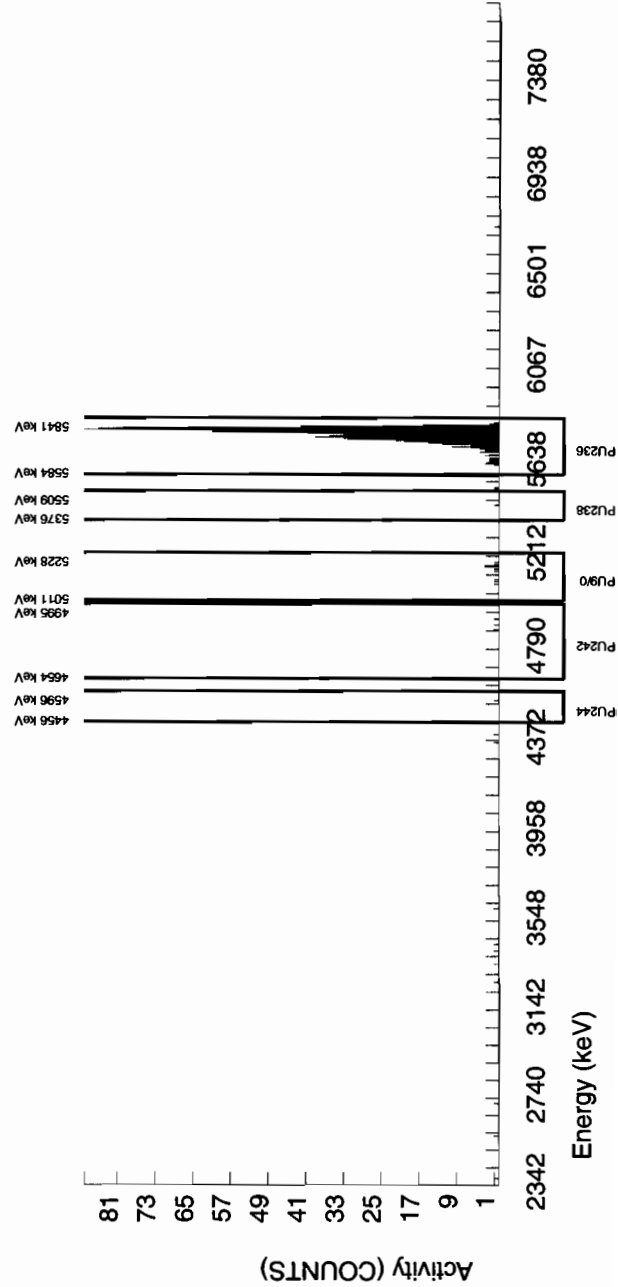
<p>BATCH NUMBER : 957099  SAMPLE ID : S1202052142_PU  SAMPLE QTY : 1.258 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 75.520</p>	<p>CHAMBER : 076  DETECTOR S/N : 78779  AVERAGE %EFFICIENCY : 31.3281  COUNT DATE : 15-MAR-2010 12:59:28  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_PU  BKG FILE : B076.CNF;1116  BKG DATE : 14-MAR-2010  BKG LIVE TIME(SEC) : 59999.99  EFF FILE : W076.CNF;297  CAL DATE : 12-MAR-2010</p>
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5990E+00 dpm  RESULTS : 4.9835E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>

## 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	5774.467	28.187	772.000	772.000	0.000	0.0000	100.0000	2.36E+00	1.55E-01	0.00E+00	8.12E-03	8.50E-02
PU-238	5499.000	5480.158	0.000	2.000	2.000	0.000	2.4495	99.900000	6.00E-03	4.26E-03	1.48E-02	3.78E-02	4.25E-03
PU-9/0	5155.000	5153.290	10.368	14.000	12.990	1.010	1.9732	99.900000	3.90E-02	1.16E-02	1.19E-02	3.20E-02	1.14E-02
PU242	4890.000	4900.461	53.849	4.000	3.495	0.505	*****	100.0000	1.05E-02	6.21E-03	7.54E-01	1.52E+00	6.18E-03
PU-244	4589.000	4559.836	4.952	1.000	0.495	0.505	6.4609	99.900000	1.48E-03	3.36E-03	3.91E-02	8.64E-02	3.36E-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

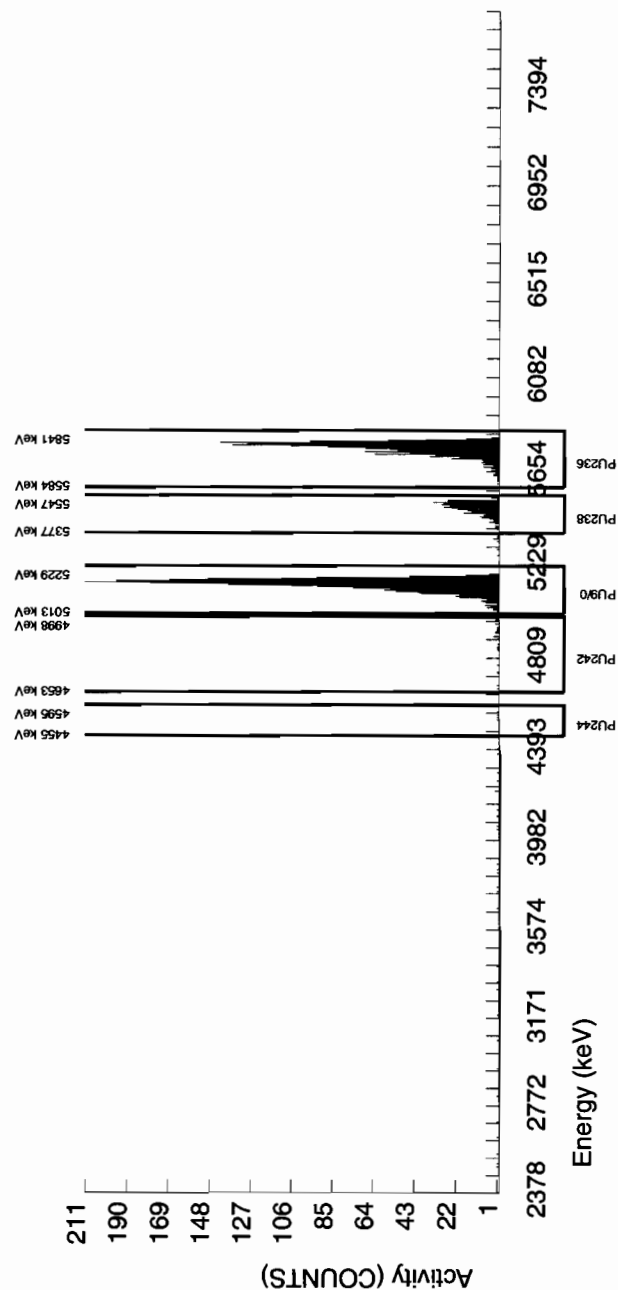
BATCH NUMBER : 957099 SAMPLE ID : S1202052143_PU SAMPLE QTY : 0.109 G SAMPLE DATE : 3-MAR-2010 00:00:00. ANALYST : JXH2 % YIELD : 60.546				CHAMBER : 112 DETECTOR S/N : 78261 AVERAGE %EFFICIENCY : 33.5504 COUNT DATE : 13-MAR-2010 14:27:44 ELAPSED LIVE TIME(SEC) : 60000.00				LIB FILE : ENV_ALPHA_PU BKG FILE : B112.CNF;694 BKG DATE : 7-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W112.CNF;223 CAL DATE : 12-MAR-2010					
TRACER ID : 1430-B NUCLIDE : PU-236 NOMINAL : 6.5159E+00 dpm RESULTS : 3.9451E+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	5766.128	31.313	1314.000	1314.000	0.000	0.0000	100.0000	2.69E+01	1.73E+00	0.00E+00	5.51E-02	7.43E-01
PU-238	5499.000	5493.785	53.933	345.000	345.000	0.000	2.4495	99.90000	7.03E+00	5.57E-01	1.16E-01	2.87E-01	3.78E-01
PU-9/0	5155.000	5149.716	35.256	1859.000	1857.000	2.000	1.9732	99.90000	3.78E+01	2.37E+00	9.35E-02	2.42E-01	8.79E-01
PU242	4890.000	4888.286	0.000	34.000	31.000	3.000	*****	100.0000	6.31E-01	1.29E-01	5.90E+00	1.19E+01	1.24E-01
PU-244	4589.000	4530.854	0.000	7.000	5.000	2.000	6.4609	99.90000	1.02E-01	6.14E-02	3.06E-01	6.67E-01	6.11E-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

957101

Batch#

Product: U

Date: 3/8/10

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.			N/A
Sample have been blank corrected (if required)	X		
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.	X		
Instrument source check is within limits.	X		
Instrument bkg check is within limits.	X		
Method RDL/LLD has been met.	X		
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%.	X		
Or meets the client's required RER acceptance criteria.	X		
Tracer yield is 15-125% . Carrier yield 25-125%.	X		
Or meets the client's contract acceptance criteria.	X		
Method blank is less than the RDL/LLD. (If rad samples, < 5% of lowest activity)	X		case narrative
Sample was run within hold time.	X		
Sample was correctly preserved if required.	X		
Smears Taken for Radioactive batches.			N/A
Method Spike and LCS are within 75-125% or meets the client's contract acceptance criteria.	X		
No blank spaces on data forms.	X		
All line-outs initialed and dated.	X		
No transcription errors are apparent.			N/A
Aux data is correct.			N/A
Client Special requirements page has been checked.	X		
Raw Data and/ or spectrum are included and properly statused.	X		
QC data entered into QC database and batch is in REVW	X		
Hit notification complete (if necessary)			N/A
Batch entered into Case Narrative.	X		
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.)	X		

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By:

*Handwritten signature* 3/8/10

Secondary Review Performed By:

*Handwritten signature* 3/8/10

3/11/10  
LAM

PL

# Uranium Que Sheet

24-FEB-10

Batch #: 957101 Analyst: JXH2 First Client Due Date: 11-MAR-10 Internal Due Date: 01-MAR-10  
Tracer Isotope: U-236 Tracer Code: 12-83-14 Expiration Date: 12-01-10 Vol: 0.1  
LCS Isotope: U-238 LCS Code: — Expiration Date: — Vol: 0.1  
Spike Isotope: U-238 Spike Code: — Expiration Date: — Vol: 0.1  
Prep Date: 3-3-10 Initials: JCH Pipet ID: 2971058 Balance ID: 59510272

Witness: AB3/340

Sample ID	Client Description	Type	Hazard Code	Min CRDL	Matrix	Client	Collection Date	Pos.	Label #	Wet Aliquot (g/110)	U Det #
247323401-1	RE46-10-12942	SAMPLE		.1 pCi/g	SOIL	LANL010	16-FEB-10	1	1	0.502	118
247323402-1	RE46-10-12944	SAMPLE		.1 pCi/g	SOIL	LANL010	16-FEB-10	2	2	0.522	125
247323403-1	RE46-10-12941	SAMPLE		.1 pCi/g	SOIL	LANL010	16-FEB-10	3	3	0.506	126
247323404-1	RE46-10-12951	SAMPLE		.1 pCi/g	SOIL	LANL010	16-FEB-10	4	4	0.509	127
247323405-1	RE46-10-12943	SAMPLE		.1 pCi/g	SOIL	LANL010	16-FEB-10	5	5	0.500	128
247323406-1	RE46-10-12952	SAMPLE		.1 pCi/g	SOIL	LANL010	16-FEB-10	6	6	0.512	129
247323407-1	RE46-10-13189	SAMPLE		.1 pCi/g	SOIL	LANL010	16-FEB-10	7	7	0.524	130
247323408-1	RE46-10-12661	SAMPLE		.1 pCi/g	SOIL	LANL010	16-FEB-10	8	8	0.503	131
247327602-1	WS15-10-8941	SAMPLE		.1 pCi/g	SOIL	LANL010	16-FEB-10	9	9	0.518	132
247337601-1	RE15-10-8346	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	10	10	0.513	133
247337602-1	RE15-10-8347	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	11	11	0.506	138
247337603-1	RE15-10-8344	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	12	12	0.514	139
247337604-1	RE15-10-8345	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	13	13	0.513	140
247337605-1	RE15-10-8342	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	14	14	0.516	141
247337606-1	RE15-10-8343	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	15	15	0.518	142
247337607-1	RE15-10-8377	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	16	16	0.513	143
247560001-1	RE36-10-7427	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	17	17	0.509	144
247560002-1	RE36-10-7423	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	18	18	0.503	145
247560003-1	RE36-10-7428	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	19	19	0.515	146
247560004-1	RE36-10-7424	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	20	20	0.502	147
1202032148-1	MB for batch 957101	MB		.1 pCi/g	SOIL	QC ACCOUNT		21	21	1	148
1202032148-1	RE36-10-7427(247560001DUP)	DUP		.1 pCi/g	SOIL	QC ACCOUNT	12-FEB-10	22	22	0.503	149
1202032150-1	LCS for batch 957101	LCS		.1 pCi/g	SOIL	QC ACCOUNT		23	23	0.103	150

\* SRM 0244-A exp 10/31/20  
Solid Sample Dissolution by: LEACH or DIGESTION  
Data Reviewed By: gghus38/10

Choose SOP used: GL-RAD-A-011

# Blank Correction Report

**Batch ID 957101**

GEL Sample ID	Client sample ID	Parameter	Allquot	Result	TPU	MDA	Allquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202052149	DUP	Uranium-233/234	0.503 g	1.42	0.156	0.185	.021471173	pCi/g	NO
		Uranium-235/236	0.503 g	0.0307	0.0219	0.119	.009085487	pCi/g	YES
		Uranium-238	0.503 g	1.48	0.161	0.127	-.01115308	pCi/g	NO
1202052150	LCS	Uranium-233/234	0.103 g	6.55	0.741	0.847	.104854369	pCi/g	NO
		Uranium-235/236	0.103 g	0.471	0.154	0.548	.044368932	pCi/g	NO
		Uranium-238	0.103 g	5.16	0.619	0.583	-.05446602	pCi/g	NO
1202052148	MB	Uranium-233/234	1.00 g	0.0108	0.00849	0.0823	.0108	pCi/g	YES
		Uranium-235/236	1.00 g	0.00457	0.00459	0.0533	.00457	pCi/g	YES
		Uranium-238	1.00 g	-0.00561	0.00492	0.0566	-.00561	pCi/g	NO
247323001	RE46-10-12942	Uranium-233/234	0.502 g	0.715	0.0904	0.162	.021513944	pCi/g	NO
		Uranium-235/236	0.502 g	0.0808	0.0276	0.105	.009103586	pCi/g	NO
		Uranium-238	0.502 g	0.846	0.102	0.111	-.01117530	pCi/g	NO
247323002	RE46-10-12944	Uranium-233/234	0.522 g	0.906	0.118	0.208	.020689655	pCi/g	NO
		Uranium-235/236	0.522 g	0.0462	0.0234	0.134	.008754789	pCi/g	NO
		Uranium-238	0.522 g	0.924	0.119	0.143	-.01074713	pCi/g	NO
247323003	RE46-10-12941	Uranium-233/234	0.506 g	0.790	0.103	0.188	.021343874	pCi/g	NO
		Uranium-235/236	0.506 g	0.0469	0.0242	0.122	.009031621	pCi/g	NO
		Uranium-238	0.506 g	0.790	0.103	0.129	-.01108696	pCi/g	NO
247323004	RE46-10-12951	Uranium-233/234	0.509 g	0.792	0.0984	0.167	.021218075	pCi/g	NO
		Uranium-235/236	0.509 g	0.0186	0.0132	0.108	.008978389	pCi/g	YES
		Uranium-238	0.509 g	0.743	0.0946	0.115	-.01102161	pCi/g	NO
247323005	RE46-10-12943	Uranium-233/234	0.500 g	0.951	0.115	0.182	.0216	pCi/g	NO
		Uranium-235/236	0.500 g	0.0453	0.0234	0.118	.00914	pCi/g	YES
		Uranium-238	0.500 g	0.893	0.110	0.125	-.01122	pCi/g	NO
247323006	RE46-10-12952	Uranium-233/234	0.512 g	0.857	0.113	0.209	.02109375	pCi/g	NO
		Uranium-235/236	0.512 g	0.0349	0.0203	0.135	.008925781	pCi/g	YES
		Uranium-238	0.512 g	0.922	0.120	0.144	-.01095703	pCi/g	NO
247323007	RE46-10-13189	Uranium-233/234	0.524 g	0.747	0.0962	0.173	.020610687	pCi/g	NO
		Uranium-235/236	0.524 g	0.0336	0.020	0.112	.008721374	pCi/g	YES
		Uranium-238	0.524 g	0.755	0.0971	0.119	-.01070611	pCi/g	NO
247325001	RE46-10-12661	Uranium-233/234	0.503 g	0.716	0.0943	0.180	.021471173	pCi/g	NO
		Uranium-235/236	0.503 g	0.070	0.027	0.116	.009085487	pCi/g	NO
		Uranium-238	0.503 g	0.683	0.0917	0.124	-.01115308	pCi/g	NO
247327002	WST15-10-8941	Uranium-233/234	0.518 g	1.50	0.155	0.158	.020849421	pCi/g	NO
		Uranium-235/236	0.518 g	0.101	0.0318	0.103	.008822394	pCi/g	NO
		Uranium-238	0.518 g	2.43	0.228	0.109	-.01083012	pCi/g	NO
247337001	RE15-10-8346	Uranium-233/234	0.513 g	1.23	0.134	0.162	.021052632	pCi/g	NO
		Uranium-235/236	0.513 g	0.108	0.0323	0.105	.008908382	pCi/g	NO
		Uranium-238	0.513 g	2.22	0.213	0.111	-.01093567	pCi/g	NO
247337002	RE15-10-8347	Uranium-233/234	0.506 g	0.761	0.0969	0.171	.021343874	pCi/g	NO
		Uranium-235/236	0.506 g	0.0285	0.0166	0.111	.009031621	pCi/g	YES

# Blank Correction Report

GEL Sample ID	Client sample ID	Parameter	Allquot	Result	TPU	MDA	Allquot Corrected Blank Result	Units	Activity <5X Corrected Blank
247337002	RE15-10-8347	Uranium-238	0.506 g	0.900	0.109	0.118	-.01108696	pCi/g	NO
247337003	RE15-10-8344	Uranium-233/234	0.514 g	1.07	0.126	0.179	.021011673	pCi/g	NO
		Uranium-235/236	0.514 g	0.0498	0.0226	0.116	.008891051	pCi/g	NO
		Uranium-238	0.514 g	1.20	0.137	0.123	-.01091440	pCi/g	NO
247337004	RE15-10-8345	Uranium-233/234	0.513 g	1.53	0.156	0.157	.021052632	pCi/g	NO
		Uranium-235/236	0.513 g	0.0873	0.0284	0.102	.008908382	pCi/g	NO
		Uranium-238	0.513 g	1.71	0.171	0.108	-.01093567	pCi/g	NO
247337005	RE15-10-8342	Uranium-233/234	0.516 g	0.949	0.112	0.163	.020930233	pCi/g	NO
		Uranium-235/236	0.516 g	0.0634	0.0245	0.106	.008856589	pCi/g	NO
		Uranium-238	0.516 g	1.10	0.125	0.112	-.01087209	pCi/g	NO
247337006	RE15-10-8343	Uranium-233/234	0.518 g	0.862	0.103	0.157	.020849421	pCi/g	NO
		Uranium-235/236	0.518 g	0.0568	0.0239	0.102	.008822394	pCi/g	NO
		Uranium-238	0.518 g	1.08	0.120	0.108	-.01083012	pCi/g	NO
247337007	RE15-10-8377	Uranium-233/234	0.513 g	1.20	0.140	0.194	.021052632	pCi/g	NO
		Uranium-235/236	0.513 g	0.0753	0.0291	0.125	.008908382	pCi/g	NO
		Uranium-238	0.513 g	1.39	0.157	0.133	-.01093567	pCi/g	NO
247360001	RE36-10-7427	Uranium-233/234	0.509 g	1.51	0.170	0.207	.021218075	pCi/g	NO
		Uranium-235/236	0.509 g	0.0228	0.0216	0.134	.008878389	pCi/g	YES
		Uranium-238	0.509 g	1.93	0.205	0.142	-.01102161	pCi/g	NO
247360002	RE36-10-7423	Uranium-233/234	0.503 g	2.45	0.253	0.217	.021471173	pCi/g	NO
		Uranium-235/236	0.503 g	0.193	0.0508	0.141	.009085487	pCi/g	NO
		Uranium-238	0.503 g	3.27	0.322	0.149	-.01115308	pCi/g	NO
247360003	RE36-10-7428	Uranium-233/234	0.515 g	0.951	0.124	0.219	.020970874	pCi/g	NO
		Uranium-235/236	0.515 g	0.0365	0.0213	0.142	.008873788	pCi/g	YES
		Uranium-238	0.515 g	0.999	0.128	0.151	-.01089320	pCi/g	NO
247360004	RE36-10-7424	Uranium-233/234	0.502 g	1.06	0.133	0.210	.021513944	pCi/g	NO
		Uranium-235/236	0.502 g	0.0989	0.0363	0.136	.009103586	pCi/g	NO
		Uranium-238	0.502 g	1.21	0.145	0.144	-.01117530	pCi/g	NO

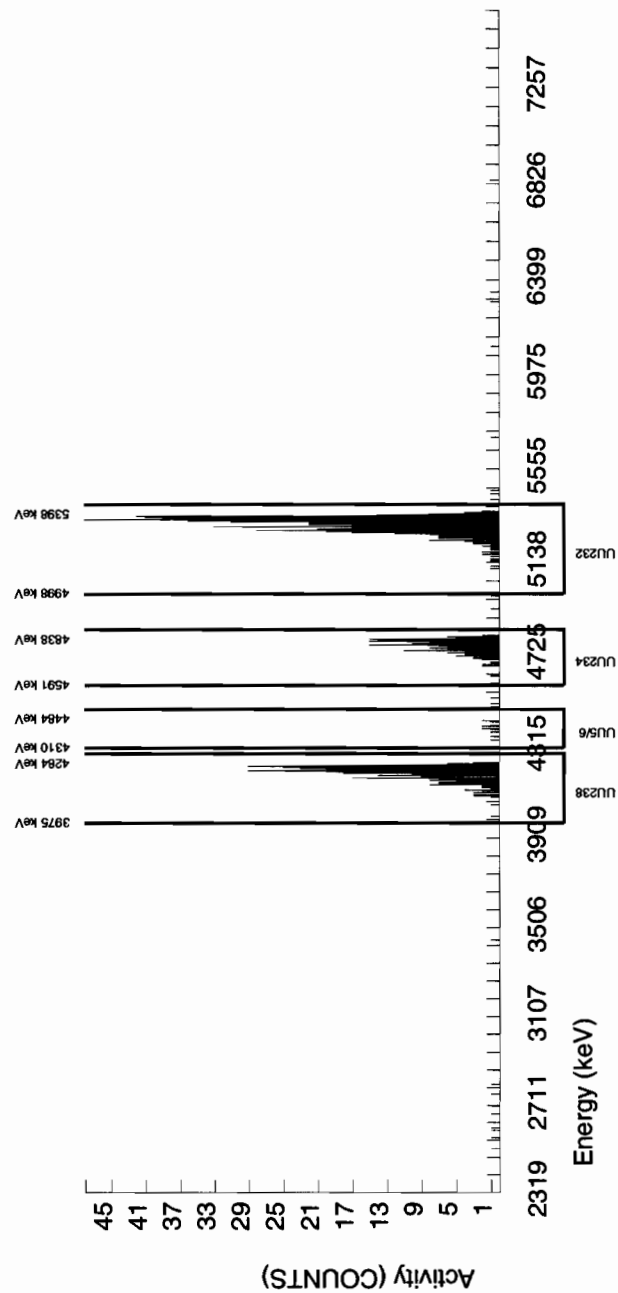


GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957101 SAMPLE ID : S0247337001_UU SAMPLE QTY : 0.513 G SAMPLE DATE : 12-FEB-2010 00:00:00 ANALYST : JXH2 % YIELD : 98.246				CHAMBER : 133 DETECTOR S/N : 76229 AVERAGE %EFFICIENCY : 24.3125 COUNT DATE : 6-MAR-2010 12:14:32 ELAPSED LIVE TIME(SEC) : 30300.00				LIB FILE : ENV_ALPHA_UU BKG FILE : B133.CNF:439 BKG DATE : 28-FEB-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W133.CNF:123 CAL DATE : 18-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5043E+00 dpm RESULTS : 4.4253E+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	5310.252	64.090	544.000	542.990	1.010	1.0050	100.0000	3.96E+00	3.48E-01	1.48E-02	4.93E-02	1.70E-01
U-3/4	4763.020	4765.281	54.826	170.000	169.450	0.000	4.8416	100.0000	1.23E+00	1.34E-01	7.11E-02	1.62E-01	9.48E-02
U-235	4391.000	4404.301	41.310	12.000	12.000	0.000	2.2152	80.90000	1.08E-01	3.23E-02	4.02E-02	1.05E-01	3.12E-02
U-238	4184.730	4200.024	55.148	305.000	305.000	0.000	3.1208	100.0000	2.22E+00	2.13E-01	4.58E-02	1.11E-01	1.27E-01

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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

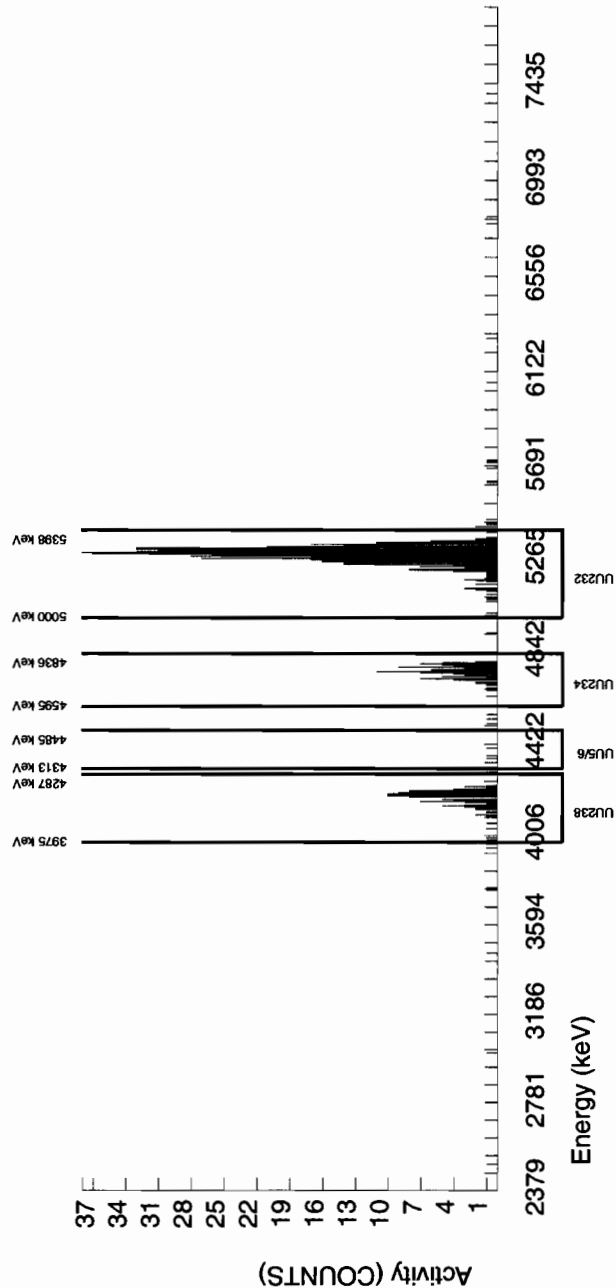
<p>BATCH NUMBER : 957101  SAMPLE ID : S0247337002_UU  SAMPLE QTY : 0.506 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 90.141</p>	<p>CHAMBER : 138  DETECTOR S/N : 65877  AVERAGE %EFFICIENCY : 25.4229  COUNT DATE : 6-MAR-2010 12:14:45  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_UU  BKG FILE : B138.CNF;404  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W138.CNF;104  CAL DATE : 19-FEB-2010</p>
<p>TRACER  ID : 1283-H  NUCLIDE : U232  NOMINAL : 4.5043E+00 dpm  RESULTS : 4.0602E+00 dpm</p>	<p>MS/MSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	<p>LCS/LCSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>

## 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	5289.304	55.143	526.000	520.950	5.050	2.2472	100.0000	4.01E+00	3.58E-01	3.49E-02	9.06E-02	1.77E-01
U-3/4	4763.020	4756.889	71.105	100.000	98.968	0.505	4.8416	100.0000	7.61E-01	9.69E-02	7.52E-02	1.71E-01	7.68E-02
U-235	4391.000	4383.821	49.925	3.000	3.000	0.000	2.2152	80.90000	2.85E-02	1.66E-02	4.25E-02	1.11E-01	1.65E-02
U-238	4184.730	4178.060	55.853	118.000	116.990	1.010	3.1208	100.0000	9.00E-01	1.09E-01	4.84E-02	1.18E-01	8.37E-02

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4

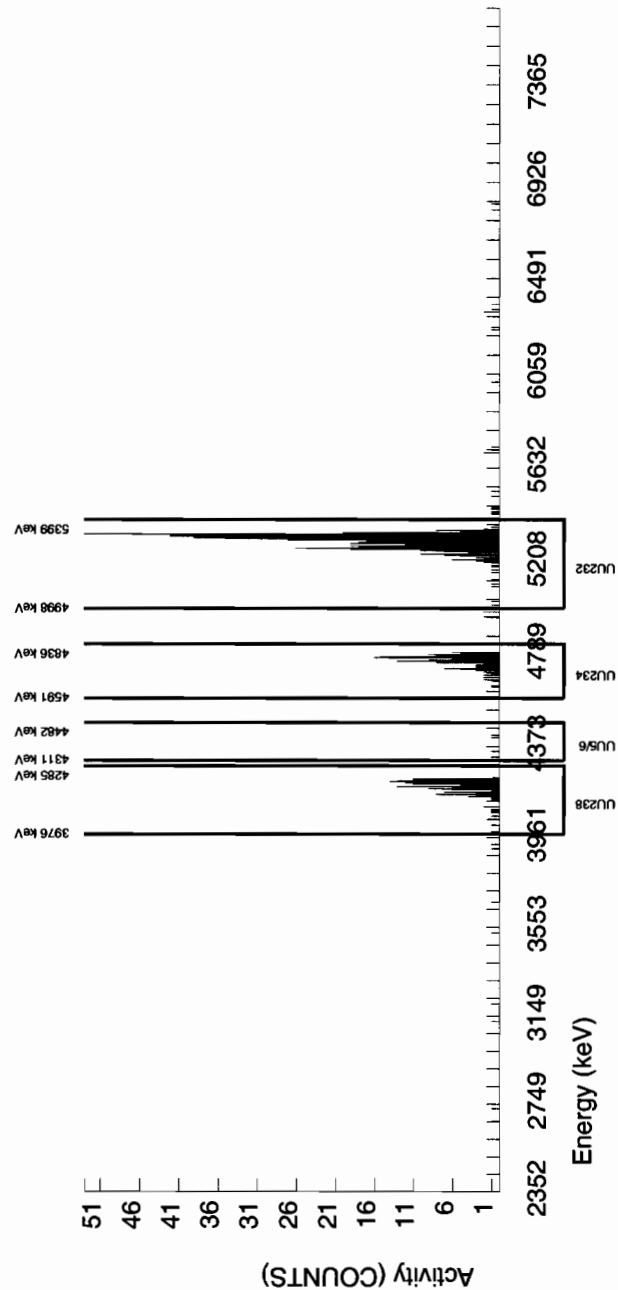


# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957101 SAMPLE ID : S0247337003_UU SAMPLE QTY : 0.514 G SAMPLE DATE : 12-FEB-2010 00:00:00 ANALYST : JXH2 % YIELD : 86.707				CHAMBER : 139 DETECTOR S/N : 76231 AVERAGE %EFFICIENCY : 24.8328 COUNT DATE : 6-MAR-2010 12:14:47 ELAPSED LIVE TIME(SEC) : 30300.00				LIB FILE : ENV_ALPHA_UU BKG FILE : B139.CNF;401 BKG DATE : 28-FEB-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W139.CNF;104 CAL DATE : 19-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5043E+00 dpm RESULTS : 3.9056E+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	5304.758	28.384	492.000	489.475	2.525	1.5890	100.0000	3.95E+00	3.61E-01	2.58E-02	7.35E-02	1.79E-01
U-3/4	4763.020	4761.426	34.995	133.000	132.504	0.000	4.8416	100.0000	1.07E+00	1.26E-01	7.87E-02	1.79E-01	9.28E-02
U-235	4391.000	4369.802	0.000	5.000	5.000	0.000	2.2152	80.90000	4.98E-02	2.26E-02	4.45E-02	1.16E-01	2.23E-02
U-238	4184.730	4192.461	71.601	149.000	149.000	0.000	3.1208	100.0000	1.20E+00	1.37E-01	5.08E-02	1.23E-01	9.84E-02

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4

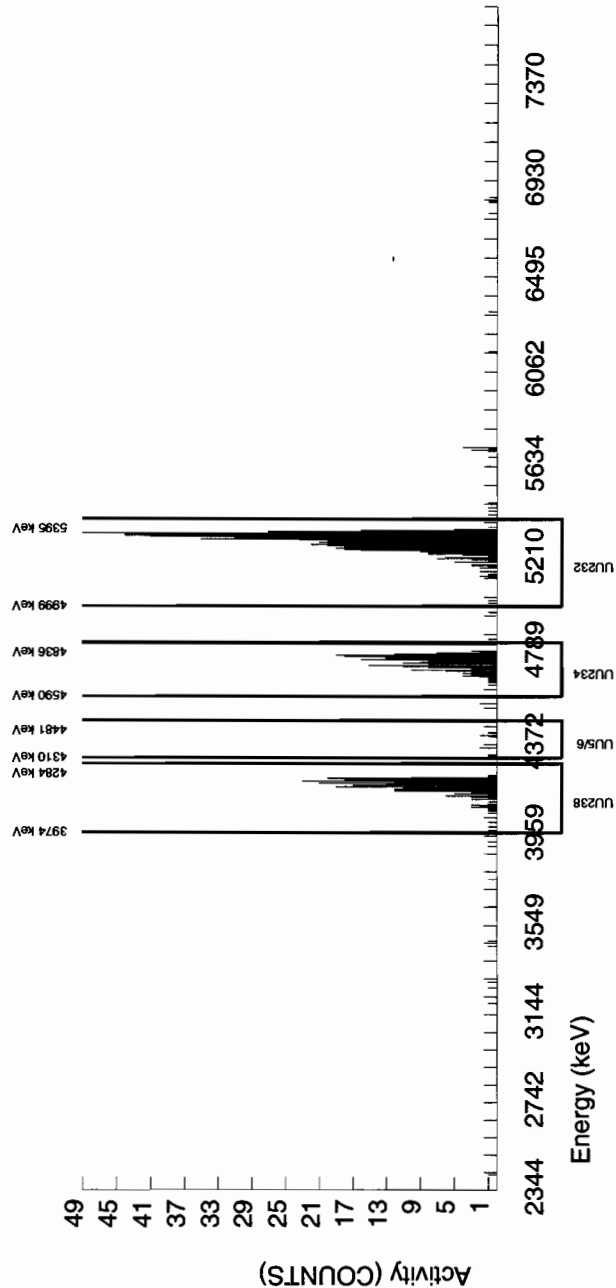


# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957101 SAMPLE ID : S0247337004_UU SAMPLE QTY : 0.513 G SAMPLE DATE : 12-FEB-2010 00:00:00 ANALYST : JXH2 % YIELD : 95.951				CHAMBER : 140 DETECTOR S/N : 78771 AVERAGE %EFFICIENCY : 25.6501 COUNT DATE : 6-MAR-2010 12:14:51 ELAPSED LIVE TIME(SEC) : 30300.00				LIB FILE : ENV_ALPHA_UU BKG FILE : B140.CNF:401 BKG DATE : 28-FEB-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W140.CNF:109 CAL DATE : 19-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5043E+00 dpm RESULTS : 4.3219E+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	5297.529	34.600	561.000	559.485	1.515	1.2309	100.0000	3.96E+00	3.46E-01	1.75E-02	5.42E-02	1.68E-01
U-3/4	4763.020	4751.066	71.811	217.000	215.928	0.505	4.8416	100.0000	1.53E+00	1.56E-01	6.90E-02	1.57E-01	1.04E-01
U-235	4391.000	4387.049	59.436	10.000	10.000	0.000	2.2152	80.90000	8.73E-02	2.84E-02	3.90E-02	1.02E-01	2.76E-02
U-238	4184.730	4184.241	58.821	242.000	242.000	0.000	3.1208	100.0000	1.71E+00	1.71E-01	4.45E-02	1.08E-01	1.10E-01

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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

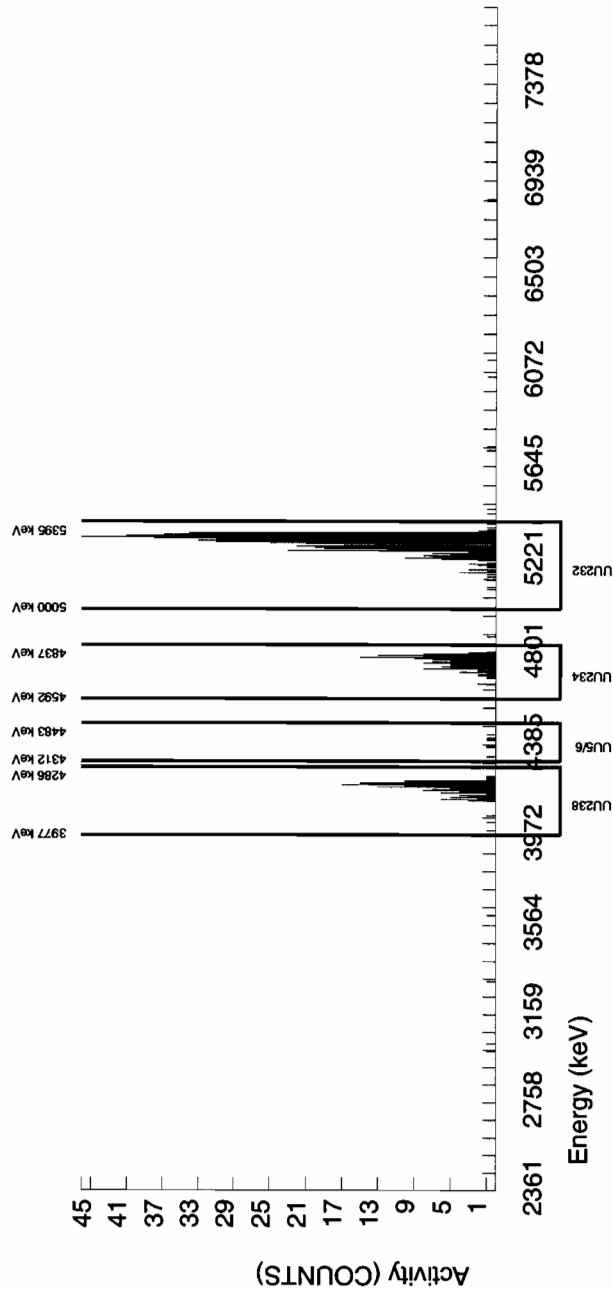
<p>BATCH NUMBER : 957101  SAMPLE ID : S0247337005_UU  SAMPLE QTY : 0.516 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 91.355</p>		<p>CHAMBER : 141  DETECTOR S/N : 76232  AVERAGE %EFFICIENCY : 25.8088  COUNT DATE : 6-MAR-2010 12:14:55  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_UU  BKG FILE : B141.CNF:404  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W141.CNF:107  CAL DATE : 19-FEB-2010</p>
<p>TRACER  ID : 1283-H  NUCLIDE : U232  NOMINAL : 4.5043E+00 dpm  RESULTS : 4.1149E+00 dpm</p>	<p>MS/MSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	<p>LCS/LCSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	

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	5304.037	44.506	538.000	535.980	2.020	1.4213	100.0000	3.93E+00	3.52E-01	2.10E-02	6.19E-02	1.70E-01
U-3/4	4763.020	4763.295	65.105	131.000	129.447	1.010	4.8416	100.0000	9.49E-01	1.12E-01	7.16E-02	1.63E-01	8.39E-02
U-235	4391.000	4397.993	98.782	7.000	7.000	0.000	2.2152	80.90000	6.34E-02	2.45E-02	4.05E-02	1.06E-01	2.40E-02
U-238	4184.730	4195.173	33.034	151.000	149.990	1.010	3.1208	100.0000	1.10E+00	1.25E-01	4.62E-02	1.12E-01	9.02E-02

NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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

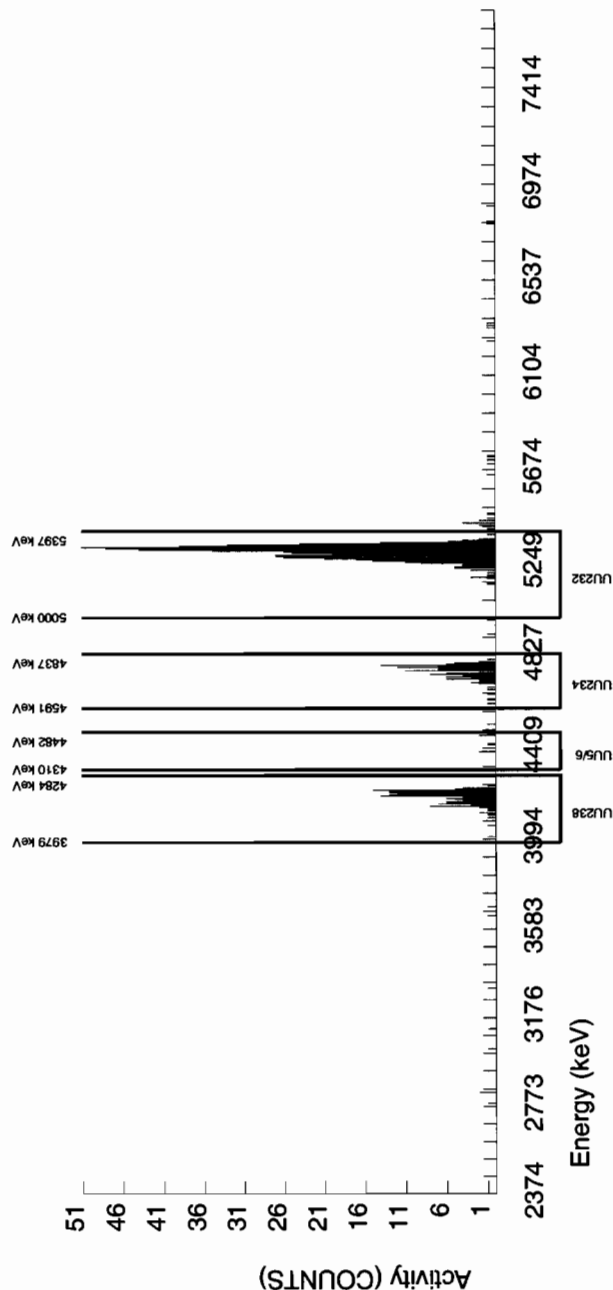
<p>BATCH NUMBER : 957101  SAMPLE ID : S0247337006_UU  SAMPLE QTY : 0.518 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 94.518</p>		<p>CHAMBER : 142  DETECTOR S/N : 64261  AVERAGE %EFFICIENCY : 25.7599  COUNT DATE : 6-MAR-2010 12:14:57  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_UU  BKG FILE : B142.CNF:398  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W142.CNF:111  CAL DATE : 19-FEB-2010</p>
<p>TRACER  ID : 1283-H  NUCLIDE : U232  NOMINAL : 4.5043E+00 dpm  RESULTS : 4.2574E+00 dpm</p>	<p>MS/MSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	<p>LCS/LCSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	

## 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	5305.690	58.798	555.000	553.485	1.515	1.2309	100.0000	3.92E+00	3.44E-01	1.76E-02	5.43E-02	1.67E-01
U-3/4	4763.020	4757.987	45.352	123.000	121.935	0.505	4.8416	100.0000	8.62E-01	1.03E-01	6.91E-02	1.57E-01	7.83E-02
U-235	4391.000	4439.887	77.049	7.000	6.495	0.505	2.2152	80.90000	5.68E-02	2.39E-02	3.91E-02	1.02E-01	2.35E-02
U-238	4184.730	4189.711	73.294	152.000	152.000	0.000	3.1208	100.0000	1.08E+00	1.20E-01	4.45E-02	1.08E-01	8.72E-02

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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

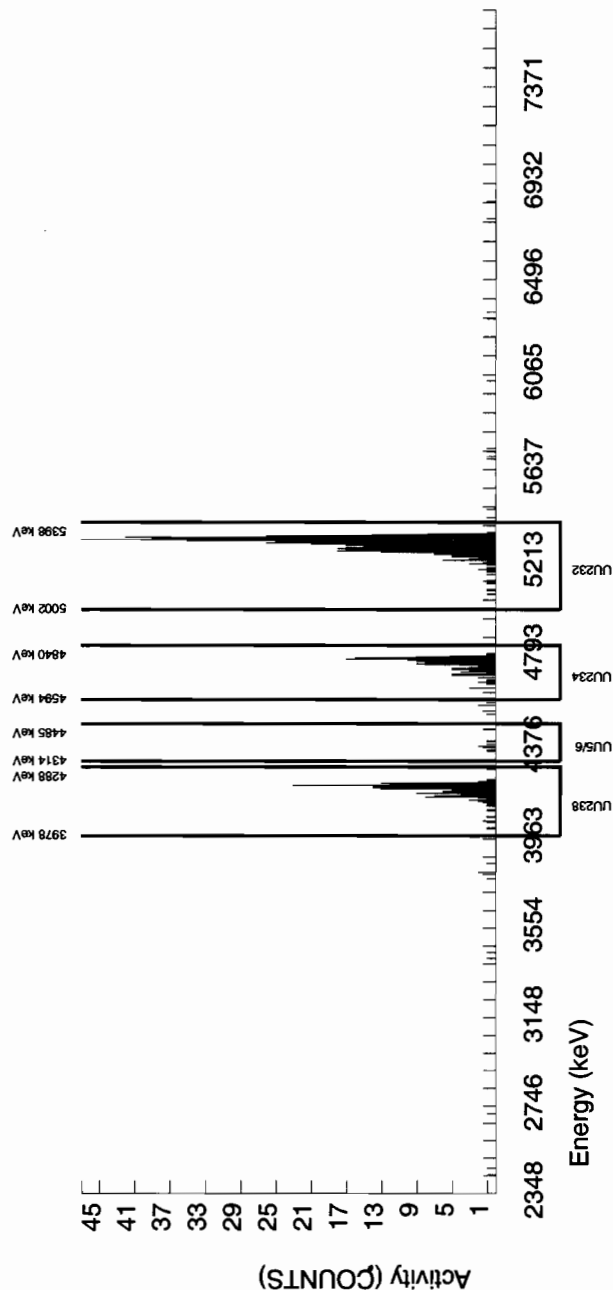
<p>BATCH NUMBER : 957101  SAMPLE ID : S0247337007_UU  SAMPLE QTY : 0.513 G  SAMPLE DATE : 12-FEB-2010 00:00:00  ANALYST : JXH2  % YIELD : 82.231</p>		<p>CHAMBER : 143  DETECTOR S/N : 65882  AVERAGE %EFFICIENCY : 24.2868  COUNT DATE : 6-MAR-2010 12:15:00  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_UU  BKG FILE : B143.CNF:400  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W143.CNF:114  CAL DATE : 19-FEB-2010</p>
<p>TRACER  ID : 1283-H  NUCLIDE : U232  NOMINAL : 4.5043E+00 dpm  RESULTS : 3.7039E+00 dpm</p>	<p>MS/MSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	<p>LCS/LCSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	

## 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	5301.117	33.154	454.000	454.000	0.000	0.0000	100.0000	3.96E+00	3.68E-01	0.00E+00	2.36E-02	1.86E-01
U-3/4	4763.020	4756.649	31.070	138.000	137.540	0.000	4.8416	100.0000	1.20E+00	1.40E-01	8.51E-02	1.94E-01	1.02E-01
U-235	4391.000	4389.228	4.953	7.000	7.000	0.000	2.2152	80.90000	7.53E-02	2.91E-02	4.81E-02	1.25E-01	2.85E-02
U-238	4184.730	4186.369	26.354	160.000	160.000	0.000	3.1208	100.0000	1.39E+00	1.57E-01	5.48E-02	1.33E-01	1.10E-01

## NOTES:

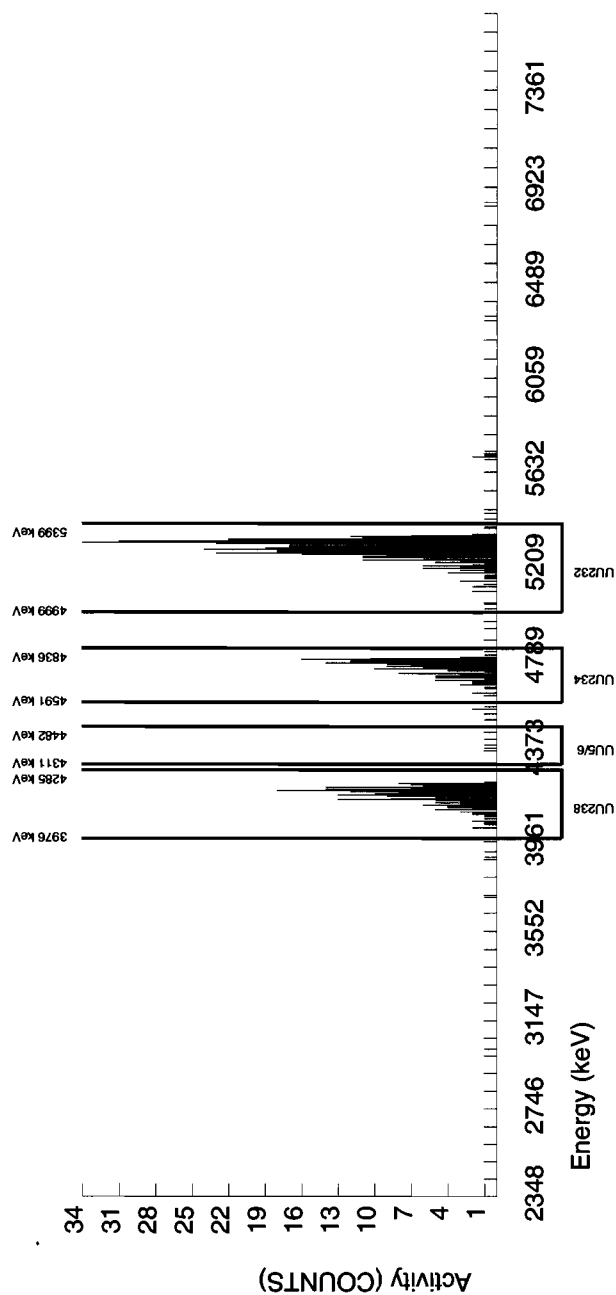
- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4



BATCH NUMBER : 957101 SAMPLE ID : S0247360001_UU SAMPLE QTY : 0.509 G SAMPLE DATE : 12-FEB-2010 00:00:00 ANALYST : JXH2 % YIELD : 75.067				CHAMBER : 144 DETECTOR S/N : 75551 AVERAGE %EFFICIENCY : 25.1386 COUNT DATE : 6-MAR-2010 12:15:02 ELAPSED LIVE TIME(SEC) : 30300.00				LIB FILE : ENV_ALPHA_UU BKG FILE : B144.CNF:399 BKG DATE : 28-FEB-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W144.CNF:108 CAL DATE : 19-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5043E+00 dpm RESULTS : 3.3812E+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	5287.514	65.548	431.000	428.980	2.020	1.4213	100.0000	3.99E+00	3.73E-01	2.66E-02	7.84E-02	1.93E-01
U-3/4	4763.020	4751.874	47.566	165.000	163.051	1.515	4.8416	100.0000	1.51E+00	1.70E-01	9.07E-02	2.07E-01	1.19E-01
U-235	4391.000	4407.846	44.540	3.000	1.990	1.010	2.2152	80.90000	2.28E-02	2.16E-02	5.13E-02	1.34E-01	2.15E-02
U-238	4184.730	4171.068	59.975	208.000	208.000	0.000	3.1208	100.0000	1.93E+00	2.05E-01	5.85E-02	1.42E-01	1.34E-01

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area  
due to tracer impurity:  
U-3/4



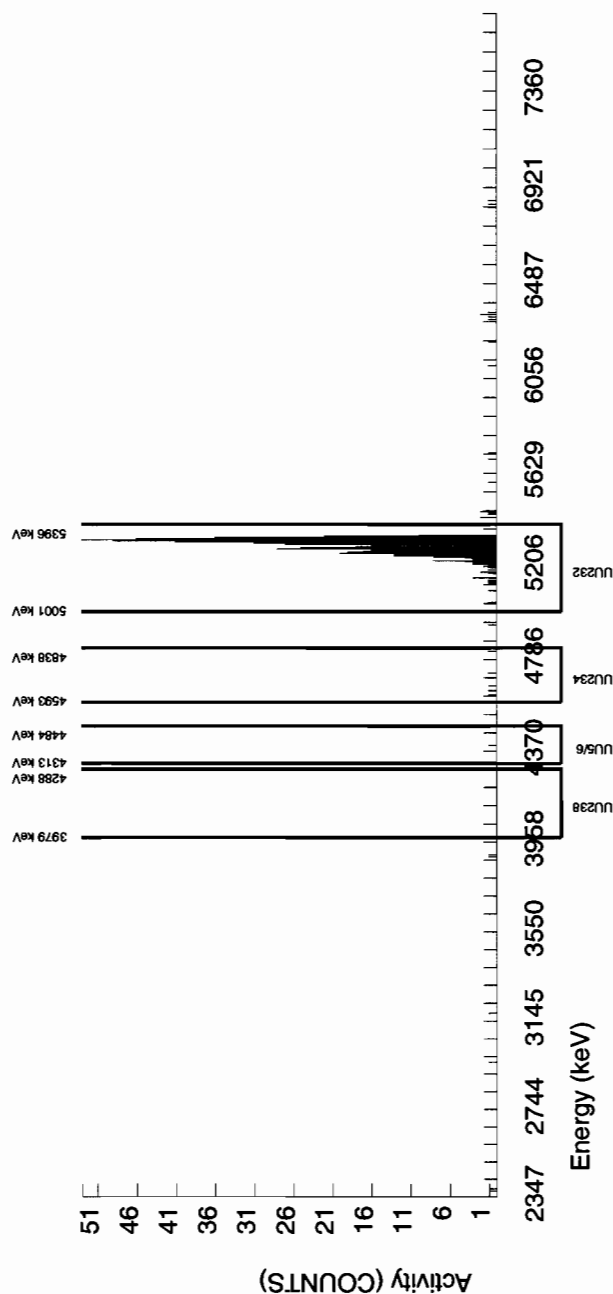


GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957101 SAMPLE ID : S1202052148_UU SAMPLE QTY : 1.000 G SAMPLE DATE : 3-MAR-2010 00:00:00. ANALYST : JXH2 % YIELD : 98.103				CHAMBER : 148 DETECTOR S/N : 74429 AVERAGE %EFFICIENCY : 24.5720 COUNT DATE : 6-MAR-2010 12:15:13 ELAPSED LIVE TIME(SEC) : 30300.00				LIB FILE : ENV_ALPHA_UU BKG FILE : B148.CNF;401 BKG DATE : 28-FEB-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W148.CNF;129 CAL DATE : 19-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5020E+00 dpm RESULTS : 4.4166E+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	5304.048	53.342	549.000	547.990	1.010	1.0050	100.0000	2.03E+00	1.78E-01	7.50E-03	2.50E-02	8.67E-02
U-3/4	4763.020	4701.647	192.702	5.000	2.930	1.515	4.8416	100.0000	1.08E-02	8.49E-03	3.62E-02	8.23E-02	8.45E-03
U-235	4391.000	4401.356	4.941	1.000	1.000	0.000	2.2152	80.900000	4.57E-03	4.59E-03	2.04E-02	5.33E-02	4.57E-03
U-238	4184.730	4132.864	0.000	0.000	-1.515	1.515	3.1208	100.0000	-5.61E-03	4.92E-03	2.33E-02	5.66E-02	4.92E-03

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4

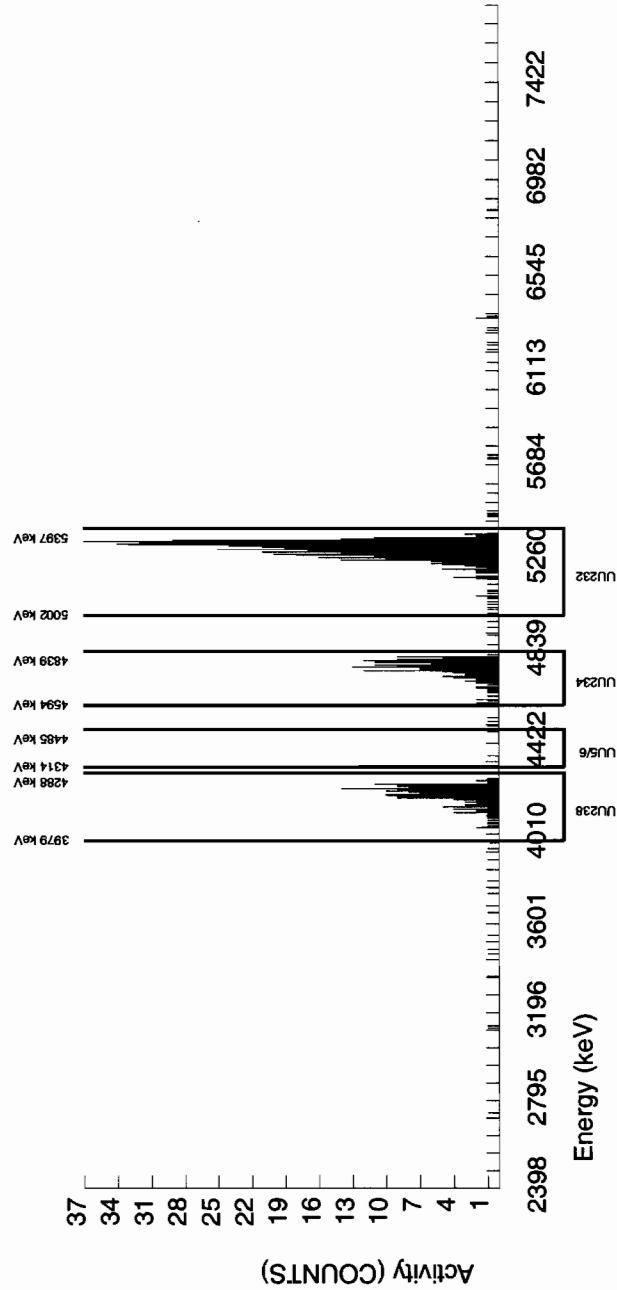


GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957101 SAMPLE ID : S1202052149_UU SAMPLE QTY : 0.503 G SAMPLE DATE : 12-FEB-2010 00:00:00 ANALYST : JXH2 % YIELD : 86.742				CHAMBER : 149 DETECTOR S/N : 33449 AVERAGE %EFFICIENCY : 24.6450 COUNT DATE : 6-MAR-2010 12:15:15 ELAPSED LIVE TIME(SEC) : 30300.00				LIB FILE : ENV_ALPHA_UU BKG FILE : B149.CNF;405 BKG DATE : 28-FEB-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W149.CNF;114 CAL DATE : 19-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5043E+00 dpm RESULTS : 3.9072E+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	5301.716	66.257	489.000	485.970	3.030	1.7407	100.0000	4.03E+00	3.66E-01	2.91E-02	8.08E-02	1.84E-01
U-3/4	4763.020	4762.927	64.438	173.000	171.498	1.010	4.8416	100.0000	1.42E+00	1.56E-01	8.10E-02	1.85E-01	1.09E-01
U-235	4391.000	4376.981	4.935	4.000	2.990	1.010	2.2152	80.90000	3.07E-02	2.19E-02	4.58E-02	1.19E-01	2.18E-02
U-238	4184.730	4188.089	63.161	179.000	179.000	0.000	3.1208	100.0000	1.48E+00	1.61E-01	5.22E-02	1.27E-01	1.11E-01

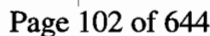
NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4



NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 10-FEB-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# 965246 Product: Pu Date: 3/16/10

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 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: E. [Signature]

3/16/10

Secondary Review Performed By: K. [Signature]

3/16/10

LAWL

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# Plutonium Que Sheet

15-MAR-10

Batch #: 965246 Pu-238 965246 Analyst: JXH2 First Client Due Date: 18-MAR-10 Internal Due Date: 12-MAR-10  
 Tracer Isotope(s): Pu-242/Pu-238 Tracer Code: 1430-C Expiration Date: 03/04/10 Vol: 0.1  
 LCS Isotope(s): Pu-239/Pu-238 LCS Code: — Expiration Date: — Vol: —  
 Spike Isotope(s): Pu-239/Pu-238 Spike Code: — Expiration Date: — Vol: —  
 Prep Date: 03/15/10 Initials: JXH2 Pipet ID: 2771058 Balance ID: 14550298  
 Witness: JXH2 3/15/10

Sample ID	Client Description	Type	Hazard Code	Min CRDL	Matrix	Client	Collection Date	Pos.	Label #	Wet/Dry Aliquot (g/1/1)	Pu Det #
24737004-3	REIS-10-8345	SAMPLE	.05 pCi/g	SOIL	LANL010	12-FEB-10	1	1	1	1.250	13
1202071011-1	MB for batch 965246	MB	UCF pCi/g to pCi/g	SOIL	QC ACCOUNT	12-FEB-10	2	2	1	1	14
1202071012-3	REIS-10-8345(24737004DUP)	DUP	.05 pCi/g	SOIL	QC ACCOUNT	12-FEB-10	3	3	1	1.250	17
1202071013-1	LCS for batch 965246	LCS	UCF pCi/g to pCi/g	SOIL	QC ACCOUNT	12-FEB-10	4	4	1	0.116	16

\* SRM 0244-B exp 04/30/20 0.116 g

Choose SOP Used: GL-RAD-A-011 GL-RAD-A-036, GL-RAD-A-045, GL-RAD-A-043

Solid Sample Dissolution by LEACH or DIGESTION Circle One

Data Reviewed By: JXH2 3/16/10

# Blank Correction Report

**Batch ID 965246**

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202071012	DUP	Plutonium-238	1.25E+00 g	1.35E-03	7.84E-03	3.08E-02	.02096	pCi/g	YES
		Plutonium-239/240	1.25E+00 g	-2.60E-03	3.05E-03	2.61E-02	.001084	pCi/g	YES
1202071013	LCS	Plutonium-238	1.16E-01 g	7.04E+00	6.45E-01	3.16E-01	.225862069	pCi/g	NO
		Plutonium-239/240	1.16E-01 g	4.02E+01	2.94E+00	2.68E-01	.011465517	pCi/g	NO
1202071011	MB	Plutonium-238	1.00E+00 g	2.62E-02	1.56E-02	3.66E-02	.0262	pCi/g	YES
		Plutonium-239/240	1.00E+00 g	1.33E-03	3.27E-03	3.10E-02	.00133	pCi/g	YES
247337004	RE15-10-8345	Plutonium-238	1.25E+00 g	1.06E-02	6.25E-03	2.76E-02	.02096	pCi/g	YES
		Plutonium-239/240	1.25E+00 g	2.02E-03	3.49E-03	2.34E-02	.001084	pCi/g	YES

# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

<p>BATCH NUMBER : 965246 SAMPLE ID : S1202071013_PU SAMPLE QTY : 0.116 G SAMPLE DATE : 15-FEB-2010 00:00:00 ANALYST : JXH2 % YIELD : 86.836</p>	<p>CHAMBER : 016 DETECTOR SN : 78774 AVERAGE %EFFICIENCY : 33.4863 COUNT DATE : 16-MAR-2010 10:32:28 ELAPSED LIVE TIME(SEC) : 32211.09</p>	<p>LIB FILE : ENV_ALPHA_PU BKG FILE : B016.CNF:1099 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W016.CNF:313 CAL DATE : 4-MAR-2010</p>
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<p>TRACER ID : 1430-C NUCLIDE : PU-236 NOMINAL : 3.0361E+00 dpm RESULTS : 2.6364E+00 dpm</p>	<p>MS/MSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G</p>
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## NUCLIDE ACTIVITY SUMMARY

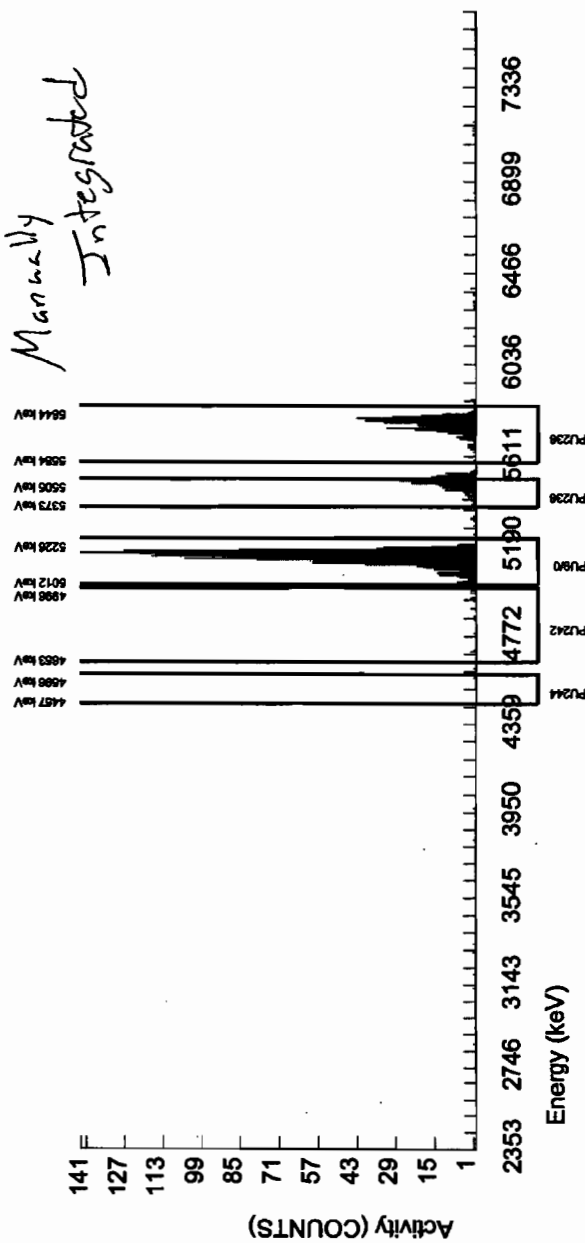
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5764.099	57.913	476.000	464.726	11.274	3.3577	100.0000	1.18E+01	9.84E-01	1.70E-01	4.08E-01	5.57E-01
PU-238	5499.000	5476.584	0.000	183.000	176.558	6.442	2.4495	99.900000	4.40E+00	4.55E-01	1.24E-01	3.16E-01	3.40E-01
PU-9/0	5155.000	5144.293	47.050	1617.000	1615.926	1.074	1.9732	99.900000	4.02E+01	2.94E+00	1.00E-01	2.68E-01	1.00E+00
PU242	4890.000	4897.081	0.000	26.000	24.389	1.611	*****	100.0000	6.07E-01	1.36E-01	6.32E+00	1.27E+01	1.29E-01
PU-244	4589.000	4566.894	63.558	3.000	3.000	0.000	6.4609	99.900000	7.47E-02	4.34E-02	3.28E-01	7.24E-01	4.31E-02

## NOTES:

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

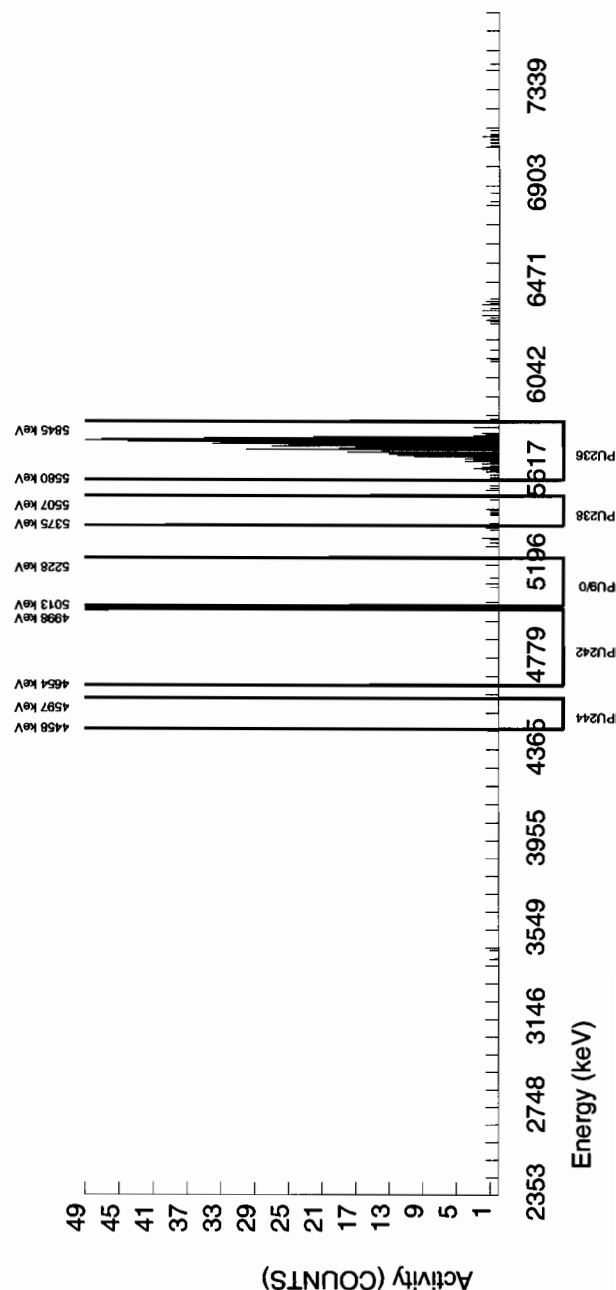
**DO NOT REPORT**

*Manually Integrated*



NOTES:

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



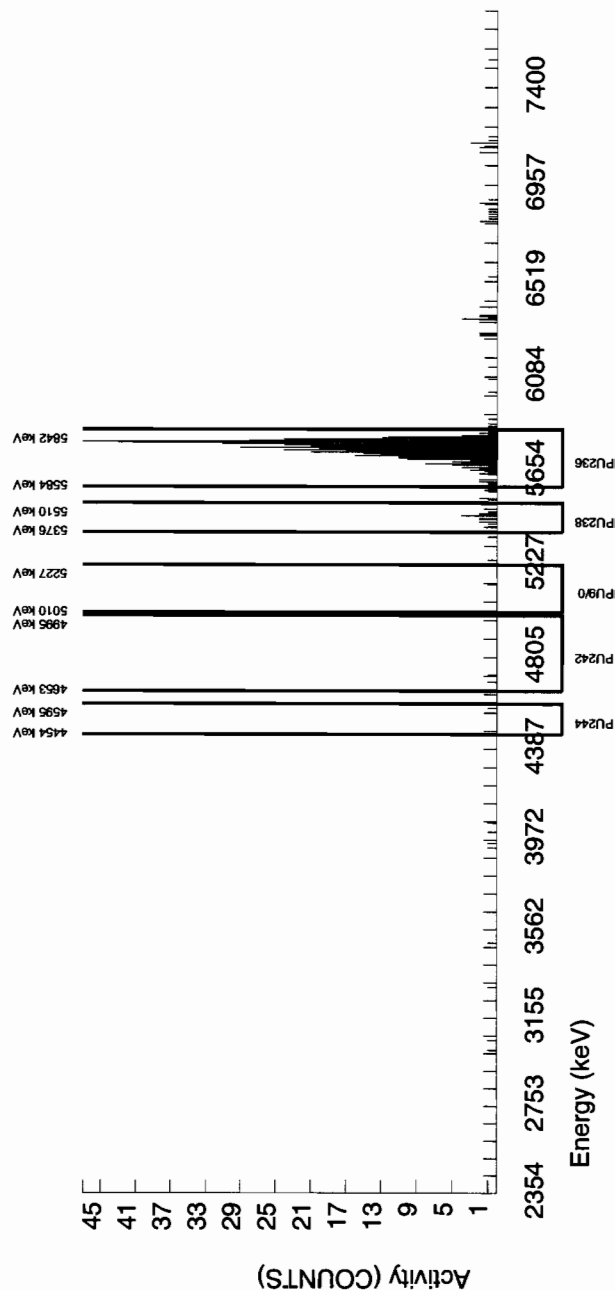


GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 965246 SAMPLE ID : S1202071011_PU SAMPLE QTY : 1.000 G SAMPLE DATE : 15-MAR-2010 00:00:00 ANALYST : JXH2 % YIELD : 86.953				CHAMBER : 014 DETECTOR S/N : 67616 AVERAGE %EFFICIENCY : 33.5532 COUNT DATE : 16-MAR-2010 10:32:28 ELAPSED LIVE TIME(SEC) : 32211.09				LIB FILE : ENV_ALPHA_PU BKG FILE : B014.CNF;1104 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W014.CNF;328 CAL DATE : 4-MAR-2010					
TRACER ID : 1430-C NUCLIDE : PU-236 NOMINAL : 2.9802E+00 dpm RESULTS : 2.5914E+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	5762.744	37.237	484.000	466.284	17.716	4.2091	100.0000	1.34E+00	1.06E-01	2.47E-02	5.72E-02	6.40E-02
PU-238	5499.000	5447.441	7.277	22.000	9.116	12.884	2.4495	99.900000	2.62E-02	1.56E-02	1.44E-02	3.66E-02	1.55E-02
PU-9/0	5155.000	5142.627	4.955	1.000	0.463	0.537	1.9732	99.900000	1.33E-03	3.27E-03	1.16E-02	3.10E-02	3.27E-03
PU242	4890.000	4715.722	34.683	2.000	0.389	1.611	*****	100.0000	1.12E-03	4.87E-03	7.31E-01	1.47E+00	4.87E-03
PU-244	4589.000	4579.561	4.955	1.000	1.000	0.000	6.4609	99.900000	2.88E-03	2.88E-03	3.79E-02	8.37E-02	2.88E-03

NOTES:

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

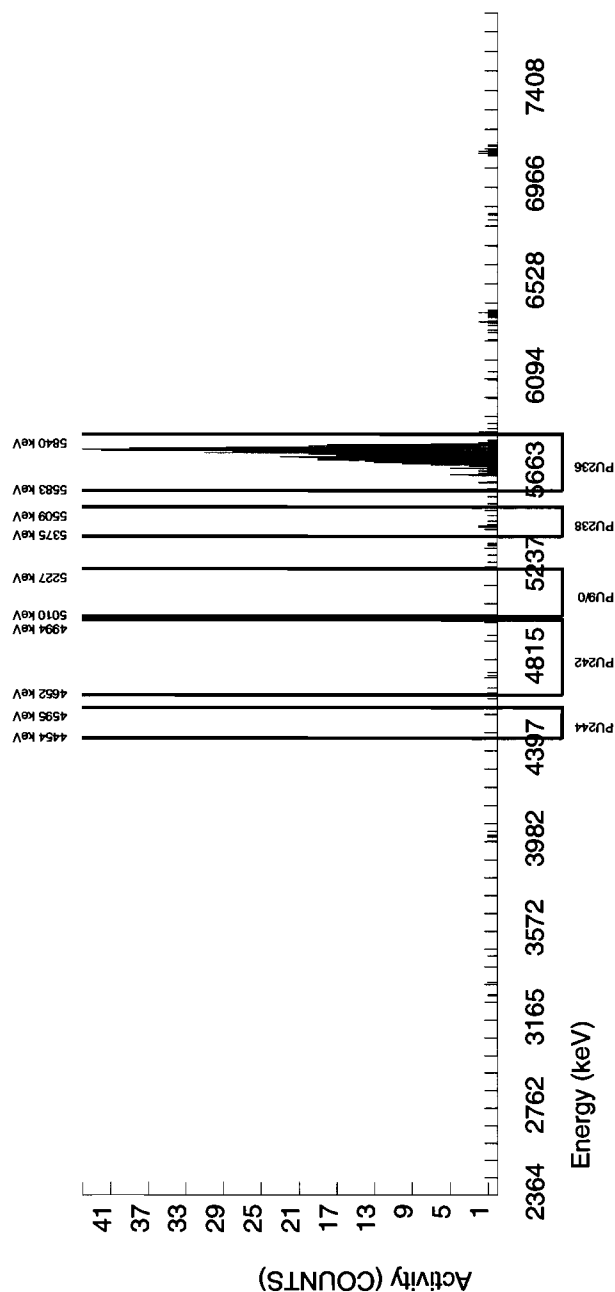


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## NUCLIDE ACTIVITY SUMMARY

NOTES:

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

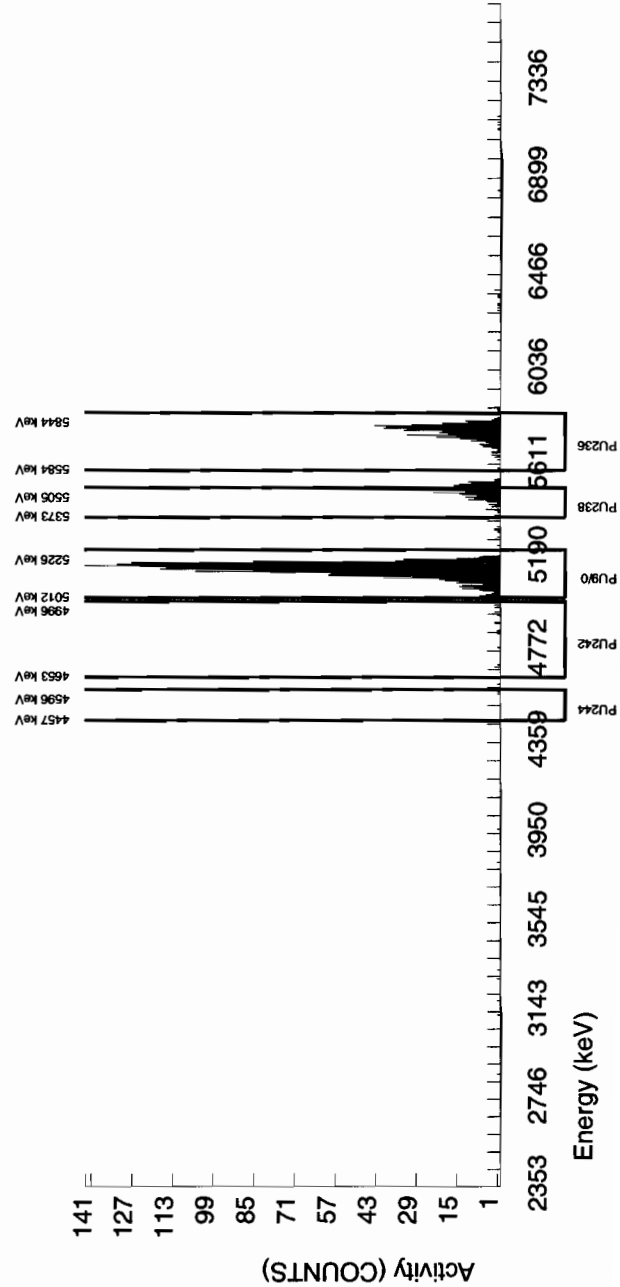


# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 965246 SAMPLE ID : S1202071013_PU SAMPLE QTY : 0.116 G SAMPLE DATE : 15-MAR-2010 00:00:00 ANALYST : JXH2 % YIELD : 86.836				CHAMBER : 016 DETECTOR S/N : 78774 AVERAGE %EFFICIENCY : 33.4863 COUNT DATE : 16-MAR-2010 10:32:28 ELAPSED LIVE TIME(SEC) : 32211.09				LIB FILE : ENV_ALPHA_PU BKG FILE : B016.CNF;1099 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W016.CNF;313 CAL DATE : 4-MAR-2010					
TRACER ID : 1430-C NUCLIDE : PU-236 NOMINAL : 2.9802E+00 dpm RESULTS : 2.5879E+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	5764.099	57.913	476.000	464.726	11.274	3.3577	100.0000	1.16E+01	9.66E-01	1.70E-01	4.08E-01	5.47E-01
PU-238	5499.000	5476.584	0.000	183.000	176.558	6.442	2.4495	99.90000	4.40E+00	4.55E-01	1.24E-01	3.16E-01	3.40E-01
PU-9/0	5155.000	5144.293	47.050	1617.000	1615.926	1.074	1.9732	99.90000	4.02E+01	2.94E+00	1.00E-01	2.68E-01	1.00E+00
PU242	4890.000	4897.081	0.000	26.000	24.389	1.611	*****	100.0000	6.07E-01	1.36E-01	6.32E+00	1.27E+01	1.29E-01
PU-244	4589.000	4566.894	63.558	3.000	3.000	0.000	6.4609	99.90000	7.47E-02	4.34E-02	3.28E-01	7.24E-01	4.31E-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# 955027 Product: 8S Date: 3/6/10

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 stated.	✓		
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: Henderson 3/6/10

Secondary Review Performed By: Walt 3/8/10

LANL  
3/18/10

I.G. - 3/1/10

## Gamma Spec Que Sheet

02/18/2010

Batch #: 955027 Analyst: MXR1 First Client Due Date: 03/18/2010 Internal Due Date: 03/07/2010

Gamma Spike Isotope: Mixed Gamma Spike Code: u Expiration Date: u Vol: u Nominal Concentration: u

Gamma LCS Isotope: Mixed Gamma LCS Code: 1032-8 Expiration Date: 12/2/10 Vol: 1.0 mL Nominal Concentration: Am 241 - 15.4 GBq - 5.565

Initials: RF Prep Date: 2/22/10 Library: Solid Witness: u Co: u

Sample ID	Client Description / Container ID	Type	Hazard Code	Client	Matrix	Collect Date	Geometry	Aliquot (1/2/F)	Detector	Sealing Date/Time (if Applicable)
247323001-1	RE46-10-12942	SAMPLE	LANL010	SOIL	16-FEB-10 12:00:00	u	can	111.10	15	2/22/10
247323002-1	RE46-10-12944	SAMPLE	LANL010	SOIL	16-FEB-10 12:00:00	u		114.76	5	
247323003-1	RE46-10-12941	SAMPLE	LANL010	SOIL	16-FEB-10 12:00:00	u		123.23	4	
247323004-1	RE46-10-12951	SAMPLE	LANL010	SOIL	16-FEB-10 12:00:00	u		136.63	15	
247323005-1	RE46-10-12943	SAMPLE	LANL010	SOIL	16-FEB-10 12:00:00	u		136.56	22	
247323006-1	RE46-10-12952	SAMPLE	LANL010	SOIL	16-FEB-10 12:00:00	u		135.01	25	
247323007-1	RE46-10-13189	SAMPLE	LANL010	SOIL	16-FEB-10 12:00:00	u		139.77	1	
247325001-1	RE46-10-12661	SAMPLE	LANL010	SOIL	16-FEB-10 12:00:00	u		134.54	14	
247337001-1	RE15-10-8346	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		134.58	14	
247337002-1	RE15-10-8347	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		134.44	17	
247337003-1	RE15-10-8344	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		135.72	18	
247337004-1	RE15-10-8345	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		123.66	21	
247337005-1	RE15-10-8342	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		137.79	20	
247337006-1	RE15-10-8343	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		130.17	6	
247337007-1	RE15-10-8377	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		145.34	16	
247360001-1	RE36-10-7427	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		80.57	22	
247360002-1	RE36-10-7423	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		72.34	25	
247360003-1	RE36-10-7428	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		144.49	19	
247360004-1	RE36-10-7424	SAMPLE	LANL010	SOIL	12-FEB-10 12:00:00	u		128.22	14	
1202047453-1	MB	MB	QC ACCOUNT	SOIL	2/22/10	u		145.34	17	
1202047454-1	DUP RE36-10-7427(247360001)	DUP	QC ACCOUNT	SOIL	2/22/10	u		80.57	16	
1202047455-1	LCS	LCS	QC ACCOUNT	SOIL	2/22/10	u		155.44	18	

GEL Laboratories LLC, Radiochemistry Division

Data Reviewed By: AEuler 3/16/10  
 ✓ no L's story  
 ✓ data/revs  
 NO 3/8/10 Page 1 of 1

# Failed RDL Report

Batch Id	Samp Id	Sample Type	Run Date	YIELD	Parmname	Result	MDA	RDL
955027	247323001	SAMPLE	03-MAR-10		Americium-241	-0.4307	0.4073	0.200
					Cerium-139	-0.02159	0.05172	0.050
					Thorium-234	1.018	3.391	2.00
955027	247323002	SAMPLE	04-MAR-10		Cerium-139	-0.03599	0.05906	0.050
					Sodium-22	-0.00705	0.09412	0.080
955027	247323003	SAMPLE	04-MAR-10		Americium-241	-0.0313	0.3943	0.200
					Cerium-139	0.01698	0.05271	0.050
					Thorium-234	1.157	3.294	2.00
955027	247323004	SAMPLE	04-MAR-10		Americium-241	-0.04935	0.4866	0.200
					Cerium-139	0.00108	0.06099	0.050
					Europium-152	0.02461	0.2005	0.200
					Sodium-22	-0.02329	0.08266	0.080
					Thorium-234	-0.9323	3.72	2.00
955027	247323005	SAMPLE	04-MAR-10		Americium-241	0.00371	0.2025	0.200
955027	247323006	SAMPLE	04-MAR-10		Sodium-22	-0.0391	0.08272	0.080
955027	247323007	SAMPLE	04-MAR-10		Americium-241	-0.02099	0.2799	0.200
					Cerium-139	-0.00831	0.05299	0.050
					Thorium-234	1.582	2.717	2.00
955027	247325001	SAMPLE	04-MAR-10		Americium-241	-0.1471	0.2707	0.200
					Thorium-234	0.6173	2.432	2.00
955027	247337001	SAMPLE	04-MAR-10		Americium-241	0.1078	0.238	0.200
					Cerium-139	0.0037	0.0533	0.050
955027	247337002	SAMPLE	04-MAR-10		Cerium-139	-0.01337	0.05183	0.050
					Cesium-134	0.02482	0.1072	0.100
					Sodium-22	0.01837	0.1037	0.080
955027	247337003	SAMPLE	04-MAR-10		Americium-241	0.06703	0.2935	0.200
					Thorium-234	0.4522	2.598	2.00
955027	247337004	SAMPLE	04-MAR-10		Sodium-22	-0.03464	0.1053	0.080
955027	247337005	SAMPLE	04-MAR-10					
955027	247337006	SAMPLE	04-MAR-10		Americium-241	0.01243	0.3292	0.200
					Cerium-139	-0.01216	0.0581	0.050
					Cesium-134	0.1159	0.1165	0.100
					Sodium-22	-0.01506	0.08876	0.080
					Thorium-234	2.472	2.72	2.00
955027	247337007	SAMPLE	04-MAR-10		Americium-241	0.03609	0.2196	0.200
955027	247360001	SAMPLE	04-MAR-10		Americium-241	-0.1908	0.2475	0.200
					Cerium-139	-0.01352	0.06221	0.050
					Europium-152	0.04437	0.207	0.200
					Thorium-234	0.5847	2.589	2.00
955027	247360002	SAMPLE	04-MAR-10		Cerium-139	-0.02275	0.05613	0.050
					Cesium-134	0.04846	0.1233	0.100
					Europium-152	-0.02881	0.2055	0.200
					Sodium-22	-0.02039	0.09268	0.080
					Tin-113	-0.04873	0.1145	0.100

# Failed RDL Report

Batch Id	Samp Id	Sample Type	Run Date	YIELD	Parmname	Result	MDA	RDL
955027	247360003	SAMPLE	04-MAR-10		Americium-241	-0.2338	0.2572	0.200
					Cerium-139	-0.0167	0.05149	0.050
					Thorium-234	2.095	2.473	2.00
955027	247360004	SAMPLE	04-MAR-10		Americium-241	0.03025	0.2195	0.200
955027	1202047453	MB	04-MAR-10					
955027	1202047454	DUP	04-MAR-10		Americium-241	0.2621	0.4913	0.200
					Cerium-139	0.00679	0.06363	0.050
					Cesium-134	0.09746	0.1143	0.100
					Sodium-22	0.0271	0.1051	0.080
955027	1202047455	LCS	04-MAR-10		Cerium-139	0.02331	0.06734	0.050
					Cesium-134	-0.00594	0.1171	0.100
					Europium-152	-0.04599	0.2364	0.200
					Thorium-234	0.2536	3.973	2.00
					Tin-113	-0.04212	0.1089	0.100

# GEL QUALS

Batch ID: 955027

Report run on: March 6, 2010 6:38 PM

Samp Id	Parmname	Cofa	Edd	Qual Comments	Auto	Result	MDA	Uncert	SQL
247323001-1 03-MAR-2010 23:25	Bismuth-211	UI	UI	Data rejected due to interference.		4.882			
	Cadmium-109	UI	UI	Data rejected due to interference.		4.305			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.1238		.1	.1
	Lanthanum-140	UI	UI	Data rejected due to low abundance.		.1436			
	Radium-224	UI	UI	Data rejected due to interference.		5.206			
	Strontium-85	UI	UI	Data rejected due to low abundance.		.1533			
247323002-1 04-MAR-2010 10:09	Bismuth-211	UI	UI	Data rejected due to interference.		4.28			
	Cadmium-109	UI	UI	Data rejected due to interference.		4.584			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.1306		.1	.1
	Radium-224	UI	UI	Data rejected due to interference.		5.512			
247323003-1 04-MAR-2010 10:10	Bismuth-211	UI	UI	Data rejected due to interference.		4.34			
	Cadmium-109	UI	UI	Data rejected due to interference.		2.962			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.1019		.1	.1
	Radium-224	UI	UI	Data rejected due to interference.		4.993			
247323004-1 04-MAR-2010 10:11	Bismuth-211	UI	UI	Data rejected due to interference.		3.32			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.1433		.1	.1
	Radium-224	UI	UI	Data rejected due to interference.		4.648			
247323005-1 04-MAR-2010 10:12	Bismuth-211	UI	UI	Data rejected due to interference.		3.305			
	Cadmium-109	UI	UI	Data rejected due to interference.		2.659			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.107		.1	.1



# GEL QUALS

Batch ID: 955027

Report run on: March 8, 2010 6:38 PM

Samp Id	Parname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247323005-1 04-MAR-2010 10:12	Radium-224	UI	UI	UI	Data rejected due to interference.		3.892			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.1291			
247323006-1 04-MAR-2010 10:13	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.344			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.932			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.137		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.427			
247325001-1 04-MAR-2010 10:14	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.362			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		1.882			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1478		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.636			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.1061			
247337001-1 04-MAR-2010 10:15	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.221			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.443			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.09597		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.563			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.08767			
247337002-1 04-MAR-2010 10:16	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.022			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		4.402			
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.217			

# GEL QUALS

Batch ID: 955027

Report run on: March 6, 2010 6:38 PM

Samp Id	Parmname	Cofa	Edd	Qual Comments	Auto	Result	MDA	Uncert	SQL
247337003-1 04-MAR-2010 10:17	Bismuth-211	UI	UI	Data rejected due to interference.		4.191			
	Cadmium-109	UI	UI	Data rejected due to interference.		3.339			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.1193		.1	.1
	Radium-224	UI	UI	Data rejected due to interference.		4.354			
247337004-1 04-MAR-2010 10:18	Bismuth-211	UI	UI	Data rejected due to interference.		4.91			
	Cadmium-109	UI	UI	Data rejected due to interference.		4.509			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.2723		.1	.1
	Radium-224	UI	UI	Data rejected due to interference.		5.754			
247337005-1 04-MAR-2010 10:19	Bismuth-211	UI	UI	Data rejected due to interference.		4.641			
	Cadmium-109	UI	UI	Data rejected due to interference.		5.345			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.1097		.1	.1
	Radium-224	UI	UI	Data rejected due to interference.		5.11			
	Strontium-85	UI	UI	Data rejected due to low abundance.		.06844			
247337006-1 04-MAR-2010 10:46	Bismuth-211	UI	UI	Data rejected due to interference.		4.294			
	Cadmium-109	UI	UI	Data rejected due to high peak-width.		4.27			
	Radium-224	UI	UI	Data rejected due to interference.		5.16			
247337007-1 04-MAR-2010 10:50	Bismuth-211	UI	UI	Data rejected due to interference.		4.068			
	Cadmium-109	UI	UI	Data rejected due to interference.		3.672			
	Radium-224	UI	UI	Data rejected due to interference.		3.51			
	Strontium-85	UI	UI	Data rejected due to low abundance.		.09828			

# GEL QUALS

Batch ID: 955027

Report run on: March 6, 2010 6:38 PM

Samp Id	Parmname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247337007-1 04-MAR-2010 12:40	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.264			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		4.058			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.181		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.703			
247360001-1 04-MAR-2010 12:41	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.557			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.857			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1095		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.55			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.2468			
247360002-1 04-MAR-2010 12:42	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.924			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		4.51			
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.589			
247360003-1 04-MAR-2010 12:43	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.528			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.17			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.112		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.274			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.1139			
247360004-1 04-MAR-2010 12:44	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.29			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.56			
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.33			

# GEL QUALS

Batch ID: 955027

Report run on: March 5, 2010 6:38 PM

Samp Id	Parmname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
1202047454-1 DUP 04-MAR-2010 16:10	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.948			
	Cadmium-109	UI	UI	UI	Data rejected due to low abundance.		2.92			
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.403			
	Strontium-85	UI	UI	UI	Data rejected due to interference.		.1553			

## Gamma Review Report based on Result &gt; MDA for Batch:955027

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247323001	16-FEB-10 12:00	03-MAR-10 23:25	15.5	SAMPLE	LOAD	I	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>UL</i>	2.111	0.1876	pCi/g	0.2397	N	910.9	3	1.926 IDENTIFIED	6.502	<input type="checkbox"/>
Annihilation Rad. <i>—</i>	0.1389	0.03488	pCi/g	0.05	N	510.8	1	2.045 IDENTIFIED	24.74	<input type="checkbox"/>
Barium-133 <i>HE</i>	0.07461	0.02378	pCi/g	0.07333	N	0	11	0 NOT_IDENTI	0	<input type="checkbox"/>
Bismuth-211 <i>INT</i>	4.882	0.328	pCi/g	0.3802	Y	352	2	1.359 IDENTIFIED	4.525	<input checked="" type="checkbox"/> <i>UL</i>
Bismuth-212 <i>LA</i>	2.793	0.3989	pCi/g	1.157	N	0	11	0 FAIL_ABUND	0	<input type="checkbox"/>
Bismuth-214 <i>V</i>	1.537	0.108	pCi/g	0.1076	0.200	609.2	2	1.771 IDENTIFIED	4.96	<input type="checkbox"/>
Cadmium-109 <i>INT</i>	4.305	0.6329	pCi/g	1.314	Y	87.41	3	1.581 IDENTIFIED	13.34	<input checked="" type="checkbox"/> <i>UL</i>
Cerium-143 <i>—</i>	1130	169.3	pCi/g	0	N	0	11	0 SHORT_HLIF	0	<input type="checkbox"/>
Cesium-134 <i>LA</i>	0.1238	0.03203	pCi/g	0.08888	0.100	0	11	0 FAIL_ABUND	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Cesium-135 <i>HE</i>	0.3852	0.09476	pCi/g	0.2948	N	0	11	0 NOT_IDENTI	0	<input type="checkbox"/>
Gross Gamma <i>—</i>	12.58	1.646	pCi/g	3.882	N	0				<input type="checkbox"/>
Iodine-133 <i>HE</i>	3931	4270	pCi/g	0	N	0	11	0 SHORT_HLIF	0	<input type="checkbox"/>
Iodine-135 <i>—</i>	1.04E+16	0	pCi/g	0	N	0	11	0 SHORT_HLIF	0	<input type="checkbox"/>
Lanthanum-140 <i>LA</i>	0.1436	0.03699	pCi/g	0.1388	Y	0	11	0 FAIL_ABUND	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Lead-212 <i>V</i>	2.087	0.1383	pCi/g	0.1	0.100	238.8	2	1.377 IDENTIFIED	2.866	<input type="checkbox"/>
Lead-214 <i>V</i>	1.772	0.1287	pCi/g	0.1292	0.100	352	2	1.359 IDENTIFIED	4.525	<input type="checkbox"/>
Neptunium-237 <i>UL</i>	1.255	0.2266	pCi/g	0.3934	N	87.41	3	1.581 IDENTIFIED	13.34	<input type="checkbox"/>
Niobium-95 <i>HE</i>	0.0969	0.02366	pCi/g	0.07709	N	0	11	0 NOT_IDENTI	0	<input type="checkbox"/>
Niobium-95m <i>LA</i>	0.6083	0.08641	pCi/g	0.2628	N	0	11	0 NOT_IDENTI	0	<input type="checkbox"/>
Potassium-40 <i>LA</i> <i>UL</i> <i>UL</i> <i>UL</i>	42.33	2.263	pCi/g	0.5776	1.00	1460	1	2.031 IDENTIFIED	2.107	<input type="checkbox"/>
Radium-224 <i>INT</i>	5.206	0.7109	pCi/g	1.072	Y	241.7	1	1.825 IDENTIFIED	12.49	<input checked="" type="checkbox"/> <i>UL</i>
Radium-226 <i>V</i>	1.537	0.108	pCi/g	0.1076	Y	609.2	2	1.771 IDENTIFIED	4.96	<input type="checkbox"/>
Radium-228 <i>V</i>	2.111	0.1876	pCi/g	0.2397	0.500	910.9	3	1.926 IDENTIFIED	6.502	<input type="checkbox"/>
Strontium-85 <i>LA</i>	0.1533	0.02416	pCi/g	0.07812	Y	0	11	0 NOT_IDENTI	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Thallium-208 <i>V</i>	0.609	0.05018	pCi/g	0.05698	0.080	583.1	1	1.374 IDENTIFIED	6.853	<input type="checkbox"/>
Thorium-228 <i>UL</i>	2.087	0.1383	pCi/g	0.1	N	238.8	2	1.377 IDENTIFIED	2.866	<input type="checkbox"/>
Thorium-232 <i>UL</i>	2.111	0.1876	pCi/g	0.2397	N	910.9	3	1.926 IDENTIFIED	6.502	<input type="checkbox"/>
Tin-126 <i>UL</i>	0.4206	0.06183	pCi/g	0.1294	N	87.41	3	1.581 IDENTIFIED	13.34	<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
247323002	16-FEB-10 12:00	04-MAR-10 10:09	15.9	SAMPLE	LOAD	I	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>UL</i>	2.057	0.2339	pCi/g	0.2972	N	910.4	3	1.911 IDENTIFIED	9.434	<input type="checkbox"/>
Bismuth-211 <i>INT</i>	4.28	0.3515	pCi/g	0.4034	Y	351.5	2	1.45 IDENTIFIED	7.198	<input checked="" type="checkbox"/> <i>UL</i>
Bismuth-212 <i>HE</i>	1.803	0.576	pCi/g	0.9625	N	726.9	1	1.077 IDENTIFIED	31.4	<input type="checkbox"/>
Bismuth-214 <i>V</i>	1.445	0.1089	pCi/g	0.1579	0.200	608.4	2	1.447 IDENTIFIED	6.246	<input type="checkbox"/>
Cadmium-109 <i>INT</i>	4.584	0.5449	pCi/g	1.153	Y	86.63	3	1.474 IDENTIFIED	11.26	<input checked="" type="checkbox"/> <i>UL</i>
Cerium-143 <i>—</i>	2361	349.9	pCi/g	0	N	0	4	0 SHORT_HLIF	0	<input type="checkbox"/>
Cesium-134 <i>LA</i>	0.1306	0.0317	pCi/g	0.1196	0.100	0	4	0 NOT_IDENTI	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Cesium-135 <i>HE</i>	0.5801	0.1692	pCi/g	0.2847	N	269.5	1	1.215 IDENTIFIED	28.68	<input type="checkbox"/>





Total Uranium 3.3934 1.63E-06 ug/g 2.9222 N 0

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

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247323006	16-FEB-10 12:00	04-MAR-10 10:13	15.9	SAMPLE	LOAD	I	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>u</i>	1.925	0.1916	pCi/g	0.2227	N	911.1	3	1.514 IDENTIFIED	7.85	<input type="checkbox"/>
Annihilation Rad.	0.1479	0.03622	pCi/g	0.04575	N	510.8	1	1.902 IDENTIFIED	23.95	<input type="checkbox"/>
Bismuth-211 <i>INT</i>	4.344	0.3166	pCi/g	0.2955	Y	351.8	2	1.04 IDENTIFIED	5.044	<i>u</i> <input checked="" type="checkbox"/>
Bismuth-212 HE	2.253	0.513	pCi/g	1.255	N	0	4	0 FAIL_ABUND	0	<input type="checkbox"/>
Bismuth-214 <i>✓</i>	1.199	0.1133	pCi/g	0.107	0.200	609.2	2	1.49 IDENTIFIED	7.259	<input type="checkbox"/>
Cadmium-109 <i>INT</i>	3.932	0.4076	pCi/g	0.7606	Y	87.13	3	1.093 IDENTIFIED	8.88	<i>u</i> <input checked="" type="checkbox"/>
Cerium-143 <i>-</i>	755.8	140	pCi/g	0	N	0	4	0 SHORT_HLIF	0	<input type="checkbox"/>
Cesium-134 <i>u</i>	0.137	0.04398	pCi/g	0.09299	0.100	0	4	0 FAIL_ABUND	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Gross Gamma	10.46	1.275	pCi/g	3.655	N	0				<input type="checkbox"/>
Lead-210 <i>u</i>	1.332	0.3329	pCi/g	0.6004	N	46.57	1	0.9643 IDENTIFIED	24.47	<input type="checkbox"/>
Lead-212 <i>✓</i>	1.887	0.1208	pCi/g	0.08104	0.100	238.6	2	0.9626 IDENTIFIED	2.896	<input type="checkbox"/>
Lead-214 <i>✓</i>	1.577	0.1229	pCi/g	0.1075	0.100	351.8	2	1.04 IDENTIFIED	5.044	<input type="checkbox"/>
Neptunium-237 <i>u</i>	1.145	0.1689	pCi/g	0.2201	N	87.13	3	1.093 IDENTIFIED	8.88	<input type="checkbox"/>
Potassium-40 <i>✓</i>	33.81	1.73	pCi/g	0.5521	1.00	1461	1	1.977 IDENTIFIED	2.835	<input type="checkbox"/>
Radium-224 <i>INT</i>	4.427	0.5569	pCi/g	0.8696	Y	241.5	1	1.643 IDENTIFIED	11.43	<i>u</i> <input checked="" type="checkbox"/>
Radium-226 <i>✓</i>	1.199	0.1133	pCi/g	0.107	Y	609.2	2	1.49 IDENTIFIED	7.259	<input type="checkbox"/>
Radium-228 <i>✓</i>	1.925	0.1916	pCi/g	0.2227	0.500	911.1	3	1.514 IDENTIFIED	7.85	<input type="checkbox"/>
Technetium-99m	1.88E+17	0	pCi/g	0	N	0	4	0 SHORT_HLIF	0	<input type="checkbox"/>
Thallium-208 <i>✓</i>	0.569	0.05383	pCi/g	0.06043	0.080	583.1	1	1.302 IDENTIFIED	7.602	<input type="checkbox"/>
Thorium-228 <i>u</i>	1.887	0.1208	pCi/g	0.08104	N	238.6	2	0.9626 IDENTIFIED	2.896	<input type="checkbox"/>
Thorium-232 <i>u</i>	1.925	0.1916	pCi/g	0.2227	N	911.1	3	1.514 IDENTIFIED	7.85	<input type="checkbox"/>
Thorium-234 <i>✓</i>	1.568	0.3872	pCi/g	0.8026	2.00	63.19	2	0.73 IDENTIFIED	22.79	<input type="checkbox"/>
Tin-126 <i>u</i>	0.3839	0.03979	pCi/g	0.07411	N	87.13	3	1.093 IDENTIFIED	8.88	<input type="checkbox"/>
Total Uranium	4.6402	1.15E-06 ug/g	1.1963	N	0					<input type="checkbox"/>
Uranium-238 HE	1.568	0.3872	pCi/g	0.8026	N	63.19	2	0.73 IDENTIFIED	22.79	<input type="checkbox"/>

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247323007	16-FEB-10 12:00	04-MAR-10 10:50	16	SAMPLE	LOAD	I	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>u</i>	1.766	0.2121	pCi/g	0.2068	N	911.7	3	1.73 IDENTIFIED	10.43	<input type="checkbox"/>
Annihilation Rad.	0.1594	0.03752	pCi/g	0.04871	N	511.2	1	1.982 IDENTIFIED	23.15	<input type="checkbox"/>
Barium-137m HE	0.09274	0.0284	pCi/g	0.06628	N	662	2	1.752 IDENTIFIED	30.35	<input type="checkbox"/>
Bismuth-211 <i>INT</i>	4.068	0.312	pCi/g	0.3727	Y	352.2	2	1.297 IDENTIFIED	6.182	<i>u</i> <input checked="" type="checkbox"/>
Bismuth-212 HE	1.716	0.4469	pCi/g	1.209	N	0	5	0 FAIL_ABUND	0	<input type="checkbox"/>
Bismuth-214 <i>✓</i>	1.178	0.1139	pCi/g	0.1258	0.200	609.6	2	1.735 IDENTIFIED	8.306	<input type="checkbox"/>
Cadmium-109 <i>INT</i>	3.672	0.5229	pCi/g	1.516	Y	87.26	3	1.729 IDENTIFIED	13.45	<i>u</i> <input checked="" type="checkbox"/>
Cerium-143	501.9	133.1	pCi/g	0	N	0	5	0 SHORT_HLIF	0	<input type="checkbox"/>
Cesium-137 <i>✓</i>	0.09797	0.03	pCi/g	0.07002	0.100	662	2	1.752 IDENTIFIED	30.35	<input type="checkbox"/>
Gross Gamma	8.619	1.085	pCi/g	2.56	N	0				<input type="checkbox"/>
Lead-212 <i>✓</i>	1.495	0.09531	pCi/g	0.1001	0.100	239	2	1.178 IDENTIFIED	3.845	<input type="checkbox"/>



Lead-214	✓	1.476	0.1203	pCi/g	0.1356	0.100	352.2	2	1.297	IDENTIFIED	6.182	□
Neptunium-237	ML	1.07	0.1892	pCi/g	0.4238	N	87.26	3	1.729	IDENTIFIED	13.45	□
Potassium-40	✓	31.35	1.691	pCi/g	0.5894	1.00	1461	1	1.843	IDENTIFIED	3.056	□
Radium-224	INT	3.51	0.6891	pCi/g	1.073	Y	242	1	1.879	IDENTIFIED	19.1	□
Radium-226	✓	1.178	0.1139	pCi/g	0.1258	Y	609.6	2	1.735	IDENTIFIED	8.306	□
Radium-228	✓	1.766	0.2121	pCi/g	0.2068	0.500	911.7	3	1.73	IDENTIFIED	10.43	□
Sodium-24	HE	1.94E+05	9.45E+05	pCi/g	0	N	0	5	0	SHORT_HLIF	0	□
Strontium-85	LA	0.09828	0.02452	pCi/g	0.08221	Y	0	5	0	NOT_IDENTI	0	☑ UI Data rejected due to low abundance.
Technetium-99m		1.30E+17	0	pCi/g	0	N	0	5	0	SHORT_HLIF	0	□
Thallium-208	✓	0.5325	0.05251	pCi/g	0.05634	0.080	583.5	1	1.761	IDENTIFIED	8.755	□
Thorium-228	ML	1.495	0.09531	pCi/g	0.1001	N	239	2	1.178	IDENTIFIED	3.845	□
Thorium-232	ML	1.766	0.2121	pCi/g	0.2068	N	911.7	3	1.73	IDENTIFIED	10.43	□
Tin-126	ML	0.3585	0.05105	pCi/g	0.1567	N	87.26	3	1.729	IDENTIFIED	13.45	□
Total Uranium		4.6363	2.29E-06	ug/g	4.0447	N	0					□

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

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue	
247325001	16-FEB-10 12:00	04-MAR-10 10:14	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 ML	2.011	0.2066	pCi/g	0.2533	N	911.5	3	1.741	IDENTIFIED	8.461	☐
Annihilation Rad.	0.1921	0.03985	pCi/g	0.04363	N	511.1	1	2.131	IDENTIFIED	20.53	☐
Bismuth-211 INT	4.362	0.2628	pCi/g	0.3448	Y	351.8	2	1.505	IDENTIFIED	5.11	☑ U
Bismuth-212 HE	1.986	0.4577	pCi/g	1.196	N	0	7	0	FAIL_ABUND	0	☐
Bismuth-214 V	1.247	0.08912	pCi/g	0.1103	0.200	609.3	2	1.572	IDENTIFIED	5.946	☐
Cadmium-109 INT	1.882	0.5536	pCi/g	1.313	Y	86.62	3	0.9788	IDENTIFIED	29.09	☑ U
Cerium-143	1728	230.2	pCi/g	0	N	0	7	0	SHORT_HLIF	0	☐
Cesium-134 LA	0.1478	0.02896	pCi/g	0.08646	0.100	0	7	0	FAIL_ABUND	0	☑ UI Data rejected due to low abundance.
Gross Gamma	10.33	1.322	pCi/g	4.348	N	0					☐
Iodine-133 HE	1236	5543	pCi/g	0	N	0	7	0	SHORT_HLIF	0	☐
Lead-212 V	1.775	0.08642	pCi/g	0.09805	0.100	238.5	2	1.213	IDENTIFIED	3.234	☐
Lead-214 V	1.583	0.1049	pCi/g	0.1254	0.100	351.8	2	1.505	IDENTIFIED	5.11	☐
Neptunium-237 HE	0.5481	0.1712	pCi/g	0.4197	N	86.62	3	0.9788	IDENTIFIED	29.09	☐
Niobium-95m LA	0.4639	0.08371	pCi/g	0.2725	N	0	7	0	NOT_IDENTI	0	☐
Potassium-40 V	30.73	1.442	pCi/g	0.5391	1.00	1461	1	2.033	IDENTIFIED	2.856	☐
Radium-224 INT	5.636	0.7852	pCi/g	1.05	Y	241.6	1	2.176	IDENTIFIED	13.64	☑ U
Radium-226 V	1.247	0.08912	pCi/g	0.1103	Y	609.3	2	1.572	IDENTIFIED	5.946	☐
Radium-228 V	2.011	0.2066	pCi/g	0.2533	0.500	911.5	3	1.741	IDENTIFIED	8.461	☐
Sodium-24 HE	5.84E+05	8.29E+05	pCi/g	0	N	0	7	0	SHORT_HLIF	0	☐
Strontium-85 LA	0.1061	0.01993	pCi/g	0.07652	Y	0	7	0	NOT_IDENTI	0	☑ UI Data rejected due to low abundance.
Thallium-208 V	0.5457	0.04724	pCi/g	0.05316	0.080	583.2	1	1.385	IDENTIFIED	7.964	☐
Thorium-228 ML	1.775	0.08642	pCi/g	0.09805	N	238.5	2	1.213	IDENTIFIED	3.234	☐
Thorium-232 ML	2.011	0.2066	pCi/g	0.2533	N	911.5	3	1.741	IDENTIFIED	8.461	☐
Tin-126 HE	0.1837	0.05404	pCi/g	0.1484	N	86.62	3	0.9788	IDENTIFIED	29.09	☐

\*\*\* = 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
247337001	12-FEB-10 12:00	04-MAR-10 10:15	19.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>AL</i>	2.017	0.2123	pCi/g	0.2414	N	911.5	3	1.615	IDENTIFIED	8.622	<input type="checkbox"/>	
Annihilation Rad.	0.171	0.03252	pCi/g	0.04529	N	511	1	1.857	IDENTIFIED	18.79	<input type="checkbox"/>	
Bismuth-211 <i>JNT</i>	4.221	0.2649	pCi/g	0.3315	Y	351.8	2	1.592	IDENTIFIED	5.419	<input checked="" type="checkbox"/> <i>UT</i>	
Bismuth-212 <i>NW</i>	2.432	0.3629	pCi/g	0.858	N	727.5	1	1.3	IDENTIFIED	13.81	<input type="checkbox"/>	
Bismuth-214 <i>V</i>	1.283	0.1032	pCi/g	0.1132	0.200	609.2	2	1.559	IDENTIFIED	6.981	<input type="checkbox"/>	
Cadmium-109 <i>JNT</i>	2.443	0.4859	pCi/g	1.36	Y	87.27	3	1.092	IDENTIFIED	19.41	<input checked="" type="checkbox"/> <i>UT</i>	
Cadmium-115 HE	17.92	25.77	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cerium-143	14210	1900	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134 <i>LA</i>	0.09597	0.02607	pCi/g	0.09497	0.100	0	8	0	FAIL_ABUND	0	<input checked="" type="checkbox"/> UI	Data rejected due to low abundance.
Cesium-135 HE	0.3643	0.09041	pCi/g	0.2988	N	0	8	0	NOT_IDENTI	0	<input type="checkbox"/>	
Gross Gamma	10.68	1.36	pCi/g	4.181	N	0					<input type="checkbox"/>	
Iodine-135	4.74E+20	0	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Lead-212 <i>V</i>	1.864	0.08927	pCi/g	0.09577	0.100	238.5	2	1.356	IDENTIFIED	3.071	<input type="checkbox"/>	
Lead-214 <i>V</i>	1.532	0.105	pCi/g	0.1206	0.100	351.8	2	1.592	IDENTIFIED	5.419	<input type="checkbox"/>	
Neptunium-237 HE	0.7074	0.159	pCi/g	0.4336	N	87.27	3	1.092	IDENTIFIED	19.41	<input type="checkbox"/>	
Niobium-95m <i>LA</i>	0.9416	0.0937	pCi/g	0.3189	N	0	8	0	NOT_IDENTI	0	<input type="checkbox"/>	
Potassium-40 <i>V</i>	32.05	1.485	pCi/g	0.444	1.00	1461	1	2.046	IDENTIFIED	2.88	<input type="checkbox"/>	
Promethium-149 HE	350.4	215	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Radium-224 <i>JNT</i>	4.563	0.6048	pCi/g	1.026	Y	241.4	1	1.756	IDENTIFIED	12.94	<input checked="" type="checkbox"/> <i>UT</i>	
Radium-226 <i>V</i>	1.283	0.1032	pCi/g	0.1132	Y	609.2	2	1.559	IDENTIFIED	6.981	<input type="checkbox"/>	
Radium-228 <i>V</i>	2.017	0.2123	pCi/g	0.2414	0.500	911.5	3	1.615	IDENTIFIED	8.622	<input type="checkbox"/>	
Strontium-85 <i>LA</i>	0.08767	0.02166	pCi/g	0.07294	Y	0	8	0	NOT_IDENTI	0	<input checked="" type="checkbox"/> UI	Data rejected due to low abundance.
Thallium-208 <i>V</i>	0.621	0.04435	pCi/g	0.05581	0.080	583	1	1.587	IDENTIFIED	6.274	<input type="checkbox"/>	
Thorium-228 <i>AL</i>	1.864	0.08927	pCi/g	0.09577	N	238.5	2	1.356	IDENTIFIED	3.071	<input type="checkbox"/>	
Thorium-232 <i>UL</i>	2.017	0.2123	pCi/g	0.2414	N	911.5	3	1.615	IDENTIFIED	8.622	<input type="checkbox"/>	
Thorium-234 <i>V</i>	2.433	0.948	pCi/g	2.012	2.00	63.97	2	1.295	IDENTIFIED	37.95	<input type="checkbox"/>	
Tin-126 <i>NIL</i>	0.2371	0.04715	pCi/g	0.1325	N	87.27	3	1.092	IDENTIFIED	19.41	<input type="checkbox"/>	
Total Uranium	7.301	2.82E-06	ug/g	2.9958	N	0					<input type="checkbox"/>	
Uranium-238 HE	2.433	0.948	pCi/g	2.012	N	63.97	2	1.295	IDENTIFIED	37.95	<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
247337002	12-FEB-10 12:00	04-MAR-10 10:16	19.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>AL</i>	2.273	0.2388	pCi/g	0.3163	N	910.4	3	1.459	IDENTIFIED	8.729	<input type="checkbox"/>	
Annihilation Rad.	0.1951	0.03772	pCi/g	0.0568	N	510.4	1	1.711	IDENTIFIED	18.81	<input type="checkbox"/>	
Bismuth-211 <i>JNT</i>	4.022	0.3111	pCi/g	0.3888	Y	351.7	2	1.111	IDENTIFIED	6.172	<input checked="" type="checkbox"/> <i>UT</i>	
Bismuth-212 HE	1.637	0.6016	pCi/g	1.552	N	0	5	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214 <i>V</i>	1.431	0.1151	pCi/g	0.1377	0.200	608.8	2	1.146	IDENTIFIED	6.215	<input type="checkbox"/>	
Cadmium-109 <i>JNT</i>	4.402	0.5271	pCi/g	1.017	Y	87.26	3	1.295	IDENTIFIED	10.94	<input checked="" type="checkbox"/> <i>UT</i>	
Cerium-143	9150	1444	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-135 <i>AL</i>	0.7998	0.169	pCi/g	0.2642	N	269.5	1	1.375	IDENTIFIED	20.48	<input type="checkbox"/>	
Gross Gamma	10.97	1.433	pCi/g	3.972	N	0					<input type="checkbox"/>	
Iodine-135	7.49E+20	0	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Lead-210 HE	1.205	0.4134	pCi/g	0.8971	N	46.42	1	0.9123	IDENTIFIED	33.87	<input type="checkbox"/>	

Lead-212	✓	1.785	0.111	pCi/g 0.1078	0.100	238.5	2	1.021	IDENTIFIED	3.608	□
Lead-214	✓	1.46	0.1199	pCi/g 0.1409	0.100	351.7	2	1.111	IDENTIFIED	6.172	□
Neptunium-237	ML	1.275	0.2029	pCi/g 0.2932	N	87.26	3	1.295	IDENTIFIED	10.94	□
Potassium-40	✓	34.81	1.933	pCi/g 0.6323	1.00	1459	1	2.147	IDENTIFIED	3.336	□
Radium-224	INT	4.217	0.6541	pCi/g 1.156	Y	241.5	1	1.5	IDENTIFIED	14.84	□ ✓
Radium-226	✓	1.431	0.1151	pCi/g 0.1377	Y	608.8	2	1.146	IDENTIFIED	6.215	□
Radium-228	✓	2.273	0.2388	pCi/g 0.3163	0.500	910.4	3	1.459	IDENTIFIED	8.729	□
Sodium-24	HE	7.75E+07	1.04E+08	pCi/g 0	N	0	5	0	SHORT_HLIF	0	□
Technetium-99m		4.63E+21	0	pCi/g 0	N	0	5	0	SHORT_HLIF	0	□
Thallium-208	✓	0.6517	0.05873	pCi/g 0.06831	0.080	582.8	1	1.351	IDENTIFIED	7.674	□
Thorium-228	ML	1.785	0.111	pCi/g 0.1078	N	238.5	2	1.021	IDENTIFIED	3.608	□
Thorium-232	ML	2.273	0.2388	pCi/g 0.3163	N	910.4	3	1.459	IDENTIFIED	8.729	□
Thorium-234	✓	2.08	0.5438	pCi/g 1.139	2.00	63.36	2	1.048	IDENTIFIED	24.35	□
Tin-126	ML	0.4272	0.05115	pCi/g 0.09857	N	87.26	3	1.295	IDENTIFIED	10.94	□
Total Uranium		6.1967	1.62E-06	ug/g 1.6978	N	0					□
Uranium-238	HE	2.08	0.5438	pCi/g 1.139	N	63.36	2	1.048	IDENTIFIED	24.35	□

\*\*\* = 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
247337003	12-FEB-10 12:00	04-MAR-10 10:17	19.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment	
Actinium-228	ML	1.899	0.1727	pCi/g 0.1886	N	910.8	3	1.679	IDENTIFIED	6.065	□
Annihilation Rad.		0.1121	0.02823	pCi/g 0.03831	N	510.5	1	1.753	IDENTIFIED	24.96	□
Bismuth-211	INT	4.191	0.2216	pCi/g 0.299	Y	352	2	1.325	IDENTIFIED	4.202	□ ✓
Bismuth-212	LA	2.428	0.3587	pCi/g 0.9728	N	0	6	0	FAIL_ABUND	0	□
Bismuth-214	✓	1.187	0.0863	pCi/g 0.09397	0.200	609	2	1.687	IDENTIFIED	5.718	□
Cadmium-109	INT	3.339	0.5037	pCi/g 1.081	Y	87.43	3	1.17	IDENTIFIED	14.36	□ ✓
Cerium-143		9176	1318	pCi/g 0	N	0	6	0	SHORT_HLIF	0	□
Cesium-134	LA	0.1193	0.02802	pCi/g 0.07353	0.100	0	6	0	FAIL_ABUND	0	□ UI Data rejected due to low abundance.
Cesium-135	HE	0.28	0.07217	pCi/g 0.2358	N	0	6	0	NOT_IDENTI	0	□
Gross Gamma		10.87	1.299	pCi/g 2.586	N	0					□
Iodine-135		2.58E+20	0	pCi/g 0	N	0	6	0	SHORT_HLIF	0	□
Lead-212	✓	1.874	0.08405	pCi/g 0.07919	0.100	238.7	2	1.153	IDENTIFIED	2.667	□
Lead-214	✓	1.521	0.09073	pCi/g 0.1043	0.100	352	2	1.325	IDENTIFIED	4.202	□
Neptunium-237	ML	0.967	0.1776	pCi/g 0.3762	N	87.43	3	1.17	IDENTIFIED	14.36	□
Potassium-40	✓	34.02	1.491	pCi/g 0.4262	1.00	1460	1	2.315	IDENTIFIED	2.191	□
Promethium-149	HE	16.51	189.4	pCi/g 0	N	0	6	0	SHORT_HLIF	0	□
Radium-224	INT	4.354	0.5541	pCi/g 0.8476	Y	241.7	1	1.775	IDENTIFIED	12.42	□ ✓
Radium-226	✓	1.187	0.0863	pCi/g 0.09397	Y	609	2	1.687	IDENTIFIED	5.718	□
Radium-228	✓	1.899	0.1727	pCi/g 0.1886	0.500	910.8	3	1.679	IDENTIFIED	6.065	□
Thallium-208	✓	0.5528	0.03985	pCi/g 0.04704	0.080	582.9	1	1.424	IDENTIFIED	6.054	□
Thorium-228	ML	1.874	0.08405	pCi/g 0.07919	N	238.7	2	1.153	IDENTIFIED	2.667	□
Thorium-232	ML	1.899	0.1727	pCi/g 0.1886	N	910.8	3	1.679	IDENTIFIED	6.065	□
Tin-126	ML	0.3241	0.04888	pCi/g 0.1241	N	87.43	3	1.17	IDENTIFIED	14.36	□

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247337004	12-FEB-10 12:00	04-MAR-10 10:18	19.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>ML</i>	2.234	0.2437	pCi/g	0.3055	N	910.7	3	1.317	IDENTIFIED	9.21	<input type="checkbox"/>	
Annihilation Rad.	0.1238	0.04007	pCi/g	0.0542	N	510.3	1	1.17	IDENTIFIED	32.02	<input type="checkbox"/>	
Bismuth-211 <i>INT</i>	4.91	0.3427	pCi/g	0.3623	Y	351.7	2	1.119	IDENTIFIED	5.328	<input checked="" type="checkbox"/>	<i>UJ</i>
Bismuth-212 HE	2.939	0.7115	pCi/g	1.626	N	0	8	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214 <i>V</i>	1.578	0.1409	pCi/g	0.1351	0.200	609	2	1.129	IDENTIFIED	6.671	<input type="checkbox"/>	
Cadmium-109 <i>INT</i>	4.509	0.4347	pCi/g	0.8145	Y	87.22	3	1.024	IDENTIFIED	8.432	<input checked="" type="checkbox"/>	<i>UJ</i>
Cerium-143 <i>—</i>	5509	1142	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134 <i>LA</i>	0.2723	0.04698	pCi/g	0.1186	0.100	0	8	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Gross Gamma <i>—</i>	11.58	1.473	pCi/g	3.771	N	0					<input type="checkbox"/>	
Iodine-133 HE	15130	1.68E+05	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Iodine-135 <i>—</i>	6.24E+20	0	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Lead-210 HE	0.8566	0.3338	pCi/g	0.6707	N	46.69	1	0.554	IDENTIFIED	38.68	<input type="checkbox"/>	
Lead-212 <i>V</i>	2.16	0.1253	pCi/g	0.088	0.100	238.4	2	0.8808	IDENTIFIED	2.95	<input type="checkbox"/>	
Lead-214 <i>V</i>	1.782	0.1337	pCi/g	0.1319	0.100	351.7	2	1.119	IDENTIFIED	5.328	<input type="checkbox"/>	
Neptunium-237 <i>INT</i>	1.306	0.186	pCi/g	0.2339	N	87.22	3	1.024	IDENTIFIED	8.432	<input type="checkbox"/>	
Potassium-40 <i>V</i>	35.17	1.911	pCi/g	0.7056	1.00	1460	1	2.28	IDENTIFIED	3.363	<input type="checkbox"/>	
Promethium-149 HE	208	210.1	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Radium-224 <i>INT</i>	5.754	0.8019	pCi/g	0.9458	Y	241.5	1	1.862	IDENTIFIED	13.21	<input checked="" type="checkbox"/>	<i>UJ</i>
Radium-226 <i>V</i>	1.578	0.1409	pCi/g	0.1351	Y	609	2	1.129	IDENTIFIED	6.671	<input type="checkbox"/>	
Radium-228 <i>V</i>	2.234	0.2437	pCi/g	0.3055	0.500	910.7	3	1.317	IDENTIFIED	9.21	<input type="checkbox"/>	
Sodium-24 HE	2.81E+07	1.19E+08	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Technetium-99m	5.37E+21	0	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Thallium-208 <i>V</i>	0.6977	0.06803	pCi/g	0.06796	0.080	582.8	1	1.255	IDENTIFIED	8.092	<input type="checkbox"/>	
Thorium-228 <i>ML</i>	2.16	0.1253	pCi/g	0.088	N	238.4	2	0.8808	IDENTIFIED	2.95	<input type="checkbox"/>	
Thorium-232 <i>ML</i>	2.234	0.2437	pCi/g	0.3055	N	910.7	3	1.317	IDENTIFIED	9.21	<input type="checkbox"/>	
Thorium-234 <i>V</i>	1.642	0.4138	pCi/g	0.8996	2.00	63.32	2	0.8006	IDENTIFIED	23.54	<input type="checkbox"/>	
Tin-126 <i>ML</i>	0.4376	0.04219	pCi/g	0.0787	N	87.22	3	1.024	IDENTIFIED	8.432	<input type="checkbox"/>	
Total Uranium	4.9601	1.23E-06	ug/g	1.3409	N	0					<input type="checkbox"/>	
Uranium-238 HE	1.642	0.4138	pCi/g	0.8996	N	63.32	2	0.8006	IDENTIFIED	23.54	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project	Quals	Zero?	queue
247337005	12-FEB-10 12:00	04-MAR-10 10:19	19.9	SAMPLE	LOAD	1	LANL	LANL01004GEL		N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>ML</i>	2.217	0.2133	pCi/g	0.214	N	911.5	3	1.348	IDENTIFIED	7.286	<input type="checkbox"/>	
Annihilation Rad.	0.1221	0.0294	pCi/g	0.04417	N	510.9	1	1.466	IDENTIFIED	23.62	<input type="checkbox"/>	
Bismuth-211 <i>INT</i>	4.641	0.3072	pCi/g	0.3243	Y	352	2	1.271	IDENTIFIED	4.574	<input checked="" type="checkbox"/>	<i>UJ</i>
Bismuth-212 <i>LA</i>	2.806	0.5451	pCi/g	1.236	N	0	9	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214 <i>V</i>	1.433	0.1122	pCi/g	0.09848	0.200	609.5	2	1.302	IDENTIFIED	5.487	<input type="checkbox"/>	
Cadmium-109 <i>INT</i>	5.345	0.7432	pCi/g	1.17	Y	86.57	3	1.199	IDENTIFIED	13.11	<input checked="" type="checkbox"/>	<i>UJ</i>
Cadmium-115 HE	1.185	22.63	pCi/g	0	N	0	9	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cerium-143 <i>—</i>	7045	1193	pCi/g	0	N	0	9	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134 <i>LA</i>	0.1097	0.03312	pCi/g	0.09131	0.100	0	9	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Gross Gamma <i>—</i>	11.02	1.412	pCi/g	3.941	N	0					<input type="checkbox"/>	
Iodine-133 HE	1.06E+05	1.29E+05	pCi/g	0	N	0	9	0	SHORT_HLIF	0	<input type="checkbox"/>	

Iodine-135		2.56E+20	0	pCi/g	0	N	0	9	0	SHORT_HLIF	0		
Lead-212	✓	1.961	0.1193	pCi/g	0.08703	0.100	238.7	2	1.115	IDENTIFIED	2.911		
Lead-214	✓	1.685	0.1208	pCi/g	0.1125	0.100	352	2	1.271	IDENTIFIED	4.574		
Neptunium-237	ML	1.548	0.2695	pCi/g	0.345	N	86.57	3	1.199	IDENTIFIED	13.11		
Potassium-40	✓	33.13	1.686	pCi/g	0.496	1.00	1461	1	1.814	IDENTIFIED	2.626		
Promethium-149 HE		119.2	188.1	pCi/g	0	N	0	9	0	SHORT_HLIF	0		
Radium-224	JNT	5.11	0.7222	pCi/g	0.9325	Y	241.6	1	1.973	IDENTIFIED	13.28	✓	U±
Radium-226	✓	1.433	0.1122	pCi/g	0.09848	Y	609.5	2	1.302	IDENTIFIED	5.487		
Radium-228	✓	2.217	0.2133	pCi/g	0.214	0.500	911.5	3	1.348	IDENTIFIED	7.286		
Sodium-24	HE	1.95E+07	6.49E+07	pCi/g	0	N	0	9	0	SHORT_HLIF	0		
Strontium-85	LA	0.06844	0.0202	pCi/g	0.06693	Y	0	9	0	NOT_IDENTI	0	☒	UI Data rejected due to low abundance.
Thallium-208	✓	0.6159	0.05221	pCi/g	0.05337	0.080	583.5	1	1.446	IDENTIFIED	6.744		
Thorium-228	ML	1.961	0.1193	pCi/g	0.08703	N	238.7	2	1.115	IDENTIFIED	2.911		
Thorium-232	ML	2.217	0.2133	pCi/g	0.214	N	911.5	3	1.348	IDENTIFIED	7.286		
Thorium-234	✓	2.363	0.7912	pCi/g	1.66	2.00	63.56	2	0.9089	IDENTIFIED	32.28		
Tin-126	ML	0.5187	0.07212	pCi/g	0.1138	N	86.57	3	1.199	IDENTIFIED	13.11		
Total Uranium		7.0249	2.35E-06	ug/g	2.4721	N		0					
Uranium-238	HE	2.363	0.7912	pCi/g	1.66	N	63.56	2	0.9089	IDENTIFIED	32.28		

\*\*\* = 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	
247337006	12-FEB-10 12:00	04-MAR-10 10:46	19.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP	
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228 ML	2.181	0.2222	pCi/g	0.262	N	911.5	3	1.557	IDENTIFIED	8.206	
Annihilation Rad. HE	0.1036	0.03781	pCi/g	0.05853	N	511.1	1	1.613	IDENTIFIED	36.26	
Bismuth-211 JNT	4.294	0.3358	pCi/g	0.439	Y	352.1	2	1.226	IDENTIFIED	6.259	✓
Bismuth-212 LA	3.397	0.5715	pCi/g	1.628	N	0	6	0	FAIL_ABUND	0	
Bismuth-214 V	1.338	0.1124	pCi/g	0.1275	0.200	609.5	2	1.48	IDENTIFIED	6.779	
Cadmium-109 JNT	4.27	1.01	pCi/g	1.56	Y	88.58	2	3.452	IDENTIFIED	23	☒ UI Data rejected due to high peak-width.
Cadmium-115 HE	56.27	31.24	pCi/g	0	N	0	6	0	SHORT_HLIF	0	☒
Cerium-143	6301	1287	pCi/g	0	N	0	6	0	SHORT_HLIF	0	
Gross Gamma	10.58	1.433	pCi/g	3.564	N	0					
Iodine-133 HE	95230	1.73E+05	pCi/g	0	N	0	6	0	SHORT_HLIF	0	
Lead-212 ✓	1.94	0.1212	pCi/g	0.1139	0.100	238.8	2	1.141	IDENTIFIED	3.56	
Lead-214 ✓	1.558	0.1292	pCi/g	0.1531	0.100	352.1	2	1.226	IDENTIFIED	6.259	
Neptunium-237 HE	0.8141	0.1885	pCi/g	0.5468	N	0	6	0	NOT_IDENTI	0	
Potassium-40 ✓	34.61	1.965	pCi/g	0.6809	1.00	1461	1	2.087	IDENTIFIED	3.165	
Promethium-149 HE	216.4	242.2	pCi/g	0	N	0	6	0	SHORT_HLIF	0	
Radium-224 JNT	5.16	0.6941	pCi/g	1.222	Y	241.7	1	1.565	IDENTIFIED	12.64	✓
Radium-226 ✓	1.338	0.1124	pCi/g	0.1275	Y	609.5	2	1.48	IDENTIFIED	6.779	
Radium-228 ✓	2.181	0.2222	pCi/g	0.262	0.500	911.5	3	1.557	IDENTIFIED	8.206	
Thallium-208 ✓	0.5506	0.04873	pCi/g	0.06918	0.080	583.4	1	1.236	IDENTIFIED	7.583	
Thorium-228 ML	1.94	0.1212	pCi/g	0.1139	N	238.8	2	1.141	IDENTIFIED	3.56	
Thorium-232 ML	2.181	0.2222	pCi/g	0.262	N	911.5	3	1.557	IDENTIFIED	8.206	
Tin-126 ML	0.4143	0.098	pCi/g	0.1522	N	88.58	2	3.452	IDENTIFIED	23	
Total Uranium	7.4543	3.45E-06	ug/g	4.0502	N	0					

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

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247337007	12-FEB-10 12:00	04-MAR-10 12:40	20	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy	*** FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>u</i>	1.993	0.184	pCi/g	0.2183	N	911.2 3	1.51	IDENTIFIED 6.929	<input type="checkbox"/>	
Annihilation Rad.	0.1296	0.03137	pCi/g	0.03958	N	510.9 1	1.631	IDENTIFIED 23.74	<input type="checkbox"/>	
Bismuth-211 <i>INT</i>	4.264	0.3009	pCi/g	0.2992	Y	351.8 2	1.09	IDENTIFIED 4.476	<input checked="" type="checkbox"/>	<i>u</i>
Bismuth-212 <i>u</i>	1.93	0.3947	pCi/g	1.126	N	0 5 0		FAIL_ABUND 0	<input type="checkbox"/>	
Bismuth-214 <i>V</i>	1.292	0.1027	pCi/g	0.1046	0.200	609.3 2	1.147	IDENTIFIED 5.913	<input type="checkbox"/>	
Cadmium-109 <i>INT</i>	4.058	0.5289	pCi/g	1.086	Y	87.19 3	1.255	IDENTIFIED 12.13	<input checked="" type="checkbox"/>	<i>u</i>
Cerium-143	4974	1064	pCi/g	0	N	0 5 0		SHORT_HLIF 0	<input type="checkbox"/>	
Cesium-134 <i>u</i>	0.181	0.03143	pCi/g	0.09348	0.100	0 5 0		FAIL_ABUND 0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Cesium-135 HE	0.4388	0.1221	pCi/g	0.2133	N	269.7 1	2.122	IDENTIFIED 27.08	<input type="checkbox"/>	
Gross Gamma	10.45	1.265	pCi/g	3.088	N	0			<input type="checkbox"/>	
Iodine-133 HE	17430	1.38E+05	pCi/g	0	N	0 5 0		SHORT_HLIF 0	<input type="checkbox"/>	
Lead-212 <i>V</i>	1.962	0.1288	pCi/g	0.08081	0.100	238.6 2	0.9784	IDENTIFIED 2.804	<input type="checkbox"/>	
Lead-214 <i>V</i>	1.548	0.1173	pCi/g	0.1059	0.100	351.8 2	1.09	IDENTIFIED 4.476	<input type="checkbox"/>	
Neptunium-237 <i>u</i>	1.175	0.1965	pCi/g	0.3195	N	87.19 3	1.255	IDENTIFIED 12.13	<input type="checkbox"/>	
Potassium-40 <i>V</i>	33.79	1.712	pCi/g	0.4504	1.00	1461 1	1.786	IDENTIFIED 2.52	<input type="checkbox"/>	
Radium-224 <i>INT</i>	4.703	0.6368	pCi/g	0.8661	Y	241.6 1	1.736	IDENTIFIED 12.37	<input checked="" type="checkbox"/>	<i>u</i>
Radium-226 <i>V</i>	1.292	0.1027	pCi/g	0.1046	Y	609.3 2	1.147	IDENTIFIED 5.913	<input type="checkbox"/>	
Radium-228 <i>V</i>	1.993	0.184	pCi/g	0.2183	0.500	911.2 3	1.51	IDENTIFIED 6.929	<input type="checkbox"/>	
Sodium-24 HE	1.94E+07	6.61E+07	pCi/g	0	N	0 5 0		SHORT_HLIF 0	<input type="checkbox"/>	
Thallium-208 <i>V</i>	0.5891	0.04674	pCi/g	0.0523	0.080	583.2 1	1.258	IDENTIFIED 6.2	<input type="checkbox"/>	
Thorium-228 <i>u</i>	1.962	0.1288	pCi/g	0.08081	N	238.6 2	0.9784	IDENTIFIED 2.804	<input type="checkbox"/>	
Thorium-232 <i>u</i>	1.993	0.184	pCi/g	0.2183	N	911.2 3	1.51	IDENTIFIED 6.929	<input type="checkbox"/>	
Thorium-234 <i>V</i>	2.597	0.8718	pCi/g	1.818	2.00	63.07 2	0.678	IDENTIFIED 32.37	<input type="checkbox"/>	
Tin-126 <i>u</i>	0.3938	0.05132	pCi/g	0.1058	N	87.19 3	1.255	IDENTIFIED 12.13	<input type="checkbox"/>	
Total Uranium	7.8253	2.59E-06	ug/g	2.7071	N	0			<input type="checkbox"/>	
Uranium-238 HE	2.597	0.8718	pCi/g	1.818	N	63.07 2	0.678	IDENTIFIED 32.37	<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
247360001	12-FEB-10 12:00	04-MAR-10 12:41	20	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy	*** FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 <i>u</i>	1.631	0.2183	pCi/g	0.2753	N	911.4 3	2.008	IDENTIFIED 11.54	<input type="checkbox"/>	
Annihilation Rad. HE	0.1511	0.04943	pCi/g	0.05797	N	510.9 1	1.793	IDENTIFIED 32.33	<input type="checkbox"/>	
Barium-137m <i>u</i>	1.173	0.08648	pCi/g	0.06863	N	661.7 2	1.859	IDENTIFIED 5.156	<input type="checkbox"/>	
Bismuth-211 <i>INT</i>	4.557	0.3758	pCi/g	0.4014	Y	351.9 2	1.427	IDENTIFIED 5.846	<input checked="" type="checkbox"/>	<i>u</i>
Bismuth-212 HE	1.616	0.4873	pCi/g	1.217	N	0 8 0		FAIL_ABUND 0	<input type="checkbox"/>	
Bismuth-214 <i>V</i>	1.309	0.1296	pCi/g	0.1465	0.200	609.4 2	1.581	IDENTIFIED 8.002	<input type="checkbox"/>	
Cadmium-109 <i>INT</i>	2.857	0.5753	pCi/g	1.781	Y	87.05 3	1.084	IDENTIFIED 19.58	<input checked="" type="checkbox"/>	<i>u</i>
Cadmium-115 HE	35.4	34.95	pCi/g	0	N	0 8 0		SHORT_HLIF 0	<input type="checkbox"/>	
Cerium-143	9089	1707	pCi/g	0	N	0 8 0		SHORT_HLIF 0	<input type="checkbox"/>	
Cesium-134 <i>u</i>	0.1095	0.03008	pCi/g	0.1051	0.100	0 8 0		NOT_IDENTI 0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Cesium-137 <i>V</i>	1.239	0.09142	pCi/g	0.0725	0.100	661.7 2	1.859	IDENTIFIED 5.156	<input type="checkbox"/>	
Gross Gamma	9.77	1.283	pCi/g	2.45	N	0			<input type="checkbox"/>	







Lead-214	✓	1.557	0.1047	pCi/g 0.1139	0.100	351.8	2	1.327	IDENTIFIED	5.254	□
Neptunium-237 HE		0.7413	0.1798	pCi/g 0.4098	N	87.29	3	1.433	IDENTIFIED	21.44	□
Niobium-95m	LA	0.858	0.08757	pCi/g 0.3014	N	0	8	0	NOT_IDENTI	0	□
Potassium-40	✓	24.67	1.21	pCi/g 0.6036	1.00	1461	1	1.869	IDENTIFIED	3.295	□
Promethium-149 HE		150.2	205.1	pCi/g 0	N	0	8	0	SHORT_HLIF	0	□
Radium-224	INT	4.33	0.5829	pCi/g 0.9919	Y	241.6	1	1.874	IDENTIFIED	13.15	✓ UZ
Radium-226	✓	1.356	0.09729	pCi/g 0.1135	Y	609.2	2	1.717	IDENTIFIED	5.965	□
Radium-228	✓	1.723	0.181	pCi/g 0.2265	0.500	911.4	3	1.458	IDENTIFIED	8.594	□
Sodium-24 HE		1.63E+08	8.74E+07	pCi/g 0	N	0	8	0	SHORT_HLIF	0	□
Thallium-208	✓	0.4962	0.04162	pCi/g 0.05513	0.080	583	1	1.766	IDENTIFIED	7.663	□
Thorium-228	MM	1.696	0.08308	pCi/g 0.0926	N	238.5	2	1.364	IDENTIFIED	3.243	□
Thorium-232	MM	1.723	0.181	pCi/g 0.2265	N	911.4	3	1.458	IDENTIFIED	8.594	□
Tin-126	MM	0.2484	0.05435	pCi/g 0.1228	N	87.29	3	1.433	IDENTIFIED	21.44	□
Total Uranium		5.6138	2.49E-06	ug/g 2.8248	N	0					□

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

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
1202047453		04-MAR-10 12:46	0	MB	LOAD	1		GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Iodine-133 HE	43.91	53.31	pCi/g 0	N	0	4	0	SHORT_HLIF	0	□	
Iodine-135 HE	4.64E+09	2.13E+10	pCi/g 0	N	0	4	0	SHORT_HLIF	0	□	
Sodium-24 HE	153.8	1306	pCi/g 0	N	0	4	0	SHORT_HLIF	0	□	
Technetium-99m HE	2.71E+10	2.52E+10	pCi/g 0	N	0	4	0	SHORT_HLIF	0	□	

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

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
1202047454	12-FEB-10 12:00	04-MAR-10 16:10	20.2	DUP	LOAD	1		LANL01004IGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228	✓	1.494	0.2201	pCi/g 0.3402	N	913	3	1.465	IDENTIFIED	13.31	□
Annihilation Rad. HE		0.1201	0.05583	pCi/g 0.06002	N	512.1	2	1.864	IDENTIFIED	46.38	□
Barium-137m	MM	1.173	0.06782	pCi/g 0.07532	N	662.8	2	1.501	IDENTIFIED	5.223	□
Bismuth-211	INT	3.948	0.2858	pCi/g 0.4168	Y	352.4	2	1.327	IDENTIFIED	6.252	✓ UZ
Bismuth-212 HE		2.137	0.5812	pCi/g 1.347	N	0	4	0	FAIL_ABUND	0	□
Bismuth-214	✓	1.476	0.1215	pCi/g 0.1433	0.200	610.2	2	1.782	IDENTIFIED	7.286	□
Cadmium-109	LA	2.92	0.6443	pCi/g 2.151	Y	0	4	0	NOT_IDENTI	0	☑ UI Data rejected due to low abundance.
Cerium-143	-	17550	2958	pCi/g 0	N	0	4	0	SHORT_HLIF	0	□
Cesium-137	✓	1.239	0.07172	pCi/g 0.07957	0.100	662.8	2	1.501	IDENTIFIED	5.223	□
Gross Gamma	-	9.797	1.448	pCi/g 3.483	N	0					□
Lead-212	✓	1.82	0.1037	pCi/g 0.1185	0.100	238.8	2	1.27	IDENTIFIED	4.226	□
Lead-214	✓	1.433	0.111	pCi/g 0.1514	0.100	352.4	2	1.327	IDENTIFIED	6.252	□
Potassium-40	✓	25.79	1.527	pCi/g 0.579	1.00	1463	1	2.368	IDENTIFIED	4.068	□
Radium-224	INT	4.403	0.7276	pCi/g 1.27	Y	241.9	1	1.616	IDENTIFIED	16.24	✓ UZ
Radium-226	✓	1.476	0.1215	pCi/g 0.1433	Y	610.2	2	1.782	IDENTIFIED	7.286	□
Radium-228	✓	1.494	0.2201	pCi/g 0.3402	0.500	913	3	1.465	IDENTIFIED	13.31	□
Strontium-85	INT	0.1553	0.07219	pCi/g 0.07803	Y	512.1	2	1.864	IDENTIFIED	46.38	✓ UZ
Thallium-208	✓	0.4572	0.05027	pCi/g 0.07651	0.080	584.1	1	1.38	IDENTIFIED	10.47	□
Thorium-228	MM	1.82	0.1037	pCi/g 0.1185	N	238.8	2	1.27	IDENTIFIED	4.226	□
Thorium-232	MM	1.494	0.2201	pCi/g 0.3402	N	913	3	1.465	IDENTIFIED	13.31	□

Thorium-234	✓	4.006	1.589	pCi/g	3.87	2.00	63.17	2	1.682	IDENTIFIED	38.38	□
Tin-126	HE	0.2806	0.06278	pCi/g	0.2096	N	0	4	0	FAIL_ABUND	0	□
Total Uranium		12.027	4.73E-06	ug/g	5.7608	N		0				□
Uranium-238	HE	4.006	1.589	pCi/g	3.87	N	63.17	2	1.682	IDENTIFIED	38.38	□

\*\*\* = 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
1202047455		04-MAR-10 12:48	0	LCS	LOAD	1		GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228	1.479	0.2335	pCi/g	0.4217	N	910.4	3	2.26	IDENTIFIED	14.26	□
Americium-241 ✓	13.33	0.6419	pCi/g	0.5724	0.200	59.68	1	0.9743	IDENTIFIED	2.436	□
Barium-137m	5.309	0.2276	pCi/g	0.0827	N	661.3	2	1.649	IDENTIFIED	1.966	□
Bismuth-211	2.54	0.2974	pCi/g	0.4975	Y	351.9	2	1.184	IDENTIFIED	11.26	□
Bismuth-212 HE	1.68	0.5188	pCi/g	1.448	N	0	7	0	FAIL_ABUND	0	□
Bismuth-214	0.7374	0.1072	pCi/g	0.1605	0.200	609	2	1.424	IDENTIFIED	13.83	□
Cadmium-109	34.27	1.906	pCi/g	1.933	Y	88.12	2	1.1	IDENTIFIED	3.103	□
Cerium-143 HE	38.08	11.44	pCi/g	35.34	N	0	7	0	NOT_IDENTI	0	□
Cesium-137 ✓	5.608	0.2409	pCi/g	0.08737	0.100	661.3	2	1.649	IDENTIFIED	1.966	□
Cobalt-57	0.1997	0.03223	pCi/g	0.06077	N	122.2	1	1.099	IDENTIFIED	15.87	□
Cobalt-60 ✓	6.449	0.2772	pCi/g	0.0673	0.100	1332	1	2.168	IDENTIFIED	2.062	□
Gross Gamma	26.89	2.657	pCi/g	2.714	N		0				□
Iodine-133 HE	80.7	109.1	pCi/g	0	N	0	7	0	SHORT_HLIF	0	□
Iodine-135 HE	3.56E+10	2.82E+10	pCi/g	0	N	0	7	0	SHORT_HLIF	0	□
Lead-212	1.288	0.08552	pCi/g	0.1576	0.100	238.6	2	1.203	IDENTIFIED	5.577	□
Lead-214	0.922	0.1109	pCi/g	0.1809	0.100	351.9	2	1.184	IDENTIFIED	11.26	□
Neptunium-237	3.806	0.5049	pCi/g	1.012	N	0	7	0	NOT_IDENTI	0	□
Potassium-40	1.13	0.2486	pCi/g	0.9874	1.00	0	7	0	NOT_IDENTI	0	□
Radium-224	2.05	0.5932	pCi/g	1.659	Y	241.7	1	2.011	IDENTIFIED	28.8	□
Radium-226	0.7374	0.1072	pCi/g	0.1605	Y	609	2	1.424	IDENTIFIED	13.83	□
Radium-228	1.479	0.2335	pCi/g	0.4217	0.500	910.4	3	2.26	IDENTIFIED	14.26	□
Silver-110m	0.7506	0.05167	pCi/g	0.1774	N	0	7	0	NOT_IDENTI	0	□
Thallium-208	0.4211	0.05687	pCi/g	0.0866	0.080	583.1	1	1.82	IDENTIFIED	12.93	□
Thorium-228	1.288	0.08552	pCi/g	0.1576	N	238.6	2	1.203	IDENTIFIED	5.577	□
Thorium-232	1.479	0.2335	pCi/g	0.4217	N	910.4	3	2.26	IDENTIFIED	14.26	□
Tin-126	3.373	0.1876	pCi/g	0.1915	N	88.12	2	1.1	IDENTIFIED	3.103	□

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

# Result Greater Than DL

Batch Id	Sample Id	Sample Type	Run Date	Parmname	Result	Uncertainty	Units	DL	RDL
955027	247360004	SAMPLE	04-MAR-10	Bismuth-211	4.29	0.2632	pCi/g	0.1567	Y
				Bismuth-214	1.356	0.09729	pCi/g	0.05679	0.200
				Cadmium-109	2.56	0.5602	pCi/g	0.6312	Y
				Cadmium-115	6.804	22.19	pCi/g	0	N
				Cerium-143	13220	1845	pCi/g	0	N
				Cesium-134	0.08932	0.02664	pCi/g	0.04543	0.100
				Gross Gamma	9.519	1.402	pCi/g	2.55	N
				Iodine-135	2.87E+20	0	pCi/g	0	N
				Lead-212	1.696	0.08308	pCi/g	0.04633	0.100
				Lead-214	1.557	0.1047	pCi/g	0.05699	0.100
				Mercury-203	0.03635	0.0226	pCi/g	0.03538	0.100
				Potassium-40	24.67	1.21	pCi/g	0.302	1.00
				Promethium-149	150.2	205.1	pCi/g	0	N
				Protactinium-234m	7.328	4.002	pCi/g	4.402	N
				Radium-224	4.33	0.5829	pCi/g	0.4962	Y
				Radium-226	1.356	0.09729	pCi/g	0.05679	Y
				Radium-228	1.723	0.181	pCi/g	0.1133	0.500
				Sodium-24	1.63E+08	8.74E+07	pCi/g	0	N
				Thallium-208	0.4962	0.04162	pCi/g	0.02758	0.080
				Thorium-234	1.851	0.8362	pCi/g	0.9491	2.00
				Uranium-235	0.2337	0.1073	pCi/g	0.1803	0.500
				Yttrium-88	0.03845	0.01636	pCi/g	0.03221	0.100
955027	1202047453	MB	04-MAR-10	Iodine-133	43.91	53.31	pCi/g	0	N
				Iodine-135	4.64E+09	2.13E+10	pCi/g	0	N
				Mercury-203	0.02451	0.009	pCi/g	0.01791	0.100
				Sodium-24	153.8	1306	pCi/g	0	N
				Technetium-99m	2.71E+10	2.52E+10	pCi/g	0	N
				Yttrium-88	0.03184	0.01466	pCi/g	0.03068	0.100
955027	1202047454	DUP	04-MAR-10	Americium-241	0.2621	0.1631	pCi/g	0.2458	0.200
				Bismuth-211	3.948	0.2858	pCi/g	0.2085	Y
				Bismuth-214	1.476	0.1215	pCi/g	0.07171	0.200
				Cadmium-109	2.92	0.6443	pCi/g	1.076	Y
				Cerium-143	17550	2958	pCi/g	0	N
				Cesium-134	0.09746	0.03104	pCi/g	0.0572	0.100
				Cesium-137	1.239	0.07172	pCi/g	0.03981	0.100
				Gross Gamma	9.797	1.448	pCi/g	1.679	N
				Lead-212	1.82	0.1037	pCi/g	0.05927	0.100

VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 12:16:49.06

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337001.CNF;1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:15:41.
Sample ID        : G247337001 Sample quantity : 1.34580E+02 GRAM
Detector name    : GAM14 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.65 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity : 5.00000
Batch ID        : 955027 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	63.97*	153	831	1.30	127.50	121	11	2.12E-02	38.0	
2	1	74.87*	645	712	1.54	149.28	142	19	8.96E-02	8.9	3.76E+00
3	1	77.15	1009	661	1.46	153.83	142	19	1.40E-01	6.0	
4	4	87.27*	222	644	1.09	174.05	169	23	3.08E-02	19.4	4.49E+00
5	4	89.99	141	724	1.53	179.48	169	23	1.96E-02	35.6	
6	4	92.74*	471	527	1.41	184.98	169	23	6.54E-02	10.6	
7	0	185.80*	299	521	1.45	370.91	364	14	4.15E-02	17.5	
8	0	209.17	170	301	1.40	417.61	413	9	2.36E-02	19.9	
9	3	238.49*	1623	262	1.36	476.21	469	21	2.25E-01	3.1	1.11E+00
10	3	241.43	370	312	1.76	482.07	469	21	5.14E-02	12.9	
11	0	270.17	126	335	1.47	539.52	532	13	1.75E-02	31.2	
12	0	294.79	540	270	1.44	588.71	581	14	7.51E-02	7.8	
13	0	300.33	157	233	1.81	599.79	595	13	2.19E-02	21.8	
14	0	327.97	131	195	1.82	655.03	647	12	1.82E-02	23.0	
15	0	338.16	368	151	1.40	675.40	670	11	5.11E-02	8.3	
16	0	351.82*	817	220	1.59	702.69	696	16	1.13E-01	5.4	
17	0	463.12	87	126	1.48	925.15	919	11	1.21E-02	27.1	
18	0	511.03*	189	149	1.86	1020.91	1013	18	2.63E-02	18.8	
19	0	569.74*	201	197	2.52	1138.29	1129	21	2.79E-02	19.2	
20	0	583.04*	522	100	1.59	1164.88	1157	16	7.25E-02	6.3	
21	0	609.23*	556	170	1.56	1217.24	1209	17	7.72E-02	7.0	
22	0	727.52	132	56	1.30	1453.73	1449	10	1.83E-02	13.8	
23	0	786.39	34	65	1.35	1571.46	1564	10	4.78E-03	47.0	
24	0	860.57	78	61	1.57	1719.80	1712	13	1.09E-02	23.6	
25	0	911.48	344	102	1.62	1821.61	1813	17	4.78E-02	8.6	
26	2	964.86	78	49	2.29	1928.37	1919	35	1.08E-02	25.3	1.19E+00
27	2	969.22*	215	54	1.99	1937.09	1919	35	2.99E-02	9.8	
28	0	1120.47	136	52	1.79	2239.62	2232	14	1.89E-02	14.2	
29	0	1377.84	65	26	1.97	2754.55	2748	13	9.03E-03	20.4	
30	0	1461.11*	1483	49	2.05	2921.21	2910	22	2.06E-01	2.9	
31	0	1588.61	17	28	2.26	3176.39	3171	12	2.42E-03	64.3	
32	0	1765.25*	101	14	1.84	3529.98	3521	19	1.41E-02	13.7	

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

## VMS Nuclide Identification Report V3.1 Generated 4-MAR-2010 12:16:52

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337001.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:15:41
Sample ID         : G247337001 Sample quantity : 134.58 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA14 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:01.65 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	*	3.205E+01	2.970E+00	4.430E-01	3.217E-02	72.340
CD-109	+	88.03	*	2.443E+00	9.717E-01	1.291E+00	1.129E-01	1.893
SN-126	+	64.28		9.379E-01	7.243E-01	6.990E-01	9.961E-02	1.342
	+	86.94		9.856E-01	5.591E-01	5.250E-01	2.171E-01	1.877
	+	87.57	*	2.371E-01	9.430E-02	1.257E-01	1.094E-02	1.886
TL-208		277.37		2.766E-01	3.982E-01	6.648E-01	7.180E-02	0.416
	+	583.19	*	6.210E-01	8.870E-02	5.476E-02	3.737E-03	11.341
	+	860.56		8.973E-01	4.314E-01	4.658E-01	4.382E-02	1.926
BI-211		72.87		1.335E+01	3.862E+00	5.933E+00	4.372E-01	2.250
	+	351.06	*	4.221E+00	5.298E-01	3.223E-01	2.043E-02	13.095
BI-212	+	727.33	*	2.432E+00	7.259E-01	8.452E-01	9.542E-02	2.878
	+	785.37		4.130E+00	3.896E+00	5.083E+00	3.887E-01	0.813
		1620.50		1.091E+00	2.105E+00	3.706E+00	2.428E-01	0.294
PB-212	+	74.82		2.875E+00	6.240E-01	5.614E-01	6.901E-02	5.121
	+	77.11		2.608E+00	3.717E-01	3.259E-01	2.510E-02	8.001
	+	238.63	*	1.864E+00	1.785E-01	9.246E-02	6.794E-03	20.163
	+	300.09		2.823E+00	1.255E+00	1.182E+00	9.945E-02	2.387
BI-214	+	609.32	*	1.283E+00	2.063E-01	1.111E-01	8.862E-03	11.547
	+	1120.29		1.671E+00	4.982E-01	4.837E-01	4.509E-02	3.456
	+	1764.49		1.745E+00	4.907E-01	2.863E-01	1.717E-02	6.094
PB-214	+	74.82		5.095E+00	1.068E+00	9.950E-01	1.087E-01	5.121
	+	77.11		4.597E+00	7.571E-01	5.745E-01	6.483E-02	8.001
	+	242.00		2.581E+00	7.003E-01	5.619E-01	4.587E-02	4.592
	+	295.22		1.711E+00	3.053E-01	2.015E-01	1.762E-02	8.493
	+	351.93	*	1.532E+00	2.100E-01	1.172E-01	9.845E-03	13.068
RA-224	+	240.99	*	4.563E+00	1.210E+00	9.905E-01	5.694E-02	4.607
RA-226	+	609.32	*	1.283E+00	2.063E-01	1.111E-01	8.862E-03	11.547
	+	1120.29		1.671E+00	4.982E-01	4.837E-01	4.509E-02	3.456
	+	1764.49		1.745E+00	4.907E-01	2.863E-01	1.717E-02	6.094
AC-228	+	338.32		2.113E+00	9.395E-01	3.776E-01	1.556E-01	5.595
	+	911.20	*	2.017E+00	4.247E-01	2.387E-01	2.884E-02	8.450
	+	968.97		2.181E+00	6.814E-01	3.751E-01	9.144E-02	5.815
RA-228	+	338.32		2.113E+00	9.395E-01	3.776E-01	1.556E-01	5.595
	+	911.20	*	2.017E+00	4.247E-01	2.387E-01	2.884E-02	8.450

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	968.97		2.181E+00	6.814E-01	3.751E-01	9.144E-02	5.815
	+	74.82		2.875E+00	5.588E-01	5.614E-01	4.270E-02	5.121
	+	77.11		2.608E+00	3.717E-01	3.259E-01	2.510E-02	8.001
	+	238.63	*	1.864E+00	1.785E-01	9.246E-02	6.794E-03	20.163
	+	300.09		2.823E+00	2.115E+00	1.182E+00	7.200E-01	2.387
TH-232	+	338.32		2.113E+00	3.730E-01	3.776E-01	2.169E-02	5.595
	+	911.20	*	2.017E+00	4.247E-01	2.387E-01	2.884E-02	8.450
	+	968.97		2.181E+00	6.814E-01	3.751E-01	9.144E-02	5.815
TH-234	+	63.29	*	2.433E+00	1.896E+00	1.899E+00	3.338E-01	1.282
	+	92.59		4.245E+00	1.297E+00	1.066E+00	2.342E-01	3.983
U-235	+	89.96		1.577E+00	1.188E+00	1.319E+00	3.243E-01	1.196
	+	93.35		3.207E+00	1.003E+00	8.020E-01	1.843E-01	3.998
		143.76	*	1.330E-01	2.164E-01	3.483E-01	5.528E-02	0.382
		163.33		8.257E-02	4.549E-01	7.320E-01	1.220E-01	0.113
	+	185.72		2.231E-01	7.927E-02	6.387E-02	3.498E-03	3.494
		205.31		1.360E-02	5.429E-01	7.883E-01	1.334E-01	0.017
NP-237	+	86.48	*	7.074E-01	3.181E-01	4.114E-01	9.321E-02	1.720
		95.86		7.282E-01	1.121E+00	1.609E+00	3.832E-01	0.453
U-238	+	63.29	*	2.433E+00	1.896E+00	1.899E+00	3.338E-01	1.282
	+	92.59		4.245E+00	9.677E-01	1.066E+00	8.899E-02	3.983
ANH-511	+	511.00	*	1.710E-01	6.505E-02	4.433E-02	2.604E-03	3.858

## ---- 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	*	-1.919E-01	3.401E-01	5.369E-01	3.617E-02	-0.357
NA-22		1274.54	*	3.273E-03	4.353E-02	7.215E-02	4.713E-03	0.045
NA-24		1368.63	*	-6.285E+01	4.353E-02	Half-Life too short		
SC-46		889.28	*	2.384E-02	4.207E-02	7.331E-02	6.774E-03	0.325
	+	1120.55		2.942E-01	8.544E-02	1.341E-01	8.681E-03	2.194
V-48		944.13		2.602E-01	1.022E+00	1.743E+00	1.558E-01	0.149
		983.53	*	6.579E-02	8.628E-02	1.525E-01	1.295E-02	0.431
		1312.11		-5.668E-02	1.027E-01	1.592E-01	1.100E-02	-0.356
CR-51		320.08	*	-1.839E-01	4.613E-01	6.791E-01	4.381E-02	-0.271
MN-54		834.85	*	-3.028E-02	3.975E-02	6.268E-02	5.258E-03	-0.483
CO-56		846.77	*	-1.053E-02	4.021E-02	6.601E-02	5.658E-03	-0.159
		1037.84		-2.324E-01	3.362E-01	5.251E-01	4.345E-02	-0.443
		1238.28		1.837E-01	1.085E-01	1.967E-01	1.278E-02	0.934
		1771.35		1.169E-02	2.099E-01	2.959E-01	1.766E-02	0.039
CO-57		122.06	*	7.453E-03	2.621E-02	4.262E-02	3.032E-03	0.175
		136.47		-1.687E-01	2.219E-01	3.458E-01	2.535E-02	-0.488
CO-58		810.76	*	-5.881E-03	4.174E-02	6.615E-02	5.322E-03	-0.089
FE-59		1099.45	*	3.715E-02	9.933E-02	1.697E-01	1.306E-02	0.219
		1291.59		-2.584E-02	1.364E-01	2.201E-01	1.792E-02	-0.117
CO-60		1173.23		-6.394E-03	4.746E-02	7.758E-02	4.273E-03	-0.082
		1332.49	*	2.138E-02	3.908E-02	6.790E-02	4.839E-03	0.315
ZN-65		1115.54	*	1.788E-02	9.776E-02	1.425E-01	9.368E-03	0.125
SE-75		121.12		-5.352E-02	1.406E-01	2.231E-01	2.224E-02	-0.240

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		136.00		-5.823E-02	4.399E-02	6.694E-02	4.423E-03	-0.870
		264.66	*	-8.854E-03	5.034E-02	7.228E-02	4.245E-03	-0.122
		279.54		-5.053E-02	1.130E-01	1.848E-01	1.166E-02	-0.273
		400.66		-1.108E-01	2.545E-01	4.090E-01	3.629E-02	-0.271
SR-85		514.00	*	8.767E-02	4.333E-02	7.140E-02	4.199E-03	1.228
Y-88		898.04		-3.805E-02	4.275E-02	6.515E-02	6.137E-03	-0.584
		1836.06	*	2.554E-02	3.424E-02	6.273E-02	3.562E-03	0.407
Y-91		1204.77	*	-2.289E+01	2.540E+01	3.897E+01	2.267E+00	-0.588
NB-94		702.65	*	3.519E-03	3.605E-02	5.862E-02	3.802E-03	0.060
		871.09		1.494E-03	3.310E-02	5.563E-02	4.979E-03	0.027
NB-95		765.81	*	5.538E-02	4.976E-02	8.582E-02	6.320E-03	0.645
NB-95M		235.69	*	9.416E-01	1.874E-01	3.078E-01	2.308E-02	3.059
ZR-95		724.19		2.816E-02	1.229E-01	1.747E-01	1.342E-02	0.161
		756.73	*	9.686E-03	8.151E-02	1.324E-01	1.097E-02	0.073
MO-99		140.51		-2.975E+01	7.836E+01	1.223E+02	2.815E+01	-0.243
		181.07		-1.682E+01	6.466E+01	9.371E+01	1.646E+01	-0.179
		366.42		-2.188E+02	3.209E+02	5.104E+02	2.865E+01	-0.429
		739.50	*	-1.633E+01	4.436E+01	6.930E+01	1.035E+01	-0.236
		777.92		-3.497E+01	1.440E+02	2.128E+02	1.605E+01	-0.164
TC-99M		140.51	*	-9.027E+15	1.440E+02	Half-Life	too short	
RU-103		497.08	*	-1.638E-02	4.194E-02	6.675E-02	8.307E-03	-0.245
	+	610.33		1.442E+01	2.967E+00	3.069E+00	4.641E-01	4.697
RH-106		621.93	*	2.073E-01	3.189E-01	5.403E-01	6.328E-02	0.384
		1050.41		9.833E-01	2.570E+00	4.404E+00	3.346E-01	0.223
RU-106		621.93	*	2.073E-01	3.182E-01	5.403E-01	3.231E-02	0.384
		1050.41		9.833E-01	2.570E+00	4.404E+00	3.346E-01	0.223
AG-108M		433.94	*	-1.307E-02	3.002E-02	4.810E-02	2.910E-03	-0.272
		614.28		-1.534E-02	4.149E-02	5.596E-02	3.572E-03	-0.274
		722.91		-8.081E-03	4.594E-02	6.266E-02	4.456E-03	-0.129
AG-110M		657.76	*	-4.248E-02	3.966E-02	5.923E-02	3.742E-03	-0.717
		677.62		2.406E-03	3.165E-01	5.122E-01	3.327E-02	0.005
		706.68		4.099E-02	2.177E-01	3.565E-01	2.447E-02	0.115
		763.94		-1.988E-01	1.919E-01	2.851E-01	2.170E-02	-0.697
		884.68		-4.823E-03	5.154E-02	8.561E-02	8.072E-03	-0.056
		937.49		-4.305E-02	1.094E-01	1.764E-01	1.641E-02	-0.244
		1384.29		1.493E-01	1.703E-01	2.761E-01	2.031E-02	0.541
		1505.03		-2.658E-01	3.006E-01	4.316E-01	2.966E-02	-0.616
SN-113		391.69	*	-4.237E-02	4.892E-02	7.699E-02	4.505E-03	-0.550
CD-115		260.90		-3.566E-05	4.892E-02	Half-Life	too short	
		492.35		7.653E-05	4.892E-02	Half-Life	too short	
		527.90	*	1.792E-05	4.892E-02	Half-Life	too short	
SN-117M		156.02		3.632E+00	3.057E+00	5.094E+00	2.932E-01	0.713
		158.56	*	6.062E-03	7.488E-02	1.202E-01	6.798E-03	0.050
TE-123M		159.00	*	5.891E-03	3.126E-02	5.035E-02	2.880E-03	0.117
SB-124		602.73		-1.346E-02	4.904E-02	6.697E-02	4.008E-03	-0.201
		645.85		1.023E-01	5.152E-01	8.474E-01	5.644E-02	0.121
		722.78		-5.609E-02	4.895E-01	6.722E-01	4.712E-02	-0.083
		1690.97	*	3.996E-02	6.547E-02	1.194E-01	8.106E-03	0.335
SB-125		427.87	*	1.334E-01	9.086E-02	1.613E-01	9.439E-03	0.827

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

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	463.37		6.981E-01	3.813E-01	5.298E-01	3.538E-02	1.318
		600.60		-1.057E-01	2.060E-01	3.026E-01	2.079E-02	-0.349
		635.95		-7.817E-02	2.714E-01	4.302E-01	2.987E-02	-0.182
TE-125M		109.28	*	-1.704E+01	1.099E+01	1.657E+01	1.585E+00	-1.028
I-126		388.63		2.077E-01	2.316E-01	3.988E-01	2.178E-02	0.521
		666.33	*	-4.284E-02	3.177E-01	5.095E-01	3.060E-02	-0.084
		753.82		8.602E-01	2.409E+00	3.986E+00	2.868E-01	0.216
SB-126		414.70		2.720E-02	1.011E-01	1.690E-01	9.379E-03	0.161
		666.50		-1.844E-02	1.102E-01	1.762E-01	1.059E-02	-0.105
		695.00		3.844E-02	1.108E-01	1.760E-01	1.124E-02	0.218
		697.00		6.916E-02	3.722E-01	6.092E-01	3.905E-02	0.114
		720.70	*	1.624E-01	2.150E-01	3.467E-01	2.334E-02	0.468
		856.80		-1.837E-01	6.475E-01	9.030E-01	7.881E-02	-0.203
SB-127		252.40		-3.460E+00	9.982E+00	1.627E+01	6.751E+00	-0.213
		473.00		-1.090E+00	3.881E+00	6.247E+00	7.877E-01	-0.174
		685.70	*	-1.083E+00	3.177E+00	4.971E+00	5.692E-01	-0.218
		783.70		3.516E+00	1.070E+01	1.532E+01	2.017E+00	0.230
I-131		80.19		8.820E-01	8.029E+00	1.145E+01	9.239E-01	0.077
		284.31		1.189E+00	2.252E+00	3.838E+00	2.503E-01	0.310
		364.49	*	-9.456E-02	1.747E-01	2.805E-01	1.787E-02	-0.337
		636.99		-2.988E-02	2.350E+00	3.806E+00	2.556E-01	-0.008
TE-132		49.72		-1.577E+01	3.818E+01	6.156E+01	6.820E+00	-0.256
		111.76		-5.385E+00	9.876E+01	1.590E+02	1.852E+01	-0.034
		116.30		1.191E+01	8.627E+01	1.397E+02	1.615E+01	0.085
		228.16	*	-2.048E-02	2.088E+00	3.500E+00	5.454E-01	-0.006
BA-133		81.00		-8.134E-02	1.322E-01	1.516E-01	2.305E-02	-0.536
		276.40		6.253E-01	3.886E-01	6.277E-01	7.910E-02	0.996
		302.85		9.618E-02	1.535E-01	2.305E-01	2.632E-02	0.417
		356.01	*	8.552E-03	4.489E-02	6.542E-02	7.333E-03	0.131
		383.85		-1.848E-01	3.118E-01	4.983E-01	5.233E-02	-0.371
I-133		529.87	*	-2.318E-01	3.118E-01	Half-Life	too short	
		875.33		2.165E+00	3.118E-01	Half-Life	too short	
		1298.22		-2.261E+00	3.118E-01	Half-Life	too short	
CS-134		563.25		1.188E-01	4.326E-01	6.247E-01	3.798E-02	0.190
	+	569.33		1.320E+00	5.123E-01	5.154E-01	3.162E-02	2.562
		604.72		9.813E-03	3.872E-02	5.565E-02	3.347E-03	0.176
		795.86	*	9.597E-02	5.213E-02	9.370E-02	7.375E-03	1.024
		801.95		-2.761E-01	4.185E-01	6.331E-01	5.030E-02	-0.436
		1365.19		-1.782E-01	1.129E+00	1.854E+00	1.405E-01	-0.096
CS-135		268.22	*	3.643E-01	1.808E-01	2.891E-01	2.218E-02	1.260
I-135		546.56		-7.571E+13	1.808E-01	Half-Life	too short	
		836.80		3.456E+15	1.808E-01	Half-Life	too short	
		1038.76		-3.469E+15	1.808E-01	Half-Life	too short	
		1131.51		1.322E+15	1.808E-01	Half-Life	too short	
		1260.41	*	4.742E+14	1.808E-01	Half-Life	too short	
		1457.56		9.918E+16	1.808E-01	Half-Life	too short	
		1678.03		7.259E+14	1.808E-01	Half-Life	too short	
		1791.20		-1.195E+15	1.808E-01	Half-Life	too short	
CS-136		153.25		-3.635E-01	1.183E+00	1.873E+00	1.517E-01	-0.194



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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		176.60		2.352E-01	6.601E-01	1.068E+00	7.216E-02	0.220
		273.65		-9.545E-01	7.960E-01	1.070E+00	7.346E-02	-0.892
		340.55		6.962E-01	2.272E-01	3.794E-01	2.362E-02	1.835
		818.51		4.718E-02	9.332E-02	1.626E-01	1.326E-02	0.290
		1048.07	*	-7.654E-02	1.368E-01	2.157E-01	1.735E-02	-0.355
		1235.36		-9.802E-02	8.395E-01	1.373E+00	1.384E-01	-0.071
BA-137M		661.66	*	3.661E-02	4.210E-02	7.173E-02	4.265E-03	0.510
CS-137		661.66	*	3.868E-02	4.448E-02	7.578E-02	4.524E-03	0.510
CE-139		165.86	*	3.699E-03	3.185E-02	5.113E-02	2.745E-03	0.072
BA-140		162.66		1.845E-01	1.117E+00	1.796E+00	1.144E-01	0.103
		304.85		-1.537E+00	1.960E+00	2.603E+00	7.436E-01	-0.591
		423.72		-1.441E+00	2.562E+00	4.008E+00	1.292E+00	-0.360
		537.26	*	-2.521E-01	3.515E-01	5.278E-01	1.759E-01	-0.478
LA-140	+	328.76		1.211E+00	5.624E-01	7.084E-01	4.597E-02	1.710
		487.02		-7.647E-02	1.837E-01	2.929E-01	1.927E-02	-0.261
		815.77		1.265E-01	4.048E-01	6.960E-01	6.381E-02	0.182
		1596.21	*	5.490E-02	1.178E-01	1.865E-01	1.237E-02	0.294
CE-141		145.44	*	2.075E-02	7.540E-02	1.220E-01	7.789E-03	0.170
CE-143		57.36		-2.680E-03	7.540E-02	Half-Life	too short	
		293.27	*	1.421E-02	7.540E-02	Half-Life	too short	
		664.57		8.527E-03	7.540E-02	Half-Life	too short	
		721.93		2.046E-02	7.540E-02	Half-Life	too short	
CE-144		80.12		4.650E-01	2.903E+00	4.146E+00	3.301E-01	0.112
		133.52	*	5.556E-02	2.160E-01	3.499E-01	4.988E-02	0.159
PM-144		476.78		-1.557E-02	6.404E-02	1.033E-01	7.075E-03	-0.151
		618.01		-1.795E-02	3.459E-02	5.237E-02	3.313E-03	-0.343
		696.49	*	3.899E-03	3.726E-02	6.062E-02	3.886E-03	0.064
PR-144		696.51	*	3.000E-01	2.796E+00	4.550E+00	2.914E-01	0.066
		1489.16		-5.038E+00	1.247E+01	1.912E+01	1.320E+00	-0.264
PM-146		453.88	*	6.122E-02	4.227E-02	7.476E-02	6.275E-03	0.819
		633.25		5.712E-01	1.432E+00	2.365E+00	8.914E-01	0.241
		735.93		1.306E-01	1.572E-01	2.624E-01	7.231E-02	0.498
		747.24		4.265E-02	9.806E-02	1.632E-01	2.243E-02	0.261
ND-147	+	91.11		6.917E-01	4.969E-01	7.734E-01	7.114E-02	0.894
		319.41		-3.976E+00	4.857E+00	7.252E+00	4.211E-01	-0.548
		531.02	*	-4.871E-01	7.797E-01	1.214E+00	1.648E-01	-0.401
PM-149		285.90	*	3.504E-04	7.797E-01	Half-Life	too short	
EU-152		121.78		2.049E-02	7.452E-02	1.212E-01	1.045E-02	0.169
		244.70		3.904E-02	3.568E-01	5.228E-01	3.012E-02	0.075
		344.28	*	4.139E-03	1.188E-01	1.616E-01	1.045E-02	0.026
		778.90		-9.342E-02	3.441E-01	4.623E-01	3.492E-02	-0.202
	+	964.08		8.479E-01	4.360E-01	5.828E-01	5.081E-02	1.455
		1085.87		-1.106E-01	3.978E-01	6.439E-01	4.542E-02	-0.172
		1112.07		-8.661E-02	3.422E-01	4.929E-01	3.263E-02	-0.176
		1408.01		1.736E-01	1.830E-01	3.310E-01	2.333E-02	0.525
GD-153		69.67		1.520E+00	2.014E+00	2.754E+00	1.969E-01	0.552
		97.43	*	1.133E-01	9.883E-02	1.465E-01	1.175E-02	0.774
		103.18		-1.347E-01	1.165E-01	1.799E-01	1.388E-02	-0.749
EU-154		123.07		-1.879E-02	5.288E-02	8.393E-02	8.576E-03	-0.224

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		723.31		-1.228E-01	2.161E-01	2.822E-01	2.215E-02	-0.435
		873.19		-1.659E-01	2.786E-01	4.425E-01	5.382E-02	-0.375
		996.26		-3.244E-01	3.878E-01	5.954E-01	1.032E-01	-0.545
		1004.73		-6.394E-02	2.198E-01	3.569E-01	4.051E-02	-0.179
		1274.44	*	1.397E-02	1.235E-01	2.054E-01	2.030E-02	0.068
EU-155	+	86.55		2.880E-01	1.146E-01	1.924E-01	1.671E-02	1.497
		105.31	*	8.639E-02	1.081E-01	1.790E-01	1.385E-02	0.483
TB-160	+	86.79		7.987E-01	3.177E-01	5.298E-01	4.566E-02	1.507
		197.04		1.784E-01	5.794E-01	9.853E-01	5.461E-02	0.181
		215.65		-5.559E-02	7.891E-01	1.288E+00	7.264E-02	-0.043
		298.57		2.759E-01	1.951E-01	2.202E-01	1.284E-02	1.253
		879.36	*	1.642E-02	1.466E-01	2.475E-01	2.248E-02	0.066
		962.29		5.226E-01	6.420E-01	9.981E-01	8.721E-02	0.524
	+	966.15		6.198E-01	3.188E-01	5.354E-01	4.655E-02	1.158
		1177.93		1.023E-01	3.738E-01	6.316E-01	3.508E-02	0.162
		1271.85		7.798E-01	7.438E-01	1.338E+00	8.686E-02	0.583
HO-166M		80.57		-1.474E-01	3.375E-01	4.364E-01	3.493E-02	-0.338
	+	184.41		1.773E-01	6.298E-02	6.988E-02	3.822E-03	2.537
		280.46		-9.155E-02	8.544E-02	1.355E-01	7.904E-03	-0.675
		410.95		-1.640E-02	2.525E-01	4.146E-01	2.294E-02	-0.040
		711.68	*	-4.389E-02	6.156E-02	9.354E-02	6.181E-03	-0.469
		752.31		-2.498E-01	2.887E-01	4.310E-01	3.091E-02	-0.580
		810.29		2.007E-02	5.830E-02	9.637E-02	7.725E-03	0.208
TA-182		67.75		-1.007E-01	1.489E-01	1.714E-01	1.206E-02	-0.587
		100.11		2.030E-01	1.931E-01	3.119E-01	2.454E-02	0.651
		152.43		-2.318E-01	3.897E-01	6.102E-01	3.598E-02	-0.380
		222.11		2.647E-01	3.669E-01	6.309E-01	3.578E-02	0.420
	+	1121.30		8.064E-01	2.342E-01	3.696E-01	2.388E-02	2.182
		1189.05		-9.258E-02	3.453E-01	5.480E-01	3.103E-02	-0.169
		1221.41	*	1.667E-01	2.380E-01	4.106E-01	2.456E-02	0.406
		1231.02		-5.368E-01	5.245E-01	7.945E-01	4.829E-02	-0.676
IR-192	+	295.96		1.324E+00	2.203E-01	3.002E-01	1.779E-02	4.411
		308.46		-3.103E-03	1.061E-01	1.662E-01	9.788E-03	-0.019
		316.51	*	-2.328E-03	3.585E-02	5.938E-02	3.466E-03	-0.039
		468.07		1.964E-02	7.690E-02	1.117E-01	7.440E-03	0.176
HG-203		70.83		1.726E+00	1.581E+00	2.311E+00	3.549E-01	0.747
		72.87		3.570E+00	1.131E+00	1.587E+00	2.361E-01	2.250
		279.20	*	1.478E-03	4.146E-02	6.924E-02	4.260E-03	0.021
BI-207		72.81		7.172E-01	2.205E-01	3.381E-01	2.490E-02	2.121
	+	74.97		8.287E-01	1.608E-01	2.472E-01	1.861E-02	3.352
	+	569.70		2.041E-01	7.911E-02	7.784E-02	4.644E-03	2.621
		1063.66	*	4.775E-03	5.540E-02	9.260E-02	6.852E-03	0.052
		1770.23		2.171E-01	3.949E-01	6.438E-01	3.845E-02	0.337
PB-210		46.54	*	-2.153E+00	2.304E+00	3.678E+00	2.693E-01	-0.585
PB-211		404.85	*	-9.588E-02	7.306E-01	1.194E+00	5.722E-01	-0.080
		427.09		9.524E-01	1.594E+00	2.611E+00	1.196E+00	0.365
		832.01		-8.014E-01	1.062E+00	1.536E+00	7.959E-01	-0.522
RN-219	+	271.23		6.398E-01	4.021E-01	4.425E-01	3.561E-02	1.446
		401.81	*	5.283E-02	3.963E-01	6.583E-01	8.760E-02	0.080

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RA-223		81.07		-1.864E-01	2.982E-01	3.430E-01	2.760E-02	-0.544
		83.79		-5.352E-03	1.786E-01	2.132E-01	1.771E-02	-0.025
		94.87		2.203E+00	5.917E-01	9.133E-01	7.475E-02	2.412
		144.24		2.935E-01	7.268E-01	1.166E+00	8.795E-02	0.252
		154.21		1.626E-02	4.171E-01	6.688E-01	4.674E-02	0.024
	+	269.46		4.971E-01	3.113E-01	3.503E-01	2.127E-02	1.419
		323.87	*	9.405E-02	7.263E-01	1.056E+00	1.702E-01	0.089
	+	338.28		8.383E+00	1.641E+00	2.357E+00	2.409E-01	3.557
	AC-227	79.69		3.399E+00	1.573E+00	2.252E+00	3.805E-01	1.510
		235.96		1.785E+00	2.613E-01	4.090E-01	3.310E-02	4.364
TH-227		256.23	*	3.537E-03	2.373E-01	3.969E-01	4.053E-02	0.009
	+	299.98		3.105E+00	1.398E+00	1.663E+00	1.830E-01	1.867
		304.50		-1.501E+00	1.797E+00	2.423E+00	3.697E-01	-0.620
		334.37		1.876E+00	1.969E+00	2.853E+00	4.053E-01	0.657
		79.80		3.597E+00	2.062E+00	2.899E+00	6.238E-01	1.241
		235.96		1.785E+00	2.540E-01	4.090E-01	2.998E-02	4.364
		256.23	*	3.537E-03	2.373E-01	3.969E-01	4.769E-02	0.009
	+	299.98		3.105E+00	1.398E+00	1.663E+00	1.830E-01	1.867
		304.50		-1.501E+00	1.797E+00	2.423E+00	3.697E-01	-0.620
		334.37		1.876E+00	1.969E+00	2.853E+00	4.053E-01	0.657
TH-229		85.43		4.902E-01	2.658E-01	3.956E-01	3.353E-02	1.239
	+	88.47		3.655E-01	1.454E-01	2.461E-01	2.142E-02	1.485
		193.51	*	-1.230E-01	5.291E-01	8.606E-01	4.752E-02	-0.143
		210.85		1.977E+00	1.028E+00	1.632E+00	9.167E-02	1.211
PA-231		283.69	*	6.039E-01	1.455E+00	2.465E+00	3.237E-01	0.245
	+	301.36		1.995E+00	8.953E-01	1.043E+00	1.081E-01	1.912
TH-231		81.07		-1.864E-01	2.982E-01	3.430E-01	2.760E-02	-0.544
		83.79		-5.352E-03	1.786E-01	2.132E-01	1.771E-02	-0.025
		94.87		2.203E+00	5.917E-01	9.133E-01	7.475E-02	2.412
		144.24		2.935E-01	7.268E-01	1.166E+00	8.795E-02	0.252
		154.21		1.626E-02	4.171E-01	6.688E-01	4.674E-02	0.024
	+	269.46		4.971E-01	3.113E-01	3.503E-01	2.127E-02	1.419
		323.87	*	9.405E-02	7.263E-01	1.056E+00	1.702E-01	0.089
	+	338.28		8.383E+00	1.641E+00	2.357E+00	2.409E-01	3.557
	PA-233	300.13		1.405E+00	6.418E-01	7.521E-01	1.008E-01	1.868
		311.90	*	-2.422E-02	6.399E-02	1.044E-01	6.449E-03	-0.232
PA-234		340.48		2.510E+00	9.467E-01	1.282E+00	2.973E-01	1.958
		94.67		9.959E-01	2.413E-01	3.464E-01	4.196E-02	2.875
		98.44		1.691E-01	1.408E-01	1.588E-01	8.846E-02	1.065
		111.00		-2.232E-02	1.920E-01	3.085E-01	3.472E-02	-0.072
		131.20		8.299E-02	1.137E-01	1.871E-01	1.257E-02	0.444
	+	569.50		1.811E+00	7.023E-01	7.024E-01	4.190E-02	2.579
		733.00		2.138E-01	4.406E-01	6.421E-01	1.386E-01	0.333
		880.51		-3.342E-02	2.822E-01	4.679E-01	4.258E-02	-0.071
		883.24		-1.355E-01	3.088E-01	4.759E-01	3.203E-01	-0.285
		926.50		-6.603E-02	1.690E-01	2.713E-01	6.904E-02	-0.243
PA-234M		946.00	*	-7.692E-02	3.075E-01	5.022E-01	9.493E-02	-0.153
		949.00		2.636E-01	4.706E-01	8.175E-01	7.263E-02	0.323
		766.42		1.824E+01	1.563E+01	2.226E+01	1.125E+01	0.819

---- 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	*		4.671E+00	4.713E+00	8.406E+00	8.126E-01	0.556
	99.53			2.357E-01	1.812E-01	2.835E-01	2.240E-02	0.831
	103.37			-1.126E-01	1.047E-01	1.623E-01	1.251E-02	-0.694
	106.12			8.149E-02	8.514E-02	1.416E-01	1.075E-02	0.575
	117.23	*		-2.005E-01	4.228E-01	6.693E-01	4.833E-02	-0.300
	228.18			-1.092E-03	2.182E-01	3.659E-01	2.085E-02	-0.003
AM-241	277.60			1.056E-01	1.770E-01	3.023E-01	1.762E-02	0.349
	59.54	*		1.078E-01	1.529E-01	2.244E-01	1.666E-02	0.480
CM-247	278.00			2.673E-01	7.576E-01	1.281E+00	7.470E-02	0.209
	287.50			5.924E-01	1.401E+00	2.083E+00	1.215E-01	0.284
CF-249	402.40	*		-2.059E-03	3.735E-02	6.140E-02	3.372E-03	-0.034
	252.80			-4.166E-01	9.109E-01	1.493E+00	8.634E-02	-0.279
	333.37			2.438E-01	2.312E-01	2.932E-01	1.690E-02	0.831
CF-251	388.16	*		3.976E-02	4.221E-02	7.286E-02	3.983E-03	0.546
	177.52	*		5.451E-02	1.325E-01	2.149E-01	1.167E-02	0.254
	227.38			-1.688E-01	3.591E-01	5.916E-01	3.369E-02	-0.285
	285.41			1.860E+00	2.144E+00	3.704E+00	2.161E-01	0.502

# 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]G247337001      *
* Acquisition date   : 4-MAR-2010 10:15:41 Detector SN#                   *
* Detector ID        : GAM14 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance: 1.500                      *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000            *
* Elapsed real time  : 0 02:00:01.65 Half life ratio : 8.000             *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID        *
* Sample ID          : G247337001 Analyst initials: MXR1                 *
* Batch Number       : 955027 Sample Quantity : 1.3458E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                 *
*****
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000                                           *
* CALIB. DATE/TIME   : 6-MAR-2009 11:43:06 MS Isotope                   :
* MSD DPM             : 0.000 MSD Isotope                               :
* LCS DPM             : 0.000 LCS Isotope                               :
* LCSD DPM            : 0.000 LCSD Isotope                              :
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.205E+01	2.911E+00	4.440E-01	0.000E+00
CD-109	2.443E+00	9.523E-01	1.360E+00	0.000E+00
SN-126	2.371E-01	9.241E-02	1.325E-01	0.000E+00
TL-208	6.210E-01	8.693E-02	5.581E-02	0.000E+00
BI-211	4.221E+00	5.192E-01	3.315E-01	0.000E+00
BI-212	2.432E+00	7.113E-01	8.580E-01	0.000E+00
PB-212	1.864E+00	1.750E-01	9.577E-02	0.000E+00
BI-214	1.283E+00	2.022E-01	1.132E-01	0.000E+00
PB-214	1.532E+00	2.058E-01	1.206E-01	0.000E+00
RA-224	4.563E+00	1.186E+00	1.026E+00	0.000E+00
RA-226	1.283E+00	2.022E-01	1.132E-01	0.000E+00
AC-228	2.017E+00	4.162E-01	2.414E-01	0.000E+00
RA-228	2.017E+00	4.162E-01	2.414E-01	0.000E+00
TH-228	1.864E+00	1.750E-01	9.577E-02	0.000E+00
TH-232	2.017E+00	4.162E-01	2.414E-01	0.000E+00
TH-234	2.433E+00	1.858E+00	2.012E+00	0.000E+00
U-235	1.330E-01	2.121E-01	3.639E-01	0.000E+00
NP-237	7.074E-01	3.117E-01	4.336E-01	0.000E+00
U-238	2.433E+00	1.858E+00	2.012E+00	0.000E+00
ANH-511	1.710E-01	6.375E-02	4.529E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-1.919E-01	3.333E-01	5.492E-01	0.000E+00 NOT IDENT.
NA-22	3.273E-03	4.266E-02	7.249E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	1.483E+08	0.000E+00	0.000E+00 SHORT HLIF
SC-46	2.384E-02	4.123E-02	7.414E-02	0.000E+00 FAIL ABUN
V-48	6.579E-02	8.456E-02	1.539E-01	0.000E+00 NOT IDENT.
CR-51	-1.839E-01	4.521E-01	6.997E-01	0.000E+00 NOT IDENT.
MN-54	-3.028E-02	3.896E-02	6.347E-02	0.000E+00 NOT IDENT.

CO-56	-1.053E-02	3.941E-02	6.683E-02	0.000E+00	NOT IDENT.
CO-57	7.453E-03	2.568E-02	4.467E-02	0.000E+00	NOT IDENT.
CO-58	-5.881E-03	4.091E-02	6.701E-02	0.000E+00	NOT IDENT.
FE-59	3.715E-02	9.735E-02	1.710E-01	0.000E+00	NOT IDENT.
CO-60	2.138E-02	3.830E-02	6.816E-02	0.000E+00	NOT IDENT.
ZN-65	1.788E-02	9.581E-02	1.435E-01	0.000E+00	NOT IDENT.
SE-75	-8.854E-03	4.934E-02	7.473E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	4.246E-02	7.294E-02	0.000E+00	NOT IDENT.
Y-88	2.554E-02	3.356E-02	6.259E-02	0.000E+00	NOT IDENT.
Y-91	-2.289E+01	2.490E+01	3.919E+01	0.000E+00	NOT IDENT.
NB-94	3.519E-03	3.533E-02	5.954E-02	0.000E+00	NOT IDENT.
NB-95	5.538E-02	4.876E-02	8.704E-02	0.000E+00	NOT IDENT.
NB-95M	0.000E+00	1.836E-01	3.189E-01	0.000E+00	NOT IDENT.
ZR-95	9.686E-03	7.988E-02	1.343E-01	0.000E+00	NOT IDENT.
MO-99	-1.633E+01	4.348E+01	7.033E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	2.344E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-1.638E-02	4.110E-02	6.823E-02	0.000E+00	FAIL ABUN
RH-106	2.073E-01	3.125E-01	5.501E-01	0.000E+00	NOT IDENT.
RU-106	2.073E-01	3.119E-01	5.501E-01	0.000E+00	NOT IDENT.
AG-108M	-1.307E-02	2.942E-02	4.929E-02	0.000E+00	NOT IDENT.
AG-110M	-4.248E-02	3.886E-02	6.023E-02	0.000E+00	NOT IDENT.
SN-113	-4.237E-02	4.794E-02	7.904E-02	0.000E+00	NOT IDENT.
CD-115	0.000E+00	5.051E+01	0.000E+00	0.000E+00	SHORT HLIF
SN-117M	6.062E-03	7.338E-02	1.254E-01	0.000E+00	NOT IDENT.
TE-123M	5.891E-03	3.063E-02	5.253E-02	0.000E+00	NOT IDENT.
SB-124	3.996E-02	6.416E-02	1.193E-01	0.000E+00	NOT IDENT.
SB-125	1.334E-01	8.905E-02	1.653E-01	0.000E+00	FAIL ABUN
TE-125M	-1.704E+01	1.077E+01	1.740E+01	0.000E+00	NOT IDENT.
I-126	-4.284E-02	3.114E-01	5.180E-01	0.000E+00	NOT IDENT.
SB-126	1.624E-01	2.107E-01	3.521E-01	0.000E+00	NOT IDENT.
SB-127	-1.083E+00	3.114E+00	5.052E+00	0.000E+00	NOT IDENT.
I-131	-9.456E-02	1.712E-01	2.884E-01	0.000E+00	NOT IDENT.
TE-132	-2.048E-02	2.046E+00	3.628E+00	0.000E+00	NOT IDENT.
BA-133	8.552E-03	4.400E-02	6.728E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	2.815E+05	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	5.109E-02	9.497E-02	0.000E+00	FAIL ABUN
CS-135	0.000E+00	1.772E-01	2.988E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.234E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-7.654E-02	1.340E-01	2.175E-01	0.000E+00	NOT IDENT.
BA-137M	3.661E-02	4.126E-02	7.295E-02	0.000E+00	NOT IDENT.
CS-137	3.868E-02	4.359E-02	7.706E-02	0.000E+00	NOT IDENT.
CE-139	3.699E-03	3.121E-02	5.330E-02	0.000E+00	NOT IDENT.
BA-140	-2.521E-01	3.444E-01	5.388E-01	0.000E+00	NOT IDENT.
LA-140	5.490E-02	1.155E-01	1.866E-01	0.000E+00	FAIL ABUN
CE-141	2.075E-02	7.389E-02	1.275E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	3.725E+03	0.000E+00	0.000E+00	SHORT HLIF
CE-144	5.556E-02	2.116E-01	3.661E-01	0.000E+00	NOT IDENT.
PM-144	3.899E-03	3.651E-02	6.159E-02	0.000E+00	NOT IDENT.
PR-144	3.000E-01	2.740E+00	4.623E+00	0.000E+00	NOT IDENT.
PM-146	6.122E-02	4.143E-02	7.655E-02	0.000E+00	NOT IDENT.
ND-147	-4.871E-01	7.641E-01	1.240E+00	0.000E+00	FAIL ABUN
PM-149	0.000E+00	4.214E+02	0.000E+00	0.000E+00	SHORT HLIF
EU-152	4.139E-03	1.164E-01	1.663E-01	0.000E+00	FAIL ABUN
GD-153	1.133E-01	9.686E-02	1.541E-01	0.000E+00	NOT IDENT.
EU-154	1.397E-02	1.210E-01	2.064E-01	0.000E+00	NOT IDENT.
EU-155	8.639E-02	1.059E-01	1.881E-01	0.000E+00	FAIL ABUN
TB-160	1.642E-02	1.437E-01	2.504E-01	0.000E+00	FAIL ABUN
HO-166M	-4.389E-02	6.033E-02	9.500E-02	0.000E+00	FAIL ABUN
TA-182	1.667E-01	2.332E-01	4.129E-01	0.000E+00	FAIL ABUN
IR-192	-2.328E-03	3.513E-02	6.120E-02	0.000E+00	FAIL ABUN
HG-203	1.478E-03	4.063E-02	7.151E-02	0.000E+00	NOT IDENT.
BI-207	4.775E-03	5.429E-02	9.334E-02	0.000E+00	FAIL ABUN
PB-210	-2.153E+00	2.258E+00	3.918E+00	0.000E+00	NOT IDENT.
PB-211	-9.588E-02	7.160E-01	1.225E+00	0.000E+00	NOT IDENT.
RN-219	5.283E-02	3.884E-01	6.756E-01	0.000E+00	FAIL ABUN
RA-223	9.405E-02	7.118E-01	1.088E+00	0.000E+00	FAIL ABUN
AC-227	3.537E-03	2.325E-01	4.106E-01	0.000E+00	FAIL ABUN
TH-227	3.537E-03	2.325E-01	4.106E-01	0.000E+00	FAIL ABUN
TH-229	-1.230E-01	5.186E-01	8.946E-01	0.000E+00	FAIL ABUN
PA-231	6.039E-01	1.426E+00	2.545E+00	0.000E+00	FAIL ABUN
TH-231	9.405E-02	7.118E-01	1.088E+00	0.000E+00	FAIL ABUN
PA-233	-2.422E-02	6.271E-02	1.076E-01	0.000E+00	FAIL ABUN
PA-234	-7.692E-02	3.014E-01	5.074E-01	0.000E+00	FAIL ABUN
PA-234M	4.671E+00	4.619E+00	8.483E+00	0.000E+00	NOT IDENT.
NP-239	-2.005E-01	4.144E-01	7.019E-01	0.000E+00	NOT IDENT.
AM-241	1.078E-01	1.498E-01	2.380E-01	0.000E+00	NOT IDENT.
CM-247	-2.059E-03	3.660E-02	6.300E-02	0.000E+00	NOT IDENT.
CF-249	3.976E-02	4.137E-02	7.481E-02	0.000E+00	NOT IDENT.

CF-251

5.451E-02

1.299E-01

2.237E-01

0.000E+00 NOT IDENT.

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337001.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:15:41.
Sample ID          : G247337001 Sample quantity : 1.34580E+02 GRAM
Detector name      : GAM14 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.65 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 955027 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	1483	10.66*	1.211E+00	3.205E+01	3.205E+01	9.27
CD-109	88.03	222	3.70*	7.052E+00	2.371E+00	2.443E+00	39.78
SN-126	64.28	153	9.60	4.728E+00	9.379E-01	9.379E-01	77.23
	86.94	222	8.90	7.052E+00	9.856E-01	9.856E-01	56.73
	87.57	222	37.00*	7.052E+00	2.371E-01	2.371E-01	39.78
TL-208	277.37	-----	6.60	5.001E+00	-----	Line Not Found	-----
	583.19	522	85.00*	2.759E+00	6.210E-01	6.210E-01	14.28
	860.56	78	12.50	1.944E+00	8.973E-01	8.973E-01	48.08
BI-211	72.87	-----	1.23	5.875E+00	-----	Line Not Found	-----
	351.06	817	12.92*	4.178E+00	4.221E+00	4.221E+00	12.55
BI-212	727.33	132	6.67*	2.267E+00	2.432E+00	2.432E+00	29.84
	785.37	34	1.10	2.112E+00	4.130E+00	4.130E+00	94.32
PB-212	1620.50	-----	1.47	1.120E+00	-----	Line Not Found	-----
	74.82	645	10.28	6.088E+00	2.875E+00	2.875E+00	21.71
	77.11	1009	17.10	6.309E+00	2.608E+00	2.608E+00	14.26
	238.63	1623	43.60*	5.570E+00	1.864E+00	1.864E+00	9.58
	300.09	157	3.30	4.715E+00	2.823E+00	2.823E+00	44.47
BI-214	609.32	556	45.49*	2.655E+00	1.283E+00	1.283E+00	16.08
	1120.29	136	14.92	1.524E+00	1.671E+00	1.671E+00	29.81
	1764.49	101	15.30	1.059E+00	1.745E+00	1.745E+00	28.13
PB-214	74.82	645	5.80	6.088E+00	5.095E+00	5.095E+00	20.96
	77.11	1009	9.70	6.309E+00	4.597E+00	4.597E+00	16.47
	242.00	370	7.25	5.523E+00	2.581E+00	2.581E+00	27.14
	295.22	540	18.42	4.781E+00	1.711E+00	1.711E+00	17.84
	351.93	817	35.60*	4.178E+00	1.532E+00	1.532E+00	13.71
RA-224	240.99	370	4.10*	5.523E+00	4.563E+00	4.563E+00	26.51
RA-226	609.32	556	45.49*	2.655E+00	1.283E+00	1.283E+00	16.08
	1120.29	136	14.92	1.524E+00	1.671E+00	1.671E+00	29.81
	1764.49	101	15.30	1.059E+00	1.745E+00	1.745E+00	28.13
AC-228	338.32	368	11.27	4.308E+00	2.113E+00	2.113E+00	44.47
	911.20	344	25.80*	1.843E+00	2.017E+00	2.017E+00	21.05
	968.97	215	15.80	1.741E+00	2.181E+00	2.181E+00	31.24



Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	338.32	368	11.27	4.308E+00	2.113E+00	2.113E+00	44.47
	911.20	344	25.80*	1.843E+00	2.017E+00	2.017E+00	21.05
	968.97	215	15.80	1.741E+00	2.181E+00	2.181E+00	31.24
TH-228	74.82	645	10.28	6.088E+00	2.875E+00	2.875E+00	19.44
	77.11	1009	17.10	6.309E+00	2.608E+00	2.608E+00	14.26
	238.63	1623	43.60*	5.570E+00	1.864E+00	1.864E+00	9.58
TH-232	300.09	157	3.30	4.715E+00	2.823E+00	2.823E+00	74.93
	338.32	368	11.27	4.308E+00	2.113E+00	2.113E+00	17.66
	911.20	344	25.80*	1.843E+00	2.017E+00	2.017E+00	21.05
TH-234	968.97	215	15.80	1.741E+00	2.181E+00	2.181E+00	31.24
	63.29	153	3.70*	4.728E+00	2.433E+00	2.433E+00	77.92
	92.59	471	4.23	7.313E+00	4.245E+00	4.245E+00	30.55
U-235	89.96	141	3.47	7.192E+00	1.577E+00	1.577E+00	75.36
	93.35	471	5.60	7.313E+00	3.207E+00	3.207E+00	31.29
	143.76	-----	10.96*	7.372E+00	-----	Line Not Found	-----
NP-237	163.33	-----	5.08	6.992E+00	-----	Line Not Found	-----
	185.72	299	57.20	6.532E+00	2.231E-01	2.231E-01	35.52
	205.31	-----	5.01	6.150E+00	-----	Line Not Found	-----
U-238	86.48	222	12.40*	7.052E+00	7.074E-01	7.074E-01	44.96
	95.86	-----	2.68	7.425E+00	-----	Line Not Found	-----
	63.29	153	3.70*	4.728E+00	2.433E+00	2.433E+00	77.92
ANH-511	92.59	471	4.23	7.313E+00	4.245E+00	4.245E+00	22.80
	511.00	189	100.00*	3.088E+00	1.710E-01	1.710E-01	38.04

Flag: "\*" = Keyline

Total number of lines in spectrum 32  
Number of unidentified lines 3  
Number of lines tentatively identified by NID 29 90.63%

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	3.205E+01	3.205E+01	0.297E+01	9.27	
CD-109	461.40D	1.03	2.371E+00	2.443E+00	0.972E+00	39.78	
SN-126	2.30E+05Y	1.00	2.371E-01	2.371E-01	0.943E-01	39.78	
TL-208	1.41E+10Y	1.00	6.210E-01	6.210E-01	0.887E-01	14.28	
BI-211	7.04E+08Y	1.00	4.221E+00	4.221E+00	0.530E+00	12.55	
BI-212	1.41E+10Y	1.00	2.432E+00	2.432E+00	0.726E+00	29.84	
PB-212	1.41E+10Y	1.00	1.864E+00	1.864E+00	0.179E+00	9.58	
BI-214	1600.00Y	1.00	1.283E+00	1.283E+00	0.206E+00	16.08	
PB-214	1600.00Y	1.00	1.532E+00	1.532E+00	0.210E+00	13.71	
RA-224	1.41E+10Y	1.00	4.563E+00	4.563E+00	1.210E+00	26.51	
RA-226	1600.00Y	1.00	1.283E+00	1.283E+00	0.206E+00	16.08	
AC-228	1.41E+10Y	1.00	2.017E+00	2.017E+00	0.425E+00	21.05	
RA-228	1.41E+10Y	1.00	2.017E+00	2.017E+00	0.425E+00	21.05	
TH-228	1.41E+10Y	1.00	1.864E+00	1.864E+00	0.179E+00	9.58	
TH-232	1.41E+10Y	1.00	2.017E+00	2.017E+00	0.425E+00	21.05	
TH-234	4.47E+09Y	1.00	2.433E+00	2.433E+00	1.896E+00	77.92	
U-235	7.04E+08Y	1.00	2.231E-01	2.231E-01	0.793E-01	35.52	K
NP-237	2.14E+06Y	1.00	7.074E-01	7.074E-01	3.181E-01	44.96	
U-238	4.47E+09Y	1.00	2.433E+00	2.433E+00	1.896E+00	77.92	
ANH-511	1.00E+09Y	1.00	1.710E-01	1.710E-01	0.650E-01	38.04	

Total Activity : 6.634E+01 6.641E+01

Grand Total Activity : 6.634E+01 6.641E+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	209.17	170	301	1.40	417.61	413	9	2.36E-02	39.9	6.08E+00	
0	270.17	126	335	1.47	539.52	532	13	1.75E-02	62.3	5.10E+00	T
0	327.97	131	195	1.82	655.03	647	12	1.82E-02	46.0	4.41E+00	T
0	463.12	87	126	1.48	925.15	919	11	1.21E-02	54.2	3.35E+00	T
0	569.74	201	197	2.52	1138.29	1129	21	2.79E-02	38.3	2.81E+00	T
2	964.86	78	49	2.29	1928.37	1919	35	1.08E-02	50.7	1.75E+00	T
0	1377.84	65	26	1.97	2754.55	2748	13	9.03E-03	40.8	1.27E+00	
0	1588.61	17	28	2.26	3176.39	3171	12	2.42E-03	****	1.14E+00	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*                                     *                                       *
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337001.CNF;1 *
* Acquisition date   : 4-MAR-2010 10:15:41.  Detector SN#      :             *
* Detector ID        : GAM14                  Sensitivity       : 5.00000      *
* Geometry           : CAN                    Energy tolerance: 1.50000      *
* Elapsed live time  : 0 02:00:00.00          Abundance limit  : 75.00000      *
* Elapsed real time  : 0 02:00:01.65          Half life ratio : 8.00000      *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 12-FEB-2010 12:00:00  Nuclide Library : SOLID          *
* Sample ID          : G247337001           Analyst initials: MXR1           *
* Batch Number       : 955027               Sample Quantity : 1.34580E+02 GRAM *
*****
*                                     QC DATA                                *
*                                     *                                       *
* CALIB. DATE/TIME   : 6-MAR-2009 11:43:06.61MS Isotope       :             *
* MSD ID              :                      MSD Isotope       :             *
* LCS ID              : 1032-A               LCS Isotope       :             *
*****

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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	3.205E+01	2.970E+00	4.430E-01	3.217E-02	72.340
CD-109	2.443E+00	9.717E-01	1.291E+00	1.129E-01	1.893
SN-126	2.371E-01	9.430E-02	1.257E-01	1.094E-02	1.886
TL-208	6.210E-01	8.870E-02	5.476E-02	3.737E-03	11.341
BI-211	4.221E+00	5.298E-01	3.223E-01	2.043E-02	13.095
BI-212	2.432E+00	7.259E-01	8.452E-01	9.542E-02	2.878
PB-212	1.864E+00	1.785E-01	9.246E-02	6.794E-03	20.163
BI-214	1.283E+00	2.063E-01	1.111E-01	8.862E-03	11.547
PB-214	1.532E+00	2.100E-01	1.172E-01	9.845E-03	13.068
RA-224	4.563E+00	1.210E+00	9.905E-01	5.694E-02	4.607
RA-226	1.283E+00	2.063E-01	1.111E-01	8.862E-03	11.547
AC-228	2.017E+00	4.247E-01	2.387E-01	2.884E-02	8.450
RA-228	2.017E+00	4.247E-01	2.387E-01	2.884E-02	8.450
TH-228	1.864E+00	1.785E-01	9.246E-02	6.794E-03	20.163
TH-232	2.017E+00	4.247E-01	2.387E-01	2.884E-02	8.450
TH-234	2.433E+00	1.896E+00	1.899E+00	3.338E-01	1.282
U-235	2.231E-01	7.927E-02	3.483E-01	5.528E-02	0.641
NP-237	7.074E-01	3.181E-01	4.114E-01	9.321E-02	1.720

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
U-238	2.433E+00	1.896E+00	1.899E+00	3.338E-01	1.282
ANH-511	1.710E-01	6.505E-02	4.433E-02	2.604E-03	3.858

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-1.919E-01		3.401E-01	5.369E-01	3.617E-02	-0.357
NA-22	3.273E-03		4.353E-02	7.215E-02	4.713E-03	0.045
NA-24	-6.285E+01		7.566E+01	Half-Life too short		
SC-46	2.384E-02		4.207E-02	7.331E-02	6.774E-03	0.325
V-48	6.579E-02		8.628E-02	1.525E-01	1.295E-02	0.431
CR-51	-1.839E-01		4.613E-01	6.791E-01	4.381E-02	-0.271
MN-54	-3.028E-02		3.975E-02	6.268E-02	5.258E-03	-0.483
CO-56	-1.053E-02		4.021E-02	6.601E-02	5.658E-03	-0.159
CO-57	7.453E-03		2.621E-02	4.262E-02	3.032E-03	0.175
CO-58	-5.881E-03		4.174E-02	6.615E-02	5.322E-03	-0.089
FE-59	3.715E-02		9.933E-02	1.697E-01	1.306E-02	0.219
CO-60	2.138E-02		3.908E-02	6.790E-02	4.839E-03	0.315
ZN-65	1.788E-02		9.776E-02	1.425E-01	9.368E-03	0.125
SE-75	-8.854E-03		5.034E-02	7.228E-02	4.245E-03	-0.122
SR-85	8.767E-02		4.333E-02	7.140E-02	4.199E-03	1.228
Y-88	2.554E-02		3.424E-02	6.273E-02	3.562E-03	0.407
Y-91	-2.289E+01		2.540E+01	3.897E+01	2.267E+00	-0.588
NB-94	3.519E-03		3.605E-02	5.862E-02	3.802E-03	0.060
NB-95	5.538E-02		4.976E-02	8.582E-02	6.320E-03	0.645
NB-95M	9.416E-01		1.874E-01	3.078E-01	2.308E-02	3.059
ZR-95	9.686E-03		8.151E-02	1.324E-01	1.097E-02	0.073
MO-99	-1.633E+01		4.436E+01	6.930E+01	1.035E+01	-0.236
TC-99M	-9.027E+15		1.196E+16	Half-Life too short		
RU-103	-1.638E-02		4.194E-02	6.675E-02	8.307E-03	-0.245
RH-106	2.073E-01		3.189E-01	5.403E-01	6.328E-02	0.384
RU-106	2.073E-01		3.182E-01	5.403E-01	3.231E-02	0.384
AG-108M	-1.307E-02		3.002E-02	4.810E-02	2.910E-03	-0.272
AG-110M	-4.248E-02		3.966E-02	5.923E-02	3.742E-03	-0.717
SN-113	-4.237E-02		4.892E-02	7.699E-02	4.505E-03	-0.550
CD-115	1.792E-05		2.577E-05	Half-Life too short		
SN-117M	6.062E-03		7.488E-02	1.202E-01	6.798E-03	0.050
TE-123M	5.891E-03		3.126E-02	5.035E-02	2.880E-03	0.117
SB-124	3.996E-02		6.547E-02	1.194E-01	8.106E-03	0.335
SB-125	1.334E-01		9.086E-02	1.613E-01	9.439E-03	0.827
TE-125M	-1.704E+01		1.099E+01	1.657E+01	1.585E+00	-1.028
I-126	-4.284E-02		3.177E-01	5.095E-01	3.060E-02	-0.084
SB-126	1.624E-01		2.150E-01	3.467E-01	2.334E-02	0.468
SB-127	-1.083E+00		3.177E+00	4.971E+00	5.692E-01	-0.218
I-131	-9.456E-02		1.747E-01	2.805E-01	1.787E-02	-0.337
TE-132	-2.048E-02		2.088E+00	3.500E+00	5.454E-01	-0.006
BA-133	8.552E-03		4.489E-02	6.542E-02	7.333E-03	0.131

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-133	-2.318E-01		1.436E-01	Half-Life too short		
CS-134	9.597E-02		5.213E-02	9.370E-02	7.375E-03	1.024
CS-135	3.643E-01		1.808E-01	2.891E-01	2.218E-02	1.260
I-135	4.742E+14		6.296E+14	Half-Life too short		
CS-136	-7.654E-02		1.368E-01	2.157E-01	1.735E-02	-0.355
BA-137M	3.661E-02		4.210E-02	7.173E-02	4.265E-03	0.510
CS-137	3.868E-02		4.448E-02	7.578E-02	4.524E-03	0.510
CE-139	3.699E-03		3.185E-02	5.113E-02	2.745E-03	0.072
BA-140	-2.521E-01		3.515E-01	5.278E-01	1.759E-01	-0.478
LA-140	5.490E-02		1.178E-01	1.865E-01	1.237E-02	0.294
CE-141	2.075E-02		7.540E-02	1.220E-01	7.789E-03	0.170
CE-143	1.421E-02		1.900E-03	Half-Life too short		
CE-144	5.556E-02		2.160E-01	3.499E-01	4.988E-02	0.159
PM-144	3.899E-03		3.726E-02	6.062E-02	3.886E-03	0.064
PR-144	3.000E-01		2.796E+00	4.550E+00	2.914E-01	0.066
PM-146	6.122E-02		4.227E-02	7.476E-02	6.275E-03	0.819
ND-147	-4.871E-01		7.797E-01	1.214E+00	1.648E-01	-0.401
PM-149	3.504E-04		2.150E-04	Half-Life too short		
EU-152	4.139E-03		1.188E-01	1.616E-01	1.045E-02	0.026
GD-153	1.133E-01		9.883E-02	1.465E-01	1.175E-02	0.774
EU-154	1.397E-02		1.235E-01	2.054E-01	2.030E-02	0.068
EU-155	8.639E-02		1.081E-01	1.790E-01	1.385E-02	0.483
TB-160	1.642E-02		1.466E-01	2.475E-01	2.248E-02	0.066
HO-166M	-4.389E-02		6.156E-02	9.354E-02	6.181E-03	-0.469
TA-182	1.667E-01		2.380E-01	4.106E-01	2.456E-02	0.406
IR-192	-2.328E-03		3.585E-02	5.938E-02	3.466E-03	-0.039
HG-203	1.478E-03		4.146E-02	6.924E-02	4.260E-03	0.021
BI-207	4.775E-03		5.540E-02	9.260E-02	6.852E-03	0.052
PB-210	-2.153E+00		2.304E+00	3.678E+00	2.693E-01	-0.585
PB-211	-9.588E-02		7.306E-01	1.194E+00	5.722E-01	-0.080
RN-219	5.283E-02		3.963E-01	6.583E-01	8.760E-02	0.080
RA-223	9.405E-02		7.263E-01	1.056E+00	1.702E-01	0.089
AC-227	3.537E-03		2.373E-01	3.969E-01	4.057E-02	0.009
TH-227	3.537E-03		2.373E-01	3.969E-01	4.769E-02	0.009
TH-229	-1.230E-01		5.291E-01	8.606E-01	4.752E-02	-0.143
PA-231	6.039E-01		1.455E+00	2.465E+00	3.237E-01	0.245
TH-231	9.405E-02		7.263E-01	1.056E+00	1.702E-01	0.089
PA-233	-2.422E-02		6.399E-02	1.044E-01	6.449E-03	-0.232
PA-234	-7.692E-02		3.075E-01	5.022E-01	9.493E-02	-0.153
PA-234M	4.671E+00		4.713E+00	8.406E+00	8.126E-01	0.556
NP-239	-2.005E-01		4.228E-01	6.693E-01	4.833E-02	-0.300
AM-241	1.078E-01		1.529E-01	2.244E-01	1.666E-02	0.480
CM-247	-2.059E-03		3.735E-02	6.140E-02	3.372E-03	-0.034
CF-249	3.976E-02		4.221E-02	7.286E-02	3.983E-03	0.546
CF-251	5.451E-02		1.325E-01	2.149E-01	1.167E-02	0.254

## 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]G247337001 *
* Acquisition date   : 4-MAR-2010 10:15:41 Detector SN#      : *
* Detector ID        : GAM14          Sensitivity            : 5.000 *
* Geometry           : CAN            Energy tolerance       : 1.500 *
* Elapsed live time  : 0 02:00:00.00 Abundance limit        : 75.000 *
* Elapsed real time  : 0 02:00:01.65 Half life ratio        : 8.000 *
*****
*               SAMPLE DATA          *
*                                     *
* Sample date       : 12-FEB-2010 12:00:00 Nuclide Library : SOLID *
* Sample ID        : G247337001      Analyst initials: MXR1 *
* Batch Number     : 955027          Sample Quantity : 1.3458E+02 GRAM *
* Recovery         : 1.00000         Carrier Weight  : 0.00000 *
*****
*               QC DATA              *
*                                     *
* CALIB. DATE/TIME  : 6-MAR-2009 11:43:06 MS Isotope       : *
* MSD DPM           : 0.000          MSD Isotope           : *
* LCS DPM           : 0.000          LCS Isotope           : *
* LCSD DPM          : 0.000          LCSD Isotope          : *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.205E+01	2.911E+00	2.221E-01	1.485E+00
CD-109	2.443E+00	9.523E-01	6.805E-01	4.859E-01
SN-126	2.371E-01	9.241E-02	6.626E-02	4.715E-02
TL-208	6.210E-01	8.693E-02	2.792E-02	4.435E-02
BI-211	4.221E+00	5.192E-01	1.659E-01	2.649E-01
BI-212	2.432E+00	7.113E-01	4.293E-01	3.629E-01
PB-212	1.864E+00	1.750E-01	4.791E-02	8.927E-02
BI-214	1.283E+00	2.022E-01	5.661E-02	1.032E-01
PB-214	1.532E+00	2.058E-01	6.032E-02	1.050E-01
RA-224	4.563E+00	1.186E+00	5.132E-01	6.048E-01
RA-226	1.283E+00	2.022E-01	5.661E-02	1.032E-01
AC-228	2.017E+00	4.162E-01	1.208E-01	2.123E-01
RA-228	2.017E+00	4.162E-01	1.208E-01	2.123E-01
TH-228	1.864E+00	1.750E-01	4.791E-02	8.927E-02
TH-232	2.017E+00	4.162E-01	1.208E-01	2.123E-01
TH-234	2.433E+00	1.858E+00	1.007E+00	9.480E-01
U-235	1.330E-01	2.121E-01	1.821E-01	1.082E-01
NP-237	7.074E-01	3.117E-01	2.169E-01	1.590E-01
U-238	2.433E+00	1.858E+00	1.007E+00	9.480E-01
ANH-511	1.710E-01	6.375E-02	2.266E-02	3.252E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-1.919E-01	3.333E-01	2.748E-01	1.701E-01 NOT IDENT.
NA-22	3.273E-03	4.266E-02	3.627E-02	2.177E-02 NOT IDENT.
NA-24	-6.285E+07	1.483E+08	0.000E+00	7.566E+07 SHORT HLIF
SC-46	2.384E-02	4.123E-02	3.709E-02	2.103E-02 FAIL ABUN
V-48	6.579E-02	8.456E-02	7.701E-02	4.314E-02 NOT IDENT.
CR-51	-1.839E-01	4.521E-01	3.501E-01	2.306E-01 NOT IDENT.
MN-54	-3.028E-02	3.896E-02	3.175E-02	1.988E-02 NOT IDENT.

CO-56	-1.053E-02	3.941E-02	3.343E-02	2.010E-02	NOT IDENT.
CO-57	7.453E-03	2.568E-02	2.235E-02	1.310E-02	NOT IDENT.
CO-58	-5.881E-03	4.091E-02	3.353E-02	2.087E-02	NOT IDENT.
FE-59	3.715E-02	9.735E-02	8.553E-02	4.967E-02	NOT IDENT.
CO-60	2.138E-02	3.830E-02	3.410E-02	1.954E-02	NOT IDENT.
ZN-65	1.788E-02	9.581E-02	7.182E-02	4.888E-02	NOT IDENT.
SE-75	-8.854E-03	4.934E-02	3.739E-02	2.517E-02	NOT IDENT.
SR-85	8.767E-02	4.246E-02	3.649E-02	2.166E-02	NOT IDENT.
Y-88	2.554E-02	3.356E-02	3.131E-02	1.712E-02	NOT IDENT.
Y-91	-2.289E+01	2.490E+01	1.961E+01	1.270E+01	NOT IDENT.
NB-94	3.519E-03	3.533E-02	2.979E-02	1.803E-02	NOT IDENT.
NB-95	5.538E-02	4.876E-02	4.354E-02	2.488E-02	NOT IDENT.
NB-95M	9.416E-01	1.836E-01	1.595E-01	9.370E-02	NOT IDENT.
ZR-95	9.686E-03	7.988E-02	6.719E-02	4.076E-02	NOT IDENT.
MO-99	-1.633E+01	4.348E+01	3.518E+01	2.218E+01	NOT IDENT.
TC-99M	-9.027E+21	2.344E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-1.638E-02	4.110E-02	3.414E-02	2.097E-02	FAIL ABUN
RH-106	2.073E-01	3.125E-01	2.752E-01	1.595E-01	NOT IDENT.
RU-106	2.073E-01	3.119E-01	2.752E-01	1.591E-01	NOT IDENT.
AG-108M	-1.307E-02	2.942E-02	2.466E-02	1.501E-02	NOT IDENT.
AG-110M	-4.248E-02	3.886E-02	3.014E-02	1.983E-02	NOT IDENT.
SN-113	-4.237E-02	4.794E-02	3.954E-02	2.446E-02	NOT IDENT.
CD-115	1.792E+01	5.051E+01	0.000E+00	2.577E+01	SHORT HLIF
SN-117M	6.062E-03	7.338E-02	6.272E-02	3.744E-02	NOT IDENT.
TE-123M	5.891E-03	3.063E-02	2.628E-02	1.563E-02	NOT IDENT.
SB-124	3.996E-02	6.416E-02	5.971E-02	3.274E-02	NOT IDENT.
SB-125	1.334E-01	8.905E-02	8.270E-02	4.543E-02	FAIL ABUN
TE-125M	-1.704E+01	1.077E+01	8.703E+00	5.493E+00	NOT IDENT.
I-126	-4.284E-02	3.114E-01	2.592E-01	1.589E-01	NOT IDENT.
SB-126	1.624E-01	2.107E-01	1.761E-01	1.075E-01	NOT IDENT.
SB-127	-1.083E+00	3.114E+00	2.527E+00	1.589E+00	NOT IDENT.
I-131	-9.456E-02	1.712E-01	1.443E-01	8.737E-02	NOT IDENT.
TE-132	-2.048E-02	2.046E+00	1.815E+00	1.044E+00	NOT IDENT.
BA-133	8.552E-03	4.400E-02	3.366E-02	2.245E-02	NOT IDENT.
I-133	-2.318E+05	2.815E+05	0.000E+00	1.436E+05	SHORT HLIF
CS-134	9.597E-02	5.109E-02	4.751E-02	2.607E-02	FAIL ABUN
CS-135	3.643E-01	1.772E-01	1.495E-01	9.041E-02	NOT IDENT.
I-135	4.742E+20	1.234E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-7.654E-02	1.340E-01	1.088E-01	6.838E-02	NOT IDENT.
BA-137M	3.661E-02	4.126E-02	3.649E-02	2.105E-02	NOT IDENT.
CS-137	3.868E-02	4.359E-02	3.855E-02	2.224E-02	NOT IDENT.
CE-139	3.699E-03	3.121E-02	2.666E-02	1.593E-02	NOT IDENT.
BA-140	-2.521E-01	3.444E-01	2.696E-01	1.757E-01	NOT IDENT.
LA-140	5.490E-02	1.155E-01	9.335E-02	5.892E-02	FAIL ABUN
CE-141	2.075E-02	7.389E-02	6.379E-02	3.770E-02	NOT IDENT.
CE-143	1.421E+04	3.725E+03	0.000E+00	1.900E+03	SHORT HLIF
CE-144	5.556E-02	2.116E-01	1.831E-01	1.080E-01	NOT IDENT.
PM-144	3.899E-03	3.651E-02	3.081E-02	1.863E-02	NOT IDENT.
PR-144	3.000E-01	2.740E+00	2.313E+00	1.398E+00	NOT IDENT.
PM-146	6.122E-02	4.143E-02	3.830E-02	2.114E-02	NOT IDENT.
ND-147	-4.871E-01	7.641E-01	6.204E-01	3.899E-01	FAIL ABUN
PM-149	3.504E+02	4.214E+02	0.000E+00	2.150E+02	SHORT HLIF
EU-152	4.139E-03	1.164E-01	8.321E-02	5.940E-02	FAIL ABUN
GD-153	1.133E-01	9.686E-02	7.708E-02	4.942E-02	NOT IDENT.
EU-154	1.397E-02	1.210E-01	1.032E-01	6.175E-02	NOT IDENT.
EU-155	8.639E-02	1.059E-01	9.409E-02	5.405E-02	FAIL ABUN
TB-160	1.642E-02	1.437E-01	1.253E-01	7.330E-02	FAIL ABUN
HO-166M	-4.389E-02	6.033E-02	4.753E-02	3.078E-02	FAIL ABUN
TA-182	1.667E-01	2.332E-01	2.065E-01	1.190E-01	FAIL ABUN
IR-192	-2.328E-03	3.513E-02	3.062E-02	1.793E-02	FAIL ABUN
HG-203	1.478E-03	4.063E-02	3.578E-02	2.073E-02	NOT IDENT.
BI-207	4.775E-03	5.429E-02	4.670E-02	2.770E-02	FAIL ABUN
PB-210	-2.153E+00	2.258E+00	1.960E+00	1.152E+00	NOT IDENT.
PB-211	-9.588E-02	7.160E-01	6.127E-01	3.653E-01	NOT IDENT.
RN-219	5.283E-02	3.884E-01	3.380E-01	1.982E-01	FAIL ABUN
RA-223	9.405E-02	7.118E-01	5.443E-01	3.632E-01	FAIL ABUN
AC-227	3.537E-03	2.325E-01	2.054E-01	1.186E-01	FAIL ABUN
TH-227	3.537E-03	2.325E-01	2.054E-01	1.186E-01	FAIL ABUN
TH-229	-1.230E-01	5.186E-01	4.476E-01	2.646E-01	FAIL ABUN
PA-231	6.039E-01	1.426E+00	1.273E+00	7.275E-01	FAIL ABUN
TH-231	9.405E-02	7.118E-01	5.443E-01	3.632E-01	FAIL ABUN
PA-233	-2.422E-02	6.271E-02	5.385E-02	3.200E-02	FAIL ABUN
PA-234	-7.692E-02	3.014E-01	2.538E-01	1.538E-01	FAIL ABUN
PA-234M	4.671E+00	4.619E+00	4.244E+00	2.357E+00	NOT IDENT.
NP-239	-2.005E-01	4.144E-01	3.512E-01	2.114E-01	NOT IDENT.
AM-241	1.078E-01	1.498E-01	1.191E-01	7.645E-02	NOT IDENT.
CM-247	-2.059E-03	3.660E-02	3.152E-02	1.867E-02	NOT IDENT.
CF-249	3.976E-02	4.137E-02	3.743E-02	2.110E-02	NOT IDENT.



CF-251

5.451E-02

1.299E-01

1.119E-01

6.625E-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	500.9481
49.72	524.2361
57.36	0.0000
59.54	574.0142
63.29	628.1685
63.29	628.1685
64.28	609.9380
67.75	712.3577
69.67	643.5551
70.83	663.8588
72.81	746.9734
72.87	747.0144
72.87	747.0144
74.82	732.4520
74.82	732.4520
74.82	732.4520
74.97	732.5535
77.11	733.9741
77.11	733.9741
77.11	733.9741
79.69	686.0571
79.80	686.1243
80.12	725.0054
80.19	725.0502
80.57	748.8516
81.00	760.3571
81.07	760.4039
81.07	760.4039
83.79	750.9429
83.79	750.9429
85.43	767.2029
86.48	759.4277
86.55	759.4716
86.79	641.8301
86.94	641.9135
87.57	642.2515
88.03	642.4969
88.47	642.7332
89.96	643.5250
91.11	644.1317
92.59	644.9074
92.59	644.9074
93.35	645.3033
94.67	544.8848
94.87	544.9727
94.87	544.9727
95.86	557.3330
97.43	450.5144
98.44	428.6686
99.53	441.5681
100.11	444.6168
103.18	514.2279
103.37	514.3030
105.31	436.7242
106.12	423.0318
109.28	531.6459
111.00	471.9715
111.76	473.3103
116.30	452.1392
117.23	464.3436
121.12	430.8764
121.78	402.8418
122.06	402.9196
123.07	421.6753
131.20	450.2164
133.52	445.4326
136.00	485.6128

136.47	457.2518
140.51	438.6467
140.51	0.0000
143.76	426.3283
144.24	437.4748
144.24	437.4748
145.44	457.6519
152.43	470.6932
153.25	454.3057
154.21	442.3727
154.21	442.3727
156.02	386.2484
158.56	415.7309
159.00	411.3918
162.66	405.5898
163.33	391.2571
165.86	385.1323
176.60	353.7814
177.52	346.0958
181.07	361.7820
184.41	338.3766
185.72	338.6147
193.51	360.6731
197.04	359.7234
205.31	345.1345
210.85	333.8979
215.65	332.1461
222.11	319.1896
227.38	342.1288
228.16	325.6502
228.18	325.6546
235.69	330.1997
235.96	330.2410
235.96	330.2410
238.63	299.4394
238.63	299.4394
240.99	299.7666
242.00	299.9046
244.70	274.2452
252.40	261.2046
252.80	256.5872
256.23	236.4193
256.23	236.4193
260.90	0.0000
264.66	237.6082
268.22	227.0139
269.46	248.1252
269.46	248.1252
271.23	263.3613
273.65	327.9742
276.40	219.5031
277.37	253.5702
277.60	255.5875
278.00	265.0634
279.20	257.6471
279.54	269.0105
280.46	279.4981
283.69	234.4920
284.31	228.8779
285.41	212.8958
285.90	0.0000
287.50	224.1284
293.27	0.0000
295.22	186.8357
295.96	218.5674
298.57	218.8004
299.98	218.9240
299.98	218.9240
300.09	201.4812
300.09	201.4812
300.13	201.4838
301.36	201.5846
302.85	201.7034
304.50	224.0876
304.50	224.0876
304.85	220.9388
308.46	213.6933
311.90	217.0909

316.51	205.0267
319.41	228.9954
320.08	217.9179
323.87	203.3674
323.87	203.3674
328.76	190.9128
333.37	151.0671
334.37	171.7031
334.37	171.7031
338.28	205.7639
338.28	205.7639
338.32	199.6508
338.32	199.6508
338.32	199.6508
340.48	183.6960
340.55	183.7007
344.28	195.5741
351.06	180.5303
351.93	180.5871
356.01	158.8134
364.49	183.3551
366.42	175.6714
383.85	201.2914
388.16	169.1382
388.63	175.0667
391.69	205.7701
400.66	162.9415
401.81	154.1128
402.40	166.0005
404.85	174.0492
410.95	177.3721
414.70	158.7402
423.72	160.2021
427.09	139.4583
427.87	120.5613
433.94	155.7372
453.88	112.5127
463.37	130.9760
468.07	119.3922
473.00	135.4002
476.78	128.4728
477.60	136.6002
487.02	137.9972
492.35	0.0000
497.08	120.0872
511.00	111.3757
514.00	97.1541
527.90	0.0000
529.87	0.0000
531.02	127.4209
537.26	120.4392
546.56	0.0000
563.25	115.7669
569.33	115.2628
569.50	115.2682
569.70	115.2736
583.19	97.9702
600.60	138.7239
602.73	125.7041
604.72	111.7943
609.32	107.0303
609.32	107.0303
610.33	107.0577
614.28	117.3209
618.01	115.6799
621.93	89.4762
621.93	89.4762
633.25	88.6758
635.95	97.1862
636.99	91.9277
645.85	88.9526
657.76	135.9406
661.66	121.1890
661.66	121.1890
664.57	0.0000
666.33	122.3896
666.50	122.3953
677.62	90.7068

685.70	89.8119
695.00	92.1519
696.49	108.2618
696.51	108.2618
697.00	103.9861
702.65	108.4172
706.68	92.4017
711.68	101.1143
720.70	91.6219
721.93	0.0000
722.78	106.0444
722.91	106.0492
723.31	118.6421
724.19	111.4744
727.33	97.1587
733.00	81.0699
735.93	75.7148
739.50	98.5093
747.24	76.9924
752.31	102.0483
753.82	82.5350
756.73	92.3690
763.94	137.1419
765.81	97.9980
766.42	95.8332
777.92	100.9867
778.90	105.5592
783.70	96.5585
785.37	83.1064
795.86	75.6237
801.95	92.1826
810.29	67.0613
810.76	76.9624
815.77	66.9553
818.51	66.9939
832.01	90.1902
834.85	103.1361
836.80	0.0000
846.77	76.6186
856.80	68.1863
860.56	76.1736
871.09	66.7939
873.19	77.0307
875.33	0.0000
879.36	70.6222
880.51	73.4260
883.24	80.9058
884.68	76.2778
889.28	67.9682
898.04	77.4140
911.20	76.6781
911.20	76.6781
911.20	76.6781
926.50	67.5278
937.49	71.4309
944.13	57.4047
946.00	74.3711
949.00	69.7032
962.29	76.0849
964.08	63.2896
966.15	63.3141
968.97	63.3482
968.97	63.3482
968.97	63.3482
983.53	54.9874
996.26	87.4273
1001.03	60.8724
1004.73	75.1908
1037.84	77.5558
1038.76	0.0000
1048.07	69.0645
1050.41	59.4974
1050.41	59.4974
1063.66	70.2168
1085.87	69.5244
1099.45	61.9453
1112.07	69.8379
1115.54	59.8962

1120.29	71.8772
1120.29	71.8772
1120.55	71.6057
1121.30	63.2874
1131.51	0.0000
1173.23	78.3952
1177.93	64.7271
1189.05	80.5653
1204.77	101.4535
1221.41	93.8249
1231.02	102.8701
1235.36	109.8708
1238.28	88.1345
1260.41	0.0000
1271.85	43.8031
1274.44	53.7803
1274.54	53.7803
1291.59	55.9180
1298.22	0.0000
1312.11	56.0934
1332.49	36.1714
1365.19	26.2518
1368.63	0.0000
1384.29	24.3008
1408.01	28.4489
1457.56	0.0000
1460.82	19.4507
1489.16	27.7504
1505.03	40.1727
1596.21	20.3347
1620.50	15.6921
1678.03	0.0000
1690.97	8.4456
1764.49	12.7856
1764.49	12.7856
1770.23	7.3111
1771.35	9.1403
1791.20	0.0000
1836.06	10.7479

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247337001

Total Uranium Activity	7.3010E+00	ug/g
Total Uranium Counting Unc.	5.5287E+00	ug/g
Total Uranium Tpu	2.8208E-06	ug/g
Total Uranium Mda	2.9958E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 955027                          SAMPLE ID   : G247337001
*  ANALYST       : MXR1                            DETECTOR    : GAM14
*  SAMPLE DATE   : 12-FEB-2010 12:00:00.00         COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 4-MAR-2010 10:15:41.16         SAMPLE ALQT  : 134.580 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.068E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.360E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 4.181E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 2.047E+00

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## VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 12:17:39.81

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337002.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:16:41.
Sample ID          : G247337002 Sample quantity : 1.34440E+02 GRAM
Detector name      : GAM17 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:10.12 0.1%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 955027 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	46.42*	116	427	0.91	92.47	89	8	1.60E-02	33.9	
2	0	63.36*	187	585	1.05	126.36	122	8	2.59E-02	24.4	
3	3	74.81*	652	375	0.91	149.26	142	16	9.06E-02	6.0	1.92E+00
4	3	77.09*	1119	409	0.95	153.83	142	16	1.55E-01	4.2	
5	5	87.26*	378	434	1.30	174.17	164	28	5.25E-02	10.9	2.02E+00
6	5	89.87	235	356	1.12	179.40	164	28	3.26E-02	15.1	
7	5	92.78*	410	379	1.36	185.22	164	28	5.69E-02	10.4	
8	0	129.06	111	311	0.96	257.81	254	8	1.55E-02	29.0	
9	0	185.79*	229	362	1.25	371.30	366	12	3.18E-02	18.3	
10	0	209.14	100	295	1.00	418.02	414	9	1.39E-02	32.5	
11	7	238.51*	1121	183	1.02	476.79	472	17	1.56E-01	3.6	8.65E-01
12	7	241.46*	247	241	1.50	482.69	472	17	3.43E-02	14.8	
13	0	269.49	167	224	1.37	538.77	532	14	2.33E-02	20.5	
14	0	295.05*	399	104	1.09	589.92	586	9	5.54E-02	7.0	
15	0	299.81	84	140	0.93	599.44	596	9	1.16E-02	27.6	
16	0	327.60	70	107	1.14	655.05	652	7	9.79E-03	27.1	
17	0	338.08	228	151	1.07	676.01	672	10	3.16E-02	12.1	
18	0	351.74*	541	159	1.11	703.36	697	10	7.52E-02	6.2	
19	0	409.10	31	72	1.24	818.12	814	7	4.36E-03	48.1	
20	0	462.56	98	107	1.61	925.10	919	15	1.37E-02	24.9	
21	0	510.43*	144	105	1.71	1020.88	1014	12	2.00E-02	18.8	
22	0	582.80*	360	87	1.35	1165.71	1159	13	4.99E-02	7.7	
23	0	608.80*	405	58	1.15	1217.72	1213	10	5.63E-02	6.2	
24	0	726.97	57	94	1.31	1454.21	1450	12	7.95E-03	36.2	
25	0	767.55	55	60	0.63	1535.42	1529	11	7.61E-03	30.6	
26	0	910.45*	248	49	1.46	1821.40	1816	13	3.45E-02	8.7	
27	1	963.72	47	40	1.83	1928.02	1922	27	6.60E-03	30.9	1.22E+00
28	1	968.16*	106	42	1.83	1936.90	1922	27	1.48E-02	15.5	
29	0	1119.91	102	46	1.38	2240.63	2235	12	1.42E-02	16.7	
30	0	1459.48*	1035	27	2.15	2920.31	2914	18	1.44E-01	3.3	
31	0	1586.85	25	20	0.73	3175.29	3168	13	3.40E-03	42.3	
32	0	1762.74	76	3	2.18	3527.41	3521	13	1.05E-02	12.5	

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

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337002.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:16:41
Sample ID         : G247337002 Sample quantity : 134.44 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA17 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:10.12 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	*	3.481E+01	3.866E+00	6.310E-01	5.603E-02	55.167
CD-109	+	88.03	*	4.402E+00	1.054E+00	9.653E-01	9.424E-02	4.560
SN-126	+	64.28		8.016E-01	4.109E-01	4.225E-01	6.744E-02	1.897
	+	86.94		1.776E+00	8.348E-01	3.882E-01	1.615E-01	4.575
	+	87.57	*	4.272E-01	1.023E-01	9.355E-02	9.129E-03	4.566
CS-135	+	268.22	*	7.998E-01	3.380E-01	2.556E-01	2.668E-02	3.129
TL-208		277.37		5.160E-01	4.209E-01	7.478E-01	9.660E-02	0.690
	+	583.19	*	6.517E-01	1.175E-01	6.703E-02	6.332E-03	9.722
		860.56		4.954E-01	4.757E-01	7.703E-01	7.244E-02	0.643
PB-210	+	46.54	*	1.205E+00	8.267E-01	8.425E-01	9.082E-02	1.431
BI-211		72.87		2.951E+00	2.003E+00	3.491E+00	3.413E-01	0.845
	+	351.06	*	4.022E+00	6.223E-01	3.780E-01	3.528E-02	10.640
PB-212	+	74.82		2.608E+00	4.757E-01	3.780E-01	5.209E-02	6.900
	+	77.11		2.695E+00	3.485E-01	2.282E-01	2.225E-02	11.807
	+	238.63	*	1.785E+00	2.219E-01	1.041E-01	1.054E-02	17.151
	+	300.09		2.116E+00	1.191E+00	1.344E+00	1.478E-01	1.574
BI-214	+	609.32	*	1.431E+00	2.302E-01	1.352E-01	1.382E-02	10.581
	+	1120.29		1.959E+00	6.875E-01	6.341E-01	6.811E-02	3.090
		1764.49		1.730E+00	5.253E-01	1.082E+00	9.145E-02	1.600
PB-214	+	74.82		4.622E+00	8.019E-01	6.699E-01	8.426E-02	6.900
	+	77.11		4.751E+00	7.287E-01	4.024E-01	5.138E-02	11.808
	+	242.00		2.385E+00	7.527E-01	6.336E-01	6.808E-02	3.764
	+	295.22		1.783E+00	3.200E-01	2.138E-01	2.407E-02	8.342
	+	351.93	*	1.460E+00	2.398E-01	1.370E-01	1.484E-02	10.654
RA-224	+	240.99	*	4.217E+00	1.308E+00	1.116E+00	1.009E-01	3.778
RA-226	+	609.32	*	1.431E+00	2.302E-01	1.352E-01	1.382E-02	10.581
	+	1120.29		1.959E+00	6.875E-01	6.341E-01	6.811E-02	3.090
		1764.49		1.730E+00	5.253E-01	1.082E+00	9.145E-02	1.600
AC-228	+	338.32		1.873E+00	9.047E-01	4.190E-01	1.751E-01	4.470
	+	911.20	*	2.273E+00	4.776E-01	3.129E-01	3.658E-02	7.264
	+	968.97		1.684E+00	6.647E-01	5.660E-01	1.381E-01	2.976
RA-228	+	338.32		1.873E+00	9.047E-01	4.190E-01	1.751E-01	4.470
	+	911.20	*	2.273E+00	4.776E-01	3.129E-01	3.658E-02	7.264
	+	968.97		1.684E+00	6.647E-01	5.660E-01	1.381E-01	2.976

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	74.82		2.608E+00	4.036E-01	3.780E-01	3.716E-02	6.900
	+	77.11		2.695E+00	3.485E-01	2.282E-01	2.225E-02	11.807
	+	238.63	*	1.785E+00	2.219E-01	1.041E-01	1.054E-02	17.151
	+	300.09		2.116E+00	1.746E+00	1.344E+00	8.240E-01	1.574
TH-232	+	338.32		1.873E+00	4.839E-01	4.190E-01	3.775E-02	4.470
	+	911.20	*	2.273E+00	4.776E-01	3.129E-01	3.658E-02	7.264
	+	968.97		1.684E+00	6.647E-01	5.660E-01	1.381E-01	2.976
TH-234	+	63.29	*	2.080E+00	1.088E+00	1.075E+00	2.046E-01	1.934
	+	92.59		4.101E+00	1.264E+00	8.316E-01	1.883E-01	4.932
U-235	+	89.96		2.844E+00	1.115E+00	1.005E+00	2.520E-01	2.830
	+	93.35		3.098E+00	9.773E-01	6.297E-01	1.490E-01	4.919
		143.76	*	2.000E-02	2.125E-01	3.438E-01	6.120E-02	0.058
		163.33		2.026E-01	4.448E-01	7.383E-01	1.324E-01	0.274
	+	185.72		2.326E-01	8.743E-02	6.698E-02	5.736E-03	3.473
		205.31		-3.886E-01	6.063E-01	8.241E-01	1.501E-01	-0.471
NP-237	+	86.48	*	1.275E+00	4.057E-01	2.782E-01	6.434E-02	4.581
		95.86		-4.558E-01	8.449E-01	1.220E+00	2.997E-01	-0.374
U-238	+	63.29	*	2.080E+00	1.088E+00	1.075E+00	2.046E-01	1.934
	+	92.59		4.101E+00	9.496E-01	8.316E-01	8.296E-02	4.932
ANH-511	+	511.00	*	1.951E-01	7.544E-02	5.559E-02	4.965E-03	3.509

## ---- 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	*	-4.506E-01	4.158E-01	6.182E-01	5.881E-02	-0.729
NA-22		1274.54	*	1.637E-02	6.242E-02	1.032E-01	8.694E-03	0.159
NA-24		1368.63	*	7.746E+01	6.242E-02	Half-Life too short		
SC-46		889.28	*	4.128E-02	5.402E-02	9.570E-02	8.378E-03	0.431
	+	1120.55		3.449E-01	1.188E-01	1.867E-01	1.566E-02	1.848
V-48		944.13		-1.364E+00	1.483E+00	2.201E+00	1.926E-01	-0.619
		983.53	*	2.236E-02	1.136E-01	1.903E-01	1.660E-02	0.117
		1312.11		-6.088E-02	1.282E-01	2.029E-01	1.722E-02	-0.300
CR-51		320.08	*	-2.019E-02	4.569E-01	7.667E-01	7.317E-02	-0.026
MN-54		834.85	*	-5.150E-02	5.140E-02	7.755E-02	6.819E-03	-0.664
CO-56		846.77	*	-3.025E-02	5.653E-02	8.919E-02	7.840E-03	-0.339
		1037.84		3.559E-01	4.970E-01	8.631E-01	7.841E-02	0.412
		1238.28		1.167E-01	1.328E-01	2.298E-01	1.975E-02	0.508
		1771.35		1.248E-01	2.603E-01	4.742E-01	4.005E-02	0.263
CO-57		122.06	*	-7.034E-04	2.561E-02	4.229E-02	4.955E-03	-0.017
		136.47		-1.813E-01	2.100E-01	3.298E-01	3.710E-02	-0.550
CO-58		810.76	*	-3.172E-03	5.029E-02	8.331E-02	7.337E-03	-0.038
FE-59		1099.45	*	-1.336E-01	1.416E-01	2.066E-01	1.896E-02	-0.647
		1291.59		-4.290E-02	1.844E-01	2.873E-01	2.769E-02	-0.149
CO-60		1173.23		1.988E-02	7.239E-02	1.199E-01	9.795E-03	0.166
		1332.49	*	3.431E-02	5.205E-02	9.368E-02	7.984E-03	0.366
ZN-65		1115.54	*	2.810E-02	1.428E-01	2.060E-01	1.734E-02	0.136
SE-75		121.12		1.331E-02	1.361E-01	2.261E-01	3.069E-02	0.059
		136.00		-4.330E-03	4.081E-02	6.679E-02	7.224E-03	-0.065

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	264.66	*		-1.317E-02	5.199E-02	7.128E-02	6.549E-03	-0.185
	279.54			-2.897E-02	1.207E-01	2.021E-01	1.918E-02	-0.143
	400.66			2.097E-01	3.067E-01	5.300E-01	5.820E-02	0.396
SR-85	514.00	*		1.824E-02	5.182E-02	7.682E-02	6.863E-03	0.237
Y-88	898.04			-7.937E-04	5.883E-02	9.718E-02	8.536E-03	-0.008
	1836.06	*		-4.308E-03	4.639E-02	7.406E-02	6.176E-03	-0.058
Y-91	1204.77	*		6.131E+00	3.459E+01	5.675E+01	4.684E+00	0.108
NB-94	702.65	*		2.106E-02	4.496E-02	7.827E-02	6.714E-03	0.269
	871.09			4.906E-02	4.717E-02	8.514E-02	7.471E-03	0.576
NB-95	765.81	*		9.494E-02	7.166E-02	1.177E-01	1.028E-02	0.807
NB-95M	235.69	*		7.430E-02	1.580E-01	2.314E-01	2.366E-02	0.321
ZR-95	724.19			1.042E-01	1.481E-01	2.325E-01	2.178E-02	0.448
	756.73	*		-2.958E-02	1.006E-01	1.643E-01	1.579E-02	-0.180
MO-99	140.51			1.523E+01	7.558E+01	1.251E+02	3.059E+01	0.122
	181.07			3.043E+01	7.057E+01	1.045E+02	1.958E+01	0.291
	366.42			1.064E+02	3.669E+02	6.236E+02	5.458E+01	0.171
	739.50	*		-3.761E+01	5.201E+01	8.100E+01	1.279E+01	-0.464
	777.92			-5.004E+01	1.458E+02	2.356E+02	2.063E+01	-0.212
TC-99M	140.51	*		4.630E+15	1.458E+02	Half-Life	too short	
RU-103	497.08	*		2.405E-02	5.385E-02	9.090E-02	1.286E-02	0.265
	610.33			1.416E+01	2.980E+00	3.826E+00	6.280E-01	3.701
RH-106	621.93	*		3.115E-01	4.098E-01	7.000E-01	9.309E-02	0.445
	1050.41			6.071E-01	3.609E+00	5.995E+00	5.159E-01	0.101
RU-106	621.93	*		3.115E-01	4.086E-01	7.000E-01	6.081E-02	0.445
	1050.41			6.071E-01	3.609E+00	5.995E+00	5.159E-01	0.101
AG-108M	433.94	*		-2.065E-02	3.355E-02	5.263E-02	4.718E-03	-0.392
	614.28			-9.740E-03	4.913E-02	6.724E-02	6.056E-03	-0.145
	722.91			1.015E-03	5.183E-02	7.608E-02	6.782E-03	0.013
AG-110M	657.76	*		2.473E-02	4.771E-02	7.980E-02	6.955E-03	0.310
	677.62			-3.834E-02	3.927E-01	6.209E-01	5.427E-02	-0.062
	706.68			1.146E-01	2.888E-01	5.003E-01	4.422E-02	0.229
	763.94			2.292E-02	2.451E-01	3.609E-01	3.236E-02	0.064
	884.68			-1.375E-02	6.792E-02	1.102E-01	9.958E-03	-0.125
	937.49			-7.381E-02	1.633E-01	2.576E-01	2.333E-02	-0.287
	1384.29			2.448E-02	1.980E-01	3.317E-01	2.924E-02	0.074
	1505.03			-3.726E-01	3.717E-01	5.139E-01	4.444E-02	-0.725
SN-113	391.69	*		3.765E-02	5.192E-02	9.024E-02	7.840E-03	0.417
CD-115	260.90			-4.564E-04	5.192E-02	Half-Life	too short	
	492.35			-9.636E-05	5.192E-02	Half-Life	too short	
	527.90	*		-4.990E-05	5.192E-02	Half-Life	too short	
SN-117M	156.02			1.380E+00	3.098E+00	5.156E+00	4.747E-01	0.268
	158.56	*		-1.915E-02	7.380E-02	1.189E-01	1.069E-02	-0.161
TE-123M	159.00	*		-2.294E-02	3.113E-02	4.888E-02	4.400E-03	-0.469
SB-124	602.73			-2.248E-02	5.429E-02	7.702E-02	6.764E-03	-0.292
	645.85			7.695E-01	7.093E-01	1.238E+00	1.119E-01	0.622
	722.78			-1.809E-01	5.690E-01	8.009E-01	7.077E-02	-0.226
	1690.97	*		-1.130E-02	1.025E-01	1.644E-01	1.466E-02	-0.069
SB-125	427.87	*		1.194E-02	1.042E-01	1.736E-01	1.530E-02	0.069
	+ 463.37			1.168E+00	5.908E-01	6.609E-01	6.249E-02	1.767

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TE-125M I-126	600.60			1.085E-01	2.109E-01	3.555E-01	3.348E-02	0.305
	635.95			-7.752E-02	3.649E-01	5.742E-01	5.344E-02	-0.135
	109.28	*		4.300E+00	9.810E+00	1.657E+01	2.059E+00	0.260
	388.63			4.066E-02	2.373E-01	3.990E-01	3.377E-02	0.102
	666.33	*		-3.579E-02	3.816E-01	6.051E-01	5.109E-02	-0.059
SB-126	753.82			2.283E+00	2.997E+00	5.330E+00	4.644E-01	0.428
	414.70			1.841E-03	1.081E-01	1.792E-01	1.536E-02	0.010
	666.50			-9.226E-03	1.308E-01	2.078E-01	1.754E-02	-0.044
	695.00			-6.350E-03	1.345E-01	2.259E-01	1.932E-02	-0.028
	697.00			4.511E-02	4.607E-01	7.823E-01	6.696E-02	0.058
SB-127	720.70	*		-8.938E-02	2.557E-01	3.923E-01	3.387E-02	-0.228
	856.80			1.278E-01	8.985E-01	1.509E+00	1.326E-01	0.085
	252.40			-1.250E+00	1.082E+01	1.704E+01	7.167E+00	-0.073
	473.00			2.230E+00	4.409E+00	7.507E+00	1.072E+00	0.297
	685.70	*		-1.867E+00	3.769E+00	5.676E+00	7.281E-01	-0.329
I-131	783.70			7.791E+00	1.108E+01	1.949E+01	2.701E+00	0.400
	80.19			2.090E+00	6.419E+00	7.923E+00	7.785E-01	0.264
	284.31			4.810E-01	2.334E+00	3.998E+00	3.853E-01	0.120
	364.49	*		1.083E-01	1.923E-01	3.323E-01	3.080E-02	0.326
	636.99			-1.177E+00	3.122E+00	4.830E+00	4.411E-01	-0.244
TE-132	49.72			5.647E+00	1.105E+01	1.734E+01	2.338E+00	0.326
	111.76			-3.542E+01	9.257E+01	1.491E+02	2.125E+01	-0.238
	116.30			1.312E+01	7.839E+01	1.308E+02	1.894E+01	0.100
	228.16	*		1.337E-01	2.214E+00	3.551E+00	6.053E-01	0.038
	81.00			-6.202E-02	9.288E-02	1.058E-01	1.710E-02	-0.586
BA-133	276.40			3.732E-01	3.956E-01	6.775E-01	9.795E-02	0.551
	302.85			4.527E-02	1.644E-01	2.502E-01	3.362E-02	0.181
	356.01	*		2.390E-02	5.157E-02	7.891E-02	1.035E-02	0.303
	383.85			-8.901E-02	3.322E-01	5.424E-01	6.706E-02	-0.164
	529.87	*		-8.663E-03	3.322E-01	Half-Life too short		
I-133	875.33			-2.989E+00	3.322E-01	Half-Life too short		
	1298.22			5.231E+00	3.322E-01	Half-Life too short		
	563.25			2.931E-01	4.391E-01	7.507E-01	6.746E-02	0.390
	569.33			-1.183E-01	2.379E-01	3.671E-01	3.307E-02	-0.322
	604.72			-2.233E-04	4.283E-02	6.022E-02	5.296E-03	-0.004
CS-134	795.86	*		2.482E-02	6.135E-02	1.058E-01	9.347E-03	0.235
	801.95			1.553E-01	5.376E-01	9.014E-01	7.957E-02	0.172
	1365.19			-9.518E-01	1.612E+00	2.471E+00	2.215E-01	-0.385
	546.56			1.235E+15	1.612E+00	Half-Life too short		
	836.80			1.853E+15	1.612E+00	Half-Life too short		
I-135	1038.76			9.004E+14	1.612E+00	Half-Life too short		
	1131.51			1.582E+15	1.612E+00	Half-Life too short		
	1260.41	*		7.493E+14	1.612E+00	Half-Life too short		
	1457.56			3.088E+17	1.612E+00	Half-Life too short		
	1678.03			-2.465E+15	1.612E+00	Half-Life too short		
CS-136	1791.20			-9.948E+14	1.612E+00	Half-Life too short		
	153.25			9.428E-01	1.186E+00	1.999E+00	2.192E-01	0.472
	176.60			-3.584E-01	7.012E-01	1.108E+00	1.038E-01	-0.324
	273.65			-4.690E-01	8.461E-01	1.129E+00	1.114E-01	-0.415

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Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		340.55		5.376E-02	2.198E-01	3.313E-01	3.085E-02	0.162
		818.51		-5.778E-02	1.179E-01	1.865E-01	1.641E-02	-0.310
		1048.07	*	-4.442E-02	1.979E-01	3.159E-01	2.837E-02	-0.141
		1235.36		7.366E-01	1.111E+00	1.885E+00	2.179E-01	0.391
BA-137M		661.66	*	-3.136E-02	5.083E-02	7.656E-02	6.449E-03	-0.410
CS-137		661.66	*	-3.313E-02	5.369E-02	8.088E-02	6.827E-03	-0.410
CE-139		165.86	*	-1.337E-02	3.125E-02	4.973E-02	4.147E-03	-0.269
BA-140		162.66		2.499E-01	1.091E+00	1.797E+00	1.654E-01	0.139
		304.85		-1.382E-01	2.046E+00	3.029E+00	8.917E-01	-0.046
		423.72		-3.233E-01	2.833E+00	4.640E+00	1.526E+00	-0.070
		537.26	*	8.884E-02	4.255E-01	6.991E-01	2.377E-01	0.127
LA-140	+	328.76		9.271E-01	5.094E-01	8.434E-01	8.046E-02	1.099
		487.02		3.391E-02	2.066E-01	3.427E-01	3.224E-02	0.099
		815.77		-4.617E-01	5.157E-01	7.754E-01	7.585E-02	-0.595
		1596.21	*	-1.298E-01	1.186E-01	1.459E-01	1.259E-02	-0.890
CE-141		145.44	*	-1.067E-02	7.197E-02	1.172E-01	1.195E-02	-0.091
CE-143		57.36		1.283E-03	7.197E-02	Half-Life	too short	
		293.27	*	9.150E-03	7.197E-02	Half-Life	too short	
		664.57		8.853E-03	7.197E-02	Half-Life	too short	
		721.93		-5.856E-03	7.197E-02	Half-Life	too short	
CE-144		80.12		6.691E-01	2.312E+00	2.848E+00	2.774E-01	0.235
		133.52	*	2.434E-01	2.106E-01	3.440E-01	5.746E-02	0.708
PM-144		476.78		-1.071E-01	8.155E-02	1.187E-01	1.138E-02	-0.902
		618.01		-1.715E-02	4.129E-02	6.380E-02	5.710E-03	-0.269
		696.49	*	-1.084E-02	4.637E-02	7.677E-02	6.573E-03	-0.141
PR-144		696.51	*	-8.017E-01	3.480E+00	5.763E+00	4.931E-01	-0.139
		1489.16		-7.578E+00	1.641E+01	2.512E+01	2.171E+00	-0.302
PM-146		453.88	*	3.054E-02	5.076E-02	8.698E-02	9.326E-03	0.351
		633.25		1.340E+00	1.942E+00	3.199E+00	1.222E+00	0.419
		735.93		1.547E-01	1.801E-01	3.161E-01	8.863E-02	0.490
		747.24		2.312E-02	1.158E-01	1.977E-01	2.893E-02	0.117
ND-147	+	91.11		1.248E+00	3.980E-01	5.915E-01	6.232E-02	2.110
		319.41		1.124E+00	4.867E+00	8.300E+00	7.571E-01	0.135
		531.02	*	4.293E-01	8.901E-01	1.505E+00	2.279E-01	0.285
PM-149		285.90	*	-6.105E-05	8.901E-01	Half-Life	too short	
EU-152		121.78		-1.335E-02	7.312E-02	1.199E-01	1.519E-02	-0.111
		244.70		1.476E-01	3.809E-01	5.554E-01	5.035E-02	0.266
		344.28	*	-6.770E-03	1.075E-01	1.734E-01	1.640E-02	-0.039
		778.90		-4.682E-02	3.209E-01	5.292E-01	4.633E-02	-0.088
	+	964.08		8.099E-01	5.055E-01	7.711E-01	6.739E-02	1.050
		1085.87		-1.679E-01	5.137E-01	8.056E-01	6.855E-02	-0.208
		1112.07		-2.260E-01	4.362E-01	6.482E-01	5.459E-02	-0.349
		1408.01		3.141E-01	2.405E-01	4.620E-01	3.975E-02	0.680
GD-153		69.67		-4.303E-01	1.166E+00	1.750E+00	1.718E-01	-0.246
		97.43	*	-4.953E-02	8.604E-02	1.233E-01	1.261E-02	-0.402
		103.18		-6.955E-02	1.030E-01	1.665E-01	1.755E-02	-0.418
EU-154		123.07		-8.570E-03	5.187E-02	8.508E-02	1.174E-02	-0.101
		723.31		2.739E-02	2.370E-01	3.519E-01	3.347E-02	0.078
		873.19		7.782E-02	3.903E-01	6.586E-01	7.908E-02	0.118

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Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	+	996.26		-4.336E-01	5.243E-01	7.802E-01	1.366E-01	-0.556
		1004.73		-3.722E-01	3.002E-01	4.223E-01	4.938E-02	-0.881
		1274.44	*	3.537E-02	1.775E-01	2.914E-01	3.271E-02	0.121
		86.55		5.189E-01	1.245E-01	1.667E-01	1.639E-02	3.113
		105.31	*	2.718E-02	9.878E-02	1.662E-01	1.785E-02	0.164
TB-160	+	86.79		1.439E+00	3.447E-01	4.637E-01	4.523E-02	3.103
		197.04		-3.556E-01	6.495E-01	1.005E+00	8.730E-02	-0.354
		215.65		1.754E-01	8.646E-01	1.401E+00	1.241E-01	0.125
		298.57		3.121E-01	1.747E-01	2.245E-01	2.060E-02	1.390
		879.36	*	-1.303E-02	1.923E-01	3.165E-01	2.775E-02	-0.041
HO-166M	+	962.29		1.592E+00	9.937E-01	1.508E+00	1.318E-01	1.056
		966.15		1.199E+00	3.801E-01	7.231E-01	6.319E-02	1.658
		1177.93		-1.873E-01	5.714E-01	8.950E-01	7.323E-02	-0.209
		1271.85		-8.361E-01	9.979E-01	1.427E+00	1.200E-01	-0.586
		80.57		1.600E-01	2.447E-01	3.089E-01	3.009E-02	0.518
TA-182	+	184.41		1.848E-01	6.946E-02	7.103E-02	6.072E-03	2.602
		280.46		-9.681E-02	9.358E-02	1.494E-01	1.372E-02	-0.648
		410.95		2.935E-01	2.940E-01	4.689E-01	4.009E-02	0.626
		711.68	*	-1.313E-02	7.707E-02	1.279E-01	1.101E-02	-0.103
		752.31		1.559E-01	3.433E-01	5.975E-01	5.204E-02	0.261
IR-192	+	810.29		-4.117E-02	7.554E-02	1.192E-01	1.047E-02	-0.345
		67.75		2.563E-02	6.835E-02	1.115E-01	1.098E-02	0.230
		100.11		5.705E-02	1.654E-01	2.795E-01	2.898E-02	0.204
		152.43		1.156E-01	3.881E-01	6.426E-01	6.108E-02	0.180
		222.11		1.352E-02	3.996E-01	6.408E-01	5.712E-02	0.021
HG-203	+	1121.30		9.453E-01	3.256E-01	4.894E-01	4.105E-02	1.932
		1189.05		-2.346E-01	4.799E-01	7.387E-01	6.066E-02	-0.318
		1221.41	*	8.791E-03	2.924E-01	4.729E-01	3.923E-02	0.019
		1231.02		5.749E-01	7.618E-01	1.303E+00	1.084E-01	0.441
		295.96		1.379E+00	2.311E-01	3.484E-01	3.219E-02	3.959
BI-207	+	308.46		5.834E-03	1.069E-01	1.809E-01	1.664E-02	0.032
		316.51	*	-3.927E-02	3.904E-02	6.139E-02	5.616E-03	-0.640
		468.07		4.611E-02	8.230E-02	1.262E-01	1.193E-02	0.365
		70.83		-6.693E-02	9.596E-01	1.457E+00	2.437E-01	-0.046
		72.87		7.894E-01	5.452E-01	9.336E-01	1.513E-01	0.845
PB-211	+	279.20	*	4.362E-03	4.515E-02	7.696E-02	7.225E-03	0.057
		72.81		1.541E-01	1.145E-01	1.992E-01	1.948E-02	0.774
		74.97		7.518E-01	1.160E-01	1.779E-01	1.736E-02	4.227
		569.70		-2.957E-02	3.896E-02	5.874E-02	5.223E-03	-0.503
		1063.66	*	4.184E-02	7.606E-02	1.306E-01	1.119E-02	0.320
RN-219	+	1770.23		-7.381E-01	6.353E-01	7.610E-01	6.428E-02	-0.970
		404.85	*	-4.491E-01	9.421E-01	1.270E+00	6.145E-01	-0.354
		427.09		-2.910E-01	1.753E+00	2.852E+00	1.320E+00	-0.102
		832.01		-2.126E-01	1.254E+00	2.044E+00	1.061E+00	-0.104
		727.33	*	1.637E+00	1.203E+00	1.529E+00	1.908E-01	1.071
RN-219	+	785.37		8.970E-01	4.166E+00	7.084E+00	6.208E-01	0.127
		1620.50		3.118E+00	2.893E+00	5.607E+00	4.831E-01	0.556
		271.23		5.806E-01	3.207E-01	5.017E-01	5.378E-02	1.157
		401.81	*	3.521E-01	4.645E-01	8.047E-01	1.191E-01	0.438

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RA-223		81.07		-1.482E-01	2.095E-01	2.387E-01	2.325E-02	-0.621
		83.79		2.056E-01	9.539E-02	1.664E-01	1.621E-02	1.236
		94.87		6.810E-01	4.087E-01	6.558E-01	6.617E-02	1.038
		144.24		3.555E-01	7.126E-01	1.171E+00	1.291E-01	0.304
		154.21		-1.928E-01	4.300E-01	6.881E-01	6.965E-02	-0.280
	+	269.46		9.206E-01	3.866E-01	4.017E-01	3.746E-02	2.292
		323.87	*	3.501E-01	7.990E-01	1.223E+00	2.149E-01	0.286
	+	338.28		7.432E+00	2.020E+00	2.810E+00	3.472E-01	2.645
	AC-227	79.69		-7.133E-01	1.192E+00	1.367E+00	2.437E-01	-0.522
		235.96		2.424E-01	1.888E-01	2.886E-01	3.080E-02	0.840
TH-227		256.23	*	-3.324E-02	2.863E-01	4.509E-01	5.597E-02	-0.074
	+	299.98		2.328E+00	1.321E+00	1.818E+00	2.380E-01	1.280
		304.50		1.049E+00	1.841E+00	2.860E+00	4.810E-01	0.367
		334.37		-6.970E-01	2.215E+00	3.190E+00	5.047E-01	-0.219
		79.80		-9.600E-01	1.579E+00	1.803E+00	4.011E-01	-0.532
		235.96		2.424E-01	1.887E-01	2.886E-01	2.917E-02	0.840
TH-229		256.23	*	-3.324E-02	2.863E-01	4.509E-01	6.280E-02	-0.074
	+	299.98		2.328E+00	1.321E+00	1.818E+00	2.380E-01	1.280
		304.50		1.049E+00	1.841E+00	2.860E+00	4.810E-01	0.367
		334.37		-6.970E-01	2.215E+00	3.190E+00	5.047E-01	-0.219
		85.43		5.058E-01	1.704E-01	2.976E-01	2.901E-02	1.700
	+	88.47		6.585E-01	1.577E-01	2.026E-01	1.982E-02	3.250
PA-231		193.51	*	-3.851E-01	5.601E-01	8.694E-01	7.518E-02	-0.443
		210.85		1.370E+00	1.074E+00	1.657E+00	1.461E-01	0.827
		283.69	*	8.445E-01	1.514E+00	2.635E+00	3.932E-01	0.321
TH-231		301.36		1.194E+00	7.133E-01	1.163E+00	1.460E-01	1.026
		81.07		-1.482E-01	2.095E-01	2.387E-01	2.325E-02	-0.621
		83.79		2.056E-01	9.539E-02	1.664E-01	1.621E-02	1.236
PA-233		94.87		6.810E-01	4.087E-01	6.558E-01	6.617E-02	1.038
		144.24		3.555E-01	7.126E-01	1.171E+00	1.291E-01	0.304
		154.21		-1.928E-01	4.300E-01	6.881E-01	6.965E-02	-0.280
	+	269.46		9.206E-01	3.866E-01	4.017E-01	3.746E-02	2.292
		323.87	*	3.501E-01	7.990E-01	1.223E+00	2.149E-01	0.286
	+	338.28		7.432E+00	2.020E+00	2.810E+00	3.472E-01	2.645
	+	300.13		1.053E+00	6.031E-01	8.258E-01	1.252E-01	1.276
		311.90	*	-1.830E-02	7.070E-02	1.173E-01	1.101E-02	-0.156
		340.48		3.217E-01	7.401E-01	1.126E+00	2.726E-01	0.286
	PA-234	94.67		3.777E-01	1.590E-01	2.532E-01	3.407E-02	1.492
PA-234M		98.44		6.244E-02	9.304E-02	1.397E-01	7.834E-02	0.447
		111.00		3.306E-02	1.753E-01	2.933E-01	4.072E-02	0.113
		131.20		-3.464E-03	1.176E-01	1.730E-01	1.921E-02	-0.020
		569.50		-2.952E-01	3.433E-01	5.118E-01	4.551E-02	-0.577
		733.00		-2.024E-01	5.283E-01	7.313E-01	1.624E-01	-0.277
		880.51		2.315E-02	3.680E-01	6.134E-01	5.377E-02	0.038
		883.24		2.117E-02	3.768E-01	6.269E-01	4.216E-01	0.034
		926.50		-1.878E-01	2.231E-01	3.246E-01	8.220E-02	-0.578
		946.00	*	-2.691E-02	4.152E-01	6.794E-01	1.279E-01	-0.040
		949.00		7.260E-01	6.267E-01	1.136E+00	9.933E-02	0.639
PA-234M	+	766.42		3.442E+01	2.736E+01	2.996E+01	1.521E+01	1.149



----- 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	*		3.329E+00	6.222E+00	1.072E+01	1.076E+00	0.311
	99.53			1.264E-01	1.512E-01	2.550E-01	2.636E-02	0.496
	103.37			-2.997E-02	9.095E-02	1.494E-01	1.576E-02	-0.201
	106.12			1.596E-02	7.890E-02	1.323E-01	1.417E-02	0.121
	117.23	*		-4.006E-01	3.926E-01	6.167E-01	7.024E-02	-0.650
	228.18			1.470E-02	2.314E-01	3.711E-01	3.325E-02	0.040
AM-241	277.60			2.652E-01	1.933E-01	3.470E-01	3.185E-02	0.764
	59.54	*		5.081E-02	7.012E-02	1.100E-01	1.168E-02	0.462
CM-247	278.00			1.123E+00	8.068E-01	1.451E+00	1.332E-01	0.774
	287.50			3.766E-01	1.195E+00	2.061E+00	1.893E-01	0.183
CF-249	402.40	*		2.283E-02	4.216E-02	7.241E-02	6.150E-03	0.315
	252.80			9.435E-02	1.027E+00	1.640E+00	1.493E-01	0.058
	333.37			-7.605E-02	2.375E-01	3.423E-01	3.096E-02	-0.222
CF-251	388.16	*		8.553E-03	4.325E-02	7.288E-02	6.172E-03	0.117
	177.52	*		-1.727E-01	1.434E-01	2.173E-01	1.841E-02	-0.795
	227.38			-2.931E-01	3.864E-01	5.888E-01	5.272E-02	-0.498
	285.41			-2.330E-01	2.249E+00	3.788E+00	3.479E-01	-0.062

## 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]G247337002
* Acquisition date   : 4-MAR-2010 10:16:41 Detector SN#      :
* Detector ID        : GAM17 Sensitivity      : 5.000
* Geometry           : CAN Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 02:00:10.12 Half life ratio : 8.000
*
*
*                                     SAMPLE DATA
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G247337002 Analyst initials: MXR1
* Batch Number       : 955027 Sample Quantity : 1.3444E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*
*
*                                     QC DATA
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 6-JAN-2010 11:41:36 MS Isotope      :
* MSD DPM            : 0.000 MSD Isotope      :
* LCS DPM            : 0.000 LCS Isotope      :
* LCSD DPM           : 0.000 LCSD Isotope     :
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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.481E+01	3.789E+00	6.323E-01	0.000E+00
CD-109	4.402E+00	1.033E+00	1.017E+00	0.000E+00
SN-126	4.272E-01	1.003E-01	9.857E-02	0.000E+00
CS-135	7.998E-01	3.312E-01	2.642E-01	0.000E+00
TL-208	6.517E-01	1.151E-01	6.831E-02	0.000E+00
PB-210	1.205E+00	8.102E-01	8.971E-01	0.000E+00
BI-211	4.022E+00	6.098E-01	3.888E-01	0.000E+00
PB-212	1.785E+00	2.175E-01	1.078E-01	0.000E+00
BI-214	1.431E+00	2.256E-01	1.377E-01	0.000E+00
PB-214	1.460E+00	2.350E-01	1.409E-01	0.000E+00
RA-224	4.217E+00	1.282E+00	1.156E+00	0.000E+00
RA-226	1.431E+00	2.256E-01	1.377E-01	0.000E+00
AC-228	2.273E+00	4.680E-01	3.163E-01	0.000E+00
RA-228	2.273E+00	4.680E-01	3.163E-01	0.000E+00
TH-228	1.785E+00	2.175E-01	1.078E-01	0.000E+00
TH-232	2.273E+00	4.680E-01	3.163E-01	0.000E+00
TH-234	2.080E+00	1.066E+00	1.139E+00	0.000E+00
U-235	2.000E-02	2.083E-01	3.591E-01	0.000E+00
NP-237	1.275E+00	3.976E-01	2.932E-01	0.000E+00
U-238	2.080E+00	1.066E+00	1.139E+00	0.000E+00
ANH-511	1.951E-01	7.393E-02	5.680E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-4.506E-01	4.075E-01	6.324E-01	0.000E+00 NOT IDENT.
NA-22	1.637E-02	6.117E-02	1.037E-01	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.043E+08	0.000E+00	0.000E+00 SHORT HLIF
SC-46	4.128E-02	5.294E-02	9.679E-02	0.000E+00 FAIL ABUN
V-48	2.236E-02	1.113E-01	1.921E-01	0.000E+00 NOT IDENT.
CR-51	-2.019E-02	4.477E-01	7.899E-01	0.000E+00 NOT IDENT.

MN-54	-5.150E-02	5.037E-02	7.852E-02	0.000E+00	NOT IDENT.
CO-56	-3.025E-02	5.540E-02	9.028E-02	0.000E+00	NOT IDENT.
CO-57	-7.034E-04	2.510E-02	4.431E-02	0.000E+00	NOT IDENT.
CO-58	-3.172E-03	4.929E-02	8.440E-02	0.000E+00	NOT IDENT.
FE-59	-1.336E-01	1.388E-01	2.081E-01	0.000E+00	NOT IDENT.
CO-60	3.431E-02	5.101E-02	9.403E-02	0.000E+00	NOT IDENT.
ZN-65	2.810E-02	1.399E-01	2.074E-01	0.000E+00	NOT IDENT.
SE-75	-1.317E-02	5.095E-02	7.368E-02	0.000E+00	NOT IDENT.
SR-85	1.824E-02	5.078E-02	7.847E-02	0.000E+00	NOT IDENT.
Y-88	-4.308E-03	4.546E-02	7.389E-02	0.000E+00	NOT IDENT.
Y-91	6.131E+00	3.390E+01	5.707E+01	0.000E+00	NOT IDENT.
NB-94	2.106E-02	4.406E-02	7.950E-02	0.000E+00	NOT IDENT.
NB-95	9.494E-02	7.023E-02	1.194E-01	0.000E+00	NOT IDENT.
NB-95M	7.430E-02	1.548E-01	2.396E-01	0.000E+00	NOT IDENT.
ZR-95	-2.958E-02	9.860E-02	1.667E-01	0.000E+00	NOT IDENT.
MO-99	-3.761E+01	5.097E+01	8.220E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	2.255E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	2.405E-02	5.277E-02	9.291E-02	0.000E+00	NOT IDENT.
RH-106	3.115E-01	4.016E-01	7.126E-01	0.000E+00	NOT IDENT.
RU-106	3.115E-01	4.004E-01	7.126E-01	0.000E+00	NOT IDENT.
AG-108M	-2.065E-02	3.288E-02	5.393E-02	0.000E+00	NOT IDENT.
AG-110M	2.473E-02	4.675E-02	8.115E-02	0.000E+00	NOT IDENT.
SN-113	3.765E-02	5.088E-02	9.263E-02	0.000E+00	NOT IDENT.
CD-115	0.000E+00	5.776E+01	0.000E+00	0.000E+00	SHORT HLIF
SN-117M	-1.915E-02	7.232E-02	1.240E-01	0.000E+00	NOT IDENT.
TE-123M	-2.294E-02	3.050E-02	5.098E-02	0.000E+00	NOT IDENT.
SB-124	-1.130E-02	1.004E-01	1.642E-01	0.000E+00	NOT IDENT.
SB-125	1.194E-02	1.022E-01	1.779E-01	0.000E+00	FAIL ABUN
TE-125M	4.300E+00	9.614E+00	1.739E+01	0.000E+00	NOT IDENT.
I-126	-3.579E-02	3.740E-01	6.152E-01	0.000E+00	NOT IDENT.
SB-126	-8.938E-02	2.506E-01	3.983E-01	0.000E+00	NOT IDENT.
SB-127	-1.867E+00	3.694E+00	5.768E+00	0.000E+00	NOT IDENT.
I-131	1.083E-01	1.884E-01	3.416E-01	0.000E+00	NOT IDENT.
TE-132	1.337E-01	2.170E+00	3.680E+00	0.000E+00	NOT IDENT.
BA-133	2.390E-02	5.054E-02	8.114E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	3.158E+05	0.000E+00	0.000E+00	SHORT HLIF
CS-134	2.482E-02	6.013E-02	1.072E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.885E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-4.442E-02	1.939E-01	3.185E-01	0.000E+00	NOT IDENT.
BA-137M	-3.136E-02	4.981E-02	7.785E-02	0.000E+00	NOT IDENT.
CS-137	-3.313E-02	5.262E-02	8.224E-02	0.000E+00	NOT IDENT.
CE-139	-1.337E-02	3.062E-02	5.183E-02	0.000E+00	NOT IDENT.
BA-140	8.884E-02	4.170E-01	7.135E-01	0.000E+00	NOT IDENT.
LA-140	-1.298E-01	1.162E-01	1.459E-01	0.000E+00	FAIL ABUN
CE-141	-1.067E-02	7.053E-02	1.224E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.830E+03	0.000E+00	0.000E+00	SHORT HLIF
CE-144	2.434E-01	2.064E-01	3.598E-01	0.000E+00	NOT IDENT.
PM-144	-1.084E-02	4.544E-02	7.799E-02	0.000E+00	NOT IDENT.
PR-144	-8.017E-01	3.410E+00	5.854E+00	0.000E+00	NOT IDENT.
PM-146	3.054E-02	4.975E-02	8.905E-02	0.000E+00	NOT IDENT.
ND-147	4.293E-01	8.723E-01	1.537E+00	0.000E+00	FAIL ABUN
PM-149	0.000E+00	4.182E+02	0.000E+00	0.000E+00	SHORT HLIF
EU-152	-6.770E-03	1.053E-01	1.784E-01	0.000E+00	FAIL ABUN
GD-153	-4.953E-02	8.432E-02	1.297E-01	0.000E+00	NOT IDENT.
EU-154	3.537E-02	1.739E-01	2.927E-01	0.000E+00	NOT IDENT.
EU-155	2.718E-02	9.681E-02	1.746E-01	0.000E+00	FAIL ABUN
TB-160	-1.303E-02	1.885E-01	3.202E-01	0.000E+00	FAIL ABUN
HO-166M	-1.313E-02	7.553E-02	1.299E-01	0.000E+00	FAIL ABUN
TA-182	8.791E-03	2.866E-01	4.754E-01	0.000E+00	FAIL ABUN
IR-192	-3.927E-02	3.826E-02	6.325E-02	0.000E+00	FAIL ABUN
HG-203	4.362E-03	4.425E-02	7.948E-02	0.000E+00	NOT IDENT.
BI-207	4.184E-02	7.454E-02	1.316E-01	0.000E+00	FAIL ABUN
PB-211	-4.491E-01	9.233E-01	1.303E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.179E+00	1.552E+00	0.000E+00	FAIL ABUN
RN-219	3.521E-01	4.552E-01	8.256E-01	0.000E+00	NOT IDENT.
RA-223	3.501E-01	7.831E-01	1.260E+00	0.000E+00	FAIL ABUN
AC-227	-3.324E-02	2.806E-01	4.664E-01	0.000E+00	FAIL ABUN
TH-227	-3.324E-02	2.806E-01	4.664E-01	0.000E+00	FAIL ABUN
TH-229	-3.851E-01	5.489E-01	9.036E-01	0.000E+00	FAIL ABUN
PA-231	8.445E-01	1.484E+00	2.720E+00	0.000E+00	NOT IDENT.
TH-231	3.501E-01	7.831E-01	1.260E+00	0.000E+00	FAIL ABUN
PA-233	-1.830E-02	6.929E-02	1.209E-01	0.000E+00	FAIL ABUN
PA-234	-2.691E-02	4.069E-01	6.864E-01	0.000E+00	NOT IDENT.
PA-234M	3.329E+00	6.098E+00	1.082E+01	0.000E+00	FAIL ABUN
NP-239	-4.006E-01	3.847E-01	6.465E-01	0.000E+00	NOT IDENT.
AM-241	5.081E-02	6.872E-02	1.167E-01	0.000E+00	NOT IDENT.
CM-247	2.283E-02	4.131E-02	7.429E-02	0.000E+00	NOT IDENT.
CF-249	8.553E-03	4.238E-02	7.482E-02	0.000E+00	NOT IDENT.

CF-251	-1.727E-01	1.405E-01	2.262E-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]G247337002.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:16:41.
Sample ID          : G247337002           Sample quantity  : 1.34440E+02 GRAM
Detector name      : GAM17                 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00         Elapsed real time: 0 02:00:10.12 0.1%
Energy tolerance   : 1.50000 keV           Analyst Initials : MXR1
Abundance limit    : 75.00000              Sensitivity       : 5.00000
Batch ID           : 955027                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	1035	10.66*	7.784E-01	3.481E+01	3.481E+01	11.11
CD-109	88.03	378	3.70*	6.675E+00	4.272E+00	4.402E+00	23.95
SN-126	64.28	187	9.60	6.777E+00	8.016E-01	8.016E-01	51.26
	86.94	378	8.90	6.675E+00	1.776E+00	1.776E+00	47.01
	87.57	378	37.00*	6.675E+00	4.272E-01	4.272E-01	23.95
CS-135	268.22	167	16.00*	3.653E+00	7.998E-01	7.998E-01	42.26
TL-208	277.37	-----	6.60	3.568E+00	-----	Line Not Found	-----
	583.19	360	85.00*	1.812E+00	6.517E-01	6.517E-01	18.02
	860.56	-----	12.50	1.246E+00	-----	Line Not Found	-----
PB-210	46.54	116	4.25*	6.308E+00	1.203E+00	1.205E+00	68.59
BI-211	72.87	-----	1.23	6.803E+00	-----	Line Not Found	-----
	351.06	541	12.92*	2.909E+00	4.022E+00	4.022E+00	15.47
PB-212	74.82	652	10.28	6.795E+00	2.608E+00	2.608E+00	18.24
	77.11	1119	17.10	6.782E+00	2.695E+00	2.695E+00	12.93
	238.63	1121	43.60*	4.023E+00	1.785E+00	1.785E+00	12.43
	300.09	84	3.30	3.343E+00	2.116E+00	2.116E+00	56.30
BI-214	609.32	405	45.49*	1.738E+00	1.431E+00	1.431E+00	16.09
	1120.29	102	14.92	9.772E-01	1.959E+00	1.959E+00	35.09
	1764.49	-----	15.30	6.714E-01	-----	Line Not Found	-----
PB-214	74.82	652	5.80	6.795E+00	4.622E+00	4.622E+00	17.35
	77.11	1119	9.70	6.782E+00	4.751E+00	4.751E+00	15.34
	242.00	247	7.25	3.985E+00	2.385E+00	2.385E+00	31.56
	295.22	399	18.42	3.389E+00	1.783E+00	1.783E+00	17.95
	351.93	541	35.60*	2.909E+00	1.460E+00	1.460E+00	16.43
RA-224	240.99	247	4.10*	3.985E+00	4.217E+00	4.217E+00	31.03
RA-226	609.32	405	45.49*	1.738E+00	1.431E+00	1.431E+00	16.09
	1120.29	102	14.92	9.772E-01	1.959E+00	1.959E+00	35.09
	1764.49	-----	15.30	6.714E-01	-----	Line Not Found	-----
AC-228	338.32	228	11.27	3.013E+00	1.873E+00	1.873E+00	48.31
	911.20	248	25.80*	1.182E+00	2.273E+00	2.273E+00	21.01
	968.97	106	15.80	1.116E+00	1.684E+00	1.684E+00	39.46
RA-228	338.32	228	11.27	3.013E+00	1.873E+00	1.873E+00	48.31

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	911.20	248	25.80*	1.182E+00	2.273E+00	2.273E+00	21.01
	968.97	106	15.80	1.116E+00	1.684E+00	1.684E+00	39.46
	74.82	652	10.28	6.795E+00	2.608E+00	2.608E+00	15.48
	77.11	1119	17.10	6.782E+00	2.695E+00	2.695E+00	12.93
TH-232	238.63	1121	43.60*	4.023E+00	1.785E+00	1.785E+00	12.43
	300.09	84	3.30	3.343E+00	2.116E+00	2.116E+00	82.50
	338.32	228	11.27	3.013E+00	1.873E+00	1.873E+00	25.84
	911.20	248	25.80*	1.182E+00	2.273E+00	2.273E+00	21.01
TH-234	968.97	106	15.80	1.116E+00	1.684E+00	1.684E+00	39.46
	63.29	187	3.70*	6.777E+00	2.080E+00	2.080E+00	52.29
	92.59	410	4.23	6.594E+00	4.101E+00	4.101E+00	30.81
U-235	89.96	235	3.47	6.638E+00	2.844E+00	2.844E+00	39.19
	93.35	410	5.60	6.594E+00	3.098E+00	3.098E+00	31.55
	143.76	-----	10.96*	5.592E+00	-----	Line Not Found	-----
	163.33	-----	5.08	5.211E+00	-----	Line Not Found	-----
NP-237	185.72	229	57.20	4.809E+00	2.326E-01	2.326E-01	37.58
	205.31	-----	5.01	4.493E+00	-----	Line Not Found	-----
	86.48	378	12.40*	6.675E+00	1.275E+00	1.275E+00	31.83
	95.86	-----	2.68	6.543E+00	-----	Line Not Found	-----
U-238	63.29	187	3.70*	6.777E+00	2.080E+00	2.080E+00	52.29
	92.59	410	4.23	6.594E+00	4.101E+00	4.101E+00	23.15
ANH-511	511.00	144	100.00*	2.058E+00	1.951E-01	1.951E-01	38.67

Flag: "\*" = Keyline

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	3.481E+01	3.481E+01	0.387E+01	11.11	
CD-109	461.40D	1.03	4.272E+00	4.402E+00	1.054E+00	23.95	
SN-126	2.30E+05Y	1.00	4.272E-01	4.272E-01	1.023E-01	23.95	
CS-135	2.30E+06Y	1.00	7.998E-01	7.998E-01	3.380E-01	42.26	
TL-208	1.41E+10Y	1.00	6.517E-01	6.517E-01	1.175E-01	18.02	
PB-210	22.20Y	1.00	1.203E+00	1.205E+00	0.827E+00	68.59	
BI-211	7.04E+08Y	1.00	4.022E+00	4.022E+00	0.622E+00	15.47	
PB-212	1.41E+10Y	1.00	1.785E+00	1.785E+00	0.222E+00	12.43	
BI-214	1600.00Y	1.00	1.431E+00	1.431E+00	0.230E+00	16.09	
PB-214	1600.00Y	1.00	1.460E+00	1.460E+00	0.240E+00	16.43	
RA-224	1.41E+10Y	1.00	4.217E+00	4.217E+00	1.308E+00	31.03	
RA-226	1600.00Y	1.00	1.431E+00	1.431E+00	0.230E+00	16.09	
AC-228	1.41E+10Y	1.00	2.273E+00	2.273E+00	0.478E+00	21.01	
RA-228	1.41E+10Y	1.00	2.273E+00	2.273E+00	0.478E+00	21.01	
TH-228	1.41E+10Y	1.00	1.785E+00	1.785E+00	0.222E+00	12.43	
TH-232	1.41E+10Y	1.00	2.273E+00	2.273E+00	0.478E+00	21.01	
TH-234	4.47E+09Y	1.00	2.080E+00	2.080E+00	1.088E+00	52.29	
U-235	7.04E+08Y	1.00	2.326E-01	2.326E-01	0.874E-01	37.58	K
NP-237	2.14E+06Y	1.00	1.275E+00	1.275E+00	0.406E+00	31.83	
U-238	4.47E+09Y	1.00	2.080E+00	2.080E+00	1.088E+00	52.29	
ANH-511	1.00E+09Y	1.00	1.951E-01	1.951E-01	0.754E-01	38.67	

Total Activity : 7.098E+01 7.111E+01

Grand Total Activity : 7.098E+01 7.111E+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	129.06	111	311	0.96	257.81	254	8	1.55E-02	58.1	5.89E+00	
0	209.14	100	295	1.00	418.02	414	9	1.39E-02	65.0	4.43E+00	
0	327.60	70	107	1.14	655.05	652	7	9.79E-03	54.1	3.10E+00	T
0	409.10	31	72	1.24	818.12	814	7	4.36E-03	96.2	2.54E+00	
0	462.56	98	107	1.61	925.10	919	15	1.37E-02	49.7	2.26E+00	T
0	726.97	57	94	1.31	1454.21	1450	12	7.95E-03	72.4	1.46E+00	T
0	767.55	55	60	0.63	1535.42	1529	11	7.61E-03	61.2	1.39E+00	T
1	963.72	47	40	1.83	1928.02	1922	27	6.60E-03	61.8	1.12E+00	T
0	1586.85	25	20	0.73	3175.29	3168	13	3.40E-03	84.6	7.28E-01	
0	1762.74	76	3	2.18	3527.41	3521	13	1.05E-02	25.0	6.72E-01	

Flags: "T" = Tentatively associated



```

*****
*                                     GEL Laboratories LLC                               *
*                                     2040 Savage Road                               *
*                                     Charleston, SC 29414                           *
*****
*                                     DETECTOR DATA                               *
*                                     *                                             *
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337002.CNF;1       *
* Acquisition date   : 4-MAR-2010 10:16:41.   Detector SN#      :                 *
* Detector ID        : GAM17                  Sensitivity       : 5.00000          *
* Geometry           : CAN                    Energy tolerance   : 1.50000          *
* Elapsed live time  : 0 02:00:00.00          Abundance limit    : 75.00000          *
* Elapsed real time  : 0 02:00:10.12          Half life ratio   : 8.00000          *
*****
*                                     SAMPLE DATA                               *
*                                     *                                             *
* Sample date        : 12-FEB-2010 12:00:00   Nuclide Library   : SOLID           *
* Sample ID          : G247337002             Analyst initials: MXR1            *
* Batch Number       : 955027                 Sample Quantity   : 1.34440E+02 GRAM  *
*****
*                                     QC DATA                                   *
*                                     *                                             *
* CALIB. DATE/TIME   : 6-JAN-2010 11:41:36.18MS Isotope       :                 *
* MSD ID              :                        MSD Isotope      :                 *
* LCS ID              : 1032-A                  LCS Isotope     :                 *
*****

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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	3.481E+01	3.866E+00	6.310E-01	5.603E-02	55.167
CD-109	4.402E+00	1.054E+00	9.653E-01	9.424E-02	4.560
SN-126	4.272E-01	1.023E-01	9.355E-02	9.129E-03	4.566
CS-135	7.998E-01	3.380E-01	2.556E-01	2.668E-02	3.129
TL-208	6.517E-01	1.175E-01	6.703E-02	6.332E-03	9.722
PB-210	1.205E+00	8.267E-01	8.425E-01	9.082E-02	1.431
BI-211	4.022E+00	6.223E-01	3.780E-01	3.528E-02	10.640
PB-212	1.785E+00	2.219E-01	1.041E-01	1.054E-02	17.151
BI-214	1.431E+00	2.302E-01	1.352E-01	1.382E-02	10.581
PB-214	1.460E+00	2.398E-01	1.370E-01	1.484E-02	10.654
RA-224	4.217E+00	1.308E+00	1.116E+00	1.009E-01	3.778
RA-226	1.431E+00	2.302E-01	1.352E-01	1.382E-02	10.581
AC-228	2.273E+00	4.776E-01	3.129E-01	3.658E-02	7.264
RA-228	2.273E+00	4.776E-01	3.129E-01	3.658E-02	7.264
TH-228	1.785E+00	2.219E-01	1.041E-01	1.054E-02	17.151
TH-232	2.273E+00	4.776E-01	3.129E-01	3.658E-02	7.264
TH-234	2.080E+00	1.088E+00	1.075E+00	2.046E-01	1.934
U-235	2.326E-01	8.743E-02	3.438E-01	6.120E-02	0.677

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-237	1.275E+00	4.057E-01	2.782E-01	6.434E-02	4.581
U-238	2.080E+00	1.088E+00	1.075E+00	2.046E-01	1.934
ANH-511	1.951E-01	7.544E-02	5.559E-02	4.965E-03	3.509

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-4.506E-01		4.158E-01	6.182E-01	5.881E-02	-0.729
NA-22	1.637E-02		6.242E-02	1.032E-01	8.694E-03	0.159
NA-24	7.746E+01		1.042E+02	Half-Life too short		
SC-46	4.128E-02		5.402E-02	9.570E-02	8.378E-03	0.431
V-48	2.236E-02		1.136E-01	1.903E-01	1.660E-02	0.117
CR-51	-2.019E-02		4.569E-01	7.667E-01	7.317E-02	-0.026
MN-54	-5.150E-02		5.140E-02	7.755E-02	6.819E-03	-0.664
CO-56	-3.025E-02		5.653E-02	8.919E-02	7.840E-03	-0.339
CO-57	-7.034E-04		2.561E-02	4.229E-02	4.955E-03	-0.017
CO-58	-3.172E-03		5.029E-02	8.331E-02	7.337E-03	-0.038
FE-59	-1.336E-01		1.416E-01	2.066E-01	1.896E-02	-0.647
CO-60	3.431E-02		5.205E-02	9.368E-02	7.984E-03	0.366
ZN-65	2.810E-02		1.428E-01	2.060E-01	1.734E-02	0.136
SE-75	-1.317E-02		5.199E-02	7.128E-02	6.549E-03	-0.185
SR-85	1.824E-02		5.182E-02	7.682E-02	6.863E-03	0.237
Y-88	-4.308E-03		4.639E-02	7.406E-02	6.176E-03	-0.058
Y-91	6.131E+00		3.459E+01	5.675E+01	4.684E+00	0.108
NB-94	2.106E-02		4.496E-02	7.827E-02	6.714E-03	0.269
NB-95	9.494E-02		7.166E-02	1.177E-01	1.028E-02	0.807
NB-95M	7.430E-02		1.580E-01	2.314E-01	2.366E-02	0.321
ZR-95	-2.958E-02		1.006E-01	1.643E-01	1.579E-02	-0.180
MO-99	-3.761E+01		5.201E+01	8.100E+01	1.279E+01	-0.464
TC-99M	4.630E+15		1.151E+16	Half-Life too short		
RU-103	2.405E-02		5.385E-02	9.090E-02	1.286E-02	0.265
RH-106	3.115E-01		4.098E-01	7.000E-01	9.309E-02	0.445
RU-106	3.115E-01		4.086E-01	7.000E-01	6.081E-02	0.445
AG-108M	-2.065E-02		3.355E-02	5.263E-02	4.718E-03	-0.392
AG-110M	2.473E-02		4.771E-02	7.980E-02	6.955E-03	0.310
SN-113	3.765E-02		5.192E-02	9.024E-02	7.840E-03	0.417
CD-115	-4.990E-05		2.947E-05	Half-Life too short		
SN-117M	-1.915E-02		7.380E-02	1.189E-01	1.069E-02	-0.161
TE-123M	-2.294E-02		3.113E-02	4.888E-02	4.400E-03	-0.469
SB-124	-1.130E-02		1.025E-01	1.644E-01	1.466E-02	-0.069
SB-125	1.194E-02		1.042E-01	1.736E-01	1.530E-02	0.069
TE-125M	4.300E+00		9.810E+00	1.657E+01	2.059E+00	0.260
I-126	-3.579E-02		3.816E-01	6.051E-01	5.109E-02	-0.059
SB-126	-8.938E-02		2.557E-01	3.923E-01	3.387E-02	-0.228
SB-127	-1.867E+00		3.769E+00	5.676E+00	7.281E-01	-0.329
I-131	1.083E-01		1.923E-01	3.323E-01	3.080E-02	0.326
TE-132	1.337E-01		2.214E+00	3.551E+00	6.053E-01	0.038

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BA-133	2.390E-02		5.157E-02	7.891E-02	1.035E-02	0.303
I-133	-8.663E-03		1.611E-01	Half-Life too short		
CS-134	2.482E-02		6.135E-02	1.058E-01	9.347E-03	0.235
I-135	7.493E+14		9.615E+14	Half-Life too short		
CS-136	-4.442E-02		1.979E-01	3.159E-01	2.837E-02	-0.141
BA-137M	-3.136E-02		5.083E-02	7.656E-02	6.449E-03	-0.410
CS-137	-3.313E-02		5.369E-02	8.088E-02	6.827E-03	-0.410
CE-139	-1.337E-02		3.125E-02	4.973E-02	4.147E-03	-0.269
BA-140	8.884E-02		4.255E-01	6.991E-01	2.377E-01	0.127
LA-140	-1.298E-01		1.186E-01	1.459E-01	1.259E-02	-0.890
CE-141	-1.067E-02		7.197E-02	1.172E-01	1.195E-02	-0.091
CE-143	9.150E-03		1.444E-03	Half-Life too short		
CE-144	2.434E-01		2.106E-01	3.440E-01	5.746E-02	0.708
PM-144	-1.084E-02		4.637E-02	7.677E-02	6.573E-03	-0.141
PR-144	-8.017E-01		3.480E+00	5.763E+00	4.931E-01	-0.139
PM-146	3.054E-02		5.076E-02	8.698E-02	9.326E-03	0.351
ND-147	4.293E-01		8.901E-01	1.505E+00	2.279E-01	0.285
PM-149	-6.105E-05		2.133E-04	Half-Life too short		
EU-152	-6.770E-03		1.075E-01	1.734E-01	1.640E-02	-0.039
GD-153	-4.953E-02		8.604E-02	1.233E-01	1.261E-02	-0.402
EU-154	3.537E-02		1.775E-01	2.914E-01	3.271E-02	0.121
EU-155	2.718E-02		9.878E-02	1.662E-01	1.785E-02	0.164
TB-160	-1.303E-02		1.923E-01	3.165E-01	2.775E-02	-0.041
HO-166M	-1.313E-02		7.707E-02	1.279E-01	1.101E-02	-0.103
TA-182	8.791E-03		2.924E-01	4.729E-01	3.923E-02	0.019
IR-192	-3.927E-02		3.904E-02	6.139E-02	5.616E-03	-0.640
HG-203	4.362E-03		4.515E-02	7.696E-02	7.225E-03	0.057
BI-207	4.184E-02		7.606E-02	1.306E-01	1.119E-02	0.320
PB-211	-4.491E-01		9.421E-01	1.270E+00	6.145E-01	-0.354
BI-212	1.637E+00	+	1.203E+00	1.529E+00	1.908E-01	1.071
RN-219	3.521E-01		4.645E-01	8.047E-01	1.191E-01	0.438
RA-223	3.501E-01		7.990E-01	1.223E+00	2.149E-01	0.286
AC-227	-3.324E-02		2.863E-01	4.509E-01	5.597E-02	-0.074
TH-227	-3.324E-02		2.863E-01	4.509E-01	6.280E-02	-0.074
TH-229	-3.851E-01		5.601E-01	8.694E-01	7.518E-02	-0.443
PA-231	8.445E-01		1.514E+00	2.635E+00	3.932E-01	0.321
TH-231	3.501E-01		7.990E-01	1.223E+00	2.149E-01	0.286
PA-233	-1.830E-02		7.070E-02	1.173E-01	1.101E-02	-0.156
PA-234	-2.691E-02		4.152E-01	6.794E-01	1.279E-01	-0.040
PA-234M	3.329E+00		6.222E+00	1.072E+01	1.076E+00	0.311
NP-239	-4.006E-01		3.926E-01	6.167E-01	7.024E-02	-0.650
AM-241	5.081E-02		7.012E-02	1.100E-01	1.168E-02	0.462
CM-247	2.283E-02		4.216E-02	7.241E-02	6.150E-03	0.315
CF-249	8.553E-03		4.325E-02	7.288E-02	6.172E-03	0.117
CF-251	-1.727E-01		1.434E-01	2.173E-01	1.841E-02	-0.795

# 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]G247337002            *
* Acquisition date   : 4-MAR-2010 10:16:41 Detector SN# :                   *
* Detector ID        : GAM17 Sensitivity : 5.000                            *
* Geometry           : CAN Energy tolerance: 1.500                          *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000               *
* Elapsed real time  : 0 02:00:10.12 Half life ratio : 8.000                *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247337002 Analyst initials: MXR1                   *
* Batch Number       : 955027 Sample Quantity : 1.3444E+02 GRAM             *
* Recovery           : 1.00000 Carrier Weight : 0.00000                    *
*****
*                                     QC DATA                               *
*                                     *                                       *
* CALIB. DATE/TIME   : 6-JAN-2010 11:41:36 MS Isotope :                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.481E+01	3.789E+00	3.164E-01	1.933E+00
CD-109	4.402E+00	1.033E+00	5.088E-01	5.271E-01
SN-126	4.272E-01	1.003E-01	4.931E-02	5.115E-02
CS-135	7.998E-01	3.312E-01	1.322E-01	1.690E-01
TL-208	6.517E-01	1.151E-01	3.418E-02	5.873E-02
PB-210	1.205E+00	8.102E-01	4.488E-01	4.134E-01
BI-211	4.022E+00	6.098E-01	1.945E-01	3.111E-01
PB-212	1.785E+00	2.175E-01	5.391E-02	1.110E-01
BI-214	1.431E+00	2.256E-01	6.890E-02	1.151E-01
PB-214	1.460E+00	2.350E-01	7.049E-02	1.199E-01
RA-224	4.217E+00	1.282E+00	5.782E-01	6.541E-01
RA-226	1.431E+00	2.256E-01	6.890E-02	1.151E-01
AC-228	2.273E+00	4.680E-01	1.583E-01	2.388E-01
RA-228	2.273E+00	4.680E-01	1.583E-01	2.388E-01
TH-228	1.785E+00	2.175E-01	5.391E-02	1.110E-01
TH-232	2.273E+00	4.680E-01	1.583E-01	2.388E-01
TH-234	2.080E+00	1.066E+00	5.700E-01	5.438E-01
U-235	2.000E-02	2.083E-01	1.797E-01	1.063E-01
NP-237	1.275E+00	3.976E-01	1.467E-01	2.029E-01
U-238	2.080E+00	1.066E+00	5.700E-01	5.438E-01
ANH-511	1.951E-01	7.393E-02	2.841E-02	3.772E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-4.506E-01	4.075E-01	3.164E-01	2.079E-01 NOT IDENT.
NA-22	1.637E-02	6.117E-02	5.187E-02	3.121E-02 NOT IDENT.
NA-24	7.746E+07	2.043E+08	0.000E+00	1.042E+08 SHORT HLIF
SC-46	4.128E-02	5.294E-02	4.842E-02	2.701E-02 FAIL ABUN
V-48	2.236E-02	1.113E-01	9.612E-02	5.678E-02 NOT IDENT.
CR-51	-2.019E-02	4.477E-01	3.952E-01	2.284E-01 NOT IDENT.

MN-54	-5.150E-02	5.037E-02	3.928E-02	2.570E-02	NOT IDENT.
CO-56	-3.025E-02	5.540E-02	4.517E-02	2.826E-02	NOT IDENT.
CO-57	-7.034E-04	2.510E-02	2.217E-02	1.280E-02	NOT IDENT.
CO-58	-3.172E-03	4.929E-02	4.223E-02	2.515E-02	NOT IDENT.
FE-59	-1.336E-01	1.388E-01	1.041E-01	7.081E-02	NOT IDENT.
CO-60	3.431E-02	5.101E-02	4.704E-02	2.603E-02	NOT IDENT.
ZN-65	2.810E-02	1.399E-01	1.038E-01	7.138E-02	NOT IDENT.
SE-75	-1.317E-02	5.095E-02	3.686E-02	2.600E-02	NOT IDENT.
SR-85	1.824E-02	5.078E-02	3.926E-02	2.591E-02	NOT IDENT.
Y-88	-4.308E-03	4.546E-02	3.697E-02	2.320E-02	NOT IDENT.
Y-91	6.131E+00	3.390E+01	2.855E+01	1.730E+01	NOT IDENT.
NB-94	2.106E-02	4.406E-02	3.977E-02	2.248E-02	NOT IDENT.
NB-95	9.494E-02	7.023E-02	5.972E-02	3.583E-02	NOT IDENT.
NB-95M	7.430E-02	1.548E-01	1.199E-01	7.898E-02	NOT IDENT.
ZR-95	-2.958E-02	9.860E-02	8.339E-02	5.031E-02	NOT IDENT.
MO-99	-3.761E+01	5.097E+01	4.112E+01	2.601E+01	NOT IDENT.
TC-99M	4.630E+21	2.255E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	2.405E-02	5.277E-02	4.648E-02	2.692E-02	NOT IDENT.
RH-106	3.115E-01	4.016E-01	3.565E-01	2.049E-01	NOT IDENT.
RU-106	3.115E-01	4.004E-01	3.565E-01	2.043E-01	NOT IDENT.
AG-108M	-2.065E-02	3.288E-02	2.698E-02	1.677E-02	NOT IDENT.
AG-110M	2.473E-02	4.675E-02	4.060E-02	2.385E-02	NOT IDENT.
SN-113	3.765E-02	5.088E-02	4.634E-02	2.596E-02	NOT IDENT.
CD-115	-4.990E+01	5.776E+01	0.000E+00	2.947E+01	SHORT HLIF
SN-117M	-1.915E-02	7.232E-02	6.204E-02	3.690E-02	NOT IDENT.
TE-123M	-2.294E-02	3.050E-02	2.551E-02	1.556E-02	NOT IDENT.
SB-124	-1.130E-02	1.004E-01	8.217E-02	5.125E-02	NOT IDENT.
SB-125	1.194E-02	1.022E-01	8.903E-02	5.212E-02	FAIL ABUN
TE-125M	4.300E+00	9.614E+00	8.701E+00	4.905E+00	NOT IDENT.
I-126	-3.579E-02	3.740E-01	3.078E-01	1.908E-01	NOT IDENT.
SB-126	-8.938E-02	2.506E-01	1.993E-01	1.279E-01	NOT IDENT.
SB-127	-1.867E+00	3.694E+00	2.886E+00	1.885E+00	NOT IDENT.
I-131	1.083E-01	1.884E-01	1.709E-01	9.613E-02	NOT IDENT.
TE-132	1.337E-01	2.170E+00	1.841E+00	1.107E+00	NOT IDENT.
BA-133	2.390E-02	5.054E-02	4.059E-02	2.579E-02	NOT IDENT.
I-133	-8.663E+03	3.158E+05	0.000E+00	1.611E+05	SHORT HLIF
CS-134	2.482E-02	6.013E-02	5.363E-02	3.068E-02	NOT IDENT.
I-135	7.493E+20	1.885E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-4.442E-02	1.939E-01	1.593E-01	9.895E-02	NOT IDENT.
BA-137M	-3.136E-02	4.981E-02	3.895E-02	2.541E-02	NOT IDENT.
CS-137	-3.313E-02	5.262E-02	4.114E-02	2.685E-02	NOT IDENT.
CE-139	-1.337E-02	3.062E-02	2.593E-02	1.562E-02	NOT IDENT.
BA-140	8.884E-02	4.170E-01	3.570E-01	2.127E-01	NOT IDENT.
LA-140	-1.298E-01	1.162E-01	7.301E-02	5.928E-02	FAIL ABUN
CE-141	-1.067E-02	7.053E-02	6.123E-02	3.599E-02	NOT IDENT.
CE-143	9.150E+03	2.830E+03	0.000E+00	1.444E+03	SHORT HLIF
CE-144	2.434E-01	2.064E-01	1.800E-01	1.053E-01	NOT IDENT.
PM-144	-1.084E-02	4.544E-02	3.902E-02	2.318E-02	NOT IDENT.
PR-144	-8.017E-01	3.410E+00	2.929E+00	1.740E+00	NOT IDENT.
PM-146	3.054E-02	4.975E-02	4.455E-02	2.538E-02	NOT IDENT.
ND-147	4.293E-01	8.723E-01	7.688E-01	4.450E-01	FAIL ABUN
PM-149	-6.105E+01	4.182E+02	0.000E+00	2.133E+02	SHORT HLIF
EU-152	-6.770E-03	1.053E-01	8.926E-02	5.375E-02	FAIL ABUN
GD-153	-4.953E-02	8.432E-02	6.490E-02	4.302E-02	NOT IDENT.
EU-154	3.537E-02	1.739E-01	1.465E-01	8.873E-02	NOT IDENT.
EU-155	2.718E-02	9.681E-02	8.733E-02	4.939E-02	FAIL ABUN
TB-160	-1.303E-02	1.885E-01	1.602E-01	9.617E-02	FAIL ABUN
HO-166M	-1.313E-02	7.553E-02	6.497E-02	3.854E-02	FAIL ABUN
TA-182	8.791E-03	2.866E-01	2.379E-01	1.462E-01	FAIL ABUN
IR-192	-3.927E-02	3.826E-02	3.165E-02	1.952E-02	FAIL ABUN
HG-203	4.362E-03	4.425E-02	3.976E-02	2.258E-02	NOT IDENT.
BI-207	4.184E-02	7.454E-02	6.584E-02	3.803E-02	FAIL ABUN
PB-211	-4.491E-01	9.233E-01	6.520E-01	4.710E-01	NOT IDENT.
BI-212	1.637E+00	1.179E+00	7.765E-01	6.016E-01	FAIL ABUN
RN-219	3.521E-01	4.552E-01	4.131E-01	2.323E-01	NOT IDENT.
RA-223	3.501E-01	7.831E-01	6.302E-01	3.995E-01	FAIL ABUN
AC-227	-3.324E-02	2.806E-01	2.333E-01	1.432E-01	FAIL ABUN
TH-227	-3.324E-02	2.806E-01	2.333E-01	1.432E-01	FAIL ABUN
TH-229	-3.851E-01	5.489E-01	4.521E-01	2.801E-01	FAIL ABUN
PA-231	8.445E-01	1.484E+00	1.361E+00	7.572E-01	NOT IDENT.
TH-231	3.501E-01	7.831E-01	6.302E-01	3.995E-01	FAIL ABUN
PA-233	-1.830E-02	6.929E-02	6.050E-02	3.535E-02	FAIL ABUN
PA-234	-2.691E-02	4.069E-01	3.434E-01	2.076E-01	NOT IDENT.
PA-234M	3.329E+00	6.098E+00	5.412E+00	3.111E+00	FAIL ABUN
NP-239	-4.006E-01	3.847E-01	3.235E-01	1.963E-01	NOT IDENT.
AM-241	5.081E-02	6.872E-02	5.836E-02	3.506E-02	NOT IDENT.
CM-247	2.283E-02	4.131E-02	3.717E-02	2.108E-02	NOT IDENT.
CF-249	8.553E-03	4.238E-02	3.743E-02	2.162E-02	NOT IDENT.

CF-251	-1.727E-01	1.405E-01	1.132E-01	7.168E-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	302.1427
49.72	259.6280
57.36	0.0000
59.54	366.3668
63.29	431.2789
63.29	431.2789
64.28	449.3632
67.75	421.6922
69.67	463.1482
70.83	443.0989
72.81	411.6849
72.87	411.7413
72.87	411.7413
74.82	413.5413
74.82	413.5413
74.82	413.5413
74.97	413.6800
77.11	415.6256
77.11	415.6256
77.11	415.6256
79.69	398.9407
79.80	399.0327
80.12	347.6934
80.19	347.7441
80.57	323.5530
81.00	400.0465
81.07	400.1049
81.07	400.1049
83.79	313.8697
83.79	313.8697
85.43	314.9221
86.48	315.5923
86.55	315.6360
86.79	315.7865
86.94	315.8827
87.57	316.2816
88.03	316.5721
88.47	316.8485
89.96	317.7794
91.11	318.4932
92.59	319.4066
92.59	319.4066
93.35	319.8720
94.67	264.2773
94.87	264.3768
94.87	264.3768
95.86	299.9073
97.43	310.6261
98.44	270.3691
99.53	268.0891
100.11	286.2648
103.18	300.1639
103.37	283.2157
105.31	278.4877
106.12	280.7878
109.28	269.8885
111.00	269.7219
111.76	285.4468
116.30	250.8154
117.23	281.2650
121.12	256.6874
121.78	262.8198
122.06	257.0714
123.07	261.3995
131.20	254.2952
133.52	210.1172
136.00	240.6470

136.47	256.8013
140.51	246.2536
140.51	0.0000
143.76	250.4320
144.24	239.4856
144.24	239.4856
145.44	257.0980
152.43	257.5525
153.25	242.4920
154.21	285.8371
154.21	285.8371
156.02	242.3715
158.56	241.1316
159.00	254.6760
162.66	220.6746
163.33	207.3852
165.86	222.6272
176.60	241.4606
177.52	258.6202
181.07	213.0902
184.41	212.3462
185.72	201.4816
193.51	219.4540
197.04	218.1778
205.31	235.4623
210.85	187.5357
215.65	197.3181
222.11	192.0011
227.38	195.2782
228.16	173.0978
228.18	173.1010
235.69	187.3531
235.96	187.4040
235.96	187.4040
238.63	197.4927
238.63	197.4927
240.99	197.9502
242.00	198.1461
244.70	148.1480
252.40	142.9520
252.80	144.1494
256.23	161.8314
256.23	161.8314
260.90	0.0000
264.66	123.1883
268.22	133.4531
269.46	133.6005
269.46	133.6005
271.23	148.3583
273.65	171.4193
276.40	143.2818
277.37	140.3955
277.60	140.4248
278.00	134.3279
279.20	159.0793
279.54	159.1262
280.46	178.6100
283.69	127.9370
284.31	131.5379
285.41	135.1976
285.90	0.0000
287.50	111.5401
293.27	0.0000
295.22	105.5006
295.96	85.5952
298.57	78.6342
299.98	130.2549
299.98	130.2549
300.09	130.2682
300.09	130.2682
300.13	130.2726
301.36	127.5377
302.85	126.2615
304.50	109.1925
304.50	109.1925
304.85	126.4699
308.46	123.4183
311.90	134.6038



316.51	137.8242
319.41	118.1477
320.08	127.3022
323.87	122.5772
323.87	122.5772
328.76	137.6930
333.37	149.9445
334.37	144.1744
334.37	144.1744
338.28	119.8894
338.28	119.8894
338.32	119.8933
338.32	119.8933
338.32	119.8933
340.48	118.2422
340.55	118.2480
344.28	112.2276
351.06	120.1108
351.93	119.2559
356.01	101.6713
364.49	94.0231
366.42	99.8036
383.85	107.7031
388.16	91.7710
388.63	94.6691
391.69	91.0339
400.66	96.4050
401.81	89.7262
402.40	91.6920
404.85	105.1809
410.95	74.5441
414.70	87.5706
423.72	90.0389
427.09	93.1750
427.87	88.3150
433.94	93.5780
453.88	82.7695
463.37	69.2021
468.07	59.5396
473.00	69.5980
476.78	107.1548
477.60	99.1155
487.02	72.2004
492.35	0.0000
497.08	77.7279
511.00	77.5104
514.00	77.6389
527.90	0.0000
529.87	0.0000
531.02	61.4793
537.26	65.8666
546.56	0.0000
563.25	62.5255
569.33	74.4135
569.50	86.1144
569.70	86.1243
583.19	63.1592
600.60	59.3842
602.73	76.3773
604.72	60.5835
609.32	67.6578
609.32	67.6578
610.33	60.7476
614.28	69.5586
618.01	72.9480
621.93	58.9043
621.93	58.9043
633.25	60.3140
635.95	72.4695
636.99	71.4052
645.85	58.4621
657.76	65.4333
661.66	81.1024
661.66	81.1024
664.57	0.0000
666.33	72.3672
666.50	70.1463
677.62	58.1858

685.70	57.2692
695.00	75.7682
696.49	80.3281
696.51	80.3303
697.00	73.1254
702.65	71.4935
706.68	70.7104
711.68	67.2269
720.70	69.5353
721.93	0.0000
722.78	68.4558
722.91	60.8529
723.31	60.8626
724.19	68.4961
727.33	56.6976
733.00	61.1100
735.93	44.0520
739.50	65.2572
747.24	49.7905
752.31	52.6652
753.82	51.7727
756.73	67.5696
763.94	66.5279
765.81	65.0286
766.42	66.9041
777.92	54.1414
778.90	55.0964
783.70	56.1372
785.37	61.7912
795.86	59.2240
801.95	54.6525
810.29	58.6094
810.76	49.1651
815.77	54.9428
818.51	52.1560
832.01	54.3281
834.85	76.3301
836.80	0.0000
846.77	64.2111
856.80	66.3721
860.56	57.7939
871.09	43.5114
873.19	53.2208
875.33	0.0000
879.36	50.4296
880.51	48.5095
883.24	48.5571
884.68	54.4113
889.28	41.8494
898.04	54.6697
911.20	53.9419
911.20	53.9419
911.20	53.9419
926.50	50.2841
937.49	64.3287
944.13	59.5137
946.00	52.6041
949.00	41.7283
962.29	66.5299
964.08	58.9150
966.15	58.9553
968.97	59.0101
968.97	59.0101
968.97	59.0101
983.53	42.2092
996.26	64.5844
1001.03	45.4812
1004.73	64.7609
1037.84	52.1505
1038.76	0.0000
1048.07	54.3690
1050.41	48.2484
1050.41	48.2484
1063.66	47.4150
1085.87	46.6985
1099.45	62.5195
1112.07	55.7813
1115.54	50.6037

1120.29	50.6745
1120.29	50.6745
1120.55	50.6768
1121.30	48.9408
1131.51	0.0000
1173.23	67.0667
1177.93	66.0899
1189.05	68.4344
1204.77	63.3645
1221.41	61.4949
1231.02	64.9014
1235.36	66.0605
1238.28	57.4434
1260.41	0.0000
1271.85	45.9313
1274.44	42.6791
1274.54	41.5866
1291.59	40.6729
1298.22	0.0000
1312.11	37.7585
1332.49	25.9207
1365.19	29.8685
1368.63	0.0000
1384.29	21.5700
1408.01	16.9790
1457.56	0.0000
1460.82	16.2391
1489.16	21.1549
1505.03	27.9875
1596.21	17.7297
1620.50	8.9114
1678.03	0.0000
1690.97	12.0605
1764.49	5.2469
1764.49	5.2469
1770.23	19.4067
1771.35	6.1296
1791.20	0.0000
1836.06	11.3818

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247337002

Total Uranium Activity	6.1967E+00	ug/g
Total Uranium Counting Unc.	3.1722E+00	ug/g
Total Uranium Tpu	1.6185E-06	ug/g
Total Uranium Mda	1.6978E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 955027                          SAMPLE ID   : G247337002
*  ANALYST       : MXR1                             DETECTOR    : GAM17
*  SAMPLE DATE   : 12-FEB-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 4-MAR-2010 10:16:41.17           SAMPLE ALQT  : 134.440 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.097E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.433E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 3.972E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.928E+00

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## VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 12:18:28.78

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337003.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:17:24.
Sample ID          : G247337003 Sample quantity : 1.35720E+02 GRAM
Detector name      : GAM18 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:01.90 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 955027 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	75.03*	530	486	1.24	149.18	142	17	7.36E-02	8.4	1.44E+00
2	3	77.24*	797	409	1.05	153.60	142	17	1.11E-01	5.7	
3	6	84.12	188	454	1.55	167.34	164	14	2.61E-02	20.4	2.58E+00
4	6	87.43	280	502	1.17	173.96	164	14	3.89E-02	14.4	
5	0	89.60	96	451	0.85	178.31	177	6	1.33E-02	36.4	
6	0	93.12*	375	629	1.59	185.34	182	10	5.21E-02	14.0	
7	0	129.53	121	472	1.68	258.14	254	9	1.68E-02	33.6	
8	0	185.92*	338	646	1.19	370.89	364	14	4.69E-02	17.1	
9	0	209.72	218	500	1.28	418.46	413	12	3.03E-02	21.6	
10	4	238.67*	2007	271	1.15	476.34	471	18	2.79E-01	2.7	1.65E+00
11	4	241.67*	436	399	1.77	482.33	471	18	6.05E-02	12.4	
12	3	270.42	239	209	1.83	539.83	535	36	3.32E-02	12.4	2.63E+00
13	3	277.07	135	220	1.84	553.13	535	36	1.87E-02	24.0	
14	3	281.33	65	202	1.85	561.64	535	36	8.99E-03	48.0	
15	1	295.16*	678	177	1.40	589.28	584	22	9.42E-02	5.2	4.00E+00
16	1	300.16	183	195	1.56	599.28	584	22	2.54E-02	15.7	
17	0	328.24	114	327	1.35	655.43	648	13	1.58E-02	34.0	
18	0	338.36*	425	298	1.15	675.65	669	13	5.90E-02	9.8	
19	0	351.98*	1067	206	1.33	702.89	698	12	1.48E-01	4.2	
20	0	409.25	105	190	1.18	817.39	811	13	1.46E-02	28.8	
21	0	462.83	145	126	1.56	924.52	920	9	2.01E-02	16.3	
22	0	510.54*	175	261	1.75	1019.91	1013	17	2.43E-02	25.0	
23	0	582.92*	668	202	1.42	1164.63	1158	14	9.28E-02	6.1	
24	0	609.02*	744	202	1.69	1216.83	1210	16	1.03E-01	5.7	
25	0	726.74*	195	94	1.67	1452.19	1445	15	2.72E-02	13.4	
26	0	767.80	130	89	0.99	1534.31	1528	13	1.81E-02	17.4	
27	0	794.82	101	98	1.61	1588.34	1581	14	1.41E-02	23.0	
28	0	860.47	110	73	2.17	1719.60	1714	11	1.53E-02	18.0	
29	0	910.76*	492	90	1.68	1820.16	1814	12	6.84E-02	6.1	
30	2	964.32*	131	43	2.55	1927.27	1920	25	1.82E-02	16.3	2.83E+00
31	2	968.54*	338	40	2.56	1935.69	1920	25	4.69E-02	7.4	
32	0	1119.71	155	105	1.35	2237.98	2230	14	2.16E-02	16.1	
33	0	1237.79	82	127	2.31	2474.12	2464	17	1.14E-02	33.3	
34	0	1377.60	78	29	2.29	2753.70	2748	14	1.08E-02	20.5	
35	0	1459.87*	2483	63	2.32	2918.23	2906	25	3.45E-01	2.2	
36	0	1588.78	81	37	0.91	3176.04	3163	25	1.12E-02	23.2	
37	0	1763.65*	156	25	2.23	3525.75	3517	16	2.17E-02	11.1	

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

## VMS Nuclide Identification Report V3.1 Generated 4-MAR-2010 12:18:31

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337003.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:17:24
Sample ID         : G247337003 Sample quantity : 135.72 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA18 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:01.90 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	*	3.402E+01	2.982E+00	4.252E-01	3.226E-02	80.014
CD-109	+	88.03	*	3.339E+00	1.007E+00	1.024E+00	9.465E-02	3.262
SN-126		64.28		6.267E-01	5.479E-01	9.224E-01	1.363E-01	0.679
	+	86.94		1.347E+00	6.798E-01	4.930E-01	2.045E-01	2.733
	+	87.57	*	3.241E-01	9.776E-02	1.175E-01	1.083E-02	2.757
TL-208	+	277.37		9.014E-01	4.435E-01	4.892E-01	5.248E-02	1.843
	+	583.19	*	5.528E-01	7.970E-02	4.611E-02	3.609E-03	11.988
	+	860.56		8.385E-01	3.159E-01	3.791E-01	4.240E-02	2.212
BI-211		72.87		5.662E+00	3.037E+00	5.255E+00	4.339E-01	1.077
	+	351.06	*	4.191E+00	4.433E-01	2.903E-01	1.864E-02	14.436
PB-212	+	74.82		2.884E+00	6.089E-01	5.256E-01	6.739E-02	5.486
	+	77.11		2.455E+00	3.481E-01	2.975E-01	2.521E-02	8.252
	+	238.63	*	1.874E+00	1.681E-01	7.636E-02	5.505E-03	24.546
	+	300.09		2.561E+00	8.323E-01	1.020E+00	8.520E-02	2.510
BI-214	+	609.32	*	1.187E+00	1.726E-01	9.220E-02	8.285E-03	12.872
	+	1120.29		1.233E+00	4.152E-01	4.247E-01	4.090E-02	2.904
	+	1764.49		1.666E+00	3.836E-01	2.192E-01	1.333E-02	7.599
PB-214	+	74.82		5.111E+00	1.040E+00	9.317E-01	1.073E-01	5.486
	+	77.11		4.328E+00	7.100E-01	5.244E-01	6.202E-02	8.252
	+	242.00		2.463E+00	6.428E-01	4.636E-01	3.727E-02	5.312
	+	295.22		1.685E+00	2.279E-01	1.806E-01	1.568E-02	9.330
	+	351.93	*	1.521E+00	1.815E-01	1.013E-01	8.571E-03	15.023
RA-224	+	240.99	*	4.354E+00	1.108E+00	8.175E-01	4.554E-02	5.327
RA-226	+	609.32	*	1.187E+00	1.726E-01	9.220E-02	8.285E-03	12.872
	+	1120.29		1.233E+00	4.152E-01	4.247E-01	4.090E-02	2.904
	+	1764.49		1.666E+00	3.836E-01	2.192E-01	1.333E-02	7.599
AC-228	+	338.32		1.869E+00	8.536E-01	3.090E-01	1.274E-01	6.050
	+	911.20	*	1.899E+00	3.453E-01	1.864E-01	2.525E-02	10.185
	+	968.97		2.241E+00	6.490E-01	2.889E-01	7.207E-02	7.758
RA-228	+	338.32		1.869E+00	8.536E-01	3.090E-01	1.274E-01	6.050
	+	911.20	*	1.899E+00	3.453E-01	1.864E-01	2.525E-02	10.185
	+	968.97		2.241E+00	6.490E-01	2.889E-01	7.207E-02	7.758
TH-228	+	74.82		2.884E+00	5.415E-01	5.256E-01	4.433E-02	5.486
	+	77.11		2.455E+00	3.481E-01	2.975E-01	2.521E-02	8.252

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-229	+	238.63	*	1.874E+00	1.681E-01	7.636E-02	5.505E-03	24.546
	+	300.09		2.561E+00	1.754E+00	1.020E+00	6.211E-01	2.510
	+	85.43		5.799E-01	2.421E-01	3.054E-01	2.761E-02	1.899
	+	88.47		4.996E-01	1.507E-01	1.523E-01	1.395E-02	3.281
TH-232		193.51	*	-4.487E-02	4.244E-01	7.069E-01	3.785E-02	-0.063
	+	210.85		2.975E+00	1.294E+00	1.147E+00	6.233E-02	2.595
	+	338.32		1.869E+00	3.827E-01	3.090E-01	1.787E-02	6.050
	+	911.20	*	1.899E+00	3.453E-01	1.864E-01	2.525E-02	10.185
U-235	+	968.97		2.241E+00	6.490E-01	2.889E-01	7.207E-02	7.758
	+	89.96		1.141E+00	8.769E-01	1.518E+00	3.751E-01	0.752
	+	93.35		2.658E+00	9.632E-01	6.634E-01	1.526E-01	4.007
		143.76	*	1.560E-01	1.819E-01	2.905E-01	4.530E-02	0.537
NP-237		163.33		2.249E-01	3.858E-01	6.557E-01	1.089E-01	0.343
	+	185.72		2.135E-01	7.403E-02	5.406E-02	2.875E-03	3.949
	+	205.31		4.403E-02	4.528E-01	6.627E-01	1.117E-01	0.066
	+	86.48	*	9.670E-01	3.552E-01	3.563E-01	8.147E-02	2.714
ANH-511		95.86		4.930E-01	8.944E-01	1.326E+00	3.152E-01	0.372
	+	511.00	*	1.121E-01	5.646E-02	3.746E-02	2.474E-03	2.993

---- 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	*	-2.291E-01	2.636E-01	4.117E-01	2.982E-02	-0.556
NA-22		1274.54	*	-2.304E-03	3.763E-02	6.152E-02	4.186E-03	-0.037
NA-24		1368.63	*	-2.985E+01	3.763E-02	Half-Life too short		
SC-46		889.28	*	-2.688E-04	3.310E-02	5.407E-02	6.031E-03	-0.005
V-48	+	1120.55		2.171E-01	7.161E-02	1.054E-01	7.278E-03	2.061
		944.13		-2.997E-01	9.876E-01	1.537E+00	1.627E-01	-0.195
		983.53	*	-2.116E-02	7.261E-02	1.149E-01	1.137E-02	-0.184
		1312.11		-5.416E-02	8.878E-02	1.384E-01	1.008E-02	-0.391
CR-51		320.08	*	-2.115E-01	3.422E-01	5.332E-01	3.428E-02	-0.397
MN-54		834.85	*	2.431E-04	3.147E-02	5.176E-02	5.302E-03	0.005
CO-56		846.77	*	-1.373E-02	3.446E-02	5.503E-02	5.744E-03	-0.249
CO-57		1037.84		-2.266E-01	2.438E-01	3.784E-01	3.502E-02	-0.599
	+	1238.28		1.893E-01	1.268E-01	1.435E-01	9.564E-03	1.320
		1771.35		-1.391E+00	3.327E-01	2.998E-01	1.812E-02	-4.640
		122.06	*	-1.958E-02	2.370E-02	3.675E-02	2.177E-03	-0.533
CO-58		136.47		9.595E-02	1.815E-01	2.951E-01	1.928E-02	0.325
FE-59		810.76	*	-7.914E-03	3.154E-02	5.105E-02	5.040E-03	-0.155
CO-60		1099.45	*	1.137E-02	7.714E-02	1.298E-01	1.067E-02	0.088
		1291.59		1.275E-01	1.064E-01	1.897E-01	1.594E-02	0.672
		1173.23		-3.259E-03	3.623E-02	5.960E-02	3.294E-03	-0.055
		1332.49	*	1.868E-02	3.106E-02	5.342E-02	4.036E-03	0.350
ZN-65		1115.54	*	1.723E-02	8.705E-02	1.261E-01	8.884E-03	0.137
SE-75		121.12		-4.777E-02	1.241E-01	1.961E-01	1.800E-02	-0.244
		136.00		5.836E-03	3.518E-02	5.642E-02	3.215E-03	0.103
		264.66	*	-8.665E-03	3.792E-02	5.657E-02	3.236E-03	-0.153
		279.54		7.398E-02	9.292E-02	1.564E-01	9.674E-03	0.473



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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		400.66		-1.307E-02	2.026E-01	3.379E-01	3.067E-02	-0.039
SR-85		514.00	*	4.393E-02	3.832E-02	5.860E-02	3.882E-03	0.750
Y-88		898.04		-4.144E-02	3.571E-02	5.141E-02	5.828E-03	-0.806
		1836.06	*	2.877E-02	2.748E-02	5.114E-02	2.913E-03	0.562
Y-91		1204.77	*	-1.184E+00	1.931E+01	3.176E+01	1.877E+00	-0.037
NB-94		702.65	*	-1.658E-02	2.640E-02	4.239E-02	3.477E-03	-0.391
		871.09		-2.196E-02	2.769E-02	4.255E-02	4.615E-03	-0.516
NB-95		765.81	*	7.165E-02	4.566E-02	7.201E-02	6.587E-03	0.995
NB-95M		235.69	*	8.452E-02	1.226E-01	1.835E-01	1.351E-02	0.461
ZR-95		724.19		1.652E-01	9.305E-02	1.498E-01	1.387E-02	1.103
		756.73	*	-2.826E-02	6.193E-02	9.971E-02	9.847E-03	-0.283
MO-99		140.51		-4.178E+01	6.872E+01	1.042E+02	2.376E+01	-0.401
		181.07		5.020E+00	5.153E+01	7.668E+01	1.343E+01	0.065
		366.42		-7.288E+01	2.543E+02	4.225E+02	2.441E+01	-0.173
		739.50	*	2.674E+00	3.166E+01	5.290E+01	8.372E+00	0.051
		777.92		-1.074E+02	9.526E+01	1.447E+02	1.351E+01	-0.742
TC-99M		140.51	*	-1.271E+16	9.526E+01	Half-Life	too short	
RU-103		497.08	*	-3.438E-03	3.242E-02	5.295E-02	6.762E-03	-0.065
	+	610.33		1.333E+01	2.588E+00	2.492E+00	3.908E-01	5.351
RH-106		621.93	*	3.673E-02	2.664E-01	4.330E-01	5.401E-02	0.085
		1050.41		7.647E-01	2.168E+00	3.705E+00	3.166E-01	0.206
RU-106		621.93	*	3.673E-02	2.664E-01	4.330E-01	3.187E-02	0.085
		1050.41		7.647E-01	2.168E+00	3.705E+00	3.166E-01	0.206
AG-108M		433.94	*	-6.089E-03	2.260E-02	3.702E-02	2.386E-03	-0.164
		614.28		1.439E-02	3.101E-02	4.495E-02	3.434E-03	0.320
		722.91		-1.350E-02	3.354E-02	4.634E-02	4.069E-03	-0.291
AG-110M		657.76	*	-1.789E-02	2.727E-02	4.394E-02	3.466E-03	-0.407
		677.62		8.272E-02	2.557E-01	4.359E-01	3.538E-02	0.190
		706.68		7.483E-02	1.691E-01	2.892E-01	2.464E-02	0.259
		763.94		1.257E-01	1.538E-01	2.337E-01	2.183E-02	0.538
		884.68		2.324E-02	4.126E-02	6.995E-02	7.899E-03	0.332
		937.49		-1.966E-02	9.702E-02	1.556E-01	1.703E-02	-0.126
		1384.29		7.475E-02	1.221E-01	1.865E-01	1.443E-02	0.401
		1505.03		-7.815E-02	2.407E-01	3.900E-01	2.799E-02	-0.200
SN-113		391.69	*	8.386E-03	3.440E-02	5.835E-02	3.579E-03	0.144
CD-115		260.90		-4.330E-05	3.440E-02	Half-Life	too short	
		492.35		-4.974E-05	3.440E-02	Half-Life	too short	
		527.90	*	-2.112E-05	3.440E-02	Half-Life	too short	
SN-117M		156.02		1.950E+00	2.407E+00	4.185E+00	2.235E-01	0.466
		158.56	*	-5.968E-02	5.813E-02	9.491E-02	5.044E-03	-0.629
TE-123M		159.00	*	-2.349E-02	2.432E-02	3.980E-02	2.147E-03	-0.590
SB-124		602.73		1.742E-03	3.833E-02	5.365E-02	3.880E-03	0.032
		645.85		-2.273E-01	4.127E-01	6.368E-01	5.147E-02	-0.357
		722.78		-1.659E-01	3.550E-01	4.872E-01	4.238E-02	-0.340
		1690.97	*	-5.286E-03	6.610E-02	1.081E-01	7.485E-03	-0.049
SB-125		427.87	*	4.867E-02	7.032E-02	1.211E-01	7.559E-03	0.402
	+	463.37		8.360E-01	2.784E-01	4.565E-01	3.257E-02	1.831
		600.60		-2.338E-03	1.509E-01	2.370E-01	1.889E-02	-0.010
		635.95		-9.979E-02	2.227E-01	3.474E-01	2.866E-02	-0.287

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

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TE-125M		109.28	*	5.449E-01	9.174E+00	1.486E+01	1.335E+00	0.037
I-126		388.63		-2.368E-02	1.691E-01	2.817E-01	1.619E-02	-0.084
		666.33	*	2.834E-02	2.207E-01	3.727E-01	2.866E-02	0.076
		753.82		9.740E-01	1.828E+00	3.130E+00	2.806E-01	0.311
SB-126		414.70		-3.302E-03	8.363E-02	1.209E-01	7.151E-03	-0.027
		666.50		6.613E-03	7.647E-02	1.289E-01	9.909E-03	0.051
		695.00		5.896E-02	8.203E-02	1.423E-01	1.151E-02	0.414
		697.00		1.067E-01	2.782E-01	4.746E-01	3.855E-02	0.225
		720.70	*	-2.118E-02	1.679E-01	2.381E-01	2.016E-02	-0.089
		856.80		4.901E-01	6.158E-01	9.251E-01	9.812E-02	0.530
SB-127		252.40		5.147E-02	8.075E+00	1.325E+01	5.494E+00	0.004
		473.00		3.790E+00	3.050E+00	5.311E+00	6.839E-01	0.714
		685.70	*	-4.534E-01	2.407E+00	3.979E+00	4.959E-01	-0.114
		783.70		1.408E+01	7.055E+00	1.253E+01	1.790E+00	1.124
I-131		80.19		7.491E+00	8.270E+00	1.025E+01	8.975E-01	0.731
		284.31		-2.222E+00	2.101E+00	2.766E+00	1.774E-01	-0.803
		364.49	*	-6.795E-02	1.336E-01	2.194E-01	1.427E-02	-0.310
		636.99		-5.907E-01	1.954E+00	3.078E+00	2.484E-01	-0.192
TE-132		49.72		-5.903E+01	6.929E+01	1.128E+02	1.343E+01	-0.523
		111.76		-2.713E+01	8.582E+01	1.350E+02	1.502E+01	-0.201
		116.30		2.349E+01	7.554E+01	1.230E+02	1.347E+01	0.191
		228.16	*	7.899E-01	1.814E+00	2.983E+00	4.629E-01	0.265
BA-133		81.00		7.217E-02	1.114E-01	1.353E-01	2.108E-02	0.533
	+	276.40		8.339E-01	4.138E-01	5.225E-01	6.552E-02	1.596
		302.85		1.616E-01	1.267E-01	1.924E-01	2.190E-02	0.840
		356.01	*	2.467E-02	3.690E-02	5.388E-02	6.071E-03	0.458
		383.85		-8.288E-02	2.329E-01	3.839E-01	4.085E-02	-0.216
I-133		529.87	*	-1.917E-01	2.329E-01	Half-Life	too short	
		875.33		6.099E+00	2.329E-01	Half-Life	too short	
		1298.22		-5.109E+00	2.329E-01	Half-Life	too short	
CS-134		563.25		2.783E-01	2.857E-01	4.905E-01	3.466E-02	0.567
		569.33		-4.699E-02	1.627E-01	2.553E-01	1.826E-02	-0.184
		604.72		6.755E-03	3.090E-02	4.387E-02	3.189E-03	0.154
	+	795.86	*	1.193E-01	5.604E-02	7.250E-02	7.012E-03	1.645
		801.95		-2.998E-02	3.614E-01	5.344E-01	5.214E-02	-0.056
		1365.19		1.327E-01	9.637E-01	1.593E+00	1.268E-01	0.083
CS-135		268.22	*	2.800E-01	1.443E-01	2.278E-01	1.722E-02	1.229
I-135		546.56		-4.631E+14	1.443E-01	Half-Life	too short	
		836.80		2.156E+15	1.443E-01	Half-Life	too short	
		1038.76		-1.662E+15	1.443E-01	Half-Life	too short	
		1131.51		-5.155E+14	1.443E-01	Half-Life	too short	
		1260.41	*	2.579E+14	1.443E-01	Half-Life	too short	
		1457.56		3.152E+17	1.443E-01	Half-Life	too short	
		1678.03		-3.727E+14	1.443E-01	Half-Life	too short	
		1791.20		-3.339E+14	1.443E-01	Half-Life	too short	
CS-136		153.25		5.907E-02	9.131E-01	1.554E+00	1.204E-01	0.038
		176.60		1.269E-01	5.120E-01	8.690E-01	5.772E-02	0.146
		273.65		2.430E-01	5.168E-01	8.600E-01	5.803E-02	0.283
		340.55		6.429E-01	1.943E-01	3.170E-01	1.988E-02	2.028

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		818.51		2.548E-02	7.287E-02	1.229E-01	1.228E-02	0.207
		1048.07	*	1.223E-01	1.169E-01	2.074E-01	1.859E-02	0.590
		1235.36		1.297E+00	7.550E-01	1.191E+00	1.214E-01	1.089
BA-137M		661.66	*	-9.967E-03	2.773E-02	4.555E-02	3.472E-03	-0.219
CS-137		661.66	*	-1.053E-02	2.930E-02	4.812E-02	3.677E-03	-0.219
CE-139		165.86	*	-3.509E-03	2.612E-02	4.394E-02	2.306E-03	-0.080
BA-140		162.66		7.647E-01	9.253E-01	1.590E+00	9.825E-02	0.481
		304.85		-5.846E-01	1.618E+00	2.217E+00	6.330E-01	-0.264
		423.72		-2.055E+00	2.040E+00	3.028E+00	9.781E-01	-0.679
		537.26	*	-1.155E-01	2.693E-01	4.233E-01	1.418E-01	-0.273
LA-140	+	328.76		8.100E-01	5.541E-01	5.988E-01	3.888E-02	1.353
		487.02		5.585E-02	1.377E-01	2.319E-01	1.654E-02	0.241
		815.77		1.915E-01	3.163E-01	5.423E-01	5.870E-02	0.353
		1596.21	*	4.524E-02	8.779E-02	1.354E-01	9.293E-03	0.334
CE-141		145.44	*	-1.146E-02	6.129E-02	9.643E-02	5.506E-03	-0.119
CE-143		57.36		-1.058E-02	6.129E-02	Half-Life	too short	
		293.27	*	9.176E-03	6.129E-02	Half-Life	too short	
		664.57		6.665E-03	6.129E-02	Half-Life	too short	
		721.93		-8.683E-03	6.129E-02	Half-Life	too short	
CE-144		80.12		2.652E+00	2.986E+00	3.696E+00	3.200E-01	0.717
		133.52	*	-5.817E-02	1.921E-01	2.675E-01	3.700E-02	-0.217
PM-144		476.78		-3.755E-02	5.090E-02	8.026E-02	5.894E-03	-0.468
		618.01		-2.510E-02	2.850E-02	4.025E-02	3.066E-03	-0.624
		696.49	*	2.781E-02	2.756E-02	4.847E-02	3.936E-03	0.574
PR-144		696.51	*	2.069E+00	2.067E+00	3.633E+00	2.948E-01	0.569
		1489.16		-3.682E+00	1.107E+01	1.724E+01	1.246E+00	-0.214
PM-146		453.88	*	4.864E-04	3.221E-02	5.339E-02	4.664E-03	0.009
		633.25		-5.179E-01	1.163E+00	1.789E+00	6.787E-01	-0.290
		735.93		6.021E-02	1.161E-01	1.934E-01	5.426E-02	0.311
		747.24		-5.507E-02	7.309E-02	1.144E-01	1.685E-02	-0.481
ND-147		91.11		1.943E+00	4.563E-01	6.284E-01	5.915E-02	3.093
		319.41		-2.864E+00	3.718E+00	5.745E+00	3.319E-01	-0.499
		531.02	*	-6.285E-02	5.738E-01	9.313E-01	1.299E-01	-0.067
PM-149		285.90	*	1.651E-05	5.738E-01	Half-Life	too short	
EU-152		121.78		-2.773E-02	6.537E-02	1.031E-01	7.911E-03	-0.269
		244.70		3.556E-01	2.960E-01	4.552E-01	2.543E-02	0.781
		344.28	*	-6.838E-02	9.364E-02	1.235E-01	8.055E-03	-0.554
		778.90		-2.640E-01	2.055E-01	3.079E-01	2.879E-02	-0.858
	+	964.08		9.365E-01	3.200E-01	4.927E-01	5.047E-02	1.901
		1085.87		-1.746E-01	3.198E-01	5.127E-01	3.972E-02	-0.340
		1112.07		6.647E-02	2.815E-01	4.101E-01	2.919E-02	0.162
		1408.01		-9.621E-02	1.552E-01	2.374E-01	1.763E-02	-0.405
GD-153		69.67		-3.388E-01	1.918E+00	2.788E+00	2.263E-01	-0.122
		97.43	*	-3.156E-02	8.632E-02	1.223E-01	9.561E-03	-0.258
		103.18		-9.455E-02	9.913E-02	1.543E-01	1.113E-02	-0.613
EU-154		123.07		-3.070E-02	4.763E-02	7.431E-02	7.017E-03	-0.413
		723.31		5.035E-02	1.506E-01	2.222E-01	2.086E-02	0.227
		873.19		-1.428E-04	2.265E-01	3.708E-01	5.051E-02	0.000
		996.26		-1.140E-01	3.268E-01	5.148E-01	9.266E-02	-0.222

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	+	1004.73		-3.921E-02	1.860E-01	2.960E-01	3.638E-02	-0.132
		1274.44	*	-5.131E-02	1.092E-01	1.732E-01	1.743E-02	-0.296
		86.55		3.937E-01	1.189E-01	1.747E-01	1.610E-02	2.253
		105.31	*	9.452E-02	9.419E-02	1.580E-01	1.129E-02	0.598
TB-160	+	86.79		1.092E+00	3.293E-01	4.884E-01	4.468E-02	2.236
		197.04		4.870E-02	4.718E-01	7.910E-01	4.248E-02	0.062
		215.65		4.446E-01	7.238E-01	1.090E+00	5.948E-02	0.408
		298.57		2.016E-01	1.018E-01	1.773E-01	1.018E-02	1.137
HO-166M	+	879.36	*	-5.142E-02	1.208E-01	1.915E-01	2.104E-02	-0.268
		962.29		1.042E+00	5.347E-01	8.519E-01	8.752E-02	1.224
		966.15		1.774E+00	2.994E-01	5.026E-01	5.129E-02	3.530
		1177.93		-9.202E-02	3.003E-01	4.864E-01	2.716E-02	-0.189
		1271.85		-4.427E-02	6.361E-01	1.039E+00	7.025E-02	-0.043
		80.57		1.064E-01	3.271E-01	3.900E-01	3.388E-02	0.273
		184.41		1.287E-01	3.090E-02	5.678E-02	3.017E-03	2.267
		280.46		9.823E-02	9.442E-02	1.140E-01	6.500E-03	0.862
		410.95		2.524E-01	2.151E-01	3.371E-01	1.984E-02	0.749
		711.68	*	-1.616E-02	5.043E-02	8.129E-02	6.776E-03	-0.199
		752.31		2.506E-01	2.112E-01	3.744E-01	3.348E-02	0.669
		810.29		-2.445E-02	4.576E-02	7.249E-02	7.138E-03	-0.337
TA-182		67.75		-6.416E-03	1.180E-01	1.947E-01	1.565E-02	-0.033
		100.11		9.313E-02	1.601E-01	2.658E-01	1.998E-02	0.350
		152.43		-2.663E-01	3.228E-01	4.925E-01	2.649E-02	-0.541
		222.11		2.465E-01	2.937E-01	5.016E-01	2.753E-02	0.491
		1121.30		4.479E-01	1.731E-01	2.861E-01	1.971E-02	1.565
		1189.05		-2.786E-02	2.735E-01	4.493E-01	2.569E-02	-0.062
IR-192	+	1221.41	*	4.431E-02	1.848E-01	3.087E-01	1.889E-02	0.144
		1231.02		-1.587E-01	4.814E-01	6.560E-01	4.092E-02	-0.242
		295.96		1.304E+00	1.551E-01	2.604E-01	1.519E-02	5.006
		308.46		-1.447E-02	8.153E-02	1.305E-01	7.605E-03	-0.111
HG-203		316.51	*	3.112E-02	2.952E-02	4.999E-02	2.899E-03	0.623
		468.07		-5.938E-02	6.542E-02	8.677E-02	6.192E-03	-0.684
		70.83		-8.799E-01	1.550E+00	2.202E+00	3.484E-01	-0.400
		72.87		1.514E+00	8.355E-01	1.405E+00	2.155E-01	1.077
BI-207	+	279.20	*	3.629E-02	3.452E-02	5.865E-02	3.536E-03	0.619
		72.81		2.903E-01	1.735E-01	2.993E-01	2.471E-02	0.970
		74.97		8.313E-01	1.558E-01	2.308E-01	1.929E-02	3.602
		569.70		-1.766E-03	2.495E-02	3.969E-02	2.781E-03	-0.044
PB-210		1063.66	*	1.020E-02	4.454E-02	7.545E-02	6.228E-03	0.135
		1770.23		1.663E-01	3.578E-01	5.511E-01	3.334E-02	0.302
		46.54	*	6.837E+00	4.913E+00	8.661E+00	6.640E-01	0.789
		404.85	*	1.119E-01	6.251E-01	9.172E-01	4.401E-01	0.122
PB-211		427.09		9.971E-01	1.252E+00	2.025E+00	9.286E-01	0.492
		832.01		-1.198E-01	8.134E-01	1.321E+00	6.887E-01	-0.091
		727.33	*	2.428E+00	7.174E-01	9.576E-01	1.189E-01	2.536
		785.37		4.982E+00	2.640E+00	4.700E+00	4.442E-01	1.060
BI-212	+	1620.50		1.741E+00	1.824E+00	3.328E+00	2.250E-01	0.523
		271.23		9.640E-01	2.509E-01	3.907E-01	3.103E-02	2.467
		401.81	*	-3.996E-01	3.463E-01	5.034E-01	6.769E-02	-0.794

## ---- 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		1.633E-01	2.512E-01	3.061E-01	2.670E-02	0.533
	+	83.79		3.451E-01	1.441E-01	2.031E-01	1.811E-02	1.699
		94.87		1.205E+00	4.612E-01	7.341E-01	5.977E-02	1.642
		144.24		6.704E-01	5.985E-01	9.709E-01	6.751E-02	0.690
		154.21		2.595E-01	3.231E-01	5.617E-01	3.710E-02	0.462
AC-227	+	269.46		7.490E-01	1.909E-01	3.006E-01	1.782E-02	2.492
		323.87	*	4.293E-01	5.940E-01	8.705E-01	1.402E-01	0.493
	+	338.28		7.419E+00	1.643E+00	2.035E+00	2.084E-01	3.645
		79.69		4.983E-01	1.320E+00	1.810E+00	3.121E-01	0.275
		235.96		4.426E-01	1.507E-01	2.419E-01	1.927E-02	1.830
TH-227		256.23	*	-1.311E-01	1.996E-01	3.166E-01	3.206E-02	-0.414
	+	299.98		2.817E+00	9.372E-01	1.367E+00	1.498E-01	2.061
		304.50		-1.480E-01	1.509E+00	2.118E+00	3.226E-01	-0.070
		334.37		1.706E+00	1.787E+00	2.279E+00	3.239E-01	0.749
		79.80		1.555E+00	1.966E+00	2.391E+00	5.209E-01	0.650
PA-231		235.96		4.426E-01	1.499E-01	2.419E-01	1.739E-02	1.830
		256.23	*	-1.311E-01	1.998E-01	3.166E-01	3.779E-02	-0.414
	+	299.98		2.817E+00	9.372E-01	1.367E+00	1.498E-01	2.061
		304.50		-1.480E-01	1.509E+00	2.118E+00	3.226E-01	-0.070
		334.37		1.706E+00	1.787E+00	2.279E+00	3.239E-01	0.749
TH-231		283.69	*	-7.394E-01	1.351E+00	1.847E+00	2.415E-01	-0.400
	+	301.36		1.810E+00	5.983E-01	8.941E-01	9.224E-02	2.024
		81.07		1.633E-01	2.512E-01	3.061E-01	2.670E-02	0.533
	+	83.79		3.451E-01	1.441E-01	2.031E-01	1.811E-02	1.699
		94.87		1.205E+00	4.612E-01	7.341E-01	5.977E-02	1.642
PA-233		144.24		6.704E-01	5.985E-01	9.709E-01	6.751E-02	0.690
		154.21		2.595E-01	3.231E-01	5.617E-01	3.710E-02	0.462
	+	269.46		7.490E-01	1.909E-01	3.006E-01	1.782E-02	2.492
		323.87	*	4.293E-01	5.940E-01	8.705E-01	1.402E-01	0.493
	+	338.28		7.419E+00	1.643E+00	2.035E+00	2.084E-01	3.645
PA-234	+	300.13		1.275E+00	4.351E-01	6.196E-01	8.281E-02	2.057
		311.90	*	-5.686E-02	5.316E-02	8.091E-02	4.958E-03	-0.703
		340.48		2.356E+00	8.399E-01	1.076E+00	2.496E-01	2.190
		94.67		5.476E-01	1.796E-01	2.774E-01	3.355E-02	1.974
		98.44		1.916E-02	9.162E-02	1.327E-01	7.386E-02	0.144
PA-234M		111.00		-6.653E-02	1.665E-01	2.610E-01	2.800E-02	-0.255
		131.20		8.990E-02	1.017E-01	1.510E-01	8.594E-03	0.595
		569.50		-2.069E-02	2.211E-01	3.512E-01	2.461E-02	-0.059
		733.00		-6.542E-02	3.352E-01	4.709E-01	1.046E-01	-0.139
		880.51		-7.685E-02	2.329E-01	3.720E-01	4.093E-02	-0.207
TH-234		883.24		-1.746E-02	2.370E-01	3.852E-01	2.603E-01	-0.045
		926.50		3.478E-02	1.393E-01	2.305E-01	6.023E-02	0.151
		946.00	*	-3.812E-02	2.744E-01	4.323E-01	8.528E-02	-0.088
	+	949.00		4.432E-01	3.932E-01	6.812E-01	7.154E-02	0.651
		766.42		3.515E+01	2.168E+01	1.832E+01	9.311E+00	1.919
U-238		1001.03	*	9.084E-01	4.272E+00	6.853E+00	7.393E-01	0.133
	+	63.29	*	4.522E-01	1.472E+00	2.447E+00	4.409E-01	0.185
		92.59		3.519E+00	1.253E+00	1.265E+00	2.785E-01	2.783
		63.29	*	4.522E-01	1.472E+00	2.447E+00	4.409E-01	0.185

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	+	92.59		3.519E+00	1.028E+00	1.265E+00	1.071E-01	2.783
		99.53		2.970E-02	1.469E-01	2.383E-01	1.806E-02	0.125
		103.37		-5.839E-02	8.882E-02	1.402E-01	1.008E-02	-0.417
		106.12		6.713E-02	7.515E-02	1.255E-01	8.728E-03	0.535
		117.23	*	5.068E-03	3.652E-01	5.878E-01	3.631E-02	0.009
AM-241		228.18		8.423E-02	1.891E-01	3.119E-01	1.720E-02	0.270
	+	277.60		4.120E-01	1.992E-01	2.584E-01	1.472E-02	1.595
		59.54	*	6.703E-02	1.642E-01	2.762E-01	2.290E-02	0.243
CM-247	+	278.00		1.750E+00	8.460E-01	1.091E+00	6.214E-02	1.604
CF-249		287.50		1.039E+00	1.105E+00	1.666E+00	9.530E-02	0.624
		402.40	*	-2.625E-02	3.249E-02	4.683E-02	2.727E-03	-0.561
		252.80		1.057E-01	7.485E-01	1.236E+00	6.941E-02	0.086
		333.37		3.793E-02	2.350E-01	2.400E-01	1.388E-02	0.158
CF-251		388.16	*	-9.102E-03	3.138E-02	5.188E-02	2.982E-03	-0.175
		177.52	*	-1.692E-02	1.033E-01	1.726E-01	9.123E-03	-0.098
		227.38		-4.811E-02	3.023E-01	4.968E-01	2.739E-02	-0.097
		285.41		-8.617E-01	2.020E+00	2.789E+00	1.594E-01	-0.309

# 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]G247337003      *
* Acquisition date   : 4-MAR-2010 10:17:24 Detector SN#                   *
* Detector ID        : GAM18 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:01.90 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID         *
* Sample ID          : G247337003 Analyst initials: MXR1                  *
* Batch Number       : 955027 Sample Quantity : 1.3572E+02 GRAM           *
* Recovery           : 1.00000 Carrier Weight : 0.00000                   *
*****
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000                                             *
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23 MS Isotope :                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.402E+01	2.922E+00	4.262E-01	0.000E+00
CD-109	3.339E+00	9.872E-01	1.081E+00	0.000E+00
SN-126	3.241E-01	9.580E-02	1.241E-01	0.000E+00
TL-208	5.528E-01	7.810E-02	4.704E-02	0.000E+00
BI-211	4.191E+00	4.344E-01	2.990E-01	0.000E+00
PB-212	1.874E+00	1.647E-01	7.919E-02	0.000E+00
BI-214	1.187E+00	1.691E-01	9.397E-02	0.000E+00
PB-214	1.521E+00	1.778E-01	1.043E-01	0.000E+00
RA-224	4.354E+00	1.086E+00	8.476E-01	0.000E+00
RA-226	1.187E+00	1.691E-01	9.397E-02	0.000E+00
AC-228	1.899E+00	3.384E-01	1.886E-01	0.000E+00
RA-228	1.899E+00	3.384E-01	1.886E-01	0.000E+00
TH-228	1.874E+00	1.647E-01	7.919E-02	0.000E+00
TH-229	-4.487E-02	4.159E-01	7.359E-01	0.000E+00
TH-232	1.899E+00	3.384E-01	1.886E-01	0.000E+00
U-235	1.560E-01	1.782E-01	3.040E-01	0.000E+00
NP-237	9.670E-01	3.481E-01	3.762E-01	0.000E+00
ANH-511	1.121E-01	5.533E-02	3.831E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-2.291E-01	2.583E-01	4.215E-01	0.000E+00 NOT IDENT.
NA-22	-2.304E-03	3.688E-02	6.183E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	1.318E+08	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-2.688E-04	3.244E-02	5.472E-02	0.000E+00 FAIL ABUN
V-48	-2.116E-02	7.116E-02	1.161E-01	0.000E+00 NOT IDENT.
CR-51	-2.115E-01	3.354E-01	5.500E-01	0.000E+00 NOT IDENT.
MN-54	2.431E-04	3.084E-02	5.245E-02	0.000E+00 NOT IDENT.
CO-56	-1.373E-02	3.377E-02	5.574E-02	0.000E+00 FAIL ABUN
CO-57	-1.958E-02	2.322E-02	3.857E-02	0.000E+00 NOT IDENT.

CO-58	-7.914E-03	3.091E-02	5.176E-02	0.000E+00	NOT IDENT.
FE-59	1.137E-02	7.560E-02	1.308E-01	0.000E+00	NOT IDENT.
CO-60	1.868E-02	3.044E-02	5.365E-02	0.000E+00	NOT IDENT.
ZN-65	1.723E-02	8.531E-02	1.271E-01	0.000E+00	NOT IDENT.
SE-75	-8.665E-03	3.716E-02	5.855E-02	0.000E+00	NOT IDENT.
SR-85	4.393E-02	3.756E-02	5.992E-02	0.000E+00	NOT IDENT.
Y-88	2.877E-02	2.693E-02	5.104E-02	0.000E+00	NOT IDENT.
Y-91	-1.184E+00	1.893E+01	3.196E+01	0.000E+00	NOT IDENT.
NB-94	-1.658E-02	2.587E-02	4.309E-02	0.000E+00	NOT IDENT.
NB-95	7.165E-02	4.475E-02	7.308E-02	0.000E+00	NOT IDENT.
NB-95M	8.452E-02	1.201E-01	1.903E-01	0.000E+00	NOT IDENT.
ZR-95	-2.826E-02	6.070E-02	1.012E-01	0.000E+00	NOT IDENT.
MO-99	2.674E+00	3.103E+01	5.372E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	2.082E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-3.438E-03	3.178E-02	5.417E-02	0.000E+00	FAIL ABUN
RH-106	3.673E-02	2.611E-01	4.412E-01	0.000E+00	NOT IDENT.
RU-106	3.673E-02	2.610E-01	4.412E-01	0.000E+00	NOT IDENT.
AG-108M	-6.089E-03	2.215E-02	3.797E-02	0.000E+00	NOT IDENT.
AG-110M	-1.789E-02	2.673E-02	4.473E-02	0.000E+00	NOT IDENT.
SN-113	8.386E-03	3.371E-02	5.996E-02	0.000E+00	NOT IDENT.
CD-115	0.000E+00	3.939E+01	0.000E+00	0.000E+00	SHORT HLIF
SN-117M	-5.968E-02	5.697E-02	9.915E-02	0.000E+00	NOT IDENT.
TE-123M	-2.349E-02	2.384E-02	4.157E-02	0.000E+00	NOT IDENT.
SB-124	-5.286E-03	6.478E-02	1.080E-01	0.000E+00	NOT IDENT.
SB-125	4.867E-02	6.892E-02	1.243E-01	0.000E+00	FAIL ABUN
TE-125M	5.449E-01	8.991E+00	1.563E+01	0.000E+00	NOT IDENT.
I-126	2.834E-02	2.163E-01	3.793E-01	0.000E+00	NOT IDENT.
SB-126	-2.118E-02	1.646E-01	2.419E-01	0.000E+00	NOT IDENT.
SB-127	-4.534E-01	2.359E+00	4.047E+00	0.000E+00	NOT IDENT.
I-131	-6.795E-02	1.309E-01	2.257E-01	0.000E+00	NOT IDENT.
TE-132	7.899E-01	1.777E+00	3.096E+00	0.000E+00	NOT IDENT.
BA-133	2.467E-02	3.616E-02	5.547E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	2.184E+05	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	5.492E-02	7.353E-02	0.000E+00	FAIL ABUN
CS-135	0.000E+00	1.415E-01	2.358E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.041E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	1.223E-01	1.146E-01	2.092E-01	0.000E+00	NOT IDENT.
BA-137M	-9.967E-03	2.718E-02	4.636E-02	0.000E+00	NOT IDENT.
CS-137	-1.053E-02	2.871E-02	4.897E-02	0.000E+00	NOT IDENT.
CE-139	-3.509E-03	2.560E-02	4.586E-02	0.000E+00	NOT IDENT.
BA-140	-1.155E-01	2.639E-01	4.324E-01	0.000E+00	NOT IDENT.
LA-140	4.524E-02	8.603E-02	1.355E-01	0.000E+00	FAIL ABUN
CE-141	-1.146E-02	6.006E-02	1.009E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.583E+03	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-5.817E-02	1.883E-01	2.803E-01	0.000E+00	NOT IDENT.
PM-144	2.781E-02	2.701E-02	4.928E-02	0.000E+00	NOT IDENT.
PR-144	2.069E+00	2.025E+00	3.694E+00	0.000E+00	NOT IDENT.
PM-146	4.864E-04	3.156E-02	5.472E-02	0.000E+00	NOT IDENT.
ND-147	-6.285E-02	5.623E-01	9.517E-01	0.000E+00	NOT IDENT.
PM-149	0.000E+00	3.713E+02	0.000E+00	0.000E+00	SHORT HLIF
EU-152	-6.838E-02	9.177E-02	1.273E-01	0.000E+00	FAIL ABUN
GD-153	-3.156E-02	8.460E-02	1.288E-01	0.000E+00	NOT IDENT.
EU-154	-5.131E-02	1.070E-01	1.740E-01	0.000E+00	NOT IDENT.
EU-155	9.452E-02	9.231E-02	1.662E-01	0.000E+00	FAIL ABUN
TB-160	-5.142E-02	1.184E-01	1.939E-01	0.000E+00	FAIL ABUN
HO-166M	-1.616E-02	4.943E-02	8.262E-02	0.000E+00	FAIL ABUN
TA-182	4.431E-02	1.811E-01	3.106E-01	0.000E+00	NOT IDENT.
IR-192	3.112E-02	2.893E-02	5.157E-02	0.000E+00	FAIL ABUN
HG-203	3.629E-02	3.383E-02	6.065E-02	0.000E+00	NOT IDENT.
BI-207	1.020E-02	4.365E-02	7.610E-02	0.000E+00	FAIL ABUN
PB-210	6.837E+00	4.815E+00	9.244E+00	0.000E+00	NOT IDENT.
PB-211	1.119E-01	6.126E-01	9.421E-01	0.000E+00	NOT IDENT.
BI-212	0.000E+00	7.030E-01	9.728E-01	0.000E+00	FAIL ABUN
RN-219	-3.996E-01	3.394E-01	5.171E-01	0.000E+00	FAIL ABUN
RA-223	4.293E-01	5.821E-01	8.977E-01	0.000E+00	FAIL ABUN
AC-227	-1.311E-01	1.956E-01	3.279E-01	0.000E+00	FAIL ABUN
TH-227	-1.311E-01	1.958E-01	3.279E-01	0.000E+00	FAIL ABUN
PA-231	-7.394E-01	1.324E+00	1.909E+00	0.000E+00	FAIL ABUN
TH-231	4.293E-01	5.821E-01	8.977E-01	0.000E+00	FAIL ABUN
PA-233	-5.686E-02	5.209E-02	8.350E-02	0.000E+00	FAIL ABUN
PA-234	-3.812E-02	2.689E-01	4.370E-01	0.000E+00	NOT IDENT.
PA-234M	9.084E-01	4.186E+00	6.920E+00	0.000E+00	FAIL ABUN
TH-234	4.522E-01	1.442E+00	2.598E+00	0.000E+00	FAIL ABUN
U-238	4.522E-01	1.442E+00	2.598E+00	0.000E+00	FAIL ABUN
NP-239	5.068E-03	3.579E-01	6.174E-01	0.000E+00	FAIL ABUN
AM-241	6.703E-02	1.609E-01	2.935E-01	0.000E+00	NOT IDENT.
CM-247	-2.625E-02	3.184E-02	4.810E-02	0.000E+00	FAIL ABUN
CF-249	-9.102E-03	3.075E-02	5.333E-02	0.000E+00	NOT IDENT.



CF-251	-1.692E-02	1.012E-01	1.800E-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]G247337003.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:17:24.
Sample ID          : G247337003          Sample quantity  : 1.35720E+02 GRAM
Detector name      : GAM18              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:01.90  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials  : MXR1
Abundance limit    : 75.00000           Sensitivity       : 5.00000
Batch ID          : 955027              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	2483	10.66*	1.894E+00	3.402E+01	3.402E+01	8.77
CD-109	88.03	280	3.70*	6.460E+00	3.241E+00	3.339E+00	30.17
SN-126	64.28	-----	9.60	3.245E+00	-----	Line Not Found	-----
	86.94	280	8.90	6.460E+00	1.347E+00	1.347E+00	50.46
	87.57	280	37.00*	6.460E+00	3.241E-01	3.241E-01	30.17
TL-208	277.37	135	6.60	6.262E+00	9.014E-01	9.014E-01	49.20
	583.19	668	85.00*	3.935E+00	5.528E-01	5.528E-01	14.42
	860.56	110	12.50	2.915E+00	8.385E-01	8.385E-01	37.67
BI-211	72.87	-----	1.23	4.622E+00	-----	Line Not Found	-----
	351.06	1067	12.92*	5.450E+00	4.191E+00	4.191E+00	10.58
PB-212	74.82	530	10.28	4.941E+00	2.884E+00	2.884E+00	21.12
	77.11	797	17.10	5.252E+00	2.455E+00	2.455E+00	14.18
	238.63	2007	43.60*	6.793E+00	1.874E+00	1.874E+00	8.97
	300.09	183	3.30	5.984E+00	2.561E+00	2.561E+00	32.50
BI-214	609.32	744	45.49*	3.813E+00	1.187E+00	1.187E+00	14.54
	1120.29	155	14.92	2.335E+00	1.233E+00	1.233E+00	33.66
	1764.49	156	15.30	1.695E+00	1.666E+00	1.666E+00	23.03
PB-214	74.82	530	5.80	4.941E+00	5.111E+00	5.111E+00	20.35
	77.11	797	9.70	5.252E+00	4.328E+00	4.328E+00	16.41
	242.00	436	7.25	6.748E+00	2.462E+00	2.463E+00	26.10
	295.22	678	18.42	6.042E+00	1.685E+00	1.685E+00	13.53
	351.93	1067	35.60*	5.450E+00	1.521E+00	1.521E+00	11.93
RA-224	240.99	436	4.10*	6.748E+00	4.354E+00	4.354E+00	25.45
RA-226	609.32	744	45.49*	3.813E+00	1.187E+00	1.187E+00	14.54
	1120.29	155	14.92	2.335E+00	1.233E+00	1.233E+00	33.66
	1764.49	156	15.30	1.695E+00	1.666E+00	1.666E+00	23.03
AC-228	338.32	425	11.27	5.580E+00	1.869E+00	1.869E+00	45.66
	911.20	492	25.80*	2.780E+00	1.899E+00	1.899E+00	18.19
	968.97	338	15.80	2.640E+00	2.241E+00	2.241E+00	28.96
RA-228	338.32	425	11.27	5.580E+00	1.869E+00	1.869E+00	45.66
	911.20	492	25.80*	2.780E+00	1.899E+00	1.899E+00	18.19
	968.97	338	15.80	2.640E+00	2.241E+00	2.241E+00	28.96

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	530	10.28	4.941E+00	2.884E+00	2.884E+00	18.78
	77.11	797	17.10	5.252E+00	2.455E+00	2.455E+00	14.18
	238.63	2007	43.60*	6.793E+00	1.874E+00	1.874E+00	8.97
	300.09	183	3.30	5.984E+00	2.561E+00	2.561E+00	68.50
TH-229	85.43	188	14.70	6.109E+00	5.799E-01	5.799E-01	41.75
	88.47	280	24.00	6.460E+00	4.996E-01	4.996E-01	30.17
	193.51	-----	4.41*	7.521E+00	-----	Line Not Found	-----
	210.85	218	2.80	7.250E+00	2.975E+00	2.975E+00	43.50
TH-232	338.32	425	11.27	5.580E+00	1.869E+00	1.869E+00	20.47
	911.20	492	25.80*	2.780E+00	1.899E+00	1.899E+00	18.19
	968.97	338	15.80	2.640E+00	2.241E+00	2.241E+00	28.96
	89.96	96	3.47	6.669E+00	1.141E+00	1.141E+00	76.82
U-235	93.35	375	5.60	6.972E+00	2.658E+00	2.658E+00	36.24
	143.76	-----	10.96*	8.222E+00	-----	Line Not Found	-----
	163.33	-----	5.08	8.005E+00	-----	Line Not Found	-----
	185.72	338	57.20	7.649E+00	2.135E-01	2.135E-01	34.67
NP-237	205.31	-----	5.01	7.323E+00	-----	Line Not Found	-----
	86.48	280	12.40*	6.460E+00	9.670E-01	9.670E-01	36.74
	95.86	-----	2.68	7.180E+00	-----	Line Not Found	-----
	511.00	175	100.00*	4.311E+00	1.121E-01	1.121E-01	50.35

Flag: "\*" = Keyline

Total number of lines in spectrum 37  
Number of unidentified lines 4  
Number of lines tentatively identified by NID 33 89.19%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.402E+01	3.402E+01	0.298E+01	8.77	
CD-109	461.40D	1.03	3.241E+00	3.339E+00	1.007E+00	30.17	
SN-126	2.30E+05Y	1.00	3.241E-01	3.241E-01	0.978E-01	30.17	
TL-208	1.41E+10Y	1.00	5.528E-01	5.528E-01	0.797E-01	14.42	
BI-211	7.04E+08Y	1.00	4.191E+00	4.191E+00	0.443E+00	10.58	
PB-212	1.41E+10Y	1.00	1.874E+00	1.874E+00	0.168E+00	8.97	
BI-214	1600.00Y	1.00	1.187E+00	1.187E+00	0.173E+00	14.54	
PB-214	1600.00Y	1.00	1.521E+00	1.521E+00	0.181E+00	11.93	
RA-224	1.41E+10Y	1.00	4.354E+00	4.354E+00	1.108E+00	25.45	
RA-226	1600.00Y	1.00	1.187E+00	1.187E+00	0.173E+00	14.54	
AC-228	1.41E+10Y	1.00	1.899E+00	1.899E+00	0.345E+00	18.19	
RA-228	1.41E+10Y	1.00	1.899E+00	1.899E+00	0.345E+00	18.19	
TH-228	1.41E+10Y	1.00	1.874E+00	1.874E+00	0.168E+00	8.97	
TH-229	7340.00Y	1.00	4.996E-01	4.996E-01	1.507E-01	30.17	K
TH-232	1.41E+10Y	1.00	1.899E+00	1.899E+00	0.345E+00	18.19	
U-235	7.04E+08Y	1.00	2.135E-01	2.135E-01	0.740E-01	34.67	K
NP-237	2.14E+06Y	1.00	9.670E-01	9.670E-01	3.552E-01	36.74	
ANH-511	1.00E+09Y	1.00	1.121E-01	1.121E-01	0.565E-01	50.35	

Total Activity : 6.181E+01 6.191E+01

Grand Total Activity : 6.181E+01 6.191E+01

Flags: "K" = Keyline not found "M" = Manually accepted  
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	129.53	121	472	1.68	258.14	254	9	1.68E-02	67.2	8.25E+00	
3	270.42	239	209	1.83	539.83	535	36	3.32E-02	24.8	6.35E+00	T
3	281.33	65	202	1.85	561.64	535	36	8.99E-03	96.0	6.21E+00	T
0	328.24	114	327	1.35	655.43	648	13	1.58E-02	68.1	5.68E+00	T
0	409.25	105	190	1.18	817.39	811	13	1.46E-02	57.6	4.97E+00	
0	462.83	145	126	1.56	924.52	920	9	2.01E-02	32.5	4.60E+00	T
0	726.74	195	94	1.67	1452.19	1445	15	2.72E-02	26.8	3.34E+00	T
0	767.80	130	89	0.99	1534.31	1528	13	1.81E-02	34.9	3.20E+00	T
0	794.82	101	98	1.61	1588.34	1581	14	1.41E-02	46.0	3.11E+00	T
2	964.32	131	43	2.55	1927.27	1920	25	1.82E-02	32.6	2.65E+00	T
0	1237.79	82	127	2.31	2474.12	2464	17	1.14E-02	66.6	2.15E+00	T
0	1377.60	78	29	2.29	2753.70	2748	14	1.08E-02	41.0	1.98E+00	
0	1588.78	81	37	0.91	3176.04	3163	25	1.12E-02	46.4	1.79E+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]G247337003.CNF;1  *
* Acquisition date   : 4-MAR-2010 10:17:24.  Detector SN#      :             *
* Detector ID        : GAM18                      Sensitivity    : 5.00000      *
* Geometry           : CAN                      Energy tolerance: 1.50000      *
* Elapsed live time  : 0 02:00:00.00           Abundance limit : 75.00000      *
* Elapsed real time  : 0 02:00:01.90           Half life ratio : 8.00000      *
*****
*                                     SAMPLE DATA                            *
*                                     *                                         *
* Sample date        : 12-FEB-2010 12:00:00  Nuclide Library : SOLID          *
* Sample ID          : G247337003           Analyst initials: MXR1           *
* Batch Number       : 955027              Sample Quantity  : 1.35720E+02 GRAM  *
*****
*                                     QC DATA                                *
*                                     *                                         *
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23.2MS Isotope         :             *
* MSD ID              :                      MSD Isotope         :             *
* LCS ID              : 1032-A              LCS Isotope         :             *
*****

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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	3.402E+01	2.982E+00	4.252E-01	3.226E-02	80.014
CD-109	3.339E+00	1.007E+00	1.024E+00	9.465E-02	3.262
SN-126	3.241E-01	9.776E-02	1.175E-01	1.083E-02	2.757
TL-208	5.528E-01	7.970E-02	4.611E-02	3.609E-03	11.988
BI-211	4.191E+00	4.433E-01	2.903E-01	1.864E-02	14.436
PB-212	1.874E+00	1.681E-01	7.636E-02	5.505E-03	24.546
BI-214	1.187E+00	1.726E-01	9.220E-02	8.285E-03	12.872
PB-214	1.521E+00	1.815E-01	1.013E-01	8.571E-03	15.023
RA-224	4.354E+00	1.108E+00	8.175E-01	4.554E-02	5.327
RA-226	1.187E+00	1.726E-01	9.220E-02	8.285E-03	12.872
AC-228	1.899E+00	3.453E-01	1.864E-01	2.525E-02	10.185
RA-228	1.899E+00	3.453E-01	1.864E-01	2.525E-02	10.185
TH-228	1.874E+00	1.681E-01	7.636E-02	5.505E-03	24.546
TH-229	4.996E-01	1.507E-01	7.069E-01	3.785E-02	0.707
TH-232	1.899E+00	3.453E-01	1.864E-01	2.525E-02	10.185
U-235	2.135E-01	7.403E-02	2.905E-01	4.530E-02	0.735
NP-237	9.670E-01	3.552E-01	3.563E-01	8.147E-02	2.714
ANH-511	1.121E-01	5.646E-02	3.746E-02	2.474E-03	2.993

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-2.291E-01		2.636E-01	4.117E-01	2.982E-02	-0.556
NA-22	-2.304E-03		3.763E-02	6.152E-02	4.186E-03	-0.037
NA-24	-2.985E+01		6.724E+01	Half-Life	too short	
SC-46	-2.688E-04		3.310E-02	5.407E-02	6.031E-03	-0.005
V-48	-2.116E-02		7.261E-02	1.149E-01	1.137E-02	-0.184
CR-51	-2.115E-01		3.422E-01	5.332E-01	3.428E-02	-0.397
MN-54	2.431E-04		3.147E-02	5.176E-02	5.302E-03	0.005
CO-56	-1.373E-02		3.446E-02	5.503E-02	5.744E-03	-0.249
CO-57	-1.958E-02		2.370E-02	3.675E-02	2.177E-03	-0.533
CO-58	-7.914E-03		3.154E-02	5.105E-02	5.040E-03	-0.155
FE-59	1.137E-02		7.714E-02	1.298E-01	1.067E-02	0.088
CO-60	1.868E-02		3.106E-02	5.342E-02	4.036E-03	0.350
ZN-65	1.723E-02		8.705E-02	1.261E-01	8.884E-03	0.137
SE-75	-8.665E-03		3.792E-02	5.657E-02	3.236E-03	-0.153
SR-85	4.393E-02		3.832E-02	5.860E-02	3.882E-03	0.750
Y-88	2.877E-02		2.748E-02	5.114E-02	2.913E-03	0.562
Y-91	-1.184E+00		1.931E+01	3.176E+01	1.877E+00	-0.037
NB-94	-1.658E-02		2.640E-02	4.239E-02	3.477E-03	-0.391
NB-95	7.165E-02		4.566E-02	7.201E-02	6.587E-03	0.995
NB-95M	8.452E-02		1.226E-01	1.835E-01	1.351E-02	0.461
ZR-95	-2.826E-02		6.193E-02	9.971E-02	9.847E-03	-0.283
MO-99	2.674E+00		3.166E+01	5.290E+01	8.372E+00	0.051
TC-99M	-1.271E+16		1.062E+16	Half-Life	too short	
RU-103	-3.438E-03		3.242E-02	5.295E-02	6.762E-03	-0.065
RH-106	3.673E-02		2.664E-01	4.330E-01	5.401E-02	0.085
RU-106	3.673E-02		2.664E-01	4.330E-01	3.187E-02	0.085
AG-108M	-6.089E-03		2.260E-02	3.702E-02	2.386E-03	-0.164
AG-110M	-1.789E-02		2.727E-02	4.394E-02	3.466E-03	-0.407
SN-113	8.386E-03		3.440E-02	5.835E-02	3.579E-03	0.144
CD-115	-2.112E-05		2.010E-05	Half-Life	too short	
SN-117M	-5.968E-02		5.813E-02	9.491E-02	5.044E-03	-0.629
TE-123M	-2.349E-02		2.432E-02	3.980E-02	2.147E-03	-0.590
SB-124	-5.286E-03		6.610E-02	1.081E-01	7.485E-03	-0.049
SB-125	4.867E-02		7.032E-02	1.211E-01	7.559E-03	0.402
TE-125M	5.449E-01		9.174E+00	1.486E+01	1.335E+00	0.037
I-126	2.834E-02		2.207E-01	3.727E-01	2.866E-02	0.076
SB-126	-2.118E-02		1.679E-01	2.381E-01	2.016E-02	-0.089
SB-127	-4.534E-01		2.407E+00	3.979E+00	4.959E-01	-0.114
I-131	-6.795E-02		1.336E-01	2.194E-01	1.427E-02	-0.310
TE-132	7.899E-01		1.814E+00	2.983E+00	4.629E-01	0.265
BA-133	2.467E-02		3.690E-02	5.388E-02	6.071E-03	0.458
I-133	-1.917E-01		1.114E-01	Half-Life	too short	
CS-134	1.193E-01	+	5.604E-02	7.250E-02	7.012E-03	1.645
CS-135	2.800E-01		1.443E-01	2.278E-01	1.722E-02	1.229
I-135	2.579E+14		5.311E+14	Half-Life	too short	
CS-136	1.223E-01		1.169E-01	2.074E-01	1.859E-02	0.590
BA-137M	-9.967E-03		2.773E-02	4.555E-02	3.472E-03	-0.219
CS-137	-1.053E-02		2.930E-02	4.812E-02	3.677E-03	-0.219

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CE-139	-3.509E-03		2.612E-02	4.394E-02	2.306E-03	-0.080
BA-140	-1.155E-01		2.693E-01	4.233E-01	1.418E-01	-0.273
LA-140	4.524E-02		8.779E-02	1.354E-01	9.293E-03	0.334
CE-141	-1.146E-02		6.129E-02	9.643E-02	5.506E-03	-0.119
CE-143	9.176E-03		1.318E-03	Half-Life too short		
CE-144	-5.817E-02		1.921E-01	2.675E-01	3.700E-02	-0.217
PM-144	2.781E-02		2.756E-02	4.847E-02	3.936E-03	0.574
PR-144	2.069E+00		2.067E+00	3.633E+00	2.948E-01	0.569
PM-146	4.864E-04		3.221E-02	5.339E-02	4.664E-03	0.009
ND-147	-6.285E-02		5.738E-01	9.313E-01	1.299E-01	-0.067
PM-149	1.651E-05		1.894E-04	Half-Life too short		
EU-152	-6.838E-02		9.364E-02	1.235E-01	8.055E-03	-0.554
GD-153	-3.156E-02		8.632E-02	1.223E-01	9.561E-03	-0.258
EU-154	-5.131E-02		1.092E-01	1.732E-01	1.743E-02	-0.296
EU-155	9.452E-02		9.419E-02	1.580E-01	1.129E-02	0.598
TB-160	-5.142E-02		1.208E-01	1.915E-01	2.104E-02	-0.268
HO-166M	-1.616E-02		5.043E-02	8.129E-02	6.776E-03	-0.199
TA-182	4.431E-02		1.848E-01	3.087E-01	1.889E-02	0.144
IR-192	3.112E-02		2.952E-02	4.999E-02	2.899E-03	0.623
HG-203	3.629E-02		3.452E-02	5.865E-02	3.536E-03	0.619
BI-207	1.020E-02		4.454E-02	7.545E-02	6.228E-03	0.135
PB-210	6.837E+00		4.913E+00	8.661E+00	6.640E-01	0.789
PB-211	1.119E-01		6.251E-01	9.172E-01	4.401E-01	0.122
BI-212	2.428E+00	+	7.174E-01	9.576E-01	1.189E-01	2.536
RN-219	-3.996E-01		3.463E-01	5.034E-01	6.769E-02	-0.794
RA-223	4.293E-01		5.940E-01	8.705E-01	1.402E-01	0.493
AC-227	-1.311E-01		1.996E-01	3.166E-01	3.206E-02	-0.414
TH-227	-1.311E-01		1.998E-01	3.166E-01	3.779E-02	-0.414
PA-231	-7.394E-01		1.351E+00	1.847E+00	2.415E-01	-0.400
TH-231	4.293E-01		5.940E-01	8.705E-01	1.402E-01	0.493
PA-233	-5.686E-02		5.316E-02	8.091E-02	4.958E-03	-0.703
PA-234	-3.812E-02		2.744E-01	4.323E-01	8.528E-02	-0.088
PA-234M	9.084E-01		4.272E+00	6.853E+00	7.393E-01	0.133
TH-234	4.522E-01		1.472E+00	2.447E+00	4.409E-01	0.185
U-238	4.522E-01		1.472E+00	2.447E+00	4.409E-01	0.185
NP-239	5.068E-03		3.652E-01	5.878E-01	3.631E-02	0.009
AM-241	6.703E-02		1.642E-01	2.762E-01	2.290E-02	0.243
CM-247	-2.625E-02		3.249E-02	4.683E-02	2.727E-03	-0.561
CF-249	-9.102E-03		3.138E-02	5.188E-02	2.982E-03	-0.175
CF-251	-1.692E-02		1.033E-01	1.726E-01	9.123E-03	-0.098



## VAX/VMS Nuclide Identification Report Generated

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                          *
*****
*                               DETECTOR DATA                               *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247337003          *
* Acquisition date   : 4-MAR-2010 10:17:24 Detector SN#      :              *
* Detector ID        : GAM18                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 02:00:00.00              Abundance limit: 75.000       *
* Elapsed real time  : 0 02:00:01.90              Half life ratio : 8.000       *
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247337003              Analyst initials: MXR1         *
* Batch Number       : 955027                  Sample Quantity : 1.3572E+02 GRAM  *
* Recovery           : 1.00000                 Carrier Weight  : 0.00000        *
*****
*                               QC DATA                               *
*
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23 MS Isotope      :              *
* MSD DPM            : 0.000                     MSD Isotope   :              *
* LCS DPM            : 0.000                     LCS Isotope    :              *
* LCSD DPM           : 0.000                     LCSD Isotope   :              *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.402E+01	2.922E+00	2.132E-01	1.491E+00
CD-109	3.339E+00	9.872E-01	5.407E-01	5.037E-01
SN-126	3.241E-01	9.580E-02	6.207E-02	4.888E-02
TL-208	5.528E-01	7.810E-02	2.354E-02	3.985E-02
BI-211	4.191E+00	4.344E-01	1.496E-01	2.216E-01
PB-212	1.874E+00	1.647E-01	3.962E-02	8.405E-02
BI-214	1.187E+00	1.691E-01	4.701E-02	8.630E-02
PB-214	1.521E+00	1.778E-01	5.216E-02	9.073E-02
RA-224	4.354E+00	1.086E+00	4.240E-01	5.541E-01
RA-226	1.187E+00	1.691E-01	4.701E-02	8.630E-02
AC-228	1.899E+00	3.384E-01	9.435E-02	1.727E-01
RA-228	1.899E+00	3.384E-01	9.435E-02	1.727E-01
TH-228	1.874E+00	1.647E-01	3.962E-02	8.405E-02
TH-229	-4.487E-02	4.159E-01	3.682E-01	2.122E-01
TH-232	1.899E+00	3.384E-01	9.435E-02	1.727E-01
U-235	1.560E-01	1.782E-01	1.521E-01	9.093E-02
NP-237	9.670E-01	3.481E-01	1.882E-01	1.776E-01
ANH-511	1.121E-01	5.533E-02	1.917E-02	2.823E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-2.291E-01	2.583E-01	2.109E-01	1.318E-01 NOT IDENT.
NA-22	-2.304E-03	3.688E-02	3.093E-02	1.881E-02 NOT IDENT.
NA-24	-2.985E+07	1.318E+08	0.000E+00	6.724E+07 SHORT HLIF
SC-46	-2.688E-04	3.244E-02	2.738E-02	1.655E-02 FAIL ABUN
V-48	-2.116E-02	7.116E-02	5.808E-02	3.631E-02 NOT IDENT.
CR-51	-2.115E-01	3.354E-01	2.752E-01	1.711E-01 NOT IDENT.
MN-54	2.431E-04	3.084E-02	2.624E-02	1.574E-02 NOT IDENT.
CO-56	-1.373E-02	3.377E-02	2.789E-02	1.723E-02 FAIL ABUN
CO-57	-1.958E-02	2.322E-02	1.929E-02	1.185E-02 NOT IDENT.

CO-58	-7.914E-03	3.091E-02	2.589E-02	1.577E-02	NOT IDENT.
FE-59	1.137E-02	7.560E-02	6.543E-02	3.857E-02	NOT IDENT.
CO-60	1.868E-02	3.044E-02	2.684E-02	1.553E-02	NOT IDENT.
ZN-65	1.723E-02	8.531E-02	6.359E-02	4.353E-02	NOT IDENT.
SE-75	-8.665E-03	3.716E-02	2.929E-02	1.896E-02	NOT IDENT.
SR-85	4.393E-02	3.756E-02	2.998E-02	1.916E-02	NOT IDENT.
Y-88	2.877E-02	2.693E-02	2.553E-02	1.374E-02	NOT IDENT.
Y-91	-1.184E+00	1.893E+01	1.599E+01	9.656E+00	NOT IDENT.
NB-94	-1.658E-02	2.587E-02	2.156E-02	1.320E-02	NOT IDENT.
NB-95	7.165E-02	4.475E-02	3.656E-02	2.283E-02	NOT IDENT.
NB-95M	8.452E-02	1.201E-01	9.523E-02	6.130E-02	NOT IDENT.
ZR-95	-2.826E-02	6.070E-02	5.064E-02	3.097E-02	NOT IDENT.
MO-99	2.674E+00	3.103E+01	2.688E+01	1.583E+01	NOT IDENT.
TC-99M	-1.271E+22	2.082E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-3.438E-03	3.178E-02	2.710E-02	1.621E-02	FAIL ABUN
RH-106	3.673E-02	2.611E-01	2.207E-01	1.332E-01	NOT IDENT.
RU-106	3.673E-02	2.610E-01	2.207E-01	1.332E-01	NOT IDENT.
AG-108M	-6.089E-03	2.215E-02	1.900E-02	1.130E-02	NOT IDENT.
AG-110M	-1.789E-02	2.673E-02	2.238E-02	1.364E-02	NOT IDENT.
SN-113	8.386E-03	3.371E-02	3.000E-02	1.720E-02	NOT IDENT.
CD-115	-2.112E+01	3.939E+01	0.000E+00	2.010E+01	SHORT HLIF
SN-117M	-5.968E-02	5.697E-02	4.960E-02	2.907E-02	NOT IDENT.
TE-123M	-2.349E-02	2.384E-02	2.080E-02	1.216E-02	NOT IDENT.
SB-124	-5.286E-03	6.478E-02	5.404E-02	3.305E-02	NOT IDENT.
SB-125	4.867E-02	6.892E-02	6.217E-02	3.516E-02	FAIL ABUN
TE-125M	5.449E-01	8.991E+00	7.818E+00	4.587E+00	NOT IDENT.
I-126	2.834E-02	2.163E-01	1.898E-01	1.103E-01	NOT IDENT.
SB-126	-2.118E-02	1.646E-01	1.210E-01	8.396E-02	NOT IDENT.
SB-127	-4.534E-01	2.359E+00	2.025E+00	1.204E+00	NOT IDENT.
I-131	-6.795E-02	1.309E-01	1.129E-01	6.678E-02	NOT IDENT.
TE-132	7.899E-01	1.777E+00	1.549E+00	9.068E-01	NOT IDENT.
BA-133	2.467E-02	3.616E-02	2.775E-02	1.845E-02	FAIL ABUN
I-133	-1.917E+05	2.184E+05	0.000E+00	1.114E+05	SHORT HLIF
CS-134	1.193E-01	5.492E-02	3.678E-02	2.802E-02	FAIL ABUN
CS-135	2.800E-01	1.415E-01	1.180E-01	7.217E-02	NOT IDENT.
I-135	2.579E+20	1.041E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	1.223E-01	1.146E-01	1.047E-01	5.846E-02	NOT IDENT.
BA-137M	-9.967E-03	2.718E-02	2.319E-02	1.387E-02	NOT IDENT.
CS-137	-1.053E-02	2.871E-02	2.450E-02	1.465E-02	NOT IDENT.
CE-139	-3.509E-03	2.560E-02	2.294E-02	1.306E-02	NOT IDENT.
BA-140	-1.155E-01	2.639E-01	2.163E-01	1.346E-01	NOT IDENT.
LA-140	4.524E-02	8.603E-02	6.780E-02	4.389E-02	FAIL ABUN
CE-141	-1.146E-02	6.006E-02	5.048E-02	3.064E-02	NOT IDENT.
CE-143	9.176E+03	2.583E+03	0.000E+00	1.318E+03	SHORT HLIF
CE-144	-5.817E-02	1.883E-01	1.403E-01	9.605E-02	NOT IDENT.
PM-144	2.781E-02	2.701E-02	2.465E-02	1.378E-02	NOT IDENT.
PR-144	2.069E+00	2.025E+00	1.848E+00	1.033E+00	NOT IDENT.
PM-146	4.864E-04	3.156E-02	2.738E-02	1.610E-02	NOT IDENT.
ND-147	-6.285E-02	5.623E-01	4.761E-01	2.869E-01	NOT IDENT.
PM-149	1.651E+01	3.713E+02	0.000E+00	1.894E+02	SHORT HLIF
EU-152	-6.838E-02	9.177E-02	6.366E-02	4.682E-02	FAIL ABUN
GD-153	-3.156E-02	8.460E-02	6.446E-02	4.316E-02	NOT IDENT.
EU-154	-5.131E-02	1.070E-01	8.707E-02	5.461E-02	NOT IDENT.
EU-155	9.452E-02	9.231E-02	8.317E-02	4.710E-02	FAIL ABUN
TB-160	-5.142E-02	1.184E-01	9.699E-02	6.041E-02	FAIL ABUN
HO-166M	-1.616E-02	4.943E-02	4.133E-02	2.522E-02	FAIL ABUN
TA-182	4.431E-02	1.811E-01	1.554E-01	9.238E-02	NOT IDENT.
IR-192	3.112E-02	2.893E-02	2.580E-02	1.476E-02	FAIL ABUN
HG-203	3.629E-02	3.383E-02	3.034E-02	1.726E-02	NOT IDENT.
BI-207	1.020E-02	4.365E-02	3.807E-02	2.227E-02	FAIL ABUN
PB-210	6.837E+00	4.815E+00	4.625E+00	2.456E+00	NOT IDENT.
PB-211	1.119E-01	6.126E-01	4.713E-01	3.126E-01	NOT IDENT.
BI-212	2.428E+00	7.030E-01	4.867E-01	3.587E-01	FAIL ABUN
RN-219	-3.996E-01	3.394E-01	2.587E-01	1.732E-01	FAIL ABUN
RA-223	4.293E-01	5.821E-01	4.491E-01	2.970E-01	FAIL ABUN
AC-227	-1.311E-01	1.956E-01	1.640E-01	9.981E-02	FAIL ABUN
TH-227	-1.311E-01	1.958E-01	1.640E-01	9.990E-02	FAIL ABUN
PA-231	-7.394E-01	1.324E+00	9.551E-01	6.753E-01	FAIL ABUN
TH-231	4.293E-01	5.821E-01	4.491E-01	2.970E-01	FAIL ABUN
PA-233	-5.686E-02	5.209E-02	4.177E-02	2.658E-02	FAIL ABUN
PA-234	-3.812E-02	2.689E-01	2.186E-01	1.372E-01	NOT IDENT.
PA-234M	9.084E-01	4.186E+00	3.462E+00	2.136E+00	FAIL ABUN
TH-234	4.522E-01	1.442E+00	1.300E+00	7.359E-01	FAIL ABUN
U-238	4.522E-01	1.442E+00	1.300E+00	7.359E-01	FAIL ABUN
NP-239	5.068E-03	3.579E-01	3.089E-01	1.826E-01	FAIL ABUN
AM-241	6.703E-02	1.609E-01	1.468E-01	8.209E-02	NOT IDENT.
CM-247	-2.625E-02	3.184E-02	2.407E-02	1.625E-02	FAIL ABUN
CF-249	-9.102E-03	3.075E-02	2.668E-02	1.569E-02	NOT IDENT.

CF-251

-1.692E-02

1.012E-01

9.004E-02

5.163E-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	308.3949
49.72	363.5953
57.36	0.0000
59.54	328.7641
63.29	427.3718
63.29	427.3718
64.28	404.1794
67.75	425.0574
69.67	421.8798
70.83	439.3560
72.81	423.0723
72.87	423.1497
72.87	423.1497
74.82	425.6410
74.82	425.6410
74.82	425.6410
74.97	425.8313
77.11	428.5262
77.11	428.5262
77.11	428.5262
79.69	402.9458
79.80	369.3170
80.12	369.6538
80.19	369.7257
80.57	399.9737
81.00	370.5734
81.07	370.6472
81.07	370.6472
83.79	474.3553
83.79	474.3553
85.43	476.4822
86.48	477.8328
86.55	477.9242
86.79	478.2270
86.94	478.4216
87.57	479.2267
88.03	347.2933
88.47	347.6969
89.96	753.2324
91.11	313.2497
92.59	314.4435
92.59	314.4435
93.35	407.7144
94.67	356.3919
94.87	356.5709
94.87	356.5709
95.86	359.0077
97.43	377.5674
98.44	353.4767
99.53	354.4147
100.11	339.2073
103.18	383.8840
103.37	376.6705
105.31	339.1667
106.12	347.2363
109.28	370.0712
111.00	379.0197
111.76	382.8872
116.30	383.4500
117.23	378.7753
121.12	386.2962
121.78	374.7396
122.06	409.0452
123.07	403.2910
131.20	336.0291
133.52	347.6816
136.00	344.8252

136.47	340.6091
140.51	409.3529
140.51	0.0000
143.76	353.3208
144.24	336.4087
144.24	336.4087
145.44	387.7776
152.43	414.7865
153.25	385.9221
154.21	365.5304
154.21	365.5304
156.02	360.5236
158.56	400.0731
159.00	399.4865
162.66	376.1664
163.33	386.3823
165.86	395.1535
176.60	326.5297
177.52	335.1986
181.07	315.0648
184.41	337.8465
185.72	338.5157
193.51	337.7814
197.04	339.5131
205.31	344.6482
210.85	325.8728
215.65	309.5135
222.11	291.2064
227.38	343.0493
228.16	318.9339
228.18	318.9414
235.69	338.1837
235.96	314.5862
235.96	314.5862
238.63	309.2864
238.63	309.2864
240.99	310.1862
242.00	310.5694
244.70	258.8618
252.40	250.9776
252.80	244.0383
256.23	263.2472
256.23	263.2472
260.90	0.0000
264.66	230.3773
268.22	223.3707
269.46	238.4818
269.46	238.4818
271.23	245.1361
273.65	245.7970
276.40	246.5451
277.37	246.8066
277.60	246.8683
278.00	246.9773
279.20	247.3005
279.54	247.3913
280.46	247.6419
283.69	255.6064
284.31	264.1370
285.41	249.3858
285.90	0.0000
287.50	206.3283
293.27	0.0000
295.22	244.1615
295.96	244.3519
298.57	245.0145
299.98	245.3705
299.98	245.3705
300.09	245.3987
300.09	245.3987
300.13	245.4058
301.36	250.1835
302.85	201.1358
304.50	237.3282
304.50	237.3282
304.85	237.4131
308.46	223.9249
311.90	247.2739

316.51	194.4058
319.41	236.1190
320.08	233.0206
323.87	203.6417
323.87	203.6417
328.76	229.0837
333.37	223.9406
334.37	181.6658
334.37	181.6658
338.28	228.2824
338.28	228.2824
338.32	228.2919
338.32	228.2919
338.32	228.2919
340.48	217.4812
340.55	217.4932
344.28	234.2130
351.06	253.5234
351.93	233.3965
356.01	166.7802
364.49	194.2401
366.42	192.7582
383.85	203.0114
388.16	198.2136
388.63	193.6809
391.69	169.2080
400.66	185.3600
401.81	216.7668
402.40	207.8758
404.85	174.4622
410.95	161.2288
414.70	160.1387
423.72	186.8879
427.09	149.3302
427.87	154.1769
433.94	165.4122
453.88	155.2773
463.37	143.3223
468.07	187.9279
473.00	131.8474
476.78	166.7287
477.60	164.8513
487.02	138.1143
492.35	0.0000
497.08	137.0686
511.00	157.5434
514.00	177.0818
527.90	0.0000
529.87	0.0000
531.02	130.9656
537.26	141.7633
546.56	0.0000
563.25	125.2852
569.33	147.7574
569.50	141.4830
569.70	141.5028
583.19	143.7065
600.60	155.3813
602.73	153.1980
604.72	148.0227
609.32	154.4941
609.32	154.4941
610.33	154.5855
614.28	123.7317
618.01	156.3387
621.93	141.5574
621.93	141.5574
633.25	135.9283
635.95	138.3078
636.99	137.2988
645.85	131.3965
657.76	141.4298
661.66	141.7244
661.66	141.7244
664.57	0.0000
666.33	131.9270
666.50	131.9387
677.62	131.7845

685.70	124.8835
695.00	130.1654
696.49	121.8300
696.51	121.8327
697.00	132.1732
702.65	147.5963
706.68	126.2302
711.68	142.6009
720.70	123.5928
721.93	0.0000
722.78	135.1182
722.91	135.1268
723.31	122.1261
724.19	122.1784
727.33	107.5468
733.00	121.0733
735.93	107.3938
739.50	111.0605
747.24	118.2028
752.31	95.3705
753.82	109.8994
756.73	135.1522
763.94	124.5431
765.81	141.2734
766.42	146.3025
777.92	130.6549
778.90	134.6168
783.70	94.8312
785.37	97.1278
795.86	104.4909
801.95	107.9472
810.29	111.8160
810.76	105.9028
815.77	85.3089
818.51	92.3643
832.01	121.8908
834.85	132.0457
836.80	0.0000
846.77	123.6807
856.80	115.9905
860.56	115.3104
871.09	113.7933
873.19	101.6907
875.33	0.0000
879.36	113.1680
880.51	112.2022
883.24	107.2238
884.68	97.0700
889.28	102.3743
898.04	111.9916
911.20	108.0201
911.20	108.0201
911.20	108.0201
926.50	91.4626
937.49	119.0028
944.13	121.4068
946.00	120.4491
949.00	99.6193
962.29	86.7321
964.08	87.5458
966.15	87.6167
968.97	87.7113
968.97	87.7113
968.97	87.7113
983.53	104.1390
996.26	128.1299
1001.03	121.9414
1004.73	116.7528
1037.84	99.4355
1038.76	0.0000
1048.07	93.2757
1050.41	103.6212
1050.41	103.6212
1063.66	106.9267
1085.87	110.5975
1099.45	94.0210
1112.07	96.8130
1115.54	113.6377

1120.29	132.2324
1120.29	132.2324
1120.55	132.2469
1121.30	140.6528
1131.51	0.0000
1173.23	109.0195
1177.93	110.1624
1189.05	127.1889
1204.77	125.8616
1221.41	147.2799
1231.02	137.0638
1235.36	123.3530
1238.28	123.4656
1260.41	0.0000
1271.85	98.3862
1274.44	110.5179
1274.54	99.4696
1291.59	63.6240
1298.22	0.0000
1312.11	99.5723
1332.49	56.2162
1365.19	50.5552
1368.63	0.0000
1384.29	32.6755
1408.01	71.0049
1457.56	0.0000
1460.82	44.4888
1489.16	51.2277
1505.03	59.0779
1596.21	27.2969
1620.50	28.9618
1678.03	0.0000
1690.97	31.4170
1764.49	19.5269
1764.49	19.5269
1770.23	17.7745
1771.35	136.0125
1791.20	0.0000
1836.06	18.2609



TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247337003

Total Uranium Activity	1.4175E+00	ug/g
Total Uranium Counting Unc.	4.2919E+00	ug/g
Total Uranium Tpu	2.1897E-06	ug/g
Total Uranium Mda	3.8678E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 955027                          SAMPLE ID   : G247337003
*  ANALYST       : MXR1                             DETECTOR    : GAM18
*  SAMPLE DATE   : 12-FEB-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 4-MAR-2010 10:17:24.58           SAMPLE ALQT  : 135.720 GRAM
*
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.087E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.299E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 2.586E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.257E+00

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VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 12:19:20.10

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337004.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:18:11.
Sample ID          : G247337004 Sample quantity : 1.23660E+02 GRAM
Detector name      : GAM21 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:25.81 0.4%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 955027 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	46.69*	88	383	0.55	93.36	90	7	1.22E-02	38.7	
2	0	63.32*	164	522	0.80	126.61	123	6	2.27E-02	23.5	
3	3	74.87*	841	425	0.81	149.70	147	14	1.17E-01	4.9	4.40E+00
4	3	77.11*	1230	293	0.74	154.17	147	14	1.71E-01	3.5	
5	7	84.26*	170	363	1.36	168.46	165	13	2.37E-02	19.9	2.71E+00
6	7	87.22	434	368	1.02	174.39	165	13	6.03E-02	8.4	
7	7	89.97	201	302	0.77	179.87	178	13	2.79E-02	14.5	4.92E+00
8	7	92.90*	416	456	1.40	185.74	178	13	5.78E-02	10.4	
9	0	128.91	90	265	0.81	257.72	255	6	1.26E-02	30.4	
10	0	185.75*	254	295	1.16	371.35	366	9	3.53E-02	13.9	
11	0	209.34	120	292	0.95	418.51	413	10	1.67E-02	28.2	
12	7	238.44*	1361	98	0.88	476.70	473	16	1.89E-01	3.0	2.47E+00
13	7	241.51	337	219	1.86	482.83	473	16	4.68E-02	13.2	
14	0	270.09*	82	167	0.86	539.98	536	9	1.14E-02	31.2	
15	0	276.94	62	124	0.83	553.66	550	8	8.68E-03	33.3	
16	0	294.99*	375	173	1.11	589.76	584	12	5.21E-02	8.8	
17	0	299.83	73	117	0.85	599.44	596	8	1.02E-02	28.1	
18	0	327.61	67	138	0.83	654.98	650	10	9.30E-03	35.0	
19	0	337.96	241	137	1.01	675.68	671	10	3.34E-02	11.2	
20	0	351.68*	626	134	1.12	703.11	699	10	8.70E-02	5.3	
21	0	463.09	94	79	1.20	925.89	920	11	1.30E-02	21.1	
22	0	510.25*	83	114	1.17	1020.21	1014	13	1.16E-02	32.0	
23	0	582.80*	347	94	1.25	1165.29	1158	14	4.82E-02	8.1	
24	0	609.00*	402	74	1.13	1217.70	1212	12	5.58E-02	6.7	
25	0	726.67	92	72	1.60	1453.05	1445	16	1.27E-02	23.2	
26	0	794.90	88	21	2.12	1589.52	1581	18	1.22E-02	16.5	
27	0	860.13	28	52	0.76	1720.01	1713	11	3.86E-03	53.8	
28	0	910.74	216	38	1.32	1821.26	1814	15	3.00E-02	9.2	
29	3	963.82	38	31	2.15	1927.46	1919	23	5.32E-03	37.8	1.82E+00
30	3	968.38	122	34	1.67	1936.57	1919	23	1.69E-02	12.4	
31	0	1120.06	90	60	1.02	2240.07	2234	12	1.25E-02	20.2	
32	0	1460.15*	890	0	2.28	2920.67	2914	14	1.24E-01	3.4	
33	0	1763.47	60	4	1.85	3527.87	3518	17	8.26E-03	15.1	

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

VMS Nuclide Identification Report V3.1 Generated 4-MAR-2010 12:19:23

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337004.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:18:11
Sample ID         : G247337004 Sample quantity : 123.66 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA21 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:25.81 0.4%
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	*	3.517E+01	3.822E+00	7.065E-01	6.032E-02	49.776
CD-109	+	88.03	*	4.509E+00	8.694E-01	7.857E-01	7.393E-02	5.739
SN-126	+	64.28		6.327E-01	3.122E-01	3.454E-01	5.118E-02	1.832
	+	86.94		1.819E+00	8.152E-01	3.148E-01	1.307E-01	5.779
	+	87.57	*	4.376E-01	8.437E-02	7.591E-02	7.116E-03	5.765
TL-208	+	277.37		7.548E-01	5.125E-01	5.964E-01	7.597E-02	1.266
	+	583.19	*	6.977E-01	1.361E-01	6.720E-02	7.314E-03	10.382
	+	860.56		5.624E-01	6.072E-01	5.955E-01	5.909E-02	0.944
PB-210	+	46.54	*	8.566E-01	6.676E-01	6.418E-01	6.069E-02	1.335
BI-211		72.87		9.336E-01	1.752E+00	2.721E+00	2.278E-01	0.343
	+	351.06	*	4.910E+00	6.855E-01	3.558E-01	3.212E-02	13.800
PB-212	+	74.82		3.000E+00	4.861E-01	3.222E-01	4.159E-02	9.311
	+	77.11		2.641E+00	2.933E-01	1.948E-01	1.680E-02	13.561
	+	238.63	*	2.160E+00	2.506E-01	8.599E-02	8.591E-03	25.116
	+	300.09		1.909E+00	1.093E+00	1.215E+00	1.310E-01	1.571
BI-214	+	609.32	*	1.578E+00	2.817E-01	1.337E-01	1.585E-02	11.805
	+	1120.29		1.970E+00	8.230E-01	5.811E-01	6.269E-02	3.389
	+	1764.49		1.972E+00	6.190E-01	2.907E-01	2.417E-02	6.784
PB-214	+	74.82		5.318E+00	8.079E-01	5.711E-01	6.633E-02	9.311
	+	77.11		4.656E+00	6.441E-01	3.433E-01	4.097E-02	13.561
	+	242.00		3.254E+00	9.263E-01	5.251E-01	5.572E-02	6.197
	+	295.22		1.729E+00	3.607E-01	2.218E-01	2.451E-02	7.797
	+	351.93	*	1.782E+00	2.675E-01	1.295E-01	1.369E-02	13.759
RA-224	+	240.99	*	5.754E+00	1.604E+00	9.243E-01	8.213E-02	6.225
RA-226	+	609.32	*	1.578E+00	2.817E-01	1.337E-01	1.585E-02	11.805
	+	1120.29		1.970E+00	8.230E-01	5.811E-01	6.269E-02	3.389
	+	1764.49		1.972E+00	6.190E-01	2.907E-01	2.417E-02	6.784
AC-228	+	338.32		2.077E+00	9.830E-01	4.184E-01	1.746E-01	4.964
	+	911.20	*	2.234E+00	4.875E-01	3.039E-01	3.554E-02	7.352
	+	968.97		2.188E+00	7.612E-01	4.632E-01	1.131E-01	4.725
RA-228	+	338.32		2.077E+00	9.830E-01	4.184E-01	1.746E-01	4.964
	+	911.20	*	2.234E+00	4.875E-01	3.039E-01	3.554E-02	7.352
	+	968.97		2.188E+00	7.612E-01	4.632E-01	1.131E-01	4.725
TH-228	+	74.82		3.000E+00	3.904E-01	3.222E-01	2.760E-02	9.311

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	77.11		2.641E+00	2.933E-01	1.948E-01	1.680E-02	13.561
	+	238.63	*	2.160E+00	2.506E-01	8.599E-02	8.591E-03	25.116
	+	300.09		1.909E+00	1.587E+00	1.215E+00	7.444E-01	1.571
TH-229	+	85.43		4.299E-01	1.751E-01	1.896E-01	1.745E-02	2.268
	+	88.47		6.747E-01	1.301E-01	1.178E-01	1.110E-02	5.729
		193.51	*	-1.195E-01	4.829E-01	8.050E-01	6.834E-02	-0.148
		210.85		1.014E+00	8.700E-01	1.407E+00	1.220E-01	0.720
TH-232	+	338.32		2.077E+00	4.977E-01	4.184E-01	3.647E-02	4.964
	+	911.20	*	2.234E+00	4.875E-01	3.039E-01	3.554E-02	7.352
	+	968.97		2.188E+00	7.612E-01	4.632E-01	1.131E-01	4.725
TH-234	+	63.29	*	1.642E+00	8.277E-01	8.641E-01	1.559E-01	1.900
	+	92.59		3.722E+00	1.139E+00	6.739E-01	1.516E-01	5.523
U-235	+	89.96		2.175E+00	8.328E-01	8.126E-01	2.026E-01	2.676
	+	93.35		2.812E+00	8.810E-01	5.107E-01	1.201E-01	5.505
		143.76	*	1.652E-01	1.903E-01	3.052E-01	5.403E-02	0.541
		163.33		3.326E-02	3.931E-01	6.681E-01	1.191E-01	0.050
	+	185.72		2.478E-01	7.187E-02	6.041E-02	5.070E-03	4.102
		205.31		2.995E-01	5.255E-01	8.171E-01	1.483E-01	0.367
NP-237	+	86.48	*	1.306E+00	3.719E-01	2.256E-01	5.173E-02	5.789
		95.86		2.516E-01	6.757E-01	1.022E+00	2.497E-01	0.246
U-238	+	63.29	*	1.642E+00	8.277E-01	8.641E-01	1.559E-01	1.900
	+	92.59		3.722E+00	8.509E-01	6.739E-01	6.487E-02	5.523
ANH-511	+	511.00	*	1.238E-01	8.015E-02	5.350E-02	5.129E-03	2.314

## ---- 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	*	7.333E-02	3.747E-01	6.386E-01	6.255E-02	0.115
NA-22		1274.54	*	-3.464E-02	6.959E-02	1.052E-01	8.631E-03	-0.329
NA-24		1368.63	*	2.814E+01	6.959E-02	Half-Life too short		
SC-46		889.28	*	1.469E-03	5.709E-02	9.560E-02	8.501E-03	0.015
	+	1120.55		3.467E-01	1.430E-01	2.121E-01	1.793E-02	1.634
V-48		944.13		5.994E-01	1.432E+00	2.485E+00	2.178E-01	0.241
		983.53	*	1.228E-02	1.076E-01	1.805E-01	1.579E-02	0.068
		1312.11		2.540E-02	1.431E-01	2.354E-01	1.918E-02	0.108
CR-51		320.08	*	-1.813E-01	4.370E-01	6.844E-01	6.358E-02	-0.265
MN-54		834.85	*	2.322E-02	4.466E-02	7.894E-02	7.651E-03	0.294
CO-56		846.77	*	-1.277E-03	5.582E-02	9.347E-02	8.909E-03	-0.014
		1037.84		-2.525E-01	4.584E-01	7.051E-01	6.432E-02	-0.358
		1238.28		1.425E-01	1.550E-01	2.693E-01	2.285E-02	0.529
		1771.35		-4.877E-01	3.296E-01	2.686E-01	2.232E-02	-1.816
CO-57		122.06	*	2.181E-04	2.218E-02	3.477E-02	3.995E-03	0.006
		136.47		5.314E-02	1.847E-01	2.937E-01	3.252E-02	0.181
CO-58		810.76	*	2.500E-02	5.018E-02	8.876E-02	8.883E-03	0.282
FE-59		1099.45	*	-2.455E-02	1.468E-01	2.357E-01	2.175E-02	-0.104
		1291.59		-8.398E-02	1.988E-01	3.013E-01	2.831E-02	-0.279
CO-60		1173.23		-5.912E-02	7.229E-02	1.071E-01	8.825E-03	-0.552
		1332.49	*	-3.918E-03	5.316E-02	8.828E-02	7.165E-03	-0.044

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
ZN-65		1115.54	*	-1.487E-01	1.592E-01	1.908E-01	1.618E-02	-0.779
SE-75		121.12		4.357E-03	1.156E-01	1.816E-01	2.429E-02	0.024
		136.00		-1.406E-02	3.722E-02	5.698E-02	6.056E-03	-0.247
		264.66	*	1.589E-02	4.411E-02	7.425E-02	6.667E-03	0.214
		279.54		1.413E-02	1.142E-01	1.692E-01	1.563E-02	0.084
		400.66		1.815E-02	3.065E-01	4.880E-01	5.211E-02	0.037
SR-85		514.00	*	-7.914E-04	5.229E-02	7.651E-02	7.362E-03	-0.010
Y-88		898.04		-5.014E-02	5.659E-02	8.473E-02	7.447E-03	-0.592
		1836.06	*	2.269E-02	5.274E-02	9.401E-02	7.762E-03	0.241
Y-91		1204.77	*	2.170E+01	3.636E+01	6.223E+01	5.126E+00	0.349
NB-94		702.65	*	3.662E-03	4.385E-02	7.148E-02	7.785E-03	0.051
		871.09		-2.868E-02	4.650E-02	7.260E-02	6.664E-03	-0.395
NB-95		765.81	*	4.428E-02	6.165E-02	1.054E-01	1.102E-02	0.420
NB-95M		235.69	*	-2.461E-02	1.276E-01	1.871E-01	1.889E-02	-0.132
ZR-95		724.19		1.513E-01	1.463E-01	2.328E-01	2.644E-02	0.650
		756.73	*	2.462E-02	1.093E-01	1.793E-01	2.022E-02	0.137
MO-99		140.51		1.761E+01	6.877E+01	1.077E+02	2.627E+01	0.163
		181.07		4.397E+01	5.600E+01	8.898E+01	1.660E+01	0.494
		366.42		-1.220E+02	3.553E+02	5.505E+02	4.617E+01	-0.222
		739.50	*	-2.596E+01	5.607E+01	8.527E+01	1.446E+01	-0.304
		777.92		-5.574E+01	1.505E+02	2.294E+02	2.372E+01	-0.243
TC-99M		140.51	*	5.369E+15	1.505E+02	Half-Life	too short	
RU-103		497.08	*	-3.204E-02	4.594E-02	7.124E-02	1.031E-02	-0.450
	+	610.33		1.774E+01	3.900E+00	4.199E+00	7.343E-01	4.224
RH-106		621.93	*	2.428E-01	3.969E-01	6.847E-01	1.008E-01	0.355
		1050.41		1.351E+00	3.721E+00	6.351E+00	5.492E-01	0.213
RU-106		621.93	*	2.428E-01	3.961E-01	6.847E-01	7.347E-02	0.355
		1050.41		1.351E+00	3.721E+00	6.351E+00	5.492E-01	0.213
AG-108M		433.94	*	-2.639E-02	3.105E-02	4.866E-02	4.308E-03	-0.542
		614.28		-1.819E-03	4.741E-02	6.770E-02	7.375E-03	-0.027
		722.91		-4.500E-02	6.198E-02	7.822E-02	8.603E-03	-0.575
AG-110M		657.76	*	-1.706E-02	4.570E-02	7.151E-02	8.021E-03	-0.239
		677.62		1.463E-01	4.670E-01	7.783E-01	8.711E-02	0.188
		706.68		-1.052E-01	3.011E-01	4.696E-01	5.197E-02	-0.224
		763.94		-1.679E-01	2.360E-01	3.497E-01	3.729E-02	-0.480
		884.68		2.724E-02	6.973E-02	1.210E-01	1.117E-02	0.225
		937.49		-4.059E-02	1.534E-01	2.476E-01	2.247E-02	-0.164
		1384.29		-1.718E-02	1.854E-01	3.049E-01	2.573E-02	-0.056
		1505.03		-8.184E-02	4.242E-01	6.815E-01	5.671E-02	-0.120
SN-113		391.69	*	3.815E-02	5.439E-02	9.111E-02	7.503E-03	0.419
CD-115		260.90		-3.023E-04	5.439E-02	Half-Life	too short	
		492.35		5.415E-07	5.439E-02	Half-Life	too short	
		527.90	*	-1.044E-05	5.439E-02	Half-Life	too short	
SN-117M		156.02		-2.610E+00	2.567E+00	4.192E+00	3.783E-01	-0.623
		158.56	*	1.599E-02	6.356E-02	1.087E-01	9.568E-03	0.147
TE-123M		159.00	*	1.121E-02	2.658E-02	4.576E-02	4.033E-03	0.245
SB-124		602.73		-7.644E-04	5.464E-02	8.287E-02	8.752E-03	-0.009
		645.85		-5.558E-01	6.063E-01	8.774E-01	9.933E-02	-0.633
		722.78		-5.165E-01	6.554E-01	8.178E-01	8.944E-02	-0.632

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-125		1690.97	*	-2.376E-02	1.113E-01	1.727E-01	1.507E-02	-0.138
		427.87	*	-1.106E-01	9.754E-02	1.492E-01	1.291E-02	-0.741
	+	463.37		1.212E+00	5.248E-01	7.203E-01	6.918E-02	1.682
		600.60		2.143E-01	2.196E-01	3.897E-01	4.313E-02	0.550
TE-125M		635.95		-3.601E-02	3.523E-01	5.694E-01	6.497E-02	-0.063
		109.28	*	1.622E+00	8.196E+00	1.319E+01	1.604E+00	0.123
	I-126	388.63		-4.042E-02	2.605E-01	4.087E-01	3.273E-02	-0.099
		666.33	*	1.078E-03	3.734E-01	6.070E-01	6.697E-02	0.002
SB-126		753.82		4.089E+00	3.145E+00	5.676E+00	5.990E-01	0.720
		414.70		7.082E-02	1.133E-01	2.001E-01	1.660E-02	0.354
		666.50		1.691E-02	1.289E-01	2.121E-01	2.340E-02	0.080
		695.00		9.392E-02	1.195E-01	2.091E-01	2.285E-02	0.449
SB-127		697.00		-3.600E-01	4.254E-01	6.187E-01	6.755E-02	-0.582
		720.70	*	6.579E-02	2.879E-01	4.185E-01	4.516E-02	0.157
		856.80		6.427E-01	9.323E-01	1.487E+00	1.396E-01	0.432
		252.40		5.872E+00	1.008E+01	1.674E+01	7.036E+00	0.351
I-131		473.00		-6.736E-01	4.162E+00	6.886E+00	9.947E-01	-0.098
		685.70	*	3.032E+00	3.841E+00	6.705E+00	9.768E-01	0.452
		783.70		3.822E+00	1.094E+01	1.814E+01	2.697E+00	0.211
		80.19		1.493E+00	4.084E+00	6.269E+00	5.594E-01	0.238
TE-132		284.31		1.170E-01	2.204E+00	3.617E+00	3.396E-01	0.032
		364.49	*	6.978E-02	1.898E-01	3.126E-01	2.791E-02	0.223
		636.99		1.802E-01	3.067E+00	5.036E+00	5.681E-01	0.036
		49.72		3.596E+00	8.754E+00	1.385E+01	1.703E+00	0.260
BA-133		111.76		-2.173E+01	7.640E+01	1.196E+02	1.678E+01	-0.182
		116.30		-3.662E+01	6.342E+01	9.680E+01	1.381E+01	-0.378
		228.16	*	-2.246E-01	1.950E+00	3.227E+00	5.477E-01	-0.070
		81.00		1.358E-02	6.404E-02	8.609E-02	1.349E-02	0.158
I-133	+	276.40		6.983E-01	4.763E-01	6.586E-01	9.417E-02	1.060
		302.85		6.281E-02	1.534E-01	2.311E-01	3.065E-02	0.272
		356.01	*	-1.059E-02	4.902E-02	6.817E-02	8.789E-03	-0.155
		383.85		-2.343E-01	3.371E-01	5.021E-01	6.060E-02	-0.467
CS-134		529.87	*	1.513E-02	3.371E-01	Half-Life	too short	
		875.33		-7.315E-01	3.371E-01	Half-Life	too short	
		1298.22		-1.952E-01	3.371E-01	Half-Life	too short	
		563.25		2.474E-01	4.680E-01	8.057E-01	8.253E-02	0.307
I-135		569.33		3.329E-02	2.520E-01	4.205E-01	4.346E-02	0.079
		604.72		-4.896E-02	4.815E-02	5.943E-02	6.297E-03	-0.824
	+	795.86	*	2.723E-01	9.396E-02	1.178E-01	1.203E-02	2.311
		801.95		-1.560E-02	5.247E-01	7.736E-01	7.838E-02	-0.020
CS-135		1365.19		4.943E-01	1.891E+00	3.271E+00	2.809E-01	0.151
		268.22	*	1.507E-01	1.716E-01	2.694E-01	2.759E-02	0.559
		546.56		1.064E+15	1.716E-01	Half-Life	too short	
		836.80		1.679E+15	1.716E-01	Half-Life	too short	
I-135		1038.76		-1.556E+15	1.716E-01	Half-Life	too short	
		1131.51		-3.487E+14	1.716E-01	Half-Life	too short	
		1260.41	*	6.244E+14	1.716E-01	Half-Life	too short	
		1457.56		2.218E+17	1.716E-01	Half-Life	too short	
		1678.03		5.605E+14	1.716E-01	Half-Life	too short	

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CS-136	1791.20			1.032E+15	1.716E-01	Half-Life too short		
	153.25			6.729E-01	9.736E-01	1.714E+00	1.854E-01	0.393
	176.60			-1.085E-02	5.501E-01	9.340E-01	8.594E-02	-0.012
	273.65			-1.958E-01	8.767E-01	9.837E-01	9.484E-02	-0.199
	340.55			-1.243E-01	2.166E-01	2.916E-01	2.633E-02	-0.426
	818.51			5.629E-02	1.217E-01	2.142E-01	2.122E-02	0.263
	1048.07	*		-4.294E-02	1.916E-01	3.065E-01	2.765E-02	-0.140
BA-137M	1235.36			-9.067E-02	1.273E+00	2.044E+00	2.347E-01	-0.044
	661.66	*		-9.062E-03	4.876E-02	7.827E-02	8.644E-03	-0.116
	661.66	*		-9.573E-03	5.151E-02	8.269E-02	9.143E-03	-0.116
CE-137	165.86	*		-8.679E-03	2.701E-02	4.543E-02	3.693E-03	-0.191
BA-140	162.66			-3.993E-01	9.538E-01	1.585E+00	1.430E-01	-0.252
	304.85			-8.450E-01	1.938E+00	2.870E+00	8.425E-01	-0.294
	423.72			-4.061E-01	2.946E+00	4.938E+00	1.622E+00	-0.082
LA-140	537.26	*		2.179E-01	4.327E-01	7.377E-01	2.527E-01	0.295
	328.76			9.199E-01	6.496E-01	7.706E-01	7.150E-02	1.194
	487.02			-7.845E-02	1.888E-01	3.036E-01	2.971E-02	-0.258
	815.77			-4.075E-01	5.292E-01	8.130E-01	8.796E-02	-0.501
CE-141	1596.21	*		-1.632E-01	1.671E-01	2.240E-01	1.873E-02	-0.729
	145.44	*		-1.272E-02	6.414E-02	9.871E-02	9.897E-03	-0.129
CE-143	57.36			9.213E-04	6.414E-02	Half-Life too short		
	293.27	*		5.509E-03	6.414E-02	Half-Life too short		
	664.57			9.135E-03	6.414E-02	Half-Life too short		
CE-144	721.93			-1.073E-02	6.414E-02	Half-Life too short		
	80.12			5.023E-01	1.471E+00	2.256E+00	1.991E-01	0.223
	133.52	*		-8.141E-02	1.753E-01	2.666E-01	4.420E-02	-0.305
PM-144	476.78			3.495E-02	6.959E-02	1.216E-01	1.199E-02	0.287
	618.01			-2.317E-03	3.869E-02	6.295E-02	6.857E-03	-0.037
	696.49	*		-3.918E-02	4.351E-02	6.304E-02	6.887E-03	-0.621
PR-144	696.51	*		-2.952E+00	3.263E+00	4.725E+00	5.160E-01	-0.625
	1489.16			1.373E+01	1.804E+01	3.357E+01	2.789E+00	0.409
PM-146	453.88	*		3.693E-02	4.856E-02	8.615E-02	9.287E-03	0.429
	633.25			5.826E-01	1.758E+00	2.943E+00	1.140E+00	0.198
	735.93			3.022E-02	1.879E-01	3.075E-01	8.833E-02	0.098
ND-147	747.24			3.796E-02	1.240E-01	2.059E-01	3.262E-02	0.184
	91.11			9.542E-01	2.938E-01	4.245E-01	4.333E-02	2.248
	319.41			-1.961E+00	4.817E+00	7.555E+00	6.690E-01	-0.260
PM-149	531.02	*		2.585E-01	9.266E-01	1.574E+00	2.467E-01	0.164
	285.90	*		2.080E-04	9.266E-01	Half-Life too short		
EU-152	121.78			-4.636E-03	6.276E-02	9.794E-02	1.220E-02	-0.047
	244.70			1.929E-02	3.322E-01	4.953E-01	4.409E-02	0.039
	344.28	*		6.527E-02	1.053E-01	1.769E-01	1.622E-02	0.369
	778.90			-1.065E-01	3.370E-01	5.185E-01	5.355E-02	-0.205
	964.08			7.409E-01	5.637E-01	7.438E-01	6.517E-02	0.996
GD-153	1085.87			9.915E-02	5.149E-01	8.626E-01	7.384E-02	0.115
	1112.07			2.376E-01	4.586E-01	7.714E-01	6.541E-02	0.308
	1408.01			6.780E-02	2.339E-01	4.073E-01	3.351E-02	0.166
	69.67			1.841E-01	8.352E-01	1.385E+00	1.136E-01	0.133
	97.43	*		-9.687E-02	6.467E-02	9.504E-02	9.388E-03	-1.019



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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-154		103.18		-3.602E-02	8.188E-02	1.278E-01	1.304E-02	-0.282
		123.07		1.224E-02	4.466E-02	7.149E-02	9.727E-03	0.171
		723.31		-3.847E-02	2.660E-01	3.668E-01	4.212E-02	-0.105
		873.19		8.444E-02	3.680E-01	6.304E-01	7.743E-02	0.134
		996.26		-4.534E-01	5.357E-01	7.941E-01	1.392E-01	-0.571
		1004.73		-1.414E-01	2.757E-01	4.257E-01	4.987E-02	-0.332
EU-155		1274.44	*	-1.284E-01	1.989E-01	2.945E-01	3.257E-02	-0.436
	+	86.55		5.316E-01	1.027E-01	1.400E-01	1.312E-02	3.798
		105.31	*	2.430E-02	8.014E-02	1.300E-01	1.355E-02	0.187
TB-160	+	86.79		1.474E+00	2.843E-01	4.055E-01	3.776E-02	3.636
		197.04		-1.965E-02	5.224E-01	8.630E-01	7.361E-02	-0.023
		215.65		6.692E-01	7.273E-01	1.271E+00	1.108E-01	0.526
	+	298.57		2.816E-01	1.603E-01	2.082E-01	1.857E-02	1.353
		879.36	*	-1.008E-01	1.933E-01	3.045E-01	2.756E-02	-0.331
		962.29		1.411E+00	7.473E-01	1.436E+00	1.258E-01	0.983
HO-166M		966.15		1.409E+00	3.756E-01	7.469E-01	6.543E-02	1.887
		1177.93		4.495E-01	5.512E-01	9.699E-01	7.993E-02	0.463
		1271.85		8.427E-01	1.118E+00	1.959E+00	1.605E-01	0.430
		80.57		3.702E-02	1.813E-01	2.439E-01	2.160E-02	0.152
	+	184.41		1.968E-01	5.710E-02	6.255E-02	5.239E-03	3.147
		280.46		8.472E-02	8.391E-02	1.341E-01	1.196E-02	0.632
TA-182		410.95		1.058E-01	2.976E-01	4.838E-01	3.986E-02	0.219
		711.68	*	2.888E-02	8.114E-02	1.356E-01	1.470E-02	0.213
		752.31		-1.665E-01	3.727E-01	5.681E-01	6.002E-02	-0.293
		810.29		1.598E-03	7.547E-02	1.274E-01	1.274E-02	0.013
		67.75		-1.702E-02	5.295E-02	8.590E-02	6.962E-03	-0.198
		100.11		2.198E-02	1.316E-01	2.129E-01	2.135E-02	0.103
IR-192		152.43		-3.456E-01	3.574E-01	5.217E-01	4.867E-02	-0.662
		222.11		-1.192E-01	3.352E-01	5.483E-01	4.809E-02	-0.217
	+	1121.30		9.503E-01	3.920E-01	5.708E-01	4.822E-02	1.665
		1189.05		1.991E-01	4.856E-01	8.203E-01	6.760E-02	0.243
		1221.41	*	-3.084E-01	3.760E-01	5.631E-01	4.636E-02	-0.548
		1231.02		3.411E-01	7.674E-01	1.292E+00	1.063E-01	0.264
HG-203	+	295.96		1.338E+00	2.655E-01	3.481E-01	3.128E-02	3.843
		308.46		5.621E-02	1.012E-01	1.708E-01	1.527E-02	0.329
		316.51	*	1.344E-02	3.797E-02	6.307E-02	5.605E-03	0.213
BI-207		468.07		8.775E-03	8.768E-02	1.293E-01	1.247E-02	0.068
		70.83		-2.909E-01	7.179E-01	1.159E+00	1.839E-01	-0.251
		72.87		2.497E-01	4.697E-01	7.278E-01	1.121E-01	0.343
PB-211		279.20	*	-3.290E-03	4.328E-02	6.292E-02	5.744E-03	-0.052
		72.81		5.206E-02	1.007E-01	1.564E-01	1.308E-02	0.333
	+	74.97		8.649E-01	1.121E-01	1.609E-01	1.367E-02	5.375
BI-212		569.70		6.654E-03	3.911E-02	6.546E-02	6.703E-03	0.102
		1063.66	*	1.400E-02	7.377E-02	1.236E-01	1.065E-02	0.113
		1770.23		-1.864E+00	9.313E-01	8.450E-01	7.022E-02	-2.206
BI-212		404.85	*	2.903E-01	8.408E-01	1.351E+00	6.529E-01	0.215
		427.09		-1.635E-01	1.612E+00	2.705E+00	1.251E+00	-0.060
		832.01		-1.363E+00	1.407E+00	1.787E+00	9.302E-01	-0.763
	+	727.33	*	2.939E+00	1.423E+00	1.613E+00	2.260E-01	1.823

---- 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		3.070E+00	4.102E+00	7.077E+00	7.264E-01	0.434
		1620.50		4.170E+00	4.181E+00	7.825E+00	6.545E-01	0.533
		271.23		5.928E-01	3.757E-01	4.561E-01	4.798E-02	1.300
RA-223	*	401.81		-7.986E-02	4.939E-01	7.717E-01	1.125E-01	-0.103
		81.07		3.315E-02	1.451E-01	1.954E-01	1.737E-02	0.170
		83.79		2.558E-01	1.042E-01	1.440E-01	1.308E-02	1.777
	+	94.87		2.319E-01	3.335E-01	5.142E-01	5.009E-02	0.451
		144.24		7.463E-02	6.450E-01	1.006E+00	1.092E-01	0.074
		154.21		2.911E-01	3.388E-01	6.000E-01	5.975E-02	0.485
	+	269.46		4.606E-01	2.909E-01	3.744E-01	3.408E-02	1.230
		323.87	*	-2.521E-01	7.485E-01	1.040E+00	1.813E-01	-0.242
		338.28		8.241E+00	2.094E+00	2.852E+00	3.463E-01	2.889
AC-227	+	79.69		-4.212E-01	7.474E-01	1.088E+00	1.885E-01	-0.387
		235.96		1.180E-02	1.450E-01	2.173E-01	2.291E-02	0.054
		256.23	*	9.552E-02	2.461E-01	4.153E-01	5.099E-02	0.230
	+	299.98		2.100E+00	1.211E+00	1.713E+00	2.211E-01	1.226
		304.50		-2.928E-01	1.763E+00	2.693E+00	4.492E-01	-0.109
		334.37		4.871E-01	2.075E+00	3.045E+00	4.769E-01	0.160
TH-227		79.80		2.132E-01	9.482E-01	1.445E+00	3.157E-01	0.148
		235.96		1.180E-02	1.450E-01	2.173E-01	2.167E-02	0.054
		256.23	*	9.552E-02	2.462E-01	4.153E-01	5.734E-02	0.230
	+	299.98		2.100E+00	1.211E+00	1.713E+00	2.211E-01	1.226
		304.50		-2.928E-01	1.763E+00	2.693E+00	4.492E-01	-0.109
		334.37		4.871E-01	2.075E+00	3.045E+00	4.769E-01	0.160
PA-231	*	283.69		-1.239E+00	1.428E+00	2.172E+00	3.207E-01	-0.571
		301.36		5.800E-01	6.877E-01	1.062E+00	1.314E-01	0.546
		81.07		3.315E-02	1.451E-01	1.954E-01	1.737E-02	0.170
TH-231	+	83.79		2.558E-01	1.042E-01	1.440E-01	1.308E-02	1.777
		94.87		2.319E-01	3.335E-01	5.142E-01	5.009E-02	0.451
		144.24		7.463E-02	6.450E-01	1.006E+00	1.092E-01	0.074
	+	154.21		2.911E-01	3.388E-01	6.000E-01	5.975E-02	0.485
		269.46		4.606E-01	2.909E-01	3.744E-01	3.408E-02	1.230
		323.87	*	-2.521E-01	7.485E-01	1.040E+00	1.813E-01	-0.242
PA-233	+	338.28		8.241E+00	2.094E+00	2.852E+00	3.463E-01	2.889
		300.13		9.503E-01	5.530E-01	7.704E-01	1.156E-01	1.234
		311.90	*	7.324E-03	6.664E-02	1.090E-01	9.945E-03	0.067
PA-234		340.48		-3.351E-01	7.255E-01	9.844E-01	2.372E-01	-0.340
		94.67		1.629E-01	1.268E-01	1.988E-01	2.624E-02	0.819
		98.44		4.250E-02	7.011E-02	1.093E-01	6.121E-02	0.389
		111.00		-1.077E-01	1.478E-01	2.248E-01	3.069E-02	-0.479
		131.20		3.280E-02	1.007E-01	1.485E-01	1.620E-02	0.221
		569.50		5.302E-02	3.465E-01	5.792E-01	5.929E-02	0.092
		733.00		3.766E-02	5.482E-01	7.784E-01	1.797E-01	0.048
		880.51		-1.934E-02	3.658E-01	6.080E-01	5.492E-02	-0.032
		883.24		2.237E-01	4.210E-01	6.945E-01	4.672E-01	0.322
		926.50		8.009E-02	2.093E-01	3.626E-01	9.184E-02	0.221
		946.00	*	-1.978E-01	4.295E-01	6.755E-01	1.272E-01	-0.293
		949.00		-8.875E-02	6.046E-01	9.872E-01	8.654E-02	-0.090
PA-234M		766.42		6.828E+00	1.619E+01	2.639E+01	1.348E+01	0.259

---- 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	*		8.642E+00	6.351E+00	1.184E+01	1.191E+00	0.730
	99.53			1.463E-01	1.188E-01	2.009E-01	2.008E-02	0.728
	103.37			-3.502E-02	7.343E-02	1.143E-01	1.168E-02	-0.306
	106.12			6.998E-02	6.177E-02	1.039E-01	1.079E-02	0.673
	117.23	*		-2.710E-01	3.179E-01	4.762E-01	5.300E-02	-0.569
AM-241	228.18			-2.322E-02	2.037E-01	3.371E-01	2.972E-02	-0.069
	277.60	+		3.450E-01	2.321E-01	3.174E-01	2.831E-02	1.087
	59.54	*		-1.509E-02	5.519E-02	8.388E-02	7.115E-03	-0.180
CM-247	278.00	+		1.465E+00	9.858E-01	1.335E+00	1.190E-01	1.098
	287.50			1.545E-01	1.277E+00	2.103E+00	1.877E-01	0.073
	402.40	*		8.906E-03	4.479E-02	7.210E-02	5.848E-03	0.124
CF-249	252.80			2.213E-01	8.924E-01	1.497E+00	1.336E-01	0.148
	333.37			1.380E-01	2.150E-01	3.274E-01	2.868E-02	0.421
	388.16	*		-1.317E-02	4.770E-02	7.407E-02	5.938E-03	-0.178
CF-251	177.52	*		-1.253E-02	1.115E-01	1.850E-01	1.533E-02	-0.068
	227.38			-1.054E-01	3.389E-01	5.550E-01	4.889E-02	-0.190
	285.41			5.368E-01	2.158E+00	3.588E+00	3.202E-01	0.150

# 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]G247337004
* Acquisition date   : 4-MAR-2010 10:18:11 Detector SN#      :
* Detector ID        : GAM21 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 02:00:25.81 Half life ratio      : 8.000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library  : SOLID
* Sample ID          : G247337004 Analyst initials        : MXR1
* Batch Number       : 955027 Sample Quantity             : 1.2366E+02 GRAM
* Recovery           : 1.00000 Carrier Weight            : 0.00000
*****
*                               QC DATA                               *
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 28-JUL-2009 10:09:51 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	3.517E+01	3.746E+00	7.056E-01	0.000E+00
CD-109	4.509E+00	8.520E-01	8.145E-01	0.000E+00
SN-126	4.376E-01	8.269E-02	7.870E-02	0.000E+00
TL-208	6.977E-01	1.333E-01	6.796E-02	0.000E+00
PB-210	8.566E-01	6.543E-01	6.707E-01	0.000E+00
BI-211	4.910E+00	6.718E-01	3.623E-01	0.000E+00
PB-212	2.160E+00	2.456E-01	8.800E-02	0.000E+00
BI-214	1.578E+00	2.761E-01	1.351E-01	0.000E+00
PB-214	1.782E+00	2.621E-01	1.319E-01	0.000E+00
RA-224	5.754E+00	1.572E+00	9.458E-01	0.000E+00
RA-226	1.578E+00	2.761E-01	1.351E-01	0.000E+00
AC-228	2.234E+00	4.777E-01	3.055E-01	0.000E+00
RA-228	2.234E+00	4.777E-01	3.055E-01	0.000E+00
TH-228	2.160E+00	2.456E-01	8.800E-02	0.000E+00
TH-229	-1.195E-01	4.733E-01	8.261E-01	0.000E+00
TH-232	2.234E+00	4.777E-01	3.055E-01	0.000E+00
TH-234	1.642E+00	8.111E-01	8.996E-01	0.000E+00
U-235	1.652E-01	1.865E-01	3.144E-01	0.000E+00
NP-237	1.306E+00	3.645E-01	2.339E-01	0.000E+00
U-238	1.642E+00	8.111E-01	8.996E-01	0.000E+00
ANH-511	1.238E-01	7.854E-02	5.420E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	7.333E-02	3.672E-01	6.475E-01	0.000E+00 NOT IDENT.
NA-22	-3.464E-02	6.820E-02	1.053E-01	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.328E+08	0.000E+00	0.000E+00 SHORT HLIF
SC-46	1.469E-03	5.595E-02	9.613E-02	0.000E+00 FAIL ABUN
V-48	1.228E-02	1.055E-01	1.812E-01	0.000E+00 NOT IDENT.
CR-51	-1.813E-01	4.282E-01	6.976E-01	0.000E+00 NOT IDENT.

MN-54	2.322E-02	4.376E-02	7.944E-02	0.000E+00	NOT IDENT.
CO-56	-1.277E-03	5.471E-02	9.404E-02	0.000E+00	NOT IDENT.
CO-57	2.181E-04	2.174E-02	3.589E-02	0.000E+00	NOT IDENT.
CO-58	2.500E-02	4.918E-02	8.937E-02	0.000E+00	NOT IDENT.
FE-59	-2.455E-02	1.439E-01	2.363E-01	0.000E+00	NOT IDENT.
CO-60	-3.918E-03	5.210E-02	8.827E-02	0.000E+00	NOT IDENT.
ZN-65	-1.487E-01	1.561E-01	1.913E-01	0.000E+00	NOT IDENT.
SE-75	1.589E-02	4.323E-02	7.588E-02	0.000E+00	NOT IDENT.
SR-85	-7.914E-04	5.125E-02	7.750E-02	0.000E+00	NOT IDENT.
Y-88	2.269E-02	5.169E-02	9.360E-02	0.000E+00	NOT IDENT.
Y-91	2.170E+01	3.563E+01	6.231E+01	0.000E+00	NOT IDENT.
NB-94	3.662E-03	4.297E-02	7.210E-02	0.000E+00	NOT IDENT.
NB-95	4.428E-02	6.042E-02	1.062E-01	0.000E+00	NOT IDENT.
NB-95M	-2.461E-02	1.250E-01	1.915E-01	0.000E+00	NOT IDENT.
ZR-95	2.462E-02	1.071E-01	1.807E-01	0.000E+00	NOT IDENT.
MO-99	-2.596E+01	5.495E+01	8.596E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	2.060E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-3.204E-02	4.502E-02	7.219E-02	0.000E+00	FAIL ABUN
RH-106	2.428E-01	3.890E-01	6.918E-01	0.000E+00	NOT IDENT.
RU-106	2.428E-01	3.882E-01	6.918E-01	0.000E+00	NOT IDENT.
AG-108M	-2.639E-02	3.043E-02	4.941E-02	0.000E+00	NOT IDENT.
AG-110M	-1.706E-02	4.479E-02	7.219E-02	0.000E+00	NOT IDENT.
SN-113	3.815E-02	5.331E-02	9.263E-02	0.000E+00	NOT IDENT.
CD-115	0.000E+00	5.875E+01	0.000E+00	0.000E+00	SHORT HLIF
SN-117M	1.599E-02	6.229E-02	1.118E-01	0.000E+00	NOT IDENT.
TE-123M	1.121E-02	2.605E-02	4.707E-02	0.000E+00	NOT IDENT.
SB-124	-2.376E-02	1.090E-01	1.721E-01	0.000E+00	NOT IDENT.
SB-125	-1.106E-01	9.559E-02	1.516E-01	0.000E+00	FAIL ABUN
TE-125M	1.622E+00	8.032E+00	1.363E+01	0.000E+00	NOT IDENT.
I-126	1.078E-03	3.659E-01	6.128E-01	0.000E+00	NOT IDENT.
SB-126	6.579E-02	2.822E-01	4.220E-01	0.000E+00	NOT IDENT.
SB-127	3.032E+00	3.764E+00	6.766E+00	0.000E+00	NOT IDENT.
I-131	6.978E-02	1.860E-01	3.181E-01	0.000E+00	NOT IDENT.
TE-132	-2.246E-01	1.911E+00	3.304E+00	0.000E+00	NOT IDENT.
BA-133	-1.059E-02	4.804E-02	6.939E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	3.292E+05	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	9.208E-02	1.186E-01	0.000E+00	FAIL ABUN
CS-135	1.507E-01	1.682E-01	2.753E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.810E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-4.294E-02	1.877E-01	3.075E-01	0.000E+00	NOT IDENT.
BA-137M	-9.062E-03	4.779E-02	7.902E-02	0.000E+00	NOT IDENT.
CS-137	-9.573E-03	5.048E-02	8.348E-02	0.000E+00	NOT IDENT.
CE-139	-8.679E-03	2.647E-02	4.672E-02	0.000E+00	NOT IDENT.
BA-140	2.179E-01	4.241E-01	7.468E-01	0.000E+00	NOT IDENT.
LA-140	-1.632E-01	1.638E-01	2.234E-01	0.000E+00	FAIL ABUN
CE-141	-1.272E-02	6.286E-02	1.017E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.239E+03	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-8.141E-02	1.718E-01	2.749E-01	0.000E+00	NOT IDENT.
PM-144	-3.918E-02	4.264E-02	6.360E-02	0.000E+00	NOT IDENT.
PR-144	-2.952E+00	3.198E+00	4.767E+00	0.000E+00	NOT IDENT.
PM-146	3.693E-02	4.759E-02	8.741E-02	0.000E+00	NOT IDENT.
ND-147	2.585E-01	9.080E-01	1.594E+00	0.000E+00	FAIL ABUN
PM-149	0.000E+00	4.119E+02	0.000E+00	0.000E+00	SHORT HLIF
EU-152	6.527E-02	1.032E-01	1.802E-01	0.000E+00	FAIL ABUN
GD-153	-9.687E-02	6.338E-02	9.839E-02	0.000E+00	NOT IDENT.
EU-154	-1.284E-01	1.949E-01	2.946E-01	0.000E+00	NOT IDENT.
EU-155	2.430E-02	7.854E-02	1.345E-01	0.000E+00	FAIL ABUN
TB-160	-1.008E-01	1.895E-01	3.062E-01	0.000E+00	FAIL ABUN
HO-166M	2.888E-02	7.951E-02	1.368E-01	0.000E+00	FAIL ABUN
TA-182	-3.084E-01	3.685E-01	5.638E-01	0.000E+00	FAIL ABUN
IR-192	1.344E-02	3.721E-02	6.431E-02	0.000E+00	FAIL ABUN
HG-203	-3.290E-03	4.242E-02	6.425E-02	0.000E+00	NOT IDENT.
BI-207	1.400E-02	7.229E-02	1.240E-01	0.000E+00	FAIL ABUN
PB-211	2.903E-01	8.239E-01	1.373E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.394E+00	1.626E+00	0.000E+00	FAIL ABUN
RN-219	-7.986E-02	4.841E-01	7.843E-01	0.000E+00	FAIL ABUN
RA-223	-2.521E-01	7.335E-01	1.060E+00	0.000E+00	FAIL ABUN
AC-227	9.552E-02	2.412E-01	4.246E-01	0.000E+00	FAIL ABUN
TH-227	9.552E-02	2.412E-01	4.246E-01	0.000E+00	FAIL ABUN
PA-231	-1.239E+00	1.399E+00	2.217E+00	0.000E+00	NOT IDENT.
TH-231	-2.521E-01	7.335E-01	1.060E+00	0.000E+00	FAIL ABUN
PA-233	7.324E-03	6.531E-02	1.111E-01	0.000E+00	FAIL ABUN
PA-234	-1.978E-01	4.209E-01	6.786E-01	0.000E+00	NOT IDENT.
PA-234M	8.642E+00	6.224E+00	1.189E+01	0.000E+00	NOT IDENT.
NP-239	-2.710E-01	3.115E-01	4.919E-01	0.000E+00	FAIL ABUN
AM-241	-1.509E-02	5.409E-02	8.739E-02	0.000E+00	NOT IDENT.
CM-247	8.906E-03	4.390E-02	7.328E-02	0.000E+00	FAIL ABUN
CF-249	-1.317E-02	4.674E-02	7.532E-02	0.000E+00	NOT IDENT.

CF-251	-1.253E-02	1.092E-01	1.901E-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]G247337004.CNF;1
Sample date    : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:18:11.
Sample ID     : G247337004 Sample quantity : 1.23660E+02 GRAM
Detector name  : GAM21 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:25.81 0.4%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 5.00000
Batch ID       : 955027 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	890	10.66*	7.206E-01	3.517E+01	3.517E+01	10.87
CD-109	88.03	434	3.70*	8.136E+00	4.376E+00	4.509E+00	19.28
SN-126	64.28	164	9.60	8.182E+00	6.327E-01	6.327E-01	49.35
	86.94	434	8.90	8.136E+00	1.819E+00	1.819E+00	44.81
	87.57	434	37.00*	8.136E+00	4.376E-01	4.376E-01	19.28
TL-208	277.37	62	6.60	3.807E+00	7.548E-01	7.548E-01	67.89
	583.19	347	85.00*	1.778E+00	6.977E-01	6.977E-01	19.50
	860.56	28	12.50	1.201E+00	5.624E-01	5.624E-01	107.96
PB-210	46.54	88	4.25*	7.364E+00	8.551E-01	8.566E-01	77.94
BI-211	72.87	-----	1.23	8.278E+00	-----	Line Not Found	-----
	351.06	626	12.92*	2.998E+00	4.910E+00	4.910E+00	13.96
PB-212	74.82	841	10.28	8.275E+00	3.000E+00	3.000E+00	16.20
	77.11	1230	17.10	8.264E+00	2.641E+00	2.641E+00	11.11
	238.63	1361	43.60*	4.388E+00	2.160E+00	2.160E+00	11.60
	300.09	73	3.30	3.521E+00	1.909E+00	1.909E+00	57.24
BI-214	609.32	402	45.49*	1.700E+00	1.578E+00	1.578E+00	17.85
	1120.29	90	14.92	9.296E-01	1.970E+00	1.970E+00	41.79
	1764.49	60	15.30	5.986E-01	1.972E+00	1.972E+00	31.39
PB-214	74.82	841	5.80	8.275E+00	5.318E+00	5.318E+00	15.19
	77.11	1230	9.70	8.264E+00	4.656E+00	4.656E+00	13.83
	242.00	337	7.25	4.336E+00	3.254E+00	3.254E+00	28.47
	295.22	375	18.42	3.578E+00	1.729E+00	1.729E+00	20.86
	351.93	626	35.60*	2.998E+00	1.782E+00	1.782E+00	15.01
RA-224	240.99	337	4.10*	4.336E+00	5.754E+00	5.754E+00	27.87
RA-226	609.32	402	45.49*	1.700E+00	1.578E+00	1.578E+00	17.85
	1120.29	90	14.92	9.296E-01	1.970E+00	1.970E+00	41.79
	1764.49	60	15.30	5.986E-01	1.972E+00	1.972E+00	31.39
AC-228	338.32	241	11.27	3.122E+00	2.077E+00	2.077E+00	47.33
	911.20	216	25.80*	1.136E+00	2.234E+00	2.234E+00	21.82
	968.97	122	15.80	1.070E+00	2.188E+00	2.188E+00	34.78
RA-228	338.32	241	11.27	3.122E+00	2.077E+00	2.077E+00	47.33
	911.20	216	25.80*	1.136E+00	2.234E+00	2.234E+00	21.82

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	968.97	122	15.80	1.070E+00	2.188E+00	2.188E+00	34.78
	74.82	841	10.28	8.275E+00	3.000E+00	3.000E+00	13.01
	77.11	1230	17.10	8.264E+00	2.641E+00	2.641E+00	11.11
	238.63	1361	43.60*	4.388E+00	2.160E+00	2.160E+00	11.60
TH-229	300.09	73	3.30	3.521E+00	1.909E+00	1.909E+00	83.14
	85.43	170	14.70	8.185E+00	4.298E-01	4.299E-01	40.75
	88.47	434	24.00	8.136E+00	6.747E-01	6.747E-01	19.28
	193.51	-----	4.41*	5.271E+00	-----	Line Not Found	-----
TH-232	210.85	-----	2.80	4.900E+00	-----	Line Not Found	-----
	338.32	241	11.27	3.122E+00	2.077E+00	2.077E+00	23.97
	911.20	216	25.80*	1.136E+00	2.234E+00	2.234E+00	21.82
	968.97	122	15.80	1.070E+00	2.188E+00	2.188E+00	34.78
TH-234	63.29	164	3.70*	8.182E+00	1.642E+00	1.642E+00	50.42
	92.59	416	4.23	8.022E+00	3.722E+00	3.722E+00	30.59
U-235	89.96	201	3.47	8.084E+00	2.175E+00	2.175E+00	38.30
	93.35	416	5.60	8.022E+00	2.812E+00	2.812E+00	31.33
	143.76	-----	10.96*	6.567E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.017E+00	-----	Line Not Found	-----
NP-237	185.72	254	57.20	5.451E+00	2.478E-01	2.478E-01	29.01
	205.31	-----	5.01	5.015E+00	-----	Line Not Found	-----
	86.48	434	12.40*	8.136E+00	1.306E+00	1.306E+00	28.48
	95.86	-----	2.68	7.953E+00	-----	Line Not Found	-----
U-238	63.29	164	3.70*	8.182E+00	1.642E+00	1.642E+00	50.42
	92.59	416	4.23	8.022E+00	3.722E+00	3.722E+00	22.86
ANH-511	511.00	83	100.00*	2.040E+00	1.238E-01	1.238E-01	64.74

Flag: "\*" = Keyline



Total number of lines in spectrum 33  
Number of unidentified lines 2  
Number of lines tentatively identified by NID 31 93.94%

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	3.517E+01	3.517E+01	0.382E+01	10.87	
CD-109	461.40D	1.03	4.376E+00	4.509E+00	0.869E+00	19.28	
SN-126	2.30E+05Y	1.00	4.376E-01	4.376E-01	0.844E-01	19.28	
TL-208	1.41E+10Y	1.00	6.977E-01	6.977E-01	1.361E-01	19.50	
PB-210	22.20Y	1.00	8.551E-01	8.566E-01	6.676E-01	77.94	
BI-211	7.04E+08Y	1.00	4.910E+00	4.910E+00	0.685E+00	13.96	
PB-212	1.41E+10Y	1.00	2.160E+00	2.160E+00	0.251E+00	11.60	
BI-214	1600.00Y	1.00	1.578E+00	1.578E+00	0.282E+00	17.85	
PB-214	1600.00Y	1.00	1.782E+00	1.782E+00	0.267E+00	15.01	
RA-224	1.41E+10Y	1.00	5.754E+00	5.754E+00	1.604E+00	27.87	
RA-226	1600.00Y	1.00	1.578E+00	1.578E+00	0.282E+00	17.85	
AC-228	1.41E+10Y	1.00	2.234E+00	2.234E+00	0.487E+00	21.82	
RA-228	1.41E+10Y	1.00	2.234E+00	2.234E+00	0.487E+00	21.82	
TH-228	1.41E+10Y	1.00	2.160E+00	2.160E+00	0.251E+00	11.60	
TH-229	7340.00Y	1.00	6.747E-01	6.747E-01	1.301E-01	19.28	K
TH-232	1.41E+10Y	1.00	2.234E+00	2.234E+00	0.487E+00	21.82	
TH-234	4.47E+09Y	1.00	1.642E+00	1.642E+00	0.828E+00	50.42	
U-235	7.04E+08Y	1.00	2.478E-01	2.478E-01	0.719E-01	29.01	K
NP-237	2.14E+06Y	1.00	1.306E+00	1.306E+00	0.372E+00	28.48	
U-238	4.47E+09Y	1.00	1.642E+00	1.642E+00	0.828E+00	50.42	
ANH-511	1.00E+09Y	1.00	1.238E-01	1.238E-01	0.801E-01	64.74	
Total Activity :			7.379E+01	7.393E+01			

Grand Total Activity : 7.379E+01 7.393E+01

Flags: "K" = Keyline not found "M" = Manually accepted  
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G247337004

Page : 4  
Acquisition date : 4-MAR-2010 10:18:11

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	128.91	90	265	0.81	257.72	255	6	1.26E-02	60.8	7.01E+00	
0	209.34	120	292	0.95	418.51	413	10	1.67E-02	56.5	4.93E+00	
0	270.09	82	167	0.86	539.98	536	9	1.14E-02	62.5	3.90E+00	T
0	327.61	67	138	0.83	654.98	650	10	9.30E-03	70.0	3.22E+00	T
0	463.09	94	79	1.20	925.89	920	11	1.30E-02	42.2	2.26E+00	T
0	726.67	92	72	1.60	1453.05	1445	16	1.27E-02	46.3	1.42E+00	T
0	794.90	88	21	2.12	1589.52	1581	18	1.22E-02	33.0	1.30E+00	T
3	963.82	38	31	2.15	1927.46	1919	23	5.32E-03	75.6	1.07E+00	T

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                               DETECTOR DATA                               *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337004.CNF;1  *
* Acquisition date   : 4-MAR-2010 10:18:11.  Detector SN#      :              *
* Detector ID        : GAM21                      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 02:00:25.81           Half life ratio : 8.00000      *
*****
*
*                               SAMPLE DATA                               *
*
* Sample date        : 12-FEB-2010 12:00:00  Nuclide Library : SOLID          *
* Sample ID          : G247337004           Analyst initials: MXR1          *
* Batch Number       : 955027              Sample Quantity : 1.23660E+02 GRAM  *
*****
*
*                               QC DATA                                   *
*
* CALIB. DATE/TIME   : 28-JUL-2009 10:09:51.9MS 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	3.517E+01	3.822E+00	7.065E-01	6.032E-02	49.776
CD-109	4.509E+00	8.694E-01	7.857E-01	7.393E-02	5.739
SN-126	4.376E-01	8.437E-02	7.591E-02	7.116E-03	5.765
TL-208	6.977E-01	1.361E-01	6.720E-02	7.314E-03	10.382
PB-210	8.566E-01	6.676E-01	6.418E-01	6.069E-02	1.335
BI-211	4.910E+00	6.855E-01	3.558E-01	3.212E-02	13.800
PB-212	2.160E+00	2.506E-01	8.599E-02	8.591E-03	25.116
BI-214	1.578E+00	2.817E-01	1.337E-01	1.585E-02	11.805
PB-214	1.782E+00	2.675E-01	1.295E-01	1.369E-02	13.759
RA-224	5.754E+00	1.604E+00	9.243E-01	8.213E-02	6.225
RA-226	1.578E+00	2.817E-01	1.337E-01	1.585E-02	11.805
AC-228	2.234E+00	4.875E-01	3.039E-01	3.554E-02	7.352
RA-228	2.234E+00	4.875E-01	3.039E-01	3.554E-02	7.352
TH-228	2.160E+00	2.506E-01	8.599E-02	8.591E-03	25.116
TH-229	6.747E-01	1.301E-01	8.050E-01	6.834E-02	0.838
TH-232	2.234E+00	4.875E-01	3.039E-01	3.554E-02	7.352
TH-234	1.642E+00	8.277E-01	8.641E-01	1.559E-01	1.900
U-235	2.478E-01	7.187E-02	3.052E-01	5.403E-02	0.812

----- Identified Nuclides -----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-237	1.306E+00	3.719E-01	2.256E-01	5.173E-02	5.789
U-238	1.642E+00	8.277E-01	8.641E-01	1.559E-01	1.900
ANH-511	1.238E-01	8.015E-02	5.350E-02	5.129E-03	2.314

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	7.333E-02		3.747E-01	6.386E-01	6.255E-02	0.115
NA-22	-3.464E-02		6.959E-02	1.052E-01	8.631E-03	-0.329
NA-24	2.814E+01		1.188E+02	Half-Life too short		
SC-46	1.469E-03		5.709E-02	9.560E-02	8.501E-03	0.015
V-48	1.228E-02		1.076E-01	1.805E-01	1.579E-02	0.068
CR-51	-1.813E-01		4.370E-01	6.844E-01	6.358E-02	-0.265
MN-54	2.322E-02		4.466E-02	7.894E-02	7.651E-03	0.294
CO-56	-1.277E-03		5.582E-02	9.347E-02	8.909E-03	-0.014
CO-57	2.181E-04		2.218E-02	3.477E-02	3.995E-03	0.006
CO-58	2.500E-02		5.018E-02	8.876E-02	8.883E-03	0.282
FE-59	-2.455E-02		1.468E-01	2.357E-01	2.175E-02	-0.104
CO-60	-3.918E-03		5.316E-02	8.828E-02	7.165E-03	-0.044
ZN-65	-1.487E-01		1.592E-01	1.908E-01	1.618E-02	-0.779
SE-75	1.589E-02		4.411E-02	7.425E-02	6.667E-03	0.214
SR-85	-7.914E-04		5.229E-02	7.651E-02	7.362E-03	-0.010
Y-88	2.269E-02		5.274E-02	9.401E-02	7.762E-03	0.241
Y-91	2.170E+01		3.636E+01	6.223E+01	5.126E+00	0.349
NB-94	3.662E-03		4.385E-02	7.148E-02	7.785E-03	0.051
NB-95	4.428E-02		6.165E-02	1.054E-01	1.102E-02	0.420
NB-95M	-2.461E-02		1.276E-01	1.871E-01	1.889E-02	-0.132
ZR-95	2.462E-02		1.093E-01	1.793E-01	2.022E-02	0.137
MO-99	-2.596E+01		5.607E+01	8.527E+01	1.446E+01	-0.304
TC-99M	5.369E+15		1.051E+16	Half-Life too short		
RU-103	-3.204E-02		4.594E-02	7.124E-02	1.031E-02	-0.450
RH-106	2.428E-01		3.969E-01	6.847E-01	1.008E-01	0.355
RU-106	2.428E-01		3.961E-01	6.847E-01	7.347E-02	0.355
AG-108M	-2.639E-02		3.105E-02	4.866E-02	4.308E-03	-0.542
AG-110M	-1.706E-02		4.570E-02	7.151E-02	8.021E-03	-0.239
SN-113	3.815E-02		5.439E-02	9.111E-02	7.503E-03	0.419
CD-115	-1.044E-05		2.997E-05	Half-Life too short		
SN-117M	1.599E-02		6.356E-02	1.087E-01	9.568E-03	0.147
TE-123M	1.121E-02		2.658E-02	4.576E-02	4.033E-03	0.245
SB-124	-2.376E-02		1.113E-01	1.727E-01	1.507E-02	-0.138
SB-125	-1.106E-01		9.754E-02	1.492E-01	1.291E-02	-0.741
TE-125M	1.622E+00		8.196E+00	1.319E+01	1.604E+00	0.123
I-126	1.078E-03		3.734E-01	6.070E-01	6.697E-02	0.002
SB-126	6.579E-02		2.879E-01	4.185E-01	4.516E-02	0.157
SB-127	3.032E+00		3.841E+00	6.705E+00	9.768E-01	0.452
I-131	6.978E-02		1.898E-01	3.126E-01	2.791E-02	0.223
TE-132	-2.246E-01		1.950E+00	3.227E+00	5.477E-01	-0.070

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BA-133	-1.059E-02		4.902E-02	6.817E-02	8.789E-03	-0.155
I-133	1.513E-02		1.680E-01	Half-Life too short		
CS-134	2.723E-01	+	9.396E-02	1.178E-01	1.203E-02	2.311
CS-135	1.507E-01		1.716E-01	2.694E-01	2.759E-02	0.559
I-135	6.244E+14		9.235E+14	Half-Life too short		
CS-136	-4.294E-02		1.916E-01	3.065E-01	2.765E-02	-0.140
BA-137M	-9.062E-03		4.876E-02	7.827E-02	8.644E-03	-0.116
CS-137	-9.573E-03		5.151E-02	8.269E-02	9.143E-03	-0.116
CE-139	-8.679E-03		2.701E-02	4.543E-02	3.693E-03	-0.191
BA-140	2.179E-01		4.327E-01	7.377E-01	2.527E-01	0.295
LA-140	-1.632E-01		1.671E-01	2.240E-01	1.873E-02	-0.729
CE-141	-1.272E-02		6.414E-02	9.871E-02	9.897E-03	-0.129
CE-143	5.509E-03		1.142E-03	Half-Life too short		
CE-144	-8.141E-02		1.753E-01	2.666E-01	4.420E-02	-0.305
PM-144	-3.918E-02		4.351E-02	6.304E-02	6.887E-03	-0.621
PR-144	-2.952E+00		3.263E+00	4.725E+00	5.160E-01	-0.625
PM-146	3.693E-02		4.856E-02	8.615E-02	9.287E-03	0.429
ND-147	2.585E-01		9.266E-01	1.574E+00	2.467E-01	0.164
PM-149	2.080E-04		2.101E-04	Half-Life too short		
EU-152	6.527E-02		1.053E-01	1.769E-01	1.622E-02	0.369
GD-153	-9.687E-02		6.467E-02	9.504E-02	9.388E-03	-1.019
EU-154	-1.284E-01		1.989E-01	2.945E-01	3.257E-02	-0.436
EU-155	2.430E-02		8.014E-02	1.300E-01	1.355E-02	0.187
TB-160	-1.008E-01		1.933E-01	3.045E-01	2.756E-02	-0.331
HO-166M	2.888E-02		8.114E-02	1.356E-01	1.470E-02	0.213
TA-182	-3.084E-01		3.760E-01	5.631E-01	4.636E-02	-0.548
IR-192	1.344E-02		3.797E-02	6.307E-02	5.605E-03	0.213
HG-203	-3.290E-03		4.328E-02	6.292E-02	5.744E-03	-0.052
BI-207	1.400E-02		7.377E-02	1.236E-01	1.065E-02	0.113
PB-211	2.903E-01		8.408E-01	1.351E+00	6.529E-01	0.215
BI-212	2.939E+00	+	1.423E+00	1.613E+00	2.260E-01	1.823
RN-219	-7.986E-02		4.939E-01	7.717E-01	1.125E-01	-0.103
RA-223	-2.521E-01		7.485E-01	1.040E+00	1.813E-01	-0.242
AC-227	9.552E-02		2.461E-01	4.153E-01	5.099E-02	0.230
TH-227	9.552E-02		2.462E-01	4.153E-01	5.734E-02	0.230
PA-231	-1.239E+00		1.428E+00	2.172E+00	3.207E-01	-0.571
TH-231	-2.521E-01		7.485E-01	1.040E+00	1.813E-01	-0.242
PA-233	7.324E-03		6.664E-02	1.090E-01	9.945E-03	0.067
PA-234	-1.978E-01		4.295E-01	6.755E-01	1.272E-01	-0.293
PA-234M	8.642E+00		6.351E+00	1.184E+01	1.191E+00	0.730
NP-239	-2.710E-01		3.179E-01	4.762E-01	5.300E-02	-0.569
AM-241	-1.509E-02		5.519E-02	8.388E-02	7.115E-03	-0.180
CM-247	8.906E-03		4.479E-02	7.210E-02	5.848E-03	0.124
CF-249	-1.317E-02		4.770E-02	7.407E-02	5.938E-03	-0.178
CF-251	-1.253E-02		1.115E-01	1.850E-01	1.533E-02	-0.068

## VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                               DETECTOR DATA                               *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247337004          *
* Acquisition date   : 4-MAR-2010 10:18:11 Detector SN#                   *
* Detector ID        : GAM21 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 02:00:25.81 Half life ratio : 8.000              *
*****
*
*                               SAMPLE DATA                               *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID         *
* Sample ID          : G247337004 Analyst initials: MXR1                 *
* Batch Number       : 955027 Sample Quantity : 1.2366E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                 *
*****
*
*                               QC DATA                                   *
*
* CALIB. DATE/TIME   : 28-JUL-2009 10:09:51 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	3.517E+01	3.746E+00	3.530E-01	1.911E+00
CD-109	4.509E+00	8.520E-01	4.075E-01	4.347E-01
SN-126	4.376E-01	8.269E-02	3.937E-02	4.219E-02
TL-208	6.977E-01	1.333E-01	3.400E-02	6.803E-02
PB-210	8.566E-01	6.543E-01	3.356E-01	3.338E-01
BI-211	4.910E+00	6.718E-01	1.812E-01	3.427E-01
PB-212	2.160E+00	2.456E-01	4.402E-02	1.253E-01
BI-214	1.578E+00	2.761E-01	6.761E-02	1.409E-01
PB-214	1.782E+00	2.621E-01	6.597E-02	1.337E-01
RA-224	5.754E+00	1.572E+00	4.732E-01	8.019E-01
RA-226	1.578E+00	2.761E-01	6.761E-02	1.409E-01
AC-228	2.234E+00	4.777E-01	1.528E-01	2.437E-01
RA-228	2.234E+00	4.777E-01	1.528E-01	2.437E-01
TH-228	2.160E+00	2.456E-01	4.402E-02	1.253E-01
TH-229	-1.195E-01	4.733E-01	4.133E-01	2.415E-01
TH-232	2.234E+00	4.777E-01	1.528E-01	2.437E-01
TH-234	1.642E+00	8.111E-01	4.501E-01	4.138E-01
U-235	1.652E-01	1.865E-01	1.573E-01	9.513E-02
NP-237	1.306E+00	3.645E-01	1.170E-01	1.860E-01
U-238	1.642E+00	8.111E-01	4.501E-01	4.138E-01
ANH-511	1.238E-01	7.854E-02	2.712E-02	4.007E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	7.333E-02	3.672E-01	3.239E-01	1.873E-01 NOT IDENT.
NA-22	-3.464E-02	6.820E-02	5.267E-02	3.480E-02 NOT IDENT.
NA-24	2.814E+07	2.328E+08	0.000E+00	1.188E+08 SHORT HLIF
SC-46	1.469E-03	5.595E-02	4.809E-02	2.855E-02 FAIL ABUN
V-48	1.228E-02	1.055E-01	9.066E-02	5.381E-02 NOT IDENT.
CR-51	-1.813E-01	4.282E-01	3.490E-01	2.185E-01 NOT IDENT.

MN-54	2.322E-02	4.376E-02	3.975E-02	2.233E-02	NOT IDENT.
CO-56	-1.277E-03	5.471E-02	4.705E-02	2.791E-02	NOT IDENT.
CO-57	2.181E-04	2.174E-02	1.796E-02	1.109E-02	NOT IDENT.
CO-58	2.500E-02	4.918E-02	4.471E-02	2.509E-02	NOT IDENT.
FE-59	-2.455E-02	1.439E-01	1.182E-01	7.342E-02	NOT IDENT.
CO-60	-3.918E-03	5.210E-02	4.416E-02	2.658E-02	NOT IDENT.
ZN-65	-1.487E-01	1.561E-01	9.569E-02	7.962E-02	NOT IDENT.
SE-75	1.589E-02	4.323E-02	3.796E-02	2.206E-02	NOT IDENT.
SR-85	-7.914E-04	5.125E-02	3.877E-02	2.615E-02	NOT IDENT.
Y-88	2.269E-02	5.169E-02	4.683E-02	2.637E-02	NOT IDENT.
Y-91	2.170E+01	3.563E+01	3.117E+01	1.818E+01	NOT IDENT.
NB-94	3.662E-03	4.297E-02	3.607E-02	2.193E-02	NOT IDENT.
NB-95	4.428E-02	6.042E-02	5.314E-02	3.082E-02	NOT IDENT.
NB-95M	-2.461E-02	1.250E-01	9.581E-02	6.378E-02	NOT IDENT.
ZR-95	2.462E-02	1.071E-01	9.040E-02	5.465E-02	NOT IDENT.
MO-99	-2.596E+01	5.495E+01	4.301E+01	2.803E+01	NOT IDENT.
TC-99M	5.369E+21	2.060E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-3.204E-02	4.502E-02	3.612E-02	2.297E-02	FAIL ABUN
RH-106	2.428E-01	3.890E-01	3.461E-01	1.984E-01	NOT IDENT.
RU-106	2.428E-01	3.882E-01	3.461E-01	1.981E-01	NOT IDENT.
AG-108M	-2.639E-02	3.043E-02	2.472E-02	1.553E-02	NOT IDENT.
AG-110M	-1.706E-02	4.479E-02	3.612E-02	2.285E-02	NOT IDENT.
SN-113	3.815E-02	5.331E-02	4.634E-02	2.720E-02	NOT IDENT.
CD-115	-1.044E+01	5.875E+01	0.000E+00	2.997E+01	SHORT HLIF
SN-117M	1.599E-02	6.229E-02	5.595E-02	3.178E-02	NOT IDENT.
TE-123M	1.121E-02	2.605E-02	2.355E-02	1.329E-02	NOT IDENT.
SB-124	-2.376E-02	1.090E-01	8.611E-02	5.564E-02	NOT IDENT.
SB-125	-1.106E-01	9.559E-02	7.582E-02	4.877E-02	FAIL ABUN
TE-125M	1.622E+00	8.032E+00	6.821E+00	4.098E+00	NOT IDENT.
I-126	1.078E-03	3.659E-01	3.066E-01	1.867E-01	NOT IDENT.
SB-126	6.579E-02	2.822E-01	2.111E-01	1.440E-01	NOT IDENT.
SB-127	3.032E+00	3.764E+00	3.385E+00	1.920E+00	NOT IDENT.
I-131	6.978E-02	1.860E-01	1.591E-01	9.488E-02	NOT IDENT.
TE-132	-2.246E-01	1.911E+00	1.653E+00	9.750E-01	NOT IDENT.
BA-133	-1.059E-02	4.804E-02	3.472E-02	2.451E-02	FAIL ABUN
I-133	1.513E+04	3.292E+05	0.000E+00	1.680E+05	SHORT HLIF
CS-134	2.723E-01	9.208E-02	5.935E-02	4.698E-02	FAIL ABUN
CS-135	1.507E-01	1.682E-01	1.377E-01	8.580E-02	NOT IDENT.
I-135	6.244E+20	1.810E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-4.294E-02	1.877E-01	1.538E-01	9.578E-02	NOT IDENT.
BA-137M	-9.062E-03	4.779E-02	3.953E-02	2.438E-02	NOT IDENT.
CS-137	-9.573E-03	5.048E-02	4.176E-02	2.576E-02	NOT IDENT.
CE-139	-8.679E-03	2.647E-02	2.337E-02	1.351E-02	NOT IDENT.
BA-140	2.179E-01	4.241E-01	3.736E-01	2.164E-01	NOT IDENT.
LA-140	-1.632E-01	1.638E-01	1.118E-01	8.356E-02	FAIL ABUN
CE-141	-1.272E-02	6.286E-02	5.086E-02	3.207E-02	NOT IDENT.
CE-143	5.509E+03	2.239E+03	0.000E+00	1.142E+03	SHORT HLIF
CE-144	-8.141E-02	1.718E-01	1.375E-01	8.764E-02	NOT IDENT.
PM-144	-3.918E-02	4.264E-02	3.182E-02	2.175E-02	NOT IDENT.
PR-144	-2.952E+00	3.198E+00	2.385E+00	1.632E+00	NOT IDENT.
PM-146	3.693E-02	4.759E-02	4.373E-02	2.428E-02	NOT IDENT.
ND-147	2.585E-01	9.080E-01	7.974E-01	4.633E-01	FAIL ABUN
PM-149	2.080E+02	4.119E+02	0.000E+00	2.101E+02	SHORT HLIF
EU-152	6.527E-02	1.032E-01	9.014E-02	5.264E-02	FAIL ABUN
GD-153	-9.687E-02	6.338E-02	4.923E-02	3.233E-02	NOT IDENT.
EU-154	-1.284E-01	1.949E-01	1.474E-01	9.945E-02	NOT IDENT.
EU-155	2.430E-02	7.854E-02	6.727E-02	4.007E-02	FAIL ABUN
TB-160	-1.008E-01	1.895E-01	1.532E-01	9.667E-02	FAIL ABUN
HO-166M	2.888E-02	7.951E-02	6.842E-02	4.057E-02	FAIL ABUN
TA-182	-3.084E-01	3.685E-01	2.820E-01	1.880E-01	FAIL ABUN
IR-192	1.344E-02	3.721E-02	3.217E-02	1.899E-02	FAIL ABUN
HG-203	-3.290E-03	4.242E-02	3.215E-02	2.164E-02	NOT IDENT.
BI-207	1.400E-02	7.229E-02	6.203E-02	3.688E-02	FAIL ABUN
PB-211	2.903E-01	8.239E-01	6.870E-01	4.204E-01	NOT IDENT.
BI-212	2.939E+00	1.394E+00	8.135E-01	7.115E-01	FAIL ABUN
RN-219	-7.986E-02	4.841E-01	3.924E-01	2.470E-01	FAIL ABUN
RA-223	-2.521E-01	7.335E-01	5.302E-01	3.743E-01	FAIL ABUN
AC-227	9.552E-02	2.412E-01	2.124E-01	1.230E-01	FAIL ABUN
TH-227	9.552E-02	2.412E-01	2.124E-01	1.231E-01	FAIL ABUN
PA-231	-1.239E+00	1.399E+00	1.109E+00	7.140E-01	NOT IDENT.
TH-231	-2.521E-01	7.335E-01	5.302E-01	3.743E-01	FAIL ABUN
PA-233	7.324E-03	6.531E-02	5.559E-02	3.332E-02	FAIL ABUN
PA-234	-1.978E-01	4.209E-01	3.395E-01	2.148E-01	NOT IDENT.
PA-234M	8.642E+00	6.224E+00	5.947E+00	3.176E+00	NOT IDENT.
NP-239	-2.710E-01	3.115E-01	2.461E-01	1.589E-01	FAIL ABUN
AM-241	-1.509E-02	5.409E-02	4.372E-02	2.760E-02	NOT IDENT.
CM-247	8.906E-03	4.390E-02	3.666E-02	2.240E-02	FAIL ABUN
CF-249	-1.317E-02	4.674E-02	3.768E-02	2.385E-02	NOT IDENT.

CF-251

-1.253E-02

1.092E-01

9.510E-02

5.573E-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	201.1112
49.72	195.4614
57.36	0.0000
59.54	311.6495
63.29	343.4507
63.29	343.4507
64.28	371.1981
67.75	346.5794
69.67	332.1692
70.83	368.6766
72.81	353.8811
72.87	353.9574
72.87	353.9574
74.82	377.1224
74.82	377.1224
74.82	377.1224
74.97	377.3262
77.11	380.1793
77.11	380.1793
77.11	380.1793
79.69	311.5432
79.80	273.0476
80.12	273.3437
80.19	273.4081
80.57	277.9085
81.00	278.3093
81.07	278.3747
81.07	278.3747
83.79	258.5341
83.79	258.5341
85.43	259.9135
86.48	260.7886
86.55	260.8469
86.79	261.0445
86.94	261.1725
87.57	261.6938
88.03	263.4905
88.47	263.8538
89.96	260.8063
91.11	261.7315
92.59	262.9117
92.59	262.9117
93.35	263.5149
94.67	244.3180
94.87	238.6780
94.87	238.6780
95.86	220.5163
97.43	282.0163
98.44	212.6796
99.53	192.4517
100.11	211.4971
103.18	214.4407
103.37	214.5541
105.31	207.8806
106.12	174.7371
109.28	218.0247
111.00	232.6348
111.76	227.4124
116.30	195.5677
117.23	205.2503
121.12	199.0899
121.78	205.2422
122.06	205.3826
123.07	204.7163
131.20	206.6876
133.52	207.3830
136.00	219.3909

136.47	193.0737
140.51	203.3197
140.51	0.0000
143.76	193.7125
144.24	218.4558
144.24	218.4558
145.44	215.3214
152.43	249.6765
153.25	207.5760
154.21	196.2852
154.21	196.2852
156.02	238.9148
158.56	203.0520
159.00	199.0098
162.66	211.4742
163.33	198.1415
165.86	204.2309
176.60	172.5934
177.52	164.1481
181.07	154.2070
184.41	177.6518
185.72	178.0567
193.51	184.9230
197.04	156.2128
205.31	186.6908
210.85	141.2477
215.65	143.2298
222.11	157.7837
227.38	160.9124
228.16	151.6195
228.18	151.6243
235.69	145.1305
235.96	139.4368
235.96	139.4368
238.63	135.6356
238.63	135.6356
240.99	136.0846
242.00	136.2768
244.70	128.0549
252.40	113.7179
252.80	113.7792
256.23	119.2275
256.23	119.2275
260.90	0.0000
264.66	109.5905
268.22	112.5938
269.46	110.2663
269.46	110.2663
271.23	111.5172
273.65	117.9045
276.40	106.1771
277.37	112.3776
277.60	112.4114
278.00	107.9062
279.20	106.5445
279.54	97.4531
280.46	79.2711
283.69	120.3959
284.31	106.1921
285.41	105.3114
285.90	0.0000
287.50	115.8278
293.27	0.0000
295.22	107.0692
295.96	107.1618
298.57	84.1229
299.98	99.8633
299.98	99.8633
300.09	99.8770
300.09	99.8770
300.13	99.8809
301.36	120.3407
302.85	95.4987
304.50	111.6802
304.50	111.6802
304.85	118.0003
308.46	88.2349
311.90	98.0689

316.51	94.3344
319.41	107.3968
320.08	104.2845
323.87	102.5801
323.87	102.5801
328.76	95.0666
333.37	93.9172
334.37	102.1212
334.37	102.1212
338.28	108.5103
338.28	108.5103
338.32	108.5144
338.32	108.5144
338.32	108.5144
340.48	107.6730
340.55	107.6810
344.28	86.2600
351.06	95.6554
351.93	95.7404
356.01	84.5326
364.49	76.8894
366.42	83.7341
383.85	94.2278
388.16	95.7476
388.63	95.7903
391.69	80.0517
400.66	84.1701
401.81	93.4915
402.40	86.6135
404.85	78.7025
410.95	86.1135
414.70	78.8104
423.72	88.2584
427.09	70.8118
427.87	84.1441
433.94	75.6772
453.88	64.2668
463.37	64.7598
468.07	61.5234
473.00	61.5796
476.78	52.5434
477.60	59.0332
487.02	58.5347
492.35	0.0000
497.08	59.9189
511.00	59.5960
514.00	72.8092
527.90	0.0000
529.87	0.0000
531.02	59.5024
537.26	57.8375
546.56	0.0000
563.25	61.8234
569.33	64.0479
569.50	64.0538
569.70	64.0617
583.19	51.7080
600.60	48.2695
602.73	61.7620
604.72	74.2064
609.32	53.5920
609.32	53.5920
610.33	59.8992
614.28	53.5557
618.01	50.8331
621.93	46.8802
621.93	46.8802
633.25	46.1810
635.95	55.5079
636.99	53.4854
645.85	51.7029
657.76	58.3157
661.66	60.5364
661.66	60.5364
664.57	0.0000
666.33	56.5148
666.50	54.4280
677.62	63.2043

685.70	37.0390
695.00	36.1696
696.49	58.5583
696.51	58.5600
697.00	54.3151
702.65	53.4180
706.68	64.2444
711.68	49.3888
720.70	50.0647
721.93	0.0000
722.78	70.8591
722.91	70.8651
723.31	58.7795
724.19	44.9693
727.33	47.6443
733.00	45.1826
735.93	43.5132
739.50	53.4038
747.24	40.4902
752.31	53.7642
753.82	35.1387
756.73	52.7886
763.94	67.3349
765.81	49.7214
766.42	55.2628
777.92	42.2467
778.90	45.6045
783.70	42.3696
785.37	37.9418
795.86	31.4103
801.95	33.0045
810.29	42.4790
810.76	34.3531
815.77	46.2175
818.51	36.2969
832.01	50.2332
834.85	34.7529
836.80	0.0000
846.77	45.9863
856.80	38.5010
860.56	40.1108
871.09	48.3666
873.19	37.2412
875.33	0.0000
879.36	44.8148
880.51	39.2335
883.24	37.4111
884.68	40.2432
889.28	44.0774
898.04	48.0167
911.20	39.7739
911.20	39.7739
911.20	39.7739
926.50	27.6463
937.49	44.0605
944.13	33.6191
946.00	48.0652
949.00	41.3896
962.29	29.0383
964.08	29.0596
966.15	29.0845
968.97	30.7366
968.97	30.7366
968.97	30.7366
983.53	30.2704
996.26	53.9849
1001.03	28.5200
1004.73	39.3965
1037.84	44.9055
1038.76	0.0000
1048.07	40.0762
1050.41	38.1058
1050.41	38.1058
1063.66	37.2927
1085.87	32.5250
1099.45	45.9690
1112.07	38.7720
1115.54	58.2327

1120.29	32.5975
1120.29	32.5975
1120.55	32.6006
1121.30	29.1772
1131.51	0.0000
1173.23	61.8924
1177.93	36.7756
1189.05	45.3558
1204.77	48.7829
1221.41	87.4533
1231.02	52.4262
1235.36	75.0039
1238.28	58.9880
1260.41	0.0000
1271.85	30.3639
1274.44	47.7533
1274.54	45.5848
1291.59	37.1045
1298.22	0.0000
1312.11	27.4622
1332.49	24.8741
1365.19	24.1941
1368.63	0.0000
1384.29	15.9112
1408.01	16.9666
1457.56	0.0000
1460.82	14.7675
1489.16	11.5786
1505.03	21.3215
1596.21	22.8475
1620.50	14.9957
1678.03	0.0000
1690.97	10.1782
1764.49	3.5530
1764.49	3.5530
1770.23	31.1316
1771.35	14.5321
1791.20	0.0000
1836.06	7.3777

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247337004

Total Uranium Activity	4.9601E+00	ug/g
Total Uranium Counting Unc.	2.4147E+00	ug/g
Total Uranium Tpu	1.2320E-06	ug/g
Total Uranium Mda	1.3409E+00	ug/g

```

*****
*
*               GEL Laboratories LLC
*               2040 SAVAGE ROAD
*               CHARLESTON ,SC 29417
*               GROSS GAMMA REPORT
*
*****
*
*  BATCH ID      : 955027          SAMPLE ID : G247337004
*  ANALYST       : MXR1            DETECTOR  : GAM21
*  SAMPLE DATE   : 12-FEB-2010 12:00:00.00 COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE : 4-MAR-2010 10:18:11.60 SAMPLE ALQT: 123.660 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.158E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.473E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.771E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.824E+00

```

VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 12:20:10.76

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337005.CNF;1
Sample date   : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:19:02.
Sample ID     : G247337005 Sample quantity : 1.37790E+02 GRAM
Detector name : GAM20 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:33.73 0.5%
Energy tolerance: 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 5.00000
Batch ID       : 955027 Detector SN# :
Matrix Spike ID : LCS ID : 1032-A
*****

```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.56*	150	643	0.91	127.10	123	9	2.08E-02	32.3	
2	3	74.94*	604	503	1.08	149.82	145	15	8.38E-02	7.2	7.35E-01
3	3	77.27*	946	479	1.08	154.47	145	15	1.31E-01	5.1	
4	0	86.57	486	894	1.20	173.05	166	12	6.75E-02	13.1	
5	3	89.99*	181	221	1.14	179.88	178	13	2.51E-02	12.6	1.85E+00
6	3	92.89*	328	530	1.40	185.67	178	13	4.55E-02	14.2	
7	0	185.92*	242	462	1.51	371.46	367	11	3.37E-02	18.9	
8	0	209.00	156	331	0.94	417.57	413	9	2.17E-02	22.4	
9	5	238.67*	1648	201	1.11	476.82	469	20	2.29E-01	2.9	1.62E+00
10	5	241.63	400	305	1.97	482.74	469	20	5.56E-02	13.3	
11	0	270.03	103	288	1.85	539.48	535	11	1.42E-02	33.6	
12	0	277.86	62	275	1.49	555.12	547	11	8.67E-03	53.0	
13	0	295.20	458	286	1.03	589.75	585	11	6.36E-02	8.5	
14	0	300.13	124	220	1.17	599.61	595	10	1.73E-02	24.0	
15	0	328.18	75	138	1.23	655.64	652	7	1.05E-02	28.4	
16	0	338.40	326	187	1.10	676.05	670	10	4.52E-02	9.6	
17	0	351.96*	874	175	1.27	703.16	698	12	1.21E-01	4.6	
18	0	409.39	80	122	1.44	817.90	814	10	1.11E-02	27.9	
19	0	463.07	81	95	1.38	925.16	921	9	1.12E-02	24.4	
20	0	510.93*	134	146	1.47	1020.81	1014	13	1.86E-02	23.6	
21	0	583.50*	518	143	1.45	1165.86	1159	15	7.19E-02	6.7	
22	0	609.53*	623	116	1.30	1217.89	1210	14	8.65E-02	5.5	
23	0	727.63*	155	120	1.64	1453.99	1446	17	2.15E-02	18.2	
24	0	786.93	42	82	1.27	1572.56	1566	13	5.78E-03	48.0	
25	0	795.40	64	75	1.01	1589.50	1585	11	8.82E-03	29.8	
26	0	860.84	78	78	1.69	1720.36	1714	13	1.08E-02	25.9	
27	0	911.54*	390	85	1.35	1821.75	1815	15	5.42E-02	7.3	
28	2	964.81	58	46	2.02	1928.30	1921	23	8.05E-03	29.0	1.34E+00
29	2	969.24*	192	41	1.55	1937.16	1921	23	2.67E-02	9.3	
30	0	1121.17	116	84	1.65	2241.10	2234	12	1.61E-02	18.4	
31	0	1239.72	78	77	1.69	2478.34	2470	16	1.08E-02	28.0	
32	0	1378.10	40	18	1.05	2755.30	2749	12	5.57E-03	26.4	
33	0	1461.27*	1624	38	1.81	2921.80	2914	15	2.26E-01	2.6	
34	0	1591.41	70	7	6.55	3182.39	3174	22	9.77E-03	14.7	
35	0	1730.54	30	14	1.83	3461.05	3453	14	4.20E-03	31.9	
36	0	1764.97*	116	3	2.38	3530.03	3524	13	1.61E-02	10.0	

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



## VMS Nuclide Identification Report V3.1 Generated 4-MAR-2010 12:20:13

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337005.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:19:02
Sample ID        : G247337005 Sample quantity : 137.79 GRAM
Sample type      : SOLID Sample geometry :
Detector name    : GAMMA20 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:33.73 0.5%
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	*	3.313E+01	3.372E+00	4.945E-01	4.312E-02	66.993
CD-109	+	88.03	*	5.345E+00	1.486E+00	1.105E+00	1.045E-01	4.838
SN-126	+	64.28		9.108E-01	6.026E-01	5.878E-01	8.511E-02	1.549
	+	86.94		2.156E+00	1.058E+00	4.525E-01	1.878E-01	4.765
	+	87.57	*	5.187E-01	1.442E-01	1.075E-01	1.011E-02	4.824
HG-203		70.83		-3.575E-01	1.312E+00	1.895E+00	2.956E-01	-0.189
		72.87		9.525E-01	7.870E-01	1.185E+00	1.794E-01	0.804
	+	279.20	*	5.950E-02	6.334E-02	5.985E-02	6.074E-03	0.994
TL-208	+	277.37		5.463E-01	5.835E-01	5.987E-01	8.067E-02	0.912
	+	583.19	*	6.159E-01	1.044E-01	5.224E-02	5.366E-03	11.789
	+	860.56		8.703E-01	4.609E-01	4.090E-01	4.334E-02	2.128
BI-211		72.87		3.561E+00	2.906E+00	4.430E+00	3.498E-01	0.804
	+	351.06	*	4.641E+00	6.144E-01	3.143E-01	3.012E-02	14.766
PB-212	+	74.82		2.643E+00	5.053E-01	4.543E-01	5.740E-02	5.817
	+	77.11		2.406E+00	3.152E-01	2.644E-01	2.187E-02	9.099
	+	238.63	*	1.961E+00	2.386E-01	8.374E-02	8.942E-03	23.424
	+	300.09		2.304E+00	1.138E+00	1.111E+00	1.282E-01	2.074
BI-214	+	609.32	*	1.433E+00	2.244E-01	9.648E-02	1.078E-02	14.854
	+	1120.29		1.357E+00	5.202E-01	4.980E-01	5.413E-02	2.724
	+	1764.49		1.879E+00	4.049E-01	2.194E-01	1.803E-02	8.562
PB-214	+	74.82		4.684E+00	8.559E-01	8.053E-01	9.107E-02	5.817
	+	77.11		4.242E+00	6.566E-01	4.662E-01	5.445E-02	9.099
	+	242.00		2.890E+00	8.338E-01	5.091E-01	5.742E-02	5.676
	+	295.22		1.501E+00	3.112E-01	2.061E-01	2.434E-02	7.285
	+	351.93	*	1.685E+00	2.416E-01	1.091E-01	1.205E-02	15.445
RA-224	+	240.99	*	5.110E+00	1.444E+00	8.973E-01	8.674E-02	5.695
RA-226	+	609.32	*	1.433E+00	2.244E-01	9.648E-02	1.078E-02	14.854
	+	1120.29		1.357E+00	5.202E-01	4.980E-01	5.413E-02	2.724
	+	1764.49		1.879E+00	4.049E-01	2.194E-01	1.803E-02	8.562
AC-228	+	338.32		1.927E+00	8.882E-01	3.627E-01	1.519E-01	5.314
	+	911.20	*	2.217E+00	4.265E-01	2.113E-01	2.656E-02	10.489
	+	968.97		1.880E+00	5.819E-01	3.834E-01	9.484E-02	4.903
RA-228	+	338.32		1.927E+00	8.882E-01	3.627E-01	1.519E-01	5.314
	+	911.20	*	2.217E+00	4.265E-01	2.113E-01	2.656E-02	10.489

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	968.97		1.880E+00	5.819E-01	3.834E-01	9.484E-02	4.903
	+	74.82		2.643E+00	4.361E-01	4.543E-01	3.701E-02	5.817
	+	77.11		2.406E+00	3.152E-01	2.644E-01	2.187E-02	9.099
	+	238.63	*	1.961E+00	2.386E-01	8.374E-02	8.942E-03	23.424
TH-232	+	300.09		2.304E+00	1.796E+00	1.111E+00	6.821E-01	2.074
	+	338.32		1.927E+00	4.124E-01	3.627E-01	3.398E-02	5.314
	+	911.20	*	2.217E+00	4.265E-01	2.113E-01	2.656E-02	10.489
	+	968.97		1.880E+00	5.819E-01	3.834E-01	9.484E-02	4.903
TH-234	+	63.29	*	2.363E+00	1.582E+00	1.559E+00	2.769E-01	1.516
	+	92.59		2.944E+00	1.061E+00	7.743E-01	1.726E-01	3.802
U-235	+	89.96		2.009E+00	7.121E-01	1.131E+00	2.812E-01	1.776
	+	93.35		2.224E+00	8.152E-01	5.831E-01	1.357E-01	3.813
		143.76	*	-1.159E-02	2.040E-01	3.193E-01	5.387E-02	-0.036
		163.33		2.912E-01	4.242E-01	6.833E-01	1.229E-01	0.426
NP-237	+	185.72		1.870E-01	7.250E-02	6.086E-02	5.477E-03	3.072
		205.31		-3.771E-02	5.050E-01	7.471E-01	1.379E-01	-0.050
	+	86.48	*	1.548E+00	5.390E-01	3.258E-01	7.469E-02	4.751
		95.86		-2.874E-01	8.651E-01	1.225E+00	2.953E-01	-0.235
U-238	+	63.29	*	2.363E+00	1.582E+00	1.559E+00	2.769E-01	1.516
	+	92.59		2.944E+00	8.757E-01	7.743E-01	7.067E-02	3.802
ANH-511	+	511.00	*	1.221E-01	5.880E-02	4.312E-02	4.018E-03	2.833

---- 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	*	-9.262E-03	3.119E-01	5.050E-01	4.908E-02	-0.018
NA-22		1274.54	*	-2.779E-02	4.362E-02	6.565E-02	5.438E-03	-0.423
NA-24		1368.63	*	1.951E+01	4.362E-02	Half-Life too short		
SC-46		889.28	*	-1.158E-02	3.576E-02	5.724E-02	5.707E-03	-0.202
V-48	+	1120.55		2.388E-01	9.015E-02	1.323E-01	1.131E-02	1.805
		944.13		7.431E-03	1.085E+00	1.787E+00	1.743E-01	0.004
		983.53	*	-8.308E-02	8.563E-02	1.274E-01	1.218E-02	-0.652
		1312.11		-1.223E-02	8.380E-02	1.323E-01	1.103E-02	-0.092
CR-51		320.08	*	-2.372E-02	3.739E-01	6.174E-01	6.186E-02	-0.038
MN-54		834.85	*	3.385E-03	3.715E-02	6.203E-02	6.266E-03	0.055
CO-56		846.77	*	-2.857E-02	3.556E-02	5.433E-02	5.476E-03	-0.526
		1037.84		-3.910E-02	3.269E-01	5.289E-01	5.099E-02	-0.074
	+	1238.28		2.650E-01	1.502E-01	1.706E-01	1.443E-02	1.554
		1771.35		-8.512E-01	3.161E-01	2.860E-01	2.345E-02	-2.977
CO-57		122.06	*	3.778E-04	2.385E-02	3.835E-02	3.201E-03	0.010
		136.47		-1.358E-01	2.016E-01	3.128E-01	2.829E-02	-0.434
CO-58		810.76	*	1.342E-02	3.879E-02	6.618E-02	6.720E-03	0.203
FE-59		1099.45	*	9.703E-02	9.414E-02	1.665E-01	1.570E-02	0.583
		1291.59		9.850E-02	1.189E-01	2.081E-01	1.979E-02	0.473
CO-60		1173.23		-1.870E-02	4.341E-02	6.758E-02	5.433E-03	-0.277
		1332.49	*	6.632E-03	3.826E-02	6.268E-02	5.251E-03	0.106
ZN-65		1115.54	*	-8.076E-02	1.060E-01	1.345E-01	1.157E-02	-0.601
SE-75		121.12		4.345E-04	1.263E-01	2.030E-01	2.208E-02	0.002

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

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		136.00		-2.476E-02	3.900E-02	6.063E-02	5.124E-03	-0.408
		264.66	*	4.479E-02	4.518E-02	7.377E-02	7.304E-03	0.607
		279.54		1.174E-01	1.171E-01	1.822E-01	1.866E-02	0.644
		400.66		1.052E-01	2.280E-01	3.842E-01	4.206E-02	0.274
SR-85		514.00	*	6.844E-02	4.039E-02	6.535E-02	6.103E-03	1.047
Y-88		898.04		-2.696E-02	4.175E-02	6.500E-02	6.485E-03	-0.415
		1836.06	*	8.555E-03	3.028E-02	5.236E-02	4.225E-03	0.163
Y-91		1204.77	*	5.845E+00	2.403E+01	3.964E+01	3.219E+00	0.147
NB-94		702.65	*	-5.840E-03	3.188E-02	5.278E-02	5.340E-03	-0.111
		871.09		-1.571E-02	3.260E-02	5.163E-02	5.174E-03	-0.304
NB-95		765.81	*	-1.688E-02	4.343E-02	7.043E-02	7.158E-03	-0.240
NB-95M		235.69	*	8.959E-02	1.302E-01	2.000E-01	2.152E-02	0.448
ZR-95		724.19		-5.398E-02	1.076E-01	1.486E-01	1.600E-02	-0.363
		756.73	*	4.535E-02	7.440E-02	1.293E-01	1.414E-02	0.351
MO-99		140.51		-1.784E+01	7.419E+01	1.159E+02	2.743E+01	-0.154
		181.07		-3.306E+01	6.259E+01	8.444E+01	1.599E+01	-0.392
		366.42		-4.571E+01	2.812E+02	4.579E+02	4.071E+01	-0.100
		739.50	*	-8.186E+00	3.803E+01	6.247E+01	1.040E+01	-0.131
		777.92		-1.345E+02	1.248E+02	1.903E+02	1.933E+01	-0.707
TC-99M		140.51	*	-5.449E+15	1.248E+02	Half-Life	too short	
RU-103		497.08	*	-2.190E-03	3.921E-02	6.320E-02	9.067E-03	-0.035
	+	610.33		1.610E+01	3.262E+00	3.155E+00	5.372E-01	5.104
RH-106		621.93	*	2.626E-03	3.253E-01	5.197E-01	7.339E-02	0.005
		1050.41		-1.337E+00	2.227E+00	3.405E+00	3.108E-01	-0.393
RU-106		621.93	*	2.626E-03	3.253E-01	5.197E-01	5.144E-02	0.005
		1050.41		-1.337E+00	2.227E+00	3.405E+00	3.108E-01	-0.393
AG-108M		433.94	*	-1.167E-02	2.605E-02	4.111E-02	3.705E-03	-0.284
		614.28		-9.407E-03	3.717E-02	5.025E-02	5.083E-03	-0.187
		722.91		-2.186E-02	4.081E-02	5.604E-02	5.816E-03	-0.390
AG-110M		657.76	*	-3.518E-03	3.071E-02	5.125E-02	5.251E-03	-0.069
		677.62		-2.870E-01	2.909E-01	4.500E-01	4.629E-02	-0.638
		706.68		9.455E-02	1.958E-01	3.390E-01	3.503E-02	0.279
		763.94		-1.903E-01	1.577E-01	2.374E-01	2.460E-02	-0.802
		884.68		-1.051E-02	4.416E-02	7.135E-02	7.294E-03	-0.147
		937.49		-8.625E-02	1.053E-01	1.599E-01	1.609E-02	-0.540
		1384.29		4.429E-02	1.485E-01	2.266E-01	1.964E-02	0.195
		1505.03		-2.104E-01	2.369E-01	3.417E-01	2.897E-02	-0.616
SN-113		391.69	*	-2.182E-02	4.238E-02	6.721E-02	5.797E-03	-0.325
CD-115		260.90		-4.347E-04	4.238E-02	Half-Life	too short	
		492.35		8.828E-05	4.238E-02	Half-Life	too short	
		527.90	*	1.185E-06	4.238E-02	Half-Life	too short	
SN-117M		156.02		-1.941E+00	2.833E+00	4.367E+00	3.754E-01	-0.445
		158.56	*	4.717E-02	6.491E-02	1.064E-01	9.179E-03	0.444
TE-123M		159.00	*	-8.688E-03	2.821E-02	4.422E-02	3.842E-03	-0.196
SB-124		602.73		2.673E-02	4.165E-02	6.209E-02	6.097E-03	0.431
		645.85		1.517E-01	4.523E-01	7.805E-01	8.130E-02	0.194
		722.78		-2.321E-01	4.333E-01	5.950E-01	6.135E-02	-0.390
		1690.97	*	1.544E-02	6.467E-02	1.117E-01	9.729E-03	0.138
SB-125		427.87	*	3.378E-02	8.117E-02	1.362E-01	1.204E-02	0.248

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

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	463.37		6.548E-01	3.255E-01	4.953E-01	4.756E-02	1.322
		600.60		-5.727E-02	1.714E-01	2.670E-01	2.770E-02	-0.214
		635.95		-1.302E-01	2.549E-01	4.068E-01	4.297E-02	-0.320
TE-125M		109.28	*	2.912E+00	9.494E+00	1.549E+01	1.610E+00	0.188
I-126		388.63		9.357E-02	2.022E-01	3.407E-01	2.869E-02	0.275
		666.33	*	-4.502E-03	2.695E-01	4.527E-01	4.548E-02	-0.010
		753.82		3.483E-01	2.246E+00	3.792E+00	3.853E-01	0.092
SB-126		414.70		2.783E-02	1.008E-01	1.472E-01	1.262E-02	0.189
		666.50		6.635E-03	9.423E-02	1.592E-01	1.600E-02	0.042
		695.00		2.120E-02	9.701E-02	1.651E-01	1.669E-02	0.128
		697.00		1.127E-01	3.323E-01	5.699E-01	5.761E-02	0.198
		720.70	*	2.059E-01	1.983E-01	3.179E-01	3.223E-02	0.648
		856.80		5.328E-01	5.766E-01	9.236E-01	9.289E-02	0.577
SB-127		252.40		3.913E+00	9.477E+00	1.594E+01	6.729E+00	0.246
		473.00		5.633E-02	3.649E+00	5.930E+00	8.544E-01	0.009
		685.70	*	-6.067E-01	2.774E+00	4.578E+00	6.373E-01	-0.133
		783.70		3.322E+00	9.460E+00	1.416E+01	2.094E+00	0.235
I-131		80.19		2.630E+00	6.699E+00	9.078E+00	7.871E-01	0.290
		284.31		-4.611E-01	2.082E+00	3.432E+00	3.551E-01	-0.134
		364.49	*	7.280E-02	1.555E-01	2.630E-01	2.477E-02	0.277
		636.99		-1.873E+00	2.220E+00	3.440E+00	3.584E-01	-0.545
TE-132		49.72		2.441E+00	3.053E+01	5.060E+01	6.047E+00	0.048
		111.76		-2.320E+01	8.774E+01	1.399E+02	1.728E+01	-0.166
		116.30		-9.589E+00	7.735E+01	1.239E+02	1.525E+01	-0.077
		228.16	*	-6.572E-01	1.883E+00	3.116E+00	5.409E-01	-0.211
BA-133		81.00		2.172E-02	1.046E-01	1.217E-01	1.892E-02	0.178
	+	276.40		5.054E-01	5.408E-01	5.998E-01	8.970E-02	0.843
		302.85		3.821E-03	1.472E-01	2.155E-01	2.988E-02	0.018
		356.01	*	-6.217E-03	3.964E-02	5.653E-02	7.499E-03	-0.110
		383.85		-3.848E-02	2.777E-01	4.522E-01	5.590E-02	-0.085
I-133		529.87	*	1.059E-01	2.777E-01	Half-Life	too short	
		875.33		7.170E-02	2.777E-01	Half-Life	too short	
		1298.22		1.029E+01	2.777E-01	Half-Life	too short	
CS-134		563.25		3.379E-01	3.467E-01	5.945E-01	5.768E-02	0.568
		569.33		3.265E-02	1.828E-01	2.975E-01	2.905E-02	0.110
		604.72		-2.310E-02	3.719E-02	4.854E-02	4.779E-03	-0.476
	+	795.86	*	1.097E-01	6.624E-02	8.992E-02	9.175E-03	1.219
		801.95		-6.966E-03	4.410E-01	6.603E-01	6.726E-02	-0.011
		1365.19		2.500E-01	1.062E+00	1.832E+00	1.616E-01	0.137
CS-135		268.22	*	3.998E-02	1.690E-01	2.522E-01	2.795E-02	0.159
I-135		546.56		-7.722E+14	1.690E-01	Half-Life	too short	
		836.80		1.338E+15	1.690E-01	Half-Life	too short	
		1038.76		3.289E+15	1.690E-01	Half-Life	too short	
		1131.51		-7.576E+14	1.690E-01	Half-Life	too short	
		1260.41	*	2.560E+14	1.690E-01	Half-Life	too short	
		1457.56		4.630E+16	1.690E-01	Half-Life	too short	
		1678.03		1.231E+15	1.690E-01	Half-Life	too short	
		1791.20		-8.243E+14	1.690E-01	Half-Life	too short	
CS-136		153.25		1.201E+00	1.086E+00	1.796E+00	1.836E-01	0.669

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

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		176.60		5.908E-01	6.329E-01	1.039E+00	1.012E-01	0.569
		273.65		-8.387E-01	9.756E-01	9.284E-01	9.813E-02	-0.903
		340.55		6.782E-01	2.087E-01	3.513E-01	3.387E-02	1.931
		818.51		1.300E-02	7.929E-02	1.337E-01	1.355E-02	0.097
		1048.07	*	-5.630E-02	1.173E-01	1.818E-01	1.726E-02	-0.310
		1235.36		4.886E-01	8.394E-01	1.243E+00	1.424E-01	0.393
BA-137M		661.66	*	-7.168E-04	3.262E-02	5.480E-02	5.500E-03	-0.013
CS-137		661.66	*	-7.572E-04	3.446E-02	5.789E-02	5.818E-03	-0.013
CE-139		165.86	*	-1.439E-02	2.895E-02	4.484E-02	3.915E-03	-0.321
BA-140		162.66		8.192E-01	1.016E+00	1.652E+00	1.530E-01	0.496
		304.85		1.547E+00	1.809E+00	2.720E+00	8.059E-01	0.569
		423.72		1.266E+00	2.263E+00	3.772E+00	1.241E+00	0.336
		537.26	*	-2.595E-01	3.302E-01	4.788E-01	1.635E-01	-0.542
LA-140	+	328.76		7.175E-01	4.133E-01	6.802E-01	6.770E-02	1.055
		487.02		-1.258E-02	1.625E-01	2.618E-01	2.528E-02	-0.048
		815.77		-2.222E-01	3.665E-01	5.739E-01	6.314E-02	-0.387
		1596.21	*	-4.376E-02	1.264E-01	1.683E-01	1.421E-02	-0.260
CE-141		145.44	*	4.767E-02	6.698E-02	1.098E-01	9.479E-03	0.434
CE-143		57.36		-2.537E-03	6.698E-02	Half-Life	too short	
		293.27	*	7.045E-03	6.698E-02	Half-Life	too short	
		664.57		-1.522E-03	6.698E-02	Half-Life	too short	
		721.93		1.023E-02	6.698E-02	Half-Life	too short	
CE-144		80.12		9.403E-01	2.418E+00	3.276E+00	2.807E-01	0.287
		133.52	*	-2.828E-02	1.897E-01	3.017E-01	4.571E-02	-0.094
PM-144		476.78		-1.049E-02	5.978E-02	9.575E-02	9.375E-03	-0.110
		618.01		-4.566E-03	3.190E-02	5.037E-02	5.085E-03	-0.091
		696.49	*	1.842E-02	3.272E-02	5.688E-02	5.752E-03	0.324
PR-144		696.51	*	1.364E+00	2.453E+00	4.263E+00	4.309E-01	0.320
		1489.16		4.697E+00	9.532E+00	1.712E+01	1.451E+00	0.274
PM-146		453.88	*	2.513E-02	3.710E-02	6.311E-02	6.830E-03	0.398
		633.25		-1.978E-01	1.386E+00	2.181E+00	8.399E-01	-0.091
		735.93		-1.866E-02	1.344E-01	2.093E-01	5.971E-02	-0.089
		747.24		-7.855E-02	9.089E-02	1.401E-01	2.177E-02	-0.561
ND-147	+	91.11		8.814E-01	2.395E-01	6.245E-01	6.182E-02	1.411
		319.41		3.316E-01	3.992E+00	6.647E+00	6.397E-01	0.050
		531.02	*	-2.494E-02	7.042E-01	1.132E+00	1.749E-01	-0.022
PM-149		285.90	*	1.192E-04	7.042E-01	Half-Life	too short	
EU-152		121.78		-2.431E-02	6.825E-02	1.080E-01	1.043E-02	-0.225
		244.70		3.870E-01	3.166E-01	5.008E-01	4.859E-02	0.773
		344.28	*	-7.310E-02	9.050E-02	1.421E-01	1.386E-02	-0.514
		778.90		-2.038E-02	2.623E-01	4.231E-01	4.298E-02	-0.048
	+	964.08		6.107E-01	3.591E-01	5.280E-01	5.101E-02	1.157
		1085.87		1.340E-01	3.775E-01	6.347E-01	5.619E-02	0.211
		1112.07		-9.186E-02	3.142E-01	4.984E-01	4.301E-02	-0.184
		1408.01		-5.243E-02	1.786E-01	2.897E-01	2.447E-02	-0.181
GD-153		69.67		3.158E-01	1.467E+00	2.306E+00	1.764E-01	0.137
		97.43	*	-9.694E-02	8.640E-02	1.174E-01	1.041E-02	-0.826
		103.18		-5.714E-03	1.029E-01	1.661E-01	1.436E-02	-0.034
EU-154		123.07		2.925E-03	4.828E-02	7.774E-02	8.660E-03	0.038

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		723.31		-1.149E-01	1.874E-01	2.550E-01	2.778E-02	-0.451
		873.19		1.879E-01	2.540E-01	4.452E-01	5.762E-02	0.422
		996.26		4.407E-02	3.202E-01	5.317E-01	9.524E-02	0.083
		1004.73		-2.160E-02	2.053E-01	3.334E-01	4.084E-02	-0.065
		1274.44	*	-6.470E-02	1.223E-01	1.861E-01	2.069E-02	-0.348
EU-155	+	86.55		6.301E-01	1.754E-01	1.732E-01	1.622E-02	3.638
		105.31	*	-4.139E-02	9.918E-02	1.576E-01	1.369E-02	-0.263
TB-160	+	86.79		1.747E+00	4.860E-01	4.830E-01	4.498E-02	3.617
		197.04		2.525E-01	5.350E-01	9.194E-01	8.416E-02	0.275
		215.65		8.936E-01	7.030E-01	1.238E+00	1.162E-01	0.722
		298.57		2.144E-01	1.700E-01	2.047E-01	2.012E-02	1.047
		879.36	*	-2.843E-02	1.400E-01	2.274E-01	2.274E-02	-0.125
		962.29		2.627E-01	6.033E-01	8.997E-01	8.701E-02	0.292
	+	966.15		4.464E-01	2.626E-01	4.186E-01	4.040E-02	1.067
		1177.93		-2.708E-02	3.713E-01	5.980E-01	4.815E-02	-0.045
		1271.85		1.904E-01	7.321E-01	1.210E+00	1.000E-01	0.157
HO-166M		80.57		1.919E-02	3.032E-01	3.495E-01	3.010E-02	0.055
		184.41		9.406E-02	3.827E-02	6.380E-02	5.731E-03	1.474
		280.46		3.661E-02	8.590E-02	1.296E-01	1.290E-02	0.282
		410.95		4.439E-01	2.562E-01	4.158E-01	3.548E-02	1.068
		711.68	*	-4.135E-02	5.277E-02	8.259E-02	8.367E-03	-0.501
		752.31		-2.328E-02	2.570E-01	4.261E-01	4.330E-02	-0.055
		810.29		7.575E-03	5.471E-02	9.195E-02	9.320E-03	0.082
TA-182		67.75		1.360E-03	1.014E-01	1.486E-01	1.117E-02	0.009
		100.11		1.372E-02	1.684E-01	2.726E-01	2.387E-02	0.050
		152.43		5.693E-01	3.415E-01	5.762E-01	4.928E-02	0.988
		222.11		6.231E-02	3.228E-01	5.482E-01	5.189E-02	0.114
	+	1121.30		6.545E-01	2.471E-01	3.632E-01	3.104E-02	1.802
		1189.05		-1.659E-01	3.209E-01	4.955E-01	4.004E-02	-0.335
		1221.41	*	1.850E-02	1.944E-01	3.168E-01	2.585E-02	0.058
		1231.02		-1.811E-01	5.121E-01	7.508E-01	6.143E-02	-0.241
IR-192	+	295.96		1.161E+00	2.289E-01	3.043E-01	3.014E-02	3.816
		308.46		-5.311E-02	9.207E-02	1.479E-01	1.446E-02	-0.359
		316.51	*	-2.921E-02	3.254E-02	5.101E-02	4.933E-03	-0.573
		468.07		2.800E-02	7.336E-02	1.080E-01	1.038E-02	0.259
BI-207		72.81		1.666E-01	1.661E-01	2.516E-01	1.985E-02	0.662
	+	74.97		7.619E-01	1.254E-01	2.020E-01	1.631E-02	3.772
		569.70		1.625E-02	2.776E-02	4.655E-02	4.497E-03	0.349
		1063.66	*	1.671E-03	5.283E-02	8.648E-02	7.808E-03	0.019
		1770.23		1.123E-01	3.354E-01	5.294E-01	4.343E-02	0.212
PB-210		46.54	*	-6.753E-01	1.925E+00	3.140E+00	2.885E-01	-0.215
PB-211		404.85	*	1.074E-01	7.339E-01	1.064E+00	5.147E-01	0.101
		427.09		-5.075E-01	1.395E+00	2.188E+00	1.013E+00	-0.232
		832.01		-1.410E-01	9.675E-01	1.583E+00	8.250E-01	-0.089
BI-212	+	727.33	*	2.806E+00	1.090E+00	1.215E+00	1.647E-01	2.310
		785.37		-7.708E-01	3.775E+00	5.350E+00	5.434E-01	-0.144
		1620.50		2.588E+00	1.906E+00	3.773E+00	3.177E-01	0.686
RN-219	+	271.23		5.376E-01	3.660E-01	4.158E-01	4.724E-02	1.293
		401.81	*	1.318E-01	3.639E-01	6.090E-01	8.998E-02	0.216

---- 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		4.762E-02	2.366E-01	2.754E-01	2.387E-02	0.173
		83.79		1.600E-01	1.211E-01	1.842E-01	1.651E-02	0.869
		94.87		1.035E+00	4.355E-01	6.851E-01	6.163E-02	1.510
		144.24		2.247E-01	6.767E-01	1.075E+00	1.019E-01	0.209
		154.21		1.149E-02	3.806E-01	6.066E-01	5.705E-02	0.019
	+	269.46		4.177E-01	2.835E-01	3.287E-01	3.303E-02	1.271
		323.87	*	5.017E-01	6.593E-01	1.005E+00	1.791E-01	0.499
	+	338.28		7.648E+00	1.759E+00	2.377E+00	2.999E-01	3.218
		79.69		5.752E-01	1.122E+00	1.664E+00	2.860E-01	0.346
		235.96		2.971E-01	1.582E-01	2.526E-01	2.825E-02	1.176
AC-227		256.23	*	-1.671E-01	2.416E-01	3.904E-01	5.045E-02	-0.428
	+	299.98		2.534E+00	1.265E+00	1.613E+00	2.184E-01	1.572
		304.50		1.158E+00	1.644E+00	2.507E+00	4.302E-01	0.462
		334.37		-4.559E-01	1.789E+00	2.546E+00	4.086E-01	-0.179
		79.80		7.240E-01	1.581E+00	2.142E+00	4.657E-01	0.338
TH-227		235.96		2.971E-01	1.579E-01	2.526E-01	2.689E-02	1.176
		256.23	*	-1.671E-01	2.418E-01	3.904E-01	5.615E-02	-0.428
	+	299.98		2.534E+00	1.265E+00	1.613E+00	2.184E-01	1.572
		304.50		1.158E+00	1.644E+00	2.507E+00	4.302E-01	0.462
		334.37		-4.559E-01	1.789E+00	2.546E+00	4.086E-01	-0.179
TH-229	+	85.43		1.305E+00	3.631E-01	3.203E-01	2.931E-02	4.076
		88.47		6.412E-01	1.692E-01	2.229E-01	2.100E-02	2.877
		193.51	*	-1.167E-01	4.744E-01	7.961E-01	7.249E-02	-0.147
		210.85		1.714E+00	9.362E-01	1.504E+00	1.404E-01	1.140
		283.69	*	-4.603E-01	1.350E+00	2.210E+00	3.403E-01	-0.208
PA-231	+	301.36		1.628E+00	8.103E-01	1.015E+00	1.321E-01	1.605
TH-231		81.07		4.762E-02	2.366E-01	2.754E-01	2.387E-02	0.173
		83.79		1.600E-01	1.211E-01	1.842E-01	1.651E-02	0.869
		94.87		1.035E+00	4.355E-01	6.851E-01	6.163E-02	1.510
		144.24		2.247E-01	6.767E-01	1.075E+00	1.019E-01	0.209
		154.21		1.149E-02	3.806E-01	6.066E-01	5.705E-02	0.019
	+	269.46		4.177E-01	2.835E-01	3.287E-01	3.303E-02	1.271
		323.87	*	5.017E-01	6.593E-01	1.005E+00	1.791E-01	0.499
	+	338.28		7.648E+00	1.759E+00	2.377E+00	2.999E-01	3.218
	+	300.13		1.147E+00	5.790E-01	7.283E-01	1.133E-01	1.575
		311.90	*	4.069E-02	5.675E-02	9.760E-02	9.685E-03	0.417
PA-234		340.48		2.536E+00	9.105E-01	1.203E+00	2.928E-01	2.108
		94.67		5.679E-01	1.718E-01	2.626E-01	3.329E-02	2.162
		98.44		6.450E-02	8.862E-02	1.347E-01	7.520E-02	0.479
		111.00		-1.731E-01	1.740E-01	2.675E-01	3.203E-02	-0.647
		131.20		-6.347E-02	1.009E-01	1.573E-01	1.315E-02	-0.403
		569.50		5.094E-02	2.512E-01	4.097E-01	3.958E-02	0.124
		733.00		1.318E-01	3.686E-01	5.565E-01	1.271E-01	0.237
		880.51		2.236E-02	2.664E-01	4.435E-01	4.433E-02	0.050
		883.24		4.399E-03	2.628E-01	4.350E-01	2.933E-01	0.010
		926.50		9.575E-02	1.613E-01	2.768E-01	7.119E-02	0.346
PA-234M		946.00	*	1.121E-01	3.013E-01	5.097E-01	9.841E-02	0.220
		949.00		3.323E-01	4.336E-01	7.569E-01	7.368E-02	0.439
		766.42		1.055E+01	1.205E+01	1.915E+01	9.773E+00	0.551

---- 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	*		1.104E+00	4.509E+00	7.541E+00	8.067E-01	0.146
	99.53			1.016E-01	1.489E-01	2.460E-01	2.160E-02	0.413
	103.37			-1.851E-03	9.222E-02	1.490E-01	1.288E-02	-0.012
	106.12			-2.297E-02	7.860E-02	1.255E-01	1.075E-02	-0.183
	117.23	*		-1.334E-01	3.763E-01	5.965E-01	4.996E-02	-0.224
	228.18			-1.479E-01	1.999E-01	3.253E-01	3.101E-02	-0.455
AM-241	+	277.60		2.497E-01	2.657E-01	2.961E-01	2.946E-02	0.843
		59.54	*	1.680E-01	1.205E-01	1.874E-01	1.466E-02	0.897
CM-247	+	278.00		1.060E+00	1.129E+00	1.257E+00	1.251E-01	0.844
		287.50		3.814E-01	1.107E+00	1.874E+00	1.857E-01	0.204
		402.40	*	-7.136E-03	3.391E-02	5.480E-02	4.633E-03	-0.130
CF-249		252.80		-6.287E-02	8.736E-01	1.459E+00	1.426E-01	-0.043
		333.37		-5.813E-02	2.055E-01	2.712E-01	2.560E-02	-0.214
		388.16	*	1.428E-02	3.796E-02	6.365E-02	5.368E-03	0.224
CF-251		177.52	*	6.271E-02	1.266E-01	2.045E-01	1.818E-02	0.307
		227.38		1.593E-01	3.193E-01	5.481E-01	5.221E-02	0.291
		285.41		-5.093E-01	2.015E+00	3.315E+00	3.290E-01	-0.154



# 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]G247337005      *
* Acquisition date   : 4-MAR-2010 10:19:02 Detector SN# :                  *
* Detector ID        : GAM20 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 02:00:33.73 Half life ratio : 8.000             *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date       : 12-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID        : G247337005 Analyst initials: MXR1                  *
* Batch Number     : 955027 Sample Quantity : 1.3779E+02 GRAM            *
* Recovery         : 1.00000 Carrier Weight : 0.00000                   *
*****
*
*                                     QC DATA                                *
*
* Standard Weight   : 0.00000                                              *
* CALIB. DATE/TIME : 26-AUG-2009 06:32:11 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	3.313E+01	3.305E+00	4.960E-01	0.000E+00
CD-109	5.345E+00	1.457E+00	1.170E+00	0.000E+00
SN-126	5.187E-01	1.414E-01	1.138E-01	0.000E+00
HG-203	5.950E-02	6.207E-02	6.202E-02	0.000E+00
TL-208	6.159E-01	1.023E-01	5.337E-02	0.000E+00
BI-211	4.641E+00	6.021E-01	3.243E-01	0.000E+00
PB-212	1.961E+00	2.338E-01	8.703E-02	0.000E+00
BI-214	1.433E+00	2.199E-01	9.848E-02	0.000E+00
PB-214	1.685E+00	2.367E-01	1.125E-01	0.000E+00
RA-224	5.110E+00	1.415E+00	9.325E-01	0.000E+00
RA-226	1.433E+00	2.199E-01	9.848E-02	0.000E+00
AC-228	2.217E+00	4.180E-01	2.140E-01	0.000E+00
RA-228	2.217E+00	4.180E-01	2.140E-01	0.000E+00
TH-228	1.961E+00	2.338E-01	8.703E-02	0.000E+00
TH-232	2.217E+00	4.180E-01	2.140E-01	0.000E+00
TH-234	2.363E+00	1.551E+00	1.660E+00	0.000E+00
U-235	-1.159E-02	1.999E-01	3.350E-01	0.000E+00
NP-237	1.548E+00	5.283E-01	3.450E-01	0.000E+00
U-238	2.363E+00	1.551E+00	1.660E+00	0.000E+00
ANH-511	1.221E-01	5.763E-02	4.417E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-9.262E-03	3.057E-01	5.180E-01	0.000E+00 NOT IDENT.
NA-22	-2.779E-02	4.275E-02	6.603E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	1.273E+08	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-1.158E-02	3.504E-02	5.800E-02	0.000E+00 FAIL ABUN
V-48	-8.308E-02	8.392E-02	1.288E-01	0.000E+00 NOT IDENT.
CR-51	-2.372E-02	3.664E-01	6.381E-01	0.000E+00 NOT IDENT.
MN-54	3.385E-03	3.640E-02	6.293E-02	0.000E+00 NOT IDENT.

CO-56	-2.857E-02	3.485E-02	5.510E-02	0.000E+00	FAIL ABUN
CO-57	3.778E-04	2.337E-02	4.036E-02	0.000E+00	NOT IDENT.
CO-58	1.342E-02	3.801E-02	6.718E-02	0.000E+00	NOT IDENT.
FE-59	9.703E-02	9.226E-02	1.680E-01	0.000E+00	NOT IDENT.
CO-60	6.632E-03	3.750E-02	6.299E-02	0.000E+00	NOT IDENT.
ZN-65	-8.076E-02	1.039E-01	1.356E-01	0.000E+00	NOT IDENT.
SE-75	4.479E-02	4.428E-02	7.652E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	3.958E-02	6.693E-02	0.000E+00	NOT IDENT.
Y-88	8.555E-03	2.967E-02	5.227E-02	0.000E+00	NOT IDENT.
Y-91	5.845E+00	2.355E+01	3.992E+01	0.000E+00	NOT IDENT.
NB-94	-5.840E-03	3.125E-02	5.372E-02	0.000E+00	NOT IDENT.
NB-95	-1.688E-02	4.256E-02	7.157E-02	0.000E+00	NOT IDENT.
NB-95M	8.959E-02	1.276E-01	2.079E-01	0.000E+00	NOT IDENT.
ZR-95	4.535E-02	7.292E-02	1.314E-01	0.000E+00	NOT IDENT.
MO-99	-8.186E+00	3.727E+01	6.353E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	2.225E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-2.190E-03	3.842E-02	6.476E-02	0.000E+00	FAIL ABUN
RH-106	2.626E-03	3.188E-01	5.303E-01	0.000E+00	NOT IDENT.
RU-106	2.626E-03	3.188E-01	5.303E-01	0.000E+00	NOT IDENT.
AG-108M	-1.167E-02	2.553E-02	4.224E-02	0.000E+00	NOT IDENT.
AG-110M	-3.518E-03	3.010E-02	5.224E-02	0.000E+00	NOT IDENT.
SN-113	-2.182E-02	4.153E-02	6.919E-02	0.000E+00	NOT IDENT.
CD-115	0.000E+00	4.435E+01	0.000E+00	0.000E+00	SHORT HLIF
SN-117M	4.717E-02	6.361E-02	1.114E-01	0.000E+00	NOT IDENT.
TE-123M	-8.688E-03	2.764E-02	4.631E-02	0.000E+00	NOT IDENT.
SB-124	1.544E-02	6.338E-02	1.117E-01	0.000E+00	NOT IDENT.
SB-125	3.378E-02	7.955E-02	1.399E-01	0.000E+00	FAIL ABUN
TE-125M	2.912E+00	9.304E+00	1.634E+01	0.000E+00	NOT IDENT.
I-126	-4.502E-03	2.641E-01	4.613E-01	0.000E+00	NOT IDENT.
SB-126	2.059E-01	1.944E-01	3.234E-01	0.000E+00	NOT IDENT.
SB-127	-6.067E-01	2.719E+00	4.663E+00	0.000E+00	NOT IDENT.
I-131	7.280E-02	1.523E-01	2.712E-01	0.000E+00	NOT IDENT.
TE-132	-6.572E-01	1.845E+00	3.242E+00	0.000E+00	NOT IDENT.
BA-133	-6.217E-03	3.885E-02	5.830E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	2.527E+05	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	6.491E-02	9.131E-02	0.000E+00	FAIL ABUN
CS-135	3.998E-02	1.656E-01	2.616E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.285E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-5.630E-02	1.150E-01	1.836E-01	0.000E+00	NOT IDENT.
BA-137M	-7.168E-04	3.197E-02	5.585E-02	0.000E+00	NOT IDENT.
CS-137	-7.572E-04	3.377E-02	5.900E-02	0.000E+00	NOT IDENT.
CE-139	-1.439E-02	2.837E-02	4.693E-02	0.000E+00	NOT IDENT.
BA-140	-2.595E-01	3.236E-01	4.899E-01	0.000E+00	NOT IDENT.
LA-140	-4.376E-02	1.239E-01	1.685E-01	0.000E+00	FAIL ABUN
CE-141	4.767E-02	6.564E-02	1.152E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.339E+03	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-2.828E-02	1.859E-01	3.170E-01	0.000E+00	NOT IDENT.
PM-144	1.842E-02	3.206E-02	5.791E-02	0.000E+00	NOT IDENT.
PR-144	1.364E+00	2.404E+00	4.340E+00	0.000E+00	NOT IDENT.
PM-146	2.513E-02	3.636E-02	6.479E-02	0.000E+00	NOT IDENT.
ND-147	-2.494E-02	6.901E-01	1.159E+00	0.000E+00	FAIL ABUN
PM-149	0.000E+00	3.686E+02	0.000E+00	0.000E+00	SHORT HLIF
EU-152	-7.310E-02	8.869E-02	1.467E-01	0.000E+00	FAIL ABUN
GD-153	-9.694E-02	8.467E-02	1.240E-01	0.000E+00	NOT IDENT.
EU-154	-6.470E-02	1.198E-01	1.872E-01	0.000E+00	NOT IDENT.
EU-155	-4.139E-02	9.719E-02	1.663E-01	0.000E+00	FAIL ABUN
TB-160	-2.843E-02	1.372E-01	2.304E-01	0.000E+00	FAIL ABUN
HO-166M	-4.135E-02	5.171E-02	8.405E-02	0.000E+00	NOT IDENT.
TA-182	1.850E-02	1.905E-01	3.190E-01	0.000E+00	FAIL ABUN
IR-192	-2.921E-02	3.189E-02	5.273E-02	0.000E+00	FAIL ABUN
BI-207	1.671E-03	5.177E-02	8.731E-02	0.000E+00	FAIL ABUN
PB-210	-6.753E-01	1.887E+00	3.363E+00	0.000E+00	NOT IDENT.
PB-211	1.074E-01	7.192E-01	1.095E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.068E+00	1.236E+00	0.000E+00	FAIL ABUN
RN-219	1.318E-01	3.567E-01	6.267E-01	0.000E+00	FAIL ABUN
RA-223	5.017E-01	6.461E-01	1.039E+00	0.000E+00	FAIL ABUN
AC-227	-1.671E-01	2.368E-01	4.052E-01	0.000E+00	FAIL ABUN
TH-227	-1.671E-01	2.370E-01	4.052E-01	0.000E+00	FAIL ABUN
TH-229	-1.167E-01	4.649E-01	8.307E-01	0.000E+00	FAIL ABUN
PA-231	-4.603E-01	1.323E+00	2.290E+00	0.000E+00	FAIL ABUN
TH-231	5.017E-01	6.461E-01	1.039E+00	0.000E+00	FAIL ABUN
PA-233	4.069E-02	5.561E-02	1.009E-01	0.000E+00	FAIL ABUN
PA-234	1.121E-01	2.953E-01	5.157E-01	0.000E+00	NOT IDENT.
PA-234M	1.104E+00	4.419E+00	7.622E+00	0.000E+00	NOT IDENT.
NP-239	-1.334E-01	3.688E-01	6.282E-01	0.000E+00	FAIL ABUN
AM-241	1.680E-01	1.181E-01	1.998E-01	0.000E+00	NOT IDENT.
CM-247	-7.136E-03	3.323E-02	5.639E-02	0.000E+00	FAIL ABUN
CF-249	1.428E-02	3.721E-02	6.554E-02	0.000E+00	NOT IDENT.

CF-251

6.271E-02

1.240E-01

2.138E-01

0.000E+00 NOT IDENT.

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337005.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:19:02.
Sample ID          : G247337005          Sample quantity   : 1.37790E+02 GRAM
Detector name      : GAM20              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:33.73 0.5%
Energy tolerance   : 1.50000 keV        Analyst Initials  : MXR1
Abundance limit    : 75.00000           Sensitivity       : 5.00000
Batch ID           : 955027             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	1624	10.66*	1.253E+00	3.313E+01	3.313E+01	10.18
CD-109	88.03	486	3.70*	6.902E+00	5.187E+00	5.345E+00	27.81
SN-126	64.28	150	9.60	4.674E+00	9.108E-01	9.108E-01	66.16
	86.94	486	8.90	6.902E+00	2.156E+00	2.156E+00	49.09
	87.57	486	37.00*	6.902E+00	5.187E-01	5.187E-01	27.81
HG-203	70.83	-----	3.69	5.621E+00	-----	Line Not Found	-----
	72.87	-----	6.19	5.845E+00	-----	Line Not Found	-----
	279.20	62	81.56*	4.715E+00	4.421E-02	5.950E-02	106.45
TL-208	277.37	62	6.60	4.715E+00	5.463E-01	5.463E-01	106.82
	583.19	518	85.00*	2.695E+00	6.159E-01	6.159E-01	16.95
	860.56	78	12.50	1.953E+00	8.703E-01	8.703E-01	52.96
BI-211	72.87	-----	1.23	5.845E+00	-----	Line Not Found	-----
	351.06	874	12.92*	3.969E+00	4.641E+00	4.641E+00	13.24
PB-212	74.82	604	10.28	6.053E+00	2.643E+00	2.643E+00	19.12
	77.11	946	17.10	6.265E+00	2.406E+00	2.406E+00	13.10
	238.63	1648	43.60*	5.248E+00	1.961E+00	1.961E+00	12.16
	300.09	124	3.30	4.460E+00	2.304E+00	2.304E+00	49.40
BI-214	609.32	623	45.49*	2.603E+00	1.433E+00	1.433E+00	15.66
	1120.29	116	14.92	1.556E+00	1.357E+00	1.357E+00	38.35
	1764.49	116	15.30	1.100E+00	1.879E+00	1.879E+00	21.55
PB-214	74.82	604	5.80	6.053E+00	4.684E+00	4.684E+00	18.27
	77.11	946	9.70	6.265E+00	4.242E+00	4.242E+00	15.48
	242.00	400	7.25	5.204E+00	2.890E+00	2.890E+00	28.85
	295.22	458	18.42	4.514E+00	1.501E+00	1.501E+00	20.73
	351.93	874	35.60*	3.969E+00	1.684E+00	1.685E+00	14.34
RA-224	240.99	400	4.10*	5.204E+00	5.110E+00	5.110E+00	28.26
RA-226	609.32	623	45.49*	2.603E+00	1.433E+00	1.433E+00	15.66
	1120.29	116	14.92	1.556E+00	1.357E+00	1.357E+00	38.35
	1764.49	116	15.30	1.100E+00	1.879E+00	1.879E+00	21.55
AC-228	338.32	326	11.27	4.086E+00	1.927E+00	1.927E+00	46.08
	911.20	390	25.80*	1.860E+00	2.217E+00	2.217E+00	19.24
	968.97	192	15.80	1.764E+00	1.880E+00	1.880E+00	30.96

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	338.32	326	11.27	4.086E+00	1.927E+00	1.927E+00	46.08
	911.20	390	25.80*	1.860E+00	2.217E+00	2.217E+00	19.24
	968.97	192	15.80	1.764E+00	1.880E+00	1.880E+00	30.96
TH-228	74.82	604	10.28	6.053E+00	2.643E+00	2.643E+00	16.50
	77.11	946	17.10	6.265E+00	2.406E+00	2.406E+00	13.10
	238.63	1648	43.60*	5.248E+00	1.961E+00	1.961E+00	12.16
TH-232	300.09	124	3.30	4.460E+00	2.304E+00	2.304E+00	77.96
	338.32	326	11.27	4.086E+00	1.927E+00	1.927E+00	21.40
	911.20	390	25.80*	1.860E+00	2.217E+00	2.217E+00	19.24
TH-234	968.97	192	15.80	1.764E+00	1.880E+00	1.880E+00	30.96
	63.29	150	3.70*	4.674E+00	2.363E+00	2.363E+00	66.96
	92.59	328	4.23	7.171E+00	2.944E+00	2.944E+00	36.03
U-235	89.96	181	3.47	7.062E+00	2.009E+00	2.009E+00	35.45
	93.35	328	5.60	7.171E+00	2.224E+00	2.224E+00	36.66
	143.76	-----	10.96*	7.037E+00	-----	Line Not Found	-----
NP-237	163.33	-----	5.08	6.638E+00	-----	Line Not Found	-----
	185.72	242	57.20	6.174E+00	1.870E-01	1.870E-01	38.77
	205.31	-----	5.01	5.804E+00	-----	Line Not Found	-----
U-238	86.48	486	12.40*	6.902E+00	1.548E+00	1.548E+00	34.83
	95.86	-----	2.68	7.260E+00	-----	Line Not Found	-----
	63.29	150	3.70*	4.674E+00	2.363E+00	2.363E+00	66.96
ANH-511	92.59	328	4.23	7.171E+00	2.944E+00	2.944E+00	29.75
	511.00	134	100.00*	2.993E+00	1.221E-01	1.221E-01	48.14

Flag: "\*" = Keyline

Total number of lines in spectrum 36  
Number of unidentified lines 6  
Number of lines tentatively identified by NID 30 83.33%

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	3.313E+01	3.313E+01	0.337E+01	10.18	
CD-109	461.40D	1.03	5.187E+00	5.345E+00	1.486E+00	27.81	
SN-126	2.30E+05Y	1.00	5.187E-01	5.187E-01	1.442E-01	27.81	
HG-203	46.59D	1.35	4.421E-02	5.950E-02	6.334E-02	106.45	
TL-208	1.41E+10Y	1.00	6.159E-01	6.159E-01	1.044E-01	16.95	
BI-211	7.04E+08Y	1.00	4.641E+00	4.641E+00	0.614E+00	13.24	
PB-212	1.41E+10Y	1.00	1.961E+00	1.961E+00	0.239E+00	12.16	
BI-214	1600.00Y	1.00	1.433E+00	1.433E+00	0.224E+00	15.66	
PB-214	1600.00Y	1.00	1.684E+00	1.685E+00	0.242E+00	14.34	
RA-224	1.41E+10Y	1.00	5.110E+00	5.110E+00	1.444E+00	28.26	
RA-226	1600.00Y	1.00	1.433E+00	1.433E+00	0.224E+00	15.66	
AC-228	1.41E+10Y	1.00	2.217E+00	2.217E+00	0.427E+00	19.24	
RA-228	1.41E+10Y	1.00	2.217E+00	2.217E+00	0.427E+00	19.24	
TH-228	1.41E+10Y	1.00	1.961E+00	1.961E+00	0.239E+00	12.16	
TH-232	1.41E+10Y	1.00	2.217E+00	2.217E+00	0.427E+00	19.24	
TH-234	4.47E+09Y	1.00	2.363E+00	2.363E+00	1.582E+00	66.96	
U-235	7.04E+08Y	1.00	1.870E-01	1.870E-01	0.725E-01	38.77	K
NP-237	2.14E+06Y	1.00	1.548E+00	1.548E+00	0.539E+00	34.83	
U-238	4.47E+09Y	1.00	2.363E+00	2.363E+00	1.582E+00	66.96	
ANH-511	1.00E+09Y	1.00	1.221E-01	1.221E-01	0.588E-01	48.14	

Total Activity : 7.095E+01 7.112E+01

Grand Total Activity : 7.095E+01 7.112E+01

Flags: "K" = Keyline not found "M" = Manually accepted  
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	209.00	156	331	0.94	417.57	413	9	2.17E-02	44.9	5.74E+00	
0	270.03	103	288	1.85	539.48	535	11	1.42E-02	67.1	4.81E+00	T
0	328.18	75	138	1.23	655.64	652	7	1.05E-02	56.7	4.18E+00	T
0	409.39	80	122	1.44	817.90	814	10	1.11E-02	55.9	3.55E+00	
0	463.07	81	95	1.38	925.16	921	9	1.12E-02	48.8	3.23E+00	T
0	727.63	155	120	1.64	1453.99	1446	17	2.15E-02	36.4	2.25E+00	T
0	786.93	42	82	1.27	1572.56	1566	13	5.78E-03	96.0	2.11E+00	
0	795.40	64	75	1.01	1589.50	1585	11	8.82E-03	59.5	2.09E+00	T
2	964.81	58	46	2.02	1928.30	1921	23	8.05E-03	58.0	1.77E+00	T
0	1239.72	78	77	1.69	2478.34	2470	16	1.08E-02	56.1	1.43E+00	T
0	1378.10	40	18	1.05	2755.30	2749	12	5.57E-03	52.8	1.31E+00	
0	1591.41	70	7	6.55	3182.39	3174	22	9.77E-03	29.4	1.18E+00	
0	1730.54	30	14	1.83	3461.05	3453	14	4.20E-03	63.9	1.11E+00	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337005.CNF;1
* Acquisition date   : 4-MAR-2010 10:19:02.  Detector SN#      :
* Detector ID        : GAM20                  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 02:00:33.73          Half life ratio   : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 12-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G247337005           Analyst initials: MXR1
* Batch Number       : 955027               Sample Quantity : 1.37790E+02 GRAM
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 26-AUG-2009 06:32:11.7MS Isotope      :
* MSD ID              :                      MSD Isotope      :
* LCS ID              : 1032-A              LCS Isotope      :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.313E+01	3.372E+00	4.945E-01	4.312E-02	66.993
CD-109	5.345E+00	1.486E+00	1.105E+00	1.045E-01	4.838
SN-126	5.187E-01	1.442E-01	1.075E-01	1.011E-02	4.824
HG-203	5.950E-02	6.334E-02	5.985E-02	6.074E-03	0.994
TL-208	6.159E-01	1.044E-01	5.224E-02	5.366E-03	11.789
BI-211	4.641E+00	6.144E-01	3.143E-01	3.012E-02	14.766
PB-212	1.961E+00	2.386E-01	8.374E-02	8.942E-03	23.424
BI-214	1.433E+00	2.244E-01	9.648E-02	1.078E-02	14.854
PB-214	1.685E+00	2.416E-01	1.091E-01	1.205E-02	15.445
RA-224	5.110E+00	1.444E+00	8.973E-01	8.674E-02	5.695
RA-226	1.433E+00	2.244E-01	9.648E-02	1.078E-02	14.854
AC-228	2.217E+00	4.265E-01	2.113E-01	2.656E-02	10.489
RA-228	2.217E+00	4.265E-01	2.113E-01	2.656E-02	10.489
TH-228	1.961E+00	2.386E-01	8.374E-02	8.942E-03	23.424
TH-232	2.217E+00	4.265E-01	2.113E-01	2.656E-02	10.489
TH-234	2.363E+00	1.582E+00	1.559E+00	2.769E-01	1.516
U-235	1.870E-01	7.250E-02	3.193E-01	5.387E-02	0.586
NP-237	1.548E+00	5.390E-01	3.258E-01	7.469E-02	4.751



---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
U-238	2.363E+00	1.582E+00	1.559E+00	2.769E-01	1.516
ANH-511	1.221E-01	5.880E-02	4.312E-02	4.018E-03	2.833

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-9.262E-03		3.119E-01	5.050E-01	4.908E-02	-0.018
NA-22	-2.779E-02		4.362E-02	6.565E-02	5.438E-03	-0.423
NA-24	1.951E+01		6.493E+01	Half-Life too short		
SC-46	-1.158E-02		3.576E-02	5.724E-02	5.707E-03	-0.202
V-48	-8.308E-02		8.563E-02	1.274E-01	1.218E-02	-0.652
CR-51	-2.372E-02		3.739E-01	6.174E-01	6.186E-02	-0.038
MN-54	3.385E-03		3.715E-02	6.203E-02	6.266E-03	0.055
CO-56	-2.857E-02		3.556E-02	5.433E-02	5.476E-03	-0.526
CO-57	3.778E-04		2.385E-02	3.835E-02	3.201E-03	0.010
CO-58	1.342E-02		3.879E-02	6.618E-02	6.720E-03	0.203
FE-59	9.703E-02		9.414E-02	1.665E-01	1.570E-02	0.583
CO-60	6.632E-03		3.826E-02	6.268E-02	5.251E-03	0.106
ZN-65	-8.076E-02		1.060E-01	1.345E-01	1.157E-02	-0.601
SE-75	4.479E-02		4.518E-02	7.377E-02	7.304E-03	0.607
SR-85	6.844E-02		4.039E-02	6.535E-02	6.103E-03	1.047
Y-88	8.555E-03		3.028E-02	5.236E-02	4.225E-03	0.163
Y-91	5.845E+00		2.403E+01	3.964E+01	3.219E+00	0.147
NB-94	-5.840E-03		3.188E-02	5.278E-02	5.340E-03	-0.111
NB-95	-1.688E-02		4.343E-02	7.043E-02	7.158E-03	-0.240
NB-95M	8.959E-02		1.302E-01	2.000E-01	2.152E-02	0.448
ZR-95	4.535E-02		7.440E-02	1.293E-01	1.414E-02	0.351
MO-99	-8.186E+00		3.803E+01	6.247E+01	1.040E+01	-0.131
TC-99M	-5.449E+15		1.135E+16	Half-Life too short		
RU-103	-2.190E-03		3.921E-02	6.320E-02	9.067E-03	-0.035
RH-106	2.626E-03		3.253E-01	5.197E-01	7.339E-02	0.005
RU-106	2.626E-03		3.253E-01	5.197E-01	5.144E-02	0.005
AG-108M	-1.167E-02		2.605E-02	4.111E-02	3.705E-03	-0.284
AG-110M	-3.518E-03		3.071E-02	5.125E-02	5.251E-03	-0.069
SN-113	-2.182E-02		4.238E-02	6.721E-02	5.797E-03	-0.325
CD-115	1.185E-06		2.263E-05	Half-Life too short		
SN-117M	4.717E-02		6.491E-02	1.064E-01	9.179E-03	0.444
TE-123M	-8.688E-03		2.821E-02	4.422E-02	3.842E-03	-0.196
SB-124	1.544E-02		6.467E-02	1.117E-01	9.729E-03	0.138
SB-125	3.378E-02		8.117E-02	1.362E-01	1.204E-02	0.248
TE-125M	2.912E+00		9.494E+00	1.549E+01	1.610E+00	0.188
I-126	-4.502E-03		2.695E-01	4.527E-01	4.548E-02	-0.010
SB-126	2.059E-01		1.983E-01	3.179E-01	3.223E-02	0.648
SB-127	-6.067E-01		2.774E+00	4.578E+00	6.373E-01	-0.133
I-131	7.280E-02		1.555E-01	2.630E-01	2.477E-02	0.277
TE-132	-6.572E-01		1.883E+00	3.116E+00	5.409E-01	-0.211
BA-133	-6.217E-03		3.964E-02	5.653E-02	7.499E-03	-0.110

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-133	1.059E-01		1.289E-01	Half-Life too short		
CS-134	1.097E-01	+	6.624E-02	8.992E-02	9.175E-03	1.219
CS-135	3.998E-02		1.690E-01	2.522E-01	2.795E-02	0.159
I-135	2.560E+14		6.558E+14	Half-Life too short		
CS-136	-5.630E-02		1.173E-01	1.818E-01	1.726E-02	-0.310
BA-137M	-7.168E-04		3.262E-02	5.480E-02	5.500E-03	-0.013
CS-137	-7.572E-04		3.446E-02	5.789E-02	5.818E-03	-0.013
CE-139	-1.439E-02		2.895E-02	4.484E-02	3.915E-03	-0.321
BA-140	-2.595E-01		3.302E-01	4.788E-01	1.635E-01	-0.542
LA-140	-4.376E-02		1.264E-01	1.683E-01	1.421E-02	-0.260
CE-141	4.767E-02		6.698E-02	1.098E-01	9.479E-03	0.434
CE-143	7.045E-03		1.193E-03	Half-Life too short		
CE-144	-2.828E-02		1.897E-01	3.017E-01	4.571E-02	-0.094
PM-144	1.842E-02		3.272E-02	5.688E-02	5.752E-03	0.324
PR-144	1.364E+00		2.453E+00	4.263E+00	4.309E-01	0.320
PM-146	2.513E-02		3.710E-02	6.311E-02	6.830E-03	0.398
ND-147	-2.494E-02		7.042E-01	1.132E+00	1.749E-01	-0.022
PM-149	1.192E-04		1.881E-04	Half-Life too short		
EU-152	-7.310E-02		9.050E-02	1.421E-01	1.386E-02	-0.514
GD-153	-9.694E-02		8.640E-02	1.174E-01	1.041E-02	-0.826
EU-154	-6.470E-02		1.223E-01	1.861E-01	2.069E-02	-0.348
EU-155	-4.139E-02		9.918E-02	1.576E-01	1.369E-02	-0.263
TB-160	-2.843E-02		1.400E-01	2.274E-01	2.274E-02	-0.125
HO-166M	-4.135E-02		5.277E-02	8.259E-02	8.367E-03	-0.501
TA-182	1.850E-02		1.944E-01	3.168E-01	2.585E-02	0.058
IR-192	-2.921E-02		3.254E-02	5.101E-02	4.933E-03	-0.573
BI-207	1.671E-03		5.283E-02	8.648E-02	7.808E-03	0.019
PB-210	-6.753E-01		1.925E+00	3.140E+00	2.885E-01	-0.215
PB-211	1.074E-01		7.339E-01	1.064E+00	5.147E-01	0.101
BI-212	2.806E+00	+	1.090E+00	1.215E+00	1.647E-01	2.310
RN-219	1.318E-01		3.639E-01	6.090E-01	8.998E-02	0.216
RA-223	5.017E-01		6.593E-01	1.005E+00	1.791E-01	0.499
AC-227	-1.671E-01		2.416E-01	3.904E-01	5.045E-02	-0.428
TH-227	-1.671E-01		2.418E-01	3.904E-01	5.615E-02	-0.428
TH-229	-1.167E-01		4.744E-01	7.961E-01	7.249E-02	-0.147
PA-231	-4.603E-01		1.350E+00	2.210E+00	3.403E-01	-0.208
TH-231	5.017E-01		6.593E-01	1.005E+00	1.791E-01	0.499
PA-233	4.069E-02		5.675E-02	9.760E-02	9.685E-03	0.417
PA-234	1.121E-01		3.013E-01	5.097E-01	9.841E-02	0.220
PA-234M	1.104E+00		4.509E+00	7.541E+00	8.067E-01	0.146
NP-239	-1.334E-01		3.763E-01	5.965E-01	4.996E-02	-0.224
AM-241	1.680E-01		1.205E-01	1.874E-01	1.466E-02	0.897
CM-247	-7.136E-03		3.391E-02	5.480E-02	4.633E-03	-0.130
CF-249	1.428E-02		3.796E-02	6.365E-02	5.368E-03	0.224
CF-251	6.271E-02		1.266E-01	2.045E-01	1.818E-02	0.307

## 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]G247337005          *
* Acquisition date   : 4-MAR-2010 10:19:02 Detector SN#      :             *
* Detector ID        : GAM20                      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 02:00:33.73           Half life ratio : 8.000      *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247337005           Analyst initials: MXR1          *
* Batch Number       : 955027              Sample Quantity : 1.3779E+02 GRAM *
* Recovery           : 1.00000             Carrier Weight   : 0.00000      *
*****
*
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 26-AUG-2009 06:32:11 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	3.313E+01	3.305E+00	2.481E-01	1.686E+00
CD-109	5.345E+00	1.457E+00	5.852E-01	7.432E-01
SN-126	5.187E-01	1.414E-01	5.696E-02	7.212E-02
HG-203	5.950E-02	6.207E-02	3.103E-02	3.167E-02
TL-208	6.159E-01	1.023E-01	2.670E-02	5.221E-02
BI-211	4.641E+00	6.021E-01	1.623E-01	3.072E-01
PB-212	1.961E+00	2.338E-01	4.354E-02	1.193E-01
BI-214	1.433E+00	2.199E-01	4.927E-02	1.122E-01
PB-214	1.685E+00	2.367E-01	5.629E-02	1.208E-01
RA-224	5.110E+00	1.415E+00	4.665E-01	7.222E-01
RA-226	1.433E+00	2.199E-01	4.927E-02	1.122E-01
AC-228	2.217E+00	4.180E-01	1.071E-01	2.133E-01
RA-228	2.217E+00	4.180E-01	1.071E-01	2.133E-01
TH-228	1.961E+00	2.338E-01	4.354E-02	1.193E-01
TH-232	2.217E+00	4.180E-01	1.071E-01	2.133E-01
TH-234	2.363E+00	1.551E+00	8.306E-01	7.912E-01
U-235	-1.159E-02	1.999E-01	1.676E-01	1.020E-01
NP-237	1.548E+00	5.283E-01	1.726E-01	2.695E-01
U-238	2.363E+00	1.551E+00	8.306E-01	7.912E-01
ANH-511	1.221E-01	5.763E-02	2.210E-02	2.940E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-9.262E-03	3.057E-01	2.591E-01	1.560E-01 NOT IDENT.
NA-22	-2.779E-02	4.275E-02	3.304E-02	2.181E-02 NOT IDENT.
NA-24	1.951E+07	1.273E+08	0.000E+00	6.493E+07 SHORT HLIF
SC-46	-1.158E-02	3.504E-02	2.902E-02	1.788E-02 FAIL ABUN
V-48	-8.308E-02	8.392E-02	6.444E-02	4.281E-02 NOT IDENT.
CR-51	-2.372E-02	3.664E-01	3.193E-01	1.869E-01 NOT IDENT.
MN-54	3.385E-03	3.640E-02	3.148E-02	1.857E-02 NOT IDENT.

CO-56	-2.857E-02	3.485E-02	2.757E-02	1.778E-02	FAIL ABUN
CO-57	3.778E-04	2.337E-02	2.019E-02	1.193E-02	NOT IDENT.
CO-58	1.342E-02	3.801E-02	3.361E-02	1.939E-02	NOT IDENT.
FE-59	9.703E-02	9.226E-02	8.406E-02	4.707E-02	NOT IDENT.
CO-60	6.632E-03	3.750E-02	3.151E-02	1.913E-02	NOT IDENT.
ZN-65	-8.076E-02	1.039E-01	6.785E-02	5.302E-02	NOT IDENT.
SE-75	4.479E-02	4.428E-02	3.828E-02	2.259E-02	NOT IDENT.
SR-85	6.844E-02	3.958E-02	3.349E-02	2.020E-02	NOT IDENT.
Y-88	8.555E-03	2.967E-02	2.615E-02	1.514E-02	NOT IDENT.
Y-91	5.845E+00	2.355E+01	1.997E+01	1.202E+01	NOT IDENT.
NB-94	-5.840E-03	3.125E-02	2.688E-02	1.594E-02	NOT IDENT.
NB-95	-1.688E-02	4.256E-02	3.581E-02	2.172E-02	NOT IDENT.
NB-95M	8.959E-02	1.276E-01	1.040E-01	6.511E-02	NOT IDENT.
ZR-95	4.535E-02	7.292E-02	6.574E-02	3.720E-02	NOT IDENT.
MO-99	-8.186E+00	3.727E+01	3.178E+01	1.902E+01	NOT IDENT.
TC-99M	-5.449E+21	2.225E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-2.190E-03	3.842E-02	3.240E-02	1.960E-02	FAIL ABUN
RH-106	2.626E-03	3.188E-01	2.653E-01	1.626E-01	NOT IDENT.
RU-106	2.626E-03	3.188E-01	2.653E-01	1.626E-01	NOT IDENT.
AG-108M	-1.167E-02	2.553E-02	2.113E-02	1.303E-02	NOT IDENT.
AG-110M	-3.518E-03	3.010E-02	2.613E-02	1.536E-02	NOT IDENT.
SN-113	-2.182E-02	4.153E-02	3.462E-02	2.119E-02	NOT IDENT.
CD-115	1.185E+00	4.435E+01	0.000E+00	2.263E+01	SHORT HLIF
SN-117M	4.717E-02	6.361E-02	5.573E-02	3.246E-02	NOT IDENT.
TE-123M	-8.688E-03	2.764E-02	2.317E-02	1.410E-02	NOT IDENT.
SB-124	1.544E-02	6.338E-02	5.588E-02	3.233E-02	NOT IDENT.
SB-125	3.378E-02	7.955E-02	7.001E-02	4.059E-02	FAIL ABUN
TE-125M	2.912E+00	9.304E+00	8.173E+00	4.747E+00	NOT IDENT.
I-126	-4.502E-03	2.641E-01	2.308E-01	1.347E-01	NOT IDENT.
SB-126	2.059E-01	1.944E-01	1.618E-01	9.917E-02	NOT IDENT.
SB-127	-6.067E-01	2.719E+00	2.333E+00	1.387E+00	NOT IDENT.
I-131	7.280E-02	1.523E-01	1.357E-01	7.773E-02	NOT IDENT.
TE-132	-6.572E-01	1.845E+00	1.622E+00	9.413E-01	NOT IDENT.
BA-133	-6.217E-03	3.885E-02	2.917E-02	1.982E-02	FAIL ABUN
I-133	1.059E+05	2.527E+05	0.000E+00	1.289E+05	SHORT HLIF
CS-134	1.097E-01	6.491E-02	4.568E-02	3.312E-02	FAIL ABUN
CS-135	3.998E-02	1.656E-01	1.309E-01	8.450E-02	NOT IDENT.
I-135	2.560E+20	1.285E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-5.630E-02	1.150E-01	9.185E-02	5.867E-02	NOT IDENT.
BA-137M	-7.168E-04	3.197E-02	2.794E-02	1.631E-02	NOT IDENT.
CS-137	-7.572E-04	3.377E-02	2.952E-02	1.723E-02	NOT IDENT.
CE-139	-1.439E-02	2.837E-02	2.348E-02	1.447E-02	NOT IDENT.
BA-140	-2.595E-01	3.236E-01	2.451E-01	1.651E-01	NOT IDENT.
LA-140	-4.376E-02	1.239E-01	8.432E-02	6.321E-02	FAIL ABUN
CE-141	4.767E-02	6.564E-02	5.761E-02	3.349E-02	NOT IDENT.
CE-143	7.045E+03	2.339E+03	0.000E+00	1.193E+03	SHORT HLIF
CE-144	-2.828E-02	1.859E-01	1.586E-01	9.485E-02	NOT IDENT.
PM-144	1.842E-02	3.206E-02	2.897E-02	1.636E-02	NOT IDENT.
PR-144	1.364E+00	2.404E+00	2.171E+00	1.227E+00	NOT IDENT.
PM-146	2.513E-02	3.636E-02	3.241E-02	1.855E-02	NOT IDENT.
ND-147	-2.494E-02	6.901E-01	5.798E-01	3.521E-01	FAIL ABUN
PM-149	1.192E+02	3.686E+02	0.000E+00	1.881E+02	SHORT HLIF
EU-152	-7.310E-02	8.869E-02	7.339E-02	4.525E-02	FAIL ABUN
GD-153	-9.694E-02	8.467E-02	6.205E-02	4.320E-02	NOT IDENT.
EU-154	-6.470E-02	1.198E-01	9.366E-02	6.115E-02	NOT IDENT.
EU-155	-4.139E-02	9.719E-02	8.318E-02	4.959E-02	FAIL ABUN
TB-160	-2.843E-02	1.372E-01	1.153E-01	6.998E-02	FAIL ABUN
HO-166M	-4.135E-02	5.171E-02	4.205E-02	2.638E-02	NOT IDENT.
TA-182	1.850E-02	1.905E-01	1.596E-01	9.720E-02	FAIL ABUN
IR-192	-2.921E-02	3.189E-02	2.638E-02	1.627E-02	FAIL ABUN
BI-207	1.671E-03	5.177E-02	4.368E-02	2.641E-02	FAIL ABUN
PB-210	-6.753E-01	1.887E+00	1.682E+00	9.626E-01	NOT IDENT.
PB-211	1.074E-01	7.192E-01	5.477E-01	3.669E-01	NOT IDENT.
BI-212	2.806E+00	1.068E+00	6.182E-01	5.451E-01	FAIL ABUN
RN-219	1.318E-01	3.567E-01	3.135E-01	1.820E-01	FAIL ABUN
RA-223	5.017E-01	6.461E-01	5.196E-01	3.296E-01	FAIL ABUN
AC-227	-1.671E-01	2.368E-01	2.027E-01	1.208E-01	FAIL ABUN
TH-227	-1.671E-01	2.370E-01	2.027E-01	1.209E-01	FAIL ABUN
TH-229	-1.167E-01	4.649E-01	4.156E-01	2.372E-01	FAIL ABUN
PA-231	-4.603E-01	1.323E+00	1.146E+00	6.752E-01	FAIL ABUN
TH-231	5.017E-01	6.461E-01	5.196E-01	3.296E-01	FAIL ABUN
PA-233	4.069E-02	5.561E-02	5.049E-02	2.837E-02	FAIL ABUN
PA-234	1.121E-01	2.953E-01	2.580E-01	1.506E-01	NOT IDENT.
PA-234M	1.104E+00	4.419E+00	3.813E+00	2.255E+00	NOT IDENT.
NP-239	-1.334E-01	3.688E-01	3.143E-01	1.881E-01	FAIL ABUN
AM-241	1.680E-01	1.181E-01	9.996E-02	6.023E-02	NOT IDENT.
CM-247	-7.136E-03	3.323E-02	2.821E-02	1.696E-02	FAIL ABUN
CF-249	1.428E-02	3.721E-02	3.279E-02	1.898E-02	NOT IDENT.

CF-251

6.271E-02

1.240E-01

1.069E-01

6.329E-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	360.8366
49.72	352.5082
57.36	0.0000
59.54	374.3611
63.29	445.2904
63.29	445.2904
64.28	453.1288
67.75	504.5173
69.67	506.1764
70.83	551.4647
72.81	537.9561
72.87	538.0097
72.87	538.0097
74.82	496.1586
74.82	496.1586
74.82	496.1586
74.97	496.2792
77.11	497.9852
77.11	497.9852
77.11	497.9852
79.69	466.4361
79.80	444.3014
80.12	444.5223
80.19	444.5704
80.57	459.3158
81.00	440.9874
81.07	441.0351
81.07	441.0351
83.79	469.3778
83.79	469.3778
85.43	483.0412
86.48	483.7932
86.55	483.8451
86.79	484.0148
86.94	484.1233
87.57	476.7302
88.03	477.0526
88.47	477.3588
89.96	478.3932
91.11	342.0492
92.59	342.7710
92.59	342.7710
93.35	343.1402
94.67	316.8457
94.87	339.1196
94.87	339.1196
95.86	374.4973
97.43	392.8026
98.44	325.9299
99.53	339.1728
100.11	364.9766
103.18	376.0930
103.37	374.0504
105.31	396.4334
106.12	390.4176
109.28	355.3935
111.00	399.3419
111.76	371.6361
116.30	360.7001
117.23	356.7597
121.12	328.9325
121.78	342.3151
122.06	329.3014
123.07	330.7917
131.20	372.6184
133.52	338.1205
136.00	352.3974

136.47	359.2547
140.51	366.4308
140.51	0.0000
143.76	363.2311
144.24	343.2290
144.24	343.2290
145.44	327.9445
152.43	279.4379
153.25	319.3011
154.21	345.6847
154.21	345.6847
156.02	355.4045
158.56	275.4897
159.00	324.5824
162.66	281.1868
163.33	285.9472
165.86	309.5865
176.60	283.8121
177.52	288.6915
181.07	293.1310
184.41	281.4245
185.72	288.2415
193.51	290.2470
197.04	280.5215
205.31	286.6139
210.85	259.2927
215.65	226.5197
222.11	242.1635
227.38	233.1964
228.16	255.1301
228.18	272.3854
235.69	244.0255
235.96	239.6898
235.96	239.6898
238.63	228.8303
238.63	228.8303
240.99	229.2404
242.00	229.4159
244.70	183.9066
252.40	202.5289
252.80	213.6898
256.23	242.9745
256.23	242.9745
260.90	0.0000
264.66	180.3827
268.22	225.9839
269.46	227.6771
269.46	227.6771
271.23	206.2131
273.65	240.3633
276.40	219.7485
277.37	216.8824
277.60	216.9176
278.00	204.9230
279.20	180.9609
279.54	181.0049
280.46	179.6084
283.69	203.2586
284.31	196.7234
285.41	196.8694
285.90	0.0000
287.50	172.5023
293.27	0.0000
295.22	182.9180
295.96	183.0059
298.57	183.3193
299.98	183.4893
299.98	183.4893
300.09	166.6801
300.09	166.6801
300.13	166.6854
301.36	191.3055
302.85	188.4248
304.50	156.4216
304.50	156.4216
304.85	151.8548
308.46	178.7287
311.90	140.5999

316.51	171.9160
319.41	149.9718
320.08	157.7794
323.87	147.4773
323.87	147.4773
328.76	160.3767
333.37	179.5640
334.37	173.4240
334.37	173.4240
338.28	173.8304
338.28	173.8304
338.32	173.8359
338.32	173.8359
338.32	173.8359
340.48	127.0173
340.55	127.0213
344.28	172.8821
351.06	162.5242
351.93	148.0042
356.01	123.4308
364.49	121.2498
366.42	120.3870
383.85	144.6658
388.16	136.9504
388.63	130.9422
391.69	142.2586
400.66	110.5019
401.81	118.6835
402.40	131.9122
404.85	123.5482
410.95	104.3734
414.70	106.2122
423.72	102.6016
427.09	120.2492
427.87	104.8747
433.94	112.4146
453.88	91.6550
463.37	127.2313
468.07	104.0256
473.00	110.3657
476.78	106.3493
477.60	103.2308
487.02	99.4519
492.35	0.0000
497.08	96.7222
511.00	103.7470
514.00	83.9651
527.90	0.0000
529.87	0.0000
531.02	93.8739
537.26	102.7814
546.56	0.0000
563.25	85.3220
569.33	89.9227
569.50	89.9277
569.70	81.1611
583.19	89.3304
600.60	104.3903
602.73	80.0266
604.72	108.5669
609.32	81.3475
609.32	81.3475
610.33	78.4824
614.28	92.8941
618.01	97.2776
621.93	100.7858
621.93	100.7858
633.25	89.9756
635.95	85.5649
636.99	89.2039
645.85	73.2283
657.76	80.8192
661.66	90.0305
661.66	90.0305
664.57	0.0000
666.33	95.6510
666.50	95.6561
677.62	96.9579



685.70	79.8123
695.00	92.0435
696.49	85.6458
696.51	85.6458
697.00	89.3437
702.65	97.8300
706.68	78.5586
711.68	84.2528
720.70	69.6570
721.93	0.0000
722.78	99.1380
722.91	99.1432
723.31	102.2549
724.19	105.3839
727.33	77.2634
733.00	65.2883
735.93	71.1884
739.50	79.4530
747.24	89.0347
752.31	81.6751
753.82	82.6547
756.73	78.9756
763.94	107.4372
765.81	103.7319
766.42	82.0595
777.92	106.9858
778.90	86.2886
783.70	85.3704
785.37	102.8162
795.86	77.1359
801.95	74.9690
810.29	68.8799
810.76	68.8904
815.77	66.1244
818.51	52.7535
832.01	81.8727
834.85	85.8016
836.80	0.0000
846.77	67.7322
856.80	45.2926
860.56	62.1859
871.09	73.1067
873.19	51.6944
875.33	0.0000
879.36	70.3564
880.51	65.4918
883.24	61.6326
884.68	59.7014
889.28	59.7818
898.04	78.6055
911.20	64.1113
911.20	64.1113
911.20	64.1113
926.50	52.5057
937.49	73.5393
944.13	70.6915
946.00	66.7432
949.00	58.8243
962.29	75.0549
964.08	71.0867
966.15	71.1265
968.97	71.1820
968.97	71.1820
968.97	71.1820
983.53	76.5010
996.26	54.5445
1001.03	67.7623
1004.73	66.8169
1037.84	70.4723
1038.76	0.0000
1048.07	53.2518
1050.41	56.3562
1050.41	56.3562
1063.66	67.8595
1085.87	58.9399
1099.45	50.8399
1112.07	78.0615
1115.54	85.0761

1120.29	83.4375
1120.29	83.4375
1120.55	83.4414
1121.30	83.4570
1131.51	0.0000
1173.23	72.8947
1177.93	71.9180
1189.05	80.5904
1204.77	81.9516
1221.41	72.6551
1231.02	84.3256
1235.36	78.6042
1238.28	87.9498
1260.41	0.0000
1271.85	54.0381
1274.44	62.7210
1274.54	64.8838
1291.59	35.8214
1298.22	0.0000
1312.11	37.0729
1332.49	40.5229
1365.19	28.4923
1368.63	0.0000
1384.29	25.3103
1408.01	43.5863
1457.56	0.0000
1460.82	27.1840
1489.16	14.1400
1505.03	30.2591
1596.21	31.3415
1620.50	9.6659
1678.03	0.0000
1690.97	11.7485
1764.49	8.5006
1764.49	8.5006
1770.23	6.8072
1771.35	54.6106
1791.20	0.0000
1836.06	12.0464

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247337005

Total Uranium Activity	7.0249E+00	ug/g
Total Uranium Counting Unc.	4.6142E+00	ug/g
Total Uranium Tpu	2.3542E-06	ug/g
Total Uranium Mda	2.4721E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417               *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 955027                          SAMPLE ID   : G247337005
*  ANALYST       : MXR1                             DETECTOR    : GAM20
*  SAMPLE DATE   : 12-FEB-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 4-MAR-2010 10:19:02.00          SAMPLE ALQT  : 137.790 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.102E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.412E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.941E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.919E+00

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VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 10:33:02.33

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                          *
*                                     Charleston, SC 29414                      *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337006.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:46:02.
Sample ID          : G247337006 Sample quantity : 1.30170E+02 GRAM
Detector name      : GAM06 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:01.39 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 955027 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	63.45*	87	482	0.94	126.48	123	8	1.20E-02	46.0	
2	2	74.84	386	507	1.21	149.25	145	14	5.36E-02	11.0	1.21E+00
3	2	77.13*	539	417	0.98	153.84	145	14	7.49E-02	7.5	
4	0	88.58	280	898	3.45	176.72	169	13	3.88E-02	23.0	
5	0	93.04*	312	453	1.63	185.64	182	9	4.34E-02	14.0	
6	0	128.75	126	308	1.46	257.02	253	8	1.75E-02	25.8	
7	0	186.20*	207	380	1.28	371.86	367	11	2.87E-02	20.3	
8	3	238.77*	1229	215	1.14	476.95	471	16	1.71E-01	3.6	8.40E-01
9	3	241.69	305	214	1.57	482.78	471	16	4.23E-02	12.6	
10	0	270.06	134	183	0.85	539.52	535	9	1.86E-02	20.1	
11	4	295.34*	390	141	1.50	590.04	584	21	5.41E-02	7.5	1.64E+00
12	4	300.08	126	170	1.95	599.52	584	21	1.75E-02	21.1	
13	0	328.29	89	132	1.99	655.93	652	8	1.24E-02	24.6	
14	0	338.33*	278	197	1.23	676.00	671	12	3.86E-02	11.8	
15	0	352.11*	605	203	1.23	703.55	699	11	8.40E-02	6.3	
16	0	462.93	64	95	1.63	925.12	922	9	8.82E-03	30.1	
17	0	511.09*	85	148	1.61	1021.43	1015	14	1.18E-02	36.3	
18	0	583.40*	345	91	1.24	1166.02	1160	10	4.79E-02	7.6	
19	0	609.54*	433	83	1.48	1218.28	1212	14	6.01E-02	6.8	
20	0	727.45	138	77	1.58	1454.08	1448	13	1.92E-02	15.6	
21	0	768.74	97	91	3.36	1536.67	1528	19	1.35E-02	25.9	
22	0	861.27*	76	46	1.87	1721.72	1716	13	1.06E-02	22.7	
23	0	911.45	279	55	1.56	1822.09	1815	16	3.88E-02	8.2	
24	0	969.56*	119	115	1.59	1938.32	1930	14	1.65E-02	21.7	
25	0	1120.24*	116	55	1.69	2239.73	2231	14	1.61E-02	16.7	
26	0	1378.80	23	22	3.26	2757.03	2748	15	3.15E-03	50.2	
27	0	1460.90*	1194	40	2.09	2921.31	2913	18	1.66E-01	3.2	
28	0	1764.91*	73	11	2.03	3529.68	3523	14	1.02E-02	15.4	

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

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337006.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:46:02
Sample ID         : G247337006 Sample quantity : 130.17 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA6 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:01.39 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 0.00 %
Efficiency type   : Empirical Efficiencies at : Peak Energy
Abundance limit   : 75.00 WTM error limit : 3.00

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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	*	3.461E+01	3.929E+00	6.804E-01	6.414E-02	50.864
CD-109	+	88.03	*	4.270E+00	2.020E+00	1.490E+00	1.658E-01	2.865
SN-126	+	64.28		9.528E-01	8.881E-01	9.806E-01	1.518E-01	0.972
		86.94		1.177E+00	6.682E-01	7.281E-01	3.052E-01	1.616
	+	87.57	*	4.143E-01	1.960E-01	1.453E-01	1.610E-02	2.851
TL-208		277.37		5.304E-01	4.800E-01	8.264E-01	1.075E-01	0.642
	+	583.19	*	5.506E-01	9.747E-02	6.809E-02	6.216E-03	8.087
	+	860.56		1.167E+00	5.422E-01	5.282E-01	5.135E-02	2.209
BI-211		72.87		7.143E+00	4.112E+00	6.422E+00	6.172E-01	1.112
	+	351.06	*	4.294E+00	6.716E-01	4.285E-01	4.022E-02	10.021
PB-212	+	74.82		2.622E+00	6.812E-01	6.451E-01	8.887E-02	4.065
	+	77.11		2.085E+00	3.762E-01	3.679E-01	3.659E-02	5.667
	+	238.63	*	1.940E+00	2.424E-01	1.105E-01	1.135E-02	17.550
	+	300.09		3.112E+00	1.358E+00	1.449E+00	1.607E-01	2.148
BI-214	+	609.32	*	1.338E+00	2.248E-01	1.256E-01	1.246E-02	10.655
	+	1120.29		1.903E+00	6.667E-01	5.566E-01	6.012E-02	3.418
	+	1764.49		1.676E+00	5.348E-01	4.194E-01	3.616E-02	3.996
PB-214	+	74.82		4.648E+00	1.179E+00	1.143E+00	1.437E-01	4.065
	+	77.11		3.675E+00	7.291E-01	6.486E-01	8.379E-02	5.667
	+	242.00		2.918E+00	8.031E-01	6.005E-01	6.529E-02	4.860
	+	295.22		1.703E+00	3.218E-01	2.559E-01	2.905E-02	6.657
	+	351.93	*	1.558E+00	2.584E-01	1.494E-01	1.626E-02	10.430
RA-224	+	240.99	*	5.160E+00	1.388E+00	1.185E+00	1.090E-01	4.353
RA-226	+	609.32	*	1.338E+00	2.248E-01	1.256E-01	1.246E-02	10.655
	+	1120.29		1.903E+00	6.667E-01	5.566E-01	6.012E-02	3.418
	+	1764.49		1.676E+00	5.348E-01	4.194E-01	3.616E-02	3.996
AC-228	+	338.32		2.199E+00	1.057E+00	4.389E-01	1.835E-01	5.009
	+	911.20	*	2.181E+00	4.443E-01	2.598E-01	3.137E-02	8.395
	+	968.97		1.605E+00	7.991E-01	5.860E-01	1.439E-01	2.739
RA-228	+	338.32		2.199E+00	1.057E+00	4.389E-01	1.835E-01	5.009
	+	911.20	*	2.181E+00	4.443E-01	2.598E-01	3.137E-02	8.395
	+	968.97		1.605E+00	7.991E-01	5.860E-01	1.439E-01	2.739
TH-228	+	74.82		2.622E+00	6.324E-01	6.451E-01	6.338E-02	4.065
	+	77.11		2.085E+00	3.762E-01	3.679E-01	3.659E-02	5.667

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	238.63	*	1.940E+00	2.424E-01	1.105E-01	1.135E-02	17.550
	+	300.09		3.112E+00	2.316E+00	1.449E+00	8.882E-01	2.148
TH-232	+	338.32		2.199E+00	5.579E-01	4.389E-01	3.984E-02	5.009
	+	911.20	*	2.181E+00	4.443E-01	2.598E-01	3.137E-02	8.395
	+	968.97		1.605E+00	7.991E-01	5.860E-01	1.439E-01	2.739
TH-234	+	63.29	*	2.472E+00	2.318E+00	2.586E+00	4.806E-01	0.956
	+	92.59		3.877E+00	1.401E+00	1.038E+00	2.372E-01	3.736
U-235	+	89.96		4.418E+00	2.325E+00	1.352E+00	3.442E-01	3.268
	+	93.35		2.929E+00	1.076E+00	7.796E-01	1.855E-01	3.757
		143.76	*	2.147E-01	2.407E-01	3.869E-01	6.503E-02	0.555
		163.33		4.314E-02	4.985E-01	7.929E-01	1.417E-01	0.054
	+	185.72		2.093E-01	8.682E-02	7.527E-02	6.538E-03	2.781
		205.31		-2.932E-01	5.956E-01	9.791E-01	1.790E-01	-0.299
U-238	+	63.29	*	2.472E+00	2.318E+00	2.586E+00	4.806E-01	0.956
	+	92.59		3.877E+00	1.158E+00	1.038E+00	1.083E-01	3.736
ANH-511	+	511.00	*	1.036E-01	7.563E-02	5.749E-02	4.989E-03	1.801

---- 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	*	6.082E-02	3.880E-01	6.612E-01	6.175E-02	0.092
NA-22		1274.54	*	-1.506E-02	5.560E-02	8.849E-02	7.775E-03	-0.170
NA-24		1368.63	*	-2.383E+02	5.560E-02	Half-Life too short		
SC-46		889.28	*	-2.735E-02	4.975E-02	7.546E-02	6.973E-03	-0.362
	+	1120.55		3.349E-01	1.152E-01	1.721E-01	1.457E-02	1.947
V-48		944.13		-9.586E-01	1.303E+00	2.033E+00	1.871E-01	-0.471
		983.53	*	1.698E-01	1.040E-01	1.967E-01	1.790E-02	0.863
		1312.11		-4.538E-02	1.230E-01	1.922E-01	1.733E-02	-0.236
CR-51		320.08	*	-1.712E-01	5.397E-01	8.333E-01	8.022E-02	-0.205
MN-54		834.85	*	-1.040E-02	4.318E-02	6.827E-02	6.152E-03	-0.152
CO-56		846.77	*	-2.991E-02	5.267E-02	8.053E-02	7.300E-03	-0.371
		1037.84		-1.086E-01	3.692E-01	5.967E-01	5.572E-02	-0.182
		1238.28		1.688E-01	1.366E-01	2.419E-01	2.127E-02	0.698
		1771.35		-1.285E-01	3.076E-01	3.760E-01	3.232E-02	-0.342
CO-57		122.06	*	-1.566E-02	2.958E-02	4.643E-02	3.910E-03	-0.337
		136.47		-9.519E-03	2.361E-01	3.770E-01	3.386E-02	-0.025
CO-58		810.76	*	7.657E-03	4.617E-02	7.616E-02	6.794E-03	0.101
FE-59		1099.45	*	-1.337E-01	1.224E-01	1.803E-01	1.676E-02	-0.742
		1291.59		-6.373E-02	1.548E-01	2.406E-01	2.411E-02	-0.265
CO-60		1173.23		3.870E-03	6.284E-02	1.028E-01	8.336E-03	0.038
		1332.49	*	5.691E-03	5.204E-02	8.597E-02	7.864E-03	0.066
ZN-65		1115.54	*	3.208E-03	1.216E-01	1.739E-01	1.480E-02	0.018
SE-75		121.12		3.593E-02	1.611E-01	2.617E-01	2.866E-02	0.137
		136.00		4.165E-03	4.568E-02	7.339E-02	6.155E-03	0.057
		264.66	*	3.585E-02	6.140E-02	9.300E-02	8.679E-03	0.385
		279.54		1.110E-01	1.399E-01	2.393E-01	2.302E-02	0.464
		400.66		1.667E-01	3.109E-01	5.193E-01	5.706E-02	0.321
SR-85		514.00	*	7.849E-02	5.170E-02	8.503E-02	7.378E-03	0.923

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
Y-88		898.04		-4.056E-03	4.778E-02	7.619E-02	7.097E-03	-0.053
		1836.06	*	-3.399E-02	3.589E-02	4.462E-02	3.729E-03	-0.762
Y-91		1204.77	*	-5.162E+00	2.964E+01	4.804E+01	3.997E+00	-0.107
NB-94		702.65	*	7.919E-03	4.111E-02	6.846E-02	5.705E-03	0.116
		871.09		-1.475E-02	4.384E-02	6.841E-02	6.272E-03	-0.216
NB-95		765.81	*	9.766E-02	6.574E-02	1.062E-01	9.219E-03	0.919
NB-95M		235.69	*	2.224E-01	1.763E-01	2.754E-01	2.854E-02	0.808
ZR-95		724.19		1.570E-01	1.355E-01	2.150E-01	1.977E-02	0.731
		756.73	*	9.008E-02	9.487E-02	1.661E-01	1.583E-02	0.542
MO-99		140.51		-6.260E+01	8.683E+01	1.321E+02	3.123E+01	-0.474
		181.07		-1.363E+01	7.518E+01	1.112E+02	2.091E+01	-0.123
		366.42		-3.212E+02	3.842E+02	5.863E+02	5.157E+01	-0.548
		739.50	*	3.259E+01	4.929E+01	8.474E+01	1.331E+01	0.385
		777.92		-2.352E+01	1.573E+02	2.374E+02	2.075E+01	-0.099
TC-99M		140.51	*	-2.003E+16	1.573E+02	Half-Life	too short	
RU-103		497.08	*	9.039E-04	4.327E-02	7.291E-02	1.021E-02	0.012
	+	610.33		1.504E+01	3.180E+00	3.601E+00	5.844E-01	4.176
RH-106		621.93	*	-1.473E-01	3.795E-01	6.086E-01	7.958E-02	-0.242
		1050.41		1.679E+00	3.235E+00	5.624E+00	4.975E-01	0.299
RU-106		621.93	*	-1.473E-01	3.792E-01	6.086E-01	5.075E-02	-0.242
		1050.41		1.679E+00	3.235E+00	5.624E+00	4.975E-01	0.299
AG-108M		433.94	*	2.410E-02	3.584E-02	6.020E-02	5.349E-03	0.400
		614.28		-1.673E-02	4.321E-02	5.921E-02	5.133E-03	-0.283
		722.91		1.263E-02	5.115E-02	7.455E-02	6.508E-03	0.169
AG-110M		657.76	*	3.895E-02	4.352E-02	7.632E-02	6.405E-03	0.510
		677.62		-1.008E-01	3.551E-01	5.696E-01	4.812E-02	-0.177
		706.68		-2.691E-01	2.661E-01	3.986E-01	3.433E-02	-0.675
		763.94		1.184E-01	2.303E-01	3.436E-01	3.059E-02	0.344
		884.68		3.061E-02	6.441E-02	1.083E-01	1.027E-02	0.283
		937.49		-1.799E-01	1.476E-01	2.215E-01	2.106E-02	-0.812
		1384.29		3.504E-02	2.140E-01	3.079E-01	2.896E-02	0.114
		1505.03		-1.637E-01	3.442E-01	5.130E-01	4.707E-02	-0.319
SN-113		391.69	*	-5.945E-02	5.554E-02	8.278E-02	7.220E-03	-0.718
CD-115		260.90		-4.960E-04	5.554E-02	Half-Life	too short	
		492.35		-1.107E-05	5.554E-02	Half-Life	too short	
		527.90	*	5.627E-05	5.554E-02	Half-Life	too short	
SN-117M		156.02		-2.467E+00	3.586E+00	5.511E+00	4.623E-01	-0.448
		158.56	*	-2.098E-02	8.358E-02	1.310E-01	1.101E-02	-0.160
TE-123M		159.00	*	5.331E-04	3.423E-02	5.435E-02	4.599E-03	0.010
SB-124		602.73		-3.310E-02	5.445E-02	7.738E-02	6.527E-03	-0.428
		645.85		-5.171E-01	6.008E-01	9.166E-01	7.991E-02	-0.564
		722.78		1.391E-01	5.435E-01	7.930E-01	6.858E-02	0.175
		1690.97	*	-3.921E-02	9.823E-02	1.511E-01	1.391E-02	-0.259
SB-125		427.87	*	5.967E-02	1.159E-01	1.925E-01	1.685E-02	0.310
	+	463.37		6.884E-01	4.199E-01	6.345E-01	5.908E-02	1.085
		600.60		-1.050E-01	2.179E-01	3.490E-01	3.174E-02	-0.301
		635.95		-2.346E-01	3.175E-01	4.915E-01	4.417E-02	-0.477
TE-125M		109.28	*	1.167E+01	1.196E+01	1.982E+01	2.136E+00	0.589
I-126		388.63		1.700E-01	2.696E-01	4.529E-01	3.849E-02	0.375



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

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-126	666.33	*		4.221E-02	3.376E-01	5.617E-01	4.561E-02	0.075
	753.82			-5.622E-01	2.952E+00	4.742E+00	4.085E-01	-0.119
	414.70			-9.101E-02	1.221E-01	1.825E-01	1.560E-02	-0.499
	666.50			5.164E-03	1.165E-01	1.927E-01	1.565E-02	0.027
	695.00			-6.346E-02	1.189E-01	1.864E-01	1.545E-02	-0.341
	697.00			1.297E-01	4.021E-01	6.776E-01	5.624E-02	0.191
SB-127	720.70	*		3.122E-01	2.369E-01	3.881E-01	3.274E-02	0.804
	856.80			-7.109E-01	9.095E-01	1.128E+00	1.027E-01	-0.631
	252.40			1.528E-01	1.153E+01	1.918E+01	8.076E+00	0.008
	473.00			-9.154E-01	4.782E+00	7.412E+00	1.051E+00	-0.124
	685.70	*		-1.789E+00	3.536E+00	5.538E+00	7.004E-01	-0.323
	783.70			1.263E+01	1.064E+01	1.872E+01	2.597E+00	0.675
I-131	80.19			-2.908E+00	8.241E+00	1.187E+01	1.224E+00	-0.245
	284.31			-1.164E+00	2.689E+00	4.334E+00	4.229E-01	-0.269
	364.49	*		-6.882E-02	2.002E-01	3.175E-01	2.957E-02	-0.217
TE-132	636.99			-1.792E+00	2.762E+00	4.310E+00	3.797E-01	-0.416
	49.72			2.379E+01	7.471E+01	1.263E+02	1.653E+01	0.188
	111.76			-1.209E+00	1.103E+02	1.782E+02	2.250E+01	-0.007
BA-133	116.30			-1.693E+01	9.482E+01	1.517E+02	1.894E+01	-0.112
	228.16	*		-2.128E-01	2.483E+00	4.137E+00	7.088E-01	-0.051
	81.00			-1.397E-01	1.187E-01	1.608E-01	2.656E-02	-0.869
	276.40			2.619E-01	4.447E-01	7.531E-01	1.095E-01	0.348
	302.85			1.813E-01	1.730E-01	2.681E-01	3.623E-02	0.676
	356.01	*		3.489E-02	5.593E-02	8.373E-02	1.101E-02	0.417
I-133	383.85			-3.188E-01	3.750E-01	5.709E-01	7.072E-02	-0.558
	529.87	*		9.523E-02	3.750E-01	Half-Life	too short	
	875.33			2.281E+00	3.750E-01	Half-Life	too short	
CS-134	1298.22			2.514E+00	3.750E-01	Half-Life	too short	
	563.25			1.264E-01	3.884E-01	6.638E-01	5.752E-02	0.190
	569.33			-3.413E-02	2.191E-01	3.608E-01	3.133E-02	-0.095
	604.72			7.371E-03	4.472E-02	6.552E-02	5.534E-03	0.113
	795.86	*		1.159E-01	6.316E-02	1.152E-01	1.024E-02	1.006
	801.95			-8.778E-02	4.955E-01	7.921E-01	7.054E-02	-0.111
CS-135	1365.19			1.270E+00	1.525E+00	2.740E+00	2.617E-01	0.464
	268.22	*		1.045E-01	2.049E-01	3.085E-01	3.257E-02	0.339
	546.56			-4.809E+14	2.049E-01	Half-Life	too short	
I-135	836.80			-1.973E+15	2.049E-01	Half-Life	too short	
	1038.76			7.790E+14	2.049E-01	Half-Life	too short	
	1131.51			1.435E+15	2.049E-01	Half-Life	too short	
	1260.41	*		-9.535E+14	2.049E-01	Half-Life	too short	
	1457.56			1.639E+17	2.049E-01	Half-Life	too short	
	1678.03			8.238E+14	2.049E-01	Half-Life	too short	
CS-136	1791.20			1.222E+14	2.049E-01	Half-Life	too short	
	153.25			9.952E-01	1.317E+00	2.157E+00	2.171E-01	0.461
	176.60			-4.824E-03	7.367E-01	1.249E+00	1.184E-01	-0.004
	273.65			-1.114E+00	9.594E-01	1.277E+00	1.276E-01	-0.872
	340.55			7.799E-01	2.844E-01	4.671E-01	4.379E-02	1.670
	818.51			7.397E-03	1.140E-01	1.861E-01	1.665E-02	0.040
	1048.07	*		-4.541E-02	1.780E-01	2.895E-01	2.668E-02	-0.157

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	1235.36			5.879E-01	1.050E+00	1.790E+00	2.093E-01	0.329
BA-137M	661.66	*		-1.150E-02	4.484E-02	7.249E-02	5.866E-03	-0.159
CS-137	661.66	*		-1.215E-02	4.737E-02	7.657E-02	6.210E-03	-0.159
CE-139	165.86	*		-1.216E-02	3.602E-02	5.605E-02	4.740E-03	-0.217
BA-140	162.66			5.165E-01	1.187E+00	1.919E+00	1.732E-01	0.269
	304.85			9.108E-02	2.095E+00	3.033E+00	8.937E-01	0.030
	423.72			4.432E-01	3.101E+00	5.032E+00	1.655E+00	0.088
	537.26	*		2.762E-01	3.904E-01	6.682E-01	2.267E-01	0.413
LA-140	328.76	+		1.136E+00	5.707E-01	8.948E-01	8.603E-02	1.270
	487.02			-2.831E-02	2.097E-01	3.500E-01	3.225E-02	-0.081
	815.77			-2.314E-01	5.025E-01	7.770E-01	7.695E-02	-0.298
	1596.21	*		-3.267E-02	1.389E-01	2.242E-01	2.032E-02	-0.146
CE-141	145.44	*		-6.808E-03	8.247E-02	1.283E-01	1.090E-02	-0.053
CE-143	57.36			-2.373E-03	8.247E-02	Half-Life	too short	
	293.27	*		6.301E-03	8.247E-02	Half-Life	too short	
	664.57			1.524E-02	8.247E-02	Half-Life	too short	
	721.93			1.358E-02	8.247E-02	Half-Life	too short	
CE-144	80.12			-9.477E-01	2.974E+00	4.292E+00	4.389E-01	-0.221
	133.52	*		-3.796E-02	2.372E-01	3.583E-01	5.419E-02	-0.106
PM-144	476.78			-2.539E-02	7.366E-02	1.213E-01	1.142E-02	-0.209
	618.01			2.429E-02	3.760E-02	6.388E-02	5.500E-03	0.380
	696.49	*		1.069E-02	3.971E-02	6.665E-02	5.534E-03	0.160
PR-144	696.51	*		7.971E-01	2.979E+00	4.999E+00	4.148E-01	0.159
	1489.16			-5.547E+00	1.438E+01	2.159E+01	1.983E+00	-0.257
PM-146	453.88	*		5.182E-02	4.886E-02	8.399E-02	8.916E-03	0.617
	633.25			9.084E-01	1.756E+00	2.960E+00	1.128E+00	0.307
	735.93			-9.655E-02	1.784E-01	2.746E-01	7.686E-02	-0.352
	747.24			5.528E-02	1.161E-01	1.970E-01	2.868E-02	0.281
ND-147	91.11			1.474E+00	5.734E-01	7.490E-01	8.409E-02	1.968
	319.41			-1.975E+00	5.941E+00	9.177E+00	8.452E-01	-0.215
	531.02	*		-3.590E-01	9.132E-01	1.484E+00	2.222E-01	-0.242
PM-149	285.90	*		2.164E-04	9.132E-01	Half-Life	too short	
EU-152	121.78			-4.692E-02	8.545E-02	1.340E-01	1.304E-02	-0.350
	244.70			3.040E-01	3.872E-01	5.974E-01	5.506E-02	0.509
	344.28	*		-1.062E-01	1.367E-01	1.818E-01	1.730E-02	-0.584
	778.90			-1.337E-01	3.268E-01	5.128E-01	4.484E-02	-0.261
	964.08			4.676E-01	4.220E-01	6.770E-01	6.197E-02	0.691
	1085.87			-2.175E-01	4.789E-01	7.597E-01	6.586E-02	-0.286
	1112.07			-1.284E-01	4.390E-01	6.001E-01	5.114E-02	-0.214
	1408.01			-1.496E-01	2.554E-01	3.846E-01	3.538E-02	-0.389
GD-153	69.67			-1.434E+00	2.171E+00	3.322E+00	3.124E-01	-0.432
	97.43	*		-8.675E-03	1.031E-01	1.490E-01	1.470E-02	-0.058
	103.18			2.649E-02	1.234E-01	2.020E-01	1.892E-02	0.131
EU-154	123.07			-1.304E-02	5.926E-02	9.435E-02	1.055E-02	-0.138
	723.31			4.863E-02	2.417E-01	3.501E-01	3.270E-02	0.139
	873.19			2.335E-01	3.593E-01	6.128E-01	7.540E-02	0.381
	996.26			-1.706E-01	4.454E-01	7.170E-01	1.268E-01	-0.238
	1004.73			-1.505E-01	2.533E-01	3.982E-01	4.756E-02	-0.378
	1274.44	*		-4.217E-02	1.572E-01	2.502E-01	2.877E-02	-0.169

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155		86.55		3.328E-01	1.369E-01	2.126E-01	2.342E-02	1.566
		105.31	*	3.067E-02	1.208E-01	1.978E-01	1.841E-02	0.155
TB-160		86.79		9.422E-01	3.799E-01	5.900E-01	6.476E-02	1.597
		197.04		2.597E-01	7.084E-01	1.181E+00	1.041E-01	0.220
		215.65		-2.689E-01	8.884E-01	1.470E+00	1.324E-01	-0.183
		298.57		2.747E-01	1.461E-01	2.585E-01	2.401E-02	1.063
		879.36	*	-1.348E-01	1.972E-01	2.949E-01	2.713E-02	-0.457
		962.29		4.798E-01	7.596E-01	1.176E+00	1.077E-01	0.408
		966.15		9.290E-01	3.588E-01	6.205E-01	5.676E-02	1.497
		1177.93		1.176E-01	5.330E-01	8.941E-01	7.278E-02	0.131
		1271.85		-2.922E-01	9.611E-01	1.525E+00	1.336E-01	-0.192
HO-166M		80.57		-2.370E-01	3.234E-01	4.558E-01	4.682E-02	-0.520
		184.41		9.777E-02	4.673E-02	7.582E-02	6.575E-03	1.289
		280.46		-1.868E-02	1.053E-01	1.725E-01	1.606E-02	-0.108
		410.95		2.741E-01	3.009E-01	5.121E-01	4.369E-02	0.535
		711.68	*	6.504E-02	7.045E-02	1.239E-01	1.039E-02	0.525
		752.31		-1.497E-01	3.369E-01	5.284E-01	4.548E-02	-0.283
		810.29		-1.535E-02	6.836E-02	1.085E-01	9.652E-03	-0.142
TA-182		67.75		1.085E-01	1.495E-01	2.280E-01	2.121E-02	0.476
		100.11		5.165E-02	2.028E-01	3.328E-01	3.199E-02	0.155
		152.43		1.508E-01	4.217E-01	6.812E-01	5.700E-02	0.221
		222.11		3.429E-01	4.233E-01	7.315E-01	6.628E-02	0.469
	+	1121.30		9.180E-01	3.158E-01	4.686E-01	3.966E-02	1.959
		1189.05		-1.121E-01	4.139E-01	6.656E-01	5.467E-02	-0.168
		1221.41	*	1.980E-01	2.892E-01	4.990E-01	4.206E-02	0.397
		1231.02		1.067E-01	6.676E-01	1.110E+00	9.430E-02	0.096
IR-192	+	295.96		1.318E+00	2.341E-01	3.549E-01	3.320E-02	3.714
		308.46		3.856E-02	1.095E-01	1.837E-01	1.709E-02	0.210
		316.51	*	1.614E-02	4.571E-02	7.637E-02	7.057E-03	0.211
		468.07		6.539E-02	9.764E-02	1.449E-01	1.347E-02	0.451
HG-203		70.83		-3.845E-02	1.864E+00	2.749E+00	4.545E-01	-0.014
		72.87		1.911E+00	1.127E+00	1.718E+00	2.767E-01	1.112
		279.20	*	5.958E-02	5.171E-02	8.962E-02	8.530E-03	0.665
BI-207		72.81		3.860E-01	2.358E-01	3.675E-01	3.531E-02	1.050
	+	74.97		7.560E-01	1.821E-01	2.648E-01	2.587E-02	2.855
		569.70		1.199E-02	3.408E-02	5.826E-02	4.988E-03	0.206
		1063.66	*	-2.660E-02	6.425E-02	1.026E-01	9.008E-03	-0.259
		1770.23		1.201E-01	5.595E-01	8.420E-01	7.242E-02	0.143
PB-210		46.54	*	-1.690E+00	5.455E+00	8.881E+00	8.544E-01	-0.190
PB-211		404.85	*	-1.303E-01	8.468E-01	1.348E+00	6.521E-01	-0.097
		427.09		1.376E+00	2.006E+00	3.208E+00	1.484E+00	0.429
		832.01		-9.345E-01	1.277E+00	1.765E+00	9.166E-01	-0.529
BI-212	+	727.33	*	3.397E+00	1.143E+00	1.608E+00	1.987E-01	2.113
		785.37		3.981E-01	4.007E+00	6.573E+00	5.769E-01	0.061
		1620.50		5.941E-01	2.488E+00	4.314E+00	3.889E-01	0.138
RN-219	+	271.23		9.364E-01	3.896E-01	5.571E-01	6.038E-02	1.681
		401.81	*	6.383E-02	4.868E-01	7.928E-01	1.174E-01	0.081
RA-223		81.07		-3.292E-01	2.652E-01	3.622E-01	3.739E-02	-0.909
		83.79		1.037E-01	1.531E-01	2.306E-01	2.448E-02	0.450

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

Nuclide	Line Ided	Energy (keV)	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		94.87	1.068E+00	5.523E-01	8.647E-01	8.774E-02	1.235
		144.24	7.469E-01	7.990E-01	1.295E+00	1.214E-01	0.577
		154.21	5.223E-01	4.644E-01	7.706E-01	7.108E-02	0.678
	+	269.46	7.275E-01	3.002E-01	4.218E-01	3.991E-02	1.725
		323.87	* -8.804E-02	8.879E-01	1.264E+00	2.227E-01	-0.070
AC-227	+	338.28	8.724E+00	2.333E+00	3.001E+00	3.721E-01	2.908
		79.69	1.715E-01	1.464E+00	2.161E+00	3.904E-01	0.079
		235.96	3.475E-01	2.117E-01	3.336E-01	3.603E-02	1.041
		256.23	* -5.254E-02	2.868E-01	4.720E-01	5.910E-02	-0.111
	+	299.98	3.423E+00	1.513E+00	2.070E+00	2.725E-01	1.654
		304.50	8.378E-01	1.904E+00	2.843E+00	4.799E-01	0.295
TH-227		334.37	3.343E-01	2.215E+00	3.210E+00	5.092E-01	0.104
		79.80	1.232E-01	1.926E+00	2.834E+00	6.362E-01	0.043
		235.96	3.475E-01	2.114E-01	3.336E-01	3.417E-02	1.041
		256.23	* -5.254E-02	2.868E-01	4.720E-01	6.619E-02	-0.111
	+	299.98	3.423E+00	1.513E+00	2.070E+00	2.725E-01	1.654
		304.50	8.378E-01	1.904E+00	2.843E+00	4.799E-01	0.295
TH-229		334.37	3.343E-01	2.215E+00	3.210E+00	5.092E-01	0.104
		85.43	3.210E-01	2.640E-01	4.034E-01	4.361E-02	0.796
	+	88.47	6.388E-01	3.022E-01	2.641E-01	2.918E-02	2.419
		193.51	* -4.725E-01	6.039E-01	9.842E-01	8.637E-02	-0.480
		210.85	1.710E+00	1.049E+00	1.853E+00	1.660E-01	0.923
PA-231		283.69	* -6.085E-01	1.738E+00	2.813E+00	4.221E-01	-0.216
	+	301.36	2.199E+00	9.688E-01	1.284E+00	1.622E-01	1.713
TH-231		81.07	-3.292E-01	2.652E-01	3.622E-01	3.739E-02	-0.909
		83.79	1.037E-01	1.531E-01	2.306E-01	2.448E-02	0.450
		94.87	1.068E+00	5.523E-01	8.647E-01	8.774E-02	1.235
		144.24	7.469E-01	7.990E-01	1.295E+00	1.214E-01	0.577
		154.21	5.223E-01	4.644E-01	7.706E-01	7.108E-02	0.678
	+	269.46	7.275E-01	3.002E-01	4.218E-01	3.991E-02	1.725
		323.87	* -8.804E-02	8.879E-01	1.264E+00	2.227E-01	-0.070
PA-233	+	338.28	8.724E+00	2.333E+00	3.001E+00	3.721E-01	2.908
	+	300.13	1.549E+00	6.950E-01	9.370E-01	1.427E-01	1.653
		311.90	* -7.118E-02	7.747E-02	1.199E-01	1.136E-02	-0.594
PA-234		340.48	3.105E+00	1.177E+00	1.586E+00	3.842E-01	1.958
		94.67	5.259E-01	2.133E-01	3.292E-01	4.452E-02	1.598
		98.44	1.189E-01	1.238E-01	1.703E-01	9.531E-02	0.698
		111.00	5.463E-02	2.133E-01	3.450E-01	4.232E-02	0.158
		131.20	5.674E-02	1.315E-01	1.924E-01	1.603E-02	0.295
		569.50	-1.591E-03	3.043E-01	5.070E-01	4.341E-02	-0.003
		733.00	2.028E-01	4.796E-01	7.129E-01	1.579E-01	0.284
		880.51	-2.963E-01	3.728E-01	5.535E-01	5.096E-02	-0.535
		883.24	1.807E-01	3.819E-01	6.113E-01	4.114E-01	0.296
		926.50	-1.028E-01	2.220E-01	3.370E-01	8.591E-02	-0.305
		946.00	* -1.321E-01	3.752E-01	6.089E-01	1.159E-01	-0.217
		949.00	6.328E-01	5.355E-01	9.825E-01	9.029E-02	0.644
PA-234M		766.42	3.364E+01	2.396E+01	2.843E+01	1.443E+01	1.184
		1001.03	* 1.454E+00	5.545E+00	9.589E+00	9.909E-01	0.152
NP-237		86.48	* 8.141E-01	3.770E-01	5.221E-01	1.235E-01	1.559

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239		95.86		4.304E-01	1.080E+00	1.596E+00	3.916E-01	0.270
		99.53		7.786E-02	1.812E-01	2.993E-01	2.893E-02	0.260
		103.37		3.823E-02	1.113E-01	1.831E-01	1.712E-02	0.209
		106.12		2.797E-02	9.697E-02	1.589E-01	1.455E-02	0.176
		117.23	*	-1.827E-01	4.701E-01	7.449E-01	6.396E-02	-0.245
		228.18		-1.298E-02	2.577E-01	4.300E-01	3.917E-02	-0.030
AM-241		277.60		1.702E-01	2.203E-01	3.765E-01	3.506E-02	0.452
		59.54	*	1.243E-02	2.094E-01	3.126E-01	2.967E-02	0.040
CM-247		278.00		9.464E-01	9.367E-01	1.614E+00	1.504E-01	0.586
		287.50		-9.838E-01	1.447E+00	2.294E+00	2.136E-01	-0.429
CF-249		402.40	*	7.447E-03	4.479E-02	7.310E-02	6.213E-03	0.102
		252.80		-7.955E-02	1.074E+00	1.779E+00	1.647E-01	-0.045
		333.37		-2.578E-04	2.827E-01	3.404E-01	3.103E-02	-0.001
CF-251		388.16	*	3.882E-02	5.003E-02	8.471E-02	7.204E-03	0.458
		177.52	*	3.159E-02	1.476E-01	2.522E-01	2.166E-02	0.125
		227.38		2.745E-02	4.343E-01	7.285E-01	6.631E-02	0.038
		285.41		-5.920E-01	2.550E+00	4.155E+00	3.869E-01	-0.142

# 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]G247337006      *
* Acquisition date   : 4-MAR-2010 10:46:02 Detector SN#                   *
* Detector ID        : GAM06                                           Sensitivity      : 5.000      *
* Geometry           : CAN                                           Energy tolerance: 1.500      *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000      *
* Elapsed real time  : 0 02:00:01.39 Half life ratio  : 8.000      *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID      *
* Sample ID          : G247337006 Analyst initials: MXR1              *
* Batch Number       : 955027 Sample Quantity : 1.3017E+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	3.461E+01	3.851E+00	6.809E-01	0.000E+00
CD-109	4.270E+00	1.979E+00	1.560E+00	0.000E+00
SN-126	4.143E-01	1.921E-01	1.522E-01	0.000E+00
TL-208	5.506E-01	9.552E-02	6.918E-02	0.000E+00
BI-211	4.294E+00	6.581E-01	4.390E-01	0.000E+00
PB-212	1.940E+00	2.375E-01	1.139E-01	0.000E+00
BI-214	1.338E+00	2.203E-01	1.275E-01	0.000E+00
PB-214	1.558E+00	2.533E-01	1.531E-01	0.000E+00
RA-224	5.160E+00	1.360E+00	1.222E+00	0.000E+00
RA-226	1.338E+00	2.203E-01	1.275E-01	0.000E+00
AC-228	2.181E+00	4.354E-01	2.620E-01	0.000E+00
RA-228	2.181E+00	4.354E-01	2.620E-01	0.000E+00
TH-228	1.940E+00	2.375E-01	1.139E-01	0.000E+00
TH-232	2.181E+00	4.354E-01	2.620E-01	0.000E+00
TH-234	2.472E+00	2.272E+00	2.720E+00	0.000E+00
U-235	2.147E-01	2.359E-01	4.020E-01	0.000E+00
U-238	2.472E+00	2.272E+00	2.720E+00	0.000E+00
ANH-511	1.036E-01	7.412E-02	5.853E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	6.082E-02	3.803E-01	6.740E-01	0.000E+00 NOT IDENT.
NA-22	-1.506E-02	5.448E-02	8.876E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	1.953E+08	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-2.735E-02	4.876E-02	7.614E-02	0.000E+00 FAIL ABUN
V-48	1.698E-01	1.019E-01	1.982E-01	0.000E+00 NOT IDENT.
CR-51	-1.712E-01	5.290E-01	8.550E-01	0.000E+00 NOT IDENT.
MN-54	-1.040E-02	4.231E-02	6.896E-02	0.000E+00 NOT IDENT.
CO-56	-2.991E-02	5.161E-02	8.132E-02	0.000E+00 NOT IDENT.
CO-57	-1.566E-02	2.899E-02	4.837E-02	0.000E+00 NOT IDENT.

CO-58	7.657E-03	4.524E-02	7.697E-02	0.000E+00	NOT IDENT.
FE-59	-1.337E-01	1.199E-01	1.813E-01	0.000E+00	NOT IDENT.
CO-60	5.691E-03	5.100E-02	8.617E-02	0.000E+00	NOT IDENT.
ZN-65	3.208E-03	1.192E-01	1.748E-01	0.000E+00	NOT IDENT.
SE-75	3.585E-02	6.017E-02	9.570E-02	0.000E+00	NOT IDENT.
SR-85	7.849E-02	5.067E-02	8.658E-02	0.000E+00	NOT IDENT.
Y-88	-3.399E-02	3.518E-02	4.448E-02	0.000E+00	NOT IDENT.
Y-91	-5.162E+00	2.905E+01	4.823E+01	0.000E+00	NOT IDENT.
NB-94	7.919E-03	4.028E-02	6.935E-02	0.000E+00	NOT IDENT.
NB-95	9.766E-02	6.442E-02	1.075E-01	0.000E+00	NOT IDENT.
NB-95M	2.224E-01	1.728E-01	2.839E-01	0.000E+00	NOT IDENT.
ZR-95	9.008E-02	9.297E-02	1.681E-01	0.000E+00	NOT IDENT.
MO-99	3.259E+01	4.831E+01	8.576E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	2.782E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	9.039E-04	4.241E-02	7.427E-02	0.000E+00	FAIL ABUN
RH-106	-1.473E-01	3.719E-01	6.178E-01	0.000E+00	NOT IDENT.
RU-106	-1.473E-01	3.716E-01	6.178E-01	0.000E+00	NOT IDENT.
AG-108M	2.410E-02	3.513E-02	6.146E-02	0.000E+00	NOT IDENT.
AG-110M	3.895E-02	4.265E-02	7.740E-02	0.000E+00	NOT IDENT.
SN-113	-5.945E-02	5.442E-02	8.465E-02	0.000E+00	NOT IDENT.
CD-115	0.000E+00	6.122E+01	0.000E+00	0.000E+00	SHORT HLIF
SN-117M	-2.098E-02	8.191E-02	1.359E-01	0.000E+00	NOT IDENT.
TE-123M	5.331E-04	3.355E-02	5.638E-02	0.000E+00	NOT IDENT.
SB-124	-3.921E-02	9.626E-02	1.509E-01	0.000E+00	NOT IDENT.
SB-125	5.967E-02	1.136E-01	1.966E-01	0.000E+00	FAIL ABUN
TE-125M	1.167E+01	1.172E+01	2.068E+01	0.000E+00	NOT IDENT.
I-126	4.221E-02	3.308E-01	5.694E-01	0.000E+00	NOT IDENT.
SB-126	3.122E-01	2.321E-01	3.930E-01	0.000E+00	NOT IDENT.
SB-127	-1.789E+00	3.465E+00	5.612E+00	0.000E+00	NOT IDENT.
I-131	-6.882E-02	1.962E-01	3.251E-01	0.000E+00	NOT IDENT.
TE-132	-2.128E-01	2.433E+00	4.267E+00	0.000E+00	NOT IDENT.
BA-133	3.489E-02	5.481E-02	8.575E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	3.391E+05	0.000E+00	0.000E+00	SHORT HLIF
CS-134	1.159E-01	6.190E-02	1.165E-01	0.000E+00	NOT IDENT.
CS-135	1.045E-01	2.008E-01	3.174E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.793E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-4.541E-02	1.745E-01	2.913E-01	0.000E+00	NOT IDENT.
BA-137M	-1.150E-02	4.394E-02	7.350E-02	0.000E+00	NOT IDENT.
CS-137	-1.215E-02	4.642E-02	7.764E-02	0.000E+00	NOT IDENT.
CE-139	-1.216E-02	3.530E-02	5.810E-02	0.000E+00	NOT IDENT.
BA-140	2.762E-01	3.826E-01	6.798E-01	0.000E+00	NOT IDENT.
LA-140	-3.267E-02	1.362E-01	2.241E-01	0.000E+00	FAIL ABUN
CE-141	-6.808E-03	8.082E-02	1.332E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.523E+03	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-3.796E-02	2.325E-01	3.727E-01	0.000E+00	NOT IDENT.
PM-144	1.069E-02	3.892E-02	6.752E-02	0.000E+00	NOT IDENT.
PR-144	7.971E-01	2.920E+00	5.065E+00	0.000E+00	NOT IDENT.
PM-146	5.182E-02	4.788E-02	8.569E-02	0.000E+00	NOT IDENT.
ND-147	-3.590E-01	8.949E-01	1.511E+00	0.000E+00	NOT IDENT.
PM-149	0.000E+00	4.747E+02	0.000E+00	0.000E+00	SHORT HLIF
EU-152	-1.062E-01	1.340E-01	1.863E-01	0.000E+00	NOT IDENT.
GD-153	-8.675E-03	1.011E-01	1.558E-01	0.000E+00	NOT IDENT.
EU-154	-4.217E-02	1.541E-01	2.510E-01	0.000E+00	NOT IDENT.
EU-155	3.067E-02	1.184E-01	2.065E-01	0.000E+00	NOT IDENT.
TB-160	-1.348E-01	1.932E-01	2.976E-01	0.000E+00	NOT IDENT.
HO-166M	6.504E-02	6.904E-02	1.255E-01	0.000E+00	NOT IDENT.
TA-182	1.980E-01	2.835E-01	5.009E-01	0.000E+00	FAIL ABUN
IR-192	1.614E-02	4.480E-02	7.837E-02	0.000E+00	FAIL ABUN
HG-203	5.958E-02	5.068E-02	9.215E-02	0.000E+00	NOT IDENT.
BI-207	-2.660E-02	6.297E-02	1.032E-01	0.000E+00	FAIL ABUN
PB-210	-1.690E+00	5.346E+00	9.389E+00	0.000E+00	NOT IDENT.
PB-211	-1.303E-01	8.299E-01	1.378E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.120E+00	1.628E+00	0.000E+00	FAIL ABUN
RN-219	6.383E-02	4.771E-01	8.104E-01	0.000E+00	FAIL ABUN
RA-223	-8.804E-02	8.702E-01	1.297E+00	0.000E+00	FAIL ABUN
AC-227	-5.254E-02	2.811E-01	4.859E-01	0.000E+00	FAIL ABUN
TH-227	-5.254E-02	2.811E-01	4.859E-01	0.000E+00	FAIL ABUN
TH-229	-4.725E-01	5.918E-01	1.018E+00	0.000E+00	FAIL ABUN
PA-231	-6.085E-01	1.703E+00	2.892E+00	0.000E+00	FAIL ABUN
TH-231	-8.804E-02	8.702E-01	1.297E+00	0.000E+00	FAIL ABUN
PA-233	-7.118E-02	7.592E-02	1.231E-01	0.000E+00	FAIL ABUN
PA-234	-1.321E-01	3.677E-01	6.138E-01	0.000E+00	NOT IDENT.
PA-234M	1.454E+00	5.434E+00	9.657E+00	0.000E+00	NOT IDENT.
NP-237	0.000E+00	3.695E-01	5.468E-01	0.000E+00	NOT IDENT.
NP-239	-1.827E-01	4.607E-01	7.764E-01	0.000E+00	NOT IDENT.
AM-241	1.243E-02	2.053E-01	3.292E-01	0.000E+00	NOT IDENT.
CM-247	7.447E-03	4.389E-02	7.472E-02	0.000E+00	NOT IDENT.
CF-249	3.882E-02	4.903E-02	8.663E-02	0.000E+00	NOT IDENT.

CF-251

3.159E-02

1.446E-01

2.611E-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]G247337006.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 10:46:02.
Sample ID          : G247337006 Sample quantity : 1.30170E+02 GRAM
Detector name      : GAM06 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.39 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit   : 75.00000 Sensitivity : 5.00000
Batch ID          : 955027 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	1194	10.66*	9.337E-01	3.461E+01	3.461E+01	11.35
CD-109	88.03	280	3.70*	5.259E+00	4.143E+00	4.270E+00	47.30
SN-126	64.28	87	9.60	2.730E+00	9.528E-01	9.528E-01	93.21
	86.94	-----	8.90	5.158E+00	-----	Line Not Found	-----
	87.57	280	37.00*	5.259E+00	4.143E-01	4.143E-01	47.30
TL-208	277.37	-----	6.60	3.754E+00	-----	Line Not Found	-----
	583.19	345	85.00*	2.125E+00	5.506E-01	5.506E-01	17.70
	860.56	76	12.50	1.510E+00	1.167E+00	1.167E+00	46.47
BI-211	72.87	-----	1.23	3.914E+00	-----	Line Not Found	-----
	351.06	605	12.92*	3.143E+00	4.294E+00	4.294E+00	15.64
PB-212	74.82	386	10.28	4.129E+00	2.622E+00	2.622E+00	25.98
	77.11	539	17.10	4.364E+00	2.085E+00	2.085E+00	18.04
	238.63	1229	43.60*	4.190E+00	1.940E+00	1.940E+00	12.49
	300.09	126	3.30	3.541E+00	3.112E+00	3.112E+00	43.64
BI-214	609.32	433	45.49*	2.050E+00	1.338E+00	1.338E+00	16.80
	1120.29	116	14.92	1.179E+00	1.903E+00	1.903E+00	35.04
	1764.49	73	15.30	8.243E-01	1.676E+00	1.676E+00	31.91
PB-214	74.82	386	5.80	4.129E+00	4.648E+00	4.648E+00	25.36
	77.11	539	9.70	4.364E+00	3.675E+00	3.675E+00	19.84
	242.00	305	7.25	4.154E+00	2.918E+00	2.918E+00	27.52
	295.22	390	18.42	3.583E+00	1.703E+00	1.703E+00	18.89
	351.93	605	35.60*	3.143E+00	1.558E+00	1.558E+00	16.58
RA-224	240.99	305	4.10*	4.154E+00	5.160E+00	5.160E+00	26.90
RA-226	609.32	433	45.49*	2.050E+00	1.338E+00	1.338E+00	16.80
	1120.29	116	14.92	1.179E+00	1.903E+00	1.903E+00	35.04
	1764.49	73	15.30	8.243E-01	1.676E+00	1.676E+00	31.91
AC-228	338.32	278	11.27	3.238E+00	2.199E+00	2.199E+00	48.06
	911.20	279	25.80*	1.433E+00	2.181E+00	2.181E+00	20.38
	968.97	119	15.80	1.352E+00	1.605E+00	1.605E+00	49.78
RA-228	338.32	278	11.27	3.238E+00	2.199E+00	2.199E+00	48.06
	911.20	279	25.80*	1.433E+00	2.181E+00	2.181E+00	20.38
	968.97	119	15.80	1.352E+00	1.605E+00	1.605E+00	49.78

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	386	10.28	4.129E+00	2.622E+00	2.622E+00	24.12
	77.11	539	17.10	4.364E+00	2.085E+00	2.085E+00	18.04
	238.63	1229	43.60*	4.190E+00	1.940E+00	1.940E+00	12.49
	300.09	126	3.30	3.541E+00	3.112E+00	3.112E+00	74.43
TH-232	338.32	278	11.27	3.238E+00	2.199E+00	2.199E+00	25.37
	911.20	279	25.80*	1.433E+00	2.181E+00	2.181E+00	20.38
	968.97	119	15.80	1.352E+00	1.605E+00	1.605E+00	49.78
TH-234	63.29	87	3.70*	2.730E+00	2.472E+00	2.472E+00	93.78
	92.59	312	4.23	5.493E+00	3.877E+00	3.877E+00	36.12
U-235	89.96	280	3.47	5.259E+00	4.418E+00	4.418E+00	52.62
	93.35	312	5.60	5.493E+00	2.929E+00	2.929E+00	36.75
	143.76	-----	10.96*	5.718E+00	-----	Line Not Found	-----
	163.33	-----	5.08	5.383E+00	-----	Line Not Found	-----
U-238	185.72	207	57.20	4.978E+00	2.093E-01	2.093E-01	41.47
	205.31	-----	5.01	4.664E+00	-----	Line Not Found	-----
	63.29	87	3.70*	2.730E+00	2.472E+00	2.472E+00	93.78
ANH-511	92.59	312	4.23	5.493E+00	3.877E+00	3.877E+00	29.86
	511.00	85	100.00*	2.364E+00	1.036E-01	1.036E-01	73.03

Flag: "\*" = Keyline

Total number of lines in spectrum 28  
Number of unidentified lines 3  
Number of lines tentatively identified by NID 25 89.29%

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	3.461E+01	3.461E+01	0.393E+01	11.35	
CD-109	461.40D	1.03	4.143E+00	4.270E+00	2.020E+00	47.30	
SN-126	2.30E+05Y	1.00	4.143E-01	4.143E-01	1.960E-01	47.30	
TL-208	1.41E+10Y	1.00	5.506E-01	5.506E-01	0.975E-01	17.70	
BI-211	7.04E+08Y	1.00	4.294E+00	4.294E+00	0.672E+00	15.64	
PB-212	1.41E+10Y	1.00	1.940E+00	1.940E+00	0.242E+00	12.49	
BI-214	1600.00Y	1.00	1.338E+00	1.338E+00	0.225E+00	16.80	
PB-214	1600.00Y	1.00	1.558E+00	1.558E+00	0.258E+00	16.58	
RA-224	1.41E+10Y	1.00	5.160E+00	5.160E+00	1.388E+00	26.90	
RA-226	1600.00Y	1.00	1.338E+00	1.338E+00	0.225E+00	16.80	
AC-228	1.41E+10Y	1.00	2.181E+00	2.181E+00	0.444E+00	20.38	
RA-228	1.41E+10Y	1.00	2.181E+00	2.181E+00	0.444E+00	20.38	
TH-228	1.41E+10Y	1.00	1.940E+00	1.940E+00	0.242E+00	12.49	
TH-232	1.41E+10Y	1.00	2.181E+00	2.181E+00	0.444E+00	20.38	
TH-234	4.47E+09Y	1.00	2.472E+00	2.472E+00	2.318E+00	93.78	
U-235	7.04E+08Y	1.00	2.093E-01	2.093E-01	0.868E-01	41.47	K
U-238	4.47E+09Y	1.00	2.472E+00	2.472E+00	2.318E+00	93.78	
ANH-511	1.00E+09Y	1.00	1.036E-01	1.036E-01	0.756E-01	73.03	
Total Activity :			6.908E+01	6.921E+01			

Grand Total Activity : 6.908E+01 6.921E+01

Flags: "K" = Keyline not found "M" = Manually accepted  
"E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	128.75	126	308	1.46	257.02	253	8	1.75E-02	51.6	5.91E+00	
0	270.06	134	183	0.85	539.52	535	9	1.86E-02	40.2	3.83E+00	T
0	328.29	89	132	1.99	655.93	652	8	1.24E-02	49.3	3.31E+00	T
0	462.93	64	95	1.63	925.12	922	9	8.82E-03	60.3	2.55E+00	T
0	727.45	138	77	1.58	1454.08	1448	13	1.92E-02	31.3	1.76E+00	T
0	768.74	97	91	3.36	1536.67	1528	19	1.35E-02	51.9	1.68E+00	
0	1378.80	23	22	3.26	2757.03	2748	15	3.15E-03	****	9.79E-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]G247337006.CNF;1
* Acquisition date   : 4-MAR-2010 10:46:02.  Detector SN#      :
* Detector ID        : GAM06                  Sensitivity      : 5.00000
* Geometry           : CAN                    Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit : 75.00000
* Elapsed real time  : 0 02:00:01.39          Half life ratio  : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 12-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G247337006           Analyst initials: MXR1
* Batch Number       : 955027               Sample Quantity : 1.30170E+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	3.461E+01	3.929E+00	6.804E-01	6.414E-02	50.864
CD-109	4.270E+00	2.020E+00	1.490E+00	1.658E-01	2.865
SN-126	4.143E-01	1.960E-01	1.453E-01	1.610E-02	2.851
TL-208	5.506E-01	9.747E-02	6.809E-02	6.216E-03	8.087
BI-211	4.294E+00	6.716E-01	4.285E-01	4.022E-02	10.021
PB-212	1.940E+00	2.424E-01	1.105E-01	1.135E-02	17.550
BI-214	1.338E+00	2.248E-01	1.256E-01	1.246E-02	10.655
PB-214	1.558E+00	2.584E-01	1.494E-01	1.626E-02	10.430
RA-224	5.160E+00	1.388E+00	1.185E+00	1.090E-01	4.353
RA-226	1.338E+00	2.248E-01	1.256E-01	1.246E-02	10.655
AC-228	2.181E+00	4.443E-01	2.598E-01	3.137E-02	8.395
RA-228	2.181E+00	4.443E-01	2.598E-01	3.137E-02	8.395
TH-228	1.940E+00	2.424E-01	1.105E-01	1.135E-02	17.550
TH-232	2.181E+00	4.443E-01	2.598E-01	3.137E-02	8.395
TH-234	2.472E+00	2.318E+00	2.586E+00	4.806E-01	0.956
U-235	2.093E-01	8.682E-02	3.869E-01	6.503E-02	0.541
U-238	2.472E+00	2.318E+00	2.586E+00	4.806E-01	0.956
ANH-511	1.036E-01	7.563E-02	5.749E-02	4.989E-03	1.801

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	6.082E-02		3.880E-01	6.612E-01	6.175E-02	0.092
NA-22	-1.506E-02		5.560E-02	8.849E-02	7.775E-03	-0.170
NA-24	-2.383E+02		9.965E+01	Half-Life	too short	
SC-46	-2.735E-02		4.975E-02	7.546E-02	6.973E-03	-0.362
V-48	1.698E-01		1.040E-01	1.967E-01	1.790E-02	0.863
CR-51	-1.712E-01		5.397E-01	8.333E-01	8.022E-02	-0.205
MN-54	-1.040E-02		4.318E-02	6.827E-02	6.152E-03	-0.152
CO-56	-2.991E-02		5.267E-02	8.053E-02	7.300E-03	-0.371
CO-57	-1.566E-02		2.958E-02	4.643E-02	3.910E-03	-0.337
CO-58	7.657E-03		4.617E-02	7.616E-02	6.794E-03	0.101
FE-59	-1.337E-01		1.224E-01	1.803E-01	1.676E-02	-0.742
CO-60	5.691E-03		5.204E-02	8.597E-02	7.864E-03	0.066
ZN-65	3.208E-03		1.216E-01	1.739E-01	1.480E-02	0.018
SE-75	3.585E-02		6.140E-02	9.300E-02	8.679E-03	0.385
SR-85	7.849E-02		5.170E-02	8.503E-02	7.378E-03	0.923
Y-88	-3.399E-02		3.589E-02	4.462E-02	3.729E-03	-0.762
Y-91	-5.162E+00		2.964E+01	4.804E+01	3.997E+00	-0.107
NB-94	7.919E-03		4.111E-02	6.846E-02	5.705E-03	0.116
NB-95	9.766E-02		6.574E-02	1.062E-01	9.219E-03	0.919
NB-95M	2.224E-01		1.763E-01	2.754E-01	2.854E-02	0.808
ZR-95	9.008E-02		9.487E-02	1.661E-01	1.583E-02	0.542
MO-99	3.259E+01		4.929E+01	8.474E+01	1.331E+01	0.385
TC-99M	-2.003E+16		1.419E+16	Half-Life	too short	
RU-103	9.039E-04		4.327E-02	7.291E-02	1.021E-02	0.012
RH-106	-1.473E-01		3.795E-01	6.086E-01	7.958E-02	-0.242
RU-106	-1.473E-01		3.792E-01	6.086E-01	5.075E-02	-0.242
AG-108M	2.410E-02		3.584E-02	6.020E-02	5.349E-03	0.400
AG-110M	3.895E-02		4.352E-02	7.632E-02	6.405E-03	0.510
SN-113	-5.945E-02		5.554E-02	8.278E-02	7.220E-03	-0.718
CD-115	5.627E-05		3.124E-05	Half-Life	too short	
SN-117M	-2.098E-02		8.358E-02	1.310E-01	1.101E-02	-0.160
TE-123M	5.331E-04		3.423E-02	5.435E-02	4.599E-03	0.010
SB-124	-3.921E-02		9.823E-02	1.511E-01	1.391E-02	-0.259
SB-125	5.967E-02		1.159E-01	1.925E-01	1.685E-02	0.310
TE-125M	1.167E+01		1.196E+01	1.982E+01	2.136E+00	0.589
I-126	4.221E-02		3.376E-01	5.617E-01	4.561E-02	0.075
SB-126	3.122E-01		2.369E-01	3.881E-01	3.274E-02	0.804
SB-127	-1.789E+00		3.536E+00	5.538E+00	7.004E-01	-0.323
I-131	-6.882E-02		2.002E-01	3.175E-01	2.957E-02	-0.217
TE-132	-2.128E-01		2.483E+00	4.137E+00	7.088E-01	-0.051
BA-133	3.489E-02		5.593E-02	8.373E-02	1.101E-02	0.417
I-133	9.523E-02		1.730E-01	Half-Life	too short	
CS-134	1.159E-01		6.316E-02	1.152E-01	1.024E-02	1.006
CS-135	1.045E-01		2.049E-01	3.085E-01	3.257E-02	0.339
I-135	-9.535E+14		9.147E+14	Half-Life	too short	
CS-136	-4.541E-02		1.780E-01	2.895E-01	2.668E-02	-0.157
BA-137M	-1.150E-02		4.484E-02	7.249E-02	5.866E-03	-0.159
CS-137	-1.215E-02		4.737E-02	7.657E-02	6.210E-03	-0.159

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CE-139	-1.216E-02		3.602E-02	5.605E-02	4.740E-03	-0.217
BA-140	2.762E-01		3.904E-01	6.682E-01	2.267E-01	0.413
LA-140	-3.267E-02		1.389E-01	2.242E-01	2.032E-02	-0.146
CE-141	-6.808E-03		8.247E-02	1.283E-01	1.090E-02	-0.053
CE-143	6.301E-03		1.287E-03	Half-Life too short		
CE-144	-3.796E-02		2.372E-01	3.583E-01	5.419E-02	-0.106
PM-144	1.069E-02		3.971E-02	6.665E-02	5.534E-03	0.160
PR-144	7.971E-01		2.979E+00	4.999E+00	4.148E-01	0.159
PM-146	5.182E-02		4.886E-02	8.399E-02	8.916E-03	0.617
ND-147	-3.590E-01		9.132E-01	1.484E+00	2.222E-01	-0.242
PM-149	2.164E-04		2.422E-04	Half-Life too short		
EU-152	-1.062E-01		1.367E-01	1.818E-01	1.730E-02	-0.584
GD-153	-8.675E-03		1.031E-01	1.490E-01	1.470E-02	-0.058
EU-154	-4.217E-02		1.572E-01	2.502E-01	2.877E-02	-0.169
EU-155	3.067E-02		1.208E-01	1.978E-01	1.841E-02	0.155
TB-160	-1.348E-01		1.972E-01	2.949E-01	2.713E-02	-0.457
HO-166M	6.504E-02		7.045E-02	1.239E-01	1.039E-02	0.525
TA-182	1.980E-01		2.892E-01	4.990E-01	4.206E-02	0.397
IR-192	1.614E-02		4.571E-02	7.637E-02	7.057E-03	0.211
HG-203	5.958E-02		5.171E-02	8.962E-02	8.530E-03	0.665
BI-207	-2.660E-02		6.425E-02	1.026E-01	9.008E-03	-0.259
PB-210	-1.690E+00		5.455E+00	8.881E+00	8.544E-01	-0.190
PB-211	-1.303E-01		8.468E-01	1.348E+00	6.521E-01	-0.097
BI-212	3.397E+00	+	1.143E+00	1.608E+00	1.987E-01	2.113
RN-219	6.383E-02		4.868E-01	7.928E-01	1.174E-01	0.081
RA-223	-8.804E-02		8.879E-01	1.264E+00	2.227E-01	-0.070
AC-227	-5.254E-02		2.868E-01	4.720E-01	5.910E-02	-0.111
TH-227	-5.254E-02		2.868E-01	4.720E-01	6.619E-02	-0.111
TH-229	-4.725E-01		6.039E-01	9.842E-01	8.637E-02	-0.480
PA-231	-6.085E-01		1.738E+00	2.813E+00	4.221E-01	-0.216
TH-231	-8.804E-02		8.879E-01	1.264E+00	2.227E-01	-0.070
PA-233	-7.118E-02		7.747E-02	1.199E-01	1.136E-02	-0.594
PA-234	-1.321E-01		3.752E-01	6.089E-01	1.159E-01	-0.217
PA-234M	1.454E+00		5.545E+00	9.589E+00	9.909E-01	0.152
NP-237	8.141E-01		3.770E-01	5.221E-01	1.235E-01	1.559
NP-239	-1.827E-01		4.701E-01	7.449E-01	6.396E-02	-0.245
AM-241	1.243E-02		2.094E-01	3.126E-01	2.967E-02	0.040
CM-247	7.447E-03		4.479E-02	7.310E-02	6.213E-03	0.102
CF-249	3.882E-02		5.003E-02	8.471E-02	7.204E-03	0.458
CF-251	3.159E-02		1.476E-01	2.522E-01	2.166E-02	0.125

# 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]G247337006          *
* Acquisition date   : 4-MAR-2010 10:46:02 Detector SN#      :              *
* Detector ID        : GAM06                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 02:00:00.00              Abundance limit : 75.000        *
* Elapsed real time  : 0 02:00:01.39              Half life ratio : 8.000        *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247337006              Analyst initials: MXR1          *
* Batch Number       : 955027                  Sample Quantity : 1.3017E+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	3.461E+01	3.851E+00	3.406E-01	1.965E+00
CD-109	4.270E+00	1.979E+00	7.806E-01	1.010E+00
SN-126	4.143E-01	1.921E-01	7.613E-02	9.800E-02
TL-208	5.506E-01	9.552E-02	3.461E-02	4.873E-02
BI-211	4.294E+00	6.581E-01	2.196E-01	3.358E-01
PB-212	1.940E+00	2.375E-01	5.701E-02	1.212E-01
BI-214	1.338E+00	2.203E-01	6.378E-02	1.124E-01
PB-214	1.558E+00	2.533E-01	7.658E-02	1.292E-01
RA-224	5.160E+00	1.360E+00	6.112E-01	6.941E-01
RA-226	1.338E+00	2.203E-01	6.378E-02	1.124E-01
AC-228	2.181E+00	4.354E-01	1.311E-01	2.222E-01
RA-228	2.181E+00	4.354E-01	1.311E-01	2.222E-01
TH-228	1.940E+00	2.375E-01	5.701E-02	1.212E-01
TH-232	2.181E+00	4.354E-01	1.311E-01	2.222E-01
TH-234	2.472E+00	2.272E+00	1.361E+00	1.159E+00
U-235	2.147E-01	2.359E-01	2.011E-01	1.204E-01
U-238	2.472E+00	2.272E+00	1.361E+00	1.159E+00
ANH-511	1.036E-01	7.412E-02	2.928E-02	3.781E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	6.082E-02	3.803E-01	3.372E-01	1.940E-01 NOT IDENT.
NA-22	-1.506E-02	5.448E-02	4.440E-02	2.780E-02 NOT IDENT.
NA-24	-2.383E+08	1.953E+08	0.000E+00	9.965E+07 SHORT HLIF
SC-46	-2.735E-02	4.876E-02	3.809E-02	2.488E-02 FAIL ABUN
V-48	1.698E-01	1.019E-01	9.914E-02	5.198E-02 NOT IDENT.
CR-51	-1.712E-01	5.290E-01	4.277E-01	2.699E-01 NOT IDENT.
MN-54	-1.040E-02	4.231E-02	3.450E-02	2.159E-02 NOT IDENT.
CO-56	-2.991E-02	5.161E-02	4.069E-02	2.633E-02 NOT IDENT.
CO-57	-1.566E-02	2.899E-02	2.420E-02	1.479E-02 NOT IDENT.



CO-58	7.657E-03	4.524E-02	3.851E-02	2.308E-02	NOT IDENT.
FE-59	-1.337E-01	1.199E-01	9.070E-02	6.119E-02	NOT IDENT.
CO-60	5.691E-03	5.100E-02	4.311E-02	2.602E-02	NOT IDENT.
ZN-65	3.208E-03	1.192E-01	8.746E-02	6.082E-02	NOT IDENT.
SE-75	3.585E-02	6.017E-02	4.788E-02	3.070E-02	NOT IDENT.
SR-85	7.849E-02	5.067E-02	4.331E-02	2.585E-02	NOT IDENT.
Y-88	-3.399E-02	3.518E-02	2.225E-02	1.795E-02	NOT IDENT.
Y-91	-5.162E+00	2.905E+01	2.413E+01	1.482E+01	NOT IDENT.
NB-94	7.919E-03	4.028E-02	3.469E-02	2.055E-02	NOT IDENT.
NB-95	9.766E-02	6.442E-02	5.376E-02	3.287E-02	NOT IDENT.
NB-95M	2.224E-01	1.728E-01	1.421E-01	8.816E-02	NOT IDENT.
ZR-95	9.008E-02	9.297E-02	8.409E-02	4.743E-02	NOT IDENT.
MO-99	3.259E+01	4.831E+01	4.291E+01	2.465E+01	NOT IDENT.
TC-99M	-2.003E+22	2.782E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	9.039E-04	4.241E-02	3.716E-02	2.164E-02	FAIL ABUN
RH-106	-1.473E-01	3.719E-01	3.091E-01	1.897E-01	NOT IDENT.
RU-106	-1.473E-01	3.716E-01	3.091E-01	1.896E-01	NOT IDENT.
AG-108M	2.410E-02	3.513E-02	3.075E-02	1.792E-02	NOT IDENT.
AG-110M	3.895E-02	4.265E-02	3.872E-02	2.176E-02	NOT IDENT.
SN-113	-5.945E-02	5.442E-02	4.235E-02	2.777E-02	NOT IDENT.
CD-115	5.627E+01	6.122E+01	0.000E+00	3.124E+01	SHORT HLIF
SN-117M	-2.098E-02	8.191E-02	6.801E-02	4.179E-02	NOT IDENT.
TE-123M	5.331E-04	3.355E-02	2.821E-02	1.712E-02	NOT IDENT.
SB-124	-3.921E-02	9.626E-02	7.548E-02	4.911E-02	NOT IDENT.
SB-125	5.967E-02	1.136E-01	9.837E-02	5.795E-02	FAIL ABUN
TE-125M	1.167E+01	1.172E+01	1.035E+01	5.978E+00	NOT IDENT.
I-126	4.221E-02	3.308E-01	2.849E-01	1.688E-01	NOT IDENT.
SB-126	3.122E-01	2.321E-01	1.966E-01	1.184E-01	NOT IDENT.
SB-127	-1.789E+00	3.465E+00	2.808E+00	1.768E+00	NOT IDENT.
I-131	-6.882E-02	1.962E-01	1.626E-01	1.001E-01	NOT IDENT.
TE-132	-2.128E-01	2.433E+00	2.135E+00	1.242E+00	NOT IDENT.
BA-133	3.489E-02	5.481E-02	4.290E-02	2.797E-02	NOT IDENT.
I-133	9.523E+04	3.391E+05	0.000E+00	1.730E+05	SHORT HLIF
CS-134	1.159E-01	6.190E-02	5.827E-02	3.158E-02	NOT IDENT.
CS-135	1.045E-01	2.008E-01	1.588E-01	1.024E-01	NOT IDENT.
I-135	-9.535E+20	1.793E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-4.541E-02	1.745E-01	1.458E-01	8.902E-02	NOT IDENT.
BA-137M	-1.150E-02	4.394E-02	3.677E-02	2.242E-02	NOT IDENT.
CS-137	-1.215E-02	4.642E-02	3.884E-02	2.368E-02	NOT IDENT.
CE-139	-1.216E-02	3.530E-02	2.907E-02	1.801E-02	NOT IDENT.
BA-140	2.762E-01	3.826E-01	3.401E-01	1.952E-01	NOT IDENT.
LA-140	-3.267E-02	1.362E-01	1.121E-01	6.947E-02	FAIL ABUN
CE-141	-6.808E-03	8.082E-02	6.666E-02	4.123E-02	NOT IDENT.
CE-143	6.301E+03	2.523E+03	0.000E+00	1.287E+03	SHORT HLIF
CE-144	-3.796E-02	2.325E-01	1.865E-01	1.186E-01	NOT IDENT.
PM-144	1.069E-02	3.892E-02	3.378E-02	1.986E-02	NOT IDENT.
PR-144	7.971E-01	2.920E+00	2.534E+00	1.490E+00	NOT IDENT.
PM-146	5.182E-02	4.788E-02	4.287E-02	2.443E-02	NOT IDENT.
ND-147	-3.590E-01	8.949E-01	7.557E-01	4.566E-01	NOT IDENT.
PM-149	2.164E+02	4.747E+02	0.000E+00	2.422E+02	SHORT HLIF
EU-152	-1.062E-01	1.340E-01	9.320E-02	6.835E-02	NOT IDENT.
GD-153	-8.675E-03	1.011E-01	7.793E-02	5.157E-02	NOT IDENT.
EU-154	-4.217E-02	1.541E-01	1.256E-01	7.860E-02	NOT IDENT.
EU-155	3.067E-02	1.184E-01	1.033E-01	6.041E-02	NOT IDENT.
TB-160	-1.348E-01	1.932E-01	1.489E-01	9.859E-02	NOT IDENT.
HO-166M	6.504E-02	6.904E-02	6.279E-02	3.522E-02	NOT IDENT.
TA-182	1.980E-01	2.835E-01	2.506E-01	1.446E-01	FAIL ABUN
IR-192	1.614E-02	4.480E-02	3.921E-02	2.286E-02	FAIL ABUN
HG-203	5.958E-02	5.068E-02	4.610E-02	2.586E-02	NOT IDENT.
BI-207	-2.660E-02	6.297E-02	5.162E-02	3.213E-02	FAIL ABUN
PB-210	-1.690E+00	5.346E+00	4.697E+00	2.727E+00	NOT IDENT.
PB-211	-1.303E-01	8.299E-01	6.894E-01	4.234E-01	NOT IDENT.
BI-212	3.397E+00	1.120E+00	8.144E-01	5.715E-01	FAIL ABUN
RN-219	6.383E-02	4.771E-01	4.054E-01	2.434E-01	FAIL ABUN
RA-223	-8.804E-02	8.702E-01	6.488E-01	4.440E-01	FAIL ABUN
AC-227	-5.254E-02	2.811E-01	2.431E-01	1.434E-01	FAIL ABUN
TH-227	-5.254E-02	2.811E-01	2.431E-01	1.434E-01	FAIL ABUN
TH-229	-4.725E-01	5.918E-01	5.092E-01	3.020E-01	FAIL ABUN
PA-231	-6.085E-01	1.703E+00	1.447E+00	8.690E-01	FAIL ABUN
TH-231	-8.804E-02	8.702E-01	6.488E-01	4.440E-01	FAIL ABUN
PA-233	-7.118E-02	7.592E-02	6.156E-02	3.874E-02	FAIL ABUN
PA-234	-1.321E-01	3.677E-01	3.071E-01	1.876E-01	NOT IDENT.
PA-234M	1.454E+00	5.434E+00	4.831E+00	2.773E+00	NOT IDENT.
NP-237	8.141E-01	3.695E-01	2.736E-01	1.885E-01	NOT IDENT.
NP-239	-1.827E-01	4.607E-01	3.884E-01	2.350E-01	NOT IDENT.
AM-241	1.243E-02	2.053E-01	1.647E-01	1.047E-01	NOT IDENT.
CM-247	7.447E-03	4.389E-02	3.738E-02	2.239E-02	NOT IDENT.
CF-249	3.882E-02	4.903E-02	4.334E-02	2.502E-02	NOT IDENT.

CF-251	3.159E-02	1.446E-01	1.307E-01	7.379E-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	330.8798
49.72	298.4516
57.36	0.0000
59.54	334.4186
63.29	373.4921
63.29	373.4921
64.28	398.2283
67.75	373.6187
69.67	440.9113
70.83	428.1642
72.81	412.2391
72.87	412.2962
72.87	412.2962
74.82	416.5862
74.82	416.5862
74.82	416.5862
74.97	416.7244
77.11	418.6824
77.11	418.6824
77.11	418.6824
79.69	376.1881
79.80	376.2755
80.12	390.1415
80.19	390.1986
80.57	408.6749
81.00	446.9203
81.07	446.9856
81.07	446.9856
83.79	396.1830
83.79	396.1830
85.43	417.3856
86.48	433.5920
86.55	433.6547
86.79	433.8619
86.94	433.9937
87.57	434.5399
88.03	434.9372
88.47	435.3172
89.96	348.6592
91.11	349.4420
92.59	320.9785
92.59	320.9785
93.35	321.4460
94.67	300.4582
94.87	300.5715
94.87	300.5715
95.86	298.0120
97.43	302.0146
98.44	278.4349
99.53	299.5183
100.11	305.0773
103.18	295.1729
103.37	295.2726
105.31	315.3351
106.12	321.0822
109.28	287.6825
111.00	305.6250
111.76	328.4876
116.30	312.6518
117.23	323.9258
121.12	306.4079
121.78	317.6076
122.06	307.9551
123.07	297.5496
131.20	273.1629
133.52	281.7592
136.00	270.1219

136.47	278.0965
140.51	311.0645
140.51	0.0000
143.76	275.4156
144.24	272.2278
144.24	272.2278
145.44	294.0976
152.43	284.4366
153.25	283.6129
154.21	272.5778
154.21	272.5778
156.02	333.8318
158.56	290.2253
159.00	273.1756
162.66	242.1951
163.33	257.4105
165.86	276.7789
176.60	279.9386
177.52	268.7947
181.07	273.3169
184.41	244.5520
185.72	256.3220
193.51	282.0064
197.04	255.1884
205.31	314.8850
210.85	238.0490
215.65	242.0338
222.11	220.5139
227.38	254.3171
228.16	243.3315
228.18	241.4708
235.69	235.9734
235.96	249.5674
235.96	249.5674
238.63	227.0499
238.63	227.0499
240.99	227.5758
242.00	181.4839
244.70	160.7313
252.40	178.5283
252.80	180.5069
256.23	183.9624
256.23	183.9624
260.90	0.0000
264.66	174.5845
268.22	178.2472
269.46	162.9294
269.46	162.9294
271.23	194.2719
273.65	252.3221
276.40	202.9727
277.37	187.5205
277.60	199.2810
278.00	193.4893
279.20	181.9528
279.54	187.8779
280.46	204.6788
283.69	186.5935
284.31	184.7297
285.41	174.0858
285.90	0.0000
287.50	181.2963
293.27	0.0000
295.22	158.6841
295.96	158.7842
298.57	159.1309
299.98	159.3164
299.98	159.3164
300.09	159.3311
300.09	159.3311
300.13	159.3359
301.36	129.1946
302.85	124.5620
304.50	118.3350
304.50	118.3350
304.85	129.5664
308.46	125.3357
311.90	172.9448

316.51	163.4930
319.41	170.9495
320.08	165.9794
323.87	162.4170
323.87	162.4170
328.76	141.8423
333.37	147.2542
334.37	139.1813
334.37	139.1813
338.28	142.6756
338.28	142.6756
338.32	142.6799
338.32	142.6799
338.32	142.6799
340.48	133.2486
340.55	144.7703
344.28	163.3234
351.06	169.1243
351.93	155.5435
356.01	121.4801
364.49	121.3897
366.42	130.9891
383.85	153.8147
388.16	122.3524
388.63	123.4553
391.69	140.7777
400.66	110.5125
401.81	119.1875
402.40	119.2349
404.85	120.5039
410.95	113.4274
414.70	122.3678
423.72	114.3663
427.09	108.0637
427.87	114.6691
433.94	98.6641
453.88	79.9069
463.37	121.6620
468.07	94.9161
473.00	99.9064
476.78	99.9027
477.60	93.6470
487.02	100.4948
492.35	0.0000
497.08	70.1130
511.00	102.7783
514.00	84.2574
527.90	0.0000
529.87	0.0000
531.02	99.2650
537.26	68.8782
546.56	0.0000
563.25	70.7611
569.33	81.3914
569.50	81.3998
569.70	75.7266
583.19	84.1841
600.60	102.8517
602.73	104.4708
604.72	88.2896
609.32	76.2574
609.32	76.2574
610.33	76.2940
614.28	75.7936
618.01	66.7748
621.93	86.4295
621.93	86.4295
633.25	74.1983
635.95	83.0887
636.99	81.1722
645.85	82.4865
657.76	72.0750
661.66	92.9719
661.66	92.9719
664.57	0.0000
666.33	77.3087
666.50	77.3164
677.62	69.7300

685.70	70.9775
695.00	81.3026
696.49	69.3024
696.51	69.3032
697.00	68.3138
702.65	80.5645
706.68	94.8262
711.68	58.6344
720.70	47.3571
721.93	0.0000
722.78	72.7917
722.91	72.7952
723.31	79.5802
724.19	67.7523
727.33	72.2515
733.00	56.1011
735.93	76.5948
739.50	58.2984
747.24	61.5615
752.31	77.1112
753.82	78.1857
756.73	61.7988
763.94	70.5872
765.81	68.9176
766.42	67.2106
777.92	68.8169
778.90	76.8979
783.70	60.3846
785.37	76.0512
795.86	61.7181
801.95	70.2519
810.29	58.9066
810.76	51.5529
815.77	62.1920
818.51	56.9808
832.01	69.9993
834.85	62.6414
836.80	0.0000
846.77	72.5173
856.80	74.9253
860.56	55.3777
871.09	65.6316
873.19	53.8367
875.33	0.0000
879.36	72.3014
880.51	74.4900
883.24	54.0308
884.68	56.2212
889.28	60.6457
898.04	47.7974
911.20	51.2915
911.20	51.2915
911.20	51.2915
926.50	61.4373
937.49	77.0854
944.13	63.4634
946.00	64.4230
949.00	43.2994
962.29	61.8679
964.08	68.2538
966.15	69.8887
968.97	87.1764
968.97	87.1764
968.97	87.1764
983.53	34.4790
996.26	62.6939
1001.03	50.6074
1004.73	60.0495
1037.84	50.2525
1038.76	0.0000
1048.07	62.7800
1050.41	51.4028
1050.41	51.4028
1063.66	58.3020
1085.87	58.6966
1099.45	67.6302
1112.07	59.8485
1115.54	53.2545

1120.29	53.3281
1120.29	53.3281
1120.55	53.3326
1121.30	65.0127
1131.51	0.0000
1173.23	71.0684
1177.93	74.1272
1189.05	69.4019
1204.77	69.7038
1221.41	76.0278
1231.02	78.2317
1235.36	85.3528
1238.28	82.4037
1260.41	0.0000
1271.85	53.7419
1274.44	51.7491
1274.54	51.7491
1291.59	41.7891
1298.22	0.0000
1312.11	43.0356
1332.49	39.1411
1365.19	22.8477
1368.63	0.0000
1384.29	25.0430
1408.01	44.0781
1457.56	0.0000
1460.82	25.5078
1489.16	20.3274
1505.03	26.8443
1596.21	25.3615
1620.50	14.1640
1678.03	0.0000
1690.97	17.2517
1764.49	15.5664
1764.49	15.5664
1770.23	10.2272
1771.35	13.6396
1791.20	0.0000
1836.06	13.8140

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247337006

Total Uranium Activity	7.4543E+00	ug/g
Total Uranium Counting Unc.	6.7602E+00	ug/g
Total Uranium Tpu	3.4491E-06	ug/g
Total Uranium Mda	4.0502E+00	ug/g



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*
*               GEL Laboratories LLC                      *
*               2040 SAVAGE ROAD                          *
*               CHARLESTON , SC 29417                     *
*               GROSS GAMMA REPORT                        *
*
*****
*
*  BATCH ID      : 955027                                SAMPLE ID   : G247337006
*  ANALYST       : MXR1                                  DETECTOR    : GAM06
*  SAMPLE DATE   : 12-FEB-2010 12:00:00.00             COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 4-MAR-2010 10:46:02.08             SAMPLE ALQT  : 130.170 GRAM
*
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.058E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.433E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 3.564E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.732E+00

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VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 14:40:56.59

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337007.CNF;1
Sample date   : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 12:40:29.
Sample ID     : G247337007 Sample quantity : 1.45340E+02 GRAM
Detector name : GAM16 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:02.31 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 5.00000
Batch ID       : 955027 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	63.07*	130	522	0.68	126.32	122	8	1.81E-02	32.4	
2	4	74.83	443	462	0.76	149.85	146	13	6.15E-02	8.7	8.96E-01
3	4	77.11*	797	455	0.85	154.41	146	13	1.11E-01	5.4	
4	7	87.19	353	515	1.25	174.58	166	26	4.90E-02	12.1	1.68E+00
5	7	89.84	243	370	1.04	179.87	166	26	3.37E-02	14.2	
6	7	92.93*	456	582	1.71	186.04	166	26	6.34E-02	11.6	
7	0	128.67	103	396	1.26	257.53	254	8	1.43E-02	35.0	
8	0	185.91*	188	461	1.07	372.01	367	10	2.60E-02	23.5	
9	0	209.03	165	293	1.12	418.25	415	8	2.30E-02	19.5	
10	5	238.56*	1730	215	0.98	477.32	471	20	2.40E-01	2.8	1.18E+00
11	5	241.56	387	299	1.74	483.32	471	20	5.37E-02	12.4	
12	0	269.65*	130	275	2.12	539.50	534	12	1.81E-02	27.1	
13	0	295.31	450	348	1.06	590.82	585	12	6.25E-02	9.6	
14	0	300.11	98	239	0.72	600.40	596	9	1.37E-02	30.1	
15	0	328.24	73	180	0.97	656.67	653	9	1.01E-02	35.1	
16	0	338.18*	292	187	1.07	676.54	672	10	4.06E-02	10.7	
17	0	351.85*	840	153	1.09	703.88	700	10	1.17E-01	4.5	
18	0	462.94	118	113	1.05	926.06	922	10	1.64E-02	19.2	
19	0	510.86*	149	176	1.63	1021.89	1015	16	2.07E-02	23.7	
20	0	583.23*	517	118	1.26	1166.59	1160	12	7.18E-02	6.2	
21	0	609.33*	586	137	1.15	1218.79	1213	13	8.14E-02	5.9	
22	0	727.28	111	94	1.65	1454.66	1450	11	1.54E-02	19.4	
23	0	795.49	109	53	2.38	1591.04	1586	13	1.51E-02	16.7	
24	0	860.96	66	88	1.15	1721.95	1717	11	9.17E-03	30.2	
25	0	911.23*	363	60	1.51	1822.47	1814	13	5.04E-02	6.9	
26	0	933.88	61	68	0.82	1867.76	1860	15	8.50E-03	31.9	
27	3	964.72	66	54	2.13	1929.41	1923	23	9.17E-03	25.5	7.67E-01
28	3	969.12*	206	32	1.59	1938.22	1923	23	2.86E-02	9.0	
29	0	1120.43*	120	95	1.78	2240.74	2234	15	1.66E-02	20.1	
30	0	1378.55	28	24	1.48	2756.77	2753	10	3.94E-03	36.7	
31	0	1460.91*	1684	22	1.79	2921.43	2914	14	2.34E-01	2.5	
32	0	1630.26	24	0	1.24	3259.96	3253	13	3.33E-03	20.4	
33	0	1764.58*	130	4	1.95	3528.43	3520	15	1.80E-02	9.8	

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

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337007.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 12:40:29
Sample ID         : G247337007 Sample quantity : 145.34 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA16 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:02.31 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	*	3.379E+01	3.424E+00	4.479E-01	3.938E-02	75.430
CD-109	+	88.03	*	4.058E+00	1.058E+00	1.014E+00	9.775E-02	4.000
SN-126	+	64.28		1.001E+00	6.640E-01	6.674E-01	9.724E-02	1.499
	+	86.94		1.637E+00	7.877E-01	4.137E-01	1.719E-01	3.957
	+	87.57	*	3.938E-01	1.026E-01	9.887E-02	9.480E-03	3.982
CS-135	+	268.22	*	4.388E-01	2.442E-01	2.041E-01	2.603E-02	2.150
TL-208		277.37		4.624E-01	3.521E-01	5.902E-01	8.868E-02	0.783
	+	583.19	*	5.891E-01	9.348E-02	5.092E-02	5.042E-03	11.569
	+	860.56		7.109E-01	4.345E-01	4.391E-01	4.395E-02	1.619
BI-211		72.87		1.031E+00	2.740E+00	4.296E+00	3.493E-01	0.240
	+	351.06	*	4.264E+00	6.019E-01	2.880E-01	3.149E-02	14.807
PB-212	+	74.82		2.180E+00	4.701E-01	4.802E-01	6.138E-02	4.539
	+	77.11		2.245E+00	3.092E-01	2.756E-01	2.341E-02	8.145
	+	238.63	*	1.962E+00	2.577E-01	7.713E-02	9.162E-03	25.434
	+	300.09		1.738E+00	1.072E+00	1.073E+00	1.415E-01	1.620
BI-214	+	609.32	*	1.292E+00	2.054E-01	1.020E-01	1.083E-02	12.671
	+	1120.29		1.366E+00	5.688E-01	4.744E-01	5.117E-02	2.880
	+	1764.49		2.073E+00	4.409E-01	2.215E-01	1.833E-02	9.357
PB-214	+	74.82		3.864E+00	8.044E-01	8.512E-01	9.766E-02	4.539
	+	77.11		3.957E+00	6.353E-01	4.859E-01	5.752E-02	8.145
	+	242.00		2.660E+00	7.366E-01	4.692E-01	5.853E-02	5.668
	+	295.22		1.407E+00	3.291E-01	2.059E-01	2.774E-02	6.831
	+	351.93	*	1.548E+00	2.345E-01	1.019E-01	1.246E-02	15.187
RA-224	+	240.99	*	4.703E+00	1.274E+00	8.268E-01	9.112E-02	5.688
RA-226	+	609.32	*	1.292E+00	2.054E-01	1.020E-01	1.083E-02	12.671
	+	1120.29		1.366E+00	5.688E-01	4.744E-01	5.117E-02	2.880
	+	1764.49		2.073E+00	4.409E-01	2.215E-01	1.833E-02	9.357
AC-228	+	338.32		1.649E+00	7.808E-01	3.417E-01	1.444E-01	4.826
	+	911.20	*	1.993E+00	3.681E-01	2.147E-01	2.621E-02	9.282
	+	968.97		1.949E+00	5.940E-01	3.429E-01	8.433E-02	5.685
RA-228	+	338.32		1.649E+00	7.808E-01	3.417E-01	1.444E-01	4.826
	+	911.20	*	1.993E+00	3.681E-01	2.147E-01	2.621E-02	9.282
	+	968.97		1.949E+00	5.940E-01	3.429E-01	8.433E-02	5.685
TH-228	+	74.82		2.180E+00	4.204E-01	4.802E-01	4.021E-02	4.539

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	77.11		2.245E+00	3.092E-01	2.756E-01	2.341E-02	8.145
	+	238.63	*	1.962E+00	2.577E-01	7.713E-02	9.162E-03	25.434
	+	300.09		1.738E+00	1.499E+00	1.073E+00	6.624E-01	1.620
TH-232	+	338.32		1.649E+00	3.959E-01	3.417E-01	3.729E-02	4.826
	+	911.20	*	1.993E+00	3.681E-01	2.147E-01	2.621E-02	9.282
	+	968.97		1.949E+00	5.940E-01	3.429E-01	8.433E-02	5.685
TH-234	+	63.29	*	2.597E+00	1.744E+00	1.687E+00	3.008E-01	1.539
	+	92.59		4.219E+00	1.357E+00	8.291E-01	1.851E-01	5.089
U-235	+	89.96		2.809E+00	1.060E+00	1.031E+00	2.570E-01	2.723
	+	93.35		3.187E+00	1.047E+00	6.231E-01	1.452E-01	5.115
		143.76	*	2.162E-01	1.827E-01	3.060E-01	5.178E-02	0.706
		163.33		4.243E-01	3.818E-01	6.449E-01	1.170E-01	0.658
	+	185.72		1.378E-01	6.611E-02	5.825E-02	5.565E-03	2.366
		205.31		1.704E-01	4.715E-01	6.986E-01	1.319E-01	0.244
NP-237	+	86.48	*	1.175E+00	3.930E-01	2.983E-01	6.863E-02	3.938
		95.86		-3.859E-01	8.107E-01	1.200E+00	2.894E-01	-0.322
U-238	+	63.29	*	2.597E+00	1.744E+00	1.687E+00	3.008E-01	1.539
	+	92.59		4.219E+00	1.052E+00	8.291E-01	7.637E-02	5.089
ANH-511	+	511.00	*	1.296E-01	6.275E-02	3.842E-02	3.654E-03	3.373

---- 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	*	-2.851E-01	2.918E-01	4.475E-01	4.526E-02	-0.637
NA-22		1274.54	*	-1.419E-02	4.261E-02	6.681E-02	5.559E-03	-0.212
NA-24		1368.63	*	1.939E+01	4.261E-02	Half-Life too short		
SC-46		889.28	*	-1.840E-02	3.267E-02	5.154E-02	4.872E-03	-0.357
	+	1120.55		2.407E-01	9.889E-02	1.274E-01	1.076E-02	1.890
V-48		944.13		-3.718E-02	9.667E-01	1.602E+00	1.497E-01	-0.023
		983.53	*	9.939E-03	8.570E-02	1.434E-01	1.320E-02	0.069
		1312.11		-5.554E-02	9.464E-02	1.429E-01	1.200E-02	-0.389
CR-51		320.08	*	-8.050E-02	3.512E-01	5.471E-01	6.393E-02	-0.147
MN-54		834.85	*	-2.366E-03	3.619E-02	6.047E-02	5.680E-03	-0.039
CO-56		846.77	*	-1.994E-02	3.441E-02	5.470E-02	5.147E-03	-0.365
		1037.84		6.020E-02	3.015E-01	5.061E-01	4.753E-02	0.119
		1238.28		1.928E-01	1.017E-01	1.830E-01	1.553E-02	1.054
		1771.35		-7.574E-01	3.058E-01	2.986E-01	2.467E-02	-2.536
CO-57		122.06	*	1.181E-02	2.102E-02	3.594E-02	2.986E-03	0.329
		136.47		-1.686E-01	1.761E-01	2.811E-01	2.553E-02	-0.600
CO-58		810.76	*	1.926E-03	3.654E-02	6.173E-02	5.784E-03	0.031
FE-59		1099.45	*	-5.307E-03	9.297E-02	1.519E-01	1.412E-02	-0.035
		1291.59		1.109E-01	1.273E-01	2.230E-01	2.130E-02	0.497
CO-60		1173.23		3.369E-02	4.512E-02	7.792E-02	6.265E-03	0.432
		1332.49	*	3.155E-02	3.588E-02	6.359E-02	5.364E-03	0.496
ZN-65		1115.54	*	-7.974E-03	1.040E-01	1.463E-01	1.242E-02	-0.055
SE-75		121.12		-8.195E-02	1.135E-01	1.843E-01	1.999E-02	-0.445
		136.00		-4.836E-02	3.498E-02	5.469E-02	4.643E-03	-0.884
		264.66	*	-3.177E-03	4.424E-02	6.279E-02	7.327E-03	-0.051

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		279.54		-1.123E-01	1.064E-01	1.588E-01	1.944E-02	-0.708
		400.66		-5.775E-02	2.111E-01	3.478E-01	4.040E-02	-0.166
SR-85		514.00	*	4.631E-02	3.569E-02	5.761E-02	5.477E-03	0.804
Y-88		898.04		1.194E-02	3.552E-02	6.103E-02	5.796E-03	0.196
		1836.06	*	-1.806E-03	2.256E-02	3.631E-02	2.948E-03	-0.050
Y-91		1204.77	*	-5.158E+00	2.349E+01	3.761E+01	3.058E+00	-0.137
NB-94		702.65	*	3.869E-02	3.199E-02	5.579E-02	5.044E-03	0.693
		871.09		9.494E-03	3.160E-02	5.412E-02	5.108E-03	0.175
NB-95		765.81	*	-3.977E-02	4.556E-02	6.711E-02	6.204E-03	-0.593
NB-95M		235.69	*	1.726E-02	1.271E-01	1.845E-01	2.197E-02	0.094
ZR-95		724.19		8.815E-02	9.486E-02	1.465E-01	1.436E-02	0.602
		756.73	*	7.246E-02	6.948E-02	1.204E-01	1.212E-02	0.602
MO-99		140.51		-1.117E+02	7.116E+01	1.010E+02	2.393E+01	-1.106
		181.07		6.269E+00	5.771E+01	8.516E+01	1.633E+01	0.074
		366.42		-9.988E+01	2.824E+02	4.663E+02	4.717E+01	-0.214
		739.50	*	-3.606E+01	4.044E+01	5.904E+01	9.484E+00	-0.611
		777.92		-1.442E+02	1.161E+02	1.622E+02	1.505E+01	-0.889
TC-99M		140.51	*	-4.363E+16	1.161E+02	Half-Life	too short	
RU-103		497.08	*	2.751E-02	3.604E-02	6.241E-02	9.072E-03	0.441
	+	610.33		1.454E+01	2.972E+00	3.000E+00	5.000E-01	4.847
RH-106		621.93	*	-3.926E-02	2.834E-01	4.553E-01	6.193E-02	-0.086
		1050.41		1.700E+00	2.426E+00	4.230E+00	3.760E-01	0.402
RU-106		621.93	*	-3.926E-02	2.833E-01	4.553E-01	4.163E-02	-0.086
		1050.41		1.700E+00	2.426E+00	4.230E+00	3.760E-01	0.402
AG-108M		433.94	*	-1.314E-03	2.487E-02	4.133E-02	3.999E-03	-0.032
		614.28		-3.143E-03	3.533E-02	4.980E-02	4.708E-03	-0.063
		722.91		1.919E-02	3.553E-02	5.299E-02	4.967E-03	0.362
AG-110M		657.76	*	-2.324E-02	3.169E-02	4.803E-02	4.396E-03	-0.484
		677.62		3.855E-01	2.910E-01	5.145E-01	4.724E-02	0.749
		706.68		-7.234E-02	2.064E-01	3.227E-01	2.999E-02	-0.224
		763.94		8.994E-02	1.488E-01	2.494E-01	2.359E-02	0.361
		884.68		1.929E-02	4.331E-02	7.507E-02	7.284E-03	0.257
		937.49		-2.351E-02	1.088E-01	1.527E-01	1.474E-02	-0.154
		1384.29		7.292E-02	1.649E-01	2.470E-01	2.156E-02	0.295
		1505.03		-3.732E-01	2.387E-01	3.005E-01	2.570E-02	-1.242
SN-113		391.69	*	-1.060E-02	3.889E-02	6.424E-02	6.098E-03	-0.165
CD-115		260.90		5.132E-05	3.889E-02	Half-Life	too short	
		492.35		7.787E-07	3.889E-02	Half-Life	too short	
		527.90	*	-2.970E-05	3.889E-02	Half-Life	too short	
SN-117M		156.02		-1.444E+00	2.473E+00	3.990E+00	3.519E-01	-0.362
		158.56	*	-1.521E-02	5.837E-02	9.539E-02	8.472E-03	-0.159
TE-123M		159.00	*	-1.265E-02	2.460E-02	3.974E-02	3.554E-03	-0.318
SB-124		602.73		-7.794E-03	3.897E-02	5.760E-02	5.328E-03	-0.135
		645.85		2.756E-01	4.426E-01	7.532E-01	7.130E-02	0.366
		722.78		1.942E-01	3.769E-01	5.607E-01	5.214E-02	0.346
		1690.97	*	-2.582E-02	6.955E-02	1.073E-01	9.420E-03	-0.241
SB-125		427.87	*	3.367E-02	7.622E-02	1.307E-01	1.248E-02	0.258
	+	463.37		9.154E-01	3.627E-01	5.200E-01	5.244E-02	1.760
		600.60		-1.244E-01	1.645E-01	2.523E-01	2.487E-02	-0.493

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TE-125M		635.95		-1.980E-01	2.309E-01	3.447E-01	3.353E-02	-0.574
		109.28	*	-6.144E-01	8.669E+00	1.456E+01	1.507E+00	-0.042
		388.63		6.049E-02	1.911E-01	3.266E-01	3.056E-02	0.185
I-126		666.33	*	2.452E-02	2.852E-01	4.638E-01	4.125E-02	0.053
		753.82		2.361E+00	2.196E+00	3.808E+00	3.507E-01	0.620
		414.70		-1.391E-02	8.374E-02	1.387E-01	1.297E-02	-0.100
SB-126		666.50		7.761E-03	9.807E-02	1.594E-01	1.418E-02	0.049
		695.00		2.870E-03	9.039E-02	1.460E-01	1.315E-02	0.020
		697.00		-6.985E-02	3.136E-01	4.956E-01	4.469E-02	-0.141
SB-127		720.70	*	-1.310E-01	1.795E-01	2.580E-01	2.349E-02	-0.508
		856.80		-4.795E-03	5.882E-01	8.568E-01	8.073E-02	-0.006
		252.40		-1.771E+00	8.800E+00	1.394E+01	5.941E+00	-0.127
I-131		473.00		2.171E+00	3.358E+00	5.783E+00	8.516E-01	0.375
		685.70	*	1.874E-01	2.945E+00	4.773E+00	6.284E-01	0.039
		783.70		1.063E+01	8.326E+00	1.441E+01	2.050E+00	0.738
TE-132		80.19		-2.666E+00	6.816E+00	9.430E+00	8.375E-01	-0.283
		284.31		5.700E-02	1.980E+00	3.165E+00	3.892E-01	0.018
		364.49	*	-6.984E-02	1.462E-01	2.395E-01	2.540E-02	-0.292
BA-133		636.99		8.827E-01	1.937E+00	3.264E+00	3.120E-01	0.270
		49.72		2.360E+01	4.331E+01	6.979E+01	8.474E+00	0.338
		111.76		7.818E+01	8.174E+01	1.412E+02	1.743E+01	0.554
I-133		116.30		3.240E+01	6.968E+01	1.188E+02	1.462E+01	0.273
		228.16	*	-1.151E+00	1.889E+00	2.948E+00	5.316E-01	-0.390
		81.00		8.025E-03	1.003E-01	1.240E-01	1.942E-02	0.065
CS-134		276.40		2.641E-01	3.247E-01	5.366E-01	8.774E-02	0.492
		302.85		2.630E-02	1.305E-01	1.872E-01	2.855E-02	0.140
		356.01	*	1.521E-02	3.747E-02	5.763E-02	8.197E-03	0.264
I-135		383.85		-8.676E-02	2.663E-01	4.396E-01	5.746E-02	-0.197
		529.87	*	1.743E-02	2.663E-01	Half-Life	too short	
		875.33		2.702E+00	2.663E-01	Half-Life	too short	
CS-136		1298.22		-5.741E+00	2.663E-01	Half-Life	too short	
		563.25		2.779E-01	3.233E-01	5.596E-01	5.309E-02	0.497
		569.33		-2.262E-03	1.831E-01	2.984E-01	2.834E-02	-0.008
+ I-135		604.72		8.195E-03	3.355E-02	4.899E-02	4.536E-03	0.167
		795.86	*	1.810E-01	6.287E-02	9.166E-02	8.594E-03	1.974
		801.95		6.852E-02	3.880E-01	5.745E-01	5.387E-02	0.119
CS-136		1365.19		-1.880E-01	9.984E-01	1.563E+00	1.388E-01	-0.120
		546.56		2.471E+15	9.984E-01	Half-Life	too short	
		836.80		6.048E+15	9.984E-01	Half-Life	too short	
I-135		1038.76		1.794E+15	9.984E-01	Half-Life	too short	
		1131.51		-1.939E+14	9.984E-01	Half-Life	too short	
		1260.41	*	-3.485E+14	9.984E-01	Half-Life	too short	
CS-136		1457.56		1.055E+17	9.984E-01	Half-Life	too short	
		1678.03		-1.205E+15	9.984E-01	Half-Life	too short	
		1791.20		1.383E+15	9.984E-01	Half-Life	too short	
CS-136		153.25		5.344E-01	9.335E-01	1.578E+00	1.639E-01	0.339
		176.60		-3.353E-01	5.579E-01	8.913E-01	9.052E-02	-0.376
		273.65		-5.663E-01	6.487E-01	8.568E-01	1.064E-01	-0.661
		340.55		1.068E-01	1.827E-01	2.836E-01	3.154E-02	0.377

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		818.51		-3.436E-02	8.321E-02	1.350E-01	1.266E-02	-0.254
		1048.07	*	-1.234E-01	1.351E-01	2.039E-01	1.888E-02	-0.605
		1235.36		-2.363E-01	7.890E-01	1.255E+00	1.440E-01	-0.188
BA-137M		661.66	*	-1.276E-03	3.490E-02	5.628E-02	4.995E-03	-0.023
CS-137		661.66	*	-1.348E-03	3.687E-02	5.946E-02	5.286E-03	-0.023
CE-139		165.86	*	-1.706E-02	2.631E-02	4.214E-02	3.822E-03	-0.405
BA-140		162.66		7.735E-01	9.249E-01	1.572E+00	1.500E-01	0.492
		304.85		-1.435E-02	1.637E+00	2.308E+00	6.991E-01	-0.006
		423.72		-7.600E-01	2.075E+00	3.358E+00	1.112E+00	-0.226
		537.26	*	-1.280E-01	3.170E-01	5.009E-01	1.710E-01	-0.256
LA-140	+	328.76		6.665E-01	4.747E-01	6.184E-01	7.132E-02	1.078
		487.02		9.663E-02	1.565E-01	2.692E-01	2.692E-02	0.359
		815.77		5.790E-02	3.822E-01	6.393E-01	6.583E-02	0.091
		1596.21	*	-8.903E-02	1.074E-01	1.583E-01	1.349E-02	-0.562
CE-141		145.44	*	-1.783E-02	6.252E-02	1.012E-01	8.852E-03	-0.176
CE-143		57.36		-1.387E-03	6.252E-02	Half-Life	too short	
		293.27	*	4.974E-03	6.252E-02	Half-Life	too short	
		664.57		8.754E-03	6.252E-02	Half-Life	too short	
		721.93		1.293E-02	6.252E-02	Half-Life	too short	
CE-144		80.12		-9.696E-01	2.441E+00	3.376E+00	2.964E-01	-0.287
		133.52	*	6.521E-02	1.732E-01	2.799E-01	4.244E-02	0.233
PM-144		476.78		-5.136E-02	5.651E-02	8.732E-02	8.897E-03	-0.588
		618.01		-4.514E-03	2.953E-02	4.744E-02	4.457E-03	-0.095
		696.49	*	-9.574E-03	3.077E-02	4.824E-02	4.352E-03	-0.198
PR-144		696.51	*	-7.114E-01	2.309E+00	3.622E+00	3.266E-01	-0.196
		1489.16		7.910E+00	9.872E+00	1.841E+01	1.574E+00	0.430
PM-146		453.88	*	1.932E-02	3.574E-02	6.140E-02	6.935E-03	0.315
		633.25		-6.079E-01	1.266E+00	1.937E+00	7.419E-01	-0.314
		735.93		3.384E-02	1.331E-01	2.176E-01	6.134E-02	0.156
		747.24		-2.103E-02	8.720E-02	1.365E-01	2.038E-02	-0.154
ND-147	+	91.11		1.240E+00	3.731E-01	5.673E-01	5.673E-02	2.186
		319.41		-1.770E+00	3.763E+00	5.753E+00	6.533E-01	-0.308
		531.02	*	-2.614E-01	6.880E-01	1.098E+00	1.699E-01	-0.238
PM-149		285.90	*	-2.042E-04	6.880E-01	Half-Life	too short	
EU-152		121.78		8.593E-03	5.941E-02	1.001E-01	9.638E-03	0.086
		244.70		1.346E-01	2.973E-01	4.400E-01	4.892E-02	0.306
		344.28	*	1.527E-02	8.614E-02	1.426E-01	1.593E-02	0.107
		778.90		-3.590E-01	2.508E-01	3.439E-01	3.190E-02	-1.044
	+	964.08		6.735E-01	3.493E-01	5.078E-01	4.711E-02	1.326
		1085.87		-1.437E-01	3.775E-01	5.995E-01	5.204E-02	-0.240
		1112.07		1.994E-01	3.286E-01	5.503E-01	4.682E-02	0.362
		1408.01		1.548E-01	1.769E-01	3.125E-01	2.661E-02	0.495
GD-153		69.67		-4.820E-01	1.425E+00	2.419E+00	1.906E-01	-0.199
		97.43	*	-4.455E-02	8.196E-02	1.206E-01	1.071E-02	-0.369
		103.18		-1.545E-01	9.363E-02	1.468E-01	1.265E-02	-1.053
EU-154		123.07		3.695E-02	4.339E-02	7.466E-02	8.298E-03	0.495
		723.31		1.021E-01	1.624E-01	2.443E-01	2.429E-02	0.418
		873.19		-3.457E-02	2.612E-01	4.323E-01	5.405E-02	-0.080
		996.26		4.289E-02	3.073E-01	5.151E-01	9.138E-02	0.083

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	+	1004.73		-1.178E-01	2.058E-01	3.233E-01	3.883E-02	-0.364
		1274.44	*	-4.921E-02	1.207E-01	1.878E-01	2.093E-02	-0.262
		86.55		4.784E-01	1.248E-01	1.574E-01	1.503E-02	3.039
		105.31	*	1.066E-01	9.035E-02	1.578E-01	1.365E-02	0.676
TB-160	+	86.79		1.328E+00	3.461E-01	4.443E-01	4.219E-02	2.989
		197.04		-4.791E-01	5.198E-01	8.001E-01	7.879E-02	-0.599
		215.65		3.273E-01	6.673E-01	1.107E+00	1.145E-01	0.296
		298.57		2.128E-01	1.573E-01	1.970E-01	2.313E-02	1.080
		879.36	*	-5.250E-02	1.312E-01	2.119E-01	2.002E-02	-0.248
		962.29		1.292E-01	5.638E-01	8.334E-01	7.736E-02	0.155
		966.15	+	4.928E-01	2.556E-01	4.213E-01	3.906E-02	1.170
		1177.93		2.537E-03	3.826E-01	6.250E-01	5.034E-02	0.004
HO-166M	+	1271.85		-2.366E-02	7.051E-01	1.140E+00	9.466E-02	-0.021
		80.57		3.295E-02	2.912E-01	3.610E-01	3.186E-02	0.091
		184.41		1.095E-01	5.253E-02	5.589E-02	5.321E-03	1.959
		280.46		-8.962E-02	7.945E-02	1.178E-01	1.413E-02	-0.761
		410.95		2.396E-01	2.182E-01	3.820E-01	3.566E-02	0.627
		711.68	*	-2.835E-02	5.853E-02	9.035E-02	8.197E-03	-0.314
		752.31		-2.644E-01	2.662E-01	3.876E-01	3.568E-02	-0.682
		810.29		-5.605E-03	5.139E-02	8.572E-02	8.013E-03	-0.065
TA-182		67.75		3.418E-02	1.024E-01	1.609E-01	1.245E-02	0.212
		100.11		1.689E-01	1.562E-01	2.726E-01	2.384E-02	0.620
		152.43		-1.001E-01	3.035E-01	4.959E-01	4.333E-02	-0.202
		222.11		-2.486E-01	3.231E-01	5.030E-01	5.290E-02	-0.494
	+	1121.30		6.597E-01	2.710E-01	3.481E-01	2.939E-02	1.895
		1189.05		-1.058E-01	2.945E-01	4.648E-01	3.759E-02	-0.228
		1221.41	*	-4.578E-02	2.008E-01	3.208E-01	2.623E-02	-0.143
		1231.02		2.352E-01	4.659E-01	7.878E-01	6.463E-02	0.299
IR-192	+	295.96		1.089E+00	2.450E-01	2.881E-01	3.407E-02	3.781
		308.46		2.485E-02	8.497E-02	1.373E-01	1.593E-02	0.181
		316.51	*	1.834E-03	3.105E-02	4.937E-02	5.642E-03	0.037
		468.07		9.310E-03	6.258E-02	9.263E-02	9.327E-03	0.101
HG-203		70.83		-5.040E-01	1.279E+00	1.944E+00	3.056E-01	-0.259
		72.87		2.762E-01	7.348E-01	1.151E+00	1.757E-01	0.240
BI-207		279.20	*	-1.431E-02	3.822E-02	5.976E-02	7.273E-03	-0.239
		72.81		5.645E-02	1.578E-01	2.473E-01	2.009E-02	0.228
	+	74.97		6.284E-01	1.210E-01	2.000E-01	1.661E-02	3.142
		569.70		-1.617E-03	2.851E-02	4.630E-02	4.347E-03	-0.035
PB-210		1063.66	*	-7.800E-03	5.183E-02	8.426E-02	7.428E-03	-0.093
		1770.23		-5.675E-03	3.725E-01	5.251E-01	4.340E-02	-0.011
		46.54	*	4.007E+00	2.921E+00	4.840E+00	4.475E-01	0.828
		404.85	*	1.212E-01	6.081E-01	1.026E+00	4.979E-01	0.118
PB-211		427.09		-2.127E-01	1.290E+00	2.125E+00	9.864E-01	-0.100
		832.01		-1.936E-01	9.545E-01	1.570E+00	8.165E-01	-0.123
	+	727.33	*	1.930E+00	7.893E-01	1.102E+00	1.412E-01	1.751
		785.37		3.484E-01	2.937E+00	4.993E+00	4.641E-01	0.070
RN-219		1620.50		3.900E+00	2.386E+00	4.709E+00	4.000E-01	0.828
		271.23		3.743E-01	2.372E-01	3.669E-01	4.788E-02	1.020
		401.81	*	-1.744E-01	3.332E-01	5.388E-01	8.230E-02	-0.324



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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		1.942E-02	2.269E-01	2.808E-01	2.492E-02	0.069
		83.79		5.582E-02	1.123E-01	1.749E-01	1.602E-02	0.319
		94.87		5.270E-01	3.994E-01	6.402E-01	5.789E-02	0.823
		144.24		5.600E-01	5.985E-01	1.010E+00	9.670E-02	0.555
		154.21		1.528E-01	3.298E-01	5.553E-01	5.325E-02	0.275
	+	269.46		5.051E-01	2.801E-01	3.015E-01	3.584E-02	1.675
AC-227		323.87	*	1.597E-01	6.128E-01	8.789E-01	1.651E-01	0.182
	+	338.28		6.543E+00	1.665E+00	2.184E+00	3.015E-01	2.996
		79.69		-3.449E-01	1.097E+00	1.664E+00	2.878E-01	-0.207
		235.96		4.378E-02	1.484E-01	2.172E-01	2.671E-02	0.202
		256.23	*	-1.403E-01	2.242E-01	3.465E-01	4.917E-02	-0.405
	+	299.98		1.912E+00	1.187E+00	1.515E+00	2.270E-01	1.262
TH-227		304.50		3.957E-02	1.513E+00	2.139E+00	3.912E-01	0.018
		334.37		8.476E-02	1.696E+00	2.385E+00	4.062E-01	0.036
		79.80		-4.495E-01	1.447E+00	2.193E+00	4.788E-01	-0.205
		235.96		4.378E-02	1.484E-01	2.172E-01	2.565E-02	0.202
		256.23	*	-1.403E-01	2.244E-01	3.465E-01	5.382E-02	-0.405
	+	299.98		1.912E+00	1.187E+00	1.515E+00	2.270E-01	1.262
TH-229		304.50		3.957E-02	1.513E+00	2.139E+00	3.912E-01	0.018
		334.37		8.476E-02	1.696E+00	2.385E+00	4.062E-01	0.036
		85.43		2.262E-01	1.636E-01	2.852E-01	2.662E-02	0.793
	+	88.47		6.070E-01	1.582E-01	1.958E-01	1.878E-02	3.100
		193.51	*	2.172E-01	4.525E-01	7.543E-01	7.358E-02	0.288
		210.85		1.343E+00	8.438E-01	1.322E+00	1.351E-01	1.016
PA-231		283.69	*	5.709E-01	1.285E+00	2.097E+00	3.518E-01	0.272
	+	301.36		1.228E+00	7.609E-01	9.464E-01	1.372E-01	1.298
TH-231		81.07		1.942E-02	2.269E-01	2.808E-01	2.492E-02	0.069
		83.79		5.582E-02	1.123E-01	1.749E-01	1.602E-02	0.319
		94.87		5.270E-01	3.994E-01	6.402E-01	5.789E-02	0.823
		144.24		5.600E-01	5.985E-01	1.010E+00	9.670E-02	0.555
		154.21		1.528E-01	3.298E-01	5.553E-01	5.325E-02	0.275
	+	269.46		5.051E-01	2.801E-01	3.015E-01	3.584E-02	1.675
PA-233		323.87	*	1.597E-01	6.128E-01	8.789E-01	1.651E-01	0.182
	+	338.28		6.543E+00	1.665E+00	2.184E+00	3.015E-01	2.996
	+	300.13		8.651E-01	5.410E-01	6.857E-01	1.153E-01	1.262
		311.90	*	-2.723E-02	5.461E-02	8.355E-02	9.768E-03	-0.326
		340.48		4.080E-01	6.120E-01	9.435E-01	2.355E-01	0.432
		94.67		3.436E-01	1.531E-01	2.460E-01	3.126E-02	1.397
PA-234		98.44		6.746E-02	9.022E-02	1.355E-01	7.563E-02	0.498
		111.00		3.398E-02	1.582E-01	2.681E-01	3.200E-02	0.127
		131.20		1.344E-02	9.722E-02	1.466E-01	1.226E-02	0.092
		569.50		-1.794E-04	2.515E-01	4.101E-01	3.850E-02	0.000
		733.00		-8.600E-03	3.932E-01	5.486E-01	1.229E-01	-0.016
		880.51		2.341E-02	2.565E-01	4.273E-01	4.036E-02	0.055
		883.24		-1.800E-02	2.610E-01	4.283E-01	2.884E-01	-0.042
		926.50		1.072E-02	1.734E-01	2.529E-01	6.462E-02	0.042
		946.00	*	7.417E-02	2.719E-01	4.619E-01	8.823E-02	0.161
		949.00		3.970E-02	4.183E-01	7.006E-01	6.534E-02	0.057
PA-234M		766.42		3.718E-01	1.108E+01	1.761E+01	8.954E+00	0.021

---- 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	*		-1.917E-01	4.245E+00	6.969E+00	7.256E-01	-0.028
	99.53			2.007E-01	1.420E-01	2.468E-01	2.165E-02	0.813
	103.37			-1.151E-01	8.406E-02	1.338E-01	1.152E-02	-0.860
	106.12			6.189E-02	7.093E-02	1.229E-01	1.047E-02	0.504
	117.23	*		4.019E-02	3.305E-01	5.572E-01	4.638E-02	0.072
AM-241	228.18			-1.185E-01	1.923E-01	3.012E-01	3.217E-02	-0.393
	277.60			2.602E-01	1.585E-01	2.702E-01	3.235E-02	0.963
	59.54	*		3.609E-02	1.399E-01	2.035E-01	1.597E-02	0.177
	278.00			8.141E-01	6.908E-01	1.160E+00	1.389E-01	0.702
	287.50			1.210E-01	1.135E+00	1.821E+00	2.168E-01	0.066
CF-249	402.40	*		-1.425E-02	3.087E-02	5.024E-02	4.671E-03	-0.284
	252.80			-1.981E-01	8.011E-01	1.270E+00	1.439E-01	-0.156
	333.37			1.415E-01	2.206E-01	2.613E-01	2.884E-02	0.541
CF-251	388.16	*		2.122E-02	3.498E-02	6.064E-02	5.684E-03	0.350
	177.52	*		1.476E-02	1.097E-01	1.812E-01	1.694E-02	0.081
	227.38			-2.817E-01	3.150E-01	4.854E-01	5.173E-02	-0.580
	285.41			-1.198E+00	1.984E+00	3.047E+00	3.636E-01	-0.393

# 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]G247337007      *
* Acquisition date   : 4-MAR-2010 12:40:29 Detector SN#                   *
* Detector ID        : GAM16                                           Sensitivity      : 5.000      *
* Geometry           : CAN                                           Energy tolerance: 1.500      *
* Elapsed live time   : 0 02:00:00.00                               Abundance limit : 75.000      *
* Elapsed real time   : 0 02:00:02.31                               Half life ratio  : 8.000      *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID        *
* Sample ID          : G247337007 Analyst initials: MXR1                 *
* Batch Number       : 955027 Sample Quantity : 1.4534E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000                                           *
* CALIB. DATE/TIME   : 16-NOV-2009 11:22:16 MS Isotope                  : *
* MSD DPM            : 0.000 MSD Isotope                                : *
* LCS DPM            : 0.000 LCS Isotope                                : *
* LCSD DPM           : 0.000 LCSD Isotope                               : *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.379E+01	3.355E+00	4.504E-01	0.000E+00
CD-109	4.058E+00	1.037E+00	1.086E+00	0.000E+00
SN-126	3.938E-01	1.006E-01	1.058E-01	0.000E+00
CS-135	4.388E-01	2.393E-01	2.133E-01	0.000E+00
TL-208	5.891E-01	9.161E-02	5.230E-02	0.000E+00
BI-211	4.264E+00	5.898E-01	2.992E-01	0.000E+00
PB-212	1.962E+00	2.525E-01	8.081E-02	0.000E+00
BI-214	1.292E+00	2.012E-01	1.046E-01	0.000E+00
PB-214	1.548E+00	2.298E-01	1.059E-01	0.000E+00
RA-224	4.703E+00	1.248E+00	8.661E-01	0.000E+00
RA-226	1.292E+00	2.012E-01	1.046E-01	0.000E+00
AC-228	1.993E+00	3.607E-01	2.183E-01	0.000E+00
RA-228	1.993E+00	3.607E-01	2.183E-01	0.000E+00
TH-228	1.962E+00	2.525E-01	8.081E-02	0.000E+00
TH-232	1.993E+00	3.607E-01	2.183E-01	0.000E+00
TH-234	2.597E+00	1.709E+00	1.818E+00	0.000E+00
U-235	2.162E-01	1.790E-01	3.242E-01	0.000E+00
NP-237	1.175E+00	3.852E-01	3.195E-01	0.000E+00
U-238	2.597E+00	1.709E+00	1.818E+00	0.000E+00
ANH-511	1.296E-01	6.149E-02	3.958E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-2.851E-01	2.860E-01	4.617E-01	0.000E+00 NOT IDENT.
NA-22	-1.419E-02	4.175E-02	6.739E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	1.296E+08	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-1.840E-02	3.202E-02	5.242E-02	0.000E+00 FAIL ABUN
V-48	9.939E-03	8.399E-02	1.455E-01	0.000E+00 NOT IDENT.
CR-51	-8.050E-02	3.442E-01	5.695E-01	0.000E+00 NOT IDENT.
MN-54	-2.366E-03	3.546E-02	6.160E-02	0.000E+00 NOT IDENT.

CO-56	-1.994E-02	3.373E-02	5.570E-02	0.000E+00	NOT IDENT.
CO-57	1.181E-02	2.060E-02	3.820E-02	0.000E+00	NOT IDENT.
CO-58	1.926E-03	3.581E-02	6.293E-02	0.000E+00	NOT IDENT.
FE-59	-5.307E-03	9.111E-02	1.538E-01	0.000E+00	NOT IDENT.
CO-60	3.155E-02	3.516E-02	6.408E-02	0.000E+00	NOT IDENT.
ZN-65	-7.974E-03	1.019E-01	1.480E-01	0.000E+00	NOT IDENT.
SE-75	-3.177E-03	4.336E-02	6.564E-02	0.000E+00	NOT IDENT.
SR-85	4.631E-02	3.498E-02	5.934E-02	0.000E+00	NOT IDENT.
Y-88	-1.806E-03	2.210E-02	3.631E-02	0.000E+00	NOT IDENT.
Y-91	-5.158E+00	2.302E+01	3.799E+01	0.000E+00	NOT IDENT.
NB-94	3.869E-02	3.135E-02	5.706E-02	0.000E+00	NOT IDENT.
NB-95	-3.977E-02	4.465E-02	6.850E-02	0.000E+00	NOT IDENT.
NB-95M	1.726E-02	1.246E-01	1.934E-01	0.000E+00	NOT IDENT.
ZR-95	7.246E-02	6.809E-02	1.229E-01	0.000E+00	NOT IDENT.
MO-99	-3.606E+01	3.963E+01	6.031E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	3.001E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	2.751E-02	3.532E-02	6.433E-02	0.000E+00	FAIL ABUN
RH-106	-3.926E-02	2.777E-01	4.670E-01	0.000E+00	NOT IDENT.
RU-106	-3.926E-02	2.777E-01	4.670E-01	0.000E+00	NOT IDENT.
AG-108M	-1.314E-03	2.437E-02	4.274E-02	0.000E+00	NOT IDENT.
AG-110M	-2.324E-02	3.106E-02	4.920E-02	0.000E+00	NOT IDENT.
SN-113	-1.060E-02	3.811E-02	6.658E-02	0.000E+00	NOT IDENT.
CD-115	0.000E+00	4.578E+01	0.000E+00	0.000E+00	SHORT HLIF
SN-117M	-1.521E-02	5.720E-02	1.008E-01	0.000E+00	NOT IDENT.
TE-123M	-1.265E-02	2.411E-02	4.201E-02	0.000E+00	NOT IDENT.
SB-124	-2.582E-02	6.816E-02	1.075E-01	0.000E+00	NOT IDENT.
SB-125	3.367E-02	7.470E-02	1.352E-01	0.000E+00	FAIL ABUN
TE-125M	-6.144E-01	8.496E+00	1.551E+01	0.000E+00	NOT IDENT.
I-126	2.452E-02	2.795E-01	4.750E-01	0.000E+00	NOT IDENT.
SB-126	-1.310E-01	1.759E-01	2.637E-01	0.000E+00	NOT IDENT.
SB-127	1.874E-01	2.886E+00	4.884E+00	0.000E+00	NOT IDENT.
I-131	-6.984E-02	1.433E-01	2.486E-01	0.000E+00	NOT IDENT.
TE-132	-1.151E+00	1.851E+00	3.092E+00	0.000E+00	NOT IDENT.
BA-133	1.521E-02	3.672E-02	5.985E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	2.695E+05	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	6.161E-02	9.348E-02	0.000E+00	FAIL ABUN
I-135	0.000E+00	1.578E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-1.234E-01	1.324E-01	2.066E-01	0.000E+00	NOT IDENT.
BA-137M	-1.276E-03	3.420E-02	5.764E-02	0.000E+00	NOT IDENT.
CS-137	-1.348E-03	3.613E-02	6.089E-02	0.000E+00	NOT IDENT.
CE-139	-1.706E-02	2.579E-02	4.450E-02	0.000E+00	NOT IDENT.
BA-140	-1.280E-01	3.107E-01	5.154E-01	0.000E+00	NOT IDENT.
LA-140	-8.903E-02	1.052E-01	1.588E-01	0.000E+00	FAIL ABUN
CE-141	-1.783E-02	6.127E-02	1.072E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.086E+03	0.000E+00	0.000E+00	SHORT HLIF
CE-144	6.521E-02	1.697E-01	2.970E-01	0.000E+00	NOT IDENT.
PM-144	-9.574E-03	3.015E-02	4.935E-02	0.000E+00	NOT IDENT.
PR-144	-7.114E-01	2.263E+00	3.705E+00	0.000E+00	NOT IDENT.
PM-146	1.932E-02	3.502E-02	6.342E-02	0.000E+00	NOT IDENT.
ND-147	-2.614E-01	6.742E-01	1.131E+00	0.000E+00	FAIL ABUN
PM-149	0.000E+00	3.826E+02	0.000E+00	0.000E+00	SHORT HLIF
EU-152	1.527E-02	8.441E-02	1.482E-01	0.000E+00	FAIL ABUN
GD-153	-4.455E-02	8.032E-02	1.288E-01	0.000E+00	NOT IDENT.
EU-154	-4.921E-02	1.183E-01	1.894E-01	0.000E+00	NOT IDENT.
EU-155	1.066E-01	8.855E-02	1.683E-01	0.000E+00	FAIL ABUN
TB-160	-5.250E-02	1.286E-01	2.156E-01	0.000E+00	FAIL ABUN
HO-166M	-2.835E-02	5.736E-02	9.238E-02	0.000E+00	FAIL ABUN
TA-182	-4.578E-02	1.968E-01	3.239E-01	0.000E+00	FAIL ABUN
IR-192	1.834E-03	3.043E-02	5.141E-02	0.000E+00	FAIL ABUN
HG-203	-1.431E-02	3.746E-02	6.240E-02	0.000E+00	NOT IDENT.
BI-207	-7.800E-03	5.079E-02	8.535E-02	0.000E+00	FAIL ABUN
PB-210	4.007E+00	2.862E+00	5.249E+00	0.000E+00	NOT IDENT.
PB-211	1.212E-01	5.960E-01	1.063E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	7.735E-01	1.126E+00	0.000E+00	FAIL ABUN
RN-219	-1.744E-01	3.266E-01	5.581E-01	0.000E+00	NOT IDENT.
RA-223	1.597E-01	6.006E-01	9.147E-01	0.000E+00	FAIL ABUN
AC-227	-1.403E-01	2.197E-01	3.625E-01	0.000E+00	FAIL ABUN
TH-227	-1.403E-01	2.199E-01	3.625E-01	0.000E+00	FAIL ABUN
TH-229	2.172E-01	4.434E-01	7.940E-01	0.000E+00	FAIL ABUN
PA-231	5.709E-01	1.260E+00	2.189E+00	0.000E+00	FAIL ABUN
TH-231	1.597E-01	6.006E-01	9.147E-01	0.000E+00	FAIL ABUN
PA-233	-2.723E-02	5.351E-02	8.703E-02	0.000E+00	FAIL ABUN
PA-234	7.417E-02	2.664E-01	4.691E-01	0.000E+00	NOT IDENT.
PA-234M	-1.917E-01	4.160E+00	7.069E+00	0.000E+00	NOT IDENT.
NP-239	4.019E-02	3.239E-01	5.928E-01	0.000E+00	NOT IDENT.
AM-241	3.609E-02	1.371E-01	2.196E-01	0.000E+00	NOT IDENT.
CM-247	-1.425E-02	3.025E-02	5.204E-02	0.000E+00	NOT IDENT.
CF-249	2.122E-02	3.428E-02	6.286E-02	0.000E+00	NOT IDENT.

CF-251	1.476E-02	1.075E-01	1.911E-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]G247337007.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 12:40:29.
Sample ID          : G247337007      Sample quantity      : 1.45340E+02 GRAM
Detector name      : GAM16            Detector geometry   : CAN
Elapsed live time  : 0 02:00:00.00    Elapsed real time   : 0 02:00:02.31  0.0%
Energy tolerance  : 1.50000 keV       Analyst Initials   : MXR1
Abundance limit   : 75.00000          Sensitivity         : 5.00000
Batch ID          : 955027            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	1684	10.66*	1.208E+00	3.379E+01	3.379E+01	10.13
CD-109	88.03	353	3.70*	6.255E+00	3.938E+00	4.058E+00	26.07
SN-126	64.28	130	9.60	3.496E+00	1.001E+00	1.001E+00	66.35
	86.94	353	8.90	6.255E+00	1.637E+00	1.637E+00	48.12
	87.57	353	37.00*	6.255E+00	3.938E-01	3.938E-01	26.07
CS-135	268.22	130	16.00*	4.791E+00	4.388E-01	4.388E-01	55.66
TL-208	277.37	-----	6.60	4.694E+00	-----	Line Not Found	-----
	583.19	517	85.00*	2.667E+00	5.891E-01	5.891E-01	15.87
	860.56	66	12.50	1.918E+00	7.109E-01	7.109E-01	61.13
BI-211	72.87	-----	1.23	4.872E+00	-----	Line Not Found	-----
	351.06	840	12.92*	3.940E+00	4.264E+00	4.264E+00	14.12
PB-212	74.82	443	10.28	5.108E+00	2.180E+00	2.180E+00	21.57
	77.11	797	17.10	5.363E+00	2.245E+00	2.245E+00	13.77
	238.63	1730	43.60*	5.225E+00	1.962E+00	1.962E+00	13.13
	300.09	98	3.30	4.432E+00	1.738E+00	1.738E+00	61.66
BI-214	609.32	586	45.49*	2.574E+00	1.292E+00	1.292E+00	15.89
	1120.29	120	14.92	1.516E+00	1.366E+00	1.366E+00	41.62
	1764.49	130	15.30	1.056E+00	2.073E+00	2.073E+00	21.27
PB-214	74.82	443	5.80	5.108E+00	3.864E+00	3.864E+00	20.82
	77.11	797	9.70	5.363E+00	3.957E+00	3.957E+00	16.05
	242.00	387	7.25	5.180E+00	2.659E+00	2.660E+00	27.70
	295.22	450	18.42	4.485E+00	1.406E+00	1.407E+00	23.39
	351.93	840	35.60*	3.940E+00	1.548E+00	1.548E+00	15.15
RA-224	240.99	387	4.10*	5.180E+00	4.703E+00	4.703E+00	27.08
RA-226	609.32	586	45.49*	2.574E+00	1.292E+00	1.292E+00	15.89
	1120.29	120	14.92	1.516E+00	1.366E+00	1.366E+00	41.62
	1764.49	130	15.30	1.056E+00	2.073E+00	2.073E+00	21.27
AC-228	338.32	292	11.27	4.058E+00	1.649E+00	1.649E+00	47.35
	911.20	363	25.80*	1.824E+00	1.993E+00	1.993E+00	18.47
	968.97	206	15.80	1.727E+00	1.949E+00	1.949E+00	30.47
RA-228	338.32	292	11.27	4.058E+00	1.649E+00	1.649E+00	47.35
	911.20	363	25.80*	1.824E+00	1.993E+00	1.993E+00	18.47

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	968.97	206	15.80	1.727E+00	1.949E+00	1.949E+00	30.47
	74.82	443	10.28	5.108E+00	2.180E+00	2.180E+00	19.28
	77.11	797	17.10	5.363E+00	2.245E+00	2.245E+00	13.77
TH-232	238.63	1730	43.60*	5.225E+00	1.962E+00	1.962E+00	13.13
	300.09	98	3.30	4.432E+00	1.738E+00	1.738E+00	86.24
	338.32	292	11.27	4.058E+00	1.649E+00	1.649E+00	24.01
TH-234	911.20	363	25.80*	1.824E+00	1.993E+00	1.993E+00	18.47
	968.97	206	15.80	1.727E+00	1.949E+00	1.949E+00	30.47
	63.29	130	3.70*	3.496E+00	2.597E+00	2.597E+00	67.15
U-235	92.59	456	4.23	6.603E+00	4.219E+00	4.219E+00	32.16
	89.96	243	3.47	6.429E+00	2.809E+00	2.809E+00	37.73
	93.35	456	5.60	6.603E+00	3.187E+00	3.187E+00	32.87
	143.76	-----	10.96*	6.943E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.588E+00	-----	Line Not Found	-----
	185.72	188	57.20	6.144E+00	1.378E-01	1.378E-01	47.97
NP-237	205.31	-----	5.01	5.780E+00	-----	Line Not Found	-----
	86.48	353	12.40*	6.255E+00	1.175E+00	1.175E+00	33.45
	95.86	-----	2.68	6.742E+00	-----	Line Not Found	-----
U-238	63.29	130	3.70*	3.496E+00	2.597E+00	2.597E+00	67.15
	92.59	456	4.23	6.603E+00	4.219E+00	4.219E+00	24.92
ANH-511	511.00	149	100.00*	2.964E+00	1.296E-01	1.296E-01	48.41

Flag: "\*" = Keyline

Total number of lines in spectrum 33  
Number of unidentified lines 5  
Number of lines tentatively identified by NID 28 84.85%

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	3.379E+01	3.379E+01	0.342E+01	10.13	
CD-109	461.40D	1.03	3.938E+00	4.058E+00	1.058E+00	26.07	
SN-126	2.30E+05Y	1.00	3.938E-01	3.938E-01	1.026E-01	26.07	
CS-135	2.30E+06Y	1.00	4.388E-01	4.388E-01	2.442E-01	55.66	
TL-208	1.41E+10Y	1.00	5.891E-01	5.891E-01	0.935E-01	15.87	
BI-211	7.04E+08Y	1.00	4.264E+00	4.264E+00	0.602E+00	14.12	
PB-212	1.41E+10Y	1.00	1.962E+00	1.962E+00	0.258E+00	13.13	
BI-214	1600.00Y	1.00	1.292E+00	1.292E+00	0.205E+00	15.89	
PB-214	1600.00Y	1.00	1.548E+00	1.548E+00	0.235E+00	15.15	
RA-224	1.41E+10Y	1.00	4.703E+00	4.703E+00	1.274E+00	27.08	
RA-226	1600.00Y	1.00	1.292E+00	1.292E+00	0.205E+00	15.89	
AC-228	1.41E+10Y	1.00	1.993E+00	1.993E+00	0.368E+00	18.47	
RA-228	1.41E+10Y	1.00	1.993E+00	1.993E+00	0.368E+00	18.47	
TH-228	1.41E+10Y	1.00	1.962E+00	1.962E+00	0.258E+00	13.13	
TH-232	1.41E+10Y	1.00	1.993E+00	1.993E+00	0.368E+00	18.47	
TH-234	4.47E+09Y	1.00	2.597E+00	2.597E+00	1.744E+00	67.15	
U-235	7.04E+08Y	1.00	1.378E-01	1.378E-01	0.661E-01	47.97	K
NP-237	2.14E+06Y	1.00	1.175E+00	1.175E+00	0.393E+00	33.45	
U-238	4.47E+09Y	1.00	2.597E+00	2.597E+00	1.744E+00	67.15	
ANH-511	1.00E+09Y	1.00	1.296E-01	1.296E-01	0.627E-01	48.41	
Total Activity :			6.878E+01	6.890E+01			

Grand Total Activity : 6.878E+01 6.890E+01

Flags: "K" = Keyline not found "M" = Manually accepted  
"E" = Manually edited "A" = Nuclide specific abn. limit



It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	128.67	103	396	1.26	257.53	254	8	1.43E-02	69.9	7.13E+00	
0	209.03	165	293	1.12	418.25	415	8	2.30E-02	39.0	5.71E+00	
0	328.24	73	180	0.97	656.67	653	9	1.01E-02	70.3	4.15E+00	T
0	462.94	118	113	1.05	926.06	922	10	1.64E-02	38.3	3.20E+00	T
0	727.28	111	94	1.65	1454.66	1450	11	1.54E-02	38.8	2.22E+00	T
0	795.49	109	53	2.38	1591.04	1586	13	1.51E-02	33.5	2.06E+00	T
0	933.88	61	68	0.82	1867.76	1860	15	8.50E-03	63.9	1.78E+00	
3	964.72	66	54	2.13	1929.41	1923	23	9.17E-03	51.0	1.73E+00	T
0	1378.55	28	24	1.48	2756.77	2753	10	3.94E-03	73.3	1.27E+00	
0	1630.26	24	0	1.24	3259.96	3253	13	3.33E-03	40.8	1.11E+00	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247337007.CNF;1
* Acquisition date   : 4-MAR-2010 12:40:29.  Detector SN#      :
* Detector ID        : GAM16                      Sensitivity    : 5.00000
* Geometry           : CAN                      Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00             Abundance limit : 75.00000
* Elapsed real time  : 0 02:00:02.31             Half life ratio : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 12-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G247337007             Analyst initials: MXR1
* Batch Number       : 955027                 Sample Quantity : 1.45340E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 16-NOV-2009 11:22:16.1MS Isotope      :
* MSD ID             :                      MSD Isotope       :
* LCS ID             : 1032-A                 LCS Isotope      :
*****

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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	3.379E+01	3.424E+00	4.479E-01	3.938E-02	75.430
CD-109	4.058E+00	1.058E+00	1.014E+00	9.775E-02	4.000
SN-126	3.938E-01	1.026E-01	9.887E-02	9.480E-03	3.982
CS-135	4.388E-01	2.442E-01	2.041E-01	2.603E-02	2.150
TL-208	5.891E-01	9.348E-02	5.092E-02	5.042E-03	11.569
BI-211	4.264E+00	6.019E-01	2.880E-01	3.149E-02	14.807
PB-212	1.962E+00	2.577E-01	7.713E-02	9.162E-03	25.434
BI-214	1.292E+00	2.054E-01	1.020E-01	1.083E-02	12.671
PB-214	1.548E+00	2.345E-01	1.019E-01	1.246E-02	15.187
RA-224	4.703E+00	1.274E+00	8.268E-01	9.112E-02	5.688
RA-226	1.292E+00	2.054E-01	1.020E-01	1.083E-02	12.671
AC-228	1.993E+00	3.681E-01	2.147E-01	2.621E-02	9.282
RA-228	1.993E+00	3.681E-01	2.147E-01	2.621E-02	9.282
TH-228	1.962E+00	2.577E-01	7.713E-02	9.162E-03	25.434
TH-232	1.993E+00	3.681E-01	2.147E-01	2.621E-02	9.282
TH-234	2.597E+00	1.744E+00	1.687E+00	3.008E-01	1.539
U-235	1.378E-01	6.611E-02	3.060E-01	5.178E-02	0.450
NP-237	1.175E+00	3.930E-01	2.983E-01	6.863E-02	3.938

----- Identified Nuclides -----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
U-238	2.597E+00	1.744E+00	1.687E+00	3.008E-01	1.539
ANH-511	1.296E-01	6.275E-02	3.842E-02	3.654E-03	3.373

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-2.851E-01		2.918E-01	4.475E-01	4.526E-02	-0.637
NA-22	-1.419E-02		4.261E-02	6.681E-02	5.559E-03	-0.212
NA-24	1.939E+01		6.611E+01	Half-Life too short		
SC-46	-1.840E-02		3.267E-02	5.154E-02	4.872E-03	-0.357
V-48	9.939E-03		8.570E-02	1.434E-01	1.320E-02	0.069
CR-51	-8.050E-02		3.512E-01	5.471E-01	6.393E-02	-0.147
MN-54	-2.366E-03		3.619E-02	6.047E-02	5.680E-03	-0.039
CO-56	-1.994E-02		3.441E-02	5.470E-02	5.147E-03	-0.365
CO-57	1.181E-02		2.102E-02	3.594E-02	2.986E-03	0.329
CO-58	1.926E-03		3.654E-02	6.173E-02	5.784E-03	0.031
FE-59	-5.307E-03		9.297E-02	1.519E-01	1.412E-02	-0.035
CO-60	3.155E-02		3.588E-02	6.359E-02	5.364E-03	0.496
ZN-65	-7.974E-03		1.040E-01	1.463E-01	1.242E-02	-0.055
SE-75	-3.177E-03		4.424E-02	6.279E-02	7.327E-03	-0.051
SR-85	4.631E-02		3.569E-02	5.761E-02	5.477E-03	0.804
Y-88	-1.806E-03		2.256E-02	3.631E-02	2.948E-03	-0.050
Y-91	-5.158E+00		2.349E+01	3.761E+01	3.058E+00	-0.137
NB-94	3.869E-02		3.199E-02	5.579E-02	5.044E-03	0.693
NB-95	-3.977E-02		4.556E-02	6.711E-02	6.204E-03	-0.593
NB-95M	1.726E-02		1.271E-01	1.845E-01	2.197E-02	0.094
ZR-95	7.246E-02		6.948E-02	1.204E-01	1.212E-02	0.602
MO-99	-3.606E+01		4.044E+01	5.904E+01	9.484E+00	-0.611
TC-99M	-4.363E+16		1.531E+16	Half-Life too short		
RU-103	2.751E-02		3.604E-02	6.241E-02	9.072E-03	0.441
RH-106	-3.926E-02		2.834E-01	4.553E-01	6.193E-02	-0.086
RU-106	-3.926E-02		2.833E-01	4.553E-01	4.163E-02	-0.086
AG-108M	-1.314E-03		2.487E-02	4.133E-02	3.999E-03	-0.032
AG-110M	-2.324E-02		3.169E-02	4.803E-02	4.396E-03	-0.484
SN-113	-1.060E-02		3.889E-02	6.424E-02	6.098E-03	-0.165
CD-115	-2.970E-05		2.336E-05	Half-Life too short		
SN-117M	-1.521E-02		5.837E-02	9.539E-02	8.472E-03	-0.159
TE-123M	-1.265E-02		2.460E-02	3.974E-02	3.554E-03	-0.318
SB-124	-2.582E-02		6.955E-02	1.073E-01	9.420E-03	-0.241
SB-125	3.367E-02		7.622E-02	1.307E-01	1.248E-02	0.258
TE-125M	-6.144E-01		8.669E+00	1.456E+01	1.507E+00	-0.042
I-126	2.452E-02		2.852E-01	4.638E-01	4.125E-02	0.053
SB-126	-1.310E-01		1.795E-01	2.580E-01	2.349E-02	-0.508
SB-127	1.874E-01		2.945E+00	4.773E+00	6.284E-01	0.039
I-131	-6.984E-02		1.462E-01	2.395E-01	2.540E-02	-0.292
TE-132	-1.151E+00		1.889E+00	2.948E+00	5.316E-01	-0.390
BA-133	1.521E-02		3.747E-02	5.763E-02	8.197E-03	0.264

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-133	1.743E-02		1.375E-01	Half-Life too short		
CS-134	1.810E-01	+	6.287E-02	9.166E-02	8.594E-03	1.974
I-135	-3.485E+14		8.053E+14	Half-Life too short		
CS-136	-1.234E-01		1.351E-01	2.039E-01	1.888E-02	-0.605
BA-137M	-1.276E-03		3.490E-02	5.628E-02	4.995E-03	-0.023
CS-137	-1.348E-03		3.687E-02	5.946E-02	5.286E-03	-0.023
CE-139	-1.706E-02		2.631E-02	4.214E-02	3.822E-03	-0.405
BA-140	-1.280E-01		3.170E-01	5.009E-01	1.710E-01	-0.256
LA-140	-8.903E-02		1.074E-01	1.583E-01	1.349E-02	-0.562
CE-141	-1.783E-02		6.252E-02	1.012E-01	8.852E-03	-0.176
CE-143	4.974E-03		1.064E-03	Half-Life too short		
CE-144	6.521E-02		1.732E-01	2.799E-01	4.244E-02	0.233
PM-144	-9.574E-03		3.077E-02	4.824E-02	4.352E-03	-0.198
PR-144	-7.114E-01		2.309E+00	3.622E+00	3.266E-01	-0.196
PM-146	1.932E-02		3.574E-02	6.140E-02	6.935E-03	0.315
ND-147	-2.614E-01		6.880E-01	1.098E+00	1.699E-01	-0.238
PM-149	-2.042E-04		1.952E-04	Half-Life too short		
EU-152	1.527E-02		8.614E-02	1.426E-01	1.593E-02	0.107
GD-153	-4.455E-02		8.196E-02	1.206E-01	1.071E-02	-0.369
EU-154	-4.921E-02		1.207E-01	1.878E-01	2.093E-02	-0.262
EU-155	1.066E-01		9.035E-02	1.578E-01	1.365E-02	0.676
TB-160	-5.250E-02		1.312E-01	2.119E-01	2.002E-02	-0.248
HO-166M	-2.835E-02		5.853E-02	9.035E-02	8.197E-03	-0.314
TA-182	-4.578E-02		2.008E-01	3.208E-01	2.623E-02	-0.143
IR-192	1.834E-03		3.105E-02	4.937E-02	5.642E-03	0.037
HG-203	-1.431E-02		3.822E-02	5.976E-02	7.273E-03	-0.239
BI-207	-7.800E-03		5.183E-02	8.426E-02	7.428E-03	-0.093
PB-210	4.007E+00		2.921E+00	4.840E+00	4.475E-01	0.828
PB-211	1.212E-01		6.081E-01	1.026E+00	4.979E-01	0.118
BI-212	1.930E+00	+	7.893E-01	1.102E+00	1.412E-01	1.751
RN-219	-1.744E-01		3.332E-01	5.388E-01	8.230E-02	-0.324
RA-223	1.597E-01		6.128E-01	8.789E-01	1.651E-01	0.182
AC-227	-1.403E-01		2.242E-01	3.465E-01	4.917E-02	-0.405
TH-227	-1.403E-01		2.244E-01	3.465E-01	5.382E-02	-0.405
TH-229	2.172E-01		4.525E-01	7.543E-01	7.358E-02	0.288
PA-231	5.709E-01		1.285E+00	2.097E+00	3.518E-01	0.272
TH-231	1.597E-01		6.128E-01	8.789E-01	1.651E-01	0.182
PA-233	-2.723E-02		5.461E-02	8.355E-02	9.768E-03	-0.326
PA-234	7.417E-02		2.719E-01	4.619E-01	8.823E-02	0.161
PA-234M	-1.917E-01		4.245E+00	6.969E+00	7.256E-01	-0.028
NP-239	4.019E-02		3.305E-01	5.572E-01	4.638E-02	0.072
AM-241	3.609E-02		1.399E-01	2.035E-01	1.597E-02	0.177
CM-247	-1.425E-02		3.087E-02	5.024E-02	4.671E-03	-0.284
CF-249	2.122E-02		3.498E-02	6.064E-02	5.684E-03	0.350
CF-251	1.476E-02		1.097E-01	1.812E-01	1.694E-02	0.081

## VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     *
*                               GEL Laboratories LLC                       *
*                               2040 Savage Road                           *
*                               Charleston, SC 29414                      *
*                               *****                                  *
*                               *                                         *
*                               DETECTOR DATA                            *
*                               *                                         *
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247337007        *
* Acquisition date   : 4-MAR-2010 12:40:29 Detector SN# :                *
* Detector ID        : GAM16                                           Sensitivity      : 5.000      *
* Geometry           : CAN                                             Energy tolerance: 1.500      *
* Elapsed live time  : 0 02:00:00.00                               Abundance limit : 75.000      *
* Elapsed real time  : 0 02:00:02.31                               Half life ratio  : 8.000      *
*                               *****                                  *
*                               *                                         *
*                               SAMPLE DATA                              *
*                               *                                         *
* Sample date       : 12-FEB-2010 12:00:00 Nuclide Library : SOLID        *
* Sample ID         : G247337007 Analyst initials: MXR1                *
* Batch Number      : 955027 Sample Quantity : 1.4534E+02 GRAM          *
* Recovery          : 1.00000 Carrier Weight : 0.00000                 *
*                               *****                                  *
*                               *                                         *
*                               QC DATA                                 *
*                               *                                         *
* CALIB. DATE/TIME  : 16-NOV-2009 11:22:16 MS Isotope :                *
* MSD DPM           : 0.000 MSD Isotope :                               *
* LCS DPM           : 0.000 LCS Isotope :                               *
* LCSD DPM          : 0.000 LCSD Isotope :                               *
*                               *****                                  *

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.379E+01	3.355E+00	2.253E-01	1.712E+00
CD-109	4.058E+00	1.037E+00	5.432E-01	5.289E-01
SN-126	3.938E-01	1.006E-01	5.295E-02	5.132E-02
CS-135	4.388E-01	2.393E-01	1.067E-01	1.221E-01
TL-208	5.891E-01	9.161E-02	2.617E-02	4.674E-02
BI-211	4.264E+00	5.898E-01	1.497E-01	3.009E-01
PB-212	1.962E+00	2.525E-01	4.043E-02	1.288E-01
BI-214	1.292E+00	2.012E-01	5.235E-02	1.027E-01
PB-214	1.548E+00	2.298E-01	5.296E-02	1.173E-01
RA-224	4.703E+00	1.248E+00	4.333E-01	6.368E-01
RA-226	1.292E+00	2.012E-01	5.235E-02	1.027E-01
AC-228	1.993E+00	3.607E-01	1.092E-01	1.840E-01
RA-228	1.993E+00	3.607E-01	1.092E-01	1.840E-01
TH-228	1.962E+00	2.525E-01	4.043E-02	1.288E-01
TH-232	1.993E+00	3.607E-01	1.092E-01	1.840E-01
TH-234	2.597E+00	1.709E+00	9.096E-01	8.718E-01
U-235	2.162E-01	1.790E-01	1.622E-01	9.134E-02
NP-237	1.175E+00	3.852E-01	1.598E-01	1.965E-01
U-238	2.597E+00	1.709E+00	9.096E-01	8.718E-01
ANH-511	1.296E-01	6.149E-02	1.980E-02	3.137E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-2.851E-01	2.860E-01	2.310E-01	1.459E-01 NOT IDENT.
NA-22	-1.419E-02	4.175E-02	3.372E-02	2.130E-02 NOT IDENT.
NA-24	1.939E+07	1.296E+08	0.000E+00	6.611E+07 SHORT HLIF
SC-46	-1.840E-02	3.202E-02	2.623E-02	1.633E-02 FAIL ABUN
V-48	9.939E-03	8.399E-02	7.279E-02	4.285E-02 NOT IDENT.
CR-51	-8.050E-02	3.442E-01	2.849E-01	1.756E-01 NOT IDENT.
MN-54	-2.366E-03	3.546E-02	3.082E-02	1.809E-02 NOT IDENT.

CO-56	-1.994E-02	3.373E-02	2.787E-02	1.721E-02	NOT IDENT.
CO-57	1.181E-02	2.060E-02	1.911E-02	1.051E-02	NOT IDENT.
CO-58	1.926E-03	3.581E-02	3.148E-02	1.827E-02	NOT IDENT.
FE-59	-5.307E-03	9.111E-02	7.693E-02	4.649E-02	NOT IDENT.
CO-60	3.155E-02	3.516E-02	3.206E-02	1.794E-02	NOT IDENT.
ZN-65	-7.974E-03	1.019E-01	7.405E-02	5.198E-02	NOT IDENT.
SE-75	-3.177E-03	4.336E-02	3.284E-02	2.212E-02	NOT IDENT.
SR-85	4.631E-02	3.498E-02	2.969E-02	1.785E-02	NOT IDENT.
Y-88	-1.806E-03	2.210E-02	1.816E-02	1.128E-02	NOT IDENT.
Y-91	-5.158E+00	2.302E+01	1.901E+01	1.175E+01	NOT IDENT.
NB-94	3.869E-02	3.135E-02	2.855E-02	1.600E-02	NOT IDENT.
NB-95	-3.977E-02	4.465E-02	3.427E-02	2.278E-02	NOT IDENT.
NB-95M	1.726E-02	1.246E-01	9.676E-02	6.356E-02	NOT IDENT.
ZR-95	7.246E-02	6.809E-02	6.148E-02	3.474E-02	NOT IDENT.
MO-99	-3.606E+01	3.963E+01	3.017E+01	2.022E+01	NOT IDENT.
TC-99M	-4.363E+22	3.001E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	2.751E-02	3.532E-02	3.219E-02	1.802E-02	FAIL ABUN
RH-106	-3.926E-02	2.777E-01	2.336E-01	1.417E-01	NOT IDENT.
RU-106	-3.926E-02	2.777E-01	2.336E-01	1.417E-01	NOT IDENT.
AG-108M	-1.314E-03	2.437E-02	2.138E-02	1.243E-02	NOT IDENT.
AG-110M	-2.324E-02	3.106E-02	2.461E-02	1.585E-02	NOT IDENT.
SN-113	-1.060E-02	3.811E-02	3.331E-02	1.944E-02	NOT IDENT.
CD-115	-2.970E+01	4.578E+01	0.000E+00	2.336E+01	SHORT HLIF
SN-117M	-1.521E-02	5.720E-02	5.045E-02	2.918E-02	NOT IDENT.
TE-123M	-1.265E-02	2.411E-02	2.102E-02	1.230E-02	NOT IDENT.
SB-124	-2.582E-02	6.816E-02	5.379E-02	3.478E-02	NOT IDENT.
SB-125	3.367E-02	7.470E-02	6.762E-02	3.811E-02	FAIL ABUN
TE-125M	-6.144E-01	8.496E+00	7.762E+00	4.335E+00	NOT IDENT.
I-126	2.452E-02	2.795E-01	2.376E-01	1.426E-01	NOT IDENT.
SB-126	-1.310E-01	1.759E-01	1.319E-01	8.974E-02	NOT IDENT.
SB-127	1.874E-01	2.886E+00	2.444E+00	1.472E+00	NOT IDENT.
I-131	-6.984E-02	1.433E-01	1.244E-01	7.310E-02	NOT IDENT.
TE-132	-1.151E+00	1.851E+00	1.547E+00	9.443E-01	NOT IDENT.
BA-133	1.521E-02	3.672E-02	2.994E-02	1.874E-02	NOT IDENT.
I-133	1.743E+04	2.695E+05	0.000E+00	1.375E+05	SHORT HLIF
CS-134	1.810E-01	6.161E-02	4.677E-02	3.143E-02	FAIL ABUN
I-135	-3.485E+20	1.578E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-1.234E-01	1.324E-01	1.034E-01	6.753E-02	NOT IDENT.
BA-137M	-1.276E-03	3.420E-02	2.884E-02	1.745E-02	NOT IDENT.
CS-137	-1.348E-03	3.613E-02	3.047E-02	1.843E-02	NOT IDENT.
CE-139	-1.706E-02	2.579E-02	2.226E-02	1.316E-02	NOT IDENT.
BA-140	-1.280E-01	3.107E-01	2.578E-01	1.585E-01	NOT IDENT.
LA-140	-8.903E-02	1.052E-01	7.947E-02	5.368E-02	FAIL ABUN
CE-141	-1.783E-02	6.127E-02	5.361E-02	3.126E-02	NOT IDENT.
CE-143	4.974E+03	2.086E+03	0.000E+00	1.064E+03	SHORT HLIF
CE-144	6.521E-02	1.697E-01	1.486E-01	8.659E-02	NOT IDENT.
PM-144	-9.574E-03	3.015E-02	2.469E-02	1.538E-02	NOT IDENT.
PR-144	-7.114E-01	2.263E+00	1.854E+00	1.155E+00	NOT IDENT.
PM-146	1.932E-02	3.502E-02	3.173E-02	1.787E-02	NOT IDENT.
ND-147	-2.614E-01	6.742E-01	5.657E-01	3.440E-01	FAIL ABUN
PM-149	-2.042E+02	3.826E+02	0.000E+00	1.952E+02	SHORT HLIF
EU-152	1.527E-02	8.441E-02	7.414E-02	4.307E-02	FAIL ABUN
GD-153	-4.455E-02	8.032E-02	6.444E-02	4.098E-02	NOT IDENT.
EU-154	-4.921E-02	1.183E-01	9.476E-02	6.037E-02	NOT IDENT.
EU-155	1.066E-01	8.855E-02	8.418E-02	4.518E-02	FAIL ABUN
TB-160	-5.250E-02	1.286E-01	1.079E-01	6.562E-02	FAIL ABUN
HO-166M	-2.835E-02	5.736E-02	4.622E-02	2.926E-02	FAIL ABUN
TA-182	-4.578E-02	1.968E-01	1.620E-01	1.004E-01	FAIL ABUN
IR-192	1.834E-03	3.043E-02	2.572E-02	1.552E-02	FAIL ABUN
HG-203	-1.431E-02	3.746E-02	3.122E-02	1.911E-02	NOT IDENT.
BI-207	-7.800E-03	5.079E-02	4.270E-02	2.591E-02	FAIL ABUN
PB-210	4.007E+00	2.862E+00	2.626E+00	1.460E+00	NOT IDENT.
PB-211	1.212E-01	5.960E-01	5.317E-01	3.041E-01	NOT IDENT.
BI-212	1.930E+00	7.735E-01	5.635E-01	3.947E-01	FAIL ABUN
RN-219	-1.744E-01	3.266E-01	2.792E-01	1.666E-01	NOT IDENT.
RA-223	1.597E-01	6.006E-01	4.576E-01	3.064E-01	FAIL ABUN
AC-227	-1.403E-01	2.197E-01	1.814E-01	1.121E-01	FAIL ABUN
TH-227	-1.403E-01	2.199E-01	1.814E-01	1.122E-01	FAIL ABUN
TH-229	2.172E-01	4.434E-01	3.972E-01	2.262E-01	FAIL ABUN
PA-231	5.709E-01	1.260E+00	1.095E+00	6.426E-01	FAIL ABUN
TH-231	1.597E-01	6.006E-01	4.576E-01	3.064E-01	FAIL ABUN
PA-233	-2.723E-02	5.351E-02	4.354E-02	2.730E-02	FAIL ABUN
PA-234	7.417E-02	2.664E-01	2.347E-01	1.359E-01	NOT IDENT.
PA-234M	-1.917E-01	4.160E+00	3.537E+00	2.123E+00	NOT IDENT.
NP-239	4.019E-02	3.239E-01	2.966E-01	1.652E-01	NOT IDENT.
AM-241	3.609E-02	1.371E-01	1.099E-01	6.995E-02	NOT IDENT.
CM-247	-1.425E-02	3.025E-02	2.604E-02	1.544E-02	NOT IDENT.
CF-249	2.122E-02	3.428E-02	3.145E-02	1.749E-02	NOT IDENT.

CF-251

1.476E-02

1.075E-01

9.560E-02

5.485E-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	222.1931
49.72	238.6369
57.36	0.0000
59.54	306.0556
63.29	336.6360
63.29	336.6360
64.28	385.7064
67.75	399.0601
69.67	439.3660
70.83	442.2693
72.81	435.5193
72.87	435.5799
72.87	435.5799
74.82	440.5239
74.82	440.5239
74.82	440.5239
74.97	440.6776
77.11	442.8373
77.11	442.8373
77.11	442.8373
79.69	443.6953
79.80	443.8035
80.12	453.5278
80.19	453.5979
80.57	413.7196
81.00	401.2496
81.07	401.3115
81.07	401.3115
83.79	419.2086
83.79	419.2086
85.43	364.4093
86.48	365.2144
86.55	365.2679
86.79	365.4500
86.94	365.5677
87.57	366.0474
88.03	366.3964
88.47	366.7305
89.96	367.8525
91.11	368.7112
92.59	369.8097
92.59	369.8097
93.35	370.3707
94.67	322.8283
94.87	334.8671
94.87	334.8671
95.86	352.7577
97.43	376.4488
98.44	333.7317
99.53	311.6333
100.11	326.2387
103.18	372.9460
103.37	368.5952
105.31	314.1121
106.12	316.3799
109.28	337.2234
111.00	341.8898
111.76	308.6585
116.30	301.0003
117.23	300.5583
121.12	319.1805
121.78	285.2612
122.06	277.9816
123.07	283.0846
131.20	306.0801
133.52	285.3888
136.00	346.7327



136.47	327.0699
140.51	359.5966
140.51	0.0000
143.76	291.3674
144.24	293.4897
144.24	293.4897
145.44	330.5170
152.43	312.4976
153.25	288.5677
154.21	294.7919
154.21	294.7919
156.02	316.0206
158.56	283.8521
159.00	296.7522
162.66	284.4521
163.33	267.9603
165.86	306.4303
176.60	294.6938
177.52	264.9319
181.07	275.1856
184.41	308.2108
185.72	290.9647
193.51	253.7973
197.04	290.8218
205.31	264.5615
210.85	223.9350
215.65	227.7502
222.11	267.4022
227.38	260.4022
228.16	254.2341
228.18	254.2390
235.69	254.0860
235.96	262.2013
235.96	262.2013
238.63	213.9902
238.63	213.9902
240.99	214.5023
242.00	214.7210
244.70	183.3853
252.40	186.4207
252.80	185.4031
256.23	211.1880
256.23	211.1880
260.90	0.0000
264.66	180.3516
268.22	170.9930
269.46	172.8530
269.46	172.8530
271.23	173.1355
273.65	210.2294
276.40	190.6877
277.37	176.3453
277.60	164.1039
278.00	186.4990
279.20	213.5305
279.54	233.7260
280.46	227.2062
283.69	170.6196
284.31	171.8355
285.41	197.8604
285.90	0.0000
287.50	188.0925
293.27	0.0000
295.22	200.7095
295.96	200.8391
298.57	184.2308
299.98	170.7916
299.98	170.7916
300.09	170.8069
300.09	170.8069
300.13	170.8130
301.36	157.3136
302.85	148.9525
304.50	147.4477
304.50	147.4477
304.85	147.4923
308.46	138.7664
311.90	150.6665

316.51	142.0060
319.41	140.0293
320.08	141.2635
323.87	139.3774
323.87	139.3774
328.76	156.2516
333.37	136.9285
334.37	154.6069
334.37	154.6069
338.28	169.1807
338.28	169.1807
338.32	169.1865
338.32	169.1865
338.32	169.1865
340.48	170.8830
340.55	170.8918
344.28	152.7722
351.06	149.4994
351.93	141.5827
356.01	120.0476
364.49	136.6298
366.42	135.9244
383.85	155.8768
388.16	128.9215
388.63	135.3671
391.69	133.8252
400.66	119.9013
401.81	127.3809
402.40	129.2783
404.85	124.8713
410.95	115.1715
414.70	122.9101
423.72	113.3433
427.09	117.3496
427.87	105.1982
433.94	111.2714
453.88	99.3170
463.37	97.0192
468.07	89.3987
473.00	92.7583
476.78	118.1484
477.60	115.2994
487.02	93.5376
492.35	0.0000
497.08	80.3684
511.00	89.9044
514.00	79.1699
527.90	0.0000
529.87	0.0000
531.02	104.9039
537.26	106.2653
546.56	0.0000
563.25	85.3894
569.33	98.9182
569.50	98.9271
569.70	100.9789
583.19	92.4390
600.60	113.9780
602.73	99.5771
604.72	94.6929
609.32	98.8646
609.32	98.8646
610.33	98.9110
614.28	93.4719
618.01	94.0594
621.93	87.9580
621.93	87.9580
633.25	86.3317
635.95	84.3359
636.99	62.2284
645.85	66.7260
657.76	93.7256
661.66	103.4977
661.66	103.4977
664.57	0.0000
666.33	104.7889
666.50	102.6592
677.62	66.6375

685.70	83.0626
695.00	81.2416
696.49	86.7139
696.51	86.7163
697.00	85.6492
702.65	78.2556
706.68	99.0814
711.68	98.2068
720.70	90.1406
721.93	0.0000
722.78	64.9090
722.91	64.9126
723.31	64.9234
724.19	66.7041
727.33	80.1957
733.00	79.2905
735.93	72.7736
739.50	91.6551
747.24	75.3358
752.31	97.7002
753.82	65.5450
756.73	62.2874
763.94	73.6276
765.81	113.8753
766.42	94.9220
777.92	89.7583
778.90	97.6493
783.70	68.5989
785.37	87.3260
795.86	72.3242
801.95	63.4375
810.29	70.0106
810.76	70.9332
815.77	63.7827
818.51	70.2343
832.01	88.0242
834.85	91.7896
836.80	0.0000
846.77	67.3111
856.80	61.7041
860.56	76.9290
871.09	66.0650
873.19	71.7025
875.33	0.0000
879.36	69.9994
880.51	60.6915
883.24	61.6865
884.68	55.1728
889.28	57.1398
898.04	52.6217
911.20	70.8087
911.20	70.8087
911.20	70.8087
926.50	56.9546
937.49	58.7610
944.13	61.1250
946.00	60.2084
949.00	67.9249
962.29	73.6794
964.08	60.5821
966.15	60.6252
968.97	60.6836
968.97	60.6836
968.97	60.6836
983.53	69.6920
996.26	54.4346
1001.03	62.3094
1004.73	77.9824
1037.84	61.0857
1038.76	0.0000
1048.07	79.0781
1050.41	56.3849
1050.41	56.3849
1063.66	72.5152
1085.87	72.0176
1099.45	66.2900
1112.07	75.0588
1115.54	80.7422

1120.29	79.8486
1120.29	79.8486
1120.55	79.8525
1121.30	79.8718
1131.51	0.0000
1173.23	68.7830
1177.93	80.1823
1189.05	72.1875
1204.77	89.0864
1221.41	86.3800
1231.02	73.0454
1235.36	110.7410
1238.28	78.4204
1260.41	0.0000
1271.85	55.9243
1274.44	63.3574
1274.54	62.3015
1291.59	43.4924
1298.22	0.0000
1312.11	53.3276
1332.49	31.0943
1365.19	27.0313
1368.63	0.0000
1384.29	28.9727
1408.01	30.6018
1457.56	0.0000
1460.82	23.0642
1489.16	13.9319
1505.03	36.3578
1596.21	35.2174
1620.50	13.3973
1678.03	0.0000
1690.97	17.4888
1764.49	8.8788
1764.49	8.8788
1770.23	10.1589
1771.35	51.3716
1791.20	0.0000
1836.06	8.0062

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247337007

Total Uranium Activity	7.8253E+00	ug/g
Total Uranium Counting Unc.	5.0842E+00	ug/g
Total Uranium Tpu	2.5940E-06	ug/g
Total Uranium Mda	2.7071E+00	ug/g

```

*****
*
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON ,SC 29417                          *
*                               GROSS GAMMA REPORT                            *
*
*****
*
*  BATCH ID      : 955027              SAMPLE ID   : G247337007              *
*  ANALYST       : MXR1                DETECTOR    : GAM16                  *
*  SAMPLE DATE   : 12-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00      *
*  ANALYSIS DATE:  4-MAR-2010 12:40:29.88  SAMPLE ALQT: 145.340 GRAM        *
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.045E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.265E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.088E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.500E+00

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VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 14:42:08.52

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                          *
*                               Charleston, SC 29414                     *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247360001.CNF;1
Sample date   : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 12:41:35.
Sample ID    : G247360001 Sample quantity : 8.05700E+01 GRAM
Detector name : GAM22 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.78 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 5.00000
Batch ID : 955027 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	390	385	1.16	149.76	143	19	5.42E-02	9.8	2.14E+00
2	2	77.09*	572	327	1.03	154.41	143	19	7.95E-02	6.8	
3	0	87.05	164	350	1.08	174.31	172	6	2.28E-02	19.6	
4	0	92.84*	227	541	1.43	185.87	182	9	3.15E-02	21.2	
5	0	185.52*	241	466	1.21	371.06	364	13	3.35E-02	20.4	
6	0	209.67*	89	364	1.31	419.31	413	10	1.23E-02	42.9	
7	2	238.69*	1100	231	1.26	477.30	472	17	1.53E-01	4.0	5.74E-01
8	2	241.75*	267	279	1.71	483.42	472	17	3.71E-02	16.0	
9	0	295.39*	349	205	1.41	590.60	586	10	4.85E-02	9.6	
10	0	300.01	93	194	1.37	599.83	596	9	1.30E-02	28.6	
11	0	338.30*	225	171	1.28	676.35	672	9	3.12E-02	13.0	
12	0	351.89*	683	203	1.43	703.51	698	12	9.48E-02	5.8	
13	0	464.15	66	192	1.57	927.87	920	14	9.11E-03	46.5	
14	0	510.93*	139	245	1.79	1021.36	1011	20	1.94E-02	32.3	
15	0	583.11*	370	136	1.77	1165.63	1159	13	5.13E-02	8.8	
16	0	609.36*	487	187	1.58	1218.09	1211	16	6.76E-02	8.0	
17	0	661.70	811	180	1.86	1322.74	1315	17	1.13E-01	5.2	
18	0	727.96*	77	84	1.45	1455.17	1450	14	1.07E-02	29.3	
19	0	861.81	85	73	1.94	1722.76	1716	17	1.18E-02	25.8	
20	0	911.42*	252	99	2.01	1821.96	1812	17	3.50E-02	11.5	
21	0	969.67*	119	88	1.70	1938.43	1933	14	1.66E-02	20.3	
22	0	1120.46*	115	88	2.39	2239.94	2231	16	1.60E-02	21.1	
23	0	1460.89*	1181	28	2.70	2920.81	2908	28	1.64E-01	3.2	
24	0	1764.84*	94	16	3.76	3528.87	3518	22	1.31E-02	16.9	

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

## VMS Nuclide Identification Report V3.1 Generated 4-MAR-2010 14:42:11

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247360001.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 12:41:35
Sample ID        : G247360001 Sample quantity : 80.570 GRAM
Sample type      : SOLID Sample geometry :
Detector name    : GAMMA22 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.78 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	*	2.703E+01	3.032E+00	5.815E-01	5.327E-02	46.492
CD-109	+	88.03	*	2.857E+00	1.151E+00	1.843E+00	1.749E-01	1.550
SN-126		64.28		7.468E-05	5.997E-01	9.976E-01	1.449E-01	0.000
	+	86.94		1.152E+00	6.578E-01	7.612E-01	3.161E-01	1.514
	+	87.57	*	2.772E-01	1.116E-01	1.781E-01	1.682E-02	1.556
BA-137M	+	661.66	*	1.173E+00	1.730E-01	7.004E-02	7.386E-03	16.742
CS-137	+	661.66	*	1.239E+00	1.828E-01	7.399E-02	7.813E-03	16.742
TL-208		277.37		3.303E-01	5.204E-01	8.539E-01	1.420E-01	0.387
	+	583.19	*	5.154E-01	1.062E-01	7.154E-02	7.750E-03	7.204
	+	860.56		1.086E+00	5.753E-01	5.677E-01	6.614E-02	1.913
BI-211		72.87		7.278E+00	3.718E+00	6.438E+00	5.153E-01	1.130
	+	351.06	*	4.557E+00	7.515E-01	4.115E-01	4.801E-02	11.075
PB-212	+	74.82		2.870E+00	6.709E-01	6.426E-01	8.161E-02	4.466
	+	77.11		2.413E+00	3.858E-01	3.701E-01	3.095E-02	6.521
	+	238.63	*	1.752E+00	2.715E-01	1.208E-01	1.601E-02	14.499
	+	300.09		2.231E+00	1.319E+00	1.595E+00	2.339E-01	1.399
BI-214	+	609.32	*	1.309E+00	2.592E-01	1.496E-01	1.746E-02	8.747
	+	1120.29		1.533E+00	6.676E-01	5.455E-01	6.053E-02	2.810
	+	1764.49		1.671E+00	5.817E-01	4.018E-01	3.348E-02	4.160
PB-214	+	74.82		5.087E+00	1.154E+00	1.139E+00	1.296E-01	4.466
	+	77.11		4.255E+00	7.653E-01	6.525E-01	7.664E-02	6.521
	+	242.00		2.573E+00	8.947E-01	7.338E-01	1.015E-01	3.507
	+	295.22		1.479E+00	3.605E-01	2.865E-01	4.297E-02	5.162
	+	351.93	*	1.654E+00	2.876E-01	1.563E-01	2.011E-02	10.583
RA-224	+	240.99	*	4.550E+00	1.560E+00	1.294E+00	1.620E-01	3.517
RA-226	+	609.32	*	1.309E+00	2.592E-01	1.496E-01	1.746E-02	8.747
	+	1120.29		1.533E+00	6.676E-01	5.455E-01	6.053E-02	2.810
	+	1764.49		1.671E+00	5.817E-01	4.018E-01	3.348E-02	4.160
AC-228	+	338.32		1.683E+00	8.395E-01	5.049E-01	2.147E-01	3.333
	+	911.20	*	1.631E+00	4.367E-01	2.804E-01	3.798E-02	5.819
	+	968.97		1.330E+00	6.342E-01	5.883E-01	1.479E-01	2.260
RA-228	+	338.32		1.683E+00	8.395E-01	5.049E-01	2.147E-01	3.333
	+	911.20	*	1.631E+00	4.367E-01	2.804E-01	3.798E-02	5.819
	+	968.97		1.330E+00	6.342E-01	5.883E-01	1.479E-01	2.260



---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	74.82		2.870E+00	6.110E-01	6.426E-01	5.299E-02	4.466
	+	77.11		2.413E+00	3.858E-01	3.701E-01	3.095E-02	6.521
	+	238.63	*	1.752E+00	2.715E-01	1.208E-01	1.601E-02	14.499
	+	300.09		2.231E+00	1.884E+00	1.595E+00	9.898E-01	1.399
TH-232	+	338.32		1.683E+00	4.825E-01	5.049E-01	6.005E-02	3.333
	+	911.20	*	1.631E+00	4.367E-01	2.804E-01	3.798E-02	5.819
	+	968.97		1.330E+00	6.342E-01	5.883E-01	1.479E-01	2.260
NP-237	+	86.48	*	8.271E-01	3.755E-01	5.054E-01	1.160E-01	1.636
		95.86		-2.229E-02	1.261E+00	1.811E+00	4.362E-01	-0.012
ANH-511	+	511.00	*	1.511E-01	9.887E-02	5.926E-02	5.938E-03	2.550

---- 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	*	-5.746E-02	4.645E-01	7.449E-01	7.773E-02	-0.077
NA-22		1274.54	*	-3.520E-02	4.771E-02	7.328E-02	6.315E-03	-0.480
NA-24		1368.63	*	-1.509E+02	4.771E-02	Half-Life too short		
SC-46		889.28	*	-3.222E-02	5.014E-02	7.886E-02	8.827E-03	-0.409
	+	1120.55		2.700E-01	1.162E-01	1.597E-01	1.412E-02	1.690
V-48		944.13		-5.356E-01	1.341E+00	2.141E+00	2.322E-01	-0.250
		983.53	*	-1.860E-02	1.092E-01	1.769E-01	1.856E-02	-0.105
		1312.11		1.070E-02	1.149E-01	1.913E-01	1.685E-02	0.056
CR-51		320.08	*	1.364E-01	5.428E-01	9.182E-01	1.189E-01	0.149
MN-54		834.85	*	-6.473E-03	4.588E-02	7.582E-02	8.422E-03	-0.085
CO-56		846.77	*	-1.111E-03	4.926E-02	8.195E-02	9.123E-03	-0.014
		1037.84		6.195E-02	3.793E-01	6.282E-01	6.473E-02	0.099
		1238.28		1.527E-01	1.172E-01	2.044E-01	1.772E-02	0.747
		1771.35		-1.767E-01	3.901E-01	4.937E-01	4.102E-02	-0.358
CO-57		122.06	*	2.392E-02	3.313E-02	5.416E-02	4.466E-03	0.442
		136.47		-1.152E-01	2.636E-01	4.381E-01	4.060E-02	-0.263
CO-58		810.76	*	-8.782E-03	4.867E-02	8.037E-02	8.899E-03	-0.109
FE-59		1099.45	*	-9.425E-04	1.216E-01	1.974E-01	1.934E-02	-0.005
		1291.59		-1.166E-01	1.556E-01	2.387E-01	2.353E-02	-0.488
CO-60		1173.23		1.959E-02	4.947E-02	8.505E-02	6.840E-03	0.230
		1332.49	*	-4.516E-02	4.451E-02	6.494E-02	5.790E-03	-0.695
ZN-65		1115.54	*	3.921E-02	1.257E-01	1.796E-01	1.602E-02	0.218
SE-75		121.12		-7.222E-02	1.809E-01	2.814E-01	3.038E-02	-0.257
		136.00		-2.513E-02	5.083E-02	8.429E-02	7.316E-03	-0.298
		264.66	*	1.604E-02	5.994E-02	9.758E-02	1.313E-02	0.164
		279.54		1.729E-01	1.530E-01	2.551E-01	3.621E-02	0.678
		400.66		3.622E-01	3.526E-01	6.051E-01	7.066E-02	0.599
SR-85		514.00	*	2.468E-01	6.768E-02	1.115E-01	1.118E-02	2.214
Y-88		898.04		1.342E-02	5.305E-02	8.949E-02	1.005E-02	0.150
		1836.06	*	1.877E-02	3.701E-02	6.581E-02	5.320E-03	0.285
Y-91		1204.77	*	4.368E+00	2.650E+01	4.463E+01	3.669E+00	0.098
NB-94		702.65	*	7.735E-04	4.273E-02	6.984E-02	7.485E-03	0.011
		871.09		9.370E-04	4.691E-02	6.927E-02	7.738E-03	0.014
NB-95		765.81	*	6.153E-02	5.912E-02	1.014E-01	1.109E-02	0.607

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NB-95M	235.69	*		1.157E-01	1.941E-01	2.843E-01	3.762E-02	0.407
ZR-95	724.19			1.395E-01	1.358E-01	2.070E-01	2.357E-02	0.674
	756.73	*		6.445E-02	9.578E-02	1.622E-01	1.887E-02	0.397
MO-99	140.51			-1.562E+02	1.092E+02	1.598E+02	3.804E+01	-0.977
	181.07			-6.761E+01	8.935E+01	1.230E+02	2.413E+01	-0.550
	366.42			-2.583E+02	4.361E+02	6.973E+02	7.396E+01	-0.370
	739.50	*		-1.312E+00	5.305E+01	8.603E+01	1.469E+01	-0.015
	777.92			-3.192E+02	1.583E+02	2.069E+02	2.270E+01	-1.543
TC-99M	140.51	*		-6.111E+16	1.583E+02	Half-Life	too short	
RU-103	497.08	*		3.981E-02	5.520E-02	9.248E-02	1.371E-02	0.430
	610.33	+		1.473E+01	3.478E+00	3.635E+00	6.309E-01	4.053
RH-106	621.93	*		8.217E-02	3.905E-01	6.533E-01	9.479E-02	0.126
	1050.41			1.289E+00	2.898E+00	4.909E+00	4.792E-01	0.263
RU-106	621.93	*		8.217E-02	3.904E-01	6.533E-01	6.824E-02	0.126
	1050.41			1.289E+00	2.898E+00	4.909E+00	4.792E-01	0.263
AG-108M	433.94	*		-2.446E-02	4.011E-02	6.300E-02	6.200E-03	-0.388
	614.28			-1.707E-02	5.167E-02	7.120E-02	7.588E-03	-0.240
	722.91			3.038E-02	4.872E-02	7.234E-02	7.969E-03	0.420
AG-110M	657.76	*		1.498E-01	6.001E-02	9.803E-02	1.054E-02	1.528
	677.62			-2.418E-01	3.940E-01	6.163E-01	6.667E-02	-0.392
	706.68			-7.149E-03	2.625E-01	4.275E-01	4.673E-02	-0.017
	763.94			-1.722E-01	2.260E-01	3.464E-01	3.851E-02	-0.497
	884.68			3.453E-03	5.932E-02	9.888E-02	1.127E-02	0.035
	937.49			9.597E-02	1.346E-01	2.334E-01	2.602E-02	0.411
	1384.29			-2.807E-01	2.353E-01	3.421E-01	3.134E-02	-0.821
	1505.03			-2.191E-01	3.470E-01	5.206E-01	4.629E-02	-0.421
SN-113	391.69	*		3.032E-02	6.047E-02	1.019E-01	9.736E-03	0.297
CD-115	260.90			1.216E-04	6.047E-02	Half-Life	too short	
	492.35			-9.093E-05	6.047E-02	Half-Life	too short	
	527.90	*		3.540E-05	6.047E-02	Half-Life	too short	
SN-117M	156.02			1.631E+00	3.673E+00	6.249E+00	5.859E-01	0.261
	158.56	*		1.154E-02	8.898E-02	1.496E-01	1.419E-02	0.077
TE-123M	159.00	*		9.887E-03	3.645E-02	6.160E-02	5.883E-03	0.161
SB-124	602.73			-1.501E-03	6.342E-02	9.015E-02	9.365E-03	-0.017
	645.85			-1.944E-01	6.394E-01	1.030E+00	1.124E-01	-0.189
	722.78			3.102E-01	5.170E-01	7.661E-01	8.389E-02	0.405
	1690.97	*		-3.140E-02	9.499E-02	1.496E-01	1.333E-02	-0.210
SB-125	427.87	*		5.995E-02	1.235E-01	2.067E-01	2.005E-02	0.290
	463.37	+		6.418E-01	6.010E-01	6.531E-01	6.757E-02	0.983
	600.60			1.544E-01	2.445E-01	4.013E-01	4.380E-02	0.385
	635.95			1.233E-01	3.420E-01	5.764E-01	6.378E-02	0.214
TE-125M	109.28	*		8.867E+00	1.341E+01	2.198E+01	2.263E+00	0.403
I-126	388.63			-2.173E-01	2.875E-01	4.529E-01	4.288E-02	-0.480
	666.33	*		-1.698E-02	4.276E-01	5.997E-01	6.336E-02	-0.028
	753.82			-2.379E-01	2.939E+00	4.737E+00	5.163E-01	-0.050
SB-126	414.70			-1.036E-02	1.326E-01	2.161E-01	2.045E-02	-0.048
	666.50			-3.725E-02	1.470E-01	2.017E-01	2.131E-02	-0.185
	695.00			-2.887E-02	1.319E-01	2.125E-01	2.271E-02	-0.136
	697.00			1.023E-01	4.503E-01	7.463E-01	7.981E-02	0.137

## ----- 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	*		-9.187E-02	2.519E-01	3.525E-01	3.801E-02	-0.261
	856.80			7.097E-01	8.866E-01	1.360E+00	1.516E-01	0.522
	252.40			-3.431E+00	1.374E+01	2.177E+01	9.377E+00	-0.158
	473.00			-2.685E+00	5.440E+00	8.517E+00	1.272E+00	-0.315
I-131	685.70	*		-1.873E+00	3.810E+00	5.993E+00	8.606E-01	-0.312
	783.70			1.705E+01	1.027E+01	1.806E+01	2.780E+00	0.944
	80.19			-5.486E+00	8.880E+00	1.251E+01	1.095E+00	-0.438
	284.31			3.614E-01	3.076E+00	4.942E+00	6.996E-01	0.073
TE-132	364.49	*		-1.140E-02	2.309E-01	3.812E-01	4.236E-02	-0.030
	636.99			7.277E-01	3.027E+00	5.063E+00	5.534E-01	0.144
	49.72			-1.548E+01	5.795E+01	9.617E+01	1.163E+01	-0.161
	111.76			2.979E+01	1.286E+02	2.071E+02	2.548E+01	0.144
BA-133	116.30			-6.353E+00	1.092E+02	1.732E+02	2.125E+01	-0.037
	228.16	*		-1.350E+00	2.792E+00	4.425E+00	8.347E-01	-0.305
	81.00			-2.065E-01	1.286E-01	1.659E-01	2.585E-02	-1.245
	276.40			2.518E-01	4.816E-01	7.871E-01	1.403E-01	0.320
I-133	302.85			1.705E-01	2.025E-01	3.095E-01	5.107E-02	0.551
	356.01	*		-5.273E-03	6.439E-02	9.214E-02	1.357E-02	-0.057
	383.85			4.500E-01	3.869E-01	6.679E-01	8.826E-02	0.674
	529.87	*		2.845E-02	3.869E-01	Half-Life	too short	
CS-134	875.33			3.896E+00	3.869E-01	Half-Life	too short	
	1298.22			3.548E+00	3.869E-01	Half-Life	too short	
	563.25			3.077E-01	4.740E-01	8.165E-01	8.424E-02	0.377
	569.33			-1.851E-01	2.650E-01	4.142E-01	4.295E-02	-0.447
CS-135	604.72			2.621E-03	5.144E-02	7.355E-02	7.657E-03	0.036
	795.86	*		1.095E-01	6.016E-02	1.071E-01	1.185E-02	1.023
	801.95			-3.275E-01	5.218E-01	7.835E-01	8.676E-02	-0.418
	1365.19			1.427E-01	1.478E+00	2.443E+00	2.277E-01	0.058
I-135	268.22	*		1.263E-01	2.135E-01	3.510E-01	5.078E-02	0.360
CS-136	546.56			2.379E+15	2.135E-01	Half-Life	too short	
	836.80			3.053E+15	2.135E-01	Half-Life	too short	
	1038.76			2.484E+15	2.135E-01	Half-Life	too short	
	1131.51			5.085E+14	2.135E-01	Half-Life	too short	
CE-139	1260.41	*		-7.899E+13	2.135E-01	Half-Life	too short	
	1457.56			2.676E+17	2.135E-01	Half-Life	too short	
	1678.03			-2.157E+15	2.135E-01	Half-Life	too short	
	1791.20			7.467E+14	2.135E-01	Half-Life	too short	
BA-140	153.25			7.068E-01	1.422E+00	2.426E+00	2.623E-01	0.291
	176.60			1.605E-01	8.456E-01	1.414E+00	1.545E-01	0.114
	273.65			-2.155E+00	1.013E+00	1.385E+00	1.974E-01	-1.556
	340.55			6.744E-01	3.016E-01	4.775E-01	5.751E-02	1.412
BA-140	818.51			-3.326E-02	1.157E-01	1.894E-01	2.099E-02	-0.176
	1048.07	*		-1.254E-02	1.564E-01	2.534E-01	2.563E-02	-0.049
	1235.36			-1.714E-01	9.084E-01	1.489E+00	1.728E-01	-0.115
	165.86	*		-1.352E-02	3.900E-02	6.411E-02	6.287E-03	-0.211
BA-140	162.66			8.939E-01	1.413E+00	2.343E+00	2.386E-01	0.382
	304.85			-1.171E-01	2.503E+00	3.649E+00	1.128E+00	-0.032
	423.72			4.479E-02	3.333E+00	5.449E+00	1.806E+00	0.008
	537.26	*		-6.167E-02	4.180E-01	6.922E-01	2.376E-01	-0.089

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

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LA-140		328.76		5.102E-01	5.254E-01	9.071E-01	1.147E-01	0.562
		487.02		1.485E-01	2.394E-01	3.998E-01	4.145E-02	0.371
		815.77		5.095E-02	5.203E-01	8.759E-01	1.040E-01	0.058
		1596.21	*	-1.237E-01	1.563E-01	2.387E-01	2.093E-02	-0.518
CE-141		145.44	*	2.932E-02	9.711E-02	1.577E-01	1.436E-02	0.186
CE-143		57.36		3.417E-03	9.711E-02	Half-Life	too short	
		293.27	*	9.089E-03	9.711E-02	Half-Life	too short	
		664.57		2.931E-01	9.711E-02	Half-Life	too short	
		721.93		1.018E-02	9.711E-02	Half-Life	too short	
CE-144		80.12		-1.935E+00	3.180E+00	4.484E+00	3.877E-01	-0.431
		133.52	*	-1.024E-01	2.466E-01	4.102E-01	6.252E-02	-0.250
PM-144		476.78		1.106E-02	8.905E-02	1.450E-01	1.523E-02	0.076
		618.01		3.141E-02	4.302E-02	6.938E-02	7.379E-03	0.453
		696.49	*	1.383E-02	4.388E-02	7.312E-02	7.821E-03	0.189
PR-144		696.51	*	1.042E+00	3.292E+00	5.487E+00	5.867E-01	0.190
		1489.16		-6.798E+00	1.652E+01	2.557E+01	2.278E+00	-0.266
PM-146		453.88	*	6.807E-04	5.659E-02	9.192E-02	1.057E-02	0.007
		633.25		-9.565E-01	1.829E+00	2.849E+00	1.101E+00	-0.336
		735.93		1.470E-01	2.108E-01	3.088E-01	8.888E-02	0.476
		747.24		2.407E-02	1.148E-01	1.891E-01	3.030E-02	0.127
ND-147		91.11		1.538E+00	7.161E-01	9.085E-01	8.982E-02	1.693
		319.41		6.341E-01	5.830E+00	9.806E+00	1.241E+00	0.065
		531.02	*	-3.982E-01	1.000E+00	1.634E+00	2.592E-01	-0.244
PM-149		285.90	*	6.232E-06	1.000E+00	Half-Life	too short	
EU-152		121.78		7.284E-03	9.593E-02	1.526E-01	1.461E-02	0.048
		244.70		3.670E-01	4.940E-01	7.280E-01	9.217E-02	0.504
		344.28	*	4.437E-02	1.376E-01	2.122E-01	2.550E-02	0.209
		778.90		-5.096E-01	3.239E-01	4.484E-01	4.921E-02	-1.136
		964.08		4.970E-01	4.117E-01	6.406E-01	6.836E-02	0.776
		1085.87		-1.317E-01	4.754E-01	7.550E-01	7.034E-02	-0.174
		1112.07		9.306E-02	3.931E-01	5.590E-01	5.009E-02	0.166
		1408.01		5.594E-02	2.274E-01	3.817E-01	3.412E-02	0.147
GD-153		69.67		-6.989E-01	2.284E+00	3.314E+00	2.572E-01	-0.211
		97.43	*	-1.415E-01	1.296E-01	1.723E-01	1.515E-02	-0.821
		103.18		5.887E-03	1.429E-01	2.297E-01	1.963E-02	0.026
EU-154		123.07		8.110E-02	6.777E-02	1.122E-01	1.243E-02	0.723
		723.31		1.093E-01	2.277E-01	3.330E-01	3.830E-02	0.328
		873.19		-4.869E-02	3.530E-01	5.695E-01	7.893E-02	-0.085
		996.26		-4.789E-01	4.412E-01	6.433E-01	1.183E-01	-0.744
		1004.73		2.161E-01	2.665E-01	4.611E-01	5.953E-02	0.469
		1274.44	*	-9.821E-02	1.351E-01	2.075E-01	2.360E-02	-0.473
EU-155	+	86.55		3.368E-01	1.357E-01	2.229E-01	2.097E-02	1.511
		105.31	*	-3.917E-02	1.380E-01	2.183E-01	1.873E-02	-0.179
TB-160	+	86.79		9.348E-01	3.765E-01	6.130E-01	5.733E-02	1.525
		197.04		7.695E-02	8.382E-01	1.324E+00	1.440E-01	0.058
		215.65		2.254E-01	9.909E-01	1.635E+00	1.890E-01	0.138
	+	298.57		3.293E-01	1.937E-01	2.776E-01	3.720E-02	1.186
		879.36	*	9.019E-02	1.799E-01	3.091E-01	3.457E-02	0.292
		962.29		7.165E-01	7.627E-01	1.169E+00	1.250E-01	0.613

## ---- 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		1.213E+00	3.650E-01	6.133E-01	6.532E-02	1.978
		1177.93		-1.600E-01	4.258E-01	6.593E-01	5.320E-02	-0.243
		1271.85		-4.931E-02	7.715E-01	1.269E+00	1.091E-01	-0.039
		80.57		-2.670E-01	3.404E-01	4.746E-01	4.124E-02	-0.563
	+	184.41		2.048E-01	8.638E-02	9.378E-02	9.778E-03	2.184
		280.46		-2.860E-02	1.174E-01	1.854E-01	2.590E-02	-0.154
		410.95		8.363E-02	3.327E-01	5.518E-01	5.209E-02	0.152
		711.68	*	-3.217E-02	7.206E-02	1.135E-01	1.220E-02	-0.283
		752.31		-1.977E-01	3.354E-01	5.184E-01	5.646E-02	-0.381
		810.29		1.140E-02	6.875E-02	1.164E-01	1.287E-02	0.098
TA-182		67.75		1.206E-02	1.359E-01	2.219E-01	1.692E-02	0.054
		100.11		1.548E-01	2.334E-01	3.852E-01	3.338E-02	0.402
		152.43		7.979E-02	4.565E-01	7.707E-01	7.111E-02	0.104
		222.11		-3.539E-02	4.847E-01	7.879E-01	9.298E-02	-0.045
	+	1121.30		7.400E-01	3.185E-01	4.352E-01	3.843E-02	1.700
		1189.05		5.724E-02	3.400E-01	5.742E-01	4.670E-02	0.100
		1221.41	*	-8.860E-02	2.351E-01	3.797E-01	3.157E-02	-0.233
		1231.02		-5.895E-01	6.064E-01	9.356E-01	7.830E-02	-0.630
	+	295.96		1.145E+00	2.693E-01	3.584E-01	4.849E-02	3.195
		308.46		-1.045E-01	1.292E-01	2.073E-01	2.714E-02	-0.504
IR-192		316.51	*	-2.439E-02	4.640E-02	7.557E-02	9.658E-03	-0.323
		468.07		4.338E-02	1.109E-01	1.597E-01	1.653E-02	0.272
		70.83		2.980E-02	1.825E+00	2.688E+00	4.209E-01	0.011
HG-203		72.87		1.949E+00	1.027E+00	1.724E+00	2.621E-01	1.130
		279.20	*	7.027E-02	5.666E-02	9.468E-02	1.339E-02	0.742
BI-207		72.81		3.739E-01	2.121E-01	3.660E-01	2.928E-02	1.022
	+	74.97		8.274E-01	1.759E-01	2.724E-01	2.227E-02	3.038
		569.70		-2.713E-02	4.053E-02	6.342E-02	6.514E-03	-0.428
		1063.66	*	-2.240E-02	6.869E-02	1.048E-01	1.006E-02	-0.214
PB-210		1770.23		2.961E-01	8.734E-01	1.282E+00	1.066E-01	0.231
		46.54	*	3.468E+00	4.121E+00	6.987E+00	6.435E-01	0.496
PB-211		404.85	*	-1.394E+00	1.205E+00	1.516E+00	7.356E-01	-0.920
		427.09		-4.855E-03	2.077E+00	3.391E+00	1.575E+00	-0.001
BI-212		832.01		-3.274E-01	1.214E+00	1.967E+00	1.029E+00	-0.166
	+	727.33	*	1.616E+00	9.746E-01	1.241E+00	1.746E-01	1.302
		785.37		4.681E+00	3.835E+00	6.687E+00	7.350E-01	0.700
		1620.50		1.623E+00	2.694E+00	4.801E+00	4.185E-01	0.338
RN-219		271.23		5.822E-01	3.358E-01	5.625E-01	8.311E-02	1.035
		401.81	*	2.167E-01	5.469E-01	9.142E-01	1.401E-01	0.237
RA-223		81.07		-4.660E-01	2.847E-01	3.756E-01	3.282E-02	-1.241
		83.79		1.837E-01	1.702E-01	2.548E-01	2.298E-02	0.721
		94.87		1.269E+00	6.295E-01	9.835E-01	8.794E-02	1.290
		144.24		6.989E-01	9.435E-01	1.554E+00	1.536E-01	0.450
		154.21		2.613E-01	4.979E-01	8.496E-01	8.554E-02	0.308
		269.46		4.244E-01	2.575E-01	4.332E-01	5.948E-02	0.980
AC-227		323.87	*	-2.286E-01	8.775E-01	1.448E+00	2.830E-01	-0.158
	+	338.28		6.679E+00	1.996E+00	2.835E+00	4.136E-01	2.356
		79.69		-4.994E-01	1.561E+00	2.236E+00	3.852E-01	-0.223
		235.96		4.345E-01	2.481E-01	3.744E-01	5.086E-02	1.160

## ---- 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	*	-8.038E-02	3.392E-01	5.400E-01	8.412E-02	-0.149
	+	299.98		2.454E+00	1.462E+00	2.071E+00	3.374E-01	1.185
		304.50		5.363E-01	2.297E+00	3.409E+00	6.585E-01	0.157
		334.37		-2.408E+00	2.627E+00	3.518E+00	6.235E-01	-0.684
		79.80		-7.188E-01	2.058E+00	2.939E+00	6.400E-01	-0.245
		235.96		4.345E-01	2.476E-01	3.744E-01	4.922E-02	1.160
TH-229		256.23	*	-8.038E-02	3.392E-01	5.400E-01	9.077E-02	-0.149
	+	299.98		2.454E+00	1.462E+00	2.071E+00	3.374E-01	1.185
		304.50		5.363E-01	2.297E+00	3.409E+00	6.585E-01	0.157
		334.37		-2.408E+00	2.627E+00	3.518E+00	6.235E-01	-0.684
		85.43		4.839E-01	2.931E-01	4.458E-01	4.101E-02	1.086
	+	88.47		4.274E-01	1.721E-01	2.834E-01	2.677E-02	1.508
PA-231		193.51	*	1.514E-01	6.848E-01	1.139E+00	1.224E-01	0.133
	+	210.85		2.054E+00	1.776E+00	2.007E+00	2.284E-01	1.023
		283.69	*	1.164E+00	1.975E+00	3.230E+00	5.875E-01	0.360
TH-231	+	301.36		1.577E+00	9.372E-01	1.352E+00	2.140E-01	1.166
		81.07		-4.660E-01	2.847E-01	3.756E-01	3.282E-02	-1.241
		83.79		1.837E-01	1.702E-01	2.548E-01	2.298E-02	0.721
		94.87		1.269E+00	6.295E-01	9.835E-01	8.794E-02	1.290
		144.24		6.989E-01	9.435E-01	1.554E+00	1.536E-01	0.450
		154.21		2.613E-01	4.979E-01	8.496E-01	8.554E-02	0.308
PA-233		269.46		4.244E-01	2.575E-01	4.332E-01	5.948E-02	0.980
		323.87	*	-2.286E-01	8.775E-01	1.448E+00	2.830E-01	-0.158
	+	338.28		6.679E+00	1.996E+00	2.835E+00	4.136E-01	2.356
	+	300.13		1.110E+00	6.668E-01	9.410E-01	1.693E-01	1.180
		311.90	*	3.917E-02	8.138E-02	1.393E-01	1.825E-02	0.281
		340.48		2.374E+00	1.144E+00	1.605E+00	4.073E-01	1.479
PA-234		94.67		6.277E-01	2.434E-01	3.752E-01	4.742E-02	1.673
		98.44		5.722E-02	1.245E-01	1.941E-01	1.083E-01	0.295
		111.00		3.336E-02	2.417E-01	3.882E-01	4.616E-02	0.086
		131.20		-1.224E-01	1.323E-01	2.160E-01	1.829E-02	-0.567
		569.50		-1.626E-01	3.568E-01	5.664E-01	5.818E-02	-0.287
		733.00		-2.668E-01	5.722E-01	7.417E-01	1.716E-01	-0.360
PA-234M		880.51		2.186E-01	3.460E-01	5.993E-01	6.702E-02	0.365
		883.24		-1.544E-01	3.612E-01	5.542E-01	3.746E-01	-0.279
		926.50		-7.421E-03	2.004E-01	3.301E-01	8.643E-02	-0.022
		946.00	*	1.416E-01	3.614E-01	6.122E-01	1.217E-01	0.231
		949.00		1.987E-01	5.280E-01	8.952E-01	9.672E-02	0.222
		766.42		1.644E+01	1.725E+01	2.602E+01	1.332E+01	0.632
		1001.03	*	3.930E+00	6.034E+00	1.008E+01	1.155E+00	0.390
	TH-234	63.29	*	5.847E-01	1.596E+00	2.686E+00	4.780E-01	0.218
	+	92.59		3.180E+00	1.523E+00	1.828E+00	4.072E-01	1.739
	U-235	89.96		5.894E-01	1.538E+00	1.789E+00	4.449E-01	0.329
U-238	+	93.35		2.402E+00	1.162E+00	1.359E+00	3.161E-01	1.767
		143.76	*	1.331E-01	2.814E-01	4.591E-01	7.847E-02	0.290
		163.33		1.027E-02	5.845E-01	9.482E-01	1.753E-01	0.011
	+	185.72		2.578E-01	1.087E-01	1.228E-01	1.286E-02	2.099
		205.31		7.296E-02	7.541E-01	1.090E+00	2.125E-01	0.067
		63.29	*	5.847E-01	1.596E+00	2.686E+00	4.780E-01	0.218

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	+	92.59		3.180E+00	1.379E+00	1.828E+00	1.663E-01	1.739
		99.53		6.781E-02	2.171E-01	3.473E-01	3.018E-02	0.195
		103.37		2.756E-02	1.274E-01	2.064E-01	1.762E-02	0.134
		106.12		-2.033E-02	1.103E-01	1.752E-01	1.482E-02	-0.116
		117.23	*	6.271E-02	5.013E-01	8.018E-01	6.625E-02	0.078
		228.18		-1.395E-01	2.846E-01	4.521E-01	5.439E-02	-0.308
AM-241		277.60		1.524E-01	2.383E-01	3.916E-01	5.458E-02	0.389
		59.54	*	-1.908E-01	1.681E-01	2.568E-01	2.008E-02	-0.743
CM-247		278.00		6.982E-01	1.023E+00	1.683E+00	2.348E-01	0.415
		287.50		-6.393E-01	1.673E+00	2.612E+00	3.594E-01	-0.245
		402.40	*	1.178E-02	5.010E-02	8.319E-02	7.803E-03	0.142
CF-249		252.80		-2.939E-01	1.252E+00	1.996E+00	2.589E-01	-0.147
		333.37		-1.822E-01	2.708E-01	3.732E-01	4.515E-02	-0.488
		388.16	*	-5.258E-02	5.298E-02	8.218E-02	7.802E-03	-0.640
CF-251		177.52	*	1.056E-01	1.692E-01	2.870E-01	2.924E-02	0.368
		227.38		-2.139E-01	4.710E-01	7.499E-01	8.999E-02	-0.285
		285.41		-3.205E-01	2.976E+00	4.726E+00	6.531E-01	-0.068

## 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]G247360001
* Acquisition date   : 4-MAR-2010 12:41:35 Detector SN#      :
* Detector ID        : GAM22                               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 02:00:01.78                     Half life ratio  : 8.000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G247360001 Analyst initials: MXR1
* Batch Number       : 955027 Sample Quantity : 8.0570E+01 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*                               QC DATA                               *
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 2-DEC-2009 16:47:28 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	2.703E+01	2.972E+00	5.729E-01	0.000E+00
CD-109	2.857E+00	1.127E+00	1.781E+00	0.000E+00
SN-126	2.772E-01	1.094E-01	1.721E-01	0.000E+00
BA-137M	1.173E+00	1.695E-01	6.863E-02	0.000E+00
CS-137	1.239E+00	1.792E-01	7.250E-02	0.000E+00
TL-208	5.154E-01	1.041E-01	7.004E-02	0.000E+00
BI-211	4.557E+00	7.365E-01	4.014E-01	0.000E+00
PB-212	1.752E+00	2.661E-01	1.176E-01	0.000E+00
BI-214	1.309E+00	2.540E-01	1.465E-01	0.000E+00
PB-214	1.654E+00	2.818E-01	1.525E-01	0.000E+00
RA-224	4.550E+00	1.529E+00	1.259E+00	0.000E+00
RA-226	1.309E+00	2.540E-01	1.465E-01	0.000E+00
AC-228	1.631E+00	4.279E-01	2.753E-01	0.000E+00
RA-228	1.631E+00	4.279E-01	2.753E-01	0.000E+00
TH-228	1.752E+00	2.661E-01	1.176E-01	0.000E+00
TH-232	1.631E+00	4.279E-01	2.753E-01	0.000E+00
NP-237	8.271E-01	3.680E-01	4.883E-01	0.000E+00
ANH-511	1.511E-01	9.689E-02	5.797E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-5.746E-02	4.552E-01	7.283E-01	0.000E+00 NOT IDENT.
NA-22	-3.520E-02	4.676E-02	7.213E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.027E+08	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-3.222E-02	4.913E-02	7.743E-02	0.000E+00 FAIL ABUN
V-48	-1.860E-02	1.070E-01	1.739E-01	0.000E+00 NOT IDENT.
CR-51	1.364E-01	5.319E-01	8.953E-01	0.000E+00 NOT IDENT.
MN-54	-6.473E-03	4.496E-02	7.441E-02	0.000E+00 NOT IDENT.
CO-56	-1.111E-03	4.827E-02	8.044E-02	0.000E+00 NOT IDENT.
CO-57	2.392E-02	3.246E-02	5.245E-02	0.000E+00 NOT IDENT.



CO-58	-8.782E-03	4.770E-02	7.886E-02	0.000E+00	NOT IDENT.
FE-59	-9.425E-04	1.192E-01	1.941E-01	0.000E+00	NOT IDENT.
CO-60	-4.516E-02	4.362E-02	6.394E-02	0.000E+00	NOT IDENT.
ZN-65	3.921E-02	1.232E-01	1.766E-01	0.000E+00	NOT IDENT.
SE-75	1.604E-02	5.874E-02	9.501E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	6.633E-02	1.090E-01	0.000E+00	NOT IDENT.
Y-88	1.877E-02	3.627E-02	6.493E-02	0.000E+00	NOT IDENT.
Y-91	4.368E+00	2.597E+01	4.391E+01	0.000E+00	NOT IDENT.
NB-94	7.735E-04	4.188E-02	6.847E-02	0.000E+00	NOT IDENT.
NB-95	6.153E-02	5.794E-02	9.945E-02	0.000E+00	NOT IDENT.
NB-95M	1.157E-01	1.902E-01	2.766E-01	0.000E+00	NOT IDENT.
ZR-95	6.445E-02	9.386E-02	1.591E-01	0.000E+00	NOT IDENT.
MO-99	-1.312E+00	5.199E+01	8.436E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	4.546E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	3.981E-02	5.410E-02	9.044E-02	0.000E+00	FAIL ABUN
RH-106	8.217E-02	3.827E-01	6.399E-01	0.000E+00	NOT IDENT.
RU-106	8.217E-02	3.826E-01	6.399E-01	0.000E+00	NOT IDENT.
AG-108M	-2.446E-02	3.931E-02	6.155E-02	0.000E+00	NOT IDENT.
AG-110M	0.000E+00	5.881E-02	9.605E-02	0.000E+00	NOT IDENT.
SN-113	3.032E-02	5.926E-02	9.954E-02	0.000E+00	NOT IDENT.
CD-115	0.000E+00	6.849E+01	0.000E+00	0.000E+00	SHORT HLIF
SN-117M	1.154E-02	8.720E-02	1.451E-01	0.000E+00	NOT IDENT.
TE-123M	9.887E-03	3.572E-02	5.976E-02	0.000E+00	NOT IDENT.
SB-124	-3.140E-02	9.309E-02	1.475E-01	0.000E+00	NOT IDENT.
SB-125	5.995E-02	1.211E-01	2.019E-01	0.000E+00	FAIL ABUN
TE-125M	8.867E+00	1.314E+01	2.127E+01	0.000E+00	NOT IDENT.
I-126	-1.698E-02	4.191E-01	5.876E-01	0.000E+00	NOT IDENT.
SB-126	-9.187E-02	2.468E-01	3.456E-01	0.000E+00	NOT IDENT.
SB-127	-1.873E+00	3.734E+00	5.874E+00	0.000E+00	NOT IDENT.
I-131	-1.140E-02	2.263E-01	3.720E-01	0.000E+00	NOT IDENT.
TE-132	-1.350E+00	2.736E+00	4.304E+00	0.000E+00	NOT IDENT.
BA-133	-5.273E-03	6.310E-02	8.990E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	3.973E+05	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	5.896E-02	1.051E-01	0.000E+00	NOT IDENT.
CS-135	1.263E-01	2.092E-01	3.418E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.870E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-1.254E-02	1.532E-01	2.491E-01	0.000E+00	NOT IDENT.
CE-139	-1.352E-02	3.822E-02	6.221E-02	0.000E+00	NOT IDENT.
BA-140	-6.167E-02	4.097E-01	6.773E-01	0.000E+00	NOT IDENT.
LA-140	-1.237E-01	1.532E-01	2.354E-01	0.000E+00	NOT IDENT.
CE-141	2.932E-02	9.517E-02	1.529E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	3.345E+03	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-1.024E-01	2.417E-01	3.975E-01	0.000E+00	NOT IDENT.
PM-144	1.383E-02	4.300E-02	7.167E-02	0.000E+00	NOT IDENT.
PR-144	1.042E+00	3.227E+00	5.379E+00	0.000E+00	NOT IDENT.
PM-146	6.807E-04	5.545E-02	8.984E-02	0.000E+00	NOT IDENT.
ND-147	-3.982E-01	9.804E-01	1.599E+00	0.000E+00	NOT IDENT.
PM-149	0.000E+00	5.715E+02	0.000E+00	0.000E+00	SHORT HLIF
EU-152	4.437E-02	1.349E-01	2.070E-01	0.000E+00	NOT IDENT.
GD-153	-1.415E-01	1.270E-01	1.666E-01	0.000E+00	NOT IDENT.
EU-154	-9.821E-02	1.324E-01	2.043E-01	0.000E+00	NOT IDENT.
EU-155	-3.917E-02	1.352E-01	2.112E-01	0.000E+00	FAIL ABUN
TB-160	9.019E-02	1.763E-01	3.035E-01	0.000E+00	FAIL ABUN
HO-166M	-3.217E-02	7.061E-02	1.112E-01	0.000E+00	FAIL ABUN
TA-182	-8.860E-02	2.304E-01	3.736E-01	0.000E+00	FAIL ABUN
IR-192	-2.439E-02	4.548E-02	7.367E-02	0.000E+00	FAIL ABUN
HG-203	7.027E-02	5.553E-02	9.223E-02	0.000E+00	NOT IDENT.
BI-207	-2.240E-02	6.732E-02	1.030E-01	0.000E+00	FAIL ABUN
PB-210	3.468E+00	4.039E+00	6.720E+00	0.000E+00	NOT IDENT.
PB-211	-1.394E+00	1.181E+00	1.480E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	9.551E-01	1.217E+00	0.000E+00	FAIL ABUN
RN-219	2.167E-01	5.359E-01	8.927E-01	0.000E+00	NOT IDENT.
RA-223	-2.286E-01	8.599E-01	1.412E+00	0.000E+00	FAIL ABUN
AC-227	-8.038E-02	3.324E-01	5.256E-01	0.000E+00	FAIL ABUN
TH-227	-8.038E-02	3.324E-01	5.256E-01	0.000E+00	FAIL ABUN
TH-229	1.514E-01	6.711E-01	1.106E+00	0.000E+00	FAIL ABUN
PA-231	1.164E+00	1.935E+00	3.147E+00	0.000E+00	FAIL ABUN
TH-231	-2.286E-01	8.599E-01	1.412E+00	0.000E+00	FAIL ABUN
PA-233	3.917E-02	7.976E-02	1.358E-01	0.000E+00	FAIL ABUN
PA-234	1.416E-01	3.541E-01	6.013E-01	0.000E+00	NOT IDENT.
PA-234M	3.930E+00	5.913E+00	9.905E+00	0.000E+00	NOT IDENT.
TH-234	5.847E-01	1.564E+00	2.589E+00	0.000E+00	FAIL ABUN
U-235	1.331E-01	2.758E-01	4.451E-01	0.000E+00	FAIL ABUN
U-238	5.847E-01	1.564E+00	2.589E+00	0.000E+00	FAIL ABUN
NP-239	6.271E-02	4.913E-01	7.762E-01	0.000E+00	NOT IDENT.
AM-241	-1.908E-01	1.648E-01	2.475E-01	0.000E+00	NOT IDENT.
CM-247	1.178E-02	4.910E-02	8.124E-02	0.000E+00	NOT IDENT.
CF-249	-5.258E-02	5.192E-02	8.023E-02	0.000E+00	NOT IDENT.

CF-251	1.056E-01	1.658E-01	2.786E-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]G247360001.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 12:41:35.
Sample ID          : G247360001 Sample quantity : 8.05700E+01 GRAM
Detector name      : GAM22 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:01.78 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 955027 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	1181	10.66*	1.909E+00	2.703E+01	2.703E+01	11.22
CD-109	88.03	164	3.70*	7.467E+00	2.772E+00	2.857E+00	40.27
SN-126	64.28	-----	9.60	4.512E+00	-----	Line Not Found	-----
	86.94	164	8.90	7.467E+00	1.152E+00	1.152E+00	57.08
	87.57	164	37.00*	7.467E+00	2.772E-01	2.772E-01	40.27
BA-137M	661.66	811	89.90*	3.590E+00	1.171E+00	1.173E+00	14.75
CS-137	661.66	811	85.10*	3.590E+00	1.237E+00	1.239E+00	14.76
TL-208	277.37	-----	6.60	6.182E+00	-----	Line Not Found	-----
	583.19	370	85.00*	3.931E+00	5.154E-01	5.154E-01	20.61
	860.56	85	12.50	2.920E+00	1.086E+00	1.086E+00	52.97
BI-211	72.87	-----	1.23	5.897E+00	-----	Line Not Found	-----
	351.06	683	12.92*	5.402E+00	4.557E+00	4.557E+00	16.49
PB-212	74.82	390	10.28	6.160E+00	2.870E+00	2.870E+00	23.38
	77.11	572	17.10	6.459E+00	2.413E+00	2.413E+00	15.99
	238.63	1100	43.60*	6.709E+00	1.752E+00	1.752E+00	15.50
	300.09	93	3.30	5.917E+00	2.231E+00	2.231E+00	59.14
BI-214	609.32	487	45.49*	3.811E+00	1.309E+00	1.309E+00	19.81
	1120.29	115	14.92	2.345E+00	1.533E+00	1.533E+00	43.55
	1764.49	94	15.30	1.716E+00	1.671E+00	1.671E+00	34.80
PB-214	74.82	390	5.80	6.160E+00	5.087E+00	5.087E+00	22.69
	77.11	572	9.70	6.459E+00	4.255E+00	4.255E+00	17.99
	242.00	267	7.25	6.664E+00	2.573E+00	2.573E+00	34.77
	295.22	349	18.42	5.968E+00	1.479E+00	1.479E+00	24.38
	351.93	683	35.60*	5.402E+00	1.654E+00	1.654E+00	17.39
RA-224	240.99	267	4.10*	6.664E+00	4.550E+00	4.550E+00	34.28
RA-226	609.32	487	45.49*	3.811E+00	1.309E+00	1.309E+00	19.81
	1120.29	115	14.92	2.345E+00	1.533E+00	1.533E+00	43.55
	1764.49	94	15.30	1.716E+00	1.671E+00	1.671E+00	34.80
AC-228	338.32	225	11.27	5.526E+00	1.683E+00	1.683E+00	49.88
	911.20	252	25.80*	2.788E+00	1.631E+00	1.631E+00	26.77
	968.97	119	15.80	2.647E+00	1.330E+00	1.330E+00	47.69
RA-228	338.32	225	11.27	5.526E+00	1.683E+00	1.683E+00	49.88

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	911.20	252	25.80*	2.788E+00	1.631E+00	1.631E+00	26.77
	968.97	119	15.80	2.647E+00	1.330E+00	1.330E+00	47.69
	74.82	390	10.28	6.160E+00	2.870E+00	2.870E+00	21.29
	77.11	572	17.10	6.459E+00	2.413E+00	2.413E+00	15.99
	238.63	1100	43.60*	6.709E+00	1.752E+00	1.752E+00	15.50
TH-232	300.09	93	3.30	5.917E+00	2.231E+00	2.231E+00	84.46
	338.32	225	11.27	5.526E+00	1.683E+00	1.683E+00	28.67
	911.20	252	25.80*	2.788E+00	1.631E+00	1.631E+00	26.77
	968.97	119	15.80	2.647E+00	1.330E+00	1.330E+00	47.69
NP-237	86.48	164	12.40*	7.467E+00	8.271E-01	8.271E-01	45.40
	95.86	-----	2.68	8.032E+00	-----	Line Not Found	-----
ANH-511	511.00	139	100.00*	4.298E+00	1.511E-01	1.511E-01	65.43

Flag: "\*" = Keyline

Total number of lines in spectrum 24  
Number of unidentified lines 0  
Number of lines tentatively identified by NID 24 100.00%

Nuclide Type :

Nuclide	Hlflife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.703E+01	2.703E+01	0.303E+01	11.22	
CD-109	461.40D	1.03	2.772E+00	2.857E+00	1.151E+00	40.27	
SN-126	2.30E+05Y	1.00	2.772E-01	2.772E-01	1.116E-01	40.27	
BA-137M	30.08Y	1.00	1.171E+00	1.173E+00	0.173E+00	14.75	
CS-137	30.08Y	1.00	1.237E+00	1.239E+00	0.183E+00	14.76	
TL-208	1.41E+10Y	1.00	5.154E-01	5.154E-01	1.062E-01	20.61	
BI-211	7.04E+08Y	1.00	4.557E+00	4.557E+00	0.752E+00	16.49	
PB-212	1.41E+10Y	1.00	1.752E+00	1.752E+00	0.272E+00	15.50	
BI-214	1600.00Y	1.00	1.309E+00	1.309E+00	0.259E+00	19.81	
PB-214	1600.00Y	1.00	1.654E+00	1.654E+00	0.288E+00	17.39	
RA-224	1.41E+10Y	1.00	4.550E+00	4.550E+00	1.560E+00	34.28	
RA-226	1600.00Y	1.00	1.309E+00	1.309E+00	0.259E+00	19.81	
AC-228	1.41E+10Y	1.00	1.631E+00	1.631E+00	0.437E+00	26.77	
RA-228	1.41E+10Y	1.00	1.631E+00	1.631E+00	0.437E+00	26.77	
TH-228	1.41E+10Y	1.00	1.752E+00	1.752E+00	0.272E+00	15.50	
TH-232	1.41E+10Y	1.00	1.631E+00	1.631E+00	0.437E+00	26.77	
NP-237	2.14E+06Y	1.00	8.271E-01	8.271E-01	3.755E-01	45.40	
ANH-511	1.00E+09Y	1.00	1.511E-01	1.511E-01	0.989E-01	65.43	
Total Activity :			5.576E+01	5.585E+01			

Grand Total Activity : 5.576E+01 5.585E+01

Flags: "K" = Keyline not found "M" = Manually accepted  
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G247360001

Page : 4  
Acquisition date : 4-MAR-2010 12:41:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	92.84	227	541	1.43	185.87	182	9	3.15E-02	42.4	7.87E+00	T
0	185.52	241	466	1.21	371.06	364	13	3.35E-02	40.8	7.61E+00	T
0	209.67	89	364	1.31	419.31	413	10	1.23E-02	85.7	7.18E+00	T
0	464.15	66	192	1.57	927.87	920	14	9.11E-03	93.1	4.57E+00	T
0	727.96	77	84	1.45	1455.17	1450	14	1.07E-02	58.7	3.34E+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]G247360001.CNF;1
* Acquisition date   : 4-MAR-2010 12:41:35.  Detector SN#      :
* Detector ID        : GAM22                      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 02:00:01.78             Half life ratio : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 12-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G247360001             Analyst initials: MXR1
* Batch Number       : 955027                 Sample Quantity : 8.05700E+01 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 2-DEC-2009 16:47:28.08MS 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	2.703E+01	3.032E+00	5.815E-01	5.327E-02	46.492
CD-109	2.857E+00	1.151E+00	1.843E+00	1.749E-01	1.550
SN-126	2.772E-01	1.116E-01	1.781E-01	1.682E-02	1.556
BA-137M	1.173E+00	1.730E-01	7.004E-02	7.386E-03	16.742
CS-137	1.239E+00	1.828E-01	7.399E-02	7.813E-03	16.742
TL-208	5.154E-01	1.062E-01	7.154E-02	7.750E-03	7.204
BI-211	4.557E+00	7.515E-01	4.115E-01	4.801E-02	11.075
PB-212	1.752E+00	2.715E-01	1.208E-01	1.601E-02	14.499
BI-214	1.309E+00	2.592E-01	1.496E-01	1.746E-02	8.747
PB-214	1.654E+00	2.876E-01	1.563E-01	2.011E-02	10.583
RA-224	4.550E+00	1.560E+00	1.294E+00	1.620E-01	3.517
RA-226	1.309E+00	2.592E-01	1.496E-01	1.746E-02	8.747
AC-228	1.631E+00	4.367E-01	2.804E-01	3.798E-02	5.819
RA-228	1.631E+00	4.367E-01	2.804E-01	3.798E-02	5.819
TH-228	1.752E+00	2.715E-01	1.208E-01	1.601E-02	14.499
TH-232	1.631E+00	4.367E-01	2.804E-01	3.798E-02	5.819
NP-237	8.271E-01	3.755E-01	5.054E-01	1.160E-01	1.636
ANH-511	1.511E-01	9.887E-02	5.926E-02	5.938E-03	2.550

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-5.746E-02		4.645E-01	7.449E-01	7.773E-02	-0.077
NA-22	-3.520E-02		4.771E-02	7.328E-02	6.315E-03	-0.480
NA-24	-1.509E+02		1.034E+02	Half-Life	too short	
SC-46	-3.222E-02		5.014E-02	7.886E-02	8.827E-03	-0.409
V-48	-1.860E-02		1.092E-01	1.769E-01	1.856E-02	-0.105
CR-51	1.364E-01		5.428E-01	9.182E-01	1.189E-01	0.149
MN-54	-6.473E-03		4.588E-02	7.582E-02	8.422E-03	-0.085
CO-56	-1.111E-03		4.926E-02	8.195E-02	9.123E-03	-0.014
CO-57	2.392E-02		3.313E-02	5.416E-02	4.466E-03	0.442
CO-58	-8.782E-03		4.867E-02	8.037E-02	8.899E-03	-0.109
FE-59	-9.425E-04		1.216E-01	1.974E-01	1.934E-02	-0.005
CO-60	-4.516E-02		4.451E-02	6.494E-02	5.790E-03	-0.695
ZN-65	3.921E-02		1.257E-01	1.796E-01	1.602E-02	0.218
SE-75	1.604E-02		5.994E-02	9.758E-02	1.313E-02	0.164
SR-85	2.468E-01		6.768E-02	1.115E-01	1.118E-02	2.214
Y-88	1.877E-02		3.701E-02	6.581E-02	5.320E-03	0.285
Y-91	4.368E+00		2.650E+01	4.463E+01	3.669E+00	0.098
NB-94	7.735E-04		4.273E-02	6.984E-02	7.485E-03	0.011
NB-95	6.153E-02		5.912E-02	1.014E-01	1.109E-02	0.607
NB-95M	1.157E-01		1.941E-01	2.843E-01	3.762E-02	0.407
ZR-95	6.445E-02		9.578E-02	1.622E-01	1.887E-02	0.397
MO-99	-1.312E+00		5.305E+01	8.603E+01	1.469E+01	-0.015
TC-99M	-6.111E+16		2.319E+16	Half-Life	too short	
RU-103	3.981E-02		5.520E-02	9.248E-02	1.371E-02	0.430
RH-106	8.217E-02		3.905E-01	6.533E-01	9.479E-02	0.126
RU-106	8.217E-02		3.904E-01	6.533E-01	6.824E-02	0.126
AG-108M	-2.446E-02		4.011E-02	6.300E-02	6.200E-03	-0.388
AG-110M	1.498E-01		6.001E-02	9.803E-02	1.054E-02	1.528
SN-113	3.032E-02		6.047E-02	1.019E-01	9.736E-03	0.297
CD-115	3.540E-05		3.495E-05	Half-Life	too short	
SN-117M	1.154E-02		8.898E-02	1.496E-01	1.419E-02	0.077
TE-123M	9.887E-03		3.645E-02	6.160E-02	5.883E-03	0.161
SB-124	-3.140E-02		9.499E-02	1.496E-01	1.333E-02	-0.210
SB-125	5.995E-02		1.235E-01	2.067E-01	2.005E-02	0.290
TE-125M	8.867E+00		1.341E+01	2.198E+01	2.263E+00	0.403
I-126	-1.698E-02		4.276E-01	5.997E-01	6.336E-02	-0.028
SB-126	-9.187E-02		2.519E-01	3.525E-01	3.801E-02	-0.261
SB-127	-1.873E+00		3.810E+00	5.993E+00	8.606E-01	-0.312
I-131	-1.140E-02		2.309E-01	3.812E-01	4.236E-02	-0.030
TE-132	-1.350E+00		2.792E+00	4.425E+00	8.347E-01	-0.305
BA-133	-5.273E-03		6.439E-02	9.214E-02	1.357E-02	-0.057
I-133	2.845E-02		2.027E-01	Half-Life	too short	
CS-134	1.095E-01		6.016E-02	1.071E-01	1.185E-02	1.023
CS-135	1.263E-01		2.135E-01	3.510E-01	5.078E-02	0.360
I-135	-7.899E+13		9.538E+14	Half-Life	too short	
CS-136	-1.254E-02		1.564E-01	2.534E-01	2.563E-02	-0.049
CE-139	-1.352E-02		3.900E-02	6.411E-02	6.287E-03	-0.211
BA-140	-6.167E-02		4.180E-01	6.922E-01	2.376E-01	-0.089



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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
LA-140	-1.237E-01		1.563E-01	2.387E-01	2.093E-02	-0.518
CE-141	2.932E-02		9.711E-02	1.577E-01	1.436E-02	0.186
CE-143	9.089E-03		1.707E-03	Half-Life too short		
CE-144	-1.024E-01		2.466E-01	4.102E-01	6.252E-02	-0.250
PM-144	1.383E-02		4.388E-02	7.312E-02	7.821E-03	0.189
PR-144	1.042E+00		3.292E+00	5.487E+00	5.867E-01	0.190
PM-146	6.807E-04		5.659E-02	9.192E-02	1.057E-02	0.007
ND-147	-3.982E-01		1.000E+00	1.634E+00	2.592E-01	-0.244
PM-149	6.232E-06		2.916E-04	Half-Life too short		
EU-152	4.437E-02		1.376E-01	2.122E-01	2.550E-02	0.209
GD-153	-1.415E-01		1.296E-01	1.723E-01	1.515E-02	-0.821
EU-154	-9.821E-02		1.351E-01	2.075E-01	2.360E-02	-0.473
EU-155	-3.917E-02		1.380E-01	2.183E-01	1.873E-02	-0.179
TB-160	9.019E-02		1.799E-01	3.091E-01	3.457E-02	0.292
HO-166M	-3.217E-02		7.206E-02	1.135E-01	1.220E-02	-0.283
TA-182	-8.860E-02		2.351E-01	3.797E-01	3.157E-02	-0.233
IR-192	-2.439E-02		4.640E-02	7.557E-02	9.658E-03	-0.323
HG-203	7.027E-02		5.666E-02	9.468E-02	1.339E-02	0.742
BI-207	-2.240E-02		6.869E-02	1.048E-01	1.006E-02	-0.214
PB-210	3.468E+00		4.121E+00	6.987E+00	6.435E-01	0.496
PB-211	-1.394E+00		1.205E+00	1.516E+00	7.356E-01	-0.920
BI-212	1.616E+00	+	9.746E-01	1.241E+00	1.746E-01	1.302
RN-219	2.167E-01		5.469E-01	9.142E-01	1.401E-01	0.237
RA-223	-2.286E-01		8.775E-01	1.448E+00	2.830E-01	-0.158
AC-227	-8.038E-02		3.392E-01	5.400E-01	8.412E-02	-0.149
TH-227	-8.038E-02		3.392E-01	5.400E-01	9.077E-02	-0.149
TH-229	1.514E-01		6.848E-01	1.139E+00	1.224E-01	0.133
PA-231	1.164E+00		1.975E+00	3.230E+00	5.875E-01	0.360
TH-231	-2.286E-01		8.775E-01	1.448E+00	2.830E-01	-0.158
PA-233	3.917E-02		8.138E-02	1.393E-01	1.825E-02	0.281
PA-234	1.416E-01		3.614E-01	6.122E-01	1.217E-01	0.231
PA-234M	3.930E+00		6.034E+00	1.008E+01	1.155E+00	0.390
TH-234	5.847E-01		1.596E+00	2.686E+00	4.780E-01	0.218
U-235	1.331E-01		2.814E-01	4.591E-01	7.847E-02	0.290
U-238	5.847E-01		1.596E+00	2.686E+00	4.780E-01	0.218
NP-239	6.271E-02		5.013E-01	8.018E-01	6.625E-02	0.078
AM-241	-1.908E-01		1.681E-01	2.568E-01	2.008E-02	-0.743
CM-247	1.178E-02		5.010E-02	8.319E-02	7.803E-03	0.142
CF-249	-5.258E-02		5.298E-02	8.218E-02	7.802E-03	-0.640
CF-251	1.056E-01		1.692E-01	2.870E-01	2.924E-02	0.368

# 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]G247360001          *
* Acquisition date   : 4-MAR-2010 12:41:35 Detector SN#      :              *
* Detector ID        : GAM22                      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 02:00:01.78             Half life ratio : 8.000       *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 12-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247360001             Analyst initials: MXR1          *
* Batch Number       : 955027                 Sample Quantity : 8.0570E+01 GRAM  *
* Recovery           : 1.00000                Carrier Weight  : 0.00000       *
*****
*
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 2-DEC-2009 16:47:28 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	2.703E+01	2.972E+00	2.866E-01	1.516E+00
CD-109	2.857E+00	1.127E+00	8.910E-01	5.753E-01
SN-126	2.772E-01	1.094E-01	8.611E-02	5.582E-02
BA-137M	1.173E+00	1.695E-01	3.434E-02	8.648E-02
CS-137	1.239E+00	1.792E-01	3.627E-02	9.142E-02
TL-208	5.154E-01	1.041E-01	3.504E-02	5.311E-02
BI-211	4.557E+00	7.365E-01	2.008E-01	3.758E-01
PB-212	1.752E+00	2.661E-01	5.882E-02	1.358E-01
BI-214	1.309E+00	2.540E-01	7.330E-02	1.296E-01
PB-214	1.654E+00	2.818E-01	7.627E-02	1.438E-01
RA-224	4.550E+00	1.529E+00	6.298E-01	7.800E-01
RA-226	1.309E+00	2.540E-01	7.330E-02	1.296E-01
AC-228	1.631E+00	4.279E-01	1.378E-01	2.183E-01
RA-228	1.631E+00	4.279E-01	1.378E-01	2.183E-01
TH-228	1.752E+00	2.661E-01	5.882E-02	1.358E-01
TH-232	1.631E+00	4.279E-01	1.378E-01	2.183E-01
NP-237	8.271E-01	3.680E-01	2.443E-01	1.878E-01
ANH-511	1.511E-01	9.689E-02	2.900E-02	4.943E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-5.746E-02	4.552E-01	3.644E-01	2.322E-01 NOT IDENT.
NA-22	-3.520E-02	4.676E-02	3.608E-02	2.386E-02 NOT IDENT.
NA-24	-1.509E+08	2.027E+08	0.000E+00	1.034E+08 SHORT HLIF
SC-46	-3.222E-02	4.913E-02	3.874E-02	2.507E-02 FAIL ABUN
V-48	-1.860E-02	1.070E-01	8.698E-02	5.460E-02 NOT IDENT.
CR-51	1.364E-01	5.319E-01	4.479E-01	2.714E-01 NOT IDENT.
MN-54	-6.473E-03	4.496E-02	3.723E-02	2.294E-02 NOT IDENT.
CO-56	-1.111E-03	4.827E-02	4.024E-02	2.463E-02 NOT IDENT.
CO-57	2.392E-02	3.246E-02	2.624E-02	1.656E-02 NOT IDENT.

CO-58	-8.782E-03	4.770E-02	3.945E-02	2.434E-02	NOT IDENT.
FE-59	-9.425E-04	1.192E-01	9.713E-02	6.081E-02	NOT IDENT.
CO-60	-4.516E-02	4.362E-02	3.199E-02	2.225E-02	NOT IDENT.
ZN-65	3.921E-02	1.232E-01	8.836E-02	6.283E-02	NOT IDENT.
SE-75	1.604E-02	5.874E-02	4.753E-02	2.997E-02	NOT IDENT.
SR-85	2.468E-01	6.633E-02	5.455E-02	3.384E-02	NOT IDENT.
Y-88	1.877E-02	3.627E-02	3.249E-02	1.850E-02	NOT IDENT.
Y-91	4.368E+00	2.597E+01	2.197E+01	1.325E+01	NOT IDENT.
NB-94	7.735E-04	4.188E-02	3.425E-02	2.137E-02	NOT IDENT.
NB-95	6.153E-02	5.794E-02	4.975E-02	2.956E-02	NOT IDENT.
NB-95M	1.157E-01	1.902E-01	1.384E-01	9.706E-02	NOT IDENT.
ZR-95	6.445E-02	9.386E-02	7.958E-02	4.789E-02	NOT IDENT.
MO-99	-1.312E+00	5.199E+01	4.220E+01	2.653E+01	NOT IDENT.
TC-99M	-6.111E+22	4.546E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	3.981E-02	5.410E-02	4.525E-02	2.760E-02	FAIL ABUN
RH-106	8.217E-02	3.827E-01	3.201E-01	1.952E-01	NOT IDENT.
RU-106	8.217E-02	3.826E-01	3.201E-01	1.952E-01	NOT IDENT.
AG-108M	-2.446E-02	3.931E-02	3.079E-02	2.005E-02	NOT IDENT.
AG-110M	1.498E-01	5.881E-02	4.805E-02	3.001E-02	NOT IDENT.
SN-113	3.032E-02	5.926E-02	4.980E-02	3.024E-02	NOT IDENT.
CD-115	3.540E+01	6.849E+01	0.000E+00	3.495E+01	SHORT HLIF
SN-117M	1.154E-02	8.720E-02	7.262E-02	4.449E-02	NOT IDENT.
TE-123M	9.887E-03	3.572E-02	2.990E-02	1.822E-02	NOT IDENT.
SB-124	-3.140E-02	9.309E-02	7.379E-02	4.750E-02	NOT IDENT.
SB-125	5.995E-02	1.211E-01	1.010E-01	6.177E-02	FAIL ABUN
TE-125M	8.867E+00	1.314E+01	1.064E+01	6.703E+00	NOT IDENT.
I-126	-1.698E-02	4.191E-01	2.940E-01	2.138E-01	NOT IDENT.
SB-126	-9.187E-02	2.468E-01	1.729E-01	1.259E-01	NOT IDENT.
SB-127	-1.873E+00	3.734E+00	2.939E+00	1.905E+00	NOT IDENT.
I-131	-1.140E-02	2.263E-01	1.861E-01	1.155E-01	NOT IDENT.
TE-132	-1.350E+00	2.736E+00	2.153E+00	1.396E+00	NOT IDENT.
BA-133	-5.273E-03	6.310E-02	4.497E-02	3.219E-02	NOT IDENT.
I-133	2.845E+04	3.973E+05	0.000E+00	2.027E+05	SHORT HLIF
CS-134	1.095E-01	5.896E-02	5.256E-02	3.008E-02	NOT IDENT.
CS-135	1.263E-01	2.092E-01	1.710E-01	1.068E-01	NOT IDENT.
I-135	-7.899E+19	1.870E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-1.254E-02	1.532E-01	1.246E-01	7.819E-02	NOT IDENT.
CE-139	-1.352E-02	3.822E-02	3.113E-02	1.950E-02	NOT IDENT.
BA-140	-6.167E-02	4.097E-01	3.389E-01	2.090E-01	NOT IDENT.
LA-140	-1.237E-01	1.532E-01	1.178E-01	7.817E-02	NOT IDENT.
CE-141	2.932E-02	9.517E-02	7.651E-02	4.856E-02	NOT IDENT.
CE-143	9.089E+03	3.345E+03	0.000E+00	1.707E+03	SHORT HLIF
CE-144	-1.024E-01	2.417E-01	1.989E-01	1.233E-01	NOT IDENT.
PM-144	1.383E-02	4.300E-02	3.586E-02	2.194E-02	NOT IDENT.
PR-144	1.042E+00	3.227E+00	2.691E+00	1.646E+00	NOT IDENT.
PM-146	6.807E-04	5.545E-02	4.495E-02	2.829E-02	NOT IDENT.
ND-147	-3.982E-01	9.804E-01	8.000E-01	5.002E-01	NOT IDENT.
PM-149	6.232E+00	5.715E+02	0.000E+00	2.916E+02	SHORT HLIF
EU-152	4.437E-02	1.349E-01	1.036E-01	6.881E-02	NOT IDENT.
GD-153	-1.415E-01	1.270E-01	8.335E-02	6.478E-02	NOT IDENT.
EU-154	-9.821E-02	1.324E-01	1.022E-01	6.757E-02	NOT IDENT.
EU-155	-3.917E-02	1.352E-01	1.057E-01	6.898E-02	FAIL ABUN
TB-160	9.019E-02	1.763E-01	1.518E-01	8.995E-02	FAIL ABUN
HO-166M	-3.217E-02	7.061E-02	5.565E-02	3.603E-02	FAIL ABUN
TA-182	-8.860E-02	2.304E-01	1.869E-01	1.176E-01	FAIL ABUN
IR-192	-2.439E-02	4.548E-02	3.686E-02	2.320E-02	FAIL ABUN
HG-203	7.027E-02	5.553E-02	4.614E-02	2.833E-02	NOT IDENT.
BI-207	-2.240E-02	6.732E-02	5.152E-02	3.435E-02	FAIL ABUN
PB-210	3.468E+00	4.039E+00	3.362E+00	2.060E+00	NOT IDENT.
PB-211	-1.394E+00	1.181E+00	7.405E-01	6.024E-01	NOT IDENT.
BI-212	1.616E+00	9.551E-01	6.090E-01	4.873E-01	FAIL ABUN
RN-219	2.167E-01	5.359E-01	4.466E-01	2.734E-01	NOT IDENT.
RA-223	-2.286E-01	8.599E-01	7.063E-01	4.387E-01	FAIL ABUN
AC-227	-8.038E-02	3.324E-01	2.630E-01	1.696E-01	FAIL ABUN
TH-227	-8.038E-02	3.324E-01	2.630E-01	1.696E-01	FAIL ABUN
TH-229	1.514E-01	6.711E-01	5.535E-01	3.424E-01	FAIL ABUN
PA-231	1.164E+00	1.935E+00	1.574E+00	9.873E-01	FAIL ABUN
TH-231	-2.286E-01	8.599E-01	7.063E-01	4.387E-01	FAIL ABUN
PA-233	3.917E-02	7.976E-02	6.792E-02	4.069E-02	FAIL ABUN
PA-234	1.416E-01	3.541E-01	3.008E-01	1.807E-01	NOT IDENT.
PA-234M	3.930E+00	5.913E+00	4.955E+00	3.017E+00	NOT IDENT.
TH-234	5.847E-01	1.564E+00	1.295E+00	7.981E-01	FAIL ABUN
U-235	1.331E-01	2.758E-01	2.227E-01	1.407E-01	FAIL ABUN
U-238	5.847E-01	1.564E+00	1.295E+00	7.981E-01	FAIL ABUN
NP-239	6.271E-02	4.913E-01	3.883E-01	2.507E-01	NOT IDENT.
AM-241	-1.908E-01	1.648E-01	1.238E-01	8.407E-02	NOT IDENT.
CM-247	1.178E-02	4.910E-02	4.064E-02	2.505E-02	NOT IDENT.
CF-249	-5.258E-02	5.192E-02	4.014E-02	2.649E-02	NOT IDENT.

CF-251	1.056E-01	1.658E-01	1.394E-01	8.458E-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	261.0669
49.72	257.6148
57.36	0.0000
59.54	283.8561
63.29	303.5376
63.29	303.5376
64.28	326.0886
67.75	344.0830
69.67	376.7321
70.83	360.3269
72.81	351.2604
72.87	351.3333
72.87	351.3333
74.82	353.6601
74.82	353.6601
74.82	353.6601
74.97	353.8381
77.11	356.3535
77.11	356.3535
77.11	356.3535
79.69	358.8291
79.80	358.9553
80.12	370.1166
80.19	370.1990
80.57	370.6458
81.00	426.8238
81.07	426.9185
81.07	426.9185
83.79	349.4343
83.79	349.4343
85.43	363.7319
86.48	460.8258
86.55	460.9220
86.79	543.6381
86.94	543.8858
87.57	521.7652
88.03	530.9063
88.47	449.3272
89.96	451.2957
91.11	452.8048
92.59	460.0683
92.59	460.0683
93.35	461.0636
94.67	301.1857
94.87	301.3540
94.87	301.3540
95.86	324.8109
97.43	361.9276
98.44	301.6262
99.53	304.6948
100.11	298.6311
103.18	306.5696
103.37	299.0273
105.31	327.0591
106.12	328.8499
109.28	296.8986
111.00	314.9902
111.76	322.3217
116.30	303.1875
117.23	270.8562
121.12	310.0932
121.78	293.3133
122.06	267.0299
123.07	260.7286
131.20	345.3896
133.52	308.1639
136.00	316.0283

136.47	322.5803
140.51	376.5348
140.51	0.0000
143.76	311.1962
144.24	303.3484
144.24	303.3484
145.44	308.6230
152.43	313.8208
153.25	312.4742
154.21	309.3572
154.21	309.3572
156.02	297.4550
158.56	297.0230
159.00	284.2202
162.66	288.9685
163.33	309.0500
165.86	308.5883
176.60	301.9859
177.52	286.0873
181.07	316.3071
184.41	284.5570
185.72	285.1763
193.51	288.8054
197.04	290.4272
205.31	328.8230
210.85	300.6950
215.65	256.7947
222.11	286.0536
227.38	284.0306
228.16	278.0917
228.18	278.0999
235.69	279.5191
235.96	306.5740
235.96	306.5740
238.63	266.2638
238.63	266.2638
240.99	267.1078
242.00	267.4674
244.70	245.4187
252.40	235.6265
252.80	234.6703
256.23	244.3503
256.23	244.3503
260.90	0.0000
264.66	213.0730
268.22	239.2491
269.46	225.3230
269.46	225.3230
271.23	223.6048
273.65	346.8824
276.40	233.8656
277.37	229.6975
277.60	230.8674
278.00	234.3099
279.20	209.0674
279.54	209.1506
280.46	249.4707
283.69	213.5256
284.31	221.5113
285.41	229.6365
285.90	0.0000
287.50	230.1933
293.27	0.0000
295.22	211.4612
295.96	167.7985
298.57	168.2908
299.98	211.0734
299.98	211.0734
300.09	206.5456
300.09	206.5456
300.13	198.9600
301.36	209.8778
302.85	196.5129
304.50	196.8725
304.50	196.8725
304.85	204.5823
308.46	219.8001
311.90	186.4653

316.51	208.7238
319.41	197.2723
320.08	200.2030
323.87	239.3344
323.87	239.3344
328.76	215.1823
333.37	228.1614
334.37	237.8422
334.37	237.8422
338.28	210.6371
338.28	210.6371
338.32	210.6480
338.32	210.6480
338.32	210.6480
340.48	204.4468
340.55	199.7076
344.28	188.1785
351.06	176.1696
351.93	192.3486
356.01	202.7659
364.49	182.0260
366.42	185.2848
383.85	154.5965
388.16	200.9619
388.63	196.0694
391.69	169.6597
400.66	163.9650
401.81	178.2272
402.40	181.3403
404.85	229.1780
410.95	187.7574
414.70	177.1584
423.72	165.1685
427.09	175.9200
427.87	163.6796
433.94	180.0152
453.88	160.8349
463.37	157.7905
468.07	159.4244
473.00	170.6914
476.78	156.2015
477.60	158.4388
487.02	134.7595
492.35	0.0000
497.08	118.3792
511.00	138.2155
514.00	115.4237
527.90	0.0000
529.87	0.0000
531.02	149.2440
537.26	122.8826
546.56	0.0000
563.25	132.6030
569.33	135.9798
569.50	126.4842
569.70	132.2072
583.19	121.7030
600.60	133.8391
602.73	154.8227
604.72	153.3472
609.32	143.3304
609.32	143.3304
610.33	143.4201
614.28	137.4770
618.01	105.8599
621.93	111.0206
621.93	111.0206
633.25	124.6260
635.95	108.9750
636.99	112.0137
645.85	113.5895
657.76	108.3494
661.66	108.5911
661.66	108.5911
664.57	0.0000
666.33	124.4305
666.50	124.4431
677.62	118.6972

685.70	105.9784
695.00	127.0021
696.49	114.8050
696.51	114.8073
697.00	117.9129
702.65	121.3586
706.68	109.2521
711.68	105.4095
720.70	102.7987
721.93	0.0000
722.78	83.7548
722.91	83.7597
723.31	90.9078
724.19	94.5153
727.33	105.3880
733.00	112.8647
735.93	87.9170
739.50	101.7107
747.24	87.3753
752.31	105.5440
753.82	103.5109
756.73	93.0864
763.94	146.5043
765.81	111.5753
766.42	115.8591
777.92	125.0718
778.90	116.5776
783.70	67.5374
785.37	79.3943
795.86	79.7993
801.95	98.4186
810.29	83.7645
810.76	91.2307
815.77	90.5129
818.51	92.4983
832.01	99.6634
834.85	104.5019
836.80	0.0000
846.77	88.0357
856.80	84.8719
860.56	91.6829
871.09	84.8583
873.19	88.7198
875.33	0.0000
879.36	79.7260
880.51	77.8444
883.24	88.5218
884.68	78.9499
889.28	93.5797
898.04	85.2208
911.20	86.6782
911.20	86.6782
911.20	86.6782
926.50	72.5392
937.49	71.8887
944.13	87.8872
946.00	74.1198
949.00	73.2219
962.29	83.5708
964.08	90.6001
966.15	87.1887
968.97	129.1861
968.97	129.1861
968.97	129.1861
983.53	84.2886
996.26	92.7829
1001.03	70.7288
1004.73	73.8669
1037.84	69.6934
1038.76	0.0000
1048.07	66.8771
1050.41	60.7573
1050.41	60.7573
1063.66	83.8251
1085.87	80.3408
1099.45	80.7383
1112.07	62.6730
1115.54	77.5144



1120.29	77.6451
1120.29	77.6451
1120.55	79.5017
1121.30	88.7695
1131.51	0.0000
1173.23	67.7900
1177.93	73.5582
1189.05	68.1548
1204.77	82.7891
1221.41	93.7711
1231.02	118.0602
1235.36	112.4618
1238.28	76.9702
1260.41	0.0000
1271.85	52.5168
1274.44	65.2130
1274.54	65.2150
1291.59	69.4811
1298.22	0.0000
1312.11	54.1658
1332.49	56.4868
1365.19	40.0317
1368.63	0.0000
1384.29	82.5280
1408.01	47.6311
1457.56	0.0000
1460.82	29.8337
1489.16	42.5102
1505.03	44.7781
1596.21	55.9479
1620.50	24.8088
1678.03	0.0000
1690.97	25.2482
1764.49	23.7207
1764.49	23.7207
1770.23	40.9732
1771.35	33.8567
1791.20	0.0000
1836.06	14.0680

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247360001

Total Uranium Activity	1.8010E+00	ug/g
Total Uranium Counting Unc.	4.6556E+00	ug/g
Total Uranium Tpu	2.3753E-06	ug/g
Total Uranium Mda	3.8551E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417               *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 955027                          SAMPLE ID   : G247360001
*  ANALYST       : MXR1                             DETECTOR    : GAM22
*  SAMPLE DATE   : 12-FEB-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 4-MAR-2010 12:41:35.10          SAMPLE ALQT  : 80.570 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 9.770E+00
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.283E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 2.450E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.188E+00

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VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 10:33:53.33

```
*****
*                                     GEL Laboratories LLC                               *
*                                     2040 Savage Road                               *
*                                     Charleston, SC 29414                          *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202047453.CNF;1
Sample date        : 22-FEB-2010 00:00:00 Acquisition date : 4-MAR-2010 12:46:31.
Sample ID          : G1202047453 Sample quantity : 1.45340E+02 GRAM
Detector name      : GAM17 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:09.03 0.1%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 955027 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****
No peaks were found
```

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202047453.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 22-FEB-2010 00:00:00 Acquisition date : 4-MAR-2010 12:46:31
Sample ID         : G1202047453 Sample quantity   : 145.34 GRAM
Sample type       : SOLID Sample geometry      :
Detector name     : GAMMA17 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:09.03 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

## ---- 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	*	-4.134E-03	1.984E-01	3.243E-01	3.085E-02	-0.013	
NA-22	1274.54	*	5.135E-03	1.971E-02	3.429E-02	2.888E-03	0.150	
NA-24	1368.63	*	1.538E-04	1.971E-02	Half-Life too short			
K-40	1460.82	*	-9.750E-02	2.762E-01	4.581E-01	4.067E-02	-0.213	
SC-46	889.28	*	-2.560E-02	2.538E-02	3.338E-02	2.922E-03	-0.767	
	1120.55		-1.271E-02	3.046E-02	4.517E-02	3.790E-03	-0.281	
V-48	944.13		1.652E-01	4.011E-01	7.189E-01	6.290E-02	0.230	
	983.53	*	-3.735E-03	3.419E-02	5.478E-02	4.778E-03	-0.068	
	1312.11		2.929E-02	3.298E-02	6.729E-02	5.712E-03	0.435	
CR-51	320.08	*	3.710E-02	1.768E-01	3.043E-01	2.904E-02	0.122	
MN-54	834.85	*	-2.505E-04	2.576E-02	4.278E-02	3.762E-03	-0.006	
CO-56	846.77	*	4.115E-03	2.216E-02	3.812E-02	3.351E-03	0.108	
	1037.84		2.303E-02	1.874E-01	3.141E-01	2.854E-02	0.073	
	1238.28		1.737E-02	4.428E-02	7.751E-02	6.661E-03	0.224	
	1771.35		1.347E-01	1.994E-01	3.825E-01	3.230E-02	0.352	
CO-57	122.06	*	7.716E-03	1.117E-02	1.952E-02	2.287E-03	0.395	
	136.47		-2.334E-02	8.852E-02	1.417E-01	1.594E-02	-0.165	
CO-58	810.76	*	-1.455E-02	2.677E-02	4.065E-02	3.580E-03	-0.358	
FE-59	1099.45	*	-3.555E-02	5.474E-02	7.600E-02	6.974E-03	-0.468	
	1291.59		3.466E-02	6.503E-02	1.186E-01	1.143E-02	0.292	
CO-60	1173.23		1.222E-03	2.352E-02	3.854E-02	3.148E-03	0.032	
	1332.49	*	-9.831E-03	2.505E-02	3.800E-02	3.238E-03	-0.259	
ZN-65	1115.54	*	3.275E-03	5.037E-02	8.302E-02	6.990E-03	0.039	
SE-75	121.12		4.459E-02	5.832E-02	1.023E-01	1.388E-02	0.436	
	136.00		-4.188E-03	1.754E-02	2.819E-02	3.049E-03	-0.149	
	264.66	*	-8.103E-03	2.463E-02	3.744E-02	3.440E-03	-0.216	
	279.54		6.855E-02	5.288E-02	1.004E-01	9.524E-03	0.683	
	400.66		3.040E-02	1.414E-01	2.407E-01	2.643E-02	0.126	
SR-85	514.00	*	-1.214E-01	3.846E-02	4.071E-02	3.637E-03	-2.981	
Y-88	898.04		-2.149E-02	2.871E-02	4.096E-02	3.598E-03	-0.525	
	1836.06	*	3.184E-02	2.932E-02	6.133E-02	5.115E-03	0.519	
Y-91	1204.77	*	-2.706E+00	1.218E+01	1.869E+01	1.542E+00	-0.145	
NB-94	702.65	*	-4.061E-03	2.040E-02	3.330E-02	2.857E-03	-0.122	
	871.09		4.823E-04	2.464E-02	4.097E-02	3.596E-03	0.012	

---- 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	*		-4.791E-03	2.477E-02	4.018E-02	3.510E-03	-0.119
NB-95M	235.69	*		-1.779E-01	7.720E-02	9.199E-02	9.409E-03	-1.933
ZR-95	724.19			-1.403E-02	5.021E-02	8.046E-02	7.537E-03	-0.174
	756.73	*		9.281E-03	3.252E-02	5.772E-02	5.548E-03	0.161
MO-99	140.51			1.572E+00	2.927E+00	5.018E+00	1.228E+00	0.313
	181.07			-3.087E+00	2.661E+00	3.653E+00	6.845E-01	-0.845
	366.42			1.051E+00	1.822E+01	3.061E+01	2.679E+00	0.034
	739.50	*		-1.500E-01	2.440E+00	4.054E+00	6.401E-01	-0.037
	777.92			-7.138E-01	7.130E+00	1.172E+01	1.026E+00	-0.061
TC-99M	140.51	*		2.707E+04	7.130E+00	Half-Life too short		
RU-103	497.08	*		-4.735E-03	2.167E-02	3.420E-02	4.839E-03	-0.138
	610.33			-3.594E-01	5.236E-01	7.327E-01	1.203E-01	-0.491
RH-106	621.93	*		-1.459E-01	2.211E-01	3.159E-01	4.201E-02	-0.462
	1050.41			1.686E-01	1.728E+00	2.875E+00	2.475E-01	0.059
RU-106	621.93	*		-1.459E-01	2.206E-01	3.159E-01	2.744E-02	-0.462
	1050.41			1.686E-01	1.728E+00	2.875E+00	2.475E-01	0.059
AG-108M	433.94	*		-5.040E-03	1.786E-02	2.836E-02	2.542E-03	-0.178
	614.28			4.692E-04	2.141E-02	3.459E-02	3.115E-03	0.014
	722.91			-2.211E-02	2.080E-02	2.777E-02	2.476E-03	-0.796
CD-109	88.03	*		1.041E-02	2.700E-01	4.279E-01	4.177E-02	0.024
AG-110M	657.76	*		-1.911E-05	2.001E-02	3.204E-02	2.792E-03	-0.001
	677.62			-3.199E-02	1.726E-01	2.649E-01	2.315E-02	-0.121
	706.68			-8.777E-02	1.376E-01	2.092E-01	1.849E-02	-0.420
	763.94			-6.071E-03	8.900E-02	1.472E-01	1.320E-02	-0.041
	884.68			-3.925E-03	3.471E-02	5.636E-02	5.091E-03	-0.070
	937.49			-2.676E-02	5.695E-02	8.277E-02	7.497E-03	-0.323
	1384.29			6.720E-02	1.019E-01	1.890E-01	1.666E-02	0.356
	1505.03			1.075E-01	1.906E-01	3.593E-01	3.107E-02	0.299
SN-113	391.69	*		-1.054E-02	2.660E-02	4.210E-02	3.658E-03	-0.250
CD-115	260.90			-4.161E-01	1.966E+01	3.107E+01	2.839E+00	-0.013
	492.35			-3.892E-01	5.401E+00	8.737E+00	7.778E-01	-0.045
	527.90	*		-2.670E-01	1.880E+00	2.999E+00	2.681E-01	-0.089
SN-117M	156.02			-7.947E-02	8.395E-01	1.358E+00	1.251E-01	-0.059
	158.56	*		-8.822E-03	1.952E-02	3.031E-02	2.725E-03	-0.291
TE-123M	159.00	*		-2.166E-03	1.281E-02	2.054E-02	1.849E-03	-0.105
SB-124	602.73			-1.639E-02	2.381E-02	3.397E-02	2.983E-03	-0.482
	645.85			2.203E-01	2.922E-01	5.276E-01	4.770E-02	0.418
	722.78			-3.214E-01	2.140E-01	2.571E-01	2.271E-02	-1.250
	1690.97	*		-4.529E-03	6.524E-02	1.051E-01	9.370E-03	-0.043
SB-125	427.87	*		-3.091E-02	5.168E-02	7.796E-02	6.872E-03	-0.397
	463.37			6.291E-03	1.646E-01	2.718E-01	2.570E-02	0.023
	600.60			-1.606E-02	1.225E-01	1.936E-01	1.823E-02	-0.083
	635.95			5.677E-02	1.915E-01	3.214E-01	2.991E-02	0.177
TE-125M	109.28	*		-1.227E+00	3.670E+00	5.908E+00	7.330E-01	-0.208
I-126	388.63			-2.280E-02	7.729E-02	1.239E-01	1.048E-02	-0.184
	666.33	*		2.854E-02	9.389E-02	1.592E-01	1.344E-02	0.179
	753.82			-1.455E-01	6.191E-01	9.792E-01	8.531E-02	-0.149
SB-126	414.70			-1.296E-02	3.881E-02	6.175E-02	5.295E-03	-0.210
	666.50			1.496E-02	3.157E-02	5.520E-02	4.661E-03	0.271

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SN-126		695.00		1.932E-02	4.078E-02	7.298E-02	6.242E-03	0.265
		697.00		-1.834E-01	1.446E-01	1.970E-01	1.686E-02	-0.931
		720.70	*	-4.285E-02	7.103E-02	1.078E-01	9.307E-03	-0.397
		856.80		-1.604E-01	2.408E-01	3.509E-01	3.083E-02	-0.457
		64.28		-6.701E-02	1.246E-01	2.121E-01	3.386E-02	-0.316
SB-127		86.94		1.011E-02	1.159E-01	1.854E-01	7.716E-02	0.055
		87.57	*	-3.968E-04	2.729E-02	4.322E-02	4.217E-03	-0.009
		252.40		-5.331E-01	1.031E+00	1.495E+00	6.175E-01	-0.357
		473.00		-2.299E-02	4.542E-01	7.401E-01	8.796E-02	-0.031
I-131		685.70	*	0.000E+00	3.756E-01	5.993E-01	6.045E-02	0.000
		783.70		4.097E-01	9.811E-01	1.745E+00	1.984E-01	0.235
		80.19		-1.063E+00	8.338E-01	1.243E+00	1.214E-01	-0.855
		284.31		-1.707E-01	5.004E-01	8.161E-01	7.813E-02	-0.209
TE-132		364.49	*	1.940E-02	4.404E-02	7.723E-02	7.109E-03	0.251
		636.99		2.336E-02	7.552E-01	1.218E+00	1.104E-01	0.019
		49.72		-4.161E-01	5.764E-01	8.686E-01	9.646E-02	-0.479
		111.76		7.419E-01	5.642E+00	8.993E+00	1.082E+00	0.082
BA-133		116.30		7.660E-01	4.633E+00	7.788E+00	9.574E-01	0.098
		228.16	*	1.312E-02	1.352E-01	2.184E-01	3.328E-02	0.060
		81.00		-1.508E-02	2.420E-02	3.832E-02	6.195E-03	-0.393
		276.40		-1.235E-01	1.869E-01	2.952E-01	4.268E-02	-0.418
I-133		302.85		1.379E-02	7.611E-02	1.308E-01	1.757E-02	0.105
		356.01	*	-6.530E-03	2.388E-02	3.864E-02	5.068E-03	-0.169
		383.85		-4.844E-03	1.576E-01	2.611E-01	3.228E-02	-0.019
		529.87	*	4.391E-05	1.576E-01	Half-Life	too short	
CS-134		875.33		-1.191E-03	1.576E-01	Half-Life	too short	
		1298.22		-1.141E-03	1.576E-01	Half-Life	too short	
		563.25		-1.472E-01	2.368E-01	3.455E-01	3.104E-02	-0.426
		569.33		-3.370E-02	1.365E-01	2.129E-01	1.918E-02	-0.158
CS-135		604.72		-1.663E-02	2.305E-02	3.299E-02	2.901E-03	-0.504
		795.86	*	3.974E-03	2.717E-02	4.650E-02	4.108E-03	0.085
		801.95		3.671E-02	2.977E-01	4.786E-01	4.225E-02	0.077
		1365.19		-4.904E-02	7.847E-01	1.291E+00	1.158E-01	-0.038
I-135		268.22	*	-3.277E-02	8.375E-02	1.259E-01	1.314E-02	-0.260
CS-136		546.56		-1.739E+03	8.375E-02	Half-Life	too short	
		836.80		1.798E+05	8.375E-02	Half-Life	too short	
		1038.76		-8.120E+04	8.375E-02	Half-Life	too short	
		1131.51		-3.320E+04	8.375E-02	Half-Life	too short	
		1260.41	*	4.639E+03	8.375E-02	Half-Life	too short	
		1457.56		7.397E+04	8.375E-02	Half-Life	too short	
		1678.03		-1.092E+02	8.375E-02	Half-Life	too short	
		1791.20		-4.321E+04	8.375E-02	Half-Life	too short	
		153.25		2.448E-01	3.354E-01	5.809E-01	6.367E-02	0.421
		176.60		1.606E-02	1.885E-01	3.084E-01	2.887E-02	0.052
		273.65		1.805E-01	2.194E-01	3.782E-01	3.728E-02	0.477
		340.55		4.867E-02	6.085E-02	1.102E-01	1.026E-02	0.442
		818.51		3.715E-02	4.302E-02	8.037E-02	7.067E-03	0.462
		1048.07	*	3.085E-03	5.915E-02	9.757E-02	8.753E-03	0.032
		1235.36		2.001E-01	2.576E-01	4.768E-01	5.508E-02	0.420

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

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BA-137M		661.66	*	-2.431E-02	2.346E-02	2.943E-02	2.479E-03	-0.826
CS-137		661.66	*	-2.568E-02	2.479E-02	3.109E-02	2.624E-03	-0.826
CE-139		165.86	*	-5.397E-03	1.375E-02	2.147E-02	1.790E-03	-0.251
BA-140		162.66		-3.257E-02	3.149E-01	5.082E-01	4.678E-02	-0.064
		304.85		-2.688E-01	6.054E-01	9.678E-01	2.849E-01	-0.278
		423.72		1.437E-01	9.100E-01	1.532E+00	5.041E-01	0.094
		537.26	*	-1.258E-01	1.516E-01	2.031E-01	6.903E-02	-0.620
LA-140		328.76		-2.192E-02	1.152E-01	1.892E-01	1.805E-02	-0.116
		487.02		2.264E-02	6.490E-02	1.115E-01	1.049E-02	0.203
		815.77		1.985E-02	1.989E-01	3.360E-01	3.287E-02	0.059
		1596.21	*	-1.258E-02	4.561E-02	6.903E-02	5.958E-03	-0.182
CE-141		145.44	*	4.558E-04	2.509E-02	4.120E-02	4.202E-03	0.011
CE-143		57.36		-5.524E+00	1.530E+01	2.535E+01	3.024E+00	-0.218
		293.27	*	-2.857E+00	6.515E+00	1.048E+01	2.284E+00	-0.273
		664.57		-3.673E+01	6.858E+01	9.634E+01	2.896E+01	-0.381
		721.93		-9.198E+01	8.312E+01	1.063E+02	2.991E+01	-0.865
CE-144		80.12		-8.268E-01	6.626E-01	9.911E-01	9.653E-02	-0.834
		133.52	*	5.433E-02	8.706E-02	1.508E-01	2.519E-02	0.360
PM-144		476.78		1.906E-02	4.169E-02	7.232E-02	6.934E-03	0.264
		618.01		-3.559E-03	2.010E-02	3.134E-02	2.804E-03	-0.114
		696.49	*	-1.515E-02	2.320E-02	3.542E-02	3.031E-03	-0.428
PR-144		696.51	*	-1.152E+00	1.729E+00	2.633E+00	2.254E-01	-0.437
		1489.16		-8.054E-01	9.988E+00	1.626E+01	1.406E+00	-0.050
PM-146		453.88	*	1.430E-02	2.409E-02	4.279E-02	4.589E-03	0.334
		633.25		-2.068E-01	1.068E+00	1.661E+00	6.342E-01	-0.125
		735.93		-1.774E-02	9.156E-02	1.487E-01	4.169E-02	-0.119
		747.24		7.136E-02	6.534E-02	1.251E-01	1.831E-02	0.570
ND-147		91.11		4.008E-02	7.481E-02	1.296E-01	1.365E-02	0.309
		319.41		-3.488E-01	1.334E+00	2.178E+00	1.986E-01	-0.160
		531.02	*	1.027E-01	2.970E-01	5.049E-01	7.642E-02	0.203
PM-149		285.90	*	7.919E+00	1.058E+01	1.922E+01	3.047E+00	0.412
EU-152		121.78		3.730E-02	3.248E-02	5.846E-02	7.406E-03	0.638
		244.70		-2.565E-02	1.755E-01	2.746E-01	2.489E-02	-0.093
		344.28	*	3.912E-04	6.012E-02	1.008E-01	9.530E-03	0.004
		778.90		-1.074E-01	1.749E-01	2.626E-01	2.299E-02	-0.409
		964.08		-4.691E-02	1.696E-01	2.642E-01	2.309E-02	-0.178
		1085.87		-2.832E-01	2.510E-01	2.952E-01	2.512E-02	-0.959
		1112.07		-1.921E-02	1.736E-01	2.748E-01	2.314E-02	-0.070
		1408.01		4.761E-02	1.151E-01	2.109E-01	1.814E-02	0.226
GD-153		69.67		-1.652E-01	3.567E-01	5.806E-01	5.700E-02	-0.285
		97.43	*	-2.188E-02	3.528E-02	5.163E-02	5.278E-03	-0.424
		103.18		-7.138E-03	4.072E-02	6.674E-02	7.032E-03	-0.107
EU-154		123.07		3.461E-03	2.261E-02	3.788E-02	5.225E-03	0.091
		723.31		-8.610E-02	9.671E-02	1.359E-01	1.293E-02	-0.634
		873.19		4.564E-02	1.869E-01	3.230E-01	3.878E-02	0.141
		996.26		-1.297E-01	2.259E-01	3.225E-01	5.648E-02	-0.402
		1004.73		-1.423E-01	1.323E-01	1.599E-01	1.870E-02	-0.890
		1274.44	*	2.304E-02	5.260E-02	9.659E-02	1.084E-02	0.239
EU-155		86.55		4.463E-03	3.347E-02	5.373E-02	5.282E-03	0.083



----- 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	*		2.183E-02	3.942E-02	6.881E-02	7.391E-03	0.317
	86.79			9.842E-03	8.508E-02	1.364E-01	1.330E-02	0.072
	197.04			-1.196E-02	3.128E-01	4.854E-01	4.215E-02	-0.025
	215.65			1.826E-01	3.688E-01	6.212E-01	5.504E-02	0.294
	298.57			-3.200E-03	5.631E-02	9.460E-02	8.683E-03	-0.034
	879.36	*		5.338E-02	9.482E-02	1.711E-01	1.500E-02	0.312
	962.29			4.702E-02	3.078E-01	5.202E-01	4.547E-02	0.090
	966.15			-3.956E-03	1.110E-01	1.812E-01	1.584E-02	-0.022
	1177.93			-1.640E-01	1.843E-01	2.225E-01	1.820E-02	-0.737
	1271.85			2.206E-01	3.187E-01	6.147E-01	5.169E-02	0.359
HO-166M	80.57			-6.004E-02	6.957E-02	1.080E-01	1.052E-02	-0.556
	184.41			-2.387E-03	1.993E-02	3.411E-02	2.916E-03	-0.070
	280.46			1.464E-02	4.178E-02	7.336E-02	6.736E-03	0.200
	410.95			5.149E-02	1.515E-01	2.607E-01	2.229E-02	0.198
	711.68	*		1.875E-02	4.157E-02	7.419E-02	6.385E-03	0.253
	752.31			-7.490E-02	1.285E-01	1.859E-01	1.619E-02	-0.403
	810.29			-2.803E-02	4.134E-02	6.098E-02	5.357E-03	-0.460
	67.75			-2.038E-02	2.397E-02	3.597E-02	3.543E-03	-0.567
	100.11			5.907E-03	6.484E-02	1.090E-01	1.130E-02	0.054
	152.43			7.518E-02	1.700E-01	2.884E-01	2.742E-02	0.261
TA-182	222.11			2.485E-03	1.658E-01	2.658E-01	2.369E-02	0.009
	1121.30			-3.252E-02	7.909E-02	1.165E-01	9.774E-03	-0.279
	1189.05			1.024E-01	1.596E-01	2.955E-01	2.427E-02	0.347
	1221.41	*		-3.705E-02	8.634E-02	1.211E-01	1.005E-02	-0.306
	1231.02			-1.940E-01	2.519E-01	3.251E-01	2.705E-02	-0.597
	295.96			1.675E-02	5.928E-02	9.462E-02	8.744E-03	0.177
	308.46			2.635E-02	5.629E-02	9.894E-02	9.101E-03	0.266
	316.51	*		-8.227E-03	1.790E-02	2.855E-02	2.612E-03	-0.288
	468.07			4.224E-03	3.997E-02	6.654E-02	6.286E-03	0.063
	70.83			1.819E-01	2.732E-01	4.832E-01	8.080E-02	0.376
HG-203	72.87			-3.652E-01	1.969E-01	2.685E-01	4.352E-02	-1.360
	279.20	*		2.451E-02	1.800E-02	3.429E-02	3.219E-03	0.715
	72.81			-8.923E-02	4.733E-02	6.670E-02	6.523E-03	-1.338
	74.97			-1.193E-02	3.078E-02	5.000E-02	4.880E-03	-0.239
	569.70			-2.600E-03	2.078E-02	3.302E-02	2.936E-03	-0.079
	1063.66	*		4.945E-03	2.338E-02	4.047E-02	3.470E-03	0.122
	1770.23			-5.015E-02	4.136E-01	6.532E-01	5.518E-02	-0.077
	277.37			-1.324E-01	2.070E-01	3.284E-01	4.242E-02	-0.403
	583.19	*		-7.554E-03	2.883E-02	4.584E-02	4.331E-03	-0.165
	860.56			1.164E-01	1.922E-01	3.491E-01	3.283E-02	0.333
PB-210	46.54	*		6.654E-02	3.034E-01	5.383E-01	5.803E-02	0.124
	72.87			-1.570E+00	8.221E-01	1.155E+00	1.129E-01	-1.360
	351.06	*		-4.231E-03	1.224E-01	1.960E-01	1.830E-02	-0.022
	404.85	*		2.428E-01	4.375E-01	7.464E-01	3.611E-01	0.325
	427.09			-6.569E-01	9.450E-01	1.327E+00	6.140E-01	-0.495
	832.01			-1.400E-01	6.203E-01	9.830E-01	5.100E-01	-0.142
	727.33	*		3.017E-01	3.116E-01	5.937E-01	7.410E-02	0.508
	785.37			-6.733E-01	1.965E+00	3.092E+00	2.709E-01	-0.218
	1620.50			1.015E+00	1.703E+00	3.246E+00	2.797E-01	0.313

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PB-212	74.82			-4.139E-02	1.069E-01	1.735E-01	2.391E-02	-0.239
	77.11			-6.369E-02	6.329E-02	9.874E-02	9.625E-03	-0.645
	238.63	*		-1.342E-02	3.884E-02	6.687E-02	6.772E-03	-0.201
BI-214	300.09			-1.816E-01	4.162E-01	6.705E-01	7.374E-02	-0.271
	609.32	*		-1.285E-02	5.577E-02	8.461E-02	8.646E-03	-0.152
	1120.29			-7.517E-02	1.876E-01	2.792E-01	2.999E-02	-0.269
PB-214	1764.49			-2.139E-02	1.839E-01	2.989E-01	2.528E-02	-0.072
	74.82			-7.335E-02	1.894E-01	3.075E-01	3.867E-02	-0.239
	77.11			-1.123E-01	1.120E-01	1.741E-01	2.223E-02	-0.645
RN-219	242.00			-1.850E-01	2.251E-01	3.061E-01	3.289E-02	-0.604
	295.22			-1.552E-02	8.307E-02	1.261E-01	1.420E-02	-0.123
	351.93	*		9.206E-03	4.374E-02	7.186E-02	7.786E-03	0.128
RA-223	271.23			-4.289E-02	1.312E-01	1.992E-01	2.135E-02	-0.215
	401.81	*		6.785E-02	2.305E-01	3.961E-01	5.862E-02	0.171
	81.07			-3.067E-02	5.464E-02	8.736E-02	8.508E-03	-0.351
RA-224	83.79			1.181E-02	4.022E-02	6.597E-02	6.427E-03	0.179
	94.87			-6.811E-01	2.191E-01	2.681E-01	2.705E-02	-2.540
	144.24			-1.608E-01	3.457E-01	5.044E-01	5.560E-02	-0.319
RA-226	154.21			1.924E-02	1.940E-01	3.198E-01	3.238E-02	0.060
	269.46			3.681E-02	9.250E-02	1.534E-01	1.431E-02	0.240
	323.87	*		-1.134E-01	3.625E-01	5.883E-01	1.034E-01	-0.193
AC-227	338.28			-4.356E-01	5.473E-01	8.353E-01	1.032E-01	-0.521
	240.99	*		-6.718E-01	4.338E-01	5.483E-01	4.959E-02	-1.225
	609.32	*		-1.285E-02	5.577E-02	8.461E-02	8.646E-03	-0.152
TH-227	1120.29			-7.517E-02	1.876E-01	2.792E-01	2.999E-02	-0.269
	1764.49			-2.139E-02	1.839E-01	2.989E-01	2.528E-02	-0.072
	79.69			-4.369E-01	3.516E-01	5.184E-01	9.239E-02	-0.843
AC-228	235.96			-2.211E-01	9.811E-02	1.177E-01	1.256E-02	-1.878
	256.23	*		-7.979E-02	1.377E-01	2.023E-01	2.511E-02	-0.395
	299.98			-2.096E-01	4.568E-01	7.336E-01	9.601E-02	-0.286
TH-228	304.50			-2.304E-01	9.208E-01	1.514E+00	2.547E-01	-0.152
	334.37			8.055E-01	9.152E-01	1.665E+00	2.635E-01	0.484
	79.80			-4.333E-01	4.501E-01	6.808E-01	1.515E-01	-0.636
AC-228	235.96			-2.211E-01	9.782E-02	1.177E-01	1.189E-02	-1.878
	256.23	*		-7.979E-02	1.378E-01	2.023E-01	2.817E-02	-0.395
	299.98			-2.096E-01	4.568E-01	7.336E-01	9.601E-02	-0.286
RA-228	304.50			-2.304E-01	9.208E-01	1.514E+00	2.547E-01	-0.152
	334.37			8.055E-01	9.152E-01	1.665E+00	2.635E-01	0.484
	338.32			-1.134E-01	1.448E-01	2.091E-01	8.740E-02	-0.543
TH-229	911.20	*		-4.080E-02	9.922E-02	1.497E-01	1.750E-02	-0.273
	968.97			-7.420E-02	1.607E-01	2.457E-01	5.997E-02	-0.302
	338.32			-1.134E-01	1.448E-01	2.091E-01	8.740E-02	-0.543
TH-228	911.20	*		-4.080E-02	9.922E-02	1.497E-01	1.750E-02	-0.273
	968.97			-7.420E-02	1.607E-01	2.457E-01	5.997E-02	-0.302
	74.82			-4.139E-02	1.068E-01	1.735E-01	1.705E-02	-0.239
TH-229	77.11			-6.369E-02	6.329E-02	9.874E-02	9.625E-03	-0.645
	238.63	*		-1.342E-02	3.884E-02	6.687E-02	6.772E-03	-0.201
	300.09			-1.816E-01	4.304E-01	6.705E-01	4.110E-01	-0.271
TH-229	85.43			-5.174E-02	7.233E-02	1.102E-01	1.074E-02	-0.470

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		88.47		9.100E-03	3.981E-02	6.382E-02	6.243E-03	0.143
		193.51	*	-2.036E-02	2.598E-01	4.159E-01	3.597E-02	-0.049
		210.85		-6.865E-03	4.250E-01	6.812E-01	6.006E-02	-0.010
PA-231		283.69	*	-3.234E-01	7.307E-01	1.177E+00	1.756E-01	-0.275
		301.36		5.578E-02	2.969E-01	5.105E-01	6.407E-02	0.109
TH-231		81.07		-3.067E-02	5.464E-02	8.736E-02	8.508E-03	-0.351
		83.79		1.181E-02	4.022E-02	6.597E-02	6.427E-03	0.179
		94.87		-6.811E-01	2.191E-01	2.681E-01	2.705E-02	-2.540
		144.24		-1.608E-01	3.457E-01	5.044E-01	5.560E-02	-0.319
		154.21		1.924E-02	1.940E-01	3.198E-01	3.238E-02	0.060
		269.46		3.681E-02	9.250E-02	1.534E-01	1.431E-02	0.240
		323.87	*	-1.134E-01	3.625E-01	5.883E-01	1.034E-01	-0.193
		338.28		-4.356E-01	5.473E-01	8.353E-01	1.032E-01	-0.521
TH-232		338.32		-1.134E-01	1.372E-01	2.091E-01	1.884E-02	-0.543
		911.20	*	-4.080E-02	9.922E-02	1.497E-01	1.750E-02	-0.273
		968.97		-7.420E-02	1.607E-01	2.457E-01	5.997E-02	-0.302
PA-233		300.13		-7.694E-02	2.066E-01	3.349E-01	5.077E-02	-0.230
		311.90	*	-2.207E-02	3.886E-02	6.169E-02	5.787E-03	-0.358
		340.48		2.644E-01	3.358E-01	5.988E-01	1.449E-01	0.442
PA-234		94.67		-1.682E-01	7.644E-02	1.025E-01	1.380E-02	-1.640
		98.44		-1.092E-02	3.864E-02	5.744E-02	3.220E-02	-0.190
		111.00		6.771E-02	7.627E-02	1.353E-01	1.879E-02	0.500
		131.20		-3.008E-02	4.683E-02	7.226E-02	8.024E-03	-0.416
		569.50		-6.454E-02	1.903E-01	2.927E-01	2.603E-02	-0.221
		733.00		1.242E-02	2.532E-01	4.283E-01	9.514E-02	0.029
		880.51		5.212E-02	2.006E-01	3.463E-01	3.036E-02	0.150
		883.24		3.662E-02	1.979E-01	3.356E-01	2.257E-01	0.109
		926.50		3.183E-02	9.994E-02	1.754E-01	4.442E-02	0.181
		946.00	*	-1.886E-02	1.800E-01	2.899E-01	5.457E-02	-0.065
		949.00		-1.653E-01	2.829E-01	4.085E-01	3.573E-02	-0.405
PA-234M		766.42		-7.556E-01	6.828E+00	1.121E+01	5.690E+00	-0.067
		1001.03	*	2.601E+00	2.876E+00	5.486E+00	5.505E-01	0.474
TH-234		63.29	*	9.330E-02	3.225E-01	5.752E-01	1.094E-01	0.162
		92.59		1.578E-01	3.178E-01	5.768E-01	1.306E-01	0.274
U-235		89.96		-1.256E+00	4.444E-01	3.605E-01	9.039E-02	-3.484
		93.35		6.971E-02	2.397E-01	4.325E-01	1.023E-01	0.161
		143.76	*	1.301E-02	9.934E-02	1.531E-01	2.727E-02	0.085
		163.33		9.053E-02	2.136E-01	3.607E-01	6.466E-02	0.251
		185.72		-7.807E-03	2.594E-02	4.367E-02	3.740E-03	-0.179
		205.31		-4.909E-02	2.303E-01	3.614E-01	6.582E-02	-0.136
NP-237		86.48	*	3.846E-04	8.292E-02	1.319E-01	3.050E-02	0.003
		95.86		-2.868E-01	3.681E-01	5.662E-01	1.392E-01	-0.507
U-238		63.29	*	9.330E-02	3.225E-01	5.752E-01	1.094E-01	0.162
		92.59		1.578E-01	3.162E-01	5.768E-01	5.755E-02	0.274
NP-239		99.53		-5.167E-03	6.858E-02	1.050E-01	1.085E-02	-0.049
		103.37		4.968E-03	3.673E-02	6.197E-02	6.536E-03	0.080
		106.12		1.165E-02	3.099E-02	5.334E-02	5.711E-03	0.218
		117.23	*	-3.351E-02	1.726E-01	2.807E-01	3.198E-02	-0.119
		228.18		1.072E-02	1.081E-01	1.747E-01	1.565E-02	0.061

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AM-241	277.60			-4.950E-02	9.211E-02	1.478E-01	1.357E-02	-0.335
	59.54	*		6.859E-03	2.652E-02	4.386E-02	4.657E-03	0.156
CM-247	278.00			-6.578E-02	3.879E-01	6.472E-01	5.940E-02	-0.102
	287.50			-2.534E-01	6.317E-01	1.023E+00	9.397E-02	-0.248
	402.40	*		9.796E-03	2.197E-02	3.835E-02	3.257E-03	0.255
CF-249	252.80			-2.074E-01	5.113E-01	7.707E-01	7.017E-02	-0.269
	333.37			-4.958E-03	9.434E-02	1.574E-01	1.423E-02	-0.031
	388.16	*		-6.418E-03	2.264E-02	3.628E-02	3.073E-03	-0.177
CF-251	177.52	*		8.374E-03	6.108E-02	1.004E-01	8.508E-03	0.083
	227.38			-6.930E-03	1.806E-01	2.875E-01	2.574E-02	-0.024
	285.41			8.105E-01	1.052E+00	1.923E+00	1.766E-01	0.421
ANH-511	511.00	*		-1.722E-02	3.896E-02	7.214E-02	6.443E-03	-0.239

# 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]G1202047453      *
* Acquisition date   : 4-MAR-2010 12:46:31 Detector SN# :                   *
* Detector ID        : GAM17 Sensitivity      : 5.000                       *
* Geometry           : CAN Energy tolerance  : 1.500                       *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000              *
* Elapsed real time  : 0 02:00:09.03 Half life ratio : 8.000               *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date       : 22-FEB-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID         : G1202047453 Analyst initials: MXR1                  *
* Batch Number      : 955027 Sample Quantity : 1.4534E+02 GRAM            *
* Recovery          : 1.00000 Carrier Weight : 0.00000                   *
*****
*
*                                     QC DATA                               *
*
* Standard Weight   : 0.00000                                              *
* CALIB. DATE/TIME : 6-JAN-2010 11:41:36 MS Isotope :                     *
* MSD DPM           : 0.000 MSD Isotope :                               *
* LCS DPM           : 0.000 LCS Isotope :                               *
* LCSD DPM          : 0.000 LCSD Isotope :                               *
*****

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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	-4.134E-03	1.944E-01	3.346E-01	0.000E+00 NOT IDENT.
NA-22	5.135E-03	1.932E-02	3.458E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.560E+03	0.000E+00	0.000E+00 SHORT HLIF
K-40	-9.750E-02	2.707E-01	4.605E-01	0.000E+00 NOT IDENT.
SC-46	-2.560E-02	2.487E-02	3.395E-02	0.000E+00 NOT IDENT.
V-48	-3.735E-03	3.351E-02	5.559E-02	0.000E+00 NOT IDENT.
CR-51	3.710E-02	1.733E-01	3.168E-01	0.000E+00 NOT IDENT.
MN-54	-2.505E-04	2.525E-02	4.358E-02	0.000E+00 NOT IDENT.
CO-56	4.115E-03	2.172E-02	3.882E-02	0.000E+00 NOT IDENT.
CO-57	7.716E-03	1.094E-02	2.075E-02	0.000E+00 NOT IDENT.
CO-58	-1.455E-02	2.623E-02	4.144E-02	0.000E+00 NOT IDENT.
FE-59	-3.555E-02	5.364E-02	7.693E-02	0.000E+00 NOT IDENT.
CO-60	-9.831E-03	2.455E-02	3.829E-02	0.000E+00 NOT IDENT.
ZN-65	3.275E-03	4.936E-02	8.401E-02	0.000E+00 NOT IDENT.
SE-75	-8.103E-03	2.414E-02	3.914E-02	0.000E+00 NOT IDENT.
SR-85	-1.214E-01	3.769E-02	4.194E-02	0.000E+00 NOT IDENT.
Y-88	3.184E-02	2.873E-02	6.133E-02	0.000E+00 NOT IDENT.
Y-91	-2.706E+00	1.194E+01	1.887E+01	0.000E+00 NOT IDENT.
NB-94	-4.061E-03	1.999E-02	3.406E-02	0.000E+00 NOT IDENT.
NB-95	-4.791E-03	2.427E-02	4.101E-02	0.000E+00 NOT IDENT.
NB-95M	-1.779E-01	7.566E-02	9.641E-02	0.000E+00 NOT IDENT.
ZR-95	9.281E-03	3.187E-02	5.893E-02	0.000E+00 NOT IDENT.
MO-99	-1.500E-01	2.391E+00	4.141E+00	0.000E+00 NOT IDENT.
TC-99M	0.000E+00	4.933E+10	0.000E+00	0.000E+00 SHORT HLIF
RU-103	-4.735E-03	2.123E-02	3.525E-02	0.000E+00 NOT IDENT.
RH-106	-1.459E-01	2.167E-01	3.240E-01	0.000E+00 NOT IDENT.

RU-106	-1.459E-01	2.162E-01	3.240E-01	0.000E+00	NOT IDENT.
AG-108M	-5.040E-03	1.751E-02	2.932E-02	0.000E+00	NOT IDENT.
CD-109	1.041E-02	2.646E-01	4.580E-01	0.000E+00	NOT IDENT.
AG-110M	-1.911E-05	1.961E-02	3.282E-02	0.000E+00	NOT IDENT.
SN-113	-1.054E-02	2.607E-02	4.363E-02	0.000E+00	NOT IDENT.
CD-115	-2.670E-01	1.843E+00	3.087E+00	0.000E+00	NOT IDENT.
SN-117M	-8.822E-03	1.913E-02	3.204E-02	0.000E+00	NOT IDENT.
TE-123M	-2.166E-03	1.255E-02	2.171E-02	0.000E+00	NOT IDENT.
SB-124	-4.529E-03	6.394E-02	1.053E-01	0.000E+00	NOT IDENT.
SB-125	-3.091E-02	5.064E-02	8.063E-02	0.000E+00	NOT IDENT.
TE-125M	-1.227E+00	3.597E+00	6.295E+00	0.000E+00	NOT IDENT.
I-126	2.854E-02	9.201E-02	1.631E-01	0.000E+00	NOT IDENT.
SB-126	-4.285E-02	6.961E-02	1.102E-01	0.000E+00	NOT IDENT.
SN-126	-3.968E-04	2.674E-02	4.626E-02	0.000E+00	NOT IDENT.
SB-127	0.000E+00	3.680E-01	6.132E-01	0.000E+00	NOT IDENT.
I-131	1.940E-02	4.316E-02	8.017E-02	0.000E+00	NOT IDENT.
TE-132	1.312E-02	1.325E-01	2.291E-01	0.000E+00	NOT IDENT.
BA-133	-6.530E-03	2.341E-02	4.013E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	1.045E+02	0.000E+00	0.000E+00	SHORT HLIF
CS-134	3.974E-03	2.663E-02	4.742E-02	0.000E+00	NOT IDENT.
CS-135	-3.277E-02	8.207E-02	1.316E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	4.169E+10	0.000E+00	0.000E+00	SHORT HLIF
CS-136	3.085E-03	5.797E-02	9.887E-02	0.000E+00	NOT IDENT.
BA-137M	-2.431E-02	2.299E-02	3.014E-02	0.000E+00	NOT IDENT.
CS-137	-2.568E-02	2.429E-02	3.184E-02	0.000E+00	NOT IDENT.
CE-139	-5.397E-03	1.347E-02	2.268E-02	0.000E+00	NOT IDENT.
BA-140	-1.258E-01	1.486E-01	2.090E-01	0.000E+00	NOT IDENT.
LA-140	-1.258E-02	4.469E-02	6.926E-02	0.000E+00	NOT IDENT.
CE-141	4.558E-04	2.459E-02	4.363E-02	0.000E+00	NOT IDENT.
CE-143	-2.857E+00	6.384E+00	1.093E+01	0.000E+00	NOT IDENT.
CE-144	5.433E-02	8.531E-02	1.599E-01	0.000E+00	NOT IDENT.
PM-144	-1.515E-02	2.273E-02	3.623E-02	0.000E+00	NOT IDENT.
PR-144	-1.152E+00	1.694E+00	2.694E+00	0.000E+00	NOT IDENT.
PM-146	1.430E-02	2.360E-02	4.420E-02	0.000E+00	NOT IDENT.
ND-147	1.027E-01	2.911E-01	5.197E-01	0.000E+00	NOT IDENT.
PM-149	7.919E+00	1.037E+01	2.006E+01	0.000E+00	NOT IDENT.
EU-152	3.912E-04	5.892E-02	1.047E-01	0.000E+00	NOT IDENT.
GD-153	-2.188E-02	3.457E-02	5.514E-02	0.000E+00	NOT IDENT.
EU-154	2.304E-02	5.154E-02	9.743E-02	0.000E+00	NOT IDENT.
EU-155	2.183E-02	3.863E-02	7.338E-02	0.000E+00	NOT IDENT.
TB-160	5.338E-02	9.292E-02	1.741E-01	0.000E+00	NOT IDENT.
HO-166M	1.875E-02	4.074E-02	7.586E-02	0.000E+00	NOT IDENT.
TA-182	-3.705E-02	8.461E-02	1.223E-01	0.000E+00	NOT IDENT.
IR-192	-8.227E-03	1.754E-02	2.973E-02	0.000E+00	NOT IDENT.
HG-203	2.451E-02	1.764E-02	3.580E-02	0.000E+00	NOT IDENT.
BI-207	4.945E-03	2.291E-02	4.100E-02	0.000E+00	NOT IDENT.
TL-208	-7.554E-03	2.825E-02	4.709E-02	0.000E+00	NOT IDENT.
PB-210	6.654E-02	2.973E-01	5.838E-01	0.000E+00	NOT IDENT.
BI-211	-4.231E-03	1.200E-01	2.037E-01	0.000E+00	NOT IDENT.
PB-211	2.428E-01	4.288E-01	7.730E-01	0.000E+00	NOT IDENT.
BI-212	3.017E-01	3.053E-01	6.067E-01	0.000E+00	NOT IDENT.
PB-212	-1.342E-02	3.806E-02	7.006E-02	0.000E+00	NOT IDENT.
BI-214	-1.285E-02	5.466E-02	8.682E-02	0.000E+00	NOT IDENT.
PB-214	9.206E-03	4.286E-02	7.465E-02	0.000E+00	NOT IDENT.
RN-219	6.785E-02	2.259E-01	4.103E-01	0.000E+00	NOT IDENT.
RA-223	-1.134E-01	3.552E-01	6.123E-01	0.000E+00	NOT IDENT.
RA-224	-6.718E-01	4.252E-01	5.744E-01	0.000E+00	NOT IDENT.
RA-226	-1.285E-02	5.466E-02	8.682E-02	0.000E+00	NOT IDENT.
AC-227	-7.979E-02	1.350E-01	2.116E-01	0.000E+00	NOT IDENT.
TH-227	-7.979E-02	1.351E-01	2.116E-01	0.000E+00	NOT IDENT.
AC-228	-4.080E-02	9.724E-02	1.522E-01	0.000E+00	NOT IDENT.
RA-228	-4.080E-02	9.724E-02	1.522E-01	0.000E+00	NOT IDENT.
TH-228	-1.342E-02	3.806E-02	7.006E-02	0.000E+00	NOT IDENT.
TH-229	-2.036E-02	2.547E-01	4.378E-01	0.000E+00	NOT IDENT.
PA-231	-3.234E-01	7.161E-01	1.228E+00	0.000E+00	NOT IDENT.
TH-231	-1.134E-01	3.552E-01	6.123E-01	0.000E+00	NOT IDENT.
TH-232	-4.080E-02	9.724E-02	1.522E-01	0.000E+00	NOT IDENT.
PA-233	-2.207E-02	3.808E-02	6.426E-02	0.000E+00	NOT IDENT.
PA-234	-1.886E-02	1.764E-01	2.944E-01	0.000E+00	NOT IDENT.
PA-234M	2.601E+00	2.819E+00	5.565E+00	0.000E+00	NOT IDENT.
TH-234	9.330E-02	3.160E-01	6.199E-01	0.000E+00	NOT IDENT.
U-235	1.301E-02	9.736E-02	1.622E-01	0.000E+00	NOT IDENT.
NP-237	3.846E-04	8.127E-02	1.412E-01	0.000E+00	NOT IDENT.
U-238	9.330E-02	3.160E-01	6.199E-01	0.000E+00	NOT IDENT.
NP-239	-3.351E-02	1.691E-01	2.987E-01	0.000E+00	NOT IDENT.
AM-241	6.859E-03	2.599E-02	4.733E-02	0.000E+00	NOT IDENT.
CM-247	9.796E-03	2.153E-02	3.972E-02	0.000E+00	NOT IDENT.
CF-249	-6.418E-03	2.219E-02	3.761E-02	0.000E+00	NOT IDENT.

CF-251	8.374E-03	5.986E-02	1.059E-01	0.000E+00 NOT IDENT.
ANH-511	-1.722E-02	3.818E-02	7.432E-02	0.000E+00 NOT IDENT.

```
*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                             *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202047453.CNF;1
Sample date        : 22-FEB-2010 00:00:00 Acquisition date : 4-MAR-2010 12:46:31.
Sample ID          : G1202047453          Sample quantity  : 1.45340E+02 GRAM
Detector name      : GAM17                Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00        Elapsed real time: 0 02:00:09.03 0.1%
Energy tolerance   : 1.50000 keV          Analyst Initials : MXR1
Abundance limit    : 75.00000             Sensitivity        : 5.00000
Batch ID           : 955027               Detector SN#       :
Matrix Spike ID    :                     LCS ID           : 1032-A
*****
```

Nuclide Line Activity Report

Flag: "\*" = Keyline



Summary of Nuclide Acti ..  
Sample ID : G1202047453

Page : 2  
Acquisition date : 4-MAR-2010 12:46:31

\*\*\*\* 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 : G1202047453

Page : 3  
Acquisition date : 4-MAR-2010 12:46:31

None

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202047453.CNF;1
* Acquisition date   : 4-MAR-2010 12:46:31.  Detector SN#      :
* Detector ID        : GAM17                      Sensitivity    : 5.00000
* Geometry           : CAN                      Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00             Abundance limit : 75.00000
* Elapsed real time  : 0 02:00:09.03             Half life ratio : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 22-FEB-2010 00:00:00  Nuclide Library : SOLID
* Sample ID          : G1202047453           Analyst initials: MXR1
* Batch Number       : 955027                Sample Quantity : 1.45340E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 6-JAN-2010 11:41:36.18MS Isotope       :
* MSD ID              :                      MSD Isotope       :
* LCS ID              : 1032-A                LCS Isotope       :
*****

```

## Combined Activity-MDA Report

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-4.134E-03		1.984E-01	3.243E-01	3.085E-02	-0.013
NA-22	5.135E-03		1.971E-02	3.429E-02	2.888E-03	0.150
NA-24	1.538E-04		1.306E-03	Half-Life too short		
K-40	-9.750E-02		2.762E-01	4.581E-01	4.067E-02	-0.213
SC-46	-2.560E-02		2.538E-02	3.338E-02	2.922E-03	-0.767
V-48	-3.735E-03		3.419E-02	5.478E-02	4.778E-03	-0.068
CR-51	3.710E-02		1.768E-01	3.043E-01	2.904E-02	0.122
MN-54	-2.505E-04		2.576E-02	4.278E-02	3.762E-03	-0.006
CO-56	4.115E-03		2.216E-02	3.812E-02	3.351E-03	0.108
CO-57	7.716E-03		1.117E-02	1.952E-02	2.287E-03	0.395
CO-58	-1.455E-02		2.677E-02	4.065E-02	3.580E-03	-0.358
FE-59	-3.555E-02		5.474E-02	7.600E-02	6.974E-03	-0.468
CO-60	-9.831E-03		2.505E-02	3.800E-02	3.238E-03	-0.259
ZN-65	3.275E-03		5.037E-02	8.302E-02	6.990E-03	0.039
SE-75	-8.103E-03		2.463E-02	3.744E-02	3.440E-03	-0.216
SR-85	-1.214E-01		3.846E-02	4.071E-02	3.637E-03	-2.981
Y-88	3.184E-02		2.932E-02	6.133E-02	5.115E-03	0.519

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
Y-91	-2.706E+00		1.218E+01	1.869E+01	1.542E+00	-0.145
NB-94	-4.061E-03		2.040E-02	3.330E-02	2.857E-03	-0.122
NB-95	-4.791E-03		2.477E-02	4.018E-02	3.510E-03	-0.119
NB-95M	-1.779E-01		7.720E-02	9.199E-02	9.409E-03	-1.933
ZR-95	9.281E-03		3.252E-02	5.772E-02	5.548E-03	0.161
MO-99	-1.500E-01		2.440E+00	4.054E+00	6.401E-01	-0.037
TC-99M	2.707E+04		2.517E+04	Half-Life too short		
RU-103	-4.735E-03		2.167E-02	3.420E-02	4.839E-03	-0.138
RH-106	-1.459E-01		2.211E-01	3.159E-01	4.201E-02	-0.462
RU-106	-1.459E-01		2.206E-01	3.159E-01	2.744E-02	-0.462
AG-108M	-5.040E-03		1.786E-02	2.836E-02	2.542E-03	-0.178
CD-109	1.041E-02		2.700E-01	4.279E-01	4.177E-02	0.024
AG-110M	-1.911E-05		2.001E-02	3.204E-02	2.792E-03	-0.001
SN-113	-1.054E-02		2.660E-02	4.210E-02	3.658E-03	-0.250
CD-115	-2.670E-01		1.880E+00	2.999E+00	2.681E-01	-0.089
SN-117M	-8.822E-03		1.952E-02	3.031E-02	2.725E-03	-0.291
TE-123M	-2.166E-03		1.281E-02	2.054E-02	1.849E-03	-0.105
SB-124	-4.529E-03		6.524E-02	1.051E-01	9.370E-03	-0.043
SB-125	-3.091E-02		5.168E-02	7.796E-02	6.872E-03	-0.397
TE-125M	-1.227E+00		3.670E+00	5.908E+00	7.330E-01	-0.208
I-126	2.854E-02		9.389E-02	1.592E-01	1.344E-02	0.179
SB-126	-4.285E-02		7.103E-02	1.078E-01	9.307E-03	-0.397
SN-126	-3.968E-04		2.729E-02	4.322E-02	4.217E-03	-0.009
SB-127	0.000E+00		3.756E-01	5.993E-01	6.045E-02	0.000
I-131	1.940E-02		4.404E-02	7.723E-02	7.109E-03	0.251
TE-132	1.312E-02		1.352E-01	2.184E-01	3.328E-02	0.060
BA-133	-6.530E-03		2.388E-02	3.864E-02	5.068E-03	-0.169
I-133	4.391E-05		5.331E-05	Half-Life too short		
CS-134	3.974E-03		2.717E-02	4.650E-02	4.108E-03	0.085
CS-135	-3.277E-02		8.375E-02	1.259E-01	1.314E-02	-0.260
I-135	4.639E+03		2.127E+04	Half-Life too short		
CS-136	3.085E-03		5.915E-02	9.757E-02	8.753E-03	0.032
BA-137M	-2.431E-02		2.346E-02	2.943E-02	2.479E-03	-0.826
CS-137	-2.568E-02		2.479E-02	3.109E-02	2.624E-03	-0.826
CE-139	-5.397E-03		1.375E-02	2.147E-02	1.790E-03	-0.251
BA-140	-1.258E-01		1.516E-01	2.031E-01	6.903E-02	-0.620
LA-140	-1.258E-02		4.561E-02	6.903E-02	5.958E-03	-0.182
CE-141	4.558E-04		2.509E-02	4.120E-02	4.202E-03	0.011
CE-143	-2.857E+00		6.515E+00	1.048E+01	2.284E+00	-0.273
CE-144	5.433E-02		8.706E-02	1.508E-01	2.519E-02	0.360
PM-144	-1.515E-02		2.320E-02	3.542E-02	3.031E-03	-0.428
PR-144	-1.152E+00		1.729E+00	2.633E+00	2.254E-01	-0.437
PM-146	1.430E-02		2.409E-02	4.279E-02	4.589E-03	0.334
ND-147	1.027E-01		2.970E-01	5.049E-01	7.642E-02	0.203
PM-149	7.919E+00		1.058E+01	1.922E+01	3.047E+00	0.412
EU-152	3.912E-04		6.012E-02	1.008E-01	9.530E-03	0.004
GD-153	-2.188E-02		3.528E-02	5.163E-02	5.278E-03	-0.424
EU-154	2.304E-02		5.260E-02	9.659E-02	1.084E-02	0.239

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	2.183E-02		3.942E-02	6.881E-02	7.391E-03	0.317
TB-160	5.338E-02		9.482E-02	1.711E-01	1.500E-02	0.312
HO-166M	1.875E-02		4.157E-02	7.419E-02	6.385E-03	0.253
TA-182	-3.705E-02		8.634E-02	1.211E-01	1.005E-02	-0.306
IR-192	-8.227E-03		1.790E-02	2.855E-02	2.612E-03	-0.288
HG-203	2.451E-02		1.800E-02	3.429E-02	3.219E-03	0.715
BI-207	4.945E-03		2.338E-02	4.047E-02	3.470E-03	0.122
TL-208	-7.554E-03		2.883E-02	4.584E-02	4.331E-03	-0.165
PB-210	6.654E-02		3.034E-01	5.383E-01	5.803E-02	0.124
BI-211	-4.231E-03		1.224E-01	1.960E-01	1.830E-02	-0.022
PB-211	2.428E-01		4.375E-01	7.464E-01	3.611E-01	0.325
BI-212	3.017E-01		3.116E-01	5.937E-01	7.410E-02	0.508
PB-212	-1.342E-02		3.884E-02	6.687E-02	6.772E-03	-0.201
BI-214	-1.285E-02		5.577E-02	8.461E-02	8.646E-03	-0.152
PB-214	9.206E-03		4.374E-02	7.186E-02	7.786E-03	0.128
RN-219	6.785E-02		2.305E-01	3.961E-01	5.862E-02	0.171
RA-223	-1.134E-01		3.625E-01	5.883E-01	1.034E-01	-0.193
RA-224	-6.718E-01		4.338E-01	5.483E-01	4.959E-02	-1.225
RA-226	-1.285E-02		5.577E-02	8.461E-02	8.646E-03	-0.152
AC-227	-7.979E-02		1.377E-01	2.023E-01	2.511E-02	-0.395
TH-227	-7.979E-02		1.378E-01	2.023E-01	2.817E-02	-0.395
AC-228	-4.080E-02		9.922E-02	1.497E-01	1.750E-02	-0.273
RA-228	-4.080E-02		9.922E-02	1.497E-01	1.750E-02	-0.273
TH-228	-1.342E-02		3.884E-02	6.687E-02	6.772E-03	-0.201
TH-229	-2.036E-02		2.598E-01	4.159E-01	3.597E-02	-0.049
PA-231	-3.234E-01		7.307E-01	1.177E+00	1.756E-01	-0.275
TH-231	-1.134E-01		3.625E-01	5.883E-01	1.034E-01	-0.193
TH-232	-4.080E-02		9.922E-02	1.497E-01	1.750E-02	-0.273
PA-233	-2.207E-02		3.886E-02	6.169E-02	5.787E-03	-0.358
PA-234	-1.886E-02		1.800E-01	2.899E-01	5.457E-02	-0.065
PA-234M	2.601E+00		2.876E+00	5.486E+00	5.505E-01	0.474
TH-234	9.330E-02		3.225E-01	5.752E-01	1.094E-01	0.162
U-235	1.301E-02		9.934E-02	1.531E-01	2.727E-02	0.085
NP-237	3.846E-04		8.292E-02	1.319E-01	3.050E-02	0.003
U-238	9.330E-02		3.225E-01	5.752E-01	1.094E-01	0.162
NP-239	-3.351E-02		1.726E-01	2.807E-01	3.198E-02	-0.119
AM-241	6.859E-03		2.652E-02	4.386E-02	4.657E-03	0.156
CM-247	9.796E-03		2.197E-02	3.835E-02	3.257E-03	0.255
CF-249	-6.418E-03		2.264E-02	3.628E-02	3.073E-03	-0.177
CF-251	8.374E-03		6.108E-02	1.004E-01	8.508E-03	0.083
ANH-511	-1.722E-02		3.896E-02	7.214E-02	6.443E-03	-0.239

# 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]G1202047453          *
* Acquisition date   : 4-MAR-2010 12:46:31 Detector SN#      :              *
* Detector ID        : GAM17                      Sensitivity   : 5.000        *
* Geometry           : CAN                      Energy tolerance: 1.500        *
* Elapsed live time   : 0 02:00:00.00           Abundance limit : 75.000      *
* Elapsed real time   : 0 02:00:09.03           Half life ratio : 8.000      *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 22-FEB-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID          : G1202047453           Analyst initials: MXR1          *
* Batch Number       : 955027                Sample Quantity : 1.4534E+02 GRAM  *
* Recovery           : 1.00000               Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                                *
*
* CALIB. DATE/TIME   : 6-JAN-2010 11:41:36 MS Isotope        :              *
* MSD DPM             : 0.000                 MSD Isotope     :              *
* LCS DPM             : 0.000                 LCS Isotope      :              *
* LCSD DPM            : 0.000                 LCSD Isotope     :              *
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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
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---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-4.134E-03	1.944E-01	1.674E-01	9.918E-02 NOT IDENT.
NA-22	5.135E-03	1.932E-02	1.730E-02	9.856E-03 NOT IDENT.
NA-24	1.538E+02	2.560E+03	0.000E+00	1.306E+03 SHORT HLIF
K-40	-9.750E-02	2.707E-01	2.304E-01	1.381E-01 NOT IDENT.
SC-46	-2.560E-02	2.487E-02	1.699E-02	1.269E-02 NOT IDENT.
V-48	-3.735E-03	3.351E-02	2.781E-02	1.710E-02 NOT IDENT.
CR-51	3.710E-02	1.733E-01	1.585E-01	8.841E-02 NOT IDENT.
MN-54	-2.505E-04	2.525E-02	2.180E-02	1.288E-02 NOT IDENT.
CO-56	4.115E-03	2.172E-02	1.942E-02	1.108E-02 NOT IDENT.
CO-57	7.716E-03	1.094E-02	1.038E-02	5.584E-03 NOT IDENT.
CO-58	-1.455E-02	2.623E-02	2.073E-02	1.338E-02 NOT IDENT.
FE-59	-3.555E-02	5.364E-02	3.849E-02	2.737E-02 NOT IDENT.
CO-60	-9.831E-03	2.455E-02	1.915E-02	1.252E-02 NOT IDENT.
ZN-65	3.275E-03	4.936E-02	4.203E-02	2.518E-02 NOT IDENT.
SE-75	-8.103E-03	2.414E-02	1.958E-02	1.232E-02 NOT IDENT.
SR-85	-1.214E-01	3.769E-02	2.098E-02	1.923E-02 NOT IDENT.
Y-88	3.184E-02	2.873E-02	3.068E-02	1.466E-02 NOT IDENT.
Y-91	-2.706E+00	1.194E+01	9.443E+00	6.089E+00 NOT IDENT.
NB-94	-4.061E-03	1.999E-02	1.704E-02	1.020E-02 NOT IDENT.
NB-95	-4.791E-03	2.427E-02	2.052E-02	1.238E-02 NOT IDENT.
NB-95M	-1.779E-01	7.566E-02	4.823E-02	3.860E-02 NOT IDENT.
ZR-95	9.281E-03	3.187E-02	2.948E-02	1.626E-02 NOT IDENT.
MO-99	-1.500E-01	2.391E+00	2.072E+00	1.220E+00 NOT IDENT.
TC-99M	2.707E+10	4.933E+10	0.000E+00	2.517E+10 SHORT HLIF
RU-103	-4.735E-03	2.123E-02	1.764E-02	1.083E-02 NOT IDENT.
RH-106	-1.459E-01	2.167E-01	1.621E-01	1.106E-01 NOT IDENT.

RU-106	-1.459E-01	2.162E-01	1.621E-01	1.103E-01	NOT IDENT.
AG-108M	-5.040E-03	1.751E-02	1.467E-02	8.932E-03	NOT IDENT.
CD-109	1.041E-02	2.646E-01	2.292E-01	1.350E-01	NOT IDENT.
AG-110M	-1.911E-05	1.961E-02	1.642E-02	1.001E-02	NOT IDENT.
SN-113	-1.054E-02	2.607E-02	2.183E-02	1.330E-02	NOT IDENT.
CD-115	-2.670E-01	1.843E+00	1.545E+00	9.402E-01	NOT IDENT.
SN-117M	-8.822E-03	1.913E-02	1.603E-02	9.759E-03	NOT IDENT.
TE-123M	-2.166E-03	1.255E-02	1.086E-02	6.405E-03	NOT IDENT.
SB-124	-4.529E-03	6.394E-02	5.267E-02	3.262E-02	NOT IDENT.
SB-125	-3.091E-02	5.064E-02	4.034E-02	2.584E-02	NOT IDENT.
TE-125M	-1.227E+00	3.597E+00	3.149E+00	1.835E+00	NOT IDENT.
I-126	2.854E-02	9.201E-02	8.158E-02	4.694E-02	NOT IDENT.
SB-126	-4.285E-02	6.961E-02	5.513E-02	3.551E-02	NOT IDENT.
SN-126	-3.968E-04	2.674E-02	2.314E-02	1.364E-02	NOT IDENT.
SB-127	0.000E+00	3.680E-01	3.068E-01	0.000E+00	NOT IDENT.
I-131	1.940E-02	4.316E-02	4.011E-02	2.202E-02	NOT IDENT.
TE-132	1.312E-02	1.325E-01	1.146E-01	6.759E-02	NOT IDENT.
BA-133	-6.530E-03	2.341E-02	2.008E-02	1.194E-02	NOT IDENT.
I-133	4.391E+01	1.045E+02	0.000E+00	5.331E+01	SHORT HLIF
CS-134	3.974E-03	2.663E-02	2.372E-02	1.359E-02	NOT IDENT.
CS-135	-3.277E-02	8.207E-02	6.582E-02	4.187E-02	NOT IDENT.
I-135	4.639E+09	4.169E+10	0.000E+00	2.127E+10	SHORT HLIF
CS-136	3.085E-03	5.797E-02	4.946E-02	2.958E-02	NOT IDENT.
BA-137M	-2.431E-02	2.299E-02	1.508E-02	1.173E-02	NOT IDENT.
CS-137	-2.568E-02	2.429E-02	1.593E-02	1.239E-02	NOT IDENT.
CE-139	-5.397E-03	1.347E-02	1.134E-02	6.874E-03	NOT IDENT.
BA-140	-1.258E-01	1.486E-01	1.045E-01	7.581E-02	NOT IDENT.
LA-140	-1.258E-02	4.469E-02	3.465E-02	2.280E-02	NOT IDENT.
CE-141	4.558E-04	2.459E-02	2.183E-02	1.255E-02	NOT IDENT.
CE-143	-2.857E+00	6.384E+00	5.466E+00	3.257E+00	NOT IDENT.
CE-144	5.433E-02	8.531E-02	8.002E-02	4.353E-02	NOT IDENT.
PM-144	-1.515E-02	2.273E-02	1.813E-02	1.160E-02	NOT IDENT.
PR-144	-1.152E+00	1.694E+00	1.348E+00	8.645E-01	NOT IDENT.
PM-146	1.430E-02	2.360E-02	2.211E-02	1.204E-02	NOT IDENT.
ND-147	1.027E-01	2.911E-01	2.600E-01	1.485E-01	NOT IDENT.
PM-149	7.919E+00	1.037E+01	1.004E+01	5.290E+00	NOT IDENT.
EU-152	3.912E-04	5.892E-02	5.240E-02	3.006E-02	NOT IDENT.
GD-153	-2.188E-02	3.457E-02	2.759E-02	1.764E-02	NOT IDENT.
EU-154	2.304E-02	5.154E-02	4.874E-02	2.630E-02	NOT IDENT.
EU-155	2.183E-02	3.863E-02	3.671E-02	1.971E-02	NOT IDENT.
TB-160	5.338E-02	9.292E-02	8.710E-02	4.741E-02	NOT IDENT.
HO-166M	1.875E-02	4.074E-02	3.795E-02	2.079E-02	NOT IDENT.
TA-182	-3.705E-02	8.461E-02	6.119E-02	4.317E-02	NOT IDENT.
IR-192	-8.227E-03	1.754E-02	1.487E-02	8.949E-03	NOT IDENT.
HG-203	2.451E-02	1.764E-02	1.791E-02	8.998E-03	NOT IDENT.
BI-207	4.945E-03	2.291E-02	2.051E-02	1.169E-02	NOT IDENT.
TL-208	-7.554E-03	2.825E-02	2.356E-02	1.441E-02	NOT IDENT.
PB-210	6.654E-02	2.973E-01	2.921E-01	1.517E-01	NOT IDENT.
BI-211	-4.231E-03	1.200E-01	1.019E-01	6.121E-02	NOT IDENT.
PB-211	2.428E-01	4.288E-01	3.867E-01	2.188E-01	NOT IDENT.
BI-212	3.017E-01	3.053E-01	3.036E-01	1.558E-01	NOT IDENT.
PB-212	-1.342E-02	3.806E-02	3.505E-02	1.942E-02	NOT IDENT.
BI-214	-1.285E-02	5.466E-02	4.344E-02	2.789E-02	NOT IDENT.
PB-214	9.206E-03	4.286E-02	3.735E-02	2.187E-02	NOT IDENT.
RN-219	6.785E-02	2.259E-01	2.053E-01	1.153E-01	NOT IDENT.
RA-223	-1.134E-01	3.552E-01	3.063E-01	1.812E-01	NOT IDENT.
RA-224	-6.718E-01	4.252E-01	2.874E-01	2.169E-01	NOT IDENT.
RA-226	-1.285E-02	5.466E-02	4.344E-02	2.789E-02	NOT IDENT.
AC-227	-7.979E-02	1.350E-01	1.059E-01	6.886E-02	NOT IDENT.
TH-227	-7.979E-02	1.351E-01	1.059E-01	6.891E-02	NOT IDENT.
AC-228	-4.080E-02	9.724E-02	7.613E-02	4.961E-02	NOT IDENT.
RA-228	-4.080E-02	9.724E-02	7.613E-02	4.961E-02	NOT IDENT.
TH-228	-1.342E-02	3.806E-02	3.505E-02	1.942E-02	NOT IDENT.
TH-229	-2.036E-02	2.547E-01	2.190E-01	1.299E-01	NOT IDENT.
PA-231	-3.234E-01	7.161E-01	6.144E-01	3.653E-01	NOT IDENT.
TH-231	-1.134E-01	3.552E-01	3.063E-01	1.812E-01	NOT IDENT.
TH-232	-4.080E-02	9.724E-02	7.613E-02	4.961E-02	NOT IDENT.
PA-233	-2.207E-02	3.808E-02	3.215E-02	1.943E-02	NOT IDENT.
PA-234	-1.886E-02	1.764E-01	1.473E-01	9.000E-02	NOT IDENT.
PA-234M	2.601E+00	2.819E+00	2.784E+00	1.438E+00	NOT IDENT.
TH-234	9.330E-02	3.160E-01	3.101E-01	1.612E-01	NOT IDENT.
U-235	1.301E-02	9.736E-02	8.116E-02	4.967E-02	NOT IDENT.
NP-237	3.846E-04	8.127E-02	7.066E-02	4.146E-02	NOT IDENT.
U-238	9.330E-02	3.160E-01	3.101E-01	1.612E-01	NOT IDENT.
NP-239	-3.351E-02	1.691E-01	1.494E-01	8.628E-02	NOT IDENT.
AM-241	6.859E-03	2.599E-02	2.368E-02	1.326E-02	NOT IDENT.
CM-247	9.796E-03	2.153E-02	1.987E-02	1.098E-02	NOT IDENT.
CF-249	-6.418E-03	2.219E-02	1.881E-02	1.132E-02	NOT IDENT.

CF-251	8.374E-03	5.986E-02	5.299E-02	3.054E-02	NOT IDENT.
ANH-511	-1.722E-02	3.818E-02	3.718E-02	1.948E-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	49.9409
49.72	58.8154
57.36	72.9436
59.54	63.0030
63.29	65.3453
63.29	65.3453
64.28	79.4792
67.75	72.2196
69.67	69.8925
70.83	59.4347
72.81	109.6044
72.87	109.6194
72.87	109.6194
74.82	90.4062
74.82	90.4062
74.82	90.4062
74.97	90.4365
77.11	92.6611
77.11	92.6611
77.11	92.6611
79.69	89.5581
79.80	81.4352
80.12	83.3015
80.19	83.3137
80.57	71.5986
81.00	67.1280
81.07	66.2305
81.07	66.2305
83.79	59.3068
83.79	59.3068
85.43	85.1388
86.48	72.4761
86.55	69.7335
86.79	69.7668
86.94	71.6246
87.57	68.9568
88.03	63.4985
88.47	56.1854
89.96	159.8135
91.11	89.8077
92.59	57.5675
92.59	57.5675
93.35	61.3708
94.67	144.4902
94.87	167.8583
94.87	167.8583
95.86	87.8233
97.43	69.3404
98.44	61.0208
99.53	56.4398
100.11	58.3830
103.18	56.8134
103.37	51.1493
105.31	47.5235
106.12	47.5911
109.28	61.2513
111.00	49.9129
111.76	59.5882
116.30	59.0723
117.23	61.1024
121.12	52.7039
121.78	45.9202
122.06	51.8053
123.07	55.8044
131.20	65.4327
133.52	48.7488
136.00	59.9121

136.47	54.9575
140.51	44.2251
140.51	0.0000
143.76	49.4805
144.24	61.6398
144.24	61.6398
145.44	53.6464
152.43	61.3220
153.25	57.2977
154.21	64.5439
154.21	64.5439
156.02	57.5119
158.56	54.6153
159.00	54.6471
162.66	62.1619
163.33	53.9202
165.86	57.2173
176.60	51.6662
177.52	48.5573
181.07	62.5489
184.41	51.0908
185.72	58.6322
193.51	52.7120
197.04	54.0044
205.31	50.1447
210.85	49.3515
215.65	46.2981
222.11	43.2835
227.38	46.8668
228.16	43.5536
228.18	43.5544
235.69	109.1487
235.96	109.1783
235.96	109.1783
238.63	53.0409
238.63	53.0409
240.99	92.7538
242.00	69.0681
244.70	49.9503
252.40	46.8882
252.80	45.7617
256.23	48.2051
256.23	48.2051
260.90	49.5674
264.66	47.4246
268.22	45.2580
269.46	34.8523
269.46	34.8523
271.23	48.8710
273.65	36.1496
276.40	51.7267
277.37	53.5258
277.60	50.0263
278.00	45.6539
279.20	26.3667
279.54	26.3745
280.46	34.3142
283.69	41.4692
284.31	39.7262
285.41	27.3930
285.90	27.4046
287.50	41.6062
293.27	46.2585
295.22	36.5331
295.96	32.0982
298.57	42.8914
299.98	45.6250
299.98	45.6250
300.09	45.6297
300.09	45.6297
300.13	44.7365
301.36	40.3033
302.85	40.3535
304.50	46.6942
304.50	46.6942
304.85	49.4023
308.46	43.2415
311.90	51.4927

316.51	39.8965
319.41	37.2620
320.08	33.6442
323.87	42.8656
323.87	42.8656
328.76	33.8739
333.37	34.9135
334.37	27.5844
334.37	27.5844
338.28	49.8002
338.28	49.8002
338.32	49.8018
338.32	49.8018
338.32	49.8018
340.48	30.4843
340.55	30.4858
344.28	43.5411
351.06	27.0016
351.93	23.2922
356.01	37.3792
364.49	28.2069
366.42	33.8956
383.85	27.6406
388.16	32.5022
388.63	35.3814
391.69	38.3301
400.66	27.9575
401.81	27.0143
402.40	27.9902
404.85	27.0686
410.95	32.0307
414.70	40.8663
423.72	28.3818
427.09	33.3468
427.87	30.4196
433.94	30.5360
453.88	19.9445
463.37	28.0820
468.07	27.1549
473.00	28.2427
476.78	25.2724
477.60	29.3301
487.02	21.3550
492.35	22.4401
497.08	23.5229
511.00	42.2597
514.00	117.6973
527.90	28.0876
529.87	0.0000
531.02	26.0506
537.26	29.2740
546.56	0.0000
563.25	28.6133
569.33	28.7023
569.50	29.7679
569.70	26.5816
583.19	23.5509
600.60	26.9928
602.73	28.1011
604.72	32.4554
609.32	23.8537
609.32	23.8537
610.33	26.0347
614.28	19.5634
618.01	20.6867
621.93	28.3613
621.93	28.3613
633.25	27.4155
635.95	20.8624
636.99	23.0694
645.85	13.2367
657.76	15.5266
661.66	18.8869
661.66	18.8869
664.57	18.9118
666.33	12.2468
666.50	11.1343
677.62	14.5464

685.70	17.9668
695.00	19.8440
696.49	27.9795
696.51	27.9802
697.00	33.4030
702.65	19.9096
706.68	25.3832
711.68	19.0779
720.70	22.7985
721.93	25.5473
722.78	26.4696
722.91	20.9942
723.31	20.9976
724.19	18.2656
727.33	11.8882
733.00	20.1663
735.93	18.3550
739.50	17.4632
747.24	11.9866
752.31	12.0114
753.82	9.2451
756.73	8.3305
763.94	14.8527
765.81	19.5086
766.42	18.5845
777.92	16.8025
778.90	22.4121
783.70	14.9699
785.37	18.7246
795.86	14.1010
801.95	17.9034
810.29	22.6875
810.76	22.6916
815.77	21.7877
818.51	14.2244
832.01	16.2031
834.85	20.0366
836.80	0.0000
846.77	11.5005
856.80	20.2002
860.56	13.4853
871.09	17.4045
873.19	13.5471
875.33	0.0000
879.36	13.5772
880.51	15.5230
883.24	14.5671
884.68	17.4894
889.28	20.4381
898.04	21.4774
911.20	12.7499
911.20	12.7499
911.20	12.7499
926.50	8.8737
937.49	10.8864
944.13	7.9352
946.00	11.9104
949.00	15.8965
962.29	13.9713
964.08	15.9770
966.15	13.9894
968.97	12.0021
968.97	12.0021
968.97	12.0021
983.53	11.0548
996.26	15.1370
1001.03	8.0855
1004.73	17.2021
1037.84	11.2481
1038.76	0.0000
1048.07	14.3616
1050.41	13.3453
1050.41	13.3453
1063.66	5.1538
1085.87	17.6417
1099.45	15.6299
1112.07	10.4590
1115.54	10.4697

1120.29	15.7266
1120.29	15.7266
1120.55	15.7273
1121.30	13.6335
1131.51	0.0000
1173.23	8.5164
1177.93	12.7916
1189.05	6.4157
1204.77	12.8877
1221.41	8.6309
1231.02	14.0620
1235.36	8.6637
1238.28	8.6707
1260.41	0.0000
1271.85	3.2808
1274.44	3.2830
1274.54	4.3775
1291.59	5.4963
1298.22	0.0000
1312.11	2.7628
1332.49	10.1831
1365.19	7.4671
1368.63	0.0000
1384.29	3.7513
1408.01	5.6597
1457.56	0.0000
1460.82	7.6419
1489.16	8.6543
1505.03	4.8254
1596.21	6.8949
1620.50	3.9606
1678.03	0.0000
1690.97	7.0353
1764.49	3.0607
1764.49	3.0607
1770.23	7.1498
1771.35	4.0864
1791.20	0.0000
1836.06	2.0694

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202047453

Total Uranium Activity	2.8358E-01	ug/g
Total Uranium Counting Unc.	9.4133E-01	ug/g
Total Uranium Tpu	4.8027E-07	ug/g
Total Uranium Mda	9.2343E-01	ug/g

THERE ARE NO PEAKS !

VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 10:38:35.70

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202047454.CNF;1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 16:10:34.
Sample ID        : G1202047454 Sample quantity : 8.05700E+01 GRAM
Detector name    : GAM10 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:00.81 0.0%
Energy tolerance : 3.00000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity : 5.00000
Batch ID        : 955027 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	63.17*	72	227	1.68	126.50	124	7	9.99E-03	38.4	
2	2	74.63*	233	296	1.18	149.41	144	15	3.24E-02	14.3	2.40E+00
3	2	76.94*	336	253	1.05	154.02	144	15	4.66E-02	9.7	
4	3	92.68*	243	244	1.31	185.47	171	22	3.38E-02	14.3	1.34E+00
5	0	186.10*	155	295	1.28	372.15	367	12	2.15E-02	24.5	
6	0	209.25	64	215	1.23	418.41	414	9	8.88E-03	43.3	
7	3	238.85*	870	144	1.27	477.56	473	19	1.21E-01	4.2	2.86E+00
8	3	241.91	196	191	1.62	483.69	473	19	2.73E-02	16.2	
9	0	295.55*	270	185	1.45	590.87	584	13	3.75E-02	12.2	
10	0	300.49	52	154	0.69	600.76	597	10	7.23E-03	46.6	
11	0	338.70	192	129	1.43	677.11	671	11	2.67E-02	13.5	
12	0	352.42*	425	77	1.33	704.55	701	8	5.90E-02	6.3	
13	0	512.10*	75	161	1.86	1023.71	1015	19	1.05E-02	46.4	
14	0	584.10*	219	67	1.38	1167.65	1163	12	3.04E-02	10.5	
15	0	610.17*	364	65	1.78	1219.76	1212	14	5.06E-02	7.3	
16	0	662.78	532	59	1.50	1324.95	1319	12	7.38E-02	5.2	
17	0	728.83	66	51	1.91	1457.00	1451	16	9.16E-03	26.6	
18	0	912.97*	144	44	1.46	1825.18	1819	14	1.99E-02	13.3	
19	0	970.44*	111	54	1.05	1940.10	1934	13	1.54E-02	17.6	
20	0	1002.52*	20	18	2.32	2004.26	1999	9	2.73E-03	47.2	
21	0	1122.56*	55	46	1.99	2244.32	2239	15	7.58E-03	31.9	
22	0	1379.56	54	12	3.85	2758.39	2748	23	7.49E-03	21.3	
23	0	1463.24*	652	5	2.37	2925.80	2916	20	9.06E-02	4.1	
24	0	1767.56*	61	0	1.83	3534.71	3528	13	8.41E-03	14.4	

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



```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202047454.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 16:10:34
Sample ID        : G1202047454 Sample quantity : 80.570 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA10 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:00.81 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 3.00 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	*	2.579E+01	3.054E+00	5.877E-01	5.062E-02	43.888
SR-85	+	514.00	*	1.553E-01	1.444E-01	7.977E-02	5.095E-03	1.946
BA-137M	+	661.66	*	1.173E+00	1.356E-01	7.687E-02	3.793E-03	15.263
CS-137	+	661.66	*	1.239E+00	1.434E-01	8.121E-02	4.030E-03	15.263
TL-208		277.37		3.606E-01	5.142E-01	8.892E-01	9.891E-02	0.406
	+	583.19	*	4.572E-01	1.005E-01	7.815E-02	5.239E-03	5.850
		860.56		5.131E-01	4.136E-01	7.522E-01	7.346E-02	0.682
BI-211	+	72.87		2.285E+01	7.017E+00	7.812E+00	8.591E-01	2.924
	+	351.06	*	3.948E+00	5.716E-01	4.273E-01	3.116E-02	9.241
PB-212	+	74.82		2.733E+00	8.807E-01	8.824E-01	1.292E-01	3.098
	+	77.11		2.196E+00	4.872E-01	4.946E-01	5.408E-02	4.440
	+	238.63	*	1.820E+00	2.074E-01	1.218E-01	9.310E-03	14.945
	+	300.09		1.687E+00	1.578E+00	1.558E+00	1.390E-01	1.083
BI-214	+	609.32	*	1.476E+00	2.431E-01	1.464E-01	1.123E-02	10.086
	+	1120.29		1.206E+00	7.785E-01	6.510E-01	6.397E-02	1.853
		1764.49		7.903E-01	4.279E-01	8.651E-01	5.777E-02	0.914
PB-214	+	74.82		4.845E+00	1.537E+00	1.564E+00	2.114E-01	3.098
	+	77.11		3.871E+00	9.164E-01	8.720E-01	1.194E-01	4.440
	+	242.00		2.490E+00	8.356E-01	7.403E-01	6.253E-02	3.363
	+	295.22		1.549E+00	4.030E-01	3.088E-01	2.846E-02	5.017
	+	351.93	*	1.433E+00	2.220E-01	1.552E-01	1.420E-02	9.231
RA-224	+	240.99	*	4.403E+00	1.455E+00	1.305E+00	8.009E-02	3.375
RA-226	+	609.32	*	1.476E+00	2.431E-01	1.464E-01	1.123E-02	10.086
	+	1120.29		1.206E+00	7.785E-01	6.510E-01	6.397E-02	1.853
		1764.49		7.903E-01	4.279E-01	8.651E-01	5.777E-02	0.914
AC-228	+	338.32		1.986E+00	9.819E-01	4.547E-01	1.881E-01	4.368
	+	911.20	*	1.494E+00	4.402E-01	3.464E-01	4.385E-02	4.312
	+	968.97		2.008E+00	8.629E-01	5.651E-01	1.393E-01	3.553
RA-228	+	338.32		1.986E+00	9.819E-01	4.547E-01	1.881E-01	4.368
	+	911.20	*	1.494E+00	4.402E-01	3.464E-01	4.385E-02	4.312
	+	968.97		2.008E+00	8.629E-01	5.651E-01	1.393E-01	3.553
TH-228	+	74.82		2.733E+00	8.402E-01	8.824E-01	9.716E-02	3.098
	+	77.11		2.196E+00	4.872E-01	4.946E-01	5.408E-02	4.440
	+	238.63	*	1.820E+00	2.074E-01	1.218E-01	9.310E-03	14.945

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-232	+	300.09		1.687E+00	1.878E+00	1.558E+00	9.498E-01	1.083
	+	338.32		1.986E+00	5.543E-01	4.547E-01	3.048E-02	4.368
	+	911.20	*	1.494E+00	4.402E-01	3.464E-01	4.385E-02	4.312
	+	968.97		2.008E+00	8.629E-01	5.651E-01	1.393E-01	3.553
TH-234	+	63.29	*	4.006E+00	3.178E+00	4.015E+00	8.051E-01	0.998
	+	92.59		4.683E+00	1.712E+00	1.475E+00	3.357E-01	3.175
U-235	+	89.96		5.709E+00	2.178E+00	1.860E+00	4.738E-01	3.069
	+	93.35		3.538E+00	1.315E+00	1.105E+00	2.615E-01	3.203
		143.76	*	2.346E-01	2.790E-01	4.533E-01	7.143E-02	0.518
		163.33		-1.276E-01	6.131E-01	9.400E-01	1.568E-01	-0.136
	+	185.72		2.111E-01	1.040E-01	7.969E-02	4.485E-03	2.649
		205.31		-3.977E-01	7.016E-01	9.981E-01	1.696E-01	-0.398
U-238	+	63.29	*	4.006E+00	3.178E+00	4.015E+00	8.051E-01	0.998
	+	92.59		4.683E+00	1.423E+00	1.475E+00	1.509E-01	3.175
ANH-511	+	511.00	*	1.201E-01	1.117E-01	6.136E-02	3.931E-03	1.957

## ---- 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	*	1.697E-01	4.985E-01	8.267E-01	6.145E-02	0.205
NA-22		1274.54	*	2.710E-02	6.106E-02	1.067E-01	8.267E-03	0.254
NA-24		1368.63	*	-2.547E+02	6.106E-02	Half-Life too short		
SC-46		889.28	*	1.191E-02	4.344E-02	7.377E-02	7.301E-03	0.161
	+	1120.55		2.127E-01	1.366E-01	1.806E-01	1.297E-02	1.178
V-48		944.13		6.444E-01	1.536E+00	2.616E+00	2.535E-01	0.246
		983.53	*	3.522E-02	1.146E-01	1.930E-01	1.784E-02	0.183
		1312.11		2.017E-02	1.267E-01	2.151E-01	1.796E-02	0.094
CR-51		320.08	*	-9.774E-02	5.315E-01	8.691E-01	6.270E-02	-0.112
MN-54		834.85	*	2.133E-02	5.008E-02	8.574E-02	7.326E-03	0.249
CO-56		846.77	*	6.107E-03	6.285E-02	9.990E-02	8.822E-03	0.061
		1037.84		-2.612E-01	4.320E-01	6.403E-01	5.752E-02	-0.408
		1238.28		2.223E-02	1.336E-01	2.278E-01	1.699E-02	0.098
		1771.35		1.069E+00	4.689E-01	9.819E-01	6.507E-02	1.088
CO-57		122.06	*	1.275E-02	3.407E-02	5.627E-02	3.711E-03	0.227
		136.47		-4.009E-02	2.666E-01	4.260E-01	2.974E-02	-0.094
CO-58		810.76	*	-2.449E-02	5.376E-02	8.255E-02	6.605E-03	-0.297
FE-59		1099.45	*	-6.029E-02	1.353E-01	2.048E-01	1.709E-02	-0.294
		1291.59		-7.342E-02	1.790E-01	2.811E-01	2.601E-02	-0.261
CO-60		1173.23		-4.330E-02	6.037E-02	9.289E-02	5.728E-03	-0.466
		1332.49	*	-5.557E-02	5.373E-02	7.454E-02	6.478E-03	-0.745
ZN-65		1115.54	*	-1.322E-01	1.490E-01	1.860E-01	1.355E-02	-0.711
SE-75		121.12		-2.631E-02	1.802E-01	2.898E-01	2.794E-02	-0.091
		136.00		7.869E-03	5.134E-02	8.348E-02	5.186E-03	0.094
		264.66	*	-1.140E-02	5.622E-02	9.293E-02	5.929E-03	-0.123
		279.54		1.089E-01	1.494E-01	2.594E-01	1.779E-02	0.420
		400.66		-2.495E-01	3.595E-01	5.550E-01	5.403E-02	-0.450
Y-88		898.04		3.255E-02	5.401E-02	9.434E-02	9.584E-03	0.345
		1836.06	*	-1.643E-02	4.625E-02	6.737E-02	4.133E-03	-0.244

----- 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	*		-1.162E+01	3.026E+01	4.843E+01	3.216E+00	-0.240
NB-94	702.65	*		2.111E-02	4.588E-02	7.928E-02	4.514E-03	0.266
	871.09			-1.635E-02	4.754E-02	7.481E-02	7.056E-03	-0.219
NB-95	765.81	*		-3.162E-02	5.993E-02	9.406E-02	6.564E-03	-0.336
NB-95M	235.69	*		-7.321E-02	1.863E-01	2.631E-01	2.047E-02	-0.278
ZR-95	724.19			5.484E-03	1.287E-01	1.867E-01	1.326E-02	0.029
	756.73	*		6.841E-02	9.955E-02	1.755E-01	1.386E-02	0.390
MO-99	140.51			-1.318E+01	1.066E+02	1.662E+02	3.811E+01	-0.079
	181.07			9.393E+00	8.698E+01	1.239E+02	2.181E+01	0.076
	366.42			2.410E+02	4.554E+02	7.769E+02	5.261E+01	0.310
	739.50	*		-1.848E+01	5.654E+01	9.043E+01	1.327E+01	-0.204
	777.92			1.240E+02	1.716E+02	3.030E+02	2.195E+01	0.409
TC-99M	140.51	*		-7.424E+15	1.716E+02	Half-Life	too short	
RU-103	497.08	*		1.062E-02	5.966E-02	9.757E-02	1.245E-02	0.109
	610.33	+		1.666E+01	3.479E+00	4.315E+00	6.455E-01	3.861
RH-106	621.93	*		-8.045E-02	4.163E-01	6.863E-01	7.852E-02	-0.117
	1050.41			1.190E-01	3.087E+00	5.009E+00	4.179E-01	0.024
RU-106	621.93	*		-8.045E-02	4.162E-01	6.863E-01	3.726E-02	-0.117
	1050.41			1.190E-01	3.087E+00	5.009E+00	4.179E-01	0.024
AG-108M	433.94	*		-2.102E-03	4.086E-02	6.613E-02	4.689E-03	-0.032
	614.28			-1.500E-02	5.213E-02	7.347E-02	4.371E-03	-0.204
	722.91			5.425E-03	5.333E-02	7.795E-02	5.048E-03	0.070
CD-109	88.03	*		2.920E+00	1.289E+00	2.226E+00	2.524E-01	1.312
AG-110M	657.76	*		-3.161E-02	5.402E-02	7.234E-02	3.920E-03	-0.437
	677.62			3.564E-02	4.141E-01	6.959E-01	3.912E-02	0.051
	706.68			-2.207E-01	2.985E-01	4.627E-01	2.839E-02	-0.477
	763.94			-1.834E-01	2.080E-01	3.116E-01	2.253E-02	-0.589
	884.68			4.368E-02	5.930E-02	1.056E-01	1.059E-02	0.413
	937.49			-2.059E-01	1.650E-01	2.318E-01	2.326E-02	-0.888
	1384.29			1.701E-01	2.536E-01	4.107E-01	3.622E-02	0.414
	1505.03			-2.074E-01	3.923E-01	5.818E-01	4.767E-02	-0.356
SN-113	391.69	*		-4.097E-02	6.355E-02	9.888E-02	7.051E-03	-0.414
CD-115	260.90			1.184E-04	6.355E-02	Half-Life	too short	
	492.35			-1.787E-04	6.355E-02	Half-Life	too short	
	527.90	*		-2.251E-05	6.355E-02	Half-Life	too short	
SN-117M	156.02			2.861E+00	3.845E+00	6.398E+00	3.622E-01	0.447
	158.56	*		-6.083E-03	8.931E-02	1.423E-01	7.982E-03	-0.043
TE-123M	159.00	*		-2.384E-02	3.870E-02	5.762E-02	3.273E-03	-0.414
SB-124	602.73			-1.902E-02	5.618E-02	8.276E-02	4.671E-03	-0.230
	645.85			2.427E-01	7.021E-01	1.209E+00	7.176E-02	0.201
	722.78			6.433E-02	5.684E-01	8.321E-01	5.297E-02	0.077
	1690.97	*		2.313E-02	1.066E-01	1.975E-01	1.505E-02	0.117
SB-125	427.87	*		1.451E-01	1.261E-01	2.222E-01	1.546E-02	0.653
	463.37			1.499E-01	3.908E-01	6.506E-01	4.859E-02	0.230
	600.60			-1.483E-02	2.264E-01	3.785E-01	2.496E-02	-0.039
	635.95			-3.531E-02	3.609E-01	5.991E-01	3.801E-02	-0.059
TE-125M	109.28	*		5.250E+00	1.349E+01	2.239E+01	2.190E+00	0.234
I-126	388.63			3.168E-01	3.004E-01	5.268E-01	3.580E-02	0.601
	666.33	*		4.410E-01	4.008E-01	6.644E-01	3.333E-02	0.664

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-126		753.82		-2.968E+00	3.219E+00	4.821E+00	3.242E-01	-0.616
		414.70		-1.531E-02	1.440E-01	2.330E-01	1.579E-02	-0.066
		666.50		1.084E-01	1.352E-01	2.175E-01	1.092E-02	0.498
		695.00		6.742E-02	1.348E-01	2.342E-01	1.299E-02	0.288
		697.00		2.528E-01	4.663E-01	8.129E-01	4.540E-02	0.311
SN-126	*	720.70		1.470E-01	2.476E-01	4.247E-01	2.568E-02	0.346
		856.80		-8.241E-01	8.914E-01	1.312E+00	1.191E-01	-0.628
	+	64.28		1.544E+00	1.215E+00	1.519E+00	2.597E-01	1.017
		86.94		1.081E+00	6.929E-01	9.200E-01	3.863E-01	1.175
	*	87.57		2.806E-01	1.256E-01	2.170E-01	2.455E-02	1.293
SB-127		252.40		1.482E+00	1.380E+01	2.329E+01	9.681E+00	0.064
		473.00		-1.773E+00	5.935E+00	9.353E+00	1.225E+00	-0.190
	*	685.70		3.160E+00	4.039E+00	7.209E+00	7.994E-01	0.438
I-131		783.70		-1.482E+01	1.236E+01	1.769E+01	2.318E+00	-0.838
		80.19		9.218E+00	1.107E+01	1.707E+01	1.886E+00	0.540
		284.31		-5.688E-01	2.854E+00	4.697E+00	3.328E-01	-0.121
	*	364.49		-8.074E-02	2.402E-01	3.849E-01	2.849E-02	-0.210
TE-132		636.99		1.339E+00	3.195E+00	5.544E+00	3.376E-01	0.242
		49.72		-3.818E+01	1.527E+02	2.529E+02	3.947E+01	-0.151
		111.76		3.803E+01	1.261E+02	2.083E+02	2.457E+01	0.183
BA-133		116.30		4.417E+01	1.107E+02	1.834E+02	2.116E+01	0.241
	*	228.16		6.759E-01	2.841E+00	4.848E+00	7.645E-01	0.139
		81.00		6.374E-02	1.450E-01	2.190E-01	3.713E-02	0.291
		276.40		2.943E-01	4.690E-01	8.081E-01	1.041E-01	0.364
I-133	+	302.85		3.049E-01	2.862E-01	3.155E-01	3.726E-02	0.966
	*	356.01		-1.320E-02	6.379E-02	9.018E-02	1.064E-02	-0.146
		383.85		-3.171E-02	3.974E-01	6.471E-01	7.270E-02	-0.049
	*	529.87		-1.614E-01	3.974E-01	Half-Life	too short	
CS-134		875.33		6.662E+00	3.974E-01	Half-Life	too short	
		1298.22		9.666E+00	3.974E-01	Half-Life	too short	
		563.25		-1.705E-02	4.709E-01	7.490E-01	4.597E-02	-0.023
		569.33		-5.645E-02	2.572E-01	4.024E-01	2.469E-02	-0.140
CS-135		604.72		-3.512E-02	4.869E-02	6.476E-02	3.661E-03	-0.542
	*	795.86		9.746E-02	6.208E-02	1.165E-01	8.983E-03	0.836
		801.95		-4.558E-01	5.387E-01	7.804E-01	6.111E-02	-0.584
		1365.19		6.581E-01	1.767E+00	3.078E+00	2.779E-01	0.214
I-135	*	268.22		-8.409E-02	2.091E-01	3.418E-01	2.763E-02	-0.246
		546.56		1.051E+15	2.091E-01	Half-Life	too short	
		836.80		4.423E+15	2.091E-01	Half-Life	too short	
		1038.76		-6.691E+15	2.091E-01	Half-Life	too short	
CS-136		1131.51		-2.268E+14	2.091E-01	Half-Life	too short	
	*	1260.41		-7.965E+13	2.091E-01	Half-Life	too short	
		1457.56		-8.413E+15	2.091E-01	Half-Life	too short	
		1678.03		7.580E+14	2.091E-01	Half-Life	too short	
		1791.20		-1.473E+15	2.091E-01	Half-Life	too short	
		153.25		1.205E+00	1.508E+00	2.512E+00	2.009E-01	0.480
		176.60		6.522E-02	8.285E-01	1.324E+00	9.077E-02	0.049
		273.65		-1.376E+00	9.155E-01	1.391E+00	1.022E-01	-0.989
	+	340.55		1.538E+00	4.309E-01	5.184E-01	3.697E-02	2.967

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		818.51		-2.937E-02	1.385E-01	2.228E-01	1.821E-02	-0.132
		1048.07	*	-8.217E-02	1.850E-01	2.806E-01	2.457E-02	-0.293
		1235.36		-1.681E+00	1.109E+00	1.565E+00	1.677E-01	-1.074
CE-139		165.86	*	6.785E-03	4.070E-02	6.557E-02	3.581E-03	0.103
BA-140		162.66		1.249E-01	1.480E+00	2.306E+00	1.474E-01	0.054
		304.85		-3.721E-01	2.546E+00	3.665E+00	1.053E+00	-0.102
		423.72		-5.984E-01	3.501E+00	5.614E+00	1.822E+00	-0.107
		537.26	*	-1.167E-02	4.479E-01	7.156E-01	2.389E-01	-0.016
LA-140		328.76		5.318E-01	5.304E-01	9.279E-01	6.771E-02	0.573
		487.02		3.516E-02	2.334E-01	3.816E-01	2.758E-02	0.092
		815.77		-1.851E-01	5.800E-01	9.209E-01	8.438E-02	-0.201
		1596.21	*	-1.503E-01	1.956E-01	2.801E-01	2.174E-02	-0.537
CE-141		145.44	*	1.223E-03	9.539E-02	1.497E-01	9.163E-03	0.008
CE-143		57.36		-1.609E-02	9.539E-02	Half-Life	too short	
	+	293.27	*	1.755E-02	9.539E-02	Half-Life	too short	
	+	664.57		4.875E-01	9.539E-02	Half-Life	too short	
		721.93		-4.380E-03	9.539E-02	Half-Life	too short	
CE-144		80.12		3.122E+00	3.910E+00	6.022E+00	6.608E-01	0.518
		133.52	*	2.582E-02	2.557E-01	4.148E-01	5.833E-02	0.062
PM-144		476.78		3.555E-02	9.259E-02	1.542E-01	1.162E-02	0.231
		618.01		-2.535E-02	4.263E-02	6.775E-02	3.963E-03	-0.374
		696.49	*	3.121E-02	4.526E-02	7.986E-02	4.459E-03	0.391
PR-144		696.51	*	2.329E+00	3.395E+00	5.989E+00	3.339E-01	0.389
		1489.16		1.708E+00	1.608E+01	2.698E+01	2.228E+00	0.063
PM-146		453.88	*	3.133E-02	5.914E-02	9.973E-02	9.058E-03	0.314
		633.25		3.623E-01	1.792E+00	3.049E+00	1.146E+00	0.119
		735.93		-8.424E-02	2.274E-01	3.082E-01	8.448E-02	-0.273
		747.24		-1.120E-01	1.265E-01	1.883E-01	2.539E-02	-0.595
ND-147	+	91.11		2.544E+00	7.785E-01	1.001E+00	1.116E-01	2.542
		319.41		3.008E-01	5.642E+00	9.380E+00	6.228E-01	0.032
		531.02	*	-1.852E-01	9.979E-01	1.570E+00	2.155E-01	-0.118
PM-149		285.90	*	-2.068E-04	9.979E-01	Half-Life	too short	
EU-152		121.78		1.673E-02	9.720E-02	1.589E-01	1.305E-02	0.105
	+	244.70		2.379E+00	7.863E-01	7.245E-01	4.469E-02	3.284
		344.28	*	5.688E-03	1.322E-01	2.027E-01	1.493E-02	0.028
		778.90		3.120E-01	3.340E-01	6.018E-01	4.371E-02	0.518
		964.08		8.105E-02	4.063E-01	5.886E-01	5.576E-02	0.138
		1085.87		5.274E-01	5.460E-01	9.765E-01	7.600E-02	0.540
		1112.07		1.752E-01	4.181E-01	7.056E-01	5.175E-02	0.248
		1408.01		-7.677E-02	2.603E-01	4.105E-01	3.500E-02	-0.187
GD-153		69.67		-1.840E+00	3.203E+00	4.580E+00	5.107E-01	-0.402
		97.43	*	-3.535E-02	1.270E-01	1.822E-01	1.696E-02	-0.194
		103.18		-1.721E-02	1.495E-01	2.426E-01	2.051E-02	-0.071
EU-154		123.07		-1.064E-02	6.950E-02	1.117E-01	1.102E-02	-0.095
		723.31		1.656E-02	2.373E-01	3.453E-01	2.515E-02	0.048
		873.19		3.036E-01	3.849E-01	6.805E-01	8.531E-02	0.446
		996.26		2.611E-02	5.810E-01	8.187E-01	1.450E-01	0.032
	+	1004.73		3.248E-01	3.091E-01	5.194E-01	6.184E-02	0.625
		1274.44	*	6.826E-02	1.740E-01	3.023E-01	3.242E-02	0.226

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Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155		86.55		2.015E-01	1.761E-01	2.711E-01	3.069E-02	0.743
		105.31	*	5.109E-02	1.429E-01	2.372E-01	1.966E-02	0.215
TB-160		86.79		8.826E-01	4.379E-01	7.495E-01	8.444E-02	1.178
		197.04		-1.170E-01	8.461E-01	1.300E+00	7.453E-02	-0.090
		215.65		3.288E-01	9.982E-01	1.716E+00	1.015E-01	0.192
	+	298.57		2.494E-01	2.328E-01	2.647E-01	1.730E-02	0.942
		879.36	*	-2.163E-01	1.970E-01	2.771E-01	2.672E-02	-0.780
		962.29		-6.718E-01	6.660E-01	8.944E-01	8.491E-02	-0.751
		966.15		6.497E-01	2.824E-01	5.260E-01	4.971E-02	1.235
		1177.93		5.609E-01	5.293E-01	9.756E-01	6.084E-02	0.575
		1271.85		-6.457E-01	1.151E+00	1.794E+00	1.380E-01	-0.360
HO-166M		80.57		3.846E-01	4.186E-01	6.480E-01	7.117E-02	0.594
	+	184.41		1.677E-01	8.264E-02	8.494E-02	4.771E-03	1.974
		280.46		-4.694E-02	1.124E-01	1.829E-01	1.176E-02	-0.257
		410.95		3.240E-01	3.392E-01	5.896E-01	3.998E-02	0.550
		711.68	*	2.120E-02	8.210E-02	1.396E-01	8.192E-03	0.152
		752.31		7.058E-02	3.675E-01	6.195E-01	4.146E-02	0.114
		810.29		-5.336E-02	7.874E-02	1.177E-01	9.379E-03	-0.453
TA-182		67.75		-6.523E-02	2.013E-01	3.135E-01	3.541E-02	-0.208
		100.11		4.895E-02	2.425E-01	4.004E-01	3.558E-02	0.122
		152.43		-1.030E-01	4.891E-01	7.752E-01	4.448E-02	-0.133
		222.11		-1.195E-02	4.478E-01	7.556E-01	4.513E-02	-0.016
	+	1121.30		5.828E-01	3.741E-01	5.078E-01	3.640E-02	1.148
		1189.05		-1.667E-01	4.493E-01	7.225E-01	4.626E-02	-0.231
		1221.41	*	1.806E-02	3.023E-01	5.074E-01	3.499E-02	0.036
		1231.02		2.874E-03	6.896E-01	1.151E+00	8.108E-02	0.002
IR-192	+	295.96		1.201E+00	3.028E-01	4.046E-01	2.673E-02	2.969
		308.46		4.074E-02	1.296E-01	2.195E-01	1.459E-02	0.186
		316.51	*	-2.300E-02	4.404E-02	7.018E-02	4.666E-03	-0.328
		468.07		-7.217E-02	1.019E-01	1.551E-01	1.151E-02	-0.465
HG-203		70.83		3.260E-02	2.527E+00	3.749E+00	6.563E-01	0.009
	+	72.87		6.132E+00	2.044E+00	2.371E+00	4.024E-01	2.586
		279.20	*	3.004E-02	5.564E-02	9.562E-02	6.421E-03	0.314
BI-207	+	72.81		1.315E+00	4.038E-01	5.005E-01	5.505E-02	2.627
	+	74.97		7.880E-01	2.420E-01	3.642E-01	3.987E-02	2.164
		569.70		-3.457E-03	4.024E-02	6.383E-02	3.806E-03	-0.054
		1063.66	*	1.913E-02	6.295E-02	1.058E-01	8.611E-03	0.181
	+	1770.23		4.216E+00	1.249E+00	2.374E+00	1.575E-01	1.776
PB-210		46.54	*	-4.311E+00	1.162E+01	1.876E+01	1.841E+00	-0.230
PB-211		404.85	*	1.123E-02	9.260E-01	1.513E+00	7.278E-01	0.007
		427.09		1.495E+00	2.246E+00	3.661E+00	1.682E+00	0.408
		832.01		-7.629E-01	1.360E+00	1.999E+00	1.036E+00	-0.382
BI-212	+	727.33	*	2.137E+00	1.162E+00	1.374E+00	1.499E-01	1.555
		785.37		5.662E+00	4.420E+00	8.094E+00	5.993E-01	0.700
		1620.50		-1.075E+00	3.727E+00	5.771E+00	4.401E-01	-0.186
RN-219		271.23		5.807E-01	3.255E-01	5.877E-01	4.967E-02	0.988
		401.81	*	-2.778E-01	5.532E-01	8.670E-01	1.205E-01	-0.320
RA-223		81.07		1.208E-01	3.264E-01	4.919E-01	5.410E-02	0.246
		83.79		-7.573E-02	2.049E-01	2.949E-01	3.274E-02	-0.257

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AC-227	+	94.87		3.482E+00	1.058E+00	9.712E-01	9.489E-02	3.585
		144.24		1.014E+00	9.235E-01	1.527E+00	1.116E-01	0.664
		154.21		3.442E-01	5.262E-01	8.709E-01	5.994E-02	0.395
		269.46		2.975E-01	2.481E-01	4.396E-01	2.896E-02	0.677
		323.87	*	-6.221E-01	8.844E-01	1.388E+00	2.282E-01	-0.448
	+	338.28		7.880E+00	2.298E+00	3.215E+00	3.468E-01	2.451
	+	79.69		1.422E+01	3.803E+00	2.935E+00	5.435E-01	4.846
	+	235.96		4.533E+00	5.393E-01	3.100E-01	2.590E-02	14.621
		256.23	*	-1.292E-01	3.401E-01	5.580E-01	5.855E-02	-0.232
	+	299.98		1.856E+00	1.741E+00	2.125E+00	2.423E-01	0.873
TH-227		304.50		-3.710E-01	2.328E+00	3.348E+00	5.209E-01	-0.111
		334.37		1.041E+00	2.327E+00	3.518E+00	5.139E-01	0.296
	+	79.80		1.878E+01	5.609E+00	3.882E+00	8.854E-01	4.837
	+	235.96		4.533E+00	5.164E-01	3.100E-01	2.362E-02	14.621
		256.23	*	-1.292E-01	3.402E-01	5.580E-01	6.834E-02	-0.232
	+	299.98		1.856E+00	1.741E+00	2.125E+00	2.423E-01	0.873
		304.50		-3.710E-01	2.328E+00	3.348E+00	5.209E-01	-0.111
		334.37		1.041E+00	2.327E+00	3.518E+00	5.139E-01	0.296
	TH-229	85.43		5.906E-01	3.384E-01	5.343E-01	5.976E-02	1.105
		88.47		4.096E-01	1.897E-01	3.278E-01	3.677E-02	1.250
PA-231		193.51	*	-1.927E-01	7.401E-01	1.154E+00	6.580E-02	-0.167
	+	210.85		1.909E+00	1.656E+00	2.021E+00	1.186E-01	0.944
		283.69	*	-1.114E+00	1.820E+00	2.906E+00	3.899E-01	-0.383
	+	301.36		1.192E+00	1.118E+00	1.387E+00	1.496E-01	0.859
	TH-231	81.07		1.208E-01	3.264E-01	4.919E-01	5.410E-02	0.246
		83.79		-7.573E-02	2.049E-01	2.949E-01	3.274E-02	-0.257
	+	94.87		3.482E+00	1.058E+00	9.712E-01	9.489E-02	3.585
		144.24		1.014E+00	9.235E-01	1.527E+00	1.116E-01	0.664
		154.21		3.442E-01	5.262E-01	8.709E-01	5.994E-02	0.395
		269.46		2.975E-01	2.481E-01	4.396E-01	2.896E-02	0.677
PA-233		323.87	*	-6.221E-01	8.844E-01	1.388E+00	2.282E-01	-0.448
	+	338.28		7.880E+00	2.298E+00	3.215E+00	3.468E-01	2.451
	+	300.13		8.399E-01	7.904E-01	9.664E-01	1.327E-01	0.869
		311.90	*	6.925E-02	8.246E-02	1.440E-01	9.969E-03	0.481
	+	340.48		5.029E+00	1.802E+00	1.735E+00	4.069E-01	2.899
	PA-234	94.67		1.262E+00	3.996E-01	3.704E-01	4.910E-02	3.407
		98.44		1.526E-01	1.559E-01	2.060E-01	1.151E-01	0.741
		111.00		2.348E-02	2.414E-01	3.948E-01	4.482E-02	0.059
		131.20		-1.316E-01	1.420E-01	2.178E-01	1.364E-02	-0.604
		569.50		-5.596E-02	3.548E-01	5.587E-01	3.333E-02	-0.100
PA-234M		733.00		-1.612E-01	5.592E-01	7.696E-01	1.647E-01	-0.209
		880.51		-2.550E-01	3.503E-01	5.177E-01	5.007E-02	-0.493
		883.24		1.091E-01	3.507E-01	5.834E-01	3.931E-01	0.187
		926.50		-1.166E-01	2.427E-01	3.699E-01	9.517E-02	-0.315
		946.00	*	-2.598E-01	4.341E-01	6.527E-01	1.258E-01	-0.398
		949.00		6.862E-02	6.145E-01	1.012E+00	9.758E-02	0.068
	PA-234M	766.42		-4.768E-01	1.495E+01	2.464E+01	1.244E+01	-0.019
	+	1001.03	*	6.895E+00	6.547E+00	1.113E+01	1.148E+00	0.620
	NP-237	86.48	*	4.985E-01	4.455E-01	6.670E-01	1.587E-01	0.747

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

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239		95.86		-5.316E-01	1.293E+00	1.828E+00	4.451E-01	-0.291
		99.53		1.237E-01	2.179E-01	3.659E-01	3.283E-02	0.338
		103.37		3.483E-02	1.333E-01	2.204E-01	1.858E-02	0.158
		106.12		9.960E-03	1.138E-01	1.863E-01	1.507E-02	0.053
		117.23	*	2.070E-01	5.121E-01	8.491E-01	5.923E-02	0.244
		228.18		6.917E-02	2.814E-01	4.806E-01	2.897E-02	0.144
AM-241		277.60		1.772E-01	2.317E-01	4.028E-01	2.583E-02	0.440
		59.54	*	2.621E-01	3.262E-01	5.099E-01	6.549E-02	0.514
CM-247		278.00		7.028E-01	9.950E-01	1.724E+00	1.106E-01	0.408
		287.50		1.980E-01	1.599E+00	2.684E+00	1.738E-01	0.074
CF-249		402.40	*	-1.651E-02	4.936E-02	7.851E-02	5.331E-03	-0.210
		252.80		-4.131E-01	1.257E+00	2.071E+00	1.291E-01	-0.199
		333.37		-6.653E-02	2.533E-01	3.579E-01	2.394E-02	-0.186
CF-251		388.16	*	2.933E-02	5.577E-02	9.459E-02	6.427E-03	0.310
		177.52	*	4.531E-03	1.664E-01	2.650E-01	1.472E-02	0.017
		227.38		2.100E-01	4.528E-01	7.818E-01	4.706E-02	0.269
		285.41		-1.852E+00	2.758E+00	4.396E+00	2.840E-01	-0.421



# 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]G1202047454      *
* Acquisition date   : 4-MAR-2010 16:10:34 Detector SN# :                   *
* Detector ID        : GAM10 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance : 3.000                      *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:00.81 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date       : 12-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID         : G1202047454 Analyst initials: MXR1                 *
* Batch Number      : 955027 Sample Quantity : 8.0570E+01 GRAM           *
* Recovery          : 1.00000 Carrier Weight : 0.00000                  *
*****
*
*                                     QC DATA                               *
*
* Standard Weight   : 0.00000                                              *
* 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

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	2.579E+01	2.993E+00	5.790E-01	0.000E+00
SR-85	1.553E-01	1.415E-01	7.803E-02	0.000E+00
BA-137M	1.173E+00	1.329E-01	7.532E-02	0.000E+00
CS-137	1.239E+00	1.406E-01	7.957E-02	0.000E+00
TL-208	4.572E-01	9.854E-02	7.651E-02	0.000E+00
BI-211	3.948E+00	5.602E-01	4.168E-01	0.000E+00
PB-212	1.820E+00	2.033E-01	1.185E-01	0.000E+00
BI-214	1.476E+00	2.382E-01	1.433E-01	0.000E+00
PB-214	1.433E+00	2.176E-01	1.514E-01	0.000E+00
RA-224	4.403E+00	1.426E+00	1.270E+00	0.000E+00
RA-226	1.476E+00	2.382E-01	1.433E-01	0.000E+00
AC-228	1.494E+00	4.314E-01	3.402E-01	0.000E+00
RA-228	1.494E+00	4.314E-01	3.402E-01	0.000E+00
TH-228	1.820E+00	2.033E-01	1.185E-01	0.000E+00
TH-232	1.494E+00	4.314E-01	3.402E-01	0.000E+00
TH-234	4.006E+00	3.115E+00	3.870E+00	0.000E+00
U-235	2.346E-01	2.734E-01	4.395E-01	0.000E+00
U-238	4.006E+00	3.115E+00	3.870E+00	0.000E+00
ANH-511	1.201E-01	1.094E-01	6.002E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	1.697E-01	4.886E-01	8.083E-01	0.000E+00 NOT IDENT.
NA-22	2.710E-02	5.984E-02	1.051E-01	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.958E+08	0.000E+00	0.000E+00 SHORT HLIF
SC-46	1.191E-02	4.257E-02	7.244E-02	0.000E+00 FAIL ABUN
V-48	3.522E-02	1.123E-01	1.896E-01	0.000E+00 NOT IDENT.
CR-51	-9.774E-02	5.209E-01	8.474E-01	0.000E+00 NOT IDENT.
MN-54	2.133E-02	4.908E-02	8.415E-02	0.000E+00 NOT IDENT.
CO-56	6.107E-03	6.159E-02	9.806E-02	0.000E+00 NOT IDENT.

CO-57	1.275E-02	3.339E-02	5.449E-02	0.000E+00	NOT IDENT.
CO-58	-2.449E-02	5.269E-02	8.100E-02	0.000E+00	NOT IDENT.
FE-59	-6.029E-02	1.326E-01	2.014E-01	0.000E+00	NOT IDENT.
CO-60	-5.557E-02	5.265E-02	7.339E-02	0.000E+00	NOT IDENT.
ZN-65	-1.322E-01	1.460E-01	1.829E-01	0.000E+00	NOT IDENT.
SE-75	-1.140E-02	5.510E-02	9.049E-02	0.000E+00	NOT IDENT.
Y-88	-1.643E-02	4.532E-02	6.648E-02	0.000E+00	NOT IDENT.
Y-91	-1.162E+01	2.966E+01	4.765E+01	0.000E+00	NOT IDENT.
NB-94	2.111E-02	4.496E-02	7.772E-02	0.000E+00	NOT IDENT.
NB-95	-3.162E-02	5.873E-02	9.226E-02	0.000E+00	NOT IDENT.
NB-95M	-7.321E-02	1.826E-01	2.559E-01	0.000E+00	NOT IDENT.
ZR-95	6.841E-02	9.756E-02	1.721E-01	0.000E+00	NOT IDENT.
MO-99	-1.848E+01	5.541E+01	8.868E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	5.892E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	1.062E-02	5.847E-02	9.541E-02	0.000E+00	FAIL ABUN
RH-106	-8.045E-02	4.080E-01	6.722E-01	0.000E+00	NOT IDENT.
RU-106	-8.045E-02	4.079E-01	6.722E-01	0.000E+00	NOT IDENT.
AG-108M	-2.102E-03	4.004E-02	6.461E-02	0.000E+00	NOT IDENT.
CD-109	0.000E+00	1.263E+00	2.151E+00	0.000E+00	NOT IDENT.
AG-110M	-3.161E-02	5.294E-02	7.089E-02	0.000E+00	NOT IDENT.
SN-113	-4.097E-02	6.228E-02	9.654E-02	0.000E+00	NOT IDENT.
CD-115	0.000E+00	7.085E+01	0.000E+00	0.000E+00	SHORT HLIF
SN-117M	-6.083E-03	8.753E-02	1.381E-01	0.000E+00	NOT IDENT.
TE-123M	-2.384E-02	3.792E-02	5.591E-02	0.000E+00	NOT IDENT.
SB-124	2.313E-02	1.045E-01	1.947E-01	0.000E+00	NOT IDENT.
SB-125	1.451E-01	1.236E-01	2.171E-01	0.000E+00	NOT IDENT.
TE-125M	5.250E+00	1.322E+01	2.167E+01	0.000E+00	NOT IDENT.
I-126	4.410E-01	3.928E-01	6.511E-01	0.000E+00	NOT IDENT.
SB-126	1.470E-01	2.427E-01	4.164E-01	0.000E+00	NOT IDENT.
SN-126	0.000E+00	1.230E-01	2.096E-01	0.000E+00	FAIL ABUN
SB-127	3.160E+00	3.958E+00	7.066E+00	0.000E+00	NOT IDENT.
I-131	-8.074E-02	2.354E-01	3.757E-01	0.000E+00	NOT IDENT.
TE-132	6.759E-01	2.784E+00	4.715E+00	0.000E+00	NOT IDENT.
BA-133	-1.320E-02	6.251E-02	8.799E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	4.368E+05	0.000E+00	0.000E+00	SHORT HLIF
CS-134	9.746E-02	6.084E-02	1.143E-01	0.000E+00	NOT IDENT.
CS-135	-8.409E-02	2.049E-01	3.329E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	3.129E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-8.217E-02	1.813E-01	2.758E-01	0.000E+00	FAIL ABUN
CE-139	6.785E-03	3.989E-02	6.363E-02	0.000E+00	NOT IDENT.
BA-140	-1.167E-02	4.390E-01	7.002E-01	0.000E+00	NOT IDENT.
LA-140	-1.503E-01	1.917E-01	2.761E-01	0.000E+00	NOT IDENT.
CE-141	1.223E-03	9.348E-02	1.451E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	5.797E+03	0.000E+00	0.000E+00	SHORT HLIF
CE-144	2.582E-02	2.506E-01	4.020E-01	0.000E+00	NOT IDENT.
PM-144	3.121E-02	4.436E-02	7.828E-02	0.000E+00	NOT IDENT.
PR-144	2.329E+00	3.327E+00	5.871E+00	0.000E+00	NOT IDENT.
PM-146	3.133E-02	5.796E-02	9.747E-02	0.000E+00	NOT IDENT.
ND-147	-1.852E-01	9.780E-01	1.536E+00	0.000E+00	FAIL ABUN
PM-149	0.000E+00	5.504E+02	0.000E+00	0.000E+00	SHORT HLIF
EU-152	5.688E-03	1.296E-01	1.978E-01	0.000E+00	FAIL ABUN
GD-153	-3.535E-02	1.245E-01	1.761E-01	0.000E+00	NOT IDENT.
EU-154	6.826E-02	1.706E-01	2.976E-01	0.000E+00	FAIL ABUN
EU-155	5.109E-02	1.401E-01	2.295E-01	0.000E+00	NOT IDENT.
TB-160	-2.163E-01	1.931E-01	2.720E-01	0.000E+00	FAIL ABUN
HO-166M	2.120E-02	8.046E-02	1.368E-01	0.000E+00	FAIL ABUN
TA-182	1.806E-02	2.962E-01	4.992E-01	0.000E+00	FAIL ABUN
IR-192	-2.300E-02	4.316E-02	6.842E-02	0.000E+00	FAIL ABUN
HG-203	3.004E-02	5.452E-02	9.314E-02	0.000E+00	FAIL ABUN
BI-207	1.913E-02	6.169E-02	1.040E-01	0.000E+00	FAIL ABUN
PB-210	-4.311E+00	1.139E+01	1.804E+01	0.000E+00	NOT IDENT.
PB-211	1.123E-02	9.074E-01	1.478E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.139E+00	1.347E+00	0.000E+00	FAIL ABUN
RN-219	-2.778E-01	5.421E-01	8.466E-01	0.000E+00	NOT IDENT.
RA-223	-6.221E-01	8.667E-01	1.353E+00	0.000E+00	FAIL ABUN
AC-227	-1.292E-01	3.333E-01	5.432E-01	0.000E+00	FAIL ABUN
TH-227	-1.292E-01	3.334E-01	5.432E-01	0.000E+00	FAIL ABUN
TH-229	-1.927E-01	7.253E-01	1.121E+00	0.000E+00	FAIL ABUN
PA-231	-1.114E+00	1.784E+00	2.831E+00	0.000E+00	FAIL ABUN
TH-231	-6.221E-01	8.667E-01	1.353E+00	0.000E+00	FAIL ABUN
PA-233	6.925E-02	8.081E-02	1.404E-01	0.000E+00	FAIL ABUN
PA-234	-2.598E-01	4.255E-01	6.411E-01	0.000E+00	FAIL ABUN
PA-234M	6.895E+00	6.416E+00	1.093E+01	0.000E+00	FAIL ABUN
NP-237	4.985E-01	4.366E-01	6.443E-01	0.000E+00	NOT IDENT.
NP-239	2.070E-01	5.019E-01	8.220E-01	0.000E+00	NOT IDENT.
AM-241	2.621E-01	3.196E-01	4.913E-01	0.000E+00	NOT IDENT.
CM-247	-1.651E-02	4.838E-02	7.667E-02	0.000E+00	NOT IDENT.
CF-249	2.933E-02	5.465E-02	9.235E-02	0.000E+00	NOT IDENT.

CF-251	4.531E-03	1.631E-01	2.573E-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]G1202047454.CNF;1
Sample date        : 12-FEB-2010 12:00:00 Acquisition date : 4-MAR-2010 16:10:34.
Sample ID          : G1202047454          Sample quantity  : 8.05700E+01 GRAM
Detector name      : GAM10                Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00        Elapsed real time: 0 02:00:00.81  0.0%
Energy tolerance   : 3.00000 keV          Analyst Initials  : MXR1
Abundance limit    : 75.00000             Sensitivity        : 5.00000
Batch ID           : 955027               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	652	10.66*	1.106E+00	2.579E+01	2.579E+01	11.84
SR-85	514.00	75	96.00*	2.924E+00	1.251E-01	1.553E-01	92.99
BA-137M	661.66	532	89.90*	2.351E+00	1.172E+00	1.173E+00	11.56
CS-137	661.66	532	85.10*	2.351E+00	1.238E+00	1.239E+00	11.57
TL-208	277.37	-----	6.60	4.609E+00	-----	Line Not Found	-----
	583.19	219	85.00*	2.624E+00	4.572E-01	4.572E-01	21.99
	860.56	-----	12.50	1.841E+00	-----	Line Not Found	-----
BI-211	72.87	233	1.23	3.868E+00	2.285E+01	2.285E+01	30.72
	351.06	425	12.92*	3.883E+00	3.948E+00	3.948E+00	14.48
PB-212	74.82	233	10.28	3.868E+00	2.733E+00	2.733E+00	32.22
	77.11	336	17.10	4.163E+00	2.196E+00	2.196E+00	22.19
	238.63	870	43.60*	5.111E+00	1.820E+00	1.820E+00	11.40
	300.09	52	3.30	4.355E+00	1.687E+00	1.687E+00	93.53
BI-214	609.32	364	45.49*	2.528E+00	1.476E+00	1.476E+00	16.47
	1120.29	55	14.92	1.412E+00	1.206E+00	1.206E+00	64.54
	1764.49	-----	15.30	9.764E-01	-----	Line Not Found	-----
PB-214	74.82	233	5.80	3.868E+00	4.845E+00	4.845E+00	31.72
	77.11	336	9.70	4.163E+00	3.871E+00	3.871E+00	23.67
	242.00	196	7.25	5.067E+00	2.490E+00	2.490E+00	33.56
	295.22	270	18.42	4.407E+00	1.549E+00	1.549E+00	26.02
	351.93	425	35.60*	3.883E+00	1.433E+00	1.433E+00	15.49
RA-224	240.99	196	4.10*	5.067E+00	4.403E+00	4.403E+00	33.05
RA-226	609.32	364	45.49*	2.528E+00	1.476E+00	1.476E+00	16.47
	1120.29	55	14.92	1.412E+00	1.206E+00	1.206E+00	64.54
	1764.49	-----	15.30	9.764E-01	-----	Line Not Found	-----
AC-228	338.32	192	11.27	3.997E+00	1.986E+00	1.986E+00	49.45
	911.20	144	25.80*	1.736E+00	1.494E+00	1.494E+00	29.47
	968.97	111	15.80	1.634E+00	2.008E+00	2.008E+00	42.98
RA-228	338.32	192	11.27	3.997E+00	1.986E+00	1.986E+00	49.45
	911.20	144	25.80*	1.736E+00	1.494E+00	1.494E+00	29.47
	968.97	111	15.80	1.634E+00	2.008E+00	2.008E+00	42.98
TH-228	74.82	233	10.28	3.868E+00	2.733E+00	2.733E+00	30.74

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	77.11	336	17.10	4.163E+00	2.196E+00	2.196E+00	22.19
	238.63	870	43.60*	5.111E+00	1.820E+00	1.820E+00	11.40
	300.09	52	3.30	4.355E+00	1.687E+00	1.687E+00	111.29
TH-232	338.32	192	11.27	3.997E+00	1.986E+00	1.986E+00	27.91
	911.20	144	25.80*	1.736E+00	1.494E+00	1.494E+00	29.47
	968.97	111	15.80	1.634E+00	2.008E+00	2.008E+00	42.98
TH-234	63.29	72	3.70*	2.260E+00	4.006E+00	4.006E+00	79.34
	92.59	243	4.23	5.718E+00	4.683E+00	4.683E+00	36.56
U-235	89.96	243	3.47	5.718E+00	5.709E+00	5.709E+00	38.14
	93.35	243	5.60	5.718E+00	3.538E+00	3.538E+00	37.18
	143.76	-----	10.96*	6.659E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.375E+00	-----	Line Not Found	-----
	185.72	155	57.20	5.974E+00	2.111E-01	2.111E-01	49.27
	205.31	-----	5.01	5.638E+00	-----	Line Not Found	-----
U-238	63.29	72	3.70*	2.260E+00	4.006E+00	4.006E+00	79.34
	92.59	243	4.23	5.718E+00	4.683E+00	4.683E+00	30.39
ANH-511	511.00	75	100.00*	2.924E+00	1.201E-01	1.201E-01	92.99

Flag: "\*" = Keyline

Total number of lines in spectrum 24  
Number of unidentified lines 1  
Number of lines tentatively identified by NID 23 95.83%

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	2.579E+01	2.579E+01	0.305E+01	11.84	
SR-85	64.84D	1.24	1.251E-01	1.553E-01	1.444E-01	92.99	
BA-137M	30.08Y	1.00	1.172E+00	1.173E+00	0.136E+00	11.56	
CS-137	30.08Y	1.00	1.238E+00	1.239E+00	0.143E+00	11.57	
TL-208	1.41E+10Y	1.00	4.572E-01	4.572E-01	1.005E-01	21.99	
BI-211	7.04E+08Y	1.00	3.948E+00	3.948E+00	0.572E+00	14.48	
PB-212	1.41E+10Y	1.00	1.820E+00	1.820E+00	0.207E+00	11.40	
BI-214	1600.00Y	1.00	1.476E+00	1.476E+00	0.243E+00	16.47	
PB-214	1600.00Y	1.00	1.433E+00	1.433E+00	0.222E+00	15.49	
RA-224	1.41E+10Y	1.00	4.403E+00	4.403E+00	1.455E+00	33.05	
RA-226	1600.00Y	1.00	1.476E+00	1.476E+00	0.243E+00	16.47	
AC-228	1.41E+10Y	1.00	1.494E+00	1.494E+00	0.440E+00	29.47	
RA-228	1.41E+10Y	1.00	1.494E+00	1.494E+00	0.440E+00	29.47	
TH-228	1.41E+10Y	1.00	1.820E+00	1.820E+00	0.207E+00	11.40	
TH-232	1.41E+10Y	1.00	1.494E+00	1.494E+00	0.440E+00	29.47	
TH-234	4.47E+09Y	1.00	4.006E+00	4.006E+00	3.178E+00	79.34	
U-235	7.04E+08Y	1.00	2.111E-01	2.111E-01	1.040E-01	49.27	K
U-238	4.47E+09Y	1.00	4.006E+00	4.006E+00	3.178E+00	79.34	
ANH-511	1.00E+09Y	1.00	1.201E-01	1.201E-01	1.117E-01	92.99	
Total Activity :			5.798E+01	5.802E+01			

Grand Total Activity : 5.798E+01 5.802E+01

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

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

Unidentified Energy Lines  
Sample ID : G1202047454

Page : 4  
Acquisition date : 4-MAR-2010 16:10:34

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	209.25	64	215	1.23	418.41	414	9	8.88E-03	86.5	5.57E+00	T
0	728.83	66	51	1.91	1457.00	1451	16	9.16E-03	53.3	2.16E+00	T
0	1002.52	20	18	2.32	2004.26	1999	9	2.73E-03	94.4	1.58E+00	T
0	1379.56	54	12	3.85	2758.39	2748	23	7.49E-03	42.6	1.16E+00	
0	1767.56	61	0	1.83	3534.71	3528	13	8.41E-03	28.9	9.76E-01	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]G1202047454.CNF;1
* Acquisition date   : 4-MAR-2010 16:10:34.  Detector SN#      :
* Detector ID        : GAM10                      Sensitivity    : 5.00000
* Geometry           : CAN                      Energy tolerance: 3.00000
* Elapsed live time  : 0 02:00:00.00             Abundance limit : 75.00000
* Elapsed real time  : 0 02:00:00.81             Half life ratio  : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 12-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G1202047454           Analyst initials: MXR1
* Batch Number       : 955027                Sample Quantity : 8.05700E+01 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 16-MAR-2009 13:18:08.8MS 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	2.579E+01	3.054E+00	5.877E-01	5.062E-02	43.888
SR-85	1.553E-01	1.444E-01	7.977E-02	5.095E-03	1.946
BA-137M	1.173E+00	1.356E-01	7.687E-02	3.793E-03	15.263
CS-137	1.239E+00	1.434E-01	8.121E-02	4.030E-03	15.263
TL-208	4.572E-01	1.005E-01	7.815E-02	5.239E-03	5.850
BI-211	3.948E+00	5.716E-01	4.273E-01	3.116E-02	9.241
PB-212	1.820E+00	2.074E-01	1.218E-01	9.310E-03	14.945
BI-214	1.476E+00	2.431E-01	1.464E-01	1.123E-02	10.086
PB-214	1.433E+00	2.220E-01	1.552E-01	1.420E-02	9.231
RA-224	4.403E+00	1.455E+00	1.305E+00	8.009E-02	3.375
RA-226	1.476E+00	2.431E-01	1.464E-01	1.123E-02	10.086
AC-228	1.494E+00	4.402E-01	3.464E-01	4.385E-02	4.312
RA-228	1.494E+00	4.402E-01	3.464E-01	4.385E-02	4.312
TH-228	1.820E+00	2.074E-01	1.218E-01	9.310E-03	14.945
TH-232	1.494E+00	4.402E-01	3.464E-01	4.385E-02	4.312
TH-234	4.006E+00	3.178E+00	4.015E+00	8.051E-01	0.998
U-235	2.111E-01	1.040E-01	4.533E-01	7.143E-02	0.466
U-238	4.006E+00	3.178E+00	4.015E+00	8.051E-01	0.998



---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
ANH-511	1.201E-01	1.117E-01	6.136E-02	3.931E-03	1.957

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	1.697E-01		4.985E-01	8.267E-01	6.145E-02	0.205
NA-22	2.710E-02		6.106E-02	1.067E-01	8.267E-03	0.254
NA-24	-2.547E+02		1.509E+02	Half-Life too short		
SC-46	1.191E-02		4.344E-02	7.377E-02	7.301E-03	0.161
V-48	3.522E-02		1.146E-01	1.930E-01	1.784E-02	0.183
CR-51	-9.774E-02		5.315E-01	8.691E-01	6.270E-02	-0.112
MN-54	2.133E-02		5.008E-02	8.574E-02	7.326E-03	0.249
CO-56	6.107E-03		6.285E-02	9.990E-02	8.822E-03	0.061
CO-57	1.275E-02		3.407E-02	5.627E-02	3.711E-03	0.227
CO-58	-2.449E-02		5.376E-02	8.255E-02	6.605E-03	-0.297
FE-59	-6.029E-02		1.353E-01	2.048E-01	1.709E-02	-0.294
CO-60	-5.557E-02		5.373E-02	7.454E-02	6.478E-03	-0.745
ZN-65	-1.322E-01		1.490E-01	1.860E-01	1.355E-02	-0.711
SE-75	-1.140E-02		5.622E-02	9.293E-02	5.929E-03	-0.123
Y-88	-1.643E-02		4.625E-02	6.737E-02	4.133E-03	-0.244
Y-91	-1.162E+01		3.026E+01	4.843E+01	3.216E+00	-0.240
NB-94	2.111E-02		4.588E-02	7.928E-02	4.514E-03	0.266
NB-95	-3.162E-02		5.993E-02	9.406E-02	6.564E-03	-0.336
NB-95M	-7.321E-02		1.863E-01	2.631E-01	2.047E-02	-0.278
ZR-95	6.841E-02		9.955E-02	1.755E-01	1.386E-02	0.390
MO-99	-1.848E+01		5.654E+01	9.043E+01	1.327E+01	-0.204
TC-99M	-7.424E+15		3.006E+16	Half-Life too short		
RU-103	1.062E-02		5.966E-02	9.757E-02	1.245E-02	0.109
RH-106	-8.045E-02		4.163E-01	6.863E-01	7.852E-02	-0.117
RU-106	-8.045E-02		4.162E-01	6.863E-01	3.726E-02	-0.117
AG-108M	-2.102E-03		4.086E-02	6.613E-02	4.689E-03	-0.032
CD-109	2.920E+00		1.289E+00	2.226E+00	2.524E-01	1.312
AG-110M	-3.161E-02		5.402E-02	7.234E-02	3.920E-03	-0.437
SN-113	-4.097E-02		6.355E-02	9.888E-02	7.051E-03	-0.414
CD-115	-2.251E-05		3.615E-05	Half-Life too short		
SN-117M	-6.083E-03		8.931E-02	1.423E-01	7.982E-03	-0.043
TE-123M	-2.384E-02		3.870E-02	5.762E-02	3.273E-03	-0.414
SB-124	2.313E-02		1.066E-01	1.975E-01	1.505E-02	0.117
SB-125	1.451E-01		1.261E-01	2.222E-01	1.546E-02	0.653
TE-125M	5.250E+00		1.349E+01	2.239E+01	2.190E+00	0.234
I-126	4.410E-01		4.008E-01	6.644E-01	3.333E-02	0.664
SB-126	1.470E-01		2.476E-01	4.247E-01	2.568E-02	0.346
SN-126	2.806E-01		1.256E-01	2.170E-01	2.455E-02	1.293
SB-127	3.160E+00		4.039E+00	7.209E+00	7.994E-01	0.438
I-131	-8.074E-02		2.402E-01	3.849E-01	2.849E-02	-0.210
TE-132	6.759E-01		2.841E+00	4.848E+00	7.645E-01	0.139
BA-133	-1.320E-02		6.379E-02	9.018E-02	1.064E-02	-0.146

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-133	-1.614E-01		2.229E-01	Half-Life too short		
CS-134	9.746E-02		6.208E-02	1.165E-01	8.983E-03	0.836
CS-135	-8.409E-02		2.091E-01	3.418E-01	2.763E-02	-0.246
I-135	-7.965E+13		1.597E+15	Half-Life too short		
CS-136	-8.217E-02		1.850E-01	2.806E-01	2.457E-02	-0.293
CE-139	6.785E-03		4.070E-02	6.557E-02	3.581E-03	0.103
BA-140	-1.167E-02		4.479E-01	7.156E-01	2.389E-01	-0.016
LA-140	-1.503E-01		1.956E-01	2.801E-01	2.174E-02	-0.537
CE-141	1.223E-03		9.539E-02	1.497E-01	9.163E-03	0.008
CE-143	1.755E-02	+	2.958E-03	Half-Life too short		
CE-144	2.582E-02		2.557E-01	4.148E-01	5.833E-02	0.062
PM-144	3.121E-02		4.526E-02	7.986E-02	4.459E-03	0.391
PR-144	2.329E+00		3.395E+00	5.989E+00	3.339E-01	0.389
PM-146	3.133E-02		5.914E-02	9.973E-02	9.058E-03	0.314
ND-147	-1.852E-01		9.979E-01	1.570E+00	2.155E-01	-0.118
PM-149	-2.068E-04		2.808E-04	Half-Life too short		
EU-152	5.688E-03		1.322E-01	2.027E-01	1.493E-02	0.028
GD-153	-3.535E-02		1.270E-01	1.822E-01	1.696E-02	-0.194
EU-154	6.826E-02		1.740E-01	3.023E-01	3.242E-02	0.226
EU-155	5.109E-02		1.429E-01	2.372E-01	1.966E-02	0.215
TB-160	-2.163E-01		1.970E-01	2.771E-01	2.672E-02	-0.780
HO-166M	2.120E-02		8.210E-02	1.396E-01	8.192E-03	0.152
TA-182	1.806E-02		3.023E-01	5.074E-01	3.499E-02	0.036
IR-192	-2.300E-02		4.404E-02	7.018E-02	4.666E-03	-0.328
HG-203	3.004E-02		5.564E-02	9.562E-02	6.421E-03	0.314
BI-207	1.913E-02		6.295E-02	1.058E-01	8.611E-03	0.181
PB-210	-4.311E+00		1.162E+01	1.876E+01	1.841E+00	-0.230
PB-211	1.123E-02		9.260E-01	1.513E+00	7.278E-01	0.007
BI-212	2.137E+00	+	1.162E+00	1.374E+00	1.499E-01	1.555
RN-219	-2.778E-01		5.532E-01	8.670E-01	1.205E-01	-0.320
RA-223	-6.221E-01		8.844E-01	1.388E+00	2.282E-01	-0.448
AC-227	-1.292E-01		3.401E-01	5.580E-01	5.855E-02	-0.232
TH-227	-1.292E-01		3.402E-01	5.580E-01	6.834E-02	-0.232
TH-229	-1.927E-01		7.401E-01	1.154E+00	6.580E-02	-0.167
PA-231	-1.114E+00		1.820E+00	2.906E+00	3.899E-01	-0.383
TH-231	-6.221E-01		8.844E-01	1.388E+00	2.282E-01	-0.448
PA-233	6.925E-02		8.246E-02	1.440E-01	9.969E-03	0.481
PA-234	-2.598E-01		4.341E-01	6.527E-01	1.258E-01	-0.398
PA-234M	6.895E+00	+	6.547E+00	1.113E+01	1.148E+00	0.620
NP-237	4.985E-01		4.455E-01	6.670E-01	1.587E-01	0.747
NP-239	2.070E-01		5.121E-01	8.491E-01	5.923E-02	0.244
AM-241	2.621E-01		3.262E-01	5.099E-01	6.549E-02	0.514
CM-247	-1.651E-02		4.936E-02	7.851E-02	5.331E-03	-0.210
CF-249	2.933E-02		5.577E-02	9.459E-02	6.427E-03	0.310
CF-251	4.531E-03		1.664E-01	2.650E-01	1.472E-02	0.017

# 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]G1202047454        *
* Acquisition date   : 4-MAR-2010 16:10:34 Detector SN# :                 *
* Detector ID        : GAM10 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 3.000                        *
* Elapsed live time: 0 02:00:00.00 Abundance limit : 75.000               *
* Elapsed real time: 0 02:00:00.81 Half life ratio : 8.000                *
*                               *****                                    *
*                               *                                           *
*                               SAMPLE DATA                               *
*                               *                                           *
* Sample date       : 12-FEB-2010 12:00:00 Nuclide Library : SOLID         *
* Sample ID         : G1202047454 Analyst initials: MXR1                 *
* Batch Number      : 955027 Sample Quantity : 8.0570E+01 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

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	2.579E+01	2.993E+00	2.897E-01	1.527E+00
SR-85	1.553E-01	1.415E-01	3.904E-02	7.219E-02
BA-137M	1.173E+00	1.329E-01	3.768E-02	6.782E-02
CS-137	1.239E+00	1.406E-01	3.981E-02	7.172E-02
TL-208	4.572E-01	9.854E-02	3.828E-02	5.027E-02
BI-211	3.948E+00	5.602E-01	2.085E-01	2.858E-01
PB-212	1.820E+00	2.033E-01	5.927E-02	1.037E-01
BI-214	1.476E+00	2.382E-01	7.171E-02	1.215E-01
PB-214	1.433E+00	2.176E-01	7.577E-02	1.110E-01
RA-224	4.403E+00	1.426E+00	6.352E-01	7.276E-01
RA-226	1.476E+00	2.382E-01	7.171E-02	1.215E-01
AC-228	1.494E+00	4.314E-01	1.702E-01	2.201E-01
RA-228	1.494E+00	4.314E-01	1.702E-01	2.201E-01
TH-228	1.820E+00	2.033E-01	5.927E-02	1.037E-01
TH-232	1.494E+00	4.314E-01	1.702E-01	2.201E-01
TH-234	4.006E+00	3.115E+00	1.936E+00	1.589E+00
U-235	2.346E-01	2.734E-01	2.199E-01	1.395E-01
U-238	4.006E+00	3.115E+00	1.936E+00	1.589E+00
ANH-511	1.201E-01	1.094E-01	3.003E-02	5.583E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	1.697E-01	4.886E-01	4.044E-01	2.493E-01 NOT IDENT.
NA-22	2.710E-02	5.984E-02	5.256E-02	3.053E-02 NOT IDENT.
NA-24	-2.547E+08	2.958E+08	0.000E+00	1.509E+08 SHORT HLIF
SC-46	1.191E-02	4.257E-02	3.624E-02	2.172E-02 FAIL ABUN
V-48	3.522E-02	1.123E-01	9.486E-02	5.729E-02 NOT IDENT.
CR-51	-9.774E-02	5.209E-01	4.239E-01	2.658E-01 NOT IDENT.
MN-54	2.133E-02	4.908E-02	4.210E-02	2.504E-02 NOT IDENT.
CO-56	6.107E-03	6.159E-02	4.906E-02	3.143E-02 NOT IDENT.

CO-57	1.275E-02	3.339E-02	2.726E-02	1.703E-02	NOT IDENT.
CO-58	-2.449E-02	5.269E-02	4.052E-02	2.688E-02	NOT IDENT.
FE-59	-6.029E-02	1.326E-01	1.008E-01	6.766E-02	NOT IDENT.
CO-60	-5.557E-02	5.265E-02	3.672E-02	2.686E-02	NOT IDENT.
ZN-65	-1.322E-01	1.460E-01	9.152E-02	7.450E-02	NOT IDENT.
SE-75	-1.140E-02	5.510E-02	4.527E-02	2.811E-02	NOT IDENT.
Y-88	-1.643E-02	4.532E-02	3.326E-02	2.312E-02	NOT IDENT.
Y-91	-1.162E+01	2.966E+01	2.384E+01	1.513E+01	NOT IDENT.
NB-94	2.111E-02	4.496E-02	3.888E-02	2.294E-02	NOT IDENT.
NB-95	-3.162E-02	5.873E-02	4.616E-02	2.996E-02	NOT IDENT.
NB-95M	-7.321E-02	1.826E-01	1.280E-01	9.316E-02	NOT IDENT.
ZR-95	6.841E-02	9.756E-02	8.610E-02	4.977E-02	NOT IDENT.
MO-99	-1.848E+01	5.541E+01	4.437E+01	2.827E+01	NOT IDENT.
TC-99M	-7.424E+21	5.892E+22	0.000E+00	0.000E+00	SHORT HLIF
RU-103	1.062E-02	5.847E-02	4.774E-02	2.983E-02	FAIL ABUN
RH-106	-8.045E-02	4.080E-01	3.363E-01	2.082E-01	NOT IDENT.
RU-106	-8.045E-02	4.079E-01	3.363E-01	2.081E-01	NOT IDENT.
AG-108M	-2.102E-03	4.004E-02	3.233E-02	2.043E-02	NOT IDENT.
CD-109	2.920E+00	1.263E+00	1.076E+00	6.443E-01	NOT IDENT.
AG-110M	-3.161E-02	5.294E-02	3.546E-02	2.701E-02	NOT IDENT.
SN-113	-4.097E-02	6.228E-02	4.830E-02	3.177E-02	NOT IDENT.
CD-115	-2.251E+01	7.085E+01	0.000E+00	3.615E+01	SHORT HLIF
SN-117M	-6.083E-03	8.753E-02	6.908E-02	4.466E-02	NOT IDENT.
TE-123M	-2.384E-02	3.792E-02	2.797E-02	1.935E-02	NOT IDENT.
SB-124	2.313E-02	1.045E-01	9.742E-02	5.332E-02	NOT IDENT.
SB-125	1.451E-01	1.236E-01	1.086E-01	6.305E-02	NOT IDENT.
TE-125M	5.250E+00	1.322E+01	1.084E+01	6.745E+00	NOT IDENT.
I-126	4.410E-01	3.928E-01	3.257E-01	2.004E-01	NOT IDENT.
SB-126	1.470E-01	2.427E-01	2.083E-01	1.238E-01	NOT IDENT.
SN-126	2.806E-01	1.230E-01	1.049E-01	6.278E-02	FAIL ABUN
SB-127	3.160E+00	3.958E+00	3.535E+00	2.020E+00	NOT IDENT.
I-131	-8.074E-02	2.354E-01	1.879E-01	1.201E-01	NOT IDENT.
TE-132	6.759E-01	2.784E+00	2.359E+00	1.421E+00	NOT IDENT.
BA-133	-1.320E-02	6.251E-02	4.402E-02	3.189E-02	FAIL ABUN
I-133	-1.614E+05	4.368E+05	0.000E+00	2.229E+05	SHORT HLIF
CS-134	9.746E-02	6.084E-02	5.720E-02	3.104E-02	NOT IDENT.
CS-135	-8.409E-02	2.049E-01	1.665E-01	1.046E-01	NOT IDENT.
I-135	-7.965E+19	3.129E+21	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-8.217E-02	1.813E-01	1.380E-01	9.249E-02	FAIL ABUN
CE-139	6.785E-03	3.989E-02	3.184E-02	2.035E-02	NOT IDENT.
BA-140	-1.167E-02	4.390E-01	3.503E-01	2.240E-01	NOT IDENT.
LA-140	-1.503E-01	1.917E-01	1.381E-01	9.781E-02	NOT IDENT.
CE-141	1.223E-03	9.348E-02	7.261E-02	4.770E-02	NOT IDENT.
CE-143	1.755E+04	5.797E+03	0.000E+00	2.958E+03	SHORT HLIF
CE-144	2.582E-02	2.506E-01	2.011E-01	1.278E-01	NOT IDENT.
PM-144	3.121E-02	4.436E-02	3.917E-02	2.263E-02	NOT IDENT.
PR-144	2.329E+00	3.327E+00	2.937E+00	1.698E+00	NOT IDENT.
PM-146	3.133E-02	5.796E-02	4.876E-02	2.957E-02	NOT IDENT.
ND-147	-1.852E-01	9.780E-01	7.683E-01	4.990E-01	FAIL ABUN
PM-149	-2.068E+02	5.504E+02	0.000E+00	2.808E+02	SHORT HLIF
EU-152	5.688E-03	1.296E-01	9.893E-02	6.611E-02	FAIL ABUN
GD-153	-3.535E-02	1.245E-01	8.811E-02	6.351E-02	NOT IDENT.
EU-154	6.826E-02	1.706E-01	1.489E-01	8.702E-02	FAIL ABUN
EU-155	5.109E-02	1.401E-01	1.148E-01	7.147E-02	NOT IDENT.
TB-160	-2.163E-01	1.931E-01	1.361E-01	9.851E-02	FAIL ABUN
HO-166M	2.120E-02	8.046E-02	6.847E-02	4.105E-02	FAIL ABUN
TA-182	1.806E-02	2.962E-01	2.498E-01	1.511E-01	FAIL ABUN
IR-192	-2.300E-02	4.316E-02	3.423E-02	2.202E-02	FAIL ABUN
HG-203	3.004E-02	5.452E-02	4.660E-02	2.782E-02	FAIL ABUN
BI-207	1.913E-02	6.169E-02	5.203E-02	3.147E-02	FAIL ABUN
PB-210	-4.311E+00	1.139E+01	9.026E+00	5.809E+00	NOT IDENT.
PB-211	1.123E-02	9.074E-01	7.393E-01	4.630E-01	NOT IDENT.
BI-212	2.137E+00	1.139E+00	6.739E-01	5.812E-01	FAIL ABUN
RN-219	-2.778E-01	5.421E-01	4.235E-01	2.766E-01	NOT IDENT.
RA-223	-6.221E-01	8.667E-01	6.771E-01	4.422E-01	FAIL ABUN
AC-227	-1.292E-01	3.333E-01	2.717E-01	1.701E-01	FAIL ABUN
TH-227	-1.292E-01	3.334E-01	2.717E-01	1.701E-01	FAIL ABUN
TH-229	-1.927E-01	7.253E-01	5.609E-01	3.700E-01	FAIL ABUN
PA-231	-1.114E+00	1.784E+00	1.416E+00	9.101E-01	FAIL ABUN
TH-231	-6.221E-01	8.667E-01	6.771E-01	4.422E-01	FAIL ABUN
PA-233	6.925E-02	8.081E-02	7.024E-02	4.123E-02	FAIL ABUN
PA-234	-2.598E-01	4.255E-01	3.207E-01	2.171E-01	FAIL ABUN
PA-234M	6.895E+00	6.416E+00	5.470E+00	3.273E+00	FAIL ABUN
NP-237	4.985E-01	4.366E-01	3.223E-01	2.228E-01	NOT IDENT.
NP-239	2.070E-01	5.019E-01	4.113E-01	2.561E-01	NOT IDENT.
AM-241	2.621E-01	3.196E-01	2.458E-01	1.631E-01	NOT IDENT.
CM-247	-1.651E-02	4.838E-02	3.836E-02	2.468E-02	NOT IDENT.
CF-249	2.933E-02	5.465E-02	4.620E-02	2.788E-02	NOT IDENT.

CF-251

4.531E-03

1.631E-01

1.288E-01

8.319E-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	212.8622
49.72	200.8762
57.36	0.0000
59.54	184.1396
63.29	243.8477
63.29	243.8477
64.28	244.8706
67.75	251.6593
69.67	250.6739
70.83	235.3111
72.81	259.6245
72.87	259.6571
72.87	259.6571
74.82	265.5793
74.82	265.5793
74.82	265.5793
74.97	265.6609
77.11	266.8079
77.11	266.8079
77.11	266.8079
79.69	239.5789
79.80	227.7960
80.12	227.9381
80.19	227.9699
80.57	225.1750
81.00	232.7762
81.07	232.8073
81.07	232.8073
83.79	278.7366
83.79	278.7366
85.43	230.2563
86.48	308.6055
86.55	308.6464
86.79	267.8105
86.94	267.8855
87.57	268.1963
88.03	268.4226
88.47	268.6379
89.96	269.3645
91.11	269.9220
92.59	270.6335
92.59	270.6335
93.35	270.9962
94.67	271.6232
94.87	184.0175
94.87	184.0175
95.86	198.0449
97.43	204.6896
98.44	165.2580
99.53	188.0476
100.11	194.3690
103.18	202.5601
103.37	193.3672
105.31	200.1720
106.12	207.6667
109.28	187.9506
111.00	195.7482
111.76	179.3023
116.30	177.4093
117.23	174.5057
121.12	195.6121
121.78	192.6280
122.06	187.4125
123.07	203.5967
131.20	230.6508
133.52	181.8868
136.00	174.9479

136.47	185.8662
140.51	196.6596
140.51	0.0000
143.76	187.6876
144.24	179.0697
144.24	179.0697
145.44	197.9430
152.43	215.1736
153.25	192.1993
154.21	195.7472
154.21	195.7472
156.02	178.4554
158.56	173.4561
159.00	174.6622
162.66	181.0289
163.33	192.3575
165.86	185.0896
176.60	164.6988
177.52	167.1455
181.07	155.8286
184.41	170.1593
185.72	158.3552
193.51	199.0430
197.04	195.1438
205.31	186.9858
210.85	168.2458
215.65	163.3696
222.11	154.5770
227.38	151.7689
228.16	160.8681
228.18	160.8708
235.69	160.7413
235.96	160.7820
235.96	160.7820
238.63	157.0043
238.63	157.0043
240.99	157.3435
242.00	157.4887
244.70	143.0917
252.40	135.9926
252.80	148.9087
256.23	154.8904
256.23	154.8904
260.90	0.0000
264.66	120.7304
268.22	155.5611
269.46	134.2771
269.46	134.2771
271.23	125.1384
273.65	183.4091
276.40	130.3676
277.37	132.3489
277.60	127.6805
278.00	131.4786
279.20	131.6089
279.54	125.0629
280.46	142.0970
283.69	125.4871
284.31	116.1102
285.41	127.5513
285.90	0.0000
287.50	120.1942
293.27	0.0000
295.22	134.0775
295.96	134.1549
298.57	106.9329
299.98	107.0508
299.98	107.0508
300.09	107.0593
300.09	107.0593
300.13	107.0627
301.36	107.1653
302.85	96.5595
304.50	113.5636
304.50	113.5636
304.85	113.5943
308.46	103.9032
311.90	93.5647

316.51	100.6659
319.41	95.0631
320.08	104.8162
323.87	133.3333
323.87	133.3333
328.76	108.4171
333.37	103.4875
334.37	87.8705
334.37	87.8705
338.28	89.4934
338.28	89.4934
338.32	89.4962
338.32	89.4962
338.32	89.4962
340.48	96.1346
340.55	96.1405
344.28	94.8135
351.06	98.4386
351.93	98.2991
356.01	105.1472
364.49	101.1495
366.42	82.2277
383.85	96.3655
388.16	93.5835
388.63	82.4189
391.69	107.0492
400.66	104.5821
401.81	100.5541
402.40	93.4064
404.85	85.3253
410.95	84.6163
414.70	101.3601
423.72	89.4368
427.09	81.2813
427.87	71.9364
433.94	85.7987
453.88	77.2718
463.37	87.2676
468.07	98.1683
473.00	90.9480
476.78	76.1265
477.60	80.4520
487.02	62.5366
492.35	0.0000
497.08	69.3799
511.00	68.8000
514.00	68.9077
527.90	0.0000
529.87	0.0000
531.02	60.6850
537.26	57.5558
546.56	0.0000
563.25	59.4196
569.33	55.0966
569.50	55.1011
569.70	55.1056
583.19	64.8937
600.60	62.9878
602.73	65.2692
604.72	71.6436
609.32	60.4909
609.32	60.4909
610.33	60.5183
614.28	65.8333
618.01	67.1703
621.93	60.8357
621.93	60.8357
633.25	50.0265
635.95	58.4350
636.99	51.9654
645.85	54.9625
657.76	63.9858
661.66	56.2764
661.66	56.2764
664.57	0.0000
666.33	39.1581
666.50	39.1612
677.62	52.8801



685.70	38.8469
695.00	50.4108
696.49	48.5372
696.51	48.5384
697.00	50.4522
702.65	56.2934
706.68	69.7653
711.68	53.6266
720.70	42.7159
721.93	0.0000
722.78	48.0945
722.91	48.0969
723.31	46.5020
724.19	43.3092
727.33	43.3641
733.00	51.5091
735.93	54.7921
739.50	49.3826
747.24	55.3579
752.31	48.6560
753.82	61.3419
756.73	40.9408
763.94	57.6705
765.81	62.6031
766.42	56.7468
777.92	40.2893
778.90	35.3892
783.70	67.9505
785.37	41.3868
795.86	33.6348
801.95	42.6336
810.29	45.7473
810.76	41.7765
815.77	46.8348
818.51	50.8718
832.01	49.1136
834.85	43.1438
836.80	0.0000
846.77	47.3557
856.80	58.6443
860.56	38.4731
871.09	45.7262
873.19	33.5567
875.33	0.0000
879.36	48.9129
880.51	39.7570
883.24	28.5701
884.68	24.5004
889.28	22.4941
898.04	29.7385
911.20	51.4990
911.20	51.4990
911.20	51.4990
926.50	43.4776
937.49	51.9446
944.13	36.4398
946.00	47.9215
949.00	38.5826
962.29	43.0512
964.08	38.4194
966.15	17.4748
968.97	45.4746
968.97	45.4746
968.97	45.4746
983.53	30.5725
996.26	38.8079
1001.03	36.0387
1004.73	14.1488
1037.84	38.5857
1038.76	0.0000
1048.07	36.5533
1050.41	26.8958
1050.41	26.8958
1063.66	24.8418
1085.87	28.2636
1099.45	39.2854
1112.07	32.8550
1115.54	53.2460

1120.29	40.2492
1120.29	40.2492
1120.55	40.2528
1121.30	36.6016
1131.51	0.0000
1173.23	45.4829
1177.93	32.5291
1189.05	47.5406
1204.77	43.0595
1221.41	51.7102
1231.02	48.0698
1235.36	64.1650
1238.28	44.3819
1260.41	0.0000
1271.85	45.7168
1274.44	30.4987
1274.54	29.5456
1291.59	31.5874
1298.22	0.0000
1312.11	22.1278
1332.49	30.9401
1365.19	19.4906
1368.63	0.0000
1384.29	16.7822
1408.01	24.6104
1457.56	0.0000
1460.82	10.2489
1489.16	12.0327
1505.03	20.1253
1596.21	28.7326
1620.50	19.5961
1678.03	0.0000
1690.97	5.2313
1764.49	1.8196
1764.49	1.8196
1770.23	3.6433
1771.35	3.6441
1791.20	0.0000
1836.06	9.6837

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202047454

Total Uranium Activity	1.2027E+01	ug/g
Total Uranium Counting Unc.	9.2675E+00	ug/g
Total Uranium Tpu	4.7283E-06	ug/g
Total Uranium Mda	5.7608E+00	ug/g

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*****
*
*               GEL Laboratories LLC
*               2040 SAVAGE ROAD
*               CHARLESTON ,SC 29417
*               GROSS GAMMA REPORT
*
*****
*
*  BATCH ID      : 955027                SAMPLE ID   : G1202047454
*  ANALYST       : MXR1                  DETECTOR    : GAM10
*  SAMPLE DATE   : 12-FEB-2010 12:00:00.00  COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 4-MAR-2010 16:10:34.04  SAMPLE ALQT  : 80.570 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 9.797E+00
GROSS GAMMA ERROR (pCi/GRAM )   : 1.448E+00
GROSS GAMMA MDA (pCi/GRAM )     : 3.483E+00
GROSS GAMMA DLC (pCi/GRAM )     : 1.679E+00

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VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 10:35:17.99

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                          *
*                               Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202047455.CNF;1
Sample date       : 22-FEB-2010 00:00:00 Acquisition date : 4-MAR-2010 12:48:27.
Sample ID        : G1202047455 Sample quantity   : 1.55440E+02 GRAM
Detector name    : GAM18 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.85 0.1%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity        : 5.00000
Batch ID        : 955027 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	59.68*	2461	419	0.97	118.49	112	13	6.84E-01	2.4	1.26E+00
2	0	77.86*	126	727	0.84	154.83	150	8	3.50E-02	38.9	
3	3	88.12	1687	383	1.10	175.34	170	22	4.69E-01	3.1	4.43E+00
4	3	89.96	94	341	1.11	179.03	170	22	2.62E-02	44.9	
5	0	122.19	282	458	1.10	243.47	238	11	7.84E-02	15.9	
6	0	154.33	51	294	1.00	307.71	303	8	1.42E-02	60.0	
7	0	185.77*	129	536	1.35	370.58	366	13	3.59E-02	38.2	
8	0	208.87	135	353	1.14	416.77	412	10	3.75E-02	27.4	
9	0	238.64*	790	370	1.20	476.29	472	8	2.19E-01	5.6	
10	0	241.68*	117	332	2.01	482.36	480	8	3.26E-02	28.8	
11	0	295.31*	196	320	1.25	589.59	585	11	5.45E-02	19.2	
12	0	338.32*	176	296	1.34	675.58	670	11	4.89E-02	20.5	
13	0	351.87*	370	315	1.18	702.68	696	13	1.03E-01	11.3	
14	0	583.15*	292	235	1.82	1165.09	1156	15	8.10E-02	12.9	
15	0	609.01*	265	221	1.42	1216.80	1209	15	7.36E-02	13.8	
16	0	661.31	3544	239	1.65	1321.38	1312	18	9.84E-01	2.0	
17	0	726.99*	77	114	1.91	1452.70	1447	12	2.15E-02	30.3	
18	0	910.41*	220	157	2.26	1819.46	1811	15	6.10E-02	14.3	
19	0	968.24*	84	195	1.36	1935.11	1931	12	2.34E-02	35.1	
20	0	1172.51	2937	133	1.94	2343.58	2335	19	8.16E-01	2.1	
21	0	1331.59	2696	63	2.17	2661.68	2650	21	7.49E-01	2.1	
22	0	1763.28*	63	0	2.25	3525.01	3518	14	1.75E-02	13.5	

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

VMS Nuclide Identification Report V3.1 Generated 5-MAR-2010 10:35:21

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202047455.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 22-FEB-2010 00:00:00 Acquisition date : 4-MAR-2010 12:48:27
Sample ID         : G1202047455 Sample quantity : 155.44 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA18 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.85 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
CO-57	+	122.06	*	1.997E-01	6.447E-02	5.642E-02	3.342E-03	3.540
		136.47		3.498E-01	2.677E-01	4.505E-01	2.943E-02	0.776
CO-60	+	1173.23		6.348E+00	4.394E-01	1.045E-01	5.776E-03	60.733
	+	1332.49	*	6.449E+00	5.544E-01	6.656E-02	5.029E-03	96.885
CD-109	+	88.03	*	3.427E+01	3.811E+00	1.781E+00	1.646E-01	19.246
SN-126		64.28		9.118E-02	8.950E-01	1.349E+00	1.995E-01	0.068
	+	86.94		1.402E+01	5.883E+00	7.399E-01	3.069E-01	18.953
	+	87.57	*	3.373E+00	3.751E-01	1.764E-01	1.625E-02	19.124
BA-137M	+	661.66	*	5.309E+00	4.553E-01	8.022E-02	6.115E-03	66.175
CS-137	+	661.66	*	5.608E+00	4.819E-01	8.475E-02	6.476E-03	66.175
TL-208		277.37		3.388E-01	5.625E-01	9.379E-01	1.006E-01	0.361
	+	583.19	*	4.211E-01	1.137E-01	8.372E-02	6.552E-03	5.030
		860.56		2.711E-01	4.985E-01	8.393E-01	9.387E-02	0.323
BI-211		72.87		-9.223E+00	5.832E+00	7.965E+00	6.577E-01	-1.158
	+	351.06	*	2.540E+00	5.948E-01	4.745E-01	3.047E-02	5.354
PB-212		74.82		1.945E-01	6.912E-01	1.035E+00	1.327E-01	0.188
	+	77.11		6.662E-01	5.208E-01	5.525E-01	4.683E-02	1.206
	+	238.63	*	1.288E+00	1.710E-01	1.489E-01	1.073E-02	8.652
		300.09		1.643E+00	1.246E+00	1.902E+00	1.588E-01	0.864
BI-214	+	609.32	*	7.374E-01	2.144E-01	1.553E-01	1.396E-02	4.748
		1120.29		3.437E-01	4.632E-01	8.002E-01	7.705E-02	0.430
	+	1764.49		1.170E+00	3.239E-01	4.897E-01	2.978E-02	2.390
PB-214		74.82		3.447E-01	1.225E+00	1.834E+00	2.112E-01	0.188
	+	77.11		1.174E+00	9.232E-01	9.739E-01	1.152E-01	1.206
	+	242.00		1.159E+00	6.742E-01	9.203E-01	7.399E-02	1.260
	+	295.22		8.515E-01	3.354E-01	3.307E-01	2.871E-02	2.575
	+	351.93	*	9.220E-01	2.218E-01	1.725E-01	1.460E-02	5.344
RA-224	+	240.99	*	2.050E+00	1.186E+00	1.567E+00	8.730E-02	1.308
RA-226	+	609.32	*	7.374E-01	2.144E-01	1.553E-01	1.396E-02	4.748
		1120.29		3.437E-01	4.632E-01	8.002E-01	7.705E-02	0.430
	+	1764.49		1.170E+00	3.239E-01	4.897E-01	2.978E-02	2.390
AC-228	+	338.32		1.351E+00	7.862E-01	5.525E-01	2.277E-01	2.445
	+	911.20	*	1.479E+00	4.669E-01	4.127E-01	5.589E-02	3.583
	+	968.97		9.763E-01	7.265E-01	7.653E-01	1.909E-01	1.276

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RA-228	+	338.32		1.351E+00	7.862E-01	5.525E-01	2.277E-01	2.445
	+	911.20	*	1.479E+00	4.669E-01	4.127E-01	5.589E-02	3.583
	+	968.97		9.763E-01	7.265E-01	7.653E-01	1.909E-01	1.276
TH-228		74.82		1.945E-01	6.910E-01	1.035E+00	8.726E-02	0.188
	+	77.11		6.662E-01	5.208E-01	5.525E-01	4.683E-02	1.206
	+	238.63	*	1.288E+00	1.710E-01	1.489E-01	1.073E-02	8.652
		300.09		1.643E+00	1.592E+00	1.902E+00	1.158E+00	0.864
TH-232	+	338.32		1.351E+00	5.604E-01	5.525E-01	3.196E-02	2.445
	+	911.20	*	1.479E+00	4.669E-01	4.127E-01	5.589E-02	3.583
	+	968.97		9.763E-01	7.265E-01	7.653E-01	1.909E-01	1.276
AM-241	+	59.54	*	1.333E+01	1.284E+00	5.222E-01	4.331E-02	25.529

---- 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	*	-1.917E-01	4.711E-01	7.609E-01	5.512E-02	-0.252
NA-22		1274.54	*	-9.503E-03	4.467E-02	7.169E-02	4.878E-03	-0.133
NA-24		1368.63	*	-4.105E-03	4.467E-02	Half-Life too short		
K-40		1460.82	*	1.130E+00	4.972E-01	9.791E-01	7.430E-02	1.154
SC-46		889.28	*	-4.648E-02	6.953E-02	1.091E-01	1.217E-02	-0.426
		1120.55		6.038E-02	7.436E-02	1.291E-01	8.919E-03	0.468
V-48		944.13		5.077E-01	1.372E+00	2.267E+00	2.399E-01	0.224
		983.53	*	-3.610E-02	1.086E-01	1.723E-01	1.704E-02	-0.210
		1312.11		-3.211E-02	7.193E-02	1.119E-01	8.154E-03	-0.287
CR-51		320.08	*	-1.543E-01	4.667E-01	7.386E-01	4.748E-02	-0.209
MN-54		834.85	*	3.682E-02	6.137E-02	1.039E-01	1.064E-02	0.354
CO-56		846.77	*	6.654E-02	6.199E-02	1.073E-01	1.121E-02	0.620
		1037.84		-3.210E-02	5.031E-01	8.391E-01	7.767E-02	-0.038
		1238.28		4.792E-02	8.033E-02	1.392E-01	9.279E-03	0.344
		1771.35		-4.261E-01	3.524E-01	4.903E-01	2.963E-02	-0.869
CO-58		810.76	*	-6.311E-02	5.893E-02	9.019E-02	8.904E-03	-0.700
FE-59		1099.45	*	2.641E-02	1.404E-01	2.363E-01	1.944E-02	0.112
		1291.59		7.591E-02	1.304E-01	2.256E-01	1.896E-02	0.337
ZN-65		1115.54	*	6.896E-02	1.447E-01	2.467E-01	1.738E-02	0.279
SE-75	+	121.12		1.028E+00	3.396E-01	3.944E-01	3.618E-02	2.608
		136.00		6.998E-02	5.083E-02	8.585E-02	4.892E-03	0.815
		264.66	*	-5.340E-02	5.989E-02	9.366E-02	5.358E-03	-0.570
		279.54		6.738E-02	1.557E-01	2.581E-01	1.597E-02	0.261
		400.66		-4.843E-01	3.701E-01	5.771E-01	5.238E-02	-0.839
SR-85		514.00	*	-1.418E-01	6.075E-02	8.750E-02	5.797E-03	-1.621
Y-88		898.04		-6.389E-02	7.348E-02	1.134E-01	1.286E-02	-0.563
		1836.06	*	-9.754E-03	3.946E-02	6.201E-02	3.532E-03	-0.157
Y-91		1204.77	*	1.746E+01	2.279E+01	3.990E+01	2.358E+00	0.438
NB-94		702.65	*	3.549E-02	4.598E-02	7.995E-02	6.560E-03	0.444
		871.09		3.511E-03	5.973E-02	9.813E-02	1.064E-02	0.036
NB-95		765.81	*	1.479E-02	5.763E-02	9.683E-02	8.858E-03	0.153
NB-95M		235.69	*	1.226E-01	1.886E-01	2.820E-01	2.076E-02	0.435
ZR-95		724.19		6.624E-02	1.422E-01	2.115E-01	1.957E-02	0.313

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
MO-99		756.73	*	-2.900E-02	9.932E-02	1.617E-01	1.597E-02	-0.179
		140.51		-5.575E+00	9.310E+00	1.421E+01	3.242E+00	-0.392
		181.07		7.611E+00	8.211E+00	1.259E+01	2.205E+00	0.604
		366.42		-2.443E+01	4.433E+01	7.277E+01	4.204E+00	-0.336
		739.50	*	-6.261E-01	5.371E+00	8.859E+00	1.402E+00	-0.071
TC-99M		777.92		3.573E+00	1.779E+01	2.975E+01	2.778E+00	0.120
		140.51	*	-9.155E+04	1.779E+01	Half-Life too short		
RU-103		497.08	*	-6.848E-02	5.638E-02	8.545E-02	1.091E-02	-0.801
	+	610.33		7.016E+00	2.230E+00	2.550E+00	3.999E-01	2.752
RH-106			621.93	*	-2.905E-02	4.688E-01	7.527E-01	9.388E-02
		1050.41		-3.009E-01	4.268E+00	7.108E+00	6.075E-01	-0.042
RU-106		621.93	*	-2.905E-02	4.687E-01	7.527E-01	5.539E-02	-0.039
		1050.41		-3.009E-01	4.268E+00	7.108E+00	6.075E-01	-0.042
AG-108M		433.94	*	-3.742E-02	4.596E-02	7.335E-02	4.728E-03	-0.510
		614.28		3.642E-03	5.875E-02	8.217E-02	6.278E-03	0.044
AG-110M		722.91		-1.711E-02	5.927E-02	8.281E-02	7.272E-03	-0.207
		657.76	*	7.506E-01	1.033E-01	1.720E-01	1.357E-02	4.363
		677.62		-5.206E-02	4.168E-01	6.927E-01	5.623E-02	-0.075
		706.68		-2.487E-02	2.952E-01	4.902E-01	4.177E-02	-0.051
		763.94		-1.056E-01	2.279E-01	3.670E-01	3.429E-02	-0.288
		884.68		3.644E-02	8.189E-02	1.373E-01	1.550E-02	0.265
		937.49		-1.333E-01	2.102E-01	3.292E-01	3.604E-02	-0.405
		1384.29		-1.734E-01	1.646E-01	2.281E-01	1.765E-02	-0.760
SN-113		1505.03		-1.305E-03	2.958E-01	4.939E-01	3.545E-02	-0.003
		391.69	*	-4.212E-02	6.414E-02	1.042E-01	6.391E-03	-0.404
CD-115		260.90		1.930E+01	4.522E+01	7.544E+01	4.259E+00	0.256
		492.35		1.122E+01	1.399E+01	2.393E+01	1.549E+00	0.469
SN-117M		527.90	*	1.348E+00	4.091E+00	6.811E+00	4.578E-01	0.198
		156.02		-1.088E-01	2.482E+00	3.711E+00	1.982E-01	-0.029
		158.56	*	7.023E-02	5.546E-02	9.259E-02	4.921E-03	0.758
TE-123M		159.00	*	5.224E-02	3.468E-02	6.036E-02	3.257E-03	0.865
SB-124		602.73		-2.195E-02	5.671E-02	7.619E-02	5.510E-03	-0.288
		645.85		-9.561E-01	7.106E-01	1.034E+00	8.361E-02	-0.924
		722.78		-1.473E-01	5.655E-01	7.922E-01	6.892E-02	-0.186
SB-125		1690.97	*	-2.882E-02	8.225E-02	1.280E-01	8.868E-03	-0.225
		427.87	*	2.135E-01	1.420E-01	2.509E-01	1.566E-02	0.851
		463.37		3.879E-01	4.476E-01	7.663E-01	5.468E-02	0.506
		600.60		2.617E-02	2.461E-01	3.775E-01	3.008E-02	0.069
TE-125M		635.95		1.839E-01	4.075E-01	6.732E-01	5.556E-02	0.273
		109.28	*	-5.480E+00	1.267E+01	2.007E+01	1.798E+00	-0.273
I-126		388.63		-1.153E-01	1.921E-01	3.132E-01	1.800E-02	-0.368
		666.33	*	3.797E-02	2.590E-01	3.797E-01	2.919E-02	0.100
SB-126		753.82		2.176E+00	2.068E+00	3.622E+00	3.247E-01	0.601
		414.70		3.099E-02	8.742E-02	1.482E-01	8.763E-03	0.209
		666.50		2.919E-03	8.733E-02	1.267E-01	9.747E-03	0.023
		695.00		-2.570E-03	8.069E-02	1.346E-01	1.089E-02	-0.019
		697.00		-1.519E-01	2.812E-01	4.542E-01	3.689E-02	-0.334
		720.70	*	5.165E-02	1.747E-01	2.571E-01	2.177E-02	0.201
		856.80		2.836E-01	6.184E-01	1.038E+00	1.101E-01	0.273



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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-127		252.40		-1.433E+00	2.631E+00	4.101E+00	1.669E+00	-0.349
		473.00		-4.084E-01	1.156E+00	1.876E+00	1.903E-01	-0.218
		685.70	*	-1.931E-01	8.033E-01	1.324E+00	1.273E-01	-0.146
		783.70		1.560E+00	2.268E+00	3.886E+00	4.619E-01	0.401
I-131		80.19		-9.500E-01	5.128E+00	7.486E+00	6.506E-01	-0.127
		284.31		-7.446E-01	1.465E+00	2.325E+00	1.469E-01	-0.320
		364.49	*	-2.146E-02	1.118E-01	1.868E-01	1.198E-02	-0.115
		636.99		8.263E-02	1.634E+00	2.636E+00	2.107E-01	0.031
TE-132		49.72		1.464E+01	1.770E+01	3.055E+01	2.788E+00	0.479
		111.76		-3.570E+00	1.712E+01	2.730E+01	2.205E+00	-0.131
		116.30		-8.189E+00	1.556E+01	2.318E+01	1.818E+00	-0.353
		228.16	*	9.199E-02	3.947E-01	6.559E-01	8.855E-02	0.140
BA-133		81.00		-9.212E-02	1.580E-01	2.252E-01	3.507E-02	-0.409
		276.40		4.180E-01	5.221E-01	8.753E-01	1.098E-01	0.478
		302.85		-2.770E-01	2.065E-01	3.087E-01	3.513E-02	-0.897
		356.01	*	-1.031E-02	6.934E-02	9.536E-02	1.074E-02	-0.108
I-133		383.85		6.284E-01	4.374E-01	7.711E-01	8.204E-02	0.815
		529.87	*	8.070E-05	4.374E-01	Half-Life	too short	
		875.33		6.419E-03	4.374E-01	Half-Life	too short	
		1298.22		-6.304E-03	4.374E-01	Half-Life	too short	
CS-134		563.25		-3.535E-03	5.013E-01	8.149E-01	5.758E-02	-0.004
		569.33		-1.500E-02	2.784E-01	4.501E-01	3.218E-02	-0.033
		604.72		3.072E-02	5.093E-02	7.472E-02	5.433E-03	0.411
		795.86	*	-5.942E-03	6.947E-02	1.141E-01	1.104E-02	-0.052
CS-135		801.95		-1.715E-02	5.831E-01	9.661E-01	9.425E-02	-0.018
		1365.19		5.797E-01	1.186E+00	2.062E+00	1.642E-01	0.281
		268.22	*	1.501E-01	2.202E-01	3.698E-01	2.795E-02	0.406
	I-135		546.56		-1.576E+05	2.202E-01	Half-Life	too short
		836.80		4.319E+05	2.202E-01	Half-Life	too short	
		1038.76		-1.136E+05	2.202E-01	Half-Life	too short	
		1131.51		-9.683E+04	2.202E-01	Half-Life	too short	
		1260.41	*	3.560E+04	2.202E-01	Half-Life	too short	
		1457.56		3.576E+05	2.202E-01	Half-Life	too short	
		1678.03		9.355E+04	2.202E-01	Half-Life	too short	
		1791.20		-1.454E+04	2.202E-01	Half-Life	too short	
CS-136	+	153.25		9.199E-01	1.106E+00	1.489E+00	1.152E-01	0.618
		176.60		-3.321E-02	4.954E-01	8.313E-01	5.511E-02	-0.040
		273.65		-8.008E-01	5.893E-01	8.999E-01	6.061E-02	-0.890
		340.55		3.508E-01	1.925E-01	2.980E-01	1.865E-02	1.177
	818.51		4.065E-02	9.348E-02	1.577E-01	1.574E-02	0.258	
	1048.07	*	-6.435E-02	1.420E-01	2.312E-01	2.071E-02	-0.278	
	1235.36		4.608E-01	4.286E-01	7.677E-01	7.816E-02	0.600	
	CE-139	165.86	*	2.331E-02	3.641E-02	6.300E-02	3.307E-03	0.370
162.66			-1.023E+00	7.737E-01	1.232E+00	7.612E-02	-0.831	
BA-140	304.85		-2.175E-01	1.510E+00	2.423E+00	6.919E-01	-0.090	
	423.72		-2.336E+00	2.434E+00	3.671E+00	1.186E+00	-0.636	
LA-140	537.26	*	8.127E-02	3.061E-01	5.053E-01	1.692E-01	0.161	
	328.76		4.026E-01	3.391E-01	5.737E-01	3.725E-02	0.702	
	487.02		1.094E-02	1.696E-01	2.801E-01	1.998E-02	0.039	

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		815.77		1.377E-01	4.079E-01	6.848E-01	7.411E-02	0.201
		1596.21	*	2.768E-02	7.920E-02	1.370E-01	9.401E-03	0.202
CE-141		145.44	*	-3.923E-02	7.693E-02	1.190E-01	6.797E-03	-0.330
CE-143		57.36		6.228E+02	2.971E+02	4.715E+02	4.739E+01	1.321
		293.27	*	3.808E+01	2.289E+01	3.355E+01	6.905E+00	1.135
		664.57		4.467E+03	1.376E+03	7.272E+02	2.170E+02	6.143
		721.93		-7.870E+01	2.039E+02	2.807E+02	7.880E+01	-0.280
CE-144		80.12		-8.080E-01	4.080E+00	5.953E+00	5.154E-01	-0.136
		133.52	*	-4.599E-01	2.739E-01	3.900E-01	5.393E-02	-1.179
PM-144		476.78		-5.935E-02	1.010E-01	1.616E-01	1.186E-02	-0.367
		618.01		1.837E-02	4.624E-02	7.636E-02	5.814E-03	0.241
		696.49	*	-3.260E-02	4.658E-02	7.447E-02	6.044E-03	-0.438
PR-144		696.51	*	-2.446E+00	3.477E+00	5.557E+00	4.510E-01	-0.440
		1489.16		-2.494E+00	1.612E+01	2.556E+01	1.847E+00	-0.098
PM-146		453.88	*	-6.382E-03	6.788E-02	1.119E-01	9.778E-03	-0.057
		633.25		-9.782E-01	2.185E+00	3.366E+00	1.277E+00	-0.291
		735.93		4.259E-02	2.008E-01	3.375E-01	9.468E-02	0.126
		747.24		-1.781E-02	1.397E-01	2.301E-01	3.389E-02	-0.077
ND-147	+	91.11		4.752E-01	4.290E-01	4.455E-01	4.192E-02	1.067
		319.41		-4.231E-01	3.512E+00	5.622E+00	3.246E-01	-0.075
		531.02	*	-6.251E-02	6.209E-01	1.009E+00	1.408E-01	-0.062
PM-149		285.90	*	1.793E+01	3.188E+01	5.295E+01	7.481E+00	0.339
EU-152	+	121.78		5.813E-01	1.898E-01	2.243E-01	1.722E-02	2.591
		244.70		2.120E-01	4.849E-01	7.180E-01	4.011E-02	0.295
		344.28	*	-4.599E-02	1.648E-01	2.254E-01	1.470E-02	-0.204
		778.90		-1.126E-02	4.127E-01	6.817E-01	6.374E-02	-0.017
		964.08		1.477E-01	6.084E-01	8.612E-01	8.821E-02	0.172
		1085.87		1.463E-01	6.098E-01	1.031E+00	7.988E-02	0.142
		1112.07		-2.001E-02	5.119E-01	8.496E-01	6.047E-02	-0.024
		1408.01		8.299E-02	1.869E-01	3.211E-01	2.385E-02	0.258
GD-153		69.67		-1.003E+00	2.652E+00	4.317E+00	3.504E-01	-0.232
		97.43	*	-8.140E-02	1.327E-01	1.859E-01	1.453E-02	-0.438
		103.18		-1.635E-01	1.496E-01	2.300E-01	1.658E-02	-0.711
EU-154	+	123.07		4.108E-01	1.360E-01	1.575E-01	1.487E-02	2.608
		723.31		-9.904E-02	2.722E-01	3.778E-01	3.547E-02	-0.262
		873.19		3.218E-01	4.844E-01	8.199E-01	1.117E-01	0.392
		996.26		-1.748E-01	6.315E-01	1.002E+00	1.805E-01	-0.174
		1004.73		6.926E-02	3.546E-01	5.798E-01	7.128E-02	0.119
		1274.44	*	-1.952E-02	1.262E-01	2.039E-01	2.052E-02	-0.096
EU-155		86.55		1.772E+00	2.684E-01	3.934E-01	3.624E-02	4.505
		105.31	*	9.644E-02	1.422E-01	2.370E-01	1.693E-02	0.407
TB-160	+	86.79		1.038E+01	1.155E+00	1.118E+00	1.023E-01	9.290
		197.04		3.248E-01	6.910E-01	1.175E+00	6.310E-02	0.276
		215.65		2.103E-01	9.864E-01	1.651E+00	9.010E-02	0.127
		298.57		2.088E-01	1.702E-01	2.591E-01	1.488E-02	0.806
		879.36	*	-9.291E-02	2.251E-01	3.588E-01	3.941E-02	-0.259
		962.29		4.529E-01	1.072E+00	1.537E+00	1.579E-01	0.295
		966.15		8.977E-01	4.487E-01	6.897E-01	7.038E-02	1.302
		1177.93		7.582E-01	5.151E-01	8.354E-01	4.664E-02	0.908

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
HO-166M		1271.85		2.253E-01	6.685E-01	1.137E+00	7.686E-02	0.198
		80.57		-1.865E-01	4.523E-01	6.527E-01	5.671E-02	-0.286
	+	184.41		1.133E-01	8.668E-02	8.040E-02	4.272E-03	1.409
		280.46		-8.244E-02	1.273E-01	2.012E-01	1.147E-02	-0.410
		410.95		-9.414E-02	3.606E-01	5.949E-01	3.502E-02	-0.158
TA-182		711.68	*	-5.020E-02	8.501E-02	1.362E-01	1.135E-02	-0.369
		752.31		1.219E-01	4.046E-01	6.828E-01	6.105E-02	0.178
		810.29		-1.470E-01	9.482E-02	1.396E-01	1.374E-02	-1.053
		67.75		-1.724E-01	1.686E-01	2.690E-01	2.162E-02	-0.641
		100.11		2.432E-01	2.390E-01	4.039E-01	3.036E-02	0.602
IR-192		152.43		1.772E-02	5.174E-01	7.272E-01	3.912E-02	0.024
		222.11		2.694E-02	4.911E-01	8.151E-01	4.474E-02	0.033
		1121.30		1.024E-01	2.076E-01	3.546E-01	2.443E-02	0.289
		1189.05		-6.257E-02	3.326E-01	5.410E-01	3.093E-02	-0.116
		1221.41	*	-1.018E-02	1.748E-01	2.865E-01	1.753E-02	-0.036
HG-203		1231.02		-3.675E-01	4.585E-01	6.977E-01	4.352E-02	-0.527
	+	295.96		6.030E-01	2.344E-01	3.040E-01	1.774E-02	1.983
		308.46		6.599E-02	1.339E-01	2.213E-01	1.289E-02	0.298
		316.51	*	-7.452E-04	4.731E-02	7.620E-02	4.419E-03	-0.010
		468.07		-5.429E-02	1.072E-01	1.729E-01	1.234E-02	-0.314
BI-207		70.83		1.335E+00	1.937E+00	3.257E+00	5.152E-01	0.410
		72.87		-2.144E+00	1.384E+00	1.852E+00	2.840E-01	-1.158
		279.20	*	4.844E-02	5.270E-02	8.907E-02	5.369E-03	0.544
		72.81		-5.437E-01	3.358E-01	4.575E-01	3.776E-02	-1.188
		74.97		7.303E-02	1.988E-01	2.986E-01	2.496E-02	0.245
PB-210		569.70		-6.147E-03	4.333E-02	6.969E-02	4.884E-03	-0.088
		1063.66	*	2.756E-02	8.739E-02	1.485E-01	1.226E-02	0.186
		1770.23		4.162E-01	5.856E-01	9.516E-01	5.757E-02	0.437
		46.54	*	-4.539E+00	8.713E+00	1.447E+01	1.110E+00	-0.314
		404.85	*	7.325E-01	1.118E+00	1.828E+00	8.769E-01	0.401
PB-211		427.09		5.115E+00	3.335E+00	4.316E+00	1.979E+00	1.185
		832.01		-1.099E-01	1.627E+00	2.663E+00	1.389E+00	-0.041
	+	727.33	*	1.680E+00	1.038E+00	1.408E+00	1.749E-01	1.193
		785.37		1.793E+00	4.715E+00	7.959E+00	7.522E-01	0.225
		1620.50		2.381E+00	2.975E+00	5.382E+00	3.640E-01	0.442
RN-219		271.23		1.477E-01	3.362E-01	5.586E-01	4.437E-02	0.264
		401.81	*	-3.834E-01	5.977E-01	9.663E-01	1.299E-01	-0.397
		81.07		-2.181E-01	3.568E-01	5.092E-01	4.441E-02	-0.428
		83.79		1.184E-01	2.069E-01	3.115E-01	2.777E-02	0.380
		94.87		6.087E-01	6.598E-01	1.006E+00	8.196E-02	0.605
RA-223		144.24		5.735E-01	9.098E-01	1.477E+00	1.027E-01	0.388
	+	154.21		5.322E-01	6.397E-01	8.483E-01	5.603E-02	0.627
		269.46		3.466E-01	2.564E-01	4.414E-01	2.617E-02	0.785
		323.87	*	-7.260E-01	9.457E-01	1.452E+00	2.339E-01	-0.500
	+	338.28		5.361E+00	2.270E+00	2.913E+00	2.983E-01	1.840
AC-227		79.69		-6.320E-01	2.070E+00	3.002E+00	5.175E-01	-0.211
		235.96		3.645E-01	2.487E-01	3.837E-01	3.057E-02	0.950
		256.23	*	1.462E-01	3.563E-01	5.939E-01	6.016E-02	0.246
		299.98		1.789E+00	1.375E+00	2.089E+00	2.289E-01	0.856

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-227		304.50		-9.856E-02	2.294E+00	3.702E+00	5.639E-01	-0.027
		334.37		1.007E+00	2.857E+00	4.090E+00	5.815E-01	0.246
		79.80		-6.792E-01	2.721E+00	3.956E+00	8.618E-01	-0.172
		235.96		3.645E-01	2.483E-01	3.837E-01	2.759E-02	0.950
		256.23	*	1.462E-01	3.564E-01	5.939E-01	7.090E-02	0.246
		299.98		1.789E+00	1.375E+00	2.089E+00	2.289E-01	0.856
TH-229		304.50		-9.856E-02	2.294E+00	3.702E+00	5.639E-01	-0.027
		334.37		1.007E+00	2.857E+00	4.090E+00	5.815E-01	0.246
		85.43		2.155E-01	3.457E-01	5.206E-01	4.706E-02	0.414
	+	88.47		5.201E+00	5.783E-01	6.403E-01	5.866E-02	8.122
		193.51	*	-1.139E-01	7.175E-01	1.152E+00	6.170E-02	-0.099
		210.85		1.786E+00	1.322E+00	2.067E+00	1.123E-01	0.864
PA-231		283.69	*	-1.176E+00	2.151E+00	3.402E+00	4.449E-01	-0.346
TH-231		301.36		5.598E-01	8.997E-01	1.321E+00	1.363E-01	0.424
		81.07		-2.181E-01	3.568E-01	5.092E-01	4.441E-02	-0.428
		83.79		1.184E-01	2.069E-01	3.115E-01	2.777E-02	0.380
		94.87		6.087E-01	6.598E-01	1.006E+00	8.196E-02	0.605
		144.24		5.735E-01	9.098E-01	1.477E+00	1.027E-01	0.388
	+	154.21		5.322E-01	6.397E-01	8.483E-01	5.603E-02	0.627
PA-233		269.46		3.466E-01	2.564E-01	4.414E-01	2.617E-02	0.785
		323.87	*	-7.260E-01	9.457E-01	1.452E+00	2.339E-01	-0.500
	+	338.28		5.361E+00	2.270E+00	2.913E+00	2.983E-01	1.840
		300.13		8.206E-01	6.261E-01	9.470E-01	1.266E-01	0.867
		311.90	*	9.438E-04	9.150E-02	1.478E-01	9.054E-03	0.006
		340.48		2.065E+00	1.151E+00	1.641E+00	3.808E-01	1.258
PA-234		94.67		2.794E-01	2.433E-01	3.729E-01	4.510E-02	0.749
		98.44		4.875E-02	1.452E-01	2.109E-01	1.174E-01	0.231
		111.00		-3.730E-02	2.550E-01	4.078E-01	4.375E-02	-0.091
		131.20		5.120E-02	1.419E-01	2.302E-01	1.310E-02	0.222
		569.50		-3.266E-02	3.860E-01	6.229E-01	4.365E-02	-0.052
		733.00		1.541E-01	5.889E-01	8.620E-01	1.914E-01	0.179
PA-234M		880.51		-2.101E-01	4.687E-01	7.448E-01	8.196E-02	-0.282
		883.24		2.187E-01	4.996E-01	8.017E-01	5.418E-01	0.273
		926.50		-2.816E-01	3.419E-01	5.182E-01	1.354E-01	-0.544
		946.00	*	-3.901E-01	5.936E-01	9.193E-01	1.813E-01	-0.424
		949.00		5.850E-01	8.380E-01	1.409E+00	1.480E-01	0.415
		766.42		4.699E+00	1.636E+01	2.724E+01	1.385E+01	0.172
TH-234		1001.03	*	-1.972E+00	7.700E+00	1.219E+01	1.316E+00	-0.162
		63.29	*	2.536E-01	2.405E+00	3.630E+00	6.539E-01	0.070
		92.59		-3.660E-01	9.152E-01	1.494E+00	3.290E-01	-0.245
U-235		89.96		1.963E+00	1.827E+00	2.779E+00	6.866E-01	0.706
	+	93.35		-1.339E-01	6.892E-01	1.136E+00	2.613E-01	-0.118
		143.76	*	2.602E-01	2.696E-01	4.400E-01	6.862E-02	0.591
		163.33		-8.547E-01	5.581E-01	8.531E-01	1.417E-01	-1.002
	+	185.72		1.426E-01	1.091E-01	1.106E-01	5.883E-03	1.290
		205.31		2.198E-01	7.136E-01	1.062E+00	1.791E-01	0.207
NP-237		86.48	*	3.806E+00	1.010E+00	9.313E-01	2.130E-01	4.086
U-238		95.86		-1.018E+00	1.424E+00	1.957E+00	4.654E-01	-0.520
		63.29	*	2.536E-01	2.405E+00	3.630E+00	6.539E-01	0.070

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	92.59			-3.660E-01	9.122E-01	1.494E+00	1.265E-01	-0.245
	99.53			2.632E-01	2.280E-01	3.864E-01	2.929E-02	0.681
	103.37			-1.291E-01	1.368E-01	2.119E-01	1.524E-02	-0.609
	106.12			4.547E-02	1.147E-01	1.888E-01	1.312E-02	0.241
	117.23	*		-2.327E-01	6.309E-01	8.840E-01	5.460E-02	-0.263
CM-247	228.18			7.437E-02	3.169E-01	5.268E-01	2.906E-02	0.141
	277.60			1.647E-01	2.573E-01	4.303E-01	2.451E-02	0.383
	278.00			6.331E-01	1.099E+00	1.833E+00	1.044E-01	0.345
	287.50			6.224E-01	1.782E+00	2.941E+00	1.682E-01	0.212
	402.40	*		-2.276E-02	5.445E-02	8.928E-02	5.198E-03	-0.255
CF-249	252.80			-2.955E-01	1.304E+00	2.117E+00	1.189E-01	-0.140
	333.37			-1.515E-01	3.101E-01	4.198E-01	2.428E-02	-0.361
CF-251	388.16	*		-5.204E-02	6.020E-02	9.696E-02	5.573E-03	-0.537
	177.52	*		-3.421E-02	1.648E-01	2.749E-01	1.453E-02	-0.124
	227.38			-6.732E-02	5.162E-01	8.492E-01	4.681E-02	-0.079
ANH-511	285.41			6.337E-01	3.187E+00	5.227E+00	2.988E-01	0.121
	511.00	*		5.910E-02	5.340E-02	9.925E-02	6.555E-03	0.596

# 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]G1202047455      *
* Acquisition date   : 4-MAR-2010 12:48:27 Detector SN# :                   *
* Detector ID        : GAM18 Sensitivity : 5.000                            *
* Geometry           : CAN Energy tolerance: 1.500                         *
* Elapsed live time: 0 01:00:00.00 Abundance limit : 75.000                *
* Elapsed real time: 0 01:00:01.85 Half life ratio : 8.000                 *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date       : 22-FEB-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID         : G1202047455 Analyst initials: MXR1                  *
* Batch Number      : 955027 Sample Quantity : 1.5544E+02 GRAM            *
* Recovery          : 1.00000 Carrier Weight : 0.00000                    *
*****
*                                     QC DATA                               *
*                                     *                                       *
* Standard Weight   : 0.00000                                              *
* CALIB. DATE/TIME : 23-APR-2009 11:59:23 MS Isotope :                    *
* MSD DPM           : 0.000 MSD Isotope :                                *
* LCS DPM           : 0.000 LCS Isotope :                                *
* LCSD DPM          : 0.000 LCSD Isotope :                                *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
CO-57	1.997E-01	6.318E-02	6.077E-02	0.000E+00
CO-60	6.449E+00	5.433E-01	6.730E-02	0.000E+00
CD-109	3.427E+01	3.735E+00	1.933E+00	0.000E+00
SN-126	3.373E+00	3.676E-01	1.915E-01	0.000E+00
BA-137M	5.309E+00	4.462E-01	8.270E-02	0.000E+00
CS-137	5.608E+00	4.722E-01	8.737E-02	0.000E+00
TL-208	4.211E-01	1.115E-01	8.660E-02	0.000E+00
BI-211	2.540E+00	5.829E-01	4.975E-01	0.000E+00
PB-212	1.288E+00	1.676E-01	1.576E-01	0.000E+00
BI-214	7.374E-01	2.101E-01	1.605E-01	0.000E+00
PB-214	9.220E-01	2.174E-01	1.809E-01	0.000E+00
RA-224	2.050E+00	1.163E+00	1.659E+00	0.000E+00
RA-226	7.374E-01	2.101E-01	1.605E-01	0.000E+00
AC-228	1.479E+00	4.576E-01	4.217E-01	0.000E+00
RA-228	1.479E+00	4.576E-01	4.217E-01	0.000E+00
TH-228	1.288E+00	1.676E-01	1.576E-01	0.000E+00
TH-232	1.479E+00	4.576E-01	4.217E-01	0.000E+00
AM-241	1.333E+01	1.258E+00	5.724E-01	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-1.917E-01	4.617E-01	7.913E-01	0.000E+00 NOT IDENT.
NA-22	-9.503E-03	4.377E-02	7.258E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	4.853E+03	0.000E+00	0.000E+00 SHORT HLIF
K-40	0.000E+00	4.873E-01	9.874E-01	0.000E+00 NOT IDENT.
SC-46	-4.648E-02	6.814E-02	1.115E-01	0.000E+00 NOT IDENT.
V-48	-3.610E-02	1.064E-01	1.757E-01	0.000E+00 NOT IDENT.
CR-51	-1.543E-01	4.573E-01	7.762E-01	0.000E+00 NOT IDENT.
MN-54	3.682E-02	6.014E-02	1.064E-01	0.000E+00 NOT IDENT.
CO-56	6.654E-02	6.075E-02	1.099E-01	0.000E+00 NOT IDENT.

CO-58	-6.311E-02	5.775E-02	9.246E-02	0.000E+00	NOT IDENT.
FE-59	2.641E-02	1.376E-01	2.402E-01	0.000E+00	NOT IDENT.
ZN-65	6.896E-02	1.418E-01	2.507E-01	0.000E+00	NOT IDENT.
SE-75	-5.340E-02	5.870E-02	9.891E-02	0.000E+00	FAIL ABUN
SR-85	-1.418E-01	5.954E-02	9.081E-02	0.000E+00	NOT IDENT.
Y-88	-9.754E-03	3.867E-02	6.214E-02	0.000E+00	NOT IDENT.
Y-91	1.746E+01	2.233E+01	4.046E+01	0.000E+00	NOT IDENT.
NB-94	3.549E-02	4.506E-02	8.229E-02	0.000E+00	NOT IDENT.
NB-95	1.479E-02	5.648E-02	9.943E-02	0.000E+00	NOT IDENT.
NB-95M	1.226E-01	1.848E-01	2.987E-01	0.000E+00	NOT IDENT.
ZR-95	-2.900E-02	9.733E-02	1.661E-01	0.000E+00	NOT IDENT.
MO-99	-6.261E-01	5.263E+00	9.105E+00	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	1.495E+11	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-6.848E-02	5.525E-02	8.877E-02	0.000E+00	FAIL ABUN
RH-106	-2.905E-02	4.594E-01	7.772E-01	0.000E+00	NOT IDENT.
RU-106	-2.905E-02	4.594E-01	7.772E-01	0.000E+00	NOT IDENT.
AG-108M	-3.742E-02	4.504E-02	7.647E-02	0.000E+00	NOT IDENT.
AG-110M	0.000E+00	1.013E-01	1.774E-01	0.000E+00	NOT IDENT.
SN-113	-4.212E-02	6.286E-02	1.089E-01	0.000E+00	NOT IDENT.
CD-115	1.348E+00	4.010E+00	7.064E+00	0.000E+00	NOT IDENT.
SN-117M	7.023E-02	5.435E-02	9.908E-02	0.000E+00	NOT IDENT.
TE-123M	5.224E-02	3.399E-02	6.458E-02	0.000E+00	NOT IDENT.
SB-124	-2.882E-02	8.061E-02	1.286E-01	0.000E+00	NOT IDENT.
SB-125	2.135E-01	1.392E-01	2.617E-01	0.000E+00	NOT IDENT.
TE-125M	-5.480E+00	1.242E+01	2.168E+01	0.000E+00	NOT IDENT.
I-126	3.797E-02	2.539E-01	3.913E-01	0.000E+00	NOT IDENT.
SB-126	5.165E-02	1.712E-01	2.645E-01	0.000E+00	NOT IDENT.
SB-127	-1.931E-01	7.872E-01	1.364E+00	0.000E+00	NOT IDENT.
I-131	-2.146E-02	1.096E-01	1.957E-01	0.000E+00	NOT IDENT.
TE-132	9.199E-02	3.868E-01	6.954E-01	0.000E+00	NOT IDENT.
BA-133	-1.031E-02	6.795E-02	9.995E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	2.138E+02	0.000E+00	0.000E+00	SHORT HLIF
CS-134	-5.942E-03	6.808E-02	1.171E-01	0.000E+00	NOT IDENT.
CS-135	1.501E-01	2.158E-01	3.904E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	5.534E+10	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-6.435E-02	1.392E-01	2.353E-01	0.000E+00	FAIL ABUN
CE-139	2.331E-02	3.568E-02	6.734E-02	0.000E+00	NOT IDENT.
BA-140	8.127E-02	2.999E-01	5.238E-01	0.000E+00	NOT IDENT.
LA-140	2.768E-02	7.762E-02	1.378E-01	0.000E+00	NOT IDENT.
CE-141	-3.923E-02	7.539E-02	1.277E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.243E+01	3.534E+01	0.000E+00	NOT IDENT.
CE-144	-4.599E-01	2.684E-01	4.191E-01	0.000E+00	NOT IDENT.
PM-144	-3.260E-02	4.565E-02	7.666E-02	0.000E+00	NOT IDENT.
PR-144	-2.446E+00	3.407E+00	5.721E+00	0.000E+00	NOT IDENT.
PM-146	-6.382E-03	6.652E-02	1.166E-01	0.000E+00	NOT IDENT.
ND-147	-6.251E-02	6.085E-01	1.046E+00	0.000E+00	FAIL ABUN
PM-149	1.793E+01	3.124E+01	5.582E+01	0.000E+00	NOT IDENT.
EU-152	-4.599E-02	1.615E-01	2.364E-01	0.000E+00	FAIL ABUN
GD-153	-8.140E-02	1.301E-01	2.013E-01	0.000E+00	NOT IDENT.
EU-154	-1.952E-02	1.237E-01	2.064E-01	0.000E+00	FAIL ABUN
EU-155	9.644E-02	1.394E-01	2.561E-01	0.000E+00	NOT IDENT.
TB-160	-9.291E-02	2.206E-01	3.670E-01	0.000E+00	FAIL ABUN
HO-166M	-5.020E-02	8.331E-02	1.401E-01	0.000E+00	FAIL ABUN
TA-182	-1.018E-02	1.713E-01	2.904E-01	0.000E+00	NOT IDENT.
IR-192	-7.452E-04	4.636E-02	8.010E-02	0.000E+00	FAIL ABUN
HG-203	4.844E-02	5.165E-02	9.394E-02	0.000E+00	NOT IDENT.
BI-207	2.756E-02	8.564E-02	1.511E-01	0.000E+00	NOT IDENT.
PB-210	-4.539E+00	8.538E+00	1.596E+01	0.000E+00	NOT IDENT.
PB-211	7.325E-01	1.095E+00	1.909E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.017E+00	1.448E+00	0.000E+00	FAIL ABUN
RN-219	-3.834E-01	5.857E-01	1.009E+00	0.000E+00	NOT IDENT.
RA-223	-7.260E-01	9.268E-01	1.525E+00	0.000E+00	FAIL ABUN
AC-227	1.462E-01	3.492E-01	6.278E-01	0.000E+00	NOT IDENT.
TH-227	1.462E-01	3.493E-01	6.278E-01	0.000E+00	NOT IDENT.
TH-229	-1.139E-01	7.032E-01	1.227E+00	0.000E+00	FAIL ABUN
PA-231	-1.176E+00	2.108E+00	3.587E+00	0.000E+00	NOT IDENT.
TH-231	-7.260E-01	9.268E-01	1.525E+00	0.000E+00	FAIL ABUN
PA-233	9.438E-04	8.967E-02	1.554E-01	0.000E+00	NOT IDENT.
PA-234	-3.901E-01	5.817E-01	9.385E-01	0.000E+00	NOT IDENT.
PA-234M	-1.972E+00	7.546E+00	1.243E+01	0.000E+00	NOT IDENT.
TH-234	2.536E-01	2.357E+00	3.973E+00	0.000E+00	NOT IDENT.
U-235	2.602E-01	2.642E-01	4.720E-01	0.000E+00	FAIL ABUN
NP-237	0.000E+00	9.897E-01	1.012E+00	0.000E+00	NOT IDENT.
U-238	2.536E-01	2.357E+00	3.973E+00	0.000E+00	NOT IDENT.
NP-239	-2.327E-01	6.183E-01	9.531E-01	0.000E+00	NOT IDENT.
CM-247	-2.276E-02	5.336E-02	9.327E-02	0.000E+00	NOT IDENT.
CF-249	-5.204E-02	5.900E-02	1.014E-01	0.000E+00	NOT IDENT.
CF-251	-3.421E-02	1.615E-01	2.933E-01	0.000E+00	NOT IDENT.

ANH-511

5.910E-02

5.234E-02

1.030E-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]G1202047455.CNF;1
Sample date    : 22-FEB-2010 00:00:00 Acquisition date : 4-MAR-2010 12:48:27.
Sample ID     : G1202047455 Sample quantity : 1.55440E+02 GRAM
Detector name  : GAM18 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.85 0.1%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 5.00000
Batch ID       : 955027 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
CO-57	122.06	282	85.60*	8.187E+00	1.944E-01	1.997E-01	32.28
	136.47	-----	10.68	8.255E+00	-----	Line Not Found	-----
CO-60	1173.23	2937	99.85	2.247E+00	6.324E+00	6.348E+00	6.92
	1332.49	2696	99.98*	2.027E+00	6.424E+00	6.449E+00	8.60
CD-109	88.03	1687	3.70*	6.528E+00	3.373E+01	3.427E+01	11.12
SN-126	64.28	-----	9.60	3.245E+00	-----	Line Not Found	-----
	86.94	1687	8.90	6.528E+00	1.402E+01	1.402E+01	41.95
	87.57	1687	37.00*	6.528E+00	3.373E+00	3.373E+00	11.12
BA-137M	661.66	3544	89.90*	3.589E+00	5.305E+00	5.309E+00	8.58
CS-137	661.66	3544	85.10*	3.589E+00	5.605E+00	5.608E+00	8.59
TL-208	277.37	-----	6.60	6.258E+00	-----	Line Not Found	-----
	583.19	292	85.00*	3.933E+00	4.211E-01	4.211E-01	27.01
	860.56	-----	12.50	2.914E+00	-----	Line Not Found	-----
BI-211	72.87	-----	1.23	4.622E+00	-----	Line Not Found	-----
	351.06	370	12.92*	5.451E+00	2.540E+00	2.540E+00	23.41
PB-212	74.82	-----	10.28	4.910E+00	-----	Line Not Found	-----
	77.11	126	17.10	5.336E+00	6.662E-01	6.662E-01	78.17
	238.63	790	43.60*	6.793E+00	1.288E+00	1.288E+00	13.28
	300.09	-----	3.30	5.984E+00	-----	Line Not Found	-----
BI-214	609.32	265	45.49*	3.813E+00	7.374E-01	7.374E-01	29.07
	1120.29	-----	14.92	2.334E+00	-----	Line Not Found	-----
	1764.49	63	15.30	1.695E+00	1.170E+00	1.170E+00	27.68
PB-214	74.82	-----	5.80	4.910E+00	-----	Line Not Found	-----
	77.11	126	9.70	5.336E+00	1.174E+00	1.174E+00	78.61
	242.00	117	7.25	6.748E+00	1.159E+00	1.159E+00	58.15
	295.22	196	18.42	6.040E+00	8.515E-01	8.515E-01	39.39
	351.93	370	35.60*	5.451E+00	9.220E-01	9.220E-01	24.06
RA-224	240.99	117	4.10*	6.748E+00	2.050E+00	2.050E+00	57.86
RA-226	609.32	265	45.49*	3.813E+00	7.374E-01	7.374E-01	29.07
	1120.29	-----	14.92	2.334E+00	-----	Line Not Found	-----
	1764.49	63	15.30	1.695E+00	1.170E+00	1.170E+00	27.68
AC-228	338.32	176	11.27	5.580E+00	1.351E+00	1.351E+00	58.20

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	911.20	220	25.80*	2.781E+00	1.479E+00	1.479E+00	31.58
	968.97	84	15.80	2.641E+00	9.763E-01	9.763E-01	74.42
	338.32	176	11.27	5.580E+00	1.351E+00	1.351E+00	58.20
	911.20	220	25.80*	2.781E+00	1.479E+00	1.479E+00	31.58
TH-228	968.97	84	15.80	2.641E+00	9.763E-01	9.763E-01	74.42
	74.82	-----	10.28	4.910E+00	-----	Line Not Found	-----
	77.11	126	17.10	5.336E+00	6.662E-01	6.662E-01	78.17
	238.63	790	43.60*	6.793E+00	1.288E+00	1.288E+00	13.28
TH-232	300.09	-----	3.30	5.984E+00	-----	Line Not Found	-----
	338.32	176	11.27	5.580E+00	1.351E+00	1.351E+00	41.48
	911.20	220	25.80*	2.781E+00	1.479E+00	1.479E+00	31.58
	968.97	84	15.80	2.641E+00	9.763E-01	9.763E-01	74.42
AM-241	59.54	2461	35.90*	2.484E+00	1.333E+01	1.333E+01	9.63

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
CO-57	271.74D	1.03	1.944E-01	1.997E-01	0.645E-01	32.28	
CO-60	5.27Y	1.00	6.424E+00	6.449E+00	0.554E+00	8.60	
CD-109	461.40D	1.02	3.373E+01	3.427E+01	0.381E+01	11.12	
SN-126	2.30E+05Y	1.00	3.373E+00	3.373E+00	0.375E+00	11.12	
BA-137M	30.08Y	1.00	5.305E+00	5.309E+00	0.455E+00	8.58	
CS-137	30.08Y	1.00	5.605E+00	5.608E+00	0.482E+00	8.59	
TL-208	1.41E+10Y	1.00	4.211E-01	4.211E-01	1.137E-01	27.01	
BI-211	7.04E+08Y	1.00	2.540E+00	2.540E+00	0.595E+00	23.41	
PB-212	1.41E+10Y	1.00	1.288E+00	1.288E+00	0.171E+00	13.28	
BI-214	1600.00Y	1.00	7.374E-01	7.374E-01	2.144E-01	29.07	
PB-214	1600.00Y	1.00	9.220E-01	9.220E-01	2.218E-01	24.06	
RA-224	1.41E+10Y	1.00	2.050E+00	2.050E+00	1.186E+00	57.86	
RA-226	1600.00Y	1.00	7.374E-01	7.374E-01	2.144E-01	29.07	
AC-228	1.41E+10Y	1.00	1.479E+00	1.479E+00	0.467E+00	31.58	
RA-228	1.41E+10Y	1.00	1.479E+00	1.479E+00	0.467E+00	31.58	
TH-228	1.41E+10Y	1.00	1.288E+00	1.288E+00	0.171E+00	13.28	
TH-232	1.41E+10Y	1.00	1.479E+00	1.479E+00	0.467E+00	31.58	
AM-241	432.60Y	1.00	1.333E+01	1.333E+01	0.128E+01	9.63	

Total Activity : 8.239E+01 8.296E+01

Grand Total Activity : 8.239E+01 8.296E+01

Flags: "K" = Keyline not found "M" = Manually accepted  
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G1202047455

Page : 4  
Acquisition date : 4-MAR-2010 12:48:27

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	89.96	94	341	1.11	179.03	170	22	2.62E-02	89.8	6.70E+00	T
0	154.33	51	294	1.00	307.71	303	8	1.42E-02	****	8.12E+00	T
0	185.77	129	536	1.35	370.58	366	13	3.59E-02	76.3	7.65E+00	T
0	208.87	135	353	1.14	416.77	412	10	3.75E-02	54.9	7.26E+00	
0	726.99	77	114	1.91	1452.70	1447	12	2.15E-02	60.5	3.34E+00	T

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*                                     *                                       *
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202047455.CNF;1 *
* Acquisition date   : 4-MAR-2010 12:48:27.  Detector SN#      :             *
* Detector ID        : GAM18                      Sensitivity    : 5.00000      *
* Geometry           : CAN                      Energy tolerance: 1.50000      *
* Elapsed live time  : 0 01:00:00.00             Abundance limit : 75.00000      *
* Elapsed real time  : 0 01:00:01.85             Half life ratio : 8.00000      *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 22-FEB-2010 00:00:00  Nuclide Library : SOLID          *
* Sample ID          : G1202047455           Analyst initials: MXR1          *
* Batch Number       : 955027                Sample Quantity : 1.55440E+02 GRAM *
*****
*                                     QC DATA                                *
*                                     *                                       *
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23.2MS Isotope         :             *
* MSD ID              :                      MSD Isotope         :             *
* LCS ID              : 1032-A                LCS Isotope        :             *
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CO-57	1.997E-01	6.447E-02	5.642E-02	3.342E-03	3.540
CO-60	6.449E+00	5.544E-01	6.656E-02	5.029E-03	96.885
CD-109	3.427E+01	3.811E+00	1.781E+00	1.646E-01	19.246
SN-126	3.373E+00	3.751E-01	1.764E-01	1.625E-02	19.124
BA-137M	5.309E+00	4.553E-01	8.022E-02	6.115E-03	66.175
CS-137	5.608E+00	4.819E-01	8.475E-02	6.476E-03	66.175
TL-208	4.211E-01	1.137E-01	8.372E-02	6.552E-03	5.030
BI-211	2.540E+00	5.948E-01	4.745E-01	3.047E-02	5.354
PB-212	1.288E+00	1.710E-01	1.489E-01	1.073E-02	8.652
BI-214	7.374E-01	2.144E-01	1.553E-01	1.396E-02	4.748
PB-214	9.220E-01	2.218E-01	1.725E-01	1.460E-02	5.344
RA-224	2.050E+00	1.186E+00	1.567E+00	8.730E-02	1.308
RA-226	7.374E-01	2.144E-01	1.553E-01	1.396E-02	4.748
AC-228	1.479E+00	4.669E-01	4.127E-01	5.589E-02	3.583
RA-228	1.479E+00	4.669E-01	4.127E-01	5.589E-02	3.583
TH-228	1.288E+00	1.710E-01	1.489E-01	1.073E-02	8.652
TH-232	1.479E+00	4.669E-01	4.127E-01	5.589E-02	3.583
AM-241	1.333E+01	1.284E+00	5.222E-01	4.331E-02	25.529

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-1.917E-01		4.711E-01	7.609E-01	5.512E-02	-0.252
NA-22	-9.503E-03		4.467E-02	7.169E-02	4.878E-03	-0.133
NA-24	-4.105E-03		2.476E-03	Half-Life too short		
K-40	1.130E+00		4.972E-01	9.791E-01	7.430E-02	1.154
SC-46	-4.648E-02		6.953E-02	1.091E-01	1.217E-02	-0.426
V-48	-3.610E-02		1.086E-01	1.723E-01	1.704E-02	-0.210
CR-51	-1.543E-01		4.667E-01	7.386E-01	4.748E-02	-0.209
MN-54	3.682E-02		6.137E-02	1.039E-01	1.064E-02	0.354
CO-56	6.654E-02		6.199E-02	1.073E-01	1.121E-02	0.620
CO-58	-6.311E-02		5.893E-02	9.019E-02	8.904E-03	-0.700
FE-59	2.641E-02		1.404E-01	2.363E-01	1.944E-02	0.112
ZN-65	6.896E-02		1.447E-01	2.467E-01	1.738E-02	0.279
SE-75	-5.340E-02		5.989E-02	9.366E-02	5.358E-03	-0.570
SR-85	-1.418E-01		6.075E-02	8.750E-02	5.797E-03	-1.621
Y-88	-9.754E-03		3.946E-02	6.201E-02	3.532E-03	-0.157
Y-91	1.746E+01		2.279E+01	3.990E+01	2.358E+00	0.438
NB-94	3.549E-02		4.598E-02	7.995E-02	6.560E-03	0.444
NB-95	1.479E-02		5.763E-02	9.683E-02	8.858E-03	0.153
NB-95M	1.226E-01		1.886E-01	2.820E-01	2.076E-02	0.435
ZR-95	-2.900E-02		9.932E-02	1.617E-01	1.597E-02	-0.179
MO-99	-6.261E-01		5.371E+00	8.859E+00	1.402E+00	-0.071
TC-99M	-9.155E+04		7.630E+04	Half-Life too short		
RU-103	-6.848E-02		5.638E-02	8.545E-02	1.091E-02	-0.801
RH-106	-2.905E-02		4.688E-01	7.527E-01	9.388E-02	-0.039
RU-106	-2.905E-02		4.687E-01	7.527E-01	5.539E-02	-0.039
AG-108M	-3.742E-02		4.596E-02	7.335E-02	4.728E-03	-0.510
AG-110M	7.506E-01		1.033E-01	1.720E-01	1.357E-02	4.363
SN-113	-4.212E-02		6.414E-02	1.042E-01	6.391E-03	-0.404
CD-115	1.348E+00		4.091E+00	6.811E+00	4.578E-01	0.198
SN-117M	7.023E-02		5.546E-02	9.259E-02	4.921E-03	0.758
TE-123M	5.224E-02		3.468E-02	6.036E-02	3.257E-03	0.865
SB-124	-2.882E-02		8.225E-02	1.280E-01	8.868E-03	-0.225
SB-125	2.135E-01		1.420E-01	2.509E-01	1.566E-02	0.851
TE-125M	-5.480E+00		1.267E+01	2.007E+01	1.798E+00	-0.273
I-126	3.797E-02		2.590E-01	3.797E-01	2.919E-02	0.100
SB-126	5.165E-02		1.747E-01	2.571E-01	2.177E-02	0.201
SB-127	-1.931E-01		8.033E-01	1.324E+00	1.273E-01	-0.146
I-131	-2.146E-02		1.118E-01	1.868E-01	1.198E-02	-0.115
TE-132	9.199E-02		3.947E-01	6.559E-01	8.855E-02	0.140
BA-133	-1.031E-02		6.934E-02	9.536E-02	1.074E-02	-0.108
I-133	8.070E-05		1.091E-04	Half-Life too short		
CS-134	-5.942E-03		6.947E-02	1.141E-01	1.104E-02	-0.052
CS-135	1.501E-01		2.202E-01	3.698E-01	2.795E-02	0.406
I-135	3.560E+04		2.824E+04	Half-Life too short		
CS-136	-6.435E-02		1.420E-01	2.312E-01	2.071E-02	-0.278
CE-139	2.331E-02		3.641E-02	6.300E-02	3.307E-03	0.370
BA-140	8.127E-02		3.061E-01	5.053E-01	1.692E-01	0.161
LA-140	2.768E-02		7.920E-02	1.370E-01	9.401E-03	0.202

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CE-141	-3.923E-02		7.693E-02	1.190E-01	6.797E-03	-0.330
CE-143	3.808E+01		2.289E+01	3.355E+01	6.905E+00	1.135
CE-144	-4.599E-01		2.739E-01	3.900E-01	5.393E-02	-1.179
PM-144	-3.260E-02		4.658E-02	7.447E-02	6.044E-03	-0.438
PR-144	-2.446E+00		3.477E+00	5.557E+00	4.510E-01	-0.440
PM-146	-6.382E-03		6.788E-02	1.119E-01	9.778E-03	-0.057
ND-147	-6.251E-02		6.209E-01	1.009E+00	1.408E-01	-0.062
PM-149	1.793E+01		3.188E+01	5.295E+01	7.481E+00	0.339
EU-152	-4.599E-02		1.648E-01	2.254E-01	1.470E-02	-0.204
GD-153	-8.140E-02		1.327E-01	1.859E-01	1.453E-02	-0.438
EU-154	-1.952E-02		1.262E-01	2.039E-01	2.052E-02	-0.096
EU-155	9.644E-02		1.422E-01	2.370E-01	1.693E-02	0.407
TB-160	-9.291E-02		2.251E-01	3.588E-01	3.941E-02	-0.259
HO-166M	-5.020E-02		8.501E-02	1.362E-01	1.135E-02	-0.369
TA-182	-1.018E-02		1.748E-01	2.865E-01	1.753E-02	-0.036
IR-192	-7.452E-04		4.731E-02	7.620E-02	4.419E-03	-0.010
HG-203	4.844E-02		5.270E-02	8.907E-02	5.369E-03	0.544
BI-207	2.756E-02		8.739E-02	1.485E-01	1.226E-02	0.186
PB-210	-4.539E+00		8.713E+00	1.447E+01	1.110E+00	-0.314
PB-211	7.325E-01		1.118E+00	1.828E+00	8.769E-01	0.401
BI-212	1.680E+00	+	1.038E+00	1.408E+00	1.749E-01	1.193
RN-219	-3.834E-01		5.977E-01	9.663E-01	1.299E-01	-0.397
RA-223	-7.260E-01		9.457E-01	1.452E+00	2.339E-01	-0.500
AC-227	1.462E-01		3.563E-01	5.939E-01	6.016E-02	0.246
TH-227	1.462E-01		3.564E-01	5.939E-01	7.090E-02	0.246
TH-229	-1.139E-01		7.175E-01	1.152E+00	6.170E-02	-0.099
PA-231	-1.176E+00		2.151E+00	3.402E+00	4.449E-01	-0.346
TH-231	-7.260E-01		9.457E-01	1.452E+00	2.339E-01	-0.500
PA-233	9.438E-04		9.150E-02	1.478E-01	9.054E-03	0.006
PA-234	-3.901E-01		5.936E-01	9.193E-01	1.813E-01	-0.424
PA-234M	-1.972E+00		7.700E+00	1.219E+01	1.316E+00	-0.162
TH-234	2.536E-01		2.405E+00	3.630E+00	6.539E-01	0.070
U-235	2.602E-01		2.696E-01	4.400E-01	6.862E-02	0.591
NP-237	3.806E+00		1.010E+00	9.313E-01	2.130E-01	4.086
U-238	2.536E-01		2.405E+00	3.630E+00	6.539E-01	0.070
NP-239	-2.327E-01		6.309E-01	8.840E-01	5.460E-02	-0.263
CM-247	-2.276E-02		5.445E-02	8.928E-02	5.198E-03	-0.255
CF-249	-5.204E-02		6.020E-02	9.696E-02	5.573E-03	-0.537
CF-251	-3.421E-02		1.648E-01	2.749E-01	1.453E-02	-0.124
ANH-511	5.910E-02		5.340E-02	9.925E-02	6.555E-03	0.596

## VAX/VMS Nuclide Identification Report Generated

```
*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G1202047455
* Acquisition date   : 4-MAR-2010 12:48:27 Detector SN#      :
* Detector ID        : GAM18 Sensitivity      : 5.000
* Geometry           : CAN Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:01.85 Half life ratio : 8.000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 22-FEB-2010 00:00:00 Nuclide Library : SOLID
* Sample ID          : G1202047455 Analyst initials: MXR1
* Batch Number       : 955027 Sample Quantity : 1.5544E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23 MS Isotope      :
* MSD DPM             : 0.000 MSD Isotope      :
* LCS DPM             : 0.000 LCS Isotope      :
* LCSD DPM            : 0.000 LCSD Isotope     :
*****
```

## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
CO-57	1.997E-01	6.318E-02	3.040E-02	3.223E-02
CO-60	6.449E+00	5.433E-01	3.367E-02	2.772E-01
CD-109	3.427E+01	3.735E+00	9.673E-01	1.906E+00
SN-126	3.373E+00	3.676E-01	9.583E-02	1.876E-01
BA-137M	5.309E+00	4.462E-01	4.138E-02	2.276E-01
CS-137	5.608E+00	4.722E-01	4.371E-02	2.409E-01
TL-208	4.211E-01	1.115E-01	4.333E-02	5.687E-02
BI-211	2.540E+00	5.829E-01	2.489E-01	2.974E-01
PB-212	1.288E+00	1.676E-01	7.886E-02	8.552E-02
BI-214	7.374E-01	2.101E-01	8.028E-02	1.072E-01
PB-214	9.220E-01	2.174E-01	9.049E-02	1.109E-01
RA-224	2.050E+00	1.163E+00	8.300E-01	5.932E-01
RA-226	7.374E-01	2.101E-01	8.028E-02	1.072E-01
AC-228	1.479E+00	4.576E-01	2.110E-01	2.335E-01
RA-228	1.479E+00	4.576E-01	2.110E-01	2.335E-01
TH-228	1.288E+00	1.676E-01	7.886E-02	8.552E-02
TH-232	1.479E+00	4.576E-01	2.110E-01	2.335E-01
AM-241	1.333E+01	1.258E+00	2.864E-01	6.419E-01

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-1.917E-01	4.617E-01	3.959E-01	2.356E-01 NOT IDENT.
NA-22	-9.503E-03	4.377E-02	3.631E-02	2.233E-02 NOT IDENT.
NA-24	-4.105E+03	4.853E+03	0.000E+00	2.476E+03 SHORT HLIF
K-40	1.130E+00	4.873E-01	4.940E-01	2.486E-01 NOT IDENT.
SC-46	-4.648E-02	6.814E-02	5.580E-02	3.477E-02 NOT IDENT.
V-48	-3.610E-02	1.064E-01	8.791E-02	5.430E-02 NOT IDENT.
CR-51	-1.543E-01	4.573E-01	3.884E-01	2.333E-01 NOT IDENT.
MN-54	3.682E-02	6.014E-02	5.325E-02	3.068E-02 NOT IDENT.
CO-56	6.654E-02	6.075E-02	5.499E-02	3.099E-02 NOT IDENT.



CO-58	-6.311E-02	5.775E-02	4.626E-02	2.946E-02	NOT IDENT.
FE-59	2.641E-02	1.376E-01	1.202E-01	7.020E-02	NOT IDENT.
ZN-65	6.896E-02	1.418E-01	1.254E-01	7.234E-02	NOT IDENT.
SE-75	-5.340E-02	5.870E-02	4.949E-02	2.995E-02	FAIL ABUN
SR-85	-1.418E-01	5.954E-02	4.543E-02	3.038E-02	NOT IDENT.
Y-88	-9.754E-03	3.867E-02	3.109E-02	1.973E-02	NOT IDENT.
Y-91	1.746E+01	2.233E+01	2.024E+01	1.139E+01	NOT IDENT.
NB-94	3.549E-02	4.506E-02	4.117E-02	2.299E-02	NOT IDENT.
NB-95	1.479E-02	5.648E-02	4.974E-02	2.881E-02	NOT IDENT.
NB-95M	1.226E-01	1.848E-01	1.495E-01	9.430E-02	NOT IDENT.
ZR-95	-2.900E-02	9.733E-02	8.311E-02	4.966E-02	NOT IDENT.
MO-99	-6.261E-01	5.263E+00	4.555E+00	2.685E+00	NOT IDENT.
TC-99M	-9.155E+10	1.495E+11	0.000E+00	7.630E+10	SHORT HLIF
RU-103	-6.848E-02	5.525E-02	4.441E-02	2.819E-02	FAIL ABUN
RH-106	-2.905E-02	4.594E-01	3.888E-01	2.344E-01	NOT IDENT.
RU-106	-2.905E-02	4.594E-01	3.888E-01	2.344E-01	NOT IDENT.
AG-108M	-3.742E-02	4.504E-02	3.826E-02	2.298E-02	NOT IDENT.
AG-110M	7.506E-01	1.013E-01	8.873E-02	5.167E-02	NOT IDENT.
SN-113	-4.212E-02	6.286E-02	5.450E-02	3.207E-02	NOT IDENT.
CD-115	1.348E+00	4.010E+00	3.534E+00	2.046E+00	NOT IDENT.
SN-117M	7.023E-02	5.435E-02	4.957E-02	2.773E-02	NOT IDENT.
TE-123M	5.224E-02	3.399E-02	3.231E-02	1.734E-02	NOT IDENT.
SB-124	-2.882E-02	8.061E-02	6.434E-02	4.113E-02	NOT IDENT.
SB-125	2.135E-01	1.392E-01	1.309E-01	7.100E-02	NOT IDENT.
TE-125M	-5.480E+00	1.242E+01	1.084E+01	6.335E+00	NOT IDENT.
I-126	3.797E-02	2.539E-01	1.958E-01	1.295E-01	NOT IDENT.
SB-126	5.165E-02	1.712E-01	1.323E-01	8.735E-02	NOT IDENT.
SB-127	-1.931E-01	7.872E-01	6.824E-01	4.017E-01	NOT IDENT.
I-131	-2.146E-02	1.096E-01	9.791E-02	5.592E-02	NOT IDENT.
TE-132	9.199E-02	3.868E-01	3.479E-01	1.974E-01	NOT IDENT.
BA-133	-1.031E-02	6.795E-02	5.000E-02	3.467E-02	NOT IDENT.
I-133	8.070E+01	2.138E+02	0.000E+00	1.091E+02	SHORT HLIF
CS-134	-5.942E-03	6.808E-02	5.856E-02	3.473E-02	NOT IDENT.
CS-135	1.501E-01	2.158E-01	1.953E-01	1.101E-01	NOT IDENT.
I-135	3.560E+10	5.534E+10	0.000E+00	2.824E+10	SHORT HLIF
CS-136	-6.435E-02	1.392E-01	1.177E-01	7.101E-02	FAIL ABUN
CE-139	2.331E-02	3.568E-02	3.369E-02	1.821E-02	NOT IDENT.
BA-140	8.127E-02	2.999E-01	2.621E-01	1.530E-01	NOT IDENT.
LA-140	2.768E-02	7.762E-02	6.895E-02	3.960E-02	NOT IDENT.
CE-141	-3.923E-02	7.539E-02	6.386E-02	3.847E-02	NOT IDENT.
CE-143	3.808E+01	2.243E+01	1.768E+01	1.144E+01	NOT IDENT.
CE-144	-4.599E-01	2.684E-01	2.097E-01	1.370E-01	NOT IDENT.
PM-144	-3.260E-02	4.565E-02	3.835E-02	2.329E-02	NOT IDENT.
PR-144	-2.446E+00	3.407E+00	2.862E+00	1.738E+00	NOT IDENT.
PM-146	-6.382E-03	6.652E-02	5.832E-02	3.394E-02	NOT IDENT.
ND-147	-6.251E-02	6.085E-01	5.235E-01	3.105E-01	FAIL ABUN
PM-149	1.793E+01	3.124E+01	2.792E+01	1.594E+01	NOT IDENT.
EU-152	-4.599E-02	1.615E-01	1.183E-01	8.239E-02	FAIL ABUN
GD-153	-8.140E-02	1.301E-01	1.007E-01	6.637E-02	NOT IDENT.
EU-154	-1.952E-02	1.237E-01	1.033E-01	6.312E-02	FAIL ABUN
EU-155	9.644E-02	1.394E-01	1.281E-01	7.111E-02	NOT IDENT.
TB-160	-9.291E-02	2.206E-01	1.836E-01	1.126E-01	FAIL ABUN
HO-166M	-5.020E-02	8.331E-02	7.011E-02	4.251E-02	FAIL ABUN
TA-182	-1.018E-02	1.713E-01	1.453E-01	8.739E-02	NOT IDENT.
IR-192	-7.452E-04	4.636E-02	4.008E-02	2.365E-02	FAIL ABUN
HG-203	4.844E-02	5.165E-02	4.700E-02	2.635E-02	NOT IDENT.
BI-207	2.756E-02	8.564E-02	7.560E-02	4.369E-02	NOT IDENT.
PB-210	-4.539E+00	8.538E+00	7.984E+00	4.356E+00	NOT IDENT.
PB-211	7.325E-01	1.095E+00	9.551E-01	5.588E-01	NOT IDENT.
BI-212	1.680E+00	1.017E+00	7.243E-01	5.188E-01	FAIL ABUN
RN-219	-3.834E-01	5.857E-01	5.050E-01	2.988E-01	NOT IDENT.
RA-223	-7.260E-01	9.268E-01	7.630E-01	4.729E-01	FAIL ABUN
AC-227	1.462E-01	3.492E-01	3.141E-01	1.781E-01	NOT IDENT.
TH-227	1.462E-01	3.493E-01	3.141E-01	1.782E-01	NOT IDENT.
TH-229	-1.139E-01	7.032E-01	6.139E-01	3.588E-01	FAIL ABUN
PA-231	-1.176E+00	2.108E+00	1.794E+00	1.075E+00	NOT IDENT.
TH-231	-7.260E-01	9.268E-01	7.630E-01	4.729E-01	FAIL ABUN
PA-233	9.438E-04	8.967E-02	7.774E-02	4.575E-02	NOT IDENT.
PA-234	-3.901E-01	5.817E-01	4.695E-01	2.968E-01	NOT IDENT.
PA-234M	-1.972E+00	7.546E+00	6.219E+00	3.850E+00	NOT IDENT.
TH-234	2.536E-01	2.357E+00	1.988E+00	1.202E+00	NOT IDENT.
U-235	2.602E-01	2.642E-01	2.361E-01	1.348E-01	FAIL ABUN
NP-237	3.806E+00	9.897E-01	5.061E-01	5.049E-01	NOT IDENT.
U-238	2.536E-01	2.357E+00	1.988E+00	1.202E+00	NOT IDENT.
NP-239	-2.327E-01	6.183E-01	4.768E-01	3.154E-01	NOT IDENT.
CM-247	-2.276E-02	5.336E-02	4.666E-02	2.723E-02	NOT IDENT.
CF-249	-5.204E-02	5.900E-02	5.072E-02	3.010E-02	NOT IDENT.
CF-251	-3.421E-02	1.615E-01	1.468E-01	8.241E-02	NOT IDENT.

ANH-511

5.910E-02

5.234E-02

5.154E-02

2.670E-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	375.7455
49.72	407.5858
57.36	489.3340
59.54	421.8984
63.29	321.2364
63.29	321.2364
64.28	332.2412
67.75	353.2571
69.67	363.1248
70.83	347.0381
72.81	514.9811
72.87	515.0754
72.87	515.0754
74.82	512.2369
74.82	512.2369
74.82	512.2369
74.97	512.4659
77.11	484.6779
77.11	484.6779
77.11	484.6779
79.69	406.4195
79.80	403.5682
80.12	403.9362
80.19	404.0148
80.57	417.8830
81.00	421.3778
81.07	421.4617
81.07	421.4617
83.79	396.0490
83.79	396.0490
85.43	412.9512
86.48	449.0112
86.55	449.0970
86.79	353.2301
86.94	353.3739
87.57	353.9685
88.03	354.4016
88.47	354.8135
89.96	356.2034
91.11	357.2685
92.59	358.6299
92.59	358.6299
93.35	359.3240
94.67	277.3659
94.87	277.5052
94.87	277.5052
95.86	321.7082
97.43	319.8402
98.44	286.2223
99.53	260.3223
100.11	264.8748
103.18	307.9509
103.37	300.7034
105.31	260.7344
106.12	275.0281
109.28	301.6187
111.00	294.1966
111.76	301.1473
116.30	303.7184
117.23	302.0407
121.12	293.0145
121.78	293.4178
122.06	293.5889
123.07	252.8833
131.20	280.0242
133.52	325.1779
136.00	234.0289

136.47	234.2395
140.51	295.3270
140.51	0.0000
143.76	258.1078
144.24	275.5566
144.24	275.5566
145.44	307.2303
152.43	291.8652
153.25	291.2355
154.21	265.0753
154.21	265.0753
156.02	274.3497
158.56	222.5572
159.00	224.2376
162.66	291.6846
163.33	305.3666
165.86	258.3696
176.60	277.4138
177.52	281.4575
181.07	276.9639
184.41	304.8904
185.72	306.2322
193.51	297.5249
197.04	276.6750
205.31	280.8807
210.85	272.3257
215.65	300.2743
222.11	320.3270
227.38	327.4117
228.16	313.0640
228.18	313.0713
235.69	322.3808
235.96	327.2328
235.96	327.2328
238.63	385.4184
238.63	385.4184
240.99	373.8141
242.00	401.3512
244.70	242.8827
252.40	259.0411
252.80	251.0973
256.23	251.0974
256.23	251.0974
260.90	231.0838
264.66	259.6857
268.22	250.4708
269.46	238.4818
269.46	238.4818
271.23	268.8257
273.65	325.3196
276.40	266.2273
277.37	268.5837
277.60	268.6508
278.00	272.9203
279.20	253.5350
279.54	262.9832
280.46	298.6270
283.69	278.7864
284.31	270.6150
285.41	253.1517
285.90	244.9116
287.50	242.1841
293.27	263.2843
295.22	268.4720
295.96	268.6813
298.57	224.0133
299.98	212.4420
299.98	212.4420
300.09	212.4664
300.09	212.4664
300.13	212.4725
301.36	236.5681
302.85	286.5760
304.50	234.7672
304.50	234.7672
304.85	245.5261
308.46	221.7821
311.90	219.3212

316.51	218.1665
319.41	214.4567
320.08	222.1824
323.87	252.3765
323.87	252.3765
328.76	220.7772
333.37	261.7031
334.37	230.3054
334.37	230.3054
338.28	239.3106
338.28	239.3106
338.32	239.3205
338.32	239.3205
338.32	239.3205
340.48	221.0175
340.55	221.0297
344.28	230.6643
351.06	222.0561
351.93	222.2292
356.01	209.8202
364.49	219.5365
366.42	227.1470
383.85	191.0695
388.16	250.7633
388.63	234.2617
391.69	235.7816
400.66	249.6306
401.81	230.2856
402.40	223.8662
404.85	208.4201
410.95	227.2856
414.70	210.0643
423.72	240.9620
427.09	177.8646
427.87	192.2452
433.94	234.2543
453.88	230.0046
463.37	231.5958
468.07	253.9477
473.00	228.2731
476.78	218.0298
477.60	209.2724
487.02	199.7192
492.35	169.5372
497.08	206.1031
511.00	175.7215
514.00	313.6877
527.90	161.3367
529.87	0.0000
531.02	164.7302
537.26	156.1451
546.56	0.0000
563.25	146.1660
569.33	147.7574
569.50	148.8192
569.70	148.8400
583.19	155.3298
600.60	126.7662
602.73	142.5098
604.72	128.4053
609.32	143.7654
609.32	143.7654
610.33	139.5564
614.28	152.4231
618.01	138.0094
621.93	152.3633
621.93	152.3633
633.25	157.6769
635.95	138.3078
636.99	153.6439
645.85	169.7205
657.76	125.9487
661.66	132.5215
661.66	132.5215
664.57	124.8262
666.33	121.7788
666.50	121.7896
677.62	128.0723

685.70	136.0671
695.00	131.1019
696.49	147.1332
696.51	147.1364
697.00	142.4845
702.65	123.1536
706.68	142.2445
711.68	141.6565
720.70	120.3403
721.93	138.3147
722.78	136.7461
722.91	136.7549
723.31	141.6663
724.19	136.8398
727.33	120.7352
733.00	116.1649
735.93	117.5597
739.50	124.4643
747.24	132.6178
752.31	132.9407
753.82	117.6117
756.73	137.0829
763.94	148.2063
765.81	142.5199
766.42	144.5014
777.92	148.2056
778.90	155.1020
783.70	128.0710
785.37	136.9751
795.86	147.4670
801.95	124.2133
810.29	170.1978
810.76	157.3696
815.77	136.8910
818.51	134.0771
832.01	158.8577
834.85	160.0553
836.80	0.0000
846.77	127.7028
856.80	156.5294
860.56	164.8737
871.09	156.4658
873.19	140.3331
875.33	0.0000
879.36	152.9297
880.51	149.9429
883.24	133.7745
884.68	135.8980
889.28	184.2737
898.04	182.8853
911.20	173.5405
911.20	173.5405
911.20	173.5405
926.50	195.3973
937.49	199.3819
944.13	168.5043
946.00	200.0503
949.00	162.5368
962.29	193.3404
964.08	204.3238
966.15	208.1086
968.97	201.8417
968.97	201.8417
968.97	201.8417
983.53	172.1481
996.26	155.8914
1001.03	144.4043
1004.73	132.8197
1037.84	145.9007
1038.76	0.0000
1048.07	151.1066
1050.41	144.6962
1050.41	144.6962
1063.66	134.1273
1085.87	119.1050
1099.45	136.7578
1112.07	148.7963
1115.54	143.2408

1120.29	129.1239
1120.29	129.1239
1120.55	124.3551
1121.30	129.1710
1131.51	0.0000
1173.23	108.0461
1177.93	71.6543
1189.05	70.4431
1204.77	61.9475
1221.41	50.4112
1231.02	69.3994
1235.36	47.6535
1238.28	52.6654
1260.41	0.0000
1271.85	39.1537
1274.44	47.2213
1274.54	48.2277
1291.59	46.4556
1298.22	0.0000
1312.11	48.7701
1332.49	35.7739
1365.19	22.6982
1368.63	0.0000
1384.29	40.4554
1408.01	27.1489
1457.56	0.0000
1460.82	23.3036
1489.16	36.2863
1505.03	29.0701
1596.21	28.7897
1620.50	26.0656
1678.03	0.0000
1690.97	21.5992
1764.49	31.9531
1764.49	31.9531
1770.23	14.2196
1771.35	48.0044
1791.20	0.0000
1836.06	21.3044

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202047455

Total Uranium Activity	8.7489E-01	ug/g
Total Uranium Counting Unc.	7.0123E+00	ug/g
Total Uranium Tpu	3.5777E-06	ug/g
Total Uranium Mda	5.9147E+00	ug/g



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*****
*
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON ,SC 29417                           *
*                               GROSS GAMMA REPORT                             *
*
*****
*
*  BATCH ID      : 955027                SAMPLE ID   : G1202047455                *
*  ANALYST       : MXR1                  DETECTOR    : GAM18                    *
*  SAMPLE DATE   : 22-FEB-2010 00:00:00.00  COUNT TIME : 0 01:00:00.00          *
*  ANALYSIS DATE : 4-MAR-2010 12:48:27.23  SAMPLE ALQT: 155.440 GRAM            *
*
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 2.689E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 2.657E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 2.714E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.321E+00

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## Radiochemistry Batch Checklist, Rev10

Batch#

956741

Product:

Tritium

Date:

3/5/10

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.	✓		
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.	✓		AP 3/5/10
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 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:

Srinivas Pare

LANL 3/16/10

Secondary Review Performed By:

Suzette Yoon 3/5/10

# Tritium Que Sheet

120 or 60 on 02-MAR-10

Batch #: 956741

Analyst: KKK2 First Client Due Date 16-MAR-10 Internal Due Date: 05-MAR-10

Spike Isotope: Hydrogen-3

Spike Code: 0134-K

Expiration Date: 3/27/10

Vol: 0.1

LCS Isotope: Hydrogen-3

LCS Code: 0134-K

Expiration Date: 3/27/10

Vol: 0.1

Prep Date: 3/2/10

Initials: YK Pipet ID: 2970968

Witness: 3/3/10

Page 454 of 644

Sample ID	Client Samp ID	Type	Hazard Code	Mln 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 Dis Vol (mL)
247193005-1	RE15-10-8188	SAMPLE		.25 pCi/mL SOIL	LANL010		10-FEB-10	8	30	5		603.52	593.86	9.66
247193006-1	RE15-10-8187	SAMPLE		.25 pCi/mL SOIL	LANL010		10-FEB-10	10	31	6		561.46	547.98	13.48
247193007-1	RE15-10-8197	SAMPLE		.25 pCi/mL SOIL	LANL010		10-FEB-10	7.5	32	7		570.43	562.44	7.99
247193012-1	RE15-10-8195	SAMPLE		.25 pCi/mL SOIL	LANL010		10-FEB-10	8.5	33	12		594.73	585.81	8.92
247193013-1	RE15-10-8226	SAMPLE		.25 pCi/mL SOIL	LANL010		10-FEB-10	10	34	13		571.21	557.56	13.71
247337001-1	RE15-10-8346	SAMPLE		.25 pCi/mL SOIL	LANL010		12-FEB-10	10	35	15		620.36	555.24	65.14
247337002-1	RE15-10-8347	SAMPLE		.25 pCi/mL SOIL	LANL010		12-FEB-10	10	36	16		599.81	583.62	16.19
247337003-1	RE15-10-8344	SAMPLE		.25 pCi/mL SOIL	LANL010		12-FEB-10	10	37	17		593.30	561.26	32.04
247337004-1	RE15-10-8345	SAMPLE		.25 pCi/mL SOIL	LANL010		12-FEB-10	10	38	18		647.10	606.98	40.12
247337005-1	RE15-10-8342	SAMPLE		.25 pCi/mL SOIL	LANL010		12-FEB-10	10	39	19		592.19	560.80	31.39
247337006-1	RE15-10-8343	SAMPLE		.25 pCi/mL SOIL	LANL010		12-FEB-10	10	40	20		577.79	554.16	23.69
247337007-1	RE15-10-8377	SAMPLE		.25 pCi/mL SOIL	LANL010		12-FEB-10	10	41	21		612.92	580.44	32.48
1202051378-1	MB for batch 956741	MB		.25 pCi/mL SOIL	QC ACCOUNT		12-FEB-10	10	42	22		20.00	0.00	20.00
1202051379-1	RE15-10-8346(247337001DUP)	DUP		.25 pCi/mL SOIL	QC ACCOUNT		12-FEB-10	10	43	15		620.36	555.22	65.14
1202051380-1	LCS for batch 956741	LCS		.25 pCi/mL SOIL	QC ACCOUNT		12-FEB-10	10	44	23		20.00	0.00	20.00

Bkg Rack #: 29

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, Wallace (Yellow) 4140127, LS6000 (Brown) 7060655, Wallace

(Pink) 2200082, Wallace (White) 4140299, Purple 7069123, Silver 7060656, Orange DG06095168

Calibration Used: Ecosci Ultra (10 mL sample/13 mL Ecosci Ultra)

Data Reviewed By: Almond

GEL Laboratories LLC, Radiochemistry Division

Page 1 of 1

DATE	3/1/2010	INITIALS	KXK2	BATCH NUMBER	956741	
Sample #	Sample Wet (g)	% Moisture of Sample (Balance Interface using % Moisture Batch)	Total Moisture in Sample (mL)	Sample Dry (g)	mLs aliquoted into LSC vial	Collection Tube Number
247193001	0.00	0.011	0.00	0.00	10	
247193002	0.00	0.011	0.00	0.00	10	
247193003	0.00	0.010	0.00	0.00	10	
247193004	0.00	0.010	0.00	0.00	10	
247193005	603.52	0.016	9.66	593.86	8	
247193006	561.46	0.024	13.48	547.98	10	
247193007	570.43	0.014	7.99	562.44	7.5	
247193008	0.00	0.000	0.00	0.00	10	
247193009	0.00	0.012	0.00	0.00	10	
247193010	0.00	0.006	0.00	0.00	10	
247193011	0.00	0.012	0.00	0.00	10	
247193012	594.73	0.015	8.92	585.81	8.5	
247193013	571.21	0.024	13.71	557.50	10	
247193014	0.00	0.012	0.00	0.00	10	
247337001	620.36	0.105	65.14	555.22	10	
247337002	599.81	0.027	16.19	583.62	10	
247337003	593.30	0.054	32.04	561.26	10	
247337004	647.10	0.062	40.12	606.98	10	
247337005	592.19	0.053	31.39	560.80	10	
247337006	577.79	0.041	23.69	554.10	10	
247337007	612.92	0.053	32.48	580.44	10	
MB	20.00	1.000	20.00	0.00	10	
DUP	620.36	0.105	65.14	555.22	10	
LCS	20.00	1.000	20.00	0.00	10	

## Tritium Solid

Filename : H3VAC.XLS  
File type : Excel  
Version # : 1.2.6

Batch : 956741  
Analyst : KXK2  
Prep Date : 3/2/2010

H-3 Abundance : 1  
Method Uncertainty : 0.0691  
Geometry: 10mL DW/13mL  
Ecoscint Ultra

Spike SN :  
Spike Exp Date :  
Spike Activity (dpm/ml):  
Spike Volume Added:

LCS SN : 0134-K  
LCS Exp Date : 3/27/2010  
LCS Activity (dpm/ml): 2460.99  
LCS Volume Added: 0.10

Procedure Code : LSC\_VH-3S  
Paramname : Tritium  
Required MDC : 250 pCi/L  
Half-life of Tritium : 12.32 years

Pipet, 0.1 ml Stdev : +/- 0.000701 ml  
Pipet, 0.5 ml Stdev : +/- 0.002564 ml  
Pipet, 1.0 ml Stdev : +/- 0.005480 ml  
Pipet, 5.0 ml Stdev : +/- 0.025729 ml

## Sample Characteristics

Pos.	Sample ID	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
1	247193005.1	603.52	0.0097	0.0080	2.5729E-05	593.86	1.60%	5	2/10/2010 12:00
2	247193006.1	561.46	0.0135	0.0100	2.5729E-05	547.98	2.40%	6	2/10/2010 12:00
3	247193007.1	570.43	0.0080	0.0075	2.5729E-05	562.44	1.40%	7	2/10/2010 12:00
4	247193012.1	594.73	0.0089	0.0085	2.5729E-05	585.81	1.50%	12	2/10/2010 12:00
5	247193013.1	571.21	0.0137	0.0100	2.5729E-05	557.50	2.40%	13	2/10/2010 12:00
6	247337001.1	620.36	0.0651	0.0100	2.5729E-05	555.22	10.50%	15	2/12/2010 12:00
7	247337002.1	599.81	0.0162	0.0100	2.5729E-05	583.62	2.70%	16	2/12/2010 12:00
8	247337003.1	593.30	0.0320	0.0100	2.5729E-05	581.28	5.40%	17	2/12/2010 12:00
9	247337004.1	647.10	0.0401	0.0100	2.5729E-05	606.88	6.20%	18	2/12/2010 12:00
10	247337005.1	592.19	0.0314	0.0100	2.5729E-05	560.80	5.30%	19	2/12/2010 12:00
11	247337006.1	577.79	0.0237	0.0100	2.5729E-05	554.10	4.10%	20	2/12/2010 12:00
12	247337007.1	612.92	0.0325	0.0100	2.5729E-05	580.44	5.30%	21	2/12/2010 12:00
13	1202051378.1	20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	22	3/2/2010 0:00
14	1202051379.1	620.36	0.0651	0.0100	2.5729E-05	555.22	10.50%	15	2/12/2010 12:00
15	1202051380.1	20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	23	3/2/2010 0:00

Count raw Data				Background				Calibration Data				Backgrounds			
Pos.	Rack Position #	Counting Time (min.)	Quench#	Gross cpm	cpm	Count Time (min.)	Count Start Date/Time	Sample Decay	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Efficiency Error (cpm/dpm)	Rack Position #	Count Start Date/Time
1	30	11.5463	762.45	888.28	1.15	60	3/4/2010 7:14	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2751	0.00782	29	3/4/2010 6:11
2	31	19.3297	757.63	529.99	1.15	60	3/4/2010 7:28	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2672	0.00782	29	3/4/2010 6:11
3	32	60.0297	757.01	98.6	1.15	60	3/4/2010 7:49	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2662	0.00782	29	3/4/2010 6:11
4	33	60.0297	758.8	142.76	1.15	60	3/4/2010 8:52	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2698	0.00782	29	3/4/2010 6:11
5	34	19.463	761.42	528.51	1.15	60	3/4/2010 9:55	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2734	0.00782	29	3/4/2010 6:11
6	35	60.0297	759.47	2.94	1.15	60	3/4/2010 10:16	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2686	0.00782	29	3/4/2010 6:11
7	36	60.0297	759.55	2.84	1.15	60	3/4/2010 11:19	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2704	0.00782	29	3/4/2010 6:11
8	37	60.013	759.03	3.24	1.15	60	3/4/2010 12:21	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2695	0.00782	29	3/4/2010 6:11
9	38	60.0297	758.81	2.18	1.15	60	3/4/2010 13:24	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2691	0.00782	29	3/4/2010 6:11
10	39	60.013	761.49	3.03	1.15	60	3/4/2010 14:28	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2735	0.00782	29	3/4/2010 6:11
11	40	60.0297	762.89	2.89	1.15	60	3/4/2010 15:29	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2758	0.00782	29	3/4/2010 6:11
12	41	60.0297	757.99	2.5	1.15	60	3/4/2010 16:32	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2678	0.00782	29	3/4/2010 6:11
13	42	60.0296	760.97	1.17	1.15	60	3/4/2010 17:35	1.000	LSCORANGE	7/23/2009	7/31/2010	0.2727	0.00782	29	3/4/2010 6:11
14	43	60.0296	762.59	2.81	1.15	60	3/4/2010 18:37	0.997	LSCORANGE	7/23/2009	7/31/2010	0.2753	0.00782	29	3/4/2010 6:11
15	44	15.013	761.76	37.29	1.15	60	3/4/2010 19:40	1.000	LSCORANGE	7/23/2009	7/31/2010	0.2739	0.00782	29	3/4/2010 6:11

## 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	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	pCi/L	CPM	CPM	pCi/L	pCi/L						
1	164.9213	116.4358	250	250	286.2384	182213.4264	0.013	0.013	887.130	8.772	1801.7732	12827.6194	SAMPLE	SAMPLE				
2	110.5242	78.0310	250	250	182.3130	89448.4842	0.013	0.013	528.840	5.238	885.9760	6282.5483	SAMPLE	SAMPLE				
3	103.2487	72.8845	250	250	157.1026	22061.2211	0.016	0.016	87.450	1.289	291.8241	1565.5777	SAMPLE	SAMPLE				
4	90.2187	63.6851	250	250	137.2782	28012.8007	0.014	0.014	141.610	1.548	306.2824	1875.9128	SAMPLE	SAMPLE				
5	107.7477	76.0708	250	250	177.6239	96882.9059	0.013	0.013	525.360	5.203	860.1605	6108.9388	SAMPLE	SAMPLE				
6	76.7236	54.1675	250	250	116.7422	301.1240	0.146	0.146	1.790	0.261	43.9108	48.6621	SAMPLE	SAMPLE				
7	76.2236	53.8145	250	250	115.9813	249.0225	0.169	0.169	1.490	0.251	41.9942	45.4348	SAMPLE	SAMPLE				
8	76.4693	53.9880	250	250	116.3570	350.4020	0.130	0.130	2.090	0.270	45.3434	51.4938	SAMPLE	SAMPLE				
9	76.5667	54.0567	250	250	116.5034	172.9180	0.229	0.229	1.030	0.236	39.5405	41.3338	SAMPLE	SAMPLE				
10	75.3519	53.1981	250	250	114.6567	310.5982	0.141	0.141	1.880	0.264	43.5989	48.6703	SAMPLE	SAMPLE				
11	74.7295	52.7597	250	250	113.7078	252.3340	0.164	0.164	1.540	0.253	41.4417	45.0142	SAMPLE	SAMPLE				
12	76.9519	54.3287	250	250	117.0896	227.7804	0.183	0.183	1.350	0.247	41.6051	44.5271	SAMPLE	SAMPLE				
13	75.3778	53.2172	250	250	114.6941	3.3055	8.829	8.829	0.020	0.197	32.4912	32.4921	MB	MB				
14	74.8622	52.8534	250	250	113.9099	272.4795	0.155	0.155	1.660	0.257	42.1590	46.2334	247337001.1	DUP	10.0%	0.1509	5542.7684	107.3%
15	118.6095	83.7393	250	250	200.3510	5945.1778	0.045	0.045	36.140	1.582	260.2603	489.0673	LCS	LCS				

# REGISTRY

THU 4 MAR 2010 6:09

\*\*\* DIRECTORY PATH :S:\LSC\O\DA\956741A0 \*\*\*

PARAMETER GROUP: 8  
ID: H-3 (2)

00A PROGRAM MODE 6 ->

ORDER	POS	ID	CTIME	COUNTS	CUCNTS	MCW	REP	STD	STMS	STIME
1	29	BKG	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
2	30	247193005	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
3	31	247193006	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
4	32	247193007	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
5	33	247193012	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
6	34	247193013	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
7	35	247337001	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
8	36	247337002	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
9	37	247337003	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
10	38	247337004	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
11	39	247337005	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
12	40	247337006	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
13	41	247337007	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
14	42	1202051378	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
15	43	1202051379	60:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
16	44	1202051380	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	50- 175	1	2
2	5- 320	1	2
3	1- 1024	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
Page 1						



# REGISTRY

Q012901N.001	4 MAR 2010	7:12				
29	BKG	60:01.780	759.71	1.15	2.40	6.97
Q023001N.001	4 MAR 2010	7:26				
30	247193005	11:32.780	762.45	888.28	970.11	974.45
Q033101N.001	4 MAR 2010	7:48				
31	247193006	19:19.780	757.63	529.99	577.44	582.10
Q043201N.001	4 MAR 2010	8:50				
32	247193007	60:01.780	757.01	98.60	107.69	112.86
Q053301N.001	4 MAR 2010	9:53				
33	247193012	60:01.780	758.60	142.76	155.30	159.99
Q063401N.001	4 MAR 2010	10:15				
34	247193013	19:27.780	761.42	526.51	580.32	585.73
Q073501N.001	4 MAR 2010	11:17				
35	247337001	60:01.780	758.47	2.94	4.33	8.69
Q083601N.001	4 MAR 2010	12:20				
36	247337002	60:01.779	759.55	2.64	3.95	8.52
Q093701N.001	4 MAR 2010	13:22				
37	247337003	60:00.779	759.03	3.24	4.51	9.65
Q103801N.001	4 MAR 2010	14:25				
38	247337004	60:01.779	758.81	2.18	3.68	8.66
Q113901N.001	4 MAR 2010	15:27				
39	247337005	60:00.779	761.49	3.03	4.55	9.85
Q124001N.001	4 MAR 2010	16:30				
40	247337006	60:01.779	762.89	2.69	4.10	8.96
Q134101N.001	4 MAR 2010	17:33				
41	247337007	60:01.779	757.99	2.50	3.78	8.44
Q144201N.001	4 MAR 2010	18:36				
42	1202051378	60:01.778	760.97	1.17	2.50	7.28
Q154301N.001	4 MAR 2010	19:38				
43	1202051379	60:01.778	762.59	2.81	4.41	8.90
Q164401N.001	4 MAR 2010	19:56				
44	1202051380	15:00.778	761.76	37.29	42.88	46.77

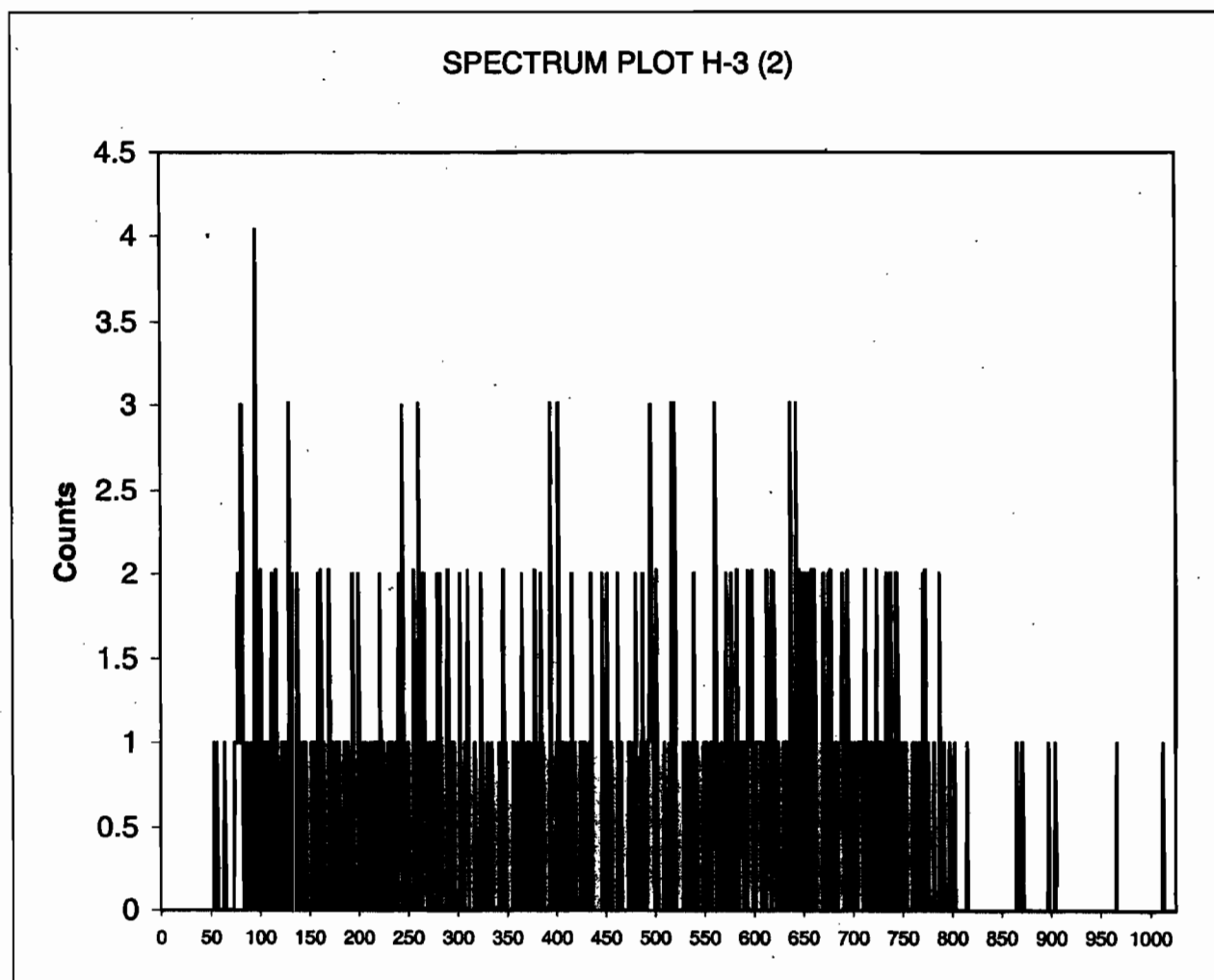
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Data Capture Date:  
FileName:  
File Info:

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ID: H-3 (2)  
Comments: ORANGE

Sample, Rack-Pos, Time: 1, BKG; 60.02967:  
Quench: 759.71  
Start, End, X-Axis 50-175

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

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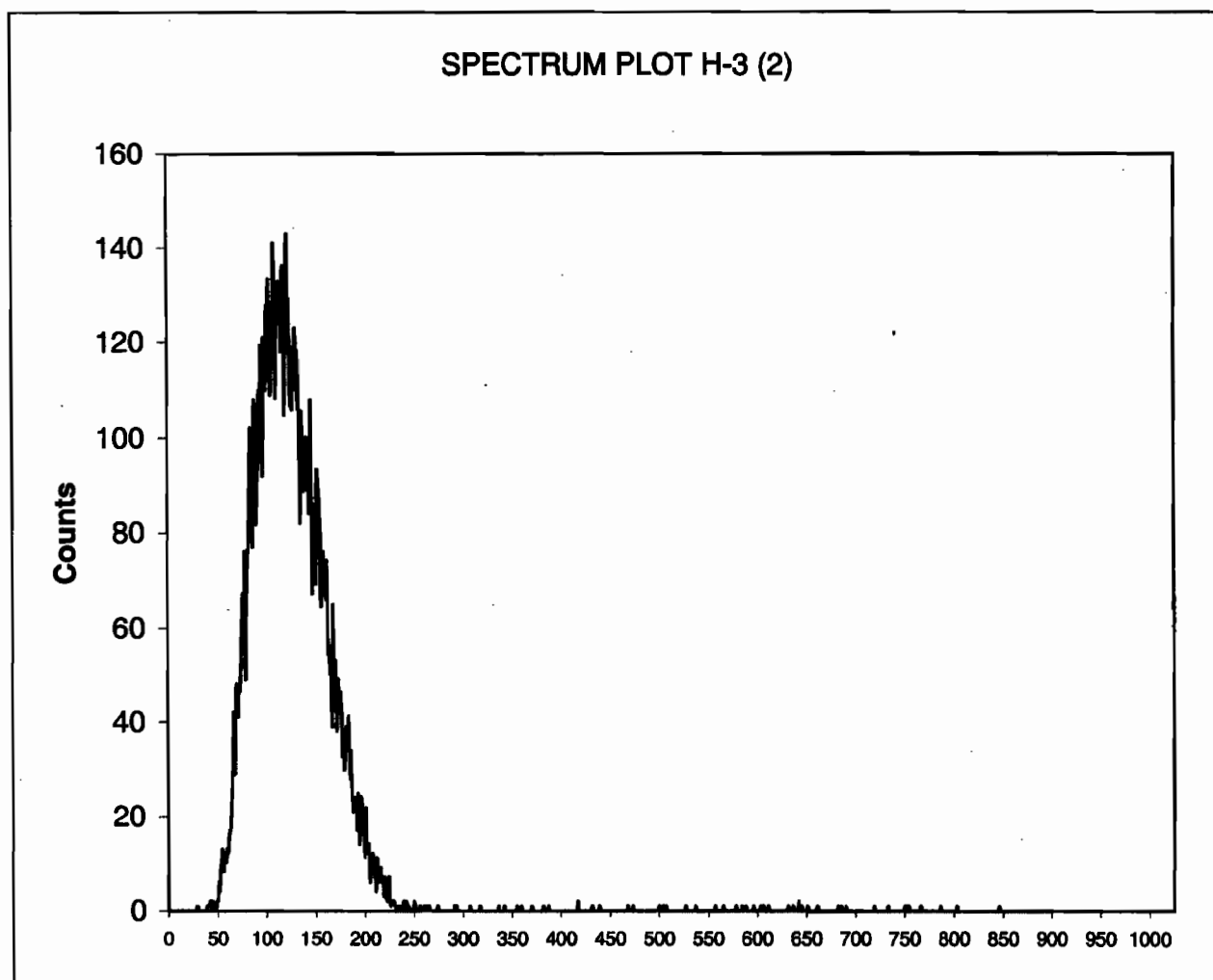
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Comments:

H-3 (2)  
ORANGE

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

2, 247193005, 11.54633:  
762.45  
50-175

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:  
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FileName:  
File Info:

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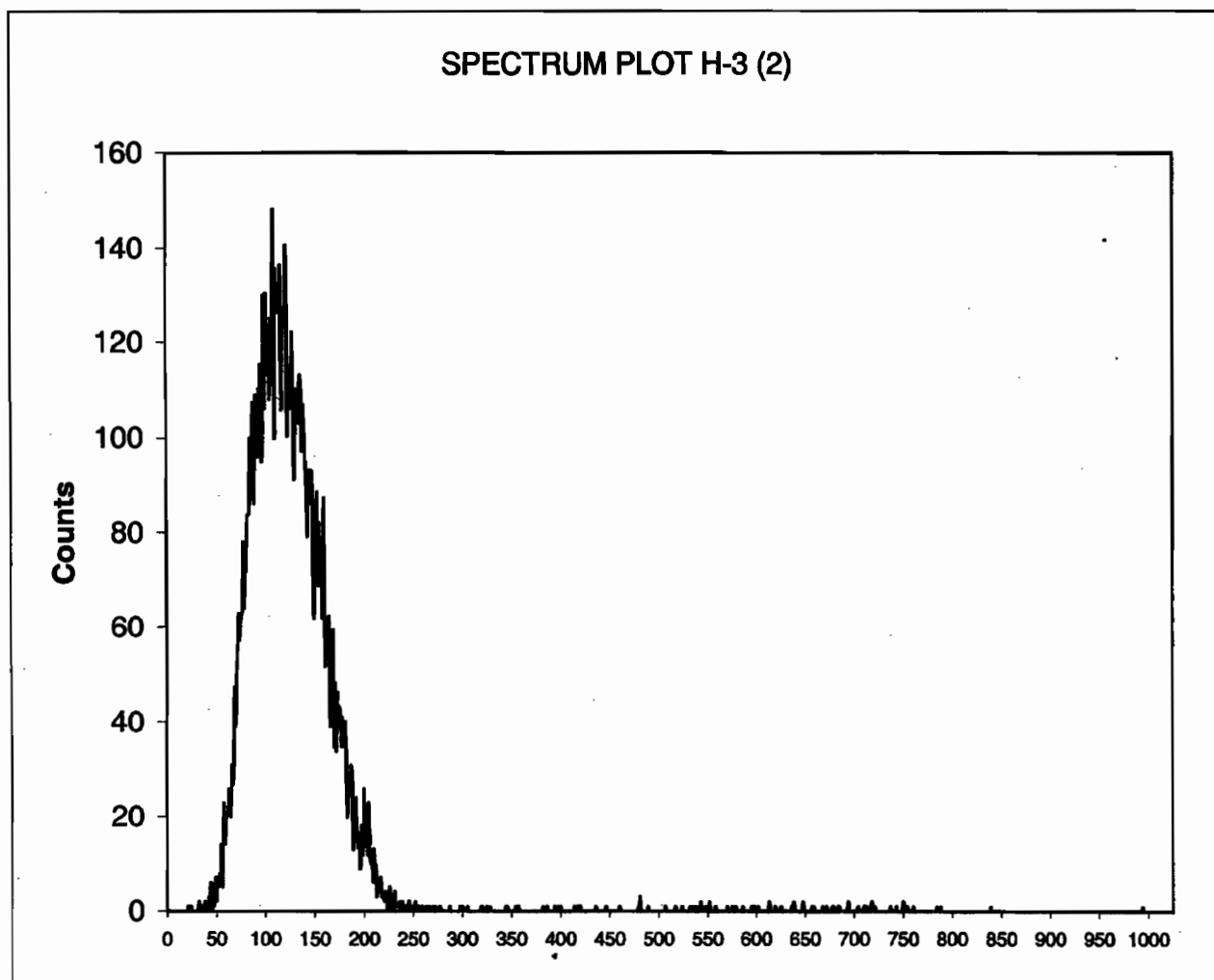
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H-3 (2)  
ORANGE

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

3, 247193006, 19.32967:  
757.63  
50-175

Channel Counts



32	2
33	0
34	1
35	1

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

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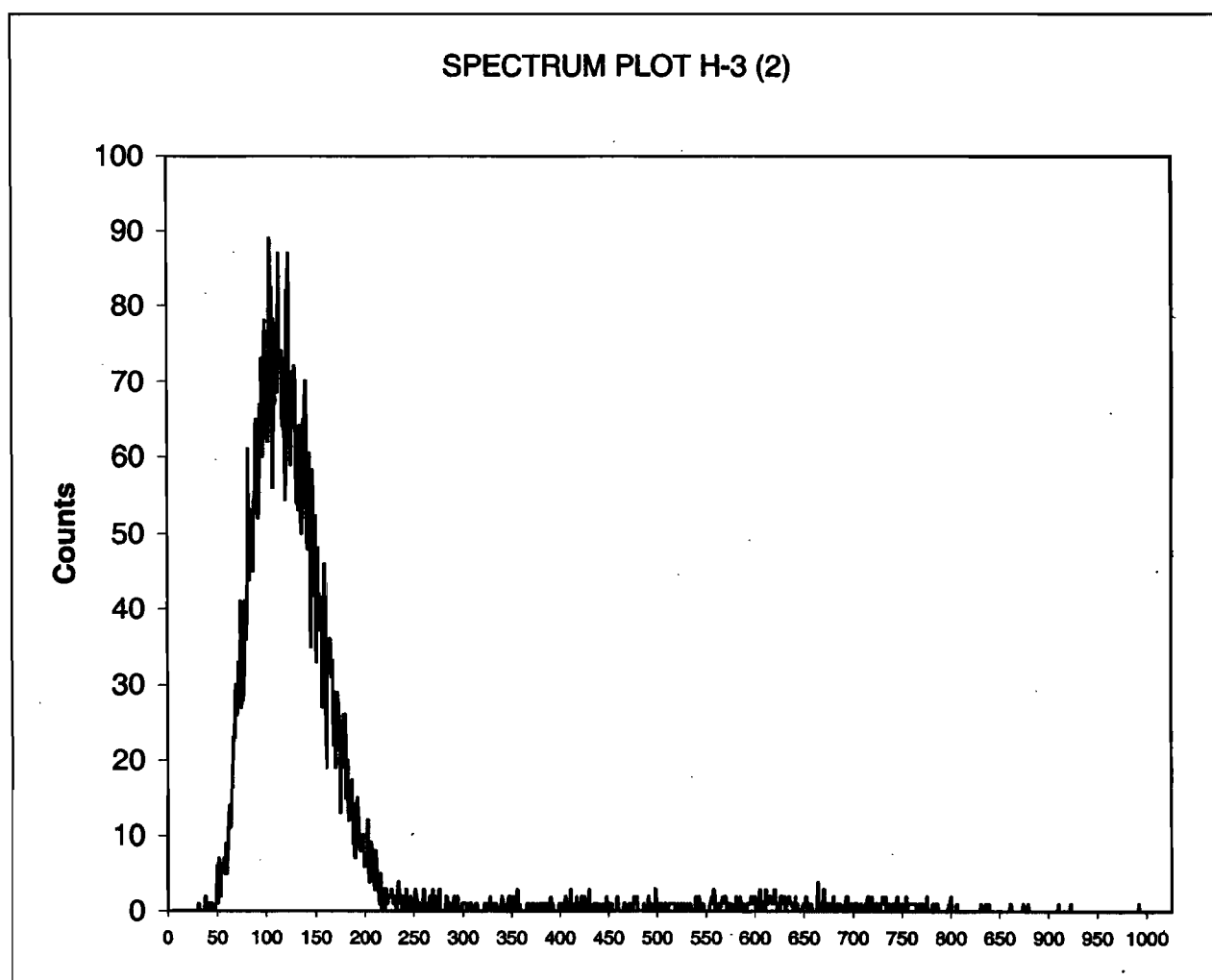
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Comments:

H-3 (2)  
ORANGE

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

4, 247193007, 60.02967:  
757.01  
50-175

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
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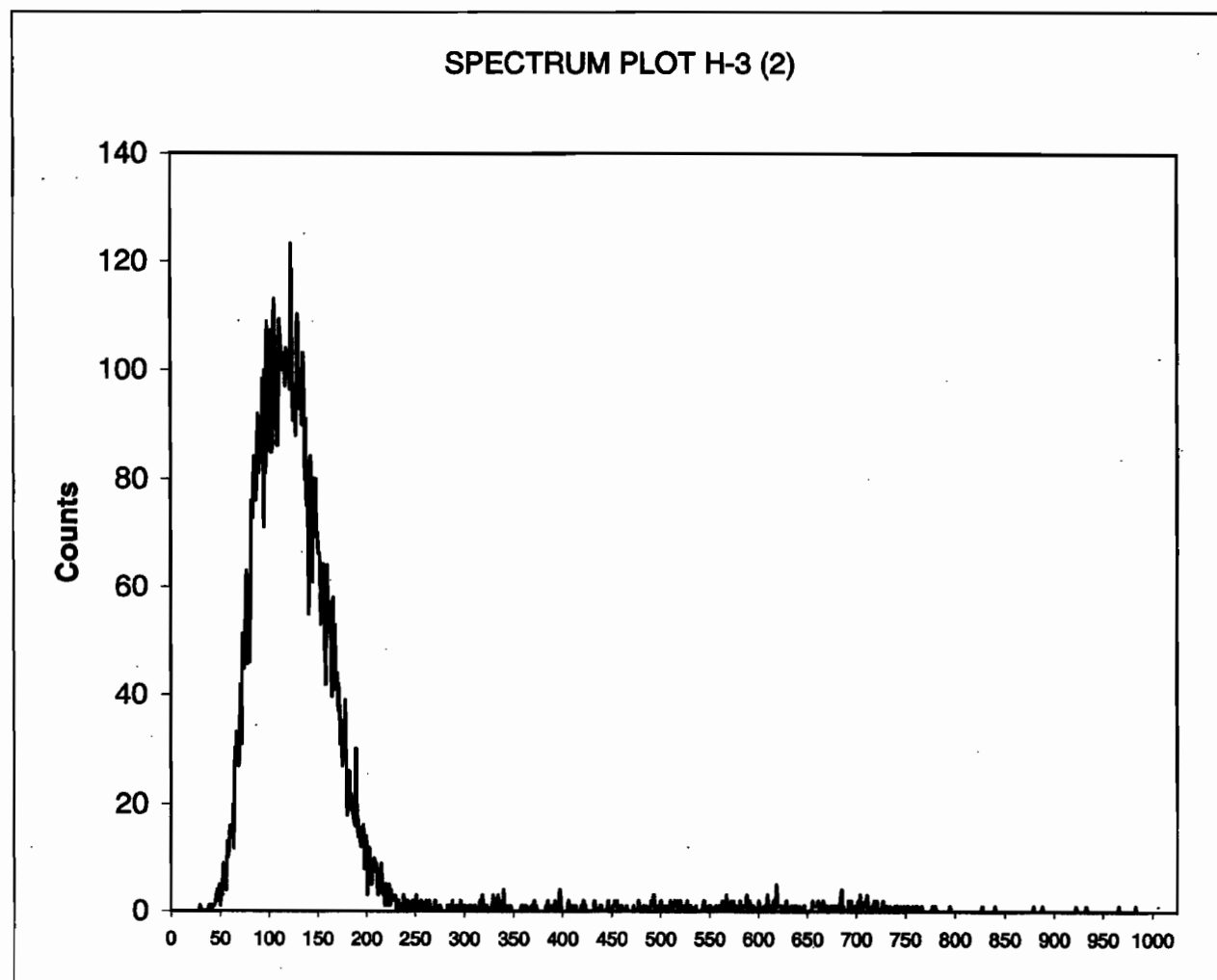
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Comments:

H-3 (2)  
ORANGE

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

5, 247193012, 60.02967:  
758.6  
50-175

Channel Counts



32	0
33	0
34	0
35	0

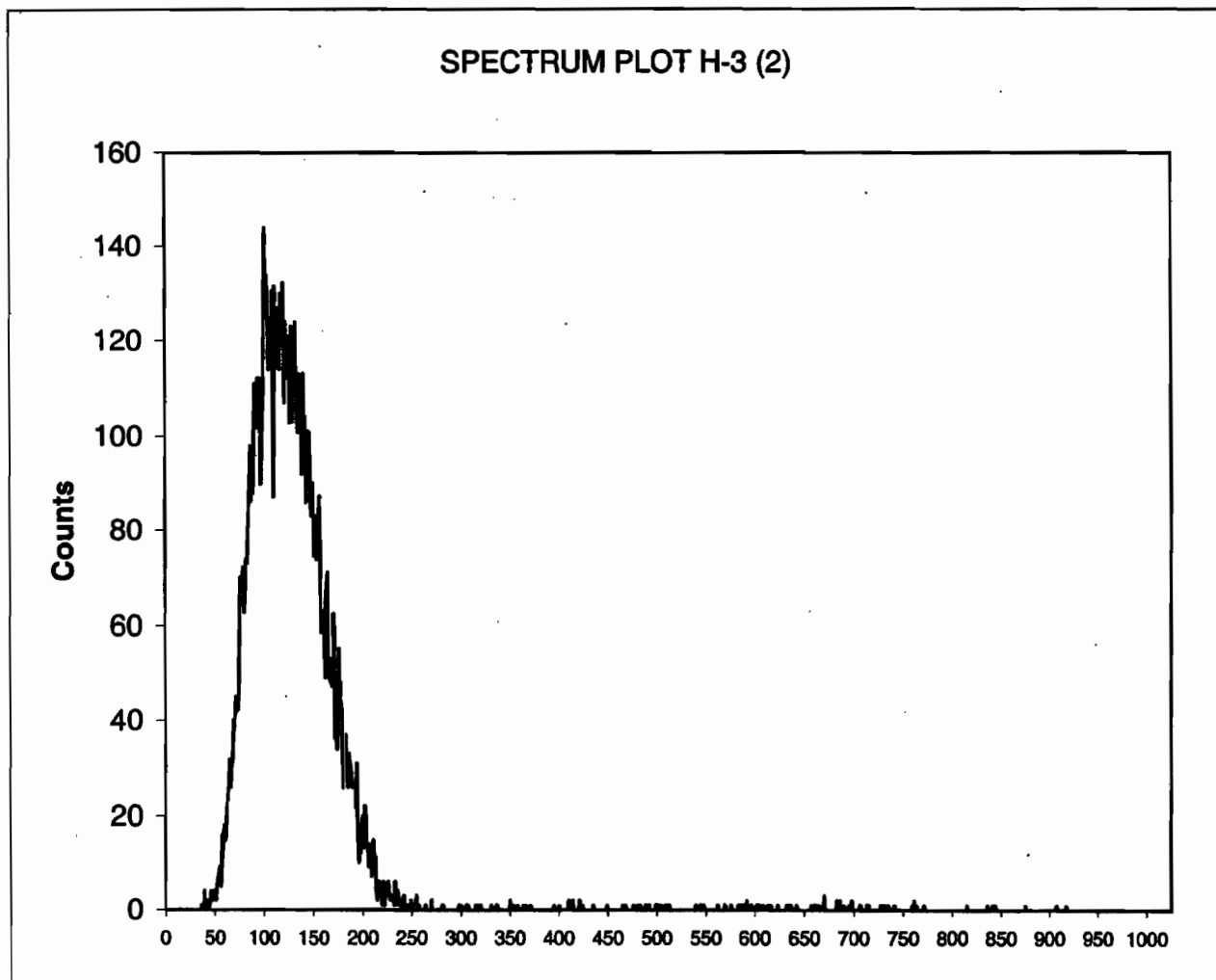
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Data Capture Date:  
FileName:  
File Info:

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THU 4 MAR 2010 6:09  
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ID: H-3 (2)  
Comments: ORANGE

Sample, Rack-Pos, Time: 6, 247193013, 19.463:  
Quench: 761.42  
Start, End, X-Axis 50-175

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
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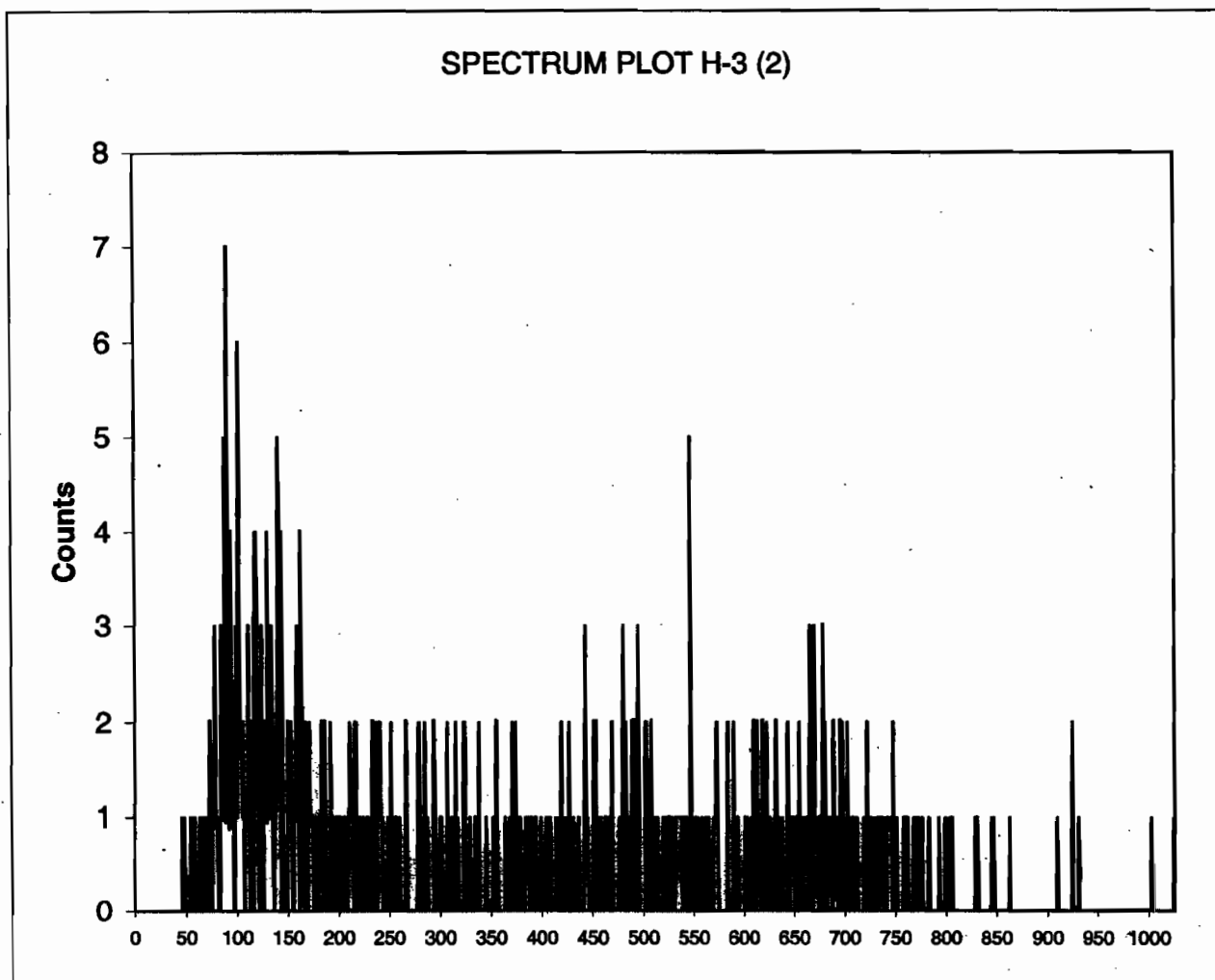
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Comments:

H-3 (2)  
ORANGE

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

7, 247337001, 60.02967:  
758.47  
50-175

Channel Counts



32	0
33	0
34	0
35	0



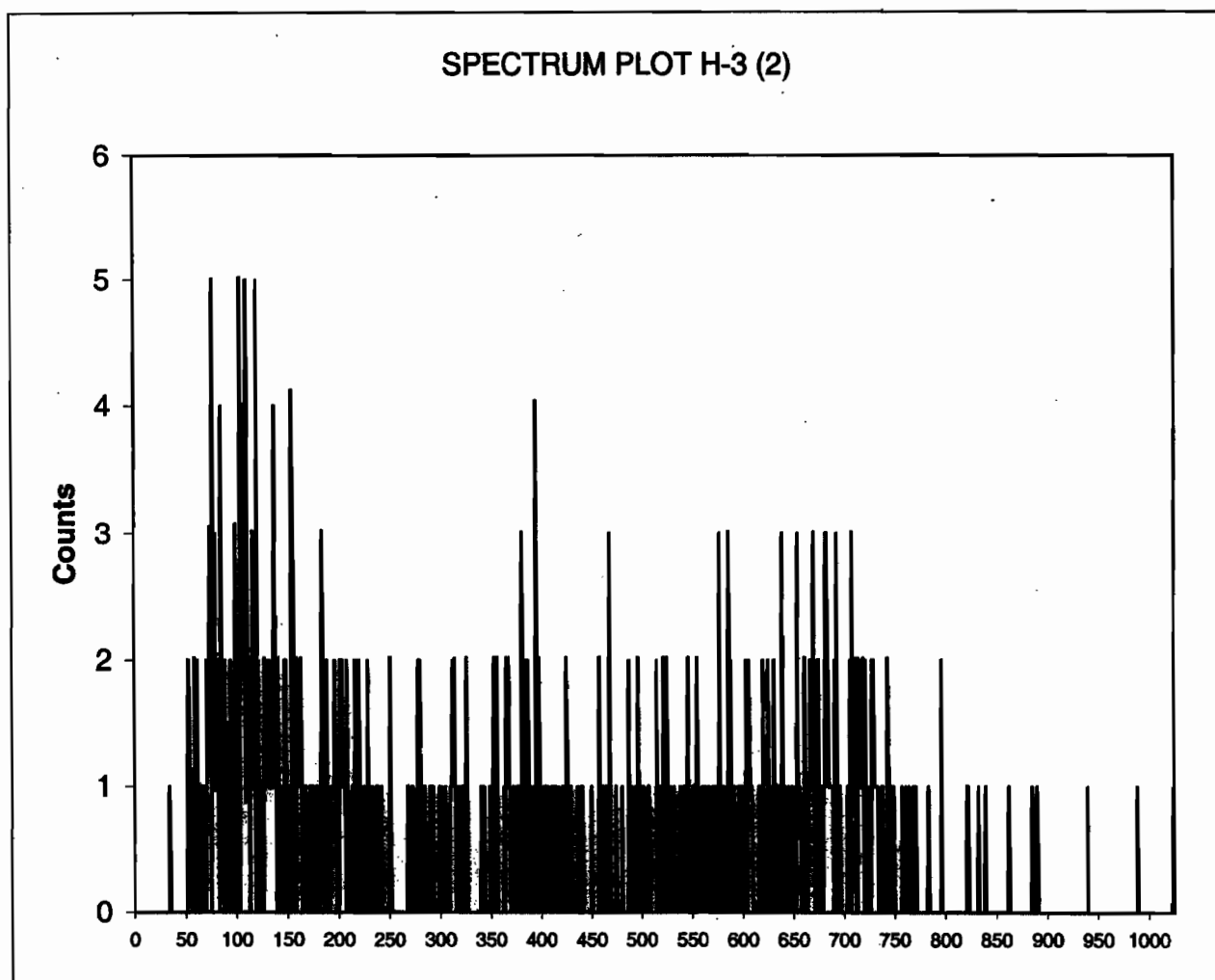
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
s:\sc\files\orange\956741A0\SQ083601N.001.xls  
s:\sc\files\orange\956741A0\U956741A0.xls

ID: H-3 (2)  
Comments: ORANGE

Sample, Rack-Pos, Time: 8, 247337002, 60.02965:  
Quench: 759.55  
Start, End, X-Axis 50-175

Channel Counts



32	0
33	0
34	1
35	0

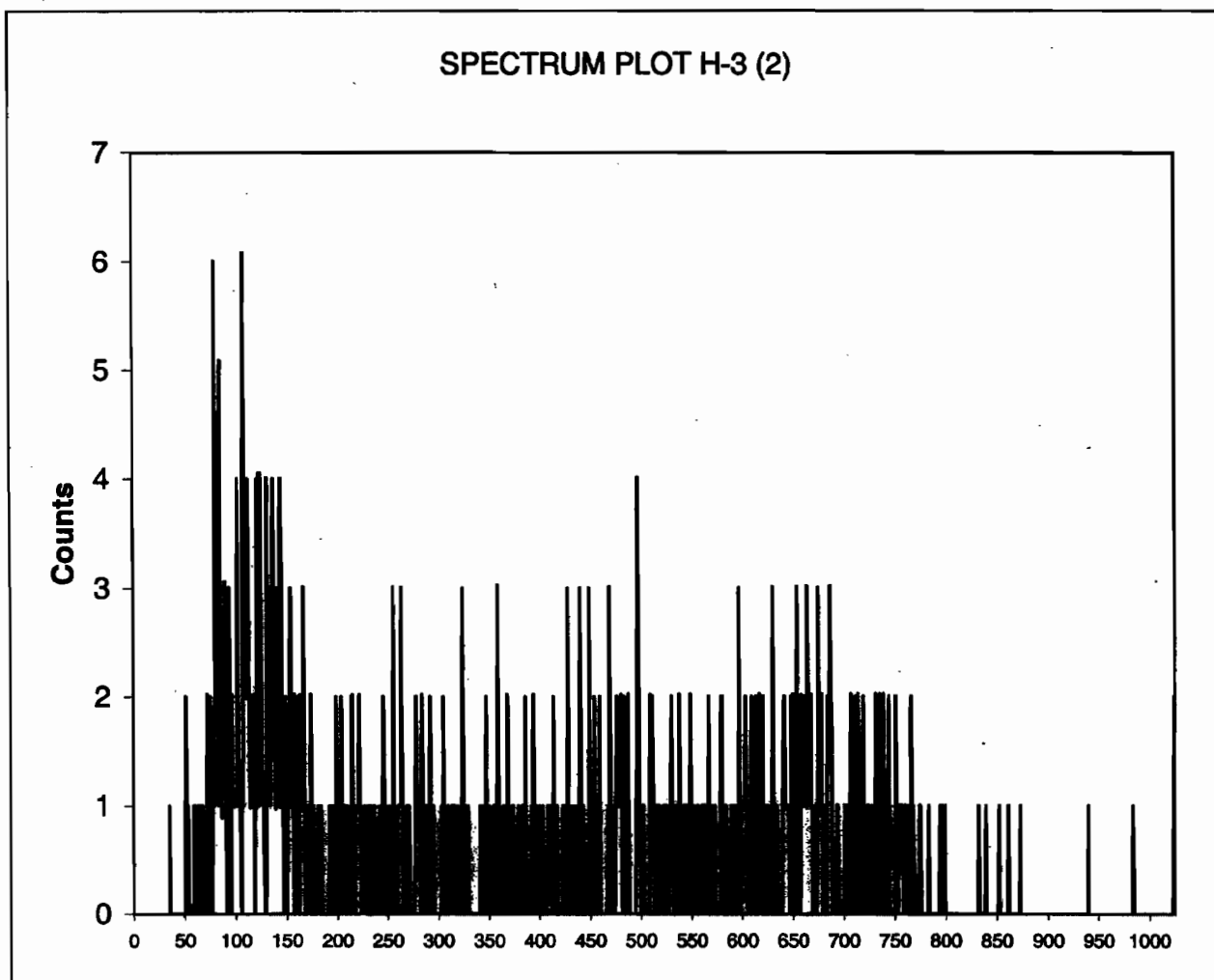
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
s:\sc\files\orange\956741A0\SQ093701N.001.xls  
s:\sc\files\orange\956741A0\U956741A0.xls

ID: H-3 (2)  
Comments: ORANGE

Sample, Rack-Pos, Time: 9, 247337003, 60.01299:  
Quench: 759.03  
Start, End, X-Axis 50-175

Channel Counts



32	0
33	0
34	0
35	1

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
s:\sc\files\orange\956741A0\SQ103801N.001.xls  
s:\sc\files\orange\956741A0\U956741A0.xls

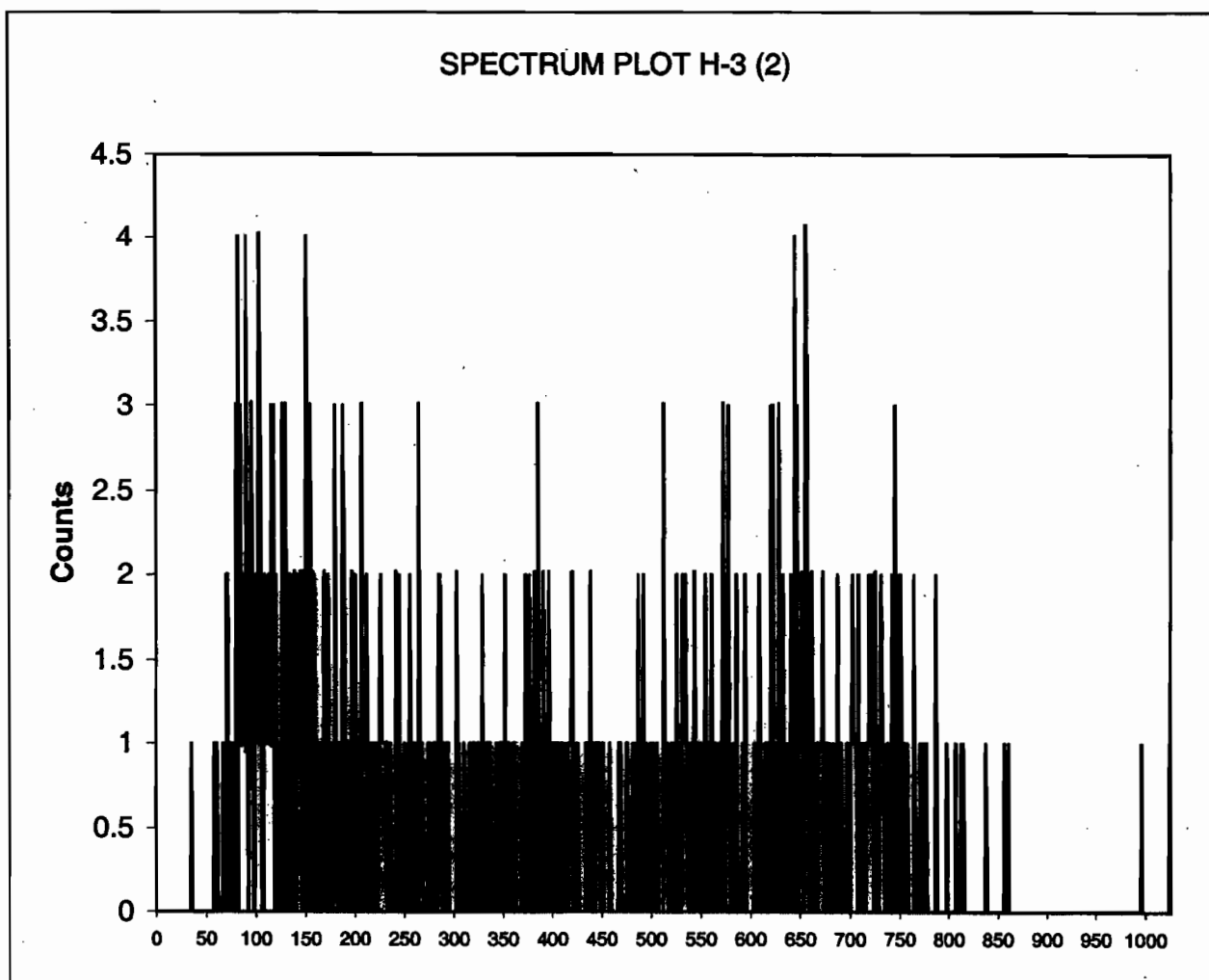
ID:  
Comments:

H-3 (2)  
ORANGE

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

10, 247337004, 60.02965:  
758.81  
50-175

Channel Counts



32	0
33	0
34	0
35	1

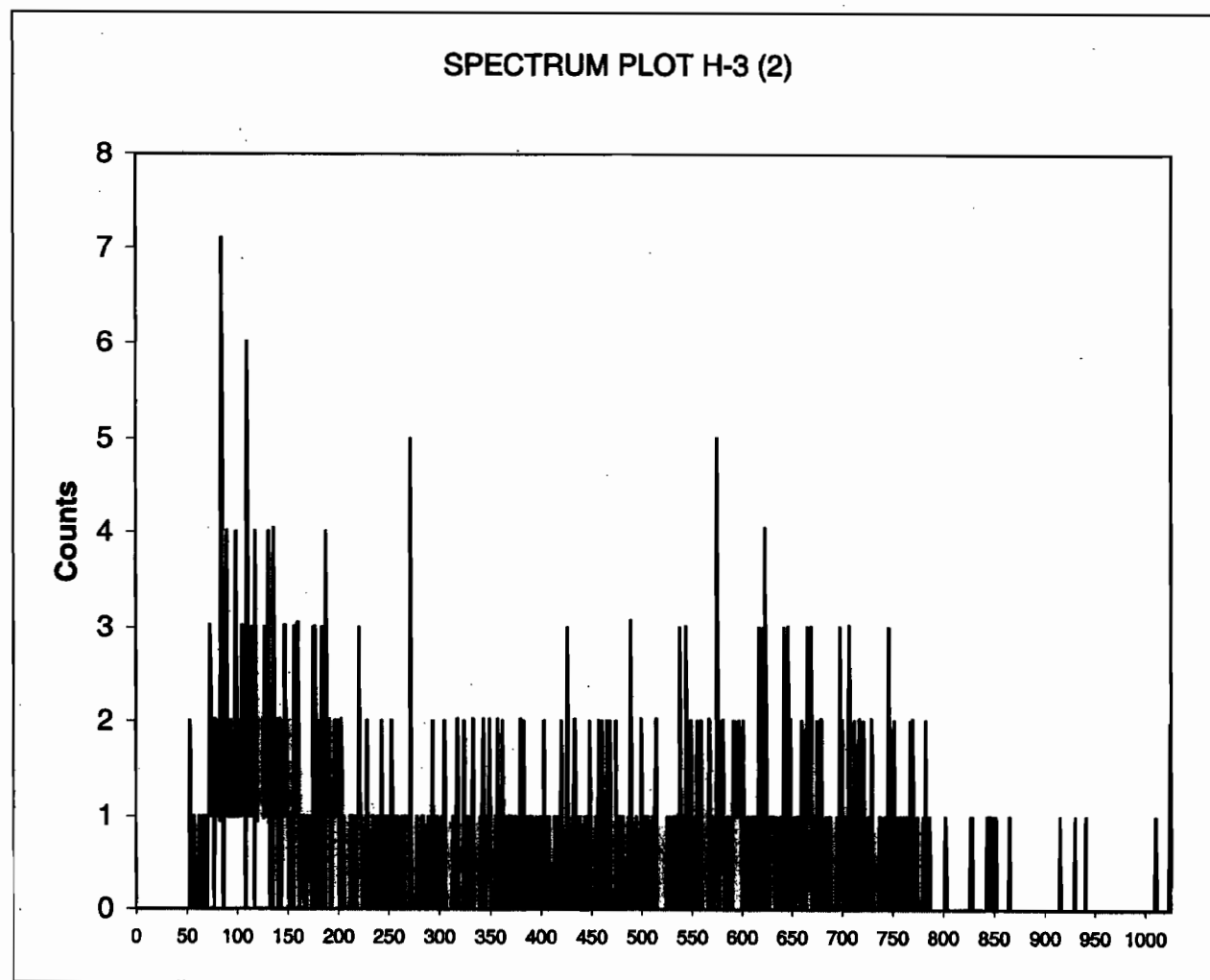
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
s:\sc\files\orange\956741A0\SQ113901N.001.xls  
s:\sc\files\orange\956741A0\U956741A0.xls

ID: H-3 (2)  
Comments: ORANGE

Sample, Rack-Pos, Time: 11, 247337005, 60.01299:  
Quench: 761.49  
Start, End, X-Axis 50-175

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
s:\sc\files\orange\956741A0\SQ124001N.001.xls  
s:\sc\files\orange\956741A0\U956741A0.xls

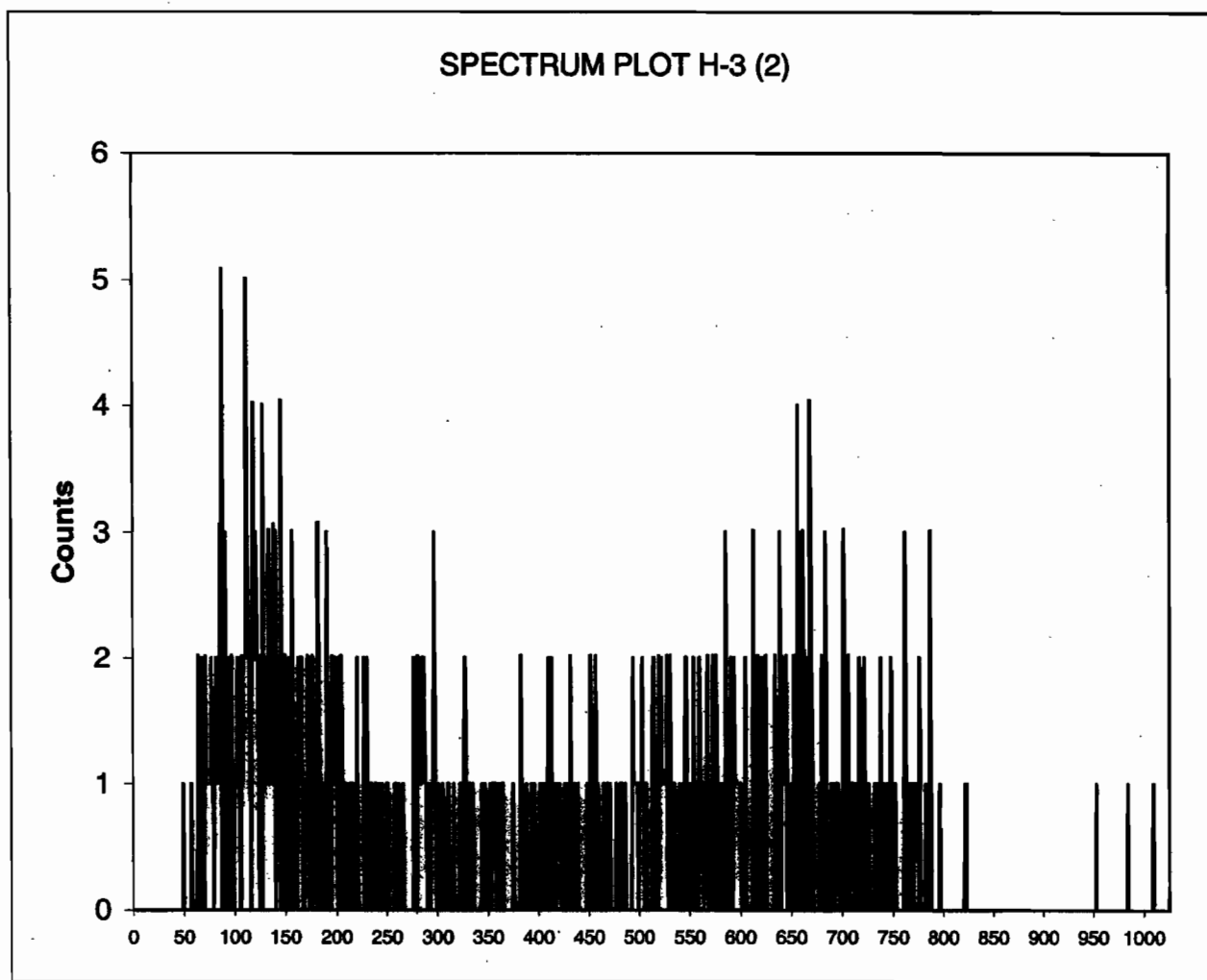
ID:  
Comments:

H-3 (2)  
ORANGE

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

12, 247337006, 60.02965:  
762.89  
50-175

Channel Counts



32 0  
33 0  
34 0  
35 0

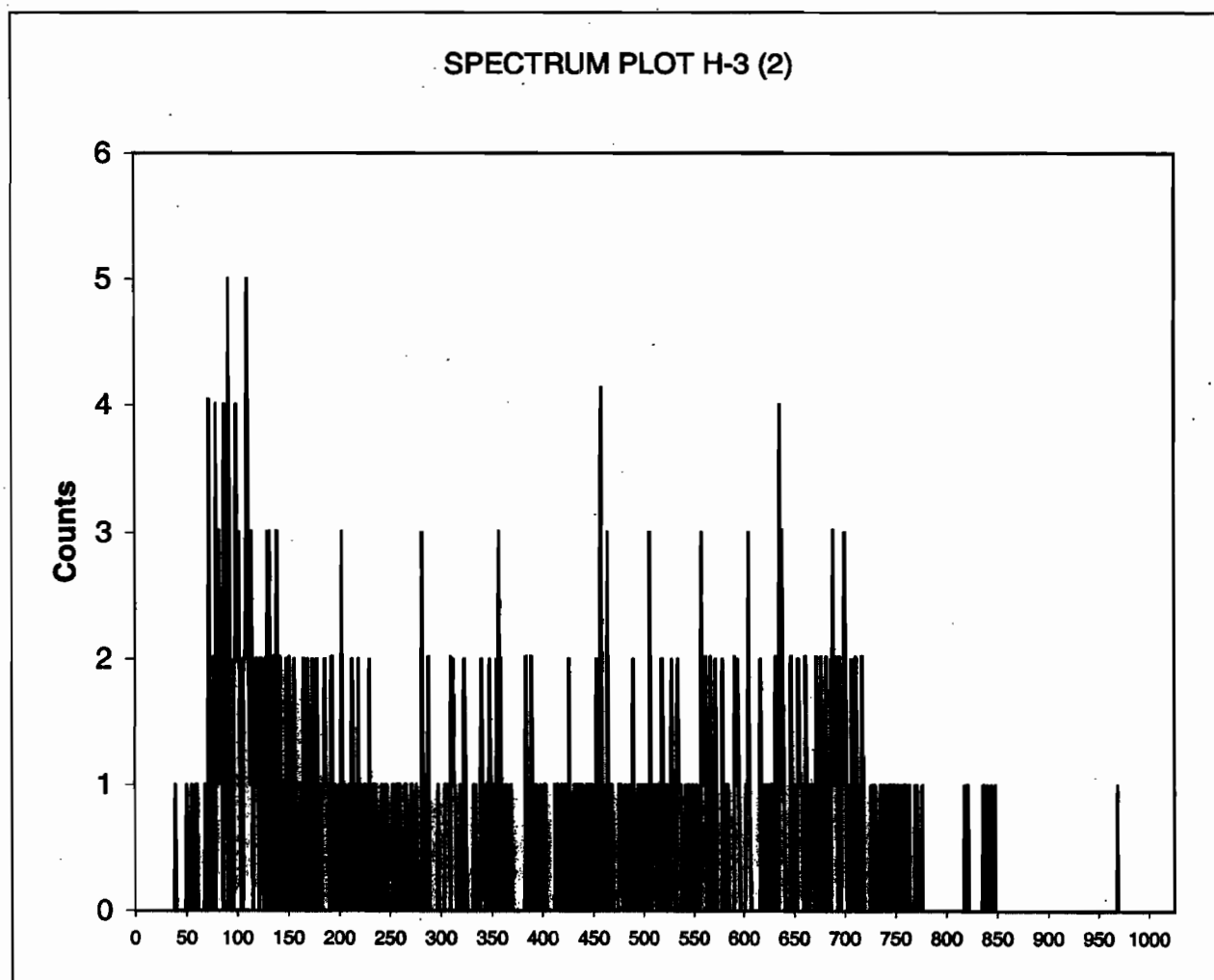
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
s:\sc\files\orange\956741A0\SQ134101N.001.xls  
s:\sc\files\orange\956741A0\U956741A0.xls

ID: H-3 (2)  
Comments: ORANGE

Sample, Rack-Pos, Time: 13, 247337007, 60.02965:  
Quench: 757.99  
Start, End, X-Axis 50-175

Channel Counts



32 0  
33 0  
34 0  
35 0

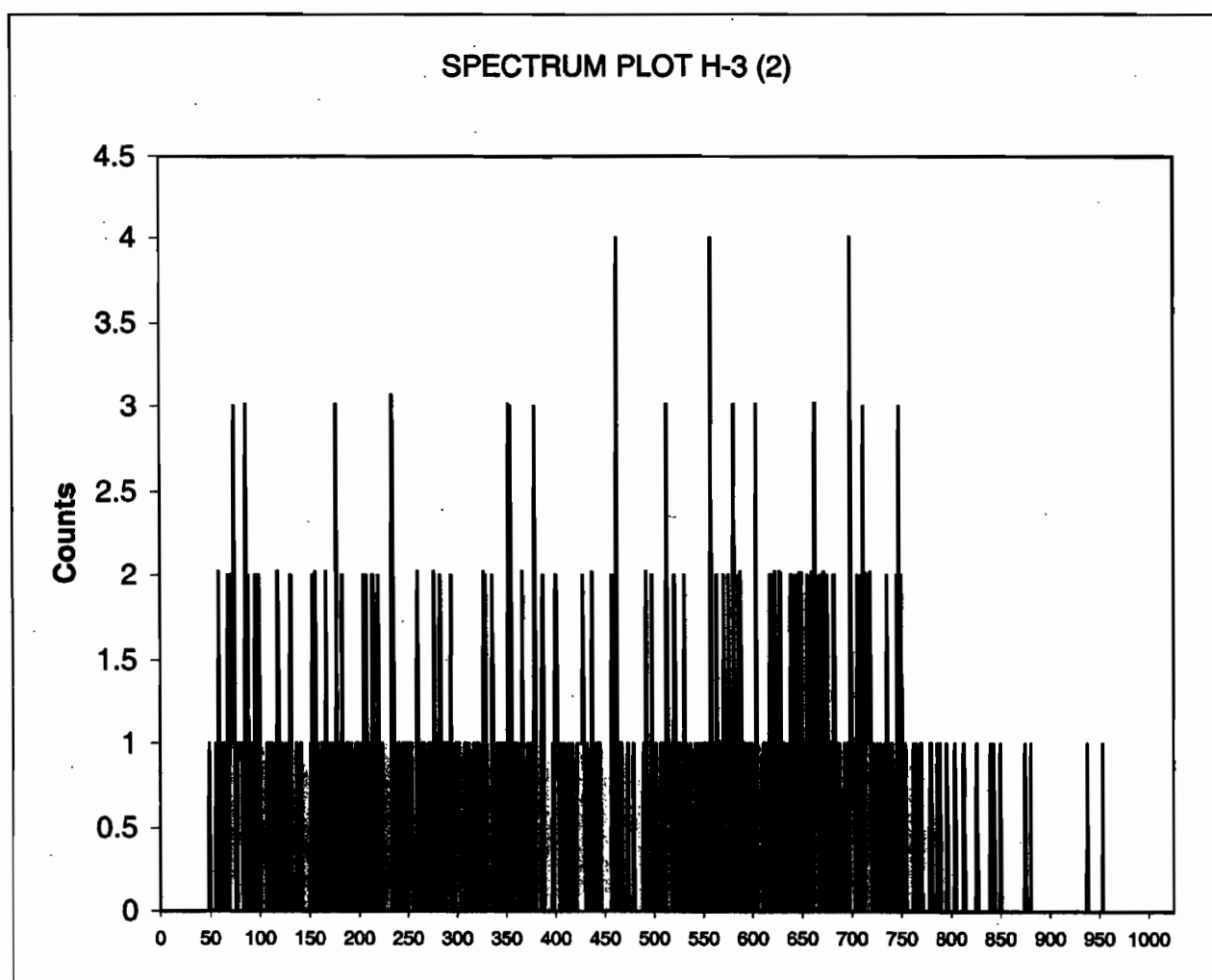
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
s:\sc\files\orange\956741A0\SQ144201N.001.xls  
s:\sc\files\orange\956741A0\U956741A0.xls

ID: H-3 (2)  
Comments: ORANGE

Sample, Rack-Pos, Time: 14, 1202051378, 60.02963:  
Quench: 760.97  
Start, End, X-Axis 50-175

Channel Counts



32 0  
33 0  
34 0  
35 0

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
s:\sc\files\orange\956741A0\SQ154301N.001.xls  
s:\sc\files\orange\956741A0\U956741A0.xls

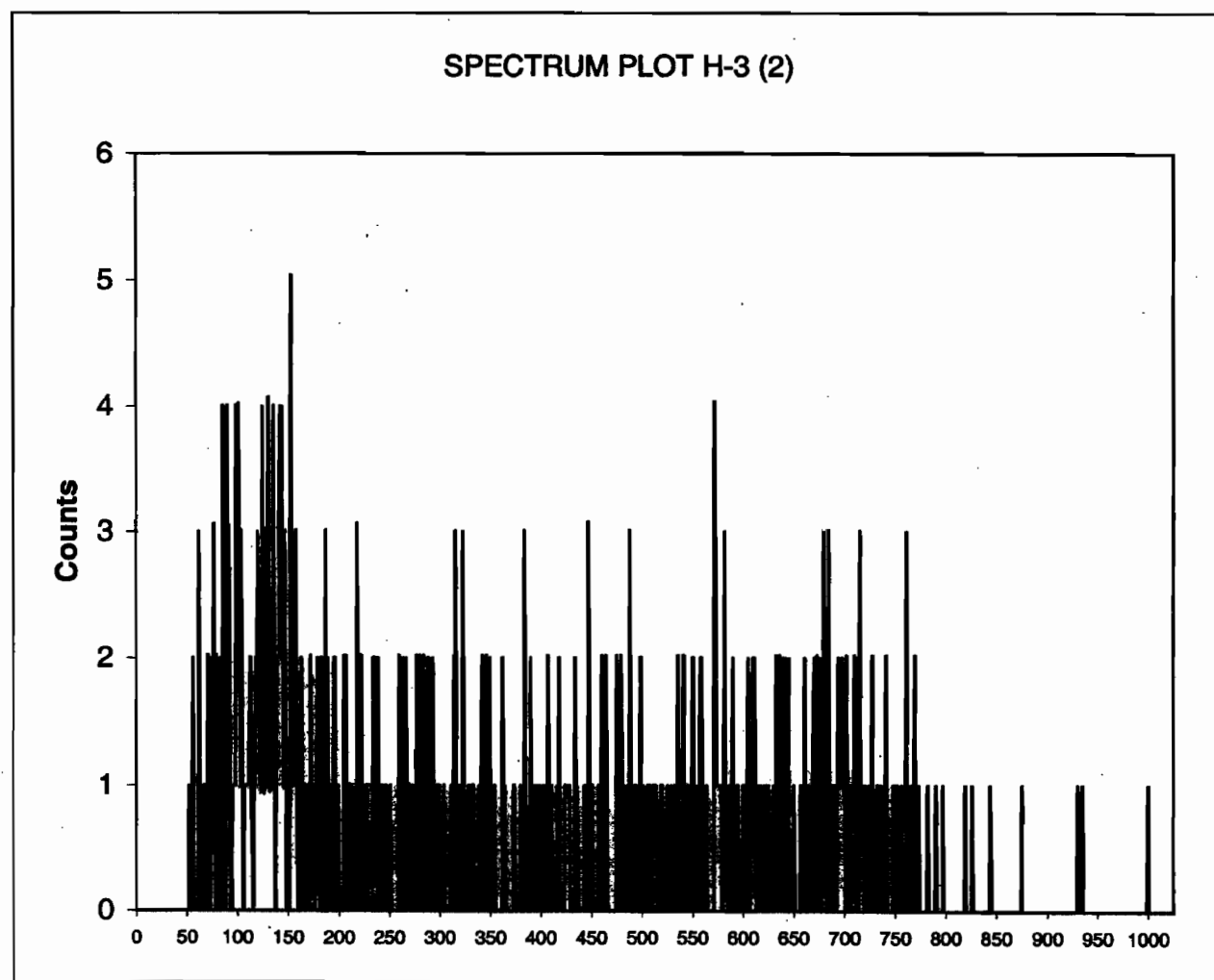
ID:  
Comments:

H-3 (2)  
ORANGE

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

15, 1202051379, 60.02963:  
762.59  
50-175

Channel Counts



32	0
33	0
34	0
35	0



Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 4 MAR 2010 6:09  
s:\sc\files\orange\956741A0\SQ164401N.001.xls  
s:\sc\files\orange\956741A0\U956741A0.xls

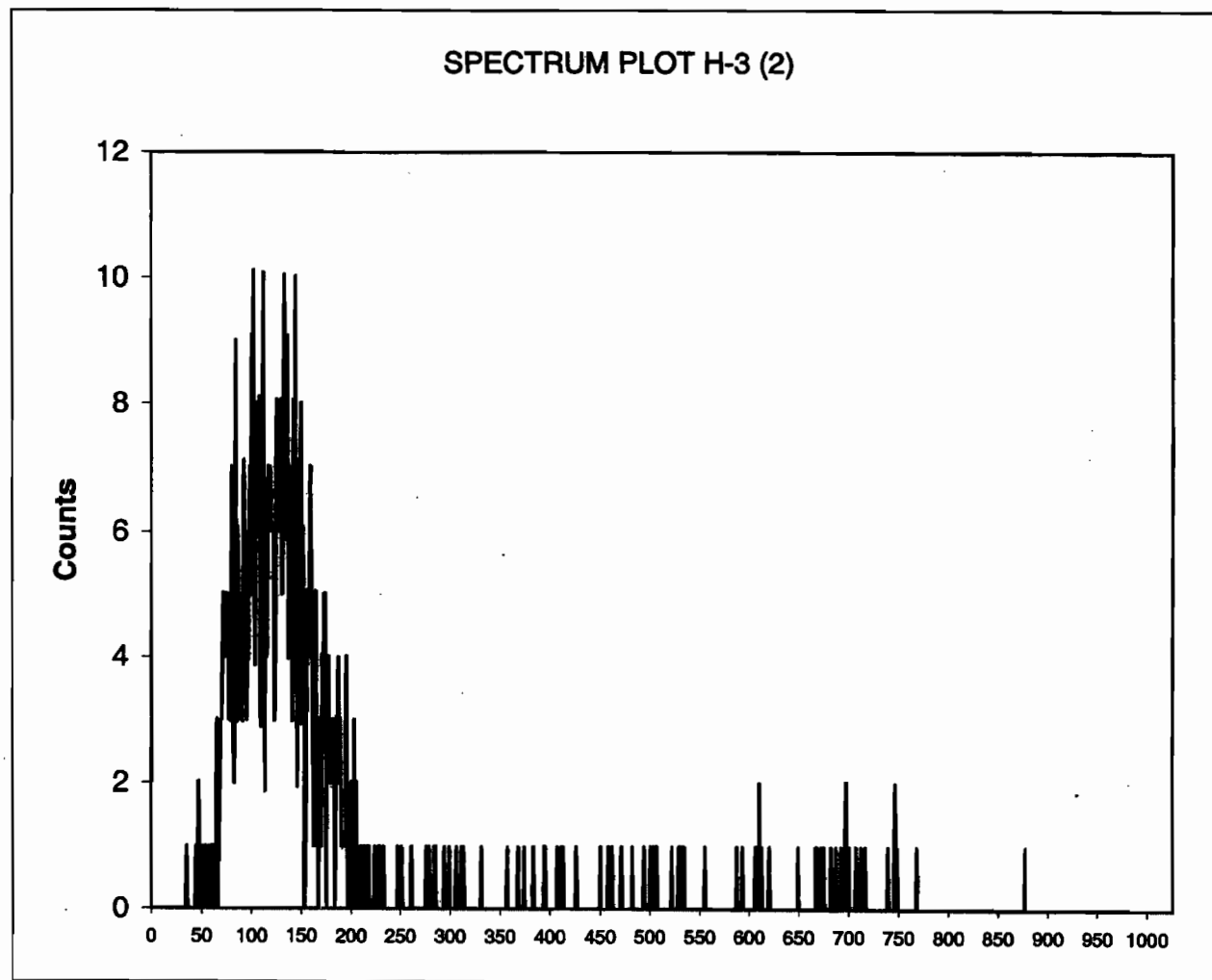
ID:  
Comments:

H-3 (2)  
ORANGE

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

16, 1202051380, 15.01297:  
761.76  
50-175

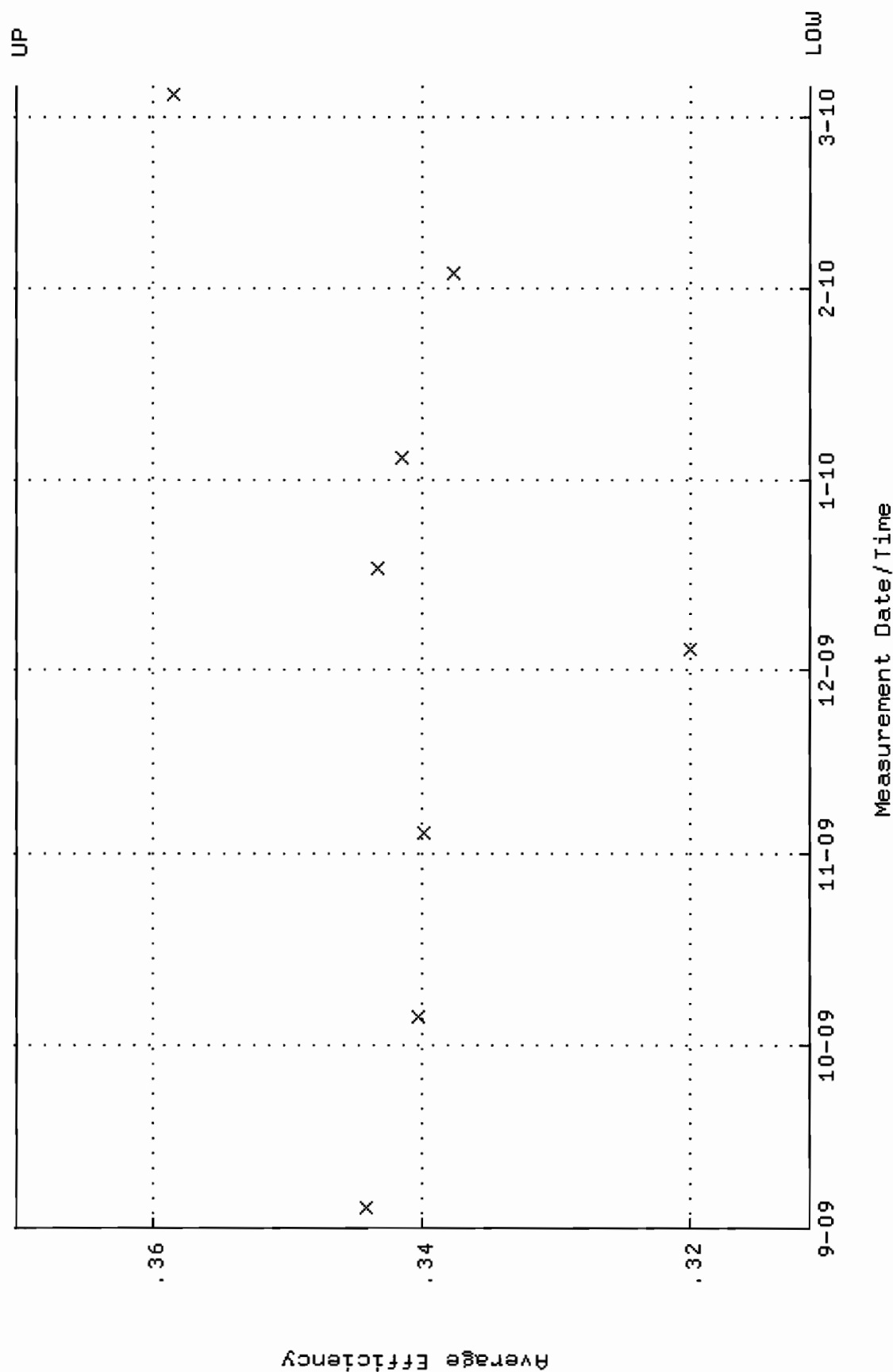
Channel Counts



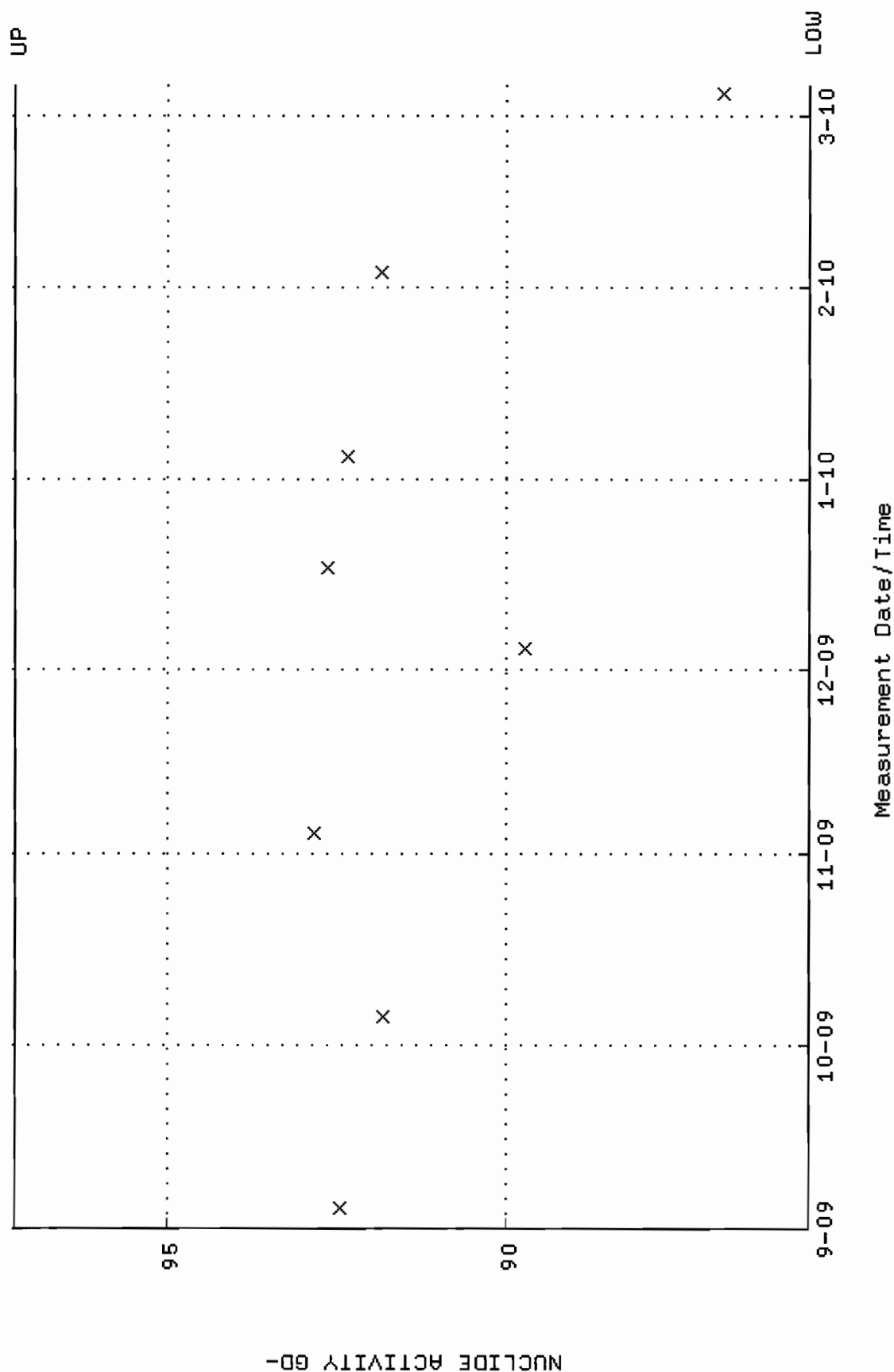
32	0
33	0
34	0
35	1

# BACKGROUND AND EFFICIENCY DATA

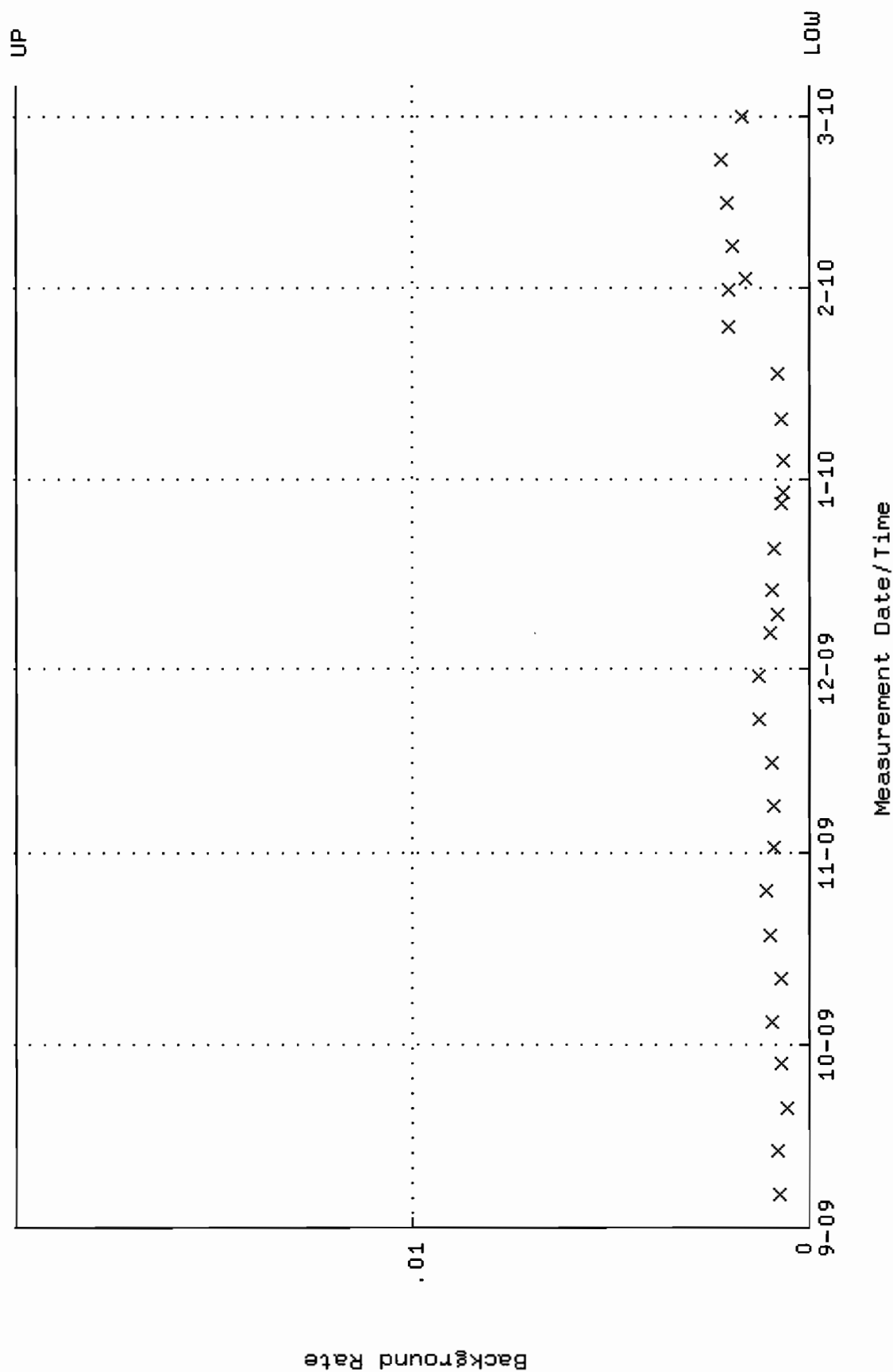
QA filename : DKA100:[ENV\_ALPHA.QA.W]W013.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.311179 through 0.370113



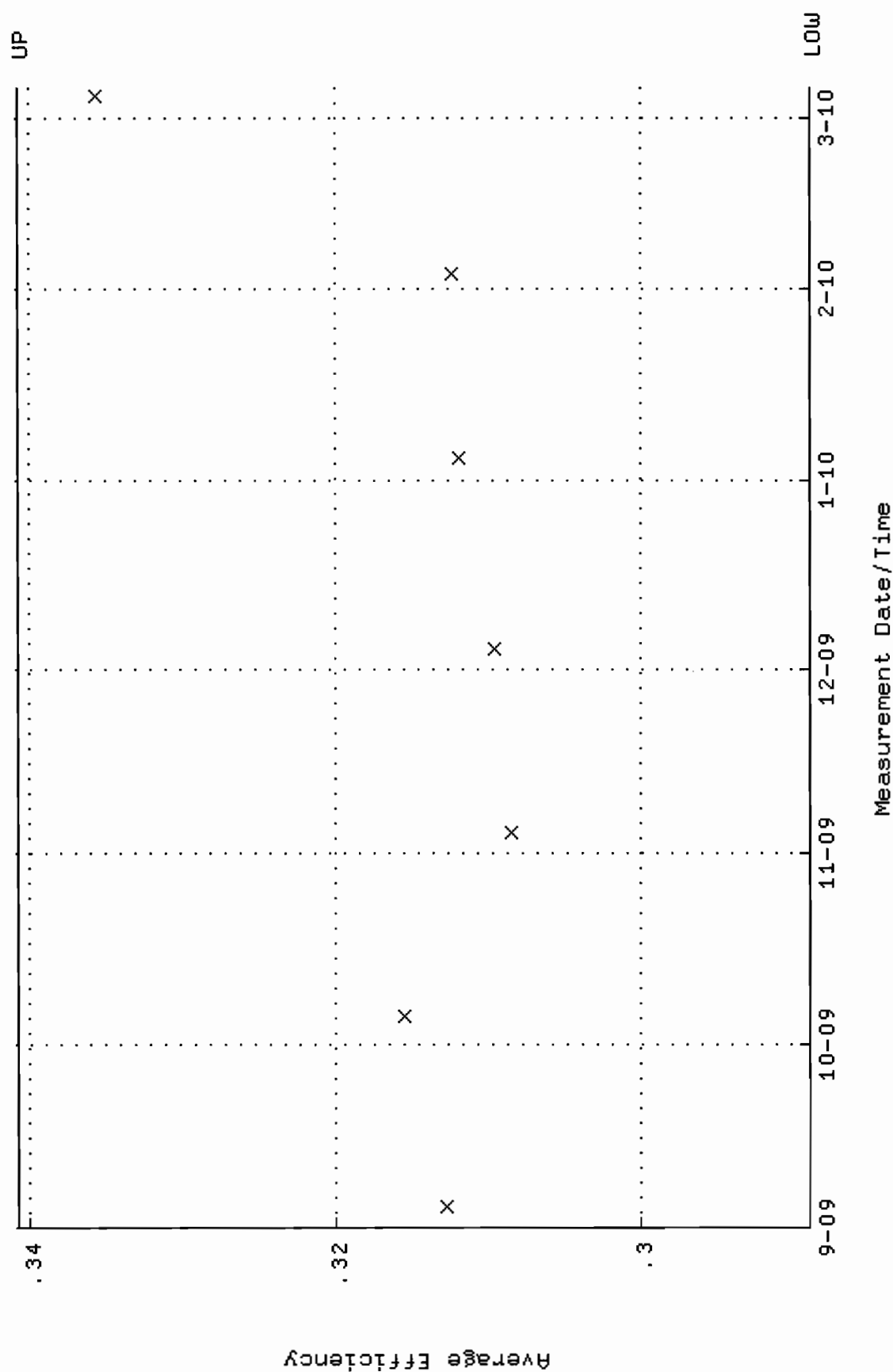
QA filename : DKA100:[ENV\_ALPHA.QA.W]W013.QAF;2  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.5651 through 97.2315



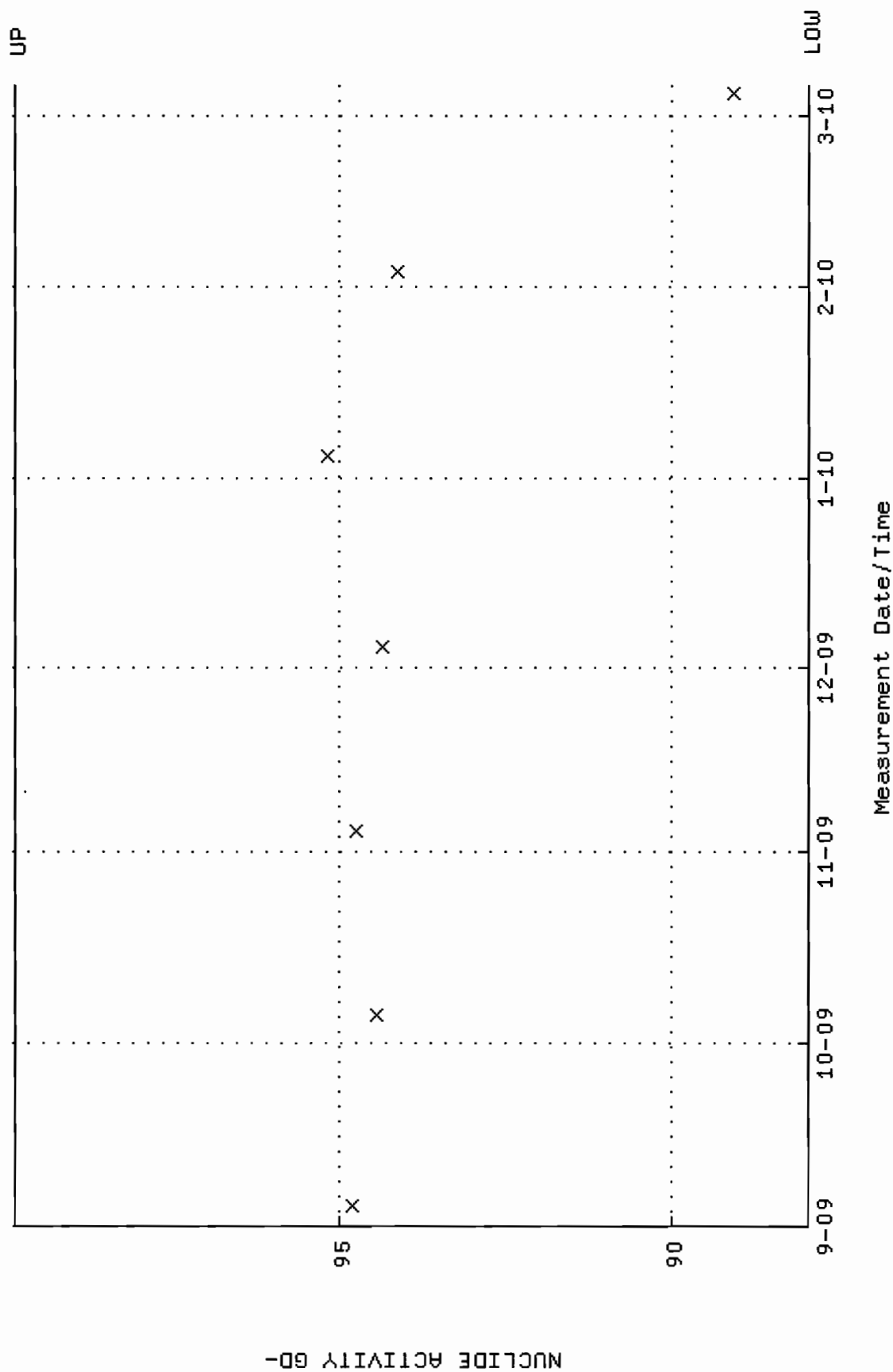
QA filename : DKA100:[ENV\_ALPHA.QA.B]B013.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:02 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



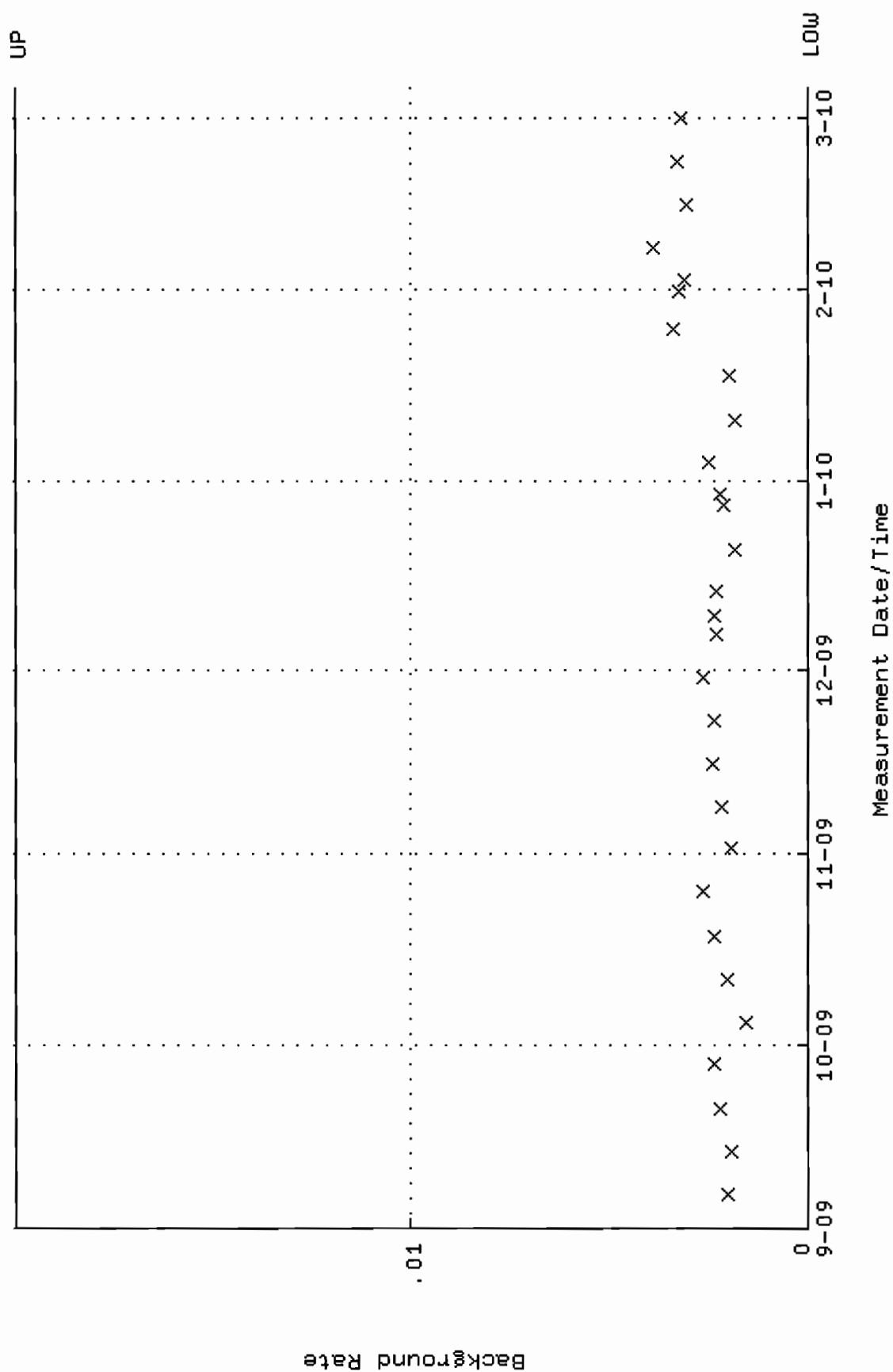
QA filename : DKA100:[ENV\_ALPHA.QA.W]W014.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.288973 through 0.340739



QA filename : DKA100:[ENV\_ALPHA.QA.W]W014.QAF;4  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 87.9529 through 99.8771

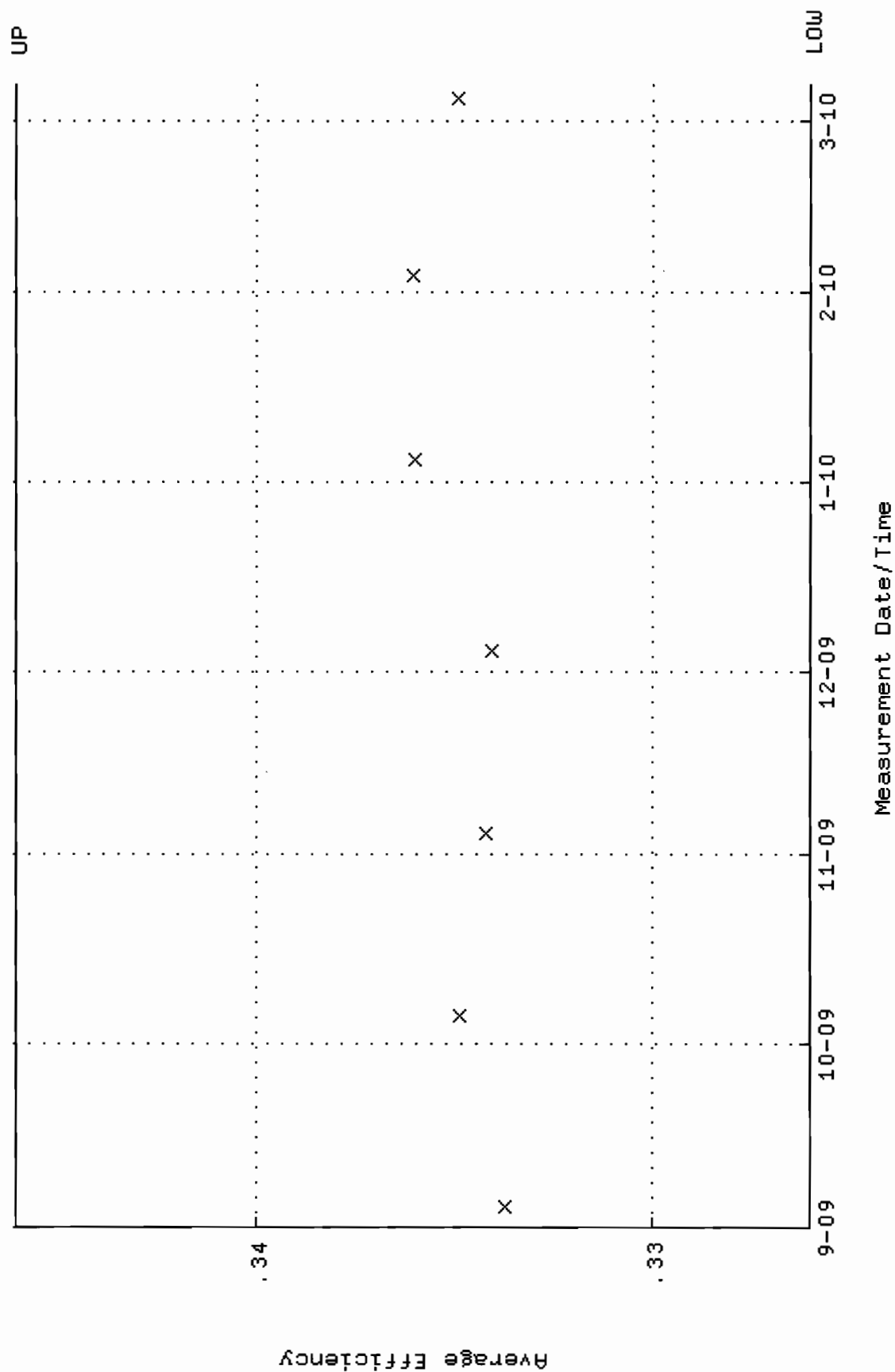


QA filename : DKA100:[ENV\_ALPHA.QA.B]B014.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:02 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02

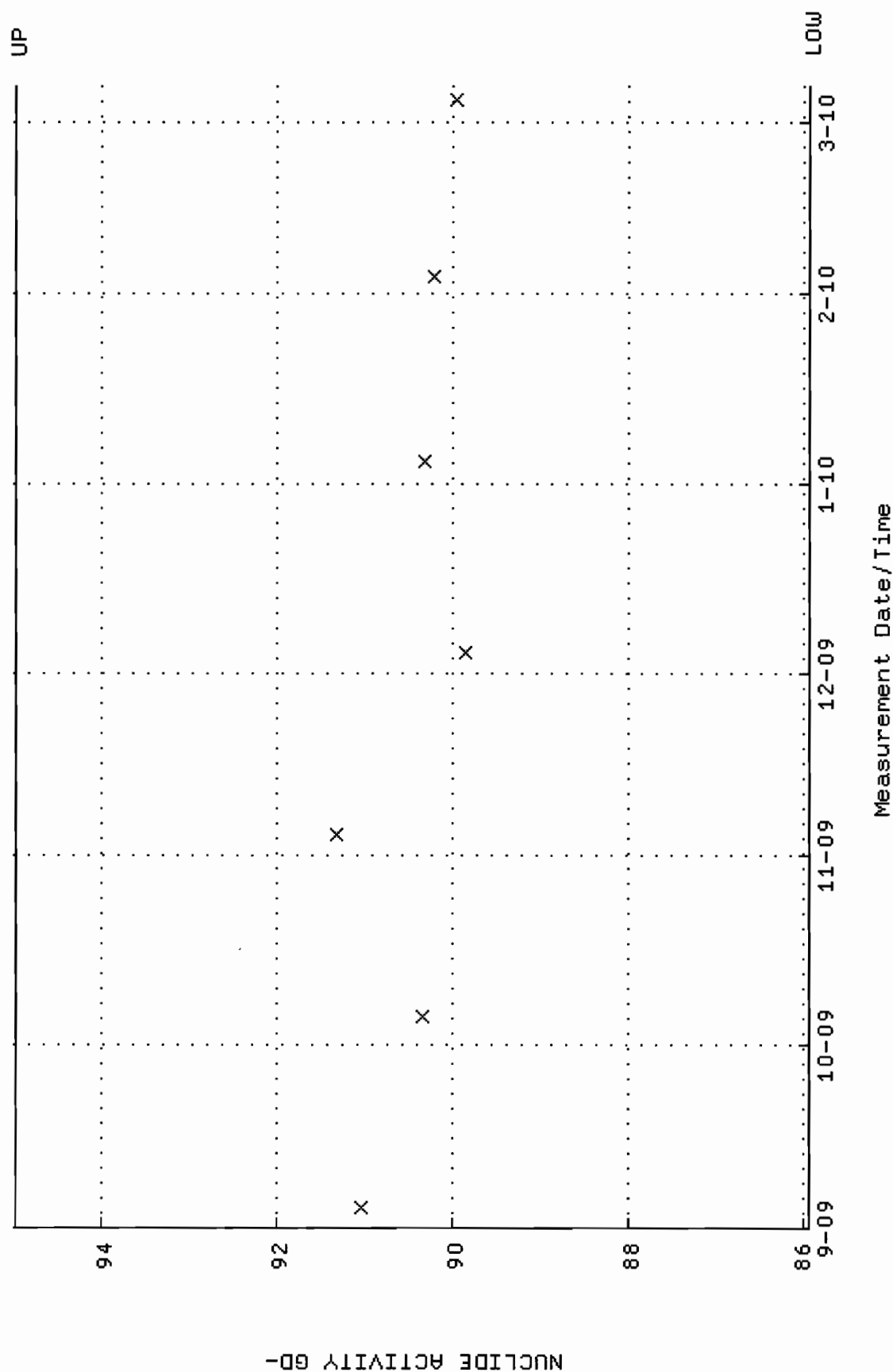




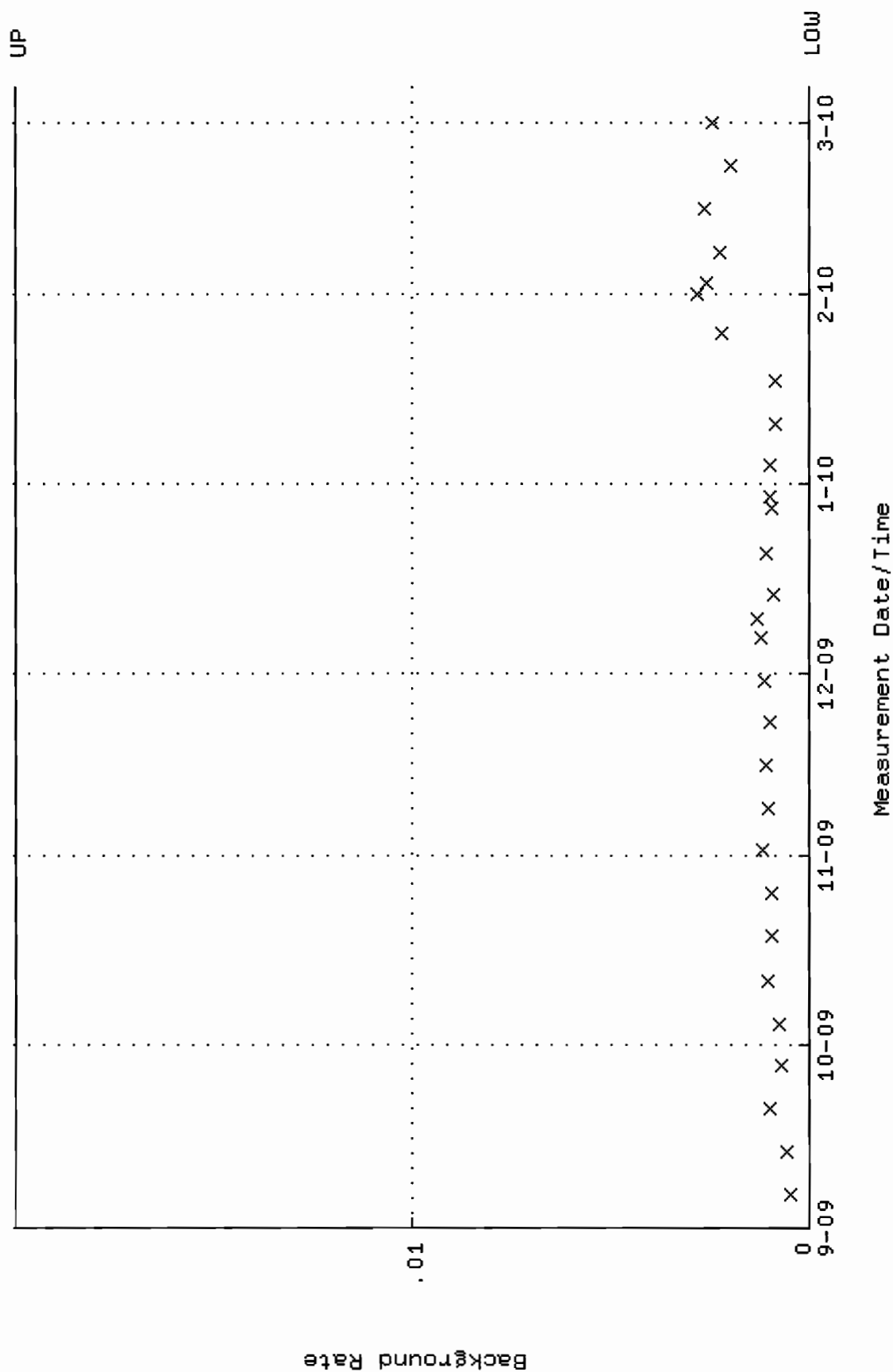
QA filename : DKA100:[ENV\_ALPHA.QA.W]W016.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.326058 through 0.346058



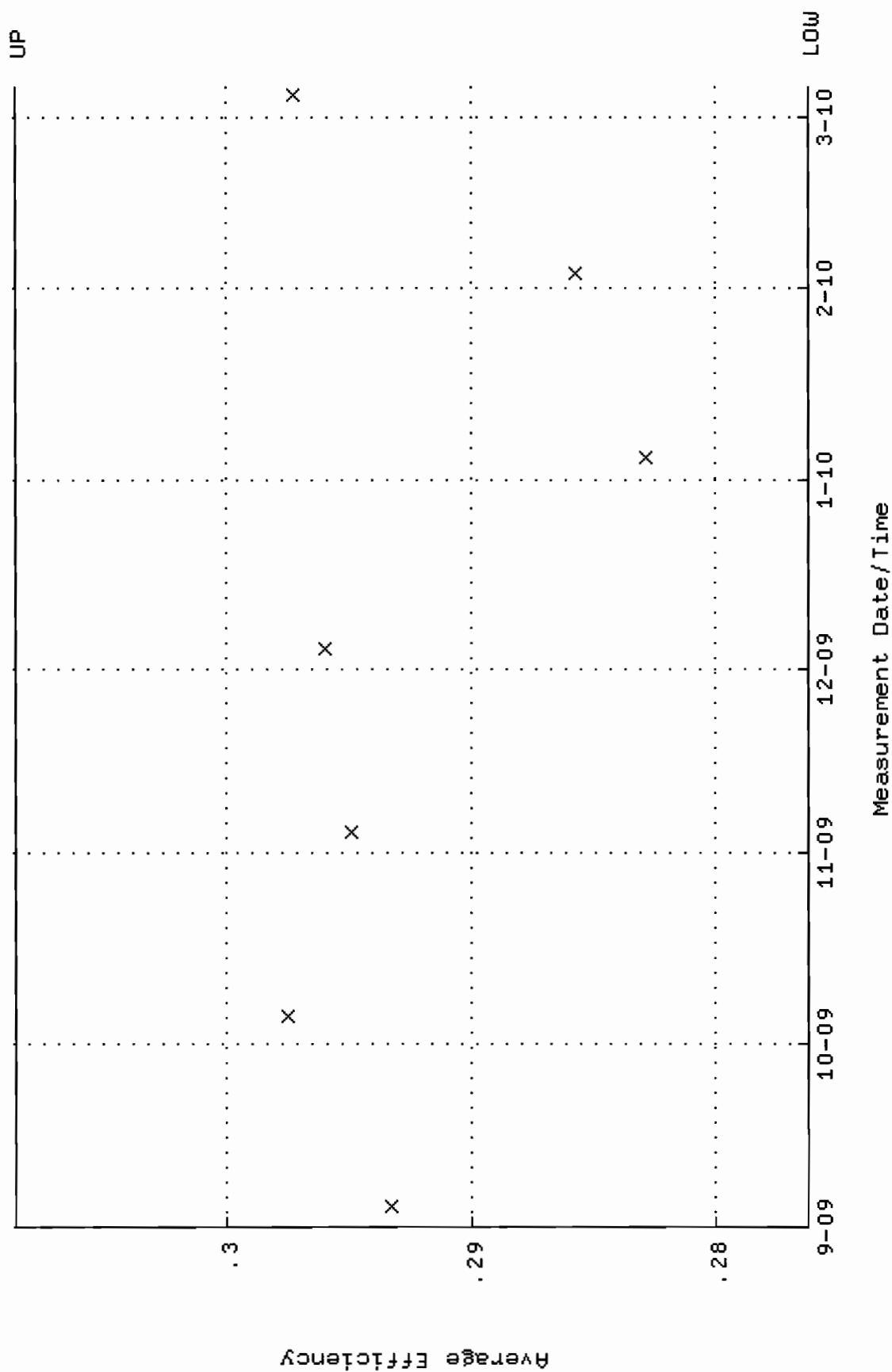
QA filename : DKA100:[ENV\_ALPHA.QA.W]W016.QAF;3  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.9280 through 94.9730



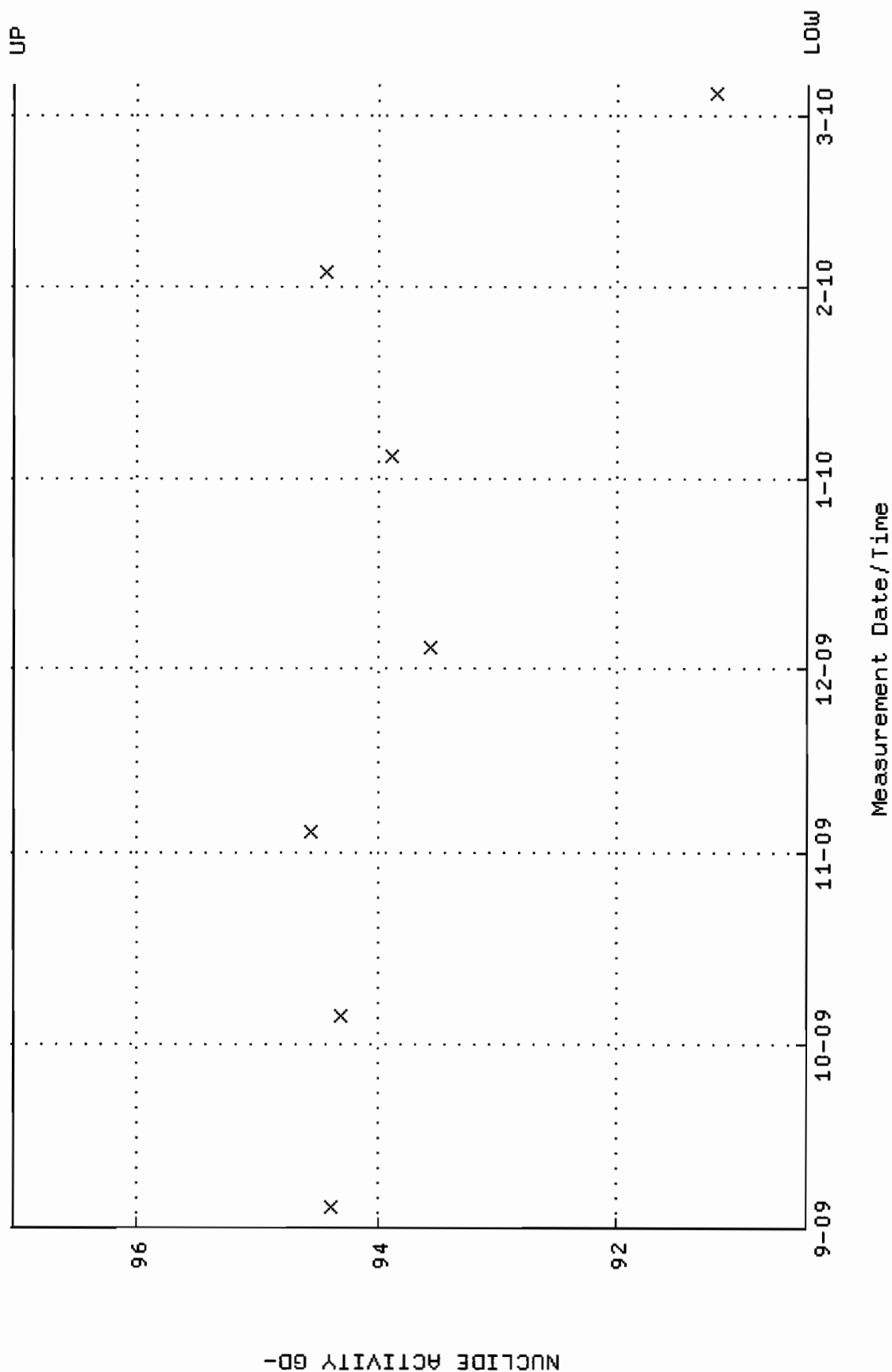
QA filename : DKA100:[ENV\_ALPHA.QA.B]B016.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:02 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



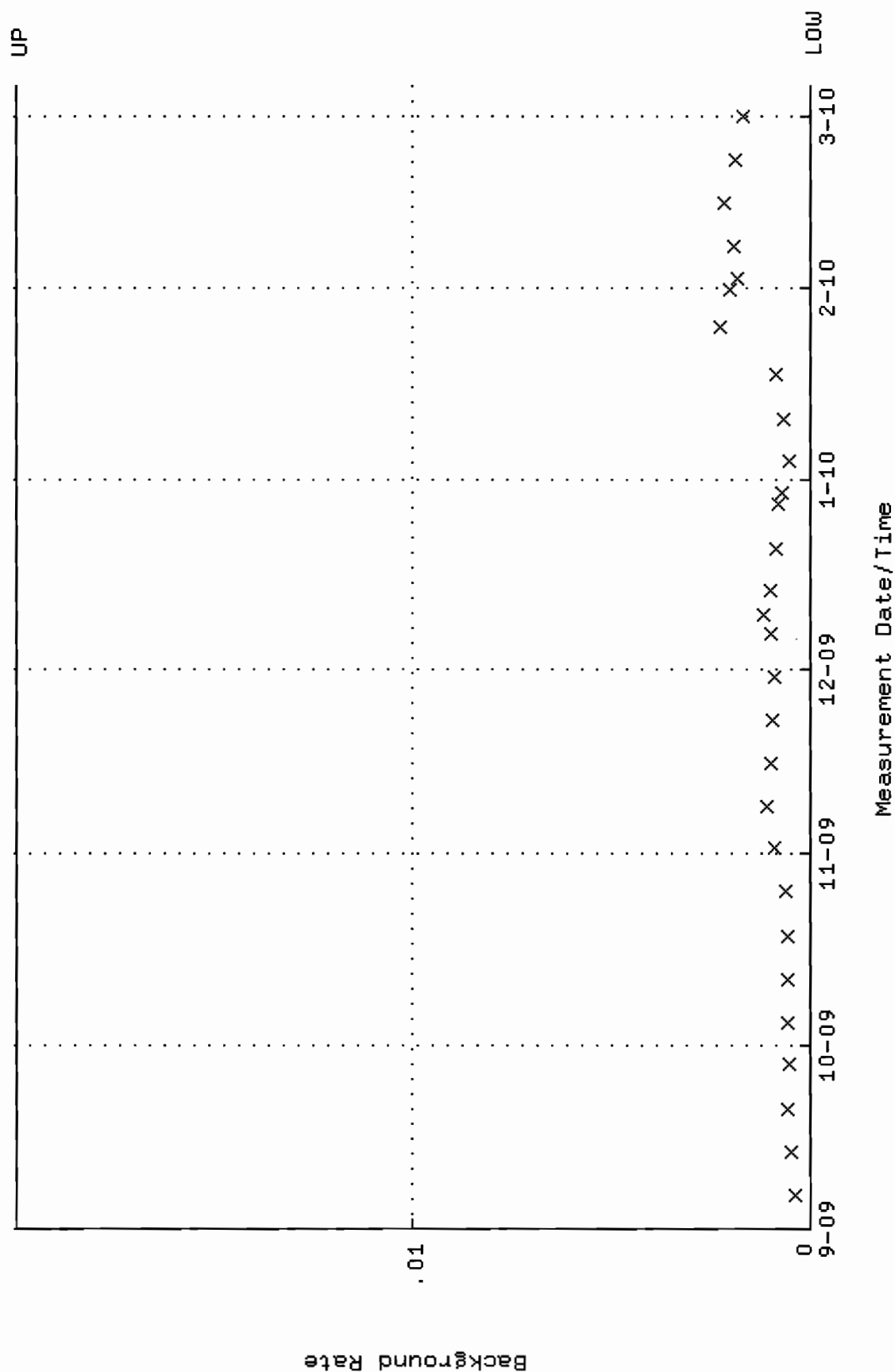
QA filename : DKA100: [ENV\_ALPHA.QA.W]W017.QAF; 4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.276155 through 0.308631



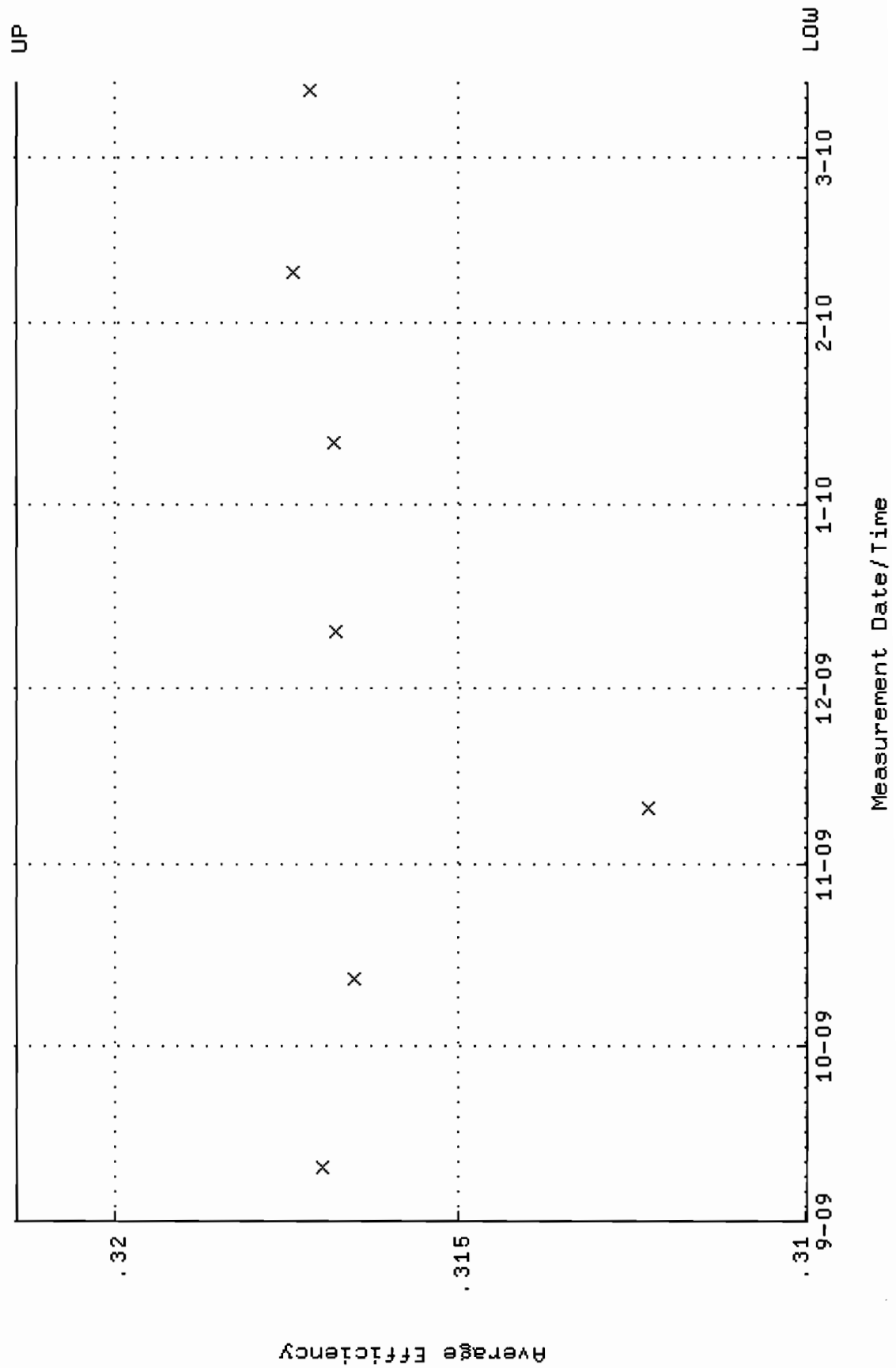
QA filename : DKA100:[ENV\_ALPHA.QA.W]W017.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 90.4251 through 97.0169



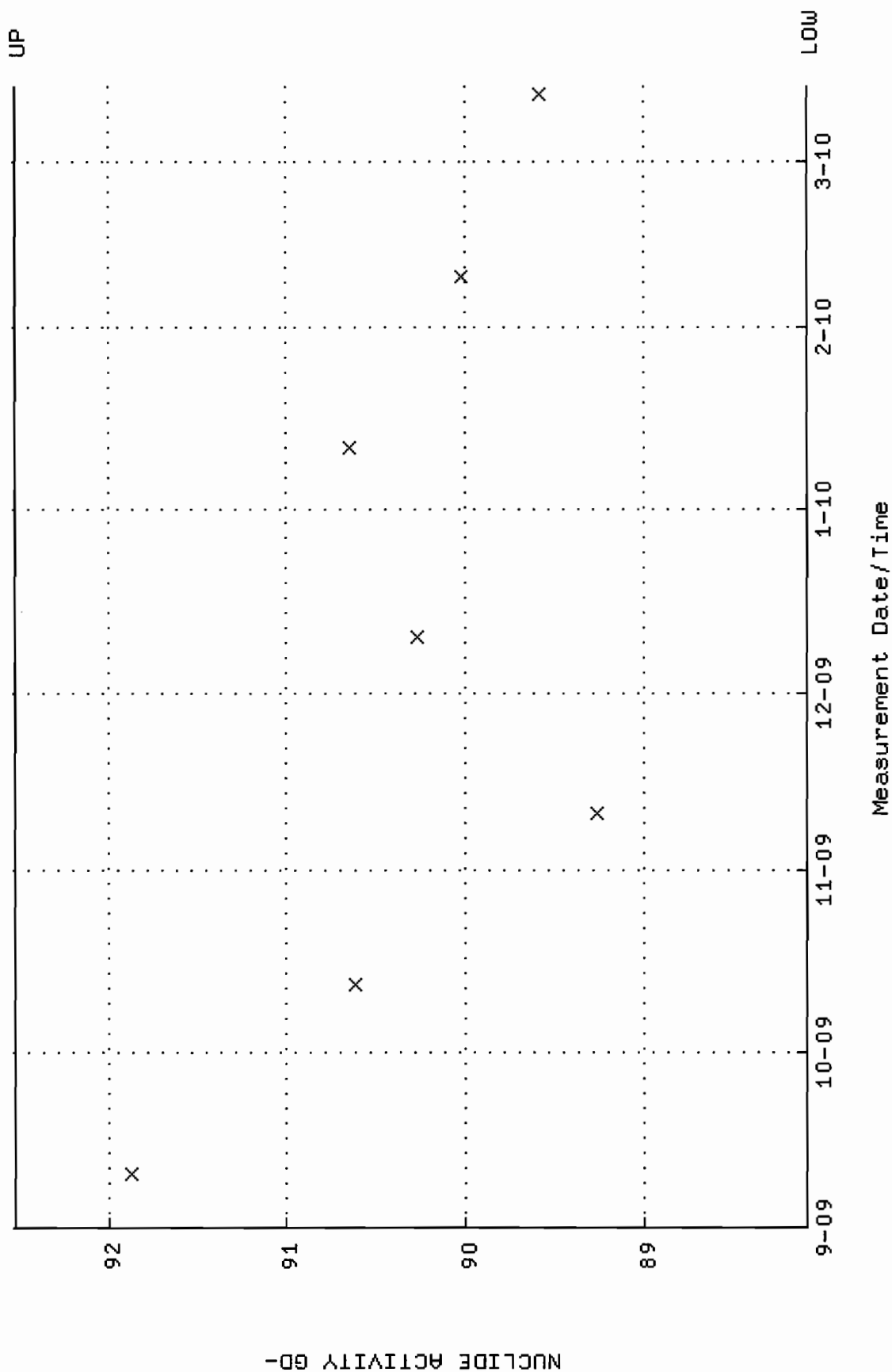
QA filename : DKA100:[ENV\_ALPHA.QA.B]B017.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:02 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



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

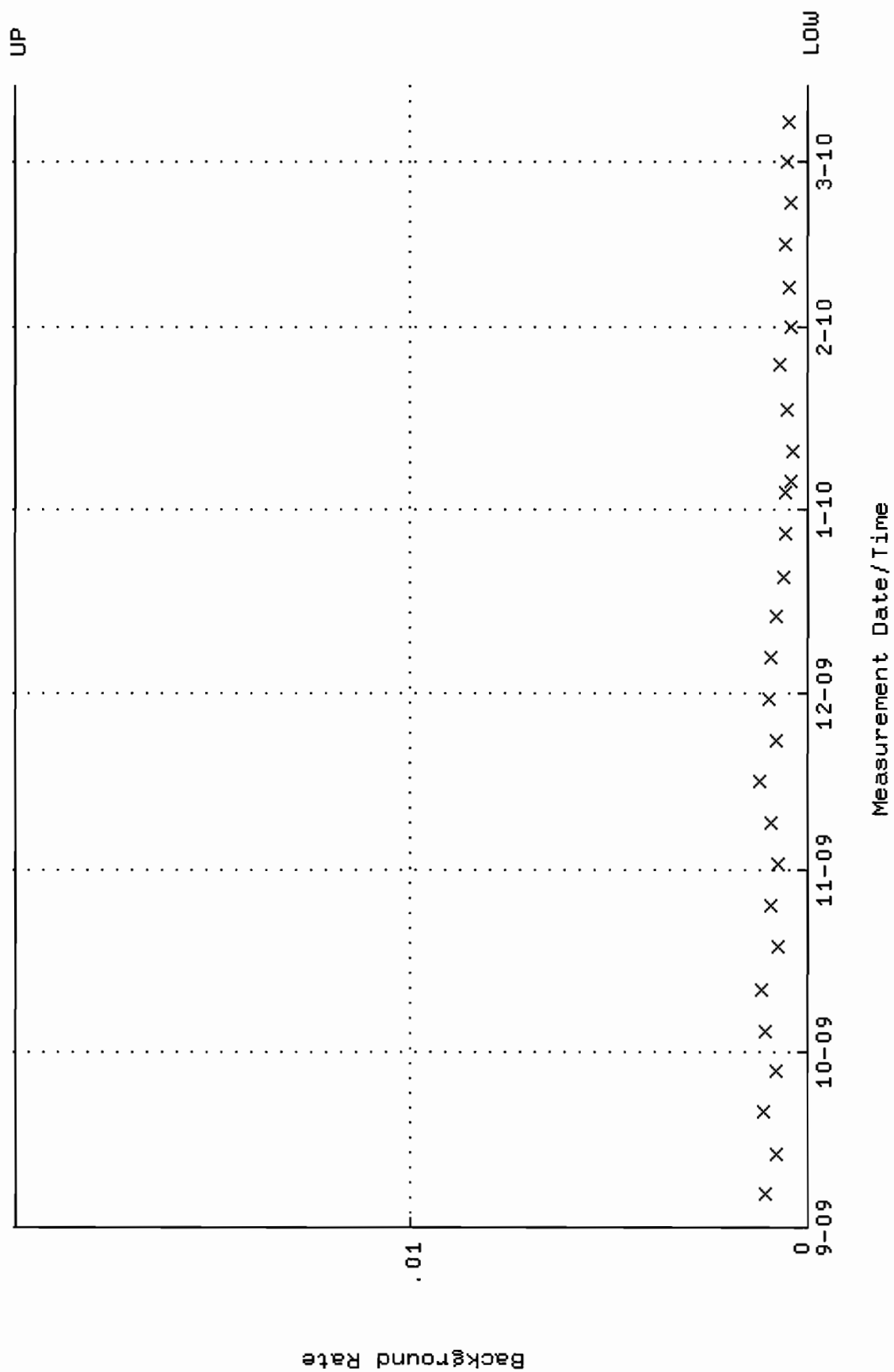


QA filename : DKA100:[ENV\_ALPHA.QA.W]W074.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 10-SEP-2009 07:45:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 88.0938 through 92.5190

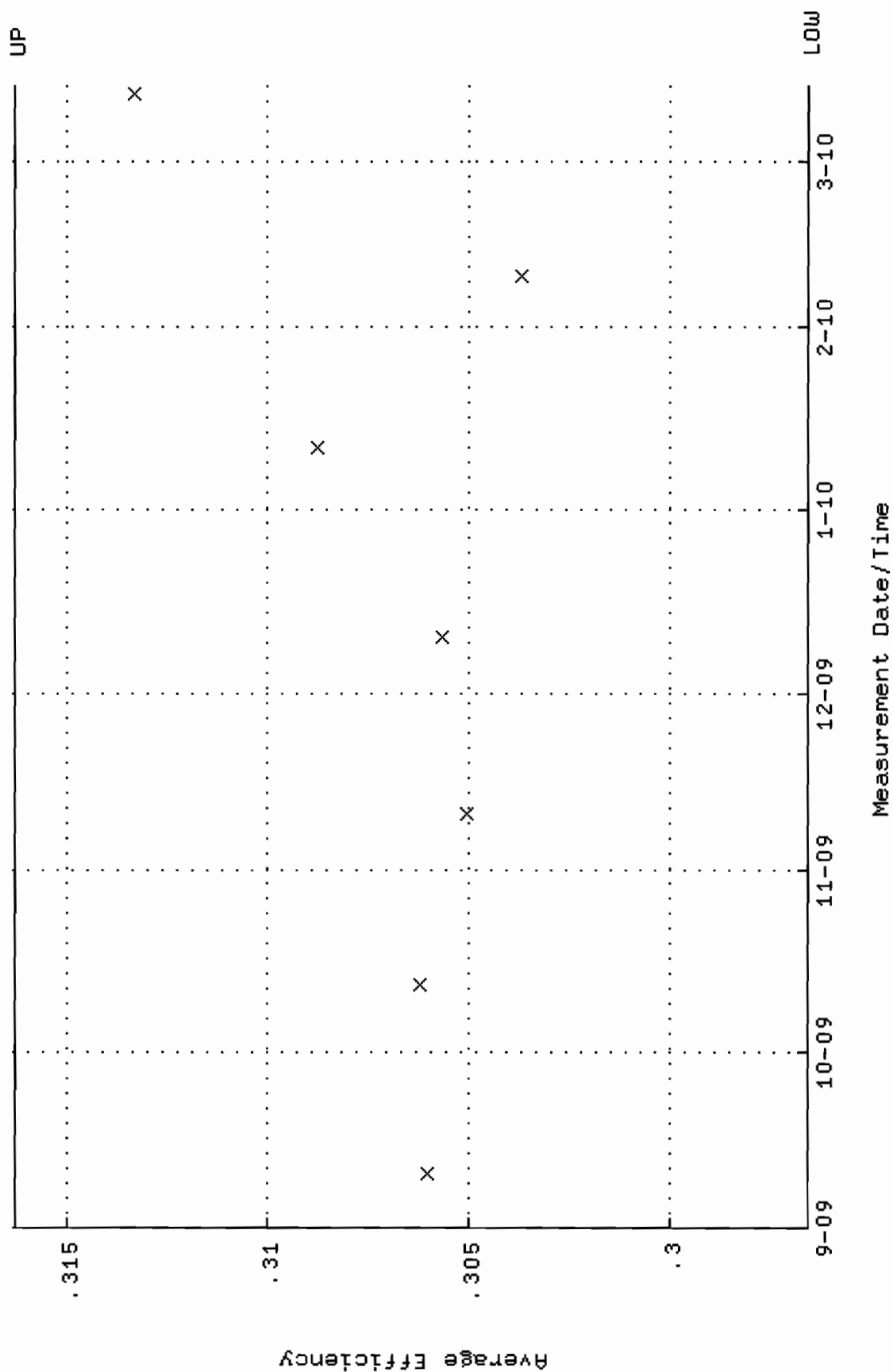




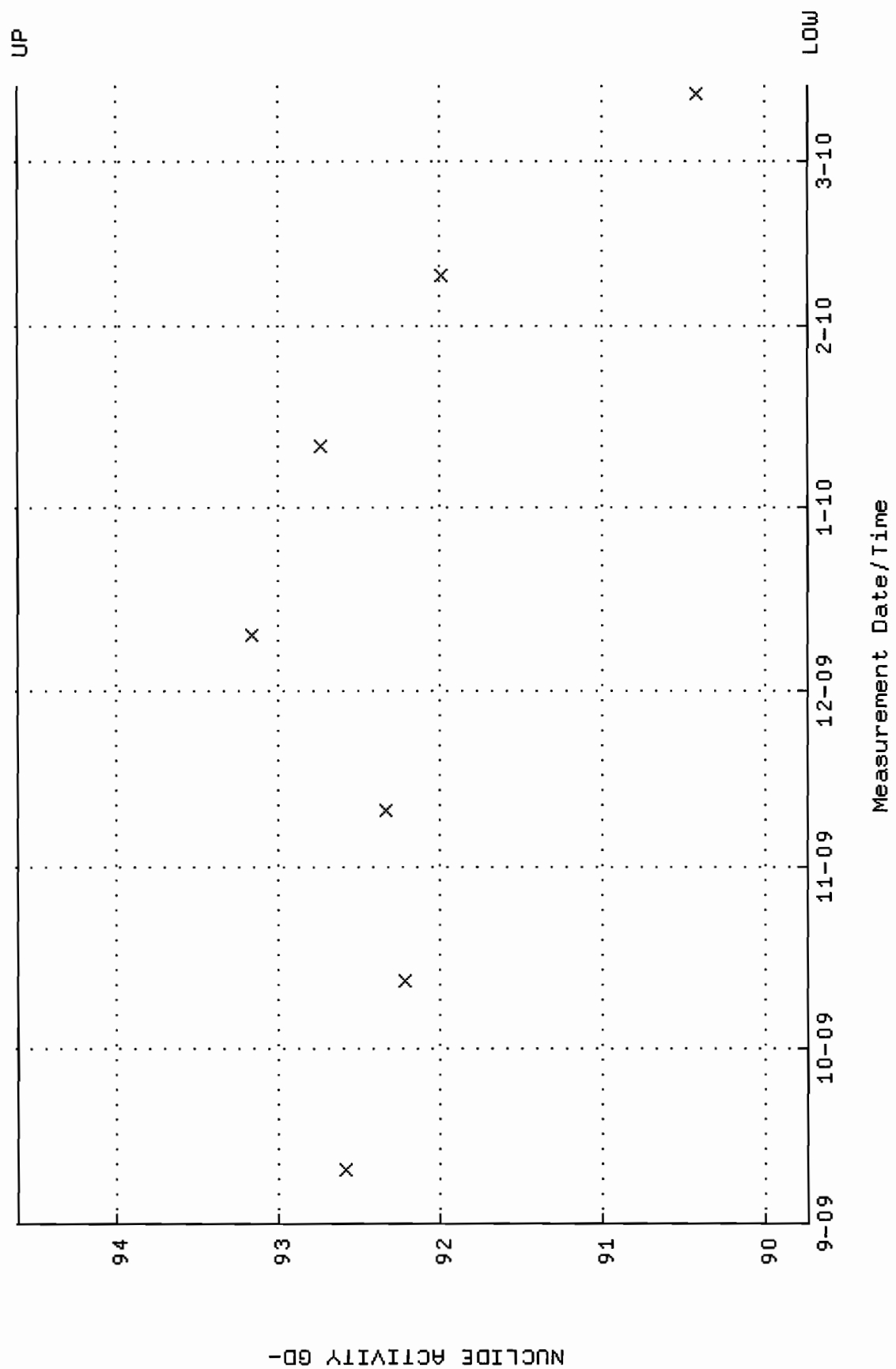
QA filename : DKA100:[ENV\_ALPHA.QA.B]B074.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:07 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



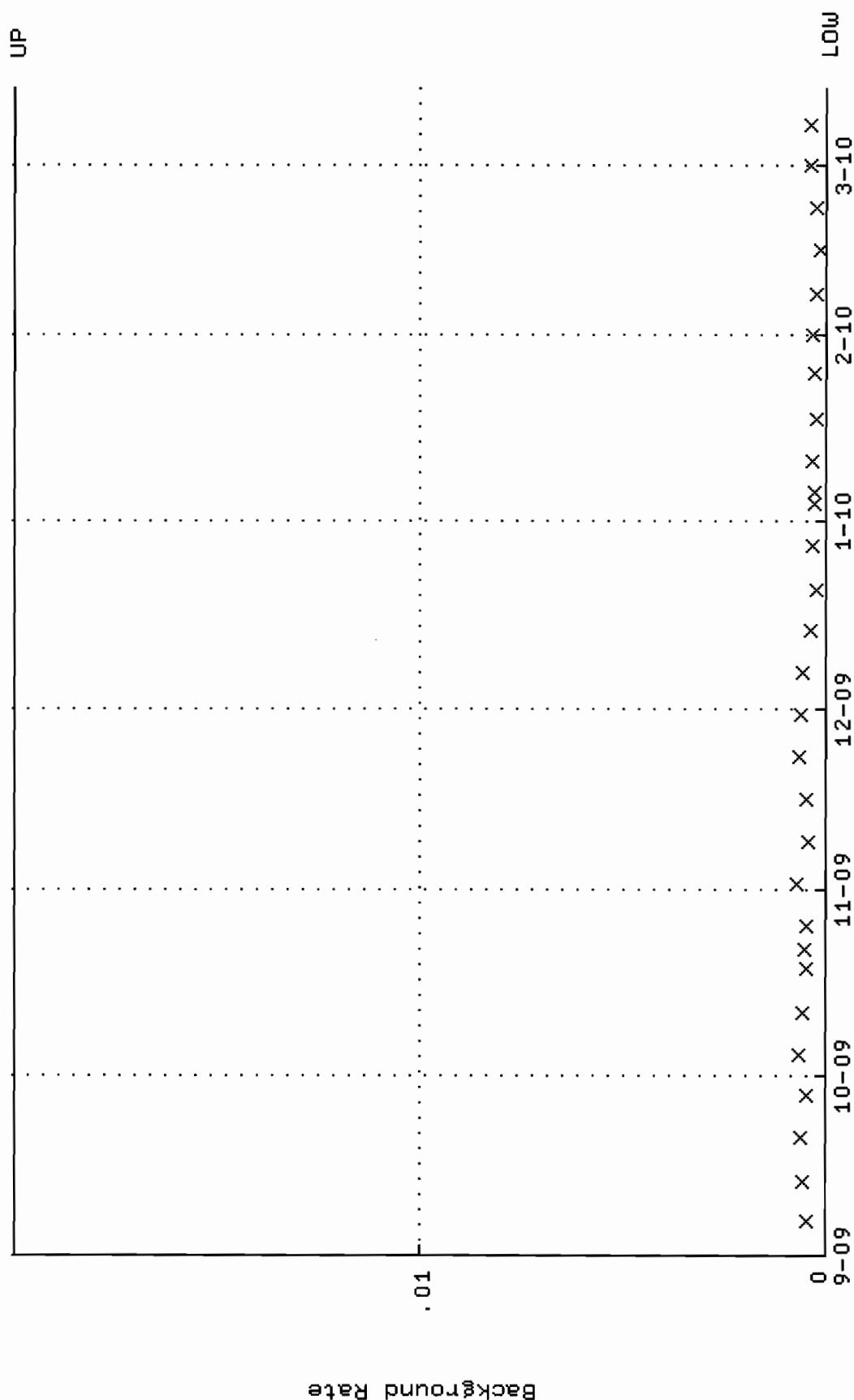
QA filename : DKA100:[ENV\_ALPHA.QA.W]W076.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 10-SEP-2009 07:45:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.296554 through 0.316286



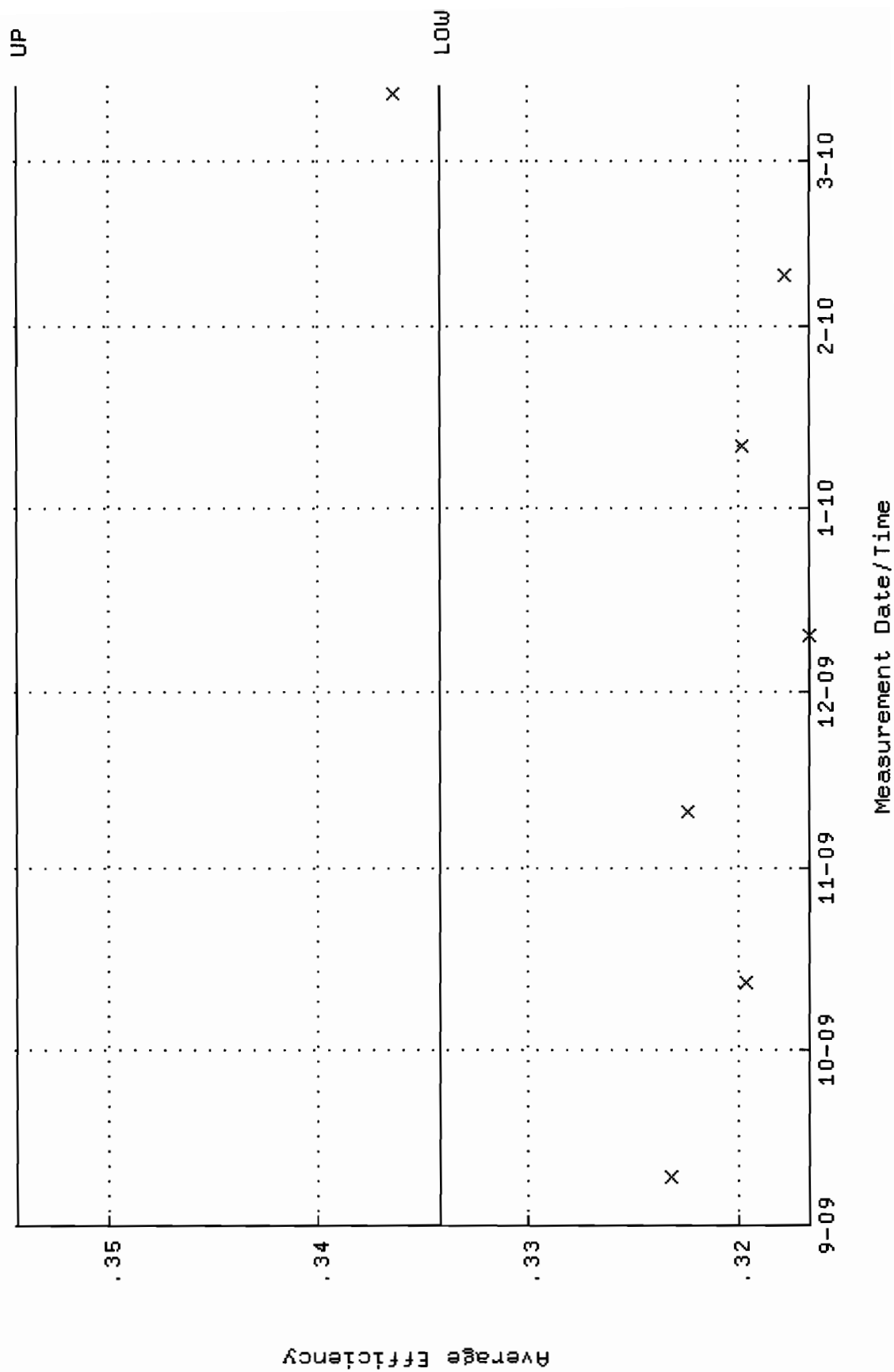
QA filename : DKA100:[ENV\_ALPHA.QA.W]W076.QAF;2  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 10-SEP-2009 07:45:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 89.7306 through 94.6123



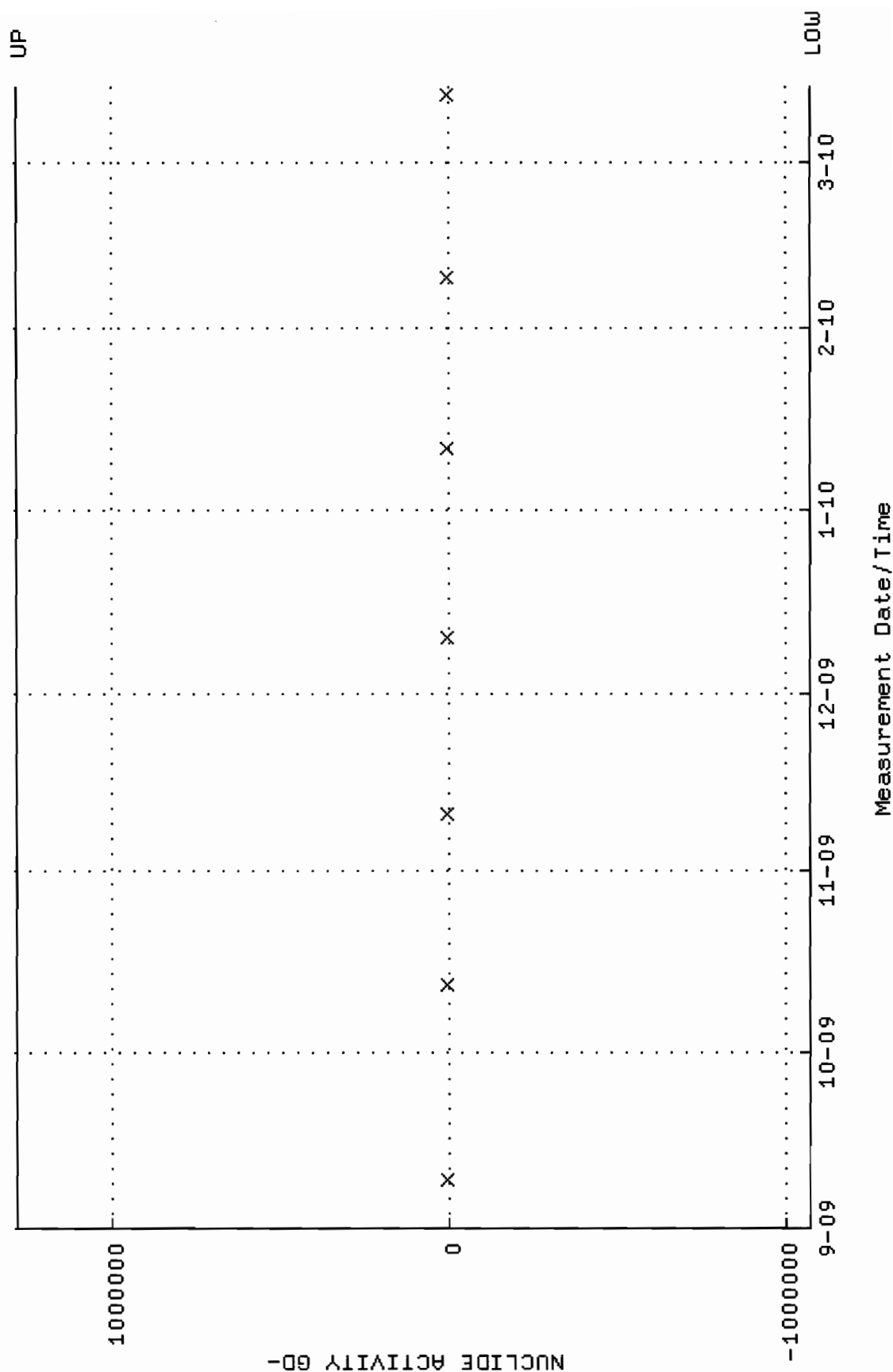
QA filename : DKA100:[ENV\_ALPHA.QA.B]B076.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:07 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



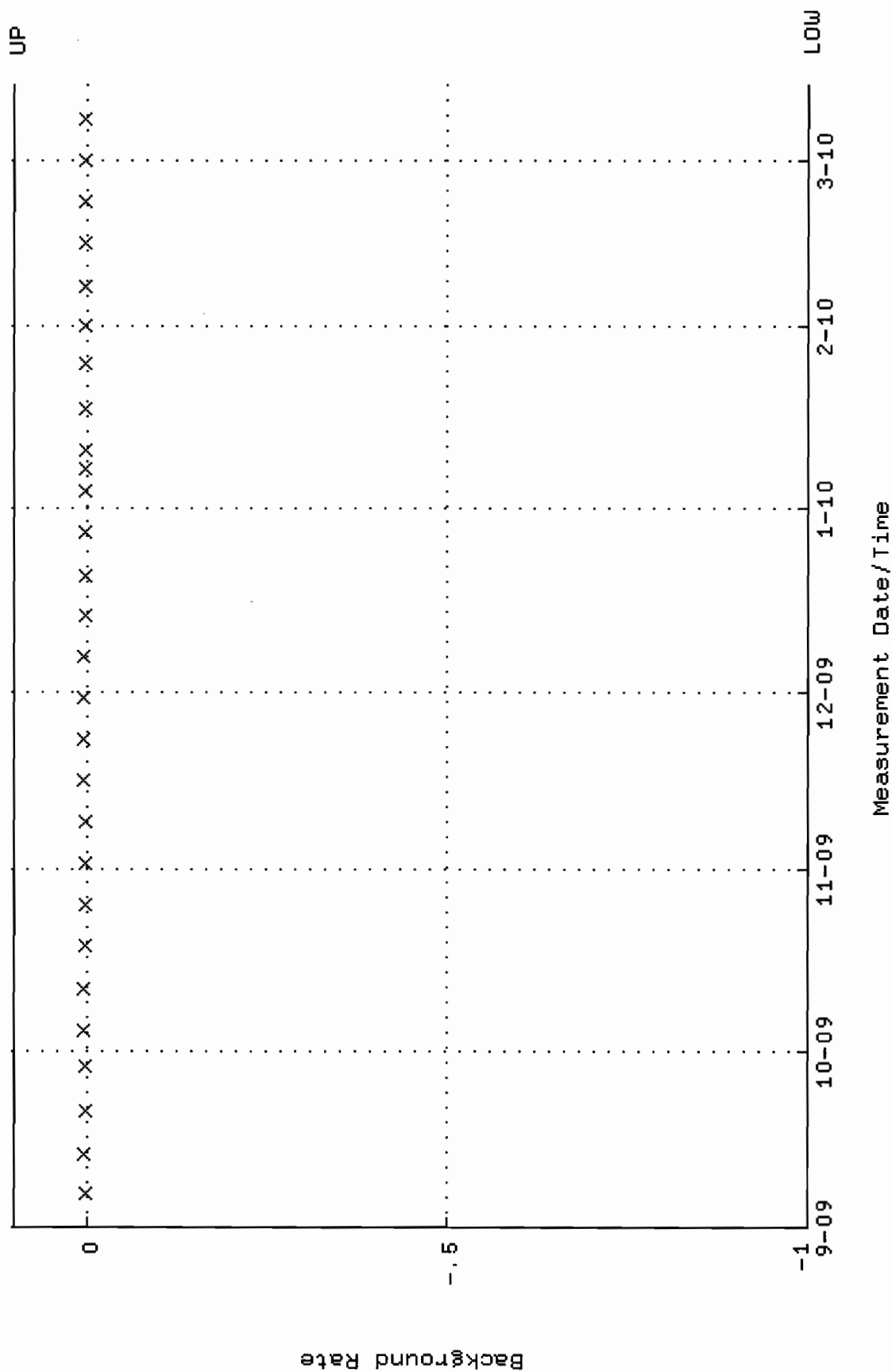
QA filename : DKA100:[ENV\_ALPHA.QA.W]W093.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.334257 through 0.354343



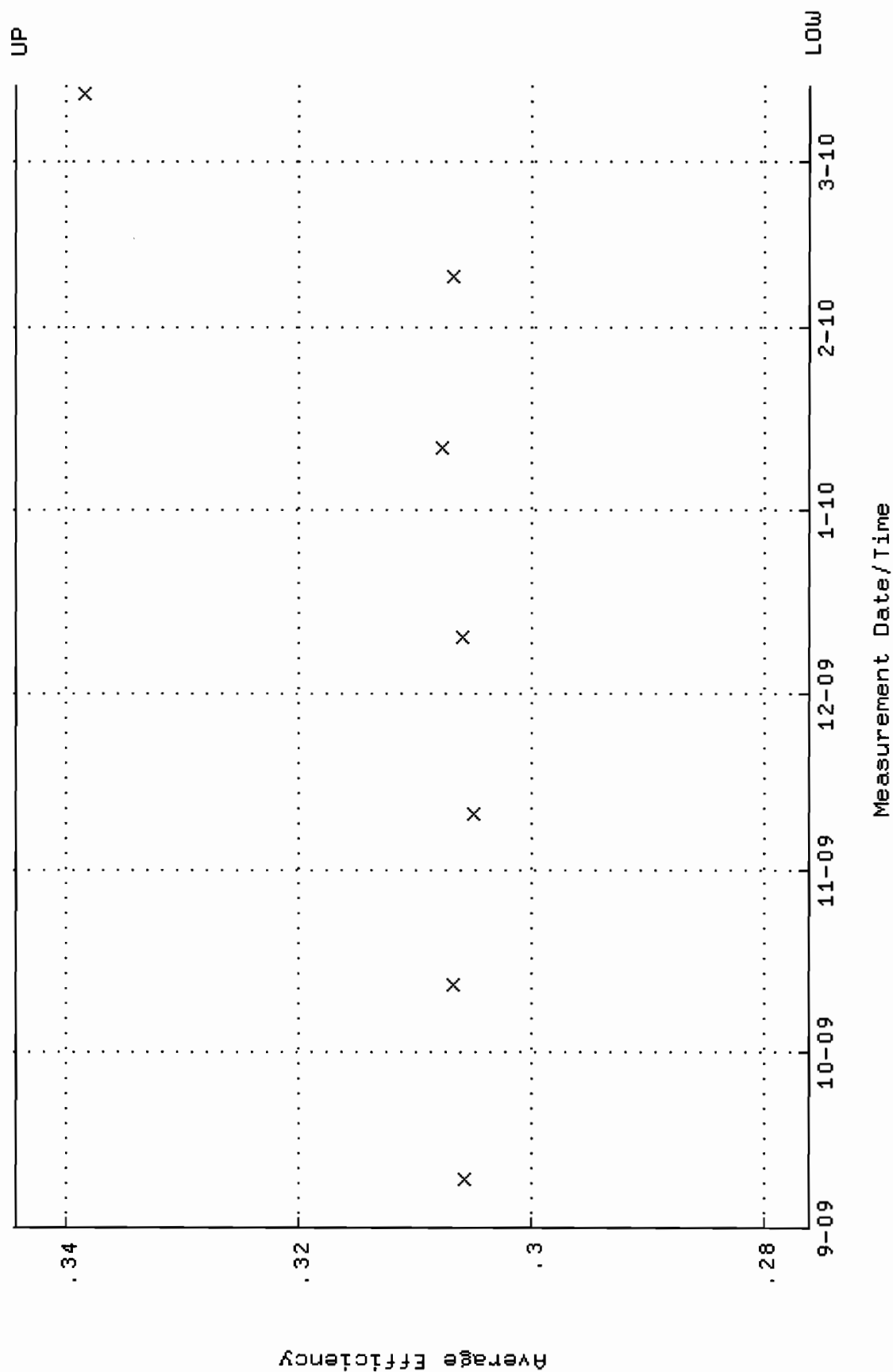
QA filename : DKA100:[ENV\_ALPHA.QA.W]W093.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: -1.071934E+06 through 1.284428E+06



QA filename : DKA100:[ENV\_ALPHA.QA.B]B093.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:10 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: -1.00000 through 0.100000

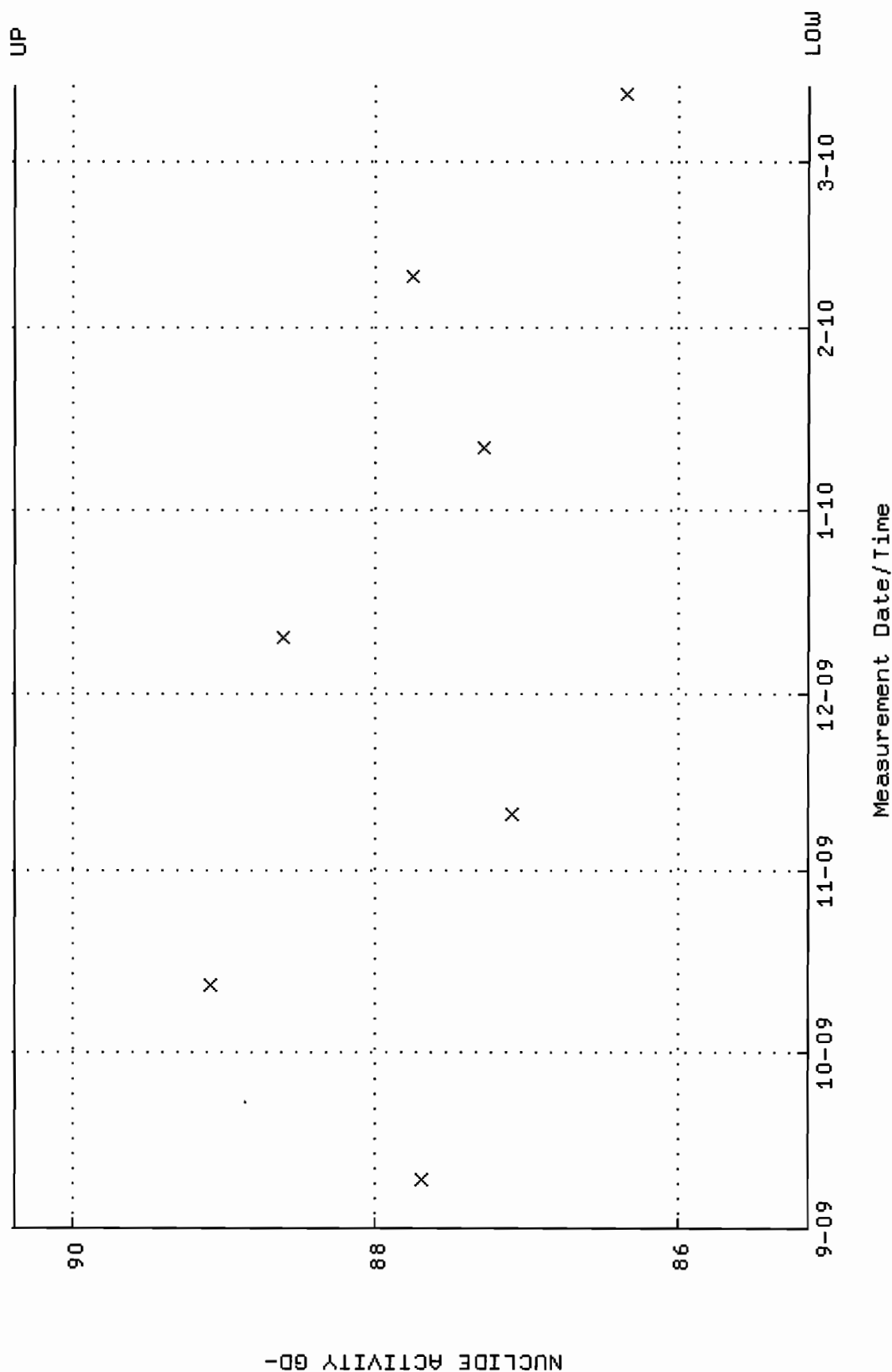


QA filename : DKA100:[ENV\_ALPHA.QA.W]W094.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.276224 through 0.344338

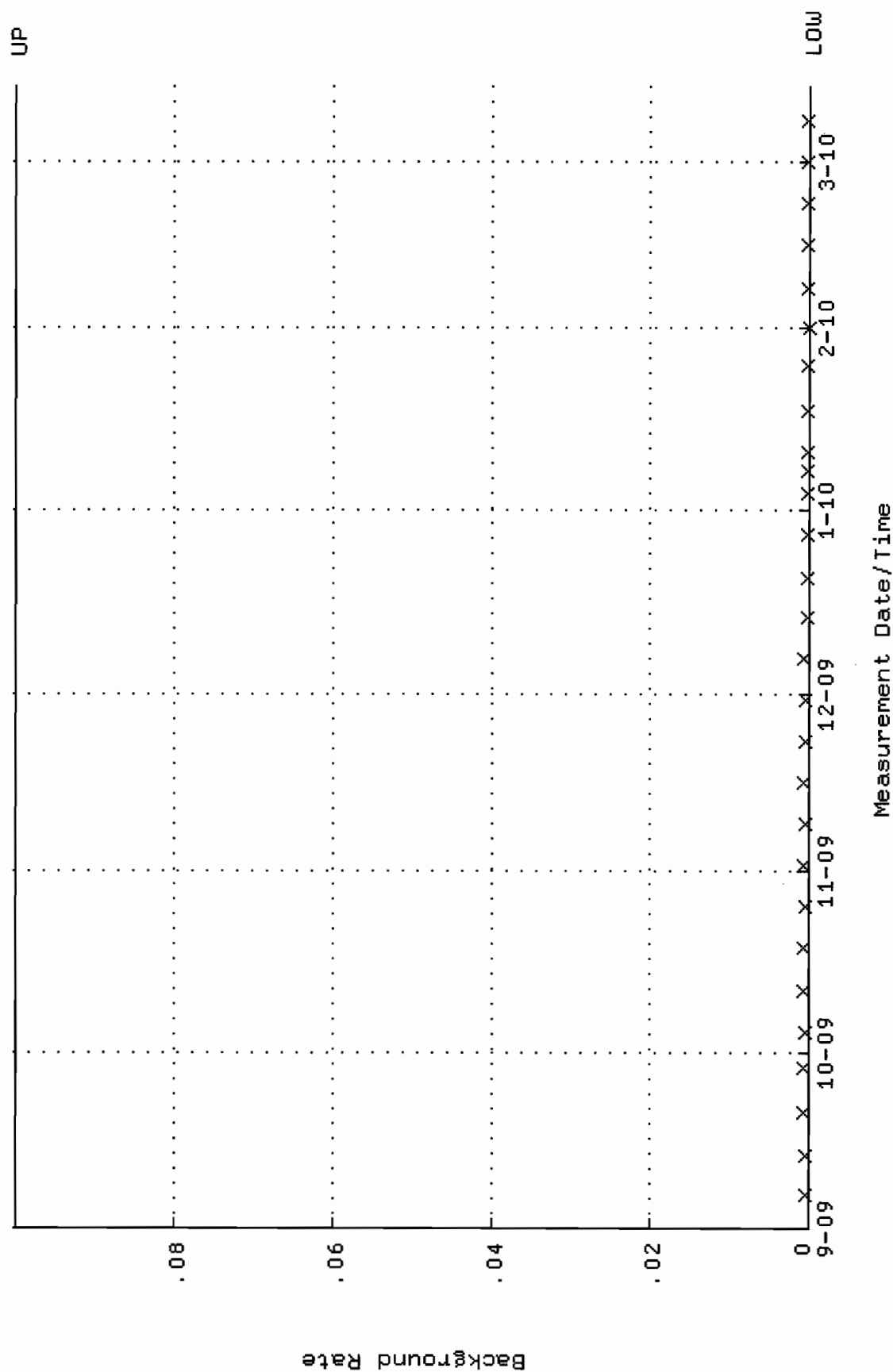




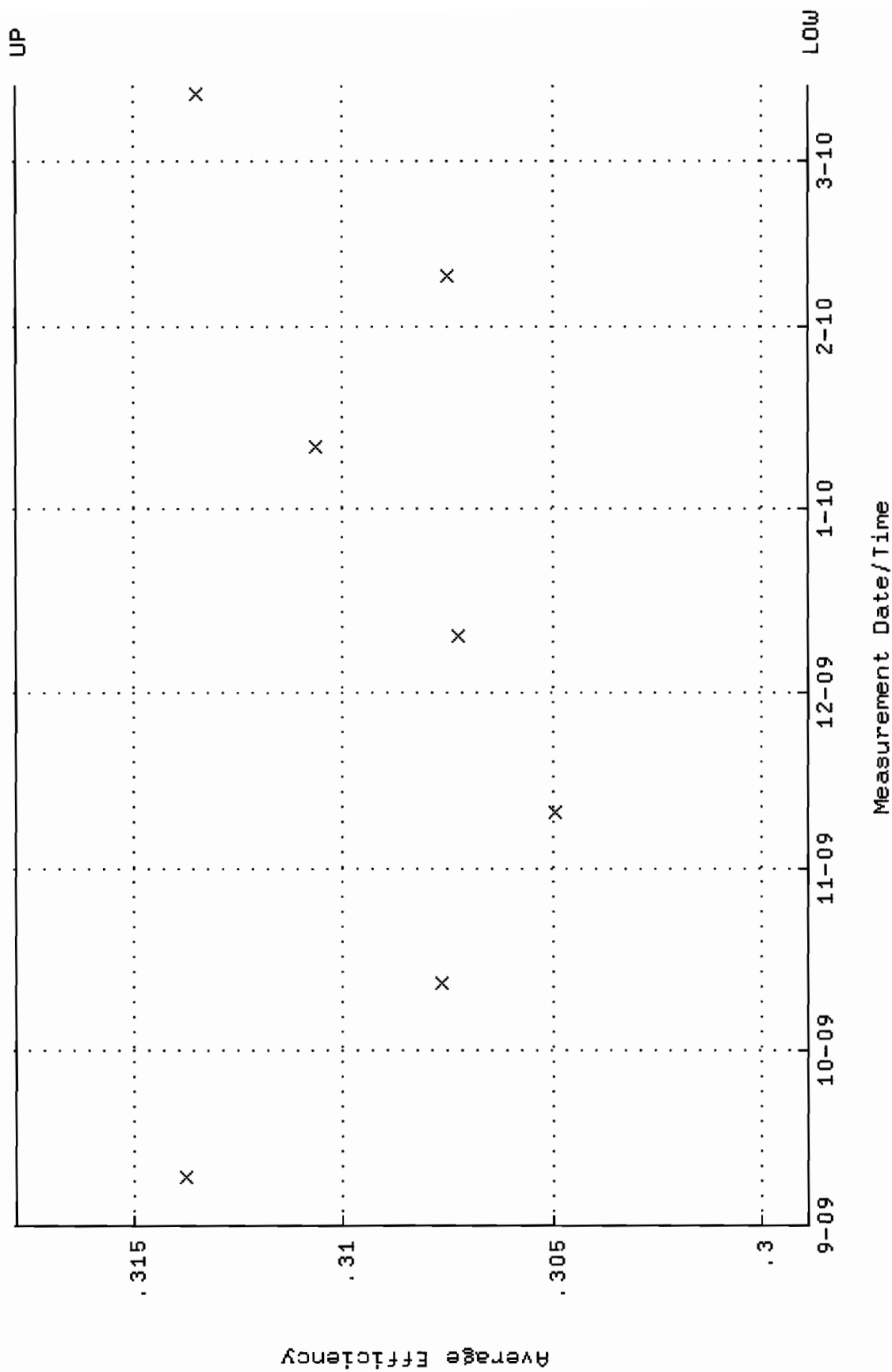
QA filename : DKA100:[ENV\_ALPHA.QA.W]W094.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.1305 through 90.3863



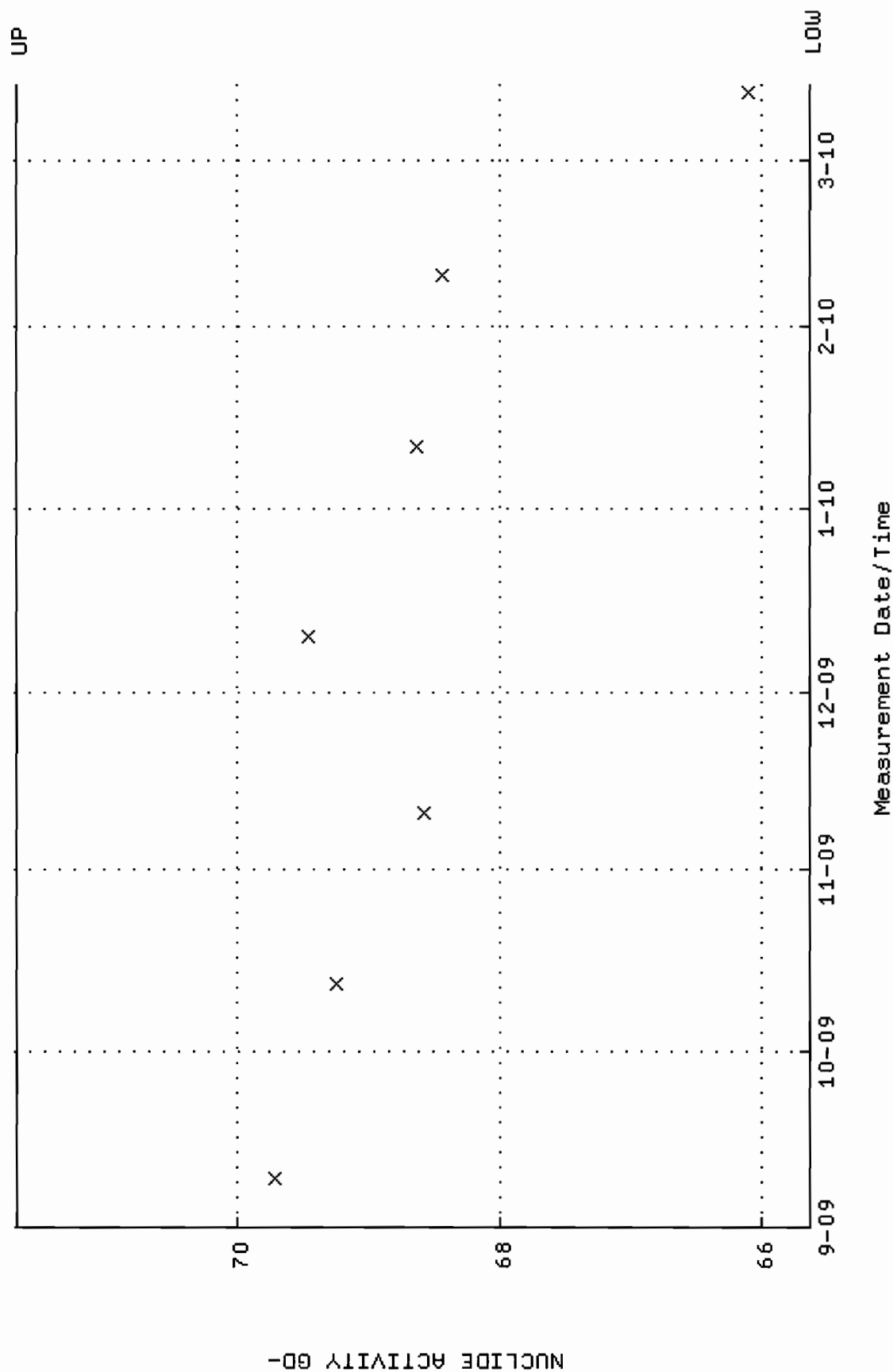
QA filename : DKA100:[ENV\_ALPHA.QA.B]B094.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:10 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



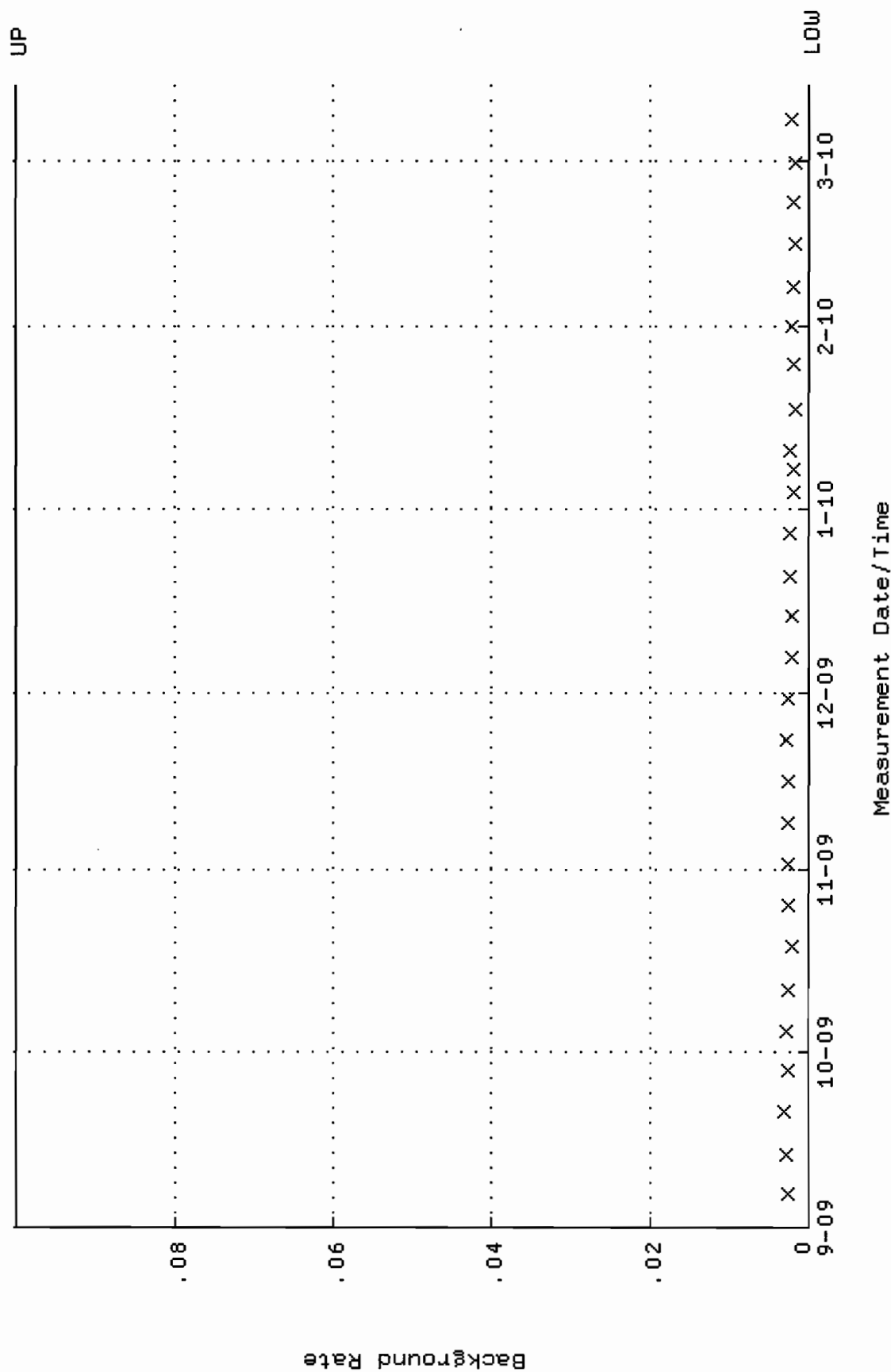
QA filename : DKA100:[ENV\_ALPHA.QA.W]W095.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:50 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.298900 through 0.317790



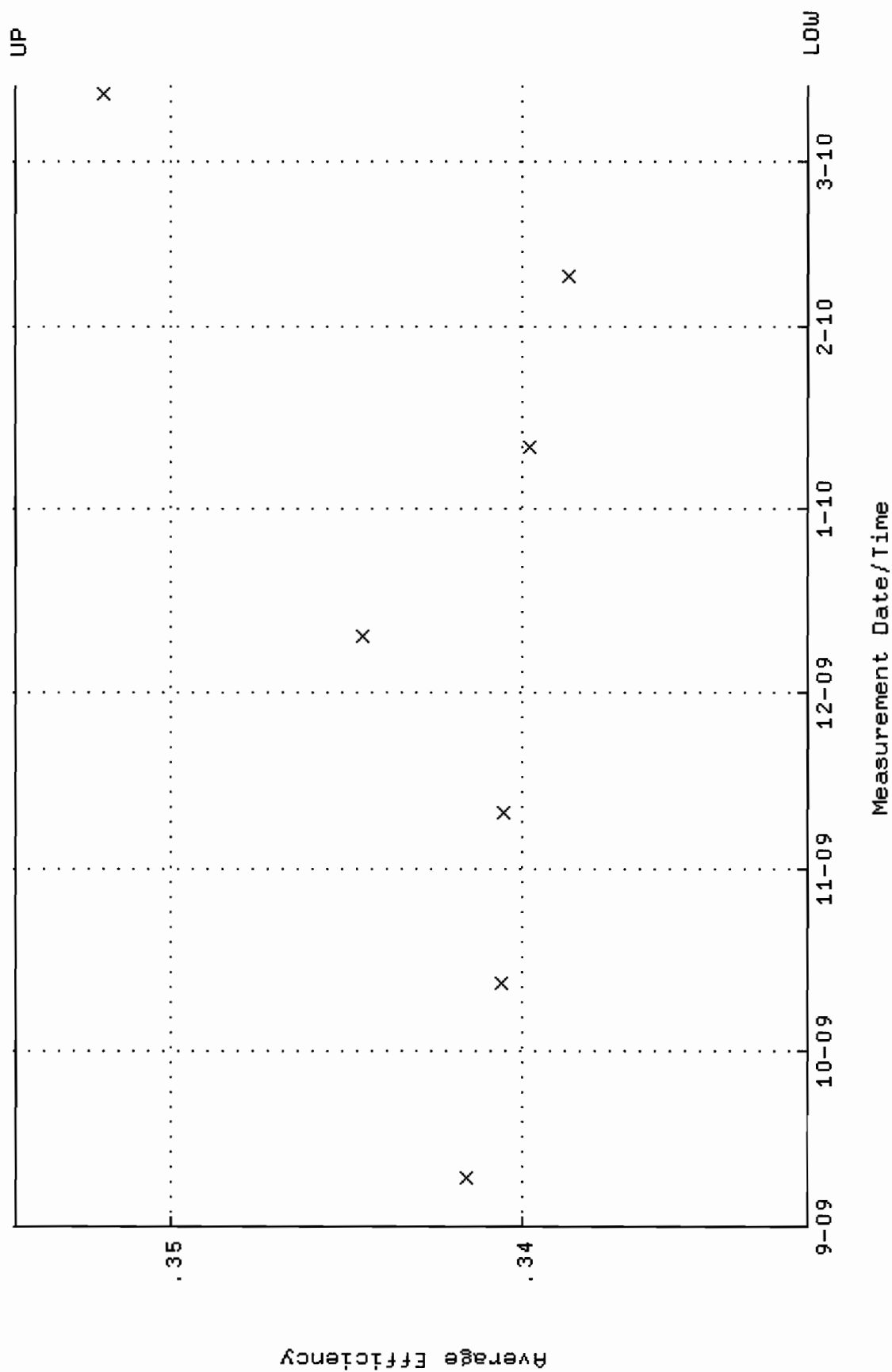
QA filename : DKA100:[ENV\_ALPHA.QA.W]W095.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:50 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 65.6370 through 71.6700



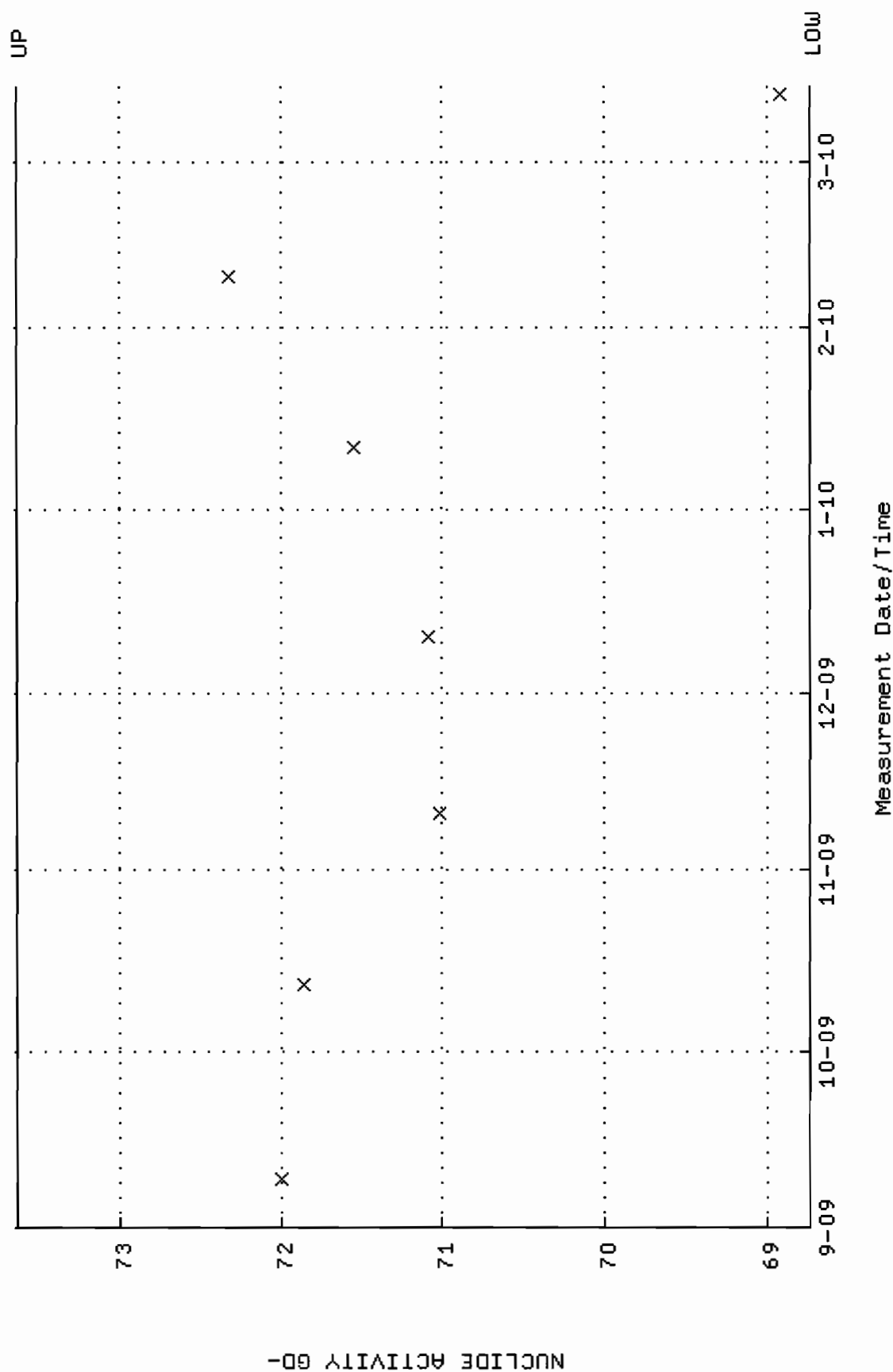
QA filename : DKA100:[ENV\_ALPHA.QA.B]B095.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



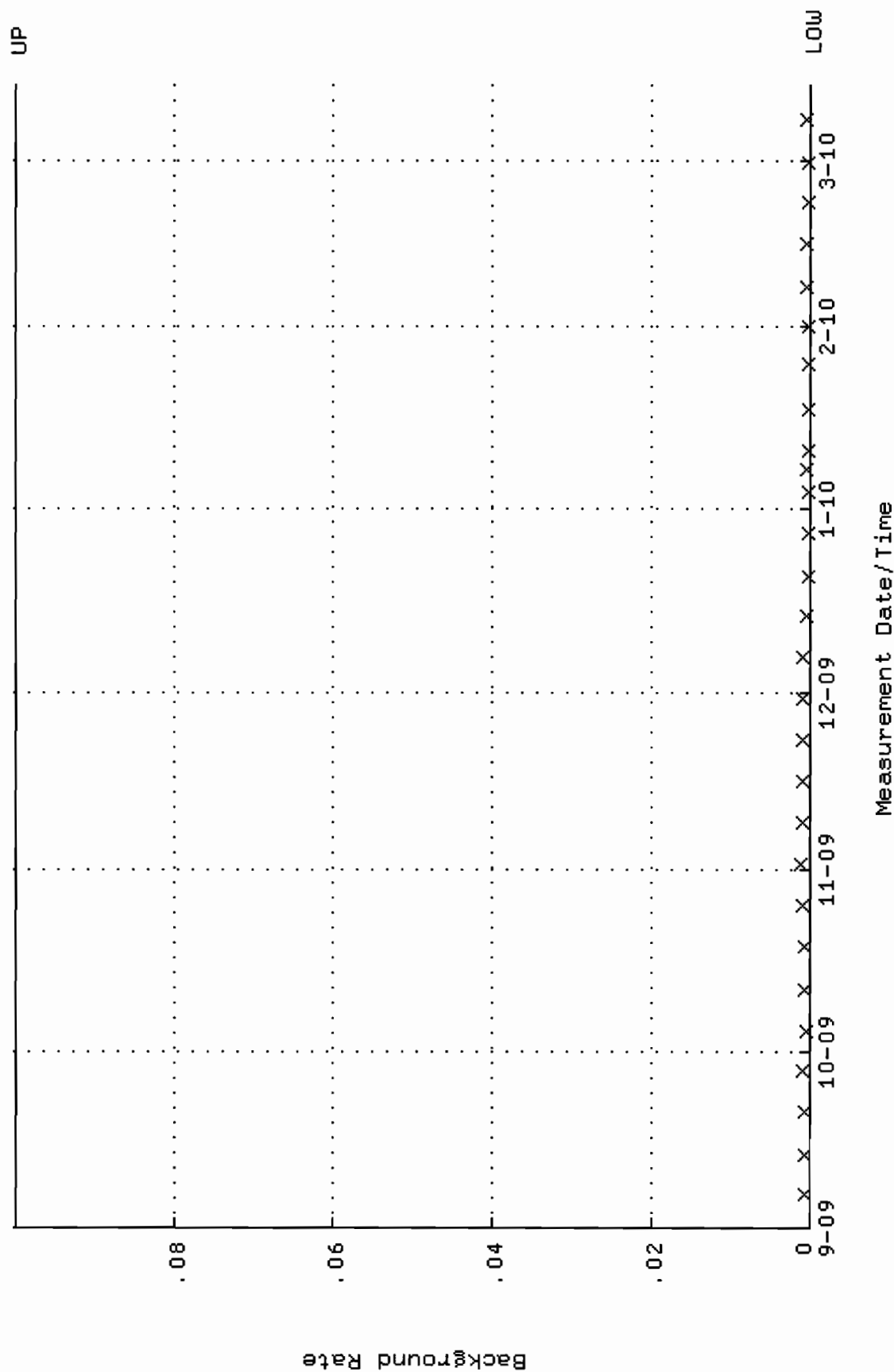
QA filename : DKA100:[ENV\_ALPHA.QA.W]W099.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:50 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.331877 through 0.354429



QA filename : DKA100:[ENV\_ALPHA.QA.W]W099.QAF;2  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:50 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 68.7313 through 73.6359

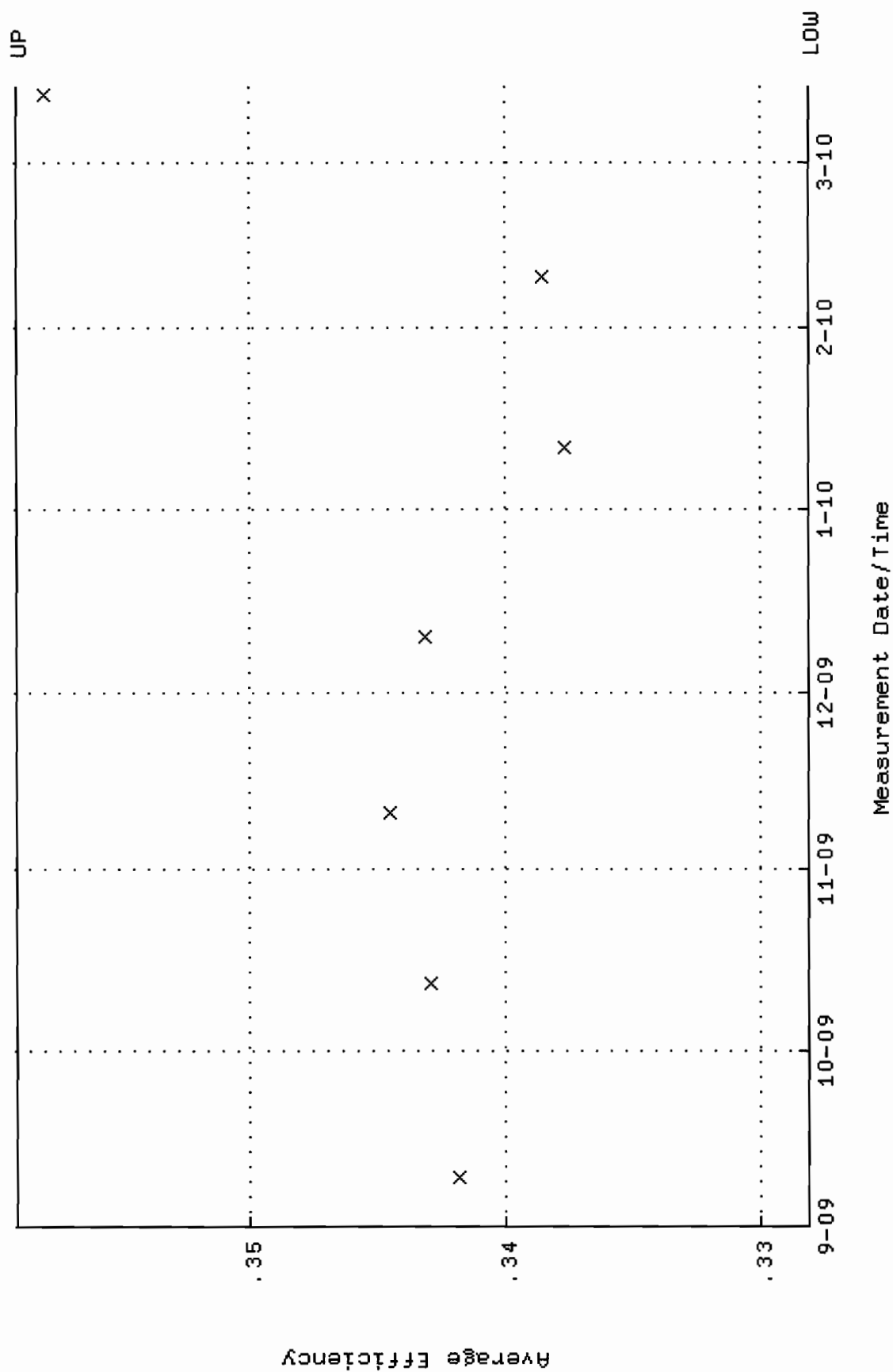


QA filename : DKA100:[ENV\_ALPHA.QA.B]B099.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

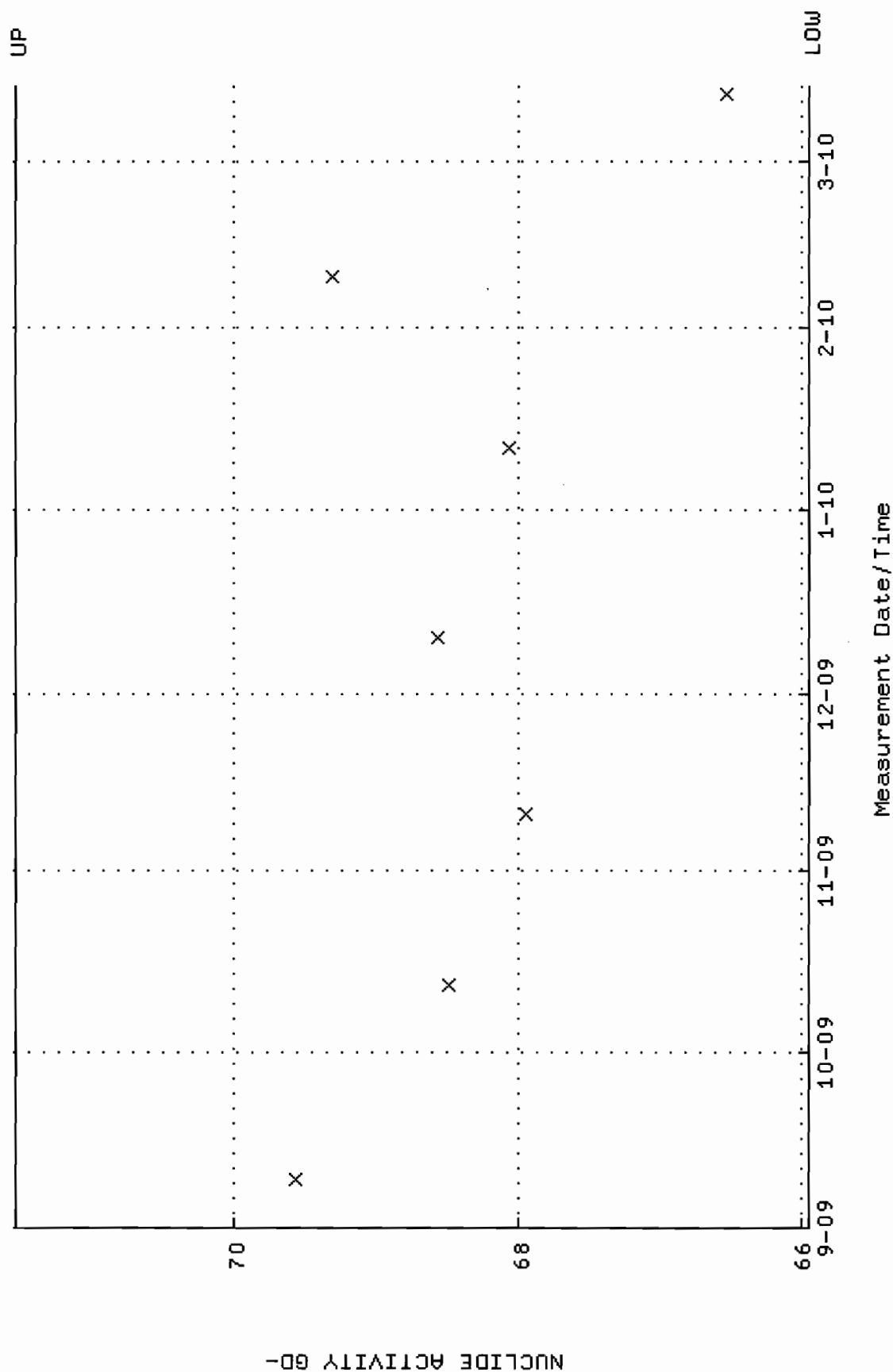




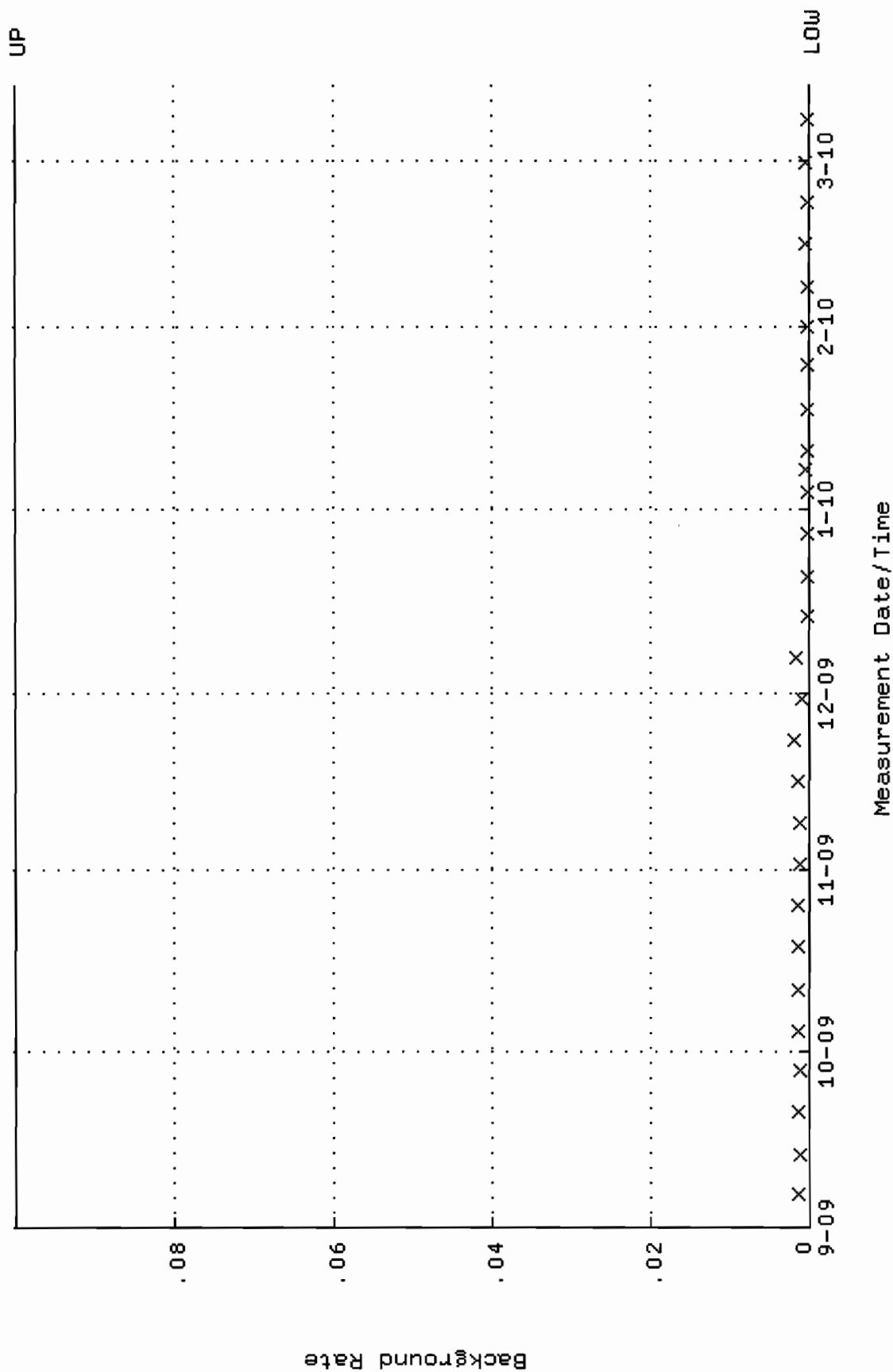
QA filename : DKA100:[ENV\_ALPHA.QA.W]w100.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:50 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.328134 through 0.359116



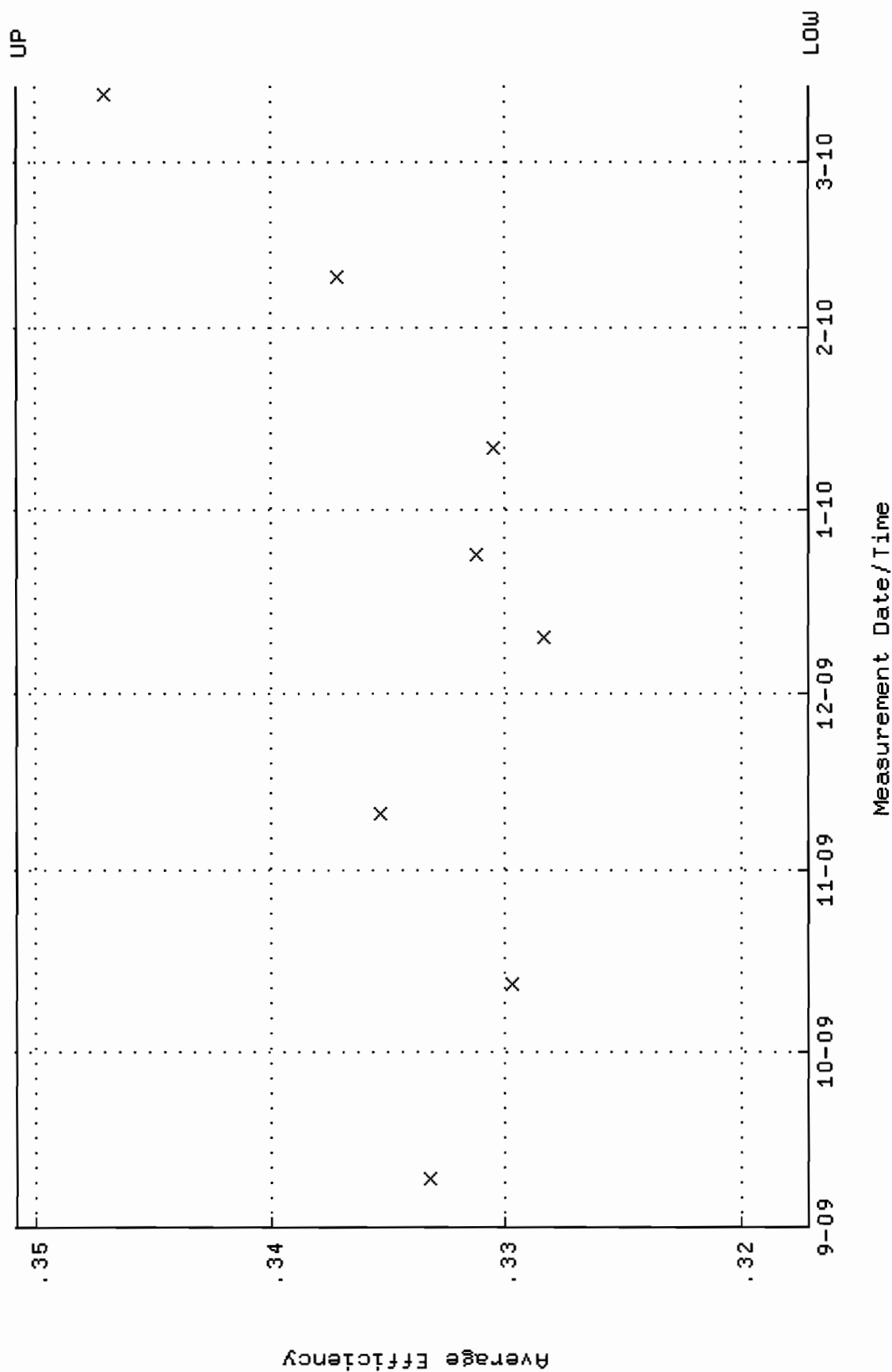
QA filename : DKA100:[ENV\_ALPHA.QA.W]W100.QAF;2  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:50 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 65.9445 through 71.5395



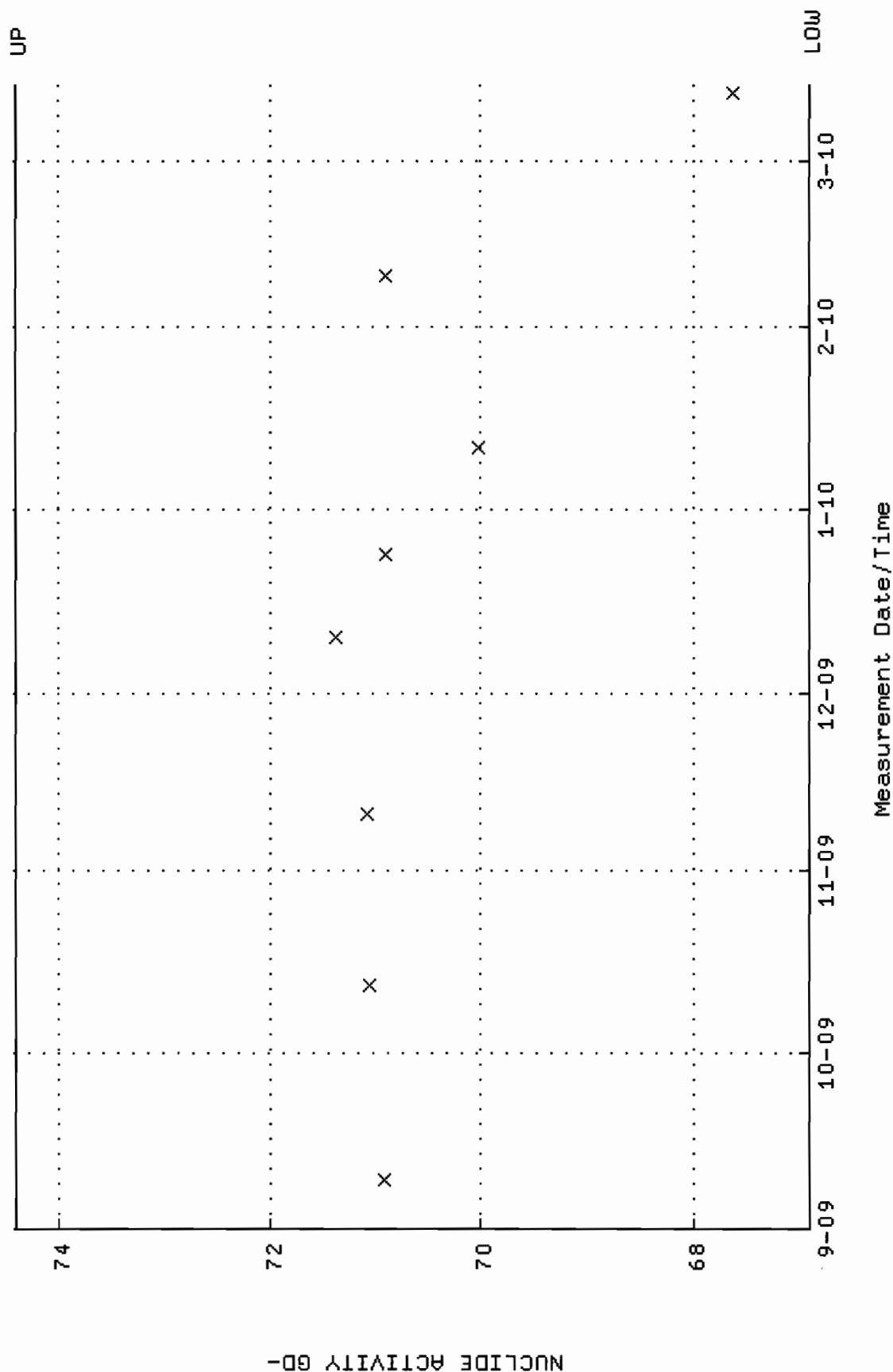
QA filename : DKA100:[ENV\_ALPHA.QA.B]B100.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



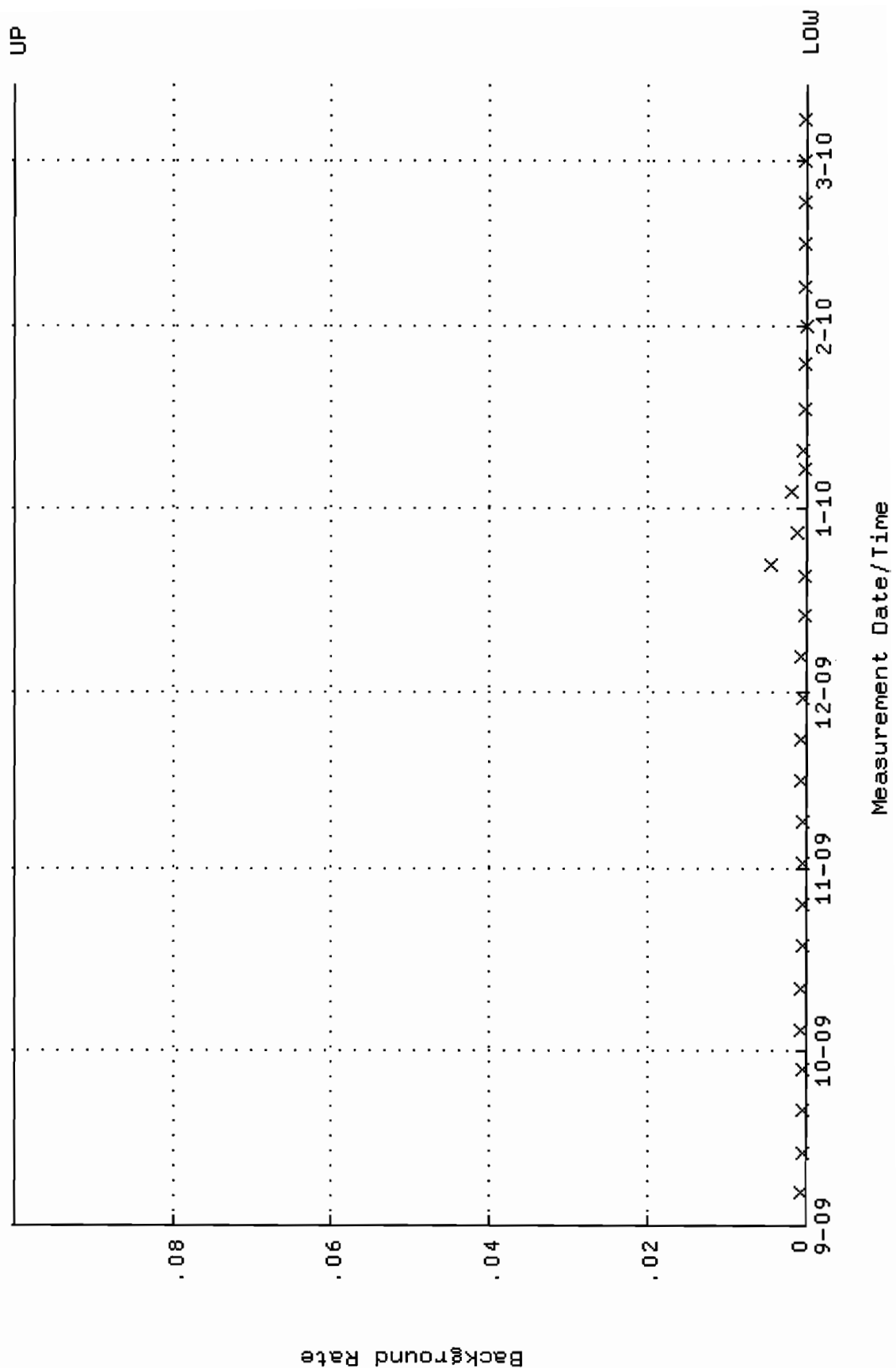
QA filename : DKA100:[ENV\_ALPHA.QA.W]W101.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:51 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.317122 through 0.350794



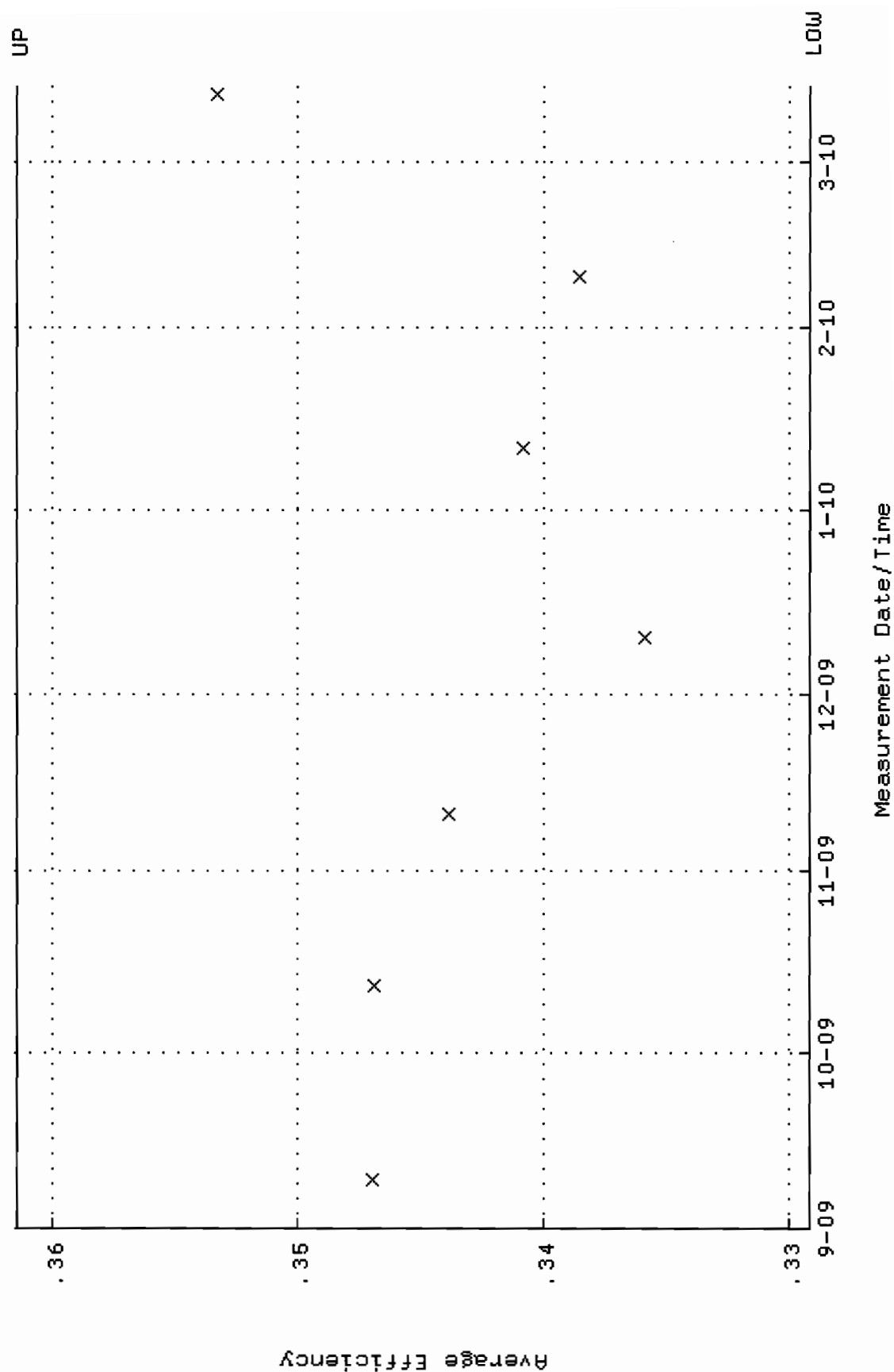
QA filename : DKA100:[ENV\_ALPHA.QA.W]w101.QAF;2  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:51 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 66.8994 through 74.4026



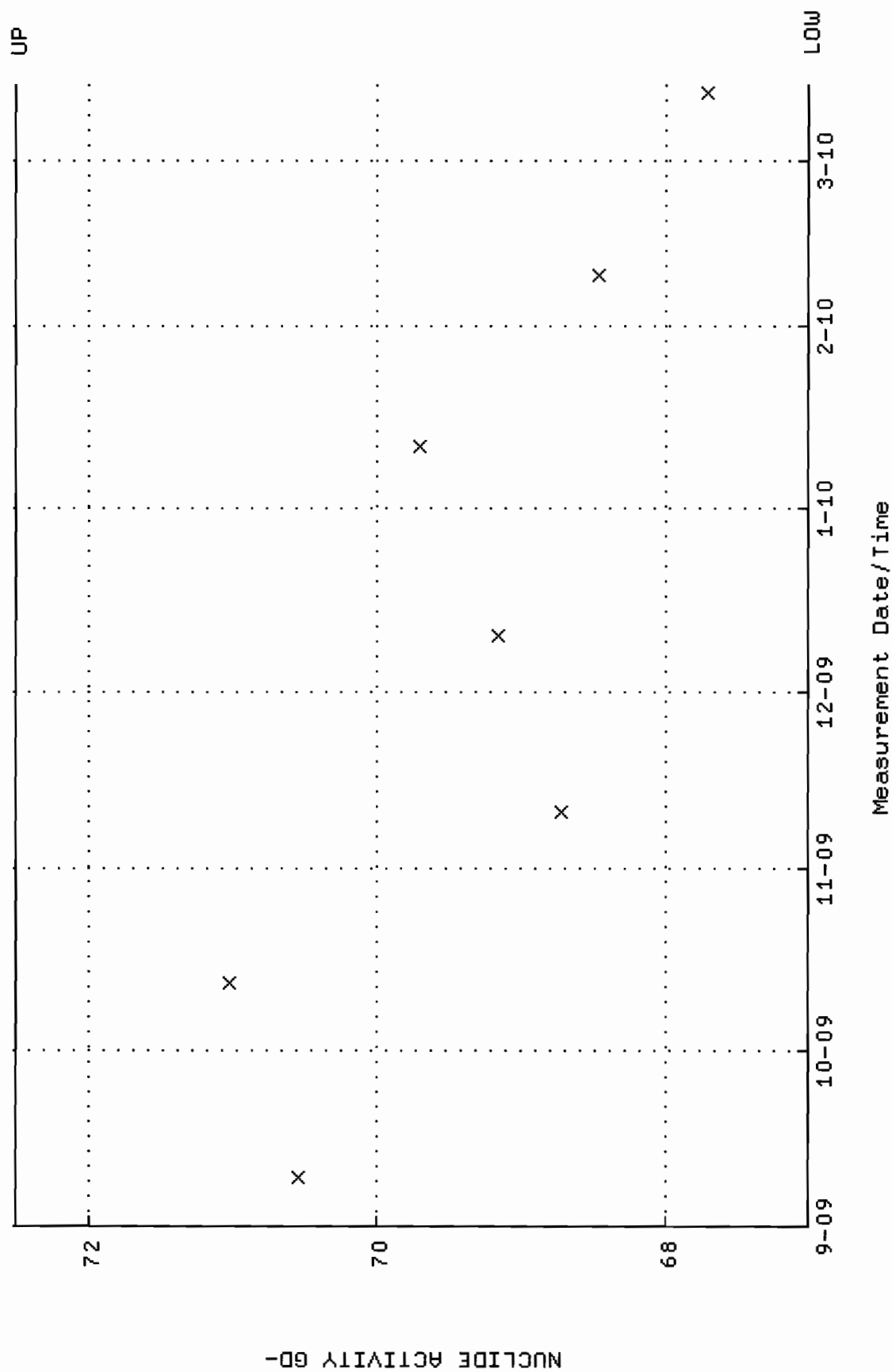
QA filename : DKA100:[ENV\_ALPHA.QA.B]B101.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W108.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.329201 through 0.361417

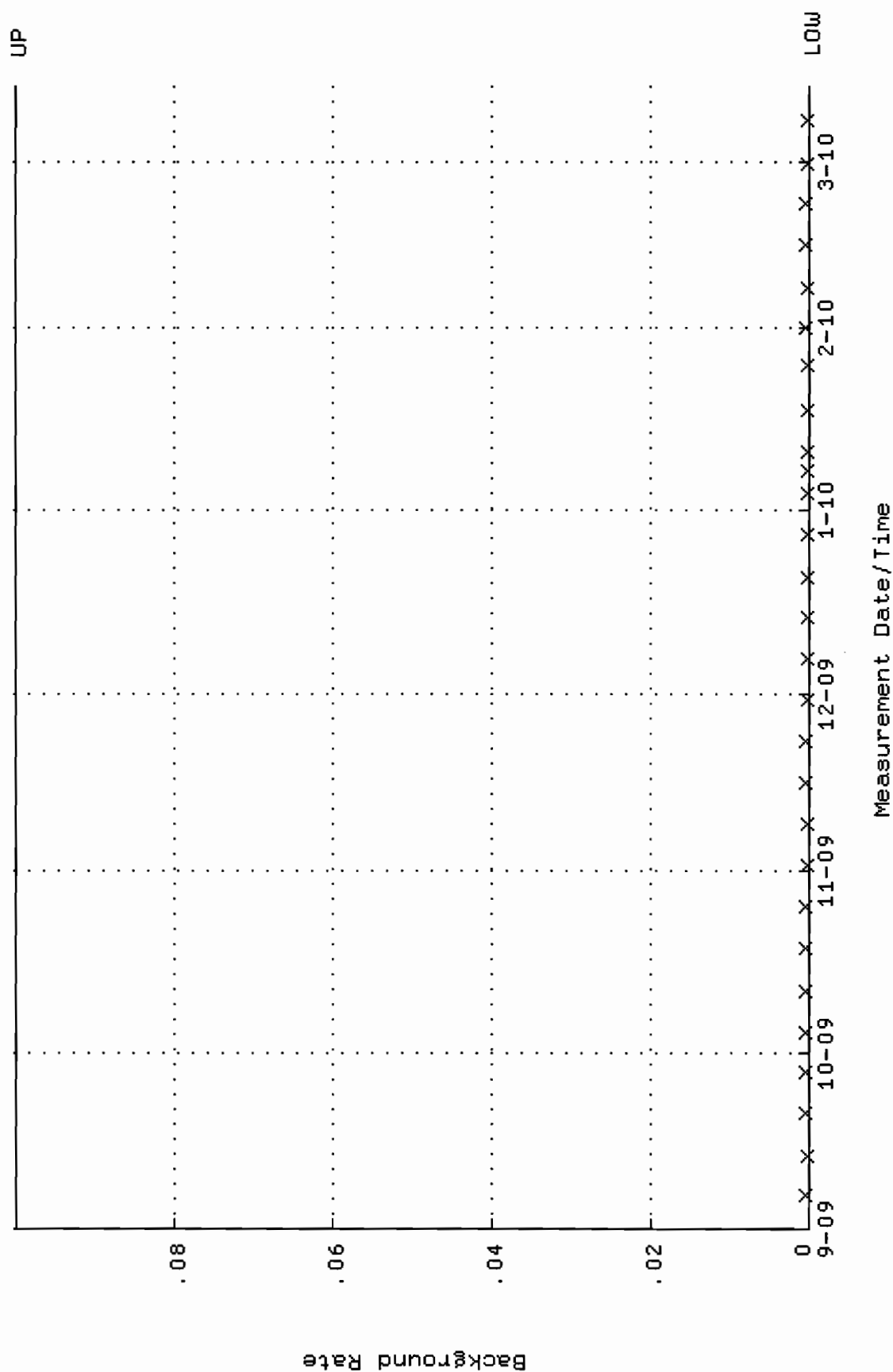


QA filename : DKA100:[ENV\_ALPHA.QA.W]w108.QAF;3  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 67.0155 through 72.5031

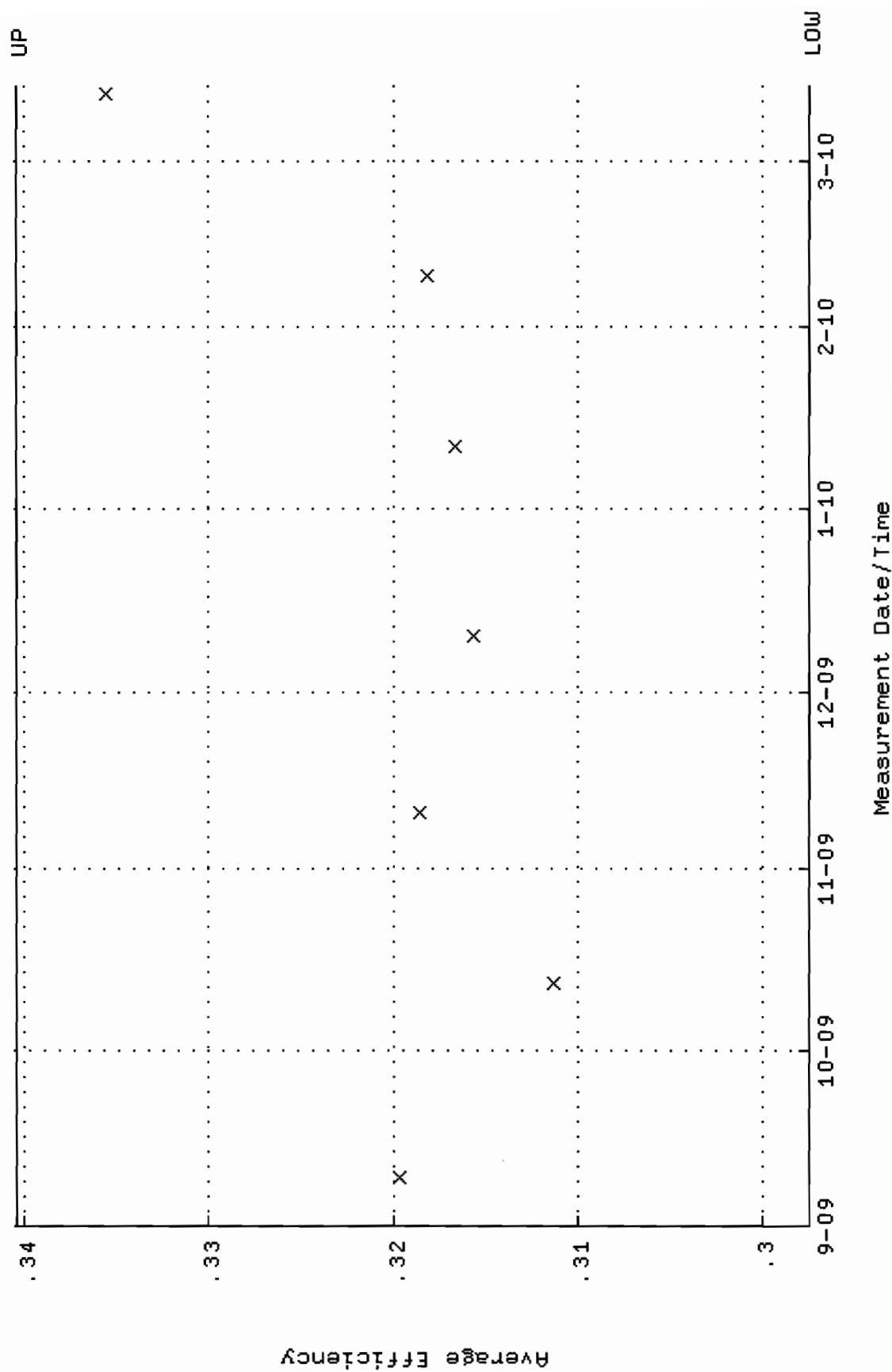




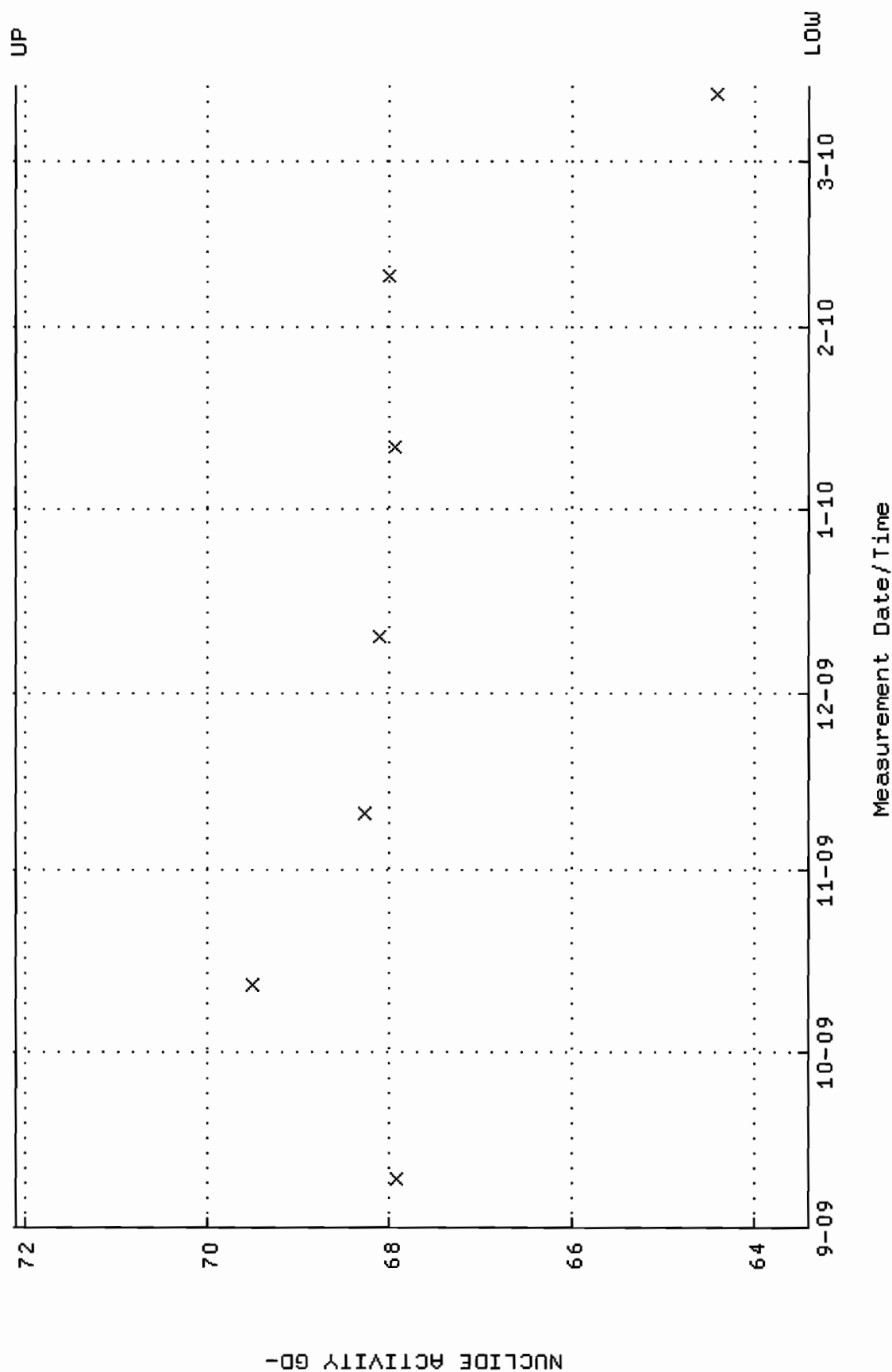
QA filename : DKA100:[ENV\_ALPHA.QA.B]B108.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:12 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



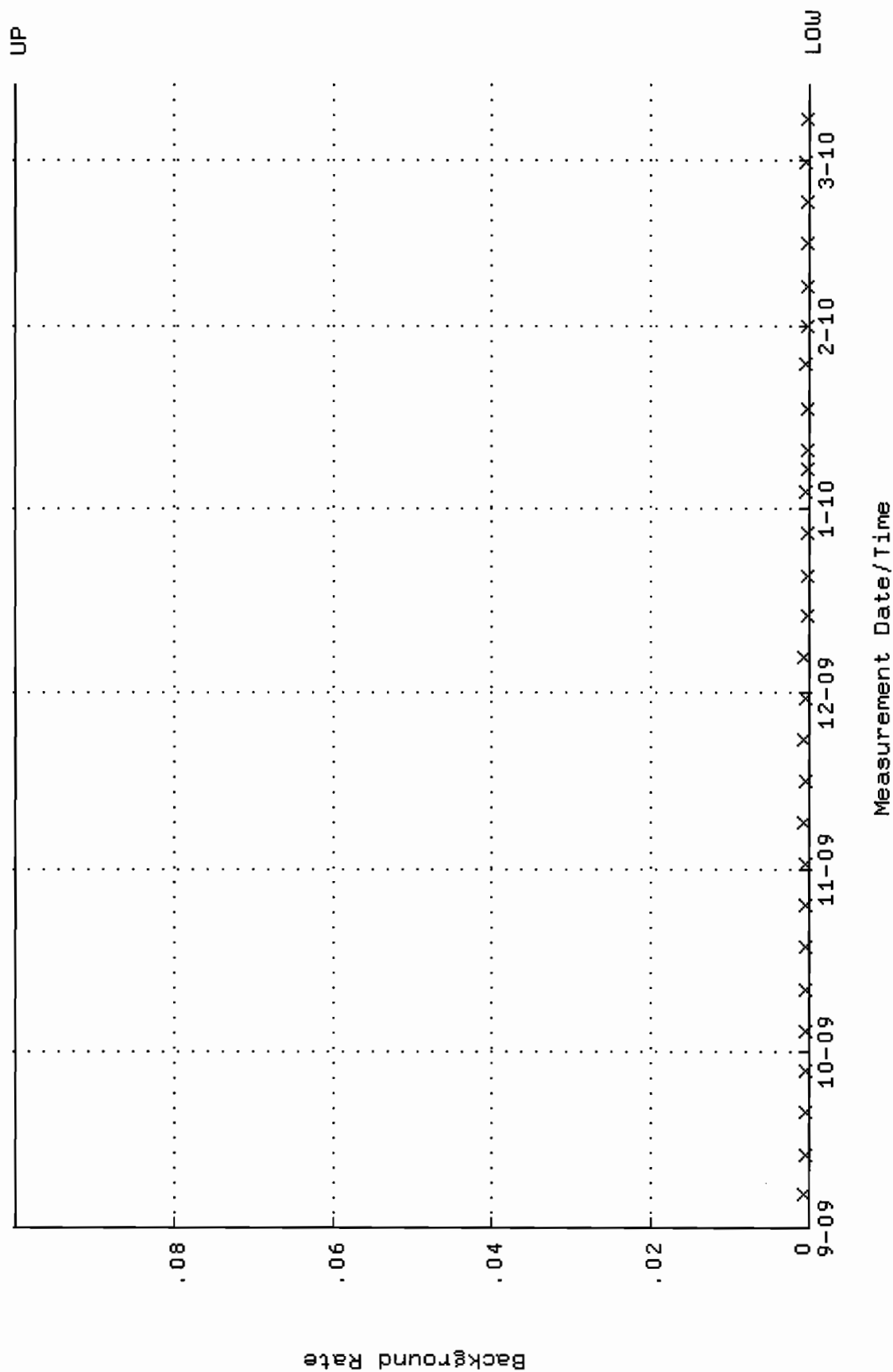
QA filename : DKA100:[ENV\_ALPHA.QA.W]W112.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.297499 through 0.340389



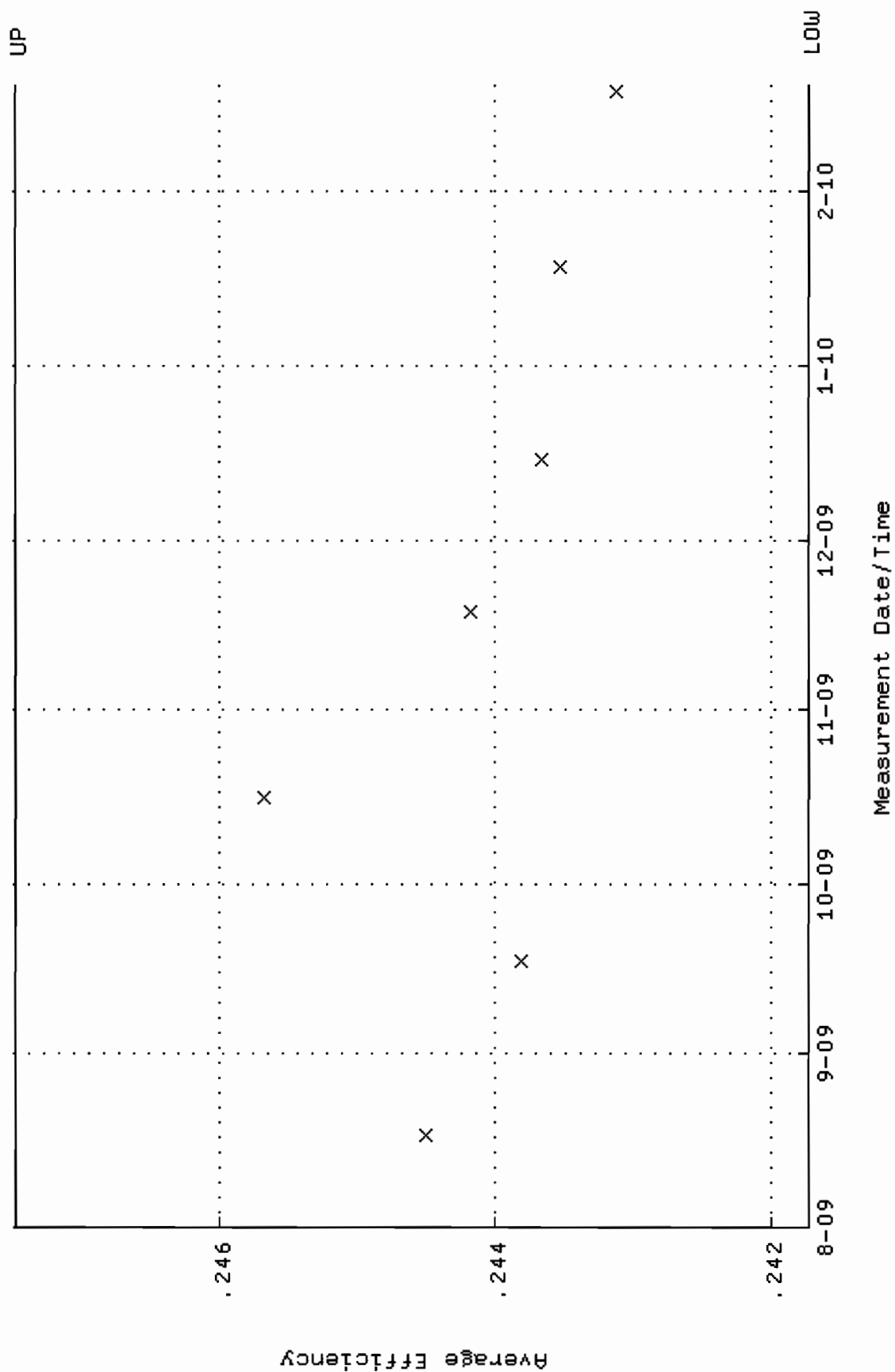
QA filename : DKA100:[ENV\_ALPHA.QA.W]w112.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 63.4111 through 72.0947



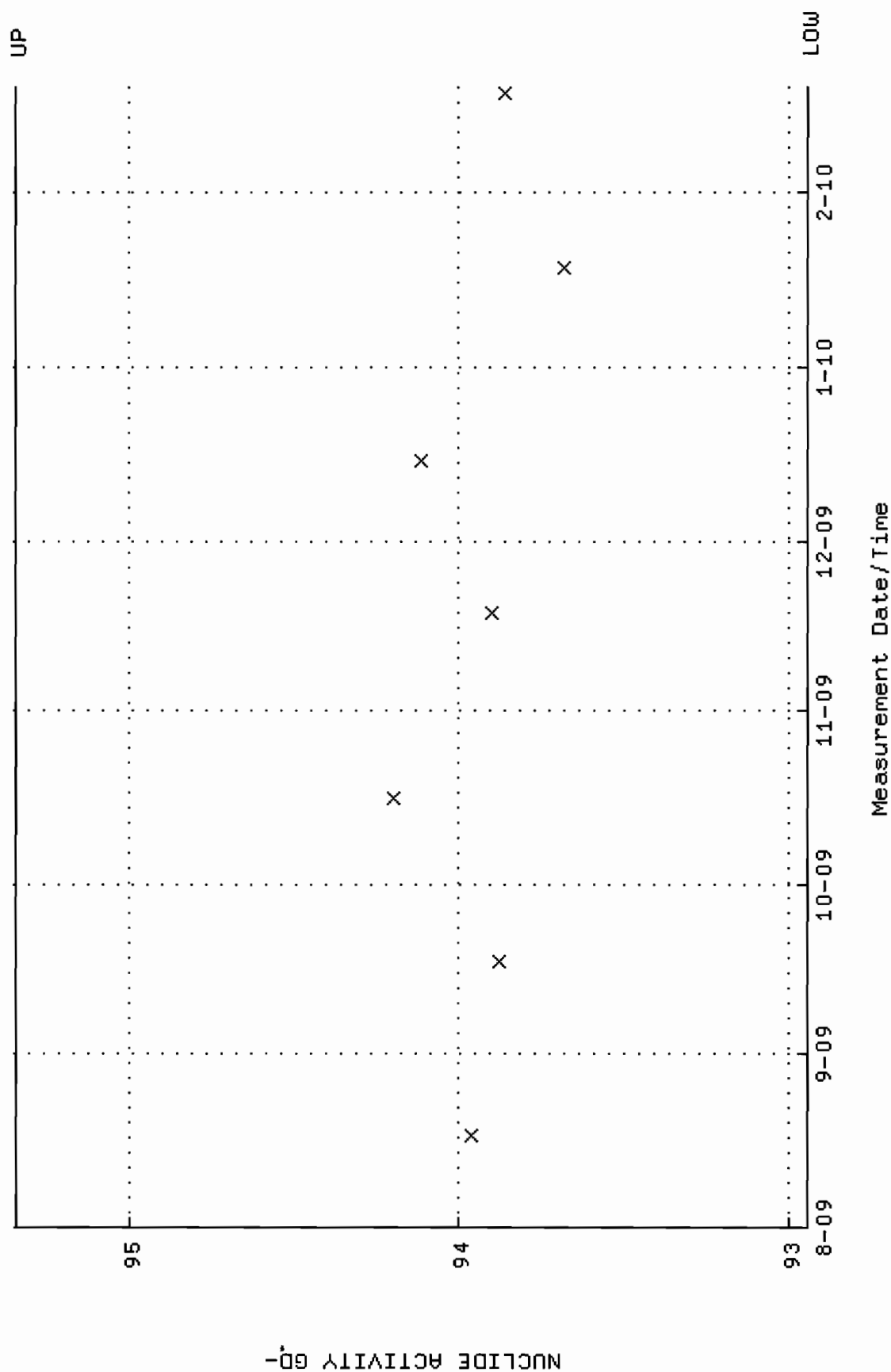
QA filename : DKA100:[ENV\_ALPHA.QA.B]B112.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:12 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



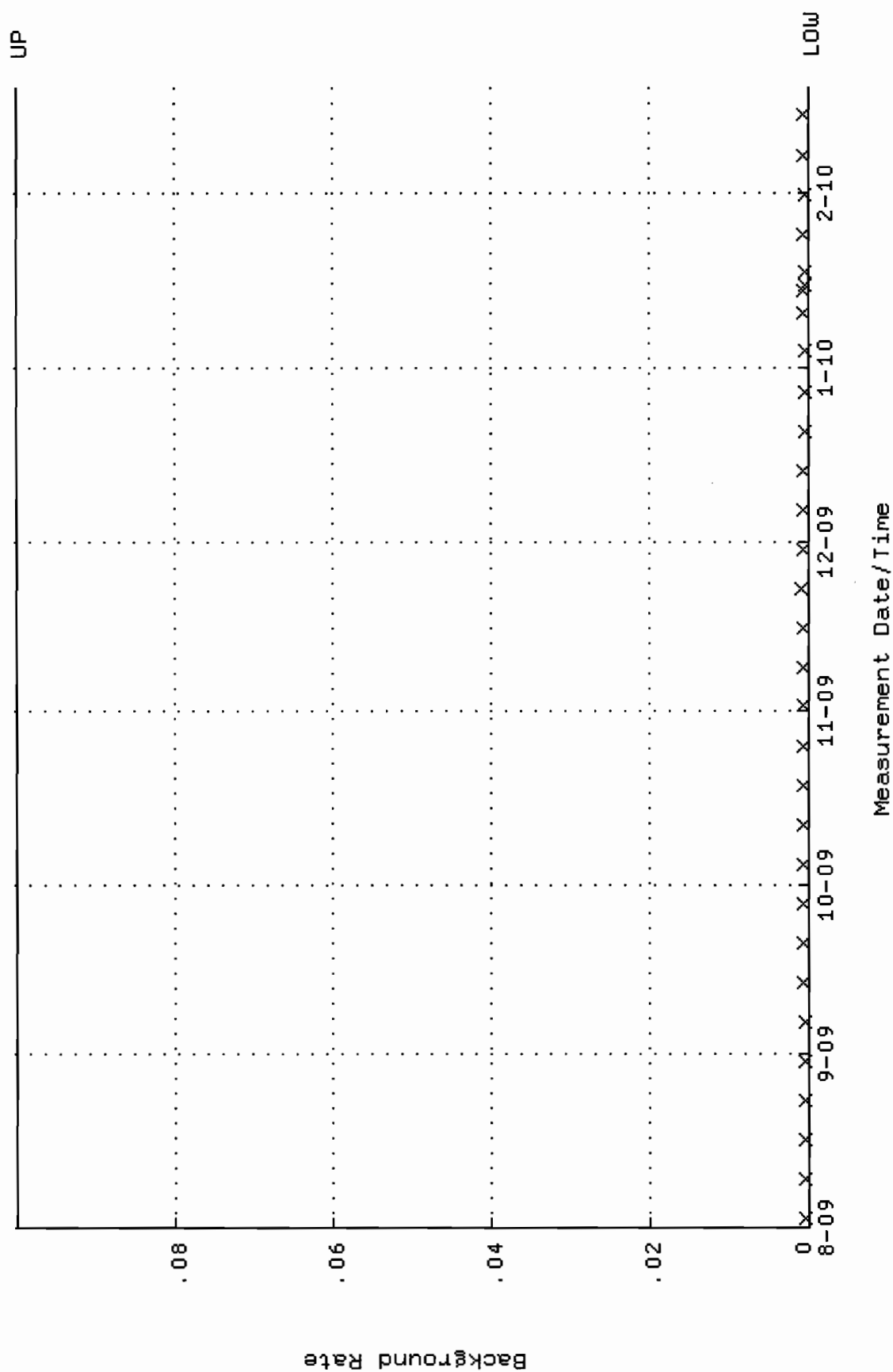
QA filename : DKA100:[ENV\_ALPHA.QA.W]W133.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 17-AUG-2009 09:42:22 through 19-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.241731 through 0.247481



QA filename : DKA100:[ENV\_ALPHA.QA.W]W133.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 09:42:22 through 19-FEB-2010 12:00:00  
 Lower/Upper Lmts: 92.9459 through 95.3425



QA filename : DKA100:[ENV\_ALPHA.QA.B]B133.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:13:28 through 19-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

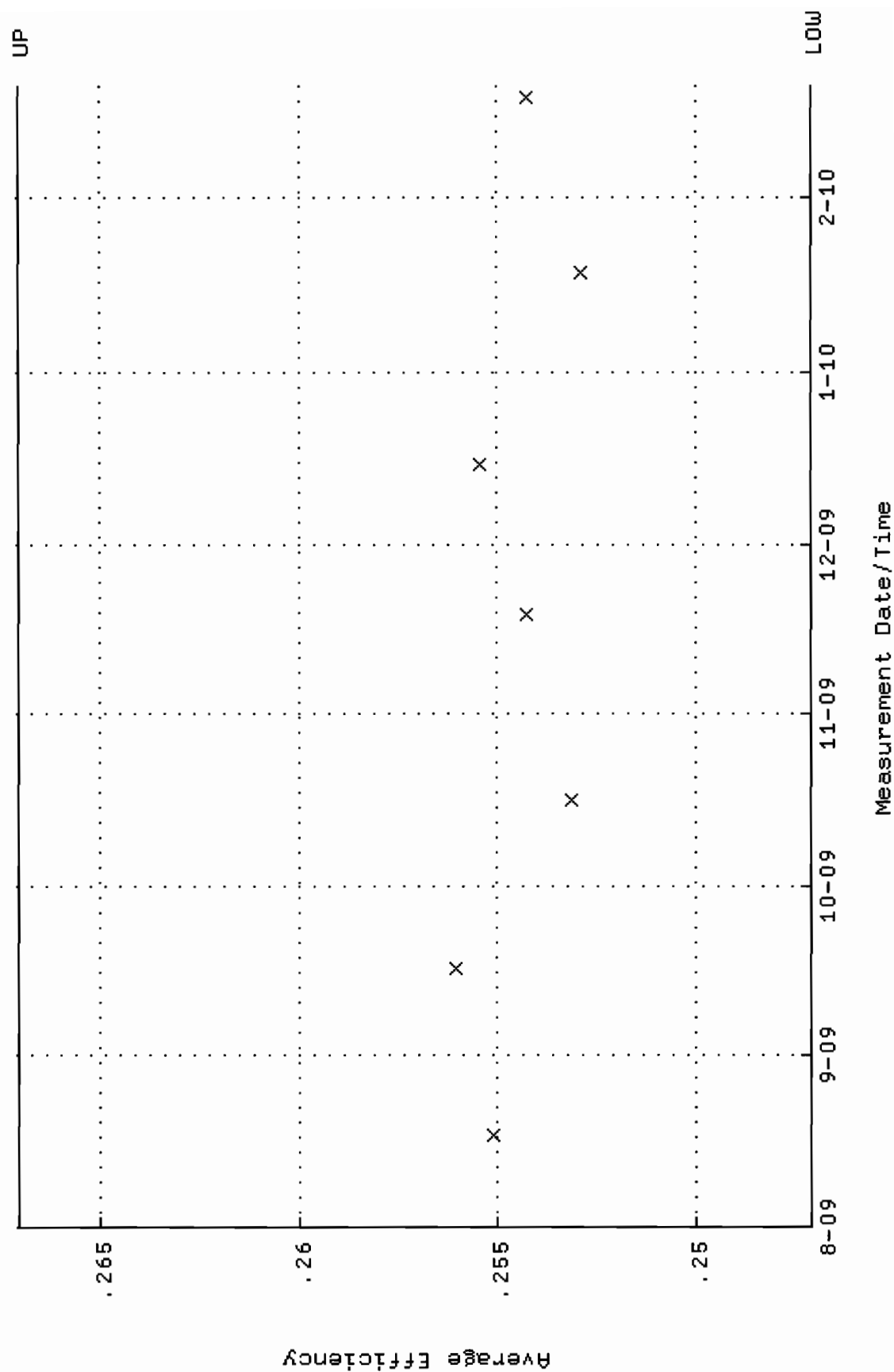


QA filename : DKA100:[ENV\_ALPHA.QA.W]W138.QAF;1

Parameter Name : AVRGEFF (Average Efficiency)

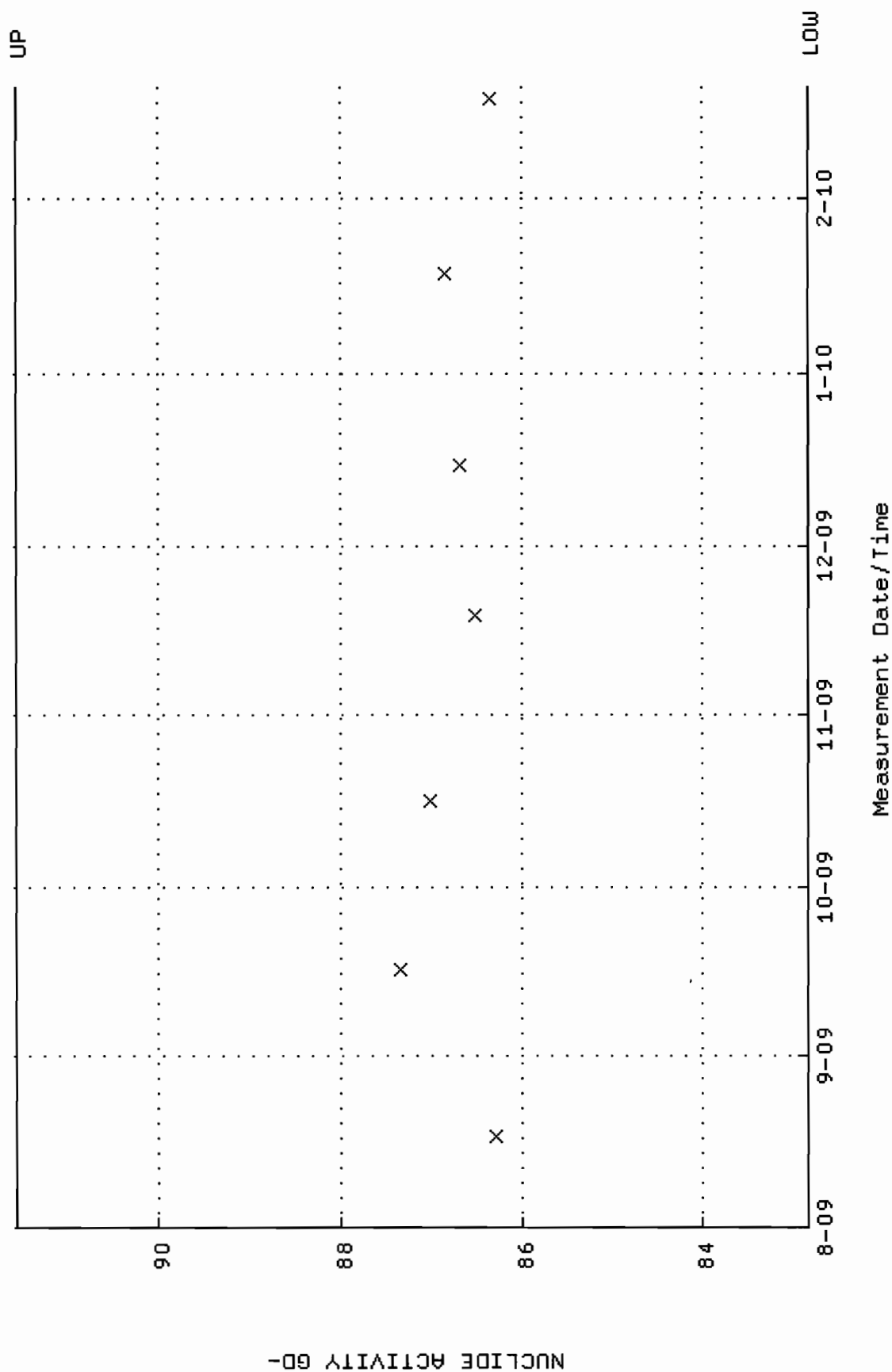
Start/End Dates : 17-AUG-2009 10:05:25 through 20-FEB-2010 12:00:00

Lower/Upper Lmts: 0.247085 through 0.267085

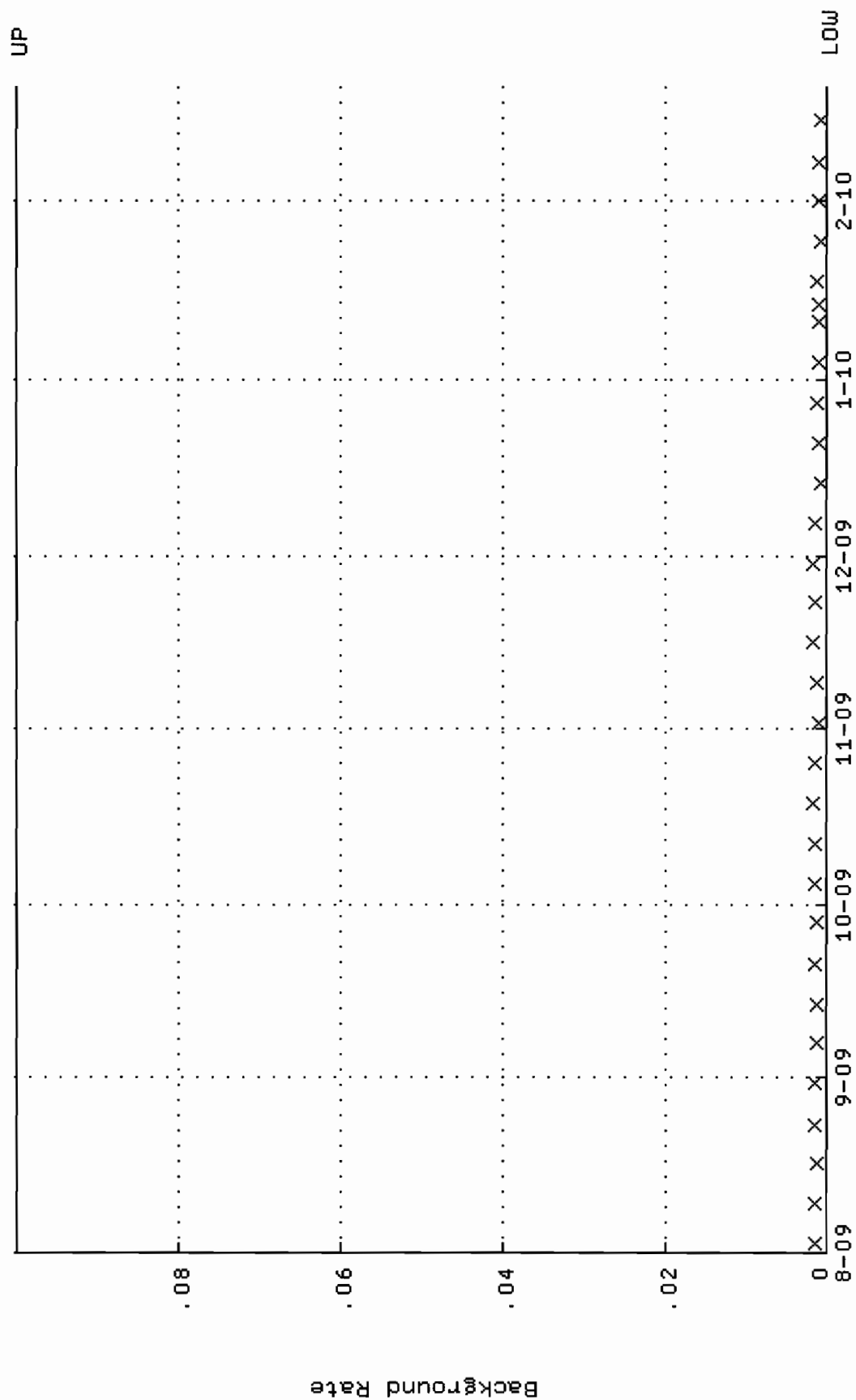




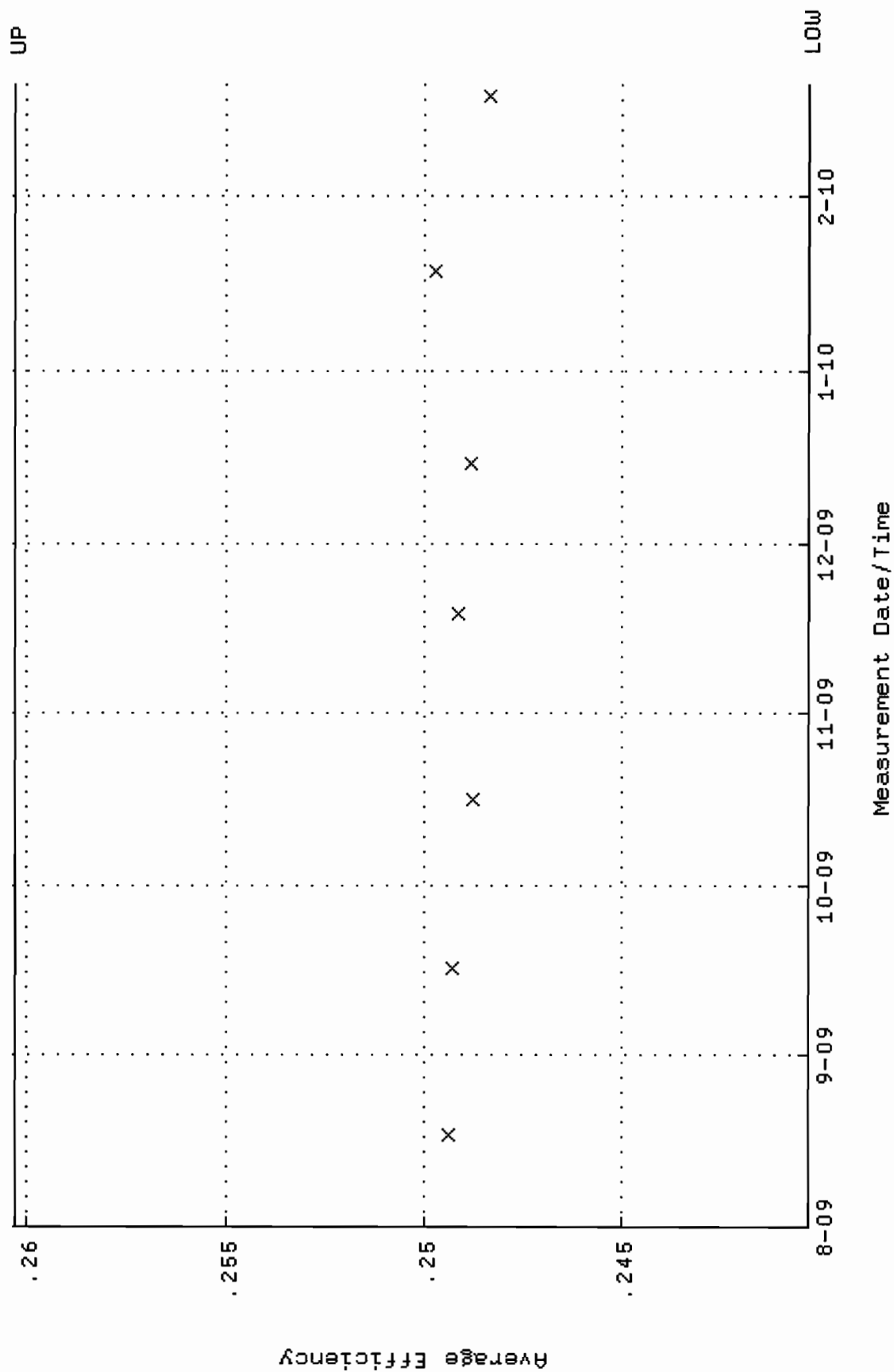
QA filename : DKA100:[ENV\_ALPHA.QA.W]w138.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 10:05:25 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 82.8399 through 91.5599



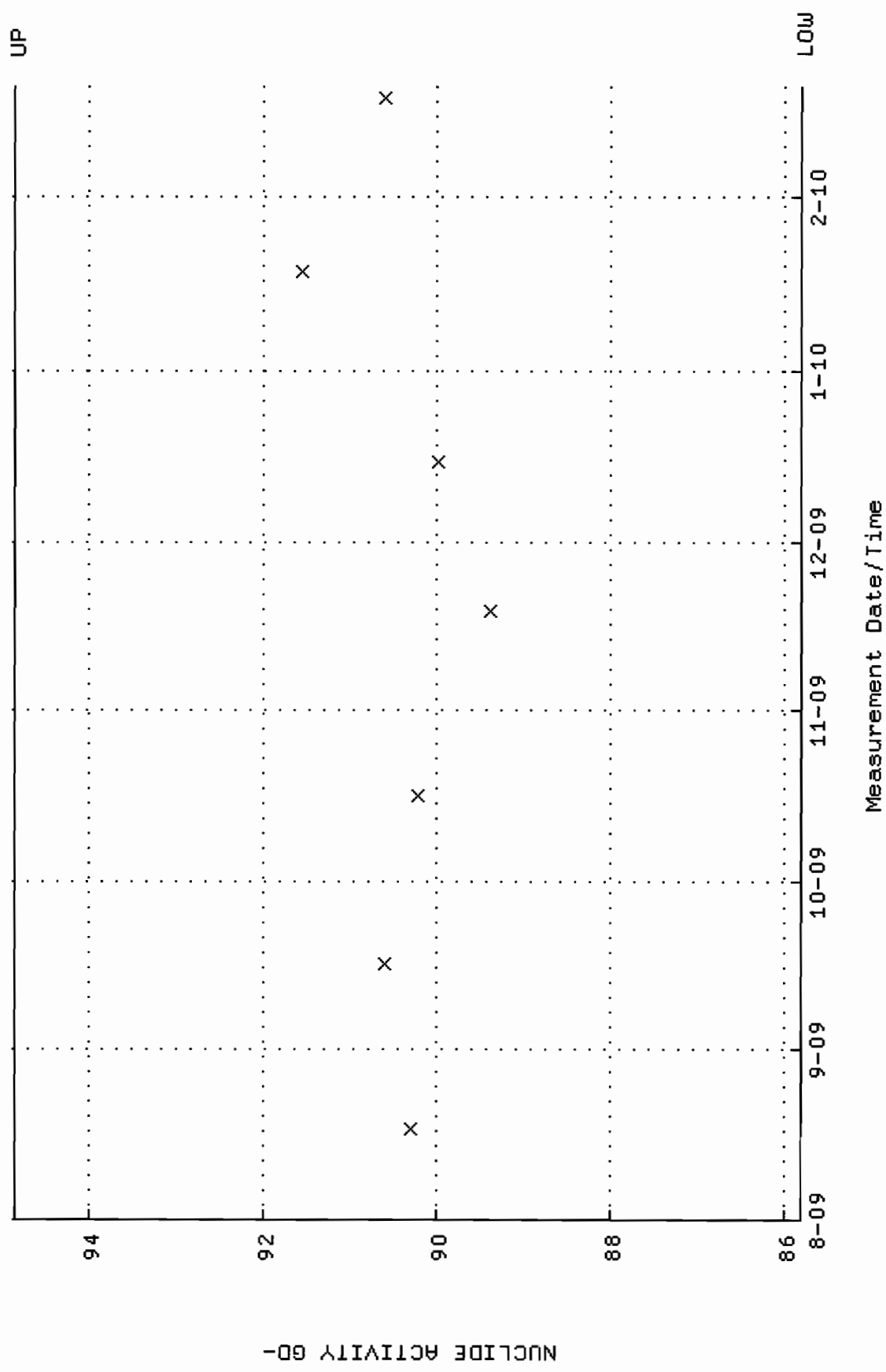
QA filename : DKA100:[ENV\_ALPHA.QA.B]B138.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:13:48 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



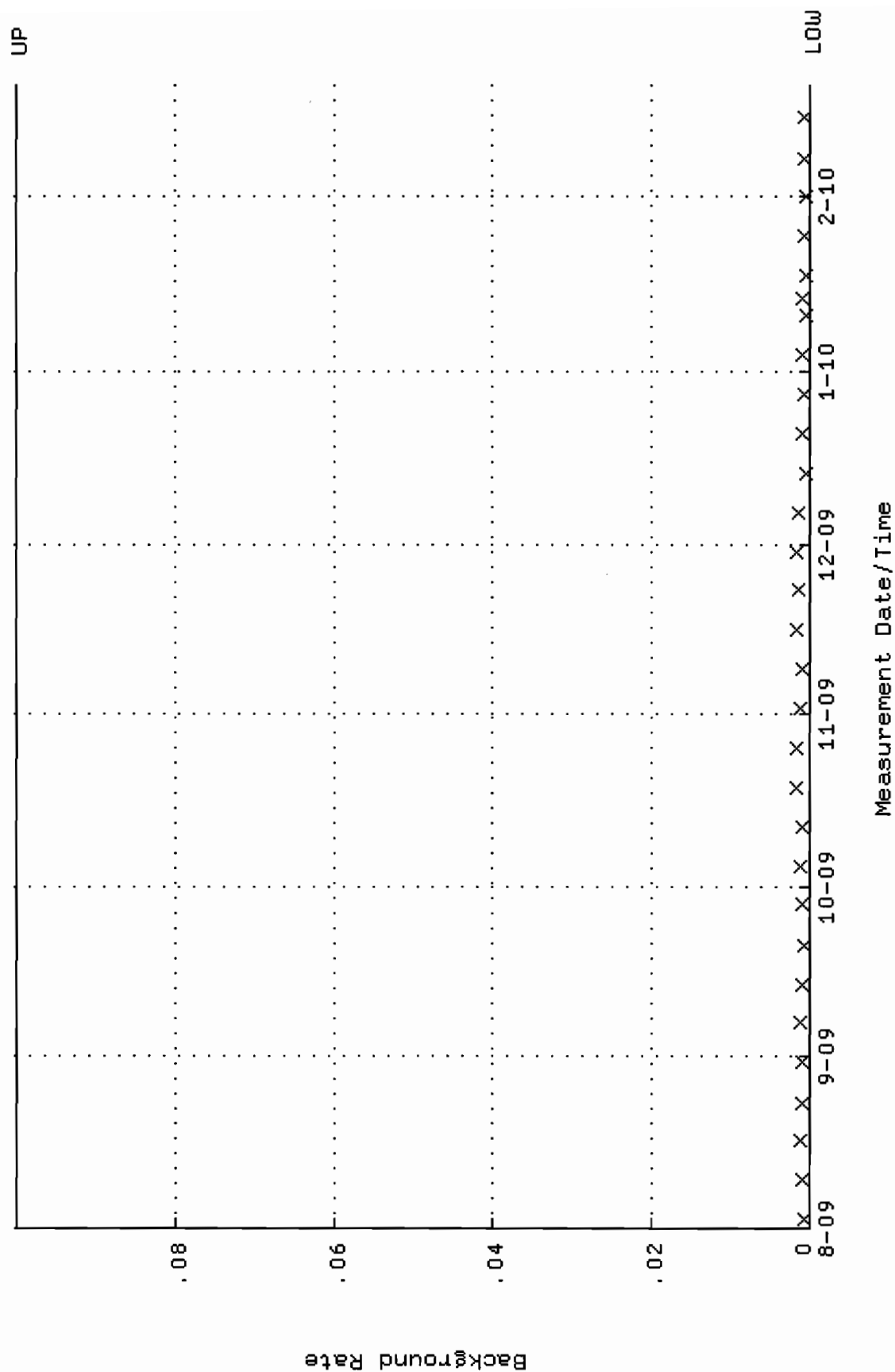
QA filename : DKA100:[ENV\_ALPHA.QA.W]w139.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 17-AUG-2009 10:05:40 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.240299 through 0.260299



QA filename : DKA100:[ENV\_ALPHA.QA.W]W139.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 10:05:40 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 85.8145 through 94.8477



QA filename : DKA100:[ENV\_ALPHA.QA.B]B139.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:13:52 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

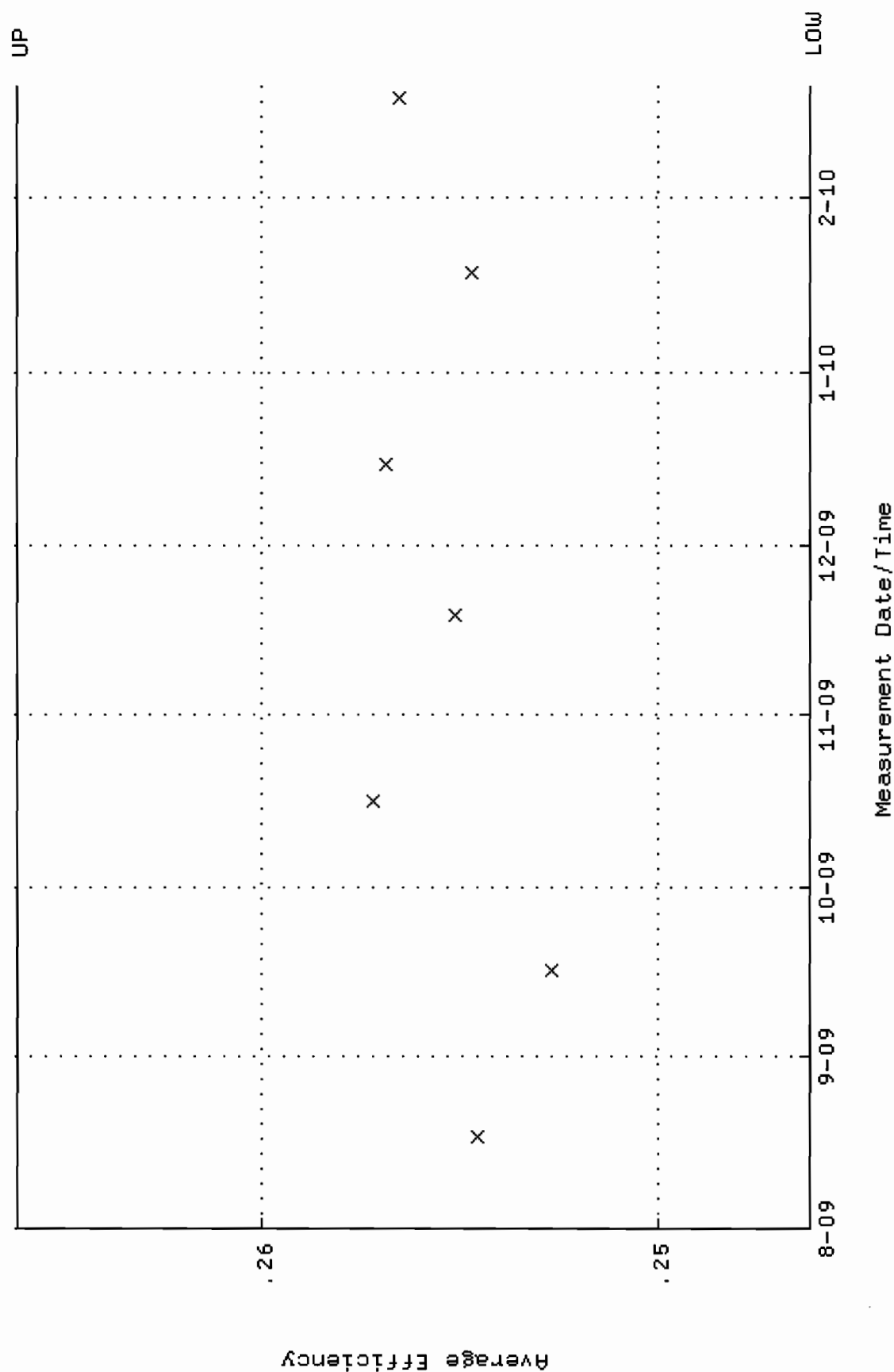


QA filename : DKA100:[ENV\_ALPHA.QA.W]w140.QAF;1

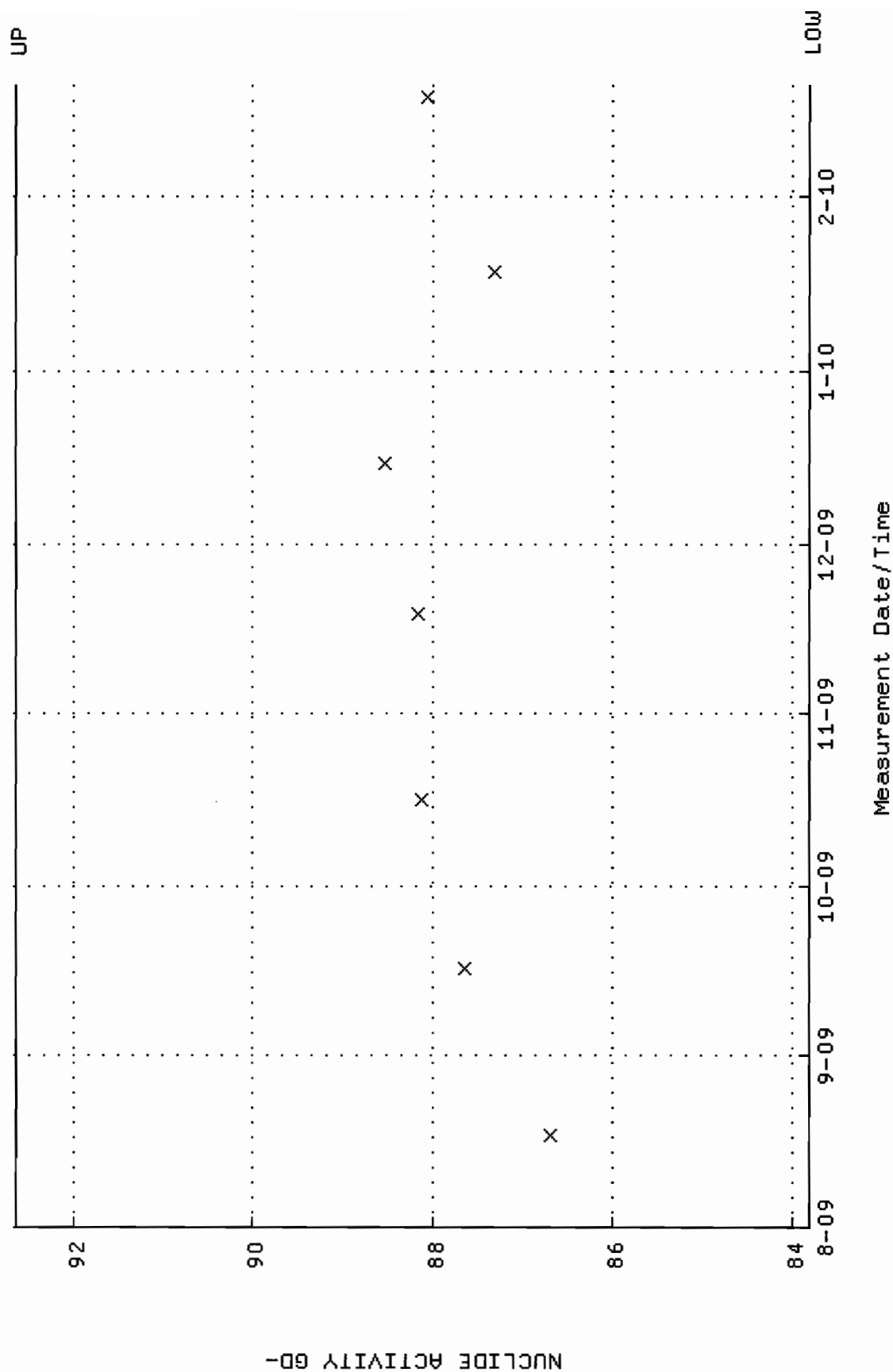
Parameter Name : AVRGEFF (Average Efficiency)

Start/End Dates : 17-AUG-2009 10:05:55 through 20-FEB-2010 12:00:00

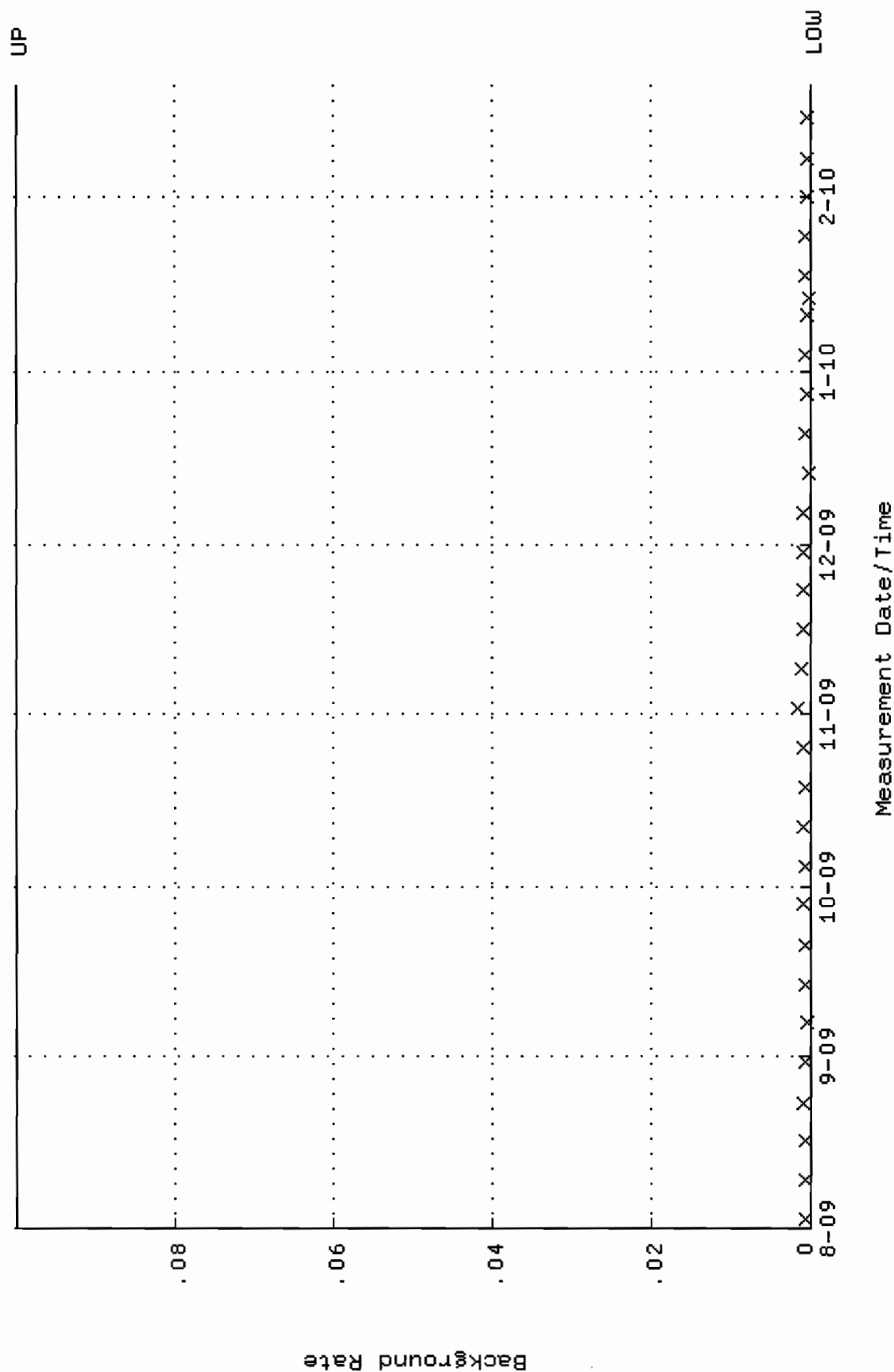
Lower/Upper Lmts: 0.246178 through 0.266178



QA filename : DKA100:[ENV\_ALPHA.QA.W]w140.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 10:05:55 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 83.8171 through 92.6399



QA filename : DKA100:[ENV\_ALPHA.QA.B]B140.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:13:56 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



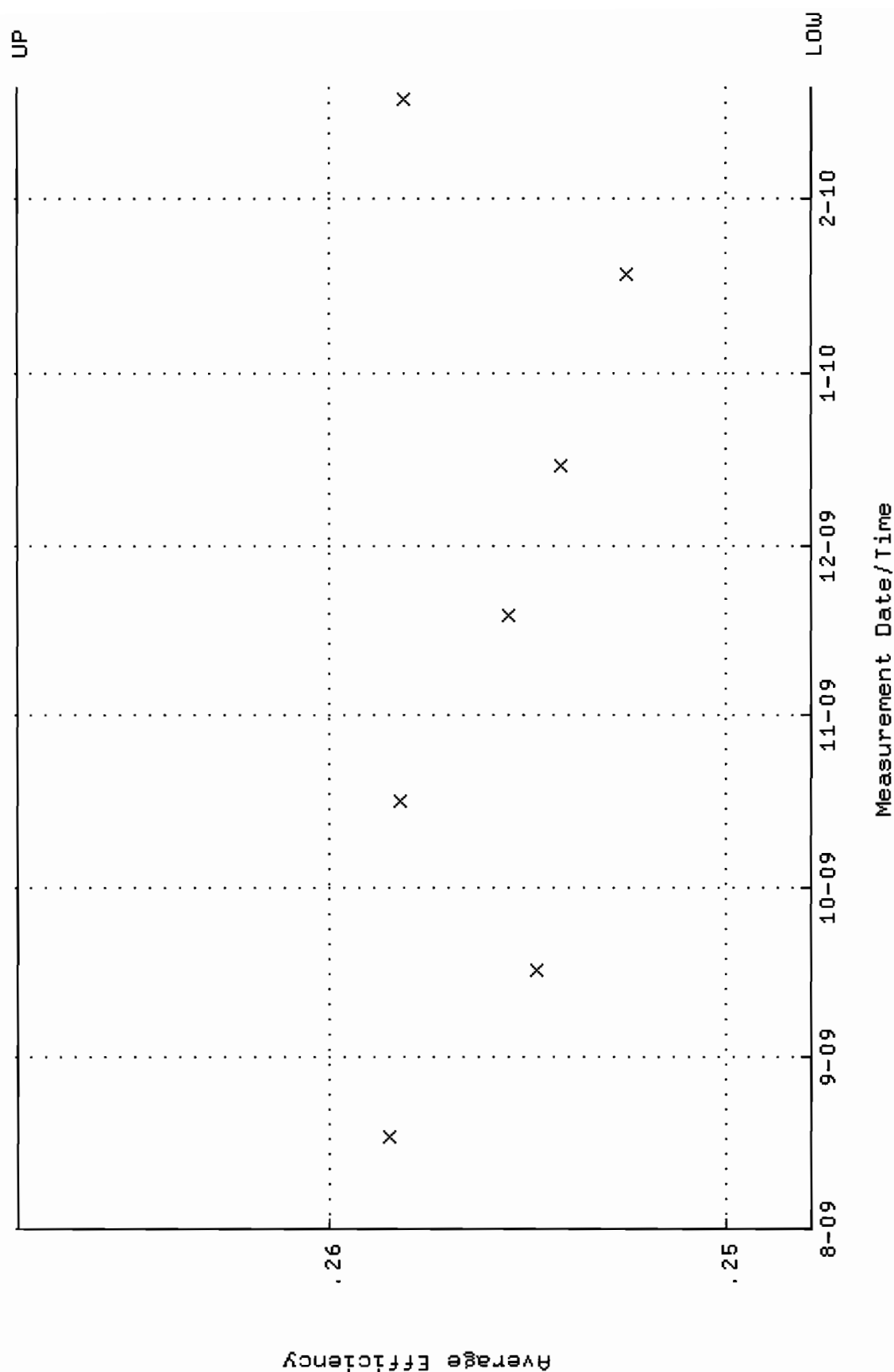


QA filename : DKA100:[ENV\_ALPHA.QA.W]W141.QAF;1

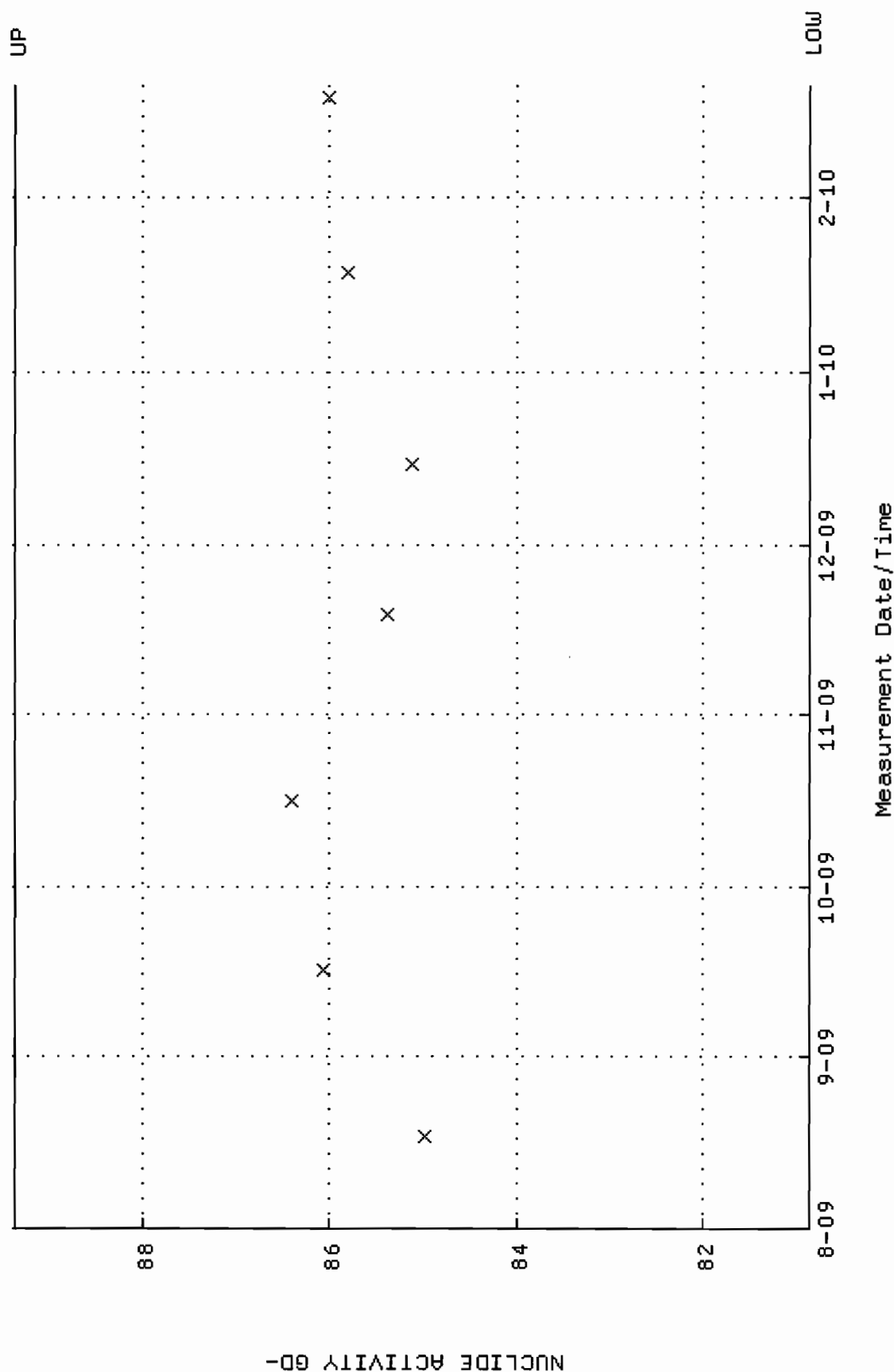
Parameter Name : AVRGEFF (Average Efficiency)

Start/End Dates : 17-AUG-2009 10:06:09 through 20-FEB-2010 12:00:00

Lower/Upper Lmts: 0.247845 through 0.267845

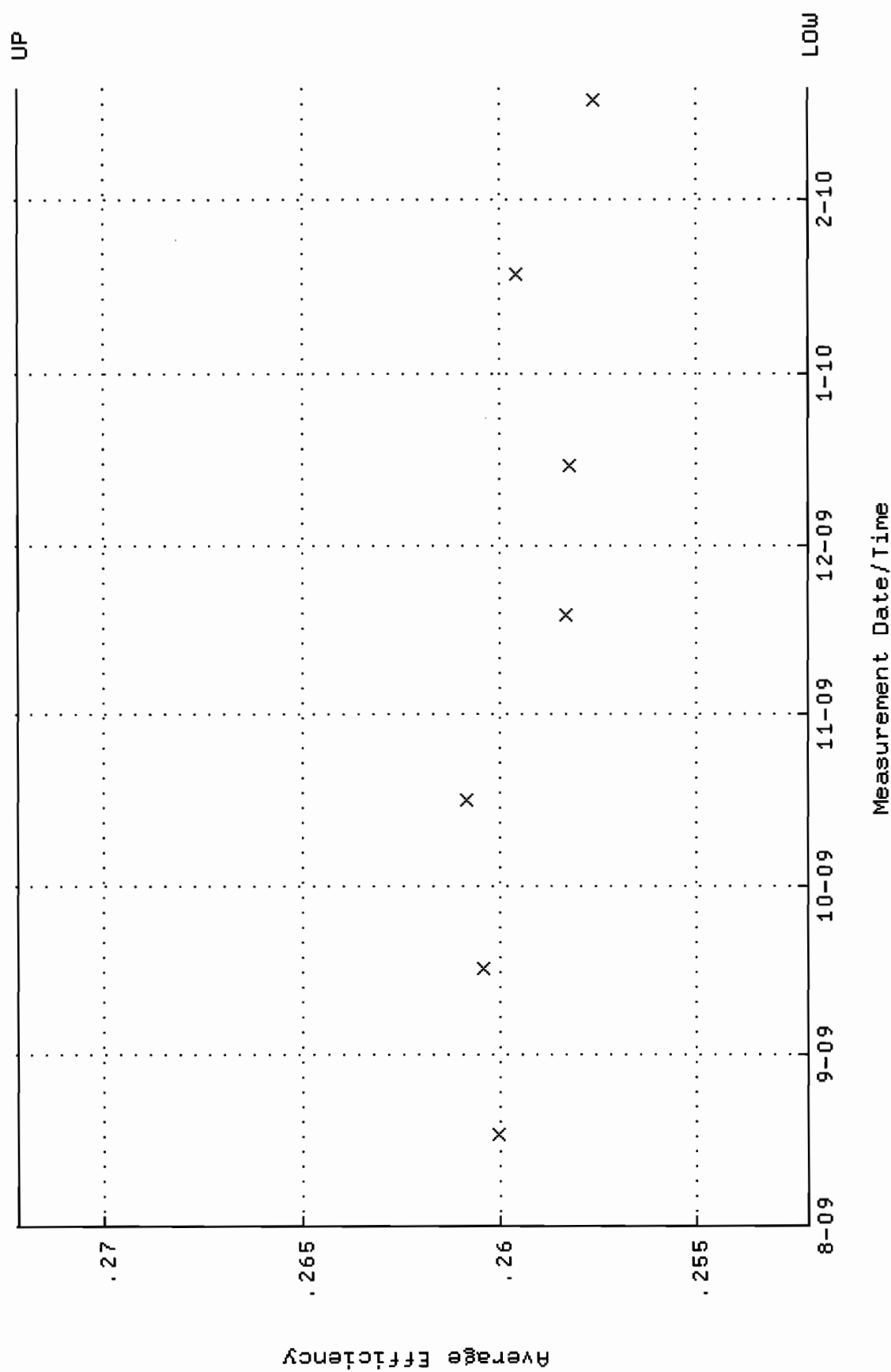


QA filename : DKA100:[ENV-ALPHA.QA.W]W141.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 10:06:09 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 80.8595 through 89.3711

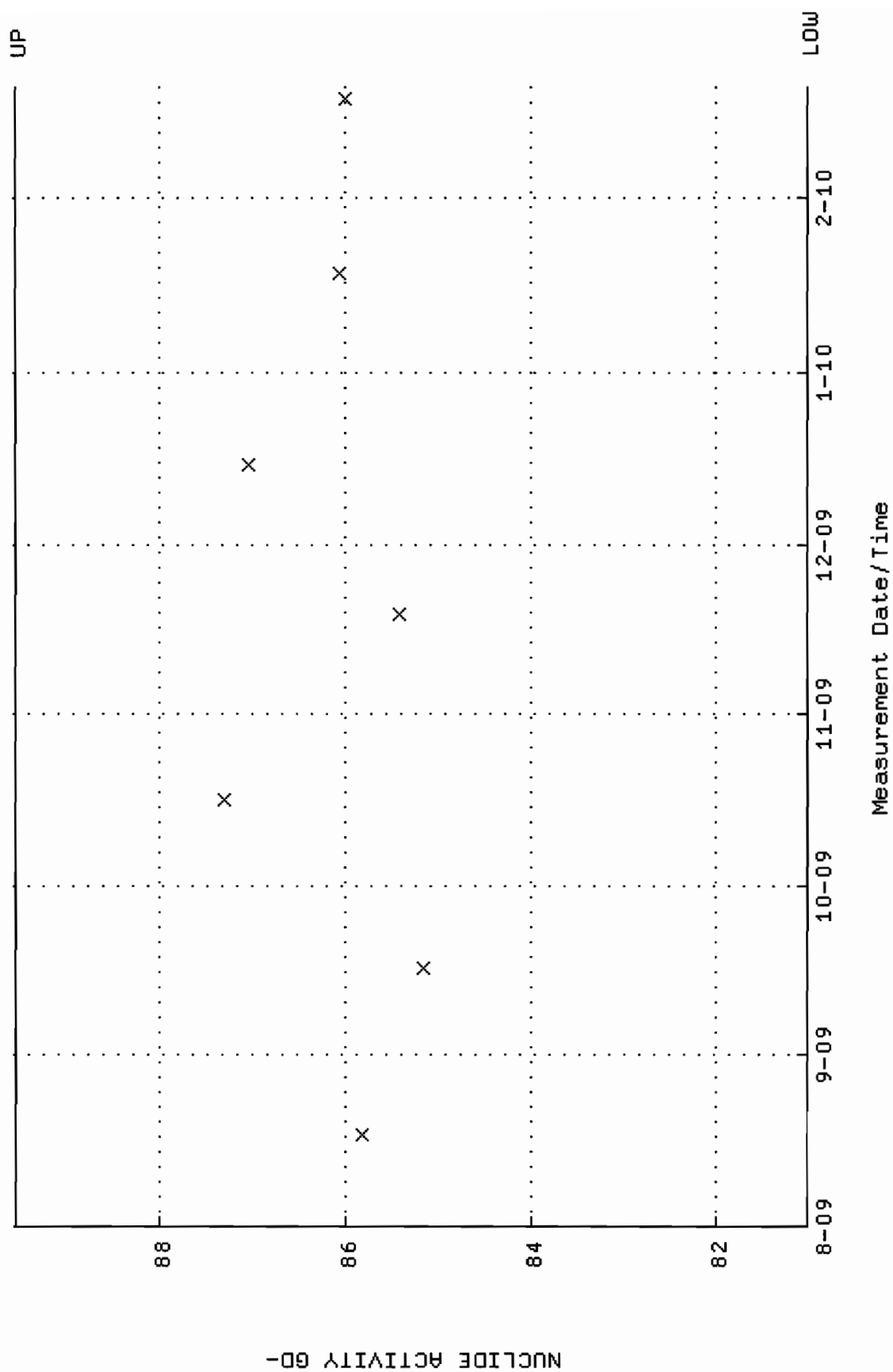




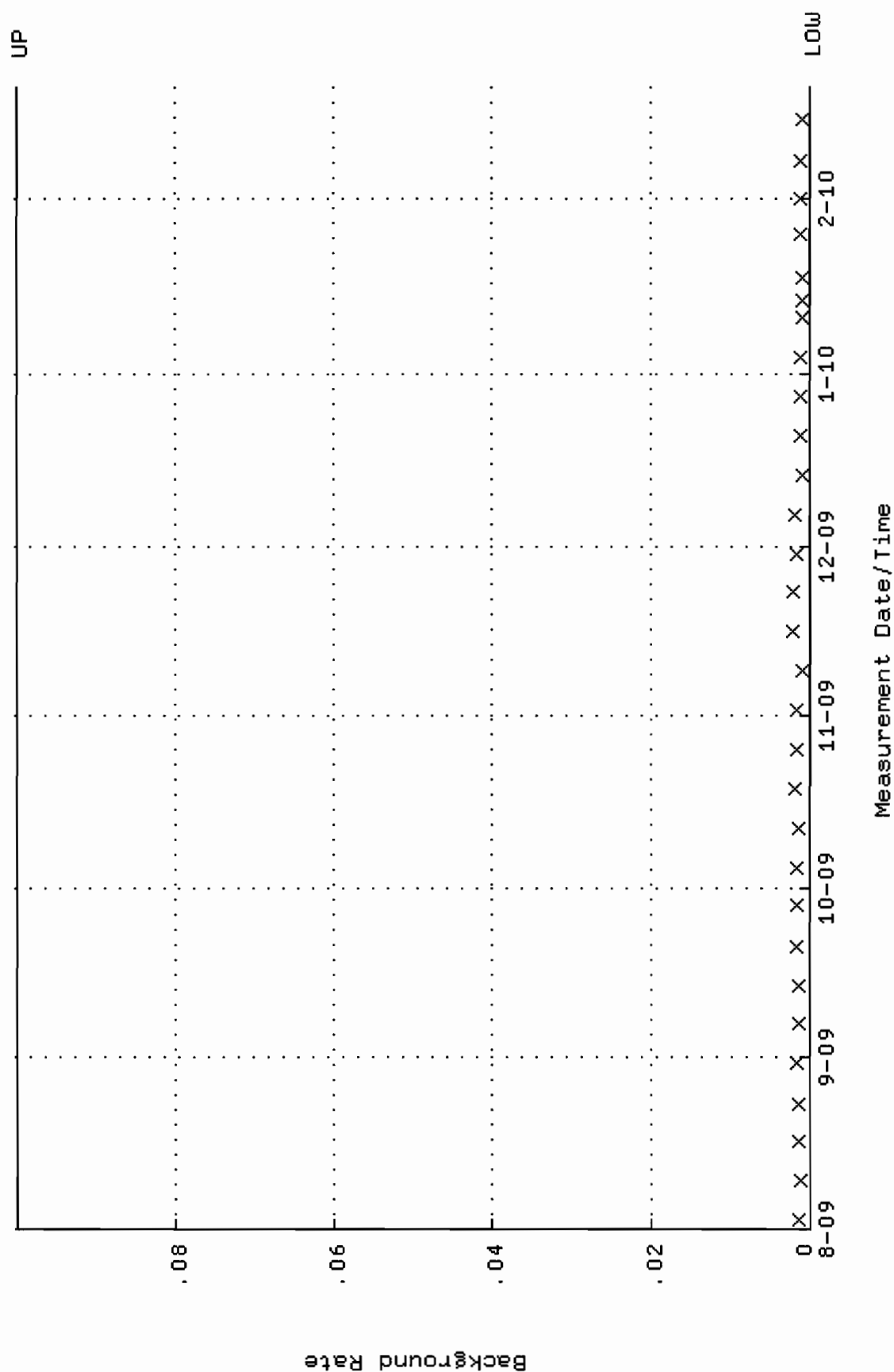
QA filename : DKA100:[ENV\_ALPHA.QA.W]w142.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 17-AUG-2009 10:06:21 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.252182 through 0.272182



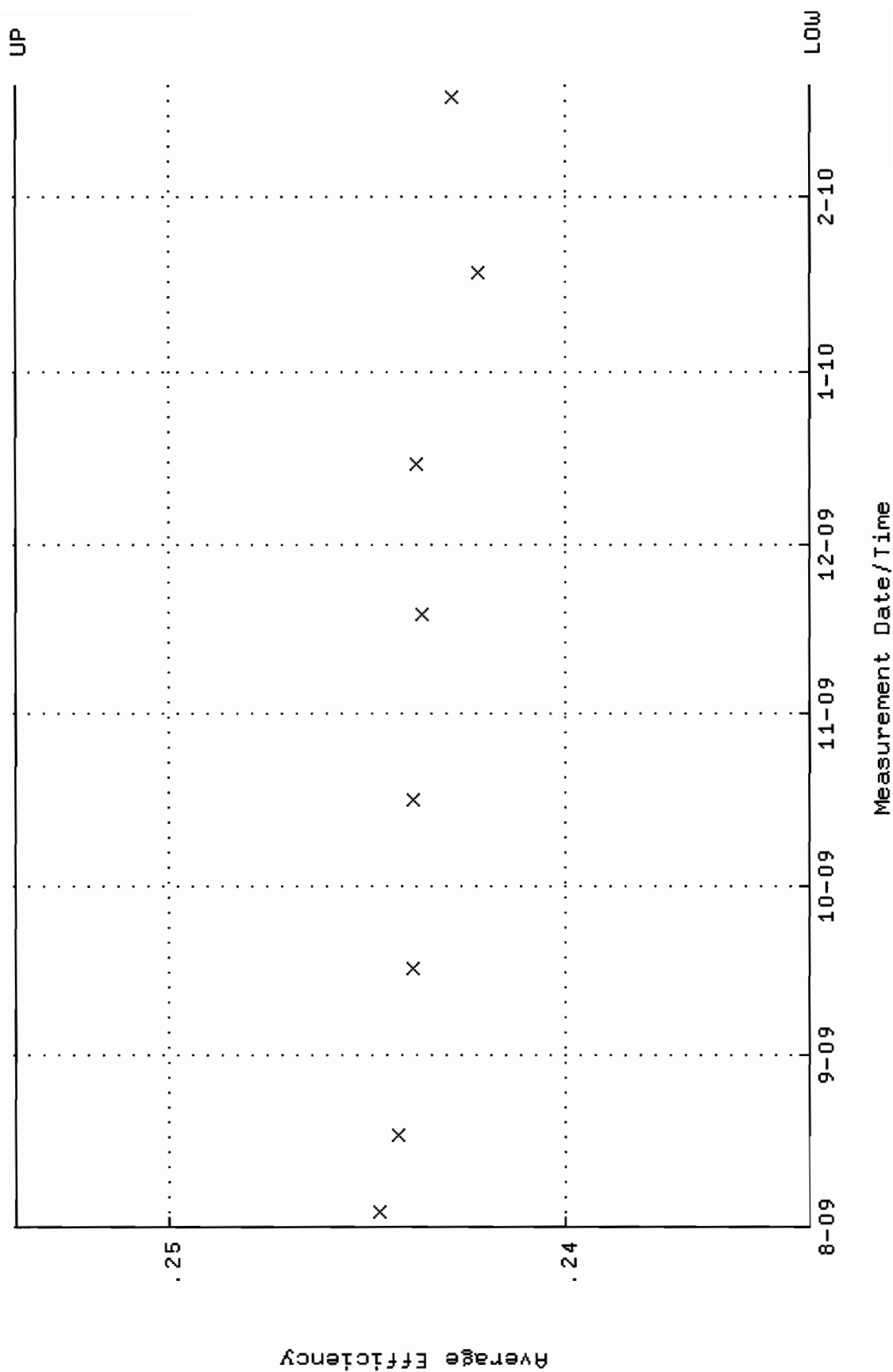
QA filename : DKA100:[ENV\_ALPHA.QA.W]w142.QAF;2  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 10:06:21 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 81.0245 through 89.5533



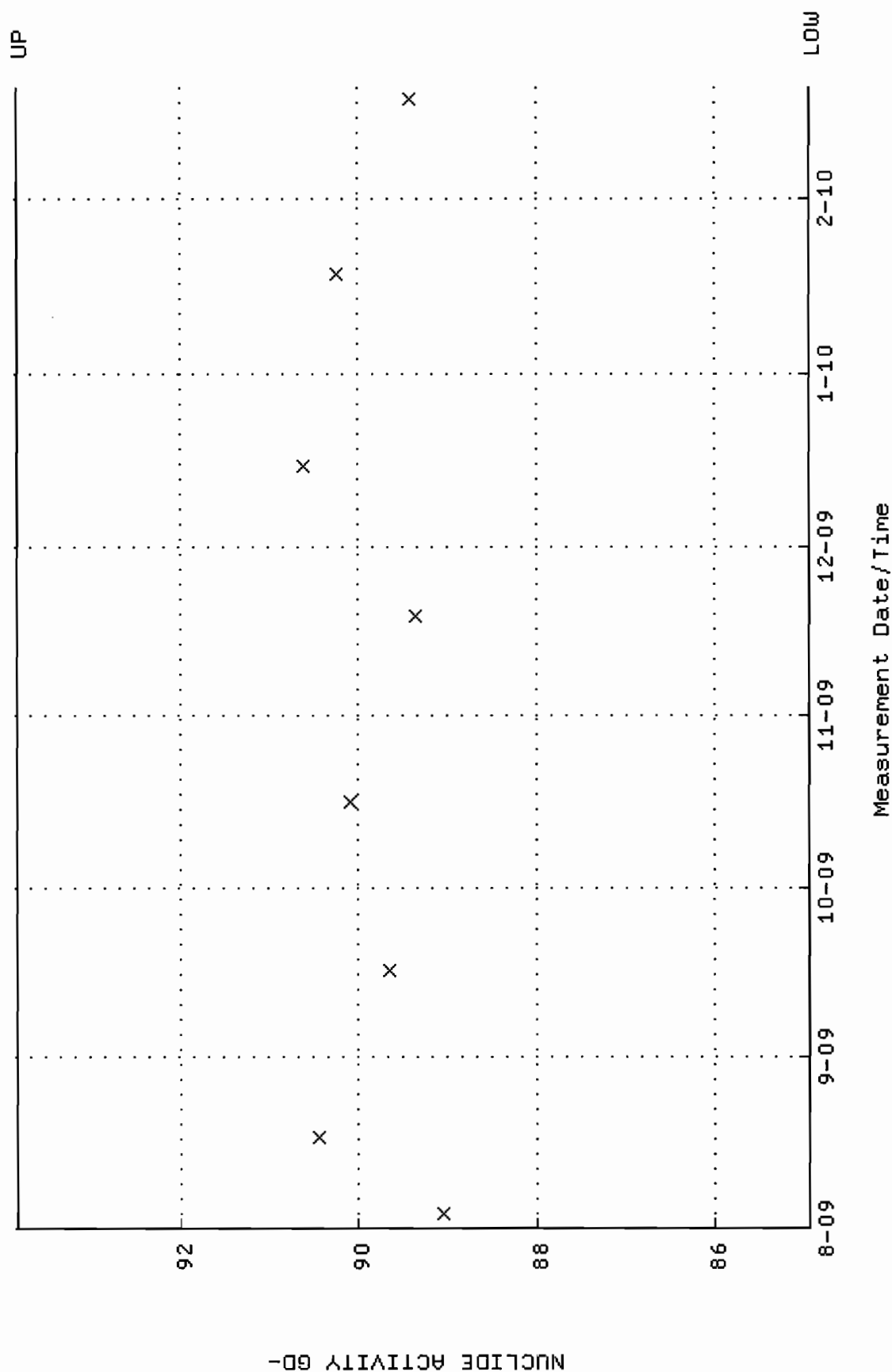
QA filename : DKA100:[ENV\_ALPHA.QA.B]B142.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:14:04 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W143.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 3-AUG-2009 15:01:06 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.233879 through 0.253879

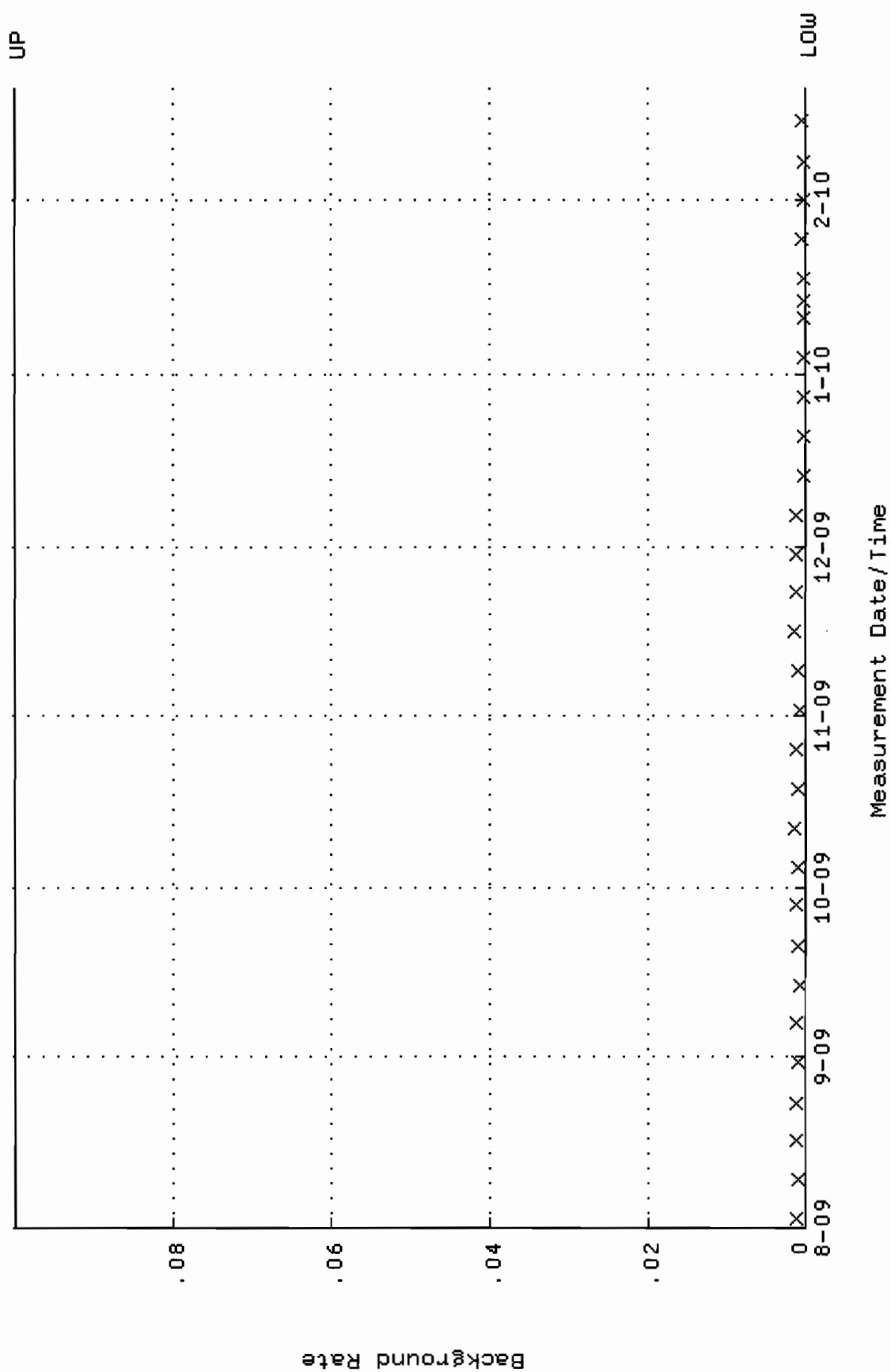


QA filename : DKA100:[ENV\_ALPHA.QA.W]W143.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 3-AUG-2009 15:01:06 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 84.9200 through 93.8590

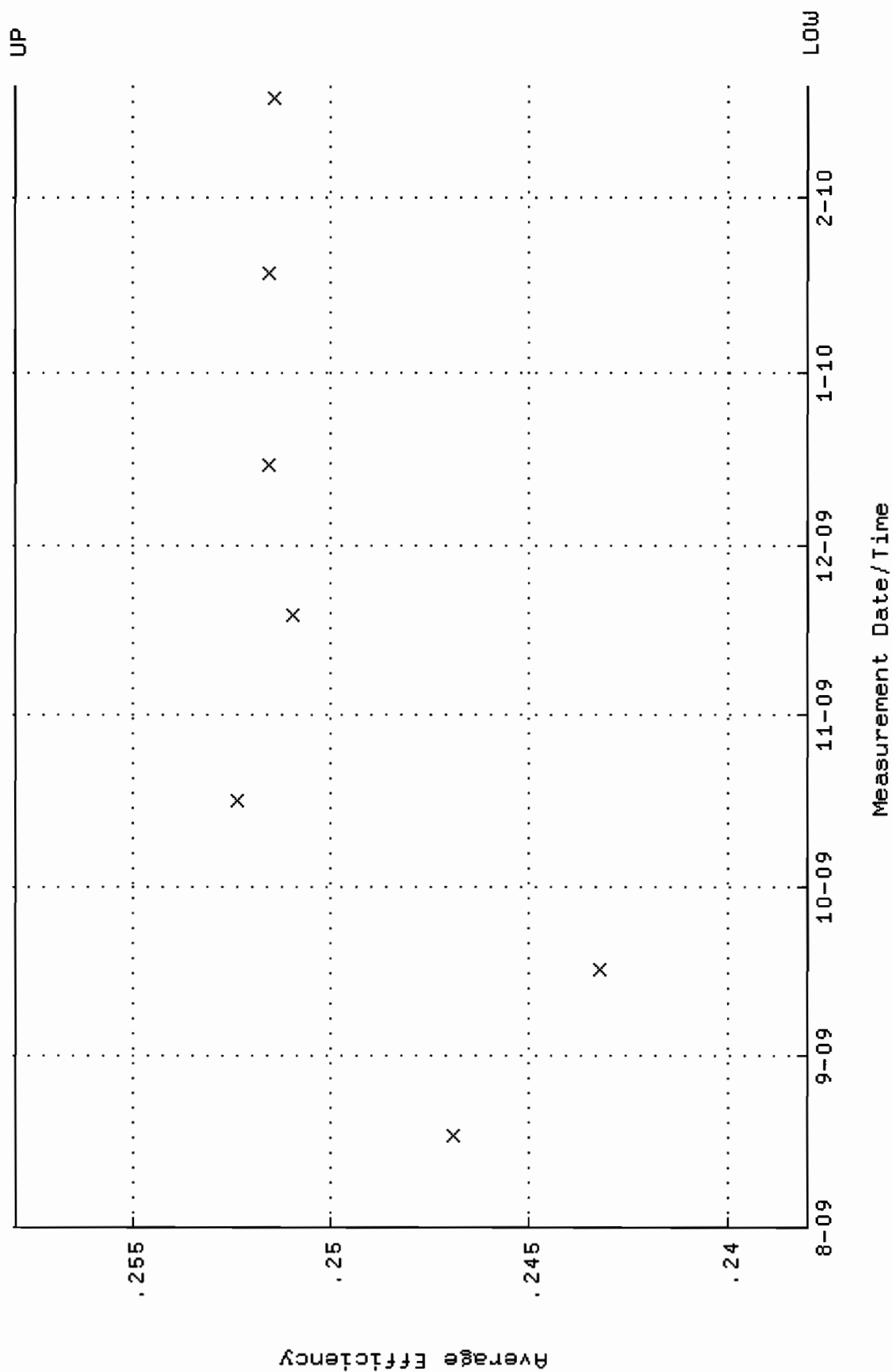




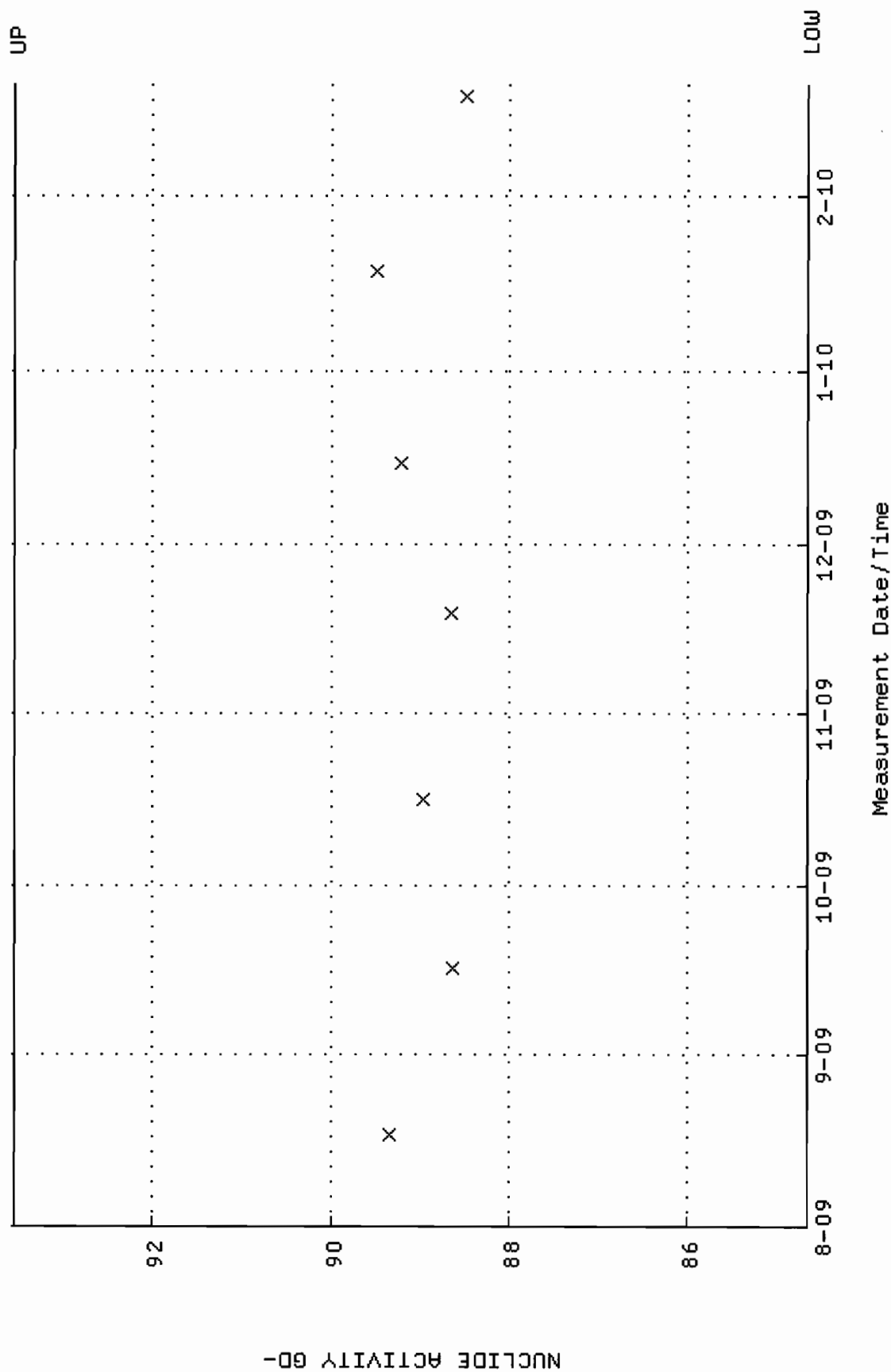
QA filename : DKA100:[ENV\_ALPHA.QA.B]B143.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:14:08 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



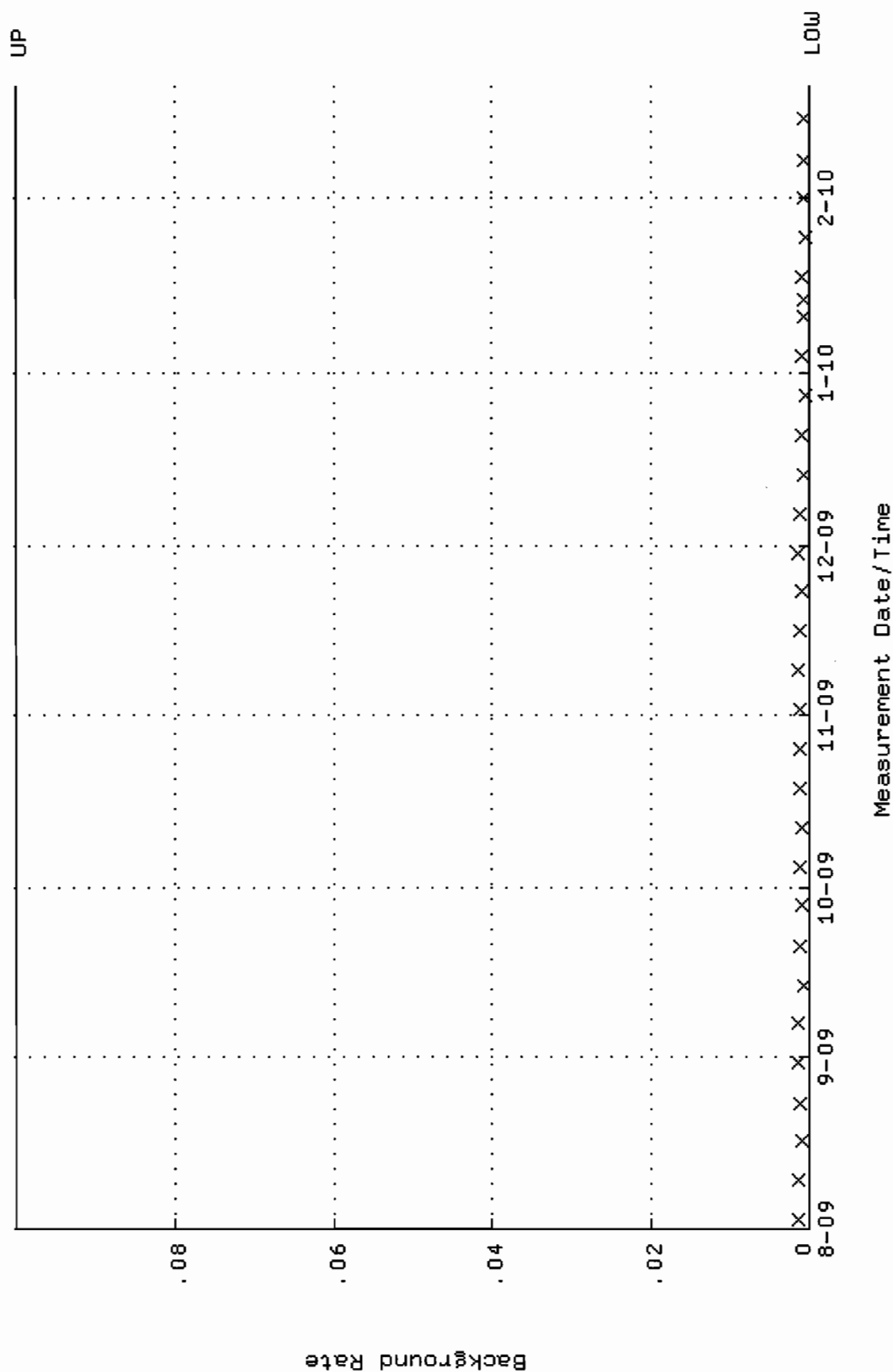
QA filename : DKA100:[ENV\_ALPHA.QA.W]w144.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 17-AUG-2009 10:06:42 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.237963 through 0.257963



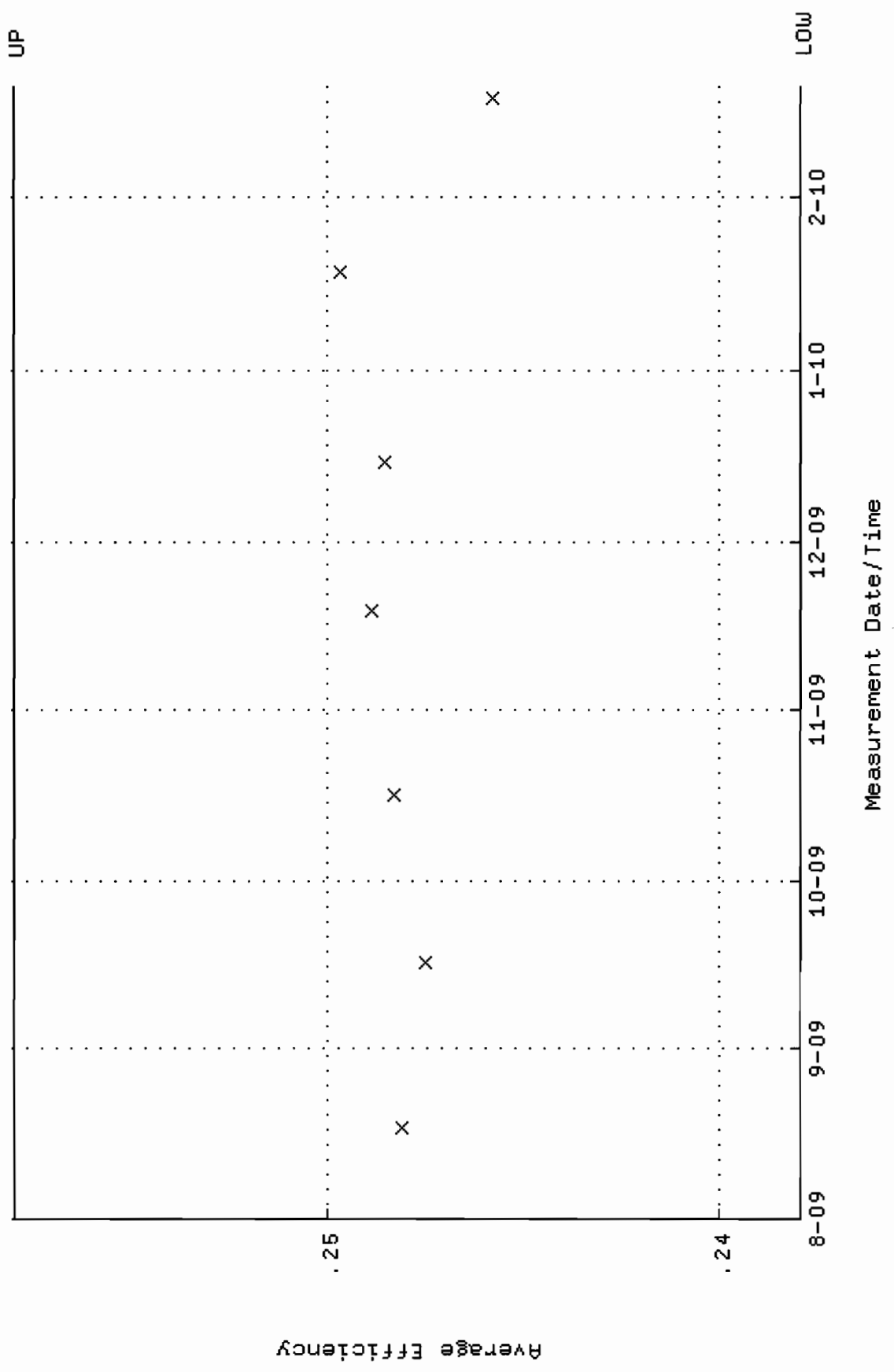
QA filename : DKA100:[ENV-ALPHA.QA.W]W144.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 10:06:42 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 84.6507 through 93.5613



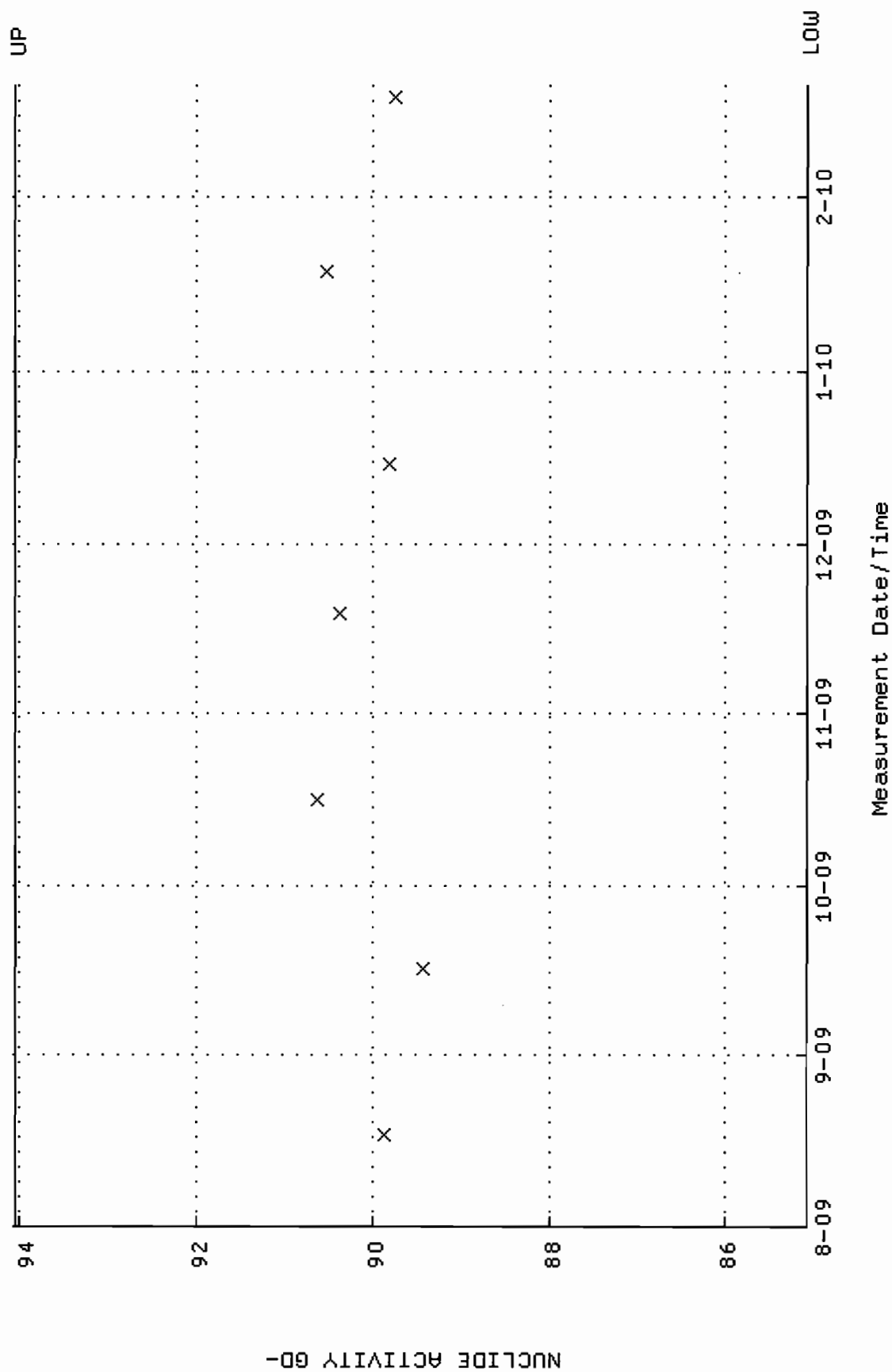
QA filename : DKA100:[ENV\_ALPHA.QA.B]B144.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:14:12 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



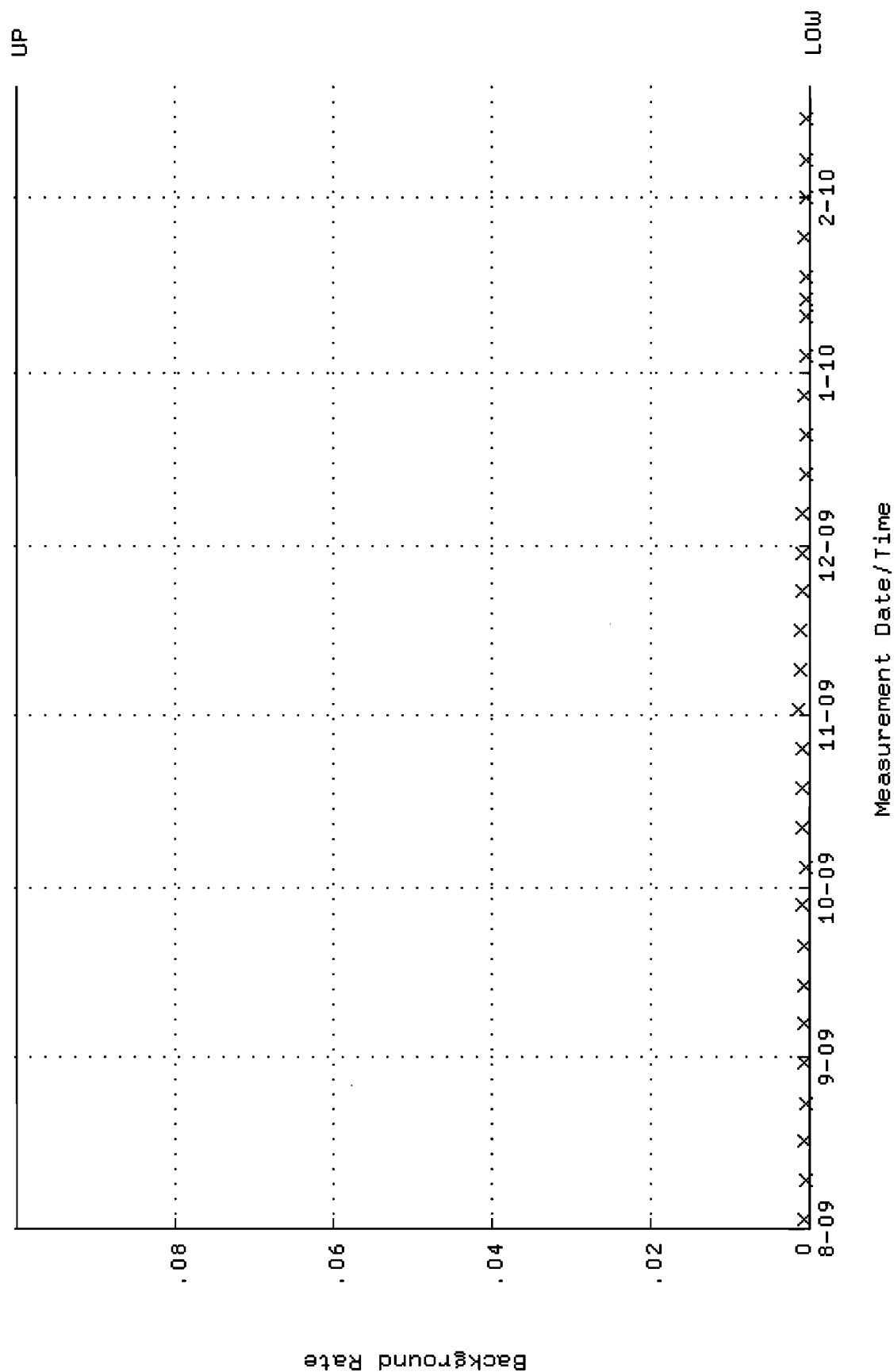
QA filename : DKA100:[ENV\_ALPHA.QA.W]W148.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 17-AUG-2009 10:07:10 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.237934 through 0.257934



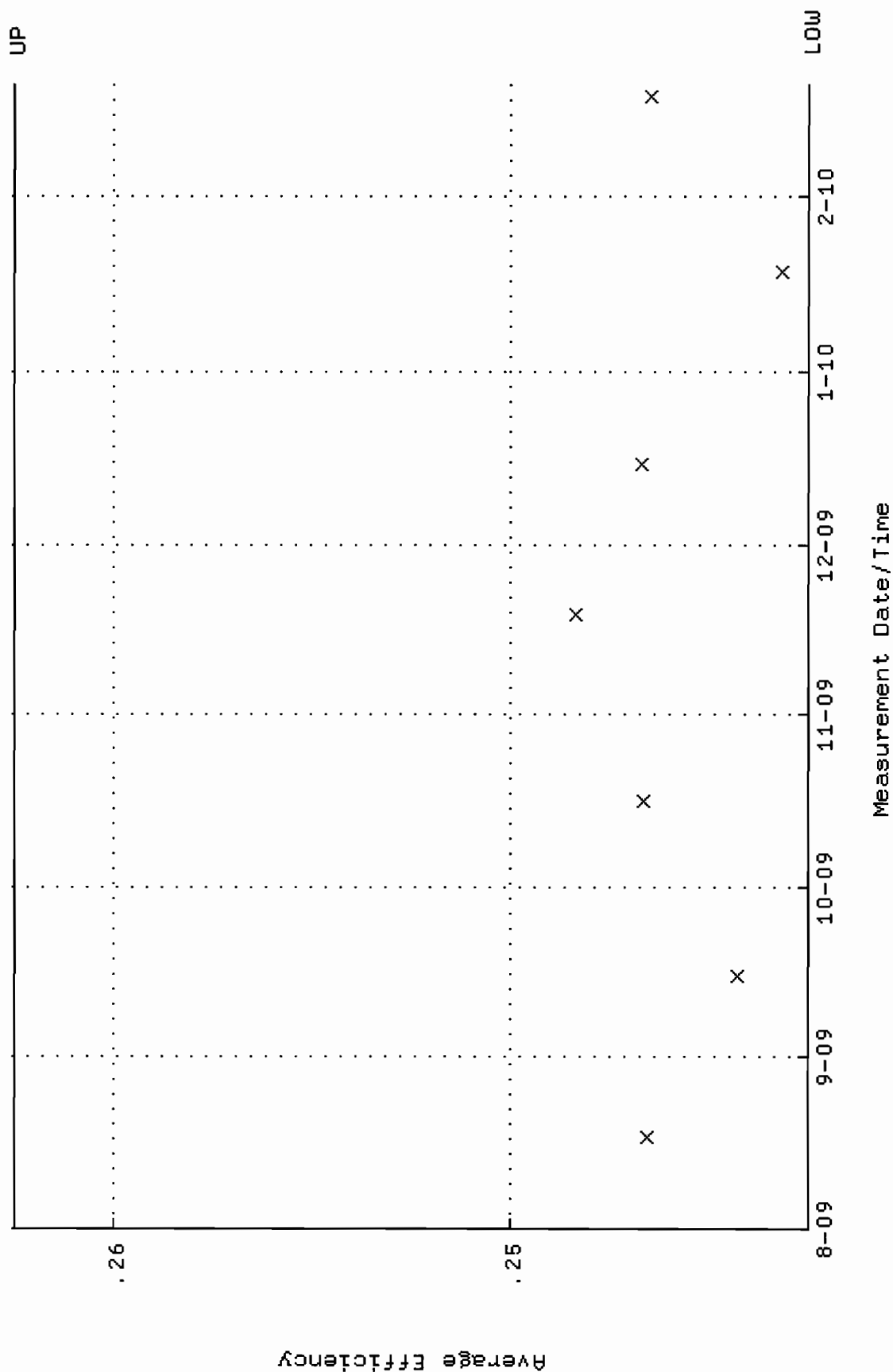
QA filename : DKA100:[ENV\_ALPHA.QA.W]W148.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 10:07:10 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 85.0831 through 94.0393



QA filename : DKA100:[ENV\_ALPHA.QA.B]B148.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:14:28 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

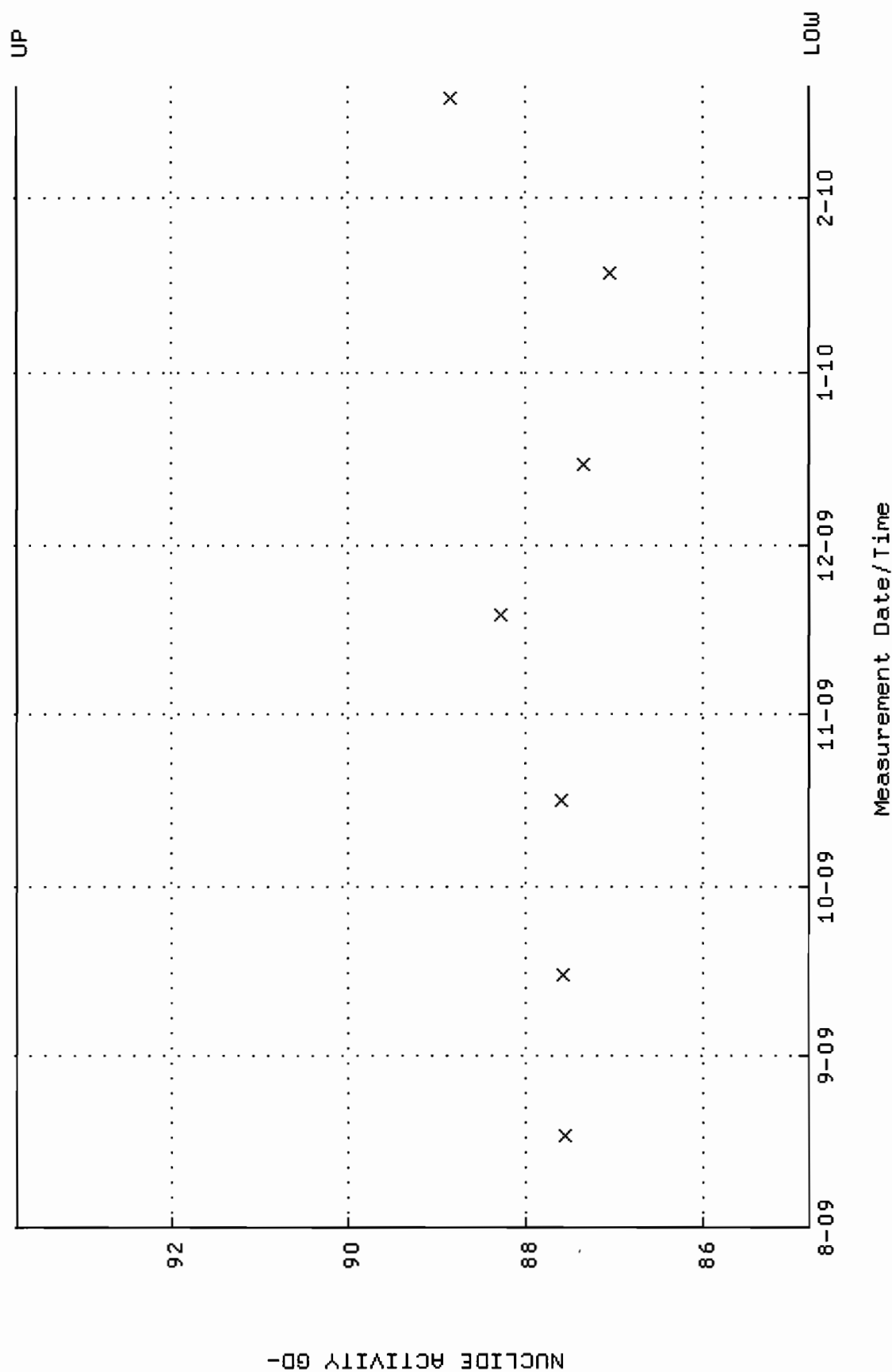


QA filename : DKA100:[ENV\_ALPHA.QA.W]W149.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 17-AUG-2009 09:46:49 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.242495 through 0.262495

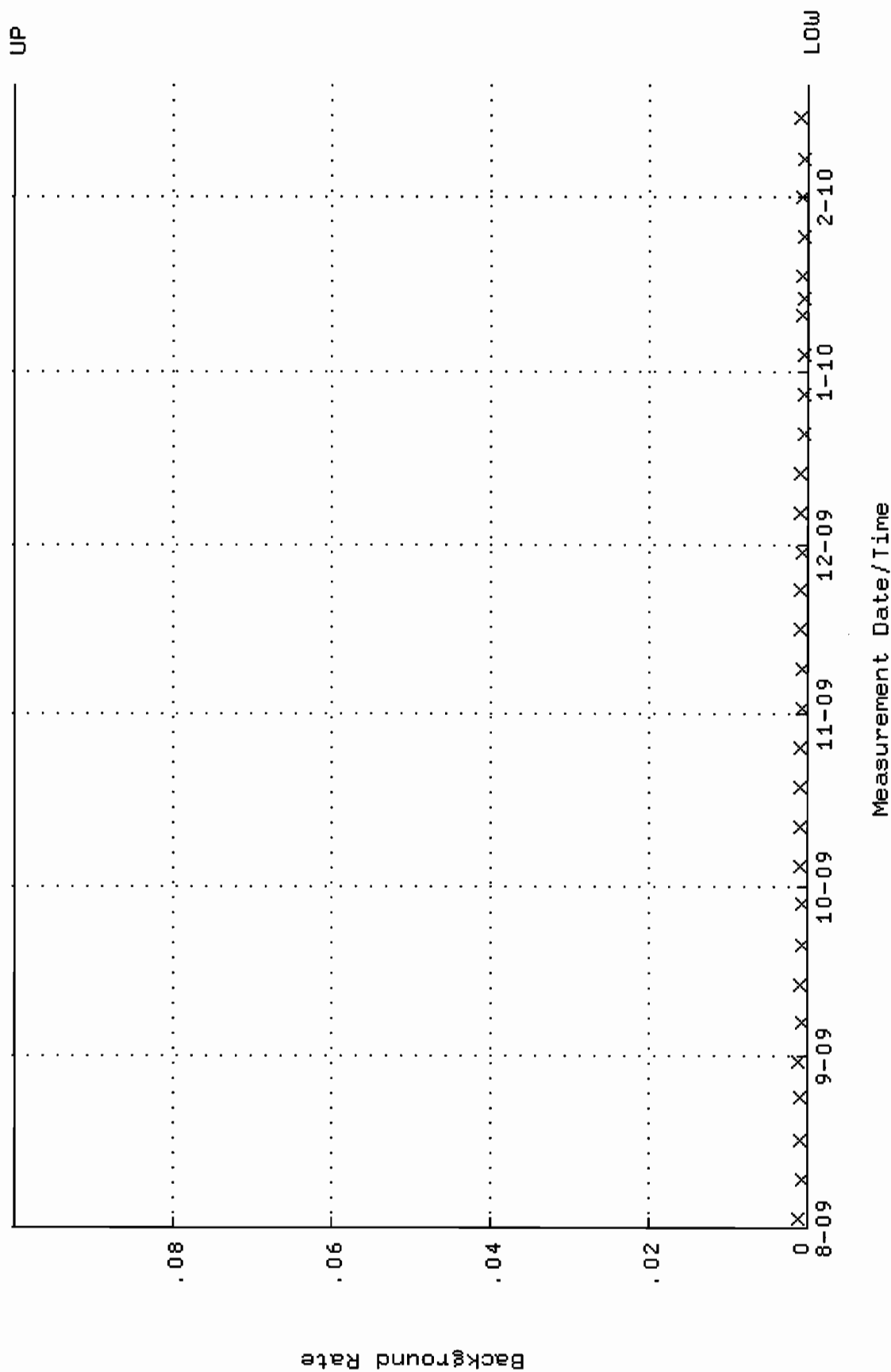




QA filename : DKA100:[ENV\_ALPHA.QA.W]W149.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 09:46:49 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 84.8126 through 93.7402



QA filename : DKA100:[ENV\_ALPHA.QA.B]B149.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:14:32 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

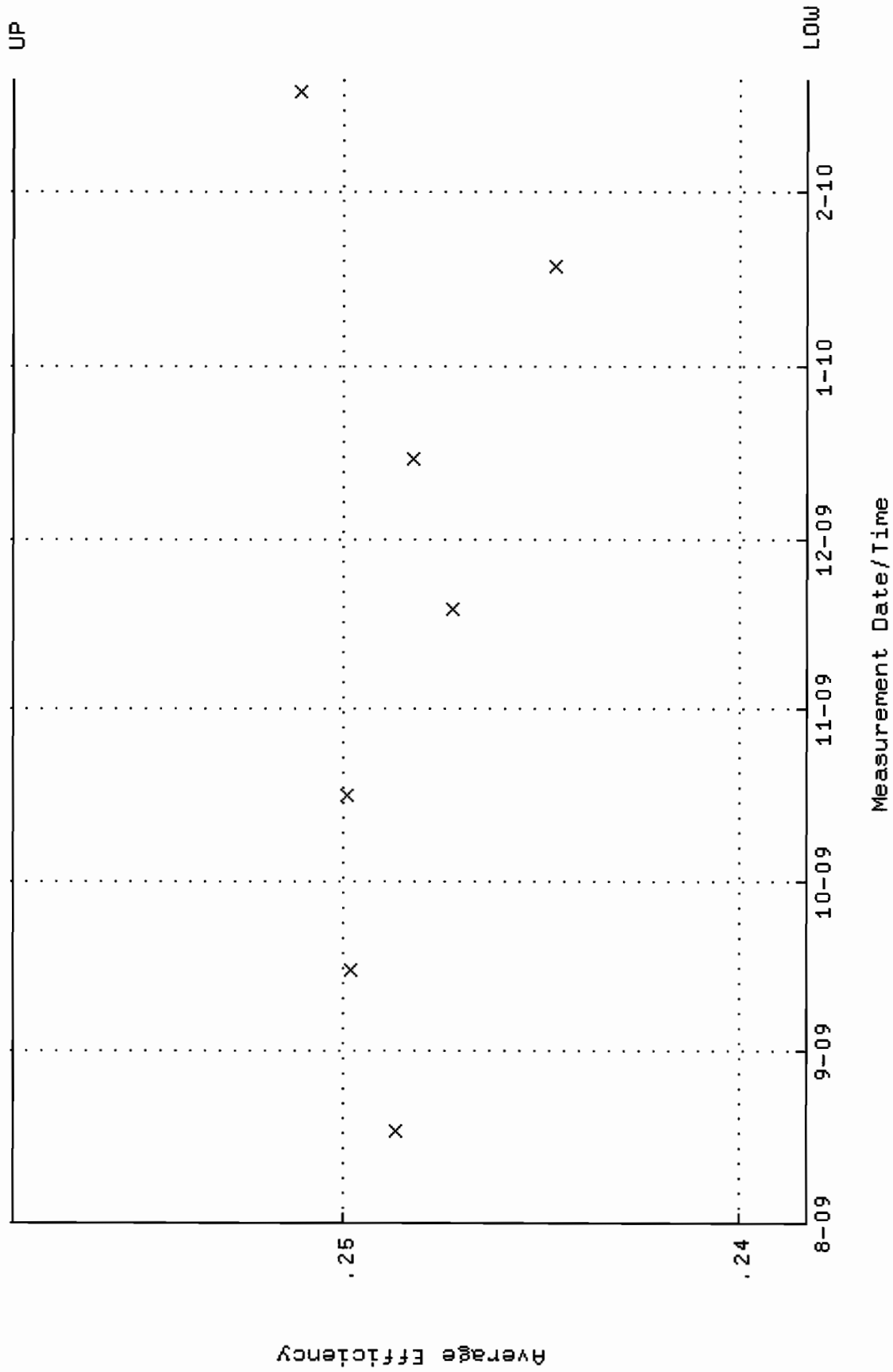


QA filename : DKA100:[ENV\_ALPHA.QA.W]W150.QAF;1

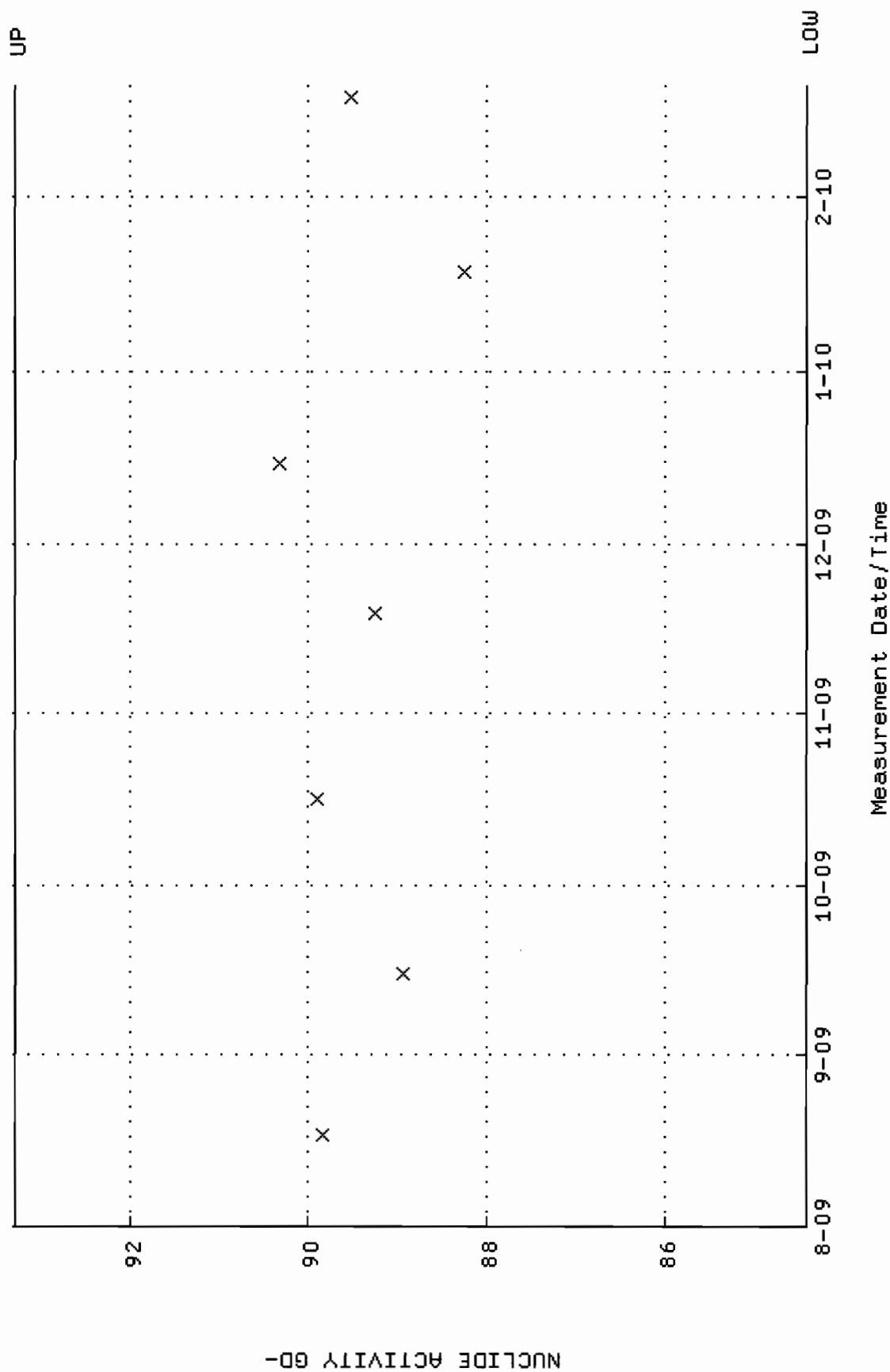
Parameter Name : AVRGEFF (Average Efficiency)

Start/End Dates : 17-AUG-2009 09:47:06 through 20-FEB-2010 12:00:00

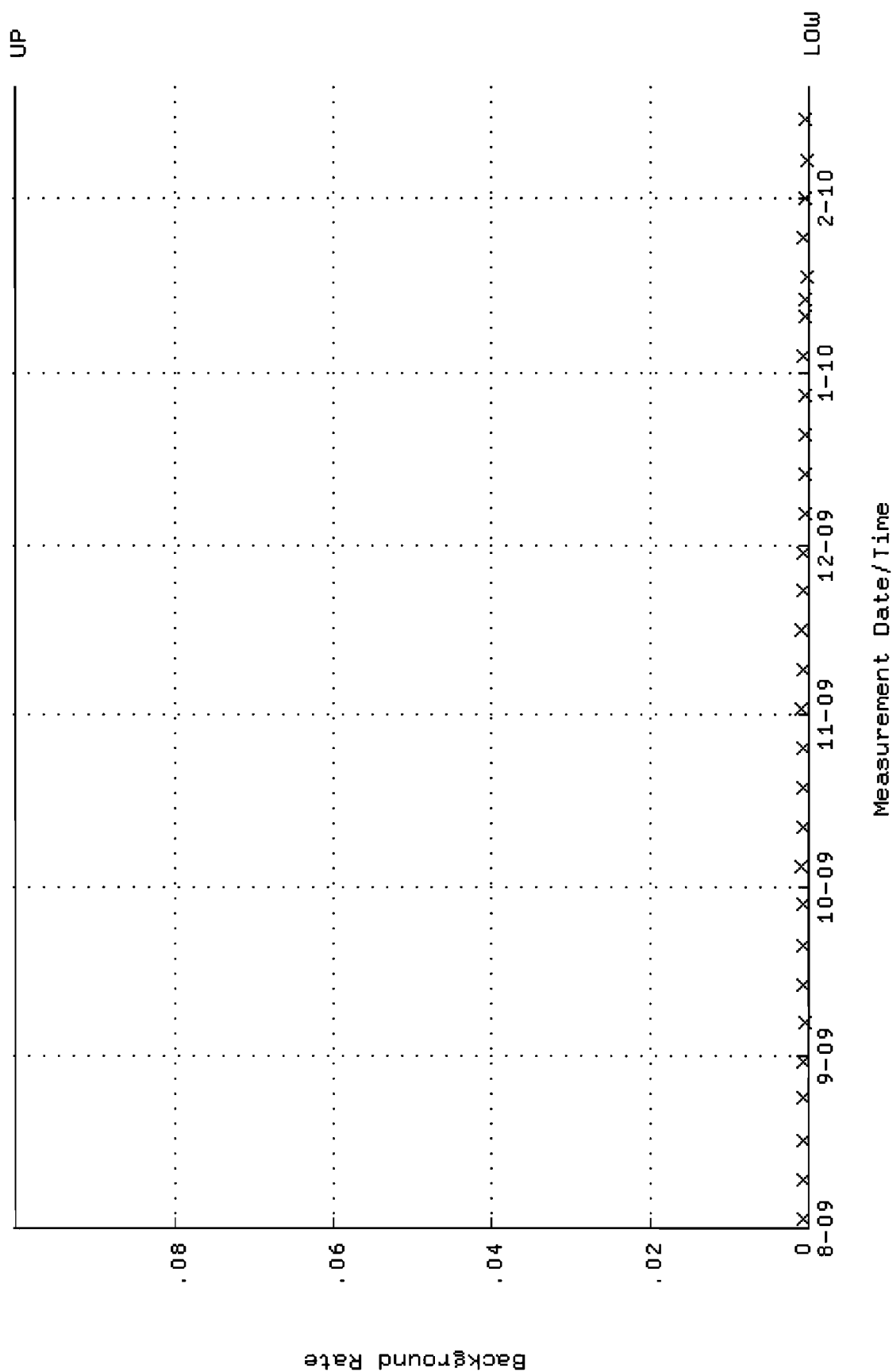
Lower/Upper Lmts: 0.238314 through 0.258314



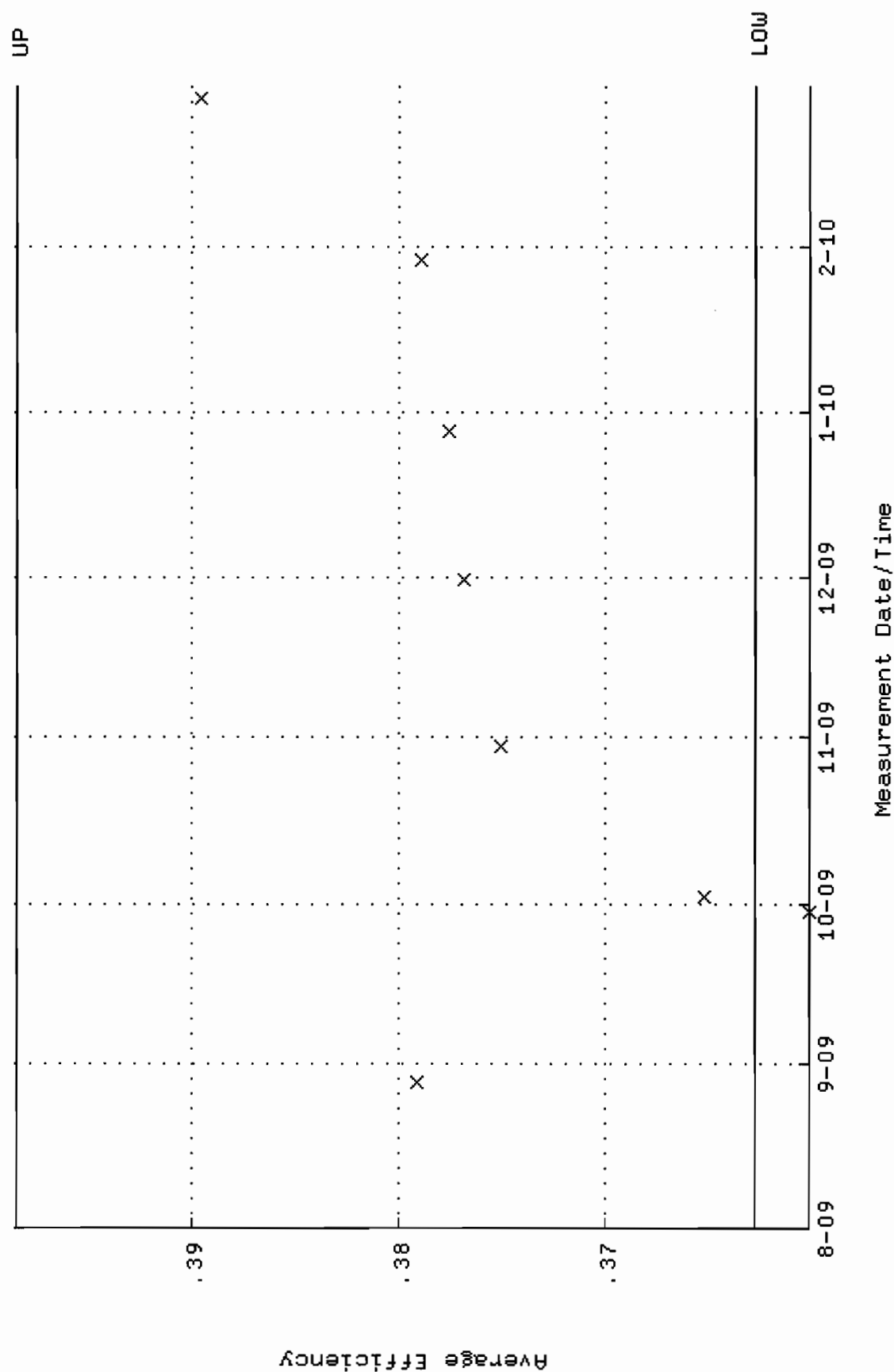
QA filename : DKA100:[ENV\_ALPHA.QA.W]W150.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-AUG-2009 09:47:06 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 84.4039 through 93.2885



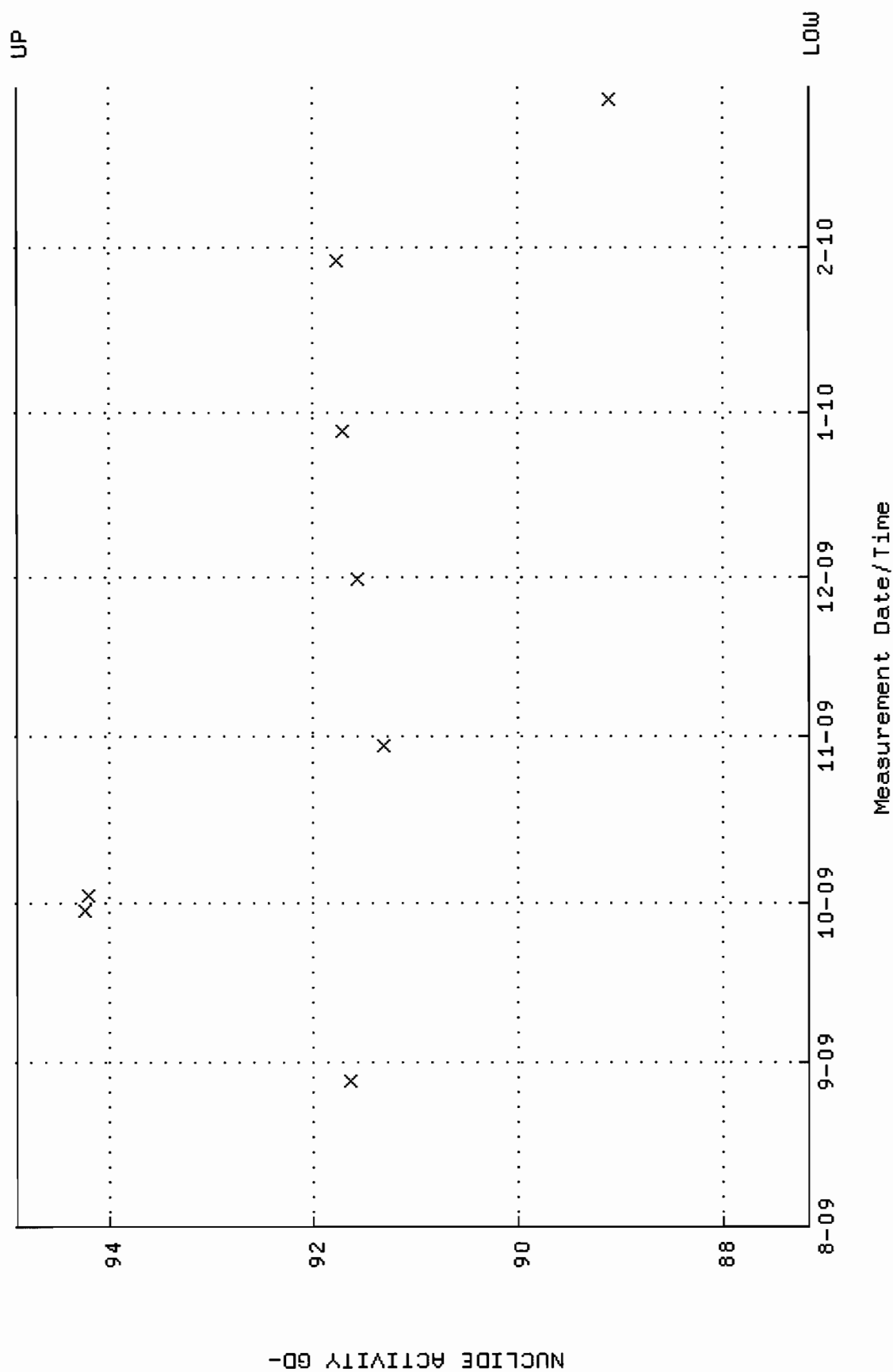
QA filename : DKA100:[ENV\_ALPHA.QA.B]B150.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:14:36 through 20-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



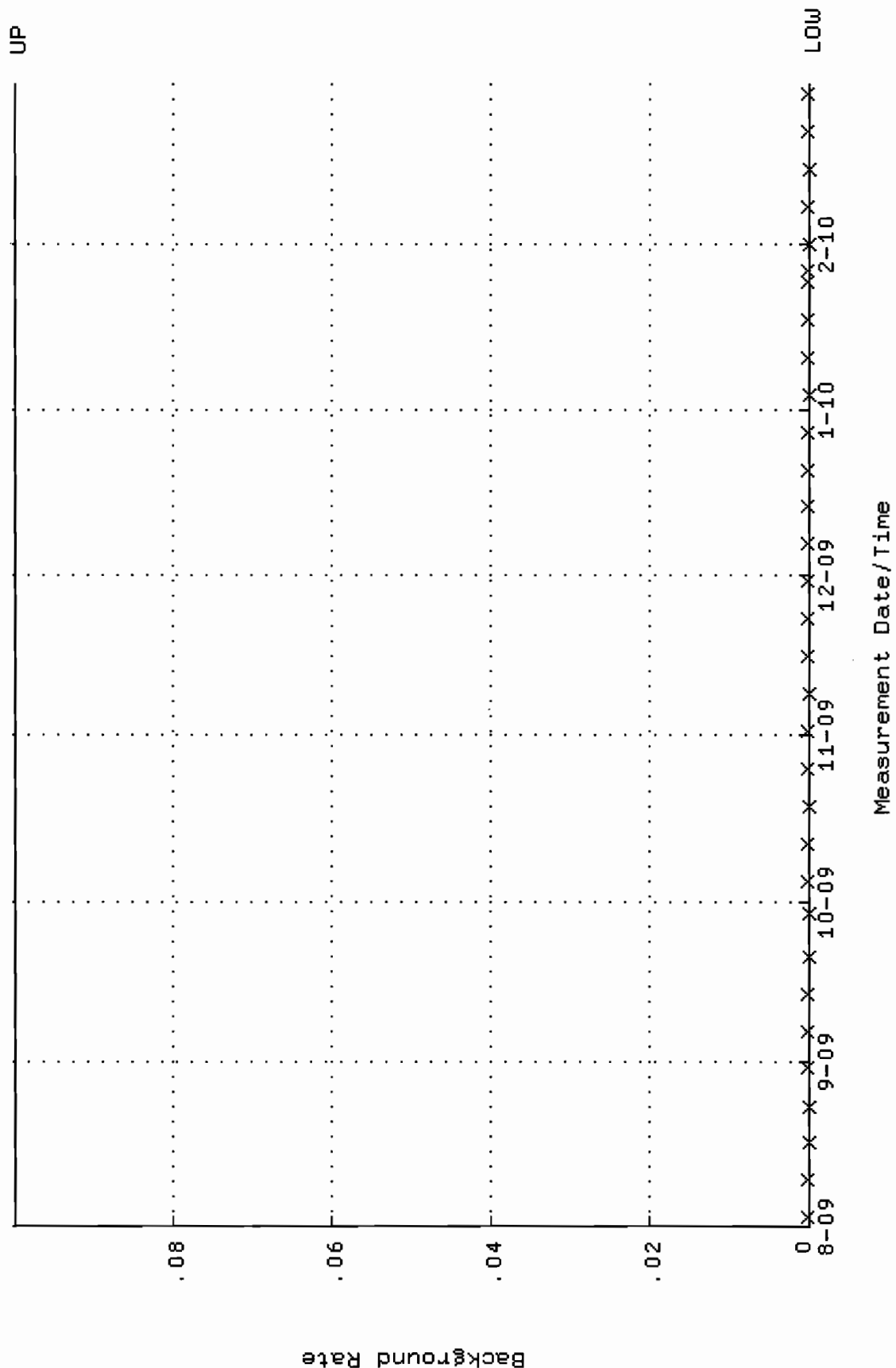
QA filename : DKA100:[ENV\_ALPHA.QA.W]W220.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:07:23 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.362894 through 0.398402



QA filename : DKA100:[ENV\_ALPHA.QA.W]w220.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:07:23 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 87.1542 through 94.9022

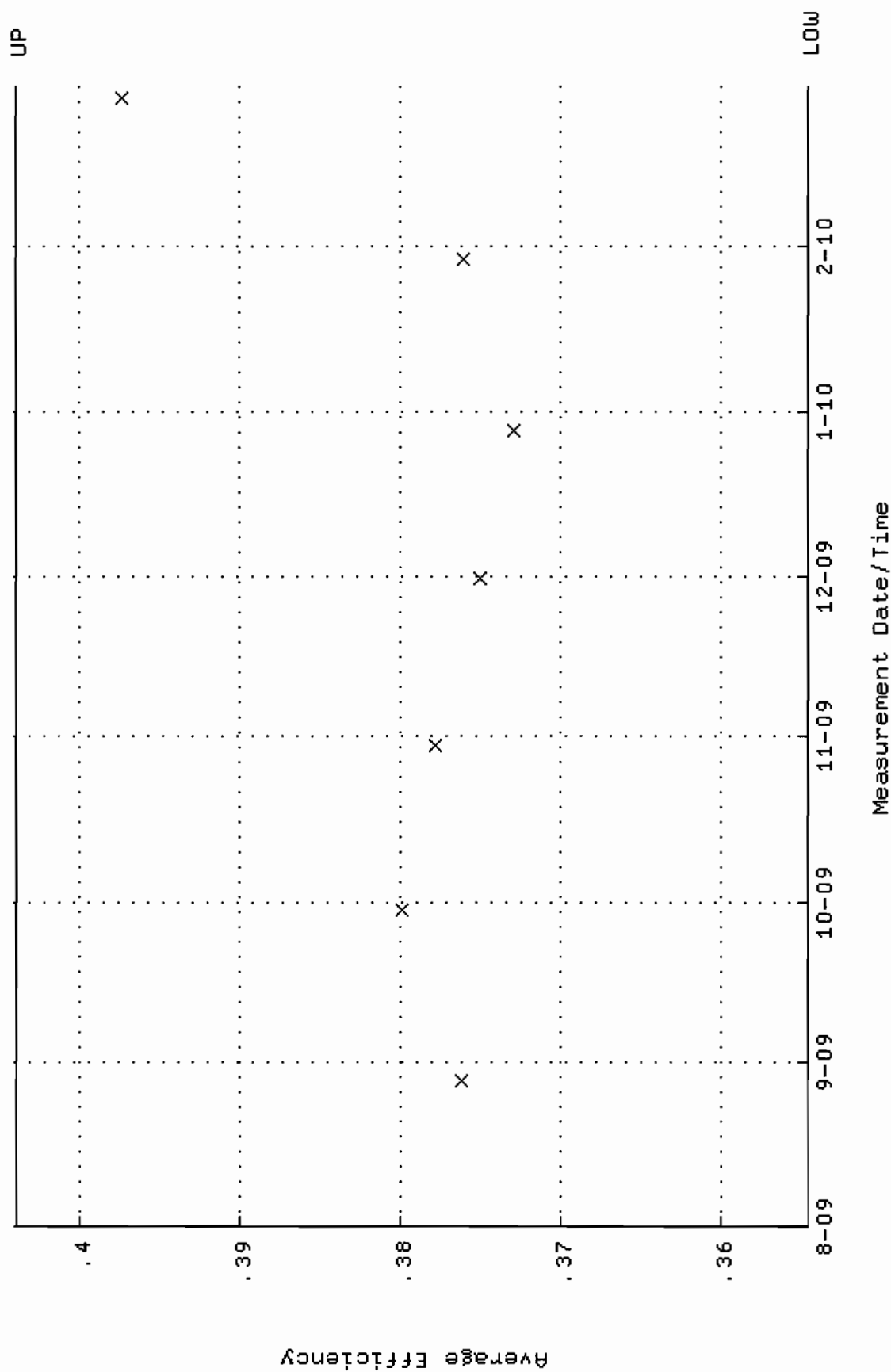


QA filename : DKA100:[ENV\_ALPHA.QA.B]B220.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:25:56 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

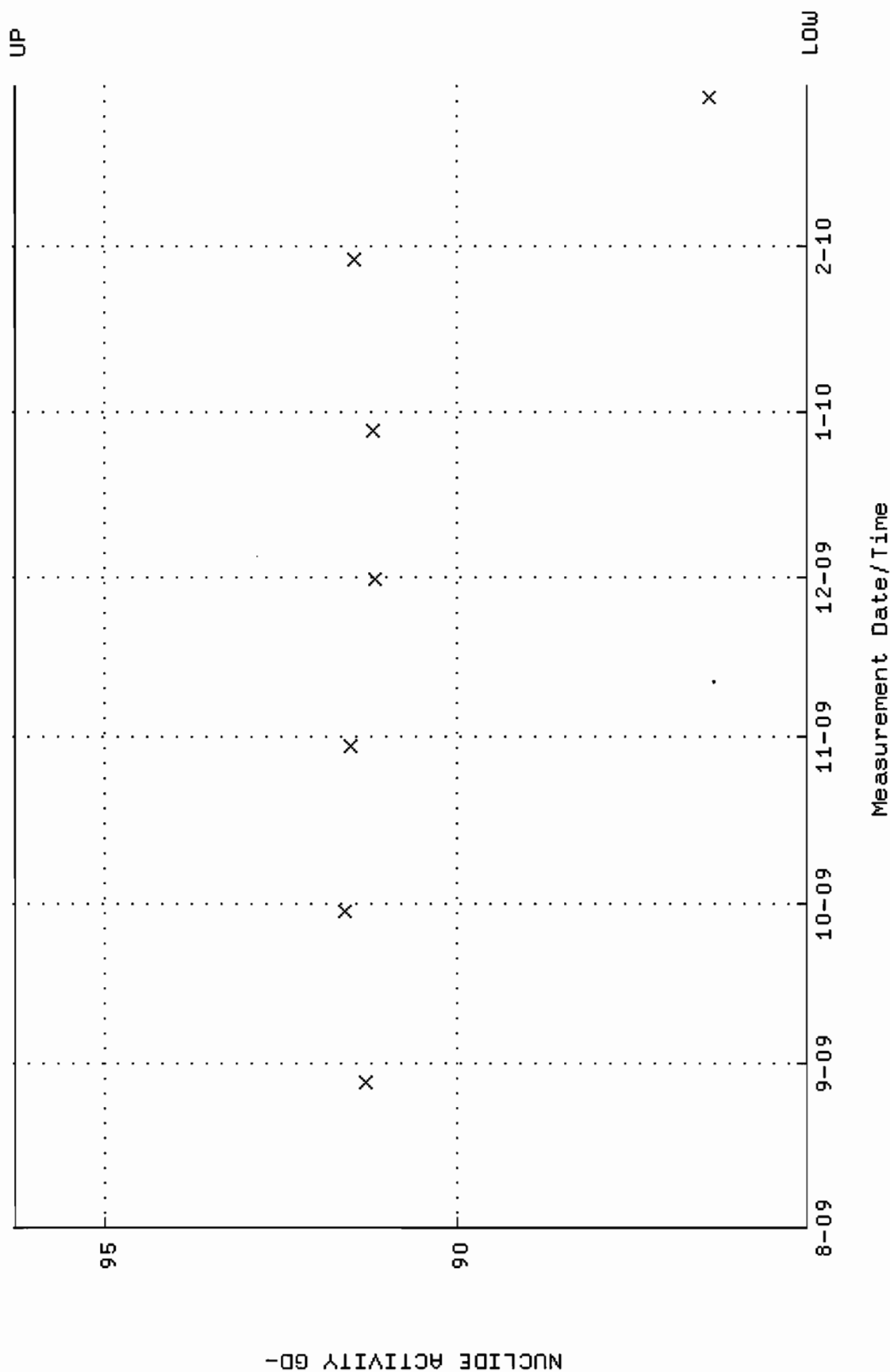




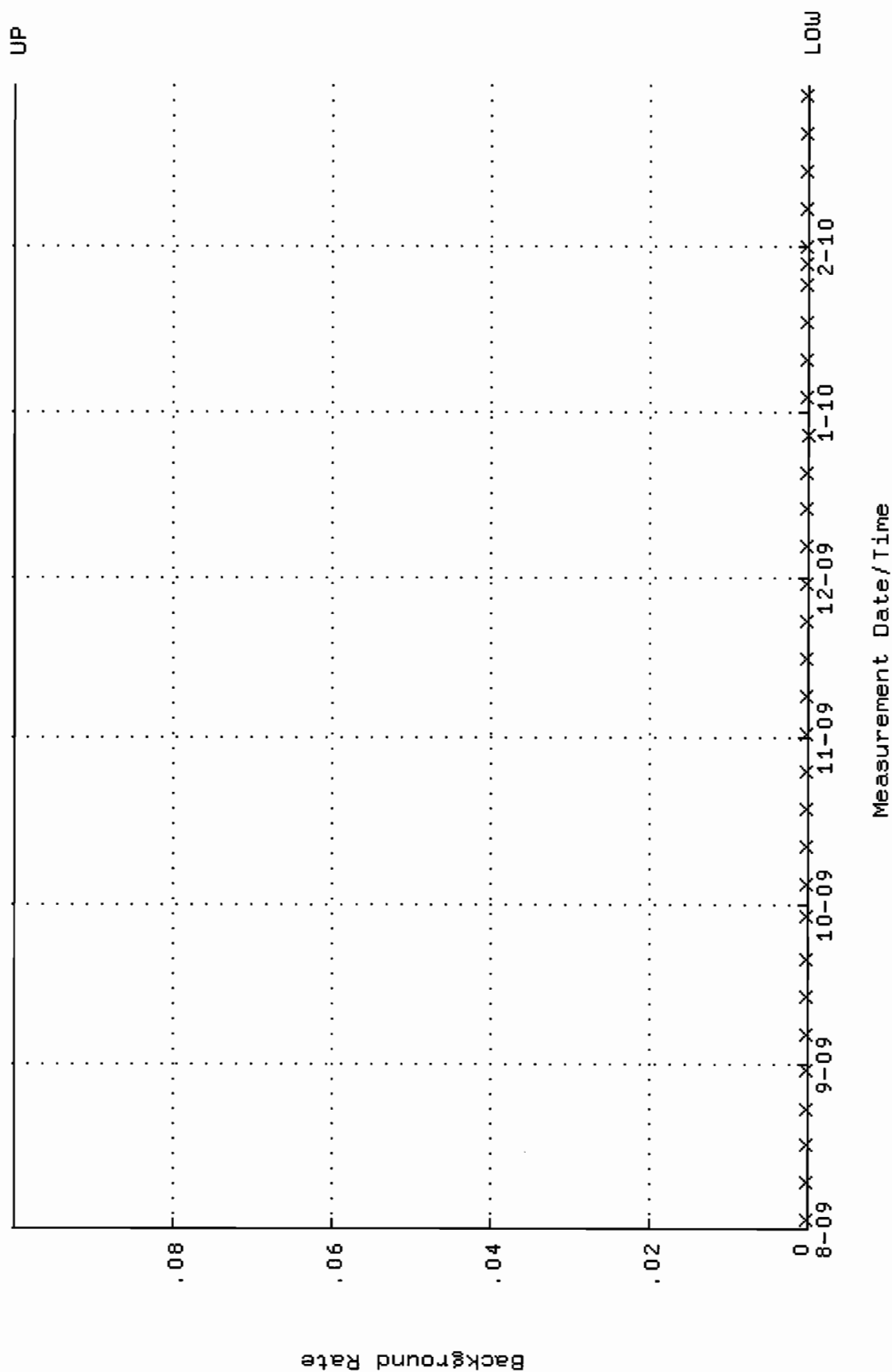
QA filename : DKA100:[ENV\_ALPHA.QA.W]W221.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:07:27 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.354487 through 0.403989



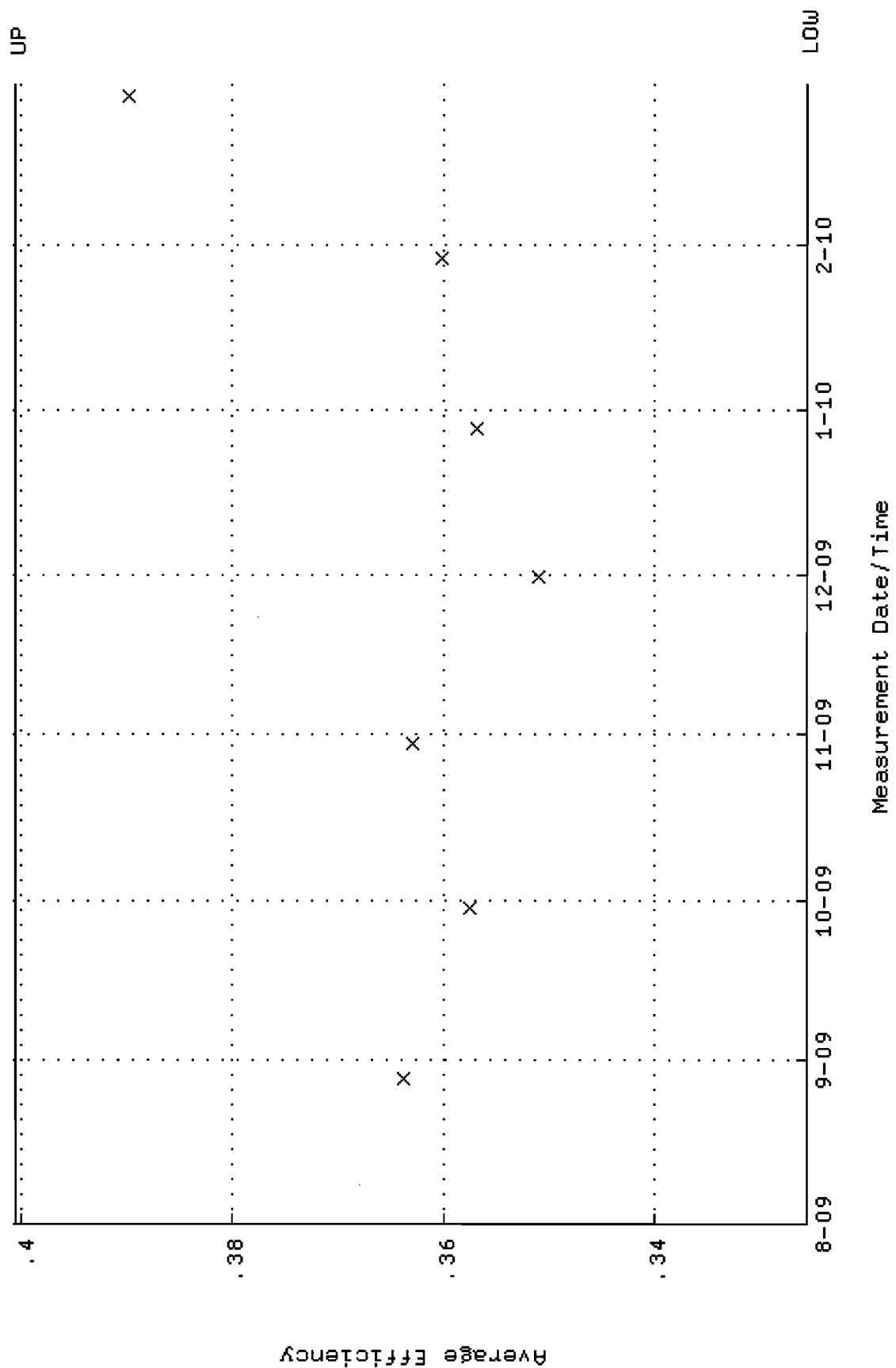
QA filename : DKA100:[ENV\_ALPHA.QA.W]W221.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:07:27 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.0275 through 96.2669



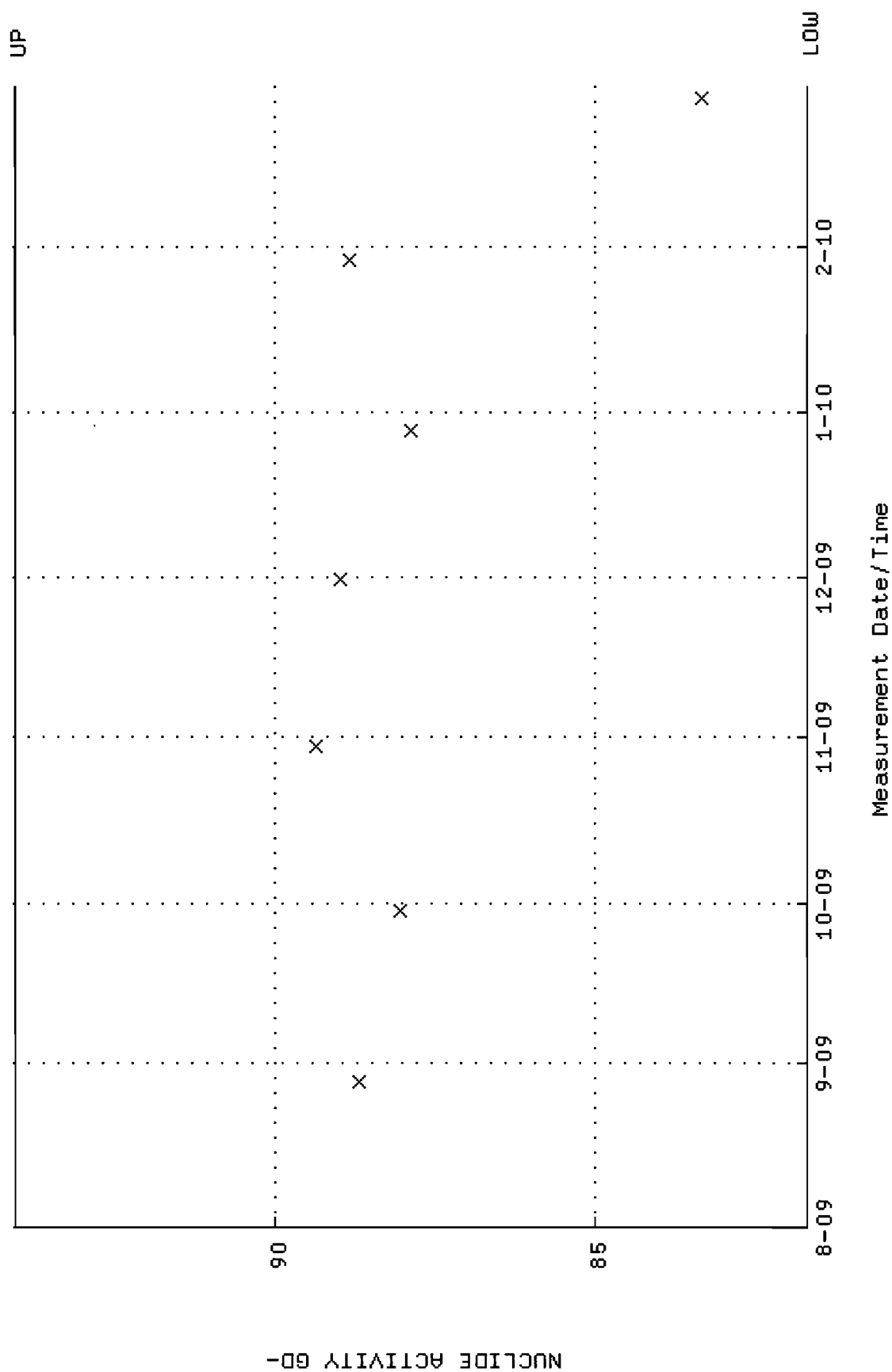
QA filename : DKA100:[ENV\_ALPHA.QA.B]B221.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:01 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



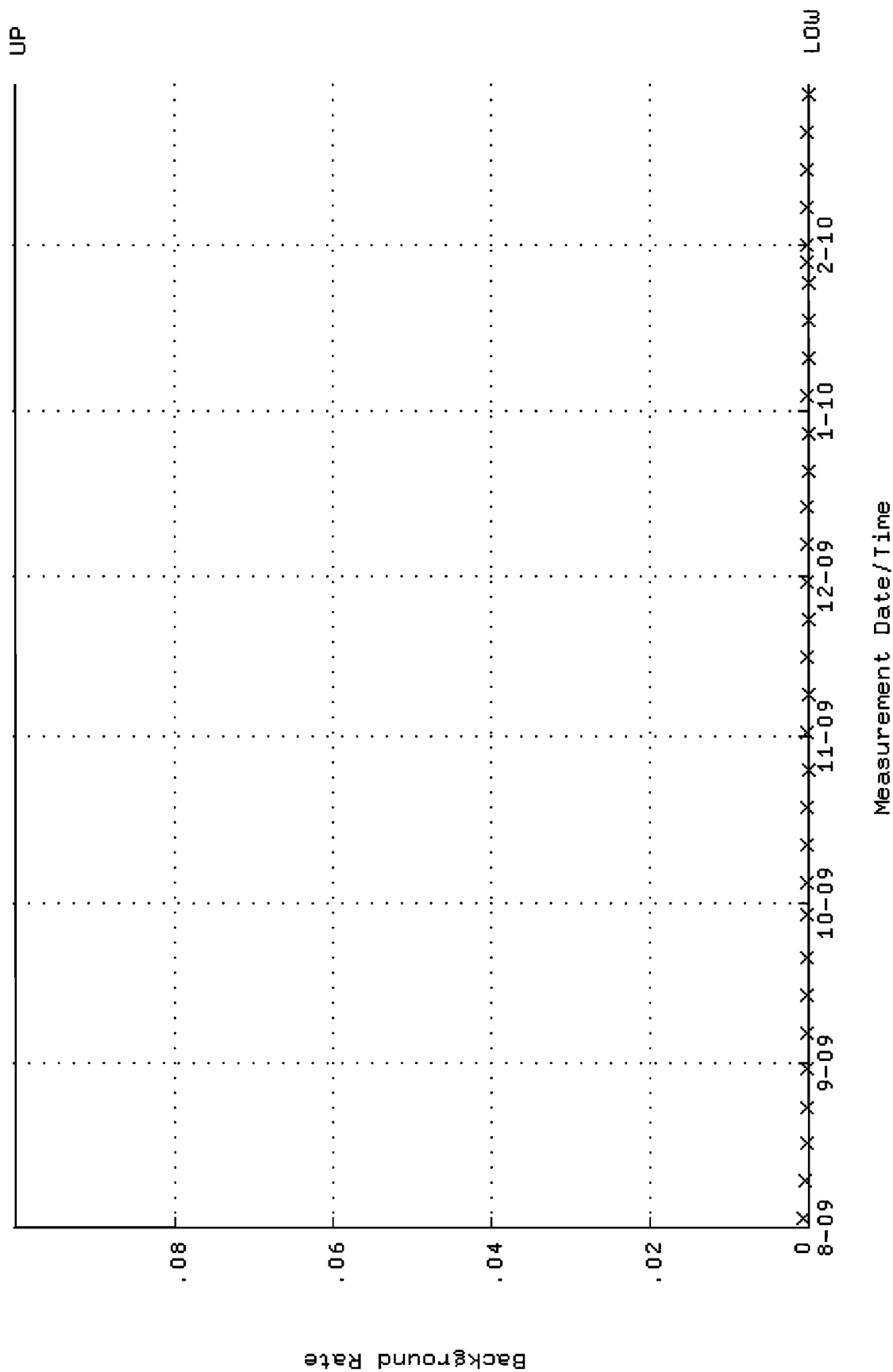
QA filename : DKA100: [ENV\_ALPHA.QA.W]W222.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:07:32 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.325585 through 0.400497



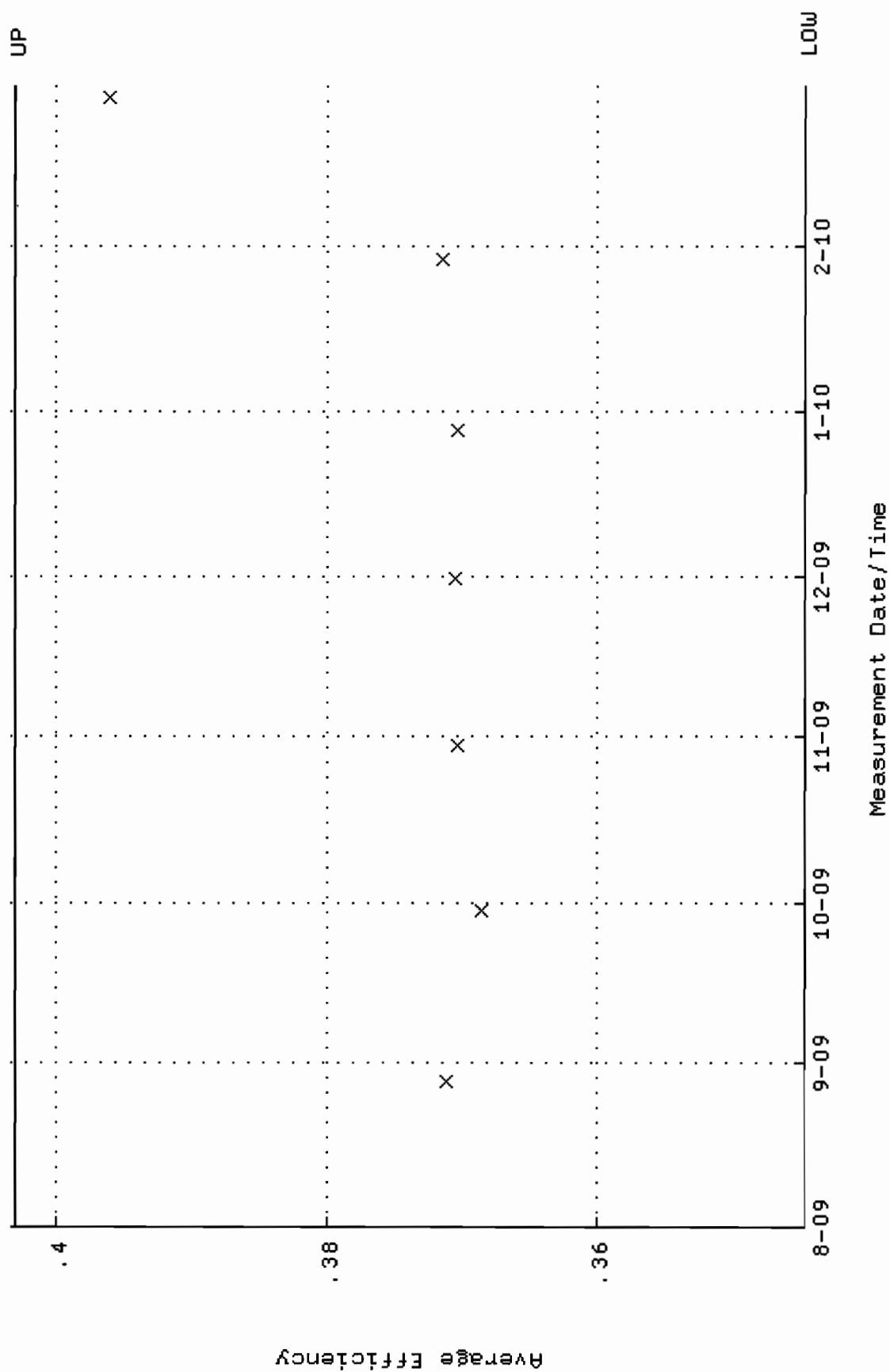
QA filename : DKA100:[ENV\_ALPHA.QA.W]W222.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:07:32 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 81.6821 through 94.0551



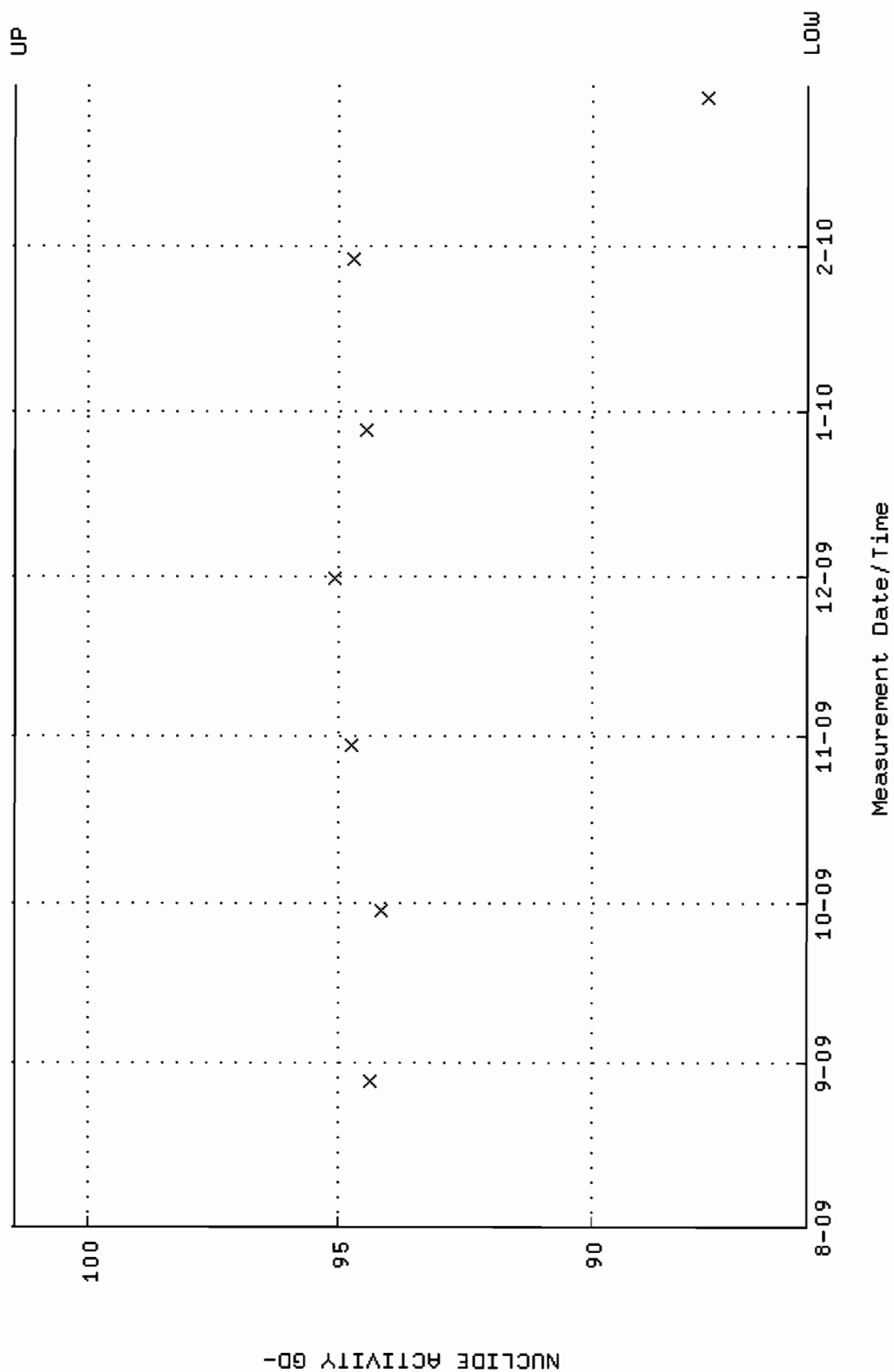
QA filename : DKA100:[ENV\_ALPHA.QA.B]B222.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:05 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]w223.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:07:38 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.344809 through 0.403131

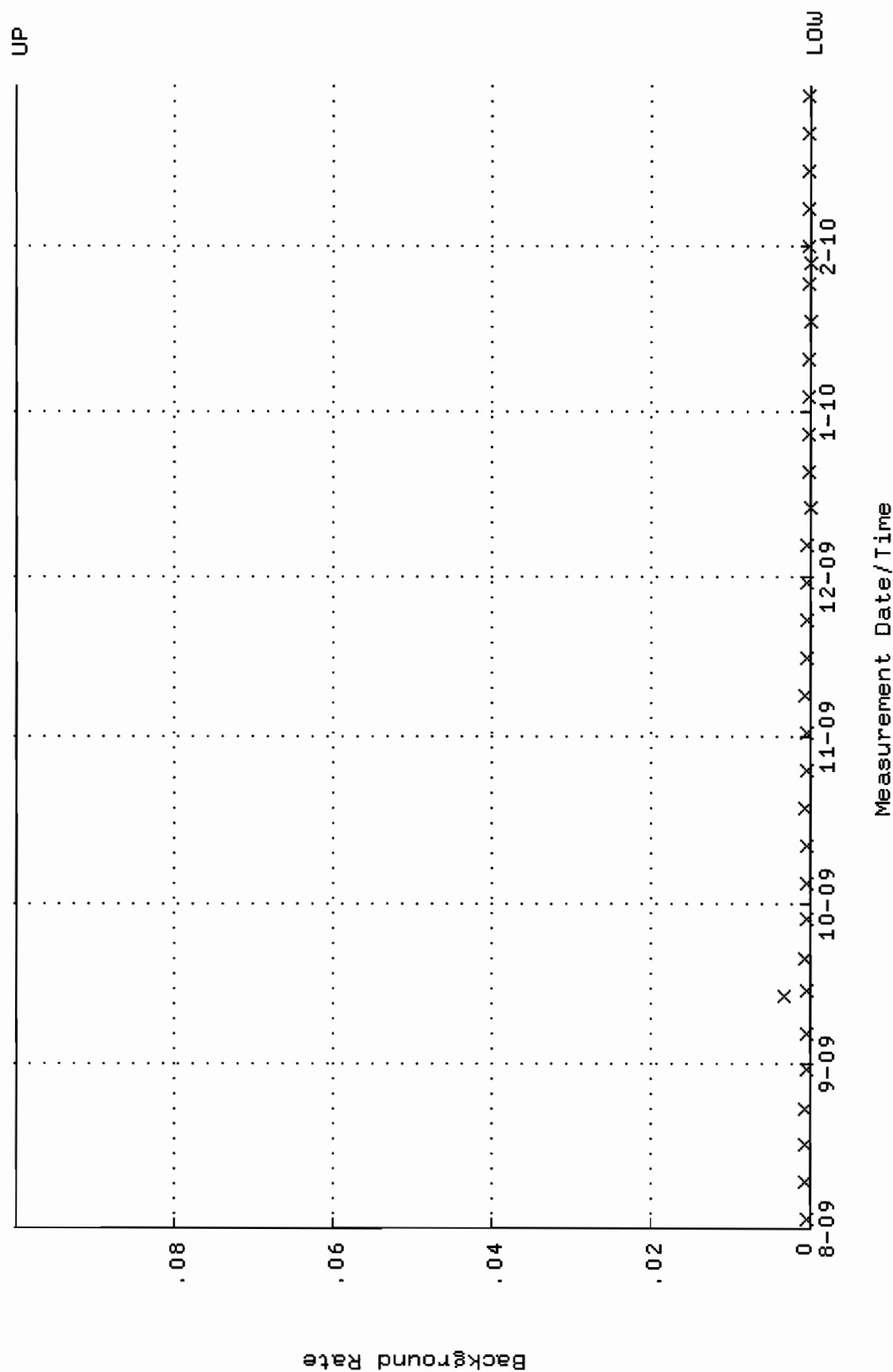


QA filename : DKA100:[ENV\_ALPHA.QA.W]W223.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:07:38 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.7275 through 101.456

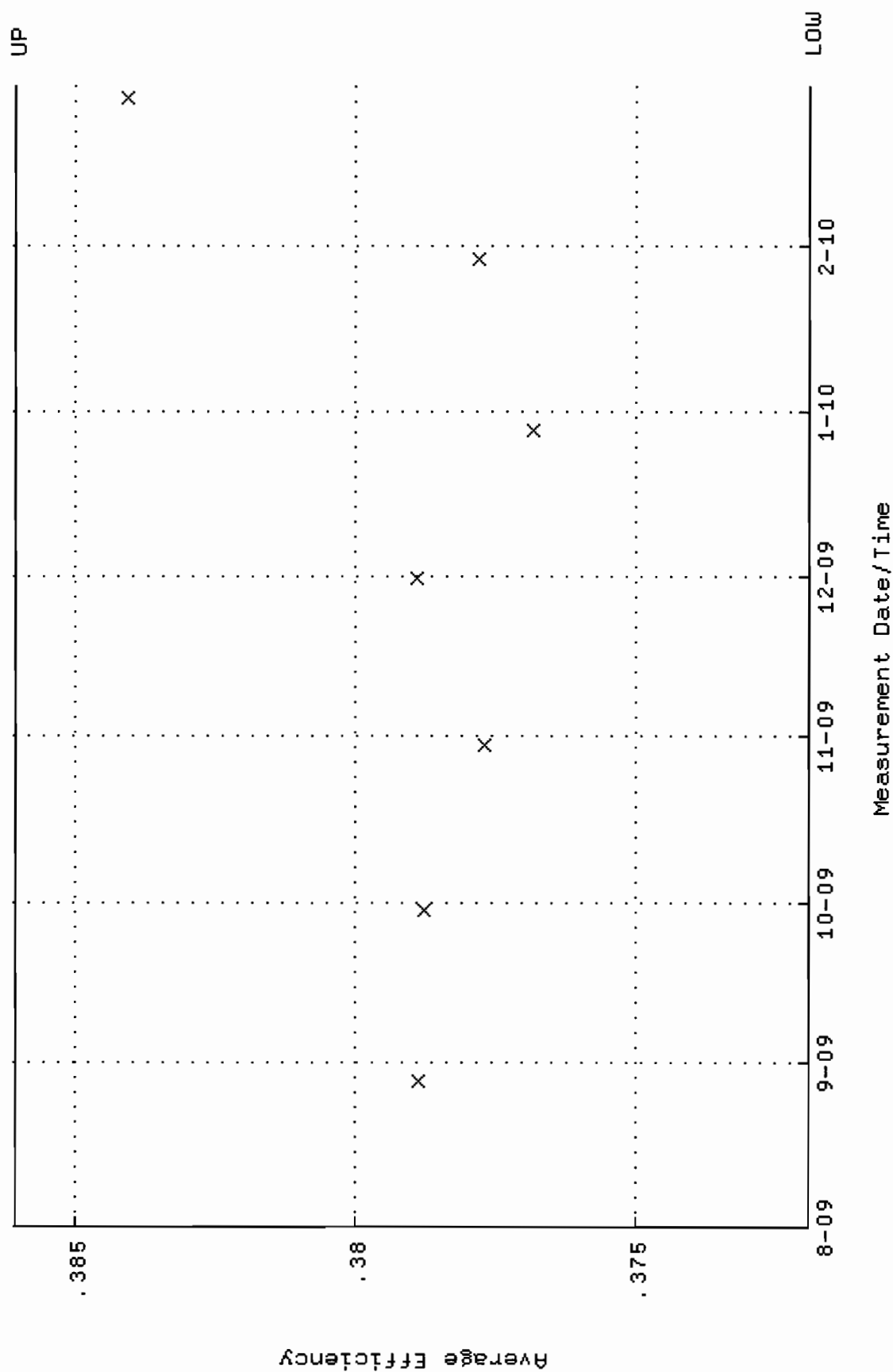




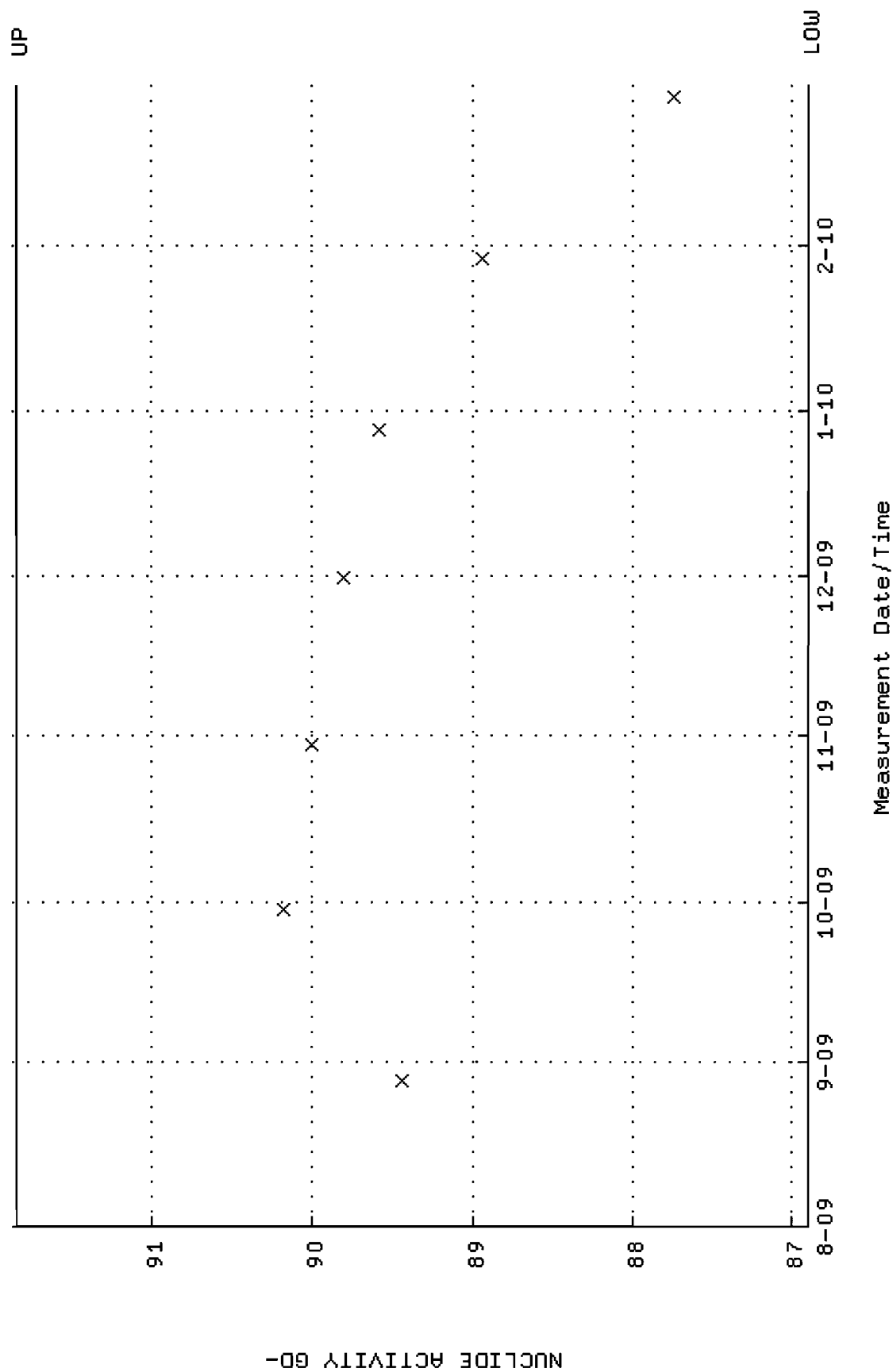
QA filename : DKA100:[ENV\_ALPHA.QA,B]B223.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:08 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



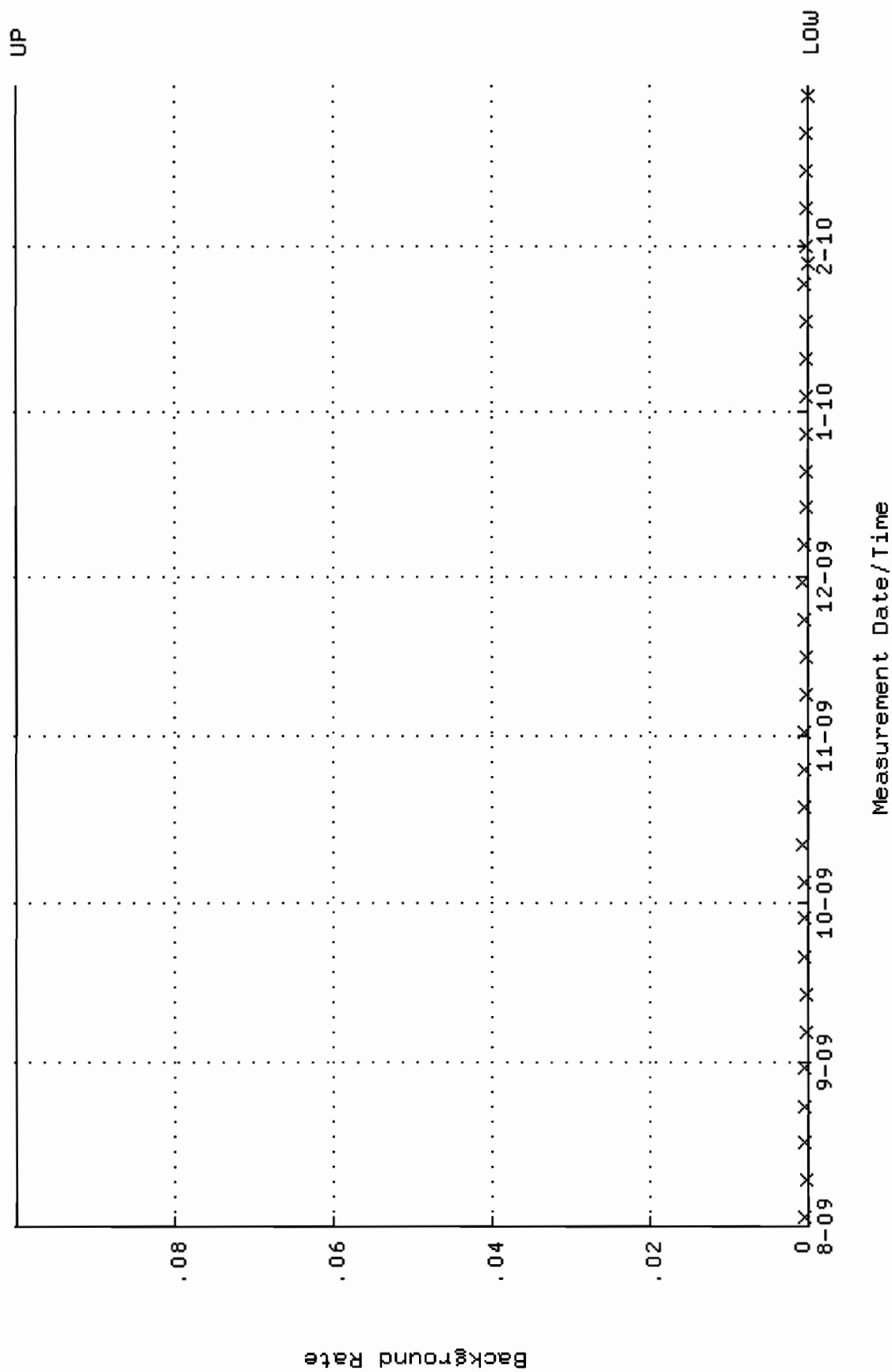
QA filename : DKA100:[ENV\_ALPHA.QA.W]W224.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:07:44 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.371921 through 0.386057



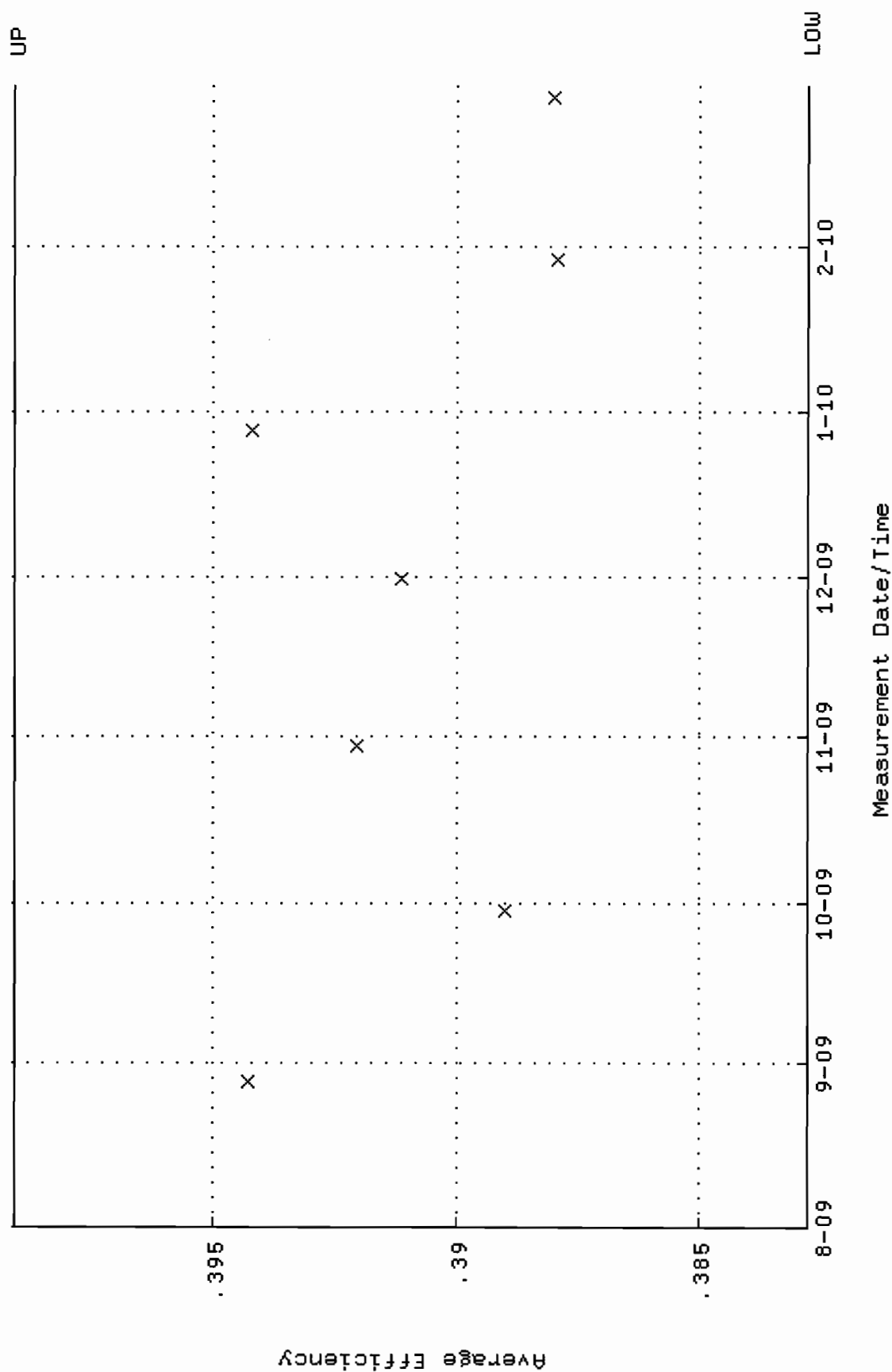
QA filename : DKA100:[ENV\_ALPHA.QA.W]W224.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:07:44 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 86.9006 through 91.8482



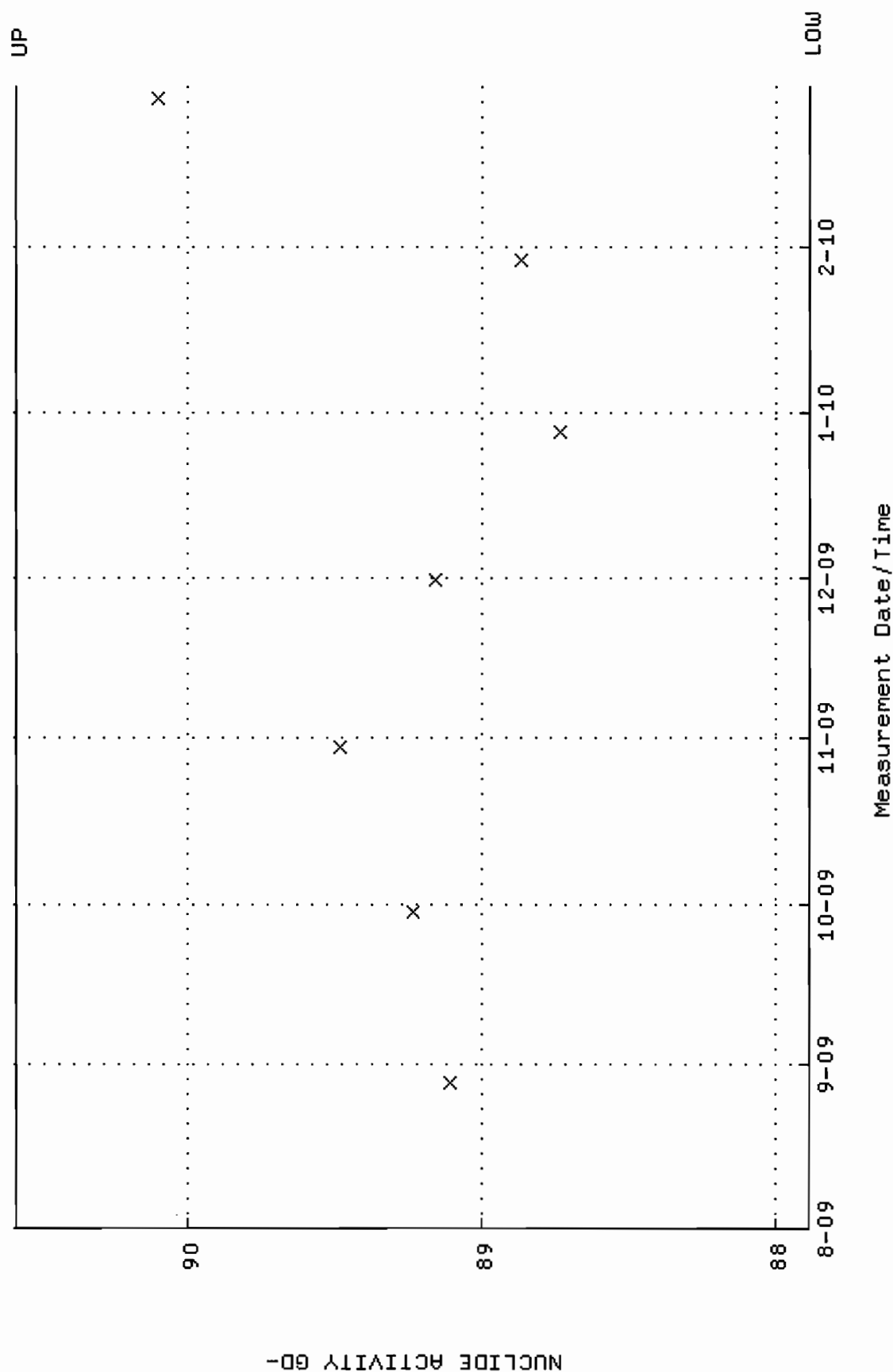
QA filename : DKA100:[ENV\_ALPHA.QA.B]B224.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:12 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



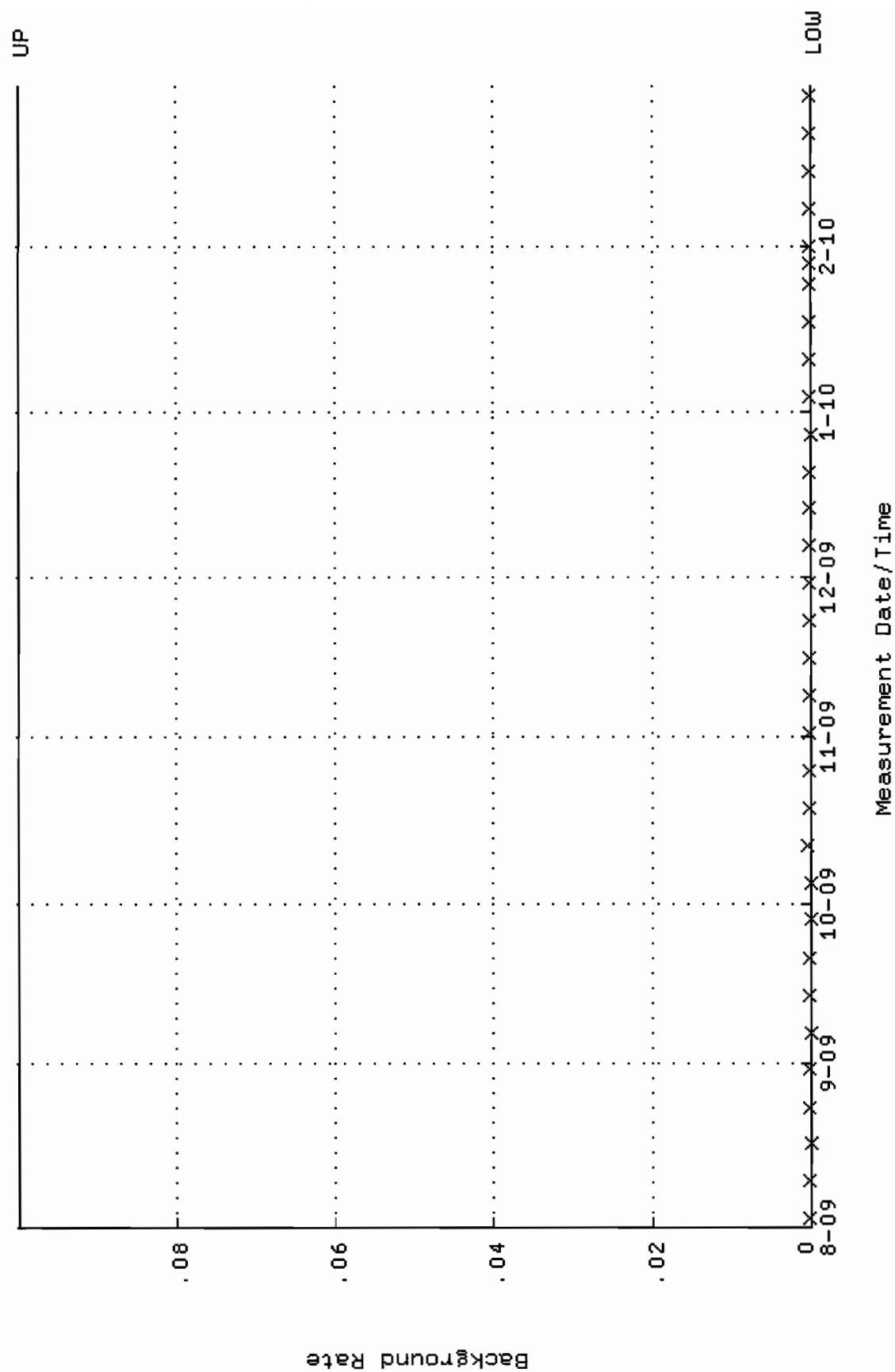
QA filename : DKA100:[ENV\_ALPHA.QA.W]W225.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:07:50 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.382792 through 0.399070



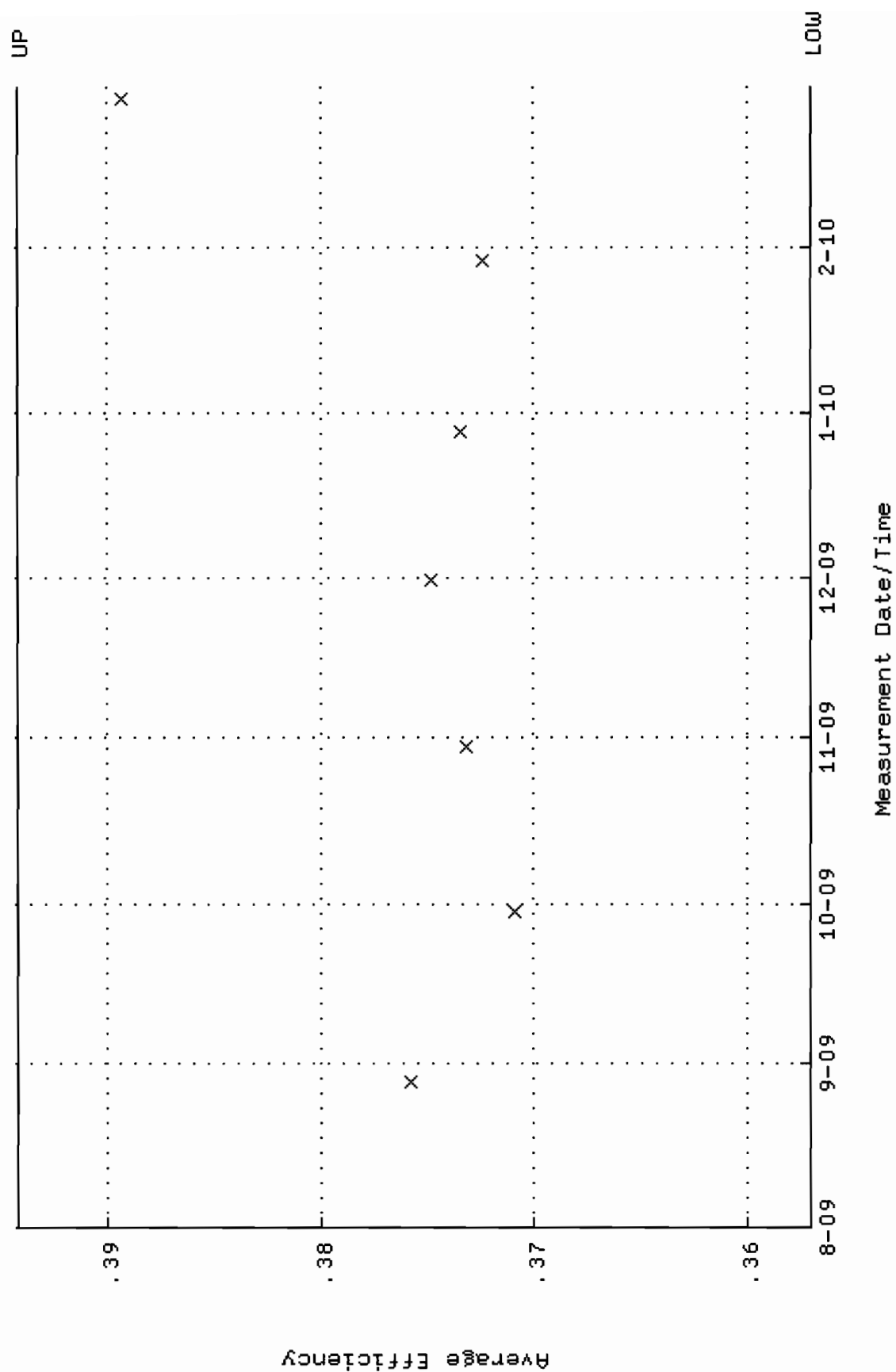
QA filename : DKA100:[ENV\_ALPHA.QA.W]W225.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:07:50 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 87.8853 through 90.5875



QA filename : DKA100:[ENV\_ALPHA.QA.B]B225.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:16 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

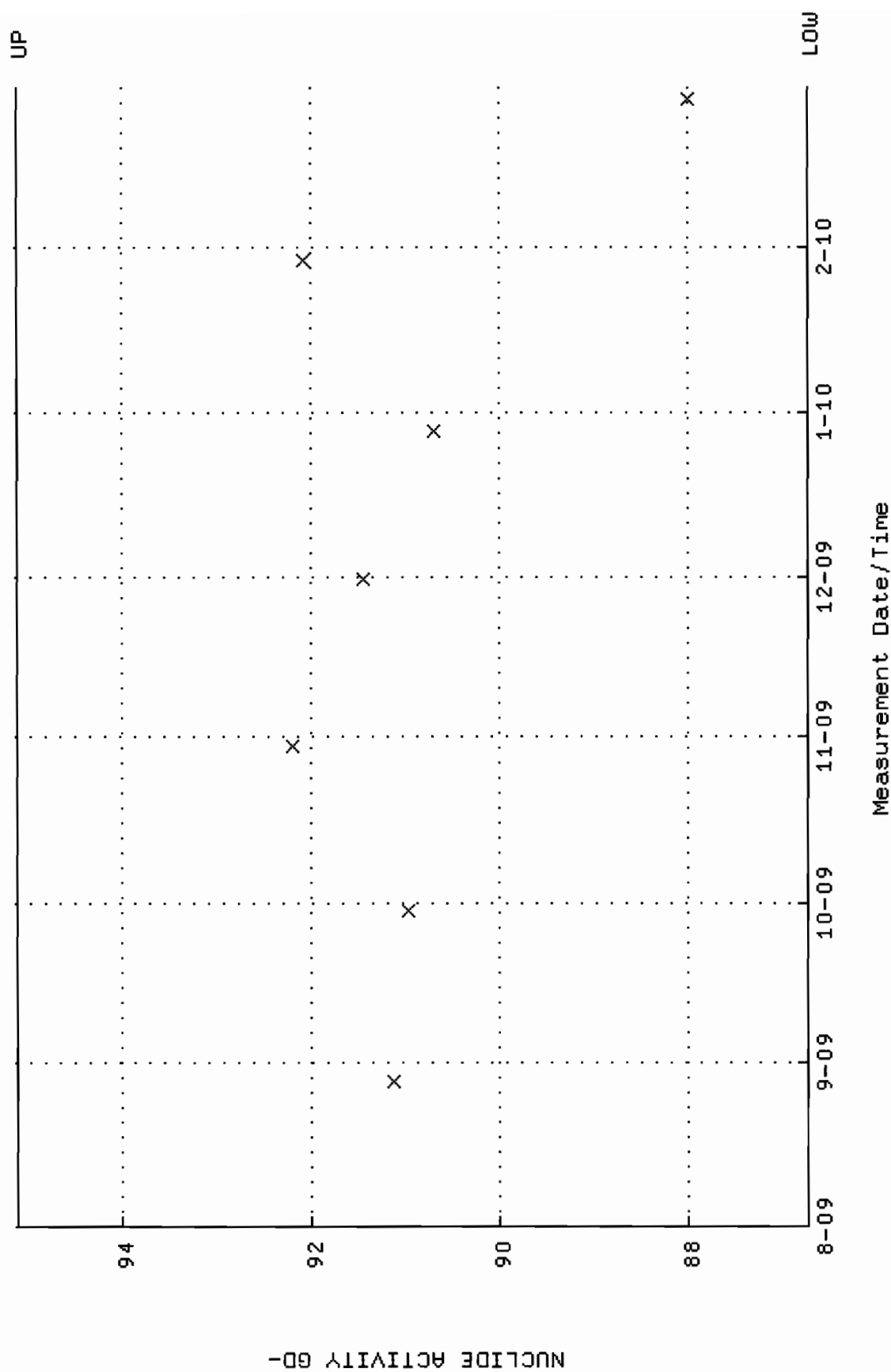


QA filename : DKA100:[ENV\_ALPHA.QA.W]W226.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:07:57 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.357039 through 0.394215

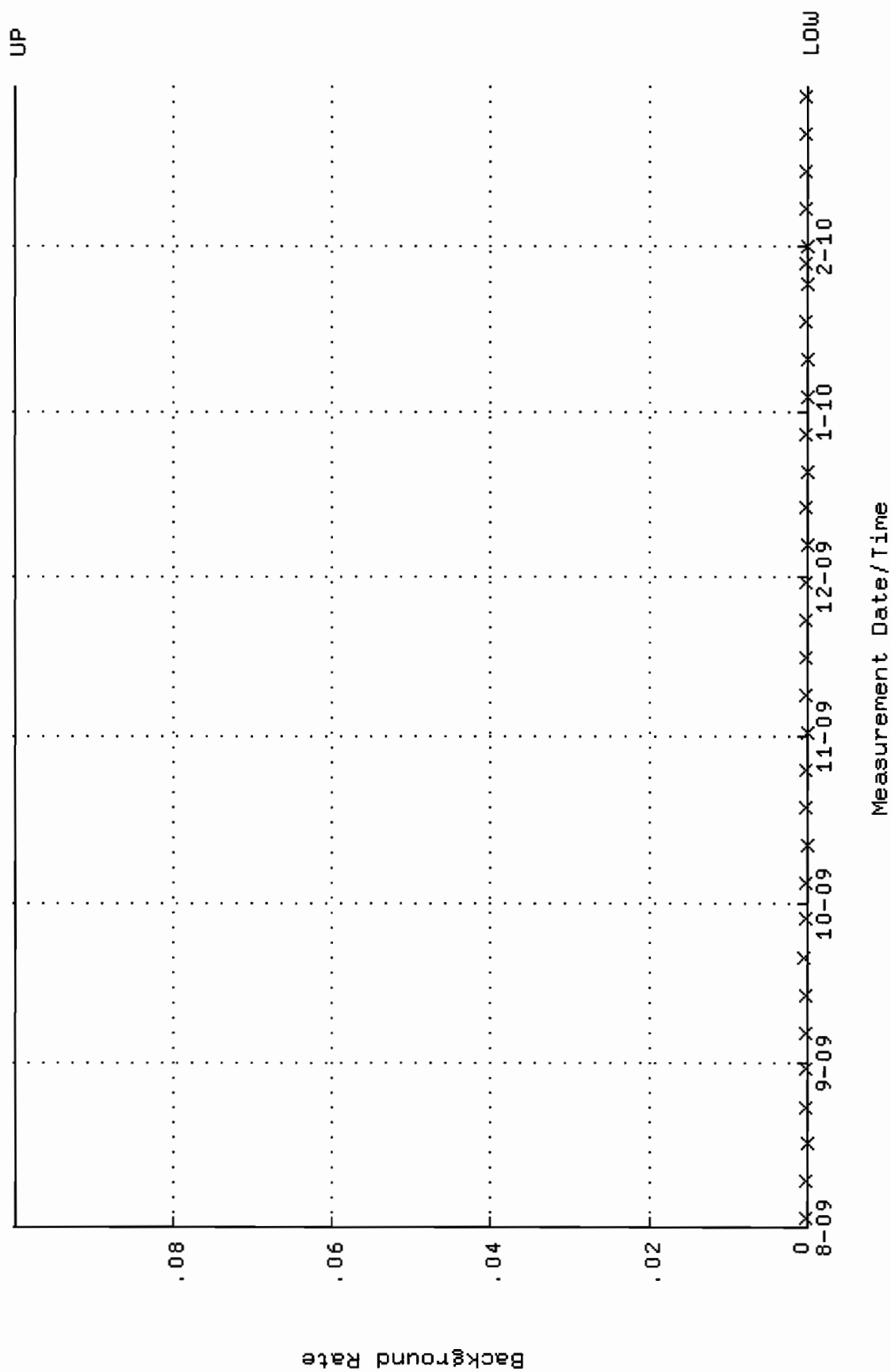




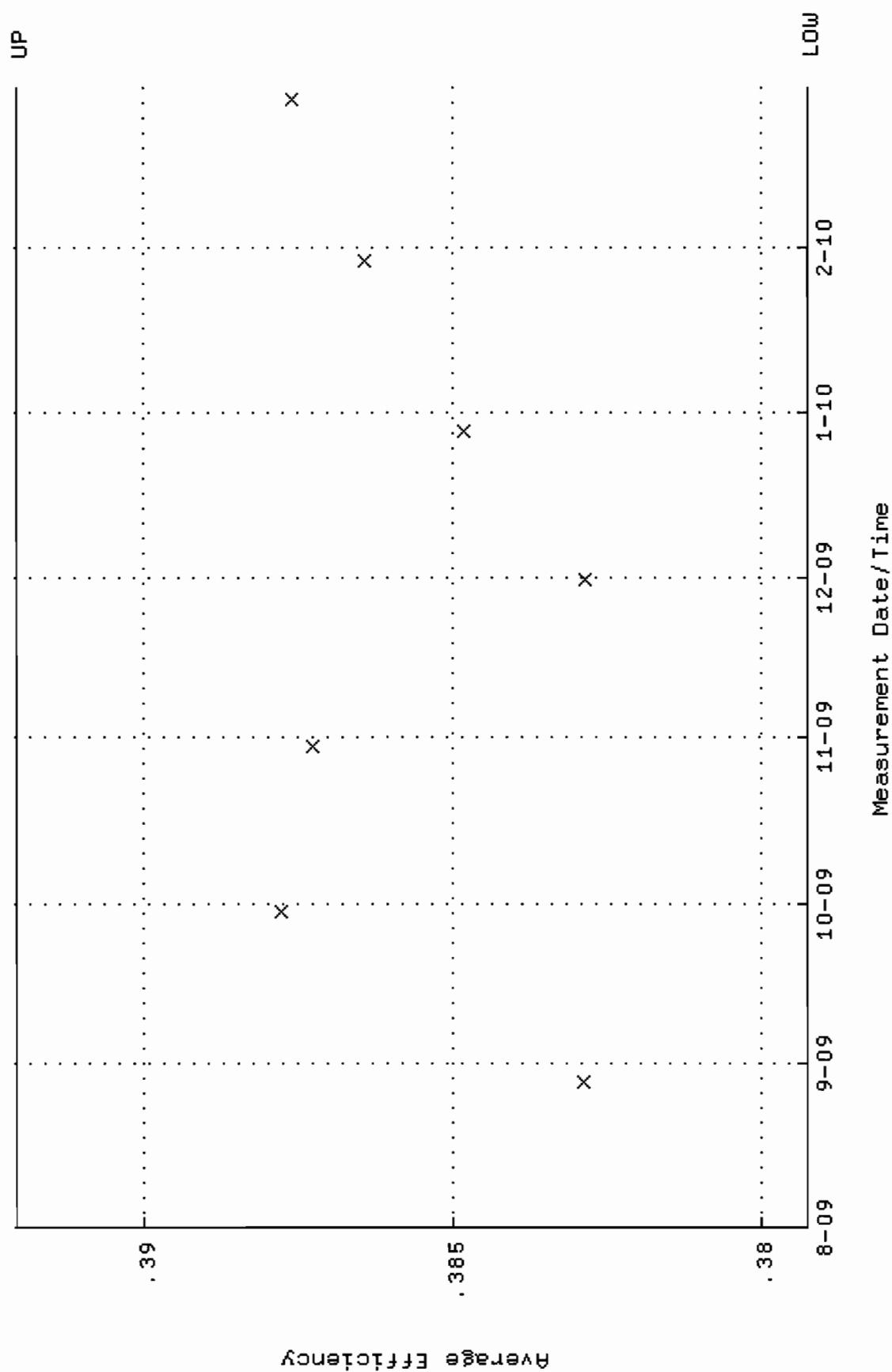
QA filename : DKA100:[ENV\_ALPHA.QA.W]W226.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:07:57 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 86.7273 through 95.1093



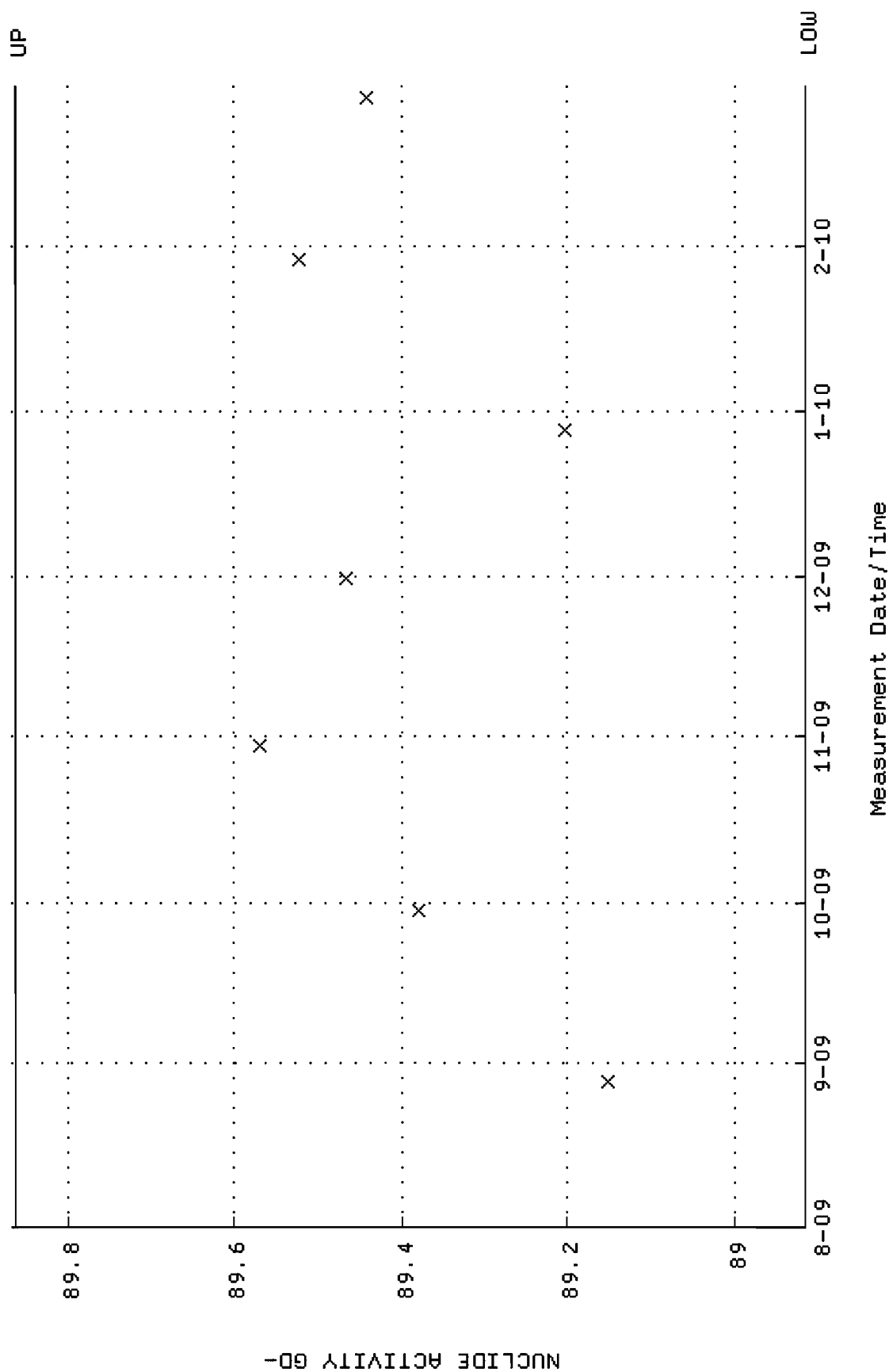
QA filename : DKA100:[ENV\_ALPHA.QA.B]B226.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:20 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



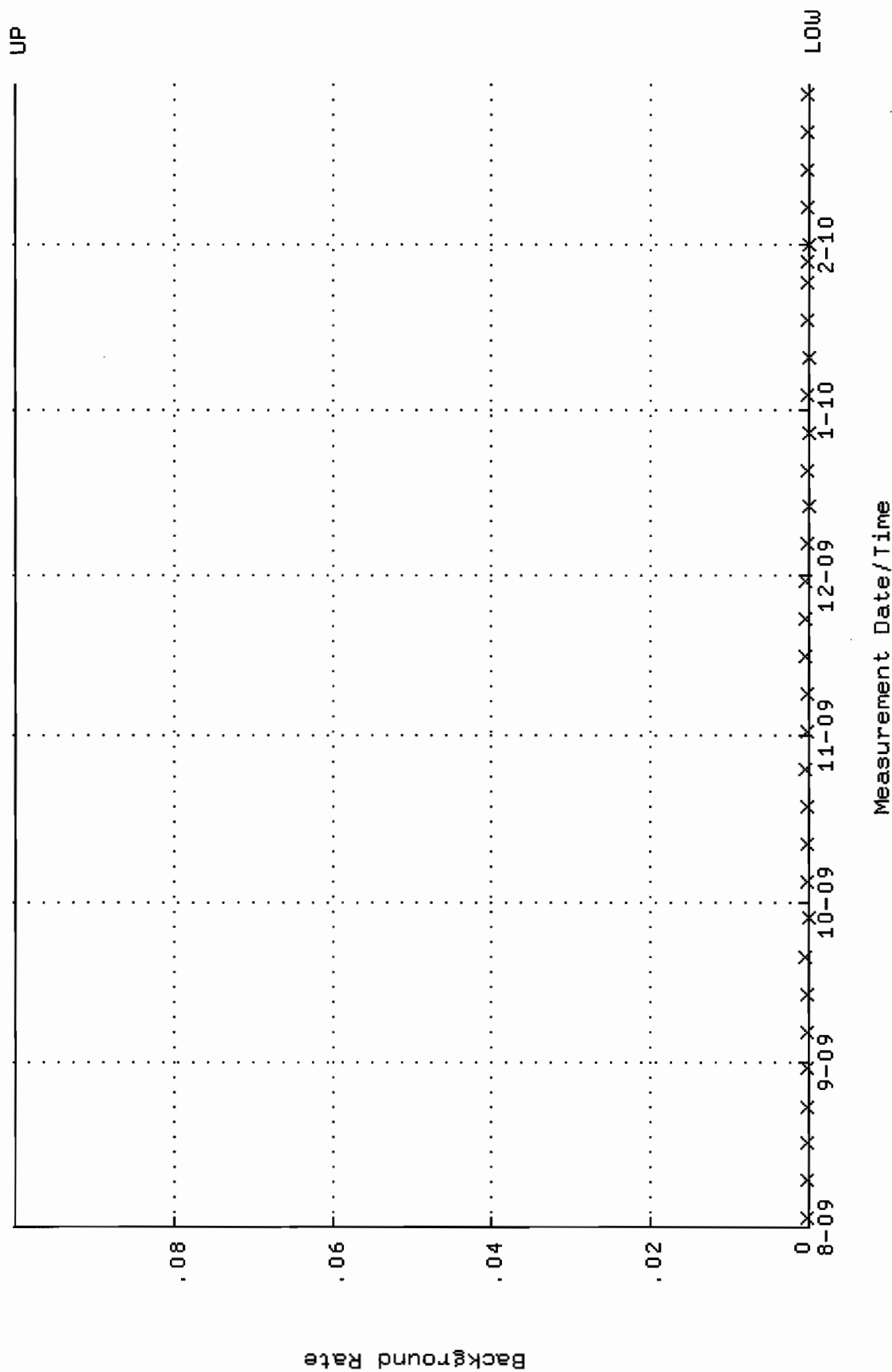
QA filename : DKA100:[ENV\_ALPHA.QA.W]W227.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:08:03 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.379260 through 0.392050



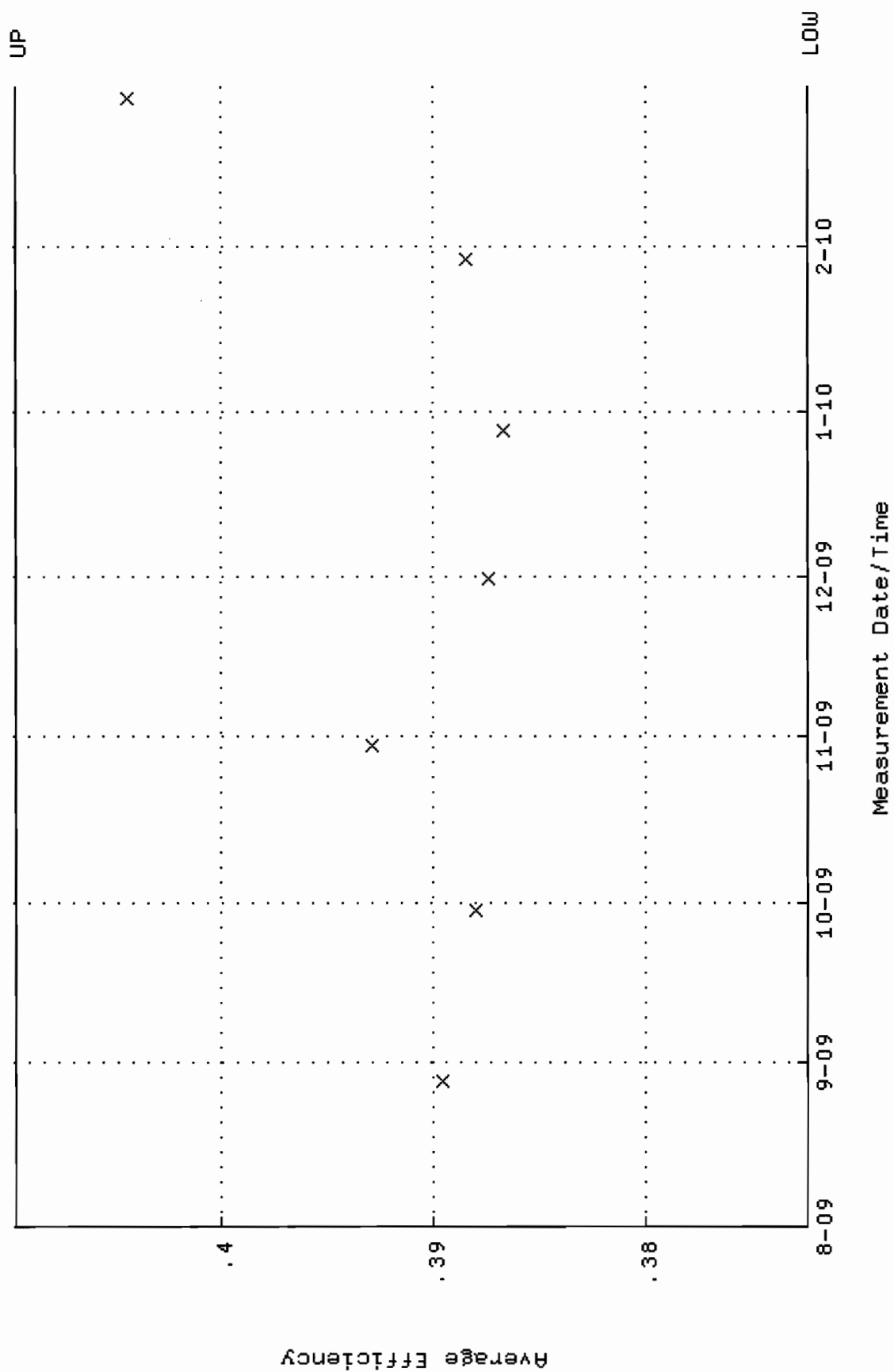
QA filename : DKA100:[ENV\_ALPHA.QA.W]W227.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:08:03 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 88.9145 through 89.8637



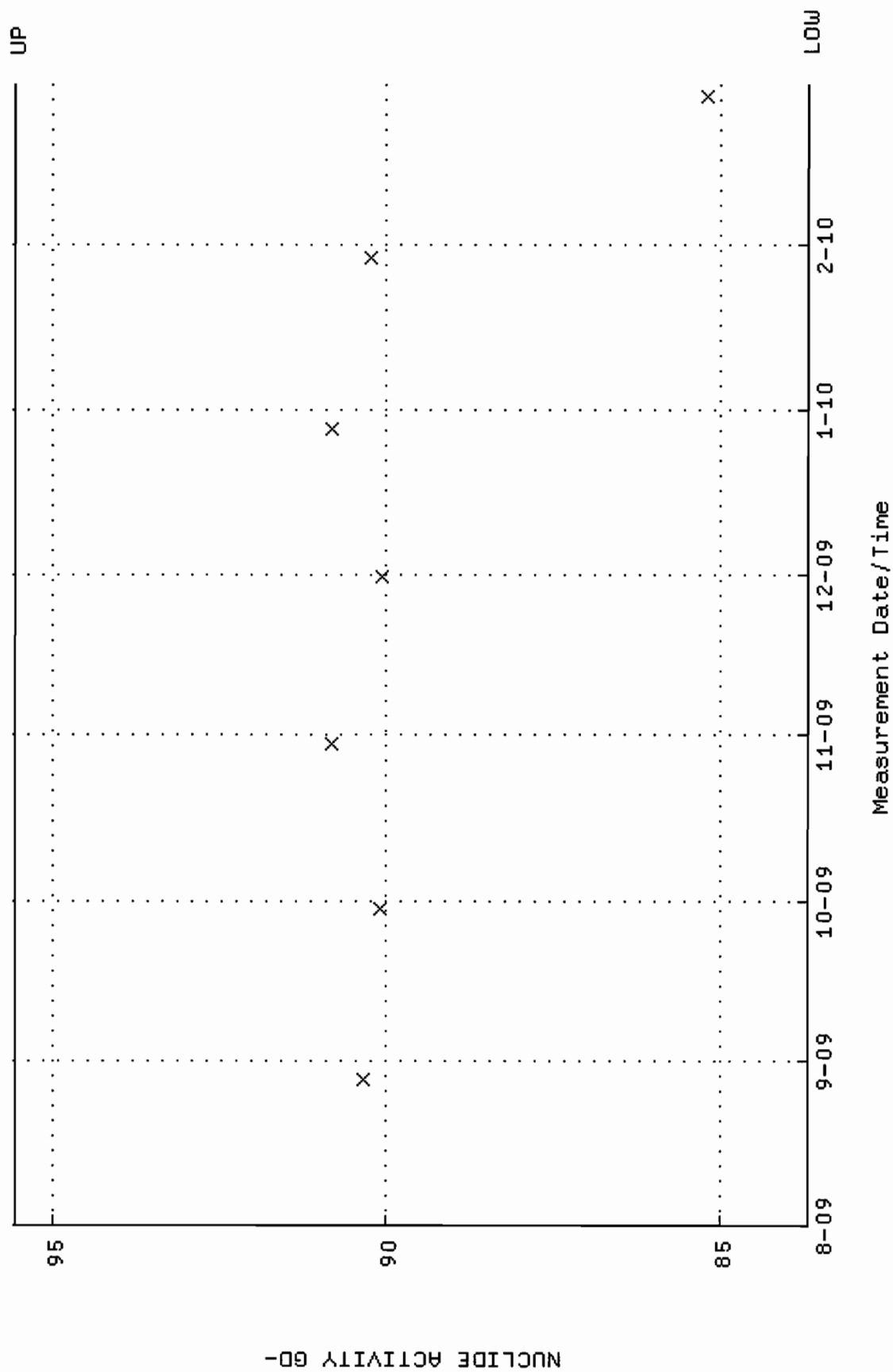
QA filename : DKA100:[ENV\_ALPHA.QA.B]B227.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:24 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



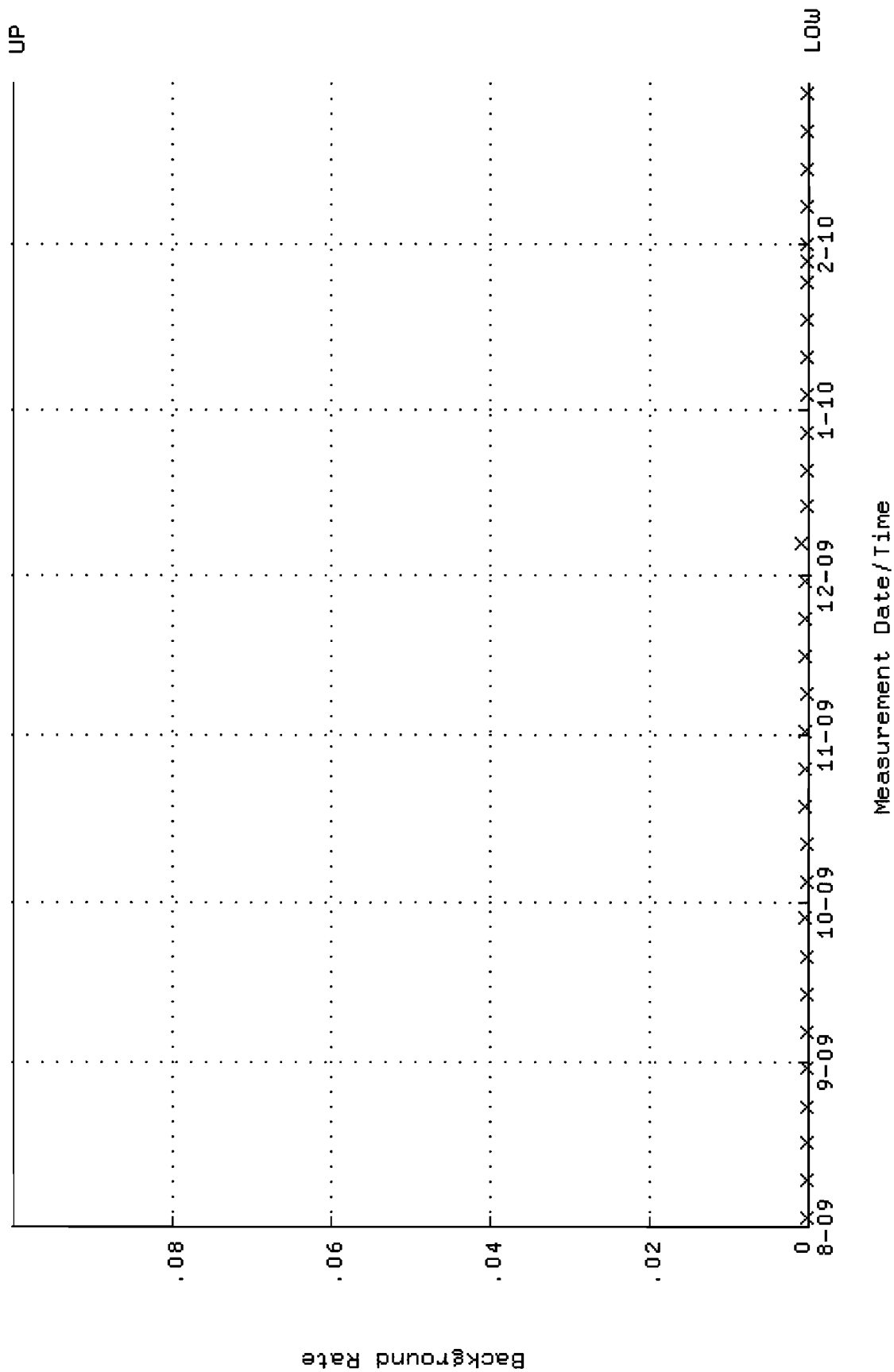
QA filename : DKA100:[ENV\_ALPHA.QA.W]W231.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:08:24 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.372352 through 0.409678



QA filename : DKA100:[ENV\_ALPHA.QA.W]W231.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:08:24 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 83.6949 through 95.5595

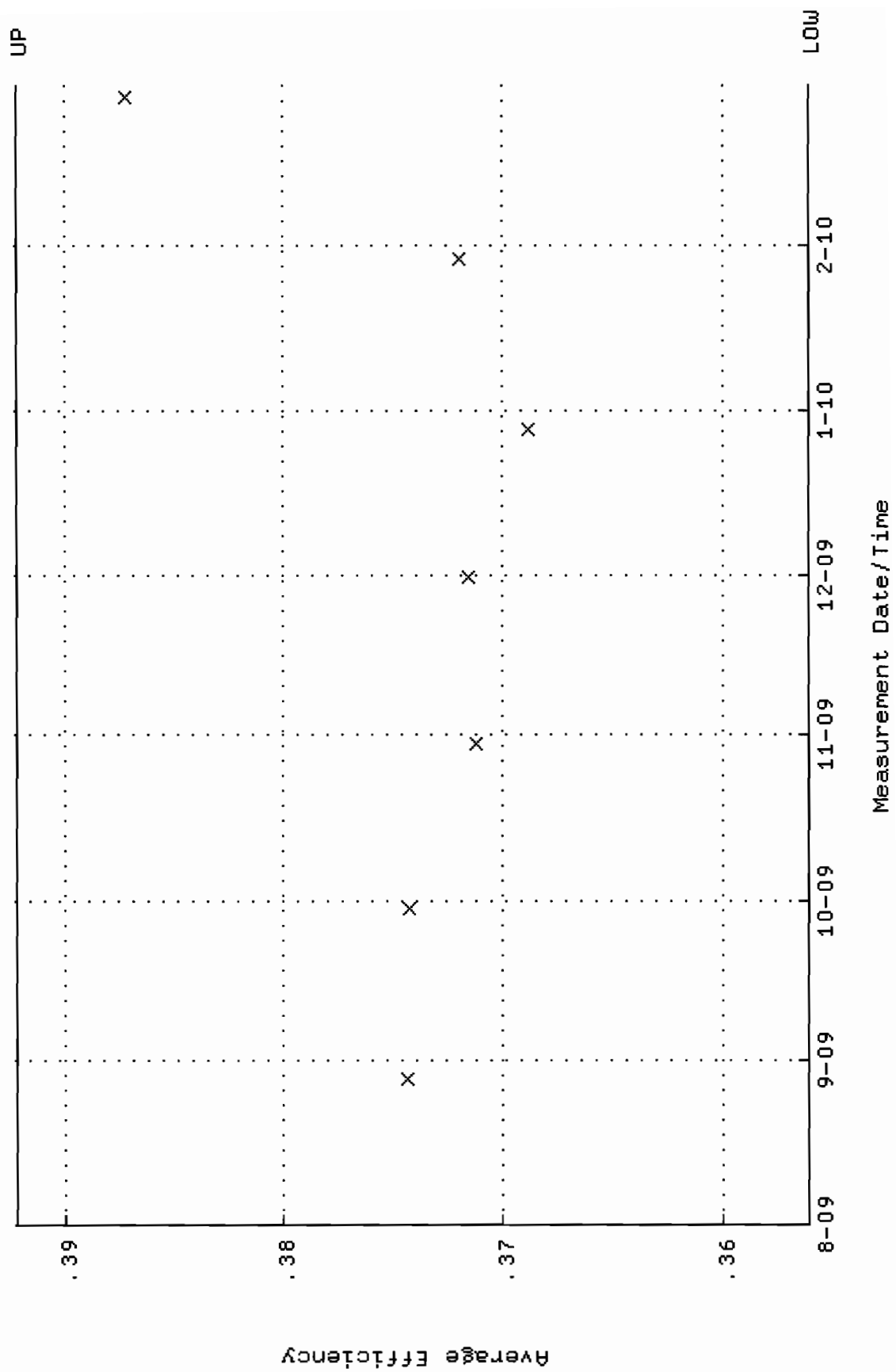


QA filename : DKA100:[ENV\_ALPHA.QA.B]B231.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:43 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

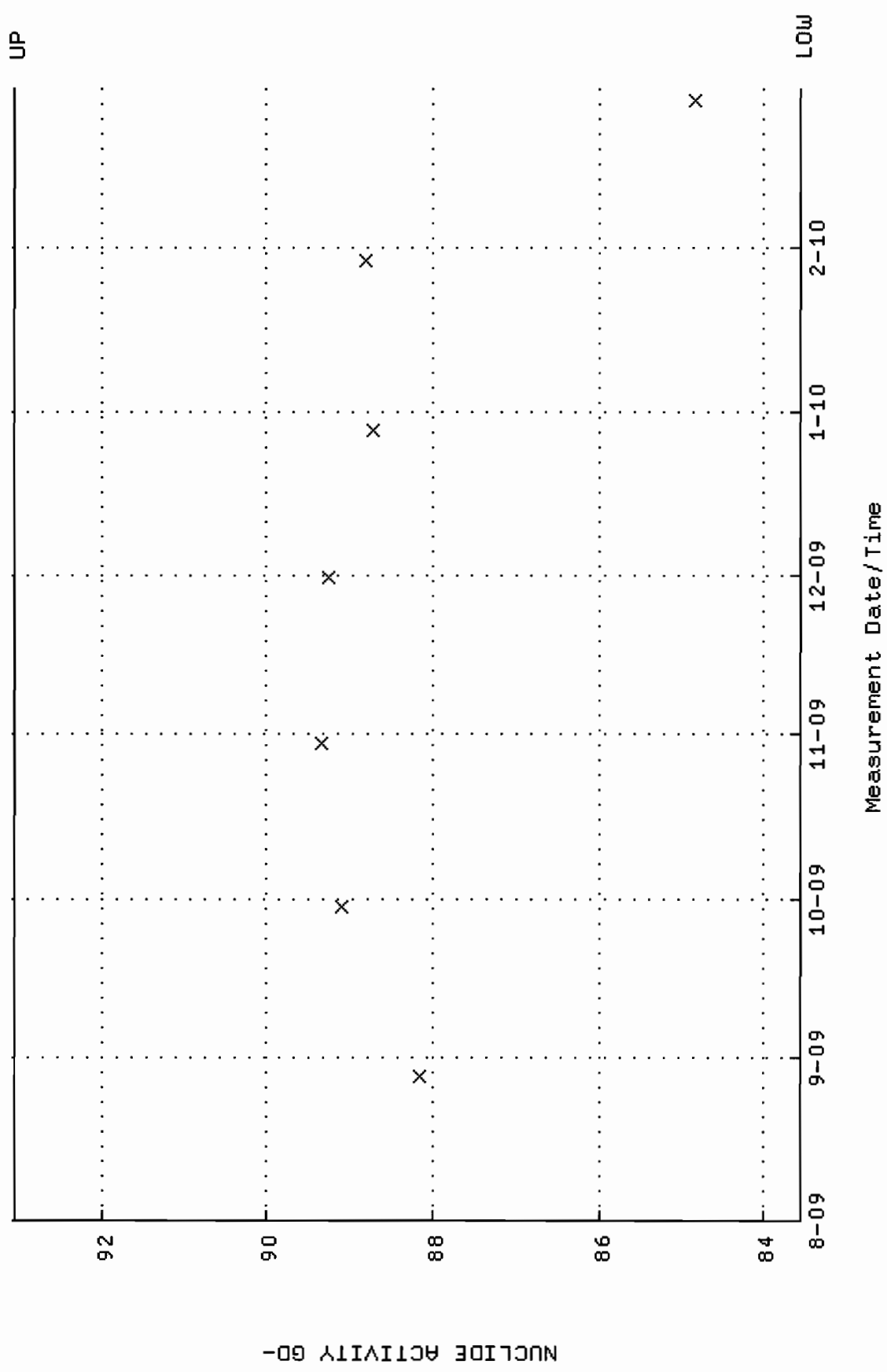




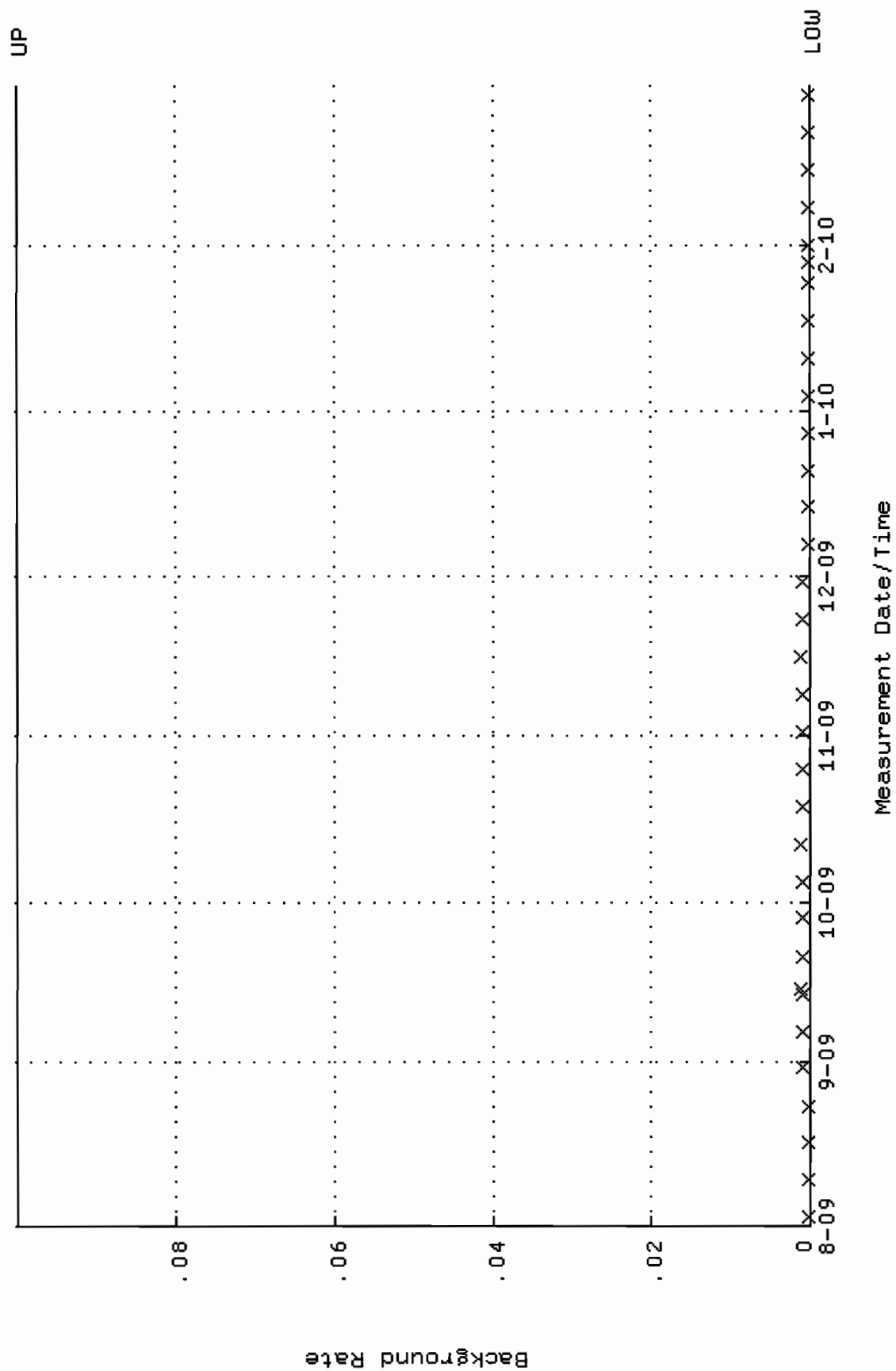
QA filename : DKA100:[ENV\_ALPHA.QA.W]W232.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:08:30 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.356063 through 0.392181



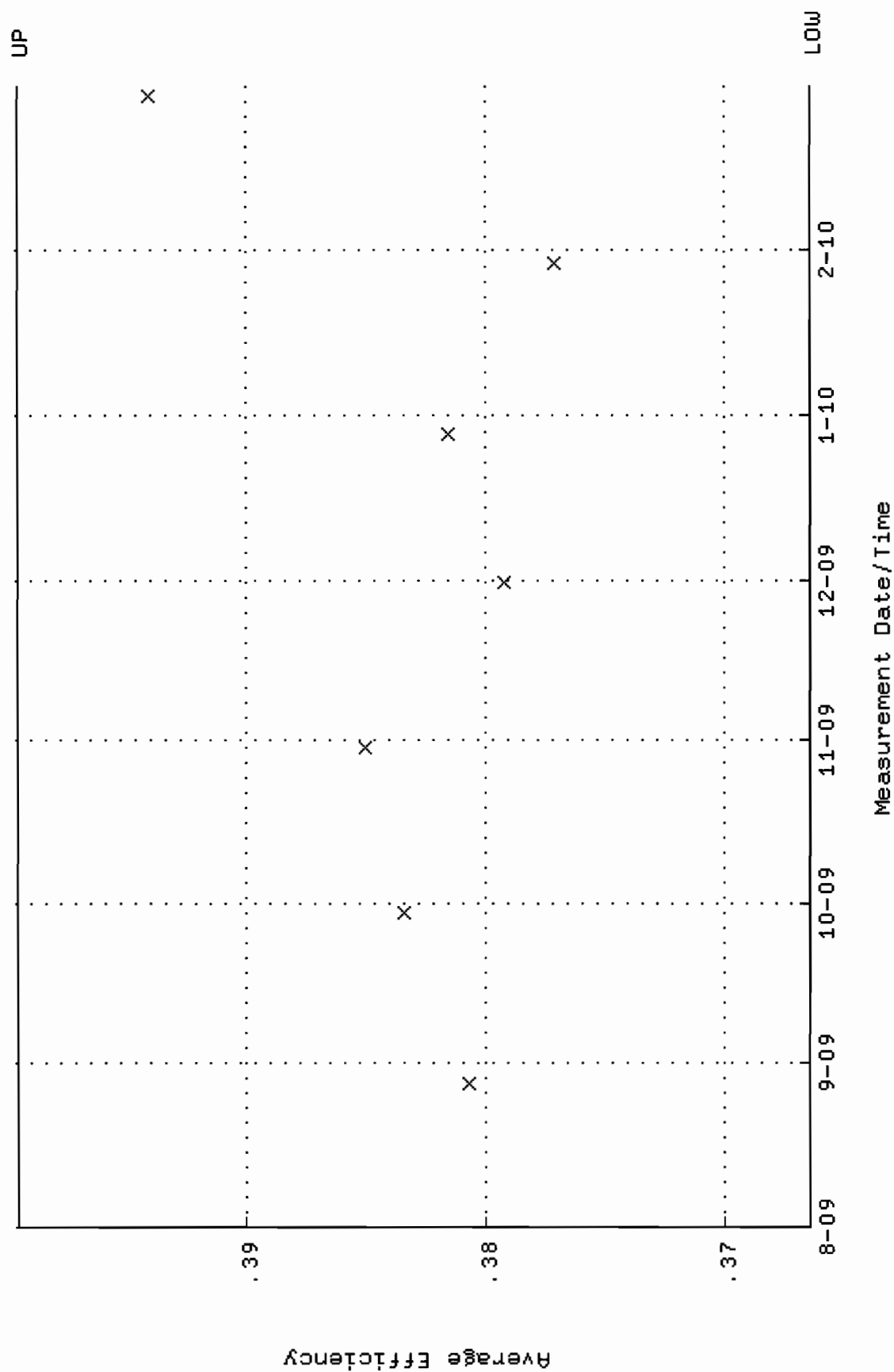
QA filename : DKA100:[ENV\_ALPHA.QA.W]W232.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:08:30 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 83.5615 through 93.0435



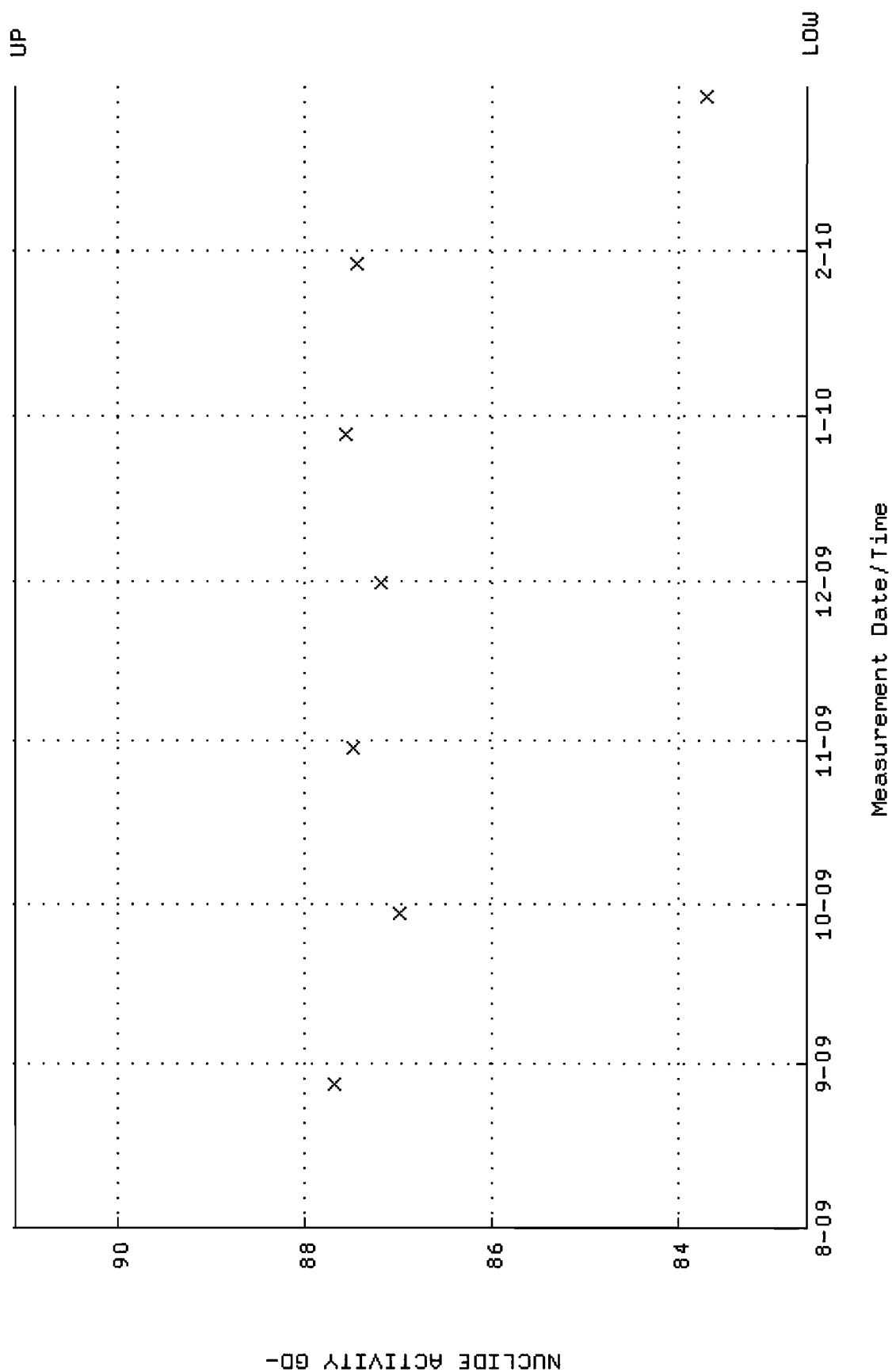
QA filename : DKA100:[ENV\_ALPHA.QA.B]B232.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:47 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



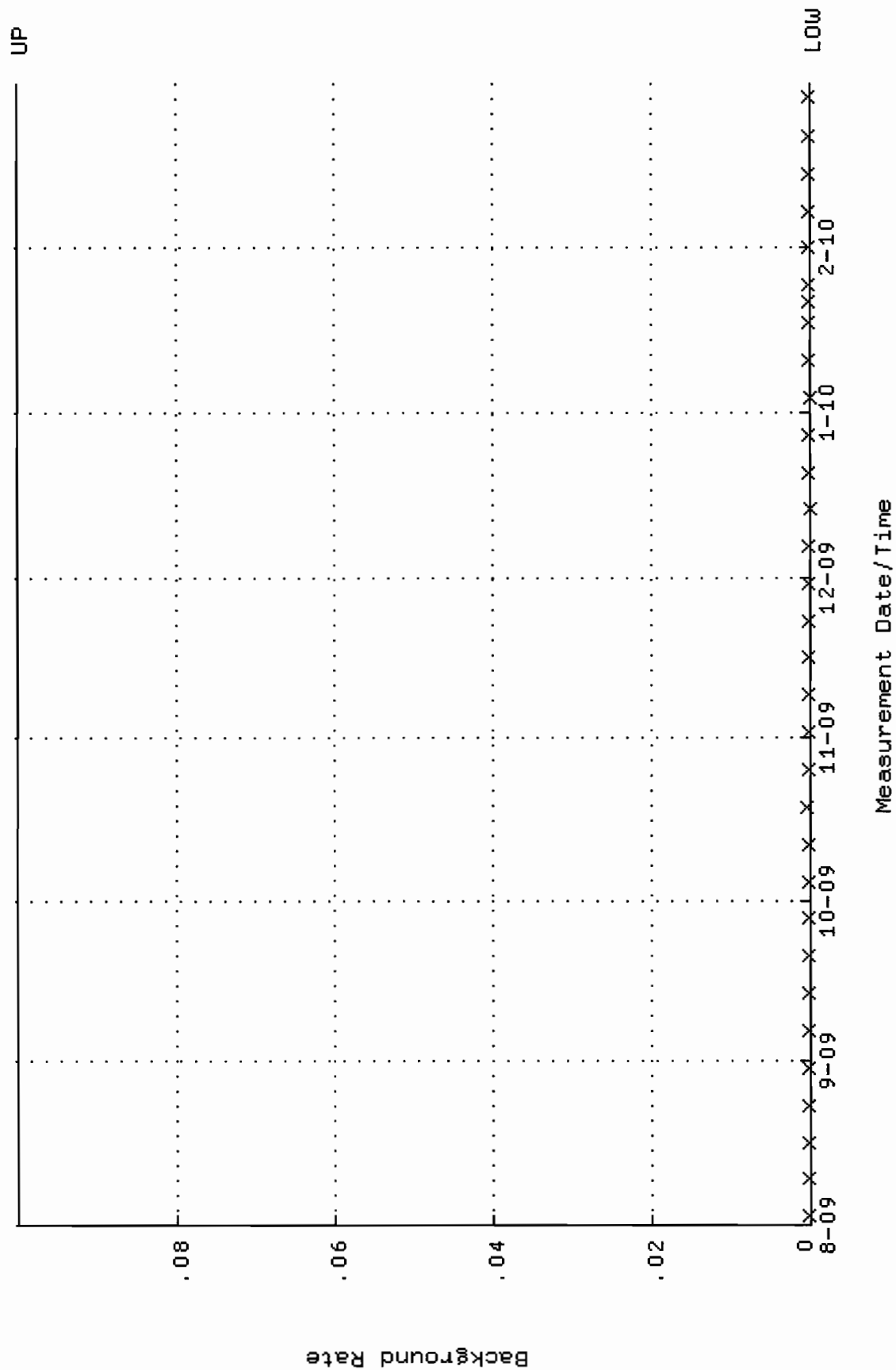
QA filename : DKA100:[ENV\_ALPHA.QA.W]W233.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:08:35 through 3-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.366381 through 0.399563



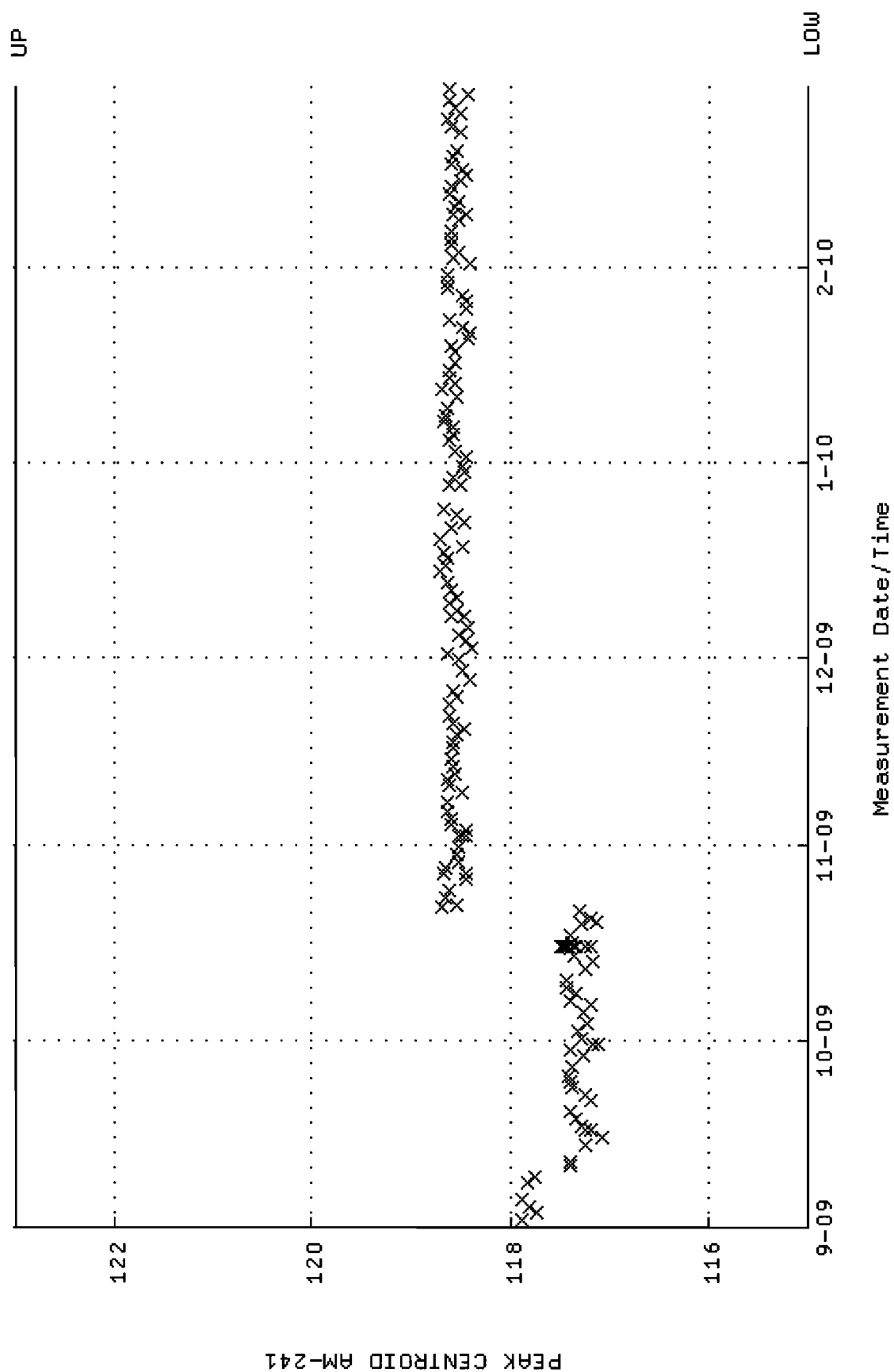
QA filename : DKA100:[ENV\_ALPHA.QA.W]W233.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:08:35 through 3-MAR-2010 12:00:00  
 Lower/Upper Lmts: 82.6177 through 91.1049



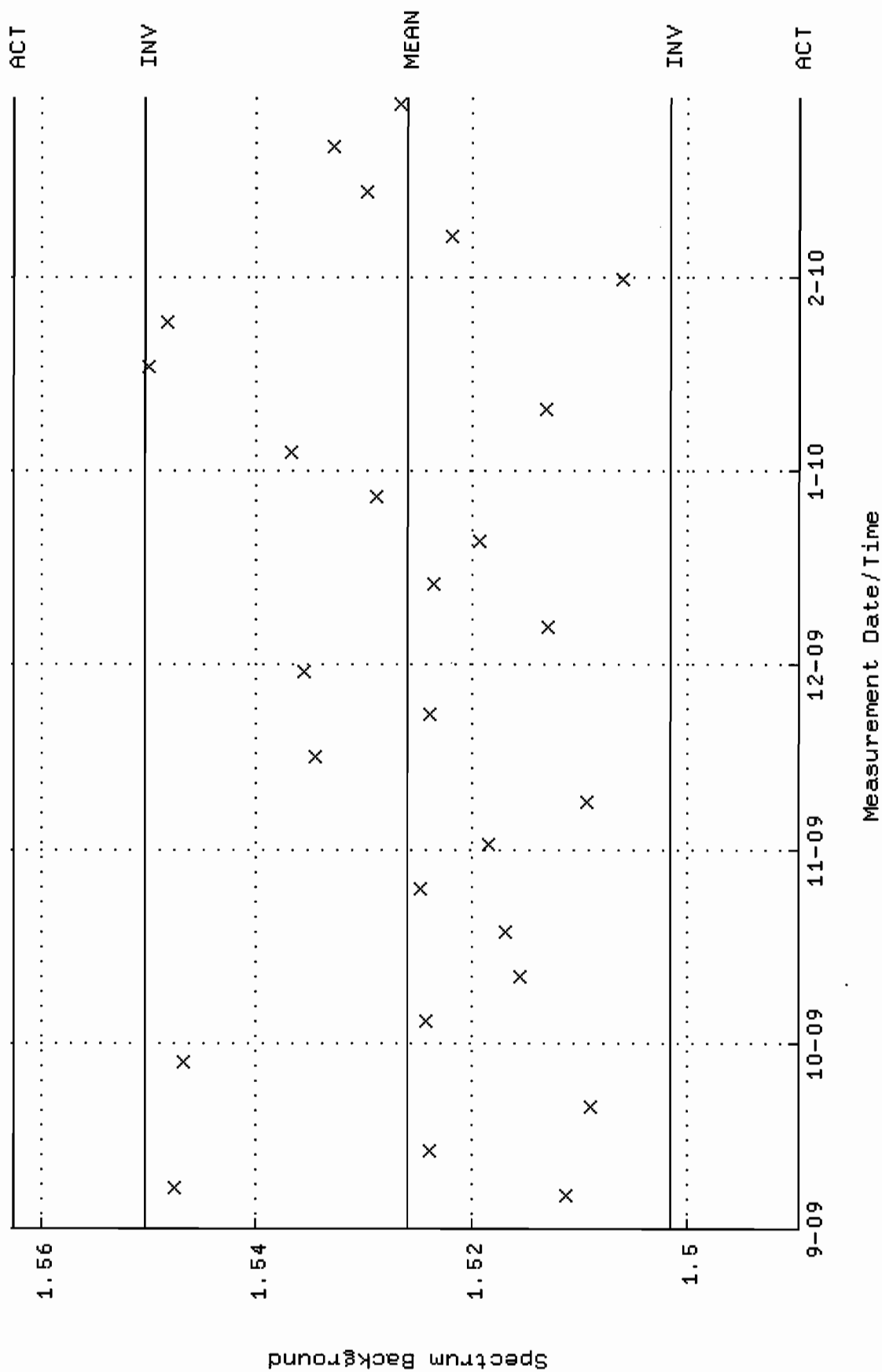
QA filename : DKA100:[ENV\_ALPHA.QA.B]B233.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:52 through 3-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[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

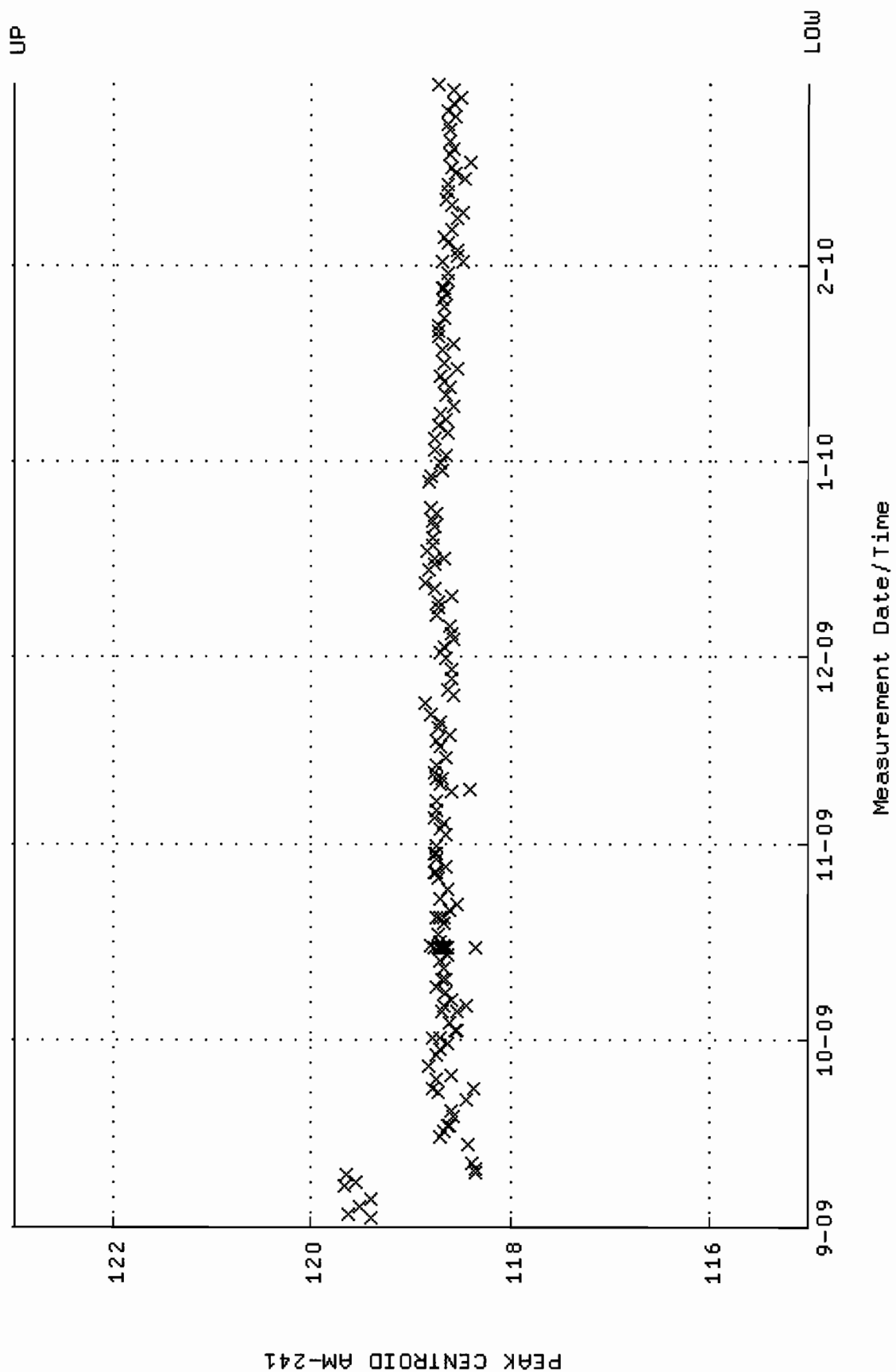


QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM06.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:39:28 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.52603 +- 1.215987E-02 (0.80 %)

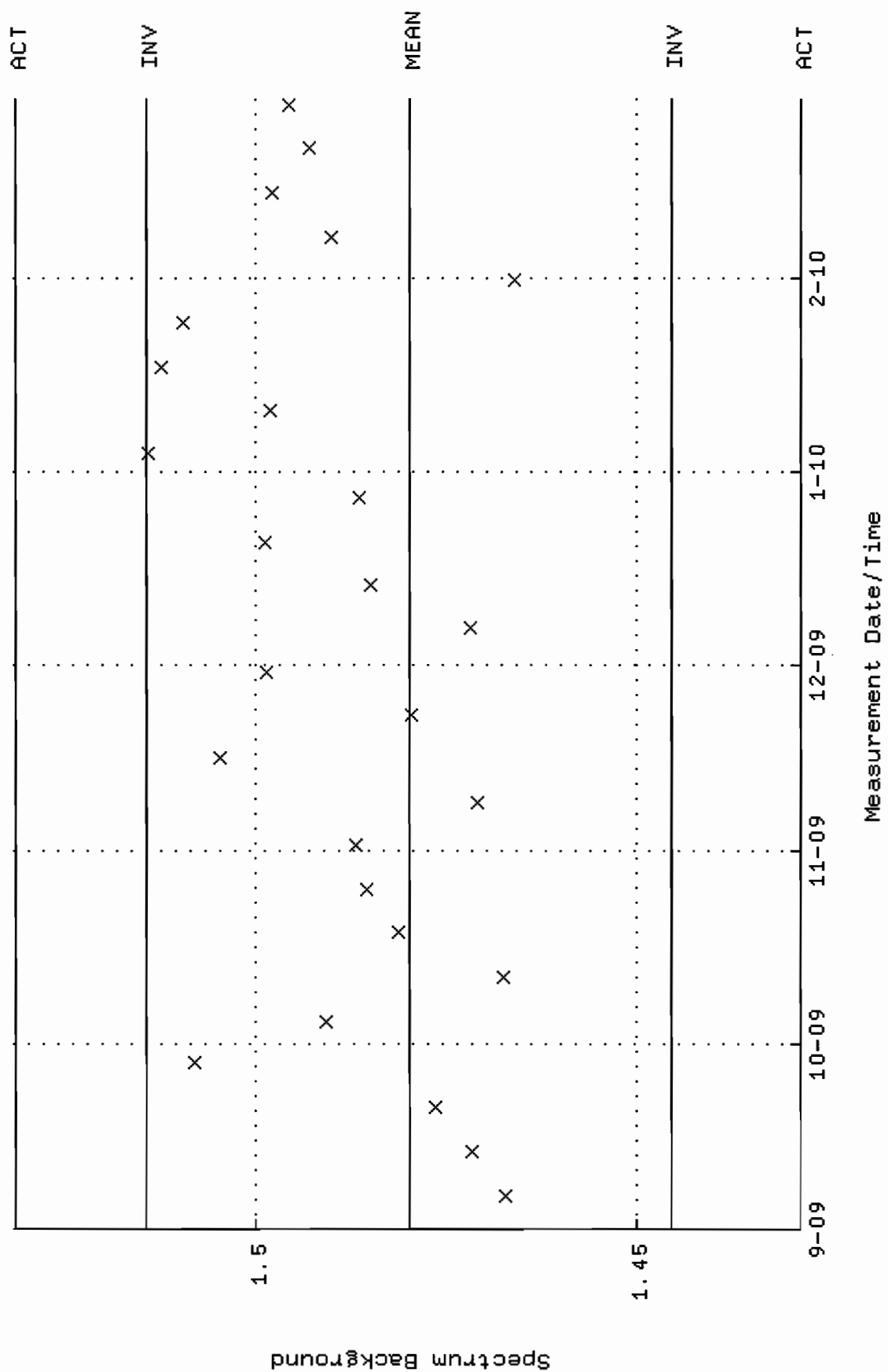




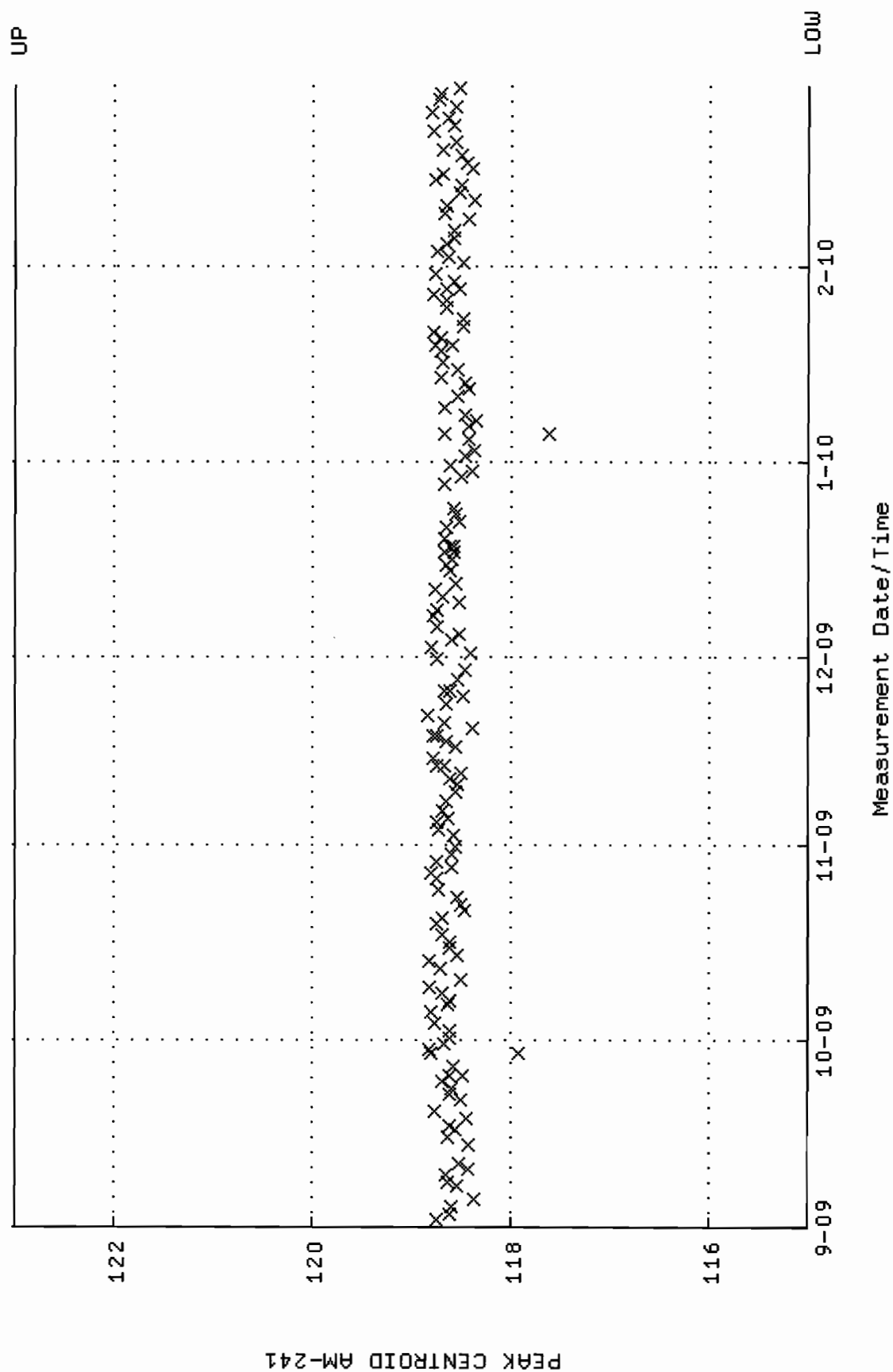
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM10\_500MLMB.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 10:11:44 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



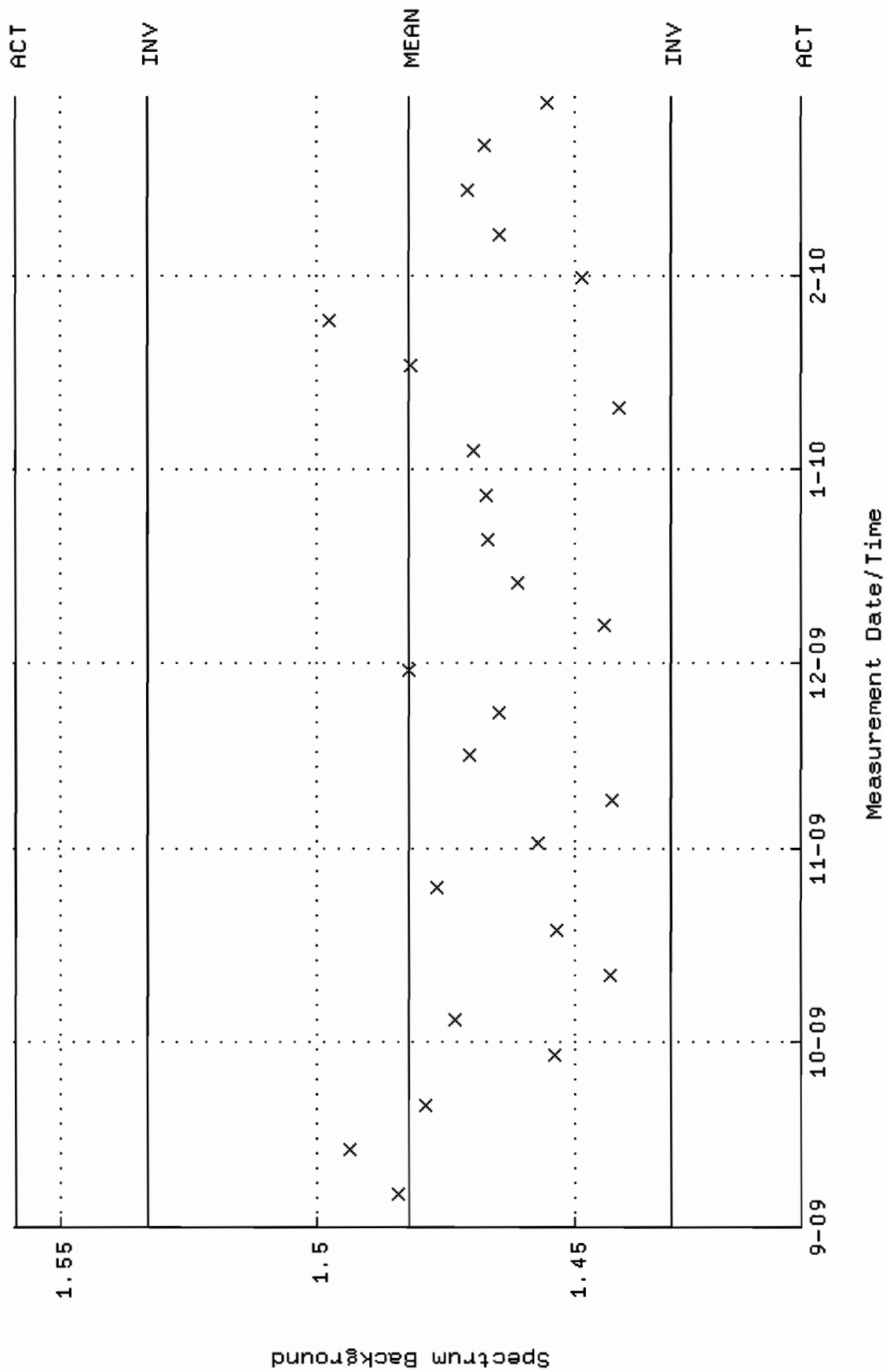
QA filename : DKA100: [CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM10.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:41:20 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.48000 +- 1.723892E-02 (1.16 %)



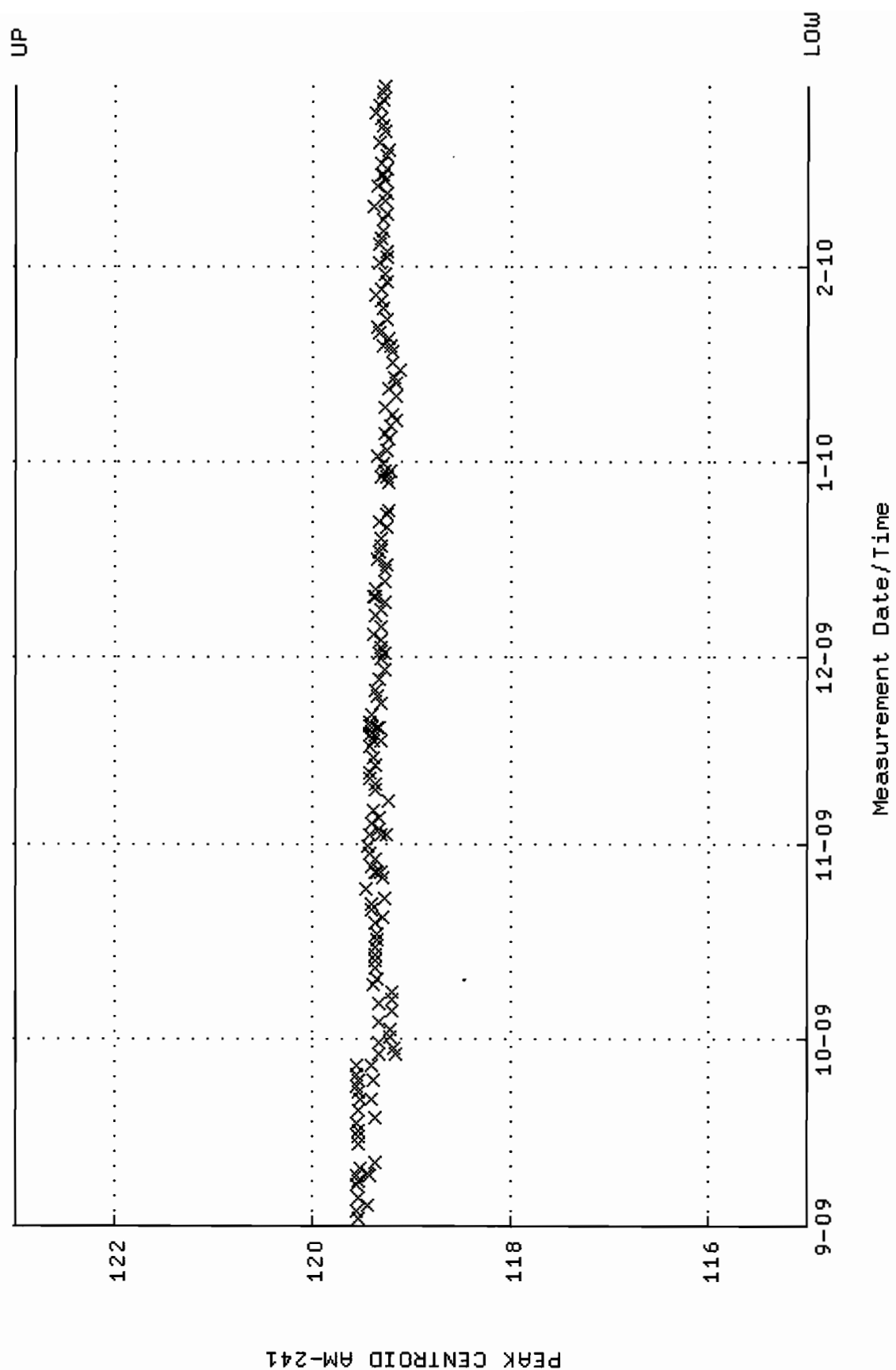
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM14\_2LMB.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 04:40:36 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



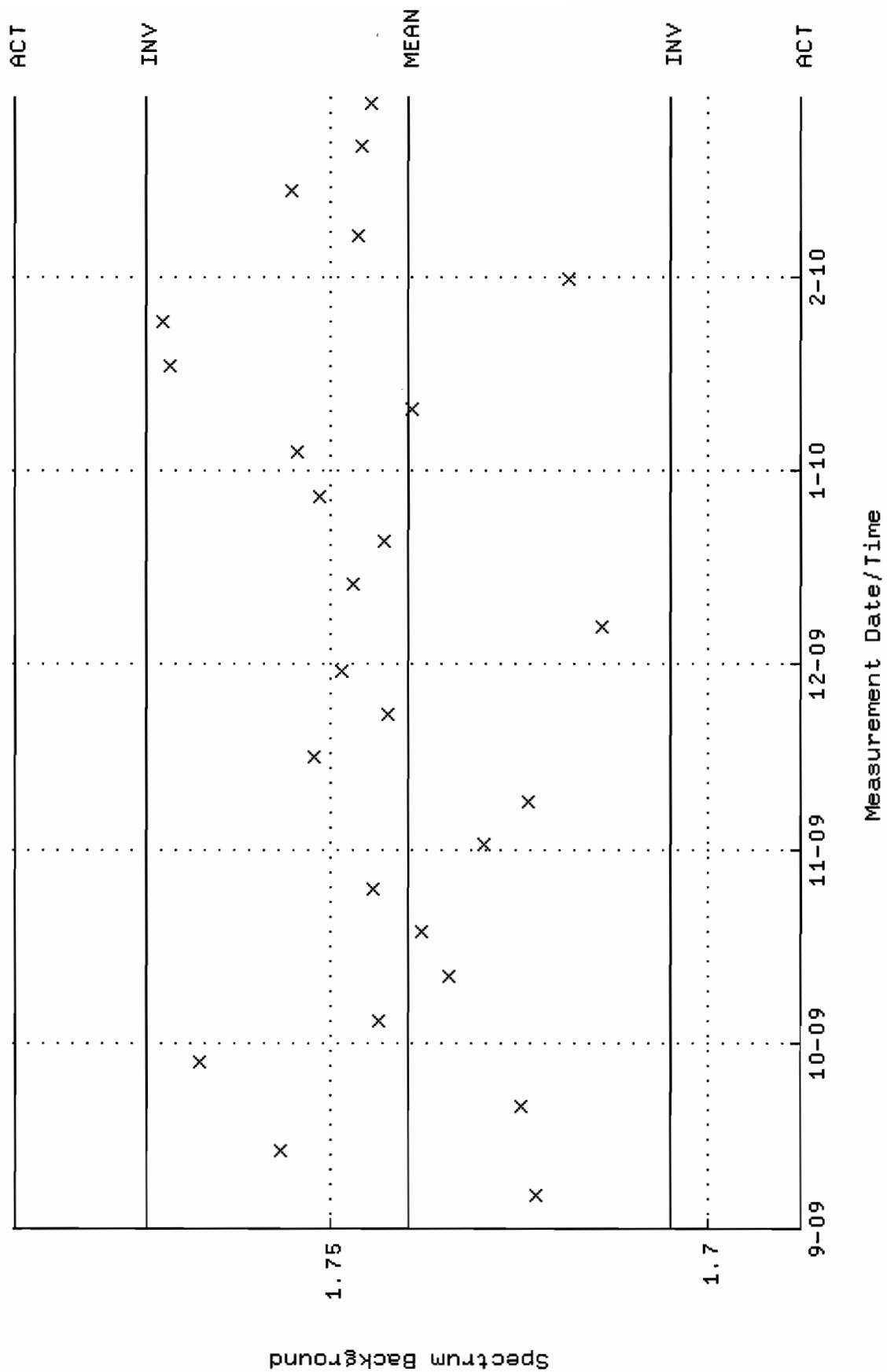
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM14.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:43:20 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.48240 +- 2.535500E-02 (1.71 %)



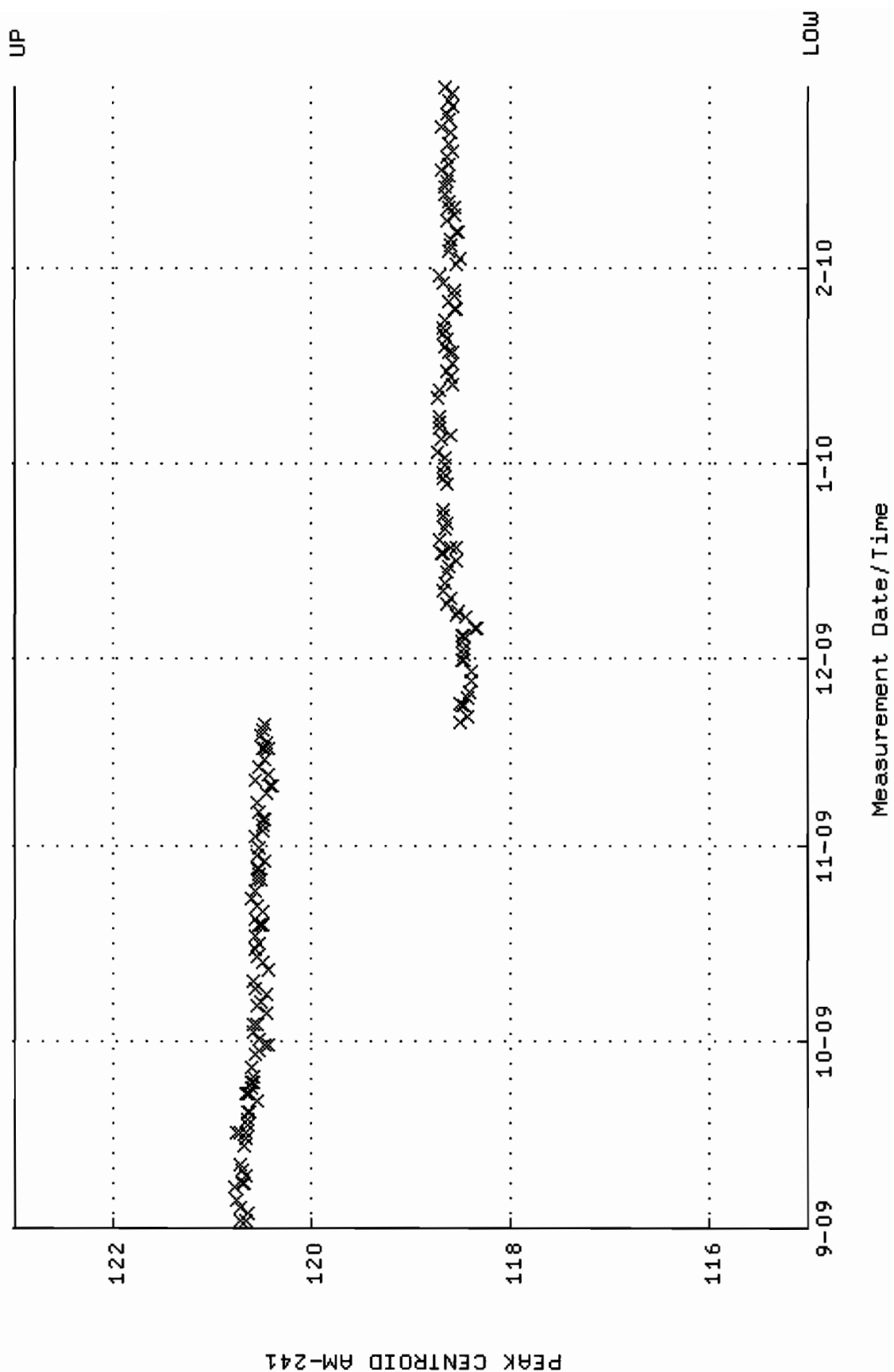
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM16\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 04:53:02 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



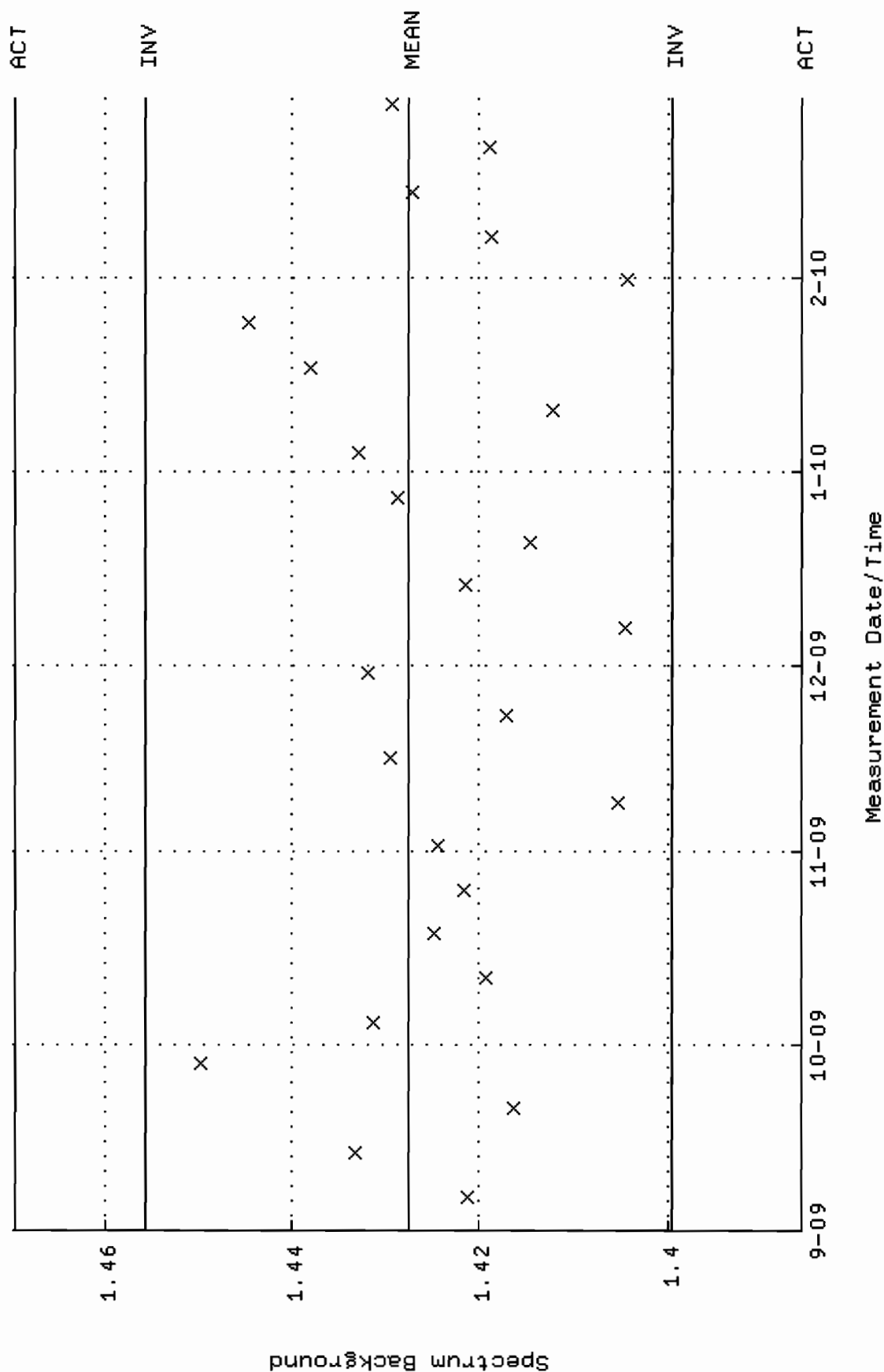
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM16.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:44:09 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.73980 +- 1.729897E-02 (0.99 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM17\_CAN.QAF;1  
Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
Start/End Dates : 2-SEP-2009 05:06:49 through 1-MAR-2010 12:00:00  
Lower/Upper Lmts: 115.000 through 123.000

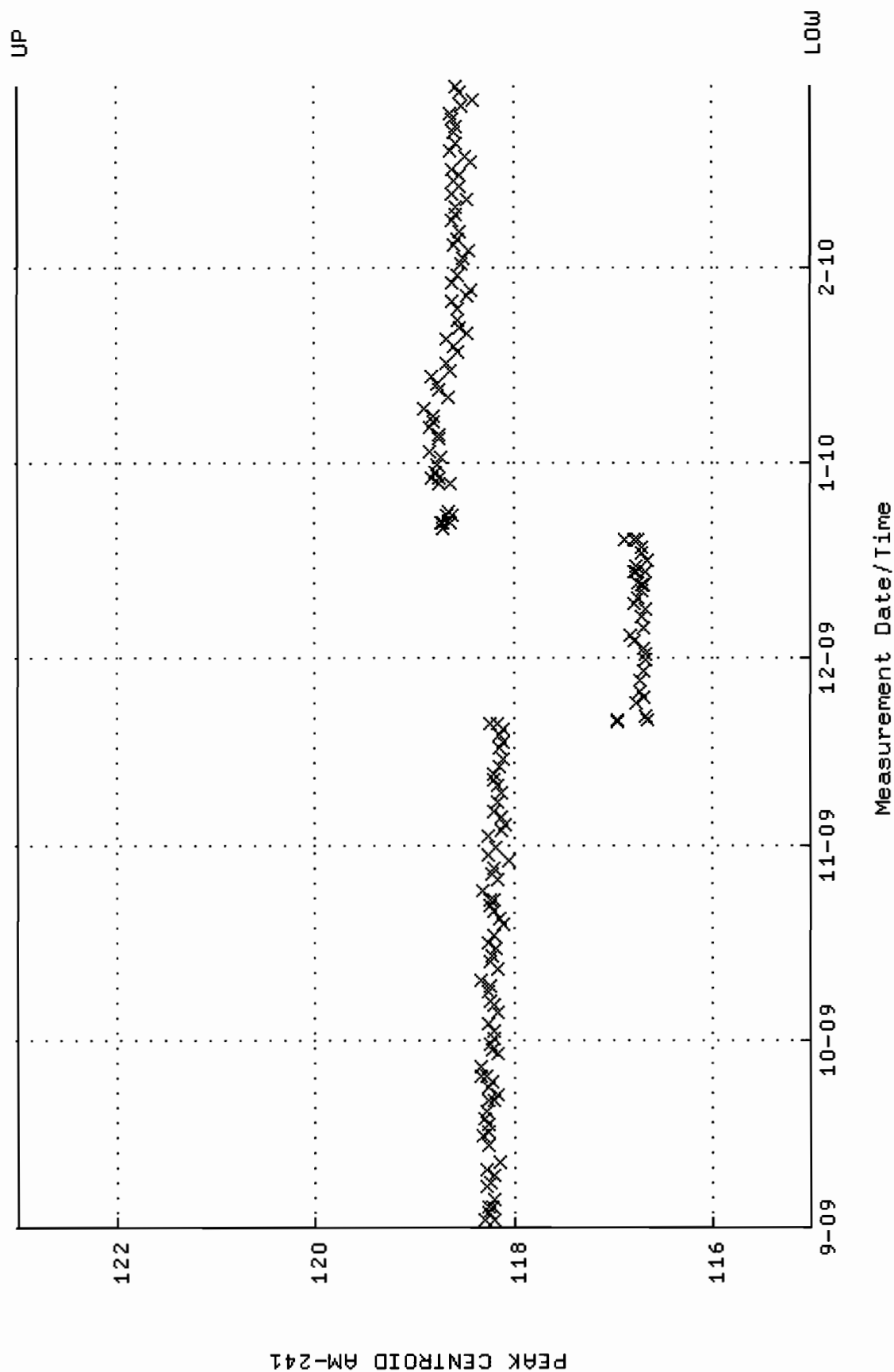


QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM17.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:44:33 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.42766 +- 1.396974E-02 (0.98 %)

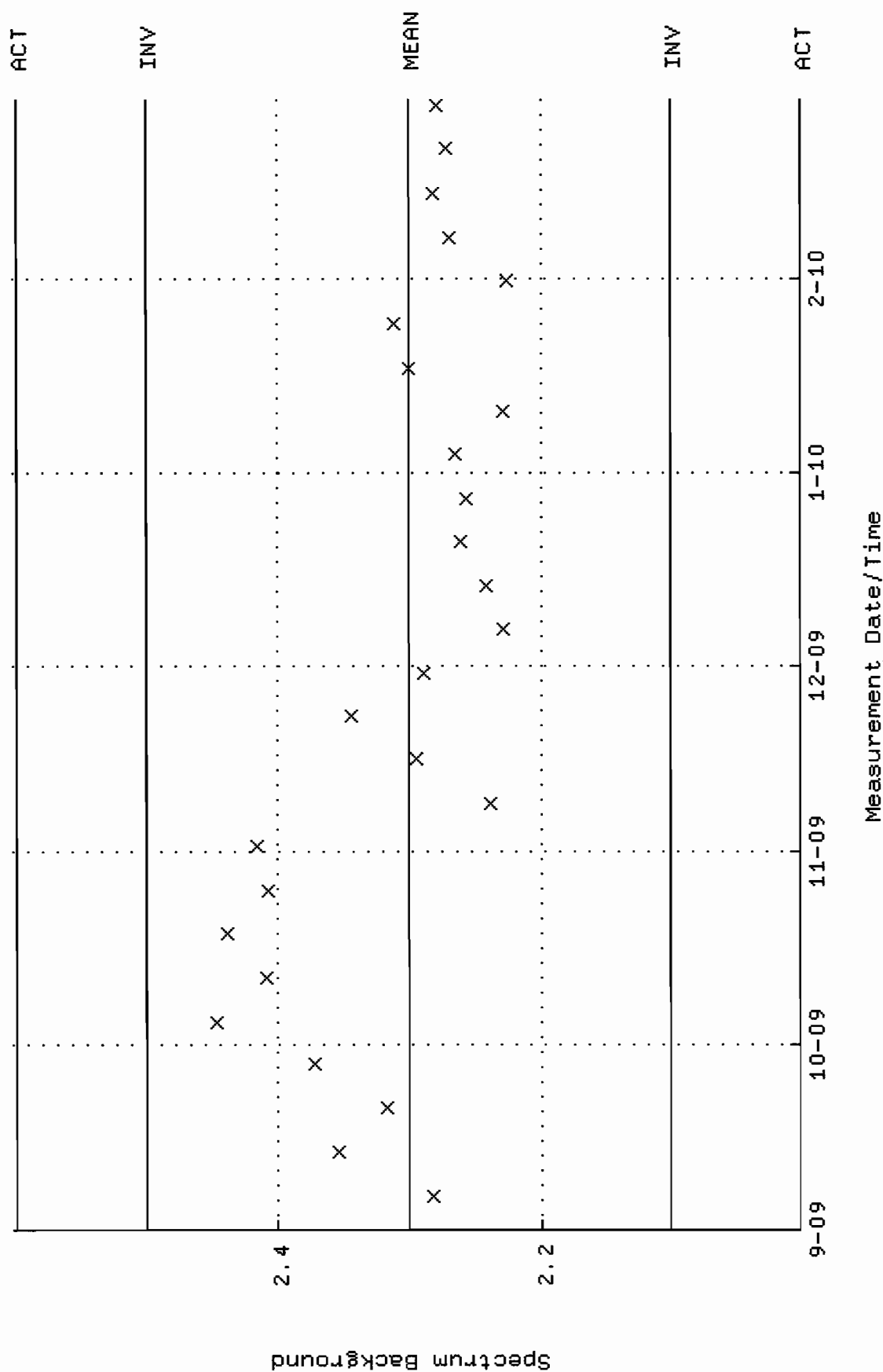




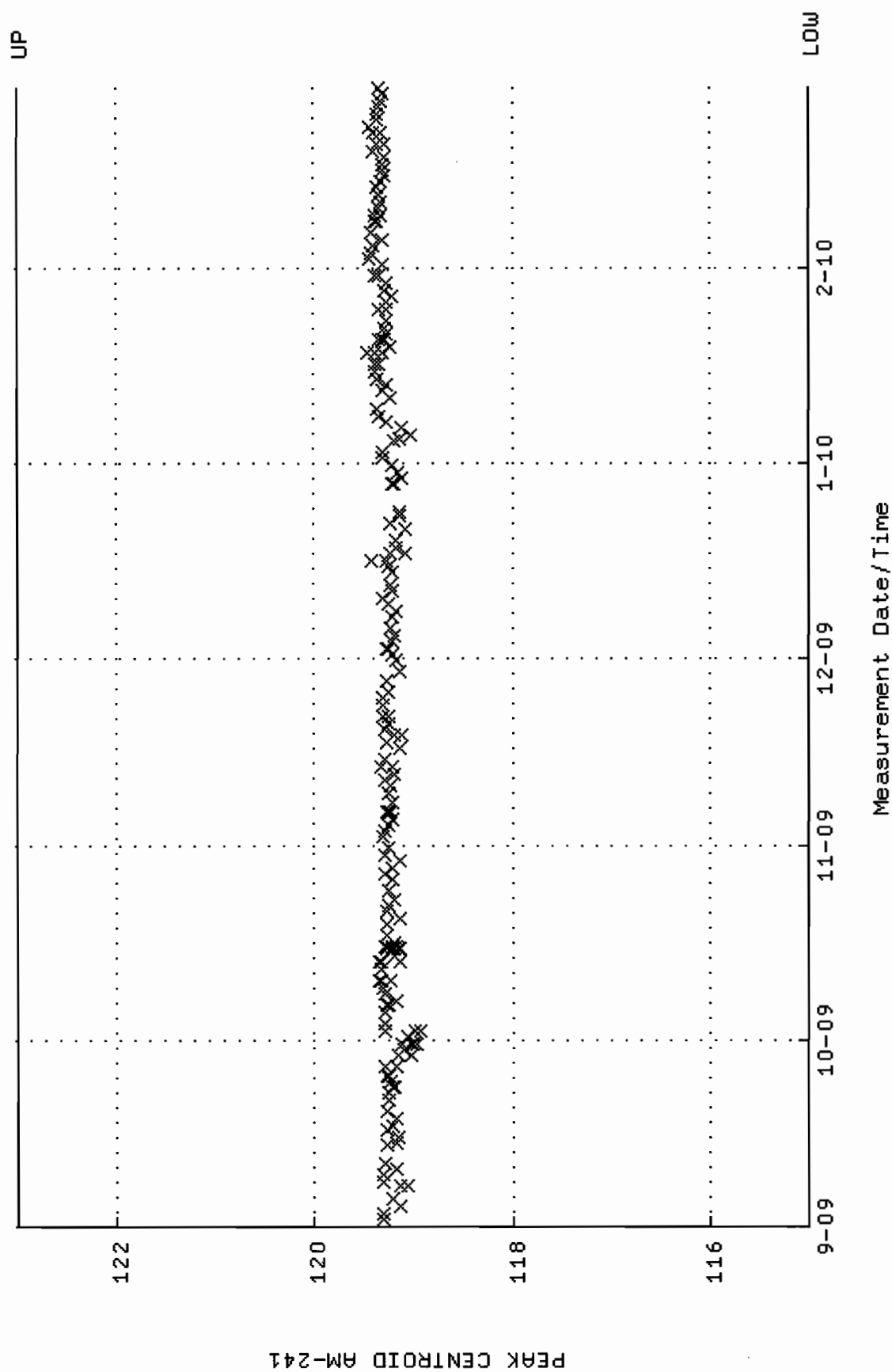
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM18-CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 06:13:07 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



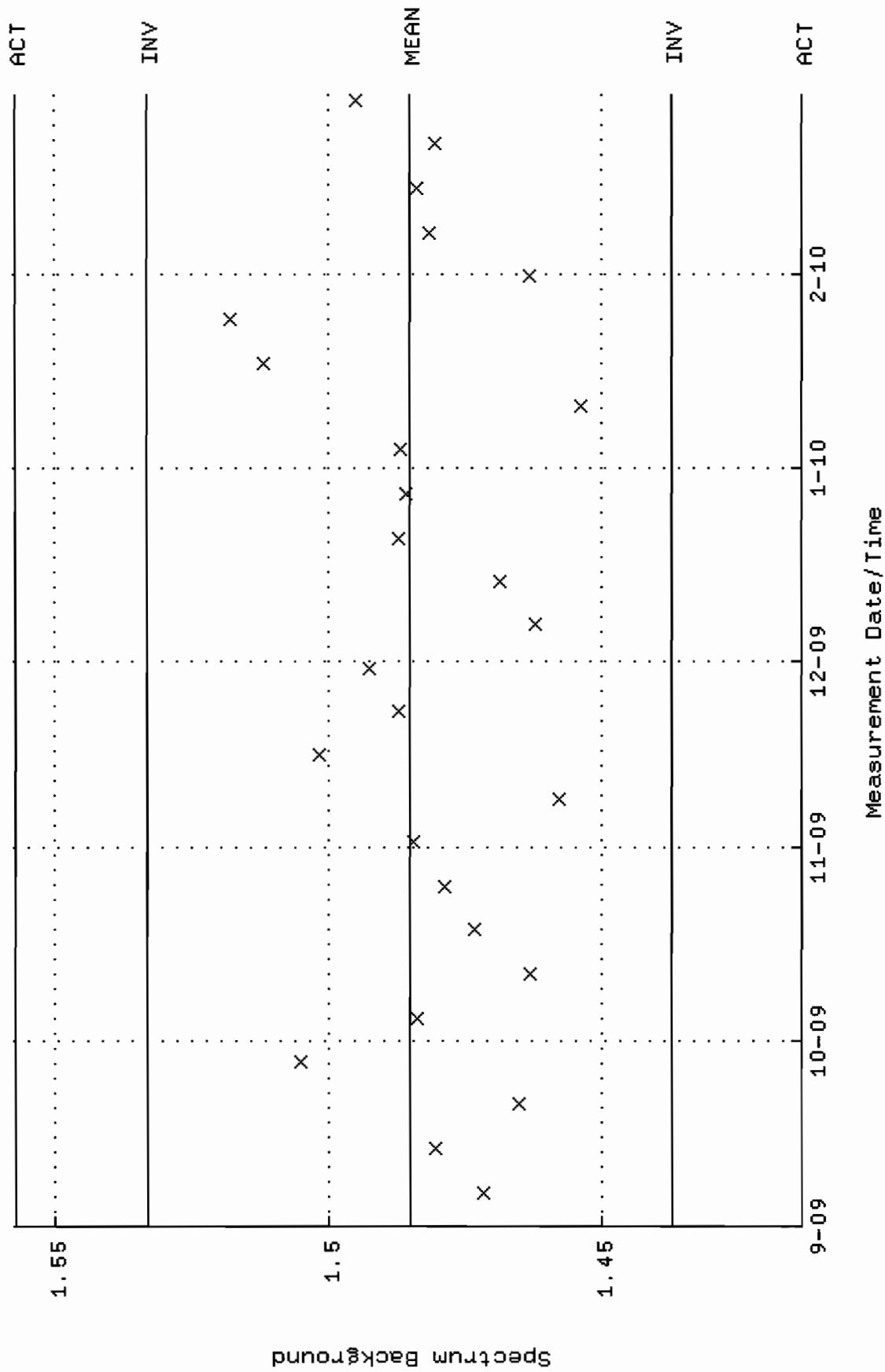
QA filename : DKA100: [CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM18.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:45:03 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 2.30164 +- 9.930626E-02 (4.31 %)



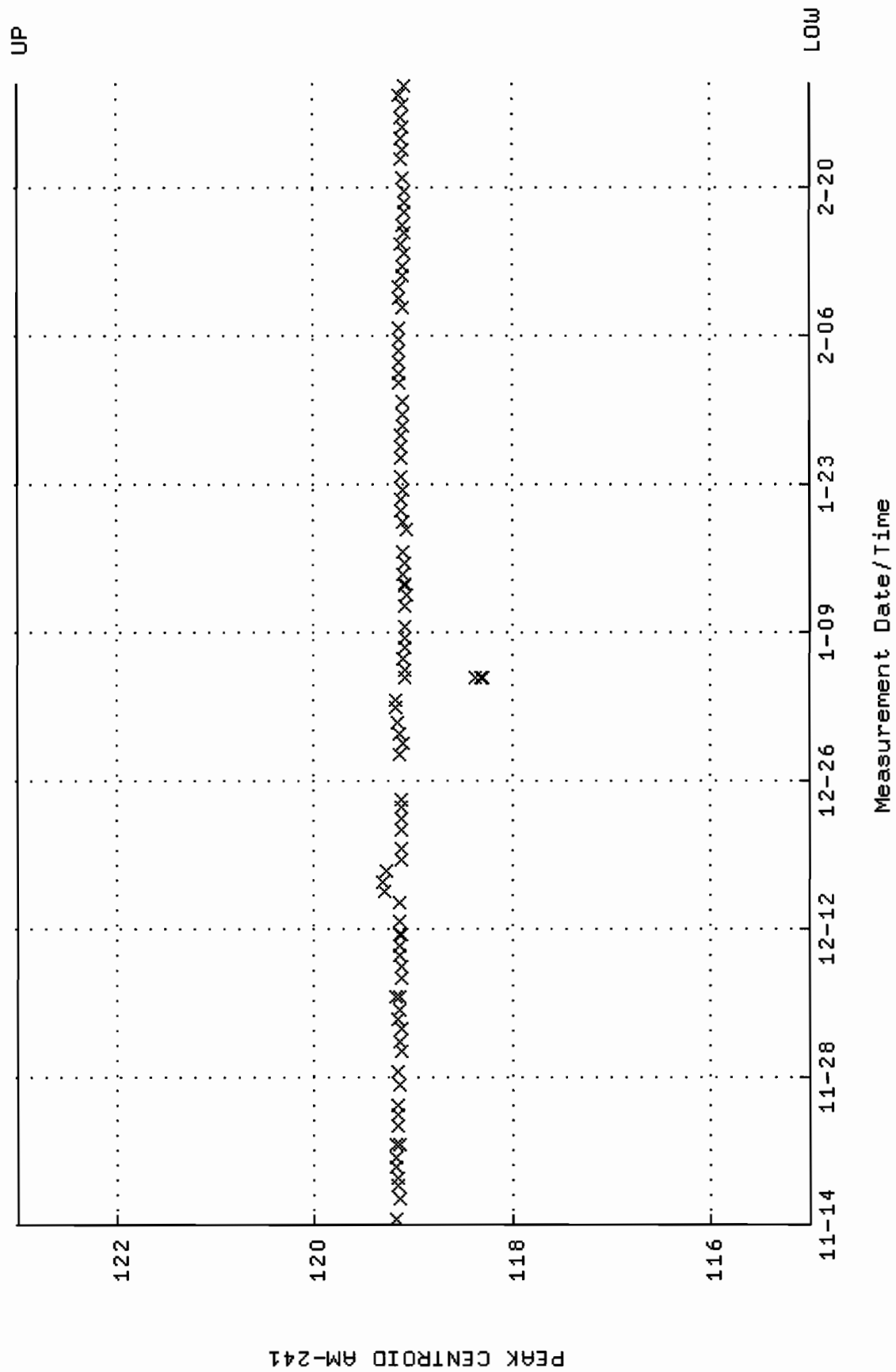
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM20-500MLMB.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 04:53:11 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



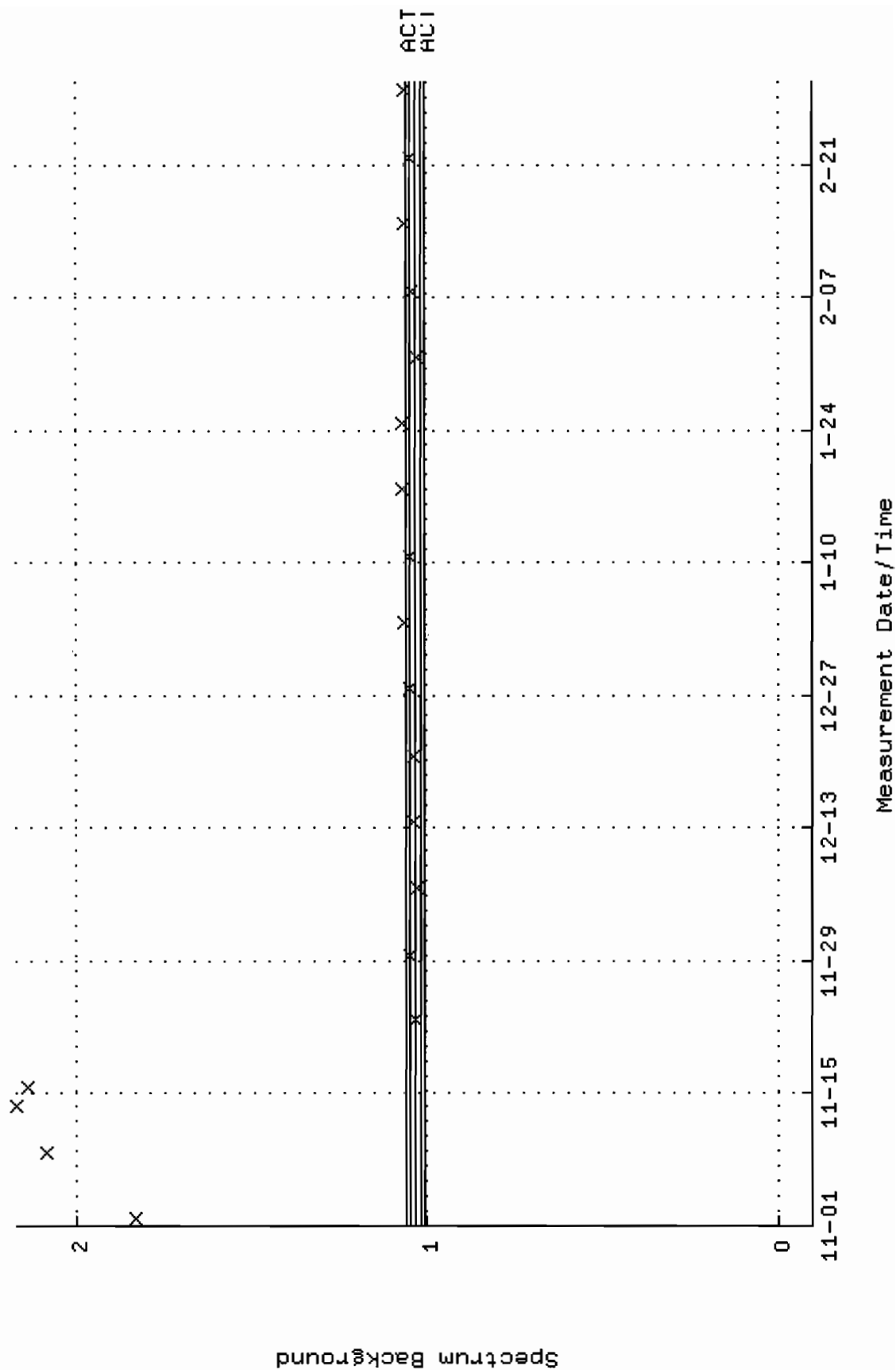
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM20.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:46:04 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.48527 +- 2.388665E-02 (1.61 %)



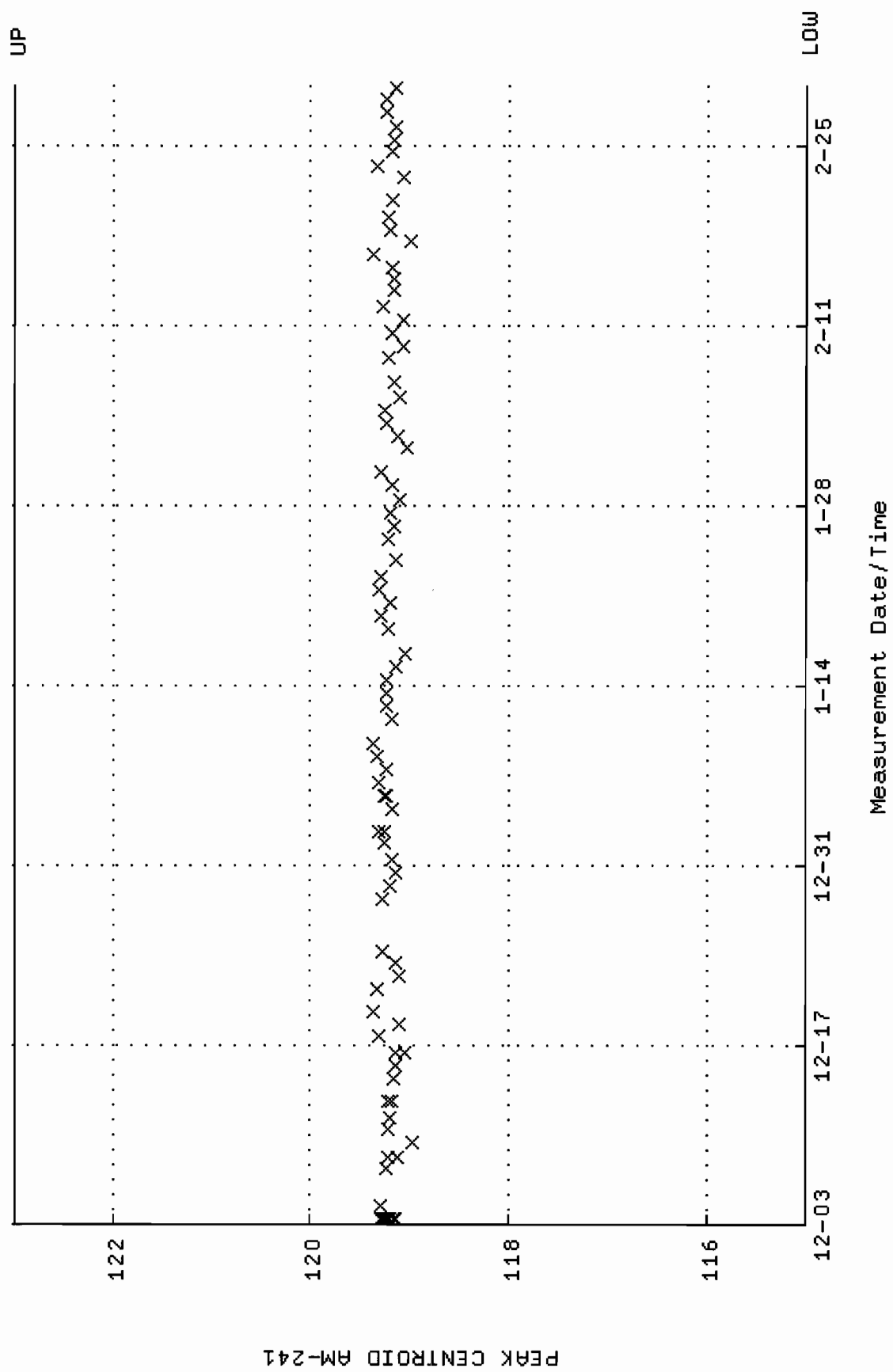
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM21-CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 14-NOV-2009 13:18:08 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



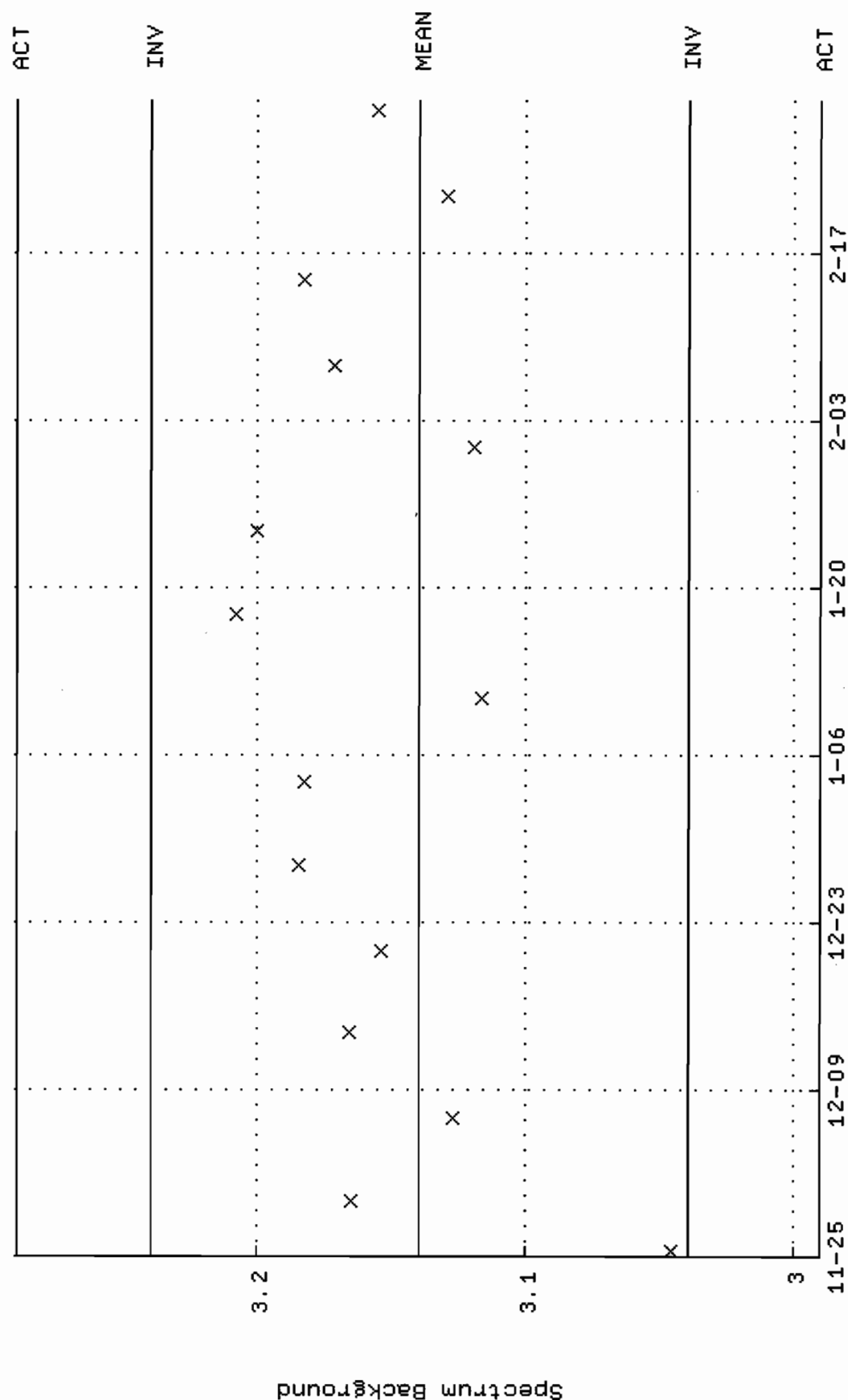
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM21.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 1-NOV-2009 18:17:19 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.03312 +- 8.784250E-03 (0.85 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM22\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 3-DEC-2009 09:11:39 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



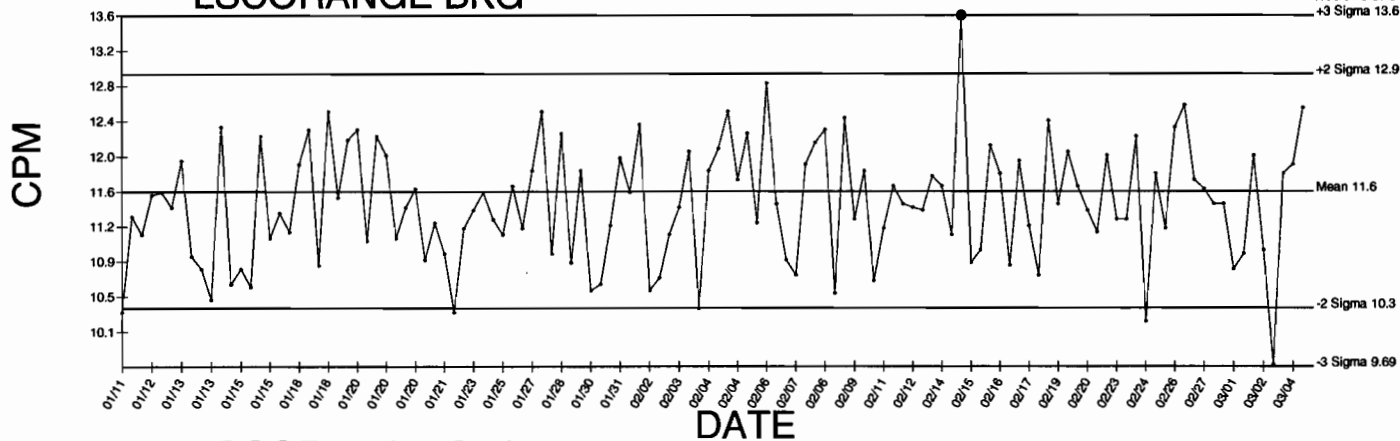
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM22.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 25-NOV-2009 10:28:37 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 3.13961 +- 4.985064E-02 (1.59 %)



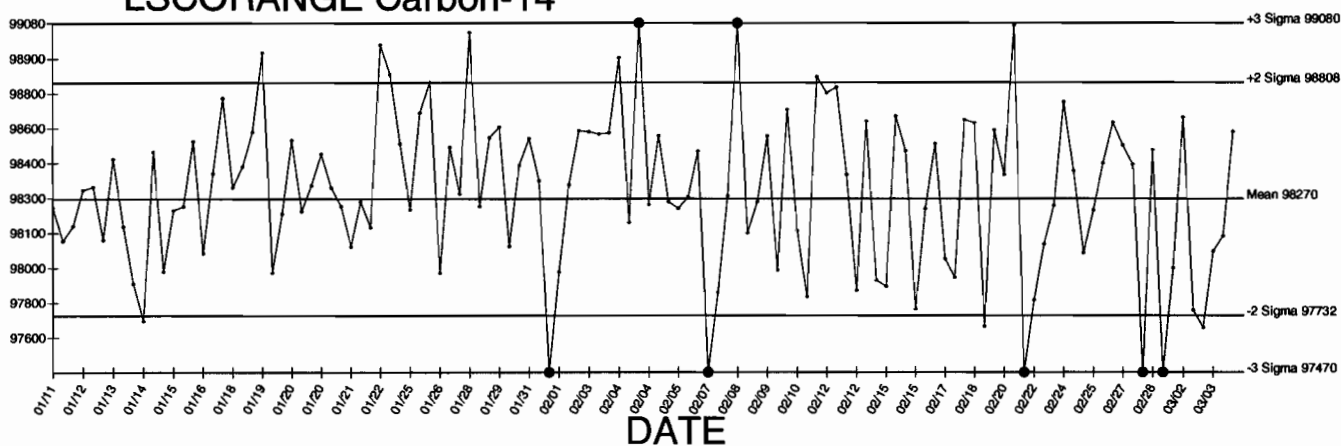


# LSCORANGE BKG

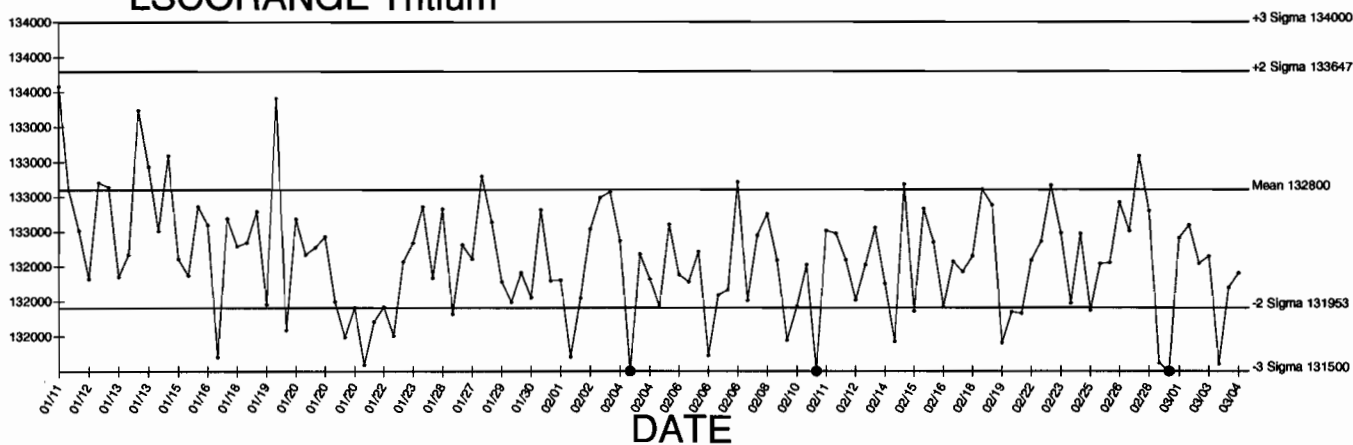
Generated 03/04/2010



# LSCORANGE Carbon-14



# LSCORANGE 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 ( $\mu$ 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*

Page 606 of 644  
W.F. Case

Page 1 of 2

2C-5-023-061a

**Amersham**  
The Health Science Group

# 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	0.380548	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
					Average =	2709.776428

Mean Value (Counting) = 2709.776428  
Stddev = 31.53347278

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 Ecoscint 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 Ecoscint 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

Per Jefferys 4/12/09  
Amanda L. Fehr 4/19/09

1032

## CERTIFICATE OF CALIBRATION

### Standard Radionuclide Source

74047-278

5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solution sources. The Am-241 was calibrated by 4 pi alpha liquid scintillation counting. All other radionuclides were calibrated using a germanium gamma spectrometer system. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytix 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-045-073-0

1380 Seaboard Industrial Blvd.  
Atlanta, Georgia 30318

Tel 404-352-8677

Fax 404-352-2837

www.analytiscinc.com

**ANALYSIS OF UNCERTAINTY FOR MIXED GAMMA STANDARDS  
BATCH 127**

**CALIBRATION DATE: October 1, 2006 12:00 EST**

Isotope	Energy (keV)	Calibration Method <sup>1</sup>	Statistics <sup>2</sup>	Calibration <sup>2</sup>	Peak Fitting <sup>2</sup>	Geometry <sup>2</sup>	Impurities <sup>2</sup>	Weighing	Combined Standard Uncertainty	Relative Expanded Uncertainty (k=2)
Cd-109	88	HPGe	0.16	1.1	0.88	0.8	0	0.2	1.64	3.3
Co-57	122	HPGe	0.23	1.1	0.71	0.7	0	0.2	1.52	3.0
Ce-139	166	HPGe	0.17	1.0	0.58	0.7	0	0.2	1.38	2.8
Hg-203	279	HPGe	0.11	1.1	0.34	0.7	0	0.2	1.37	2.7
Sn-113	392	HPGe	0.21	1.0	0.35	0.7	0	0.2	1.30	2.6
Cs-137	662	HPGe	0.36	1.1	0.60	0.7	0	0.2	1.49	3.0
Y-88	898	HPGe	0.19	1.0	0.33	0.7	0	0.2	1.29	2.6
Co-60	1173	HPGe	0.31	.97	0.45	0.7	0	0.2	1.33	2.7
Co-60	1332	HPGe	0.33	.93	0.48	0.7	0	0.2	1.32	2.6
Y-88	1836	HPGe	0.24	1.0	0.35	0.7	0	0.2	1.31	2.6

**Optional Additional Isotopes**

Pb-210	46.5	4π LS	0.33	1.1	0	0.9	0.30	0.2	1.50	3.0
Am-241	59.5	4π LS	0.33	1.1	0	0.9	0.30	0.2	1.50	3.0
Sr-85	514	IC	0.30	1.1	0	0.7	0.17	0.2	1.36	2.7
Cs-134	605	IC	0.30	1.0	0	0.8	0.17	0.2	1.34	2.7
Cs-134	796	IC	0.30	1.0	0	0.8	0.17	0.2	1.34	2.7
Mn-54	835	IC	0.30	1.0	0	0.8	0.17	0.2	1.34	2.7
Zn-65	1116	IC	0.30	1.0	0	0.8	0.17	0.2	1.34	2.7

**Calibration Methods:**

4π LS (4 pi Liquid Scintillation Counting)

HPGe (High Purity Germanium Gamma Ray Spectrometer)

IC (Gamma Ray Ionization Chamber)

<sup>2</sup>As Percent (%) from counting data

No interfering gamma emitting impurities were detected during calibration. Depending on the resolution and energy dispersion (keV/channel) of the measuring system, the following spectral conflicts may occur: (1) between the 88 keV gamma-ray and the X-rays emitted in the decay of Hg-203, (2) between the 1333 keV gamma-ray and the 1325 keV single escape peak from the 1836 keV gamma-ray.

# Standard Traceability Log Rad

Source Material Info	
Parent Code:	1032
Prepared By:	Daniel Roy
Carrier Conc:	4 M HCL
Reference Date:	10/01/2006
Ampoule Mass (g):	5.31725 g
Uncertainty:	+/- 2.81 %
LogBook No:	RC-S-045-073

A Solution Material Info	
Isotope:	Mixed Gamma
Prepared By:	Daniel Roy
Prep Date:	11/30/2006
Verification Date:	12/02/2009
Expiration Date:	12/02/2010
Primary Code:	1032-A
Dilution(mL):	100 mL
Mass of Parent(g):	5.2579 g
Density(g/mL):	1.0611
Balance ID:	38080204

## Calculations Converting parent activity to dpm/mL|dpm/g

$(\text{Mass of parent(g)}) * (\text{Parm Activity (dpm)}) * (\text{conversion dpm to dpm}) / (\text{Ampoule Mass(g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)}) * (\text{Parm Activity (dpm)}) * (\text{conversion dpm to dpm}) / \text{Density} / (\text{Ampoule Mass (g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/g)}$
$(5.2579 \text{ g}) * (218817 \text{ dpm}) * (1 \text{ dpm/dpm}) / (5.31725 \text{ g} * 100 \text{ mL}) = 2163.7461 \text{ dpm/mL}$
$(5.2579 \text{ g}) * (218817 \text{ dpm}) * (1 \text{ dpm/dpm}) / (1.0611 \text{ g/mL}) / (5.31725 \text{ g} * 100 \text{ mL}) = 2039.2400 \text{ dpm/g}$

## Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
-----------	----------	--------------	---------------	------	-------------	-------------------	-----------------

GEL Laboratories LLC  
Version 1.0 9/18/2000



# Verification for Mixed Gamma Standard 1032-A

M. Stamps  
12/2/2009

Am-241

Isotope	Result	pCi/L - Ver. Jar. 1
Mixed Gamma N1	2534	pCi/L - Ver. Jar. 3
Mixed Gamma N2	2510	pCi/L - Ver. Jar. 5
Mixed Gamma N3	2413	

Mean Value (Counting) = 2485.67  
Stddev = 64.065  
Pass  
Rule 3 (Pass/Fail)

Certificate Value = 2485.68018  
Lower Limit = 2357.536524  
Upper Limit = 2613.796809  
Rule 1 (Pass/Fail) Pass  
Two sigma = 128.1301422  
10 % of Mean = 248.5666667  
Rule 2 (Pass/Fail) Pass

## Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

M. Stamps  
12/2/09  
independent  
12/2/09

# Verification for Mixed Gamma Standard 1032-A

M. Stamps  
12/2/2009

Cs-137

Isotope	Result	pC/L - Ver. Tab. 1
Mixed Gamma N1	854.2	pC/L
Mixed Gamma N2	907.6	pC/L - Ver. Tab. 3
Mixed Gamma N3	898.9	pC/L - Ver. Tab. 1

Mean Value (Counting) = 886.90  
Sidev = 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.

*Handwritten:* 12/2/2009  
12/2/2009  
12/2/2009

# 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
Mixed Gamma N2	1495	pCi/L - Ver-1a2-2
Mixed Gamma N3	1501	pCi/L - Ver-1a2-3

Mean Value (Counting) = 1522.67  
Stdev = 42.829  
98.50 Pass  
Rule 3 (Pass/Fail)

Certificate Value = 1545.8378  
Lower Limit = 1437.008431  
Upper Limit = 1608.324902  
Rule 1 (Pass/Fail) Pass  
Two sigma = 85.65823564  
10 % of Mean = 152.26666667  
Rule 2 (Pass/Fail) Pass

*M. Stamps issued 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.

# 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 12/3/04*

TRM

Invoice:

5 boxes of TRM-1  
 10 " " TRM-2 and 3  
 5 " each of TRM-1 through 6  
 7 " baghouse dirt

use 1/4 gm x 10 samples with together  
 for TRM-2

Table 7. Recommended Concentrations of Tailings Reference Materials (pCi/g)

	TRM-1	TRM-2	TRM-3	TRM-4
U-238	99 ± 6	6.0 ± 4.0	19.6 ± 1.4	44.9 ± 7.6
U-234	105 ± 6	6.2 ± 4.0	19.5 ± 1.9	44.6 ± 1.2
Th-230	471 ± 11	24.5 ± 0.6	58.5 ± 2.1	44.0 ± 1.6
Ra-226	489 ± 17	25.4 ± 0.9	60.3 ± 2.3	42.9 ± 1.2
Pb-210	485 ± 24	22.1 ± 1.2	56.0 ± 2.1	38.9 ± 2.0



### 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 DATE 4/14/2000

Amanda L. Fehr 4/30/04  
 Pitt & Shale 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.



by Slater At GEL  
Not For Lead In  
ANALYSIS REQUEST AND CHAIN OF CUSTODY

602945

AR/COC-

**Press F1 for instructions for each field.**

SARWR No. N/A

Batch No.

**Supervises (5-97) none**

Contract No.: AJ-2480A  
 Case No.: 10204 143  
 SMO Authorization: [Signature]  
 Bill to: Sandia National Laboratories  
 Supplier Services, Dept. \_\_\_\_\_  
 P.O. Box 5800 MS 0154

Date Samples Shipped: 11/16/99 SMO USE  
 Can or Vialbill No. 756799  
 Lab Contact: EDIE KENT  
 Lab Destination: G.E.L.  
 SMO Contact/Phone: Doug Salm / 844-3110

Dept. No./Mail Stop: 7132 / 1042  
Project/Task Manager: PAM PUISSANT  
Project Name:  
Record Center Code: N/A  
Logbook Ref. No.: N/A

[illegible]

Building	Sample No. - Fraction	Room	N/A	Begin Depth	ER Site	Date/Time Collected	Sample Matrix	Container		Sample Collected Method	Sample Type	Parameter & Method Requested	Lab Sample ID
								Type	Volume				

050484 - 001	PEM-1	N/A	N/A	11/15/91	1100	S	P	1 L	4 C	G	SA
050485 - 001 <th>TRM-2</th> <th>N/A</th> <th>N/A</th> <th>11/15/91</th> <th>1100</th> <th>S</th> <th>G</th> <th>1 L</th> <th>4 C</th> <th>G</th> <th>SA</th>	TRM-2	N/A	N/A	11/15/91	1100	S	G	1 L	4 C	G	SA
050486 - 001 <th>ARM-3</th> <th>N/A</th> <th>N/A</th> <th>11/15/91</th> <th>1100</th> <th>S</th> <th>G</th> <th>1 L</th> <th>4 C</th> <th>G</th> <th>SA</th>	ARM-3	N/A	N/A	11/15/91	1100	S	G	1 L	4 C	G	SA

[illegible][illegible][illegible][illegible]

Sample Disposal ☐ Return to Client ☒ Disposal by lab

Turnaround Time ☒ Normal ☐ Rush Required Report Date           

Name            Signature           

Entered by            Initials           

Company/Organization/Phone           

Raw data package ☐ Yes ☒ No  
*These "samples" are well characterized and materials*

Receipt Value           

Sample Team	Name	Signature	Phone Number	Comments
	Douglas E. Perry	[Signature]	Weston / 7577 / 945-0867	Being sent to FEL over behold up Hawk Division
				Please list as separate report

Intervener		Date		Time		Orig.		Date	
1. Relinquished by		Date		Time		Orig.		Date	
1. Received by		Date		Time		Orig.		Date	

2. Relinquished by	Org.	Date	Time	5. Relinquished by	Org.	Date
2. Received by	Org.	Date	Time	5. Received by	Org.	Date
3. Relinquished by	Org.	Date	Time	6. Relinquished by	Org.	Date

3. Received by	Org.	Date	Time	5. Received by	Org.	Date

	Original	1 <sup>st</sup> Copy	2 <sup>nd</sup> Copy	3 <sup>rd</sup> Copy	Field Copy (Pink)
To Accompany Samples, Laboratory Copy (White)					
To Accompany Samples, Return to SMO (Blue)					
SMO Suspense Copy (Yellow)					

---

# CERTIFICATE OF CALIBRATION

## ALPHA STANDARD SOLUTION

Radionuclide Am-243  
Half Life: 7380  $\pm$  40 years  
Catalog No.: 7243  
Source No.: 445-96-2

Customer: GENERAL ENGINEERING LABS  
P.O.No.: 9290-RAD  
Reference Date: January 1 1994 12:00 PST.  
Contained Radioactivity: (Am-243) 101.2  $\mu$ Ci  
Contained Radioactivity: (Am-243) 3750 kBq

### Description of Solution

a. Mass of solution: 5.3739 g (in a 5 ml Flame Sealed Ampoule)  
b. Chemical form: Am(NO<sub>3</sub>)<sub>3</sub> in 2N HNO<sub>3</sub>  
c. Carrier content: None added  
d. Density: 1.0651 g/ml @ 20°C.

### Radioimpurities

None detected

### Radioactive Daughters

Np-239 (beta active) in equilibrium

### Radionuclide Concentration

(Am-243) 18.84  $\mu$ Ci/g

### Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry for Np-239:

Energy peak(s) intergrated under: 228, 278 keV.  
Branching ratio(s) used: 0.108, 0.1420 gamma rays per decay.

### Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration:  $\pm 3.0\%$   
b. Random uncertainty in assay:  $\pm 0.4\%$   
c. Random uncertainty in weighing(s):  $\pm 0.0\%$   
d. Total uncertainty at the 99% confidence level:  $\pm 3.0\%$

### NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

### Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

### Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).



ISOTOPE PRODUCTS LABORATORIES  
1800 North Keystone Street  
Burbank, California 91504  
(818) 843 - 7000

*Anna H. Khan*  
QUALITY CONTROL

*Jan 3, 1994*  
Date Signed

THE LEAK TEST(S) INDICATED BY THE CHECKED BOX(ES) WAS(WERE) APPLIED TO  
DETERMINE THE INTEGRITY OF THE SOURCE DESCRIBED ON THE FRONT SIDE

☒ 1. STANDARD WIPE TEST

The source is wiped over its entire surface with a moistened filter paper disk. After drying, the disk is checked for activity using a windowless proportional counter or end-window G.M. tube. Activity levels exceeding 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha are cause for rejection of the source.

☐ 2. SOAK TEST

The source is immersed in distilled water and maintained at  $50 \pm 10^\circ \text{C}$  for a minimum of four hours. After removal of the source, the liquid is a) checked for activity using a liquid scintillation counter, or b) evaporated in a planchet and the residue is checked for activity using a windowless proportional counter or end-window G.M. tube. Activity levels exceeding 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha are cause for rejection of the source.

☐ 3. SOAK TEST - BERYLLIUM WINDOW

The source is immersed in distilled water and maintained at  $50 \pm 10^\circ \text{C}$  for 20 minutes. The entire surface of the source is then wiped with a moistened cotton swab or filter paper disk. After drying, the swab or disk is checked for activity using a windowless proportional counter or end-window G.M. tube. Activity levels exceeding 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha are cause for rejection of the source.

☐ 4. GAS SOURCE TEST (Radioactive Gas)

The source is placed in a vacuum desiccator and maintained at a pressure of less than 1 mm Hg for not less than 12 hours. The activity is checked by introducing air into the desiccator and monitoring the air with an end-window G.M. tube. Activity levels exceeding 1000 cpm are cause for rejection of the source.

☒ 5. OTHER LEAK TEST

The ampoule is kept in an inverted position on a filter paper disk for a minimum of 16 hours. The filter paper disk is then checked for activity using a windowless proportional counter or end-window G.M. tube. Activity levels exceeding 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha are cause for rejection of the source.

☐ 6. LEAK TEST NOT APPLICABLE

The active area of this source is uncovered or is protected by a very thin coating. Although the deposit is adherent, it is not designed or certified to pass a standard leak test. The inactive portions of the source have been checked using the standard wipe test. Levels of removable activity did not exceed 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha at the time of shipment.



# Standard Traceability Log Rad

Source Material Info	
Parent Code:	445-96-2
Prepared By:	Genie Bost
Carrier Conc:	2M HNO3
Reference Date:	01/01/1994
Ampoule Mass (g):	5.3739 g
Uncertainty:	+/- 3 %
LogBook No:	RC S 005 032

A Solution Material Info	
Isotope:	Americium-243
Prepared By:	Angela Johnson
Prep Date:	01/05/1994
Verification Date:	05/11/2009
Expiration Date:	05/11/2010
Primary Code:	445-96-2-A
Dilution(mL):	100 mL
Mass of Parent(g):	5.3419 g
Density(g/mL):	1.0785
Balance ID:	38080204

### Calculations Converting parent activity to dpm/mL/dpm/g

$(\text{Mass of parent(g)}) * (\text{Parm Activity (uCi/g)}) * (\text{conversion dpm to uCi}) / (\text{Dilution Vol}) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)}) * (\text{Parm Activity (uCi/g)}) * (\text{conversion dpm to uCi}) / \text{Density (g/mL)} / (\text{Dilution Vol}) = \text{Parent Activity (dpm/g)}$
$(5.3419 \text{ g}) * (18.84 \text{ uCi/g}) * (2220000 \text{ dpm/uCi}) / (100 \text{ mL}) = 2234238.9912 \text{ dpm/mL}$
$(5.3419 \text{ g}) * (18.84 \text{ uCi/g}) * (2220000 \text{ dpm/uCi}) / (1.0785 \text{ g/mL}) / (100 \text{ mL}) = 2071617.0528 \text{ dpm/g}$

## Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
01/05/1994	Genie Bost	.0058	100	445-96-2-B	120.1 dpm/ml	01/05/1995	01/05/1996
09/10/2004	Amanda Fehr	.0325	1000	445-96-2-BB	67.328 dpm/mL	09/10/2005	09/10/2006
01/05/1994	Genie Bost	.0025	100	445-96-2-C	51.77 dpm/ml	01/05/1995	01/05/1996
05/27/2005	Brenda Burke	.000246	100	445-96-2-CC	5.10613 dpm/mL	05/31/2005	05/31/2006
03/25/1994	Genie Bost	.0064	100	445-96-2-D	132.53 dpm/ml	01/05/1995	01/05/1996
08/16/2005	Brenda Burke	.001224	500	445-96-2-DD	5.07144 dpm/mL	08/18/2007	08/18/2008
08/04/1994	Genie Bost	.0094	100	445-96-2-E	194.65 dpm/ml	01/05/1995	01/05/1996
10/13/2005	Brenda Burke	.0017	500	445-96-2-EE	7.0435 dpm/mL	11/15/2005	11/15/2006
08/04/1994	Genie Bost	.0046	100	445-96-2-F	95.25 dpm/ml	01/05/1995	01/05/1996
10/14/2005	Mary Aders	.0141	500	445-96-2-FF	58.4196 dpm/mL	10/14/2005	10/14/2006
09/01/1994	Genie Bost	.0031	100	445-96-2-G	64.19 dpm/ml	01/05/1995	01/05/1996
05/10/2006	Mary Aders	2.0753	1000	445-96-2-GG	4299.227 dpm/mL	09/30/2008	09/30/2009
10/17/1994	Genie Bost	.0969	100	445-96-2-H	2006.52 dpm/ml	01/05/1995	01/05/1996
06/07/2006	Mary Aders	.0365	1000	445-96-2-HH	75.614 dpm/mL	06/19/2006	06/19/2007
02/06/1995	Genie Bost	.0043	100	445-96-2-I	89.04 dpm/ml	01/05/1995	01/05/1996
05/11/2006	Brenda Burke	.000009739	100	445-96-2-II	.201761 dpm/mL	07/26/2006	07/26/2007
07/20/1995	Theresa Austin	.0041	100	445-96-2-J	84.9 dpm/ml	01/05/1995	01/05/1996
05/01/2007	Daniel Roy	.0352	1000	445-96-2-JJ	72.9209 dpm/ml	04/30/2008	04/30/2009
08/10/1995	Garret Ray	.0952	100	445-96-2-K	1971.32 dpm/ml	01/05/1995	01/05/1996
06/12/2007	Julie Strock	.01038	250	445-96-2-KK	22.1496 dpm/mL	05/28/2008	05/28/2009

09/11/1995	Theresa Austin	1.0525	100	445-96-2-L	21794.23 dpm/ml	01/05/1995	01/05/1996
09/11/1995	Theresa Austin	.5107	100	445-96-2-L-1	111.3 dpm/ml	01/05/1995	01/05/1996
04/28/1998	Richard Kinney	.1264	100	445-96-2-M	2617.4 dpm/ml	04/28/1998	04/28/1999
11/01/2007	Eric Williamson	.001274	500	445-96-2-MM	5.27945 dpm/mL	04/06/2008	04/06/2010
10/12/1998	Gregory Smith	.1348	100	445-96-2-N	2791.32 dpm/mL	01/05/1995	01/05/1996
01/25/1999	Gregory Smith	1.9382	100	445-96-2-N-1	50.16 dpm/ml	01/05/1995	01/05/1996
04/19/2008	Daniel Roy	.0424	1000	445-96-2-NN	87.8366 dpm/ml	04/16/2009	04/16/2010
04/21/1999	Greg Smith	.1645	100	445-96-2-O	3406.32 dpm/mL	04/21/1999	04/21/2000
07/27/1999	Gregory Smith	1.567	100	445-96-2-O-2	50.56 dpm/ml	05/13/1999	05/13/2000
10/12/1999	Richard Kinney	1.5589	100	445-96-2-O-3	50.31 dpm/mL	05/13/1999	05/13/2000
04/21/1999	Greg Smith	1.5309	100	445-96-2-O-1	49.4 dpm/mL	04/21/1999	04/21/2000
11/10/1999	Joe Davis	.1809	100	445-96-2-P	3745.92 dpm/mL	05/13/1999	05/13/2000
01/04/2008	Julie Strock	.00001005	100	445-96-2-PP	.20819 dpm/mL	12/29/2008	12/29/2009
01/28/2000	Angela Johnson	.0354	1000	445-96-2-Q	73.3 dpm/mL	02/08/2001	02/08/2002
09/29/2008	Julie Strock	.0025219	250	445-96-2-QQ	20.8977 dpm/mL	09/30/2008	09/29/2009
04/18/2000	Robert Timm	.429	250	445-96-2-R	3553.34 dpm/mL	04/18/2000	04/18/2001
04/23/2009	Tina Schoneman	.001251	500	445-96-2-RR	4.8075 dpm/mL	04/23/2009	04/23/2010
04/13/2001	Angela Johnson	.1869	100	445-96-2-S	3870.16 dpm/mL	04/13/2001	04/13/2002
05/08/2009	Mary Aders	.0141	1000	445-96-2-SS	29.2098 dpm/ml	05/11/2009	05/11/2010
07/03/2001	Lonnie Morris	2.0057	1000	445-96-2-T-103	4153.225 dpm/mL	07/03/2002	07/03/2003
07/03/2001	Lonnie Morris	2.0057	1000	445-96-2-T-203	4153.225 dpm/mL	07/03/2002	07/03/2003

07/03/2001	Lonnie Morris	2.0057	1000	445-96-2-T-303	4153.225 dpm/mL	07/03/2002	07/03/2003
06/03/2009	Julie Strock	.00000927	100	445-96-2-TT	.1923 dpm/mL	06/05/2009	06/03/2010
08/23/2001	Angela Johnson	.0194	500	445-96-2-U-103	80.34 dpm/mL	08/23/2001	08/23/2002
08/23/2001	Angela Johnson	.0194	500	445-96-2-U-203	80.34 dpm/mL	08/23/2001	08/23/2002
08/23/2001	Angela Johnson	.0194	500	445-96-2-U-303	80.34 dpm/ml	08/23/2001	08/23/2002
06/02/2009	Mary Aders	2.1177	1000	445-96-2-UU	4385.1449 dpm/ml	06/04/2009	06/04/2010
08/27/2001	Angela Johnson	.0394	1000	445-96-2-V-103	81.586 dpm/mL	08/27/2002	08/27/2003
08/27/2001	Angela Johnson	.0394	1000	445-96-2-V-203	81.586 dpm/mL	08/27/2002	08/27/2003
08/27/2001	Angela Johnson	.0394	1000	445-96-2-V-303	81.586 dpm/mL	08/27/2002	08/27/2003
03/17/2003	Angela Johnson	2.1108	1000	445-96-2-W	4370.857 dpm/mL	03/14/2006	03/14/2007
04/14/2003	Lonnie Morris	.0315	1000	445-96-2-X	65.2559 dpm/mL	04/14/2004	04/14/2005
05/03/2003	Tim Chandler	.0103	1000	445-96-2-Y	21.3376 dpm/mL	05/05/2003	05/05/2004
05/05/2003	Eric Williamson	.011	1000	445-96-2-Z	22.7877 dpm/mL	04/03/2007	04/03/2008

GEL Laboratories LLC  
Version 1.0 9/18/2000

## Verification for Am-243 Standard 445-96-2-SS

M. Aders 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*  
*Taheri*  
*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  $2 \text{ mol dm}^{-3}$  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

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## 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.

Reference: 2009100356

Page 2 of 3

Checked by:

*Cr all*

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## 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		A Solution Material Info	
Parent Code:	1430	Isotope:	Plutonium-236
Prepared By:	Ashley Drochter	Prepared By:	Ashley Drochter
Carrier Conc:	2 M HNO3	Prep Date:	01/27/2010
Reference Date:	07/01/2009	Verification Date:	01/27/2010
Ampoule Mass (g):	4.97 g	Expiration Date:	01/27/2011
Uncertainty:	+/- .36 %	Primary Code:	1430-A
LogBook No:	RC-S-051-149	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-B

	Isotope	Value	Uncertainty
A. Drochter 1/29/2010	1430-B	3.080	0.4720
	1430-B	3.000	0.4660
	1430-B	2.960	0.4740
Mean Value (Counting) =	3.013	100.4268	% of Known Value
Stdev =	0.061101009		
Target =	3.00		
Lower Limit =	2.891131315		
Upper Limit =	3.135535352		
Rule 1 Pass/Fail	Pass	Pass	Pass
Two sigma =	0.122202019		
10 % of Mean =	0.301333333		
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.

*Signature*  
2/1/10

1/28/10

## Verification for Plutonium-236 Standard 1430-C

	Isotope	Value	Uncertainty
A. Drochter 3/4/2010	1430-C	2.760	0.4480
	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  
*h* 3/5/10



**Eckert & Ziegler**  
Analytics

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Atlanta, Georgia 30318  
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**CERTIFICATE OF CALIBRATION**  
Standard Radionuclide Source

**78747-278**

1283

**U-232 5 mL Liquid in Flame Sealed Vial**

**Customer:** GEL Laboratories, LLC  
**P.O. No.:** 7319 RD, Item 1

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.18, Revision 1.

Isotope:	U-232
Activity (Bq):	3.754 E3
Half-Life:	68.9 years
Calibration Date:	December 9, 2008 12:00 EST
Relative Expanded Uncertainty (k=2):	5.0%

**Comments:**

Impurities: U-233 <0.3%, Am-241 <0.15%  
5.20453 grams 1M HNO<sub>3</sub> solution.

Source Prepared By: WMS

W. Mao, Radiochemist

QA Approved: DM Montgomery

D. M. Montgomery, QA Manager

Date: 12-11-08

RECEIVED  
12/15/08

22-S-05

# 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  
Date: 12/10/09

Serial #	Value	Uncertainty
1283-H N1	2.020	0.238
1283-H N2	2.000	0.234
1283-H N3	2.060	0.242

Mean Value (Counting) =	2.027	pCi/L	99.66904	Pass
Stdev =	0.030550505	pCi/L	Rule 3 (Pass/Fail)	
Target =	2.033	pCi/L		
Lower Limit =	1.965565657	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: 955027**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247323001	SAMPLE	MXR1	GAM15	03-MAR-10 23:25	DONE	CAN	03-FEB-10 00:00
247323002	SAMPLE	MXR1	GAM05	04-MAR-10 10:09	DONE	CAN	11-JUN-09 00:00
247323003	SAMPLE	MXR1	GAM04	04-MAR-10 10:10	DONE	CAN	05-MAY-09 00:00
247323004	SAMPLE	MXR1	GAM15	04-MAR-10 10:11	DONE	CAN	03-FEB-10 00:00
247323005	SAMPLE	MXR1	GAM22	04-MAR-10 10:12	DONE	CAN	02-DEC-09 00:00
247323006	SAMPLE	MXR1	GAM25	04-MAR-10 10:13	DONE	CAN	07-OCT-09 00:00
247325001	SAMPLE	MXR1	GAM19	04-MAR-10 10:14	DONE	CAN	12-MAR-09 00:00
247337001	SAMPLE	MXR1	GAM14	04-MAR-10 10:15	DONE	CAN	06-MAR-09 00:00
247337002	SAMPLE	MXR1	GAM17	04-MAR-10 10:16	DONE	CAN	06-JAN-10 00:00
247337003	SAMPLE	MXR1	GAM18	04-MAR-10 10:17	DONE	CAN	23-APR-09 00:00
247337004	SAMPLE	MXR1	GAM21	04-MAR-10 10:18	DONE	CAN	28-JUL-09 00:00
247337005	SAMPLE	MXR1	GAM20	04-MAR-10 10:19	DONE	CAN	26-AUG-09 00:00
247337006	SAMPLE	MXR1	GAM06	04-MAR-10 10:46	DONE	CAN	16-FEB-10 00:00
247323007	SAMPLE	MXR1	GAM01	04-MAR-10 10:50	DONE	CAN	12-JAN-10 00:00
247337007	SAMPLE	MXR1	GAM16	04-MAR-10 12:40	DONE	CAN	16-NOV-09 00:00
247360001	SAMPLE	MXR1	GAM22	04-MAR-10 12:41	DONE	CAN	02-DEC-09 00:00
247360002	SAMPLE	MXR1	GAM25	04-MAR-10 12:42	DONE	CAN	07-OCT-09 00:00
247360003	SAMPLE	MXR1	GAM19	04-MAR-10 12:43	DONE	CAN	12-MAR-09 00:00
247360004	SAMPLE	MXR1	GAM14	04-MAR-10 12:44	DONE	CAN	06-MAR-09 00:00
1202047453	MB	MXR1	GAM17	04-MAR-10 12:46	DONE	CAN	06-JAN-10 00:00
1202047455	LCS	MXR1	GAM18	04-MAR-10 12:48	DONE	CAN	23-APR-09 00:00
1202047454	DUP	MXR1	GAM10	04-MAR-10 16:10	DONE	CAN	16-MAR-09 00:00

# Instrument Run Log

**Instrument Type: LSC**

**Batch ID: 956741**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247193005	SAMPLE	KXK2	LSCORANGE	04-MAR-10 07:14	DONE		
247193006	SAMPLE	KXK2	LSCORANGE	04-MAR-10 07:28	DONE		
247193007	SAMPLE	KXK2	LSCORANGE	04-MAR-10 07:49	DONE		
247193012	SAMPLE	KXK2	LSCORANGE	04-MAR-10 08:52	DONE		
247193013	SAMPLE	KXK2	LSCORANGE	04-MAR-10 09:55	DONE		
247337001	SAMPLE	KXK2	LSCORANGE	04-MAR-10 10:16	DONE		
247337002	SAMPLE	KXK2	LSCORANGE	04-MAR-10 11:19	DONE		
247337003	SAMPLE	KXK2	LSCORANGE	04-MAR-10 12:21	DONE		
247337004	SAMPLE	KXK2	LSCORANGE	04-MAR-10 13:24	DONE		
247337005	SAMPLE	KXK2	LSCORANGE	04-MAR-10 14:26	DONE		
247337006	SAMPLE	KXK2	LSCORANGE	04-MAR-10 15:29	DONE		
247337007	SAMPLE	KXK2	LSCORANGE	04-MAR-10 16:32	DONE		
1202051378	MB	KXK2	LSCORANGE	04-MAR-10 17:35	DONE		
1202051379	DUP	KXK2	LSCORANGE	04-MAR-10 18:37	DONE		
1202051380	LCS	KXK2	LSCORANGE	04-MAR-10 19:40	DONE		

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID: 957096**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247323001	SAMPLE	JXH2	1211	06-MAR-10 12:07	DONE		
247323002	SAMPLE	JXH2	1212	06-MAR-10 12:07	DONE		
247323003	SAMPLE	JXH2	1213	06-MAR-10 12:07	DONE		
247323004	SAMPLE	JXH2	1214	06-MAR-10 12:07	DUSE		
247323005	SAMPLE	JXH2	1215	06-MAR-10 12:07	DONE		
247323006	SAMPLE	JXH2	1216	06-MAR-10 12:07	DONE		
247323007	SAMPLE	JXH2	1217	06-MAR-10 12:07	DONE		
247325001	SAMPLE	JXH2	1218	06-MAR-10 12:07	DONE		
247327002	SAMPLE	JXH2	1219	06-MAR-10 12:07	DONE		
247337001	SAMPLE	JXH2	1220	06-MAR-10 12:07	DONE		
247337002	SAMPLE	JXH2	1221	06-MAR-10 12:07	DONE		
247337003	SAMPLE	JXH2	1222	06-MAR-10 12:07	DONE		
247337004	SAMPLE	JXH2	1223	06-MAR-10 12:07	DONE		
247337005	SAMPLE	JXH2	1224	06-MAR-10 12:07	DONE		
247337006	SAMPLE	JXH2	1225	06-MAR-10 12:07	DONE		
247337007	SAMPLE	JXH2	1226	06-MAR-10 12:07	DONE		
247360001	SAMPLE	JXH2	1227	06-MAR-10 12:07	DONE		
247360002	SAMPLE	JXH2	1228	06-MAR-10 12:07	DUSE		
247360003	SAMPLE	JXH2	1229	06-MAR-10 12:07	DONE		
247360004	SAMPLE	JXH2	1230	06-MAR-10 12:08	DONE		
1202052134	MB	JXH2	1231	06-MAR-10 12:08	DONE		
1202052135	DUP	JXH2	1232	06-MAR-10 12:08	DONE		
1202052136	LCS	JXH2	1233	06-MAR-10 12:08	DONE		

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID: 957099**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247323001	SAMPLE	JXH2	1234	06-MAR-10 12:08	DUSE		
247323002	SAMPLE	JXH2	1235	06-MAR-10 12:08	DUSE		
247323003	SAMPLE	JXH2	1236	06-MAR-10 12:08	DUSE		
247323004	SAMPLE	JXH2	1237	06-MAR-10 12:08	DUSE		
247323005	SAMPLE	JXH2	1238	06-MAR-10 12:08	DUSE		
247323006	SAMPLE	JXH2	1239	06-MAR-10 12:08	DUSE		
247323007	SAMPLE	JXH2	1240	06-MAR-10 12:08	DUSE		
247325001	SAMPLE	JXH2	1241	06-MAR-10 12:08	DUSE		
247327002	SAMPLE	JXH2	1242	06-MAR-10 12:08	DUSE		
247337001	SAMPLE	JXH2	1243	06-MAR-10 12:08	DUSE		
247337002	SAMPLE	JXH2	1244	06-MAR-10 12:08	DUSE		
247337003	SAMPLE	JXH2	1245	06-MAR-10 12:08	DUSE		
247337004	SAMPLE	JXH2	1246	06-MAR-10 12:08	DUSE		
247337005	SAMPLE	JXH2	1247	06-MAR-10 12:08	DUSE		
247337006	SAMPLE	JXH2	1248	06-MAR-10 12:08	DUSE		
247337007	SAMPLE	JXH2	1249	06-MAR-10 12:09	DUSE		
247360001	SAMPLE	JXH2	1250	06-MAR-10 12:09	DUSE		
247360002	SAMPLE	JXH2	1251	06-MAR-10 12:09	DUSE		
247360003	SAMPLE	JXH2	1252	06-MAR-10 12:09	DUSE		
247360004	SAMPLE	JXH2	1253	06-MAR-10 12:09	DUSE		
1202052141	MB	JXH2	1254	06-MAR-10 12:09	DUSE		
1202052142	DUP	JXH2	1255	06-MAR-10 12:09	DUSE		
1202052143	LCS	JXH2	1256	06-MAR-10 12:09	DUSE		
247323006	SAMPLE	JXH2	1089	13-MAR-10 14:27	DONE		
247323007	SAMPLE	JXH2	1090	13-MAR-10 14:27	DONE		
247325001	SAMPLE	JXH2	1091	13-MAR-10 14:27	DONE		
247337001	SAMPLE	JXH2	1093	13-MAR-10 14:27	DONE		
247337002	SAMPLE	JXH2	1094	13-MAR-10 14:27	DONE		
247337003	SAMPLE	JXH2	1095	13-MAR-10 14:27	DONE		
247337004	SAMPLE	JXH2	1097	13-MAR-10 14:27	DUSE		
247337005	SAMPLE	JXH2	1099	13-MAR-10 14:27	DONE		
247337006	SAMPLE	JXH2	1100	13-MAR-10 14:27	DONE		
247337007	SAMPLE	JXH2	1101	13-MAR-10 14:27	DONE		
247360003	SAMPLE	JXH2	1105	13-MAR-10 14:27	DONE		
247360004	SAMPLE	JXH2	1107	13-MAR-10 14:27	DONE		
1202052141	MB	JXH2	1108	13-MAR-10 14:27	DONE		
1202052143	LCS	JXH2	1112	13-MAR-10 14:27	DONE		
247323001	SAMPLE	JXH2	1077	13-MAR-10 14:53	DONE		
247323002	SAMPLE	JXH2	1079	13-MAR-10 14:53	DONE		
247323003	SAMPLE	JXH2	1080	13-MAR-10 14:53	DONE		
247323004	SAMPLE	JXH2	1081	13-MAR-10 14:53	DONE		
247323005	SAMPLE	JXH2	1082	13-MAR-10 14:53	DONE		
247360001	SAMPLE	JXH2	1074	15-MAR-10 12:59	DONE		
247360002	SAMPLE	JXH2	1075	15-MAR-10 12:59	DONE		

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1202052142	DUP	JXH2	1076	15-MAR-10 12:59	DONE		

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID: 957101**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247323001	SAMPLE	JXH2	1118	06-MAR-10 12:13	DONE		
247323002	SAMPLE	JXH2	1125	06-MAR-10 12:14	DONE		
247323003	SAMPLE	JXH2	1126	06-MAR-10 12:14	DONE		
247323004	SAMPLE	JXH2	1127	06-MAR-10 12:14	DONE		
247323005	SAMPLE	JXH2	1128	06-MAR-10 12:14	DONE		
247323006	SAMPLE	JXH2	1129	06-MAR-10 12:14	DONE		
247323007	SAMPLE	JXH2	1130	06-MAR-10 12:14	DONE		
247325001	SAMPLE	JXH2	1131	06-MAR-10 12:14	DONE		
247327002	SAMPLE	JXH2	1132	06-MAR-10 12:14	DONE		
247337001	SAMPLE	JXH2	1133	06-MAR-10 12:14	DONE		
247337002	SAMPLE	JXH2	1138	06-MAR-10 12:14	DONE		
247337003	SAMPLE	JXH2	1139	06-MAR-10 12:14	DONE		
247337004	SAMPLE	JXH2	1140	06-MAR-10 12:14	DONE		
247337005	SAMPLE	JXH2	1141	06-MAR-10 12:14	DONE		
247337006	SAMPLE	JXH2	1142	06-MAR-10 12:14	DONE		
247337007	SAMPLE	JXH2	1143	06-MAR-10 12:15	DONE		
247360001	SAMPLE	JXH2	1144	06-MAR-10 12:15	DONE		
247360002	SAMPLE	JXH2	1145	06-MAR-10 12:15	DONE		
247360003	SAMPLE	JXH2	1146	06-MAR-10 12:15	DONE		
247360004	SAMPLE	JXH2	1147	06-MAR-10 12:15	DONE		
1202052148	MB	JXH2	1148	06-MAR-10 12:15	DONE		
1202052149	DUP	JXH2	1149	06-MAR-10 12:15	DONE		
1202052150	LCS	JXH2	1150	06-MAR-10 12:15	DONE		



# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID: 965246**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247337004	SAMPLE	JXH2	1013	16-MAR-10 10:32	DONE		
1202071011	MB	JXH2	1014	16-MAR-10 10:32	DONE		
1202071013	LCS	JXH2	1016	16-MAR-10 10:32	DONE		
1202071012	DUP	JXH2	1017	16-MAR-10 10:32	DONE		