

Friday, February 19, 2010

Page 1 of 3  
REQUEST NUMBER: 10-1952

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

ATTN: Valerie Davis

These Samples are on:

General Engineering Laboratories, Inc., Charleston, SC.

LANL Request Number: 10-1952

2040 Savage Rd

Per Agreement Number: 126310011

Charleston, SC 29407

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/19/2010

TURNAROUND/REPORT DUE: 3/21/2010

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	1	RE15-10-8302	R	2/15/2010	
	1	1	RE15-10-8303	R	2/15/2010	
	1	1	RE15-10-8310	R	2/15/2010	
	1	1	RE15-10-8311	R	2/15/2010	
	1	1	RE15-10-8312	R	2/15/2010	
	1	1	RE15-10-8313	R	2/15/2010	
	1	1	RE15-10-8314	R	2/15/2010	
	1	1	RE15-10-8315	R	2/15/2010	
EPA:906.0	1	1	RE15-10-8302	R	2/15/2010	

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REQUEST NUMBER: 10-1952

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA:906.0						
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
HASL-300:AM-241						
		1	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
HASL-300:ISOPU						
		1	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
HASL-300:ISOU						
		1	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	

Friday, February 19, 2010

REQUEST NUMBER: 10-1952

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	HASL-300:ISOU	1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	

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Friday, February 19, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1952

LOS ALAMOS

REQUEST NUMBER: 10-1952

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/21/2010

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
RE15-10-8314	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8314	1	POLY	H3	Ice	R
RE15-10-8313	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8313	1	POLY	H3	Ice	R
RE15-10-8312	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8312	1	POLY	H3	Ice	R
RE15-10-8315	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8315	1	POLY	H3	Ice	R
RE15-10-8311	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8311	1	POLY	H3	Ice	R
RE15-10-8310	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8310	1	POLY	H3	Ice	R
RE15-10-8303	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8303	1	POLY	H3	Ice	R
RE15-10-8302	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8302	1	POLY	H3	Ice	R

Relinquished By:

Date

Time

Received By:

Date

Time

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:

Printed Name

Signature

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8302

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	QBT3	52/2/15/10	
TIME COLLECTED (HH:MM)		0845		SUB-MEDIA:	TUFF 1	Att Fill	
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	HA	NA	
LOCATION ID:	15-610830	↓		FIELD QC TYPE:	NA	DC	
LOCATION TYPE:	GENERIC	↓		FIELD PREP:	NA	OK	
TOP DEPTH:	0	7.0		SAMPLE USAGE:	INV	↓	
BOTTOM DEPTH:	0	8.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	S		EXCAVATED:	YES/NO/NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE: YES/NO/NA	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	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+N03+pH	500 ML POLY	Ice	Y	
1	↓	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Pinkish brown weathered Tuff and silty sand

FTB: RE 15-10-8334

SAMPLE COMMENTS:

NA

LOCATION DESC:

73m 2/15/10  
Below R45 Tank inlet, 9b-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha ≤ 5 dpm  
Beta/Gamma ≤ 1983 dpmPID  $\frac{\text{Ambient Reading}}{0.0} = 0.0$  ppm

COLLECTED BY (PRINT)

TLMcfarland

REVIEWED BY (PRINT)

JonRobertson

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Estevan Lucian	2/16/10	(Printed Name) Sheri Greenwood	2/16/10
(Signature)	08:22 AM	(Signature)	0822
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8303

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	OBT3	JR2/15/10	
TIME COLLECTED (HH:MM)		0900		SUB-MEDIA:	TUFF 1	ATTN Fill	
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	HA	DC	
LOCATION ID:	15-610830	↓		FIELD QC TYPE:	NA	OK	
LOCATION TYPE:	GENERIC	↓		FIELD PREP:	NA	↓	
TOP DEPTH:	0	12.0		SAMPLE USAGE:	INV	↓	
BOTTOM DEPTH:	0	13.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	S		EXCAVATED:	YES/NO/NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
				WATER FLOWING:	YES/NO/NA		
BOREHOLE:	YES/NO/NA			BOREHOLE DECLINATION:	NA		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8082+8270+NME D-EXP	500 ML AMBER GLASS	Ice	Y	
1		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+N03+pH	500 ML POLY	Ice	Y	
1	↓	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Pinkish brown weathered tuff and sandy silt

SAMPLE COMMENTS:

NA

LOCATION DESC:

5 ft below R45 tank inlet, 96-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 11 dpm  
Beta/Gamma = 1879 dpm

PID  $\frac{\text{Ambient Reading}}{2.2} = 0.0$  ppm

COLLECTED BY (PRINT)

ThMcFarlane

REVIEWED BY (PRINT)

Jim Robertson

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Estevan Lujon	2/16/10	(Printed Name) Sheri Sherwood	2/16/10
(Signature)	08:22 AM	(Signature)	0822
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

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

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8310

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	QBT3		FILL
TIME COLLECTED (HH:MM)		0935		SUB-MEDIA:	TUFF 1		NA
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	HA		DC
LOCATION ID:	15-610834	↓		FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC	↓		FIELD PREP:	NA		↓
TOP DEPTH:	0	15.0		SAMPLE USAGE:	INV		↓
BOTTOM DEPTH:	0	16.0		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	S		EXCAVATED:	YES/NO/NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES/NO/NA
BOREHOLE: YES/NO/NA	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	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+ N03+pH	500 ML POLY	Ice	Y	
1	↓	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Pinkish gray weathered tuff fill

SAMPLE COMMENTS:

NA

LOCATION DESC:

Below Tank, 9b-3

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha =  $\frac{27}{2120}$  dpm  
Beta/Gamma =  $\frac{27}{2120}$  dpm

PID  $\frac{\text{Ambient Reading } 0.0}{0.6} = \text{ppm}$

COLLECTED BY (PRINT)

TLMcFarland

REVIEWED BY (PRINT)

Riley Evans

RELINQUISHED BY (Printed Name) Estevan Lujan (Signature)	Date/Time 2/16/10 08:23 AM	RECEIVED BY (Printed Name) Sherin Sherwood (Signature)	Date/Time 2/16/10 08:23
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8311

WORK ORDER:

AS PLANNED		AS COLLECTED	AS PLANNED		AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		02/15/2010	MEDIA:	QBT3	ok
TIME COLLECTED (HH:MM)		0949	SUB-MEDIA:	TUFF 1	↓
PRS ID:	15-009(b)	ok	SAMPLE TECH CODE:	HA	DC
LOCATION ID:	15-610834	↓	FIELD QC TYPE:	NA	ok
LOCATION TYPE:	GENERIC	↓	FIELD PREP:	NA	↓
TOP DEPTH:	0	17.0	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	0	18.0	SCREEN/PORT DESC:		NA
FIELD MATRIX:	R	R	EXCAVATED:	YES/NO/NA	
COMPOSITE TYPE:	NA		COMPOSITE TIME INTERVAL:	NA	
			WATER FLOWING:	YES/NO/NA	
BOREHOLE:	YES/NO/NA		BOREHOLE DECLINATION:	NA	
			BOREHOLE DIRECTION:	NA	

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8260B	125 ML SEPTUM AMBER GLASS	Ice	Y	
1		8270C+NMED Exp	500 ML 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+N03+pH	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Pinkish gray tuff

Bingale collected: RE15-10-8329

SAMPLE COMMENTS:

NA

LOCATION DESC:

2  
17m  
2/15/10  
5 feet below tank

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  11 dpm  
Beta/Gamma  $\leq$  2080 dpmPID  $\frac{\text{Ambient}}{\text{Reading}} = \frac{0.0}{0.0}$  ppm

COLLECTED BY (PRINT)

Th McFarlane

REVIEWED BY (PRINT)

Riley Evans

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Estevan Lujan	2/16/10	(Printed Name) Sheri Sherwood	2/16/10
(Signature)	08:23 AM	(Signature)	0823
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8312

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	QBT3	SR2/15/10	Att F:11
TIME COLLECTED (HH:MM)		0850		SUB-MEDIA:	TUFF 1		NA
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	HA		DC
LOCATION ID:	15-610835			FIELD QC TYPE:	NA		
LOCATION TYPE:	GENERIC	↓		FIELD PREP:	NA		↓
TOP DEPTH:	0	7.0		SAMPLE USAGE:	INV		↓
BOTTOM DEPTH:	0	8.0		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	S		EXCAVATED:	YES/NO/NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES/NO/NA
BOREHOLE: YES/NO/NA	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	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+N03+pH	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Pinkish gray weathered

SAMPLE COMMENTS:

NA

LOCATION DESC:

Below inlet pipe, 16-1

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 16 dpm  
Beta/Gamma = 1976 dpm

PID  $\frac{\text{Ambient Reading}}{0.3} = 0.0$  ppm

COLLECTED BY (PRINT)

TLMCFarland

REVIEWED BY (PRINT)

JonRoberson

RELINQUISHED BY (Printed Name) Estevan Lujan (Signature)	Date/Time 2/16/10 08:25 AM	RECEIVED BY (Printed Name) Sherri Sherwood (Signature)	Date/Time 2/16/10 0825
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8313

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA: QBT3		JR 2/15/10 ATTN: Fill	
TIME COLLECTED (HH:MM)		0910		SUB-MEDIA: TUFF 1		NA	
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE: HA		DC	
LOCATION ID:	15-610835	↓		FIELD QC TYPE: NA		OK	
LOCATION TYPE:	GENERIC	↓		FIELD PREP: NA		↓	
TOP DEPTH:	0	12.0		SAMPLE USAGE: INV		↓	
BOTTOM DEPTH:	0	13.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	S		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA		WATER FLOWING: YES/NO/NA		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	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+N03+pH	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Pinkish brown weathered tuff and sandy silt

SAMPLE COMMENTS:

NA

LOCATION DESC:

5' Below inlet pipe, 9b-1

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq 22$  dpm  
Beta/Gamma  $\leq 2120$  dpm

PID  $\frac{\text{Ambient Reading}}{0.8} \text{ ppm}$

COLLECTED BY (PRINT)

ThMcFarland

REVIEWED BY (PRINT)

Jo. Robinson

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Estwan Lujan	2/16/10	(Printed Name) Sherri Sherwood	2/16/10
(Signature)	08:26 AM	(Signature)	0826
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

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

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8314

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	QBT3	73m	ATTN FILL
TIME COLLECTED (HH:MM)		0915		SUB-MEDIA:	TUFF 1	215110	NA
PRS ID:	15-009(b)			SAMPLE TECH CODE:	HA		OC
LOCATION ID:	15-610836			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0		7.0	SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0		8.0	SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	S	FILL 8 13m 2/15/10	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	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+N03+pH	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Pinkish gray weathered tuff fill and tuff fragments

SAMPLE COMMENTS:

NA

LOCATION DESC:

Below outlet, 9b-4

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  22 dpm  
 Beta/Gamma  $\leq$  2280 dpm

PID  $\frac{\text{Ambient Reading}}{0.1} \frac{0.0}{0.1}$  ppm

COLLECTED BY (PRINT)

TLMcFarlane

REVIEWED BY (PRINT)

Riley Evans

RELINQUISHED BY (Printed Name) E. Lujan (Signature)	Date/Time 2/16/10 08:26 AM	RECEIVED BY (Printed Name) Sheri Sherwood (Signature)	Date/Time 2/16/10 0826
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8315

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA: OBT3		12m 2/15/10 FILL	
TIME COLLECTED (HH:MM)		0921		SUB-MEDIA: TUFF 1		NA	
PRS ID:	15-009(b)	ok		SAMPLE TECH CODE: HA		DC	
LOCATION ID:	15-610836	↓		FIELD QC TYPE: NA		ok	
LOCATION TYPE:	GENERIC	↓		FIELD PREP: NA		↓	
TOP DEPTH:	0	12.0		SAMPLE USAGE: INV		↓	
BOTTOM DEPTH:	0	13.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	S FILL 12m 2/15/10		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	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+ N03+pH	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Pinkish gray weathered tuff fill and tuff fragments

SAMPLE COMMENTS:

NA

LOCATION DESC:

5 ft below tank outlet, 9b-4

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  11 dpm  
Beta/Gamma  $\leq$  2140 dpm

PID  $\frac{\text{Ambient}}{\text{Reading}} = \frac{0.0}{0.2}$  ppm

COLLECTED BY (PRINT)

TLM cFarland

REVIEWED BY (PRINT)

Riley Evans

RELINQUISHED BY (Printed Name) E. L. Lyan (Signature)	Date/Time 2/16/10 08:26 AM	RECEIVED BY (Printed Name) Sheri Sherwood (Signature)	Date/Time 2/16/10 0826
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8329

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	NA		OK
TIME COLLECTED (HH:MM)		10:50		SUB-MEDIA:	OTHER		
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	DC		
LOCATION ID:	UNK			FIELD QC TYPE:	FR		
LOCATION TYPE:	GENERIC			FIELD PREP:	UF		
TOP DEPTH:	0			SAMPLE USAGE:	QC		
BOTTOM DEPTH:	0			SCREEN/PORT DESC:			
FIELD MATRIX:	W			EXCAVATED: YES/NO/NA			
COMPOSITE TYPE:		COMPOSITE TIME INTERVAL:		WATER FLOWING: YES/NO/NA			
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION:		BOREHOLE DIRECTION:			

#	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)	NO	
1	normal	SW-846:6850	250 ML POLY	Ice	y	
1	↓	TCN	500 ML POLY	Sodium Hydroxide	y	

SAMPLE DESC: QC Sample of RE15-10-8329

SAMPLE COMMENTS: none

LOCATION DESC: R44 tank

FIELD SCREENING/MEASUREMENT RESULTS:

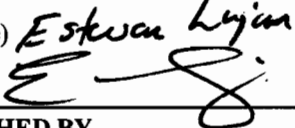
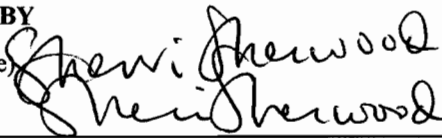
NA

COLLECTED BY (PRINT)

Jon Roberson

REVIEWED BY (PRINT)

Nicholas Gallegos

RELINQUISHED BY (Printed Name) Estwan Leyman (Signature) 	Date/Time 2/16/10 08:21 AM	RECEIVED BY (Printed Name) Sheri Sherwood (Signature) 	Date/Time 2/16/10 0821
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

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

SAMPLE ID: RE15-10-8334

WORK ORDER:

AS PLANNED	AS COLLECTED	AS PLANNED	AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):	02/15/2010	MEDIA:	NA
TIME COLLECTED (HH:MM)	0840	SUB-MEDIA:	OTHER
PRS ID: 15-009(b)	OK	SAMPLE TECH CODE:	DC
LOCATION ID: UNK	15-610 830	FIELD QC TYPE:	FTB
LOCATION TYPE: GENERIC	OK	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	Normal	8260B Trip Blank	40 ML SEPTUM AMBER GLASS	Ice	Y	

SAMPLE DESC: QC Sample of RE 15-10-8307

SAMPLE COMMENTS:

FTB

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

TLMcFarlane

REVIEWED BY (PRINT)

Riley Evans

RELINQUISHED BY (Printed Name) Estwan Lujan (Signature) [Signature]	Date/Time 2/16/10 08:28 AM	RECEIVED BY (Printed Name) Sherri Sherwood (Signature) [Signature]	Date/Time 2/16/10 0828
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-10-00262  
 Analysis Description: Gross Alpha/Beta in (Soil, Sludge, Waste, Sediment [SO])  
 Analysis Test Method: GPC-A-003

Request or PO Number: N/A  
 Date Received: 2/17/2010  
 Report Date: 02/18/10 12:34

ARS Sample ID	Client Sample ID	Isotope	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Date/Time	Analysis Technician	Trace/Chem Recovery	Sample Matrix	Collection Date
ARS1-10-00262-001	RE15-10-8302	GROSS ALPHA	6.817	4.732	14.397	4.405	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-001	RE15-10-8302	GROSS BETA	25.135	4.841	7.848	3.393	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-002	RE15-10-8303	GROSS ALPHA	5.392	3.976	12.127	3.443	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-002	RE15-10-8303	GROSS BETA	32.960	5.742	8.016	3.483	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-003	RE15-10-8310	GROSS ALPHA	4.815	3.949	13.061	3.913	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-003	RE15-10-8310	GROSS BETA	28.560	5.211	7.666	3.298	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-004	RE15-10-8311	GROSS ALPHA	16.706	6.638	13.740	4.170	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-004	RE15-10-8311	GROSS BETA	31.065	5.505	7.578	3.274	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-005	RE15-10-8312	GROSS ALPHA	9.299	5.281	13.981	4.169	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-005	RE15-10-8312	GROSS BETA	41.326	6.770	7.991	3.448	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-006	RE15-10-8313	GROSS ALPHA	7.489	4.853	13.949	4.119	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-006	RE15-10-8313	GROSS BETA	43.056	6.963	7.921	3.412	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-007	RE15-10-8314	GROSS ALPHA	5.109	4.119	13.539	4.037	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-007	RE15-10-8314	GROSS BETA	24.911	4.797	7.864	3.408	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-008	RE15-10-8315	GROSS ALPHA	-4.587	0.925	16.695	5.307	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-008	RE15-10-8315	GROSS BETA	41.335	6.715	8.074	3.495	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-009	RE15-10-8254	GROSS ALPHA	9.792	5.179	12.801	3.634	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-009	RE15-10-8254	GROSS BETA	24.323	4.794	8.108	3.525	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-010	RE15-10-8268	GROSS ALPHA	8.073	5.086	14.434	4.219	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-010	RE15-10-8268	GROSS BETA	26.329	5.062	8.262	3.585	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-011	RE15-10-8253	GROSS ALPHA	3.451	3.582	13.138	3.819	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-011	RE15-10-8253	GROSS BETA	32.688	5.715	7.891	3.407	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-012	RE15-10-8252	GROSS ALPHA	2.746	3.546	13.798	4.188	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-012	RE15-10-8252	GROSS BETA	35.047	6.091	8.879	3.904	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-013	RE15-10-8264	GROSS ALPHA	18.758	7.035	13.380	3.990	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-013	RE15-10-8264	GROSS BETA	37.384	6.327	7.991	3.459	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-014	RE15-10-8251	GROSS ALPHA	9.207	4.947	12.428	3.572	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-014	RE15-10-8251	GROSS BETA	28.501	5.280	8.199	3.569	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-015	RE15-10-8250	GROSS ALPHA	9.265	5.182	13.645	4.049	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-015	RE15-10-8250	GROSS BETA	36.111	6.111	7.756	3.345	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-016	RE15-10-8249	GROSS ALPHA	3.355	4.301	16.569	5.426	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-016	RE15-10-8249	GROSS BETA	27.286	5.120	8.204	3.568	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-017	RE15-10-8248	GROSS ALPHA	2.496	3.730	14.783	4.559	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-017	RE15-10-8248	GROSS BETA	31.617	5.622	8.177	3.548	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-018	RE15-10-8247	GROSS ALPHA	3.909	4.426	16.310	5.230	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-018	RE15-10-8247	GROSS BETA	30.943	5.717	9.264	4.075	U	PC/g	2/18/2010	CR	N/A	SO	



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS-10-00262  
 Analysis Description: Gross Alpha/Beta in (Soil, Sludge, Waste, Sediment [SO])  
 Analysis Test Method: GPC-A-003

Request or PO Number: N/A  
 Date Received: 2/17/2010  
 Report Date: 02/18/10 12:34

ARS Sample ID	Client Sample ID	Isotope	Analysis Results	Analysis Error +/- 2 s	HDC	DLC	Qual	Analysis Units	Analysis Date/Time	Analysis Technician	Trace/Chain Recovery	Sample Name	Collection Date
ARS1-10-00262-019	RE15-10-8894	GROSS ALPHA	7.676	5.176	15.661	5.050	U	pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-019	RE15-10-8894	GROSS BETA	23.779	4.717	7.870	3.391		pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-020	RE15-10-8349	GROSS ALPHA	14.120	6.531	15.732	5.045	U	pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-020	RE15-10-8349	GROSS BETA	38.731	6.505	8.084	3.491		pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-021	RE15-10-8348	GROSS ALPHA	12.891	6.315	15.594	5.082	U	pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-021	RE15-10-8348	GROSS BETA	42.571	6.852	7.546	3.242		pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-022	RE16-10-1514	GROSS ALPHA	1.837	3.758	15.319	4.839	U	pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-022	RE16-10-1514	GROSS BETA	45.190	7.195	8.022	3.465		pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-023	RE16-10-13141	GROSS ALPHA	-1.251	2.802	15.097	5.002	U	pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-023	RE16-10-13141	GROSS BETA	26.989	4.999	7.752	3.346		pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-024	RE16-10-13142	GROSS ALPHA	9.142	5.361	14.808	4.762	U	pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-024	RE16-10-13142	GROSS BETA	35.501	6.042	7.756	3.343		pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-025	RE16-10-13143	GROSS ALPHA	8.291	5.673	16.892	5.656	U	pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-025	RE16-10-13143	GROSS BETA	37.273	6.288	7.980	3.444		pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-026	RE16-10-13147	GROSS ALPHA	5.527	5.069	17.198	6.082	U	pc/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-026	RE16-10-13147	GROSS BETA	32.272	5.756	8.540	3.729		pc/g	2/18/2010	CR	N/A	SO	
NOTES:													

Project Manager Review

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

LELAP Certificate # 01949

NELAP Certificate # EB7558

## DATA VALIDATION COVER SHEET

5119-1

## Data Validation Cover Sheet

Records Use only



## Section I.

REQUEST NUMBER: 10-1952 VALIDATION DATE: 04/04/10 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):


- The gamma spec results that were rejected by the laboratory due to interference, low abundance, or no valid peak were qualified R,R5a.
- Alpha spec U-238 was detected in the MB associated with all samples except RE15-10-8311. All associated sample results were detects >5X but ≤50X the blank concentration and, thus, were qualified J,R4a.
- An MS was not analyzed for tritium. However, an LCS was analyzed, met acceptance criteria and, thus, no sample results were qualified.
- It should be noted that the parent sample for all QC analyses except tritium was a LANL sample from another RN. No sample data were qualified as a result.

Reviewed by: Monica Dymerski Level I Date: 04/06/10


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

John Bailey


DATE: 04/04/10

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

Yes No N/A (Check One)				Assign Qualifier Listed Below If Criterion = Yes	
				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 checked="" type="checkbox"/>	<input 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	
<b>5119-2</b>  <b>Rad Analytical Data Validation Checklist</b>	Records Use only  

Yes No N/A (Check One)				Assign Qualifier Listed Below If Criterion = Yes	
				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	
<b>5119-2</b>  <b>Rad Analytical Data Validation Checklist</b>	Records Use only  

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

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8314  
Sample ID: 247563001  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-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	-0.000624	0.0336	+/-0.00271	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0176	0.0197	+/-0.00591	0.050	pCi/g		KXM4	03/08/10	1726	957108	2
Plutonium-239/240	U	-0.00344	0.0167	+/-0.00335	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.913	0.181	+/-0.109	0.100	pCi/g		KXM4	03/06/10	2203	957113	3
Uranium-235/236	U	0.0948	0.112	+/-0.0312	0.100	pCi/g						
Uranium-238		0.866	J,R4a	+/-0.105	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0912	0.140	+/-0.0437	0.200	pCi/g		MXR1	03/02/10	2321	956157	4
Bismuth-211	UI	4.25	R,R5a	+/-0.259		pCi/g						
Bismuth-214		1.34		+/-0.0934	0.200	pCi/g						
Cadmium-109	UI	4.10	R,R5a	+/-0.362		pCi/g						
Cerium-139	U	-0.0224	0.0325	+/-0.0102	0.050	pCi/g						
Cesium-134	UI	0.0766	R,R5a	+/-0.0267	0.100	pCi/g						
Cesium-137	U	-0.0143	0.0403	+/-0.0122	0.100	pCi/g						
Cobalt-60	U	-0.00707	0.0403	+/-0.0128	0.100	pCi/g						
Europium-152	U	0.0385	0.109	+/-0.0354	0.200	pCi/g						
Lanthanum-140	U	0.0147	0.0907	+/-0.0306		pCi/g						
Lead-212		1.80	0.0628	+/-0.105	0.100	pCi/g						
Lead-214		1.54	0.0765	+/-0.103	0.100	pCi/g						
Mercury-203	U	0.0244	0.044	+/-0.014	0.100	pCi/g						
Potassium-40		34.8	0.300	+/-1.64	1.00	pCi/g						
Radium-223	U	-0.00527	0.699	+/-0.233		pCi/g						
Radium-224	UI	4.20	R,R5a	+/-0.423		pCi/g						
Radium-226		1.34	0.0698	+/-0.0934		pCi/g						
Radium-228		1.99	0.154	+/-0.169	0.500	pCi/g						
Ruthenium-106	U	0.307	0.369	+/-0.106	0.800	pCi/g						
Sodium-22	U	-0.0126	0.0457	+/-0.0146	0.080	pCi/g						
Strontium-85	UI	0.0748	R,R5a	+/-0.0145		pCi/g						

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8314  
Sample ID: 247563001  
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		0.574	0.0419	+/-0.0397	0.080	pCi/g						
Thorium-227	U	-0.0512	0.282	+/-0.0823		pCi/g						
Thorium-231	U	-0.00527	0.699	+/-0.233		pCi/g						
Thorium-234		1.79	1.23	+/-0.597	2.00	pCi/g						
Tin-113	U	0.00495	0.0489	+/-0.0144	0.100	pCi/g						
Uranium-235		0.281	0.219	+/-0.116	0.500	pCi/g						
Yttrium-88	U	0.00453	0.0346	+/-0.0102	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		5360	201	+/-394	250	pCi/L		KXK2	03/11/10	1133	960227	5

### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	DOE HASL 300, 4.5.2.3/Ga-01-R
5	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	71.3	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	104	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	99.4	(50%-105%)

### Notes:

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

The Qualifiers in this report are defined as follows :

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

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8313  
Sample ID: 247563002  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.59%

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>												
<i>AM241 "Dry Weight Corrected"</i>												
Americium-241	U	0.00348	0.0207	+/-0.00216	0.050	pCi/g		KXM4	03/10/10	1636	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0128	0.0225	+/-0.0054	0.050	pCi/g		KXM4	03/08/10	1726	957108	3
Plutonium-239/240	U	0.0111	0.019	+/-0.00512	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.19	0.190	+/-0.133	0.100	pCi/g		KXM4	03/06/10	2203	957113	4
Uranium-235/236	U	0.0945	0.118	+/-0.0308	0.100	pCi/g						
Uranium-238		1.18	J,R4a	0.134	+/-0.132	0.100	pCi/g					
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0242	0.246	+/-0.0782	0.200	pCi/g		MXR1	03/02/10	2321	956157	5
Bismuth-211	UI	4.05	R,R5a	0.250	+/-0.220	pCi/g						
Bismuth-214		1.29		0.0867	+/-0.0825	0.200	pCi/g					
Cadmium-109	UI	4.08	R,R5a	1.02	+/-0.462	pCi/g						
Cerium-139	U	-0.0018		0.0398	+/-0.0118	0.050	pCi/g					
Cesium-134	UI	0.0839	R,R5a	0.0709	+/-0.0295	0.100	pCi/g					
Cesium-137	U	0.0363		0.0512	+/-0.0203	0.100	pCi/g					
Cobalt-60	U	0.00264		0.0469	+/-0.0143	0.100	pCi/g					
Europium-152	U	0.0689		0.128	+/-0.0463	0.200	pCi/g					
Lanthanum-140	U	-0.0291		0.106	+/-0.0333	pCi/g						
Lead-212		1.63		0.0757	+/-0.0725	0.100	pCi/g					
Lead-214		1.47		0.0909	+/-0.0895	0.100	pCi/g					
Mercury-203	UI	0.0539	R,R5a	0.0496	+/-0.0188	0.100	pCi/g					
Potassium-40		30.2		0.373	+/-1.32	1.00	pCi/g					
Radium-223	U	0.266		0.856	+/-0.279	pCi/g						
Radium-224	UI	4.14	R,R5a	0.811	+/-0.481	pCi/g						
Radium-226		1.29		0.0867	+/-0.0825	pCi/g						
Radium-228		2.00		0.193	+/-0.177	0.500	pCi/g					
Ruthenium-106	U	0.122		0.427	+/-0.126	0.800	pCi/g					
Sodium-22	U	-0.000384		0.0603	+/-0.0184	0.080	pCi/g					
Strontium-85	UI	0.0556	R,R5a	0.0537	+/-0.0168	pCi/g						
Thallium-208		0.528		0.0469	+/-0.0362	0.080	pCi/g					

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

Report Date: March 18, 2010

Client Sample ID:  
Sample ID:

RE15-10-8313  
247563002

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	-0.00793	0.329	+/-0.0995		pCi/g						
Thorium-231	U	0.266	0.856	+/-0.279		pCi/g						
Thorium-234		3.63	2.02	+/-1.06	2.00	pCi/g						
Tin-113	U	-0.0181	0.0579	+/-0.0174	0.100	pCi/g						
Uranium-235	U	-0.0279	0.273	+/-0.0823	0.500	pCi/g						
Yttrium-88	U	0.0309	0.0506	+/-0.0134	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		2160	202	+/-176	250	pCi/L		KXK2	03/11/10	1311	960227	6

### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Am-05-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, U-02-RC Modified
5	DOE HASL 300, 4.5.2.3/Ga-01-R
6	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	85.4	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	99.8	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	93.1	(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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Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 18, 2010

Client Sample ID: RE15-10-8312  
Sample ID: 247563003  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 5.16%

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>												
<i>AM241 "Dry Weight Corrected"</i>												
Americium-241	U	-0.00184	0.0336	+/-0.00297	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00771	0.0243	+/-0.00387	0.050	pCi/g		KXM4	03/10/10	1856	957108	2
Plutonium-239/240	U	0.00385	0.0206	+/-0.00273	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.34	0.177	+/-0.142	0.100	pCi/g		KXM4	03/06/10	2203	957113	4
Uranium-235/236	U	0.0878	0.109	+/-0.0306	0.100	pCi/g						
Uranium-238		1.37	J,R4a	0.125	+/-0.144	0.100	pCi/g					
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0203	0.0582	+/-0.0183	0.200	pCi/g		MXR1	03/02/10	2322	956157	5
Bismuth-211	UI	4.26	R,R5a	0.217	+/-0.280	pCi/g						
Bismuth-214		1.28		0.0796	+/-0.096	0.200	pCi/g					
Cadmium-109	UI	3.58	R,R5a	0.509	+/-0.310	pCi/g						
Cerium-139	U	-0.00915		0.0293	+/-0.00863	0.050	pCi/g					
Cesium-134	UI	0.123	R,R5a	0.0672	+/-0.0235	0.100	pCi/g					
Cesium-137		0.140		0.0473	+/-0.0212	0.100	pCi/g					
Cobalt-60	U	-0.0172		0.0457	+/-0.0146	0.100	pCi/g					
Europium-152	U	-0.0122		0.103	+/-0.0342	0.200	pCi/g					
Lanthanum-140	U	-0.0453		0.0965	+/-0.0327	pCi/g						
Lead-212		1.86		0.0576	+/-0.113	0.100	pCi/g					
Lead-214		1.55		0.0788	+/-0.110	0.100	pCi/g					
Mercury-203	U	0.0296		0.0423	+/-0.0138	0.100	pCi/g					
Potassium-40		33.6		0.367	+/-1.58	1.00	pCi/g					
Radium-223	U	0.305		0.718	+/-0.228	pCi/g						
Radium-224	UI	4.55	R,R5a	0.618	+/-0.421	pCi/g						
Radium-226		1.28		0.0796	+/-0.096	pCi/g						
Radium-228		1.93		0.176	+/-0.163	0.500	pCi/g					
Ruthenium-106	U	-0.188		0.351	+/-0.108	0.800	pCi/g					
Sodium-22	U	0.00176		0.0596	+/-0.018	0.080	pCi/g					
Strontium-85	U	0.041		0.0439	+/-0.0139	pCi/g						
Thallium-208		0.626		0.0391	+/-0.0461	0.080	pCi/g					

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 18, 2010

Client Sample ID:  
Sample ID:

RE15-10-8312  
247563003

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	-0.0483	0.252	+/-0.0872		pCi/g						
Thorium-231	U	0.305	0.718	+/-0.228		pCi/g						
Thorium-234		2.51	0.558	+/-0.394	2.00	pCi/g						
Tin-113	U	-0.0133	0.0489	+/-0.0147	0.100	pCi/g						
Uranium-235	U	0.0836	0.204	+/-0.0599	0.500	pCi/g						
Yttrium-88	U	-0.0138	0.0348	+/-0.0117	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		1900	201	+/-159	250	pCi/L	KXX2	03/11/10	1450	960227	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"	75.9	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	96.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	101	(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 18, 2010

Client Sample ID: RE15-10-8315  
Sample ID: 247563004  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.35%

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	-0.00184	0.0314	+/-0.00278	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	-0.0068	0.0339	+/-0.00406	0.050	pCi/g		KXM4	03/10/10	1901	957108	2
Plutonium-239/240	U	-0.00139	0.0287	+/-0.00358	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.982	0.185	+/-0.114	0.100	pCi/g		KXM4	03/06/10	2203	957113	4
Uranium-235/236	U	0.0184	0.115	+/-0.0131	0.100	pCi/g						
Uranium-238		1.00	J,R4a	+/-0.116	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.0599	0.290	+/-0.0834	0.200	pCi/g		MXR1	03/03/10	1850	956157	5
Bismuth-211	UI	3.89	R,R5a	+/-0.211		pCi/g						
Bismuth-214		1.22		+/-0.0878	0.200	pCi/g						
Cadmium-109	UI	3.39	R,R5a	+/-0.504		pCi/g						
Cerium-139	U	-0.0115		+/-0.0117	0.050	pCi/g						
Cesium-134	UI	0.0902	R,R5a	+/-0.0224	0.100	pCi/g						
Cesium-137	U	0.00682		+/-0.015	0.100	pCi/g						
Cobalt-60	U	-0.0138		+/-0.0164	0.100	pCi/g						
Europium-152	U	-0.0668		+/-0.0459	0.200	pCi/g						
Lanthanum-140	U	0.0854		+/-0.0336		pCi/g						
Lead-212		1.57		+/-0.0774	0.100	pCi/g						
Lead-214		1.41		+/-0.0859	0.100	pCi/g						
Mercury-203	U	0.0109		+/-0.0163	0.100	pCi/g						
Potassium-40		35.5		+/-1.54	1.00	pCi/g						
Radium-223	U	-0.156		+/-0.300		pCi/g						
Radium-224	UI	3.00	R,R5a	+/-0.400		pCi/g						
Radium-226		1.22		+/-0.0878		pCi/g						
Radium-228		1.98		+/-0.179	0.500	pCi/g						
Ruthenium-106	U	-0.108		+/-0.131	0.800	pCi/g						
Sodium-22	U	0.00701		+/-0.0192	0.080	pCi/g						
Strontium-85	UI	0.0732	R,R5a	+/-0.0179		pCi/g						
Thallium-208		0.544		+/-0.0403	0.080	pCi/g						

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8315  
Sample ID: 247563004  
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	0.0604	0.352	+/-0.102		pCi/g						
Thorium-231	U	-0.156	0.852	+/-0.300		pCi/g						
Thorium-234	U	0.215	2.56	+/-0.728	2.00	pCi/g						
Tin-113	U	-0.0147	0.0594	+/-0.0176	0.100	pCi/g						
Uranium-235	U	0.121	0.301	+/-0.0903	0.500	pCi/g						
Yttrium-88	U	0.0128	0.0477	+/-0.0139	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4180	202	+/-313	250	pCi/L		KXX2	03/11/10	1629	960227	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"	79.6	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	85.7	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	93.0	(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
- D Results are reported from a diluted aliquot of the sample

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8311  
Sample ID: 247563005  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.68%

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	0.00176	0.0333	+/-0.00294	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0128	0.0269	+/-0.00527	0.050	pCi/g		KXM4	03/10/10	1901	957108	2
Plutonium-239/240	U	0.0107	0.0228	+/-0.00548	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.936	0.0751	+/-0.0821	0.100	pCi/g		KXM4	03/17/10	0811	964412	4
Uranium-235/236		0.048	0.046	+/-0.0139	0.100	pCi/g						
Uranium-238		0.938	0.0529	+/-0.0822	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0177	0.239	+/-0.0779	0.200	pCi/g		MXR1	03/03/10	1850	956157	7
Bismuth-211	UI	4.23	R,R5a	0.365	+/-0.326	pCi/g						
Bismuth-214		1.29		0.119	+/-0.113	pCi/g						
Cadmium-109	UI	3.48	R,R5a	1.32	+/-0.474	pCi/g						
Cerium-139	U	-0.0084		0.052	+/-0.0154	pCi/g						
Cesium-134	UI	0.102	R,R5a	0.0862	+/-0.0244	pCi/g						
Cesium-137	U	-0.0121		0.0586	+/-0.0181	pCi/g						
Cobalt-60	U	-0.00117		0.0642	+/-0.0196	pCi/g						
Europium-152	U	-0.0527		0.162	+/-0.0605	pCi/g						
Lanthanum-140	U	-0.20		0.117	+/-0.0463	pCi/g						
Lead-212		2.10		0.0963	+/-0.151	pCi/g						
Lead-214		1.54		0.122	+/-0.126	pCi/g						
Mercury-203	U	0.0494		0.0705	+/-0.0236	pCi/g						
Potassium-40		42.1		0.498	+/-2.10	pCi/g						
Radium-223	U	-0.125		1.05	+/-0.358	pCi/g						
Radium-224	UI	5.71	R,R5a	1.03	+/-0.701	pCi/g						
Radium-226		1.29		0.119	+/-0.113	pCi/g						
Radium-228		1.97		0.232	+/-0.212	pCi/g						
Ruthenium-106	U	-0.159		0.514	+/-0.159	pCi/g						
Sodium-22	U	-0.0242		0.0743	+/-0.0232	pCi/g						
Strontium-85	UI	0.128	R,R5a	0.0766	+/-0.0241	pCi/g						
Thallium-208		0.556		0.0527	+/-0.0505	pCi/g						

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

Report Date: March 18, 2010

Client Sample ID:  
Sample ID:

RE15-10-8311  
247563005

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	-0.0512	0.443	+/-0.136		pCi/g						
Thorium-231	U	-0.125	1.05	+/-0.358		pCi/g						
Thorium-234		2.57	2.02	+/-1.01	2.00	pCi/g						
Tin-113	U	-0.00621	0.0729	+/-0.022	0.100	pCi/g						
Uranium-235	U	0.0923	0.368	+/-0.109	0.500	pCi/g						
Yttrium-88	U	-0.0193	0.0456	+/-0.0166	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		1460	201	+/-131	250	pCi/L		KXK2	03/11/10	1808	960227	8

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

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	75.1	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	98.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	98.1	(50%-105%)

### Notes:

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

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- BD Results are either below the MDC or tracer recovery is low

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 18, 2010

Client Sample ID: RE15-10-8310  
Sample ID: 247563006  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.65%

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	0.00206	0.0269	+/-0.002	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.017	0.0226	+/-0.0109	0.050	pCi/g		KXM4	03/08/10	1751	957108	2
Plutonium-239/240	U	-0.00177	0.0191	+/-0.0047	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.27	0.176	+/-0.136	0.100	pCi/g		KXM4	03/06/10	2203	957113	3
Uranium-235/236	U	0.0877	0.109	+/-0.0285	0.100	pCi/g						
Uranium-238		1.30	J,R4a	0.125	+/-0.139	0.100	pCi/g					
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.336	0.562	+/-0.174	0.200	pCi/g		MXR1	03/03/10	1920	956157	4
Bismuth-211	UI	4.59	R,R5a	0.448	+/-0.404	pCi/g						
Bismuth-214		1.36		0.151	+/-0.118	0.200	pCi/g					
Cadmium-109	UI	3.23	R,R5a	2.19	+/-0.668	pCi/g						
Cerium-139	U	0.00852	0.0745	+/-0.0227	0.050	pCi/g						
Cesium-134	U	0.108	0.125	+/-0.0487	0.100	pCi/g						
Cesium-137	U	-0.00887	0.088	+/-0.0265	0.100	pCi/g						
Cobalt-60	U	0.0447	0.0943	+/-0.0267	0.100	pCi/g						
Europium-152	U	-0.00496	0.225	+/-0.0745	0.200	pCi/g						
Lanthanum-140	U	0.0265	0.202	+/-0.0689	pCi/g							
Lead-212		2.07	0.134	+/-0.148	0.100	pCi/g						
Lead-214		1.66	0.165	+/-0.154	0.100	pCi/g						
Mercury-203	U	0.0748	0.0943	+/-0.0364	0.100	pCi/g						
Potassium-40		38.9	0.790	+/-2.28	1.00	pCi/g						
Radium-223	U	-0.0423	1.47	+/-0.507	pCi/g							
Radium-224	UI	4.98	R,R5a	1.44	+/-0.887	pCi/g						
Radium-226		1.36	0.151	+/-0.118	pCi/g							
Radium-228		1.96	0.292	+/-0.241	0.500	pCi/g						
Ruthenium-106	U	0.282	0.751	+/-0.222	0.800	pCi/g						
Sodium-22	U	-0.0184	0.105	+/-0.0336	0.080	pCi/g						
Strontium-85	UI	0.117	R,R5a	0.101	+/-0.0309	pCi/g						
Thallium-208		0.637	0.0738	+/-0.0663	0.080	pCi/g						

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

Report Date: March 18, 2010

Client Sample ID:  
Sample ID:

RE15-10-8310  
247563006

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	0.0289	0.616	+/-0.182		pCi/g						
Thorium-231	U	-0.0423	1.47	+/-0.507		pCi/g						
Thorium-234	U	1.18	4.73	+/-1.40	2.00	pCi/g						
Tin-113	U	-0.00973	0.107	+/-0.0326	0.100	pCi/g						
Uranium-235	U	-0.0927	0.493	+/-0.154	0.500	pCi/g						
Yttrium-88	U	-0.00945	0.0652	+/-0.021	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		3090	202	+/-239	250	pCi/L		KXK2	03/11/10	1946	960227	5

### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	DOE HASL 300, 4.5.2.3/Ga-01-R
5	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	90.5	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	87.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	103	(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
- F Estimated Value
- H Analytical holding time was exceeded

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 18, 2010

Client Sample ID: RE15-10-8303  
Sample ID: 247563007  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.17%

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	0.00041	0.0348	+/-0.00223	0.050	pCi/g		KXM4	03/10/10	1636	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00673	0.0283	+/-0.0039	0.050	pCi/g		KXM4	03/10/10	1901	957108	3
Plutonium-239/240	U	0.0224	0.0239	+/-0.00718	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.23	0.180	+/-0.134	0.100	pCi/g		KXM4	03/06/10	2203	957113	5
Uranium-235/236	U	0.0583	0.112	+/-0.0246	0.100	pCi/g						
Uranium-238		1.39	J,R4a	0.128	+/-0.147	0.100	pCi/g					
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.185	0.421	+/-0.128	0.200	pCi/g		MXR1	03/03/10	2042	956157	6
Bismuth-211	UI	4.12	R,R5a	0.364	+/-0.271	pCi/g						
Bismuth-214		1.39		0.113	+/-0.0997	0.200	pCi/g					
Cadmium-109	UI	4.38	R,R5a	1.48	+/-0.705	pCi/g						
Cerium-139	U	0.00835	0.0523	+/-0.0155	0.050	pCi/g						
Cesium-134	U	0.0905	0.0951	+/-0.0252	0.100	pCi/g						
Cesium-137	U	0.00736	0.0803	+/-0.0231	0.100	pCi/g						
Cobalt-60	U	-0.0458	0.0602	+/-0.021	0.100	pCi/g						
Europium-152	U	-0.127	0.160	+/-0.0555	0.200	pCi/g						
Lanthanum-140	U	0.0692	0.186	+/-0.0553	pCi/g							
Lead-212		1.80	0.0915	+/-0.0947	0.100	pCi/g						
Lead-214		1.49	0.123	+/-0.107	0.100	pCi/g						
Mercury-203	U	0.0236	0.0718	+/-0.0202	0.100	pCi/g						
Potassium-40		36.4	0.522	+/-1.66	1.00	pCi/g						
Radium-223	U	0.487	1.14	+/-0.363	pCi/g							
Radium-224	UI	5.01	R,R5a	0.981	+/-0.536	pCi/g						
Radium-226		1.39	0.113	+/-0.0997	pCi/g							
Radium-228		1.81	0.235	+/-0.181	0.500	pCi/g						
Ruthenium-106	U	-0.132	0.487	+/-0.157	0.800	pCi/g						
Sodium-22	U	-0.0362	0.0863	+/-0.0274	0.080	pCi/g						
Strontium-85	U	0.0633	0.0688	+/-0.0207	pCi/g							
Thallium-208		0.583	0.0607	+/-0.0469	0.080	pCi/g						

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8303  
Sample ID: 247563007  
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	-0.123	0.452	+/-0.133		pCi/g						
Thorium-231	U	0.487	1.14	+/-0.363		pCi/g						
Thorium-234		3.17	3.16	+/-1.52	2.00	pCi/g						
Tin-113	U	0.0231	0.0775	+/-0.0223	0.100	pCi/g						
Uranium-235	U	0.186	0.352	+/-0.102	0.500	pCi/g						
Yttrium-88	U	0.0202	0.0598	+/-0.0163	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		1840	202	+/-155	250	pCi/L		KXK2	03/11/10	2303	960227	7

### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Am-05-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, 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"	52.6	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	88.9	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	95.2	(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

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8302  
Sample ID: 247563008  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 5.18%

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	-0.00363	0.0282	+/-0.0106	0.050	pCi/g		KXM4	03/10/10	1636	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.020	0.0214	+/-0.00701	0.050	pCi/g		KXM4	03/08/10	1751	957108	3
Plutonium-239/240	U	0.00367	0.0181	+/-0.00302	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.13	0.185	+/-0.127	0.100	pCi/g		KXM4	03/06/10	2203	957113	4
Uranium-235/236	U	0.0553	0.115	+/-0.023	0.100	pCi/g						
Uranium-238		1.64	J,R4a	0.131	+/-0.168	0.100	pCi/g					
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.010	0.132	+/-0.0434	0.200	pCi/g		MXR1	03/03/10	2043	956157	5
Bismuth-211	UI	4.59	R,R5a	0.436	+/-0.336	pCi/g						
Bismuth-214		1.35		0.145	+/-0.120	0.200	pCi/g					
Cadmium-109	UI	2.83	R,R5a	1.31	+/-0.494	pCi/g						
Cerium-139	U	-0.0042		0.0606	+/-0.0184	0.050	pCi/g					
Cesium-134	U	0.106		0.110	+/-0.0329	0.100	pCi/g					
Cesium-137		0.099		0.0839	+/-0.0296	0.100	pCi/g					
Cobalt-60	U	-0.00177		0.0826	+/-0.0257	0.100	pCi/g					
Europium-152	U	0.0867		0.199	+/-0.0737	0.200	pCi/g					
Lanthanum-140	U	-0.0337		0.177	+/-0.0561	pCi/g						
Lead-212		2.12		0.116	+/-0.132	0.100	pCi/g					
Lead-214		1.67		0.165	+/-0.130	0.100	pCi/g					
Mercury-203	U	-0.0368		0.0818	+/-0.0249	0.100	pCi/g					
Potassium-40		37.2		0.667	+/-1.60	1.00	pCi/g					
Radium-223	U	-1.07		1.33	+/-0.430	pCi/g						
Radium-224	UI	5.66	R,R5a	1.25	+/-0.870	pCi/g						
Radium-226		1.35		0.145	+/-0.120	pCi/g						
Radium-228		1.82		0.323	+/-0.233	0.500	pCi/g					
Ruthenium-106	U	0.0274		0.650	+/-0.199	0.800	pCi/g					
Sodium-22	U	-0.029		0.090	+/-0.0293	0.080	pCi/g					
Strontium-85	U	0.0468		0.0843	+/-0.0275	pCi/g						
Thallium-208		0.551		0.0812	+/-0.0582	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 18, 2010

Client Sample ID: RE15-10-8302  
Sample ID: 247563008  
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	-0.106	0.478	+/-0.143		pCi/g						
Thorium-231	U	-1.07	1.33	+/-0.430		pCi/g						
Thorium-234		2.54	1.27	+/-0.635	2.00	pCi/g						
Tin-113	U	0.0131	0.100	+/-0.0297	0.100	pCi/g						
Uranium-235	U	0.280	0.431	+/-0.129	0.500	pCi/g						
Yttrium-88	U	-0.0263	0.0661	+/-0.0228	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		1740	202	+/-149	250	pCi/L		KXX2	03/12/10	0041	960227	6

### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Am-05-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, U-02-RC Modified
5	DOE HASL 300, 4.5.2.3/Ga-01-R
6	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	64.7	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	105	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	90.5	(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

Friday, February 19, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1952

LOS ALAMOS

REQUEST NUMBER: 10-1952

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/21/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

2475631

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8314	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8314	1	POLY	H3	Ice	R
RE15-10-8313	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8313	1	POLY	H3	Ice	R
RE15-10-8312	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8312	1	POLY	H3	Ice	R
RE15-10-8315	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8315	1	POLY	H3	Ice	R
RE15-10-8311	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8311	1	POLY	H3	Ice	R
RE15-10-8310	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8310	1	POLY	H3	Ice	R
RE15-10-8303	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8303	1	POLY	H3	Ice	R
RE15-10-8302	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8302	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

Friday, February 19, 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: 10-1952  
Per Agreement Number: 126310011  
Project Cost Code: MR3A05529E00

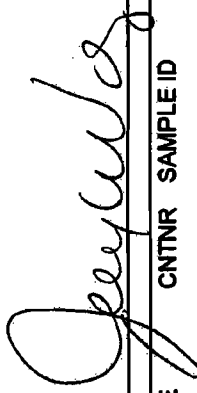
Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/19/2010  
TURNAROUND/REPORT DUE: 3/21/2010  
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	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
		1	RE15-10-8302	R	2/15/2010	
EPA-906.0						

Friday, February 19, 2010

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
	HASL-300:AM-241	1	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
	HASL-300:ISOPU	1	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
	HASL-300:ISOU	1	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	

REQUEST NUMBER: 10-1952

Friday, February 19, 2010

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	HASL-300:ISOU	1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	

Final Page of REQUEST NUMBER 10-1952



February 24, 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: 247563  
SDG: 10-1952

Dear Ms. Valdez:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on February 20, 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: 10-1952  
Enclosures

**Los Alamos National Laboratory (72733-001-09)**  
**LANL ER Project**  
**Work Order #: 247563**  
**SDG: 10-1952**

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# Case Narrative

**Case Narrative for  
Los Alamos National Laboratory (72733-001-09)  
LANL ER Project  
Workorder #: 247563  
SDG # : 10-1952**

**February 24, 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 20, 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 12C 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>
247563001	RE15-10-8314
247563002	RE15-10-8313
247563003	RE15-10-8312
247563004	RE15-10-8315
247563005	RE15-10-8311
247563006	RE15-10-8310
247563007	RE15-10-8303
247563008	RE15-10-8302

**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 24 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**

Friday, February 19, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1952

LOS ALAMOS

REQUEST NUMBER: 10-1952

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/21/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

2475631

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8314	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8314	1	POLY	H3	Ice	R
RE15-10-8313	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8313	1	POLY	H3	Ice	R
RE15-10-8312	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8312	1	POLY	H3	Ice	R
RE15-10-8315	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8315	1	POLY	H3	Ice	R
RE15-10-8311	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8311	1	POLY	H3	Ice	R
RE15-10-8310	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8310	1	POLY	H3	Ice	R
RE15-10-8303	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8303	1	POLY	H3	Ice	R
RE15-10-8302	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8302	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

REQUEST NUMBER: 10-1952

Friday, February 19, 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: 10-1952  
Per Agreement Number: 126310011  
Project Cost Code: MR3A05529E00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/19/2010

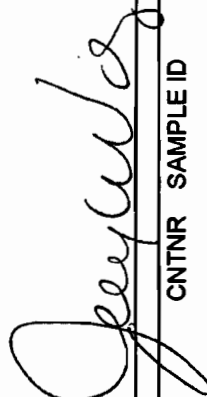
TURNAROUND/REPORT DUE: 3/21/2010

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	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
		1	RE15-10-8302	R	2/15/2010	
EPA:906.0						

Friday, February 19, 2010

Page 2 of 3

REQUEST NUMBER: 10-1952

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
	HASL-300:AM-241	1	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
	HASL-300:ISOPU	1	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	
		1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	
	HASL-300:ISOU	1	RE15-10-8302	R	2/15/2010	
		1	RE15-10-8303	R	2/15/2010	
		1	RE15-10-8310	R	2/15/2010	
		1	RE15-10-8311	R	2/15/2010	
		1	RE15-10-8312	R	2/15/2010	

Friday, February 19, 2010

Page 3 of 3

REQUEST NUMBER: 10-1952

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	HASL-300:ISOU	1	RE15-10-8313	R	2/15/2010	
		1	RE15-10-8314	R	2/15/2010	
		1	RE15-10-8315	R	2/15/2010	

Final Page of REQUEST NUMBER 10-1952



Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: LANL			SDG/ARCOC/Work Order: 10-1952		
Received By: Patricia Dover-Dent			Date Received: February 20, 2009		
Suspected Hazard Information	Yes	No	*If Counts > x2 area background on samples not marked "radioactive", contact the Radiation Safety Group of further investigation.		
COC/Samples marked as radioactive?		X	Maximum Counts Observed*: 40 CPM		
Classified Radioactive II by RSO?		X			
COC/Samples marked containing PCBs?		X			
Shipped as a DOT Hazardous?		X	Hazard Class Shipped: UN#:		
Samples identified as Foreign Soil?		X			

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	X			Circle Applicable: seals broken   damaged container   leaking container   other (describe)
2	Samples requiring cold preservation within 0 ≤ 6 deg. C?	X			Preservation Method: ice bags   blue ice   dry ice   none   other (describe) 2-6   12C
3	Chain of custody documents included with shipment?	X			
4	Sample containers intact and sealed?	X			Circle Applicable: seals broken   damaged container   leaking container   other (describe)
5	Samples requiring chemical preservation at proper pH?		X		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?		X		Sample ID's and containers affected:
7	Are Encore containers present?			X	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	X			Id's and tests affected:
9	Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?			X	Sample ID's affected: time written on containers, not on COC
11	Number of containers received match number indicated on COC?	X			Sample ID's affected:
12	COC form is properly signed in relinquished/received sections?	X			

Comments: FEDEX#S

7209 7850 1448 2C  
 7209 7850 1426 2C  
 7209 7850 1437 3C  
 7209 7850 1460 4C  
 7209 7850 1470 6C  
 7209 7850 1459 6C  
 7209 7850 1415 5C  
 7209 7850 1390 12C  
 7209 7850 1404 12C

ORIGIN ID: SAFA (595) 655-9969  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGS BLDG 1237 DPU 03

SHIP DATE: 19FEB10  
ACTMGT: 65.0 LB MAN  
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LOS ALAMOS, NM 87545  
UNITED STATES US

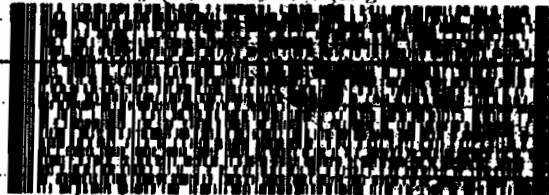
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GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR3A0532VA00

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ORIGIN ID: SAFA (595) 655-9969  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGS BLDG 1237 DPU 03

SHIP DATE: 19FEB10  
ACTMGT: 65.0 LB MAN  
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2 of 2  
NPSH 0263 7209 7850 1448  
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### SATURDAY ###  
PRIORITY OVERNIGHT

X0 CHSA

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2 of 2  
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PRIORITY OVERNIGHT

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29407  
SC-US  
CHS



ORIGIN ID: SAFA (595) 655-9969  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGS BLDG 1237 DPU 03

SHIP DATE: 19FEB10  
ACTMGT: 65.0 LB MAN  
CAD: 0014176/CAFE2450

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1 of 2  
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### SATURDAY ###  
PRIORITY OVERNIGHT

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ORIGIN ID: SAFA (595) 655-9969  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGS BLDG 1237 DPU 03

SHIP DATE: 19FEB10  
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LOS ALAMOS, NM 87545  
UNITED STATES US

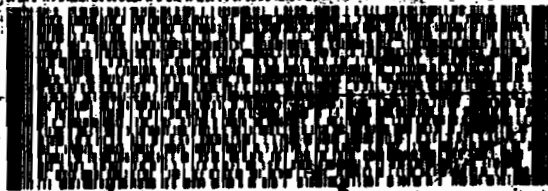
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2 of 2  
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### SATURDAY ###  
PRIORITY OVERNIGHT

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29407  
SC-US  
CHS



ORIGIN ID: SAFA (505) 555-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPU 83  
LOS ALAMOS NM 87545  
UNITED STATES US

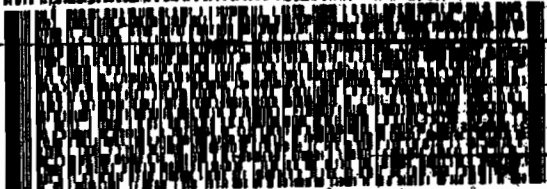
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TAGO BLDG 1237 DPU 83  
LOS ALAMOS NM 87545  
UNITED STATES US

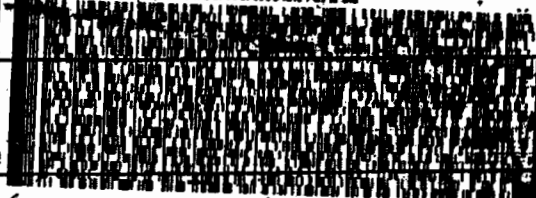
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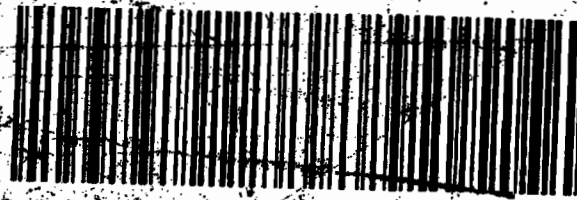


Page 159148-404 NR1 V3 08-08

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ORIGIN ID: SAFA (505) 555-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPU 83  
LOS ALAMOS NM 87545  
UNITED STATES US

SHIP DATE: 19FEB10  
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CHS

X0 CHSA

29407  
SC-US  
CHS

ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TR00 BLDG 1287 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

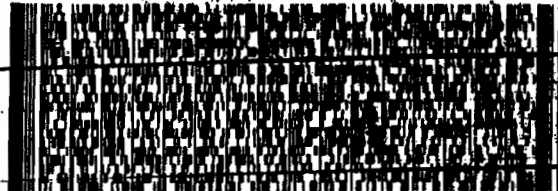
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TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
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NOTE: THIS LABEL IS VOID IF IT IS NOT USED WITHIN 10 DAYS OF THE DATE OF ISSUE



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2 of 3  
MPS# 7209 7850 1390  
Matr# 7209 7850 1389 0201  
### SATURDAY ### A1  
PRIORITY OVERNIGHT

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SC-US  
CHS



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UNITED STATES US

BILL SENDER

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GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407  
(843) 556-9171  
REF: 68010AMR3A05529E00

12°

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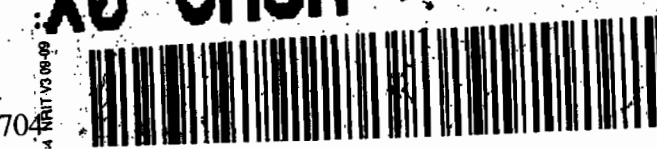
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3 of 3  
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PRIORITY OVERNIGHT

X0 CHSA

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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 10-1952**

**Method/Analysis Information**

**Product:** AM241  
**Analytical Method:** DOE EML HASL-300, Am-05-RC Modified  
**Prep Method:** Dry Soil Prep  
**Analytical Batch Number:** 957107  
**Prep Batch Number:** 955935

<b>Sample ID</b>	<b>Client ID</b>
247563001	RE15-10-8314
247563002	RE15-10-8313
247563003	RE15-10-8312
247563004	RE15-10-8315
247563005	RE15-10-8311
247563006	RE15-10-8310
247563007	RE15-10-8303
247563008	RE15-10-8302
1202052164	Method Blank (MB)
1202052165	247544001(RE46-10-12956) Sample Duplicate (DUP)
1202052166	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 1202052164 (MB) was changed to 1.0 per client request.

#### **Designated QC**

The following sample was used for QC: 247544001 (RE46-10-12956). The QC was from LANL work order 247544.

#### **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**

Samples 247563007 (RE15-10-8303) and 247563008 (RE15-10-8302) were recounted due to high MDAs. Sample 247563002 (RE15-10-8313) was recounted due to a negative result greater than three times the error. Second count being reported.

### **Miscellaneous Information:**

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

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

#### **Manual Integration**

No manual integrations were performed on data in this batch.

#### **Additional Comments**

The MDCs are calculated using a blank population.

#### **Blank Decision Level**

The blank result is less than the decision level.

### **Qualifier information**

Manual qualifiers were not required.

### **Method/Analysis Information**

**Product:** ISOPU

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

**Prep Method:** Dry Soil Prep

**Analytical Batch Number:** 957108

**Prep Batch Number:** 955935

<b>Sample ID</b>	<b>Client ID</b>
247563001	RE15-10-8314
247563002	RE15-10-8313
247563003	RE15-10-8312
247563004	RE15-10-8315
247563005	RE15-10-8311
247563006	RE15-10-8310
247563007	RE15-10-8303
247563008	RE15-10-8302
1202052167	Method Blank (MB)
1202052168	247544001(RE46-10-12956) Sample Duplicate (DUP)
1202052169	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 1202052167 (MB) was changed to 1.0 per client request.

**Designated QC**

The following sample was used for QC: 247544001 (RE46-10-12956). The QC was from LANL work order 247544.

**QC Information**

All of the QC samples met the required acceptance limits.

**CSU**

The Pu239/240 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 1202052167 (MB), 1202052168 (RE46-10-12956), 247563003 (RE15-10-8312), 247563004 (RE15-10-8315), 247563005 (RE15-10-8311) and 247563007 (RE15-10-8303) were given additional clean-up steps and recounted in order to remove suspected interferences.

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

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

**Manual Integration**

Manual integration of alpha spectroscopy spectra 1202052169 (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 Pu239/240 blank result is greater than the decision level but less than the MDC.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** ISOU

**Analytical Method:** DOE EML HASL-300, U-02-RC Modified

**Prep Method:** Dry Soil Prep

**Analytical Batch Number:** 957113

**Prep Batch Number:** 955935

<b>Sample ID</b>	<b>Client ID</b>
247563001	RE15-10-8314
247563002	RE15-10-8313
247563003	RE15-10-8312
247563004	RE15-10-8315
247563006	RE15-10-8310
247563007	RE15-10-8303
247563008	RE15-10-8302
1202052186	Method Blank (MB)
1202052187	247544001(RE46-10-12956) Sample Duplicate (DUP)
1202052188	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 1202052186 (MB) was changed to 1.0 per client request.

##### **Designated QC**

The following sample was used for QC: 247544001 (RE46-10-12956). The QC was from LANL work order 247544.

### **QC Information**

Refer to Data Exception Report (DER).

### **CSU**

The U-233/234 blank result is greater than 1.65 times the CSU but less than the MDA. The U-238 blank result is greater than 1.65 times the CSU and the MDA, however all sample activities are greater than five time the blank activity.

### **Technical Information:**

#### **Holding Time**

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

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

Sample 1202052188 (LCS) was recounted due to high carrier/tracer yield.

### **Miscellaneous Information:**

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

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG: DER 803096 was generated due to Failed Yield for Surrogates. 1. Laboratory Control Sample 1202052188 does not meet the client's tracer yield recovery requirements of 50 to 105 percent. 1. The LCS does meet GEL's standard tracer yield recovery requirements of 15 to 125 percent and its respective spike recovery requirement were met. PM notified, reporting results.

#### **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 U-233/234 blank result is greater than the decision level but less than the MDA. The U-238 blank result is greater than the decision level and the MDA, however all sample activities are greater than five time the blank activity.

### **Qualifier information**

Manual qualifiers were not required.

### **Method/Analysis Information**

**Product:** ISOU  
**Analytical Method:** DOE EML HASL-300, U-02-RC Modified  
**Prep Method:** Dry Soil Prep  
**Analytical Batch Number:** 964412  
**Prep Batch Number:** 955935

<b>Sample ID</b>	<b>Client ID</b>
247563005	RE15-10-8311
1202069004	Method Blank (MB)
1202069005	247563005(RE15-10-8311) Sample Duplicate (DUP)
1202069006	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 1202069004 (MB) was changed to 1.0 per client request.

##### **Designated QC**

The following sample was used for QC: 247563005 (RE15-10-8311). The QC was from LANL work order 247563.

##### **QC Information**

All of the QC samples met the required acceptance limits.

CSU

The U-233/234 and U-235/236 blank results are greater than 1.65 times the CSU but less than the MDC.

**Technical Information:**

**Holding Time**

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

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

Sample 247563005 (RE15-10-8311) was reprepared due to high carrier/tracer yield.

**Miscellaneous Information:**

**Data Exception (DER) Documentation**

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

**Manual Integration**

No manual integrations were performed on data in this batch.

**Additional Comments**

The MDCs are calculated using a blank population.

**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:	956157
Prep Batch Number:	955935

<b>Sample ID</b>	<b>Client ID</b>
247563001	RE15-10-8314
247563002	RE15-10-8313
247563003	RE15-10-8312
247563004	RE15-10-8315
247563005	RE15-10-8311
247563006	RE15-10-8310
247563007	RE15-10-8303
247563008	RE15-10-8302
1202050251	Method Blank (MB)
1202050252	247544001(RE46-10-12956) Sample Duplicate (DUP)
1202050253	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, May 2009, June 2009, August 2009, October 2009, November 2009, December 2009 and February 2010.

##### **Standards Information**

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

##### **Sample Geometry**

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

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

##### **Blank Information**

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

##### **Designated QC**

The following sample was used for QC: 247544001 (RE46-10-12956). The QC was from LANL work order 247544.

##### **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**

Qualifier	Reason	Analyte	Sample	Client Sample
UI	Data rejected due to interference.	Bismuth-211	247563001	RE15-10-8314
			247563002	RE15-10-8313
			247563003	RE15-10-8312
			247563004	RE15-10-8315
			247563005	RE15-10-8311
			247563006	RE15-10-8310
			247563007	RE15-10-8303
			247563008	RE15-10-8302
			1202050252	RE46-10-12956(247544001DUP)
		Cadmium-109	247563001	RE15-10-8314
			247563002	RE15-10-8313
			247563003	RE15-10-8312
			247563004	RE15-10-8315
			247563005	RE15-10-8311

			247563006	RE15-10-8310
			247563007	RE15-10-8303
			247563008	RE15-10-8302
			1202050252	RE46-10-12956(247544001DUP)
		Mercury-203	247563002	RE15-10-8313
		Radium-224	247563001	RE15-10-8314
			247563002	RE15-10-8313
			247563003	RE15-10-8312
			247563005	RE15-10-8311
			247563006	RE15-10-8310
			247563007	RE15-10-8303
			247563008	RE15-10-8302
			1202050252	RE46-10-12956(247544001DUP)
UI	Data rejected due to low abundance.	Cesium-134	247563001	RE15-10-8314
			247563002	RE15-10-8313
			247563003	RE15-10-8312
			247563004	RE15-10-8315
			247563005	RE15-10-8311
		Radium-224	247563004	RE15-10-8315
		Strontium-85	247563001	RE15-10-8314
			247563002	RE15-10-8313
			247563004	RE15-10-8315
			247563005	RE15-10-8311
			247563006	RE15-10-8310
			1202050252	RE46-10-12956(247544001DUP)

#### **Method/Analysis Information**

**Product:** H3  
**Analytical Method:** GL-RAD-A-002  
**Analytical Batch Number:** 960227

<b>Sample ID</b>	<b>Client ID</b>
247563001	RE15-10-8314
247563002	RE15-10-8313
247563003	RE15-10-8312
247563004	RE15-10-8315
247563005	RE15-10-8311
247563006	RE15-10-8310
247563007	RE15-10-8303
247563008	RE15-10-8302
1202059604	Method Blank (MB)
1202059605	247563008(RE15-10-8302) Sample Duplicate (DUP)
1202059606	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

#### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 18.

#### **Calibration Information:**

##### **Calibration Information**

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

##### **Standards Information**

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

##### **Sample Geometry**

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

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

##### **Blank Information**

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

##### **Designated QC**

The following sample was used for QC: 247563008 (RE15-10-8302). The QC was from LANL work order 247563.

**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: \_\_\_\_\_

*Randy Williams 3/15/10*

### DATA EXCEPTION REPORT

<b>Mo.Day Yr.</b> 11-MAR-10	<b>Division:</b> Radiochemistry	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Product
<b>Instrument Type:</b> ALPHA SPECTROMETER	<b>Test / Method:</b> DOE EML HASL-300, U-02-RC Modified	<b>Matrix Type:</b> Solid	<b>Client Code:</b> LANL
<b>Batch ID:</b> 957113	<b>Sample Numbers:</b> See Below.		
<b>Potentially affected work order(s)(SDG):</b> 247469(10-1944),247544(10-1963),247563(10-1952),247564(10-1955)			
<b>Application Issues:</b> Failed Yield for Surrogates			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
1. Laboratory Control Sample 1202052188 does not meet the client's tracer yield recovery requirements of 50 to 105 percent.		1. The LCS does meet GEL's standard tracer yield recovery requirements of 15 to 125 percent and its respective spike recovery requirement were met. PM notified, reporting results.	

**Originator's Name:**

Eric Brimstin

11-MAR-10

**Data Validator/Group Leader:**

Jessica Downey

12-MAR-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: 10-1952 GEL Work Order: 247563

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

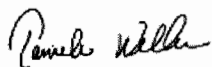
- \* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
- \*\* Indicates the analyte is a surrogate compound.

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

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

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

Reviewed by



# GEL LABORATORIES LLC

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## Certificate of Analysis

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8314  
Sample ID: 247563001  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-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	-0.000624	0.0336	+/-0.00271	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0176	0.0197	+/-0.00591	0.050	pCi/g		KXM4	03/08/10	1726	957108	2
Plutonium-239/240	U	-0.00344	0.0167	+/-0.00335	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.913	0.181	+/-0.109	0.100	pCi/g		KXM4	03/06/10	2203	957113	3
Uranium-235/236	U	0.0948	0.112	+/-0.0312	0.100	pCi/g						
Uranium-238		0.866	0.128	+/-0.105	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0912	0.140	+/-0.0437	0.200	pCi/g		MXR1	03/02/10	2321	956157	4
Bismuth-211	UI	4.25	0.210	+/-0.259		pCi/g						
Bismuth-214		1.34	0.0698	+/-0.0934	0.200	pCi/g						
Cadmium-109	UI	4.10	0.782	+/-0.362		pCi/g						
Cerium-139	U	-0.0224	0.0325	+/-0.0102	0.050	pCi/g						
Cesium-134	UI	0.0766	0.0643	+/-0.0267	0.100	pCi/g						
Cesium-137	U	-0.0143	0.0403	+/-0.0122	0.100	pCi/g						
Cobalt-60	U	-0.00707	0.0403	+/-0.0128	0.100	pCi/g						
Europium-152	U	0.0385	0.109	+/-0.0354	0.200	pCi/g						
Lanthanum-140	U	0.0147	0.0907	+/-0.0306		pCi/g						
Lead-212		1.80	0.0628	+/-0.105	0.100	pCi/g						
Lead-214		1.54	0.0765	+/-0.103	0.100	pCi/g						
Mercury-203	U	0.0244	0.044	+/-0.014	0.100	pCi/g						
Potassium-40		34.8	0.300	+/-1.64	1.00	pCi/g						
Radium-223	U	-0.00527	0.699	+/-0.233		pCi/g						
Radium-224	UI	4.20	0.673	+/-0.423		pCi/g						
Radium-226		1.34	0.0698	+/-0.0934		pCi/g						
Radium-228		1.99	0.154	+/-0.169	0.500	pCi/g						
Ruthenium-106	U	0.307	0.369	+/-0.106	0.800	pCi/g						
Sodium-22	U	-0.0126	0.0457	+/-0.0146	0.080	pCi/g						
Strontium-85	UI	0.0748	0.0474	+/-0.0145		pCi/g						

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8314  
Sample ID: 247563001

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		0.574	0.0419	+/-0.0397	0.080	pCi/g						
Thorium-227	U	-0.0512	0.282	+/-0.0823		pCi/g						
Thorium-231	U	-0.00527	0.699	+/-0.233		pCi/g						
Thorium-234		1.79	1.23	+/-0.597	2.00	pCi/g						
Tin-113	U	0.00495	0.0489	+/-0.0144	0.100	pCi/g						
Uranium-235		0.281	0.219	+/-0.116	0.500	pCi/g						
Yttrium-88	U	0.00453	0.0346	+/-0.0102	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		5360	201	+/-394	250	pCi/L	KXK2	03/11/10	1133	960227	5	
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### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	DOE HASL 300, 4.5.2.3/Ga-01-R
5	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	71.3	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	104	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	99.4	(50%-105%)

### Notes:

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

The Qualifiers in this report are defined as follows :

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

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8314  
Sample ID: 247563001  
Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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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 18, 2010

Client Sample ID: RE15-10-8313  
Sample ID: 247563002  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.59%

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>												
<i>AM241 "Dry Weight Corrected"</i>												
Americium-241	U	0.00348	0.0207	+/-0.00216	0.050	pCi/g		KXM4	03/10/10	1636	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0128	0.0225	+/-0.0054	0.050	pCi/g		KXM4	03/08/10	1726	957108	3
Plutonium-239/240	U	0.0111	0.019	+/-0.00512	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.19	0.190	+/-0.133	0.100	pCi/g		KXM4	03/06/10	2203	957113	4
Uranium-235/236	U	0.0945	0.118	+/-0.0308	0.100	pCi/g						
Uranium-238		1.18	0.134	+/-0.132	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0242	0.246	+/-0.0782	0.200	pCi/g		MXR1	03/02/10	2321	956157	5
Bismuth-211	UI	4.05	0.250	+/-0.220		pCi/g						
Bismuth-214		1.29	0.0867	+/-0.0825	0.200	pCi/g						
Cadmium-109	UI	4.08	1.02	+/-0.462		pCi/g						
Cerium-139	U	-0.0018	0.0398	+/-0.0118	0.050	pCi/g						
Cesium-134	UI	0.0839	0.0709	+/-0.0295	0.100	pCi/g						
Cesium-137	U	0.0363	0.0512	+/-0.0203	0.100	pCi/g						
Cobalt-60	U	0.00264	0.0469	+/-0.0143	0.100	pCi/g						
Europium-152	U	0.0689	0.128	+/-0.0463	0.200	pCi/g						
Lanthanum-140	U	-0.0291	0.106	+/-0.0333		pCi/g						
Lead-212		1.63	0.0757	+/-0.0725	0.100	pCi/g						
Lead-214		1.47	0.0909	+/-0.0895	0.100	pCi/g						
Mercury-203	UI	0.0539	0.0496	+/-0.0188	0.100	pCi/g						
Potassium-40		30.2	0.373	+/-1.32	1.00	pCi/g						
Radium-223	U	0.266	0.856	+/-0.279		pCi/g						
Radium-224	UI	4.14	0.811	+/-0.481		pCi/g						
Radium-226		1.29	0.0867	+/-0.0825		pCi/g						
Radium-228		2.00	0.193	+/-0.177	0.500	pCi/g						
Ruthenium-106	U	0.122	0.427	+/-0.126	0.800	pCi/g						
Sodium-22	U	-0.000384	0.0603	+/-0.0184	0.080	pCi/g						
Strontium-85	UI	0.0556	0.0537	+/-0.0168		pCi/g						
Thallium-208		0.528	0.0469	+/-0.0362	0.080	pCi/g						

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8313  
Sample ID: 247563002

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	-0.00793	0.329	+/-0.0995		pCi/g						
Thorium-231	U	0.266	0.856	+/-0.279		pCi/g						
Thorium-234		3.63	2.02	+/-1.06	2.00	pCi/g						
Tin-113	U	-0.0181	0.0579	+/-0.0174	0.100	pCi/g						
Uranium-235	U	-0.0279	0.273	+/-0.0823	0.500	pCi/g						
Yttrium-88	U	0.0309	0.0506	+/-0.0134	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		2160	202	+/-176	250	pCi/L	KXK2	03/11/10	1311	960227	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, Am-05-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, U-02-RC Modified
5	DOE HASL 300, 4.5.2.3/Ga-01-R
6	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	85.4	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	99.8	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	93.1	(50%-105%)

### Notes:

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

The Qualifiers in this report are defined as follows :

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

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 18, 2010

Client Sample ID: RE15-10-8313  
Sample ID: 247563002

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8312  
Sample ID: 247563003  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 5.16%

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>												
<i>AM241 "Dry Weight Corrected"</i>												
Americium-241	U	-0.00184	0.0336	+/-0.00297	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00771	0.0243	+/-0.00387	0.050	pCi/g		KXM4	03/10/10	1856	957108	2
Plutonium-239/240	U	0.00385	0.0206	+/-0.00273	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.34	0.177	+/-0.142	0.100	pCi/g		KXM4	03/06/10	2203	957113	4
Uranium-235/236	U	0.0878	0.109	+/-0.0306	0.100	pCi/g						
Uranium-238		1.37	0.125	+/-0.144	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0203	0.0582	+/-0.0183	0.200	pCi/g		MXR1	03/02/10	2322	956157	5
Bismuth-211	UI	4.26	0.217	+/-0.280		pCi/g						
Bismuth-214		1.28	0.0796	+/-0.096	0.200	pCi/g						
Cadmium-109	UI	3.58	0.509	+/-0.310		pCi/g						
Cerium-139	U	-0.00915	0.0293	+/-0.00863	0.050	pCi/g						
Cesium-134	UI	0.123	0.0672	+/-0.0235	0.100	pCi/g						
Cesium-137		0.140	0.0473	+/-0.0212	0.100	pCi/g						
Cobalt-60	U	-0.0172	0.0457	+/-0.0146	0.100	pCi/g						
Europium-152	U	-0.0122	0.103	+/-0.0342	0.200	pCi/g						
Lanthanum-140	U	-0.0453	0.0965	+/-0.0327		pCi/g						
Lead-212		1.86	0.0576	+/-0.113	0.100	pCi/g						
Lead-214		1.55	0.0788	+/-0.110	0.100	pCi/g						
Mercury-203	U	0.0296	0.0423	+/-0.0138	0.100	pCi/g						
Potassium-40		33.6	0.367	+/-1.58	1.00	pCi/g						
Radium-223	U	0.305	0.718	+/-0.228		pCi/g						
Radium-224	UI	4.55	0.618	+/-0.421		pCi/g						
Radium-226		1.28	0.0796	+/-0.096		pCi/g						
Radium-228		1.93	0.176	+/-0.163	0.500	pCi/g						
Ruthenium-106	U	-0.188	0.351	+/-0.108	0.800	pCi/g						
Sodium-22	U	0.00176	0.0596	+/-0.018	0.080	pCi/g						
Strontium-85	U	0.041	0.0439	+/-0.0139		pCi/g						
Thallium-208		0.626	0.0391	+/-0.0461	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 18, 2010

Client Sample ID: RE15-10-8312  
Sample ID: 247563003

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	-0.0483	0.252	+/-0.0872		pCi/g						
Thorium-231	U	0.305	0.718	+/-0.228		pCi/g						
Thorium-234		2.51	0.558	+/-0.394	2.00	pCi/g						
Tin-113	U	-0.0133	0.0489	+/-0.0147	0.100	pCi/g						
Uranium-235	U	0.0836	0.204	+/-0.0599	0.500	pCi/g						
Yttrium-88	U	-0.0138	0.0348	+/-0.0117	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		1900	201	+/-159	250	pCi/L	KXK2	03/11/10	1450	960227	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"	75.9	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	96.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	101	(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 18, 2010

Client Sample ID: RE15-10-8312  
Sample ID: 247563003

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 18, 2010

Client Sample ID: RE15-10-8315  
Sample ID: 247563004  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.35%

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	-0.00184	0.0314	+/-0.00278	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	-0.0068	0.0339	+/-0.00406	0.050	pCi/g		KXM4	03/10/10	1901	957108	2
Plutonium-239/240	U	-0.00139	0.0287	+/-0.00358	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.982	0.185	+/-0.114	0.100	pCi/g		KXM4	03/06/10	2203	957113	4
Uranium-235/236	U	0.0184	0.115	+/-0.0131	0.100	pCi/g						
Uranium-238		1.00	0.131	+/-0.116	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.0599	0.290	+/-0.0834	0.200	pCi/g		MXR1	03/03/10	1850	956157	5
Bismuth-211	UI	3.89	0.280	+/-0.211		pCi/g						
Bismuth-214		1.22	0.0876	+/-0.0878	0.200	pCi/g						
Cadmium-109	UI	3.39	1.07	+/-0.504		pCi/g						
Cerium-139	U	-0.0115	0.0405	+/-0.0117	0.050	pCi/g						
Cesium-134	UI	0.0902	0.074	+/-0.0224	0.100	pCi/g						
Cesium-137	U	0.00682	0.0518	+/-0.015	0.100	pCi/g						
Cobalt-60	U	-0.0138	0.0517	+/-0.0164	0.100	pCi/g						
Europium-152	U	-0.0668	0.125	+/-0.0459	0.200	pCi/g						
Lanthanum-140	U	0.0854	0.116	+/-0.0336		pCi/g						
Lead-212		1.57	0.0962	+/-0.0774	0.100	pCi/g						
Lead-214		1.41	0.101	+/-0.0859	0.100	pCi/g						
Mercury-203	U	0.0109	0.0556	+/-0.0163	0.100	pCi/g						
Potassium-40		35.5	0.404	+/-1.54	1.00	pCi/g						
Radium-223	U	-0.156	0.852	+/-0.300		pCi/g						
Radium-224	UI	3.00	1.14	+/-0.400		pCi/g						
Radium-226		1.22	0.0876	+/-0.0878		pCi/g						
Radium-228		1.98	0.194	+/-0.179	0.500	pCi/g						
Ruthenium-106	U	-0.108	0.418	+/-0.131	0.800	pCi/g						
Sodium-22	U	0.00701	0.0642	+/-0.0192	0.080	pCi/g						
Strontium-85	UI	0.0732	0.0589	+/-0.0179		pCi/g						
Thallium-208		0.544	0.0431	+/-0.0403	0.080	pCi/g						

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 18, 2010

Client Sample ID: RE15-10-8315  
Sample ID: 247563004

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	0.0604	0.352	+/-0.102		pCi/g						
Thorium-231	U	-0.156	0.852	+/-0.300		pCi/g						
Thorium-234	U	0.215	2.56	+/-0.728	2.00	pCi/g						
Tin-113	U	-0.0147	0.0594	+/-0.0176	0.100	pCi/g						
Uranium-235	U	0.121	0.301	+/-0.0903	0.500	pCi/g						
Yttrium-88	U	0.0128	0.0477	+/-0.0139	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		4180	202	+/-313	250	pCi/L	KXK2	03/11/10	1629	960227	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"	79.6	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	85.7	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	93.0	(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
- 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 18, 2010

Client Sample ID: RE15-10-8315  
Sample ID: 247563004

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 18, 2010

Client Sample ID: RE15-10-8311  
Sample ID: 247563005  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.68%

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	0.00176	0.0333	+/-0.00294	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0128	0.0269	+/-0.00527	0.050	pCi/g		KXM4	03/10/10	1901	957108	2
Plutonium-239/240	U	0.0107	0.0228	+/-0.00548	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.936	0.0751	+/-0.0821	0.100	pCi/g		KXM4	03/17/10	0811	964412	4
Uranium-235/236		0.048	0.046	+/-0.0139	0.100	pCi/g						
Uranium-238		0.938	0.0529	+/-0.0822	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0177	0.239	+/-0.0779	0.200	pCi/g		MXR1	03/03/10	1850	956157	7
Bismuth-211	UI	4.23	0.365	+/-0.326		pCi/g						
Bismuth-214		1.29	0.119	+/-0.113	0.200	pCi/g						
Cadmium-109	UI	3.48	1.32	+/-0.474		pCi/g						
Cerium-139	U	-0.0084	0.052	+/-0.0154	0.050	pCi/g						
Cesium-134	UI	0.102	0.0862	+/-0.0244	0.100	pCi/g						
Cesium-137	U	-0.0121	0.0586	+/-0.0181	0.100	pCi/g						
Cobalt-60	U	-0.00117	0.0642	+/-0.0196	0.100	pCi/g						
Europium-152	U	-0.0527	0.162	+/-0.0605	0.200	pCi/g						
Lanthanum-140	U	-0.20	0.117	+/-0.0463		pCi/g						
Lead-212		2.10	0.0963	+/-0.151	0.100	pCi/g						
Lead-214		1.54	0.122	+/-0.126	0.100	pCi/g						
Mercury-203	U	0.0494	0.0705	+/-0.0236	0.100	pCi/g						
Potassium-40		42.1	0.498	+/-2.10	1.00	pCi/g						
Radium-223	U	-0.125	1.05	+/-0.358		pCi/g						
Radium-224	UI	5.71	1.03	+/-0.701		pCi/g						
Radium-226		1.29	0.119	+/-0.113		pCi/g						
Radium-228		1.97	0.232	+/-0.212	0.500	pCi/g						
Ruthenium-106	U	-0.159	0.514	+/-0.159	0.800	pCi/g						
Sodium-22	U	-0.0242	0.0743	+/-0.0232	0.080	pCi/g						
Strontium-85	UI	0.128	0.0766	+/-0.0241		pCi/g						
Thallium-208		0.556	0.0527	+/-0.0505	0.080	pCi/g						

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 18, 2010

Client Sample ID: RE15-10-8311  
Sample ID: 247563005

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	-0.0512	0.443	+/-0.136		pCi/g						
Thorium-231	U	-0.125	1.05	+/-0.358		pCi/g						
Thorium-234		2.57	2.02	+/-1.01	2.00	pCi/g						
Tin-113	U	-0.00621	0.0729	+/-0.022	0.100	pCi/g						
Uranium-235	U	0.0923	0.368	+/-0.109	0.500	pCi/g						
Yttrium-88	U	-0.0193	0.0456	+/-0.0166	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		1460	201	+/-131	250	pCi/L	KXK2	03/11/10	1808	960227	8	
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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 EML HASL-300, U-02-RC Modified
6	DOE EML HASL-300, U-02-RC Modified
7	DOE HASL 300, 4.5.2.3/Ga-01-R
8	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	75.1	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	98.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	98.1	(50%-105%)

### Notes:

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

The Qualifiers in this report are defined as follows :

\*\* Analyte is a surrogate compound

< Result is less than value reported

> Result is greater than value reported

A The TIC is a suspected aldol-condensation product

B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.

BD Results are either below the MDC or tracer recovery is low

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 18, 2010

Client Sample ID: RE15-10-8311  
Sample ID: 247563005

Project: LANL01004  
Client ID: LANL010

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

C Analyte has been confirmed by GC/MS analysis  
D Results are reported from a diluted aliquot of the sample  
F Estimated Value  
H Analytical holding time was exceeded  
J Value is estimated  
M M if above MDC and less than LLD  
M Matrix Related Failure  
N/A RPD or %Recovery limits do not apply.  
ND Analyte concentration is not detected above the detection limit  
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
R Sample results are rejected  
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.  
UI Gamma Spectroscopy--Uncertain identification  
UJ Gamma Spectroscopy--Uncertain identification  
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
Y QC Samples were not spiked with this compound  
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.  
h Preparation or preservation holding time was exceeded  
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 18, 2010

Client Sample ID: RE15-10-8310  
Sample ID: 247563006  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.65%

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	0.00206	0.0269	+/-0.002	0.050	pCi/g		KXM4	03/08/10	0934	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.017	0.0226	+/-0.0109	0.050	pCi/g		KXM4	03/08/10	1751	957108	2
Plutonium-239/240	U	-0.00177	0.0191	+/-0.0047	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.27	0.176	+/-0.136	0.100	pCi/g		KXM4	03/06/10	2203	957113	3
Uranium-235/236	U	0.0877	0.109	+/-0.0285	0.100	pCi/g						
Uranium-238		1.30	0.125	+/-0.139	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.336	0.562	+/-0.174	0.200	pCi/g		MXR1	03/03/10	1920	956157	4
Bismuth-211	UI	4.59	0.448	+/-0.404		pCi/g						
Bismuth-214		1.36	0.151	+/-0.118	0.200	pCi/g						
Cadmium-109	UI	3.23	2.19	+/-0.668		pCi/g						
Cerium-139	U	0.00852	0.0745	+/-0.0227	0.050	pCi/g						
Cesium-134	U	0.108	0.125	+/-0.0487	0.100	pCi/g						
Cesium-137	U	-0.00887	0.088	+/-0.0265	0.100	pCi/g						
Cobalt-60	U	0.0447	0.0943	+/-0.0267	0.100	pCi/g						
Europium-152	U	-0.00496	0.225	+/-0.0745	0.200	pCi/g						
Lanthanum-140	U	0.0265	0.202	+/-0.0689		pCi/g						
Lead-212		2.07	0.134	+/-0.148	0.100	pCi/g						
Lead-214		1.66	0.165	+/-0.154	0.100	pCi/g						
Mercury-203	U	0.0748	0.0943	+/-0.0364	0.100	pCi/g						
Potassium-40		38.9	0.790	+/-2.28	1.00	pCi/g						
Radium-223	U	-0.0423	1.47	+/-0.507		pCi/g						
Radium-224	UI	4.98	1.44	+/-0.887		pCi/g						
Radium-226		1.36	0.151	+/-0.118		pCi/g						
Radium-228		1.96	0.292	+/-0.241	0.500	pCi/g						
Ruthenium-106	U	0.282	0.751	+/-0.222	0.800	pCi/g						
Sodium-22	U	-0.0184	0.105	+/-0.0336	0.080	pCi/g						
Strontium-85	UI	0.117	0.101	+/-0.0309		pCi/g						
Thallium-208		0.637	0.0738	+/-0.0663	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 18, 2010

Client Sample ID: RE15-10-8310  
Sample ID: 247563006

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	0.0289	0.616	+/-0.182		pCi/g					
Thorium-231	U	-0.0423	1.47	+/-0.507		pCi/g					
Thorium-234	U	1.18	4.73	+/-1.40	2.00	pCi/g					
Tin-113	U	-0.00973	0.107	+/-0.0326	0.100	pCi/g					
Uranium-235	U	-0.0927	0.493	+/-0.154	0.500	pCi/g					
Yttrium-88	U	-0.00945	0.0652	+/-0.021	0.100	pCi/g					

### **Rad Liquid Scintillation Analysis**

*H3 "As Received"*

Tritium		3090	202	+/-239	250	pCi/L	KXX2	03/11/10	1946	960227	5
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### **The following Analytical Methods were performed**

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	DOE HASL 300, 4.5.2.3/Ga-01-R
5	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	90.5	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	87.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	103	(50%-105%)

### **Notes:**

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

The Qualifiers in this report are defined as follows :

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

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 18, 2010

Client Sample ID: RE15-10-8310  
Sample ID: 247563006

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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J Value is estimated  
M M if above MDC and less than LLD  
M Matrix Related Failure  
N/A RPD or %Recovery limits do not apply.  
ND Analyte concentration is not detected above the detection limit  
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
R Sample results are rejected  
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.  
UI Gamma Spectroscopy--Uncertain identification  
UJ Gamma Spectroscopy--Uncertain identification  
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
Y QC Samples were not spiked with this compound  
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.  
h Preparation or preservation holding time was exceeded  
The above sample is reported on a dry weight basis.

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## Certificate of Analysis

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8303  
Sample ID: 247563007  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 3.17%

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	0.00041	0.0348	+/-0.00223	0.050	pCi/g		KXM4	03/10/10	1636	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00673	0.0283	+/-0.0039	0.050	pCi/g		KXM4	03/10/10	1901	957108	3
Plutonium-239/240	U	0.0224	0.0239	+/-0.00718	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.23	0.180	+/-0.134	0.100	pCi/g		KXM4	03/06/10	2203	957113	5
Uranium-235/236	U	0.0583	0.112	+/-0.0246	0.100	pCi/g						
Uranium-238		1.39	0.128	+/-0.147	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.185	0.421	+/-0.128	0.200	pCi/g		MXR1	03/03/10	2042	956157	6
Bismuth-211	UI	4.12	0.364	+/-0.271		pCi/g						
Bismuth-214		1.39	0.113	+/-0.0997	0.200	pCi/g						
Cadmium-109	UI	4.38	1.48	+/-0.705		pCi/g						
Cerium-139	U	0.00835	0.0523	+/-0.0155	0.050	pCi/g						
Cesium-134	U	0.0905	0.0951	+/-0.0252	0.100	pCi/g						
Cesium-137	U	0.00736	0.0803	+/-0.0231	0.100	pCi/g						
Cobalt-60	U	-0.0458	0.0602	+/-0.021	0.100	pCi/g						
Europium-152	U	-0.127	0.160	+/-0.0555	0.200	pCi/g						
Lanthanum-140	U	0.0692	0.186	+/-0.0553		pCi/g						
Lead-212		1.80	0.0915	+/-0.0947	0.100	pCi/g						
Lead-214		1.49	0.123	+/-0.107	0.100	pCi/g						
Mercury-203	U	0.0236	0.0718	+/-0.0202	0.100	pCi/g						
Potassium-40		36.4	0.522	+/-1.66	1.00	pCi/g						
Radium-223	U	0.487	1.14	+/-0.363		pCi/g						
Radium-224	UI	5.01	0.981	+/-0.536		pCi/g						
Radium-226		1.39	0.113	+/-0.0997		pCi/g						
Radium-228		1.81	0.235	+/-0.181	0.500	pCi/g						
Ruthenium-106	U	-0.132	0.487	+/-0.157	0.800	pCi/g						
Sodium-22	U	-0.0362	0.0863	+/-0.0274	0.080	pCi/g						
Strontium-85	U	0.0633	0.0688	+/-0.0207		pCi/g						
Thallium-208		0.583	0.0607	+/-0.0469	0.080	pCi/g						

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8303  
Sample ID: 247563007

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	-0.123	0.452	+/-0.133		pCi/g						
Thorium-231	U	0.487	1.14	+/-0.363		pCi/g						
Thorium-234		3.17	3.16	+/-1.52	2.00	pCi/g						
Tin-113	U	0.0231	0.0775	+/-0.0223	0.100	pCi/g						
Uranium-235	U	0.186	0.352	+/-0.102	0.500	pCi/g						
Yttrium-88	U	0.0202	0.0598	+/-0.0163	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		1840	202	+/-155	250	pCi/L		KXK2	03/11/10	2303	960227	7

### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Am-05-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, 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"	52.6	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	88.9	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	95.2	(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 18, 2010

Client Sample ID: RE15-10-8303  
Sample ID: 247563007

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 18, 2010

Client Sample ID: RE15-10-8302  
Sample ID: 247563008  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client  
Moisture: 5.18%

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	-0.00363	0.0282	+/-0.0106	0.050	pCi/g		KXM4	03/10/10	1636	957107	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.020	0.0214	+/-0.00701	0.050	pCi/g		KXM4	03/08/10	1751	957108	3
Plutonium-239/240	U	0.00367	0.0181	+/-0.00302	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		1.13	0.185	+/-0.127	0.100	pCi/g		KXM4	03/06/10	2203	957113	4
Uranium-235/236	U	0.0553	0.115	+/-0.023	0.100	pCi/g						
Uranium-238		1.64	0.131	+/-0.168	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.010	0.132	+/-0.0434	0.200	pCi/g		MXR1	03/03/10	2043	956157	5
Bismuth-211	UI	4.59	0.436	+/-0.336		pCi/g						
Bismuth-214		1.35	0.145	+/-0.120	0.200	pCi/g						
Cadmium-109	UI	2.83	1.31	+/-0.494		pCi/g						
Cerium-139	U	-0.0042	0.0606	+/-0.0184	0.050	pCi/g						
Cesium-134	U	0.106	0.110	+/-0.0329	0.100	pCi/g						
Cesium-137		0.099	0.0839	+/-0.0296	0.100	pCi/g						
Cobalt-60	U	-0.00177	0.0826	+/-0.0257	0.100	pCi/g						
Europium-152	U	0.0867	0.199	+/-0.0737	0.200	pCi/g						
Lanthanum-140	U	-0.0337	0.177	+/-0.0561		pCi/g						
Lead-212		2.12	0.116	+/-0.132	0.100	pCi/g						
Lead-214		1.67	0.165	+/-0.130	0.100	pCi/g						
Mercury-203	U	-0.0368	0.0818	+/-0.0249	0.100	pCi/g						
Potassium-40		37.2	0.667	+/-1.60	1.00	pCi/g						
Radium-223	U	-1.07	1.33	+/-0.430		pCi/g						
Radium-224	UI	5.66	1.25	+/-0.870		pCi/g						
Radium-226		1.35	0.145	+/-0.120		pCi/g						
Radium-228		1.82	0.323	+/-0.233	0.500	pCi/g						
Ruthenium-106	U	0.0274	0.650	+/-0.199	0.800	pCi/g						
Sodium-22	U	-0.029	0.090	+/-0.0293	0.080	pCi/g						
Strontium-85	U	0.0468	0.0843	+/-0.0275		pCi/g						
Thallium-208		0.551	0.0812	+/-0.0582	0.080	pCi/g						

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

Report Date: March 18, 2010

Client Sample ID: RE15-10-8302  
Sample ID: 247563008

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	-0.106	0.478	+/-0.143		pCi/g					
Thorium-231	U	-1.07	1.33	+/-0.430		pCi/g					
Thorium-234		2.54	1.27	+/-0.635	2.00	pCi/g					
Tin-113	U	0.0131	0.100	+/-0.0297	0.100	pCi/g					
Uranium-235	U	0.280	0.431	+/-0.129	0.500	pCi/g					
Yttrium-88	U	-0.0263	0.0661	+/-0.0228	0.100	pCi/g					
<b>Rad Liquid Scintillation Analysis</b>											
<i>H3 "As Received"</i>											
Tritium		1740	202	+/-149	250	pCi/L		KXX2	03/12/10	0041 960227	6

### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Am-05-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, U-02-RC Modified
5	DOE HASL 300, 4.5.2.3/Ga-01-R
6	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	64.7	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	105	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	90.5	(50%-105%)

### Notes:

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

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- \*\* 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 18, 2010

Client Sample ID: RE15-10-8302  
Sample ID: 247563008

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.

# QUALITY CONTROL DATA

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## QC Summary

Report Date: March 18, 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:** 247563

Parmname	NOM	Sample	Qual	QC	Units	RER	REC %	Range	Anlst	Date	Time
<b>Rad Alpha Spec</b>											
Batch	957107										
QC1202052165	247544001	DUP									
Americium-241		U	-0.00399	U	-0.00181	pCi/g	0.204	(0-1)	KXM4	03/08/1009:35	
		TPU:	+/-0.00306		+/-0.00225						
		Yield:	48.3		80.6						
QC1202052166	LCS										
Americium-241	33.2				32.4	pCi/g	97.9	(75%-125%)		03/08/1009:35	
		TPU:			+/-2.52						
		Yield:			95.0						
QC1202052164	MB										
Americium-241		U	-0.00372		-0.00371	pCi/g				03/08/1009:35	
		TPU:			+/-0.00371						
		Yield:			79.2						
Batch	957108										
QC1202052168	247544001	DUP									
Plutonium-238		U	0.0138	U	0.0174	pCi/g	0.124	(0-1)	KXM4	03/10/1019:01	
		TPU:	+/-0.00796		+/-0.00662						
		Yield:	90.5		89.9						
Plutonium-239/240		U	0.0165	U	0.0099	pCi/g	0.295	(0-1)			
		TPU:	+/-0.00527		+/-0.00584						
		Yield:	90.5		89.9						
QC1202052169	LCS										
Plutonium-238					8.19	pCi/g		(75%-125%)		03/08/1019:09	
		TPU:			+/-0.595						
		Yield:			89.6						
Plutonium-239/240	41.8				42.7	pCi/g	102	(75%-125%)			
		TPU:			+/-2.58						
		Yield:			89.6						
QC1202052167	MB										
Plutonium-238		U	-0.00171		-0.0038	pCi/g				03/10/1019:01	
		TPU:			+/-0.0038						
		Yield:			79.5						
Plutonium-239/240		U	0.0288		0.0288	pCi/g					
		TPU:			+/-0.0104						
		Yield:			79.5						
Batch	957113										
QC1202052187	247544001	DUP									
Uranium-233/234			1.09		0.886	pCi/g	0.500	(0-1)	KXM4	03/05/1012:23	
		TPU:	+/-0.123		+/-0.0813						
		Yield:	101		87.6						
Uranium-235/236		U	0.0538		0.110	pCi/g	0.641	(0-1)			
		TPU:	+/-0.0223		+/-0.0215						
		Yield:	101		87.6						
Uranium-238			1.13		1.04	pCi/g	0.198	(0-1)			
		TPU:	+/-0.126		+/-0.0926						

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## QC Summary

Workorder: 247563

Page 2 of 7

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	957113										
QC1202052188	LCS										
Uranium-233/234		Yield:	101	87.6							
				4.61	pCi/g					03/10/1016:36	
		TPU:		+/-0.405							
Uranium-235/236		Yield:		120							
				0.281	pCi/g						
		TPU:		+/-0.0646							
Uranium-238	5.75	Yield:		120							
				4.57	pCi/g		79.5	(75%-125%)			
		TPU:		+/-0.402							
		Yield:		120							
QC1202052186	MB										
Uranium-233/234			U	0.0315	pCi/g					03/05/1012:23	
		TPU:		+/-0.0076							
Uranium-235/236		Yield:		95.7							
			U	0.00566	pCi/g						
		TPU:		+/-0.00424							
Uranium-238		Yield:		95.7							
				0.0428	pCi/g						
		TPU:		+/-0.00989							
		Yield:		95.7							
Batch	964412										
QC1202069005	247563005 DUP										
Uranium-233/234			0.936	1.15	pCi/g	0.607		(0-1) KXM4		03/17/1008:11	
		TPU:	+/-0.0821	+/-0.096							
Uranium-235/236		Yield:	98.1	100							
			0.048	0.0893	pCi/g	0.648		(0-1)			
		TPU:	+/-0.0139	+/-0.018							
Uranium-238		Yield:	98.1	100							
			0.938	1.13	pCi/g	0.541		(0-1)			
		TPU:	+/-0.0822	+/-0.0944							
		Yield:	98.1	100							
QC1202069006	LCS										
Uranium-233/234				6.10	pCi/g					03/17/1008:11	
		TPU:		+/-0.534							
Uranium-235/236		Yield:		99.7							
				0.334	pCi/g						
		TPU:		+/-0.0815							
Uranium-238	5.75	Yield:		99.7							
				5.41	pCi/g		94.1	(75%-125%)			
		TPU:		+/-0.482							
		Yield:		99.7							
QC1202069004	MB										
Uranium-233/234			U	0.016	pCi/g					03/17/1008:11	
		TPU:		+/-0.00514							
Uranium-235/236		Yield:		100							
			U	0.00852	pCi/g						
		TPU:		+/-0.00385							
Uranium-238		Yield:		100							
			U	0.00589	pCi/g						

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## QC Summary

Workorder: 247563

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	964412										
		TPU:		+/-0.00379							
		Yield:		100							
Rad Gamma Spec											
Batch	956157										
QC1202050252 247544001 DUP											
Americium-241	U	-0.00768	U	0.140	pCi/g	0.647		(0-1)	MXR1	03/03/1020:50	
	TPU:	+/-0.026		+/-0.0885							
Bismuth-211	UI	5.03	UI	4.26	pCi/g	0.639		(0-1)			
	TPU:	+/-0.346		+/-0.256							
Bismuth-214		1.42		1.37	pCi/g	0.111		(0-1)			
	TPU:	+/-0.119		+/-0.110							
Cadmium-109	UI	4.39	UI	3.30	pCi/g	0.578		(0-1)			
	TPU:	+/-0.425		+/-0.515							
Cerium-139	U	-0.0235	U	-0.0334	pCi/g	0.174		(0-1)			
	TPU:	+/-0.0123		+/-0.0162							
Cesium-134	UI	0.156	U	0.018	pCi/g	0.983		(0-1)			
	TPU:	+/-0.0453		+/-0.025							
Cesium-137	U	0.00415	U	0.00988	pCi/g	0.064		(0-1)			
	TPU:	+/-0.0236		+/-0.0212							
Cobalt-60	U	0.0104	U	-0.0307	pCi/g	0.478		(0-1)			
	TPU:	+/-0.0207		+/-0.0223							
Europium-152	U	-0.0834	U	-0.0445	pCi/g	0.182		(0-1)			
	TPU:	+/-0.0473		+/-0.0598							
Lanthanum-140	U	-0.0653	U	-0.0692	pCi/g	0.0242		(0-1)			
	TPU:	+/-0.0391		+/-0.0408							
Lead-212		2.00		1.89	pCi/g	0.251		(0-1)			
	TPU:	+/-0.127		+/-0.092							
Lead-214		1.83		1.55	pCi/g	0.588		(0-1)			
	TPU:	+/-0.135		+/-0.102							
Mercury-203	U	0.00277	U	0.0291	pCi/g	0.329		(0-1)			
	TPU:	+/-0.0187		+/-0.0214							
Potassium-40		33.2		34.4	pCi/g	0.172		(0-1)			
	TPU:	+/-1.70		+/-1.58							
Radium-223	U	-0.388	U	0.0247	pCi/g	0.303		(0-1)			
	TPU:	+/-0.301		+/-0.380							
Radium-224	UI	5.54	UI	5.48	pCi/g	0.0246		(0-1)			
	TPU:	+/-0.716		+/-0.563							
Radium-226		1.42		1.37	pCi/g	0.111		(0-1)			
	TPU:	+/-0.119		+/-0.110							
Radium-228		1.98		1.77	pCi/g	0.261		(0-1)			
	TPU:	+/-0.211		+/-0.200							
Ruthenium-106	U	0.107	U	0.0802	pCi/g	0.0404		(0-1)			
	TPU:	+/-0.164		+/-0.167							
Sodium-22	U	0.0228	U	0.00659	pCi/g	0.164		(0-1)			
	TPU:	+/-0.0268		+/-0.0226							
Strontium-85	U	0.0197	UI	0.0898	pCi/g	0.831		(0-1)			
	TPU:	+/-0.0209		+/-0.0213							
Thallium-208		0.625		0.591	pCi/g	0.167		(0-1)			
	TPU:	+/-0.0561		+/-0.045							
Thorium-227	U	0.125	U	0.173	pCi/g	0.0911		(0-1)			

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## QC Summary

Workorder: 247563

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>											
Batch	956157										
Thorium-231		TPU:	+/-0.120	+/-0.142							
		U	-0.388	U 0.0247	pCi/g	0.303		(0-1)			
Thorium-234		TPU:	+/-0.301	+/-0.380							
			1.51	U 2.17	pCi/g	0.227		(0-1)			
Tin-113		TPU:	+/-0.430	+/-1.03							
		U	-0.036	U 0.0183	pCi/g	0.624		(0-1)			
Uranium-235		TPU:	+/-0.0208	+/-0.0227							
		U	0.0736	U 0.136	pCi/g	0.158		(0-1)			
Yttrium-88		TPU:	+/-0.0873	+/-0.111							
		U	-0.0197	U 0.0127	pCi/g	0.428		(0-1)			
		TPU:	+/-0.0201	+/-0.0177							
QC1202050253	LCS										
Americium-241	15.9			14.0	pCi/g		88	(75%-125%)		03/03/10	21:20
		TPU:		+/-0.788							
Bismuth-211				2.07	pCi/g						
		TPU:		+/-0.305							
Bismuth-214				0.709	pCi/g						
		TPU:		+/-0.125							
Cadmium-109				33.4	pCi/g						
		TPU:		+/-2.17							
Cerium-139			U	-0.0341	pCi/g						
		TPU:		+/-0.0245							
Cesium-134			U	0.00903	pCi/g						
		TPU:		+/-0.0487							
Cesium-137	5.55			5.35	pCi/g		96.3	(75%-125%)			
		TPU:		+/-0.201							
Cobalt-60	6.36			5.91	pCi/g		92.9	(75%-125%)			
		TPU:		+/-0.275							
Europium-152			U	-0.0401	pCi/g						
		TPU:		+/-0.116							
Lanthanum-140			U	0.024	pCi/g						
		TPU:		+/-0.0438							
Lead-212				0.887	pCi/g						
		TPU:		+/-0.113							
Lead-214				0.752	pCi/g						
		TPU:		+/-0.113							
Mercury-203			U	-0.014	pCi/g						
		TPU:		+/-0.0324							
Potassium-40			U	0.676	pCi/g						
		TPU:		+/-0.305							
Radium-223			U	0.0845	pCi/g						
		TPU:		+/-0.600							
Radium-224				4.27	pCi/g						
		TPU:		+/-0.754							
Radium-226				0.709	pCi/g						
		TPU:		+/-0.125							
Radium-228				1.33	pCi/g						
		TPU:		+/-0.291							
Ruthenium-106			U	0.0148	pCi/g						
		TPU:		+/-0.307							
Sodium-22			U	0.0245	pCi/g						

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## QC Summary

Workorder: 247563

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Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gamma Spec									
Batch	956157								
Strontium-85	TPU:		+/-0.0307						
		U	-0.137	pCi/g					
Thallium-208	TPU:		+/-0.0394						
			0.409	pCi/g					
Thorium-227	TPU:		+/-0.0627						
		U	0.194	pCi/g					
Thorium-231	TPU:		+/-0.243						
		U	0.0845	pCi/g					
Thorium-234	TPU:		+/-0.600						
		U	-1.41	pCi/g					
Tin-113	TPU:		+/-1.47						
		U	-0.00881	pCi/g					
Uranium-235	TPU:		+/-0.0455						
		U	-0.268	pCi/g					
Yttrium-88	TPU:		+/-0.168						
		U	0.00845	pCi/g					
	TPU:		+/-0.0248						
QC1202050251 MB									
Americium-241		U	0.0311	pCi/g					03/03/1020:49
Bismuth-211	TPU:		+/-0.0216						
		U	-0.086	pCi/g					
Bismuth-214	TPU:		+/-0.0576						
		U	-0.00873	pCi/g					
Cadmium-109	TPU:		+/-0.0213						
		U	-0.122	pCi/g					
Cerium-139	TPU:		+/-0.147						
		U	-0.00919	pCi/g					
Cesium-134	TPU:		+/-0.00623						
		U	0.011	pCi/g					
Cesium-137	TPU:		+/-0.00993						
		U	-0.0076	pCi/g					
Cobalt-60	TPU:		+/-0.00888						
		U	-0.0205	pCi/g					
Europium-152	TPU:		+/-0.00888						
		U	0.0308	pCi/g					
Lanthanum-140	TPU:		+/-0.0207						
		U	-0.00666	pCi/g					
Lead-212	TPU:		+/-0.0148						
		U	-0.00808	pCi/g					
Lead-214	TPU:		+/-0.0151						
		U	-0.0358	pCi/g					
Mercury-203	TPU:		+/-0.0215						
		U	-0.000186	pCi/g					
Potassium-40	TPU:		+/-0.00858						
		U	-0.047	pCi/g					
Radium-223	TPU:		+/-0.102						
		U	0.0449	pCi/g					
Radium-224	TPU:		+/-0.155						
		U	-0.238	pCi/g					
Radium-226	TPU:		+/-0.153						
		U	-0.00873	pCi/g					

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## QC Summary

Workorder: 247563

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>											
Batch	956157										
		TPU:		+/-0.0213							
Radium-228			U	0.0546	pCi/g						
		TPU:		+/-0.0357							
Ruthenium-106			U	-0.164	pCi/g						
		TPU:		+/-0.0844							
Sodium-22			U	0.0145	pCi/g						
		TPU:		+/-0.00907							
Strontium-85			U	-0.0721	pCi/g						
		TPU:		+/-0.0145							
Thallium-208			U	-0.00976	pCi/g						
		TPU:		+/-0.00977							
Thorium-227			U	-0.019	pCi/g						
		TPU:		+/-0.0539							
Thorium-231			U	0.0449	pCi/g						
		TPU:		+/-0.155							
Thorium-234			U	-0.13	pCi/g						
		TPU:		+/-0.236							
Tin-113			U	-0.0257	pCi/g						
		TPU:		+/-0.00909							
Uranium-235			U	-0.0167	pCi/g						
		TPU:		+/-0.0445							
Yttrium-88			U	0.00567	pCi/g						
		TPU:		+/-0.00889							
<b>Rad Liquid Scintillation</b>											
Batch	960227										
QC1202059605	247563008	DUP									
Tritium			1740	1490	pCi/L	0.438		(0-1)	KXK2	03/13/1004:56	
		TPU:	+/-149	+/-133							
QC1202059606	LCS										
Tritium	5540			5840	pCi/L		106	(80%-120%)		03/13/1006:34	
		TPU:		+/-513							
QC1202059604	MB										
Tritium			U	-125	pCi/L					03/13/1003:18	
		TPU:		+/-56.4							

### 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

## GEL LABORATORIES LLC

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### QC Summary

Workorder: 247563

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Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
H	Analytical holding time was exceeded								
J	Value is estimated								
M	M if above MDC and less than LLD								
M	Matrix Related Failure								
N/A	RPD or %Recovery limits do not apply.								
ND	Analyte concentration is not detected above the detection limit								
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier								
R	Sample results are rejected								
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.								
UI	Gamma Spectroscopy--Uncertain identification								
UJ	Gamma Spectroscopy--Uncertain identification								
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier								
Y	QC Samples were not spiked with this compound								
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.								
h	Preparation or preservation holding time was exceeded								

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

\*\* Indicates analyte is a surrogate compound.

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

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

# RAW DATA

## Radiochemistry Batch Checklist, Rev10

Batch# 987107 Product: Am Date: 3/11/10

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.			N/A
Samples have been blank corrected (if required)	✓		
If activity less 10* MDA/ MDC, error is 150% or less of sample activity. If greater 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay.	✓		
Instrument source check is within limits.	✓		
Instrument bkg check is within limits.	✓		
Method RDL/ LLD has been met.	✓		
If duplicate activities are less 5* MDA/ MDC, then RPD is 100% or less. If greater 5* MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.	✓		
Or meets the client's required RER acceptance criteria.	✓		
Tracer yield is 15-125% . Carrier yield 25-125%.	✓		CASE narrative
Or meets the client's contract acceptance criteria.	✓		
Method blank is less than the RDL/ LLD.	✓		
(If rad samples, < 5% of lowest activity)	✓		
Sample was run within hold time.	✓		
Sample was correctly preserved if required.	✓		
Smears Taken for Radioactive batches.			N/A
Method Spike and LCS are within 75-125% or meets the client's contract acceptance criteria.	✓		
No blank spaces on data forms.	✓		
All line outs initialed and dated.	✓		
No transcription errors are apparent.	✓		
Aux data is correct.			N/A
Client Special requirements page has been checked.	✓		
Raw Data and/ or spectrum are included and properly stated.	✓		
QC data entered into QC database and batch is in REVW	✓		
Hit notification complete (if necessary)			N/A
Batch entered into Case Narrative.	✓		
Batch Data Exception Reports (DER) completed, if applicable.			N/A
Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.			N/A
Aliquot Correction completed if required.			N/A
Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)	✓		

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: [Signature] 3/11/10Secondary Review Performed By: [Signature] 3/12/10

3/3 - 3/13

# Am/Cm Que Sheet

24-FEB-10

3044

Batch #: 957107  
 Analyst: ATBT/AM  
 Tracer Code: 445-96-2-55  
 LCS Isotope(s): Am241/Cm244  
 Spike Isotope(s): Am241/Cm244  
 Prep Date: 3-3-10 Initials: AM  
 Internal Due Date: 13-MAR-10  
 Expiration Date: 5-11-10  
 Expiration Date: 4-30-10  
 Expiration Date: NA  
 Balance ID: 50410777  
 Pipet ID: 1971058  
 Witness: MDA 3/3/10

Comments:

Vol: 0.1ml 0.13  
 Vol(s): Start/NA  
 Vol(s): NA/NA  
 Vol(s): NA/NA

Sample ID	Client Description	Type	Hazard Code	Min CRDL	Matrix	Client	Collection Date	Pos.	Label #	Wet/Dry Aliquot (g/l/f)	Am/Cm Det #
247469001-1	RE46-10-13381	SAMPLE		.05 pCi/g	SOIL	LANL010	17-FEB-10	1	1	1.253	233
247469002-1	RE46-10-13379	SAMPLE		.05 pCi/g	SOIL	LANL010	17-FEB-10	2	2	1.252	235
247469003-1	RE46-10-13382	SAMPLE		.05 pCi/g	SOIL	LANL010	17-FEB-10	3	3	1.255	237
247544001-1	RE46-10-12956	SAMPLE		.05 pCi/g	SOIL	LANL010	18-FEB-10	4	4	1.251	239
247544002-1	RE46-10-12955	SAMPLE		.05 pCi/g	SOIL	LANL010	18-FEB-10	5	5	1.253	241
247544003-1	RE46-10-12938	SAMPLE		.05 pCi/g	SOIL	LANL010	18-FEB-10	6	6	1.252	245
247544004-1	RE46-10-12937	SAMPLE		.05 pCi/g	SOIL	LANL010	18-FEB-10	7	7	1.254	244
247563001-1	RE15-10-8314	SAMPLE		.05 pCi/g	SOIL	LANL010	15-FEB-10	8	8	1.254	234
247563002-1	RE15-10-8313	SAMPLE		.05 pCi/g	SOIL	LANL010	15-FEB-10	9	9	1.253	238
247563003-1	RE15-10-8312	SAMPLE		.05 pCi/g	SOIL	LANL010	15-FEB-10	10	10	1.258	240
247563004-1	RE15-10-8315	SAMPLE		.05 pCi/g	SOIL	LANL010	15-FEB-10	11	11	1.256	242
247563005-1	RE15-10-8311	SAMPLE		.05 pCi/g	SOIL	LANL010	15-FEB-10	12	12	1.254	244
247563006-1	RE15-10-8310	SAMPLE		.05 pCi/g	SOIL	LANL010	15-FEB-10	13	13	1.254	245
247563007-1	RE15-10-8303	SAMPLE		.05 pCi/g	SOIL	LANL010	15-FEB-10	14	14	1.255	246
247563008-1	RE15-10-8302	SAMPLE		.05 pCi/g	SOIL	LANL010	15-FEB-10	15	15	1.257	247
247564001-1	RE16-10-1514	SAMPLE		.05 pCi/g	SOIL	LANL010	12-FEB-10	16	16	1.253	248
247564002-1	RE16-10-13143	SAMPLE		.05 pCi/g	SOIL	LANL010	12-FEB-10	17	17	1.258	249
247564003-1	RE16-10-13141	SAMPLE		.05 pCi/g	SOIL	LANL010	12-FEB-10	18	18	1.254	250
247564004-1	RE16-10-13142	SAMPLE		.05 pCi/g	SOIL	LANL010	12-FEB-10	19	19	1.287	230
247564005-1	RE16-10-13147	SAMPLE		.05 pCi/g	SOIL	LANL010	12-FEB-10	20	20	1.255	254
1202052164-1	MB for batch 957107	MB		.05 pCi/g	SOIL	QC ACCOUNT		21	21	1.259	251
1202052165-1	RE46-10-12956(247544001)DUP)	DUP		.05 pCi/g	SOIL	QC ACCOUNT	18-FEB-10	22	22	1.254	252
1202052166-1	LCS for batch 957107	LCS		.05 pCi/g	SOIL	QC ACCOUNT		23	23	0.106	253

Choose SOP Used: GL-RAD-A-011  
GL-RAD-A-036

Solid Sample Dissolution by LEACH or DIGESTION  
 Circle One

Data Reviewed By: E. [Signature] 3/11/10

# Blank Correction Report

**Batch ID 957107**

GEL Sample ID	Client sample ID	Parameter	Allquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202052165	DUP	Americium-241	1.26 g	-0.00181	0.00225	0.0312	-.00295238	pCi/g	NO
1202052166	LCS	Americium-241	0.106 g	32.4	2.52	0.308	-.03509434	pCi/g	NO
1202052164	MB	Americium-241	1.00 g	-0.00372	0.00371	0.0387	-.00372	pCi/g	NO
247469001	RE46-10-13381	Americium-241	1.25 g	0.000378	0.0022	0.0306	-.002976	pCi/g	NO
247469002	RE46-10-13379	Americium-241	1.25 g	-0.00303	0.00267	0.0331	-.002976	pCi/g	NO
247469003	RE46-10-13382	Americium-241	1.26 g	0.000289	0.00383	0.0299	-.00295238	pCi/g	NO
247544001	RE46-10-12956	Americium-241	1.25 g	-0.00399	0.00306	0.0337	-.002976	pCi/g	NO
247544002	RE46-10-12955	Americium-241	1.26 g	0.00148	0.00265	0.0307	-.00295238	pCi/g	NO
247544003	RE46-10-12938	Americium-241	1.25 g	0.000289	0.00212	0.033	-.002976	pCi/g	NO
247544004	RE46-10-12937	Americium-241	1.25 g	0.000306	0.00277	0.0298	-.002976	pCi/g	NO
247563001	RE15-10-8314	Americium-241	1.25 g	-0.000624	0.00271	0.0336	-.002976	pCi/g	NO
247563002	RE15-10-8313	Americium-241	1.25 g	0.00348	0.00216	0.0207	-.002976	pCi/g	NO
247563003	RE15-10-8312	Americium-241	1.26 g	-0.00184	0.00297	0.0336	-.00295238	pCi/g	NO
247563004	RE15-10-8315	Americium-241	1.26 g	-0.00184	0.00278	0.0314	-.00295238	pCi/g	NO
247563005	RE15-10-8311	Americium-241	1.25 g	0.00176	0.00294	0.0333	-.002976	pCi/g	NO
247563006	RE15-10-8310	Americium-241	1.25 g	0.00206	0.002	0.0269	-.002976	pCi/g	NO
247563007	RE15-10-8303	Americium-241	1.26 g	0.00041	0.00223	0.0348	-.00295238	pCi/g	NO
247563008	RE15-10-8302	Americium-241	1.25 g	-0.00363	0.0106	0.0282	-.002976	pCi/g	NO
247564001	RE16-10-1514	Americium-241	1.25 g	0.000613	0.007	0.038	-.002976	pCi/g	NO
247564002	RE16-10-13143	Americium-241	1.26 g	0.00239	0.00225	0.0292	-.00295238	pCi/g	NO
247564003	RE16-10-13141	Americium-241	1.25 g	0.000124	0.00195	0.027	-.002976	pCi/g	NO
247564004	RE16-10-13142	Americium-241	1.26 g	0.00054	0.00236	0.0327	-.00295238	pCi/g	NO
247564005	RE16-10-13147	Americium-241	1.26 g	0.00623	0.00431	0.032	-.00295238	pCi/g	NO

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

BATCH NUMBER : 957107  
SAMPLE ID : S0247544001\_AM  
SAMPLE QTY : 1.251 G  
SAMPLE DATE : 18-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 48.307

CHAMBER : 091  
DETECTOR S/N : 78259  
AVERAGE %EFFICIENCY : 34.5001  
COUNT DATE : 10-MAR-2000  
ELAPSED LIVE TIME(SEC) : 59999.9

```
LIB FILE : ENV_ALPHA_AM
BKG FILE : B091_CNF:731
BKG DATE : 7-MAR-2010
BKG LIVE TIME(SEC) : 60000.00
EFF FILE : W091_CNF:192
CAL DATE : 9-FEB-2010
```

TRACER	ID	: 445-96-2-SS
	NUCLIDE	: AM243
	NOMINAL	: 2.9166E+00 dpm
	RESULTS	: 1.4089E+00 dpm

MS/MSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E+01 pCi/G

LCS/LCSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E

## NUCLIDE ACTIVITY SUMMARY

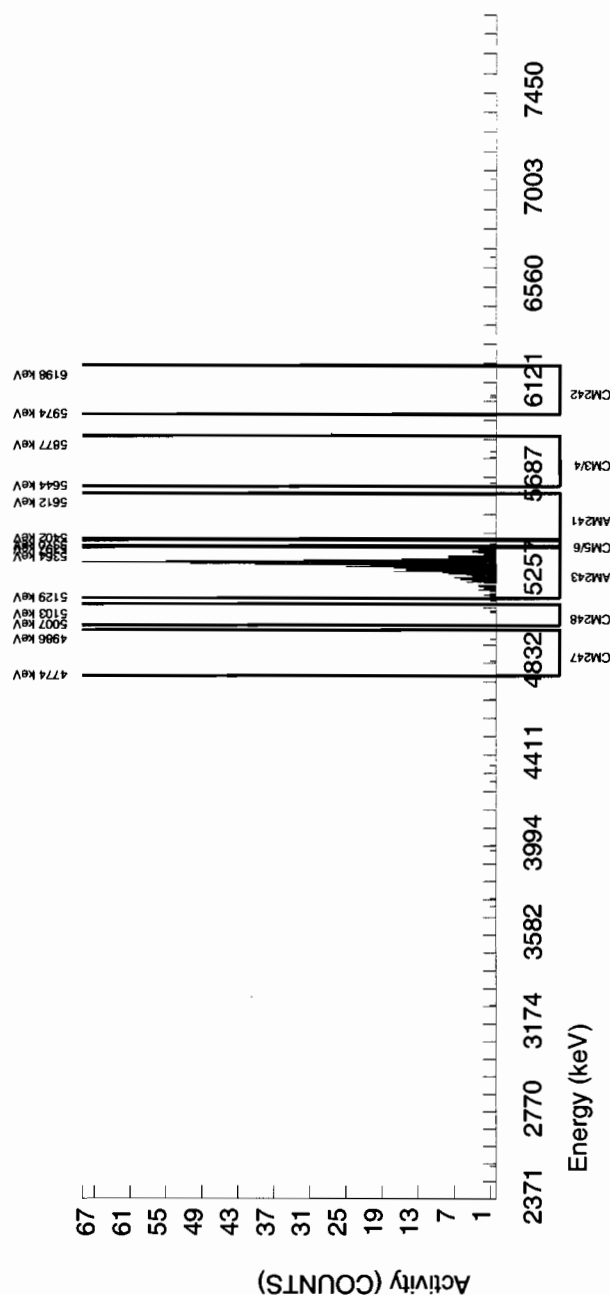
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
AM-241	5479.150	5506.685	0.000	0.000	-1.844	1.000	2.7707	99.94000	-3.99E-03	3.06E-03	1.39E-02	3.37E-02	3.06E-03
AM243	5270.000	5285.271	20.733	488.000	485.000	3.000	1.7321	99.78000	1.05E+00	8.66E-02	8.72E-03	2.33E-02	4.80E-02
CM-242	6102.000	6061.487	14.888	2.000	2.000	0.000	4.0092	100.0000	4.73E-03	3.36E-03	2.02E-02	4.62E-02	3.34E-03
CM-3/4	5795.020	5753.880	138.957	3.000	2.000	1.000	4.8510	100.0000	4.33E-03	4.34E-03	2.44E-02	5.46E-02	4.33E-03
CM-5/6	5386.000	5375.902	0.000	7.000	7.000	0.000	6.1294	86.09000	1.76E-02	6.75E-03	3.58E-02	7.84E-02	6.64E-03
CM-247	4946.000	4898.065	99.255	2.000	2.000	0.000	6.3427	79.30000	5.45E-03	3.87E-03	4.02E-02	8.78E-02	3.85E-03
CM-248	5078.600	5073.332	9.305	2.000	2.000	0.000	11.0244	91.00000	4.75E-03	3.37E-03	6.09E-02	1.28E-01	3.36E-03

## NOTES:

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

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

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

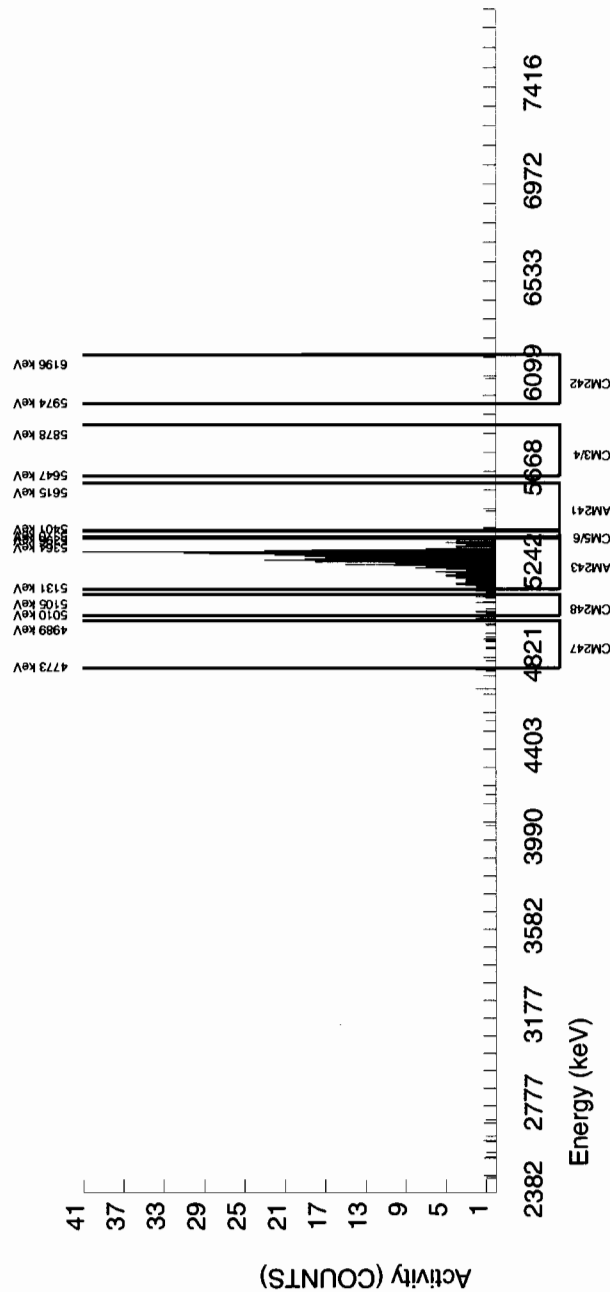
<p>BATCH NUMBER : 957107  SAMPLE ID : S0247563001_AM  SAMPLE QTY : 1.254 G  SAMPLE DATE : 15-FEB-2010 00:00:00  ANALYST : KXM4  % YIELD : 71.271</p>		<p>CHAMBER : 236  DETECTOR S/N : 79429  AVERAGE %EFFICIENCY : 41.3400  COUNT DATE : 8-MAR-2010 09:34:09  ELAPSED LIVE TIME(SEC) : 30300.00</p>
<p>LIB FILE : ENV_ALPHA_AM  BKG FILE : B236.CNF:87  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W236.CNF:30  CAL DATE : 28-FEB-2010</p>		
<p>TRACER  ID : 445-96-2-SS  NUCLIDE : AM243  NOMINAL : 2.9166E+00 dpm  RESULTS : 2.0787E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3153E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3153E+01 pCi/G</p>

## 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	5492.004	4.918	1.000	-0.258	0.505	2.7707	99.94000	-6.24E-04	2.71E-03	1.35E-02	3.36E-02	2.71E-03
AM243	5270.000	5272.351	44.560	433.000	433.000	0.000	0.0000	99.78000	1.05E+00	8.91E-02	0.00E+00	6.56E-03	5.03E-02
CM-242	6102.000	6093.224	4.918	1.000	1.000	0.000	4.0092	100.0000	2.65E-03	2.65E-03	1.95E-02	4.56E-02	2.65E-03
CM-3/4	5795.020	5762.037	0.000	0.000	-0.505	0.505	4.8510	100.0000	-1.22E-03	2.72E-03	2.36E-02	5.38E-02	2.71E-03
CM-5/6	5386.000	5382.880	0.000	2.000	2.000	0.000	6.1294	86.09000	5.61E-03	3.99E-03	3.47E-02	7.70E-02	3.97E-03
CM-247	4946.000	4894.560	186.880	10.000	9.495	0.505	6.3427	79.30000	2.89E-02	9.96E-03	3.90E-02	8.62E-02	9.75E-03
CM-248	5078.600	5059.246	73.154	13.000	12.495	0.505	11.0244	91.00000	3.31E-02	9.93E-03	5.90E-02	1.25E-01	9.66E-03

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957107  
SAMPLE ID : S0247563002\_AM  
SAMPLE QTY : 1.253 G  
SAMPLE DATE : 15-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 85.431

CHAMBER : 093  
DETECTOR S/N : 33206  
AVERAGE %EFFICIENCY : 31.7762  
COUNT DATE : 10-MAR-2010 16:36:39  
ELAPSED LIVE TIME(SEC) : 59999.99

LIB FILE : ENV\_ALPHA\_AM  
BKG FILE : B093.CNF;722  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W093.CNF;201  
CAL DATE : 9-FEB-2010

TRACER  
ID : 445-96-2-SS  
NUCLIDE : AM243  
NOMINAL : 2.9166E+00 dpm  
RESULTS : 2.4916E+00 dpm

MS/MSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E+01 pCi/G

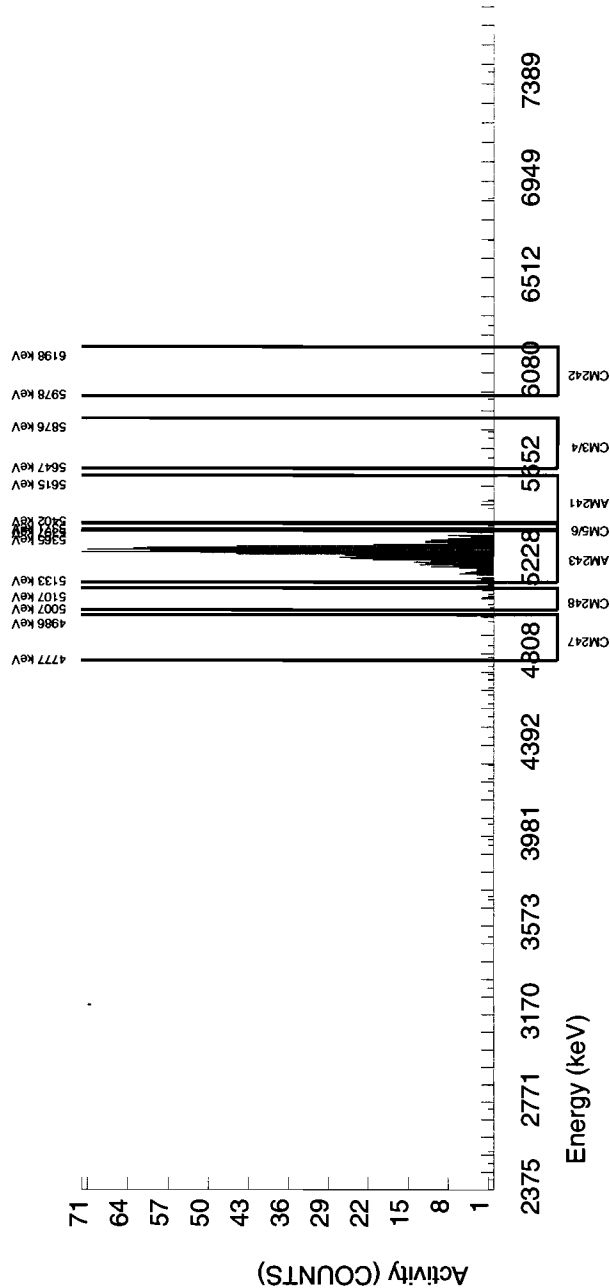
LCS/LCSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E+01 pCi/G

## 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	5496.409	7.215	4.000	2.625	0.000	2.7707	99.94000	3.48E-03	2.16E-03	8.54E-03	2.07E-02	2.15E-03
AM243	5270.000	5272.841	38.512	791.000	790.000	1.000	1.0000	99.78000	1.05E+00	7.54E-02	3.09E-03	9.77E-03	3.74E-02
CM-242	6102.000	6088.107	0.000	0.000	0.000	0.000	4.0092	100.0000	0.00E+00	1.47E-03	1.24E-02	2.83E-02	1.47E-03
CM-3/4	5795.020	5762.562	112.990	4.000	4.000	0.000	4.8510	100.0000	5.31E-03	2.68E-03	1.49E-02	3.35E-02	2.66E-03
CM-5/6	5386.000	5379.018	4.913	5.000	4.000	1.000	6.1294	86.09000	6.15E-03	3.79E-03	2.19E-02	4.80E-02	3.77E-03
CM-247	4946.000	4869.009	157.204	3.000	2.000	1.000	6.3427	79.30000	3.34E-03	3.35E-03	2.46E-02	5.38E-02	3.34E-03
CM-248	5078.600	5059.465	36.845	11.000	11.000	0.000	11.0244	91.00000	1.60E-02	4.93E-03	3.73E-02	7.86E-02	4.83E-03

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957107 SAMPLE ID : S0247563003_AM SAMPLE QTY : 1.258 G SAMPLE DATE : 15-FEB-2010 00:00:00 ANALYST : KXM4 % YIELD : 75.856	CHAMBER : 240 DETECTOR S/N : 79433 AVERAGE %EFFICIENCY : 38.7048 COUNT DATE : 8-MAR-2010 09:34:26 ELAPSED LIVE TIME(SEC) : 30300.00	LIB FILE : ENV_ALPHA_AM BKG FILE : B240.CNF:87 BKG DATE : 7-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W240.CNF:30 CAL DATE : 28-FEB-2010
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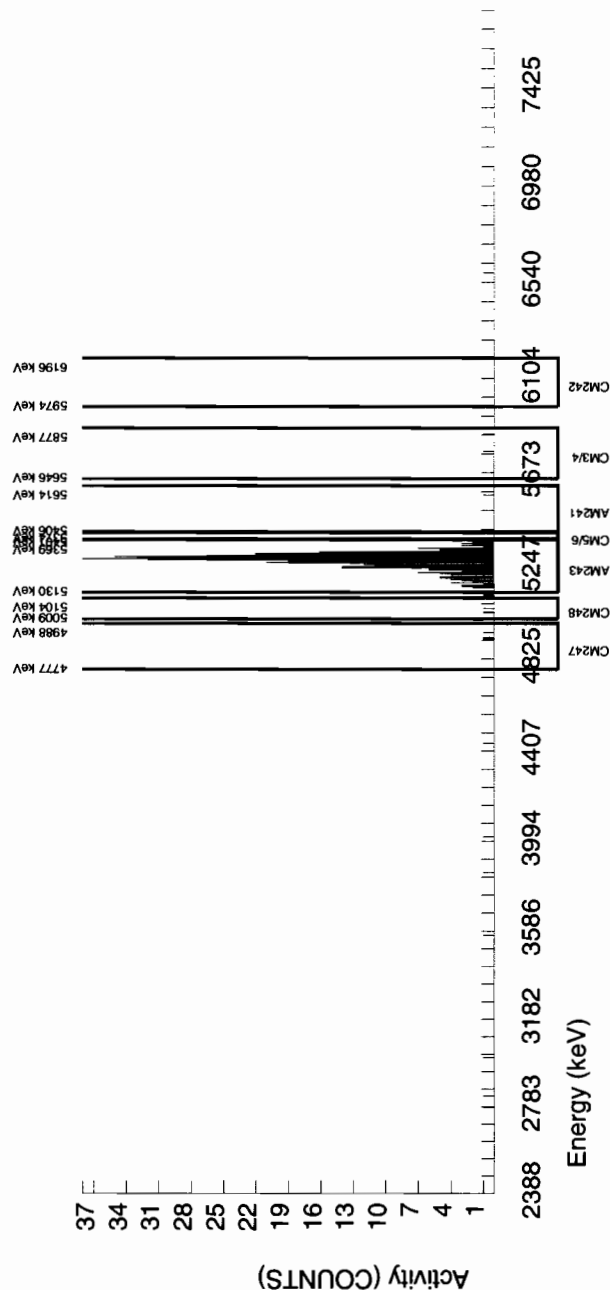
TRACER ID : 445-96-2-SS NUCLEIDE : AM243 NOMINAL : 2.9166E+00 dpm RESULTS : 2.2124E+00 dpm	MS/MSD ID : 0244-B NUCLEIDE : AM-241 NOMINAL : 3.3153E+01 pCi/G	LCS/LCSD ID : 0244-B NUCLEIDE : AM-241 NOMINAL : 3.3153E+01 pCi/G
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## NUCLEIDE ACTIVITY SUMMARY

NUCLEIDE	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	5576.792	4.904	1.000	-0.761	1.010	2.7707	99.94000	-1.84E-03	2.97E-03	1.35E-02	3.36E-02	2.97E-03
AM243	5270.000	5278.593	45.342	434.000	431.475	2.525	1.5890	99.78000	1.04E+00	8.92E-02	7.76E-03	2.21E-02	5.05E-02
CM-242	6102.000	6085.290	0.000	0.000	-0.505	0.505	4.0092	100.0000	-1.34E-03	2.97E-03	1.95E-02	4.56E-02	2.97E-03
CM-3/4	5795.020	5815.452	78.465	2.000	2.000	0.000	4.8510	100.0000	4.84E-03	3.44E-03	2.36E-02	5.38E-02	3.42E-03
CM-5/6	5386.000	5381.203	7.203	3.000	3.000	0.000	6.1294	86.09000	8.42E-03	4.89E-03	3.47E-02	7.70E-02	4.86E-03
CM-247	4946.000	4931.030	33.716	4.000	3.495	0.505	6.3427	79.30000	1.06E-02	6.33E-03	3.90E-02	8.62E-02	6.28E-03
CM-248	5078.600	5041.662	44.137	4.000	4.000	0.000	11.0244	91.00000	1.06E-02	5.36E-03	5.90E-02	1.25E-01	5.31E-03

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957107  
SAMPLE ID : S0247563004\_AM  
SAMPLE QTY : 1.256 G  
SAMPLE DATE : 15-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 79.632

CHAMBER : 242  
DETECTOR S/N : 79435  
AVERAGE %EFFICIENCY : 39.5199  
COUNT DATE : 8-MAR-2010 09:34:32  
ELAPSED LIVE TIME(SEC) : 30300.00

LIB FILE : ENV\_ALPHA\_AM  
BKG FILE : B242.CNF:87  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W242.CNF:30  
CAL DATE : 28-FEB-2010

TRACER  
ID : 445-96-2-SS  
NUCLIDE : AM243  
NOMINAL : 2.9166E+00 dpm  
RESULTS : 2.3225E+00 dpm

MS/MSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E+01 pCi/G

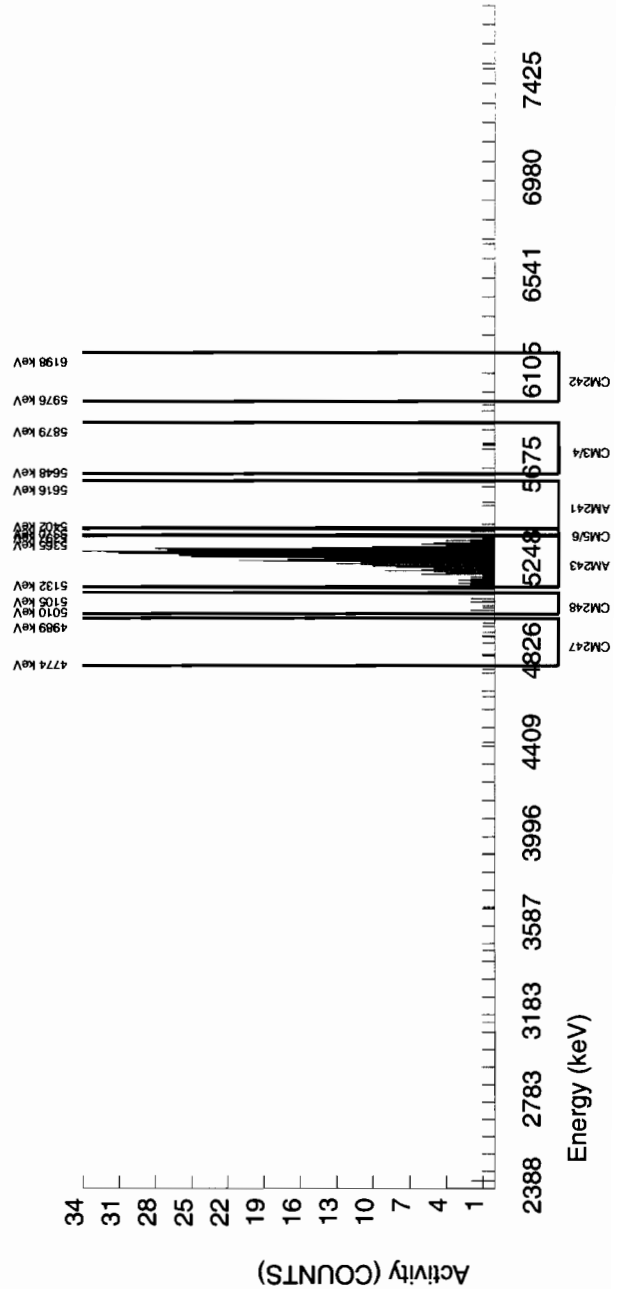
LCS/LCSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E+01 pCi/G

## 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	5524.817	4.912	1.000	-0.815	1.010	2.7707	99.94000	-1.84E-03	2.78E-03	1.26E-02	3.14E-02	2.77E-03
AM243	5270.000	5273.521	59.244	463.000	462.495	0.505	0.7106	99.78000	1.05E+00	8.72E-02	3.24E-03	1.26E-02	4.87E-02
CM-242	6102.000	6086.457	0.000	0.000	0.000	0.000	4.0092	100.0000	0.00E+00	2.48E-03	1.83E-02	4.26E-02	2.47E-03
CM-3/4	5795.020	5787.225	14.122	3.000	2.495	0.505	4.8510	100.0000	5.64E-03	4.10E-03	2.21E-02	5.03E-02	4.08E-03
CM-5/6	5386.000	5379.875	0.000	5.000	5.000	0.000	6.1294	86.09000	1.31E-02	5.93E-03	3.24E-02	7.20E-02	5.86E-03
CM-247	4946.000	4913.768	142.449	6.000	6.000	0.000	6.3427	79.30000	1.71E-02	7.07E-03	3.64E-02	8.06E-02	6.97E-03
CM-248	5078.600	5058.559	0.000	13.000	12.495	0.505	11.0244	91.00000	3.10E-02	9.28E-03	5.52E-02	1.17E-01	9.03E-03

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

<p>BATCH NUMBER : 957107  SAMPLE ID : S0247563005_AM  SAMPLE QTY : 1.254 G  SAMPLE DATE : 15-FEB-2010 00:00:00  ANALYST : KXM4  % YIELD : 75.052</p>		<p>CHAMBER : 244  DETECTOR S/N : 79437  AVERAGE %EFFICIENCY : 39.5742  COUNT DATE : 8-MAR-2010 09:34:40  ELAPSED LIVE TIME(SEC) : 30300.00</p>		<p>LIB FILE : ENV_ALPHA_AM  BKG FILE : B244.CNF:87  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W244.CNF:30  CAL DATE : 28-FEB-2010</p>	
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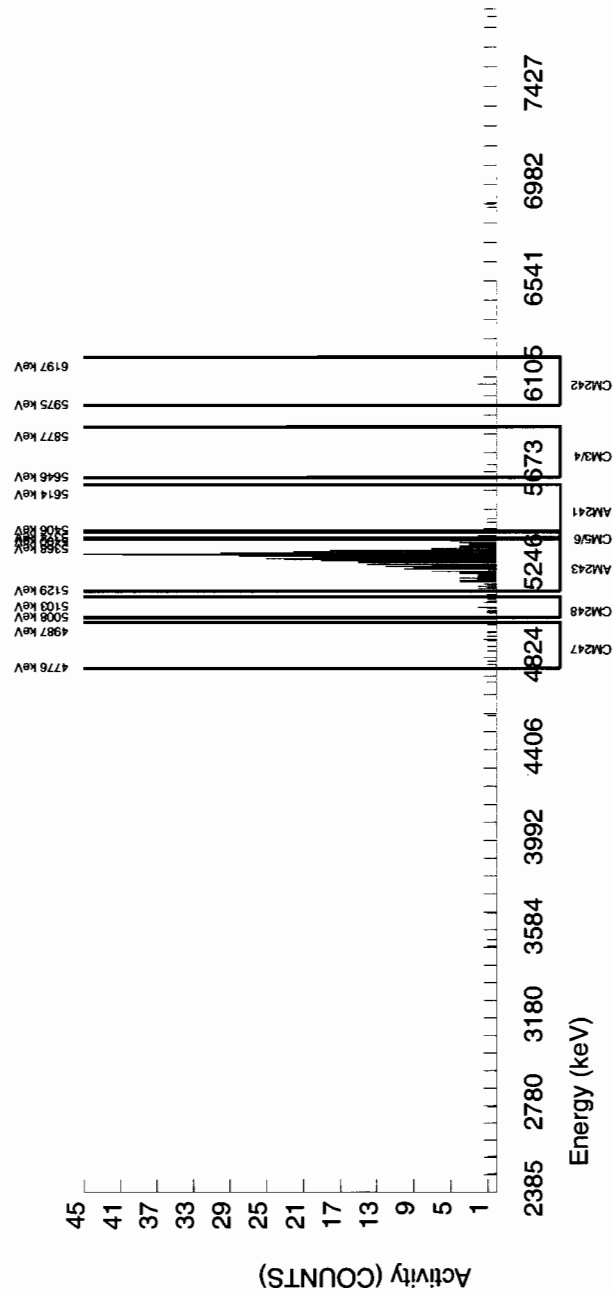
<p>TRACER ID : 445-96-2-SS  NUCLIDE : AM243  NOMINAL : 2.9166E+00 dpm  RESULTS : 2.1889E+00 dpm</p>		<p>MS/MSD ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3153E+01 pCi/G</p>		<p>LCS/LCSD ID : 0244-B  NUCLIDE : AM-241  NOMINAL : 3.3153E+01 pCi/G</p>	
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## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
AM-241	5479.150	5456.226	19.625	2.000	0.735	0.505	2.7707	99.94000	1.76E-03	2.94E-03	1.34E-02	3.33E-02	2.93E-03
AM243	5270.000	5283.399	33.919	437.000	436.495	0.505	0.7106	99.78000	1.05E+00	8.89E-02	3.44E-03	1.34E-02	5.02E-02
CM-242	6102.000	6046.807	4.906	3.000	3.000	0.000	4.0092	100.00000	7.88E-03	4.58E-03	1.94E-02	4.52E-02	4.55E-03
CM-3/4	5795.020	5780.466	132.470	2.000	2.000	0.000	4.8510	100.00000	4.80E-03	3.41E-03	2.34E-02	5.34E-02	3.39E-03
CM-5/6	5386.000	5381.036	0.000	5.000	5.000	0.000	6.1294	86.09000	1.39E-02	6.30E-03	3.44E-02	7.64E-02	6.22E-03
CM-247	4946.000	4904.997	0.000	10.000	9.495	0.505	6.3427	79.30000	2.87E-02	9.88E-03	3.87E-02	8.55E-02	9.67E-03
CM-248	5078.600	5063.004	0.000	13.000	13.000	0.000	11.0244	91.00000	3.42E-02	9.79E-03	5.86E-02	1.24E-01	9.49E-03

## NOTES:

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

BATCH NUMBER : 957107  
SAMPLE ID : S0247563006\_AM  
SAMPLE QTY : 1.254 G  
SAMPLE DATE : 15-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 90.526

CHAMBER : 245  
DETECTOR S/N : 79438  
AVERAGE %EFFICIENCY : 40.5519  
COUNT DATE : 8-MAR-2010 09:34:43  
ELAPSED LIVE TIME(SEC) : 30300.00

LIB FILE : ENV\_ALPHA\_AM  
BKG FILE : B245.CNF:87  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W245.CNF:31  
CAL DATE : 28-FEB-2010

TRACER  
ID : 445-96-2-SS  
NUCLIDE : AM243  
NOMINAL : 2.9166E+00 dpm  
RESULTS : 2.6402E+00 dpm

MS/MSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E+01 pCi/G

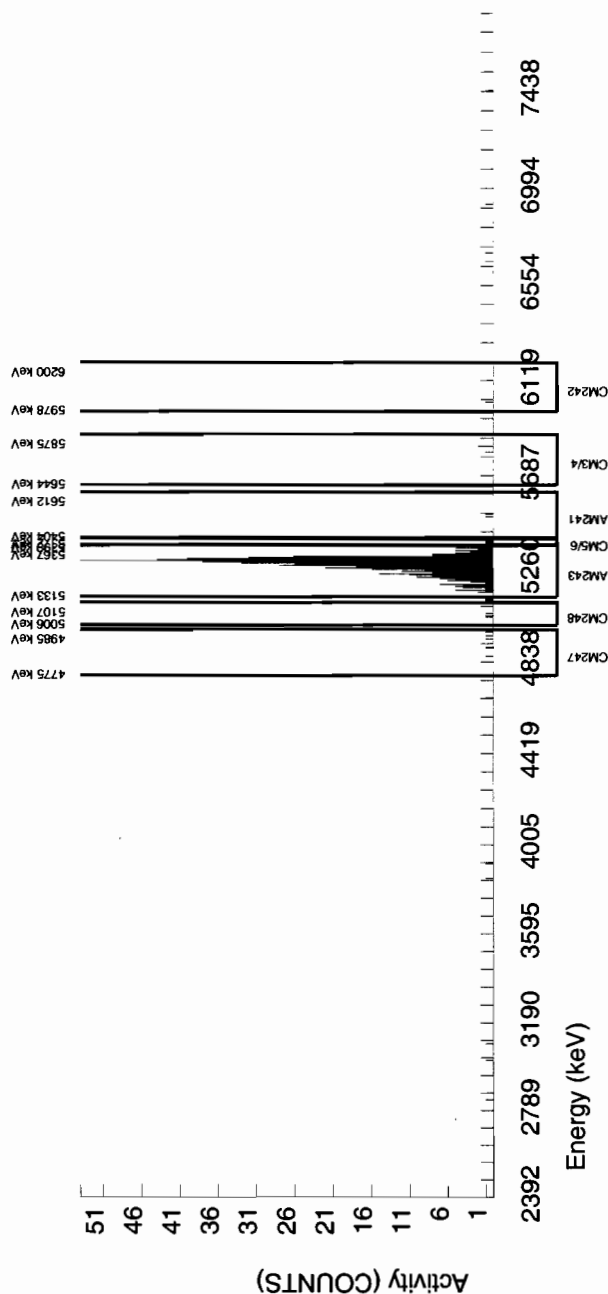
LCS/LCSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E+01 pCi/G

## 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	5510.703	14.806	2.000	1.061	0.000	2.7707	99.94000	2.06E-03	2.00E-03	1.08E-02	2.69E-02	2.00E-03
AM243	5270.000	5284.193	39.040	540.000	539.495	0.505	0.7106	99.78000	1.05E+00	8.33E-02	2.78E-03	1.08E-02	4.51E-02
CM-242	6102.000	6026.517	4.935	1.000	1.000	0.000	4.0092	100.0000	2.12E-03	2.13E-03	1.57E-02	3.66E-02	2.12E-03
CM-3/4	5795.020	5774.558	4.935	4.000	3.495	0.505	4.8510	100.0000	6.79E-03	4.03E-03	1.90E-02	4.32E-02	4.01E-03
CM-5/6	5386.000	5383.598	11.413	6.000	6.000	0.000	6.1294	86.09000	1.35E-02	5.59E-03	2.78E-02	6.18E-02	5.51E-03
CM-247	4946.000	4929.860	108.577	6.000	6.000	0.000	6.3427	79.30000	1.47E-02	6.06E-03	3.13E-02	6.92E-02	5.99E-03
CM-248	5078.600	5053.842	0.000	5.000	4.495	0.505	11.0244	91.00000	9.57E-03	4.92E-03	4.74E-02	1.01E-01	4.88E-03

## NOTES:

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

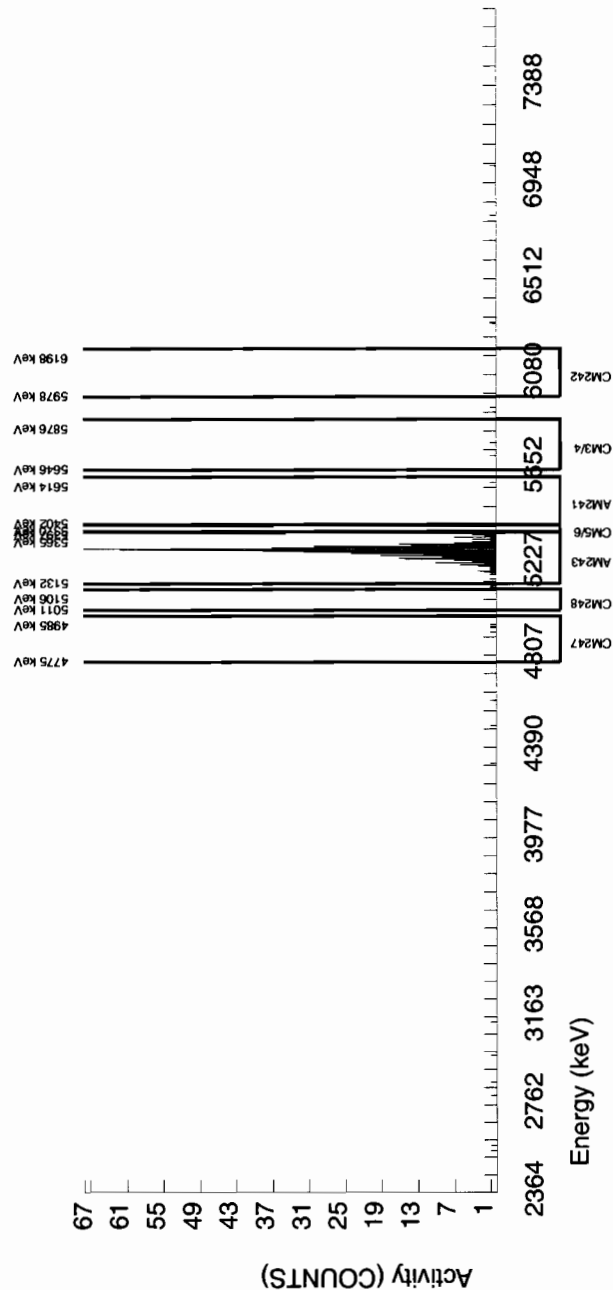


# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957107 SAMPLE ID : S0247563007_AM SAMPLE QTY : 1.255 G SAMPLE DATE : 15-FEB-2010 00:00:00 ANALYST : KXM4 % YIELD : 52.575				CHAMBER : 094 DETECTOR S/N : 78267 AVERAGE %EFFICIENCY : 30.6536 COUNT DATE : 10-MAR-2010 16:36:39 ELAPSED LIVE TIME(SEC) : 59999.99				LIB FILE : ENV_ALPHA_AM BKG FILE : B094.CNF;723 BKG DATE : 7-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W094.CNF;193 CAL DATE : 9-FEB-2010					
TRACER ID : 445-96-2-SS NUCLIDE : AM243 NOMINAL : 2.9166E+00 dpm RESULTS : 1.5334E+00 dpm				MS/MSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3153E+01 pCi/G				LCS/LCSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3153E+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	5593.097	4.943	1.000	0.184	0.000	2.7707	99.94000	4.10E-04	2.23E-03	1.44E-02	3.48E-02	2.23E-03
AM243	5270.000	5284.273	19.695	471.000	469.000	2.000	1.4142	99.78000	1.05E+00	8.72E-02	7.34E-03	2.07E-02	4.85E-02
CM-242	6102.000	6088.079	0.000	0.000	-1.000	1.000	4.0092	100.0000	-2.47E-03	3.49E-03	2.08E-02	4.76E-02	3.49E-03
CM-3/4	5795.020	5745.055	59.320	2.000	-1.000	3.000	4.8510	100.0000	-2.23E-03	4.99E-03	2.51E-02	5.63E-02	4.99E-03
CM-5/6	5386.000	5372.701	0.000	4.000	4.000	0.000	6.1294	86.09000	1.03E-02	5.22E-03	3.69E-02	8.08E-02	5.17E-03
CM-247	4946.000	4947.097	0.000	5.000	5.000	0.000	6.3427	79.30000	1.40E-02	6.35E-03	4.14E-02	9.05E-02	6.28E-03
CM-248	5078.600	5061.155	0.000	2.000	2.000	0.000	11.0244	91.00000	4.89E-03	3.48E-03	6.28E-02	1.32E-01	3.46E-03

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957107  
SAMPLE ID : S0247563008\_AM  
SAMPLE QTY : 1.252 G  
SAMPLE DATE : 15-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 64.698

CHAMBER : 095  
DETECTOR S/N : 64279  
AVERAGE %EFFICIENCY : 30.7522  
COUNT DATE : 10-MAR-2010 16:36:41  
ELAPSED LIVE TIME(SEC) : 60000.00

LIB FILE : ENV\_ALPHA\_AM  
BKG FILE : B095.CNF;688  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W095.CNF;209  
CAL DATE : 9-FEB-2010

TRACER  
ID : 445-96-2-SS  
NUCLIDE : AM243  
NOMINAL : 2.9166E+00 dpm  
RESULTS : 1.8870E+00 dpm

MS/MSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E+01 pCi/G

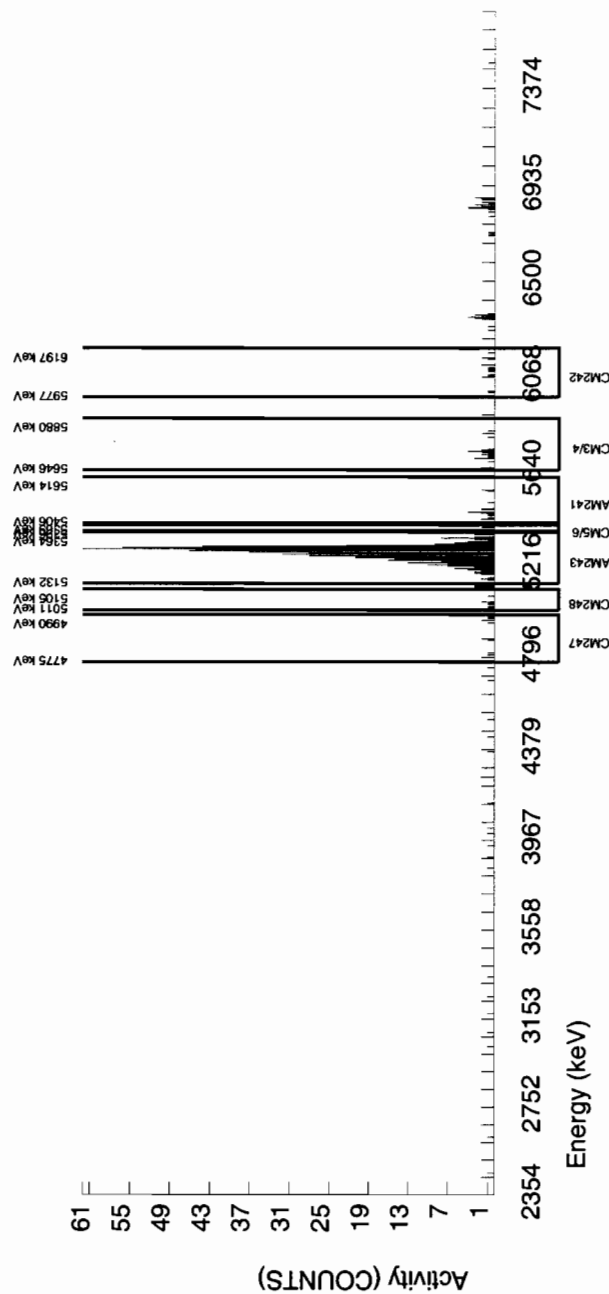
LCS/LCSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3153E+01 pCi/G

## 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	5459.821	7.261	17.000	-2.007	18.000	2.7707	99.94000	-3.63E-03	1.06E-02	1.17E-02	2.82E-02	1.06E-02
AM243	5270.000	5277.801	38.284	585.000	6.000	6.000	2.4495	99.78000	1.05E+00	8.10E-02	1.03E-02	2.56E-02	4.41E-02
CM-242	6102.000	6090.750	4.944	13.000	0.000	7.000	4.0092	100.00000	1.20E-02	8.99E-03	1.69E-02	3.86E-02	8.96E-03
CM-3/4	5795.020	5725.958	36.204	21.000	0.000	21.000	4.8510	100.00000	0.00E+00	1.17E-02	2.04E-02	4.57E-02	1.17E-02
CM-5/6	5386.000	5376.234	5.742	7.000	0.000	1.000	6.1294	86.09000	1.26E-02	6.00E-03	3.00E-02	6.56E-02	5.94E-03
CM-247	4946.000	4905.861	168.092	6.000	3.000	3.000	6.3427	79.30000	6.84E-03	6.86E-03	3.36E-02	7.35E-02	6.84E-03
CM-248	5078.600	5046.289	0.000	8.000	8.000	0.000	11.0244	91.00000	1.59E-02	5.71E-03	5.10E-02	1.07E-01	5.62E-03

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957107  
SAMPLE ID : S1202052164\_AM  
SAMPLE QTY : 1.000 G  
SAMPLE DATE : 3-MAR-2010 00:00:00.  
ANALYST : KXM4  
% YIELD : 79.164

CHAMBER : 251  
DETECTOR S/N : 79444  
AVERAGE %EFFICIENCY : 40.4400  
COUNT DATE : 8-MAR-2010 09:35:04  
ELAPSED LIVE TIME(SEC) : 30300.00

LIB FILE : ENV\_ALPHA\_AM  
BKG FILE : B251.CNF:87  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W251.CNF:31  
CAL DATE : 28-FEB-2010

TRACER  
ID : 445-96-2-SS  
NUCLIDE : AM243  
NOMINAL : 2.9165E+00 dpm  
RESULTS : 2.3089E+00 dpm

MS/MSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3151E+01 pCi/G

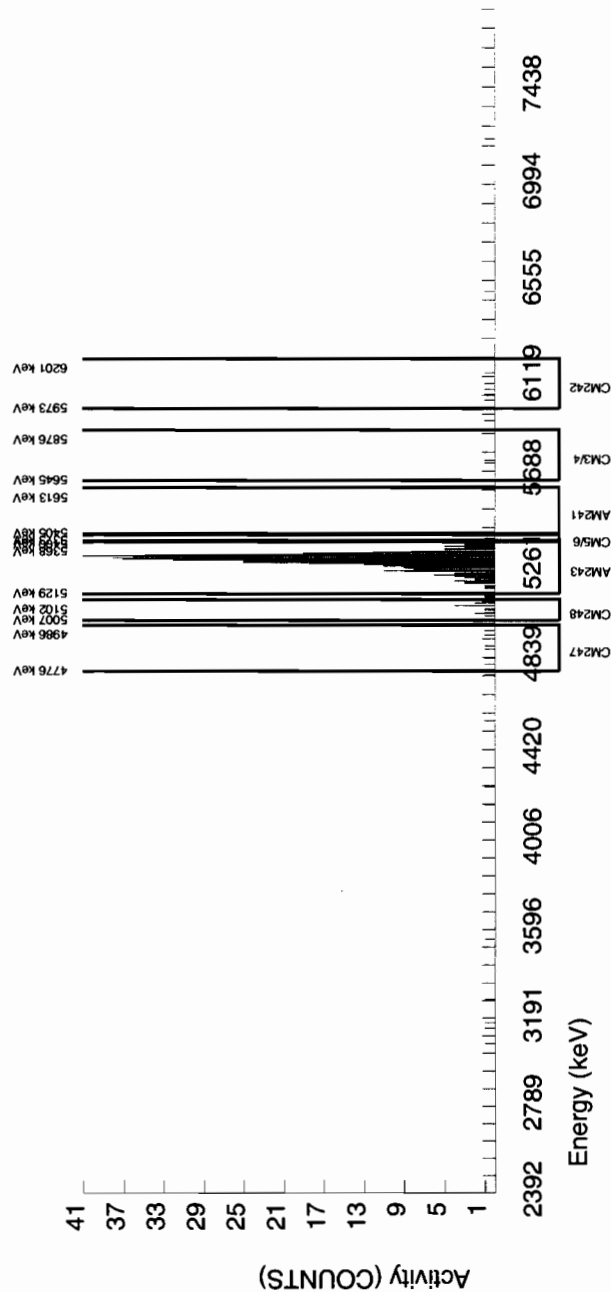
LCS/LCSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3151E+01 pCi/G

## 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	5509.027	0.000	1.000	-1.334	1.515	2.7707	99.94000	-3.72E-03	3.71E-03	1.56E-02	3.87E-02	3.70E-03
AM243	5270.000	5284.453	42.219	472.000	470.485	1.515	1.2309	99.78000	1.31E+00	1.09E-01	6.94E-03	2.14E-02	6.07E-02
CM-242	6102.000	6071.675	118.539	5.000	4.495	0.505	4.0092	100.0000	1.28E-02	6.60E-03	2.25E-02	5.26E-02	6.54E-03
CM-3/4	5795.020	5736.547	14.817	2.000	1.495	0.505	4.8510	100.0000	4.17E-03	4.20E-03	2.73E-02	6.21E-02	4.19E-03
CM-5/6	5386.000	5379.740	7.254	4.000	4.000	0.000	6.1294	86.09000	1.29E-02	6.53E-03	4.00E-02	8.88E-02	6.47E-03
CM-247	4946.000	4873.417	0.000	7.000	2.960	4.040	6.3427	79.30000	1.04E-02	1.06E-02	4.50E-02	9.95E-02	1.06E-02
CM-248	5078.600	5072.278	4.939	14.000	14.000	0.000	11.0244	91.00000	4.29E-02	1.18E-02	6.81E-02	1.45E-01	1.15E-02

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957107	CHAMBER : 252	LIB FILE : ENV_ALPHA_AM
SAMPLE ID : S1202052165_AM	DETECTOR S/N : 79445	BKG FILE : B252.CNF:87
SAMPLE QTY : 1.259 G	AVERAGE %EFFICIENCY : 39.1229	BKG DATE : 7-MAR-2010
SAMPLE DATE : 18-FEB-2010 00:00:00	COUNT DATE : 8-MAR-2010 09:35:08	BKG LIVE TIME(SEC) : 60000.00
ANALYST : KXM4	ELAPSED LIVE TIME(SEC) : 30300.00	EFF FILE : W252.CNF:31
% YIELD : 80.614		CAL DATE : 28-FEB-2010

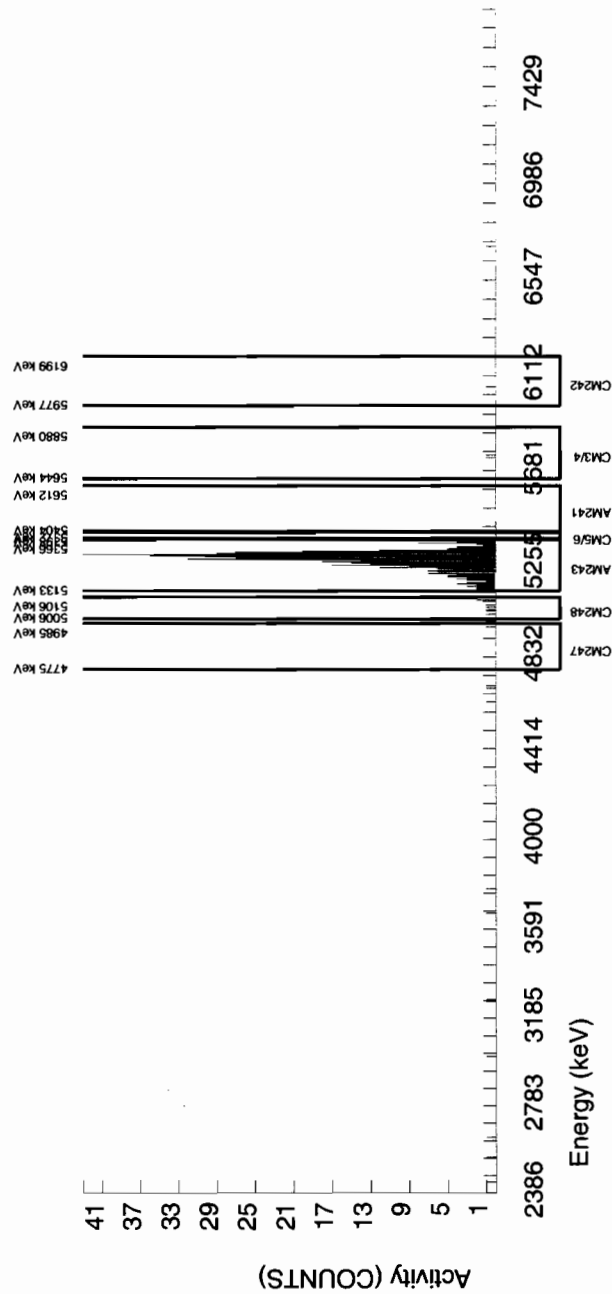
TRACER	MS/MSD	LCS/LCSD
ID : 445-96-2-SS	ID : 0244-B	ID : 0244-B
NUCLIDE : AM243	NUCLIDE : AM-241	NUCLIDE : AM-241
NOMINAL : 2.9166E+00 dpm	NOMINAL : 3.3153E+01 pCi/G	NOMINAL : 3.3153E+01 pCi/G
RESULTS : 2.3512E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
AM-241	5479.150	5507.522	0.000	0.000	-0.806	0.000	2.7707	99.94000	-1.81E-03	2.25E-03	1.26E-02	3.12E-02	2.25E-03
AM243	5270.000	5278.234	36.256	464.000	463.495	0.505	0.7106	99.78000	1.04E+00	8.69E-02	3.23E-03	1.26E-02	4.85E-02
CM-242	6102.000	6068.715	4.939	1.000	1.000	0.000	4.0092	100.0000	2.43E-03	2.44E-03	1.82E-02	4.24E-02	2.43E-03
CM-3/4	5795.020	5750.994	14.818	2.000	0.990	1.010	4.8510	100.0000	2.23E-03	3.57E-03	2.20E-02	5.01E-02	3.57E-03
CM-5/6	5386.000	5372.548	0.000	6.000	6.000	0.000	6.1294	86.09000	1.57E-02	6.48E-03	3.23E-02	7.16E-02	6.39E-03
CM-247	4946.000	4979.798	0.000	2.000	2.000	0.000	6.3427	79.30000	5.67E-03	4.03E-03	3.63E-02	8.02E-02	4.01E-03
CM-248	5078.600	5071.426	0.000	11.000	10.495	0.505	11.0244	91.00000	2.59E-02	8.47E-03	5.49E-02	1.17E-01	8.28E-03

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957107  
SAMPLE ID : S1202052166\_AM  
SAMPLE QTY : 0.106 G  
SAMPLE DATE : 3-MAR-2010 00:00:00.  
ANALYST : KXM4  
% YIELD : 95.023

CHAMBER : 253  
DETECTOR S/N : 79446  
AVERAGE %EFFICIENCY : 39.9556  
COUNT DATE : 8-MAR-2010 09:35:11  
ELAPSED LIVE TIME(SEC) : 30300.00

LIB FILE : ENV\_ALPHA\_AM  
BKG FILE : B253.CNF:89  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W253.CNF:30  
CAL DATE : 28-FEB-2010

TRACER  
ID : 445-96-2-SS  
NUCLIDE : AM243  
NOMINAL : 2.9165E+00 dpm  
RESULTS : 2.7714E+00 dpm

MS/MSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3151E+01 pCi/G

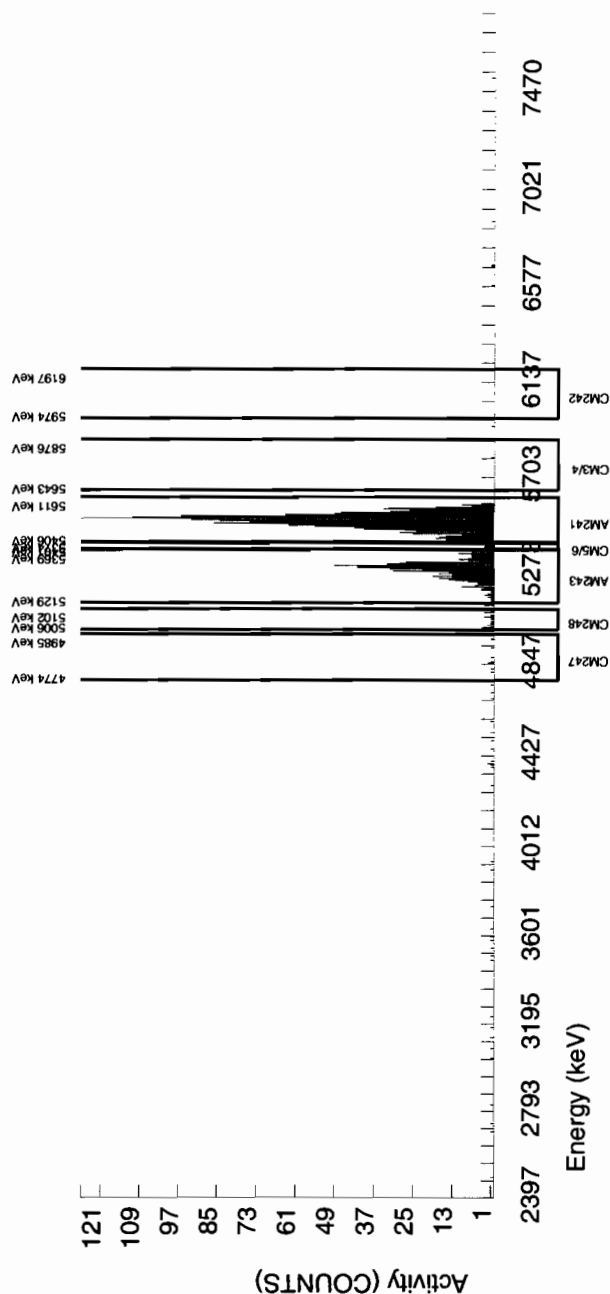
LCS/LCSD  
ID : 0244-B  
NUCLIDE : AM-241  
NOMINAL : 3.3151E+01 pCi/G

## 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	5506.501	42.139	1470.000	1462.969	6.060	2.7707	99.94000	3.24E+01	2.52E+00	1.24E-01	3.08E-01	8.51E-01
AM243	5270.000	5283.702	41.822	561.000	557.970	3.030	1.7407	99.78000	1.24E+01	1.05E+00	7.80E-02	2.16E-01	5.27E-01
CM-242	6102.000	6055.291	4.926	1.000	1.000	0.000	4.0092	100.0000	2.27E-02	2.28E-02	1.79E-01	4.19E-01	2.27E-02
CM-3/4	5795.020	5799.881	4.926	1.000	-8.090	9.090	4.8510	100.0000	-1.79E-01	5.25E-02	2.17E-01	4.94E-01	5.24E-02
CM-5/6	5386.000	5384.997	0.000	34.000	34.000	0.000	6.1294	86.09000	8.75E-01	1.63E-01	3.18E-01	7.07E-01	1.50E-01
CM-247	4946.000	4895.605	7.236	10.000	-0.605	10.605	6.3427	79.30000	-1.69E-02	1.10E-01	3.58E-01	7.91E-01	1.10E-01
CM-248	5078.600	5059.175	60.348	19.000	19.000	0.000	11.0244	91.00000	4.63E-01	1.11E-01	5.42E-01	1.15E+00	1.06E-01

## NOTES:

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



# Radiochemistry Batch Checklist, Rev10

Batch# 957108 Product: Pu Date: 3/11/10

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.			N/A
Samples have been blank corrected (if required)	✓		
If activity less 10* MDA/ MDC, error is 150% or less of sample activity. If greater 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay.	✓		
Instrument source check is within limits.	✓		
Instrument bkg check is within limits.	✓		
Method RDL/ LLD has been met.	✓		
If duplicate activities are less 5* MDA/ MDC, then RPD is 100% or less. If greater 5* MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.	✓		
Or meets the client's required RER acceptance criteria.			
Tracer yield is 15-125% . Carrier yield 25-125%.	✓		
Or meets the client's contract acceptance criteria.			
Method blank is less than the RDL/ LLD.	✓		Case narrative
(If rad samples, < 5% of lowest activity)	✓		
Sample was run within hold time.	✓		
Sample was correctly preserved if required.			N/A
Smears Taken for Radioactive batches.			N/A
Method Spike and LCS are within 75-125% or meets the client's contract acceptance criteria.	✓		
No blank spaces on data forms.			
All line outs initialed and dated.	✓		
No transcription errors are apparent.			
Aux data is correct.			N/A
Client Special requirements page has been checked.	✓		
Raw Data and/ or spectrum are included and properly statused.	✓		
QC data entered into QC database and batch is in REVW	✓		
Hit notification complete (if necessary)			N/A
Batch entered into Case Narrative.	✓		
Batch Data Exception Reports (DER) completed, if applicable.			N/A
Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.			N/A
Aliquot Correction completed if required.			N/A
Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)	✓		

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: J. L. M. - 3/11/10

Secondary Review Performed By: E. J. H. 3/11/10

3/13 3/19 <sup>EXP</sup> 3/11/10  
LANL

# Plutonium Que Sheet

24-FEB-10

Batch #: 957108 00-236 Analyst: WMA First Client Due Date: 13-MAR-10 Internal Due Date: 03-MAR-10  
 Tracer Isotope(s): Pu-239/Pu-238 Tracer Code: 1430-B Expiration Date: 1-27-11 Vol: 0.1mL  
 LCS Isotope(s): Pu-239/Pu-238 LCS Code: SM0244-B Expiration Date: 4-30-06 Vol: 0.1g  
 Spike Isotope(s): Pu-239/Pu-238 Spike Code: NA Expiration Date: NA Vol: NA  
 Prep Date: 3-2-10 Initials: WMA Pipet ID: 297056 Balance ID: 5040272 Witness: MDA 3/3/10

Sample ID	Client Description	Type	Hazard Code	Min CRDL	Matrix	Client	Collection Date	Pos.	Label #	Wet/Dry	Aliquot (g)	Pu Det #
247469001-1	RE46-10-13381	SAMPLE	.05 pC/g		SOIL	LANL010	17-FEB-10	1	1	Wet	1.253	19
247469002-1	RE46-10-13379	SAMPLE	.05 pC/g		SOIL	LANL010	17-FEB-10	2	2	Wet	1.252	20
247469003-1	RE46-10-13382	SAMPLE	.05 pC/g		SOIL	LANL010	17-FEB-10	3	3	Wet	1.253	22
247544001-1	RE46-10-12956	SAMPLE	.05 pC/g		SOIL	LANL010	18-FEB-10	4	4	Wet	1.251	23
247544002-1	RE46-10-12955	SAMPLE	.05 pC/g		SOIL	LANL010	18-FEB-10	5	5	Wet	1.255	229
247544003-1	RE46-10-12938	SAMPLE	.05 pC/g		SOIL	LANL010	18-FEB-10	6	6	Wet	1.252	65
247544004-1	RE46-10-12937	SAMPLE	.05 pC/g		SOIL	LANL010	18-FEB-10	7	7	Wet	1.254	66
247563001-1	RE15-10-8314	SAMPLE	.05 pC/g		SOIL	LANL010	15-FEB-10	8	8	Wet	1.254	67
247563002-1	RE15-10-8313	SAMPLE	.05 pC/g		SOIL	LANL010	15-FEB-10	9	9	Wet	1.252	68
247563003-1	RE15-10-8312	SAMPLE	.05 pC/g		SOIL	LANL010	15-FEB-10	10	10	Wet	1.258	230
247563004-1	RE15-10-8315	SAMPLE	.05 pC/g		SOIL	LANL010	15-FEB-10	11	11	Wet	1.252	107
247563005-1	RE15-10-8311	SAMPLE	.05 pC/g		SOIL	LANL010	15-FEB-10	12	12	Wet	1.254	108
247563006-1	RE15-10-8310	SAMPLE	.05 pC/g		SOIL	LANL010	15-FEB-10	13	13	Wet	1.254	14
247563007-1	RE15-10-8303	SAMPLE	.05 pC/g		SOIL	LANL010	15-FEB-10	14	14	Wet	1.255	16
247563008-1	RE15-10-8302	SAMPLE	.05 pC/g		SOIL	LANL010	15-FEB-10	15	15	Wet	1.252	17
247564001-1	RE16-10-13143	SAMPLE	.05 pC/g		SOIL	LANL010	12-FEB-10	16	16	Wet	1.255	18
247564002-1	RE16-10-13143	SAMPLE	.05 pC/g		SOIL	LANL010	12-FEB-10	17	17	Wet	1.255	217
247564003-1	RE16-10-13141	SAMPLE	.05 pC/g		SOIL	LANL010	12-FEB-10	18	18	Wet	1.254	218
247564004-1	RE16-10-13142	SAMPLE	.05 pC/g		SOIL	LANL010	12-FEB-10	19	19	Wet	1.257	219
247564005-1	RE16-10-13147	SAMPLE	.05 pC/g		SOIL	LANL010	12-FEB-10	20	20	Wet	1.253	220
1202052167-1	MB for batch 957108	MB	.05 pC/g		SOIL	QC ACCOUNT	18-FEB-10	21	21	Wet	1.254	221
1202052168-1	RE46-10-12956(247544001DUP)	DUP	.05 pC/g		SOIL	QC ACCOUNT	18-FEB-10	22	22	Wet	1.254	222
1202052169-1	LCS for batch 957108	LCS	.05 pC/g		SOIL	QC ACCOUNT	18-FEB-10	23	23	Wet	0.106	223

Solid Sample Dissolution by: LEACH & DIGESTION  
 Circle One

Data Reviewed By: Isabel - 3/11/10

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

GEL Laboratories LLC, Radiochemistry Division

# Blank Correction Report

**Batch ID 957108**

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202052168	DUP	Plutonium-238	1.26 g	0.0174	0.00662	0.0312	-.00135714	pCi/g	NO
		Plutonium-239/240	1.26 g	0.0099	0.00584	0.0265	.022857143	pCi/g	YES
1202052169	LCS	Plutonium-238	0.106 g	8.19	0.595	0.221	-.01613208	pCi/g	NO
		Plutonium-239/240	0.106 g	42.7	2.58	0.187	.271698113	pCi/g	NO
1202052167	MB	Plutonium-238	1.00 g	-0.00171	0.0038	0.0427	-.00171	pCi/g	NO
		Plutonium-239/240	1.00 g	0.0288	0.0104	0.0362	.0288	pCi/g	YES
247469001	RE46-10-13381	Plutonium-238	1.25 g	0.00241	0.00713	0.0235	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	0.00531	0.00308	0.0199	.02304	pCi/g	YES
247469002	RE46-10-13379	Plutonium-238	1.25 g	6.35E-05	0.00751	0.0211	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	0.00337	0.00423	0.0178	.02304	pCi/g	YES
247469003	RE46-10-13382	Plutonium-238	1.26 g	0.0168	0.00961	0.0229	-.00135714	pCi/g	NO
		Plutonium-239/240	1.26 g	0.0105	0.00576	0.0193	.022857143	pCi/g	YES
247544001	RE46-10-12956	Plutonium-238	1.25 g	0.0138	0.00796	0.0218	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	0.0165	0.00527	0.0185	.02304	pCi/g	YES
247544002	RE46-10-12955	Plutonium-238	1.26 g	0.0184	0.0059	0.0232	-.00135714	pCi/g	NO
		Plutonium-239/240	1.26 g	0.0111	0.00455	0.0197	.022857143	pCi/g	YES
247544003	RE46-10-12938	Plutonium-238	1.25 g	0.00964	0.00705	0.0211	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	0.00856	0.00541	0.0178	.02304	pCi/g	YES
247544004	RE46-10-12937	Plutonium-238	1.25 g	0.0187	0.00912	0.0227	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	0.0139	0.00621	0.0192	.02304	pCi/g	YES
247563001	RE15-10-8314	Plutonium-238	1.25 g	0.0176	0.00591	0.0197	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	-0.00344	0.00335	0.0167	.02304	pCi/g	YES
247563002	RE15-10-8313	Plutonium-238	1.25 g	0.0128	0.0054	0.0225	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	0.0111	0.00512	0.019	.02304	pCi/g	YES
247563003	RE15-10-8312	Plutonium-238	1.26 g	0.00771	0.00387	0.0243	-.00135714	pCi/g	NO
		Plutonium-239/240	1.26 g	0.00385	0.00273	0.0206	.022857143	pCi/g	YES
247563004	RE15-10-8315	Plutonium-238	1.26 g	-0.0068	0.00406	0.0339	-.00135714	pCi/g	YES
		Plutonium-239/240	1.26 g	-0.00139	0.00358	0.0287	.022857143	pCi/g	YES
247563005	RE15-10-8311	Plutonium-238	1.25 g	0.0128	0.00527	0.0269	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	0.0107	0.00548	0.0228	.02304	pCi/g	YES
247563006	RE15-10-8310	Plutonium-238	1.25 g	0.017	0.0109	0.0226	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	-0.00177	0.0047	0.0191	.02304	pCi/g	YES
247563007	RE15-10-8303	Plutonium-238	1.26 g	0.00673	0.0039	0.0283	-.00135714	pCi/g	NO
		Plutonium-239/240	1.26 g	0.0224	0.00718	0.0239	.022857143	pCi/g	YES
247563008	RE15-10-8302	Plutonium-238	1.25 g	0.020	0.00701	0.0214	-.001368	pCi/g	NO
		Plutonium-239/240	1.25 g	0.00367	0.00302	0.0181	.02304	pCi/g	YES

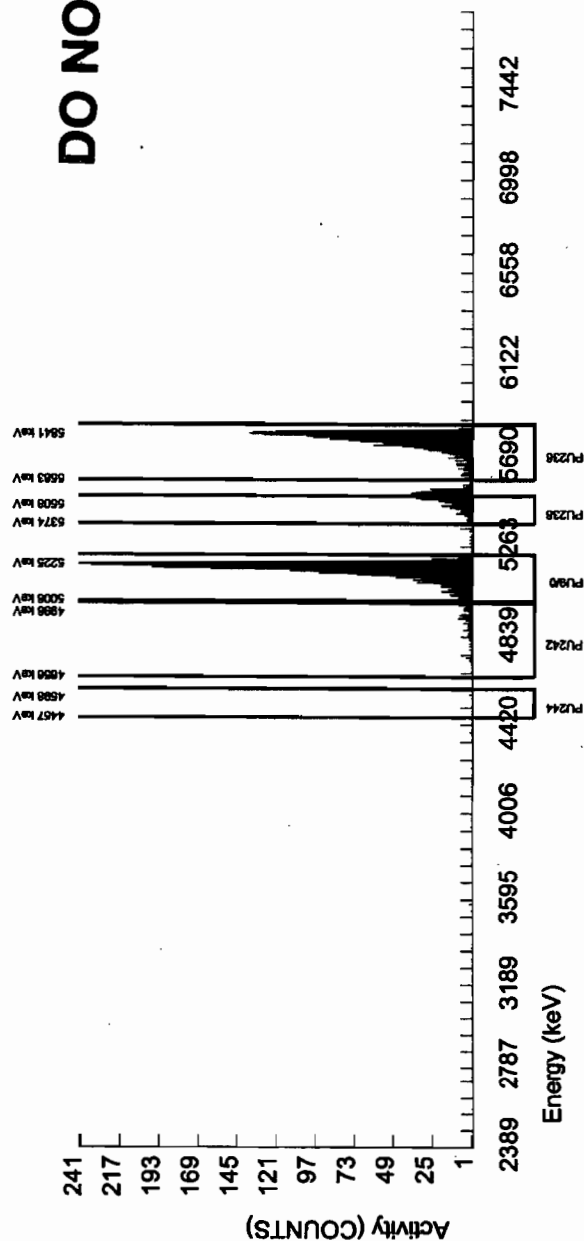
**GEL Laboratories LLC**  
**ALPHA SPECTROSCOPY REPORT**

NOTES:

\* BKG Sg calculated via blank population.

Sg updated 8-MAR-2010)

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



**DO NOT REPORT**

Manually Integrated

# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957108  
SAMPLE ID : S0247544001\_PU  
SAMPLE QTY : 1.251 G  
SAMPLE DATE : 18-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 90.505

CHAMBER : 023  
DETECTOR S/N : 78264  
AVERAGE %EFFICIENCY : 33.6228  
COUNT DATE : 8-MAR-2010 17:26:15  
ELAPSED LIVE TIME(SEC) : 43200.00

LIB FILE : ENV\_ALPHA\_PU  
BKG FILE : B023.CNF:1115  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W023.CNF:303  
CAL DATE : 4-MAR-2010

TRACER  
ID : 1430-B  
NUCLIDE : PU-236  
NOMINAL : 6.5726E+00 dpm  
RESULTS : 5.9485E+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

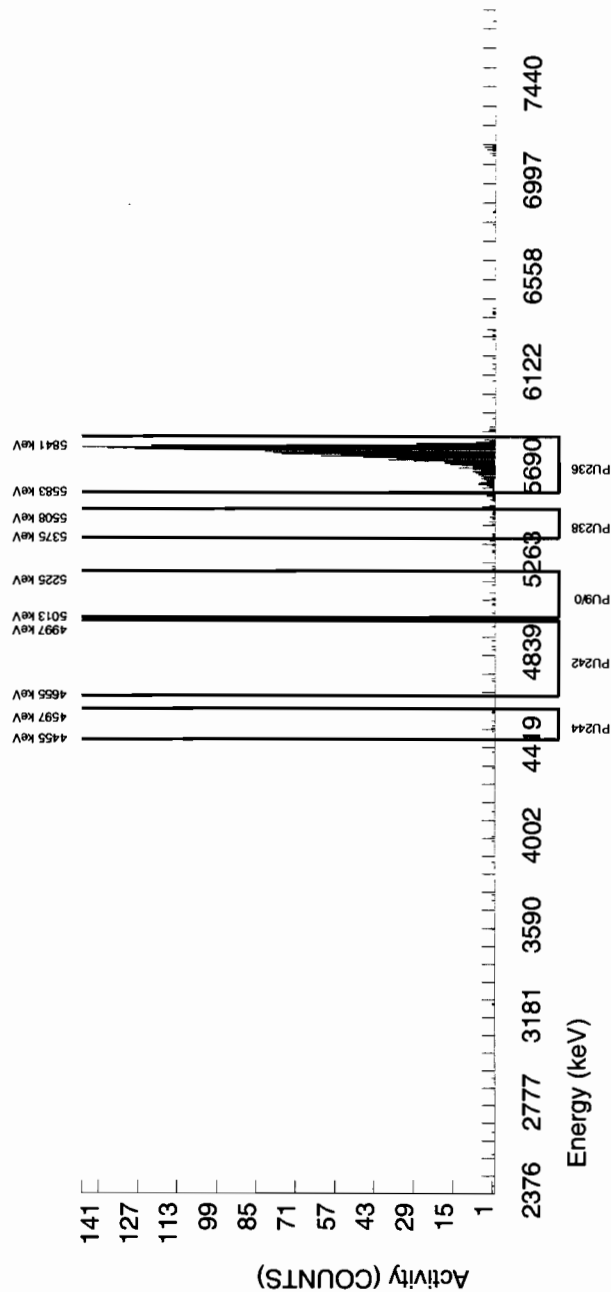
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5769.031	40.182	1440.000	1422.000	18.000	4.2426	100.0000	2.37E+00	1.33E-01	1.50E-02	3.45E-02	6.34E-02
PU-238	5499.000	5459.149	0.000	17.000	8.360	8.640	2.4495	99.90000	1.38E-02	7.96E-03	8.69E-03	2.18E-02	7.93E-03
PU-9/0	5155.000	5113.383	4.987	10.000	10.000	0.000	1.9732	99.90000	1.65E-02	5.27E-03	7.00E-03	1.85E-02	5.20E-03
PU242	4890.000	4851.983	239.379	6.000	3.840	2.160	*****	100.0000	6.31E-03	4.53E-03	4.42E-01	8.88E-01	4.52E-03
PU-244	4589.000	4540.827	89.767	6.000	5.280	0.720	6.4609	99.90000	8.69E-03	4.22E-03	2.29E-02	5.03E-02	4.20E-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 : 957108  
 SAMPLE ID : S0247563001\_PU  
 SAMPLE QTY : 1.254 G  
 SAMPLE DATE : 15-FEB-2010 00:00:00  
 ANALYST : KXM4  
 % YIELD : 104.114

CHAMBER : 067  
 DETECTOR S/N : 46-089B4  
 AVERAGE %EFFICIENCY : 32.3338  
 COUNT DATE : 8-MAR-2010 17:26:16  
 ELAPSED LIVE TIME(SEC) : 43200.00

LIB FILE : ENV\_ALPHA\_PU  
 BKG FILE : B067.CNF;1110  
 BKG DATE : 7-MAR-2010  
 BKG LIVE TIME(SEC) : 60000.00  
 EFF FILE : W067.CNF;289  
 CAL DATE : 9-FEB-2010

TRACER  
 ID : 1430-B  
 NUCLIDE : PU-236  
 NOMINAL : 6.5857E+00 dpm  
 RESULTS : 6.8566E+00 dpm

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

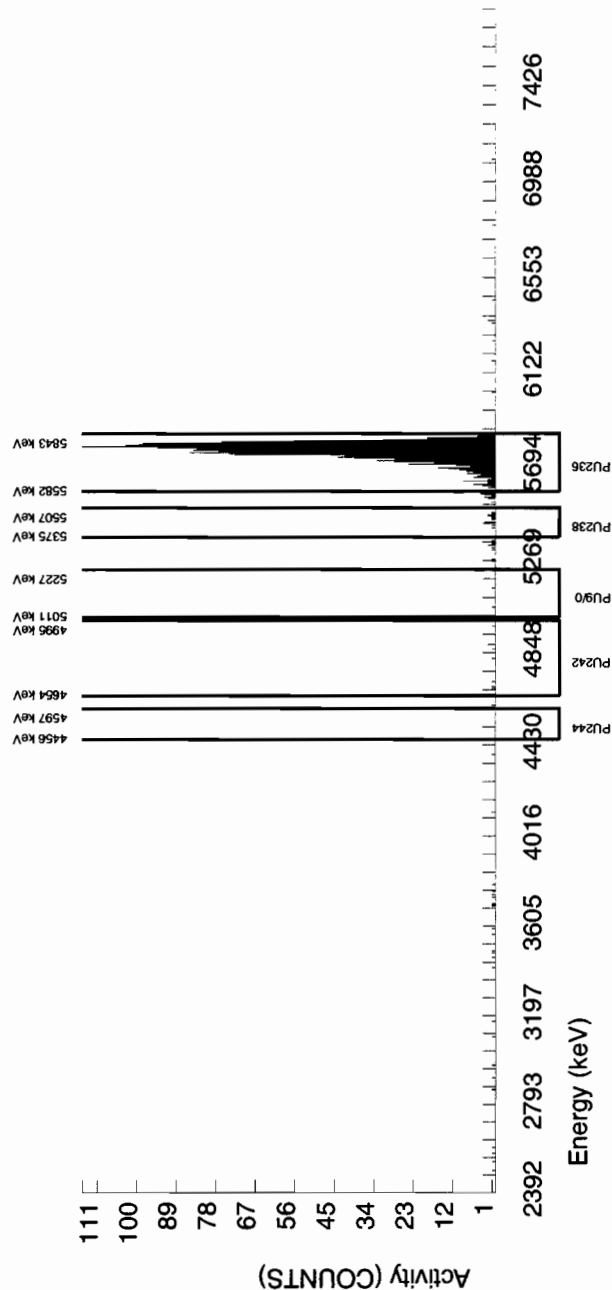
LCS/LCSD  
 ID : 0244-B  
 NUCLIDE : PU-9/0  
 NOMINAL : 4.1778E+01 pCi/G

## 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	5767.584	61.812	1576.000	1573.120	2.880	1.6971	100.0000	2.37E+00	1.25E-01	5.43E-03	1.49E-02	5.97E-02
PU-238	5499.000	5463.471	34.906	14.000	11.840	2.160	2.4495	99.900000	1.76E-02	5.91E-03	7.84E-03	1.97E-02	5.85E-03
PU-9/0	5155.000	5105.413	84.772	2.000	-2.320	4.320	1.9732	99.900000	-3.44E-03	3.35E-03	6.32E-03	1.67E-02	3.35E-03
PU242	4890.000	4820.317	4.987	8.000	5.120	2.880	*****	100.0000	7.59E-03	4.72E-03	3.99E-01	8.01E-01	4.70E-03
PU-244	4589.000	4526.372	0.000	1.000	0.280	0.720	6.4609	99.900000	4.15E-04	1.83E-03	2.07E-02	4.54E-02	1.83E-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 : 957108  
SAMPLE ID : S0247563002\_PU  
SAMPLE QTY : 1.253 G  
SAMPLE DATE : 15-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 99.761

CHAMBER : 068  
DETECTOR S/N : 78794  
AVERAGE %EFFICIENCY : 29.5953  
COUNT DATE : 8-MAR-2010 17:26:16  
ELAPSED LIVE TIME(SEC) : 43200.00

LIB FILE : ENV\_ALPHA\_PU  
BKG FILE : B068.CNF;1103  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W068.CNF;280  
CAL DATE : 9-FEB-2010

TRACER  
ID : 1430-B  
NUCLIDE : PU-236  
NOMINAL : 6.5857E+00 dpm  
RESULTS : 6.5699E+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

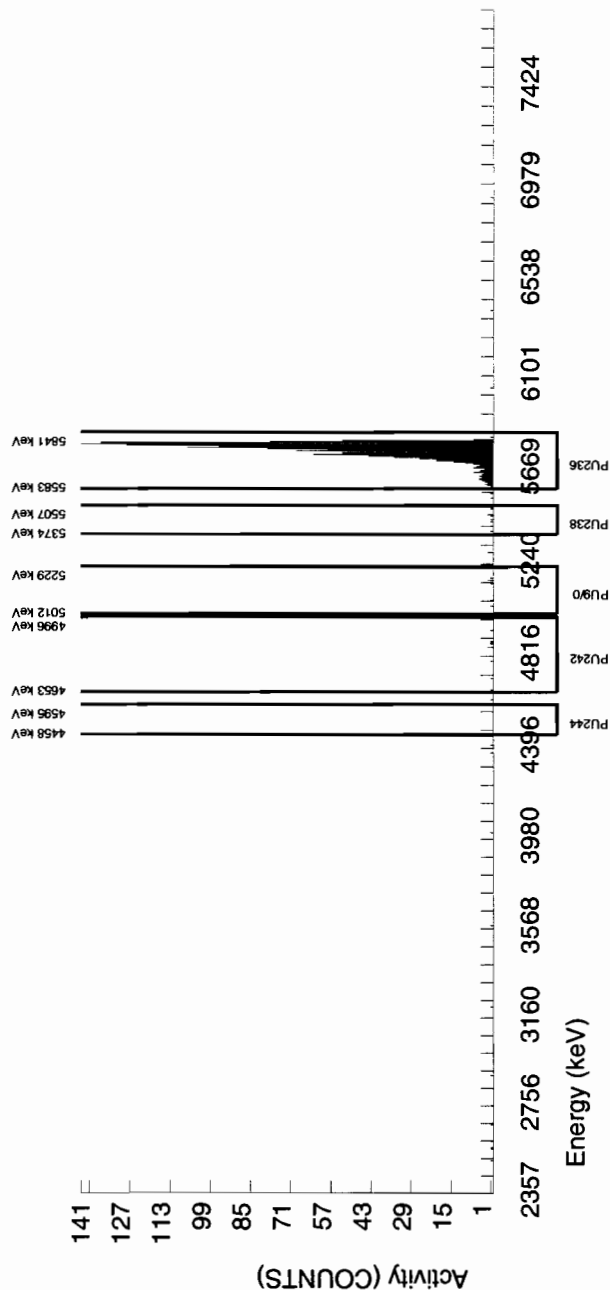
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5765.871	32.552	1384.000	1379.680	4.320	2.0785	100.0000	2.37E+00	1.30E-01	7.58E-03	1.97E-02	6.39E-02
PU-238	5499.000	5456.254	7.295	9.000	7.560	1.440	2.4495	99.90000	1.28E-02	5.40E-03	8.95E-03	2.25E-02	5.37E-03
PU-9/0	5155.000	5141.665	17.228	8.000	6.560	1.440	1.9732	99.90000	1.11E-02	5.12E-03	7.21E-03	1.90E-02	5.09E-03
PU242	4890.000	4834.604	4.967	9.000	7.560	1.440	*****	100.0000	1.28E-02	5.39E-03	4.55E-01	9.14E-01	5.36E-03
PU-244	4589.000	4526.514	0.000	0.000	0.000	0.000	6.4609	99.90000	0.00E+00	1.69E-03	2.36E-02	5.18E-02	1.69E-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 : 957108	CHAMBER : 230	LIB FILE : ENV_ALPHA_PU
SAMPLE ID : S0247563003_PU	DETECTOR S/N : 79423	BKG FILE : B230.CNF:87
SAMPLE QTY : 1.258 G	AVERAGE %EFFICIENCY : 38.1908	BKG DATE : 7-MAR-2010
SAMPLE DATE : 15-FEB-2010 00:00:00	COUNT DATE : 10-MAR-2010 18:56:12	BKG LIVE TIME(SEC) : 60000.00
ANALYST : KXM4	ELAPSED LIVE TIME(SEC) : 30300.00	EFF FILE : W230.CNF:30
% YIELD : 96.511		CAL DATE : 28-FEB-2010

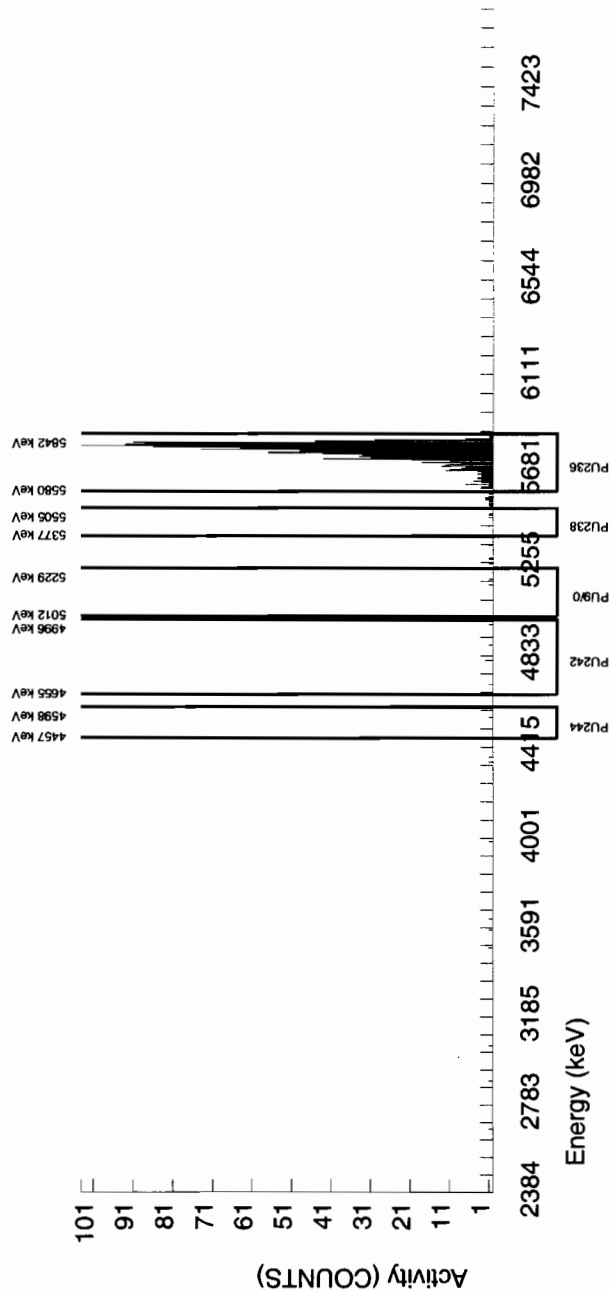
TRACER	MS/MSD	LCS/LCSD
ID : 1430-B	ID : 0244-B	ID : 0244-B
NUCLIDE : PU-236	NUCLIDE : PU-9/0	NUCLIDE : PU-9/0
NOMINAL : 6.5858E+00 dpm	NOMINAL : 4.1778E+01 pCi/G	NOMINAL : 4.1778E+01 pCi/G
RESULTS : 6.3560E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5769.098	50.520	1207.000	1206.495	0.505	0.7106	100.0000	2.36E+00	1.37E-01	2.76E-03	1.07E-02	6.79E-02
PU-238	5499.000	5483.729	0.000	4.000	4.000	0.000	2.4495	99.900000	7.71E-03	3.87E-03	9.52E-03	2.43E-02	3.85E-03
PU-9/0	5155.000	5173.298	29.732	2.000	2.000	0.000	1.9732	99.900000	3.85E-03	2.73E-03	7.67E-03	2.06E-02	2.72E-03
PU242	4890.000	4855.329	4.955	6.000	4.990	1.010	*****	100.0000	9.60E-03	4.93E-03	4.84E-01	9.73E-01	4.91E-03
PU-244	4589.000	4556.100	4.955	1.000	1.000	0.000	6.4609	99.900000	1.93E-03	1.93E-03	2.51E-02	5.54E-02	1.93E-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 : 957108  
SAMPLE ID : S0247563004\_PU  
SAMPLE QTY : 1.256 G  
SAMPLE DATE : 15-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 85.652

CHAMBER : 107  
DETECTOR S/N : 67578  
AVERAGE %EFFICIENCY : 30.8518  
COUNT DATE : 10-MAR-2010 19:01:46  
ELAPSED LIVE TIME(SEC) : 30300.00

LIB FILE : ENV\_ALPHA\_PU  
BKG FILE : B107.CNF:691  
BKG DATE : 7-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W107.CNF:232  
CAL DATE : 9-FEB-2010

TRACER  
ID : 1430-B  
NUCLIDE : PU-236  
NOMINAL : 6.5858E+00 dpm  
RESULTS : 5.6409E+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

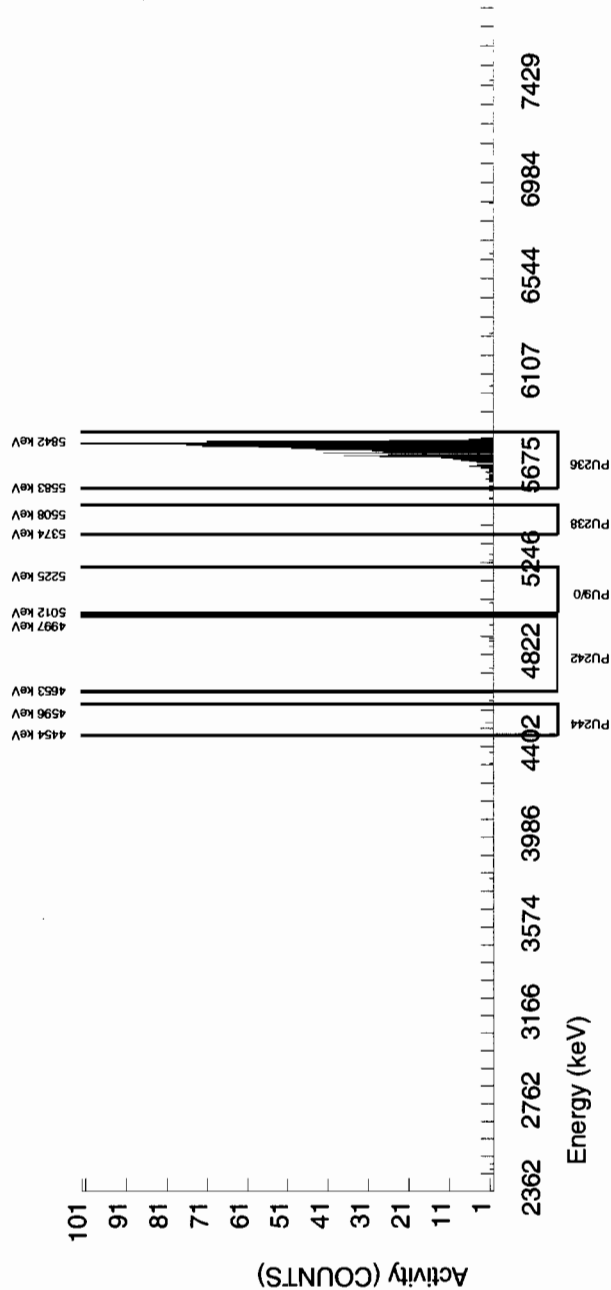
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5772.461	30.527	866.000	864.990	1.010	1.0050	100.0000	2.36E+00	1.47E-01	5.45E-03	1.82E-02	8.04E-02
PU-238	5499.000	5441.178	0.000	0.000	-2.525	2.525	2.4495	99.900000	-6.80E-03	4.06E-03	1.33E-02	3.39E-02	4.06E-03
PU-9/0	5155.000	5065.442	4.970	1.000	-0.515	1.515	1.9732	99.900000	-1.39E-03	3.58E-03	1.07E-02	2.87E-02	3.57E-03
PU242	4890.000	4876.917	193.821	5.000	3.990	1.010	*****	100.0000	1.07E-02	6.33E-03	6.76E-01	1.36E+00	6.31E-03
PU-244	4589.000	4516.971	4.970	2.000	2.000	0.000	6.4609	99.900000	5.38E-03	3.81E-03	3.51E-02	7.74E-02	3.80E-03

## NOTES:

\* BKG Sg calculated via blank population.

(Sg updated 8-MAR-2010)

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



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957108  
SAMPLE ID : S0247563005\_PU  
SAMPLE QTY : 1.254 G  
SAMPLE DATE : 15-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 98.471

CHAMBER : 108  
DETECTOR S/N : 78778  
AVERAGE %EFFICIENCY : 33.8473  
COUNT DATE : 10-MAR-2010 19:01:46  
ELAPSED LIVE TIME(SEC) : 30300.00

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;213  
CAL DATE : 9-FEB-2010

TRACER  
ID : 1430-B  
NUCLIDE : PU-236  
NOMINAL : 6.5858E+00 dpm  
RESULTS : 6.4852E+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

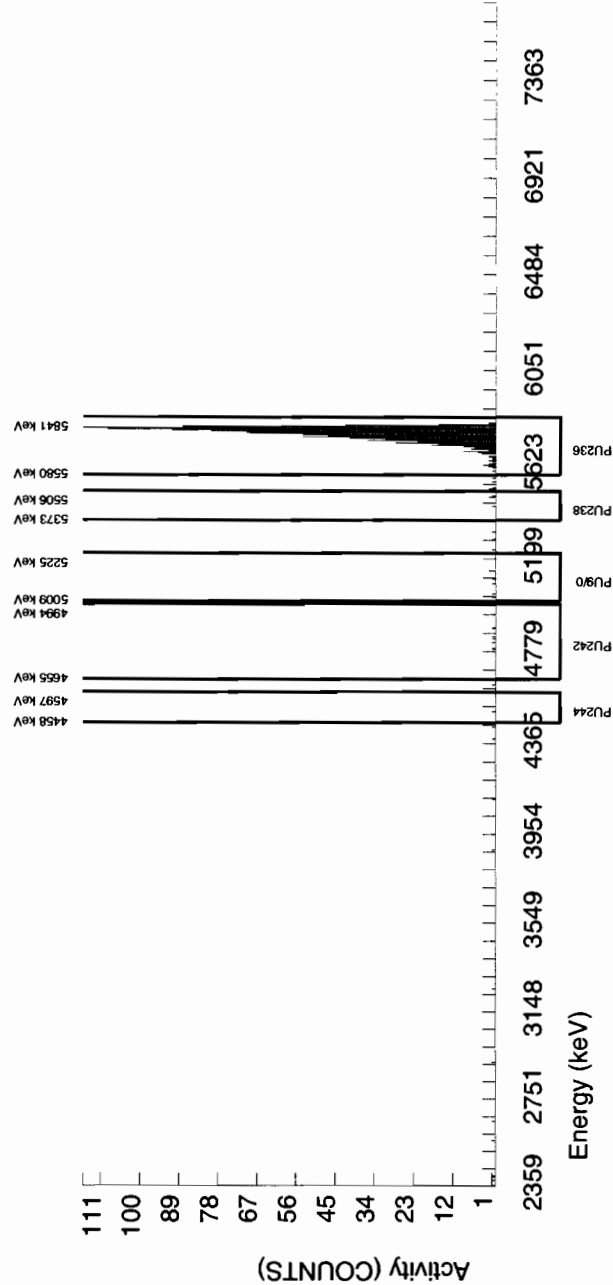
NUCLIDE ACTIVITY SUMMARY

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	5771.412	35.647	1091.000	1091.000	0.000	0.0000	100.0000	2.37E+00	1.37E-01	0.00E+00	5.78E-03	7.16E-02
PU-238	5499.000	5456.874	7.156	6.000	6.000	0.000	2.4495	99.90000	1.28E-02	5.27E-03	1.06E-02	2.69E-02	5.24E-03
PU-9/0	5155.000	5097.834	4.872	6.000	4.990	1.010	1.9732	99.90000	1.07E-02	5.48E-03	8.51E-03	2.28E-02	5.45E-03
PU242	4890.000	4825.047	185.154	8.000	6.990	1.010	*****	100.0000	1.49E-02	6.27E-03	5.37E-01	1.08E+00	6.23E-03
PU-244	4589.000	4514.471	4.872	1.000	1.000	0.000	6.4609	99.90000	2.14E-03	2.14E-03	2.79E-02	6.15E-02	2.14E-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

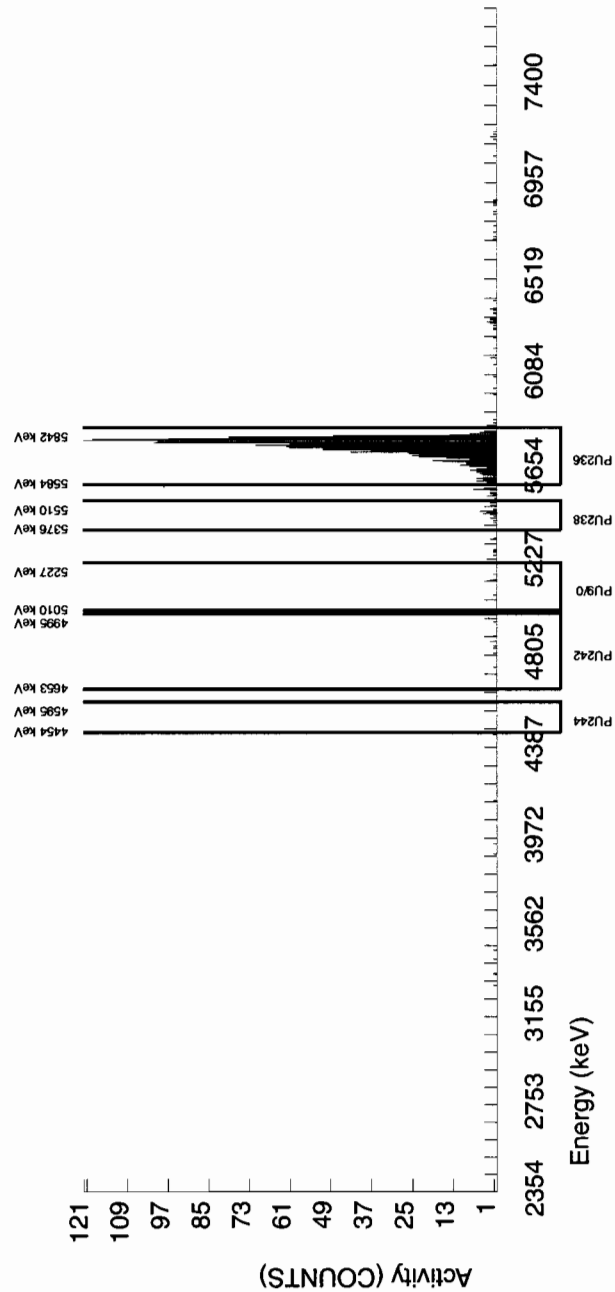
<p>BATCH NUMBER : 957108  SAMPLE ID : S0247563006_PU  SAMPLE QTY : 1.254 G  SAMPLE DATE : 15-FEB-2010 00:00:00  ANALYST : KXM4  % YIELD : 87.494</p>		<p>CHAMBER : 014  DETECTOR S/N : 67616  AVERAGE %EFFICIENCY : 33.5532  COUNT DATE : 8-MAR-2010 17:51:35  ELAPSED LIVE TIME(SEC) : 43200.00</p>		<p>LIB FILE : ENV_ALPHA_PU  BKG FILE : B014.CNF;1102  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 59999.99  EFF FILE : W014.CNF;328  CAL DATE : 4-MAR-2010</p>	
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5857E+00 dpm  RESULTS : 5.7621E+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	5760.699	42.854	1392.000	1371.840	20.160	4.4900	100.0000	2.37E+00	1.34E-01	1.65E-02	3.75E-02	6.47E-02
PU-238	5499.000	5453.691	16.567	28.000	10.000	18.000	2.4495	99.90000	1.70E-02	1.09E-02	8.99E-03	2.26E-02	1.09E-02
PU-9/0	5155.000	5142.627	4.955	4.000	-1.040	5.040	1.9732	99.90000	-1.77E-03	4.70E-03	7.24E-03	1.91E-02	4.70E-03
PU242	4890.000	4860.199	4.955	8.000	5.840	2.160	*****	100.0000	9.92E-03	5.28E-03	4.57E-01	9.19E-01	5.25E-03
PU-244	4589.000	4524.693	0.000	0.000	-1.440	1.440	6.4609	99.90000	-2.45E-03	2.43E-03	2.37E-02	5.20E-02	2.43E-03

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

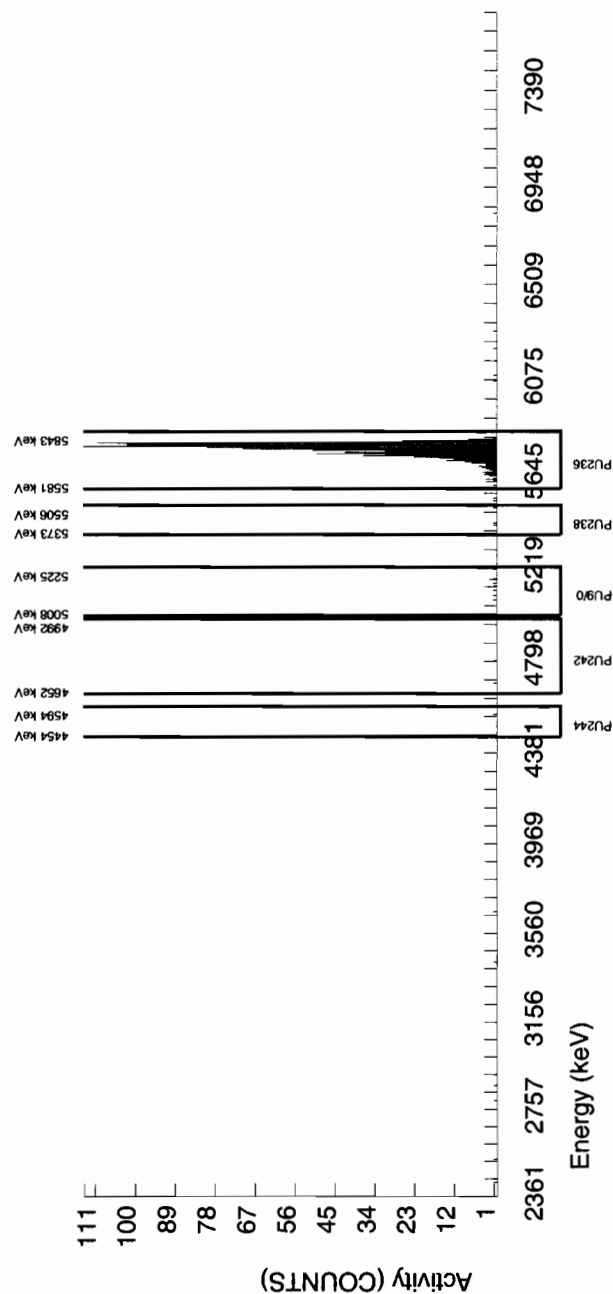
<p>BATCH NUMBER : 957108 SAMPLE ID : S0247563007_PU SAMPLE QTY : 1.255 G SAMPLE DATE : 15-FEB-2010 00:00:00 ANALYST : KXM4 % YIELD : 88.949</p>	<p>CHAMBER : 109 DETECTOR S/N : 79463 AVERAGE %EFFICIENCY : 35.6501 COUNT DATE : 10-MAR-2010 19:01:46 ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_PU BKG FILE : B109.CNF:687 BKG DATE : 7-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W109.CNF:194 CAL DATE : 9-FEB-2010</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	5767.293	33.272	1039.000	1037.990	1.010	1.0050	100.0000	2.36E+00	1.39E-01	4.55E-03	1.52E-02	7.34E-02
PU-238	5499.000	5451.175	78.631	3.000	3.000	0.000	2.4495	99.90000	6.73E-03	3.90E-03	1.11E-02	2.83E-02	3.89E-03
PU-9/0	5155.000	5136.931	7.218	10.000	10.000	0.000	1.9732	99.90000	2.24E-02	7.18E-03	8.93E-03	2.39E-02	7.09E-03
PU242	4890.000	4771.968	103.203	3.000	1.990	1.010	*****	100.0000	4.46E-03	4.21E-03	5.64E-01	1.13E+00	4.20E-03
PU-244	4589.000	4563.090	4.914	1.000	1.000	0.000	6.4609	99.90000	2.24E-03	2.25E-03	2.93E-02	6.46E-02	2.24E-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 : 957108  SAMPLE ID : S0247563008_PU  SAMPLE QTY : 1.252 G  SAMPLE DATE : 15-FEB-2010 00:00:00  ANALYST : KXM4  % YIELD : 104.633</p>	<p>CHAMBER : 017  DETECTOR S/N : 78791  AVERAGE %EFFICIENCY : 29.7179  COUNT DATE : 8-MAR-2010 17:51:35  ELAPSED LIVE TIME(SEC) : 43200.00</p>	<p>LIB FILE : ENV_ALPHA_PU  BKG FILE : B017.CNF;1944  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 59999.99  EFF FILE : W017.CNF;1264  CAL DATE : 4-MAR-2010</p>
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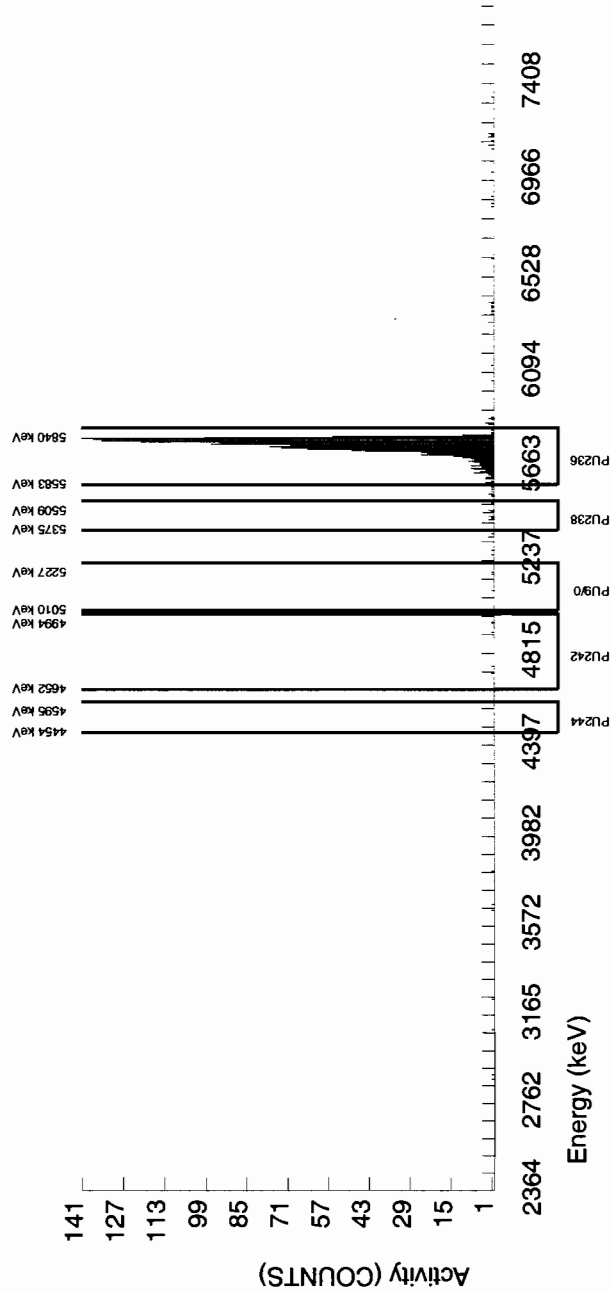
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5857E+00 dpm  RESULTS : 6.8908E+00 dpm</p>	<p>MS/MSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>	<p>LCS/LCSD  ID : 0244-B  NUCLIDE : PU-9/0  NOMINAL : 4.1778E+01 pCi/G</p>
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NUCLIDE 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	5767.437	47.652	1466.000	1453.040	12.960	3.6000	100.0000	2.37E+00	1.33E-01	1.25E-02	2.93E-02	6.26E-02
PU-238	5499.000	5445.540	5.760	16.000	12.400	3.600	2.4495	99.90000	2.00E-02	7.01E-03	8.50E-03	2.14E-02	6.94E-03
PU-9/0	5155.000	5157.760	84.304	3.000	2.280	0.720	1.9732	99.90000	3.67E-03	3.02E-03	6.85E-03	1.81E-02	3.02E-03
PU242	4890.000	4857.865	223.157	6.000	4.560	1.440	*****	100.0000	7.33E-03	4.28E-03	4.32E-01	8.69E-01	4.26E-03
PU-244	4589.000	4524.268	0.000	0.000	-0.720	0.720	6.4609	99.90000	-1.16E-03	1.98E-03	2.24E-02	4.92E-02	1.98E-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 : 957108 SAMPLE ID : S1202052167_PU SAMPLE QTY : 1.000 G SAMPLE DATE : 3-MAR-2010 00:00:00. ANALYST : KXM4 % YIELD : 79.507	CHAMBER : 111 DETECTOR S/N : 79462 AVERAGE %EFFICIENCY : 33.1216 COUNT DATE : 10-MAR-2010 19:01:46 ELAPSED LIVE TIME(SEC) : 30300.00	LIB FILE : ENV_ALPHA_PU BKG FILE : B111.CNF:686 BKG DATE : 7-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W111.CNF:209 CAL DATE : 9-FEB-2010
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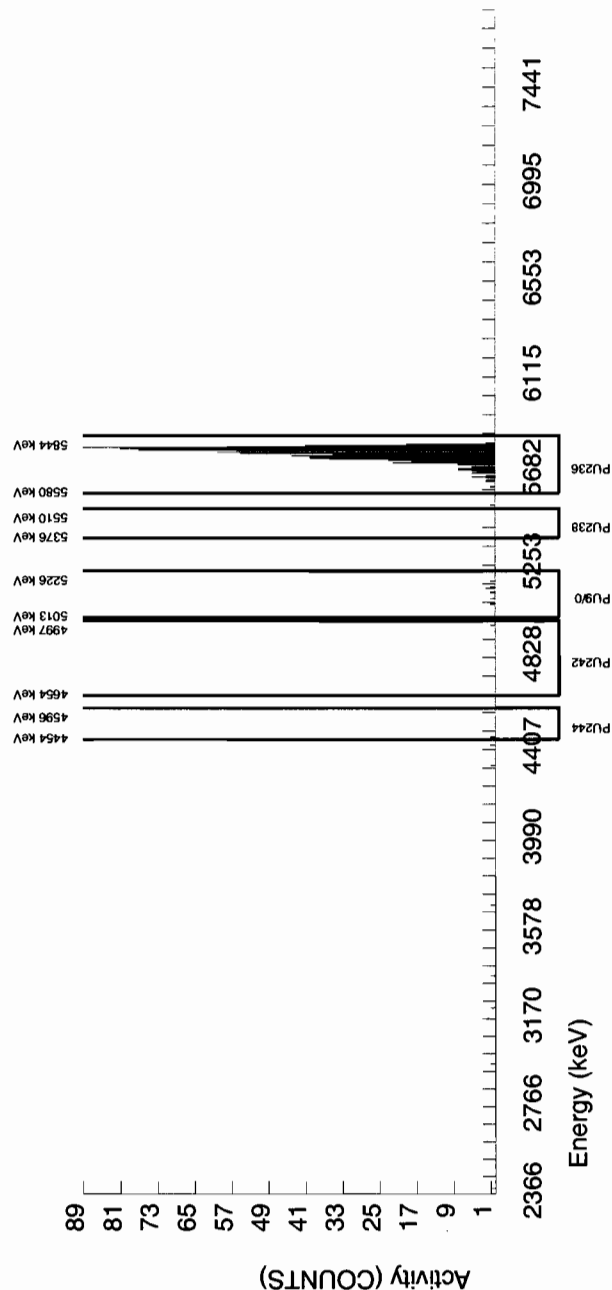
<b>TRACER</b> ID : 1430-B NUCLIDE : PU-236 NOMINAL : 6.5162E+00 dpm RESULTS : 5.1809E+00 dpm	<b>MS/MSD</b> ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G	<b>LCS/LCSD</b> ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G
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## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5767.389	35.357	862.000	862.000	0.000	0.0000	100.0000	2.94E+00	1.83E-01	0.00E+00	9.18E-03	1.00E-01
PU-238	5499.000	5442.618	0.000	0.000	-0.505	0.505	2.4495	99.90000	-1.71E-03	3.80E-03	1.68E-02	4.27E-02	3.80E-03
PU-9/0	5155.000	5130.063	7.299	9.000	8.495	0.505	1.9732	99.90000	2.88E-02	1.04E-02	1.35E-02	3.62E-02	1.03E-02
PU242	4890.000	4981.262	4.969	1.000	-0.515	1.515	*****	100.0000	-1.74E-03	4.50E-03	8.52E-01	1.71E+00	4.50E-03
PU-244	4589.000	4469.764	4.969	1.000	1.000	0.000	6.4609	99.90000	3.39E-03	3.40E-03	4.42E-02	9.76E-02	3.39E-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 : 957108 SAMPLE ID : S1202052168_PU SAMPLE QTY : 1.259 G SAMPLE DATE : 18-FEB-2010 00:00:00 ANALYST : KXM4 % YIELD : 89.878	CHAMBER : 112 DETECTOR S/N : 78261 AVERAGE %EFFICIENCY : 31.8150 COUNT DATE : 10-MAR-2010 19:01:46 ELAPSED LIVE TIME(SEC) : 30300.00	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;221 CAL DATE : 15-FEB-2010
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TRACER ID : 1430-B NUCLIDE : PU-236 NOMINAL : 6.5727E+00 dpm RESULTS : 5.9074E+00 dpm	MS/MSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G	LCS/LCSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G
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## NUCLIDE ACTIVITY SUMMARY

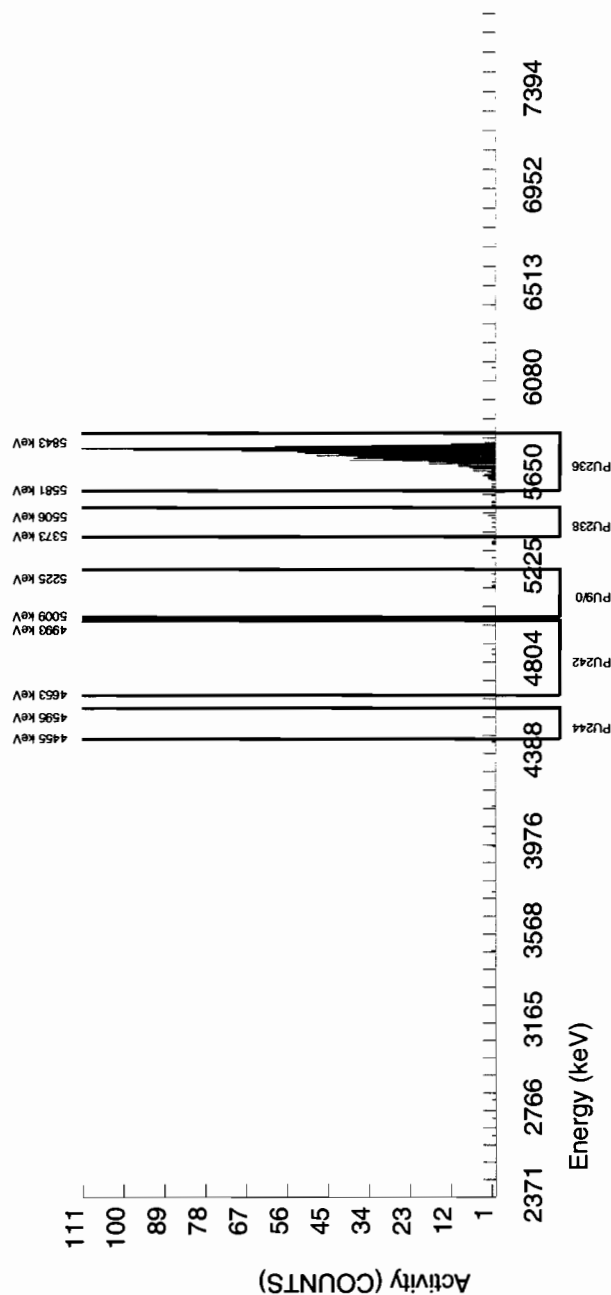
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5757.346	24.311	936.000	936.000	0.000	0.0000	100.0000	2.35E+00	1.43E-01	0.00E+00	6.71E-03	7.69E-02
PU-238	5499.000	5449.129	4.904	7.000	7.000	0.000	2.4495	99.900000	1.74E-02	6.62E-03	1.23E-02	3.12E-02	6.56E-03
PU-9/0	5155.000	5141.519	181.437	5.000	3.990	1.010	1.9732	99.900000	9.90E-03	5.84E-03	9.88E-03	2.65E-02	5.82E-03
PU242	4890.000	4856.564	24.519	2.000	0.485	1.515	*****	100.0000	1.20E-03	4.12E-03	6.23E-01	1.25E+00	4.12E-03
PU-244	4589.000	4460.375	4.904	1.000	-0.010	1.010	6.4609	99.900000	-2.48E-05	3.05E-03	3.23E-02	7.14E-02	3.05E-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

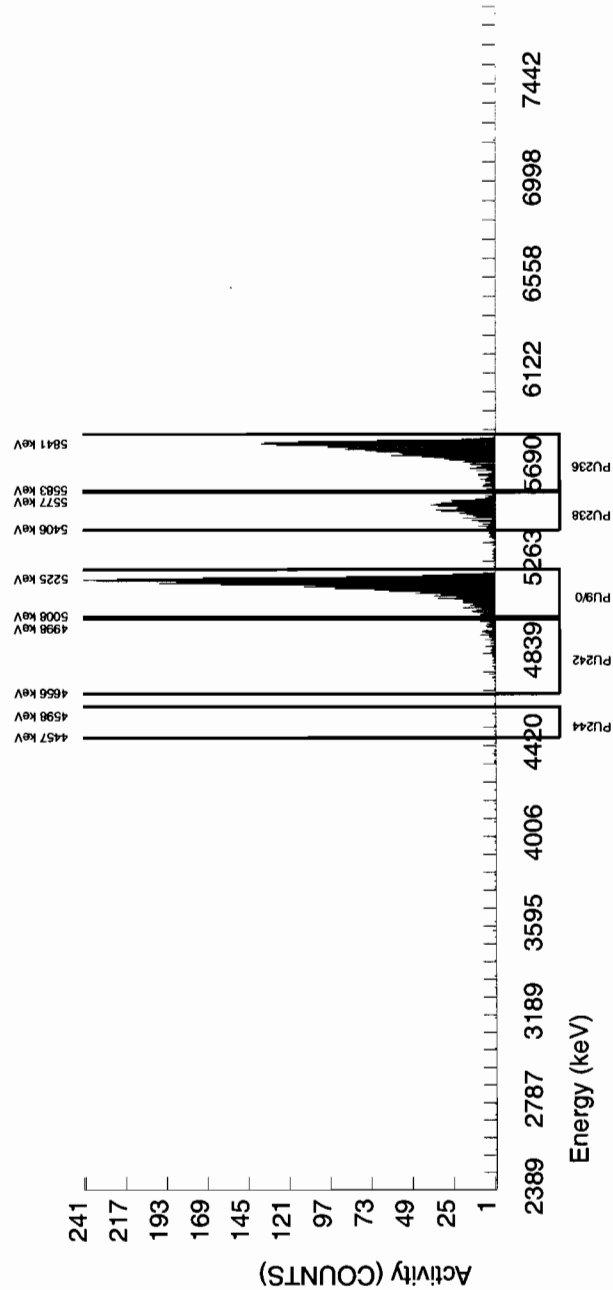
<p>BATCH NUMBER : 957108  SAMPLE ID : S1202052169_PU  SAMPLE QTY : 0.106 G  SAMPLE DATE : 3-MAR-2010 00:00:00.  ANALYST : KXM4  % YIELD : 89.620</p>		<p>CHAMBER : 223  DETECTOR S/N : 79416  AVERAGE %EFFICIENCY : 39.5920  COUNT DATE : 8-MAR-2010 19:09:07  ELAPSED LIVE TIME(SEC) : 43200.00</p>		<p>LIB FILE : ENV_ALPHA_PU  BKG FILE : B223.CNF:89  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W223.CNF:30  CAL DATE : 28-FEB-2010</p>	
<p>TRACER  ID : 1430-B  NUCLIDE : PU-236  NOMINAL : 6.5161E+00 dpm  RESULTS : 5.8397E+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	5769.416	49.560	1658.000	1658.000	0.000	0.0000	100.0000	2.77E+01	1.72E+00	0.00E+00	4.51E-02	6.80E-01
PU-238	5499.000	5504.521	59.338	492.000	492.000	0.000	2.4495	99.900000	8.19E+00	5.95E-01	8.80E-02	2.21E-01	3.69E-01
PU-9/0	5155.000	5156.205	36.106	2566.000	2566.000	0.000	1.9732	99.900000	4.27E+01	2.58E+00	7.09E-02	1.87E-01	8.43E-01
PU242	4890.000	4897.398	0.000	158.000	157.280	0.720	*****	100.0000	2.62E+00	2.57E-01	4.47E+00	8.99E+00	2.09E-01
PU-244	4589.000	4519.586	4.946	9.000	9.000	0.000	6.4609	99.900000	1.50E-01	5.07E-02	2.32E-01	5.09E-01	5.00E-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# 957113 Product: 66 Date: 3/11/10

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 RDU/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%.		✓	DER# 803096
Or meets the client's contract acceptance criteria.			
Method blank is less than the RDU/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 statused.	✓		
QC data entered into QC database and batch is in REVW	✓		
Hit notification complete (if necessary)			N/A
Batch entered into Case Narrative.	✓		
Batch Data Exception Reports (DER) completed, if applicable.	✓		DER# 803096
Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.	✓		DER# 803096
Aliquot Correction completed if required.			N/A
Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)	✓		

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: [Signature] 3/11/10

Secondary Review Performed By: [Signature] 3/12/10

LANL

3/3 - 3/13

# Uranium Que Sheet

24-FEB-10

Batch #: 957113

Analyst: AYB

First Client Due Date: 13-MAR-10

Internal Due Date: 03-MAR-10

Tracer Isotope: U-232

Tracer Code: 1283-H

Expiration Date: 17-9-10

Vol: 0.141

LCS Isotope: U-238

LCS Code: SM0244-A

Expiration Date: 10-3-10

Vol: 0.12

Spike Isotope: U-238

Spike Code: NA

Expiration Date: NA

Vol: NA

Prep Date: 3-2-10

Initials: KM

Pipet ID: 297058

Balance ID: 5040772

Witness: 3/2/10

Sample ID	Client Description	Type	Hazard Code	Min CRDL	Matrix	Client	Collection Date	Pos.	Label #	Wet/Dry Aliquot (g/l/l)	U Det #
247469001-1	RE46-10-13381	SAMPLE		.1 pCi/g	SOIL	LANL010	17-FEB-10	1	1	0.514	113
247469002-1	RE46-10-13379	SAMPLE		.1 pCi/g	SOIL	LANL010	17-FEB-10	2	2	0.510	114
247469003-1	RE46-10-13382	SAMPLE		.1 pCi/g	SOIL	LANL010	17-FEB-10	3	3	0.512	112
247544001-1	RE46-10-12956	SAMPLE		.1 pCi/g	SOIL	LANL010	18-FEB-10	4	4	0.503	143
247544002-1	RE46-10-12955	SAMPLE		.1 pCi/g	SOIL	LANL010	18-FEB-10	5	5	0.510	144
247544003-1	RE46-10-12938	SAMPLE		.1 pCi/g	SOIL	LANL010	18-FEB-10	6	6	0.502	145
247544004-1	RE46-10-12937	SAMPLE		.1 pCi/g	SOIL	LANL010	18-FEB-10	7	7	0.506	146
247563001-1	RE15-10-8314	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	8	8	0.502	147
247563002-1	RE15-10-8313	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	9	9	0.510	148
247563003-1	RE15-10-8312	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	10	10	0.503	149
247563004-1	RE15-10-8315	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	11	11	0.513	150
247563005-1	RE15-10-8311	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	12	12	0.501	151
247563006-1	RE15-10-8310	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	13	13	0.503	152
247563007-1	RE15-10-8303	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	14	14	0.516	153
247563008-1	RE15-10-8302	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	15	15	0.517	154
247564001-1	RE16-10-1514	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	16	16	0.510	155
247564002-1	RE16-10-13143	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	17	17	0.511	156
247564003-1	RE16-10-13141	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	18	18	0.505	157
247564004-1	RE16-10-13142	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	19	19	0.504	159
247564005-1	RE16-10-13147	SAMPLE		.1 pCi/g	SOIL	LANL010	12-FEB-10	20	20	0.509	160
1202052186-1	MB for batch 957113	MB		.1 pCi/g	SOIL	QC ACCOUNT		21	21	0.505	7
1202052187-1	RE46-10-12956(247544001DUP)	DUP		.1 pCi/g	SOIL	QC ACCOUNT	18-FEB-10	22	22	0.505	9
1202052188-1	LCS for batch 957113	LCS		.1 pCi/g	SOIL	QC ACCOUNT		23	23	0.121	10

Choose SOP used: GL-RAD-A-011

Solid Sample Dissolution by: LEACH or DIGESTION

Circle One

Data Reviewed By: 3/14/10

# Blank Correction Report

**Batch ID 957113**

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202052187	DUP	Uranium-233/234	0.505 g	0.886	0.0813	0.0837	.062376238	pCi/g	NO
		Uranium-235/236	0.505 g	0.110	0.0215	0.0511	.011207921	pCi/g	NO
		Uranium-238	0.505 g	1.04	0.0926	0.0588	.084752475	pCi/g	NO
1202052188	LCS	Uranium-233/234	0.121 g	4.61	0.405	0.279	.260330579	pCi/g	NO
		Uranium-235/236	0.121 g	0.281	0.0646	0.170	.046776860	pCi/g	NO
		Uranium-238	0.121 g	4.57	0.402	0.196	.353719008	pCi/g	NO
1202052186	MB	Uranium-233/234	1.00 g	0.0315	0.0076	0.0431	.0315	pCi/g	YES
		Uranium-235/236	1.00 g	0.00566	0.00424	0.0263	.00566	pCi/g	YES
		Uranium-238	1.00 g	0.0428	0.00989	0.0303	.0428	pCi/g	YES
247469001	RE46-10-13381	Uranium-233/234	0.514 g	1.09	0.117	0.160	.061284047	pCi/g	NO
		Uranium-235/236	0.514 g	0.0477	0.0198	0.099	.011011673	pCi/g	YES
		Uranium-238	0.514 g	0.769	0.0914	0.113	.083268482	pCi/g	NO
247469002	RE46-10-13379	Uranium-233/234	0.510 g	0.832	0.101	0.180	.061764706	pCi/g	NO
		Uranium-235/236	0.510 g	0.0358	0.0181	0.111	.011098039	pCi/g	YES
		Uranium-238	0.510 g	0.909	0.107	0.127	.083921569	pCi/g	NO
247469003	RE46-10-13382	Uranium-233/234	0.512 g	0.767	0.0939	0.173	.061523438	pCi/g	NO
		Uranium-235/236	0.512 g	0.0474	0.0219	0.107	.011054688	pCi/g	YES
		Uranium-238	0.512 g	0.796	0.0962	0.123	.08359375	pCi/g	NO
247544001	RE46-10-12956	Uranium-233/234	0.503 g	1.09	0.123	0.180	.062624254	pCi/g	NO
		Uranium-235/236	0.503 g	0.0538	0.0223	0.112	.011252485	pCi/g	YES
		Uranium-238	0.503 g	1.13	0.126	0.127	.085089463	pCi/g	NO
247544002	RE46-10-12955	Uranium-233/234	0.510 g	0.741	0.0918	0.172	.061764706	pCi/g	NO
		Uranium-235/236	0.510 g	0.0599	0.0254	0.107	.011098039	pCi/g	NO
		Uranium-238	0.510 g	0.741	0.0913	0.122	.083921569	pCi/g	NO
247544003	RE46-10-12938	Uranium-233/234	0.502 g	0.751	0.0929	0.173	.062749004	pCi/g	NO
		Uranium-235/236	0.502 g	0.0691	0.025	0.108	.011274900	pCi/g	NO
		Uranium-238	0.502 g	0.877	0.104	0.123	.085258964	pCi/g	NO
247544004	RE46-10-12937	Uranium-233/234	0.506 g	0.967	0.112	0.180	.062252964	pCi/g	NO
		Uranium-235/236	0.506 g	0.0537	0.0223	0.112	.011185771	pCi/g	YES
		Uranium-238	0.506 g	1.05	0.119	0.127	.084584980	pCi/g	NO
247563001	RE15-10-8314	Uranium-233/234	0.502 g	0.913	0.109	0.181	.062749004	pCi/g	NO
		Uranium-235/236	0.502 g	0.0948	0.0312	0.112	.011274900	pCi/g	NO
		Uranium-238	0.502 g	0.866	0.105	0.128	.085258964	pCi/g	NO
247563002	RE15-10-8313	Uranium-233/234	0.510 g	1.19	0.133	0.190	.061764706	pCi/g	NO
		Uranium-235/236	0.510 g	0.0945	0.0308	0.118	.011098039	pCi/g	NO
		Uranium-238	0.510 g	1.18	0.132	0.134	.083921569	pCi/g	NO
247563003	RE15-10-8312	Uranium-233/234	0.503 g	1.34	0.142	0.177	.062624254	pCi/g	NO
		Uranium-235/236	0.503 g	0.0878	0.0306	0.109	.011252485	pCi/g	NO
		Uranium-238	0.503 g	1.37	0.144	0.125	.085089463	pCi/g	NO
247563004	RE15-10-8315	Uranium-233/234	0.513 g	0.982	0.114	0.185	.061403509	pCi/g	NO
		Uranium-235/236	0.513 g	0.0184	0.0131	0.115	.011033138	pCi/g	YES

# Blank Correction Report

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
247563004	RE15-10-8315	Uranium-238	0.513 g	1.00	0.116	0.131	.083430799	pCi/g	NO
247563006	RE15-10-8310	Uranium-233/234	0.503 g	1.27	0.136	0.176	.062624254	pCi/g	NO
		Uranium-235/236	0.503 g	0.0877	0.0285	0.109	.011252485	pCi/g	NO
		Uranium-238	0.503 g	1.30	0.139	0.125	.085089463	pCi/g	NO
247563007	RE15-10-8303	Uranium-233/234	0.516 g	1.23	0.134	0.180	.061046512	pCi/g	NO
		Uranium-235/236	0.516 g	0.0583	0.0246	0.112	.010968992	pCi/g	NO
		Uranium-238	0.516 g	1.39	0.147	0.128	.082945736	pCi/g	NO
247563008	RE15-10-8302	Uranium-233/234	0.517 g	1.13	0.127	0.185	.060928433	pCi/g	NO
		Uranium-235/236	0.517 g	0.0553	0.023	0.115	.010947776	pCi/g	NO
		Uranium-238	0.517 g	1.64	0.168	0.131	.082785300	pCi/g	NO
247564001	RE16-10-1514	Uranium-233/234	0.520 g	0.579	0.077	0.168	.060576923	pCi/g	NO
		Uranium-235/236	0.520 g	0.0168	0.0119	0.104	.010884615	pCi/g	YES
		Uranium-238	0.520 g	0.749	0.0915	0.119	.082307692	pCi/g	NO
247564002	RE16-10-13143	Uranium-233/234	0.511 g	0.629	0.0809	0.166	.061643836	pCi/g	NO
		Uranium-235/236	0.511 g	0.00829	0.00831	0.103	.011076321	pCi/g	YES
		Uranium-238	0.511 g	0.697	0.0865	0.118	.083757339	pCi/g	NO
247564003	RE16-10-13141	Uranium-233/234	0.505 g	1.02	0.119	0.195	.062376238	pCi/g	NO
		Uranium-235/236	0.505 g	0.0776	0.0281	0.121	.011207921	pCi/g	NO
		Uranium-238	0.505 g	0.976	0.116	0.138	.084752475	pCi/g	NO
247564004	RE16-10-13142	Uranium-233/234	0.504 g	1.04	0.118	0.178	.0625	pCi/g	NO
		Uranium-235/236	0.504 g	0.062	0.0263	0.110	.011230159	pCi/g	NO
		Uranium-238	0.504 g	0.731	0.092	0.126	.084920635	pCi/g	NO
247564005	RE16-10-13147	Uranium-233/234	0.509 g	0.702	0.0889	0.177	.061886051	pCi/g	NO
		Uranium-235/236	0.509 g	0.0441	0.020	0.110	.011119843	pCi/g	YES
		Uranium-238	0.509 g	0.792	0.0966	0.125	.084086444	pCi/g	NO

# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

<p>BATCH NUMBER : 957113  SAMPLE ID : S0247544001_UU  SAMPLE QTY : 0.503 G  SAMPLE DATE : 18-FEB-2010 00:00:00  ANALYST : KXM4  % YIELD : 100.707</p>	<p>CHAMBER : 143  DETECTOR S/N : 65882  AVERAGE %EFFICIENCY : 24.2868  COUNT DATE : 6-MAR-2010 22:03:22  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>
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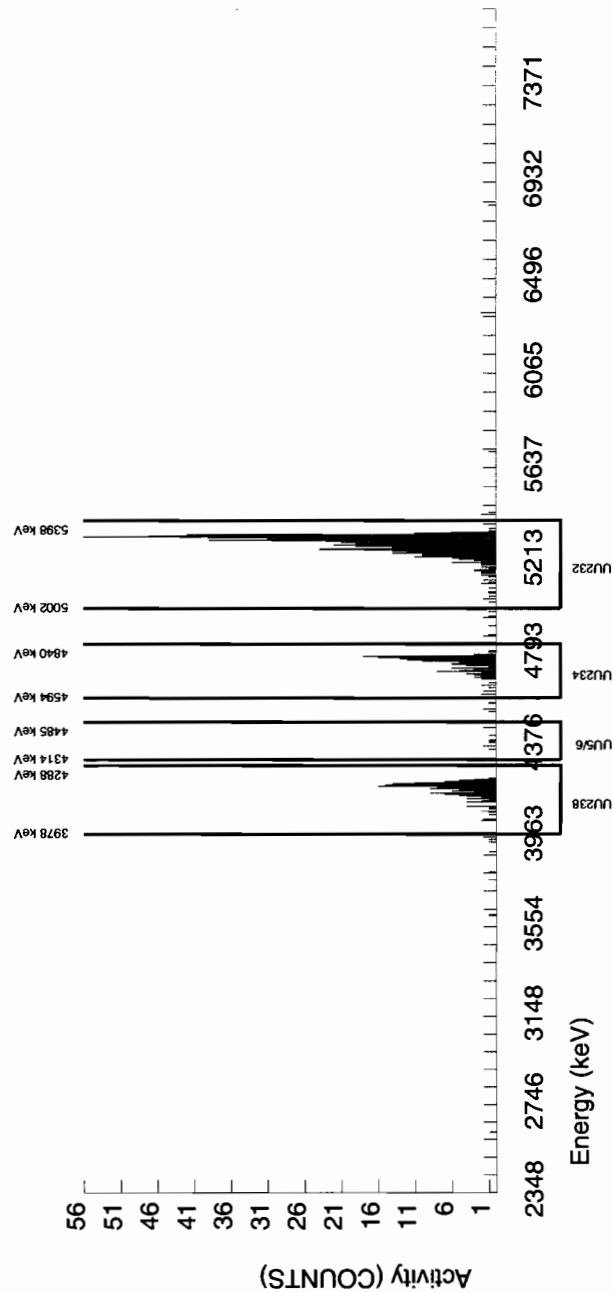
<p>TRACER ID : 1283-H  NUCLIDE : U232  NOMINAL : 4.5036E+00 dpm  RESULTS : 4.5354E+00 dpm</p>	<p>MS/MSD ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	<p>LCS/LCSD ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>
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## NUCLIDE 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
U232	5302.100	5294.214	30.333	556.000	556.000	0.000	0.0000	100.0000	4.03E+00	3.58E-01	0.00E+00	1.96E-02	1.71E-01
U-3/4	4763.020	4753.994	25.325	151.000	150.437	0.000	5.4790	100.0000	1.09E+00	1.23E-01	8.02E-02	1.80E-01	8.89E-02
U-235	4391.000	4386.264	108.959	6.000	6.000	0.000	2.4127	80.90000	5.38E-02	2.23E-02	4.36E-02	1.12E-01	2.20E-02
U-238	4184.730	4180.428	49.501	156.000	156.000	0.000	3.6781	100.0000	1.13E+00	1.26E-01	5.38E-02	1.27E-01	9.06E-02

## NOTES:

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

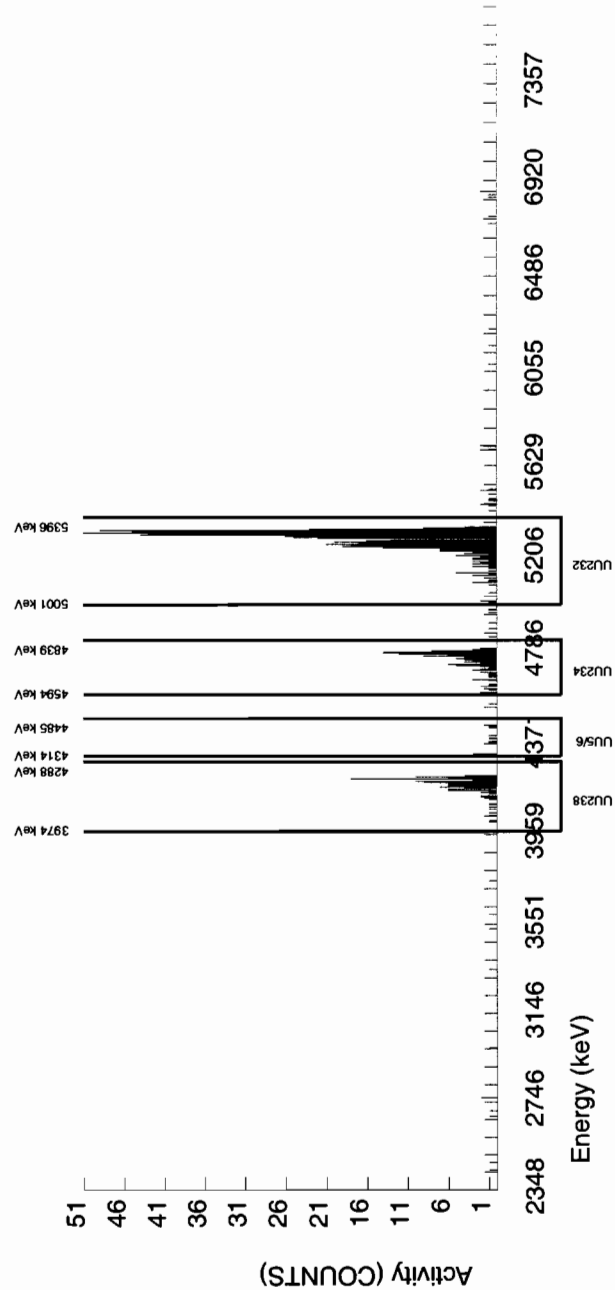


GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957113 SAMPLE ID : S0247563001_UU SAMPLE QTY : 0.502 G SAMPLE DATE : 15-FEB-2010 00:00:00 ANALYST : KXM4 % YIELD : 99.362				CHAMBER : 147 DETECTOR S/N : 75550 AVERAGE %EFFICIENCY : 24.4814 COUNT DATE : 6-MAR-2010 22:03:31 ELAPSED LIVE TIME(SEC) : 30300.00				LIB FILE : ENV_ALPHA_UU BKG FILE : B147.CNF:402 BKG DATE : 28-FEB-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W147.CNF:114 CAL DATE : 19-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5039E+00 dpm RESULTS : 4.4752E+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	5299.455	31.544	556.000	552.970	3.030	1.7407	100.0000	4.04E+00	3.60E-01	2.57E-02	7.11E-02	1.73E-01
U-3/4	4763.020	4752.590	27.623	126.000	124.935	0.505	5.4790	100.0000	9.13E-01	1.09E-01	8.08E-02	1.81E-01	8.19E-02
U-235	4391.000	4393.499	4.940	11.000	10.495	0.505	2.4127	80.90000	9.48E-02	3.12E-02	4.40E-02	1.12E-01	3.03E-02
U-238	4184.730	4186.772	25.404	119.000	118.495	0.505	3.6781	100.0000	8.66E-01	1.05E-01	5.42E-02	1.28E-01	7.98E-02

NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957113 SAMPLE ID : S0247563002_UU SAMPLE QTY : 0.510 G SAMPLE DATE : 15-FEB-2010 00:00:00 ANALYST : KXM4 % YIELD : 93.091	CHAMBER : 148 DETECTOR S/N : 74429 AVERAGE %EFFICIENCY : 24.5720 COUNT DATE : 6-MAR-2010 22:03:33 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
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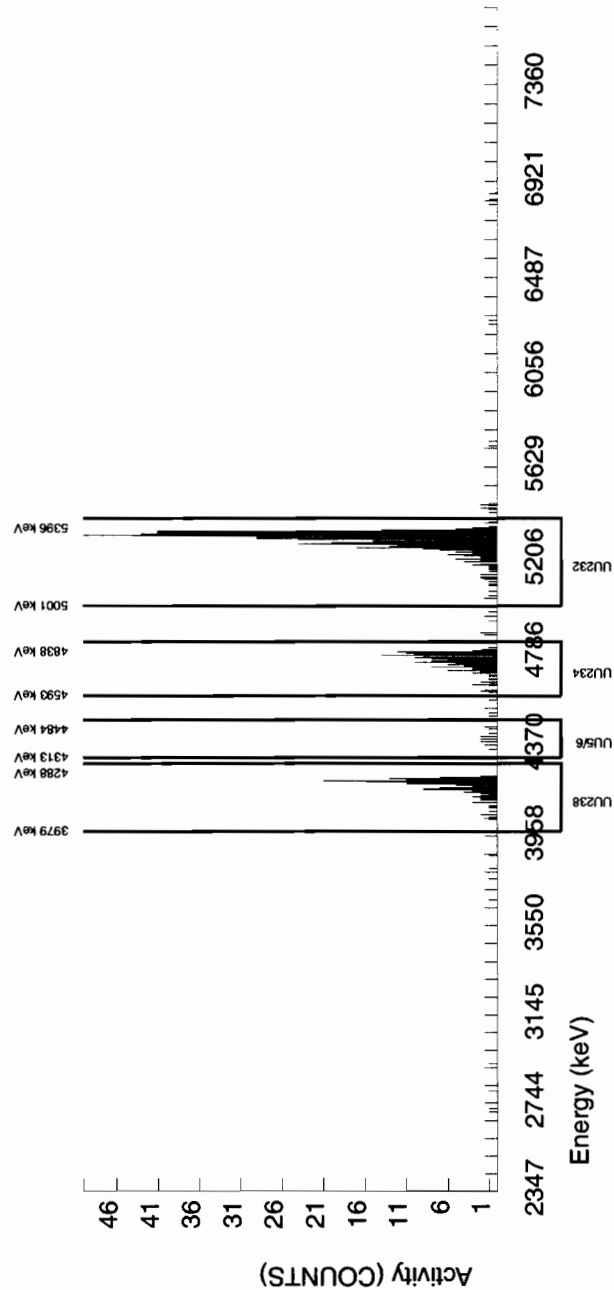
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5039E+00 dpm RESULTS : 4.1928E+00 dpm	MS/MSD ID : 0244-A NUCLIDE : U-238 NOMINAL : 5.7500E+00 pCi/G	LCS/LCSD ID : 0244-A NUCLIDE : U-238 NOMINAL : 5.7500E+00 pCi/G
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## NUCLIDE ACTIVITY SUMMARY

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
U232	5302.100	5301.291	36.522	521.000	519.990	1.010	1.0050	100.0000	3.98E+00	3.54E-01	1.55E-02	5.17E-02	1.75E-01
U-3/4	4763.020	4753.190	67.957	158.000	155.958	1.515	5.4790	100.0000	1.19E+00	1.33E-01	8.45E-02	1.90E-01	9.62E-02
U-235	4391.000	4396.178	24.705	10.000	10.000	0.000	2.4127	80.90000	9.45E-02	3.08E-02	4.60E-02	1.18E-01	2.99E-02
U-238	4184.730	4190.487	23.367	156.000	154.485	1.515	3.6781	100.0000	1.18E+00	1.32E-01	5.68E-02	1.34E-01	9.57E-02

## NOTES:

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

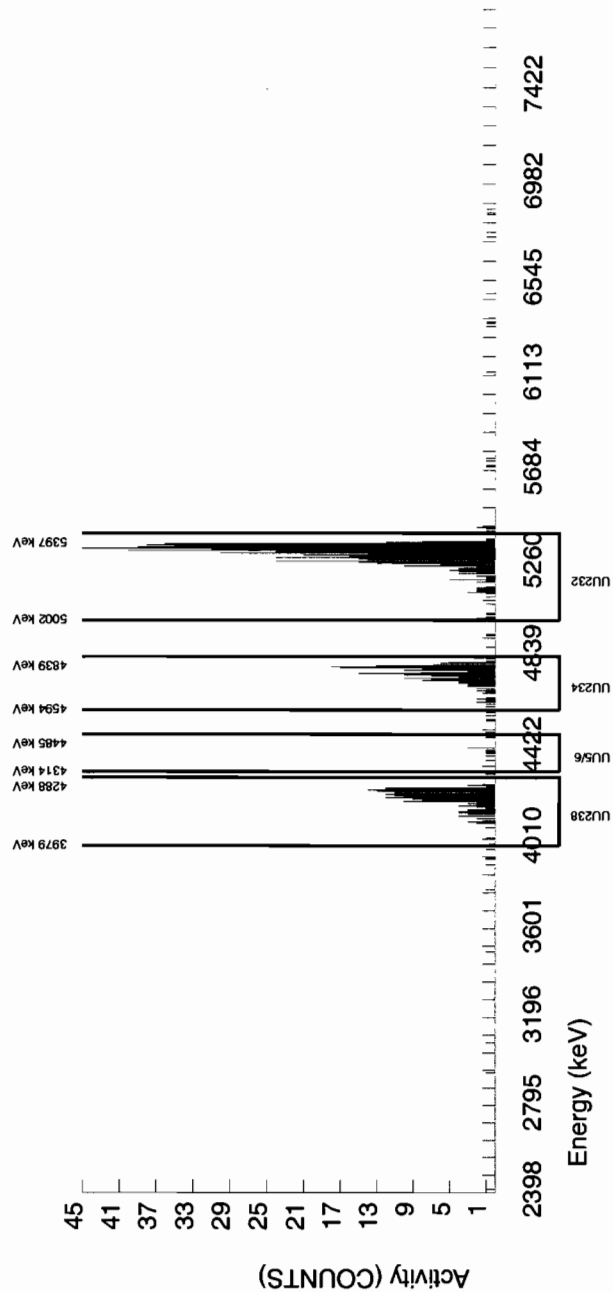


# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957113 SAMPLE ID : S0247563003_UU SAMPLE QTY : 0.503 G SAMPLE DATE : 15-FEB-2010 00:00:00 ANALYST : KXM4 % YIELD : 101.202				CHAMBER : 149 DETECTOR S/N : 33449 AVERAGE %EFFICIENCY : 24.6450 COUNT DATE : 6-MAR-2010 22:03:36 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 : 4.5039E+00 dpm RESULTS : 4.5581E+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	5304.494	77.474	570.000	566.970	3.030	1.7407	100.0000	4.03E+00	3.52E-01	2.50E-02	6.92E-02	1.70E-01
U-3/4	4763.020	4762.771	58.810	190.000	188.416	1.010	5.4790	100.0000	1.34E+00	1.42E-01	7.86E-02	1.76E-01	9.80E-02
U-235	4391.000	4421.373	4.935	11.000	9.990	1.010	2.4127	80.90000	8.78E-02	3.06E-02	4.28E-02	1.09E-01	2.98E-02
U-238	4184.730	4196.951	62.280	192.000	192.000	0.000	3.6781	100.0000	1.37E+00	1.44E-01	5.28E-02	1.25E-01	9.85E-02

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

<p>BATCH NUMBER : 957113  SAMPLE ID : S0247563004_UU  SAMPLE QTY : 0.513 G  SAMPLE DATE : 15-FEB-2010 00:00:00  ANALYST : KXM4  % YIELD : 93.041</p>	<p>CHAMBER : 150  DETECTOR S/N : 75552  AVERAGE %EFFICIENCY : 25.1049  COUNT DATE : 6-MAR-2010 22:03:38  ELAPSED LIVE TIME(SEC) : 30300.00</p>	<p>LIB FILE : ENV_ALPHA_UU  BKG FILE : B150.CNF:406  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W150.CNF:122  CAL DATE : 19-FEB-2010</p>
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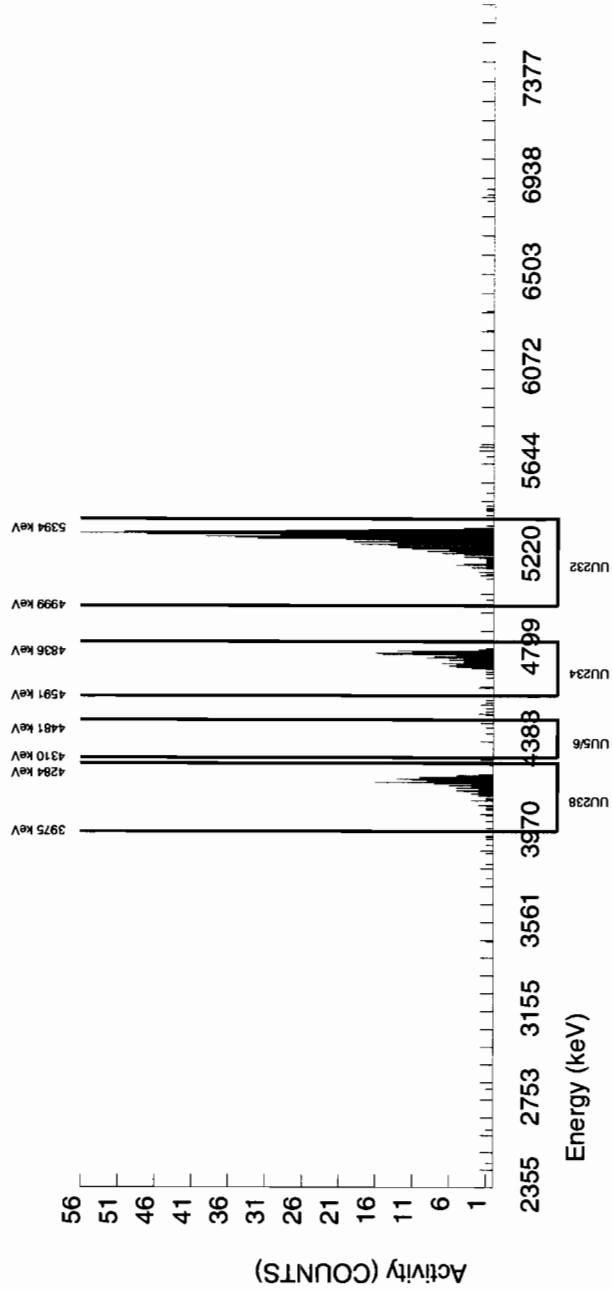
<p>TRACER  ID : 1283-H  NUCLIDE : U232  NOMINAL : 4.5039E+00 dpm  RESULTS : 4.1905E+00 dpm</p>	<p>MS/MSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	<p>LCS/LCSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>
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## NUCLIDE 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
U232	5302.100	5305.756	36.305	533.000	530.980	2.020	1.4213	100.0000	3.95E+00	3.50E-01	2.14E-02	6.29E-02	1.72E-01
U-3/4	4763.020	4762.577	32.726	133.000	131.957	0.505	5.4790	100.0000	9.82E-01	1.14E-01	8.23E-02	1.85E-01	8.58E-02
U-235	4391.000	4437.325	29.723	2.000	2.000	0.000	2.4127	80.90000	1.84E-02	1.31E-02	4.48E-02	1.15E-01	1.30E-02
U-238	4184.730	4189.832	31.698	135.000	134.495	0.505	3.6781	100.0000	1.00E+00	1.16E-01	5.53E-02	1.31E-01	8.66E-02

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957113  
 SAMPLE ID : S0247563006\_UU  
 SAMPLE QTY : 0.503 G  
 SAMPLE DATE : 15-FEB-2010 00:00:00  
 ANALYST : KXM4  
 % YIELD : 102.735

CHAMBER : 152  
 DETECTOR S/N : 76222  
 AVERAGE %EFFICIENCY : 24.3204  
 COUNT DATE : 6-MAR-2010 22:03:43  
 ELAPSED LIVE TIME(SEC) : 30300.00

LIB FILE : ENV\_ALPHA\_UU  
 BKG FILE : B152.CNF:398  
 BKG DATE : 28-FEB-2010  
 BKG LIVE TIME(SEC) : 60000.00  
 EFF FILE : W152.CNF:107  
 CAL DATE : 19-FEB-2010

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

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

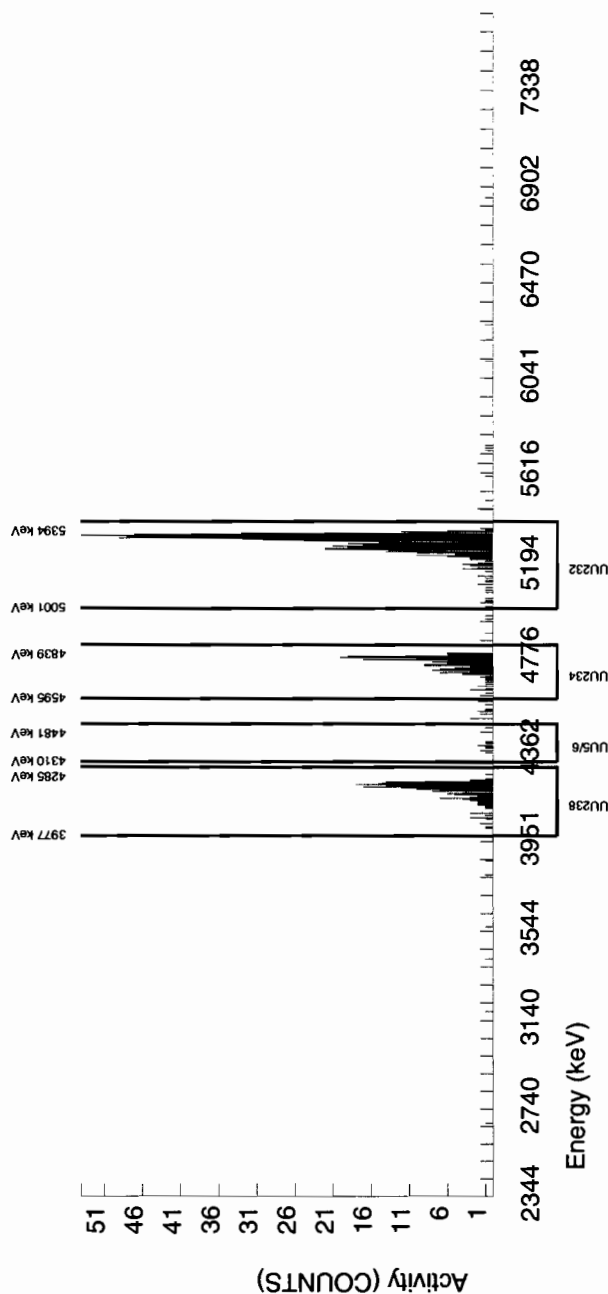
TRACER  
 ID : 1283-H  
 NUCLIDE : U232  
 NOMINAL : 4.5039E+00 dpm  
 RESULTS : 4.6271E+00 dpm

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
U232	5302.100	5301.496	32.968	570.000	567.980	2.020	1.4213	100.0000	4.03E+00	3.52E-01	2.04E-02	5.99E-02	1.70E-01
U-3/4	4763.020	4759.601	22.408	180.000	178.920	0.505	5.4790	100.0000	1.27E+00	1.36E-01	7.85E-02	1.76E-01	9.51E-02
U-235	4391.000	4388.755	7.244	10.000	10.000	0.000	2.4127	80.90000	8.77E-02	2.85E-02	4.27E-02	1.09E-01	2.77E-02
U-238	4184.730	4186.087	36.144	184.000	183.495	0.505	3.6781	100.0000	1.30E+00	1.39E-01	5.27E-02	1.25E-01	9.63E-02

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957113  
 SAMPLE ID : S0247563007\_UU  
 SAMPLE QTY : 0.516 G  
 SAMPLE DATE : 15-FEB-2010 00:00:00  
 ANALYST : KXM4  
 % YIELD : 95.219

CHAMBER : 153  
 DETECTOR S/N : 76223  
 AVERAGE %EFFICIENCY : 24.9933  
 COUNT DATE : 6-MAR-2010 22:03:46  
 ELAPSED LIVE TIME(SEC) : 30300.00

LIB FILE : ENV\_ALPHA\_UU  
 BKG FILE : B153.CNF;393  
 BKG DATE : 28-FEB-2010  
 BKG LIVE TIME(SEC) : 60000.00  
 EFF FILE : W153.CNF;110  
 CAL DATE : 19-FEB-2010

TRACER  
 ID : 1283-H  
 NUCLIDE : U232  
 NOMINAL : 4.5039E+00 dpm  
 RESULTS : 4.2886E+00 dpm

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

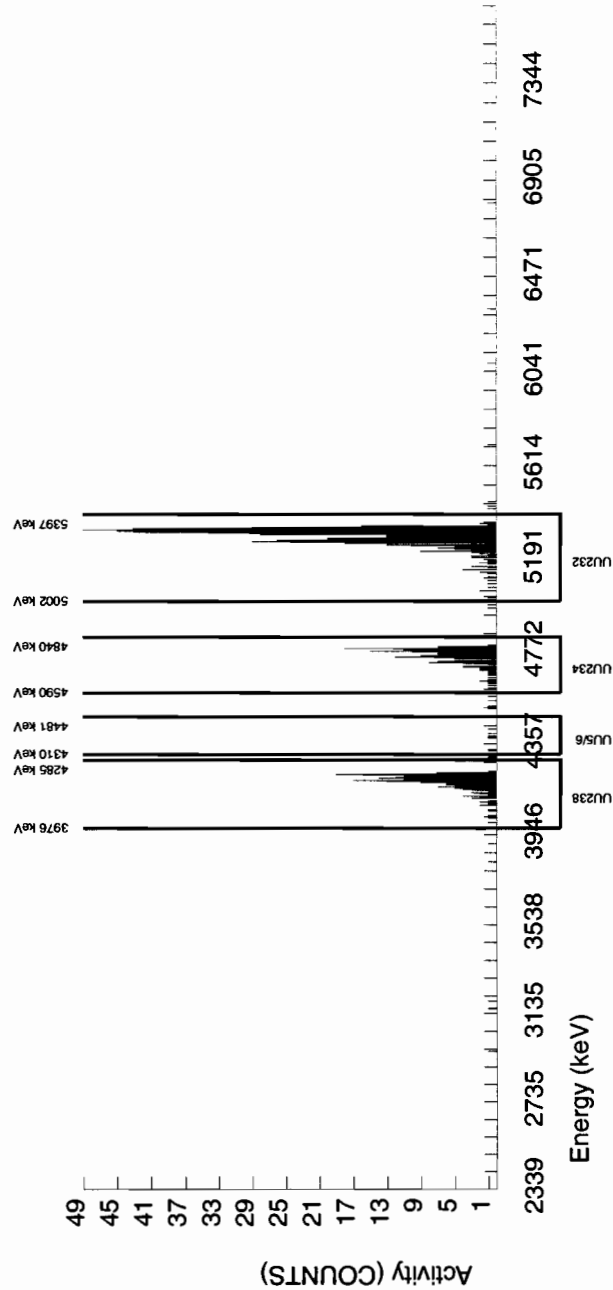
LCS/LCSD  
 ID : 0244-A  
 NUCLIDE : U-238  
 NOMINAL : 5.7500E+00 pCi/G

## 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	5298.192	65.184	542.000	540.990	1.010	1.0050	100.0000	3.93E+00	3.47E-01	1.47E-02	4.91E-02	1.69E-01
U-3/4	4763.020	4753.839	42.093	170.000	169.452	0.000	5.4790	100.0000	1.23E+00	1.34E-01	8.03E-02	1.80E-01	9.46E-02
U-235	4391.000	4383.393	97.855	7.000	6.495	0.505	2.4127	80.90000	5.83E-02	2.46E-02	4.37E-02	1.12E-01	2.42E-02
U-238	4184.730	4185.650	40.619	191.000	191.000	0.000	3.6781	100.0000	1.39E+00	1.47E-01	5.39E-02	1.28E-01	1.00E-01

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957113 SAMPLE ID : S0247563008_UU SAMPLE QTY : 0.517 G SAMPLE DATE : 15-FEB-2010 00:00:00 ANALYST : KXM4 % YIELD : 90.483		CHAMBER : 154 DETECTOR S/N : 76224 AVERAGE %EFFICIENCY : 25.5722 COUNT DATE : 6-MAR-2010 22:03:49 ELAPSED LIVE TIME(SEC) : 30300.00	
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5039E+00 dpm RESULTS : 4.0753E+00 dpm		MS/MSD ID : 0244-A NUCLIDE : U-238 NOMINAL : 5.7500E+00 pCi/G	

LIB FILE : ENV\_ALPHA\_UU  
 BKG FILE : B154.CNF:395  
 BKG DATE : 28-FEB-2010  
 BKG LIVE TIME(SEC) : 60000.00  
 EFF FILE : W154.CNF:108  
 CAL DATE : 19-FEB-2010

## LCS/LCSD

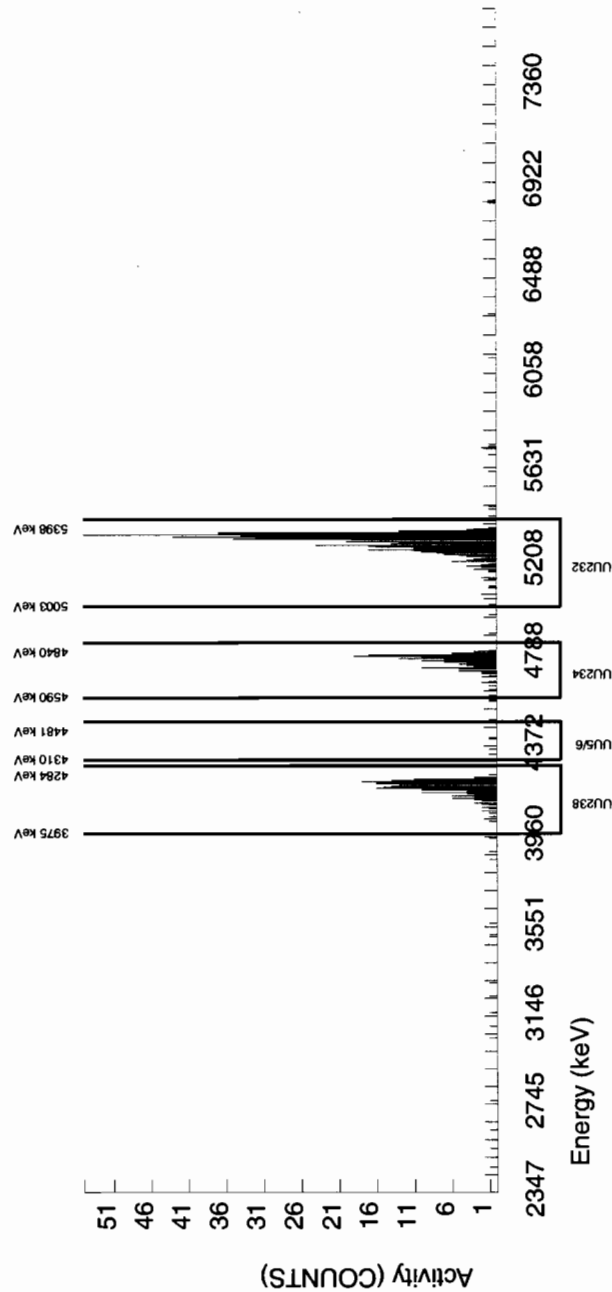
ID : 0244-A  
 NUCLIDE : U-238  
 NOMINAL : 5.7500E+00 pCi/G

## 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	5300.683	33.823	527.000	525.990	1.010	1.0050	100.0000	3.92E+00	3.48E-01	1.51E-02	5.05E-02	1.71E-01
U-3/4	4763.020	4757.304	58.619	152.000	151.467	0.000	5.4790	100.0000	1.13E+00	1.27E-01	8.24E-02	1.85E-01	9.18E-02
U-235	4391.000	4386.831	153.393	6.000	6.000	0.000	2.4127	80.90000	5.53E-02	2.30E-02	4.49E-02	1.15E-01	2.26E-02
U-238	4184.730	4188.580	62.591	220.000	219.495	0.505	3.6781	100.0000	1.64E+00	1.68E-01	5.53E-02	1.31E-01	1.11E-01

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 957113  
 SAMPLE ID : S1202052186\_UU  
 SAMPLE QTY : 1.000 G  
 SAMPLE DATE : 2-MAR-2010 00:00:00.  
 ANALYST : KXM4  
 % YIELD : 95.743

LIB FILE : ENV\_ALPHA\_UU  
 BKG FILE : B007.CNF:1117  
 BKG DATE : 28-FEB-2010  
 BKG LIVE TIME(SEC) : 60000.00  
 EFF FILE : W007.CNF:314  
 CAL DATE : 4-MAR-2010

TRACER  
 ID : 1283-H  
 NUCLIDE : U232  
 NOMINAL : 4.5021E+00 dpm  
 RESULTS : 4.3104E+00 dpm

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

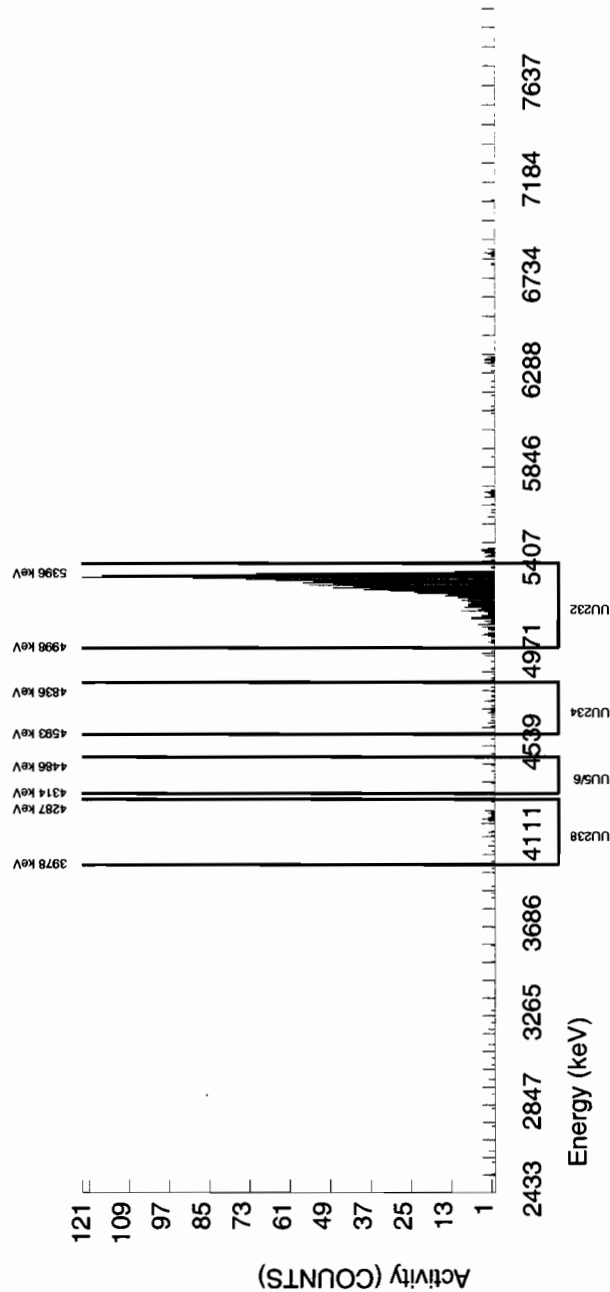
LCS/LCSD  
 ID : 0244-A  
 NUCLIDE : U-238  
 NOMINAL : 5.7500E+00 pCi/G

## 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	5299.371	33.019	1352.000	1328.000	24.000	4.8990	100.0000	2.03E+00	1.54E-01	1.74E-02	3.89E-02	5.66E-02
U-3/4	4763.020	4712.807	103.027	23.000	20.655	1.000	5.4790	100.0000	3.15E-02	7.60E-03	1.95E-02	4.31E-02	7.27E-03
U-235	4391.000	4405.030	86.984	4.000	3.000	1.000	2.4127	80.90000	5.66E-03	4.24E-03	1.06E-02	2.63E-02	4.22E-03
U-238	4184.730	4168.939	60.996	33.000	28.000	5.000	3.6781	100.0000	4.28E-02	9.89E-03	1.31E-02	3.03E-02	9.41E-03

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

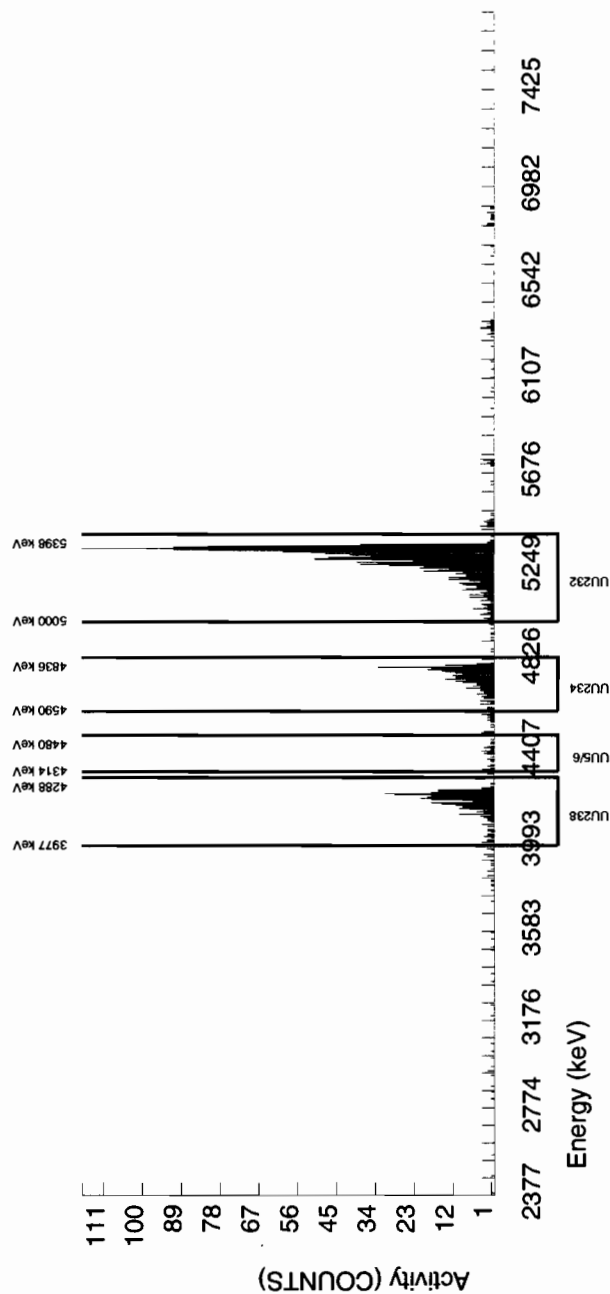
<p>BATCH NUMBER : 957113  SAMPLE ID : S1202052187_UU  SAMPLE QTY : 0.505 G  SAMPLE DATE : 18-FEB-2010 00:00:00  ANALYST : KXM4  % YIELD : 87.560</p>		<p>CHAMBER : 009  DETECTOR S/N : 72528  AVERAGE %EFFICIENCY : 34.3260  COUNT DATE : 5-MAR-2010 12:23:26  ELAPSED LIVE TIME(SEC) : 60000.00</p>		<p>LIB FILE : ENV_ALPHA_UU  BKG FILE : B009.CNF:1110  BKG DATE : 28-FEB-2010  BKG LIVE TIME(SEC) : 60000.00  EFF FILE : W009.CNF:309  CAL DATE : 4-MAR-2010</p>	
<p>TRACER  ID : 1283-H  NUCLIDE : U232  NOMINAL : 4.5036E+00 dpm  RESULTS : 3.9433E+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	5286.872	28.189	1365.000	1353.000	12.000	3.4641	100.0000	4.02E+00	3.05E-01	2.39E-02	5.59E-02	1.10E-01
U-3/4	4763.020	4746.740	16.196	303.000	298.630	3.000	5.4790	100.0000	8.86E-01	8.13E-02	3.78E-02	8.37E-02	5.18E-02
U-235	4391.000	4402.630	86.554	30.000	30.000	0.000	2.4127	80.90000	1.10E-01	2.15E-02	2.06E-02	5.11E-02	2.01E-02
U-238	4184.730	4179.899	57.937	353.000	352.000	1.000	3.6781	100.0000	1.04E+00	9.26E-02	2.54E-02	5.88E-02	5.58E-02

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

<p>BATCH NUMBER : 957113  SAMPLE ID : S1202052188_UU  SAMPLE QTY : 0.121 G  SAMPLE DATE : 2-MAR-2010 00:00:00.  ANALYST : KXM4  % YIELD : 120.065</p>		<p>CHAMBER : 010  DETECTOR S/N : 72529  AVERAGE %EFFICIENCY : 31.3468  COUNT DATE : 10-MAR-2010 16:36:37  ELAPSED LIVE TIME(SEC) : 59999.99</p>		<p>LIB FILE : ENV_ALPHA_UU  BKG FILE : B010.CNF;1130  BKG DATE : 7-MAR-2010  BKG LIVE TIME(SEC) : 59999.99  EFF FILE : W010.CNF;337  CAL DATE : 4-MAR-2010</p>	
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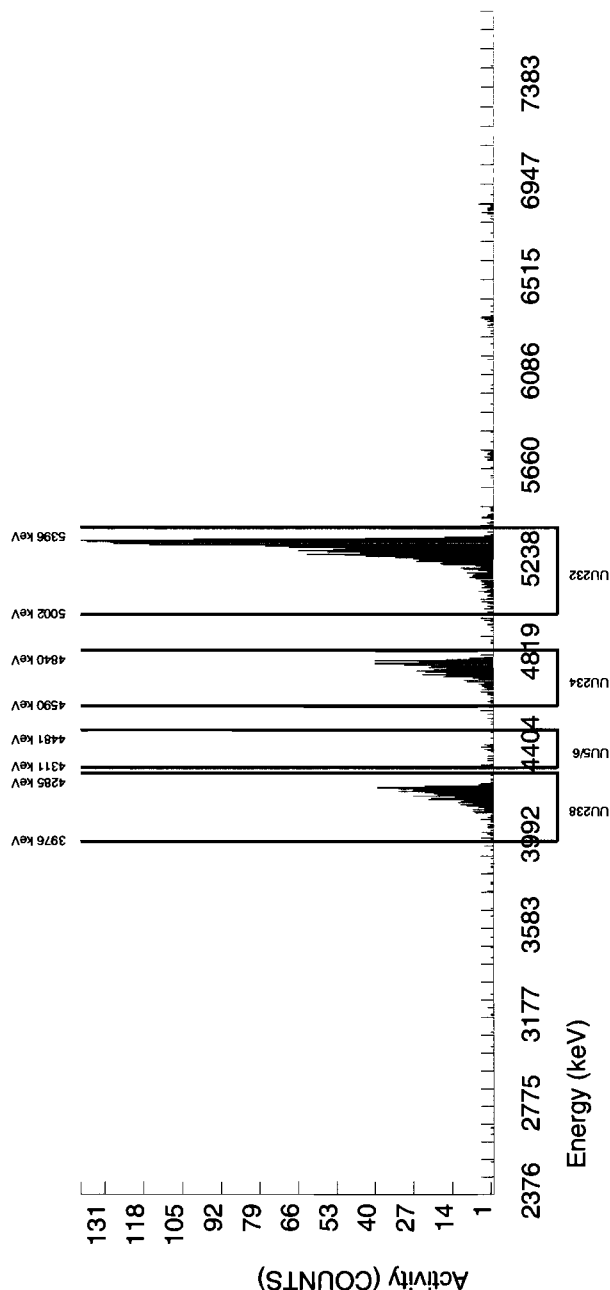
<p>TRACER  ID : 1283-H  NUCLIDE : U232  NOMINAL : 4.5021E+00 dpm  RESULTS : 5.4054E+00 dpm</p>		<p>MS/MSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>		<p>LCS/LCSD  ID : 0244-A  NUCLIDE : U-238  NOMINAL : 5.7500E+00 pCi/G</p>	
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## NUCLIDE 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
U232	5302.100	5298.607	35.754	1701.000	1694.000	7.000	2.6458	100.0000	1.68E+01	1.31E+00	6.09E-02	1.49E-01	4.09E-01
U-3/4	4763.020	4756.813	66.002	472.000	466.285	4.000	5.4790	100.0000	4.61E+00	4.05E-01	1.26E-01	2.79E-01	2.15E-01
U-235	4391.000	4391.444	73.145	24.000	23.000	1.000	2.4127	80.90000	2.81E-01	6.46E-02	6.86E-02	1.70E-01	6.11E-02
U-238	4184.730	4184.048	61.383	456.000	462.000	4.000	3.6781	100.0000	4.57E+00	4.02E-01	8.46E-02	1.96E-01	2.14E-01

## NOTES:

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



# Radiochemistry Batch Checklist, Rev10

Batch# 964412 Product: U Date: 3/17/10

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.			N/A
Samples have been blank corrected (if required)	✓		
If activity less 10" MDA/ MDC, error is 150% or less of sample activity. If greater 10" MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay.	✓		
Instrument source check is within limits.	✓		
Instrument bkg check is within limits.	✓		
Method RDL/ LLD has been met.	✓		
If duplicate activities are less 5" MDA/ MDC, then RPD is 100% or less. If greater 5" MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.	✓		
Or meets the client's required RER acceptance criteria.	✓		
Tracer yield is 15-125% . Carrier yield 25-125%.	✓		
Or meets the client's contract acceptance criteria.	✓		
Method blank is less than the RDL/ LLD.	✓		
(If rad samples, < 5% of lowest activity)	✓		
Sample was run within hold time.	✓		
Sample was correctly preserved if required.	✓		
Smears Taken for Radioactive batches.			N/A
Method Spike and LCS are within 75-125% or meets the client's contract acceptance criteria.	✓		
No blank spaces on data forms.	✓		
All line outs initialed and dated.	✓		
No transcription errors are apparent.	✓		
Aux data is correct.			N/A
Client Special requirements page has been checked.	✓		
Raw Data and/ or spectrum are included and properly statused.	✓		
QC data entered into QC database and batch is in REVW	✓		
Hit notification complete (if necessary)			N/A
Batch entered into Case Narrative.	✓		
Batch Data Exception Reports (DER) completed, if applicable.			N/A
Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.			N/A
Aliquot Correction completed if required.			N/A
Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)	✓		

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: [Signature] 3/17/10

Secondary Review Performed By: J. L. M. - 3/18/10

L A N L

3/14 - 3/29  
Page 111 of 704

# Uranium Que Sheet

11-MAR-10

Batch #: 964412 Analyst: KXM4 First Client Due Date: 20-MAR-10 Internal Due Date: 14-MAR-10  
 Tracer Isotope: U-232/0-236 Tracer Code: 183-H Expiration Date: 12-9-10 Vol: 0.164 Analyzed Sequentially with Pu  
 LCS Isotope: U-238 LCS Code: 58M 0244-DA Expiration Date: 10-3-10 Vol: 0.19 Pu-236 ID: NA  
 Spike Isotope: U-238 Spike Code: NA Expiration Date: NA Vol: NA  
 Prep Date: 3-17-10 Initials: KM Pipet ID: 247458 Balance ID: 5044272 Witness: AKB 3/12/10

Sample ID	Client Description	Type	Hazard Code	Mln CRDL	Matrix	Client	Collection Date	Pos.	Label #	Wet/Dry	Allquot	U	Det #
247563005-3	RE15-10-8311	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	1			0.513	164	
1202069004-1	MB for batch 964412	MB		UCF pCi/g to pCi	SOIL	QC ACCOUNT		2			0.513	165	
1202069005-3	RE15-10-8311(247563005DUP)	DUP		.1 pCi/g	SOIL	QC ACCOUNT	15-FEB-10	3			0.511	166	
1202069006-1	LCS for batch 964412	LCS		UCF pCi/g to pCi	SOIL	QC ACCOUNT		4			0.107	167	

Choose SOP used: GL-RAD-A-011

Solid Sample Dissolution by: LEACH or DIGESTION  
 Circle One

Data Reviewed By: E. J. J. 3/17/10

# Blank Correction Report

**Batch ID 964412**

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202069005	DUP	Uranium-233/234	0.511 g	1.15	0.096	0.0705	.031311155	pCi/g	NO
		Uranium-235/236	0.511 g	0.0893	0.018	0.0432	.016673190	pCi/g	NO
		Uranium-238	0.511 g	1.13	0.0944	0.0496	.011526419	pCi/g	NO
1202069006	LCS	Uranium-233/234	0.107 g	6.10	0.534	0.346	.149532710	pCi/g	NO
		Uranium-235/236	0.107 g	0.334	0.0815	0.212	.079626168	pCi/g	YES
		Uranium-238	0.107 g	5.41	0.482	0.244	.055046729	pCi/g	NO
1202069004	MB	Uranium-233/234	1.00 g	0.016	0.00514	0.0376	.016	pCi/g	YES
		Uranium-235/236	1.00 g	0.00852	0.00385	0.0231	.00852	pCi/g	YES
		Uranium-238	1.00 g	0.00589	0.00379	0.0265	.00589	pCi/g	YES
247563005	RE15-10-8311	Uranium-233/234	0.513 g	0.936	0.0821	0.0751	.031189084	pCi/g	NO
		Uranium-235/236	0.513 g	0.048	0.0139	0.046	.016608187	pCi/g	YES
		Uranium-238	0.513 g	0.938	0.0822	0.0529	.011481481	pCi/g	NO

*Don*  
3/18/10

# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 964412  
SAMPLE ID : S0247563005\_UU  
SAMPLE QTY : 0.513 G  
SAMPLE DATE : 15-FEB-2010 00:00:00  
ANALYST : KXM4  
% YIELD : 98.080

CHAMBER : 164  
DETECTOR S/N : 70325  
AVERAGE %EFFICIENCY : 37.7598  
COUNT DATE : 17-MAR-2010 08:11:06  
ELAPSED LIVE TIME(SEC) : 51741.93

LIB FILE : ENV\_ALPHA\_UU  
BKG FILE : B164.CNF;178  
BKG DATE : 14-MAR-2010  
BKG LIVE TIME(SEC) : 60000.00  
EFF FILE : W164.CNF;58  
CAL DATE : 22-FEB-2010

TRACER ID : 1283-H  
NUCLIDE : U232  
NOMINAL : 4.5039E+00 dpm  
RESULTS : 4.4175E+00 dpm

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

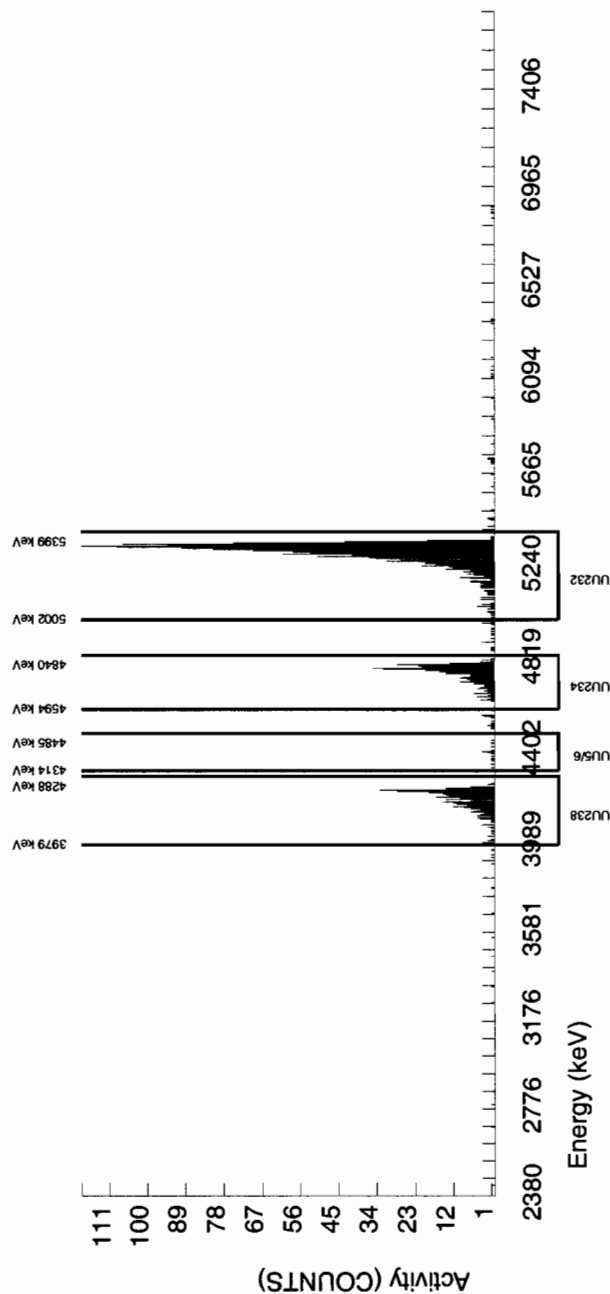
LCS/LCSD ID : 0244-A  
NUCLIDE : U-238  
NOMINAL : 5.7500E+00 pCi/G

## 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	5304.856	51.910	1445.000	1437.239	7.761	2.7859	100.0000	3.95E+00	2.92E-01	1.72E-02	4.18E-02	1.05E-01
U-3/4	4763.020	4758.944	30.457	342.000	340.544	0.000	5.4790	100.0000	9.36E-01	8.21E-02	3.38E-02	7.51E-02	5.07E-02
U-235	4391.000	4398.702	9.850	15.000	14.138	0.862	2.4127	80.90000	4.80E-02	1.39E-02	1.84E-02	4.60E-02	1.35E-02
U-238	4184.730	4187.076	34.276	341.000	341.000	0.000	3.6781	100.0000	9.38E-01	8.22E-02	2.27E-02	5.29E-02	5.08E-02

## NOTES:

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



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 964412	CHAMBER : 165	LIB FILE : ENV_ALPHA_UU
SAMPLE ID : S1202069004_UU	DETECTOR S/N : 72544	BKG FILE : B165.CNF:178
SAMPLE QTY : 1.000 G	AVERAGE %EFFICIENCY : 37.8780	BKG DATE : 14-MAR-2010
SAMPLE DATE : 12-MAR-2010 00:00:00	COUNT DATE : 17-MAR-2010 08:11:09	BKG LIVE TIME(SEC) : 60000.00
ANALYST : KXM4	ELAPSED LIVE TIME(SEC) : 51710.13	EFF FILE : W165.CNF:58
% YIELD : 100.149		CAL DATE : 22-FEB-2010

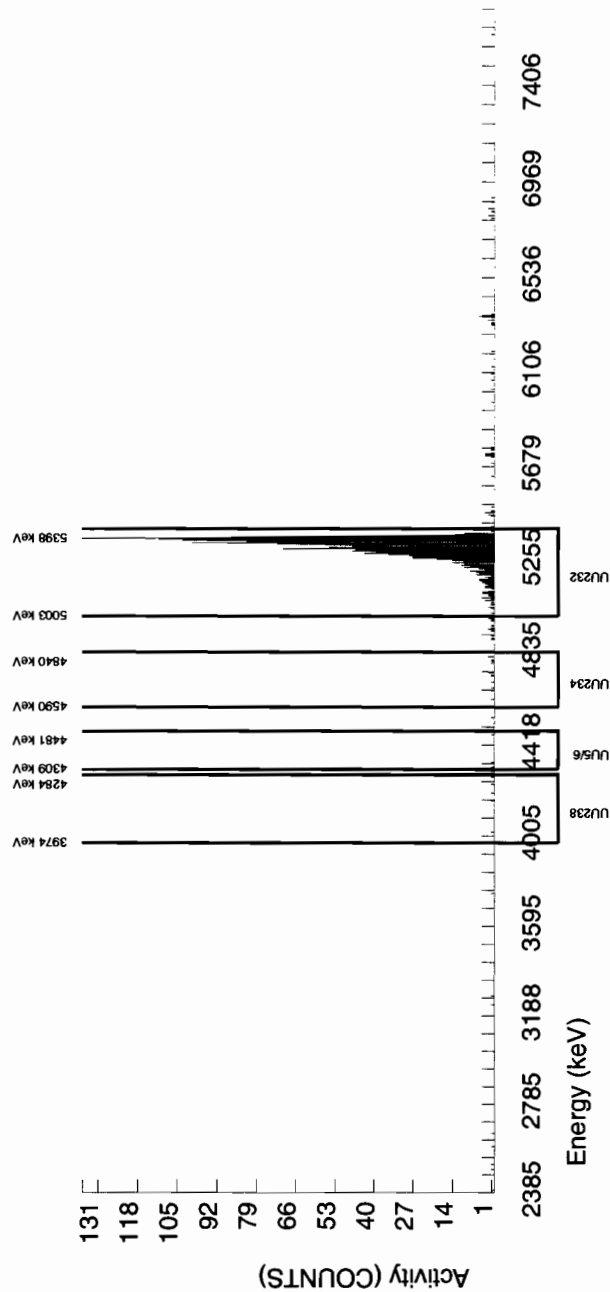
TRACER	MS/MSD	LCS/LCSD
ID : 1283-H	ID : 0244-A	ID : 0244-A
NUCLIDE : U232	NUCLIDE : U-238	NUCLIDE : U-238
NOMINAL : 4.5008E+00 dpm	NOMINAL : 5.7500E+00 pCi/G	NOMINAL : 5.7500E+00 pCi/G
RESULTS : 4.5076E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
U232	5302.100	5316.513	52.519	1479.000	1471.244	7.757	2.7851	100.0000	2.03E+00	1.49E-01	8.61E-03	2.10E-02	5.31E-02
U-3/4	4763.020	4737.257	74.670	14.000	11.648	0.862	5.4790	100.0000	1.60E-02	5.14E-03	1.69E-02	3.76E-02	5.02E-03
U-235	4391.000	4388.196	0.000	5.000	5.000	0.000	2.4127	80.90000	8.52E-03	3.85E-03	9.22E-03	2.31E-02	3.81E-03
U-238	4184.730	4150.902	0.000	6.000	4.276	1.724	3.6781	100.0000	5.89E-03	3.79E-03	1.14E-02	2.65E-02	3.77E-03

## NOTES:

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

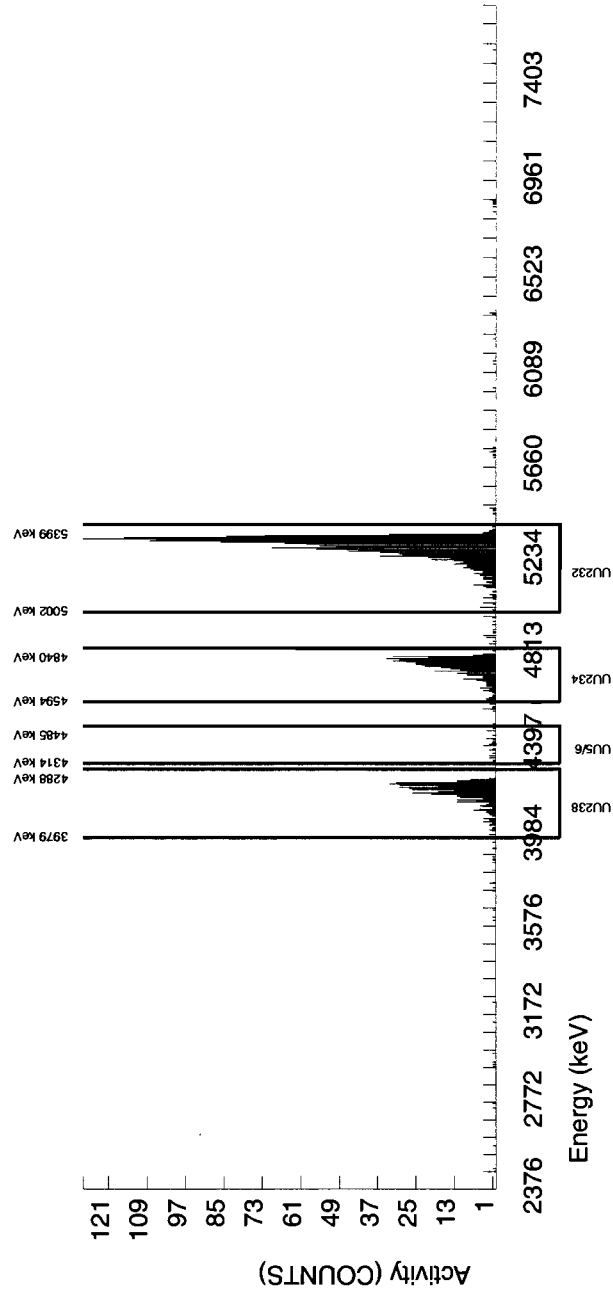


# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 964412 SAMPLE ID : S1202069005_UU SAMPLE QTY : 0.511 G SAMPLE DATE : 15-FEB-2010 00:00:00 ANALYST : KXM4 % YIELD : 100.421				CHAMBER : 166 DETECTOR S/N : 74545 AVERAGE %EFFICIENCY : 39.4562 COUNT DATE : 17-MAR-2010 08:11:12 ELAPSED LIVE TIME(SEC) : 51714.42				LIB FILE : ENV_ALPHA_UU BKG FILE : B166.CNF:179 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W166.CNF:58 CAL DATE : 22-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5039E+00 dpm RESULTS : 4.5229E+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	5303.201	56.894	1542.000	1536.829	5.171	2.2741	100.0000	3.97E+00	2.90E-01	1.32E-02	3.33E-02	1.02E-01
U-3/4	4763.020	4759.666	67.665	448.000	446.443	0.000	5.4790	100.0000	1.15E+00	9.60E-02	3.17E-02	7.05E-02	5.45E-02
U-235	4391.000	4403.402	0.000	28.000	28.000	0.000	2.4127	80.90000	8.93E-02	1.80E-02	1.73E-02	4.32E-02	1.69E-02
U-238	4184.730	4186.584	56.075	438.000	437.138	0.862	3.6781	100.0000	1.13E+00	9.44E-02	2.13E-02	4.96E-02	5.41E-02

## NOTES:

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

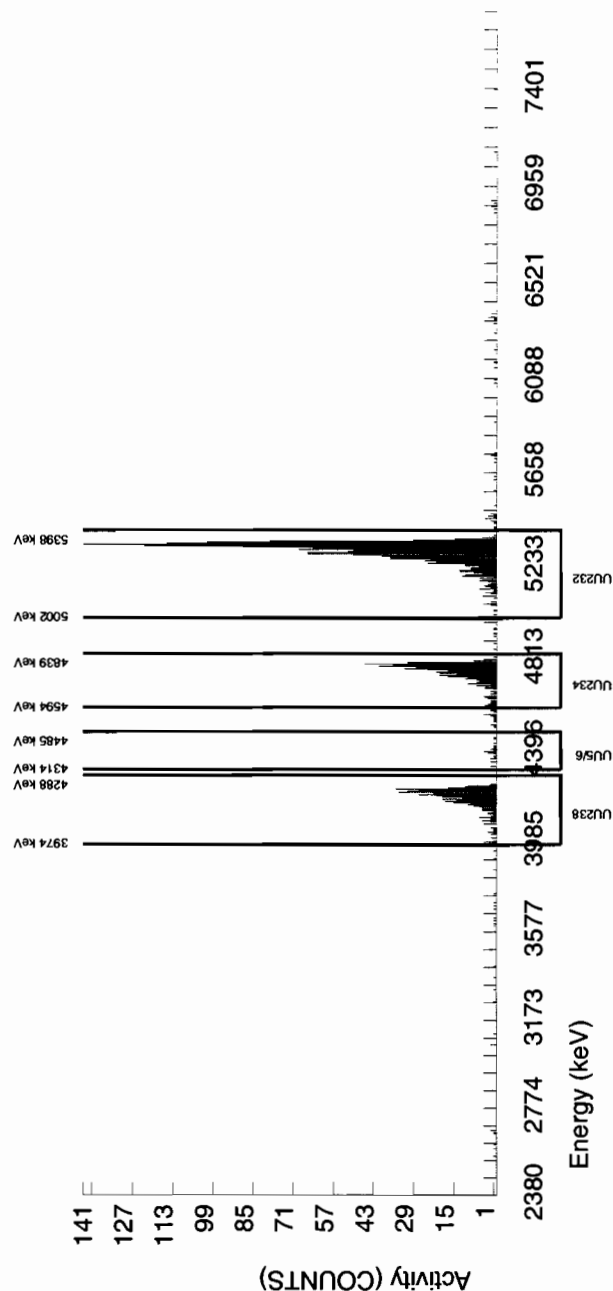


# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 964412 SAMPLE ID : S1202069006_UU SAMPLE QTY : 0.107 G SAMPLE DATE : 12-MAR-2010 00:00:00 ANALYST : KXM4 % YIELD : 99.664				CHAMBER : 167 DETECTOR S/N : 72546 AVERAGE %EFFICIENCY : 38.5981 COUNT DATE : 17-MAR-2010 08:11:15 ELAPSED LIVE TIME(SEC) : 51765.64				LIB FILE : ENV_ALPHA_UU BKG FILE : B167.CNF;179 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W167.CNF;58 CAL DATE : 22-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5008E+00 dpm RESULTS : 4.4857E+00 dpm				MS/MSD ID : 0244-A NUCLIDE : U-238 NOMINAL : 5.7500E+00 pCi/G				LCS/LCSD ID : 0244-A NUCLIDE : U-238 NOMINAL : 5.7500E+00 pCi/G					
NUCLIDE ACTIVITY SUMMARY													
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
U232	5302.100	5305.737	28.317	1497.000	1493.549	3.451	1.8577	100.0000	1.89E+01	1.50E+00	5.29E-02	1.40E-01	4.91E-01
U-3/4	4763.020	4762.196	35.804	484.000	480.762	1.726	5.4790	100.0000	6.10E+00	5.34E-01	1.56E-01	3.46E-01	2.79E-01
U-235	4391.000	4389.736	86.999	23.000	21.274	1.726	2.4127	80.90000	3.34E-01	8.15E-02	8.49E-02	2.12E-01	7.76E-02
U-238	4184.730	4189.692	59.101	428.000	426.274	1.726	3.6781	100.0000	5.41E+00	4.82E-01	1.05E-01	2.44E-01	2.63E-01

## NOTES:

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



# Radiochemistry Batch Checklist, Rev10

Batch# 956157

Product: Gamma Solid

Date: 03/08/10

LANL

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.			N/A
Samples have been blank corrected (if required)			N/A
If activity less 10* MDA/ MDC, error is 150% or less of sample activity. If greater 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay.	✓		
Instrument source check is within limits.	✓		
Instrument bkg check is within limits.	✓		
Method RDL/ LLD has been met.	✓		
If duplicate activities are less 5* MDA/ MDC, then RPD is 100% or less. If greater 5* MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.	✓		
Or meets the client's required RER acceptance criteria.			
Tracer yield is 15-125% . Carrier yield 25-125%.			N/A
Or meets the client's contract acceptance criteria.			
Method blank is less than the RDL/ LLD.	✓		
(If rad samples, < 5% of lowest activity)	✓		
Sample was run within hold time.	✓		
Sample was correctly preserved if required.	✓		
Smears Taken for Radioactive batches.			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.	✓		
Client Special requirements page has been checked.	✓		
Raw Data and/ or spectrum are included and properly stated.	✓		
QC data entered into QC database and batch is in REVW	✓		
Hit notification complete (if necessary)			N/A
Batch entered into Case Narrative.	✓		
Batch Data Exception Reports (DER) completed, if applicable.			N/A
Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.			N/A
Aliquot Correction completed if required.			N/A
Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)	✓		

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By:

*for Harty* 3/8/10

Secondary Review Performed By:

*KRst* 3/9/10

3/13

I.G. - 3/2/10

## Gamma Spec Que Sheet

02/22/2010

Batch #: 956157 Analyst: MXR1 First Client Due Date: 03/03/2010 Internal Due Date: 03/03/2010

Gamma Spike Isotope: Mixed Gamma Spike Code: NA Expiration Date: NA Vol: NA Nominal Concentration: NA CS137-5.554

Gamma LCS Isotope: Mixed Gamma LCS Code: 032-F Expiration Date: 12/2/10 Vol: 1.0 mL Nominal Concentration: NA Co60-6.363

Initials: RF Prep Date: 2/23/10 Library: Solid Witness: NA Am241-15.90

Sample ID	Client Description / Container ID	Type	Hazard Code	Client	Matrix	Collect Date	Geometry	Detector (1/G/F)	Sealing Date/Time (if Applicable)
24746001-1	RE46-10-13381	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00	CSN	115.70	17 2/23/10
24746002-1	RE46-10-13379	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00		117.45	19
24746003-1	RE46-10-13382	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00		119.23	20
24754001-1	RE46-10-12956	SAMPLE		LANL010	SOIL	18-FEB-10 12:00:00		134.37	25
24754002-1	RE46-10-12955	SAMPLE		LANL010	SOIL	18-FEB-10 12:00:00		128.36	10
24754003-1	RE46-10-12938	SAMPLE		LANL010	SOIL	18-FEB-10 12:00:00		119.73	15
24754004-1	RE46-10-12937	SAMPLE		LANL010	SOIL	18-FEB-10 12:00:00		125.02	18
24753001-1	RE15-10-8314	SAMPLE		LANL010	SOIL	15-FEB-10 12:00:00		133.71	20
24753002-1	RE15-10-8313	SAMPLE		LANL010	SOIL	15-FEB-10 12:00:00		133.68	23
24753003-1	RE15-10-8312	SAMPLE		LANL010	SOIL	15-FEB-10 12:00:00		135.92	25
24753004-1	RE15-10-8315	SAMPLE		LANL010	SOIL	15-FEB-10 12:00:00		136.27	18
24753005-1	RE15-10-8311	SAMPLE		LANL010	SOIL	15-FEB-10 12:00:00		120.65	22
24753006-1	RE15-10-8310	SAMPLE		LANL010	SOIL	15-FEB-10 12:00:00		112.09	15
24753007-1	RE15-10-8303	SAMPLE		LANL010	SOIL	15-FEB-10 12:00:00		125.53	4
24753008-1	RE15-10-8302	SAMPLE		LANL010	SOIL	15-FEB-10 12:00:00		120.94	5
24756001-1	RE16-10-1514	SAMPLE		LANL010	SOIL	12-FEB-10 12:00:00		134.61	6
24756002-1	RE16-10-13143	SAMPLE		LANL010	SOIL	12-FEB-10 12:00:00		121.63	10
24756003-1	RE16-10-13141	SAMPLE		LANL010	SOIL	12-FEB-10 12:00:00		126.12	19
24756004-1	RE16-10-13142	SAMPLE		LANL010	SOIL	12-FEB-10 12:00:00		113.52	16
24756005-1	RE16-10-13147	SAMPLE		LANL010	SOIL	12-FEB-10 12:00:00		122.26	17
120200251-1	MB	MB		QC ACCOUNT	SOIL	2/23/10		136.27	11
120200252-1	DUP RE46-10-12956(247544001)	DUP		QC ACCOUNT	SOIL	18-FEB-10 12:00:00		134.37	19
120200253-1	LCS	LCS		QC ACCOUNT	SOIL	2/23/10		155.44	23

GEL Laboratories LLC, Radiochemistry Division

Data Reviewed By: Si Hartley✓ no history  
✓ d. hes

APD 3/19/10

Page 1 of 1

## Failed RDL Report

Batch Id	Samp Id	Sample Type	Run Date	YIELD	Parmname	Result	MDA	RDL
956157	247469001	SAMPLE	02-MAR-10		Cerium-139	0.01823	0.05749	0.050
					Cesium-134	0.1343	0.1347	0.100
					Cobalt-60	0.02837	0.1052	0.100
					Sodium-22	-0.01435	0.104	0.080
					Tin-113	0.02947	0.102	0.100
956157	247469002	SAMPLE	02-MAR-10		Americium-241	-0.1404	0.2972	0.200
					Cerium-139	0.007	0.05853	0.050
					Cesium-134	0.09881	0.1055	0.100
					Sodium-22	-0.01241	0.08496	0.080
					Thorium-234	1.563	2.705	2.00
956157	247469003	SAMPLE	02-MAR-10		Americium-241	0.1208	0.2044	0.200
					Cerium-139	-0.01024	0.05043	0.050
956157	247544001	SAMPLE	02-MAR-10		Sodium-22	0.02279	0.08044	0.080
956157	247544002	SAMPLE	02-MAR-10		Americium-241	-0.09395	0.2895	0.200
					Thorium-234	0.7659	2.42	2.00
956157	247544003	SAMPLE	02-MAR-10		Americium-241	0.00557	0.3936	0.200
					Cerium-139	0.02399	0.05149	0.050
956157	247544004	SAMPLE	02-MAR-10		Americium-241	0.01097	0.2101	0.200
956157	247563001	SAMPLE	02-MAR-10					
956157	247563002	SAMPLE	02-MAR-10		Americium-241	0.02421	0.246	0.200
956157	247563003	SAMPLE	02-MAR-10					
956157	247563004	SAMPLE	03-MAR-10		Americium-241	-0.05994	0.2904	0.200
					Thorium-234	0.2154	2.563	2.00
956157	247563005	SAMPLE	03-MAR-10		Americium-241	0.01774	0.2389	0.200
					Cerium-139	-0.0084	0.05196	0.050
956157	247563006	SAMPLE	03-MAR-10		Americium-241	-0.3359	0.5619	0.200
					Cerium-139	0.00852	0.07451	0.050
					Cesium-134	0.1075	0.1247	0.100
					Europium-152	-0.00496	0.2251	0.200
					Sodium-22	-0.01841	0.1052	0.080
					Thorium-234	1.179	4.733	2.00
					Tin-113	-0.00973	0.107	0.100
956157	247563007	SAMPLE	03-MAR-10		Americium-241	0.1853	0.4206	0.200
					Cerium-139	0.00835	0.05225	0.050
					Sodium-22	-0.03619	0.08633	0.080
956157	247563008	SAMPLE	03-MAR-10		Cerium-139	-0.0042	0.06056	0.050
					Cesium-134	0.1055	0.1099	0.100
					Sodium-22	-0.029	0.09003	0.080
					Tin-113	0.01314	0.1003	0.100
956157	247564001	SAMPLE	03-MAR-10		Americium-241	0.07962	0.3085	0.200
					Cerium-139	-0.02449	0.05076	0.050
					Cesium-134	0.07628	0.1022	0.100
					Sodium-22	0.01849	0.09908	0.080
					Thorium-234	0.03898	2.577	2.00

## Failed RDL Report

Batch Id	Samp Id	Sample Type	Run Date	YIELD	Parmname	Result	MDA	RDL
956157	247564002	SAMPLE	03-MAR-10		Americium-241	-0.1629	0.384	0.200
					Cerium-139	0.01356	0.05033	0.050
					Sodium-22	0.00631	0.08021	0.080
					Thorium-234	0.9007	3.307	2.00
956157	247564003	SAMPLE	03-MAR-10					
956157	247564004	SAMPLE	03-MAR-10		Americium-241	-0.01627	0.2125	0.200
					Thorium-234	0.8684	2.104	2.00
956157	247564005	SAMPLE	03-MAR-10		Cerium-139	-0.0047	0.05117	0.050
					Cesium-134	0.05197	0.1021	0.100
					Sodium-22	-0.01674	0.09475	0.080
956157	1202050251	MB	03-MAR-10					
956157	1202050252	DUP	03-MAR-10		Americium-241	0.1404	0.2807	0.200
					Cerium-139	-0.0334	0.05202	0.050
					Thorium-234	2.173	2.393	2.00
956157	1202050253	LCS	03-MAR-10		Cerium-139	-0.03414	0.08226	0.050
					Cesium-134	0.00903	0.1684	0.100
					Europium-152	-0.04007	0.3303	0.200
					Mercury-203	-0.01403	0.114	0.100
					Potassium-40	0.6756	1.187	1.00
					Ruthenium-106	0.0148	1.033	0.800
					Sodium-22	0.0245	0.1071	0.080
					Thorium-234	-1.406	4.586	2.00
					Tin-113	-0.00881	0.1573	0.100
					Uranium-235	-0.2684	0.5672	0.500

# GEL QUALS

Batch ID: 956157

Report run on: March 9, 2010 1:01 PM

Samp Id	Parname	Cofa	Edd	Qual Comments	Auto	Result	MDA	Uncert	SQL
247469001-1 02-MAR-2010 20:52	Bismuth-211	UI	UI	Data rejected due to interference.		4.521			
	Cadmium-109	UI	UI	Data rejected due to interference.		4.52			
	Radium-224	UI	UI	Data rejected due to interference.		5.069			
247469002-1 02-MAR-2010 20:53	Bismuth-211	UI	UI	Data rejected due to interference.		3.978			
	Bismuth-214	UI	UI	Data rejected due to interference.		1.327		.2	.2
	Radium-224	UI	UI	Data rejected due to interference.		4.832			
	Strontium-85	UI	UI	Data rejected due to low abundance.		.1475			
247469003-1 02-MAR-2010 20:53	Bismuth-211	UI	UI	Data rejected due to interference.		4.324			
	Cadmium-109	UI	UI	Data rejected due to interference.		5.003			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.1325		.1	.1
	Radium-224	UI	UI	Data rejected due to interference.		4.748			
247544001-1 02-MAR-2010 20:54	Bismuth-211	UI	UI	Data rejected due to interference.		5.032			
	Cadmium-109	UI	UI	Data rejected due to interference.		4.385			
	Cesium-134	UI	UI	Data rejected due to low abundance.		.1563		.1	.1
	Radium-224	UI	UI	Data rejected due to interference.		5.539			
247544002-1 02-MAR-2010 23:19	Bismuth-211	UI	UI	Data rejected due to interference.		4.053			
	Cadmium-109	UI	UI	Data rejected due to interference.		3.365			
	Mercury-203	UI	UI	Data rejected due to interference.		.05271		.1	.1
	Radium-224	UI	UI	Data rejected due to interference.		4.189			

# GEL QUALS

Batch ID: 956157

Report run on: March 9, 2010 1:01 PM

Samp Id	Parmname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247544003-1 02-MAR-2010 23:20	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.227			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		4.208			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1435		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.414			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.09593			
	Thorium-234	UI	UI	UI	Data rejected due to high peak-width.		3.461		2	2
247544004-1 02-MAR-2010 23:20	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.866			
	Cadmium-109	UI	UI	UI	Data rejected due to a short half-life.		3.609			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1322		.1	.1
	Mercury-203	UI	UI	UI	Data rejected due to low abundance.		.05117		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.014			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.07812			
247563001-1 02-MAR-2010 23:21	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.251			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		4.101			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.07658		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.204			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.07479			
247563002-1 02-MAR-2010 23:21	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.047			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		4.082			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.0839		.1	.1
	Mercury-203	UI	UI	UI	Data rejected due to interference.		.05387		.1	.1

# GEL QUALS

Batch ID: 956157

Report run on: March 9, 2010 1:01 PM

Samp Id	Parmname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247563002-1 02-MAR-2010 23:21	Radium-224	UI	UI	UI	Data rejected due to interference.		4.142			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.05558			
247563003-1 02-MAR-2010 23:22	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.261			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.577			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1234		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.554			
247563004-1 03-MAR-2010 18:50	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.886			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.385			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.09019		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to low abundance.		3.003			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.07319			
247563005-1 03-MAR-2010 18:50	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.229			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.477			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1019		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.709			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.1284			
247563006-1 03-MAR-2010 19:20	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.585			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.225			
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.98			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.1166			

# GEL QUALS

Batch ID: 956157

Report run on: March 9, 2010 1:01 PM

Samp Id	Parname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247563007-1 03-MAR-2010 20:42	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.115			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		4.377			
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.012			
247563008-1 03-MAR-2010 20:43	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.592			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.832			
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.656			
247564001-1 03-MAR-2010 20:43	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.244			
	Cadmium-109	UI	UI	UI	Data rejected due to high peak-width.		2.413			
	Radium-224	UI	UI	UI	Data rejected due to interference.		3.546			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.1117			
247564002-1 03-MAR-2010 20:44	Bismuth-211	UI	UI	UI	Data rejected due to interference.		2.762			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.02			
	Radium-224	UI	UI	UI	Data rejected due to interference.		3.147			
247564003-1 03-MAR-2010 20:44	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.468			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.968			
	Radium-224	UI	UI	UI	Data rejected due to interference.		3.382			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.08215			
	Thorium-234	UI	UI	UI	Data rejected due to no valid peak.		2.791		2	2
247564004-1 03-MAR-2010 20:45	Bismuth-211	UI	UI	UI	Data rejected due to interference.		2.849			

# GEL QUALS

Batch ID: 956157

Report run on: March 9, 2010 1:01 PM

Samp Id	Parname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247564004-1 03-MAR-2010 20:45	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.261			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1082		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		2.577			
247564005-1 03-MAR-2010 20:46	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.314			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.232			
	Radium-224	UI	UI	UI	Data rejected due to interference.		3.382			
1202050252-1 DUP 03-MAR-2010 20:50	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.263			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.298			
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.476			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.08978			

# Gamma Review Report based on Result > MDA for Batch:956157

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247469001	17-FEB-10 12:00	02-MAR-10 20:52	13.4	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy	*** FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	2.227	0.2594	pCi/g	0.2903	N	910.2	3 1.541	IDENTIFIED 10.08	□	
Annihilation Rad.	0.2066	0.04736	pCi/g	0.06274	N	510.3	1 1.775	IDENTIFIED 22.48	□	
Bismuth-211 int	4.521	0.3934	pCi/g	0.4004	Y	351.7	2 1.188	IDENTIFIED 7.346	□ ui	
Bismuth-212 HE	2.239	0.5958	pCi/g	1.625	N	0	2 0	FAIL_ABUND 0	□	
Bismuth-214 ✓	1.272	0.1244	pCi/g	0.1496	0.200	608.8	2 1.265	IDENTIFIED 8.331	□	
Cadmium-109 int	4.52	0.5384	pCi/g	1.121	Y	87.23	3 1.1	IDENTIFIED 10.87	□ ui	
Cerium-143 —	312.3	53.56	pCi/g	0	N	0	2 0	SHORT_HLIF 0	□	
Gross Gamma —	10.74	1.511	pCi/g	4.645	N	0			□	
Lead-210 HE	1.383	0.4377	pCi/g	0.8978	N	46.48	1 0.9936	IDENTIFIED 31.19	□	
Lead-212 ✓	1.973	0.1234	pCi/g	0.1105	0.100	238.5	2 1.013	IDENTIFIED 3.671	□	
Lead-214 ✓	1.641	0.1498	pCi/g	0.1457	0.100	351.7	2 1.188	IDENTIFIED 7.346	□	
Neptunium-237 int nr	1.322	0.2097	pCi/g	0.3263	N	87.23	3 1.1	IDENTIFIED 10.87	□	
Potassium-40 ✓	34.11	1.919	pCi/g	0.6137	1.00	1459	1 1.815	IDENTIFIED 3.453	□	
Radium-224 int	5.069	0.9122	pCi/g	1.185	Y	241.4	1 1.805	IDENTIFIED 17.42	□ ui	
Radium-226 ✓	1.272	0.1244	pCi/g	0.1496	Y	608.8	2 1.265	IDENTIFIED 8.331	□	
Radium-228 ✓	2.227	0.2594	pCi/g	0.2903	0.500	910.2	3 1.541	IDENTIFIED 10.08	□	
Thallium-208 ✓	0.5792	0.06006	pCi/g	0.0718	0.080	582.7	1 1.308	IDENTIFIED 9.232	□	
Thorium-228 nr	1.973	0.1234	pCi/g	0.1105	N	238.5	2 1.013	IDENTIFIED 3.671	□	
Thorium-232 nr	2.227	0.2594	pCi/g	0.2903	N	910.2	3 1.541	IDENTIFIED 10.08	□	
Thorium-234 ✓	1.553	0.693	pCi/g	1.212	2.00	63.24	2 1.169	IDENTIFIED 43.58	□	
Tin-126 int nr	0.4429	0.05277	pCi/g	0.1097	N	87.23	3 1.1	IDENTIFIED 10.87	□	
Total Uranium —	4.7427	2.06E-06	ug/g	1.8057	N	0			□	
Uranium-238 HE	1.553	0.693	pCi/g	1.212	N	63.24	2 1.169	IDENTIFIED 43.58	□	

\*\*\* = 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
247469002	17-FEB-10 12:00	02-MAR-10 20:53	13.4	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy	*** FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	1.974	0.2375	pCi/g	0.2526	N	911.7	3 1.509	IDENTIFIED 10.52	□	
Annihilation Rad.	0.1795	0.04056	pCi/g	0.05702	N	510.8	1 1.754	IDENTIFIED 22.4	□	
Bismuth-211 int	3.978	0.2735	pCi/g	0.3818	Y	351.7	2 1.465	IDENTIFIED 6.09	□ ui	
Bismuth-212 HE	1.422	0.5148	pCi/g	1.351	N	0	4 0	FAIL_ABUND 0	□	
Bismuth-214 ✓	1.327	0.1078	pCi/g	0.1272	0.200	609.2	2 1.383	IDENTIFIED 7.091	□ ui	
Cadmium-109 int	4.423	0.6436	pCi/g	1.404	Y	87.21	3 1.477	IDENTIFIED 13.86	□	
Cerium-143 —	431.9	61.81	pCi/g	0	N	0	4 0	SHORT_HLIF 0	□	
Gross Gamma —	11.02	1.667	pCi/g	4.272	N	0			□	
Lead-212 ✓	1.924	0.0968	pCi/g	0.1078	0.100	238.5	2 1.302	IDENTIFIED 3.471	□	
Lead-214 ✓	1.444	0.1069	pCi/g	0.1388	0.100	351.7	2 1.465	IDENTIFIED 6.09	□	
Neptunium-237 int nr	1.293	0.232	pCi/g	0.4167	N	87.21	3 1.477	IDENTIFIED 13.86	□	

Niobium-95m	HE	0.4508	0.0915	pCi/g	0.29	N	0	4	0	NOT_IDENTI	0	<input type="checkbox"/>
Potassium-40	✓	33.02	1.56	pCi/g	0.5545	1.00	1461	1	1.966	IDENTIFIED	2.909	<input type="checkbox"/>
Radium-224	int	4.832	0.7184	pCi/g	1.154	Y	241.5	1	1.709	IDENTIFIED	14.59	<input type="checkbox"/> ui
Radium-226	✓	1.327	0.1078	pCi/g	0.1272	Y	609.2	2	1.383	IDENTIFIED	7.091	<input type="checkbox"/>
Radium-228	✓	1.974	0.2375	pCi/g	0.2526	0.500	911.7	3	1.509	IDENTIFIED	10.52	<input type="checkbox"/>
Strontium-85	la	0.1475	0.02372	pCi/g	0.08521	Y	0	4	0	NOT_IDENTI	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Thallium-208	✓	0.5601	0.05654	pCi/g	0.06323	0.080	583.2	1	1.729	IDENTIFIED	9.508	<input type="checkbox"/>
Thorium-228	nr	1.924	0.0968	pCi/g	0.1078	N	238.5	2	1.302	IDENTIFIED	3.471	<input type="checkbox"/>
Thorium-232	nr	1.974	0.2375	pCi/g	0.2526	N	911.7	3	1.509	IDENTIFIED	10.52	<input type="checkbox"/>
Tin-126	int nr	0.4335	0.06307	pCi/g	0.1382	N	87.21	3	1.477	IDENTIFIED	13.86	<input type="checkbox"/>
Total Uranium		4.718	2.33E-06	ug/g	4.0273	N		0				<input type="checkbox"/>

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247469003	17-FEB-10 12:00	02-MAR-10 20:53	13.4	SAMPLE	LOAD	1	LANL	LANL01004IGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb	Act	Rpt	Err(%)	Qual	Qual Comment
Actinium-228	nr	2.088	0.2248	pCi/g	0.243	N	911.5	3	1.464	IDENTIFIED	8.743	<input type="checkbox"/>		
Annihilation Rad.		0.1935	0.03739	pCi/g	0.05031	N	510.8	1	1.785	IDENTIFIED	18.75	<input type="checkbox"/>		
Bismuth-211	int	4.324	0.3032	pCi/g	0.3518	Y	351.9	2	1.379	IDENTIFIED	5.126	<input type="checkbox"/> ui		
Bismuth-212	HE	2.229	0.532	pCi/g	1.284	N	0	4	0	FAIL_ABUND	0	<input type="checkbox"/>		
Bismuth-214	✓	1.308	0.114	pCi/g	0.1161	0.200	609.5	2	1.25	IDENTIFIED	6.69	<input type="checkbox"/>		
Cadmium-109	int	5.003	0.577	pCi/g	1.163	Y	87.34	3	1.28	IDENTIFIED	10.54	<input type="checkbox"/> ui		
Cerium-143	—	233.1	41.9	pCi/g	0	N	0	4	0	SHORT_HLIF	0	<input type="checkbox"/>		
Cesium-134	la	0.1325	0.03466	pCi/g	0.1035	0.100	0	4	0	FAIL_ABUND	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.		
Gross Gamma	—	12.22	1.651	pCi/g	4.48	N	0					<input type="checkbox"/>		
Iodine-133	HE	96.55	733.8	pCi/g	0	N	0	4	0	SHORT_HLIF	0	<input type="checkbox"/>		
Lead-212	✓	2.175	0.1336	pCi/g	0.09814	0.100	238.6	2	1.137	IDENTIFIED	3.039	<input type="checkbox"/>		
Lead-214	✓	1.569	0.1182	pCi/g	0.1295	0.100	351.9	2	1.379	IDENTIFIED	5.126	<input type="checkbox"/>		
Neptunium-237	int nr	1.463	0.228	pCi/g	0.3436	N	87.34	3	1.28	IDENTIFIED	10.54	<input type="checkbox"/>		
Potassium-40	✓	39.89	2.007	pCi/g	0.485	1.00	1461	1	1.911	IDENTIFIED	2.512	<input type="checkbox"/>		
Radium-224	int	4.748	0.7929	pCi/g	1.052	Y	241.6	1	1.758	IDENTIFIED	15.99	<input type="checkbox"/> ui		
Radium-226	✓	1.308	0.114	pCi/g	0.1161	Y	609.5	2	1.25	IDENTIFIED	6.69	<input type="checkbox"/>		
Radium-228	✓	2.088	0.2248	pCi/g	0.243	0.500	911.5	3	1.464	IDENTIFIED	8.743	<input type="checkbox"/>		
Thallium-208	✓	0.6718	0.05633	pCi/g	0.05493	0.080	583.4	1	1.288	IDENTIFIED	6.628	<input type="checkbox"/>		
Thorium-228	nr	2.175	0.1336	pCi/g	0.09814	N	238.6	2	1.137	IDENTIFIED	3.039	<input type="checkbox"/>		
Thorium-232	nr	2.088	0.2248	pCi/g	0.243	N	911.5	3	1.464	IDENTIFIED	8.743	<input type="checkbox"/>		
Thorium-234	✓	2.505	0.8054	pCi/g	1.775	2.00	63.46	2	1.531	IDENTIFIED	30.9	<input type="checkbox"/>		
Tin-126	int nr	0.4903	0.05655	pCi/g	0.1143	N	87.34	3	1.28	IDENTIFIED	10.54	<input type="checkbox"/>		
Total Uranium		7.4683	2.40E-06	ug/g	2.6437	N	0					<input type="checkbox"/>		
Uranium-238	HE	2.505	0.8054	pCi/g	1.775	N	63.46	2	1.531	IDENTIFIED	30.9	<input type="checkbox"/>		

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247544001	18-FEB-10 12:00	02-MAR-10 20:54	12.4	SAMPLE	LOAD	1	LANL	LANL01004IGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb	Act	Rpt	Err(%)	Qual	Qual Comment
Actinium-228	nr	1.98	0.2108	pCi/g	0.247	N	911	3	2.039	IDENTIFIED	8.717	<input type="checkbox"/>		
Annihilation Rad.		0.149	0.03765	pCi/g	0.04594	N	510.7	1	1.661	IDENTIFIED	24.74	<input type="checkbox"/>		

Bismuth-211	int	5.032	0.346	pCi/g	0.315	Y	351.8	2	1.201	IDENTIFIED	4.426	<input type="checkbox"/>	ui
Bismuth-212	HE	2.255	0.6573	pCi/g	1.387	N	0	5	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214	✓	1.423	0.1189	pCi/g	0.1052	0.200	609.2	2	1.214	IDENTIFIED	5.762	<input type="checkbox"/>	
Cadmium-109	int	4.385	0.425	pCi/g	0.772	Y	87.17	3	1.09	IDENTIFIED	8.081	<input type="checkbox"/>	ui
Cerium-143	—	151.8	25.44	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134	la	0.1563	0.0453	pCi/g	0.106	0.100	0	5	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Gross Gamma	—	11.24	1.4	pCi/g	4.006	N		0				<input type="checkbox"/>	
Iodine-133	HE	110	357.9	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Lead-210	nr	1.56	0.322	pCi/g	0.5957	N	46.64	1	0.9566	IDENTIFIED	20.01	<input type="checkbox"/>	
Lead-212	✓	1.995	0.1271	pCi/g	0.08271	0.100	238.6	2	0.9326	IDENTIFIED	2.814	<input type="checkbox"/>	
Lead-214	✓	1.826	0.1353	pCi/g	0.1146	0.100	351.8	2	1.201	IDENTIFIED	4.426	<input type="checkbox"/>	
Neptunium-237	int nr	1.284	0.1834	pCi/g	0.2175	N	87.17	3	1.09	IDENTIFIED	8.081	<input type="checkbox"/>	
Potassium-40	✓	33.24	1.698	pCi/g	0.5661	1.00	1460	1	2.202	IDENTIFIED	2.82	<input type="checkbox"/>	
Radium-224	int	5.539	0.7156	pCi/g	0.8875	Y	241.6	1	1.783	IDENTIFIED	11.8	<input type="checkbox"/>	ui
Radium-226	✓	1.423	0.1189	pCi/g	0.1052	Y	609.2	2	1.214	IDENTIFIED	5.762	<input type="checkbox"/>	
Radium-228	✓	1.98	0.2108	pCi/g	0.247	0.500	911	3	2.039	IDENTIFIED	8.717	<input type="checkbox"/>	
Sodium-24	HE	22630	18780	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Thallium-208	✓	0.6248	0.05606	pCi/g	0.05507	0.080	583	1	1.402	IDENTIFIED	6.985	<input type="checkbox"/>	
Thorium-228	nr	1.995	0.1271	pCi/g	0.08271	N	238.6	2	0.9326	IDENTIFIED	2.814	<input type="checkbox"/>	
Thorium-232	nr	1.98	0.2108	pCi/g	0.247	N	911	3	2.039	IDENTIFIED	8.717	<input type="checkbox"/>	
Thorium-234	✓	1.511	0.43	pCi/g	0.8218	2.00	63.2	2	0.7275	IDENTIFIED	26.84	<input type="checkbox"/>	
Tin-126	int nr	0.4304	0.04171	pCi/g	0.07563	N	87.17	3	1.09	IDENTIFIED	8.081	<input type="checkbox"/>	
Total Uranium		4.5287	1.28E-06	ug/g	1.2252	N		0				<input type="checkbox"/>	
Uranium-238	HE	1.511	0.43	pCi/g	0.8218	N	63.2	2	0.7275	IDENTIFIED	26.84	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247544002	18-FEB-10 12:00	02-MAR-10 23:19	12.5	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228	nr	2.077	0.1787	pCi/g	0.1557	N	910.2	3	1.875	IDENTIFIED 5.823 <input type="checkbox"/>
Annihilation Rad.		0.1559	0.02632	pCi/g	0.0348	N	510.2	1	2.045	IDENTIFIED 16.58 <input type="checkbox"/>
Barium-137m		0.1173	0.01974	pCi/g	0.04135	N	661	2	1.515	IDENTIFIED 16.65 <input type="checkbox"/>
Bismuth-211	int	4.053	0.2195	pCi/g	0.2308	Y	351.4	2	1.248	IDENTIFIED 4.004 <input type="checkbox"/> ui
Bismuth-212	la nr	1.879	0.3628	pCi/g	0.8846	N	0	3	0	FAIL_ABUND 0 <input type="checkbox"/>
Bismuth-214	✓	1.333	0.07993	pCi/g	0.07453	0.200	608.7	2	1.391	IDENTIFIED 4.608 <input type="checkbox"/>
Cadmium-109	int	3.365	0.4597	pCi/g	1.006	Y	86.81	3	1.108	IDENTIFIED 12.45 <input type="checkbox"/> ui
Cerium-143	—	318.5	40.46	pCi/g	0	N	0	3	0	SHORT_HLIF 0 <input type="checkbox"/>
Cesium-135	int nr	0.4538	0.08426	pCi/g	0.1756	N	269.8	1	1.296	IDENTIFIED 18.12 <input type="checkbox"/>
Cesium-137	✓	0.1239	0.02086	pCi/g	0.04368	0.100	661	2	1.515	IDENTIFIED 16.65 <input type="checkbox"/>
Gross Gamma	—	10.53	1.277	pCi/g	3.018	N		0		<input type="checkbox"/>
Lead-212	✓	1.889	0.08405	pCi/g	0.06861	0.100	238.2	2	1.148	IDENTIFIED 2.277 <input type="checkbox"/>
Lead-214	✓	1.471	0.0894	pCi/g	0.08394	0.100	351.4	2	1.248	IDENTIFIED 4.004 <input type="checkbox"/>
Mercury-203	int	0.05271	0.02382	pCi/g	0.04153	0.100	277.4	1	0.9771	IDENTIFIED 45.07 <input type="checkbox"/> ui
Neptunium-237	int nr	0.9853	0.1697	pCi/g	0.2975	N	86.81	3	1.108	IDENTIFIED 12.45 <input type="checkbox"/>
Niobium-95	int nr	0.1011	0.01993	pCi/g	0.05617	N	767.4	1	2.361	IDENTIFIED 19.41 <input type="checkbox"/>
Niobium-95m	la nr	0.3261	0.05418	pCi/g	0.1781	N	0	3	0	NOT_IDENTI 0 <input type="checkbox"/>
Potassium-40	✓	32.66	1.557	pCi/g	0.2818	1.00	1459	1	2.192	IDENTIFIED 2.036 <input type="checkbox"/>

Radium-224	int	4.189	0.4139	pCi/g	0.7351	Y	241.2	1	1.599	IDENTIFIED	9.392	<input type="checkbox"/> ui
Radium-226	✓	1.333	0.07993	pCi/g	0.07453	Y	608.7	2	1.391	IDENTIFIED	4.608	<input type="checkbox"/>
Radium-228	✓	2.077	0.1787	pCi/g	0.1557	0.500	910.2	3	1.875	IDENTIFIED	5.823	<input type="checkbox"/>
Thallium-208	✓	0.5772	0.03408	pCi/g	0.0402	0.080	582.5	1	1.516	IDENTIFIED	4.86	<input type="checkbox"/>
Thorium-228	nr	1.889	0.08405	pCi/g	0.06861	N	238.2	2	1.148	IDENTIFIED	2.277	<input type="checkbox"/>
Thorium-232	nr	2.077	0.1787	pCi/g	0.1557	N	910.2	3	1.875	IDENTIFIED	5.823	<input type="checkbox"/>
Tin-126	int nr	0.3302	0.04511	pCi/g	0.09949	N	86.81	3	1.108	IDENTIFIED	12.45	<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
247544003	18-FEB-10 12:00	02-MAR-10 23:20	12.5	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	2.231	0.1888	pCi/g	0.2132	N	911.1	3	1.594	IDENTIFIED	5.91	<input type="checkbox"/>
Annihilation Rad.	0.157	0.03444	pCi/g	0.04282	N	510.6	1	1.707	IDENTIFIED	21.52	<input type="checkbox"/>
Bismuth-211 int	4.227	0.3034	pCi/g	0.3355	Y	352	2	1.327	IDENTIFIED	5.18	<input type="checkbox"/> ui
Bismuth-212 nr	2.215	0.4746	pCi/g	0.7825	N	727.6	1	1.981	IDENTIFIED	20.51	<input type="checkbox"/>
Bismuth-214 ✓	1.416	0.1051	pCi/g	0.1149	0.200	609.3	2	1.562	IDENTIFIED	5.508	<input type="checkbox"/>
Cadmium-109 int	4.208	0.5644	pCi/g	1.265	Y	87.45	3	1.402	IDENTIFIED	11.9	<input type="checkbox"/> ui
Cerium-143	260.6	35.65	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>
Cesium-134 la	0.1435	0.0277	pCi/g	0.08097	0.100	0	5	0	FAIL_ABUND	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Gross Gamma	12.16	1.528	pCi/g	3.701	N	0					<input type="checkbox"/>
Iodine-133 HE	169.9	334.7	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>
Lead-212 ✓	2.191	0.1424	pCi/g	0.09372	0.100	238.7	2	1.329	IDENTIFIED	2.556	<input type="checkbox"/>
Lead-214 ✓	1.534	0.118	pCi/g	0.123	0.100	352	2	1.327	IDENTIFIED	5.18	<input type="checkbox"/>
Neptunium-237 int nr	1.232	0.2098	pCi/g	0.3806	N	87.45	3	1.402	IDENTIFIED	11.9	<input type="checkbox"/>
Niobium-95m la nr	0.5145	0.0782	pCi/g	0.2408	N	0	5	0	NOT_IDENTI	0	<input type="checkbox"/>
Potassium-40 ✓	38.39	2.063	pCi/g	0.4986	1.00	1460	1	2.283	IDENTIFIED	2.18	<input type="checkbox"/>
Radium-224 int	5.414	0.6344	pCi/g	1.004	Y	241.7	1	1.747	IDENTIFIED	10.34	<input type="checkbox"/> ui
Radium-226 ✓	1.416	0.1051	pCi/g	0.1149	Y	609.3	2	1.562	IDENTIFIED	5.508	<input type="checkbox"/>
Radium-228 ✓	2.231	0.1888	pCi/g	0.2132	0.500	911.1	3	1.594	IDENTIFIED	5.91	<input type="checkbox"/>
Strontium-85 la	0.09593	0.02099	pCi/g	0.06666	Y	0	5	0	NOT_IDENTI	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Thallium-208 ✓	0.6832	0.05292	pCi/g	0.05321	0.080	583	1	1.6	IDENTIFIED	6.253	<input type="checkbox"/>
Thorium-228 nr	2.191	0.1424	pCi/g	0.09372	N	238.7	2	1.329	IDENTIFIED	2.556	<input type="checkbox"/>
Thorium-232 nr	2.231	0.1888	pCi/g	0.2132	N	911.1	3	1.594	IDENTIFIED	5.91	<input type="checkbox"/>
Thorium-234 ↑pw	3.461	1.543	pCi/g	3.034	2.00	62.76	2	3.032	IDENTIFIED	43.46	<input checked="" type="checkbox"/> UI Data rejected due to high peak-width.
Tin-126 int nr	0.413	0.05539	pCi/g	0.1251	N	87.45	3	1.402	IDENTIFIED	11.9	<input type="checkbox"/>
Total Uranium	10.307	4.59E-06	ug/g	4.5171	N	0					<input type="checkbox"/>
Uranium-238 HE	3.461	1.543	pCi/g	3.034	N	62.76	2	3.032	IDENTIFIED	43.46	<input type="checkbox"/>

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247544004	18-FEB-10 12:00	02-MAR-10 23:20	12.5	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	1.902	0.1623	pCi/g	0.1317	N	910.5	3	1.869	IDENTIFIED	5.184	<input type="checkbox"/>
Annihilation Rad. —	0.1214	0.02258	pCi/g	0.02574	N	510.7	1	1.77	IDENTIFIED	18.3	<input type="checkbox"/>
Barium-137m	0.09089	0.02072	pCi/g	0.03514	N	661	2	1.438	IDENTIFIED	22.47	<input type="checkbox"/>
Bismuth-211 int	3.866	0.1839	pCi/g	0.1898	Y	351.9	2	1.394	IDENTIFIED	3.508	<input type="checkbox"/> ui

Bismuth-212	la nr	2.08	0.2863	pCi/g	0.7144	N	0	8	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214	✓	1.162	0.0734	pCi/g	0.06644	0.200	609	2	1.48	IDENTIFIED	4.439	<input type="checkbox"/>	
Cadmium-109	int	3.609	0.3864	pCi/g	0.8437	Y	87.38	3	1.137	IDENTIFIED	9.671	<input type="checkbox"/>	ui
Cerium-143	—	209.2	25.87	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134	la	0.1322	0.02056	pCi/g	0.05474	0.100	0	8	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Cesium-135	HE	0.1945	0.05347	pCi/g	0.1675	N	0	8	0	NOT_IDENTI	0	<input type="checkbox"/>	
Cesium-137	✓	0.09601	0.02189	pCi/g	0.03712	0.100	661	2	1.438	IDENTIFIED	22.47	<input type="checkbox"/>	
Gross Gamma		10.24	1.134	pCi/g	2.307	N		0				<input type="checkbox"/>	
Lead-212	✓	1.695	0.07101	pCi/g	0.05797	0.100	238.7	2	1.15	IDENTIFIED	2.137	<input type="checkbox"/>	
Lead-214	✓	1.403	0.07714	pCi/g	0.069	0.100	351.9	2	1.394	IDENTIFIED	3.508	<input type="checkbox"/>	
Mercury-203	la	0.05117	0.01234	pCi/g	0.03912	0.100	0	8	0	NOT_IDENTI	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Neptunium-237	int nr	1.057	0.1584	pCi/g	0.2527	N	87.38	3	1.137	IDENTIFIED	9.671	<input type="checkbox"/>	
Niobium-95m	HE	0.1334	0.04266	pCi/g	0.133	N	0	8	0	NOT_IDENTI	0	<input type="checkbox"/>	
Potassium-40	✓	31.18	1.292	pCi/g	0.3394	1.00	1460	1	2.218	IDENTIFIED	1.666	<input type="checkbox"/>	
Radium-224	int	4.014	0.4142	pCi/g	0.6205	Y	241.7	1	1.767	IDENTIFIED	9.936	<input type="checkbox"/>	ui
Radium-226	✓	1.162	0.0734	pCi/g	0.06644	Y	609	2	1.48	IDENTIFIED	4.439	<input type="checkbox"/>	
Radium-228	✓	1.902	0.1623	pCi/g	0.1317	0.500	910.5	3	1.869	IDENTIFIED	5.184	<input type="checkbox"/>	
Sodium-24	HE	6907	13910	pCi/g	0	N	0	8	0	SHORT_HLIF	0	<input type="checkbox"/>	
Strontium-85	la	0.07812	0.01229	pCi/g	0.0406	Y	0	8	0	NOT_IDENTI	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.5125	0.03227	pCi/g	0.03338	0.080	582.9	1	1.492	IDENTIFIED	4.933	<input type="checkbox"/>	
Thorium-228	nr	1.695	0.07101	pCi/g	0.05797	N	238.7	2	1.15	IDENTIFIED	2.137	<input type="checkbox"/>	
Thorium-232	nr	1.902	0.1623	pCi/g	0.1317	N	910.5	3	1.869	IDENTIFIED	5.184	<input type="checkbox"/>	
Tin-126	int nr	0.3541	0.03792	pCi/g	0.08333	N	87.38	3	1.137	IDENTIFIED	9.671	<input type="checkbox"/>	
Total Uranium		4.3919	2.04E-06	ug/g	2.5732	N		0				<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247563001	15-FEB-10 12:00	02-MAR-10 23:21	15.5	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	1.988	0.1686	pCi/g	0.1544	N	911.4	3	1.622	IDENTIFIED	5.689 <input type="checkbox"/>
Annihilation Rad.	0.1341	0.02426	pCi/g	0.03099	N	511.1	1	1.578	IDENTIFIED	17.48 <input type="checkbox"/>
Bismuth-211 int	4.251	0.2585	pCi/g	0.2103	Y	352	2	1.228	IDENTIFIED	3.755 <input type="checkbox"/> ui
Bismuth-212 nr	2.094	0.2995	pCi/g	0.5414	N	727.3	1	1.806	IDENTIFIED	12.59 <input type="checkbox"/>
Bismuth-214 ✓	1.336	0.09335	pCi/g	0.06982	0.200	609.6	2	1.467	IDENTIFIED	4.201 <input type="checkbox"/>
Cadmium-109 int	4.101	0.3623	pCi/g	0.7818	Y	87.34	3	1.25	IDENTIFIED	7.487 <input type="checkbox"/> ui
Cerium-141 HE	0.08368	0.02396	pCi/g	0.07507	N	0	7	0	NOT_IDENTI	0 <input type="checkbox"/>
Cerium-143	691.8	100.5	pCi/g	0	N	0	7	0	SHORT_HLIF	0 <input type="checkbox"/>
Cesium-134 la	0.07658	0.02668	pCi/g	0.06428	0.100	0	7	0	FAIL_ABUND	0 <input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Cesium-135 HE	0.2496	0.05247	pCi/g	0.1886	N	0	7	0	NOT_IDENTI	0 <input type="checkbox"/>
Europium-155 HE	0.1456	0.04456	pCi/g	0.1121	N	105.3	1	1.361	IDENTIFIED	30.29 <input type="checkbox"/>
Gross Gamma	10.91	1.224	pCi/g	3.161	N		0			<input type="checkbox"/>
Iodine-133 HE	952.6	2797	pCi/g	0	N	0	7	0	SHORT_HLIF	0 <input type="checkbox"/>
Lead-212 ✓	1.803	0.1047	pCi/g	0.06282	0.100	238.7	2	1.11	IDENTIFIED	2.276 <input type="checkbox"/>
Lead-214 ✓	1.543	0.103	pCi/g	0.07648	0.100	352	2	1.228	IDENTIFIED	3.755 <input type="checkbox"/>
Neptunium-237 int nr	1.195	0.1639	pCi/g	0.2303	N	87.34	3	1.25	IDENTIFIED	7.487 <input type="checkbox"/>
Potassium-40 ✓	34.77	1.64	pCi/g	0.2998	1.00	1461	1	1.963	IDENTIFIED	1.798 <input type="checkbox"/>
Radium-224 int	4.204	0.4232	pCi/g	0.6731	Y	241.6	1	1.561	IDENTIFIED	8.829 <input type="checkbox"/> ui

Radium-226	✓	1.336	0.09335	pCi/g	0.06982	Y	609.6	2	1.467	IDENTIFIED	4.201	□
Radium-228	✓	1.988	0.1686	pCi/g	0.1544	0.500	911.4	3	1.622	IDENTIFIED	5.689	□
Sodium-24	HE	2.79E+05	3.43E+05	pCi/g	0	N	0	7	0	SHORT_HLIF	0	□
Strontium-85	la	0.07479	0.01445	pCi/g	0.04742	Y	0	7	0	NOT_IDENTI	0	☒ UI Data rejected due to low abundance.
Thallium-208	✓	0.5737	0.03972	pCi/g	0.04188	0.080	583.5	1	1.545	IDENTIFIED	4.643	□
Thorium-228	nr	1.803	0.1047	pCi/g	0.06282	N	238.7	2	1.11	IDENTIFIED	2.276	□
Thorium-232	nr	1.988	0.1686	pCi/g	0.1544	N	911.4	3	1.622	IDENTIFIED	5.689	□
Thorium-234	✓	1.788	0.5972	pCi/g	1.229	2.00	63.36	2	0.8159	IDENTIFIED	32.2	□
Tin-126	int nr	0.4006	0.03539	pCi/g	0.0766	N	87.34	3	1.25	IDENTIFIED	7.487	□
Total Uranium		5.4484	1.78E-06	ug/g	1.8305	N	0					□
Uranium-235	✓	0.281	0.1159	pCi/g	0.219	0.500	143.8	1	1.569	IDENTIFIED	40.38	□
Uranium-238	HE	1.788	0.5972	pCi/g	1.229	N	63.36	2	0.8159	IDENTIFIED	32.2	□

\*\*\* = 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
247563002	15-FEB-10 12:00	02-MAR-10 23:21	15.5	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	2.003	0.1771	pCi/g	0.1929	N	910.1	3	1.662	IDENTIFIED	6.547 □
Annihilation Rad.	0.09406	0.02703	pCi/g	0.03829	N	510.3	1	1.474	IDENTIFIED	28.59 □
Bismuth-211 int	4.047	0.22	pCi/g	0.2498	Y	351.3	2	1.257	IDENTIFIED	4.35 □ ui
Bismuth-212 la nr	1.856	0.3537	pCi/g	0.8753	N	0	6	0	FAIL_ABUND	0 □
Bismuth-214 ✓	1.287	0.08248	pCi/g	0.08668	0.200	608.5	2	1.514	IDENTIFIED	5.166 □
Cadmium-109 int	4.082	0.4617	pCi/g	1.022	Y	86.98	3	1.408	IDENTIFIED	10.22 □ ui
Cerium-143	1553	193.4	pCi/g	0	N	0	6	0	SHORT_HLIF	0 □
Cesium-134 la	0.0839	0.02954	pCi/g	0.07086	0.100	0	6	0	FAIL_ABUND	0 ☒ UI Data rejected due to low abundance.
Cesium-135 int nr	0.433	0.07475	pCi/g	0.1834	N	269.9	1	1.28	IDENTIFIED	16.84 □
Gross Gamma	9.794	1.217	pCi/g	2.775	N	0				□
Lead-212 ✓	1.628	0.0725	pCi/g	0.0757	0.100	238.3	2	1.16	IDENTIFIED	2.586 □
Lead-214 ✓	1.469	0.08952	pCi/g	0.09087	0.100	351.3	2	1.257	IDENTIFIED	4.35 □
Mercury-203 int	0.05387	0.01875	pCi/g	0.04956	0.100	277.3	1	0.8863	IDENTIFIED	34.68 □ ui
Neptunium-237 int nr	1.19	0.1835	pCi/g	0.3043	N	86.98	3	1.408	IDENTIFIED	10.22 □
Niobium-95m la nr	0.7133	0.07083	pCi/g	0.2268	N	0	6	0	NOT_IDENTI	0 □
Potassium-40 ✓	30.21	1.319	pCi/g	0.3734	1.00	1459	1	2.212	IDENTIFIED	2.248 □
Radium-224 int	4.142	0.4809	pCi/g	0.8113	Y	241.3	1	1.735	IDENTIFIED	11.26 □ ui
Radium-226 ✓	1.287	0.08248	pCi/g	0.08668	Y	608.5	2	1.514	IDENTIFIED	5.166 □
Radium-228 ✓	2.003	0.1771	pCi/g	0.1929	0.500	910.1	3	1.662	IDENTIFIED	6.547 □
Sodium-24 HE	4.58E+05	5.36E+05	pCi/g	0	N	0	6	0	SHORT_HLIF	0 □
Strontium-85 la	0.05558	0.01678	pCi/g	0.05368	Y	0	6	0	NOT_IDENTI	0 ☒ UI Data rejected due to low abundance.
Thallium-208 ✓	0.5277	0.03617	pCi/g	0.04692	0.080	582.6	1	1.46	IDENTIFIED	6.04 □
Thorium-228 nr	1.628	0.0725	pCi/g	0.0757	N	238.3	2	1.16	IDENTIFIED	2.586 □
Thorium-232 nr	2.003	0.1771	pCi/g	0.1929	N	910.1	3	1.662	IDENTIFIED	6.547 □
Thorium-234 ✓	3.631	1.057	pCi/g	2.022	2.00	63.15	2	1.15	IDENTIFIED	27.62 □
Tin-126 int nr	0.3987	0.0451	pCi/g	0.1004	N	86.98	3	1.408	IDENTIFIED	10.22 □
Total Uranium	10.789	3.14E-06	ug/g	3.0097	N	0				□
Uranium-238 HE	3.631	1.057	pCi/g	2.022	N	63.15	2	1.15	IDENTIFIED	27.62 □

\*\*\* = 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
247563003	15-FEB-10 12:00	02-MAR-10 23:22	15.5	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy	*** FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	1.929	0.1632	pCi/g	0.1762	N	910.9	3 1.522	IDENTIFIED 5.854	☐	
Annihilation Rad.	0.1186	0.02556	pCi/g	0.03068	N	510.7	1 1.424	IDENTIFIED 20.92	☐	
Barium-137m	0.1327	0.02011	pCi/g	0.04477	N	661.5	2 1.532	IDENTIFIED 14.11	☐	
Bismuth-211 int	4.261	0.2803	pCi/g	0.2165	Y	351.7	2 1.106	IDENTIFIED 3.948	☐ ui	
Bismuth-212 nr	2.036	0.4262	pCi/g	0.5743	N	727.3	1 1.518	IDENTIFIED 19.71	☐	
Bismuth-214	1.276	0.09597	pCi/g	0.07961	0.200	609.1	2 1.364	IDENTIFIED 4.461	☐	
Cadmium-109 int	3.577	0.3104	pCi/g	0.509	Y	87.22	3 1.119	IDENTIFIED 6.831	☐ ui	
Cerium-143	763.9	108.9	pCi/g	0	N	0	4 0	SHORT_HLIF 0	☐	
Cesium-134 la	0.1234	0.02348	pCi/g	0.06716	0.100	0	4 0	FAIL_ABUND 0	☑ UI	Data rejected due to low abundance.
Cesium-137	0.1402	0.02124	pCi/g	0.0473	0.100	661.5	2 1.532	IDENTIFIED 14.11	☐	
Europium-155 HE	0.162	0.0434	pCi/g	0.08792	N	105.1	1 1.275	IDENTIFIED 26.14	☐	
Gross Gamma	11.39	1.273	pCi/g	3.569	N	0			☐	
Iodine-133 HE	2027	2755	pCi/g	0	N	0	4 0	SHORT_HLIF 0	☐	
Lead-210 nr	0.8942	0.2238	pCi/g	0.425	N	46.44	1 0.9334	IDENTIFIED 24.5	☐	
Lead-212	1.855	0.1128	pCi/g	0.05761	0.100	238.5	2 0.9825	IDENTIFIED 2.09	☐	
Lead-214	1.546	0.1103	pCi/g	0.07875	0.100	351.7	2 1.106	IDENTIFIED 3.948	☐	
Neptunium-237 int nr	1.043	0.1419	pCi/g	0.1672	N	87.22	3 1.119	IDENTIFIED 6.831	☐	
Potassium-40	33.6	1.581	pCi/g	0.3671	1.00	1460	1 2.029	IDENTIFIED 2	☐	
Radium-224 int	4.554	0.4208	pCi/g	0.6181	Y	241.6	1 1.553	IDENTIFIED 7.597	☐ ui	
Radium-226	1.276	0.09597	pCi/g	0.07961	Y	609.1	2 1.364	IDENTIFIED 4.461	☐	
Radium-228	1.929	0.1632	pCi/g	0.1762	0.500	910.9	3 1.522	IDENTIFIED 5.854	☐	
Ruthenium-103 HE	0.05978	0.01464	pCi/g	0.05124	N	0	4 0	FAIL_ABUND 0	☐	
Thallium-208	0.6257	0.04611	pCi/g	0.03909	0.080	583	1 1.272	IDENTIFIED 4.754	☐	
Thorium-228 nr	1.855	0.1128	pCi/g	0.05761	N	238.5	2 0.9825	IDENTIFIED 2.09	☐	
Thorium-232 nr	1.929	0.1632	pCi/g	0.1762	N	910.9	3 1.522	IDENTIFIED 5.854	☐	
Thorium-234	2.509	0.3943	pCi/g	0.5584	2.00	63.36	2 0.7452	IDENTIFIED 12.52	☐	
Tin-126 int nr	0.3495	0.03033	pCi/g	0.04963	N	87.22	3 1.119	IDENTIFIED 6.831	☐	
Total Uranium	7.5036	1.17E-06	ug/g	0.83244	N	0			☐	
Uranium-238 nr	2.509	0.3943	pCi/g	0.5584	N	63.36	2 0.7452	IDENTIFIED 12.52	☐	

\*\*\* = 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
247563004	15-FEB-10 12:00	03-MAR-10 18:50	16.3	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy	*** FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	1.984	0.1791	pCi/g	0.1939	N	910.7	3 2.029	IDENTIFIED 5.966	☐	
Annihilation Rad.	0.1248	0.02485	pCi/g	0.03564	N	510.6	1 2.013	IDENTIFIED 19.63	☐	
Bismuth-211 int	3.886	0.211	pCi/g	0.2795	Y	351.8	2 1.322	IDENTIFIED 4.38	☐ ui	
Bismuth-212 HE	1.591	0.3508	pCi/g	0.9439	N	0	6 0	FAIL_ABUND 0	☐	
Bismuth-214	1.217	0.0878	pCi/g	0.08758	0.200	608.9	2 1.509	IDENTIFIED 5.643	☐	
Cadmium-109 int	3.385	0.5037	pCi/g	1.071	Y	87.27	3 1.091	IDENTIFIED 14.15	☐ ui	
Cerium-143	1214	178.5	pCi/g	0	N	0	6 0	SHORT_HLIF 0	☐	
Cesium-134 la	0.09019	0.02242	pCi/g	0.07404	0.100	0	6 0	NOT_IDENTI 0	☑ UI	Data rejected due to low abundance.
Gross Gamma	10.18	1.229	pCi/g	2.842	N	0			☐	
Lead-212	1.574	0.07739	pCi/g	0.09624	0.100	238.6	2 1.228	IDENTIFIED 3.345	☐	

Lead-214	✓		1.41	0.08589	pCi/g	0.1011	0.100	351.8	2	1.322	IDENTIFIED	4.38	<input type="checkbox"/>
Neptunium-237	int nr		0.9855	0.1794	pCi/g	0.4031	N	87.27	3	1.091	IDENTIFIED	14.15	<input type="checkbox"/>
Niobium-95	HE		0.08163	0.02073	pCi/g	0.06819	N	0	6	0	NOT_IDENTI	0	<input type="checkbox"/>
Niobium-95m	HE		0.2041	0.05679	pCi/g	0.1851	N	0	6	0	NOT_IDENTI	0	<input type="checkbox"/>
Potassium-40	✓		35.51	1.544	pCi/g	0.4038	1.00	1460	1	2.234	IDENTIFIED	2.123	<input type="checkbox"/>
Radium-224	int		3.003	0.4003	pCi/g	1.144	Y	241.7	1	1.664	IDENTIFIED	13.03	<input type="checkbox"/> ui
Radium-226	✓		1.217	0.0878	pCi/g	0.08758	Y	608.9	2	1.509	IDENTIFIED	5.643	<input type="checkbox"/>
Radium-228	✓		1.984	0.1791	pCi/g	0.1939	0.500	910.7	3	2.029	IDENTIFIED	5.966	<input type="checkbox"/>
Strontium-85	la		0.07319	0.01788	pCi/g	0.05891	Y	0	6	0	NOT_IDENTI	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Thallium-208	✓		0.5442	0.04027	pCi/g	0.0431	0.080	582.8	1	1.608	IDENTIFIED	6.28	<input type="checkbox"/>
Thorium-228	nr		1.574	0.07739	pCi/g	0.09624	N	238.6	2	1.228	IDENTIFIED	3.345	<input type="checkbox"/>
Thorium-232	nr		1.984	0.1791	pCi/g	0.1939	N	910.7	3	2.029	IDENTIFIED	5.966	<input type="checkbox"/>
Tin-126	int nr		0.3303	0.04915	pCi/g	0.1337	N	87.27	3	1.091	IDENTIFIED	14.15	<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
247563005	15-FEB-10 12:00	03-MAR-10 18:50	16.3	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt	Err(%)	Qual	Qual Comment
Actinium-228	nr	1.967	0.2121	pCi/g	0.2319	N	911.3	3	2.12	IDENTIFIED	8.391 <input type="checkbox"/>
Annihilation Rad.		0.1517	0.03423	pCi/g	0.04625	N	510.8	1	2.53	IDENTIFIED	22.01 <input type="checkbox"/>
Bismuth-211	int	4.229	0.3264	pCi/g	0.3651	Y	351.9	2	1.288	IDENTIFIED	5.074 <input type="checkbox"/> ui
Bismuth-212	nr	2.582	0.3945	pCi/g	0.7262	N	727.4	1	1.984	IDENTIFIED	13.57 <input type="checkbox"/>
Bismuth-214	✓	1.292	0.1131	pCi/g	0.1191	0.200	609.4	2	1.637	IDENTIFIED	6.523 <input type="checkbox"/>
Cadmium-109	int	3.477	0.4735	pCi/g	1.324	Y	87.14	3	0.9704	IDENTIFIED	12.78 <input type="checkbox"/> ui
Cerium-143		1840	277.8	pCi/g	0	N	0	6	0	SHORT_HLIF	0 <input type="checkbox"/>
Cesium-134	la	0.1019	0.02436	pCi/g	0.08617	0.100	0	6	0	NOT_IDENTI	0 <input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Gross Gamma		11.76	1.536	pCi/g	3.378	N	0				<input type="checkbox"/>
Iodine-133	HE	2272	6892	pCi/g	0	N	0	6	0	SHORT_HLIF	0 <input type="checkbox"/>
Lead-212	✓	2.103	0.1508	pCi/g	0.0963	0.100	238.7	2	1.302	IDENTIFIED	2.755 <input type="checkbox"/>
Lead-214	✓	1.535	0.1258	pCi/g	0.1215	0.100	351.9	2	1.288	IDENTIFIED	5.074 <input type="checkbox"/>
Neptunium-237	int nr	1.012	0.174	pCi/g	0.4229	N	87.14	3	0.9704	IDENTIFIED	12.78 <input type="checkbox"/>
Niobium-95	HE	0.1064	0.02554	pCi/g	0.08081	N	0	6	0	NOT_IDENTI	0 <input type="checkbox"/>
Potassium-40	✓	42.1	2.103	pCi/g	0.4977	1.00	1461	1	2.632	IDENTIFIED	1.99 <input type="checkbox"/>
Radium-224	int	5.709	0.7008	pCi/g	1.031	Y	241.7	1	1.886	IDENTIFIED	10.55 <input type="checkbox"/> ui
Radium-226	✓	1.292	0.1131	pCi/g	0.1191	Y	609.4	2	1.637	IDENTIFIED	6.523 <input type="checkbox"/>
Radium-228	✓	1.967	0.2121	pCi/g	0.2319	0.500	911.3	3	2.12	IDENTIFIED	8.391 <input type="checkbox"/>
Sodium-24	HE	6.17E+05	1.39E+06	pCi/g	0	N	0	6	0	SHORT_HLIF	0 <input type="checkbox"/>
Strontium-85	la	0.1284	0.02411	pCi/g	0.07656	Y	0	6	0	NOT_IDENTI	0 <input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Thallium-208	✓	0.5563	0.05051	pCi/g	0.05269	0.080	583.3	1	1.837	IDENTIFIED	7.287 <input type="checkbox"/>
Thorium-228	nr	2.103	0.1508	pCi/g	0.0963	N	238.7	2	1.302	IDENTIFIED	2.755 <input type="checkbox"/>
Thorium-232	nr	1.967	0.2121	pCi/g	0.2319	N	911.3	3	2.12	IDENTIFIED	8.391 <input type="checkbox"/>
Thorium-234	✓	2.572	1.006	pCi/g	2.022	2.00	62.93	2	1.13	IDENTIFIED	38.06 <input type="checkbox"/>
Tin-126	int nr	0.3393	0.04621	pCi/g	0.1297	N	87.14	3	0.9704	IDENTIFIED	12.78 <input type="checkbox"/>
Total Uranium		7.6958	2.99E-06	ug/g	3.0106	N	0				<input type="checkbox"/>
Uranium-238	HE	2.572	1.006	pCi/g	2.022	N	62.93	2	1.13	IDENTIFIED	38.06 <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
247563006	15-FEB-10 12:00	03-MAR-10 19:20	16.3	SAMPLE	LOAD	1	LANL	LANL01004 GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb Act Rpt	Err(%)	Qual	Qual Comment
Actinium-228 nr	1.956	0.2409	pCi/g	0.2919	N	911.1	3	1.36	IDENTIFIED	10.72	□	
Annihilation Rad.	0.122	0.04442	pCi/g	0.0658	N	510.7	1	1.819	IDENTIFIED	36.14	□	
Bismuth-211 int	4.585	0.4035	pCi/g	0.4484	Y	352	2	1.533	IDENTIFIED	7.262	□	ui
Bismuth-212 HE	1.966	0.5939	pCi/g	1.133	N	726.9	1	1.015	IDENTIFIED	29.56	□	
Bismuth-214 ✓	1.36	0.1177	pCi/g	0.151	0.200	609.4	2	1.363	IDENTIFIED	7.083	□	
Cadmium-109 int	3.225	0.6678	pCi/g	2.19	Y	87.31	3	1.574	IDENTIFIED	19.77	□	ui
Cerium-143 —	1762	305	pCi/g	0	N	0	7	0	SHORT_HLIF	0	□	
Gross Gamma —	11.57	1.893	pCi/g	5.322	N	0					□	
Iodine-133 HE	4591	11340	pCi/g	0	N	0	7	0	SHORT_HLIF	0	□	
Iodine-135 —	1.19E+16	0	pCi/g	0	N	0	7	0	SHORT_HLIF	0	□	
Lead-212 ✓	2.071	0.1483	pCi/g	0.1341	0.100	238.7	2	1.346	IDENTIFIED	3.945	□	
Lead-214 ✓	1.664	0.1535	pCi/g	0.1652	0.100	352	2	1.533	IDENTIFIED	7.262	□	
Neptunium-237 HE	0.9389	0.2179	pCi/g	0.6182	N	87.31	3	1.574	IDENTIFIED	19.77	□	
Niobium-95m la nr	0.6019	0.1148	pCi/g	0.3672	N	0	7	0	NOT_IDENTI	0	□	
Potassium-40 ✓	38.94	2.276	pCi/g	0.7897	1.00	1460	1	2.291	IDENTIFIED	3.166	□	
Radium-224 int	4.98	0.8872	pCi/g	1.436	Y	241.8	1	1.727	IDENTIFIED	16.94	□	ui
Radium-226 ✓	1.36	0.1177	pCi/g	0.151	Y	609.4	2	1.363	IDENTIFIED	7.083	□	
Radium-228 ✓	1.956	0.2409	pCi/g	0.2919	0.500	911.1	3	1.36	IDENTIFIED	10.72	□	
Sodium-24 HE	1.27E+06	2.05E+06	pCi/g	0	N	0	7	0	SHORT_HLIF	0	□	
Strontium-85 la	0.1166	0.0309	pCi/g	0.1008	Y	0	7	0	NOT_IDENTI	0	□	UI Data rejected due to low abundance.
Technetium-99m	1.75E+17	0	pCi/g	0	N	0	7	0	SHORT_HLIF	0	□	
Thallium-208 ✓	0.6371	0.06625	pCi/g	0.07377	0.080	583.1	1	1.56	IDENTIFIED	9.337	□	
Thorium-228 nr	2.071	0.1483	pCi/g	0.1341	N	238.7	2	1.346	IDENTIFIED	3.945	□	
Thorium-232 nr	1.956	0.2409	pCi/g	0.2919	N	911.1	3	1.36	IDENTIFIED	10.72	□	
Tin-126 HE	0.3147	0.06516	pCi/g	0.2191	N	87.31	3	1.574	IDENTIFIED	19.77	□	

\*\*\* = 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
247563007	15-FEB-10 12:00	03-MAR-10 20:42	16.4	SAMPLE	LOAD	1	LANL	LANL01004 GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb Act Rpt	Err(%)	Qual	Qual Comment
Actinium-228 nr	1.805	0.1809	pCi/g	0.2345	N	911.3	3	1.608	IDENTIFIED	8.294	□	
Annihilation Rad.	0.1399	0.03874	pCi/g	0.04861	N	510.8	1	1.526	IDENTIFIED	27.55	□	
Bismuth-211 int	4.115	0.2708	pCi/g	0.3635	Y	351.9	2	1.372	IDENTIFIED	5.649	□	ui
Bismuth-212 la nr	2.646	0.4681	pCi/g	1.402	N	0	3	0	FAIL_ABUND	0	□	
Bismuth-214 ✓	1.394	0.09973	pCi/g	0.1126	0.200	609.3	2	1.483	IDENTIFIED	6.116	□	
Cadmium-109 int	4.377	0.7046	pCi/g	1.478	Y	87.22	3	1.253	IDENTIFIED	14.95	□	ui
Cerium-143	1315	212.4	pCi/g	0	N	0	3	0	SHORT_HLIF	0	□	
Gross Gamma	11.04	1.53	pCi/g	3.756	N	0					□	
Lead-212 ✓	1.803	0.09465	pCi/g	0.09154	0.100	238.6	2	1.114	IDENTIFIED	3.346	□	
Lead-214 ✓	1.493	0.1066	pCi/g	0.1232	0.100	351.9	2	1.372	IDENTIFIED	5.649	□	
Neptunium-237 int nr	1.274	0.2448	pCi/g	0.4913	N	87.22	3	1.253	IDENTIFIED	14.95	□	
Potassium-40 ✓	36.37	1.661	pCi/g	0.522	1.00	1461	1	2.1	IDENTIFIED	2.867	□	

Radium-224	int	5.012	0.5358	pCi/g	0.9813	Y	241.7	1	1.541	IDENTIFIED	10.16	□	ui
Radium-226	✓	1.394	0.09973	pCi/g	0.1126	Y	609.3	2	1.483	IDENTIFIED	6.116	□	
Radium-228	✓	1.805	0.1809	pCi/g	0.2345	0.500	911.3	3	1.608	IDENTIFIED	8.294	□	
Sodium-24	HE	2053	1.55E+06	pCi/g	0	N	0	3	0	SHORT_HLIF	0	□	
Thallium-208	✓	0.5834	0.04686	pCi/g	0.06071	0.080	583.3	1	1.337	IDENTIFIED	7.394	□	
Thorium-228	nr	1.803	0.09465	pCi/g	0.09154	N	238.6	2	1.114	IDENTIFIED	3.346	□	
Thorium-232	nr	1.805	0.1809	pCi/g	0.2345	N	911.3	3	1.608	IDENTIFIED	8.294	□	
Thorium-234	✓ ✓	3.167	1.524	pCi/g	3.164	2.00	63.43	2	2.434	IDENTIFIED	47.06	□	
Tin-126	int nr	0.427	0.06875	pCi/g	0.1453	N	87.22	3	1.253	IDENTIFIED	14.95	□	
Total Uranium		9.5073	4.53E-06	ug/g	4.7097	N	0					□	
Uranium-238	HE	3.167	1.524	pCi/g	3.164	N	63.43	2	2.434	IDENTIFIED	47.06	□	

\*\*\* = 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
247563008	15-FEB-10 12:00	03-MAR-10 20:43	16.4	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb	Act	Rpt	Err(%)	Qual	Qual Comment
Actinium-228	nr	1.821	0.2333	pCi/g	0.3232	N	910.1	3	1.759	IDENTIFIED	11.13	□		
Annihilation Rad.		0.1569	0.04445	pCi/g	0.06441	N	510.2	1	1.801	IDENTIFIED	28.16	□		
Barium-137m	HE	0.09373	0.02801	pCi/g	0.07942	N	661.1	2	1.489	IDENTIFIED	29.7	□		
Bismuth-211	int	4.592	0.3356	pCi/g	0.4355	Y	351.1	2	1.298	IDENTIFIED	6.143	□	ui	
Bismuth-212	nr	3.727	0.5743	pCi/g	1.526	N	0	3	0	FAIL_ABUND	0	□		
Bismuth-214	✓	1.35	0.1202	pCi/g	0.1452	0.200	608.5	2	1.583	IDENTIFIED	7.838	□		
Cadmium-109	int	2.832	0.4936	pCi/g	1.31	Y	86.63	3	1.133	IDENTIFIED	17.01	□	ui	
Cerium-143	—	2940	432	pCi/g	0	N	0	3	0	SHORT_HLIF	0	□		
Cesium-135	HE	0.3768	0.1286	pCi/g	0.2949	N	269.9	1	1.147	IDENTIFIED	33.72	□		
Cesium-137	✓	0.09902	0.02959	pCi/g	0.0839	0.100	661.1	2	1.489	IDENTIFIED	29.7	□		
Gross Gamma	✓	11.42	1.549	pCi/g	5.491	N	0					□		
Lead-210	HE	1.35	0.478	pCi/g	1.026	N	45.73	1	1.311	IDENTIFIED	35.19	□		
Lead-212	✓	2.115	0.1323	pCi/g	0.1162	0.100	238.1	2	1.236	IDENTIFIED	3.132	□		
Lead-214	✓	1.666	0.1302	pCi/g	0.1654	0.100	351.1	2	1.298	IDENTIFIED	6.143	□		
Neptunium-237	int nr	0.8243	0.1677	pCi/g	0.4134	N	86.63	3	1.133	IDENTIFIED	17.01	□		
Niobium-95m	la nr	1.778	0.1475	pCi/g	0.4296	N	0	3	0	NOT_IDENTI	0	□		
Potassium-40	✓	37.15	1.596	pCi/g	0.667	1.00	1459	1	1.857	IDENTIFIED	2.965	□		
Radium-224	int	5.656	0.8699	pCi/g	1.245	Y	241.1	1	1.955	IDENTIFIED	14.58	□	ui	
Radium-226	✓	1.35	0.1202	pCi/g	0.1452	Y	608.5	2	1.583	IDENTIFIED	7.838	□		
Radium-228	✓	1.821	0.2333	pCi/g	0.3232	0.500	910.1	3	1.759	IDENTIFIED	11.13	□		
Thallium-208	✓	0.551	0.05815	pCi/g	0.08115	0.080	582.4	1	1.312	IDENTIFIED	9.894	□		
Thorium-228	nr	2.115	0.1323	pCi/g	0.1162	N	238.1	2	1.236	IDENTIFIED	3.132	□		
Thorium-232	nr	1.821	0.2333	pCi/g	0.3232	N	910.1	3	1.759	IDENTIFIED	11.13	□		
Thorium-234	✓	2.541	0.6347	pCi/g	1.268	2.00	62.93	2	0.9874	IDENTIFIED	23.27	□		
Tin-126	int nr	0.2763	0.04816	pCi/g	0.1277	N	86.63	3	1.133	IDENTIFIED	17.01	□		
Total Uranium		7.6901	1.89E-06	ug/g	1.8906	N	0					□		
Uranium-238	nr	2.541	0.6347	pCi/g	1.268	N	62.93	2	0.9874	IDENTIFIED	23.27	□		

\*\*\* = 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
247564001	12-FEB-10 12:00	03-MAR-10 20:43	19.4	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb	Act	Rpt	Err(%)	Qual	Qual Comment
Actinium-228 nr	1.685	0.1935	pCi/g	0.2697	N	911.3	3	1.274	IDENTIFIED	9.77				
Annihilation Rad. HE	0.111	0.03374	pCi/g	0.05394	N	510.9	1	1.413	IDENTIFIED	30.08				
Bismuth-211 int	3.244	0.2567	pCi/g	0.3429	Y	352	2	1.261	IDENTIFIED	6.376			ui	
Bismuth-212 la nr	3.148	0.6246	pCi/g	1.386	N	0	4	0	FAIL_ABUND	0				
Bismuth-214 ✓	0.8824	0.07979	pCi/g	0.132	0.200	609.5	2	1.65	IDENTIFIED	7.56				
Cadmium-109 pw	2.413	0.8819	pCi/g	1.44	Y	89.15	1	3.777	IDENTIFIED	36.13			UI	Data rejected due to high peak-width.
Cerium-143 —	3268	776.1	pCi/g	0	N	0	4	0	SHORT_HLIF	0				
Gross Gamma —	8.666	1.311	pCi/g	2.659	N	0								
Iodine-133 HE	13960	92870	pCi/g	0	N	0	4	0	SHORT_HLIF	0				
Lead-212 ✓	1.484	0.09587	pCi/g	0.09727	0.100	238.7	2	1.152	IDENTIFIED	3.926				
Lead-214 ✓	1.177	0.09868	pCi/g	0.1255	0.100	352	2	1.261	IDENTIFIED	6.376				
Potassium-40 ✓	37.62	2.074	pCi/g	0.6454	1.00	1461	1	2.188	IDENTIFIED	2.86				
Radium-224 int	3.546	0.7179	pCi/g	1.043	Y	241.8	1	2.031	IDENTIFIED	19.72			ui	
Radium-226 ✓	0.8824	0.07979	pCi/g	0.132	Y	609.5	2	1.65	IDENTIFIED	7.56				
Radium-228 ✓	1.685	0.1935	pCi/g	0.2697	0.500	911.3	3	1.274	IDENTIFIED	9.77				
Strontium-85 la	0.1117	0.02404	pCi/g	0.08519	Y	0	4	0	NOT_IDENTI	0			UI	Data rejected due to low abundance.
Thallium-208 ✓	0.436	0.04185	pCi/g	0.0666	0.080	583.4	1	1.317	IDENTIFIED	8.441				
Thorium-228 nr	1.484	0.09587	pCi/g	0.09727	N	238.7	2	1.152	IDENTIFIED	3.926				
Thorium-232 nr	1.685	0.1935	pCi/g	0.2697	N	911.3	3	1.274	IDENTIFIED	9.77				

\*\*\* = 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
247564002	12-FEB-10 12:00	03-MAR-10 20:44	19.4	SAMPLE	LOAD	1	LANL	LANL010041GEL		N	RCSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb	Act	Rpt	Err(%)	Qual	Qual Comment
Actinium-228 nr	1.392	0.1926	pCi/g	0.2667	N	910.7	3	1.477	IDENTIFIED	12.31				
Annihilation Rad. HE	0.1122	0.03343	pCi/g	0.04662	N	510.5	1	1.463	IDENTIFIED	29.63				
Bismuth-211 int	2.762	0.231	pCi/g	0.3189	Y	351.5	2	1.301	IDENTIFIED	7.526			ui	
Bismuth-212 HE	1.834	0.4903	pCi/g	1.128	N	0	6	0	FAIL_ABUND	0				
Bismuth-214 ✓	0.8469	0.08335	pCi/g	0.1204	0.200	608.9	2	1.512	IDENTIFIED	9.063				
Cadmium-109 int	3.02	0.5897	pCi/g	1.378	Y	86.99	3	1.206	IDENTIFIED	18.69			ui	
Cadmium-115 HE	25.74	21.71	pCi/g	0	N	0	6	0	SHORT_HLIF	0				
Cerium-143	5598	951	pCi/g	0	N	0	6	0	SHORT_HLIF	0				
Gross Gamma	8.235	1.159	pCi/g	2.375	N	0								
Iodine-133 HE	78740	90660	pCi/g	0	N	0	6	0	SHORT_HLIF	0				
Lead-212 ✓	1.385	0.07579	pCi/g	0.0918	0.100	238.3	2	1.097	IDENTIFIED	3.917				
Lead-214 ✓	1.002	0.08826	pCi/g	0.116	0.100	351.5	2	1.301	IDENTIFIED	7.526				
Neptunium-237 int nr	0.8752	0.194	pCi/g	0.4096	N	86.99	3	1.206	IDENTIFIED	18.69				
Potassium-40 ✓	37.08	1.915	pCi/g	0.4995	1.00	1460	1	2.249	IDENTIFIED	2.849				
Radium-224 int	3.147	0.6174	pCi/g	0.9837	Y	241.2	1	1.778	IDENTIFIED	19.37			ui	
Radium-226 ✓	0.8469	0.08335	pCi/g	0.1204	Y	608.9	2	1.512	IDENTIFIED	9.063				
Radium-228 ✓	1.392	0.1926	pCi/g	0.2667	0.500	910.7	3	1.477	IDENTIFIED	12.31				
Sodium-24 HE	5.73E+07	4.48E+07	pCi/g	0	N	0	6	0	SHORT_HLIF	0				
Technetium-99m	1.72E+21	0	pCi/g	0	N	0	6	0	SHORT_HLIF	0				
Thallium-208 ✓	0.4378	0.03987	pCi/g	0.05966	0.080	582.7	1	1.454	IDENTIFIED	8.467				
Thorium-228 nr	1.385	0.07579	pCi/g	0.0918	N	238.3	2	1.097	IDENTIFIED	3.917				
Thorium-232 nr	1.392	0.1926	pCi/g	0.2667	N	910.7	3	1.477	IDENTIFIED	12.31				

Tin-126 int nr 0.2933 0.05728 pCi/g 0.1348 N 86.99 3 1.206 IDENTIFIED 18.69 □

\*\*\* = 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
247564003	12-FEB-10 12:00	03-MAR-10 20:44	19.4	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	1.406	0.1906	pCi/g	0.2318	N	911.4	3	1.391 IDENTIFIED 12.13	☐	
Annihilation Rad. HE	0.08122	0.03709	pCi/g	0.04845	N	510.7	1	2.03 IDENTIFIED 45.57	☐	
Bismuth-211 int	3.468	0.2423	pCi/g	0.3056	Y	351.6	2	1.355 IDENTIFIED 6.227	☐	ui
Bismuth-214 ✓	0.8906	0.08592	pCi/g	0.1183	0.200	609.3	2	1.444 IDENTIFIED 8.784	☐	
Cadmium-109 int	2.968	0.5071	pCi/g	1.184	Y	87.19	3	1.553 IDENTIFIED 16.53	☐	ui
Cerium-143	5918	957.3	pCi/g	0	N	0	3	0 SHORT_HLIF 0	☐	
Gross Gamma	8.808	1.306	pCi/g	3.498	N	0			☐	
Lead-212 ✓	1.447	0.07389	pCi/g	0.08764	0.100	238.5	2	1.315 IDENTIFIED 3.549	☐	
Lead-214 ✓	1.259	0.09453	pCi/g	0.1111	0.100	351.6	2	1.355 IDENTIFIED 6.227	☐	
Neptunium-237 int nr	0.8601	0.1724	pCi/g	0.3473	N	87.19	3	1.553 IDENTIFIED 16.53	☐	
Niobium-95m la nr	0.5698	0.08223	pCi/g	0.2779	N	0	3	0 NOT_IDENTI 0	☐	
Potassium-40 ✓	33.14	1.517	pCi/g	0.4469	1.00	1461	1	1.823 IDENTIFIED 2.79	☐	
Radium-224 int	3.382	0.5336	pCi/g	0.9387	Y	241.7	1	1.874 IDENTIFIED 15.52	☐	ui
Radium-226 ✓	0.8906	0.08592	pCi/g	0.1183	Y	609.3	2	1.444 IDENTIFIED 8.784	☐	
Radium-228 ✓	1.406	0.1906	pCi/g	0.2318	0.500	911.4	3	1.391 IDENTIFIED 12.13	☐	
Strontium-85 la	0.08215	0.02296	pCi/g	0.07566	Y	0	3	0 NOT_IDENTI 0	☒ UI	Data rejected due to low abundance.
Thallium-208 ✓	0.4746	0.04071	pCi/g	0.04998	0.080	583.3	1	1.64 IDENTIFIED 7.871	☐	
Thorium-228 nr	1.447	0.07389	pCi/g	0.08764	N	238.5	2	1.315 IDENTIFIED 3.549	☐	
Thorium-232 nr	1.406	0.1906	pCi/g	0.2318	N	911.4	3	1.391 IDENTIFIED 12.13	☐	
Thorium-234 ✓ NVP	2.791	0.9168	pCi/g	1.757	2.00	63.19	2	1.857 IDENTIFIED 31.65	☒ ui	
Tin-126 ✓ int nr	0.2883	0.04925	pCi/g	0.1154	N	87.19	3	1.553 IDENTIFIED 16.53	☐	
Total Uranium	8.3826	2.73E-06	ug/g	2.6169	N	0			☐	
Uranium-238 HE	2.791	0.9168	pCi/g	1.757	N	63.19	2	1.857 IDENTIFIED 31.65	☐	

\*\*\* = 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	
247564004	12-FEB-10 12:00	03-MAR-10 20:45	19.4	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP	
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	1.487	0.1648	pCi/g	0.2222	N	911.3	3	1.584	IDENTIFIED	9.255	☐
Annihilation Rad.	0.1155	0.03336	pCi/g	0.04114	N	511.2	1	1.6	IDENTIFIED	28.48	☐
Bismuth-211 int	2.849	0.264	pCi/g	0.2953	Y	351.9	2	1.26	IDENTIFIED	7.491	☐ ui
Bismuth-212 HE	1.67	0.4618	pCi/g	1.119	N	0	5	0	FAIL_ABUND	0	☐
Bismuth-214 ✓	0.8173	0.08929	pCi/g	0.1067	0.200	609.5	2	1.207	IDENTIFIED	9.547	☐
Cadmium-109 int	2.261	0.4414	pCi/g	1.265	Y	87.23	3	1.008	IDENTIFIED	18.93	☐ ui
Cerium-143	2558	714.3	pCi/g	0	N	0	5	0	SHORT_HLIF	0	☐
Cesium-134 la	0.1082	0.02758	pCi/g	0.08605	0.100	0	5	0	FAIL_ABUND	0	☑ UI Data rejected due to low abundance.
Gross Gamma	8.603	1.299	pCi/g	2.858	N	0					☐
Lead-212 ✓	1.387	0.09847	pCi/g	0.08845	0.100	238.6	2	1.02	IDENTIFIED	3.885	☐
Lead-214 ✓	1.034	0.09998	pCi/g	0.1074	0.100	351.9	2	1.26	IDENTIFIED	7.491	☐
Neptunium-237 int nr	0.6552	0.1452	pCi/g	0.3364	N	87.23	3	1.008	IDENTIFIED	18.93	☐
Potassium-40 ✓	36.43	1.904	pCi/g	0.4568	1.00	1461	1	1.928	IDENTIFIED	2.83	☐

Promethium-149 HE	98.59	168.9	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>
Radium-224 int	2.577	0.4864	pCi/g	0.9482	Y	241.4	1	1.466	IDENTIFIED	18.05	<input type="checkbox"/> ui
Radium-226 ✓	0.8173	0.08929	pCi/g	0.1067	Y	609.5	2	1.207	IDENTIFIED	9.547	<input type="checkbox"/>
Radium-228 ✓	1.487	0.1648	pCi/g	0.2222	0.500	911.3	3	1.584	IDENTIFIED	9.255	<input type="checkbox"/>
Technetium-99m	5.68E+20		pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>
Thallium-208 ✓	0.4475	0.04403	pCi/g	0.05022	0.080	583.2	1	1.243	IDENTIFIED	8.502	<input type="checkbox"/>
Thorium-228 nr	1.387	0.09847	pCi/g	0.08845	N	238.6	2	1.02	IDENTIFIED	3.885	<input type="checkbox"/>
Thorium-232 nr	1.487	0.1648	pCi/g	0.2222	N	911.3	3	1.584	IDENTIFIED	9.255	<input type="checkbox"/>
Tin-126 int nr	0.2196	0.04287	pCi/g	0.1295	N	87.23	3	1.008	IDENTIFIED	18.93	<input type="checkbox"/>

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247564005	12-FEB-10 12:00	03-MAR-10 20:46	19.4	SAMPLE	LOAD	1	LANL	LANL010041GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb	Act	Rpt	Err(%)	Qual	Qual Comment
Actinium-228 nr	1.706	0.2549	pCi/g	0.2984	N	910.2	3	1.301	IDENTIFIED	13.75	<input type="checkbox"/>			
Annihilation Rad.	0.1384	0.0396	pCi/g	0.05662	N	510.4	1	1.91	IDENTIFIED	28.26	<input type="checkbox"/>			
Bismuth-211 int	3.314	0.2823	pCi/g	0.3608	Y	351.6	2	1.091	IDENTIFIED	7.129	<input type="checkbox"/> ui			
Bismuth-212 HE	2.585	0.5697	pCi/g	1.49	N	0	6	0	FAIL_ABUND	0	<input type="checkbox"/>			
Bismuth-214 ✓	1.01	0.1101	pCi/g	0.1442	0.200	608.7	2	1.315	IDENTIFIED	9.636	<input type="checkbox"/>			
Cadmium-109 int	3.232	0.3895	pCi/g	0.8873	Y	87.24	3	1.222	IDENTIFIED	11.02	<input type="checkbox"/> ui			
Cerium-143	5091	927.6	pCi/g	0	N	0	6	0	SHORT_HLIF	0	<input type="checkbox"/>			
Cesium-135 HE	0.461	0.1502	pCi/g	0.2466	N	269.7	1	1.502	IDENTIFIED	32.17	<input type="checkbox"/>			
Gross Gamma	8.227	1.4	pCi/g	3.882	N	0					<input type="checkbox"/>			
Iodine-133 HE	2834	1.08E+05	pCi/g	0	N	0	6	0	SHORT_HLIF	0	<input type="checkbox"/>			
Iodine-135	2.07E+19	0	pCi/g	0	N	0	6	0	SHORT_HLIF	0	<input type="checkbox"/>			
Lead-212 ✓	1.452	0.09484	pCi/g	0.09184	0.100	238.5	2	0.9913	IDENTIFIED	4.123	<input type="checkbox"/>			
Lead-214 ✓	1.203	0.1077	pCi/g	0.1313	0.100	351.6	2	1.091	IDENTIFIED	7.129	<input type="checkbox"/>			
Neptunium-237 int nr	0.9367	0.1496	pCi/g	0.2881	N	87.24	3	1.222	IDENTIFIED	11.02	<input type="checkbox"/>			
Potassium-40 ✓	31.6	1.799	pCi/g	0.672	1.00	1459	1	2.111	IDENTIFIED	3.565	<input type="checkbox"/>			
Promethium-149 HE	74.84	181.9	pCi/g	0	N	0	6	0	SHORT_HLIF	0	<input type="checkbox"/>			
Radium-224 int	3.382	0.7273	pCi/g	0.9851	Y	241.4	1	1.815	IDENTIFIED	21.02	<input type="checkbox"/> ui			
Radium-226 ✓	1.01	0.1101	pCi/g	0.1442	Y	608.7	2	1.315	IDENTIFIED	9.636	<input type="checkbox"/>			
Radium-228 ✓	1.706	0.2549	pCi/g	0.2984	0.500	910.2	3	1.301	IDENTIFIED	13.75	<input type="checkbox"/>			
Sodium-24 HE	8.86E+07	4.77E+07	pCi/g	0	N	0	6	0	SHORT_HLIF	0	<input type="checkbox"/>			
Thallium-208 ✓	0.4337	0.04658	pCi/g	0.0715	0.080	582.8	1	1.269	IDENTIFIED	9.647	<input type="checkbox"/>			
Thorium-228 nr	1.452	0.09484	pCi/g	0.09184	N	238.5	2	0.9913	IDENTIFIED	4.123	<input type="checkbox"/>			
Thorium-232 nr	1.706	0.2549	pCi/g	0.2984	N	910.2	3	1.301	IDENTIFIED	13.75	<input type="checkbox"/>			
Tin-126 int nr	0.3139	0.03783	pCi/g	0.08607	N	87.24	3	1.222	IDENTIFIED	11.02	<input type="checkbox"/>			
Total Uranium	2.8558	1.43E-06	ug/g	1.5653	N	0					<input type="checkbox"/>			

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

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
1202050251		03-MAR-10 20:49	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	4.382	8.627	pCi/g	0	N	0	2	0	SHORT_HLIF	0	<input type="checkbox"/>			
Sodium-24	381.2	166.8	pCi/g	0	N	0	2	0	SHORT_HLIF	0	<input type="checkbox"/>			

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

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
1202050252	18-FEB-10 12:00	03-MAR-10 20:50	13.4	DUP	LOAD	1		LANL010041GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 nr	1.766	0.1998	pCi/g	0.2572	N	911.5	3	1.66 IDENTIFIED	9.702	<input type="checkbox"/>
Annihilation Rad.	0.1312	0.03417	pCi/g	0.04789	N	510.9	1	2.099 IDENTIFIED	25.88	<input type="checkbox"/>
Bismuth-211 int	4.263	0.2556	pCi/g	0.3675	Y	351.8	2	1.249 IDENTIFIED	5.075	<input type="checkbox"/> ui
Bismuth-212 la nr	2.125	0.4237	pCi/g	1.192	N	0	5	0 FAIL_ABUND	0	<input type="checkbox"/>
Bismuth-214 ✓	1.372	0.1101	pCi/g	0.1197	0.200	609.3	2	1.379 IDENTIFIED	6.974	<input type="checkbox"/>
Cadmium-109 int	3.298	0.5154	pCi/g	1.4	Y	87.25	3	1.095 IDENTIFIED	14.98	<input type="checkbox"/> ui
Cerium-143	413.8	57.32	pCi/g	0	N	0	5	0 SHORT_HLIF	0	<input type="checkbox"/>
Gross Gamma	10.97	1.583	pCi/g	3.947	N	0				<input type="checkbox"/>
Iodine-135 HE	1.54E+13	4.26E+13	pCi/g	0	N	0	5	0 SHORT_HLIF	0	<input type="checkbox"/>
Lead-212 ✓	1.885	0.09197	pCi/g	0.1019	0.100	238.5	2	1.319 IDENTIFIED	3.247	<input type="checkbox"/>
Lead-214 ✓	1.547	0.1021	pCi/g	0.1273	0.100	351.8	2	1.249 IDENTIFIED	5.075	<input type="checkbox"/>
Neptunium-237 int nr	0.9644	0.1815	pCi/g	0.4156	N	87.25	3	1.095 IDENTIFIED	14.98	<input type="checkbox"/>
Niobium-95m la nr	0.6453	0.08335	pCi/g	0.2791	N	0	5	0 NOT_IDENTI	0	<input type="checkbox"/>
Potassium-40 ✓	34.37	1.582	pCi/g	0.4407	1.00	1461	1	2.163 IDENTIFIED	2.707	<input type="checkbox"/>
Radium-224 int	5.476	0.563	pCi/g	1.092	Y	241.5	1	1.781 IDENTIFIED	9.881	<input type="checkbox"/> ui
Radium-226 ✓	1.372	0.1101	pCi/g	0.1197	Y	609.3	2	1.379 IDENTIFIED	6.974	<input type="checkbox"/>
Radium-228 ✓	1.766	0.1998	pCi/g	0.2572	0.500	911.5	3	1.66 IDENTIFIED	9.702	<input type="checkbox"/>
Strontium-85 la	0.08978	0.02134	pCi/g	0.07298	Y	0	5	0 NOT_IDENTI	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Thallium-208 ✓	0.591	0.045	pCi/g	0.05982	0.080	583.1	1	1.543 IDENTIFIED	6.816	<input type="checkbox"/>
Thorium-228 nr	1.885	0.09197	pCi/g	0.1019	N	238.5	2	1.319 IDENTIFIED	3.247	<input type="checkbox"/>
Thorium-232 nr	1.766	0.1998	pCi/g	0.2572	N	911.5	3	1.66 IDENTIFIED	9.702	<input type="checkbox"/>
Tin-126 int nr	0.3232	0.05051	pCi/g	0.1378	N	87.25	3	1.095 IDENTIFIED	14.98	<input type="checkbox"/>
Total Uranium	6.5286	3.06E-06	ug/g	3.5625	N	0				<input type="checkbox"/>
*** = Number of isotopes identified with a keyline at this energy.										
Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
1202050253		03-MAR-10 21:20	0	LCS	LOAD	1		GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 HE	1.331	0.2908	pCi/g	0.7869	N	0	9	0 FAIL_ABUND	0	<input type="checkbox"/>
Americium-241	13.99	0.7882	pCi/g	0.6969	0.200	59.37	1	1.023 IDENTIFIED	3.176	<input type="checkbox"/>
Barium-137m	5.061	0.19	pCi/g	0.1276	N	660.8	2	1.534 IDENTIFIED	2.748	<input type="checkbox"/>
Bismuth-211	2.072	0.3054	pCi/g	0.7134	Y	351.3	2	1.35 IDENTIFIED	14.37	<input type="checkbox"/>
Bismuth-214	0.7091	0.1245	pCi/g	0.2127	0.200	608.6	2	1.811 IDENTIFIED	17.14	<input type="checkbox"/>
Cadmium-109	33.42	2.171	pCi/g	2.473	Y	87.82	3	1.108 IDENTIFIED	4.293	<input type="checkbox"/>
Cerium-143 HE	23.9	6.691	pCi/g	20.94	N	0	9	0 FAIL_ABUND	0	<input type="checkbox"/>
Cesium-137	5.347	0.2012	pCi/g	0.1348	0.100	660.8	2	1.534 IDENTIFIED	2.748	<input type="checkbox"/>
Cobalt-57	0.2012	0.03605	pCi/g	0.06977	N	121.6	1	1.061 IDENTIFIED	17.68	<input type="checkbox"/>
Cobalt-60	5.913	0.2753	pCi/g	0.09413	0.100	1331	1	2.145 IDENTIFIED	2.874	<input type="checkbox"/>
Gross Gamma	25.29	2.16	pCi/g	3.29	N	0				<input type="checkbox"/>
Iodine-133 HE	74.66	44.32	pCi/g	0	N	0	9	0 SHORT_HLIF	0	<input type="checkbox"/>
Iodine-135 HE	4.10E+08	5.58E+08	pCi/g	0	N	0	9	0 SHORT_HLIF	0	<input type="checkbox"/>
Lead-212	0.8868	0.113	pCi/g	0.1915	0.100	238.5	2	1.222 IDENTIFIED	12.22	<input type="checkbox"/>
Lead-214	0.752	0.1127	pCi/g	0.2488	0.100	351.3	2	1.35 IDENTIFIED	14.37	<input type="checkbox"/>

Neptunium-237	9.839	1.214	pCi/g	0.7703	N	87.82	3	1.108	IDENTIFIED	4.293	<input type="checkbox"/>
Radium-224	4.269	0.7535	pCi/g	2.568	Y	0	9	0	NOT_IDENTI	0	<input type="checkbox"/>
Radium-226	0.7091	0.1245	pCi/g	0.2127	Y	608.6	2	1.811	IDENTIFIED	17.14	<input type="checkbox"/>
Radium-228	1.331	0.2908	pCi/g	0.7869	0.500	0	9	0	FAIL_ABUND	0	<input type="checkbox"/>
Silver-110m	1.54	0.08515	pCi/g	0.3208	N	0	9	0	NOT_IDENTI	0	<input type="checkbox"/>
Technetium-99m HE	9.26E+08	1.02E+09	pCi/g	0	N	0	9	0	SHORT_HLIF	0	<input type="checkbox"/>
Thallium-208	0.4089	0.06274	pCi/g	0.1058	0.080	582.3	1	1.499	IDENTIFIED	15	<input type="checkbox"/>
Thorium-228	0.8868	0.113	pCi/g	0.1915	N	238.5	2	1.222	IDENTIFIED	12.22	<input type="checkbox"/>
Thorium-232 HE	1.331	0.2908	pCi/g	0.7869	N	0	9	0	FAIL_ABUND	0	<input type="checkbox"/>
Tin-126	3.297	0.2142	pCi/g	0.2455	N	87.82	3	1.108	IDENTIFIED	4.293	<input type="checkbox"/>

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

# Result Greater Than DL

Batch Id	Sample Id	Sample Type	Run Date	Paramname	Result	Uncertainty	Units	DL	RDL
956157	247564005	SAMPLE	03-MAR-10	Cerium-143	5081	927.6	pCi/g	0	N
				Cesium-134	0.05197	0.02794	pCi/g	0.05107	0.100
				Gross Gamma	8.227	1.4	pCi/g	1.886	N
				Iodine-133	2834	1.08E+05	pCi/g	0	N
				Iodine-135	2.07E+19	0	pCi/g	0	N
				Lead-212	1.452	0.09484	pCi/g	0.04595	0.100
				Lead-214	1.203	0.1077	pCi/g	0.06567	0.100
				Potassium-40	31.6	1.799	pCi/g	0.3362	1.00
				Promethium-149	74.84	181.9	pCi/g	0	N
				Radium-224	3.382	0.7273	pCi/g	0.4929	Y
				Radium-226	1.01	0.1101	pCi/g	0.07217	Y
				Radium-228	1.706	0.2549	pCi/g	0.1493	0.500
				Ruthenium-106	0.3586	0.1984	pCi/g	0.3501	0.800
				Sodium-24	8.86E+07	4.77E+07	pCi/g	0	N
				Thallium-208	0.4337	0.04658	pCi/g	0.03577	0.080
				Thorium-234	0.9332	0.4817	pCi/g	0.5255	2.00
				Uranium-235	0.172	0.101	pCi/g	0.1717	0.500
956157	1202050251	MB	03-MAR-10	Sodium-24	381.2	168.8	pCi/g	0	N
956157	1202050252	DUP	03-MAR-10	Bismuth-211	4.263	0.2556	pCi/g	0.1839	Y
				Bismuth-214	1.372	0.1101	pCi/g	0.05991	0.200
				Cadmium-109	3.298	0.5154	pCi/g	0.7003	Y
				Cerium-143	413.8	57.32	pCi/g	0	N
				Gross Gamma	10.97	1.583	pCi/g	1.927	N
				Iodine-135	1.54E+13	4.26E+13	pCi/g	0	N
				Lead-212	1.885	0.09197	pCi/g	0.051	0.100
				Lead-214	1.547	0.1021	pCi/g	0.06371	0.100
				Potassium-40	34.37	1.582	pCi/g	0.2205	1.00
				Radium-224	5.476	0.563	pCi/g	0.5483	Y
				Radium-226	1.372	0.1101	pCi/g	0.05991	Y
				Radium-228	1.766	0.1998	pCi/g	0.1287	0.500
				Strontium-85	0.08978	0.02134	pCi/g	0.03651	Y
				Thallium-208	0.591	0.045	pCi/g	0.02983	0.080
				Thorium-234	2.173	1.027	pCi/g	1.197	2.00
956157	1202050253	LCS	03-MAR-10	Americium-241	13.99	0.7882	pCi/g	0.3486	0.200
				Barium-137m	5.061	0.19	pCi/g	0.06383	N
				Bismuth-211	2.072	0.3054	pCi/g	0.3569	Y
				Bismuth-214	0.7091	0.1245	pCi/g	0.1064	0.200

no sh/ko

no sh/ko

VAX/VMS Nuclide Identification Report Generated 2-MAR-2010 22:54:50.06

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247544001.CNF;1
Sample date       : 18-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 20:54:01.
Sample ID        : G247544001 Sample quantity   : 1.34370E+02 GRAM
Detector name    : GAM25 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:02.26 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity        : 5.00000
Batch ID        : 956157 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	46.64*	218	508	0.96	92.85	89	8	3.03E-02	20.0	
2	0	63.20*	196	807	0.73	125.96	123	8	2.72E-02	26.8	
3	3	74.80*	951	445	0.89	149.16	143	18	1.32E-01	4.7	3.57E+00
4	3	77.08*	1482	423	0.88	153.72	143	18	2.06E-01	3.4	
5	0	84.16*	206	433	1.33	167.88	165	6	2.86E-02	17.9	
6	3	87.17	536	486	1.09	173.89	171	26	7.45E-02	8.1	1.48E+00
7	3	89.85	331	412	1.02	179.26	171	26	4.60E-02	11.3	
8	3	92.83*	425	473	1.11	185.21	171	26	5.91E-02	10.6	
9	0	129.01	119	324	1.06	257.56	254	7	1.65E-02	26.8	
10	0	185.93*	268	429	1.15	371.39	367	10	3.72E-02	16.3	
11	0	209.22	177	242	1.20	417.97	414	8	2.46E-02	17.0	
12	6	238.56*	1663	183	0.93	476.66	471	17	2.31E-01	2.8	1.94E+00
13	6	241.58	430	269	1.78	482.70	471	17	5.97E-02	11.8	
14	3	269.88	114	144	1.31	539.29	536	9	1.59E-02	18.8	2.29E+00
15	3	271.25	54	105	0.88	542.02	536	9	7.52E-03	36.2	
16	0	277.15	47	206	0.99	553.82	549	8	6.50E-03	55.4	
17	0	295.13*	488	249	1.10	589.79	585	10	6.77E-02	7.7	
18	0	300.00	98	195	0.82	599.53	595	10	1.36E-02	28.8	
19	0	338.33	308	248	1.00	676.19	671	11	4.27E-02	11.4	
20	0	351.80*	904	181	1.20	703.12	698	11	1.26E-01	4.4	
21	0	409.19	91	127	2.13	817.89	814	10	1.27E-02	25.3	
22	0	463.42	95	133	1.17	926.34	921	10	1.32E-02	25.2	
23	0	510.75*	150	186	1.66	1020.99	1013	17	2.08E-02	24.7	
24	0	582.96*	475	129	1.40	1165.40	1157	15	6.59E-02	7.0	
25	0	609.19*	556	116	1.21	1217.87	1212	11	7.73E-02	5.8	
26	0	726.26*	111	158	1.82	1452.00	1446	18	1.54E-02	28.3	
27	0	768.19	60	63	2.05	1535.87	1530	11	8.39E-03	28.5	
28	0	771.88	36	28	1.64	1543.25	1540	7	5.00E-03	29.5	
29	0	795.05*	81	84	1.79	1589.59	1584	15	1.12E-02	28.5	
30	0	860.59	80	88	0.72	1720.67	1715	15	1.11E-02	27.7	
31	0	911.01*	307	77	2.04	1821.50	1814	16	4.26E-02	8.7	
32	0	933.70	38	41	1.54	1866.89	1863	9	5.27E-03	34.4	
33	0	968.55*	166	51	1.88	1936.59	1932	10	2.31E-02	11.3	
34	0	1119.63*	124	72	1.80	2238.76	2231	14	1.72E-02	17.3	
35	0	1282.41	43	66	5.21	2564.32	2552	24	5.94E-03	52.6	
36	0	1460.35*	1406	28	2.20	2920.23	2909	20	1.95E-01	2.8	
37	0	1728.21	39	12	2.05	3455.99	3447	15	5.47E-03	24.5	
38	0	1764.28	107	3	2.86	3528.15	3523	14	1.49E-02	10.3	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
39	0	1847.23	20	5	1.18	3694.05	3688	11	2.77E-03	31.7	

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

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247544001.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 18-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 20:54:01
Sample ID         : G247544001 Sample quantity : 134.37 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA25 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:02.26 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	*	3.324E+01	3.395E+00	5.649E-01	4.811E-02	58.840
CD-109	+	88.03	*	4.385E+00	8.499E-01	7.329E-01	7.876E-02	5.983
SN-126	+	64.28		5.823E-01	3.260E-01	2.994E-01	4.771E-02	1.945
	+	86.94		1.789E+00	8.025E-01	2.976E-01	1.245E-01	6.012
	+	87.57	*	4.304E-01	8.342E-02	7.179E-02	7.697E-03	5.995
TL-208	+	277.37		4.178E-01	4.671E-01	5.344E-01	7.681E-02	0.782
	+	583.19	*	6.248E-01	1.121E-01	5.404E-02	6.087E-03	11.562
	+	860.56		1.014E+00	5.713E-01	5.207E-01	5.441E-02	1.948
PB-210	+	46.54	*	1.560E+00	6.441E-01	5.594E-01	5.729E-02	2.788
BI-211	+	72.87		1.553E+00	1.605E+00	2.599E+00	2.624E-01	0.597
	+	351.06	*	5.032E+00	6.919E-01	3.063E-01	3.228E-02	16.428
PB-212	+	74.82		2.667E+00	4.502E-01	2.912E-01	4.096E-02	9.159
	+	77.11		2.508E+00	3.081E-01	1.765E-01	1.808E-02	14.211
	+	238.63	*	1.995E+00	2.541E-01	7.988E-02	9.126E-03	24.981
	+	300.09		1.866E+00	1.098E+00	1.080E+00	1.355E-01	1.728
BI-214	+	609.32	*	1.423E+00	2.378E-01	1.033E-01	1.251E-02	13.773
	+	1120.29		1.659E+00	6.028E-01	5.787E-01	6.309E-02	2.867
	+	1764.49		2.084E+00	4.620E-01	4.415E-01	3.637E-02	4.721
PB-214	+	74.82		4.727E+00	7.522E-01	5.161E-01	6.652E-02	9.159
	+	77.11		4.421E+00	6.542E-01	3.111E-01	4.092E-02	14.211
	+	242.00		3.133E+00	8.295E-01	4.867E-01	5.848E-02	6.436
	+	295.22		1.642E+00	3.281E-01	2.094E-01	2.684E-02	7.840
	+	351.93	*	1.826E+00	2.706E-01	1.114E-01	1.324E-02	16.387
RA-224	+	240.99	*	5.539E+00	1.431E+00	8.573E-01	9.009E-02	6.461
RA-226	+	609.32	*	1.423E+00	2.378E-01	1.033E-01	1.251E-02	13.773
	+	1120.29		1.659E+00	6.028E-01	5.787E-01	6.309E-02	2.867
	+	1764.49		2.084E+00	4.620E-01	4.415E-01	3.637E-02	4.721
AC-228	+	338.32		1.897E+00	9.093E-01	3.437E-01	1.448E-01	5.519
	+	911.20	*	1.980E+00	4.216E-01	2.443E-01	2.987E-02	8.104
	+	968.97		1.849E+00	6.170E-01	5.608E-01	1.380E-01	3.296
RA-228	+	338.32		1.897E+00	9.093E-01	3.437E-01	1.448E-01	5.519
	+	911.20	*	1.980E+00	4.216E-01	2.443E-01	2.987E-02	8.104
	+	968.97		1.849E+00	6.170E-01	5.608E-01	1.380E-01	3.296
TH-228	+	74.82		2.667E+00	3.692E-01	2.912E-01	2.978E-02	9.159

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	77.11		2.508E+00	3.081E-01	1.765E-01	1.808E-02	14.211
	+	238.63	*	1.995E+00	2.541E-01	7.988E-02	9.126E-03	24.981
	+	300.09		1.866E+00	1.572E+00	1.080E+00	6.653E-01	1.728
TH-229	+	85.43		4.119E-01	1.539E-01	1.733E-01	1.840E-02	2.377
	+	88.47		6.635E-01	1.286E-01	1.111E-01	1.197E-02	5.971
		193.51	*	2.514E-03	4.530E-01	7.400E-01	7.057E-02	0.003
		210.85		4.915E-01	8.874E-01	1.325E+00	1.313E-01	0.371
TH-232	+	338.32		1.897E+00	4.767E-01	3.437E-01	3.583E-02	5.519
	+	911.20	*	1.980E+00	4.216E-01	2.443E-01	2.987E-02	8.104
	+	968.97		1.849E+00	6.170E-01	5.608E-01	1.380E-01	3.296
TH-234	+	63.29	*	1.511E+00	8.601E-01	7.758E-01	1.473E-01	1.947
	+	92.59		3.041E+00	9.523E-01	6.375E-01	1.473E-01	4.770
U-235	+	89.96		2.859E+00	9.746E-01	7.738E-01	1.971E-01	3.695
	+	93.35		2.297E+00	7.360E-01	4.833E-01	1.165E-01	4.753
		143.76	*	7.360E-02	1.747E-01	2.918E-01	5.361E-02	0.252
		163.33		2.095E-01	3.665E-01	6.105E-01	1.113E-01	0.343
	+	185.72		2.037E-01	6.909E-02	5.609E-02	5.252E-03	3.632
		205.31		5.177E-01	4.816E-01	7.294E-01	1.366E-01	0.710
NP-237	+	86.48	*	1.284E+00	3.667E-01	2.064E-01	4.856E-02	6.222
		95.86		-5.389E-01	6.567E-01	9.549E-01	2.389E-01	-0.564
U-238	+	63.29	*	1.511E+00	8.601E-01	7.758E-01	1.473E-01	1.947
	+	92.59		3.041E+00	7.243E-01	6.375E-01	7.005E-02	4.770
ANH-511	+	511.00	*	1.490E-01	7.530E-02	4.497E-02	4.629E-03	3.313

## ---- 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	*	1.094E-01	2.989E-01	4.996E-01	5.288E-02	0.219
NA-22		1274.54	*	2.279E-02	5.357E-02	8.007E-02	6.566E-03	0.285
NA-24		1368.63	*	2.263E-02	5.357E-02	Half-Life too short		
SC-46		889.28	*	8.804E-03	4.574E-02	7.557E-02	7.236E-03	0.117
	+	1120.55		2.744E-01	9.796E-02	1.390E-01	1.195E-02	1.974
V-48		944.13		-1.412E-02	8.376E-01	1.353E+00	1.269E-01	-0.010
		983.53	*	3.071E-02	7.142E-02	1.194E-01	1.107E-02	0.257
		1312.11		-3.966E-02	8.018E-02	1.246E-01	1.015E-02	-0.318
CR-51		320.08	*	-2.411E-01	3.076E-01	4.941E-01	5.484E-02	-0.488
MN-54		834.85	*	1.979E-02	4.192E-02	7.098E-02	7.203E-03	0.279
CO-56		846.77	*	-8.698E-03	4.067E-02	6.521E-02	6.543E-03	-0.133
		1037.84		-1.610E-02	3.518E-01	5.879E-01	5.574E-02	-0.027
		1238.28		1.209E-01	1.147E-01	2.005E-01	1.700E-02	0.603
		1771.35		-1.078E-01	2.260E-01	2.645E-01	2.177E-02	-0.408
CO-57		122.06	*	-8.591E-03	1.898E-02	3.140E-02	4.050E-03	-0.274
		136.47		-1.005E-01	1.597E-01	2.598E-01	3.184E-02	-0.387
CO-58		810.76	*	-5.056E-02	4.123E-02	5.976E-02	6.200E-03	-0.846
FE-59		1099.45	*	-5.683E-03	1.030E-01	1.711E-01	1.611E-02	-0.033
		1291.59		1.647E-01	1.479E-01	2.393E-01	2.248E-02	0.688
CO-60		1173.23		4.385E-03	5.298E-02	8.837E-02	7.274E-03	0.050
		1332.49	*	1.035E-02	4.139E-02	6.965E-02	5.657E-03	0.149

---- 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	*		9.207E-02	1.059E-01	1.673E-01	1.445E-02	0.550
SE-75	121.12			-2.842E-02	9.640E-02	1.607E-01	2.345E-02	-0.177
	136.00			-1.054E-02	3.028E-02	4.996E-02	5.928E-03	-0.211
	264.66	*		-3.911E-03	4.025E-02	6.373E-02	6.985E-03	-0.061
	279.54			-2.359E-03	1.073E-01	1.508E-01	1.721E-02	-0.016
	400.66			2.936E-02	2.419E-01	4.031E-01	4.653E-02	0.073
SR-85	514.00	*		1.969E-02	4.169E-02	6.155E-02	6.350E-03	0.320
Y-88	898.04			-2.288E-03	4.570E-02	7.395E-02	7.034E-03	-0.031
	1836.06	*		-1.970E-02	4.017E-02	6.045E-02	4.940E-03	-0.326
Y-91	1204.77	*		-1.147E+01	2.516E+01	4.015E+01	3.304E+00	-0.286
NB-94	702.65	*		3.706E-02	3.761E-02	6.622E-02	7.272E-03	0.560
	871.09			-1.914E-02	3.672E-02	5.690E-02	5.566E-03	-0.336
NB-95	765.81	*		3.246E-02	5.004E-02	7.658E-02	8.179E-03	0.424
NB-95M	235.69	*		-7.238E-02	1.195E-01	1.637E-01	1.879E-02	-0.442
ZR-95	724.19			1.575E-01	1.077E-01	1.754E-01	2.014E-02	0.898
	756.73	*		6.068E-02	7.412E-02	1.296E-01	1.487E-02	0.468
MO-99	140.51			-4.483E+00	9.137E+00	1.474E+01	3.672E+00	-0.304
	181.07			-8.465E-01	8.267E+00	1.206E+01	2.301E+00	-0.070
	366.42			-2.440E+00	4.696E+01	7.804E+01	7.649E+00	-0.031
	739.50	*		8.814E-01	6.928E+00	1.157E+01	1.975E+00	0.076
	777.92			1.878E+01	2.011E+01	3.380E+01	3.584E+00	0.556
TC-99M	140.51	*		-7.809E+06	2.011E+01	Half-Life	too short	
RU-103	497.08	*		4.984E-03	3.778E-02	6.192E-02	9.275E-03	0.080
	610.33		+	1.399E+01	2.949E+00	2.975E+00	5.253E-01	4.702
RH-106	621.93	*		1.069E-01	3.277E-01	5.625E-01	8.368E-02	0.190
	1050.41			8.853E-01	2.586E+00	4.460E+00	4.010E-01	0.198
RU-106	621.93	*		1.069E-01	3.275E-01	5.625E-01	6.159E-02	0.190
	1050.41			8.853E-01	2.586E+00	4.460E+00	4.010E-01	0.198
AG-108M	433.94	*		-5.771E-03	2.867E-02	4.647E-02	4.566E-03	-0.124
	614.28			-2.134E-02	3.906E-02	5.393E-02	6.010E-03	-0.396
	722.91			1.207E-02	4.231E-02	6.284E-02	6.991E-03	0.192
AG-110M	657.76	*		-1.032E-01	4.131E-02	5.412E-02	6.099E-03	-1.908
	677.62			-5.784E-03	3.316E-01	5.527E-01	6.214E-02	-0.010
	706.68			-1.811E-01	2.428E-01	3.817E-01	4.261E-02	-0.474
	763.94			7.354E-02	1.852E-01	2.767E-01	3.012E-02	0.266
	884.68			-8.712E-03	5.758E-02	9.253E-02	9.140E-03	-0.094
	937.49			1.094E-01	1.180E-01	1.864E-01	1.805E-02	0.587
	1384.29			-7.557E-02	1.462E-01	2.201E-01	1.856E-02	-0.343
	1505.03			-2.398E-01	3.132E-01	4.500E-01	3.730E-02	-0.533
SN-113	391.69	*		-3.604E-02	4.151E-02	6.484E-02	6.056E-03	-0.556
CD-115	260.90			-2.542E+01	5.438E+01	8.423E+01	9.151E+00	-0.302
	492.35			-9.764E+00	1.632E+01	2.528E+01	2.563E+00	-0.386
	527.90	*		-4.198E+00	5.447E+00	8.277E+00	8.626E-01	-0.507
SN-117M	156.02			-1.394E+00	1.664E+00	2.657E+00	2.650E-01	-0.525
	158.56	*		1.484E-03	3.835E-02	6.366E-02	6.181E-03	0.023
TE-123M	159.00	*		5.701E-04	2.256E-02	3.742E-02	3.634E-03	0.015
SB-124	602.73			-3.258E-03	4.178E-02	6.380E-02	6.935E-03	-0.051
	645.85			1.190E-01	4.592E-01	7.713E-01	8.813E-02	0.154
	722.78			1.062E-01	4.109E-01	6.087E-01	6.734E-02	0.174

----- 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	*		-4.839E-02	6.415E-02	8.798E-02	7.624E-03	-0.550
	427.87	*		8.949E-03	8.664E-02	1.435E-01	1.385E-02	0.062
	463.37		+	8.311E-01	4.281E-01	5.747E-01	6.003E-02	1.446
	600.60			-1.137E-02	1.788E-01	3.004E-01	3.416E-02	-0.038
TE-125M	635.95			1.452E-01	2.613E-01	4.558E-01	5.268E-02	0.319
	109.28	*		1.735E-01	6.531E+00	1.111E+01	1.488E+00	0.016
	388.63			6.667E-02	1.366E-01	2.329E-01	2.139E-02	0.286
	666.33	*		-3.021E-01	2.244E-01	3.378E-01	3.739E-02	-0.894
SB-126	753.82			-1.692E-01	1.689E+00	2.770E+00	2.979E-01	-0.061
	414.70			-5.226E-02	7.689E-02	1.051E-01	9.833E-03	-0.497
	666.50			-3.132E-02	7.083E-02	1.147E-01	1.270E-02	-0.273
	695.00			-1.000E-02	7.282E-02	1.201E-01	1.321E-02	-0.083
SB-127	697.00			-1.558E-01	2.572E-01	4.095E-01	4.504E-02	-0.381
	720.70	*		1.842E-01	1.282E-01	2.137E-01	2.332E-02	0.862
	856.80			1.774E-01	5.033E-01	7.401E-01	7.351E-02	0.240
	252.40			-1.246E+00	2.450E+00	3.714E+00	1.553E+00	-0.335
I-131	473.00			3.916E-02	9.485E-01	1.551E+00	2.031E-01	0.025
	685.70	*		-3.342E-01	8.239E-01	1.329E+00	1.682E-01	-0.251
	783.70			2.489E+00	2.454E+00	4.296E+00	5.656E-01	0.579
	80.19			2.332E-01	2.159E+00	3.123E+00	3.250E-01	0.075
TE-132	284.31			-5.578E-02	1.079E+00	1.702E+00	1.950E-01	-0.033
	364.49	*		3.156E-02	8.853E-02	1.505E-01	1.542E-02	0.210
	636.99			1.094E+00	1.184E+00	2.113E+00	2.405E-01	0.518
	49.72			6.110E-02	1.598E+00	2.382E+00	2.633E-01	0.026
BA-133	111.76			-4.085E+00	1.311E+01	2.166E+01	2.901E+00	-0.189
	116.30			7.929E+00	1.170E+01	2.022E+01	2.766E+00	0.392
	228.16	*		-9.642E-02	3.786E-01	6.023E-01	9.820E-02	-0.160
	81.00			2.028E-02	6.432E-02	8.235E-02	1.365E-02	0.246
I-133	276.40		+	3.860E-01	4.322E-01	5.807E-01	9.153E-02	0.665
	302.85			6.922E-02	1.281E-01	1.986E-01	2.922E-02	0.349
	356.01	*		-3.772E-02	4.439E-02	6.026E-02	8.405E-03	-0.626
	383.85			3.016E-02	2.778E-01	4.642E-01	5.999E-02	0.065
CS-134	529.87	*		1.100E-04	2.778E-01	Half-Life	too short	
	875.33			-4.986E-03	2.778E-01	Half-Life	too short	
	1298.22			-3.154E-02	2.778E-01	Half-Life	too short	
	563.25			7.726E-02	3.846E-01	6.263E-01	6.718E-02	0.123
I-135	569.33			-1.939E-02	2.157E-01	3.315E-01	3.577E-02	-0.058
	604.72			-9.890E-04	3.826E-02	5.608E-02	6.110E-03	-0.018
	795.86	*	+	1.563E-01	9.059E-02	1.046E-01	1.101E-02	1.495
	801.95			-3.803E-01	5.413E-01	7.092E-01	7.424E-02	-0.536
CS-135	1365.19			5.425E-02	1.286E+00	2.111E+00	1.812E-01	0.026
	268.22	*		2.548E-01	1.648E-01	2.546E-01	3.073E-02	1.001
	546.56			-1.094E+07	1.648E-01	Half-Life	too short	
	836.80			9.998E+06	1.648E-01	Half-Life	too short	
I-135	1038.76			2.039E+07	1.648E-01	Half-Life	too short	
	1131.51			1.807E+06	1.648E-01	Half-Life	too short	
	1260.41	*		-1.510E+06	1.648E-01	Half-Life	too short	
	1457.56			1.119E+09	1.648E-01	Half-Life	too short	
	1678.03			-3.977E+06	1.648E-01	Half-Life	too short	

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Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CS-136	1791.20			8.607E+05	1.648E-01	Half-Life	too short	
	153.25			6.153E-01	6.235E-01	1.069E+00	1.247E-01	0.576
	176.60			-1.686E-01	3.634E-01	5.844E-01	5.842E-02	-0.289
	273.65			-4.696E-02	5.776E-01	6.316E-01	7.357E-02	-0.074
	340.55			3.380E-01	1.305E-01	2.196E-01	2.339E-02	1.539
	818.51			-2.312E-02	6.818E-02	1.084E-01	1.116E-02	-0.213
	1048.07	*		-2.267E-02	9.540E-02	1.564E-01	1.462E-02	-0.145
BA-137M	1235.36			9.792E-01	6.623E-01	1.174E+00	1.347E-01	0.834
	661.66	*		3.928E-03	4.467E-02	7.809E-02	8.650E-03	0.050
	661.66	*		4.150E-03	4.719E-02	8.250E-02	9.149E-03	0.050
CE-139	165.86	*		-2.347E-02	2.468E-02	3.894E-02	3.472E-03	-0.603
BA-140	162.66			2.356E-01	5.912E-01	9.826E-01	9.641E-02	0.240
	304.85			4.210E-01	1.107E+00	1.690E+00	5.075E-01	0.249
	423.72			2.514E-01	1.565E+00	2.602E+00	8.618E-01	0.097
LA-140	537.26	*		-4.960E-02	2.286E-01	3.610E-01	1.243E-01	-0.137
	328.76			1.246E-01	2.491E-01	4.281E-01	4.709E-02	0.291
	487.02			5.449E-02	1.174E-01	1.971E-01	2.080E-02	0.276
	815.77			1.152E-01	2.890E-01	4.901E-01	5.477E-02	0.235
CE-141	1596.21	*		-6.529E-02	7.812E-02	1.145E-01	9.519E-03	-0.570
CE-143	145.44	*		-1.387E-02	4.942E-02	8.148E-02	9.062E-03	-0.170
	57.36			2.045E-05	4.942E-02	Half-Life	too short	
	293.27	*		1.518E-04	4.942E-02	Half-Life	too short	
CE-144	664.57			-2.017E-04	4.942E-02	Half-Life	too short	
	721.93			2.721E-04	4.942E-02	Half-Life	too short	
	80.12			4.282E-02	1.465E+00	2.110E+00	2.189E-01	0.020
PM-144	133.52	*		1.946E-02	1.553E-01	2.617E-01	4.562E-02	0.074
	476.78			-9.617E-03	6.224E-02	1.003E-01	1.068E-02	-0.096
PR-144	618.01			2.564E-02	3.225E-02	5.698E-02	6.339E-03	0.450
	696.49	*		-8.389E-03	3.778E-02	6.191E-02	6.812E-03	-0.135
PM-146	696.51	*		-6.391E-01	2.822E+00	4.624E+00	5.087E-01	-0.138
	1489.16			-8.257E-01	1.269E+01	2.033E+01	1.684E+00	-0.041
ND-147	453.88	*		4.657E-02	4.297E-02	7.465E-02	8.626E-03	0.624
	633.25			-8.171E-01	1.394E+00	2.172E+00	8.429E-01	-0.376
	735.93			-5.175E-02	1.842E-01	2.690E-01	7.744E-02	-0.192
	747.24			2.198E-02	1.091E-01	1.831E-01	2.922E-02	0.120
	91.11	+		7.785E-01	1.975E-01	2.718E-01	3.121E-02	2.864
PM-149	319.41			-1.883E+00	2.529E+00	4.077E+00	4.380E-01	-0.462
	531.02	*		1.511E-01	5.199E-01	8.552E-01	1.374E-01	0.177
EU-152	285.90	*		1.879E+01	3.586E+01	5.831E+01	9.940E+00	0.322
	121.78			-1.244E-02	5.425E-02	9.067E-02	1.248E-02	-0.137
GD-153	244.70			-1.086E-01	3.141E-01	4.362E-01	4.613E-02	-0.249
	344.28	*		-8.341E-02	9.450E-02	1.370E-01	1.471E-02	-0.609
	778.90			1.622E-01	2.789E-01	4.795E-01	5.082E-02	0.338
	964.08			8.235E-01	3.503E-01	6.025E-01	5.620E-02	1.367
	1085.87			2.245E-02	3.963E-01	6.651E-01	5.857E-02	0.034
	1112.07			-1.793E-01	3.895E-01	5.265E-01	4.554E-02	-0.341
	1408.01			2.757E-01	1.990E-01	3.727E-01	3.062E-02	0.740
	69.67			-3.720E-01	8.735E-01	1.245E+00	1.245E-01	-0.299
	97.43	*		-3.077E-02	6.082E-02	9.150E-02	1.030E-02	-0.336

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Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-154		103.18		-3.877E-02	7.551E-02	1.262E-01	1.465E-02	-0.307
		123.07		-7.725E-03	3.954E-02	6.615E-02	9.789E-03	-0.117
		723.31		5.850E-02	2.017E-01	2.992E-01	3.473E-02	0.196
		873.19		1.447E-01	2.924E-01	4.972E-01	6.336E-02	0.291
		996.26		-3.430E-01	4.225E-01	6.212E-01	1.104E-01	-0.552
		1004.73		-1.142E-01	2.387E-01	3.655E-01	4.409E-02	-0.312
EU-155		1274.44	*	6.261E-02	1.519E-01	2.266E-01	2.505E-02	0.276
	+	86.55		5.213E-01	1.012E-01	1.285E-01	1.381E-02	4.056
		105.31	*	6.004E-02	7.504E-02	1.307E-01	1.545E-02	0.459
TB-160	+	86.79		1.349E+00	2.614E-01	3.402E-01	3.634E-02	3.964
		197.04		3.092E-01	4.671E-01	7.831E-01	7.529E-02	0.395
		215.65		-3.467E-01	6.612E-01	1.042E+00	1.043E-01	-0.333
	+	298.57		2.560E-01	1.498E-01	1.781E-01	1.960E-02	1.437
		879.36	*	2.228E-02	1.548E-01	2.552E-01	2.473E-02	0.087
		962.29		8.921E-01	6.481E-01	1.066E+00	9.949E-02	0.837
		966.15		1.136E+00	3.210E-01	5.535E-01	5.160E-02	2.052
		1177.93		3.320E-01	4.329E-01	7.551E-01	6.216E-02	0.440
		1271.85		3.522E-01	8.422E-01	1.303E+00	1.067E-01	0.270
		80.57		-1.568E-02	1.877E-01	2.347E-01	2.439E-02	-0.067
HO-166M		184.41		6.929E-02	3.643E-02	5.910E-02	5.516E-03	1.173
		280.46		2.506E-02	8.203E-02	1.183E-01	1.320E-02	0.212
		410.95		2.872E-01	2.839E-01	4.424E-01	4.122E-02	0.649
		711.68	*	3.056E-02	6.196E-02	1.066E-01	1.167E-02	0.287
		752.31		-4.084E-02	2.910E-01	4.756E-01	5.118E-02	-0.086
		810.29		-9.045E-02	6.425E-02	9.112E-02	9.441E-03	-0.993
		67.75		2.330E-02	4.895E-02	7.852E-02	7.812E-03	0.297
TA-182		100.11		3.521E-02	1.276E-01	1.990E-01	2.273E-02	0.177
		152.43		2.234E-02	2.866E-01	4.778E-01	4.937E-02	0.047
		222.11		7.018E-02	3.104E-01	5.068E-01	5.140E-02	0.138
		1121.30		5.286E-01	2.288E-01	3.837E-01	3.297E-02	1.378
		1189.05		3.439E-01	3.830E-01	6.717E-01	5.529E-02	0.512
		1221.41	*	-1.402E-02	2.320E-01	3.814E-01	3.137E-02	-0.037
		1231.02		-2.284E-03	6.219E-01	1.026E+00	8.431E-02	-0.002
	+	295.96		1.183E+00	2.239E-01	2.901E-01	3.214E-02	4.079
IR-192		308.46		3.873E-04	8.110E-02	1.371E-01	1.498E-02	0.003
		316.51	*	2.511E-02	3.025E-02	5.304E-02	5.728E-03	0.473
		468.07		2.999E-02	7.016E-02	1.044E-01	1.093E-02	0.287
HG-203		70.83		1.336E-01	6.443E-01	9.438E-01	1.591E-01	0.142
		72.87		3.711E-01	3.866E-01	6.212E-01	1.019E-01	0.597
BI-207		279.20	*	2.766E-03	3.732E-02	5.285E-02	5.989E-03	0.052
		72.81		6.667E-02	9.144E-02	1.473E-01	1.486E-02	0.453
	+	74.97		7.685E-01	1.060E-01	1.410E-01	1.433E-02	5.451
		569.70		1.121E-03	3.385E-02	5.257E-02	5.623E-03	0.021
PB-211		1063.66	*	1.705E-02	5.858E-02	1.003E-01	8.949E-03	0.170
		1770.23		-1.597E-01	4.660E-01	5.811E-01	4.785E-02	-0.275
		404.85	*	-2.879E-01	7.938E-01	1.088E+00	5.278E-01	-0.265
		427.09		-1.042E-01	1.461E+00	2.391E+00	1.110E+00	-0.044
BI-212		832.01		-2.534E-01	1.133E+00	1.810E+00	9.435E-01	-0.140
	+	727.33	*	2.255E+00	1.315E+00	1.367E+00	1.930E-01	1.650

----- 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		4.015E+00	3.613E+00	6.375E+00	6.727E-01	0.630
		1620.50		2.156E+00	2.458E+00	4.578E+00	3.805E-01	0.471
		271.23		2.903E-01	2.134E-01	4.109E-01	5.076E-02	0.707
		401.81	*	1.065E-01	3.847E-01	6.466E-01	9.843E-02	0.165
RA-223	+	81.07		4.491E-02	1.458E-01	1.867E-01	1.944E-02	0.241
		83.79		2.451E-01	9.161E-02	1.335E-01	1.406E-02	1.837
		94.87		1.778E-01	3.166E-01	5.001E-01	5.559E-02	0.355
		144.24		4.369E-01	5.805E-01	9.802E-01	1.167E-01	0.446
AC-227	+	154.21		3.108E-01	3.278E-01	5.616E-01	6.101E-02	0.553
		269.46		4.741E-01	1.857E-01	3.260E-01	3.632E-02	1.454
		323.87	*	-3.882E-01	6.013E-01	9.713E-01	1.791E-01	-0.400
		338.28		7.528E+00	1.996E+00	2.466E+00	3.310E-01	3.052
	+	79.69		-8.737E-01	7.633E-01	1.013E+00	1.840E-01	-0.862
		235.96		-1.998E-02	1.506E-01	2.138E-01	2.539E-02	-0.093
		256.23	*	1.248E-01	2.402E-01	3.932E-01	5.380E-02	0.317
		299.98		2.053E+00	1.217E+00	1.479E+00	2.133E-01	1.388
	+	304.50		9.761E-01	1.516E+00	2.360E+00	4.212E-01	0.414
		334.37		9.683E-02	1.788E+00	2.658E+00	4.438E-01	0.036
TH-227	+	79.80		-3.356E-01	9.567E-01	1.349E+00	3.038E-01	-0.249
		235.96		-1.998E-02	1.506E-01	2.138E-01	2.431E-02	-0.093
		256.23	*	1.248E-01	2.403E-01	3.932E-01	5.925E-02	0.317
		299.98		2.053E+00	1.217E+00	1.479E+00	2.133E-01	1.388
PA-231	+	304.50		9.761E-01	1.516E+00	2.360E+00	4.212E-01	0.414
		334.37		9.683E-02	1.788E+00	2.658E+00	4.438E-01	0.036
		283.69	*	-1.041E-01	1.325E+00	2.087E+00	3.380E-01	-0.050
		301.36		1.319E+00	7.802E-01	8.823E-01	1.228E-01	1.495
TH-231	+	81.07		4.491E-02	1.458E-01	1.867E-01	1.944E-02	0.241
		83.79		2.451E-01	9.161E-02	1.335E-01	1.406E-02	1.837
		94.87		1.778E-01	3.166E-01	5.001E-01	5.559E-02	0.355
		144.24		4.369E-01	5.805E-01	9.802E-01	1.167E-01	0.446
PA-233	+	154.21		3.108E-01	3.278E-01	5.616E-01	6.101E-02	0.553
		269.46		4.741E-01	1.857E-01	3.260E-01	3.632E-02	1.454
		323.87	*	-3.882E-01	6.013E-01	9.713E-01	1.791E-01	-0.400
		338.28		7.528E+00	1.996E+00	2.466E+00	3.310E-01	3.052
	+	300.13		9.288E-01	5.552E-01	6.714E-01	1.096E-01	1.383
		311.90	*	-2.493E-02	5.624E-02	9.256E-02	1.022E-02	-0.269
		340.48		1.825E+00	7.722E-01	1.107E+00	2.741E-01	1.648
		94.67		1.442E-01	1.188E-01	1.901E-01	2.707E-02	0.758
	+	98.44		6.728E-02	7.562E-02	1.057E-01	5.949E-02	0.636
		111.00		-5.040E-02	1.280E-01	2.137E-01	3.159E-02	-0.236
PA-234	+	131.20		1.418E-02	8.783E-02	1.336E-01	1.631E-02	0.106
		569.50		-9.915E-03	2.991E-01	4.621E-01	4.942E-02	-0.021
		733.00		-3.634E-01	5.094E-01	6.679E-01	1.547E-01	-0.544
		880.51		7.362E-02	3.205E-01	5.319E-01	5.148E-02	0.138
	+	883.24		-1.959E-02	3.391E-01	5.490E-01	3.698E-01	-0.036
		926.50		2.525E-01	2.185E-01	3.646E-01	9.319E-02	0.693
		946.00	*	8.033E-02	3.122E-01	5.168E-01	9.884E-02	0.155
		949.00		-2.129E-02	4.813E-01	7.748E-01	7.260E-02	-0.027
	PA-234M	766.42		7.041E+00	1.458E+01	2.132E+01	1.090E+01	0.330

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	1001.03	*		2.638E+00	5.384E+00	9.041E+00	9.470E-01	0.292
	99.53			9.688E-02	1.188E-01	1.892E-01	2.155E-02	0.512
	103.37			-1.739E-02	6.923E-02	1.169E-01	1.359E-02	-0.149
	106.12			6.372E-02	6.006E-02	1.052E-01	1.241E-02	0.606
	117.23	*		-1.069E-01	2.952E-01	4.918E-01	6.169E-02	-0.217
	228.18			-5.159E-02	2.032E-01	3.235E-01	3.319E-02	-0.160
AM-241	+	277.60		1.910E-01	2.128E-01	2.838E-01	3.160E-02	0.673
		59.54	*	-7.680E-03	5.202E-02	7.596E-02	7.892E-03	-0.101
CM-247	+	278.00		8.110E-01	9.037E-01	1.210E+00	1.349E-01	0.670
		287.50		1.463E-01	1.139E+00	1.815E+00	2.015E-01	0.081
		402.40	*	1.147E-02	3.541E-02	5.970E-02	5.502E-03	0.192
CF-249		252.80		-4.268E-01	8.779E-01	1.363E+00	1.461E-01	-0.313
		333.37		1.781E-01	1.828E-01	2.886E-01	3.035E-02	0.617
		388.16	*	2.706E-02	3.784E-02	6.530E-02	6.005E-03	0.414
CF-251		177.52	*	-5.815E-02	1.092E-01	1.750E-01	1.606E-02	-0.332
		227.38		3.656E-02	3.334E-01	5.403E-01	5.537E-02	0.068
		285.41		9.603E-01	1.990E+00	3.238E+00	3.600E-01	0.297

## 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]G247544001
* Acquisition date   : 2-MAR-2010 20:54:01 Detector SN#      :
* Detector ID        : GAM25                               Sensitivity      : 5.000
* Geometry           : CAN                               Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00                     Abundance limit : 75.000
* Elapsed real time  : 0 02:00:02.26                     Half life ratio  : 8.000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 18-FEB-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G247544001 Analyst initials: MXR1
* Batch Number       : 956157 Sample Quantity : 1.3437E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*                               QC DATA                               *
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 7-OCT-2009 09:38:43 MS Isotope      :
* MSD DPM             : 0.000 MSD Isotope                  :
* LCS DPM             : 0.000 LCS Isotope                  :
* LCSD DPM            : 0.000 LCSD Isotope                 :
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.324E+01	3.328E+00	5.661E-01	0.000E+00
CD-109	4.385E+00	8.329E-01	7.720E-01	0.000E+00
SN-126	4.304E-01	8.175E-02	7.563E-02	0.000E+00
TL-208	6.248E-01	1.099E-01	5.507E-02	0.000E+00
PB-210	1.560E+00	6.312E-01	5.957E-01	0.000E+00
BI-211	5.032E+00	6.781E-01	3.150E-01	0.000E+00
PB-212	1.995E+00	2.490E-01	8.271E-02	0.000E+00
BI-214	1.423E+00	2.330E-01	1.052E-01	0.000E+00
PB-214	1.826E+00	2.651E-01	1.146E-01	0.000E+00
RA-224	5.539E+00	1.403E+00	8.875E-01	0.000E+00
RA-226	1.423E+00	2.330E-01	1.052E-01	0.000E+00
AC-228	1.980E+00	4.132E-01	2.470E-01	0.000E+00
RA-228	1.980E+00	4.132E-01	2.470E-01	0.000E+00
TH-228	1.995E+00	2.490E-01	8.271E-02	0.000E+00
TH-229	2.514E-03	4.440E-01	7.691E-01	0.000E+00
TH-232	1.980E+00	4.132E-01	2.470E-01	0.000E+00
TH-234	1.511E+00	8.429E-01	8.218E-01	0.000E+00
U-235	7.360E-02	1.712E-01	3.049E-01	0.000E+00
NP-237	1.284E+00	3.594E-01	2.175E-01	0.000E+00
U-238	1.511E+00	8.429E-01	8.218E-01	0.000E+00
ANH-511	1.490E-01	7.380E-02	4.594E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	1.094E-01	2.930E-01	5.110E-01	0.000E+00 NOT IDENT.
NA-22	2.279E-02	5.250E-02	8.044E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	3.681E+04	0.000E+00	0.000E+00 SHORT HLIF
SC-46	8.804E-03	4.482E-02	7.642E-02	0.000E+00 FAIL ABUN
V-48	3.071E-02	6.999E-02	1.206E-01	0.000E+00 NOT IDENT.
CR-51	-2.411E-01	3.015E-01	5.090E-01	0.000E+00 NOT IDENT.

MN-54	1.979E-02	4.108E-02	7.187E-02	0.000E+00	NOT IDENT.
CO-56	-8.698E-03	3.986E-02	6.600E-02	0.000E+00	NOT IDENT.
CO-57	-8.591E-03	1.860E-02	3.290E-02	0.000E+00	NOT IDENT.
CO-58	-5.056E-02	4.040E-02	6.053E-02	0.000E+00	NOT IDENT.
FE-59	-5.683E-03	1.010E-01	1.724E-01	0.000E+00	NOT IDENT.
CO-60	1.035E-02	4.056E-02	6.991E-02	0.000E+00	NOT IDENT.
ZN-65	9.207E-02	1.038E-01	1.684E-01	0.000E+00	NOT IDENT.
SE-75	-3.911E-03	3.945E-02	6.587E-02	0.000E+00	NOT IDENT.
SR-85	1.969E-02	4.086E-02	6.287E-02	0.000E+00	NOT IDENT.
Y-88	-1.970E-02	3.936E-02	6.031E-02	0.000E+00	NOT IDENT.
Y-91	-1.147E+01	2.466E+01	4.037E+01	0.000E+00	NOT IDENT.
NB-94	3.706E-02	3.685E-02	6.726E-02	0.000E+00	NOT IDENT.
NB-95	3.246E-02	4.904E-02	7.765E-02	0.000E+00	NOT IDENT.
NB-95M	-7.238E-02	1.171E-01	1.695E-01	0.000E+00	NOT IDENT.
ZR-95	6.068E-02	7.263E-02	1.314E-01	0.000E+00	NOT IDENT.
MO-99	8.814E-01	6.790E+00	1.175E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	1.560E+13	0.000E+00	0.000E+00	SHORT HLIF
RU-103	4.984E-03	3.702E-02	6.328E-02	0.000E+00	FAIL ABUN
RH-106	1.069E-01	3.211E-01	5.726E-01	0.000E+00	NOT IDENT.
RU-106	1.069E-01	3.209E-01	5.726E-01	0.000E+00	NOT IDENT.
AG-108M	-5.771E-03	2.810E-02	4.762E-02	0.000E+00	NOT IDENT.
AG-110M	-1.032E-01	4.049E-02	5.503E-02	0.000E+00	NOT IDENT.
SN-113	-3.604E-02	4.068E-02	6.655E-02	0.000E+00	NOT IDENT.
CD-115	-4.198E+00	5.338E+00	8.450E+00	0.000E+00	NOT IDENT.
SN-117M	1.484E-03	3.758E-02	6.639E-02	0.000E+00	NOT IDENT.
TE-123M	5.701E-04	2.211E-02	3.903E-02	0.000E+00	NOT IDENT.
SB-124	-4.839E-02	6.287E-02	8.792E-02	0.000E+00	NOT IDENT.
SB-125	8.949E-03	8.491E-02	1.471E-01	0.000E+00	FAIL ABUN
TE-125M	1.735E-01	6.400E+00	1.166E+01	0.000E+00	NOT IDENT.
I-126	-3.021E-01	2.200E-01	3.434E-01	0.000E+00	NOT IDENT.
SB-126	1.842E-01	1.257E-01	2.169E-01	0.000E+00	NOT IDENT.
SB-127	-3.342E-01	8.074E-01	1.350E+00	0.000E+00	NOT IDENT.
I-131	3.156E-02	8.676E-02	1.547E-01	0.000E+00	NOT IDENT.
TE-132	-9.642E-02	3.711E-01	6.242E-01	0.000E+00	NOT IDENT.
BA-133	-3.772E-02	4.351E-02	6.196E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	7.014E+02	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	8.878E-02	1.060E-01	0.000E+00	FAIL ABUN
CS-135	2.548E-01	1.615E-01	2.631E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	7.397E+12	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-2.267E-02	9.349E-02	1.577E-01	0.000E+00	NOT IDENT.
BA-137M	3.928E-03	4.378E-02	7.940E-02	0.000E+00	NOT IDENT.
CS-137	4.150E-03	4.625E-02	8.388E-02	0.000E+00	NOT IDENT.
CE-139	-2.347E-02	2.419E-02	4.058E-02	0.000E+00	NOT IDENT.
BA-140	-4.960E-02	2.240E-01	3.685E-01	0.000E+00	NOT IDENT.
LA-140	-6.529E-02	7.656E-02	1.145E-01	0.000E+00	NOT IDENT.
CE-141	-1.387E-02	4.843E-02	8.510E-02	0.000E+00	NOT IDENT.
CE-143	0.000E+00	4.987E+01	0.000E+00	0.000E+00	SHORT HLIF
CE-144	1.946E-02	1.522E-01	2.737E-01	0.000E+00	NOT IDENT.
PM-144	-8.389E-03	3.702E-02	6.290E-02	0.000E+00	NOT IDENT.
PR-144	-6.391E-01	2.766E+00	4.697E+00	0.000E+00	NOT IDENT.
PM-146	4.657E-02	4.211E-02	7.643E-02	0.000E+00	NOT IDENT.
ND-147	1.511E-01	5.095E-01	8.730E-01	0.000E+00	FAIL ABUN
PM-149	1.879E+01	3.515E+01	6.019E+01	0.000E+00	NOT IDENT.
EU-152	-8.341E-02	9.261E-02	1.409E-01	0.000E+00	NOT IDENT.
GD-153	-3.077E-02	5.960E-02	9.622E-02	0.000E+00	NOT IDENT.
EU-154	6.261E-02	1.488E-01	2.276E-01	0.000E+00	NOT IDENT.
EU-155	6.004E-02	7.354E-02	1.373E-01	0.000E+00	FAIL ABUN
TB-160	2.228E-02	1.517E-01	2.581E-01	0.000E+00	FAIL ABUN
HO-166M	3.056E-02	6.072E-02	1.083E-01	0.000E+00	NOT IDENT.
TA-182	-1.402E-02	2.274E-01	3.835E-01	0.000E+00	NOT IDENT.
IR-192	2.511E-02	2.965E-02	5.465E-02	0.000E+00	FAIL ABUN
HG-203	2.766E-03	3.657E-02	5.457E-02	0.000E+00	NOT IDENT.
BI-207	1.705E-02	5.741E-02	1.011E-01	0.000E+00	FAIL ABUN
PB-211	-2.879E-01	7.780E-01	1.116E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.288E+00	1.387E+00	0.000E+00	FAIL ABUN
RN-219	1.065E-01	3.770E-01	6.634E-01	0.000E+00	FAIL ABUN
RA-223	-3.882E-01	5.893E-01	1.000E+00	0.000E+00	FAIL ABUN
AC-227	1.248E-01	2.354E-01	4.066E-01	0.000E+00	FAIL ABUN
TH-227	1.248E-01	2.355E-01	4.066E-01	0.000E+00	FAIL ABUN
PA-231	-1.041E-01	1.299E+00	2.155E+00	0.000E+00	FAIL ABUN
TH-231	-3.882E-01	5.893E-01	1.000E+00	0.000E+00	FAIL ABUN
PA-233	-2.493E-02	5.511E-02	9.540E-02	0.000E+00	FAIL ABUN
PA-234	8.033E-02	3.060E-01	5.221E-01	0.000E+00	NOT IDENT.
PA-234M	2.638E+00	5.276E+00	9.123E+00	0.000E+00	NOT IDENT.
NP-239	-1.069E-01	2.893E-01	5.156E-01	0.000E+00	FAIL ABUN
AM-241	-7.680E-03	5.098E-02	8.054E-02	0.000E+00	NOT IDENT.
CM-247	1.147E-02	3.470E-02	6.125E-02	0.000E+00	FAIL ABUN
CF-249	2.706E-02	3.709E-02	6.704E-02	0.000E+00	NOT IDENT.

CF-251	-5.815E-02	1.070E-01	1.822E-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]G247544001.CNF;1
Sample date        : 18-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 20:54:01.
Sample ID          : G247544001 Sample quantity : 1.34370E+02 GRAM
Detector name      : GAM25 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:02.26 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 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	1406	10.66*	1.109E+00	3.324E+01	3.324E+01	10.21
CD-109	88.03	536	3.70*	9.406E+00	4.304E+00	4.385E+00	19.38
SN-126	64.28	196	9.60	9.778E+00	5.823E-01	5.823E-01	55.98
	86.94	536	8.90	9.406E+00	1.789E+00	1.789E+00	44.85
	87.57	536	37.00*	9.406E+00	4.304E-01	4.304E-01	19.38
TL-208	277.37	47	6.60	4.741E+00	4.178E-01	4.178E-01	111.80
	583.19	475	85.00*	2.497E+00	6.248E-01	6.248E-01	17.94
	860.56	80	12.50	1.765E+00	1.014E+00	1.014E+00	56.32
PB-210	46.54	218	4.25*	9.199E+00	1.558E+00	1.560E+00	41.30
BI-211	72.87	-----	1.23	9.724E+00	-----	Line Not Found	-----
	351.06	904	12.92*	3.887E+00	5.032E+00	5.032E+00	13.75
PB-212	74.82	951	10.28	9.694E+00	2.667E+00	2.667E+00	16.88
	77.11	1482	17.10	9.652E+00	2.508E+00	2.508E+00	12.29
	238.63	1663	43.60*	5.340E+00	1.995E+00	1.995E+00	12.74
	300.09	98	3.30	4.443E+00	1.866E+00	1.866E+00	58.86
BI-214	609.32	556	45.49*	2.401E+00	1.423E+00	1.423E+00	16.72
	1120.29	124	14.92	1.399E+00	1.659E+00	1.659E+00	36.33
	1764.49	107	15.30	9.413E-01	2.084E+00	2.084E+00	22.17
PB-214	74.82	951	5.80	9.694E+00	4.727E+00	4.727E+00	15.91
	77.11	1482	9.70	9.652E+00	4.421E+00	4.421E+00	14.80
	242.00	430	7.25	5.288E+00	3.132E+00	3.133E+00	26.48
	295.22	488	18.42	4.504E+00	1.642E+00	1.642E+00	19.99
	351.93	904	35.60*	3.887E+00	1.826E+00	1.826E+00	14.82
RA-224	240.99	430	4.10*	5.288E+00	5.539E+00	5.539E+00	25.84
RA-226	609.32	556	45.49*	2.401E+00	1.423E+00	1.423E+00	16.72
	1120.29	124	14.92	1.399E+00	1.659E+00	1.659E+00	36.33
	1764.49	107	15.30	9.413E-01	2.084E+00	2.084E+00	22.17
AC-228	338.32	308	11.27	4.018E+00	1.897E+00	1.897E+00	47.93
	911.20	307	25.80*	1.678E+00	1.980E+00	1.980E+00	21.29
	968.97	166	15.80	1.589E+00	1.849E+00	1.849E+00	33.38
RA-228	338.32	308	11.27	4.018E+00	1.897E+00	1.897E+00	47.93
	911.20	307	25.80*	1.678E+00	1.980E+00	1.980E+00	21.29

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	968.97	166	15.80	1.589E+00	1.849E+00	1.849E+00	33.38
	74.82	951	10.28	9.694E+00	2.667E+00	2.667E+00	13.85
	77.11	1482	17.10	9.652E+00	2.508E+00	2.508E+00	12.29
	238.63	1663	43.60*	5.340E+00	1.995E+00	1.995E+00	12.74
TH-229	300.09	98	3.30	4.443E+00	1.866E+00	1.866E+00	84.26
	85.43	206	14.70	9.488E+00	4.119E-01	4.119E-01	37.37
	88.47	536	24.00	9.406E+00	6.635E-01	6.635E-01	19.38
	193.51	-----	4.41*	6.239E+00	-----	Line Not Found	-----
TH-232	210.85	-----	2.80	5.863E+00	-----	Line Not Found	-----
	338.32	308	11.27	4.018E+00	1.897E+00	1.897E+00	25.13
	911.20	307	25.80*	1.678E+00	1.980E+00	1.980E+00	21.29
	968.97	166	15.80	1.589E+00	1.849E+00	1.849E+00	33.38
TH-234	63.29	196	3.70*	9.778E+00	1.511E+00	1.511E+00	56.93
	92.59	425	4.23	9.238E+00	3.041E+00	3.041E+00	31.32
U-235	89.96	331	3.47	9.328E+00	2.859E+00	2.859E+00	34.09
	93.35	425	5.60	9.238E+00	2.297E+00	2.297E+00	32.04
	143.76	-----	10.96*	7.568E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.998E+00	-----	Line Not Found	-----
NP-237	185.72	268	57.20	6.417E+00	2.037E-01	2.037E-01	33.91
	205.31	-----	5.01	5.979E+00	-----	Line Not Found	-----
	86.48	536	12.40*	9.406E+00	1.284E+00	1.284E+00	28.55
	95.86	-----	2.68	9.143E+00	-----	Line Not Found	-----
U-238	63.29	196	3.70*	9.778E+00	1.511E+00	1.511E+00	56.93
	92.59	425	4.23	9.238E+00	3.041E+00	3.041E+00	23.82
ANH-511	511.00	150	100.00*	2.808E+00	1.490E-01	1.490E-01	50.54

Flag: "\*" = Keyline

Total number of lines in spectrum 39  
Number of unidentified lines 9  
Number of lines tentatively identified by NID 30 76.92%

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	3.324E+01	3.324E+01	0.340E+01	10.21	
CD-109	461.40D	1.02	4.304E+00	4.385E+00	0.850E+00	19.38	
SN-126	2.30E+05Y	1.00	4.304E-01	4.304E-01	0.834E-01	19.38	
TL-208	1.41E+10Y	1.00	6.248E-01	6.248E-01	1.121E-01	17.94	
PB-210	22.20Y	1.00	1.558E+00	1.560E+00	0.644E+00	41.30	
BI-211	7.04E+08Y	1.00	5.032E+00	5.032E+00	0.692E+00	13.75	
PB-212	1.41E+10Y	1.00	1.995E+00	1.995E+00	0.254E+00	12.74	
BI-214	1600.00Y	1.00	1.423E+00	1.423E+00	0.238E+00	16.72	
PB-214	1600.00Y	1.00	1.826E+00	1.826E+00	0.271E+00	14.82	
RA-224	1.41E+10Y	1.00	5.539E+00	5.539E+00	1.431E+00	25.84	
RA-226	1600.00Y	1.00	1.423E+00	1.423E+00	0.238E+00	16.72	
AC-228	1.41E+10Y	1.00	1.980E+00	1.980E+00	0.422E+00	21.29	
RA-228	1.41E+10Y	1.00	1.980E+00	1.980E+00	0.422E+00	21.29	
TH-228	1.41E+10Y	1.00	1.995E+00	1.995E+00	0.254E+00	12.74	
TH-229	7340.00Y	1.00	6.635E-01	6.635E-01	1.286E-01	19.38	K
TH-232	1.41E+10Y	1.00	1.980E+00	1.980E+00	0.422E+00	21.29	
TH-234	4.47E+09Y	1.00	1.511E+00	1.511E+00	0.860E+00	56.93	
U-235	7.04E+08Y	1.00	2.037E-01	2.037E-01	0.691E-01	33.91	K
NP-237	2.14E+06Y	1.00	1.284E+00	1.284E+00	0.367E+00	28.55	
U-238	4.47E+09Y	1.00	1.511E+00	1.511E+00	0.860E+00	56.93	
ANH-511	1.00E+09Y	1.00	1.490E-01	1.490E-01	0.753E-01	50.54	

Total Activity : 7.065E+01 7.073E+01

Grand Total Activity : 7.065E+01 7.073E+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	129.01	119	324	1.06	257.56	254	7	1.65E-02	53.6	8.04E+00	
0	209.22	177	242	1.20	417.97	414	8	2.46E-02	34.0	5.90E+00	
3	269.88	114	144	1.31	539.29	536	9	1.59E-02	37.5	4.84E+00	T
3	271.25	54	105	0.88	542.02	536	9	7.52E-03	72.4	4.82E+00	T
0	409.19	91	127	2.13	817.89	814	10	1.27E-02	50.6	3.41E+00	
0	463.42	95	133	1.17	926.34	921	10	1.32E-02	50.4	3.06E+00	T
0	726.26	111	158	1.82	1452.00	1446	18	1.54E-02	56.5	2.05E+00	T
0	768.19	60	63	2.05	1535.87	1530	11	8.39E-03	57.0	1.95E+00	
0	771.88	36	28	1.64	1543.25	1540	7	5.00E-03	59.1	1.94E+00	
0	795.05	81	84	1.79	1589.59	1584	15	1.12E-02	57.0	1.89E+00	T
0	933.70	38	41	1.54	1866.89	1863	9	5.27E-03	68.7	1.64E+00	
0	1282.41	43	66	5.21	2564.32	2552	24	5.94E-03	****	1.24E+00	
0	1728.21	39	12	2.05	3455.99	3447	15	5.47E-03	49.0	9.58E-01	
0	1847.23	20	5	1.18	3694.05	3688	11	2.77E-03	63.5	9.05E-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]G247544001.CNF;1  *
* Acquisition date   : 2-MAR-2010 20:54:01.  Detector SN#      :             *
* Detector ID        : GAM25                      Sensitivity    : 5.00000      *
* Geometry           : CAN                      Energy tolerance: 1.50000      *
* Elapsed live time  : 0 02:00:00.00             Abundance limit : 75.00000      *
* Elapsed real time  : 0 02:00:02.26             Half life ratio : 8.00000      *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 18-FEB-2010 12:00:00  Nuclide Library : SOLID          *
* Sample ID          : G247544001             Analyst initials: MXR1          *
* Batch Number       : 956157                 Sample Quantity : 1.34370E+02 GRAM *
*****
*                                     QC DATA                                *
*
* CALIB. DATE/TIME   : 7-OCT-2009 09:38:43.34MS Isotope        :             *
* MSD ID             :                          MSD Isotope     :             *
* LCS ID             : 1032-A                   LCS Isotope     :             *
*****

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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	3.324E+01	3.395E+00	5.649E-01	4.811E-02	58.840
CD-109	4.385E+00	8.499E-01	7.329E-01	7.876E-02	5.983
SN-126	4.304E-01	8.342E-02	7.179E-02	7.697E-03	5.995
TL-208	6.248E-01	1.121E-01	5.404E-02	6.087E-03	11.562
PB-210	1.560E+00	6.441E-01	5.594E-01	5.729E-02	2.788
BI-211	5.032E+00	6.919E-01	3.063E-01	3.228E-02	16.428
PB-212	1.995E+00	2.541E-01	7.988E-02	9.126E-03	24.981
BI-214	1.423E+00	2.378E-01	1.033E-01	1.251E-02	13.773
PB-214	1.826E+00	2.706E-01	1.114E-01	1.324E-02	16.387
RA-224	5.539E+00	1.431E+00	8.573E-01	9.009E-02	6.461
RA-226	1.423E+00	2.378E-01	1.033E-01	1.251E-02	13.773
AC-228	1.980E+00	4.216E-01	2.443E-01	2.987E-02	8.104
RA-228	1.980E+00	4.216E-01	2.443E-01	2.987E-02	8.104
TH-228	1.995E+00	2.541E-01	7.988E-02	9.126E-03	24.981
TH-229	6.635E-01	1.286E-01	7.400E-01	7.057E-02	0.897
TH-232	1.980E+00	4.216E-01	2.443E-01	2.987E-02	8.104
TH-234	1.511E+00	8.601E-01	7.758E-01	1.473E-01	1.947
U-235	2.037E-01	6.909E-02	2.918E-01	5.361E-02	0.698

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-237	1.284E+00	3.667E-01	2.064E-01	4.856E-02	6.222
U-238	1.511E+00	8.601E-01	7.758E-01	1.473E-01	1.947
ANH-511	1.490E-01	7.530E-02	4.497E-02	4.629E-03	3.313

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	1.094E-01		2.989E-01	4.996E-01	5.288E-02	0.219
NA-22	2.279E-02		5.357E-02	8.007E-02	6.566E-03	0.285
NA-24	2.263E-02		1.878E-02	Half-Life too short		
SC-46	8.804E-03		4.574E-02	7.557E-02	7.236E-03	0.117
V-48	3.071E-02		7.142E-02	1.194E-01	1.107E-02	0.257
CR-51	-2.411E-01		3.076E-01	4.941E-01	5.484E-02	-0.488
MN-54	1.979E-02		4.192E-02	7.098E-02	7.203E-03	0.279
CO-56	-8.698E-03		4.067E-02	6.521E-02	6.543E-03	-0.133
CO-57	-8.591E-03		1.898E-02	3.140E-02	4.050E-03	-0.274
CO-58	-5.056E-02		4.123E-02	5.976E-02	6.200E-03	-0.846
FE-59	-5.683E-03		1.030E-01	1.711E-01	1.611E-02	-0.033
CO-60	1.035E-02		4.139E-02	6.965E-02	5.657E-03	0.149
ZN-65	9.207E-02		1.059E-01	1.673E-01	1.445E-02	0.550
SE-75	-3.911E-03		4.025E-02	6.373E-02	6.985E-03	-0.061
SR-85	1.969E-02		4.169E-02	6.155E-02	6.350E-03	0.320
Y-88	-1.970E-02		4.017E-02	6.045E-02	4.940E-03	-0.326
Y-91	-1.147E+01		2.516E+01	4.015E+01	3.304E+00	-0.286
NB-94	3.706E-02		3.761E-02	6.622E-02	7.272E-03	0.560
NB-95	3.246E-02		5.004E-02	7.658E-02	8.179E-03	0.424
NB-95M	-7.238E-02		1.195E-01	1.637E-01	1.879E-02	-0.442
ZR-95	6.068E-02		7.412E-02	1.296E-01	1.487E-02	0.468
MO-99	8.814E-01		6.928E+00	1.157E+01	1.975E+00	0.076
TC-99M	-7.809E+06		7.961E+06	Half-Life too short		
RU-103	4.984E-03		3.778E-02	6.192E-02	9.275E-03	0.080
RH-106	1.069E-01		3.277E-01	5.625E-01	8.368E-02	0.190
RU-106	1.069E-01		3.275E-01	5.625E-01	6.159E-02	0.190
AG-108M	-5.771E-03		2.867E-02	4.647E-02	4.566E-03	-0.124
AG-110M	-1.032E-01		4.131E-02	5.412E-02	6.099E-03	-1.908
SN-113	-3.604E-02		4.151E-02	6.484E-02	6.056E-03	-0.556
CD-115	-4.198E+00		5.447E+00	8.277E+00	8.626E-01	-0.507
SN-117M	1.484E-03		3.835E-02	6.366E-02	6.181E-03	0.023
TE-123M	5.701E-04		2.256E-02	3.742E-02	3.634E-03	0.015
SB-124	-4.839E-02		6.415E-02	8.798E-02	7.624E-03	-0.550
SB-125	8.949E-03		8.664E-02	1.435E-01	1.385E-02	0.062
TE-125M	1.735E-01		6.531E+00	1.111E+01	1.488E+00	0.016
I-126	-3.021E-01		2.244E-01	3.378E-01	3.739E-02	-0.894
SB-126	1.842E-01		1.282E-01	2.137E-01	2.332E-02	0.862
SB-127	-3.342E-01		8.239E-01	1.329E+00	1.682E-01	-0.251
I-131	3.156E-02		8.853E-02	1.505E-01	1.542E-02	0.210
TE-132	-9.642E-02		3.786E-01	6.023E-01	9.820E-02	-0.160

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BA-133	-3.772E-02		4.439E-02	6.026E-02	8.405E-03	-0.626
I-133	1.100E-04		3.579E-04	Half-Life too short		
CS-134	1.563E-01	+	9.059E-02	1.046E-01	1.101E-02	1.495
CS-135	2.548E-01		1.648E-01	2.546E-01	3.073E-02	1.001
I-135	-1.510E+06		3.774E+06	Half-Life too short		
CS-136	-2.267E-02		9.540E-02	1.564E-01	1.462E-02	-0.145
BA-137M	3.928E-03		4.467E-02	7.809E-02	8.650E-03	0.050
CS-137	4.150E-03		4.719E-02	8.250E-02	9.149E-03	0.050
CE-139	-2.347E-02		2.468E-02	3.894E-02	3.472E-03	-0.603
BA-140	-4.960E-02		2.286E-01	3.610E-01	1.243E-01	-0.137
LA-140	-6.529E-02		7.812E-02	1.145E-01	9.519E-03	-0.570
CE-141	-1.387E-02		4.942E-02	8.148E-02	9.062E-03	-0.170
CE-143	1.518E-04		2.544E-05	Half-Life too short		
CE-144	1.946E-02		1.553E-01	2.617E-01	4.562E-02	0.074
PM-144	-8.389E-03		3.778E-02	6.191E-02	6.812E-03	-0.135
PR-144	-6.391E-01		2.822E+00	4.624E+00	5.087E-01	-0.138
PM-146	4.657E-02		4.297E-02	7.465E-02	8.626E-03	0.624
ND-147	1.511E-01		5.199E-01	8.552E-01	1.374E-01	0.177
PM-149	1.879E+01		3.586E+01	5.831E+01	9.940E+00	0.322
EU-152	-8.341E-02		9.450E-02	1.370E-01	1.471E-02	-0.609
GD-153	-3.077E-02		6.082E-02	9.150E-02	1.030E-02	-0.336
EU-154	6.261E-02		1.519E-01	2.266E-01	2.505E-02	0.276
EU-155	6.004E-02		7.504E-02	1.307E-01	1.545E-02	0.459
TB-160	2.228E-02		1.548E-01	2.552E-01	2.473E-02	0.087
HO-166M	3.056E-02		6.196E-02	1.066E-01	1.167E-02	0.287
TA-182	-1.402E-02		2.320E-01	3.814E-01	3.137E-02	-0.037
IR-192	2.511E-02		3.025E-02	5.304E-02	5.728E-03	0.473
HG-203	2.766E-03		3.732E-02	5.285E-02	5.989E-03	0.052
BI-207	1.705E-02		5.858E-02	1.003E-01	8.949E-03	0.170
PB-211	-2.879E-01		7.938E-01	1.088E+00	5.278E-01	-0.265
BI-212	2.255E+00	+	1.315E+00	1.367E+00	1.930E-01	1.650
RN-219	1.065E-01		3.847E-01	6.466E-01	9.843E-02	0.165
RA-223	-3.882E-01		6.013E-01	9.713E-01	1.791E-01	-0.400
AC-227	1.248E-01		2.402E-01	3.932E-01	5.380E-02	0.317
TH-227	1.248E-01		2.403E-01	3.932E-01	5.925E-02	0.317
PA-231	-1.041E-01		1.325E+00	2.087E+00	3.380E-01	-0.050
TH-231	-3.882E-01		6.013E-01	9.713E-01	1.791E-01	-0.400
PA-233	-2.493E-02		5.624E-02	9.256E-02	1.022E-02	-0.269
PA-234	8.033E-02		3.122E-01	5.168E-01	9.884E-02	0.155
PA-234M	2.638E+00		5.384E+00	9.041E+00	9.470E-01	0.292
NP-239	-1.069E-01		2.952E-01	4.918E-01	6.169E-02	-0.217
AM-241	-7.680E-03		5.202E-02	7.596E-02	7.892E-03	-0.101
CM-247	1.147E-02		3.541E-02	5.970E-02	5.502E-03	0.192
CF-249	2.706E-02		3.784E-02	6.530E-02	6.005E-03	0.414
CF-251	-5.815E-02		1.092E-01	1.750E-01	1.606E-02	-0.332

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247544001          *
* Acquisition date   : 2-MAR-2010 20:54:01 Detector SN#      :              *
* Detector ID        : GAM25 Sensitivity      : 5.000          *
* Geometry           : CAN Energy tolerance: 1.500          *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000   *
* Elapsed real time  : 0 02:00:02.26 Half life ratio : 8.000   *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 18-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247544001 Analyst initials: MXR1          *
* Batch Number       : 956157 Sample Quantity : 1.3437E+02 GRAM   *
* Recovery           : 1.00000 Carrier Weight : 0.00000          *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 7-OCT-2009 09:38:43 MS Isotope        :              *
* MSD DPM             : 0.000 MSD Isotope                    :              *
* LCS DPM             : 0.000 LCS Isotope                     :              *
* LCSD DPM            : 0.000 LCSD Isotope                    :              *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.324E+01	3.328E+00	2.832E-01	1.698E+00
CD-109	4.385E+00	8.329E-01	3.863E-01	4.250E-01
SN-126	4.304E-01	8.175E-02	3.784E-02	4.171E-02
TL-208	6.248E-01	1.099E-01	2.755E-02	5.606E-02
PB-210	1.560E+00	6.312E-01	2.980E-01	3.220E-01
BI-211	5.032E+00	6.781E-01	1.576E-01	3.460E-01
PB-212	1.995E+00	2.490E-01	4.138E-02	1.271E-01
BI-214	1.423E+00	2.330E-01	5.262E-02	1.189E-01
PB-214	1.826E+00	2.651E-01	5.734E-02	1.353E-01
RA-224	5.539E+00	1.403E+00	4.440E-01	7.156E-01
RA-226	1.423E+00	2.330E-01	5.262E-02	1.189E-01
AC-228	1.980E+00	4.132E-01	1.236E-01	2.108E-01
RA-228	1.980E+00	4.132E-01	1.236E-01	2.108E-01
TH-228	1.995E+00	2.490E-01	4.138E-02	1.271E-01
TH-229	2.514E-03	4.440E-01	3.848E-01	2.265E-01
TH-232	1.980E+00	4.132E-01	1.236E-01	2.108E-01
TH-234	1.511E+00	8.429E-01	4.112E-01	4.300E-01
U-235	7.360E-02	1.712E-01	1.525E-01	8.734E-02
NP-237	1.284E+00	3.594E-01	1.088E-01	1.834E-01
U-238	1.511E+00	8.429E-01	4.112E-01	4.300E-01
ANH-511	1.490E-01	7.380E-02	2.299E-02	3.765E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	1.094E-01	2.930E-01	2.557E-01	1.495E-01 NOT IDENT.
NA-22	2.279E-02	5.250E-02	4.024E-02	2.678E-02 NOT IDENT.
NA-24	2.263E+04	3.681E+04	0.000E+00	1.878E+04 SHORT HLIF
SC-46	8.804E-03	4.482E-02	3.823E-02	2.287E-02 FAIL ABUN
V-48	3.071E-02	6.999E-02	6.032E-02	3.571E-02 NOT IDENT.
CR-51	-2.411E-01	3.015E-01	2.547E-01	1.538E-01 NOT IDENT.

MN-54	1.979E-02	4.108E-02	3.596E-02	2.096E-02	NOT IDENT.
CO-56	-8.698E-03	3.986E-02	3.302E-02	2.034E-02	NOT IDENT.
CO-57	-8.591E-03	1.860E-02	1.646E-02	9.491E-03	NOT IDENT.
CO-58	-5.056E-02	4.040E-02	3.028E-02	2.061E-02	NOT IDENT.
FE-59	-5.683E-03	1.010E-01	8.623E-02	5.151E-02	NOT IDENT.
CO-60	1.035E-02	4.056E-02	3.498E-02	2.069E-02	NOT IDENT.
ZN-65	9.207E-02	1.038E-01	8.427E-02	5.294E-02	NOT IDENT.
SE-75	-3.911E-03	3.945E-02	3.295E-02	2.013E-02	NOT IDENT.
SR-85	1.969E-02	4.086E-02	3.145E-02	2.085E-02	NOT IDENT.
Y-88	-1.970E-02	3.936E-02	3.017E-02	2.008E-02	NOT IDENT.
Y-91	-1.147E+01	2.466E+01	2.020E+01	1.258E+01	NOT IDENT.
NB-94	3.706E-02	3.685E-02	3.365E-02	1.880E-02	NOT IDENT.
NB-95	3.246E-02	4.904E-02	3.885E-02	2.502E-02	NOT IDENT.
NB-95M	-7.238E-02	1.171E-01	8.482E-02	5.973E-02	NOT IDENT.
ZR-95	6.068E-02	7.263E-02	6.575E-02	3.706E-02	NOT IDENT.
MO-99	8.814E-01	6.790E+00	5.876E+00	3.464E+00	NOT IDENT.
TC-99M	-7.809E+12	1.560E+13	0.000E+00	7.961E+12	SHORT HLIF
RU-103	4.984E-03	3.702E-02	3.166E-02	1.889E-02	FAIL ABUN
RH-106	1.069E-01	3.211E-01	2.865E-01	1.638E-01	NOT IDENT.
RU-106	1.069E-01	3.209E-01	2.865E-01	1.637E-01	NOT IDENT.
AG-108M	-5.771E-03	2.810E-02	2.382E-02	1.434E-02	NOT IDENT.
AG-110M	-1.032E-01	4.049E-02	2.753E-02	2.066E-02	NOT IDENT.
SN-113	-3.604E-02	4.068E-02	3.330E-02	2.076E-02	NOT IDENT.
CD-115	-4.198E+00	5.338E+00	4.228E+00	2.723E+00	NOT IDENT.
SN-117M	1.484E-03	3.758E-02	3.322E-02	1.917E-02	NOT IDENT.
TE-123M	5.701E-04	2.211E-02	1.952E-02	1.128E-02	NOT IDENT.
SB-124	-4.839E-02	6.287E-02	4.398E-02	3.208E-02	NOT IDENT.
SB-125	8.949E-03	8.491E-02	7.358E-02	4.332E-02	FAIL ABUN
TE-125M	1.735E-01	6.400E+00	5.832E+00	3.265E+00	NOT IDENT.
I-126	-3.021E-01	2.200E-01	1.718E-01	1.122E-01	NOT IDENT.
SB-126	1.842E-01	1.257E-01	1.085E-01	6.411E-02	NOT IDENT.
SB-127	-3.342E-01	8.074E-01	6.756E-01	4.119E-01	NOT IDENT.
I-131	3.156E-02	8.676E-02	7.738E-02	4.427E-02	NOT IDENT.
TE-132	-9.642E-02	3.711E-01	3.123E-01	1.893E-01	NOT IDENT.
BA-133	-3.772E-02	4.351E-02	3.100E-02	2.220E-02	FAIL ABUN
I-133	1.100E+02	7.014E+02	0.000E+00	3.579E+02	SHORT HLIF
CS-134	1.563E-01	8.878E-02	5.302E-02	4.530E-02	FAIL ABUN
CS-135	2.548E-01	1.615E-01	1.316E-01	8.240E-02	NOT IDENT.
I-135	-1.510E+12	7.397E+12	0.000E+00	3.774E+12	SHORT HLIF
CS-136	-2.267E-02	9.349E-02	7.890E-02	4.770E-02	NOT IDENT.
BA-137M	3.928E-03	4.378E-02	3.972E-02	2.234E-02	NOT IDENT.
CS-137	4.150E-03	4.625E-02	4.196E-02	2.360E-02	NOT IDENT.
CE-139	-2.347E-02	2.419E-02	2.030E-02	1.234E-02	NOT IDENT.
BA-140	-4.960E-02	2.240E-01	1.844E-01	1.143E-01	NOT IDENT.
LA-140	-6.529E-02	7.656E-02	5.730E-02	3.906E-02	NOT IDENT.
CE-141	-1.387E-02	4.843E-02	4.257E-02	2.471E-02	NOT IDENT.
CE-143	1.518E+02	4.987E+01	0.000E+00	2.544E+01	SHORT HLIF
CE-144	1.946E-02	1.522E-01	1.370E-01	7.766E-02	NOT IDENT.
PM-144	-8.389E-03	3.702E-02	3.147E-02	1.889E-02	NOT IDENT.
PR-144	-6.391E-01	2.766E+00	2.350E+00	1.411E+00	NOT IDENT.
PM-146	4.657E-02	4.211E-02	3.824E-02	2.149E-02	NOT IDENT.
ND-147	1.511E-01	5.095E-01	4.368E-01	2.599E-01	FAIL ABUN
PM-149	1.879E+01	3.515E+01	3.011E+01	1.793E+01	NOT IDENT.
EU-152	-8.341E-02	9.261E-02	7.051E-02	4.725E-02	NOT IDENT.
GD-153	-3.077E-02	5.960E-02	4.814E-02	3.041E-02	NOT IDENT.
EU-154	6.261E-02	1.488E-01	1.139E-01	7.594E-02	NOT IDENT.
EU-155	6.004E-02	7.354E-02	6.869E-02	3.752E-02	FAIL ABUN
TB-160	2.228E-02	1.517E-01	1.291E-01	7.740E-02	FAIL ABUN
HO-166M	3.056E-02	6.072E-02	5.416E-02	3.098E-02	NOT IDENT.
TA-182	-1.402E-02	2.274E-01	1.918E-01	1.160E-01	NOT IDENT.
IR-192	2.511E-02	2.965E-02	2.734E-02	1.513E-02	FAIL ABUN
HG-203	2.766E-03	3.657E-02	2.730E-02	1.866E-02	NOT IDENT.
BI-207	1.705E-02	5.741E-02	5.057E-02	2.929E-02	FAIL ABUN
PB-211	-2.879E-01	7.780E-01	5.585E-01	3.969E-01	NOT IDENT.
BI-212	2.255E+00	1.288E+00	6.940E-01	6.573E-01	FAIL ABUN
RN-219	1.065E-01	3.770E-01	3.319E-01	1.923E-01	FAIL ABUN
RA-223	-3.882E-01	5.893E-01	5.005E-01	3.007E-01	FAIL ABUN
AC-227	1.248E-01	2.354E-01	2.034E-01	1.201E-01	FAIL ABUN
TH-227	1.248E-01	2.355E-01	2.034E-01	1.201E-01	FAIL ABUN
PA-231	-1.041E-01	1.299E+00	1.078E+00	6.626E-01	FAIL ABUN
TH-231	-3.882E-01	5.893E-01	5.005E-01	3.007E-01	FAIL ABUN
PA-233	-2.493E-02	5.511E-02	4.773E-02	2.812E-02	FAIL ABUN
PA-234	8.033E-02	3.060E-01	2.612E-01	1.561E-01	NOT IDENT.
PA-234M	2.638E+00	5.276E+00	4.564E+00	2.692E+00	NOT IDENT.
NP-239	-1.069E-01	2.893E-01	2.580E-01	1.476E-01	FAIL ABUN
AM-241	-7.680E-03	5.098E-02	4.030E-02	2.601E-02	NOT IDENT.
CM-247	1.147E-02	3.470E-02	3.064E-02	1.771E-02	FAIL ABUN
CF-249	2.706E-02	3.709E-02	3.354E-02	1.892E-02	NOT IDENT.

CF-251	-5.815E-02	1.070E-01	9.113E-02	5.462E-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	282.3753
49.72	306.9805
57.36	0.0000
59.54	427.6725
63.29	466.8659
63.29	466.8659
64.28	468.5626
67.75	467.4507
69.67	507.5610
70.83	457.9883
72.81	495.6610
72.87	495.7603
72.87	495.7603
74.82	498.9519
74.82	498.9519
74.82	498.9519
74.97	499.1954
77.11	502.6497
77.11	502.6497
77.11	502.6497
79.69	469.7474
79.80	420.0203
80.12	420.4372
80.19	420.5274
80.57	435.5392
81.00	402.1959
81.07	402.2820
81.07	402.2820
83.79	369.7756
83.79	369.7756
85.43	343.7558
86.48	344.8175
86.55	344.8880
86.79	368.1357
86.94	368.2998
87.57	368.9743
88.03	369.4642
88.47	369.9336
89.96	371.5104
91.11	372.7204
92.59	368.4152
92.59	368.4152
93.35	369.1913
94.67	370.5326
94.87	370.7345
94.87	370.7345
95.86	371.7326
97.43	349.1798
98.44	295.3738
99.53	294.9483
100.11	310.7431
103.18	335.1324
103.37	328.4173
105.31	308.4384
106.12	298.6778
109.28	297.5321
111.00	299.6570
111.76	298.4511
116.30	275.9467
117.23	298.7749
121.12	283.5045
121.78	283.9272
122.06	295.7934
123.07	297.3639
131.20	271.0343
133.52	286.6493
136.00	281.6478

136.47	289.3420
140.51	304.8224
140.51	0.0000
143.76	308.6878
144.24	292.0251
144.24	292.0251
145.44	319.1546
152.43	294.7656
153.25	273.1743
154.21	273.6671
154.21	273.6671
156.02	313.1312
158.56	255.5540
159.00	255.7581
162.66	251.6093
163.33	240.1943
165.86	287.3757
176.60	262.7699
177.52	262.1759
181.07	256.6809
184.41	255.0505
185.72	251.5344
193.51	245.4257
197.04	231.2848
205.31	227.4055
210.85	251.4071
215.65	255.8100
222.11	223.8824
227.38	240.6283
228.16	246.2856
228.18	246.2926
235.69	247.1676
235.96	247.2551
235.96	247.2551
238.63	204.8603
238.63	204.8603
240.99	205.4957
242.00	205.7677
244.70	193.7902
252.40	197.3767
252.80	198.5932
256.23	189.3625
256.23	189.3625
260.90	191.5855
264.66	178.8783
268.22	162.0259
269.46	177.6392
269.46	177.6392
271.23	195.1304
273.65	185.3910
276.40	197.4718
277.37	165.5127
277.60	165.5566
278.00	158.7314
279.20	165.8643
279.54	162.4719
280.46	145.3440
283.69	164.4099
284.31	164.5255
285.41	151.9725
285.90	153.2158
287.50	160.4722
293.27	0.0000
295.22	178.7550
295.96	165.5212
298.57	165.9974
299.98	148.5663
299.98	148.5663
300.09	148.5842
300.09	148.5842
300.13	148.5919
301.36	150.2089
302.85	132.0005
304.50	130.8125
304.50	130.8125
304.85	140.8188
308.46	146.3653
311.90	154.0667

316.51	135.0128
319.41	164.3127
320.08	161.7162
323.87	177.7686
323.87	177.7686
328.76	177.7453
333.37	136.2645
334.37	161.3342
334.37	161.3342
338.28	143.5578
338.28	143.5578
338.32	143.5626
338.32	143.5626
338.32	143.5626
340.48	113.6201
340.55	113.6276
344.28	154.2791
351.06	140.6962
351.93	140.8137
356.01	154.2812
364.49	136.8291
366.42	138.9654
383.85	128.6961
388.16	117.6179
388.63	121.5261
391.69	141.1947
400.66	128.6505
401.81	120.9727
402.40	121.0332
404.85	126.7642
410.95	128.9939
414.70	140.4444
423.72	108.3081
427.09	115.5805
427.87	111.6650
433.94	116.2213
453.88	100.7584
463.37	115.8450
468.07	93.8287
473.00	97.0666
476.78	101.4827
477.60	93.2547
487.02	92.8568
492.35	107.8800
497.08	96.6859
511.00	94.4573
514.00	107.2046
527.90	124.5527
529.87	0.0000
531.02	105.4469
537.26	91.8456
546.56	0.0000
563.25	98.9182
569.33	97.0959
569.50	97.1067
569.70	97.1174
583.19	77.9105
600.60	99.9000
602.73	104.2785
604.72	102.2546
609.32	75.3967
609.32	75.3967
610.33	67.8973
614.28	95.2819
618.01	78.2126
621.93	89.3317
621.93	89.3317
633.25	83.5018
635.95	68.9282
636.99	62.5331
645.85	64.7004
657.76	147.9562
661.66	102.5825
661.66	102.5825
664.57	0.0000
666.33	135.5729
666.50	106.5995
677.62	90.3188

685.70	85.9923
695.00	99.7192
696.49	103.6006
696.51	103.6032
697.00	111.2357
702.65	87.7302
706.68	116.5851
711.68	73.7760
720.70	46.5279
721.93	0.0000
722.78	73.8834
722.91	73.8890
723.31	81.9370
724.19	70.7230
727.33	83.0732
733.00	108.1798
735.93	97.0215
739.50	87.4775
747.24	85.8688
752.31	81.1945
753.82	84.1943
756.73	67.6490
763.94	72.1535
765.81	73.8611
766.42	82.0923
777.92	63.1539
778.90	70.3708
783.70	77.4877
785.37	76.5563
795.86	81.9359
801.95	93.5316
810.29	89.5389
810.76	86.5396
815.77	59.5085
818.51	71.7038
832.01	85.3617
834.85	80.3848
836.80	0.0000
846.77	69.5655
856.80	68.5091
860.56	78.2303
871.09	70.3209
873.19	54.8594
875.33	0.0000
879.36	70.5766
880.51	69.5730
883.24	77.9718
884.68	78.0212
889.28	76.0922
898.04	71.1477
911.20	66.2854
911.20	66.2854
911.20	66.2854
926.50	57.6518
937.49	39.0031
944.13	60.7977
946.00	54.4390
949.00	63.0563
962.29	69.0758
964.08	48.3871
966.15	73.5384
968.97	117.4345
968.97	117.4345
968.97	117.4345
983.53	60.6826
996.26	80.5888
1001.03	63.2817
1004.73	71.0208
1037.84	74.6884
1038.76	0.0000
1048.07	60.1652
1050.41	52.8066
1050.41	52.8066
1063.66	64.2383
1085.87	55.3749
1099.45	77.3354
1112.07	73.0811
1115.54	55.2856

1120.29	86.3246
1120.29	86.3246
1120.55	86.3320
1121.30	89.6129
1131.51	0.0000
1173.23	80.3083
1177.93	78.4951
1189.05	81.7065
1204.77	94.8450
1221.41	92.4127
1231.02	116.3675
1235.36	98.7549
1238.28	106.7563
1260.41	0.0000
1271.85	50.9523
1274.44	47.9941
1274.54	47.9941
1291.59	39.6339
1298.22	0.0000
1312.11	54.6240
1332.49	36.6416
1365.19	31.8603
1368.63	0.0000
1384.29	29.9712
1408.01	23.9331
1457.56	0.0000
1460.82	26.4038
1489.16	22.3518
1505.03	36.3450
1596.21	30.9674
1620.50	16.0513
1678.03	0.0000
1690.97	14.4114
1764.49	23.9540
1764.49	23.9540
1770.23	11.9928
1771.35	11.9958
1791.20	0.0000
1836.06	20.8704

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247544001

Total Uranium Activity	4.5287E+00	ug/g
Total Uranium Counting Unc.	2.5088E+00	ug/g
Total Uranium Tpu	1.2800E-06	ug/g
Total Uranium Mda	1.2252E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 956157                          SAMPLE ID   : G247544001
*  ANALYST       : MXR1                             DETECTOR    : GAM25
*  SAMPLE DATE   : 18-FEB-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE: 2-MAR-2010 20:54:01.80            SAMPLE ALQT: 134.370 GRAM
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.124E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.400E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 4.006E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.947E+00

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VAX/VMS Nuclide Identification Report Generated 3-MAR-2010 03:24:00.69

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563001.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 23:21:20.
Sample ID          : G247563001 Sample quantity : 1.33710E+02 GRAM
Detector name      : GAM20 Detector geometry: CAN
Elapsed live time  : 0 04:00:00.00 Elapsed real time: 0 04:01:09.01 0.5%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 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	63.36*	219	1373	0.82	126.71	123	9	1.52E-02	32.2	
2	3	74.96*	1152	1075	1.18	149.87	143	15	8.00E-02	5.6	4.33E+00
3	3	77.23*	1763	858	1.06	154.40	143	15	1.22E-01	3.7	
4	5	87.34	733	842	1.25	174.59	164	28	5.09E-02	7.5	1.13E+00
5	5	90.04*	532	803	1.21	179.99	164	28	3.70E-02	10.2	
6	5	92.92*	732	970	1.44	185.72	164	28	5.08E-02	9.4	
7	0	105.35	161	744	1.36	210.55	207	8	1.12E-02	30.3	
8	0	129.58	195	840	0.91	258.94	254	9	1.35E-02	27.8	
9	0	143.78*	154	936	1.57	287.30	282	11	1.07E-02	40.4	
10	0	186.02*	616	820	1.24	371.66	366	12	4.28E-02	10.5	
11	0	209.13	274	595	1.16	417.83	413	9	1.90E-02	17.2	
12	5	238.67*	2940	473	1.11	476.84	472	27	2.04E-01	2.3	1.14E+00
13	5	241.62	639	534	1.56	482.73	472	27	4.44E-02	8.8	
14	3	270.25	274	413	1.67	539.91	532	28	1.90E-02	15.2	1.52E+00
15	3	277.56	193	367	1.60	554.51	532	28	1.34E-02	20.5	
16	0	295.33	934	461	1.22	590.01	584	12	6.49E-02	5.6	
17	0	300.14	226	347	1.23	599.62	596	9	1.57E-02	16.3	
18	0	328.21	236	426	1.14	655.71	650	13	1.64E-02	19.2	
19	0	338.55	615	419	1.22	676.36	671	12	4.27E-02	7.8	
20	0	352.00*	1553	411	1.23	703.23	697	13	1.08E-01	3.8	
21	0	409.39	85	242	0.96	817.90	813	10	5.90E-03	36.2	
22	0	463.16	222	263	1.44	925.36	919	14	1.54E-02	16.9	
23	0	511.05*	286	330	1.58	1021.06	1014	15	1.99E-02	17.5	
24	0	583.46*	936	218	1.54	1165.79	1160	12	6.50E-02	4.6	
25	0	609.61*	1126	230	1.47	1218.05	1212	14	7.82E-02	4.2	
26	0	727.33*	224	139	1.81	1453.39	1448	11	1.56E-02	12.6	
27	0	769.32	178	227	2.47	1537.33	1530	18	1.24E-02	21.1	
28	0	785.96	100	164	1.32	1570.61	1563	14	6.94E-03	29.2	
29	0	795.13	86	189	1.25	1588.95	1582	13	6.00E-03	34.5	
30	0	860.93	131	120	1.46	1720.53	1716	11	9.11E-03	18.3	
31	0	911.42*	680	156	1.62	1821.51	1813	16	4.72E-02	5.7	
32	0	934.09	73	127	1.46	1866.85	1862	12	5.09E-03	33.0	
33	3	965.14	87	138	1.77	1928.96	1925	19	6.02E-03	25.3	9.98E-01
34	3	969.38*	356	121	1.61	1937.45	1925	19	2.47E-02	8.1	
35	0	1120.96	210	190	1.62	2240.68	2234	14	1.46E-02	15.5	
36	0	1239.03	58	205	1.03	2476.94	2472	13	4.01E-03	53.1	
37	0	1378.44	64	57	1.63	2755.99	2750	13	4.41E-03	27.7	
38	0	1461.28*	3308	34	1.96	2921.83	2912	17	2.30E-01	1.8	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
39	0	1509.21	38	19	3.31	3017.79	3010	12	2.61E-03	29.2	
40	0	1588.63	49	61	1.13	3176.83	3167	18	3.37E-03	40.8	
41	0	1730.02	59	20	2.34	3460.02	3453	16	4.07E-03	21.5	
42	0	1764.94*	176	32	1.53	3529.96	3524	14	1.22E-02	10.3	

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

## VMS Nuclide Identification Report V3.1 Generated 3-MAR-2010 03:24:03

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563001.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8  
 Sample title : MXR1  
 Sample date : 15-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 23:21:20  
 Sample ID : G247563001 Sample quantity : 133.71 GRAM  
 Sample type : SOLID Sample geometry :  
 Detector name : GAMMA20 Detector geometry: CAN  
 Elapsed live time: 0 04:00:00.00 Elapsed real time: 0 04:01:09.01 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

## 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	*	3.477E+01	3.280E+00	2.992E-01	2.609E-02	116.212
CD-109	+	88.03	*	4.101E+00	7.246E-01	7.429E-01	7.025E-02	5.520
SN-126	+	64.28		6.890E-01	4.548E-01	4.434E-01	6.420E-02	1.554
	+	86.94		1.666E+00	7.352E-01	3.038E-01	1.261E-01	5.482
	+	87.57	*	4.006E-01	7.078E-02	7.278E-02	6.845E-03	5.505
EU-155	+	86.55		4.859E-01	8.605E-02	8.885E-02	8.321E-03	5.468
	+	105.31	*	1.456E-01	8.913E-02	1.069E-01	9.285E-03	1.363
TL-208	+	277.37		8.703E-01	3.757E-01	3.824E-01	5.153E-02	2.276
	+	583.19	*	5.737E-01	7.944E-02	4.112E-02	4.223E-03	13.952
	+	860.56		7.543E-01	2.874E-01	3.004E-01	3.182E-02	2.511
BI-211		72.87		5.727E+00	1.905E+00	3.221E+00	2.544E-01	1.778
	+	351.06	*	4.251E+00	5.170E-01	2.046E-01	1.961E-02	20.775
BI-212	+	727.33	*	2.094E+00	5.990E-01	5.336E-01	7.236E-02	3.925
	+	785.37		6.047E+00	3.583E+00	3.296E+00	3.348E-01	1.834
		1620.50		1.552E+00	1.508E+00	2.749E+00	2.315E-01	0.565
PB-212	+	74.82		2.598E+00	4.397E-01	3.271E-01	4.133E-02	7.941
	+	77.11		2.311E+00	2.580E-01	1.904E-01	1.575E-02	12.140
	+	238.63	*	1.803E+00	2.093E-01	6.071E-02	6.483E-03	29.704
	+	300.09		2.151E+00	7.428E-01	7.518E-01	8.672E-02	2.861
BI-214	+	609.32	*	1.336E+00	1.867E-01	6.860E-02	7.663E-03	19.470
	+	1120.29		1.272E+00	4.174E-01	3.169E-01	3.444E-02	4.013
	+	1764.49		1.469E+00	3.264E-01	2.023E-01	1.662E-02	7.262
PB-214	+	74.82		4.604E+00	7.350E-01	5.798E-01	6.557E-02	7.941
	+	77.11		4.075E+00	5.655E-01	3.356E-01	3.920E-02	12.140
	+	242.00		2.378E+00	4.981E-01	3.691E-01	4.163E-02	6.441
	+	295.22		1.578E+00	2.578E-01	1.329E-01	1.570E-02	11.873
	+	351.93	*	1.543E+00	2.060E-01	7.441E-02	8.218E-03	20.731
RA-224	+	240.99	*	4.204E+00	8.465E-01	6.506E-01	6.289E-02	6.462
RA-226	+	609.32	*	1.336E+00	1.867E-01	6.860E-02	7.663E-03	19.470
	+	1120.29		1.272E+00	4.174E-01	3.169E-01	3.444E-02	4.013
	+	1764.49		1.469E+00	3.264E-01	2.023E-01	1.662E-02	7.262
AC-228	+	338.32		1.874E+00	8.374E-01	2.412E-01	1.010E-01	7.769
	+	911.20	*	1.988E+00	3.371E-01	1.528E-01	1.921E-02	13.013
	+	968.97		1.793E+00	5.296E-01	2.600E-01	6.432E-02	6.894

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RA-228	+	338.32		1.874E+00	8.374E-01	2.412E-01	1.010E-01	7.769
	+	911.20	*	1.988E+00	3.371E-01	1.528E-01	1.921E-02	13.013
	+	968.97		1.793E+00	5.296E-01	2.600E-01	6.432E-02	6.894
TH-228	+	74.82		2.598E+00	3.612E-01	3.271E-01	2.665E-02	7.941
	+	77.11		2.311E+00	2.580E-01	1.904E-01	1.575E-02	12.140
	+	238.63	*	1.803E+00	2.093E-01	6.071E-02	6.483E-03	29.704
	+	300.09		2.151E+00	1.495E+00	7.518E-01	4.616E-01	2.861
TH-232	+	338.32		1.874E+00	3.408E-01	2.412E-01	2.260E-02	7.769
	+	911.20	*	1.988E+00	3.371E-01	1.528E-01	1.921E-02	13.013
	+	968.97		1.793E+00	5.296E-01	2.600E-01	6.432E-02	6.894
TH-234	+	63.29	*	1.788E+00	1.194E+00	1.162E+00	2.064E-01	1.539
	+	92.59		3.387E+00	9.855E-01	6.204E-01	1.383E-01	5.459
U-235	+	89.96		3.048E+00	9.802E-01	7.655E-01	1.903E-01	3.981
	+	93.35		2.558E+00	7.643E-01	4.672E-01	1.087E-01	5.476
	+	143.76	*	2.810E-01	2.318E-01	2.098E-01	3.539E-02	1.339
		163.33		-3.826E-02	3.088E-01	4.768E-01	8.576E-02	-0.080
	+	185.72		2.450E-01	5.604E-02	4.242E-02	3.817E-03	5.777
		205.31		-3.563E-01	3.745E-01	5.179E-01	9.560E-02	-0.688
NP-237	+	86.48	*	1.195E+00	3.278E-01	2.187E-01	5.015E-02	5.466
		95.86		2.250E-02	6.173E-01	8.935E-01	2.154E-01	0.025
U-238	+	63.29	*	1.788E+00	1.194E+00	1.162E+00	2.064E-01	1.539
	+	92.59		3.387E+00	7.050E-01	6.204E-01	5.662E-02	5.459
ANH-511	+	511.00	*	1.341E-01	4.853E-02	3.035E-02	2.828E-03	4.419

## ---- 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	*	-5.893E-02	2.060E-01	3.290E-01	3.197E-02	-0.179
NA-22		1274.54	*	-1.263E-02	2.920E-02	4.547E-02	3.766E-03	-0.278
NA-24		1368.63	*	2.786E-01	2.920E-02	Half-Life too short		
SC-46		889.28	*	8.529E-04	2.613E-02	4.327E-02	4.313E-03	0.020
	+	1120.55		2.158E-01	6.934E-02	8.916E-02	7.626E-03	2.421
V-48		944.13		1.318E-02	6.129E-01	1.010E+00	9.856E-02	0.013
		983.53	*	2.951E-02	5.024E-02	8.535E-02	8.158E-03	0.346
		1312.11		1.118E-02	5.642E-02	9.214E-02	7.688E-03	0.121
CR-51		320.08	*	3.165E-02	2.505E-01	4.172E-01	4.180E-02	0.076
MN-54		834.85	*	7.446E-03	2.613E-02	4.399E-02	4.443E-03	0.169
CO-56		846.77	*	-8.728E-04	2.647E-02	4.379E-02	4.413E-03	-0.020
		1037.84		9.029E-02	2.134E-01	3.583E-01	3.454E-02	0.252
	+	1238.28		9.735E-02	1.037E-01	1.194E-01	1.011E-02	0.815
		1771.35		-9.345E-02	1.773E-01	2.250E-01	1.846E-02	-0.415
CO-57		122.06	*	-3.823E-03	1.661E-02	2.649E-02	2.211E-03	-0.144
		136.47		1.489E-03	1.379E-01	2.206E-01	1.995E-02	0.007
CO-58		810.76	*	-1.355E-02	2.709E-02	4.368E-02	4.436E-03	-0.310
FE-59		1099.45	*	3.511E-02	6.255E-02	1.055E-01	9.945E-03	0.333
		1291.59		6.128E-04	8.605E-02	1.386E-01	1.318E-02	0.004
CO-60		1173.23		-5.004E-03	3.241E-02	5.204E-02	4.184E-03	-0.096
		1332.49	*	-7.073E-03	2.562E-02	4.011E-02	3.360E-03	-0.176

---- 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	*		-2.792E-02	7.184E-02	9.733E-02	8.378E-03	-0.287
SE-75	121.12			-1.980E-02	8.599E-02	1.372E-01	1.492E-02	-0.144
	136.00			-6.049E-03	2.635E-02	4.185E-02	3.537E-03	-0.145
	264.66	*		-1.489E-02	3.206E-02	4.606E-02	4.560E-03	-0.323
	279.54			2.969E-02	7.779E-02	1.163E-01	1.191E-02	0.255
	400.66			5.215E-02	1.790E-01	2.967E-01	3.248E-02	0.176
SR-85	514.00	*		7.479E-02	2.889E-02	4.645E-02	4.338E-03	1.610
Y-88	898.04			-2.272E-03	2.732E-02	4.487E-02	4.476E-03	-0.051
	1836.06	*		4.527E-03	2.047E-02	3.466E-02	2.796E-03	0.131
Y-91	1204.77	*		-5.981E-01	1.606E+01	2.594E+01	2.106E+00	-0.023
NB-94	702.65	*		3.153E-02	2.247E-02	3.987E-02	4.034E-03	0.791
	871.09			-2.424E-02	2.173E-02	3.299E-02	3.306E-03	-0.735
NB-95	765.81	*		4.674E-02	3.013E-02	4.835E-02	4.914E-03	0.967
NB-95M	235.69	*		6.409E-02	8.799E-02	1.339E-01	1.442E-02	0.479
ZR-95	724.19			4.707E-02	6.493E-02	9.955E-02	1.072E-02	0.473
	756.73	*		1.879E-02	4.617E-02	7.877E-02	8.616E-03	0.239
MO-99	140.51			-4.125E+00	1.837E+01	2.519E+01	5.963E+00	-0.164
	181.07			-2.345E+00	1.492E+01	2.079E+01	3.936E+00	-0.113
	366.42			-1.993E+01	7.280E+01	1.184E+02	1.053E+01	-0.168
	739.50	*		1.920E+00	9.148E+00	1.545E+01	2.573E+00	0.124
	777.92			-2.133E+01	3.207E+01	4.094E+01	4.160E+00	-0.521
TC-99M	140.51	*		-1.917E+10	3.207E+01	Half-Life	too short	
RU-103	497.08	*		1.649E-02	2.577E-02	4.299E-02	6.168E-03	0.383
	610.33		+	1.388E+01	2.636E+00	2.046E+00	3.483E-01	6.786
RH-106	621.93	*		3.070E-01	2.137E-01	3.627E-01	5.122E-02	0.846
	1050.41			-4.300E-01	1.719E+00	2.760E+00	2.519E-01	-0.156
RU-106	621.93	*		3.070E-01	2.114E-01	3.627E-01	3.590E-02	0.846
	1050.41			-4.300E-01	1.719E+00	2.760E+00	2.519E-01	-0.156
AG-108M	433.94	*		5.219E-03	1.874E-02	3.099E-02	2.793E-03	0.168
	614.28			4.225E-03	2.419E-02	3.420E-02	3.460E-03	0.124
	722.91			1.024E-02	2.603E-02	3.907E-02	4.055E-03	0.262
AG-110M	657.76	*		-1.968E-03	2.257E-02	3.782E-02	3.875E-03	-0.052
	677.62			1.014E-01	2.002E-01	3.449E-01	3.548E-02	0.294
	706.68			-9.502E-02	1.385E-01	2.231E-01	2.306E-02	-0.426
	763.94			7.816E-02	1.123E-01	1.717E-01	1.780E-02	0.455
	884.68			1.172E-02	3.286E-02	5.549E-02	5.672E-03	0.211
	937.49			5.191E-02	8.649E-02	1.297E-01	1.305E-02	0.400
	1384.29			-3.563E-02	1.195E-01	1.666E-01	1.444E-02	-0.214
	1505.03			-3.654E-02	1.623E-01	2.236E-01	1.895E-02	-0.163
SN-113	391.69	*		4.945E-03	2.886E-02	4.769E-02	4.114E-03	0.104
CD-115	260.90			2.401E+01	9.961E+01	1.680E+02	1.653E+01	0.143
	492.35			-2.484E+01	2.756E+01	4.219E+01	3.878E+00	-0.589
	527.90	*		-1.738E+00	9.003E+00	1.437E+01	1.355E+00	-0.121
SN-117M	156.02			2.470E-01	1.548E+00	2.474E+00	2.127E-01	0.100
	158.56	*		-1.969E-02	3.751E-02	5.855E-02	5.053E-03	-0.336
TE-123M	159.00	*		-1.211E-02	1.943E-02	3.023E-02	2.626E-03	-0.401
SB-124	602.73			2.439E-02	2.815E-02	4.381E-02	4.302E-03	0.557
	645.85			-6.515E-02	3.286E-01	5.481E-01	5.709E-02	-0.119
	722.78			9.256E-02	2.621E-01	3.922E-01	4.044E-02	0.236

----- 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	*		-8.389E-03	4.734E-02	7.642E-02	6.658E-03	-0.110
	427.87	*		1.073E-02	5.863E-02	9.655E-02	8.541E-03	0.111
	463.37		+	9.249E-01	3.243E-01	3.655E-01	3.510E-02	2.531
	600.60			-4.396E-02	1.221E-01	1.914E-01	1.985E-02	-0.230
	635.95			-1.927E-01	1.825E-01	2.706E-01	2.858E-02	-0.712
TE-125M	109.28	*		6.862E+00	7.127E+00	1.057E+01	1.097E+00	0.649
I-126	388.63			3.420E-02	1.159E-01	1.926E-01	1.622E-02	0.178
	666.33	*		4.221E-02	1.453E-01	2.478E-01	2.490E-02	0.170
	753.82			8.760E-02	1.187E+00	1.990E+00	2.022E-01	0.044
SB-126	414.70			-6.237E-02	6.073E-02	7.853E-02	6.729E-03	-0.794
	666.50			1.356E-02	4.987E-02	8.499E-02	8.540E-03	0.160
	695.00			1.272E-02	4.989E-02	8.481E-02	8.570E-03	0.150
	697.00			2.058E-02	1.780E-01	3.003E-01	3.036E-02	0.069
	720.70	*		-3.151E-03	1.008E-01	1.533E-01	1.555E-02	-0.021
SB-127	856.80			9.553E-02	3.409E-01	5.023E-01	5.051E-02	0.190
	252.40			-1.057E+00	3.295E+00	5.012E+00	2.096E+00	-0.211
	473.00			9.728E-01	1.178E+00	1.979E+00	2.605E-01	0.492
	685.70	*		1.760E-01	8.819E-01	1.497E+00	1.890E-01	0.118
	783.70			3.011E+00	2.996E+00	4.619E+00	6.269E-01	0.652
I-131	80.19			3.538E+00	3.759E+00	4.508E+00	3.892E-01	0.785
	284.31			2.609E-01	9.773E-01	1.644E+00	1.696E-01	0.159
	364.49	*		-3.858E-02	8.123E-02	1.309E-01	1.228E-02	-0.295
TE-132	636.99			-1.400E+00	1.101E+00	1.607E+00	1.670E-01	-0.871
	49.72			3.047E+00	8.609E+00	1.435E+01	1.511E+00	0.212
	111.76			-1.526E+01	2.416E+01	3.816E+01	4.191E+00	-0.400
	116.30			1.012E+01	2.055E+01	3.352E+01	3.665E+00	0.302
BA-133	228.16	*		-4.159E-01	5.168E-01	8.407E-01	1.380E-01	-0.495
	81.00			-4.100E-02	7.873E-02	8.767E-02	1.362E-02	-0.468
	276.40		+	8.045E-01	3.512E-01	4.231E-01	6.328E-02	1.901
	302.85			4.188E-02	9.652E-02	1.441E-01	1.998E-02	0.291
	356.01	*		-2.229E-03	2.817E-02	4.054E-02	5.378E-03	-0.055
I-133	383.85			2.228E-02	1.905E-01	3.145E-01	3.888E-02	0.071
	529.87	*		9.526E-04	1.905E-01	Half-Life	too short	
	875.33			7.722E-02	1.905E-01	Half-Life	too short	
CS-134	1298.22			-2.530E-02	1.905E-01	Half-Life	too short	
	563.25			9.583E-02	2.366E-01	3.885E-01	3.769E-02	0.247
	569.33			-1.918E-02	1.283E-01	2.042E-01	1.994E-02	-0.094
	604.72			9.859E-03	2.591E-02	3.686E-02	3.629E-03	0.267
	795.86	*	+	7.658E-02	5.336E-02	6.346E-02	6.475E-03	1.207
CS-135	801.95			-1.428E-01	3.055E-01	4.332E-01	4.413E-02	-0.330
	1365.19			4.222E-01	7.516E-01	1.320E+00	1.164E-01	0.320
	268.22	*		2.496E-01	1.049E-01	1.826E-01	2.024E-02	1.367
	546.56			-2.773E+10	1.049E-01	Half-Life	too short	
	836.80			1.385E+10	1.049E-01	Half-Life	too short	
I-135	1038.76			-2.528E+10	1.049E-01	Half-Life	too short	
	1131.51			1.761E+10	1.049E-01	Half-Life	too short	
	1260.41	*		-7.189E+09	1.049E-01	Half-Life	too short	
	1457.56			7.130E+11	1.049E-01	Half-Life	too short	
	1678.03			-1.107E+10	1.049E-01	Half-Life	too short	

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CS-136	1791.20			-4.013E+09	1.049E-01	Half-Life	too short	
	153.25			3.566E-01	5.935E-01	9.606E-01	9.817E-02	0.371
	176.60			2.355E-01	3.493E-01	5.639E-01	5.493E-02	0.418
	273.65			1.924E-01	3.138E-01	5.343E-01	5.645E-02	0.360
	340.55			4.700E-01	1.230E-01	1.977E-01	1.905E-02	2.378
	818.51			-1.679E-02	5.109E-02	8.316E-02	8.427E-03	-0.202
BA-137M	1048.07	*		-2.580E-02	7.257E-02	1.156E-01	1.097E-02	-0.223
	1235.36			-3.258E-01	5.071E-01	6.678E-01	7.651E-02	-0.488
	661.66	*		-1.350E-02	2.304E-02	3.753E-02	3.766E-03	-0.360
	661.66	*		-1.427E-02	2.434E-02	3.965E-02	3.985E-03	-0.360
	165.86	*		-2.239E-02	2.048E-02	3.118E-02	2.722E-03	-0.718
	162.66			6.079E-01	5.818E-01	9.279E-01	8.594E-02	0.655
LA-140	304.85			-2.155E-01	9.484E-01	1.364E+00	4.043E-01	-0.158
	423.72			2.345E-01	1.301E+00	2.140E+00	7.042E-01	0.110
	537.26	*		-8.002E-02	1.770E-01	2.743E-01	9.366E-02	-0.292
	328.76	+		9.096E-01	3.603E-01	3.853E-01	3.835E-02	2.361
	487.02			1.737E-02	9.301E-02	1.522E-01	1.470E-02	0.114
	815.77			-1.397E-02	2.297E-01	3.803E-01	4.184E-02	-0.037
CE-141	1596.21	*		1.470E-02	6.122E-02	9.067E-02	7.655E-03	0.162
	145.44	*		8.368E-02	4.792E-02	7.194E-02	6.212E-03	1.163
	57.36			-3.302E-04	4.792E-02	Half-Life	too short	
	293.27	*		6.918E-04	4.792E-02	Half-Life	too short	
	664.57			3.145E-04	4.792E-02	Half-Life	too short	
	721.93			-1.423E-05	4.792E-02	Half-Life	too short	
CE-144	80.12			1.760E+00	1.963E+00	2.350E+00	2.013E-01	0.749
	133.52	*		-3.744E-03	1.455E-01	2.070E-01	3.136E-02	-0.018
	476.78			-2.316E-02	4.242E-02	6.675E-02	6.534E-03	-0.347
	618.01			6.096E-03	2.151E-02	3.493E-02	3.525E-03	0.175
	696.49	*		3.358E-03	2.210E-02	3.736E-02	3.778E-03	0.090
	696.51	*		2.644E-01	1.655E+00	2.799E+00	2.829E-01	0.094
PM-144	1489.16			2.591E+00	6.788E+00	1.181E+01	1.001E+00	0.219
	453.88	*		7.228E-03	2.740E-02	4.516E-02	4.887E-03	0.160
	633.25			3.104E-01	9.488E-01	1.532E+00	5.899E-01	0.203
	735.93			-6.636E-02	9.860E-02	1.557E-01	4.441E-02	-0.426
	747.24			-4.122E-02	6.315E-02	1.010E-01	1.570E-02	-0.408
	91.11	+		1.012E+00	2.299E-01	3.428E-01	3.393E-02	2.952
ND-147	319.41			-1.411E+00	2.314E+00	3.739E+00	3.597E-01	-0.377
	531.02	*		1.907E-01	3.855E-01	6.366E-01	9.829E-02	0.300
	285.90	*		-3.333E+01	6.711E+01	1.094E+02	1.784E+01	-0.305
	121.78			-1.166E-02	4.772E-02	7.609E-02	7.352E-03	-0.153
	244.70			-1.314E-01	2.078E-01	3.409E-01	3.307E-02	-0.386
	344.28	*		3.852E-02	7.087E-02	1.058E-01	1.032E-02	0.364
EU-152	778.90			-1.168E-01	2.085E-01	2.692E-01	2.735E-02	-0.434
	964.08	+		4.700E-01	2.425E-01	3.900E-01	3.767E-02	1.205
	1085.87			9.180E-02	2.765E-01	4.601E-01	4.073E-02	0.200
	1112.07			8.042E-02	2.127E-01	3.544E-01	3.058E-02	0.227
	1408.01			2.987E-02	1.201E-01	2.051E-01	1.733E-02	0.146
	69.67			-2.698E-01	1.103E+00	1.601E+00	1.225E-01	-0.169
GD-153	97.43	*		-8.341E-02	6.294E-02	8.501E-02	7.539E-03	-0.981

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-154		103.18		-6.960E-02	7.873E-02	1.092E-01	9.446E-03	-0.637
		123.07		2.726E-02	3.400E-02	5.570E-02	6.205E-03	0.489
		723.31		7.184E-02	1.156E-01	1.765E-01	1.922E-02	0.407
		873.19		-9.869E-02	1.797E-01	2.857E-01	3.697E-02	-0.345
		996.26		-2.577E-02	2.508E-01	4.085E-01	7.317E-02	-0.063
TB-160		1004.73		-1.099E-01	1.610E-01	2.522E-01	3.090E-02	-0.436
		1274.44	*	-6.321E-02	8.465E-02	1.282E-01	1.425E-02	-0.493
	+	86.79		1.294E+00	2.286E-01	3.173E-01	2.955E-02	4.077
		197.04		3.125E-02	3.650E-01	6.156E-01	5.635E-02	0.051
		215.65		2.786E-01	4.729E-01	8.106E-01	7.611E-02	0.344
		298.57		2.620E-01	1.072E-01	1.348E-01	1.325E-02	1.943
		879.36	*	-3.332E-02	9.016E-02	1.454E-01	1.454E-02	-0.229
		962.29		4.361E-01	4.073E-01	6.266E-01	6.059E-02	0.696
	+	966.15		3.296E-01	1.700E-01	2.958E-01	2.855E-02	1.114
		1177.93		3.886E-02	2.679E-01	4.379E-01	3.526E-02	0.089
HO-166M		1271.85		-2.735E-01	4.704E-01	7.227E-01	5.976E-02	-0.378
		80.57		1.924E-01	2.119E-01	2.538E-01	2.186E-02	0.758
		184.41		8.078E-02	2.818E-02	4.513E-02	4.054E-03	1.790
		280.46		-3.494E-03	5.907E-02	8.644E-02	8.601E-03	-0.040
		410.95		1.794E-01	1.792E-01	2.721E-01	2.322E-02	0.659
TA-182		711.68	*	2.215E-03	3.751E-02	6.305E-02	6.387E-03	0.035
		752.31		-4.218E-02	1.767E-01	2.909E-01	2.956E-02	-0.145
		810.29		-2.739E-02	4.000E-02	6.366E-02	6.453E-03	-0.430
		67.75		-1.801E-02	7.110E-02	1.033E-01	7.766E-03	-0.174
		100.11		1.288E-01	1.186E-01	1.929E-01	1.689E-02	0.667
		152.43		7.996E-02	2.326E-01	3.743E-01	3.202E-02	0.214
		222.11		6.816E-02	2.334E-01	3.964E-01	3.753E-02	0.172
	+	1121.30		5.974E-01	1.919E-01	2.512E-01	2.147E-02	2.378
		1189.05		-6.243E-02	2.219E-01	3.505E-01	2.832E-02	-0.178
		1221.41	*	-4.299E-02	1.476E-01	2.345E-01	1.913E-02	-0.183
IR-192		1231.02		2.278E-01	3.548E-01	5.929E-01	4.851E-02	0.384
	+	295.96		1.171E+00	1.759E-01	2.020E-01	2.001E-02	5.798
		308.46		7.347E-03	5.904E-02	9.851E-02	9.632E-03	0.075
		316.51	*	2.115E-02	2.302E-02	3.934E-02	3.805E-03	0.538
HG-203		468.07		-1.230E-02	4.855E-02	6.766E-02	6.506E-03	-0.182
		70.83		5.372E-01	8.570E-01	1.271E+00	1.983E-01	0.423
		72.87		1.434E+00	5.119E-01	8.068E-01	1.222E-01	1.778
BI-207		279.20	*	2.444E-02	2.798E-02	4.268E-02	4.331E-03	0.573
		72.81		2.902E-01	1.082E-01	1.829E-01	1.443E-02	1.587
	+	74.97		7.487E-01	1.037E-01	1.426E-01	1.151E-02	5.250
		569.70		-6.247E-03	1.994E-02	3.142E-02	3.036E-03	-0.199
		1063.66	*	2.019E-02	3.715E-02	6.265E-02	5.657E-03	0.322
PB-210		1770.23		-6.770E-02	3.409E-01	4.640E-01	3.807E-02	-0.146
		46.54	*	6.635E-01	1.408E+00	2.293E+00	2.107E-01	0.289
		404.85	*	-3.986E-01	5.965E-01	7.750E-01	3.748E-01	-0.514
PB-211		427.09		-5.350E-01	1.029E+00	1.589E+00	7.353E-01	-0.337
		832.01		-4.211E-01	7.256E-01	1.108E+00	5.777E-01	-0.380
RN-219	+	271.23		7.394E-01	2.393E-01	2.995E-01	3.403E-02	2.468
		401.81	*	4.944E-02	2.826E-01	4.662E-01	6.888E-02	0.106

----- 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		-9.608E-02	1.779E-01	1.984E-01	1.719E-02	-0.484
		83.79		1.994E-01	7.883E-02	1.296E-01	1.161E-02	1.539
		94.87		8.967E-01	3.215E-01	4.931E-01	4.436E-02	1.819
	+	144.24		9.417E-01	7.656E-01	7.752E-01	7.351E-02	1.215
		154.21		3.707E-01	2.624E-01	4.321E-01	4.063E-02	0.858
AC-227	+	269.46		5.745E-01	1.835E-01	2.389E-01	2.400E-02	2.405
		323.87	*	-5.273E-03	4.669E-01	6.790E-01	1.210E-01	-0.008
	+	338.28		7.437E+00	1.491E+00	1.646E+00	2.077E-01	4.518
		79.69		-2.286E-02	1.032E+00	1.184E+00	2.035E-01	-0.019
		235.96		1.831E-01	1.144E-01	1.771E-01	1.981E-02	1.034
TH-227		256.23	*	-5.117E-02	1.646E-01	2.726E-01	3.522E-02	-0.188
	+	299.98		2.366E+00	8.342E-01	1.113E+00	1.508E-01	2.125
		304.50		1.699E-01	1.100E+00	1.620E+00	2.780E-01	0.105
		334.37		1.332E+00	1.565E+00	1.777E+00	2.851E-01	0.750
		79.80		1.031E+00	1.303E+00	1.535E+00	3.337E-01	0.672
TH-229		235.96		1.831E-01	1.142E-01	1.771E-01	1.886E-02	1.034
		256.23	*	-5.117E-02	1.646E-01	2.726E-01	3.920E-02	-0.188
	+	299.98		2.366E+00	8.342E-01	1.113E+00	1.508E-01	2.125
		304.50		1.699E-01	1.100E+00	1.620E+00	2.780E-01	0.105
		334.37		1.332E+00	1.565E+00	1.777E+00	2.851E-01	0.750
TH-229		85.43		4.469E-01	1.362E-01	2.229E-01	2.039E-02	2.005
	+	88.47		6.176E-01	1.091E-01	1.552E-01	1.462E-02	3.981
		193.51	*	-1.383E-02	3.339E-01	5.652E-01	5.146E-02	-0.024
		210.85		1.485E+00	6.457E-01	1.025E+00	9.562E-02	1.449
		283.69	*	6.865E-01	9.415E-01	1.553E+00	2.391E-01	0.442
PA-231	+	301.36		1.520E+00	5.329E-01	7.130E-01	9.282E-02	2.132
TH-231		81.07		-9.608E-02	1.779E-01	1.984E-01	1.719E-02	-0.484
		83.79		1.994E-01	7.883E-02	1.296E-01	1.161E-02	1.539
		94.87		8.967E-01	3.215E-01	4.931E-01	4.436E-02	1.819
	+	144.24		9.417E-01	7.656E-01	7.752E-01	7.351E-02	1.215
		154.21		3.707E-01	2.624E-01	4.321E-01	4.063E-02	0.858
PA-233	+	269.46		5.745E-01	1.835E-01	2.389E-01	2.400E-02	2.405
		323.87	*	-5.273E-03	4.669E-01	6.790E-01	1.210E-01	-0.008
	+	338.28		7.437E+00	1.491E+00	1.646E+00	2.077E-01	4.518
	+	300.13		1.071E+00	3.862E-01	5.051E-01	7.857E-02	2.120
		311.90	*	-2.973E-02	4.160E-02	6.691E-02	6.639E-03	-0.444
PA-234		340.48		2.204E+00	7.237E-01	8.500E-01	2.068E-01	2.593
		94.67		5.127E-01	1.327E-01	1.908E-01	2.419E-02	2.687
		98.44		5.214E-02	6.916E-02	9.772E-02	5.455E-02	0.534
		111.00		-2.464E-02	1.216E-01	1.949E-01	2.334E-02	-0.126
		131.20		5.790E-02	7.785E-02	1.141E-01	9.535E-03	0.508
PA-234M		569.50		-3.274E-02	1.765E-01	2.802E-01	2.707E-02	-0.117
		733.00		2.888E-01	2.807E-01	4.296E-01	9.811E-02	0.672
		880.51		-7.039E-02	1.793E-01	2.886E-01	2.885E-02	-0.244
		883.24		-6.536E-02	1.951E-01	3.073E-01	2.071E-01	-0.213
		926.50		-6.930E-03	1.248E-01	1.994E-01	5.128E-02	-0.035
PA-234M		946.00	*	2.204E-02	2.142E-01	3.546E-01	6.846E-02	0.062
		949.00		4.948E-01	3.118E-01	5.550E-01	5.403E-02	0.892
		766.42		1.320E+01	1.070E+01	1.344E+01	6.856E+00	0.983

----- 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	*		3.921E+00	3.392E+00	5.883E+00	6.293E-01	0.666
	99.53			7.966E-02	1.091E-01	1.762E-01	1.547E-02	0.452
	103.37			-5.754E-02	7.164E-02	9.975E-02	8.623E-03	-0.577
	+	106.12		1.161E-01	7.104E-02	9.150E-02	7.839E-03	1.269
	117.23	*		-1.383E-02	2.596E-01	4.170E-01	3.493E-02	-0.033
AM-241	228.18			-1.538E-01	1.412E-01	2.284E-01	2.178E-02	-0.673
	+	277.60		3.978E-01	1.679E-01	2.066E-01	2.055E-02	1.926
	59.54	*		9.124E-02	8.741E-02	1.325E-01	1.037E-02	0.688
CM-247	+	278.00		1.689E+00	7.129E-01	8.737E-01	8.694E-02	1.934
	287.50			6.407E-01	7.789E-01	1.332E+00	1.320E-01	0.481
	402.40	*		7.096E-03	2.558E-02	4.238E-02	3.583E-03	0.167
CF-249	252.80			-3.947E-01	6.888E-01	1.045E+00	1.021E-01	-0.378
	333.37			5.755E-02	1.720E-01	1.868E-01	1.764E-02	0.308
	388.16	*		1.114E-02	2.692E-02	4.494E-02	3.790E-03	0.248
CF-251	177.52	*		7.255E-02	8.953E-02	1.450E-01	1.289E-02	0.500
	227.38			-1.368E-01	2.292E-01	3.782E-01	3.602E-02	-0.362
	285.41			-1.089E+00	1.414E+00	2.283E+00	2.265E-01	-0.477

# 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]G247563001      *
* Acquisition date   : 2-MAR-2010 23:21:20 Detector SN#      :              *
* Detector ID        : GAM20                      Sensitivity   : 5.000        *
* Geometry           : CAN                      Energy tolerance: 1.500        *
* Elapsed live time  : 0 04:00:00.00             Abundance limit: 75.000        *
* Elapsed real time  : 0 04:01:09.01             Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247563001             Analyst initials: MXR1          *
* Batch Number       : 956157                 Sample Quantity : 1.3371E+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	3.477E+01	3.214E+00	2.998E-01	0.000E+00
CD-109	4.101E+00	7.101E-01	7.818E-01	0.000E+00
SN-126	4.006E-01	6.937E-02	7.660E-02	0.000E+00
EU-155	1.456E-01	8.734E-02	1.121E-01	0.000E+00
TL-208	5.737E-01	7.785E-02	4.188E-02	0.000E+00
BI-211	4.251E+00	5.066E-01	2.103E-01	0.000E+00
BI-212	2.094E+00	5.870E-01	5.414E-01	0.000E+00
PB-212	1.803E+00	2.052E-01	6.282E-02	0.000E+00
BI-214	1.336E+00	1.830E-01	6.982E-02	0.000E+00
PB-214	1.543E+00	2.019E-01	7.648E-02	0.000E+00
RA-224	4.204E+00	8.296E-01	6.731E-01	0.000E+00
RA-226	1.336E+00	1.830E-01	6.982E-02	0.000E+00
AC-228	1.988E+00	3.304E-01	1.544E-01	0.000E+00
RA-228	1.988E+00	3.304E-01	1.544E-01	0.000E+00
TH-228	1.803E+00	2.052E-01	6.282E-02	0.000E+00
TH-232	1.988E+00	3.304E-01	1.544E-01	0.000E+00
TH-234	1.788E+00	1.170E+00	1.229E+00	0.000E+00
U-235	2.810E-01	2.271E-01	2.190E-01	0.000E+00
NP-237	1.195E+00	3.212E-01	2.303E-01	0.000E+00
U-238	1.788E+00	1.170E+00	1.229E+00	0.000E+00
ANH-511	1.341E-01	4.755E-02	3.099E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-5.893E-02	2.019E-01	3.363E-01	0.000E+00 NOT IDENT.
NA-22	-1.263E-02	2.862E-02	4.567E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	6.724E+05	0.000E+00	0.000E+00 SHORT HLIF
SC-46	8.529E-04	2.561E-02	4.374E-02	0.000E+00 FAIL ABUN
V-48	2.951E-02	4.924E-02	8.613E-02	0.000E+00 NOT IDENT.
CR-51	3.165E-02	2.455E-01	4.295E-01	0.000E+00 NOT IDENT.

MN-54	7.446E-03	2.561E-02	4.452E-02	0.000E+00	NOT IDENT.
CO-56	-8.728E-04	2.594E-02	4.431E-02	0.000E+00	FAIL ABUN
CO-57	-3.823E-03	1.628E-02	2.773E-02	0.000E+00	NOT IDENT.
CO-58	-1.355E-02	2.655E-02	4.424E-02	0.000E+00	NOT IDENT.
FE-59	3.511E-02	6.130E-02	1.062E-01	0.000E+00	NOT IDENT.
CO-60	-7.073E-03	2.511E-02	4.025E-02	0.000E+00	NOT IDENT.
ZN-65	-2.792E-02	7.040E-02	9.799E-02	0.000E+00	NOT IDENT.
SE-75	-1.489E-02	3.142E-02	4.757E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	2.831E-02	4.742E-02	0.000E+00	NOT IDENT.
Y-88	4.527E-03	2.006E-02	3.457E-02	0.000E+00	NOT IDENT.
Y-91	-5.981E-01	1.574E+01	2.608E+01	0.000E+00	NOT IDENT.
NB-94	3.153E-02	2.202E-02	4.048E-02	0.000E+00	NOT IDENT.
NB-95	4.674E-02	2.953E-02	4.901E-02	0.000E+00	NOT IDENT.
NB-95M	6.409E-02	8.623E-02	1.386E-01	0.000E+00	NOT IDENT.
ZR-95	1.879E-02	4.525E-02	7.986E-02	0.000E+00	NOT IDENT.
MO-99	1.920E+00	8.965E+00	1.568E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	8.374E+16	0.000E+00	0.000E+00	SHORT HLIF
RU-103	1.649E-02	2.526E-02	4.391E-02	0.000E+00	FAIL ABUN
RH-106	3.070E-01	2.094E-01	3.690E-01	0.000E+00	NOT IDENT.
RU-106	3.070E-01	2.072E-01	3.690E-01	0.000E+00	NOT IDENT.
AG-108M	5.219E-03	1.837E-02	3.174E-02	0.000E+00	NOT IDENT.
AG-110M	-1.968E-03	2.212E-02	3.845E-02	0.000E+00	NOT IDENT.
SN-113	4.945E-03	2.828E-02	4.893E-02	0.000E+00	NOT IDENT.
CD-115	-1.738E+00	8.823E+00	1.466E+01	0.000E+00	NOT IDENT.
SN-117M	-1.969E-02	3.676E-02	6.101E-02	0.000E+00	NOT IDENT.
TE-123M	-1.211E-02	1.904E-02	3.149E-02	0.000E+00	NOT IDENT.
SB-124	-8.389E-03	4.640E-02	7.635E-02	0.000E+00	NOT IDENT.
SB-125	1.073E-02	5.745E-02	9.889E-02	0.000E+00	FAIL ABUN
TE-125M	6.862E+00	6.985E+00	1.108E+01	0.000E+00	NOT IDENT.
I-126	4.221E-02	1.424E-01	2.519E-01	0.000E+00	NOT IDENT.
SB-126	-3.151E-03	9.881E-02	1.556E-01	0.000E+00	NOT IDENT.
SB-127	1.760E-01	8.643E-01	1.520E+00	0.000E+00	NOT IDENT.
I-131	-3.858E-02	7.961E-02	1.345E-01	0.000E+00	NOT IDENT.
TE-132	-4.159E-01	5.065E-01	8.706E-01	0.000E+00	NOT IDENT.
BA-133	-2.229E-03	2.760E-02	4.166E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	5.483E+03	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	5.230E-02	6.428E-02	0.000E+00	FAIL ABUN
CS-135	0.000E+00	1.028E-01	1.886E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.242E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-2.580E-02	7.112E-02	1.165E-01	0.000E+00	NOT IDENT.
BA-137M	-1.350E-02	2.258E-02	3.814E-02	0.000E+00	NOT IDENT.
CS-137	-1.427E-02	2.385E-02	4.029E-02	0.000E+00	NOT IDENT.
CE-139	-2.239E-02	2.007E-02	3.247E-02	0.000E+00	NOT IDENT.
BA-140	-8.002E-02	1.735E-01	2.798E-01	0.000E+00	NOT IDENT.
LA-140	1.470E-02	6.000E-02	9.069E-02	0.000E+00	FAIL ABUN
CE-141	0.000E+00	4.696E-02	7.507E-02	0.000E+00	NOT IDENT.
CE-143	0.000E+00	1.971E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-3.744E-03	1.426E-01	2.164E-01	0.000E+00	NOT IDENT.
PM-144	3.358E-03	2.166E-02	3.794E-02	0.000E+00	NOT IDENT.
PR-144	2.644E-01	1.622E+00	2.842E+00	0.000E+00	NOT IDENT.
PM-146	7.228E-03	2.685E-02	4.620E-02	0.000E+00	NOT IDENT.
ND-147	1.907E-01	3.778E-01	6.495E-01	0.000E+00	FAIL ABUN
PM-149	-3.333E+01	6.577E+01	1.129E+02	0.000E+00	NOT IDENT.
EU-152	3.852E-02	6.945E-02	1.088E-01	0.000E+00	FAIL ABUN
GD-153	-8.341E-02	6.168E-02	8.931E-02	0.000E+00	NOT IDENT.
EU-154	-6.321E-02	8.295E-02	1.288E-01	0.000E+00	NOT IDENT.
TB-160	-3.332E-02	8.836E-02	1.470E-01	0.000E+00	FAIL ABUN
HO-166M	2.215E-03	3.676E-02	6.400E-02	0.000E+00	NOT IDENT.
TA-182	-4.299E-02	1.446E-01	2.357E-01	0.000E+00	FAIL ABUN
IR-192	2.115E-02	2.256E-02	4.051E-02	0.000E+00	FAIL ABUN
HG-203	2.444E-02	2.742E-02	4.404E-02	0.000E+00	NOT IDENT.
BI-207	2.019E-02	3.641E-02	6.313E-02	0.000E+00	FAIL ABUN
PB-210	6.635E-01	1.379E+00	2.439E+00	0.000E+00	NOT IDENT.
PB-211	-3.986E-01	5.846E-01	7.946E-01	0.000E+00	NOT IDENT.
RN-219	4.944E-02	2.769E-01	4.780E-01	0.000E+00	FAIL ABUN
RA-223	-5.273E-03	4.575E-01	6.989E-01	0.000E+00	FAIL ABUN
AC-227	-5.117E-02	1.613E-01	2.817E-01	0.000E+00	FAIL ABUN
TH-227	-5.117E-02	1.613E-01	2.817E-01	0.000E+00	FAIL ABUN
TH-229	-1.383E-02	3.272E-01	5.869E-01	0.000E+00	FAIL ABUN
PA-231	6.865E-01	9.227E-01	1.602E+00	0.000E+00	FAIL ABUN
TH-231	-5.273E-03	4.575E-01	6.989E-01	0.000E+00	FAIL ABUN
PA-233	-2.973E-02	4.077E-02	6.891E-02	0.000E+00	FAIL ABUN
PA-234	2.204E-02	2.099E-01	3.581E-01	0.000E+00	NOT IDENT.
PA-234M	3.921E+00	3.324E+00	5.934E+00	0.000E+00	NOT IDENT.
NP-239	-1.383E-02	2.544E-01	4.368E-01	0.000E+00	FAIL ABUN
AM-241	9.124E-02	8.566E-02	1.404E-01	0.000E+00	NOT IDENT.
CM-247	7.096E-03	2.507E-02	4.346E-02	0.000E+00	FAIL ABUN
CF-249	1.114E-02	2.639E-02	4.611E-02	0.000E+00	NOT IDENT.

CF-251	7.255E-02	8.774E-02	1.508E-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]G247563001.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 23:21:20.
Sample ID          : G247563001 Sample quantity : 1.33710E+02 GRAM
Detector name      : GAM20 Detector geometry: CAN
Elapsed live time  : 0 04:00:00.00 Elapsed real time: 0 04:01:09.01 0.5%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 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	3308	10.66*	1.253E+00	3.477E+01	3.477E+01	9.43
CD-109	88.03	733	3.70*	6.941E+00	4.006E+00	4.101E+00	17.67
SN-126	64.28	219	9.60	4.646E+00	6.890E-01	6.890E-01	66.00
	86.94	733	8.90	6.941E+00	1.666E+00	1.666E+00	44.14
	87.57	733	37.00*	6.941E+00	4.006E-01	4.006E-01	17.67
EU-155	86.55	733	30.70	6.941E+00	4.829E-01	4.859E-01	17.71
	105.31	161	21.10*	7.417E+00	1.447E-01	1.456E-01	61.20
TL-208	277.37	193	6.60	4.719E+00	8.703E-01	8.703E-01	43.16
	583.19	936	85.00*	2.695E+00	5.737E-01	5.737E-01	13.85
	860.56	131	12.50	1.953E+00	7.543E-01	7.543E-01	38.10
BI-211	72.87	-----	1.23	5.845E+00	-----	Line Not Found	-----
	351.06	1553	12.92*	3.969E+00	4.251E+00	4.251E+00	12.16
BI-212	727.33	224	6.67*	2.252E+00	2.094E+00	2.094E+00	28.60
	785.37	100	1.10	2.110E+00	6.047E+00	6.047E+00	59.26
	1620.50	-----	1.47	1.162E+00	-----	Line Not Found	-----
PB-212	74.82	1152	10.28	6.055E+00	2.598E+00	2.598E+00	16.93
	77.11	1763	17.10	6.262E+00	2.311E+00	2.311E+00	11.16
	238.63	2940	43.60*	5.248E+00	1.803E+00	1.803E+00	11.61
	300.09	226	3.30	4.460E+00	2.151E+00	2.151E+00	34.53
BI-214	609.32	1126	45.49*	2.602E+00	1.336E+00	1.336E+00	13.98
	1120.29	210	14.92	1.557E+00	1.272E+00	1.272E+00	32.82
	1764.49	176	15.30	1.100E+00	1.469E+00	1.469E+00	22.23
PB-214	74.82	1152	5.80	6.055E+00	4.604E+00	4.604E+00	15.96
	77.11	1763	9.70	6.262E+00	4.074E+00	4.075E+00	13.88
	242.00	639	7.25	5.204E+00	2.378E+00	2.378E+00	20.95
	295.22	934	18.42	4.513E+00	1.578E+00	1.578E+00	16.34
	351.93	1553	35.60*	3.969E+00	1.543E+00	1.543E+00	13.35
RA-224	240.99	639	4.10*	5.204E+00	4.204E+00	4.204E+00	20.13
RA-226	609.32	1126	45.49*	2.602E+00	1.336E+00	1.336E+00	13.98
	1120.29	210	14.92	1.557E+00	1.272E+00	1.272E+00	32.82
	1764.49	176	15.30	1.100E+00	1.469E+00	1.469E+00	22.23
AC-228	338.32	615	11.27	4.084E+00	1.874E+00	1.874E+00	44.68

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	911.20	680	25.80*	1.860E+00	1.988E+00	1.988E+00	16.95
	968.97	356	15.80	1.764E+00	1.793E+00	1.793E+00	29.55
	338.32	615	11.27	4.084E+00	1.874E+00	1.874E+00	44.68
TH-228	911.20	680	25.80*	1.860E+00	1.988E+00	1.988E+00	16.95
	968.97	356	15.80	1.764E+00	1.793E+00	1.793E+00	29.55
	74.82	1152	10.28	6.055E+00	2.598E+00	2.598E+00	13.90
TH-232	77.11	1763	17.10	6.262E+00	2.311E+00	2.311E+00	11.16
	238.63	2940	43.60*	5.248E+00	1.803E+00	1.803E+00	11.61
	300.09	226	3.30	4.460E+00	2.151E+00	2.151E+00	69.49
TH-234	338.32	615	11.27	4.084E+00	1.874E+00	1.874E+00	18.18
	911.20	680	25.80*	1.860E+00	1.988E+00	1.988E+00	16.95
	968.97	356	15.80	1.764E+00	1.793E+00	1.793E+00	29.55
U-235	63.29	219	3.70*	4.646E+00	1.788E+00	1.788E+00	66.81
	92.59	732	4.23	7.172E+00	3.387E+00	3.387E+00	29.10
	89.96	532	3.47	7.064E+00	3.048E+00	3.048E+00	32.17
NP-237	93.35	732	5.60	7.172E+00	2.558E+00	2.558E+00	29.88
	143.76	154	10.96*	7.037E+00	2.810E-01	2.810E-01	82.50
	163.33	-----	5.08	6.638E+00	-----	Line Not Found	-----
U-238	185.72	616	57.20	6.172E+00	2.450E-01	2.450E-01	22.87
	205.31	-----	5.01	5.804E+00	-----	Line Not Found	-----
	86.48	733	12.40*	6.941E+00	1.195E+00	1.195E+00	27.42
ANH-511	95.86	-----	2.68	7.260E+00	-----	Line Not Found	-----
	63.29	219	3.70*	4.646E+00	1.788E+00	1.788E+00	66.81
	92.59	732	4.23	7.172E+00	3.387E+00	3.387E+00	20.82
	511.00	286	100.00*	2.992E+00	1.341E-01	1.341E-01	36.18

Flag: "\*" = Keyline

Total number of lines in spectrum 42  
Number of unidentified lines 9  
Number of lines tentatively identified by NID 33 78.57%

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	3.477E+01	3.477E+01	0.328E+01	9.43	
CD-109	461.40D	1.02	4.006E+00	4.101E+00	0.725E+00	17.67	
SN-126	2.30E+05Y	1.00	4.006E-01	4.006E-01	0.708E-01	17.67	
EU-155	4.75Y	1.01	1.447E-01	1.456E-01	0.891E-01	61.20	
TL-208	1.41E+10Y	1.00	5.737E-01	5.737E-01	0.794E-01	13.85	
BI-211	7.04E+08Y	1.00	4.251E+00	4.251E+00	0.517E+00	12.16	
BI-212	1.41E+10Y	1.00	2.094E+00	2.094E+00	0.599E+00	28.60	
PB-212	1.41E+10Y	1.00	1.803E+00	1.803E+00	0.209E+00	11.61	
BI-214	1600.00Y	1.00	1.336E+00	1.336E+00	0.187E+00	13.98	
PB-214	1600.00Y	1.00	1.543E+00	1.543E+00	0.206E+00	13.35	
RA-224	1.41E+10Y	1.00	4.204E+00	4.204E+00	0.846E+00	20.13	
RA-226	1600.00Y	1.00	1.336E+00	1.336E+00	0.187E+00	13.98	
AC-228	1.41E+10Y	1.00	1.988E+00	1.988E+00	0.337E+00	16.95	
RA-228	1.41E+10Y	1.00	1.988E+00	1.988E+00	0.337E+00	16.95	
TH-228	1.41E+10Y	1.00	1.803E+00	1.803E+00	0.209E+00	11.61	
TH-232	1.41E+10Y	1.00	1.988E+00	1.988E+00	0.337E+00	16.95	
TH-234	4.47E+09Y	1.00	1.788E+00	1.788E+00	1.194E+00	66.81	
U-235	7.04E+08Y	1.00	2.810E-01	2.810E-01	2.318E-01	82.50	
NP-237	2.14E+06Y	1.00	1.195E+00	1.195E+00	0.328E+00	27.42	
U-238	4.47E+09Y	1.00	1.788E+00	1.788E+00	1.194E+00	66.81	
ANH-511	1.00E+09Y	1.00	1.341E-01	1.341E-01	0.485E-01	36.18	

Total Activity : 6.942E+01 6.951E+01

Grand Total Activity : 6.942E+01 6.951E+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	129.58	195	840	0.91	258.94	254	9	1.35E-02	55.6	7.28E+00	
0	209.13	274	595	1.16	417.83	413	9	1.90E-02	34.4	5.74E+00	
3	270.25	274	413	1.67	539.91	532	28	1.90E-02	30.3	4.81E+00	T
0	328.21	236	426	1.14	655.71	650	13	1.64E-02	38.3	4.18E+00	T
0	409.39	85	242	0.96	817.90	813	10	5.90E-03	72.4	3.55E+00	
0	463.16	222	263	1.44	925.36	919	14	1.54E-02	33.7	3.23E+00	T
0	769.32	178	227	2.47	1537.33	1530	18	1.24E-02	42.2	2.15E+00	
0	795.13	86	189	1.25	1588.95	1582	13	6.00E-03	68.9	2.09E+00	T
0	934.09	73	127	1.46	1866.85	1862	12	5.09E-03	66.1	1.82E+00	
3	965.14	87	138	1.77	1928.96	1925	19	6.02E-03	50.7	1.77E+00	T
0	1239.03	58	205	1.03	2476.94	2472	13	4.01E-03	****	1.43E+00	T
0	1378.44	64	57	1.63	2755.99	2750	13	4.41E-03	55.5	1.31E+00	
0	1509.21	38	19	3.31	3017.79	3010	12	2.61E-03	58.4	1.22E+00	
0	1588.63	49	61	1.13	3176.83	3167	18	3.37E-03	81.6	1.18E+00	
0	1730.02	59	20	2.34	3460.02	3453	16	4.07E-03	43.0	1.11E+00	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563001.CNF;1 *
* Acquisition date   : 2-MAR-2010 23:21:20.  Detector SN#      :             *
* Detector ID        : GAM20                      Sensitivity    : 5.00000      *
* Geometry           : CAN                      Energy tolerance: 1.50000      *
* Elapsed live time  : 0 04:00:00.00             Abundance limit : 75.00000      *
* Elapsed real time  : 0 04:01:09.01             Half life ratio : 8.00000      *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00  Nuclide Library : SOLID          *
* Sample ID          : G247563001             Analyst initials: MXR1          *
* Batch Number       : 956157                 Sample Quantity : 1.33710E+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      :             *
*****

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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	3.477E+01	3.280E+00	2.992E-01	2.609E-02	116.212
CD-109	4.101E+00	7.246E-01	7.429E-01	7.025E-02	5.520
SN-126	4.006E-01	7.078E-02	7.278E-02	6.845E-03	5.505
EU-155	1.456E-01	8.913E-02	1.069E-01	9.285E-03	1.363
TL-208	5.737E-01	7.944E-02	4.112E-02	4.223E-03	13.952
BI-211	4.251E+00	5.170E-01	2.046E-01	1.961E-02	20.775
BI-212	2.094E+00	5.990E-01	5.336E-01	7.236E-02	3.925
PB-212	1.803E+00	2.093E-01	6.071E-02	6.483E-03	29.704
BI-214	1.336E+00	1.867E-01	6.860E-02	7.663E-03	19.470
PB-214	1.543E+00	2.060E-01	7.441E-02	8.218E-03	20.731
RA-224	4.204E+00	8.465E-01	6.506E-01	6.289E-02	6.462
RA-226	1.336E+00	1.867E-01	6.860E-02	7.663E-03	19.470
AC-228	1.988E+00	3.371E-01	1.528E-01	1.921E-02	13.013
RA-228	1.988E+00	3.371E-01	1.528E-01	1.921E-02	13.013
TH-228	1.803E+00	2.093E-01	6.071E-02	6.483E-03	29.704
TH-232	1.988E+00	3.371E-01	1.528E-01	1.921E-02	13.013
TH-234	1.788E+00	1.194E+00	1.162E+00	2.064E-01	1.539
U-235	2.810E-01	2.318E-01	2.098E-01	3.539E-02	1.339

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-237	1.195E+00	3.278E-01	2.187E-01	5.015E-02	5.466
U-238	1.788E+00	1.194E+00	1.162E+00	2.064E-01	1.539
ANH-511	1.341E-01	4.853E-02	3.035E-02	2.828E-03	4.419

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-5.893E-02		2.060E-01	3.290E-01	3.197E-02	-0.179
NA-22	-1.263E-02		2.920E-02	4.547E-02	3.766E-03	-0.278
NA-24	2.786E-01		3.431E-01	Half-Life too short		
SC-46	8.529E-04		2.613E-02	4.327E-02	4.313E-03	0.020
V-48	2.951E-02		5.024E-02	8.535E-02	8.158E-03	0.346
CR-51	3.165E-02		2.505E-01	4.172E-01	4.180E-02	0.076
MN-54	7.446E-03		2.613E-02	4.399E-02	4.443E-03	0.169
CO-56	-8.728E-04		2.647E-02	4.379E-02	4.413E-03	-0.020
CO-57	-3.823E-03		1.661E-02	2.649E-02	2.211E-03	-0.144
CO-58	-1.355E-02		2.709E-02	4.368E-02	4.436E-03	-0.310
FE-59	3.511E-02		6.255E-02	1.055E-01	9.945E-03	0.333
CO-60	-7.073E-03		2.562E-02	4.011E-02	3.360E-03	-0.176
ZN-65	-2.792E-02		7.184E-02	9.733E-02	8.378E-03	-0.287
SE-75	-1.489E-02		3.206E-02	4.606E-02	4.560E-03	-0.323
SR-85	7.479E-02		2.889E-02	4.645E-02	4.338E-03	1.610
Y-88	4.527E-03		2.047E-02	3.466E-02	2.796E-03	0.131
Y-91	-5.981E-01		1.606E+01	2.594E+01	2.106E+00	-0.023
NB-94	3.153E-02		2.247E-02	3.987E-02	4.034E-03	0.791
NB-95	4.674E-02		3.013E-02	4.835E-02	4.914E-03	0.967
NB-95M	6.409E-02		8.799E-02	1.339E-01	1.442E-02	0.479
ZR-95	1.879E-02		4.617E-02	7.877E-02	8.616E-03	0.239
MO-99	1.920E+00		9.148E+00	1.545E+01	2.573E+00	0.124
TC-99M	-1.917E+10		4.272E+10	Half-Life too short		
RU-103	1.649E-02		2.577E-02	4.299E-02	6.168E-03	0.383
RH-106	3.070E-01		2.137E-01	3.627E-01	5.122E-02	0.846
RU-106	3.070E-01		2.114E-01	3.627E-01	3.590E-02	0.846
AG-108M	5.219E-03		1.874E-02	3.099E-02	2.793E-03	0.168
AG-110M	-1.968E-03		2.257E-02	3.782E-02	3.875E-03	-0.052
SN-113	4.945E-03		2.886E-02	4.769E-02	4.114E-03	0.104
CD-115	-1.738E+00		9.003E+00	1.437E+01	1.355E+00	-0.121
SN-117M	-1.969E-02		3.751E-02	5.855E-02	5.053E-03	-0.336
TE-123M	-1.211E-02		1.943E-02	3.023E-02	2.626E-03	-0.401
SB-124	-8.389E-03		4.734E-02	7.642E-02	6.658E-03	-0.110
SB-125	1.073E-02		5.863E-02	9.655E-02	8.541E-03	0.111
TE-125M	6.862E+00		7.127E+00	1.057E+01	1.097E+00	0.649
I-126	4.221E-02		1.453E-01	2.478E-01	2.490E-02	0.170
SB-126	-3.151E-03		1.008E-01	1.533E-01	1.555E-02	-0.021
SB-127	1.760E-01		8.819E-01	1.497E+00	1.890E-01	0.118
I-131	-3.858E-02		8.123E-02	1.309E-01	1.228E-02	-0.295
TE-132	-4.159E-01		5.168E-01	8.407E-01	1.380E-01	-0.495

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BA-133	-2.229E-03		2.817E-02	4.054E-02	5.378E-03	-0.055
I-133	9.526E-04		2.797E-03	Half-Life too short		
CS-134	7.658E-02	+	5.336E-02	6.346E-02	6.475E-03	1.207
CS-135	2.496E-01		1.049E-01	1.826E-01	2.024E-02	1.367
I-135	-7.189E+09		6.335E+09	Half-Life too short		
CS-136	-2.580E-02		7.257E-02	1.156E-01	1.097E-02	-0.223
BA-137M	-1.350E-02		2.304E-02	3.753E-02	3.766E-03	-0.360
CS-137	-1.427E-02		2.434E-02	3.965E-02	3.985E-03	-0.360
CE-139	-2.239E-02		2.048E-02	3.118E-02	2.722E-03	-0.718
BA-140	-8.002E-02		1.770E-01	2.743E-01	9.366E-02	-0.292
LA-140	1.470E-02		6.122E-02	9.067E-02	7.655E-03	0.162
CE-141	8.368E-02		4.792E-02	7.194E-02	6.212E-03	1.163
CE-143	6.918E-04		1.005E-04	Half-Life too short		
CE-144	-3.744E-03		1.455E-01	2.070E-01	3.136E-02	-0.018
PM-144	3.358E-03		2.210E-02	3.736E-02	3.778E-03	0.090
PR-144	2.644E-01		1.655E+00	2.799E+00	2.829E-01	0.094
PM-146	7.228E-03		2.740E-02	4.516E-02	4.887E-03	0.160
ND-147	1.907E-01		3.855E-01	6.366E-01	9.829E-02	0.300
PM-149	-3.333E+01		6.711E+01	1.094E+02	1.784E+01	-0.305
EU-152	3.852E-02		7.087E-02	1.058E-01	1.032E-02	0.364
GD-153	-8.341E-02		6.294E-02	8.501E-02	7.539E-03	-0.981
EU-154	-6.321E-02		8.465E-02	1.282E-01	1.425E-02	-0.493
TB-160	-3.332E-02		9.016E-02	1.454E-01	1.454E-02	-0.229
HO-166M	2.215E-03		3.751E-02	6.305E-02	6.387E-03	0.035
TA-182	-4.299E-02		1.476E-01	2.345E-01	1.913E-02	-0.183
IR-192	2.115E-02		2.302E-02	3.934E-02	3.805E-03	0.538
HG-203	2.444E-02		2.798E-02	4.268E-02	4.331E-03	0.573
BI-207	2.019E-02		3.715E-02	6.265E-02	5.657E-03	0.322
PB-210	6.635E-01		1.408E+00	2.293E+00	2.107E-01	0.289
PB-211	-3.986E-01		5.965E-01	7.750E-01	3.748E-01	-0.514
RN-219	4.944E-02		2.826E-01	4.662E-01	6.888E-02	0.106
RA-223	-5.273E-03		4.669E-01	6.790E-01	1.210E-01	-0.008
AC-227	-5.117E-02		1.646E-01	2.726E-01	3.522E-02	-0.188
TH-227	-5.117E-02		1.646E-01	2.726E-01	3.920E-02	-0.188
TH-229	-1.383E-02		3.339E-01	5.652E-01	5.146E-02	-0.024
PA-231	6.865E-01		9.415E-01	1.553E+00	2.391E-01	0.442
TH-231	-5.273E-03		4.669E-01	6.790E-01	1.210E-01	-0.008
PA-233	-2.973E-02		4.160E-02	6.691E-02	6.639E-03	-0.444
PA-234	2.204E-02		2.142E-01	3.546E-01	6.846E-02	0.062
PA-234M	3.921E+00		3.392E+00	5.883E+00	6.293E-01	0.666
NP-239	-1.383E-02		2.596E-01	4.170E-01	3.493E-02	-0.033
AM-241	9.124E-02		8.741E-02	1.325E-01	1.037E-02	0.688
CM-247	7.096E-03		2.558E-02	4.238E-02	3.583E-03	0.167
CF-249	1.114E-02		2.692E-02	4.494E-02	3.790E-03	0.248
CF-251	7.255E-02		8.953E-02	1.450E-01	1.289E-02	0.500

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247563001          *
* Acquisition date   : 2-MAR-2010 23:21:20 Detector SN#      :              *
* Detector ID        : GAM20                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 04:00:00.00              Abundance limit : 75.000        *
* Elapsed real time  : 0 04:01:09.01              Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID           : G247563001              Analyst initials: MXR1         *
* Batch Number        : 956157                  Sample Quantity : 1.3371E+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	3.477E+01	3.214E+00	1.500E-01	1.640E+00
CD-109	4.101E+00	7.101E-01	3.912E-01	3.623E-01
SN-126	4.006E-01	6.937E-02	3.832E-02	3.539E-02
EU-155	1.456E-01	8.734E-02	5.609E-02	4.456E-02
TL-208	5.737E-01	7.785E-02	2.095E-02	3.972E-02
BI-211	4.251E+00	5.066E-01	1.052E-01	2.585E-01
BI-212	2.094E+00	5.870E-01	2.709E-01	2.995E-01
PB-212	1.803E+00	2.052E-01	3.143E-02	1.047E-01
BI-214	1.336E+00	1.830E-01	3.493E-02	9.335E-02
PB-214	1.543E+00	2.019E-01	3.826E-02	1.030E-01
RA-224	4.204E+00	8.296E-01	3.367E-01	4.232E-01
RA-226	1.336E+00	1.830E-01	3.493E-02	9.335E-02
AC-228	1.988E+00	3.304E-01	7.725E-02	1.686E-01
RA-228	1.988E+00	3.304E-01	7.725E-02	1.686E-01
TH-228	1.803E+00	2.052E-01	3.143E-02	1.047E-01
TH-232	1.988E+00	3.304E-01	7.725E-02	1.686E-01
TH-234	1.788E+00	1.170E+00	6.151E-01	5.972E-01
U-235	2.810E-01	2.271E-01	1.095E-01	1.159E-01
NP-237	1.195E+00	3.212E-01	1.152E-01	1.639E-01
U-238	1.788E+00	1.170E+00	6.151E-01	5.972E-01
ANH-511	1.341E-01	4.755E-02	1.550E-02	2.426E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-5.893E-02	2.019E-01	1.683E-01	1.030E-01 NOT IDENT.
NA-22	-1.263E-02	2.862E-02	2.285E-02	1.460E-02 NOT IDENT.
NA-24	2.786E+05	6.724E+05	0.000E+00	3.431E+05 SHORT HLIF
SC-46	8.529E-04	2.561E-02	2.188E-02	1.307E-02 FAIL ABUN
V-48	2.951E-02	4.924E-02	4.309E-02	2.512E-02 NOT IDENT.
CR-51	3.165E-02	2.455E-01	2.149E-01	1.253E-01 NOT IDENT.

MN-54	7.446E-03	2.561E-02	2.227E-02	1.306E-02	NOT IDENT.
CO-56	-8.728E-04	2.594E-02	2.217E-02	1.324E-02	FAIL ABUN
CO-57	-3.823E-03	1.628E-02	1.387E-02	8.305E-03	NOT IDENT.
CO-58	-1.355E-02	2.655E-02	2.213E-02	1.355E-02	NOT IDENT.
FE-59	3.511E-02	6.130E-02	5.314E-02	3.127E-02	NOT IDENT.
CO-60	-7.073E-03	2.511E-02	2.014E-02	1.281E-02	NOT IDENT.
ZN-65	-2.792E-02	7.040E-02	4.902E-02	3.592E-02	NOT IDENT.
SE-75	-1.489E-02	3.142E-02	2.380E-02	1.603E-02	NOT IDENT.
SR-85	7.479E-02	2.831E-02	2.373E-02	1.445E-02	NOT IDENT.
Y-88	4.527E-03	2.006E-02	1.730E-02	1.023E-02	NOT IDENT.
Y-91	-5.981E-01	1.574E+01	1.305E+01	8.032E+00	NOT IDENT.
NB-94	3.153E-02	2.202E-02	2.025E-02	1.124E-02	NOT IDENT.
NB-95	4.674E-02	2.953E-02	2.452E-02	1.507E-02	NOT IDENT.
NB-95M	6.409E-02	8.623E-02	6.935E-02	4.399E-02	NOT IDENT.
ZR-95	1.879E-02	4.525E-02	3.996E-02	2.309E-02	NOT IDENT.
MO-99	1.920E+00	8.965E+00	7.843E+00	4.574E+00	NOT IDENT.
TC-99M	-1.917E+16	8.374E+16	0.000E+00	0.000E+00	SHORT HLIF
RU-103	1.649E-02	2.526E-02	2.197E-02	1.289E-02	FAIL ABUN
RH-106	3.070E-01	2.094E-01	1.846E-01	1.068E-01	NOT IDENT.
RU-106	3.070E-01	2.072E-01	1.846E-01	1.057E-01	NOT IDENT.
AG-108M	5.219E-03	1.837E-02	1.588E-02	9.372E-03	NOT IDENT.
AG-110M	-1.968E-03	2.212E-02	1.923E-02	1.129E-02	NOT IDENT.
SN-113	4.945E-03	2.828E-02	2.448E-02	1.443E-02	NOT IDENT.
CD-115	-1.738E+00	8.823E+00	7.337E+00	4.502E+00	NOT IDENT.
SN-117M	-1.969E-02	3.676E-02	3.052E-02	1.875E-02	NOT IDENT.
TE-123M	-1.211E-02	1.904E-02	1.576E-02	9.716E-03	NOT IDENT.
SB-124	-8.389E-03	4.640E-02	3.820E-02	2.367E-02	NOT IDENT.
SB-125	1.073E-02	5.745E-02	4.947E-02	2.931E-02	FAIL ABUN
TE-125M	6.862E+00	6.985E+00	5.544E+00	3.564E+00	NOT IDENT.
I-126	4.221E-02	1.424E-01	1.260E-01	7.265E-02	NOT IDENT.
SB-126	-3.151E-03	9.881E-02	7.785E-02	5.041E-02	NOT IDENT.
SB-127	1.760E-01	8.643E-01	7.605E-01	4.410E-01	NOT IDENT.
I-131	-3.858E-02	7.961E-02	6.729E-02	4.062E-02	NOT IDENT.
TE-132	-4.159E-01	5.065E-01	4.356E-01	2.584E-01	NOT IDENT.
BA-133	-2.229E-03	2.760E-02	2.084E-02	1.408E-02	FAIL ABUN
I-133	9.526E+02	5.483E+03	0.000E+00	2.797E+03	SHORT HLIF
CS-134	7.658E-02	5.230E-02	3.216E-02	2.668E-02	FAIL ABUN
CS-135	2.496E-01	1.028E-01	9.435E-02	5.247E-02	NOT IDENT.
I-135	-7.189E+15	1.242E+16	0.000E+00	6.335E+15	SHORT HLIF
CS-136	-2.580E-02	7.112E-02	5.830E-02	3.629E-02	NOT IDENT.
BA-137M	-1.350E-02	2.258E-02	1.908E-02	1.152E-02	NOT IDENT.
CS-137	-1.427E-02	2.385E-02	2.016E-02	1.217E-02	NOT IDENT.
CE-139	-2.239E-02	2.007E-02	1.624E-02	1.024E-02	NOT IDENT.
BA-140	-8.002E-02	1.735E-01	1.400E-01	8.852E-02	NOT IDENT.
LA-140	1.470E-02	6.000E-02	4.537E-02	3.061E-02	FAIL ABUN
CE-141	8.368E-02	4.696E-02	3.756E-02	2.396E-02	NOT IDENT.
CE-143	6.918E+02	1.971E+02	0.000E+00	1.005E+02	SHORT HLIF
CE-144	-3.744E-03	1.426E-01	1.082E-01	7.273E-02	NOT IDENT.
PM-144	3.358E-03	2.166E-02	1.898E-02	1.105E-02	NOT IDENT.
PR-144	2.644E-01	1.622E+00	1.422E+00	8.276E-01	NOT IDENT.
PM-146	7.228E-03	2.685E-02	2.312E-02	1.370E-02	NOT IDENT.
ND-147	1.907E-01	3.778E-01	3.250E-01	1.928E-01	FAIL ABUN
PM-149	-3.333E+01	6.577E+01	5.647E+01	3.356E+01	NOT IDENT.
EU-152	3.852E-02	6.945E-02	5.443E-02	3.544E-02	FAIL ABUN
GD-153	-8.341E-02	6.168E-02	4.468E-02	3.147E-02	NOT IDENT.
EU-154	-6.321E-02	8.295E-02	6.441E-02	4.232E-02	NOT IDENT.
TB-160	-3.332E-02	8.836E-02	7.354E-02	4.508E-02	FAIL ABUN
HO-166M	2.215E-03	3.676E-02	3.202E-02	1.876E-02	NOT IDENT.
TA-182	-4.299E-02	1.446E-01	1.179E-01	7.379E-02	FAIL ABUN
IR-192	2.115E-02	2.256E-02	2.027E-02	1.151E-02	FAIL ABUN
HG-203	2.444E-02	2.742E-02	2.203E-02	1.399E-02	NOT IDENT.
BI-207	2.019E-02	3.641E-02	3.159E-02	1.857E-02	FAIL ABUN
PB-210	6.635E-01	1.379E+00	1.220E+00	7.038E-01	NOT IDENT.
PB-211	-3.986E-01	5.846E-01	3.975E-01	2.982E-01	NOT IDENT.
RN-219	4.944E-02	2.769E-01	2.392E-01	1.413E-01	FAIL ABUN
RA-223	-5.273E-03	4.575E-01	3.496E-01	2.334E-01	FAIL ABUN
AC-227	-5.117E-02	1.613E-01	1.409E-01	8.230E-02	FAIL ABUN
TH-227	-5.117E-02	1.613E-01	1.409E-01	8.231E-02	FAIL ABUN
TH-229	-1.383E-02	3.272E-01	2.936E-01	1.669E-01	FAIL ABUN
PA-231	6.865E-01	9.227E-01	8.015E-01	4.708E-01	FAIL ABUN
TH-231	-5.273E-03	4.575E-01	3.496E-01	2.334E-01	FAIL ABUN
PA-233	-2.973E-02	4.077E-02	3.448E-02	2.080E-02	FAIL ABUN
PA-234	2.204E-02	2.099E-01	1.791E-01	1.071E-01	NOT IDENT.
PA-234M	3.921E+00	3.324E+00	2.969E+00	1.696E+00	NOT IDENT.
NP-239	-1.383E-02	2.544E-01	2.185E-01	1.298E-01	FAIL ABUN
AM-241	9.124E-02	8.566E-02	7.024E-02	4.370E-02	NOT IDENT.
CM-247	7.096E-03	2.507E-02	2.174E-02	1.279E-02	FAIL ABUN
CF-249	1.114E-02	2.639E-02	2.307E-02	1.346E-02	NOT IDENT.

CF-251            7.255E-02            8.774E-02            7.547E-02            4.476E-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	649.7004
49.72	705.0165
57.36	0.0000
59.54	780.1684
63.29	931.7928
63.29	931.7928
64.28	971.2061
67.75	995.3579
69.67	994.0573
70.83	963.9176
72.81	965.5623
72.87	965.6584
72.87	965.6584
74.82	968.7394
74.82	968.7394
74.82	968.7394
74.97	968.9749
77.11	972.3058
77.11	972.3058
77.11	972.3058
79.69	960.7654
79.80	830.7403
80.12	831.1533
80.19	831.2433
80.57	816.2166
81.00	962.7190
81.07	962.8231
81.07	962.8231
83.79	818.1625
83.79	818.1625
85.43	820.1800
86.48	821.4569
86.55	821.5450
86.79	821.8332
86.94	822.0173
87.57	822.7778
88.03	823.3342
88.47	823.8626
89.96	825.6479
91.11	827.0129
92.59	828.7582
92.59	828.7582
93.35	829.6508
94.67	685.9709
94.87	703.5939
94.87	703.5939
95.86	706.1496
97.43	772.8828
98.44	663.7503
99.53	669.8397
100.11	649.0837
103.18	697.1609
103.37	697.3368
105.31	648.2222
106.12	704.6824
109.28	644.5546
111.00	702.6259
111.76	725.9868
116.30	624.7065
117.23	625.4172
121.12	611.9674
121.78	623.3853
122.06	623.5941
123.07	589.2913
131.20	608.6838
133.52	600.3024
136.00	618.0851

136.47	618.4075
140.51	598.2430
140.51	0.0000
143.76	614.3538
144.24	614.6716
144.24	614.6716
145.44	571.0952
152.43	591.6841
153.25	608.0308
154.21	561.0292
154.21	561.0292
156.02	592.7194
158.56	595.3764
159.00	616.1370
162.66	542.9420
163.33	598.2015
165.86	619.1730
176.60	539.8222
177.52	537.9633
181.07	570.5585
184.41	555.8484
185.72	527.4206
193.51	531.9725
197.04	550.4239
205.31	583.2095
210.85	459.8505
215.65	462.0283
222.11	502.3988
227.38	492.7069
228.16	493.9172
228.18	511.1766
235.69	467.5938
235.96	510.0717
235.96	510.0717
238.63	453.0841
238.63	453.0841
240.99	453.8960
242.00	454.2435
244.70	455.1687
252.40	420.4709
252.80	442.7973
256.23	409.9035
256.23	409.9035
260.90	365.6910
264.66	371.7127
268.22	331.1188
269.46	331.4051
269.46	331.4051
271.23	331.8156
273.65	332.3773
276.40	333.0093
277.37	333.2308
277.60	333.2848
278.00	333.3766
279.20	342.3178
279.54	342.4009
280.46	335.0677
283.69	314.4093
284.31	334.8081
285.41	374.8090
285.90	361.6806
287.50	310.8833
293.27	0.0000
295.22	286.5715
295.96	286.7092
298.57	271.1599
299.98	271.4112
299.98	271.4112
300.09	287.4849
300.09	287.4849
300.13	287.4940
301.36	275.4800
302.85	295.6584
304.50	283.7058
304.50	283.7058
304.85	300.6418
308.46	280.5848
311.90	328.3873

316.51	295.5410
319.41	349.2891
320.08	327.1745
323.87	307.3737
323.87	307.3737
328.76	300.7064
333.37	273.2495
334.37	238.2626
334.37	238.2626
338.28	289.7174
338.28	289.7174
338.32	289.7264
338.32	289.7264
338.32	289.7264
340.48	271.2839
340.55	271.2924
344.28	271.8964
351.06	259.3682
351.93	259.5006
356.01	232.6196
364.49	295.1737
366.42	282.5613
383.85	250.1512
388.16	261.8170
388.63	268.9352
391.69	243.1513
400.66	280.8167
401.81	278.9570
402.40	268.8980
404.85	295.8655
410.95	221.7936
414.70	256.5432
423.72	226.7496
427.09	239.4706
427.87	215.9184
433.94	201.1086
453.88	204.1407
463.37	173.6875
468.07	199.6620
473.00	193.4027
476.78	210.5927
477.60	194.8744
487.02	192.5558
492.35	194.0885
497.08	168.9982
511.00	193.5899
514.00	167.9303
527.90	202.5785
529.87	0.0000
531.02	173.7206
537.26	177.4331
546.56	0.0000
563.25	168.4563
569.33	175.4590
569.50	175.4688
569.70	178.7737
583.19	208.4376
600.60	198.7857
602.73	170.4270
604.72	174.4189
609.32	154.8946
609.32	154.8946
610.33	154.9582
614.28	141.1276
618.01	161.0112
621.93	134.3811
621.93	134.3811
633.25	148.4597
635.95	156.7189
636.99	163.0900
645.85	174.4822
657.76	167.0869
661.66	179.1517
661.66	179.1517
664.57	0.0000
666.33	162.1512
666.50	162.1599
677.62	145.4369

685.70	140.3596
695.00	150.9513
696.49	161.1615
696.51	161.1615
697.00	164.8714
702.65	147.6680
706.68	176.5258
711.68	141.6557
720.70	144.6212
721.93	0.0000
722.78	136.3148
722.91	136.3219
723.31	127.0439
724.19	137.9290
727.33	150.8032
733.00	127.4677
735.93	165.2504
739.50	151.4281
747.24	154.6392
752.31	147.3906
753.82	141.8279
756.73	132.5662
763.94	125.6575
765.81	121.0206
766.42	136.7659
777.92	153.3779
778.90	151.5313
783.70	147.0267
785.37	137.6155
795.86	142.8442
801.95	135.9664
810.29	153.0664
810.76	155.0035
815.77	143.7488
818.51	140.9958
832.01	165.6718
834.85	160.0344
836.80	0.0000
846.77	134.4967
856.80	113.2316
860.56	126.3152
871.09	128.6678
873.19	121.9208
875.33	0.0000
879.36	121.1694
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883.24	127.1785
884.68	116.4666
889.28	121.5236
898.04	122.8210
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911.20	126.2500
911.20	126.2500
926.50	129.8883
937.49	117.5966
944.13	124.4568
946.00	134.4825
949.00	103.6902
962.29	131.7631
964.08	133.4961
966.15	123.2192
968.97	123.3153
968.97	123.3153
968.97	123.3153
983.53	115.7581
996.26	131.3108
1001.03	128.4449
1004.73	162.9928
1037.84	113.3685
1038.76	0.0000
1048.07	116.7442
1050.41	118.8604
1050.41	118.8604
1063.66	118.2400
1085.87	122.0159
1099.45	111.0177
1112.07	122.8168
1115.54	142.3722

1120.29	127.2422
1120.29	127.2422
1120.55	127.2481
1121.30	127.2720
1131.51	0.0000
1173.23	145.7895
1177.93	149.1240
1189.05	144.2145
1204.77	159.6460
1221.41	174.1585
1231.02	160.6201
1235.36	196.5104
1238.28	151.9458
1260.41	0.0000
1271.85	103.7531
1274.44	113.5466
1274.54	104.8955
1291.59	98.7803
1298.22	0.0000
1312.11	87.2305
1332.49	74.4746
1365.19	51.4701
1368.63	0.0000
1384.29	71.1851
1408.01	66.7705
1457.56	0.0000
1460.82	37.4951
1489.16	30.1654
1505.03	34.0415
1596.21	39.5893
1620.50	32.8642
1678.03	0.0000
1690.97	30.3504
1764.49	27.2020
1764.49	27.2020
1770.23	32.3342
1771.35	35.7451
1791.20	0.0000
1836.06	23.0889

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247563001

Total Uranium Activity	5.4484E+00	ug/g
Total Uranium Counting Unc.	3.4836E+00	ug/g
Total Uranium Tpu	1.7773E-06	ug/g
Total Uranium Mda	1.8305E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417               *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 956157          SAMPLE ID   : G247563001
*  ANALYST       : MXR1            DETECTOR    : GAM20
*  SAMPLE DATE   : 15-FEB-2010 12:00:00.00    COUNT TIME : 0 04:00:00.00
*  ANALYSIS DATE: 2-MAR-2010 23:21:20.38    SAMPLE ALQT: 133.710 GRAM
*
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.091E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.224E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.161E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.550E+00

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VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 09:10:41.45

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                   *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563002.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 23:21:51.
Sample ID          : G247563002 Sample quantity : 1.33680E+02 GRAM
Detector name      : GAM23 Detector geometry: CAN
Elapsed live time  : 0 04:00:00.00 Elapsed real time: 0 04:00:03.66 0.0%
Energy tolerance   : 2.00000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****

```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.15*	246	1103	1.15	126.31	121	11	1.71E-02	27.6	
2	2	74.64	762	917	1.20	149.28	145	15	5.29E-02	7.5	1.68E+00
3	2	76.97	1146	760	1.02	153.93	145	15	7.96E-02	4.9	
4	1	83.99	166	941	1.25	167.97	163	30	1.15E-02	32.0	2.43E+00
5	1	86.98	547	893	1.41	173.96	163	30	3.80E-02	10.2	
6	1	89.63	340	739	1.18	179.26	163	30	2.36E-02	14.4	
7	1	92.62*	632	791	1.27	185.24	163	30	4.39E-02	9.7	
8	0	105.41	99	716	1.33	210.81	207	8	6.88E-03	47.8	
9	0	128.72	134	688	1.32	257.43	254	8	9.30E-03	35.1	
10	0	185.45*	433	835	1.30	370.90	365	12	3.01E-02	14.7	
11	0	209.00	302	609	1.24	417.99	413	11	2.10E-02	16.9	
12	3	238.28*	2345	423	1.16	476.57	472	18	1.63E-01	2.6	1.01E+00
13	3	241.32*	556	527	1.74	482.64	472	18	3.86E-02	11.3	
14	0	269.87	209	340	1.28	539.73	536	8	1.45E-02	16.8	
15	0	277.25	103	358	0.89	554.50	550	9	7.14E-03	34.7	
16	0	294.77	742	363	1.26	589.54	585	10	5.15E-02	6.0	
17	0	299.73	164	228	1.25	599.47	596	7	1.14E-02	17.3	
18	0	327.26*	77	319	1.17	654.51	651	9	5.37E-03	44.5	
19	0	337.73	599	419	1.27	675.46	668	14	4.16E-02	8.3	
20	0	351.35*	1282	386	1.26	702.69	696	14	8.90E-02	4.3	
21	0	462.39	126	153	1.45	924.79	921	8	8.75E-03	19.2	
22	0	510.26*	171	349	1.47	1020.51	1013	15	1.18E-02	28.6	
23	0	582.56	728	261	1.46	1165.11	1159	14	5.05E-02	6.0	
24	0	608.50*	915	229	1.51	1217.01	1208	17	6.35E-02	5.2	
25	0	660.92	45	166	0.94	1321.83	1317	10	3.11E-03	56.0	
26	0	726.49	166	158	1.76	1452.99	1447	15	1.15E-02	18.3	
27	0	793.93	79	150	1.50	1587.85	1580	14	5.45E-03	35.0	
28	0	860.54	117	177	1.88	1721.08	1714	17	8.12E-03	28.0	
29	0	910.09	562	144	1.66	1820.17	1811	18	3.90E-02	6.5	
30	0	933.40	69	58	2.33	1866.79	1861	10	4.76E-03	24.3	
31	0	967.40	332	240	1.92	1934.80	1925	21	2.31E-02	13.0	
32	0	1119.30	216	174	2.45	2238.59	2230	18	1.50E-02	15.9	
33	0	1376.69	60	35	1.64	2753.38	2747	15	4.18E-03	25.5	
34	0	1459.31*	2288	67	2.21	2918.63	2910	16	1.59E-01	2.2	
35	0	1762.64*	172	15	2.56	3525.29	3516	20	1.19E-02	9.9	

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

## VMS Nuclide Identification Report V3.1 Generated 4-MAR-2010 09:10:44

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563002.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8  
 Sample title : MXR1  
 Sample date : 15-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 23:21:51  
 Sample ID : G247563002 Sample quantity : 133.68 GRAM  
 Sample type : SOLID Sample geometry :  
 Detector name : GAMMA23 Detector geometry: CAN  
 Elapsed live time: 0 04:00:00.00 Elapsed real time: 0 04:00:03.66 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 2.00 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	*	3.021E+01	2.638E+00	3.728E-01	2.789E-02	81.045
CD-109	+	88.03	*	4.082E+00	9.233E-01	9.710E-01	9.480E-02	4.204
SN-126	+	64.28		1.399E+00	8.018E-01	7.331E-01	1.116E-01	1.909
	+	86.94		1.658E+00	7.683E-01	4.002E-01	1.664E-01	4.143
	+	87.57	*	3.987E-01	9.020E-02	9.543E-02	9.286E-03	4.178
CS-135	+	268.22	*	4.330E-01	1.495E-01	1.776E-01	1.357E-02	2.437
BA-137M	+	661.66	*	3.432E-02	3.846E-02	4.766E-02	2.435E-03	0.720
CS-137	+	661.66	*	3.626E-02	4.063E-02	5.035E-02	2.586E-03	0.720
EU-155	+	86.55		4.836E-01	1.096E-01	1.174E-01	1.141E-02	4.120
	+	105.31	*	1.085E-01	1.040E-01	1.380E-01	1.017E-02	0.786
HG-203		70.83		1.117E+00	1.308E+00	1.954E+00	3.152E-01	0.572
	+	72.87		5.400E+00	1.172E+00	1.079E+00	1.689E-01	5.004
	+	279.20	*	5.387E-02	3.751E-02	4.803E-02	2.950E-03	1.122
TL-208	+	277.37		5.281E-01	3.707E-01	4.611E-01	4.975E-02	1.145
	+	583.19	*	5.277E-01	7.234E-02	4.606E-02	2.983E-03	11.457
	+	860.56		8.163E-01	4.628E-01	3.630E-01	3.281E-02	2.249
BI-211	+	72.87		2.156E+01	3.761E+00	4.309E+00	3.801E-01	5.004
	+	351.06	*	4.047E+00	4.399E-01	2.431E-01	1.584E-02	16.651
PB-212	+	74.82		2.580E+00	5.153E-01	4.899E-01	6.457E-02	5.266
	+	77.11		2.191E+00	2.908E-01	2.777E-01	2.498E-02	7.891
	+	238.63	*	1.628E+00	1.450E-01	7.316E-02	5.307E-03	22.250
	+	300.09		1.787E+00	6.352E-01	1.002E+00	8.458E-02	1.784
BI-214	+	609.32	*	1.287E+00	1.650E-01	8.517E-02	6.457E-03	15.111
	+	1120.29		1.617E+00	5.354E-01	4.222E-01	3.948E-02	3.829
	+	1764.49		1.805E+00	3.734E-01	2.202E-01	1.369E-02	8.196
PB-214	+	74.82		4.573E+00	8.762E-01	8.683E-01	1.035E-01	5.266
	+	77.11		3.863E+00	6.036E-01	4.895E-01	5.974E-02	7.891
	+	242.00		2.343E+00	5.606E-01	4.450E-01	3.598E-02	5.264
	+	295.22		1.431E+00	2.138E-01	1.681E-01	1.474E-02	8.516
	+	351.93	*	1.469E+00	1.790E-01	8.841E-02	7.548E-03	16.614
RA-224	+	240.99	*	4.142E+00	9.617E-01	7.842E-01	4.419E-02	5.282
RA-226	+	609.32	*	1.287E+00	1.650E-01	8.517E-02	6.457E-03	15.111
	+	1120.29		1.617E+00	5.354E-01	4.222E-01	3.948E-02	3.829
	+	1764.49		1.805E+00	3.734E-01	2.202E-01	1.369E-02	8.196

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AC-228	+	338.32		2.103E+00	9.351E-01	2.936E-01	1.211E-01	7.162
	+	911.20	*	2.003E+00	3.541E-01	1.909E-01	2.268E-02	10.491
	+	968.97		2.048E+00	7.290E-01	2.877E-01	6.993E-02	7.118
RA-228	+	338.32		2.103E+00	9.351E-01	2.936E-01	1.211E-01	7.162
	+	911.20	*	2.003E+00	3.541E-01	1.909E-01	2.268E-02	10.491
	+	968.97		2.048E+00	7.290E-01	2.877E-01	6.993E-02	7.118
TH-228	+	74.82		2.580E+00	4.510E-01	4.899E-01	4.394E-02	5.266
	+	77.11		2.191E+00	2.908E-01	2.777E-01	2.498E-02	7.891
	+	238.63	*	1.628E+00	1.450E-01	7.316E-02	5.307E-03	22.250
	+	300.09		1.787E+00	1.251E+00	1.002E+00	6.099E-01	1.784
TH-229	+	85.43		3.187E-01	2.059E-01	2.476E-01	2.364E-02	1.287
	+	88.47		3.687E-01	1.120E-01	1.454E-01	1.406E-02	2.535
	+	193.51	*	2.256E-01	4.172E-01	6.860E-01	3.633E-02	0.329
	+	210.85		2.978E+00	1.017E+00	1.070E+00	5.810E-02	2.782
TH-232	+	338.32		2.103E+00	3.713E-01	2.936E-01	1.734E-02	7.162
	+	911.20	*	2.003E+00	3.541E-01	1.909E-01	2.268E-02	10.491
	+	968.97		2.048E+00	7.290E-01	2.877E-01	6.993E-02	7.118
TH-234	+	63.29	*	3.631E+00	2.114E+00	1.911E+00	3.515E-01	1.900
	+	92.59		3.759E+00	1.107E+00	7.879E-01	1.749E-01	4.771
U-235	+	89.96		2.550E+00	9.726E-01	9.878E-01	2.458E-01	2.581
	+	93.35		2.839E+00	8.577E-01	5.908E-01	1.368E-01	4.805
		143.76	*	-2.785E-02	1.645E-01	2.614E-01	4.070E-02	-0.107
		163.33		2.937E-01	3.422E-01	5.653E-01	9.363E-02	0.520
	+	185.72		1.933E-01	5.785E-02	5.071E-02	2.655E-03	3.813
		205.31		8.457E-02	4.369E-01	6.063E-01	1.022E-01	0.139
NP-237	+	86.48	*	1.190E+00	3.670E-01	2.891E-01	6.671E-02	4.116
		95.86		2.758E-01	8.109E-01	1.190E+00	2.845E-01	0.232
U-238	+	63.29	*	3.631E+00	2.114E+00	1.911E+00	3.515E-01	1.900
	+	92.59		3.759E+00	8.004E-01	7.879E-01	7.013E-02	4.771
ANH-511	+	511.00	*	9.406E-02	5.407E-02	3.750E-02	2.178E-03	2.508

---- 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	*	-8.509E-02	2.608E-01	4.229E-01	2.872E-02	-0.201
NA-22		1274.54	*	-3.839E-04	3.686E-02	6.002E-02	4.030E-03	-0.006
NA-24		1368.63	*	4.577E-01	3.686E-02	Half-Life too short		
SC-46		889.28	*	9.180E-03	3.218E-02	5.451E-02	4.870E-03	0.168
	+	1120.55		2.744E-01	8.898E-02	1.041E-01	6.785E-03	2.635
V-48		944.13		-1.875E-01	7.487E-01	1.224E+00	1.066E-01	-0.153
		983.53	*	-1.395E-02	5.486E-02	8.924E-02	7.424E-03	-0.156
		1312.11		6.566E-02	7.029E-02	1.220E-01	8.679E-03	0.538
CR-51		320.08	*	-2.592E-01	2.876E-01	4.655E-01	3.048E-02	-0.557
MN-54		834.85	*	1.025E-02	3.074E-02	5.229E-02	4.140E-03	0.196
CO-56		846.77	*	1.238E-02	3.186E-02	5.440E-02	4.426E-03	0.228
		1037.84		3.957E-02	2.638E-01	4.397E-01	3.600E-02	0.090
		1238.28		1.363E-01	8.425E-02	1.442E-01	9.596E-03	0.945
		1771.35		-1.159E-01	1.899E-01	2.900E-01	1.794E-02	-0.400

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CO-57		122.06	*	-1.568E-02	2.042E-02	3.286E-02	1.937E-03	-0.477
		136.47		-2.440E-02	1.614E-01	2.634E-01	1.710E-02	-0.093
CO-58		810.76	*	-1.437E-02	3.079E-02	5.012E-02	3.765E-03	-0.287
FE-59		1099.45	*	-6.919E-02	7.441E-02	1.143E-01	8.799E-03	-0.605
		1291.59		5.384E-02	9.931E-02	1.683E-01	1.397E-02	0.320
CO-60		1173.23		6.111E-02	4.168E-02	7.356E-02	4.150E-03	0.831
		1332.49	*	2.639E-03	2.850E-02	4.671E-02	3.429E-03	0.056
ZN-65		1115.54	*	1.146E-01	9.881E-02	1.514E-01	9.997E-03	0.757
SE-75		121.12		7.237E-02	1.048E-01	1.752E-01	1.606E-02	0.413
		136.00		5.673E-03	3.114E-02	5.128E-02	2.897E-03	0.111
		264.66	*	-2.650E-02	4.019E-02	5.391E-02	3.139E-03	-0.492
		279.54		-2.770E-02	9.287E-02	1.345E-01	8.470E-03	-0.206
		400.66		-4.756E-02	2.064E-01	3.395E-01	3.078E-02	-0.140
SR-85		514.00	*	5.558E-02	3.356E-02	5.259E-02	3.051E-03	1.057
Y-88		898.04		-3.015E-02	3.530E-02	5.456E-02	4.989E-03	-0.553
		1836.06	*	3.087E-02	2.689E-02	5.069E-02	2.985E-03	0.609
Y-91		1204.77	*	-5.890E+00	1.958E+01	3.106E+01	1.852E+00	-0.190
NB-94		702.65	*	1.363E-02	2.773E-02	4.594E-02	2.625E-03	0.297
		871.09		5.511E-03	3.016E-02	4.811E-02	4.132E-03	0.115
NB-95		765.81	*	4.743E-02	3.608E-02	6.186E-02	4.157E-03	0.767
NB-95M		235.69	*	7.133E-01	1.417E-01	2.191E-01	1.622E-02	3.256
ZR-95		724.19		1.660E-01	9.249E-02	1.443E-01	1.016E-02	1.150
		756.73	*	1.051E-02	6.089E-02	9.881E-02	7.624E-03	0.106
MO-99		140.51		-2.646E+01	2.091E+01	3.020E+01	6.883E+00	-0.876
		181.07		1.282E+00	1.738E+01	2.474E+01	4.327E+00	0.052
		366.42		-6.574E+01	8.060E+01	1.295E+02	7.591E+00	-0.508
		739.50	*	-2.405E+00	1.090E+01	1.728E+01	2.526E+00	-0.139
		777.92		-3.882E+01	3.133E+01	4.864E+01	3.368E+00	-0.798
TC-99M		140.51	*	-1.230E+11	3.133E+01	Half-Life	too short	
RU-103		497.08	*	1.820E-02	2.986E-02	5.048E-02	6.280E-03	0.360
	+	610.33		1.338E+01	2.428E+00	2.114E+00	3.154E-01	6.326
RH-106		621.93	*	1.224E-01	2.522E-01	4.200E-01	4.794E-02	0.292
		1050.41		-1.090E+00	2.224E+00	3.554E+00	2.674E-01	-0.307
RU-106		621.93	*	1.224E-01	2.519E-01	4.200E-01	2.257E-02	0.292
		1050.41		-1.090E+00	2.224E+00	3.554E+00	2.674E-01	-0.307
AG-108M		433.94	*	-1.114E-02	2.408E-02	3.901E-02	2.438E-03	-0.286
		614.28		5.776E-03	3.169E-02	4.511E-02	2.642E-03	0.128
		722.91		-6.185E-03	3.474E-02	4.747E-02	3.047E-03	-0.130
AG-110M		657.76	*	2.966E-03	3.353E-02	4.717E-02	2.621E-03	0.063
		677.62		5.960E-02	2.547E-01	4.172E-01	2.391E-02	0.143
		706.68		3.742E-03	1.757E-01	2.838E-01	1.742E-02	0.013
		763.94		-3.352E-02	1.395E-01	2.208E-01	1.544E-02	-0.152
		884.68		-3.826E-03	4.031E-02	6.679E-02	6.089E-03	-0.057
		937.49		-2.702E-02	9.843E-02	1.369E-01	1.243E-02	-0.197
		1384.29		1.099E-01	1.420E-01	2.174E-01	1.646E-02	0.505
		1505.03		-3.351E-02	2.012E-01	3.177E-01	2.256E-02	-0.105
SN-113		391.69	*	-1.811E-02	3.475E-02	5.647E-02	3.479E-03	-0.321
CD-115		260.90		7.583E+01	1.195E+02	1.956E+02	1.123E+01	0.388
		492.35		2.704E+00	3.293E+01	5.438E+01	3.174E+00	0.050

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SN-117M	527.90	*		-3.687E+00	9.872E+00	1.584E+01	9.143E-01	-0.233
	156.02			2.194E+00	1.843E+00	3.098E+00	1.621E-01	0.708
	158.56	*		-2.843E-02	4.414E-02	7.061E-02	3.670E-03	-0.403
TE-123M	159.00	*		-2.181E-02	2.264E-02	3.586E-02	1.892E-03	-0.608
SB-124	602.73			-3.744E-02	3.455E-02	4.416E-02	2.421E-03	-0.848
	645.85			9.637E-02	3.913E-01	6.432E-01	3.862E-02	0.150
	722.78			-9.040E-02	3.493E-01	4.738E-01	2.988E-02	-0.191
SB-125	1690.97	*		3.728E-02	5.612E-02	1.012E-01	7.079E-03	0.369
	427.87	*		-5.691E-04	6.944E-02	1.149E-01	6.982E-03	-0.005
	463.37		+	6.135E-01	2.394E-01	4.088E-01	2.771E-02	1.501
	600.60			-1.139E-02	1.594E-01	2.228E-01	1.436E-02	-0.051
	635.95			3.656E-02	2.144E-01	3.512E-01	2.235E-02	0.104
TE-125M	109.28	*		-2.825E+00	8.831E+00	1.264E+01	1.150E+00	-0.224
I-126	388.63			1.471E-01	1.322E-01	2.293E-01	1.326E-02	0.641
	666.33	*		1.798E-01	2.025E-01	3.030E-01	1.568E-02	0.593
	753.82			1.103E+00	1.489E+00	2.499E+00	1.630E-01	0.441
SB-126	414.70			-3.255E-03	5.991E-02	9.910E-02	5.768E-03	-0.033
	666.50			5.821E-02	6.981E-02	1.040E-01	5.385E-03	0.560
	695.00			2.011E-02	6.387E-02	1.050E-01	5.876E-03	0.192
	697.00			-1.756E-01	2.263E-01	3.484E-01	1.961E-02	-0.504
	720.70	*		4.952E-02	1.355E-01	1.940E-01	1.163E-02	0.255
SB-127	856.80			8.505E-01	4.502E-01	7.373E-01	6.135E-02	1.154
	252.40			-6.906E-01	3.678E+00	5.832E+00	2.394E+00	-0.118
	473.00			-8.011E-01	1.376E+00	2.198E+00	2.464E-01	-0.364
	685.70	*		9.656E-02	1.145E+00	1.859E+00	1.738E-01	0.052
	783.70			5.610E+00	3.086E+00	5.544E+00	6.328E-01	1.012
I-131	80.19			-8.892E-01	5.979E+00	6.287E+00	5.800E-01	-0.141
	284.31			4.635E-01	1.168E+00	1.994E+00	1.291E-01	0.232
	364.49	*		-6.253E-02	9.184E-02	1.487E-01	9.716E-03	-0.420
TE-132	636.99			3.420E-01	1.281E+00	2.111E+00	1.278E-01	0.162
	49.72			-1.781E+01	2.224E+01	3.653E+01	3.997E+00	-0.488
	111.76			-2.009E+01	2.895E+01	4.677E+01	4.525E+00	-0.429
	116.30			-3.446E+01	2.644E+01	3.993E+01	3.765E+00	-0.863
BA-133	228.16	*		5.766E-02	6.518E-01	1.051E+00	1.520E-01	0.055
	81.00			-3.119E-02	1.183E-01	1.234E-01	1.957E-02	-0.253
	276.40		+	4.882E-01	3.442E-01	4.738E-01	5.966E-02	1.030
	302.85			1.013E-01	1.148E-01	1.748E-01	2.002E-02	0.580
	356.01	*		-5.206E-02	3.808E-02	5.025E-02	5.687E-03	-1.036
I-133	383.85			-1.547E-01	2.250E-01	3.625E-01	3.866E-02	-0.427
	529.87	*		-1.553E-04	2.250E-01	Half-Life	too short	
	875.33			6.577E-02	2.250E-01	Half-Life	too short	
CS-134	1298.22			-3.931E-02	2.250E-01	Half-Life	too short	
	563.25			1.761E-01	2.772E-01	4.676E-01	2.705E-02	0.377
	569.33			-1.084E-01	1.686E-01	2.528E-01	1.470E-02	-0.429
	604.72			2.652E-02	2.993E-02	4.479E-02	2.465E-03	0.592
	795.86	*	+	8.390E-02	5.908E-02	6.995E-02	5.109E-03	1.199
I-135	801.95			-1.130E-01	3.462E-01	5.322E-01	3.934E-02	-0.212
	1365.19			4.037E-01	9.963E-01	1.676E+00	1.305E-01	0.241
	546.56			-1.491E+10	9.963E-01	Half-Life	too short	

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	836.80			5.714E+10	9.963E-01	Half-Life	too short	
	1038.76			1.387E+10	9.963E-01	Half-Life	too short	
	1131.51			7.042E+09	9.963E-01	Half-Life	too short	
	1260.41	*		-1.167E+09	9.963E-01	Half-Life	too short	
	+ 1457.56			4.429E+12	9.963E-01	Half-Life	too short	
	1678.03			-5.101E+09	9.963E-01	Half-Life	too short	
	1791.20			-1.646E+10	9.963E-01	Half-Life	too short	
CS-136	153.25			6.321E-01	6.943E-01	1.158E+00	8.891E-02	0.546
	176.60			-3.551E-01	4.094E-01	6.470E-01	4.235E-02	-0.549
	273.65			-9.546E-02	6.479E-01	6.339E-01	4.334E-02	-0.151
	340.55			3.033E-01	1.320E-01	2.113E-01	1.346E-02	1.436
	818.51			-1.017E-02	5.988E-02	9.922E-02	7.575E-03	-0.102
	1048.07	*		1.963E-02	9.544E-02	1.594E-01	1.270E-02	0.123
	1235.36			4.358E-01	5.704E-01	9.398E-01	9.567E-02	0.464
CE-139	165.86	*		-1.797E-03	2.353E-02	3.822E-02	1.949E-03	-0.047
BA-140	162.66			4.021E-01	6.407E-01	1.062E+00	6.437E-02	0.379
	304.85			7.520E-01	1.120E+00	1.737E+00	4.964E-01	0.433
	423.72			-7.509E-01	1.538E+00	2.459E+00	7.938E-01	-0.305
	537.26	*		3.640E-02	2.106E-01	3.474E-01	1.157E-01	0.105
LA-140	+ 328.76			3.421E-01	3.056E-01	4.279E-01	2.827E-02	0.800
	487.02			-7.485E-02	1.126E-01	1.790E-01	1.182E-02	-0.418
	815.77			1.358E-02	2.603E-01	4.372E-01	3.808E-02	0.031
	1596.21	*		-2.913E-02	6.655E-02	1.058E-01	7.258E-03	-0.275
CE-141	145.44	*		3.710E-02	5.187E-02	8.428E-02	4.754E-03	0.440
CE-143	57.36			-1.004E-05	5.187E-02	Half-Life	too short	
	+ 293.27	*		1.553E-03	5.187E-02	Half-Life	too short	
	664.57			4.820E-04	5.187E-02	Half-Life	too short	
	721.93			1.501E-04	5.187E-02	Half-Life	too short	
CE-144	80.12			-4.337E-01	3.128E+00	3.291E+00	3.017E-01	-0.132
	133.52	*		8.019E-02	1.782E-01	2.600E-01	3.592E-02	0.308
PM-144	476.78			-2.199E-02	5.165E-02	8.329E-02	5.750E-03	-0.264
	618.01			-2.082E-04	2.617E-02	4.251E-02	2.454E-03	-0.005
	696.49	*		-5.789E-03	2.778E-02	4.429E-02	2.491E-03	-0.131
PR-144	696.51	*		-4.512E-01	2.078E+00	3.312E+00	1.862E-01	-0.136
	1489.16			-4.985E+00	9.246E+00	1.387E+01	9.895E-01	-0.360
PM-146	453.88	*		-3.315E-03	3.287E-02	5.401E-02	4.588E-03	-0.061
	633.25			2.869E-01	1.136E+00	1.862E+00	6.999E-01	0.154
	735.93			4.257E-02	1.179E-01	1.881E-01	5.150E-02	0.226
	747.24			-2.491E-02	8.036E-02	1.266E-01	1.696E-02	-0.197
ND-147	+ 91.11			8.467E-01	2.591E-01	4.648E-01	4.572E-02	1.822
	319.41			-1.888E+00	2.638E+00	4.305E+00	2.544E-01	-0.438
	531.02	*		-2.875E-01	4.818E-01	7.247E-01	9.788E-02	-0.397
PM-149	285.90	*		7.403E+01	7.882E+01	1.358E+02	1.927E+01	0.545
EU-152	121.78			-4.770E-02	5.869E-02	9.425E-02	7.218E-03	-0.506
	244.70			2.391E-02	2.928E-01	4.111E-01	2.325E-02	0.058
	344.28	*		6.887E-02	9.250E-02	1.241E-01	8.222E-03	0.555
	778.90			-1.002E-01	2.055E-01	3.353E-01	2.327E-02	-0.299
	964.08			8.112E-01	2.811E-01	4.729E-01	4.029E-02	1.715
	1085.87			4.026E-02	3.327E-01	5.520E-01	3.883E-02	0.073

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
GD-153	1112.07			1.229E-01	3.099E-01	4.525E-01	3.007E-02	0.272
	1408.01			2.155E-01	1.538E-01	2.774E-01	2.017E-02	0.777
	69.67			8.950E-01	1.690E+00	2.523E+00	2.205E-01	0.355
	97.43	*		-8.186E-03	7.607E-02	1.102E-01	9.004E-03	-0.074
EU-154	103.18			-6.782E-02	1.021E-01	1.445E-01	1.080E-02	-0.469
	123.07			-2.008E-02	4.306E-02	6.740E-02	6.352E-03	-0.298
	723.31			2.986E-02	1.628E-01	2.293E-01	1.657E-02	0.130
	873.19			-4.591E-02	2.524E-01	3.945E-01	4.695E-02	-0.116
TB-160	996.26			-1.782E-01	2.986E-01	4.727E-01	8.158E-02	-0.377
	1004.73			-6.174E-02	1.785E-01	2.887E-01	3.247E-02	-0.214
	1274.44	*		3.537E-04	1.045E-01	1.703E-01	1.704E-02	0.002
	86.79	+		1.288E+00	2.913E-01	4.077E-01	3.939E-02	3.159
HO-166M	197.04			-1.879E-02	4.631E-01	7.226E-01	3.847E-02	-0.026
	215.65			-7.524E-02	6.167E-01	9.549E-01	5.218E-02	-0.079
	298.57	+		2.526E-01	8.847E-02	1.577E-01	9.266E-03	1.602
	879.36	*		3.587E-03	1.161E-01	1.940E-01	1.696E-02	0.018
TA-182	962.29			1.152E+00	4.786E-01	8.004E-01	6.834E-02	1.439
	966.15	+		1.552E+00	4.245E-01	4.445E-01	3.778E-02	3.492
	1177.93			-1.009E-01	3.288E-01	5.287E-01	3.008E-02	-0.191
	1271.85			-4.553E-01	6.233E-01	9.621E-01	6.421E-02	-0.473
IR-192	80.57	+		-5.601E-02	3.391E-01	3.561E-01	3.275E-02	-0.157
	184.41			1.536E-01	4.596E-02	5.449E-02	2.848E-03	2.819
	280.46			-3.015E-02	7.105E-02	1.022E-01	5.952E-03	-0.295
	410.95			1.732E-01	1.977E-01	3.390E-01	1.970E-02	0.511
BI-207	711.68	*		1.024E-03	4.921E-02	7.943E-02	4.649E-03	0.013
	752.31			-6.797E-02	2.311E-01	3.646E-01	2.369E-02	-0.186
	810.29			-2.780E-02	4.647E-02	7.501E-02	5.611E-03	-0.371
	67.75			-1.093E-01	1.131E-01	1.607E-01	1.399E-02	-0.680
PB-210	100.11			9.160E-02	1.591E-01	2.357E-01	1.845E-02	0.389
	152.43			6.203E-02	2.788E-01	4.579E-01	2.420E-02	0.135
	222.11			-1.538E-01	2.881E-01	4.556E-01	2.511E-02	-0.337
	1121.30			5.195E-01	1.606E-01	2.720E-01	1.769E-02	1.910
PB-211	1189.05			4.153E-02	2.598E-01	4.295E-01	2.492E-02	0.097
	1221.41	*		-7.822E-02	1.875E-01	2.994E-01	1.838E-02	-0.261
	1231.02			-6.269E-01	4.517E-01	6.782E-01	4.231E-02	-0.924
	295.96	+		1.062E+00	1.432E-01	2.172E-01	1.295E-02	4.891
BI-212	308.46			-2.590E-02	7.346E-02	1.218E-01	7.258E-03	-0.213
	316.51	*		-3.030E-03	2.665E-02	4.453E-02	2.642E-03	-0.068
	468.07			1.901E-02	5.745E-02	8.768E-02	5.915E-03	0.217
	72.81	+		1.240E+00	2.164E-01	2.995E-01	2.641E-02	4.141
BI-212	74.97	+		7.436E-01	1.297E-01	2.095E-01	1.865E-02	3.549
	569.70			-9.629E-03	2.632E-02	4.014E-02	2.261E-03	-0.240
	1063.66	*		-2.147E-02	4.503E-02	7.194E-02	5.285E-03	-0.298
	1770.23			2.962E-02	3.655E-01	5.265E-01	3.260E-02	0.056
BI-212	46.54	*		2.501E+00	4.200E+00	6.835E+00	5.280E-01	0.366
	404.85	*		-7.957E-01	7.106E-01	9.423E-01	4.520E-01	-0.845
	427.09			-7.734E-02	1.154E+00	1.904E+00	8.723E-01	-0.041
	832.01			-5.883E-02	7.900E-01	1.315E+00	6.802E-01	-0.045
BI-212	727.33	*		1.856E+00	7.074E-01	8.627E-01	9.375E-02	2.151

---- 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		2.624E+00	2.704E+00	4.467E+00	3.148E-01	0.588
		1620.50		-4.254E-01	1.727E+00	2.797E+00	1.897E-01	-0.152
		271.23		6.415E-01	2.220E-01	3.480E-01	2.792E-02	1.843
		401.81	*	-2.464E-01	3.324E-01	5.325E-01	7.154E-02	-0.463
RA-223	+	81.07		-7.114E-02	2.677E-01	2.793E-01	2.578E-02	-0.255
		83.79		1.897E-01	1.226E-01	1.736E-01	1.635E-02	1.092
		94.87		1.482E+00	4.295E-01	6.643E-01	5.670E-02	2.230
		144.24		2.103E-01	5.475E-01	8.824E-01	6.088E-02	0.238
AC-227	+	154.21		4.636E-01	3.102E-01	5.241E-01	3.419E-02	0.885
		269.46		4.984E-01	1.705E-01	2.706E-01	1.633E-02	1.842
		323.87	*	2.656E-01	5.577E-01	8.316E-01	1.344E-01	0.319
		338.28		8.344E+00	1.633E+00	1.890E+00	1.949E-01	4.414
	+	79.69		3.717E-02	1.569E+00	1.666E+00	2.916E-01	0.022
		235.96		1.603E+00	2.164E-01	3.123E-01	2.499E-02	5.133
		256.23	*	-7.930E-03	1.990E-01	3.181E-01	3.238E-02	-0.025
		299.98		1.965E+00	7.125E-01	1.203E+00	1.327E-01	1.634
TH-227	+	304.50		1.106E+00	1.358E+00	2.056E+00	3.142E-01	0.538
		334.37		-5.279E-01	1.603E+00	2.159E+00	3.080E-01	-0.244
		79.80		-4.526E-02	2.065E+00	2.187E+00	4.811E-01	-0.021
		235.96		1.603E+00	2.093E-01	3.123E-01	2.258E-02	5.133
	+	256.23	*	-7.930E-03	1.990E-01	3.181E-01	3.811E-02	-0.025
		299.98		1.965E+00	7.125E-01	1.203E+00	1.327E-01	1.634
		304.50		1.106E+00	1.358E+00	2.056E+00	3.142E-01	0.538
		334.37		-5.279E-01	1.603E+00	2.159E+00	3.080E-01	-0.244
PA-231	+	283.69	*	1.963E-01	1.119E+00	1.850E+00	2.429E-01	0.106
		301.36		1.263E+00	4.553E-01	7.782E-01	8.086E-02	1.622
TH-231	+	81.07		-7.114E-02	2.677E-01	2.793E-01	2.578E-02	-0.255
		83.79		1.897E-01	1.226E-01	1.736E-01	1.635E-02	1.092
		94.87		1.482E+00	4.295E-01	6.643E-01	5.670E-02	2.230
		144.24		2.103E-01	5.475E-01	8.824E-01	6.088E-02	0.238
PA-233	+	154.21		4.636E-01	3.102E-01	5.241E-01	3.419E-02	0.885
		269.46		4.984E-01	1.705E-01	2.706E-01	1.633E-02	1.842
		323.87	*	2.656E-01	5.577E-01	8.316E-01	1.344E-01	0.319
		338.28		8.344E+00	1.633E+00	1.890E+00	1.949E-01	4.414
	+	300.13		8.893E-01	3.295E-01	5.445E-01	7.308E-02	1.633
		311.90	*	8.916E-03	4.893E-02	8.268E-02	5.170E-03	0.108
		340.48		1.506E+00	6.548E-01	9.085E-01	2.111E-01	1.658
		94.67		7.140E-01	1.754E-01	2.518E-01	3.113E-02	2.836
PA-234	+	98.44		5.956E-02	8.734E-02	1.206E-01	6.715E-02	0.494
		111.00		-1.377E-01	1.529E-01	2.363E-01	2.556E-02	-0.583
		131.20		-2.490E-02	9.606E-02	1.368E-01	7.735E-03	-0.182
		569.50		-1.270E-01	2.333E-01	3.522E-01	1.984E-02	-0.361
	+	733.00		-1.760E-01	3.457E-01	4.539E-01	9.699E-02	-0.388
		880.51		8.884E-02	2.327E-01	3.963E-01	3.475E-02	0.224
		883.24		5.492E-02	2.343E-01	3.912E-01	2.631E-01	0.140
		926.50		-3.682E-02	1.616E-01	2.258E-01	5.727E-02	-0.163
	+	946.00	*	2.752E-01	2.563E-01	4.436E-01	8.339E-02	0.620
		949.00		1.953E-01	3.770E-01	6.442E-01	5.583E-02	0.303
		766.42		1.256E+01	1.138E+01	1.628E+01	8.215E+00	0.772

---- 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	*		4.458E+00	3.989E+00	6.831E+00	6.517E-01	0.653
	99.53			8.804E-02	1.475E-01	2.187E-01	1.727E-02	0.403
	103.37			-3.582E-02	9.267E-02	1.326E-01	9.881E-03	-0.270
	+	106.12		8.648E-02	8.293E-02	1.169E-01	8.380E-03	0.740
	117.23	*		-5.121E-01	3.349E-01	5.033E-01	3.133E-02	-1.017
	228.18			1.335E-02	1.770E-01	2.854E-01	1.585E-02	0.047
AM-241	+	277.60		2.414E-01	1.680E-01	2.329E-01	1.354E-02	1.037
	59.54	*		2.421E-02	1.564E-01	2.323E-01	2.161E-02	0.104
CM-247	+	278.00		1.025E+00	7.136E-01	9.945E-01	5.784E-02	1.031
	287.50			-2.166E-01	9.741E-01	1.586E+00	9.274E-02	-0.137
	402.40	*		-1.790E-02	3.008E-02	4.869E-02	2.822E-03	-0.368
CF-249	252.80			6.708E-03	7.547E-01	1.209E+00	6.894E-02	0.006
	333.37			1.008E-03	1.984E-01	2.280E-01	1.347E-02	0.004
	388.16	*		3.478E-02	3.096E-02	5.372E-02	3.108E-03	0.648
CF-251	177.52	*		5.235E-02	1.026E-01	1.690E-01	8.744E-03	0.310
	227.38			1.698E-01	2.879E-01	4.717E-01	2.616E-02	0.360
	285.41			1.465E+00	1.636E+00	2.835E+00	1.656E-01	0.517

## 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]G247563002      *
* Acquisition date   : 2-MAR-2010 23:21:51 Detector SN#      :              *
* Detector ID        : GAM23                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 2.000        *
* Elapsed live time  : 0 04:00:00.00             Abundance limit : 75.000        *
* Elapsed real time  : 0 04:00:03.66             Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247563002             Analyst initials: MXR1          *
* Batch Number       : 956157                 Sample Quantity : 1.3368E+02 GRAM    *
* Recovery           : 1.00000                Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000                                                         *
* CALIB. DATE/TIME   : 2-JUN-2009 11:17:00 MS Isotope      :                  *
* MSD DPM             : 0.000                      MSD Isotope :                  *
* LCS DPM             : 0.000                      LCS Isotope  :                  *
* LCSD DPM            : 0.000                      LCSD Isotope :                  *
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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.021E+01	2.585E+00	3.734E-01	0.000E+00
CD-109	4.082E+00	9.049E-01	1.022E+00	0.000E+00
SN-126	3.987E-01	8.840E-02	1.004E-01	0.000E+00
CS-135	4.330E-01	1.465E-01	1.834E-01	0.000E+00
BA-137M	3.432E-02	3.769E-02	4.844E-02	0.000E+00
CS-137	3.626E-02	3.982E-02	5.117E-02	0.000E+00
EU-155	1.085E-01	1.019E-01	1.448E-01	0.000E+00
HG-203	5.387E-02	3.676E-02	4.956E-02	0.000E+00
TL-208	5.277E-01	7.089E-02	4.692E-02	0.000E+00
BI-211	4.047E+00	4.311E-01	2.498E-01	0.000E+00
PB-212	1.628E+00	1.421E-01	7.570E-02	0.000E+00
BI-214	1.287E+00	1.617E-01	8.668E-02	0.000E+00
PB-214	1.469E+00	1.755E-01	9.087E-02	0.000E+00
RA-224	4.142E+00	9.425E-01	8.113E-01	0.000E+00
RA-226	1.287E+00	1.617E-01	8.668E-02	0.000E+00
AC-228	2.003E+00	3.471E-01	1.929E-01	0.000E+00
RA-228	2.003E+00	3.471E-01	1.929E-01	0.000E+00
TH-228	1.628E+00	1.421E-01	7.570E-02	0.000E+00
TH-229	2.256E-01	4.088E-01	7.124E-01	0.000E+00
TH-232	2.003E+00	3.471E-01	1.929E-01	0.000E+00
TH-234	3.631E+00	2.072E+00	2.022E+00	0.000E+00
U-235	-2.785E-02	1.612E-01	2.728E-01	0.000E+00
NP-237	1.190E+00	3.596E-01	3.043E-01	0.000E+00
U-238	3.631E+00	2.072E+00	2.022E+00	0.000E+00
ANH-511	9.406E-02	5.299E-02	3.829E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-8.509E-02	2.556E-01	4.323E-01	0.000E+00 NOT IDENT.
NA-22	-3.839E-04	3.612E-02	6.028E-02	0.000E+00 NOT IDENT.

NA-24	0.000E+00	1.050E+06	0.000E+00	0.000E+00	SHORT HLIF
SC-46	9.180E-03	3.153E-02	5.510E-02	0.000E+00	FAIL ABUN
V-48	-1.395E-02	5.376E-02	9.005E-02	0.000E+00	NOT IDENT.
CR-51	-2.592E-01	2.819E-01	4.792E-01	0.000E+00	NOT IDENT.
MN-54	1.025E-02	3.013E-02	5.292E-02	0.000E+00	NOT IDENT.
CO-56	1.238E-02	3.123E-02	5.505E-02	0.000E+00	NOT IDENT.
CO-57	-1.568E-02	2.001E-02	3.439E-02	0.000E+00	NOT IDENT.
CO-58	-1.437E-02	3.018E-02	5.075E-02	0.000E+00	NOT IDENT.
FE-59	-6.919E-02	7.293E-02	1.151E-01	0.000E+00	NOT IDENT.
CO-60	2.639E-03	2.793E-02	4.687E-02	0.000E+00	NOT IDENT.
ZN-65	1.146E-01	9.683E-02	1.524E-01	0.000E+00	NOT IDENT.
SE-75	-2.650E-02	3.938E-02	5.568E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	3.289E-02	5.368E-02	0.000E+00	NOT IDENT.
Y-88	3.087E-02	2.635E-02	5.057E-02	0.000E+00	NOT IDENT.
Y-91	-5.890E+00	1.919E+01	3.122E+01	0.000E+00	NOT IDENT.
NB-94	1.363E-02	2.717E-02	4.664E-02	0.000E+00	NOT IDENT.
NB-95	4.743E-02	3.536E-02	6.271E-02	0.000E+00	NOT IDENT.
NB-95M	0.000E+00	1.388E-01	2.268E-01	0.000E+00	NOT IDENT.
ZR-95	1.051E-02	5.967E-02	1.002E-01	0.000E+00	NOT IDENT.
MO-99	-2.405E+00	1.069E+01	1.753E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	9.772E+16	0.000E+00	0.000E+00	SHORT HLIF
RU-103	1.820E-02	2.926E-02	5.156E-02	0.000E+00	FAIL ABUN
RH-106	1.224E-01	2.471E-01	4.274E-01	0.000E+00	NOT IDENT.
RU-106	1.224E-01	2.468E-01	4.274E-01	0.000E+00	NOT IDENT.
AG-108M	-1.114E-02	2.359E-02	3.994E-02	0.000E+00	NOT IDENT.
AG-110M	2.966E-03	3.286E-02	4.794E-02	0.000E+00	NOT IDENT.
SN-113	-1.811E-02	3.405E-02	5.793E-02	0.000E+00	NOT IDENT.
CD-115	-3.687E+00	9.674E+00	1.617E+01	0.000E+00	NOT IDENT.
SN-117M	-2.843E-02	4.326E-02	7.358E-02	0.000E+00	NOT IDENT.
TE-123M	-2.181E-02	2.219E-02	3.736E-02	0.000E+00	NOT IDENT.
SB-124	3.728E-02	5.500E-02	1.011E-01	0.000E+00	NOT IDENT.
SB-125	-5.691E-04	6.805E-02	1.177E-01	0.000E+00	FAIL ABUN
TE-125M	-2.825E+00	8.655E+00	1.325E+01	0.000E+00	NOT IDENT.
I-126	1.798E-01	1.985E-01	3.079E-01	0.000E+00	NOT IDENT.
SB-126	4.952E-02	1.328E-01	1.968E-01	0.000E+00	NOT IDENT.
SB-127	9.656E-02	1.122E+00	1.888E+00	0.000E+00	NOT IDENT.
I-131	-6.253E-02	9.000E-02	1.527E-01	0.000E+00	NOT IDENT.
TE-132	5.766E-02	6.387E-01	1.088E+00	0.000E+00	NOT IDENT.
BA-133	-5.206E-02	3.732E-02	5.163E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	6.247E+03	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	5.790E-02	7.086E-02	0.000E+00	FAIL ABUN
I-135	0.000E+00	1.536E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	1.963E-02	9.353E-02	1.607E-01	0.000E+00	NOT IDENT.
CE-139	-1.797E-03	2.306E-02	3.979E-02	0.000E+00	NOT IDENT.
BA-140	3.640E-02	2.064E-01	3.544E-01	0.000E+00	NOT IDENT.
LA-140	-2.913E-02	6.522E-02	1.058E-01	0.000E+00	FAIL ABUN
CE-141	3.710E-02	5.084E-02	8.795E-02	0.000E+00	NOT IDENT.
CE-143	0.000E+00	3.790E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	8.019E-02	1.747E-01	2.718E-01	0.000E+00	NOT IDENT.
PM-144	-5.789E-03	2.722E-02	4.497E-02	0.000E+00	NOT IDENT.
PR-144	-4.512E-01	2.037E+00	3.363E+00	0.000E+00	NOT IDENT.
PM-146	-3.315E-03	3.221E-02	5.526E-02	0.000E+00	NOT IDENT.
ND-147	-2.875E-01	4.721E-01	7.394E-01	0.000E+00	FAIL ABUN
PM-149	7.403E+01	7.724E+01	1.401E+02	0.000E+00	NOT IDENT.
EU-152	6.887E-02	9.065E-02	1.276E-01	0.000E+00	NOT IDENT.
GD-153	-8.186E-03	7.455E-02	1.158E-01	0.000E+00	NOT IDENT.
EU-154	3.537E-04	1.024E-01	1.711E-01	0.000E+00	NOT IDENT.
TB-160	3.587E-03	1.138E-01	1.961E-01	0.000E+00	FAIL ABUN
HO-166M	1.024E-03	4.823E-02	8.062E-02	0.000E+00	FAIL ABUN
TA-182	-7.822E-02	1.838E-01	3.010E-01	0.000E+00	NOT IDENT.
IR-192	-3.030E-03	2.612E-02	4.585E-02	0.000E+00	FAIL ABUN
BI-207	-2.147E-02	4.413E-02	7.249E-02	0.000E+00	FAIL ABUN
PB-210	2.501E+00	4.116E+00	7.269E+00	0.000E+00	NOT IDENT.
PB-211	-7.957E-01	6.964E-01	9.660E-01	0.000E+00	NOT IDENT.
BI-212	0.000E+00	6.932E-01	8.753E-01	0.000E+00	FAIL ABUN
RN-219	-2.464E-01	3.257E-01	5.460E-01	0.000E+00	FAIL ABUN
RA-223	2.656E-01	5.466E-01	8.559E-01	0.000E+00	FAIL ABUN
AC-227	-7.930E-03	1.951E-01	3.287E-01	0.000E+00	FAIL ABUN
TH-227	-7.930E-03	1.951E-01	3.287E-01	0.000E+00	FAIL ABUN
PA-231	1.963E-01	1.097E+00	1.908E+00	0.000E+00	FAIL ABUN
TH-231	2.656E-01	5.466E-01	8.559E-01	0.000E+00	FAIL ABUN
PA-233	8.916E-03	4.795E-02	8.515E-02	0.000E+00	FAIL ABUN
PA-234	2.752E-01	2.511E-01	4.479E-01	0.000E+00	NOT IDENT.
PA-234M	4.458E+00	3.910E+00	6.890E+00	0.000E+00	NOT IDENT.
NP-239	-5.121E-01	3.282E-01	5.271E-01	0.000E+00	FAIL ABUN
AM-241	2.421E-02	1.533E-01	2.460E-01	0.000E+00	NOT IDENT.
CM-247	-1.790E-02	2.947E-02	4.992E-02	0.000E+00	FAIL ABUN
CF-249	3.478E-02	3.034E-02	5.512E-02	0.000E+00	NOT IDENT.

CF-251

5.235E-02

1.005E-01

1.757E-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]G247563002.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 23:21:51.
Sample ID          : G247563002 Sample quantity : 1.33680E+02 GRAM
Detector name      : GAM23 Detector geometry: CAN
Elapsed live time  : 0 04:00:00.00 Elapsed real time: 0 04:00:03.66 0.0%
Energy tolerance   : 2.00000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 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	2288	10.66*	9.975E-01	3.021E+01	3.021E+01	8.73
CD-109	88.03	547	3.70*	5.208E+00	3.987E+00	4.082E+00	22.62
SN-126	64.28	246	9.60	2.571E+00	1.399E+00	1.399E+00	57.30
	86.94	547	8.90	5.208E+00	1.658E+00	1.658E+00	46.35
	87.57	547	37.00*	5.208E+00	3.987E-01	3.987E-01	22.62
CS-135	268.22	209	16.00*	4.227E+00	4.330E-01	4.330E-01	34.53
BA-137M	661.66	45	89.90*	2.042E+00	3.429E-02	3.432E-02	112.05
CS-137	661.66	45	85.10*	2.042E+00	3.622E-02	3.626E-02	112.05
EU-155	86.55	547	30.70	5.208E+00	4.806E-01	4.836E-01	22.65
	105.31	99	21.10*	6.115E+00	1.078E-01	1.085E-01	95.90
HG-203	70.83	-----	3.69	3.580E+00	-----	Line Not Found	-----
	72.87	762	6.19	4.036E+00	4.285E+00	5.400E+00	21.71
	279.20	103	81.56*	4.141E+00	4.274E-02	5.387E-02	69.63
TL-208	277.37	103	6.60	4.141E+00	5.281E-01	5.281E-01	70.19
	583.19	728	85.00*	2.278E+00	5.277E-01	5.277E-01	13.71
	860.56	117	12.50	1.609E+00	8.163E-01	8.163E-01	56.70
BI-211	72.87	762	1.23	4.036E+00	2.156E+01	2.156E+01	17.44
	351.06	1282	12.92*	3.443E+00	4.047E+00	4.047E+00	10.87
PB-212	74.82	762	10.28	4.036E+00	2.580E+00	2.580E+00	19.97
	77.11	1146	17.10	4.294E+00	2.191E+00	2.191E+00	13.27
	238.63	2345	43.60*	4.639E+00	1.628E+00	1.628E+00	8.91
	300.09	164	3.30	3.899E+00	1.787E+00	1.787E+00	35.55
BI-214	609.32	915	45.49*	2.194E+00	1.287E+00	1.287E+00	12.82
	1120.29	216	14.92	1.259E+00	1.617E+00	1.617E+00	33.11
	1764.49	172	15.30	8.745E-01	1.805E+00	1.805E+00	20.69
PB-214	74.82	762	5.80	4.036E+00	4.573E+00	4.573E+00	19.16
	77.11	1146	9.70	4.294E+00	3.862E+00	3.863E+00	15.63
	242.00	556	7.25	4.596E+00	2.343E+00	2.343E+00	23.93
	295.22	742	18.42	3.950E+00	1.431E+00	1.431E+00	14.94
	351.93	1282	35.60*	3.443E+00	1.469E+00	1.469E+00	12.19
RA-224	240.99	556	4.10*	4.596E+00	4.142E+00	4.142E+00	23.22
RA-226	609.32	915	45.49*	2.194E+00	1.287E+00	1.287E+00	12.82

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	1120.29	216	14.92	1.259E+00	1.617E+00	1.617E+00	33.11
	1764.49	172	15.30	8.745E-01	1.805E+00	1.805E+00	20.69
AC-228	338.32	599	11.27	3.552E+00	2.103E+00	2.103E+00	44.47
	911.20	562	25.80*	1.527E+00	2.003E+00	2.003E+00	17.68
	968.97	332	15.80	1.442E+00	2.048E+00	2.048E+00	35.60
RA-228	338.32	599	11.27	3.552E+00	2.103E+00	2.103E+00	44.47
	911.20	562	25.80*	1.527E+00	2.003E+00	2.003E+00	17.68
	968.97	332	15.80	1.442E+00	2.048E+00	2.048E+00	35.60
TH-228	74.82	762	10.28	4.036E+00	2.580E+00	2.580E+00	17.48
	77.11	1146	17.10	4.294E+00	2.191E+00	2.191E+00	13.27
	238.63	2345	43.60*	4.639E+00	1.628E+00	1.628E+00	8.91
	300.09	164	3.30	3.899E+00	1.787E+00	1.787E+00	70.00
TH-229	85.43	166	14.70	4.969E+00	3.187E-01	3.187E-01	64.62
	88.47	340	24.00	5.396E+00	3.687E-01	3.687E-01	30.39
	193.51	-----	4.41*	5.353E+00	-----	Line Not Found	-----
	210.85	302	2.80	5.089E+00	2.978E+00	2.978E+00	34.16
TH-232	338.32	599	11.27	3.552E+00	2.103E+00	2.103E+00	17.66
	911.20	562	25.80*	1.527E+00	2.003E+00	2.003E+00	17.68
	968.97	332	15.80	1.442E+00	2.048E+00	2.048E+00	35.60
TH-234	63.29	246	3.70*	2.571E+00	3.631E+00	3.631E+00	58.22
	92.59	632	4.23	5.583E+00	3.759E+00	3.759E+00	29.44
U-235	89.96	340	3.47	5.396E+00	2.550E+00	2.550E+00	38.15
	93.35	632	5.60	5.583E+00	2.839E+00	2.839E+00	30.21
	143.76	-----	10.96*	6.189E+00	-----	Line Not Found	-----
	163.33	-----	5.08	5.887E+00	-----	Line Not Found	-----
	185.72	433	57.20	5.495E+00	1.933E-01	1.933E-01	29.92
	205.31	-----	5.01	5.150E+00	-----	Line Not Found	-----
NP-237	86.48	547	12.40*	5.208E+00	1.190E+00	1.190E+00	30.84
	95.86	-----	2.68	5.757E+00	-----	Line Not Found	-----
U-238	63.29	246	3.70*	2.571E+00	3.631E+00	3.631E+00	58.22
	92.59	632	4.23	5.583E+00	3.759E+00	3.759E+00	21.29
ANH-511	511.00	171	100.00*	2.547E+00	9.406E-02	9.406E-02	57.48

Flag: "\*" = Keyline

Total number of lines in spectrum 35  
Number of unidentified lines 3  
Number of lines tentatively identified by NID 32 91.43%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.021E+01	3.021E+01	0.264E+01	8.73	
CD-109	461.40D	1.02	3.987E+00	4.082E+00	0.923E+00	22.62	
SN-126	2.30E+05Y	1.00	3.987E-01	3.987E-01	0.902E-01	22.62	
CS-135	2.30E+06Y	1.00	4.330E-01	4.330E-01	1.495E-01	34.53	
BA-137M	30.08Y	1.00	3.429E-02	3.432E-02	3.846E-02	112.05	
CS-137	30.08Y	1.00	3.622E-02	3.626E-02	4.063E-02	112.05	
EU-155	4.75Y	1.01	1.078E-01	1.085E-01	1.040E-01	95.90	
HG-203	46.59D	1.26	4.274E-02	5.387E-02	3.751E-02	69.63	
TL-208	1.41E+10Y	1.00	5.277E-01	5.277E-01	0.723E-01	13.71	
BI-211	7.04E+08Y	1.00	4.047E+00	4.047E+00	0.440E+00	10.87	
PB-212	1.41E+10Y	1.00	1.628E+00	1.628E+00	0.145E+00	8.91	
BI-214	1600.00Y	1.00	1.287E+00	1.287E+00	0.165E+00	12.82	
PB-214	1600.00Y	1.00	1.469E+00	1.469E+00	0.179E+00	12.19	
RA-224	1.41E+10Y	1.00	4.142E+00	4.142E+00	0.962E+00	23.22	
RA-226	1600.00Y	1.00	1.287E+00	1.287E+00	0.165E+00	12.82	
AC-228	1.41E+10Y	1.00	2.003E+00	2.003E+00	0.354E+00	17.68	
RA-228	1.41E+10Y	1.00	2.003E+00	2.003E+00	0.354E+00	17.68	
TH-228	1.41E+10Y	1.00	1.628E+00	1.628E+00	0.145E+00	8.91	
TH-229	7340.00Y	1.00	3.687E-01	3.687E-01	1.120E-01	30.39	K
TH-232	1.41E+10Y	1.00	2.003E+00	2.003E+00	0.354E+00	17.68	
TH-234	4.47E+09Y	1.00	3.631E+00	3.631E+00	2.114E+00	58.22	
U-235	7.04E+08Y	1.00	1.933E-01	1.933E-01	0.578E-01	29.92	K
NP-237	2.14E+06Y	1.00	1.190E+00	1.190E+00	0.367E+00	30.84	
U-238	4.47E+09Y	1.00	3.631E+00	3.631E+00	2.114E+00	58.22	
ANH-511	1.00E+09Y	1.00	9.406E-02	9.406E-02	5.407E-02	57.48	

Total Activity : 6.638E+01 6.649E+01

Grand Total Activity : 6.638E+01 6.649E+01

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

Unidentified Energy Lines  
Sample ID : G247563002

Page : 4  
Acquisition date : 2-MAR-2010 23:21:51

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	128.72	134	688	1.32	257.43	254	8	9.30E-03	70.1	6.33E+00	
0	327.26	77	319	1.17	654.51	651	9	5.37E-03	89.1	3.64E+00	T
0	462.39	126	153	1.45	924.79	921	8	8.75E-03	38.4	2.76E+00	T
0	726.49	166	158	1.76	1452.99	1447	15	1.15E-02	36.5	1.88E+00	T
0	793.93	79	150	1.50	1587.85	1580	14	5.45E-03	70.0	1.73E+00	T
0	933.40	69	58	2.33	1866.79	1861	10	4.76E-03	48.6	1.49E+00	
0	1376.69	60	35	1.64	2753.38	2747	15	4.18E-03	51.0	1.05E+00	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563002.CNF;1
* Acquisition date   : 2-MAR-2010 23:21:51.  Detector SN#      :
* Detector ID        : GAM23                      Sensitivity    : 5.00000
* Geometry           : CAN                      Energy tolerance: 2.00000
* Elapsed live time  : 0 04:00:00.00             Abundance limit : 75.00000
* Elapsed real time  : 0 04:00:03.66             Half life ratio : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G247563002             Analyst initials: MXR1
* Batch Number       : 956157                 Sample Quantity : 1.33680E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 2-JUN-2009 11:17:00.62MS 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	3.021E+01	2.638E+00	3.728E-01	2.789E-02	81.045
CD-109	4.082E+00	9.233E-01	9.710E-01	9.480E-02	4.204
SN-126	3.987E-01	9.020E-02	9.543E-02	9.286E-03	4.178
CS-135	4.330E-01	1.495E-01	1.776E-01	1.357E-02	2.437
BA-137M	3.432E-02	3.846E-02	4.766E-02	2.435E-03	0.720
CS-137	3.626E-02	4.063E-02	5.035E-02	2.586E-03	0.720
EU-155	1.085E-01	1.040E-01	1.380E-01	1.017E-02	0.786
HG-203	5.387E-02	3.751E-02	4.803E-02	2.950E-03	1.122
TL-208	5.277E-01	7.234E-02	4.606E-02	2.983E-03	11.457
BI-211	4.047E+00	4.399E-01	2.431E-01	1.584E-02	16.651
PB-212	1.628E+00	1.450E-01	7.316E-02	5.307E-03	22.250
BI-214	1.287E+00	1.650E-01	8.517E-02	6.457E-03	15.111
PB-214	1.469E+00	1.790E-01	8.841E-02	7.548E-03	16.614
RA-224	4.142E+00	9.617E-01	7.842E-01	4.419E-02	5.282
RA-226	1.287E+00	1.650E-01	8.517E-02	6.457E-03	15.111
AC-228	2.003E+00	3.541E-01	1.909E-01	2.268E-02	10.491
RA-228	2.003E+00	3.541E-01	1.909E-01	2.268E-02	10.491
TH-228	1.628E+00	1.450E-01	7.316E-02	5.307E-03	22.250

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-229	3.687E-01	1.120E-01	6.860E-01	3.633E-02	0.537
TH-232	2.003E+00	3.541E-01	1.909E-01	2.268E-02	10.491
TH-234	3.631E+00	2.114E+00	1.911E+00	3.515E-01	1.900
U-235	1.933E-01	5.785E-02	2.614E-01	4.070E-02	0.740
NP-237	1.190E+00	3.670E-01	2.891E-01	6.671E-02	4.116
U-238	3.631E+00	2.114E+00	1.911E+00	3.515E-01	1.900
ANH-511	9.406E-02	5.407E-02	3.750E-02	2.178E-03	2.508

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-8.509E-02		2.608E-01	4.229E-01	2.872E-02	-0.201
NA-22	-3.839E-04		3.686E-02	6.002E-02	4.030E-03	-0.006
NA-24	4.577E-01		5.356E-01	Half-Life too short		
SC-46	9.180E-03		3.218E-02	5.451E-02	4.870E-03	0.168
V-48	-1.395E-02		5.486E-02	8.924E-02	7.424E-03	-0.156
CR-51	-2.592E-01		2.876E-01	4.655E-01	3.048E-02	-0.557
MN-54	1.025E-02		3.074E-02	5.229E-02	4.140E-03	0.196
CO-56	1.238E-02		3.186E-02	5.440E-02	4.426E-03	0.228
CO-57	-1.568E-02		2.042E-02	3.286E-02	1.937E-03	-0.477
CO-58	-1.437E-02		3.079E-02	5.012E-02	3.765E-03	-0.287
FE-59	-6.919E-02		7.441E-02	1.143E-01	8.799E-03	-0.605
CO-60	2.639E-03		2.850E-02	4.671E-02	3.429E-03	0.056
ZN-65	1.146E-01		9.881E-02	1.514E-01	9.997E-03	0.757
SE-75	-2.650E-02		4.019E-02	5.391E-02	3.139E-03	-0.492
SR-85	5.558E-02		3.356E-02	5.259E-02	3.051E-03	1.057
Y-88	3.087E-02		2.689E-02	5.069E-02	2.985E-03	0.609
Y-91	-5.890E+00		1.958E+01	3.106E+01	1.852E+00	-0.190
NB-94	1.363E-02		2.773E-02	4.594E-02	2.625E-03	0.297
NB-95	4.743E-02		3.608E-02	6.186E-02	4.157E-03	0.767
NB-95M	7.133E-01		1.417E-01	2.191E-01	1.622E-02	3.256
ZR-95	1.051E-02		6.089E-02	9.881E-02	7.624E-03	0.106
MO-99	-2.405E+00		1.090E+01	1.728E+01	2.526E+00	-0.139
TC-99M	-1.230E+11		4.986E+10	Half-Life too short		
RU-103	1.820E-02		2.986E-02	5.048E-02	6.280E-03	0.360
RH-106	1.224E-01		2.522E-01	4.200E-01	4.794E-02	0.292
RU-106	1.224E-01		2.519E-01	4.200E-01	2.257E-02	0.292
AG-108M	-1.114E-02		2.408E-02	3.901E-02	2.438E-03	-0.286
AG-110M	2.966E-03		3.353E-02	4.717E-02	2.621E-03	0.063
SN-113	-1.811E-02		3.475E-02	5.647E-02	3.479E-03	-0.321
CD-115	-3.687E+00		9.872E+00	1.584E+01	9.143E-01	-0.233
SN-117M	-2.843E-02		4.414E-02	7.061E-02	3.670E-03	-0.403
TE-123M	-2.181E-02		2.264E-02	3.586E-02	1.892E-03	-0.608
SB-124	3.728E-02		5.612E-02	1.012E-01	7.079E-03	0.369
SB-125	-5.691E-04		6.944E-02	1.149E-01	6.982E-03	-0.005
TE-125M	-2.825E+00		8.831E+00	1.264E+01	1.150E+00	-0.224
I-126	1.798E-01		2.025E-01	3.030E-01	1.568E-02	0.593

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-126	4.952E-02		1.355E-01	1.940E-01	1.163E-02	0.255
SB-127	9.656E-02		1.145E+00	1.859E+00	1.738E-01	0.052
I-131	-6.253E-02		9.184E-02	1.487E-01	9.716E-03	-0.420
TE-132	5.766E-02		6.518E-01	1.051E+00	1.520E-01	0.055
BA-133	-5.206E-02		3.808E-02	5.025E-02	5.687E-03	-1.036
I-133	-1.553E-04		3.187E-03	Half-Life too short		
CS-134	8.390E-02	+	5.908E-02	6.995E-02	5.109E-03	1.199
I-135	-1.167E+09		7.835E+09	Half-Life too short		
CS-136	1.963E-02		9.544E-02	1.594E-01	1.270E-02	0.123
CE-139	-1.797E-03		2.353E-02	3.822E-02	1.949E-03	-0.047
BA-140	3.640E-02		2.106E-01	3.474E-01	1.157E-01	0.105
LA-140	-2.913E-02		6.655E-02	1.058E-01	7.258E-03	-0.275
CE-141	3.710E-02		5.187E-02	8.428E-02	4.754E-03	0.440
CE-143	1.553E-03	+	1.934E-04	Half-Life too short		
CE-144	8.019E-02		1.782E-01	2.600E-01	3.592E-02	0.308
PM-144	-5.789E-03		2.778E-02	4.429E-02	2.491E-03	-0.131
PR-144	-4.512E-01		2.078E+00	3.312E+00	1.862E-01	-0.136
PM-146	-3.315E-03		3.287E-02	5.401E-02	4.588E-03	-0.061
ND-147	-2.875E-01		4.818E-01	7.247E-01	9.788E-02	-0.397
PM-149	7.403E+01		7.882E+01	1.358E+02	1.927E+01	0.545
EU-152	6.887E-02		9.250E-02	1.241E-01	8.222E-03	0.555
GD-153	-8.186E-03		7.607E-02	1.102E-01	9.004E-03	-0.074
EU-154	3.537E-04		1.045E-01	1.703E-01	1.704E-02	0.002
TB-160	3.587E-03		1.161E-01	1.940E-01	1.696E-02	0.018
HO-166M	1.024E-03		4.921E-02	7.943E-02	4.649E-03	0.013
TA-182	-7.822E-02		1.875E-01	2.994E-01	1.838E-02	-0.261
IR-192	-3.030E-03		2.665E-02	4.453E-02	2.642E-03	-0.068
BI-207	-2.147E-02		4.503E-02	7.194E-02	5.285E-03	-0.298
PB-210	2.501E+00		4.200E+00	6.835E+00	5.280E-01	0.366
PB-211	-7.957E-01		7.106E-01	9.423E-01	4.520E-01	-0.845
BI-212	1.856E+00	+	7.074E-01	8.627E-01	9.375E-02	2.151
RN-219	-2.464E-01		3.324E-01	5.325E-01	7.154E-02	-0.463
RA-223	2.656E-01		5.577E-01	8.316E-01	1.344E-01	0.319
AC-227	-7.930E-03		1.990E-01	3.181E-01	3.238E-02	-0.025
TH-227	-7.930E-03		1.990E-01	3.181E-01	3.811E-02	-0.025
PA-231	1.963E-01		1.119E+00	1.850E+00	2.429E-01	0.106
TH-231	2.656E-01		5.577E-01	8.316E-01	1.344E-01	0.319
PA-233	8.916E-03		4.893E-02	8.268E-02	5.170E-03	0.108
PA-234	2.752E-01		2.563E-01	4.436E-01	8.339E-02	0.620
PA-234M	4.458E+00		3.989E+00	6.831E+00	6.517E-01	0.653
NP-239	-5.121E-01		3.349E-01	5.033E-01	3.133E-02	-1.017
AM-241	2.421E-02		1.564E-01	2.323E-01	2.161E-02	0.104
CM-247	-1.790E-02		3.008E-02	4.869E-02	2.822E-03	-0.368
CF-249	3.478E-02		3.096E-02	5.372E-02	3.108E-03	0.648
CF-251	5.235E-02		1.026E-01	1.690E-01	8.744E-03	0.310

## VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247563002          *
* Acquisition date   : 2-MAR-2010 23:21:51 Detector SN#                   *
* Detector ID        : GAM23 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance: 2.000                        *
* Elapsed live time  : 0 04:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 04:00:03.66 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID         *
* Sample ID          : G247563002 Analyst initials: MXR1                  *
* Batch Number       : 956157 Sample Quantity : 1.3368E+02 GRAM           *
* Recovery           : 1.00000 Carrier Weight : 0.00000                   *
*****
*                                     QC DATA                                *
*
* CALIB. DATE/TIME   : 2-JUN-2009 11:17:00 MS Isotope                    :
* MSD DPM             : 0.000 MSD Isotope                                :
* LCS DPM             : 0.000 LCS Isotope                                :
* LCSD DPM            : 0.000 LCSD Isotope                               :
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.021E+01	2.585E+00	1.868E-01	1.319E+00
CD-109	4.082E+00	9.049E-01	5.112E-01	4.617E-01
SN-126	3.987E-01	8.840E-02	5.025E-02	4.510E-02
CS-135	4.330E-01	1.465E-01	9.178E-02	7.475E-02
BA-137M	3.432E-02	3.769E-02	2.423E-02	1.923E-02
CS-137	3.626E-02	3.982E-02	2.560E-02	2.031E-02
EU-155	1.085E-01	1.019E-01	7.242E-02	5.201E-02
HG-203	5.387E-02	3.676E-02	2.479E-02	1.875E-02
TL-208	5.277E-01	7.089E-02	2.347E-02	3.617E-02
BI-211	4.047E+00	4.311E-01	1.250E-01	2.200E-01
PB-212	1.628E+00	1.421E-01	3.787E-02	7.250E-02
BI-214	1.287E+00	1.617E-01	4.337E-02	8.248E-02
PB-214	1.469E+00	1.755E-01	4.546E-02	8.952E-02
RA-224	4.142E+00	9.425E-01	4.059E-01	4.809E-01
RA-226	1.287E+00	1.617E-01	4.337E-02	8.248E-02
AC-228	2.003E+00	3.471E-01	9.651E-02	1.771E-01
RA-228	2.003E+00	3.471E-01	9.651E-02	1.771E-01
TH-228	1.628E+00	1.421E-01	3.787E-02	7.250E-02
TH-229	2.256E-01	4.088E-01	3.564E-01	2.086E-01
TH-232	2.003E+00	3.471E-01	9.651E-02	1.771E-01
TH-234	3.631E+00	2.072E+00	1.011E+00	1.057E+00
U-235	-2.785E-02	1.612E-01	1.365E-01	8.225E-02
NP-237	1.190E+00	3.596E-01	1.522E-01	1.835E-01
U-238	3.631E+00	2.072E+00	1.011E+00	1.057E+00
ANH-511	9.406E-02	5.299E-02	1.916E-02	2.703E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-8.509E-02	2.556E-01	2.163E-01	1.304E-01 NOT IDENT.
NA-22	-3.839E-04	3.612E-02	3.016E-02	1.843E-02 NOT IDENT.

NA-24	4.577E+05	1.050E+06	0.000E+00	5.356E+05	SHORT HLIF
SC-46	9.180E-03	3.153E-02	2.757E-02	1.609E-02	FAIL ABUN
V-48	-1.395E-02	5.376E-02	4.505E-02	2.743E-02	NOT IDENT.
CR-51	-2.592E-01	2.819E-01	2.398E-01	1.438E-01	NOT IDENT.
MN-54	1.025E-02	3.013E-02	2.648E-02	1.537E-02	NOT IDENT.
CO-56	1.238E-02	3.123E-02	2.754E-02	1.593E-02	NOT IDENT.
CO-57	-1.568E-02	2.001E-02	1.720E-02	1.021E-02	NOT IDENT.
CO-58	-1.437E-02	3.018E-02	2.539E-02	1.540E-02	NOT IDENT.
FE-59	-6.919E-02	7.293E-02	5.758E-02	3.721E-02	NOT IDENT.
CO-60	2.639E-03	2.793E-02	2.345E-02	1.425E-02	NOT IDENT.
ZN-65	1.146E-01	9.683E-02	7.624E-02	4.940E-02	NOT IDENT.
SE-75	-2.650E-02	3.938E-02	2.786E-02	2.009E-02	NOT IDENT.
SR-85	5.558E-02	3.289E-02	2.686E-02	1.678E-02	NOT IDENT.
Y-88	3.087E-02	2.635E-02	2.530E-02	1.344E-02	NOT IDENT.
Y-91	-5.890E+00	1.919E+01	1.562E+01	9.791E+00	NOT IDENT.
NB-94	1.363E-02	2.717E-02	2.333E-02	1.386E-02	NOT IDENT.
NB-95	4.743E-02	3.536E-02	3.137E-02	1.804E-02	NOT IDENT.
NB-95M	7.133E-01	1.388E-01	1.134E-01	7.083E-02	NOT IDENT.
ZR-95	1.051E-02	5.967E-02	5.012E-02	3.044E-02	NOT IDENT.
MO-99	-2.405E+00	1.069E+01	8.769E+00	5.452E+00	NOT IDENT.
TC-99M	-1.230E+17	9.772E+16	0.000E+00	0.000E+00	SHORT HLIF
RU-103	1.820E-02	2.926E-02	2.580E-02	1.493E-02	FAIL ABUN
RH-106	1.224E-01	2.471E-01	2.138E-01	1.261E-01	NOT IDENT.
RU-106	1.224E-01	2.468E-01	2.138E-01	1.259E-01	NOT IDENT.
AG-108M	-1.114E-02	2.359E-02	1.998E-02	1.204E-02	NOT IDENT.
AG-110M	2.966E-03	3.286E-02	2.399E-02	1.676E-02	NOT IDENT.
SN-113	-1.811E-02	3.405E-02	2.898E-02	1.737E-02	NOT IDENT.
CD-115	-3.687E+00	9.674E+00	8.088E+00	4.936E+00	NOT IDENT.
SN-117M	-2.843E-02	4.326E-02	3.681E-02	2.207E-02	NOT IDENT.
TE-123M	-2.181E-02	2.219E-02	1.869E-02	1.132E-02	NOT IDENT.
SB-124	3.728E-02	5.500E-02	5.056E-02	2.806E-02	NOT IDENT.
SB-125	-5.691E-04	6.805E-02	5.889E-02	3.472E-02	FAIL ABUN
TE-125M	-2.825E+00	8.655E+00	6.630E+00	4.416E+00	NOT IDENT.
I-126	1.798E-01	1.985E-01	1.540E-01	1.013E-01	NOT IDENT.
SB-126	4.952E-02	1.328E-01	9.848E-02	6.774E-02	NOT IDENT.
SB-127	9.656E-02	1.122E+00	9.444E-01	5.724E-01	NOT IDENT.
I-131	-6.253E-02	9.000E-02	7.642E-02	4.592E-02	NOT IDENT.
TE-132	5.766E-02	6.387E-01	5.446E-01	3.259E-01	NOT IDENT.
BA-133	-5.206E-02	3.732E-02	2.583E-02	1.904E-02	FAIL ABUN
I-133	-1.553E+02	6.247E+03	0.000E+00	3.187E+03	SHORT HLIF
CS-134	8.390E-02	5.790E-02	3.545E-02	2.954E-02	FAIL ABUN
I-135	-1.167E+15	1.536E+16	0.000E+00	7.835E+15	SHORT HLIF
CS-136	1.963E-02	9.353E-02	8.039E-02	4.772E-02	NOT IDENT.
CE-139	-1.797E-03	2.306E-02	1.991E-02	1.176E-02	NOT IDENT.
BA-140	3.640E-02	2.064E-01	1.773E-01	1.053E-01	NOT IDENT.
LA-140	-2.913E-02	6.522E-02	5.293E-02	3.327E-02	FAIL ABUN
CE-141	3.710E-02	5.084E-02	4.400E-02	2.594E-02	NOT IDENT.
CE-143	1.553E+03	3.790E+02	0.000E+00	1.934E+02	SHORT HLIF
CE-144	8.019E-02	1.747E-01	1.360E-01	8.911E-02	NOT IDENT.
PM-144	-5.789E-03	2.722E-02	2.250E-02	1.389E-02	NOT IDENT.
PR-144	-4.512E-01	2.037E+00	1.682E+00	1.039E+00	NOT IDENT.
PM-146	-3.315E-03	3.221E-02	2.764E-02	1.643E-02	NOT IDENT.
ND-147	-2.875E-01	4.721E-01	3.699E-01	2.409E-01	FAIL ABUN
PM-149	7.403E+01	7.724E+01	7.007E+01	3.941E+01	NOT IDENT.
EU-152	6.887E-02	9.065E-02	6.386E-02	4.625E-02	NOT IDENT.
GD-153	-8.186E-03	7.455E-02	5.793E-02	3.804E-02	NOT IDENT.
EU-154	3.537E-04	1.024E-01	8.559E-02	5.225E-02	NOT IDENT.
TB-160	3.587E-03	1.138E-01	9.813E-02	5.807E-02	FAIL ABUN
HO-166M	1.024E-03	4.823E-02	4.033E-02	2.460E-02	FAIL ABUN
TA-182	-7.822E-02	1.838E-01	1.506E-01	9.377E-02	NOT IDENT.
IR-192	-3.030E-03	2.612E-02	2.294E-02	1.333E-02	FAIL ABUN
BI-207	-2.147E-02	4.413E-02	3.627E-02	2.252E-02	FAIL ABUN
PB-210	2.501E+00	4.116E+00	3.637E+00	2.100E+00	NOT IDENT.
PB-211	-7.957E-01	6.964E-01	4.833E-01	3.553E-01	NOT IDENT.
BI-212	1.856E+00	6.932E-01	4.379E-01	3.537E-01	FAIL ABUN
RN-219	-2.464E-01	3.257E-01	2.732E-01	1.662E-01	FAIL ABUN
RA-223	2.656E-01	5.466E-01	4.282E-01	2.789E-01	FAIL ABUN
AC-227	-7.930E-03	1.951E-01	1.645E-01	9.952E-02	FAIL ABUN
TH-227	-7.930E-03	1.951E-01	1.645E-01	9.952E-02	FAIL ABUN
PA-231	1.963E-01	1.097E+00	9.547E-01	5.596E-01	FAIL ABUN
TH-231	2.656E-01	5.466E-01	4.282E-01	2.789E-01	FAIL ABUN
PA-233	8.916E-03	4.795E-02	4.260E-02	2.446E-02	FAIL ABUN
PA-234	2.752E-01	2.511E-01	2.241E-01	1.281E-01	NOT IDENT.
PA-234M	4.458E+00	3.910E+00	3.447E+00	1.995E+00	NOT IDENT.
NP-239	-5.121E-01	3.282E-01	2.637E-01	1.675E-01	FAIL ABUN
AM-241	2.421E-02	1.533E-01	1.231E-01	7.821E-02	NOT IDENT.
CM-247	-1.790E-02	2.947E-02	2.498E-02	1.504E-02	FAIL ABUN
CF-249	3.478E-02	3.034E-02	2.757E-02	1.548E-02	NOT IDENT.

CF-251

5.235E-02

1.005E-01

8.792E-02

5.128E-02 NOT IDENT.

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

ENERGY	MDA COUNTS
46.54	615.2806
49.72	710.5668
57.36	0.0000
59.54	693.0803
63.29	785.9323
63.29	785.9323
64.28	861.9163
67.75	957.6406
69.67	892.7942
70.83	900.2842
72.81	966.1048
72.87	966.1870
72.87	966.1870
74.82	979.1682
74.82	979.1682
74.82	979.1682
74.97	979.3699
77.11	982.2327
77.11	982.2327
77.11	982.2327
79.69	947.0518
79.80	947.1886
80.12	947.5914
80.19	947.6788
80.57	948.1537
81.00	948.6894
81.07	948.7768
81.07	948.7768
83.79	803.0059
83.79	803.0059
85.43	804.6881
86.48	805.7584
86.55	805.8321
86.79	806.0724
86.94	806.2262
87.57	806.8639
88.03	807.3285
88.47	807.7707
89.96	809.2607
91.11	810.4047
92.59	811.8627
92.59	811.8627
93.35	812.6093
94.67	734.8302
94.87	748.9625
94.87	748.9625
95.86	760.7112
97.43	754.3431
98.44	696.0612
99.53	718.7706
100.11	708.3304
103.18	789.1027
103.37	779.8758
105.31	733.7102
106.12	732.0159
109.28	750.3333
111.00	781.7459
111.76	771.5200
116.30	764.3369
117.23	760.1149
121.12	662.4220
121.78	745.7263
122.06	745.9399
123.07	736.8533
131.20	751.3567
133.52	678.7112
136.00	676.2766

136.47	685.6981
140.51	732.0300
140.51	0.0000
143.76	709.7637
144.24	675.3893
144.24	675.3893
145.44	663.8756
152.43	703.0110
153.25	671.6327
154.21	649.5537
154.21	649.5537
156.02	651.6198
158.56	684.0613
159.00	701.8920
162.66	610.7720
163.33	608.0054
165.86	645.6984
176.60	672.4113
177.52	600.4752
181.07	618.1835
184.41	594.2701
185.72	594.8801
193.51	577.2068
197.04	586.2087
205.31	543.9189
210.85	539.2181
215.65	550.7024
222.11	575.2234
227.38	516.3184
228.16	538.3904
228.18	538.3979
235.69	583.6402
235.96	596.0168
235.96	596.0168
238.63	512.5663
238.63	512.5663
240.99	513.3679
242.00	513.7100
244.70	467.2339
252.40	431.9094
252.80	422.0498
256.23	416.3117
256.23	416.3117
260.90	360.7526
264.66	407.1325
268.22	341.8112
269.46	386.1720
269.46	386.1720
271.23	430.2949
273.65	408.4836
276.40	404.6649
277.37	372.2841
277.60	323.9648
278.00	354.0480
279.20	384.3281
279.54	393.4158
280.46	381.6098
283.69	374.3154
284.31	371.3399
285.41	347.1703
285.90	345.4647
287.50	395.2708
293.27	0.0000
295.22	350.0718
295.96	372.9639
298.57	367.4459
299.98	376.8589
299.98	376.8589
300.09	389.0417
300.09	389.0417
300.13	389.0521
301.36	314.8041
302.85	307.4590
304.50	310.7937
304.50	310.7937
304.85	317.3866
308.46	350.8807
311.90	330.4424

316.51	337.7233
319.41	355.7731
320.08	360.5152
323.87	320.2985
323.87	320.2985
328.76	347.3877
333.37	334.3140
334.37	353.0725
334.37	353.0725
338.28	323.0802
338.28	323.0802
338.32	323.0844
338.32	323.0844
338.32	323.0844
340.48	309.1602
340.55	309.1723
344.28	266.1855
351.06	274.6160
351.93	274.7376
356.01	341.3967
364.49	294.4195
366.42	277.6994
383.85	283.8930
388.16	246.2936
388.63	246.3503
391.69	284.9589
400.66	296.7336
401.81	313.2258
402.40	303.7025
404.85	347.3435
410.95	270.1699
414.70	256.1365
423.72	249.4236
427.09	231.3324
427.87	233.3584
433.94	268.1149
453.88	229.1517
463.37	222.1793
468.07	214.8474
473.00	229.0318
476.78	231.3759
477.60	234.4357
487.02	228.3654
492.35	188.8869
497.08	170.2241
511.00	213.4609
514.00	193.2167
527.90	184.4705
529.87	0.0000
531.02	189.7667
537.26	178.0121
546.56	0.0000
563.25	166.4060
569.33	208.9869
569.50	209.0018
569.70	205.9277
583.19	186.2446
600.60	180.4639
602.73	197.9646
604.72	172.0334
609.32	169.1785
609.32	169.1785
610.33	191.5243
614.28	174.3530
618.01	180.1675
621.93	160.4819
621.93	160.4819
633.25	157.9431
635.95	154.9278
636.99	152.8730
645.85	153.3297
657.76	175.1715
661.66	178.9405
661.66	178.9405
664.57	0.0000
666.33	143.7275
666.50	145.5086
677.62	158.1461

685.70	155.3440
695.00	159.0314
696.49	170.9328
696.51	170.9328
697.00	188.1635
702.65	165.8771
706.68	170.4016
711.68	157.7092
720.70	144.4303
721.93	0.0000
722.78	162.5867
722.91	162.5940
723.31	168.0365
724.19	159.0453
727.33	134.5957
733.00	150.4138
735.93	130.5967
739.50	144.9005
747.24	155.0698
752.31	161.8678
753.82	131.3057
756.73	152.2281
763.94	182.1866
765.81	153.7368
766.42	152.6658
777.92	163.4709
778.90	153.4129
783.70	122.3496
785.37	137.4418
795.86	148.7601
801.95	142.0469
810.29	142.7552
810.76	139.0656
815.77	126.2659
818.51	131.9376
832.01	140.8344
834.85	152.1459
836.80	0.0000
846.77	127.3616
856.80	107.8585
860.56	125.0230
871.09	118.7813
873.19	130.1667
875.33	0.0000
879.36	131.3277
880.51	124.7544
883.24	120.1141
884.68	127.7298
889.28	122.2025
898.04	134.8295
911.20	132.4391
911.20	132.4391
911.20	132.4391
926.50	118.0698
937.49	113.4678
944.13	130.6820
946.00	109.5956
949.00	123.1484
962.29	97.6344
964.08	112.5776
966.15	100.4897
968.97	100.5596
968.97	100.5596
968.97	100.5596
983.53	104.8052
996.26	132.3892
1001.03	100.3827
1004.73	131.6876
1037.84	120.9380
1038.76	0.0000
1048.07	126.1563
1050.41	137.0770
1050.41	137.0770
1063.66	132.5551
1085.87	121.3050
1099.45	126.6641
1112.07	128.5976
1115.54	151.0045

1120.29	147.3051
1120.29	147.3051
1120.55	147.3110
1121.30	128.8644
1131.51	0.0000
1173.23	129.7656
1177.93	156.2809
1189.05	128.1738
1204.77	152.0739
1221.41	187.4305
1231.02	209.3623
1235.36	174.6277
1238.28	145.9521
1260.41	0.0000
1271.85	121.0895
1274.44	103.5482
1274.54	103.5522
1291.59	78.9688
1298.22	0.0000
1312.11	78.2501
1332.49	56.5686
1365.19	55.8747
1368.63	0.0000
1384.29	48.9752
1408.01	51.0176
1457.56	0.0000
1460.82	36.7997
1489.16	40.9966
1505.03	41.1125
1596.21	46.1699
1620.50	37.8460
1678.03	0.0000
1690.97	21.0601
1764.49	20.3416
1764.49	20.3416
1770.23	22.0565
1771.35	36.8483
1791.20	0.0000
1836.06	18.6104

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247563002

Total Uranium Activity	1.0789E+01	ug/g
Total Uranium Counting Unc.	6.1636E+00	ug/g
Total Uranium Tpu	3.1447E-06	ug/g
Total Uranium Mda	3.0097E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 956157          SAMPLE ID   : G247563002
*  ANALYST       : MXR1            DETECTOR    : GAM23
*  SAMPLE DATE   : 15-FEB-2010 12:00:00.00  COUNT TIME : 0 04:00:00.00
*  ANALYSIS DATE: 2-MAR-2010 23:21:51.68  SAMPLE ALQT: 133.680 GRAM
*
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 9.794E+00
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.217E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 2.775E+00
GROSS GAMMA DLC       (pCi/GRAM ) : 1.361E+00

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VAX/VMS Nuclide Identification Report Generated 3-MAR-2010 03:23:18.90

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                          *
*                                     Charleston, SC 29414                      *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563003.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 23:22:19.
Sample ID          : G247563003 Sample quantity : 1.35920E+02 GRAM
Detector name      : GAM25 Detector geometry: CAN
Elapsed live time  : 0 04:00:00.00 Elapsed real time: 0 04:00:04.47 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 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	46.44*	252	1060	0.93	92.44	89	8	1.75E-02	24.5	
2	0	63.36*	657	1747	0.75	126.27	122	9	4.57E-02	12.5	
3	4	74.80*	1841	900	0.90	149.15	143	23	1.28E-01	3.4	2.63E+00
4	4	77.07*	2892	851	0.86	153.70	143	23	2.01E-01	2.4	
5	0	84.09*	339	951	1.04	167.73	165	6	2.35E-02	16.0	
6	5	87.22	881	1092	1.12	173.99	171	22	6.12E-02	6.8	6.27E+00
7	5	89.86	622	850	0.99	179.27	171	22	4.32E-02	8.4	
8	5	92.67*	1422	854	1.24	184.90	171	22	9.87E-02	4.8	
9	0	105.07	217	928	1.27	209.69	206	9	1.51E-02	26.1	
10	0	114.98	67	590	1.17	229.51	228	6	4.67E-03	58.3	
11	0	128.71	181	904	0.99	256.96	253	9	1.26E-02	30.7	
12	0	154.31	118	732	1.07	308.16	304	8	8.16E-03	41.0	
13	0	185.94*	589	850	1.04	371.42	366	11	4.09E-02	10.9	
14	0	209.29	295	620	0.89	418.10	414	9	2.05E-02	16.2	
15	6	238.54*	3128	387	0.98	476.61	472	17	2.17E-01	2.1	3.07E+00
16	6	241.56	715	547	1.55	482.65	472	17	4.97E-02	7.6	
17	0	258.70	105	412	1.78	516.92	513	9	7.29E-03	36.2	
18	0	270.06	277	549	1.15	539.65	534	12	1.93E-02	17.9	
19	0	277.36	145	428	1.04	554.23	550	9	1.01E-02	27.0	
20	0	295.04*	980	420	1.18	589.60	583	11	6.81E-02	5.3	
21	0	300.13	216	416	1.35	599.77	595	10	1.50E-02	19.0	
22	0	328.15	177	299	1.00	655.82	652	9	1.23E-02	19.1	
23	0	338.19	580	409	1.13	675.89	671	11	4.03E-02	7.9	
24	0	351.75*	1550	469	1.11	703.01	696	14	1.08E-01	3.9	
25	0	409.43	86	268	0.84	818.38	814	9	6.01E-03	36.1	
26	0	462.74	163	258	1.00	924.98	920	10	1.13E-02	20.0	
27	0	510.66*	241	330	1.42	1020.82	1013	16	1.68E-02	20.9	
28	0	583.02*	962	237	1.27	1165.54	1159	14	6.68E-02	4.8	
29	0	609.14*	1010	240	1.36	1217.77	1212	11	7.01E-02	4.5	
30	0	661.47*	193	134	1.53	1322.42	1318	8	1.34E-02	14.1	
31	0	727.32*	202	251	1.52	1454.12	1446	17	1.40E-02	19.7	
32	0	767.87	80	155	1.00	1535.23	1531	10	5.59E-03	30.9	
33	0	795.10*	128	100	1.30	1589.68	1584	11	8.91E-03	18.3	
34	0	835.44	49	106	1.76	1670.36	1665	9	3.43E-03	40.1	
35	0	860.22	153	164	1.66	1719.92	1713	14	1.06E-02	19.5	
36	0	910.93*	605	133	1.52	1821.35	1815	13	4.20E-02	5.9	
37	0	934.33	87	173	1.97	1868.15	1861	18	6.04E-03	36.9	
38	3	964.25	141	109	2.39	1927.99	1921	21	9.77E-03	18.6	1.44E+00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
39	3	968.64*	361	85	1.60	1936.77	1921	21	2.50E-02	7.3	
40	0	1120.09*	223	140	1.43	2239.67	2234	13	1.55E-02	13.1	
41	0	1238.04	115	178	1.85	2475.59	2469	14	8.01E-03	26.3	
42	0	1377.42*	76	41	2.36	2754.35	2748	13	5.30E-03	21.6	
43	0	1409.39	38	47	1.02	2818.31	2812	16	2.62E-03	46.6	
44	0	1460.42*	2876	68	2.03	2920.37	2909	20	2.00E-01	2.0	
45	0	1587.99	55	19	1.37	3175.53	3171	9	3.80E-03	20.0	
46	0	1620.66	35	19	1.31	3240.87	3235	11	2.43E-03	29.6	
47	0	1630.28	23	15	0.88	3260.12	3255	11	1.62E-03	37.4	
48	0	1729.20	50	25	1.55	3457.98	3451	16	3.47E-03	26.2	
49	0	1764.24	197	19	2.32	3528.06	3518	17	1.37E-02	8.6	

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

## VMS Nuclide Identification Report V3.1 Generated 3-MAR-2010 03:23:21

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563003.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8  
 Sample title : MXR1  
 Sample date : 15-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 23:22:19  
 Sample ID : G247563003 Sample quantity : 135.92 GRAM  
 Sample type : SOLID Sample geometry :  
 Detector name : GAMMA25 Detector geometry: CAN  
 Elapsed live time: 0 04:00:00.00 Elapsed real time: 0 04:00:04.47 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 0.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 75.00 WTM error limit : 3.00

## Full Combined Activity-MDA Report

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	+	1460.82	*	3.360E+01	3.162E+00	3.662E-01	3.119E-02	91.755
MN-54	+	834.85	*	3.902E-02	3.153E-02	4.407E-02	4.472E-03	0.885
CD-109	+	88.03	*	3.577E+00	6.209E-01	4.821E-01	5.181E-02	7.421
SN-126	+	64.28		9.671E-01	2.870E-01	2.030E-01	3.234E-02	4.765
	+	86.94		1.453E+00	6.395E-01	1.948E-01	8.152E-02	7.457
	+	87.57	*	3.495E-01	6.066E-02	4.700E-02	5.040E-03	7.436
BA-137M	+	661.66	*	1.327E-01	4.021E-02	4.399E-02	4.873E-03	3.016
CS-137	+	661.66	*	1.402E-01	4.249E-02	4.647E-02	5.154E-03	3.016
EU-155	+	86.55		4.238E-01	7.374E-02	6.435E-02	6.913E-03	6.586
	+	105.31	*	1.620E-01	8.681E-02	8.354E-02	9.873E-03	1.939
TL-208	+	277.37		6.424E-01	3.586E-01	3.703E-01	5.323E-02	1.735
	+	583.19	*	6.257E-01	9.222E-02	3.831E-02	4.315E-03	16.331
	+	860.56		9.577E-01	3.870E-01	3.531E-01	3.689E-02	2.712
PB-210	+	46.54	*	8.942E-01	4.477E-01	3.981E-01	4.077E-02	2.246
BI-211		72.87		3.228E+00	1.195E+00	1.803E+00	1.820E-01	1.790
	+	351.06	*	4.261E+00	5.606E-01	2.102E-01	2.215E-02	20.275
BI-212	+	727.33	*	2.036E+00	8.523E-01	5.652E-01	7.982E-02	3.602
		785.37		1.953E+00	2.338E+00	4.010E+00	4.231E-01	0.487
	+	1620.50		3.240E+00	1.937E+00	2.177E+00	1.810E-01	1.488
PB-212	+	74.82		2.551E+00	3.983E-01	1.860E-01	2.616E-02	13.718
	+	77.11		2.419E+00	2.746E-01	1.127E-01	1.155E-02	21.463
	+	238.63	*	1.855E+00	2.257E-01	5.554E-02	6.345E-03	33.407
	+	300.09		2.031E+00	8.123E-01	7.902E-01	9.916E-02	2.570
BI-214	+	609.32	*	1.276E+00	1.919E-01	7.810E-02	9.456E-03	16.341
	+	1120.29		1.477E+00	4.192E-01	3.576E-01	3.899E-02	4.129
	+	1764.49		1.888E+00	3.608E-01	2.475E-01	2.039E-02	7.631
PB-214	+	74.82		4.522E+00	6.585E-01	3.297E-01	4.249E-02	13.718
	+	77.11		4.265E+00	5.984E-01	1.987E-01	2.614E-02	21.463
	+	242.00		2.575E+00	4.988E-01	3.384E-01	4.066E-02	7.610
	+	295.22		1.631E+00	2.708E-01	1.331E-01	1.706E-02	12.254
	+	351.93	*	1.546E+00	2.206E-01	7.647E-02	9.083E-03	20.223
RA-224	+	240.99	*	4.554E+00	8.416E-01	5.960E-01	6.264E-02	7.640
RA-226	+	609.32	*	1.276E+00	1.919E-01	7.810E-02	9.456E-03	16.341
	+	1120.29		1.477E+00	4.192E-01	3.576E-01	3.899E-02	4.129

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AC-228	+	1764.49		1.888E+00	3.608E-01	2.475E-01	2.039E-02	7.631
	+	338.32		1.768E+00	7.956E-01	2.391E-01	1.007E-01	7.393
	+	911.20	*	1.929E+00	3.265E-01	1.742E-01	2.129E-02	11.075
RA-228	+	968.97		1.983E+00	5.668E-01	2.655E-01	6.535E-02	7.469
	+	338.32		1.768E+00	7.956E-01	2.391E-01	1.007E-01	7.393
	+	911.20	*	1.929E+00	3.265E-01	1.742E-01	2.129E-02	11.075
TH-228	+	968.97		1.983E+00	5.668E-01	2.655E-01	6.535E-02	7.469
	+	74.82		2.551E+00	3.130E-01	1.860E-01	1.902E-02	13.718
	+	77.11		2.419E+00	2.746E-01	1.127E-01	1.155E-02	21.463
TH-229	+	238.63	*	1.855E+00	2.257E-01	5.554E-02	6.345E-03	33.407
	+	300.09		2.031E+00	1.470E+00	7.902E-01	4.867E-01	2.570
	+	85.43		3.353E-01	1.127E-01	1.329E-01	1.411E-02	2.523
TH-232	+	88.47		5.388E-01	9.351E-02	7.275E-02	7.834E-03	7.406
		193.51	*	-6.667E-02	3.092E-01	5.011E-01	4.779E-02	-0.133
		210.85		1.287E+00	6.123E-01	9.458E-01	9.373E-02	1.361
TH-234	+	338.32		1.768E+00	3.352E-01	2.391E-01	2.492E-02	7.393
	+	911.20	*	1.929E+00	3.265E-01	1.742E-01	2.129E-02	11.075
	+	968.97		1.983E+00	5.668E-01	2.655E-01	6.535E-02	7.469
U-235	+	63.29	*	2.509E+00	7.886E-01	5.258E-01	9.981E-02	4.772
	+	92.59		5.021E+00	1.256E+00	4.231E-01	9.778E-02	11.868
	+	89.96		2.652E+00	8.093E-01	5.066E-01	1.291E-01	5.235
NP-237	+	93.35		3.793E+00	9.829E-01	3.208E-01	7.730E-02	11.825
		143.76	*	8.359E-02	1.198E-01	1.948E-01	3.578E-02	0.429
		163.33		6.222E-02	2.587E-01	4.161E-01	7.588E-02	0.150
U-238	+	185.72		2.218E-01	5.277E-02	3.747E-02	3.508E-03	5.919
		205.31		3.764E-01	3.273E-01	4.877E-01	9.136E-02	0.772
	+	86.48	*	1.043E+00	2.838E-01	1.583E-01	3.724E-02	6.588
ANH-511		95.86		-1.716E-01	4.309E-01	6.535E-01	1.635E-01	-0.263
	+	63.29	*	2.509E+00	7.886E-01	5.258E-01	9.981E-02	4.772
	+	92.59		5.021E+00	7.317E-01	4.231E-01	4.649E-02	11.868
	+	511.00	*	1.186E-01	5.112E-02	2.999E-02	3.087E-03	3.956

---- 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	*	-8.265E-02	2.289E-01	3.660E-01	3.874E-02	-0.226
NA-22		1274.54	*	1.764E-03	3.593E-02	5.925E-02	4.858E-03	0.030
NA-24		1368.63	*	-1.968E-01	3.593E-02	Half-Life too short		
SC-46		889.28	*	-1.663E-02	2.975E-02	4.656E-02	4.459E-03	-0.357
V-48	+	1120.55		2.506E-01	6.913E-02	9.725E-02	8.361E-03	2.577
		944.13		-3.772E-01	7.385E-01	1.078E+00	1.011E-01	-0.350
		983.53	*	-2.752E-02	5.484E-02	8.514E-02	7.889E-03	-0.323
CR-51		1312.11		2.293E-02	6.313E-02	1.061E-01	8.650E-03	0.216
		320.08	*	-1.808E-01	2.386E-01	3.893E-01	4.320E-02	-0.464
		846.77	*	-4.146E-03	2.829E-02	4.579E-02	4.595E-03	-0.091
CO-56		1037.84		-2.513E-01	2.496E-01	3.925E-01	3.722E-02	-0.640
	+	1238.28		2.138E-01	1.138E-01	1.408E-01	1.194E-02	1.518
		1771.35		-1.077E+00	2.770E-01	2.492E-01	2.052E-02	-4.320

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CO-57	122.06	*		-9.086E-03	1.284E-02	2.113E-02	2.725E-03	-0.430
	136.47			-1.221E-01	1.137E-01	1.828E-01	2.240E-02	-0.668
CO-58	810.76	*		1.505E-02	2.889E-02	4.883E-02	5.066E-03	0.308
FE-59	1099.45	*		1.611E-02	6.870E-02	1.162E-01	1.094E-02	0.139
	1291.59			-1.267E-01	9.811E-02	1.450E-01	1.362E-02	-0.874
CO-60	1173.23			-2.202E-02	3.719E-02	5.957E-02	4.903E-03	-0.370
	1332.49	*		-1.722E-02	2.927E-02	4.552E-02	3.697E-03	-0.378
ZN-65	1115.54	*		-2.422E-02	7.938E-02	1.109E-01	9.580E-03	-0.218
SE-75	121.12			1.130E-02	6.690E-02	1.134E-01	1.656E-02	0.100
	136.00			-9.385E-03	2.151E-02	3.553E-02	4.216E-03	-0.264
	264.66	*		2.133E-02	3.044E-02	4.469E-02	4.898E-03	0.477
	279.54			-9.668E-03	7.897E-02	1.104E-01	1.260E-02	-0.088
	400.66			3.751E-02	1.751E-01	2.923E-01	3.737E-02	0.128
SR-85	514.00	*		4.101E-02	2.776E-02	4.297E-02	4.433E-03	0.954
Y-88	898.04			-3.563E-03	3.192E-02	5.152E-02	4.900E-03	-0.069
	1836.06	*		-1.384E-02	2.332E-02	3.491E-02	2.853E-03	-0.397
Y-91	1204.77	*		-1.663E+00	1.767E+01	2.906E+01	2.392E+00	-0.057
NB-94	702.65	*		3.236E-03	2.549E-02	4.267E-02	4.685E-03	0.076
	871.09			-8.702E-03	2.462E-02	3.915E-02	3.830E-03	-0.222
NB-95	765.81	*		2.857E-02	3.633E-02	5.394E-02	5.761E-03	0.530
NB-95M	235.69	*		2.247E-02	8.104E-02	1.175E-01	1.349E-02	0.191
ZR-95	724.19			3.220E-02	7.790E-02	1.154E-01	1.325E-02	0.279
	756.73	*		1.135E-02	5.418E-02	9.051E-02	1.038E-02	0.125
MO-99	140.51			-7.832E+00	1.427E+01	2.263E+01	5.635E+00	-0.346
	181.07			-2.337E+00	1.260E+01	1.833E+01	3.498E+00	-0.128
	366.42			-7.852E+01	7.142E+01	1.128E+02	1.105E+01	-0.696
	739.50	*		-1.849E+00	9.925E+00	1.625E+01	2.774E+00	-0.114
	777.92			-2.974E+01	2.805E+01	4.286E+01	4.545E+00	-0.694
TC-99M	140.51	*		-3.643E+10	2.805E+01	Half-Life	too short	
RU-103	497.08	*		5.978E-02	2.928E-02	5.007E-02	7.501E-03	1.194
	610.33	*		1.326E+01	2.624E+00	2.113E+00	3.732E-01	6.277
RH-106	621.93	*		-1.879E-01	2.165E-01	3.443E-01	5.122E-02	-0.546
	1050.41			1.466E+00	1.803E+00	3.163E+00	2.844E-01	0.463
RU-106	621.93	*		-1.879E-01	2.156E-01	3.443E-01	3.770E-02	-0.546
	1050.41			1.466E+00	1.803E+00	3.163E+00	2.844E-01	0.463
AG-108M	433.94	*		-2.633E-03	1.910E-02	3.117E-02	3.062E-03	-0.084
	614.28			-1.468E-02	2.783E-02	3.921E-02	4.370E-03	-0.374
	722.91			-2.213E-03	2.947E-02	4.219E-02	4.693E-03	-0.052
AG-110M	657.76	*		-1.711E-03	2.888E-02	4.186E-02	4.717E-03	-0.041
	677.62			1.027E-01	2.238E-01	3.819E-01	4.295E-02	0.269
	706.68			-4.110E-03	1.592E-01	2.644E-01	2.951E-02	-0.016
	763.94			-3.520E-02	1.286E-01	1.798E-01	1.957E-02	-0.196
	884.68			1.102E-02	3.745E-02	6.207E-02	6.132E-03	0.178
	937.49			5.096E-02	9.368E-02	1.374E-01	1.331E-02	0.371
	1384.29			5.722E-02	1.277E-01	1.889E-01	1.593E-02	0.303
	1505.03			-2.348E-01	2.057E-01	2.894E-01	2.400E-02	-0.811
SN-113	391.69	*		-1.332E-02	2.930E-02	4.755E-02	4.441E-03	-0.280
CD-115	260.90			1.979E+01	1.074E+02	1.538E+02	1.671E+01	0.129
	492.35			-3.205E+01	2.991E+01	4.548E+01	4.611E+00	-0.705

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SN-117M	527.90	*		6.563E-01	8.833E+00	1.432E+01	1.493E+00	0.046
	156.02			1.301E+00	1.421E+00	2.181E+00	2.175E-01	0.596
	158.56	*		-1.349E-02	3.220E-02	5.011E-02	4.865E-03	-0.269
TE-123M	159.00	*		-5.913E-03	1.574E-02	2.576E-02	2.501E-03	-0.230
SB-124	602.73			-1.960E-02	2.921E-02	4.289E-02	4.662E-03	-0.457
	645.85			-8.665E-02	3.702E-01	5.872E-01	6.709E-02	-0.148
	722.78			-2.234E-02	2.974E-01	4.257E-01	4.710E-02	-0.052
SB-125	1690.97	*		-2.803E-02	5.061E-02	7.738E-02	6.705E-03	-0.362
	427.87	*		7.376E-03	6.089E-02	1.007E-01	9.726E-03	0.073
	463.37			7.046E-01	2.910E-01	3.915E-01	4.090E-02	1.800
	600.60			7.288E-02	1.210E-01	2.094E-01	2.382E-02	0.348
	635.95			-6.473E-02	1.882E-01	3.099E-01	3.581E-02	-0.209
TE-125M	109.28	*		6.547E-01	5.222E+00	8.024E+00	1.075E+00	0.082
I-126	388.63			3.016E-02	1.156E-01	1.938E-01	1.779E-02	0.156
	666.33	*		2.220E-01	1.840E-01	2.882E-01	3.190E-02	0.770
	753.82			1.463E+00	1.383E+00	2.399E+00	2.580E-01	0.610
SB-126	414.70			-5.149E-02	5.855E-02	8.155E-02	7.633E-03	-0.631
	666.50			5.695E-02	6.071E-02	9.742E-02	1.079E-02	0.585
	695.00			-5.240E-03	5.805E-02	9.621E-02	1.059E-02	-0.054
	697.00			6.307E-02	1.992E-01	3.367E-01	3.703E-02	0.187
	720.70	*		-1.745E-02	1.207E-01	1.719E-01	1.876E-02	-0.102
SB-127	856.80			1.268E-01	4.423E-01	6.386E-01	6.343E-02	0.198
	252.40			-2.091E+00	2.968E+00	4.392E+00	1.847E+00	-0.476
	473.00			4.196E-01	1.211E+00	2.006E+00	2.770E-01	0.209
	685.70	*		7.995E-01	9.558E-01	1.658E+00	2.220E-01	0.482
	783.70			3.931E+00	2.831E+00	4.925E+00	6.835E-01	0.798
I-131	80.19			9.904E-01	2.005E+00	2.929E+00	3.052E-01	0.338
	284.31			4.958E-01	9.736E-01	1.572E+00	1.804E-01	0.315
	364.49	*		7.236E-02	7.708E-02	1.330E-01	1.364E-02	0.544
TE-132	636.99			-7.495E-01	1.121E+00	1.809E+00	2.062E-01	-0.414
	49.72			-1.324E+00	2.219E+00	3.220E+00	3.811E-01	-0.411
	111.76			4.988E+00	2.059E+01	3.097E+01	4.350E+00	0.161
BA-133	116.30			1.619E+01	1.903E+01	2.681E+01	3.839E+00	0.604
	228.16	*		3.689E-02	4.919E-01	7.951E-01	1.339E-01	0.046
	81.00			2.525E-03	4.007E-02	5.773E-02	9.571E-03	0.044
I-133	276.40			5.939E-01	3.338E-01	4.105E-01	6.470E-02	1.447
	302.85			6.384E-02	9.226E-02	1.422E-01	2.092E-02	0.449
	356.01	*		-8.687E-04	2.905E-02	4.266E-02	5.950E-03	-0.020
	383.85			-1.990E-02	1.906E-01	3.151E-01	4.072E-02	-0.063
	529.87	*		2.027E-03	1.906E-01	Half-Life too short		
CS-134	875.33			-9.781E-02	1.906E-01	Half-Life too short		
	1298.22			-2.854E-02	1.906E-01	Half-Life too short		
	563.25			1.214E-01	2.580E-01	4.242E-01	4.549E-02	0.286
	569.33			9.255E-02	1.526E-01	2.333E-01	2.517E-02	0.397
	604.72			-1.176E-02	2.617E-02	3.721E-02	4.054E-03	-0.316
CS-135	795.86	*		1.234E-01	4.696E-02	6.621E-02	6.970E-03	1.864
	801.95			-1.868E-01	3.254E-01	4.669E-01	4.888E-02	-0.400
	1365.19			6.136E-01	8.799E-01	1.524E+00	1.308E-01	0.403
	268.22	*		8.401E-02	1.109E-01	1.625E-01	1.961E-02	0.517

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

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-135		546.56		-1.117E+10	1.109E-01	Half-Life	too short	
	+	836.80		6.746E+10	1.109E-01	Half-Life	too short	
		1038.76		-4.316E+10	1.109E-01	Half-Life	too short	
		1131.51		-1.081E+10	1.109E-01	Half-Life	too short	
		1260.41	*	-2.715E+09	1.109E-01	Half-Life	too short	
		1457.56		3.111E+12	1.109E-01	Half-Life	too short	
		1678.03		-5.643E+08	1.109E-01	Half-Life	too short	
CS-136		1791.20		2.550E+09	1.109E-01	Half-Life	too short	
	+	153.25		8.829E-01	7.306E-01	8.697E-01	1.015E-01	1.015
		176.60		-2.262E-01	2.958E-01	4.730E-01	4.729E-02	-0.478
		273.65		-1.999E-01	4.690E-01	4.978E-01	5.800E-02	-0.402
		340.55		2.047E-01	1.060E-01	1.685E-01	1.795E-02	1.215
		818.51		3.050E-03	5.594E-02	9.204E-02	9.480E-03	0.033
		1048.07	*	-1.370E-01	8.294E-02	1.228E-01	1.149E-02	-1.115
CE-139		1235.36		8.376E-01	5.794E-01	8.913E-01	1.023E-01	0.940
		165.86	*	-9.145E-03	1.727E-02	2.803E-02	2.499E-03	-0.326
		162.66		2.062E-01	4.862E-01	7.865E-01	7.717E-02	0.262
BA-140		304.85		-1.264E-01	9.379E-01	1.390E+00	4.175E-01	-0.091
		423.72		-5.950E-01	1.369E+00	2.186E+00	7.241E-01	-0.272
		537.26	*	5.506E-02	1.814E-01	2.960E-01	1.019E-01	0.186
LA-140	+	328.76		6.821E-01	2.707E-01	3.666E-01	4.033E-02	1.860
		487.02		3.490E-02	9.589E-02	1.588E-01	1.676E-02	0.220
		815.77		1.447E-01	2.424E-01	4.114E-01	4.597E-02	0.352
CE-141		1596.21	*	-4.533E-02	6.535E-02	9.644E-02	8.019E-03	-0.470
		145.44	*	-1.551E-03	3.560E-02	5.929E-02	6.595E-03	-0.026
		57.36		-6.445E-05	3.560E-02	Half-Life	too short	
CE-143		293.27	*	7.639E-04	3.560E-02	Half-Life	too short	
		664.57		1.261E-03	3.560E-02	Half-Life	too short	
		721.93		2.364E-04	3.560E-02	Half-Life	too short	
CE-144		80.12		4.677E-01	1.046E+00	1.526E+00	1.582E-01	0.307
		133.52	*	-6.784E-02	1.104E-01	1.722E-01	3.002E-02	-0.394
PM-144		476.78		1.668E-02	4.564E-02	7.564E-02	8.055E-03	0.221
		618.01		2.264E-02	2.240E-02	3.932E-02	4.374E-03	0.576
PR-144		696.49	*	6.105E-03	2.499E-02	4.210E-02	4.632E-03	0.145
		696.51	*	4.570E-01	1.871E+00	3.151E+00	3.467E-01	0.145
PM-146		1489.16		-6.822E+00	8.422E+00	1.221E+01	1.012E+00	-0.559
		453.88	*	7.987E-03	2.818E-02	4.675E-02	5.402E-03	0.171
ND-147		633.25		7.886E-01	1.013E+00	1.690E+00	6.559E-01	0.467
		735.93		6.969E-02	1.108E-01	1.775E-01	5.110E-02	0.393
		747.24		-7.444E-03	7.034E-02	1.156E-01	1.846E-02	-0.064
	+	91.11		8.808E-01	1.788E-01	2.504E-01	2.875E-02	3.518
PM-149		319.41		-1.135E+00	2.159E+00	3.560E+00	3.825E-01	-0.319
		531.02	*	2.880E-02	3.851E-01	6.241E-01	1.003E-01	0.046
EU-152		285.90	*	-2.994E+01	6.743E+01	1.043E+02	1.778E+01	-0.287
		121.78		-2.267E-02	3.717E-02	6.141E-02	8.453E-03	-0.369
		244.70		-5.602E-03	2.203E-01	3.139E-01	3.320E-02	-0.018
		344.28	*	-1.219E-02	6.844E-02	9.998E-02	1.073E-02	-0.122
		778.90		-1.089E-01	1.818E-01	2.879E-01	3.050E-02	-0.378
	+	964.08		8.329E-01	3.193E-01	4.181E-01	3.899E-02	1.992

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
GD-153		1085.87		-1.680E-01	2.797E-01	4.484E-01	3.948E-02	-0.375
		1112.07		-3.386E-02	2.444E-01	3.851E-01	3.331E-02	-0.088
	+	1408.01		2.166E-01	2.027E-01	2.374E-01	1.951E-02	0.912
		69.67		8.734E-01	5.843E-01	8.809E-01	8.808E-02	0.992
EU-154		97.43	*	-1.693E-02	4.184E-02	6.363E-02	7.166E-03	-0.266
		103.18		-3.911E-02	5.717E-02	8.547E-02	9.922E-03	-0.458
		123.07		-1.166E-02	2.654E-02	4.410E-02	6.525E-03	-0.264
		723.31		-1.310E-02	1.328E-01	1.896E-01	2.201E-02	-0.069
TB-160		873.19		-6.366E-02	1.953E-01	3.108E-01	3.961E-02	-0.205
		996.26		-5.128E-01	3.137E-01	4.291E-01	7.626E-02	-1.195
		1004.73		-1.444E-01	1.785E-01	2.707E-01	3.266E-02	-0.534
	+	1274.44	*	2.745E-02	1.004E-01	1.679E-01	1.856E-02	0.163
HO-166M		86.79		1.129E+00	1.959E-01	2.394E-01	2.557E-02	4.714
		197.04		5.421E-02	3.354E-01	5.498E-01	5.286E-02	0.099
		215.65		1.615E-01	4.491E-01	7.360E-01	7.367E-02	0.219
		298.57		2.020E-01	1.028E-01	1.286E-01	1.415E-02	1.571
TA-182		879.36	*	1.462E-02	1.057E-01	1.736E-01	1.683E-02	0.084
		962.29		1.102E+00	4.540E-01	7.409E-01	6.915E-02	1.487
		966.15		1.388E+00	2.335E-01	4.038E-01	3.764E-02	3.438
		1177.93		-1.114E-01	3.034E-01	4.926E-01	4.054E-02	-0.226
IR-192		1271.85		6.957E-02	5.784E-01	9.583E-01	7.851E-02	0.073
		80.57		3.288E-02	1.142E-01	1.658E-01	1.722E-02	0.198
		184.41		7.814E-02	2.667E-02	4.153E-02	3.877E-03	1.881
		280.46		-2.705E-02	6.092E-02	8.342E-02	9.304E-03	-0.324
HG-203		410.95		2.543E-01	1.851E-01	2.881E-01	2.684E-02	0.883
		711.68	*	-1.871E-02	4.415E-02	7.161E-02	7.841E-03	-0.261
		752.31		1.129E-02	2.063E-01	3.420E-01	3.680E-02	0.033
		810.29		4.009E-03	4.405E-02	7.270E-02	7.533E-03	0.055
BI-207		67.75		-3.641E-03	3.351E-02	5.229E-02	5.202E-03	-0.070
		100.11		9.428E-02	8.360E-02	1.455E-01	1.662E-02	0.648
		152.43		7.483E-02	2.243E-01	3.381E-01	3.494E-02	0.221
		222.11		-5.836E-02	2.188E-01	3.500E-01	3.549E-02	-0.167
PB-211	+	1121.30		6.937E-01	1.913E-01	2.667E-01	2.291E-02	2.601
		1189.05		2.439E-01	2.595E-01	4.492E-01	3.698E-02	0.543
		1221.41	*	-6.813E-02	1.626E-01	2.623E-01	2.157E-02	-0.260
		1231.02		-2.945E-01	4.735E-01	6.388E-01	5.251E-02	-0.461
BI-207	+	295.96		1.211E+00	1.853E-01	1.995E-01	2.210E-02	6.069
		308.46		5.684E-02	5.880E-02	1.024E-01	1.119E-02	0.555
		316.51	*	7.712E-03	2.115E-02	3.615E-02	3.904E-03	0.213
		468.07		-4.921E-02	4.932E-02	6.932E-02	7.257E-03	-0.710
BI-207		70.83		8.866E-03	4.682E-01	6.803E-01	1.147E-01	0.013
		72.87		8.086E-01	3.169E-01	4.517E-01	7.407E-02	1.790
		279.20	*	2.963E-02	2.758E-02	4.085E-02	4.629E-03	0.725
		72.81		1.648E-01	6.776E-02	1.023E-01	1.032E-02	1.612
PB-211	+	74.97		7.354E-01	8.980E-02	9.727E-02	9.889E-03	7.560
		569.70		1.396E-02	2.366E-02	3.615E-02	3.867E-03	0.386
		1063.66	*	2.597E-02	4.016E-02	6.958E-02	6.210E-03	0.373
		1770.23		1.843E-01	3.048E-01	4.884E-01	4.022E-02	0.377
PB-211		404.85	*	-1.491E-01	5.880E-01	8.119E-01	3.938E-01	-0.184

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		427.09		5.081E-01	1.043E+00	1.710E+00	7.942E-01	0.297
		832.01		5.015E-01	7.987E-01	1.136E+00	5.922E-01	0.442
RN-219	+	271.23		7.328E-01	2.773E-01	2.903E-01	3.587E-02	2.524
		401.81	*	-9.572E-02	2.846E-01	4.636E-01	7.058E-02	-0.206
RA-223		81.07		2.210E-03	9.080E-02	1.306E-01	1.360E-02	0.017
	+	83.79		1.996E-01	6.708E-02	9.314E-02	9.814E-03	2.143
		94.87		3.629E-01	2.185E-01	3.491E-01	3.880E-02	1.039
		144.24		5.386E-01	3.982E-01	6.554E-01	7.802E-02	0.822
	+	154.21		3.925E-01	3.244E-01	3.957E-01	4.299E-02	0.992
	+	269.46		5.694E-01	2.134E-01	2.265E-01	2.524E-02	2.514
		323.87	*	3.045E-01	4.565E-01	6.964E-01	1.284E-01	0.437
	+	338.28		7.016E+00	1.456E+00	1.644E+00	2.206E-01	4.268
AC-227		79.69		8.970E-02	5.143E-01	7.443E-01	1.352E-01	0.121
		235.96		1.168E-01	1.007E-01	1.507E-01	1.790E-02	0.775
		256.23	*	-4.832E-02	1.744E-01	2.436E-01	3.333E-02	-0.198
	+	299.98		2.234E+00	9.075E-01	1.080E+00	1.557E-01	2.069
		304.50		-8.558E-01	1.142E+00	1.625E+00	2.900E-01	-0.527
		334.37		-3.565E-01	1.159E+00	1.683E+00	2.811E-01	-0.212
TH-227		79.80		1.397E-01	6.801E-01	9.846E-01	2.218E-01	0.142
		235.96		1.168E-01	1.007E-01	1.507E-01	1.714E-02	0.775
		256.23	*	-4.832E-02	1.744E-01	2.436E-01	3.671E-02	-0.198
	+	299.98		2.234E+00	9.075E-01	1.080E+00	1.557E-01	2.069
		304.50		-8.558E-01	1.142E+00	1.625E+00	2.900E-01	-0.527
		334.37		-3.565E-01	1.159E+00	1.683E+00	2.811E-01	-0.212
PA-231		283.69	*	4.660E-01	9.245E-01	1.490E+00	2.414E-01	0.313
	+	301.36		1.435E+00	5.805E-01	6.744E-01	9.388E-02	2.128
TH-231		81.07		2.210E-03	9.080E-02	1.306E-01	1.360E-02	0.017
	+	83.79		1.996E-01	6.708E-02	9.314E-02	9.814E-03	2.143
		94.87		3.629E-01	2.185E-01	3.491E-01	3.880E-02	1.039
		144.24		5.386E-01	3.982E-01	6.554E-01	7.802E-02	0.822
	+	154.21		3.925E-01	3.244E-01	3.957E-01	4.299E-02	0.992
	+	269.46		5.694E-01	2.134E-01	2.265E-01	2.524E-02	2.514
		323.87	*	3.045E-01	4.565E-01	6.964E-01	1.284E-01	0.437
	+	338.28		7.016E+00	1.456E+00	1.644E+00	2.206E-01	4.268
PA-233	+	300.13		1.011E+00	4.179E-01	4.893E-01	7.984E-02	2.066
		311.90	*	-4.354E-03	3.868E-02	6.503E-02	7.183E-03	-0.067
		340.48		9.777E-01	5.002E-01	7.185E-01	1.778E-01	1.361
PA-234		94.67		2.246E-01	8.618E-02	1.338E-01	1.906E-02	1.678
		98.44		4.986E-02	5.419E-02	7.399E-02	4.163E-02	0.674
		111.00		-4.595E-02	9.058E-02	1.513E-01	2.236E-02	-0.304
		131.20		1.210E-02	6.135E-02	9.320E-02	1.138E-02	0.130
		569.50		1.259E-01	2.101E-01	3.212E-01	3.435E-02	0.392
		733.00		2.320E-01	2.988E-01	4.500E-01	1.042E-01	0.516
		880.51		1.495E-01	2.167E-01	3.671E-01	3.552E-02	0.407
		883.24		4.993E-02	2.228E-01	3.637E-01	2.450E-01	0.137
		926.50		-1.392E-01	1.521E-01	1.989E-01	5.085E-02	-0.700
		946.00	*	-4.736E-02	2.422E-01	3.865E-01	7.391E-02	-0.123
		949.00		1.435E-01	3.671E-01	6.070E-01	5.688E-02	0.236
PA-234M	+	766.42		1.777E+01	1.424E+01	1.530E+01	7.824E+00	1.162

----- 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	*		4.080E+00	3.991E+00	6.684E+00	7.001E-01	0.610
	99.53			1.226E-01	7.713E-02	1.347E-01	1.533E-02	0.910
	103.37			-1.077E-03	5.122E-02	7.864E-02	9.139E-03	-0.014
	+	106.12		1.291E-01	6.919E-02	7.283E-02	8.591E-03	1.773
	117.23	*		-4.062E-02	2.173E-01	3.283E-01	4.118E-02	-0.124
	228.18			9.398E-03	1.336E-01	2.160E-01	2.217E-02	0.044
AM-241	+	277.60		2.936E-01	1.617E-01	2.028E-01	2.258E-02	1.448
	59.54	*		2.028E-02	3.661E-02	5.470E-02	5.683E-03	0.371
CM-247	+	278.00		1.247E+00	6.869E-01	8.617E-01	9.601E-02	1.447
	287.50			1.084E-01	7.862E-01	1.250E+00	1.388E-01	0.087
	402.40	*		2.743E-03	2.540E-02	4.221E-02	3.890E-03	0.065
CF-249	252.80			-9.121E-02	5.833E-01	9.261E-01	9.931E-02	-0.098
	333.37			9.438E-03	1.449E-01	1.825E-01	1.919E-02	0.052
	388.16	*		2.498E-02	2.686E-02	4.611E-02	4.240E-03	0.542
CF-251	177.52	*		5.911E-03	7.420E-02	1.223E-01	1.122E-02	0.048
	227.38			1.237E-02	2.219E-01	3.585E-01	3.674E-02	0.034
	285.41			-4.941E-01	1.413E+00	2.200E+00	2.446E-01	-0.225

# 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]G247563003      *
* Acquisition date   : 2-MAR-2010 23:22:19 Detector SN#      :              *
* Detector ID        : GAM25                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 04:00:00.00              Abundance limit : 75.000        *
* Elapsed real time  : 0 04:00:04.47              Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247563003              Analyst initials: MXR1          *
* Batch Number       : 956157                  Sample Quantity : 1.3592E+02 GRAM   *
* Recovery           : 1.00000                  Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 7-OCT-2009 09:38:43 MS Isotope       :
* MSD DPM             : 0.000                      MSD Isotope   :
* LCS DPM             : 0.000                      LCS Isotope   :
* LCSD DPM            : 0.000                      LCSD Isotope  :
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.360E+01	3.099E+00	3.671E-01	0.000E+00
MN-54	3.902E-02	3.090E-02	4.466E-02	0.000E+00
CD-109	3.577E+00	6.085E-01	5.090E-01	0.000E+00
SN-126	3.495E-01	5.944E-02	4.963E-02	0.000E+00
BA-137M	1.327E-01	3.941E-02	4.477E-02	0.000E+00
CS-137	1.402E-01	4.164E-02	4.730E-02	0.000E+00
EU-155	1.620E-01	8.507E-02	8.792E-02	0.000E+00
TL-208	6.257E-01	9.038E-02	3.909E-02	0.000E+00
PB-210	8.942E-01	4.387E-01	4.250E-01	0.000E+00
BI-211	4.261E+00	5.494E-01	2.165E-01	0.000E+00
BI-212	2.036E+00	8.353E-01	5.743E-01	0.000E+00
PB-212	1.855E+00	2.212E-01	5.761E-02	0.000E+00
BI-214	1.276E+00	1.881E-01	7.961E-02	0.000E+00
PB-214	1.546E+00	2.162E-01	7.875E-02	0.000E+00
RA-224	4.554E+00	8.247E-01	6.181E-01	0.000E+00
RA-226	1.276E+00	1.881E-01	7.961E-02	0.000E+00
AC-228	1.929E+00	3.199E-01	1.762E-01	0.000E+00
RA-228	1.929E+00	3.199E-01	1.762E-01	0.000E+00
TH-228	1.855E+00	2.212E-01	5.761E-02	0.000E+00
TH-229	-6.667E-02	3.030E-01	5.218E-01	0.000E+00
TH-232	1.929E+00	3.199E-01	1.762E-01	0.000E+00
TH-234	2.509E+00	7.728E-01	5.584E-01	0.000E+00
U-235	8.359E-02	1.174E-01	2.039E-01	0.000E+00
NP-237	1.043E+00	2.782E-01	1.672E-01	0.000E+00
U-238	2.509E+00	7.728E-01	5.584E-01	0.000E+00
ANH-511	1.186E-01	5.010E-02	3.068E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-8.265E-02	2.243E-01	3.748E-01	0.000E+00 NOT IDENT.

NA-22	1.764E-03	3.521E-02	5.956E-02	0.000E+00	NOT IDENT.
NA-24	0.000E+00	8.678E+05	0.000E+00	0.000E+00	SHORT HLIF
SC-46	-1.663E-02	2.916E-02	4.713E-02	0.000E+00	FAIL ABUN
V-48	-2.752E-02	5.374E-02	8.601E-02	0.000E+00	NOT IDENT.
CR-51	-1.808E-01	2.339E-01	4.016E-01	0.000E+00	NOT IDENT.
CO-56	-4.146E-03	2.772E-02	4.639E-02	0.000E+00	FAIL ABUN
CO-57	-9.086E-03	1.258E-02	2.218E-02	0.000E+00	NOT IDENT.
CO-58	1.505E-02	2.831E-02	4.951E-02	0.000E+00	NOT IDENT.
FE-59	1.611E-02	6.732E-02	1.171E-01	0.000E+00	NOT IDENT.
CO-60	-1.722E-02	2.868E-02	4.572E-02	0.000E+00	NOT IDENT.
ZN-65	-2.422E-02	7.779E-02	1.118E-01	0.000E+00	NOT IDENT.
SE-75	2.133E-02	2.983E-02	4.626E-02	0.000E+00	NOT IDENT.
SR-85	4.101E-02	2.721E-02	4.394E-02	0.000E+00	NOT IDENT.
Y-88	-1.384E-02	2.286E-02	3.484E-02	0.000E+00	NOT IDENT.
Y-91	-1.663E+00	1.732E+01	2.925E+01	0.000E+00	NOT IDENT.
NB-94	3.236E-03	2.498E-02	4.338E-02	0.000E+00	NOT IDENT.
NB-95	2.857E-02	3.560E-02	5.475E-02	0.000E+00	NOT IDENT.
NB-95M	2.247E-02	7.942E-02	1.220E-01	0.000E+00	NOT IDENT.
ZR-95	1.135E-02	5.310E-02	9.190E-02	0.000E+00	NOT IDENT.
MO-99	-1.849E+00	9.727E+00	1.651E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	6.539E+16	0.000E+00	0.000E+00	SHORT HLIF
RU-103	0.000E+00	2.869E-02	5.124E-02	0.000E+00	FAIL ABUN
RH-106	-1.879E-01	2.121E-01	3.508E-01	0.000E+00	NOT IDENT.
RU-106	-1.879E-01	2.113E-01	3.508E-01	0.000E+00	NOT IDENT.
AG-108M	-2.633E-03	1.872E-02	3.198E-02	0.000E+00	NOT IDENT.
AG-110M	-1.711E-03	2.830E-02	4.261E-02	0.000E+00	NOT IDENT.
SN-113	-1.332E-02	2.871E-02	4.888E-02	0.000E+00	NOT IDENT.
CD-115	6.563E-01	8.656E+00	1.464E+01	0.000E+00	NOT IDENT.
SN-117M	-1.349E-02	3.155E-02	5.236E-02	0.000E+00	NOT IDENT.
TE-123M	-5.913E-03	1.543E-02	2.692E-02	0.000E+00	NOT IDENT.
SB-124	-2.803E-02	4.959E-02	7.736E-02	0.000E+00	NOT IDENT.
SB-125	7.376E-03	5.968E-02	1.034E-01	0.000E+00	FAIL ABUN
TE-125M	6.547E-01	5.117E+00	8.440E+00	0.000E+00	NOT IDENT.
I-126	2.220E-01	1.804E-01	2.933E-01	0.000E+00	NOT IDENT.
SB-126	-1.745E-02	1.183E-01	1.747E-01	0.000E+00	NOT IDENT.
SB-127	7.995E-01	9.367E-01	1.686E+00	0.000E+00	NOT IDENT.
I-131	7.236E-02	7.554E-02	1.368E-01	0.000E+00	NOT IDENT.
TE-132	3.689E-02	4.821E-01	8.253E-01	0.000E+00	FAIL ABUN
BA-133	-8.687E-04	2.847E-02	4.392E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	5.399E+03	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	4.602E-02	6.716E-02	0.000E+00	FAIL ABUN
CS-135	8.401E-02	1.087E-01	1.682E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.395E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-1.370E-01	8.128E-02	1.239E-01	0.000E+00	FAIL ABUN
CE-139	-9.145E-03	1.692E-02	2.926E-02	0.000E+00	NOT IDENT.
BA-140	5.506E-02	1.778E-01	3.024E-01	0.000E+00	NOT IDENT.
LA-140	-4.533E-02	6.404E-02	9.652E-02	0.000E+00	FAIL ABUN
CE-141	-1.551E-03	3.489E-02	6.205E-02	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.134E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-6.784E-02	1.082E-01	1.805E-01	0.000E+00	NOT IDENT.
PM-144	6.105E-03	2.449E-02	4.281E-02	0.000E+00	NOT IDENT.
PR-144	4.570E-01	1.833E+00	3.205E+00	0.000E+00	NOT IDENT.
PM-146	7.987E-03	2.762E-02	4.792E-02	0.000E+00	NOT IDENT.
ND-147	2.880E-02	3.774E-01	6.379E-01	0.000E+00	FAIL ABUN
PM-149	-2.994E+01	6.608E+01	1.078E+02	0.000E+00	NOT IDENT.
EU-152	-1.219E-02	6.707E-02	1.030E-01	0.000E+00	FAIL ABUN
GD-153	-1.693E-02	4.101E-02	6.707E-02	0.000E+00	NOT IDENT.
EU-154	2.745E-02	9.844E-02	1.688E-01	0.000E+00	NOT IDENT.
TB-160	1.462E-02	1.036E-01	1.758E-01	0.000E+00	FAIL ABUN
HO-166M	-1.871E-02	4.327E-02	7.279E-02	0.000E+00	NOT IDENT.
TA-182	-6.813E-02	1.593E-01	2.638E-01	0.000E+00	FAIL ABUN
IR-192	7.712E-03	2.073E-02	3.730E-02	0.000E+00	FAIL ABUN
HG-203	2.963E-02	2.703E-02	4.225E-02	0.000E+00	NOT IDENT.
BI-207	2.597E-02	3.935E-02	7.019E-02	0.000E+00	FAIL ABUN
PB-211	-1.491E-01	5.762E-01	8.340E-01	0.000E+00	NOT IDENT.
RN-219	-9.572E-02	2.789E-01	4.763E-01	0.000E+00	FAIL ABUN
RA-223	3.045E-01	4.474E-01	7.184E-01	0.000E+00	FAIL ABUN
AC-227	-4.832E-02	1.709E-01	2.523E-01	0.000E+00	FAIL ABUN
TH-227	-4.832E-02	1.709E-01	2.523E-01	0.000E+00	FAIL ABUN
PA-231	4.660E-01	9.061E-01	1.541E+00	0.000E+00	FAIL ABUN
TH-231	3.045E-01	4.474E-01	7.184E-01	0.000E+00	FAIL ABUN
PA-233	-4.354E-03	3.791E-02	6.713E-02	0.000E+00	FAIL ABUN
PA-234	-4.736E-02	2.373E-01	3.907E-01	0.000E+00	NOT IDENT.
PA-234M	4.080E+00	3.911E+00	6.750E+00	0.000E+00	FAIL ABUN
NP-239	-4.062E-02	2.130E-01	3.449E-01	0.000E+00	FAIL ABUN
AM-241	2.028E-02	3.588E-02	5.815E-02	0.000E+00	NOT IDENT.
CM-247	2.743E-03	2.490E-02	4.336E-02	0.000E+00	FAIL ABUN
CF-249	2.498E-02	2.632E-02	4.740E-02	0.000E+00	NOT IDENT.

CF-251

5.911E-03

7.272E-02

1.275E-01

0.000E+00 NOT IDENT.

## VAX/VMS Nuclide Identification Report Generated 3-MAR-2010 03:23:19.82

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563003.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 2-MAR-2010 23:22:19.
Sample ID          : G247563003 Sample quantity : 1.35920E+02 GRAM
Detector name      : GAM25 Detector geometry: CAN
Elapsed live time  : 0 04:00:00.00 Elapsed real time: 0 04:00:04.47 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 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	2876	10.66*	1.109E+00	3.360E+01	3.360E+01	9.41
MN-54	834.85	49	99.98*	1.812E+00	3.769E-02	3.902E-02	80.80
CD-109	88.03	881	3.70*	9.405E+00	3.495E+00	3.577E+00	17.36
SN-126	64.28	657	9.60	9.779E+00	9.671E-01	9.671E-01	29.68
	86.94	881	8.90	9.405E+00	1.453E+00	1.453E+00	44.02
	87.57	881	37.00*	9.405E+00	3.495E-01	3.495E-01	17.36
BA-137M	661.66	193	89.90*	2.231E+00	1.325E-01	1.327E-01	30.31
CS-137	661.66	193	85.10*	2.231E+00	1.400E-01	1.402E-01	30.31
EU-155	86.55	881	30.70	9.405E+00	4.212E-01	4.238E-01	17.40
	105.31	217	21.10*	8.841E+00	1.610E-01	1.620E-01	53.60
TL-208	277.37	145	6.60	4.738E+00	6.424E-01	6.424E-01	55.83
	583.19	962	85.00*	2.497E+00	6.257E-01	6.257E-01	14.74
	860.56	153	12.50	1.766E+00	9.577E-01	9.577E-01	40.41
PB-210	46.54	252	4.25*	9.183E+00	8.930E-01	8.942E-01	50.06
BI-211	72.87	-----	1.23	9.724E+00	-----	Line Not Found	-----
	351.06	1550	12.92*	3.887E+00	4.261E+00	4.261E+00	13.16
BI-212	727.33	202	6.67*	2.050E+00	2.036E+00	2.036E+00	41.87
	785.37	-----	1.10	1.915E+00	-----	Line Not Found	-----
	1620.50	35	1.47	1.013E+00	3.240E+00	3.240E+00	59.78
PB-212	74.82	1841	10.28	9.694E+00	2.551E+00	2.551E+00	15.61
	77.11	2892	17.10	9.653E+00	2.419E+00	2.419E+00	11.35
	238.63	3128	43.60*	5.340E+00	1.855E+00	1.855E+00	12.16
	300.09	216	3.30	4.442E+00	2.031E+00	2.031E+00	39.99
BI-214	609.32	1010	45.49*	2.401E+00	1.276E+00	1.276E+00	15.04
	1120.29	223	14.92	1.398E+00	1.477E+00	1.477E+00	28.39
	1764.49	197	15.30	9.413E-01	1.888E+00	1.888E+00	19.11
PB-214	74.82	1841	5.80	9.694E+00	4.522E+00	4.522E+00	14.56
	77.11	2892	9.70	9.653E+00	4.265E+00	4.265E+00	14.03
	242.00	715	7.25	5.288E+00	2.575E+00	2.575E+00	19.37
	295.22	980	18.42	4.505E+00	1.631E+00	1.631E+00	16.60
	351.93	1550	35.60*	3.887E+00	1.546E+00	1.546E+00	14.27
RA-224	240.99	715	4.10*	5.288E+00	4.554E+00	4.554E+00	18.48

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-226	609.32	1010	45.49*	2.401E+00	1.276E+00	1.276E+00	15.04
	1120.29	223	14.92	1.398E+00	1.477E+00	1.477E+00	28.39
	1764.49	197	15.30	9.413E-01	1.888E+00	1.888E+00	19.11
AC-228	338.32	580	11.27	4.019E+00	1.768E+00	1.768E+00	45.00
	911.20	605	25.80*	1.678E+00	1.929E+00	1.929E+00	16.93
	968.97	361	15.80	1.589E+00	1.983E+00	1.983E+00	28.58
RA-228	338.32	580	11.27	4.019E+00	1.768E+00	1.768E+00	45.00
	911.20	605	25.80*	1.678E+00	1.929E+00	1.929E+00	16.93
	968.97	361	15.80	1.589E+00	1.983E+00	1.983E+00	28.58
TH-228	74.82	1841	10.28	9.694E+00	2.551E+00	2.551E+00	12.27
	77.11	2892	17.10	9.653E+00	2.419E+00	2.419E+00	11.35
	238.63	3128	43.60*	5.340E+00	1.855E+00	1.855E+00	12.16
	300.09	216	3.30	4.442E+00	2.031E+00	2.031E+00	72.36
TH-229	85.43	339	14.70	9.490E+00	3.353E-01	3.353E-01	33.62
	88.47	881	24.00	9.405E+00	5.388E-01	5.388E-01	17.36
	193.51	-----	4.41*	6.239E+00	-----	Line Not Found	-----
	210.85	-----	2.80	5.863E+00	-----	Line Not Found	-----
TH-232	338.32	580	11.27	4.019E+00	1.768E+00	1.768E+00	18.96
	911.20	605	25.80*	1.678E+00	1.929E+00	1.929E+00	16.93
	968.97	361	15.80	1.589E+00	1.983E+00	1.983E+00	28.58
TH-234	63.29	657	3.70*	9.779E+00	2.509E+00	2.509E+00	31.43
	92.59	1422	4.23	9.243E+00	5.021E+00	5.021E+00	25.01
U-235	89.96	622	3.47	9.328E+00	2.652E+00	2.652E+00	30.51
	93.35	1422	5.60	9.243E+00	3.793E+00	3.793E+00	25.91
	143.76	-----	10.96*	7.568E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.998E+00	-----	Line Not Found	-----
	185.72	589	57.20	6.416E+00	2.218E-01	2.218E-01	23.80
	205.31	-----	5.01	5.979E+00	-----	Line Not Found	-----
NP-237	86.48	881	12.40*	9.405E+00	1.043E+00	1.043E+00	27.22
	95.86	-----	2.68	9.143E+00	-----	Line Not Found	-----
U-238	63.29	657	3.70*	9.779E+00	2.509E+00	2.509E+00	31.43
	92.59	1422	4.23	9.243E+00	5.021E+00	5.021E+00	14.57
ANH-511	511.00	241	100.00*	2.809E+00	1.186E-01	1.186E-01	43.09

Flag: "\*" = Keyline

Total number of lines in spectrum 49  
Number of unidentified lines 9  
Number of lines tentatively identified by NID 40 81.63%

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	3.360E+01	3.360E+01	0.316E+01	9.41	
MN-54	312.05D	1.04	3.769E-02	3.902E-02	3.153E-02	80.80	
CD-109	461.40D	1.02	3.495E+00	3.577E+00	0.621E+00	17.36	
SN-126	2.30E+05Y	1.00	3.495E-01	3.495E-01	0.607E-01	17.36	
BA-137M	30.08Y	1.00	1.325E-01	1.327E-01	0.402E-01	30.31	
CS-137	30.08Y	1.00	1.400E-01	1.402E-01	0.425E-01	30.31	
EU-155	4.75Y	1.01	1.610E-01	1.620E-01	0.868E-01	53.60	
TL-208	1.41E+10Y	1.00	6.257E-01	6.257E-01	0.922E-01	14.74	
PB-210	22.20Y	1.00	8.930E-01	8.942E-01	4.477E-01	50.06	
BI-211	7.04E+08Y	1.00	4.261E+00	4.261E+00	0.561E+00	13.16	
BI-212	1.41E+10Y	1.00	2.036E+00	2.036E+00	0.852E+00	41.87	
PB-212	1.41E+10Y	1.00	1.855E+00	1.855E+00	0.226E+00	12.16	
BI-214	1600.00Y	1.00	1.276E+00	1.276E+00	0.192E+00	15.04	
PB-214	1600.00Y	1.00	1.546E+00	1.546E+00	0.221E+00	14.27	
RA-224	1.41E+10Y	1.00	4.554E+00	4.554E+00	0.842E+00	18.48	
RA-226	1600.00Y	1.00	1.276E+00	1.276E+00	0.192E+00	15.04	
AC-228	1.41E+10Y	1.00	1.929E+00	1.929E+00	0.326E+00	16.93	
RA-228	1.41E+10Y	1.00	1.929E+00	1.929E+00	0.326E+00	16.93	
TH-228	1.41E+10Y	1.00	1.855E+00	1.855E+00	0.226E+00	12.16	
TH-229	7340.00Y	1.00	5.388E-01	5.388E-01	0.935E-01	17.36	K
TH-232	1.41E+10Y	1.00	1.929E+00	1.929E+00	0.326E+00	16.93	
TH-234	4.47E+09Y	1.00	2.509E+00	2.509E+00	0.789E+00	31.43	
U-235	7.04E+08Y	1.00	2.218E-01	2.218E-01	0.528E-01	23.80	K
NP-237	2.14E+06Y	1.00	1.043E+00	1.043E+00	0.284E+00	27.22	
U-238	4.47E+09Y	1.00	2.509E+00	2.509E+00	0.789E+00	31.43	
ANH-511	1.00E+09Y	1.00	1.186E-01	1.186E-01	0.511E-01	43.09	
Total Activity :			7.082E+01	7.091E+01			

Grand Total Activity : 7.082E+01 7.091E+01

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

Unidentified Energy Lines  
Sample ID : G247563003

Page : 4  
Acquisition date : 2-MAR-2010 23:22:19

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	114.98	67	590	1.17	229.51	228	6	4.67E-03	****	8.51E+00	T
0	128.71	181	904	0.99	256.96	253	9	1.26E-02	61.5	8.05E+00	
0	154.31	118	732	1.07	308.16	304	8	8.16E-03	81.9	7.25E+00	T
0	209.29	295	620	0.89	418.10	414	9	2.05E-02	32.5	5.90E+00	
0	258.70	105	412	1.78	516.92	513	9	7.29E-03	72.4	5.01E+00	
0	270.06	277	549	1.15	539.65	534	12	1.93E-02	35.8	4.84E+00	T
0	328.15	177	299	1.00	655.82	652	9	1.23E-02	38.1	4.12E+00	T
0	409.43	86	268	0.84	818.38	814	9	6.01E-03	72.3	3.41E+00	
0	462.74	163	258	1.00	924.98	920	10	1.13E-02	40.0	3.06E+00	T
0	767.87	80	155	1.00	1535.23	1531	10	5.59E-03	61.7	1.95E+00	T
0	795.10	128	100	1.30	1589.68	1584	11	8.91E-03	36.6	1.89E+00	T
0	934.33	87	173	1.97	1868.15	1861	18	6.04E-03	73.8	1.64E+00	
3	964.25	141	109	2.39	1927.99	1921	21	9.77E-03	37.2	1.60E+00	T
0	1238.04	115	178	1.85	2475.59	2469	14	8.01E-03	52.5	1.28E+00	T
0	1377.42	76	41	2.36	2754.35	2748	13	5.30E-03	43.3	1.17E+00	
0	1409.39	38	47	1.02	2818.31	2812	16	2.62E-03	93.2	1.14E+00	T
0	1587.99	55	19	1.37	3175.53	3171	9	3.80E-03	40.0	1.03E+00	
0	1630.28	23	15	0.88	3260.12	3255	11	1.62E-03	74.7	1.01E+00	
0	1729.20	50	25	1.55	3457.98	3451	16	3.47E-03	52.4	9.58E-01	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563003.CNF;1  *
* Acquisition date   : 2-MAR-2010 23:22:19.  Detector SN#      :             *
* Detector ID        : GAM25                      Sensitivity    : 5.00000      *
* Geometry           : CAN                      Energy tolerance : 1.50000      *
* Elapsed live time  : 0 04:00:00.00             Abundance limit : 75.00000      *
* Elapsed real time  : 0 04:00:04.47             Half life ratio : 8.00000      *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00  Nuclide Library : SOLID          *
* Sample ID          : G247563003             Analyst initials: MXR1          *
* Batch Number       : 956157                 Sample Quantity : 1.35920E+02 GRAM  *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 7-OCT-2009 09:38:43.34MS Isotope        :             *
* MSD ID             :                          MSD Isotope     :             *
* LCS ID             : 1032-A                   LCS Isotope      :             *
*****

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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	3.360E+01	3.162E+00	3.662E-01	3.119E-02	91.755
MN-54	3.902E-02	3.153E-02	4.407E-02	4.472E-03	0.885
CD-109	3.577E+00	6.209E-01	4.821E-01	5.181E-02	7.421
SN-126	3.495E-01	6.066E-02	4.700E-02	5.040E-03	7.436
BA-137M	1.327E-01	4.021E-02	4.399E-02	4.873E-03	3.016
CS-137	1.402E-01	4.249E-02	4.647E-02	5.154E-03	3.016
EU-155	1.620E-01	8.681E-02	8.354E-02	9.873E-03	1.939
TL-208	6.257E-01	9.222E-02	3.831E-02	4.315E-03	16.331
PB-210	8.942E-01	4.477E-01	3.981E-01	4.077E-02	2.246
BI-211	4.261E+00	5.606E-01	2.102E-01	2.215E-02	20.275
BI-212	2.036E+00	8.523E-01	5.652E-01	7.982E-02	3.602
PB-212	1.855E+00	2.257E-01	5.554E-02	6.345E-03	33.407
BI-214	1.276E+00	1.919E-01	7.810E-02	9.456E-03	16.341
PB-214	1.546E+00	2.206E-01	7.647E-02	9.083E-03	20.223
RA-224	4.554E+00	8.416E-01	5.960E-01	6.264E-02	7.640
RA-226	1.276E+00	1.919E-01	7.810E-02	9.456E-03	16.341
AC-228	1.929E+00	3.265E-01	1.742E-01	2.129E-02	11.075
RA-228	1.929E+00	3.265E-01	1.742E-01	2.129E-02	11.075

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	1.855E+00	2.257E-01	5.554E-02	6.345E-03	33.407
TH-229	5.388E-01	9.351E-02	5.011E-01	4.779E-02	1.075
TH-232	1.929E+00	3.265E-01	1.742E-01	2.129E-02	11.075
TH-234	2.509E+00	7.886E-01	5.258E-01	9.981E-02	4.772
U-235	2.218E-01	5.277E-02	1.948E-01	3.578E-02	1.138
NP-237	1.043E+00	2.838E-01	1.583E-01	3.724E-02	6.588
U-238	2.509E+00	7.886E-01	5.258E-01	9.981E-02	4.772
ANH-511	1.186E-01	5.112E-02	2.999E-02	3.087E-03	3.956

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-8.265E-02		2.289E-01	3.660E-01	3.874E-02	-0.226
NA-22	1.764E-03		3.593E-02	5.925E-02	4.858E-03	0.030
NA-24	-1.968E-01		4.427E-01	Half-Life too short		
SC-46	-1.663E-02		2.975E-02	4.656E-02	4.459E-03	-0.357
V-48	-2.752E-02		5.484E-02	8.514E-02	7.889E-03	-0.323
CR-51	-1.808E-01		2.386E-01	3.893E-01	4.320E-02	-0.464
CO-56	-4.146E-03		2.829E-02	4.579E-02	4.595E-03	-0.091
CO-57	-9.086E-03		1.284E-02	2.113E-02	2.725E-03	-0.430
CO-58	1.505E-02		2.889E-02	4.883E-02	5.066E-03	0.308
FE-59	1.611E-02		6.870E-02	1.162E-01	1.094E-02	0.139
CO-60	-1.722E-02		2.927E-02	4.552E-02	3.697E-03	-0.378
ZN-65	-2.422E-02		7.938E-02	1.109E-01	9.580E-03	-0.218
SE-75	2.133E-02		3.044E-02	4.469E-02	4.898E-03	0.477
SR-85	4.101E-02		2.776E-02	4.297E-02	4.433E-03	0.954
Y-88	-1.384E-02		2.332E-02	3.491E-02	2.853E-03	-0.397
Y-91	-1.663E+00		1.767E+01	2.906E+01	2.392E+00	-0.057
NB-94	3.236E-03		2.549E-02	4.267E-02	4.685E-03	0.076
NB-95	2.857E-02		3.633E-02	5.394E-02	5.761E-03	0.530
NB-95M	2.247E-02		8.104E-02	1.175E-01	1.349E-02	0.191
ZR-95	1.135E-02		5.418E-02	9.051E-02	1.038E-02	0.125
MO-99	-1.849E+00		9.925E+00	1.625E+01	2.774E+00	-0.114
TC-99M	-3.643E+10		3.336E+10	Half-Life too short		
RU-103	5.978E-02		2.928E-02	5.007E-02	7.501E-03	1.194
RH-106	-1.879E-01		2.165E-01	3.443E-01	5.122E-02	-0.546
RU-106	-1.879E-01		2.156E-01	3.443E-01	3.770E-02	-0.546
AG-108M	-2.633E-03		1.910E-02	3.117E-02	3.062E-03	-0.084
AG-110M	-1.711E-03		2.888E-02	4.186E-02	4.717E-03	-0.041
SN-113	-1.332E-02		2.930E-02	4.755E-02	4.441E-03	-0.280
CD-115	6.563E-01		8.833E+00	1.432E+01	1.493E+00	0.046
SN-117M	-1.349E-02		3.220E-02	5.011E-02	4.865E-03	-0.269
TE-123M	-5.913E-03		1.574E-02	2.576E-02	2.501E-03	-0.230
SB-124	-2.803E-02		5.061E-02	7.738E-02	6.705E-03	-0.362
SB-125	7.376E-03		6.089E-02	1.007E-01	9.726E-03	0.073
TE-125M	6.547E-01		5.222E+00	8.024E+00	1.075E+00	0.082
I-126	2.220E-01		1.840E-01	2.882E-01	3.190E-02	0.770

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-126	-1.745E-02		1.207E-01	1.719E-01	1.876E-02	-0.102
SB-127	7.995E-01		9.558E-01	1.658E+00	2.220E-01	0.482
I-131	7.236E-02		7.708E-02	1.330E-01	1.364E-02	0.544
TE-132	3.689E-02		4.919E-01	7.951E-01	1.339E-01	0.046
BA-133	-8.687E-04		2.905E-02	4.266E-02	5.950E-03	-0.020
I-133	2.027E-03		2.755E-03	Half-Life	too short	
CS-134	1.234E-01	+	4.696E-02	6.621E-02	6.970E-03	1.864
CS-135	8.401E-02		1.109E-01	1.625E-01	1.961E-02	0.517
I-135	-2.715E+09		7.119E+09	Half-Life	too short	
CS-136	-1.370E-01		8.294E-02	1.228E-01	1.149E-02	-1.115
CE-139	-9.145E-03		1.727E-02	2.803E-02	2.499E-03	-0.326
BA-140	5.506E-02		1.814E-01	2.960E-01	1.019E-01	0.186
LA-140	-4.533E-02		6.535E-02	9.644E-02	8.019E-03	-0.470
CE-141	-1.551E-03		3.560E-02	5.929E-02	6.595E-03	-0.026
CE-143	7.639E-04		1.089E-04	Half-Life	too short	
CE-144	-6.784E-02		1.104E-01	1.722E-01	3.002E-02	-0.394
PM-144	6.105E-03		2.499E-02	4.210E-02	4.632E-03	0.145
PR-144	4.570E-01		1.871E+00	3.151E+00	3.467E-01	0.145
PM-146	7.987E-03		2.818E-02	4.675E-02	5.402E-03	0.171
ND-147	2.880E-02		3.851E-01	6.241E-01	1.003E-01	0.046
PM-149	-2.994E+01		6.743E+01	1.043E+02	1.778E+01	-0.287
EU-152	-1.219E-02		6.844E-02	9.998E-02	1.073E-02	-0.122
GD-153	-1.693E-02		4.184E-02	6.363E-02	7.166E-03	-0.266
EU-154	2.745E-02		1.004E-01	1.679E-01	1.856E-02	0.163
TB-160	1.462E-02		1.057E-01	1.736E-01	1.683E-02	0.084
HO-166M	-1.871E-02		4.415E-02	7.161E-02	7.841E-03	-0.261
TA-182	-6.813E-02		1.626E-01	2.623E-01	2.157E-02	-0.260
IR-192	7.712E-03		2.115E-02	3.615E-02	3.904E-03	0.213
HG-203	2.963E-02		2.758E-02	4.085E-02	4.629E-03	0.725
BI-207	2.597E-02		4.016E-02	6.958E-02	6.210E-03	0.373
PB-211	-1.491E-01		5.880E-01	8.119E-01	3.938E-01	-0.184
RN-219	-9.572E-02		2.846E-01	4.636E-01	7.058E-02	-0.206
RA-223	3.045E-01		4.565E-01	6.964E-01	1.284E-01	0.437
AC-227	-4.832E-02		1.744E-01	2.436E-01	3.333E-02	-0.198
TH-227	-4.832E-02		1.744E-01	2.436E-01	3.671E-02	-0.198
PA-231	4.660E-01		9.245E-01	1.490E+00	2.414E-01	0.313
TH-231	3.045E-01		4.565E-01	6.964E-01	1.284E-01	0.437
PA-233	-4.354E-03		3.868E-02	6.503E-02	7.183E-03	-0.067
PA-234	-4.736E-02		2.422E-01	3.865E-01	7.391E-02	-0.123
PA-234M	4.080E+00		3.991E+00	6.684E+00	7.001E-01	0.610
NP-239	-4.062E-02		2.173E-01	3.283E-01	4.118E-02	-0.124
AM-241	2.028E-02		3.661E-02	5.470E-02	5.683E-03	0.371
CM-247	2.743E-03		2.540E-02	4.221E-02	3.890E-03	0.065
CF-249	2.498E-02		2.686E-02	4.611E-02	4.240E-03	0.542
CF-251	5.911E-03		7.420E-02	1.223E-01	1.122E-02	0.048

# 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]G247563003          *
* Acquisition date   : 2-MAR-2010 23:22:19 Detector SN#      :              *
* Detector ID        : GAM25                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 04:00:00.00              Abundance limit : 75.000        *
* Elapsed real time  : 0 04:00:04.47              Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID           : G247563003              Analyst initials: MXR1         *
* Batch Number        : 956157                  Sample Quantity : 1.3592E+02 GRAM  *
* Recovery             : 1.00000                 Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 7-OCT-2009 09:38:43 MS Isotope      :              *
* MSD DPM             : 0.000                     MSD Isotope   :              *
* LCS DPM             : 0.000                     LCS Isotope   :              *
* LCSD DPM            : 0.000                     LCSD Isotope  :              *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.360E+01	3.099E+00	1.837E-01	1.581E+00
MN-54	3.902E-02	3.090E-02	2.234E-02	1.576E-02
CD-109	3.577E+00	6.085E-01	2.547E-01	3.104E-01
SN-126	3.495E-01	5.944E-02	2.483E-02	3.033E-02
BA-137M	1.327E-01	3.941E-02	2.240E-02	2.011E-02
CS-137	1.402E-01	4.164E-02	2.366E-02	2.124E-02
EU-155	1.620E-01	8.507E-02	4.399E-02	4.340E-02
TL-208	6.257E-01	9.038E-02	1.955E-02	4.611E-02
PB-210	8.942E-01	4.387E-01	2.126E-01	2.238E-01
BI-211	4.261E+00	5.494E-01	1.083E-01	2.803E-01
BI-212	2.036E+00	8.353E-01	2.873E-01	4.262E-01
PB-212	1.855E+00	2.212E-01	2.882E-02	1.128E-01
BI-214	1.276E+00	1.881E-01	3.983E-02	9.597E-02
PB-214	1.546E+00	2.162E-01	3.940E-02	1.103E-01
RA-224	4.554E+00	8.247E-01	3.092E-01	4.208E-01
RA-226	1.276E+00	1.881E-01	3.983E-02	9.597E-02
AC-228	1.929E+00	3.199E-01	8.814E-02	1.632E-01
RA-228	1.929E+00	3.199E-01	8.814E-02	1.632E-01
TH-228	1.855E+00	2.212E-01	2.882E-02	1.128E-01
TH-229	-6.667E-02	3.030E-01	2.610E-01	1.546E-01
TH-232	1.929E+00	3.199E-01	8.814E-02	1.632E-01
TH-234	2.509E+00	7.728E-01	2.794E-01	3.943E-01
U-235	8.359E-02	1.174E-01	1.020E-01	5.991E-02
NP-237	1.043E+00	2.782E-01	8.364E-02	1.419E-01
U-238	2.509E+00	7.728E-01	2.794E-01	3.943E-01
ANH-511	1.186E-01	5.010E-02	1.535E-02	2.556E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-8.265E-02	2.243E-01	1.875E-01	1.144E-01 NOT IDENT.

NA-22	1.764E-03	3.521E-02	2.980E-02	1.796E-02	NOT IDENT.
NA-24	-1.968E+05	8.678E+05	0.000E+00	4.427E+05	SHORT HLIF
SC-46	-1.663E-02	2.916E-02	2.358E-02	1.488E-02	FAIL ABUN
V-48	-2.752E-02	5.374E-02	4.303E-02	2.742E-02	NOT IDENT.
CR-51	-1.808E-01	2.339E-01	2.009E-01	1.193E-01	NOT IDENT.
CO-56	-4.146E-03	2.772E-02	2.321E-02	1.414E-02	FAIL ABUN
CO-57	-9.086E-03	1.258E-02	1.110E-02	6.420E-03	NOT IDENT.
CO-58	1.505E-02	2.831E-02	2.477E-02	1.445E-02	NOT IDENT.
FE-59	1.611E-02	6.732E-02	5.858E-02	3.435E-02	NOT IDENT.
CO-60	-1.722E-02	2.868E-02	2.287E-02	1.463E-02	NOT IDENT.
ZN-65	-2.422E-02	7.779E-02	5.592E-02	3.969E-02	NOT IDENT.
SE-75	2.133E-02	2.983E-02	2.315E-02	1.522E-02	NOT IDENT.
SR-85	4.101E-02	2.721E-02	2.198E-02	1.388E-02	NOT IDENT.
Y-88	-1.384E-02	2.286E-02	1.743E-02	1.166E-02	NOT IDENT.
Y-91	-1.663E+00	1.732E+01	1.463E+01	8.835E+00	NOT IDENT.
NB-94	3.236E-03	2.498E-02	2.170E-02	1.275E-02	NOT IDENT.
NB-95	2.857E-02	3.560E-02	2.739E-02	1.816E-02	NOT IDENT.
NB-95M	2.247E-02	7.942E-02	6.101E-02	4.052E-02	NOT IDENT.
ZR-95	1.135E-02	5.310E-02	4.597E-02	2.709E-02	NOT IDENT.
MO-99	-1.849E+00	9.727E+00	8.259E+00	4.963E+00	NOT IDENT.
TC-99M	-3.643E+16	6.539E+16	0.000E+00	0.000E+00	SHORT HLIF
RU-103	5.978E-02	2.869E-02	2.564E-02	1.464E-02	FAIL ABUN
RH-106	-1.879E-01	2.121E-01	1.755E-01	1.082E-01	NOT IDENT.
RU-106	-1.879E-01	2.113E-01	1.755E-01	1.078E-01	NOT IDENT.
AG-108M	-2.633E-03	1.872E-02	1.600E-02	9.550E-03	NOT IDENT.
AG-110M	-1.711E-03	2.830E-02	2.132E-02	1.444E-02	NOT IDENT.
SN-113	-1.332E-02	2.871E-02	2.445E-02	1.465E-02	NOT IDENT.
CD-115	6.563E-01	8.656E+00	7.323E+00	4.416E+00	NOT IDENT.
SN-117M	-1.349E-02	3.155E-02	2.619E-02	1.610E-02	NOT IDENT.
TE-123M	-5.913E-03	1.543E-02	1.347E-02	7.872E-03	NOT IDENT.
SB-124	-2.803E-02	4.959E-02	3.870E-02	2.530E-02	NOT IDENT.
SB-125	7.376E-03	5.968E-02	5.172E-02	3.045E-02	FAIL ABUN
TE-125M	6.547E-01	5.117E+00	4.223E+00	2.611E+00	NOT IDENT.
I-126	2.220E-01	1.804E-01	1.467E-01	9.202E-02	NOT IDENT.
SB-126	-1.745E-02	1.183E-01	8.739E-02	6.036E-02	NOT IDENT.
SB-127	7.995E-01	9.367E-01	8.435E-01	4.779E-01	NOT IDENT.
I-131	7.236E-02	7.554E-02	6.846E-02	3.854E-02	NOT IDENT.
TE-132	3.689E-02	4.821E-01	4.129E-01	2.460E-01	FAIL ABUN
BA-133	-8.687E-04	2.847E-02	2.197E-02	1.452E-02	FAIL ABUN
I-133	2.027E+03	5.399E+03	0.000E+00	2.755E+03	SHORT HLIF
CS-134	1.234E-01	4.602E-02	3.360E-02	2.348E-02	FAIL ABUN
CS-135	8.401E-02	1.087E-01	8.414E-02	5.546E-02	NOT IDENT.
I-135	-2.715E+15	1.395E+16	0.000E+00	7.119E+15	SHORT HLIF
CS-136	-1.370E-01	8.128E-02	6.200E-02	4.147E-02	FAIL ABUN
CE-139	-9.145E-03	1.692E-02	1.464E-02	8.634E-03	NOT IDENT.
BA-140	5.506E-02	1.778E-01	1.513E-01	9.070E-02	NOT IDENT.
LA-140	-4.533E-02	6.404E-02	4.829E-02	3.268E-02	FAIL ABUN
CE-141	-1.551E-03	3.489E-02	3.104E-02	1.780E-02	NOT IDENT.
CE-143	7.639E+02	2.134E+02	0.000E+00	1.089E+02	SHORT HLIF
CE-144	-6.784E-02	1.082E-01	9.029E-02	5.519E-02	NOT IDENT.
PM-144	6.105E-03	2.449E-02	2.142E-02	1.249E-02	NOT IDENT.
PR-144	4.570E-01	1.833E+00	1.603E+00	9.353E-01	NOT IDENT.
PM-146	7.987E-03	2.762E-02	2.397E-02	1.409E-02	NOT IDENT.
ND-147	2.880E-02	3.774E-01	3.191E-01	1.926E-01	FAIL ABUN
PM-149	-2.994E+01	6.608E+01	5.392E+01	3.371E+01	NOT IDENT.
EU-152	-1.219E-02	6.707E-02	5.153E-02	3.422E-02	FAIL ABUN
GD-153	-1.693E-02	4.101E-02	3.355E-02	2.092E-02	NOT IDENT.
EU-154	2.745E-02	9.844E-02	8.443E-02	5.022E-02	NOT IDENT.
TB-160	1.462E-02	1.036E-01	8.794E-02	5.285E-02	FAIL ABUN
HO-166M	-1.871E-02	4.327E-02	3.641E-02	2.208E-02	NOT IDENT.
TA-182	-6.813E-02	1.593E-01	1.320E-01	8.128E-02	FAIL ABUN
IR-192	7.712E-03	2.073E-02	1.866E-02	1.058E-02	FAIL ABUN
HG-203	2.963E-02	2.703E-02	2.114E-02	1.379E-02	NOT IDENT.
BI-207	2.597E-02	3.935E-02	3.511E-02	2.008E-02	FAIL ABUN
PB-211	-1.491E-01	5.762E-01	4.172E-01	2.940E-01	NOT IDENT.
RN-219	-9.572E-02	2.789E-01	2.383E-01	1.423E-01	FAIL ABUN
RA-223	3.045E-01	4.474E-01	3.594E-01	2.283E-01	FAIL ABUN
AC-227	-4.832E-02	1.709E-01	1.262E-01	8.719E-02	FAIL ABUN
TH-227	-4.832E-02	1.709E-01	1.262E-01	8.720E-02	FAIL ABUN
PA-231	4.660E-01	9.061E-01	7.710E-01	4.623E-01	FAIL ABUN
TH-231	3.045E-01	4.474E-01	3.594E-01	2.283E-01	FAIL ABUN
PA-233	-4.354E-03	3.791E-02	3.358E-02	1.934E-02	FAIL ABUN
PA-234	-4.736E-02	2.373E-01	1.955E-01	1.211E-01	NOT IDENT.
PA-234M	4.080E+00	3.911E+00	3.377E+00	1.995E+00	FAIL ABUN
NP-239	-4.062E-02	2.130E-01	1.725E-01	1.087E-01	FAIL ABUN
AM-241	2.028E-02	3.588E-02	2.909E-02	1.830E-02	NOT IDENT.
CM-247	2.743E-03	2.490E-02	2.169E-02	1.270E-02	FAIL ABUN
CF-249	2.498E-02	2.632E-02	2.371E-02	1.343E-02	NOT IDENT.

CF-251

5.911E-03

7.272E-02

6.380E-02

3.710E-02 NOT IDENT.

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

ENERGY	MDA COUNTS
46.54	584.9963
49.72	638.4619
57.36	0.0000
59.54	835.8372
63.29	877.7992
63.29	877.7992
64.28	880.9894
67.75	878.0650
69.67	817.3912
70.83	912.8505
72.81	827.6752
72.87	827.8411
72.87	827.8411
74.82	833.1704
74.82	833.1704
74.82	833.1704
74.97	833.5771
77.11	839.3452
77.11	839.3452
77.11	839.3452
79.69	846.1888
79.80	846.4777
80.12	847.3178
80.19	847.4997
80.57	848.4949
81.00	849.6186
81.07	849.8005
81.07	849.8005
83.79	847.8775
83.79	847.8775
85.43	827.4693
86.48	830.0250
86.55	830.1947
86.79	645.8810
86.94	646.1689
87.57	647.3522
88.03	648.2117
88.47	649.0353
89.96	651.8018
91.11	653.9246
92.59	664.1498
92.59	664.1498
93.35	665.5489
94.67	667.9669
94.87	668.3309
94.87	668.3309
95.86	652.4287
97.43	655.1884
98.44	620.0303
99.53	589.8967
100.11	606.9933
103.18	622.5730
103.37	586.7664
105.31	580.5898
106.12	581.7725
109.28	582.4125
111.00	610.7045
111.76	589.8799
116.30	533.7040
117.23	526.8575
121.12	520.3562
121.78	551.6812
122.06	545.7344
123.07	551.4749
131.20	542.0687
133.52	551.9152
136.00	558.6632

136.47	589.8126
140.51	591.8792
140.51	0.0000
143.76	549.6149
144.24	505.8629
144.24	505.8629
145.44	581.6545
152.43	564.1699
153.25	567.9150
154.21	531.9705
154.21	531.9705
156.02	481.2586
158.56	500.6534
159.00	503.7659
162.66	473.9617
163.33	490.1526
165.86	534.5385
176.60	513.5503
177.52	471.3162
181.07	499.7728
184.41	487.3287
185.72	459.4560
193.51	474.4213
197.04	485.2852
205.31	435.9912
210.85	431.6613
215.65	424.5809
222.11	455.2633
227.38	439.1736
228.16	424.5187
228.18	424.5307
235.69	409.2178
235.96	409.3628
235.96	409.3628
238.63	405.3387
238.63	405.3387
240.99	406.5958
242.00	407.1340
244.70	379.2987
252.40	365.7602
252.80	346.9803
256.23	347.9117
256.23	347.9117
260.90	322.8779
264.66	298.8853
268.22	341.1072
269.46	335.9202
269.46	335.9202
271.23	336.6284
273.65	363.9156
276.40	337.5389
277.37	325.2784
277.60	325.3648
278.00	307.1108
279.20	310.9955
279.54	349.1417
280.46	347.7874
283.69	310.2949
284.31	303.5612
285.41	339.9079
285.90	338.9320
287.50	313.9673
293.27	0.0000
295.22	295.5791
295.96	281.7383
298.57	282.5488
299.98	325.4309
299.98	325.4309
300.09	325.4702
300.09	325.4702
300.13	325.4871
301.36	296.1667
302.85	281.0333
304.50	342.6719
304.50	342.6719
304.85	312.9307
308.46	269.5263
311.90	286.6357

316.51	275.4261
319.41	316.8887
320.08	330.6599
323.87	288.7832
323.87	288.7832
328.76	284.3925
333.37	280.8319
334.37	284.5349
334.37	284.5349
338.28	284.3549
338.28	284.3549
338.32	284.3643
338.32	284.3643
338.32	284.3643
340.48	270.0322
340.55	270.0501
344.28	276.9618
351.06	271.1429
351.93	271.3694
356.01	251.6432
364.49	234.0250
366.42	290.2203
383.85	253.5505
388.16	243.9124
388.63	265.2355
391.69	261.1134
400.66	265.0979
401.81	288.7734
402.40	263.5400
404.85	273.8733
410.95	221.8065
414.70	238.0191
423.72	251.3940
427.09	216.2153
427.87	225.3241
433.94	208.3967
453.88	203.5522
463.37	218.1577
468.07	227.7130
473.00	202.3942
476.78	208.1431
477.60	224.8474
487.02	185.7136
492.35	212.6178
497.08	154.4873
511.00	171.9334
514.00	163.3594
527.90	171.7969
529.87	0.0000
531.02	164.6263
537.26	156.6777
546.56	0.0000
563.25	176.9536
569.33	164.4011
569.50	164.4193
569.70	164.4375
583.19	160.2729
600.60	171.9000
602.73	203.4074
604.72	201.5016
609.32	176.4283
609.32	176.4283
610.33	172.0066
614.28	193.5885
618.01	153.6967
621.93	179.5749
621.93	179.5749
633.25	142.2284
635.95	167.2658
636.99	171.0464
645.85	166.3726
657.76	176.8030
661.66	188.3788
661.66	188.3788
664.57	0.0000
666.33	151.1560
666.50	157.6283
677.62	156.1762

685.70	127.5710
695.00	180.4443
696.49	172.9844
696.51	172.9889
697.00	171.1318
702.65	191.6714
706.68	184.4337
711.68	174.3796
720.70	160.4411
721.93	0.0000
722.78	154.1914
722.91	154.2031
723.31	152.6278
724.19	173.5928
727.33	144.8950
733.00	127.5553
735.93	134.6173
739.50	156.4876
747.24	152.2219
752.31	162.3890
753.82	140.9766
756.73	156.8672
763.94	152.5062
765.81	142.7981
766.42	144.4824
777.92	152.5600
778.90	144.7061
783.70	132.1265
785.37	143.1703
795.86	118.2409
801.95	146.5606
810.29	140.8477
810.76	128.8031
815.77	121.0342
818.51	133.3084
832.01	105.0085
834.85	144.4892
836.80	0.0000
846.77	127.8778
856.80	155.8582
860.56	147.1964
871.09	124.0957
873.19	114.8942
875.33	0.0000
879.36	127.6605
880.51	123.5700
883.24	129.9530
884.68	124.8340
889.28	137.5913
898.04	137.0639
911.20	137.8315
911.20	137.8315
911.20	137.8315
926.50	140.6839
937.49	111.6907
944.13	137.3281
946.00	144.1033
949.00	142.1438
962.29	105.6603
964.08	102.1505
966.15	102.2363
968.97	107.7380
968.97	107.7380
968.97	107.7380
983.53	127.8669
996.26	178.6022
1001.03	132.0188
1004.73	162.8014
1037.84	160.4417
1038.76	0.0000
1048.07	151.8014
1050.41	98.2018
1050.41	98.2018
1063.66	119.1667
1085.87	122.9511
1099.45	122.6050
1112.07	137.5548
1115.54	149.5963

1120.29	134.9162
1120.29	134.9162
1120.55	134.9277
1121.30	131.9753
1131.51	0.0000
1173.23	174.1626
1177.93	175.4027
1189.05	152.7134
1204.77	168.1787
1221.41	184.8254
1231.02	206.2495
1235.36	177.7588
1238.28	184.8466
1260.41	0.0000
1271.85	122.8849
1274.44	120.9852
1274.54	127.9844
1291.59	127.6615
1298.22	0.0000
1312.11	91.0400
1332.49	86.5149
1365.19	53.4430
1368.63	0.0000
1384.29	54.9225
1408.01	44.5958
1457.56	0.0000
1460.82	45.4146
1489.16	45.7680
1505.03	64.1382
1596.21	53.6456
1620.50	25.4933
1678.03	0.0000
1690.97	29.7837
1764.49	30.7980
1764.49	30.7980
1770.23	15.4193
1771.35	20.5642
1791.20	0.0000
1836.06	27.8271

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247563003

Total Uranium Activity	7.5036E+00	ug/g
Total Uranium Counting Unc.	2.2997E+00	ug/g
Total Uranium Tpu	1.1733E-06	ug/g
Total Uranium Mda	8.3244E-01	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 956157          SAMPLE ID   : G247563003
*  ANALYST       : MXR1            DETECTOR    : GAM25
*  SAMPLE DATE   : 15-FEB-2010 12:00:00.00  COUNT TIME : 0 04:00:00.00
*  ANALYSIS DATE: 2-MAR-2010 23:22:19.77  SAMPLE ALQT: 135.920 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.139E+01
GROSS GAMMA ERROR  (pCi/GRAM )  : 1.273E+00
GROSS GAMMA MDA    (pCi/GRAM )  : 3.569E+00
GROSS GAMMA DLC    (pCi/GRAM )  : 1.747E+00

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VAX/VMS Nuclide Identification Report Generated 3-MAR-2010 20:50:48.29

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                             *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563004.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 18:50:23.
Sample ID          : G247563004 Sample quantity   : 1.36270E+02 GRAM
Detector name      : GAM18 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:01.89 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity         : 5.00000
Batch ID           : 956157 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	75.02*	419	456	1.03	149.16	143	18	5.83E-02	9.6	1.32E+00
2	2	77.25*	684	456	0.95	153.61	143	18	9.50E-02	6.3	
3	0	87.27	286	494	1.09	173.65	171	7	3.97E-02	14.2	
4	4	90.21	189	316	1.18	179.53	177	12	2.62E-02	15.6	1.67E+00
5	4	93.06*	344	437	1.50	185.22	177	12	4.78E-02	12.0	
6	0	128.83	83	386	1.01	256.73	254	7	1.16E-02	40.5	
7	0	186.22*	312	517	1.35	371.48	366	11	4.34E-02	15.6	
8	0	209.62	131	363	1.16	418.25	414	8	1.82E-02	26.6	
9	0	238.64*	1692	467	1.23	476.27	472	8	2.35E-01	3.3	
10	0	241.70*	302	365	1.66	482.41	480	8	4.19E-02	13.0	
11	0	270.33	221	289	1.31	539.65	534	11	3.07E-02	16.3	
12	0	295.20*	535	284	1.32	589.37	584	11	7.43E-02	7.6	
13	0	300.44	194	272	1.47	599.83	595	12	2.69E-02	18.8	
14	0	327.71	125	224	1.00	654.37	651	9	1.74E-02	23.2	
15	0	338.56*	416	358	1.44	676.05	668	16	5.78E-02	11.4	
16	0	351.85*	994	221	1.32	702.62	698	11	1.38E-01	4.4	
17	0	462.55	163	222	1.72	923.95	917	17	2.26E-02	22.5	
18	0	510.64*	195	192	2.01	1020.11	1013	15	2.71E-02	19.6	
19	0	582.84*	661	191	1.61	1164.47	1156	17	9.18E-02	6.3	
20	0	608.92*	767	208	1.51	1216.63	1208	16	1.06E-01	5.6	
21	0	726.85*	129	133	1.96	1452.43	1446	13	1.79E-02	21.2	
22	0	769.52	186	202	4.35	1537.74	1526	26	2.58E-02	22.1	
23	0	794.13	69	121	1.21	1586.96	1581	13	9.58E-03	34.9	
24	0	807.67	43	107	0.67	1614.03	1605	15	5.97E-03	55.6	
25	0	860.05	90	94	1.76	1718.76	1713	12	1.26E-02	23.8	
26	0	910.70*	517	85	2.03	1820.04	1811	15	7.18E-02	6.0	
27	0	968.62*	272	128	1.48	1935.87	1931	13	3.78E-02	11.0	
28	0	1119.87	175	109	1.64	2238.31	2230	14	2.43E-02	14.7	
29	0	1237.73	95	144	6.23	2473.99	2462	18	1.32E-02	31.3	
30	0	1377.28	62	47	2.69	2753.05	2745	16	8.57E-03	28.1	
31	0	1459.86*	2602	62	2.23	2918.22	2907	23	3.61E-01	2.1	
32	0	1587.20	57	29	0.78	3172.86	3165	18	7.92E-03	25.3	
33	0	1629.91	39	28	0.87	3258.28	3247	19	5.37E-03	36.8	
34	0	1763.83*	118	24	2.09	3526.12	3516	19	1.64E-02	14.1	
35	0	1846.59	18	21	1.25	3691.63	3687	10	2.56E-03	51.2	

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

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563004.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 18:50:23
Sample ID         : G247563004 Sample quantity : 136.27 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA18 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:01.89 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	*	3.551E+01	3.088E+00	4.028E-01	3.057E-02	88.155
CD-109	+	88.03	*	3.385E+00	1.007E+00	1.014E+00	9.375E-02	3.338
SN-126		64.28		-2.467E-01	5.324E-01	8.620E-01	1.274E-01	-0.286
	+	86.94		1.373E+00	6.896E-01	5.336E-01	2.213E-01	2.573
	+	87.57	*	3.303E-01	9.830E-02	1.265E-01	1.166E-02	2.610
TL-208		277.37		-7.308E-02	3.215E-01	5.184E-01	5.561E-02	-0.141
	+	583.19	*	5.442E-01	8.053E-02	4.223E-02	3.305E-03	12.885
	+	860.56		6.837E-01	3.341E-01	3.496E-01	3.910E-02	1.956
BI-211		72.87		3.077E-01	3.354E+00	4.992E+00	4.122E-01	0.062
	+	351.06	*	3.886E+00	4.220E-01	2.713E-01	1.742E-02	14.322
PB-212	+	74.82		2.275E+00	5.267E-01	5.424E-01	6.955E-02	4.195
	+	77.11		2.097E+00	3.197E-01	3.070E-01	2.602E-02	6.830
	+	238.63	*	1.574E+00	1.548E-01	9.275E-02	6.686E-03	16.968
	+	300.09		2.703E+00	1.039E+00	1.001E+00	8.356E-02	2.701
BI-214	+	609.32	*	1.217E+00	1.756E-01	8.589E-02	7.719E-03	14.172
	+	1120.29		1.384E+00	4.288E-01	3.896E-01	3.751E-02	3.552
	+	1764.49		1.253E+00	3.628E-01	2.374E-01	1.443E-02	5.280
PB-214	+	74.82		4.033E+00	9.055E-01	9.614E-01	1.107E-01	4.195
	+	77.11		3.696E+00	6.408E-01	5.412E-01	6.400E-02	6.830
	+	242.00		1.699E+00	4.633E-01	6.395E-01	5.141E-02	2.656
	+	295.22		1.324E+00	2.319E-01	1.687E-01	1.465E-02	7.849
	+	351.93	*	1.410E+00	1.718E-01	9.816E-02	8.308E-03	14.367
RA-224	+	240.99	*	3.003E+00	8.005E-01	1.102E+00	6.141E-02	2.725
RA-226	+	609.32	*	1.217E+00	1.756E-01	8.589E-02	7.719E-03	14.172
	+	1120.29		1.384E+00	4.288E-01	3.896E-01	3.751E-02	3.552
	+	1764.49		1.253E+00	3.628E-01	2.374E-01	1.443E-02	5.280
AC-228	+	338.32		1.823E+00	8.591E-01	3.033E-01	1.250E-01	6.010
	+	911.20	*	1.984E+00	3.583E-01	1.917E-01	2.596E-02	10.351
	+	968.97		1.795E+00	5.967E-01	4.154E-01	1.036E-01	4.322
RA-228	+	338.32		1.823E+00	8.591E-01	3.033E-01	1.250E-01	6.010
	+	911.20	*	1.984E+00	3.583E-01	1.917E-01	2.596E-02	10.351
	+	968.97		1.795E+00	5.967E-01	4.154E-01	1.036E-01	4.322
TH-228	+	74.82		2.275E+00	4.787E-01	5.424E-01	4.575E-02	4.195
	+	77.11		2.097E+00	3.197E-01	3.070E-01	2.602E-02	6.830

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	238.63	*	1.574E+00	1.548E-01	9.275E-02	6.686E-03	16.968
	+	300.09		2.703E+00	1.933E+00	1.001E+00	6.091E-01	2.701
TH-232	+	338.32		1.823E+00	4.297E-01	3.033E-01	1.754E-02	6.010
	+	911.20	*	1.984E+00	3.583E-01	1.917E-01	2.596E-02	10.351
	+	968.97		1.795E+00	5.967E-01	4.154E-01	1.036E-01	4.322
U-235	+	89.96		2.231E+00	8.871E-01	1.029E+00	2.543E-01	2.168
	+	93.35		2.429E+00	8.075E-01	6.365E-01	1.464E-01	3.816
		143.76	*	1.206E-01	1.806E-01	2.873E-01	4.481E-02	0.420
		163.33		4.943E-02	3.491E-01	5.868E-01	9.745E-02	0.084
	+	185.72		1.967E-01	6.231E-02	5.457E-02	2.903E-03	3.605
		205.31		7.122E-01	4.594E-01	6.977E-01	1.176E-01	1.021
NP-237	+	86.48	*	9.855E-01	3.588E-01	3.814E-01	8.722E-02	2.584
		95.86		1.442E-01	8.873E-01	1.300E+00	3.092E-01	0.111
ANH-511	+	511.00	*	1.248E-01	4.970E-02	3.484E-02	2.301E-03	3.582

## ---- 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	*	1.610E-02	2.419E-01	4.005E-01	2.901E-02	0.040
NA-22		1274.54	*	7.011E-03	3.841E-02	6.386E-02	4.345E-03	0.110
NA-24		1368.63	*	-3.030E+00	3.841E-02	Half-Life too short		
SC-46		889.28	*	-1.235E-02	3.230E-02	5.130E-02	5.722E-03	-0.241
	+	1120.55		2.363E-01	7.150E-02	1.056E-01	7.293E-03	2.238
V-48		944.13		-3.819E-01	8.178E-01	1.254E+00	1.327E-01	-0.305
		983.53	*	-7.403E-03	5.912E-02	9.478E-02	9.374E-03	-0.078
		1312.11		1.945E-02	6.816E-02	1.142E-01	8.318E-03	0.170
CR-51		320.08	*	4.313E-01	3.114E-01	5.336E-01	3.430E-02	0.808
MN-54		834.85	*	1.338E-02	3.158E-02	5.317E-02	5.447E-03	0.252
CO-56		846.77	*	-6.959E-03	3.275E-02	5.299E-02	5.531E-03	-0.131
		1037.84		-1.404E-02	2.506E-01	4.179E-01	3.868E-02	-0.034
	+	1238.28		2.110E-01	1.329E-01	1.445E-01	9.635E-03	1.460
		1771.35		-7.856E-02	2.077E-01	2.658E-01	1.607E-02	-0.296
CO-57		122.06	*	2.118E-02	2.209E-02	3.674E-02	2.176E-03	0.576
		136.47		-1.124E-01	1.808E-01	2.802E-01	1.831E-02	-0.401
CO-58		810.76	*	-1.032E-02	3.274E-02	4.469E-02	4.411E-03	-0.231
FE-59		1099.45	*	-9.569E-02	7.384E-02	1.108E-01	9.113E-03	-0.864
		1291.59		7.776E-03	1.058E-01	1.745E-01	1.467E-02	0.045
CO-60		1173.23		-1.811E-02	3.760E-02	6.026E-02	3.330E-03	-0.300
		1332.49	*	-1.380E-02	3.271E-02	5.149E-02	3.891E-03	-0.268
ZN-65		1115.54	*	4.767E-02	9.114E-02	1.355E-01	9.543E-03	0.352
SE-75		121.12		4.394E-02	1.184E-01	1.928E-01	1.769E-02	0.228
		136.00		-3.753E-02	3.517E-02	5.344E-02	3.044E-03	-0.702
		264.66	*	1.832E-02	4.089E-02	6.019E-02	3.444E-03	0.304
		279.54		1.012E-02	9.103E-02	1.489E-01	9.212E-03	0.068
		400.66		8.009E-02	2.060E-01	3.507E-01	3.183E-02	0.228
SR-85		514.00	*	7.319E-02	3.576E-02	5.759E-02	3.815E-03	1.271
Y-88		898.04		-3.232E-02	3.515E-02	5.198E-02	5.891E-03	-0.622
		1836.06	*	1.284E-02	2.785E-02	4.774E-02	2.719E-03	0.269

---- 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	*		1.450E+00	1.880E+01	3.118E+01	1.843E+00	0.046
NB-94	702.65	*		1.855E-02	2.665E-02	4.614E-02	3.786E-03	0.402
	871.09			8.268E-03	2.754E-02	4.602E-02	4.991E-03	0.180
NB-95	765.81	*		8.163E-02	4.146E-02	6.716E-02	6.144E-03	1.215
NB-95M	235.69	*		2.041E-01	1.136E-01	1.783E-01	1.313E-02	1.145
ZR-95	724.19			1.960E-01	9.066E-02	1.485E-01	1.374E-02	1.320
	756.73	*		6.438E-02	5.908E-02	1.038E-01	1.025E-02	0.620
MO-99	140.51			-2.934E+01	2.761E+01	4.017E+01	9.160E+00	-0.730
	181.07			4.213E+00	2.197E+01	3.281E+01	5.748E+00	0.128
	366.42			1.118E+02	9.913E+01	1.756E+02	1.015E+01	0.637
	739.50	*		3.040E+00	1.339E+01	2.254E+01	3.567E+00	0.135
	777.92			3.301E+01	4.256E+01	6.487E+01	6.056E+00	0.509
TC-99M	140.51	*		-9.485E+11	4.256E+01	Half-Life too short		
RU-103	497.08	*		-1.288E-02	3.107E-02	4.973E-02	6.350E-03	-0.259
+	610.33			1.283E+01	2.477E+00	2.316E+00	3.631E-01	5.539
RH-106	621.93	*		-1.083E-01	2.614E-01	4.096E-01	5.109E-02	-0.264
	1050.41			6.120E-01	2.116E+00	3.603E+00	3.079E-01	0.170
RU-106	621.93	*		-1.083E-01	2.612E-01	4.096E-01	3.015E-02	-0.264
	1050.41			6.120E-01	2.116E+00	3.603E+00	3.079E-01	0.170
AG-108M	433.94	*		-1.715E-02	2.238E-02	3.557E-02	2.293E-03	-0.482
	614.28			-2.674E-02	3.413E-02	4.412E-02	3.371E-03	-0.606
	722.91			8.239E-03	3.310E-02	4.850E-02	4.259E-03	0.170
AG-110M	657.76	*		-7.236E-03	2.704E-02	4.468E-02	3.524E-03	-0.162
	677.62			2.858E-01	2.362E-01	4.218E-01	3.424E-02	0.677
	706.68			-1.988E-02	1.747E-01	2.897E-01	2.468E-02	-0.069
	763.94			7.305E-02	1.486E-01	2.207E-01	2.062E-02	0.331
	884.68			6.300E-03	3.945E-02	6.524E-02	7.367E-03	0.097
	937.49			-6.409E-02	9.642E-02	1.492E-01	1.633E-02	-0.430
	1384.29			1.178E-01	1.433E-01	2.212E-01	1.712E-02	0.532
	1505.03			1.250E-01	2.023E-01	3.590E-01	2.577E-02	0.348
SN-113	391.69	*		-1.467E-02	3.518E-02	5.774E-02	3.541E-03	-0.254
CD-115	260.90			-1.002E+01	1.610E+02	2.628E+02	1.484E+01	-0.038
	492.35			-4.994E+00	4.246E+01	6.937E+01	4.491E+00	-0.072
	527.90	*		6.689E+00	1.293E+01	2.179E+01	1.464E+00	0.307
SN-117M	156.02			7.274E-01	2.002E+00	3.434E+00	1.834E-01	0.212
	158.56	*		7.301E-03	4.707E-02	8.016E-02	4.260E-03	0.091
TE-123M	159.00	*		9.841E-04	2.306E-02	3.912E-02	2.111E-03	0.025
SB-124	602.73			-2.787E-02	3.917E-02	5.131E-02	3.711E-03	-0.543
	645.85			-4.354E-02	4.129E-01	6.586E-01	5.323E-02	-0.066
	722.78			6.954E-02	3.362E-01	4.909E-01	4.271E-02	0.142
	1690.97	*		-3.524E-02	5.587E-02	8.351E-02	5.784E-03	-0.422
SB-125	427.87	*		2.680E-02	6.882E-02	1.169E-01	7.293E-03	0.229
+	463.37			9.319E-01	4.253E-01	4.330E-01	3.090E-02	2.152
	600.60			1.487E-01	1.606E-01	2.506E-01	1.997E-02	0.593
	635.95			-2.283E-01	2.305E-01	3.455E-01	2.851E-02	-0.661
TE-125M	109.28	*		3.026E+00	8.788E+00	1.438E+01	1.290E+00	0.210
I-126	388.63			8.111E-02	1.368E-01	2.359E-01	1.356E-02	0.344
	666.33	*		7.681E-03	1.848E-01	3.105E-01	2.387E-02	0.025
	753.82			3.746E-02	1.549E+00	2.573E+00	2.307E-01	0.015

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-126	414.70			1.471E-02	6.379E-02	1.076E-01	6.365E-03	0.137
	666.50			-6.353E-04	6.340E-02	1.063E-01	8.171E-03	-0.006
	695.00			2.312E-02	6.455E-02	1.100E-01	8.905E-03	0.210
	697.00			-1.009E-01	2.274E-01	3.699E-01	3.005E-02	-0.273
	720.70	*		-2.486E-02	1.395E-01	1.969E-01	1.667E-02	-0.126
SB-127	856.80			8.581E-02	5.085E-01	7.262E-01	7.701E-02	0.118
	252.40			2.304E+00	4.353E+00	7.136E+00	2.934E+00	0.323
	473.00			-5.819E-01	1.531E+00	2.470E+00	2.890E-01	-0.236
	685.70	*		1.352E-01	1.215E+00	2.047E+00	2.301E-01	0.066
	783.70			2.454E+00	3.419E+00	5.877E+00	7.779E-01	0.418
I-131	80.19			8.304E-02	5.062E+00	7.462E+00	6.512E-01	0.011
	284.31			-3.087E-01	1.324E+00	2.129E+00	1.356E-01	-0.145
	364.49	*		3.655E-02	9.476E-02	1.627E-01	1.051E-02	0.225
TE-132	636.99			-2.516E-01	1.413E+00	2.246E+00	1.805E-01	-0.112
	49.72			-4.536E+00	3.070E+01	5.153E+01	5.523E+00	-0.088
	111.76			-4.121E+01	3.943E+01	5.995E+01	5.900E+00	-0.687
	116.30			2.539E+01	3.318E+01	5.484E+01	5.292E+00	0.463
BA-133	228.16	*		6.138E-03	7.723E-01	1.250E+00	1.828E-01	0.005
	81.00			-9.414E-02	9.797E-02	1.364E-01	2.125E-02	-0.690
	276.40			2.613E-01	3.073E-01	5.000E-01	6.269E-02	0.523
	302.85			1.075E-01	1.256E-01	1.869E-01	2.127E-02	0.575
	356.01	*		3.889E-02	3.642E-02	5.453E-02	6.144E-03	0.713
I-133	383.85			-1.599E-01	2.232E-01	3.601E-01	3.831E-02	-0.444
	529.87	*		-1.242E-03	2.232E-01	Half-Life	too short	
	875.33			1.591E-01	2.232E-01	Half-Life	too short	
	1298.22			8.906E-02	2.232E-01	Half-Life	too short	
CS-134	563.25			4.258E-02	2.838E-01	4.658E-01	3.291E-02	0.091
	569.33			3.366E-02	1.627E-01	2.633E-01	1.883E-02	0.128
	604.72			7.094E-03	3.296E-02	4.672E-02	3.396E-03	0.152
	795.86	*		9.019E-02	4.484E-02	7.299E-02	7.060E-03	1.236
	801.95			-3.197E-01	4.580E-01	4.973E-01	4.852E-02	-0.643
CS-135	1365.19			3.993E-01	1.028E+00	1.736E+00	1.382E-01	0.230
I-135	268.22	*		1.733E-01	1.489E-01	2.265E-01	1.712E-02	0.765
	546.56			7.285E+10	1.489E-01	Half-Life	too short	
	836.80			7.615E+11	1.489E-01	Half-Life	too short	
	1038.76			8.794E+09	1.489E-01	Half-Life	too short	
	1131.51			3.600E+09	1.489E-01	Half-Life	too short	
	1260.41	*		-2.911E+10	1.489E-01	Half-Life	too short	
	1457.56			3.341E+13	1.489E-01	Half-Life	too short	
	1678.03			-7.979E+09	1.489E-01	Half-Life	too short	
	1791.20			2.034E+11	1.489E-01	Half-Life	too short	
	153.25			3.835E-01	7.543E-01	1.301E+00	1.007E-01	0.295
CS-136	176.60			1.737E-01	4.300E-01	7.334E-01	4.867E-02	0.237
	273.65			-2.051E-02	5.188E-01	7.389E-01	4.982E-02	-0.028
	340.55			6.150E-01	1.559E-01	2.610E-01	1.635E-02	2.356
	818.51			-3.345E-03	5.872E-02	9.631E-02	9.617E-03	-0.035
	1048.07	*		3.972E-02	9.688E-02	1.661E-01	1.488E-02	0.239
BA-137M	1235.36			7.260E-01	5.696E-01	9.918E-01	1.010E-01	0.732
	661.66	*		6.455E-03	2.833E-02	4.813E-02	3.669E-03	0.134

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

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CS-137		661.66	*	6.819E-03	2.993E-02	5.084E-02	3.885E-03	0.134
CE-139		165.86	*	-1.150E-02	2.338E-02	3.879E-02	2.036E-03	-0.297
BA-140		162.66		-4.640E-02	6.907E-01	1.153E+00	7.125E-02	-0.040
		304.85		3.715E-01	1.270E+00	1.824E+00	5.210E-01	0.204
		423.72		8.598E-01	1.607E+00	2.710E+00	8.753E-01	0.317
		537.26	*	-2.043E-01	2.274E-01	3.327E-01	1.114E-01	-0.614
LA-140	+	328.76		7.257E-01	3.394E-01	5.103E-01	3.313E-02	1.422
		487.02		8.927E-02	1.078E-01	1.859E-01	1.326E-02	0.480
		815.77		4.138E-03	2.678E-01	4.213E-01	4.559E-02	0.010
		1596.21	*	8.543E-02	6.715E-02	1.162E-01	7.976E-03	0.735
CE-141		145.44	*	3.679E-02	5.714E-02	9.282E-02	5.300E-03	0.396
CE-143		57.36		5.921E-05	5.714E-02	Half-Life	too short	
		293.27	*	1.214E-03	5.714E-02	Half-Life	too short	
		664.57		1.284E-03	5.714E-02	Half-Life	too short	
		721.93		1.649E-03	5.714E-02	Half-Life	too short	
CE-144		80.12		1.441E-02	2.482E+00	3.657E+00	3.166E-01	0.004
		133.52	*	1.694E-01	1.831E-01	2.870E-01	3.970E-02	0.590
PM-144		476.78		-2.946E-03	4.832E-02	7.941E-02	5.830E-03	-0.037
		618.01		2.902E-02	2.681E-02	4.591E-02	3.496E-03	0.632
		696.49	*	-6.715E-03	2.701E-02	4.446E-02	3.610E-03	-0.151
PR-144		696.51	*	-5.178E-01	2.022E+00	3.327E+00	2.700E-01	-0.156
		1489.16		1.995E+00	9.858E+00	1.632E+01	1.179E+00	0.122
PM-146		453.88	*	-1.482E-02	3.159E-02	5.087E-02	4.444E-03	-0.291
		633.25		7.507E-01	1.138E+00	1.853E+00	7.032E-01	0.405
		735.93		-1.841E-02	1.168E-01	1.921E-01	5.389E-02	-0.096
		747.24		4.505E-02	7.823E-02	1.339E-01	1.973E-02	0.336
ND-147	+	91.11		7.777E-01	2.535E-01	4.812E-01	4.528E-02	1.616
		319.41		3.340E-01	2.973E+00	4.816E+00	2.782E-01	0.069
		531.02	*	1.529E-01	4.703E-01	7.831E-01	1.093E-01	0.195
PM-149		285.90	*	-1.345E+00	1.045E+02	1.698E+02	2.402E+01	-0.008
EU-152		121.78		4.591E-02	6.445E-02	1.062E-01	8.152E-03	0.432
		244.70		1.430E-02	2.972E-01	4.299E-01	2.402E-02	0.033
		344.28	*	-6.682E-02	9.176E-02	1.210E-01	7.887E-03	-0.552
		778.90		1.565E-01	2.270E-01	3.436E-01	3.213E-02	0.455
		964.08		9.381E-01	3.109E-01	5.095E-01	5.218E-02	1.841
		1085.87		-9.622E-02	3.321E-01	5.431E-01	4.207E-02	-0.177
		1112.07		2.621E-01	2.691E-01	4.200E-01	2.990E-02	0.624
		1408.01		1.091E-01	1.548E-01	2.671E-01	1.983E-02	0.408
GD-153		69.67		-2.647E-01	1.948E+00	2.840E+00	2.305E-01	-0.093
		97.43	*	-4.313E-02	8.099E-02	1.217E-01	9.512E-03	-0.355
		103.18		1.676E-02	1.010E-01	1.649E-01	1.189E-02	0.102
EU-154		123.07		-1.280E-02	4.741E-02	7.520E-02	7.102E-03	-0.170
		723.31		1.645E-01	1.520E-01	2.368E-01	2.224E-02	0.695
		873.19		-9.526E-02	2.315E-01	3.674E-01	5.004E-02	-0.259
		996.26		5.921E-02	3.186E-01	5.213E-01	9.383E-02	0.114
		1004.73		-6.883E-02	1.842E-01	2.893E-01	3.557E-02	-0.238
		1274.44	*	3.414E-02	1.082E-01	1.815E-01	1.827E-02	0.188
EU-155	+	86.55		4.007E-01	1.194E-01	1.760E-01	1.621E-02	2.277
		105.31	*	1.217E-02	9.689E-02	1.577E-01	1.127E-02	0.077

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TB-160	+	86.79		1.075E+00	3.198E-01	4.755E-01	4.350E-02	2.260
		197.04		-2.404E-02	4.498E-01	7.497E-01	4.026E-02	-0.032
		215.65		-7.406E-01	5.914E-01	9.292E-01	5.072E-02	-0.797
		298.57		2.403E-01	1.506E-01	1.775E-01	1.020E-02	1.354
		879.36	*	-2.637E-02	1.115E-01	1.792E-01	1.969E-02	-0.147
		962.29		1.132E+00	5.445E-01	8.669E-01	8.906E-02	1.305
		966.15		1.520E+00	3.129E-01	4.986E-01	5.088E-02	3.048
		1177.93		1.826E-01	2.996E-01	5.146E-01	2.873E-02	0.355
		1271.85		-3.905E-01	6.404E-01	1.006E+00	6.797E-02	-0.388
		80.57		-1.195E-01	2.719E-01	3.922E-01	3.408E-02	-0.305
HO-166M		184.41		1.030E-01	3.473E-02	5.685E-02	3.020E-03	1.811
		280.46		-2.754E-02	7.096E-02	1.135E-01	6.472E-03	-0.243
		410.95		2.009E-01	2.008E-01	3.499E-01	2.060E-02	0.574
		711.68	*	-1.194E-02	4.846E-02	7.835E-02	6.531E-03	-0.152
		752.31		-1.286E-01	2.186E-01	3.488E-01	3.118E-02	-0.369
		810.29		-5.952E-03	4.791E-02	6.689E-02	6.586E-03	-0.089
		67.75		-9.800E-03	1.154E-01	1.901E-01	1.528E-02	-0.052
TA-182		100.11		-2.601E-02	1.609E-01	2.599E-01	1.953E-02	-0.100
		152.43		1.849E-01	3.105E-01	5.020E-01	2.700E-02	0.368
		222.11		1.308E-01	2.873E-01	4.840E-01	2.656E-02	0.270
	+	1121.30		6.529E-01	1.976E-01	2.890E-01	1.991E-02	2.260
		1189.05		4.571E-02	2.531E-01	4.233E-01	2.420E-02	0.108
		1221.41	*	-4.453E-02	1.791E-01	2.910E-01	1.780E-02	-0.153
		1231.02		1.587E-01	4.911E-01	7.094E-01	4.425E-02	0.224
IR-192	+	295.96		9.899E-01	1.612E-01	2.396E-01	1.398E-02	4.131
		308.46		-5.535E-02	7.869E-02	1.225E-01	7.135E-03	-0.452
		316.51	*	-1.828E-02	2.865E-02	4.465E-02	2.589E-03	-0.409
		468.07		3.331E-02	5.739E-02	8.605E-02	6.140E-03	0.387
HG-203		70.83		-1.995E-01	1.492E+00	2.173E+00	3.438E-01	-0.092
		72.87		7.796E-02	8.497E-01	1.265E+00	1.939E-01	0.062
	*	279.20		1.093E-02	3.252E-02	5.371E-02	3.238E-03	0.203
BI-207		72.81		-4.150E-03	1.927E-01	2.854E-01	2.356E-02	-0.015
	+	74.97		6.558E-01	1.378E-01	2.210E-01	1.848E-02	2.967
		569.70		9.263E-03	2.522E-02	4.118E-02	2.886E-03	0.225
		1063.66	*	4.475E-02	4.384E-02	7.767E-02	6.411E-03	0.576
		1770.23		-3.949E-02	4.036E-01	5.515E-01	3.336E-02	-0.072
PB-210		46.54	*	7.617E-01	4.602E+00	7.836E+00	6.007E-01	0.097
PB-211		404.85	*	-4.709E-01	6.378E-01	9.605E-01	4.608E-01	-0.490
		427.09		7.419E-01	1.212E+00	2.000E+00	9.171E-01	0.371
		832.01		-5.749E-01	8.811E-01	1.302E+00	6.787E-01	-0.442
BI-212	+	727.33	*	1.591E+00	7.016E-01	9.288E-01	1.154E-01	1.713
		785.37		1.651E+00	2.517E+00	4.239E+00	4.006E-01	0.389
		1620.50		1.676E+00	2.166E+00	3.426E+00	2.317E-01	0.489
RN-219	+	271.23		8.893E-01	2.986E-01	3.865E-01	3.070E-02	2.301
		401.81	*	4.193E-01	3.293E-01	5.751E-01	7.732E-02	0.729
RA-223		81.07		-2.131E-01	2.201E-01	3.088E-01	2.693E-02	-0.690
		83.79		1.938E-01	1.266E-01	1.964E-01	1.750E-02	0.987
		94.87		1.202E+00	4.618E-01	7.345E-01	5.981E-02	1.637
		144.24		6.312E-01	6.076E-01	9.829E-01	6.835E-02	0.642

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AC-227		154.21		1.305E-01	3.247E-01	5.579E-01	3.685E-02	0.234
	+	269.46		6.910E-01	2.291E-01	2.955E-01	1.752E-02	2.339
		323.87	*	-1.561E-01	5.994E-01	8.256E-01	1.330E-01	-0.189
	+	338.28		7.232E+00	1.812E+00	2.010E+00	2.059E-01	3.598
		79.69		7.068E-02	1.229E+00	1.816E+00	3.130E-01	0.039
		235.96		4.748E-01	1.509E-01	2.433E-01	1.938E-02	1.951
		256.23	*	6.043E-02	2.045E-01	3.393E-01	3.437E-02	0.178
	+	299.98		2.973E+00	1.163E+00	1.393E+00	1.526E-01	2.135
		304.50		5.137E-01	1.425E+00	2.062E+00	3.141E-01	0.249
		334.37		-6.130E-01	1.758E+00	2.219E+00	3.154E-01	-0.276
TH-227		79.80		-8.414E-02	1.630E+00	2.396E+00	5.219E-01	-0.035
		235.96		4.748E-01	1.500E-01	2.433E-01	1.749E-02	1.951
		256.23	*	6.043E-02	2.045E-01	3.393E-01	4.050E-02	0.178
	+	299.98		2.973E+00	1.163E+00	1.393E+00	1.526E-01	2.135
		304.50		5.137E-01	1.425E+00	2.062E+00	3.141E-01	0.249
TH-229		334.37		-6.130E-01	1.758E+00	2.219E+00	3.154E-01	-0.276
		85.43		3.470E-01	2.138E-01	3.313E-01	2.994E-02	1.048
	+	88.47		5.092E-01	1.516E-01	2.178E-01	1.995E-02	2.338
		193.51	*	-1.737E-01	4.171E-01	6.864E-01	3.675E-02	-0.253
	+	210.85		1.782E+00	9.534E-01	1.368E+00	7.438E-02	1.303
PA-231		283.69	*	-1.881E-01	1.179E+00	1.902E+00	2.488E-01	-0.099
	+	301.36		1.910E+00	7.435E-01	8.636E-01	8.908E-02	2.212
TH-231		81.07		-2.131E-01	2.201E-01	3.088E-01	2.693E-02	-0.690
		83.79		1.938E-01	1.266E-01	1.964E-01	1.750E-02	0.987
PA-233		94.87		1.202E+00	4.618E-01	7.345E-01	5.981E-02	1.637
		144.24		6.312E-01	6.076E-01	9.829E-01	6.835E-02	0.642
		154.21		1.305E-01	3.247E-01	5.579E-01	3.685E-02	0.234
	+	269.46		6.910E-01	2.291E-01	2.955E-01	1.752E-02	2.339
		323.87	*	-1.561E-01	5.994E-01	8.256E-01	1.330E-01	-0.189
	+	338.28		7.232E+00	1.812E+00	2.010E+00	2.059E-01	3.598
	+	300.13		1.345E+00	5.361E-01	6.306E-01	8.427E-02	2.133
		311.90	*	5.318E-03	5.177E-02	8.399E-02	5.147E-03	0.063
		340.48		2.680E+00	8.738E-01	1.071E+00	2.486E-01	2.502
		94.67		5.757E-01	1.819E-01	2.803E-01	3.390E-02	2.054
PA-234		98.44		5.050E-02	8.741E-02	1.365E-01	7.594E-02	0.370
		111.00		-6.763E-02	1.665E-01	2.609E-01	2.799E-02	-0.259
		131.20		2.223E-02	1.064E-01	1.528E-01	8.696E-03	0.146
		569.50		7.722E-02	2.235E-01	3.646E-01	2.555E-02	0.212
		733.00		1.331E-01	3.346E-01	4.946E-01	1.098E-01	0.269
		880.51		-2.553E-02	2.207E-01	3.580E-01	3.940E-02	-0.071
		883.24		1.291E-01	2.392E-01	3.795E-01	2.565E-01	0.340
		926.50		-2.352E-02	1.404E-01	2.256E-01	5.895E-02	-0.104
		946.00	*	-1.091E-01	2.638E-01	4.050E-01	7.989E-02	-0.269
		949.00		1.562E-01	3.811E-01	6.358E-01	6.678E-02	0.246
PA-234M		766.42		2.354E+01	1.536E+01	1.794E+01	9.118E+00	1.312
		1001.03	*	-1.878E+00	4.158E+00	6.357E+00	6.857E-01	-0.296
TH-234		63.29	*	2.154E-01	1.456E+00	2.412E+00	4.345E-01	0.089
	+	92.59		3.215E+00	1.047E+00	1.242E+00	2.735E-01	2.589
U-238		63.29	*	2.154E-01	1.456E+00	2.412E+00	4.345E-01	0.089

----- 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		3.215E+00	8.174E-01	1.242E+00	1.052E-01	2.589
		99.53		7.116E-02	1.462E-01	2.397E-01	1.817E-02	0.297
		103.37		2.193E-02	9.127E-02	1.493E-01	1.074E-02	0.147
		106.12		6.814E-03	7.729E-02	1.256E-01	8.729E-03	0.054
		117.23	*	-8.849E-02	3.646E-01	5.810E-01	3.588E-02	-0.152
AM-241		228.18		-5.057E-06	1.776E-01	2.873E-01	1.585E-02	0.000
		277.60		-4.324E-02	1.466E-01	2.357E-01	1.343E-02	-0.183
		59.54	*	-5.994E-02	1.668E-01	2.730E-01	2.264E-02	-0.220
CM-247		278.00		-4.289E-01	6.317E-01	9.979E-01	5.685E-02	-0.430
		287.50		-4.622E-01	9.665E-01	1.532E+00	8.766E-02	-0.302
CF-249		402.40	*	3.172E-02	3.025E-02	5.294E-02	3.082E-03	0.599
		252.80		1.489E-01	7.669E-01	1.269E+00	7.126E-02	0.117
		333.37		-1.852E-01	2.605E-01	2.387E-01	1.381E-02	-0.776
CF-251		388.16	*	9.169E-03	3.078E-02	5.235E-02	3.009E-03	0.175
		177.52	*	3.872E-02	1.056E-01	1.799E-01	9.504E-03	0.215
		227.38		-3.439E-02	2.851E-01	4.691E-01	2.586E-02	-0.073
		285.41		4.616E-01	1.720E+00	2.831E+00	1.618E-01	0.163

# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563004      *
* Acquisition date   : 3-MAR-2010 18:50:23 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 02:00:01.89 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID         *
* Sample ID           : G247563004 Analyst initials: MXR1                 *
* Batch Number        : 956157 Sample Quantity : 1.3627E+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	3.551E+01	3.027E+00	4.038E-01	0.000E+00
CD-109	3.385E+00	9.873E-01	1.071E+00	0.000E+00
SN-126	3.303E-01	9.634E-02	1.337E-01	0.000E+00
TL-208	5.442E-01	7.892E-02	4.310E-02	0.000E+00
BI-211	3.886E+00	4.136E-01	2.795E-01	0.000E+00
PB-212	1.574E+00	1.517E-01	9.624E-02	0.000E+00
BI-214	1.217E+00	1.721E-01	8.758E-02	0.000E+00
PB-214	1.410E+00	1.683E-01	1.011E-01	0.000E+00
RA-224	3.003E+00	7.845E-01	1.144E+00	0.000E+00
RA-226	1.217E+00	1.721E-01	8.758E-02	0.000E+00
AC-228	1.984E+00	3.511E-01	1.939E-01	0.000E+00
RA-228	1.984E+00	3.511E-01	1.939E-01	0.000E+00
TH-228	1.574E+00	1.517E-01	9.624E-02	0.000E+00
TH-232	1.984E+00	3.511E-01	1.939E-01	0.000E+00
U-235	1.206E-01	1.770E-01	3.009E-01	0.000E+00
NP-237	9.855E-01	3.516E-01	4.031E-01	0.000E+00
ANH-511	1.248E-01	4.870E-02	3.564E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	1.610E-02	2.370E-01	4.102E-01	0.000E+00 NOT IDENT.
NA-22	7.011E-03	3.764E-02	6.420E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.750E+06	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-1.235E-02	3.165E-02	5.193E-02	0.000E+00 FAIL ABUN
V-48	-7.403E-03	5.794E-02	9.576E-02	0.000E+00 NOT IDENT.
CR-51	4.313E-01	3.052E-01	5.507E-01	0.000E+00 NOT IDENT.
MN-54	1.338E-02	3.094E-02	5.389E-02	0.000E+00 NOT IDENT.
CO-56	-6.959E-03	3.209E-02	5.369E-02	0.000E+00 FAIL ABUN
CO-57	2.118E-02	2.164E-02	3.859E-02	0.000E+00 NOT IDENT.
CO-58	-1.032E-02	3.208E-02	4.532E-02	0.000E+00 NOT IDENT.

FE-59	-9.569E-02	7.236E-02	1.117E-01	0.000E+00	NOT IDENT.
CO-60	-1.380E-02	3.206E-02	5.172E-02	0.000E+00	NOT IDENT.
ZN-65	4.767E-02	8.932E-02	1.366E-01	0.000E+00	NOT IDENT.
SE-75	1.832E-02	4.007E-02	6.234E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	3.504E-02	5.891E-02	0.000E+00	NOT IDENT.
Y-88	1.284E-02	2.729E-02	4.765E-02	0.000E+00	NOT IDENT.
Y-91	1.450E+00	1.842E+01	3.138E+01	0.000E+00	NOT IDENT.
NB-94	1.855E-02	2.612E-02	4.692E-02	0.000E+00	NOT IDENT.
NB-95	0.000E+00	4.063E-02	6.819E-02	0.000E+00	NOT IDENT.
NB-95M	0.000E+00	1.113E-01	1.851E-01	0.000E+00	NOT IDENT.
ZR-95	6.438E-02	5.790E-02	1.054E-01	0.000E+00	NOT IDENT.
MO-99	3.040E+00	1.312E+01	2.290E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	8.948E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-1.288E-02	3.045E-02	5.090E-02	0.000E+00	FAIL ABUN
RH-106	-1.083E-01	2.562E-01	4.175E-01	0.000E+00	NOT IDENT.
RU-106	-1.083E-01	2.560E-01	4.175E-01	0.000E+00	NOT IDENT.
AG-108M	-1.715E-02	2.193E-02	3.651E-02	0.000E+00	NOT IDENT.
AG-110M	-7.236E-03	2.650E-02	4.549E-02	0.000E+00	NOT IDENT.
SN-113	-1.467E-02	3.447E-02	5.936E-02	0.000E+00	NOT IDENT.
CD-115	6.689E+00	1.267E+01	2.228E+01	0.000E+00	NOT IDENT.
SN-117M	7.301E-03	4.612E-02	8.380E-02	0.000E+00	NOT IDENT.
TE-123M	9.841E-04	2.260E-02	4.089E-02	0.000E+00	NOT IDENT.
SB-124	-3.524E-02	5.476E-02	8.349E-02	0.000E+00	NOT IDENT.
SB-125	2.680E-02	6.744E-02	1.199E-01	0.000E+00	FAIL ABUN
TE-125M	3.026E+00	8.612E+00	1.514E+01	0.000E+00	NOT IDENT.
I-126	7.681E-03	1.811E-01	3.161E-01	0.000E+00	NOT IDENT.
SB-126	-2.486E-02	1.367E-01	2.001E-01	0.000E+00	NOT IDENT.
SB-127	1.352E-01	1.191E+00	2.082E+00	0.000E+00	NOT IDENT.
I-131	3.655E-02	9.287E-02	1.675E-01	0.000E+00	NOT IDENT.
TE-132	6.138E-03	7.568E-01	1.298E+00	0.000E+00	NOT IDENT.
BA-133	3.889E-02	3.569E-02	5.617E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	1.174E+04	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	4.395E-02	7.404E-02	0.000E+00	NOT IDENT.
CS-135	1.733E-01	1.459E-01	2.345E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.087E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	3.972E-02	9.494E-02	1.676E-01	0.000E+00	NOT IDENT.
BA-137M	6.455E-03	2.777E-02	4.900E-02	0.000E+00	NOT IDENT.
CS-137	6.819E-03	2.933E-02	5.176E-02	0.000E+00	NOT IDENT.
CE-139	-1.150E-02	2.292E-02	4.051E-02	0.000E+00	NOT IDENT.
BA-140	-2.043E-01	2.229E-01	3.400E-01	0.000E+00	NOT IDENT.
LA-140	8.543E-02	6.581E-02	1.163E-01	0.000E+00	FAIL ABUN
CE-141	3.679E-02	5.600E-02	9.718E-02	0.000E+00	NOT IDENT.
CE-143	0.000E+00	3.498E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	1.694E-01	1.794E-01	3.010E-01	0.000E+00	NOT IDENT.
PM-144	-6.715E-03	2.647E-02	4.522E-02	0.000E+00	NOT IDENT.
PR-144	-5.178E-01	1.981E+00	3.383E+00	0.000E+00	NOT IDENT.
PM-146	-1.482E-02	3.096E-02	5.216E-02	0.000E+00	NOT IDENT.
ND-147	1.529E-01	4.609E-01	8.006E-01	0.000E+00	FAIL ABUN
PM-149	-1.345E+00	1.024E+02	1.756E+02	0.000E+00	NOT IDENT.
EU-152	-6.682E-02	8.992E-02	1.247E-01	0.000E+00	NOT IDENT.
GD-153	-4.313E-02	7.937E-02	1.283E-01	0.000E+00	NOT IDENT.
EU-154	3.414E-02	1.061E-01	1.824E-01	0.000E+00	NOT IDENT.
EU-155	1.217E-02	9.495E-02	1.660E-01	0.000E+00	FAIL ABUN
TB-160	-2.637E-02	1.093E-01	1.815E-01	0.000E+00	FAIL ABUN
HO-166M	-1.194E-02	4.749E-02	7.965E-02	0.000E+00	NOT IDENT.
TA-182	-4.453E-02	1.755E-01	2.927E-01	0.000E+00	FAIL ABUN
IR-192	-1.828E-02	2.808E-02	4.609E-02	0.000E+00	FAIL ABUN
HG-203	1.093E-02	3.187E-02	5.557E-02	0.000E+00	NOT IDENT.
BI-207	4.475E-02	4.296E-02	7.836E-02	0.000E+00	FAIL ABUN
PB-210	7.617E-01	4.510E+00	8.371E+00	0.000E+00	NOT IDENT.
PB-211	-4.709E-01	6.251E-01	9.869E-01	0.000E+00	NOT IDENT.
BI-212	0.000E+00	6.876E-01	9.439E-01	0.000E+00	FAIL ABUN
RN-219	4.193E-01	3.227E-01	5.910E-01	0.000E+00	FAIL ABUN
RA-223	-1.561E-01	5.874E-01	8.519E-01	0.000E+00	FAIL ABUN
AC-227	6.043E-02	2.004E-01	3.516E-01	0.000E+00	FAIL ABUN
TH-227	6.043E-02	2.004E-01	3.516E-01	0.000E+00	FAIL ABUN
TH-229	-1.737E-01	4.087E-01	7.150E-01	0.000E+00	FAIL ABUN
PA-231	-1.881E-01	1.155E+00	1.968E+00	0.000E+00	FAIL ABUN
TH-231	-1.561E-01	5.874E-01	8.519E-01	0.000E+00	FAIL ABUN
PA-233	5.318E-03	5.074E-02	8.672E-02	0.000E+00	FAIL ABUN
PA-234	-1.091E-01	2.585E-01	4.095E-01	0.000E+00	NOT IDENT.
PA-234M	-1.878E+00	4.075E+00	6.420E+00	0.000E+00	NOT IDENT.
TH-234	2.154E-01	1.427E+00	2.563E+00	0.000E+00	FAIL ABUN
U-238	2.154E-01	1.427E+00	2.563E+00	0.000E+00	FAIL ABUN
NP-239	-8.849E-02	3.573E-01	6.106E-01	0.000E+00	NOT IDENT.
AM-241	-5.994E-02	1.634E-01	2.904E-01	0.000E+00	NOT IDENT.
CM-247	3.172E-02	2.965E-02	5.440E-02	0.000E+00	NOT IDENT.
CF-249	9.169E-03	3.016E-02	5.383E-02	0.000E+00	NOT IDENT.

CF-251	3.872E-02	1.035E-01	1.876E-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]G247563004.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 18:50:23.
Sample ID          : G247563004 Sample quantity : 1.36270E+02 GRAM
Detector name      : GAM18 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:01.89 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 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	2602	10.66*	1.894E+00	3.551E+01	3.551E+01	8.70
CD-109	88.03	286	3.70*	6.444E+00	3.303E+00	3.385E+00	29.76
SN-126	64.28	-----	9.60	3.245E+00	-----	Line Not Found	-----
	86.94	286	8.90	6.444E+00	1.373E+00	1.373E+00	50.22
	87.57	286	37.00*	6.444E+00	3.303E-01	3.303E-01	29.76
TL-208	277.37	-----	6.60	6.258E+00	-----	Line Not Found	-----
	583.19	661	85.00*	3.935E+00	5.442E-01	5.442E-01	14.80
	860.56	90	12.50	2.916E+00	6.837E-01	6.837E-01	48.87
BI-211	72.87	-----	1.23	4.622E+00	-----	Line Not Found	-----
	351.06	994	12.92*	5.452E+00	3.886E+00	3.886E+00	10.86
PB-212	74.82	419	10.28	4.939E+00	2.275E+00	2.275E+00	23.15
	77.11	684	17.10	5.253E+00	2.097E+00	2.097E+00	15.25
	238.63	1692	43.60*	6.793E+00	1.574E+00	1.574E+00	9.84
	300.09	194	3.30	5.980E+00	2.703E+00	2.703E+00	38.46
BI-214	609.32	767	45.49*	3.813E+00	1.217E+00	1.217E+00	14.43
	1120.29	175	14.92	2.335E+00	1.384E+00	1.384E+00	30.99
	1764.49	118	15.30	1.695E+00	1.253E+00	1.253E+00	28.95
PB-214	74.82	419	5.80	4.939E+00	4.033E+00	4.033E+00	22.45
	77.11	684	9.70	5.253E+00	3.696E+00	3.696E+00	17.34
	242.00	302	7.25	6.748E+00	1.698E+00	1.699E+00	27.28
	295.22	535	18.42	6.041E+00	1.324E+00	1.324E+00	17.51
	351.93	994	35.60*	5.452E+00	1.410E+00	1.410E+00	12.18
RA-224	240.99	302	4.10*	6.748E+00	3.003E+00	3.003E+00	26.65
RA-226	609.32	767	45.49*	3.813E+00	1.217E+00	1.217E+00	14.43
	1120.29	175	14.92	2.335E+00	1.384E+00	1.384E+00	30.99
	1764.49	118	15.30	1.695E+00	1.253E+00	1.253E+00	28.95
AC-228	338.32	416	11.27	5.578E+00	1.823E+00	1.823E+00	47.14
	911.20	517	25.80*	2.780E+00	1.984E+00	1.984E+00	18.06
	968.97	272	15.80	2.640E+00	1.795E+00	1.795E+00	33.23
RA-228	338.32	416	11.27	5.578E+00	1.823E+00	1.823E+00	47.14
	911.20	517	25.80*	2.780E+00	1.984E+00	1.984E+00	18.06
	968.97	272	15.80	2.640E+00	1.795E+00	1.795E+00	33.23

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	419	10.28	4.939E+00	2.275E+00	2.275E+00	21.04
	77.11	684	17.10	5.253E+00	2.097E+00	2.097E+00	15.25
	238.63	1692	43.60*	6.793E+00	1.574E+00	1.574E+00	9.84
TH-232	300.09	194	3.30	5.980E+00	2.703E+00	2.703E+00	71.52
	338.32	416	11.27	5.578E+00	1.823E+00	1.823E+00	23.58
	911.20	517	25.80*	2.780E+00	1.984E+00	1.984E+00	18.06
U-235	968.97	272	15.80	2.640E+00	1.795E+00	1.795E+00	33.23
	89.96	189	3.47	6.725E+00	2.231E+00	2.231E+00	39.76
	93.35	344	5.60	6.967E+00	2.429E+00	2.429E+00	33.25
	143.76	-----	10.96*	8.222E+00	-----	Line Not Found	-----
	163.33	-----	5.08	8.005E+00	-----	Line Not Found	-----
	185.72	312	57.20	7.644E+00	1.967E-01	1.967E-01	31.67
	205.31	-----	5.01	7.323E+00	-----	Line Not Found	-----
NP-237	86.48	286	12.40*	6.444E+00	9.855E-01	9.855E-01	36.41
	95.86	-----	2.68	7.180E+00	-----	Line Not Found	-----
ANH-511	511.00	195	100.00*	4.311E+00	1.248E-01	1.248E-01	39.82

Flag: "\*" = Keyline

Total number of lines in spectrum 35  
Number of unidentified lines 8  
Number of lines tentatively identified by NID 27 77.14%

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	3.551E+01	3.551E+01	0.309E+01	8.70	
CD-109	461.40D	1.02	3.303E+00	3.385E+00	1.007E+00	29.76	
SN-126	2.30E+05Y	1.00	3.303E-01	3.303E-01	0.983E-01	29.76	
TL-208	1.41E+10Y	1.00	5.442E-01	5.442E-01	0.805E-01	14.80	
BI-211	7.04E+08Y	1.00	3.886E+00	3.886E+00	0.422E+00	10.86	
PB-212	1.41E+10Y	1.00	1.574E+00	1.574E+00	0.155E+00	9.84	
BI-214	1600.00Y	1.00	1.217E+00	1.217E+00	0.176E+00	14.43	
PB-214	1600.00Y	1.00	1.410E+00	1.410E+00	0.172E+00	12.18	
RA-224	1.41E+10Y	1.00	3.003E+00	3.003E+00	0.801E+00	26.65	
RA-226	1600.00Y	1.00	1.217E+00	1.217E+00	0.176E+00	14.43	
AC-228	1.41E+10Y	1.00	1.984E+00	1.984E+00	0.358E+00	18.06	
RA-228	1.41E+10Y	1.00	1.984E+00	1.984E+00	0.358E+00	18.06	
TH-228	1.41E+10Y	1.00	1.574E+00	1.574E+00	0.155E+00	9.84	
TH-232	1.41E+10Y	1.00	1.984E+00	1.984E+00	0.358E+00	18.06	
U-235	7.04E+08Y	1.00	1.967E-01	1.967E-01	0.623E-01	31.67	K
NP-237	2.14E+06Y	1.00	9.855E-01	9.855E-01	3.588E-01	36.41	
ANH-511	1.00E+09Y	1.00	1.248E-01	1.248E-01	0.497E-01	39.82	
Total Activity :			6.082E+01	6.091E+01			

Grand Total Activity : 6.082E+01 6.091E+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	128.83	83	386	1.01	256.73	254	7	1.16E-02	81.0	8.25E+00	
0	209.62	131	363	1.16	418.25	414	8	1.82E-02	53.2	7.25E+00	T
0	270.33	221	289	1.31	539.65	534	11	3.07E-02	32.6	6.35E+00	T
0	327.71	125	224	1.00	654.37	651	9	1.74E-02	46.3	5.69E+00	T
0	462.55	163	222	1.72	923.95	917	17	2.26E-02	45.1	4.60E+00	T
0	726.85	129	133	1.96	1452.43	1446	13	1.79E-02	42.3	3.34E+00	T
0	769.52	186	202	4.35	1537.74	1526	26	2.58E-02	44.3	3.19E+00	
0	794.13	69	121	1.21	1586.96	1581	13	9.58E-03	69.9	3.11E+00	
0	807.67	43	107	0.67	1614.03	1605	15	5.97E-03	****	3.07E+00	
0	1237.73	95	144	6.23	2473.99	2462	18	1.32E-02	62.6	2.15E+00	T
0	1377.28	62	47	2.69	2753.05	2745	16	8.57E-03	56.3	1.98E+00	
0	1587.20	57	29	0.78	3172.86	3165	18	7.92E-03	50.5	1.79E+00	
0	1629.91	39	28	0.87	3258.28	3247	19	5.37E-03	73.6	1.76E+00	
0	1846.59	18	21	1.25	3691.63	3687	10	2.56E-03	****	1.66E+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]G247563004.CNF;1
* Acquisition date   : 3-MAR-2010 18:50:23.  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 02:00:01.89             Half life ratio : 8.00000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 15-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G247563004           Analyst initials: MXR1
* Batch Number       : 956157               Sample Quantity : 1.36270E+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	3.551E+01	3.088E+00	4.028E-01	3.057E-02	88.155
CD-109	3.385E+00	1.007E+00	1.014E+00	9.375E-02	3.338
SN-126	3.303E-01	9.830E-02	1.265E-01	1.166E-02	2.610
TL-208	5.442E-01	8.053E-02	4.223E-02	3.305E-03	12.885
BI-211	3.886E+00	4.220E-01	2.713E-01	1.742E-02	14.322
PB-212	1.574E+00	1.548E-01	9.275E-02	6.686E-03	16.968
BI-214	1.217E+00	1.756E-01	8.589E-02	7.719E-03	14.172
PB-214	1.410E+00	1.718E-01	9.816E-02	8.308E-03	14.367
RA-224	3.003E+00	8.005E-01	1.102E+00	6.141E-02	2.724
RA-226	1.217E+00	1.756E-01	8.589E-02	7.719E-03	14.172
AC-228	1.984E+00	3.583E-01	1.917E-01	2.596E-02	10.351
RA-228	1.984E+00	3.583E-01	1.917E-01	2.596E-02	10.351
TH-228	1.574E+00	1.548E-01	9.275E-02	6.686E-03	16.968
TH-232	1.984E+00	3.583E-01	1.917E-01	2.596E-02	10.351
U-235	1.967E-01	6.231E-02	2.873E-01	4.481E-02	0.685
NP-237	9.855E-01	3.588E-01	3.814E-01	8.722E-02	2.584
ANH-511	1.248E-01	4.970E-02	3.484E-02	2.301E-03	3.582

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	1.610E-02		2.419E-01	4.005E-01	2.901E-02	0.040

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NA-22	7.011E-03		3.841E-02	6.386E-02	4.345E-03	0.110
NA-24	-3.030E+00		1.403E+00	Half-Life too short		
SC-46	-1.235E-02		3.230E-02	5.130E-02	5.722E-03	-0.241
V-48	-7.403E-03		5.912E-02	9.478E-02	9.374E-03	-0.078
CR-51	4.313E-01		3.114E-01	5.336E-01	3.430E-02	0.808
MN-54	1.338E-02		3.158E-02	5.317E-02	5.447E-03	0.252
CO-56	-6.959E-03		3.275E-02	5.299E-02	5.531E-03	-0.131
CO-57	2.118E-02		2.209E-02	3.674E-02	2.176E-03	0.576
CO-58	-1.032E-02		3.274E-02	4.469E-02	4.411E-03	-0.231
FE-59	-9.569E-02		7.384E-02	1.108E-01	9.113E-03	-0.864
CO-60	-1.380E-02		3.271E-02	5.149E-02	3.891E-03	-0.268
ZN-65	4.767E-02		9.114E-02	1.355E-01	9.543E-03	0.352
SE-75	1.832E-02		4.089E-02	6.019E-02	3.444E-03	0.304
SR-85	7.319E-02		3.576E-02	5.759E-02	3.815E-03	1.271
Y-88	1.284E-02		2.785E-02	4.774E-02	2.719E-03	0.269
Y-91	1.450E+00		1.880E+01	3.118E+01	1.843E+00	0.046
NB-94	1.855E-02		2.665E-02	4.614E-02	3.786E-03	0.402
NB-95	8.163E-02		4.146E-02	6.716E-02	6.144E-03	1.215
NB-95M	2.041E-01		1.136E-01	1.783E-01	1.313E-02	1.145
ZR-95	6.438E-02		5.908E-02	1.038E-01	1.025E-02	0.620
MO-99	3.040E+00		1.339E+01	2.254E+01	3.567E+00	0.135
TC-99M	-9.485E+11		4.565E+11	Half-Life too short		
RU-103	-1.288E-02		3.107E-02	4.973E-02	6.350E-03	-0.259
RH-106	-1.083E-01		2.614E-01	4.096E-01	5.109E-02	-0.264
RU-106	-1.083E-01		2.612E-01	4.096E-01	3.015E-02	-0.264
AG-108M	-1.715E-02		2.238E-02	3.557E-02	2.293E-03	-0.482
AG-110M	-7.236E-03		2.704E-02	4.468E-02	3.524E-03	-0.162
SN-113	-1.467E-02		3.518E-02	5.774E-02	3.541E-03	-0.254
CD-115	6.689E+00		1.293E+01	2.179E+01	1.464E+00	0.307
SN-117M	7.301E-03		4.707E-02	8.016E-02	4.260E-03	0.091
TE-123M	9.841E-04		2.306E-02	3.912E-02	2.111E-03	0.025
SB-124	-3.524E-02		5.587E-02	8.351E-02	5.784E-03	-0.422
SB-125	2.680E-02		6.882E-02	1.169E-01	7.293E-03	0.229
TE-125M	3.026E+00		8.788E+00	1.438E+01	1.290E+00	0.210
I-126	7.681E-03		1.848E-01	3.105E-01	2.387E-02	0.025
SB-126	-2.486E-02		1.395E-01	1.969E-01	1.667E-02	-0.126
SB-127	1.352E-01		1.215E+00	2.047E+00	2.301E-01	0.066
I-131	3.655E-02		9.476E-02	1.627E-01	1.051E-02	0.225
TE-132	6.138E-03		7.723E-01	1.250E+00	1.828E-01	0.005
BA-133	3.889E-02		3.642E-02	5.453E-02	6.144E-03	0.713
I-133	-1.242E-03		5.991E-03	Half-Life too short		
CS-134	9.019E-02		4.484E-02	7.299E-02	7.060E-03	1.236
CS-135	1.733E-01		1.489E-01	2.265E-01	1.712E-02	0.765
I-135	-2.911E+10		5.545E+10	Half-Life too short		
CS-136	3.972E-02		9.688E-02	1.661E-01	1.488E-02	0.239
BA-137M	6.455E-03		2.833E-02	4.813E-02	3.669E-03	0.134
CS-137	6.819E-03		2.993E-02	5.084E-02	3.885E-03	0.134
CE-139	-1.150E-02		2.338E-02	3.879E-02	2.036E-03	-0.297

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BA-140	-2.043E-01		2.274E-01	3.327E-01	1.114E-01	-0.614
LA-140	8.543E-02		6.715E-02	1.162E-01	7.976E-03	0.735
CE-141	3.679E-02		5.714E-02	9.282E-02	5.300E-03	0.396
CE-143	1.214E-03		1.785E-04	Half-Life too short		
CE-144	1.694E-01		1.831E-01	2.870E-01	3.970E-02	0.590
PM-144	-6.715E-03		2.701E-02	4.446E-02	3.610E-03	-0.151
PR-144	-5.178E-01		2.022E+00	3.327E+00	2.700E-01	-0.156
PM-146	-1.482E-02		3.159E-02	5.087E-02	4.444E-03	-0.291
ND-147	1.529E-01		4.703E-01	7.831E-01	1.093E-01	0.195
PM-149	-1.345E+00		1.045E+02	1.698E+02	2.402E+01	-0.008
EU-152	-6.682E-02		9.176E-02	1.210E-01	7.887E-03	-0.552
GD-153	-4.313E-02		8.099E-02	1.217E-01	9.512E-03	-0.355
EU-154	3.414E-02		1.082E-01	1.815E-01	1.827E-02	0.188
EU-155	1.217E-02		9.689E-02	1.577E-01	1.127E-02	0.077
TB-160	-2.637E-02		1.115E-01	1.792E-01	1.969E-02	-0.147
HO-166M	-1.194E-02		4.846E-02	7.835E-02	6.531E-03	-0.152
TA-182	-4.453E-02		1.791E-01	2.910E-01	1.780E-02	-0.153
IR-192	-1.828E-02		2.865E-02	4.465E-02	2.589E-03	-0.409
HG-203	1.093E-02		3.252E-02	5.371E-02	3.238E-03	0.203
BI-207	4.475E-02		4.384E-02	7.767E-02	6.411E-03	0.576
PB-210	7.617E-01		4.602E+00	7.836E+00	6.007E-01	0.097
PB-211	-4.709E-01		6.378E-01	9.605E-01	4.608E-01	-0.490
BI-212	1.591E+00	+	7.016E-01	9.288E-01	1.154E-01	1.713
RN-219	4.193E-01		3.293E-01	5.751E-01	7.732E-02	0.729
RA-223	-1.561E-01		5.994E-01	8.256E-01	1.330E-01	-0.189
AC-227	6.043E-02		2.045E-01	3.393E-01	3.437E-02	0.178
TH-227	6.043E-02		2.045E-01	3.393E-01	4.050E-02	0.178
TH-229	-1.737E-01		4.171E-01	6.864E-01	3.675E-02	-0.253
PA-231	-1.881E-01		1.179E+00	1.902E+00	2.488E-01	-0.099
TH-231	-1.561E-01		5.994E-01	8.256E-01	1.330E-01	-0.189
PA-233	5.318E-03		5.177E-02	8.399E-02	5.147E-03	0.063
PA-234	-1.091E-01		2.638E-01	4.050E-01	7.989E-02	-0.269
PA-234M	-1.878E+00		4.158E+00	6.357E+00	6.857E-01	-0.296
TH-234	2.154E-01		1.456E+00	2.412E+00	4.345E-01	0.089
U-238	2.154E-01		1.456E+00	2.412E+00	4.345E-01	0.089
NP-239	-8.849E-02		3.646E-01	5.810E-01	3.588E-02	-0.152
AM-241	-5.994E-02		1.668E-01	2.730E-01	2.264E-02	-0.220
CM-247	3.172E-02		3.025E-02	5.294E-02	3.082E-03	0.599
CF-249	9.169E-03		3.078E-02	5.235E-02	3.009E-03	0.175
CF-251	3.872E-02		1.056E-01	1.799E-01	9.504E-03	0.215

# 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]G247563004            *
* Acquisition date   : 3-MAR-2010 18:50:23 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 02:00:01.89              Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID            *
* Sample ID           : G247563004              Analyst initials: MXR1          *
* Batch Number        : 956157                  Sample Quantity : 1.3627E+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	3.551E+01	3.027E+00	2.020E-01	1.544E+00
CD-109	3.385E+00	9.873E-01	5.360E-01	5.037E-01
SN-126	3.303E-01	9.634E-02	6.688E-02	4.915E-02
TL-208	5.442E-01	7.892E-02	2.156E-02	4.027E-02
BI-211	3.886E+00	4.136E-01	1.398E-01	2.110E-01
PB-212	1.574E+00	1.517E-01	4.815E-02	7.739E-02
BI-214	1.217E+00	1.721E-01	4.382E-02	8.780E-02
PB-214	1.410E+00	1.683E-01	5.059E-02	8.589E-02
RA-224	3.003E+00	7.845E-01	5.722E-01	4.003E-01
RA-226	1.217E+00	1.721E-01	4.382E-02	8.780E-02
AC-228	1.984E+00	3.511E-01	9.703E-02	1.791E-01
RA-228	1.984E+00	3.511E-01	9.703E-02	1.791E-01
TH-228	1.574E+00	1.517E-01	4.815E-02	7.739E-02
TH-232	1.984E+00	3.511E-01	9.703E-02	1.791E-01
U-235	1.206E-01	1.770E-01	1.505E-01	9.029E-02
NP-237	9.855E-01	3.516E-01	2.017E-01	1.794E-01
ANH-511	1.248E-01	4.870E-02	1.783E-02	2.485E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	1.610E-02	2.370E-01	2.052E-01	1.209E-01 NOT IDENT.
NA-22	7.011E-03	3.764E-02	3.212E-02	1.920E-02 NOT IDENT.
NA-24	-3.030E+06	2.750E+06	0.000E+00	1.403E+06 SHORT HLIF
SC-46	-1.235E-02	3.165E-02	2.598E-02	1.615E-02 FAIL ABUN
V-48	-7.403E-03	5.794E-02	4.791E-02	2.956E-02 NOT IDENT.
CR-51	4.313E-01	3.052E-01	2.755E-01	1.557E-01 NOT IDENT.
MN-54	1.338E-02	3.094E-02	2.696E-02	1.579E-02 NOT IDENT.
CO-56	-6.959E-03	3.209E-02	2.686E-02	1.637E-02 FAIL ABUN
CO-57	2.118E-02	2.164E-02	1.931E-02	1.104E-02 NOT IDENT.
CO-58	-1.032E-02	3.208E-02	2.267E-02	1.637E-02 NOT IDENT.

FE-59	-9.569E-02	7.236E-02	5.588E-02	3.692E-02	NOT IDENT.
CO-60	-1.380E-02	3.206E-02	2.588E-02	1.636E-02	NOT IDENT.
ZN-65	4.767E-02	8.932E-02	6.832E-02	4.557E-02	NOT IDENT.
SE-75	1.832E-02	4.007E-02	3.119E-02	2.044E-02	NOT IDENT.
SR-85	7.319E-02	3.504E-02	2.947E-02	1.788E-02	NOT IDENT.
Y-88	1.284E-02	2.729E-02	2.384E-02	1.392E-02	NOT IDENT.
Y-91	1.450E+00	1.842E+01	1.570E+01	9.399E+00	NOT IDENT.
NB-94	1.855E-02	2.612E-02	2.348E-02	1.333E-02	NOT IDENT.
NB-95	8.163E-02	4.063E-02	3.411E-02	2.073E-02	NOT IDENT.
NB-95M	2.041E-01	1.113E-01	9.259E-02	5.679E-02	NOT IDENT.
ZR-95	6.438E-02	5.790E-02	5.272E-02	2.954E-02	NOT IDENT.
MO-99	3.040E+00	1.312E+01	1.146E+01	6.694E+00	NOT IDENT.
TC-99M	-9.485E+17	8.948E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-1.288E-02	3.045E-02	2.546E-02	1.553E-02	FAIL ABUN
RH-106	-1.083E-01	2.562E-01	2.089E-01	1.307E-01	NOT IDENT.
RU-106	-1.083E-01	2.560E-01	2.089E-01	1.306E-01	NOT IDENT.
AG-108M	-1.715E-02	2.193E-02	1.826E-02	1.119E-02	NOT IDENT.
AG-110M	-7.236E-03	2.650E-02	2.276E-02	1.352E-02	NOT IDENT.
SN-113	-1.467E-02	3.447E-02	2.970E-02	1.759E-02	NOT IDENT.
CD-115	6.689E+00	1.267E+01	1.114E+01	6.466E+00	NOT IDENT.
SN-117M	7.301E-03	4.612E-02	4.192E-02	2.353E-02	NOT IDENT.
TE-123M	9.841E-04	2.260E-02	2.046E-02	1.153E-02	NOT IDENT.
SB-124	-3.524E-02	5.476E-02	4.177E-02	2.794E-02	NOT IDENT.
SB-125	2.680E-02	6.744E-02	6.001E-02	3.441E-02	FAIL ABUN
TE-125M	3.026E+00	8.612E+00	7.572E+00	4.394E+00	NOT IDENT.
I-126	7.681E-03	1.811E-01	1.581E-01	9.238E-02	NOT IDENT.
SB-126	-2.486E-02	1.367E-01	1.001E-01	6.974E-02	NOT IDENT.
SB-127	1.352E-01	1.191E+00	1.042E+00	6.077E-01	NOT IDENT.
I-131	3.655E-02	9.287E-02	8.378E-02	4.738E-02	NOT IDENT.
TE-132	6.138E-03	7.568E-01	6.494E-01	3.861E-01	NOT IDENT.
BA-133	3.889E-02	3.569E-02	2.810E-02	1.821E-02	NOT IDENT.
I-133	-1.242E+03	1.174E+04	0.000E+00	5.991E+03	SHORT HLIF
CS-134	9.019E-02	4.395E-02	3.704E-02	2.242E-02	NOT IDENT.
CS-135	1.733E-01	1.459E-01	1.173E-01	7.444E-02	NOT IDENT.
I-135	-2.911E+16	1.087E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	3.972E-02	9.494E-02	8.384E-02	4.844E-02	NOT IDENT.
BA-137M	6.455E-03	2.777E-02	2.451E-02	1.417E-02	NOT IDENT.
CS-137	6.819E-03	2.933E-02	2.590E-02	1.497E-02	NOT IDENT.
CE-139	-1.150E-02	2.292E-02	2.027E-02	1.169E-02	NOT IDENT.
BA-140	-2.043E-01	2.229E-01	1.701E-01	1.137E-01	NOT IDENT.
LA-140	8.543E-02	6.581E-02	5.821E-02	3.358E-02	FAIL ABUN
CE-141	3.679E-02	5.600E-02	4.862E-02	2.857E-02	NOT IDENT.
CE-143	1.214E+03	3.498E+02	0.000E+00	1.785E+02	SHORT HLIF
CE-144	1.694E-01	1.794E-01	1.506E-01	9.153E-02	NOT IDENT.
PM-144	-6.715E-03	2.647E-02	2.262E-02	1.351E-02	NOT IDENT.
PR-144	-5.178E-01	1.981E+00	1.693E+00	1.011E+00	NOT IDENT.
PM-146	-1.482E-02	3.096E-02	2.610E-02	1.579E-02	NOT IDENT.
ND-147	1.529E-01	4.609E-01	4.005E-01	2.352E-01	FAIL ABUN
PM-149	-1.345E+00	1.024E+02	8.785E+01	5.227E+01	NOT IDENT.
EU-152	-6.682E-02	8.992E-02	6.237E-02	4.588E-02	NOT IDENT.
GD-153	-4.313E-02	7.937E-02	6.418E-02	4.050E-02	NOT IDENT.
EU-154	3.414E-02	1.061E-01	9.128E-02	5.411E-02	NOT IDENT.
EU-155	1.217E-02	9.495E-02	8.307E-02	4.844E-02	FAIL ABUN
TB-160	-2.637E-02	1.093E-01	9.078E-02	5.575E-02	FAIL ABUN
HO-166M	-1.194E-02	4.749E-02	3.985E-02	2.423E-02	NOT IDENT.
TA-182	-4.453E-02	1.755E-01	1.465E-01	8.953E-02	FAIL ABUN
IR-192	-1.828E-02	2.808E-02	2.306E-02	1.433E-02	FAIL ABUN
HG-203	1.093E-02	3.187E-02	2.780E-02	1.626E-02	NOT IDENT.
BI-207	4.475E-02	4.296E-02	3.920E-02	2.192E-02	FAIL ABUN
PB-210	7.617E-01	4.510E+00	4.188E+00	2.301E+00	NOT IDENT.
PB-211	-4.709E-01	6.251E-01	4.938E-01	3.189E-01	NOT IDENT.
BI-212	1.591E+00	6.876E-01	4.722E-01	3.508E-01	FAIL ABUN
RN-219	4.193E-01	3.227E-01	2.957E-01	1.646E-01	FAIL ABUN
RA-223	-1.561E-01	5.874E-01	4.262E-01	2.997E-01	FAIL ABUN
AC-227	6.043E-02	2.004E-01	1.759E-01	1.022E-01	FAIL ABUN
TH-227	6.043E-02	2.004E-01	1.759E-01	1.023E-01	FAIL ABUN
TH-229	-1.737E-01	4.087E-01	3.577E-01	2.085E-01	FAIL ABUN
PA-231	-1.881E-01	1.155E+00	9.845E-01	5.895E-01	FAIL ABUN
TH-231	-1.561E-01	5.874E-01	4.262E-01	2.997E-01	FAIL ABUN
PA-233	5.318E-03	5.074E-02	4.339E-02	2.589E-02	FAIL ABUN
PA-234	-1.091E-01	2.585E-01	2.049E-01	1.319E-01	NOT IDENT.
PA-234M	-1.878E+00	4.075E+00	3.212E+00	2.079E+00	NOT IDENT.
TH-234	2.154E-01	1.427E+00	1.282E+00	7.282E-01	FAIL ABUN
U-238	2.154E-01	1.427E+00	1.282E+00	7.282E-01	FAIL ABUN
NP-239	-8.849E-02	3.573E-01	3.055E-01	1.823E-01	NOT IDENT.
AM-241	-5.994E-02	1.634E-01	1.453E-01	8.338E-02	NOT IDENT.
CM-247	3.172E-02	2.965E-02	2.722E-02	1.513E-02	NOT IDENT.
CF-249	9.169E-03	3.016E-02	2.693E-02	1.539E-02	NOT IDENT.

CF-251

3.872E-02

1.035E-01

9.387E-02

5.280E-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	305.7364
49.72	333.9690
57.36	0.0000
59.54	364.1551
63.29	427.3718
63.29	427.3718
64.28	442.9883
67.75	428.8867
69.67	447.8860
70.83	449.5062
72.81	484.3448
72.87	484.4335
72.87	484.4335
74.82	456.9525
74.82	456.9525
74.82	456.9525
74.97	457.1568
77.11	460.0499
77.11	460.0499
77.11	460.0499
79.69	431.7277
79.80	440.7977
80.12	441.1997
80.19	441.2855
80.57	464.1486
81.00	499.0786
81.07	499.1780
81.07	499.1780
83.79	423.1551
83.79	423.1551
85.43	449.2546
86.48	552.1624
86.55	552.2679
86.79	564.7633
86.94	564.9932
87.57	559.8585
88.03	347.2933
88.47	347.6969
89.96	349.0589
91.11	417.6663
92.59	419.2579
92.59	419.2579
93.35	378.3713
94.67	361.0405
94.87	361.2218
94.87	361.2218
95.86	371.4409
97.43	393.1694
98.44	356.6049
99.53	346.0510
100.11	382.1317
103.18	380.7202
103.37	376.6705
105.31	390.0417
106.12	395.0211
109.28	365.7929
111.00	382.2408
111.76	411.9264
116.30	347.6033
117.23	387.4828
121.12	350.0810
121.78	337.3755
122.06	319.9789
123.07	394.4759
131.20	389.7937
133.52	334.8545
136.00	393.4399

136.47	376.8201
140.51	415.0542
140.51	0.0000
143.76	359.0566
144.24	353.6310
144.24	353.6310
145.44	373.9695
152.43	367.0161
153.25	376.2959
154.21	384.8150
154.21	384.8150
156.02	378.1101
158.56	352.3822
159.00	351.7602
162.66	334.3701
163.33	329.4042
165.86	340.6187
176.60	336.5348
177.52	338.8421
181.07	360.4927
184.41	394.7373
185.72	347.7396
193.51	336.8483
197.04	337.6373
205.31	297.5817
210.85	258.5564
215.65	332.0341
222.11	303.8253
227.38	306.8874
228.16	291.5408
228.18	291.5476
235.69	286.0339
235.96	309.8437
235.96	309.8437
238.63	459.9644
238.63	459.9644
240.99	568.6746
242.00	595.6562
244.70	289.2222
252.40	247.9538
252.80	257.1478
256.23	257.1723
256.23	257.1723
260.90	259.5875
264.66	238.8291
268.22	261.1466
269.46	277.5435
269.46	277.5435
271.23	309.8190
273.65	294.1302
276.40	262.8236
277.37	290.3607
277.60	290.4333
278.00	307.1650
279.20	263.9258
279.54	266.1016
280.46	279.8978
283.69	250.5945
284.31	245.5387
285.41	224.9075
285.90	230.2588
287.50	235.8936
293.27	0.0000
295.22	214.7776
295.96	249.6409
298.57	250.3179
299.98	237.9351
299.98	237.9351
300.09	237.9624
300.09	237.9624
300.13	237.9692
301.36	238.2700
302.85	209.6586
304.50	204.8877
304.50	204.8877
304.85	208.3770
308.46	235.7104
311.90	213.9456

316.51	233.2870
319.41	223.1216
320.08	190.7517
323.87	229.7496
323.87	229.7496
328.76	257.0634
333.37	289.8054
334.37	243.9304
334.37	243.9304
338.28	221.6656
338.28	221.6656
338.32	221.6748
338.32	221.6748
338.32	221.6748
340.48	187.4228
340.55	187.4332
344.28	227.1156
351.06	223.1720
351.93	221.1125
356.01	156.0201
364.49	168.0403
366.42	157.4645
383.85	194.7440
388.16	180.6971
388.63	174.3128
391.69	199.7209
400.66	191.8802
401.81	171.5488
402.40	181.8913
404.85	233.6548
410.95	189.7178
414.70	181.8045
423.72	158.4278
427.09	154.0859
427.87	155.1286
433.94	172.1052
453.88	159.1593
463.37	170.0323
468.07	135.6349
473.00	155.4618
476.78	143.0512
477.60	139.1859
487.02	119.2354
492.35	146.5998
497.08	149.0746
511.00	137.3456
514.00	150.0979
527.90	132.7454
529.87	0.0000
531.02	133.0120
537.26	148.9542
546.56	0.0000
563.25	139.9017
569.33	141.4698
569.50	138.3390
569.70	138.3583
583.19	121.5165
600.60	138.7756
602.73	187.0441
604.72	171.2070
609.32	135.1824
609.32	135.1824
610.33	128.8213
614.28	170.3552
618.01	127.2274
621.93	148.0409
621.93	148.0409
633.25	109.8301
635.95	157.9105
636.99	134.0298
645.85	136.8713
657.76	136.8380
661.66	138.9635
661.66	138.9635
664.57	0.0000
666.33	139.3076
666.50	139.3199
677.62	100.2305

685.70	114.6318
695.00	128.2926
696.49	141.5103
696.51	141.5133
697.00	148.1089
702.65	128.7943
706.68	148.8386
711.68	131.2683
720.70	130.0977
721.93	0.0000
722.78	123.7226
722.91	123.7306
723.31	113.9844
724.19	118.9203
727.33	130.5246
733.00	112.8927
735.93	128.0732
739.50	123.5069
747.24	115.3198
752.31	132.9407
753.82	126.2879
756.73	108.1217
763.94	124.5431
765.81	118.0048
766.42	118.3166
777.92	96.9465
778.90	96.9910
783.70	110.4734
785.37	109.9359
795.86	102.8056
801.95	121.2558
810.29	86.5125
810.76	91.6222
815.77	91.6574
818.51	94.3506
832.01	136.8774
834.85	129.0446
836.80	0.0000
846.77	117.6475
856.80	129.8401
860.56	98.8375
871.09	98.5531
873.19	112.8766
875.33	0.0000
879.36	101.9531
880.51	98.9419
883.24	86.8002
884.68	97.0700
889.28	109.5405
898.04	111.9916
911.20	115.1034
911.20	115.1034
911.20	115.1034
926.50	99.7773
937.49	127.3539
944.13	117.2204
946.00	115.2122
949.00	105.9111
962.29	97.5737
964.08	95.8333
966.15	152.0098
968.97	182.8199
968.97	182.8199
968.97	182.8199
983.53	93.5125
996.26	115.3169
1001.03	126.2200
1004.73	117.8239
1037.84	100.3648
1038.76	0.0000
1048.07	105.4015
1050.41	101.7541
1050.41	101.7541
1063.66	91.9194
1085.87	116.2691
1099.45	116.8140
1112.07	80.1211
1115.54	123.6646

1120.29	112.1465
1120.29	112.1465
1120.55	112.1588
1121.30	115.5363
1131.51	0.0000
1173.23	124.5938
1177.93	104.3131
1189.05	110.5565
1204.77	128.8115
1221.41	154.1991
1231.02	140.5338
1235.36	150.9026
1238.28	132.1604
1260.41	0.0000
1271.85	115.4532
1274.44	98.4614
1274.54	101.4791
1291.59	87.8617
1298.22	0.0000
1312.11	71.1230
1332.49	75.6363
1365.19	55.7139
1368.63	0.0000
1384.29	45.3827
1408.01	56.3862
1457.56	0.0000
1460.82	40.2517
1489.16	37.3535
1505.03	34.6965
1596.21	18.7666
1620.50	32.6088
1678.03	0.0000
1690.97	28.4716
1764.49	23.0773
1764.49	23.0773
1770.23	26.6618
1771.35	28.4470
1791.20	0.0000
1836.06	23.8068

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247563004

Total Uranium Activity	6.9665E-01	ug/g
Total Uranium Counting Unc.	4.2468E+00	ug/g
Total Uranium Tpu	2.1667E-06	ug/g
Total Uranium Mda	3.8155E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 956157          SAMPLE ID   : G247563004
*  ANALYST       : MXR1            DETECTOR    : GAM18
*  SAMPLE DATE   : 15-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 3-MAR-2010 18:50:23.21  SAMPLE ALQT: 136.270 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.018E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.229E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 2.842E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.384E+00

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VAX/VMS Nuclide Identification Report Generated 3-MAR-2010 20:51:31.77

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                   *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563005.CNF;1
Sample date       : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 18:50:51.
Sample ID        : G247563005 Sample quantity : 1.20850E+02 GRAM
Detector name    : GAM22 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:02.36 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity : 5.00000
Batch ID        : 956157 Detector SN# :
Matrix Spike ID : LCS ID : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	62.93*	131	681	1.13	126.11	122	9	1.82E-02	38.1	
2	2	74.78	537	607	1.22	149.79	144	15	7.45E-02	8.9	2.60E+00
3	2	77.09*	919	534	1.00	154.40	144	15	1.28E-01	5.4	
4	5	87.14	302	517	0.97	174.48	171	25	4.20E-02	12.8	2.92E+00
5	5	89.93	290	709	1.53	180.05	171	25	4.03E-02	17.7	
6	5	92.74*	331	544	1.35	185.67	171	25	4.60E-02	14.9	
7	0	185.95*	230	486	1.36	371.92	368	9	3.20E-02	19.4	
8	0	209.22*	143	509	1.12	418.41	414	10	1.98E-02	31.2	
9	3	238.66*	1980	277	1.30	477.24	470	20	2.75E-01	2.8	3.25E+00
10	3	241.69*	502	376	1.89	483.29	470	20	6.98E-02	10.6	
11	0	270.22	173	357	1.19	540.31	534	11	2.40E-02	22.5	
12	0	277.59	70	297	1.10	555.03	550	9	9.74E-03	46.2	
13	0	295.24*	607	285	1.36	590.30	586	9	8.44E-02	6.5	
14	0	300.00	122	270	1.61	599.81	596	9	1.70E-02	26.0	
15	0	327.63	115	334	1.21	655.03	649	12	1.60E-02	33.1	
16	0	338.56*	386	389	1.35	676.87	671	14	5.36E-02	12.2	
17	0	351.95*	950	317	1.29	703.62	698	12	1.32E-01	5.1	
18	0	409.66	90	182	1.58	818.96	813	11	1.25E-02	31.0	
19	0	463.76	113	198	1.52	927.09	922	12	1.57E-02	26.8	
20	0	510.77*	210	261	2.53	1021.04	1012	19	2.92E-02	22.0	
21	0	583.26*	598	227	1.84	1165.93	1159	17	8.31E-02	7.3	
22	0	609.44*	721	279	1.64	1218.27	1211	16	1.00E-01	6.5	
23	0	727.42*	185	96	1.98	1454.10	1448	13	2.57E-02	13.6	
24	0	769.97	111	246	4.97	1539.17	1529	23	1.55E-02	37.8	
25	0	860.42	141	93	2.58	1719.99	1712	16	1.95E-02	17.7	
26	0	911.30*	455	155	2.12	1821.72	1813	21	6.33E-02	8.4	
27	0	969.36*	183	231	1.80	1937.80	1930	14	2.54E-02	19.5	
28	0	1120.44*	211	145	1.91	2239.90	2230	20	2.93E-02	15.8	
29	0	1238.54*	69	90	1.10	2476.09	2469	13	9.60E-03	32.1	
30	0	1378.83	57	85	1.26	2756.67	2744	24	7.95E-03	44.4	
31	0	1460.79*	2758	34	2.63	2920.62	2908	21	3.83E-01	2.0	
32	0	1620.31	20	20	1.36	3239.72	3232	13	2.71E-03	51.9	
33	0	1729.44*	51	13	2.10	3458.04	3450	18	7.11E-03	23.0	
34	0	1764.94*	167	43	3.25	3529.08	3516	26	2.32E-02	14.1	
35	0	1848.30	36	15	2.02	3695.88	3686	19	4.99E-03	28.0	

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

VMS Nuclide Identification Report V3.1 Generated 3-MAR-2010 20:51:34

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563005.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 18:50:51
Sample ID         : G247563005 Sample quantity : 120.85 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA22 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:02.36 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00
    
```

Full Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	+	1460.82	*	4.210E+01	4.205E+00	4.988E-01	4.569E-02	84.410
CD-109	+	88.03	*	3.477E+00	9.471E-01	1.282E+00	1.217E-01	2.712
SN-126	+	64.28		9.915E-01	7.683E-01	7.264E-01	1.055E-01	1.365
	+	86.94		1.411E+00	6.878E-01	5.253E-01	2.181E-01	2.685
	+	87.57	*	3.393E-01	9.241E-02	1.256E-01	1.186E-02	2.701
TL-208	+	277.37		5.340E-01	5.016E-01	6.184E-01	1.029E-01	0.864
	+	583.19	*	5.563E-01	1.010E-01	5.221E-02	5.656E-03	10.655
	+	860.56		1.195E+00	4.450E-01	3.953E-01	4.606E-02	3.023
BI-211		72.87		5.877E+00	3.329E+00	5.167E+00	4.135E-01	1.137
	+	351.06	*	4.229E+00	6.527E-01	3.596E-01	4.196E-02	11.761
BI-212	+	727.33	*	2.582E+00	7.890E-01	7.215E-01	1.015E-01	3.578
		785.37		3.594E+00	3.191E+00	5.455E+00	5.996E-01	0.659
	+	1620.50		2.303E+00	2.398E+00	3.476E+00	3.031E-01	0.662
PB-212	+	74.82		2.631E+00	5.753E-01	5.287E-01	6.714E-02	4.976
	+	77.11		2.586E+00	3.526E-01	3.045E-01	2.547E-02	8.491
	+	238.63	*	2.103E+00	3.017E-01	9.440E-02	1.251E-02	22.274
	+	300.09		1.947E+00	1.050E+00	1.289E+00	1.891E-01	1.510
BI-214	+	609.32	*	1.292E+00	2.262E-01	1.181E-01	1.378E-02	10.944
	+	1120.29		1.875E+00	6.280E-01	4.569E-01	5.070E-02	4.105
	+	1764.49		1.979E+00	5.828E-01	2.893E-01	2.411E-02	6.838
PB-214	+	74.82		4.663E+00	9.853E-01	9.371E-01	1.067E-01	4.976
	+	77.11		4.558E+00	7.265E-01	5.368E-01	6.305E-02	8.491
	+	242.00		3.229E+00	8.145E-01	5.733E-01	7.928E-02	5.632
	+	295.22		1.716E+00	3.416E-01	2.254E-01	3.381E-02	7.611
	+	351.93	*	1.535E+00	2.516E-01	1.197E-01	1.541E-02	12.823
RA-224	+	240.99	*	5.709E+00	1.402E+00	1.011E+00	1.265E-01	5.649
RA-226	+	609.32	*	1.292E+00	2.262E-01	1.181E-01	1.378E-02	10.944
	+	1120.29		1.875E+00	6.280E-01	4.569E-01	5.070E-02	4.105
	+	1764.49		1.979E+00	5.828E-01	2.893E-01	2.411E-02	6.838
AC-228	+	338.32		1.927E+00	9.439E-01	3.629E-01	1.543E-01	5.311
	+	911.20	*	1.967E+00	4.241E-01	2.311E-01	3.130E-02	8.511
	+	968.97		1.360E+00	6.300E-01	4.650E-01	1.169E-01	2.925
RA-228	+	338.32		1.927E+00	9.439E-01	3.629E-01	1.543E-01	5.311
	+	911.20	*	1.967E+00	4.241E-01	2.311E-01	3.130E-02	8.511

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	968.97		1.360E+00	6.300E-01	4.650E-01	1.169E-01	2.925
	+	74.82		2.631E+00	5.161E-01	5.287E-01	4.360E-02	4.976
	+	77.11		2.586E+00	3.526E-01	3.045E-01	2.547E-02	8.491
	+	238.63	*	2.103E+00	3.017E-01	9.440E-02	1.251E-02	22.274
TH-232	+	300.09		1.947E+00	1.575E+00	1.289E+00	8.002E-01	1.510
	+	338.32		1.927E+00	5.216E-01	3.629E-01	4.316E-02	5.311
	+	911.20	*	1.967E+00	4.241E-01	2.311E-01	3.130E-02	8.511
	+	968.97		1.360E+00	6.300E-01	4.650E-01	1.169E-01	2.925
TH-234	+	63.29	*	2.572E+00	2.011E+00	1.951E+00	3.472E-01	1.318
	+	92.59		3.090E+00	1.149E+00	1.058E+00	2.357E-01	2.920
U-235	+	89.96		3.383E+00	1.464E+00	1.314E+00	3.266E-01	2.575
	+	93.35		2.334E+00	8.820E-01	7.957E-01	1.851E-01	2.934
		143.76	*	9.226E-02	2.177E-01	3.582E-01	6.123E-02	0.258
		163.33		2.246E-01	4.606E-01	7.618E-01	1.409E-01	0.295
NP-237	+	185.72		1.643E-01	6.614E-02	7.117E-02	7.452E-03	2.309
		205.31		-9.495E-02	5.738E-01	8.185E-01	1.595E-01	-0.116
	+	86.48	*	1.012E+00	3.480E-01	4.096E-01	9.399E-02	2.471
		95.86		-2.023E+00	1.075E+00	1.435E+00	3.457E-01	-1.410
U-238	+	63.29	*	2.572E+00	2.011E+00	1.951E+00	3.472E-01	1.318
	+	92.59		3.090E+00	9.618E-01	1.058E+00	9.626E-02	2.920
ANH-511	+	511.00	*	1.517E-01	6.846E-02	4.576E-02	4.585E-03	3.315

---- 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	*	5.021E-02	3.209E-01	5.228E-01	5.455E-02	0.096
NA-22		1274.54	*	-2.416E-02	4.648E-02	7.432E-02	6.405E-03	-0.325
NA-24		1368.63	*	6.171E-01	4.648E-02	Half-Life too short		
SC-46		889.28	*	6.239E-03	3.858E-02	6.463E-02	7.234E-03	0.097
	+	1120.55		3.203E-01	1.051E-01	1.265E-01	1.119E-02	2.531
V-48		944.13		-8.671E-01	9.654E-01	1.495E+00	1.621E-01	-0.580
		983.53	*	2.907E-02	7.562E-02	1.271E-01	1.333E-02	0.229
		1312.11		4.568E-02	8.645E-02	1.478E-01	1.302E-02	0.309
CR-51		320.08	*	-1.107E-01	4.083E-01	6.366E-01	8.239E-02	-0.174
MN-54		834.85	*	2.052E-03	3.824E-02	6.400E-02	7.109E-03	0.032
CO-56		846.77	*	-1.071E-03	4.074E-02	6.778E-02	7.545E-03	-0.016
		1037.84		-2.679E-02	2.964E-01	4.812E-01	4.958E-02	-0.056
	+	1238.28		1.720E-01	1.113E-01	1.585E-01	1.374E-02	1.085
CO-57		1771.35		6.386E-02	2.336E-01	3.435E-01	2.854E-02	0.186
		122.06	*	2.443E-03	2.677E-02	4.258E-02	3.511E-03	0.057
		136.47		-1.145E-02	2.049E-01	3.459E-01	3.206E-02	-0.033
CO-58		810.76	*	-3.741E-02	3.655E-02	5.680E-02	6.289E-03	-0.659
FE-59		1099.45	*	-3.217E-02	9.357E-02	1.484E-01	1.454E-02	-0.217
		1291.59		5.984E-02	1.319E-01	2.243E-01	2.210E-02	0.267
CO-60		1173.23		-2.072E-02	4.498E-02	7.296E-02	5.867E-03	-0.284
		1332.49	*	-1.168E-03	3.911E-02	6.429E-02	5.733E-03	-0.018
ZN-65		1115.54	*	8.832E-02	1.117E-01	1.642E-01	1.465E-02	0.538
SE-75		121.12		5.600E-02	1.417E-01	2.279E-01	2.461E-02	0.246

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		136.00		1.215E-02	3.943E-02	6.729E-02	5.841E-03	0.181
		264.66	*	-3.697E-02	5.508E-02	7.386E-02	9.941E-03	-0.501
		279.54		8.490E-02	1.303E-01	1.880E-01	2.670E-02	0.452
		400.66		5.131E-02	2.593E-01	4.294E-01	5.014E-02	0.119
SR-85		514.00	*	1.284E-01	4.822E-02	7.575E-02	7.600E-03	1.695
Y-88		898.04		-4.299E-02	4.168E-02	6.410E-02	7.202E-03	-0.671
		1836.06	*	-1.931E-02	3.315E-02	4.584E-02	3.706E-03	-0.421
Y-91		1204.77	*	6.924E+00	2.316E+01	3.916E+01	3.219E+00	0.177
NB-94		702.65	*	-1.377E-02	3.345E-02	5.328E-02	5.710E-03	-0.258
		871.09		5.618E-03	3.246E-02	5.453E-02	6.092E-03	0.103
NB-95		765.81	*	1.064E-01	5.107E-02	8.034E-02	8.786E-03	1.324
NB-95M		235.69	*	1.955E-01	1.549E-01	2.299E-01	3.042E-02	0.850
ZR-95		724.19		1.406E-01	1.098E-01	1.667E-01	1.898E-02	0.844
		756.73	*	3.683E-02	7.225E-02	1.205E-01	1.402E-02	0.306
MO-99		140.51		-3.354E+01	3.180E+01	4.930E+01	1.173E+01	-0.680
		181.07		2.752E+01	2.780E+01	4.154E+01	8.151E+00	0.663
		366.42		6.449E+01	1.266E+02	2.141E+02	2.271E+01	0.301
		739.50	*	-1.145E+00	1.696E+01	2.743E+01	4.686E+00	-0.042
		777.92		-1.409E+01	5.804E+01	7.840E+01	8.601E+00	-0.180
TC-99M		140.51	*	-1.085E+12	5.804E+01	Half-Life	too short	
RU-103		497.08	*	-8.095E-03	3.859E-02	6.132E-02	9.090E-03	-0.132
	+	610.33		1.361E+01	2.956E+00	2.762E+00	4.794E-01	4.930
RH-106		621.93	*	-1.592E-01	3.183E-01	5.101E-01	7.401E-02	-0.312
		1050.41		-8.045E-01	2.531E+00	4.040E+00	3.943E-01	-0.199
RU-106		621.93	*	-1.592E-01	3.179E-01	5.101E-01	5.328E-02	-0.312
		1050.41		-8.045E-01	2.531E+00	4.040E+00	3.943E-01	-0.199
AG-108M		433.94	*	9.981E-03	2.886E-02	4.784E-02	4.709E-03	0.209
		614.28		3.588E-02	3.863E-02	5.854E-02	6.240E-03	0.613
		722.91		-9.054E-03	4.214E-02	5.762E-02	6.347E-03	-0.157
AG-110M		657.76	*	-8.327E-03	3.350E-02	5.422E-02	5.828E-03	-0.154
		677.62		2.411E-01	2.948E-01	5.043E-01	5.455E-02	0.478
		706.68		6.018E-02	2.133E-01	3.533E-01	3.862E-02	0.170
		763.94		2.135E-01	1.784E-01	2.706E-01	3.008E-02	0.789
		884.68		-1.185E-02	4.830E-02	7.889E-02	8.996E-03	-0.150
		937.49		3.683E-02	1.072E-01	1.806E-01	2.013E-02	0.204
		1384.29		-1.290E-01	1.865E-01	2.353E-01	2.156E-02	-0.548
		1505.03		2.280E-01	2.972E-01	5.147E-01	4.577E-02	0.443
SN-113		391.69	*	-6.207E-03	4.398E-02	7.186E-02	6.862E-03	-0.086
CD-115		260.90		1.599E+02	2.066E+02	3.414E+02	4.537E+01	0.468
		492.35		2.581E+01	5.556E+01	9.169E+01	9.102E+00	0.281
		527.90	*	7.498E+00	1.486E+01	2.554E+01	2.579E+00	0.294
SN-117M		156.02		-1.865E+00	2.442E+00	3.981E+00	3.732E-01	-0.468
		158.56	*	7.963E-03	5.945E-02	9.988E-02	9.472E-03	0.080
TE-123M		159.00	*	7.878E-03	2.935E-02	4.950E-02	4.728E-03	0.159
SB-124		602.73		-9.532E-03	4.680E-02	6.566E-02	6.821E-03	-0.145
		645.85		-5.681E-01	4.946E-01	7.532E-01	8.224E-02	-0.754
		722.78		-1.030E-01	4.285E-01	5.846E-01	6.402E-02	-0.176
		1690.97	*	-6.555E-02	7.007E-02	1.011E-01	9.016E-03	-0.648
SB-125		427.87	*	-6.626E-02	8.929E-02	1.398E-01	1.355E-02	-0.474

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	463.37		7.334E-01	4.005E-01	5.074E-01	5.250E-02	1.445
		600.60		2.902E-02	1.869E-01	2.980E-01	3.253E-02	0.097
		635.95		-1.043E-02	2.660E-01	4.374E-01	4.841E-02	-0.024
TE-125M		109.28	*	5.494E+00	1.048E+01	1.704E+01	1.752E+00	0.322
I-126		388.63		1.179E-01	1.691E-01	2.870E-01	2.718E-02	0.411
		666.33	*	2.216E-01	2.247E-01	3.869E-01	4.088E-02	0.573
		753.82		9.124E-01	1.871E+00	3.120E+00	3.400E-01	0.292
SB-126		414.70		-4.584E-02	9.457E-02	1.292E-01	1.223E-02	-0.355
		666.50		7.334E-02	7.716E-02	1.327E-01	1.402E-02	0.553
		695.00		4.050E-02	8.237E-02	1.381E-01	1.475E-02	0.293
		697.00		3.209E-01	2.856E-01	4.918E-01	5.259E-02	0.653
		720.70	*	1.071E-02	1.764E-01	2.473E-01	2.667E-02	0.043
		856.80		4.201E-01	5.660E-01	8.549E-01	9.532E-02	0.491
SB-127		252.40		4.732E+00	5.948E+00	9.333E+00	3.988E+00	0.507
		473.00		-5.376E-01	2.043E+00	3.256E+00	4.526E-01	-0.165
		685.70	*	9.757E-01	1.552E+00	2.624E+00	3.485E-01	0.372
		783.70		4.164E+00	4.487E+00	7.571E+00	1.090E+00	0.550
I-131		80.19		-1.940E+00	5.380E+00	7.725E+00	6.733E-01	-0.251
		284.31		-2.820E-01	1.713E+00	2.716E+00	3.839E-01	-0.104
		364.49	*	-1.225E-01	1.240E-01	1.943E-01	2.153E-02	-0.630
		636.99		-4.049E-02	1.702E+00	2.801E+00	3.054E-01	-0.014
TE-132		49.72		-2.259E+00	2.011E+01	3.364E+01	3.661E+00	-0.067
		111.76		-5.658E+00	4.602E+01	7.311E+01	8.131E+00	-0.077
		116.30		-1.921E+01	3.938E+01	6.142E+01	6.804E+00	-0.313
		228.16	*	-1.555E-01	9.913E-01	1.603E+00	2.904E-01	-0.097
BA-133		81.00		-1.117E-01	1.027E-01	1.407E-01	2.192E-02	-0.794
	+	276.40		4.937E-01	4.649E-01	6.369E-01	1.136E-01	0.775
		302.85		1.826E-01	1.551E-01	2.376E-01	3.920E-02	0.769
		356.01	*	-9.290E-03	4.566E-02	6.480E-02	9.542E-03	-0.143
		383.85		-1.201E-01	2.833E-01	4.566E-01	6.033E-02	-0.263
I-133		529.87	*	2.272E-03	2.833E-01	Half-Life	too short	
		875.33		-5.128E-02	2.833E-01	Half-Life	too short	
		1298.22		-3.294E-01	2.833E-01	Half-Life	too short	
CS-134		563.25		2.284E-01	3.345E-01	5.759E-01	5.942E-02	0.397
		569.33		-7.119E-02	1.965E-01	3.161E-01	3.277E-02	-0.225
		604.72		3.611E-03	3.844E-02	5.510E-02	5.737E-03	0.066
		795.86	*	1.019E-01	4.872E-02	8.571E-02	9.487E-03	1.189
		801.95		-2.114E-01	4.123E-01	6.333E-01	7.013E-02	-0.334
		1365.19		-1.396E+00	1.205E+00	1.664E+00	1.550E-01	-0.839
CS-135		268.22	*	2.460E-01	1.934E-01	2.852E-01	4.125E-02	0.863
I-135		546.56		1.861E+09	1.934E-01	Half-Life	too short	
		836.80		8.437E+10	1.934E-01	Half-Life	too short	
		1038.76		-2.386E+10	1.934E-01	Half-Life	too short	
		1131.51		-5.634E+10	1.934E-01	Half-Life	too short	
		1260.41	*	-6.400E+10	1.934E-01	Half-Life	too short	
		1457.56		3.305E+13	1.934E-01	Half-Life	too short	
		1678.03		4.991E+10	1.934E-01	Half-Life	too short	
		1791.20		1.853E+11	1.934E-01	Half-Life	too short	
CS-136		153.25		7.974E-01	9.218E-01	1.580E+00	1.709E-01	0.505

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		176.60		-3.559E-01	5.400E-01	8.739E-01	9.547E-02	-0.407
		273.65		-3.730E-01	9.282E-01	8.870E-01	1.264E-01	-0.421
		340.55		9.693E-01	2.238E-01	3.418E-01	4.115E-02	2.835
		818.51		7.021E-02	7.284E-02	1.282E-01	1.420E-02	0.548
		1048.07	*	-7.566E-02	1.115E-01	1.728E-01	1.748E-02	-0.438
		1235.36		5.606E-01	7.543E-01	1.121E+00	1.300E-01	0.500
BA-137M		661.66	*	-1.141E-02	3.421E-02	5.506E-02	5.806E-03	-0.207
CS-137		661.66	*	-1.205E-02	3.614E-02	5.817E-02	6.142E-03	-0.207
CE-139		165.86	*	-8.395E-03	3.070E-02	5.071E-02	4.974E-03	-0.166
BA-140		162.66		4.966E-01	9.129E-01	1.517E+00	1.545E-01	0.327
		304.85		9.546E-01	1.570E+00	2.337E+00	7.227E-01	0.408
		423.72		-1.376E+00	2.093E+00	3.222E+00	1.068E+00	-0.427
		537.26	*	1.977E-01	2.680E-01	4.511E-01	1.549E-01	0.438
LA-140	+	328.76		7.589E-01	5.117E-01	5.980E-01	7.558E-02	1.269
		487.02		6.116E-02	1.458E-01	2.404E-01	2.492E-02	0.254
		815.77		4.173E-02	3.229E-01	5.442E-01	6.461E-02	0.077
		1596.21	*	-2.000E-01	9.265E-02	1.172E-01	1.027E-02	-1.707
CE-141		145.44	*	1.344E-02	6.893E-02	1.128E-01	1.027E-02	0.119
CE-143		57.36		4.086E-04	6.893E-02	Half-Life	too short	
		293.27	*	1.840E-03	6.893E-02	Half-Life	too short	
		664.57		1.488E-03	6.893E-02	Half-Life	too short	
		721.93		1.383E-04	6.893E-02	Half-Life	too short	
CE-144		80.12		-8.819E-01	2.639E+00	3.794E+00	3.280E-01	-0.232
		133.52	*	-1.682E-01	2.036E-01	3.333E-01	5.080E-02	-0.505
PM-144		476.78		9.208E-03	6.420E-02	1.045E-01	1.098E-02	0.088
		618.01		-5.180E-03	3.472E-02	5.262E-02	5.596E-03	-0.098
		696.49	*	3.630E-02	3.439E-02	5.905E-02	6.315E-03	0.615
PR-144		696.51	*	2.732E+00	2.576E+00	4.424E+00	4.731E-01	0.618
		1489.16		-1.435E+01	1.200E+01	1.676E+01	1.493E+00	-0.856
PM-146		453.88	*	6.143E-02	4.227E-02	7.269E-02	8.358E-03	0.845
		633.25		-3.008E-01	1.379E+00	2.236E+00	8.645E-01	-0.135
		735.93		6.168E-02	1.472E-01	2.329E-01	6.705E-02	0.265
		747.24		4.333E-02	9.654E-02	1.605E-01	2.572E-02	0.270
ND-147	+	91.11		1.179E+00	4.342E-01	5.603E-01	5.539E-02	2.105
		319.41		3.481E-01	3.603E+00	6.052E+00	7.661E-01	0.058
		531.02	*	-1.426E-01	5.484E-01	9.047E-01	1.435E-01	-0.158
PM-149		285.90	*	1.576E+01	1.369E+02	2.196E+02	4.155E+01	0.072
EU-152		121.78		-2.380E-02	7.818E-02	1.225E-01	1.173E-02	-0.194
		244.70		4.189E-01	3.664E-01	5.459E-01	6.912E-02	0.767
		344.28	*	-5.271E-02	1.210E-01	1.598E-01	1.920E-02	-0.330
		778.90		-2.346E-01	3.198E-01	4.111E-01	4.511E-02	-0.571
		964.08		9.111E-01	3.503E-01	5.686E-01	6.067E-02	1.602
		1085.87		8.474E-02	3.941E-01	6.500E-01	6.056E-02	0.130
		1112.07		1.320E-01	3.709E-01	5.284E-01	4.734E-02	0.250
		1408.01		9.149E-02	1.817E-01	3.098E-01	2.770E-02	0.295
GD-153		69.67		7.697E-01	1.747E+00	2.621E+00	2.034E-01	0.294
		97.43	*	-5.108E-02	9.821E-02	1.365E-01	1.200E-02	-0.374
		103.18		-9.964E-02	1.146E-01	1.776E-01	1.518E-02	-0.561
EU-154		123.07		-1.583E-02	5.560E-02	8.710E-02	9.651E-03	-0.182

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EU-155	+	723.31		2.218E-02	1.930E-01	2.716E-01	3.124E-02	0.082
		873.19		-1.547E-01	2.736E-01	4.369E-01	6.055E-02	-0.354
		996.26		-1.983E-01	3.651E-01	5.749E-01	1.057E-01	-0.345
		1004.73		-1.380E-01	2.007E-01	3.118E-01	4.025E-02	-0.443
		1274.44	*	-7.010E-02	1.316E-01	2.101E-01	2.389E-02	-0.334
		86.55		4.116E-01	1.122E-01	1.853E-01	1.743E-02	2.221
		105.31	*	1.494E-01	1.105E-01	1.843E-01	1.581E-02	0.811
		86.79		1.104E+00	3.007E-01	4.945E-01	4.624E-02	2.232
		197.04		1.616E-01	6.291E-01	1.011E+00	1.099E-01	0.160
		215.65		3.696E-01	8.025E-01	1.288E+00	1.489E-01	0.287
TB-160	+	298.57		2.772E-01	1.486E-01	2.172E-01	2.912E-02	1.276
		879.36	*	1.232E-01	1.373E-01	2.393E-01	2.675E-02	0.515
		962.29		1.195E+00	6.323E-01	1.002E+00	1.071E-01	1.192
		966.15		1.482E+00	3.304E-01	5.302E-01	5.647E-02	2.794
		1177.93		1.216E-01	3.783E-01	6.290E-01	5.076E-02	0.193
		1271.85		-9.904E-01	7.613E-01	1.144E+00	9.834E-02	-0.866
		80.57		-1.207E-01	2.859E-01	4.091E-01	3.555E-02	-0.295
		184.41		8.406E-02	4.413E-02	6.894E-02	7.188E-03	1.219
		280.46		-2.535E-02	9.946E-02	1.364E-01	1.904E-02	-0.186
		410.95	+	5.054E-01	3.171E-01	4.082E-01	3.853E-02	1.238
HO-166M	+	711.68	*	-7.864E-04	6.192E-02	1.009E-01	1.085E-02	-0.008
		752.31		-1.936E-01	2.724E-01	4.207E-01	4.583E-02	-0.460
		810.29		-5.422E-02	5.512E-02	8.602E-02	9.510E-03	-0.630
		67.75		-5.867E-02	1.098E-01	1.680E-01	1.281E-02	-0.349
		100.11		2.105E-01	1.976E-01	2.963E-01	2.567E-02	0.710
		152.43		1.127E-01	3.580E-01	6.062E-01	5.593E-02	0.186
		222.11		1.065E-01	3.667E-01	6.041E-01	7.129E-02	0.176
		1121.30	+	8.851E-01	2.904E-01	3.515E-01	3.103E-02	2.518
		1189.05		-1.937E-01	3.123E-01	5.009E-01	4.073E-02	-0.387
		1221.41	*	7.697E-02	2.106E-01	3.565E-01	2.965E-02	0.216
IR-192	+	1231.02		6.015E-02	5.902E-01	8.409E-01	7.037E-02	0.072
		295.96		1.283E+00	2.417E-01	2.981E-01	4.034E-02	4.302
		308.46		1.598E-03	9.387E-02	1.576E-01	2.064E-02	0.010
		316.51	*	1.604E-02	3.525E-02	6.001E-02	7.669E-03	0.267
		468.07		1.332E-02	7.728E-02	1.093E-01	1.132E-02	0.122
HG-203		70.83		1.534E-01	1.384E+00	2.047E+00	3.205E-01	0.075
		72.87		1.489E+00	8.650E-01	1.309E+00	1.990E-01	1.137
		279.20	*	4.943E-02	4.726E-02	6.919E-02	9.783E-03	0.714
BI-207	+	72.81		2.999E-01	1.903E-01	2.942E-01	2.353E-02	1.020
		74.97		7.583E-01	1.485E-01	2.249E-01	1.838E-02	3.372
		569.70		-4.252E-03	3.050E-02	4.968E-02	5.103E-03	-0.086
		1063.66	*	-3.216E-03	5.568E-02	8.814E-02	8.461E-03	-0.036
		1770.23		8.942E-01	5.786E-01	9.833E-01	8.174E-02	0.909
PB-210		46.54	*	2.544E+00	2.940E+00	4.991E+00	4.597E-01	0.510
PB-211		404.85	*	-3.427E-01	8.397E-01	1.135E+00	5.509E-01	-0.302
		427.09		-1.190E+00	1.573E+00	2.303E+00	1.070E+00	-0.516
		832.01		-1.066E-01	1.024E+00	1.697E+00	8.878E-01	-0.063
RN-219	+	271.23		7.918E-01	3.754E-01	4.603E-01	6.801E-02	1.720
		401.81	*	3.691E-01	4.197E-01	6.936E-01	1.063E-01	0.532

---- 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		-2.638E-01	2.301E-01	3.175E-01	2.775E-02	-0.831
		83.79		8.837E-02	1.384E-01	2.035E-01	1.836E-02	0.434
		94.87		-1.706E-01	4.764E-01	7.602E-01	6.797E-02	-0.224
		144.24		3.443E-01	7.287E-01	1.203E+00	1.188E-01	0.286
		154.21		4.799E-01	3.920E-01	6.770E-01	6.817E-02	0.709
	+	269.46		6.152E-01	2.898E-01	3.579E-01	4.914E-02	1.719
		323.87	*	-1.249E-01	7.152E-01	1.028E+00	2.009E-01	-0.121
	+	338.28		7.648E+00	2.168E+00	2.358E+00	3.440E-01	3.244
		79.69		3.698E-01	1.291E+00	1.904E+00	3.280E-01	0.194
		235.96		7.113E-01	2.196E-01	3.219E-01	4.374E-02	2.210
AC-227		256.23	*	-5.121E-02	2.721E-01	4.350E-01	6.776E-02	-0.118
	+	299.98		2.141E+00	1.166E+00	1.627E+00	2.651E-01	1.316
		304.50		2.052E-01	1.796E+00	2.644E+00	5.108E-01	0.078
		334.37		-4.815E-01	2.149E+00	2.673E+00	4.737E-01	-0.180
		79.80		4.420E-01	1.702E+00	2.505E+00	5.454E-01	0.176
TH-227		235.96		7.113E-01	2.182E-01	3.219E-01	4.232E-02	2.210
		256.23	*	-5.121E-02	2.721E-01	4.350E-01	7.312E-02	-0.118
	+	299.98		2.141E+00	1.166E+00	1.627E+00	2.651E-01	1.316
		304.50		2.052E-01	1.796E+00	2.644E+00	5.108E-01	0.078
		334.37		-4.815E-01	2.149E+00	2.673E+00	4.737E-01	-0.180
TH-229		85.43		3.315E-01	2.394E-01	3.590E-01	3.302E-02	0.923
	+	88.47		5.231E-01	1.425E-01	2.348E-01	2.218E-02	2.228
		193.51	*	-4.968E-02	5.585E-01	9.180E-01	9.866E-02	-0.054
		210.85		2.071E+00	1.112E+00	1.664E+00	1.893E-01	1.245
PA-231		283.69	*	-1.253E+00	1.526E+00	2.320E+00	4.219E-01	-0.540
	+	301.36		1.376E+00	7.470E-01	1.061E+00	1.679E-01	1.297
TH-231		81.07		-2.638E-01	2.301E-01	3.175E-01	2.775E-02	-0.831
		83.79		8.837E-02	1.384E-01	2.035E-01	1.836E-02	0.434
		94.87		-1.706E-01	4.764E-01	7.602E-01	6.797E-02	-0.224
		144.24		3.443E-01	7.287E-01	1.203E+00	1.188E-01	0.286
		154.21		4.799E-01	3.920E-01	6.770E-01	6.817E-02	0.709
	+	269.46		6.152E-01	2.898E-01	3.579E-01	4.914E-02	1.719
		323.87	*	-1.249E-01	7.152E-01	1.028E+00	2.009E-01	-0.121
	+	338.28		7.648E+00	2.168E+00	2.358E+00	3.440E-01	3.244
	+	300.13		9.690E-01	5.326E-01	7.329E-01	1.319E-01	1.322
		311.90	*	-2.263E-02	6.363E-02	1.050E-01	1.376E-02	-0.215
PA-234		340.48		4.183E+00	1.312E+00	1.395E+00	3.540E-01	2.999
		94.67		4.871E-02	1.760E-01	2.864E-01	3.619E-02	0.170
		98.44		5.113E-02	1.076E-01	1.511E-01	8.434E-02	0.338
		111.00		1.051E-01	1.962E-01	3.185E-01	3.788E-02	0.330
		131.20		-8.956E-03	1.102E-01	1.864E-01	1.579E-02	-0.048
PA-234M		569.50		-9.036E-02	2.716E-01	4.377E-01	4.495E-02	-0.206
		733.00		-3.102E-01	4.368E-01	5.531E-01	1.280E-01	-0.561
		880.51		6.666E-03	2.774E-01	4.612E-01	5.158E-02	0.014
		883.24		-1.176E-01	2.914E-01	4.530E-01	3.062E-01	-0.260
		926.50		3.881E-02	1.678E-01	2.809E-01	7.355E-02	0.138
		946.00	*	7.496E-02	3.041E-01	5.085E-01	1.011E-01	0.147
		949.00		4.504E-01	4.650E-01	8.059E-01	8.708E-02	0.559
		766.42		2.217E+01	1.761E+01	2.099E+01	1.075E+01	1.056

---- 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	*		4.110E+00	4.529E+00	7.666E+00	8.785E-01	0.536
	99.53			2.200E-01	1.827E-01	2.735E-01	2.377E-02	0.805
	103.37			-7.730E-02	1.037E-01	1.616E-01	1.380E-02	-0.478
	106.12			2.211E-02	8.867E-02	1.432E-01	1.211E-02	0.154
	117.23	*		-1.954E-01	4.223E-01	6.593E-01	5.448E-02	-0.296
	228.18			-3.464E-02	2.280E-01	3.688E-01	4.437E-02	-0.094
	277.60	+		2.441E-01	2.282E-01	3.055E-01	4.258E-02	0.799
AM-241	59.54	*		1.774E-02	1.557E-01	2.304E-01	1.801E-02	0.077
CM-247	278.00	+		1.037E+00	9.692E-01	1.313E+00	1.832E-01	0.790
	287.50			-2.279E-01	1.318E+00	2.087E+00	2.871E-01	-0.109
CF-249	402.40	*		3.050E-02	3.894E-02	6.266E-02	5.878E-03	0.487
	252.80			2.322E-01	1.023E+00	1.665E+00	2.160E-01	0.139
	333.37			-7.972E-02	3.029E-01	2.850E-01	3.448E-02	-0.280
	388.16	*		5.540E-03	3.858E-02	6.393E-02	6.069E-03	0.087
CF-251	177.52	*		-4.687E-02	1.332E-01	2.183E-01	2.225E-02	-0.215
	227.38			1.940E-01	3.685E-01	6.104E-01	7.325E-02	0.318
	285.41			-1.589E-01	2.256E+00	3.591E+00	4.963E-01	-0.044

## 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]G247563005      *
* Acquisition date   : 3-MAR-2010 18:50:51 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 02:00:02.36             Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247563005             Analyst initials: MXR1          *
* Batch Number       : 956157                 Sample Quantity : 1.2085E+02 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	4.210E+01	4.121E+00	4.977E-01	0.000E+00
CD-109	3.477E+00	9.282E-01	1.324E+00	0.000E+00
SN-126	3.393E-01	9.057E-02	1.297E-01	0.000E+00
TL-208	5.563E-01	9.900E-02	5.269E-02	0.000E+00
BI-211	4.229E+00	6.397E-01	3.651E-01	0.000E+00
BI-212	2.582E+00	7.732E-01	7.262E-01	0.000E+00
PB-212	2.103E+00	2.957E-01	9.630E-02	0.000E+00
BI-214	1.292E+00	2.216E-01	1.191E-01	0.000E+00
PB-214	1.535E+00	2.465E-01	1.215E-01	0.000E+00
RA-224	5.709E+00	1.374E+00	1.031E+00	0.000E+00
RA-226	1.292E+00	2.216E-01	1.191E-01	0.000E+00
AC-228	1.967E+00	4.156E-01	2.319E-01	0.000E+00
RA-228	1.967E+00	4.156E-01	2.319E-01	0.000E+00
TH-228	2.103E+00	2.957E-01	9.630E-02	0.000E+00
TH-232	1.967E+00	4.156E-01	2.319E-01	0.000E+00
TH-234	2.572E+00	1.971E+00	2.022E+00	0.000E+00
U-235	9.226E-02	2.133E-01	3.676E-01	0.000E+00
NP-237	1.012E+00	3.410E-01	4.229E-01	0.000E+00
U-238	2.572E+00	1.971E+00	2.022E+00	0.000E+00
ANH-511	1.517E-01	6.709E-02	4.625E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	5.021E-02	3.144E-01	5.289E-01	0.000E+00 NOT IDENT.
NA-22	-2.416E-02	4.555E-02	7.428E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.717E+06	0.000E+00	0.000E+00 SHORT HLIF
SC-46	6.239E-03	3.781E-02	6.488E-02	0.000E+00 FAIL ABUN
V-48	2.907E-02	7.410E-02	1.275E-01	0.000E+00 NOT IDENT.
CR-51	-1.107E-01	4.001E-01	6.471E-01	0.000E+00 NOT IDENT.
MN-54	2.052E-03	3.748E-02	6.430E-02	0.000E+00 NOT IDENT.

CO-56	-1.071E-03	3.992E-02	6.809E-02	0.000E+00	FAIL ABUN
CO-57	2.443E-03	2.623E-02	4.378E-02	0.000E+00	NOT IDENT.
CO-58	-3.741E-02	3.582E-02	5.709E-02	0.000E+00	NOT IDENT.
FE-59	-3.217E-02	9.170E-02	1.486E-01	0.000E+00	NOT IDENT.
CO-60	-1.168E-03	3.832E-02	6.422E-02	0.000E+00	NOT IDENT.
ZN-65	8.832E-02	1.094E-01	1.644E-01	0.000E+00	NOT IDENT.
SE-75	-3.697E-02	5.398E-02	7.525E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	4.726E-02	7.656E-02	0.000E+00	NOT IDENT.
Y-88	-1.931E-02	3.249E-02	4.561E-02	0.000E+00	NOT IDENT.
Y-91	6.924E+00	2.270E+01	3.916E+01	0.000E+00	NOT IDENT.
NB-94	-1.377E-02	3.278E-02	5.365E-02	0.000E+00	NOT IDENT.
NB-95	0.000E+00	5.005E-02	8.081E-02	0.000E+00	NOT IDENT.
NB-95M	1.955E-01	1.518E-01	2.346E-01	0.000E+00	NOT IDENT.
ZR-95	3.683E-02	7.081E-02	1.212E-01	0.000E+00	NOT IDENT.
MO-99	-1.145E+00	1.662E+01	2.761E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	1.031E+18	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-8.095E-03	3.782E-02	6.200E-02	0.000E+00	FAIL ABUN
RH-106	-1.592E-01	3.120E-01	5.144E-01	0.000E+00	NOT IDENT.
RU-106	-1.592E-01	3.116E-01	5.144E-01	0.000E+00	NOT IDENT.
AG-108M	9.981E-03	2.828E-02	4.846E-02	0.000E+00	NOT IDENT.
AG-110M	-8.327E-03	3.283E-02	5.464E-02	0.000E+00	NOT IDENT.
SN-113	-6.207E-03	4.310E-02	7.287E-02	0.000E+00	NOT IDENT.
CD-115	7.498E+00	1.456E+01	2.580E+01	0.000E+00	NOT IDENT.
SN-117M	7.963E-03	5.826E-02	1.024E-01	0.000E+00	NOT IDENT.
TE-123M	7.878E-03	2.877E-02	5.074E-02	0.000E+00	NOT IDENT.
SB-124	-6.555E-02	6.867E-02	1.007E-01	0.000E+00	NOT IDENT.
SB-125	-6.626E-02	8.751E-02	1.416E-01	0.000E+00	FAIL ABUN
TE-125M	5.494E+00	1.027E+01	1.754E+01	0.000E+00	NOT IDENT.
I-126	2.216E-01	2.202E-01	3.898E-01	0.000E+00	NOT IDENT.
SB-126	1.071E-02	1.729E-01	2.489E-01	0.000E+00	NOT IDENT.
SB-127	9.757E-01	1.521E+00	2.643E+00	0.000E+00	NOT IDENT.
I-131	-1.225E-01	1.215E-01	1.972E-01	0.000E+00	NOT IDENT.
TE-132	-1.555E-01	9.715E-01	1.636E+00	0.000E+00	NOT IDENT.
BA-133	-9.290E-03	4.475E-02	6.579E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	1.351E+04	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	4.774E-02	8.617E-02	0.000E+00	NOT IDENT.
CS-135	2.460E-01	1.896E-01	2.906E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.332E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-7.566E-02	1.092E-01	1.732E-01	0.000E+00	NOT IDENT.
BA-137M	-1.141E-02	3.353E-02	5.548E-02	0.000E+00	NOT IDENT.
CS-137	-1.205E-02	3.542E-02	5.861E-02	0.000E+00	NOT IDENT.
CE-139	-8.395E-03	3.008E-02	5.196E-02	0.000E+00	NOT IDENT.
BA-140	1.977E-01	2.626E-01	4.557E-01	0.000E+00	NOT IDENT.
LA-140	-2.000E-01	9.079E-02	1.168E-01	0.000E+00	FAIL ABUN
CE-141	1.344E-02	6.755E-02	1.157E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	5.444E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-1.682E-01	1.995E-01	3.424E-01	0.000E+00	NOT IDENT.
PM-144	3.630E-02	3.370E-02	5.946E-02	0.000E+00	NOT IDENT.
PR-144	2.732E+00	2.525E+00	4.455E+00	0.000E+00	NOT IDENT.
PM-146	6.143E-02	4.143E-02	7.358E-02	0.000E+00	NOT IDENT.
ND-147	-1.426E-01	5.374E-01	9.141E-01	0.000E+00	FAIL ABUN
PM-149	1.576E+01	1.341E+02	2.235E+02	0.000E+00	NOT IDENT.
EU-152	-5.271E-02	1.186E-01	1.623E-01	0.000E+00	NOT IDENT.
GD-153	-5.108E-02	9.625E-02	1.407E-01	0.000E+00	NOT IDENT.
EU-154	-7.010E-02	1.290E-01	2.100E-01	0.000E+00	NOT IDENT.
EU-155	1.494E-01	1.083E-01	1.898E-01	0.000E+00	FAIL ABUN
TB-160	1.232E-01	1.346E-01	2.402E-01	0.000E+00	FAIL ABUN
HO-166M	-7.864E-04	6.068E-02	1.016E-01	0.000E+00	FAIL ABUN
TA-182	7.697E-02	2.064E-01	3.565E-01	0.000E+00	FAIL ABUN
IR-192	1.604E-02	3.455E-02	6.101E-02	0.000E+00	FAIL ABUN
HG-203	4.943E-02	4.631E-02	7.045E-02	0.000E+00	NOT IDENT.
BI-207	-3.216E-03	5.457E-02	8.829E-02	0.000E+00	FAIL ABUN
PB-210	2.544E+00	2.881E+00	5.190E+00	0.000E+00	NOT IDENT.
PB-211	-3.427E-01	8.229E-01	1.151E+00	0.000E+00	NOT IDENT.
RN-219	3.691E-01	4.113E-01	7.031E-01	0.000E+00	FAIL ABUN
RA-223	-1.249E-01	7.009E-01	1.045E+00	0.000E+00	FAIL ABUN
AC-227	-5.121E-02	2.666E-01	4.434E-01	0.000E+00	FAIL ABUN
TH-227	-5.121E-02	2.667E-01	4.434E-01	0.000E+00	FAIL ABUN
TH-229	-4.968E-02	5.474E-01	9.388E-01	0.000E+00	FAIL ABUN
PA-231	-1.253E+00	1.495E+00	2.362E+00	0.000E+00	FAIL ABUN
TH-231	-1.249E-01	7.009E-01	1.045E+00	0.000E+00	FAIL ABUN
PA-233	-2.263E-02	6.236E-02	1.068E-01	0.000E+00	FAIL ABUN
PA-234	7.496E-02	2.980E-01	5.101E-01	0.000E+00	NOT IDENT.
PA-234M	4.110E+00	4.439E+00	7.686E+00	0.000E+00	NOT IDENT.
NP-239	-1.954E-01	4.138E-01	6.782E-01	0.000E+00	FAIL ABUN
AM-241	1.774E-02	1.526E-01	2.389E-01	0.000E+00	NOT IDENT.
CM-247	3.050E-02	3.816E-02	6.353E-02	0.000E+00	FAIL ABUN
CF-249	5.540E-03	3.781E-02	6.484E-02	0.000E+00	NOT IDENT.

CF-251	-4.687E-02	1.306E-01	2.235E-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]G247563005.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 18:50:51.
Sample ID          : G247563005          Sample quantity  : 1.20850E+02 GRAM
Detector name      : GAM22              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:02.36  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials  : MXR1
Abundance limit    : 75.00000           Sensitivity       : 5.00000
Batch ID           : 956157             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	2758	10.66*	1.909E+00	4.210E+01	4.210E+01	9.99
CD-109	88.03	302	3.70*	7.474E+00	3.393E+00	3.477E+00	27.24
SN-126	64.28	131	9.60	4.268E+00	9.915E-01	9.915E-01	77.49
	86.94	302	8.90	7.474E+00	1.411E+00	1.411E+00	48.77
	87.57	302	37.00*	7.474E+00	3.393E-01	3.393E-01	27.24
TL-208	277.37	70	6.60	6.179E+00	5.340E-01	5.340E-01	93.94
	583.19	598	85.00*	3.930E+00	5.563E-01	5.563E-01	18.16
	860.56	141	12.50	2.923E+00	1.195E+00	1.195E+00	37.23
BI-211	72.87	-----	1.23	5.897E+00	-----	Line Not Found	-----
	351.06	950	12.92*	5.401E+00	4.229E+00	4.229E+00	15.44
BI-212	727.33	185	6.67*	3.342E+00	2.582E+00	2.582E+00	30.56
	785.37	-----	1.10	3.147E+00	-----	Line Not Found	-----
	1620.50	20	1.47	1.789E+00	2.303E+00	2.303E+00	104.14
PB-212	74.82	537	10.28	6.162E+00	2.631E+00	2.631E+00	21.87
	77.11	919	17.10	6.458E+00	2.586E+00	2.586E+00	13.64
	238.63	1980	43.60*	6.710E+00	2.103E+00	2.103E+00	14.35
	300.09	122	3.30	5.917E+00	1.947E+00	1.947E+00	53.96
BI-214	609.32	721	45.49*	3.810E+00	1.292E+00	1.292E+00	17.50
	1120.29	211	14.92	2.345E+00	1.875E+00	1.875E+00	33.48
	1764.49	167	15.30	1.716E+00	1.979E+00	1.979E+00	29.46
PB-214	74.82	537	5.80	6.162E+00	4.663E+00	4.663E+00	21.13
	77.11	919	9.70	6.458E+00	4.558E+00	4.558E+00	15.94
	242.00	502	7.25	6.664E+00	3.229E+00	3.229E+00	25.23
	295.22	607	18.42	5.970E+00	1.716E+00	1.716E+00	19.91
	351.93	950	35.60*	5.401E+00	1.535E+00	1.535E+00	16.39
RA-224	240.99	502	4.10*	6.664E+00	5.709E+00	5.709E+00	24.55
RA-226	609.32	721	45.49*	3.810E+00	1.292E+00	1.292E+00	17.50
	1120.29	211	14.92	2.345E+00	1.875E+00	1.875E+00	33.48
	1764.49	167	15.30	1.716E+00	1.979E+00	1.979E+00	29.46
AC-228	338.32	386	11.27	5.523E+00	1.927E+00	1.927E+00	48.97
	911.20	455	25.80*	2.788E+00	1.967E+00	1.967E+00	21.57
	968.97	183	15.80	2.648E+00	1.360E+00	1.360E+00	46.32

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	338.32	386	11.27	5.523E+00	1.927E+00	1.927E+00	48.97
	911.20	455	25.80*	2.788E+00	1.967E+00	1.967E+00	21.57
	968.97	183	15.80	2.648E+00	1.360E+00	1.360E+00	46.32
TH-228	74.82	537	10.28	6.162E+00	2.631E+00	2.631E+00	19.62
	77.11	919	17.10	6.458E+00	2.586E+00	2.586E+00	13.64
	238.63	1980	43.60*	6.710E+00	2.103E+00	2.103E+00	14.35
TH-232	300.09	122	3.30	5.917E+00	1.947E+00	1.947E+00	80.92
	338.32	386	11.27	5.523E+00	1.927E+00	1.927E+00	27.06
	911.20	455	25.80*	2.788E+00	1.967E+00	1.967E+00	21.57
TH-234	968.97	183	15.80	2.648E+00	1.360E+00	1.360E+00	46.32
	63.29	131	3.70*	4.268E+00	2.572E+00	2.572E+00	78.18
	92.59	331	4.23	7.862E+00	3.090E+00	3.090E+00	37.17
U-235	89.96	290	3.47	7.681E+00	3.383E+00	3.383E+00	43.29
	93.35	331	5.60	7.862E+00	2.334E+00	2.334E+00	37.79
	143.76	-----	10.96*	8.364E+00	-----	Line Not Found	-----
	163.33	-----	5.08	8.031E+00	-----	Line Not Found	-----
	185.72	230	57.20	7.605E+00	1.643E-01	1.643E-01	40.25
	205.31	-----	5.01	7.253E+00	-----	Line Not Found	-----
NP-237	86.48	302	12.40*	7.474E+00	1.012E+00	1.012E+00	34.37
	95.86	-----	2.68	8.032E+00	-----	Line Not Found	-----
U-238	63.29	131	3.70*	4.268E+00	2.572E+00	2.572E+00	78.18
	92.59	331	4.23	7.862E+00	3.090E+00	3.090E+00	31.12
ANH-511	511.00	210	100.00*	4.299E+00	1.517E-01	1.517E-01	45.14

Flag: "\*" = Keyline

Total number of lines in spectrum 35  
Number of unidentified lines 5  
Number of lines tentatively identified by NID 30 85.71%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	4.210E+01	4.210E+01	0.421E+01	9.99	
CD-109	461.40D	1.02	3.393E+00	3.477E+00	0.947E+00	27.24	
SN-126	2.30E+05Y	1.00	3.393E-01	3.393E-01	0.924E-01	27.24	
TL-208	1.41E+10Y	1.00	5.563E-01	5.563E-01	1.010E-01	18.16	
BI-211	7.04E+08Y	1.00	4.229E+00	4.229E+00	0.653E+00	15.44	
BI-212	1.41E+10Y	1.00	2.582E+00	2.582E+00	0.789E+00	30.56	
PB-212	1.41E+10Y	1.00	2.103E+00	2.103E+00	0.302E+00	14.35	
BI-214	1600.00Y	1.00	1.292E+00	1.292E+00	0.226E+00	17.50	
PB-214	1600.00Y	1.00	1.535E+00	1.535E+00	0.252E+00	16.39	
RA-224	1.41E+10Y	1.00	5.709E+00	5.709E+00	1.402E+00	24.55	
RA-226	1600.00Y	1.00	1.292E+00	1.292E+00	0.226E+00	17.50	
AC-228	1.41E+10Y	1.00	1.967E+00	1.967E+00	0.424E+00	21.57	
RA-228	1.41E+10Y	1.00	1.967E+00	1.967E+00	0.424E+00	21.57	
TH-228	1.41E+10Y	1.00	2.103E+00	2.103E+00	0.302E+00	14.35	
TH-232	1.41E+10Y	1.00	1.967E+00	1.967E+00	0.424E+00	21.57	
TH-234	4.47E+09Y	1.00	2.572E+00	2.572E+00	2.011E+00	78.18	
U-235	7.04E+08Y	1.00	1.643E-01	1.643E-01	0.661E-01	40.25	K
NP-237	2.14E+06Y	1.00	1.012E+00	1.012E+00	0.348E+00	34.37	
U-238	4.47E+09Y	1.00	2.572E+00	2.572E+00	2.011E+00	78.18	
ANH-511	1.00E+09Y	1.00	1.517E-01	1.517E-01	0.685E-01	45.14	

Total Activity : 7.961E+01 7.969E+01

Grand Total Activity : 7.961E+01 7.969E+01

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

Unidentified Energy Lines  
Sample ID : G247563005

Page : 4  
Acquisition date : 3-MAR-2010 18:50:51

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	209.22	143	509	1.12	418.41	414	10	1.98E-02	62.4	7.19E+00	
0	270.22	173	357	1.19	540.31	534	11	2.40E-02	45.1	6.27E+00	T
0	327.63	115	334	1.21	655.03	649	12	1.60E-02	66.2	5.63E+00	T
0	409.66	90	182	1.58	818.96	813	11	1.25E-02	62.0	4.94E+00	T
0	463.76	113	198	1.52	927.09	922	12	1.57E-02	53.6	4.57E+00	T
0	769.97	111	246	4.97	1539.17	1529	23	1.55E-02	75.7	3.20E+00	
0	1238.54	69	90	1.10	2476.09	2469	13	9.60E-03	64.2	2.16E+00	T
0	1378.83	57	85	1.26	2756.67	2744	24	7.95E-03	88.8	1.99E+00	
0	1729.44	51	13	2.10	3458.04	3450	18	7.11E-03	45.9	1.73E+00	
0	1848.30	36	15	2.02	3695.88	3686	19	4.99E-03	56.0	1.69E+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]G247563005.CNF;1 *
* Acquisition date   : 3-MAR-2010 18:50:51.  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 02:00:02.36           Half life ratio : 8.00000      *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 15-FEB-2010 12:00:00  Nuclide Library : SOLID          *
* Sample ID          : G247563005           Analyst initials: MXR1          *
* Batch Number       : 956157               Sample Quantity : 1.20850E+02 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	4.210E+01	4.205E+00	4.988E-01	4.569E-02	84.410
CD-109	3.477E+00	9.471E-01	1.282E+00	1.217E-01	2.712
SN-126	3.393E-01	9.241E-02	1.256E-01	1.186E-02	2.701
TL-208	5.563E-01	1.010E-01	5.221E-02	5.656E-03	10.655
BI-211	4.229E+00	6.527E-01	3.596E-01	4.196E-02	11.761
BI-212	2.582E+00	7.890E-01	7.215E-01	1.015E-01	3.578
PB-212	2.103E+00	3.017E-01	9.440E-02	1.251E-02	22.274
BI-214	1.292E+00	2.262E-01	1.181E-01	1.378E-02	10.944
PB-214	1.535E+00	2.516E-01	1.197E-01	1.541E-02	12.823
RA-224	5.709E+00	1.402E+00	1.011E+00	1.265E-01	5.649
RA-226	1.292E+00	2.262E-01	1.181E-01	1.378E-02	10.944
AC-228	1.967E+00	4.241E-01	2.311E-01	3.130E-02	8.511
RA-228	1.967E+00	4.241E-01	2.311E-01	3.130E-02	8.511
TH-228	2.103E+00	3.017E-01	9.440E-02	1.251E-02	22.274
TH-232	1.967E+00	4.241E-01	2.311E-01	3.130E-02	8.511
TH-234	2.572E+00	2.011E+00	1.951E+00	3.472E-01	1.318
U-235	1.643E-01	6.614E-02	3.582E-01	6.123E-02	0.459
NP-237	1.012E+00	3.480E-01	4.096E-01	9.399E-02	2.471

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
U-238	2.572E+00	2.011E+00	1.951E+00	3.472E-01	1.318
ANH-511	1.517E-01	6.846E-02	4.576E-02	4.585E-03	3.315

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	5.021E-02		3.209E-01	5.228E-01	5.455E-02	0.096
NA-22	-2.416E-02		4.648E-02	7.432E-02	6.405E-03	-0.325
NA-24	6.171E-01		1.386E+00	Half-Life	too short	
SC-46	6.239E-03		3.858E-02	6.463E-02	7.234E-03	0.097
V-48	2.907E-02		7.562E-02	1.271E-01	1.333E-02	0.229
CR-51	-1.107E-01		4.083E-01	6.366E-01	8.239E-02	-0.174
MN-54	2.052E-03		3.824E-02	6.400E-02	7.109E-03	0.032
CO-56	-1.071E-03		4.074E-02	6.778E-02	7.545E-03	-0.016
CO-57	2.443E-03		2.677E-02	4.258E-02	3.511E-03	0.057
CO-58	-3.741E-02		3.655E-02	5.680E-02	6.289E-03	-0.659
FE-59	-3.217E-02		9.357E-02	1.484E-01	1.454E-02	-0.217
CO-60	-1.168E-03		3.911E-02	6.429E-02	5.733E-03	-0.018
ZN-65	8.832E-02		1.117E-01	1.642E-01	1.465E-02	0.538
SE-75	-3.697E-02		5.508E-02	7.386E-02	9.941E-03	-0.501
SR-85	1.284E-01		4.822E-02	7.575E-02	7.600E-03	1.695
Y-88	-1.931E-02		3.315E-02	4.584E-02	3.706E-03	-0.421
Y-91	6.924E+00		2.316E+01	3.916E+01	3.219E+00	0.177
NB-94	-1.377E-02		3.345E-02	5.328E-02	5.710E-03	-0.258
NB-95	1.064E-01		5.107E-02	8.034E-02	8.786E-03	1.324
NB-95M	1.955E-01		1.549E-01	2.299E-01	3.042E-02	0.850
ZR-95	3.683E-02		7.225E-02	1.205E-01	1.402E-02	0.306
MO-99	-1.145E+00		1.696E+01	2.743E+01	4.686E+00	-0.042
TC-99M	-1.085E+12		5.260E+11	Half-Life	too short	
RU-103	-8.095E-03		3.859E-02	6.132E-02	9.090E-03	-0.132
RH-106	-1.592E-01		3.183E-01	5.101E-01	7.401E-02	-0.312
RU-106	-1.592E-01		3.179E-01	5.101E-01	5.328E-02	-0.312
AG-108M	9.981E-03		2.886E-02	4.784E-02	4.709E-03	0.209
AG-110M	-8.327E-03		3.350E-02	5.422E-02	5.828E-03	-0.154
SN-113	-6.207E-03		4.398E-02	7.186E-02	6.862E-03	-0.086
CD-115	7.498E+00		1.486E+01	2.554E+01	2.579E+00	0.294
SN-117M	7.963E-03		5.945E-02	9.988E-02	9.472E-03	0.080
TE-123M	7.878E-03		2.935E-02	4.950E-02	4.728E-03	0.159
SB-124	-6.555E-02		7.007E-02	1.011E-01	9.016E-03	-0.648
SB-125	-6.626E-02		8.929E-02	1.398E-01	1.355E-02	-0.474
TE-125M	5.494E+00		1.048E+01	1.704E+01	1.752E+00	0.322
I-126	2.216E-01		2.247E-01	3.869E-01	4.088E-02	0.573
SB-126	1.071E-02		1.764E-01	2.473E-01	2.667E-02	0.043
SB-127	9.757E-01		1.552E+00	2.624E+00	3.485E-01	0.372
I-131	-1.225E-01		1.240E-01	1.943E-01	2.153E-02	-0.630
TE-132	-1.555E-01		9.913E-01	1.603E+00	2.904E-01	-0.097
BA-133	-9.290E-03		4.566E-02	6.480E-02	9.542E-03	-0.143

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-133	2.272E-03		6.892E-03	Half-Life too short		
CS-134	1.019E-01		4.872E-02	8.571E-02	9.487E-03	1.189
CS-135	2.460E-01		1.934E-01	2.852E-01	4.125E-02	0.863
I-135	-6.400E+10		6.794E+10	Half-Life too short		
CS-136	-7.566E-02		1.115E-01	1.728E-01	1.748E-02	-0.438
BA-137M	-1.141E-02		3.421E-02	5.506E-02	5.806E-03	-0.207
CS-137	-1.205E-02		3.614E-02	5.817E-02	6.142E-03	-0.207
CE-139	-8.395E-03		3.070E-02	5.071E-02	4.974E-03	-0.166
BA-140	1.977E-01		2.680E-01	4.511E-01	1.549E-01	0.438
LA-140	-2.000E-01		9.265E-02	1.172E-01	1.027E-02	-1.707
CE-141	1.344E-02		6.893E-02	1.128E-01	1.027E-02	0.119
CE-143	1.840E-03		2.778E-04	Half-Life too short		
CE-144	-1.682E-01		2.036E-01	3.333E-01	5.080E-02	-0.505
PM-144	3.630E-02		3.439E-02	5.905E-02	6.315E-03	0.615
PR-144	2.732E+00		2.576E+00	4.424E+00	4.731E-01	0.618
PM-146	6.143E-02		4.227E-02	7.269E-02	8.358E-03	0.845
ND-147	-1.426E-01		5.484E-01	9.047E-01	1.435E-01	-0.158
PM-149	1.576E+01		1.369E+02	2.196E+02	4.155E+01	0.072
EU-152	-5.271E-02		1.210E-01	1.598E-01	1.920E-02	-0.330
GD-153	-5.108E-02		9.821E-02	1.365E-01	1.200E-02	-0.374
EU-154	-7.010E-02		1.316E-01	2.101E-01	2.389E-02	-0.334
EU-155	1.494E-01		1.105E-01	1.843E-01	1.581E-02	0.811
TB-160	1.232E-01		1.373E-01	2.393E-01	2.675E-02	0.515
HO-166M	-7.864E-04		6.192E-02	1.009E-01	1.085E-02	-0.008
TA-182	7.697E-02		2.106E-01	3.565E-01	2.965E-02	0.216
IR-192	1.604E-02		3.525E-02	6.001E-02	7.669E-03	0.267
HG-203	4.943E-02		4.726E-02	6.919E-02	9.783E-03	0.714
BI-207	-3.216E-03		5.568E-02	8.814E-02	8.461E-03	-0.036
PB-210	2.544E+00		2.940E+00	4.991E+00	4.597E-01	0.510
PB-211	-3.427E-01		8.397E-01	1.135E+00	5.509E-01	-0.302
RN-219	3.691E-01		4.197E-01	6.936E-01	1.063E-01	0.532
RA-223	-1.249E-01		7.152E-01	1.028E+00	2.009E-01	-0.121
AC-227	-5.121E-02		2.721E-01	4.350E-01	6.776E-02	-0.118
TH-227	-5.121E-02		2.721E-01	4.350E-01	7.312E-02	-0.118
TH-229	-4.968E-02		5.585E-01	9.180E-01	9.866E-02	-0.054
PA-231	-1.253E+00		1.526E+00	2.320E+00	4.219E-01	-0.540
TH-231	-1.249E-01		7.152E-01	1.028E+00	2.009E-01	-0.121
PA-233	-2.263E-02		6.363E-02	1.050E-01	1.376E-02	-0.215
PA-234	7.496E-02		3.041E-01	5.085E-01	1.011E-01	0.147
PA-234M	4.110E+00		4.529E+00	7.666E+00	8.785E-01	0.536
NP-239	-1.954E-01		4.223E-01	6.593E-01	5.448E-02	-0.296
AM-241	1.774E-02		1.557E-01	2.304E-01	1.801E-02	0.077
CM-247	3.050E-02		3.894E-02	6.266E-02	5.878E-03	0.487
CF-249	5.540E-03		3.858E-02	6.393E-02	6.069E-03	0.087
CF-251	-4.687E-02		1.332E-01	2.183E-01	2.225E-02	-0.215

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247563005          *
* Acquisition date   : 3-MAR-2010 18:50:51 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 02:00:02.36                Half life ratio : 8.000      *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247563005                Analyst initials: MXR1        *
* Batch Number       : 956157                    Sample Quantity : 1.2085E+02 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	4.210E+01	4.121E+00	2.490E-01	2.103E+00
CD-109	3.477E+00	9.282E-01	6.622E-01	4.735E-01
SN-126	3.393E-01	9.057E-02	6.488E-02	4.621E-02
TL-208	5.563E-01	9.900E-02	2.636E-02	5.051E-02
BI-211	4.229E+00	6.397E-01	1.827E-01	3.264E-01
BI-212	2.582E+00	7.732E-01	3.633E-01	3.945E-01
PB-212	2.103E+00	2.957E-01	4.818E-02	1.508E-01
BI-214	1.292E+00	2.216E-01	5.959E-02	1.131E-01
PB-214	1.535E+00	2.465E-01	6.080E-02	1.258E-01
RA-224	5.709E+00	1.374E+00	5.158E-01	7.008E-01
RA-226	1.292E+00	2.216E-01	5.959E-02	1.131E-01
AC-228	1.967E+00	4.156E-01	1.160E-01	2.121E-01
RA-228	1.967E+00	4.156E-01	1.160E-01	2.121E-01
TH-228	2.103E+00	2.957E-01	4.818E-02	1.508E-01
TH-232	1.967E+00	4.156E-01	1.160E-01	2.121E-01
TH-234	2.572E+00	1.971E+00	1.012E+00	1.006E+00
U-235	9.226E-02	2.133E-01	1.839E-01	1.088E-01
NP-237	1.012E+00	3.410E-01	2.116E-01	1.740E-01
U-238	2.572E+00	1.971E+00	1.012E+00	1.006E+00
ANH-511	1.517E-01	6.709E-02	2.314E-02	3.423E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	5.021E-02	3.144E-01	2.646E-01	1.604E-01 NOT IDENT.
NA-22	-2.416E-02	4.555E-02	3.716E-02	2.324E-02 NOT IDENT.
NA-24	6.171E+05	2.717E+06	0.000E+00	1.386E+06 SHORT HLIF
SC-46	6.239E-03	3.781E-02	3.246E-02	1.929E-02 FAIL ABUN
V-48	2.907E-02	7.410E-02	6.378E-02	3.781E-02 NOT IDENT.
CR-51	-1.107E-01	4.001E-01	3.237E-01	2.041E-01 NOT IDENT.
MN-54	2.052E-03	3.748E-02	3.217E-02	1.912E-02 NOT IDENT.

CO-56	-1.071E-03	3.992E-02	3.407E-02	2.037E-02	FAIL ABUN
CO-57	2.443E-03	2.623E-02	2.190E-02	1.338E-02	NOT IDENT.
CO-58	-3.741E-02	3.582E-02	2.856E-02	1.827E-02	NOT IDENT.
FE-59	-3.217E-02	9.170E-02	7.434E-02	4.679E-02	NOT IDENT.
CO-60	-1.168E-03	3.832E-02	3.213E-02	1.955E-02	NOT IDENT.
ZN-65	8.832E-02	1.094E-01	8.223E-02	5.583E-02	NOT IDENT.
SE-75	-3.697E-02	5.398E-02	3.765E-02	2.754E-02	NOT IDENT.
SR-85	1.284E-01	4.726E-02	3.830E-02	2.411E-02	NOT IDENT.
Y-88	-1.931E-02	3.249E-02	2.282E-02	1.657E-02	NOT IDENT.
Y-91	6.924E+00	2.270E+01	1.959E+01	1.158E+01	NOT IDENT.
NB-94	-1.377E-02	3.278E-02	2.684E-02	1.673E-02	NOT IDENT.
NB-95	1.064E-01	5.005E-02	4.043E-02	2.554E-02	NOT IDENT.
NB-95M	1.955E-01	1.518E-01	1.173E-01	7.745E-02	NOT IDENT.
ZR-95	3.683E-02	7.081E-02	6.066E-02	3.613E-02	NOT IDENT.
MO-99	-1.145E+00	1.662E+01	1.381E+01	8.478E+00	NOT IDENT.
TC-99M	-1.085E+18	1.031E+18	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-8.095E-03	3.782E-02	3.102E-02	1.929E-02	FAIL ABUN
RH-106	-1.592E-01	3.120E-01	2.573E-01	1.592E-01	NOT IDENT.
RU-106	-1.592E-01	3.116E-01	2.573E-01	1.590E-01	NOT IDENT.
AG-108M	9.981E-03	2.828E-02	2.424E-02	1.443E-02	NOT IDENT.
AG-110M	-8.327E-03	3.283E-02	2.734E-02	1.675E-02	NOT IDENT.
SN-113	-6.207E-03	4.310E-02	3.646E-02	2.199E-02	NOT IDENT.
CD-115	7.498E+00	1.456E+01	1.291E+01	7.430E+00	NOT IDENT.
SN-117M	7.963E-03	5.826E-02	5.123E-02	2.973E-02	NOT IDENT.
TE-123M	7.878E-03	2.877E-02	2.539E-02	1.468E-02	NOT IDENT.
SB-124	-6.555E-02	6.867E-02	5.039E-02	3.503E-02	NOT IDENT.
SB-125	-6.626E-02	8.751E-02	7.083E-02	4.465E-02	FAIL ABUN
TE-125M	5.494E+00	1.027E+01	8.776E+00	5.241E+00	NOT IDENT.
I-126	2.216E-01	2.202E-01	1.950E-01	1.123E-01	NOT IDENT.
SB-126	1.071E-02	1.729E-01	1.245E-01	8.822E-02	NOT IDENT.
SB-127	9.757E-01	1.521E+00	1.322E+00	7.758E-01	NOT IDENT.
I-131	-1.225E-01	1.215E-01	9.864E-02	6.198E-02	NOT IDENT.
TE-132	-1.555E-01	9.715E-01	8.186E-01	4.957E-01	NOT IDENT.
BA-133	-9.290E-03	4.475E-02	3.292E-02	2.283E-02	FAIL ABUN
I-133	2.272E+03	1.351E+04	0.000E+00	6.892E+03	SHORT HLIF
CS-134	1.019E-01	4.774E-02	4.311E-02	2.436E-02	NOT IDENT.
CS-135	2.460E-01	1.896E-01	1.454E-01	9.671E-02	NOT IDENT.
I-135	-6.400E+16	1.332E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-7.566E-02	1.092E-01	8.664E-02	5.573E-02	NOT IDENT.
BA-137M	-1.141E-02	3.353E-02	2.776E-02	1.711E-02	NOT IDENT.
CS-137	-1.205E-02	3.542E-02	2.932E-02	1.807E-02	NOT IDENT.
CE-139	-8.395E-03	3.008E-02	2.600E-02	1.535E-02	NOT IDENT.
BA-140	1.977E-01	2.626E-01	2.280E-01	1.340E-01	NOT IDENT.
LA-140	-2.000E-01	9.079E-02	5.844E-02	4.632E-02	FAIL ABUN
CE-141	1.344E-02	6.755E-02	5.789E-02	3.446E-02	NOT IDENT.
CE-143	1.840E+03	5.444E+02	0.000E+00	2.778E+02	SHORT HLIF
CE-144	-1.682E-01	1.995E-01	1.713E-01	1.018E-01	NOT IDENT.
PM-144	3.630E-02	3.370E-02	2.975E-02	1.719E-02	NOT IDENT.
PR-144	2.732E+00	2.525E+00	2.229E+00	1.288E+00	NOT IDENT.
PM-146	6.143E-02	4.143E-02	3.681E-02	2.114E-02	NOT IDENT.
ND-147	-1.426E-01	5.374E-01	4.573E-01	2.742E-01	FAIL ABUN
PM-149	1.576E+01	1.341E+02	1.118E+02	6.843E+01	NOT IDENT.
EU-152	-5.271E-02	1.186E-01	8.118E-02	6.049E-02	NOT IDENT.
GD-153	-5.108E-02	9.625E-02	7.039E-02	4.911E-02	NOT IDENT.
EU-154	-7.010E-02	1.290E-01	1.050E-01	6.581E-02	NOT IDENT.
EU-155	1.494E-01	1.083E-01	9.497E-02	5.527E-02	FAIL ABUN
TB-160	1.232E-01	1.346E-01	1.202E-01	6.865E-02	FAIL ABUN
HO-166M	-7.864E-04	6.068E-02	5.081E-02	3.096E-02	FAIL ABUN
TA-182	7.697E-02	2.064E-01	1.784E-01	1.053E-01	FAIL ABUN
IR-192	1.604E-02	3.455E-02	3.052E-02	1.763E-02	FAIL ABUN
HG-203	4.943E-02	4.631E-02	3.525E-02	2.363E-02	NOT IDENT.
BI-207	-3.216E-03	5.457E-02	4.417E-02	2.784E-02	FAIL ABUN
PB-210	2.544E+00	2.881E+00	2.597E+00	1.470E+00	NOT IDENT.
PB-211	-3.427E-01	8.229E-01	5.756E-01	4.199E-01	NOT IDENT.
RN-219	3.691E-01	4.113E-01	3.518E-01	2.099E-01	FAIL ABUN
RA-223	-1.249E-01	7.009E-01	5.228E-01	3.576E-01	FAIL ABUN
AC-227	-5.121E-02	2.666E-01	2.218E-01	1.360E-01	FAIL ABUN
TH-227	-5.121E-02	2.667E-01	2.218E-01	1.360E-01	FAIL ABUN
TH-229	-4.968E-02	5.474E-01	4.697E-01	2.793E-01	FAIL ABUN
PA-231	-1.253E+00	1.495E+00	1.182E+00	7.629E-01	FAIL ABUN
TH-231	-1.249E-01	7.009E-01	5.228E-01	3.576E-01	FAIL ABUN
PA-233	-2.263E-02	6.236E-02	5.343E-02	3.182E-02	FAIL ABUN
PA-234	7.496E-02	2.980E-01	2.552E-01	1.521E-01	NOT IDENT.
PA-234M	4.110E+00	4.439E+00	3.845E+00	2.265E+00	NOT IDENT.
NP-239	-1.954E-01	4.138E-01	3.393E-01	2.111E-01	FAIL ABUN
AM-241	1.774E-02	1.526E-01	1.195E-01	7.786E-02	NOT IDENT.
CM-247	3.050E-02	3.816E-02	3.178E-02	1.947E-02	FAIL ABUN
CF-249	5.540E-03	3.781E-02	3.244E-02	1.929E-02	NOT IDENT.

CF-251

-4.687E-02

1.306E-01

1.118E-01

6.662E-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	304.4275
49.72	348.3759
57.36	0.0000
59.54	417.1824
63.29	469.3680
63.29	469.3680
64.28	474.5320
67.75	512.2794
69.67	483.9443
70.83	518.8110
72.81	535.9230
72.87	536.0344
72.87	536.0344
74.82	538.5738
74.82	538.5738
74.82	538.5738
74.97	538.8449
77.11	542.6755
77.11	542.6755
77.11	542.6755
79.69	532.8535
79.80	533.0410
80.12	572.1385
80.19	572.2659
80.57	572.9565
81.00	607.7599
81.07	607.8949
81.07	607.8949
83.79	558.4709
83.79	558.4709
85.43	586.3610
86.48	681.0157
86.55	681.1577
86.79	582.4694
86.94	582.7347
87.57	583.8300
88.03	584.6289
88.47	585.3911
89.96	587.9557
91.11	589.9218
92.59	592.4313
92.59	592.4313
93.35	593.7130
94.67	595.9289
94.87	596.2620
94.87	596.2620
95.86	597.9105
97.43	469.0451
98.44	418.2622
99.53	373.7953
100.11	392.3621
103.18	477.9849
103.37	473.8264
105.31	417.6634
106.12	463.9331
109.28	456.5095
111.00	453.9894
111.76	482.9211
116.30	459.8911
117.23	449.5303
121.12	422.6456
121.78	449.7470
122.06	423.5646
123.07	453.3908
131.20	507.5112
133.52	485.2697
136.00	420.1841

136.47	433.9684
140.51	493.3595
140.51	0.0000
143.76	449.6062
144.24	447.3257
144.24	447.3257
145.44	440.2417
152.43	450.9449
153.25	426.7716
154.21	407.2433
154.21	407.2433
156.02	471.6654
158.56	437.6201
159.00	435.1831
162.66	425.9471
163.33	424.5914
165.86	442.5930
176.60	434.7058
177.52	432.5023
181.07	398.4849
184.41	438.1398
185.72	459.9933
193.51	443.0986
197.04	415.7485
205.31	435.2069
210.85	394.9669
215.65	374.1574
222.11	374.8644
227.38	362.0610
228.16	390.5783
228.18	390.5897
235.69	410.8594
235.96	422.8026
235.96	422.8026
238.63	365.5845
238.63	365.5845
240.99	366.7433
242.00	367.2370
244.70	293.1391
252.40	313.0927
252.80	339.0879
256.23	351.3886
256.23	351.3886
260.90	292.5605
264.66	342.6650
268.22	316.0723
269.46	311.0556
269.46	311.0556
271.23	334.8564
273.65	357.9296
276.40	325.8602
277.37	305.1537
277.60	296.5759
278.00	278.9510
279.20	293.5840
279.54	293.7008
280.46	304.7107
283.69	319.7295
284.31	302.0609
285.41	295.7271
285.90	289.1713
287.50	315.5333
293.27	0.0000
295.22	294.5352
295.96	353.7374
298.57	354.7753
299.98	309.7769
299.98	309.7769
300.09	303.7435
300.09	303.7435
300.13	318.9435
301.36	269.1911
302.85	249.8304
304.50	274.7058
304.50	274.7058
304.85	248.8575
308.46	261.1850
311.90	278.7749

316.51	265.3111
319.41	272.6452
320.08	287.5008
323.87	268.0046
323.87	268.0046
328.76	277.1999
333.37	278.5143
334.37	264.6191
334.37	264.6191
338.28	244.7945
338.28	244.7945
338.32	244.8071
338.32	244.8071
338.32	244.8071
340.48	229.8046
340.55	234.5772
344.28	282.5405
351.06	302.6915
351.93	253.9002
356.01	231.7324
364.49	242.3768
366.42	207.7140
383.85	226.9398
388.16	215.8848
388.63	197.0646
391.69	226.5456
400.66	232.3676
401.81	211.4561
402.40	207.7858
404.85	238.9374
410.95	209.7470
414.70	237.5688
423.72	223.6443
427.09	215.0133
427.87	218.2394
433.94	190.3609
453.88	168.1934
463.37	185.3244
468.07	191.3093
473.00	203.7629
476.78	185.0880
477.60	181.9905
487.02	174.6483
492.35	176.4169
497.08	168.3373
511.00	185.3842
514.00	185.0444
527.90	144.2981
529.87	0.0000
531.02	159.4408
537.26	143.3630
546.56	0.0000
563.25	149.6519
569.33	168.3106
569.50	169.2796
569.70	164.5457
583.19	145.8244
600.60	188.5386
602.73	209.7598
604.72	193.3509
609.32	200.8575
609.32	200.8575
610.33	200.9833
614.28	150.8894
618.01	176.4331
621.93	181.7593
621.93	181.7593
633.25	158.2552
635.95	157.5184
636.99	157.6122
645.85	178.3554
657.76	157.5079
661.66	162.8866
661.66	162.8866
664.57	0.0000
666.33	137.1040
666.50	137.1178
677.62	126.8133

685.70	131.4539
695.00	155.6800
696.49	146.5814
696.51	146.5843
697.00	144.5715
702.65	174.8387
706.68	159.7555
711.68	165.3483
720.70	151.3055
721.93	0.0000
722.78	156.8175
722.91	156.8267
723.31	155.0780
724.19	149.7979
727.33	123.9947
733.00	150.4863
735.93	128.1076
739.50	155.1874
747.24	135.8001
752.31	156.2052
753.82	130.9730
756.73	134.3406
763.94	121.9352
765.81	131.1579
766.42	149.4172
777.92	152.1020
778.90	166.8450
783.70	140.4348
785.37	130.8934
795.86	118.6206
801.95	141.6795
810.29	138.6767
810.76	135.9151
815.77	117.5735
818.51	100.9072
832.01	157.9570
834.85	161.9309
836.80	0.0000
846.77	144.8329
856.80	121.4832
860.56	100.0177
871.09	113.8888
873.19	130.2796
875.33	0.0000
879.36	106.6215
880.51	124.9355
883.24	128.9339
884.68	125.1644
889.28	118.6629
898.04	144.2944
911.20	132.4520
911.20	132.4520
911.20	132.4520
926.50	109.7891
937.49	113.2493
944.13	147.1370
946.00	122.5447
949.00	118.7381
962.29	123.6151
964.08	120.2194
966.15	144.7333
968.97	181.5588
968.97	181.5588
968.97	181.5588
983.53	116.3985
996.26	134.1318
1001.03	90.9370
1004.73	118.3895
1037.84	106.5898
1038.76	0.0000
1048.07	121.4076
1050.41	119.4551
1050.41	119.4551
1063.66	123.1504
1085.87	115.8160
1099.45	125.8259
1112.07	125.3459
1115.54	134.7274

1120.29	122.5420
1120.29	122.5420
1120.55	122.5541
1121.30	122.5865
1131.51	0.0000
1173.23	143.1123
1177.93	132.9706
1189.05	149.5619
1204.77	154.1591
1221.41	160.7505
1231.02	167.2253
1235.36	169.1733
1238.28	166.4481
1260.41	0.0000
1271.85	141.0175
1274.44	131.3992
1274.54	131.4034
1291.59	104.7110
1298.22	0.0000
1312.11	89.6198
1332.49	82.2528
1365.19	70.9134
1368.63	0.0000
1384.29	78.7259
1408.01	65.8728
1457.56	0.0000
1460.82	49.3799
1489.16	58.0627
1505.03	57.2743
1596.21	78.7064
1620.50	40.0757
1678.03	0.0000
1690.97	37.8722
1764.49	27.6742
1764.49	27.6742
1770.23	30.2846
1771.35	24.9471
1791.20	0.0000
1836.06	32.2989

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247563005

Total Uranium Activity	7.6958E+00	ug/g
Total Uranium Counting Unc.	5.8642E+00	ug/g
Total Uranium Tpu	2.9919E-06	ug/g
Total Uranium Mda	3.0106E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 956157                          SAMPLE ID   : G247563005
*  ANALYST       : MXR1                             DETECTOR    : GAM22
*  SAMPLE DATE   : 15-FEB-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE: 3-MAR-2010 18:50:51.13            SAMPLE ALQT: 120.850 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.176E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.536E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 3.378E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.649E+00

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VAX/VMS Nuclide Identification Report Generated 3-MAR-2010 21:20:51.63

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                          *
*                               Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563006.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 19:20:17.
Sample ID          : G247563006 Sample quantity : 1.12090E+02 GRAM
Detector name      : GAM15 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:01.31 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	74.82*	284	470	1.60	148.56	141	17	3.95E-02	17.1	4.06E+00
2	2	77.27*	445	446	1.42	153.47	141	17	6.18E-02	10.4	
3	0	87.31	155	310	1.57	173.54	171	6	2.15E-02	19.8	
4	2	90.01	90	433	1.14	178.94	176	13	1.25E-02	38.5	4.74E+00
5	2	92.97*	201	435	1.38	184.87	176	13	2.80E-02	20.6	
6	0	153.81	94	292	1.60	306.54	302	9	1.31E-02	34.3	
7	0	185.85*	222	364	1.30	370.61	365	12	3.08E-02	19.2	
8	0	209.89	146	360	1.13	418.69	412	13	2.03E-02	28.2	
9	3	238.75*	1110	222	1.35	476.40	468	21	1.54E-01	3.9	1.04E+00
10	3	241.81*	249	257	1.73	482.52	468	21	3.45E-02	16.9	
11	0	270.16	123	214	1.13	539.22	533	13	1.71E-02	26.2	
12	0	277.91	53	183	0.93	554.72	549	9	7.34E-03	48.3	
13	1	295.39*	358	172	1.72	589.68	584	19	4.97E-02	8.8	1.01E+00
14	1	300.05	96	130	1.74	599.00	584	19	1.33E-02	23.2	
15	0	328.21	143	161	1.39	655.31	648	14	1.99E-02	20.6	
16	0	338.46	232	134	1.56	675.83	671	9	3.22E-02	11.2	
17	0	351.95*	556	213	1.53	702.80	697	15	7.72E-02	7.3	
18	0	463.24	72	76	2.76	925.39	921	9	1.00E-02	24.9	
19	0	510.70*	88	140	1.82	1020.30	1012	16	1.22E-02	36.1	
20	0	583.14*	354	128	1.56	1165.19	1157	17	4.92E-02	9.3	
21	0	609.36*	391	85	1.36	1217.63	1211	12	5.43E-02	7.1	
22	0	726.87*	72	84	1.01	1452.67	1446	13	9.96E-03	29.6	
23	0	795.55	41	71	1.49	1590.05	1582	13	5.72E-03	45.1	
24	0	861.13*	30	53	2.01	1721.22	1716	10	4.16E-03	51.6	
25	0	911.08*	225	71	1.36	1821.15	1813	15	3.13E-02	10.7	
26	0	969.10*	115	101	1.30	1937.22	1931	13	1.60E-02	20.7	
27	0	1120.14*	95	64	1.83	2239.35	2231	14	1.32E-02	20.9	
28	0	1237.81*	55	58	0.97	2474.74	2467	17	7.59E-03	34.5	
29	0	1376.52*	33	7	2.97	2752.25	2746	13	4.60E-03	25.9	
30	0	1460.43*	1198	38	2.29	2920.12	2909	21	1.66E-01	3.2	
31	0	1591.05	27	33	4.87	3181.44	3168	22	3.75E-03	57.6	
32	0	1619.99	17	5	1.51	3239.34	3232	12	2.37E-03	37.1	
33	0	1763.91	66	4	2.11	3527.31	3520	14	9.23E-03	13.6	

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

## VMS Nuclide Identification Report V3.1 Generated 3-MAR-2010 21:20:54

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Configuration       : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563006.CNF;1
Analyses by        : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title       : MXR1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 19:20:17
Sample ID          : G247563006 Sample quantity : 112.09 GRAM
Sample type        : SOLID Sample geometry :
Detector name      : GAMMA15 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.31 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	*	3.894E+01	4.552E+00	7.936E-01	7.799E-02	49.064
CD-109	+	88.03	*	3.225E+00	1.336E+00	2.151E+00	2.670E-01	1.499
SN-126		64.28		7.235E-01	1.012E+00	1.685E+00	2.853E-01	0.429
	+	86.94		1.308E+00	7.573E-01	9.127E-01	3.859E-01	1.433
	+	87.57	*	3.147E-01	1.303E-01	2.152E-01	2.663E-02	1.462
HG-203		70.83		2.646E+00	2.709E+00	4.049E+00	7.175E-01	0.654
		72.87		3.336E+00	1.540E+00	2.523E+00	4.358E-01	1.322
	+	279.20	*	7.484E-02	7.270E-02	9.350E-02	1.028E-02	0.800
TL-208	+	277.37		7.251E-01	7.073E-01	9.334E-01	1.320E-01	0.777
	+	583.19	*	6.371E-01	1.325E-01	7.358E-02	6.729E-03	8.660
	+	860.56		5.095E-01	5.282E-01	5.627E-01	5.501E-02	0.906
BI-211		72.87		1.317E+01	5.835E+00	9.957E+00	1.140E+00	1.322
	+	351.06	*	4.585E+00	8.069E-01	4.453E-01	4.435E-02	10.297
BI-212	+	727.33	*	1.966E+00	1.188E+00	1.132E+00	1.407E-01	1.736
		785.37		-2.208E+00	4.570E+00	7.315E+00	6.477E-01	-0.302
	+	1620.50		4.331E+00	3.239E+00	5.350E+00	4.980E-01	0.809
PB-212	+	74.82		2.871E+00	1.071E+00	9.535E-01	1.436E-01	3.010
	+	77.11		2.486E+00	5.913E-01	5.318E-01	6.165E-02	4.674
	+	238.63	*	2.071E+00	2.966E-01	1.327E-01	1.586E-02	15.607
	+	300.09		2.778E+00	1.334E+00	1.833E+00	2.231E-01	1.516
BI-214	+	609.32	*	1.360E+00	2.355E-01	1.506E-01	1.501E-02	9.028
	+	1120.29		1.734E+00	7.500E-01	6.712E-01	7.268E-02	2.584
	+	1764.49		1.700E+00	4.874E-01	4.720E-01	4.138E-02	3.602
PB-214	+	74.82		5.088E+00	1.877E+00	1.690E+00	2.361E-01	3.010
	+	77.11		4.383E+00	1.103E+00	9.376E-01	1.334E-01	4.674
	+	242.00		2.816E+00	1.017E+00	8.069E-01	1.005E-01	3.490
	+	295.22		1.835E+00	3.970E-01	3.200E-01	3.988E-02	5.735
	+	351.93	*	1.664E+00	3.069E-01	1.641E-01	1.865E-02	10.143
RA-224	+	240.99	*	4.980E+00	1.774E+00	1.422E+00	1.569E-01	3.502
RA-226	+	609.32	*	1.360E+00	2.355E-01	1.506E-01	1.501E-02	9.028
	+	1120.29		1.734E+00	7.500E-01	6.712E-01	7.268E-02	2.584
	+	1764.49		1.700E+00	4.874E-01	4.720E-01	4.138E-02	3.602
AC-228	+	338.32		2.134E+00	1.015E+00	5.467E-01	2.296E-01	3.903
	+	911.20	*	1.956E+00	4.818E-01	2.922E-01	3.539E-02	6.695

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RA-228	+	968.97		1.736E+00	8.364E-01	7.237E-01	1.778E-01	2.399
	+	338.32		2.134E+00	1.015E+00	5.467E-01	2.296E-01	3.903
	+	911.20	*	1.956E+00	4.818E-01	2.922E-01	3.539E-02	6.695
TH-228	+	968.97		1.736E+00	8.364E-01	7.237E-01	1.778E-01	2.399
	+	74.82		2.871E+00	1.035E+00	9.535E-01	1.103E-01	3.010
	+	77.11		2.486E+00	5.913E-01	5.318E-01	6.165E-02	4.674
	+	238.63	*	2.071E+00	2.966E-01	1.327E-01	1.586E-02	15.607
TH-232	+	300.09		2.778E+00	2.141E+00	1.833E+00	1.127E+00	1.516
	+	338.32		2.134E+00	5.210E-01	5.467E-01	5.390E-02	3.903
	+	911.20	*	1.956E+00	4.818E-01	2.922E-01	3.539E-02	6.695
	+	968.97		1.736E+00	8.364E-01	7.237E-01	1.778E-01	2.399
U-235	+	89.96		1.864E+00	1.516E+00	1.925E+00	5.008E-01	0.968
	+	93.35		2.487E+00	1.190E+00	1.039E+00	2.527E-01	2.395
		143.76	*	-9.273E-02	3.078E-01	4.862E-01	8.652E-02	-0.191
		163.33		2.521E-01	6.710E-01	1.074E+00	2.039E-01	0.235
NP-237	+	185.72		2.670E-01	1.064E-01	9.383E-02	1.016E-02	2.845
		205.31		8.109E-02	8.512E-01	1.191E+00	2.306E-01	0.068
	+	86.48	*	9.389E-01	4.359E-01	6.071E-01	1.475E-01	1.547
		95.86		-1.209E-02	1.578E+00	2.261E+00	5.661E-01	-0.005
ANH-511	+	511.00	*	1.220E-01	8.884E-02	6.555E-02	5.664E-03	1.862

---- 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	*	4.902E-02	4.827E-01	7.923E-01	7.365E-02	0.062
NA-22		1274.54	*	-1.841E-02	6.725E-02	1.056E-01	9.596E-03	-0.174
NA-24		1368.63	*	1.265E+00	6.725E-02	Half-Life too short		
SC-46		889.28	*	-1.006E-02	5.462E-02	8.870E-02	8.243E-03	-0.113
V-48	+	1120.55		2.963E-01	1.266E-01	1.835E-01	1.560E-02	1.615
		944.13		3.023E-01	1.313E+00	2.206E+00	2.039E-01	0.137
		983.53	*	6.436E-02	1.101E-01	1.898E-01	1.735E-02	0.339
		1312.11		3.549E-02	1.216E-01	2.026E-01	1.909E-02	0.175
CR-51		320.08	*	2.290E-01	5.818E-01	9.330E-01	9.901E-02	0.245
MN-54		834.85	*	-1.757E-02	5.149E-02	8.292E-02	7.525E-03	-0.212
CO-56		846.77	*	-6.405E-03	5.395E-02	8.841E-02	8.068E-03	-0.072
		1037.84		8.738E-03	4.252E-01	6.974E-01	6.539E-02	0.013
	+	1238.28		2.838E-01	1.972E-01	2.384E-01	2.143E-02	1.190
		1771.35		-6.753E-01	4.315E-01	5.287E-01	4.619E-02	-1.277
CO-57		122.06	*	7.062E-03	3.626E-02	5.939E-02	5.982E-03	0.119
		136.47		-1.664E-01	2.986E-01	4.713E-01	5.007E-02	-0.353
CO-58		810.76	*	-1.278E-02	5.384E-02	8.755E-02	7.871E-03	-0.146
FE-59		1099.45	*	-1.140E-01	1.309E-01	1.939E-01	1.809E-02	-0.588
CO-60		1291.59		1.829E-02	1.863E-01	3.039E-01	3.139E-02	0.060
		1173.23		-1.806E-02	6.798E-02	1.078E-01	8.773E-03	-0.168
		1332.49	*	4.466E-02	5.338E-02	9.471E-02	9.104E-03	0.472
ZN-65		1115.54	*	-5.133E-02	1.623E-01	2.174E-01	1.858E-02	-0.236
SE-75		121.12		4.136E-02	1.924E-01	3.153E-01	3.862E-02	0.131
		136.00		-3.355E-02	5.745E-02	9.058E-02	9.170E-03	-0.370

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	264.66	*		5.035E-03	6.936E-02	1.015E-01	1.113E-02	0.050
	279.54			2.310E-01	1.883E-01	2.924E-01	3.237E-02	0.790
	400.66			2.654E-01	3.749E-01	6.401E-01	7.013E-02	0.415
SR-85	514.00	*		1.166E-01	6.180E-02	1.004E-01	8.675E-03	1.161
Y-88	898.04			-1.877E-02	5.837E-02	9.353E-02	8.759E-03	-0.201
	1836.06	*		-9.450E-03	4.208E-02	6.560E-02	5.525E-03	-0.144
Y-91	1204.77	*		5.794E-01	3.442E+01	5.589E+01	4.712E+00	0.010
NB-94	702.65	*		1.541E-02	4.699E-02	8.039E-02	6.787E-03	0.192
	871.09			1.880E-02	4.419E-02	7.592E-02	7.002E-03	0.248
NB-95	765.81	*		7.816E-02	6.213E-02	1.116E-01	9.779E-03	0.700
NB-95M	235.69	*		6.019E-01	2.296E-01	3.635E-01	4.379E-02	1.656
ZR-95	724.19			9.967E-02	1.533E-01	2.347E-01	2.179E-02	0.425
	756.73	*		2.678E-02	9.675E-02	1.648E-01	1.583E-02	0.163
MO-99	140.51			5.134E+00	4.456E+01	7.173E+01	1.745E+01	0.072
	181.07			-8.861E-01	4.001E+01	5.590E+01	1.111E+01	-0.016
	366.42			-9.202E+01	1.936E+02	3.104E+02	2.844E+01	-0.296
	739.50	*		-1.065E+00	2.363E+01	3.930E+01	6.195E+00	-0.027
	777.92			-6.379E+01	6.837E+01	1.047E+02	9.235E+00	-0.609
TC-99M	140.51	*		1.749E+11	6.837E+01	Half-Life too short		
RU-103	497.08	*		8.087E-03	5.596E-02	9.201E-02	1.286E-02	0.088
	610.33	+		1.433E+01	3.091E+00	3.757E+00	6.108E-01	3.814
RH-106	621.93	*		2.819E-01	4.446E-01	7.490E-01	9.824E-02	0.376
	1050.41			-1.066E+00	3.836E+00	6.112E+00	5.431E-01	-0.174
RU-106	621.93	*		2.819E-01	4.437E-01	7.490E-01	6.295E-02	0.376
	1050.41			-1.066E+00	3.836E+00	6.112E+00	5.431E-01	-0.174
AG-108M	433.94	*		2.672E-03	4.266E-02	7.016E-02	6.200E-03	0.038
	614.28			2.151E-02	5.333E-02	7.742E-02	6.752E-03	0.278
	722.91			-3.362E-02	6.146E-02	8.316E-02	7.341E-03	-0.404
AG-110M	657.76	*		1.861E-02	4.873E-02	8.393E-02	7.143E-03	0.222
	677.62			-2.272E-01	4.192E-01	6.725E-01	5.761E-02	-0.338
	706.68			-8.163E-02	3.038E-01	4.939E-01	4.305E-02	-0.165
	763.94			-1.049E-01	2.262E-01	3.632E-01	3.263E-02	-0.289
	884.68			1.632E-02	6.227E-02	1.055E-01	1.006E-02	0.155
	937.49			-2.357E-01	1.756E-01	2.536E-01	2.422E-02	-0.929
	1384.29			-3.991E-02	2.485E-01	3.588E-01	3.531E-02	-0.111
	1505.03			-3.419E-02	3.835E-01	6.294E-01	6.016E-02	-0.054
SN-113	391.69	*		-9.729E-03	6.520E-02	1.063E-01	9.234E-03	-0.091
CD-115	260.90			-4.111E+01	2.852E+02	4.739E+02	5.193E+01	-0.087
	492.35			2.981E+01	7.764E+01	1.298E+02	1.122E+01	0.230
	527.90	*		-9.045E+00	2.433E+01	3.837E+01	3.312E+00	-0.236
SN-117M	156.02			1.856E+00	4.041E+00	5.834E+00	6.081E-01	0.318
	158.56	*		2.863E-02	9.507E-02	1.361E-01	1.427E-02	0.210
TE-123M	159.00	*		-1.750E-02	4.502E-02	6.551E-02	6.903E-03	-0.267
SB-124	602.73			-8.895E-02	7.001E-02	8.334E-02	7.063E-03	-1.067
	645.85			-6.081E-02	6.847E-01	1.091E+00	9.612E-02	-0.056
	722.78			-3.689E-01	6.242E-01	8.400E-01	7.347E-02	-0.439
	1690.97	*		1.236E-02	1.043E-01	1.757E-01	1.654E-02	0.070
SB-125	427.87	*		4.424E-02	1.344E-01	2.247E-01	1.956E-02	0.197
	463.37	+		8.934E-01	4.533E-01	7.233E-01	6.701E-02	1.235

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TE-125M I-126	600.60			-2.038E-01	2.758E-01	4.057E-01	3.703E-02	-0.502
	635.95			-2.748E-01	3.690E-01	5.517E-01	5.002E-02	-0.498
	109.28	*		-1.732E+01	1.512E+01	2.332E+01	2.771E+00	-0.743
	388.63			2.907E-02	2.666E-01	4.416E-01	3.758E-02	0.066
	666.33	*		-8.383E-02	3.305E-01	5.444E-01	4.490E-02	-0.154
SB-126	753.82			2.880E+00	2.515E+00	4.550E+00	3.960E-01	0.633
	414.70			-2.776E-02	1.155E-01	1.866E-01	1.586E-02	-0.149
	666.50			-2.742E-02	1.139E-01	1.878E-01	1.549E-02	-0.146
	695.00			7.656E-02	1.196E-01	2.085E-01	1.752E-02	0.367
	697.00			-1.267E-01	4.229E-01	6.932E-01	5.831E-02	-0.183
SB-127	720.70	*		1.234E-01	2.432E-01	3.693E-01	3.153E-02	0.334
	856.80			6.253E-01	7.817E-01	1.219E+00	1.117E-01	0.513
	252.40			-6.738E+00	8.000E+00	1.199E+01	5.059E+00	-0.562
	473.00			1.380E+00	2.928E+00	4.918E+00	6.437E-01	0.281
	685.70	*		-8.285E-01	2.337E+00	3.812E+00	4.394E-01	-0.217
I-131	783.70			2.007E+00	6.196E+00	1.055E+01	1.354E+00	0.190
	80.19			-5.254E+00	9.309E+00	1.303E+01	1.538E+00	-0.403
	284.31			-1.018E+00	2.414E+00	3.939E+00	4.381E-01	-0.258
TE-132	364.49	*		-2.177E-02	1.867E-01	3.062E-01	2.957E-02	-0.071
	636.99			-2.453E+00	2.415E+00	3.511E+00	3.110E-01	-0.699
	49.72			-6.250E+01	8.231E+01	1.316E+02	2.036E+01	-0.475
	111.76			-2.397E+01	6.427E+01	1.031E+02	1.297E+01	-0.233
BA-133	116.30			-1.582E+01	5.713E+01	9.192E+01	1.150E+01	-0.172
	228.16	*		6.874E-01	1.361E+00	2.327E+00	4.065E-01	0.295
	81.00			-2.131E-01	1.760E-01	2.330E-01	4.077E-02	-0.915
	276.40			5.954E-01	8.881E-01	9.353E-01	1.456E-01	0.637
	302.85			1.685E-01	2.326E-01	3.515E-01	5.059E-02	0.479
I-133	356.01	*		-3.719E-02	7.037E-02	9.619E-02	1.300E-02	-0.387
	383.85			9.737E-02	4.403E-01	7.341E-01	9.140E-02	0.133
	529.87	*		4.591E-03	4.403E-01	Half-Life	too short	
	875.33			6.702E-02	4.403E-01	Half-Life	too short	
CS-134	1298.22			-8.004E-01	4.403E-01	Half-Life	too short	
	563.25			-7.082E-02	5.363E-01	8.588E-01	7.439E-02	-0.082
	569.33			1.710E-01	3.040E-01	4.901E-01	4.257E-02	0.349
	604.72			2.360E-03	5.166E-02	7.208E-02	6.119E-03	0.033
+ CS-135	795.86	*		1.075E-01	9.741E-02	1.247E-01	1.118E-02	0.863
	801.95			-3.559E-01	6.404E-01	9.054E-01	8.128E-02	-0.393
	1365.19			8.305E-01	1.707E+00	3.013E+00	3.010E-01	0.276
	268.22	*		4.028E-01	2.569E-01	4.048E-01	4.858E-02	0.995
I-135	546.56			5.382E+11	2.569E-01	Half-Life	too short	
	836.80			2.218E+11	2.569E-01	Half-Life	too short	
	1038.76			-6.908E+10	2.569E-01	Half-Life	too short	
	1131.51			-1.178E+11	2.569E-01	Half-Life	too short	
	1260.41	*		1.185E+10	2.569E-01	Half-Life	too short	
	1457.56			2.858E+13	2.569E-01	Half-Life	too short	
	1678.03			-1.399E+11	2.569E-01	Half-Life	too short	
	1791.20			3.790E+10	2.569E-01	Half-Life	too short	
	153.25			2.423E+00	1.686E+00	2.323E+00	2.733E-01	1.043
	176.60			5.102E-01	8.237E-01	1.353E+00	1.553E-01	0.377

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	273.65			-4.509E-01	1.294E+00	1.199E+00	1.373E-01	-0.376
	340.55			9.822E-01	2.894E-01	4.788E-01	4.836E-02	2.051
	818.51			1.041E-01	1.076E-01	1.922E-01	1.732E-02	0.542
	1048.07	*		-9.346E-02	1.672E-01	2.587E-01	2.393E-02	-0.361
	1235.36			5.049E-01	1.064E+00	1.553E+00	1.838E-01	0.325
BA-137M	661.66	*		-8.397E-03	5.012E-02	8.312E-02	6.834E-03	-0.101
CS-137	661.66	*		-8.870E-03	5.295E-02	8.781E-02	7.235E-03	-0.101
CE-139	165.86	*		8.517E-03	4.537E-02	7.355E-02	7.851E-03	0.116
BA-140	162.66			4.426E-02	1.305E+00	2.063E+00	2.283E-01	0.021
	304.85			1.640E+00	2.341E+00	3.483E+00	1.041E+00	0.471
	423.72			4.674E-01	3.062E+00	5.062E+00	1.664E+00	0.092
	537.26	*		1.948E-02	4.024E-01	6.545E-01	2.220E-01	0.030
LA-140	328.76	+		1.741E+00	7.400E-01	8.713E-01	9.136E-02	1.998
	487.02			-2.208E-02	1.988E-01	3.212E-01	2.945E-02	-0.069
	815.77			-7.230E-02	4.693E-01	7.683E-01	7.656E-02	-0.094
	1596.21	*		2.653E-02	1.378E-01	2.035E-01	1.908E-02	0.130
CE-141	145.44	*		7.908E-03	9.567E-02	1.551E-01	1.603E-02	0.051
CE-143	57.36			7.955E-04	9.567E-02	Half-Life	too short	
	293.27	*		1.762E-03	9.567E-02	Half-Life	too short	
	664.57			-1.149E-03	9.567E-02	Half-Life	too short	
	721.93			-1.195E-03	9.567E-02	Half-Life	too short	
CE-144	80.12			-1.914E+00	4.574E+00	6.457E+00	7.589E-01	-0.296
	133.52	*		-1.674E-01	2.871E-01	4.517E-01	7.289E-02	-0.371
PM-144	476.78			-2.291E-03	9.459E-02	1.540E-01	1.444E-02	-0.015
	618.01			-1.874E-02	4.685E-02	7.294E-02	6.321E-03	-0.257
	696.49	*		1.643E-02	4.973E-02	8.507E-02	7.157E-03	0.193
PR-144	696.51	*		5.938E-01	3.766E+00	6.370E+00	5.357E-01	0.093
	1489.16			-1.018E+00	1.317E+01	2.157E+01	2.066E+00	-0.047
PM-146	453.88	*		-1.215E-03	6.144E-02	1.003E-01	1.061E-02	-0.012
	633.25			-7.353E-01	1.893E+00	2.901E+00	1.106E+00	-0.253
	735.93			-1.302E-01	2.034E-01	3.166E-01	8.873E-02	-0.411
	747.24			-5.884E-02	1.304E-01	2.090E-01	3.054E-02	-0.282
ND-147	91.11	+		6.506E-01	5.081E-01	8.966E-01	1.110E-01	0.726
	319.41			4.087E+00	5.377E+00	9.036E+00	9.256E-01	0.452
	531.02	*		3.009E-01	8.841E-01	1.467E+00	2.194E-01	0.205
PM-149	285.90	*		-9.760E+01	1.976E+02	3.205E+02	5.389E+01	-0.305
EU-152	121.78			1.431E-02	1.045E-01	1.708E-01	1.911E-02	0.084
	244.70			2.085E-01	5.428E-01	8.106E-01	8.934E-02	0.257
	344.28	*		-4.960E-03	1.490E-01	2.235E-01	2.275E-02	-0.022
	778.90			-3.938E-01	3.790E-01	5.762E-01	5.084E-02	-0.683
	964.08			3.273E-01	5.200E-01	7.805E-01	7.178E-02	0.419
	1085.87			-4.281E-01	5.822E-01	8.818E-01	7.678E-02	-0.485
	1112.07			3.760E-01	5.209E-01	7.937E-01	6.791E-02	0.474
	1408.01			1.455E-01	2.332E-01	4.188E-01	4.035E-02	0.347
GD-153	69.67			-6.593E-01	3.527E+00	5.059E+00	5.775E-01	-0.130
	97.43	*		1.063E-01	1.399E-01	2.081E-01	2.297E-02	0.511
	103.18			-2.575E-01	1.694E-01	2.564E-01	2.711E-02	-1.004
EU-154	123.07			-3.491E-02	7.415E-02	1.179E-01	1.471E-02	-0.296
	723.31			-7.787E-02	2.783E-01	3.887E-01	3.665E-02	-0.200

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	+	873.19	*	1.940E-01	3.716E-01	6.425E-01	7.931E-02	0.302
		996.26		-3.271E-01	4.942E-01	7.523E-01	1.332E-01	-0.435
		1004.73		2.615E-01	3.166E-01	5.532E-01	6.625E-02	0.473
		1274.44		-6.592E-02	1.910E-01	2.977E-01	3.491E-02	-0.221
		86.55		3.817E-01	1.582E-01	2.791E-01	3.443E-02	1.368
		105.31		1.564E-01	1.566E-01	2.640E-01	2.781E-02	0.592
		86.79		1.024E+00	4.241E-01	7.421E-01	9.125E-02	1.380
		197.04		-4.036E-01	8.717E-01	1.363E+00	1.487E-01	-0.296
		215.65		4.832E-01	1.260E+00	1.889E+00	2.078E-01	0.256
		298.57		3.957E-01	1.884E-01	3.228E-01	3.415E-02	1.226
TB-160	+	879.36	*	-5.841E-02	1.831E-01	2.932E-01	2.714E-02	-0.199
		962.29		1.243E+00	8.920E-01	1.442E+00	1.327E-01	0.862
		966.15		1.415E+00	4.461E-01	7.641E-01	7.023E-02	1.852
		1177.93		-2.235E-01	5.527E-01	8.645E-01	7.074E-02	-0.258
		1271.85		6.384E-01	1.057E+00	1.810E+00	1.638E-01	0.353
		80.57		-6.124E-01	5.008E-01	6.717E-01	7.915E-02	-0.912
		184.41		2.121E-01	8.452E-02	1.005E-01	1.087E-02	2.109
		280.46		7.996E-02	1.386E-01	2.087E-01	2.254E-02	0.383
		410.95		1.719E-03	3.559E-01	5.846E-01	4.962E-02	0.003
		711.68		-2.980E-03	8.202E-02	1.367E-01	1.161E-02	-0.022
HO-166M	+	752.31	*	1.071E-01	3.602E-01	6.147E-01	5.345E-02	0.174
		810.29		-5.011E-03	7.960E-02	1.314E-01	1.179E-02	-0.038
		67.75		-1.769E-01	2.358E-01	3.456E-01	3.944E-02	-0.512
		100.11		2.963E-02	2.618E-01	4.298E-01	4.639E-02	0.069
		152.43		9.382E-01	6.509E-01	8.787E-01	9.087E-02	1.068
		222.11		-4.114E-01	5.136E-01	8.328E-01	9.178E-02	-0.494
		1121.30		8.187E-01	3.497E-01	5.035E-01	4.280E-02	1.626
		1189.05		-1.625E-01	4.815E-01	7.582E-01	6.281E-02	-0.214
		1221.41		-1.988E-01	2.923E-01	4.436E-01	3.807E-02	-0.448
		1231.02		4.807E-01	7.648E-01	1.145E+00	9.931E-02	0.420
TA-182	+	295.96	*	1.372E+00	2.834E-01	4.132E-01	4.408E-02	3.321
		308.46		-1.315E-01	1.415E-01	2.226E-01	2.330E-02	-0.591
		316.51		-1.950E-03	5.200E-02	8.620E-02	8.888E-03	-0.023
		468.07		-1.509E-02	1.042E-01	1.448E-01	1.339E-02	-0.104
		72.81		6.730E-01	3.313E-01	5.656E-01	6.478E-02	1.190
		74.97		8.274E-01	2.980E-01	3.965E-01	4.563E-02	2.087
		569.70		2.601E-02	4.480E-02	7.534E-02	6.453E-03	0.345
		1063.66		-1.764E-02	7.965E-02	1.247E-01	1.100E-02	-0.142
		1770.23		5.940E-01	5.138E-01	9.903E-01	8.656E-02	0.600
		46.54		-1.218E+00	1.461E+01	2.382E+01	2.932E+00	-0.051
IR-192	+	404.85	*	-4.213E-01	1.098E+00	1.732E+00	8.377E-01	-0.243
		427.09		2.653E-01	2.281E+00	3.761E+00	1.739E+00	0.071
		832.01		-7.221E-01	1.443E+00	2.211E+00	1.148E+00	-0.327
		271.23		1.010E+00	5.427E-01	6.199E-01	7.575E-02	1.630
		401.81		4.782E-01	6.083E-01	1.038E+00	1.534E-01	0.461
		81.07		-4.783E-01	3.934E-01	5.278E-01	6.236E-02	-0.906
		83.79		5.958E-02	2.167E-01	3.160E-01	3.799E-02	0.189
		94.87		1.771E+00	8.236E-01	1.263E+00	1.430E-01	1.402
		144.24		-1.584E-01	1.024E+00	1.628E+00	1.799E-01	-0.097
BI-207	+		*					
PB-210	+		*					
PB-211	+		*					
RN-219	+		*					
RA-223	+		*					

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AC-227	+	154.21		1.033E+00	7.179E-01	9.784E-01	1.084E-01	1.056
	+	269.46		7.850E-01	4.196E-01	4.889E-01	5.394E-02	1.606
		323.87	*	-4.228E-02	1.015E+00	1.456E+00	2.643E-01	-0.029
	+	338.28		8.467E+00	2.188E+00	3.290E+00	4.273E-01	2.573
		79.69		2.746E+00	2.355E+00	3.494E+00	6.632E-01	0.786
		235.96		1.212E+00	3.144E-01	4.859E-01	6.038E-02	2.494
		256.23	*	2.892E-02	3.633E-01	6.106E-01	8.450E-02	0.047
	+	299.98		3.056E+00	1.483E+00	2.354E+00	3.318E-01	1.298
		304.50		2.305E+00	2.615E+00	3.978E+00	6.993E-01	0.579
		334.37		2.409E+00	3.735E+00	3.955E+00	6.469E-01	0.609
TH-227		79.80		7.258E-01	3.073E+00	4.473E+00	1.037E+00	0.162
		235.96		1.212E+00	3.117E-01	4.859E-01	5.803E-02	2.494
		256.23	*	2.892E-02	3.633E-01	6.106E-01	9.288E-02	0.047
	+	299.98		3.056E+00	1.483E+00	2.354E+00	3.318E-01	1.298
		304.50		2.305E+00	2.615E+00	3.978E+00	6.993E-01	0.579
TH-229		334.37		2.409E+00	3.735E+00	3.955E+00	6.469E-01	0.609
		85.43		7.869E-01	3.735E-01	5.707E-01	6.942E-02	1.379
	+	88.47		4.851E-01	2.009E-01	3.661E-01	4.512E-02	1.325
		193.51	*	7.461E-01	8.123E-01	1.345E+00	1.463E-01	0.555
PA-231	+	210.85		3.892E+00	2.236E+00	2.385E+00	2.619E-01	1.632
		283.69	*	-2.809E-01	2.184E+00	3.525E+00	5.621E-01	-0.080
TH-231	+	301.36		1.963E+00	9.499E-01	1.507E+00	2.047E-01	1.303
		81.07		-4.783E-01	3.934E-01	5.278E-01	6.236E-02	-0.906
PA-233		83.79		5.958E-02	2.167E-01	3.160E-01	3.799E-02	0.189
		94.87		1.771E+00	8.236E-01	1.263E+00	1.430E-01	1.402
		144.24		-1.584E-01	1.024E+00	1.628E+00	1.799E-01	-0.097
	+	154.21		1.033E+00	7.179E-01	9.784E-01	1.084E-01	1.056
	+	269.46		7.850E-01	4.196E-01	4.889E-01	5.394E-02	1.606
		323.87	*	-4.228E-02	1.015E+00	1.456E+00	2.643E-01	-0.029
	+	338.28		8.467E+00	2.188E+00	3.290E+00	4.273E-01	2.573
	+	300.13		1.383E+00	6.793E-01	1.065E+00	1.708E-01	1.298
		311.90	*	4.184E-02	9.125E-02	1.551E-01	1.641E-02	0.270
		340.48		4.176E+00	1.503E+00	1.951E+00	4.783E-01	2.141
	PA-234	94.67		1.000E+00	3.222E-01	4.781E-01	6.900E-02	2.092
		98.44		1.425E-01	1.589E-01	2.264E-01	1.272E-01	0.630
		111.00		-1.289E-01	2.728E-01	4.354E-01	5.780E-02	-0.296
		131.20		-2.098E-02	1.547E-01	2.494E-01	2.503E-02	-0.084
		569.50		2.272E-01	3.995E-01	6.712E-01	5.749E-02	0.338
PA-234M		733.00		1.223E-02	5.639E-01	8.134E-01	1.805E-01	0.015
		880.51		-2.580E-02	3.670E-01	6.025E-01	5.579E-02	-0.043
		883.24		-2.683E-03	3.677E-01	6.071E-01	4.086E-01	-0.004
		926.50		-3.632E-01	2.782E-01	3.779E-01	9.641E-02	-0.961
		946.00	*	-1.135E-01	4.302E-01	6.903E-01	1.315E-01	-0.164
		949.00		1.719E-01	6.082E-01	1.027E+00	9.480E-02	0.167
		766.42		2.032E+01	1.943E+01	2.966E+01	1.506E+01	0.685
	1001.03	*		-1.471E-01	6.989E+00	1.127E+01	1.169E+00	-0.013
	TH-234	63.29	*	1.179E+00	2.801E+00	4.636E+00	9.193E-01	0.254
	+	92.59		3.293E+00	1.559E+00	2.051E+00	4.803E-01	1.606
U-238		63.29	*	1.179E+00	2.801E+00	4.636E+00	9.193E-01	0.254

---- 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		3.293E+00	1.408E+00	2.051E+00	2.384E-01	1.606
		99.53		1.757E-01	2.411E-01	4.041E-01	4.381E-02	0.435
		103.37		-1.242E-01	1.486E-01	2.336E-01	2.467E-02	-0.532
		106.12		7.178E-02	1.255E-01	2.088E-01	2.174E-02	0.344
		117.23	*	-2.556E-01	6.108E-01	9.767E-01	9.858E-02	-0.262
AM-241		228.18		1.594E-01	3.109E-01	5.331E-01	5.881E-02	0.299
	+	277.60		3.314E-01	3.219E-01	4.555E-01	4.933E-02	0.728
CM-247	+	59.54	*	-3.359E-01	3.476E-01	5.501E-01	6.458E-02	-0.611
CF-249		278.00		1.408E+00	1.367E+00	1.950E+00	2.111E-01	0.722
		287.50		3.627E-01	1.827E+00	2.998E+00	3.215E-01	0.121
		402.40	*	2.073E-02	5.677E-02	9.520E-02	8.051E-03	0.218
		252.80		-1.257E+00	1.353E+00	2.154E+00	2.369E-01	-0.584
CF-251		333.37		2.963E-02	4.243E-01	4.127E-01	4.113E-02	0.072
		388.16	*	2.371E-02	5.964E-02	1.004E-01	8.555E-03	0.236
		177.52	*	-2.808E-02	2.032E-01	3.242E-01	3.488E-02	-0.087
		227.38		-7.048E-02	5.068E-01	8.474E-01	9.347E-02	-0.083
		285.41		-1.460E+00	3.231E+00	5.265E+00	5.658E-01	-0.277

## 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]G247563006      *
* Acquisition date   : 3-MAR-2010 19:20:17 Detector SN#      :              *
* Detector ID        : GAM15                      Sensitivity   : 5.000        *
* Geometry           : CAN                      Energy tolerance: 1.500        *
* Elapsed live time  : 0 02:00:00.00             Abundance limit: 75.000        *
* Elapsed real time  : 0 02:00:01.31             Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247563006             Analyst initials: MXR1          *
* Batch Number       : 956157                 Sample Quantity : 1.1209E+02 GRAM  *
* Recovery           : 1.00000                Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 3-FEB-2010 11:04:32 MS Isotope       :
* MSD DPM            : 0.000                  MSD Isotope    :
* LCS DPM            : 0.000                  LCS Isotope     :
* LCSD DPM           : 0.000                  LCSD Isotope    :
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.894E+01	4.461E+00	7.897E-01	0.000E+00
CD-109	3.225E+00	1.309E+00	2.190E+00	0.000E+00
SN-126	3.147E-01	1.277E-01	2.191E-01	0.000E+00
HG-203	7.484E-02	7.124E-02	9.432E-02	0.000E+00
TL-208	6.371E-01	1.298E-01	7.377E-02	0.000E+00
BI-211	4.585E+00	7.908E-01	4.484E-01	0.000E+00
BI-212	1.966E+00	1.164E+00	1.133E+00	0.000E+00
PB-212	2.071E+00	2.907E-01	1.341E-01	0.000E+00
BI-214	1.360E+00	2.308E-01	1.510E-01	0.000E+00
PB-214	1.664E+00	3.008E-01	1.652E-01	0.000E+00
RA-224	4.980E+00	1.739E+00	1.436E+00	0.000E+00
RA-226	1.360E+00	2.308E-01	1.510E-01	0.000E+00
AC-228	1.956E+00	4.722E-01	2.919E-01	0.000E+00
RA-228	1.956E+00	4.722E-01	2.919E-01	0.000E+00
TH-228	2.071E+00	2.907E-01	1.341E-01	0.000E+00
TH-232	1.956E+00	4.722E-01	2.919E-01	0.000E+00
U-235	-9.273E-02	3.017E-01	4.931E-01	0.000E+00
NP-237	9.389E-01	4.271E-01	6.182E-01	0.000E+00
ANH-511	1.220E-01	8.706E-02	6.580E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	4.902E-02	4.731E-01	7.958E-01	0.000E+00 NOT IDENT.
NA-22	-1.841E-02	6.590E-02	1.052E-01	0.000E+00 NOT IDENT.
NA-24	0.000E+00	4.009E+06	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-1.006E-02	5.353E-02	8.863E-02	0.000E+00 FAIL ABUN
V-48	6.436E-02	1.079E-01	1.895E-01	0.000E+00 NOT IDENT.
CR-51	2.290E-01	5.702E-01	9.401E-01	0.000E+00 NOT IDENT.
MN-54	-1.757E-02	5.046E-02	8.290E-02	0.000E+00 NOT IDENT.
CO-56	-6.405E-03	5.287E-02	8.838E-02	0.000E+00 FAIL ABUN

CO-57	7.062E-03	3.553E-02	6.031E-02	0.000E+00	NOT IDENT.
CO-58	-1.278E-02	5.276E-02	8.755E-02	0.000E+00	NOT IDENT.
FE-59	-1.140E-01	1.283E-01	1.934E-01	0.000E+00	NOT IDENT.
CO-60	4.466E-02	5.231E-02	9.431E-02	0.000E+00	NOT IDENT.
ZN-65	-5.133E-02	1.591E-01	2.169E-01	0.000E+00	NOT IDENT.
SE-75	5.035E-03	6.798E-02	1.024E-01	0.000E+00	NOT IDENT.
SR-85	0.000E+00	6.057E-02	1.008E-01	0.000E+00	NOT IDENT.
Y-88	-9.450E-03	4.124E-02	6.515E-02	0.000E+00	NOT IDENT.
Y-91	5.794E-01	3.373E+01	5.571E+01	0.000E+00	NOT IDENT.
NB-94	1.541E-02	4.605E-02	8.048E-02	0.000E+00	NOT IDENT.
NB-95	7.816E-02	6.089E-02	1.117E-01	0.000E+00	NOT IDENT.
NB-95M	0.000E+00	2.250E-01	3.672E-01	0.000E+00	NOT IDENT.
ZR-95	2.678E-02	9.481E-02	1.648E-01	0.000E+00	NOT IDENT.
MO-99	-1.065E+00	2.316E+01	3.933E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	1.488E+18	0.000E+00	0.000E+00	SHORT HLIF
RU-103	8.087E-03	5.484E-02	9.238E-02	0.000E+00	FAIL ABUN
RH-106	2.819E-01	4.357E-01	7.506E-01	0.000E+00	NOT IDENT.
RU-106	2.819E-01	4.348E-01	7.506E-01	0.000E+00	NOT IDENT.
AG-108M	2.672E-03	4.181E-02	7.052E-02	0.000E+00	NOT IDENT.
AG-110M	1.861E-02	4.776E-02	8.408E-02	0.000E+00	NOT IDENT.
SN-113	-9.729E-03	6.389E-02	1.070E-01	0.000E+00	NOT IDENT.
CD-115	-9.045E+00	2.384E+01	3.851E+01	0.000E+00	NOT IDENT.
SN-117M	2.863E-02	9.317E-02	1.380E-01	0.000E+00	NOT IDENT.
TE-123M	-1.750E-02	4.412E-02	6.639E-02	0.000E+00	NOT IDENT.
SB-124	1.236E-02	1.022E-01	1.746E-01	0.000E+00	NOT IDENT.
SB-125	4.424E-02	1.318E-01	2.259E-01	0.000E+00	FAIL ABUN
TE-125M	-1.732E+01	1.482E+01	2.371E+01	0.000E+00	NOT IDENT.
I-126	-8.383E-02	3.239E-01	5.453E-01	0.000E+00	NOT IDENT.
SB-126	1.234E-01	2.384E-01	3.697E-01	0.000E+00	NOT IDENT.
SB-127	-8.285E-01	2.290E+00	3.817E+00	0.000E+00	NOT IDENT.
I-131	-2.177E-02	1.830E-01	3.082E-01	0.000E+00	NOT IDENT.
TE-132	6.874E-01	1.333E+00	2.351E+00	0.000E+00	NOT IDENT.
BA-133	-3.719E-02	6.896E-02	9.684E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	2.222E+04	0.000E+00	0.000E+00	SHORT HLIF
CS-134	1.075E-01	9.546E-02	1.247E-01	0.000E+00	FAIL ABUN
CS-135	4.028E-01	2.518E-01	4.085E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.855E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-9.346E-02	1.639E-01	2.581E-01	0.000E+00	FAIL ABUN
BA-137M	-8.397E-03	4.912E-02	8.326E-02	0.000E+00	NOT IDENT.
CS-137	-8.870E-03	5.189E-02	8.796E-02	0.000E+00	NOT IDENT.
CE-139	8.517E-03	4.446E-02	7.451E-02	0.000E+00	NOT IDENT.
BA-140	1.948E-02	3.943E-01	6.567E-01	0.000E+00	NOT IDENT.
LA-140	2.653E-02	1.351E-01	2.023E-01	0.000E+00	FAIL ABUN
CE-141	7.908E-03	9.376E-02	1.573E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	5.978E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-1.674E-01	2.813E-01	4.584E-01	0.000E+00	NOT IDENT.
PM-144	1.643E-02	4.874E-02	8.517E-02	0.000E+00	NOT IDENT.
PR-144	5.938E-01	3.691E+00	6.378E+00	0.000E+00	NOT IDENT.
PM-146	-1.215E-03	6.021E-02	1.008E-01	0.000E+00	NOT IDENT.
ND-147	3.009E-01	8.664E-01	1.472E+00	0.000E+00	FAIL ABUN
PM-149	-9.760E+01	1.936E+02	3.232E+02	0.000E+00	NOT IDENT.
EU-152	-4.960E-03	1.460E-01	2.251E-01	0.000E+00	NOT IDENT.
GD-153	1.063E-01	1.371E-01	2.117E-01	0.000E+00	NOT IDENT.
EU-154	-6.592E-02	1.872E-01	2.966E-01	0.000E+00	NOT IDENT.
EU-155	1.564E-01	1.535E-01	2.684E-01	0.000E+00	FAIL ABUN
TB-160	-5.841E-02	1.795E-01	2.930E-01	0.000E+00	FAIL ABUN
HO-166M	-2.980E-03	8.038E-02	1.369E-01	0.000E+00	FAIL ABUN
TA-182	-1.988E-01	2.864E-01	4.421E-01	0.000E+00	FAIL ABUN
IR-192	-1.950E-03	5.096E-02	8.687E-02	0.000E+00	FAIL ABUN
BI-207	-1.764E-02	7.806E-02	1.244E-01	0.000E+00	FAIL ABUN
PB-210	-1.218E+00	1.432E+01	2.438E+01	0.000E+00	NOT IDENT.
PB-211	-4.213E-01	1.076E+00	1.742E+00	0.000E+00	NOT IDENT.
RN-219	4.782E-01	5.961E-01	1.044E+00	0.000E+00	FAIL ABUN
RA-223	-4.228E-02	9.943E-01	1.467E+00	0.000E+00	FAIL ABUN
AC-227	2.892E-02	3.560E-01	6.164E-01	0.000E+00	FAIL ABUN
TH-227	2.892E-02	3.560E-01	6.164E-01	0.000E+00	FAIL ABUN
TH-229	7.461E-01	7.960E-01	1.361E+00	0.000E+00	FAIL ABUN
PA-231	-2.809E-01	2.140E+00	3.555E+00	0.000E+00	FAIL ABUN
TH-231	-4.228E-02	9.943E-01	1.467E+00	0.000E+00	FAIL ABUN
PA-233	4.184E-02	8.943E-02	1.564E-01	0.000E+00	FAIL ABUN
PA-234	-1.135E-01	4.216E-01	6.894E-01	0.000E+00	NOT IDENT.
PA-234M	-1.471E-01	6.849E+00	1.125E+01	0.000E+00	NOT IDENT.
TH-234	1.179E+00	2.745E+00	4.733E+00	0.000E+00	FAIL ABUN
U-238	1.179E+00	2.745E+00	4.733E+00	0.000E+00	FAIL ABUN
NP-239	-2.556E-01	5.986E-01	9.922E-01	0.000E+00	FAIL ABUN
AM-241	-3.359E-01	3.406E-01	5.619E-01	0.000E+00	NOT IDENT.
CM-247	2.073E-02	5.564E-02	9.575E-02	0.000E+00	FAIL ABUN
CF-249	2.371E-02	5.845E-02	1.010E-01	0.000E+00	NOT IDENT.

CF-251	-2.808E-02	1.991E-01	3.282E-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]G247563006.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 19:20:17.
Sample ID          : G247563006      Sample quantity      : 1.12090E+02 GRAM
Detector name      : GAM15            Detector geometry   : CAN
Elapsed live time  : 0 02:00:00.00    Elapsed real time  : 0 02:00:01.31  0.0%
Energy tolerance   : 1.50000 keV      Analyst Initials   : MXR1
Abundance limit    : 75.00000          Sensitivity        : 5.00000
Batch ID           : 956157            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	1198	10.66*	9.663E-01	3.894E+01	3.894E+01	11.69
CD-109	88.03	155	3.70*	4.445E+00	3.147E+00	3.225E+00	41.42
SN-126	64.28	-----	9.60	1.941E+00	-----	Line Not Found	-----
	86.94	155	8.90	4.445E+00	1.308E+00	1.308E+00	57.89
	87.57	155	37.00*	4.445E+00	3.147E-01	3.147E-01	41.42
HG-203	70.83	-----	3.69	2.755E+00	-----	Line Not Found	-----
	72.87	-----	6.19	3.001E+00	-----	Line Not Found	-----
	279.20	53	81.56*	3.700E+00	5.868E-02	7.484E-02	97.14
TL-208	277.37	53	6.60	3.700E+00	7.251E-01	7.251E-01	97.54
	583.19	354	85.00*	2.191E+00	6.371E-01	6.371E-01	20.79
	860.56	30	12.50	1.575E+00	5.095E-01	5.095E-01	103.67
BI-211	72.87	-----	1.23	3.001E+00	-----	Line Not Found	-----
	351.06	556	12.92*	3.141E+00	4.585E+00	4.585E+00	17.60
BI-212	727.33	72	6.67*	1.832E+00	1.966E+00	1.966E+00	60.41
	785.37	-----	1.10	1.712E+00	-----	Line Not Found	-----
	1620.50	17	1.47	8.967E-01	4.331E+00	4.331E+00	74.79
PB-212	74.82	284	10.28	3.228E+00	2.871E+00	2.871E+00	37.31
	77.11	445	17.10	3.502E+00	2.486E+00	2.486E+00	23.78
	238.63	1110	43.60*	4.114E+00	2.071E+00	2.071E+00	14.32
	300.09	96	3.30	3.507E+00	2.778E+00	2.778E+00	48.01
BI-214	609.32	391	45.49*	2.117E+00	1.360E+00	1.360E+00	17.32
	1120.29	95	14.92	1.227E+00	1.734E+00	1.734E+00	43.24
	1764.49	66	15.30	8.555E-01	1.700E+00	1.700E+00	28.67
PB-214	74.82	284	5.80	3.228E+00	5.088E+00	5.088E+00	36.89
	77.11	445	9.70	3.502E+00	4.383E+00	4.383E+00	25.17
	242.00	249	7.25	4.078E+00	2.816E+00	2.816E+00	36.10
	295.22	358	18.42	3.546E+00	1.835E+00	1.835E+00	21.63
	351.93	556	35.60*	3.141E+00	1.664E+00	1.664E+00	18.44
RA-224	240.99	249	4.10*	4.078E+00	4.980E+00	4.980E+00	35.63
RA-226	609.32	391	45.49*	2.117E+00	1.360E+00	1.360E+00	17.32
	1120.29	95	14.92	1.227E+00	1.734E+00	1.734E+00	43.24
	1764.49	66	15.30	8.555E-01	1.700E+00	1.700E+00	28.67

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
AC-228	338.32	232	11.27	3.227E+00	2.134E+00	2.134E+00	47.56
	911.20	225	25.80*	1.494E+00	1.956E+00	1.956E+00	24.63
	968.97	115	15.80	1.409E+00	1.736E+00	1.736E+00	48.19
RA-228	338.32	232	11.27	3.227E+00	2.134E+00	2.134E+00	47.56
	911.20	225	25.80*	1.494E+00	1.956E+00	1.956E+00	24.63
	968.97	115	15.80	1.409E+00	1.736E+00	1.736E+00	48.19
TH-228	74.82	284	10.28	3.228E+00	2.871E+00	2.871E+00	36.04
	77.11	445	17.10	3.502E+00	2.486E+00	2.486E+00	23.78
	238.63	1110	43.60*	4.114E+00	2.071E+00	2.071E+00	14.32
TH-232	300.09	96	3.30	3.507E+00	2.778E+00	2.778E+00	77.08
	338.32	232	11.27	3.227E+00	2.134E+00	2.134E+00	24.42
	911.20	225	25.80*	1.494E+00	1.956E+00	1.956E+00	24.63
U-235	968.97	115	15.80	1.409E+00	1.736E+00	1.736E+00	48.19
	89.96	90	3.47	4.645E+00	1.864E+00	1.864E+00	81.35
	93.35	201	5.60	4.839E+00	2.487E+00	2.487E+00	47.82
	143.76	-----	10.96*	5.506E+00	-----	Line Not Found	-----
	163.33	-----	5.08	5.224E+00	-----	Line Not Found	-----
	185.72	222	57.20	4.859E+00	2.670E-01	2.670E-01	39.85
	205.31	-----	5.01	4.560E+00	-----	Line Not Found	-----
NP-237	86.48	155	12.40*	4.445E+00	9.389E-01	9.389E-01	46.42
	95.86	-----	2.68	5.004E+00	-----	Line Not Found	-----
ANH-511	511.00	88	100.00*	2.420E+00	1.220E-01	1.220E-01	72.80

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	3.894E+01	3.894E+01	0.455E+01	11.69	
CD-109	461.40D	1.02	3.147E+00	3.225E+00	1.336E+00	41.42	
SN-126	2.30E+05Y	1.00	3.147E-01	3.147E-01	1.303E-01	41.42	
HG-203	46.59D	1.28	5.868E-02	7.484E-02	7.270E-02	97.14	
TL-208	1.41E+10Y	1.00	6.371E-01	6.371E-01	1.325E-01	20.79	
BI-211	7.04E+08Y	1.00	4.585E+00	4.585E+00	0.807E+00	17.60	
BI-212	1.41E+10Y	1.00	1.966E+00	1.966E+00	1.188E+00	60.41	
PB-212	1.41E+10Y	1.00	2.071E+00	2.071E+00	0.297E+00	14.32	
BI-214	1600.00Y	1.00	1.360E+00	1.360E+00	0.235E+00	17.32	
PB-214	1600.00Y	1.00	1.664E+00	1.664E+00	0.307E+00	18.44	
RA-224	1.41E+10Y	1.00	4.980E+00	4.980E+00	1.774E+00	35.63	
RA-226	1600.00Y	1.00	1.360E+00	1.360E+00	0.235E+00	17.32	
AC-228	1.41E+10Y	1.00	1.956E+00	1.956E+00	0.482E+00	24.63	
RA-228	1.41E+10Y	1.00	1.956E+00	1.956E+00	0.482E+00	24.63	
TH-228	1.41E+10Y	1.00	2.071E+00	2.071E+00	0.297E+00	14.32	
TH-232	1.41E+10Y	1.00	1.956E+00	1.956E+00	0.482E+00	24.63	
U-235	7.04E+08Y	1.00	2.670E-01	2.670E-01	1.064E-01	39.85	K
NP-237	2.14E+06Y	1.00	9.389E-01	9.389E-01	4.359E-01	46.42	
ANH-511	1.00E+09Y	1.00	1.220E-01	1.220E-01	0.888E-01	72.80	
Total Activity :			7.035E+01	7.044E+01			

Grand Total Activity : 7.035E+01 7.044E+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	153.81	94	292	1.60	306.54	302	9	1.31E-02	68.6	5.37E+00	T
0	209.89	146	360	1.13	418.69	412	13	2.03E-02	56.4	4.49E+00	T
0	270.16	123	214	1.13	539.22	533	13	1.71E-02	52.3	3.77E+00	T
0	328.21	143	161	1.39	655.31	648	14	1.99E-02	41.2	3.30E+00	T
0	463.24	72	76	2.76	925.39	921	9	1.00E-02	49.9	2.60E+00	T
0	795.55	41	71	1.49	1590.05	1582	13	5.72E-03	90.1	1.69E+00	T
0	1237.81	55	58	0.97	2474.74	2467	17	7.59E-03	68.9	1.12E+00	T
0	1376.52	33	7	2.97	2752.25	2746	13	4.60E-03	51.9	1.01E+00	
0	1591.05	27	33	4.87	3181.44	3168	22	3.75E-03	***	9.07E-01	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563006.CNF;1
* Acquisition date   : 3-MAR-2010 19:20:17.   Detector SN#      :
* Detector ID        : GAM15                   Sensitivity       : 5.00000
* Geometry           : CAN                     Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00           Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:01.31           Half life ratio  : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 15-FEB-2010 12:00:00   Nuclide Library   : SOLID
* Sample ID          : G247563006             Analyst initials: MXR1
* Batch Number       : 956157                 Sample Quantity   : 1.12090E+02 GRAM
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 3-FEB-2010 11:04:32.11MS Isotope      :
* MSD ID             :                          MSD Isotope   :
* LCS ID             : 1032-A                   LCS Isotope       :
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.894E+01	4.552E+00	7.936E-01	7.799E-02	49.064
CD-109	3.225E+00	1.336E+00	2.151E+00	2.670E-01	1.499
SN-126	3.147E-01	1.303E-01	2.152E-01	2.663E-02	1.462
HG-203	7.484E-02	7.270E-02	9.350E-02	1.028E-02	0.800
TL-208	6.371E-01	1.325E-01	7.358E-02	6.729E-03	8.660
BI-211	4.585E+00	8.069E-01	4.453E-01	4.435E-02	10.297
BI-212	1.966E+00	1.188E+00	1.132E+00	1.407E-01	1.736
PB-212	2.071E+00	2.966E-01	1.327E-01	1.586E-02	15.607
BI-214	1.360E+00	2.355E-01	1.506E-01	1.501E-02	9.028
PB-214	1.664E+00	3.069E-01	1.641E-01	1.865E-02	10.143
RA-224	4.980E+00	1.774E+00	1.422E+00	1.569E-01	3.502
RA-226	1.360E+00	2.355E-01	1.506E-01	1.501E-02	9.028
AC-228	1.956E+00	4.818E-01	2.922E-01	3.539E-02	6.695
RA-228	1.956E+00	4.818E-01	2.922E-01	3.539E-02	6.695
TH-228	2.071E+00	2.966E-01	1.327E-01	1.586E-02	15.607
TH-232	1.956E+00	4.818E-01	2.922E-01	3.539E-02	6.695
U-235	2.670E-01	1.064E-01	4.862E-01	8.652E-02	0.549
NP-237	9.389E-01	4.359E-01	6.071E-01	1.475E-01	1.547

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
ANH-511	1.220E-01	8.884E-02	6.555E-02	5.664E-03	1.862

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	4.902E-02		4.827E-01	7.923E-01	7.365E-02	0.062
NA-22	-1.841E-02		6.725E-02	1.056E-01	9.596E-03	-0.174
NA-24	1.265E+00		2.045E+00	Half-Life	too short	
SC-46	-1.006E-02		5.462E-02	8.870E-02	8.243E-03	-0.113
V-48	6.436E-02		1.101E-01	1.898E-01	1.735E-02	0.339
CR-51	2.290E-01		5.818E-01	9.330E-01	9.901E-02	0.245
MN-54	-1.757E-02		5.149E-02	8.292E-02	7.525E-03	-0.212
CO-56	-6.405E-03		5.395E-02	8.841E-02	8.068E-03	-0.072
CO-57	7.062E-03		3.626E-02	5.939E-02	5.982E-03	0.119
CO-58	-1.278E-02		5.384E-02	8.755E-02	7.871E-03	-0.146
FE-59	-1.140E-01		1.309E-01	1.939E-01	1.809E-02	-0.588
CO-60	4.466E-02		5.338E-02	9.471E-02	9.104E-03	0.472
ZN-65	-5.133E-02		1.623E-01	2.174E-01	1.858E-02	-0.236
SE-75	5.035E-03		6.936E-02	1.015E-01	1.113E-02	0.050
SR-85	1.166E-01		6.180E-02	1.004E-01	8.675E-03	1.161
Y-88	-9.450E-03		4.208E-02	6.560E-02	5.525E-03	-0.144
Y-91	5.794E-01		3.442E+01	5.589E+01	4.712E+00	0.010
NB-94	1.541E-02		4.699E-02	8.039E-02	6.787E-03	0.192
NB-95	7.816E-02		6.213E-02	1.116E-01	9.779E-03	0.700
NB-95M	6.019E-01		2.296E-01	3.635E-01	4.379E-02	1.656
ZR-95	2.678E-02		9.675E-02	1.648E-01	1.583E-02	0.163
MO-99	-1.065E+00		2.363E+01	3.930E+01	6.195E+00	-0.027
TC-99M	1.749E+11		7.591E+11	Half-Life	too short	
RU-103	8.087E-03		5.596E-02	9.201E-02	1.286E-02	0.088
RH-106	2.819E-01		4.446E-01	7.490E-01	9.824E-02	0.376
RU-106	2.819E-01		4.437E-01	7.490E-01	6.295E-02	0.376
AG-108M	2.672E-03		4.266E-02	7.016E-02	6.200E-03	0.038
AG-110M	1.861E-02		4.873E-02	8.393E-02	7.143E-03	0.222
SN-113	-9.729E-03		6.520E-02	1.063E-01	9.234E-03	-0.091
CD-115	-9.045E+00		2.433E+01	3.837E+01	3.312E+00	-0.236
SN-117M	2.863E-02		9.507E-02	1.361E-01	1.427E-02	0.210
TE-123M	-1.750E-02		4.502E-02	6.551E-02	6.903E-03	-0.267
SB-124	1.236E-02		1.043E-01	1.757E-01	1.654E-02	0.070
SB-125	4.424E-02		1.344E-01	2.247E-01	1.956E-02	0.197
TE-125M	-1.732E+01		1.512E+01	2.332E+01	2.771E+00	-0.743
I-126	-8.383E-02		3.305E-01	5.444E-01	4.490E-02	-0.154
SB-126	1.234E-01		2.432E-01	3.693E-01	3.153E-02	0.334
SB-127	-8.285E-01		2.337E+00	3.812E+00	4.394E-01	-0.217
I-131	-2.177E-02		1.867E-01	3.062E-01	2.957E-02	-0.071
TE-132	6.874E-01		1.361E+00	2.327E+00	4.065E-01	0.295
BA-133	-3.719E-02		7.037E-02	9.619E-02	1.300E-02	-0.387
I-133	4.591E-03		1.134E-02	Half-Life	too short	

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CS-134	1.075E-01	+	9.741E-02	1.247E-01	1.118E-02	0.863
CS-135	4.028E-01		2.569E-01	4.048E-01	4.858E-02	0.995
I-135	1.185E+10		9.466E+10	Half-Life	too short	
CS-136	-9.346E-02		1.672E-01	2.587E-01	2.393E-02	-0.361
BA-137M	-8.397E-03		5.012E-02	8.312E-02	6.834E-03	-0.101
CS-137	-8.870E-03		5.295E-02	8.781E-02	7.235E-03	-0.101
CE-139	8.517E-03		4.537E-02	7.355E-02	7.851E-03	0.116
BA-140	1.948E-02		4.024E-01	6.545E-01	2.220E-01	0.030
LA-140	2.653E-02		1.378E-01	2.035E-01	1.908E-02	0.130
CE-141	7.908E-03		9.567E-02	1.551E-01	1.603E-02	0.051
CE-143	1.762E-03		3.050E-04	Half-Life	too short	
CE-144	-1.674E-01		2.871E-01	4.517E-01	7.289E-02	-0.371
PM-144	1.643E-02		4.973E-02	8.507E-02	7.157E-03	0.193
PR-144	5.938E-01		3.766E+00	6.370E+00	5.357E-01	0.093
PM-146	-1.215E-03		6.144E-02	1.003E-01	1.061E-02	-0.012
ND-147	3.009E-01		8.841E-01	1.467E+00	2.194E-01	0.205
PM-149	-9.760E+01		1.976E+02	3.205E+02	5.389E+01	-0.305
EU-152	-4.960E-03		1.490E-01	2.235E-01	2.275E-02	-0.022
GD-153	1.063E-01		1.399E-01	2.081E-01	2.297E-02	0.511
EU-154	-6.592E-02		1.910E-01	2.977E-01	3.491E-02	-0.221
EU-155	1.564E-01		1.566E-01	2.640E-01	2.781E-02	0.592
TB-160	-5.841E-02		1.831E-01	2.932E-01	2.714E-02	-0.199
HO-166M	-2.980E-03		8.202E-02	1.367E-01	1.161E-02	-0.022
TA-182	-1.988E-01		2.923E-01	4.436E-01	3.807E-02	-0.448
IR-192	-1.950E-03		5.200E-02	8.620E-02	8.888E-03	-0.023
BI-207	-1.764E-02		7.965E-02	1.247E-01	1.100E-02	-0.142
PB-210	-1.218E+00		1.461E+01	2.382E+01	2.932E+00	-0.051
PB-211	-4.213E-01		1.098E+00	1.732E+00	8.377E-01	-0.243
RN-219	4.782E-01		6.083E-01	1.038E+00	1.534E-01	0.461
RA-223	-4.228E-02		1.015E+00	1.456E+00	2.643E-01	-0.029
AC-227	2.892E-02		3.633E-01	6.106E-01	8.450E-02	0.047
TH-227	2.892E-02		3.633E-01	6.106E-01	9.288E-02	0.047
TH-229	7.461E-01		8.123E-01	1.345E+00	1.463E-01	0.555
PA-231	-2.809E-01		2.184E+00	3.525E+00	5.621E-01	-0.080
TH-231	-4.228E-02		1.015E+00	1.456E+00	2.643E-01	-0.029
PA-233	4.184E-02		9.125E-02	1.551E-01	1.641E-02	0.270
PA-234	-1.135E-01		4.302E-01	6.903E-01	1.315E-01	-0.164
PA-234M	-1.471E-01		6.989E+00	1.127E+01	1.169E+00	-0.013
TH-234	1.179E+00		2.801E+00	4.636E+00	9.193E-01	0.254
U-238	1.179E+00		2.801E+00	4.636E+00	9.193E-01	0.254
NP-239	-2.556E-01		6.108E-01	9.767E-01	9.858E-02	-0.262
AM-241	-3.359E-01		3.476E-01	5.501E-01	6.458E-02	-0.611
CM-247	2.073E-02		5.677E-02	9.520E-02	8.051E-03	0.218
CF-249	2.371E-02		5.964E-02	1.004E-01	8.555E-03	0.236
CF-251	-2.808E-02		2.032E-01	3.242E-01	3.488E-02	-0.087

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247563006          *
* Acquisition date   : 3-MAR-2010 19:20:17 Detector SN#      :              *
* Detector ID        : GAM15                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 02:00:00.00              Abundance limit : 75.000        *
* Elapsed real time  : 0 02:00:01.31              Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247563006              Analyst initials: MXR1         *
* Batch Number       : 956157                  Sample Quantity : 1.1209E+02 GRAM  *
* Recovery           : 1.00000                 Carrier Weight   : 0.00000        *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME  : 3-FEB-2010 11:04:32 MS Isotope      :                  *
* MSD DPM           : 0.000                      MSD Isotope   :                  *
* LCS DPM           : 0.000                      LCS Isotope   :                  *
* LCSD DPM          : 0.000                      LCSD Isotope  :                  *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.894E+01	4.461E+00	3.951E-01	2.276E+00
CD-109	3.225E+00	1.309E+00	1.096E+00	6.678E-01
SN-126	3.147E-01	1.277E-01	1.096E-01	6.516E-02
HG-203	7.484E-02	7.124E-02	4.719E-02	3.635E-02
TL-208	6.371E-01	1.298E-01	3.691E-02	6.625E-02
BI-211	4.585E+00	7.908E-01	2.243E-01	4.035E-01
BI-212	1.966E+00	1.164E+00	5.670E-01	5.939E-01
PB-212	2.071E+00	2.907E-01	6.707E-02	1.483E-01
BI-214	1.360E+00	2.308E-01	7.553E-02	1.177E-01
PB-214	1.664E+00	3.008E-01	8.264E-02	1.535E-01
RA-224	4.980E+00	1.739E+00	7.186E-01	8.872E-01
RA-226	1.360E+00	2.308E-01	7.553E-02	1.177E-01
AC-228	1.956E+00	4.722E-01	1.460E-01	2.409E-01
RA-228	1.956E+00	4.722E-01	1.460E-01	2.409E-01
TH-228	2.071E+00	2.907E-01	6.707E-02	1.483E-01
TH-232	1.956E+00	4.722E-01	1.460E-01	2.409E-01
U-235	-9.273E-02	3.017E-01	2.467E-01	1.539E-01
NP-237	9.389E-01	4.271E-01	3.093E-01	2.179E-01
ANH-511	1.220E-01	8.706E-02	3.292E-02	4.442E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	4.902E-02	4.731E-01	3.981E-01	2.414E-01 NOT IDENT.
NA-22	-1.841E-02	6.590E-02	5.265E-02	3.362E-02 NOT IDENT.
NA-24	1.265E+06	4.009E+06	0.000E+00	2.045E+06 SHORT HLIF
SC-46	-1.006E-02	5.353E-02	4.434E-02	2.731E-02 FAIL ABUN
V-48	6.436E-02	1.079E-01	9.481E-02	5.507E-02 NOT IDENT.
CR-51	2.290E-01	5.702E-01	4.703E-01	2.909E-01 NOT IDENT.
MN-54	-1.757E-02	5.046E-02	4.148E-02	2.574E-02 NOT IDENT.
CO-56	-6.405E-03	5.287E-02	4.422E-02	2.697E-02 FAIL ABUN

CO-57	7.062E-03	3.553E-02	3.017E-02	1.813E-02	NOT IDENT.
CO-58	-1.278E-02	5.276E-02	4.380E-02	2.692E-02	NOT IDENT.
FE-59	-1.140E-01	1.283E-01	9.678E-02	6.544E-02	NOT IDENT.
CO-60	4.466E-02	5.231E-02	4.719E-02	2.669E-02	NOT IDENT.
ZN-65	-5.133E-02	1.591E-01	1.085E-01	8.115E-02	NOT IDENT.
SE-75	5.035E-03	6.798E-02	5.122E-02	3.468E-02	NOT IDENT.
SR-85	1.166E-01	6.057E-02	5.043E-02	3.090E-02	NOT IDENT.
Y-88	-9.450E-03	4.124E-02	3.260E-02	2.104E-02	NOT IDENT.
Y-91	5.794E-01	3.373E+01	2.787E+01	1.721E+01	NOT IDENT.
NB-94	1.541E-02	4.605E-02	4.026E-02	2.350E-02	NOT IDENT.
NB-95	7.816E-02	6.089E-02	5.587E-02	3.106E-02	NOT IDENT.
NB-95M	6.019E-01	2.250E-01	1.837E-01	1.148E-01	NOT IDENT.
ZR-95	2.678E-02	9.481E-02	8.247E-02	4.837E-02	NOT IDENT.
MO-99	-1.065E+00	2.316E+01	1.968E+01	1.182E+01	NOT IDENT.
TC-99M	1.749E+17	1.488E+18	0.000E+00	0.000E+00	SHORT HLIF
RU-103	8.087E-03	5.484E-02	4.622E-02	2.798E-02	FAIL ABUN
RH-106	2.819E-01	4.357E-01	3.755E-01	2.223E-01	NOT IDENT.
RU-106	2.819E-01	4.348E-01	3.755E-01	2.219E-01	NOT IDENT.
AG-108M	2.672E-03	4.181E-02	3.528E-02	2.133E-02	NOT IDENT.
AG-110M	1.861E-02	4.776E-02	4.206E-02	2.437E-02	NOT IDENT.
SN-113	-9.729E-03	6.389E-02	5.351E-02	3.260E-02	NOT IDENT.
CD-115	-9.045E+00	2.384E+01	1.926E+01	1.216E+01	NOT IDENT.
SN-117M	2.863E-02	9.317E-02	6.902E-02	4.754E-02	NOT IDENT.
TE-123M	-1.750E-02	4.412E-02	3.321E-02	2.251E-02	NOT IDENT.
SB-124	1.236E-02	1.022E-01	8.734E-02	5.213E-02	NOT IDENT.
SB-125	4.424E-02	1.318E-01	1.130E-01	6.722E-02	FAIL ABUN
TE-125M	-1.732E+01	1.482E+01	1.186E+01	7.559E+00	NOT IDENT.
I-126	-8.383E-02	3.239E-01	2.728E-01	1.652E-01	NOT IDENT.
SB-126	1.234E-01	2.384E-01	1.850E-01	1.216E-01	NOT IDENT.
SB-127	-8.285E-01	2.290E+00	1.910E+00	1.169E+00	NOT IDENT.
I-131	-2.177E-02	1.830E-01	1.542E-01	9.336E-02	NOT IDENT.
TE-132	6.874E-01	1.333E+00	1.176E+00	6.803E-01	NOT IDENT.
BA-133	-3.719E-02	6.896E-02	4.845E-02	3.519E-02	NOT IDENT.
I-133	4.591E+03	2.222E+04	0.000E+00	1.134E+04	SHORT HLIF
CS-134	1.075E-01	9.546E-02	6.239E-02	4.871E-02	FAIL ABUN
CS-135	4.028E-01	2.518E-01	2.044E-01	1.285E-01	NOT IDENT.
I-135	1.185E+16	1.855E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-9.346E-02	1.639E-01	1.292E-01	8.362E-02	FAIL ABUN
BA-137M	-8.397E-03	4.912E-02	4.166E-02	2.506E-02	NOT IDENT.
CS-137	-8.870E-03	5.189E-02	4.401E-02	2.647E-02	NOT IDENT.
CE-139	8.517E-03	4.446E-02	3.728E-02	2.268E-02	NOT IDENT.
BA-140	1.948E-02	3.943E-01	3.285E-01	2.012E-01	NOT IDENT.
LA-140	2.653E-02	1.351E-01	1.012E-01	6.891E-02	FAIL ABUN
CE-141	7.908E-03	9.376E-02	7.870E-02	4.784E-02	NOT IDENT.
CE-143	1.762E+03	5.978E+02	0.000E+00	3.050E+02	SHORT HLIF
CE-144	-1.674E-01	2.813E-01	2.293E-01	1.435E-01	NOT IDENT.
PM-144	1.643E-02	4.874E-02	4.261E-02	2.487E-02	NOT IDENT.
PR-144	5.938E-01	3.691E+00	3.191E+00	1.883E+00	NOT IDENT.
PM-146	-1.215E-03	6.021E-02	5.042E-02	3.072E-02	NOT IDENT.
ND-147	3.009E-01	8.664E-01	7.366E-01	4.421E-01	FAIL ABUN
PM-149	-9.760E+01	1.936E+02	1.617E+02	9.879E+01	NOT IDENT.
EU-152	-4.960E-03	1.460E-01	1.126E-01	7.451E-02	NOT IDENT.
GD-153	1.063E-01	1.371E-01	1.059E-01	6.996E-02	NOT IDENT.
EU-154	-6.592E-02	1.872E-01	1.484E-01	9.552E-02	NOT IDENT.
EU-155	1.564E-01	1.535E-01	1.343E-01	7.831E-02	FAIL ABUN
TB-160	-5.841E-02	1.795E-01	1.466E-01	9.156E-02	FAIL ABUN
HO-166M	-2.980E-03	8.038E-02	6.849E-02	4.101E-02	FAIL ABUN
TA-182	-1.988E-01	2.864E-01	2.212E-01	1.461E-01	FAIL ABUN
IR-192	-1.950E-03	5.096E-02	4.346E-02	2.600E-02	FAIL ABUN
BI-207	-1.764E-02	7.806E-02	6.222E-02	3.982E-02	FAIL ABUN
PB-210	-1.218E+00	1.432E+01	1.220E+01	7.304E+00	NOT IDENT.
PB-211	-4.213E-01	1.076E+00	8.715E-01	5.489E-01	NOT IDENT.
RN-219	4.782E-01	5.961E-01	5.224E-01	3.041E-01	FAIL ABUN
RA-223	-4.228E-02	9.943E-01	7.342E-01	5.073E-01	FAIL ABUN
AC-227	2.892E-02	3.560E-01	3.084E-01	1.816E-01	FAIL ABUN
TH-227	2.892E-02	3.560E-01	3.084E-01	1.816E-01	FAIL ABUN
TH-229	7.461E-01	7.960E-01	6.807E-01	4.061E-01	FAIL ABUN
PA-231	-2.809E-01	2.140E+00	1.779E+00	1.092E+00	FAIL ABUN
TH-231	-4.228E-02	9.943E-01	7.342E-01	5.073E-01	FAIL ABUN
PA-233	4.184E-02	8.943E-02	7.823E-02	4.563E-02	FAIL ABUN
PA-234	-1.135E-01	4.216E-01	3.449E-01	2.151E-01	NOT IDENT.
PA-234M	-1.471E-01	6.849E+00	5.631E+00	3.495E+00	NOT IDENT.
TH-234	1.179E+00	2.745E+00	2.368E+00	1.400E+00	FAIL ABUN
U-238	1.179E+00	2.745E+00	2.368E+00	1.400E+00	FAIL ABUN
NP-239	-2.556E-01	5.986E-01	4.964E-01	3.054E-01	FAIL ABUN
AM-241	-3.359E-01	3.406E-01	2.811E-01	1.738E-01	NOT IDENT.
CM-247	2.073E-02	5.564E-02	4.790E-02	2.839E-02	FAIL ABUN
CF-249	2.371E-02	5.845E-02	5.051E-02	2.982E-02	NOT IDENT.

CF-251	-2.808E-02	1.991E-01	1.642E-01	1.016E-01 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	282.5179
49.72	307.9706
57.36	0.0000
59.54	351.6797
63.29	347.7802
63.29	347.7802
64.28	336.5402
67.75	424.7210
69.67	395.8888
70.83	366.5017
72.81	411.8359
72.87	411.8685
72.87	411.8685
74.82	412.9373
74.82	412.9373
74.82	412.9373
74.97	413.0198
77.11	414.1750
77.11	414.1750
77.11	414.1750
79.69	413.9495
79.80	452.3716
80.12	452.5547
80.19	452.5945
80.57	478.4128
81.00	475.4701
81.07	475.5118
81.07	475.5118
83.79	414.4723
83.79	414.4723
85.43	386.3306
86.48	448.0697
86.55	448.1087
86.79	504.6685
86.94	530.5648
87.57	521.2830
88.03	503.8084
88.47	395.8266
89.96	396.5265
91.11	397.0633
92.59	397.7482
92.59	397.7482
93.35	329.8527
94.67	335.2366
94.87	372.7512
94.87	372.7512
95.86	379.6902
97.43	308.5358
98.44	303.5154
99.53	316.0100
100.11	330.5395
103.18	393.2608
103.37	358.4245
105.31	313.8925
106.12	333.7350
109.28	394.7958
111.00	357.1960
111.76	361.6223
116.30	367.4664
117.23	364.6852
121.12	307.5211
121.78	305.6273
122.06	301.5242
123.07	321.7326
131.20	344.3082
133.52	330.2336
136.00	326.7448

136.47	327.9471
140.51	330.2122
140.51	0.0000
143.76	348.2628
144.24	338.7909
144.24	338.7909
145.44	342.3584
152.43	339.2695
153.25	300.5138
154.21	288.0383
154.21	288.0383
156.02	309.2076
158.56	285.6301
159.00	310.2654
162.66	295.2816
163.33	297.6159
165.86	315.6410
176.60	306.2631
177.52	330.6472
181.07	296.0836
184.41	307.4375
185.72	280.7697
193.51	279.0602
197.04	318.7912
205.31	299.6011
210.85	259.6408
215.65	268.0285
222.11	282.2082
227.38	254.0596
228.16	239.6135
228.18	239.6167
235.69	250.2525
235.96	250.2959
235.96	250.2959
238.63	233.9077
238.63	233.9077
240.99	234.2595
242.00	234.4104
244.70	236.3451
252.40	222.0601
252.80	223.9652
256.23	209.5983
256.23	209.5983
260.90	204.6118
264.66	175.5555
268.22	175.9280
269.46	185.7944
269.46	185.7944
271.23	193.3968
273.65	206.1667
276.40	206.4971
277.37	214.8301
277.60	214.8608
278.00	214.5168
279.20	200.5651
279.54	189.6336
280.46	183.4623
283.69	202.1280
284.31	205.5539
285.41	210.3991
285.90	209.5152
287.50	185.7746
293.27	0.0000
295.22	180.2542
295.96	180.3284
298.57	180.5905
299.98	185.4857
299.98	185.4857
300.09	185.4976
300.09	185.4976
300.13	185.5023
301.36	206.2512
302.85	174.6635
304.50	154.1596
304.50	154.1596
304.85	157.3683
308.46	191.1230
311.90	155.0964

316.51	177.5521
319.41	154.8629
320.08	159.8573
323.87	155.7601
323.87	155.7601
328.76	154.5469
333.37	154.9141
334.37	125.9327
334.37	125.9327
338.28	163.0679
338.28	163.0679
338.32	163.0720
338.32	163.0720
338.32	163.0720
340.48	142.5202
340.55	142.5247
344.28	148.8193
351.06	135.1350
351.93	138.7759
356.01	163.2100
364.49	147.4969
366.42	153.5397
383.85	146.8727
388.16	142.1953
388.63	148.1924
391.69	142.4257
400.66	128.0094
401.81	132.0773
402.40	146.1248
404.85	157.3085
410.95	140.6580
414.70	132.8411
423.72	130.3369
427.09	132.5511
427.87	125.5106
433.94	120.7649
453.88	120.7627
463.37	122.2641
468.07	101.2238
473.00	106.2401
476.78	114.6666
477.60	115.7365
487.02	96.4648
492.35	94.5891
497.08	94.7635
511.00	103.6509
514.00	89.0949
527.90	108.5297
529.87	0.0000
531.02	97.0537
537.26	95.1636
546.56	0.0000
563.25	107.8081
569.33	87.7176
569.50	95.2122
569.70	94.1488
583.19	77.3965
600.60	118.9590
602.73	131.6709
604.72	88.4417
609.32	86.7715
609.32	86.7715
610.33	86.8027
614.28	76.0532
618.01	97.9058
621.93	76.2480
621.93	76.2480
633.25	76.5352
635.95	84.2620
636.99	90.8603
645.85	77.9492
657.76	83.5759
661.66	94.7142
661.66	94.7142
664.57	0.0000
666.33	95.7756
666.50	95.7819
677.62	85.0277

685.70	92.6554
695.00	85.4882
696.49	91.1054
696.51	95.7536
697.00	104.1364
702.65	85.6885
706.68	85.7952
711.68	79.3866
720.70	73.8516
721.93	0.0000
722.78	96.3867
722.91	96.3909
723.31	93.1900
724.19	85.1786
727.33	78.8235
733.00	69.2886
735.93	83.7290
739.50	80.9924
747.24	76.4566
752.31	65.2266
753.82	53.9060
756.73	66.2573
763.94	90.1081
765.81	75.9212
766.42	79.7310
777.92	86.6585
778.90	94.3030
783.70	77.2625
785.37	90.6590
795.86	62.3504
801.95	76.2215
810.29	65.3465
810.76	68.2381
815.77	64.4823
818.51	52.0104
832.01	78.3023
834.85	77.3942
836.80	0.0000
846.77	64.0557
856.80	55.0522
860.56	50.6532
871.09	48.8403
873.19	49.8441
875.33	0.0000
879.36	56.7775
880.51	54.8356
883.24	51.9347
884.68	47.0527
889.28	61.8311
898.04	65.9041
911.20	52.3088
911.20	52.3088
911.20	52.3088
926.50	84.2149
937.49	93.3880
944.13	57.7168
946.00	64.7117
949.00	53.8011
962.29	61.6867
964.08	87.4286
966.15	82.3259
968.97	107.1263
968.97	107.1263
968.97	107.1263
983.53	56.2632
996.26	62.4806
1001.03	59.5246
1004.73	55.5371
1037.84	51.8965
1038.76	0.0000
1048.07	66.2986
1050.41	66.3356
1050.41	66.3356
1063.66	60.3924
1085.87	69.9534
1099.45	65.0046
1112.07	54.9874
1115.54	78.1049

1120.29	62.1924
1120.29	62.1924
1120.55	62.1973
1121.30	56.8750
1131.51	0.0000
1173.23	71.2871
1177.93	73.4578
1189.05	76.7843
1204.77	77.0338
1221.41	78.3570
1231.02	56.3821
1235.36	74.6357
1238.28	87.1250
1260.41	0.0000
1271.85	44.9258
1274.44	59.9307
1274.54	58.8627
1291.59	47.2477
1298.22	0.0000
1312.11	38.8125
1332.49	25.9766
1365.19	27.0712
1368.63	0.0000
1384.29	33.5167
1408.01	22.5820
1457.56	0.0000
1460.82	27.5486
1489.16	13.3662
1505.03	25.8493
1596.21	18.7183
1620.50	20.5020
1678.03	0.0000
1690.97	13.8247
1764.49	15.7335
1764.49	15.7335
1770.23	3.4994
1771.35	5.2500
1791.20	0.0000
1836.06	12.1184

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247563006

Total Uranium Activity	3.4636E+00	ug/g
Total Uranium Counting Unc.	8.1673E+00	ug/g
Total Uranium Tpu	4.1670E-06	ug/g
Total Uranium Mda	7.0453E+00	ug/g

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*****
*
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON ,SC 29417                           *
*                               GROSS GAMMA REPORT                             *
*
*****
*
*  BATCH ID      : 956157                SAMPLE ID   : G247563006                *
*  ANALYST       : MXR1                  DETECTOR    : GAM15                  *
*  SAMPLE DATE   : 15-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00          *
*  ANALYSIS DATE: 3-MAR-2010 19:20:17.27  SAMPLE ALQT: 112.090 GRAM          *
*
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.157E+01
GROSS GAMMA ERROR (pCi/GRAM )   : 1.893E+00
GROSS GAMMA MDA (pCi/GRAM )     : 5.322E+00
GROSS GAMMA DLC (pCi/GRAM )     : 2.588E+00

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VAX/VMS Nuclide Identification Report Generated 3-MAR-2010 22:43:39.76

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563007.CNF;1
Sample date       : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 20:42:58.
Sample ID        : G247563007 Sample quantity   : 1.25530E+02 GRAM
Detector name    : GAM04 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.38 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity       : 5.00000
Batch ID        : 956157 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	63.43*	82	416	2.43	126.90	123	9	1.14E-02	47.1	
2	3	74.76	334	396	1.14	149.55	144	15	4.63E-02	11.4	1.47E+00
3	3	77.06*	506	339	1.00	154.16	144	15	7.02E-02	7.5	
4	3	87.22	265	434	1.25	174.47	171	21	3.68E-02	14.9	1.38E+00
5	3	89.87	153	374	1.19	179.78	171	21	2.13E-02	22.6	
6	3	92.76*	298	367	1.25	185.56	171	21	4.14E-02	12.6	
7	0	128.87	78	355	1.25	257.79	253	8	1.08E-02	43.6	
8	0	186.04*	229	421	1.33	372.15	368	10	3.19E-02	18.3	
9	0	208.96	177	216	1.43	417.98	414	8	2.46E-02	16.2	
10	3	238.60*	1269	177	1.11	477.27	470	18	1.76E-01	3.3	1.05E+00
11	3	241.67	329	168	1.54	483.42	470	18	4.56E-02	10.2	
12	0	270.02	106	236	1.70	540.11	536	9	1.47E-02	28.0	
13	0	295.16	417	264	1.09	590.40	584	12	5.79E-02	9.2	
14	0	300.65*	110	205	1.55	601.37	596	12	1.53E-02	28.3	
15	0	328.24	50	182	0.81	656.57	652	9	6.88E-03	51.1	
16	0	338.22*	311	218	1.13	676.53	670	13	4.31E-02	11.5	
17	0	351.90*	645	174	1.37	703.89	699	11	8.95E-02	5.6	
18	0	409.60	83	123	1.33	819.28	815	10	1.15E-02	27.4	
19	0	463.00	72	99	1.20	926.10	922	9	9.94E-03	27.7	
20	0	510.85*	128	172	1.53	1021.79	1014	17	1.77E-02	27.6	
21	0	583.26*	407	116	1.34	1166.61	1159	13	5.65E-02	7.4	
22	0	609.27*	502	92	1.48	1218.64	1211	14	6.98E-02	6.1	
23	0	727.32	120	78	1.61	1454.73	1448	11	1.67E-02	16.9	
24	0	860.62	48	58	1.23	1721.30	1717	10	6.64E-03	33.1	
25	0	911.29*	257	50	1.61	1822.64	1817	11	3.57E-02	8.3	
26	0	934.62	56	44	1.68	1869.29	1863	11	7.82E-03	26.4	
27	1	964.64	67	53	1.81	1929.34	1923	27	9.25E-03	22.1	1.42E+00
28	1	969.00*	150	42	1.73	1938.05	1923	27	2.08E-02	11.7	
29	0	1120.96	123	79	2.05	2241.93	2235	18	1.71E-02	19.4	
30	0	1460.84*	1393	31	2.10	2921.56	2913	19	1.93E-01	2.9	
31	0	1588.32	40	3	1.97	3176.47	3169	14	5.52E-03	18.7	
32	0	1729.76	21	10	1.34	3459.26	3454	11	2.90E-03	37.5	
33	0	1764.89	110	0	1.70	3529.51	3522	17	1.53E-02	9.5	

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

## VMS Nuclide Identification Report V3.1 Generated 3-MAR-2010 22:43:42

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Configuration       : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563007.CNF;1
Analyses by        : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title       : MXR1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 20:42:58
Sample ID          : G247563007 Sample quantity : 125.53 GRAM
Sample type        : SOLID Sample geometry :
Detector name      : GAMMA4 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.38 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

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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	*	3.637E+01	3.321E+00	5.223E-01	3.712E-02	69.625
CD-109	+	88.03	*	4.377E+00	1.409E+00	1.422E+00	1.709E-01	3.078
SN-126	+	64.28		1.221E+00	1.168E+00	1.097E+00	1.890E-01	1.113
	+	86.94		1.775E+00	9.178E-01	5.875E-01	2.478E-01	3.022
	+	87.57	*	4.270E-01	1.375E-01	1.398E-01	1.676E-02	3.055
TL-208		277.37		4.173E-01	4.085E-01	7.168E-01	8.075E-02	0.582
	+	583.19	*	5.834E-01	9.372E-02	5.995E-02	3.762E-03	9.732
	+	860.56		6.557E-01	4.371E-01	5.623E-01	4.689E-02	1.166
BI-211		72.87		3.480E+00	4.201E+00	6.559E+00	7.519E-01	0.531
	+	351.06	*	4.115E+00	5.416E-01	3.564E-01	2.408E-02	11.547
PB-212	+	74.82		2.673E+00	7.282E-01	6.801E-01	1.022E-01	3.931
	+	77.11		2.255E+00	4.243E-01	3.798E-01	4.357E-02	5.938
	+	238.63	*	1.803E+00	1.893E-01	8.926E-02	7.220E-03	20.200
	+	300.09		2.443E+00	1.400E+00	1.158E+00	1.035E-01	2.110
BI-214	+	609.32	*	1.394E+00	1.995E-01	1.112E-01	8.247E-03	12.537
	+	1120.29		1.816E+00	7.234E-01	5.266E-01	4.936E-02	3.448
	+	1764.49		2.256E+00	4.517E-01	2.383E-01	1.453E-02	9.468
PB-214	+	74.82		4.738E+00	1.263E+00	1.205E+00	1.679E-01	3.931
	+	77.11		3.975E+00	8.167E-01	6.695E-01	9.459E-02	5.938
	+	242.00		2.834E+00	6.279E-01	5.103E-01	4.508E-02	5.554
	+	295.22		1.638E+00	3.376E-01	2.206E-01	2.044E-02	7.426
	+	351.93	*	1.493E+00	2.131E-01	1.208E-01	1.053E-02	12.364
RA-224	+	240.99	*	5.012E+00	1.072E+00	9.570E-01	6.380E-02	5.237
RA-226	+	609.32	*	1.394E+00	1.995E-01	1.112E-01	8.247E-03	12.537
	+	1120.29		1.816E+00	7.234E-01	5.266E-01	4.936E-02	3.448
	+	1764.49		2.256E+00	4.517E-01	2.383E-01	1.453E-02	9.468
AC-228	+	338.32		2.206E+00	1.042E+00	3.877E-01	1.601E-01	5.691
	+	911.20	*	1.805E+00	3.618E-01	2.331E-01	2.624E-02	7.744
	+	968.97		1.815E+00	6.089E-01	3.827E-01	9.221E-02	4.744
RA-228	+	338.32		2.206E+00	1.042E+00	3.877E-01	1.601E-01	5.691
	+	911.20	*	1.805E+00	3.618E-01	2.331E-01	2.624E-02	7.744
	+	968.97		1.815E+00	6.089E-01	3.827E-01	9.221E-02	4.744
TH-228	+	74.82		2.673E+00	6.809E-01	6.801E-01	7.829E-02	3.931
	+	77.11		2.255E+00	4.243E-01	3.798E-01	4.357E-02	5.938

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	238.63	*	1.803E+00	1.893E-01	8.926E-02	7.220E-03	20.200
	+	300.09		2.443E+00	2.033E+00	1.158E+00	7.061E-01	2.110
TH-232	+	338.32		2.206E+00	5.252E-01	3.877E-01	2.437E-02	5.691
	+	911.20	*	1.805E+00	3.618E-01	2.331E-01	2.624E-02	7.744
	+	968.97		1.815E+00	6.089E-01	3.827E-01	9.221E-02	4.744
TH-234	+	63.29	*	3.167E+00	3.048E+00	3.030E+00	6.098E-01	1.045
	+	92.59		3.850E+00	1.313E+00	1.137E+00	2.617E-01	3.387
U-235	+	89.96		2.518E+00	1.311E+00	1.436E+00	3.697E-01	1.754
	+	93.35		2.908E+00	1.011E+00	8.507E-01	2.035E-01	3.419
		143.76	*	1.859E-01	2.030E-01	3.405E-01	5.444E-02	0.546
		163.33		-1.550E-01	4.470E-01	7.110E-01	1.208E-01	-0.218
	+	185.72		2.106E-01	7.821E-02	7.001E-02	4.514E-03	3.009
		205.31		-1.979E-01	5.632E-01	7.805E-01	1.347E-01	-0.254
NP-237	+	86.48	*	1.274E+00	4.896E-01	4.725E-01	1.139E-01	2.697
		95.86		-7.488E-01	1.111E+00	1.573E+00	3.865E-01	-0.476
U-238	+	63.29	*	3.167E+00	3.048E+00	3.030E+00	6.098E-01	1.045
	+	92.59		3.850E+00	1.054E+00	1.137E+00	1.229E-01	3.387
ANH-511	+	511.00	*	1.399E-01	7.748E-02	4.791E-02	2.679E-03	2.920

## ---- 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	*	1.380E-01	3.508E-01	5.879E-01	3.892E-02	0.235
NA-22		1274.54	*	-3.619E-02	5.476E-02	8.622E-02	5.637E-03	-0.420
NA-24		1368.63	*	2.053E-03	5.476E-02	Half-Life too short		
SC-46		889.28	*	-7.017E-02	4.615E-02	6.447E-02	5.215E-03	-1.088
	+	1120.55		3.104E-01	1.219E-01	1.490E-01	9.760E-03	2.083
V-48		944.13		-3.858E-02	9.033E-01	1.473E+00	1.178E-01	-0.026
		983.53	*	-4.280E-02	7.831E-02	1.203E-01	9.321E-03	-0.356
		1312.11		-2.961E-02	8.312E-02	1.327E-01	8.940E-03	-0.223
CR-51		320.08	*	-2.718E-01	3.879E-01	6.224E-01	4.377E-02	-0.437
MN-54		834.85	*	-1.543E-02	4.053E-02	6.489E-02	4.696E-03	-0.238
CO-56		846.77	*	-2.800E-02	4.419E-02	6.883E-02	5.107E-03	-0.407
		1037.84		3.596E-01	3.438E-01	6.141E-01	4.827E-02	0.586
		1238.28		1.665E-01	1.155E-01	2.107E-01	1.403E-02	0.790
		1771.35		-2.410E-01	2.772E-01	2.645E-01	1.606E-02	-0.911
CO-57		122.06	*	5.258E-03	2.668E-02	4.421E-02	3.069E-03	0.119
		136.47		-2.421E-02	2.123E-01	3.454E-01	2.565E-02	-0.070
CO-58		810.76	*	-5.412E-02	4.371E-02	6.416E-02	4.429E-03	-0.844
FE-59		1099.45	*	2.094E-02	1.086E-01	1.790E-01	1.367E-02	0.117
		1291.59		-7.808E-02	1.488E-01	2.358E-01	1.906E-02	-0.331
CO-60		1173.23		4.738E-03	5.123E-02	8.320E-02	4.948E-03	0.057
		1332.49	*	-4.584E-02	4.197E-02	6.017E-02	4.123E-03	-0.762
ZN-65		1115.54	*	7.564E-02	1.186E-01	1.790E-01	1.184E-02	0.422
SE-75		121.12		-7.044E-02	1.388E-01	2.229E-01	2.204E-02	-0.316
		136.00		1.079E-03	4.076E-02	6.672E-02	4.473E-03	0.016
		264.66	*	7.190E-03	5.073E-02	8.048E-02	5.415E-03	0.089
		279.54		-5.364E-02	1.161E-01	1.915E-01	1.353E-02	-0.280

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	400.66			1.235E-01	2.630E-01	4.467E-01	4.007E-02	0.277
SR-85	514.00	*		6.326E-02	4.139E-02	6.777E-02	3.785E-03	0.933
Y-88	898.04			4.844E-02	5.171E-02	9.043E-02	7.481E-03	0.536
	1836.06	*		2.022E-02	3.268E-02	6.007E-02	3.505E-03	0.336
Y-91	1204.77	*		-1.611E+01	2.747E+01	4.175E+01	2.558E+00	-0.386
NB-94	702.65	*		-1.930E-03	3.561E-02	5.945E-02	3.203E-03	-0.032
	871.09			1.779E-03	3.525E-02	5.843E-02	4.556E-03	0.030
NB-95	765.81	*		-1.523E-02	4.582E-02	7.434E-02	4.633E-03	-0.205
NB-95M	235.69	*		8.855E-02	1.479E-01	2.164E-01	1.781E-02	0.409
ZR-95	724.19			8.796E-02	1.089E-01	1.720E-01	1.156E-02	0.511
	756.73	*		1.353E-02	7.713E-02	1.304E-01	9.553E-03	0.104
MO-99	140.51			-1.133E+01	3.133E+01	5.016E+01	1.158E+01	-0.226
	181.07			-2.361E+00	2.764E+01	4.217E+01	7.543E+00	-0.056
	366.42			-4.513E+01	1.353E+02	2.196E+02	1.313E+01	-0.205
	739.50	*		-8.491E+00	1.734E+01	2.766E+01	3.994E+00	-0.307
	777.92			-6.158E+01	4.983E+01	7.304E+01	4.677E+00	-0.843
TC-99M	140.51	*		-4.456E+11	4.983E+01	Half-Life too short		
RU-103	497.08	*		3.283E-02	4.255E-02	7.290E-02	8.998E-03	0.450
	610.33		+	1.471E+01	2.829E+00	3.171E+00	4.703E-01	4.640
RH-106	621.93	*		-1.320E-01	3.144E-01	4.818E-01	5.447E-02	-0.274
	1050.41			-1.572E+00	2.968E+00	4.565E+00	3.300E-01	-0.344
RU-106	621.93	*		-1.320E-01	3.141E-01	4.818E-01	2.475E-02	-0.274
	1050.41			-1.572E+00	2.968E+00	4.565E+00	3.300E-01	-0.344
AG-108M	433.94	*		6.772E-03	2.989E-02	4.985E-02	3.034E-03	0.136
	614.28			1.111E-02	3.845E-02	5.514E-02	3.110E-03	0.202
	722.91			-7.680E-03	4.297E-02	6.120E-02	3.711E-03	-0.125
AG-110M	657.76	*		-4.647E-02	3.900E-02	5.984E-02	3.198E-03	-0.777
	677.62			-1.730E-01	3.417E-01	5.523E-01	3.028E-02	-0.313
	706.68			4.358E-02	2.177E-01	3.704E-01	2.157E-02	0.118
	763.94			-2.881E-01	1.761E-01	2.520E-01	1.646E-02	-1.143
	884.68			4.336E-02	5.278E-02	9.332E-02	7.756E-03	0.465
	937.49			9.988E-02	1.303E-01	2.043E-01	1.709E-02	0.489
	1384.29			2.779E-02	1.716E-01	2.909E-01	2.076E-02	0.096
	1505.03			-3.085E-01	2.994E-01	4.130E-01	2.787E-02	-0.747
SN-113	391.69	*		2.310E-02	4.455E-02	7.609E-02	4.584E-03	0.304
CD-115	260.90			-5.957E+01	2.119E+02	3.541E+02	2.364E+01	-0.168
	492.35			6.802E+00	5.716E+01	9.386E+01	5.285E+00	0.072
	527.90	*		-5.588E+00	1.730E+01	2.725E+01	1.512E+00	-0.205
SN-117M	156.02			-2.989E+00	2.464E+00	3.763E+00	2.414E-01	-0.794
	158.56	*		6.334E-02	5.826E-02	9.896E-02	6.330E-03	0.640
TE-123M	159.00	*		2.881E-02	2.869E-02	4.856E-02	3.139E-03	0.593
SB-124	602.73			-7.776E-03	4.635E-02	6.349E-02	3.331E-03	-0.122
	645.85			3.855E-03	4.597E-01	7.757E-01	4.500E-02	0.005
	722.78			-1.007E-01	4.362E-01	6.172E-01	3.670E-02	-0.163
	1690.97	*		3.553E-03	6.442E-02	1.067E-01	7.278E-03	0.033
SB-125	427.87	*		1.189E-01	9.363E-02	1.664E-01	9.839E-03	0.715
	463.37		+	6.955E-01	3.883E-01	5.791E-01	3.829E-02	1.201
	600.60			8.977E-02	1.842E-01	3.073E-01	1.919E-02	0.292
	635.95			-2.417E-01	2.995E-01	4.422E-01	2.729E-02	-0.547

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TE-125M	109.28	*		-4.069E+00	1.062E+01	1.705E+01	1.720E+00	-0.239
I-126	388.63			-1.133E-02	1.862E-01	3.066E-01	1.739E-02	-0.037
	666.33	*		3.868E-02	2.824E-01	4.792E-01	2.364E-02	0.081
	753.82			1.519E+00	2.117E+00	3.721E+00	2.258E-01	0.408
SB-126	414.70			-6.752E-02	9.436E-02	1.266E-01	7.163E-03	-0.533
	666.50			6.514E-02	9.415E-02	1.654E-01	8.164E-03	0.394
	695.00			-1.580E-02	9.554E-02	1.503E-01	7.953E-03	-0.105
	697.00			6.469E-02	3.046E-01	5.188E-01	2.758E-02	0.125
	720.70	*		-1.366E-01	1.879E-01	2.498E-01	1.404E-02	-0.547
	856.80			7.930E-02	6.384E-01	9.281E-01	7.030E-02	0.085
SB-127	252.40			2.005E+00	5.391E+00	9.201E+00	3.798E+00	0.218
	473.00			9.081E-01	2.183E+00	3.663E+00	4.165E-01	0.248
	685.70	*		-8.816E-01	1.751E+00	2.822E+00	2.682E-01	-0.312
	783.70			4.199E+00	4.697E+00	8.321E+00	9.449E-01	0.505
I-131	80.19			-2.264E+00	6.235E+00	9.197E+00	1.067E+00	-0.246
	284.31			1.253E-01	1.599E+00	2.706E+00	1.950E-01	0.046
	364.49	*		2.117E-02	1.280E-01	2.148E-01	1.431E-02	0.099
	636.99			5.304E-01	1.833E+00	3.003E+00	1.760E-01	0.177
TE-132	49.72			3.736E+01	5.369E+01	9.368E+01	1.347E+01	0.399
	111.76			2.952E+01	4.542E+01	7.676E+01	8.290E+00	0.385
	116.30			-2.503E+01	3.788E+01	6.044E+01	6.336E+00	-0.414
	228.16	*		-3.228E-01	1.067E+00	1.667E+00	2.518E-01	-0.194
BA-133	81.00			-1.321E-01	1.233E-01	1.727E-01	2.995E-02	-0.765
	276.40			1.445E-02	3.761E-01	6.360E-01	8.271E-02	0.023
	302.85			1.167E-01	1.422E-01	2.235E-01	2.639E-02	0.522
	356.01	*		1.759E-02	4.685E-02	7.066E-02	8.079E-03	0.249
	383.85			-4.717E-02	2.931E-01	4.798E-01	5.101E-02	-0.098
I-133	529.87	*		-8.334E-03	2.931E-01	Half-Life	too short	
	875.33			3.003E-01	2.931E-01	Half-Life	too short	
	1298.22			2.484E-01	2.931E-01	Half-Life	too short	
CS-134	563.25			2.891E-01	3.824E-01	6.524E-01	3.626E-02	0.443
	569.33			9.165E-03	2.232E-01	3.513E-01	1.963E-02	0.026
	604.72			6.939E-03	3.921E-02	5.592E-02	2.947E-03	0.124
	795.86	*		9.051E-02	5.035E-02	9.437E-02	6.361E-03	0.959
	801.95			-6.937E-01	4.078E-01	5.676E-01	3.866E-02	-1.222
	1365.19			-2.917E-01	1.213E+00	1.949E+00	1.432E-01	-0.150
CS-135	268.22	*		2.464E-01	1.942E-01	3.104E-01	2.587E-02	0.794
I-135	546.56			1.597E+11	1.942E-01	Half-Life	too short	
	836.80			2.358E+11	1.942E-01	Half-Life	too short	
	1038.76			5.896E+11	1.942E-01	Half-Life	too short	
	1131.51			1.243E+11	1.942E-01	Half-Life	too short	
	1260.41	*		-7.125E+10	1.942E-01	Half-Life	too short	
	1457.56			1.606E+13	1.942E-01	Half-Life	too short	
	1678.03			1.323E+11	1.942E-01	Half-Life	too short	
	1791.20			1.357E+11	1.942E-01	Half-Life	too short	
CS-136	153.25			8.581E-01	9.169E-01	1.547E+00	1.317E-01	0.555
	176.60			-7.601E-01	5.619E-01	8.421E-01	6.364E-02	-0.903
	273.65			-4.555E-01	6.583E-01	9.359E-01	7.097E-02	-0.487
	340.55			4.385E-01	1.783E-01	3.040E-01	2.040E-02	1.443

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	818.51			-4.662E-03	8.288E-02	1.366E-01	9.569E-03	-0.034
	1048.07	*		-8.424E-02	1.253E-01	1.888E-01	1.450E-02	-0.446
	1235.36			-3.744E-01	7.869E-01	1.276E+00	1.300E-01	-0.293
BA-137M	661.66	*		6.970E-03	4.370E-02	7.519E-02	3.667E-03	0.093
CS-137	661.66	*		7.363E-03	4.616E-02	7.943E-02	3.897E-03	0.093
CE-139	165.86	*		8.354E-03	3.096E-02	5.070E-02	3.221E-03	0.165
BA-140	162.66			-4.228E-01	8.915E-01	1.411E+00	1.007E-01	-0.300
	304.85			-7.261E-01	1.523E+00	2.142E+00	6.153E-01	-0.339
	423.72			-1.746E+00	2.163E+00	3.225E+00	1.040E+00	-0.541
	537.26	*		-9.588E-02	3.089E-01	4.843E-01	1.611E-01	-0.198
LA-140	328.76		+	4.664E-01	4.780E-01	6.213E-01	4.364E-02	0.751
	487.02			6.493E-02	1.575E-01	2.641E-01	1.697E-02	0.246
	815.77			2.008E-01	3.724E-01	6.456E-01	5.275E-02	0.311
	1596.21	*		6.920E-02	1.105E-01	1.862E-01	1.227E-02	0.372
CE-141	145.44	*		-1.468E-02	6.502E-02	1.049E-01	7.041E-03	-0.140
CE-143	57.36			3.971E-04	6.502E-02	Half-Life	too short	
	293.27	*		1.315E-03	6.502E-02	Half-Life	too short	
	664.57			-1.470E-03	6.502E-02	Half-Life	too short	
	721.93			-1.385E-03	6.502E-02	Half-Life	too short	
CE-144	80.12			-1.210E+00	3.036E+00	4.469E+00	5.163E-01	-0.271
	133.52	*		-3.166E-02	2.052E-01	3.334E-01	4.760E-02	-0.095
PM-144	476.78			-1.239E-02	7.106E-02	1.144E-01	7.706E-03	-0.108
	618.01			7.524E-03	3.042E-02	4.984E-02	2.768E-03	0.151
	696.49	*		-9.210E-03	3.919E-02	6.129E-02	3.257E-03	-0.150
PR-144	696.51	*		-1.302E+00	2.977E+00	4.589E+00	2.436E-01	-0.284
	1489.16			-6.178E+00	1.133E+01	1.675E+01	1.134E+00	-0.369
PM-146	453.88	*		8.564E-03	4.428E-02	7.344E-02	6.145E-03	0.117
	633.25			-1.122E+00	1.588E+00	2.279E+00	8.558E-01	-0.492
	735.93			7.913E-03	1.451E-01	2.435E-01	6.645E-02	0.033
	747.24			5.816E-02	1.034E-01	1.797E-01	2.371E-02	0.324
ND-147	91.11		+	8.822E-01	4.130E-01	5.919E-01	6.944E-02	1.490
	319.41			-1.811E+00	3.731E+00	6.073E+00	3.916E-01	-0.298
	531.02	*		-2.852E-01	6.438E-01	1.002E+00	1.344E-01	-0.285
PM-149	285.90	*		-7.588E+01	1.309E+02	2.128E+02	3.093E+01	-0.357
EU-152	121.78			1.868E-02	7.672E-02	1.274E-01	1.082E-02	0.147
	244.70			8.832E-02	3.451E-01	4.947E-01	3.301E-02	0.179
	344.28	*		-1.274E-01	1.109E-01	1.565E-01	1.082E-02	-0.814
	778.90			-4.045E-01	2.641E-01	3.642E-01	2.337E-02	-1.111
	964.08		+	8.705E-01	3.901E-01	6.200E-01	4.882E-02	1.404
	1085.87			2.660E-01	4.539E-01	7.759E-01	5.356E-02	0.343
	1112.07			6.238E-02	3.770E-01	6.186E-01	4.107E-02	0.101
	1408.01			-5.873E-02	1.987E-01	3.257E-01	2.228E-02	-0.180
GD-153	69.67			-8.657E-01	2.442E+00	3.606E+00	4.164E-01	-0.240
	97.43	*		-4.966E-02	1.017E-01	1.473E-01	1.446E-02	-0.337
	103.18			-1.400E-01	1.206E-01	1.892E-01	1.684E-02	-0.740
EU-154	123.07			2.215E-02	5.381E-02	8.987E-02	9.084E-03	0.247
	723.31			3.030E-02	1.932E-01	2.862E-01	1.979E-02	0.106
	873.19			-1.250E-01	3.044E-01	4.819E-01	5.463E-02	-0.260
	996.26			-5.158E-01	4.081E-01	5.627E-01	9.575E-02	-0.917

---- 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		-1.813E-01	2.531E-01	3.837E-01	4.182E-02	-0.473
		1274.44	*	-6.722E-02	1.524E-01	2.448E-01	2.421E-02	-0.275
		86.55		5.181E-01	1.669E-01	2.173E-01	2.603E-02	2.384
		105.31	*	1.558E-01	1.163E-01	2.009E-01	1.750E-02	0.775
TB-160	+	86.79		1.390E+00	4.477E-01	5.882E-01	7.019E-02	2.364
		197.04		-4.607E-01	6.411E-01	9.763E-01	6.353E-02	-0.472
		215.65		-1.344E-02	7.995E-01	1.273E+00	8.395E-02	-0.011
		298.57		1.543E-01	1.783E-01	2.123E-01	1.395E-02	0.727
HO-166M		879.36	*	1.087E-01	1.467E-01	2.581E-01	2.047E-02	0.421
		962.29		3.378E-01	7.039E-01	1.051E+00	8.290E-02	0.321
		966.15		1.117E+00	2.842E-01	5.552E-01	4.365E-02	2.011
		1177.93		1.591E-01	4.223E-01	7.037E-01	4.204E-02	0.226
		1271.85		-2.376E-01	8.792E-01	1.436E+00	9.350E-02	-0.165
		80.57		-1.515E-01	3.358E-01	4.930E-01	5.705E-02	-0.307
		184.41		9.474E-02	4.500E-02	7.072E-02	4.555E-03	1.340
		280.46		-5.282E-02	8.916E-02	1.459E-01	9.696E-03	-0.362
		410.95	+	6.825E-01	3.754E-01	4.913E-01	2.778E-02	1.389
		711.68	*	2.423E-02	6.386E-02	1.100E-01	6.054E-03	0.220
		752.31		-9.322E-02	3.034E-01	4.937E-01	2.985E-02	-0.189
		810.29		-7.149E-02	6.670E-02	1.000E-01	6.872E-03	-0.715
TA-182		67.75		-8.629E-02	1.637E-01	2.394E-01	2.785E-02	-0.360
		100.11		2.760E-01	1.904E-01	3.310E-01	3.098E-02	0.834
		152.43		1.198E-02	3.565E-01	5.802E-01	3.737E-02	0.021
		222.11		-8.870E-02	3.892E-01	6.119E-01	4.050E-02	-0.145
IR-192	+	1121.30		8.575E-01	3.367E-01	4.134E-01	2.704E-02	2.074
		1189.05		1.212E-01	3.819E-01	6.313E-01	3.812E-02	0.192
		1221.41	*	3.059E-02	2.210E-01	3.752E-01	2.335E-02	0.082
		1231.02		3.667E-01	5.856E-01	1.026E+00	6.440E-02	0.357
HG-203	+	295.96		1.226E+00	2.400E-01	3.233E-01	2.156E-02	3.791
		308.46		5.723E-02	9.710E-02	1.680E-01	1.105E-02	0.341
		316.51	*	1.484E-02	3.517E-02	6.028E-02	3.914E-03	0.246
		468.07		1.342E-02	7.945E-02	1.155E-01	7.599E-03	0.116
BI-207		70.83		9.557E-01	1.811E+00	2.799E+00	4.976E-01	0.341
		72.87		8.826E-01	1.072E+00	1.664E+00	2.874E-01	0.531
		279.20	*	2.359E-02	4.047E-02	7.013E-02	4.861E-03	0.336
		72.81		1.806E-01	2.413E-01	3.758E-01	4.309E-02	0.481
PB-210	+	74.97		7.705E-01	1.960E-01	2.752E-01	3.152E-02	2.799
		569.70		-1.634E-02	3.572E-02	5.404E-02	2.919E-03	-0.302
		1063.66	*	-2.145E-02	6.203E-02	9.594E-02	6.823E-03	-0.224
		1770.23		2.950E-02	4.626E-01	6.588E-01	4.002E-02	0.045
PB-211		46.54	*	1.392E+00	8.853E+00	1.522E+01	1.328E+00	0.091
		404.85	*	-1.545E-01	8.365E-01	1.185E+00	5.683E-01	-0.130
		427.09		1.775E+00	1.753E+00	2.748E+00	1.259E+00	0.646
		832.01		-2.322E-01	1.049E+00	1.691E+00	8.731E-01	-0.137
RN-219	+	727.33	*	2.646E+00	9.363E-01	1.388E+00	1.479E-01	1.906
		785.37		2.271E+00	3.408E+00	5.956E+00	3.876E-01	0.381
		1620.50		2.646E+00	2.563E+00	4.841E+00	3.161E-01	0.547
		271.23		6.620E-01	3.752E-01	4.831E-01	4.192E-02	1.370
		401.81	*	-1.763E-01	4.310E-01	6.833E-01	9.135E-02	-0.258

---- 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		-3.047E-01	2.763E-01	3.900E-01	4.521E-02	-0.781
		83.79		1.598E-01	1.552E-01	2.421E-01	2.839E-02	0.660
		94.87		7.949E-01	5.254E-01	8.326E-01	8.585E-02	0.955
		144.24		6.131E-01	6.702E-01	1.133E+00	8.835E-02	0.541
		154.21		4.138E-01	3.908E-01	6.624E-01	4.967E-02	0.625
	+	269.46		5.144E-01	2.902E-01	3.880E-01	2.673E-02	1.326
AC-227		323.87	*	4.869E-01	7.260E-01	1.119E+00	1.829E-01	0.435
	+	338.28		8.755E+00	2.212E+00	2.737E+00	2.883E-01	3.199
		79.69		-9.618E-01	1.516E+00	2.190E+00	4.132E-01	-0.439
		235.96		1.395E-01	1.792E-01	2.647E-01	2.322E-02	0.527
		256.23	*	-1.227E-01	2.661E-01	4.410E-01	4.740E-02	-0.278
	+	299.98		2.688E+00	1.552E+00	1.711E+00	1.952E-01	1.571
TH-227		304.50		-7.048E-01	1.709E+00	2.436E+00	3.787E-01	-0.289
		334.37		-1.043E-01	1.945E+00	2.845E+00	4.109E-01	-0.037
		79.80		-1.196E+00	2.003E+00	2.892E+00	6.678E-01	-0.414
		235.96		1.395E-01	1.791E-01	2.647E-01	2.137E-02	0.527
		256.23	*	-1.227E-01	2.662E-01	4.410E-01	5.498E-02	-0.278
	+	299.98		2.688E+00	1.552E+00	1.711E+00	1.952E-01	1.571
TH-229		304.50		-7.048E-01	1.709E+00	2.436E+00	3.787E-01	-0.289
		334.37		-1.043E-01	1.945E+00	2.845E+00	4.109E-01	-0.037
		85.43		2.109E-01	2.583E-01	3.995E-01	4.728E-02	0.528
	+	88.47		6.583E-01	1.210E-01	2.634E-01	3.131E-02	2.499
		193.51	*	-2.882E-02	5.626E-01	9.002E-01	5.842E-02	-0.032
		210.85		1.315E+00	1.026E+00	1.571E+00	1.033E-01	0.837
PA-231		283.69	*	3.074E-01	1.410E+00	2.404E+00	3.246E-01	0.128
	+	301.36		1.727E+00	9.948E-01	1.061E+00	1.145E-01	1.627
TH-231		81.07		-3.047E-01	2.763E-01	3.900E-01	4.521E-02	-0.781
		83.79		1.598E-01	1.552E-01	2.421E-01	2.839E-02	0.660
		94.87		7.949E-01	5.254E-01	8.326E-01	8.585E-02	0.955
		144.24		6.131E-01	6.702E-01	1.133E+00	8.835E-02	0.541
		154.21		4.138E-01	3.908E-01	6.624E-01	4.967E-02	0.625
	+	269.46		5.144E-01	2.902E-01	3.880E-01	2.673E-02	1.326
PA-233		323.87	*	4.869E-01	7.260E-01	1.119E+00	1.829E-01	0.435
	+	338.28		8.755E+00	2.212E+00	2.737E+00	2.883E-01	3.199
	+	300.13		1.216E+00	7.083E-01	7.737E-01	1.063E-01	1.572
		311.90	*	2.251E-02	6.233E-02	1.066E-01	7.273E-03	0.211
		340.48		2.008E+00	8.554E-01	1.255E+00	2.928E-01	1.600
		94.67		3.971E-01	1.970E-01	3.113E-01	4.254E-02	1.276
PA-234		98.44		6.602E-02	1.088E-01	1.668E-01	9.332E-02	0.396
		111.00		-4.770E-02	1.936E-01	3.164E-01	3.675E-02	-0.151
		131.20		3.088E-02	1.195E-01	1.775E-01	1.190E-02	0.174
		569.50		-4.196E-02	3.104E-01	4.818E-01	2.603E-02	-0.087
		733.00		2.253E-01	3.989E-01	6.400E-01	1.361E-01	0.352
		880.51		-1.903E-01	3.098E-01	4.804E-01	3.818E-02	-0.396
		883.24		2.777E-01	3.543E-01	5.387E-01	3.617E-01	0.515
		926.50		-9.914E-02	2.043E-01	3.077E-01	7.723E-02	-0.322
		946.00	*	-2.542E-01	3.223E-01	4.793E-01	8.857E-02	-0.530
		949.00		2.447E-01	4.764E-01	8.182E-01	6.518E-02	0.299
		766.42		1.075E+01	1.337E+01	2.166E+01	1.091E+01	0.496
PA-234M								

----- 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	*		4.521E+00	5.173E+00	9.080E+00	8.279E-01	0.498
	99.53			2.710E-01	1.749E-01	3.046E-01	2.880E-02	0.890
	103.37			-8.679E-02	1.086E-01	1.736E-01	1.540E-02	-0.500
	106.12			9.432E-02	9.312E-02	1.594E-01	1.356E-02	0.592
	117.23	*		3.360E-02	3.952E-01	6.532E-01	4.793E-02	0.051
	228.18			-7.000E-02	2.413E-01	3.775E-01	2.506E-02	-0.185
AM-241	277.60			2.623E-01	1.851E-01	3.310E-01	2.202E-02	0.793
	59.54	*		1.853E-01	2.550E-01	4.024E-01	5.081E-02	0.460
	278.00			1.146E+00	7.959E-01	1.423E+00	9.467E-02	0.805
CM-247	287.50			-4.001E-01	1.203E+00	1.989E+00	1.317E-01	-0.201
	402.40	*		-6.751E-03	3.932E-02	6.341E-02	3.578E-03	-0.106
	252.80			-6.207E-02	9.581E-01	1.621E+00	1.082E-01	-0.038
CF-249	333.37			-3.677E-02	2.411E-01	2.942E-01	1.863E-02	-0.125
	388.16	*		-1.833E-03	4.083E-02	6.731E-02	3.823E-03	-0.027
CF-251	177.52	*		-7.861E-02	1.368E-01	2.144E-01	1.373E-02	-0.367
	227.38			-3.803E-01	3.945E-01	5.939E-01	3.940E-02	-0.640
	285.41			-6.757E-01	2.091E+00	3.461E+00	2.294E-01	-0.195

## 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]G247563007      *
* Acquisition date   : 3-MAR-2010 20:42:58 Detector SN#                   *
* Detector ID        : GAM04 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                       *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000            *
* Elapsed real time  : 0 02:00:01.38 Half life ratio : 8.000             *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date       : 15-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID         : G247563007 Analyst initials: MXR1                  *
* Batch Number      : 956157 Sample Quantity : 1.2553E+02 GRAM           *
* Recovery          : 1.00000 Carrier Weight : 0.00000                  *
*****
*
*                                     QC DATA                                *
*
* Standard Weight   : 0.00000                                              *
* CALIB. DATE/TIME  : 5-MAY-2009 14:25:41 MS Isotope :                   *
* MSD DPM           : 0.000 MSD Isotope :                               *
* LCS DPM           : 0.000 LCS Isotope :                               *
* LCSD DPM          : 0.000 LCSD Isotope :                               *
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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.637E+01	3.255E+00	5.220E-01	0.000E+00
CD-109	4.377E+00	1.381E+00	1.478E+00	0.000E+00
SN-126	4.270E-01	1.347E-01	1.453E-01	0.000E+00
TL-208	5.834E-01	9.185E-02	6.071E-02	0.000E+00
BI-211	4.115E+00	5.307E-01	3.635E-01	0.000E+00
PB-212	1.803E+00	1.855E-01	9.154E-02	0.000E+00
BI-214	1.394E+00	1.955E-01	1.126E-01	0.000E+00
PB-214	1.493E+00	2.089E-01	1.232E-01	0.000E+00
RA-224	5.012E+00	1.050E+00	9.813E-01	0.000E+00
RA-226	1.394E+00	1.955E-01	1.126E-01	0.000E+00
AC-228	1.805E+00	3.546E-01	2.345E-01	0.000E+00
RA-228	1.805E+00	3.546E-01	2.345E-01	0.000E+00
TH-228	1.803E+00	1.855E-01	9.154E-02	0.000E+00
TH-232	1.805E+00	3.546E-01	2.345E-01	0.000E+00
TH-234	3.167E+00	2.987E+00	3.164E+00	0.000E+00
U-235	1.859E-01	1.990E-01	3.516E-01	0.000E+00
NP-237	1.274E+00	4.798E-01	4.913E-01	0.000E+00
U-238	3.167E+00	2.987E+00	3.164E+00	0.000E+00
ANH-511	1.399E-01	7.593E-02	4.861E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	1.380E-01	3.438E-01	5.970E-01	0.000E+00 NOT IDENT.
NA-22	-3.619E-02	5.367E-02	8.633E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	3.028E+06	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-7.017E-02	4.523E-02	6.489E-02	0.000E+00 FAIL ABUN
V-48	-4.280E-02	7.675E-02	1.209E-01	0.000E+00 NOT IDENT.
CR-51	-2.718E-01	3.802E-01	6.357E-01	0.000E+00 NOT IDENT.
MN-54	-1.543E-02	3.972E-02	6.537E-02	0.000E+00 NOT IDENT.
CO-56	-2.800E-02	4.331E-02	6.933E-02	0.000E+00 NOT IDENT.

CO-57	5.258E-03	2.615E-02	4.576E-02	0.000E+00	NOT IDENT.
CO-58	-5.412E-02	4.284E-02	6.466E-02	0.000E+00	NOT IDENT.
FE-59	2.094E-02	1.064E-01	1.796E-01	0.000E+00	NOT IDENT.
CO-60	-4.584E-02	4.113E-02	6.020E-02	0.000E+00	NOT IDENT.
ZN-65	7.564E-02	1.162E-01	1.796E-01	0.000E+00	NOT IDENT.
SE-75	7.190E-03	4.972E-02	8.241E-02	0.000E+00	NOT IDENT.
SR-85	6.326E-02	4.056E-02	6.875E-02	0.000E+00	NOT IDENT.
Y-88	2.022E-02	3.203E-02	5.983E-02	0.000E+00	NOT IDENT.
Y-91	-1.611E+01	2.692E+01	4.183E+01	0.000E+00	NOT IDENT.
NB-94	-1.930E-03	3.490E-02	6.004E-02	0.000E+00	NOT IDENT.
NB-95	-1.523E-02	4.491E-02	7.499E-02	0.000E+00	NOT IDENT.
NB-95M	8.855E-02	1.449E-01	2.220E-01	0.000E+00	NOT IDENT.
ZR-95	1.353E-02	7.559E-02	1.316E-01	0.000E+00	NOT IDENT.
MO-99	-8.491E+00	1.699E+01	2.792E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	1.211E+18	0.000E+00	0.000E+00	SHORT HLIF
RU-103	3.283E-02	4.170E-02	7.399E-02	0.000E+00	FAIL ABUN
RH-106	-1.320E-01	3.081E-01	4.874E-01	0.000E+00	NOT IDENT.
RU-106	-1.320E-01	3.079E-01	4.874E-01	0.000E+00	NOT IDENT.
AG-108M	6.772E-03	2.929E-02	5.069E-02	0.000E+00	NOT IDENT.
AG-110M	-4.647E-02	3.822E-02	6.049E-02	0.000E+00	NOT IDENT.
SN-113	2.310E-02	4.366E-02	7.749E-02	0.000E+00	NOT IDENT.
CD-115	-5.588E+00	1.696E+01	2.763E+01	0.000E+00	NOT IDENT.
SN-117M	6.334E-02	5.709E-02	1.021E-01	0.000E+00	NOT IDENT.
TE-123M	2.881E-02	2.811E-02	5.008E-02	0.000E+00	NOT IDENT.
SB-124	3.553E-03	6.313E-02	1.064E-01	0.000E+00	NOT IDENT.
SB-125	1.189E-01	9.176E-02	1.693E-01	0.000E+00	FAIL ABUN
TE-125M	-4.069E+00	1.041E+01	1.767E+01	0.000E+00	NOT IDENT.
I-126	3.868E-02	2.767E-01	4.844E-01	0.000E+00	NOT IDENT.
SB-126	-1.366E-01	1.841E-01	2.522E-01	0.000E+00	NOT IDENT.
SB-127	-8.816E-01	1.716E+00	2.851E+00	0.000E+00	NOT IDENT.
I-131	2.117E-02	1.255E-01	2.189E-01	0.000E+00	NOT IDENT.
TE-132	-3.228E-01	1.046E+00	1.711E+00	0.000E+00	NOT IDENT.
BA-133	1.759E-02	4.591E-02	7.205E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	1.664E+04	0.000E+00	0.000E+00	SHORT HLIF
CS-134	9.051E-02	4.934E-02	9.514E-02	0.000E+00	NOT IDENT.
CS-135	2.464E-01	1.903E-01	3.178E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.778E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-8.424E-02	1.228E-01	1.896E-01	0.000E+00	NOT IDENT.
BA-137M	6.970E-03	4.282E-02	7.600E-02	0.000E+00	NOT IDENT.
CS-137	7.363E-03	4.524E-02	8.029E-02	0.000E+00	NOT IDENT.
CE-139	8.354E-03	3.034E-02	5.225E-02	0.000E+00	NOT IDENT.
BA-140	-9.588E-02	3.027E-01	4.910E-01	0.000E+00	NOT IDENT.
LA-140	6.920E-02	1.083E-01	1.858E-01	0.000E+00	FAIL ABUN
CE-141	-1.468E-02	6.372E-02	1.083E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	4.164E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-3.166E-02	2.011E-01	3.447E-01	0.000E+00	NOT IDENT.
PM-144	-9.210E-03	3.840E-02	6.190E-02	0.000E+00	NOT IDENT.
PR-144	-1.302E+00	2.917E+00	4.635E+00	0.000E+00	NOT IDENT.
PM-146	8.564E-03	4.340E-02	7.463E-02	0.000E+00	NOT IDENT.
ND-147	-2.852E-01	6.309E-01	1.016E+00	0.000E+00	FAIL ABUN
PM-149	-7.588E+01	1.283E+02	2.177E+02	0.000E+00	NOT IDENT.
EU-152	-1.274E-01	1.087E-01	1.597E-01	0.000E+00	FAIL ABUN
GD-153	-4.966E-02	9.969E-02	1.529E-01	0.000E+00	NOT IDENT.
EU-154	-6.722E-02	1.494E-01	2.451E-01	0.000E+00	NOT IDENT.
EU-155	1.558E-01	1.139E-01	2.084E-01	0.000E+00	FAIL ABUN
TB-160	1.087E-01	1.437E-01	2.599E-01	0.000E+00	FAIL ABUN
HO-166M	2.423E-02	6.258E-02	1.111E-01	0.000E+00	FAIL ABUN
TA-182	3.059E-02	2.166E-01	3.759E-01	0.000E+00	FAIL ABUN
IR-192	1.484E-02	3.447E-02	6.157E-02	0.000E+00	FAIL ABUN
HG-203	2.359E-02	3.966E-02	7.176E-02	0.000E+00	NOT IDENT.
BI-207	-2.145E-02	6.079E-02	9.631E-02	0.000E+00	FAIL ABUN
PB-210	1.392E+00	8.676E+00	1.596E+01	0.000E+00	NOT IDENT.
PB-211	-1.545E-01	8.198E-01	1.206E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	9.176E-01	1.402E+00	0.000E+00	FAIL ABUN
RN-219	-1.763E-01	4.224E-01	6.956E-01	0.000E+00	FAIL ABUN
RA-223	4.869E-01	7.115E-01	1.143E+00	0.000E+00	FAIL ABUN
AC-227	-1.227E-01	2.608E-01	4.518E-01	0.000E+00	FAIL ABUN
TH-227	-1.227E-01	2.609E-01	4.518E-01	0.000E+00	FAIL ABUN
TH-229	-2.882E-02	5.513E-01	9.258E-01	0.000E+00	FAIL ABUN
PA-231	3.074E-01	1.382E+00	2.459E+00	0.000E+00	FAIL ABUN
TH-231	4.869E-01	7.115E-01	1.143E+00	0.000E+00	FAIL ABUN
PA-233	2.251E-02	6.108E-02	1.089E-01	0.000E+00	FAIL ABUN
PA-234	-2.542E-01	3.158E-01	4.820E-01	0.000E+00	NOT IDENT.
PA-234M	4.521E+00	5.070E+00	9.124E+00	0.000E+00	NOT IDENT.
NP-239	3.360E-02	3.873E-01	6.764E-01	0.000E+00	NOT IDENT.
AM-241	1.853E-01	2.499E-01	4.206E-01	0.000E+00	NOT IDENT.
CM-247	-6.751E-03	3.853E-02	6.455E-02	0.000E+00	NOT IDENT.
CF-249	-1.833E-03	4.001E-02	6.856E-02	0.000E+00	NOT IDENT.

CF-251	-7.861E-02	1.341E-01	2.208E-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]G247563007.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 20:42:58.
Sample ID          : G247563007 Sample quantity : 1.25530E+02 GRAM
Detector name      : GAM04 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:01.38 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 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	1393	10.66*	1.075E+00	3.637E+01	3.637E+01	9.13
CD-109	88.03	265	3.70*	5.014E+00	4.270E+00	4.377E+00	32.20
SN-126	64.28	82	9.60	2.087E+00	1.221E+00	1.221E+00	95.69
	86.94	265	8.90	5.014E+00	1.775E+00	1.775E+00	51.70
	87.57	265	37.00*	5.014E+00	4.270E-01	4.270E-01	32.20
TL-208	277.37	-----	6.60	4.326E+00	-----	Line Not Found	-----
	583.19	407	85.00*	2.455E+00	5.834E-01	5.834E-01	16.06
	860.56	48	12.50	1.744E+00	6.557E-01	6.557E-01	66.66
BI-211	72.87	-----	1.23	3.384E+00	-----	Line Not Found	-----
	351.06	645	12.92*	3.626E+00	4.115E+00	4.115E+00	13.16
PB-212	74.82	334	10.28	3.631E+00	2.673E+00	2.673E+00	27.24
	77.11	506	17.10	3.922E+00	2.255E+00	2.255E+00	18.82
	238.63	1269	43.60*	4.826E+00	1.803E+00	1.803E+00	10.50
	300.09	110	3.30	4.076E+00	2.443E+00	2.443E+00	57.30
BI-214	609.32	502	45.49*	2.368E+00	1.394E+00	1.394E+00	14.30
	1120.29	123	14.92	1.357E+00	1.816E+00	1.816E+00	39.84
	1764.49	110	15.30	9.528E-01	2.256E+00	2.256E+00	20.02
PB-214	74.82	334	5.80	3.631E+00	4.738E+00	4.738E+00	26.65
	77.11	506	9.70	3.922E+00	3.975E+00	3.975E+00	20.54
	242.00	329	7.25	4.782E+00	2.834E+00	2.834E+00	22.15
	295.22	417	18.42	4.132E+00	1.638E+00	1.638E+00	20.61
	351.93	645	35.60*	3.626E+00	1.493E+00	1.493E+00	14.27
RA-224	240.99	329	4.10*	4.782E+00	5.012E+00	5.012E+00	21.38
RA-226	609.32	502	45.49*	2.368E+00	1.394E+00	1.394E+00	14.30
	1120.29	123	14.92	1.357E+00	1.816E+00	1.816E+00	39.84
	1764.49	110	15.30	9.528E-01	2.256E+00	2.256E+00	20.02
AC-228	338.32	311	11.27	3.735E+00	2.206E+00	2.206E+00	47.25
	911.20	257	25.80*	1.652E+00	1.805E+00	1.805E+00	20.05
	968.97	150	15.80	1.559E+00	1.815E+00	1.815E+00	33.54
RA-228	338.32	311	11.27	3.735E+00	2.206E+00	2.206E+00	47.25
	911.20	257	25.80*	1.652E+00	1.805E+00	1.805E+00	20.05
	968.97	150	15.80	1.559E+00	1.815E+00	1.815E+00	33.54

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	334	10.28	3.631E+00	2.673E+00	2.673E+00	25.47
	77.11	506	17.10	3.922E+00	2.255E+00	2.255E+00	18.82
	238.63	1269	43.60*	4.826E+00	1.803E+00	1.803E+00	10.50
TH-232	300.09	110	3.30	4.076E+00	2.443E+00	2.443E+00	83.18
	338.32	311	11.27	3.735E+00	2.206E+00	2.206E+00	23.80
	911.20	257	25.80*	1.652E+00	1.805E+00	1.805E+00	20.05
TH-234	968.97	150	15.80	1.559E+00	1.815E+00	1.815E+00	33.54
	63.29	82	3.70*	2.087E+00	3.167E+00	3.167E+00	96.25
	92.59	298	4.23	5.467E+00	3.850E+00	3.850E+00	34.10
U-235	89.96	153	3.47	5.244E+00	2.518E+00	2.518E+00	52.06
	93.35	298	5.60	5.467E+00	2.908E+00	2.908E+00	34.76
	143.76	-----	10.96*	6.399E+00	-----	Line Not Found	-----
NP-237	163.33	-----	5.08	6.104E+00	-----	Line Not Found	-----
	185.72	229	57.20	5.694E+00	2.106E-01	2.106E-01	37.13
	205.31	-----	5.01	5.352E+00	-----	Line Not Found	-----
U-238	86.48	265	12.40*	5.014E+00	1.274E+00	1.274E+00	38.42
	95.86	-----	2.68	5.677E+00	-----	Line Not Found	-----
	63.29	82	3.70*	2.087E+00	3.167E+00	3.167E+00	96.25
ANH-511	92.59	298	4.23	5.467E+00	3.850E+00	3.850E+00	27.38
	511.00	128	100.00*	2.730E+00	1.399E-01	1.399E-01	55.38

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	3.637E+01	3.637E+01	0.332E+01	9.13	
CD-109	461.40D	1.02	4.270E+00	4.377E+00	1.409E+00	32.20	
SN-126	2.30E+05Y	1.00	4.270E-01	4.270E-01	1.375E-01	32.20	
TL-208	1.41E+10Y	1.00	5.834E-01	5.834E-01	0.937E-01	16.06	
BI-211	7.04E+08Y	1.00	4.115E+00	4.115E+00	0.542E+00	13.16	
PB-212	1.41E+10Y	1.00	1.803E+00	1.803E+00	0.189E+00	10.50	
BI-214	1600.00Y	1.00	1.394E+00	1.394E+00	0.199E+00	14.30	
PB-214	1600.00Y	1.00	1.493E+00	1.493E+00	0.213E+00	14.27	
RA-224	1.41E+10Y	1.00	5.012E+00	5.012E+00	1.072E+00	21.38	
RA-226	1600.00Y	1.00	1.394E+00	1.394E+00	0.199E+00	14.30	
AC-228	1.41E+10Y	1.00	1.805E+00	1.805E+00	0.362E+00	20.05	
RA-228	1.41E+10Y	1.00	1.805E+00	1.805E+00	0.362E+00	20.05	
TH-228	1.41E+10Y	1.00	1.803E+00	1.803E+00	0.189E+00	10.50	
TH-232	1.41E+10Y	1.00	1.805E+00	1.805E+00	0.362E+00	20.05	
TH-234	4.47E+09Y	1.00	3.167E+00	3.167E+00	3.048E+00	96.25	
U-235	7.04E+08Y	1.00	2.106E-01	2.106E-01	0.782E-01	37.13	K
NP-237	2.14E+06Y	1.00	1.274E+00	1.274E+00	0.490E+00	38.42	
U-238	4.47E+09Y	1.00	3.167E+00	3.167E+00	3.048E+00	96.25	
ANH-511	1.00E+09Y	1.00	1.399E-01	1.399E-01	0.775E-01	55.38	
Total Activity :			7.204E+01	7.214E+01			

Grand Total Activity : 7.204E+01 7.214E+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	128.87	78	355	1.25	257.79	253	8	1.08E-02	87.2	6.50E+00	
0	208.96	177	216	1.43	417.98	414	8	2.46E-02	32.4	5.29E+00	
0	270.02	106	236	1.70	540.11	536	9	1.47E-02	56.0	4.41E+00	T
0	328.24	50	182	0.81	656.57	652	9	6.88E-03	****	3.82E+00	T
0	409.60	83	123	1.33	819.28	815	10	1.15E-02	54.7	3.24E+00	T
0	463.00	72	99	1.20	926.10	922	9	9.94E-03	55.4	2.95E+00	T
0	727.32	120	78	1.61	1454.73	1448	11	1.67E-02	33.7	2.03E+00	T
0	934.62	56	44	1.68	1869.29	1863	11	7.82E-03	52.8	1.61E+00	
1	964.64	67	53	1.81	1929.34	1923	27	9.25E-03	44.1	1.57E+00	T
0	1588.32	40	3	1.97	3176.47	3169	14	5.52E-03	37.4	1.01E+00	
0	1729.76	21	10	1.34	3459.26	3454	11	2.90E-03	74.9	9.62E-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]G247563007.CNF;1
* Acquisition date   : 3-MAR-2010 20:42:58.  Detector SN#      :
* Detector ID        : GAM04                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:01.38          Half life ratio  : 8.00000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 15-FEB-2010 12:00:00  Nuclide Library   : SOLID
* Sample ID          : G247563007           Analyst initials: MXR1
* Batch Number       : 956157               Sample Quantity  : 1.25530E+02 GRAM
*****
*                               QC DATA                               *
*
* CALIB. DATE/TIME  : 5-MAY-2009 14:25:41.36MS Isotope       :
* MSD ID            :                      MSD Isotope       :
* LCS ID            : 1032-A               LCS Isotope       :
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.637E+01	3.321E+00	5.223E-01	3.712E-02	69.625
CD-109	4.377E+00	1.409E+00	1.422E+00	1.709E-01	3.078
SN-126	4.270E-01	1.375E-01	1.398E-01	1.676E-02	3.055
TL-208	5.834E-01	9.372E-02	5.995E-02	3.762E-03	9.732
BI-211	4.115E+00	5.416E-01	3.564E-01	2.408E-02	11.547
PB-212	1.803E+00	1.893E-01	8.926E-02	7.220E-03	20.200
BI-214	1.394E+00	1.995E-01	1.112E-01	8.247E-03	12.537
PB-214	1.493E+00	2.131E-01	1.208E-01	1.053E-02	12.364
RA-224	5.012E+00	1.072E+00	9.570E-01	6.380E-02	5.237
RA-226	1.394E+00	1.995E-01	1.112E-01	8.247E-03	12.537
AC-228	1.805E+00	3.618E-01	2.331E-01	2.624E-02	7.744
RA-228	1.805E+00	3.618E-01	2.331E-01	2.624E-02	7.744
TH-228	1.803E+00	1.893E-01	8.926E-02	7.220E-03	20.200
TH-232	1.805E+00	3.618E-01	2.331E-01	2.624E-02	7.744
TH-234	3.167E+00	3.048E+00	3.030E+00	6.098E-01	1.045
U-235	2.106E-01	7.821E-02	3.405E-01	5.444E-02	0.619
NP-237	1.274E+00	4.896E-01	4.725E-01	1.139E-01	2.697
U-238	3.167E+00	3.048E+00	3.030E+00	6.098E-01	1.045

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
ANH-511	1.399E-01	7.748E-02	4.791E-02	2.679E-03	2.920

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	1.380E-01		3.508E-01	5.879E-01	3.892E-02	0.235
NA-22	-3.619E-02		5.476E-02	8.622E-02	5.637E-03	-0.420
NA-24	2.053E-03		1.545E+00	Half-Life too short		
SC-46	-7.017E-02		4.615E-02	6.447E-02	5.215E-03	-1.088
V-48	-4.280E-02		7.831E-02	1.203E-01	9.321E-03	-0.356
CR-51	-2.718E-01		3.879E-01	6.224E-01	4.377E-02	-0.437
MN-54	-1.543E-02		4.053E-02	6.489E-02	4.696E-03	-0.238
CO-56	-2.800E-02		4.419E-02	6.883E-02	5.107E-03	-0.407
CO-57	5.258E-03		2.668E-02	4.421E-02	3.069E-03	0.119
CO-58	-5.412E-02		4.371E-02	6.416E-02	4.429E-03	-0.844
FE-59	2.094E-02		1.086E-01	1.790E-01	1.367E-02	0.117
CO-60	-4.584E-02		4.197E-02	6.017E-02	4.123E-03	-0.762
ZN-65	7.564E-02		1.186E-01	1.790E-01	1.184E-02	0.422
SE-75	7.190E-03		5.073E-02	8.048E-02	5.415E-03	0.089
SR-85	6.326E-02		4.139E-02	6.777E-02	3.785E-03	0.933
Y-88	2.022E-02		3.268E-02	6.007E-02	3.505E-03	0.336
Y-91	-1.611E+01		2.747E+01	4.175E+01	2.558E+00	-0.386
NB-94	-1.930E-03		3.561E-02	5.945E-02	3.203E-03	-0.032
NB-95	-1.523E-02		4.582E-02	7.434E-02	4.633E-03	-0.205
NB-95M	8.855E-02		1.479E-01	2.164E-01	1.781E-02	0.409
ZR-95	1.353E-02		7.713E-02	1.304E-01	9.553E-03	0.104
MO-99	-8.491E+00		1.734E+01	2.766E+01	3.994E+00	-0.307
TC-99M	-4.456E+11		6.180E+11	Half-Life too short		
RU-103	3.283E-02		4.255E-02	7.290E-02	8.998E-03	0.450
RH-106	-1.320E-01		3.144E-01	4.818E-01	5.447E-02	-0.274
RU-106	-1.320E-01		3.141E-01	4.818E-01	2.475E-02	-0.274
AG-108M	6.772E-03		2.989E-02	4.985E-02	3.034E-03	0.136
AG-110M	-4.647E-02		3.900E-02	5.984E-02	3.198E-03	-0.777
SN-113	2.310E-02		4.455E-02	7.609E-02	4.584E-03	0.304
CD-115	-5.588E+00		1.730E+01	2.725E+01	1.512E+00	-0.205
SN-117M	6.334E-02		5.826E-02	9.896E-02	6.330E-03	0.640
TE-123M	2.881E-02		2.869E-02	4.856E-02	3.139E-03	0.593
SB-124	3.553E-03		6.442E-02	1.067E-01	7.278E-03	0.033
SB-125	1.189E-01		9.363E-02	1.664E-01	9.839E-03	0.715
TE-125M	-4.069E+00		1.062E+01	1.705E+01	1.720E+00	-0.239
I-126	3.868E-02		2.824E-01	4.792E-01	2.364E-02	0.081
SB-126	-1.366E-01		1.879E-01	2.498E-01	1.404E-02	-0.547
SB-127	-8.816E-01		1.751E+00	2.822E+00	2.682E-01	-0.312
I-131	2.117E-02		1.280E-01	2.148E-01	1.431E-02	0.099
TE-132	-3.228E-01		1.067E+00	1.667E+00	2.518E-01	-0.194
BA-133	1.759E-02		4.685E-02	7.066E-02	8.079E-03	0.249
I-133	-8.334E-03		8.488E-03	Half-Life too short		

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CS-134	9.051E-02		5.035E-02	9.437E-02	6.361E-03	0.959
CS-135	2.464E-01		1.942E-01	3.104E-01	2.587E-02	0.794
I-135	-7.125E+10		9.072E+10	Half-Life too short		
CS-136	-8.424E-02		1.253E-01	1.888E-01	1.450E-02	-0.446
BA-137M	6.970E-03		4.370E-02	7.519E-02	3.667E-03	0.093
CS-137	7.363E-03		4.616E-02	7.943E-02	3.897E-03	0.093
CE-139	8.354E-03		3.096E-02	5.070E-02	3.221E-03	0.165
BA-140	-9.588E-02		3.089E-01	4.843E-01	1.611E-01	-0.198
LA-140	6.920E-02		1.105E-01	1.862E-01	1.227E-02	0.372
CE-141	-1.468E-02		6.502E-02	1.049E-01	7.041E-03	-0.140
CE-143	1.315E-03		2.124E-04	Half-Life too short		
CE-144	-3.166E-02		2.052E-01	3.334E-01	4.760E-02	-0.095
PM-144	-9.210E-03		3.919E-02	6.129E-02	3.257E-03	-0.150
PR-144	-1.302E+00		2.977E+00	4.589E+00	2.436E-01	-0.284
PM-146	8.564E-03		4.428E-02	7.344E-02	6.145E-03	0.117
ND-147	-2.852E-01		6.438E-01	1.002E+00	1.344E-01	-0.285
PM-149	-7.588E+01		1.309E+02	2.128E+02	3.093E+01	-0.357
EU-152	-1.274E-01		1.109E-01	1.565E-01	1.082E-02	-0.814
GD-153	-4.966E-02		1.017E-01	1.473E-01	1.446E-02	-0.337
EU-154	-6.722E-02		1.524E-01	2.448E-01	2.421E-02	-0.275
EU-155	1.558E-01		1.163E-01	2.009E-01	1.750E-02	0.775
TB-160	1.087E-01		1.467E-01	2.581E-01	2.047E-02	0.421
HO-166M	2.423E-02		6.386E-02	1.100E-01	6.054E-03	0.220
TA-182	3.059E-02		2.210E-01	3.752E-01	2.335E-02	0.082
IR-192	1.484E-02		3.517E-02	6.028E-02	3.914E-03	0.246
HG-203	2.359E-02		4.047E-02	7.013E-02	4.861E-03	0.336
BI-207	-2.145E-02		6.203E-02	9.594E-02	6.823E-03	-0.224
PB-210	1.392E+00		8.853E+00	1.522E+01	1.328E+00	0.091
PB-211	-1.545E-01		8.365E-01	1.185E+00	5.683E-01	-0.130
BI-212	2.646E+00	+	9.363E-01	1.388E+00	1.479E-01	1.906
RN-219	-1.763E-01		4.310E-01	6.833E-01	9.135E-02	-0.258
RA-223	4.869E-01		7.260E-01	1.119E+00	1.829E-01	0.435
AC-227	-1.227E-01		2.661E-01	4.410E-01	4.740E-02	-0.278
TH-227	-1.227E-01		2.662E-01	4.410E-01	5.498E-02	-0.278
TH-229	-2.882E-02		5.626E-01	9.002E-01	5.842E-02	-0.032
PA-231	3.074E-01		1.410E+00	2.404E+00	3.246E-01	0.128
TH-231	4.869E-01		7.260E-01	1.119E+00	1.829E-01	0.435
PA-233	2.251E-02		6.233E-02	1.066E-01	7.273E-03	0.211
PA-234	-2.542E-01		3.223E-01	4.793E-01	8.857E-02	-0.530
PA-234M	4.521E+00		5.173E+00	9.080E+00	8.279E-01	0.498
NP-239	3.360E-02		3.952E-01	6.532E-01	4.793E-02	0.051
AM-241	1.853E-01		2.550E-01	4.024E-01	5.081E-02	0.460
CM-247	-6.751E-03		3.932E-02	6.341E-02	3.578E-03	-0.106
CF-249	-1.833E-03		4.083E-02	6.731E-02	3.823E-03	-0.027
CF-251	-7.861E-02		1.368E-01	2.144E-01	1.373E-02	-0.367

# 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]G247563007            *
* Acquisition date   : 3-MAR-2010 20:42:58 Detector SN#      :              *
* Detector ID        : GAM04                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 02:00:00.00              Abundance limit : 75.000        *
* Elapsed real time  : 0 02:00:01.38              Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID            *
* Sample ID           : G247563007              Analyst initials: MXR1         *
* Batch Number        : 956157                  Sample Quantity : 1.2553E+02 GRAM  *
* Recovery            : 1.00000                  Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 5-MAY-2009 14:25:41 MS Isotope       :              *
* MSD DPM             : 0.000                    MSD Isotope   :              *
* LCS DPM             : 0.000                    LCS Isotope   :              *
* LCSD DPM            : 0.000                    LCSD Isotope  :              *
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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.637E+01	3.255E+00	2.611E-01	1.661E+00
CD-109	4.377E+00	1.381E+00	7.396E-01	7.046E-01
SN-126	4.270E-01	1.347E-01	7.271E-02	6.875E-02
TL-208	5.834E-01	9.185E-02	3.037E-02	4.686E-02
BI-211	4.115E+00	5.307E-01	1.818E-01	2.708E-01
PB-212	1.803E+00	1.855E-01	4.580E-02	9.465E-02
BI-214	1.394E+00	1.955E-01	5.632E-02	9.973E-02
PB-214	1.493E+00	2.089E-01	6.163E-02	1.066E-01
RA-224	5.012E+00	1.050E+00	4.909E-01	5.358E-01
RA-226	1.394E+00	1.955E-01	5.632E-02	9.973E-02
AC-228	1.805E+00	3.546E-01	1.173E-01	1.809E-01
RA-228	1.805E+00	3.546E-01	1.173E-01	1.809E-01
TH-228	1.803E+00	1.855E-01	4.580E-02	9.465E-02
TH-232	1.805E+00	3.546E-01	1.173E-01	1.809E-01
TH-234	3.167E+00	2.987E+00	1.583E+00	1.524E+00
U-235	1.859E-01	1.990E-01	1.759E-01	1.015E-01
NP-237	1.274E+00	4.798E-01	2.458E-01	2.448E-01
U-238	3.167E+00	2.987E+00	1.583E+00	1.524E+00
ANH-511	1.399E-01	7.593E-02	2.432E-02	3.874E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	1.380E-01	3.438E-01	2.987E-01	1.754E-01 NOT IDENT.
NA-22	-3.619E-02	5.367E-02	4.319E-02	2.738E-02 NOT IDENT.
NA-24	2.053E+03	3.028E+06	0.000E+00	1.545E+06 SHORT HLIF
SC-46	-7.017E-02	4.523E-02	3.247E-02	2.308E-02 FAIL ABUN
V-48	-4.280E-02	7.675E-02	6.050E-02	3.916E-02 NOT IDENT.
CR-51	-2.718E-01	3.802E-01	3.180E-01	1.940E-01 NOT IDENT.
MN-54	-1.543E-02	3.972E-02	3.271E-02	2.027E-02 NOT IDENT.
CO-56	-2.800E-02	4.331E-02	3.469E-02	2.210E-02 NOT IDENT.

CO-57	5.258E-03	2.615E-02	2.289E-02	1.334E-02	NOT IDENT.
CO-58	-5.412E-02	4.284E-02	3.235E-02	2.186E-02	NOT IDENT.
FE-59	2.094E-02	1.064E-01	8.985E-02	5.429E-02	NOT IDENT.
CO-60	-4.584E-02	4.113E-02	3.012E-02	2.099E-02	NOT IDENT.
ZN-65	7.564E-02	1.162E-01	8.987E-02	5.931E-02	NOT IDENT.
SE-75	7.190E-03	4.972E-02	4.123E-02	2.537E-02	NOT IDENT.
SR-85	6.326E-02	4.056E-02	3.440E-02	2.069E-02	NOT IDENT.
Y-88	2.022E-02	3.203E-02	2.993E-02	1.634E-02	NOT IDENT.
Y-91	-1.611E+01	2.692E+01	2.093E+01	1.373E+01	NOT IDENT.
NB-94	-1.930E-03	3.490E-02	3.004E-02	1.781E-02	NOT IDENT.
NB-95	-1.523E-02	4.491E-02	3.752E-02	2.291E-02	NOT IDENT.
NB-95M	8.855E-02	1.449E-01	1.110E-01	7.394E-02	NOT IDENT.
ZR-95	1.353E-02	7.559E-02	6.582E-02	3.857E-02	NOT IDENT.
MO-99	-8.491E+00	1.699E+01	1.397E+01	8.668E+00	NOT IDENT.
TC-99M	-4.456E+17	1.211E+18	0.000E+00	0.000E+00	SHORT HLIF
RU-103	3.283E-02	4.170E-02	3.702E-02	2.128E-02	FAIL ABUN
RH-106	-1.320E-01	3.081E-01	2.439E-01	1.572E-01	NOT IDENT.
RU-106	-1.320E-01	3.079E-01	2.439E-01	1.571E-01	NOT IDENT.
AG-108M	6.772E-03	2.929E-02	2.536E-02	1.495E-02	NOT IDENT.
AG-110M	-4.647E-02	3.822E-02	3.026E-02	1.950E-02	NOT IDENT.
SN-113	2.310E-02	4.366E-02	3.877E-02	2.228E-02	NOT IDENT.
CD-115	-5.588E+00	1.696E+01	1.382E+01	8.652E+00	NOT IDENT.
SN-117M	6.334E-02	5.709E-02	5.106E-02	2.913E-02	NOT IDENT.
TE-123M	2.881E-02	2.811E-02	2.505E-02	1.434E-02	NOT IDENT.
SB-124	3.553E-03	6.313E-02	5.322E-02	3.221E-02	NOT IDENT.
SB-125	1.189E-01	9.176E-02	8.469E-02	4.682E-02	FAIL ABUN
TE-125M	-4.069E+00	1.041E+01	8.842E+00	5.309E+00	NOT IDENT.
I-126	3.868E-02	2.767E-01	2.423E-01	1.412E-01	NOT IDENT.
SB-126	-1.366E-01	1.841E-01	1.262E-01	9.393E-02	NOT IDENT.
SB-127	-8.816E-01	1.716E+00	1.426E+00	8.756E-01	NOT IDENT.
I-131	2.117E-02	1.255E-01	1.095E-01	6.401E-02	NOT IDENT.
TE-132	-3.228E-01	1.046E+00	8.560E-01	5.337E-01	NOT IDENT.
BA-133	1.759E-02	4.591E-02	3.605E-02	2.342E-02	NOT IDENT.
I-133	-8.334E+03	1.664E+04	0.000E+00	8.488E+03	SHORT HLIF
CS-134	9.051E-02	4.934E-02	4.760E-02	2.517E-02	NOT IDENT.
CS-135	2.464E-01	1.903E-01	1.590E-01	9.709E-02	NOT IDENT.
I-135	-7.125E+16	1.778E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-8.424E-02	1.228E-01	9.486E-02	6.266E-02	NOT IDENT.
BA-137M	6.970E-03	4.282E-02	3.802E-02	2.185E-02	NOT IDENT.
CS-137	7.363E-03	4.524E-02	4.017E-02	2.308E-02	NOT IDENT.
CE-139	8.354E-03	3.034E-02	2.614E-02	1.548E-02	NOT IDENT.
BA-140	-9.588E-02	3.027E-01	2.457E-01	1.545E-01	NOT IDENT.
LA-140	6.920E-02	1.083E-01	9.297E-02	5.526E-02	FAIL ABUN
CE-141	-1.468E-02	6.372E-02	5.417E-02	3.251E-02	NOT IDENT.
CE-143	1.315E+03	4.164E+02	0.000E+00	2.124E+02	SHORT HLIF
CE-144	-3.166E-02	2.011E-01	1.724E-01	1.026E-01	NOT IDENT.
PM-144	-9.210E-03	3.840E-02	3.097E-02	1.959E-02	NOT IDENT.
PR-144	-1.302E+00	2.917E+00	2.319E+00	1.488E+00	NOT IDENT.
PM-146	8.564E-03	4.340E-02	3.734E-02	2.214E-02	NOT IDENT.
ND-147	-2.852E-01	6.309E-01	5.083E-01	3.219E-01	FAIL ABUN
PM-149	-7.588E+01	1.283E+02	1.089E+02	6.546E+01	NOT IDENT.
EU-152	-1.274E-01	1.087E-01	7.989E-02	5.545E-02	FAIL ABUN
GD-153	-4.966E-02	9.969E-02	7.649E-02	5.086E-02	NOT IDENT.
EU-154	-6.722E-02	1.494E-01	1.226E-01	7.620E-02	NOT IDENT.
EU-155	1.558E-01	1.139E-01	1.042E-01	5.813E-02	FAIL ABUN
TB-160	1.087E-01	1.437E-01	1.300E-01	7.334E-02	FAIL ABUN
HO-166M	2.423E-02	6.258E-02	5.557E-02	3.193E-02	FAIL ABUN
TA-182	3.059E-02	2.166E-01	1.881E-01	1.105E-01	FAIL ABUN
IR-192	1.484E-02	3.447E-02	3.080E-02	1.759E-02	FAIL ABUN
HG-203	2.359E-02	3.966E-02	3.590E-02	2.024E-02	NOT IDENT.
BI-207	-2.145E-02	6.079E-02	4.819E-02	3.102E-02	FAIL ABUN
PB-210	1.392E+00	8.676E+00	7.983E+00	4.426E+00	NOT IDENT.
PB-211	-1.545E-01	8.198E-01	6.035E-01	4.182E-01	NOT IDENT.
BI-212	2.646E+00	9.176E-01	7.012E-01	4.681E-01	FAIL ABUN
RN-219	-1.763E-01	4.224E-01	3.480E-01	2.155E-01	FAIL ABUN
RA-223	4.869E-01	7.115E-01	5.716E-01	3.630E-01	FAIL ABUN
AC-227	-1.227E-01	2.608E-01	2.260E-01	1.330E-01	FAIL ABUN
TH-227	-1.227E-01	2.609E-01	2.260E-01	1.331E-01	FAIL ABUN
TH-229	-2.882E-02	5.513E-01	4.632E-01	2.813E-01	FAIL ABUN
PA-231	3.074E-01	1.382E+00	1.230E+00	7.052E-01	FAIL ABUN
TH-231	4.869E-01	7.115E-01	5.716E-01	3.630E-01	FAIL ABUN
PA-233	2.251E-02	6.108E-02	5.450E-02	3.117E-02	FAIL ABUN
PA-234	-2.542E-01	3.158E-01	2.411E-01	1.611E-01	NOT IDENT.
PA-234M	4.521E+00	5.070E+00	4.565E+00	2.587E+00	NOT IDENT.
NP-239	3.360E-02	3.873E-01	3.384E-01	1.976E-01	NOT IDENT.
AM-241	1.853E-01	2.499E-01	2.104E-01	1.275E-01	NOT IDENT.
CM-247	-6.751E-03	3.853E-02	3.229E-02	1.966E-02	NOT IDENT.
CF-249	-1.833E-03	4.001E-02	3.430E-02	2.041E-02	NOT IDENT.

CF-251

-7.861E-02

1.341E-01

1.104E-01

6.841E-02 NOT IDENT.

```

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

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ENERGY	MDA COUNTS
46.54	214.2465
49.72	209.3615
57.36	0.0000
59.54	230.9245
63.29	277.7595
63.29	277.7595
64.28	278.4317
67.75	316.8583
69.67	322.3599
70.83	298.6672
72.81	336.9944
72.87	337.0395
72.87	337.0395
74.82	334.8302
74.82	334.8302
74.82	334.8302
74.97	334.9398
77.11	336.5029
77.11	336.5029
77.11	336.5029
79.69	346.2390
79.80	346.3188
80.12	346.5515
80.19	346.6019
80.57	364.9894
81.00	408.5418
81.07	408.5999
81.07	408.5999
83.79	343.5836
83.79	343.5836
85.43	368.6454
86.48	434.2835
86.55	434.3446
86.79	351.7778
86.94	351.8843
87.57	352.3256
88.03	352.6452
88.47	352.9514
89.96	353.9806
91.11	354.7681
92.59	355.7763
92.59	355.7763
93.35	356.2899
94.67	270.7488
94.87	280.8827
94.87	280.8827
95.86	334.5233
97.43	312.4590
98.44	282.7444
99.53	251.5069
100.11	253.7004
103.18	332.6930
103.37	322.1316
105.31	279.4209
106.12	295.4145
109.28	298.0038
111.00	299.8574
111.76	272.6761
116.30	275.7235
117.23	249.3212
121.12	287.8638
121.78	277.1578
122.06	277.2804
123.07	268.6979
131.20	272.5779
133.52	282.1819
136.00	269.9216

136.47	276.2457
140.51	297.4168
140.51	0.0000
143.76	251.2315
144.24	247.2637
144.24	247.2637
145.44	278.7690
152.43	268.9005
153.25	241.9644
154.21	239.1282
154.21	239.1282
156.02	294.3783
158.56	222.5798
159.00	225.8751
162.66	272.5553
163.33	267.4834
165.86	252.3766
176.60	287.0681
177.52	270.1009
181.07	285.1465
184.41	308.8294
185.72	269.4829
193.51	254.3058
197.04	279.6399
205.31	244.2876
210.85	212.0905
215.65	226.7077
222.11	239.5944
227.38	253.4468
228.16	239.9371
228.18	239.9414
235.69	217.5738
235.96	222.8132
235.96	222.8132
238.63	182.4127
238.63	182.4127
240.99	182.8322
242.00	161.5835
244.70	153.2950
252.40	171.0892
252.80	184.3188
256.23	208.6841
256.23	208.6841
260.90	194.5511
264.66	186.9371
268.22	192.2860
269.46	205.3336
269.46	205.3336
271.23	189.9471
273.65	220.4125
276.40	199.0670
277.37	176.7998
277.60	166.0641
278.00	169.7124
279.20	170.7901
279.54	198.7132
280.46	197.0753
283.69	148.8968
284.31	148.0720
285.41	152.7308
285.90	157.3158
287.50	156.6255
293.27	0.0000
295.22	145.8032
295.96	160.4829
298.57	160.8293
299.98	125.8863
299.98	125.8863
300.09	125.8989
300.09	125.8989
300.13	125.9031
301.36	126.0291
302.85	112.9791
304.50	136.6392
304.50	136.6392
304.85	136.6778
308.46	131.7365
311.90	125.6365

316.51	131.6624
319.41	155.1967
320.08	154.3484
323.87	128.3218
323.87	128.3218
328.76	148.2800
333.37	142.7946
334.37	142.9036
334.37	142.9036
338.28	137.6681
338.28	137.6681
338.32	137.6725
338.32	137.6725
338.32	137.6725
340.48	111.8292
340.55	111.8347
344.28	162.9166
351.06	144.6964
351.93	125.7360
356.01	114.6460
364.49	111.5024
366.42	121.2819
383.85	113.9972
388.16	117.2644
388.63	122.1886
391.69	100.8924
400.66	107.4116
401.81	119.3291
402.40	114.4424
404.85	116.9980
410.95	96.8301
414.70	117.7532
423.72	113.0328
427.09	86.2100
427.87	85.2490
433.94	94.6354
453.88	98.8560
463.37	104.9531
468.07	93.7341
473.00	93.7993
476.78	106.4011
477.60	94.0506
487.02	89.3646
492.35	82.3403
497.08	78.3794
511.00	88.4669
514.00	67.5142
527.90	83.9664
529.87	0.0000
531.02	90.4941
537.26	91.8632
546.56	0.0000
563.25	74.7044
569.33	82.5382
569.50	86.8896
569.70	95.5867
583.19	80.9240
600.60	73.8967
602.73	83.0257
604.72	79.5696
609.32	74.2075
609.32	74.2075
610.33	86.8769
614.28	60.3948
618.01	57.8335
621.93	70.1963
621.93	70.1963
633.25	82.8909
635.95	86.3595
636.99	66.2021
645.85	59.4870
657.76	105.1193
661.66	89.8710
661.66	89.8710
664.57	0.0000
666.33	102.7952
666.50	88.2473
677.62	87.7688

685.70	81.6579
695.00	78.3013
696.49	78.3521
696.51	83.8840
697.00	77.4478
702.65	81.3313
706.68	70.3612
711.68	69.5837
720.70	82.2647
721.93	0.0000
722.78	71.4632
722.91	71.4670
723.31	66.8166
724.19	65.2866
727.33	62.2591
733.00	53.4905
735.93	60.9185
739.50	70.3949
747.24	62.1425
752.31	79.2545
753.82	65.1406
756.73	66.1633
763.94	98.5842
765.81	83.4797
766.42	71.1639
777.92	73.3963
778.90	72.4709
783.70	59.2315
785.37	64.0508
795.86	49.9142
801.95	71.1979
810.29	82.0428
810.76	80.1266
815.77	54.1652
818.51	58.0942
832.01	64.2275
834.85	74.0369
836.80	0.0000
846.77	71.4299
856.80	63.8352
860.56	77.6904
871.09	51.3322
873.19	61.2507
875.33	0.0000
879.36	44.5540
880.51	65.3732
883.24	43.6240
884.68	45.6305
889.28	81.4735
898.04	56.8093
911.20	51.0623
911.20	51.0623
911.20	51.0623
926.50	63.7462
937.49	42.0949
944.13	43.5396
946.00	59.7778
949.00	47.6678
962.29	69.6113
964.08	45.8690
966.15	45.8998
968.97	45.9426
968.97	45.9426
968.97	45.9426
983.53	53.3432
996.26	69.0152
1001.03	49.5188
1004.73	71.2674
1037.84	40.7043
1038.76	0.0000
1048.07	57.5862
1050.41	62.8682
1050.41	62.8682
1063.66	57.8628
1085.87	50.8383
1099.45	56.3617
1112.07	65.1133
1115.54	55.2061

1120.29	58.8484
1120.29	58.8484
1120.55	58.8538
1121.30	58.8672
1131.51	0.0000
1173.23	57.5780
1177.93	56.5652
1189.05	65.4697
1204.77	81.1001
1221.41	65.1382
1231.02	74.5071
1235.36	104.9824
1238.28	77.4170
1260.41	0.0000
1271.85	61.3728
1274.44	64.2074
1274.54	68.8601
1291.59	56.0815
1298.22	0.0000
1312.11	34.7673
1332.49	42.5052
1365.19	25.7124
1368.63	0.0000
1384.29	28.7048
1408.01	29.8332
1457.56	0.0000
1460.82	18.5160
1489.16	17.6572
1505.03	30.5207
1596.21	18.7548
1620.50	13.1301
1678.03	0.0000
1690.97	8.2008
1764.49	6.2434
1764.49	6.2434
1770.23	8.9293
1771.35	16.0758
1791.20	0.0000
1836.06	7.3868

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247563007

Total Uranium Activity	9.5073E+00	ug/g
Total Uranium Counting Unc.	8.8869E+00	ug/g
Total Uranium Tpu	4.5342E-06	ug/g
Total Uranium Mda	4.7097E+00	ug/g

```

*****
*
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON ,SC 29417                           *
*                               GROSS GAMMA REPORT                             *
*
*****
*
*  BATCH ID      : 956157                SAMPLE ID   : G247563007                *
*  ANALYST       : MXR1                  DETECTOR    : GAM04                  *
*  SAMPLE DATE   : 15-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00          *
*  ANALYSIS DATE: 3-MAR-2010 20:42:58.21  SAMPLE ALQT: 125.530 GRAM          *
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.104E+01
GROSS GAMMA ERROR (pCi/GRAM )   : 1.530E+00
GROSS GAMMA MDA (pCi/GRAM )     : 3.756E+00
GROSS GAMMA DLC (pCi/GRAM )     : 1.822E+00

```

VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 09:11:25.56

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563008.CNF;1
Sample date       : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 20:43:25.
Sample ID        : G247563008 Sample quantity   : 1.20940E+02 GRAM
Detector name    : GAM05 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.91 0.0%
Energy tolerance : 2.00000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity       : 5.00000
Batch ID        : 956157 Detector SN#       :
Matrix Spike ID  : LCS ID                  : 1032-A
*****

```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	45.73*	140	569	1.31	92.44	88	10	1.95E-02	35.2	
2	0	62.93*	244	821	0.99	126.84	122	10	3.39E-02	23.3	
3	3	74.29*	715	644	1.25	149.55	144	18	9.93E-02	7.0	2.72E+00
4	3	76.62*	1151	556	1.17	154.21	144	18	1.60E-01	4.7	
5	2	86.63*	259	635	1.13	174.23	166	13	3.60E-02	17.0	2.78E+00
6	4	89.49	159	223	0.88	179.95	178	15	2.21E-02	13.9	2.42E+00
7	4	92.35*	457	570	1.44	185.68	178	15	6.35E-02	11.0	
8	0	128.96	175	545	1.24	258.88	253	12	2.43E-02	27.8	
9	0	185.43*	255	420	1.40	371.81	366	12	3.54E-02	17.7	
10	0	208.50	92	319	1.66	417.95	414	10	1.27E-02	38.0	
11	3	238.14*	1420	203	1.24	477.20	471	18	1.97E-01	3.1	1.35E+00
12	3	241.07*	354	242	1.95	483.07	471	18	4.92E-02	14.6	
13	0	269.89	85	221	1.15	540.69	537	9	1.17E-02	33.7	
14	0	294.67*	426	246	1.27	590.23	584	13	5.92E-02	9.1	
15	0	299.55	95	184	1.15	600.01	597	9	1.33E-02	27.4	
16	0	337.82	282	174	1.40	676.51	671	12	3.91E-02	11.1	
17	0	351.14*	673	236	1.30	703.15	697	13	9.35E-02	6.1	
18	0	462.13	116	114	1.30	925.04	918	13	1.62E-02	21.0	
19	0	510.18*	129	174	1.80	1021.10	1012	18	1.79E-02	28.2	
20	0	582.35*	341	170	1.31	1165.39	1159	14	4.74E-02	9.9	
21	0	608.52*	430	141	1.58	1217.68	1211	15	5.98E-02	7.8	
22	0	661.07	55	69	1.49	1322.74	1319	8	7.60E-03	29.7	
23	0	726.34	148	59	1.55	1453.20	1446	16	2.06E-02	14.3	
24	0	794.41	44	40	2.03	1589.25	1585	10	6.11E-03	30.8	
25	0	859.48	54	83	4.05	1719.28	1709	15	7.51E-03	39.1	
26	0	910.11*	229	81	1.76	1820.48	1814	16	3.18E-02	11.1	
27	1	967.85*	133	58	2.01	1935.87	1917	25	1.85E-02	14.7	2.40E+00
28	0	1119.32	120	63	1.51	2238.53	2233	15	1.67E-02	17.1	
29	0	1237.39	48	74	1.35	2474.44	2468	12	6.61E-03	39.7	
30	0	1459.26*	1281	24	1.86	2917.67	2908	20	1.78E-01	3.0	
31	0	1506.06	28	10	5.74	3011.16	3003	15	3.82E-03	32.5	
32	0	1727.80	27	3	2.58	3454.05	3448	11	3.68E-03	22.8	
33	0	1762.96*	75	10	2.35	3524.26	3516	19	1.04E-02	15.7	

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

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563008.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 20:43:25
Sample ID         : G247563008 Sample quantity : 120.94 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA5 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:01.91 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 2.00 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	*	3.715E+01	3.192E+00	6.684E-01	4.157E-02	55.581
CD-109	+	88.03	*	2.832E+00	9.872E-01	1.269E+00	9.665E-02	2.231
SN-126	+	64.28		9.795E-01	4.787E-01	4.749E-01	7.077E-02	2.063
	+	86.94		1.149E+00	6.133E-01	5.132E-01	2.112E-01	2.238
	+	87.57	*	2.763E-01	9.631E-02	1.237E-01	9.417E-03	2.234
CS-135	+	268.22	*	3.768E-01	2.572E-01	2.895E-01	3.097E-02	1.302
BA-137M	+	661.66	*	9.373E-02	5.602E-02	7.881E-02	5.183E-03	1.189
CS-137	+	661.66	*	9.902E-02	5.918E-02	8.326E-02	5.493E-03	1.189
TL-208		277.37		7.762E-01	4.946E-01	8.628E-01	1.123E-01	0.900
	+	583.19	*	5.510E-01	1.163E-01	8.041E-02	5.905E-03	6.853
	+	860.56		8.435E-01	6.649E-01	5.212E-01	5.288E-02	1.618
PB-210	+	46.54	*	1.350E+00	9.560E-01	9.869E-01	7.611E-02	1.368
BI-211	+	72.87		2.244E+01	3.596E+00	3.851E+00	3.032E-01	5.827
	+	351.06	*	4.592E+00	6.713E-01	4.288E-01	3.399E-02	10.708
PB-212	+	74.82		2.685E+00	5.034E-01	4.587E-01	5.728E-02	5.855
	+	77.11		2.605E+00	3.188E-01	2.770E-01	2.156E-02	9.407
	+	238.63	*	2.115E+00	2.646E-01	1.139E-01	1.233E-02	18.575
	+	300.09		2.239E+00	1.250E+00	1.393E+00	1.495E-01	1.608
BI-214	+	609.32	*	1.350E+00	2.404E-01	1.440E-01	1.215E-02	9.378
	+	1120.29		1.983E+00	7.053E-01	5.995E-01	5.760E-02	3.308
	+	1764.49		1.757E+00	5.605E-01	4.498E-01	2.600E-02	3.905
PB-214	+	74.82		4.760E+00	8.510E-01	8.130E-01	9.060E-02	5.855
	+	77.11		4.593E+00	6.777E-01	4.883E-01	5.537E-02	9.407
	+	242.00		3.199E+00	1.001E+00	6.094E-01	6.924E-02	5.249
	+	295.22		1.767E+00	3.776E-01	2.677E-01	2.967E-02	6.603
	+	351.93	*	1.666E+00	2.604E-01	1.629E-01	1.569E-02	10.231
RA-224	+	240.99	*	5.656E+00	1.740E+00	1.221E+00	1.194E-01	4.634
RA-226	+	609.32	*	1.350E+00	2.404E-01	1.440E-01	1.215E-02	9.378
	+	1120.29		1.983E+00	7.053E-01	5.995E-01	5.760E-02	3.308
	+	1764.49		1.757E+00	5.605E-01	4.498E-01	2.600E-02	3.905
AC-228	+	338.32		2.134E+00	1.007E+00	4.688E-01	1.949E-01	4.552
	+	911.20	*	1.821E+00	4.667E-01	3.220E-01	4.087E-02	5.654
	+	968.97		1.831E+00	7.018E-01	5.008E-01	1.234E-01	3.656
RA-228	+	338.32		2.134E+00	1.007E+00	4.688E-01	1.949E-01	4.552

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	911.20	*	1.821E+00	4.667E-01	3.220E-01	4.087E-02	5.654
	+	968.97		1.831E+00	7.018E-01	5.008E-01	1.234E-01	3.656
	+	74.82		2.685E+00	4.315E-01	4.587E-01	3.631E-02	5.855
	+	77.11		2.605E+00	3.188E-01	2.770E-01	2.156E-02	9.407
TH-229	+	238.63	*	2.115E+00	2.646E-01	1.139E-01	1.233E-02	18.575
	+	300.09		2.239E+00	1.840E+00	1.393E+00	8.530E-01	1.608
	+	85.43		6.954E-01	2.424E-01	3.367E-01	2.574E-02	2.065
	+	88.47		2.635E-01	7.611E-02	1.912E-01	1.470E-02	1.379
TH-232		193.51	*	-2.932E-01	6.897E-01	1.084E+00	1.083E-01	-0.270
		210.85		4.390E-01	1.269E+00	1.801E+00	1.794E-01	0.244
	+	338.32		2.134E+00	5.044E-01	4.688E-01	3.676E-02	4.552
	+	911.20	*	1.821E+00	4.667E-01	3.220E-01	4.087E-02	5.654
TH-234	+	968.97		1.831E+00	7.018E-01	5.008E-01	1.234E-01	3.656
	+	63.29	*	2.541E+00	1.269E+00	1.224E+00	2.221E-01	2.076
U-235	+	92.59		4.325E+00	1.347E+00	9.664E-01	2.126E-01	4.476
	+	89.96		1.823E+00	6.735E-01	1.487E+00	3.625E-01	1.226
	+	93.35		3.267E+00	1.042E+00	7.318E-01	1.688E-01	4.465
		143.76	*	2.799E-01	2.575E-01	4.200E-01	8.011E-02	0.666
NP-237		163.33		1.824E-01	5.334E-01	8.695E-01	1.632E-01	0.210
	+	185.72		2.437E-01	8.975E-02	8.127E-02	8.111E-03	2.998
		205.31		-2.358E-01	6.912E-01	9.404E-01	1.771E-01	-0.251
	+	86.48	*	8.243E-01	3.354E-01	4.003E-01	8.932E-02	2.059
U-238		95.86		-3.108E-01	1.077E+00	1.522E+00	3.671E-01	-0.204
	+	63.29	*	2.541E+00	1.269E+00	1.224E+00	2.221E-01	2.076
ANH-511	+	92.59		4.325E+00	1.021E+00	9.664E-01	8.121E-02	4.476
	+	511.00	*	1.569E-01	8.890E-02	6.371E-02	4.078E-03	2.462

----- 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	*	1.019E-01	4.233E-01	7.019E-01	5.026E-02	0.145
NA-22		1274.54	*	-2.900E-02	5.869E-02	9.007E-02	5.247E-03	-0.322
NA-24		1368.63	*	-3.437E+00	5.869E-02	Half-Life too short		
SC-46		889.28	*	2.223E-02	5.043E-02	8.655E-02	8.693E-03	0.257
	+	1120.55		3.390E-01	1.184E-01	1.684E-01	1.159E-02	2.012
V-48		944.13		1.441E-01	1.256E+00	2.090E+00	2.022E-01	0.069
		983.53	*	3.450E-02	9.306E-02	1.583E-01	1.450E-02	0.218
		1312.11		7.085E-02	1.230E-01	2.099E-01	1.217E-02	0.337
CR-51		320.08	*	2.033E-01	4.809E-01	8.152E-01	7.203E-02	0.249
MN-54		834.85	*	1.686E-02	5.513E-02	9.338E-02	8.555E-03	0.181
CO-56		846.77	*	-6.670E-03	5.120E-02	8.399E-02	7.854E-03	-0.079
		1037.84		2.264E-01	4.374E-01	7.480E-01	6.591E-02	0.303
	+	1238.28		2.215E-01	1.763E-01	2.395E-01	1.480E-02	0.925
		1771.35		2.921E-01	2.716E-01	5.036E-01	2.908E-02	0.580
CO-57		122.06	*	3.648E-03	3.115E-02	4.914E-02	6.972E-03	0.074
		136.47		1.392E-02	2.569E-01	4.172E-01	5.586E-02	0.033
CO-58		810.76	*	-3.564E-02	5.428E-02	8.540E-02	7.516E-03	-0.417
FE-59		1099.45	*	-1.011E-01	1.416E-01	2.173E-01	1.759E-02	-0.465

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CO-60	1291.59			-3.985E-02	1.713E-01	2.702E-01	2.006E-02	-0.148
	1173.23			-8.187E-03	5.968E-02	9.589E-02	5.562E-03	-0.085
	1332.49	*		-1.772E-03	5.146E-02	8.271E-02	4.786E-03	-0.021
ZN-65	1115.54	*		1.428E-01	1.456E-01	2.265E-01	1.582E-02	0.631
SE-75	121.12			-8.719E-02	1.579E-01	2.505E-01	3.914E-02	-0.348
	136.00			-1.106E-02	4.933E-02	7.925E-02	1.034E-02	-0.140
	264.66	*		-1.370E-02	6.038E-02	8.659E-02	8.267E-03	-0.158
	279.54			-1.589E-01	1.392E-01	2.193E-01	2.101E-02	-0.724
	400.66			9.900E-03	3.343E-01	5.512E-01	5.025E-02	0.018
SR-85	514.00	*		4.683E-02	5.506E-02	8.335E-02	5.343E-03	0.562
Y-88	898.04			1.982E-02	5.580E-02	9.491E-02	9.704E-03	0.209
	1836.06	*		-2.625E-02	4.559E-02	6.648E-02	3.803E-03	-0.395
Y-91	1204.77	*		1.554E+01	3.095E+01	5.231E+01	3.040E+00	0.297
NB-94	702.65	*		-5.397E-03	4.751E-02	7.902E-02	5.654E-03	-0.068
	871.09			-1.036E-02	4.682E-02	7.610E-02	7.417E-03	-0.136
NB-95	765.81	*		6.512E-02	6.564E-02	1.155E-01	9.344E-03	0.564
NB-95M	235.69	*		1.778E+00	2.950E-01	4.210E-01	4.613E-02	4.222
ZR-95	724.19			4.127E-01	1.521E-01	2.654E-01	2.202E-02	1.555
	756.73	*		-3.257E-02	9.872E-02	1.607E-01	1.433E-02	-0.203
	140.51			-1.250E+01	3.731E+01	5.944E+01	1.513E+01	-0.210
MO-99	181.07			-7.935E+00	3.467E+01	4.786E+01	9.307E+00	-0.166
	366.42			-5.431E+00	1.600E+02	2.639E+02	1.811E+01	-0.021
	739.50	*		1.441E+01	2.323E+01	4.031E+01	6.156E+00	0.357
	777.92			-4.821E+01	6.925E+01	1.093E+02	9.040E+00	-0.441
TC-99M	140.51	*		-4.920E+11	6.925E+01	Half-Life	too short	
RU-103	497.08	*		2.824E-02	5.426E-02	9.124E-02	1.158E-02	0.309
	610.33	+		1.425E+01	3.128E+00	3.444E+00	5.294E-01	4.136
RH-106	621.93	*		2.735E-02	3.982E-01	6.450E-01	7.763E-02	0.042
	1050.41			-1.341E+00	3.436E+00	5.422E+00	4.415E-01	-0.247
RU-106	621.93	*		2.735E-02	3.982E-01	6.450E-01	4.252E-02	0.042
	1050.41			-1.341E+00	3.436E+00	5.422E+00	4.415E-01	-0.247
AG-108M	433.94	*		-2.948E-02	3.878E-02	6.050E-02	3.906E-03	-0.487
	614.28			1.252E-02	4.755E-02	6.812E-02	4.739E-03	0.184
	722.91			6.497E-02	5.398E-02	8.717E-02	6.772E-03	0.745
AG-110M	657.76	*		9.021E-03	5.680E-02	7.989E-02	5.523E-03	0.113
	677.62			1.449E-01	3.872E-01	6.673E-01	4.745E-02	0.217
	706.68			-3.572E-02	2.913E-01	4.838E-01	3.632E-02	-0.074
	763.94			3.457E-02	2.510E-01	4.145E-01	3.446E-02	0.083
	884.68			-4.181E-02	6.629E-02	1.034E-01	1.056E-02	-0.404
	937.49			-3.090E-02	1.430E-01	2.312E-01	2.319E-02	-0.134
	1384.29			-1.414E-01	1.818E-01	2.719E-01	1.676E-02	-0.520
	1505.03	+		6.724E-01	4.390E-01	6.856E-01	4.030E-02	0.981
SN-113	391.69	*		1.314E-02	5.933E-02	9.893E-02	6.136E-03	0.133
CD-115	260.90			2.050E+02	2.324E+02	4.038E+02	3.861E+01	0.508
	492.35			-6.374E+01	7.435E+01	1.138E+02	7.208E+00	-0.560
	527.90	*		-5.869E+00	2.212E+01	3.523E+01	2.273E+00	-0.167
SN-117M	156.02			-2.029E+00	3.041E+00	4.767E+00	5.256E-01	-0.426
	158.56	*		-9.294E-03	7.146E-02	1.146E-01	1.232E-02	-0.081
TE-123M	159.00	*		-3.280E-02	3.565E-02	5.506E-02	5.916E-03	-0.596

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Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-124		602.73		-5.631E-03	6.183E-02	8.519E-02	5.610E-03	-0.066
		645.85		-2.828E-01	6.756E-01	1.049E+00	7.577E-02	-0.270
		722.78		4.190E-01	5.637E-01	8.737E-01	6.707E-02	0.480
		1690.97	*	-9.898E-03	9.036E-02	1.461E-01	9.289E-03	-0.068
SB-125		427.87	*	-2.857E-02	1.213E-01	1.962E-01	1.229E-02	-0.146
	+	463.37		1.244E+00	5.310E-01	6.873E-01	4.870E-02	1.810
		600.60		7.727E-02	2.488E-01	3.877E-01	2.868E-02	0.199
		635.95		1.575E-01	3.436E-01	5.734E-01	4.291E-02	0.275
TE-125M		109.28	*	2.956E+00	1.164E+01	1.914E+01	2.484E+00	0.154
I-126		388.63		3.128E-03	2.388E-01	3.938E-01	2.343E-02	0.008
		666.33	*	2.560E-01	3.816E-01	5.640E-01	3.745E-02	0.454
		753.82		6.782E-01	2.517E+00	4.285E+00	3.388E-01	0.158
SB-126		414.70		-6.667E-02	1.087E-01	1.723E-01	1.026E-02	-0.387
		666.50		8.421E-02	1.311E-01	1.933E-01	1.284E-02	0.436
		695.00		-5.889E-02	1.278E-01	1.939E-01	1.366E-02	-0.304
		697.00		-2.606E-01	4.540E-01	6.866E-01	4.857E-02	-0.380
		720.70	*	1.037E-01	2.128E-01	3.239E-01	2.402E-02	0.320
		856.80		1.069E+00	8.117E-01	1.311E+00	1.247E-01	0.815
SB-127		252.40		3.352E+00	6.162E+00	1.032E+01	4.322E+00	0.325
		473.00		-7.061E-01	2.688E+00	4.313E+00	5.038E-01	-0.164
		685.70	*	-7.689E-01	2.091E+00	3.409E+00	3.598E-01	-0.226
		783.70		6.700E+00	6.312E+00	1.116E+01	1.398E+00	0.600
I-131		80.19		-2.195E+00	7.002E+00	7.125E+00	5.557E-01	-0.308
		284.31		9.720E-01	2.038E+00	3.474E+00	3.339E-01	0.280
		364.49	*	-7.988E-02	1.564E-01	2.505E-01	1.883E-02	-0.319
		636.99		7.422E-01	2.159E+00	3.574E+00	2.586E-01	0.208
TE-132		49.72		-7.510E+00	6.923E+00	9.598E+00	9.836E-01	-0.782
		111.76		-6.103E+01	5.245E+01	8.090E+01	1.142E+01	-0.754
		116.30		-9.113E-01	4.414E+01	7.183E+01	1.072E+01	-0.013
		228.16	*	6.058E-02	1.111E+00	1.875E+00	3.146E-01	0.032
BA-133		81.00		-7.250E-02	1.315E-01	1.310E-01	1.969E-02	-0.553
		276.40		8.447E-01	4.829E-01	8.023E-01	1.168E-01	1.053
		302.85		-8.423E-02	1.942E-01	2.719E-01	3.586E-02	-0.310
		356.01	*	9.235E-07	6.410E-02	9.199E-02	1.112E-02	0.000
		383.85		5.340E-02	3.879E-01	6.444E-01	6.999E-02	0.083
I-133		529.87	*	-4.695E-03	3.879E-01	Half-Life	too short	
		875.33		1.753E-01	3.879E-01	Half-Life	too short	
		1298.22		-2.637E-01	3.879E-01	Half-Life	too short	
CS-134		563.25		7.773E-01	4.917E-01	8.758E-01	5.818E-02	0.887
		569.33		-1.504E-01	2.545E-01	3.930E-01	2.632E-02	-0.383
		604.72		2.334E-02	5.301E-02	7.686E-02	5.083E-03	0.304
	+	795.86	*	1.055E-01	6.570E-02	1.093E-01	9.413E-03	0.965
		801.95		-2.030E-01	5.536E-01	8.403E-01	7.304E-02	-0.242
		1365.19		1.721E+00	1.586E+00	2.899E+00	1.852E-01	0.594
I-135		546.56		-1.459E+11	1.586E+00	Half-Life	too short	
		836.80		3.550E+11	1.586E+00	Half-Life	too short	
		1038.76		-4.213E+10	1.586E+00	Half-Life	too short	
		1131.51		-1.686E+10	1.586E+00	Half-Life	too short	
		1260.41	*	-2.378E+10	1.586E+00	Half-Life	too short	

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CS-136	+	1457.56		4.677E+13	1.586E+00	Half-Life	too short	
		1678.03		1.583E+11	1.586E+00	Half-Life	too short	
		1791.20		-1.322E+11	1.586E+00	Half-Life	too short	
		153.25		8.447E-01	1.142E+00	1.887E+00	2.382E-01	0.448
		176.60		8.905E-02	6.677E-01	1.079E+00	1.158E-01	0.083
		273.65		-7.499E-01	8.204E-01	1.122E+00	1.128E-01	-0.668
		340.55		3.931E-01	2.069E-01	3.344E-01	2.719E-02	1.175
CE-139		818.51		-1.015E-01	9.986E-02	1.501E-01	1.338E-02	-0.676
		1048.07	*	-5.934E-02	1.564E-01	2.472E-01	2.117E-02	-0.240
		1235.36		2.175E+00	1.012E+00	1.688E+00	1.670E-01	1.289
		165.86	*	-4.202E-03	3.688E-02	5.910E-02	5.867E-03	-0.071
BA-140		162.66		7.789E-02	1.052E+00	1.700E+00	1.834E-01	0.046
		304.85		-7.840E-01	1.955E+00	2.725E+00	7.987E-01	-0.288
LA-140		423.72		3.689E-01	2.698E+00	4.462E+00	1.442E+00	0.083
		537.26	*	-1.698E-01	4.296E-01	6.735E-01	2.252E-01	-0.252
		328.76		5.022E-01	4.105E-01	7.159E-01	6.192E-02	0.701
		487.02		1.498E-01	1.823E-01	3.137E-01	2.203E-02	0.477
		815.77		3.699E-01	4.389E-01	7.776E-01	7.656E-02	0.476
CE-141		1596.21	*	-3.372E-02	1.122E-01	1.777E-01	1.044E-02	-0.190
		145.44	*	1.411E-02	7.945E-02	1.293E-01	1.581E-02	0.109
CE-143		57.36		8.129E-04	7.945E-02	Half-Life	too short	
	+	293.27	*	2.940E-03	7.945E-02	Half-Life	too short	
CE-144		664.57		2.117E-03	7.945E-02	Half-Life	too short	
		721.93		2.437E-03	7.945E-02	Half-Life	too short	
		80.12		-9.762E-01	3.407E+00	3.475E+00	2.685E-01	-0.281
		133.52	*	2.766E-02	2.742E-01	3.908E-01	7.143E-02	0.071
PM-144		476.78		4.347E-02	8.511E-02	1.434E-01	1.042E-02	0.303
		618.01		1.264E-02	3.982E-02	6.582E-02	4.544E-03	0.192
PR-144		696.49	*	-2.724E-02	5.420E-02	8.236E-02	5.824E-03	-0.331
		696.51	*	-2.065E+00	4.057E+00	6.162E+00	4.355E-01	-0.335
PM-146		1489.16		-2.760E+00	1.410E+01	2.276E+01	1.337E+00	-0.121
		453.88	*	4.095E-02	5.775E-02	9.351E-02	8.147E-03	0.438
		633.25		-1.142E+00	1.912E+00	2.845E+00	1.075E+00	-0.401
		735.93		-2.790E-02	2.011E-01	3.251E-01	9.020E-02	-0.086
ND-147		747.24		9.566E-03	1.243E-01	2.087E-01	2.947E-02	0.046
	+	91.11		1.847E+00	4.410E-01	6.278E-01	5.588E-02	2.942
		319.41		1.685E+00	4.556E+00	7.705E+00	6.466E-01	0.219
		531.02	*	-8.736E-02	8.452E-01	1.363E+00	1.883E-01	-0.064
PM-149		285.90	*	-3.278E+01	1.695E+02	2.803E+02	4.444E+01	-0.117
EU-152		121.78		-6.075E-03	9.024E-02	1.413E-01	2.111E-02	-0.043
		244.70		2.060E-01	3.934E-01	5.945E-01	5.796E-02	0.347
		344.28	*	8.668E-02	1.474E-01	1.963E-01	1.614E-02	0.441
		778.90		-5.900E-02	3.781E-01	6.232E-01	5.165E-02	-0.095
		964.08		9.943E-01	4.184E-01	7.806E-01	7.354E-02	1.274
		1085.87		1.530E-02	5.420E-01	8.884E-01	6.688E-02	0.017
		1112.07		-1.004E-01	4.747E-01	6.748E-01	4.752E-02	-0.149
GD-153		1408.01		2.607E-01	2.180E-01	4.135E-01	2.416E-02	0.630
		69.67		-2.021E-01	1.404E+00	2.023E+00	1.609E-01	-0.100
		97.43	*	9.412E-02	9.950E-02	1.485E-01	1.377E-02	0.634

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-154		103.18		-1.222E-01	1.209E-01	1.894E-01	1.959E-02	-0.645
		123.07		-1.589E-02	7.098E-02	9.973E-02	1.589E-02	-0.159
		723.31		3.373E-01	2.596E-01	4.194E-01	3.544E-02	0.804
		873.19		-3.878E-01	4.024E-01	6.083E-01	7.762E-02	-0.637
		996.26		-6.939E-02	4.630E-01	7.501E-01	1.324E-01	-0.093
EU-155		1004.73		-1.381E-01	2.868E-01	4.498E-01	5.314E-02	-0.307
		1274.44	*	-8.370E-02	1.661E-01	2.545E-01	2.400E-02	-0.329
	+	86.55		3.351E-01	1.169E-01	1.853E-01	1.432E-02	1.809
		105.31	*	2.973E-02	1.202E-01	1.948E-01	2.110E-02	0.153
	+	86.79		8.995E-01	3.136E-01	4.962E-01	3.784E-02	1.813
TB-160		197.04		-1.036E-01	7.519E-01	1.176E+00	1.175E-01	-0.088
		215.65		4.954E-01	9.366E-01	1.570E+00	1.562E-01	0.315
	+	298.57		3.191E-01	1.771E-01	2.664E-01	2.371E-02	1.198
		879.36	*	1.358E-01	2.027E-01	3.520E-01	3.478E-02	0.386
		962.29		1.175E+00	7.435E-01	1.338E+00	1.264E-01	0.878
HO-166M	+	966.15		1.399E+00	4.312E-01	7.381E-01	6.934E-02	1.895
		1177.93		2.981E-02	5.176E-01	8.462E-01	4.910E-02	0.035
		1271.85		-5.692E-01	9.485E-01	1.436E+00	8.347E-02	-0.396
		80.57		-1.881E-01	3.724E-01	3.734E-01	2.882E-02	-0.504
	+	184.41		1.936E-01	7.130E-02	8.630E-02	8.611E-03	2.243
TA-182		280.46		-1.765E-01	1.089E-01	1.666E-01	1.542E-02	-1.059
		410.95		2.136E-01	3.309E-01	5.624E-01	3.338E-02	0.380
		711.68	*	-1.759E-02	7.884E-02	1.298E-01	9.460E-03	-0.135
		752.31		1.870E-01	3.567E-01	6.180E-01	4.873E-02	0.303
		810.29		-5.773E-02	8.040E-02	1.258E-01	1.103E-02	-0.459
IR-192		67.75		-6.613E-02	9.308E-02	1.216E-01	9.734E-03	-0.544
		100.11		8.567E-02	1.875E-01	3.112E-01	3.038E-02	0.275
		152.43		3.645E-01	4.447E-01	7.369E-01	8.405E-02	0.495
		222.11		-9.307E-02	4.107E-01	6.855E-01	6.799E-02	-0.136
	+	1121.30		9.365E-01	3.271E-01	4.440E-01	3.048E-02	2.109
HG-203		1189.05		-2.185E-01	4.312E-01	6.695E-01	3.888E-02	-0.326
		1221.41	*	-2.529E-01	2.903E-01	4.369E-01	2.540E-02	-0.579
		1231.02		-6.240E-01	8.084E-01	1.016E+00	5.906E-02	-0.614
	+	295.96		1.322E+00	2.694E-01	3.450E-01	3.110E-02	3.833
		308.46		8.965E-02	1.174E-01	2.024E-01	1.764E-02	0.443
BI-207		316.51	*	-4.961E-04	4.365E-02	7.253E-02	6.156E-03	-0.007
		468.07		2.722E-02	9.714E-02	1.391E-01	9.843E-03	0.196
	+	70.83		6.846E-01	1.140E+00	1.681E+00	2.638E-01	0.407
		72.87		5.693E+00	1.172E+00	1.377E+00	2.084E-01	4.134
	+	279.20	*	-3.678E-02	4.981E-02	8.032E-02	7.618E-03	-0.458
PB-211	+	72.81		1.291E+00	2.069E-01	3.110E-01	2.448E-02	4.152
	+	74.97		7.740E-01	1.240E-01	2.396E-01	1.875E-02	3.231
		569.70		-7.740E-03	3.841E-02	6.118E-02	4.004E-03	-0.127
		1063.66	*	1.792E-02	7.352E-02	1.229E-01	9.730E-03	0.146
		1770.23		6.392E-01	5.423E-01	1.020E+00	5.890E-02	0.627
BI-212		404.85	*	-5.033E-01	9.964E-01	1.545E+00	7.412E-01	-0.326
		427.09		-1.009E-01	2.014E+00	3.295E+00	1.511E+00	-0.031
	+	832.01		2.069E+00	1.793E+00	2.620E+00	1.361E+00	0.790
		727.33	*	3.727E+00	1.149E+00	1.516E+00	1.777E-01	2.458

---- 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		3.847E+00	4.363E+00	7.689E+00	6.449E-01	0.500
		1620.50		9.373E-01	2.771E+00	4.832E+00	2.836E-01	0.194
		271.23		5.582E-01	3.813E-01	5.419E-01	5.923E-02	1.030
		401.81	*	2.249E-01	5.291E-01	8.900E-01	1.199E-01	0.253
RA-223		81.07		-1.614E-01	2.974E-01	2.972E-01	2.292E-02	-0.543
		83.79		5.552E-02	1.452E-01	1.974E-01	1.514E-02	0.281
		94.87		5.455E-01	5.368E-01	8.004E-01	7.050E-02	0.681
		144.24		8.770E-01	8.535E-01	1.407E+00	1.823E-01	0.623
AC-227	+	154.21		3.703E-01	4.857E-01	8.033E-01	9.532E-02	0.461
		269.46		4.337E-01	2.954E-01	4.279E-01	4.106E-02	1.014
	+	323.87	*	-1.072E+00	8.590E-01	1.307E+00	2.243E-01	-0.821
		338.28		8.470E+00	2.126E+00	2.844E+00	3.279E-01	2.978
		79.69		-1.660E-01	1.695E+00	1.753E+00	2.946E-01	-0.095
		235.96		3.175E+00	4.639E-01	5.786E-01	6.578E-02	5.488
	+	256.23	*	-1.064E-01	2.849E-01	4.685E-01	5.991E-02	-0.227
		299.98		2.463E+00	1.386E+00	2.041E+00	2.628E-01	1.207
		304.50		-1.159E+00	2.229E+00	3.090E+00	5.130E-01	-0.375
		334.37		8.630E-01	2.496E+00	3.676E+00	5.600E-01	0.235
TH-227		79.80		-3.636E-01	2.230E+00	2.294E+00	4.919E-01	-0.159
		235.96		3.175E+00	4.510E-01	5.786E-01	6.271E-02	5.488
	+	256.23	*	-1.064E-01	2.849E-01	4.685E-01	6.682E-02	-0.227
		299.98		2.463E+00	1.386E+00	2.041E+00	2.628E-01	1.207
PA-231		304.50		-1.159E+00	2.229E+00	3.090E+00	5.130E-01	-0.375
		334.37		8.630E-01	2.496E+00	3.676E+00	5.600E-01	0.235
	+	283.69	*	5.205E-01	1.784E+00	3.016E+00	4.505E-01	0.173
		301.36		1.582E+00	8.885E-01	1.301E+00	1.601E-01	1.216
TH-231		81.07		-1.614E-01	2.974E-01	2.972E-01	2.292E-02	-0.543
		83.79		5.552E-02	1.452E-01	1.974E-01	1.514E-02	0.281
		94.87		5.455E-01	5.368E-01	8.004E-01	7.050E-02	0.681
		144.24		8.770E-01	8.535E-01	1.407E+00	1.823E-01	0.623
PA-233	+	154.21		3.703E-01	4.857E-01	8.033E-01	9.532E-02	0.461
		269.46		4.337E-01	2.954E-01	4.279E-01	4.106E-02	1.014
	+	323.87	*	-1.072E+00	8.590E-01	1.307E+00	2.243E-01	-0.821
		338.28		8.470E+00	2.126E+00	2.844E+00	3.279E-01	2.978
	+	300.13		1.114E+00	6.330E-01	9.264E-01	1.387E-01	1.203
		311.90	*	1.727E-02	7.945E-02	1.336E-01	1.180E-02	0.129
		340.48		1.757E+00	9.254E-01	1.365E+00	3.246E-01	1.287
		94.67		4.914E-01	2.012E-01	3.041E-01	3.804E-02	1.616
		98.44		1.629E-01	1.393E-01	1.623E-01	9.075E-02	1.004
		111.00		-1.773E-01	2.191E-01	3.449E-01	5.030E-02	-0.514
PA-234		131.20		1.633E-01	1.468E-01	2.176E-01	2.921E-02	0.751
		569.50		-1.988E-01	3.509E-01	5.431E-01	3.554E-02	-0.366
		733.00		-2.656E-01	5.502E-01	7.443E-01	1.624E-01	-0.357
		880.51		3.061E-02	3.909E-01	6.511E-01	6.446E-02	0.047
		883.24		-3.317E-01	4.645E-01	6.284E-01	4.236E-01	-0.528
		926.50		2.253E-02	2.463E-01	4.096E-01	1.054E-01	0.055
		946.00	*	4.751E-01	4.189E-01	7.379E-01	1.421E-01	0.644
		949.00		1.940E-01	6.041E-01	1.022E+00	9.825E-02	0.190
	PA-234M	766.42		1.998E+01	2.004E+01	3.077E+01	1.559E+01	0.649

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	1001.03	*	-2.251E+00	6.336E+00	1.006E+01	1.028E+00	-0.224	
	99.53		2.112E-01	1.771E-01	2.905E-01	2.805E-02	0.727	
	103.37		-6.065E-02	1.104E-01	1.735E-01	1.801E-02	-0.349	
	106.12		6.407E-02	9.722E-02	1.594E-01	1.738E-02	0.402	
	117.23	*	-5.858E-01	4.739E-01	7.258E-01	9.544E-02	-0.807	
	228.18		1.302E-02	2.513E-01	4.239E-01	4.189E-02	0.031	
AM-241	277.60		2.823E-01	2.251E-01	3.931E-01	3.658E-02	0.718	
	59.54	*	1.002E-02	8.689E-02	1.270E-01	1.137E-02	0.079	
CM-247	278.00		7.732E-01	9.447E-01	1.628E+00	1.514E-01	0.475	
	287.50		-3.602E-01	1.728E+00	2.592E+00	2.366E-01	-0.139	
CF-249	402.40	*	1.758E-03	4.820E-02	7.948E-02	4.676E-03	0.022	
	252.80		6.001E-01	1.065E+00	1.830E+00	1.768E-01	0.328	
	333.37		1.148E-01	2.537E-01	3.770E-01	3.013E-02	0.305	
	388.16	*	-4.563E-04	5.348E-02	8.811E-02	5.262E-03	-0.005	
CF-251	177.52	*	1.303E-02	1.645E-01	2.651E-01	2.641E-02	0.049	
	227.38		1.802E-01	4.058E-01	6.949E-01	6.871E-02	0.259	
	285.41		9.605E-02	2.686E+00	4.492E+00	4.118E-01	0.021	

# 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]G247563008      *
* Acquisition date   : 3-MAR-2010 20:43:25 Detector SN#                   *
* Detector ID        : GAM05 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 2.000                        *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:01.91 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID        *
* Sample ID          : G247563008 Analyst initials: MXR1                 *
* Batch Number       : 956157 Sample Quantity : 1.2094E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                 *
*****
*                                     QC DATA                               *
*                                     *                                       *
* Standard Weight    : 0.00000                                           *
* CALIB. DATE/TIME   : 11-JUN-2009 16:41:00 MS Isotope                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.715E+01	3.129E+00	6.670E-01	0.000E+00
CD-109	2.832E+00	9.674E-01	1.310E+00	0.000E+00
SN-126	2.763E-01	9.439E-02	1.277E-01	0.000E+00
CS-135	3.768E-01	2.521E-01	2.949E-01	0.000E+00
BA-137M	9.373E-02	5.490E-02	7.942E-02	0.000E+00
CS-137	9.902E-02	5.800E-02	8.390E-02	0.000E+00
TL-208	5.510E-01	1.140E-01	8.115E-02	0.000E+00
PB-210	1.350E+00	9.369E-01	1.026E+00	0.000E+00
BI-211	4.592E+00	6.579E-01	4.355E-01	0.000E+00
PB-212	2.115E+00	2.593E-01	1.162E-01	0.000E+00
BI-214	1.350E+00	2.356E-01	1.452E-01	0.000E+00
PB-214	1.666E+00	2.552E-01	1.654E-01	0.000E+00
RA-224	5.656E+00	1.705E+00	1.245E+00	0.000E+00
RA-226	1.350E+00	2.356E-01	1.452E-01	0.000E+00
AC-228	1.821E+00	4.573E-01	3.232E-01	0.000E+00
RA-228	1.821E+00	4.573E-01	3.232E-01	0.000E+00
TH-228	2.115E+00	2.593E-01	1.162E-01	0.000E+00
TH-229	-2.932E-01	6.759E-01	1.109E+00	0.000E+00
TH-232	1.821E+00	4.573E-01	3.232E-01	0.000E+00
TH-234	2.541E+00	1.244E+00	1.268E+00	0.000E+00
U-235	2.799E-01	2.523E-01	4.311E-01	0.000E+00
NP-237	8.243E-01	3.287E-01	4.134E-01	0.000E+00
U-238	2.541E+00	1.244E+00	1.268E+00	0.000E+00
ANH-511	1.569E-01	8.712E-02	6.441E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	1.019E-01	4.149E-01	7.102E-01	0.000E+00 NOT IDENT.
NA-22	-2.900E-02	5.751E-02	9.003E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	3.993E+06	0.000E+00	0.000E+00 SHORT HLIF

SC-46	2.223E-02	4.942E-02	8.690E-02	0.000E+00	FAIL ABUN
V-48	3.450E-02	9.120E-02	1.588E-01	0.000E+00	NOT IDENT.
CR-51	2.033E-01	4.713E-01	8.287E-01	0.000E+00	NOT IDENT.
MN-54	1.686E-02	5.402E-02	9.383E-02	0.000E+00	NOT IDENT.
CO-56	-6.670E-03	5.018E-02	8.438E-02	0.000E+00	FAIL ABUN
CO-57	3.648E-03	3.053E-02	5.054E-02	0.000E+00	NOT IDENT.
CO-58	-3.564E-02	5.319E-02	8.584E-02	0.000E+00	NOT IDENT.
FE-59	-1.011E-01	1.388E-01	2.176E-01	0.000E+00	NOT IDENT.
CO-60	-1.772E-03	5.043E-02	8.263E-02	0.000E+00	NOT IDENT.
ZN-65	1.428E-01	1.427E-01	2.268E-01	0.000E+00	NOT IDENT.
SE-75	-1.370E-02	5.917E-02	8.823E-02	0.000E+00	NOT IDENT.
SR-85	4.683E-02	5.396E-02	8.425E-02	0.000E+00	NOT IDENT.
Y-88	-2.625E-02	4.468E-02	6.614E-02	0.000E+00	NOT IDENT.
Y-91	1.554E+01	3.033E+01	5.232E+01	0.000E+00	NOT IDENT.
NB-94	-5.397E-03	4.656E-02	7.956E-02	0.000E+00	NOT IDENT.
NB-95	6.512E-02	6.433E-02	1.162E-01	0.000E+00	NOT IDENT.
NB-95M	0.000E+00	2.891E-01	4.296E-01	0.000E+00	NOT IDENT.
ZR-95	-3.257E-02	9.675E-02	1.616E-01	0.000E+00	NOT IDENT.
MO-99	1.441E+01	2.276E+01	4.057E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	1.443E+18	0.000E+00	0.000E+00	SHORT HLIF
RU-103	2.824E-02	5.318E-02	9.227E-02	0.000E+00	FAIL ABUN
RH-106	2.735E-02	3.902E-01	6.504E-01	0.000E+00	NOT IDENT.
RU-106	2.735E-02	3.902E-01	6.504E-01	0.000E+00	NOT IDENT.
AG-108M	-2.948E-02	3.800E-02	6.128E-02	0.000E+00	NOT IDENT.
AG-110M	9.021E-03	5.567E-02	8.052E-02	0.000E+00	FAIL ABUN
SN-113	1.314E-02	5.815E-02	1.003E-01	0.000E+00	NOT IDENT.
CD-115	-5.869E+00	2.167E+01	3.560E+01	0.000E+00	NOT IDENT.
SN-117M	-9.294E-03	7.003E-02	1.175E-01	0.000E+00	NOT IDENT.
TE-123M	-3.280E-02	3.493E-02	5.644E-02	0.000E+00	NOT IDENT.
SB-124	-9.898E-03	8.856E-02	1.455E-01	0.000E+00	NOT IDENT.
SB-125	-2.857E-02	1.189E-01	1.988E-01	0.000E+00	FAIL ABUN
TE-125M	2.956E+00	1.140E+01	1.971E+01	0.000E+00	NOT IDENT.
I-126	2.560E-01	3.740E-01	5.682E-01	0.000E+00	NOT IDENT.
SB-126	1.037E-01	2.086E-01	3.260E-01	0.000E+00	NOT IDENT.
SB-127	-7.689E-01	2.049E+00	3.434E+00	0.000E+00	NOT IDENT.
I-131	-7.988E-02	1.532E-01	2.543E-01	0.000E+00	NOT IDENT.
TE-132	6.058E-02	1.089E+00	1.914E+00	0.000E+00	NOT IDENT.
BA-133	9.235E-07	6.282E-02	9.340E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	2.079E+04	0.000E+00	0.000E+00	SHORT HLIF
CS-134	1.055E-01	6.438E-02	1.099E-01	0.000E+00	FAIL ABUN
I-135	0.000E+00	2.137E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-5.934E-02	1.533E-01	2.477E-01	0.000E+00	NOT IDENT.
CE-139	-4.202E-03	3.614E-02	6.056E-02	0.000E+00	NOT IDENT.
BA-140	-1.698E-01	4.210E-01	6.805E-01	0.000E+00	NOT IDENT.
LA-140	-3.372E-02	1.100E-01	1.771E-01	0.000E+00	NOT IDENT.
CE-141	1.411E-02	7.786E-02	1.327E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	8.467E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	2.766E-02	2.687E-01	4.014E-01	0.000E+00	NOT IDENT.
PM-144	-2.724E-02	5.311E-02	8.294E-02	0.000E+00	NOT IDENT.
PR-144	-2.065E+00	3.976E+00	6.206E+00	0.000E+00	NOT IDENT.
PM-146	4.095E-02	5.660E-02	9.467E-02	0.000E+00	NOT IDENT.
ND-147	-8.736E-02	8.283E-01	1.377E+00	0.000E+00	FAIL ABUN
PM-149	-3.278E+01	1.661E+02	2.854E+02	0.000E+00	NOT IDENT.
EU-152	8.668E-02	1.444E-01	1.994E-01	0.000E+00	NOT IDENT.
GD-153	9.412E-02	9.751E-02	1.531E-01	0.000E+00	NOT IDENT.
EU-154	-8.370E-02	1.628E-01	2.544E-01	0.000E+00	NOT IDENT.
EU-155	2.973E-02	1.178E-01	2.007E-01	0.000E+00	FAIL ABUN
TB-160	1.358E-01	1.986E-01	3.534E-01	0.000E+00	FAIL ABUN
HO-166M	-1.759E-02	7.726E-02	1.307E-01	0.000E+00	FAIL ABUN
TA-182	-2.529E-01	2.845E-01	4.369E-01	0.000E+00	FAIL ABUN
IR-192	-4.961E-04	4.278E-02	7.374E-02	0.000E+00	FAIL ABUN
HG-203	-3.678E-02	4.881E-02	8.179E-02	0.000E+00	FAIL ABUN
BI-207	1.792E-02	7.205E-02	1.231E-01	0.000E+00	FAIL ABUN
PB-211	-5.033E-01	9.764E-01	1.566E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.126E+00	1.526E+00	0.000E+00	FAIL ABUN
RN-219	2.249E-01	5.185E-01	9.023E-01	0.000E+00	FAIL ABUN
RA-223	-1.072E+00	8.418E-01	1.328E+00	0.000E+00	FAIL ABUN
AC-227	-1.064E-01	2.792E-01	4.776E-01	0.000E+00	FAIL ABUN
TH-227	-1.064E-01	2.792E-01	4.776E-01	0.000E+00	FAIL ABUN
PA-231	5.205E-01	1.749E+00	3.071E+00	0.000E+00	FAIL ABUN
TH-231	-1.072E+00	8.418E-01	1.328E+00	0.000E+00	FAIL ABUN
PA-233	1.727E-02	7.786E-02	1.358E-01	0.000E+00	FAIL ABUN
PA-234	4.751E-01	4.105E-01	7.403E-01	0.000E+00	NOT IDENT.
PA-234M	-2.251E+00	6.210E+00	1.009E+01	0.000E+00	NOT IDENT.
NP-239	-5.858E-01	4.645E-01	7.468E-01	0.000E+00	NOT IDENT.
AM-241	1.002E-02	8.515E-02	1.317E-01	0.000E+00	NOT IDENT.
CM-247	1.758E-03	4.723E-02	8.057E-02	0.000E+00	NOT IDENT.
CF-249	-4.563E-04	5.241E-02	8.937E-02	0.000E+00	NOT IDENT.

CF-251	1.303E-02	1.612E-01	2.714E-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]G247563008.CNF;1
Sample date        : 15-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 20:43:25.
Sample ID          : G247563008 Sample quantity : 1.20940E+02 GRAM
Detector name      : GAM05 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.91 0.0%
Energy tolerance   : 2.00000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 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	1281	10.66*	1.004E+00	3.715E+01	3.715E+01	8.59
CD-109	88.03	259	3.70*	7.870E+00	2.763E+00	2.832E+00	34.86
SN-126	64.28	244	9.60	8.063E+00	9.795E-01	9.795E-01	48.87
	86.94	259	8.90	7.870E+00	1.149E+00	1.149E+00	53.40
	87.57	259	37.00*	7.870E+00	2.763E-01	2.763E-01	34.86
CS-135	268.22	85	16.00*	4.352E+00	3.768E-01	3.768E-01	68.27
BA-137M	661.66	55	89.90*	2.017E+00	9.363E-02	9.373E-02	59.77
CS-137	661.66	55	85.10*	2.017E+00	9.892E-02	9.902E-02	59.77
TL-208	277.37	-----	6.60	4.261E+00	-----	Line Not Found	-----
	583.19	341	85.00*	2.262E+00	5.510E-01	5.510E-01	21.11
	860.56	54	12.50	1.591E+00	8.435E-01	8.435E-01	78.83
PB-210	46.54	140	4.25*	7.589E+00	1.349E+00	1.350E+00	70.80
BI-211	72.87	715	1.23	8.041E+00	2.244E+01	2.244E+01	16.02
	351.06	673	12.92*	3.522E+00	4.592E+00	4.592E+00	14.62
PB-212	74.82	715	10.28	8.041E+00	2.685E+00	2.685E+00	18.75
	77.11	1151	17.10	8.017E+00	2.605E+00	2.605E+00	12.23
	238.63	1420	43.60*	4.780E+00	2.115E+00	2.115E+00	12.51
	300.09	95	3.30	4.011E+00	2.239E+00	2.239E+00	55.83
BI-214	609.32	430	45.49*	2.174E+00	1.350E+00	1.350E+00	17.80
	1120.29	120	14.92	1.259E+00	1.983E+00	1.983E+00	35.56
	1764.49	75	15.30	8.618E-01	1.757E+00	1.757E+00	31.91
PB-214	74.82	715	5.80	8.041E+00	4.760E+00	4.760E+00	17.88
	77.11	1151	9.70	8.017E+00	4.593E+00	4.593E+00	14.75
	242.00	354	7.25	4.737E+00	3.199E+00	3.199E+00	31.30
	295.22	426	18.42	4.064E+00	1.767E+00	1.767E+00	21.36
	351.93	673	35.60*	3.522E+00	1.666E+00	1.666E+00	15.63
RA-224	240.99	354	4.10*	4.737E+00	5.656E+00	5.656E+00	30.76
RA-226	609.32	430	45.49*	2.174E+00	1.350E+00	1.350E+00	17.80
	1120.29	120	14.92	1.259E+00	1.983E+00	1.983E+00	35.56
	1764.49	75	15.30	8.618E-01	1.757E+00	1.757E+00	31.91
AC-228	338.32	282	11.27	3.637E+00	2.134E+00	2.134E+00	47.17
	911.20	229	25.80*	1.512E+00	1.821E+00	1.821E+00	25.63

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	968.97	133	15.80	1.431E+00	1.831E+00	1.831E+00	38.33
	338.32	282	11.27	3.637E+00	2.134E+00	2.134E+00	47.17
	911.20	229	25.80*	1.512E+00	1.821E+00	1.821E+00	25.63
TH-228	968.97	133	15.80	1.431E+00	1.831E+00	1.831E+00	38.33
	74.82	715	10.28	8.041E+00	2.685E+00	2.685E+00	16.07
	77.11	1151	17.10	8.017E+00	2.605E+00	2.605E+00	12.23
	238.63	1420	43.60*	4.780E+00	2.115E+00	2.115E+00	12.51
TH-229	300.09	95	3.30	4.011E+00	2.239E+00	2.239E+00	82.18
	85.43	259	14.70	7.870E+00	6.954E-01	6.954E-01	34.86
	88.47	159	24.00	7.817E+00	2.635E-01	2.635E-01	28.88
	193.51	-----	4.41*	5.516E+00	-----	Line Not Found	-----
TH-232	210.85	-----	2.80	5.209E+00	-----	Line Not Found	-----
	338.32	282	11.27	3.637E+00	2.134E+00	2.134E+00	23.64
	911.20	229	25.80*	1.512E+00	1.821E+00	1.821E+00	25.63
TH-234	968.97	133	15.80	1.431E+00	1.831E+00	1.831E+00	38.33
	63.29	244	3.70*	8.063E+00	2.541E+00	2.541E+00	49.95
U-235	92.59	457	4.23	7.761E+00	4.325E+00	4.325E+00	31.15
	89.96	159	3.47	7.817E+00	1.823E+00	1.823E+00	36.95
	93.35	457	5.60	7.761E+00	3.267E+00	3.267E+00	31.88
	143.76	-----	10.96*	6.557E+00	-----	Line Not Found	-----
NP-237	163.33	-----	5.08	6.119E+00	-----	Line Not Found	-----
	185.72	255	57.20	5.668E+00	2.437E-01	2.437E-01	36.83
	205.31	-----	5.01	5.304E+00	-----	Line Not Found	-----
	86.48	259	12.40*	7.870E+00	8.243E-01	8.243E-01	40.68
U-238	95.86	-----	2.68	7.688E+00	-----	Line Not Found	-----
	63.29	244	3.70*	8.063E+00	2.541E+00	2.541E+00	49.95
ANH-511	92.59	457	4.23	7.761E+00	4.325E+00	4.325E+00	23.60
	511.00	129	100.00*	2.547E+00	1.569E-01	1.569E-01	56.67

Flag: "\*" = Keyline

Total number of lines in spectrum 33  
Number of unidentified lines 3  
Number of lines tentatively identified by NID 30 90.91%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.715E+01	3.715E+01	0.319E+01	8.59	
CD-109	461.40D	1.02	2.763E+00	2.832E+00	0.987E+00	34.86	
SN-126	2.30E+05Y	1.00	2.763E-01	2.763E-01	0.963E-01	34.86	
CS-135	2.30E+06Y	1.00	3.768E-01	3.768E-01	2.572E-01	68.27	
BA-137M	30.08Y	1.00	9.363E-02	9.373E-02	5.602E-02	59.77	
CS-137	30.08Y	1.00	9.892E-02	9.902E-02	5.918E-02	59.77	
TL-208	1.41E+10Y	1.00	5.510E-01	5.510E-01	1.163E-01	21.11	
PB-210	22.20Y	1.00	1.349E+00	1.350E+00	0.956E+00	70.80	
BI-211	7.04E+08Y	1.00	4.592E+00	4.592E+00	0.671E+00	14.62	
PB-212	1.41E+10Y	1.00	2.115E+00	2.115E+00	0.265E+00	12.51	
BI-214	1600.00Y	1.00	1.350E+00	1.350E+00	0.240E+00	17.80	
PB-214	1600.00Y	1.00	1.666E+00	1.666E+00	0.260E+00	15.63	
RA-224	1.41E+10Y	1.00	5.656E+00	5.656E+00	1.740E+00	30.76	
RA-226	1600.00Y	1.00	1.350E+00	1.350E+00	0.240E+00	17.80	
AC-228	1.41E+10Y	1.00	1.821E+00	1.821E+00	0.467E+00	25.63	
RA-228	1.41E+10Y	1.00	1.821E+00	1.821E+00	0.467E+00	25.63	
TH-228	1.41E+10Y	1.00	2.115E+00	2.115E+00	0.265E+00	12.51	
TH-229	7340.00Y	1.00	2.635E-01	2.635E-01	0.761E-01	28.88	K
TH-232	1.41E+10Y	1.00	1.821E+00	1.821E+00	0.467E+00	25.63	
TH-234	4.47E+09Y	1.00	2.541E+00	2.541E+00	1.269E+00	49.95	
U-235	7.04E+08Y	1.00	2.437E-01	2.437E-01	0.898E-01	36.83	K
NP-237	2.14E+06Y	1.00	8.243E-01	8.243E-01	3.354E-01	40.68	
U-238	4.47E+09Y	1.00	2.541E+00	2.541E+00	1.269E+00	49.95	
ANH-511	1.00E+09Y	1.00	1.569E-01	1.569E-01	0.889E-01	56.67	

Total Activity : 7.354E+01 7.361E+01

Grand Total Activity : 7.354E+01 7.361E+01

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

Unidentified Energy Lines  
Sample ID : G247563008

Page : 4  
Acquisition date : 3-MAR-2010 20:43:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	128.96	175	545	1.24	258.88	253	12	2.43E-02	55.5	6.91E+00	
0	208.50	92	319	1.66	417.95	414	10	1.27E-02	76.1	5.25E+00	
0	462.13	116	114	1.30	925.04	918	13	1.62E-02	42.1	2.78E+00	T
0	726.34	148	59	1.55	1453.20	1446	16	2.06E-02	28.5	1.85E+00	T
0	794.41	44	40	2.03	1589.25	1585	10	6.11E-03	61.7	1.71E+00	T
0	1237.39	48	74	1.35	2474.44	2468	12	6.61E-03	79.3	1.15E+00	T
0	1506.06	28	10	5.74	3011.16	3003	15	3.82E-03	65.0	9.78E-01	T
0	1727.80	27	3	2.58	3454.05	3448	11	3.68E-03	45.6	8.76E-01	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247563008.CNF;1
* Acquisition date   : 3-MAR-2010 20:43:25.   Detector SN#      :
* Detector ID        : GAM05                   Sensitivity         : 5.00000
* Geometry           : CAN                     Energy tolerance    : 2.00000
* Elapsed live time  : 0 02:00:00.00           Abundance limit     : 75.00000
* Elapsed real time  : 0 02:00:01.91           Half life ratio     : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 15-FEB-2010 12:00:00   Nuclide Library     : SOLID
* Sample ID          : G247563008             Analyst initials    : MXR1
* Batch Number       : 956157                 Sample Quantity     : 1.20940E+02 GRAM
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 11-JUN-2009 16:41:00.5MS Isotope      :
* MSD ID              :                          MSD Isotope   :
* LCS ID              : 1032-A                   LCS Isotope        :
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.715E+01	3.192E+00	6.684E-01	4.157E-02	55.581
CD-109	2.832E+00	9.872E-01	1.269E+00	9.665E-02	2.231
SN-126	2.763E-01	9.631E-02	1.237E-01	9.417E-03	2.234
CS-135	3.768E-01	2.572E-01	2.895E-01	3.097E-02	1.302
BA-137M	9.373E-02	5.602E-02	7.881E-02	5.183E-03	1.189
CS-137	9.902E-02	5.918E-02	8.326E-02	5.493E-03	1.189
TL-208	5.510E-01	1.163E-01	8.041E-02	5.905E-03	6.853
PB-210	1.350E+00	9.560E-01	9.869E-01	7.611E-02	1.368
BI-211	4.592E+00	6.713E-01	4.288E-01	3.399E-02	10.708
PB-212	2.115E+00	2.646E-01	1.139E-01	1.233E-02	18.575
BI-214	1.350E+00	2.404E-01	1.440E-01	1.215E-02	9.378
PB-214	1.666E+00	2.604E-01	1.629E-01	1.569E-02	10.231
RA-224	5.656E+00	1.740E+00	1.221E+00	1.194E-01	4.634
RA-226	1.350E+00	2.404E-01	1.440E-01	1.215E-02	9.378
AC-228	1.821E+00	4.667E-01	3.220E-01	4.087E-02	5.654
RA-228	1.821E+00	4.667E-01	3.220E-01	4.087E-02	5.654
TH-228	2.115E+00	2.646E-01	1.139E-01	1.233E-02	18.575
TH-229	2.635E-01	7.611E-02	1.084E+00	1.083E-01	0.243

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-232	1.821E+00	4.667E-01	3.220E-01	4.087E-02	5.654
TH-234	2.541E+00	1.269E+00	1.224E+00	2.221E-01	2.076
U-235	2.437E-01	8.975E-02	4.200E-01	8.011E-02	0.580
NP-237	8.243E-01	3.354E-01	4.003E-01	8.932E-02	2.059
U-238	2.541E+00	1.269E+00	1.224E+00	2.221E-01	2.076
ANH-511	1.569E-01	8.890E-02	6.371E-02	4.078E-03	2.462

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	1.019E-01		4.233E-01	7.019E-01	5.026E-02	0.145
NA-22	-2.900E-02		5.869E-02	9.007E-02	5.247E-03	-0.322
NA-24	-3.437E+00		2.037E+00	Half-Life	too short	
SC-46	2.223E-02		5.043E-02	8.655E-02	8.693E-03	0.257
V-48	3.450E-02		9.306E-02	1.583E-01	1.450E-02	0.218
CR-51	2.033E-01		4.809E-01	8.152E-01	7.203E-02	0.249
MN-54	1.686E-02		5.513E-02	9.338E-02	8.555E-03	0.181
CO-56	-6.670E-03		5.120E-02	8.399E-02	7.854E-03	-0.079
CO-57	3.648E-03		3.115E-02	4.914E-02	6.972E-03	0.074
CO-58	-3.564E-02		5.428E-02	8.540E-02	7.516E-03	-0.417
FE-59	-1.011E-01		1.416E-01	2.173E-01	1.759E-02	-0.465
CO-60	-1.772E-03		5.146E-02	8.271E-02	4.786E-03	-0.021
ZN-65	1.428E-01		1.456E-01	2.265E-01	1.582E-02	0.631
SE-75	-1.370E-02		6.038E-02	8.659E-02	8.267E-03	-0.158
SR-85	4.683E-02		5.506E-02	8.335E-02	5.343E-03	0.562
Y-88	-2.625E-02		4.559E-02	6.648E-02	3.803E-03	-0.395
Y-91	1.554E+01		3.095E+01	5.231E+01	3.040E+00	0.297
NB-94	-5.397E-03		4.751E-02	7.902E-02	5.654E-03	-0.068
NB-95	6.512E-02		6.564E-02	1.155E-01	9.344E-03	0.564
NB-95M	1.778E+00		2.950E-01	4.210E-01	4.613E-02	4.222
ZR-95	-3.257E-02		9.872E-02	1.607E-01	1.433E-02	-0.203
MO-99	1.441E+01		2.323E+01	4.031E+01	6.156E+00	0.357
TC-99M	-4.920E+11		7.363E+11	Half-Life	too short	
RU-103	2.824E-02		5.426E-02	9.124E-02	1.158E-02	0.309
RH-106	2.735E-02		3.982E-01	6.450E-01	7.763E-02	0.042
RU-106	2.735E-02		3.982E-01	6.450E-01	4.252E-02	0.042
AG-108M	-2.948E-02		3.878E-02	6.050E-02	3.906E-03	-0.487
AG-110M	9.021E-03		5.680E-02	7.989E-02	5.523E-03	0.113
SN-113	1.314E-02		5.933E-02	9.893E-02	6.136E-03	0.133
CD-115	-5.869E+00		2.212E+01	3.523E+01	2.273E+00	-0.167
SN-117M	-9.294E-03		7.146E-02	1.146E-01	1.232E-02	-0.081
TE-123M	-3.280E-02		3.565E-02	5.506E-02	5.916E-03	-0.596
SB-124	-9.898E-03		9.036E-02	1.461E-01	9.289E-03	-0.068
SB-125	-2.857E-02		1.213E-01	1.962E-01	1.229E-02	-0.146
TE-125M	2.956E+00		1.164E+01	1.914E+01	2.484E+00	0.154
I-126	2.560E-01		3.816E-01	5.640E-01	3.745E-02	0.454
SB-126	1.037E-01		2.128E-01	3.239E-01	2.402E-02	0.320

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-127	-7.689E-01		2.091E+00	3.409E+00	3.598E-01	-0.226
I-131	-7.988E-02		1.564E-01	2.505E-01	1.883E-02	-0.319
TE-132	6.058E-02		1.111E+00	1.875E+00	3.146E-01	0.032
BA-133	9.235E-07		6.410E-02	9.199E-02	1.112E-02	0.000
I-133	-4.695E-03		1.061E-02	Half-Life	too short	
CS-134	1.055E-01	+	6.570E-02	1.093E-01	9.413E-03	0.965
I-135	-2.378E+10		1.091E+11	Half-Life	too short	
CS-136	-5.934E-02		1.564E-01	2.472E-01	2.117E-02	-0.240
CE-139	-4.202E-03		3.688E-02	5.910E-02	5.867E-03	-0.071
BA-140	-1.698E-01		4.296E-01	6.735E-01	2.252E-01	-0.252
LA-140	-3.372E-02		1.122E-01	1.777E-01	1.044E-02	-0.190
CE-141	1.411E-02		7.945E-02	1.293E-01	1.581E-02	0.109
CE-143	2.940E-03	+	4.320E-04	Half-Life	too short	
CE-144	2.766E-02		2.742E-01	3.908E-01	7.143E-02	0.071
PM-144	-2.724E-02		5.420E-02	8.236E-02	5.824E-03	-0.331
PR-144	-2.065E+00		4.057E+00	6.162E+00	4.355E-01	-0.335
PM-146	4.095E-02		5.775E-02	9.351E-02	8.147E-03	0.438
ND-147	-8.736E-02		8.452E-01	1.363E+00	1.883E-01	-0.064
PM-149	-3.278E+01		1.695E+02	2.803E+02	4.444E+01	-0.117
EU-152	8.668E-02		1.474E-01	1.963E-01	1.614E-02	0.441
GD-153	9.412E-02		9.950E-02	1.485E-01	1.377E-02	0.634
EU-154	-8.370E-02		1.661E-01	2.545E-01	2.400E-02	-0.329
EU-155	2.973E-02		1.202E-01	1.948E-01	2.110E-02	0.153
TB-160	1.358E-01		2.027E-01	3.520E-01	3.478E-02	0.386
HO-166M	-1.759E-02		7.884E-02	1.298E-01	9.460E-03	-0.135
TA-182	-2.529E-01		2.903E-01	4.369E-01	2.540E-02	-0.579
IR-192	-4.961E-04		4.365E-02	7.253E-02	6.156E-03	-0.007
HG-203	-3.678E-02		4.981E-02	8.032E-02	7.618E-03	-0.458
BI-207	1.792E-02		7.352E-02	1.229E-01	9.730E-03	0.146
PB-211	-5.033E-01		9.964E-01	1.545E+00	7.412E-01	-0.326
BI-212	3.727E+00	+	1.149E+00	1.516E+00	1.777E-01	2.458
RN-219	2.249E-01		5.291E-01	8.900E-01	1.199E-01	0.253
RA-223	-1.072E+00		8.590E-01	1.307E+00	2.243E-01	-0.821
AC-227	-1.064E-01		2.849E-01	4.685E-01	5.991E-02	-0.227
TH-227	-1.064E-01		2.849E-01	4.685E-01	6.682E-02	-0.227
PA-231	5.205E-01		1.784E+00	3.016E+00	4.505E-01	0.173
TH-231	-1.072E+00		8.590E-01	1.307E+00	2.243E-01	-0.821
PA-233	1.727E-02		7.945E-02	1.336E-01	1.180E-02	0.129
PA-234	4.751E-01		4.189E-01	7.379E-01	1.421E-01	0.644
PA-234M	-2.251E+00		6.336E+00	1.006E+01	1.028E+00	-0.224
NP-239	-5.858E-01		4.739E-01	7.258E-01	9.544E-02	-0.807
AM-241	1.002E-02		8.689E-02	1.270E-01	1.137E-02	0.079
CM-247	1.758E-03		4.820E-02	7.948E-02	4.676E-03	0.022
CF-249	-4.563E-04		5.348E-02	8.811E-02	5.262E-03	-0.005
CF-251	1.303E-02		1.645E-01	2.651E-01	2.641E-02	0.049

## 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]G247563008          *
* Acquisition date   : 3-MAR-2010 20:43:25 Detector SN# :                  *
* Detector ID        : GAM05 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 2.000                       *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000            *
* Elapsed real time  : 0 02:00:01.91 Half life ratio : 8.000             *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-FEB-2010 12:00:00 Nuclide Library : SOLID        *
* Sample ID          : G247563008 Analyst initials: MXR1                 *
* Batch Number       : 956157 Sample Quantity : 1.2094E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 11-JUN-2009 16:41:00 MS Isotope :                  *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                             *
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.715E+01	3.129E+00	3.337E-01	1.596E+00
CD-109	2.832E+00	9.674E-01	6.555E-01	4.936E-01
SN-126	2.763E-01	9.439E-02	6.387E-02	4.816E-02
CS-135	3.768E-01	2.521E-01	1.476E-01	1.286E-01
BA-137M	9.373E-02	5.490E-02	3.973E-02	2.801E-02
CS-137	9.902E-02	5.800E-02	4.197E-02	2.959E-02
TL-208	5.510E-01	1.140E-01	4.060E-02	5.815E-02
PB-210	1.350E+00	9.369E-01	5.135E-01	4.780E-01
BI-211	4.592E+00	6.579E-01	2.179E-01	3.356E-01
PB-212	2.115E+00	2.593E-01	5.813E-02	1.323E-01
BI-214	1.350E+00	2.356E-01	7.267E-02	1.202E-01
PB-214	1.666E+00	2.552E-01	8.275E-02	1.302E-01
RA-224	5.656E+00	1.705E+00	6.230E-01	8.699E-01
RA-226	1.350E+00	2.356E-01	7.267E-02	1.202E-01
AC-228	1.821E+00	4.573E-01	1.617E-01	2.333E-01
RA-228	1.821E+00	4.573E-01	1.617E-01	2.333E-01
TH-228	2.115E+00	2.593E-01	5.813E-02	1.323E-01
TH-229	-2.932E-01	6.759E-01	5.547E-01	3.448E-01
TH-232	1.821E+00	4.573E-01	1.617E-01	2.333E-01
TH-234	2.541E+00	1.244E+00	6.346E-01	6.347E-01
U-235	2.799E-01	2.523E-01	2.157E-01	1.287E-01
NP-237	8.243E-01	3.287E-01	2.068E-01	1.677E-01
U-238	2.541E+00	1.244E+00	6.346E-01	6.347E-01
ANH-511	1.569E-01	8.712E-02	3.222E-02	4.445E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	1.019E-01	4.149E-01	3.553E-01	2.117E-01 NOT IDENT.
NA-22	-2.900E-02	5.751E-02	4.504E-02	2.934E-02 NOT IDENT.
NA-24	-3.437E+06	3.993E+06	0.000E+00	2.037E+06 SHORT HLIF

SC-46	2.223E-02	4.942E-02	4.347E-02	2.521E-02	FAIL ABUN
V-48	3.450E-02	9.120E-02	7.943E-02	4.653E-02	NOT IDENT.
CR-51	2.033E-01	4.713E-01	4.146E-01	2.405E-01	NOT IDENT.
MN-54	1.686E-02	5.402E-02	4.694E-02	2.756E-02	NOT IDENT.
CO-56	-6.670E-03	5.018E-02	4.221E-02	2.560E-02	FAIL ABUN
CO-57	3.648E-03	3.053E-02	2.528E-02	1.558E-02	NOT IDENT.
CO-58	-3.564E-02	5.319E-02	4.295E-02	2.714E-02	NOT IDENT.
FE-59	-1.011E-01	1.388E-01	1.089E-01	7.082E-02	NOT IDENT.
CO-60	-1.772E-03	5.043E-02	4.134E-02	2.573E-02	NOT IDENT.
ZN-65	1.428E-01	1.427E-01	1.135E-01	7.280E-02	NOT IDENT.
SE-75	-1.370E-02	5.917E-02	4.414E-02	3.019E-02	NOT IDENT.
SR-85	4.683E-02	5.396E-02	4.215E-02	2.753E-02	NOT IDENT.
Y-88	-2.625E-02	4.468E-02	3.309E-02	2.279E-02	NOT IDENT.
Y-91	1.554E+01	3.033E+01	2.618E+01	1.547E+01	NOT IDENT.
NB-94	-5.397E-03	4.656E-02	3.981E-02	2.376E-02	NOT IDENT.
NB-95	6.512E-02	6.433E-02	5.814E-02	3.282E-02	NOT IDENT.
NB-95M	1.778E+00	2.891E-01	2.149E-01	1.475E-01	NOT IDENT.
ZR-95	-3.257E-02	9.675E-02	8.087E-02	4.936E-02	NOT IDENT.
MO-99	1.441E+01	2.276E+01	2.030E+01	1.161E+01	NOT IDENT.
TC-99M	-4.920E+17	1.443E+18	0.000E+00	0.000E+00	SHORT HLIF
RU-103	2.824E-02	5.318E-02	4.616E-02	2.713E-02	FAIL ABUN
RH-106	2.735E-02	3.902E-01	3.254E-01	1.991E-01	NOT IDENT.
RU-106	2.735E-02	3.902E-01	3.254E-01	1.991E-01	NOT IDENT.
AG-108M	-2.948E-02	3.800E-02	3.066E-02	1.939E-02	NOT IDENT.
AG-110M	9.021E-03	5.567E-02	4.028E-02	2.840E-02	FAIL ABUN
SN-113	1.314E-02	5.815E-02	5.019E-02	2.967E-02	NOT IDENT.
CD-115	-5.869E+00	2.167E+01	1.781E+01	1.106E+01	NOT IDENT.
SN-117M	-9.294E-03	7.003E-02	5.880E-02	3.573E-02	NOT IDENT.
TE-123M	-3.280E-02	3.493E-02	2.824E-02	1.782E-02	NOT IDENT.
SB-124	-9.898E-03	8.856E-02	7.281E-02	4.518E-02	NOT IDENT.
SB-125	-2.857E-02	1.189E-01	9.947E-02	6.065E-02	FAIL ABUN
TE-125M	2.956E+00	1.140E+01	9.860E+00	5.819E+00	NOT IDENT.
I-126	2.560E-01	3.740E-01	2.843E-01	1.908E-01	NOT IDENT.
SB-126	1.037E-01	2.086E-01	1.631E-01	1.064E-01	NOT IDENT.
SB-127	-7.689E-01	2.049E+00	1.718E+00	1.046E+00	NOT IDENT.
I-131	-7.988E-02	1.532E-01	1.272E-01	7.818E-02	NOT IDENT.
TE-132	6.058E-02	1.089E+00	9.575E-01	5.557E-01	NOT IDENT.
BA-133	9.235E-07	6.282E-02	4.673E-02	3.205E-02	NOT IDENT.
I-133	-4.695E+03	2.079E+04	0.000E+00	1.061E+04	SHORT HLIF
CS-134	1.055E-01	6.438E-02	5.498E-02	3.285E-02	FAIL ABUN
I-135	-2.378E+16	2.137E+17	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-5.934E-02	1.533E-01	1.239E-01	7.820E-02	NOT IDENT.
CE-139	-4.202E-03	3.614E-02	3.030E-02	1.844E-02	NOT IDENT.
BA-140	-1.698E-01	4.210E-01	3.404E-01	2.148E-01	NOT IDENT.
LA-140	-3.372E-02	1.100E-01	8.862E-02	5.611E-02	NOT IDENT.
CE-141	1.411E-02	7.786E-02	6.640E-02	3.972E-02	NOT IDENT.
CE-143	2.940E+03	8.467E+02	0.000E+00	4.320E+02	SHORT HLIF
CE-144	2.766E-02	2.687E-01	2.008E-01	1.371E-01	NOT IDENT.
PM-144	-2.724E-02	5.311E-02	4.150E-02	2.710E-02	NOT IDENT.
PR-144	-2.065E+00	3.976E+00	3.105E+00	2.029E+00	NOT IDENT.
PM-146	4.095E-02	5.660E-02	4.736E-02	2.888E-02	NOT IDENT.
ND-147	-8.736E-02	8.283E-01	6.889E-01	4.226E-01	FAIL ABUN
PM-149	-3.278E+01	1.661E+02	1.428E+02	8.475E+01	NOT IDENT.
EU-152	8.668E-02	1.444E-01	9.978E-02	7.369E-02	NOT IDENT.
GD-153	9.412E-02	9.751E-02	7.661E-02	4.975E-02	NOT IDENT.
EU-154	-8.370E-02	1.628E-01	1.273E-01	8.307E-02	NOT IDENT.
EU-155	2.973E-02	1.178E-01	1.004E-01	6.011E-02	FAIL ABUN
TB-160	1.358E-01	1.986E-01	1.768E-01	1.013E-01	FAIL ABUN
HO-166M	-1.759E-02	7.726E-02	6.540E-02	3.942E-02	FAIL ABUN
TA-182	-2.529E-01	2.845E-01	2.186E-01	1.451E-01	FAIL ABUN
IR-192	-4.961E-04	4.278E-02	3.689E-02	2.182E-02	FAIL ABUN
HG-203	-3.678E-02	4.881E-02	4.092E-02	2.490E-02	FAIL ABUN
BI-207	1.792E-02	7.205E-02	6.158E-02	3.676E-02	FAIL ABUN
PB-211	-5.033E-01	9.764E-01	7.834E-01	4.982E-01	NOT IDENT.
BI-212	3.727E+00	1.126E+00	7.636E-01	5.743E-01	FAIL ABUN
RN-219	2.249E-01	5.185E-01	4.514E-01	2.646E-01	FAIL ABUN
RA-223	-1.072E+00	8.418E-01	6.646E-01	4.295E-01	FAIL ABUN
AC-227	-1.064E-01	2.792E-01	2.389E-01	1.424E-01	FAIL ABUN
TH-227	-1.064E-01	2.792E-01	2.389E-01	1.425E-01	FAIL ABUN
PA-231	5.205E-01	1.749E+00	1.536E+00	8.922E-01	FAIL ABUN
TH-231	-1.072E+00	8.418E-01	6.646E-01	4.295E-01	FAIL ABUN
PA-233	1.727E-02	7.786E-02	6.796E-02	3.972E-02	FAIL ABUN
PA-234	4.751E-01	4.105E-01	3.704E-01	2.094E-01	NOT IDENT.
PA-234M	-2.251E+00	6.210E+00	5.048E+00	3.168E+00	NOT IDENT.
NP-239	-5.858E-01	4.645E-01	3.736E-01	2.370E-01	NOT IDENT.
AM-241	1.002E-02	8.515E-02	6.591E-02	4.344E-02	NOT IDENT.
CM-247	1.758E-03	4.723E-02	4.031E-02	2.410E-02	NOT IDENT.
CF-249	-4.563E-04	5.241E-02	4.471E-02	2.674E-02	NOT IDENT.

CF-251

1.303E-02

1.612E-01

1.358E-01

8.226E-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	490.6716
49.72	574.2675
57.36	0.0000
59.54	634.3943
63.29	640.4286
63.29	640.4286
64.28	649.7340
67.75	708.2344
69.67	693.9774
70.83	685.6109
72.81	698.4890
72.87	698.5456
72.87	698.5456
74.82	689.2483
74.82	689.2483
74.82	689.2483
74.97	689.3810
77.11	691.2900
77.11	691.2900
77.11	691.2900
79.69	665.6556
79.80	661.7609
80.12	662.0269
80.19	662.0851
80.57	666.3895
81.00	666.7463
81.07	666.8049
81.07	666.8049
83.79	667.0391
83.79	667.0391
85.43	732.1912
86.48	733.1152
86.55	733.1764
86.79	619.1958
86.94	619.3086
87.57	619.7715
88.03	620.1099
88.47	620.4318
89.96	778.9147
91.11	481.7163
92.59	482.5385
92.59	482.5385
93.35	482.9586
94.67	459.3378
94.87	514.6394
94.87	514.6394
95.86	492.4601
97.43	410.2906
98.44	373.2613
99.53	386.9985
100.11	410.2809
103.18	454.6569
103.37	422.9995
105.31	419.7701
106.12	416.0217
109.28	454.5020
111.00	478.0233
111.76	489.7618
116.30	406.8983
117.23	433.2493
121.12	402.5786
121.78	397.1709
122.06	384.1564
123.07	402.9219
131.20	370.6484
133.52	378.1969
136.00	397.6669

136.47	393.6039
140.51	406.7125
140.51	0.0000
143.76	351.4357
144.24	353.7125
144.24	353.7125
145.44	385.0140
152.43	368.0122
153.25	361.8240
154.21	358.8910
154.21	358.8910
156.02	397.0990
158.56	349.4064
159.00	377.5814
162.66	335.4297
163.33	332.3640
165.86	340.6322
176.60	331.4802
177.52	338.2823
181.07	346.0029
184.41	343.3519
185.72	332.6719
193.51	356.7397
197.04	323.2166
205.31	319.9734
210.85	310.4370
215.65	287.0487
222.11	272.1217
227.38	242.2230
228.16	257.7771
228.18	257.7806
235.69	278.1859
235.96	278.2343
235.96	278.2343
238.63	269.5692
238.63	269.5692
240.99	269.9707
242.00	209.0928
244.70	191.1011
252.40	188.9381
252.80	188.0625
256.23	209.7014
256.23	209.7014
260.90	181.5728
264.66	211.9999
268.22	196.9389
269.46	211.0474
269.46	211.0474
271.23	259.4222
273.65	294.0090
276.40	204.4987
277.37	212.3304
277.60	224.5195
278.00	230.1836
279.20	259.3697
279.54	263.1665
280.46	275.4850
283.69	209.3401
284.31	203.7792
285.41	213.3030
285.90	222.7603
287.50	231.1580
293.27	0.0000
295.22	192.1093
295.96	165.4083
298.57	165.6454
299.98	162.6139
299.98	162.6139
300.09	162.6244
300.09	162.6244
300.13	162.6286
301.36	176.9574
302.85	207.1448
304.50	197.8327
304.50	197.8327
304.85	189.9561
308.46	166.5341
311.90	183.0469

316.51	187.3149
319.41	183.7711
320.08	182.8769
323.87	236.9626
323.87	236.9626
328.76	185.6259
333.37	176.7426
334.37	191.3002
334.37	191.3002
338.28	176.8590
338.28	176.8590
338.32	176.8635
338.32	176.8635
338.32	176.8635
340.48	140.2900
340.55	140.2953
344.28	140.5555
351.06	182.8502
351.93	199.4696
356.01	188.4906
364.49	154.6749
366.42	140.1198
383.85	163.9919
388.16	170.2552
388.63	169.3029
391.69	159.6243
400.66	156.2909
401.81	148.4052
402.40	153.4248
404.85	178.5258
410.95	157.0096
414.70	168.2871
423.72	138.7783
427.09	145.0230
427.87	150.1095
433.94	149.4887
453.88	115.8564
463.37	103.9527
468.07	105.8574
473.00	128.3081
476.78	114.1097
477.60	115.1746
487.02	91.8638
492.35	128.2579
497.08	109.8417
511.00	126.0559
514.00	107.7734
527.90	109.0350
529.87	0.0000
531.02	119.6582
537.26	142.0236
546.56	0.0000
563.25	87.0790
569.33	107.4876
569.50	107.4925
569.70	96.8564
583.19	114.4242
600.60	98.1650
602.73	113.0391
604.72	109.5250
609.32	97.1060
609.32	97.1060
610.33	93.5412
614.28	75.6533
618.01	77.9115
621.93	82.3457
621.93	82.3457
633.25	94.6167
635.95	74.0181
636.99	71.8652
645.85	96.0953
657.76	96.8281
661.66	97.6805
661.66	97.6805
664.57	0.0000
666.33	91.5955
666.50	91.5995
677.62	75.3744

685.70	87.5433
695.00	107.1995
696.49	115.5701
696.51	115.5701
697.00	117.4373
702.65	112.0811
706.68	102.0172
711.68	90.0968
720.70	67.0562
721.93	0.0000
722.78	78.2817
722.91	68.6977
723.31	76.6959
724.19	68.7247
727.33	75.5865
733.00	83.3248
735.93	88.7919
739.50	80.5410
747.24	76.0298
752.31	73.3218
753.82	77.1152
756.73	90.3574
763.94	115.0650
765.81	108.5214
766.42	108.5401
777.92	98.4797
778.90	98.5072
783.70	81.5681
785.37	78.7581
795.86	63.6266
801.95	75.5004
810.29	86.9491
810.76	86.9603
815.77	54.5438
818.51	75.6521
832.01	71.1229
834.85	95.2234
836.80	0.0000
846.77	68.5097
856.80	64.6835
860.56	51.4659
871.09	73.8044
873.19	88.4192
875.33	0.0000
879.36	69.0961
880.51	72.0368
883.24	85.7262
884.68	74.0641
889.28	55.6130
898.04	63.5599
911.20	75.5462
911.20	75.5462
911.20	75.5462
926.50	67.9570
937.49	64.1907
944.13	64.2965
946.00	53.4397
949.00	63.3828
962.29	61.6001
964.08	61.6266
966.15	61.6582
968.97	61.4155
968.97	61.4155
968.97	61.4155
983.53	49.9308
996.26	61.1005
1001.03	65.1798
1004.73	70.2549
1037.84	60.6812
1038.76	0.0000
1048.07	67.9187
1050.41	65.9257
1050.41	65.9257
1063.66	64.0895
1085.87	65.4297
1099.45	89.2090
1112.07	70.9485
1115.54	63.5047

1120.29	60.7741
1120.29	60.7741
1120.55	60.7765
1121.30	74.1797
1131.51	0.0000
1173.23	66.6693
1177.93	74.0334
1189.05	78.3844
1204.77	71.2982
1221.41	97.8438
1231.02	92.1600
1235.36	61.4946
1238.28	70.5787
1260.41	0.0000
1271.85	57.3882
1274.44	58.4800
1274.54	58.4800
1291.59	53.3427
1298.22	0.0000
1312.11	47.1278
1332.49	38.7085
1365.19	22.7192
1368.63	0.0000
1384.29	33.5027
1408.01	20.5628
1457.56	0.0000
1460.82	24.5328
1489.16	19.9138
1505.03	21.6328
1596.21	24.1420
1620.50	16.4824
1678.03	0.0000
1690.97	13.7285
1764.49	16.8624
1764.49	16.8624
1770.23	5.2121
1771.35	5.2130
1791.20	0.0000
1836.06	18.0483

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247563008

Total Uranium Activity	7.6901E+00	ug/g
Total Uranium Counting Unc.	3.7030E+00	ug/g
Total Uranium Tpu	1.8893E-06	ug/g
Total Uranium Mda	1.8906E+00	ug/g

```

*****
*
*               GEL Laboratories LLC
*               2040 SAVAGE ROAD
*               CHARLESTON ,SC 29417
*               GROSS GAMMA REPORT
*
*****
*
*  BATCH ID      : 956157          SAMPLE ID   : G247563008
*  ANALYST       : MXR1            DETECTOR    : GAM05
*  SAMPLE DATE   : 15-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 3-MAR-2010 20:43:25.05  SAMPLE ALQT: 120.940 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.142E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.549E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 5.491E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 2.687E+00

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VAX/VMS Nuclide Identification Report Generated 3-MAR-2010 22:49:49.55

```
*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050251.CNF;1
Sample date        : 23-FEB-2010 00:00:00 Acquisition date : 3-MAR-2010 20:49:25.
Sample ID          : G1202050251      Sample quantity   : 1.36270E+02 GRAM
Detector name      : GAM11             Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00     Elapsed real time: 0 02:00:00.60 0.0%
Energy tolerance   : 1.50000 keV       Analyst Initials : MXR1
Abundance limit    : 75.00000          Sensitivity       : 5.00000
Batch ID           : 956157            Detector SN#      :
Matrix Spike ID    :                   LCS ID           : 1032-A
*****
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	911.21*	9	2	1.12	1822.34	1817	10	1.30E-03	65.0	

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

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050251.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 23-FEB-2010 00:00:00 Acquisition date : 3-MAR-2010 20:49:25
Sample ID         : G1202050251 Sample quantity : 136.27 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA11 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:00.60 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

```

## Full Combined Activity-MDA Report

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

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	477.60	*	-3.476E-02	1.261E-01	2.019E-01	2.285E-02	-0.172	
NA-22	1274.54	*	1.453E-02	1.814E-02	3.452E-02	2.835E-03	0.421	
NA-24	1368.63	*	3.812E-04	1.814E-02	Half-Life too short			
K-40	1460.82	*	-4.699E-02	2.035E-01	3.360E-01	2.905E-02	-0.140	
SC-46	889.28	*	-5.337E-03	1.741E-02	2.767E-02	2.725E-03	-0.193	
	1120.55		1.167E-02	1.899E-02	3.489E-02	2.975E-03	0.335	
V-48	944.13		-1.649E-01	2.701E-01	3.906E-01	3.778E-02	-0.422	
	983.53	*	2.588E-03	2.288E-02	3.891E-02	3.691E-03	0.067	
	1312.11		-1.310E-02	2.582E-02	3.607E-02	2.974E-03	-0.363	
CR-51	320.08	*	4.724E-02	1.531E-01	2.535E-01	3.678E-02	0.186	
MN-54	834.85	*	3.852E-03	1.646E-02	2.875E-02	2.831E-03	0.134	
CO-56	846.77	*	3.828E-05	1.703E-02	2.871E-02	2.828E-03	0.001	
	1037.84		4.855E-03	1.191E-01	1.989E-01	1.907E-02	0.024	
	1238.28		2.645E-03	2.139E-02	3.618E-02	3.044E-03	0.073	
	1771.35		-7.080E-03	1.314E-01	2.138E-01	1.759E-02	-0.033	
CO-57	122.06	*	1.797E-04	9.448E-03	1.607E-02	1.360E-03	0.011	
	136.47		2.957E-02	8.017E-02	1.393E-01	1.307E-02	0.212	
CO-58	810.76	*	2.468E-03	1.566E-02	2.586E-02	2.546E-03	0.095	
FE-59	1099.45	*	-1.857E-03	3.154E-02	5.128E-02	4.820E-03	-0.036	
	1291.59		-3.810E-03	4.669E-02	7.432E-02	7.013E-03	-0.051	
CO-60	1173.23		1.856E-03	1.822E-02	3.048E-02	2.449E-03	0.061	
	1332.49	*	-2.046E-02	1.776E-02	2.177E-02	1.799E-03	-0.940	
ZN-65	1115.54	*	-1.435E-02	3.244E-02	4.778E-02	4.100E-03	-0.300	
SE-75	121.12		-3.378E-02	4.796E-02	7.632E-02	8.363E-03	-0.443	
	136.00		6.232E-03	1.537E-02	2.677E-02	2.357E-03	0.233	
	264.66	*	1.073E-03	2.002E-02	3.264E-02	4.799E-03	0.033	
	279.54		-1.241E-02	5.168E-02	7.954E-02	1.246E-02	-0.156	
	400.66		3.398E-02	1.043E-01	1.830E-01	2.336E-02	0.186	
SR-85	514.00	*	-7.211E-02	2.908E-02	3.669E-02	3.919E-03	-1.966	
Y-88	898.04		4.928E-03	1.932E-02	3.367E-02	3.327E-03	0.146	
	1836.06	*	5.670E-03	1.777E-02	3.205E-02	2.602E-03	0.177	
Y-91	1204.77	*	-1.504E+00	8.204E+00	1.290E+01	1.044E+00	-0.117	
NB-94	702.65	*	3.324E-03	1.648E-02	2.750E-02	2.641E-03	0.121	
	871.09		-1.288E-02	1.668E-02	2.428E-02	2.393E-03	-0.530	

## ---- 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	*		-5.326E-03	1.666E-02	2.444E-02	2.386E-03	-0.218
NB-95M	235.69	*		-9.868E-02	5.761E-02	7.641E-02	1.068E-02	-1.292
ZR-95	724.19	*		-5.105E-03	3.696E-02	5.818E-02	6.004E-03	-0.088
	756.73	*		-9.192E-03	2.977E-02	4.496E-02	4.744E-03	-0.204
MO-99	140.51	*		-2.376E+00	1.981E+00	2.630E+00	6.268E-01	-0.904
	181.07	*		-1.725E-01	1.436E+00	2.358E+00	4.637E-01	-0.073
	366.42	*		-1.383E+00	9.644E+00	1.495E+01	1.812E+00	-0.092
	739.50	*		2.436E-02	1.065E+00	1.725E+00	2.824E-01	0.014
	777.92	*		2.961E+00	3.255E+00	6.069E+00	5.937E-01	0.488
TC-99M	140.51	*		-6.259E+02	3.255E+00	Half-Life too short		
RU-103	497.08	*		8.162E-03	1.660E-02	2.932E-02	4.505E-03	0.278
	610.33	*		4.934E-02	3.846E-01	5.909E-01	1.013E-01	0.083
RH-106	621.93	*		-1.636E-01	1.697E-01	2.405E-01	3.400E-02	-0.680
	1050.41	*		-1.471E-01	1.204E+00	1.947E+00	1.767E-01	-0.076
RU-106	621.93	*		-1.636E-01	1.689E-01	2.405E-01	2.386E-02	-0.680
	1050.41	*		-1.471E-01	1.204E+00	1.947E+00	1.767E-01	-0.076
AG-108M	433.94	*		-4.753E-04	1.265E-02	2.115E-02	2.328E-03	-0.022
	614.28	*		1.332E-02	1.706E-02	3.082E-02	3.156E-03	0.432
	722.91	*		-1.005E-02	1.799E-02	2.625E-02	2.601E-03	-0.383
CD-109	88.03	*		-1.217E-01	2.945E-01	4.206E-01	3.988E-02	-0.289
AG-110M	657.76	*		1.507E-02	1.485E-02	2.800E-02	2.729E-03	0.538
	677.62	*		-2.673E-02	1.369E-01	2.146E-01	2.092E-02	-0.125
	706.68	*		-1.341E-02	9.343E-02	1.473E-01	1.450E-02	-0.091
	763.94	*		-2.667E-02	6.140E-02	8.920E-02	8.891E-03	-0.299
	884.68	*		-3.647E-03	2.452E-02	4.019E-02	4.057E-03	-0.091
	937.49	*		3.673E-02	4.892E-02	9.172E-02	9.153E-03	0.400
	1384.29	*		-6.787E-02	6.817E-02	7.260E-02	6.222E-03	-0.935
	1505.03	*		2.132E-02	1.197E-01	2.099E-01	1.766E-02	0.102
SN-113	391.69	*		-2.573E-02	1.817E-02	2.452E-02	2.666E-03	-1.049
CD-115	260.90	*		4.107E-01	9.409E+00	1.534E+01	2.219E+00	0.027
	492.35	*		-2.126E+00	2.857E+00	4.295E+00	4.617E-01	-0.495
	527.90	*		-2.478E-01	7.329E-01	1.151E+00	1.223E-01	-0.215
SN-117M	156.02	*		-3.040E-01	5.856E-01	9.301E-01	8.708E-02	-0.327
	158.56	*		-1.194E-02	1.591E-02	2.345E-02	2.216E-03	-0.509
TE-123M	159.00	*		-3.045E-03	1.125E-02	1.755E-02	1.670E-03	-0.174
SB-124	602.73	*		9.573E-03	2.089E-02	3.599E-02	3.638E-03	0.266
	645.85	*		-1.337E-01	2.193E-01	3.203E-01	3.236E-02	-0.417
	722.78	*		-1.006E-01	1.673E-01	2.417E-01	2.378E-02	-0.416
	1690.97	*		2.311E-02	4.281E-02	8.037E-02	7.002E-03	0.288
SB-125	427.87	*		2.797E-02	4.034E-02	7.330E-02	7.989E-03	0.382
	463.37	*		3.338E-03	1.088E-01	1.828E-01	2.069E-02	0.018
	600.60	*		2.563E-03	1.043E-01	1.715E-01	1.831E-02	0.015
	635.95	*		5.062E-03	1.286E-01	2.112E-01	2.195E-02	0.024
TE-125M	109.28	*		1.668E+00	3.366E+00	5.960E+00	6.200E-01	0.280
I-126	388.63	*		5.755E-02	5.349E-02	1.005E-01	1.090E-02	0.573
	666.33	*		-2.825E-02	7.689E-02	1.177E-01	1.116E-02	-0.240
	753.82	*		-1.704E-02	6.139E-01	9.830E-01	9.571E-02	-0.017
SB-126	414.70	*		-9.869E-03	2.194E-02	3.474E-02	3.731E-03	-0.284
	666.50	*		-9.544E-03	2.598E-02	3.976E-02	3.770E-03	-0.240

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	695.00			2.842E-02	2.725E-02	5.055E-02	4.842E-03	0.562
	697.00			8.217E-02	1.038E-01	1.853E-01	1.777E-02	0.443
	720.70	*		1.291E-02	4.707E-02	7.951E-02	7.678E-03	0.162
	856.80			-8.595E-02	1.421E-01	2.125E-01	2.094E-02	-0.404
SN-126	64.28			-3.383E-01	1.823E-01	2.598E-01	3.768E-02	-1.302
	86.94			-1.187E-01	1.325E-01	1.653E-01	6.863E-02	-0.718
	87.57	*		-1.687E-02	2.947E-02	4.140E-02	3.905E-03	-0.408
SB-127	252.40			-6.344E-02	5.959E-01	9.565E-01	4.073E-01	-0.066
	473.00			3.304E-02	2.462E-01	4.182E-01	5.486E-02	0.079
	685.70	*		7.367E-02	1.945E-01	3.353E-01	3.568E-02	0.220
	783.70			-1.400E-01	4.702E-01	7.062E-01	8.395E-02	-0.198
I-131	80.19			7.291E-01	7.935E-01	1.359E+00	1.173E-01	0.536
	284.31			-5.855E-02	3.680E-01	5.815E-01	9.065E-02	-0.101
	364.49	*		-1.032E-03	3.002E-02	4.729E-02	5.923E-03	-0.022
	636.99			9.439E-02	4.679E-01	7.858E-01	7.988E-02	0.120
TE-132	49.72			4.510E-01	1.250E+00	2.083E+00	1.854E-01	0.217
	111.76			-6.847E-01	3.518E+00	5.703E+00	5.366E-01	-0.120
	116.30			-5.034E-01	2.750E+00	4.612E+00	4.322E-01	-0.109
	228.16	*		-4.945E-02	8.710E-02	1.341E-01	2.349E-02	-0.369
BA-133	81.00			-1.862E-02	2.895E-02	4.192E-02	6.521E-03	-0.444
	276.40			7.563E-03	1.685E-01	2.735E-01	5.187E-02	0.028
	302.85			1.502E-02	6.333E-02	1.044E-01	1.857E-02	0.144
	356.01	*		2.211E-02	2.089E-02	3.686E-02	5.871E-03	0.600
	383.85			-7.058E-02	1.244E-01	1.955E-01	2.793E-02	-0.361
I-133	529.87	*		4.382E-06	1.244E-01	Half-Life	too short	
	875.33			-1.122E-05	1.244E-01	Half-Life	too short	
	1298.22			-2.576E-04	1.244E-01	Half-Life	too short	
CS-134	563.25			-3.757E-02	1.723E-01	2.752E-01	2.887E-02	-0.137
	569.33			4.047E-02	1.089E-01	1.791E-01	1.876E-02	0.226
	604.72			2.381E-03	1.913E-02	3.180E-02	3.214E-03	0.075
	795.86	*		1.100E-02	1.985E-02	3.502E-02	3.455E-03	0.314
	801.95			9.286E-02	2.104E-01	3.412E-01	3.365E-02	0.272
CS-135	1365.19			-1.656E-01	5.580E-01	8.252E-01	7.196E-02	-0.201
I-135	268.22	*		4.470E-03	7.095E-02	1.157E-01	1.815E-02	0.039
	546.56			6.600E+02	7.095E-02	Half-Life	too short	
	836.80			6.041E+02	7.095E-02	Half-Life	too short	
	1038.76			2.725E+02	7.095E-02	Half-Life	too short	
	1131.51			-3.211E+02	7.095E-02	Half-Life	too short	
	1260.41	*		-1.570E+02	7.095E-02	Half-Life	too short	
	1457.56			-6.448E+02	7.095E-02	Half-Life	too short	
	1678.03			-4.061E+02	7.095E-02	Half-Life	too short	
	1791.20			2.760E+02	7.095E-02	Half-Life	too short	
CS-136	153.25			1.018E-01	2.253E-01	3.928E-01	4.247E-02	0.259
	176.60			1.512E-01	1.508E-01	2.706E-01	2.962E-02	0.559
	273.65			5.682E-03	1.661E-01	2.696E-01	4.205E-02	0.021
	340.55			-2.374E-02	4.738E-02	7.037E-02	9.567E-03	-0.337
	818.51			-2.336E-03	2.489E-02	3.901E-02	3.838E-03	-0.060
	1048.07	*		-1.818E-02	3.551E-02	5.279E-02	4.980E-03	-0.344
	1235.36			-5.814E-02	1.134E-01	1.551E-01	1.772E-02	-0.375

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BA-137M	661.66	*		-7.191E-03	1.681E-02	2.540E-02	2.403E-03	-0.283
CS-137	661.66	*		-7.597E-03	1.775E-02	2.683E-02	2.543E-03	-0.283
CE-139	165.86	*		-9.193E-03	1.246E-02	1.944E-02	1.889E-03	-0.473
BA-140	162.66			-1.790E-04	2.397E-01	4.008E-01	4.057E-02	0.000
	304.85			-2.539E-01	4.793E-01	7.115E-01	2.251E-01	-0.357
	423.72			1.262E-01	5.985E-01	1.032E+00	3.459E-01	0.122
	537.26	*		-4.068E-02	8.656E-02	1.310E-01	4.515E-02	-0.311
LA-140	328.76			1.072E-02	9.591E-02	1.552E-01	2.203E-02	0.069
	487.02			-2.602E-02	4.578E-02	7.015E-02	7.852E-03	-0.371
	815.77			-1.829E-02	1.023E-01	1.572E-01	1.686E-02	-0.116
	1596.21	*		-6.663E-03	2.958E-02	4.631E-02	3.895E-03	-0.144
CE-141	145.44	*		-8.396E-03	2.206E-02	3.592E-02	3.293E-03	-0.234
CE-143	57.36			-1.598E+01	1.263E+01	1.688E+01	1.524E+00	-0.947
	293.27	*		1.119E+00	2.344E+00	3.955E+00	9.746E-01	0.283
	664.57			1.573E+01	2.339E+01	4.123E+01	1.244E+01	0.382
	721.93			-4.259E+00	2.426E+01	3.788E+01	1.070E+01	-0.112
CE-144	80.12			6.796E-01	7.259E-01	1.245E+00	1.071E-01	0.546
	133.52	*		-5.071E-02	7.542E-02	1.194E-01	1.830E-02	-0.425
PM-144	476.78			-1.406E-02	2.677E-02	4.108E-02	4.676E-03	-0.342
	618.01			-4.748E-03	1.514E-02	2.355E-02	2.394E-03	-0.202
	696.49	*		1.128E-02	1.818E-02	3.190E-02	3.057E-03	0.354
PR-144	696.51	*		8.382E-01	1.355E+00	2.378E+00	2.279E-01	0.353
	1489.16			1.633E+00	5.009E+00	9.201E+00	7.738E-01	0.177
PM-146	453.88	*		4.522E-04	1.863E-02	3.130E-02	3.889E-03	0.014
	633.25			-3.325E-01	6.767E-01	9.947E-01	3.827E-01	-0.334
	735.93			-3.626E-02	6.363E-02	8.932E-02	2.534E-02	-0.406
	747.24			-2.521E-03	4.164E-02	6.626E-02	1.011E-02	-0.038
ND-147	91.11			8.555E-03	7.455E-02	1.171E-01	1.161E-02	0.073
	319.41			7.140E-01	1.119E+00	1.912E+00	2.726E-01	0.373
	531.02	*		2.355E-02	1.552E-01	2.632E-01	4.257E-02	0.090
PM-149	285.90	*		4.415E+00	5.296E+00	9.305E+00	1.864E+00	0.474
EU-152	121.78			-6.461E-03	2.754E-02	4.586E-02	4.475E-03	-0.141
	244.70			2.547E-03	1.499E-01	2.447E-01	3.326E-02	0.010
	344.28	*		3.075E-02	4.147E-02	7.228E-02	9.797E-03	0.425
	778.90			4.463E-02	1.151E-01	1.979E-01	1.936E-02	0.226
	964.08			4.171E-02	1.060E-01	1.895E-01	1.816E-02	0.220
	1085.87			3.854E-02	1.527E-01	2.655E-01	2.341E-02	0.145
	1112.07			-1.885E-02	1.059E-01	1.666E-01	1.433E-02	-0.113
	1408.01			-1.067E-02	8.558E-02	1.333E-01	1.114E-02	-0.080
GD-153	69.67			-2.201E-01	5.026E-01	7.560E-01	5.822E-02	-0.291
	97.43	*		9.437E-03	3.144E-02	4.772E-02	4.240E-03	0.198
	103.18			-1.019E-02	3.622E-02	6.052E-02	5.251E-03	-0.168
EU-154	123.07			6.199E-03	1.955E-02	3.403E-02	3.824E-03	0.182
	723.31			-3.657E-02	8.276E-02	1.237E-01	1.293E-02	-0.296
	873.19			-6.078E-02	1.183E-01	1.786E-01	2.290E-02	-0.340
	996.26			-1.604E-03	1.462E-01	2.424E-01	4.333E-02	-0.007
	1004.73			-7.649E-02	1.062E-01	1.465E-01	1.787E-02	-0.522
	1274.44	*		4.130E-02	5.165E-02	9.811E-02	1.086E-02	0.421
EU-155	86.55			-6.164E-02	3.725E-02	4.542E-02	4.266E-03	-1.357

----- 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	*		2.133E-02	3.322E-02	5.998E-02	5.231E-03	0.356
	86.79			-9.577E-02	8.947E-02	1.178E-01	1.101E-02	-0.813
	197.04			5.299E-02	2.316E-01	3.807E-01	4.242E-02	0.139
	215.65			-8.434E-02	2.843E-01	4.526E-01	5.463E-02	-0.186
	298.57			3.520E-03	4.574E-02	7.418E-02	1.110E-02	0.047
	879.36	*		-7.096E-02	7.093E-02	9.581E-02	9.440E-03	-0.741
	962.29			6.057E-03	1.947E-01	3.264E-01	3.130E-02	0.019
	966.15			1.513E-03	7.259E-02	1.214E-01	1.162E-02	0.012
	1177.93			1.950E-03	1.224E-01	2.013E-01	1.619E-02	0.010
	1271.85			-1.113E-01	3.070E-01	4.591E-01	3.764E-02	-0.242
HO-166M	80.57			5.571E-02	7.928E-02	1.333E-01	1.153E-02	0.418
	184.41			-8.455E-03	1.667E-02	2.789E-02	2.941E-03	-0.303
	280.46			-1.504E-02	3.713E-02	5.691E-02	8.793E-03	-0.264
	410.95			3.065E-02	1.018E-01	1.780E-01	1.910E-02	0.172
	711.68	*		-6.652E-04	2.663E-02	4.286E-02	4.128E-03	-0.016
	752.31			-3.273E-03	1.375E-01	2.171E-01	2.113E-02	-0.015
	810.29			-3.437E-05	2.537E-02	4.056E-02	3.986E-03	-0.001
	67.75			-9.173E-03	3.254E-02	4.994E-02	3.781E-03	-0.184
	100.11			-8.724E-03	5.349E-02	9.040E-02	7.933E-03	-0.097
	152.43			8.395E-02	1.248E-01	2.214E-01	2.046E-02	0.379
TA-182	222.11			-1.771E-01	1.396E-01	1.937E-01	2.403E-02	-0.914
	1121.30			3.252E-02	5.332E-02	9.790E-02	8.342E-03	0.332
	1189.05			-6.984E-02	1.018E-01	1.352E-01	1.090E-02	-0.517
	1221.41	*		-2.489E-02	6.357E-02	9.324E-02	7.574E-03	-0.267
	1231.02			3.150E-02	1.550E-01	2.648E-01	2.155E-02	0.119
	295.96			5.568E-03	4.469E-02	7.287E-02	1.099E-02	0.076
	308.46			-9.030E-03	4.890E-02	7.684E-02	1.127E-02	-0.118
	316.51	*		-1.073E-02	1.589E-02	2.317E-02	3.330E-03	-0.463
	468.07			-1.004E-02	2.832E-02	4.506E-02	5.090E-03	-0.223
	70.83			9.446E-02	3.511E-01	5.691E-01	8.894E-02	0.166
HG-203	72.87			-5.295E-02	2.060E-01	3.155E-01	4.787E-02	-0.168
	279.20	*		-1.861E-04	1.716E-02	2.712E-02	4.233E-03	-0.007
	72.81			-1.177E-02	5.240E-02	8.059E-02	6.398E-03	-0.146
BI-207	74.97			-1.266E-02	3.006E-02	4.512E-02	3.663E-03	-0.281
	569.70			-2.888E-03	1.786E-02	2.757E-02	2.861E-03	-0.105
	1063.66	*		-6.804E-03	2.269E-02	3.517E-02	3.159E-03	-0.193
TL-208	1770.23			-1.804E-01	3.064E-01	4.276E-01	3.519E-02	-0.422
	277.37			3.082E-02	1.953E-01	3.145E-01	5.620E-02	0.098
	583.19	*		-9.763E-03	1.954E-02	2.892E-02	3.120E-03	-0.338
	860.56			-1.488E-02	1.253E-01	2.065E-01	2.150E-02	-0.072
PB-210	46.54	*		5.679E-01	1.111E+00	1.852E+00	1.708E-01	0.307
BI-211	72.87			-2.334E-01	9.077E-01	1.391E+00	1.105E-01	-0.168
	351.06	*		-8.596E-02	1.152E-01	1.623E-01	2.141E-02	-0.530
PB-211	404.85	*		-9.284E-02	2.847E-01	4.537E-01	2.215E-01	-0.205
	427.09			4.574E-01	7.071E-01	1.226E+00	5.729E-01	0.373
BI-212	832.01			-5.780E-04	4.723E-01	7.532E-01	3.922E-01	-0.001
	727.33	*		-3.247E-01	2.833E-01	3.727E-01	4.923E-02	-0.871
	785.37			8.618E-01	1.276E+00	2.311E+00	2.264E-01	0.373
	1620.50			-1.078E-01	1.161E+00	1.883E+00	1.581E-01	-0.057

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Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PB-212	74.82			-3.985E-02	1.050E-01	1.583E-01	2.005E-02	-0.252
	77.11			-6.051E-02	6.831E-02	9.420E-02	7.828E-03	-0.642
	238.63	*		-8.076E-03	3.010E-02	4.841E-02	6.796E-03	-0.167
	300.09			-2.573E-01	3.603E-01	5.250E-01	8.453E-02	-0.490
BI-214	609.32	*		-8.727E-03	4.267E-02	6.299E-02	7.147E-03	-0.139
	1120.29			7.265E-02	1.183E-01	2.172E-01	2.356E-02	0.335
	1764.49			-7.078E-02	1.384E-01	2.345E-01	1.933E-02	-0.302
PB-214	74.82			-7.062E-02	1.861E-01	2.806E-01	3.182E-02	-0.252
	77.11			-1.067E-01	1.207E-01	1.661E-01	1.944E-02	-0.642
	242.00			-4.373E-02	1.628E-01	2.586E-01	3.787E-02	-0.169
	295.22			-1.303E-02	6.415E-02	1.007E-01	1.653E-02	-0.129
RN-219	351.93	*		-3.578E-02	4.295E-02	5.983E-02	8.534E-03	-0.598
	271.23			7.157E-03	1.051E-01	1.713E-01	2.746E-02	0.042
	401.81	*		-5.746E-02	1.707E-01	2.758E-01	4.460E-02	-0.208
RA-223	81.07			-4.305E-02	6.537E-02	9.480E-02	8.247E-03	-0.454
	83.79			-1.017E-02	4.492E-02	6.451E-02	5.801E-03	-0.158
	94.87			-7.086E-01	2.302E-01	2.457E-01	2.214E-02	-2.884
	144.24			-4.476E-02	3.010E-01	4.751E-01	4.726E-02	-0.094
	154.21			-4.808E-02	1.414E-01	2.294E-01	2.310E-02	-0.210
	269.46			1.002E-02	8.252E-02	1.353E-01	2.035E-02	0.074
	323.87	*		4.492E-02	3.106E-01	5.044E-01	1.039E-01	0.089
	338.28			5.869E-02	4.796E-01	7.580E-01	1.206E-01	0.077
RA-224	240.99	*		-2.378E-01	3.053E-01	4.598E-01	6.158E-02	-0.517
RA-226	609.32	*		-8.727E-03	4.267E-02	6.299E-02	7.147E-03	-0.139
	1120.29			7.265E-02	1.183E-01	2.172E-01	2.356E-02	0.335
	1764.49			-7.078E-02	1.384E-01	2.345E-01	1.933E-02	-0.302
AC-227	79.69			2.667E-01	3.782E-01	6.316E-01	1.087E-01	0.422
	235.96			-9.842E-02	7.116E-02	9.877E-02	1.414E-02	-0.996
	256.23	*		-1.897E-02	1.079E-01	1.716E-01	2.835E-02	-0.111
	299.98			-3.362E-01	4.023E-01	5.743E-01	1.011E-01	-0.585
	304.50			-3.024E-01	7.769E-01	1.186E+00	2.422E-01	-0.255
TH-227	334.37			-1.992E-01	8.071E-01	1.245E+00	2.347E-01	-0.160
	79.80			3.563E-01	5.014E-01	8.340E-01	1.815E-01	0.427
	235.96			-9.842E-02	7.108E-02	9.877E-02	1.373E-02	-0.996
	256.23	*		-1.897E-02	1.079E-01	1.716E-01	3.035E-02	-0.111
	299.98			-3.362E-01	4.023E-01	5.743E-01	1.011E-01	-0.585
AC-228	304.50			-3.024E-01	7.769E-01	1.186E+00	2.422E-01	-0.255
	334.37			-1.992E-01	8.071E-01	1.245E+00	2.347E-01	-0.160
	338.32			-1.318E-02	1.240E-01	1.908E-01	8.203E-02	-0.069
	+	911.20	*	5.461E-02	7.137E-02	1.334E-01	1.667E-02	0.409
	968.97			-1.111E-01	1.164E-01	1.547E-01	3.823E-02	-0.718
RA-228	338.32			-1.318E-02	1.240E-01	1.908E-01	8.203E-02	-0.069
	+	911.20	*	5.461E-02	7.137E-02	1.334E-01	1.667E-02	0.409
	968.97			-1.111E-01	1.164E-01	1.547E-01	3.823E-02	-0.718
TH-228	74.82			-3.985E-02	1.049E-01	1.583E-01	1.297E-02	-0.252
	77.11			-6.051E-02	6.831E-02	9.420E-02	7.828E-03	-0.642
	238.63	*		-8.076E-03	3.010E-02	4.841E-02	6.796E-03	-0.167
TH-229	300.09			-2.573E-01	3.923E-01	5.250E-01	3.277E-01	-0.490
	85.43			4.112E-02	7.017E-02	1.104E-01	1.014E-02	0.372

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	88.47			8.897E-03	4.094E-02	6.518E-02	6.157E-03	0.136
	193.51	*		-8.910E-02	2.134E-01	3.384E-01	3.714E-02	-0.263
	210.85			1.324E-03	3.593E-01	5.915E-01	6.997E-02	0.002
PA-231	283.69	*		9.019E-02	5.790E-01	9.525E-01	1.844E-01	0.095
	301.36			7.932E-02	2.427E-01	4.043E-01	6.941E-02	0.196
TH-231	81.07			-4.305E-02	6.537E-02	9.480E-02	8.247E-03	-0.454
	83.79			-1.017E-02	4.492E-02	6.451E-02	5.801E-03	-0.158
	94.87			-7.086E-01	2.302E-01	2.457E-01	2.214E-02	-2.884
	144.24			-4.476E-02	3.010E-01	4.751E-01	4.726E-02	-0.094
	154.21			-4.808E-02	1.414E-01	2.294E-01	2.310E-02	-0.210
	269.46			1.002E-02	8.252E-02	1.353E-01	2.035E-02	0.074
	323.87	*		4.492E-02	3.106E-01	5.044E-01	1.039E-01	0.089
	338.28			5.869E-02	4.796E-01	7.580E-01	1.206E-01	0.077
TH-232	338.32			-1.318E-02	1.239E-01	1.908E-01	2.573E-02	-0.069
	911.20	*		5.461E-02	7.137E-02	1.334E-01	1.667E-02	0.409
	968.97			-1.111E-01	1.164E-01	1.547E-01	3.823E-02	-0.718
PA-233	300.13			-1.266E-01	1.800E-01	2.619E-01	5.025E-02	-0.483
	311.90	*		-2.714E-03	3.427E-02	5.443E-02	7.988E-03	-0.050
	340.48			-1.278E-01	2.837E-01	4.224E-01	1.105E-01	-0.303
PA-234	94.67			-2.540E-01	8.659E-02	9.000E-02	1.142E-02	-2.822
	98.44			-1.146E-02	3.208E-02	4.813E-02	2.687E-02	-0.238
	111.00			2.372E-02	7.098E-02	1.241E-01	1.491E-02	0.191
	131.20			-1.683E-03	4.018E-02	6.775E-02	5.845E-03	-0.025
	569.50			-1.454E-02	1.599E-01	2.493E-01	2.588E-02	-0.058
	733.00			1.434E-02	1.668E-01	2.732E-01	6.184E-02	0.052
	880.51			-1.926E-02	1.522E-01	2.436E-01	2.400E-02	-0.079
	883.24			1.202E-01	1.613E-01	2.646E-01	1.783E-01	0.454
	926.50			6.048E-02	8.116E-02	1.500E-01	3.853E-02	0.403
	946.00	*		6.312E-02	1.148E-01	2.118E-01	4.080E-02	0.298
	949.00			1.125E-03	1.712E-01	2.861E-01	2.762E-02	0.004
PA-234M	766.42			-3.797E-01	4.760E+00	7.349E+00	3.744E+00	-0.052
	1001.03	*		-3.131E-01	2.315E+00	3.767E+00	4.007E-01	-0.083
TH-234	63.29	*		-1.298E-01	4.717E-01	8.020E-01	1.426E-01	-0.162
	92.59			2.113E-02	3.282E-01	5.692E-01	1.269E-01	0.037
U-235	89.96			-4.891E-01	3.444E-01	4.303E-01	1.070E-01	-1.137
	93.35			-1.011E-01	2.414E-01	4.072E-01	9.480E-02	-0.248
	143.76	*		-1.669E-02	8.893E-02	1.397E-01	2.393E-02	-0.119
	163.33			7.201E-02	1.817E-01	3.129E-01	5.774E-02	0.230
	185.72			8.306E-03	2.224E-02	3.924E-02	4.162E-03	0.212
	205.31			7.026E-02	2.169E-01	3.668E-01	7.230E-02	0.192
NP-237	86.48	*		-1.446E-01	9.599E-02	1.120E-01	2.568E-02	-1.292
	95.86			-1.462E-01	3.384E-01	4.978E-01	1.200E-01	-0.294
U-238	63.29	*		-1.298E-01	4.717E-01	8.020E-01	1.426E-01	-0.162
	92.59			2.113E-02	3.281E-01	5.692E-01	5.204E-02	0.037
NP-239	99.53			-3.603E-02	5.553E-02	8.181E-02	7.197E-03	-0.440
	103.37			-1.268E-02	3.323E-02	5.499E-02	4.768E-03	-0.231
	106.12			-3.823E-03	2.893E-02	4.894E-02	4.209E-03	-0.078
	117.23	*		-5.234E-02	1.467E-01	2.420E-01	2.048E-02	-0.216
	228.18			2.009E-02	9.234E-02	1.544E-01	1.964E-02	0.130

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	277.60			7.849E-03	9.119E-02	1.460E-01	2.247E-02	0.054
AM-241	59.54	*		3.107E-02	4.316E-02	7.380E-02	5.799E-03	0.421
CM-247	278.00			3.532E-02	3.739E-01	5.984E-01	9.224E-02	0.059
	287.50			-8.263E-02	5.117E-01	8.072E-01	1.233E-01	-0.102
	402.40	*		-6.797E-03	1.493E-02	2.368E-02	2.534E-03	-0.287
CF-249	252.80			8.154E-02	4.009E-01	6.667E-01	9.353E-02	0.122
	333.37			-5.227E-02	8.768E-02	1.290E-01	1.767E-02	-0.405
	388.16	*		2.466E-02	1.840E-02	3.518E-02	3.826E-03	0.701
CF-251	177.52	*		3.681E-03	5.613E-02	9.389E-02	9.603E-03	0.039
	227.38			-9.517E-02	1.640E-01	2.528E-01	3.205E-02	-0.376
	285.41			3.236E-01	8.995E-01	1.513E+00	2.320E-01	0.214
ANH-511	511.00	*		-2.188E-02	2.985E-02	5.680E-02	6.074E-03	-0.385

# 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]G1202050251      *
* Acquisition date   : 3-MAR-2010 20:49:25 Detector SN# :                    *
* Detector ID        : GAM11 Sensitivity : 5.000                            *
* Geometry           : CAN Energy tolerance: 1.500                          *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000               *
* Elapsed real time  : 0 02:00:00.60 Half life ratio : 8.000                *
*****
*                                     SAMPLE DATA                            *
*
* Sample date       : 23-FEB-2010 00:00:00 Nuclide Library : SOLID           *
* Sample ID         : G1202050251 Analyst initials: MXR1                   *
* Batch Number      : 956157 Sample Quantity : 1.3627E+02 GRAM             *
* Recovery          : 1.00000 Carrier Weight : 0.00000                     *
*****
*                                     QC DATA                                *
*
* Standard Weight   : 0.00000                                                *
* CALIB. DATE/TIME : 18-NOV-2009 15:33:22 MS Isotope :                      *
* MSD DPM           : 0.000 MSD Isotope :                                  *
* LCS DPM           : 0.000 LCS Isotope :                                  *
* LCSD DPM          : 0.000 LCSD Isotope :                                  *
*****

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## Combined Activity-MDA Report

---- 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	-3.476E-02	1.235E-01	2.068E-01	0.000E+00 NOT IDENT.
NA-22	1.453E-02	1.778E-02	3.470E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	3.269E+02	0.000E+00	0.000E+00 SHORT HLIF
K-40	-4.699E-02	1.994E-01	3.368E-01	0.000E+00 NOT IDENT.
SC-46	-5.337E-03	1.707E-02	2.801E-02	0.000E+00 NOT IDENT.
V-48	2.588E-03	2.243E-02	3.931E-02	0.000E+00 NOT IDENT.
CR-51	4.724E-02	1.500E-01	2.616E-01	0.000E+00 NOT IDENT.
MN-54	3.852E-03	1.613E-02	2.913E-02	0.000E+00 NOT IDENT.
CO-56	3.828E-05	1.669E-02	2.909E-02	0.000E+00 NOT IDENT.
CO-57	1.797E-04	9.259E-03	1.688E-02	0.000E+00 NOT IDENT.
CO-58	2.468E-03	1.535E-02	2.622E-02	0.000E+00 NOT IDENT.
FE-59	-1.857E-03	3.091E-02	5.170E-02	0.000E+00 NOT IDENT.
CO-60	-2.046E-02	1.740E-02	2.187E-02	0.000E+00 NOT IDENT.
ZN-65	-1.435E-02	3.179E-02	4.816E-02	0.000E+00 NOT IDENT.
SE-75	1.073E-03	1.962E-02	3.381E-02	0.000E+00 NOT IDENT.
SR-85	-7.211E-02	2.850E-02	3.753E-02	0.000E+00 NOT IDENT.
Y-88	5.670E-03	1.742E-02	3.199E-02	0.000E+00 NOT IDENT.
Y-91	-1.504E+00	8.040E+00	1.298E+01	0.000E+00 NOT IDENT.
NB-94	3.324E-03	1.615E-02	2.796E-02	0.000E+00 NOT IDENT.
NB-95	-5.326E-03	1.633E-02	2.481E-02	0.000E+00 NOT IDENT.
NB-95M	-9.868E-02	5.646E-02	7.930E-02	0.000E+00 NOT IDENT.
ZR-95	-9.192E-03	2.918E-02	4.566E-02	0.000E+00 NOT IDENT.
MO-99	2.436E-02	1.044E+00	1.752E+00	0.000E+00 NOT IDENT.
TC-99M	0.000E+00	5.031E+08	0.000E+00	0.000E+00 SHORT HLIF
RU-103	8.162E-03	1.627E-02	3.001E-02	0.000E+00 NOT IDENT.
RH-106	-1.636E-01	1.663E-01	2.452E-01	0.000E+00 NOT IDENT.

RU-106	-1.636E-01	1.655E-01	2.452E-01	0.000E+00	NOT IDENT.
AG-108M	-4.753E-04	1.239E-02	2.171E-02	0.000E+00	NOT IDENT.
CD-109	-1.217E-01	2.886E-01	4.443E-01	0.000E+00	NOT IDENT.
AG-110M	1.507E-02	1.455E-02	2.851E-02	0.000E+00	NOT IDENT.
SN-113	-2.573E-02	1.781E-02	2.521E-02	0.000E+00	NOT IDENT.
CD-115	-2.478E-01	7.182E-01	1.177E+00	0.000E+00	NOT IDENT.
SN-117M	-1.194E-02	1.560E-02	2.451E-02	0.000E+00	NOT IDENT.
TE-123M	-3.045E-03	1.103E-02	1.835E-02	0.000E+00	NOT IDENT.
SB-124	2.311E-02	4.195E-02	8.035E-02	0.000E+00	NOT IDENT.
SB-125	2.797E-02	3.953E-02	7.524E-02	0.000E+00	NOT IDENT.
TE-125M	1.668E+00	3.299E+00	6.272E+00	0.000E+00	NOT IDENT.
I-126	-2.825E-02	7.535E-02	1.198E-01	0.000E+00	NOT IDENT.
SB-126	1.291E-02	4.613E-02	8.081E-02	0.000E+00	NOT IDENT.
SN-126	-1.687E-02	2.888E-02	4.374E-02	0.000E+00	NOT IDENT.
SB-127	7.367E-02	1.906E-01	3.411E-01	0.000E+00	NOT IDENT.
I-131	-1.032E-03	2.942E-02	4.868E-02	0.000E+00	NOT IDENT.
TE-132	-4.945E-02	8.536E-02	1.392E-01	0.000E+00	NOT IDENT.
BA-133	2.211E-02	2.047E-02	3.797E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	1.691E+01	0.000E+00	0.000E+00	SHORT HLIF
CS-134	1.100E-02	1.945E-02	3.553E-02	0.000E+00	NOT IDENT.
CS-135	4.470E-03	6.953E-02	1.198E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	3.644E+08	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-1.818E-02	3.480E-02	5.327E-02	0.000E+00	NOT IDENT.
BA-137M	-7.191E-03	1.647E-02	2.586E-02	0.000E+00	NOT IDENT.
CS-137	-7.597E-03	1.740E-02	2.732E-02	0.000E+00	NOT IDENT.
CE-139	-9.193E-03	1.221E-02	2.030E-02	0.000E+00	NOT IDENT.
BA-140	-4.068E-02	8.483E-02	1.339E-01	0.000E+00	NOT IDENT.
LA-140	-6.663E-03	2.899E-02	4.635E-02	0.000E+00	NOT IDENT.
CE-141	-8.396E-03	2.161E-02	3.761E-02	0.000E+00	NOT IDENT.
CE-143	1.119E+00	2.297E+00	4.088E+00	0.000E+00	NOT IDENT.
CE-144	-5.071E-02	7.391E-02	1.252E-01	0.000E+00	NOT IDENT.
PM-144	1.128E-02	1.781E-02	3.244E-02	0.000E+00	NOT IDENT.
PR-144	8.382E-01	1.328E+00	2.418E+00	0.000E+00	NOT IDENT.
PM-146	4.522E-04	1.825E-02	3.210E-02	0.000E+00	NOT IDENT.
ND-147	2.355E-02	1.521E-01	2.690E-01	0.000E+00	NOT IDENT.
PM-149	4.415E+00	5.190E+00	9.623E+00	0.000E+00	NOT IDENT.
EU-152	3.075E-02	4.064E-02	7.450E-02	0.000E+00	NOT IDENT.
GD-153	9.437E-03	3.081E-02	5.032E-02	0.000E+00	NOT IDENT.
EU-154	4.130E-02	5.062E-02	9.863E-02	0.000E+00	NOT IDENT.
EU-155	2.133E-02	3.255E-02	6.316E-02	0.000E+00	NOT IDENT.
TB-160	-7.096E-02	6.951E-02	9.701E-02	0.000E+00	NOT IDENT.
HO-166M	-6.652E-04	2.609E-02	4.357E-02	0.000E+00	NOT IDENT.
TA-182	-2.489E-02	6.230E-02	9.381E-02	0.000E+00	NOT IDENT.
IR-192	-1.073E-02	1.558E-02	2.391E-02	0.000E+00	NOT IDENT.
HG-203	-1.861E-04	1.682E-02	2.806E-02	0.000E+00	NOT IDENT.
BI-207	-6.804E-03	2.223E-02	3.548E-02	0.000E+00	NOT IDENT.
TL-208	-9.763E-03	1.915E-02	2.951E-02	0.000E+00	NOT IDENT.
PB-210	5.679E-01	1.089E+00	1.978E+00	0.000E+00	NOT IDENT.
BI-211	-8.596E-02	1.129E-01	1.672E-01	0.000E+00	NOT IDENT.
PB-211	-9.284E-02	2.790E-01	4.662E-01	0.000E+00	NOT IDENT.
BI-212	-3.247E-01	2.777E-01	3.787E-01	0.000E+00	NOT IDENT.
PB-212	-8.076E-03	2.950E-02	5.023E-02	0.000E+00	NOT IDENT.
BI-214	-8.727E-03	4.181E-02	6.423E-02	0.000E+00	NOT IDENT.
PB-214	-3.578E-02	4.209E-02	6.164E-02	0.000E+00	NOT IDENT.
RN-219	-5.746E-02	1.673E-01	2.835E-01	0.000E+00	NOT IDENT.
RA-223	4.492E-02	3.043E-01	5.205E-01	0.000E+00	NOT IDENT.
RA-224	-2.378E-01	2.992E-01	4.770E-01	0.000E+00	NOT IDENT.
RA-226	-8.727E-03	4.181E-02	6.423E-02	0.000E+00	NOT IDENT.
AC-227	-1.897E-02	1.057E-01	1.778E-01	0.000E+00	NOT IDENT.
TH-227	-1.897E-02	1.057E-01	1.778E-01	0.000E+00	NOT IDENT.
AC-228	5.461E-02	6.994E-02	1.350E-01	0.000E+00	FAIL ABUN
RA-228	5.461E-02	6.994E-02	1.350E-01	0.000E+00	FAIL ABUN
TH-228	-8.076E-03	2.950E-02	5.023E-02	0.000E+00	NOT IDENT.
TH-229	-8.910E-02	2.091E-01	3.525E-01	0.000E+00	NOT IDENT.
PA-231	9.019E-02	5.674E-01	9.852E-01	0.000E+00	NOT IDENT.
TH-231	4.492E-02	3.043E-01	5.205E-01	0.000E+00	NOT IDENT.
TH-232	5.461E-02	6.994E-02	1.350E-01	0.000E+00	FAIL ABUN
PA-233	-2.714E-03	3.359E-02	5.621E-02	0.000E+00	NOT IDENT.
PA-234	6.312E-02	1.125E-01	2.141E-01	0.000E+00	NOT IDENT.
PA-234M	-3.131E-01	2.269E+00	3.804E+00	0.000E+00	NOT IDENT.
TH-234	-1.298E-01	4.623E-01	8.522E-01	0.000E+00	NOT IDENT.
U-235	-1.669E-02	8.716E-02	1.463E-01	0.000E+00	NOT IDENT.
NP-237	-1.446E-01	9.407E-02	1.183E-01	0.000E+00	NOT IDENT.
U-238	-1.298E-01	4.623E-01	8.522E-01	0.000E+00	NOT IDENT.
NP-239	-5.234E-02	1.438E-01	2.544E-01	0.000E+00	NOT IDENT.
AM-241	3.107E-02	4.230E-02	7.850E-02	0.000E+00	NOT IDENT.
CM-247	-6.797E-03	1.464E-02	2.433E-02	0.000E+00	NOT IDENT.
CF-249	2.466E-02	1.803E-02	3.618E-02	0.000E+00	NOT IDENT.

CF-251	3.681E-03	5.501E-02	9.795E-02	0.000E+00 NOT IDENT.
ANH-511	-2.188E-02	2.925E-02	5.811E-02	0.000E+00 NOT IDENT.

```
*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050251.CNF;1
Sample date        : 23-FEB-2010 00:00:00 Acquisition date : 3-MAR-2010 20:49:25.
Sample ID          : G1202050251      Sample quantity   : 1.36270E+02 GRAM
Detector name      : GAM11             Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00     Elapsed real time: 0 02:00:00.60 0.0%
Energy tolerance  : 1.50000 keV        Analyst Initials : MXR1
Abundance limit   : 75.00000           Sensitivity       : 5.00000
Batch ID          : 956157             Detector SN#      :
Matrix Spike ID   :                    LCS ID           : 1032-A
*****
```

Nuclide Line Activity Report

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G1202050251

Page : 2  
Acquisition date : 3-MAR-2010 20:49:25

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%
**** There are no nuclides meeting summary criteria ****		

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

Unidentified Energy Lines  
Sample ID : G1202050251

Page : 3  
Acquisition date : 3-MAR-2010 20:49:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	911.21	9	2	1.12	1822.34	1817	10	1.30E-03	****	1.83E+00	T

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*                                     *                                       *
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050251.CNF;1 *
* Acquisition date   : 3-MAR-2010 20:49:25.  Detector SN#      :             *
* Detector ID        : GAM11                      Sensitivity    : 5.00000      *
* Geometry           : CAN                      Energy tolerance: 1.50000      *
* Elapsed live time  : 0 02:00:00.00             Abundance limit : 75.00000      *
* Elapsed real time  : 0 02:00:00.60             Half life ratio : 8.00000      *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 23-FEB-2010 00:00:00  Nuclide Library : SOLID          *
* Sample ID          : G1202050251           Analyst initials: MXR1          *
* Batch Number       : 956157                Sample Quantity : 1.36270E+02 GRAM *
*****
*                                     QC DATA                                *
*                                     *                                       *
* CALIB. DATE/TIME   : 18-NOV-2009 15:33:22.2MS Isotope         :             *
* MSD ID              :                      MSD Isotope         :             *
* LCS ID              : 1032-A                LCS Isotope        :             *
*****

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## Combined Activity-MDA Report

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-3.476E-02		1.261E-01	2.019E-01	2.285E-02	-0.172
NA-22	1.453E-02		1.814E-02	3.452E-02	2.835E-03	0.421
NA-24	3.812E-04		1.668E-04	Half-Life too short		
K-40	-4.699E-02		2.035E-01	3.360E-01	2.905E-02	-0.140
SC-46	-5.337E-03		1.741E-02	2.767E-02	2.725E-03	-0.193
V-48	2.588E-03		2.288E-02	3.891E-02	3.691E-03	0.067
CR-51	4.724E-02		1.531E-01	2.535E-01	3.678E-02	0.186
MN-54	3.852E-03		1.646E-02	2.875E-02	2.831E-03	0.134
CO-56	3.828E-05		1.703E-02	2.871E-02	2.828E-03	0.001
CO-57	1.797E-04		9.448E-03	1.607E-02	1.360E-03	0.011
CO-58	2.468E-03		1.566E-02	2.586E-02	2.546E-03	0.095
FE-59	-1.857E-03		3.154E-02	5.128E-02	4.820E-03	-0.036
CO-60	-2.046E-02		1.776E-02	2.177E-02	1.799E-03	-0.940
ZN-65	-1.435E-02		3.244E-02	4.778E-02	4.100E-03	-0.300
SE-75	1.073E-03		2.002E-02	3.264E-02	4.799E-03	0.033
SR-85	-7.211E-02		2.908E-02	3.669E-02	3.919E-03	-1.966
Y-88	5.670E-03		1.777E-02	3.205E-02	2.602E-03	0.177

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
Y-91	-1.504E+00		8.204E+00	1.290E+01	1.044E+00	-0.117
NB-94	3.324E-03		1.648E-02	2.750E-02	2.641E-03	0.121
NB-95	-5.326E-03		1.666E-02	2.444E-02	2.386E-03	-0.218
NB-95M	-9.868E-02		5.761E-02	7.641E-02	1.068E-02	-1.292
ZR-95	-9.192E-03		2.977E-02	4.496E-02	4.744E-03	-0.204
MO-99	2.436E-02		1.065E+00	1.725E+00	2.824E-01	0.014
TC-99M	-6.259E+02		2.567E+02	Half-Life too short		
RU-103	8.162E-03		1.660E-02	2.932E-02	4.505E-03	0.278
RH-106	-1.636E-01		1.697E-01	2.405E-01	3.400E-02	-0.680
RU-106	-1.636E-01		1.689E-01	2.405E-01	2.386E-02	-0.680
AG-108M	-4.753E-04		1.265E-02	2.115E-02	2.328E-03	-0.022
CD-109	-1.217E-01		2.945E-01	4.206E-01	3.988E-02	-0.289
AG-110M	1.507E-02		1.485E-02	2.800E-02	2.729E-03	0.538
SN-113	-2.573E-02		1.817E-02	2.452E-02	2.666E-03	-1.049
CD-115	-2.478E-01		7.329E-01	1.151E+00	1.223E-01	-0.215
SN-117M	-1.194E-02		1.591E-02	2.345E-02	2.216E-03	-0.509
TE-123M	-3.045E-03		1.125E-02	1.755E-02	1.670E-03	-0.174
SB-124	2.311E-02		4.281E-02	8.037E-02	7.002E-03	0.288
SB-125	2.797E-02		4.034E-02	7.330E-02	7.989E-03	0.382
TE-125M	1.668E+00		3.366E+00	5.960E+00	6.200E-01	0.280
I-126	-2.825E-02		7.689E-02	1.177E-01	1.116E-02	-0.240
SB-126	1.291E-02		4.707E-02	7.951E-02	7.678E-03	0.162
SN-126	-1.687E-02		2.947E-02	4.140E-02	3.905E-03	-0.408
SB-127	7.367E-02		1.945E-01	3.353E-01	3.568E-02	0.220
I-131	-1.032E-03		3.002E-02	4.729E-02	5.923E-03	-0.022
TE-132	-4.945E-02		8.710E-02	1.341E-01	2.349E-02	-0.369
BA-133	2.211E-02		2.089E-02	3.686E-02	5.871E-03	0.600
I-133	4.382E-06		8.627E-06	Half-Life too short		
CS-134	1.100E-02		1.985E-02	3.502E-02	3.455E-03	0.314
CS-135	4.470E-03		7.095E-02	1.157E-01	1.815E-02	0.039
I-135	-1.570E+02		1.859E+02	Half-Life too short		
CS-136	-1.818E-02		3.551E-02	5.279E-02	4.980E-03	-0.344
BA-137M	-7.191E-03		1.681E-02	2.540E-02	2.403E-03	-0.283
CS-137	-7.597E-03		1.775E-02	2.683E-02	2.543E-03	-0.283
CE-139	-9.193E-03		1.246E-02	1.944E-02	1.889E-03	-0.473
BA-140	-4.068E-02		8.656E-02	1.310E-01	4.515E-02	-0.311
LA-140	-6.663E-03		2.958E-02	4.631E-02	3.895E-03	-0.144
CE-141	-8.396E-03		2.206E-02	3.592E-02	3.293E-03	-0.234
CE-143	1.119E+00		2.344E+00	3.955E+00	9.746E-01	0.283
CE-144	-5.071E-02		7.542E-02	1.194E-01	1.830E-02	-0.425
PM-144	1.128E-02		1.818E-02	3.190E-02	3.057E-03	0.354
PR-144	8.382E-01		1.355E+00	2.378E+00	2.279E-01	0.353
PM-146	4.522E-04		1.863E-02	3.130E-02	3.889E-03	0.014
ND-147	2.355E-02		1.552E-01	2.632E-01	4.257E-02	0.090
PM-149	4.415E+00		5.296E+00	9.305E+00	1.864E+00	0.474
EU-152	3.075E-02		4.147E-02	7.228E-02	9.797E-03	0.425
GD-153	9.437E-03		3.144E-02	4.772E-02	4.240E-03	0.198
EU-154	4.130E-02		5.165E-02	9.811E-02	1.086E-02	0.421

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	2.133E-02		3.322E-02	5.998E-02	5.231E-03	0.356
TB-160	-7.096E-02		7.093E-02	9.581E-02	9.440E-03	-0.741
HO-166M	-6.652E-04		2.663E-02	4.286E-02	4.128E-03	-0.016
TA-182	-2.489E-02		6.357E-02	9.324E-02	7.574E-03	-0.267
IR-192	-1.073E-02		1.589E-02	2.317E-02	3.330E-03	-0.463
HG-203	-1.861E-04		1.716E-02	2.712E-02	4.233E-03	-0.007
BI-207	-6.804E-03		2.269E-02	3.517E-02	3.159E-03	-0.193
TL-208	-9.763E-03		1.954E-02	2.892E-02	3.120E-03	-0.338
PB-210	5.679E-01		1.111E+00	1.852E+00	1.708E-01	0.307
BI-211	-8.596E-02		1.152E-01	1.623E-01	2.141E-02	-0.530
PB-211	-9.284E-02		2.847E-01	4.537E-01	2.215E-01	-0.205
BI-212	-3.247E-01		2.833E-01	3.727E-01	4.923E-02	-0.871
PB-212	-8.076E-03		3.010E-02	4.841E-02	6.796E-03	-0.167
BI-214	-8.727E-03		4.267E-02	6.299E-02	7.147E-03	-0.139
PB-214	-3.578E-02		4.295E-02	5.983E-02	8.534E-03	-0.598
RN-219	-5.746E-02		1.707E-01	2.758E-01	4.460E-02	-0.208
RA-223	4.492E-02		3.106E-01	5.044E-01	1.039E-01	0.089
RA-224	-2.378E-01		3.053E-01	4.598E-01	6.158E-02	-0.517
RA-226	-8.727E-03		4.267E-02	6.299E-02	7.147E-03	-0.139
AC-227	-1.897E-02		1.079E-01	1.716E-01	2.835E-02	-0.111
TH-227	-1.897E-02		1.079E-01	1.716E-01	3.035E-02	-0.111
AC-228	5.461E-02	+	7.137E-02	1.334E-01	1.667E-02	0.409
RA-228	5.461E-02	+	7.137E-02	1.334E-01	1.667E-02	0.409
TH-228	-8.076E-03		3.010E-02	4.841E-02	6.796E-03	-0.167
TH-229	-8.910E-02		2.134E-01	3.384E-01	3.714E-02	-0.263
PA-231	9.019E-02		5.790E-01	9.525E-01	1.844E-01	0.095
TH-231	4.492E-02		3.106E-01	5.044E-01	1.039E-01	0.089
TH-232	5.461E-02	+	7.137E-02	1.334E-01	1.667E-02	0.409
PA-233	-2.714E-03		3.427E-02	5.443E-02	7.988E-03	-0.050
PA-234	6.312E-02		1.148E-01	2.118E-01	4.080E-02	0.298
PA-234M	-3.131E-01		2.315E+00	3.767E+00	4.007E-01	-0.083
TH-234	-1.298E-01		4.717E-01	8.020E-01	1.426E-01	-0.162
U-235	-1.669E-02		8.893E-02	1.397E-01	2.393E-02	-0.119
NP-237	-1.446E-01		9.599E-02	1.120E-01	2.568E-02	-1.292
U-238	-1.298E-01		4.717E-01	8.020E-01	1.426E-01	-0.162
NP-239	-5.234E-02		1.467E-01	2.420E-01	2.048E-02	-0.216
AM-241	3.107E-02		4.316E-02	7.380E-02	5.799E-03	0.421
CM-247	-6.797E-03		1.493E-02	2.368E-02	2.534E-03	-0.287
CF-249	2.466E-02		1.840E-02	3.518E-02	3.826E-03	0.701
CF-251	3.681E-03		5.613E-02	9.389E-02	9.603E-03	0.039
ANH-511	-2.188E-02		2.985E-02	5.680E-02	6.074E-03	-0.385

# 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]G1202050251          *
* Acquisition date   : 3-MAR-2010 20:49:25 Detector SN#      :              *
* Detector ID        : GAM11                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 02:00:00.00              Abundance limit : 75.000        *
* Elapsed real time  : 0 02:00:00.60              Half life ratio : 8.000        *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date       : 23-FEB-2010 00:00:00 Nuclide Library : SOLID            *
* Sample ID         : G1202050251              Analyst initials: MXR1          *
* Batch Number      : 956157                    Sample Quantity : 1.3627E+02 GRAM *
* Recovery          : 1.00000                   Carrier Weight  : 0.00000        *
*****
*
*                                     QC DATA                                *
*
* CALIB. DATE/TIME  : 18-NOV-2009 15:33:22 MS Isotope      :              *
* MSD DPM           : 0.000                      MSD Isotope  :              *
* LCS DPM           : 0.000                      LCS Isotope  :              *
* LCSD DPM          : 0.000                      LCSD Isotope :              *
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## Combined Activity-MDA Report

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act Error	DLC (pCi/GRAM )	TPU
---- Non-Identified Nuclides ----				
BE-7	-3.476E-02	1.235E-01	1.035E-01	6.303E-02 NOT IDENT.
NA-22	1.453E-02	1.778E-02	1.736E-02	9.071E-03 NOT IDENT.
NA-24	3.812E+02	3.269E+02	0.000E+00	1.668E+02 SHORT HLIF
K-40	-4.699E-02	1.994E-01	1.685E-01	1.017E-01 NOT IDENT.
SC-46	-5.337E-03	1.707E-02	1.401E-02	8.707E-03 NOT IDENT.
V-48	2.588E-03	2.243E-02	1.967E-02	1.144E-02 NOT IDENT.
CR-51	4.724E-02	1.500E-01	1.309E-01	7.655E-02 NOT IDENT.
MN-54	3.852E-03	1.613E-02	1.458E-02	8.230E-03 NOT IDENT.
CO-56	3.828E-05	1.669E-02	1.455E-02	8.517E-03 NOT IDENT.
CO-57	1.797E-04	9.259E-03	8.446E-03	4.724E-03 NOT IDENT.
CO-58	2.468E-03	1.535E-02	1.312E-02	7.829E-03 NOT IDENT.
FE-59	-1.857E-03	3.091E-02	2.587E-02	1.577E-02 NOT IDENT.
CO-60	-2.046E-02	1.740E-02	1.094E-02	8.879E-03 NOT IDENT.
ZN-65	-1.435E-02	3.179E-02	2.410E-02	1.622E-02 NOT IDENT.
SE-75	1.073E-03	1.962E-02	1.691E-02	1.001E-02 NOT IDENT.
SR-85	-7.211E-02	2.850E-02	1.878E-02	1.454E-02 NOT IDENT.
Y-88	5.670E-03	1.742E-02	1.600E-02	8.887E-03 NOT IDENT.
Y-91	-1.504E+00	8.040E+00	6.493E+00	4.102E+00 NOT IDENT.
NB-94	3.324E-03	1.615E-02	1.399E-02	8.239E-03 NOT IDENT.
NB-95	-5.326E-03	1.633E-02	1.241E-02	8.332E-03 NOT IDENT.
NB-95M	-9.868E-02	5.646E-02	3.967E-02	2.880E-02 NOT IDENT.
ZR-95	-9.192E-03	2.918E-02	2.284E-02	1.489E-02 NOT IDENT.
MO-99	2.436E-02	1.044E+00	8.765E-01	5.326E-01 NOT IDENT.
TC-99M	-6.259E+08	5.031E+08	0.000E+00	2.567E+08 SHORT HLIF
RU-103	8.162E-03	1.627E-02	1.502E-02	8.300E-03 NOT IDENT.
RH-106	-1.636E-01	1.663E-01	1.227E-01	8.483E-02 NOT IDENT.

RU-106	-1.636E-01	1.655E-01	1.227E-01	8.443E-02	NOT IDENT.
AG-108M	-4.753E-04	1.239E-02	1.086E-02	6.323E-03	NOT IDENT.
CD-109	-1.217E-01	2.886E-01	2.223E-01	1.472E-01	NOT IDENT.
AG-110M	1.507E-02	1.455E-02	1.427E-02	7.423E-03	NOT IDENT.
SN-113	-2.573E-02	1.781E-02	1.261E-02	9.086E-03	NOT IDENT.
CD-115	-2.478E-01	7.182E-01	5.889E-01	3.665E-01	NOT IDENT.
SN-117M	-1.194E-02	1.560E-02	1.226E-02	7.957E-03	NOT IDENT.
TE-123M	-3.045E-03	1.103E-02	9.179E-03	5.627E-03	NOT IDENT.
SB-124	2.311E-02	4.195E-02	4.020E-02	2.140E-02	NOT IDENT.
SB-125	2.797E-02	3.953E-02	3.764E-02	2.017E-02	NOT IDENT.
TE-125M	1.668E+00	3.299E+00	3.138E+00	1.683E+00	NOT IDENT.
I-126	-2.825E-02	7.535E-02	5.993E-02	3.844E-02	NOT IDENT.
SB-126	1.291E-02	4.613E-02	4.043E-02	2.354E-02	NOT IDENT.
SN-126	-1.687E-02	2.888E-02	2.188E-02	1.473E-02	NOT IDENT.
SB-127	7.367E-02	1.906E-01	1.706E-01	9.724E-02	NOT IDENT.
I-131	-1.032E-03	2.942E-02	2.436E-02	1.501E-02	NOT IDENT.
TE-132	-4.945E-02	8.536E-02	6.966E-02	4.355E-02	NOT IDENT.
BA-133	2.211E-02	2.047E-02	1.900E-02	1.044E-02	NOT IDENT.
I-133	4.382E+00	1.691E+01	0.000E+00	8.627E+00	SHORT HLIF
CS-134	1.100E-02	1.945E-02	1.777E-02	9.925E-03	NOT IDENT.
CS-135	4.470E-03	6.953E-02	5.992E-02	3.548E-02	NOT IDENT.
I-135	-1.570E+08	3.644E+08	0.000E+00	1.859E+08	SHORT HLIF
CS-136	-1.818E-02	3.480E-02	2.665E-02	1.776E-02	NOT IDENT.
BA-137M	-7.191E-03	1.647E-02	1.294E-02	8.403E-03	NOT IDENT.
CS-137	-7.597E-03	1.740E-02	1.367E-02	8.877E-03	NOT IDENT.
CE-139	-9.193E-03	1.221E-02	1.016E-02	6.228E-03	NOT IDENT.
BA-140	-4.068E-02	8.483E-02	6.700E-02	4.328E-02	NOT IDENT.
LA-140	-6.663E-03	2.899E-02	2.319E-02	1.479E-02	NOT IDENT.
CE-141	-8.396E-03	2.161E-02	1.882E-02	1.103E-02	NOT IDENT.
CE-143	1.119E+00	2.297E+00	2.045E+00	1.172E+00	NOT IDENT.
CE-144	-5.071E-02	7.391E-02	6.266E-02	3.771E-02	NOT IDENT.
PM-144	1.128E-02	1.781E-02	1.623E-02	9.088E-03	NOT IDENT.
PR-144	8.382E-01	1.328E+00	1.210E+00	6.776E-01	NOT IDENT.
PM-146	4.522E-04	1.825E-02	1.606E-02	9.313E-03	NOT IDENT.
ND-147	2.355E-02	1.521E-01	1.346E-01	7.761E-02	NOT IDENT.
PM-149	4.415E+00	5.190E+00	4.814E+00	2.648E+00	NOT IDENT.
EU-152	3.075E-02	4.064E-02	3.727E-02	2.073E-02	NOT IDENT.
GD-153	9.437E-03	3.081E-02	2.518E-02	1.572E-02	NOT IDENT.
EU-154	4.130E-02	5.062E-02	4.934E-02	2.583E-02	NOT IDENT.
EU-155	2.133E-02	3.255E-02	3.160E-02	1.661E-02	NOT IDENT.
TB-160	-7.096E-02	6.951E-02	4.853E-02	3.546E-02	NOT IDENT.
HO-166M	-6.652E-04	2.609E-02	2.180E-02	1.331E-02	NOT IDENT.
TA-182	-2.489E-02	6.230E-02	4.693E-02	3.179E-02	NOT IDENT.
IR-192	-1.073E-02	1.558E-02	1.196E-02	7.947E-03	NOT IDENT.
HG-203	-1.861E-04	1.682E-02	1.404E-02	8.582E-03	NOT IDENT.
BI-207	-6.804E-03	2.223E-02	1.775E-02	1.134E-02	NOT IDENT.
TL-208	-9.763E-03	1.915E-02	1.476E-02	9.770E-03	NOT IDENT.
PB-210	5.679E-01	1.089E+00	9.897E-01	5.554E-01	NOT IDENT.
BI-211	-8.596E-02	1.129E-01	8.365E-02	5.762E-02	NOT IDENT.
PB-211	-9.284E-02	2.790E-01	2.332E-01	1.424E-01	NOT IDENT.
BI-212	-3.247E-01	2.777E-01	1.895E-01	1.417E-01	NOT IDENT.
PB-212	-8.076E-03	2.950E-02	2.513E-02	1.505E-02	NOT IDENT.
BI-214	-8.727E-03	4.181E-02	3.213E-02	2.133E-02	NOT IDENT.
PB-214	-3.578E-02	4.209E-02	3.084E-02	2.148E-02	NOT IDENT.
RN-219	-5.746E-02	1.673E-01	1.418E-01	8.535E-02	NOT IDENT.
RA-223	4.492E-02	3.043E-01	2.604E-01	1.553E-01	NOT IDENT.
RA-224	-2.378E-01	2.992E-01	2.386E-01	1.526E-01	NOT IDENT.
RA-226	-8.727E-03	4.181E-02	3.213E-02	2.133E-02	NOT IDENT.
AC-227	-1.897E-02	1.057E-01	8.897E-02	5.393E-02	NOT IDENT.
TH-227	-1.897E-02	1.057E-01	8.897E-02	5.393E-02	NOT IDENT.
AC-228	5.461E-02	6.994E-02	6.754E-02	3.569E-02	FAIL ABUN
RA-228	5.461E-02	6.994E-02	6.754E-02	3.569E-02	FAIL ABUN
TH-228	-8.076E-03	2.950E-02	2.513E-02	1.505E-02	NOT IDENT.
TH-229	-8.910E-02	2.091E-01	1.764E-01	1.067E-01	NOT IDENT.
PA-231	9.019E-02	5.674E-01	4.929E-01	2.895E-01	NOT IDENT.
TH-231	4.492E-02	3.043E-01	2.604E-01	1.553E-01	NOT IDENT.
TH-232	5.461E-02	6.994E-02	6.754E-02	3.569E-02	FAIL ABUN
PA-233	-2.714E-03	3.359E-02	2.812E-02	1.714E-02	NOT IDENT.
PA-234	6.312E-02	1.125E-01	1.071E-01	5.739E-02	NOT IDENT.
PA-234M	-3.131E-01	2.269E+00	1.903E+00	1.158E+00	NOT IDENT.
TH-234	-1.298E-01	4.623E-01	4.263E-01	2.358E-01	NOT IDENT.
U-235	-1.669E-02	8.716E-02	7.320E-02	4.447E-02	NOT IDENT.
NP-237	-1.446E-01	9.407E-02	5.919E-02	4.800E-02	NOT IDENT.
U-238	-1.298E-01	4.623E-01	4.263E-01	2.358E-01	NOT IDENT.
NP-239	-5.234E-02	1.438E-01	1.273E-01	7.335E-02	NOT IDENT.
AM-241	3.107E-02	4.230E-02	3.927E-02	2.158E-02	NOT IDENT.
CM-247	-6.797E-03	1.464E-02	1.217E-02	7.467E-03	NOT IDENT.
CF-249	2.466E-02	1.803E-02	1.810E-02	9.200E-03	NOT IDENT.

CF-251	3.681E-03	5.501E-02	4.900E-02	2.807E-02	NOT IDENT.
ANH-511	-2.188E-02	2.925E-02	2.907E-02	1.492E-02	NOT IDENT.

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

ENERGY	MDA COUNTS
46.54	36.9796
49.72	43.9890
57.36	58.6182
59.54	43.1221
63.29	56.2232
63.29	56.2232
64.28	77.0957
67.75	62.7448
69.67	61.9072
70.83	52.7265
72.81	61.2489
72.87	61.2585
72.87	61.2585
74.82	62.7535
74.82	62.7535
74.82	62.7535
74.97	62.7778
77.11	69.0755
77.11	69.0755
77.11	69.0755
79.69	50.3432
79.80	50.3566
80.12	45.5967
80.19	45.6045
80.57	46.8481
81.00	64.9350
81.07	64.9461
81.07	64.9461
83.79	53.2665
83.79	53.2665
85.43	51.0427
86.48	91.3719
86.55	93.8238
86.79	80.4647
86.94	80.4929
87.57	75.7247
88.03	72.1372
88.47	64.8667
89.96	108.0691
91.11	99.7310
92.59	61.7661
92.59	61.7661
93.35	61.8698
94.67	165.0516
94.87	165.1237
94.87	165.1237
95.86	65.9427
97.43	46.1913
98.44	50.8783
99.53	50.9956
100.11	50.2209
103.18	56.4386
103.37	56.4607
105.31	40.6099
106.12	57.6247
109.28	58.8413
111.00	64.1743
111.76	66.8400
116.30	61.3721
117.23	61.4795
121.12	66.2851
121.78	61.9990
122.06	59.4097
123.07	56.0176
131.20	62.1565
133.52	67.7540
136.00	59.9820

136.47	58.2371
140.51	67.6498
140.51	0.0000
143.76	57.1277
144.24	58.0794
144.24	58.0794
145.44	70.0115
152.43	46.8849
153.25	47.8650
154.21	55.3101
154.21	55.3101
156.02	53.6151
158.56	52.8936
159.00	51.0713
162.66	63.4878
163.33	58.8773
165.86	75.0423
176.60	48.5757
177.52	62.9425
181.07	55.5833
184.41	47.1712
185.72	45.3257
193.51	57.4845
197.04	46.9805
205.31	61.3188
210.85	53.7709
215.65	51.0783
222.11	59.5438
227.38	64.9850
228.16	64.0273
228.18	47.7674
235.69	92.2495
235.96	83.0500
235.96	83.0500
238.63	53.4742
238.63	53.4742
240.99	76.2967
242.00	62.9627
244.70	54.8665
252.40	42.7959
252.80	38.6369
256.23	42.9690
256.23	42.9690
260.90	49.4967
264.66	46.5173
268.22	46.6855
269.46	46.7446
269.46	46.7446
271.23	45.7636
273.65	46.9407
276.40	50.2789
277.37	44.9728
277.60	48.1961
278.00	43.9295
279.20	40.7631
279.54	42.9224
280.46	44.0355
283.69	31.2450
284.31	37.7322
285.41	31.2969
285.90	25.9131
287.50	35.6855
293.27	35.8816
295.22	45.7521
295.96	42.5134
298.57	39.3391
299.98	51.4263
299.98	51.4263
300.09	49.2435
300.09	49.2435
300.13	49.2453
301.36	36.1542
302.85	38.3980
304.50	47.2465
304.50	47.2465
304.85	51.6577
308.46	54.0334
311.90	50.8834

316.51	46.6510
319.41	36.7484
320.08	37.8841
323.87	40.2466
323.87	40.2466
328.76	37.0498
333.37	47.3414
334.37	41.7409
334.37	41.7409
338.28	32.8244
338.28	32.8244
338.32	37.3533
338.32	37.3533
338.32	37.3533
340.48	43.0917
340.55	43.0940
344.28	23.8895
351.06	40.0394
351.93	43.5022
356.01	28.7155
364.49	28.9118
366.42	33.5891
383.85	33.4611
388.16	22.0860
388.63	22.9777
391.69	38.9753
400.66	25.8604
401.81	30.3451
402.40	28.5723
404.85	26.8346
410.95	25.1571
414.70	28.8291
423.72	25.3878
427.09	22.7219
427.87	22.7341
433.94	25.5703
453.88	25.9197
463.37	22.3572
468.07	28.9669
473.00	26.2474
476.78	25.3718
477.60	24.4448
487.02	30.2671
492.35	37.9608
497.08	21.8920
511.00	33.6000
514.00	121.1810
527.90	24.2447
529.87	0.0000
531.02	17.4880
537.26	25.3533
546.56	0.0000
563.25	26.7231
569.33	23.8345
569.50	31.7822
569.70	31.7861
583.19	20.0140
600.60	37.3760
602.73	33.3726
604.72	36.4449
609.32	30.4449
609.32	30.4449
610.33	25.3838
614.28	19.3317
618.01	24.4666
621.93	29.6239
621.93	29.6239
633.25	23.6324
635.95	20.5780
636.99	22.6479
645.85	24.8174
657.76	11.4421
661.66	23.9707
661.66	23.9707
664.57	15.6555
666.33	25.0701
666.50	25.0723
677.62	18.9058

685.70	15.8162
695.00	15.8862
696.49	22.2561
696.51	22.2567
697.00	22.2619
702.65	21.2579
706.68	19.1684
711.68	17.0781
720.70	17.1489
721.93	18.2311
722.78	24.6754
722.91	24.6768
723.31	24.6811
724.19	18.2498
727.33	18.2762
733.00	16.1673
735.93	18.3473
739.50	14.0529
747.24	15.1865
752.31	17.3950
753.82	18.4941
756.73	17.4287
763.94	15.2984
765.81	12.0299
766.42	10.9393
777.92	9.8946
778.90	13.1982
783.70	15.4296
785.37	9.9261
795.86	12.1860
801.95	11.1066
810.29	13.3744
810.76	12.2622
815.77	14.5219
818.51	15.6564
832.01	16.8677
834.85	16.2119
836.80	0.0000
846.77	16.2896
856.80	18.1724
860.56	16.3793
871.09	21.9299
873.19	15.5465
875.33	0.0000
879.36	22.0008
880.51	16.5078
883.24	11.9349
884.68	19.2902
889.28	17.4841
898.04	15.6959
911.20	12.3722
911.20	12.3722
911.20	12.3722
926.50	10.2658
937.49	10.3074
944.13	14.0900
946.00	7.5197
949.00	10.3509
962.29	13.2375
964.08	10.4076
966.15	13.2556
968.97	17.0604
968.97	17.0604
968.97	17.0604
983.53	11.4325
996.26	11.4838
1001.03	11.5028
1004.73	15.3566
1037.84	10.6783
1038.76	0.0000
1048.07	16.5592
1050.41	15.5977
1050.41	15.5977
1063.66	13.7081
1085.87	8.8765
1099.45	9.9063
1112.07	8.9517
1115.54	11.9484

1120.29	8.9750
1120.29	8.9750
1120.55	8.9754
1121.30	8.9776
1131.51	0.0000
1173.23	11.1509
1177.93	9.1362
1189.05	11.2041
1204.77	13.3034
1221.41	10.2837
1231.02	8.2504
1235.36	8.2605
1238.28	5.1672
1260.41	0.0000
1271.85	13.5649
1274.44	6.2654
1274.54	6.2654
1291.59	9.4434
1298.22	0.0000
1312.11	10.5527
1332.49	10.6118
1365.19	8.5645
1368.63	0.0000
1384.29	10.7603
1408.01	8.6617
1457.56	0.0000
1460.82	6.5845
1489.16	3.6839
1505.03	5.5476
1596.21	7.5596
1620.50	6.6519
1678.03	0.0000
1690.97	4.8275
1764.49	3.9242
1764.49	3.9242
1770.23	10.8049
1771.35	6.8772
1791.20	0.0000
1836.06	3.9836

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202050251

Total Uranium Activity	-3.9379E-01	ug/g
Total Uranium Counting Unc.	1.3758E+00	ug/g
Total Uranium Tpu	7.0195E-07	ug/g
Total Uranium Mda	1.2688E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 956157          SAMPLE ID   : G1202050251
*  ANALYST       : MXR1            DETECTOR    : GAM11
*  SAMPLE DATE   : 23-FEB-2010 00:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 3-MAR-2010 20:49:25.04  SAMPLE ALQT: 136.270 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.409E-02
GROSS GAMMA ERROR   (pCi/GRAM ) : 9.165E-03
GROSS GAMMA MDA      (pCi/GRAM ) : 4.655E-02
GROSS GAMMA DLC      (pCi/GRAM ) : 2.125E-02

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VAX/VMS Nuclide Identification Report Generated 3-MAR-2010 22:50:39.50

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                          *
*                               Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050252.CNF;1
Sample date       : 18-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 20:50:13.
Sample ID        : G1202050252 Sample quantity   : 1.34370E+02 GRAM
Detector name    : GAM19 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.72 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity        : 5.00000
Batch ID        : 956157 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	63.59*	106	634	2.01	127.05	122	10	1.47E-02	46.4	
2	1	74.71*	552	690	1.47	149.27	142	18	7.67E-02	10.0	5.54E+00
3	1	77.10*	803	548	1.21	154.04	142	18	1.12E-01	6.3	
4	2	84.23	103	581	1.36	168.28	163	29	1.43E-02	39.6	1.70E+00
5	2	87.25	261	463	1.09	174.31	163	29	3.62E-02	15.0	
6	2	90.03	232	482	1.41	179.88	163	29	3.22E-02	18.1	
7	2	92.85*	285	438	1.36	185.51	163	29	3.96E-02	15.5	
8	0	129.33	96	357	1.11	258.42	254	8	1.33E-02	35.8	
9	0	186.02*	189	384	1.71	371.71	367	10	2.62E-02	21.6	
10	0	208.99	130	226	1.17	417.63	414	8	1.81E-02	21.9	
11	2	238.53*	1476	249	1.32	476.66	469	18	2.05E-01	3.2	1.45E+00
12	2	241.53	400	227	1.78	482.66	469	18	5.55E-02	9.9	
13	0	270.29	87	312	1.61	540.13	534	11	1.21E-02	40.8	
14	0	277.36	69	247	1.18	554.27	549	11	9.62E-03	45.8	
15	1	295.15	478	184	1.67	589.84	584	23	6.64E-02	6.9	2.44E+00
16	1	299.75	121	171	1.68	599.02	584	23	1.69E-02	22.6	
17	0	327.86	120	291	1.55	655.21	649	16	1.67E-02	32.8	
18	0	338.01	299	196	0.99	675.49	670	11	4.16E-02	10.7	
19	0	351.76*	747	175	1.25	702.98	698	11	1.04E-01	5.1	
20	0	463.59	127	117	2.74	926.52	920	14	1.76E-02	20.5	
21	0	510.90*	133	164	2.10	1021.10	1013	16	1.85E-02	25.9	
22	0	568.36*	167	171	2.91	1135.99	1126	17	2.32E-02	20.1	
23	0	583.11*	459	103	1.54	1165.46	1159	15	6.38E-02	6.8	
24	0	609.25*	551	185	1.38	1217.73	1211	15	7.65E-02	7.0	
25	0	727.11	108	75	1.34	1453.38	1447	13	1.50E-02	19.1	
26	0	769.93	90	140	4.40	1539.02	1531	22	1.25E-02	36.1	
27	0	860.94	68	68	1.42	1721.02	1713	13	9.43E-03	27.9	
28	0	911.55	285	112	1.66	1822.22	1813	15	3.95E-02	9.7	
29	0	968.39	202	85	2.08	1935.90	1926	19	2.80E-02	13.1	
30	0	1120.40	131	87	1.82	2239.94	2233	17	1.82E-02	18.4	
31	0	1237.91	59	53	3.28	2475.02	2470	10	8.18E-03	26.5	
32	0	1460.98*	1532	32	2.16	2921.31	2914	18	2.13E-01	2.7	
33	0	1729.74	40	0	2.36	3459.15	3453	12	5.56E-03	15.8	
34	0	1764.45*	121	4	1.53	3528.63	3520	16	1.69E-02	10.1	

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

## VMS Nuclide Identification Report V3.1 Generated 3-MAR-2010 22:50:41

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050252.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 18-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 20:50:13
Sample ID        : G1202050252 Sample quantity : 134.37 GRAM
Sample type       : SOLID Sample geometry :
Detector name    : GAMMA19 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.72 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	*	3.437E+01	3.165E+00	4.398E-01	3.275E-02	78.151
CD-109	+	88.03	*	3.298E+00	1.031E+00	1.329E+00	1.190E-01	2.482
SN-126	+	64.28		8.376E-01	7.868E-01	8.636E-01	1.261E-01	0.970
	+	86.94		1.344E+00	6.869E-01	5.470E-01	2.265E-01	2.456
	+	87.57	*	3.232E-01	1.010E-01	1.308E-01	1.167E-02	2.471
TL-208	+	277.37		6.495E-01	5.987E-01	6.280E-01	6.768E-02	1.034
	+	583.19	*	5.910E-01	9.000E-02	5.870E-02	3.982E-03	10.069
	+	860.56		8.268E-01	4.666E-01	4.957E-01	4.438E-02	1.668
BI-211		72.87		1.281E+01	3.891E+00	6.462E+00	5.063E-01	1.982
	+	351.06	*	4.263E+00	5.112E-01	3.574E-01	2.283E-02	11.930
PB-212	+	74.82		2.968E+00	7.013E-01	6.140E-01	7.710E-02	4.834
	+	77.11		2.476E+00	3.717E-01	3.535E-01	2.855E-02	7.006
	+	238.63	*	1.885E+00	1.839E-01	9.845E-02	7.169E-03	19.151
	+	300.09		2.410E+00	1.110E+00	1.211E+00	1.017E-01	1.990
BI-214	+	609.32	*	1.372E+00	2.201E-01	1.176E-01	9.318E-03	11.669
	+	1120.29		1.682E+00	6.383E-01	4.703E-01	4.330E-02	3.577
	+	1764.49		2.152E+00	4.547E-01	2.898E-01	1.756E-02	7.424
PB-214	+	74.82		5.261E+00	1.207E+00	1.088E+00	1.221E-01	4.834
	+	77.11		4.366E+00	7.477E-01	6.231E-01	7.194E-02	7.006
	+	242.00		3.097E+00	6.615E-01	5.636E-01	4.569E-02	5.495
	+	295.22		1.682E+00	2.735E-01	2.142E-01	1.870E-02	7.852
	+	351.93	*	1.547E+00	2.042E-01	1.238E-01	1.045E-02	12.496
RA-224	+	240.99	*	5.476E+00	1.126E+00	1.055E+00	5.976E-02	5.193
RA-226	+	609.32	*	1.372E+00	2.201E-01	1.176E-01	9.318E-03	11.669
	+	1120.29		1.682E+00	6.383E-01	4.703E-01	4.330E-02	3.577
	+	1764.49		2.152E+00	4.547E-01	2.898E-01	1.756E-02	7.424
AC-228	+	338.32		1.902E+00	8.839E-01	3.976E-01	1.639E-01	4.783
	+	911.20	*	1.766E+00	3.997E-01	2.544E-01	2.966E-02	6.940
	+	968.97		2.154E+00	7.672E-01	4.318E-01	1.045E-01	4.988
RA-228	+	338.32		1.902E+00	8.839E-01	3.976E-01	1.639E-01	4.783
	+	911.20	*	1.766E+00	3.997E-01	2.544E-01	2.966E-02	6.940
	+	968.97		2.154E+00	7.672E-01	4.318E-01	1.045E-01	4.988
TH-228	+	74.82		2.968E+00	6.400E-01	6.140E-01	4.928E-02	4.834
	+	77.11		2.476E+00	3.717E-01	3.535E-01	2.855E-02	7.006

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-229	+	238.63	*	1.885E+00	1.839E-01	9.845E-02	7.169E-03	19.151
	+	300.09		2.410E+00	1.829E+00	1.211E+00	7.374E-01	1.990
	+	85.43		3.315E-01	2.642E-01	3.364E-01	2.934E-02	0.985
	+	88.47		4.983E-01	1.557E-01	2.000E-01	1.778E-02	2.492
TH-232		193.51	*	1.809E-01	5.707E-01	9.305E-01	5.020E-02	0.194
		210.85		6.288E-01	1.111E+00	1.606E+00	8.842E-02	0.392
	+	338.32		1.902E+00	4.227E-01	3.976E-01	2.299E-02	4.783
	+	911.20	*	1.766E+00	3.997E-01	2.544E-01	2.966E-02	6.940
TH-234	+	968.97		2.154E+00	7.672E-01	4.318E-01	1.045E-01	4.988
	+	63.29	*	2.173E+00	2.054E+00	2.259E+00	4.039E-01	0.962
U-235	+	92.59		2.947E+00	1.119E+00	1.099E+00	2.414E-01	2.682
	+	89.96		2.982E+00	1.304E+00	1.366E+00	3.364E-01	2.184
	+	93.35		2.226E+00	8.583E-01	8.258E-01	1.896E-01	2.695
		143.76	*	1.363E-01	2.229E-01	3.665E-01	5.724E-02	0.372
		163.33		2.891E-01	4.750E-01	7.764E-01	1.289E-01	0.372
	+	185.72		1.569E-01	6.837E-02	7.169E-02	3.831E-03	2.188
NP-237		205.31		-2.060E-01	6.125E-01	8.405E-01	1.419E-01	-0.245
	+	86.48	*	9.644E-01	3.630E-01	3.944E-01	8.972E-02	2.445
U-238		95.86		2.456E-02	1.144E+00	1.641E+00	3.898E-01	0.015
	+	63.29	*	2.173E+00	2.054E+00	2.259E+00	4.039E-01	0.962
ANH-511	+	92.59		2.947E+00	9.447E-01	1.099E+00	9.147E-02	2.682
	+	511.00	*	1.312E-01	6.834E-02	4.688E-02	2.766E-03	2.799

---- 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	*	4.568E-02	3.336E-01	5.569E-01	3.779E-02	0.082
NA-22		1274.54	*	6.586E-03	4.513E-02	7.593E-02	5.065E-03	0.087
NA-24		1368.63	*	-1.145E-02	4.513E-02	Half-Life too short		
SC-46		889.28	*	-3.914E-02	3.965E-02	5.740E-02	4.988E-03	-0.682
V-48	+	1120.55		2.805E-01	1.048E-01	1.363E-01	8.599E-03	2.057
		944.13		7.823E-03	8.325E-01	1.341E+00	1.129E-01	0.006
		983.53	*	4.347E-02	7.155E-02	1.211E-01	9.739E-03	0.359
		1312.11		-2.821E-02	7.345E-02	1.167E-01	8.306E-03	-0.242
CR-51		320.08	*	3.128E-02	3.906E-01	6.410E-01	4.142E-02	0.049
MN-54		834.85	*	-2.672E-02	3.953E-02	6.020E-02	4.789E-03	-0.444
CO-56		846.77	*	-4.096E-03	3.989E-02	6.389E-02	5.184E-03	-0.064
		1037.84		7.247E-02	3.159E-01	5.397E-01	4.287E-02	0.134
	+	1238.28		2.076E-01	1.108E-01	1.843E-01	1.211E-02	1.126
		1771.35		-8.582E-01	3.397E-01	3.370E-01	2.031E-02	-2.547
CO-57		122.06	*	3.656E-02	2.770E-02	4.711E-02	2.811E-03	0.776
		136.47		1.190E-01	2.263E-01	3.743E-01	2.466E-02	0.318
CO-58		810.76	*	-6.234E-02	4.053E-02	5.571E-02	4.269E-03	-1.119
FE-59		1099.45	*	-6.759E-02	9.588E-02	1.508E-01	1.131E-02	-0.448
CO-60		1291.59		-3.631E-02	1.217E-01	1.952E-01	1.617E-02	-0.186
		1173.23		1.124E-03	4.879E-02	8.094E-02	4.435E-03	0.014
		1332.49	*	-3.073E-02	4.451E-02	6.850E-02	5.048E-03	-0.449
ZN-65		1115.54	*	-1.647E-02	1.052E-01	1.487E-01	9.510E-03	-0.111

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SE-75	121.12			1.407E-01	1.442E-01	2.421E-01	2.229E-02	0.581
	136.00			3.081E-02	4.354E-02	7.247E-02	4.176E-03	0.425
	264.66	*		1.047E-02	5.223E-02	7.775E-02	4.523E-03	0.135
	279.54			3.224E-02	1.215E-01	1.814E-01	1.137E-02	0.178
	400.66			3.997E-02	2.604E-01	4.373E-01	3.911E-02	0.091
SR-85	514.00	*		8.978E-02	4.268E-02	7.145E-02	4.219E-03	1.257
Y-88	898.04			2.186E-02	4.796E-02	7.888E-02	6.982E-03	0.277
	1836.06	*		1.265E-02	3.544E-02	6.127E-02	3.498E-03	0.206
Y-91	1204.77	*		1.361E+01	2.367E+01	4.103E+01	2.395E+00	0.332
NB-94	702.65	*		2.975E-02	3.545E-02	6.123E-02	3.856E-03	0.486
	871.09			7.846E-03	3.653E-02	6.011E-02	5.074E-03	0.131
NB-95	765.81	*		7.960E-02	5.083E-02	8.225E-02	5.812E-03	0.968
NB-95M	235.69	*		6.453E-01	1.667E-01	2.694E-01	2.003E-02	2.395
ZR-95	724.19			1.042E-01	1.060E-01	1.643E-01	1.230E-02	0.634
	756.73	*		3.059E-02	7.567E-02	1.252E-01	1.007E-02	0.244
MO-99	140.51			-1.716E+01	1.614E+01	2.437E+01	5.561E+00	-0.704
	181.07			3.265E+00	1.400E+01	1.995E+01	3.494E+00	0.164
	366.42			2.845E+01	6.328E+01	1.083E+02	6.163E+00	0.263
	739.50	*		1.904E+00	8.069E+00	1.338E+01	1.981E+00	0.142
	777.92			-3.649E+00	2.717E+01	3.744E+01	2.703E+00	-0.097
TC-99M	140.51	*		-3.658E+08	2.717E+01	Half-Life too short		
RU-103	497.08	*		-3.070E-03	3.743E-02	6.151E-02	7.666E-03	-0.050
	610.33	+		1.373E+01	2.822E+00	3.017E+00	4.554E-01	4.551
RH-106	621.93	*		8.022E-02	3.338E-01	5.561E-01	6.490E-02	0.144
	1050.41			8.078E-01	2.482E+00	4.277E+00	3.109E-01	0.189
RU-106	621.93	*		8.022E-02	3.337E-01	5.561E-01	3.279E-02	0.144
	1050.41			8.078E-01	2.482E+00	4.277E+00	3.109E-01	0.189
AG-108M	433.94	*		-1.861E-02	3.045E-02	4.863E-02	2.984E-03	-0.383
	614.28			2.190E-02	3.894E-02	5.853E-02	3.695E-03	0.374
	722.91			1.924E-02	4.289E-02	6.338E-02	4.374E-03	0.304
AG-110M	657.76	*		-4.918E-02	3.779E-02	5.549E-02	3.443E-03	-0.886
	677.62			1.578E-01	3.245E-01	5.491E-01	3.490E-02	0.287
	706.68			-1.497E-01	2.287E-01	3.540E-01	2.365E-02	-0.423
	763.94			1.190E-01	1.871E-01	2.811E-01	2.061E-02	0.423
	884.68			1.969E-02	5.066E-02	8.466E-02	7.537E-03	0.233
	937.49			4.185E-02	1.288E-01	2.128E-01	1.873E-02	0.197
	1384.29			4.066E-02	1.664E-01	2.825E-01	2.139E-02	0.144
	1505.03			-3.542E-01	2.909E-01	3.955E-01	2.787E-02	-0.896
SN-113	391.69	*		1.826E-02	4.548E-02	7.745E-02	4.621E-03	0.236
CD-115	260.90			-4.976E+01	9.059E+01	1.405E+02	8.069E+00	-0.354
	492.35			-5.046E-01	2.215E+01	3.657E+01	2.148E+00	-0.014
	527.90	*		8.395E-01	6.565E+00	1.092E+01	6.467E-01	0.077
SN-117M	156.02			-1.688E-01	2.372E+00	3.828E+00	2.051E-01	-0.044
	158.56	*		-2.216E-02	5.709E-02	9.098E-02	4.843E-03	-0.244
TE-123M	159.00	*		-1.998E-02	3.211E-02	5.068E-02	2.737E-03	-0.394
SB-124	602.73			4.037E-04	4.728E-02	6.720E-02	3.979E-03	0.006
	645.85			8.143E-03	4.837E-01	7.925E-01	5.203E-02	0.010
	722.78			1.784E-01	4.215E-01	6.213E-01	4.223E-02	0.287
	1690.97	*		-3.030E-02	6.906E-02	1.030E-01	7.082E-03	-0.294

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-125		427.87	*	1.580E-02	9.654E-02	1.619E-01	9.628E-03	0.098
	+	463.37		1.101E+00	4.576E-01	5.759E-01	3.880E-02	1.912
		600.60		9.671E-02	1.903E-01	3.227E-01	2.199E-02	0.300
		635.95		-4.163E-02	2.885E-01	4.672E-01	3.205E-02	-0.089
TE-125M		109.28	*	-7.948E+00	1.055E+01	1.672E+01	1.507E+00	-0.475
I-126		388.63		-7.591E-02	1.607E-01	2.608E-01	1.456E-02	-0.291
		666.33	*	-6.418E-02	2.300E-01	3.686E-01	2.166E-02	-0.174
		753.82		1.615E+00	1.739E+00	3.025E+00	2.093E-01	0.534
SB-126		414.70		-6.984E-02	6.970E-02	1.088E-01	6.153E-03	-0.642
		666.50		-1.578E-02	7.901E-02	1.273E-01	7.485E-03	-0.124
		695.00		-8.264E-04	6.430E-02	1.048E-01	6.504E-03	-0.008
		697.00		5.414E-03	2.301E-01	3.761E-01	2.344E-02	0.014
		720.70	*	-2.147E-02	1.615E-01	2.239E-01	1.459E-02	-0.096
		856.80		1.078E-01	5.006E-01	7.079E-01	5.838E-02	0.152
SB-127		252.40		1.548E-01	3.367E+00	5.389E+00	2.204E+00	0.029
		473.00		4.405E-01	1.308E+00	2.208E+00	2.344E-01	0.200
		685.70	*	-7.163E-02	9.770E-01	1.585E+00	1.429E-01	-0.045
		783.70		2.452E+00	2.691E+00	4.659E+00	5.116E-01	0.526
I-131		80.19		-3.816E-01	6.849E+00	7.074E+00	5.898E-01	-0.054
		284.31		-5.083E-01	1.325E+00	2.130E+00	1.368E-01	-0.239
		364.49	*	-1.678E-02	9.917E-02	1.641E-01	1.044E-02	-0.102
		636.99		1.407E-01	1.366E+00	2.255E+00	1.479E-01	0.062
TE-132		49.72		-8.149E+00	1.252E+01	2.022E+01	1.894E+00	-0.403
		111.76		-1.428E+01	2.463E+01	3.926E+01	3.514E+00	-0.364
		116.30		1.040E+01	2.139E+01	3.544E+01	3.095E+00	0.293
		228.16	*	3.759E-01	5.569E-01	9.147E-01	1.284E-01	0.411
BA-133		81.00		-5.283E-02	1.633E-01	1.651E-01	2.538E-02	-0.320
	+	276.40		6.002E-01	5.546E-01	6.724E-01	8.459E-02	0.893
		302.85		1.335E-02	1.512E-01	2.227E-01	2.542E-02	0.060
		356.01	*	-2.744E-03	4.612E-02	6.674E-02	7.501E-03	-0.041
		383.85		3.755E-02	3.094E-01	5.194E-01	5.485E-02	0.072
I-133		529.87	*	-1.206E-04	3.094E-01	Half-Life	too short	
		875.33		1.756E-02	3.094E-01	Half-Life	too short	
		1298.22		-4.549E-03	3.094E-01	Half-Life	too short	
CS-134		563.25		-1.403E-01	4.593E-01	6.354E-01	3.848E-02	-0.221
	+	569.33		1.176E+00	4.774E-01	5.209E-01	3.181E-02	2.257
		604.72		-2.702E-02	4.380E-02	5.860E-02	3.486E-03	-0.461
		795.86	*	1.801E-02	5.005E-02	8.341E-02	6.272E-03	0.216
		801.95		2.947E-01	4.093E-01	7.024E-01	5.325E-02	0.420
		1365.19		2.498E-01	1.154E+00	1.951E+00	1.520E-01	0.128
CS-135		268.22	*	3.087E-01	2.017E-01	3.190E-01	2.434E-02	0.968
I-135		546.56		-4.719E+07	2.017E-01	Half-Life	too short	
		836.80		3.058E+08	2.017E-01	Half-Life	too short	
		1038.76		8.744E+07	2.017E-01	Half-Life	too short	
		1131.51		-1.627E+07	2.017E-01	Half-Life	too short	
		1260.41	*	1.542E+07	2.017E-01	Half-Life	too short	
		1457.56		6.697E+09	2.017E-01	Half-Life	too short	
		1678.03		-2.099E+07	2.017E-01	Half-Life	too short	
		1791.20		-8.370E+07	2.017E-01	Half-Life	too short	

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CS-136	153.25			1.257E+00	8.749E-01	1.481E+00	1.150E-01	0.849
	176.60			6.893E-02	4.974E-01	8.069E-01	5.354E-02	0.085
	273.65			-4.366E-01	8.407E-01	7.777E-01	5.302E-02	-0.561
	340.55			3.655E-01	1.756E-01	2.844E-01	1.778E-02	1.285
	818.51			-4.461E-02	7.284E-02	1.114E-01	8.632E-03	-0.400
BA-137M	1048.07	*		5.955E-02	9.591E-02	1.692E-01	1.306E-02	0.352
	1235.36			1.158E+00	5.991E-01	1.018E+00	1.030E-01	1.137
	661.66	*		9.352E-03	4.011E-02	6.659E-02	3.878E-03	0.140
	661.66	*		9.879E-03	4.237E-02	7.035E-02	4.114E-03	0.140
	165.86	*		-3.340E-02	3.230E-02	4.992E-02	2.606E-03	-0.669
BA-140	162.66			-2.912E-02	8.116E-01	1.300E+00	8.021E-02	-0.022
	304.85			1.913E-01	1.331E+00	1.965E+00	5.614E-01	0.097
	423.72			6.963E-01	1.915E+00	3.226E+00	1.040E+00	0.216
	537.26	*		6.455E-02	2.509E-01	4.192E-01	1.397E-01	0.154
	328.76			8.603E-01	5.679E-01	5.513E-01	3.589E-02	1.561
LA-140	487.02			-1.940E-02	1.243E-01	2.034E-01	1.346E-02	-0.095
	815.77			1.600E-01	3.123E-01	5.277E-01	4.655E-02	0.303
	1596.21	*		-6.915E-02	8.167E-02	1.173E-01	7.936E-03	-0.590
	145.44	*		3.647E-02	6.658E-02	1.097E-01	6.317E-03	0.333
	57.36			7.302E-05	6.658E-02	Half-Life	too short	
CE-143	293.27	*		4.138E-04	6.658E-02	Half-Life	too short	
	664.57			-2.402E-04	6.658E-02	Half-Life	too short	
	721.93			3.082E-04	6.658E-02	Half-Life	too short	
	80.12			1.069E-01	4.294E+00	4.462E+00	3.697E-01	0.024
	133.52	*		-9.114E-02	2.525E-01	3.516E-01	4.873E-02	-0.259
PM-144	476.78			4.832E-02	6.963E-02	1.199E-01	8.264E-03	0.403
	618.01			-2.009E-02	3.484E-02	5.299E-02	3.311E-03	-0.379
	696.49	*		1.597E-02	3.142E-02	5.341E-02	3.327E-03	0.299
	696.51	*		1.186E+00	2.348E+00	3.991E+00	2.485E-01	0.297
	1489.16			3.393E-01	1.158E+01	1.917E+01	1.359E+00	0.018
PM-146	453.88	*		4.988E-03	4.465E-02	7.233E-02	6.109E-03	0.069
	633.25			-2.071E-01	1.504E+00	2.435E+00	9.173E-01	-0.085
	735.93			-8.900E-02	1.467E-01	2.227E-01	6.122E-02	-0.400
	747.24			-6.906E-02	9.405E-02	1.419E-01	1.930E-02	-0.487
	91.11			8.648E-01	3.229E-01	5.246E-01	4.848E-02	1.648
ND-147	319.41			8.097E-01	3.214E+00	5.454E+00	3.170E-01	0.148
	531.02	*		-2.997E-01	4.910E-01	7.699E-01	1.045E-01	-0.389
	285.90	*		3.794E+00	5.280E+01	8.915E+01	1.263E+01	0.043
	121.78			1.168E-01	8.018E-02	1.366E-01	1.053E-02	0.855
	244.70			3.670E-01	3.797E-01	5.630E-01	3.199E-02	0.652
EU-152	344.28	*		-4.447E-02	1.195E-01	1.693E-01	1.101E-02	-0.263
	778.90			-1.110E-01	3.174E-01	4.257E-01	3.078E-02	-0.261
	964.08			3.825E-01	3.372E-01	5.267E-01	4.337E-02	0.726
	1085.87			-1.219E-01	4.446E-01	7.280E-01	4.952E-02	-0.167
	1112.07			-1.769E-02	3.419E-01	5.275E-01	3.393E-02	-0.034
GD-153	1408.01			2.110E-01	1.824E-01	3.393E-01	2.464E-02	0.622
	69.67			8.083E-01	2.256E+00	3.082E+00	2.372E-01	0.262
	97.43	*		1.264E-01	1.017E-01	1.537E-01	1.195E-02	0.822
	103.18			-1.753E-01	1.238E-01	1.912E-01	1.384E-02	-0.917

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-154		123.07		6.080E-03	5.904E-02	9.314E-02	8.823E-03	0.065
		723.31		7.900E-02	1.958E-01	2.879E-01	2.205E-02	0.274
		873.19		1.019E-01	3.063E-01	5.087E-01	5.996E-02	0.200
		996.26		1.222E-01	3.860E-01	6.367E-01	1.091E-01	0.192
		1004.73		-1.651E-01	2.212E-01	3.469E-01	3.833E-02	-0.476
EU-155		1274.44	*	-1.002E-02	1.297E-01	2.138E-01	2.132E-02	-0.047
	+	86.55		3.916E-01	1.225E-01	2.042E-01	1.820E-02	1.918
		105.31	*	1.360E-01	1.144E-01	1.939E-01	1.394E-02	0.702
TB-160	+	86.79		1.022E+00	3.196E-01	5.264E-01	4.656E-02	1.943
		197.04		-1.425E-01	6.316E-01	1.000E+00	5.419E-02	-0.142
		215.65		7.752E-02	8.171E-01	1.316E+00	7.285E-02	0.059
	+	298.57		3.338E-01	1.523E-01	2.175E-01	1.265E-02	1.534
		879.36	*	-8.147E-02	1.515E-01	2.324E-01	1.988E-02	-0.351
		962.29		6.930E-01	6.106E-01	9.630E-01	7.948E-02	0.720
		966.15		6.302E-01	2.494E-01	4.584E-01	3.766E-02	1.375
		1177.93		1.326E-01	3.783E-01	6.477E-01	3.584E-02	0.205
		1271.85		-6.467E-01	7.409E-01	1.127E+00	7.468E-02	-0.574
		80.57		-1.175E-01	4.670E-01	4.754E-01	3.955E-02	-0.247
HO-166M		184.41		1.107E-01	4.571E-02	7.191E-02	3.836E-03	1.539
		280.46		2.520E-02	9.228E-02	1.379E-01	7.990E-03	0.183
		410.95		1.535E-01	2.644E-01	4.532E-01	2.557E-02	0.339
		711.68	*	2.020E-02	6.465E-02	1.078E-01	6.906E-03	0.187
		752.31		-7.947E-02	2.866E-01	4.551E-01	3.140E-02	-0.175
		810.29		-9.909E-02	6.137E-02	8.332E-02	6.360E-03	-1.189
	TA-182	67.75		3.310E-02	1.594E-01	1.965E-01	1.499E-02	0.168
		100.11		7.370E-02	1.950E-01	3.194E-01	2.400E-02	0.231
		152.43		3.797E-01	3.852E-01	6.452E-01	3.492E-02	0.589
IR-192		222.11		-8.731E-02	3.918E-01	6.220E-01	3.465E-02	-0.140
	+	1121.30		7.801E-01	2.913E-01	3.742E-01	2.356E-02	2.085
		1189.05		1.429E-01	3.179E-01	5.483E-01	3.102E-02	0.261
		1221.41	*	1.229E-02	2.099E-01	3.507E-01	2.115E-02	0.035
		1231.02		-3.087E-01	5.288E-01	7.371E-01	4.527E-02	-0.419
	+	295.96		1.223E+00	1.827E-01	2.952E-01	1.743E-02	4.144
		308.46		6.860E-03	9.553E-02	1.610E-01	9.469E-03	0.043
		316.51	*	3.401E-05	3.720E-02	6.242E-02	3.647E-03	0.001
		468.07		-6.181E-02	7.677E-02	1.017E-01	6.828E-03	-0.608
	HG-203	70.83		3.783E-01	1.598E+00	2.326E+00	3.630E-01	0.163
		72.87		3.106E+00	1.026E+00	1.567E+00	2.369E-01	1.982
BI-207		279.20	*	2.910E-02	4.283E-02	6.554E-02	4.007E-03	0.444
		72.81		6.654E-01	2.391E-01	3.673E-01	2.877E-02	1.812
	+	74.97		8.555E-01	1.842E-01	2.720E-01	2.162E-02	3.145
	+	569.70		1.827E-01	7.415E-02	7.809E-02	4.635E-03	2.340
PB-210		1063.66	*	2.778E-03	5.123E-02	8.620E-02	6.121E-03	0.032
		1770.23		-2.586E-01	4.846E-01	5.633E-01	3.398E-02	-0.459
		46.54	*	2.317E+00	3.298E+00	5.479E+00	4.130E-01	0.423
PB-211		404.85	*	-9.262E-01	9.220E-01	1.264E+00	6.060E-01	-0.733
		427.09		2.179E-02	1.613E+00	2.683E+00	1.229E+00	0.008
		832.01		-6.761E-01	1.095E+00	1.583E+00	8.191E-01	-0.427
BI-212	+	727.33	*	2.125E+00	8.474E-01	1.175E+00	1.310E-01	1.809

---- 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		2.905E+00	3.356E+00	5.801E+00	4.242E-01	0.501
		1620.50		-3.194E-02	2.112E+00	3.455E+00	2.307E-01	-0.009
		271.23		4.895E-01	4.017E-01	4.816E-01	3.858E-02	1.016
		401.81	*	-3.445E-02	4.220E-01	6.994E-01	9.341E-02	-0.049
RA-223	+	81.07		-1.280E-01	3.696E-01	3.733E-01	3.120E-02	-0.343
		83.79		1.973E-01	1.572E-01	2.299E-01	1.972E-02	0.858
		94.87		1.240E+00	5.776E-01	8.894E-01	7.163E-02	1.394
		144.24		4.756E-01	7.420E-01	1.226E+00	8.578E-02	0.388
AC-227	+	154.21		3.255E-01	4.432E-01	7.355E-01	4.873E-02	0.443
		269.46		3.803E-01	3.114E-01	3.802E-01	2.289E-02	1.000
		323.87	*	2.469E-02	7.597E-01	1.111E+00	1.791E-01	0.022
		338.28		7.547E+00	1.794E+00	2.521E+00	2.582E-01	2.993
	+	79.69		1.957E+00	2.214E+00	2.408E+00	4.108E-01	0.813
		235.96		1.526E+00	2.503E-01	3.993E-01	3.206E-02	3.822
		256.23	*	1.726E-01	2.841E-01	4.660E-01	4.745E-02	0.370
		299.98		2.651E+00	1.235E+00	1.696E+00	1.865E-01	1.563
TH-227	+	304.50		3.863E-01	1.745E+00	2.594E+00	3.956E-01	0.149
		334.37		1.893E+00	2.619E+00	2.840E+00	4.038E-01	0.667
		79.80		1.440E+00	2.881E+00	3.074E+00	6.653E-01	0.468
		235.96		1.526E+00	2.448E-01	3.993E-01	2.900E-02	3.822
	+	256.23	*	1.726E-01	2.843E-01	4.660E-01	5.584E-02	0.370
		299.98		2.651E+00	1.235E+00	1.696E+00	1.865E-01	1.563
		304.50		3.863E-01	1.745E+00	2.594E+00	3.956E-01	0.149
		334.37		1.893E+00	2.619E+00	2.840E+00	4.038E-01	0.667
PA-231	+	283.69	*	-6.444E-01	1.589E+00	2.374E+00	3.113E-01	-0.271
		301.36		1.292E+00	6.554E-01	1.058E+00	1.095E-01	1.222
TH-231	+	81.07		-1.280E-01	3.696E-01	3.733E-01	3.120E-02	-0.343
		83.79		1.973E-01	1.572E-01	2.299E-01	1.972E-02	0.858
		94.87		1.240E+00	5.776E-01	8.894E-01	7.163E-02	1.394
		144.24		4.756E-01	7.420E-01	1.226E+00	8.578E-02	0.388
PA-233	+	154.21		3.255E-01	4.432E-01	7.355E-01	4.873E-02	0.443
		269.46		3.803E-01	3.114E-01	3.802E-01	2.289E-02	1.000
		323.87	*	2.469E-02	7.597E-01	1.111E+00	1.791E-01	0.022
		338.28		7.547E+00	1.794E+00	2.521E+00	2.582E-01	2.993
	+	300.13		1.200E+00	5.663E-01	7.681E-01	1.029E-01	1.562
		311.90	*	4.367E-02	6.731E-02	1.164E-01	7.186E-03	0.375
		340.48		1.974E+00	9.437E-01	1.365E+00	3.168E-01	1.446
		94.67		6.027E-01	2.208E-01	3.341E-01	4.020E-02	1.804
PA-234	+	98.44		2.033E-01	1.591E-01	1.727E-01	9.611E-02	1.177
		111.00		-9.149E-02	1.988E-01	3.184E-01	3.429E-02	-0.287
		131.20		2.287E-02	1.337E-01	1.916E-01	1.103E-02	0.119
		569.50		1.623E+00	6.585E-01	7.084E-01	4.205E-02	2.291
	+	733.00		3.254E-01	3.915E-01	6.004E-01	1.292E-01	0.542
		880.51		-1.141E-01	3.078E-01	4.799E-01	4.113E-02	-0.238
		883.24		2.101E-01	3.255E-01	5.045E-01	3.391E-01	0.416
		926.50		1.559E-01	1.952E-01	3.300E-01	8.337E-02	0.472
	+	946.00	*	2.395E-01	3.105E-01	5.306E-01	9.904E-02	0.451
		949.00		-1.011E-01	4.783E-01	7.540E-01	6.318E-02	-0.134
		766.42		1.585E+01	1.682E+01	2.290E+01	1.156E+01	0.692

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	1001.03	*		-2.194E+00	5.036E+00	8.047E+00	7.491E-01	-0.273
	99.53			1.449E-01	1.887E-01	3.031E-01	2.294E-02	0.478
	103.37			-8.977E-02	1.121E-01	1.777E-01	1.284E-02	-0.505
	106.12			8.991E-02	9.343E-02	1.572E-01	1.100E-02	0.572
	117.23	*		-3.617E-01	4.419E-01	6.973E-01	4.350E-02	-0.519
AM-241	228.18			1.630E-01	2.401E-01	3.958E-01	2.218E-02	0.412
	277.60	+		2.969E-01	2.723E-01	3.294E-01	1.906E-02	0.901
CM-247	59.54	*		1.404E-01	1.770E-01	2.647E-01	2.180E-02	0.530
CF-249	278.00	+		1.261E+00	1.157E+00	1.400E+00	8.105E-02	0.900
	287.50			1.945E+00	1.277E+00	2.240E+00	1.300E-01	0.868
	402.40	*		7.397E-03	3.873E-02	6.517E-02	3.655E-03	0.114
CF-251	252.80			-1.607E-01	1.040E+00	1.649E+00	9.422E-02	-0.097
	333.37			1.937E-01	2.741E-01	2.979E-01	1.725E-02	0.650
	388.16	*		-1.725E-02	4.209E-02	6.857E-02	3.829E-03	-0.252
	177.52	*		3.041E-02	1.412E-01	2.297E-01	1.215E-02	0.132
	227.38			9.961E-02	3.950E-01	6.397E-01	3.582E-02	0.156
	285.41			-1.378E+00	2.171E+00	3.540E+00	2.054E-01	-0.389

# 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]G1202050252      *
* Acquisition date   : 3-MAR-2010 20:50:13 Detector SN#      :              *
* Detector ID        : GAM19                      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 02:00:01.72              Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 18-FEB-2010 12:00:00 Nuclide Library : SOLID            *
* Sample ID          : G1202050252              Analyst initials: MXR1         *
* Batch Number       : 956157                    Sample Quantity : 1.3437E+02 GRAM *
* Recovery           : 1.00000                   Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                               *
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 12-MAR-2009 10:24:54 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	3.437E+01	3.101E+00	4.407E-01	0.000E+00
CD-109	3.298E+00	1.010E+00	1.400E+00	0.000E+00
SN-126	3.232E-01	9.900E-02	1.378E-01	0.000E+00
TL-208	5.910E-01	8.820E-02	5.982E-02	0.000E+00
BI-211	4.263E+00	5.010E-01	3.675E-01	0.000E+00
PB-212	1.885E+00	1.803E-01	1.019E-01	0.000E+00
BI-214	1.372E+00	2.157E-01	1.197E-01	0.000E+00
PB-214	1.547E+00	2.001E-01	1.273E-01	0.000E+00
RA-224	5.476E+00	1.103E+00	1.092E+00	0.000E+00
RA-226	1.372E+00	2.157E-01	1.197E-01	0.000E+00
AC-228	1.766E+00	3.917E-01	2.572E-01	0.000E+00
RA-228	1.766E+00	3.917E-01	2.572E-01	0.000E+00
TH-228	1.885E+00	1.803E-01	1.019E-01	0.000E+00
TH-229	1.809E-01	5.593E-01	9.671E-01	0.000E+00
TH-232	1.766E+00	3.917E-01	2.572E-01	0.000E+00
TH-234	2.173E+00	2.013E+00	2.393E+00	0.000E+00
U-235	1.363E-01	2.184E-01	3.829E-01	0.000E+00
NP-237	9.644E-01	3.557E-01	4.156E-01	0.000E+00
U-238	2.173E+00	2.013E+00	2.393E+00	0.000E+00
ANH-511	1.312E-01	6.698E-02	4.789E-02	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	4.568E-02	3.270E-01	5.696E-01	0.000E+00 NOT IDENT.
NA-22	6.586E-03	4.423E-02	7.628E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	9.747E+04	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-3.914E-02	3.886E-02	5.805E-02	0.000E+00 FAIL ABUN
V-48	4.347E-02	7.012E-02	1.223E-01	0.000E+00 NOT IDENT.
CR-51	3.128E-02	3.828E-01	6.603E-01	0.000E+00 NOT IDENT.
MN-54	-2.672E-02	3.873E-02	6.095E-02	0.000E+00 NOT IDENT.

CO-56	-4.096E-03	3.909E-02	6.467E-02	0.000E+00	FAIL ABUN
CO-57	3.656E-02	2.715E-02	4.935E-02	0.000E+00	NOT IDENT.
CO-58	-6.234E-02	3.972E-02	5.644E-02	0.000E+00	NOT IDENT.
FE-59	-6.759E-02	9.396E-02	1.519E-01	0.000E+00	NOT IDENT.
CO-60	-3.073E-02	4.362E-02	6.875E-02	0.000E+00	NOT IDENT.
ZN-65	-1.647E-02	1.031E-01	1.498E-01	0.000E+00	NOT IDENT.
SE-75	1.047E-02	5.118E-02	8.036E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	4.182E-02	7.298E-02	0.000E+00	NOT IDENT.
Y-88	1.265E-02	3.473E-02	6.113E-02	0.000E+00	NOT IDENT.
Y-91	1.361E+01	2.320E+01	4.127E+01	0.000E+00	NOT IDENT.
NB-94	2.975E-02	3.474E-02	6.219E-02	0.000E+00	NOT IDENT.
NB-95	7.960E-02	4.982E-02	8.341E-02	0.000E+00	NOT IDENT.
NB-95M	0.000E+00	1.634E-01	2.791E-01	0.000E+00	NOT IDENT.
ZR-95	3.059E-02	7.415E-02	1.270E-01	0.000E+00	NOT IDENT.
MO-99	1.904E+00	7.907E+00	1.357E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	3.395E+14	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-3.070E-03	3.668E-02	6.287E-02	0.000E+00	FAIL ABUN
RH-106	8.022E-02	3.271E-01	5.661E-01	0.000E+00	NOT IDENT.
RU-106	8.022E-02	3.270E-01	5.661E-01	0.000E+00	NOT IDENT.
AG-108M	-1.861E-02	2.984E-02	4.983E-02	0.000E+00	NOT IDENT.
AG-110M	-4.918E-02	3.704E-02	5.642E-02	0.000E+00	NOT IDENT.
SN-113	1.826E-02	4.457E-02	7.950E-02	0.000E+00	NOT IDENT.
CD-115	8.395E-01	6.433E+00	1.115E+01	0.000E+00	NOT IDENT.
SN-117M	-2.216E-02	5.595E-02	9.488E-02	0.000E+00	NOT IDENT.
TE-123M	-1.998E-02	3.146E-02	5.285E-02	0.000E+00	NOT IDENT.
SB-124	-3.030E-02	6.768E-02	1.029E-01	0.000E+00	NOT IDENT.
SB-125	1.580E-02	9.461E-02	1.659E-01	0.000E+00	FAIL ABUN
TE-125M	-7.948E+00	1.034E+01	1.755E+01	0.000E+00	NOT IDENT.
I-126	-6.418E-02	2.254E-01	3.748E-01	0.000E+00	NOT IDENT.
SB-126	-2.147E-02	1.583E-01	2.273E-01	0.000E+00	NOT IDENT.
SB-127	-7.163E-02	9.575E-01	1.611E+00	0.000E+00	NOT IDENT.
I-131	-1.678E-02	9.719E-02	1.686E-01	0.000E+00	NOT IDENT.
TE-132	3.759E-01	5.458E-01	9.479E-01	0.000E+00	NOT IDENT.
BA-133	-2.744E-03	4.520E-02	6.862E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	1.415E+03	0.000E+00	0.000E+00	SHORT HLIF
CS-134	1.801E-02	4.905E-02	8.453E-02	0.000E+00	FAIL ABUN
CS-135	3.087E-01	1.976E-01	3.297E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	8.344E+13	0.000E+00	0.000E+00	SHORT HLIF
CS-136	5.955E-02	9.399E-02	1.705E-01	0.000E+00	NOT IDENT.
BA-137M	9.352E-03	3.930E-02	6.771E-02	0.000E+00	NOT IDENT.
CS-137	9.879E-03	4.152E-02	7.153E-02	0.000E+00	NOT IDENT.
CE-139	-3.340E-02	3.165E-02	5.202E-02	0.000E+00	NOT IDENT.
BA-140	6.455E-02	2.459E-01	4.279E-01	0.000E+00	NOT IDENT.
LA-140	-6.915E-02	8.004E-02	1.173E-01	0.000E+00	FAIL ABUN
CE-141	3.647E-02	6.524E-02	1.146E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	1.124E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-9.114E-02	2.475E-01	3.678E-01	0.000E+00	NOT IDENT.
PM-144	1.597E-02	3.079E-02	5.425E-02	0.000E+00	NOT IDENT.
PR-144	1.186E+00	2.301E+00	4.055E+00	0.000E+00	NOT IDENT.
PM-146	4.988E-03	4.376E-02	7.404E-02	0.000E+00	NOT IDENT.
ND-147	-2.997E-01	4.812E-01	7.860E-01	0.000E+00	FAIL ABUN
PM-149	3.794E+00	5.175E+01	9.203E+01	0.000E+00	NOT IDENT.
EU-152	-4.447E-02	1.171E-01	1.742E-01	0.000E+00	NOT IDENT.
GD-153	1.264E-01	9.968E-02	1.616E-01	0.000E+00	NOT IDENT.
EU-154	-1.002E-02	1.271E-01	2.147E-01	0.000E+00	NOT IDENT.
EU-155	1.360E-01	1.121E-01	2.036E-01	0.000E+00	FAIL ABUN
TB-160	-8.147E-02	1.484E-01	2.351E-01	0.000E+00	FAIL ABUN
HO-166M	2.020E-02	6.336E-02	1.095E-01	0.000E+00	NOT IDENT.
TA-182	1.229E-02	2.057E-01	3.526E-01	0.000E+00	FAIL ABUN
IR-192	3.401E-05	3.646E-02	6.431E-02	0.000E+00	FAIL ABUN
HG-203	2.910E-02	4.197E-02	6.768E-02	0.000E+00	NOT IDENT.
BI-207	2.778E-03	5.020E-02	8.689E-02	0.000E+00	FAIL ABUN
PB-210	2.317E+00	3.232E+00	5.834E+00	0.000E+00	NOT IDENT.
PB-211	-9.262E-01	9.035E-01	1.297E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	8.304E-01	1.192E+00	0.000E+00	FAIL ABUN
RN-219	-3.445E-02	4.135E-01	7.176E-01	0.000E+00	FAIL ABUN
RA-223	2.469E-02	7.445E-01	1.145E+00	0.000E+00	FAIL ABUN
AC-227	1.726E-01	2.785E-01	4.819E-01	0.000E+00	FAIL ABUN
TH-227	1.726E-01	2.787E-01	4.819E-01	0.000E+00	FAIL ABUN
PA-231	-6.444E-01	1.557E+00	2.450E+00	0.000E+00	NOT IDENT.
TH-231	2.469E-02	7.445E-01	1.145E+00	0.000E+00	FAIL ABUN
PA-233	4.367E-02	6.597E-02	1.199E-01	0.000E+00	FAIL ABUN
PA-234	2.395E-01	3.043E-01	5.359E-01	0.000E+00	FAIL ABUN
PA-234M	-2.194E+00	4.935E+00	8.120E+00	0.000E+00	NOT IDENT.
NP-239	-3.617E-01	4.331E-01	7.310E-01	0.000E+00	FAIL ABUN
AM-241	1.404E-01	1.734E-01	2.807E-01	0.000E+00	NOT IDENT.
CM-247	7.397E-03	3.796E-02	6.686E-02	0.000E+00	FAIL ABUN
CF-249	-1.725E-02	4.124E-02	7.040E-02	0.000E+00	NOT IDENT.

CF-251

3.041E-02

1.383E-01

2.391E-01

0.000E+00 NOT IDENT.

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050252.CNF;1
Sample date        : 18-FEB-2010 12:00:00 Acquisition date : 3-MAR-2010 20:50:13.
Sample ID          : G1202050252          Sample quantity  : 1.34370E+02 GRAM
Detector name      : GAM19                Detector geometry: CAN
Elapsed live time   : 0 02:00:00.00        Elapsed real time: 0 02:00:01.72  0.0%
Energy tolerance    : 1.50000 keV          Analyst Initials : MXR1
Abundance limit     : 75.00000             Sensitivity        : 5.00000
Batch ID           : 956157                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	1532	10.66*	1.168E+00	3.437E+01	3.437E+01	9.21
CD-109	88.03	261	3.70*	6.094E+00	3.232E+00	3.298E+00	31.26
SN-126	64.28	106	9.60	3.667E+00	8.376E-01	8.376E-01	93.93
	86.94	261	8.90	6.094E+00	1.344E+00	1.344E+00	51.12
	87.57	261	37.00*	6.094E+00	3.232E-01	3.232E-01	31.26
TL-208	277.37	69	6.60	4.511E+00	6.495E-01	6.495E-01	92.18
	583.19	459	85.00*	2.555E+00	5.910E-01	5.910E-01	15.23
	860.56	68	12.50	1.835E+00	8.268E-01	8.268E-01	56.43
BI-211	72.87	-----	1.23	4.857E+00	-----	Line Not Found	-----
	351.06	747	12.92*	3.788E+00	4.263E+00	4.263E+00	11.99
PB-212	74.82	552	10.28	5.057E+00	2.968E+00	2.968E+00	23.62
	77.11	803	17.10	5.299E+00	2.476E+00	2.476E+00	15.01
	238.63	1476	43.60*	5.017E+00	1.885E+00	1.885E+00	9.76
	300.09	121	3.30	4.264E+00	2.410E+00	2.410E+00	46.03
BI-214	609.32	551	45.49*	2.465E+00	1.372E+00	1.372E+00	16.04
	1120.29	131	14.92	1.455E+00	1.682E+00	1.682E+00	37.94
	1764.49	121	15.30	1.030E+00	2.152E+00	2.152E+00	21.13
PB-214	74.82	552	5.80	5.057E+00	5.261E+00	5.261E+00	22.94
	77.11	803	9.70	5.299E+00	4.366E+00	4.366E+00	17.13
	242.00	400	7.25	4.974E+00	3.097E+00	3.097E+00	21.36
	295.22	478	18.42	4.313E+00	1.682E+00	1.682E+00	16.26
	351.93	747	35.60*	3.788E+00	1.547E+00	1.547E+00	13.20
RA-224	240.99	400	4.10*	4.974E+00	5.476E+00	5.476E+00	20.56
RA-226	609.32	551	45.49*	2.465E+00	1.372E+00	1.372E+00	16.04
	1120.29	131	14.92	1.455E+00	1.682E+00	1.682E+00	37.94
	1764.49	121	15.30	1.030E+00	2.152E+00	2.152E+00	21.13
AC-228	338.32	299	11.27	3.902E+00	1.902E+00	1.902E+00	46.47
	911.20	285	25.80*	1.745E+00	1.766E+00	1.766E+00	22.64
	968.97	202	15.80	1.655E+00	2.154E+00	2.154E+00	35.62
RA-228	338.32	299	11.27	3.902E+00	1.902E+00	1.902E+00	46.47
	911.20	285	25.80*	1.745E+00	1.766E+00	1.766E+00	22.64
	968.97	202	15.80	1.655E+00	2.154E+00	2.154E+00	35.62

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	552	10.28	5.057E+00	2.968E+00	2.968E+00	21.56
	77.11	803	17.10	5.299E+00	2.476E+00	2.476E+00	15.01
	238.63	1476	43.60*	5.017E+00	1.885E+00	1.885E+00	9.76
	300.09	121	3.30	4.264E+00	2.410E+00	2.410E+00	75.87
TH-229	85.43	103	14.70	5.894E+00	3.315E-01	3.315E-01	79.70
	88.47	261	24.00	6.094E+00	4.983E-01	4.983E-01	31.26
	193.51	-----	4.41*	5.746E+00	-----	Line Not Found	-----
	210.85	-----	2.80	5.447E+00	-----	Line Not Found	-----
TH-232	338.32	299	11.27	3.902E+00	1.902E+00	1.902E+00	22.22
	911.20	285	25.80*	1.745E+00	1.766E+00	1.766E+00	22.64
	968.97	202	15.80	1.655E+00	2.154E+00	2.154E+00	35.62
	63.29	106	3.70*	3.667E+00	2.173E+00	2.173E+00	94.50
U-235	92.59	285	4.23	6.391E+00	2.947E+00	2.947E+00	37.96
	89.96	232	3.47	6.253E+00	2.982E+00	2.982E+00	43.74
	93.35	285	5.60	6.391E+00	2.226E+00	2.226E+00	38.56
	143.76	-----	10.96*	6.636E+00	-----	Line Not Found	-----
NP-237	163.33	-----	5.08	6.300E+00	-----	Line Not Found	-----
	185.72	189	57.20	5.881E+00	1.569E-01	1.569E-01	43.58
	205.31	-----	5.01	5.540E+00	-----	Line Not Found	-----
	86.48	261	12.40*	6.094E+00	9.644E-01	9.644E-01	37.64
U-238	95.86	-----	2.68	6.514E+00	-----	Line Not Found	-----
	63.29	106	3.70*	3.667E+00	2.173E+00	2.173E+00	94.50
	92.59	285	4.23	6.391E+00	2.947E+00	2.947E+00	32.06
	511.00	133	100.00*	2.842E+00	1.312E-01	1.312E-01	52.09

Flag: "\*" = Keyline

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

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.437E+01	3.437E+01	0.316E+01	9.21	
CD-109	461.40D	1.02	3.232E+00	3.298E+00	1.031E+00	31.26	
SN-126	2.30E+05Y	1.00	3.232E-01	3.232E-01	1.010E-01	31.26	
TL-208	1.41E+10Y	1.00	5.910E-01	5.910E-01	0.900E-01	15.23	
BI-211	7.04E+08Y	1.00	4.263E+00	4.263E+00	0.511E+00	11.99	
PB-212	1.41E+10Y	1.00	1.885E+00	1.885E+00	0.184E+00	9.76	
BI-214	1600.00Y	1.00	1.372E+00	1.372E+00	0.220E+00	16.04	
PB-214	1600.00Y	1.00	1.547E+00	1.547E+00	0.204E+00	13.20	
RA-224	1.41E+10Y	1.00	5.476E+00	5.476E+00	1.126E+00	20.56	
RA-226	1600.00Y	1.00	1.372E+00	1.372E+00	0.220E+00	16.04	
AC-228	1.41E+10Y	1.00	1.766E+00	1.766E+00	0.400E+00	22.64	
RA-228	1.41E+10Y	1.00	1.766E+00	1.766E+00	0.400E+00	22.64	
TH-228	1.41E+10Y	1.00	1.885E+00	1.885E+00	0.184E+00	9.76	
TH-229	7340.00Y	1.00	4.983E-01	4.983E-01	1.557E-01	31.26	K
TH-232	1.41E+10Y	1.00	1.766E+00	1.766E+00	0.400E+00	22.64	
TH-234	4.47E+09Y	1.00	2.173E+00	2.173E+00	2.054E+00	94.50	
U-235	7.04E+08Y	1.00	1.569E-01	1.569E-01	0.684E-01	43.58	K
NP-237	2.14E+06Y	1.00	9.644E-01	9.644E-01	3.630E-01	37.64	
U-238	4.47E+09Y	1.00	2.173E+00	2.173E+00	2.054E+00	94.50	
ANH-511	1.00E+09Y	1.00	1.312E-01	1.312E-01	0.683E-01	52.09	
Total Activity :			6.771E+01	6.778E+01			

Grand Total Activity : 6.771E+01 6.778E+01

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

Unidentified Energy Lines  
Sample ID : G1202050252

Page : 4  
Acquisition date : 3-MAR-2010 20:50:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	129.33	96	357	1.11	258.42	254	8	1.33E-02	71.5	6.82E+00	
0	208.99	130	226	1.17	417.63	414	8	1.81E-02	43.8	5.48E+00	
0	270.29	87	312	1.61	540.13	534	11	1.21E-02	81.7	4.60E+00	T
0	327.86	120	291	1.55	655.21	649	16	1.67E-02	65.7	3.99E+00	T
0	463.59	127	117	2.74	926.52	920	14	1.76E-02	41.0	3.07E+00	T
0	568.36	167	171	2.91	1135.99	1126	17	2.32E-02	40.1	2.61E+00	T
0	727.11	108	75	1.34	1453.38	1447	13	1.50E-02	38.3	2.12E+00	T
0	769.93	90	140	4.40	1539.02	1531	22	1.25E-02	72.1	2.02E+00	
0	1237.91	59	53	3.28	2475.02	2470	10	8.18E-03	53.0	1.34E+00	T
0	1729.74	40	0	2.36	3459.15	3453	12	5.56E-03	31.6	1.04E+00	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050252.CNF;1
* Acquisition date   : 3-MAR-2010 20:50:13.  Detector SN#      :
* Detector ID        : GAM19                      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 02:00:01.72             Half life ratio : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 18-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G1202050252           Analyst initials: MXR1
* Batch Number       : 956157                Sample Quantity : 1.34370E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 12-MAR-2009 10:24:54.1MS 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	3.437E+01	3.165E+00	4.398E-01	3.275E-02	78.151
CD-109	3.298E+00	1.031E+00	1.329E+00	1.190E-01	2.482
SN-126	3.232E-01	1.010E-01	1.308E-01	1.167E-02	2.471
TL-208	5.910E-01	9.000E-02	5.870E-02	3.982E-03	10.069
BI-211	4.263E+00	5.112E-01	3.574E-01	2.283E-02	11.930
PB-212	1.885E+00	1.839E-01	9.845E-02	7.169E-03	19.151
BI-214	1.372E+00	2.201E-01	1.176E-01	9.318E-03	11.669
PB-214	1.547E+00	2.042E-01	1.238E-01	1.045E-02	12.496
RA-224	5.476E+00	1.126E+00	1.055E+00	5.976E-02	5.193
RA-226	1.372E+00	2.201E-01	1.176E-01	9.318E-03	11.669
AC-228	1.766E+00	3.997E-01	2.544E-01	2.966E-02	6.940
RA-228	1.766E+00	3.997E-01	2.544E-01	2.966E-02	6.940
TH-228	1.885E+00	1.839E-01	9.845E-02	7.169E-03	19.151
TH-229	4.983E-01	1.557E-01	9.305E-01	5.020E-02	0.535
TH-232	1.766E+00	3.997E-01	2.544E-01	2.966E-02	6.940
TH-234	2.173E+00	2.054E+00	2.259E+00	4.039E-01	0.962
U-235	1.569E-01	6.837E-02	3.665E-01	5.724E-02	0.428
NP-237	9.644E-01	3.630E-01	3.944E-01	8.972E-02	2.445

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
U-238	2.173E+00	2.054E+00	2.259E+00	4.039E-01	0.962
ANH-511	1.312E-01	6.834E-02	4.688E-02	2.766E-03	2.799

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	4.568E-02		3.336E-01	5.569E-01	3.779E-02	0.082
NA-22	6.586E-03		4.513E-02	7.593E-02	5.065E-03	0.087
NA-24	-1.145E-02		4.973E-02	Half-Life too short		
SC-46	-3.914E-02		3.965E-02	5.740E-02	4.988E-03	-0.682
V-48	4.347E-02		7.155E-02	1.211E-01	9.739E-03	0.359
CR-51	3.128E-02		3.906E-01	6.410E-01	4.142E-02	0.049
MN-54	-2.672E-02		3.953E-02	6.020E-02	4.789E-03	-0.444
CO-56	-4.096E-03		3.989E-02	6.389E-02	5.184E-03	-0.064
CO-57	3.656E-02		2.770E-02	4.711E-02	2.811E-03	0.776
CO-58	-6.234E-02		4.053E-02	5.571E-02	4.269E-03	-1.119
FE-59	-6.759E-02		9.588E-02	1.508E-01	1.131E-02	-0.448
CO-60	-3.073E-02		4.451E-02	6.850E-02	5.048E-03	-0.449
ZN-65	-1.647E-02		1.052E-01	1.487E-01	9.510E-03	-0.111
SE-75	1.047E-02		5.223E-02	7.775E-02	4.523E-03	0.135
SR-85	8.978E-02		4.268E-02	7.145E-02	4.219E-03	1.257
Y-88	1.265E-02		3.544E-02	6.127E-02	3.498E-03	0.206
Y-91	1.361E+01		2.367E+01	4.103E+01	2.395E+00	0.332
NB-94	2.975E-02		3.545E-02	6.123E-02	3.856E-03	0.486
NB-95	7.960E-02		5.083E-02	8.225E-02	5.812E-03	0.968
NB-95M	6.453E-01		1.667E-01	2.694E-01	2.003E-02	2.395
ZR-95	3.059E-02		7.567E-02	1.252E-01	1.007E-02	0.244
MO-99	1.904E+00		8.069E+00	1.338E+01	1.981E+00	0.142
TC-99M	-3.658E+08		1.732E+08	Half-Life too short		
RU-103	-3.070E-03		3.743E-02	6.151E-02	7.666E-03	-0.050
RH-106	8.022E-02		3.338E-01	5.561E-01	6.490E-02	0.144
RU-106	8.022E-02		3.337E-01	5.561E-01	3.279E-02	0.144
AG-108M	-1.861E-02		3.045E-02	4.863E-02	2.984E-03	-0.383
AG-110M	-4.918E-02		3.779E-02	5.549E-02	3.443E-03	-0.886
SN-113	1.826E-02		4.548E-02	7.745E-02	4.621E-03	0.236
CD-115	8.395E-01		6.565E+00	1.092E+01	6.467E-01	0.077
SN-117M	-2.216E-02		5.709E-02	9.098E-02	4.843E-03	-0.244
TE-123M	-1.998E-02		3.211E-02	5.068E-02	2.737E-03	-0.394
SB-124	-3.030E-02		6.906E-02	1.030E-01	7.082E-03	-0.294
SB-125	1.580E-02		9.654E-02	1.619E-01	9.628E-03	0.098
TE-125M	-7.948E+00		1.055E+01	1.672E+01	1.507E+00	-0.475
I-126	-6.418E-02		2.300E-01	3.686E-01	2.166E-02	-0.174
SB-126	-2.147E-02		1.615E-01	2.239E-01	1.459E-02	-0.096
SB-127	-7.163E-02		9.770E-01	1.585E+00	1.429E-01	-0.045
I-131	-1.678E-02		9.917E-02	1.641E-01	1.044E-02	-0.102
TE-132	3.759E-01		5.569E-01	9.147E-01	1.284E-01	0.411
BA-133	-2.744E-03		4.612E-02	6.674E-02	7.501E-03	-0.041

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-133	-1.206E-04		7.220E-04	Half-Life too short		
CS-134	1.801E-02		5.005E-02	8.341E-02	6.272E-03	0.216
CS-135	3.087E-01		2.017E-01	3.190E-01	2.434E-02	0.968
I-135	1.542E+07		4.257E+07	Half-Life too short		
CS-136	5.955E-02		9.591E-02	1.692E-01	1.306E-02	0.352
BA-137M	9.352E-03		4.011E-02	6.659E-02	3.878E-03	0.140
CS-137	9.879E-03		4.237E-02	7.035E-02	4.114E-03	0.140
CE-139	-3.340E-02		3.230E-02	4.992E-02	2.606E-03	-0.669
BA-140	6.455E-02		2.509E-01	4.192E-01	1.397E-01	0.154
LA-140	-6.915E-02		8.167E-02	1.173E-01	7.936E-03	-0.590
CE-141	3.647E-02		6.658E-02	1.097E-01	6.317E-03	0.333
CE-143	4.138E-04		5.732E-05	Half-Life too short		
CE-144	-9.114E-02		2.525E-01	3.516E-01	4.873E-02	-0.259
PM-144	1.597E-02		3.142E-02	5.341E-02	3.327E-03	0.299
PR-144	1.186E+00		2.348E+00	3.991E+00	2.485E-01	0.297
PM-146	4.988E-03		4.465E-02	7.233E-02	6.109E-03	0.069
ND-147	-2.997E-01		4.910E-01	7.699E-01	1.045E-01	-0.389
PM-149	3.794E+00		5.280E+01	8.915E+01	1.263E+01	0.043
EU-152	-4.447E-02		1.195E-01	1.693E-01	1.101E-02	-0.263
GD-153	1.264E-01		1.017E-01	1.537E-01	1.195E-02	0.822
EU-154	-1.002E-02		1.297E-01	2.138E-01	2.132E-02	-0.047
EU-155	1.360E-01		1.144E-01	1.939E-01	1.394E-02	0.702
TB-160	-8.147E-02		1.515E-01	2.324E-01	1.988E-02	-0.351
HO-166M	2.020E-02		6.465E-02	1.078E-01	6.906E-03	0.187
TA-182	1.229E-02		2.099E-01	3.507E-01	2.115E-02	0.035
IR-192	3.401E-05		3.720E-02	6.242E-02	3.647E-03	0.001
HG-203	2.910E-02		4.283E-02	6.554E-02	4.007E-03	0.444
BI-207	2.778E-03		5.123E-02	8.620E-02	6.121E-03	0.032
PB-210	2.317E+00		3.298E+00	5.479E+00	4.130E-01	0.423
PB-211	-9.262E-01		9.220E-01	1.264E+00	6.060E-01	-0.733
BI-212	2.125E+00	+	8.474E-01	1.175E+00	1.310E-01	1.809
RN-219	-3.445E-02		4.220E-01	6.994E-01	9.341E-02	-0.049
RA-223	2.469E-02		7.597E-01	1.111E+00	1.791E-01	0.022
AC-227	1.726E-01		2.841E-01	4.660E-01	4.745E-02	0.370
TH-227	1.726E-01		2.843E-01	4.660E-01	5.584E-02	0.370
PA-231	-6.444E-01		1.589E+00	2.374E+00	3.113E-01	-0.271
TH-231	2.469E-02		7.597E-01	1.111E+00	1.791E-01	0.022
PA-233	4.367E-02		6.731E-02	1.164E-01	7.186E-03	0.375
PA-234	2.395E-01		3.105E-01	5.306E-01	9.904E-02	0.451
PA-234M	-2.194E+00		5.036E+00	8.047E+00	7.491E-01	-0.273
NP-239	-3.617E-01		4.419E-01	6.973E-01	4.350E-02	-0.519
AM-241	1.404E-01		1.770E-01	2.647E-01	2.180E-02	0.530
CM-247	7.397E-03		3.873E-02	6.517E-02	3.655E-03	0.114
CF-249	-1.725E-02		4.209E-02	6.857E-02	3.829E-03	-0.252
CF-251	3.041E-02		1.412E-01	2.297E-01	1.215E-02	0.132

# 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]G1202050252          *
* Acquisition date   : 3-MAR-2010 20:50:13 Detector SN#      :              *
* Detector ID        : GAM19                      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 02:00:01.72              Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 18-FEB-2010 12:00:00 Nuclide Library : SOLID           *
* Sample ID          : G1202050252              Analyst initials: MXR1         *
* Batch Number       : 956157                   Sample Quantity : 1.3437E+02 GRAM  *
* Recovery           : 1.00000                  Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 12-MAR-2009 10:24:54 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	3.437E+01	3.101E+00	2.205E-01	1.582E+00
CD-109	3.298E+00	1.010E+00	7.003E-01	5.154E-01
SN-126	3.232E-01	9.900E-02	6.894E-02	5.051E-02
TL-208	5.910E-01	8.820E-02	2.993E-02	4.500E-02
BI-211	4.263E+00	5.010E-01	1.839E-01	2.556E-01
PB-212	1.885E+00	1.803E-01	5.100E-02	9.197E-02
BI-214	1.372E+00	2.157E-01	5.991E-02	1.101E-01
PB-214	1.547E+00	2.001E-01	6.371E-02	1.021E-01
RA-224	5.476E+00	1.103E+00	5.463E-01	5.630E-01
RA-226	1.372E+00	2.157E-01	5.991E-02	1.101E-01
AC-228	1.766E+00	3.917E-01	1.287E-01	1.998E-01
RA-228	1.766E+00	3.917E-01	1.287E-01	1.998E-01
TH-228	1.885E+00	1.803E-01	5.100E-02	9.197E-02
TH-229	1.809E-01	5.593E-01	4.838E-01	2.854E-01
TH-232	1.766E+00	3.917E-01	1.287E-01	1.998E-01
TH-234	2.173E+00	2.013E+00	1.197E+00	1.027E+00
U-235	1.363E-01	2.184E-01	1.916E-01	1.114E-01
NP-237	9.644E-01	3.557E-01	2.079E-01	1.815E-01
U-238	2.173E+00	2.013E+00	1.197E+00	1.027E+00
ANH-511	1.312E-01	6.698E-02	2.396E-02	3.417E-02

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	4.568E-02	3.270E-01	2.850E-01	1.668E-01 NOT IDENT.
NA-22	6.586E-03	4.423E-02	3.816E-02	2.257E-02 NOT IDENT.
NA-24	-1.145E+04	9.747E+04	0.000E+00	4.973E+04 SHORT HLIF
SC-46	-3.914E-02	3.886E-02	2.904E-02	1.983E-02 FAIL ABUN
V-48	4.347E-02	7.012E-02	6.118E-02	3.578E-02 NOT IDENT.
CR-51	3.128E-02	3.828E-01	3.304E-01	1.953E-01 NOT IDENT.
MN-54	-2.672E-02	3.873E-02	3.049E-02	1.976E-02 NOT IDENT.

CO-56	-4.096E-03	3.909E-02	3.236E-02	1.994E-02	FAIL ABUN
CO-57	3.656E-02	2.715E-02	2.469E-02	1.385E-02	NOT IDENT.
CO-58	-6.234E-02	3.972E-02	2.824E-02	2.026E-02	NOT IDENT.
FE-59	-6.759E-02	9.396E-02	7.598E-02	4.794E-02	NOT IDENT.
CO-60	-3.073E-02	4.362E-02	3.440E-02	2.225E-02	NOT IDENT.
ZN-65	-1.647E-02	1.031E-01	7.494E-02	5.262E-02	NOT IDENT.
SE-75	1.047E-02	5.118E-02	4.021E-02	2.611E-02	NOT IDENT.
SR-85	8.978E-02	4.182E-02	3.651E-02	2.134E-02	NOT IDENT.
Y-88	1.265E-02	3.473E-02	3.059E-02	1.772E-02	NOT IDENT.
Y-91	1.361E+01	2.320E+01	2.064E+01	1.184E+01	NOT IDENT.
NB-94	2.975E-02	3.474E-02	3.111E-02	1.772E-02	NOT IDENT.
NB-95	7.960E-02	4.982E-02	4.173E-02	2.542E-02	NOT IDENT.
NB-95M	6.453E-01	1.634E-01	1.396E-01	8.335E-02	NOT IDENT.
ZR-95	3.059E-02	7.415E-02	6.354E-02	3.783E-02	NOT IDENT.
MO-99	1.904E+00	7.907E+00	6.790E+00	4.034E+00	NOT IDENT.
TC-99M	-3.658E+14	3.395E+14	0.000E+00	1.732E+14	SHORT HLIF
RU-103	-3.070E-03	3.668E-02	3.145E-02	1.872E-02	FAIL ABUN
RH-106	8.022E-02	3.271E-01	2.832E-01	1.669E-01	NOT IDENT.
RU-106	8.022E-02	3.270E-01	2.832E-01	1.668E-01	NOT IDENT.
AG-108M	-1.861E-02	2.984E-02	2.493E-02	1.522E-02	NOT IDENT.
AG-110M	-4.918E-02	3.704E-02	2.823E-02	1.890E-02	NOT IDENT.
SN-113	1.826E-02	4.457E-02	3.977E-02	2.274E-02	NOT IDENT.
CD-115	8.395E-01	6.433E+00	5.580E+00	3.282E+00	NOT IDENT.
SN-117M	-2.216E-02	5.595E-02	4.747E-02	2.855E-02	NOT IDENT.
TE-123M	-1.998E-02	3.146E-02	2.644E-02	1.605E-02	NOT IDENT.
SB-124	-3.030E-02	6.768E-02	5.149E-02	3.453E-02	NOT IDENT.
SB-125	1.580E-02	9.461E-02	8.302E-02	4.827E-02	FAIL ABUN
TE-125M	-7.948E+00	1.034E+01	8.780E+00	5.277E+00	NOT IDENT.
I-126	-6.418E-02	2.254E-01	1.875E-01	1.150E-01	NOT IDENT.
SB-126	-2.147E-02	1.583E-01	1.137E-01	8.076E-02	NOT IDENT.
SB-127	-7.163E-02	9.575E-01	8.059E-01	4.885E-01	NOT IDENT.
I-131	-1.678E-02	9.719E-02	8.437E-02	4.959E-02	NOT IDENT.
TE-132	3.759E-01	5.458E-01	4.742E-01	2.785E-01	NOT IDENT.
BA-133	-2.744E-03	4.520E-02	3.433E-02	2.306E-02	FAIL ABUN
I-133	-1.206E+02	1.415E+03	0.000E+00	7.220E+02	SHORT HLIF
CS-134	1.801E-02	4.905E-02	4.229E-02	2.503E-02	FAIL ABUN
CS-135	3.087E-01	1.976E-01	1.649E-01	1.008E-01	NOT IDENT.
I-135	1.542E+13	8.344E+13	0.000E+00	4.257E+13	SHORT HLIF
CS-136	5.955E-02	9.399E-02	8.532E-02	4.796E-02	NOT IDENT.
BA-137M	9.352E-03	3.930E-02	3.388E-02	2.005E-02	NOT IDENT.
CS-137	9.879E-03	4.152E-02	3.579E-02	2.118E-02	NOT IDENT.
CE-139	-3.340E-02	3.165E-02	2.603E-02	1.615E-02	NOT IDENT.
BA-140	6.455E-02	2.459E-01	2.141E-01	1.254E-01	NOT IDENT.
LA-140	-6.915E-02	8.004E-02	5.870E-02	4.084E-02	FAIL ABUN
CE-141	3.647E-02	6.524E-02	5.731E-02	3.329E-02	NOT IDENT.
CE-143	4.138E+02	1.124E+02	0.000E+00	5.732E+01	SHORT HLIF
CE-144	-9.114E-02	2.475E-01	1.840E-01	1.263E-01	NOT IDENT.
PM-144	1.597E-02	3.079E-02	2.714E-02	1.571E-02	NOT IDENT.
PR-144	1.186E+00	2.301E+00	2.028E+00	1.174E+00	NOT IDENT.
PM-146	4.988E-03	4.376E-02	3.704E-02	2.232E-02	NOT IDENT.
ND-147	-2.997E-01	4.812E-01	3.932E-01	2.455E-01	FAIL ABUN
PM-149	3.794E+00	5.175E+01	4.604E+01	2.640E+01	NOT IDENT.
EU-152	-4.447E-02	1.171E-01	8.716E-02	5.977E-02	NOT IDENT.
GD-153	1.264E-01	9.968E-02	8.085E-02	5.086E-02	NOT IDENT.
EU-154	-1.002E-02	1.271E-01	1.074E-01	6.483E-02	NOT IDENT.
EU-155	1.360E-01	1.121E-01	1.019E-01	5.722E-02	FAIL ABUN
TB-160	-8.147E-02	1.484E-01	1.176E-01	7.573E-02	FAIL ABUN
HO-166M	2.020E-02	6.336E-02	5.477E-02	3.232E-02	NOT IDENT.
TA-182	1.229E-02	2.057E-01	1.764E-01	1.049E-01	FAIL ABUN
IR-192	3.401E-05	3.646E-02	3.218E-02	1.860E-02	FAIL ABUN
HG-203	2.910E-02	4.197E-02	3.386E-02	2.141E-02	NOT IDENT.
BI-207	2.778E-03	5.020E-02	4.347E-02	2.561E-02	FAIL ABUN
PB-210	2.317E+00	3.232E+00	2.919E+00	1.649E+00	NOT IDENT.
PB-211	-9.262E-01	9.035E-01	6.487E-01	4.610E-01	NOT IDENT.
BI-212	2.125E+00	8.304E-01	5.965E-01	4.237E-01	FAIL ABUN
RN-219	-3.445E-02	4.135E-01	3.590E-01	2.110E-01	FAIL ABUN
RA-223	2.469E-02	7.445E-01	5.726E-01	3.799E-01	FAIL ABUN
AC-227	1.726E-01	2.785E-01	2.411E-01	1.421E-01	FAIL ABUN
TH-227	1.726E-01	2.787E-01	2.411E-01	1.422E-01	FAIL ABUN
PA-231	-6.444E-01	1.557E+00	1.226E+00	7.945E-01	NOT IDENT.
TH-231	2.469E-02	7.445E-01	5.726E-01	3.799E-01	FAIL ABUN
PA-233	4.367E-02	6.597E-02	6.000E-02	3.366E-02	FAIL ABUN
PA-234	2.395E-01	3.043E-01	2.681E-01	1.552E-01	FAIL ABUN
PA-234M	-2.194E+00	4.935E+00	4.063E+00	2.518E+00	NOT IDENT.
NP-239	-3.617E-01	4.331E-01	3.657E-01	2.210E-01	FAIL ABUN
AM-241	1.404E-01	1.734E-01	1.405E-01	8.848E-02	NOT IDENT.
CM-247	7.397E-03	3.796E-02	3.345E-02	1.937E-02	FAIL ABUN
CF-249	-1.725E-02	4.124E-02	3.522E-02	2.104E-02	NOT IDENT.

CF-251	3.041E-02	1.383E-01	1.196E-01	7.059E-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	379.9998
49.72	458.5281
57.36	0.0000
59.54	449.7978
63.29	543.6680
63.29	543.6680
64.28	577.3301
67.75	562.3723
69.67	582.0440
70.83	606.6455
72.81	609.4000
72.87	605.5502
72.87	605.5502
74.82	606.6663
74.82	606.6663
74.82	606.6663
74.97	606.7518
77.11	607.9602
77.11	607.9602
77.11	607.9602
79.69	631.8138
79.80	631.8785
80.12	632.0606
80.19	632.1013
80.57	632.3170
81.00	632.5613
81.07	632.5996
81.07	632.5996
83.79	516.9980
83.79	516.9980
85.43	517.7383
86.48	518.2109
86.55	518.2422
86.79	518.3477
86.94	518.4160
87.57	518.6973
88.03	518.9004
88.47	519.0957
89.96	519.7520
91.11	520.2539
92.59	520.8965
92.59	520.8965
93.35	521.2246
94.67	463.0895
94.87	472.9510
94.87	472.9510
95.86	484.7586
97.43	387.3194
98.44	369.6432
99.53	416.2687
100.11	423.7726
103.18	489.4389
103.37	465.9084
105.31	380.2767
106.12	408.2795
109.28	451.5288
111.00	418.0487
111.76	422.4178
116.30	377.1982
117.23	423.0799
121.12	359.7902
121.78	344.3527
122.06	349.6236
123.07	390.3351
131.20	407.1318
133.52	411.1257
136.00	371.8847

136.47	372.0009
140.51	433.0470
140.51	0.0000
143.76	371.6609
144.24	367.5516
144.24	367.5516
145.44	364.6621
152.43	368.3910
153.25	356.8949
154.21	392.1779
154.21	392.1779
156.02	411.7662
158.56	402.8132
159.00	409.3154
162.66	353.5966
163.33	324.8833
165.86	378.8852
176.60	337.0901
177.52	329.7242
181.07	333.4056
184.41	330.5662
185.72	345.3091
193.51	313.0774
197.04	348.5205
205.31	343.0359
210.85	321.1971
215.65	310.1028
222.11	314.4128
227.38	288.6827
228.16	274.4079
228.18	274.4098
235.69	255.8584
235.96	255.8918
235.96	255.8918
238.63	274.6771
238.63	274.6771
240.99	274.9824
242.00	244.1483
244.70	214.1221
252.40	229.4348
252.80	240.6702
256.23	236.5612
256.23	236.5612
260.90	257.2826
264.66	222.0753
268.22	247.9767
269.46	243.5999
269.46	243.5999
271.23	261.8461
273.65	262.1222
276.40	239.8134
277.37	207.2210
277.60	207.2406
278.00	184.1343
279.20	197.8193
279.54	197.8486
280.46	182.8170
283.69	207.4944
284.31	210.8624
285.41	209.8513
285.90	194.4469
287.50	168.7169
293.27	0.0000
295.22	171.4915
295.96	171.5431
298.57	171.7290
299.98	171.8277
299.98	171.8277
300.09	171.8369
300.09	171.8369
300.13	171.8392
301.36	169.1829
302.85	172.3347
304.50	163.2952
304.50	163.2952
304.85	167.8982
308.46	180.6763
311.90	179.0896

316.51	206.1035
319.41	194.3649
320.08	198.6127
323.87	187.6316
323.87	187.6316
328.76	179.3600
333.37	134.2967
334.37	134.3480
334.37	134.3480
338.28	180.9463
338.28	180.9463
338.32	180.9487
338.32	180.9487
338.32	180.9487
340.48	207.4094
340.55	207.4148
344.28	193.7587
351.06	181.8175
351.93	165.0884
356.01	144.7884
364.49	148.0479
366.42	137.8376
383.85	155.6825
388.16	164.4207
388.63	166.3385
391.69	141.9177
400.66	145.2043
401.81	150.9568
402.40	146.2398
404.85	199.5846
410.95	152.3789
414.70	153.5239
423.72	141.5503
427.09	140.7500
427.87	138.8722
433.94	139.1465
453.88	119.7572
463.37	118.1771
468.07	129.3441
473.00	129.2172
476.78	117.6958
477.60	122.5901
487.02	107.3292
492.35	104.5693
497.08	99.8248
511.00	105.1492
514.00	91.7992
527.90	93.8148
529.87	0.0000
531.02	100.8171
537.26	100.0063
546.56	0.0000
563.25	123.0081
569.33	108.2275
569.50	108.2328
569.70	101.5773
583.19	96.2672
600.60	103.7645
602.73	115.9181
604.72	139.5120
609.32	102.9936
609.32	102.9936
610.33	103.0210
614.28	80.8828
618.01	106.8235
621.93	94.2125
621.93	94.2125
633.25	95.5009
635.95	95.5674
636.99	83.3894
645.85	82.5563
657.76	117.5577
661.66	105.3939
661.66	105.3939
664.57	0.0000
666.33	116.7832
666.50	116.7888
677.62	81.1524

685.70	82.3398
695.00	70.1458
696.49	65.0118
696.51	65.0118
697.00	75.3401
702.65	82.6758
706.68	105.5112
711.68	85.9585
720.70	91.6760
721.93	0.0000
722.78	76.1442
722.91	76.1478
723.31	77.8857
724.19	76.1693
727.33	82.1149
733.00	52.0398
735.93	80.1958
739.50	72.9651
747.24	76.2276
752.31	83.6328
753.82	70.0670
756.73	71.1593
763.94	73.3701
765.81	73.4009
766.42	94.3857
777.92	73.5991
778.90	82.3801
783.70	69.4837
785.37	72.6673
795.86	82.3361
801.95	64.4759
810.29	88.9465
810.76	90.0157
815.77	64.6680
818.51	80.6183
832.01	81.9140
834.85	89.4141
836.80	0.0000
846.77	68.2969
856.80	62.3794
860.56	76.6970
871.09	65.4246
873.19	66.5259
875.33	0.0000
879.36	78.4269
880.51	75.2227
883.24	53.7598
884.68	58.0777
889.28	72.1264
898.04	67.9403
911.20	77.8518
911.20	77.8518
911.20	77.8518
926.50	58.5655
937.49	76.0823
944.13	58.7672
946.00	51.1687
949.00	68.6279
962.29	58.2461
964.08	63.7280
966.15	75.4115
968.97	75.4519
968.97	75.4519
968.97	75.4519
983.53	58.1163
996.26	61.5535
1001.03	76.0935
1004.73	75.2284
1037.84	60.9216
1038.76	0.0000
1048.07	49.9373
1050.41	52.7324
1050.41	52.7324
1063.66	55.6421
1085.87	80.0686
1099.45	78.3945
1112.07	67.3418
1115.54	70.5915

1120.29	61.8186
1120.29	61.8186
1120.55	61.8213
1121.30	61.8293
1131.51	0.0000
1173.23	70.8832
1177.93	69.0464
1189.05	65.3838
1204.77	76.9559
1221.41	80.9741
1231.02	80.1479
1235.36	52.3772
1238.28	85.0164
1260.41	0.0000
1271.85	67.2286
1274.44	57.6465
1274.54	53.8057
1291.59	50.0957
1298.22	0.0000
1312.11	46.3906
1332.49	57.1995
1365.19	24.3581
1368.63	0.0000
1384.29	36.1539
1408.01	24.5138
1457.56	0.0000
1460.82	17.7861
1489.16	20.8342
1505.03	39.7738
1596.21	33.2269
1620.50	18.1824
1678.03	0.0000
1690.97	16.3125
1764.49	12.3496
1764.49	12.3496
1770.23	15.8894
1771.35	15.8913
1791.20	0.0000
1836.06	14.5355

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202050252

Total Uranium Activity	6.5286E+00	ug/g
Total Uranium Counting Unc.	5.9885E+00	ug/g
Total Uranium Tpu	3.0553E-06	ug/g
Total Uranium Mda	3.5625E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 956157                          SAMPLE ID   : G1202050252
*  ANALYST       : MXR1                             DETECTOR    : GAM19
*  SAMPLE DATE   : 18-FEB-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 3-MAR-2010 20:50:13.82          SAMPLE ALQT  : 134.370 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.097E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.583E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 3.947E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.927E+00

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VAX/VMS Nuclide Identification Report Generated 4-MAR-2010 09:12:09.21

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050253.CNF;1
Sample date        : 23-FEB-2010 00:00:00 Acquisition date : 3-MAR-2010 21:20:30.
Sample ID          : G1202050253 Sample quantity : 1.55440E+02 GRAM
Detector name      : GAM23 Detector geometry: CAN
Elapsed live time  : 0 01:00:00.00 Elapsed real time: 0 01:00:01.57 0.0%
Energy tolerance   : 2.00000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 956157 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	59.37	2139	656	1.02	118.74	113	11	5.94E-01	3.2	
2	1	74.37	183	347	1.38	148.75	143	15	5.08E-02	19.3	3.35E+00
3	1	77.05	208	323	1.14	154.10	143	15	5.79E-02	15.6	
4	0	87.82	1331	477	1.11	175.64	170	12	3.70E-01	4.3	
5	0	92.87*	114	283	1.41	185.74	182	9	3.16E-02	29.1	
6	0	121.60	221	348	1.06	243.20	238	11	6.13E-02	17.7	
7	0	238.50*	371	421	1.22	477.01	472	12	1.03E-01	12.2	
8	0	294.80	94	170	1.20	589.61	586	8	2.62E-02	26.1	
9	0	338.03	107	148	1.81	676.06	672	10	2.96E-02	23.6	
10	0	351.34*	191	157	1.35	702.67	697	10	5.30E-02	14.4	
11	0	582.26	164	98	1.50	1164.51	1157	14	4.56E-02	15.0	
12	0	608.59*	147	105	1.81	1217.17	1210	14	4.07E-02	17.1	
13	0	660.77	1923	166	1.53	1321.54	1313	17	5.34E-01	2.7	
14	0	910.55	109	95	1.73	1821.10	1815	13	3.02E-02	21.0	
15	0	1171.81	1452	65	2.06	2343.63	2333	22	4.03E-01	3.0	
16	0	1330.97	1314	22	2.14	2661.94	2652	17	3.65E-01	2.9	
17	0	1762.85*	28	7	1.28	3525.69	3519	13	7.66E-03	27.7	

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

## VMS Nuclide Identification Report V3.1 Generated 4-MAR-2010 09:12:12

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050253.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 23-FEB-2010 00:00:00 Acquisition date : 3-MAR-2010 21:20:30
Sample ID         : G1202050253 Sample quantity : 155.44 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA23 Detector geometry: CAN
Elapsed live time : 0 01:00:00.00 Elapsed real time: 0 01:00:01.57 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 2.00 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

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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
CO-57	+	122.06	*	2.012E-01	7.211E-02	6.478E-02	3.819E-03	3.105
		136.47		-1.828E-01	3.476E-01	5.562E-01	3.610E-02	-0.329
CO-60	+	1173.23		5.839E+00	4.806E-01	1.192E-01	6.725E-03	48.978
	+	1332.49	*	5.913E+00	5.505E-01	9.309E-02	6.834E-03	63.519
CD-109	+	88.03	*	3.342E+01	4.342E+00	2.278E+00	2.224E-01	14.673
SN-126		64.28		-9.197E-01	1.100E+00	1.534E+00	2.335E-01	-0.599
	+	86.94		1.371E+01	5.824E+00	9.480E-01	3.943E-01	14.460
	+	87.57	*	3.297E+00	4.285E-01	2.261E-01	2.200E-02	14.584
BA-137M	+	661.66	*	5.061E+00	3.800E-01	1.238E-01	6.323E-03	40.894
CS-137	+	661.66	*	5.347E+00	4.025E-01	1.307E-01	6.715E-03	40.894
TL-208		277.37		-1.737E-01	7.574E-01	1.193E+00	1.287E-01	-0.146
	+	583.19	*	4.089E-01	1.255E-01	1.023E-01	6.623E-03	3.998
		860.56		5.558E-01	7.025E-01	1.228E+00	1.110E-01	0.453
BI-211	+	72.87		1.794E+01	7.112E+00	8.703E+00	7.677E-01	2.061
	+	351.06	*	2.072E+00	6.107E-01	6.804E-01	4.435E-02	3.045
PB-212	+	74.82		2.147E+00	8.762E-01	1.012E+00	1.334E-01	2.121
	+	77.11		1.368E+00	4.442E-01	6.016E-01	5.413E-02	2.275
	+	238.63	*	8.868E-01	2.261E-01	1.808E-01	1.312E-02	4.905
		300.09		8.637E-01	1.556E+00	2.464E+00	2.080E-01	0.351
BI-214	+	609.32	*	7.091E-01	2.490E-01	2.059E-01	1.561E-02	3.444
		1120.29		3.408E-01	6.178E-01	1.060E+00	9.906E-02	0.322
	+	1764.49		9.957E-01	5.545E-01	3.788E-01	2.355E-02	2.629
PB-214	+	74.82		3.805E+00	1.538E+00	1.794E+00	2.138E-01	2.121
	+	77.11		2.412E+00	8.079E-01	1.061E+00	1.294E-01	2.275
		242.00		1.339E+00	8.084E-01	1.240E+00	1.003E-01	1.080
	+	295.22		6.256E-01	3.309E-01	4.527E-01	3.969E-02	1.382
RA-226	+	351.93	*	7.520E-01	2.255E-01	2.373E-01	2.026E-02	3.169
	+	609.32	*	7.091E-01	2.490E-01	2.059E-01	1.561E-02	3.444
		1120.29		3.408E-01	6.178E-01	1.060E+00	9.906E-02	0.322
TH-228	+	1764.49		9.957E-01	5.545E-01	3.788E-01	2.355E-02	2.629
	+	74.82		2.147E+00	8.513E-01	1.012E+00	9.079E-02	2.121
	+	77.11		1.368E+00	4.442E-01	6.016E-01	5.413E-02	2.275
	+	238.63	*	8.868E-01	2.261E-01	1.808E-01	1.312E-02	4.905
		300.09		8.637E-01	1.641E+00	2.464E+00	1.500E+00	0.351

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-237	+	86.48	*	9.839E+00	2.427E+00	7.092E-01	1.636E-01	13.874
		95.86		4.212E-01	1.532E+00	2.263E+00	5.410E-01	0.186
AM-241	+	59.54	*	1.399E+01	1.576E+00	6.358E-01	5.916E-02	22.000

## ---- 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	*	-1.584E-01	6.788E-01	1.103E+00	7.491E-02	-0.144
NA-22		1274.54	*	2.450E-02	6.145E-02	1.058E-01	7.105E-03	0.232
NA-24		1368.63	*	-1.717E-04	6.145E-02	Half-Life too short		
K-40		1460.82	*	6.756E-01	6.107E-01	1.177E+00	8.805E-02	0.574
SC-46		889.28	*	3.814E-02	9.637E-02	1.646E-01	1.471E-02	0.232
		1120.55		6.121E-02	9.974E-02	1.719E-01	1.120E-02	0.356
V-48		944.13		8.067E-02	1.892E+00	3.149E+00	2.744E-01	0.026
		983.53	*	5.080E-02	1.287E-01	2.193E-01	1.825E-02	0.232
		1312.11		-6.366E-02	9.003E-02	1.293E-01	9.200E-03	-0.492
CR-51		320.08	*	-9.910E-02	5.883E-01	9.780E-01	6.403E-02	-0.101
MN-54		834.85	*	-4.607E-02	8.861E-02	1.431E-01	1.133E-02	-0.322
CO-56		846.77	*	2.198E-02	8.363E-02	1.423E-01	1.158E-02	0.154
		1037.84		2.105E-01	6.914E-01	1.168E+00	9.561E-02	0.180
		1238.28		8.874E-02	1.131E-01	2.015E-01	1.340E-02	0.440
		1771.35		-2.961E-01	3.038E-01	3.607E-01	2.231E-02	-0.821
CO-58		810.76	*	-5.037E-02	8.087E-02	1.291E-01	9.700E-03	-0.390
FE-59		1099.45	*	-1.333E-02	2.045E-01	3.348E-01	2.577E-02	-0.040
		1291.59		4.874E-02	1.550E-01	2.643E-01	2.194E-02	0.184
ZN-65		1115.54	*	-1.688E-01	1.992E-01	3.045E-01	2.011E-02	-0.554
SE-75	+	121.12		1.030E+00	3.763E-01	4.693E-01	4.301E-02	2.196
		136.00		2.621E-02	6.452E-02	1.076E-01	6.078E-03	0.244
		264.66	*	-7.485E-02	8.431E-02	1.280E-01	7.455E-03	-0.585
		279.54		-3.934E-02	1.939E-01	3.239E-01	2.039E-02	-0.121
		400.66		1.232E-01	5.170E-01	8.692E-01	7.880E-02	0.142
SR-85		514.00	*	-1.374E-01	7.884E-02	1.153E-01	6.692E-03	-1.192
Y-88		898.04		-2.410E-02	9.936E-02	1.634E-01	1.494E-02	-0.147
		1836.06	*	8.445E-03	4.960E-02	8.522E-02	5.018E-03	0.099
Y-91		1204.77	*	1.546E+01	2.909E+01	5.073E+01	3.026E+00	0.305
NB-94		702.65	*	-7.493E-02	6.773E-02	9.895E-02	5.654E-03	-0.757
		871.09		-1.105E-01	8.126E-02	1.209E-01	1.039E-02	-0.914
NB-95		765.81	*	1.308E-03	8.290E-02	1.332E-01	8.954E-03	0.010
NB-95M		235.69	*	3.340E-01	2.489E-01	3.762E-01	2.785E-02	0.888
ZR-95		724.19		4.415E-02	1.706E-01	2.804E-01	1.976E-02	0.157
		756.73	*	-2.841E-03	1.489E-01	2.389E-01	1.843E-02	-0.012
MO-99		140.51		3.503E+00	7.710E+00	1.278E+01	2.913E+00	0.274
		181.07		8.907E-01	6.433E+00	1.050E+01	1.836E+00	0.085
		366.42		-3.180E+01	4.235E+01	6.776E+01	3.971E+00	-0.469
		739.50	*	-7.523E+00	5.436E+00	7.485E+00	1.094E+00	-1.005
		777.92		-1.942E+01	1.553E+01	2.350E+01	1.627E+00	-0.826
TC-99M		140.51	*	9.260E+02	1.553E+01	Half-Life too short		
RU-103		497.08	*	-1.921E-02	7.797E-02	1.261E-01	1.569E-02	-0.152

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	610.33		6.554E+00	2.451E+00	3.025E+00	4.512E-01	2.167
RH-106		621.93	*	1.480E-02	6.145E-01	1.000E+00	1.141E-01	0.015
		1050.41		1.595E-01	6.059E+00	1.002E+01	7.536E-01	0.016
RU-106		621.93	*	1.480E-02	6.145E-01	1.000E+00	5.373E-02	0.015
		1050.41		1.595E-01	6.059E+00	1.002E+01	7.536E-01	0.016
AG-108M		433.94	*	5.054E-02	6.770E-02	1.162E-01	7.264E-03	0.435
		614.28		6.651E-02	7.391E-02	1.140E-01	6.676E-03	0.583
		722.91		-2.861E-02	7.656E-02	1.195E-01	7.671E-03	-0.239
AG-110M		657.76	*	1.540E+00	1.703E-01	3.111E-01	1.729E-02	4.950
		677.62		7.649E-02	5.646E-01	9.236E-01	5.294E-02	0.083
		706.68		2.710E-01	4.079E-01	6.928E-01	4.254E-02	0.391
		763.94		-3.956E-01	3.461E-01	5.022E-01	3.511E-02	-0.788
		884.68		-1.206E-01	1.235E-01	1.911E-01	1.742E-02	-0.631
		937.49		-2.192E-01	2.994E-01	4.729E-01	4.294E-02	-0.464
		1384.29		8.481E-02	1.873E-01	3.317E-01	2.511E-02	0.256
		1505.03		4.722E-02	3.470E-01	5.766E-01	4.095E-02	0.082
SN-113		391.69	*	-8.809E-03	9.098E-02	1.505E-01	9.269E-03	-0.059
CD-115		260.90		-2.071E+01	3.829E+01	5.941E+01	3.412E+00	-0.349
		492.35		-2.567E+00	1.153E+01	1.868E+01	1.091E+00	-0.137
		527.90	*	1.108E+00	3.565E+00	5.957E+00	3.438E-01	0.186
SN-117M		156.02		1.275E+00	2.790E+00	4.642E+00	2.429E-01	0.275
		158.56	*	-6.947E-02	6.966E-02	1.084E-01	5.631E-03	-0.641
TE-123M		159.00	*	-2.446E-02	4.730E-02	7.530E-02	3.974E-03	-0.325
SB-124		602.73		-7.287E-03	8.168E-02	1.137E-01	6.235E-03	-0.064
		645.85		1.703E-01	9.913E-01	1.627E+00	9.768E-02	0.105
		722.78		-2.675E-01	7.157E-01	1.117E+00	7.046E-02	-0.239
		1690.97	*	4.423E-02	1.133E-01	2.033E-01	1.423E-02	0.218
SB-125		427.87	*	-1.635E-01	2.072E-01	3.282E-01	1.994E-02	-0.498
		463.37		5.278E-01	6.458E-01	1.107E+00	7.504E-02	0.477
		600.60		-1.911E-01	3.789E-01	5.550E-01	3.578E-02	-0.344
		635.95		3.254E-01	6.011E-01	1.012E+00	6.438E-02	0.322
TE-125M		109.28	*	4.079E+00	1.475E+01	2.461E+01	2.235E+00	0.166
I-126		388.63		7.925E-02	2.560E-01	4.324E-01	2.501E-02	0.183
		666.33	*	1.724E-01	3.627E-01	5.329E-01	2.758E-02	0.324
		753.82		-3.448E-02	2.795E+00	4.486E+00	2.926E-01	-0.008
SB-126		414.70		-7.436E-02	1.179E-01	1.888E-01	1.099E-02	-0.394
		666.50		5.089E-02	1.221E-01	1.783E-01	9.232E-03	0.285
		695.00		-6.188E-02	1.081E-01	1.662E-01	9.302E-03	-0.372
		697.00		4.795E-02	3.635E-01	5.930E-01	3.338E-02	0.081
		720.70	*	-3.290E-02	2.011E-01	3.194E-01	1.914E-02	-0.103
		856.80		6.584E-01	8.158E-01	1.428E+00	1.188E-01	0.461
SB-127		252.40		-3.465E-01	2.707E+00	4.300E+00	1.747E+00	-0.081
		473.00		-1.999E-01	1.288E+00	2.105E+00	1.998E-01	-0.095
		685.70	*	-1.906E-01	8.429E-01	1.335E+00	9.619E-02	-0.143
		783.70		2.486E+00	2.369E+00	4.240E+00	4.127E-01	0.586
I-131		80.19		-3.596E+00	5.521E+00	7.813E+00	7.180E-01	-0.460
		284.31		-4.672E-01	1.618E+00	2.690E+00	1.727E-01	-0.174
		364.49	*	5.348E-02	1.389E-01	2.361E-01	1.530E-02	0.227
		636.99		1.965E+00	1.985E+00	3.440E+00	2.064E-01	0.571

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TE-132	49.72			5.780E+00	1.434E+01	2.443E+01	2.274E+00	0.237
	111.76			-1.459E+01	1.418E+01	2.226E+01	1.731E+00	-0.655
	116.30			5.130E+00	1.390E+01	2.049E+01	1.530E+00	0.250
	228.16	*		-1.352E-01	3.505E-01	5.521E-01	7.327E-02	-0.245
BA-133	81.00			-2.508E-02	2.041E-01	2.764E-01	4.383E-02	-0.091
	276.40			3.898E-01	6.861E-01	1.124E+00	1.416E-01	0.347
	302.85			-2.295E-01	2.588E-01	4.137E-01	4.736E-02	-0.555
	356.01	*		4.480E-02	9.364E-02	1.406E-01	1.592E-02	0.319
	383.85			3.962E-01	6.041E-01	1.037E+00	1.106E-01	0.382
I-133	529.87	*		7.466E-05	6.041E-01	Half-Life	too short	
	875.33			1.038E-03	6.041E-01	Half-Life	too short	
	1298.22			1.523E-04	6.041E-01	Half-Life	too short	
CS-134	563.25			1.603E-01	7.264E-01	1.204E+00	6.967E-02	0.133
	569.33			-2.068E-01	4.349E-01	6.848E-01	3.981E-02	-0.302
	604.72			5.701E-02	7.275E-02	1.104E-01	6.079E-03	0.516
	795.86	*		9.031E-03	9.730E-02	1.642E-01	1.199E-02	0.055
	801.95			1.232E-01	8.924E-01	1.515E+00	1.120E-01	0.081
CS-135	1365.19			5.918E-01	1.409E+00	2.495E+00	1.942E-01	0.237
I-135	268.22	*		2.783E-01	3.091E-01	5.150E-01	3.934E-02	0.540
	546.56			-7.013E+02	3.091E-01	Half-Life	too short	
	836.80			5.725E+01	3.091E-01	Half-Life	too short	
	1038.76			-5.889E+02	3.091E-01	Half-Life	too short	
	1131.51			-6.788E+02	3.091E-01	Half-Life	too short	
	1260.41	*		4.103E+02	3.091E-01	Half-Life	too short	
	1457.56			5.546E+03	3.091E-01	Half-Life	too short	
	1678.03			2.196E+03	3.091E-01	Half-Life	too short	
	1791.20			9.594E+02	3.091E-01	Half-Life	too short	
CS-136	153.25			6.276E-01	1.034E+00	1.730E+00	1.327E-01	0.363
	176.60			-5.027E-01	6.148E-01	9.583E-01	6.266E-02	-0.525
	273.65			-1.160E+00	7.548E-01	1.102E+00	7.528E-02	-1.052
	340.55			1.645E-01	2.120E-01	3.257E-01	2.073E-02	0.505
	818.51			4.304E-02	1.189E-01	2.041E-01	1.557E-02	0.211
	1048.07	*		4.380E-03	1.853E-01	3.063E-01	2.438E-02	0.014
	1235.36			5.323E-01	5.362E-01	9.767E-01	9.938E-02	0.545
CE-139	165.86	*		-3.414E-02	4.891E-02	7.697E-02	3.924E-03	-0.444
BA-140	162.66			1.136E-01	9.871E-01	1.616E+00	9.798E-02	0.070
	304.85			-7.055E-01	1.768E+00	2.893E+00	8.270E-01	-0.244
	423.72			3.186E+00	3.304E+00	5.467E+00	1.765E+00	0.583
	537.26	*		-6.297E-02	3.756E-01	6.065E-01	2.019E-01	-0.104
LA-140	328.76			-8.169E-02	4.077E-01	6.741E-01	4.454E-02	-0.121
	487.02			9.953E-02	2.020E-01	3.425E-01	2.262E-02	0.291
	815.77			-7.438E-02	5.168E-01	8.562E-01	7.457E-02	-0.087
	1596.21	*		2.402E-02	8.762E-02	1.536E-01	1.054E-02	0.156
CE-141	145.44	*		-3.156E-03	9.012E-02	1.476E-01	8.325E-03	-0.021
CE-143	57.36			1.499E+03	2.425E+02	3.403E+02	3.510E+01	4.404
	293.27	*		2.390E+01	1.338E+01	1.988E+01	4.042E+00	1.202
	664.57			3.508E+02	1.746E+02	2.390E+02	6.955E+01	1.468
	721.93			-5.428E+01	1.130E+02	1.732E+02	4.712E+01	-0.313
CE-144	80.12			-3.279E+00	5.044E+00	7.139E+00	6.544E-01	-0.459

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PM-144		133.52	*	-2.835E-02	3.316E-01	5.418E-01	7.483E-02	-0.052
		476.78		-3.973E-02	1.483E-01	2.406E-01	1.660E-02	-0.165
		618.01		-8.728E-03	6.224E-02	1.000E-01	5.771E-03	-0.087
PR-144		696.49	*	-1.546E-02	6.650E-02	1.053E-01	5.918E-03	-0.147
		696.51	*	-1.161E+00	4.960E+00	7.850E+00	4.413E-01	-0.148
PM-146		1489.16		-1.276E+01	1.773E+01	2.362E+01	1.685E+00	-0.540
		453.88	*	3.717E-02	9.972E-02	1.677E-01	1.425E-02	0.222
		633.25		-6.834E-01	3.121E+00	4.966E+00	1.867E+00	-0.138
ND-147		735.93		9.014E-02	2.861E-01	4.713E-01	1.291E-01	0.191
		747.24		-9.396E-02	2.118E-01	3.274E-01	4.387E-02	-0.287
	+	91.11		6.165E-01	3.642E-01	5.057E-01	4.974E-02	1.219
		319.41		-2.767E+00	4.194E+00	6.786E+00	4.008E-01	-0.408
		531.02	*	3.515E-01	8.278E-01	1.391E+00	1.879E-01	0.253
PM-149		285.90	*	-9.762E+00	2.424E+01	3.999E+01	5.668E+00	-0.244
EU-152	+	121.78		5.878E-01	2.126E-01	2.660E-01	2.037E-02	2.210
		244.70		1.215E-01	7.079E-01	1.002E+00	5.667E-02	0.121
		344.28	*	-4.007E-02	2.327E-01	3.148E-01	2.085E-02	-0.127
		778.90		-1.130E-01	5.360E-01	8.858E-01	6.147E-02	-0.128
		964.08		-9.180E-02	7.566E-01	1.246E+00	1.061E-01	-0.074
		1085.87		1.324E-01	8.946E-01	1.490E+00	1.048E-01	0.089
		1112.07		1.316E-01	6.941E-01	1.158E+00	7.697E-02	0.114
		1408.01		-1.612E-01	2.363E-01	3.252E-01	2.365E-02	-0.496
		69.67		-1.881E+00	3.541E+00	5.060E+00	4.421E-01	-0.372
		97.43	*	-7.280E-03	1.423E-01	2.063E-01	1.686E-02	-0.035
EU-154	+	103.18		-4.346E-02	1.743E-01	2.849E-01	2.129E-02	-0.153
		123.07		4.154E-01	1.520E-01	1.853E-01	1.746E-02	2.242
		723.31		-1.510E-01	3.493E-01	5.426E-01	3.922E-02	-0.278
		873.19		-4.403E-01	6.598E-01	1.044E+00	1.242E-01	-0.422
		996.26		-3.355E-01	8.898E-01	1.429E+00	2.466E-01	-0.235
EU-155		1004.73		-1.811E-01	5.582E-01	9.021E-01	1.014E-01	-0.201
	+	1274.44	*	6.221E-02	1.737E-01	2.974E-01	2.976E-02	0.209
		86.55		3.988E+00	5.206E-01	5.485E-01	5.332E-02	7.272
		105.31	*	-1.259E-02	1.742E-01	2.868E-01	2.114E-02	-0.044
TB-160	+	86.79		9.991E+00	1.298E+00	1.406E+00	1.359E-01	7.106
		197.04		5.353E-01	9.460E-01	1.568E+00	8.350E-02	0.341
		215.65		-1.415E+00	1.378E+00	2.114E+00	1.155E-01	-0.669
		298.57		1.190E-01	2.182E-01	3.314E-01	1.947E-02	0.359
		879.36	*	2.557E-01	3.195E-01	5.602E-01	4.899E-02	0.456
HO-166M		962.29		-1.346E+00	1.349E+00	2.096E+00	1.789E-01	-0.643
		966.15		9.310E-01	5.219E-01	9.383E-01	7.976E-02	0.992
		1177.93		1.389E-02	6.100E-01	8.602E-01	4.894E-02	0.016
		1271.85		3.068E-01	8.958E-01	1.535E+00	1.025E-01	0.200
		80.57		-1.831E-01	5.502E-01	7.921E-01	7.283E-02	-0.231
		184.41		1.357E-02	6.135E-02	1.014E-01	5.299E-03	0.134
		280.46		-1.196E-01	1.578E-01	2.564E-01	1.493E-02	-0.466
		410.95		-3.287E-02	5.313E-01	8.784E-01	5.107E-02	-0.037
		711.68	*	-6.088E-02	1.230E-01	1.900E-01	1.112E-02	-0.320
		752.31		-1.297E-01	6.064E-01	9.577E-01	6.223E-02	-0.135
	810.29		-6.867E-02	1.276E-01	2.050E-01	1.533E-02	-0.335	

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TA-182		67.75		1.633E-01	2.055E-01	3.419E-01	2.976E-02	0.478
		100.11		-1.439E-01	2.655E-01	4.280E-01	3.349E-02	-0.336
		152.43		5.915E-02	5.617E-01	9.214E-01	4.869E-02	0.064
		222.11		-3.861E-01	6.421E-01	1.003E+00	5.529E-02	-0.385
		1121.30		2.528E-02	2.796E-01	4.628E-01	3.010E-02	0.055
		1189.05		1.631E-01	4.079E-01	7.019E-01	4.072E-02	0.232
		1221.41	*	6.176E-02	2.424E-01	4.097E-01	2.515E-02	0.151
		1231.02		-6.966E-01	5.944E-01	8.017E-01	5.002E-02	-0.869
IR-192	+	295.96		4.363E-01	2.290E-01	3.686E-01	2.197E-02	1.184
		308.46		1.374E-03	1.704E-01	2.864E-01	1.707E-02	0.005
		316.51	*	-1.245E-02	6.191E-02	1.028E-01	6.098E-03	-0.121
		468.07		5.239E-02	1.540E-01	2.582E-01	1.742E-02	0.203
HG-203		70.83		-1.467E+00	2.492E+00	3.534E+00	5.703E-01	-0.415
	+	72.87		4.070E+00	1.697E+00	2.310E+00	3.614E-01	1.762
		279.20	*	-1.403E-02	6.474E-02	1.081E-01	6.637E-03	-0.130
BI-207	+	72.81		1.032E+00	4.090E-01	5.814E-01	5.127E-02	1.775
	+	74.97		6.184E-01	2.452E-01	3.649E-01	3.247E-02	1.695
		569.70		-1.441E-02	6.760E-02	1.084E-01	6.106E-03	-0.133
		1063.66	*	7.540E-03	1.230E-01	2.037E-01	1.496E-02	0.037
		1770.23		-1.045E+00	7.490E-01	7.947E-01	4.921E-02	-1.315
PB-210		46.54	*	-1.575E+01	1.024E+01	1.616E+01	1.248E+00	-0.975
PB-211		404.85	*	-8.809E-01	1.633E+00	2.542E+00	1.220E+00	-0.346
		427.09		-1.363E+00	3.482E+00	5.551E+00	2.544E+00	-0.245
		832.01		9.955E-01	2.463E+00	4.133E+00	2.138E+00	0.241
BI-212		727.33	*	6.974E-01	1.015E+00	1.721E+00	1.870E-01	0.405
		785.37		-1.016E+00	6.561E+00	1.089E+01	7.674E-01	-0.093
		1620.50		2.691E+00	3.368E+00	6.442E+00	4.369E-01	0.418
		271.23		4.955E-01	4.667E-01	7.818E-01	6.273E-02	0.634
RN-219		401.81	*	1.984E-01	8.580E-01	1.441E+00	1.936E-01	0.138
		81.07		-5.779E-02	4.624E-01	6.263E-01	5.779E-02	-0.092
RA-223		83.79		8.442E-02	2.499E-01	3.710E-01	3.495E-02	0.228
		94.87		1.364E+00	7.738E-01	1.228E+00	1.048E-01	1.111
		144.24		-3.027E-01	1.090E+00	1.766E+00	1.218E-01	-0.171
		154.21		5.806E-01	6.587E-01	1.114E+00	7.268E-02	0.521
		269.46		4.661E-01	3.641E-01	6.162E-01	3.718E-02	0.756
		323.87	*	8.445E-02	1.201E+00	2.020E+00	3.263E-01	0.042
	+	338.28		5.104E+00	2.462E+00	3.502E+00	3.610E-01	1.457
		240.99	*	4.269E+00	1.507E+00	2.425E+00	1.367E-01	1.760
RA-224 AC-227		79.69		1.641E-01	2.492E+00	3.660E+00	6.406E-01	0.045
		235.96		9.076E-01	3.401E-01	5.390E-01	4.314E-02	1.684
		256.23	*	1.938E-01	4.847E-01	7.915E-01	8.057E-02	0.245
		299.98		1.044E+00	1.779E+00	2.707E+00	2.986E-01	0.386
		304.50		-1.247E+00	3.014E+00	4.952E+00	7.568E-01	-0.252
		334.37		-1.893E+00	3.831E+00	5.366E+00	7.657E-01	-0.353
		79.80		1.469E-01	3.280E+00	4.813E+00	1.058E+00	0.031
		235.96		9.076E-01	3.386E-01	5.390E-01	3.898E-02	1.684
TH-227		256.23	*	1.938E-01	4.849E-01	7.915E-01	9.482E-02	0.245
		299.98		1.044E+00	1.779E+00	2.707E+00	2.986E-01	0.386
		304.50		-1.247E+00	3.014E+00	4.952E+00	7.568E-01	-0.252

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

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AC-228		334.37		-1.893E+00	3.831E+00	5.366E+00	7.657E-01	-0.353
	+	338.32		1.286E+00	8.055E-01	8.825E-01	3.640E-01	1.457
	+	911.20	*	1.331E+00	5.817E-01	7.700E-01	9.146E-02	1.729
RA-228		968.97		8.494E-01	7.558E-01	1.286E+00	3.126E-01	0.660
	+	338.32		1.286E+00	8.055E-01	8.825E-01	3.640E-01	1.457
	+	911.20	*	1.331E+00	5.817E-01	7.700E-01	9.146E-02	1.729
TH-229		968.97		8.494E-01	7.558E-01	1.286E+00	3.126E-01	0.660
		85.43		1.689E+00	4.765E-01	7.561E-01	7.220E-02	2.234
	+	88.47		5.084E+00	6.605E-01	6.950E-01	6.721E-02	7.314
PA-231		193.51	*	-9.848E-02	9.636E-01	1.553E+00	8.222E-02	-0.063
		210.85		1.732E+00	1.605E+00	2.709E+00	1.471E-01	0.639
		283.69	*	3.339E-01	2.665E+00	4.518E+00	5.933E-01	0.074
TH-231		301.36		2.142E-01	1.035E+00	1.714E+00	1.781E-01	0.125
		81.07		-5.779E-02	4.624E-01	6.263E-01	5.779E-02	-0.092
		83.79		8.442E-02	2.499E-01	3.710E-01	3.495E-02	0.228
TH-232		94.87		1.364E+00	7.738E-01	1.228E+00	1.048E-01	1.111
		144.24		-3.027E-01	1.090E+00	1.766E+00	1.218E-01	-0.171
		154.21		5.806E-01	6.587E-01	1.114E+00	7.268E-02	0.521
PA-233		269.46		4.661E-01	3.641E-01	6.162E-01	3.718E-02	0.756
		323.87	*	8.445E-02	1.201E+00	2.020E+00	3.263E-01	0.042
	+	338.28		5.104E+00	2.462E+00	3.502E+00	3.610E-01	1.457
PA-234		338.32		1.286E+00	6.109E-01	8.825E-01	5.212E-02	1.457
	+	911.20	*	1.331E+00	5.817E-01	7.700E-01	9.146E-02	1.729
		968.97		8.494E-01	7.558E-01	1.286E+00	3.126E-01	0.660
PA-234M		300.13		4.314E-01	7.760E-01	1.227E+00	1.646E-01	0.352
		311.90	*	-3.367E-02	1.240E-01	2.054E-01	1.284E-02	-0.164
		340.48		1.070E+00	1.284E+00	1.948E+00	4.525E-01	0.549
TH-234		94.67		6.243E-01	3.723E-01	4.595E-01	5.682E-02	1.359
	+	98.44		-6.832E-02	1.559E-01	2.260E-01	1.259E-01	-0.302
		111.00		-1.063E-01	3.010E-01	4.885E-01	5.284E-02	-0.217
U-235		131.20		-4.864E-02	1.772E-01	2.872E-01	1.623E-02	-0.169
		569.50		-2.609E-01	6.045E-01	9.549E-01	5.380E-02	-0.273
		733.00		3.152E-01	7.282E-01	1.211E+00	2.588E-01	0.260
U-238		880.51		-3.644E-01	7.071E-01	1.136E+00	9.960E-02	-0.321
		883.24		5.460E-01	7.820E-01	1.213E+00	8.157E-01	0.450
		926.50		-5.271E-01	4.884E-01	7.218E-01	1.831E-01	-0.730
PA-234M		946.00	*	-1.921E-01	8.768E-01	1.435E+00	2.698E-01	-0.134
		949.00		2.907E-01	1.272E+00	2.140E+00	1.855E-01	0.136
		766.42		7.206E+00	2.413E+01	3.917E+01	1.976E+01	0.184
TH-234		1001.03	*	-9.579E-01	1.161E+01	1.917E+01	1.829E+00	-0.050
		63.29	*	-1.406E+00	2.933E+00	4.190E+00	7.708E-01	-0.336
	+	92.59		2.317E+00	1.445E+00	1.893E+00	4.202E-01	1.224
U-235		89.96		1.271E+01	3.804E+00	3.252E+00	8.094E-01	3.907
	+	93.35		1.750E+00	1.098E+00	1.415E+00	3.276E-01	1.237
		143.76	*	-2.684E-01	3.367E-01	5.288E-01	8.234E-02	-0.508
U-238		163.33		2.746E-01	7.336E-01	1.213E+00	2.009E-01	0.226
		185.72		8.627E-02	7.662E-02	1.310E-01	6.862E-03	0.658
		205.31		-4.152E-01	8.411E-01	1.318E+00	2.221E-01	-0.315
		63.29	*	-1.406E+00	2.933E+00	4.190E+00	7.708E-01	-0.336

---- 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		2.317E+00	1.366E+00	1.893E+00	1.685E-01	1.224
		99.53		-1.435E-01	2.560E-01	4.124E-01	3.257E-02	-0.348
		103.37		-2.218E-02	1.606E-01	2.638E-01	1.965E-02	-0.084
		106.12		-6.800E-02	1.397E-01	2.258E-01	1.618E-02	-0.301
		117.23	*	-2.331E-02	7.555E-01	1.087E+00	6.768E-02	-0.021
		228.18		-1.543E-01	4.015E-01	6.332E-01	3.516E-02	-0.244
CM-247		277.60		4.431E-02	3.422E-01	5.495E-01	3.195E-02	0.081
		278.00		1.546E-01	1.386E+00	2.350E+00	1.366E-01	0.066
		287.50		-3.517E-01	2.345E+00	3.922E+00	2.293E-01	-0.090
		402.40	*	5.724E-02	7.959E-02	1.369E-01	7.936E-03	0.418
CF-249		252.80		-4.128E-01	1.852E+00	2.931E+00	1.671E-01	-0.141
		333.37		2.248E-01	3.915E-01	5.933E-01	3.506E-02	0.379
		388.16	*	2.174E-02	8.622E-02	1.452E-01	8.400E-03	0.150
CF-251		177.52	*	-1.583E-01	2.272E-01	3.568E-01	1.846E-02	-0.444
		227.38		1.783E-01	6.492E-01	1.058E+00	5.870E-02	0.168
		285.41		-4.529E-01	4.028E+00	6.751E+00	3.943E-01	-0.067
ANH-511		511.00	*	1.390E-02	7.078E-02	1.255E-01	7.290E-03	0.111

# 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]G1202050253      *
* Acquisition date   : 3-MAR-2010 21:20:30 Detector SN# :                   *
* Detector ID        : GAM23 Sensitivity : 5.000                            *
* Geometry           : CAN Energy tolerance: 2.000                         *
* Elapsed live time: 0 01:00:00.00 Abundance limit : 75.000                *
* Elapsed real time: 0 01:00:01.57 Half life ratio : 8.000                 *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 23-FEB-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID           : G1202050253 Analyst initials: MXR1                 *
* Batch Number        : 956157 Sample Quantity : 1.5544E+02 GRAM           *
* Recovery             : 1.00000 Carrier Weight : 0.00000                  *
*****
*                                     QC DATA                                *
*
* Standard Weight     : 0.00000                                             *
* CALIB. DATE/TIME    : 2-JUN-2009 11:17:00 MS Isotope :                   *
* MSD DPM              : 0.000 MSD Isotope :                               *
* LCS DPM               : 0.000 LCS Isotope :                               *
* LCSD DPM              : 0.000 LCSD Isotope :                             *
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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
CO-57	2.012E-01	7.066E-02	6.977E-02	0.000E+00
CO-60	5.913E+00	5.395E-01	9.413E-02	0.000E+00
CD-109	3.342E+01	4.255E+00	2.473E+00	0.000E+00
SN-126	3.297E+00	4.199E-01	2.455E-01	0.000E+00
BA-137M	5.061E+00	3.724E-01	1.276E-01	0.000E+00
CS-137	5.347E+00	3.944E-01	1.348E-01	0.000E+00
TL-208	4.089E-01	1.230E-01	1.058E-01	0.000E+00
BI-211	2.072E+00	5.985E-01	7.134E-01	0.000E+00
PB-212	8.868E-01	2.216E-01	1.915E-01	0.000E+00
BI-214	7.091E-01	2.440E-01	2.127E-01	0.000E+00
PB-214	7.520E-01	2.210E-01	2.488E-01	0.000E+00
RA-226	7.091E-01	2.440E-01	2.127E-01	0.000E+00
TH-228	8.868E-01	2.216E-01	1.915E-01	0.000E+00
NP-237	9.839E+00	2.379E+00	7.703E-01	0.000E+00
AM-241	1.399E+01	1.545E+00	6.969E-01	0.000E+00

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-1.584E-01	6.653E-01	1.147E+00	0.000E+00 NOT IDENT.
NA-22	2.450E-02	6.023E-02	1.071E-01	0.000E+00 NOT IDENT.
NA-24	0.000E+00	8.648E+02	0.000E+00	0.000E+00 SHORT HLIF
K-40	6.756E-01	5.985E-01	1.187E+00	0.000E+00 NOT IDENT.
SC-46	3.814E-02	9.445E-02	1.683E-01	0.000E+00 NOT IDENT.
V-48	5.080E-02	1.261E-01	2.237E-01	0.000E+00 NOT IDENT.
CR-51	-9.910E-02	5.766E-01	1.028E+00	0.000E+00 NOT IDENT.
MN-54	-4.607E-02	8.684E-02	1.466E-01	0.000E+00 NOT IDENT.
CO-56	2.198E-02	8.196E-02	1.457E-01	0.000E+00 NOT IDENT.
CO-58	-5.037E-02	7.926E-02	1.324E-01	0.000E+00 NOT IDENT.
FE-59	-1.333E-02	2.004E-01	3.403E-01	0.000E+00 NOT IDENT.
ZN-65	-1.688E-01	1.952E-01	3.094E-01	0.000E+00 NOT IDENT.

SE-75	-7.485E-02	8.262E-02	1.352E-01	0.000E+00	FAIL ABUN
SR-85	-1.374E-01	7.726E-02	1.197E-01	0.000E+00	NOT IDENT.
Y-88	8.445E-03	4.861E-02	8.539E-02	0.000E+00	NOT IDENT.
Y-91	1.546E+01	2.851E+01	5.144E+01	0.000E+00	NOT IDENT.
NB-94	-7.493E-02	6.638E-02	1.018E-01	0.000E+00	NOT IDENT.
NB-95	1.308E-03	8.125E-02	1.368E-01	0.000E+00	NOT IDENT.
NB-95M	3.340E-01	2.439E-01	3.985E-01	0.000E+00	NOT IDENT.
ZR-95	-2.841E-03	1.460E-01	2.454E-01	0.000E+00	NOT IDENT.
MO-99	-7.523E+00	5.327E+00	7.693E+00	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	1.993E+09	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-1.921E-02	7.641E-02	1.310E-01	0.000E+00	FAIL ABUN
RH-106	1.480E-02	6.022E-01	1.033E+00	0.000E+00	NOT IDENT.
RU-106	1.480E-02	6.022E-01	1.033E+00	0.000E+00	NOT IDENT.
AG-108M	5.054E-02	6.635E-02	1.212E-01	0.000E+00	NOT IDENT.
AG-110M	0.000E+00	1.669E-01	3.208E-01	0.000E+00	NOT IDENT.
SN-113	-8.809E-03	8.916E-02	1.573E-01	0.000E+00	NOT IDENT.
CD-115	1.108E+00	3.494E+00	6.178E+00	0.000E+00	NOT IDENT.
SN-117M	-6.947E-02	6.827E-02	1.159E-01	0.000E+00	NOT IDENT.
TE-123M	-2.446E-02	4.636E-02	8.056E-02	0.000E+00	NOT IDENT.
SB-124	4.423E-02	1.111E-01	2.042E-01	0.000E+00	NOT IDENT.
SB-125	-1.635E-01	2.030E-01	3.423E-01	0.000E+00	NOT IDENT.
TE-125M	4.079E+00	1.445E+01	2.658E+01	0.000E+00	NOT IDENT.
I-126	1.724E-01	3.555E-01	5.493E-01	0.000E+00	NOT IDENT.
SB-126	-3.290E-02	1.971E-01	3.285E-01	0.000E+00	NOT IDENT.
SB-127	-1.906E-01	8.260E-01	1.375E+00	0.000E+00	NOT IDENT.
I-131	5.348E-02	1.361E-01	2.473E-01	0.000E+00	NOT IDENT.
TE-132	-1.352E-01	3.435E-01	5.853E-01	0.000E+00	NOT IDENT.
BA-133	4.480E-02	9.177E-02	1.474E-01	0.000E+00	NOT IDENT.
I-133	0.000E+00	8.687E+01	0.000E+00	0.000E+00	SHORT HLIF
CS-134	9.031E-03	9.535E-02	1.684E-01	0.000E+00	NOT IDENT.
CS-135	2.783E-01	3.029E-01	5.437E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	1.094E+09	0.000E+00	0.000E+00	SHORT HLIF
CS-136	4.380E-03	1.816E-01	3.118E-01	0.000E+00	NOT IDENT.
CE-139	-3.414E-02	4.793E-02	8.226E-02	0.000E+00	NOT IDENT.
BA-140	-6.297E-02	3.681E-01	6.287E-01	0.000E+00	NOT IDENT.
LA-140	2.402E-02	8.587E-02	1.545E-01	0.000E+00	NOT IDENT.
CE-141	-3.156E-03	8.832E-02	1.583E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	1.311E+01	2.094E+01	0.000E+00	FAIL ABUN
CE-144	-2.835E-02	3.250E-01	5.822E-01	0.000E+00	NOT IDENT.
PM-144	-1.546E-02	6.517E-02	1.084E-01	0.000E+00	NOT IDENT.
PR-144	-1.161E+00	4.861E+00	8.081E+00	0.000E+00	NOT IDENT.
PM-146	3.717E-02	9.773E-02	1.747E-01	0.000E+00	NOT IDENT.
ND-147	3.515E-01	8.113E-01	1.443E+00	0.000E+00	FAIL ABUN
PM-149	-9.762E+00	2.375E+01	4.215E+01	0.000E+00	NOT IDENT.
EU-152	-4.007E-02	2.281E-01	3.303E-01	0.000E+00	FAIL ABUN
GD-153	-7.280E-03	1.395E-01	2.235E-01	0.000E+00	NOT IDENT.
EU-154	6.221E-02	1.702E-01	3.011E-01	0.000E+00	FAIL ABUN
EU-155	-1.259E-02	1.707E-01	3.100E-01	0.000E+00	FAIL ABUN
TB-160	2.557E-01	3.132E-01	5.731E-01	0.000E+00	FAIL ABUN
HO-166M	-6.088E-02	1.205E-01	1.955E-01	0.000E+00	NOT IDENT.
TA-182	6.176E-02	2.375E-01	4.153E-01	0.000E+00	NOT IDENT.
IR-192	-1.245E-02	6.067E-02	1.081E-01	0.000E+00	FAIL ABUN
HG-203	-1.403E-02	6.344E-02	1.140E-01	0.000E+00	FAIL ABUN
BI-207	7.540E-03	1.205E-01	2.073E-01	0.000E+00	FAIL ABUN
PB-210	-1.575E+01	1.003E+01	1.781E+01	0.000E+00	NOT IDENT.
PB-211	-8.809E-01	1.600E+00	2.656E+00	0.000E+00	NOT IDENT.
BI-212	6.974E-01	9.951E-01	1.769E+00	0.000E+00	NOT IDENT.
RN-219	1.984E-01	8.409E-01	1.506E+00	0.000E+00	NOT IDENT.
RA-223	8.445E-02	1.177E+00	2.122E+00	0.000E+00	FAIL ABUN
RA-224	0.000E+00	1.477E+00	2.568E+00	0.000E+00	NOT IDENT.
AC-227	1.938E-01	4.751E-01	8.366E-01	0.000E+00	NOT IDENT.
TH-227	1.938E-01	4.752E-01	8.366E-01	0.000E+00	NOT IDENT.
AC-228	0.000E+00	5.701E-01	7.869E-01	0.000E+00	FAIL ABUN
RA-228	0.000E+00	5.701E-01	7.869E-01	0.000E+00	FAIL ABUN
TH-229	-9.848E-02	9.443E-01	1.653E+00	0.000E+00	FAIL ABUN
PA-231	3.339E-01	2.612E+00	4.763E+00	0.000E+00	NOT IDENT.
TH-231	8.445E-02	1.177E+00	2.122E+00	0.000E+00	FAIL ABUN
TH-232	0.000E+00	5.701E-01	7.869E-01	0.000E+00	FAIL ABUN
PA-233	-3.367E-02	1.215E-01	2.160E-01	0.000E+00	NOT IDENT.
PA-234	-1.921E-01	8.592E-01	1.465E+00	0.000E+00	FAIL ABUN
PA-234M	-9.579E-01	1.138E+01	1.954E+01	0.000E+00	NOT IDENT.
TH-234	-1.406E+00	2.874E+00	4.586E+00	0.000E+00	FAIL ABUN
U-235	-2.684E-01	3.300E-01	5.672E-01	0.000E+00	FAIL ABUN
U-238	-1.406E+00	2.874E+00	4.586E+00	0.000E+00	FAIL ABUN
NP-239	-2.331E-02	7.404E-01	1.172E+00	0.000E+00	NOT IDENT.
CM-247	5.724E-02	7.800E-02	1.430E-01	0.000E+00	NOT IDENT.
CF-249	2.174E-02	8.449E-02	1.518E-01	0.000E+00	NOT IDENT.
CF-251	-1.583E-01	2.227E-01	3.807E-01	0.000E+00	NOT IDENT.

ANH-511	1.390E-02	6.937E-02	1.303E-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]G1202050253.CNF;1
Sample date        : 23-FEB-2010 00:00:00 Acquisition date : 3-MAR-2010 21:20:30.
Sample ID          : G1202050253      Sample quantity   : 1.55440E+02 GRAM
Detector name      : GAM23            Detector geometry: CAN
Elapsed live time  : 0 01:00:00.00    Elapsed real time: 0 01:00:01.57  0.0%
Energy tolerance   : 2.00000 keV      Analyst Initials  : MXR1
Abundance limit    : 75.00000         Sensitivity       : 5.00000
Batch ID           : 956157           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	221	85.60*	6.333E+00	1.966E-01	2.012E-01	35.85
	136.47	-----	10.68	6.271E+00	-----	Line Not Found	-----
CO-60	1173.23	1452	99.85	1.207E+00	5.820E+00	5.839E+00	8.23
	1332.49	1314	99.98*	1.077E+00	5.894E+00	5.913E+00	9.31
CD-109	88.03	1331	3.70*	5.270E+00	3.297E+01	3.342E+01	12.99
SN-126	64.28	-----	9.60	2.723E+00	-----	Line Not Found	-----
	86.94	1331	8.90	5.270E+00	1.371E+01	1.371E+01	42.49
	87.57	1331	37.00*	5.270E+00	3.297E+00	3.297E+00	12.99
BA-137M	661.66	1923	89.90*	2.043E+00	5.058E+00	5.061E+00	7.51
CS-137	661.66	1923	85.10*	2.043E+00	5.344E+00	5.347E+00	7.53
TL-208	277.37	-----	6.60	4.139E+00	-----	Line Not Found	-----
	583.19	164	85.00*	2.279E+00	4.089E-01	4.089E-01	30.69
	860.56	-----	12.50	1.609E+00	-----	Line Not Found	-----
BI-211	72.87	183	1.23	4.006E+00	1.794E+01	1.794E+01	39.64
	351.06	191	12.92*	3.443E+00	2.072E+00	2.072E+00	29.47
PB-212	74.82	183	10.28	4.006E+00	2.147E+00	2.147E+00	40.82
	77.11	208	17.10	4.303E+00	1.368E+00	1.368E+00	32.46
	238.63	371	43.60*	4.636E+00	8.868E-01	8.868E-01	25.50
	300.09	-----	3.30	3.896E+00	-----	Line Not Found	-----
BI-214	609.32	147	45.49*	2.194E+00	7.091E-01	7.091E-01	35.11
	1120.29	-----	14.92	1.258E+00	-----	Line Not Found	-----
	1764.49	28	15.30	8.744E-01	9.956E-01	9.957E-01	55.69
PB-214	74.82	183	5.80	4.006E+00	3.805E+00	3.805E+00	40.43
	77.11	208	9.70	4.303E+00	2.412E+00	2.412E+00	33.49
	242.00	-----	7.25	4.586E+00	-----	Line Not Found	-----
	295.22	94	18.42	3.950E+00	6.256E-01	6.256E-01	52.89
	351.93	191	35.60*	3.443E+00	7.520E-01	7.520E-01	29.98
RA-226	609.32	147	45.49*	2.194E+00	7.091E-01	7.091E-01	35.11
	1120.29	-----	14.92	1.258E+00	-----	Line Not Found	-----
	1764.49	28	15.30	8.744E-01	9.956E-01	9.957E-01	55.69
TH-228	74.82	183	10.28	4.006E+00	2.147E+00	2.147E+00	39.66
	77.11	208	17.10	4.303E+00	1.368E+00	1.368E+00	32.46

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	371	43.60*	4.636E+00	8.868E-01	8.868E-01	25.50
	300.09	-----	3.30	3.896E+00	-----	Line Not Found	-----
NP-237	86.48	1331	12.40*	5.270E+00	9.839E+00	9.839E+00	24.67
	95.86	-----	2.68	5.757E+00	-----	Line Not Found	-----
AM-241	59.54	2139	35.90*	2.058E+00	1.399E+01	1.399E+01	11.27

Flag: "\*" = Keyline

Total number of lines in spectrum 17  
Number of unidentified lines 0  
Number of lines tentatively identified by NID 17 100.00%

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	1.02	1.966E-01	2.012E-01	0.721E-01	35.85	
CO-60	5.27Y	1.00	5.894E+00	5.913E+00	0.551E+00	9.31	
CD-109	461.40D	1.01	3.297E+01	3.342E+01	0.434E+01	12.99	
SN-126	2.30E+05Y	1.00	3.297E+00	3.297E+00	0.428E+00	12.99	
BA-137M	30.08Y	1.00	5.058E+00	5.061E+00	0.380E+00	7.51	
CS-137	30.08Y	1.00	5.344E+00	5.347E+00	0.402E+00	7.53	
TL-208	1.41E+10Y	1.00	4.089E-01	4.089E-01	1.255E-01	30.69	
BI-211	7.04E+08Y	1.00	2.072E+00	2.072E+00	0.611E+00	29.47	
PB-212	1.41E+10Y	1.00	8.868E-01	8.868E-01	2.261E-01	25.50	
BI-214	1600.00Y	1.00	7.091E-01	7.091E-01	2.490E-01	35.11	
PB-214	1600.00Y	1.00	7.520E-01	7.520E-01	2.255E-01	29.98	
RA-226	1600.00Y	1.00	7.091E-01	7.091E-01	2.490E-01	35.11	
TH-228	1.41E+10Y	1.00	8.868E-01	8.868E-01	2.261E-01	25.50	
NP-237	2.14E+06Y	1.00	9.839E+00	9.839E+00	2.427E+00	24.67	
AM-241	432.60Y	1.00	1.399E+01	1.399E+01	0.158E+01	11.27	

Total Activity : 8.302E+01 8.349E+01

Grand Total Activity : 8.302E+01 8.349E+01

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

Unidentified Energy Lines  
Sample ID : G1202050253

Page : 4  
Acquisition date : 3-MAR-2010 21:20:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	92.87	114	283	1.41	185.74	182	9	3.16E-02	58.3	5.60E+00	T
0	338.03	107	148	1.81	676.06	672	10	2.96E-02	47.1	3.55E+00	T
0	910.55	109	95	1.73	1821.10	1815	13	3.02E-02	42.1	1.53E+00	T

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKAl00:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202050253.CNF;1 *
* Acquisition date   : 3-MAR-2010 21:20:30.  Detector SN#      :             *
* Detector ID        : GAM23                      Sensitivity    : 5.00000      *
* Geometry           : CAN                      Energy tolerance: 2.00000      *
* Elapsed live time  : 0 01:00:00.00             Abundance limit : 75.00000      *
* Elapsed real time  : 0 01:00:01.57             Half life ratio : 8.00000      *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 23-FEB-2010 00:00:00  Nuclide Library : SOLID          *
* Sample ID          : G1202050253           Analyst initials: MXR1          *
* Batch Number       : 956157                Sample Quantity : 1.55440E+02 GRAM *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 2-JUN-2009 11:17:00.62MS 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	2.012E-01	7.211E-02	6.478E-02	3.819E-03	3.105
CO-60	5.913E+00	5.505E-01	9.309E-02	6.834E-03	63.519
CD-109	3.342E+01	4.342E+00	2.278E+00	2.224E-01	14.673
SN-126	3.297E+00	4.285E-01	2.261E-01	2.200E-02	14.584
BA-137M	5.061E+00	3.800E-01	1.238E-01	6.323E-03	40.894
CS-137	5.347E+00	4.025E-01	1.307E-01	6.715E-03	40.894
TL-208	4.089E-01	1.255E-01	1.023E-01	6.623E-03	3.998
BI-211	2.072E+00	6.107E-01	6.804E-01	4.435E-02	3.045
PB-212	8.868E-01	2.261E-01	1.808E-01	1.312E-02	4.905
BI-214	7.091E-01	2.490E-01	2.059E-01	1.561E-02	3.444
PB-214	7.520E-01	2.255E-01	2.373E-01	2.026E-02	3.169
RA-226	7.091E-01	2.490E-01	2.059E-01	1.561E-02	3.444
TH-228	8.868E-01	2.261E-01	1.808E-01	1.312E-02	4.905
NP-237	9.839E+00	2.427E+00	7.092E-01	1.636E-01	13.874
AM-241	1.399E+01	1.576E+00	6.358E-01	5.916E-02	22.000

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-1.584E-01		6.788E-01	1.103E+00	7.491E-02	-0.144

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NA-22	2.450E-02		6.145E-02	1.058E-01	7.105E-03	0.232
NA-24	-1.717E-04		4.412E-04	Half-Life too short		
K-40	6.756E-01		6.107E-01	1.177E+00	8.805E-02	0.574
SC-46	3.814E-02		9.637E-02	1.646E-01	1.471E-02	0.232
V-48	5.080E-02		1.287E-01	2.193E-01	1.825E-02	0.232
CR-51	-9.910E-02		5.883E-01	9.780E-01	6.403E-02	-0.101
MN-54	-4.607E-02		8.861E-02	1.431E-01	1.133E-02	-0.322
CO-56	2.198E-02		8.363E-02	1.423E-01	1.158E-02	0.154
CO-58	-5.037E-02		8.087E-02	1.291E-01	9.700E-03	-0.390
FE-59	-1.333E-02		2.045E-01	3.348E-01	2.577E-02	-0.040
ZN-65	-1.688E-01		1.992E-01	3.045E-01	2.011E-02	-0.554
SE-75	-7.485E-02		8.431E-02	1.280E-01	7.455E-03	-0.585
SR-85	-1.374E-01		7.884E-02	1.153E-01	6.692E-03	-1.192
Y-88	8.445E-03		4.960E-02	8.522E-02	5.018E-03	0.099
Y-91	1.546E+01		2.909E+01	5.073E+01	3.026E+00	0.305
NB-94	-7.493E-02		6.773E-02	9.895E-02	5.654E-03	-0.757
NB-95	1.308E-03		8.290E-02	1.332E-01	8.954E-03	0.010
NB-95M	3.340E-01		2.489E-01	3.762E-01	2.785E-02	0.888
ZR-95	-2.841E-03		1.489E-01	2.389E-01	1.843E-02	-0.012
MO-99	-7.523E+00		5.436E+00	7.485E+00	1.094E+00	-1.005
TC-99M	9.260E+02		1.017E+03	Half-Life too short		
RU-103	-1.921E-02		7.797E-02	1.261E-01	1.569E-02	-0.152
RH-106	1.480E-02		6.145E-01	1.000E+00	1.141E-01	0.015
RU-106	1.480E-02		6.145E-01	1.000E+00	5.373E-02	0.015
AG-108M	5.054E-02		6.770E-02	1.162E-01	7.264E-03	0.435
AG-110M	1.540E+00		1.703E-01	3.111E-01	1.729E-02	4.950
SN-113	-8.809E-03		9.098E-02	1.505E-01	9.269E-03	-0.059
CD-115	1.108E+00		3.565E+00	5.957E+00	3.438E-01	0.186
SN-117M	-6.947E-02		6.966E-02	1.084E-01	5.631E-03	-0.641
TE-123M	-2.446E-02		4.730E-02	7.530E-02	3.974E-03	-0.325
SB-124	4.423E-02		1.133E-01	2.033E-01	1.423E-02	0.218
SB-125	-1.635E-01		2.072E-01	3.282E-01	1.994E-02	-0.498
TE-125M	4.079E+00		1.475E+01	2.461E+01	2.235E+00	0.166
I-126	1.724E-01		3.627E-01	5.329E-01	2.758E-02	0.324
SB-126	-3.290E-02		2.011E-01	3.194E-01	1.914E-02	-0.103
SB-127	-1.906E-01		8.429E-01	1.335E+00	9.619E-02	-0.143
I-131	5.348E-02		1.389E-01	2.361E-01	1.530E-02	0.227
TE-132	-1.352E-01		3.505E-01	5.521E-01	7.327E-02	-0.245
BA-133	4.480E-02		9.364E-02	1.406E-01	1.592E-02	0.319
I-133	7.466E-05		4.432E-05	Half-Life too short		
CS-134	9.031E-03		9.730E-02	1.642E-01	1.199E-02	0.055
CS-135	2.783E-01		3.091E-01	5.150E-01	3.934E-02	0.540
I-135	4.103E+02		5.583E+02	Half-Life too short		
CS-136	4.380E-03		1.853E-01	3.063E-01	2.438E-02	0.014
CE-139	-3.414E-02		4.891E-02	7.697E-02	3.924E-03	-0.444
BA-140	-6.297E-02		3.756E-01	6.065E-01	2.019E-01	-0.104
LA-140	2.402E-02		8.762E-02	1.536E-01	1.054E-02	0.156
CE-141	-3.156E-03		9.012E-02	1.476E-01	8.325E-03	-0.021

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CE-143	2.390E+01	+	1.338E+01	1.988E+01	4.042E+00	1.202
CE-144	-2.835E-02		3.316E-01	5.418E-01	7.483E-02	-0.052
PM-144	-1.546E-02		6.650E-02	1.053E-01	5.918E-03	-0.147
PR-144	-1.161E+00		4.960E+00	7.850E+00	4.413E-01	-0.148
PM-146	3.717E-02		9.972E-02	1.677E-01	1.425E-02	0.222
ND-147	3.515E-01		8.278E-01	1.391E+00	1.879E-01	0.253
PM-149	-9.762E+00		2.424E+01	3.999E+01	5.668E+00	-0.244
EU-152	-4.007E-02		2.327E-01	3.148E-01	2.085E-02	-0.127
GD-153	-7.280E-03		1.423E-01	2.063E-01	1.686E-02	-0.035
EU-154	6.221E-02		1.737E-01	2.974E-01	2.976E-02	0.209
EU-155	-1.259E-02		1.742E-01	2.868E-01	2.114E-02	-0.044
TB-160	2.557E-01		3.195E-01	5.602E-01	4.899E-02	0.456
HO-166M	-6.088E-02		1.230E-01	1.900E-01	1.112E-02	-0.320
TA-182	6.176E-02		2.424E-01	4.097E-01	2.515E-02	0.151
IR-192	-1.245E-02		6.191E-02	1.028E-01	6.098E-03	-0.121
HG-203	-1.403E-02		6.474E-02	1.081E-01	6.637E-03	-0.130
BI-207	7.540E-03		1.230E-01	2.037E-01	1.496E-02	0.037
PB-210	-1.575E+01		1.024E+01	1.616E+01	1.248E+00	-0.975
PB-211	-8.809E-01		1.633E+00	2.542E+00	1.220E+00	-0.346
BI-212	6.974E-01		1.015E+00	1.721E+00	1.870E-01	0.405
RN-219	1.984E-01		8.580E-01	1.441E+00	1.936E-01	0.138
RA-223	8.445E-02		1.201E+00	2.020E+00	3.263E-01	0.042
RA-224	4.269E+00		1.507E+00	2.425E+00	1.367E-01	1.760
AC-227	1.938E-01		4.847E-01	7.915E-01	8.057E-02	0.245
TH-227	1.938E-01		4.849E-01	7.915E-01	9.482E-02	0.245
AC-228	1.331E+00	+	5.817E-01	7.700E-01	9.146E-02	1.729
RA-228	1.331E+00	+	5.817E-01	7.700E-01	9.146E-02	1.729
TH-229	-9.848E-02		9.636E-01	1.553E+00	8.222E-02	-0.063
PA-231	3.339E-01		2.665E+00	4.518E+00	5.933E-01	0.074
TH-231	8.445E-02		1.201E+00	2.020E+00	3.263E-01	0.042
TH-232	1.331E+00	+	5.817E-01	7.700E-01	9.146E-02	1.729
PA-233	-3.367E-02		1.240E-01	2.054E-01	1.284E-02	-0.164
PA-234	-1.921E-01		8.768E-01	1.435E+00	2.698E-01	-0.134
PA-234M	-9.579E-01		1.161E+01	1.917E+01	1.829E+00	-0.050
TH-234	-1.406E+00		2.933E+00	4.190E+00	7.708E-01	-0.336
U-235	-2.684E-01		3.367E-01	5.288E-01	8.234E-02	-0.508
U-238	-1.406E+00		2.933E+00	4.190E+00	7.708E-01	-0.336
NP-239	-2.331E-02		7.555E-01	1.087E+00	6.768E-02	-0.021
CM-247	5.724E-02		7.959E-02	1.369E-01	7.936E-03	0.418
CF-249	2.174E-02		8.622E-02	1.452E-01	8.400E-03	0.150
CF-251	-1.583E-01		2.272E-01	3.568E-01	1.846E-02	-0.444
ANH-511	1.390E-02		7.078E-02	1.255E-01	7.290E-03	0.111

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G1202050253          *
* Acquisition date   : 3-MAR-2010 21:20:30 Detector SN# :                   *
* Detector ID        : GAM23 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 2.000                       *
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 01:00:01.57 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 23-FEB-2010 00:00:00 Nuclide Library : SOLID         *
* Sample ID           : G1202050253 Analyst initials: MXR1                *
* Batch Number        : 956157 Sample Quantity : 1.5544E+02 GRAM          *
* Recovery            : 1.00000 Carrier Weight : 0.00000                  *
*****
*
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 2-JUN-2009 11:17:00 MS Isotope :                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

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## Combined Activity-MDA Report

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

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
CO-57	2.012E-01	7.066E-02	3.490E-02	3.605E-02
CO-60	5.913E+00	5.395E-01	4.709E-02	2.753E-01
CD-109	3.342E+01	4.255E+00	1.237E+00	2.171E+00
SN-126	3.297E+00	4.199E-01	1.228E-01	2.142E-01
BA-137M	5.061E+00	3.724E-01	6.383E-02	1.900E-01
CS-137	5.347E+00	3.944E-01	6.743E-02	2.012E-01
TL-208	4.089E-01	1.230E-01	5.293E-02	6.274E-02
BI-211	2.072E+00	5.985E-01	3.569E-01	3.054E-01
PB-212	8.868E-01	2.216E-01	9.578E-02	1.130E-01
BI-214	7.091E-01	2.440E-01	1.064E-01	1.245E-01
PB-214	7.520E-01	2.210E-01	1.245E-01	1.127E-01
RA-226	7.091E-01	2.440E-01	1.064E-01	1.245E-01
TH-228	8.868E-01	2.216E-01	9.578E-02	1.130E-01
NP-237	9.839E+00	2.379E+00	3.854E-01	1.214E+00
AM-241	1.399E+01	1.545E+00	3.486E-01	7.882E-01

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

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-1.584E-01	6.653E-01	5.738E-01	3.394E-01 NOT IDENT.
NA-22	2.450E-02	6.023E-02	5.359E-02	3.073E-02 NOT IDENT.
NA-24	-1.717E+02	8.648E+02	0.000E+00	4.412E+02 SHORT HLIF
K-40	6.756E-01	5.985E-01	5.939E-01	3.054E-01 NOT IDENT.
SC-46	3.814E-02	9.445E-02	8.420E-02	4.819E-02 NOT IDENT.
V-48	5.080E-02	1.261E-01	1.119E-01	6.436E-02 NOT IDENT.
CR-51	-9.910E-02	5.766E-01	5.142E-01	2.942E-01 NOT IDENT.
MN-54	-4.607E-02	8.684E-02	7.335E-02	4.431E-02 NOT IDENT.
CO-56	2.198E-02	8.196E-02	7.291E-02	4.182E-02 NOT IDENT.
CO-58	-5.037E-02	7.926E-02	6.623E-02	4.044E-02 NOT IDENT.
FE-59	-1.333E-02	2.004E-01	1.703E-01	1.022E-01 NOT IDENT.
ZN-65	-1.688E-01	1.952E-01	1.548E-01	9.959E-02 NOT IDENT.

SE-75	-7.485E-02	8.262E-02	6.765E-02	4.215E-02	FAIL ABUN
SR-85	-1.374E-01	7.726E-02	5.988E-02	3.942E-02	NOT IDENT.
Y-88	8.445E-03	4.861E-02	4.272E-02	2.480E-02	NOT IDENT.
Y-91	1.546E+01	2.851E+01	2.574E+01	1.454E+01	NOT IDENT.
NB-94	-7.493E-02	6.638E-02	5.095E-02	3.387E-02	NOT IDENT.
NB-95	1.308E-03	8.125E-02	6.844E-02	4.145E-02	NOT IDENT.
NB-95M	3.340E-01	2.439E-01	1.994E-01	1.245E-01	NOT IDENT.
ZR-95	-2.841E-03	1.460E-01	1.228E-01	7.447E-02	NOT IDENT.
MO-99	-7.523E+00	5.327E+00	3.849E+00	2.718E+00	NOT IDENT.
TC-99M	9.260E+08	1.993E+09	0.000E+00	1.017E+09	SHORT HLIF
RU-103	-1.921E-02	7.641E-02	6.555E-02	3.898E-02	FAIL ABUN
RH-106	1.480E-02	6.022E-01	5.166E-01	3.073E-01	NOT IDENT.
RU-106	1.480E-02	6.022E-01	5.166E-01	3.073E-01	NOT IDENT.
AG-108M	5.054E-02	6.635E-02	6.063E-02	3.385E-02	NOT IDENT.
AG-110M	1.540E+00	1.669E-01	1.605E-01	8.515E-02	NOT IDENT.
SN-113	-8.809E-03	8.916E-02	7.870E-02	4.549E-02	NOT IDENT.
CD-115	1.108E+00	3.494E+00	3.091E+00	1.783E+00	NOT IDENT.
SN-117M	-6.947E-02	6.827E-02	5.800E-02	3.483E-02	NOT IDENT.
TE-123M	-2.446E-02	4.636E-02	4.031E-02	2.365E-02	NOT IDENT.
SB-124	4.423E-02	1.111E-01	1.021E-01	5.667E-02	NOT IDENT.
SB-125	-1.635E-01	2.030E-01	1.713E-01	1.036E-01	NOT IDENT.
TE-125M	4.079E+00	1.445E+01	1.330E+01	7.373E+00	NOT IDENT.
I-126	1.724E-01	3.555E-01	2.748E-01	1.814E-01	NOT IDENT.
SB-126	-3.290E-02	1.971E-01	1.644E-01	1.006E-01	NOT IDENT.
SB-127	-1.906E-01	8.260E-01	6.881E-01	4.214E-01	NOT IDENT.
I-131	5.348E-02	1.361E-01	1.237E-01	6.943E-02	NOT IDENT.
TE-132	-1.352E-01	3.435E-01	2.928E-01	1.752E-01	NOT IDENT.
BA-133	4.480E-02	9.177E-02	7.373E-02	4.682E-02	NOT IDENT.
I-133	7.466E+01	8.687E+01	0.000E+00	4.432E+01	SHORT HLIF
CS-134	9.031E-03	9.535E-02	8.425E-02	4.865E-02	NOT IDENT.
CS-135	2.783E-01	3.029E-01	2.720E-01	1.545E-01	NOT IDENT.
I-135	4.103E+08	1.094E+09	0.000E+00	5.583E+08	SHORT HLIF
CS-136	4.380E-03	1.816E-01	1.560E-01	9.265E-02	NOT IDENT.
CE-139	-3.414E-02	4.793E-02	4.116E-02	2.445E-02	NOT IDENT.
BA-140	-6.297E-02	3.681E-01	3.145E-01	1.878E-01	NOT IDENT.
LA-140	2.402E-02	8.587E-02	7.729E-02	4.381E-02	NOT IDENT.
CE-141	-3.156E-03	8.832E-02	7.918E-02	4.506E-02	NOT IDENT.
CE-143	2.390E+01	1.311E+01	1.048E+01	6.691E+00	FAIL ABUN
CE-144	-2.835E-02	3.250E-01	2.913E-01	1.658E-01	NOT IDENT.
PM-144	-1.546E-02	6.517E-02	5.421E-02	3.325E-02	NOT IDENT.
PR-144	-1.161E+00	4.861E+00	4.043E+00	2.480E+00	NOT IDENT.
PM-146	3.717E-02	9.773E-02	8.738E-02	4.986E-02	NOT IDENT.
ND-147	3.515E-01	8.113E-01	7.219E-01	4.139E-01	FAIL ABUN
PM-149	-9.762E+00	2.375E+01	2.109E+01	1.212E+01	NOT IDENT.
EU-152	-4.007E-02	2.281E-01	1.652E-01	1.164E-01	FAIL ABUN
GD-153	-7.280E-03	1.395E-01	1.118E-01	7.117E-02	NOT IDENT.
EU-154	6.221E-02	1.702E-01	1.506E-01	8.683E-02	FAIL ABUN
EU-155	-1.259E-02	1.707E-01	1.551E-01	8.708E-02	FAIL ABUN
TB-160	2.557E-01	3.132E-01	2.867E-01	1.598E-01	FAIL ABUN
HO-166M	-6.088E-02	1.205E-01	9.779E-02	6.150E-02	NOT IDENT.
TA-182	6.176E-02	2.375E-01	2.078E-01	1.212E-01	NOT IDENT.
IR-192	-1.245E-02	6.067E-02	5.407E-02	3.095E-02	FAIL ABUN
HG-203	-1.403E-02	6.344E-02	5.703E-02	3.237E-02	FAIL ABUN
BI-207	7.540E-03	1.205E-01	1.037E-01	6.149E-02	FAIL ABUN
PB-210	-1.575E+01	1.003E+01	8.911E+00	5.120E+00	NOT IDENT.
PB-211	-8.809E-01	1.600E+00	1.329E+00	8.164E-01	NOT IDENT.
BI-212	6.974E-01	9.951E-01	8.851E-01	5.077E-01	NOT IDENT.
RN-219	1.984E-01	8.409E-01	7.533E-01	4.290E-01	NOT IDENT.
RA-223	8.445E-02	1.177E+00	1.062E+00	6.004E-01	FAIL ABUN
RA-224	4.269E+00	1.477E+00	1.285E+00	7.535E-01	NOT IDENT.
AC-227	1.938E-01	4.751E-01	4.186E-01	2.424E-01	NOT IDENT.
TH-227	1.938E-01	4.752E-01	4.186E-01	2.425E-01	NOT IDENT.
AC-228	1.331E+00	5.701E-01	3.937E-01	2.908E-01	FAIL ABUN
RA-228	1.331E+00	5.701E-01	3.937E-01	2.908E-01	FAIL ABUN
TH-229	-9.848E-02	9.443E-01	8.269E-01	4.818E-01	FAIL ABUN
PA-231	3.339E-01	2.612E+00	2.383E+00	1.333E+00	NOT IDENT.
TH-231	8.445E-02	1.177E+00	1.062E+00	6.004E-01	FAIL ABUN
TH-232	1.331E+00	5.701E-01	3.937E-01	2.908E-01	FAIL ABUN
PA-233	-3.367E-02	1.215E-01	1.080E-01	6.200E-02	NOT IDENT.
PA-234	-1.921E-01	8.592E-01	7.329E-01	4.384E-01	FAIL ABUN
PA-234M	-9.579E-01	1.138E+01	9.777E+00	5.804E+00	NOT IDENT.
TH-234	-1.406E+00	2.874E+00	2.294E+00	1.466E+00	FAIL ABUN
U-235	-2.684E-01	3.300E-01	2.838E-01	1.684E-01	FAIL ABUN
U-238	-1.406E+00	2.874E+00	2.294E+00	1.466E+00	FAIL ABUN
NP-239	-2.331E-02	7.404E-01	5.865E-01	3.778E-01	NOT IDENT.
CM-247	5.724E-02	7.800E-02	7.156E-02	3.979E-02	NOT IDENT.
CF-249	2.174E-02	8.449E-02	7.596E-02	4.311E-02	NOT IDENT.
CF-251	-1.583E-01	2.227E-01	1.904E-01	1.136E-01	NOT IDENT.

ANH-511

1.390E-02

6.937E-02

6.518E-02

3.539E-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	400.2486
49.72	416.1632
57.36	546.3532
59.54	447.0294
63.29	340.3849
63.29	340.3849
64.28	361.7369
67.75	316.3634
69.67	364.6201
70.83	366.7267
72.81	333.0876
72.87	333.1160
72.87	333.1160
74.82	353.2886
74.82	353.2886
74.82	353.2886
74.97	353.3614
77.11	389.6443
77.11	389.6443
77.11	389.6443
79.69	383.3849
79.80	383.4402
80.12	423.1813
80.19	423.2204
80.57	408.2011
81.00	396.2397
81.07	396.2762
81.07	396.2762
83.79	386.9723
83.79	386.9723
85.43	372.4556
86.48	409.7857
86.55	409.8232
86.79	382.3086
86.94	382.3816
87.57	382.6840
88.03	382.9044
88.47	383.1141
89.96	246.6318
91.11	246.9805
92.59	247.4248
92.59	247.4248
93.35	227.5306
94.67	218.5887
94.87	223.2932
94.87	223.2932
95.86	228.2134
97.43	231.7466
98.44	246.5541
99.53	256.2862
100.11	252.5572
103.18	260.2943
103.37	255.4563
105.31	272.6891
106.12	285.6983
109.28	259.1093
111.00	272.4266
111.76	292.4070
116.30	244.5878
117.23	255.9550
121.12	233.4439
121.78	233.6010
122.06	233.6679
123.07	241.5051
131.20	284.1773
133.52	275.7264
136.00	258.1595

136.47	287.6488
140.51	256.2105
140.51	0.0000
143.76	282.4778
144.24	255.0564
144.24	255.0564
145.44	253.2941
152.43	262.0874
153.25	253.0193
154.21	250.1451
154.21	250.1451
156.02	255.6989
158.56	296.5643
159.00	278.0692
162.66	259.2411
163.33	243.8247
165.86	266.1816
176.60	264.3489
177.52	271.8935
181.07	265.2968
184.41	286.0519
185.72	255.7033
193.51	271.0640
197.04	243.0102
205.31	247.7233
210.85	241.1838
215.65	304.6767
222.11	266.9905
227.38	224.3915
228.16	243.0386
228.18	243.0420
235.69	238.3636
235.96	231.3948
235.96	231.3948
238.63	264.5149
238.63	264.5149
240.99	240.9641
242.00	237.6046
244.70	229.2091
252.40	217.0622
252.80	219.3330
256.23	199.8296
256.23	199.8296
260.90	216.0062
264.66	224.3247
268.22	203.5656
269.46	203.7197
269.46	203.7197
271.23	203.9419
273.65	272.6965
276.40	196.7121
277.37	220.4462
277.60	208.1024
278.00	211.5287
279.20	208.9784
279.54	206.3180
280.46	219.0500
283.69	188.7633
284.31	201.4813
285.41	193.4751
285.90	202.5762
287.50	203.6700
293.27	189.2192
295.22	214.5895
295.96	218.3203
298.57	182.2046
299.98	173.2335
299.98	173.2335
300.09	175.8503
300.09	175.8503
300.13	175.8550
301.36	183.5090
302.85	203.6535
304.50	191.0467
304.50	191.0467
304.85	186.5136
308.46	175.8984
311.90	187.2507

316.51	176.6836
319.41	178.8082
320.08	169.6542
323.87	170.9285
323.87	170.9285
328.76	190.8316
333.37	167.1570
334.37	195.1190
334.37	195.1190
338.28	176.9027
338.28	176.9027
338.32	176.9050
338.32	176.9050
338.32	176.9050
340.48	150.6961
340.55	150.7021
344.28	177.4570
351.06	181.8276
351.93	167.2180
356.01	155.0380
364.49	162.3082
366.42	187.0220
383.85	151.4731
388.16	174.6966
388.63	170.9175
391.69	173.0790
400.66	162.2912
401.81	163.3386
402.40	157.6178
404.85	194.3584
410.95	179.4700
414.70	187.5112
423.72	158.1948
427.09	178.8452
427.87	191.5484
433.94	157.9441
453.88	170.1427
463.37	171.8186
468.07	178.0972
473.00	179.4578
476.78	163.8499
477.60	158.9395
487.02	112.6869
492.35	126.9240
497.08	137.1806
511.00	126.8683
514.00	191.5366
527.90	117.5746
529.87	0.0000
531.02	112.6422
537.26	102.7384
546.56	0.0000
563.25	101.6925
569.33	130.7455
569.50	130.7548
569.70	125.6159
583.19	77.6019
600.60	109.3195
602.73	100.7188
604.72	85.1479
609.32	83.5449
609.32	83.5449
610.33	99.2444
614.28	71.4847
618.01	90.0837
621.93	87.0588
621.93	87.0588
633.25	107.4013
635.95	98.0156
636.99	86.4523
645.85	97.2851
657.76	81.3928
661.66	102.0492
661.66	102.0492
664.57	97.5368
666.33	81.6230
666.50	81.6268
677.62	68.3875

685.70	81.4217
695.00	91.3356
696.49	86.0039
696.51	86.0039
697.00	78.4910
702.65	102.3268
706.68	72.2589
711.68	89.6566
720.70	81.2421
721.93	91.0260
722.78	93.2164
722.91	93.2206
723.31	95.4014
724.19	82.4144
727.33	73.8105
733.00	67.4144
735.93	68.5633
739.50	99.1425
747.24	93.9155
752.31	94.0583
753.82	87.5371
756.73	90.8988
763.94	110.8485
765.81	92.2421
766.42	91.1602
777.92	101.0213
778.90	86.3522
783.70	73.5938
785.37	91.1166
795.86	90.4694
801.95	92.4784
810.29	91.7712
810.76	95.4917
815.77	89.1289
818.51	81.7642
832.01	103.5273
834.85	122.2768
836.80	0.0000
846.77	84.2834
856.80	96.7239
860.56	97.7624
871.09	106.5260
873.19	95.2670
875.33	0.0000
879.36	84.0875
880.51	109.6327
883.24	82.2829
884.68	117.3222
889.28	101.3618
898.04	102.5464
911.20	109.4358
911.20	109.4358
911.20	109.4358
926.50	128.1822
937.49	131.4199
944.13	121.0730
946.00	134.5911
949.00	123.1484
962.29	158.3111
964.08	141.9636
966.15	117.8822
968.97	126.6664
968.97	126.6664
968.97	126.6664
983.53	78.6039
996.26	98.3184
1001.03	99.4081
1004.73	109.2520
1037.84	76.6924
1038.76	0.0000
1048.07	82.7900
1050.41	82.8379
1050.41	82.8379
1063.66	78.1482
1085.87	73.5784
1099.45	89.7620
1112.07	75.0153
1115.54	93.0908

1120.29	65.1349
1120.29	65.1349
1120.55	65.1375
1121.30	71.1618
1131.51	0.0000
1173.23	40.5518
1177.93	36.5332
1189.05	26.4486
1204.77	28.5776
1221.41	25.6053
1231.02	37.9726
1235.36	21.5717
1238.28	25.6958
1260.41	0.0000
1271.85	19.6641
1274.44	21.7451
1274.54	21.7460
1291.59	19.7422
1298.22	0.0000
1312.11	27.1267
1332.49	19.7541
1365.19	8.4339
1368.63	0.0000
1384.29	9.5229
1408.01	17.0059
1457.56	0.0000
1460.82	11.8066
1489.16	15.1040
1505.03	9.7372
1596.21	11.3069
1620.50	7.5692
1678.03	0.0000
1690.97	8.6155
1764.49	5.0854
1764.49	5.0854
1770.23	17.4513
1771.35	11.6363
1791.20	0.0000
1836.06	7.8359

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202050253

Total Uranium Activity	-4.3075E+00	ug/g
Total Uranium Counting Unc.	8.5513E+00	ug/g
Total Uranium Tpu	4.3629E-06	ug/g
Total Uranium Mda	6.8272E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 956157                          SAMPLE ID   : G1202050253
*  ANALYST       : MXR1                             DETECTOR    : GAM23
*  SAMPLE DATE   : 23-FEB-2010 00:00:00.00          COUNT TIME   : 0 01:00:00.00
*  ANALYSIS DATE: 3-MAR-2010 21:20:30.65            SAMPLE ALQT: 155.440 GRAM
*
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 2.529E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 2.160E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 3.290E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.597E+00

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# Radiochemistry Batch Checklist, Rev10

Batch# 960227 Product: H<sup>3</sup> Date: 3-16-10

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.	✓		
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)			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: JM

Secondary Review Performed By: Lunch

3/16/10

LANL 3-19-10

# Tritium Que Sheet

10-MAR-10

Batch #: 960227 Analyst: KXK2 First Client Due Date 19-MAR-10 Internal Due Date: 09-MAR-10

Spike Isotope: Hydrogen-3  
LCS Isotope: Hydrogen-3

Spike Code: 0134-K Expiration Date: 3/27/10 Vol: 0.1  
LCS Code: 0134-K Expiration Date: 3/27/10 Vol: 0.1

Prep Date: 3/9/10 Initials: KXK Pipet ID: 2970960 Witness: AW 3/9/10

Sample ID	Client Samp ID	Type	Hazard Code	Mln CRDL	Matrix	Client	Sample Date	Alloquot in vial (g/mL)	LSC Rack #	Dist Rtg #	Vol added for Dist (mL)	Initial Sample Aliquot (g/mL)	Final Wt (g)	Total Moisture Dist (mL)
24756001-1	REIS-10-8314	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	33-3	1			540.76	533.94	14.82
24756002-1	REIS-10-8313	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	33-3	2			595.56	574.72	20.84
24756003-1	REIS-10-8312	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	33-4	3			510.42	484.39	26.03
24756004-1	REIS-10-8315	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	33-5	4			611.20	591.03	20.17
24756005-1	REIS-10-8311	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	33-6	5			559.00	538.88	20.12
24756006-1	REIS-10-8310	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	33-7	6			558.33	538.23	20.10
24756007-1	REIS-10-8303	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	40-1	7			528.54	512.16	16.38
24756008-1	REIS-10-8302	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	40-2	8			559.80	531.25	28.55
24756009-1	REIS-10-8252	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	60-3	9			499.96	486.46	13.50
24756010-1	REIS-10-8253	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	0-1	10			520.79	507.25	13.54
24756011-1	REIS-10-8250	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	0-2	11			584.66	582.17	12.49
24756012-1	REIS-10-8251	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	0-3	12			587.50	572.81	14.69
24756013-1	REIS-10-8248	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	8	0-4	13			535.14	536.58	8.56
24756014-1	REIS-10-8249	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	9.5	0-5	14			654.27	638.00	10.47
24756015-1	REIS-10-8247	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	0-6	15			496.75	485.82	10.93
24756016-1	REIS-10-8254	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	0-7	16			571.30	560.45	10.85
24756017-1	REIS-10-8268	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	0-8	17			521.95	507.86	14.09
24756018-1	REIS-10-8264	SAMPLE		.25 pCi/mL SOIL	LANL010	15-FEB-10	10	0-9	18			555.77	534.65	21.12
248103002-1	WST36-10-8978	SAMPLE		.25 pCi/mL SOIL	LANL010	23-FEB-10	8.5	0-10	19			568.32	556.39	11.93
1207059404-1	MB for batch 960227	MB		.25 pCi/mL SOIL	QC ACCOUNT	15-FEB-10	10	0-11	20			20.00	0.00	20.00
1207059405-1	WST36-10-8978	DUP		.25 pCi/mL SOIL	QC ACCOUNT	23-FEB-10	10	0-12	8			568.80	531.25	28.55
1207059406-1	LCS for batch 960227	LCS		.25 pCi/mL SOIL	QC ACCOUNT	3/9/10	10	37-1	21			20.00	0.00	20.00

Bkg Rack #: 33-1/49-1

Mailies ✓

Bkg prepared with dead water? Yes/No

Instrument Used (circle as appropriate): LS6000 (Red) 7065155 LS6500 (Blue) 7067083 LS6500 (Gold) 7070506 LS6500 (Green) 7067406 Wallac (Yellow) 4140127 LS6000 (Brown) 7060655 Wallac (Pink) 2200082 Wallac (White) 4140299 Purple 7069723 Silver 7060656 Orange DG06095168

Calibration Used: Eco-sint Ultra (10 mL sample/13 mL Eco-sint Ultra)  
Data Reviewed By: AW 3-15-10

GEL Laboratories LLC, Radiochemistry Division

DATE	3/10/2010	INITIALS	KXK2	BATCH NUMBER	960227				
Sample #	Flask Wt. (g)	Sample Wet (g)	Flask & Sample Wet (g)	% Moisture of Sample (Balance Interface using % Moisture Batch)	Total Moisture in Sample (mL)	Flask & Sample Dry (g)	Sample Dry (g)	mLs aliquoted into LSC vial	Collection Tube Number
247563001	200	548.76	748.76	0.027	14.82	733.94	533.94	10	
247563002	200	595.56	795.56	0.035	20.84	774.72	574.72	10	
247563003	200	510.42	710.42	0.051	26.03	684.39	484.39	10	
247563004	200	611.20	811.20	0.033	20.17	791.03	591.03	10	
247563005	200	559.00	759.00	0.036	20.12	738.88	538.88	10	
247563006	200	558.33	758.33	0.036	20.10	738.23	538.23	10	
247563007	200	528.54	728.54	0.031	16.38	712.16	512.16	10	
247563008	200	559.80	759.80	0.051	28.55	731.25	531.25	10	
247568001	200	499.96	699.96	0.027	13.50	686.46	486.46	10	
247568002	200	520.79	720.79	0.026	13.54	707.25	507.25	10	
247568003	200	594.66	794.66	0.021	12.49	782.17	582.17	10	
247568004	200	587.50	787.50	0.025	14.69	772.81	572.81	10	
247568005	200	535.14	735.14	0.016	8.56	726.58	526.58	8	
247568006	200	654.27	854.27	0.016	10.47	843.80	643.80	9.5	
247568007	200	496.75	696.75	0.022	10.93	685.82	485.82	10	
247568008	200	571.30	771.30	0.019	10.85	760.45	560.45	10	
247568009	200	521.95	721.95	0.027	14.09	707.86	507.86	10	
247568010	200	555.77	755.77	0.038	21.12	734.65	534.65	10	
248203002	200	568.32	768.32	0.021	11.93	756.39	556.39	8	
MB	200	20.00	220.00	1	20.00	200.00	0.00	10	
DUP	200	559.80	759.80	0.051	28.55	731.25	531.25	10	
MS	200	20.00	220.00	1	20.00	200.00	0.00	10	

## Tritium Solid

Filename : H3VAC.XLS  
File Type : Excel  
Version # : 1.2.6

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): 2458.34  
LCS Volume Added: 0.10

Batch : 960227  
Analyst : KXK2  
Prep Date : 3/9/2010

H-3 Abundance : 1  
Method Uncertainty : 0.0691  
Geometry: 10mL DW/13mL  
Eoscent Ultra

Procedure Code : LSC\_VH3S  
Parname : Tritium  
Required MDC : 250  
Half-life of Tritium : 12.32 years

Pipet, 0.1 ml Stdev : +/-  
Pipet, 0.5 ml Stdev : +/-  
Pipet, 1.0 ml Stdev : +/-  
Pipet, 5.0 ml Stdev : +/-

0.000701 ml  
0.002564 ml  
0.005480 ml  
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	247563001.1	548.76	0.0148	0.0100	2.5729E-05	533.94	2.70%	1	2/15/2010 12:00
2	247563002.1	595.56	0.0208	0.0100	2.5729E-05	574.72	3.50%	2	2/15/2010 12:00
3	247563003.1	510.42	0.0260	0.0100	2.5729E-05	484.39	5.10%	3	2/15/2010 12:00
4	247563004.1	611.20	0.0202	0.0100	2.5729E-05	591.03	3.30%	4	2/15/2010 12:00
5	247563005.1	559.00	0.0201	0.0100	2.5729E-05	538.88	3.60%	5	2/15/2010 12:00
6	247563006.1	558.33	0.0201	0.0100	2.5729E-05	538.23	3.60%	6	2/15/2010 12:00
7	247563007.1	528.54	0.0164	0.0100	2.5729E-05	512.16	3.10%	7	2/15/2010 12:00
8	247563008.1	559.80	0.0286	0.0100	2.5729E-05	531.25	5.10%	8	2/15/2010 12:00
9	247568001.1	499.96	0.0135	0.0100	2.5729E-05	488.46	2.70%	9	2/15/2010 12:00
10	247568002.1	520.79	0.0135	0.0100	2.5729E-05	507.25	2.60%	10	2/15/2010 12:00
11	247568003.1	594.66	0.0125	0.0100	2.5729E-05	582.17	2.10%	11	2/15/2010 12:00
12	247568004.1	587.50	0.0147	0.0100	2.5729E-05	572.81	2.50%	12	2/15/2010 12:00
13	247568005.1	535.14	0.0086	0.0080	2.5729E-05	526.58	1.60%	13	2/15/2010 12:00
14	247568006.1	654.27	0.0105	0.0085	2.5729E-05	643.80	1.60%	14	2/15/2010 12:00
15	247568007.1	496.75	0.0109	0.0100	2.5729E-05	485.82	2.20%	15	2/15/2010 12:00
16	247568008.1	571.30	0.0109	0.0100	2.5729E-05	560.45	1.90%	16	2/15/2010 12:00
17	247568009.1	521.95	0.0141	0.0100	2.5729E-05	507.86	2.70%	17	2/15/2010 12:00
18	247568010.1	555.77	0.0211	0.0100	2.5729E-05	534.65	3.80%	18	2/15/2010 12:00
19	248203002.1	568.32	0.0119	0.0080	2.5729E-05	556.39	2.10%	19	2/23/2010 12:00
20	1202059604.1	20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	20	3/9/2010 0:00
21	1202059605.1	559.98	0.0286	0.0100	2.5729E-05	531.25	5.13%	8	2/15/2010 12:00
22	1202059606.1	20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	21	3/9/2010 0:00

Count raw Data				Background				Calibration Data				Detector Efficiency				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 Error (cpm/dpm)	Rack Position #	Count Start Date/Time		
1	33-2	95	114	28.19	3.52	95	3/11/2010 11:33	0.996	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	33-1	3/11/2010 9:54		
2	33-3	95	114.5	13.46	3.52	95	3/11/2010 13:11	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	33-1	3/11/2010 9:54		
3	33-4	95	114	12.25	3.52	95	3/11/2010 14:50	0.996	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	33-1	3/11/2010 9:54		
4	33-5	95	114.4	22.76	3.52	95	3/11/2010 16:29	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	33-1	3/11/2010 9:54		
5	33-6	95	114.1	10.22	3.52	95	3/11/2010 18:08	0.996	LSCRED	8/21/2009	8/31/2010	0.2081	0.00792	33-1	3/11/2010 9:54		
6	33-7	95	114.7	17.73	3.52	95	3/11/2010 19:46	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		
7	60-1	95	114.9	11.96	3.52	95	3/11/2010 23:03	0.996	LSCRED	8/21/2009	8/31/2010	0.2078	0.00792	33-1	3/11/2010 9:54		
8	60-2	95	114.8	11.51	3.52	95	3/12/2010 0:41	0.996	LSCRED	8/21/2009	8/31/2010	0.2078	0.00792	33-1	3/11/2010 9:54		
9	60-3	95	114.6	269.92	3.52	95	3/12/2010 2:19	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		
10	0-1	95	113.8	19442.22	3.52	95	3/12/2010 10:51	0.996	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	33-1	3/11/2010 9:54		
11	0-2	95	114	1514.74	3.52	95	3/12/2010 12:29	0.996	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	33-1	3/11/2010 9:54		
12	0-3	95	114.7	1730.79	3.52	95	3/12/2010 14:08	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		
13	0-4	95	112.3	1028	3.52	95	3/12/2010 15:46	0.996	LSCRED	8/21/2009	8/31/2010	0.2088	0.00792	33-1	3/11/2010 9:54		
14	0-5	95	113.7	1181.49	3.52	95	3/12/2010 17:25	0.996	LSCRED	8/21/2009	8/31/2010	0.2083	0.00792	33-1	3/11/2010 9:54		
15	0-6	95	113.4	1212.12	3.52	95	3/12/2010 19:03	0.996	LSCRED	8/21/2009	8/31/2010	0.2084	0.00792	33-1	3/11/2010 9:54		
16	0-7	95	113.7	19013.33	3.52	95	3/12/2010 20:43	0.996	LSCRED	8/21/2009	8/31/2010	0.2083	0.00792	33-1	3/11/2010 9:54		
17	0-8	95	114.7	18833.67	3.52	95	3/12/2010 22:23	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		
18	0-9	95	114.4	1744.07	3.52	95	3/13/2010 0:01	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	33-1	3/11/2010 9:54		
19	49-2	120	731.78	3.93	2.86	120	3/15/2010 21:09	0.997	LSCYELLOW	8/21/2009	8/31/2010	0.2033	0.00792	49-1	3/15/2010 19:07		
20	0-11	95	113.6	2.94	3.52	95	3/13/2010 3:18	0.999	LSCRED	8/21/2009	8/31/2010	0.2083	0.00792	33-1	3/11/2010 9:54		
21	0-12	95	115.1	10.37	3.52	95	3/13/2010 4:56	0.996	LSCRED	8/21/2009	8/31/2010	0.2077	0.00792	33-1	3/11/2010 9:54		
22	37-1	15	114.6	30.47	3.52	95	3/13/2010 6:34	0.999	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		

## 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	Pos.	Decision Level	Critical Level	Required MDC	MDC	MDC pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error pCi/L	Net Count Rate CPM	Net Count Rate Error CPM	1 SIGMA		Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
											Counting Uncertainty pCi/L	Total Prop. Uncertainty pCi/L						
1	137.7611	97.2605	250	201.3797	250	201.5836	5358.1539	0.025	24.670	0.578	125.4823	383.7139		SAMPLE				
2	137.9005	97.3590	250	201.5836	250	201.5836	2161.0852	0.043	9.940	0.423	91.9163	176.3608		SAMPLE				
3	137.7640	97.2625	250	201.3840	250	201.3840	1896.1358	0.047	8.730	0.407	88.4931	158.9691		SAMPLE				
4	137.8753	97.3412	250	201.5467	250	201.5467	4182.2609	0.029	19.240	0.526	114.3291	312.9178		SAMPLE				
5	137.7940	97.2837	250	201.4278	250	201.4278	1455.5413	0.057	6.700	0.380	82.6193	130.7777		SAMPLE				
6	137.9634	97.4033	250	201.6755	250	201.6755	3090.8472	0.034	14.210	0.473	102.8729	238.5874		SAMPLE				
7	138.0244	97.4464	250	201.7647	250	201.7647	1836.6139	0.049	8.440	0.404	87.8414	155.1725		SAMPLE				
8	137.9967	97.4268	250	201.7241	250	201.7241	1738.3409	0.051	7.990	0.398	86.5378	148.6187		SAMPLE				
9	137.9406	97.3872	250	201.6421	250	201.6421	57935.6303	0.011	266.400	1.697	388.9612	4051.9061		SAMPLE				
10	137.7283	97.2374	250	201.3318	250	201.3318	4220947.2933	0.009	19438.700	14.307	3106.6559	293994.8956		SAMPLE				
11	137.7831	97.2761	250	201.4120	250	201.4120	328279.1072	0.009	1511.220	3.998	868.4140	22880.3095		SAMPLE				
12	137.8797	97.4148	250	201.6993	250	201.6993	375746.4367	0.009	1727.270	4.273	929.4718	26186.3056		SAMPLE				
13	171.7079	121.2272	250	251.0033	250	251.0033	277340.4413	0.010	1024.480	3.295	892.0450	19351.4653		SAMPLE				
14	144.9556	102.3399	250	211.8967	250	211.8967	269208.4833	0.009	1177.970	3.532	807.1490	18769.8282		SAMPLE				
15	137.8320	97.1894	250	201.1910	250	201.1910	262253.6240	0.009	1208.600	3.577	776.2106	18281.7983		SAMPLE				
16	137.7107	97.2250	250	201.3061	250	201.3061	4127591.0604	0.009	19009.810	14.148	3071.8133	287471.9713		SAMPLE				
17	137.9870	97.4200	250	201.7089	250	201.7089	4096485.3636	0.009	18830.150	14.081	3063.4012	285326.4627		SAMPLE				
18	137.9032	97.3609	250	201.5875	250	201.5875	378425.5789	0.009	1740.550	4.289	932.5087	26372.8916		SAMPLE				
19	141.3302	98.7803	250	206.5063	250	206.5063	297.2729	0.222	1.070	0.238	66.0870	69.2590		SAMPLE				
20	137.2353	96.8893	250	200.6111	250	200.6111	-125.4912	0.450	-0.580	0.261	58.4208	56.4211		MB				
21	138.1100	97.5089	250	201.8898	250	201.8898	1491.5415	0.056	6.850	0.382	83.2596	133.1302	247563008.1	DUP	15.3%	0.4377	5536.7931	105.5%
22	263.3093	185.8986	250	415.1563	250	415.1563	5842.6357	0.054	26.950	1.438	311.7926	512.6428		LCS				

## ID: TRITIUM

11 MAR 2010 10:03

USER: 2

COMMENT: RED

PRESET TIME : 120.00

DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : EDIT

COUNT BLANK : NO IC# : NO REPLICATES : 1 RS232 : EDIT

TWO PHASE : NO ADC : NO CYCLE REPEATS : 1 DISK : OFF

SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0

LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

CHAN: 65.0 - 225.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

CHAN: 0.0 - 990.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
1	33-1	95.00	113.6	3.52	12.18	46.34	3.04	1.70	97.93
2	33-2	95.00	114.0	28.19	3.93	82.41	2.27	1.15	196.43
3	33-3	95.00	114.5	13.46	5.79	61.85	2.63	1.52	294.95
4	33-4	95.00	114.0	12.25	6.11	58.34	2.71	1.79	393.51
5	33-5	95.00	114.4	22.76	4.39	71.96	2.44	1.37	492.05
6	33-6	SAMPLE TERMINATED:							
7	33-7	SAMPLE TERMINATED:							

## ID: TRITIUM

11 MAR 2010 18:17

USER: 2

COMMENT:RED

```

PRESET TIME :      95.00
DATA CALC   :      CPM  H#   :YES  SAMPLE REPEATS:   1  PRINTER      :EDIT
COUNT BLANK :      NO  IC#  : NO  REPLICATES   :   1  RS232       :EDIT
TWO PHASE    :      NO  ADC  : NO  CYCLE REPEATS :   1  DISK        : OFF
SCINTILLATOR: LIQUID  LUMEX:YES  LOW SAMPLE REJ:   0
LOW LEVEL    :      NO  HALF LIFE CORRECTION DATE: none

```

```

CHAN: 65.0 - 225.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0
CHAN: 0.0 - 990.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

```

ALPHA-BETA DISCRIMINATION: NO

SAM	POS	TIME	H#	WIND1		WIND2		LUMEX	ELAPSED
				CPM	%ERROR	CPM	%ERROR		
NO		MIN						%	TIME
MISSING SAMPLE									
6	33-6	95.00	114.1	10.22	6.74	53.68	2.83	1.82	98.07
7	33-7	95.00	114.7	17.73	5.00	66.26	2.54	1.34	196.56

## ID: TRITIUM

11 MAR 2010 23:11

USER: 2 COMMENT: RED

PRESET TIME : 95.00

DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : EDIT

COUNT BLANK : NO IC# : NO REPLICATES : 1 RS232 : EDIT

TWO PHASE : NO ADC : NO CYCLE REPEATS : 1 DISK : OFF

SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0

LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

CHAN: 65.0 - 225.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

CHAN: 0.0 - 990.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
1	60-1	95.00	114.9	11.96	6.14	62.35	2.62	1.32	97.94
2	60-2	95.00	114.8	11.51	6.25	61.19	2.64	1.22	196.37
3	60-3	95.00	114.6	269.92	1.25	431.72	0.99	0.17	294.77

INSTRUMENT CALIBRATION: Mini 12 MAR 2010 04:29

Calibration successful

Calibrating Auto DPM

Counting Standard for 14C

Calibration Complete: 14C

Counting Standard for 3H

Calibration Complete: 3H

Calibration Successful

## ID: TRITIUM

12 MAR 2010 10:59

USER: 2

COMMENT: RED

PRESET TIME : 95.00  
 DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : EDIT  
 COUNT BLANK : NO IC# : NO REPLICATES : 1 RE232 : EDIT  
 TWO PHASE : NO AQC : NO CYCLE REPEATS : 1 DISK : OFF  
 SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0  
 LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

CHAN: 65.0 - 225.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0  
 CHAN: 0.0 - 990.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
1	0-1	95.00	113.8	19442.22	0.15	28095.98	0.12	0.01	99.17
2	0-2	95.00	114.0	1514.74	0.53	2240.23	0.43	0.04	197.72
3	0-3	95.00	114.7	1730.79	0.49	2539.36	0.41	0.03	296.24
4	0-4	95.00	112.3	1028.00	0.64	1545.53	0.52	0.06	394.77
5	0-5	95.00	113.7	1181.49	0.60	1753.71	0.49	0.05	493.25
6	0-6	95.00	113.4	1212.12	0.59	1797.66	0.48	0.04	591.76
7	0-7	95.00	113.7	19013.33	0.15	27531.88	0.12	0.01	691.42
8	0-8	95.00	114.7	18833.67	0.15	27307.73	0.12	0.01	791.03
9	0-9	95.00	114.4	1744.07	0.49	2569.88	0.40	0.02	889.46
10	0-10	95.00	114.7	4.38	10.32	46.33	3.03	1.00	987.76
11	0-11	95.00	113.6	2.94	12.84	43.23	3.14	0.97	1086.03
12	0-12	95.00	115.1	10.37	6.51	53.62	2.81	0.82	1184.28

## ID: TRITIUM

13 MAR 2010 06:44

USER: 3 COMMENT: RED  
 PRESET TIME : 15.00  
 DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : EDIT  
 COUNT BLANK : NO IC# : NO REPLICATES : 1 RS232 : EDIT  
 TWO PHASE : NO ABC : NO CYCLE REPEATS : 1 DISK : OFF  
 SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0  
 LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

CHAN: 65.0 - 225.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0  
 CHAN: 0.0 - 990.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
1	37-1	15.00	114.6	30.47	9.42	84.33	5.64	0.56	15.81

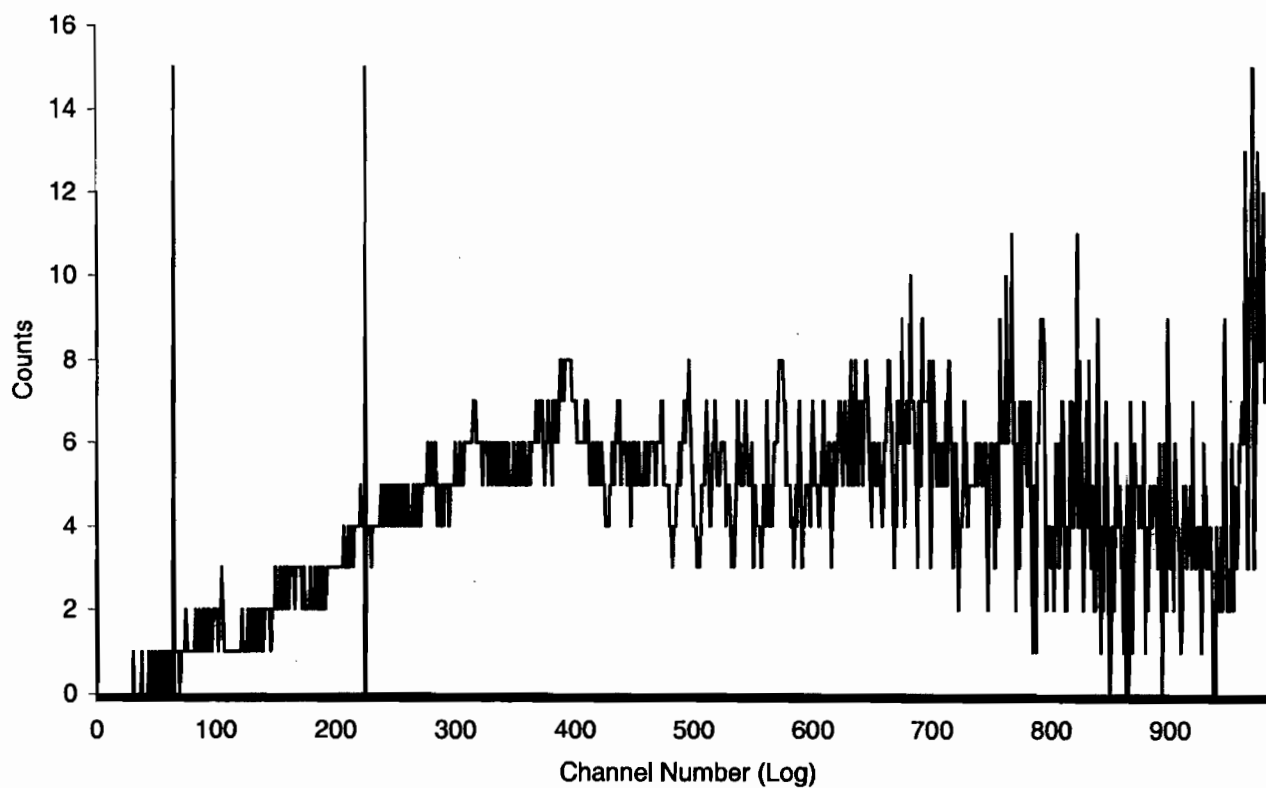
INSTRUMENT CALIBRATION: Mini 13 MAR 2010 07:03  
 Calibration successful

Calibrating Auto DPM  
 Counting Standard for 14C  
 Calibration Complete: 14C  
 Counting Standard for 3H  
 Calibration Complete: 3H  
 Calibration Successful

Sample Count Start Time:	11 Mar 2010 09:54:58		
Data Capture Date	11 Mar 2010 11:29:20		
User Filename	S02031133-1A.XLS		
	U02031133-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	33-1	95.00
H#, Total Counts:	113.6	5061	
Win1: Tritium - Start, End, Counts:	65	225	338
Win2: - Start, End, Counts:	0	990	4409

# SPECTRUM PLOT

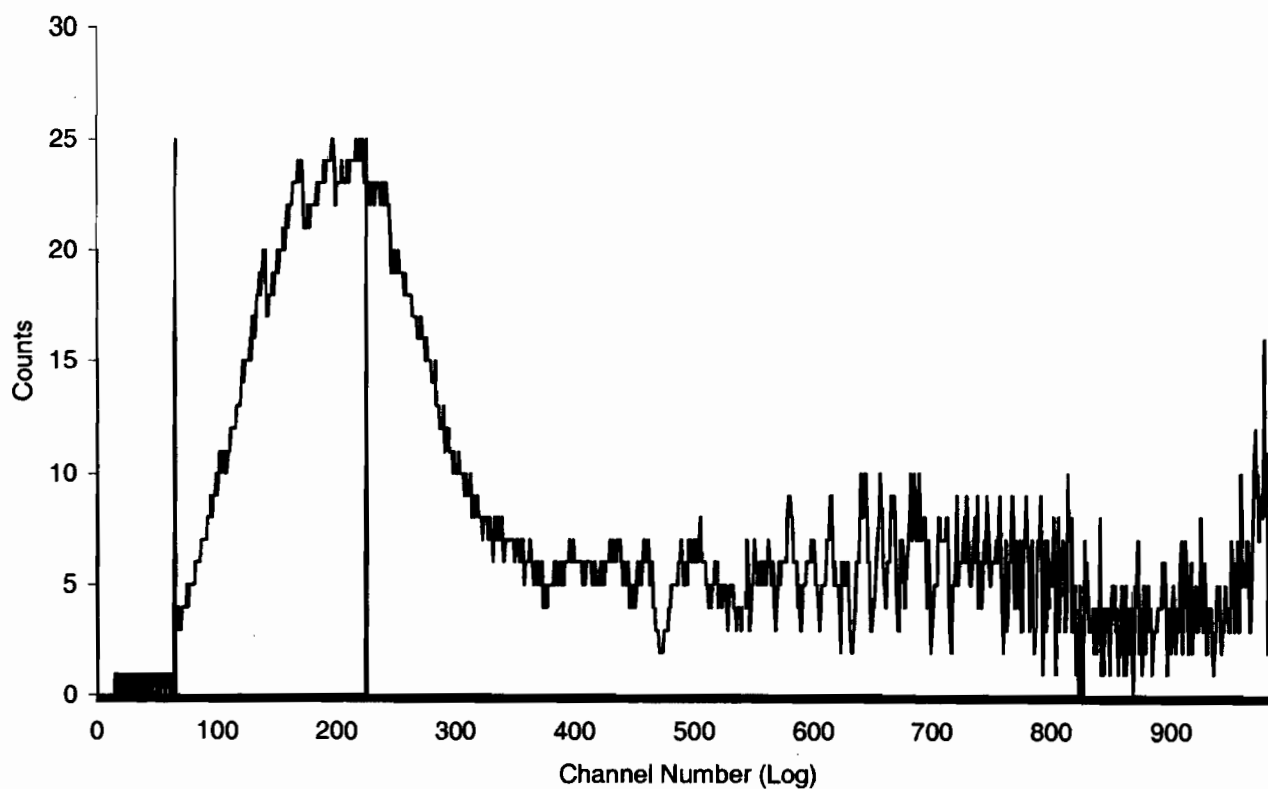
USER 02 - TRITIUM



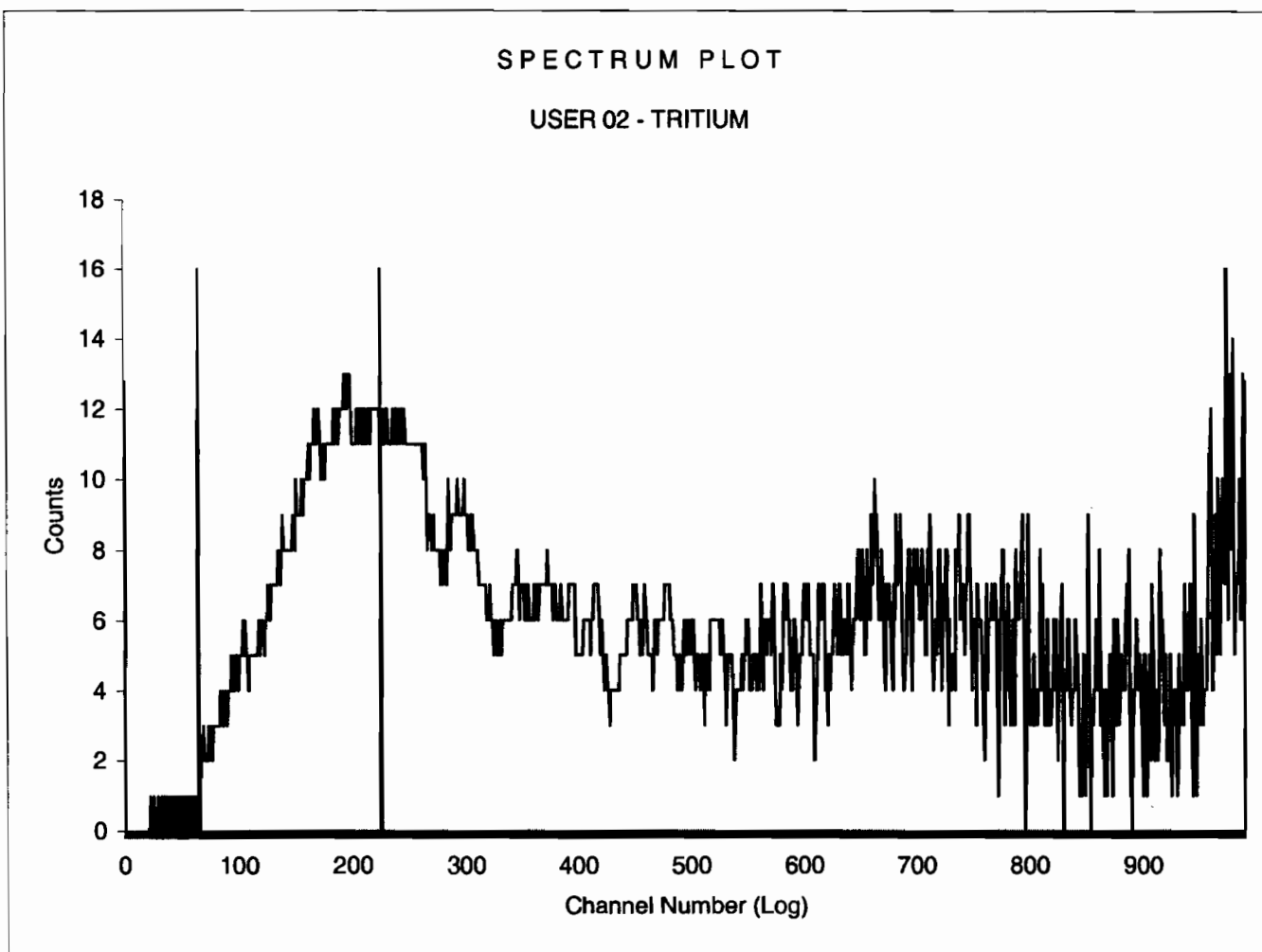
Sample Count Start Time:	11 Mar 2010 11:33:28
Data Capture Date	11 Mar 2010 13:07:51
User Filename	S02031133-2A.XLS
	U02031133-1A.XLS
Spectrum Type	Log Counts
User Number	02
User Id	TRITIUM
User Comment	RED
Scintillator	LIQUID
Sample, Rack-Pos, Time:	2 33-2 95.00
H#, Total Counts:	114.0 8659
Win1: Tritium - Start, End, Counts:	65 225 2697
Win2: - Start, End, Counts:	0 990 7836

### SPECTRUM PLOT

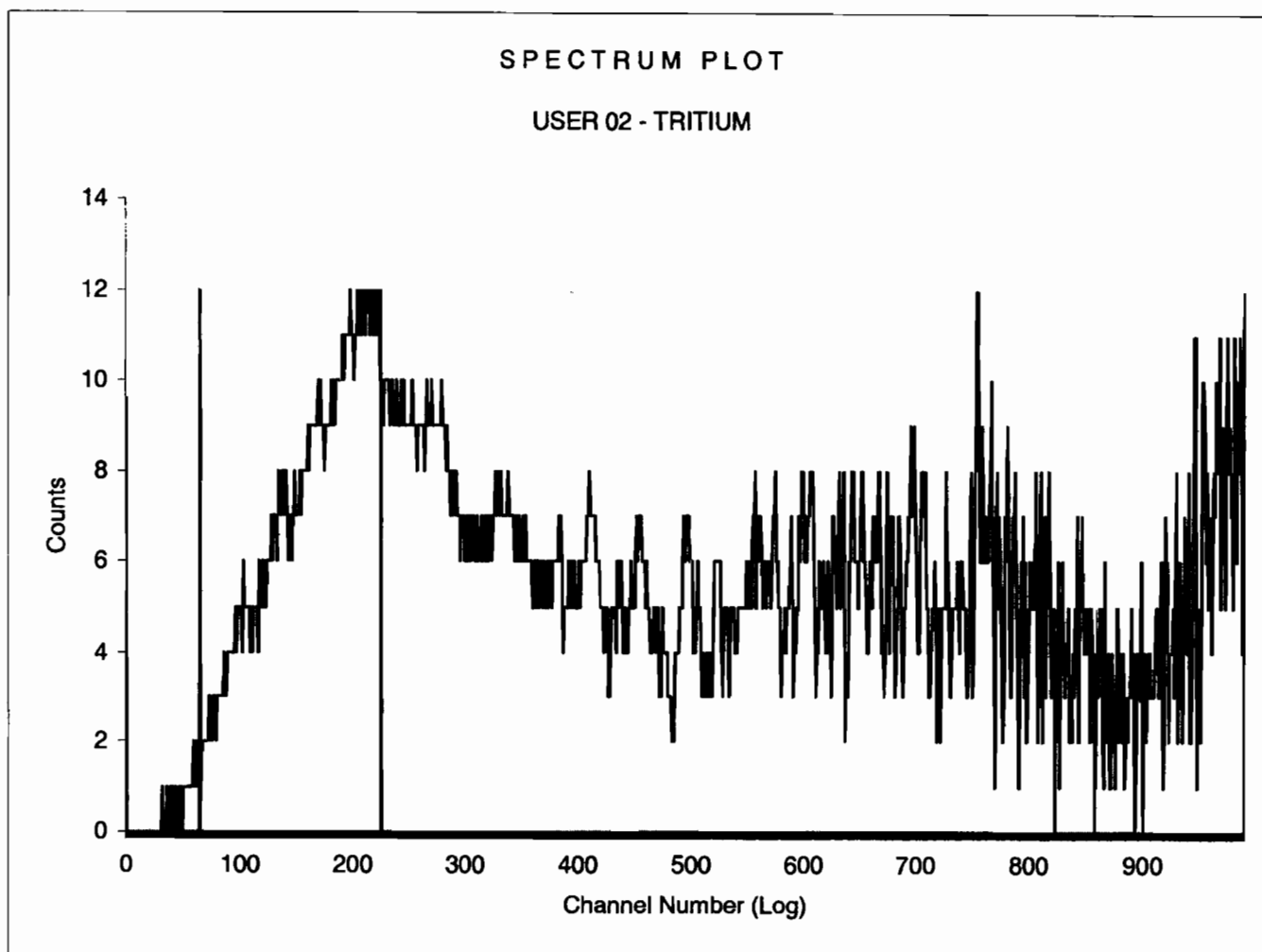
USER 02 - TRITIUM



Sample Count Start Time:	11 Mar 2010 13:11:59		
Data Capture Date	11 Mar 2010 14:46:22		
User Filename	S02031133-3A.XLS		
	U02031133-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	3	33-3	95.00
H#, Total Counts:	114.5	6781	
Win1: Tritium - Start, End, Counts:	65	225	1289
Win2: - Start, End, Counts:	0	990	5888



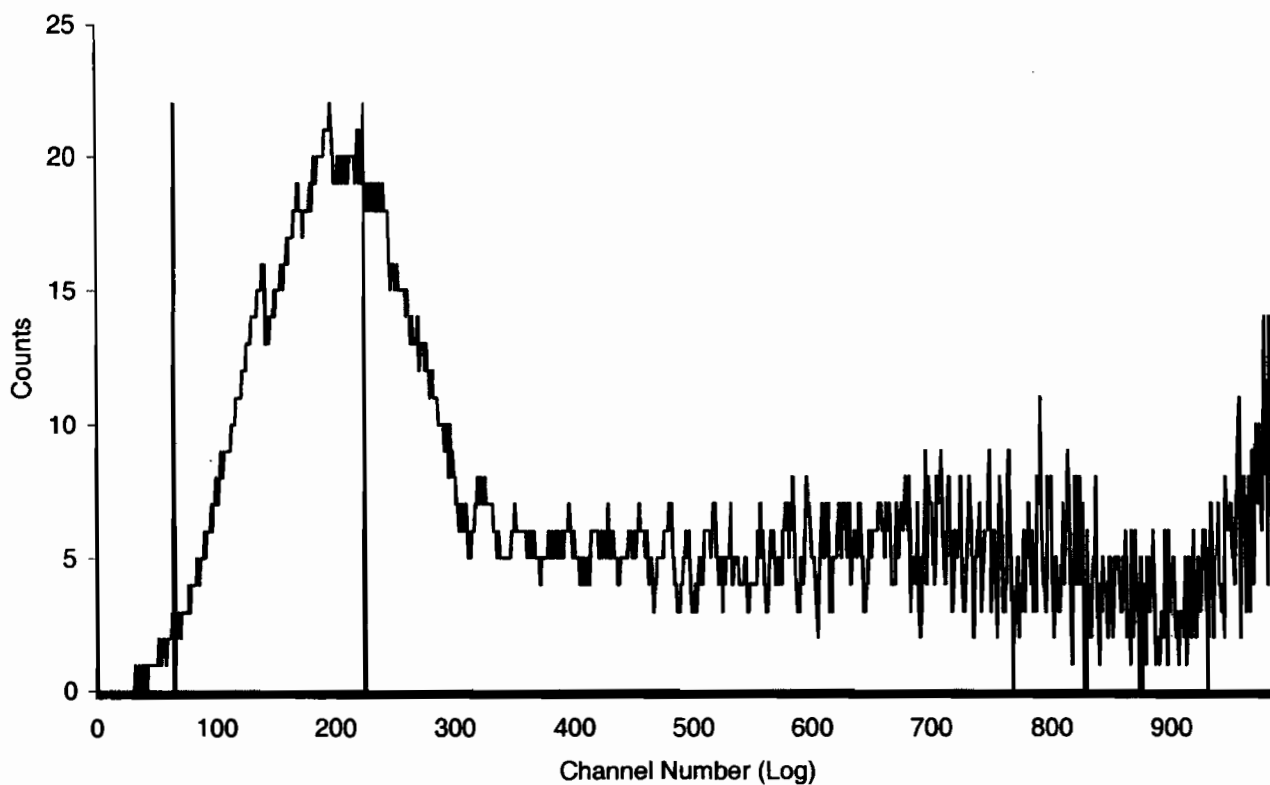
Sample Count Start Time:	11 Mar 2010 14:50:33		
Data Capture Date	11 Mar 2010 16:24:55		
User Filename	S02031133-4A.XLS		
	U02031133-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	4	33-4	95.00
H#, Total Counts:	114.0	6280	
Win1: Tritium - Start, End, Counts:	65	225	1172
Win2: - Start, End, Counts:	0	990	5560



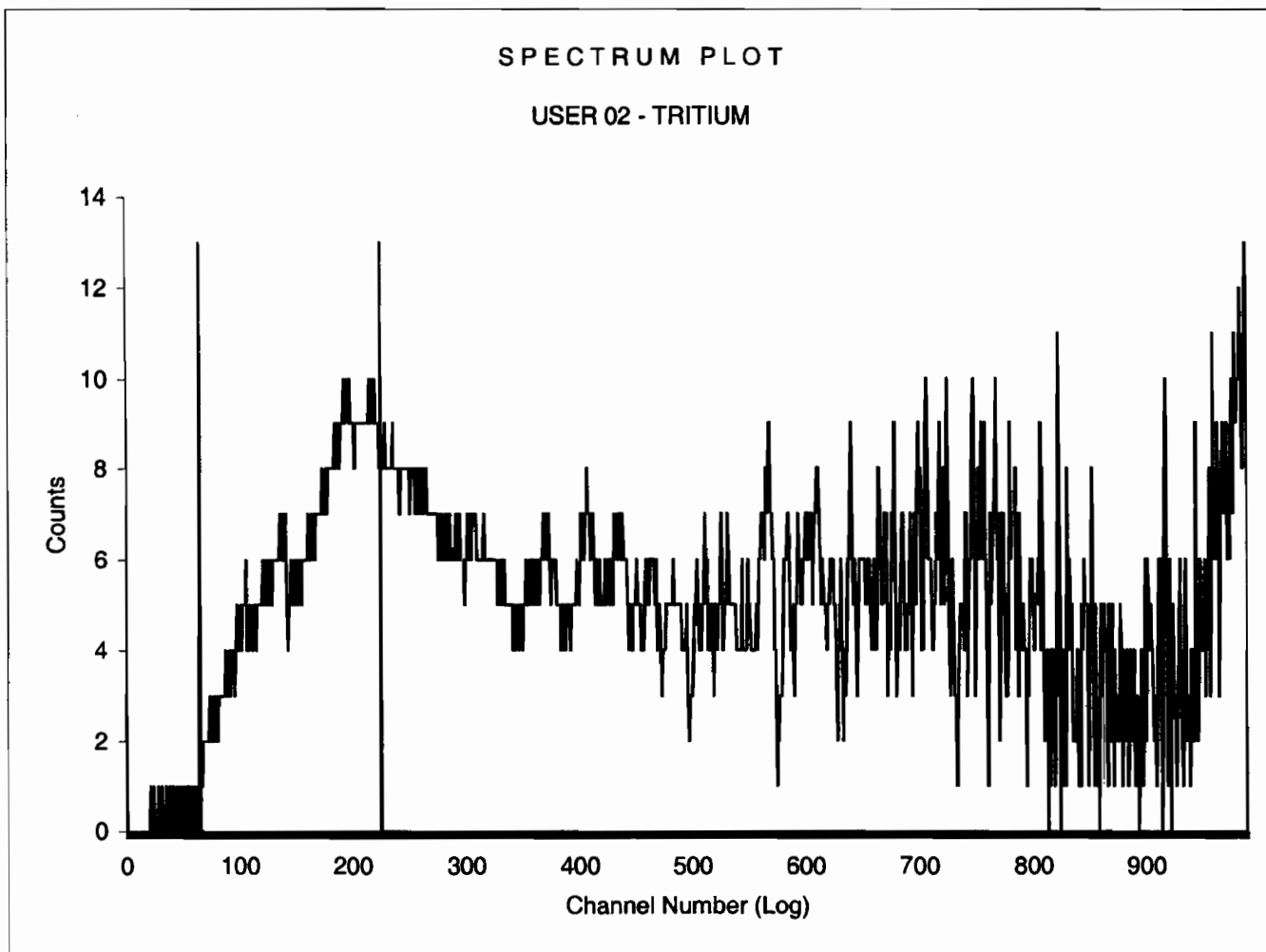
Sample Count Start Time:	11 Mar 2010 16:29:05		
Data Capture Date	11 Mar 2010 18:03:30		
User Filename	S02031133-5A.XLS		
	U02031133-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	5	33-5	95.00
H#, Total Counts:	114.4	7540	
Win1: Tritium - Start, End, Counts:	65	225	2177
Win2: - Start, End, Counts:	0	990	6843

# SPECTRUM PLOT

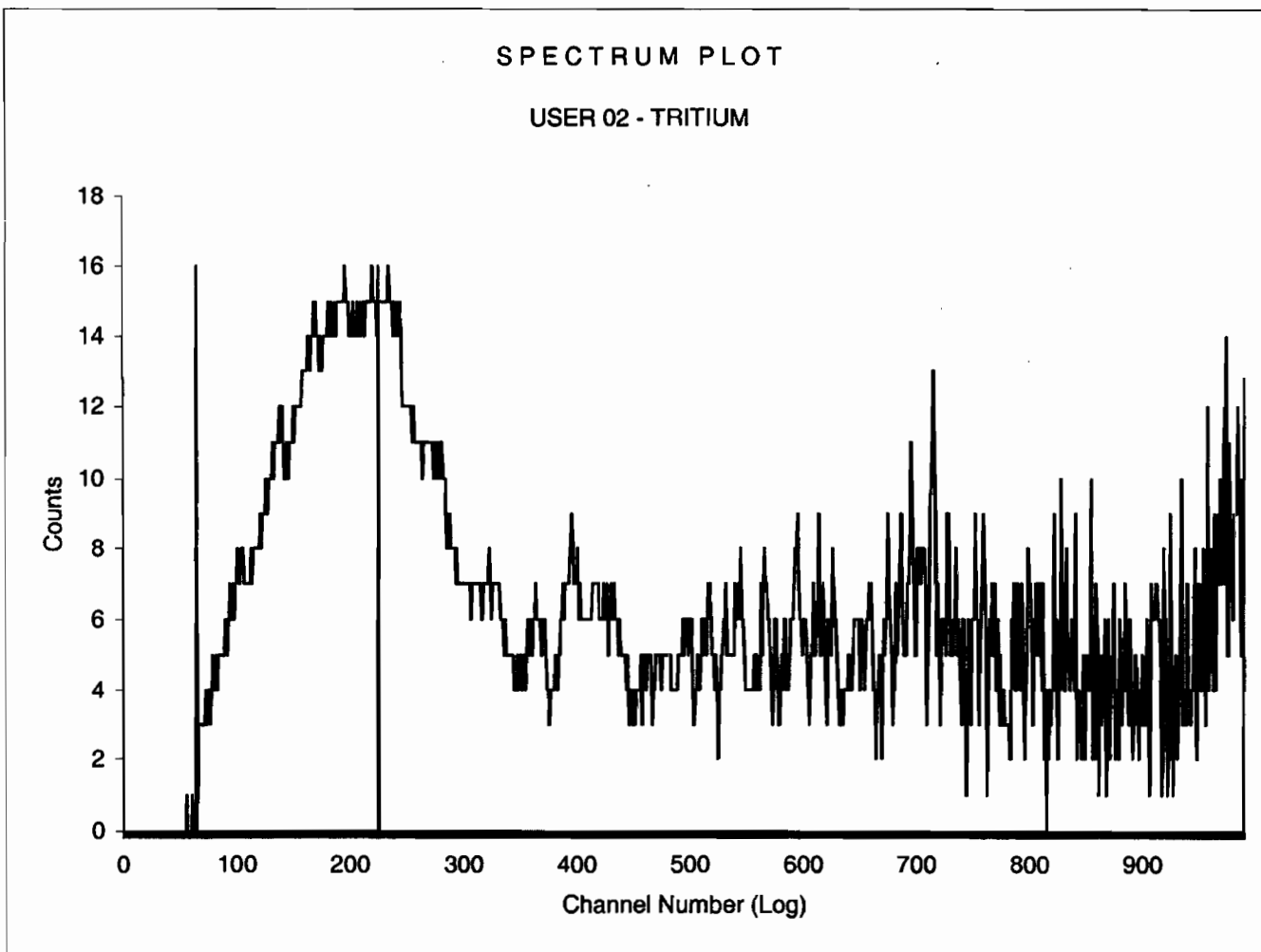
USER 02 - TRITIUM



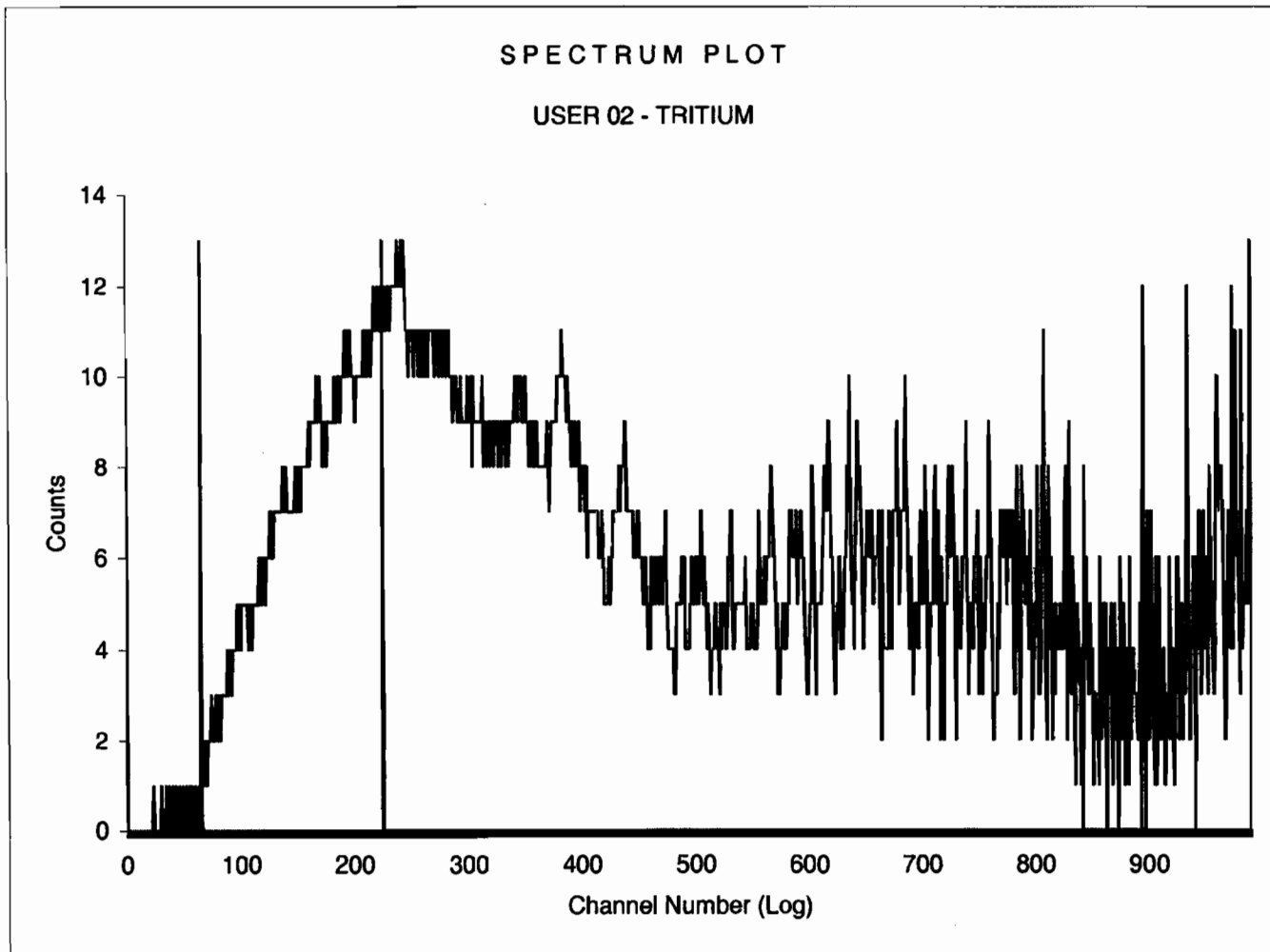
Sample Count Start Time:	11 Mar 2010 18:08:05		
Data Capture Date	11 Mar 2010 19:43:19		
User Filename	S02031133-6A.XLS		
	U02031133-6A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	6	33-6	95.00
H#, Total Counts:	114.1	5786	
Win1: Tritium - Start, End, Counts:	65	225	979
Win2: - Start, End, Counts:	0	990	5113



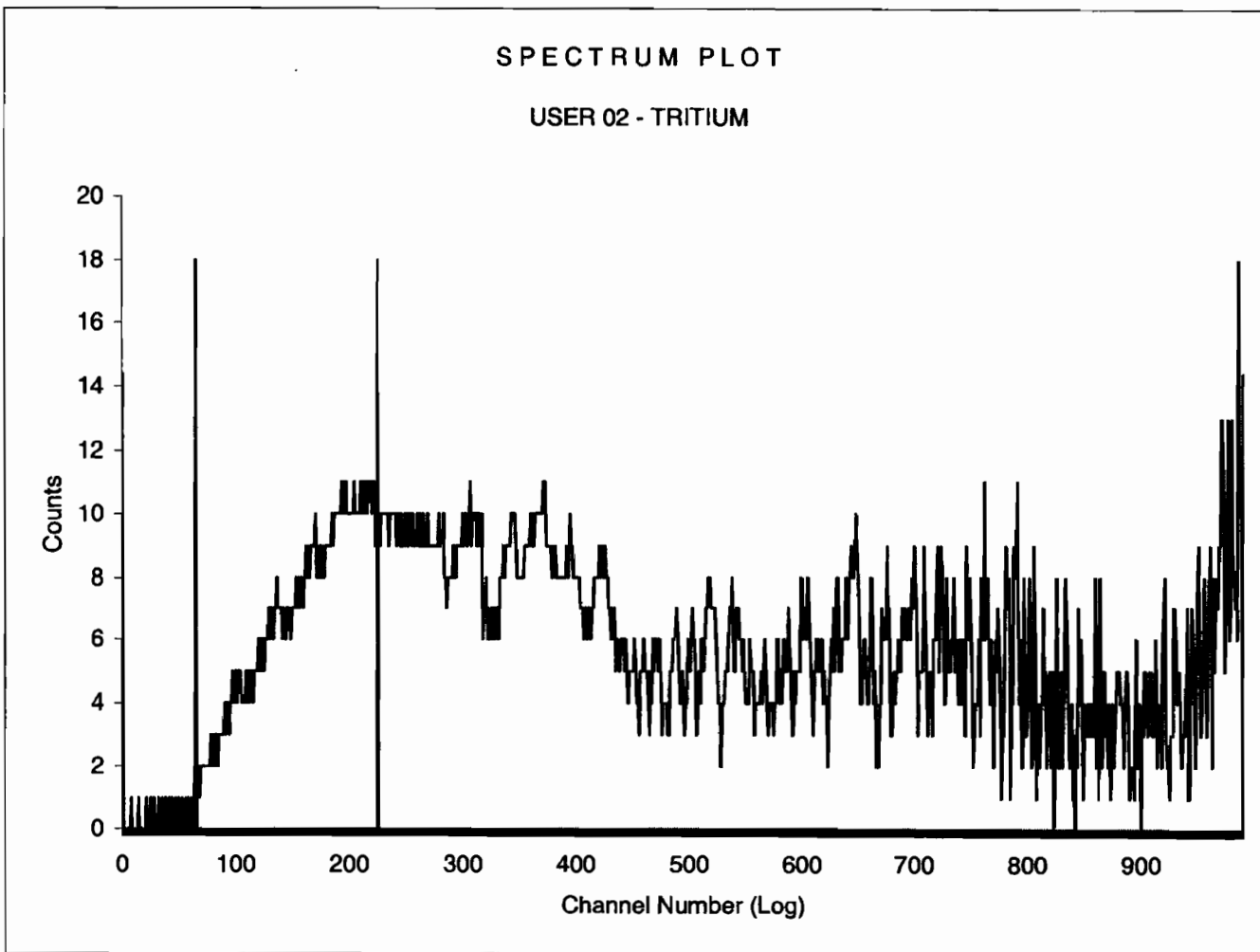
Sample Count Start Time:	11 Mar 2010 19:46:35		
Data Capture Date	11 Mar 2010 21:21:49		
User Filename	S02031133-7A.XLS		
	U02031133-6A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	7	33-7	95.00
H#, Total Counts:	114.7	7098	
Win1: Tritium - Start, End, Counts:	65	225	1699
Win2: - Start, End, Counts:	0	990	6270



Sample Count Start Time:	11 Mar 2010 23:03:08		
Data Capture Date	12 Mar 2010 00:38:25		
User Filename	S02031260-1A.XLS		
	U02031160-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	60-1	95.00
H#, Total Counts:	114.9	6701	
Win1: Tritium - Start, End, Counts:	65	225	1146
Win2: - Start, End, Counts:	0	990	5932



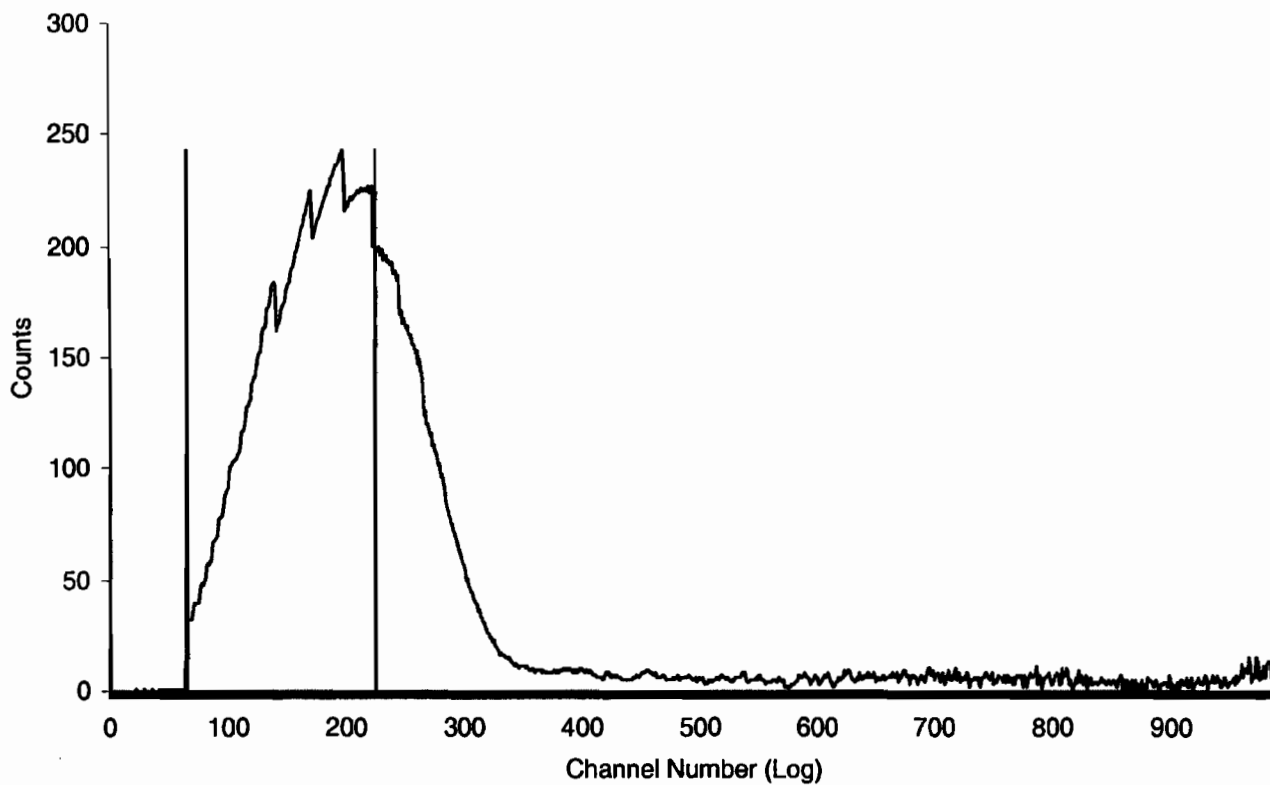
Sample Count Start Time:	12 Mar 2010 00:41:34
Data Capture Date	12 Mar 2010 02:15:59
User Filename	S02031260-2A.XLS
	U02031160-1A.XLS
Spectrum Type	Log Counts
User Number	02
User Id	TRITIUM
User Comment	RED
Scintillator	LIQUID
Sample, Rack-Pos, Time:	2 60-2 95.00
H#, Total Counts:	114.8 6567
Win1: Tritium - Start, End, Counts:	65 225 1102
Win2: - Start, End, Counts:	0 990 5824



Sample Count Start Time:	12 Mar 2010 02:19:58		
Data Capture Date	12 Mar 2010 03:54:23		
User Filename	S02031260-3A.XLS		
	U02031160-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	3	60-3	95.00
H#, Total Counts:	114.6	41480	
Win1: Tritium - Start, End, Counts:	65	225	25809
Win2: - Start, End, Counts:	0	990	40769

### SPECTRUM PLOT

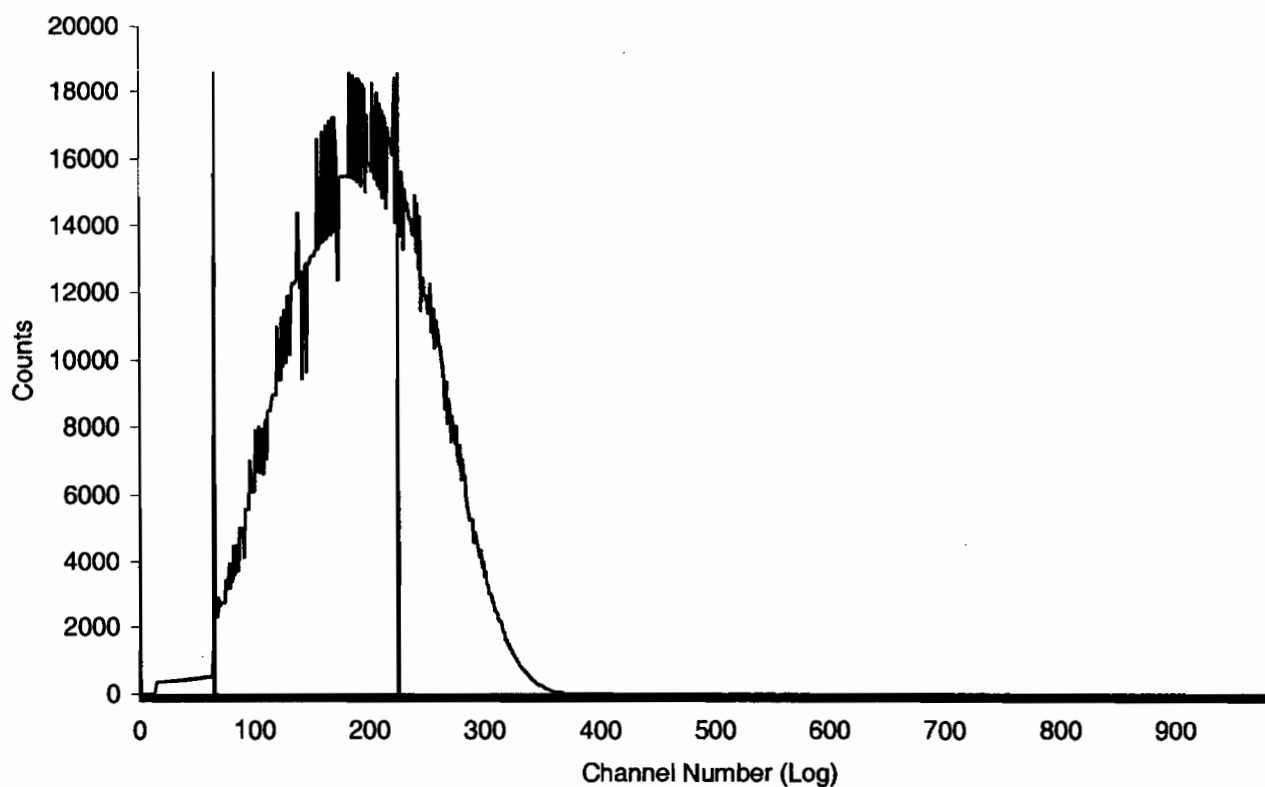
USER 02 - TRITIUM



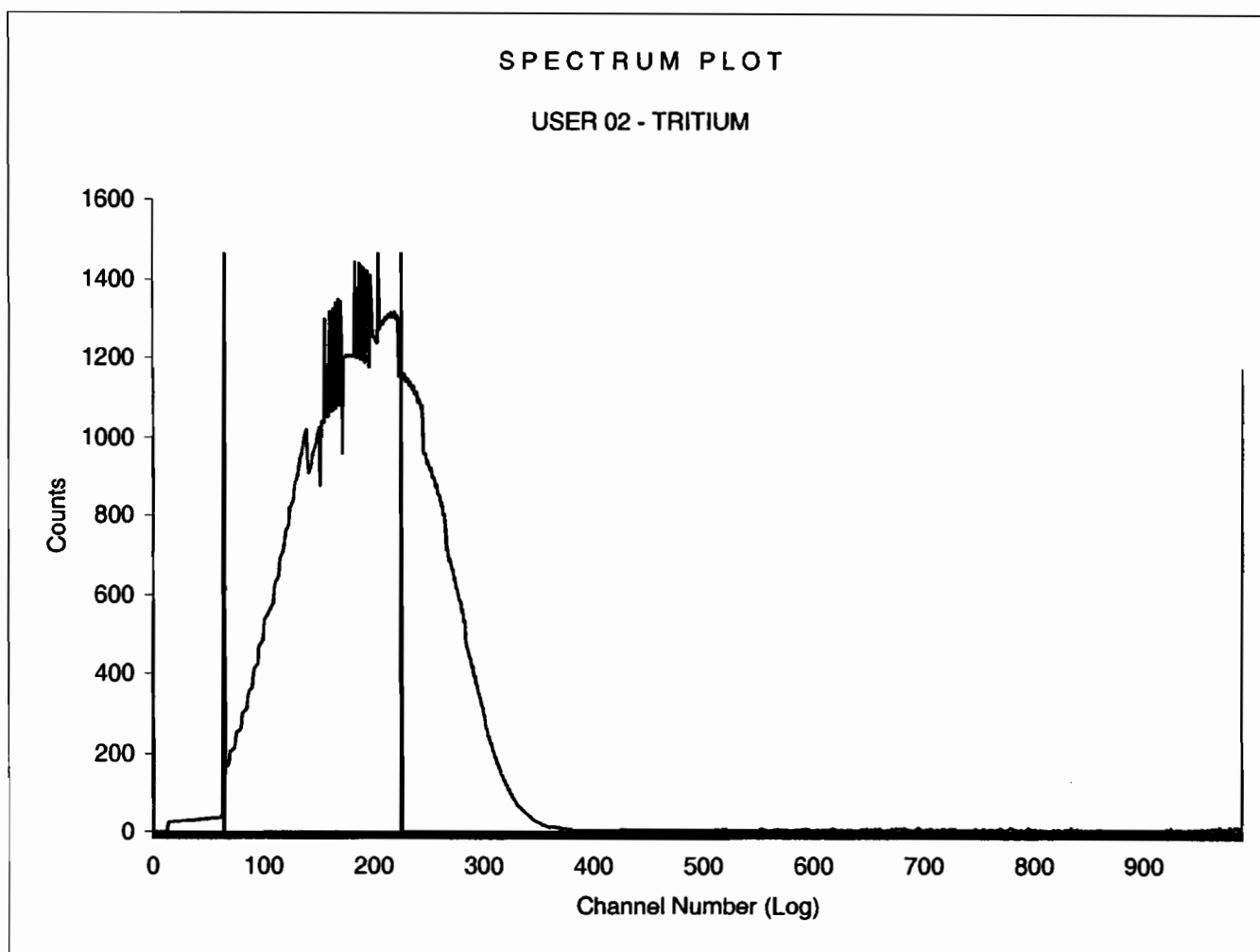
Sample Count Start Time:	12 Mar 2010 10:51:20		
Data Capture Date	12 Mar 2010 12:26:46		
User Filename	S02031200-1A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	0-1	95.00
H#, Total Counts:	113.8	2669914	
Win1: Tritium - Start, End, Counts:	65	225	1858392
Win2: - Start, End, Counts:	0	990	2668847

# SPECTRUM PLOT

USER 02 - TRITIUM



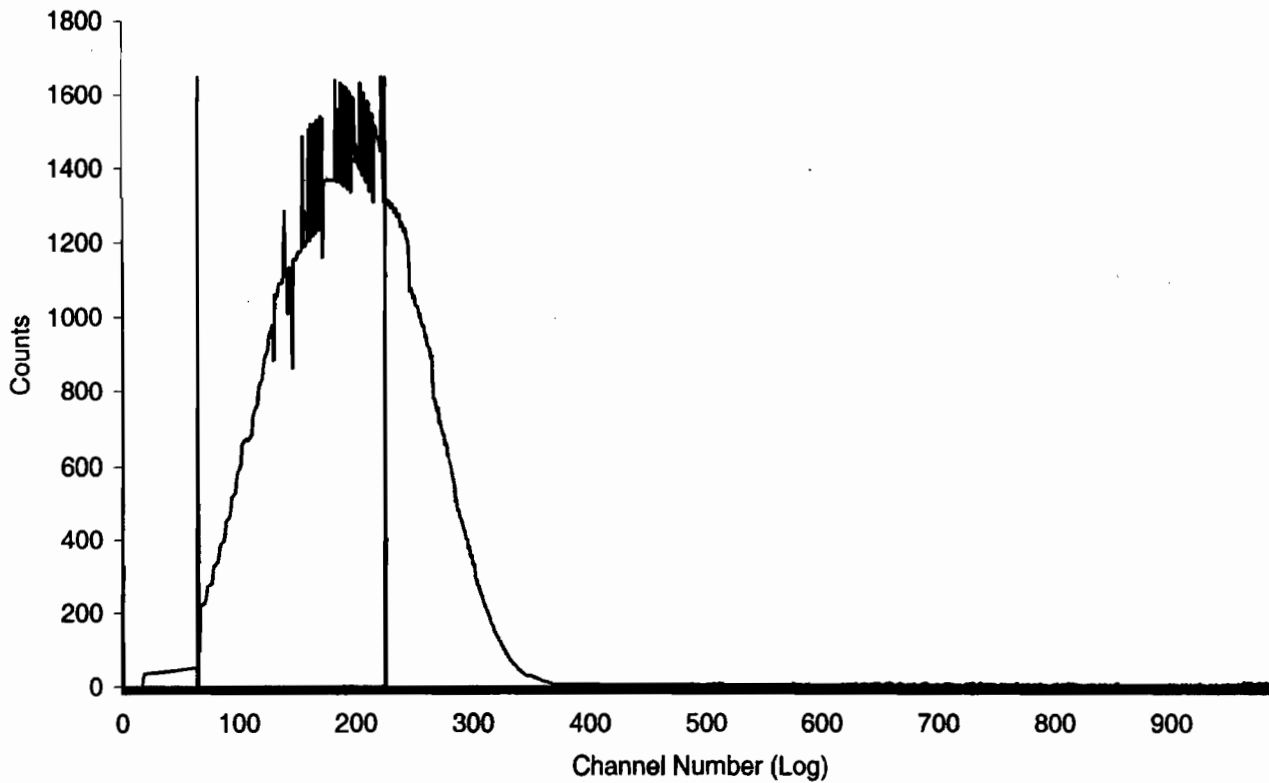
Sample Count Start Time:	12 Mar 2010 12:29:53		
Data Capture Date	12 Mar 2010 14:05:18		
User Filename	S02031200-2A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	2	0-2	95.00
H#, Total Counts:	114.0	213491	
Win1: Tritium - Start, End, Counts:	65	225	144880
Win2: - Start, End, Counts:	0	990	212815



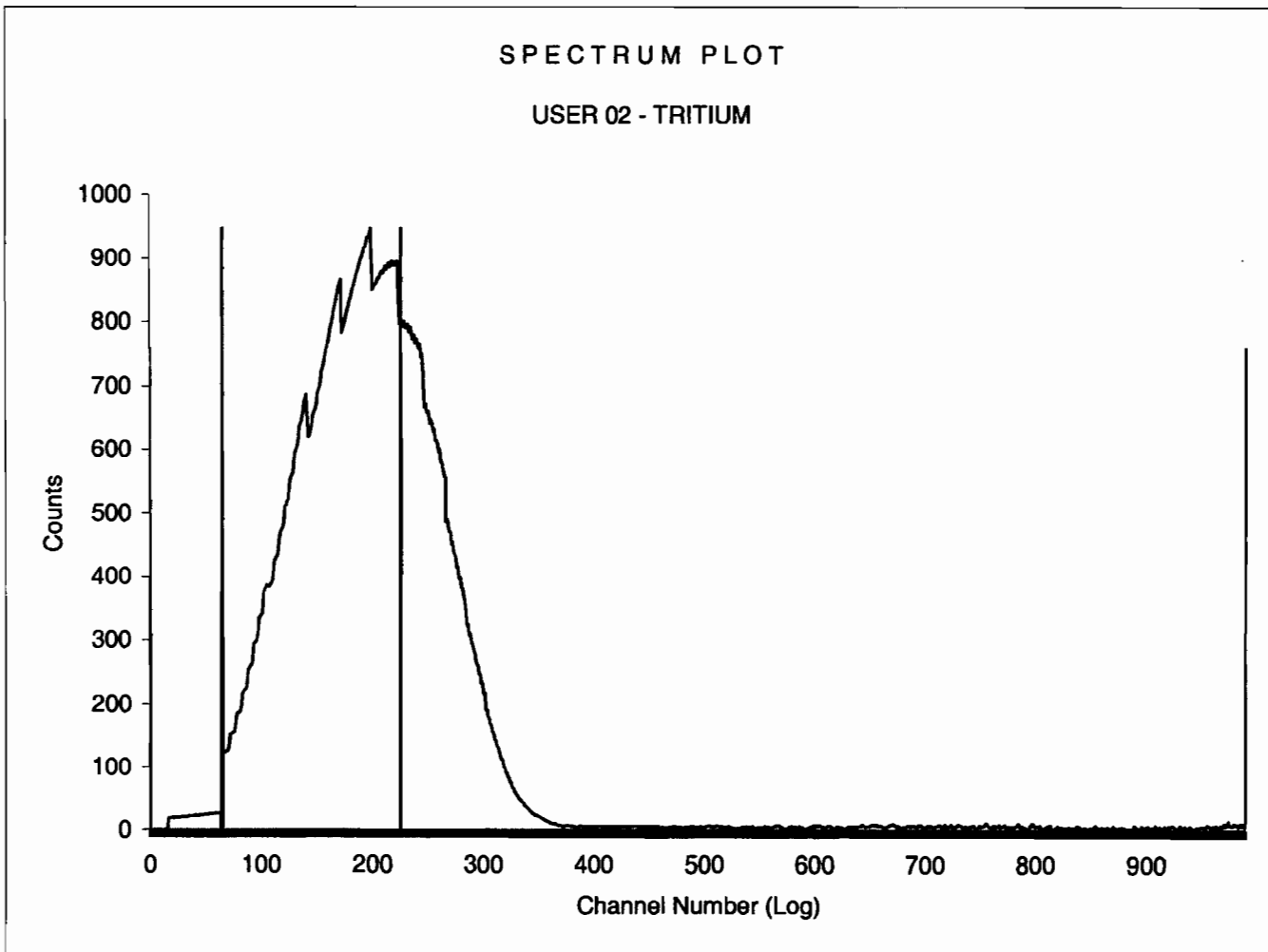
Sample Count Start Time:	12 Mar 2010 14:08:24		
Data Capture Date	12 Mar 2010 15:43:50		
User Filename	S02031200-3A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	3	0-3	95.00
H#, Total Counts:	114.7	241912	
Win1: Tritium - Start, End, Counts:	65	225	165687
Win2: - Start, End, Counts:	0	990	241207

# SPECTRUM PLOT

USER 02 - TRITIUM



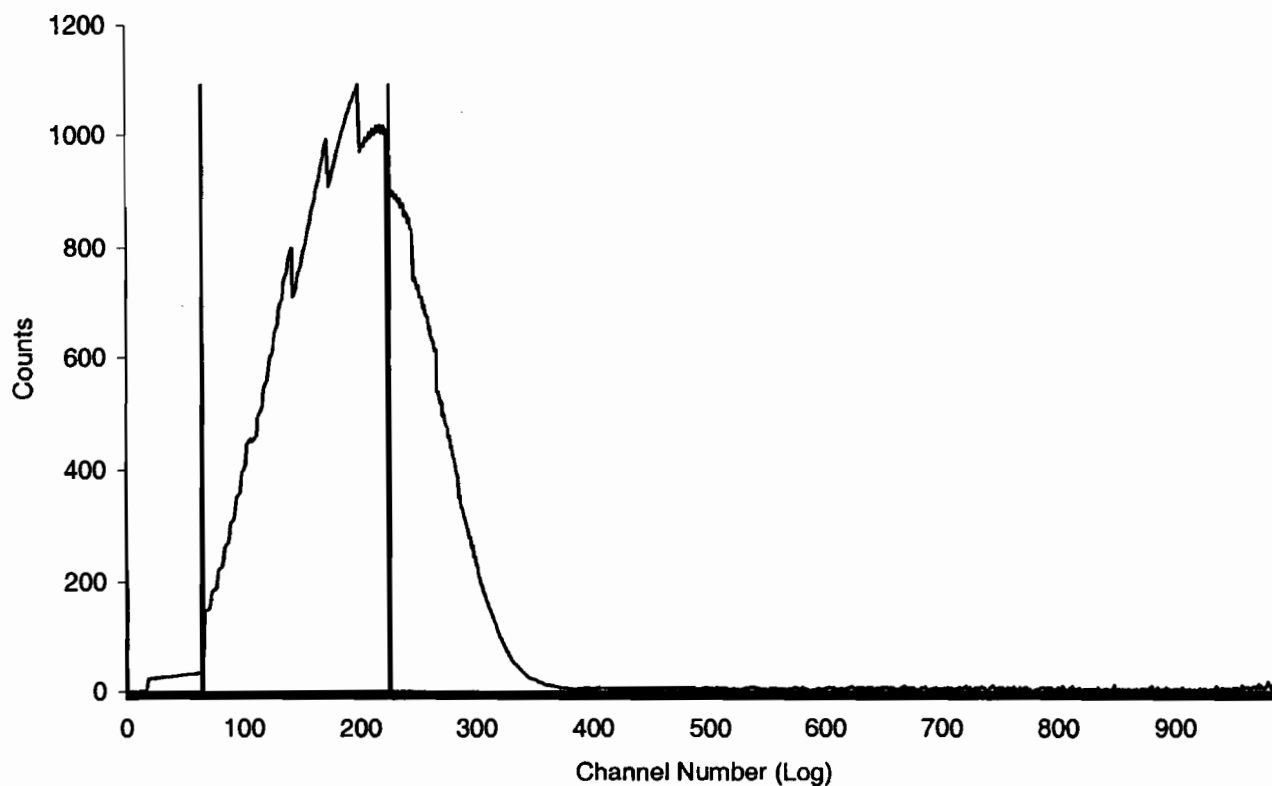
Sample Count Start Time:	12 Mar 2010 15:46:56		
Data Capture Date	12 Mar 2010 17:22:21		
User Filename	S02031200-4A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	4	0-4	95.00
H#, Total Counts:	112.3	147660	
Win1: Tritium - Start, End, Counts:	65	225	98417
Win2: - Start, End, Counts:	0	990	146827



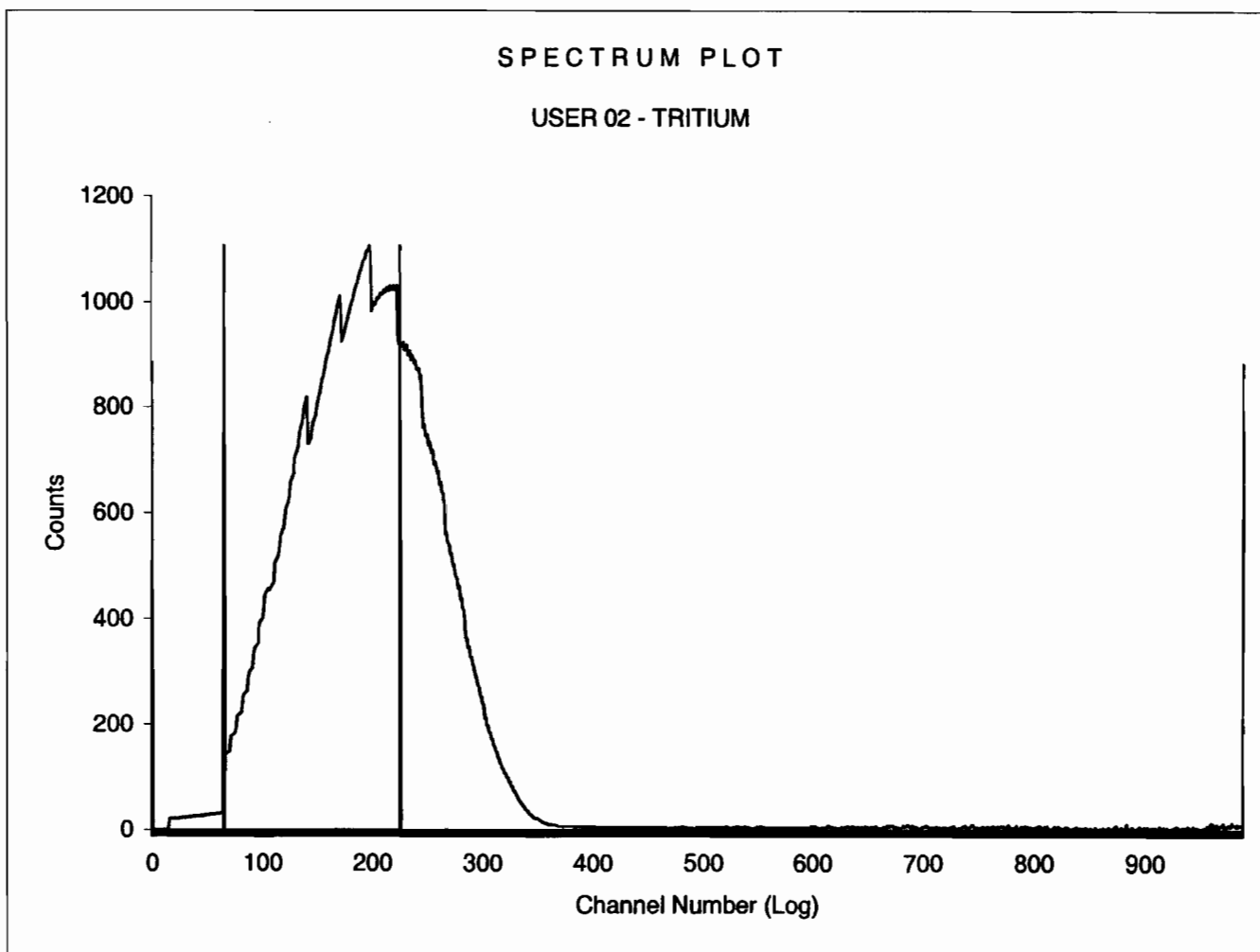
Sample Count Start Time:	12 Mar 2010 17:25:25		
Data Capture Date	12 Mar 2010 19:00:51		
User Filename	S02031200-5A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	5	0-5	95.00
H#, Total Counts:	113.7	167253	
Win1: Tritium - Start, End, Counts:	65	225	113111
Win2: - Start, End, Counts:	0	990	166599

# SPECTRUM PLOT

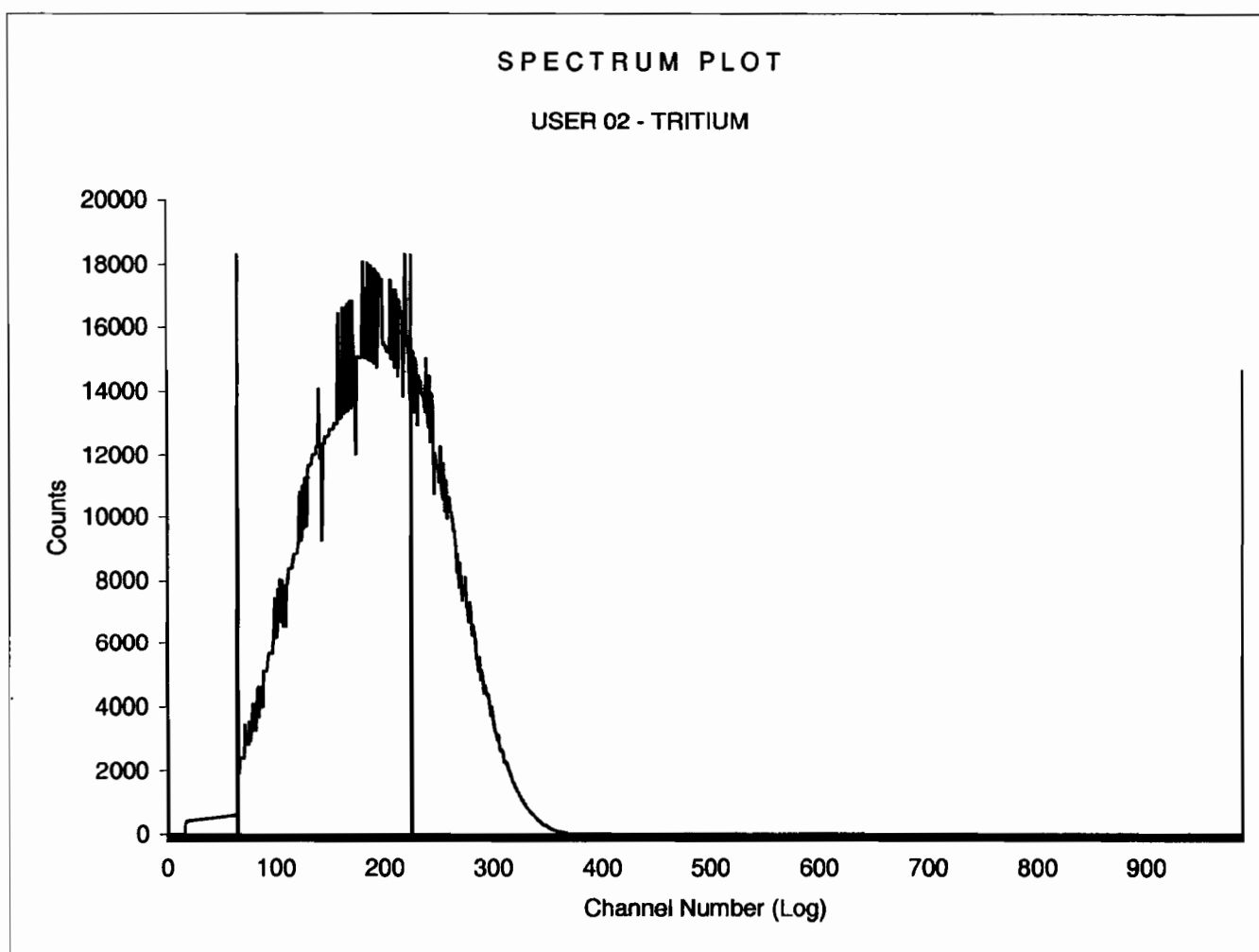
USER 02 - TRITIUM



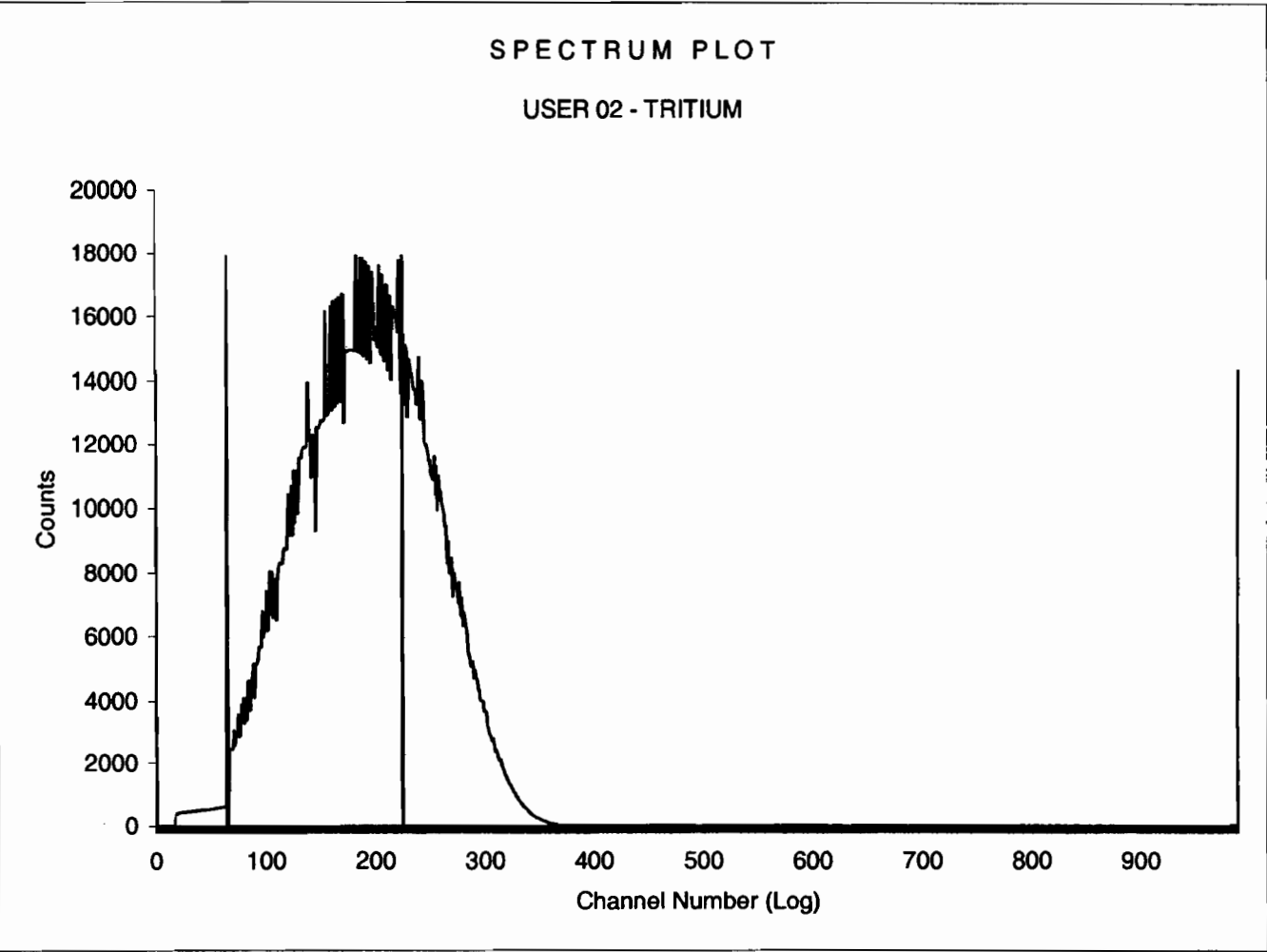
Sample Count Start Time:	12 Mar 2010 19:03:56		
Data Capture Date	12 Mar 2010 20:39:20		
User Filename	S02031200-6A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	6	0-6	95.00
H#, Total Counts:	113.4	171631	
Win1: Tritium - Start, End, Counts:	65	225	115933
Win2: - Start, End, Counts:	0	990	170774



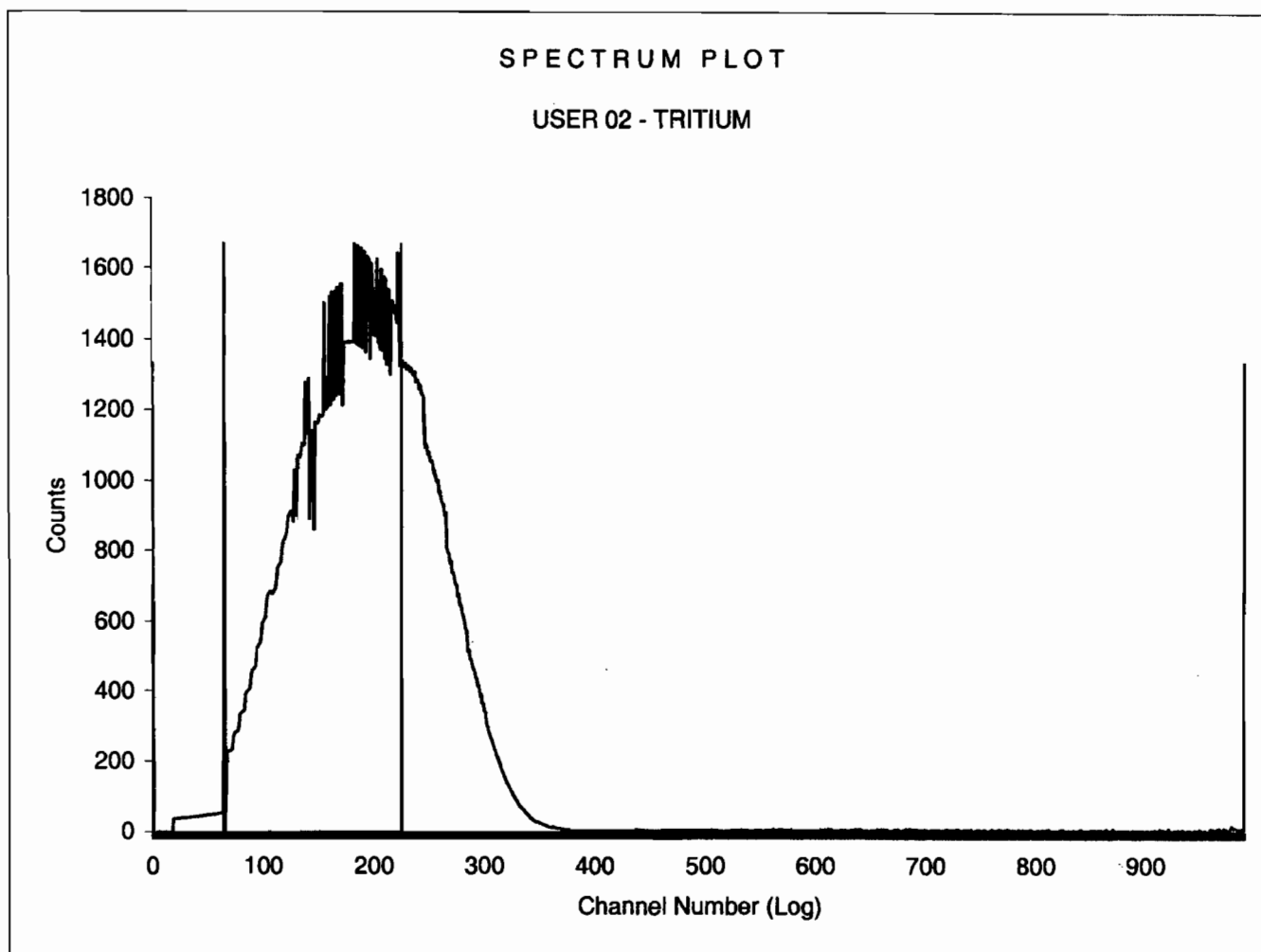
Sample Count Start Time:	12 Mar 2010 20:43:35		
Data Capture Date	12 Mar 2010 22:19:01		
User Filename	S02031200-7A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	7	0-7	95.00
H#, Total Counts:	113.7	2616197	
Win1: Tritium - Start, End, Counts:	65	225	1819244
Win2: - Start, End, Counts:	0	990	2615214



Sample Count Start Time:	12 Mar 2010 22:23:12		
Data Capture Date	12 Mar 2010 23:58:38		
User Filename	S02031200-8A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	8	0-8	95.00
H#, Total Counts:	114.7	2594957	
Win1: Tritium - Start, End, Counts:	65	225	1804019
Win2: - Start, End, Counts:	0	990	2593910



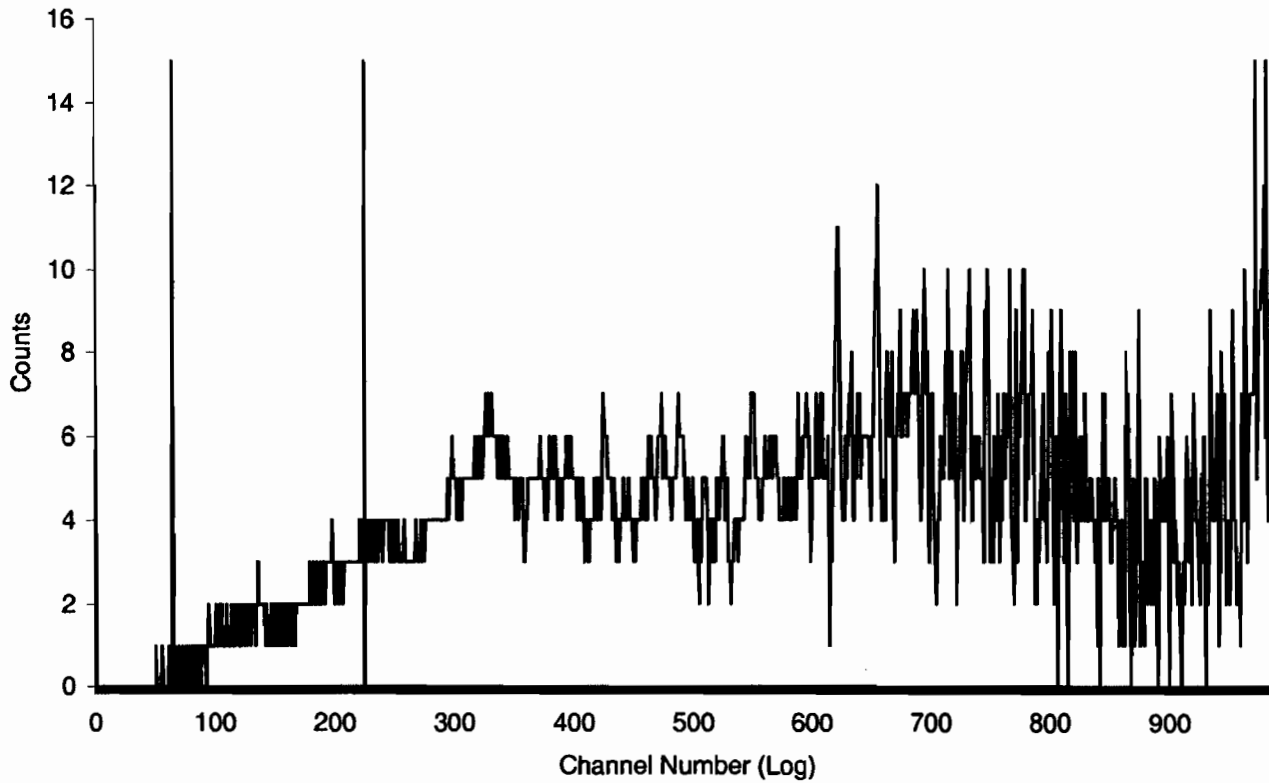
Sample Count Start Time:	13 Mar 2010 00:01:38		
Data Capture Date	13 Mar 2010 01:37:04		
User Filename	S02031300-9A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	9	0-9	95.00
H#, Total Counts:	114.4	244904	
Win1: Tritium - Start, End, Counts:	65	225	166972
Win2: - Start, End, Counts:	0	990	244118



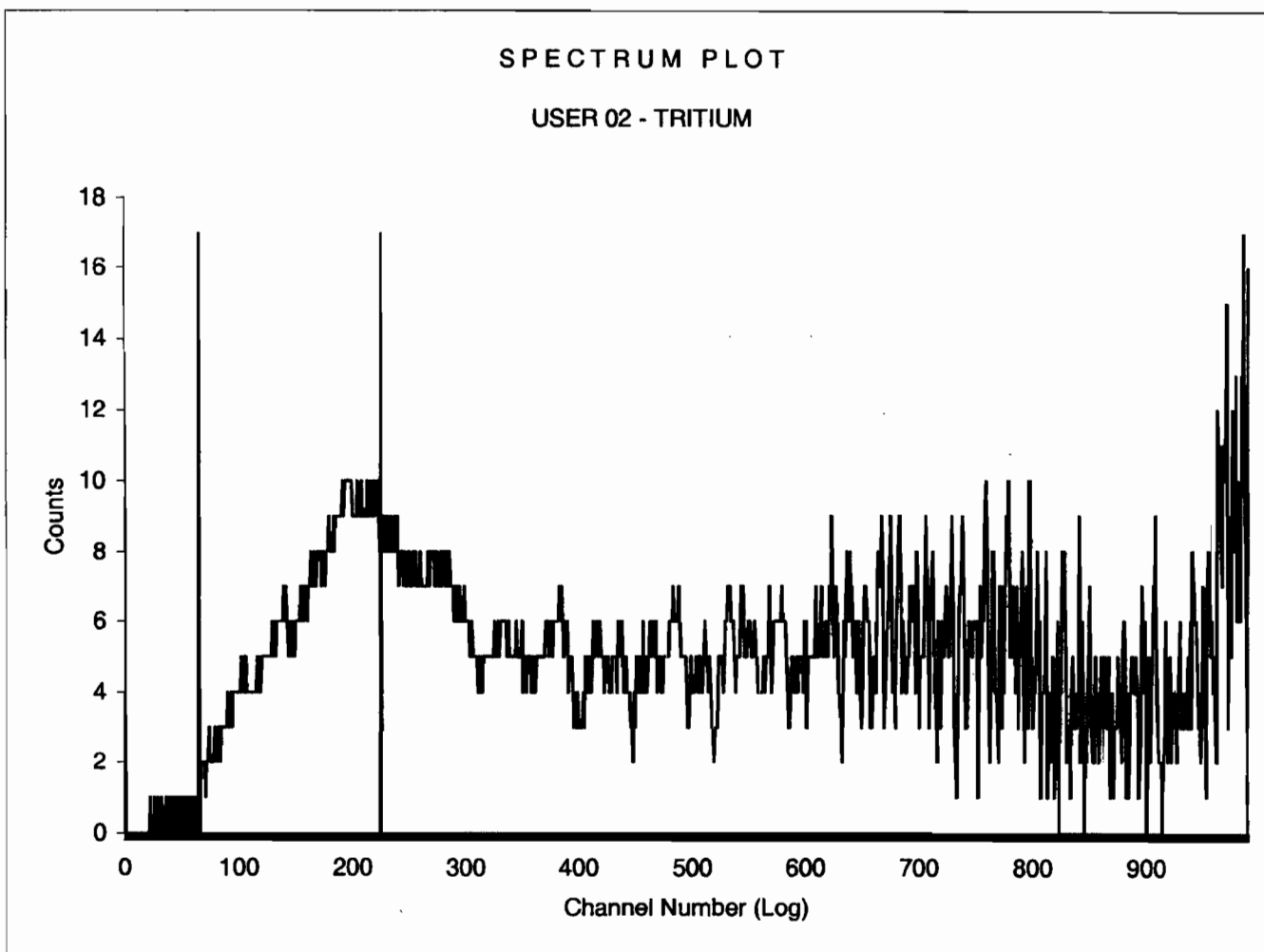
Sample Count Start Time:	13 Mar 2010 03:18:12		
Data Capture Date	13 Mar 2010 04:53:37		
User Filename	S02031300-11A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	11	0-11	95.00
H#, Total Counts:	113.6	4881	
Win1: Tritium - Start, End, Counts:	65	225	282
Win2: - Start, End, Counts:	0	990	4116

# SPECTRUM PLOT

USER 02 - TRITIUM



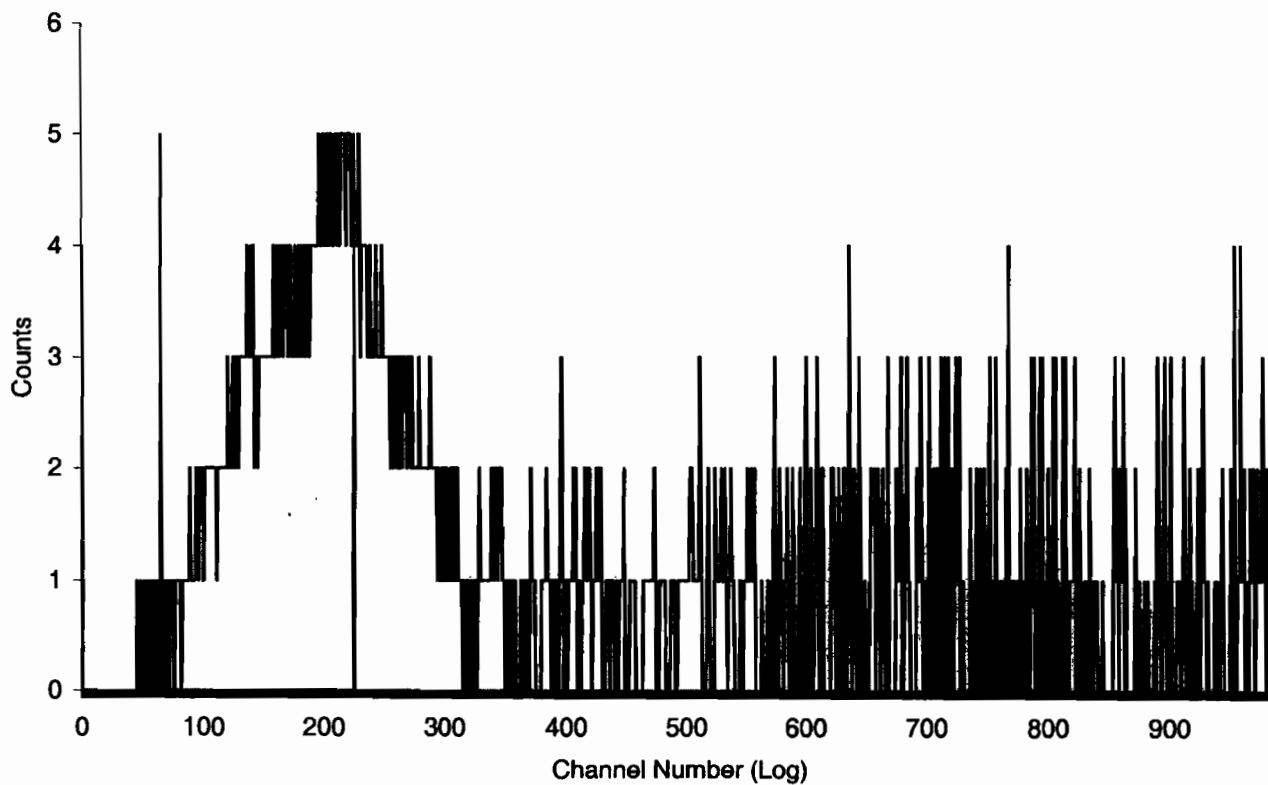
Sample Count Start Time:	13 Mar 2010 04:56:27
Data Capture Date	13 Mar 2010 06:32:12
User Filename	S02031300-12A.XLS
	U02031200-1A.XLS
Spectrum Type	Log Counts
User Number	02
User Id	TRITIUM
User Comment	RED
Scintillator	LIQUID
Sample, Rack-Pos, Time:	12 0-12 95.00
H#, Total Counts:	115.1 5830
Win1: Tritium - Start, End, Counts:	65 225 992
Win2: - Start, End, Counts:	0 990 5107



Sample Count Start Time:	13 Mar 2010 06:34:05		
Data Capture Date	13 Mar 2010 06:48:27		
User Filename	S03031337-1A.XLS		
	U03031337-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	37-1	15.00
H#, Total Counts:	114.6	1399	
Win1: Tritium - Start, End, Counts:	65	225	460
Win2: - Start, End, Counts:	0	990	1269

# SPECTRUM PLOT

USER 03 - TRITIUM



---

PROTOCOL : 10 H-3 120 min  
DATE : 2010/03/15  
TIME : 19:07  
ID : P10AS258

H-3

Wallac 1414 WlnSpectral v1.40 S/N 4140127

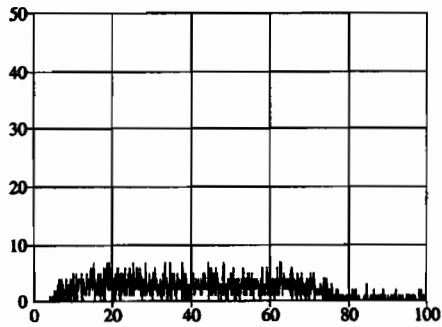
Counting mode : DPM  
Quench index : SQP(E)  
Isotope(s) : H3  
H3 = ,12.43 y  
Protocol name : H-3 120 min  
Counting time : 7200  
Repeats : 1  
Cycles : 1  
Replicates : 1  
2 sigma % : 0.00  
Minimum cpm : 0.00 Checking time: 10  
Sp. library of Isotope H3 : Wallac  
Vial type : Diffuse  
Liquid system : HiSafe  
Advanced modes : Chemlum  
Output to Display :  
POS,DPM1,CPMw2,CLMM,FNCT2,  
RACK,RACKPOS,FNCT1,SQPE,DATE,  
TIME,CPMw1,CPM,CPM1,CTIME  
Additions to Display : Listing,Header,Spectrum  
Header : H-3  
Spectrum : Rnd.Cos,Beta  
Window 1 : 25- 190 /Beta  
Window 2 : 25- 190 /Rnd.Cos  
Window 3 : 1-1024 /Beta  
Window 4 : 1-1024 /Beta  
Window 5 : 1-1024 /Beta  
Window 6 : 1-1024 /Beta  
FNCT1 = FNCT1 : CTIME/60  
FNCT2 = FNCT2 : CPMW1-CPMW2  
FNCT3 = FNCT3 :  
FNCT4 = FNCT4 :

Total activity:

H3 26.4 DPM 0.000 kBq

# H-3

Rack_position	Count_Time(min)	Quench_number	H-3_CPM	Run_Date
49 1	120.00	735.46	2.86	3/15/2010 7:07 PM



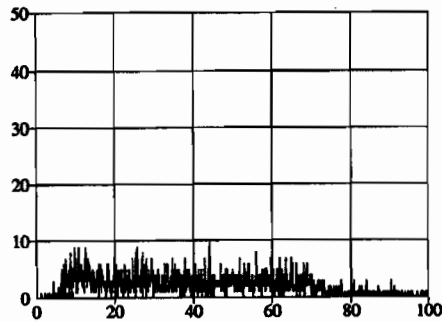
Counts  
Chem

Gross_B_CPM	LUMEX
3.00	0.00

Lumex_CPM	DPM
0.10	11.40

Counts  
Beta

Rack_position	Count_Time(min)	Quench_number	H-3_CPM	Run_Date
49 2	120.00	731.78	3.93	3/15/2010 9:09 PM



Counts  
Chem

Gross_B_CPM	LUMEX
4.10	0.00

Lumex_CPM	DPM
0.10	15.00

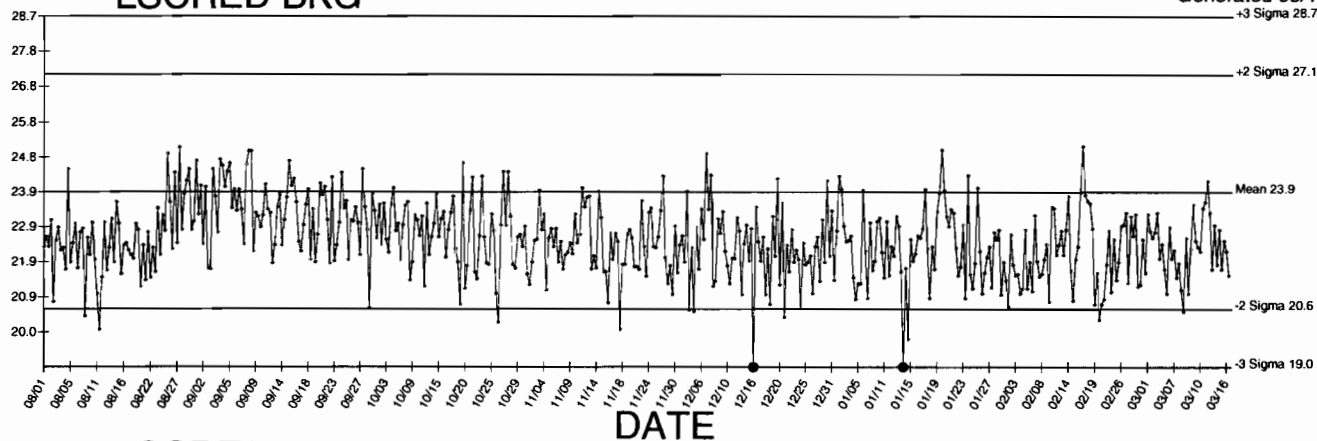
Counts  
Beta

# BACKGROUND AND EFFICIENCY DATA

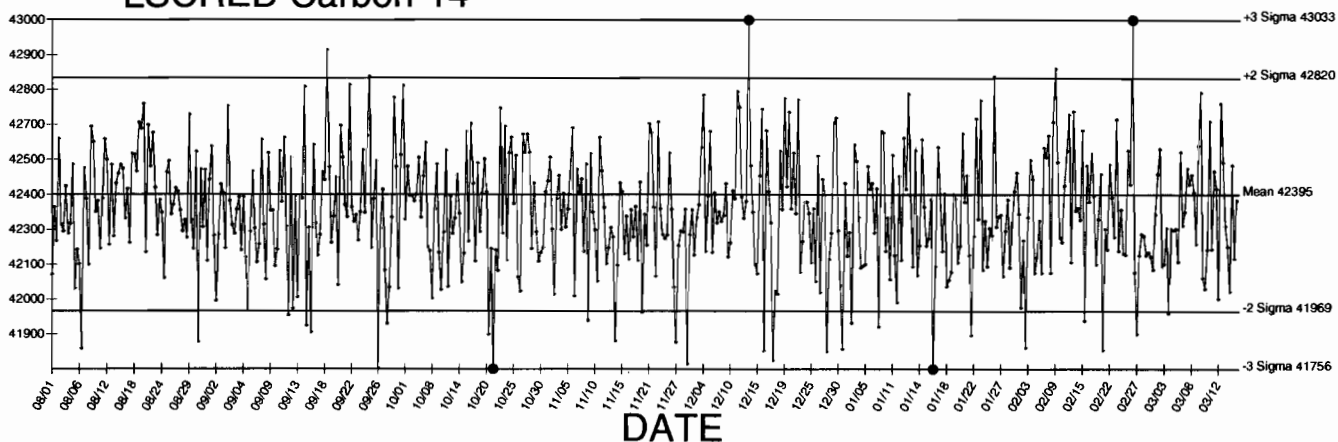
# LSCRED BKG

Generated 03/16/2010  
+3 Sigma 28.7

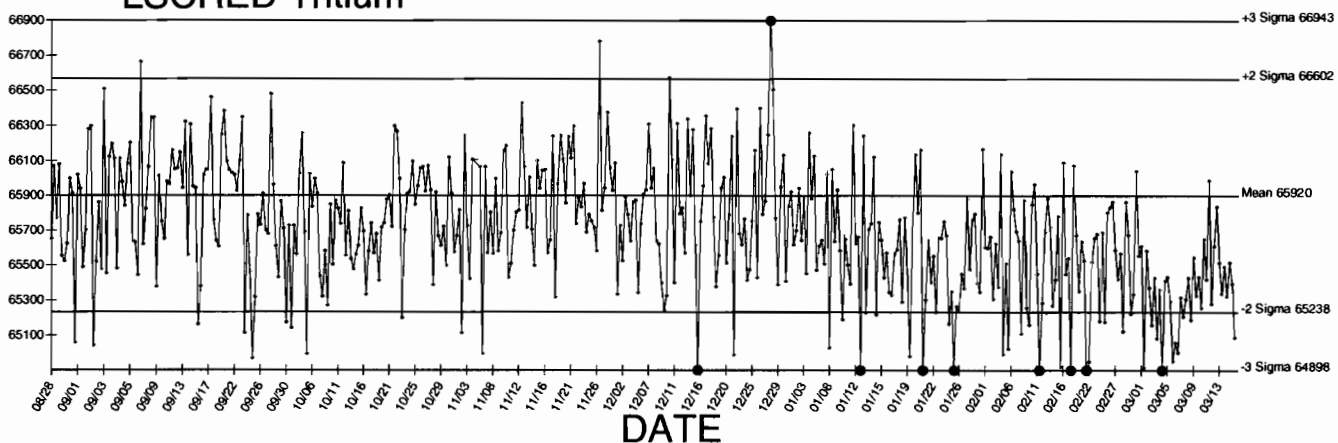
CPM



# LSCRED Carbon-14

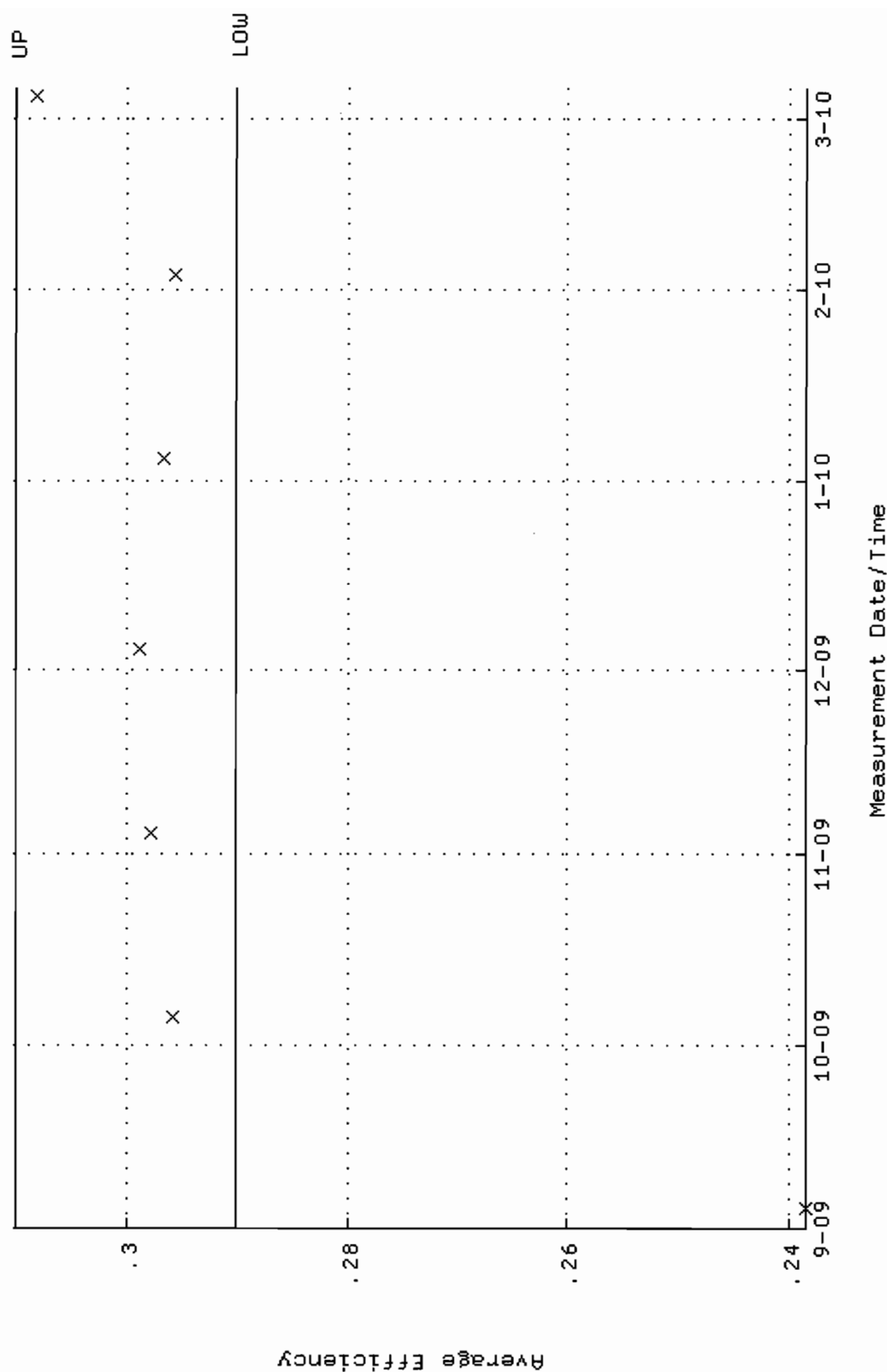


# LSCRED Tritium

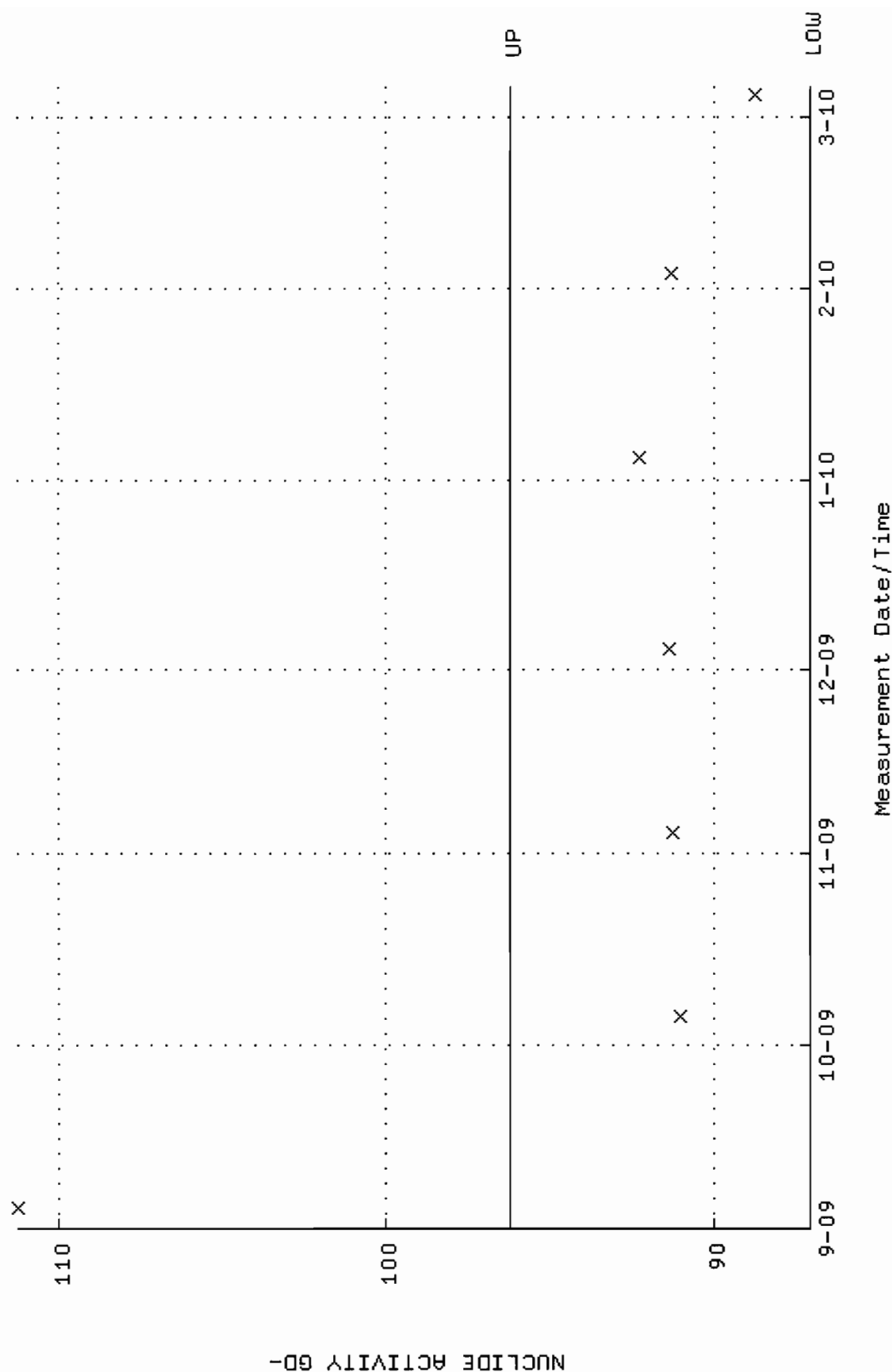


● Denotes Outlier

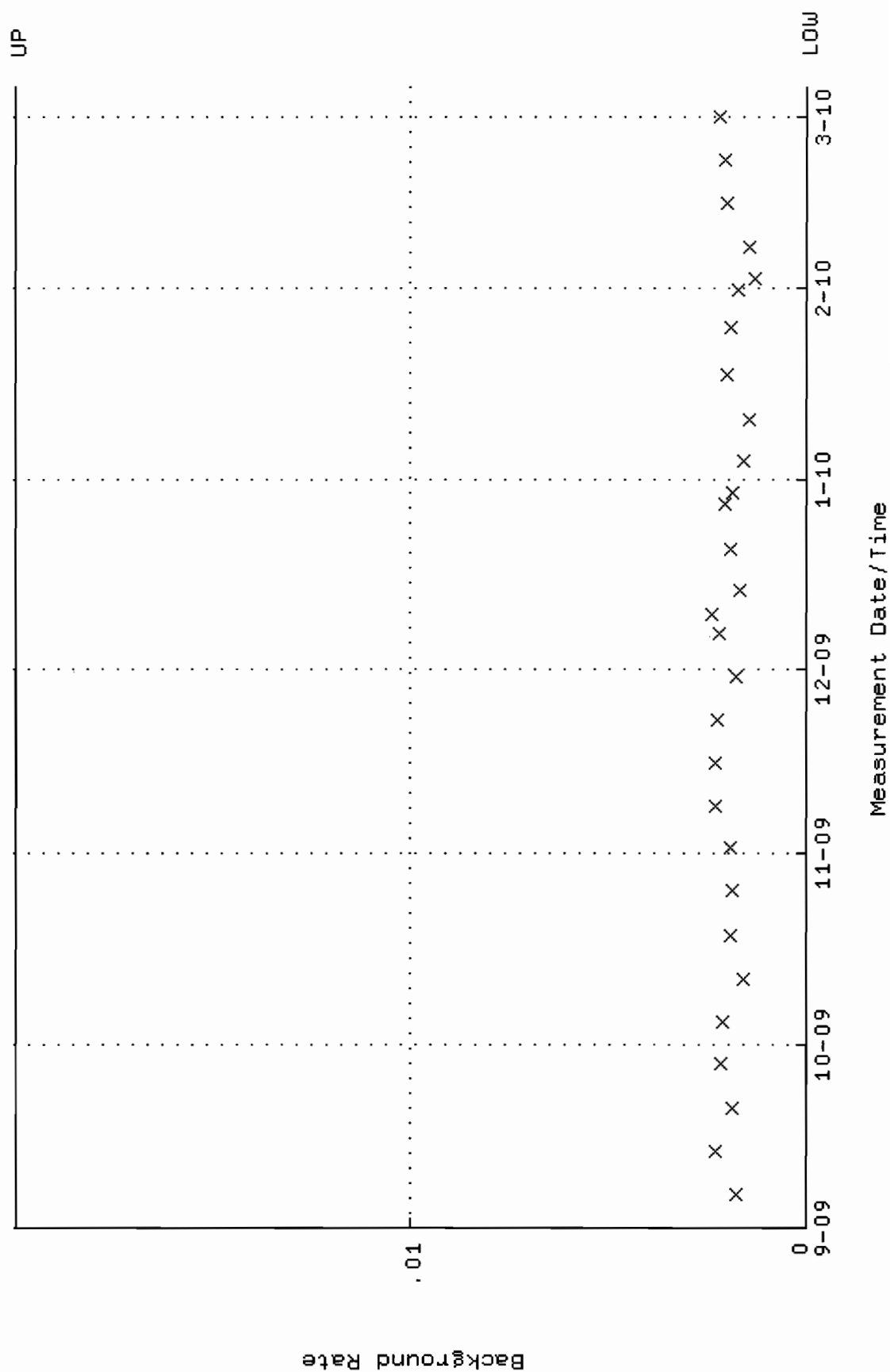
QA filename : DKA100:[ENV\_ALPHA.QA.W]W007.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.290108 through 0.310108



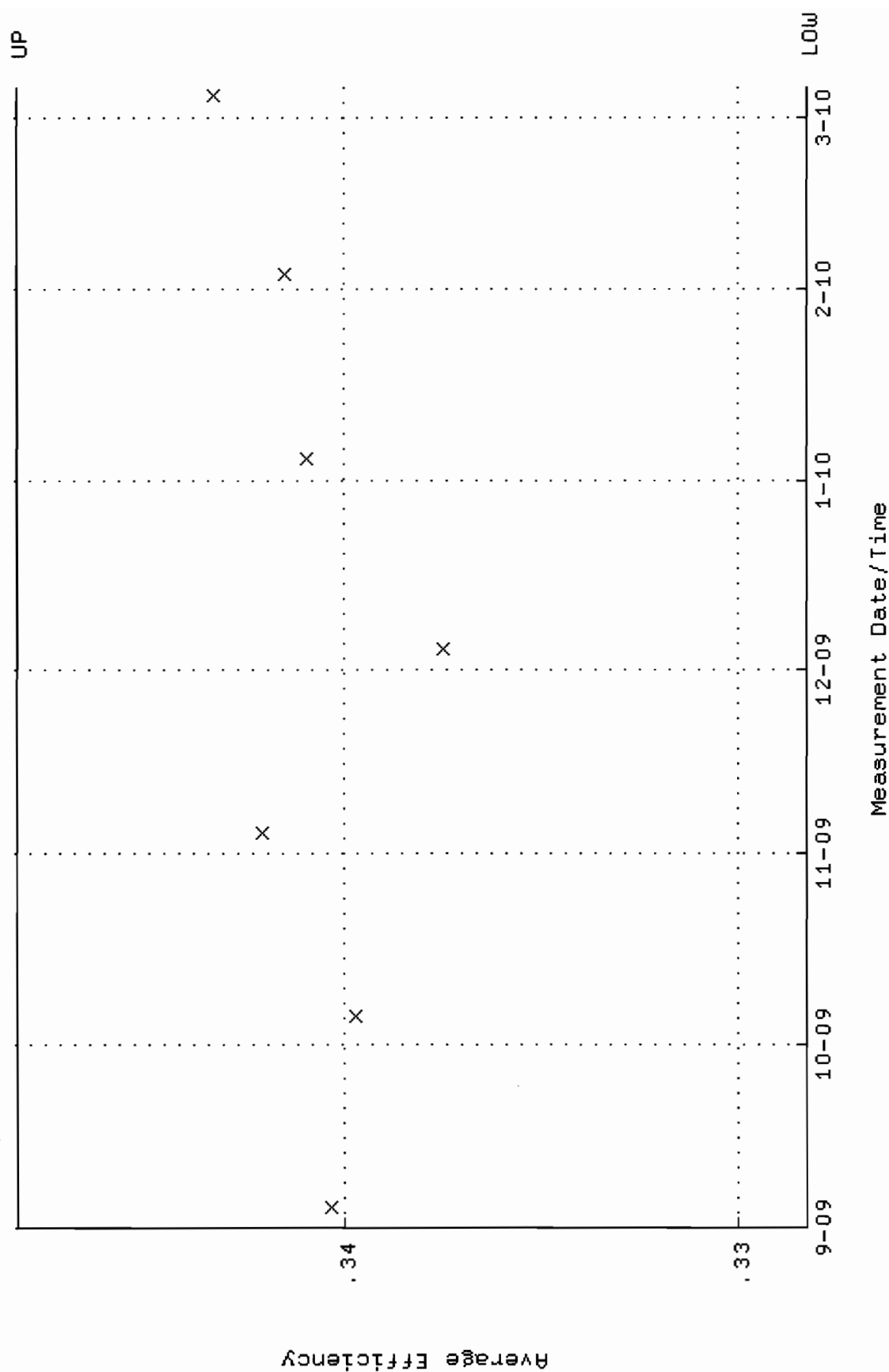
QA filename : DKA100:[ENV\_ALPHA.QA.W]W007.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 87.0687 through 96.2339



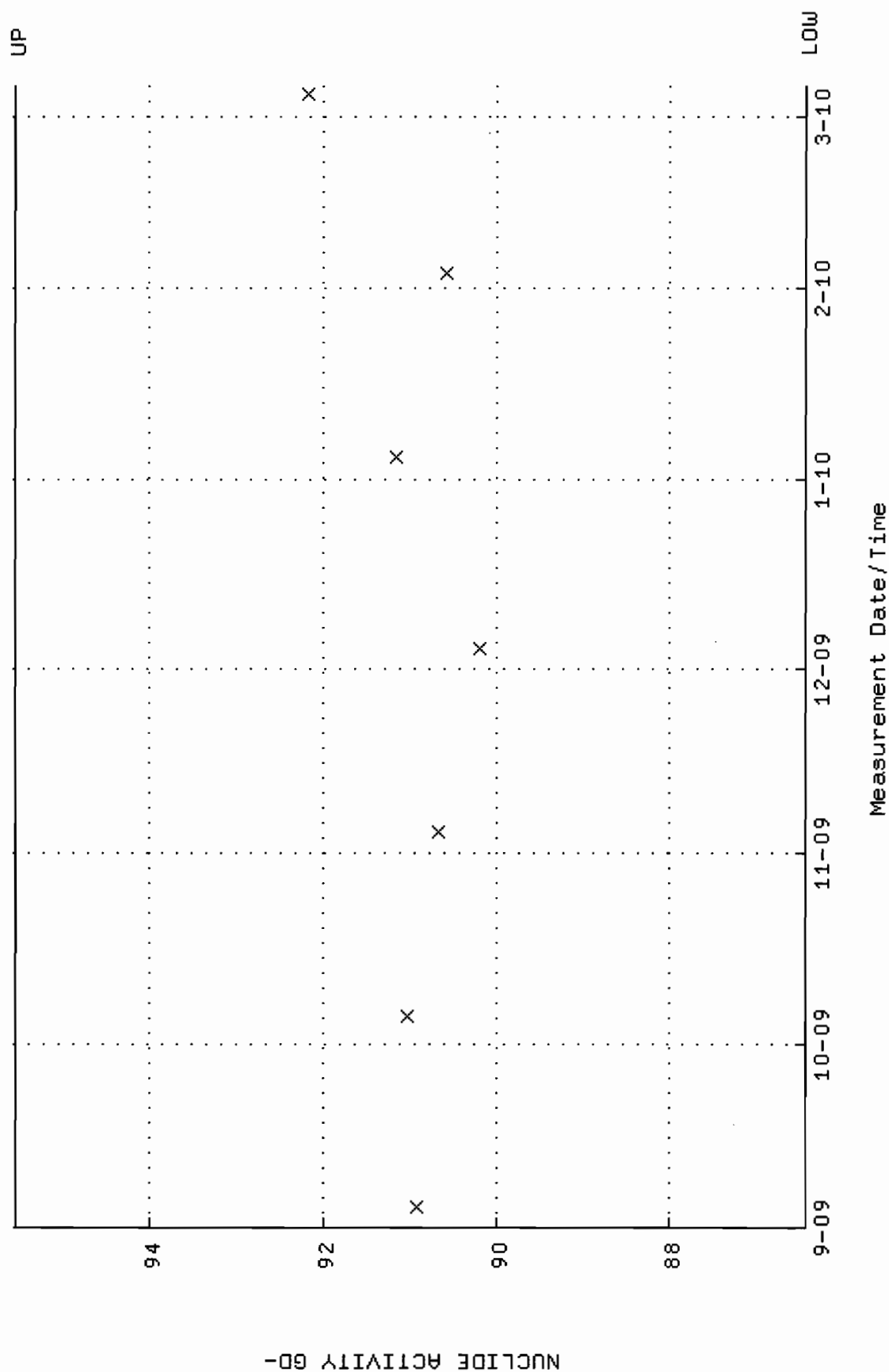
QA filename : DKA100:[ENV\_ALPHA.QA.B]B007.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:01 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



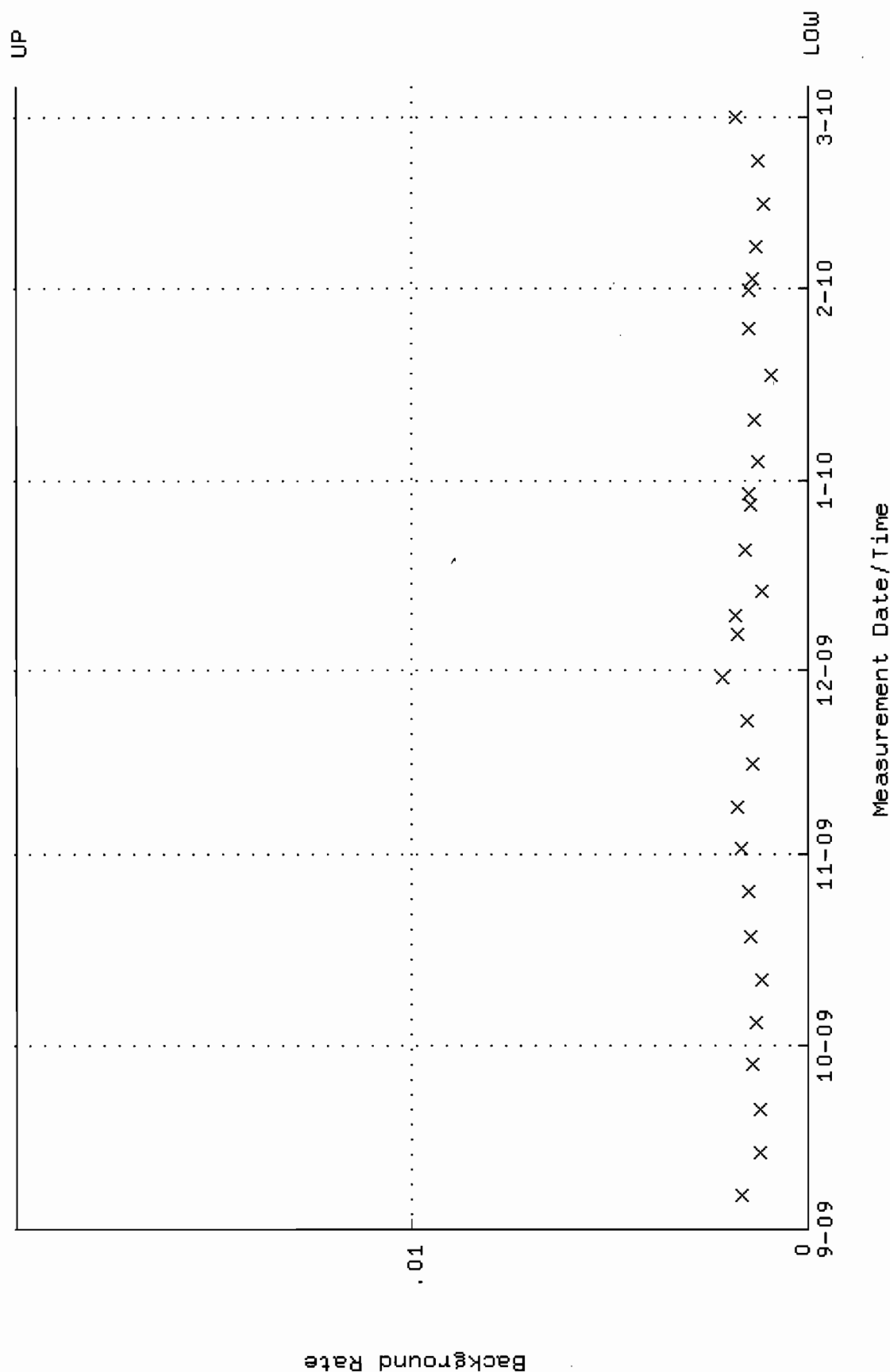
QA filename : DKA100:[ENV\_ALPHA.QA.w]W009.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.328261 through 0.348261



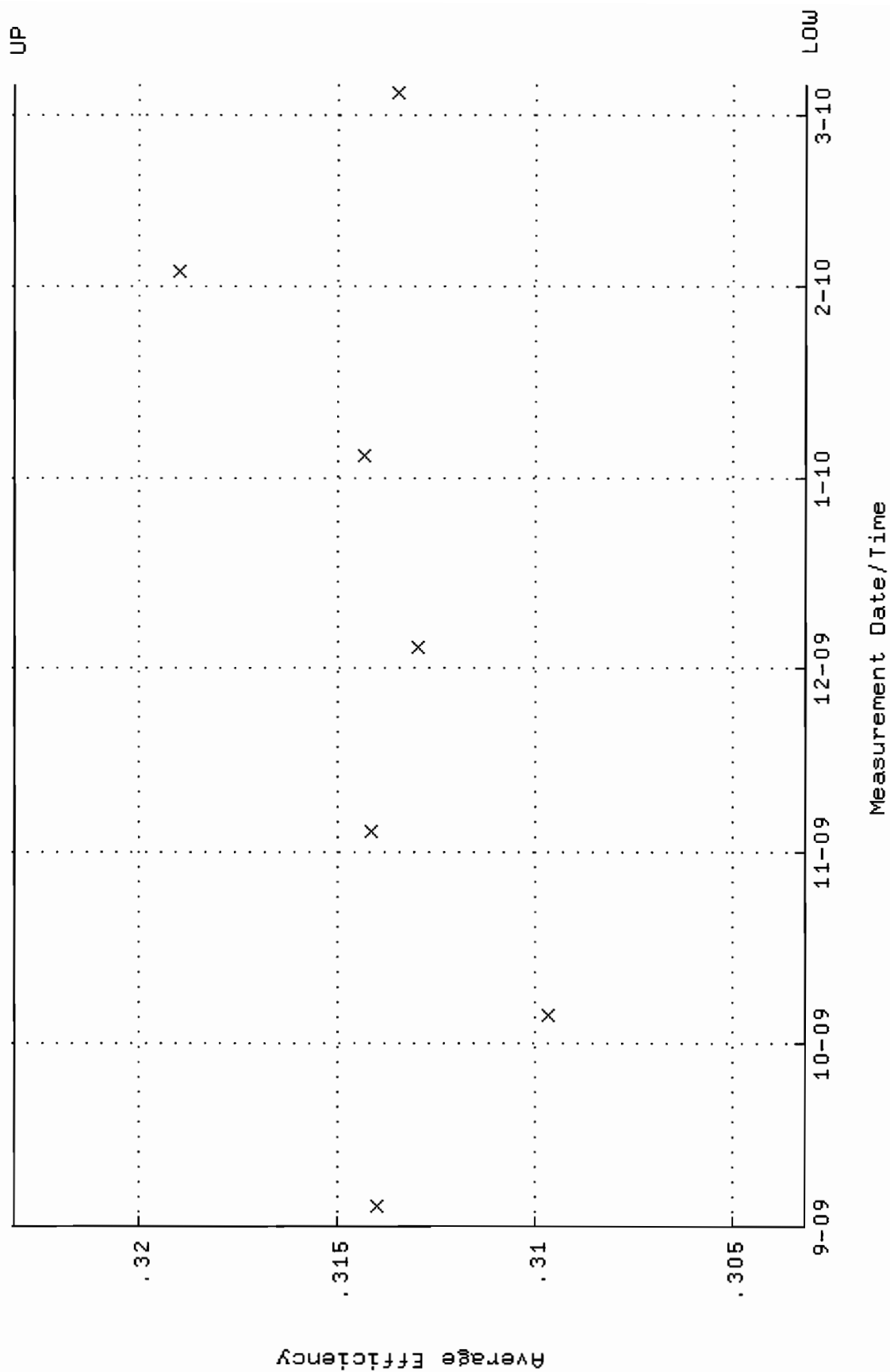
QA filename : DKA100:[ENV\_ALPHA.QA.W]W009.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 86.4475 through 95.5473



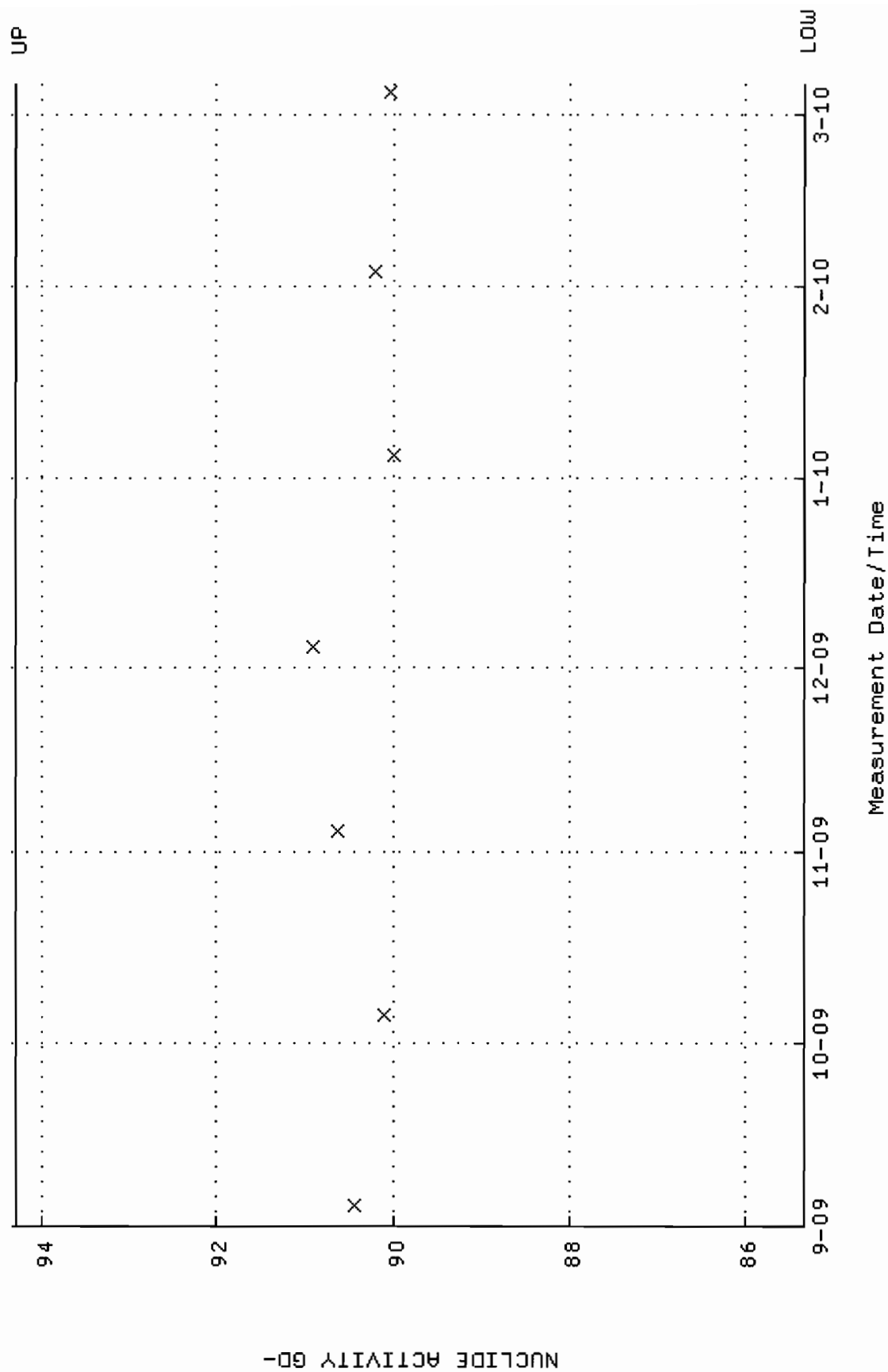
QA filename : DKA100:[ENV\_ALPHA.QA.B]B009.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:01 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



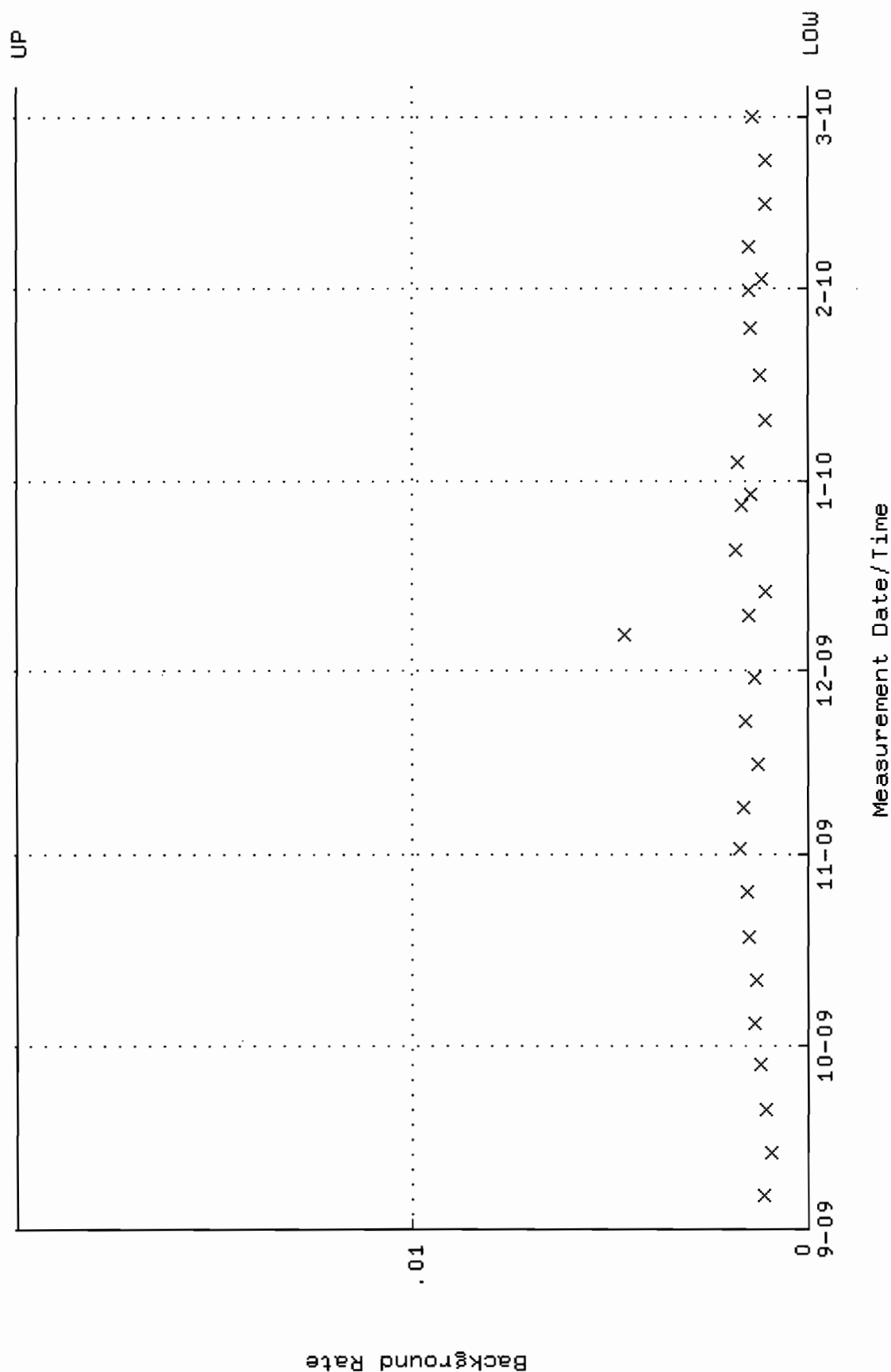
QA filename : DKA100:[ENV\_ALPHA.QA.W]W010.QAF;5  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.303169 through 0.323169



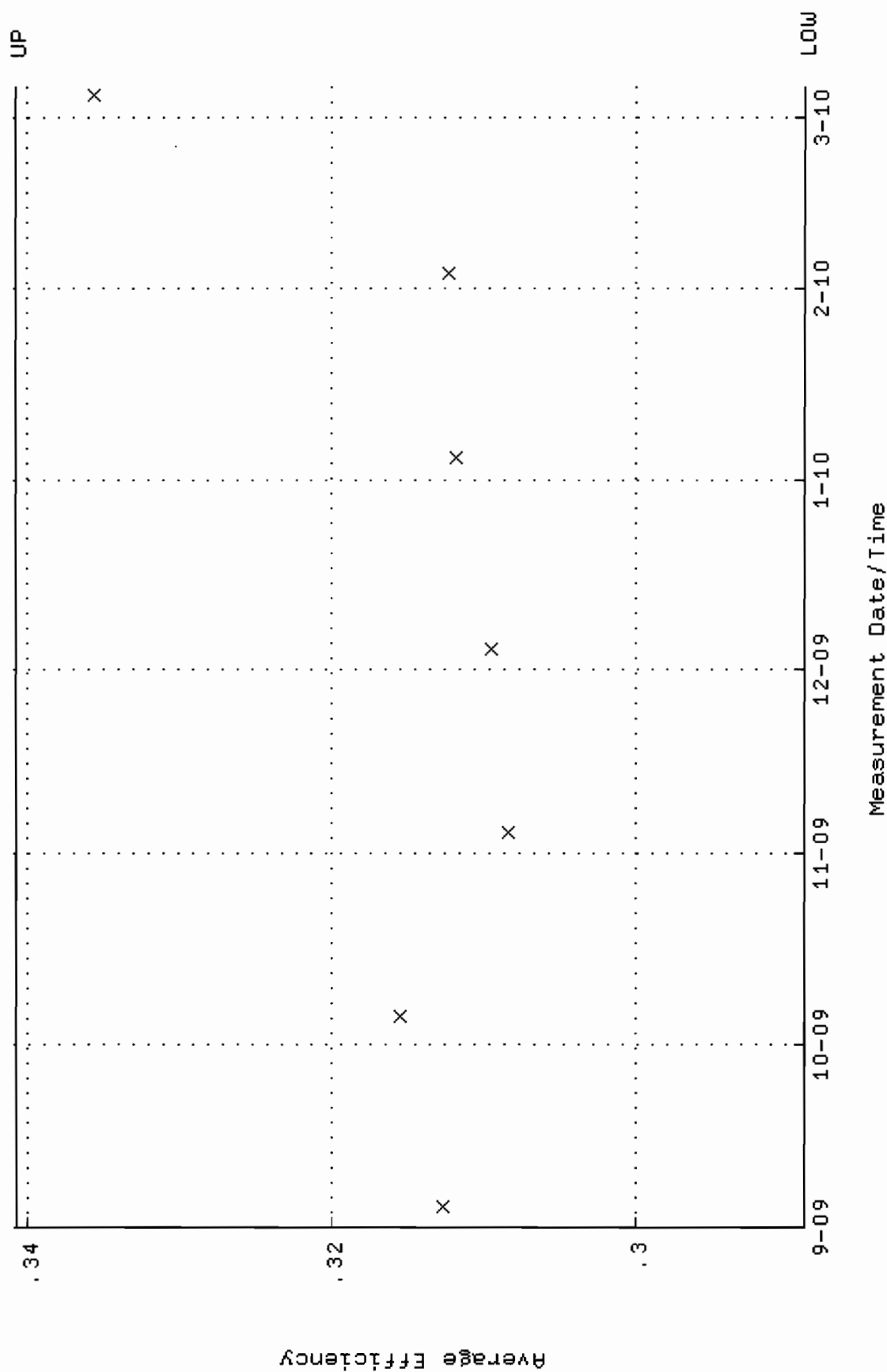
QA filename : DKA100:[ENV\_ALPHA.QA.W]W010.QAF;5  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.3273 through 94.3091



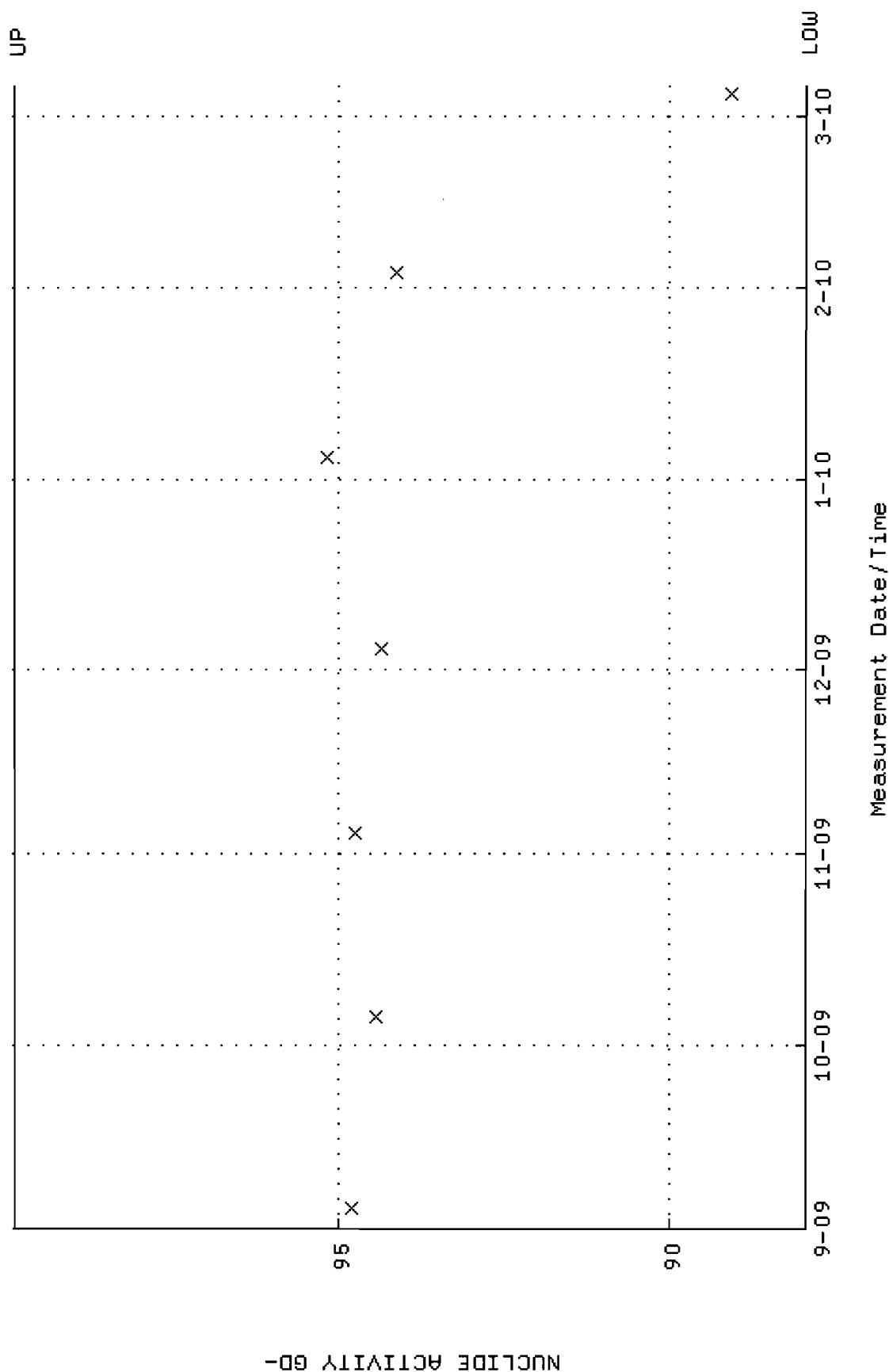
QA filename : DKA100:[ENV\_ALPHA.QA.B]B010.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:01 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



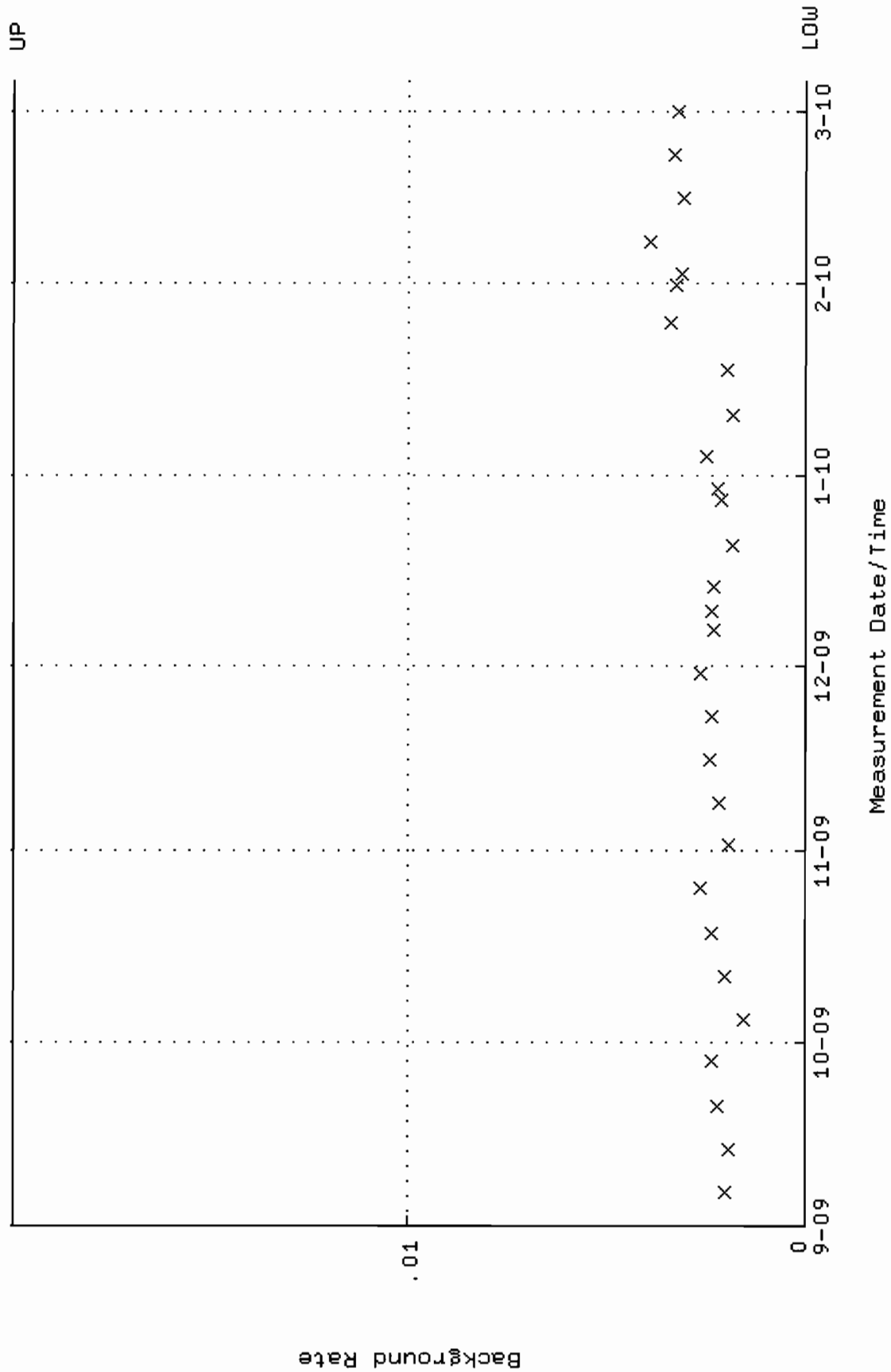
QA filename : DKA100:[ENV\_ALPHA.QA.W]W014.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.288973 through 0.340739



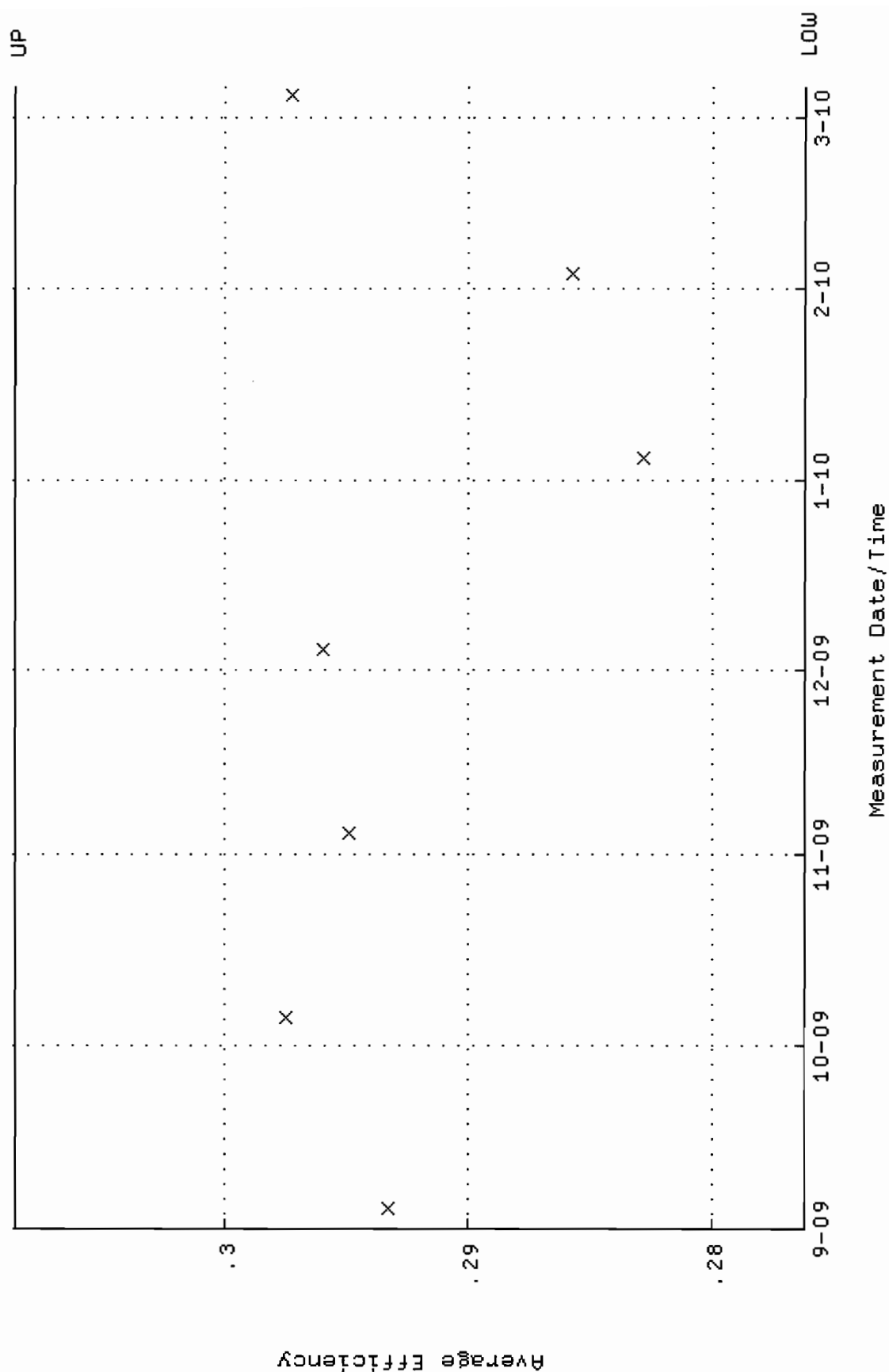
QA filename : DKA100:[ENV\_ALPHA.QA.W]W014.QAF;4  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 87.9529 through 99.8771



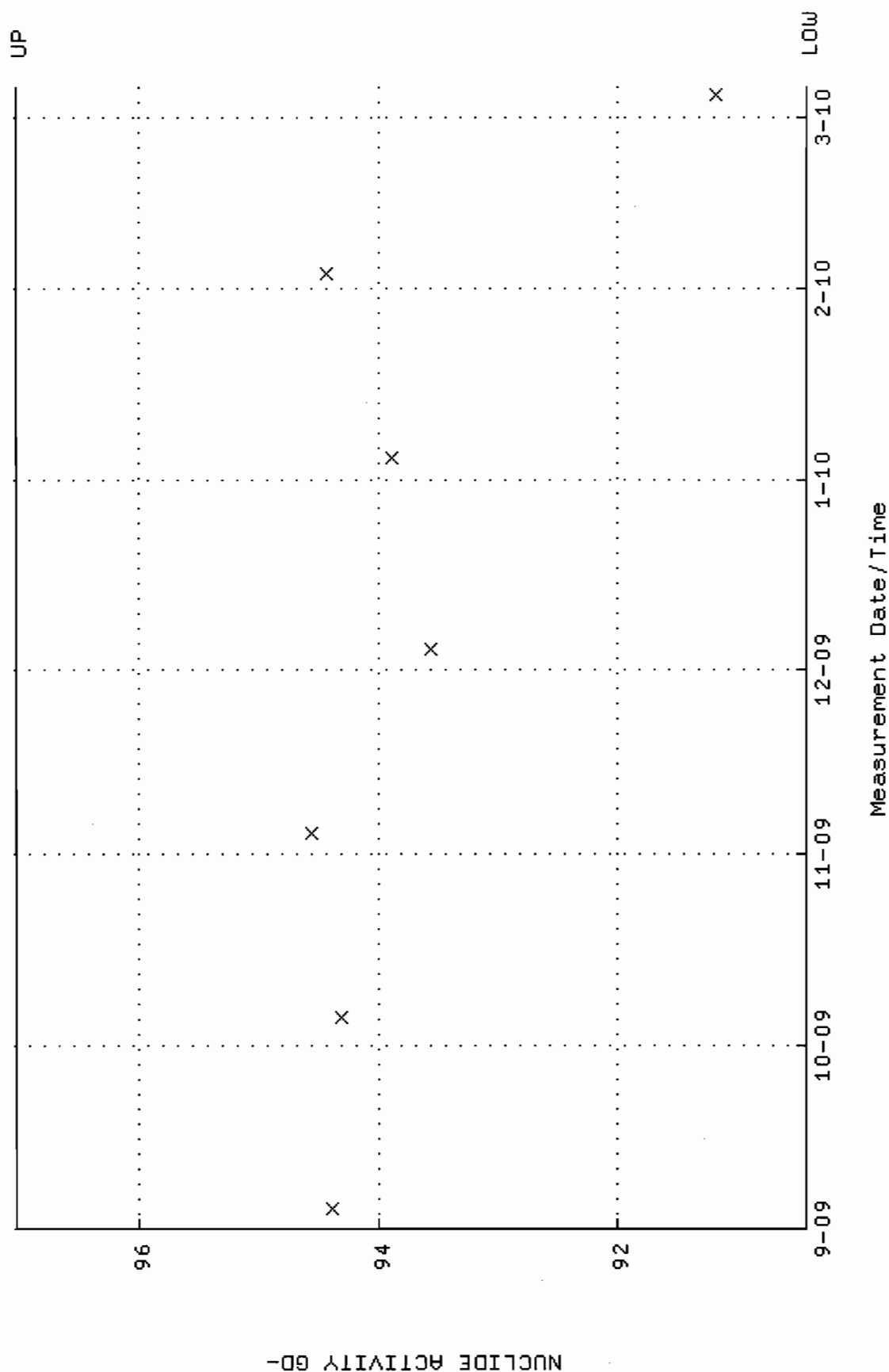
QA filename : DKA100:[ENV\_ALPHA.QA.B]B014.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:02 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



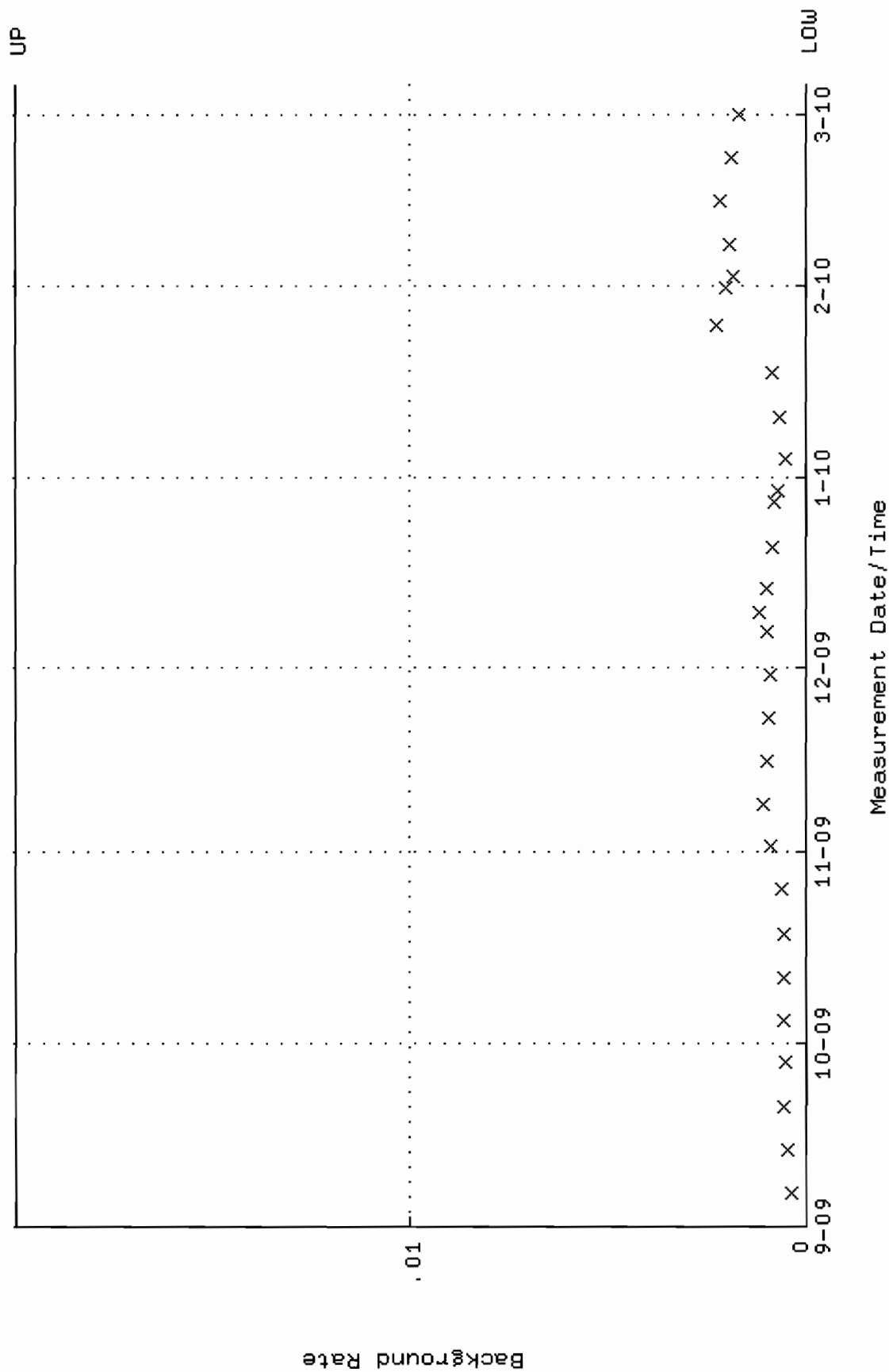
QA filename : DKA100:[ENV\_ALPHA.QA.W]W017.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.276155 through 0.308631



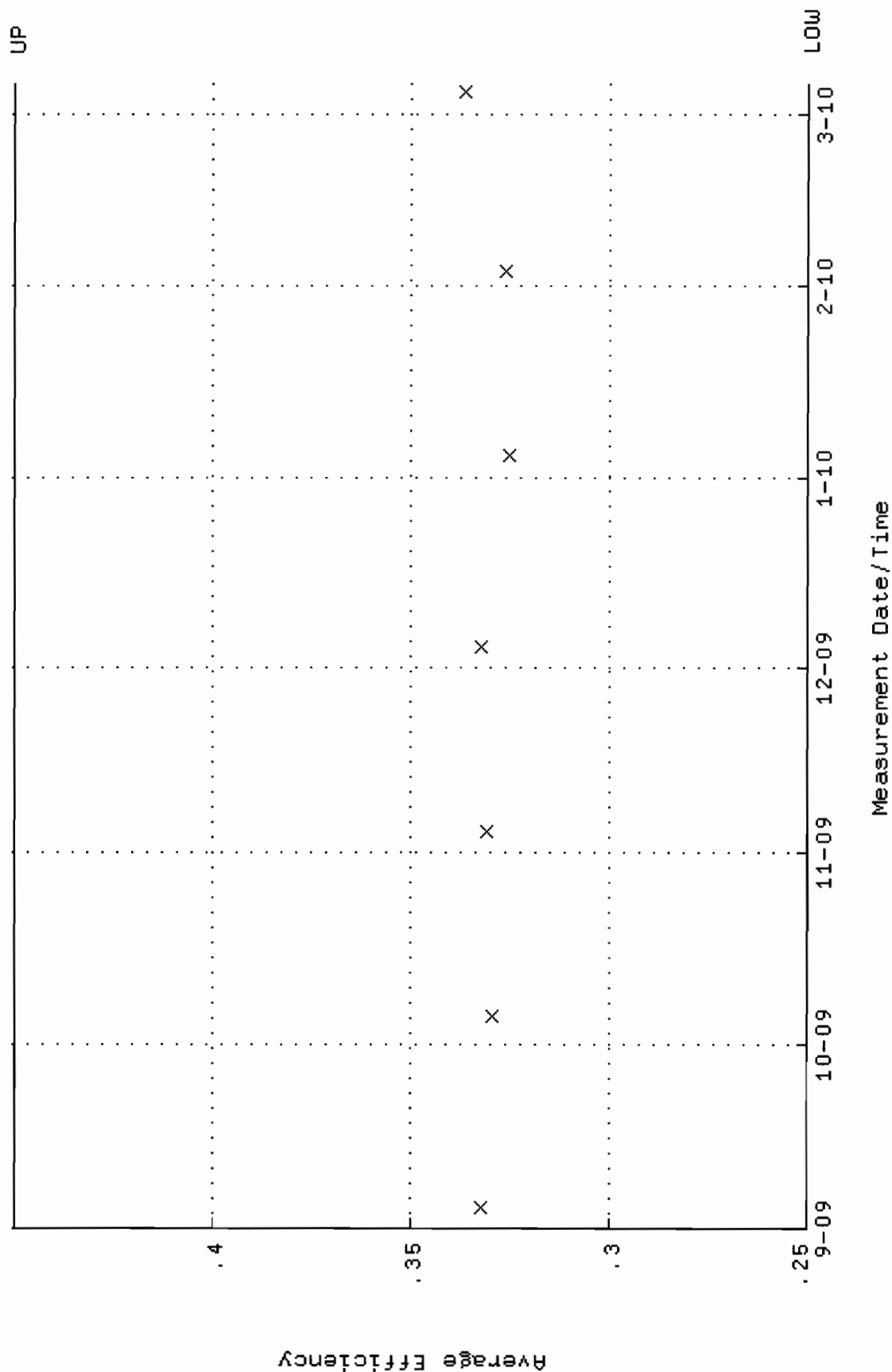
QA filename : DKA100:[ENV\_ALPHA.QA.W]w017.QAF;4  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:41 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 90.4251 through 97.0169



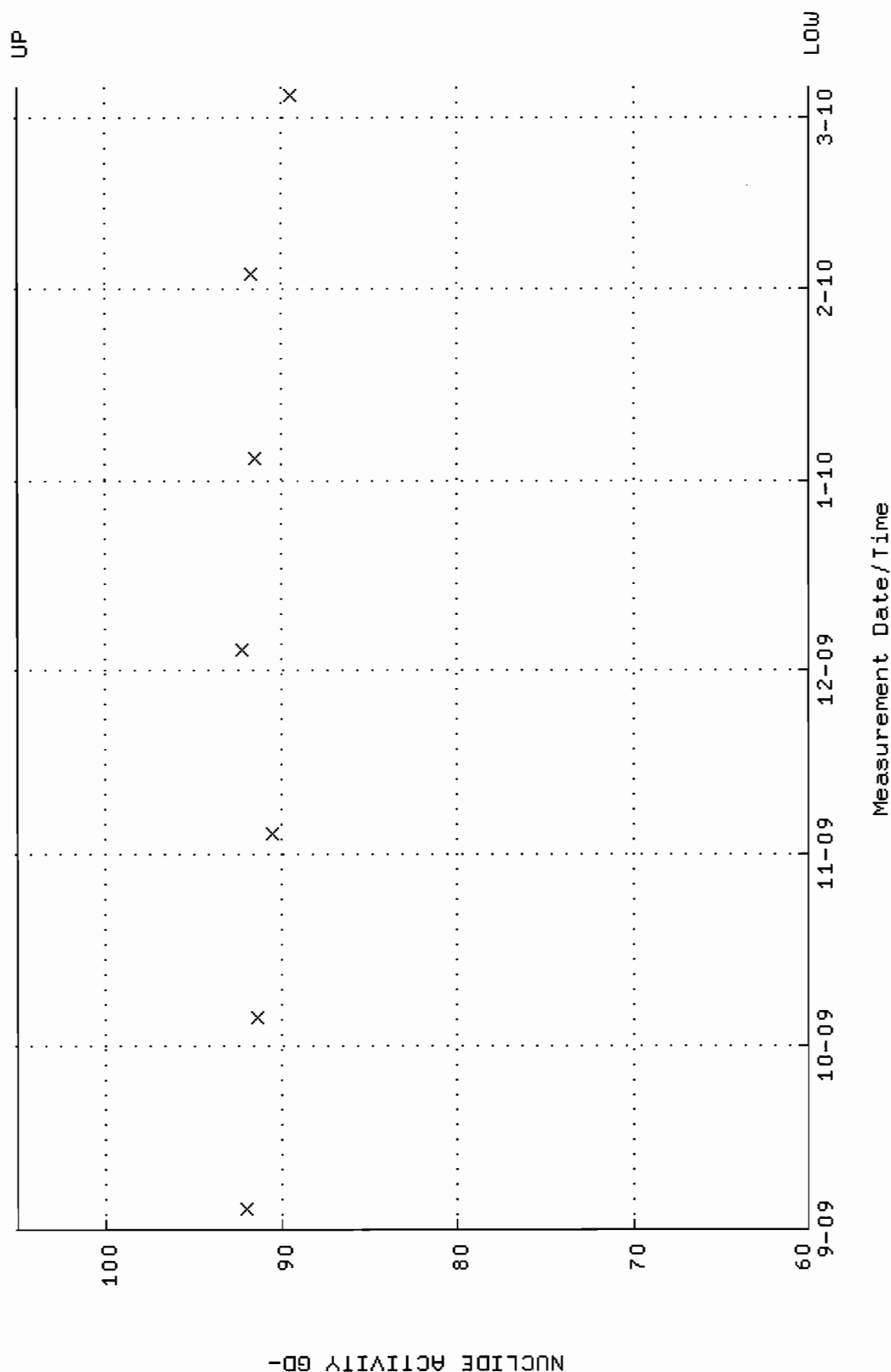
QA filename : DKA100:[ENV\_ALPHA.QA.B]B017.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:02 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W023.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:42 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.250000 through 0.450000

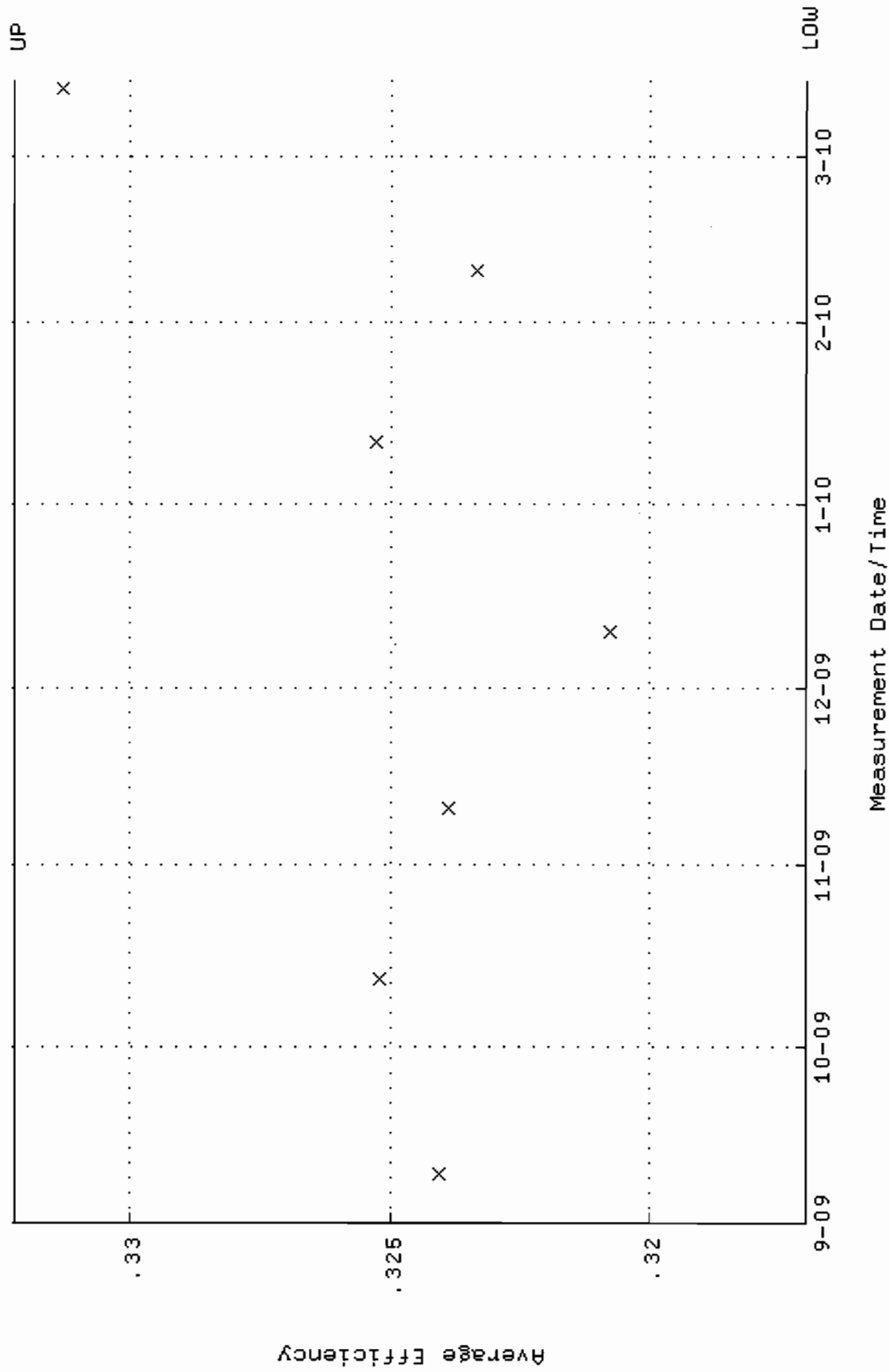


QA filename : DKA100:[ENV\_ALPHA.QA.W]W023.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:42 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 60.0000 through 105.000

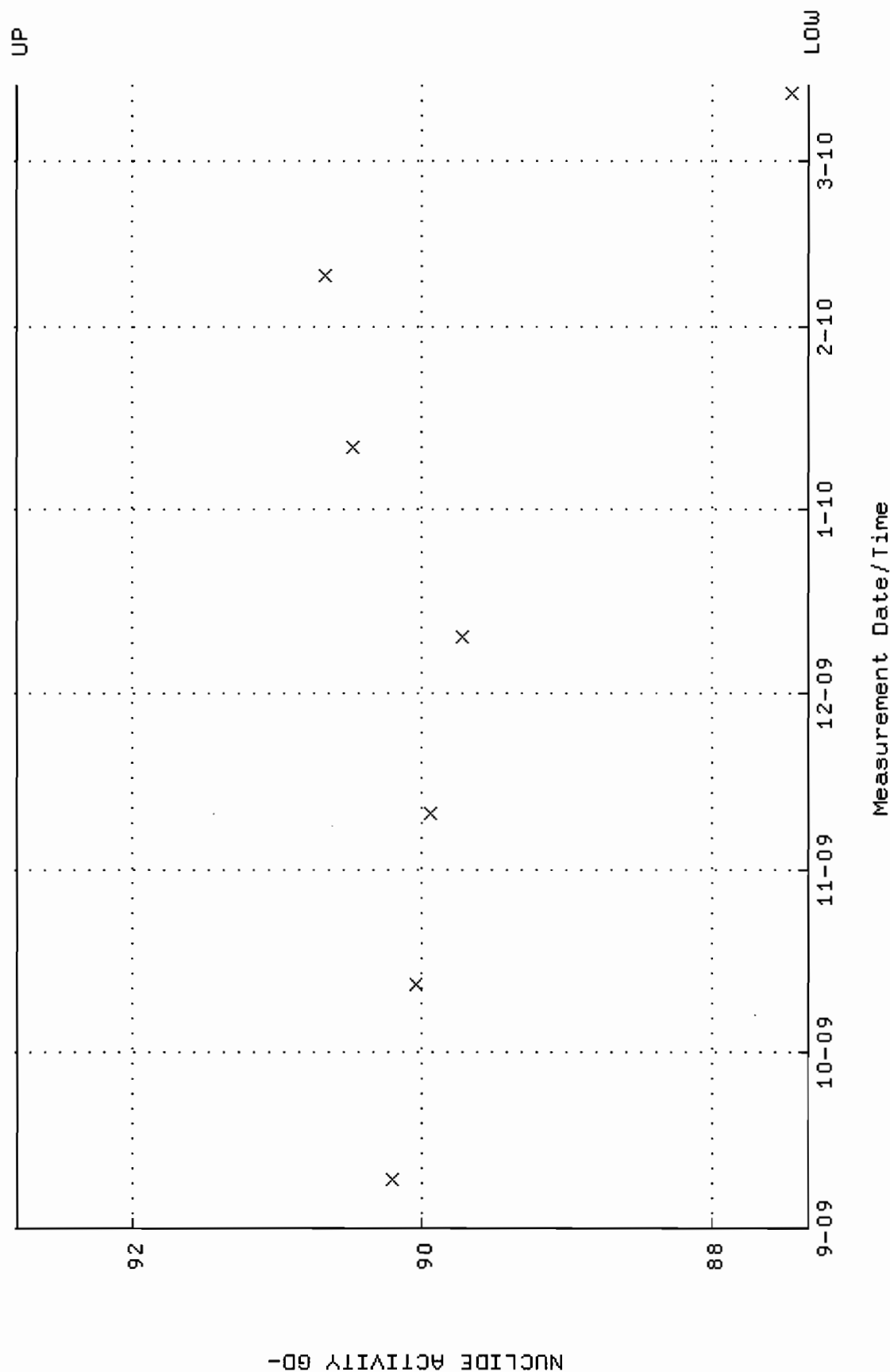




QA filename : DKA100:[ENV\_ALPHA.QA.W]W067.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:46 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.317012 through 0.332214



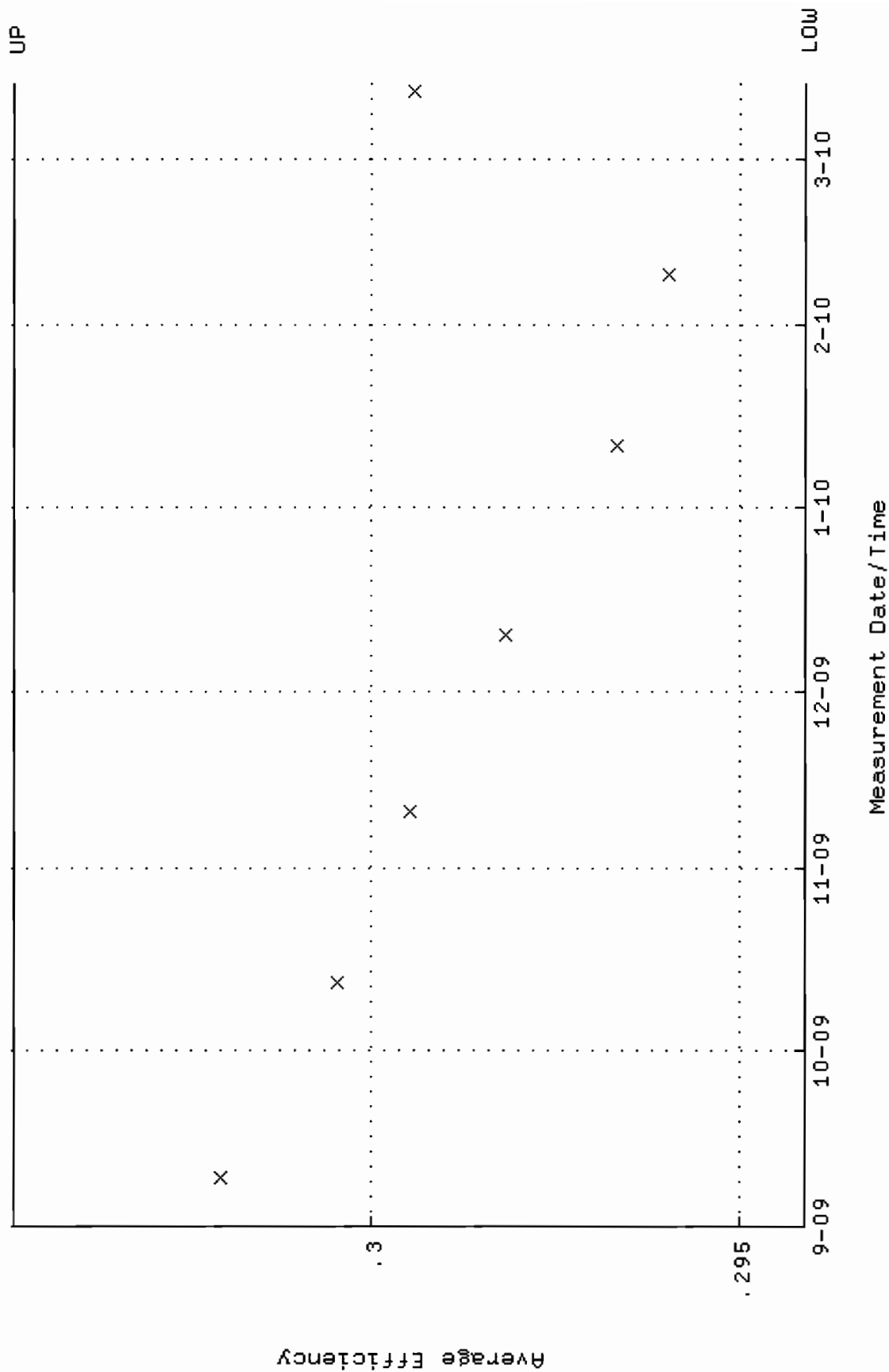
QA filename : DKA100:[ENV\_ALPHA.QA.W]W067.QAF;2  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:46 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 87.3271 through 92.8001



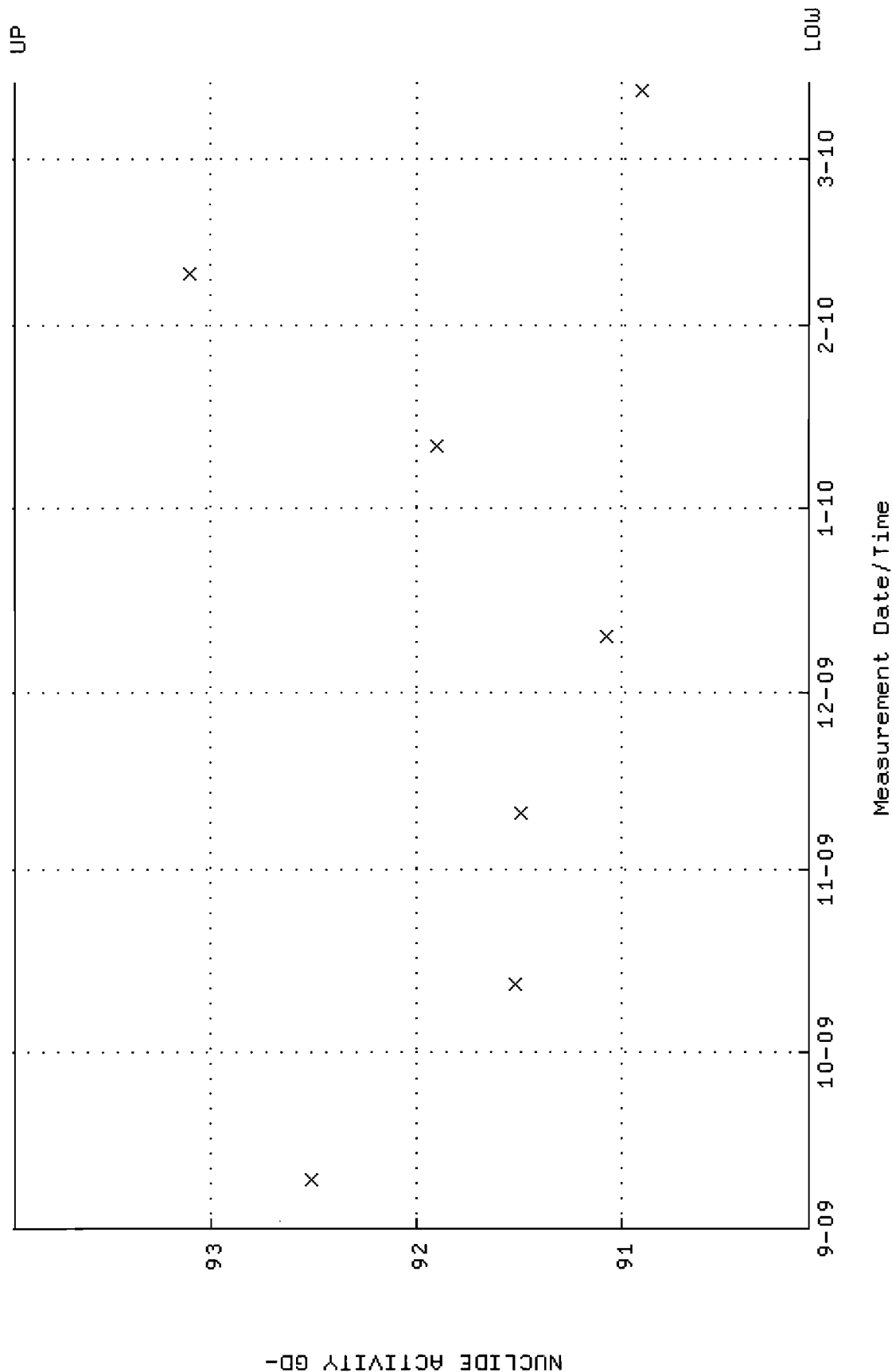
0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV-ALPHA.QA.W]W068.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:46 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.294113 through 0.304839



QA filename : DKA100:[ENV\_ALPHA.QA.W]W068.QAF;2  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:46 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 90.0941 through 93.9543

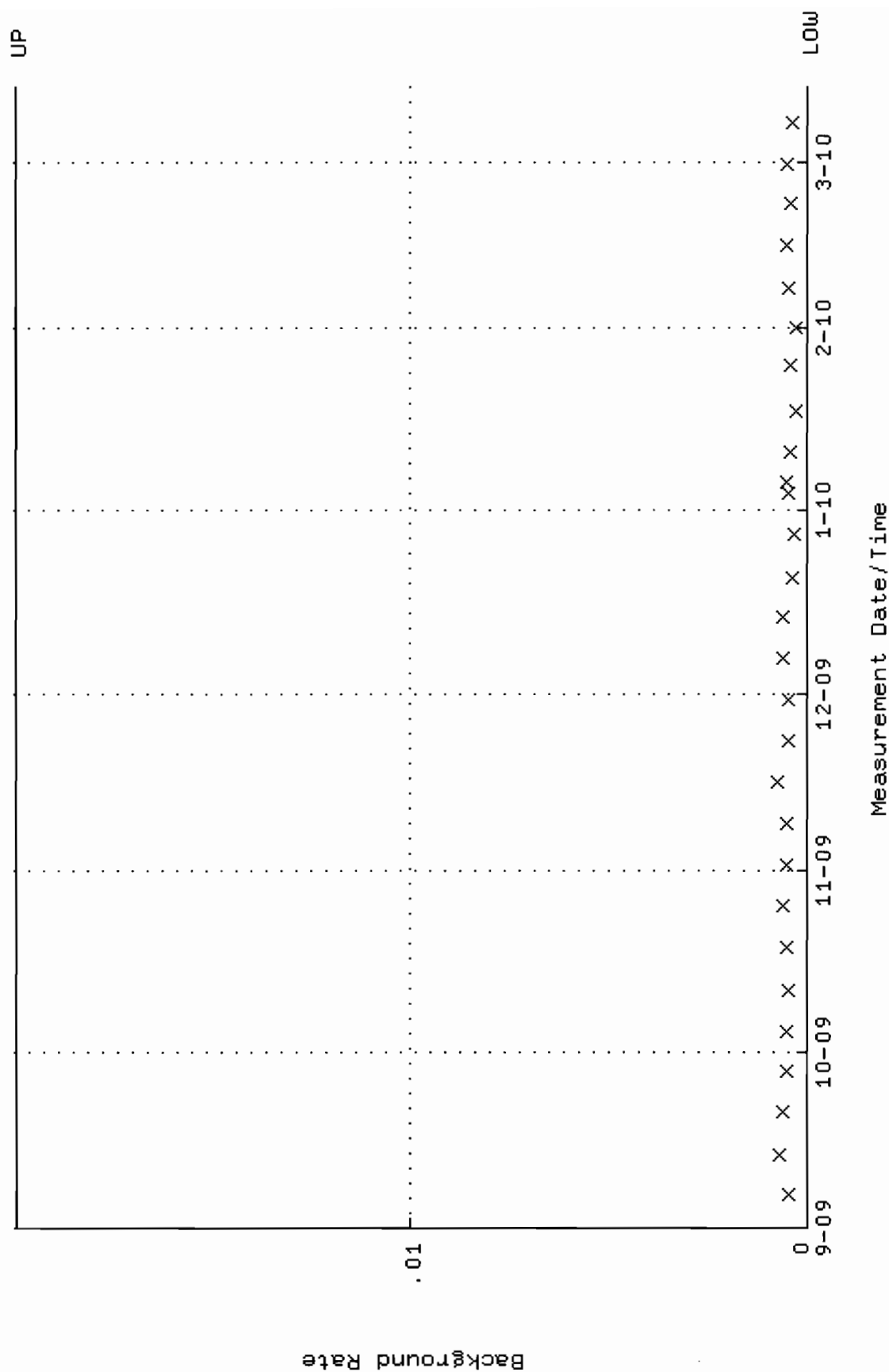


QA filename : DKA100:[ENV\_ALPHA.QA.B]B068.QAF;1

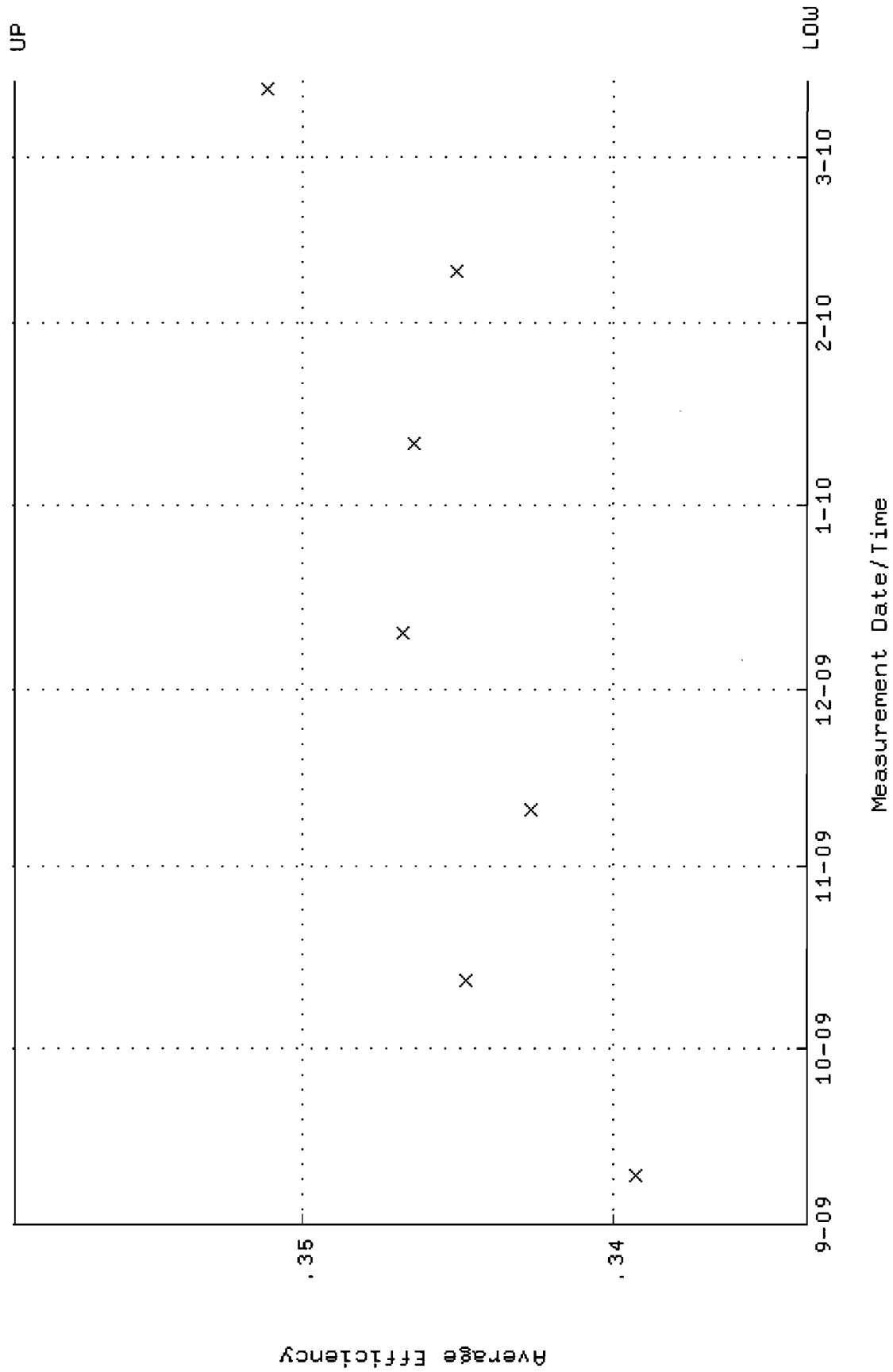
Parameter Name : BACKRATE (Background Rate)

Start/End Dates : 6-SEP-2009 14:27:07 through 13-MAR-2010 12:00:00

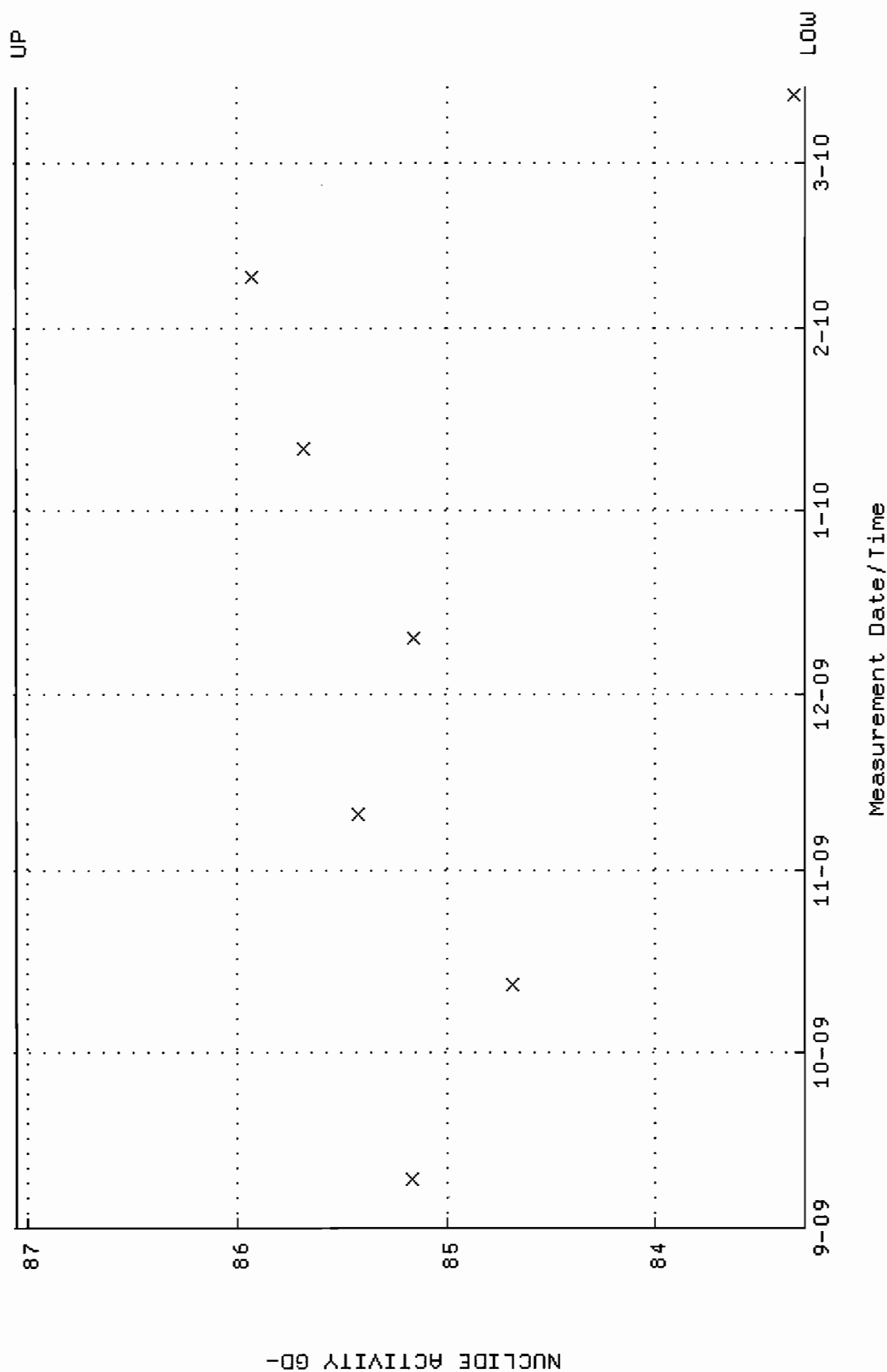
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



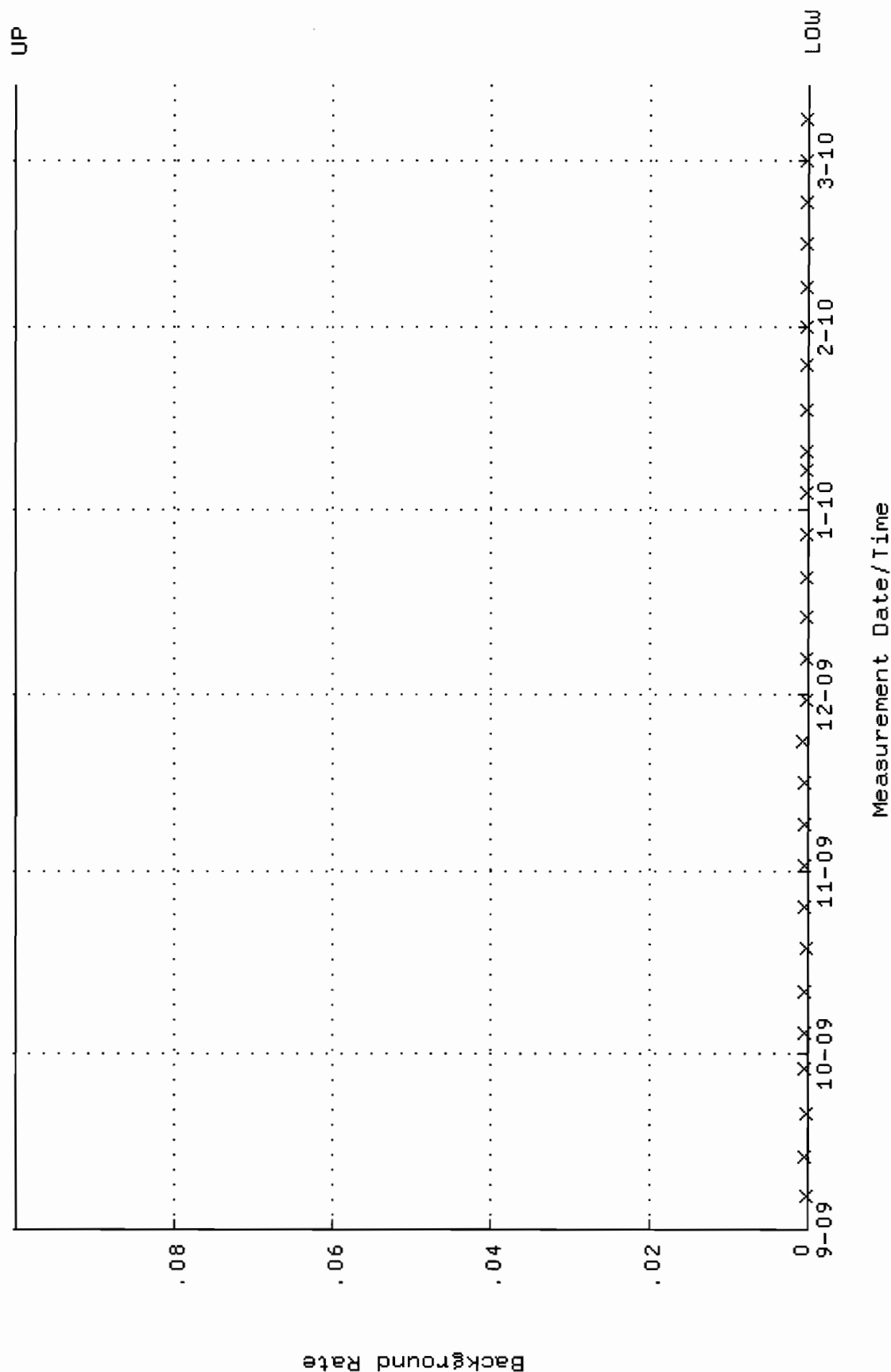
QA filename : DKA100:[ENV\_ALPHA.QA.W]W091.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.333733 through 0.359273



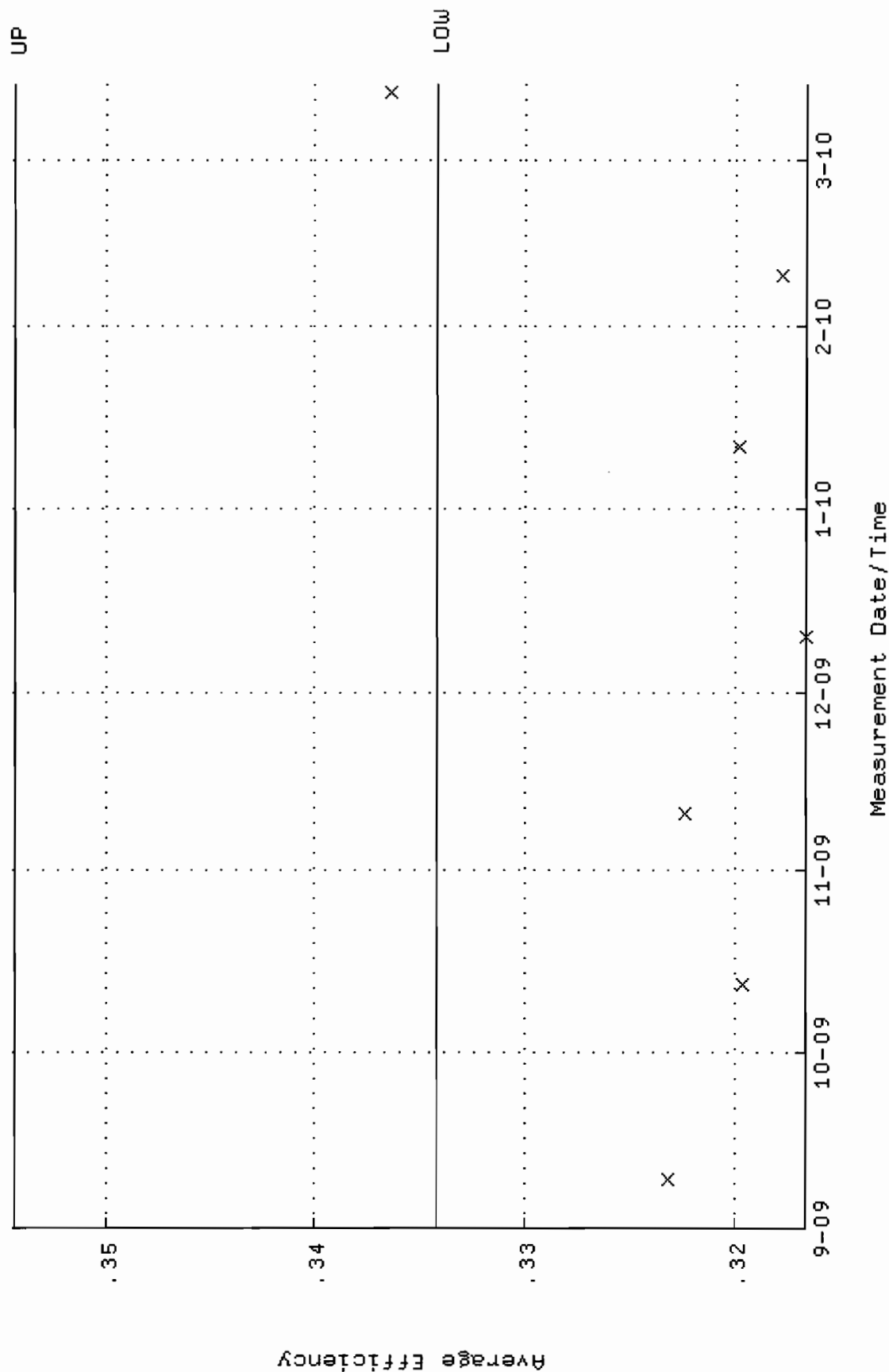
QA filename : DKA100:[ENV\_ALPHA.QA.W]W091.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 83.2831 through 87.0563



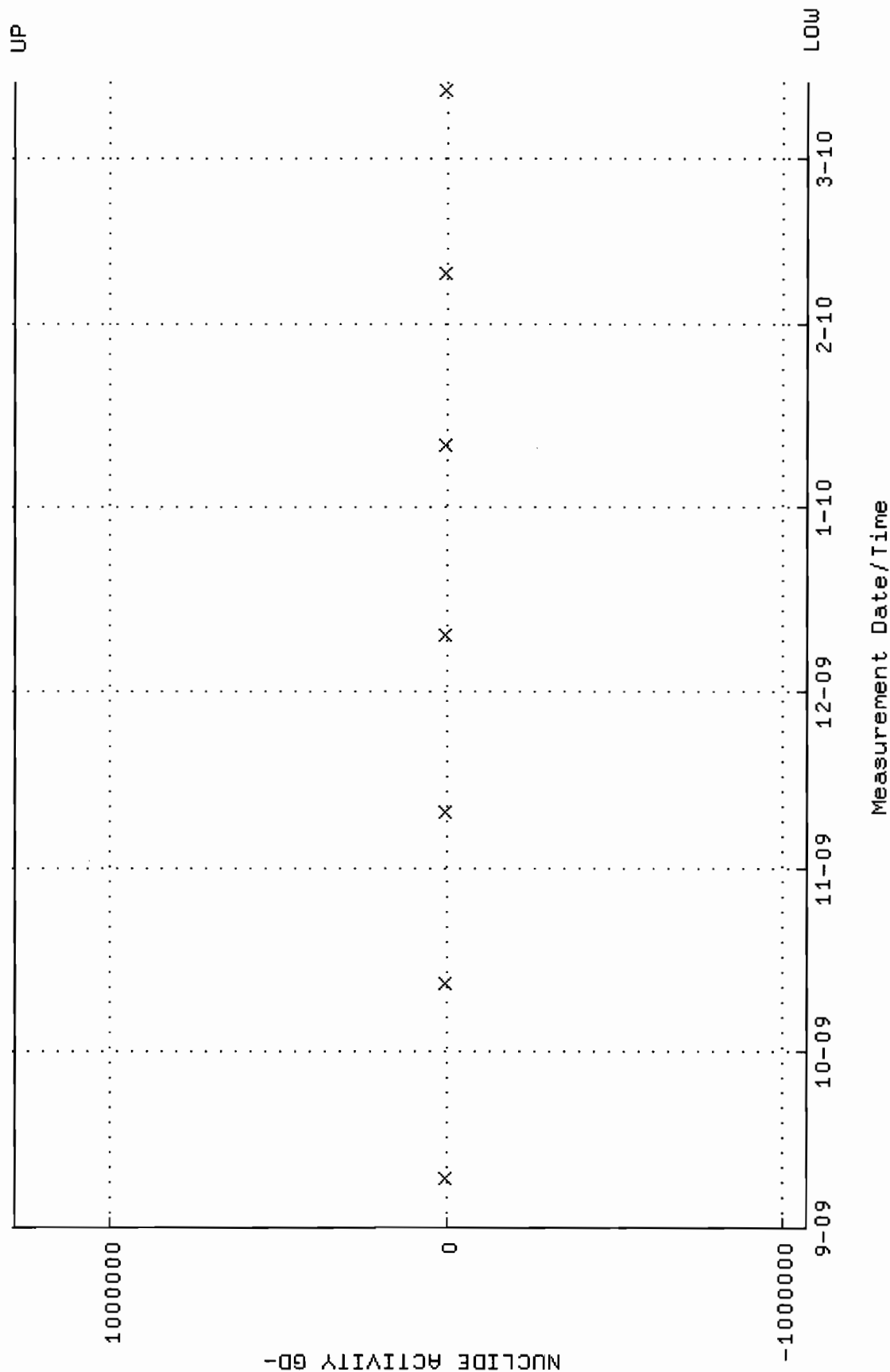
QA filename : DKA100:[ENV\_ALPHA.QA.B]B091.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:10 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



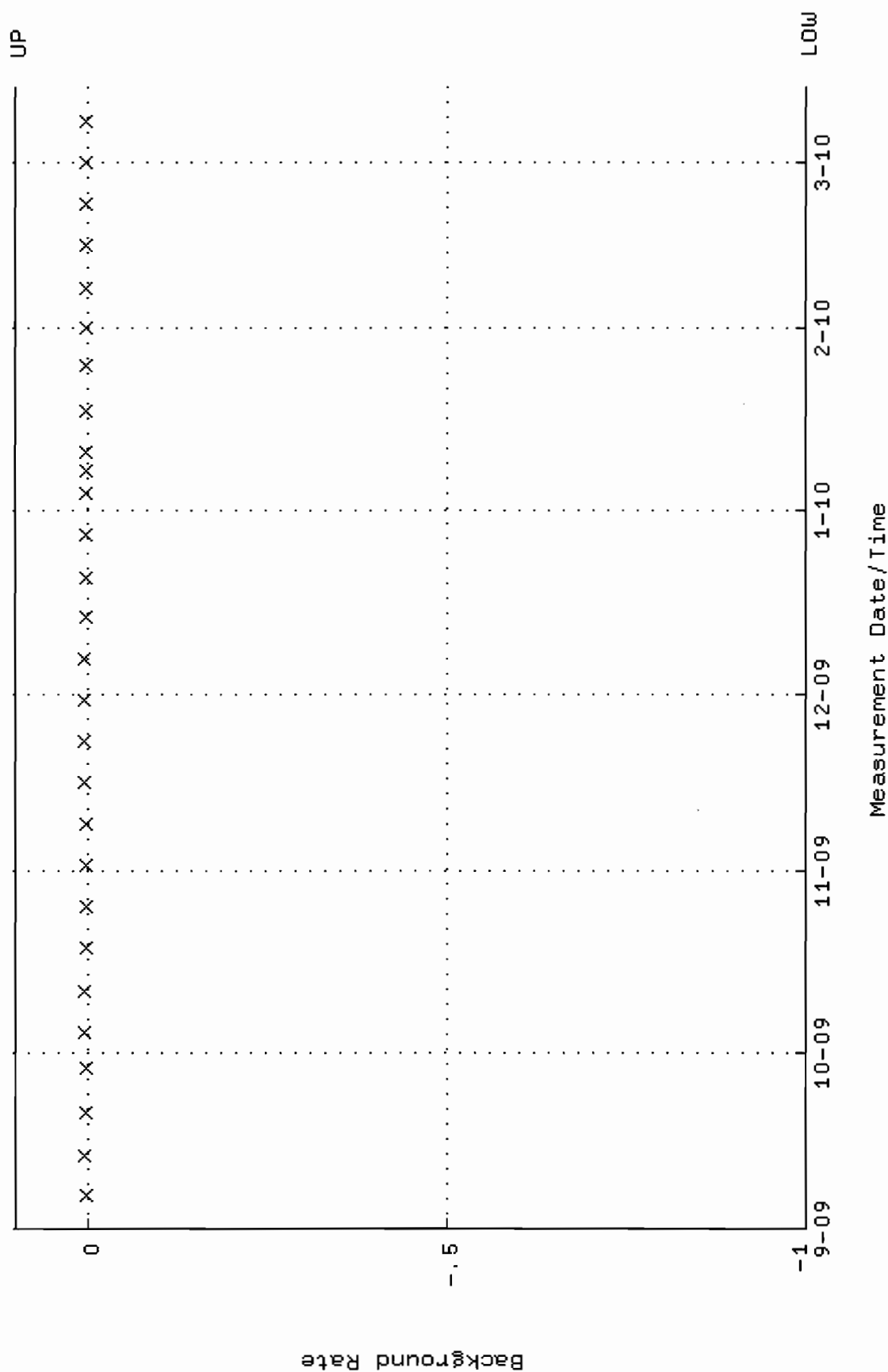
QA filename : DKA100:[ENV\_ALPHA.QA.W]W093.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.334257 through 0.354343



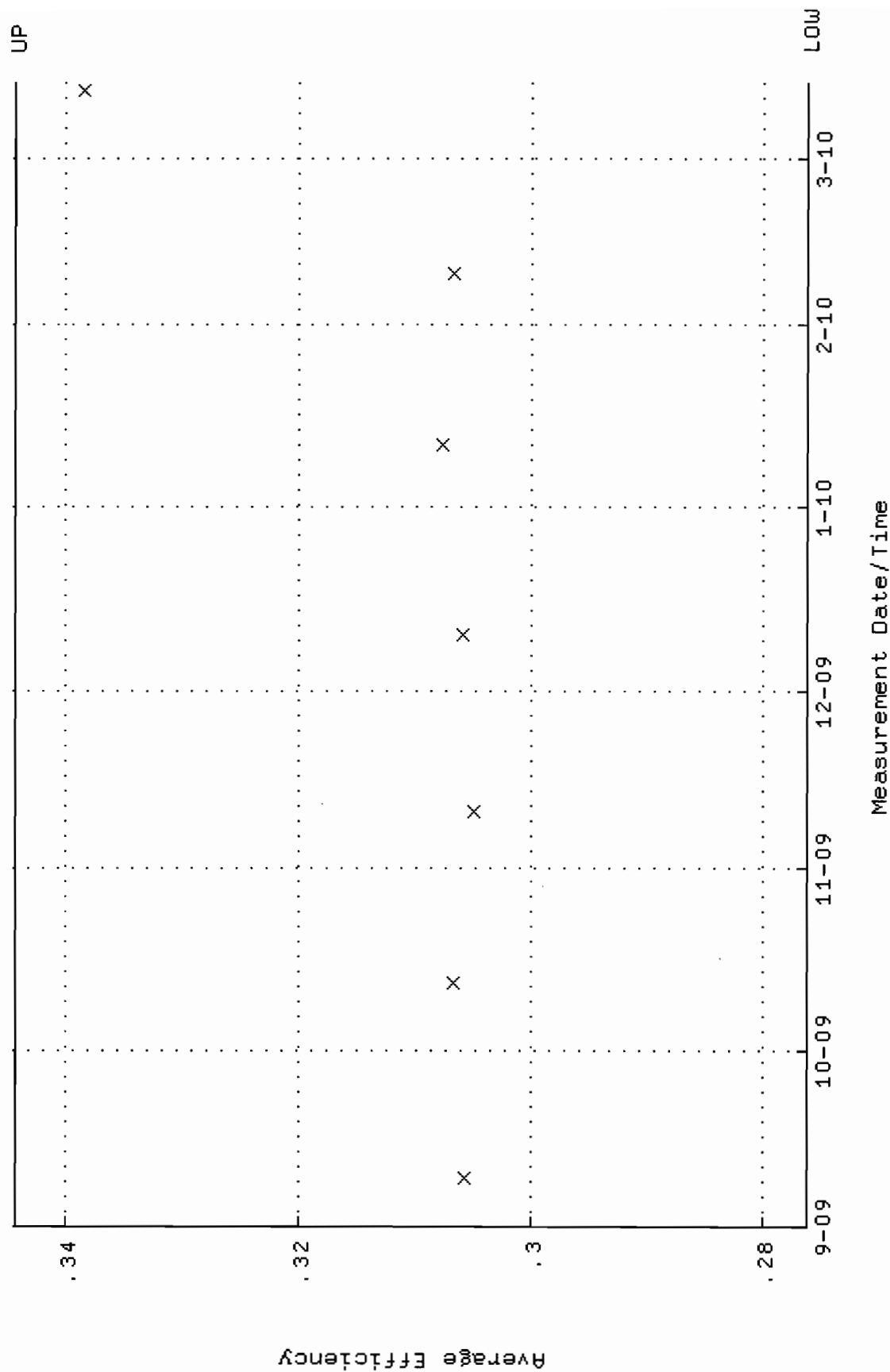
QA filename : DKA100:[ENV\_ALPHA.QA.W]W093.QAF;1  
 Parameter Name : NLACTVY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: -1.071934E+06 through 1.284428E+06



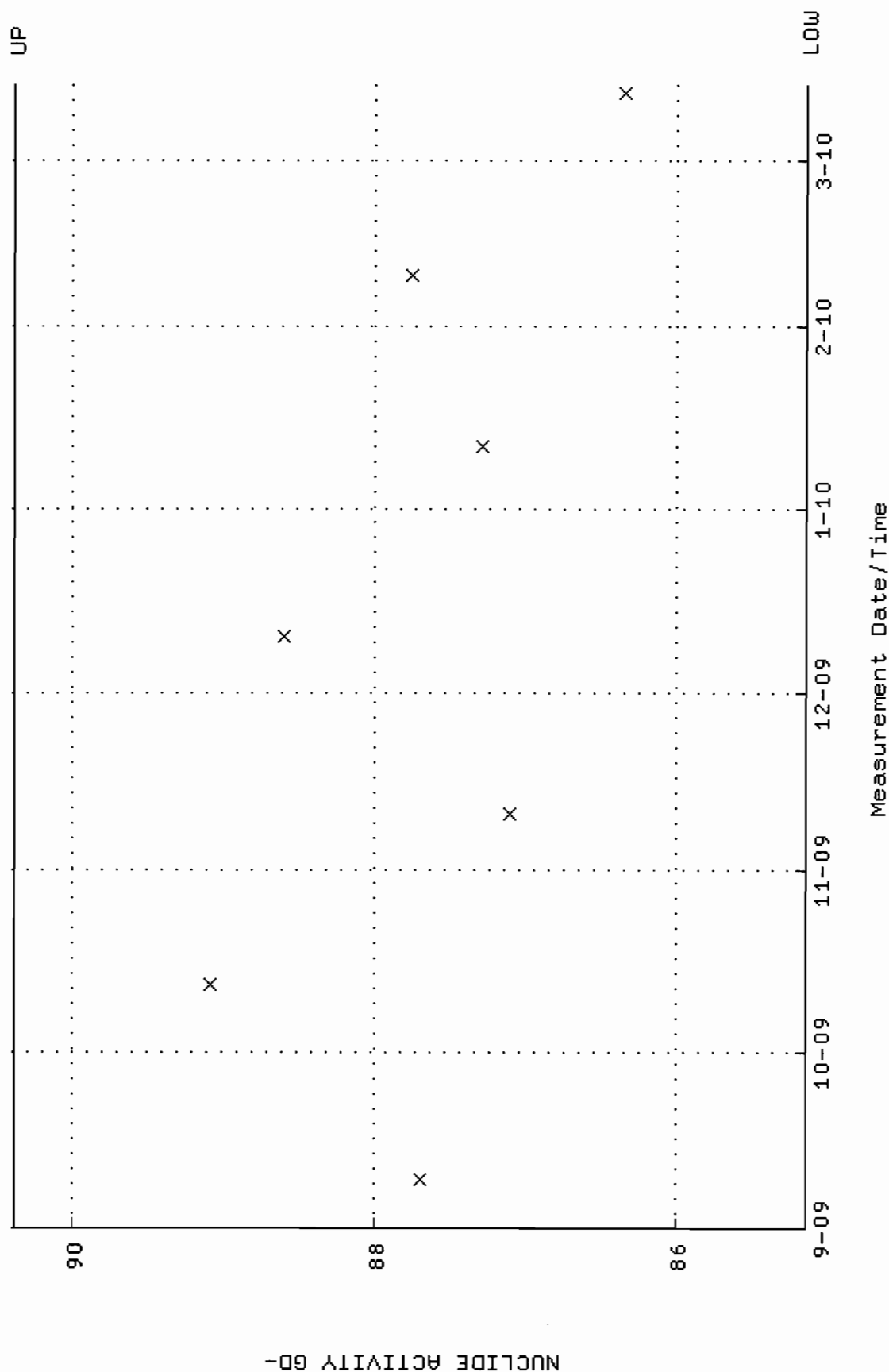
QA filename : DKA100:[ENV\_ALPHA.QA.B]B093.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:10 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: -1.00000 through 0.100000



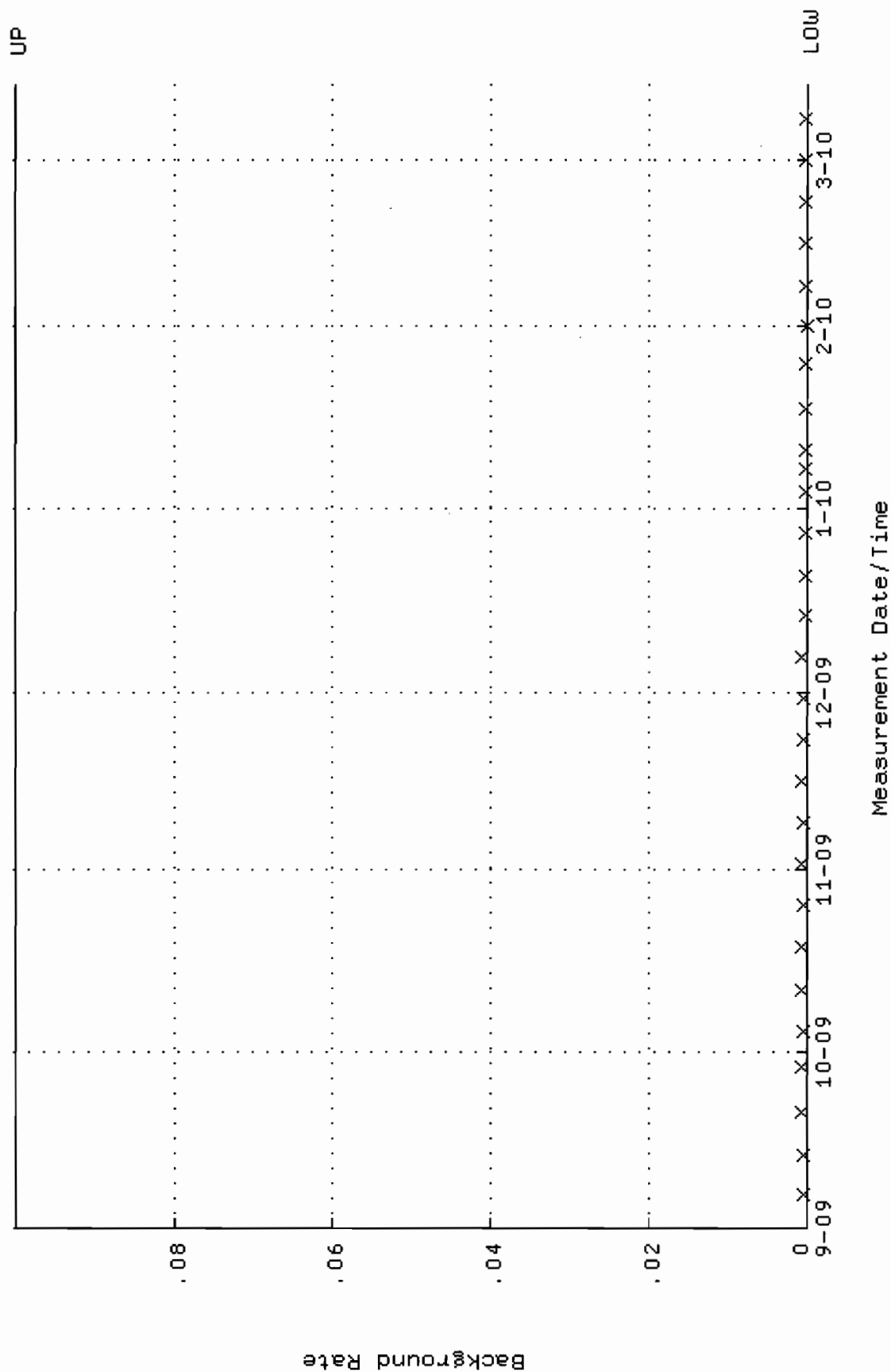
QA filename : DKA100:[ENV\_ALPHA.QA.W]W094.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.276224 through 0.344338



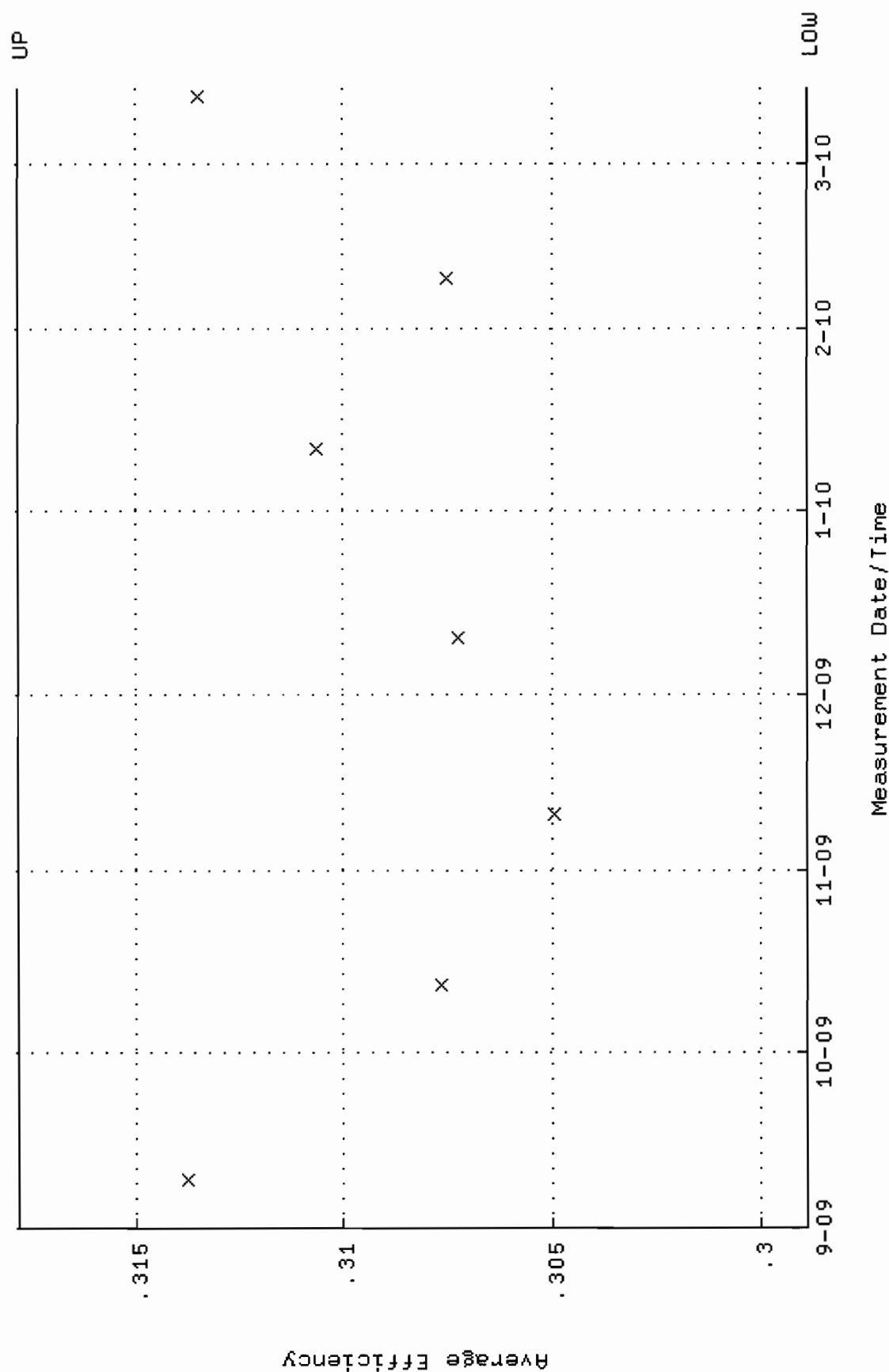
QA filename : DKA100:[ENV-ALPHA.QA.W]W094.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:49 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.1305 through 90.3863



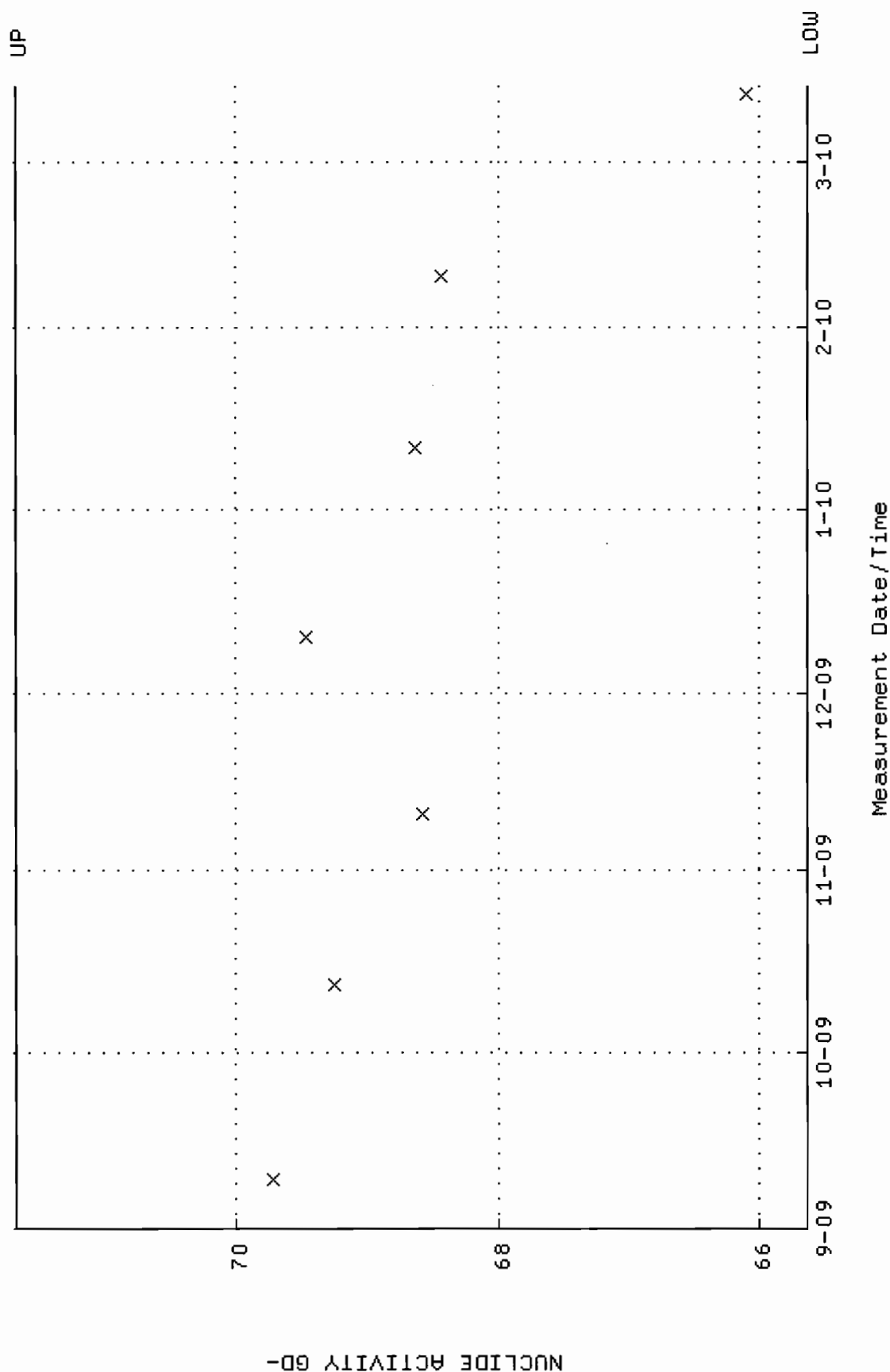
QA filename : DKA100:[ENV\_ALPHA.QA.B]B094.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:10 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



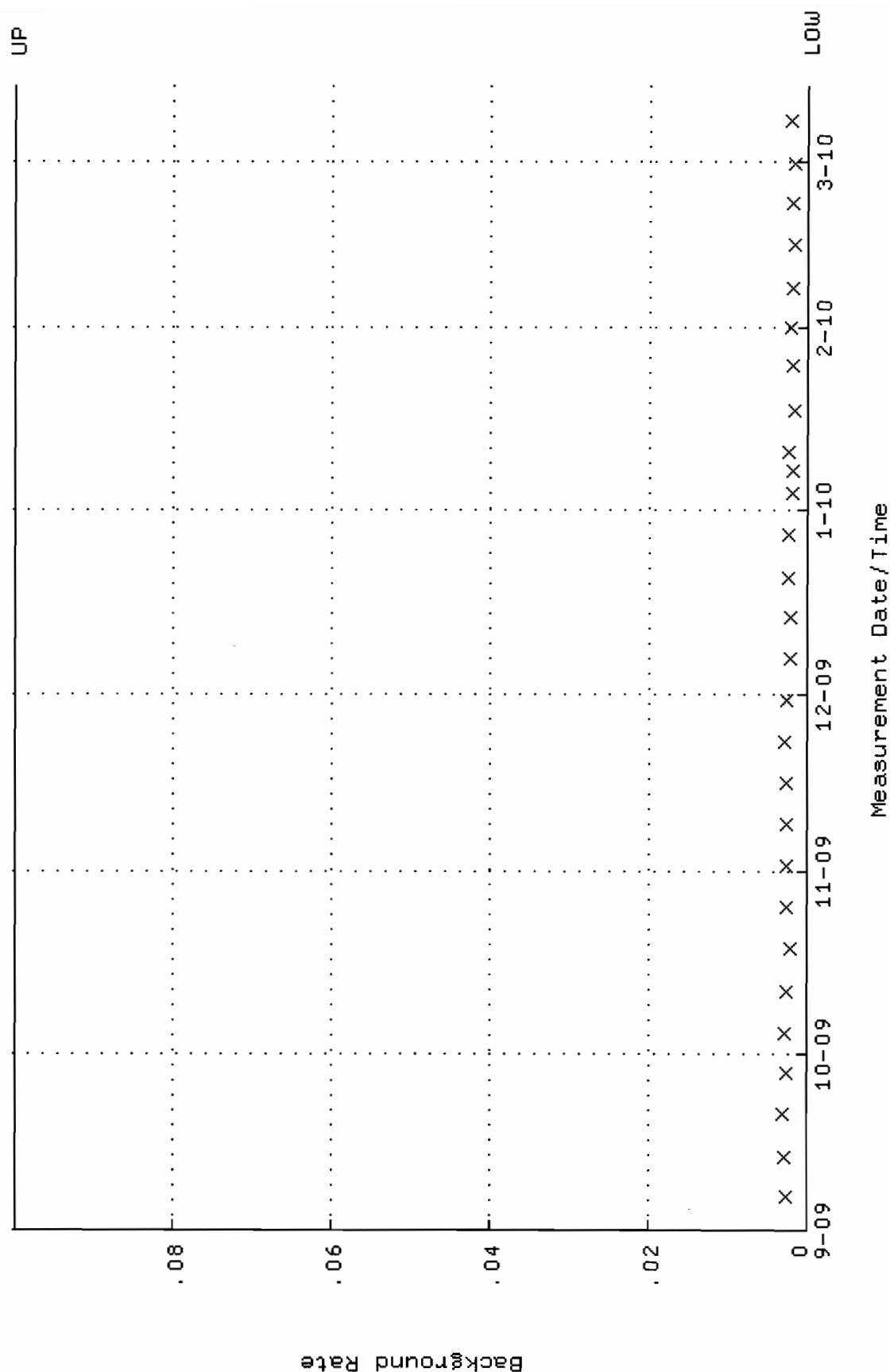
QA filename : DKA100:[ENV\_ALPHA.QA.W]W095.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:50 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.298900 through 0.317790



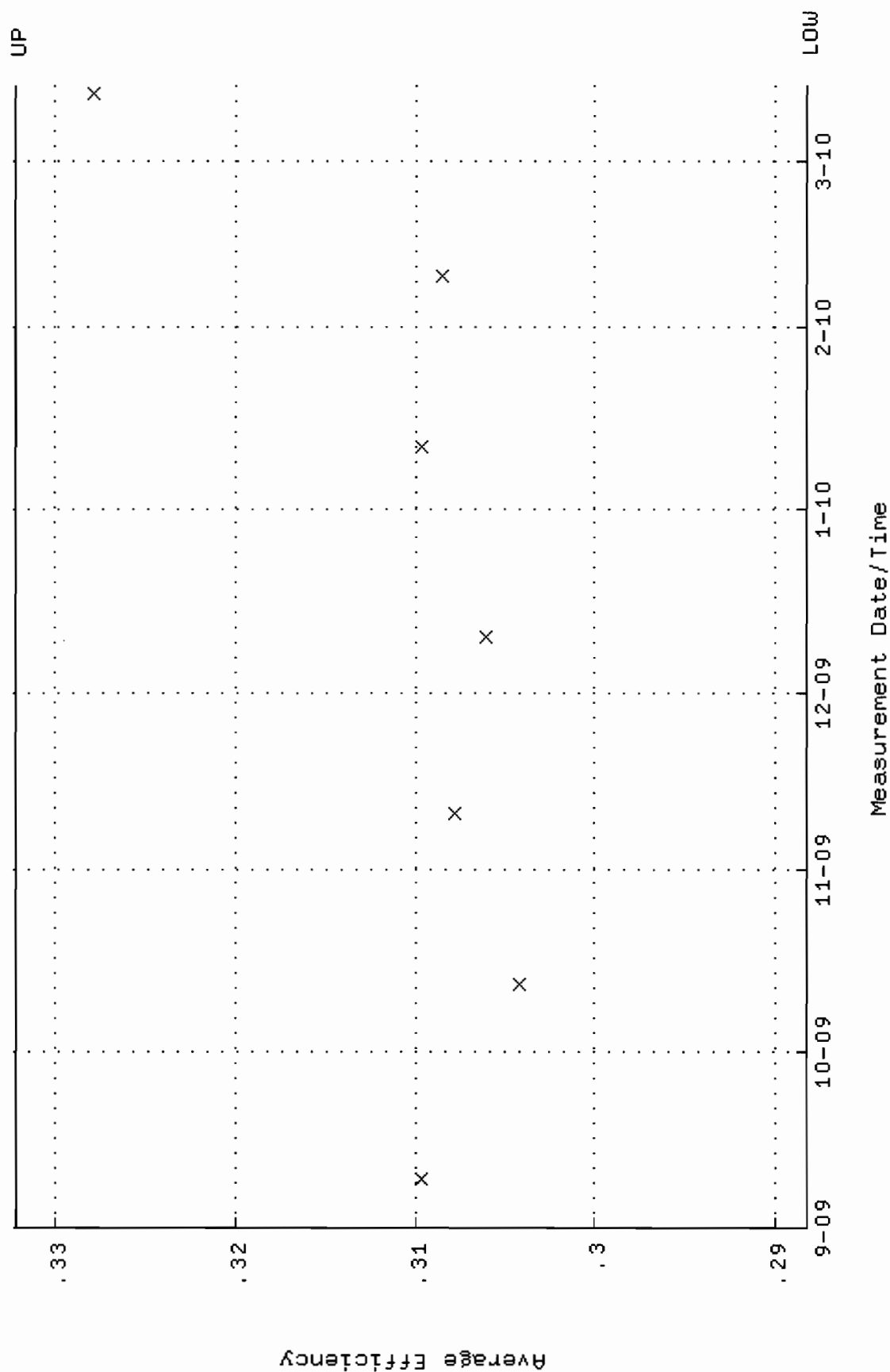
QA filename : DKA100:[ENV\_ALPHA.QA.W]W095.QAF;3  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:50 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 65.6370 through 71.6700



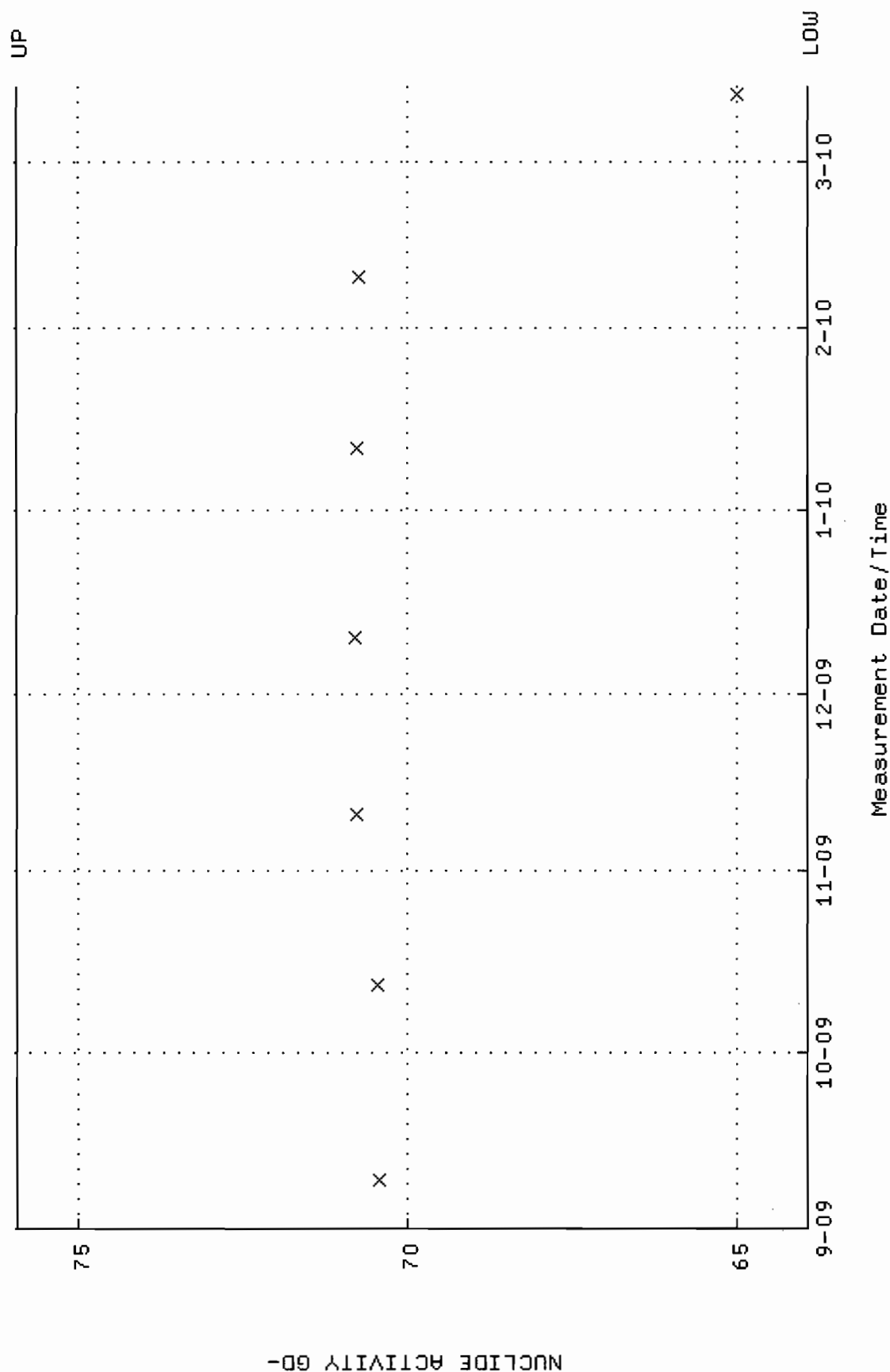
QA filename : DKA100:[ENV\_ALPHA.QA.B]B095.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



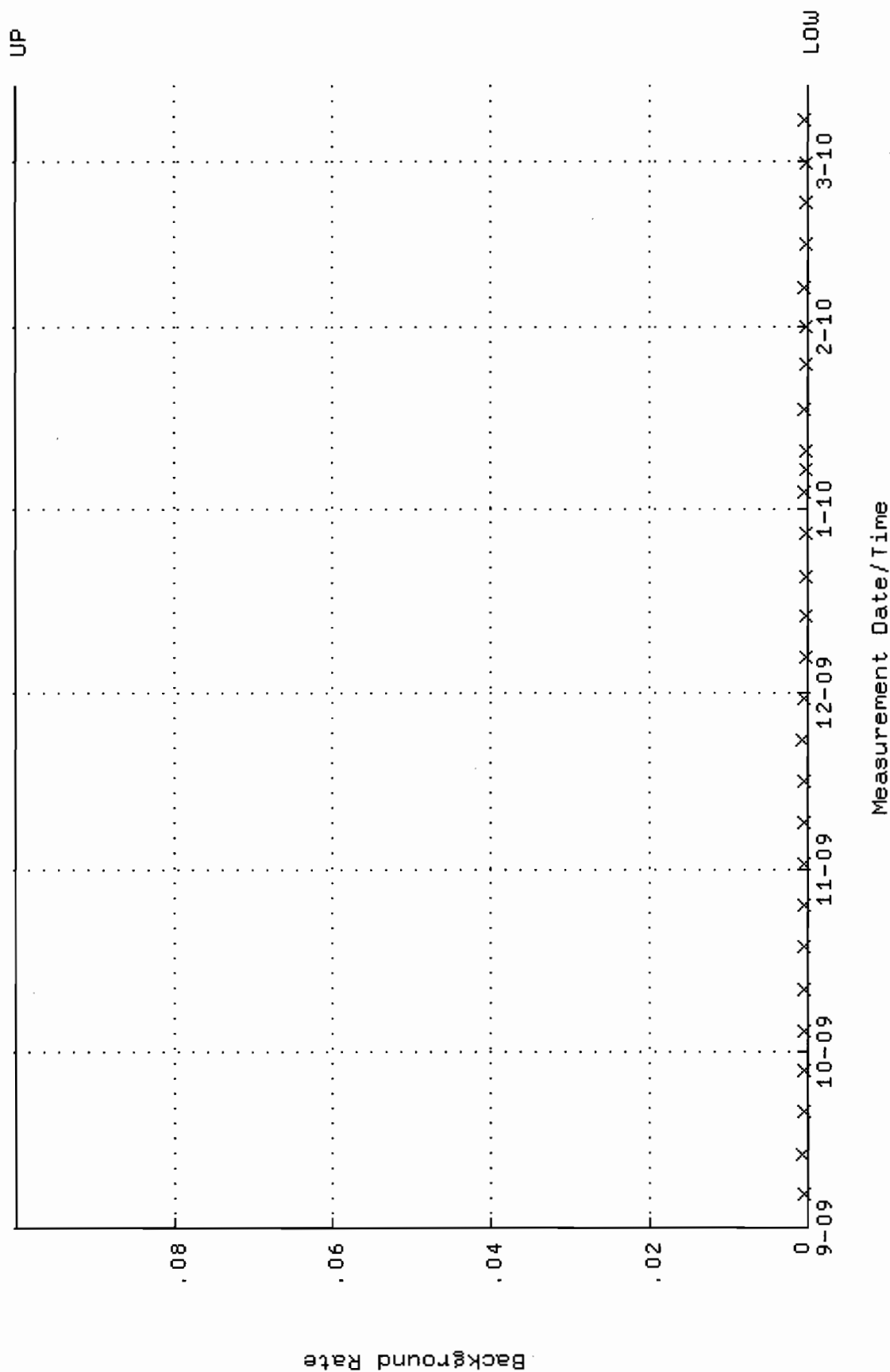
QA filename : DKA100:[ENV\_ALPHA.QA.W]W107.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.288232 through 0.332218



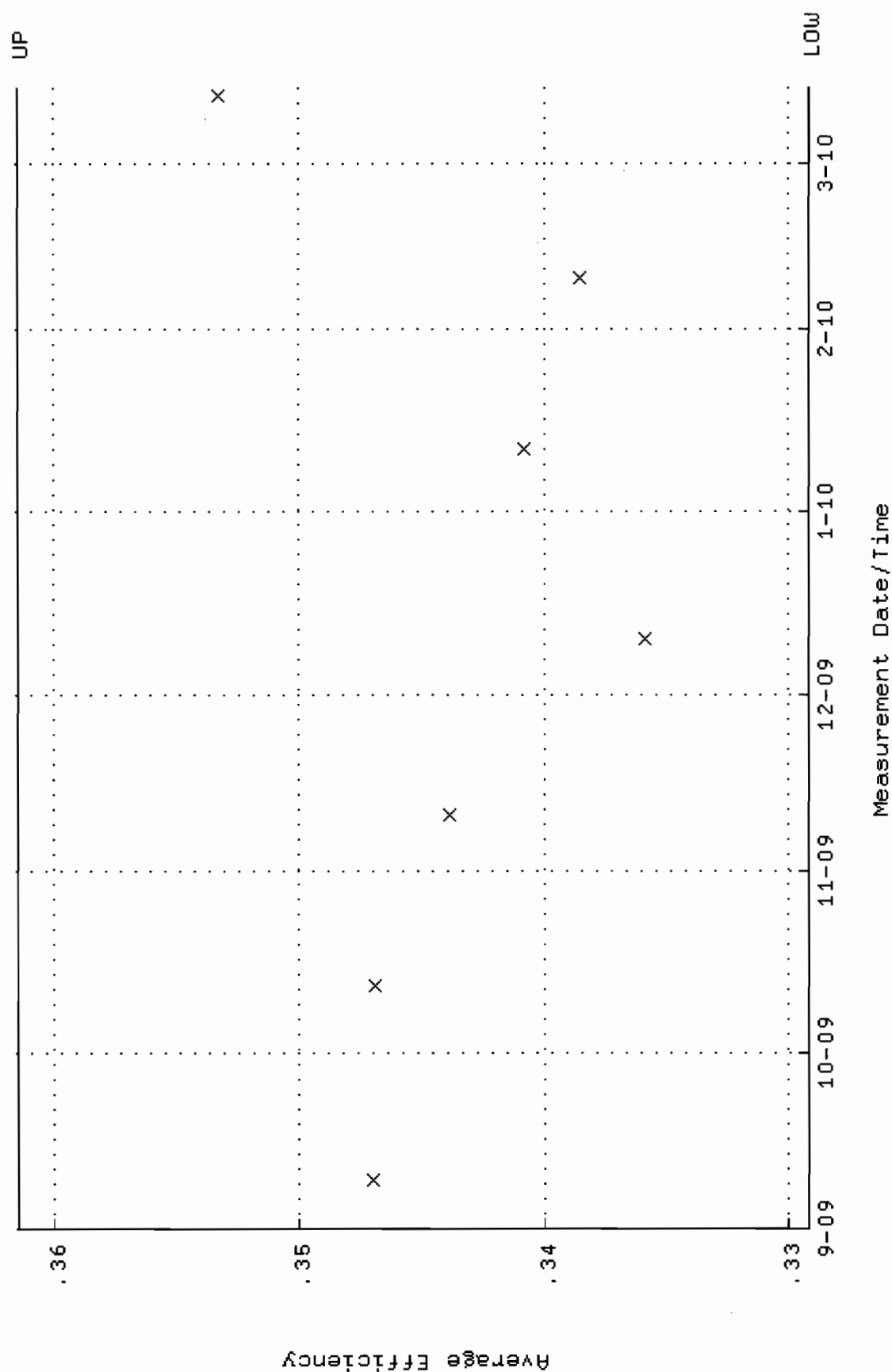
QA filename : DKA100:[ENV\_ALPHA.QA.W]W107.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 63.9135 through 75.9257



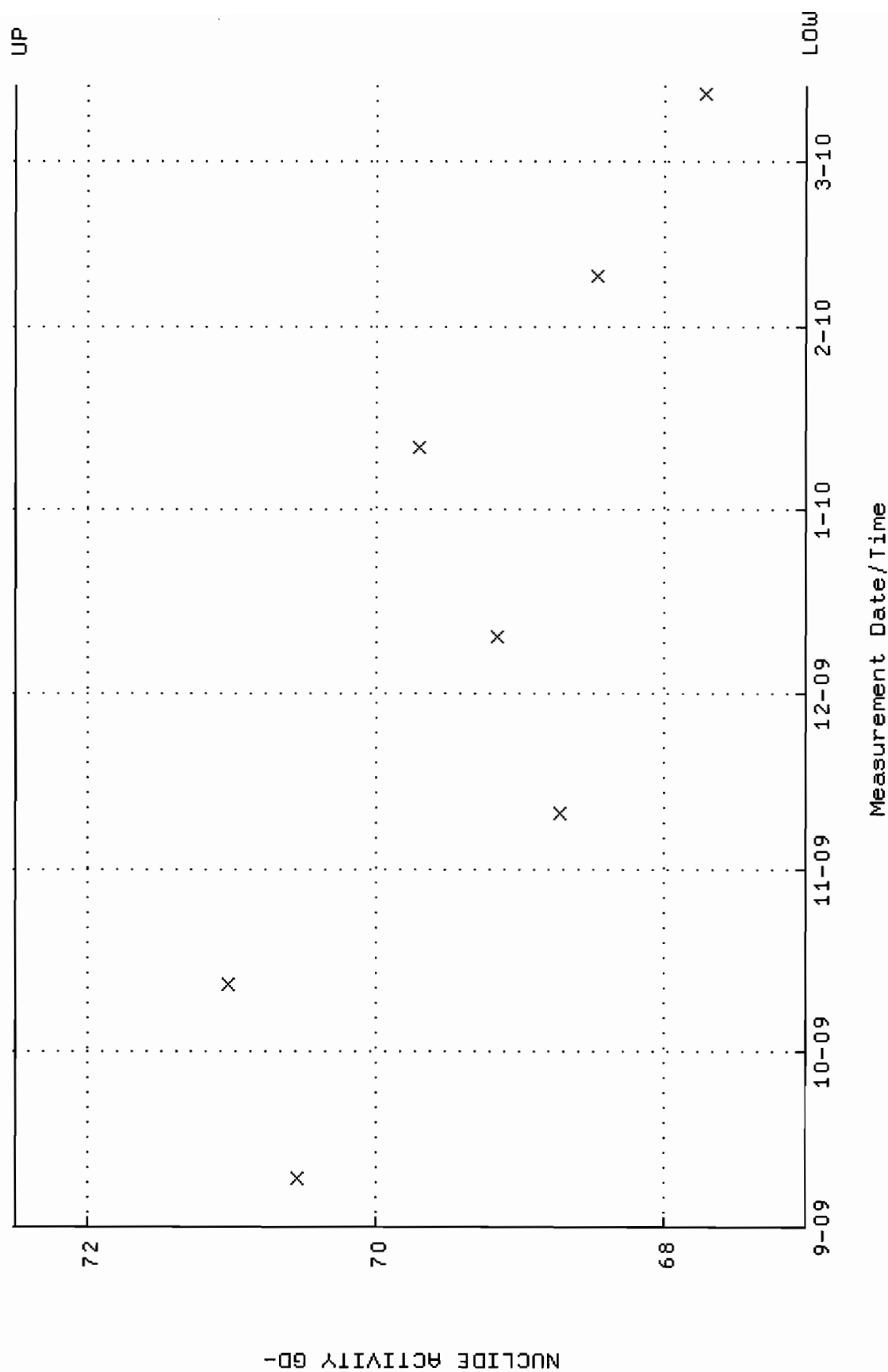
QA filename : DKA100:[ENV\_ALPHA.QA.B]B107.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:12 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



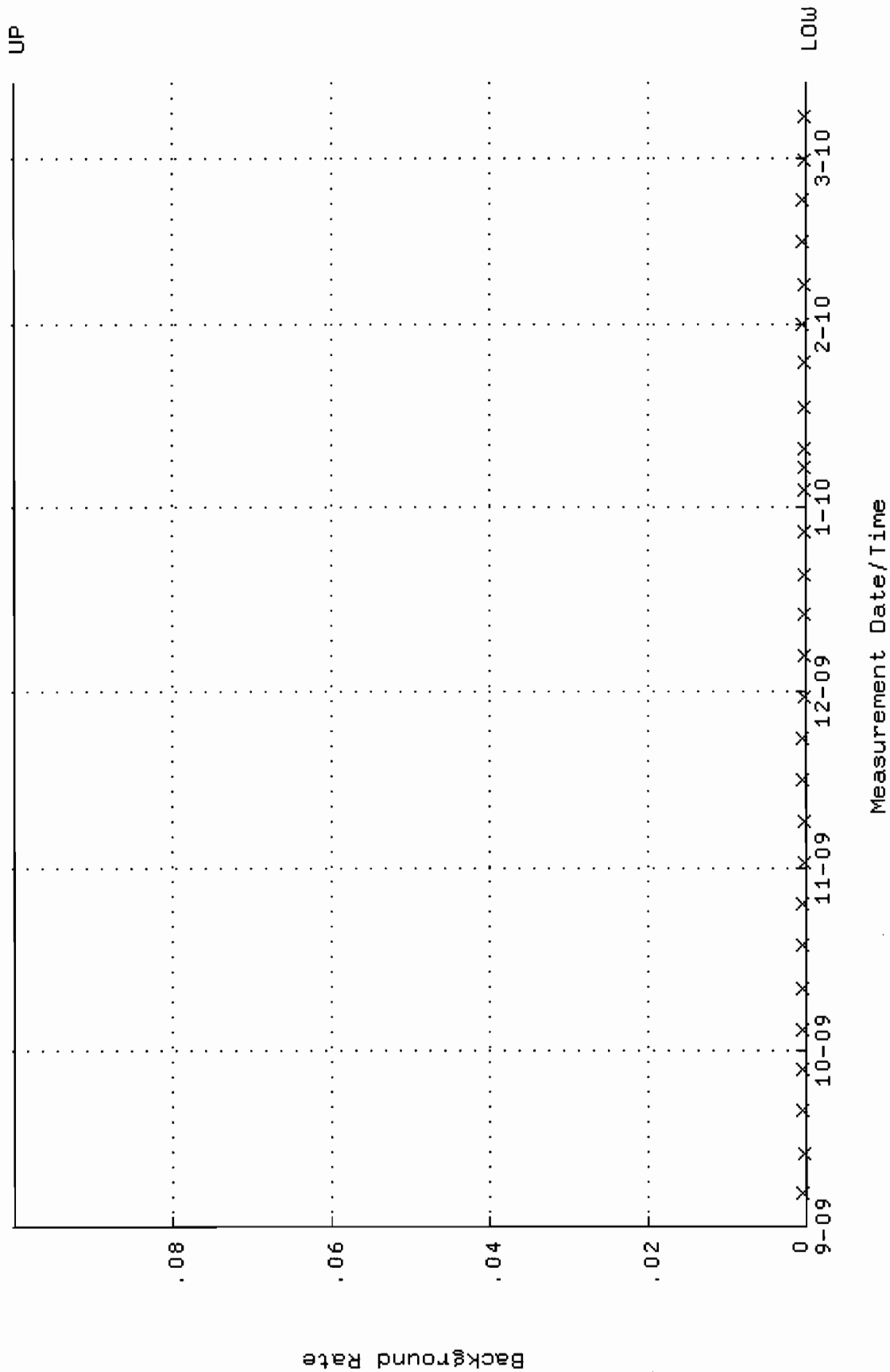
QA filename : DKA100:[ENV\_ALPHA.QA.W]W108.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.329201 through 0.361417



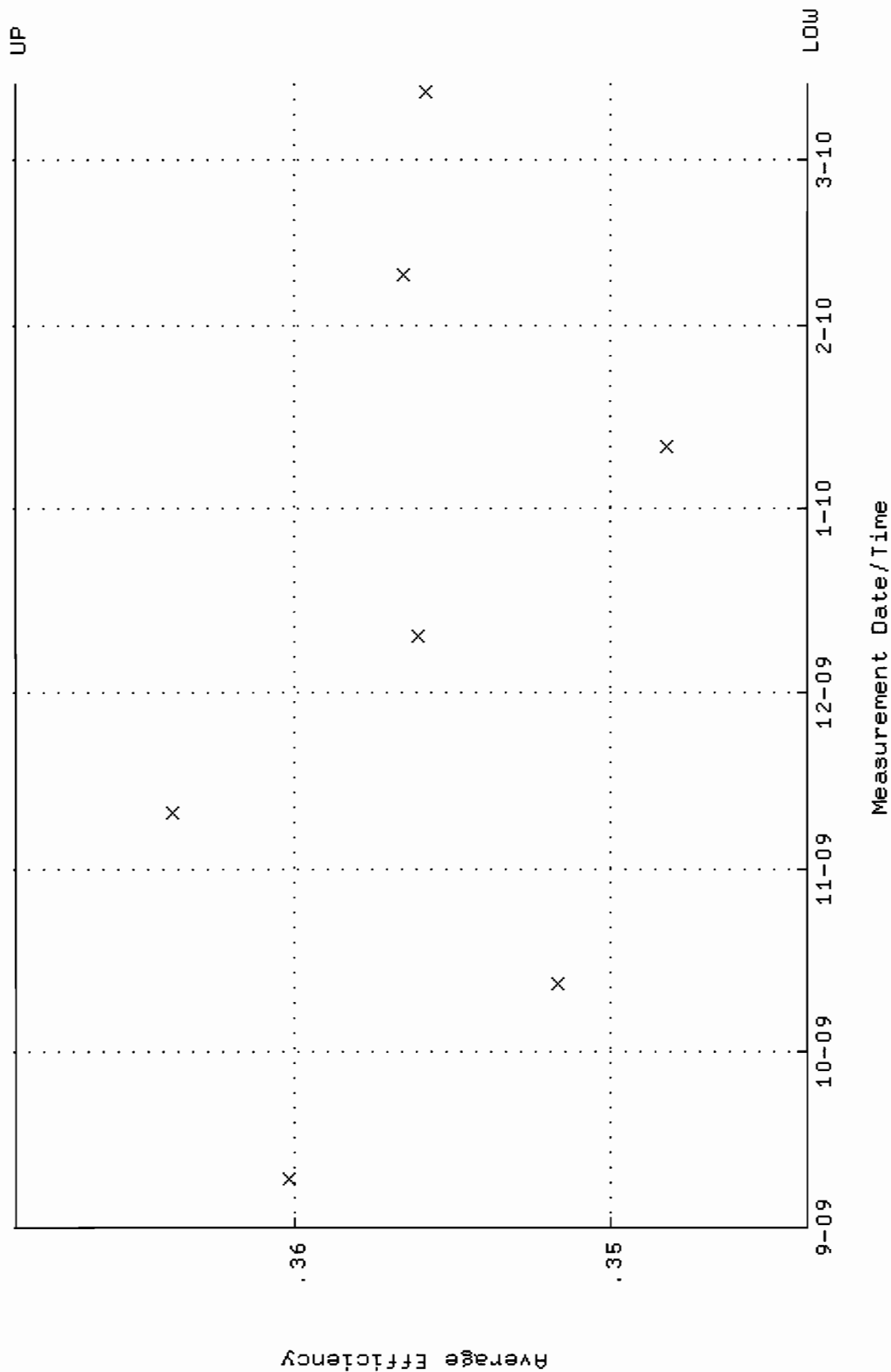
QA filename : DKA100:[ENV\_ALPHA.QA.W]w108.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 67.0155 through 72.5031



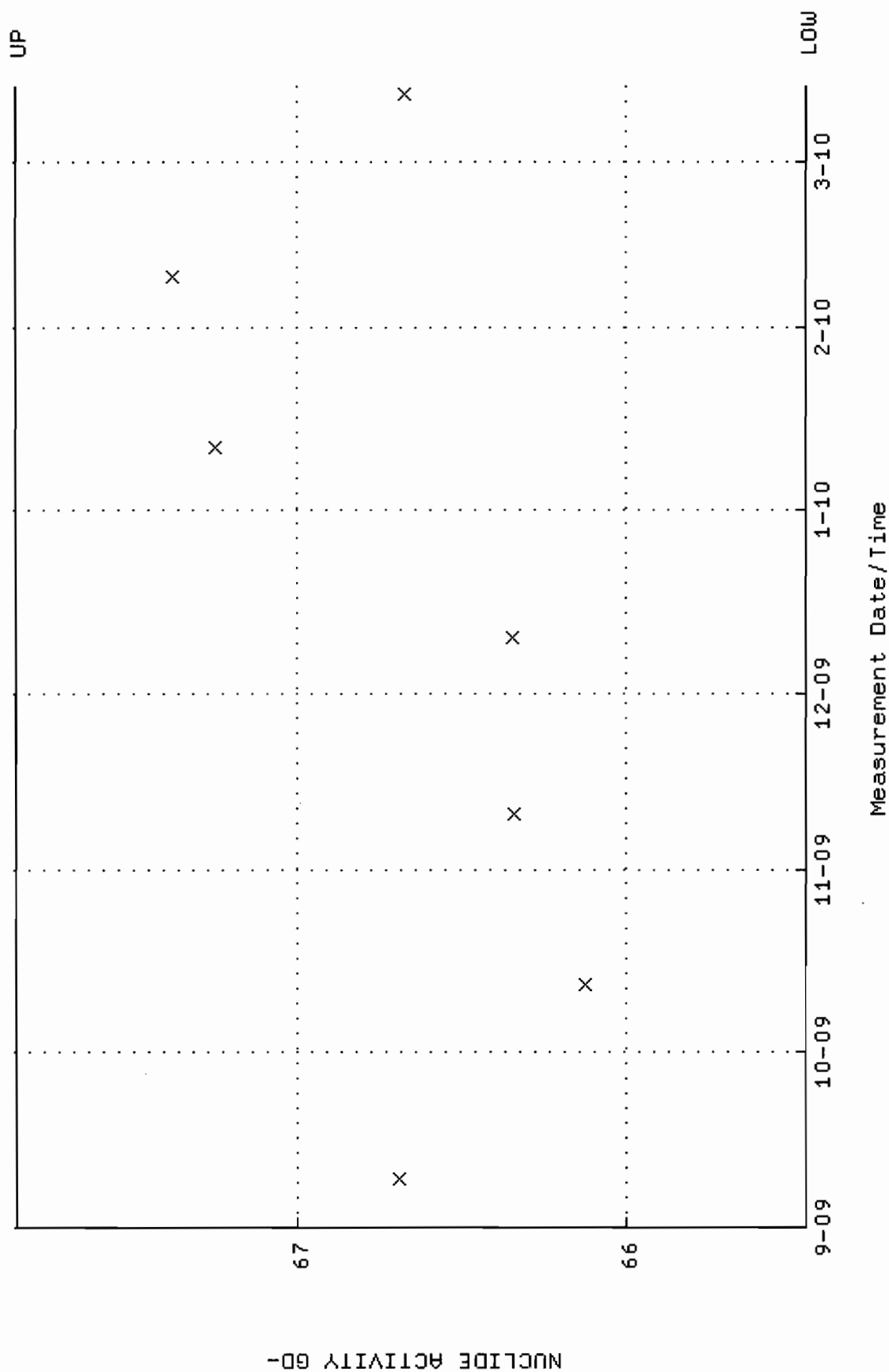
QA filename : DKA100:[ENV\_ALPHA.QA.B]B108.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:12 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



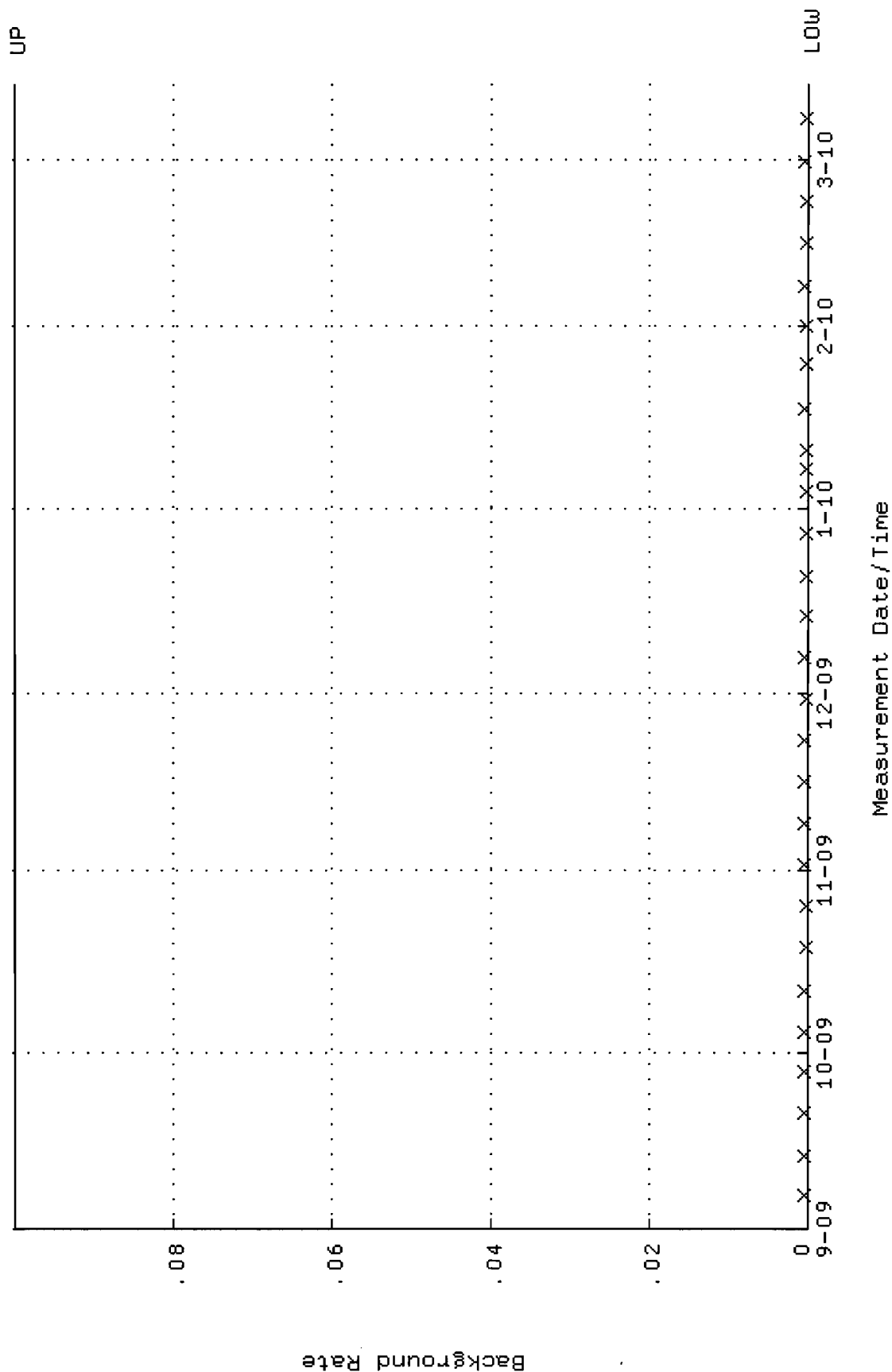
QA filename : DKA100:[ENV\_ALPHA.QA.W]W109.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.343718 through 0.368808



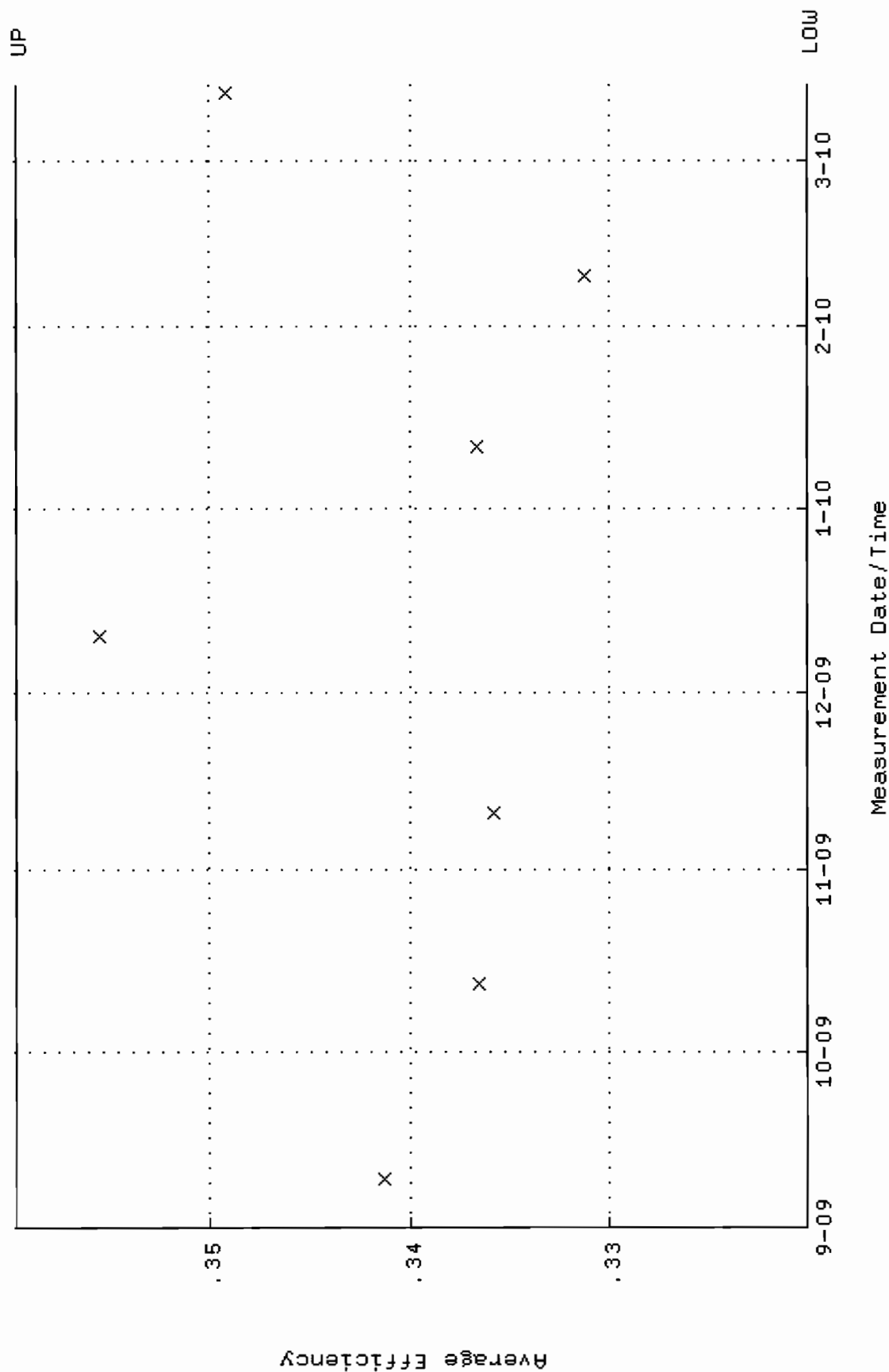
QA filename : DKA100:[ENV\_ALPHA.QA.W]W109.QAF;2  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 65.4511 through 67.8527



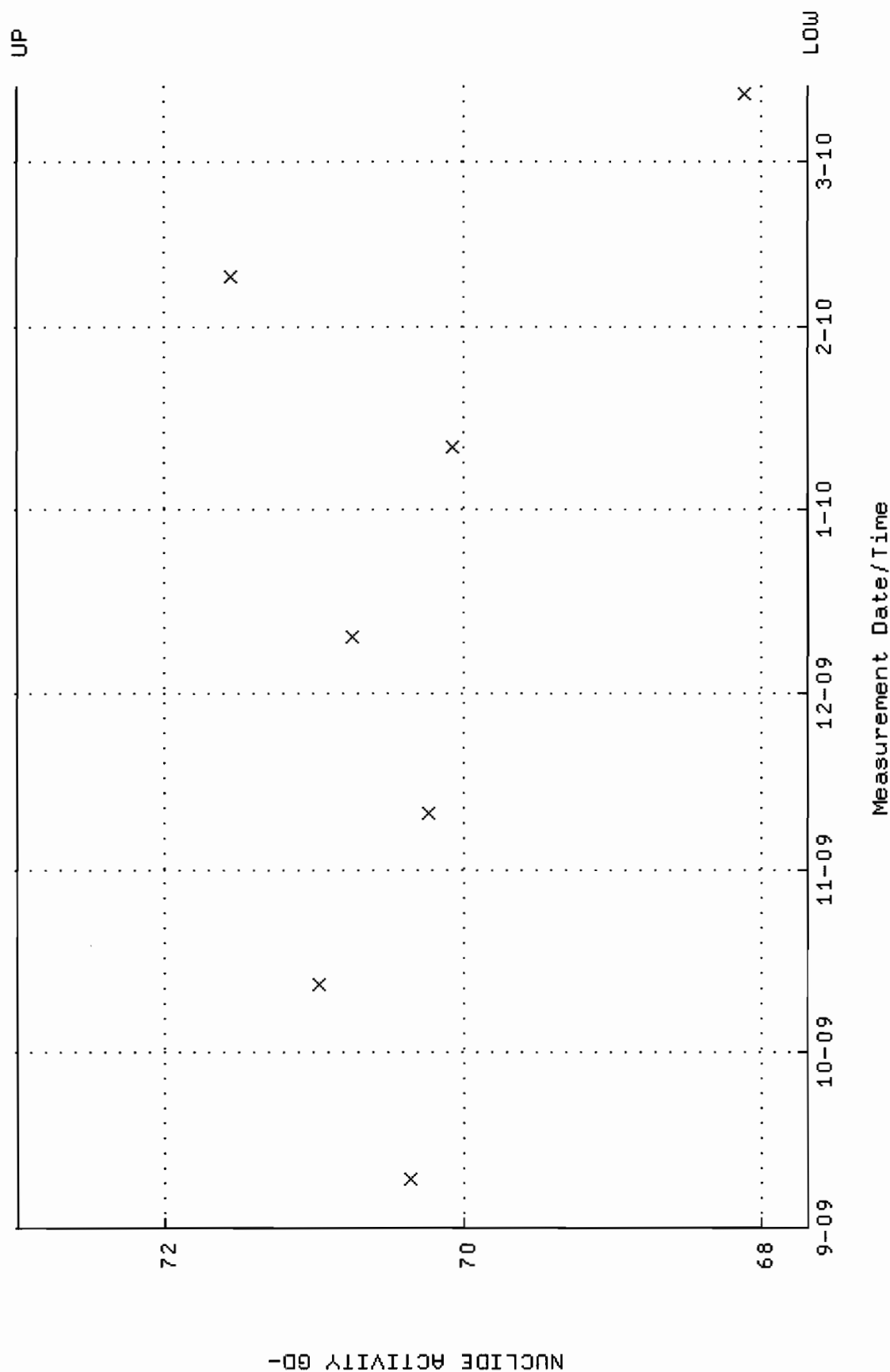
QA filename : DKA100:[ENV\_ALPHA.QA.B]B109.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:12 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



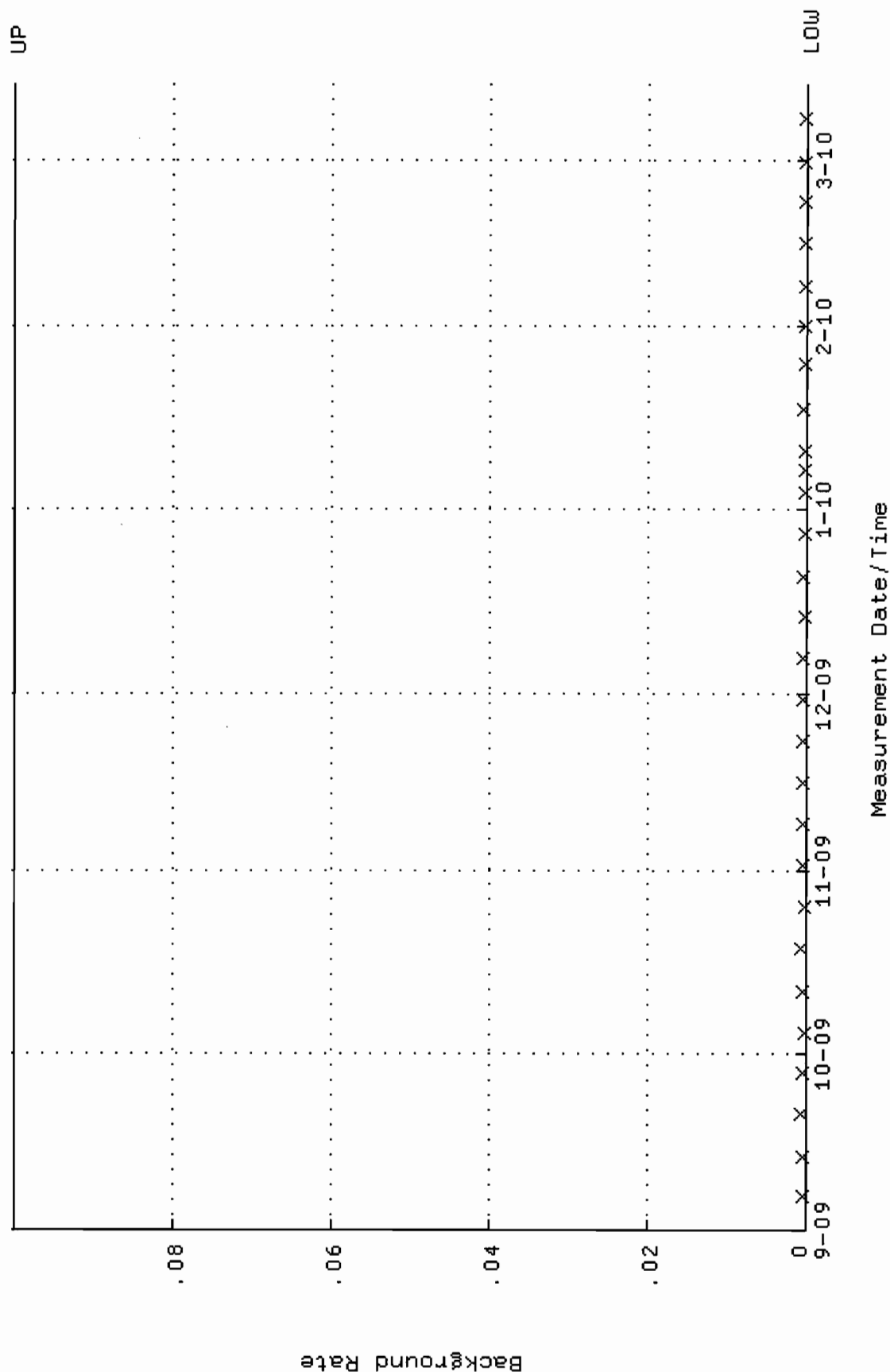
QA filename : DKA100:[ENV\_ALPHA.QA.W]W111.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.320109 through 0.359725



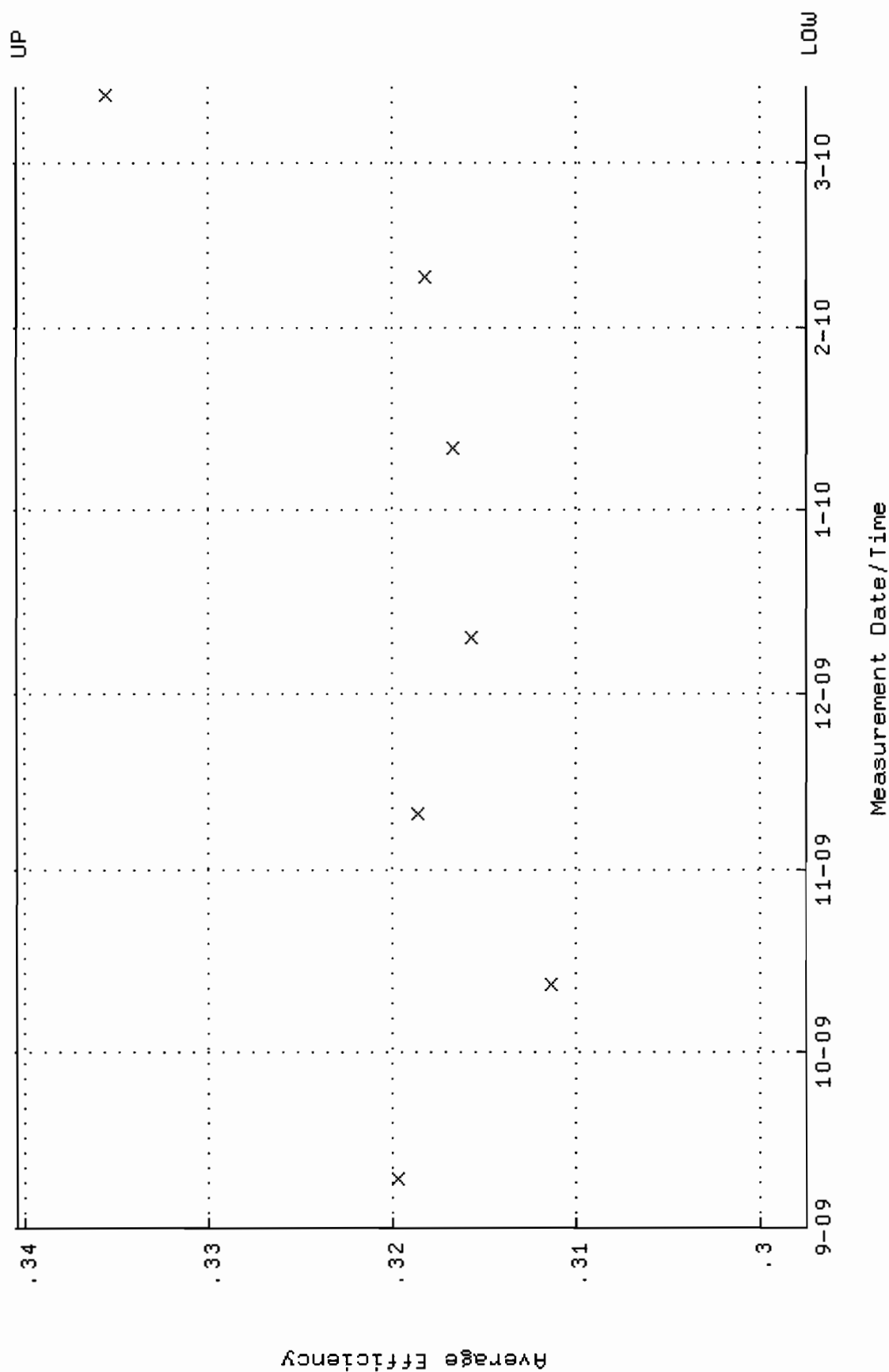
QA filename : DKA100:[ENV\_ALPHA.QA.W]w111.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 67.6917 through 72.9869



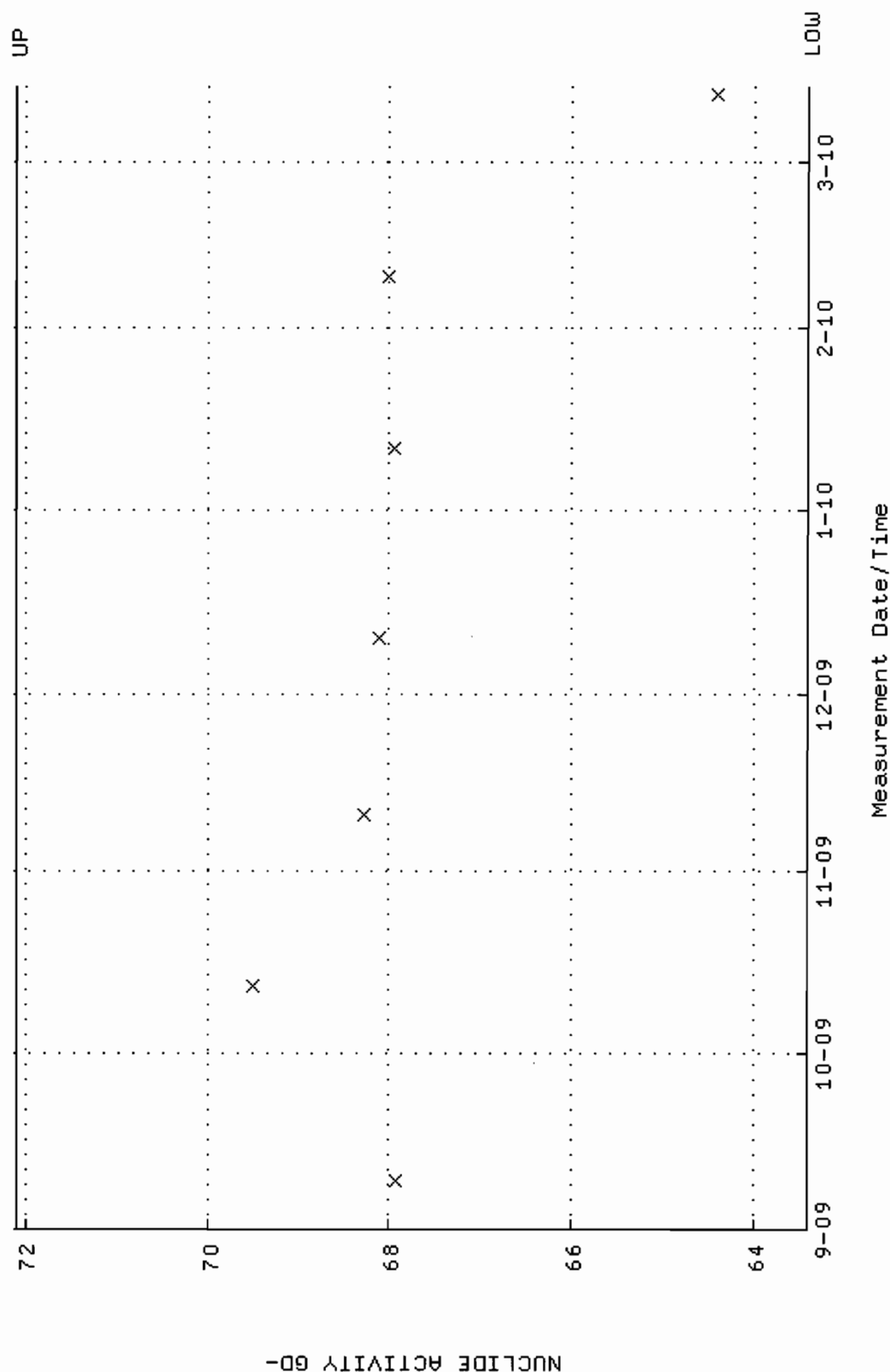
QA filename : DKA100:[ENV\_ALPHA.QA.B]B111.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:12 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



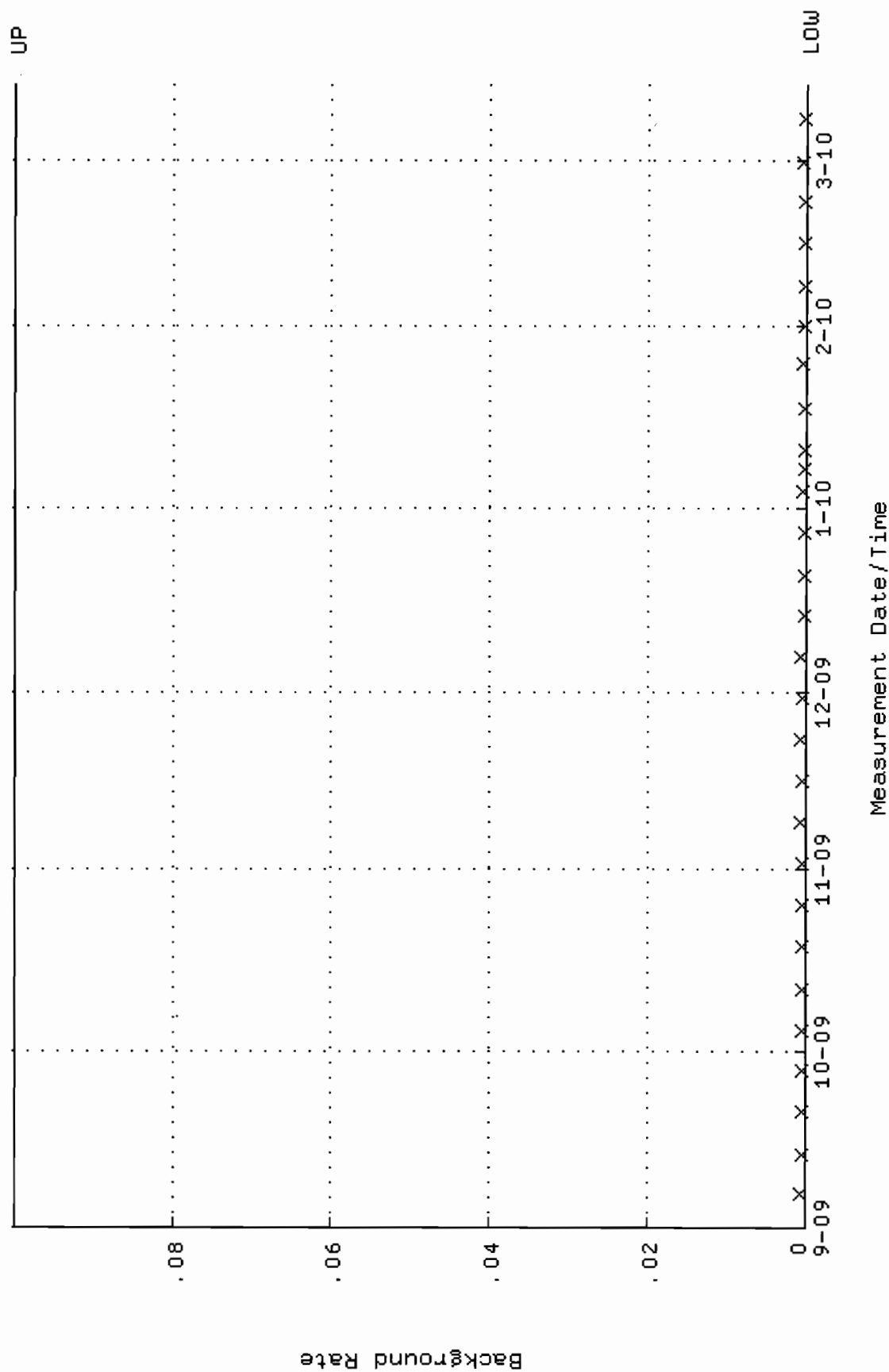
QA filename : DKA100:[ENV\_ALPHA.QA.W]W112.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.297499 through 0.340389



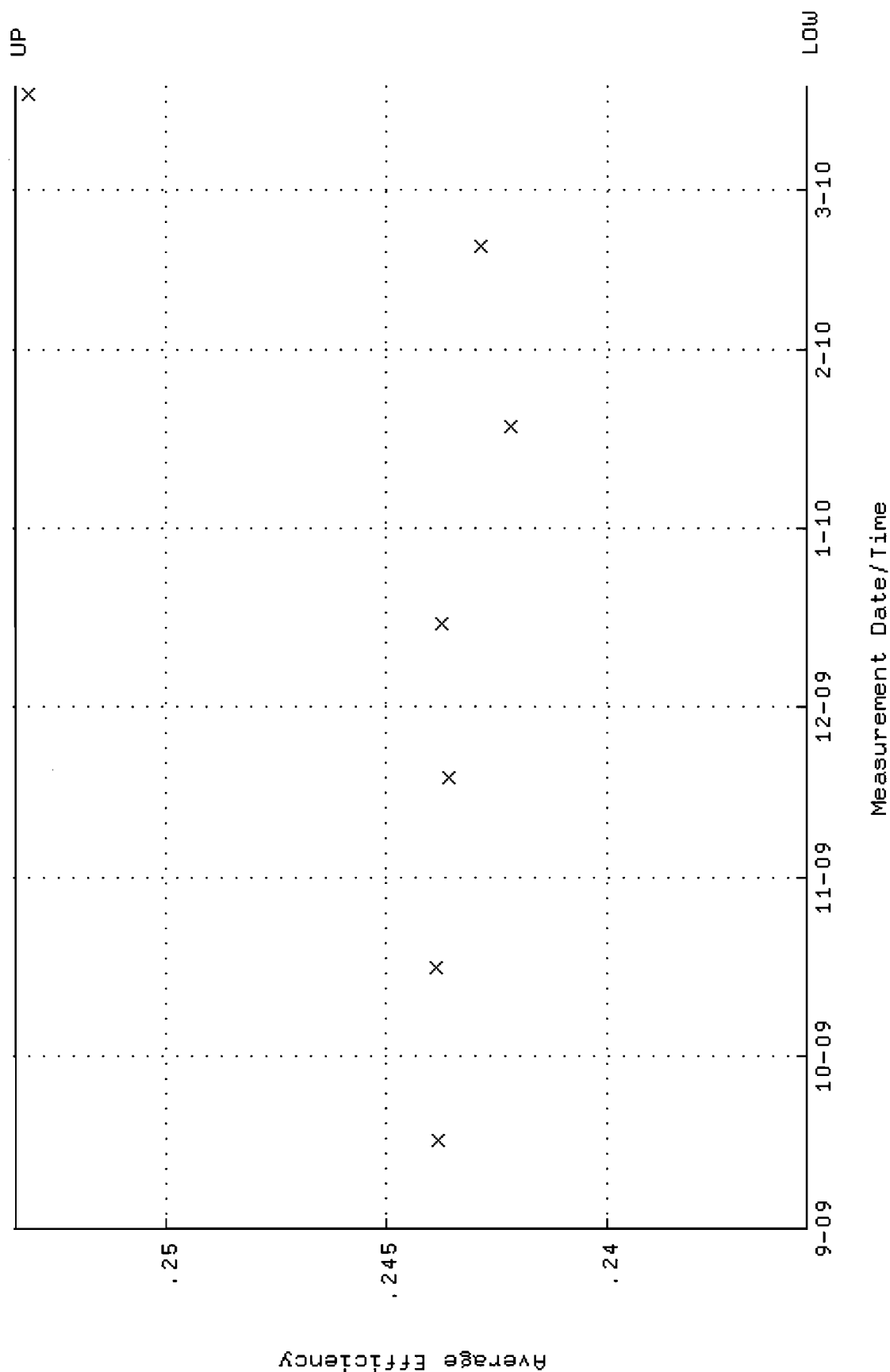
QA filename : DKA100:[ENV\_ALPHA.QA.W]W112.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-SEP-2009 09:27:52 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 63.4111 through 72.0947



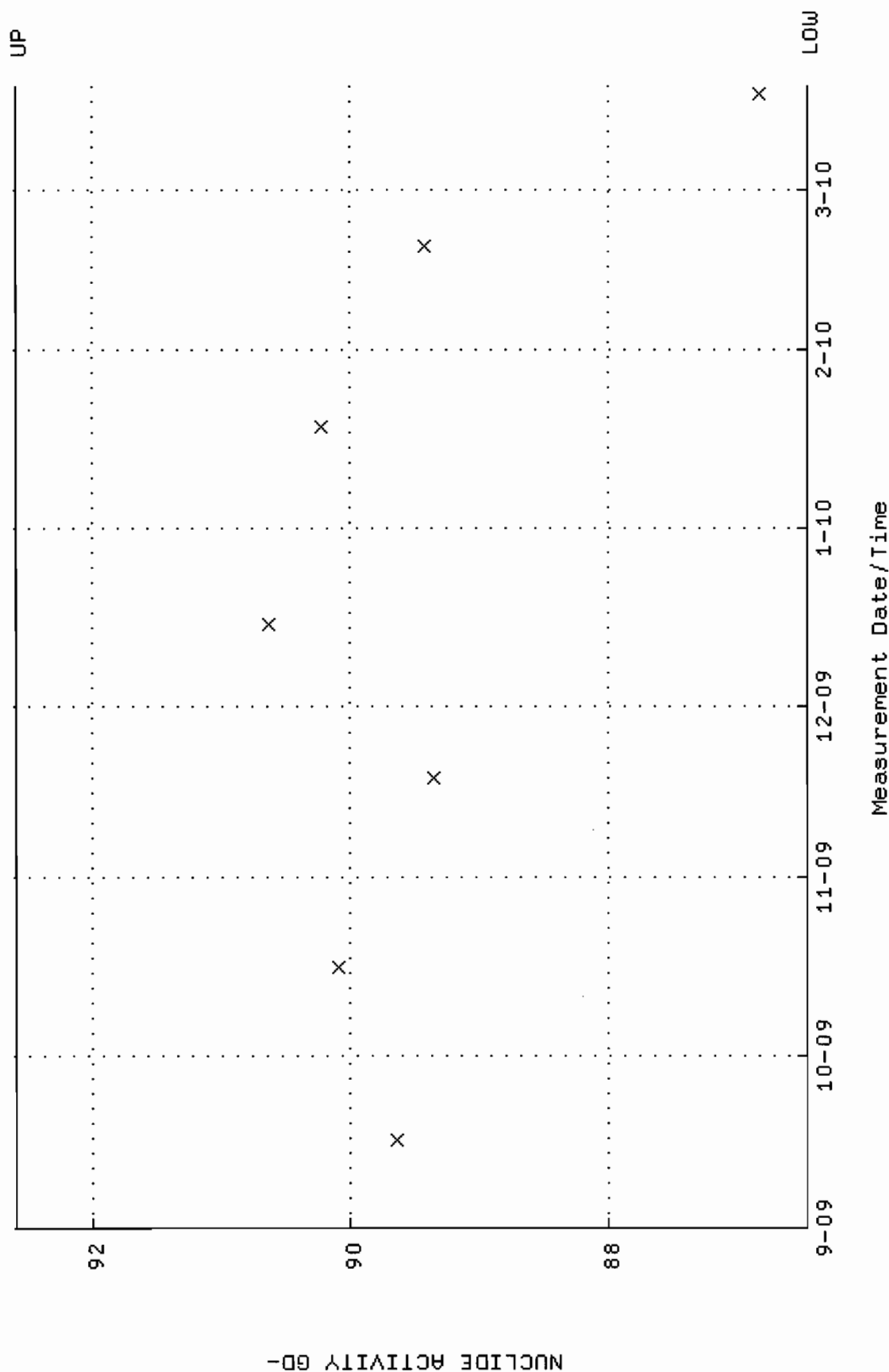
QA filename : DKA100:[ENV\_ALPHA.QA.B]B112.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:12 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



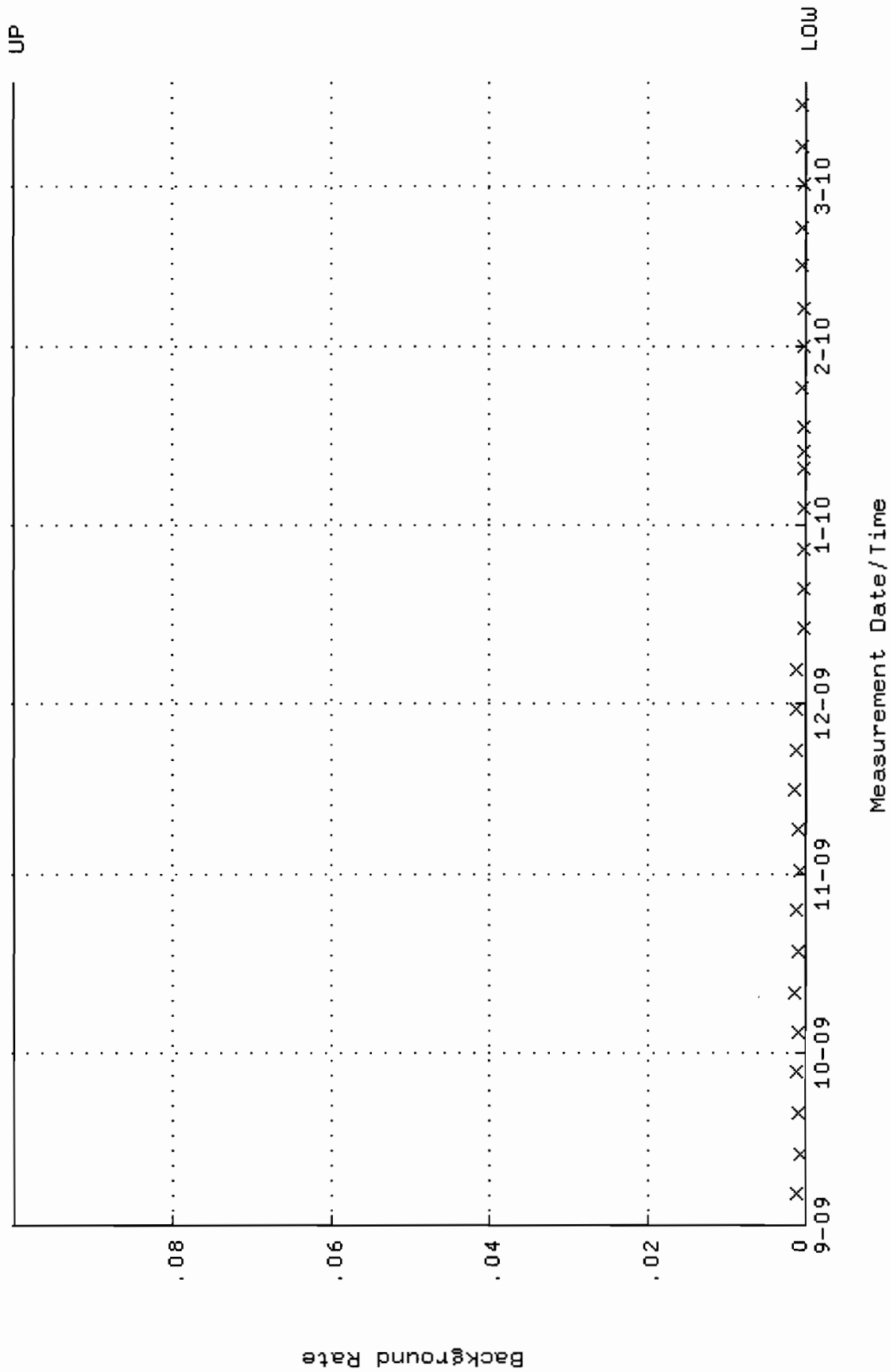
QA filename : DKA100:[ENV\_ALPHA.QA.W]W143.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 16-SEP-2009 07:03:57 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.235497 through 0.253401



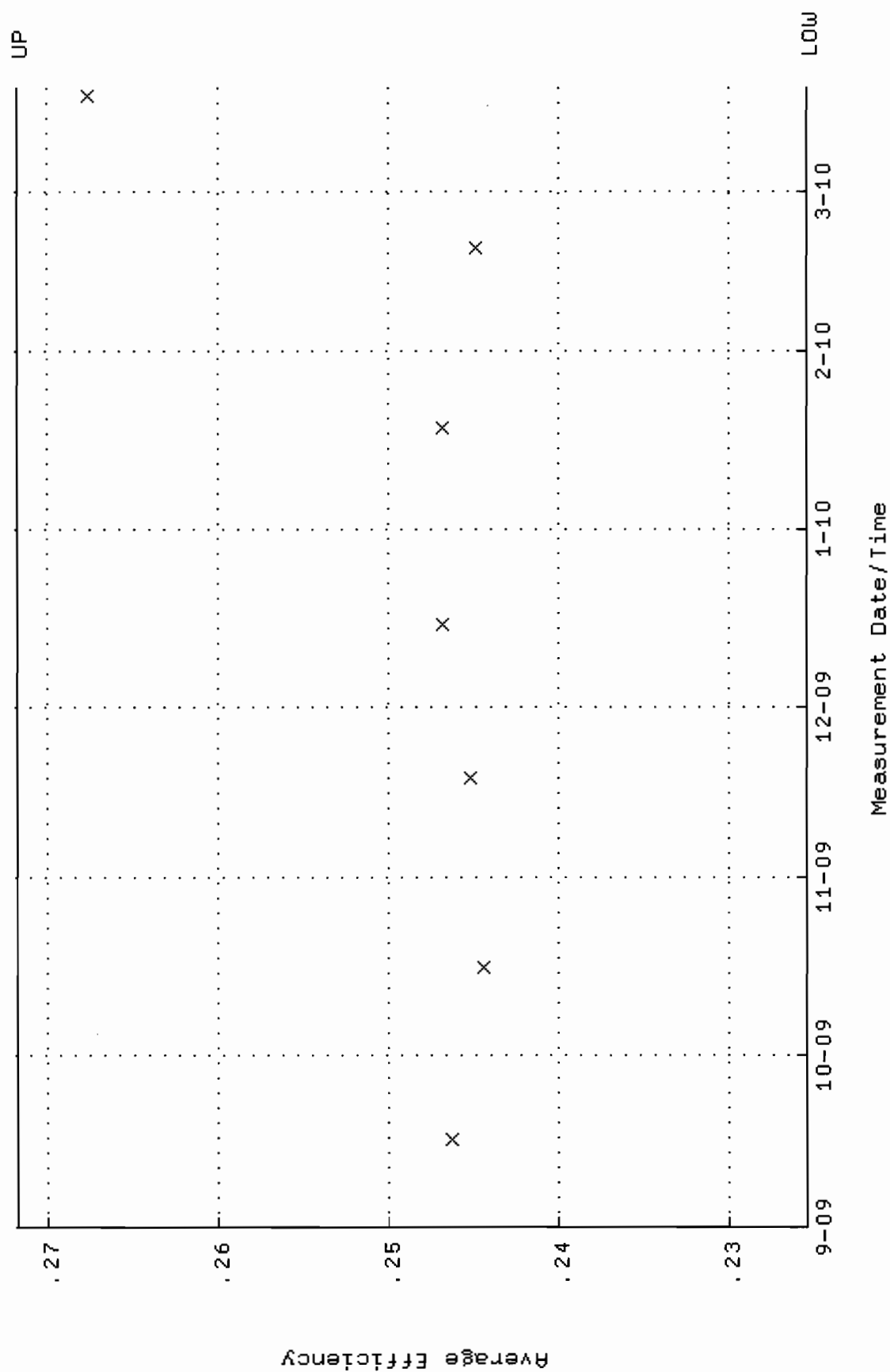
QA filename : DKA100:[ENV\_ALPHA.QA.W]W143.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 16-SEP-2009 07:03:57 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 86.4493 through 92.5939



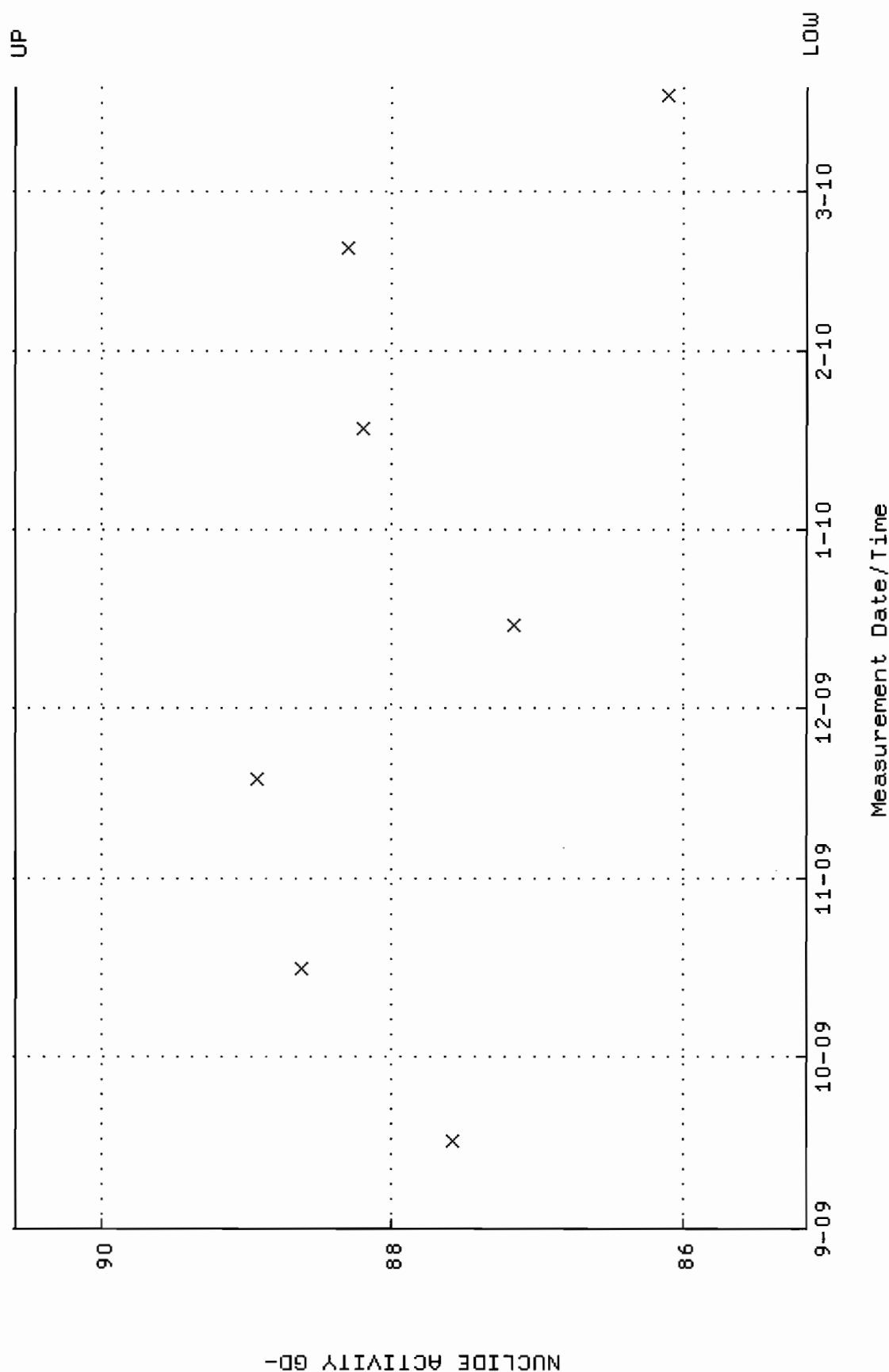
QA filename : DKA100:[ENV\_ALPHA.QA.B]B143.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:42:18 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



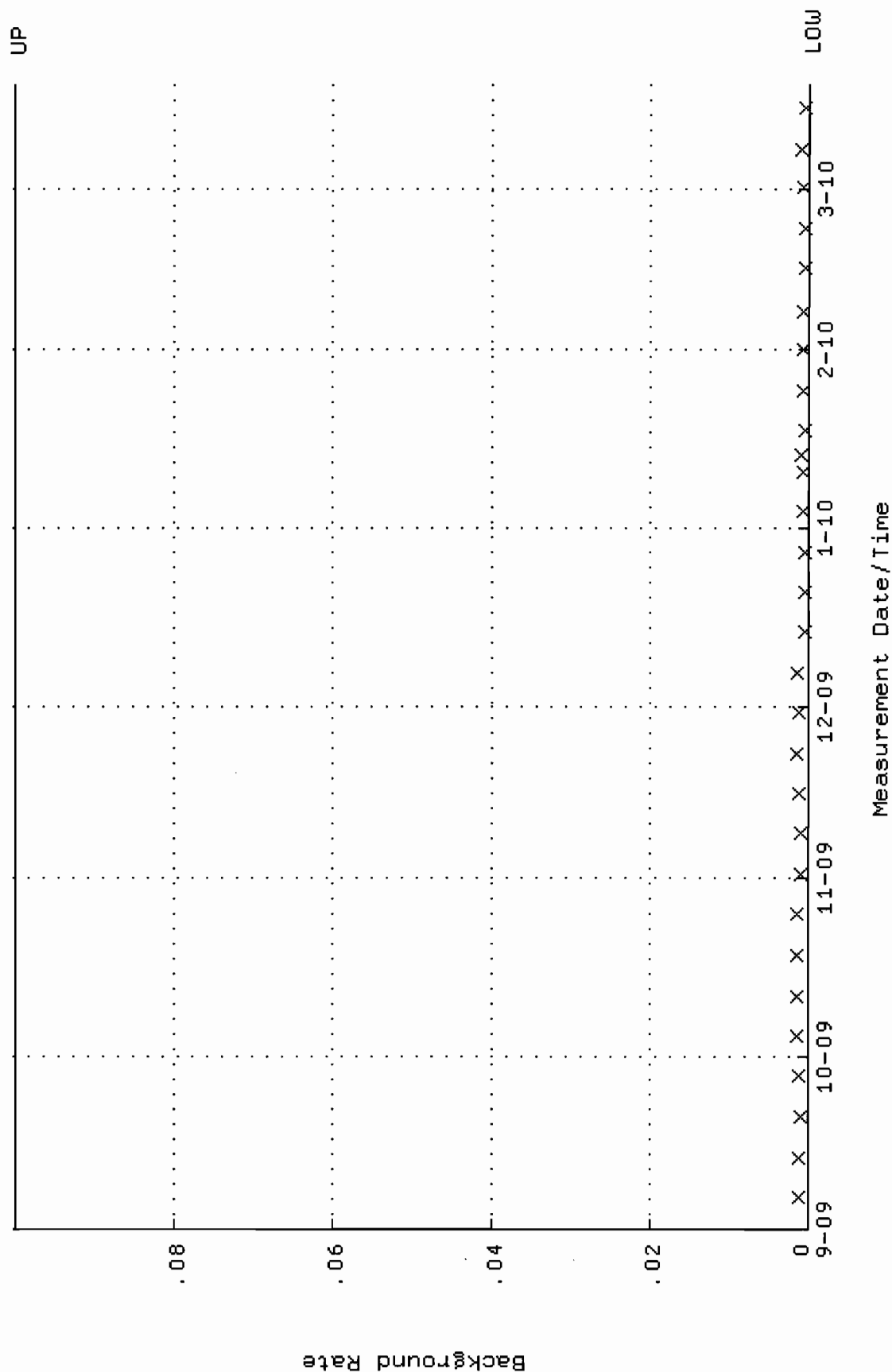
QA filename : DKA100:[ENV\_ALPHA.QA.W]W147.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 16-SEP-2009 07:04:19 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.225419 through 0.271751



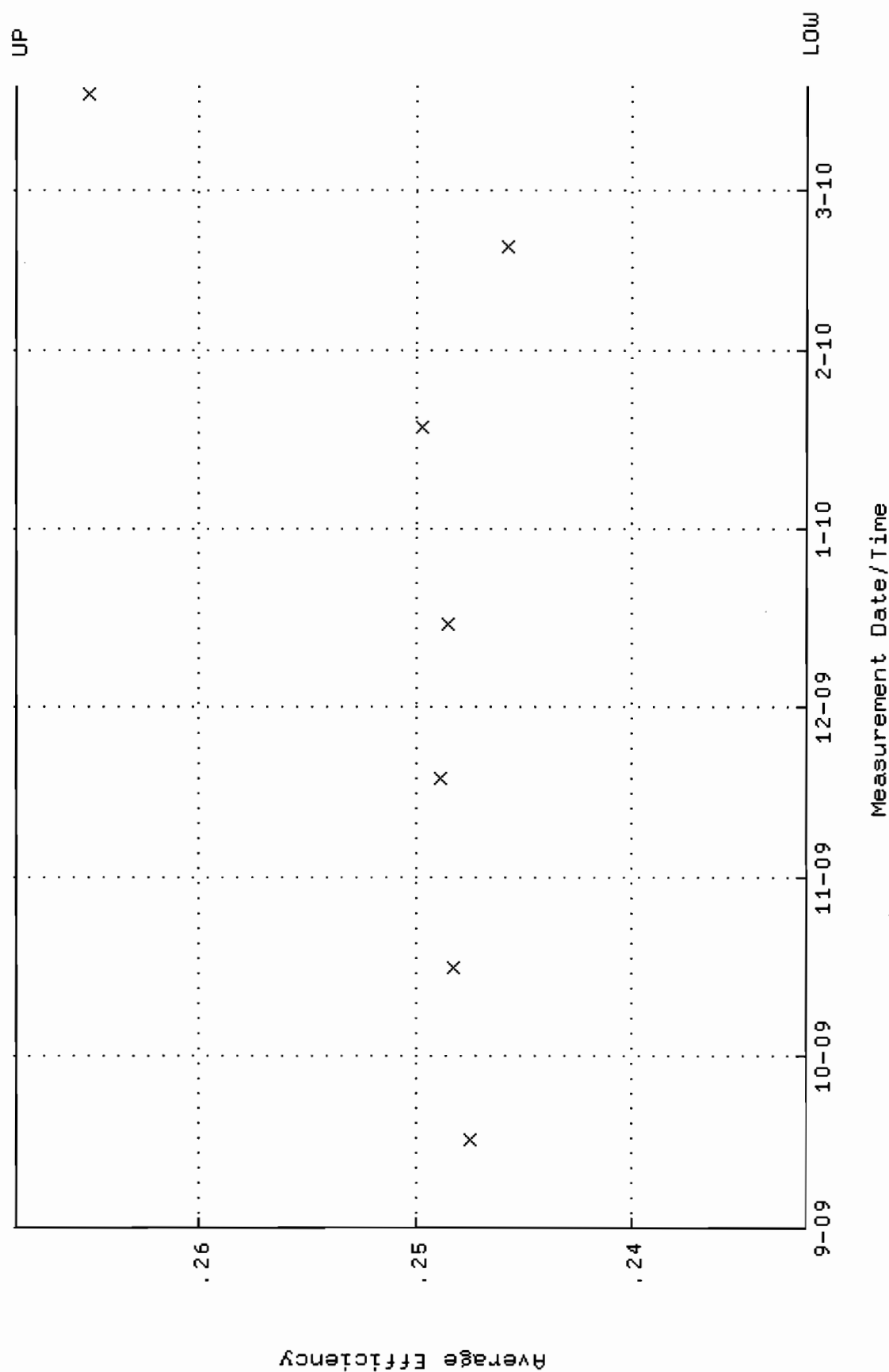
QA filename : DKA100:[ENV\_ALPHA.QA.W]W147.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 16-SEP-2009 07:04:19 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.1511 through 90.5851



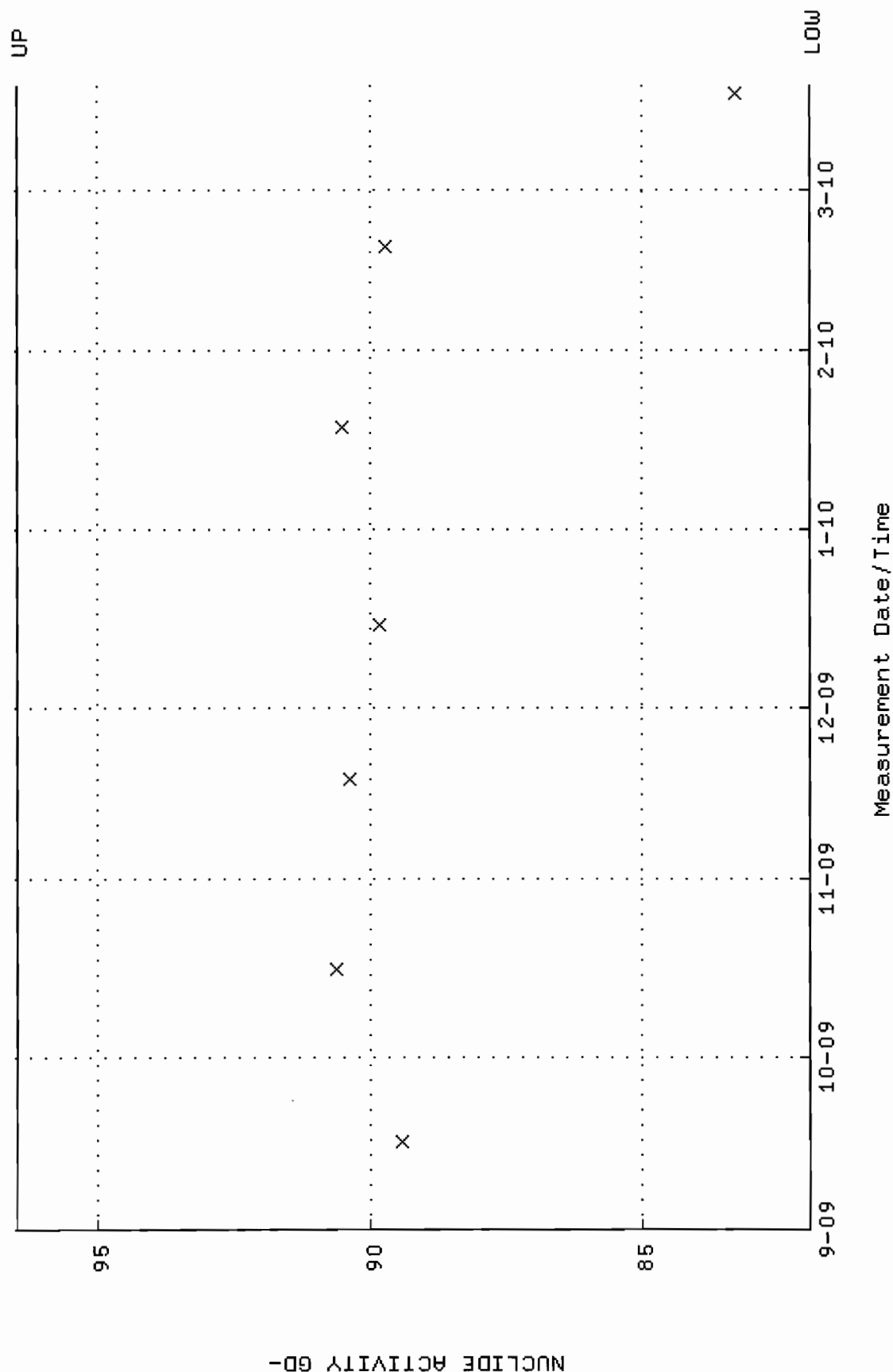
QA filename : DKA100:[ENV\_ALPHA.QA.B]B147.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:42:34 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



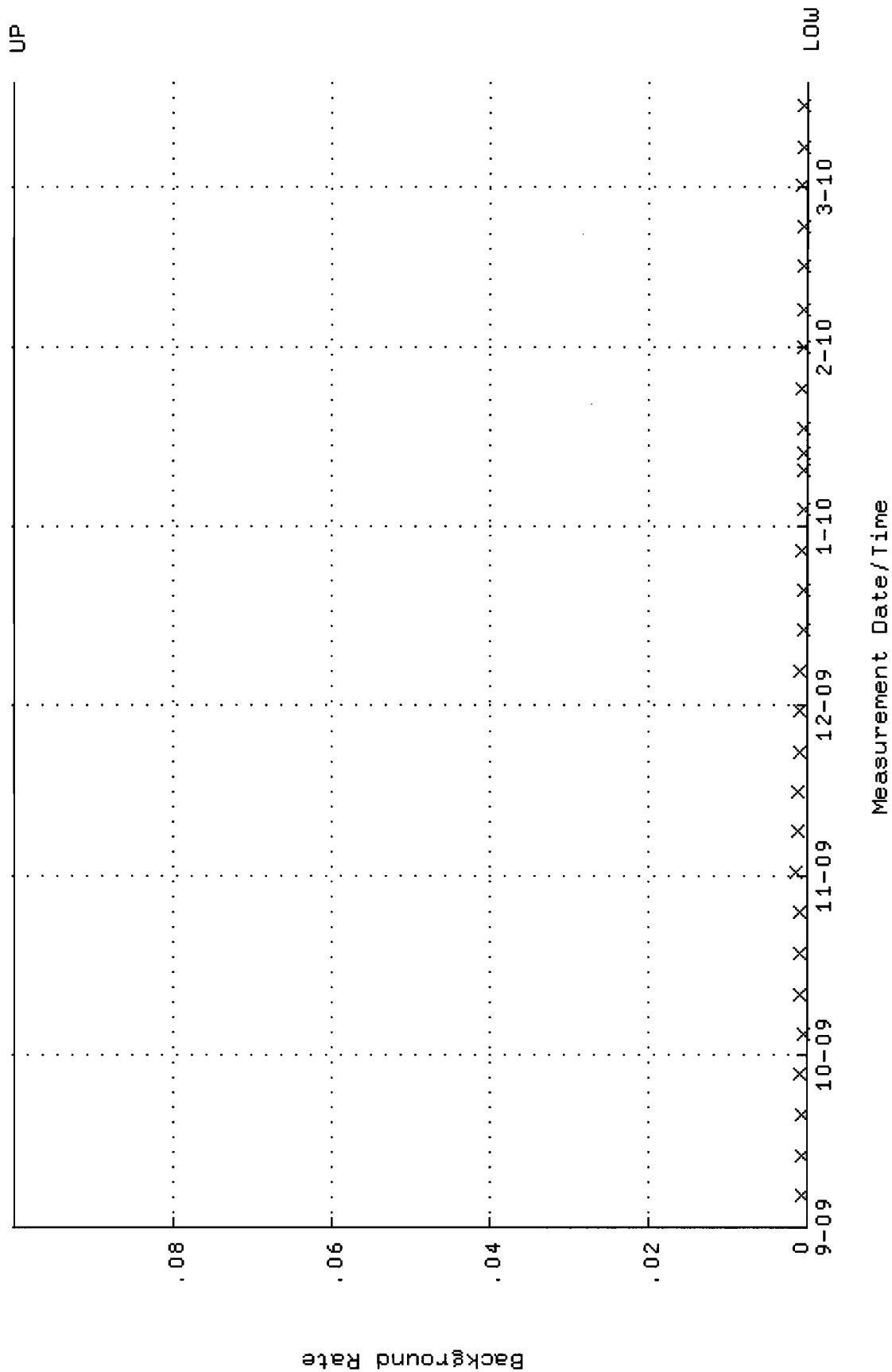
QA filename : DKA100:[ENV\_ALPHA.QA.W]W148.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 16-SEP-2009 07:04:24 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.231959 through 0.268393



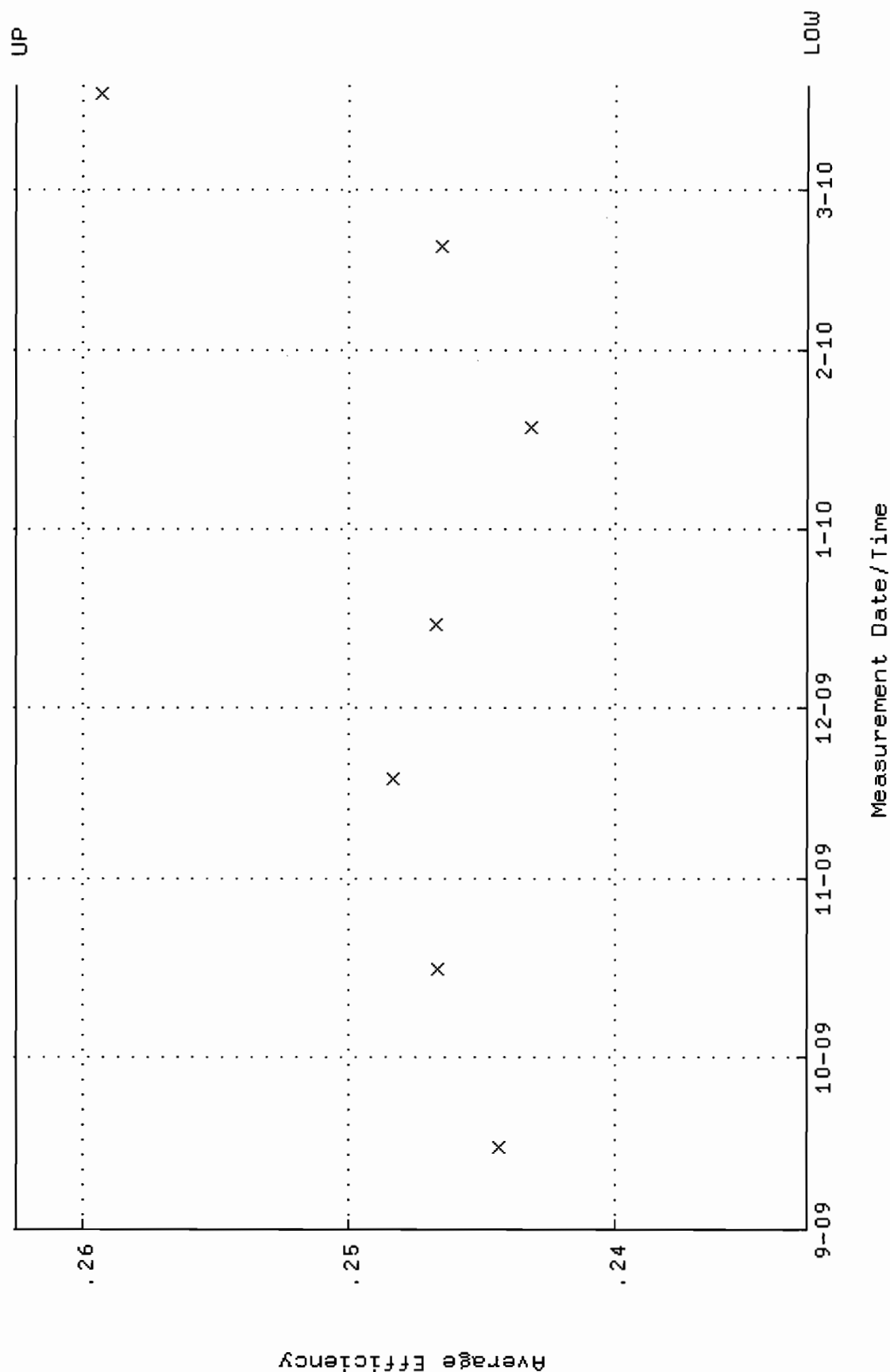
QA filename : DKA100:[ENV\_ALPHA.QA.W]W148.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 16-SEP-2009 07:04:24 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 81.9014 through 96.4918



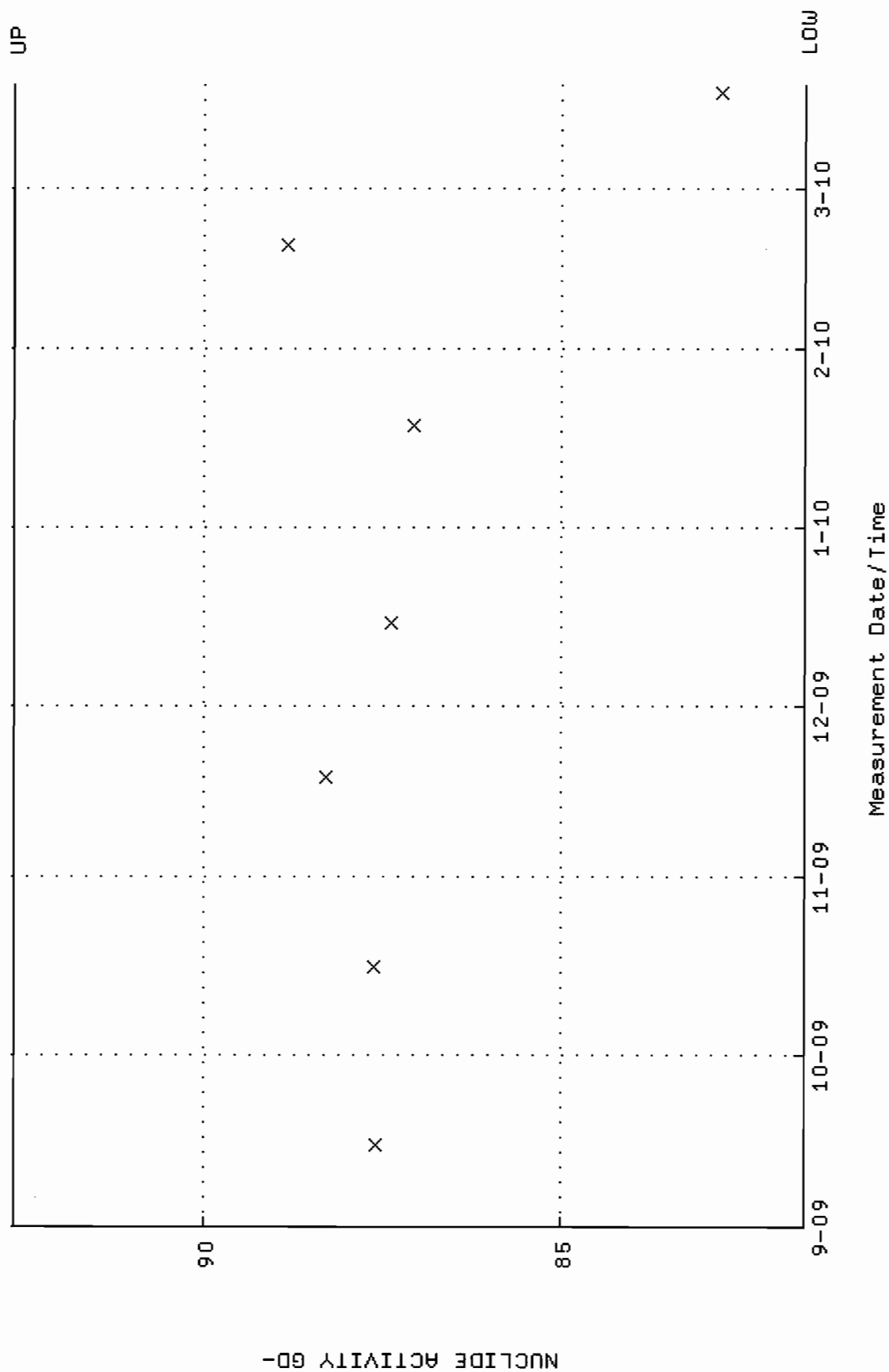
QA filename : DKA100:[ENV\_ALPHA.QA.B]B148.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:42:38 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



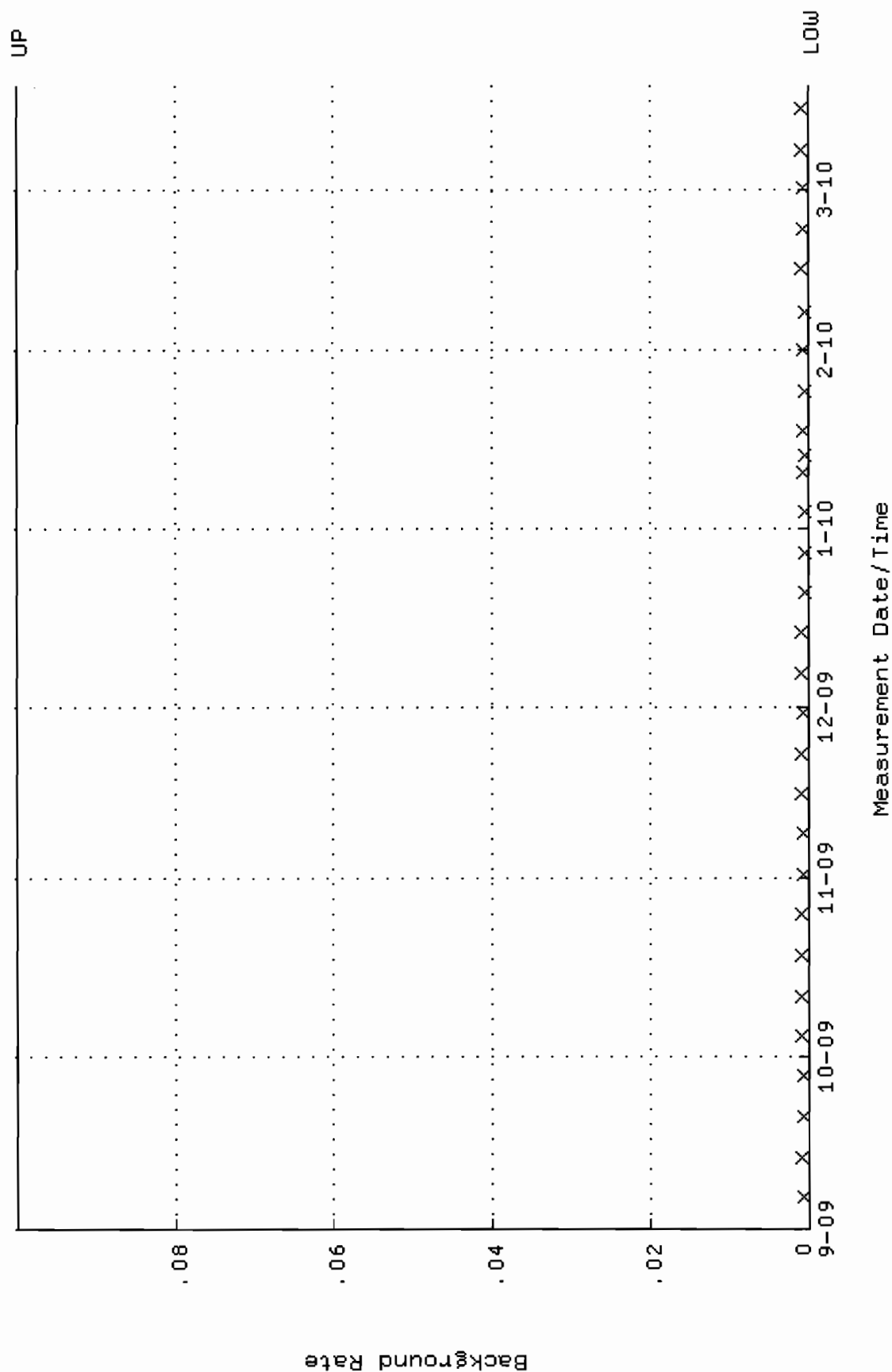
QA filename : DKA100:[ENV\_ALPHA.QA.W]W149.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-SEP-2009 07:17:20 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.232775 through 0.262555



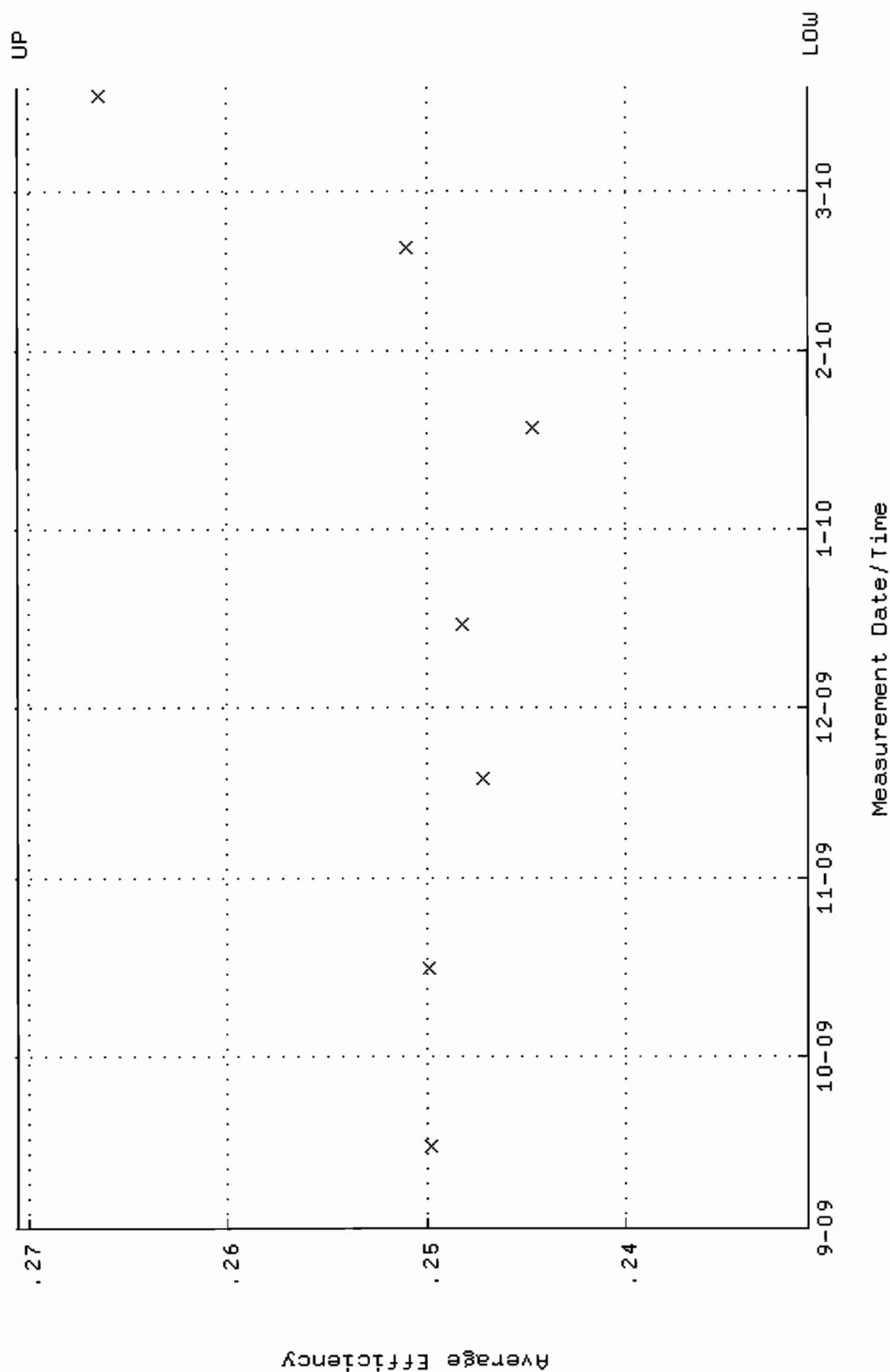
QA filename : DKA100:[ENV\_ALPHA.QA.w]w149.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-SEP-2009 07:17:20 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 81.5753 through 92.6757



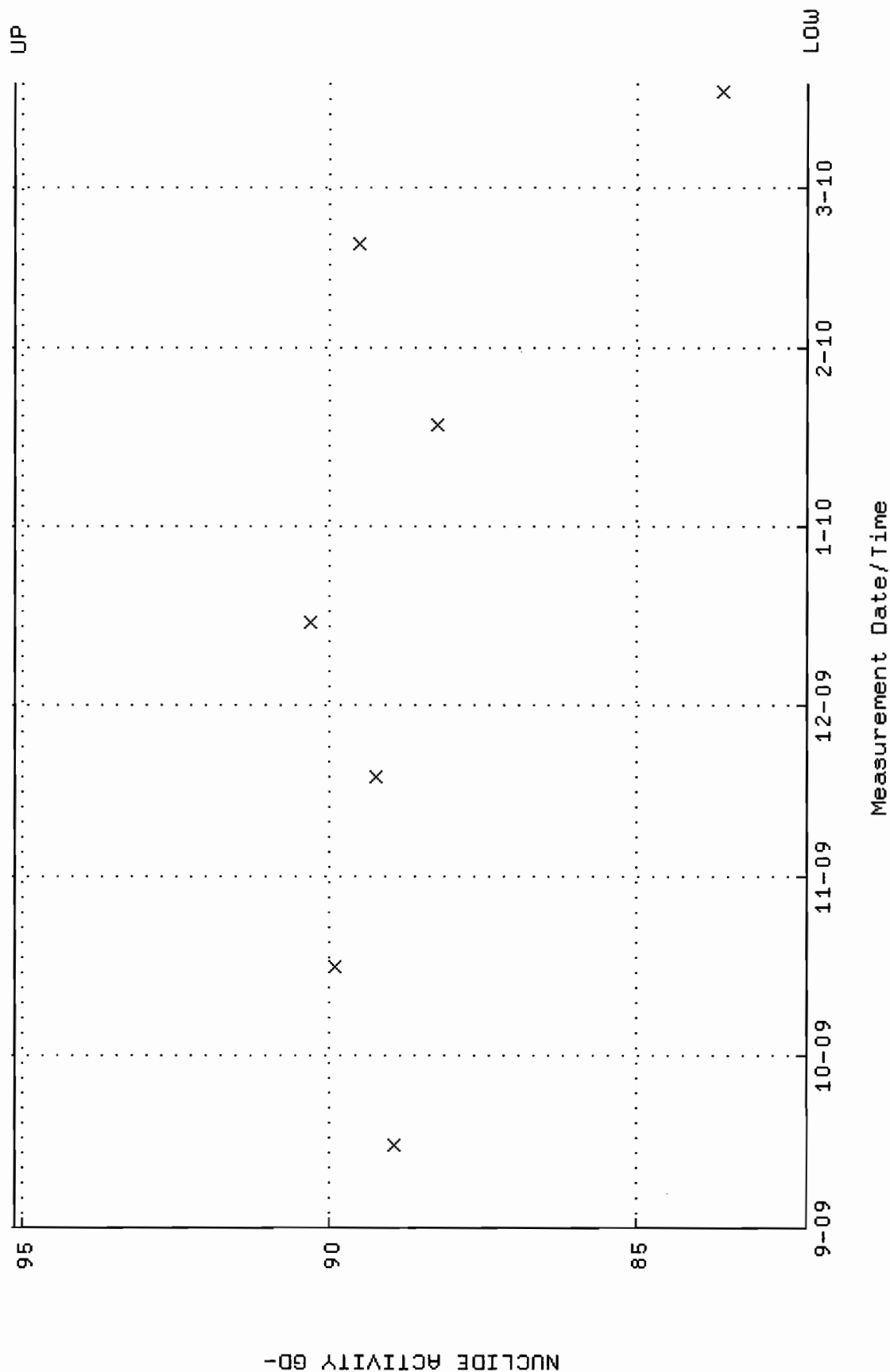
QA filename : DKA100:[ENV\_ALPHA.QA.B]B149.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:42:42 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



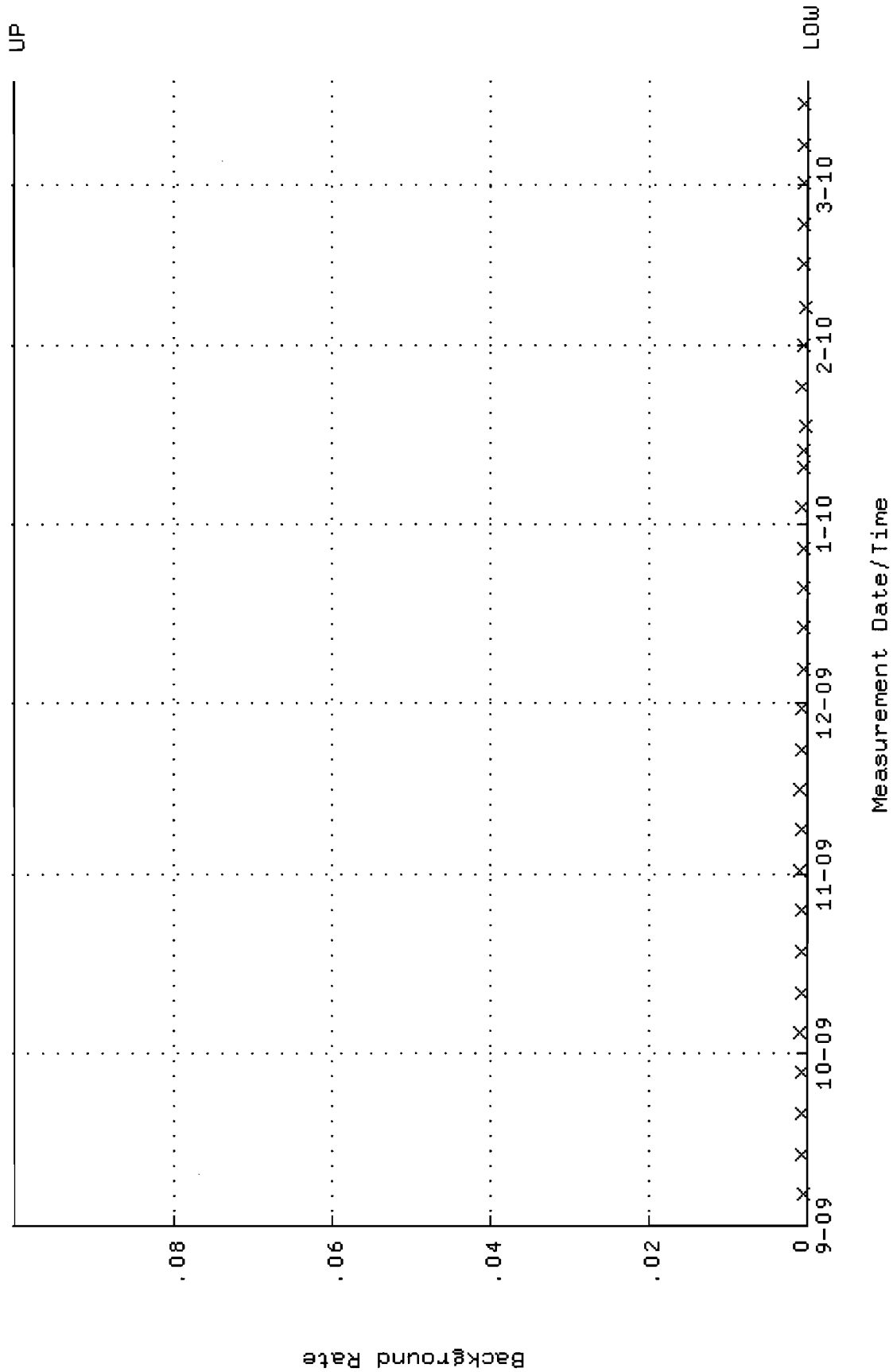
QA filename : DKA100:[ENV\_ALPHA.QA.W]W150.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-SEP-2009 07:17:25 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.230847 through 0.270601



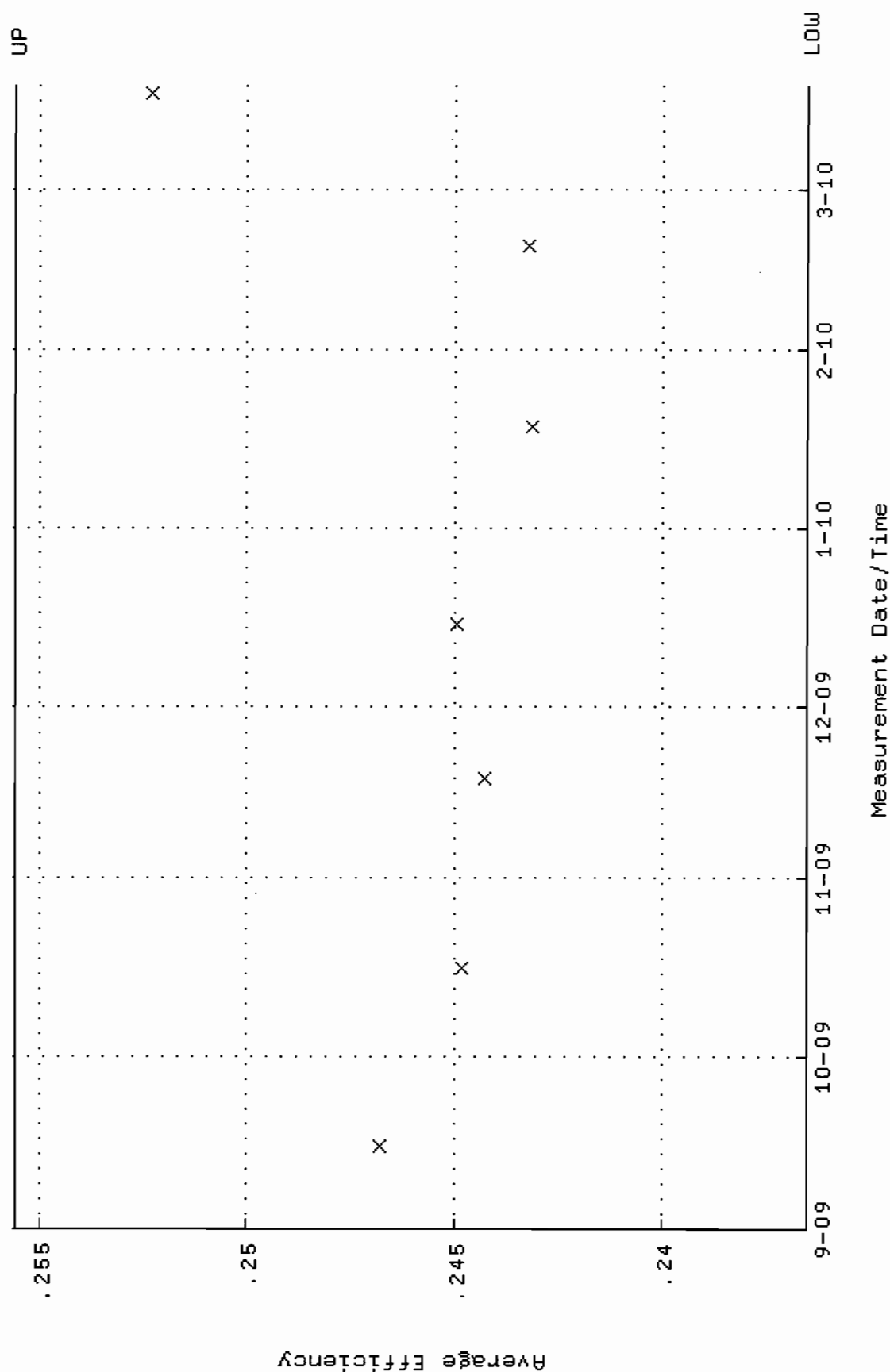
QA filename : DKA100:[ENV\_ALPHA.QA.W]W150.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-SEP-2009 07:17:25 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 82.2504 through 95.1354



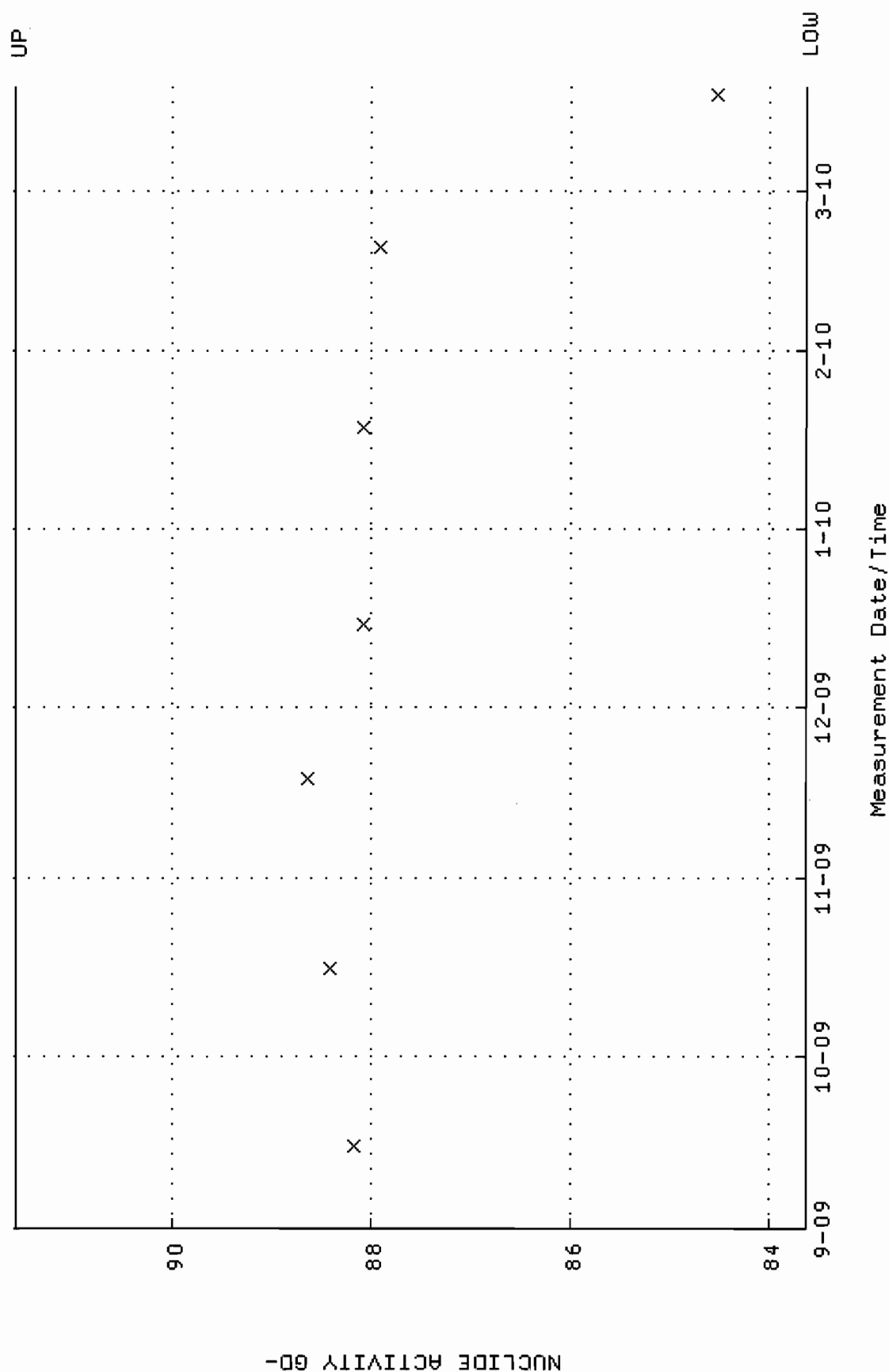
QA filename : DKA100:[ENV\_ALPHA.QA.B]B150.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:42:46 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



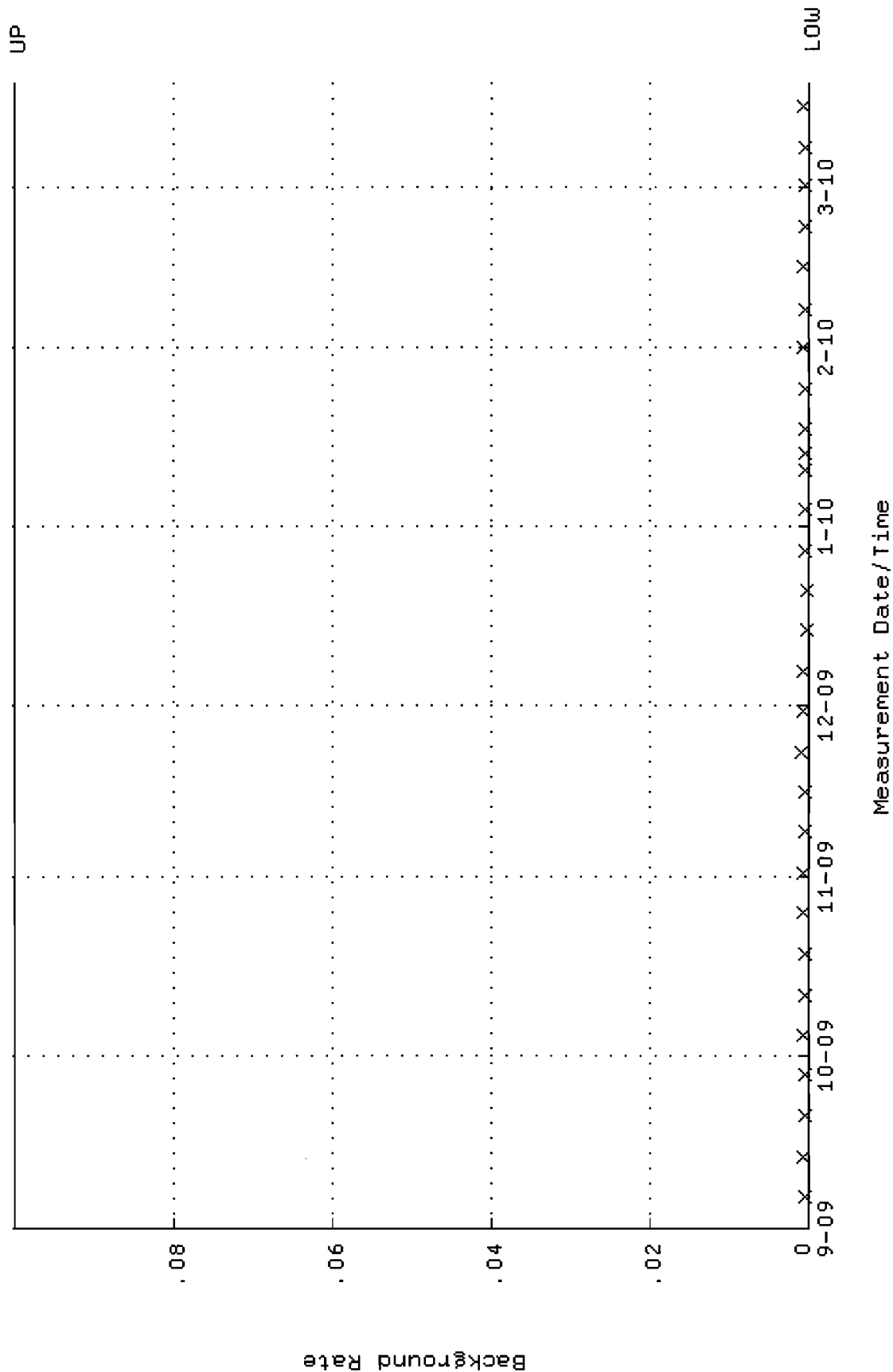
QA filename : DKA100:[ENV\_ALPHA.QA.W]W152.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-SEP-2009 07:17:36 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.236513 through 0.255567



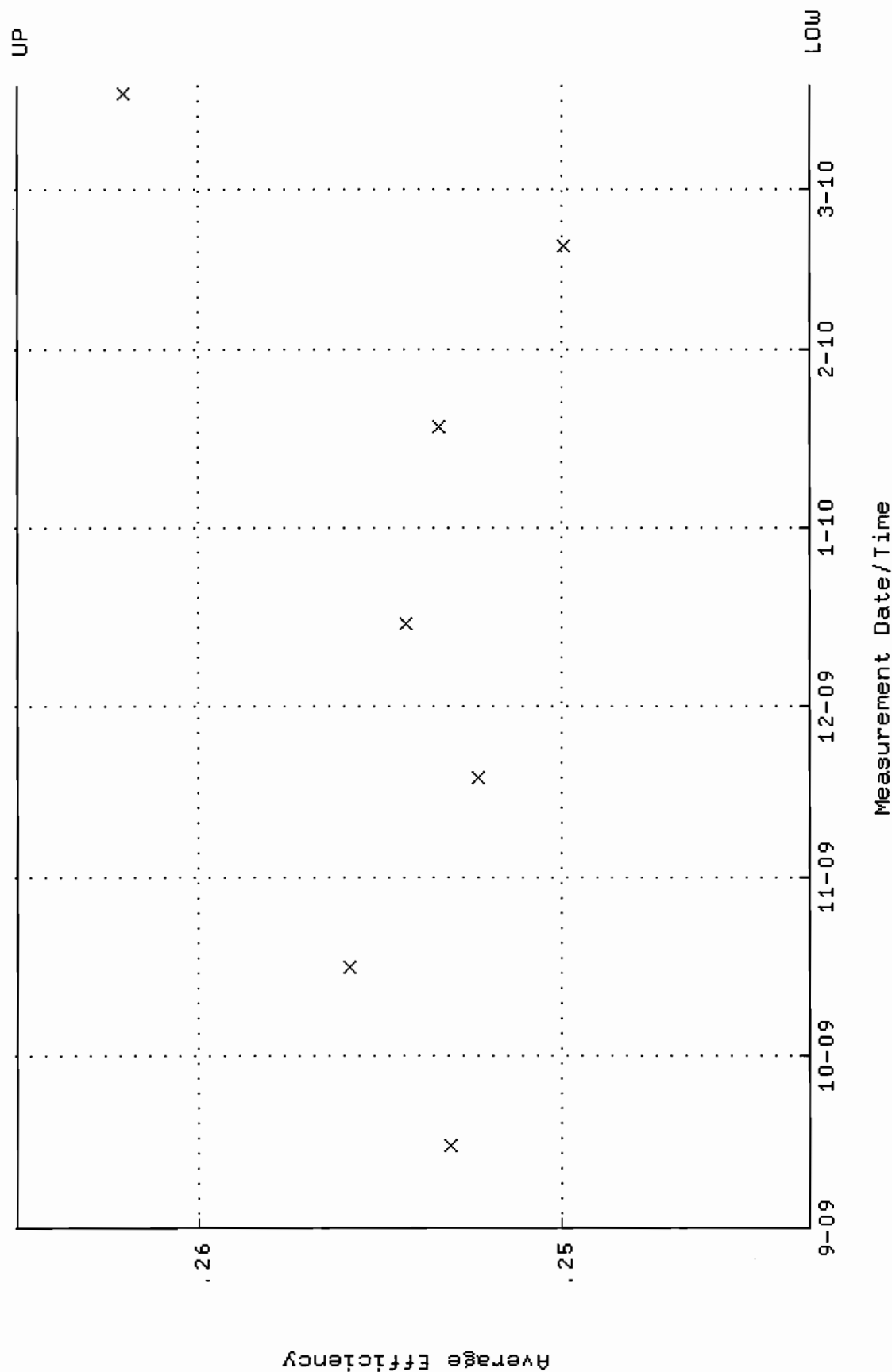
QA filename : DKA100:[ENV\_ALPHA.QA.W]W152.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-SEP-2009 07:17:36 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 83.6285 through 91.5809



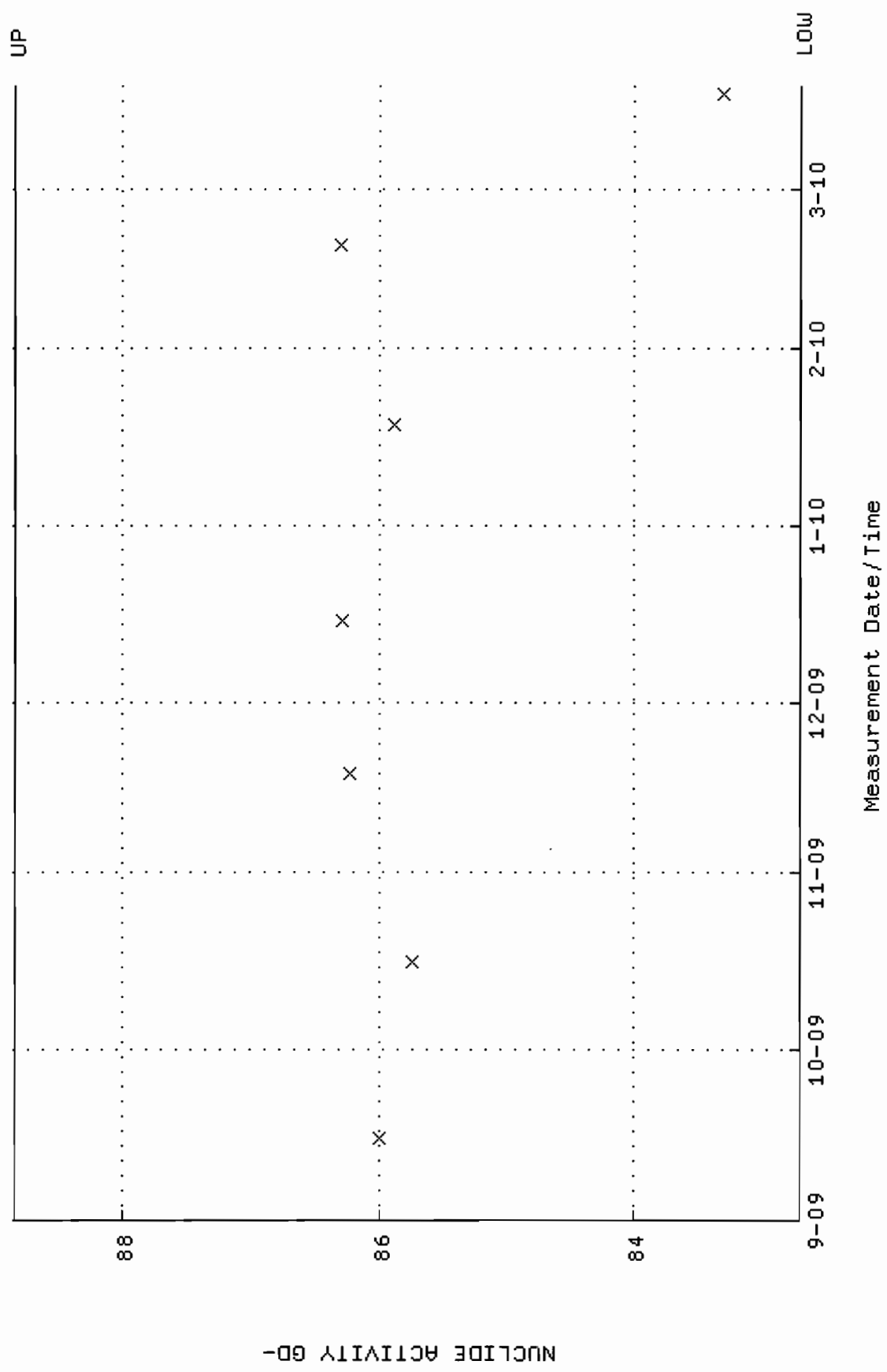
QA filename : DKA100:[ENV\_ALPHA.QA.B]B152.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:42:55 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



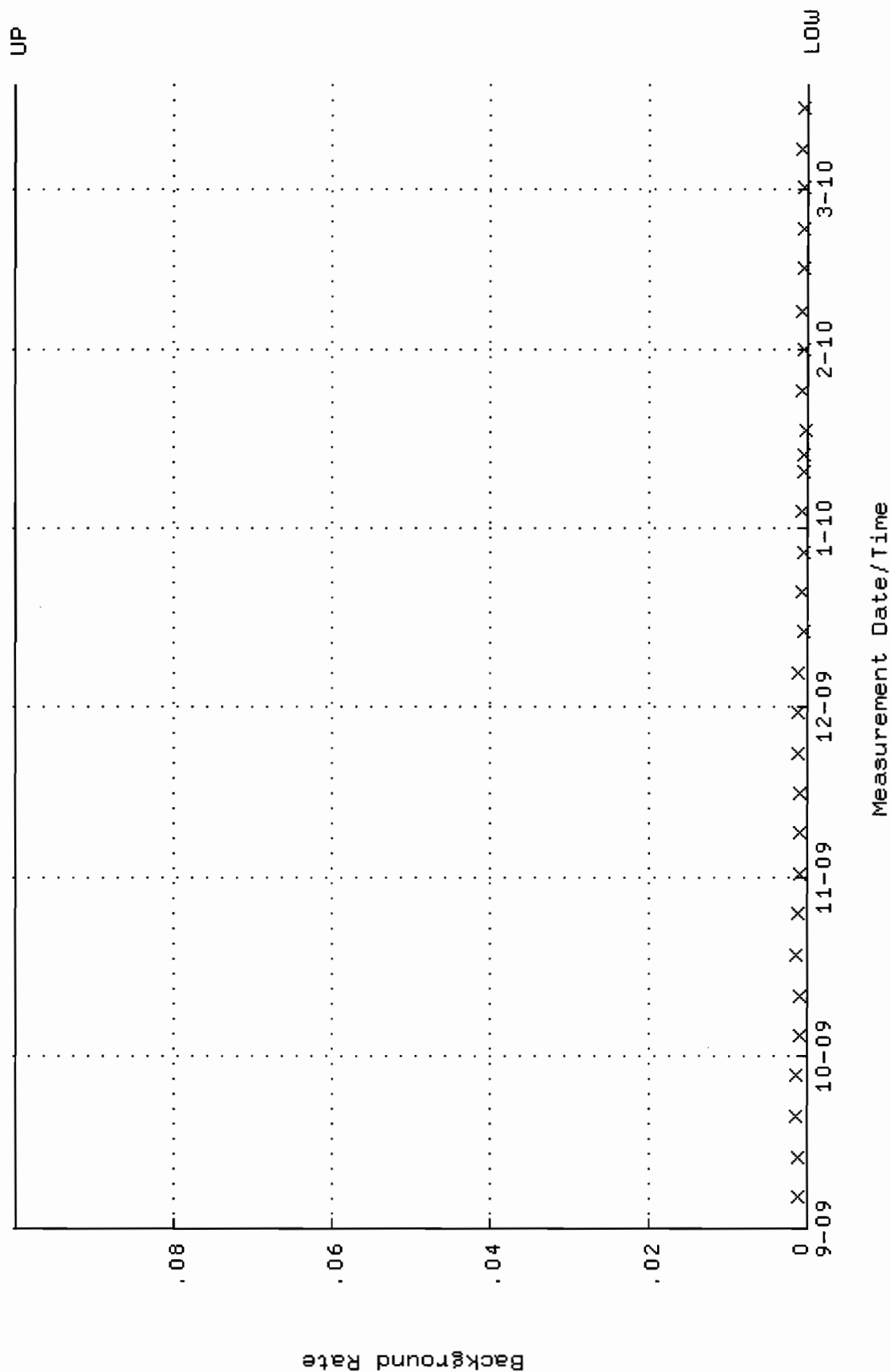
QA filename : DKA100:[ENV\_ALPHA.QA.W]W153.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-SEP-2009 07:17:41 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.243195 through 0.264993



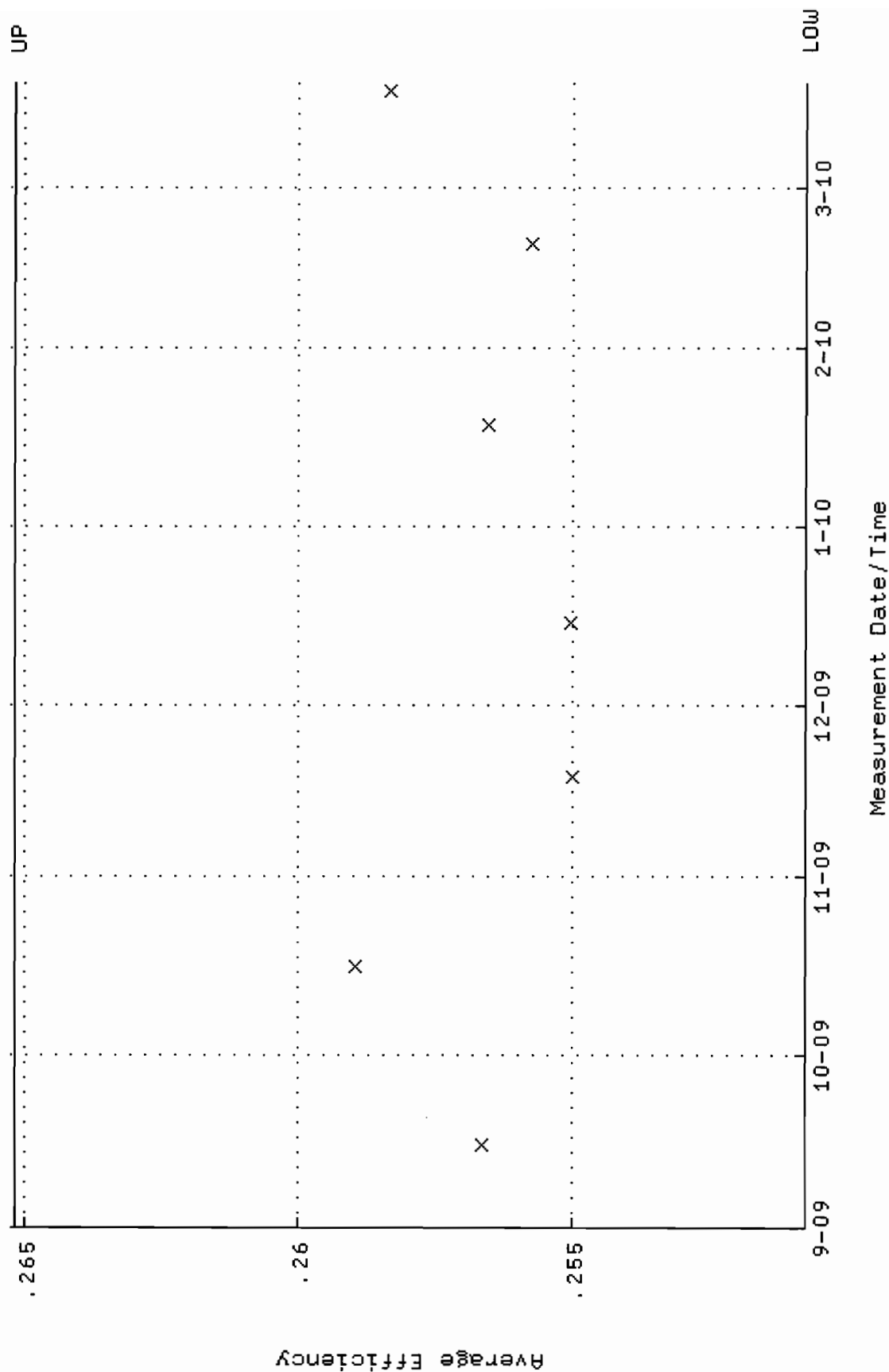
QA filename : DKA100:[ENV\_ALPHA.QA.W]W153.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-SEP-2009 07:17:41 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 82.6961 through 88.8445



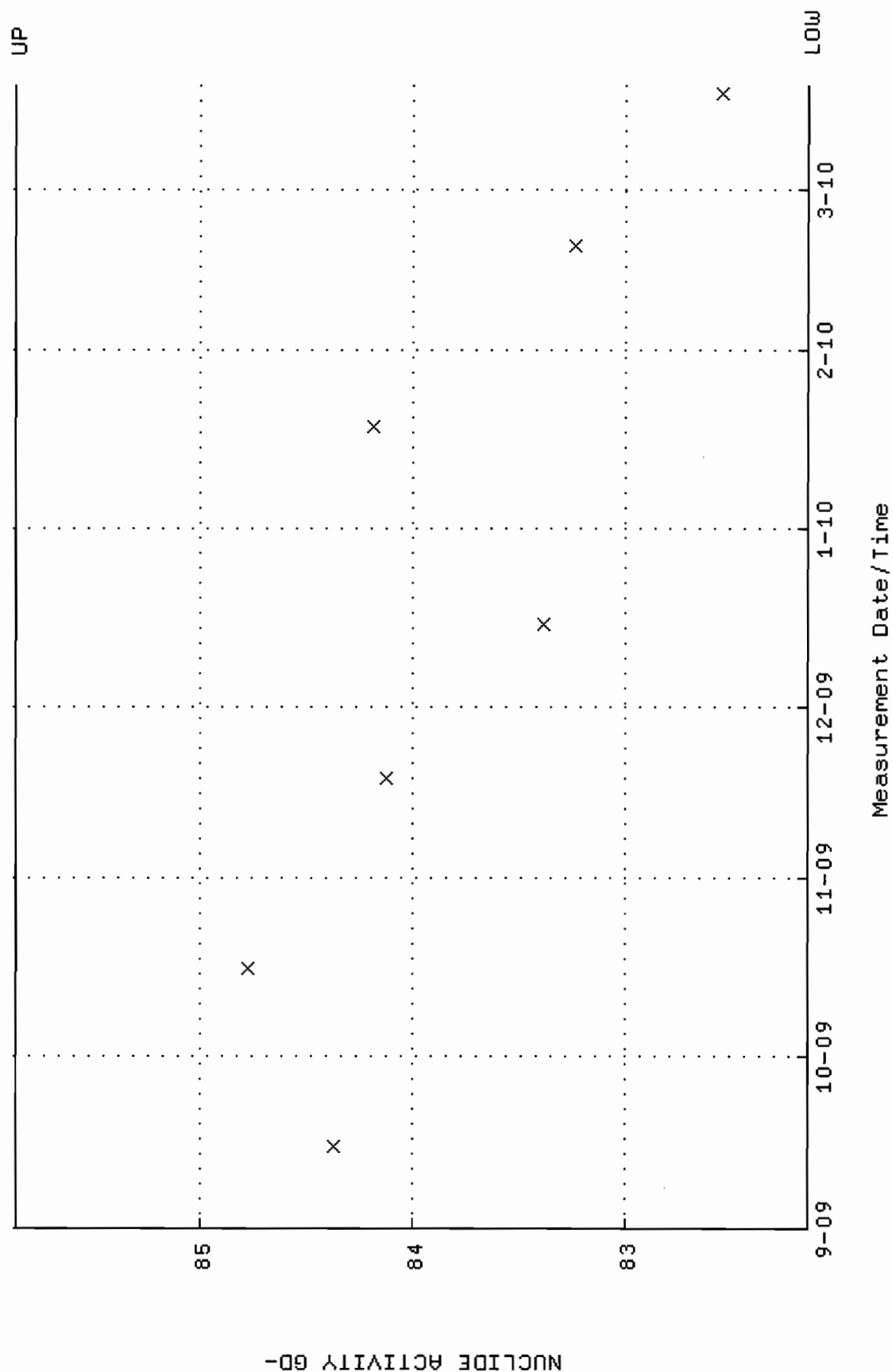
QA filename : DKA100:[ENV\_ALPHA.QA.B]B153.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:42:58 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



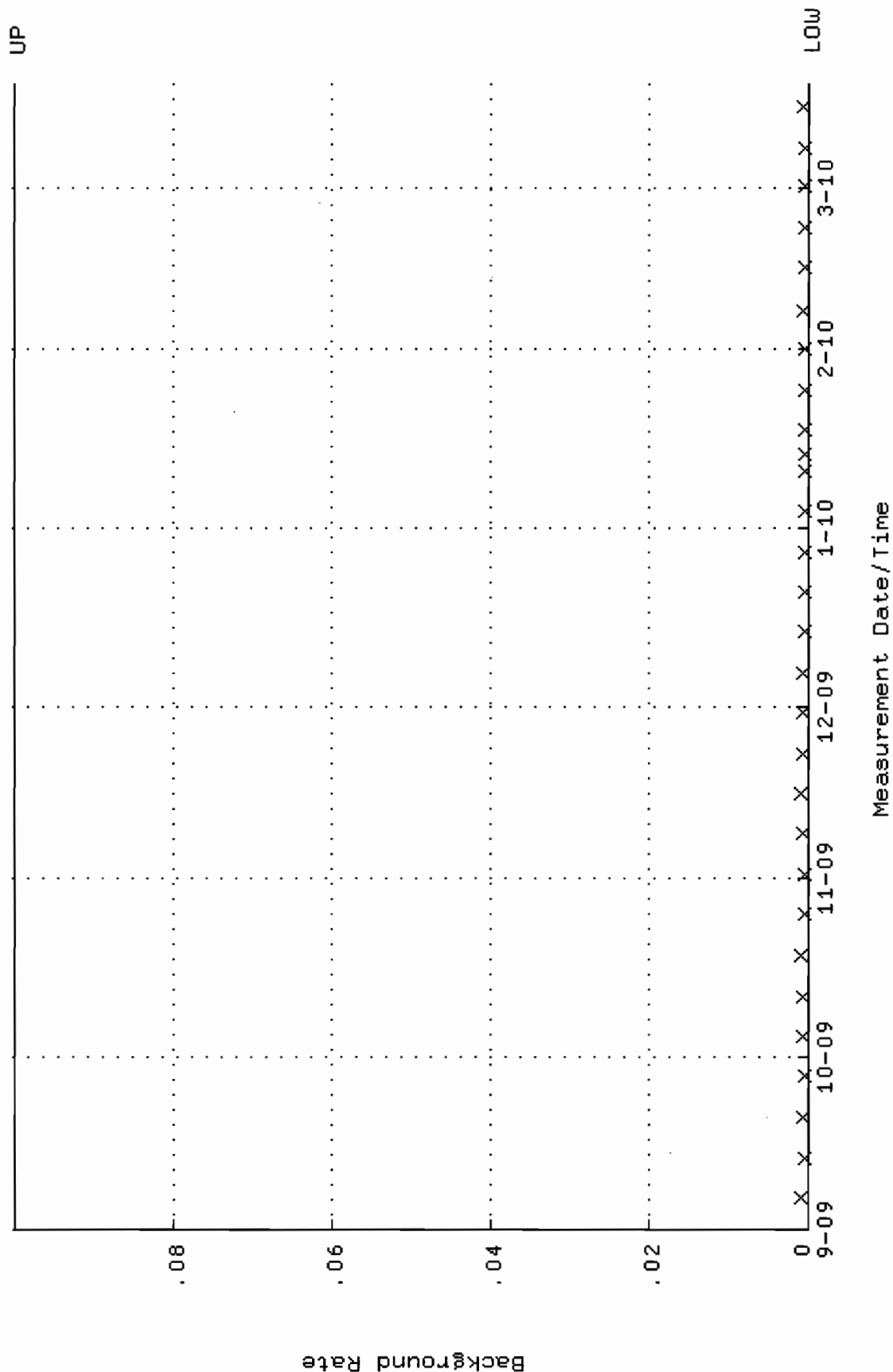
QA filename : DKA100:[ENV\_ALPHA.QA.W]W154.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-SEP-2009 07:17:46 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.250737 through 0.265205



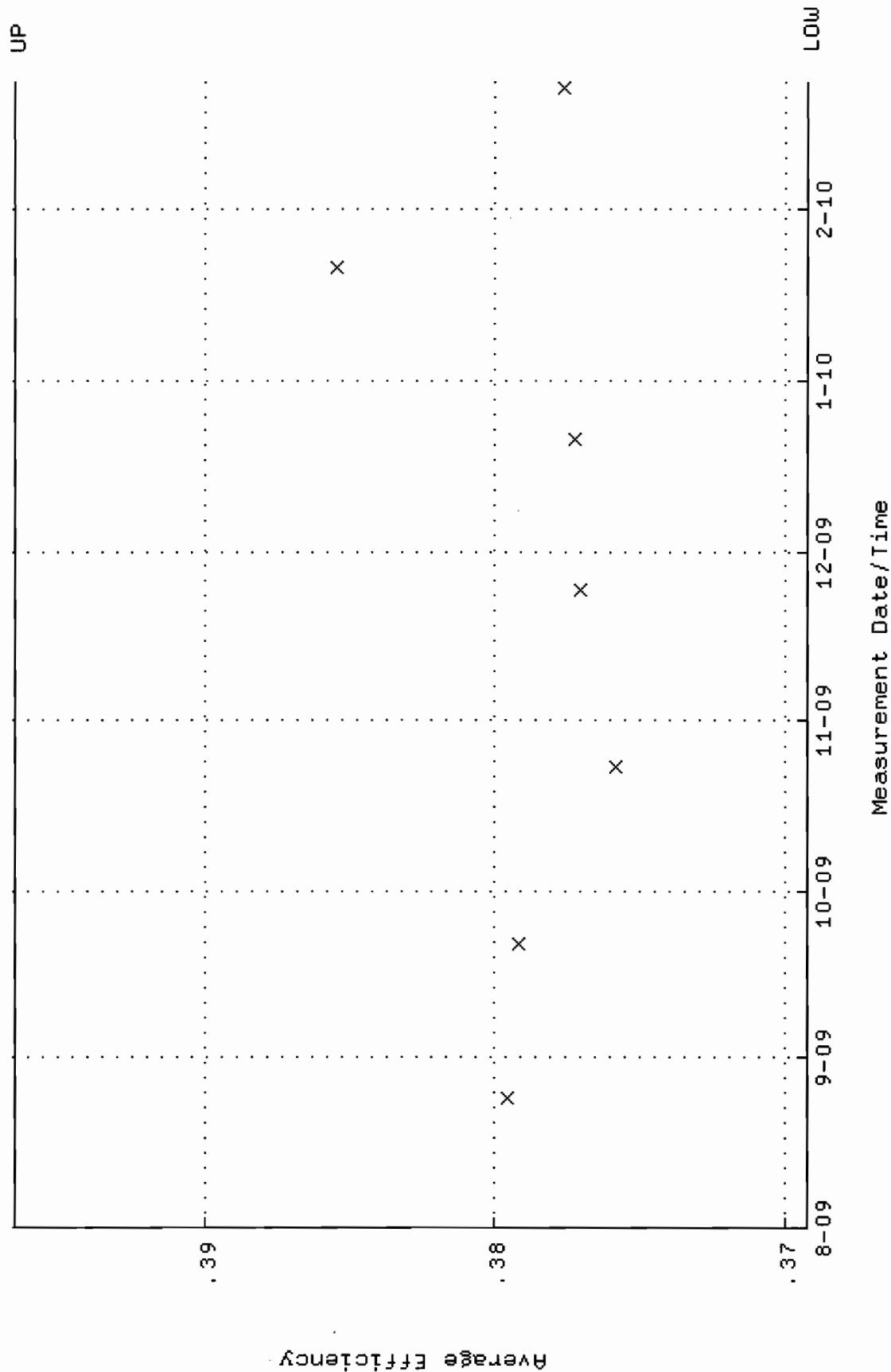
QA filename : DKA100:[ENV\_ALPHA.QA.W]W154.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-SEP-2009 07:17:46 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 82.1374 through 85.8670



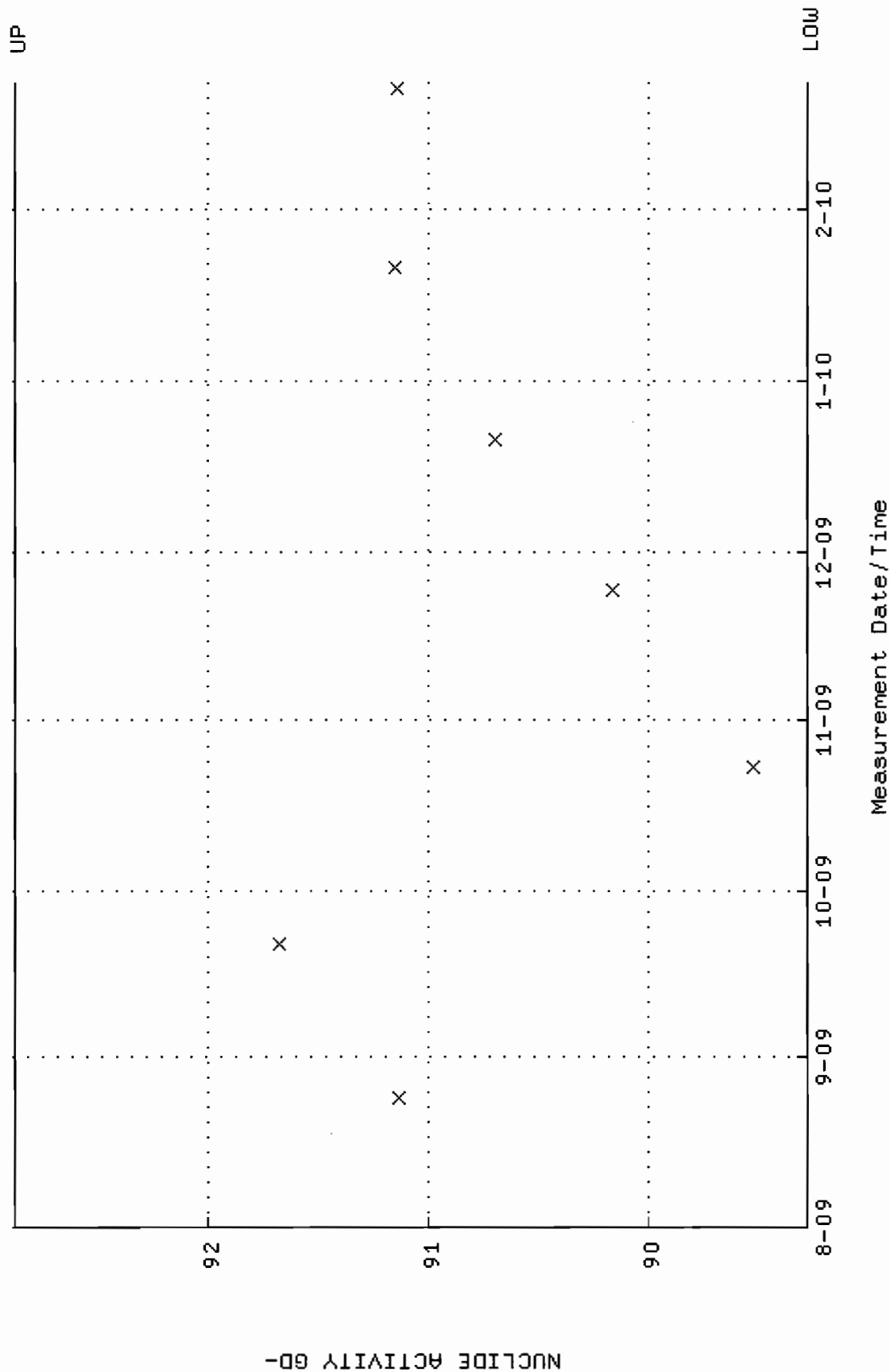
QA filename : DKA100:[ENV\_ALPHA.QA.B]B154.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:43:02 through 18-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



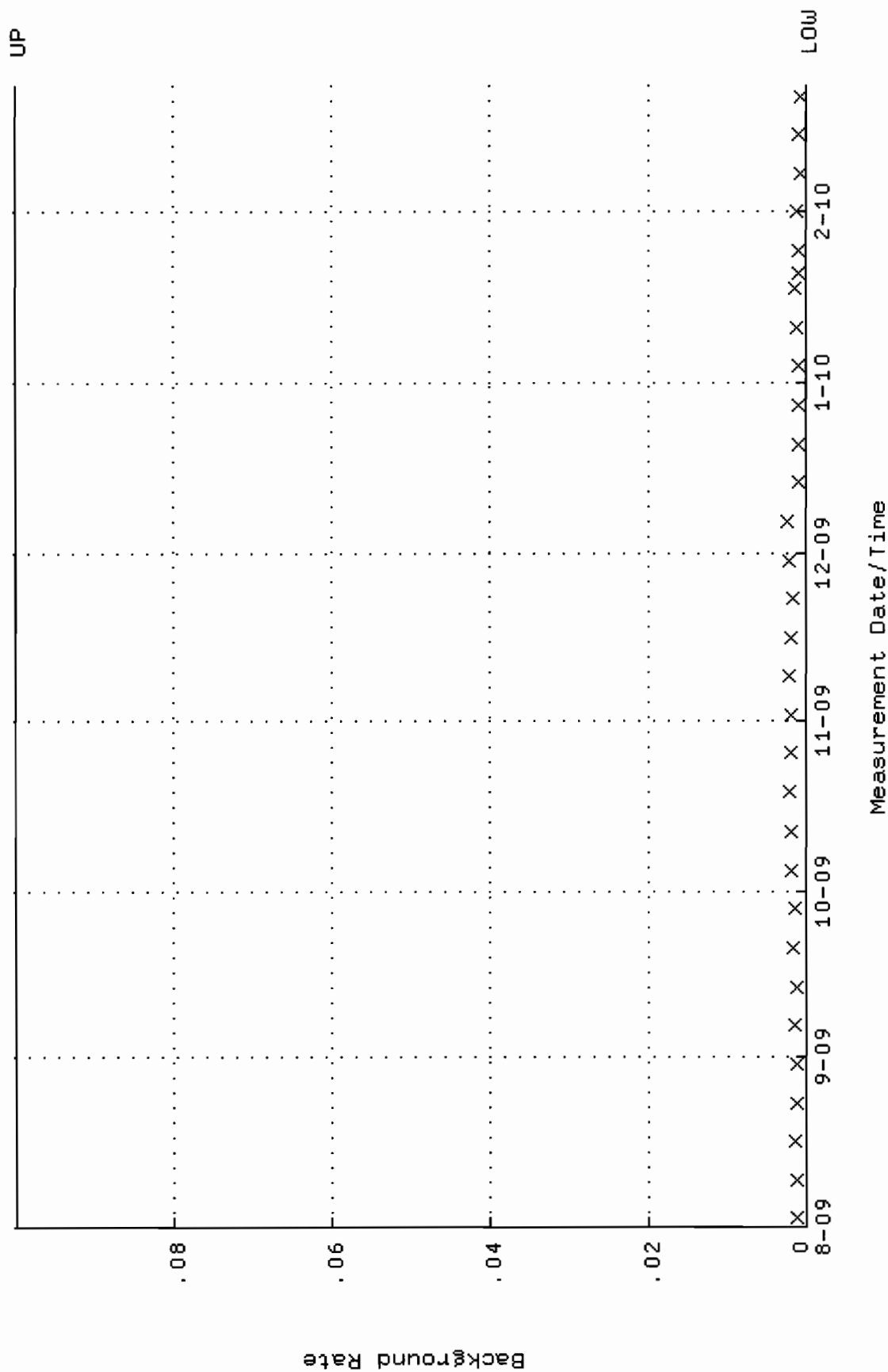
QA filename : DKA100:[ENV\_ALPHA.QA.W]W164.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 24-AUG-2009 08:40:07 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.369199 through 0.396555



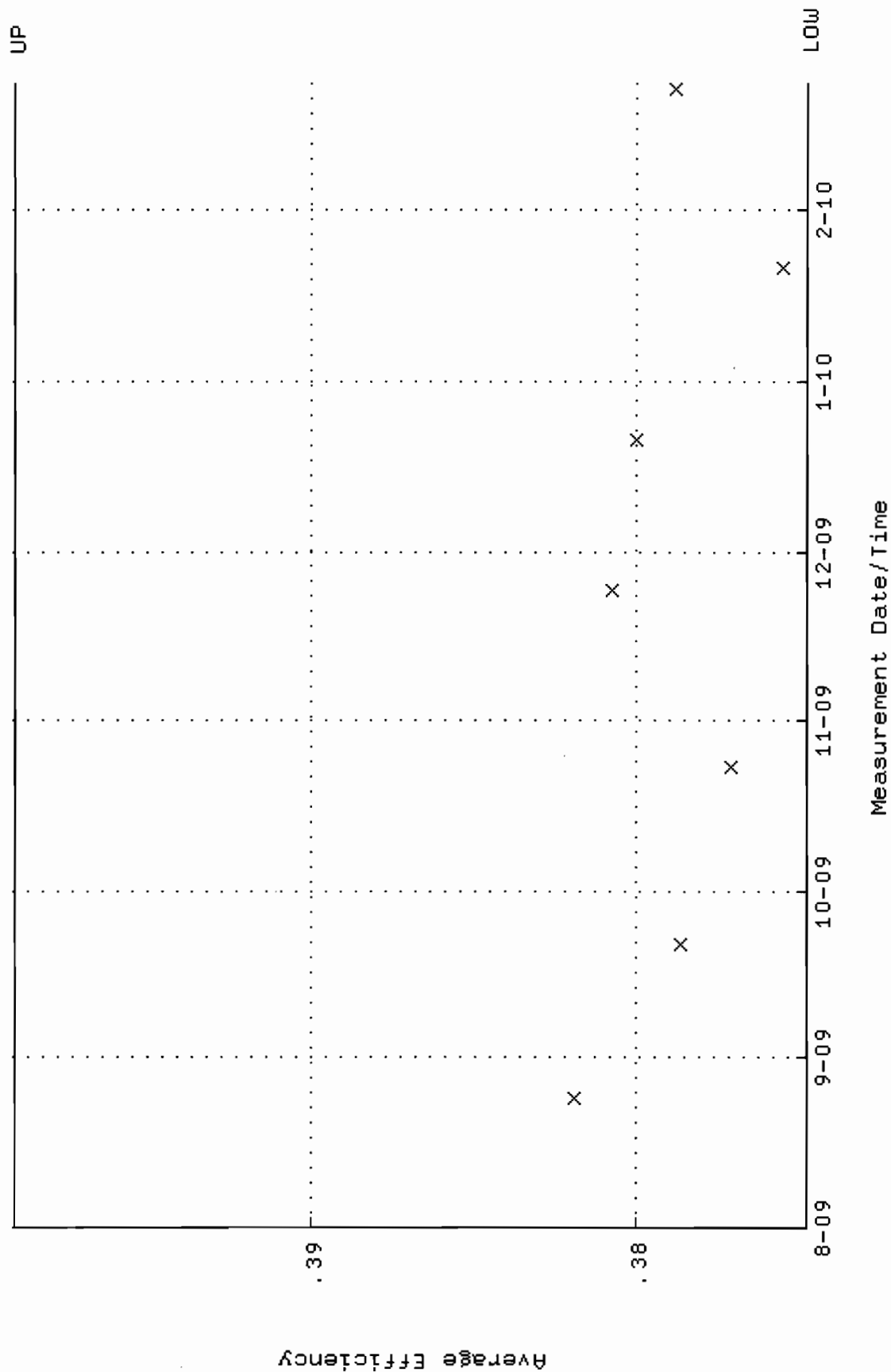
QA filename : DKA100:[ENV\_ALPHA.QA.W]w164.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 24-AUG-2009 08:40:07 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 89.2764 through 92.8786



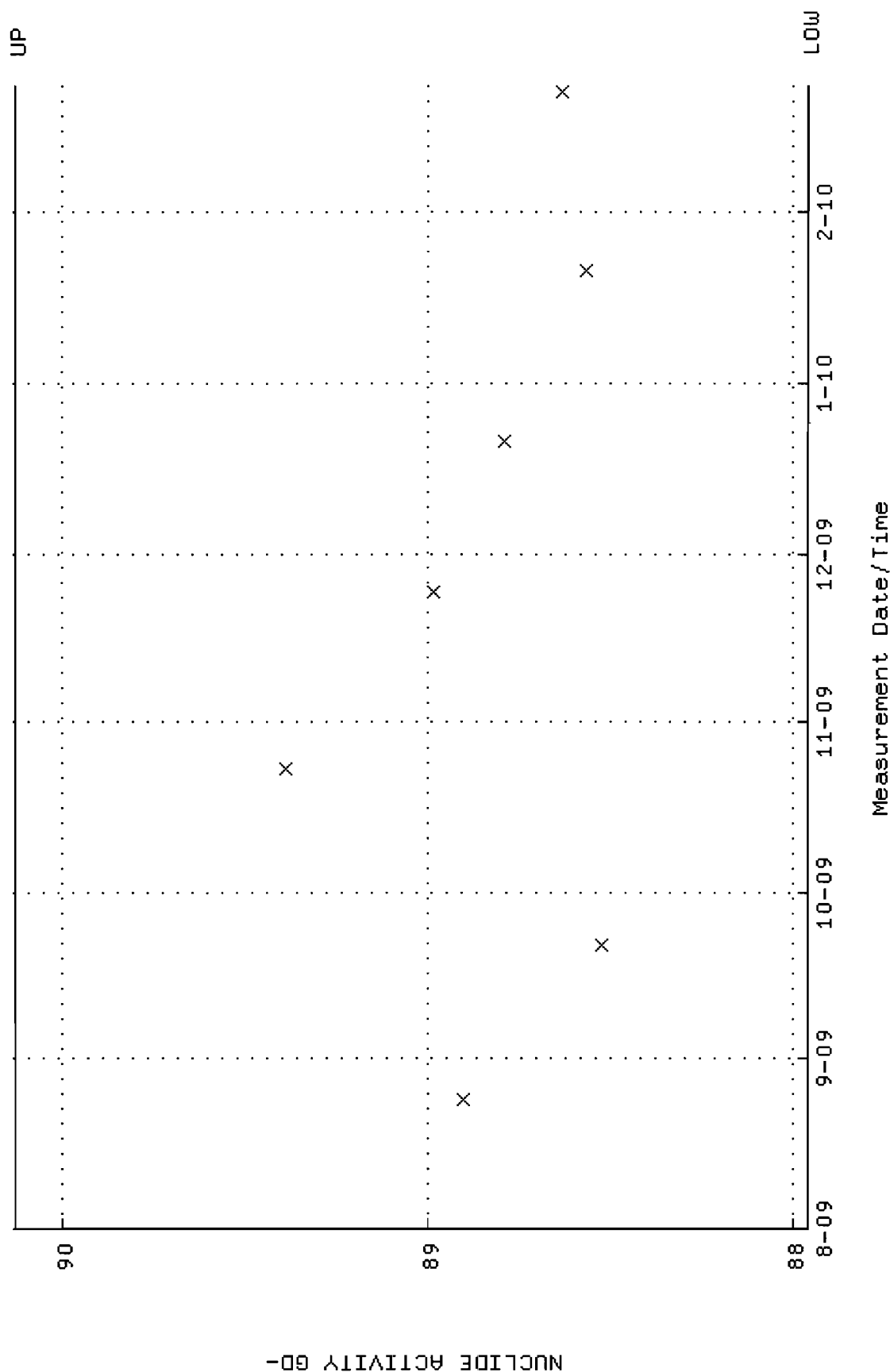
QA filename : DKA100:[ENV\_ALPHA.QA.B]B164.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:21:49 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



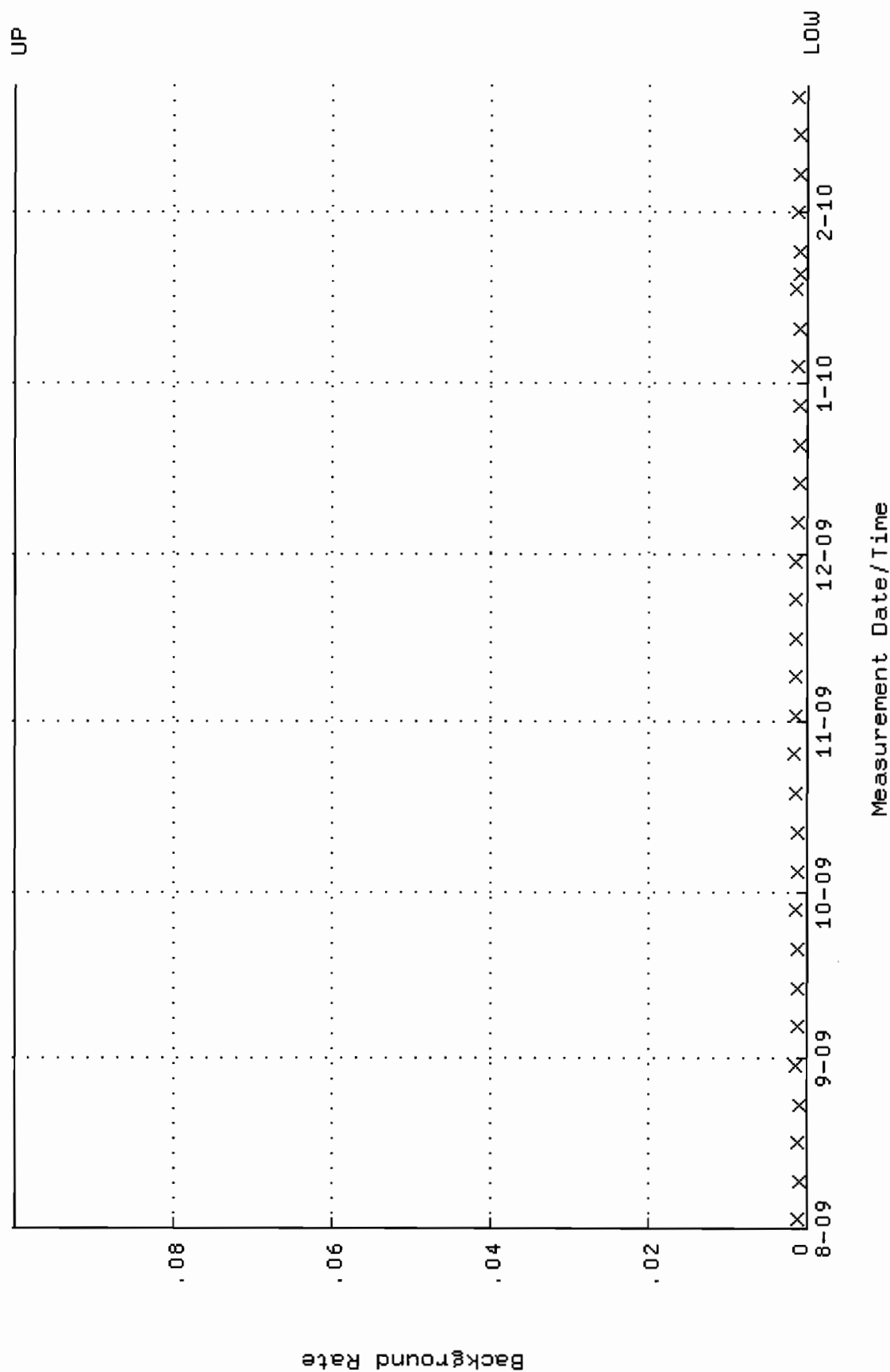
QA filename : DKA100:[ENV\_ALPHA.QA.W]w165.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 24-AUG-2009 08:40:14 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.374689 through 0.399127



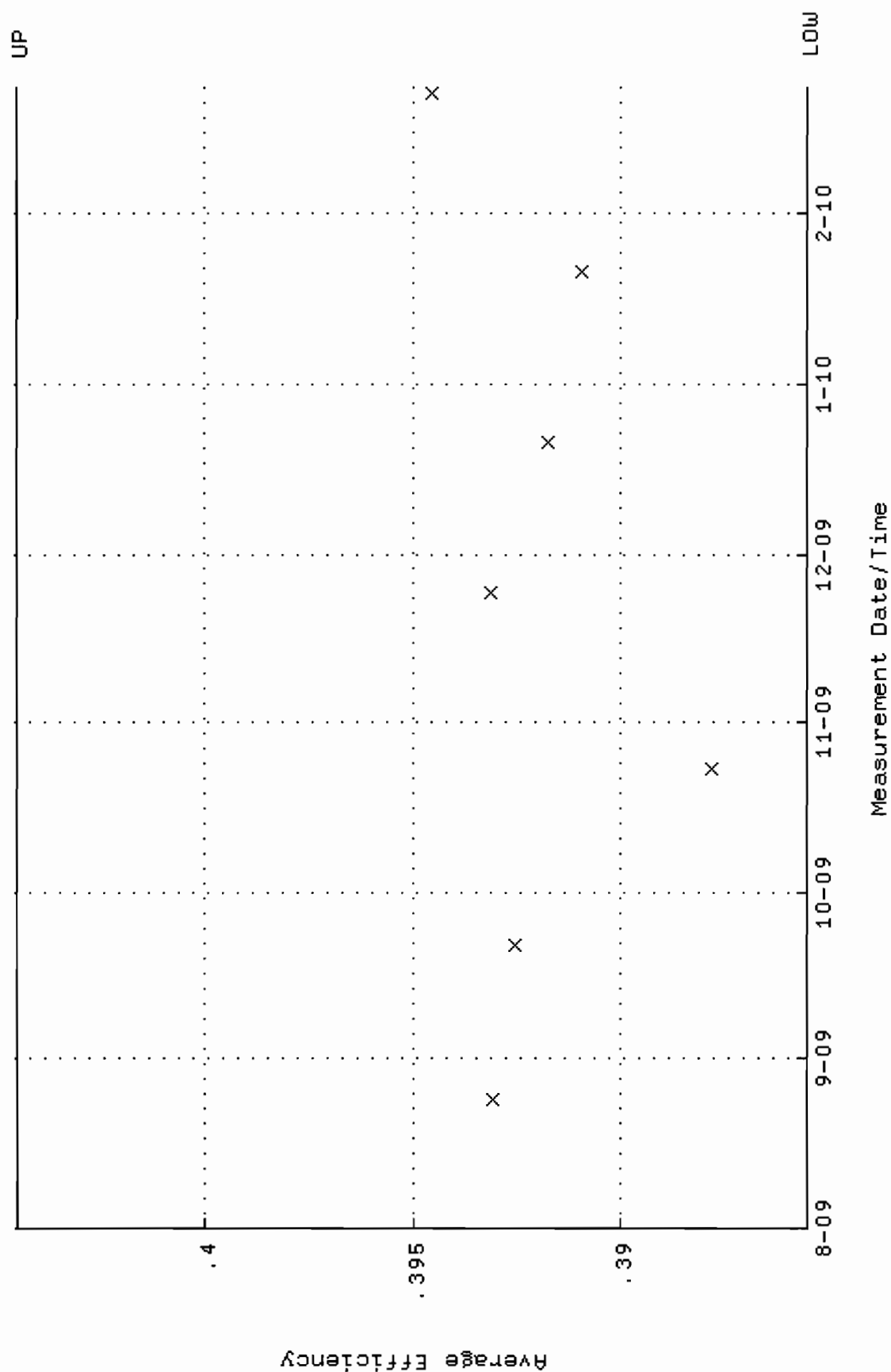
QA filename : DKA100:[ENV\_ALPHA.QA.W]w165.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 24-AUG-2009 08:40:14 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 87.9613 through 90.1269



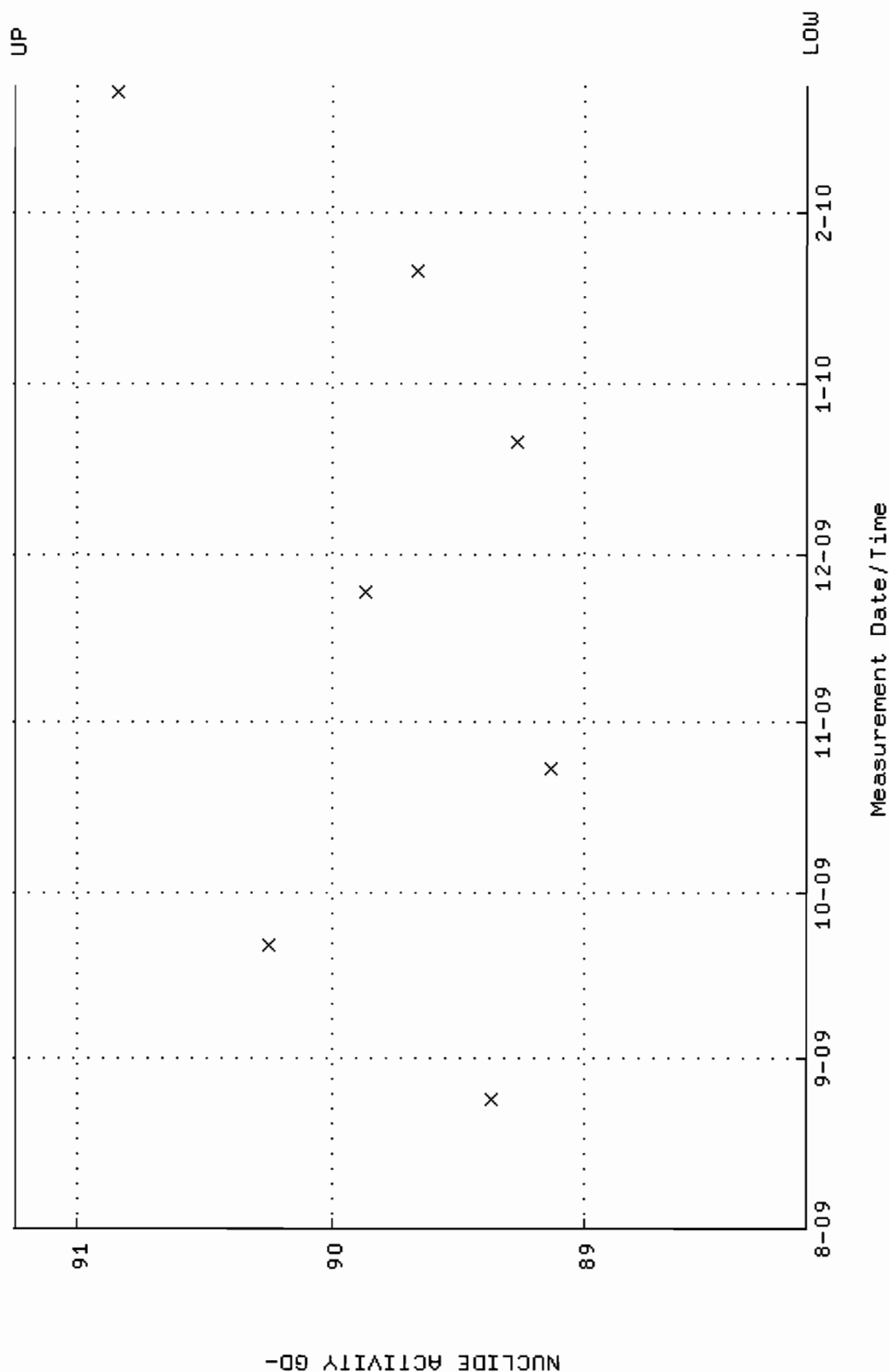
QA filename : DKA100:[ENV\_ALPHA.QA.B]B165.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:21:53 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



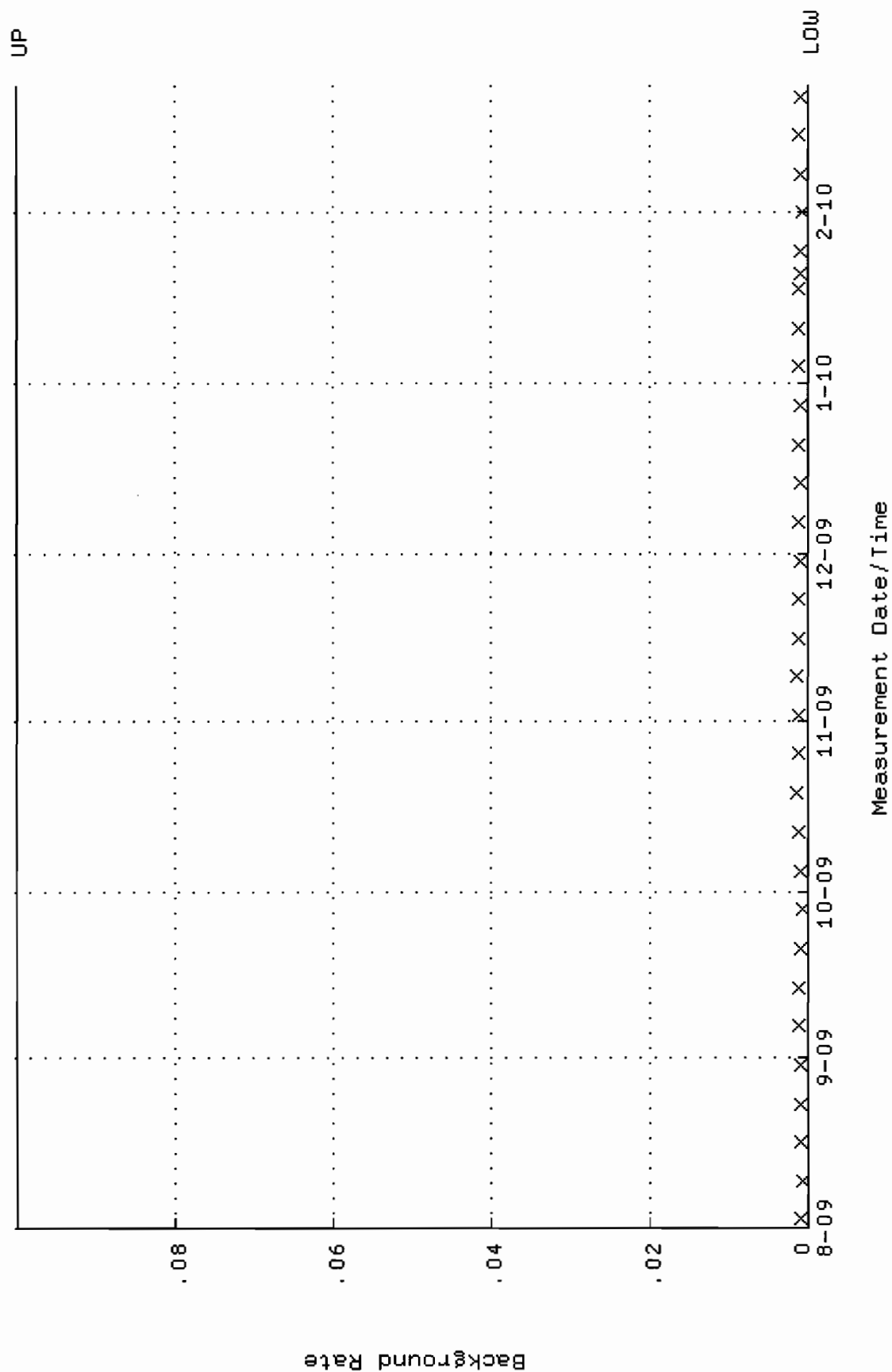
QA filename : DKA100:[ENV-ALPHA.QA.W]W166.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 24-AUG-2009 08:40:20 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.385564 through 0.404504



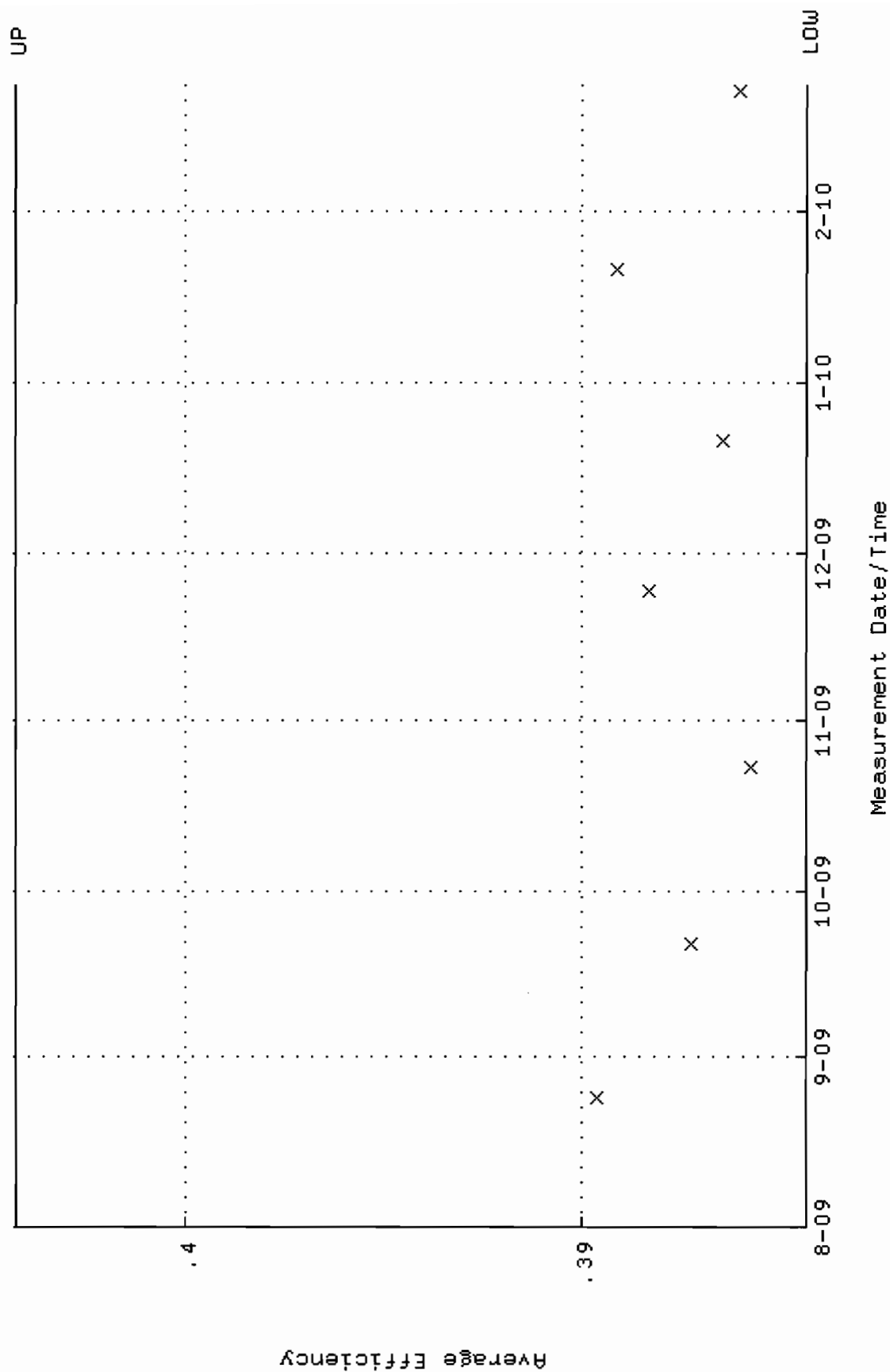
QA filename : DKA100:[ENV-ALPHA.QA.W]W166.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 24-AUG-2009 08:40:20 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 88.1264 through 91.2442



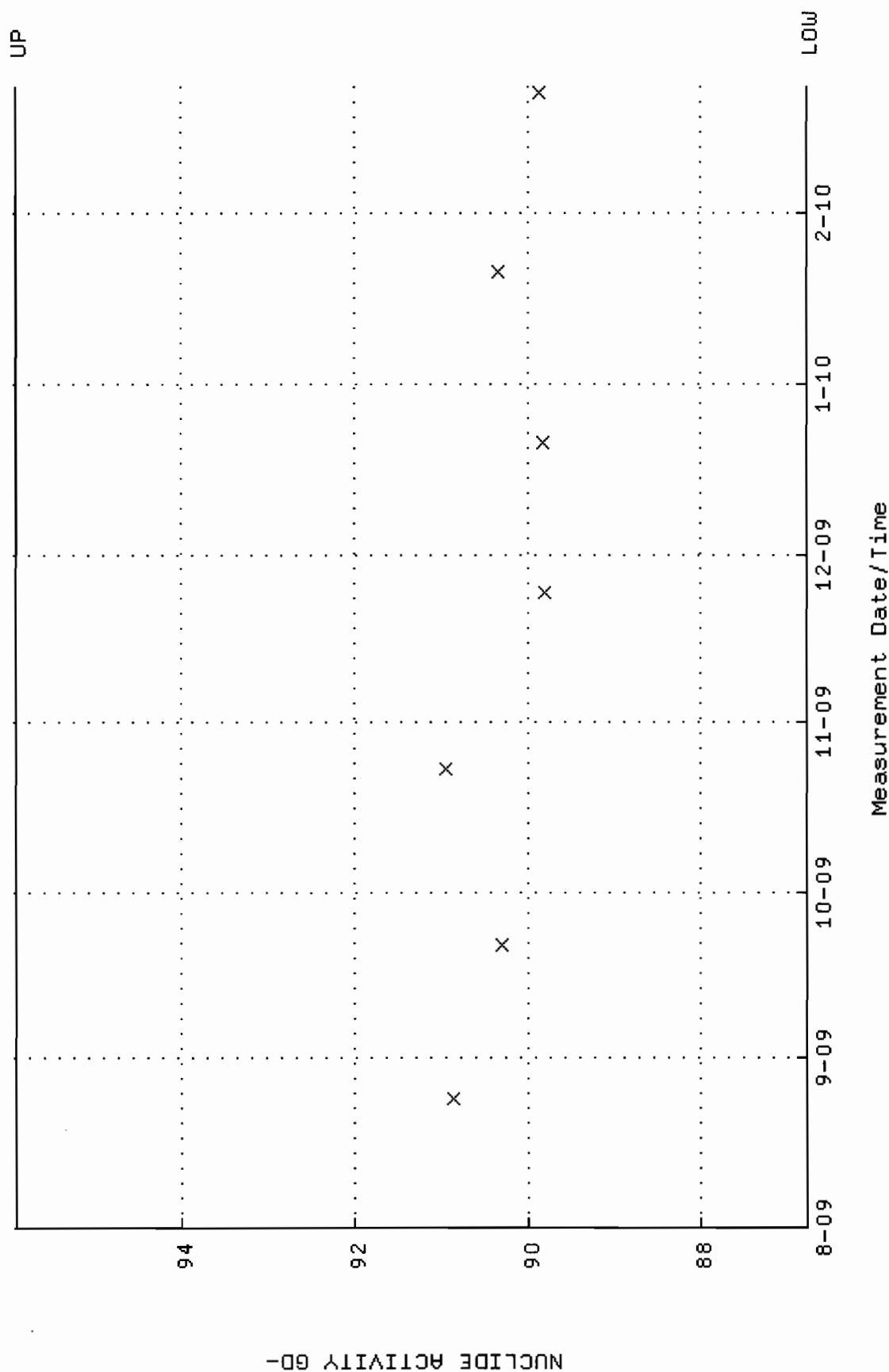
QA filename : DKA100:[ENV\_ALPHA.QA.B]B166.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:21:58 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



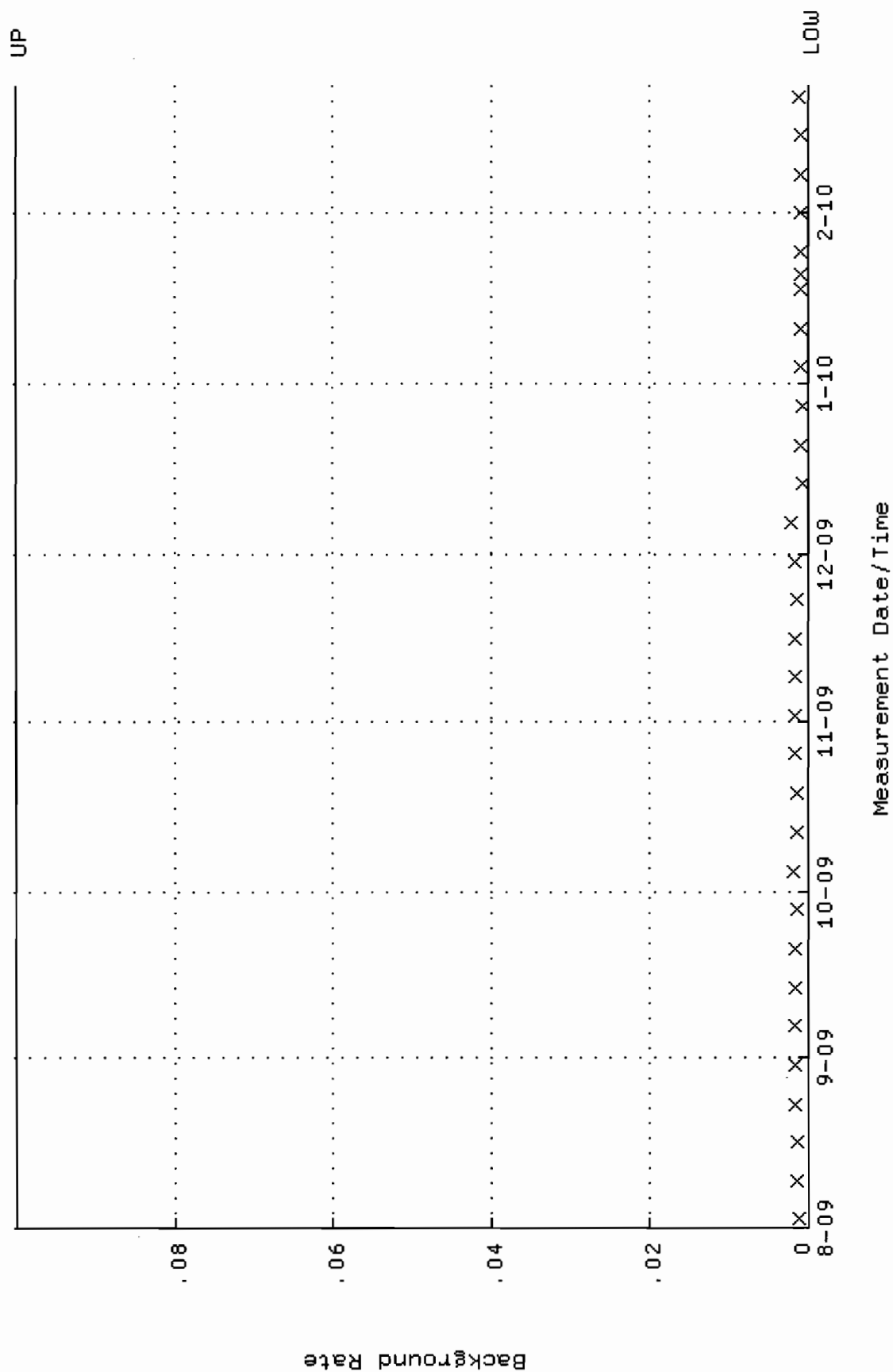
QA filename : DKA100:[ENV\_ALPHA.QA.W]W167.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 24-AUG-2009 08:40:25 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.384285 through 0.404285



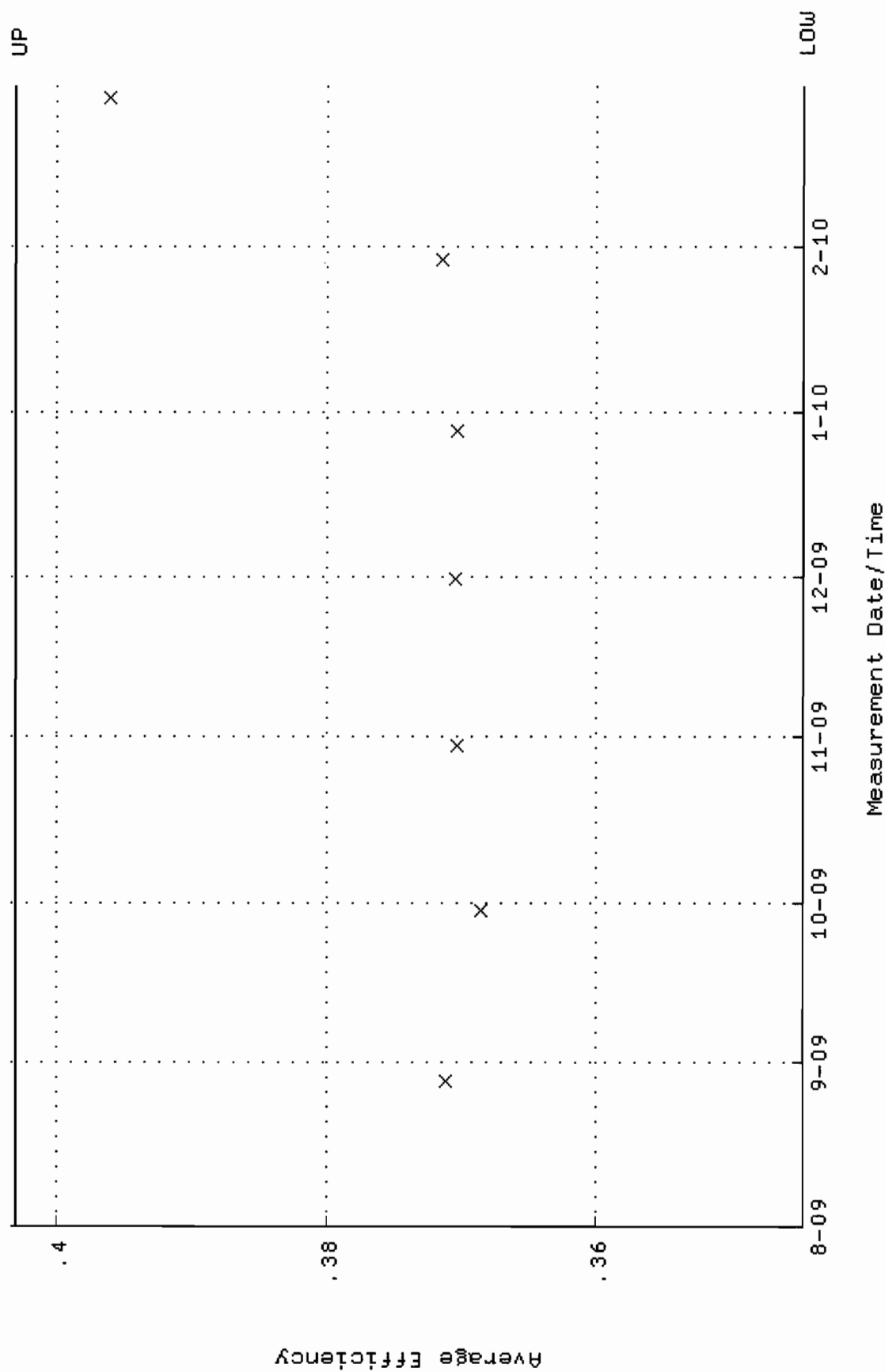
QA filename : DKA100:[ENV\_ALPHA.QA.W]w167.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 24-AUG-2009 08:40:25 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 86.7740 through 95.9082



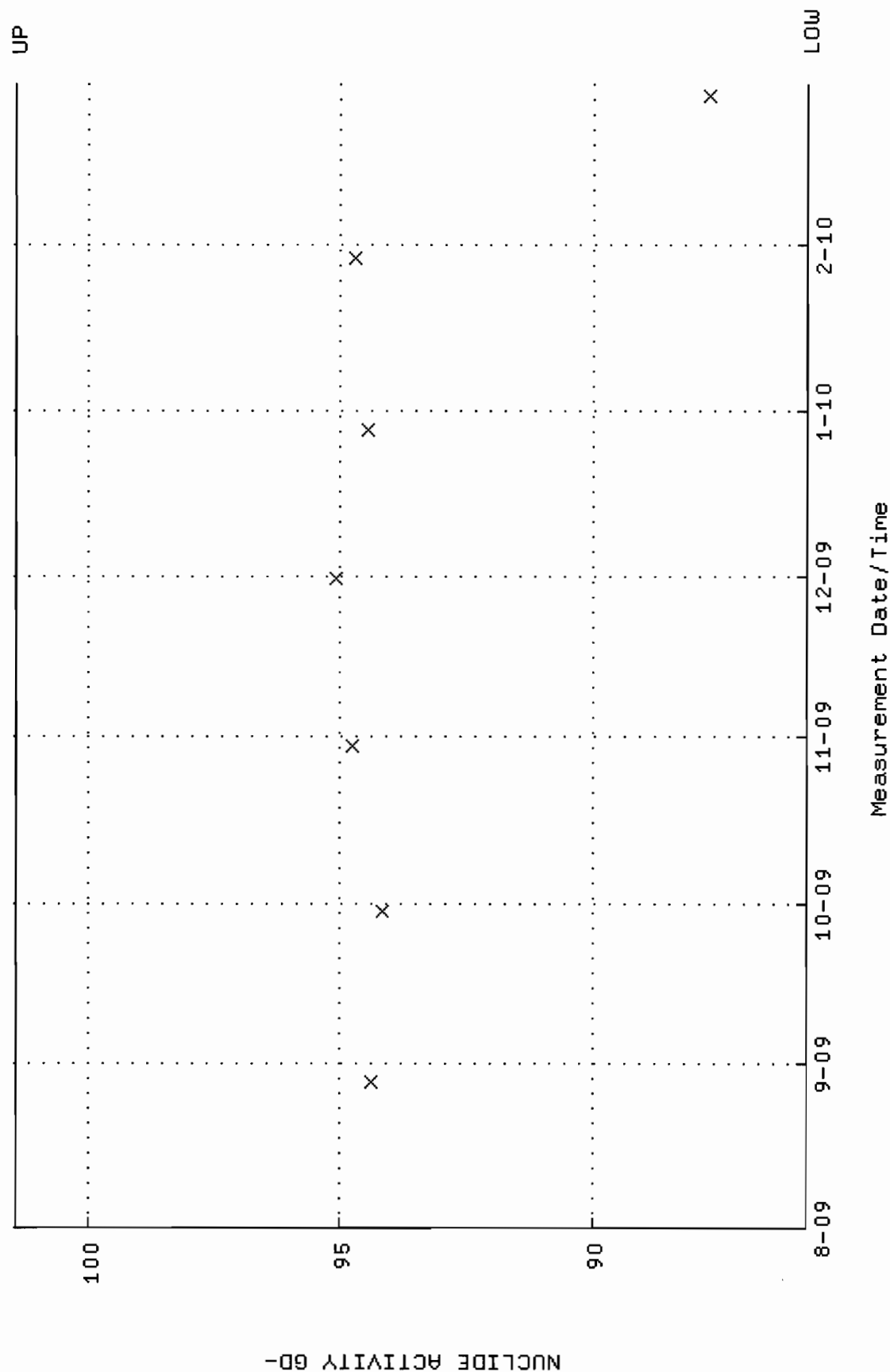
QA filename : DKA100:[ENV\_ALPHA.QA.B]B167.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:22:02 through 23-FEB-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



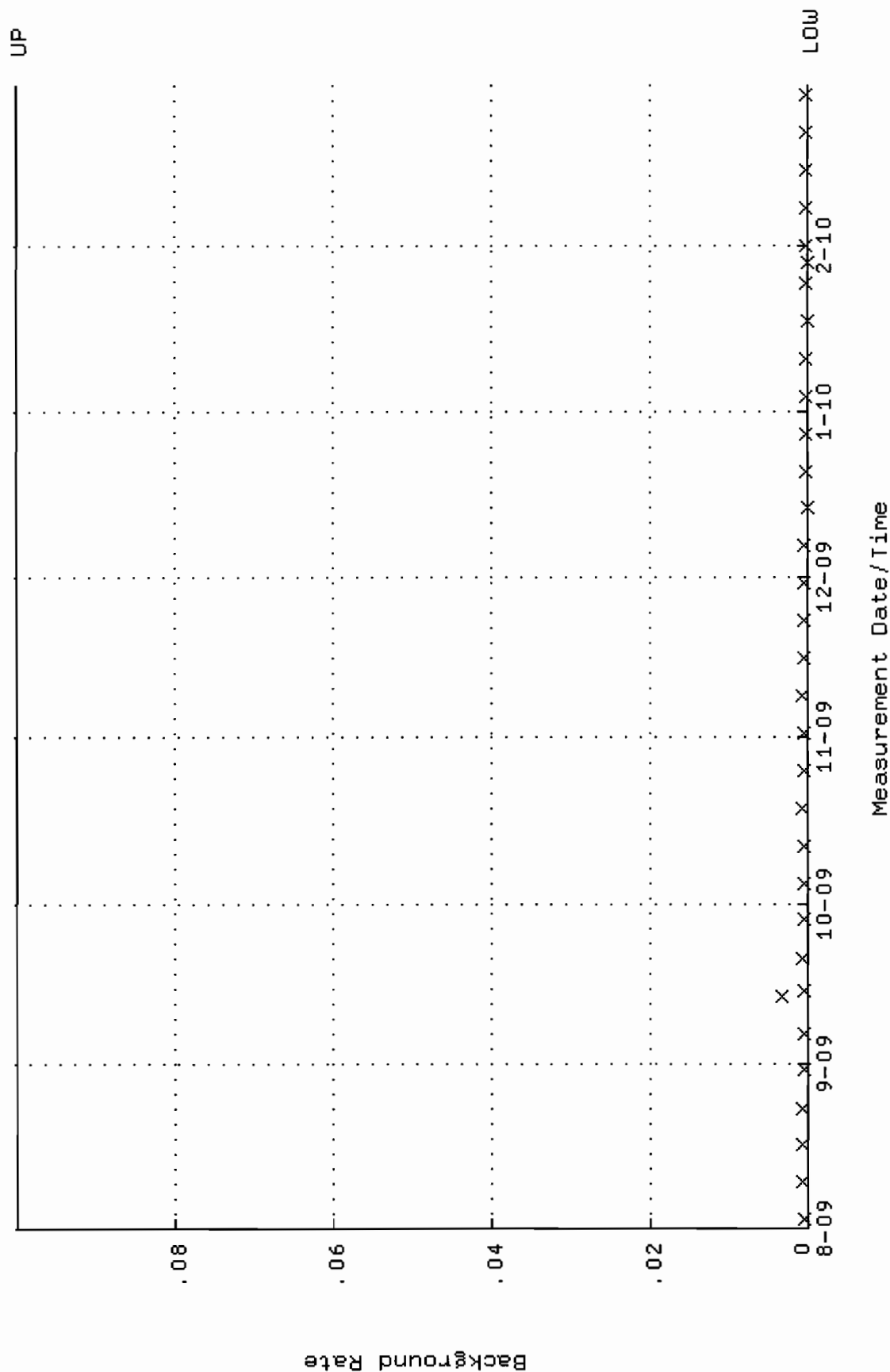
QA filename : DKA100:[ENV\_ALPHA.QA.W]W223.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:07:38 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.344809 through 0.403131



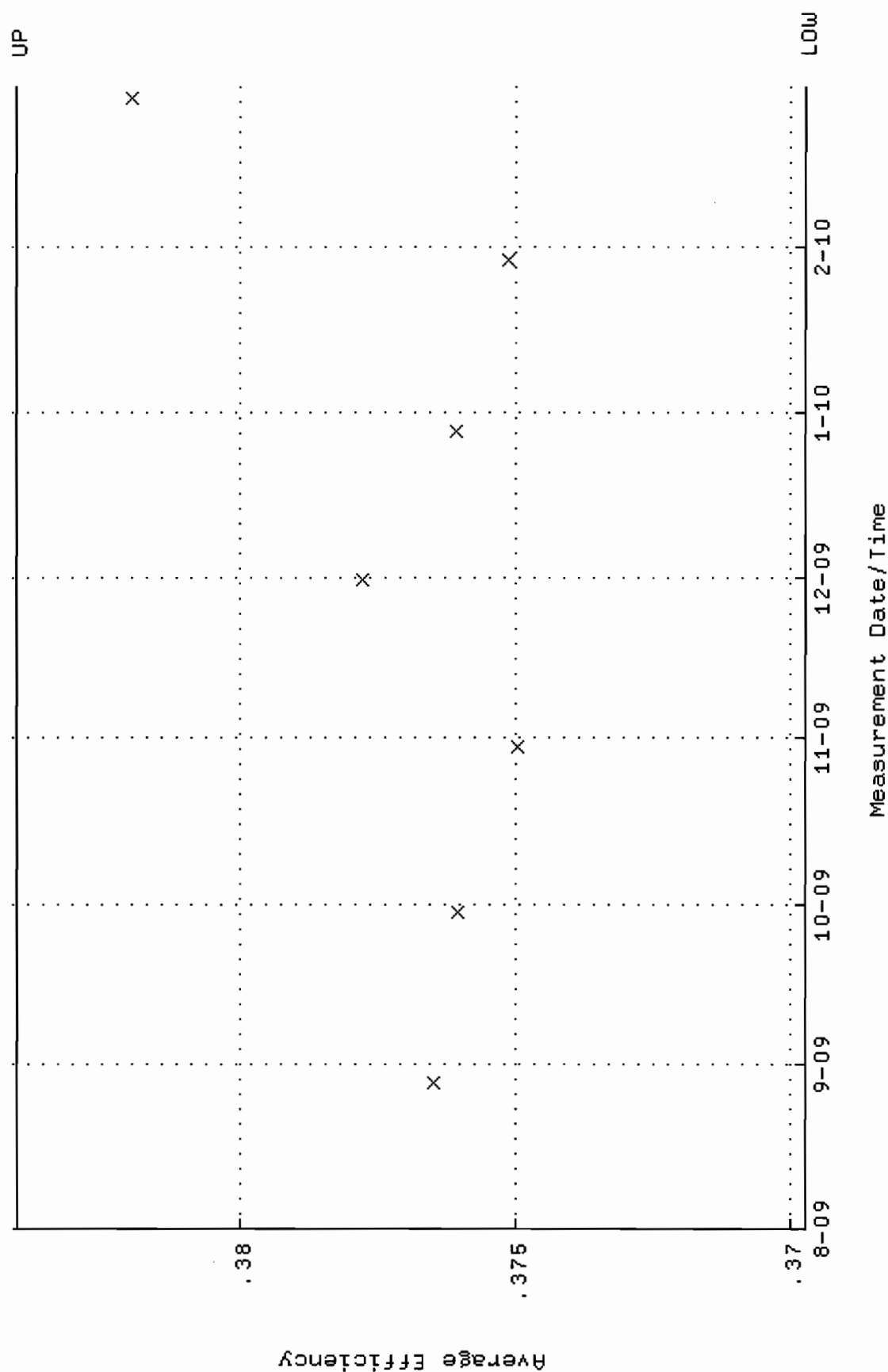
QA filename : DKA100:[ENV\_ALPHA.QA.W]W223.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:07:38 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.7275 through 101.456



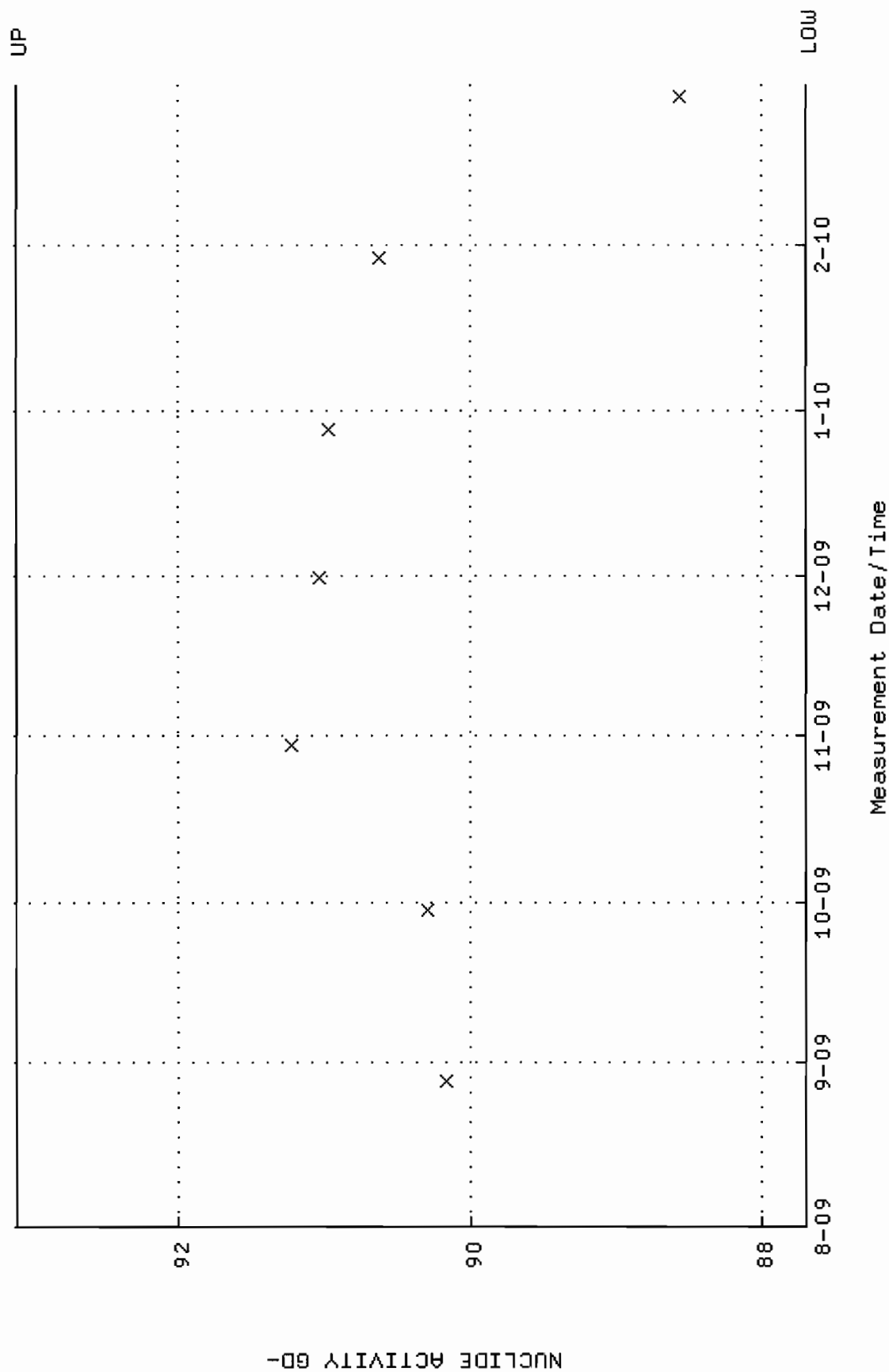
QA filename : DKA100:[ENV\_ALPHA.QA.B]B223.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:08 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



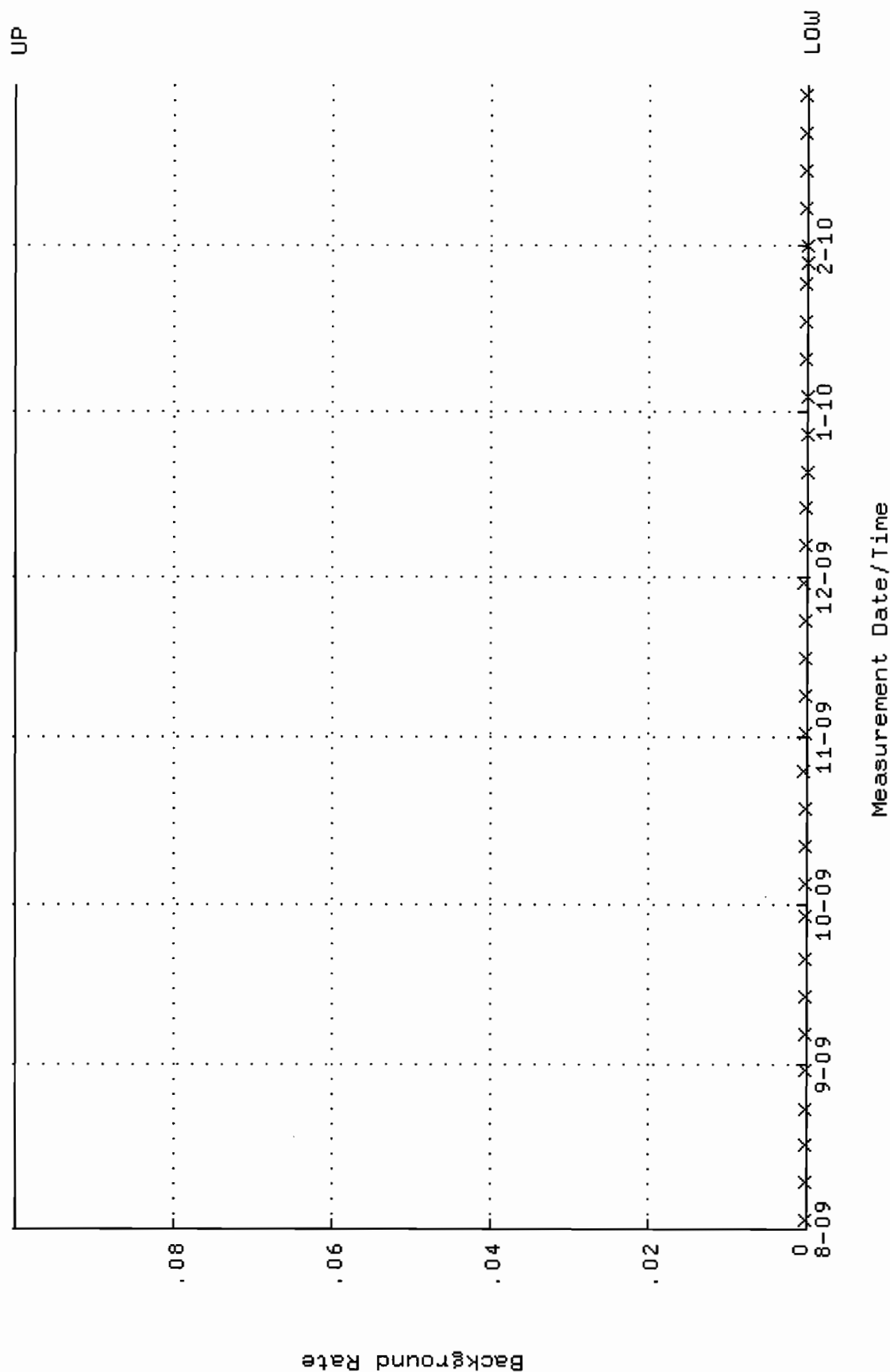
QA filename : DKA100:[ENV\_ALPHA.QA.W]W230.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:08:19 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.369716 through 0.384082



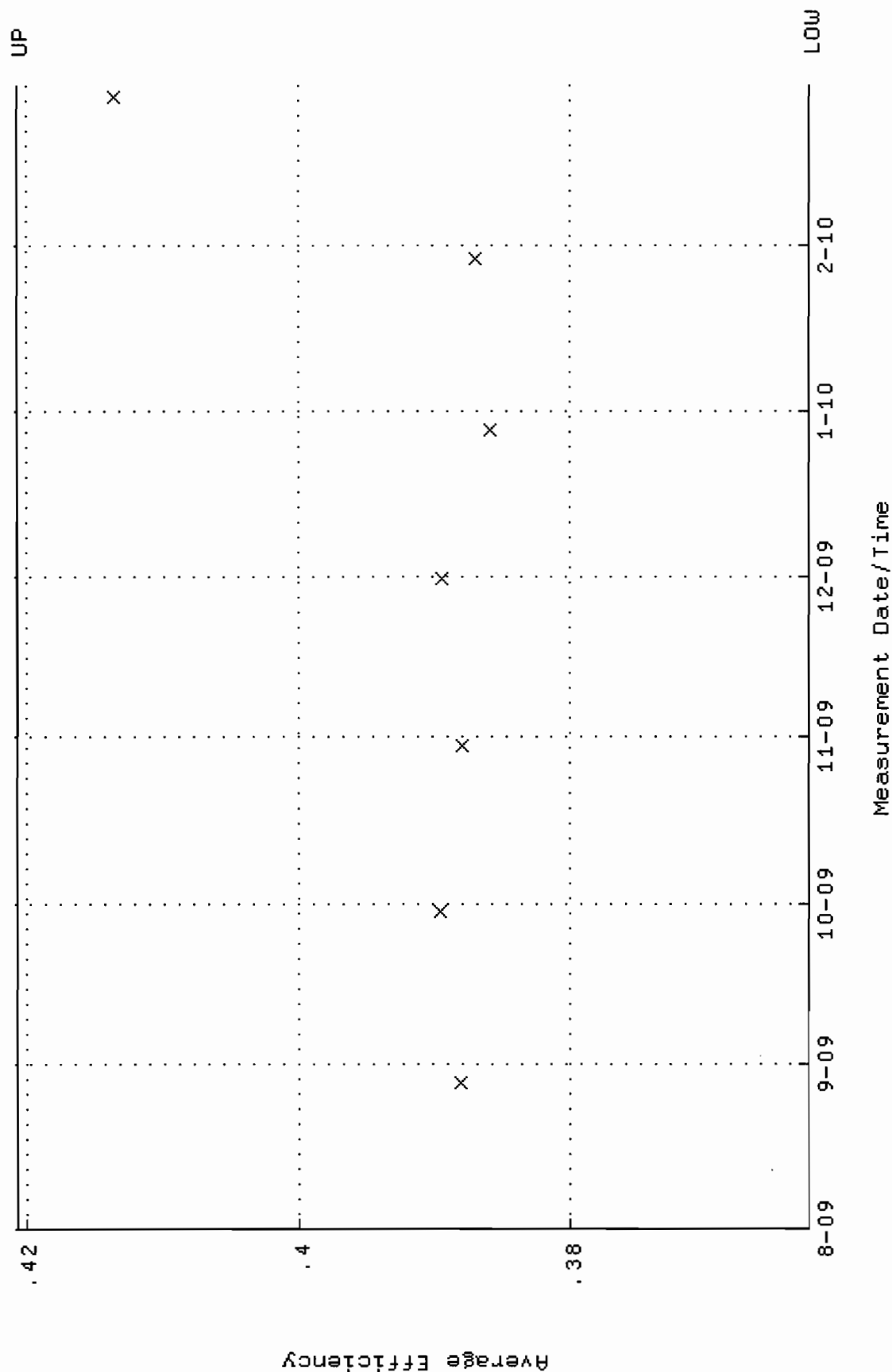
QA filename : DKA100:[ENV-ALPHA.QA.W]W230.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:08:19 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 87.6979 through 93.1141



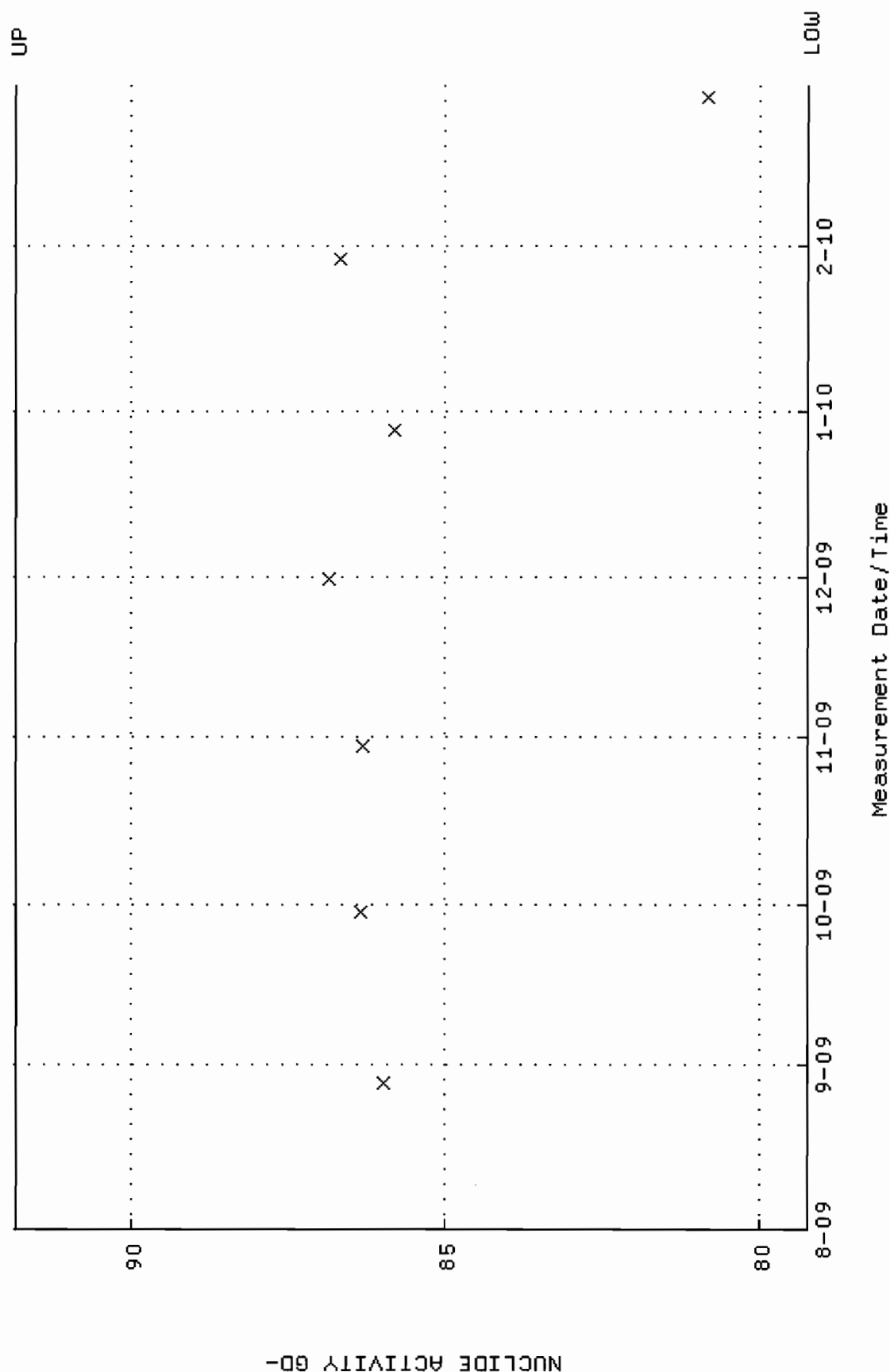
QA filename : DKA100:[ENV\_ALPHA.QA.B]B230.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:38 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



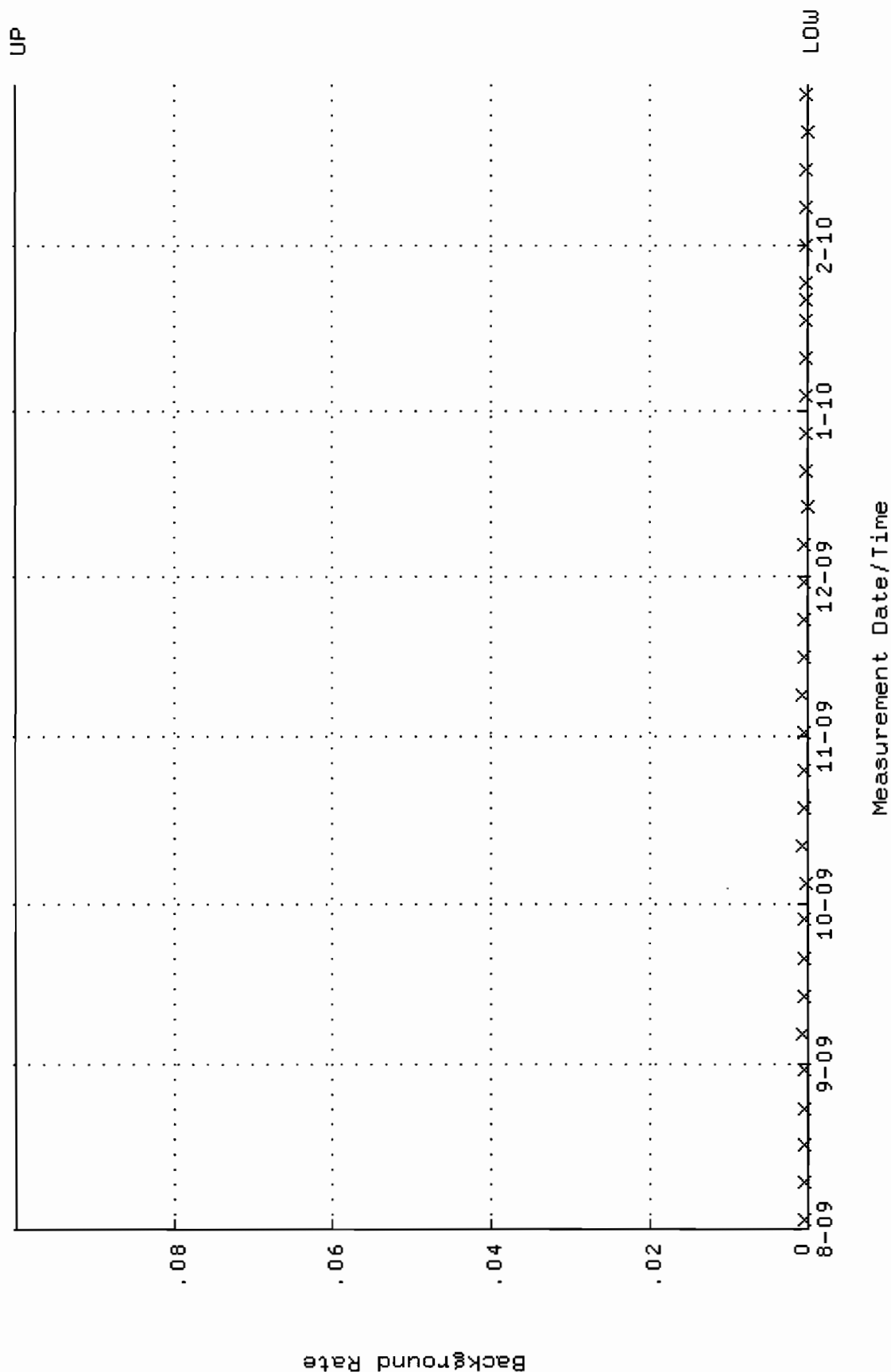
QA filename : DKA100:[ENV\_ALPHA.QA.W]W236.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:08:51 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.362418 through 0.420706



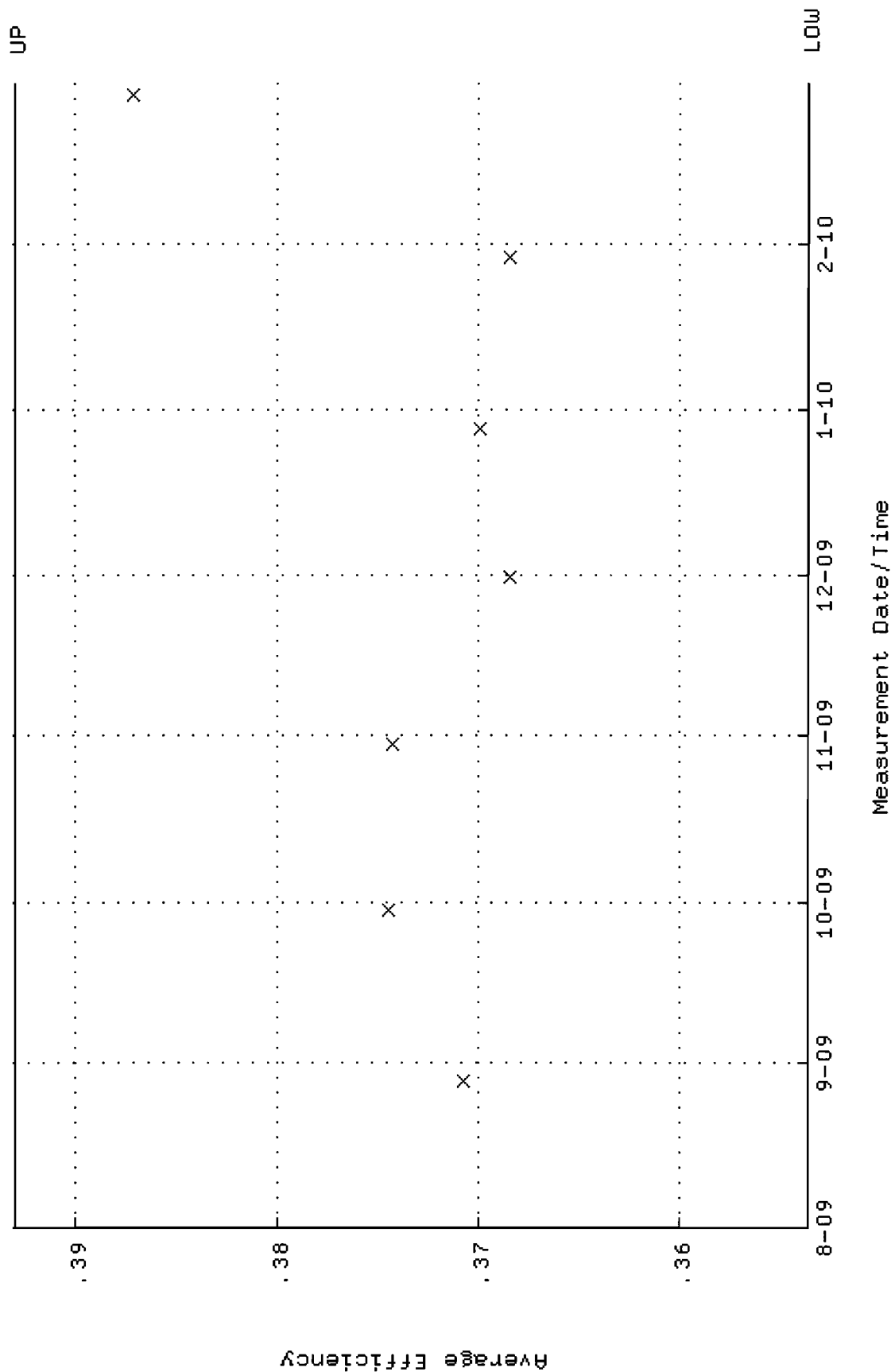
QA filename : DKA100:[ENV\_ALPHA.QA.W]W236.QAF;1  
 Parameter Name : NLACTVY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:08:51 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 79.2135 through 91.8401



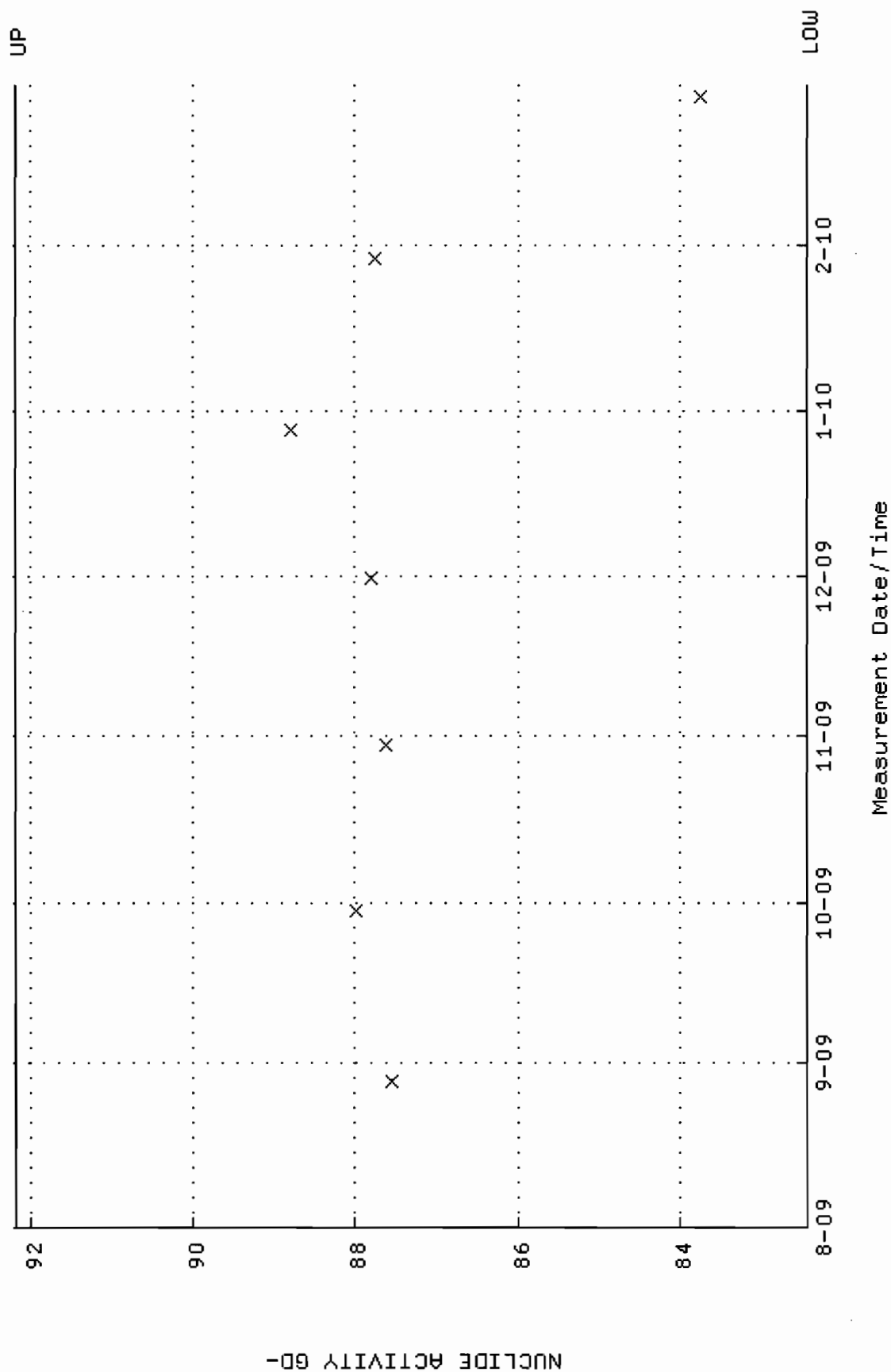
QA filename : DKA100:[ENV\_ALPHA.QA.B]B236.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:27:04 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



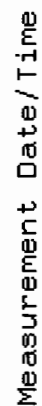
QA filename : DKA100:[ENV\_ALPHA.QA.W]W240.QAF;1  
Parameter Name : AVRGEFF (Average Efficiency)  
Start/End Dates : 28-AUG-2009 07:09:09 through 2-MAR-2010 12:00:00  
Lower/Upper Lmts: 0.353617 through 0.392947



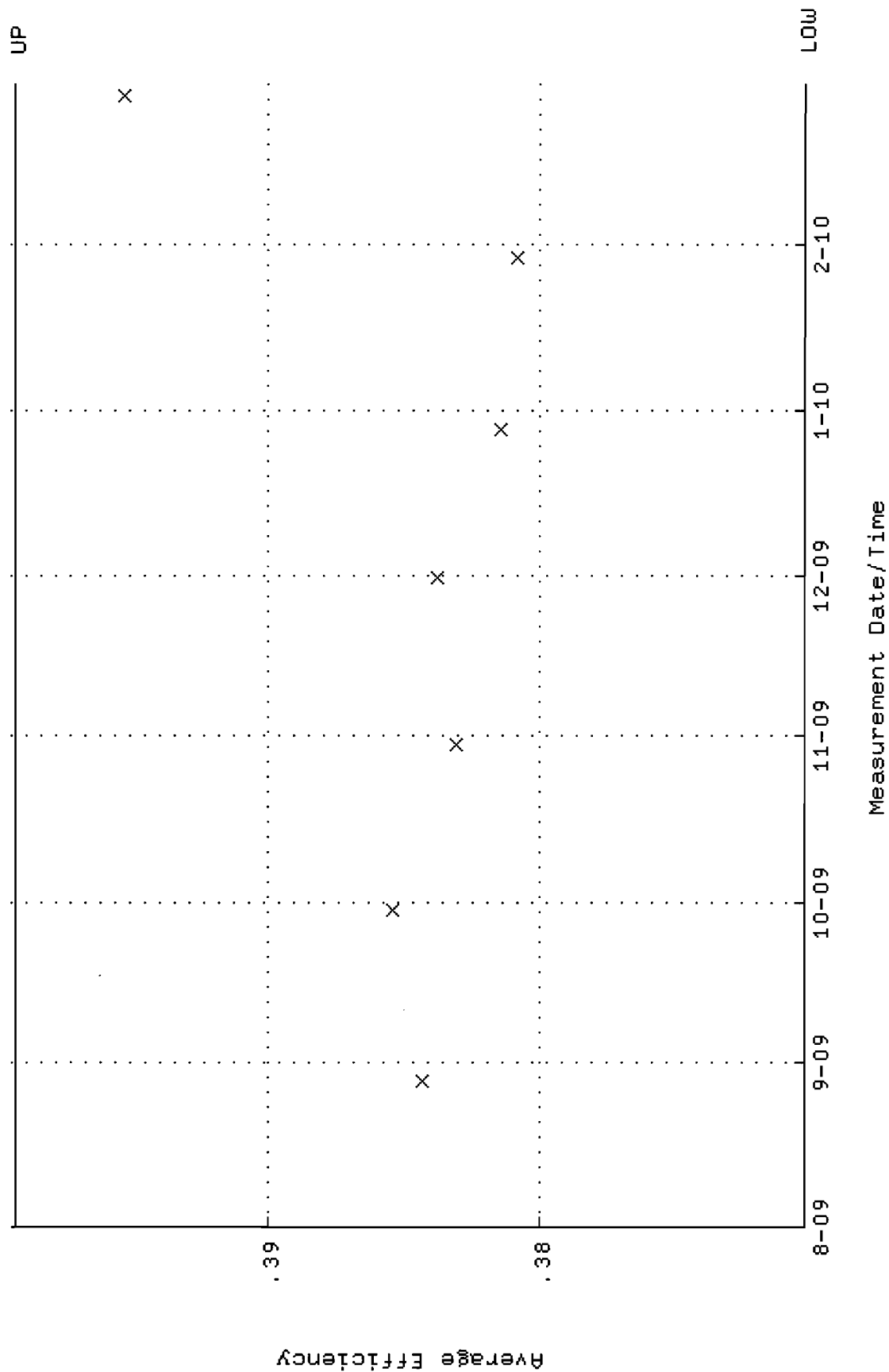
QA filename : DKA100:[ENV\_ALPHA.QA.W]W240.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:09:09 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 82.4439 through 92.1786



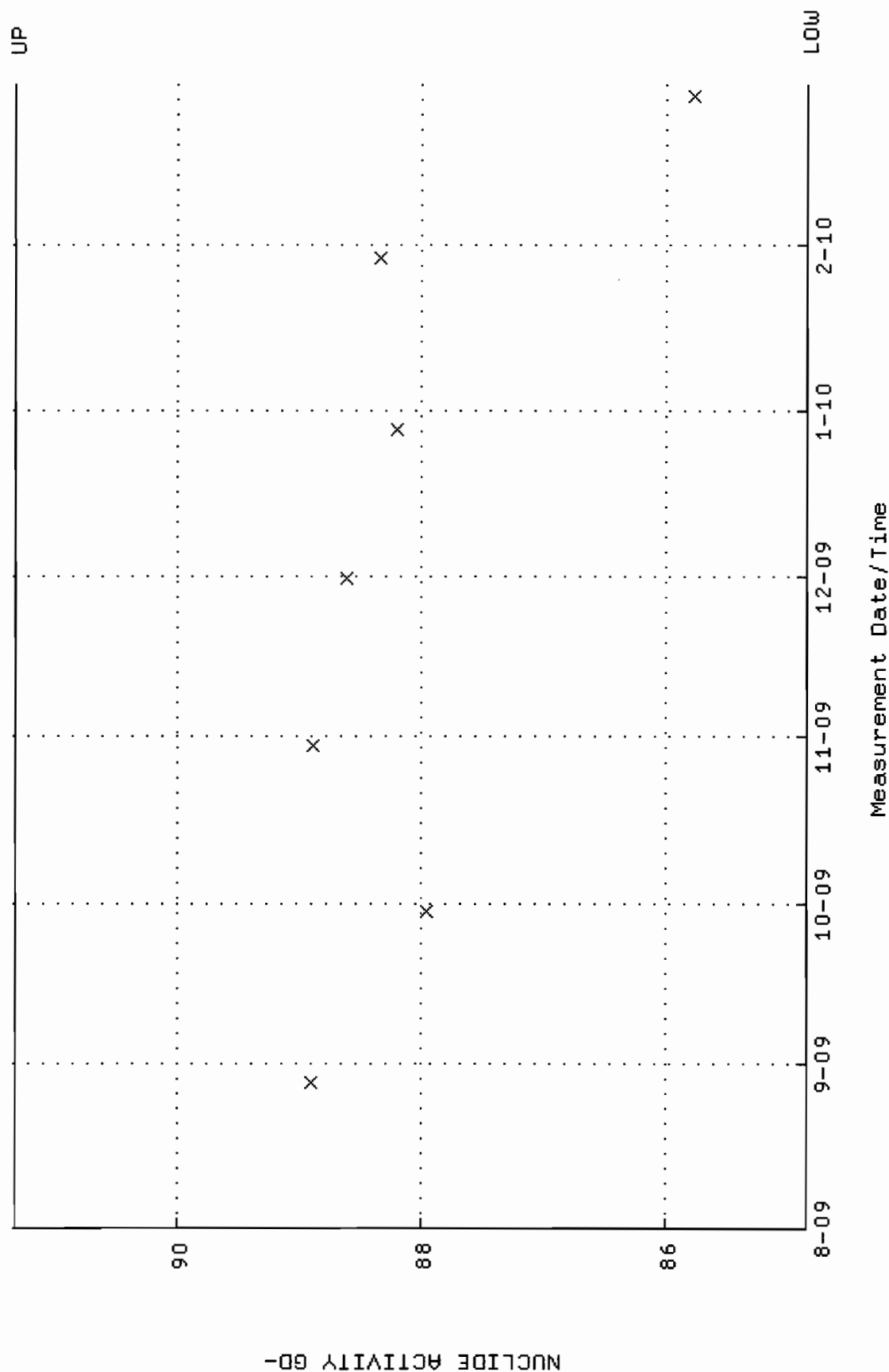
Lower/Upper Lmts: 0.000000E+00 through 0.100000



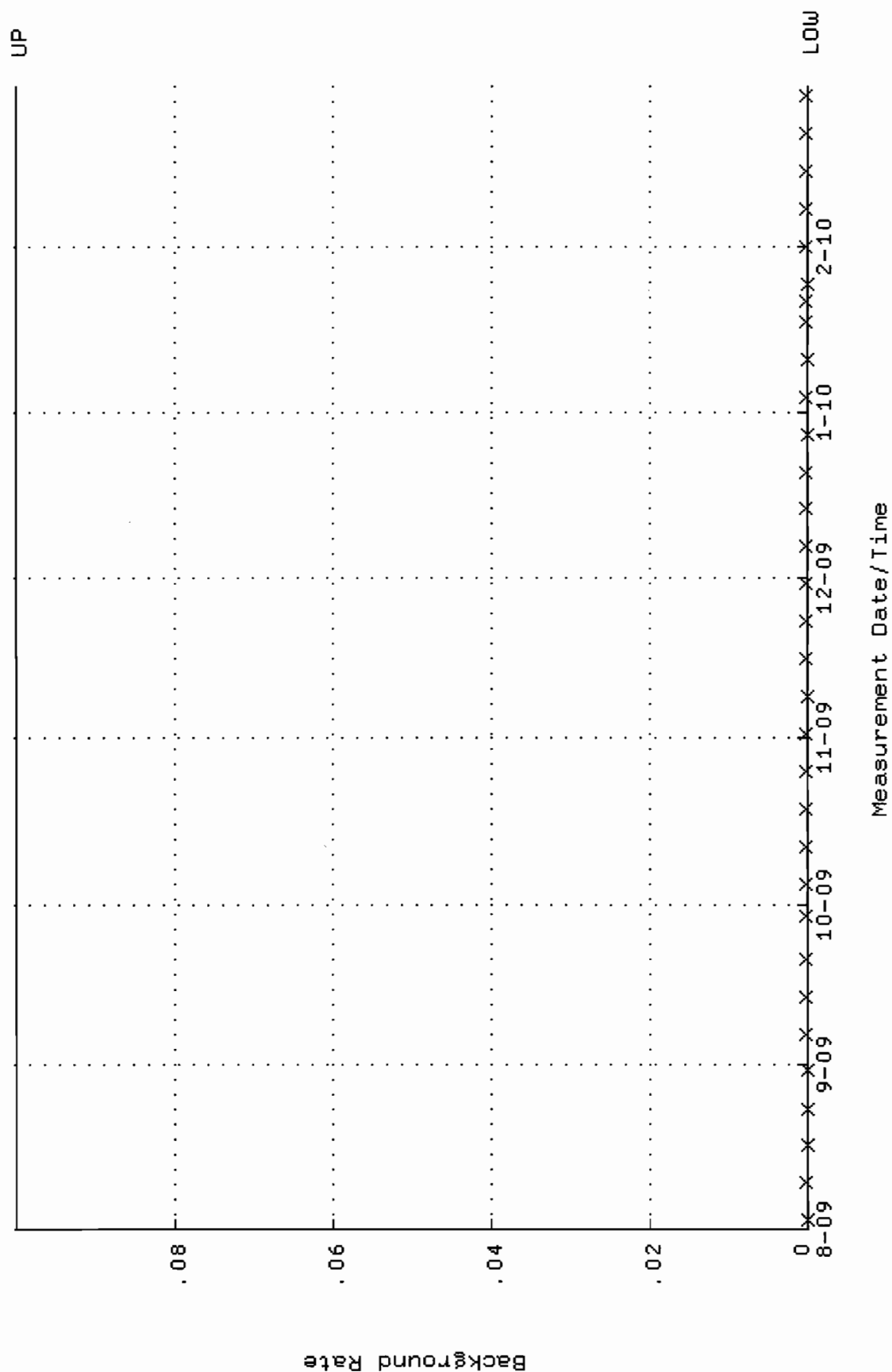
QA filename : DKA100:[ENV\_ALPHA.QA.W]W242.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:09:21 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.370324 through 0.399338



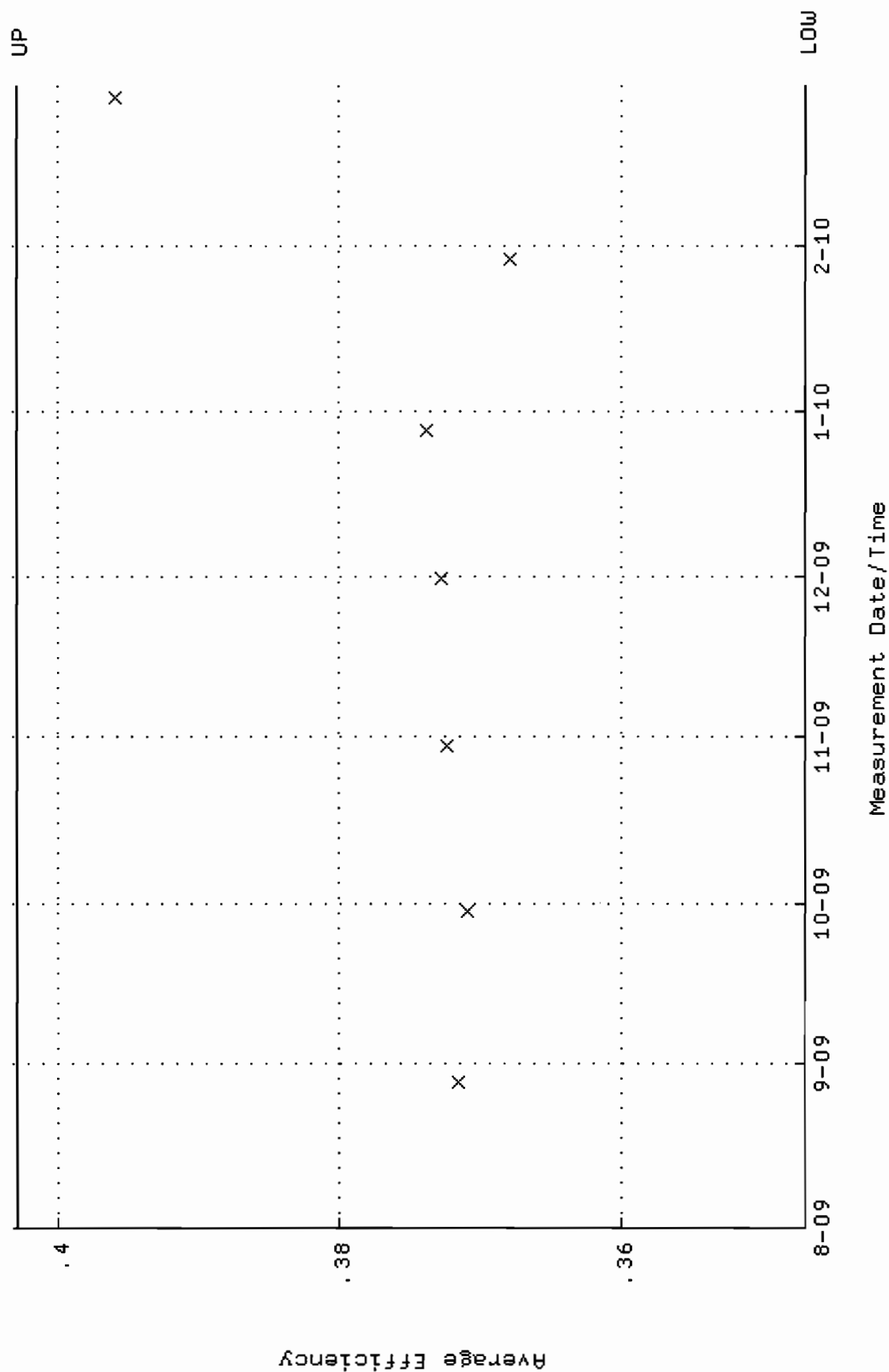
QA filename : DKA100:[ENV\_ALPHA.QA.W]W242.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:09:21 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 84.8419 through 91.3223



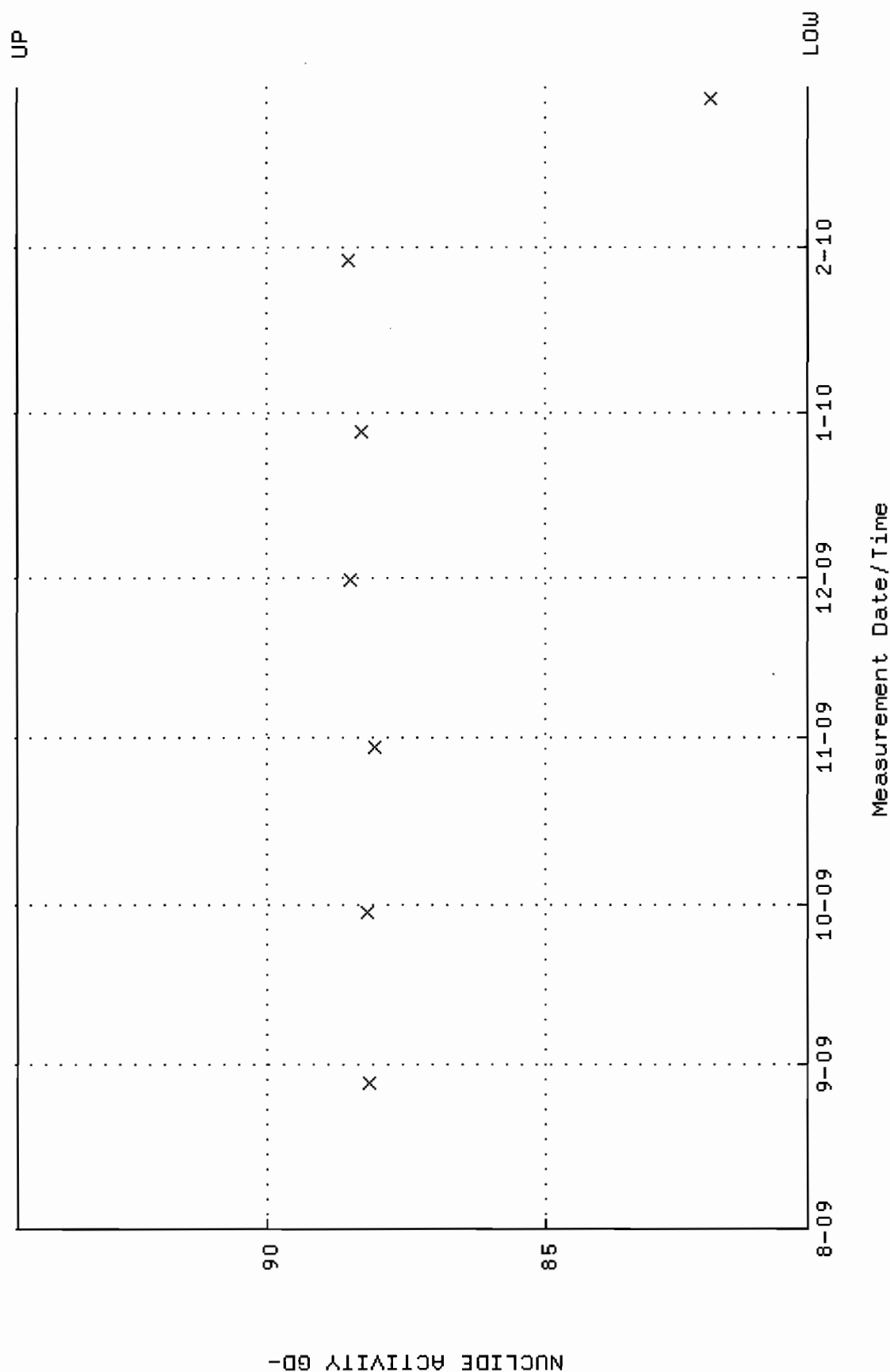
QA filename : DKA100:[ENV\_ALPHA.QA.B]B242.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:27:31 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



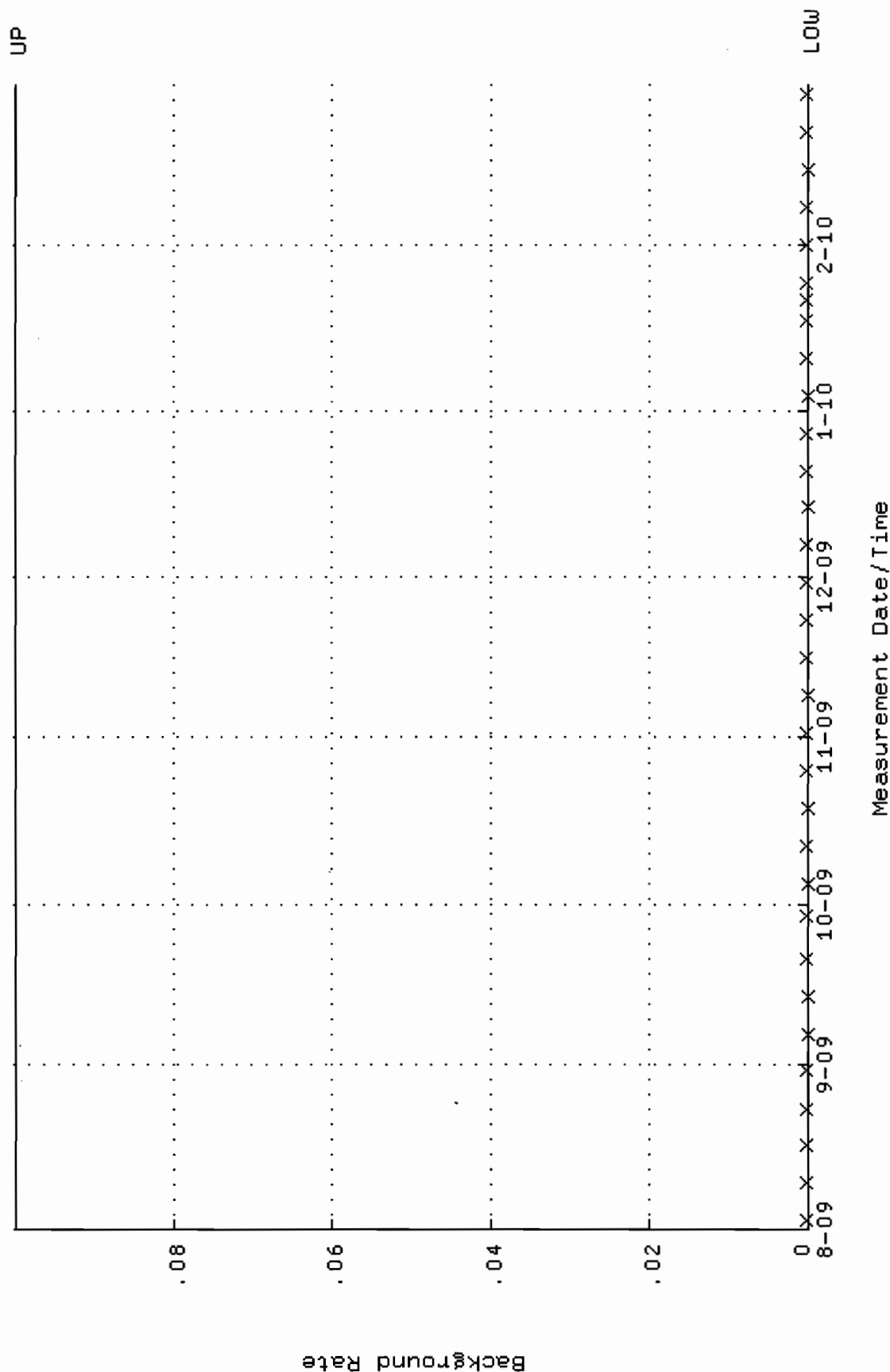
QA filename : DKA100:[ENV\_ALPHA.QA.W]W244.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:09:32 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.346871 through 0.403035



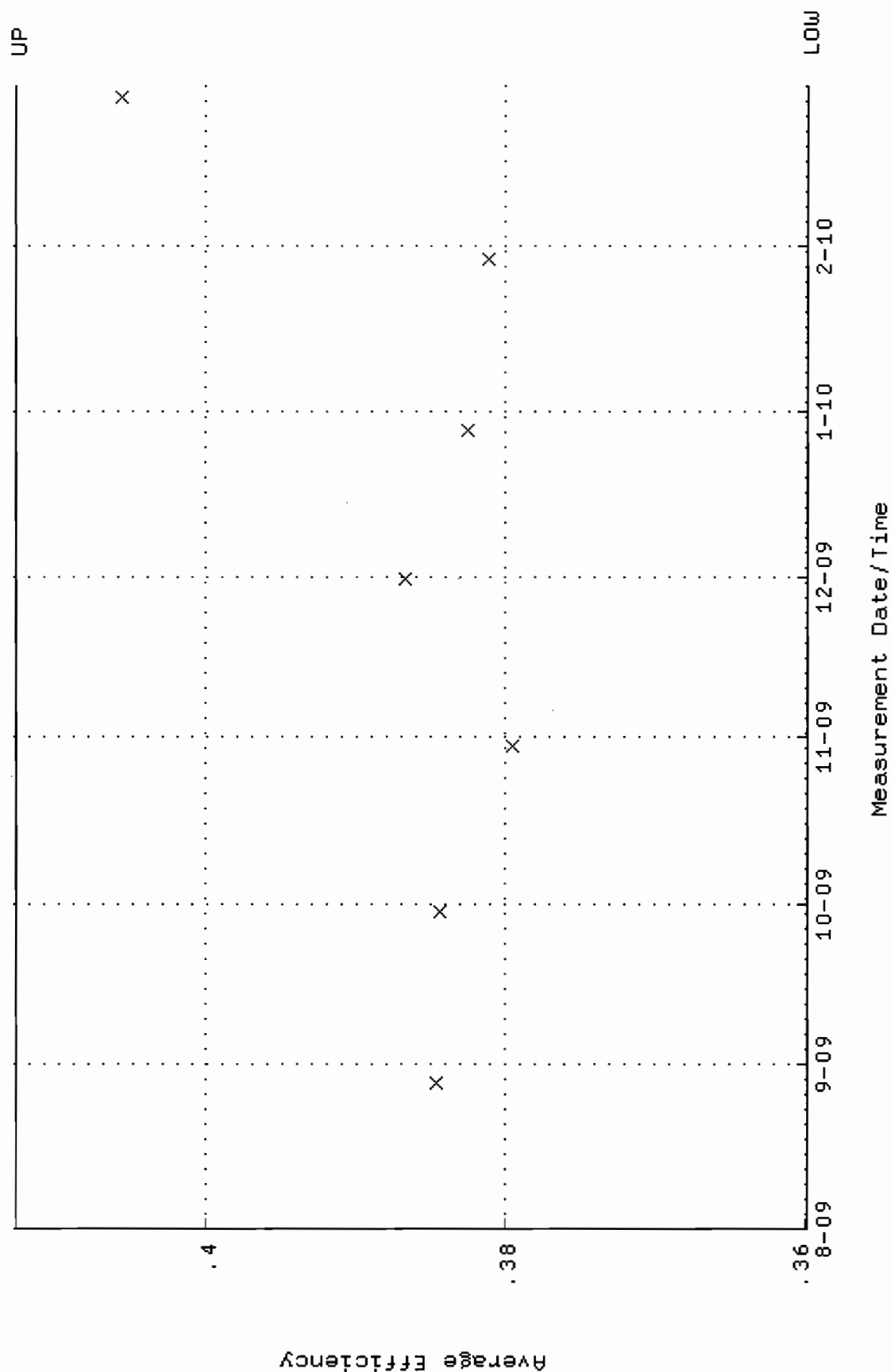
QA filename : DKA100:[ENV\_ALPHA.QA.W]W244.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:09:32 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 80.2814 through 94.4734



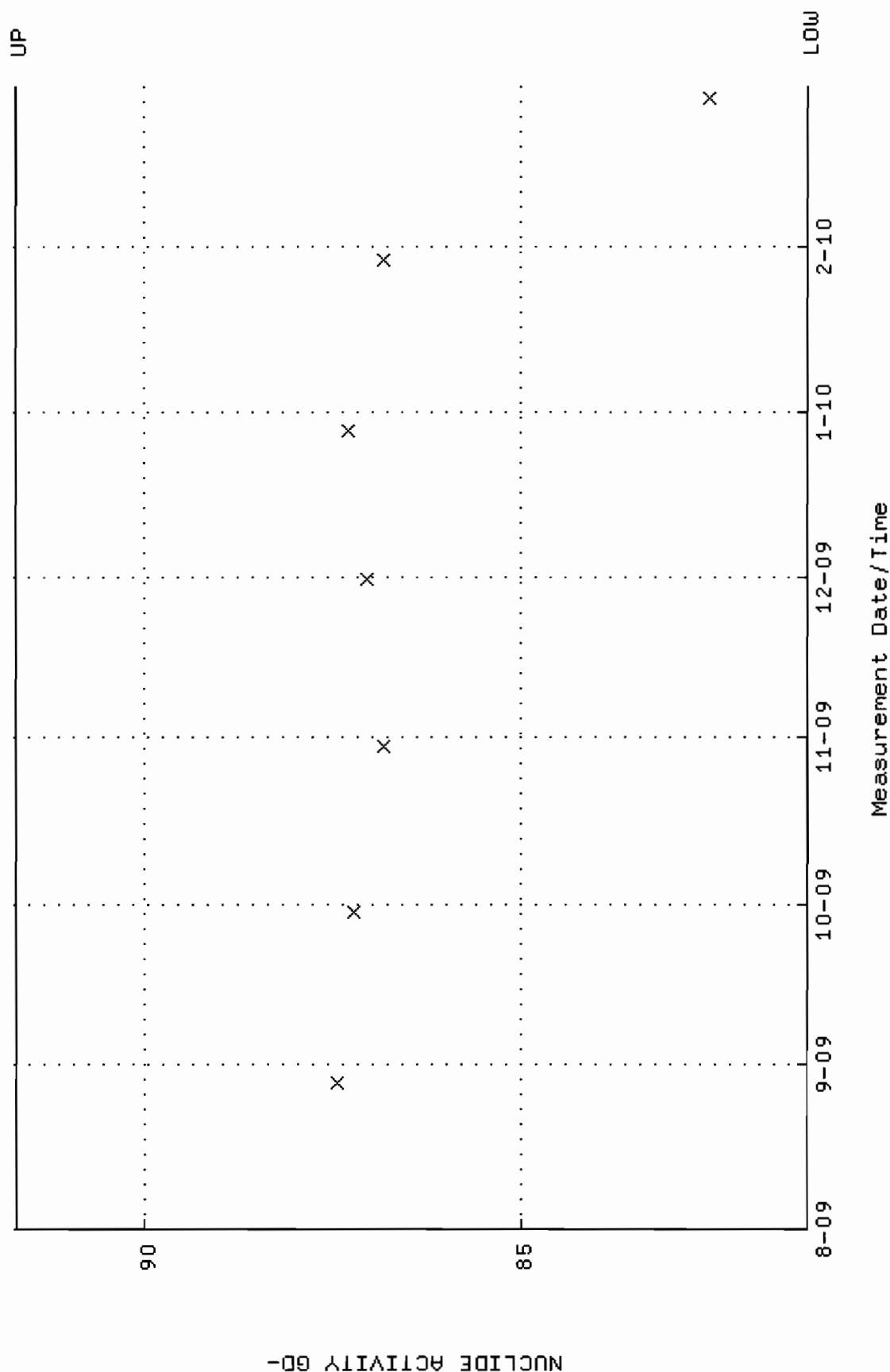
QA filename : DKA100:[ENV\_ALPHA.QA.B]B244.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:27:40 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



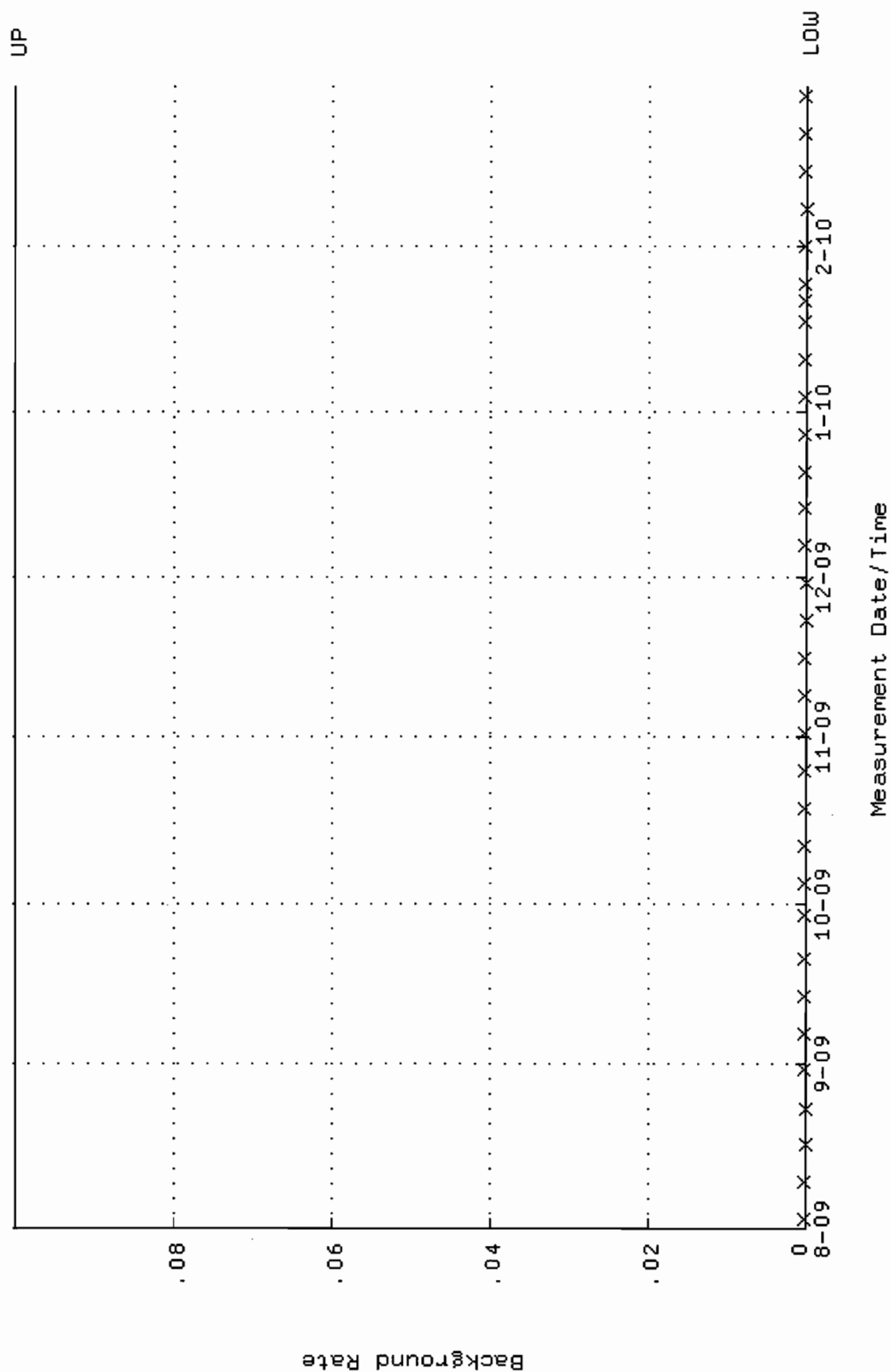
QA filename : DKA100:[ENV\_ALPHA.QA.W]W245.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:09:37 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.359838 through 0.412714



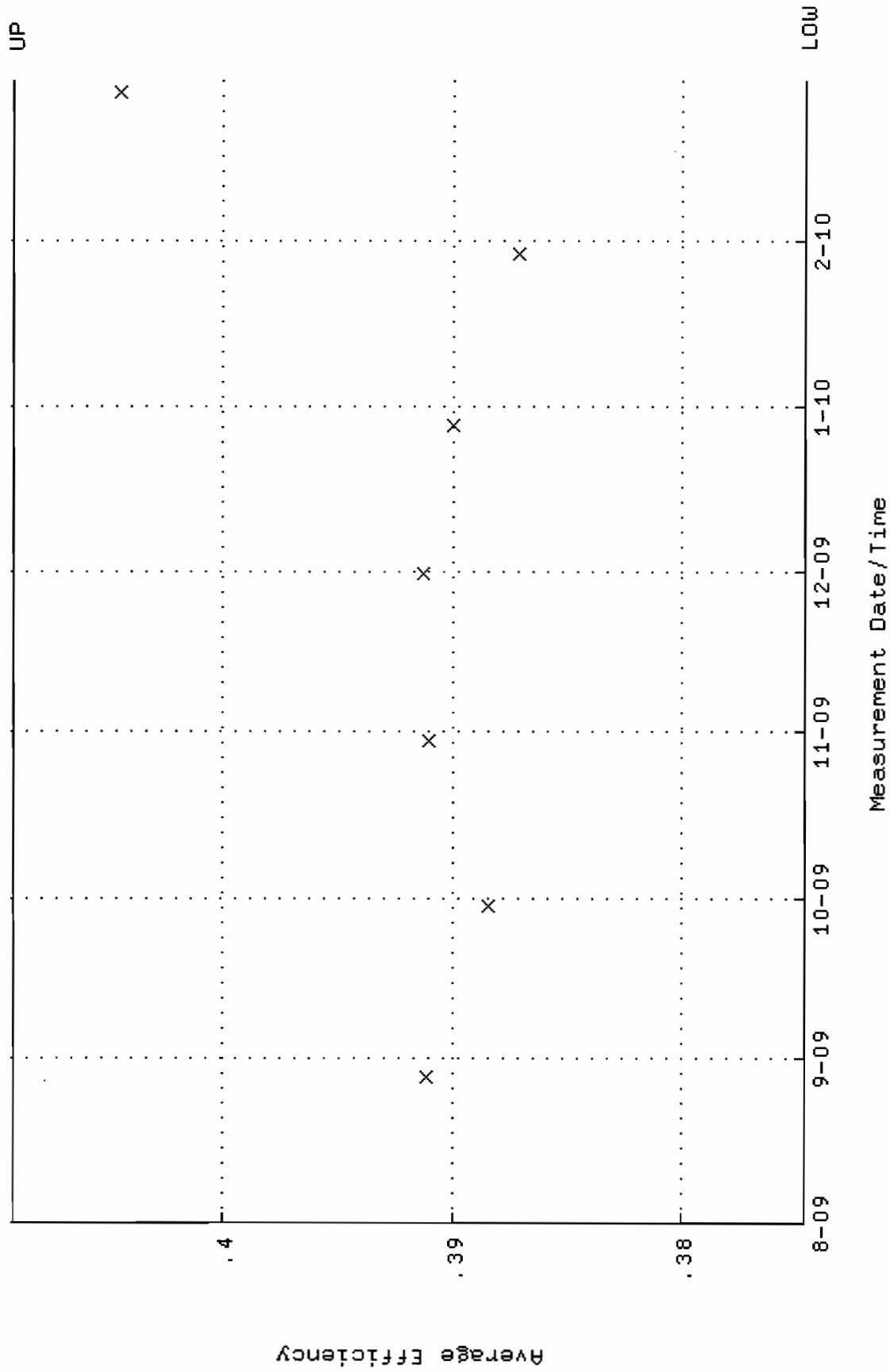
QA filename : DKA100:[ENV-ALPHA.QA.W]W245.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:09:37 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 81.1644 through 91.7216



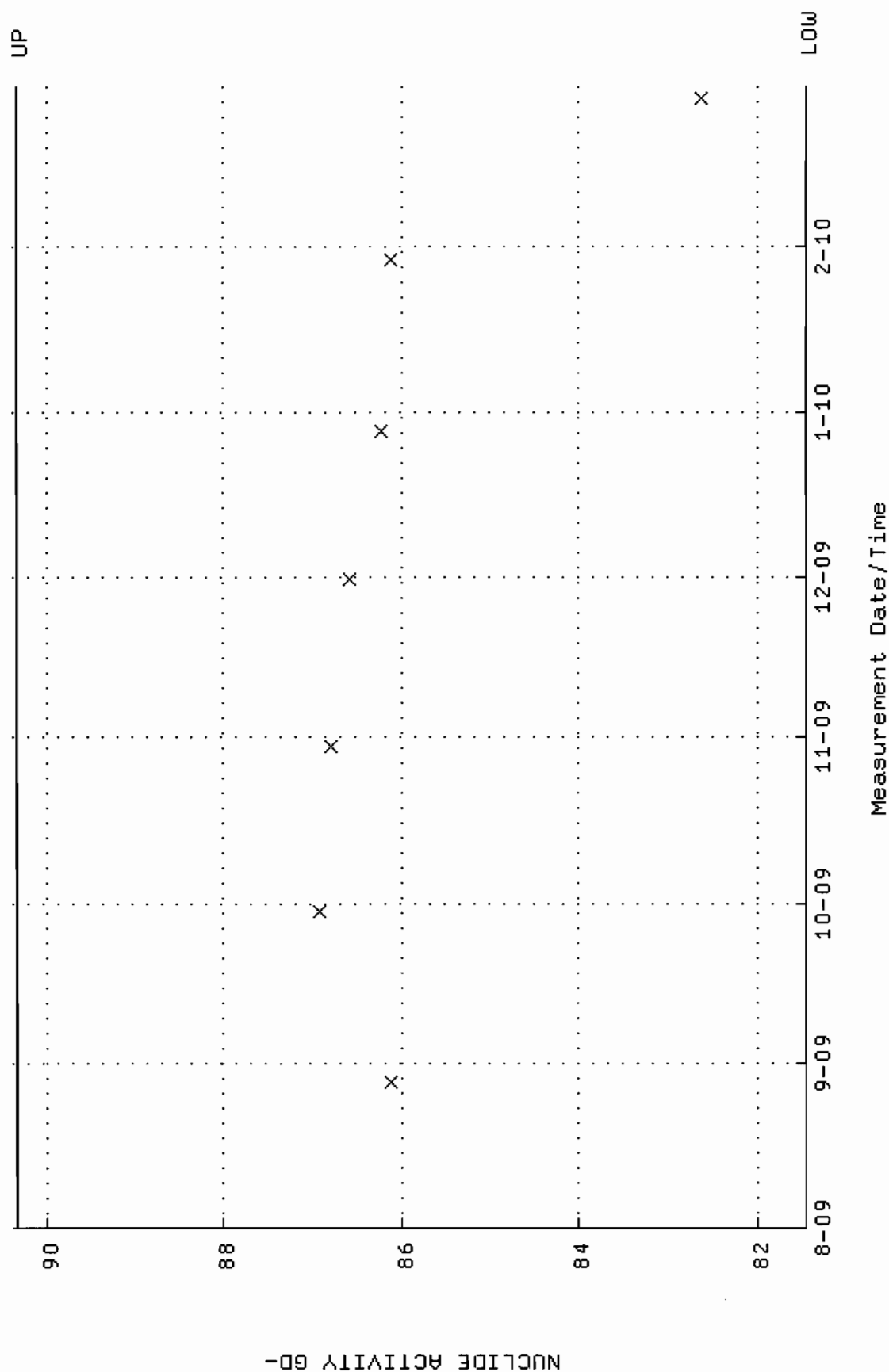
QA filename : DKA100:[ENV\_ALPHA.QA.B]B245.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:27:45 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



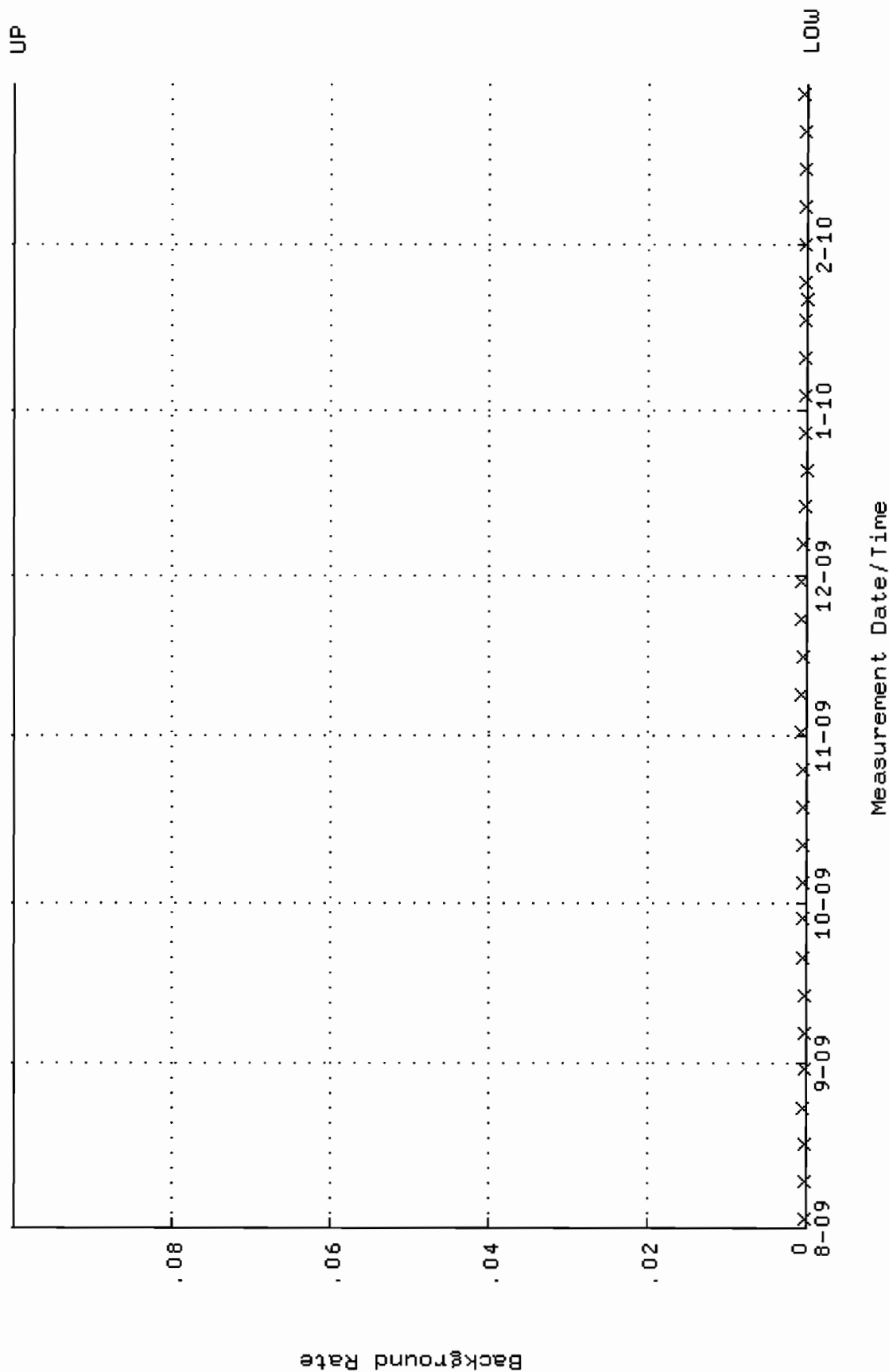
QA filename : DKA100:[ENV\_ALPHA.QA.W]W251.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:10:12 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.374659 through 0.409089



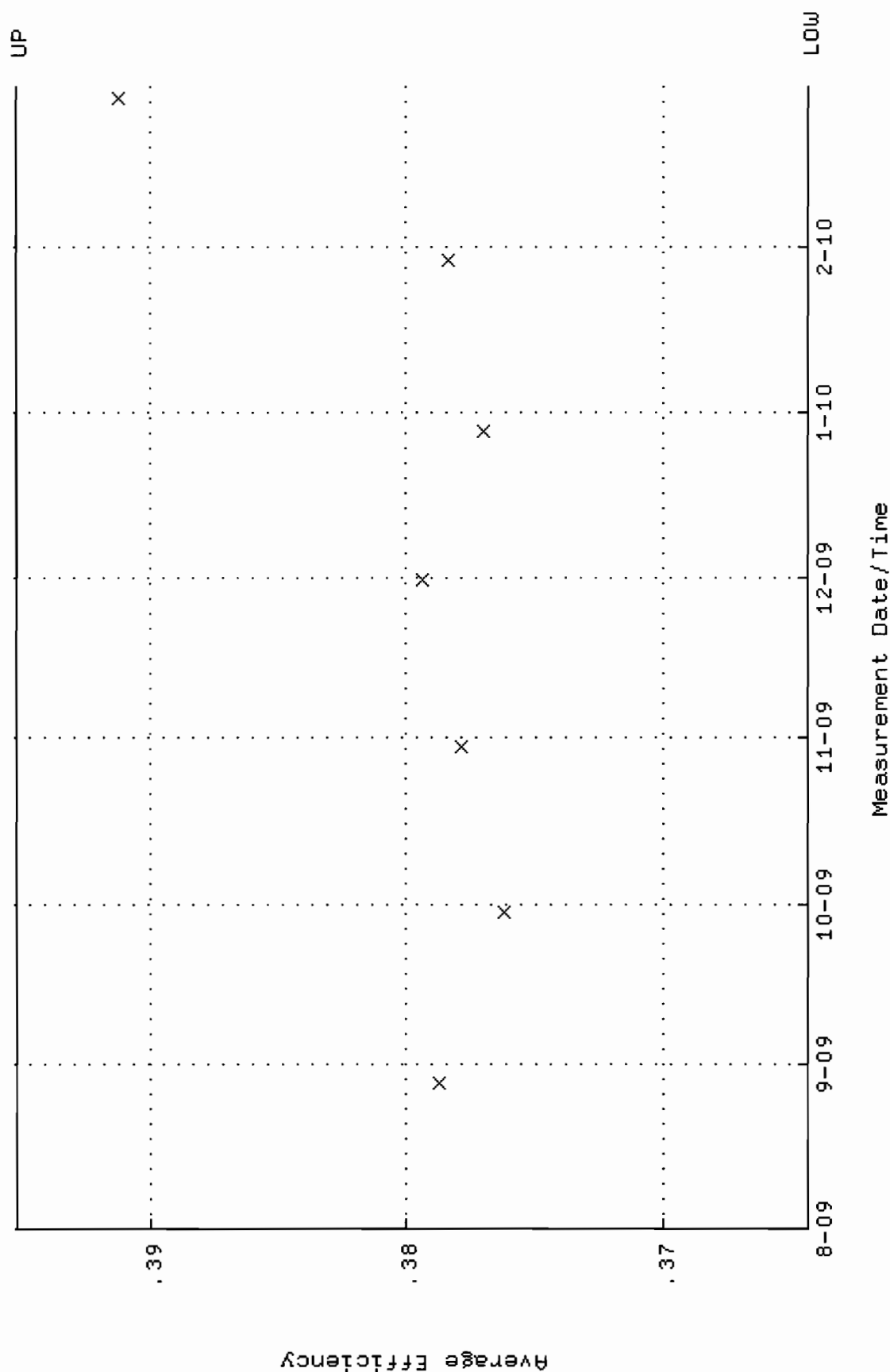
QA filename : DKA100:[ENV\_ALPHA.QA.W]W251.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:10:12 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 81.4582 through 90.3490



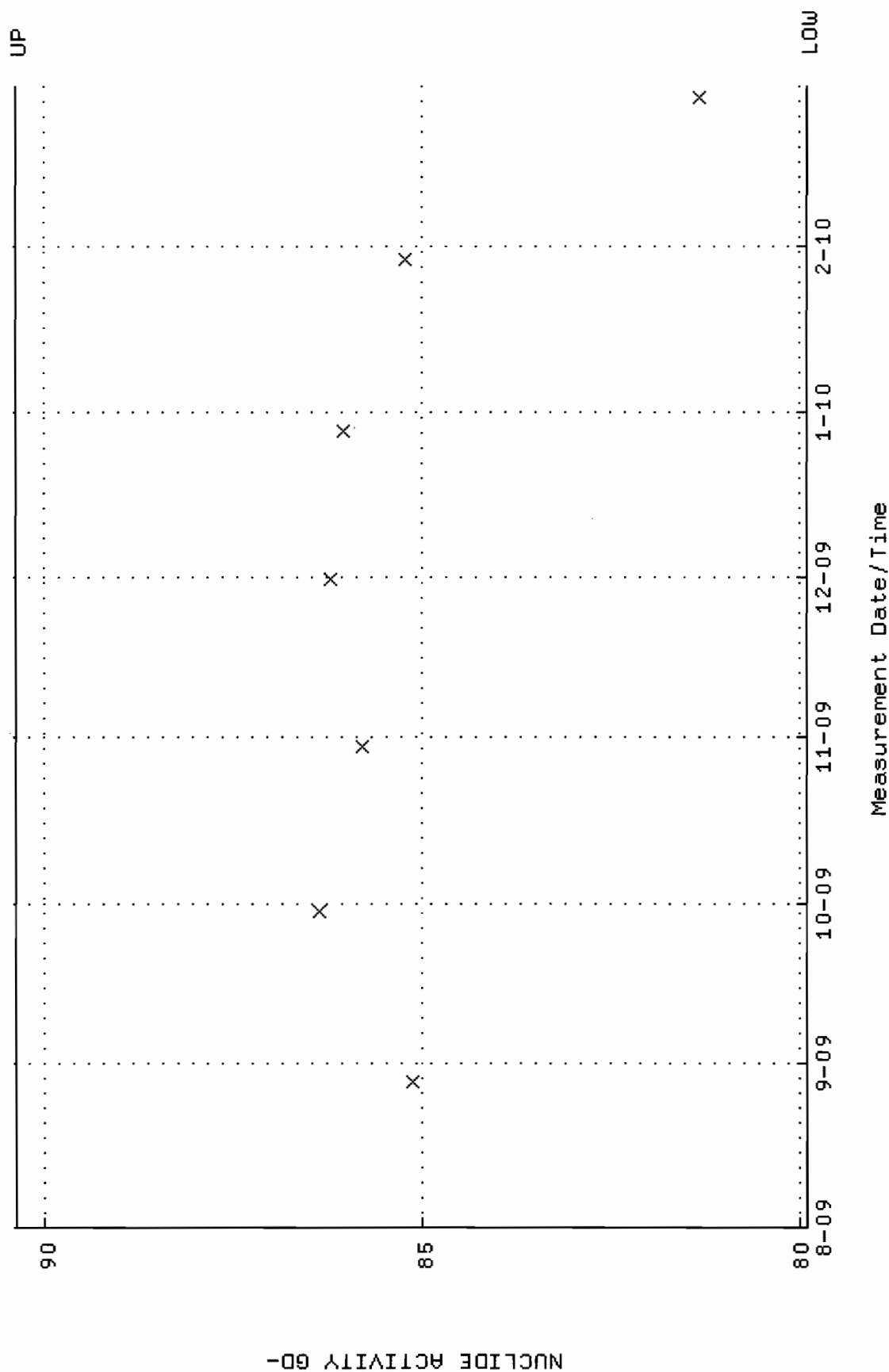
QA filename : DKA100:[ENV\_ALPHA.QA.B]B251.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:28:13 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



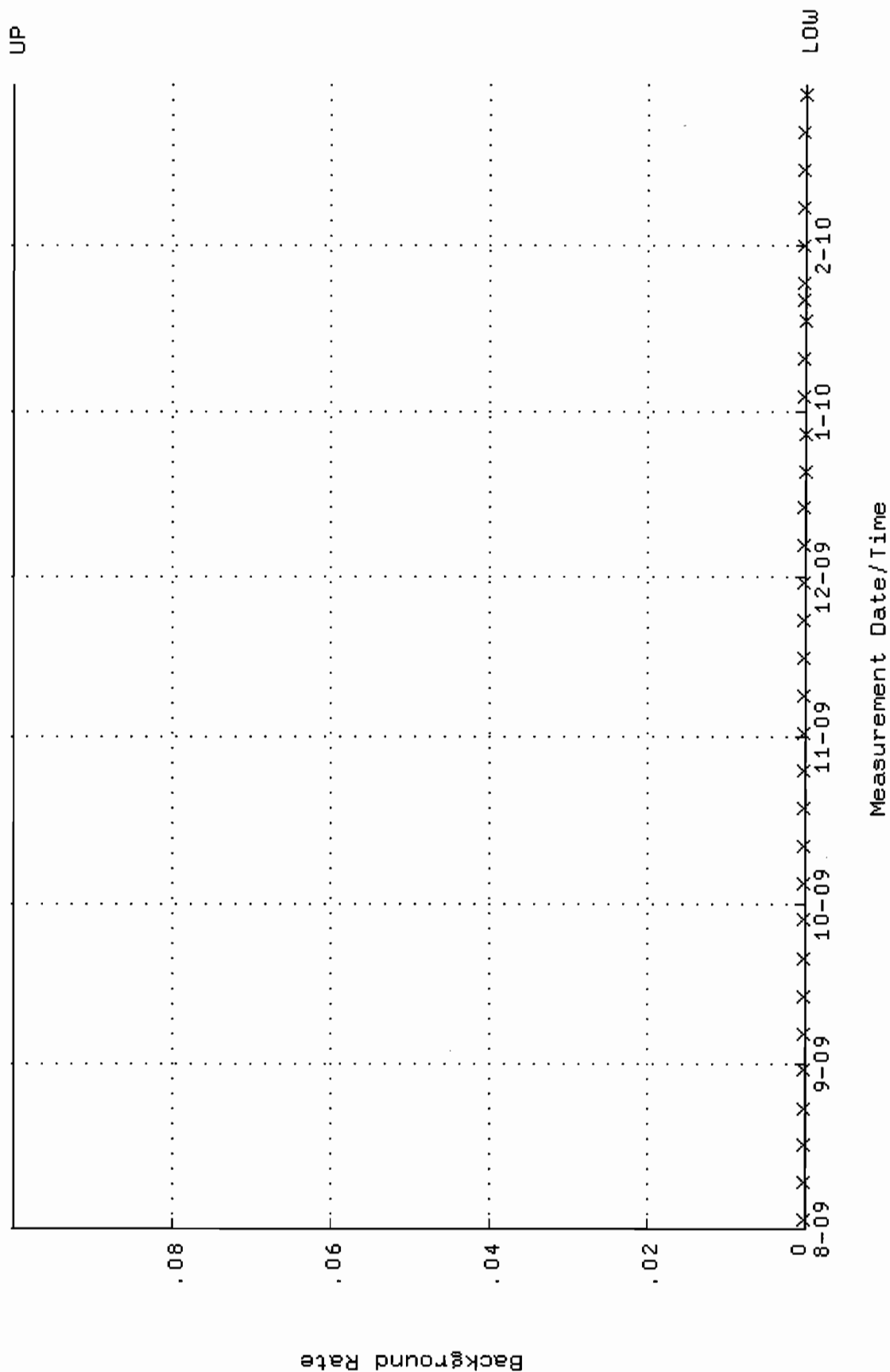
QA filename : DKA100:[ENV\_ALPHA.QA.W]W252.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:10:17 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.364281 through 0.395267



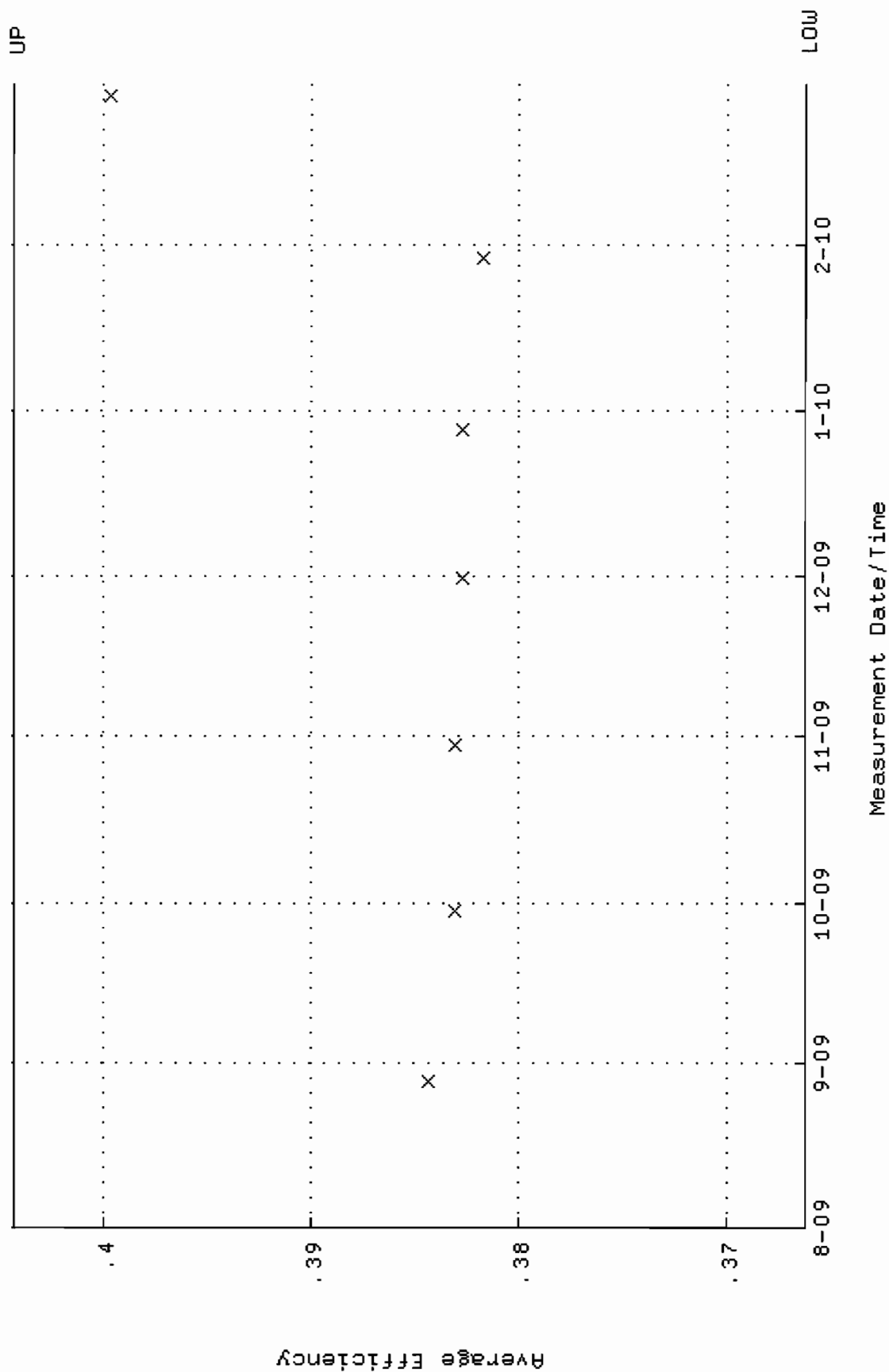
QA filename : DKA100:[ENV\_ALPHA.QA.W]W252.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:10:17 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 79.9099 through 90.3785



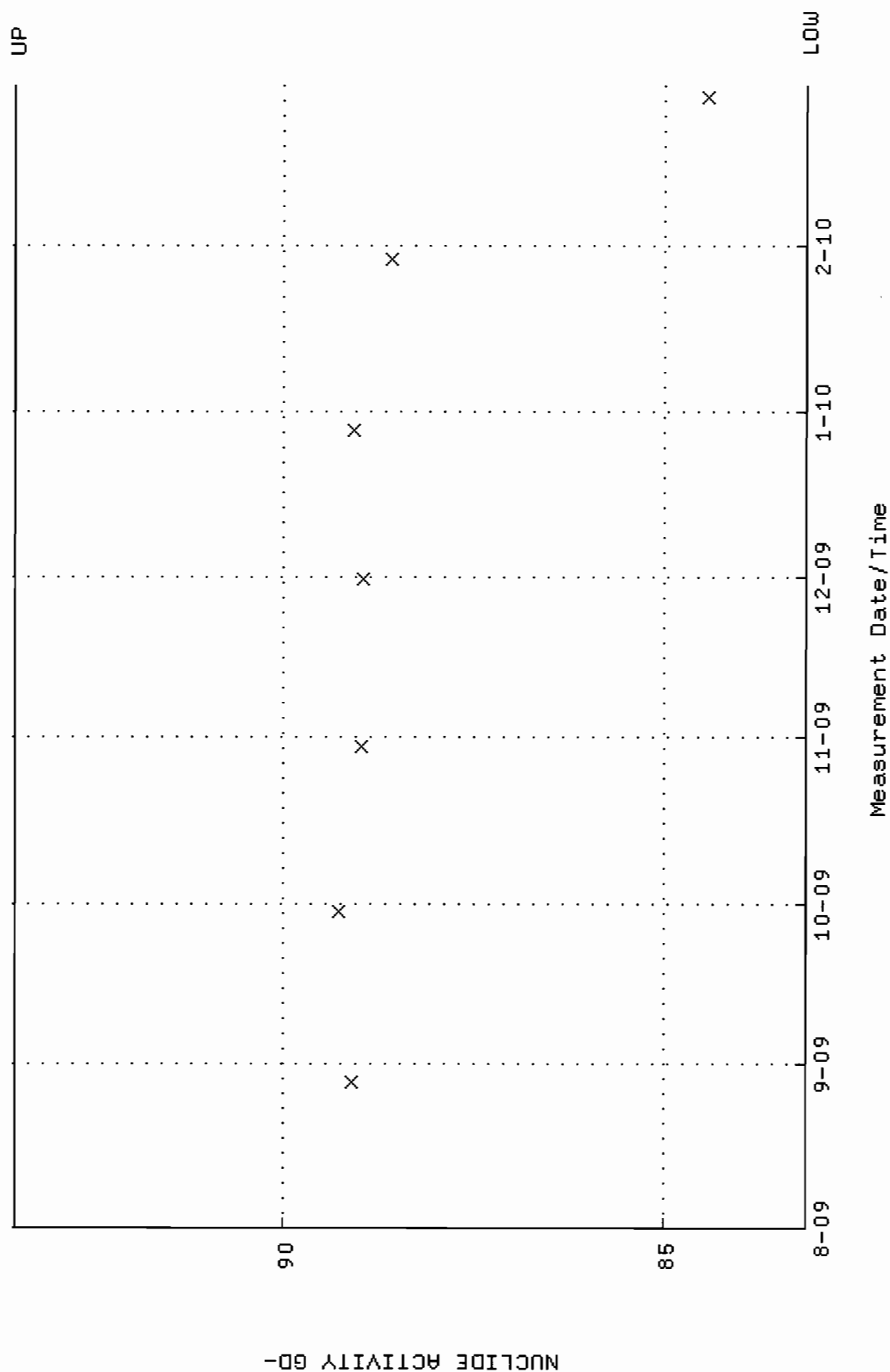
QA filename : DKA100:[ENV\_ALPHA.QA.B]B252.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:28:18 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



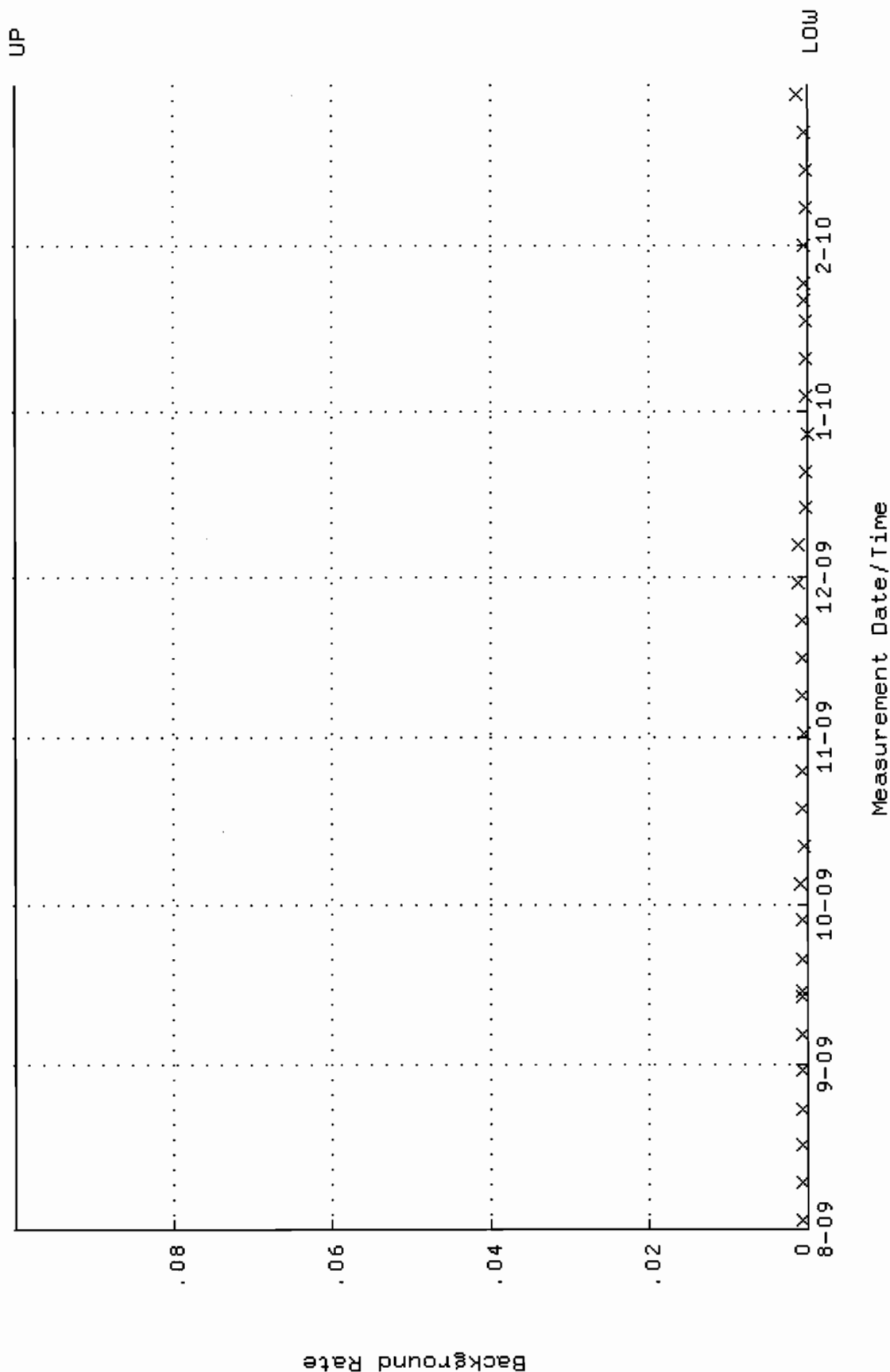
QA filename : DKA100:[ENV\_ALPHA.QA.W]W253.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:10:22 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.366220 through 0.404308



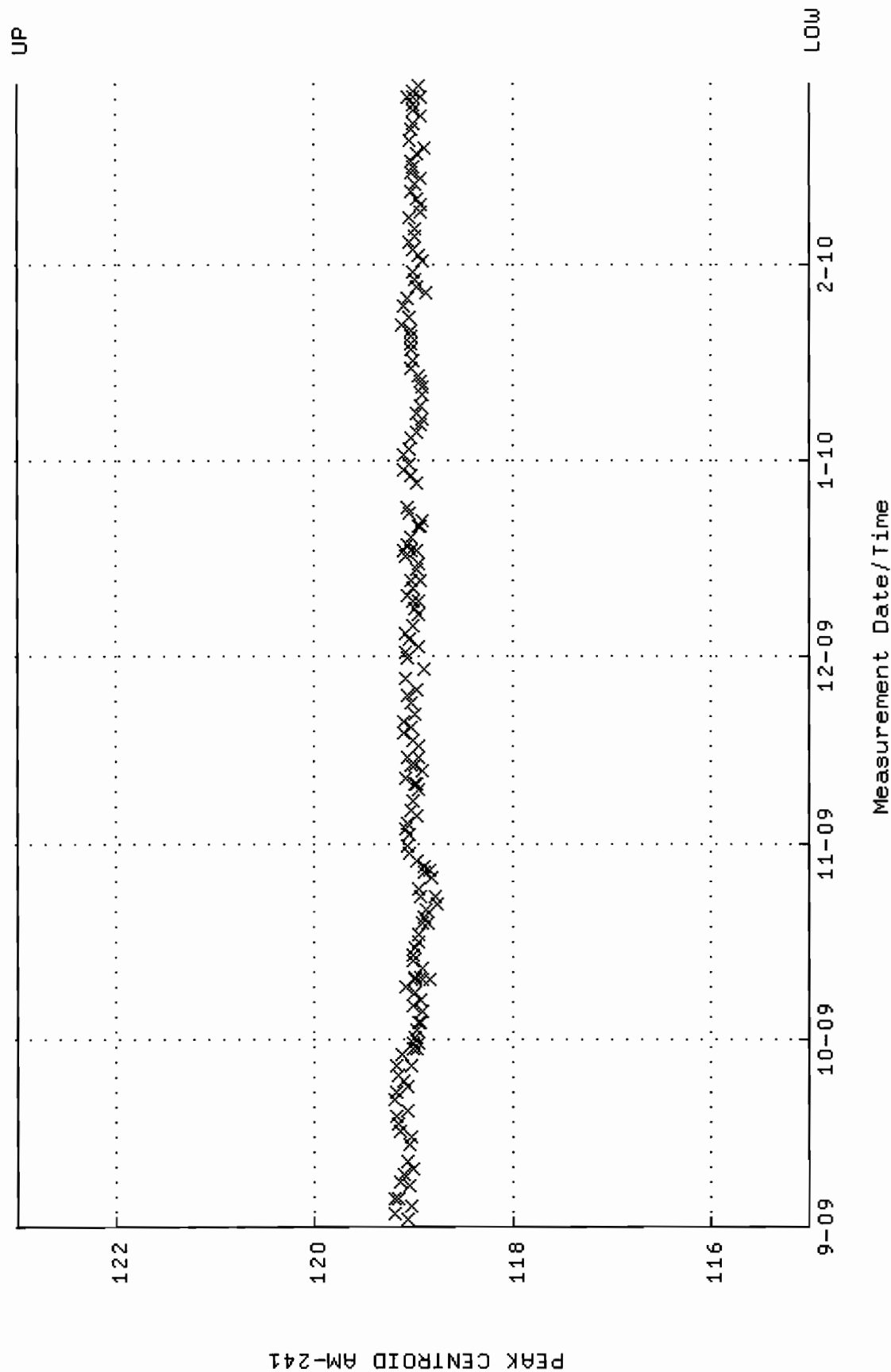
QA filename : DKA100:[ENV\_ALPHA.QA.W]W253.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:10:22 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 83.1439 through 93.5297



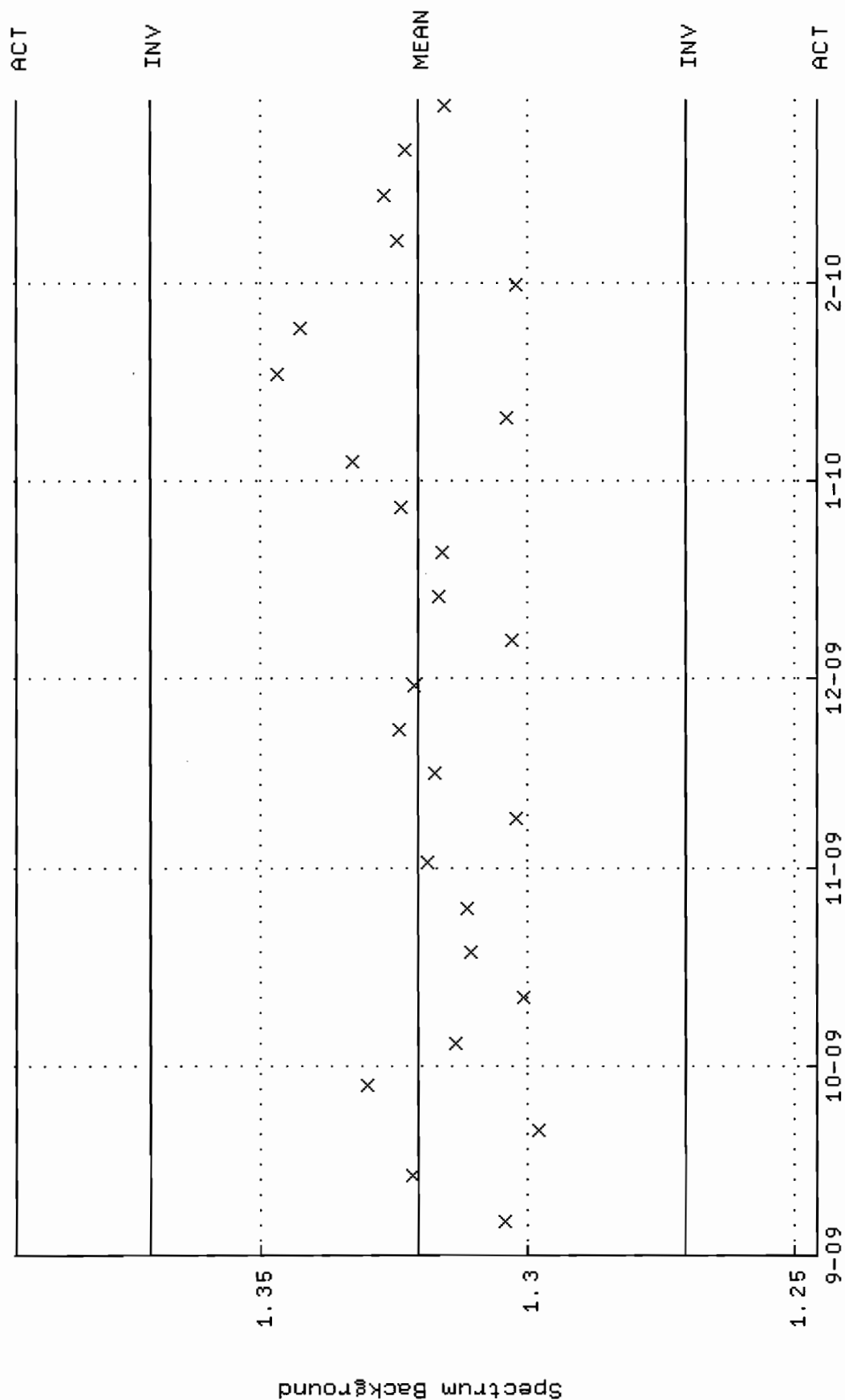
QA filename : DKA100:[ENV\_ALPHA.QA.B]B253.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:28:23 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



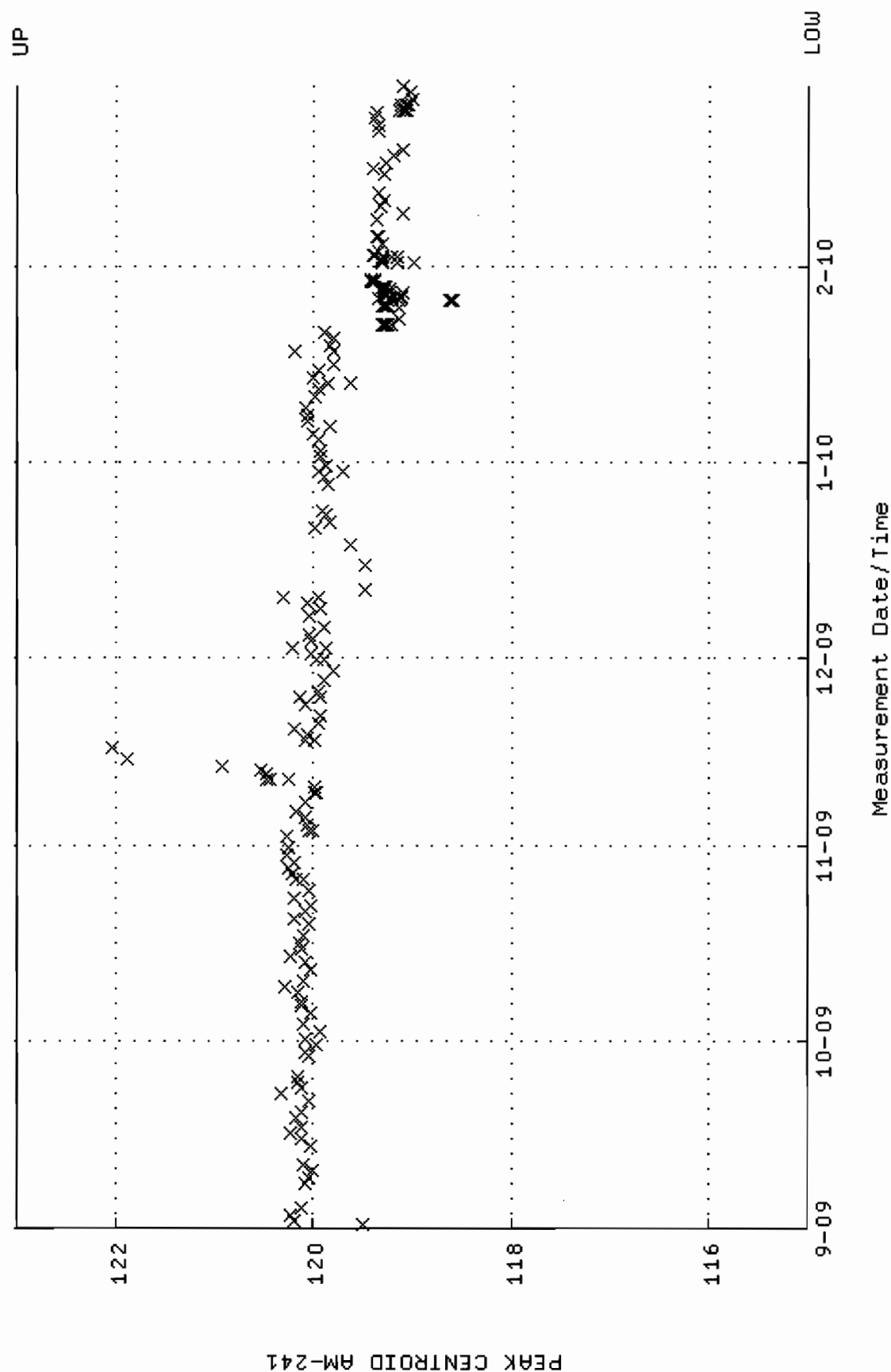
QA filename : DKA100:[CANNBERRA.GAMMA.SCUSR.QA]QCC\_GAM04\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 05:22:58 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



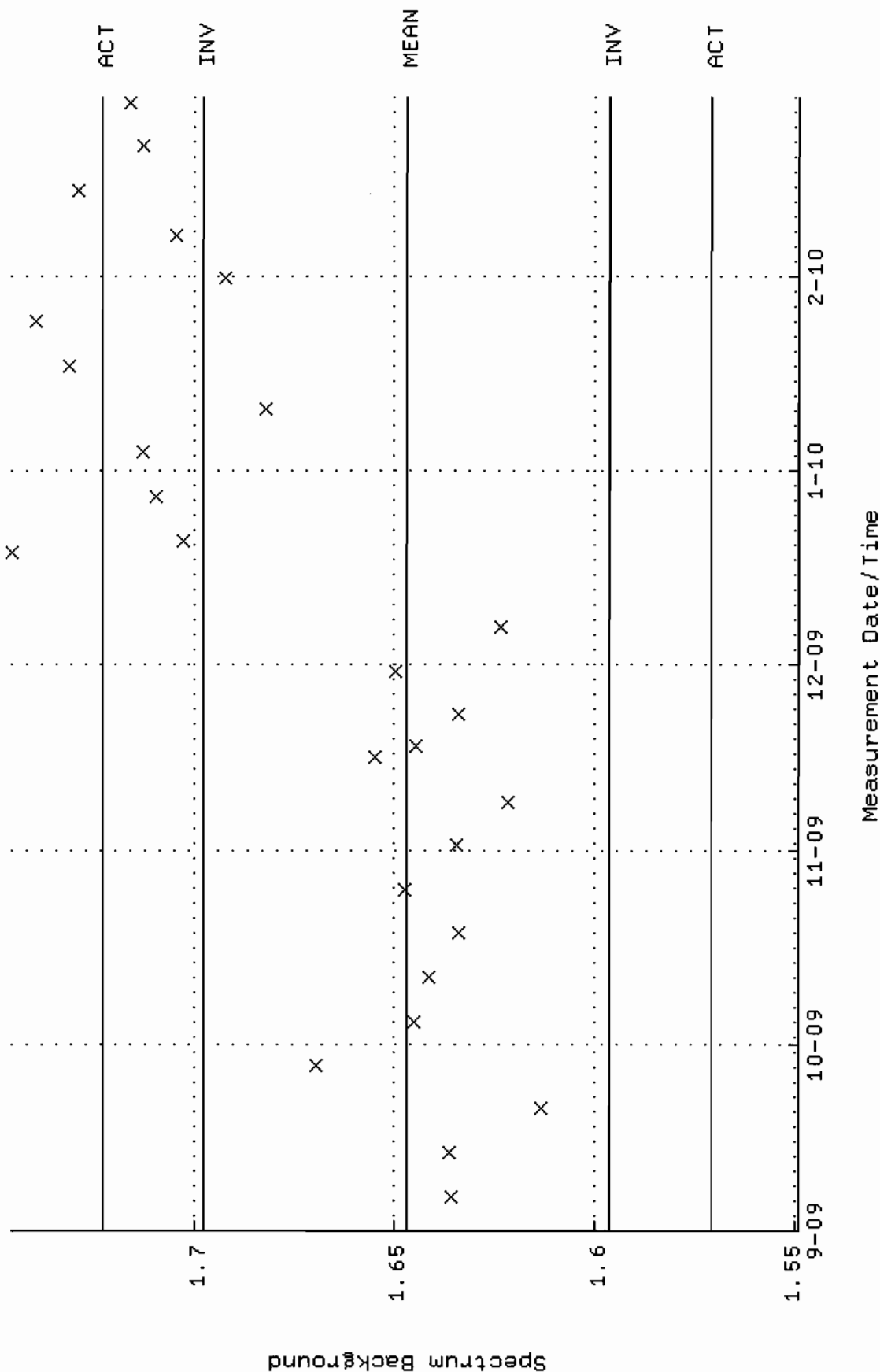
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM04.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:38:33 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.32050 +- 2.495234E-02 (1.89 %)



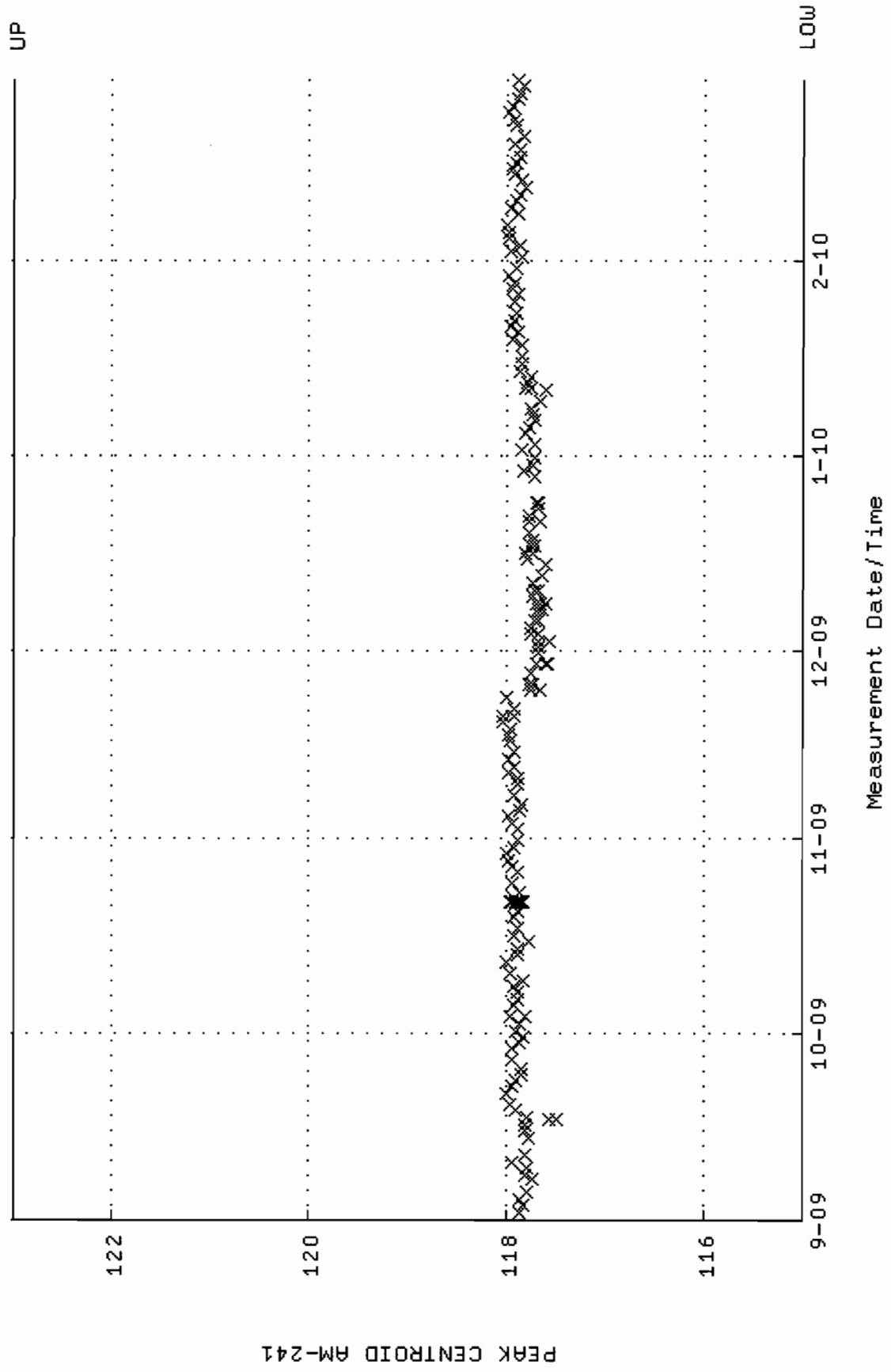
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM05\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 1-SEP-2009 14:54:46 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM05.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:39:04 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.64719 +- 2.547087E-02 (1.55 %)



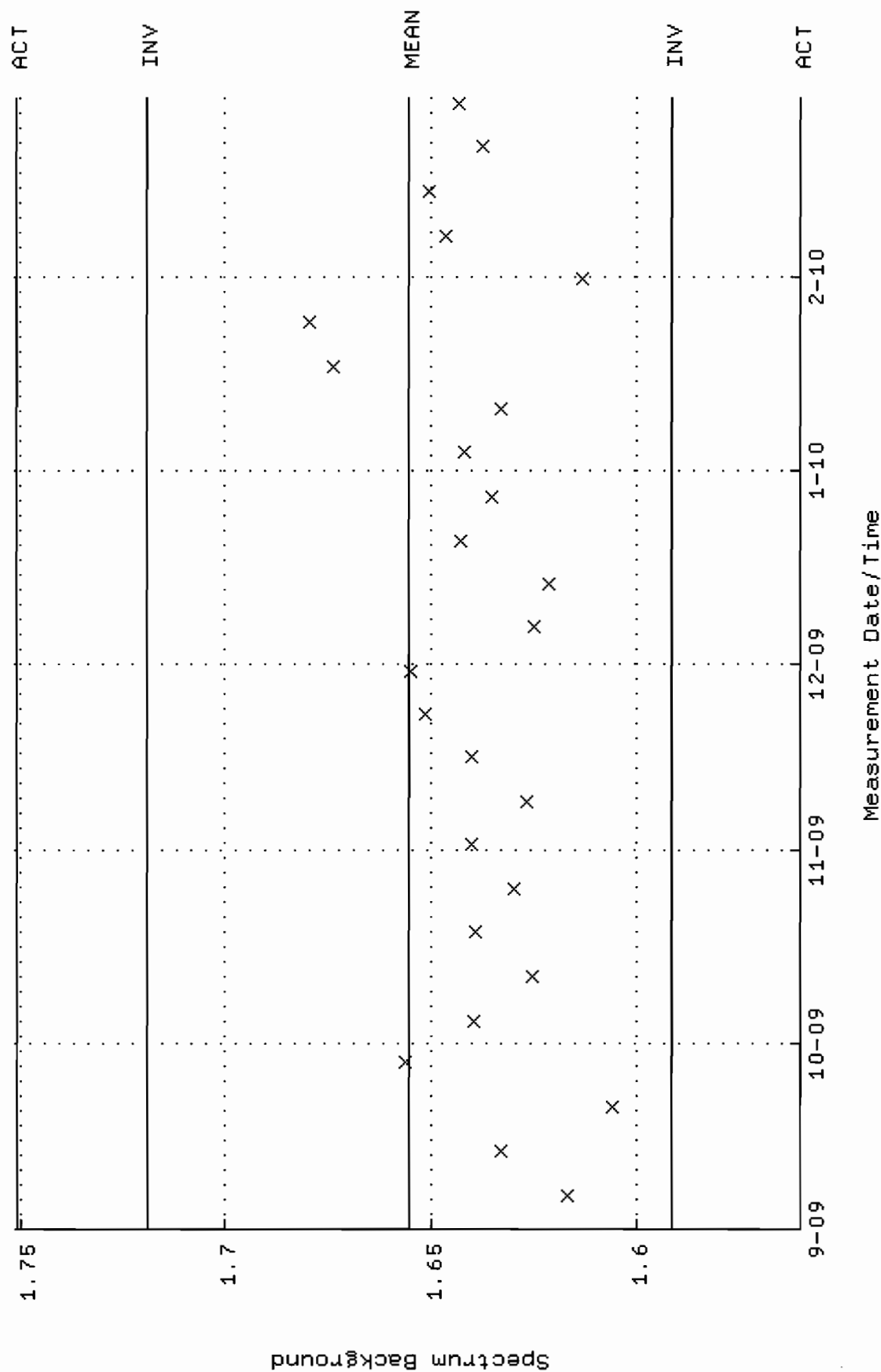
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM11-JAR.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 06:47:51 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



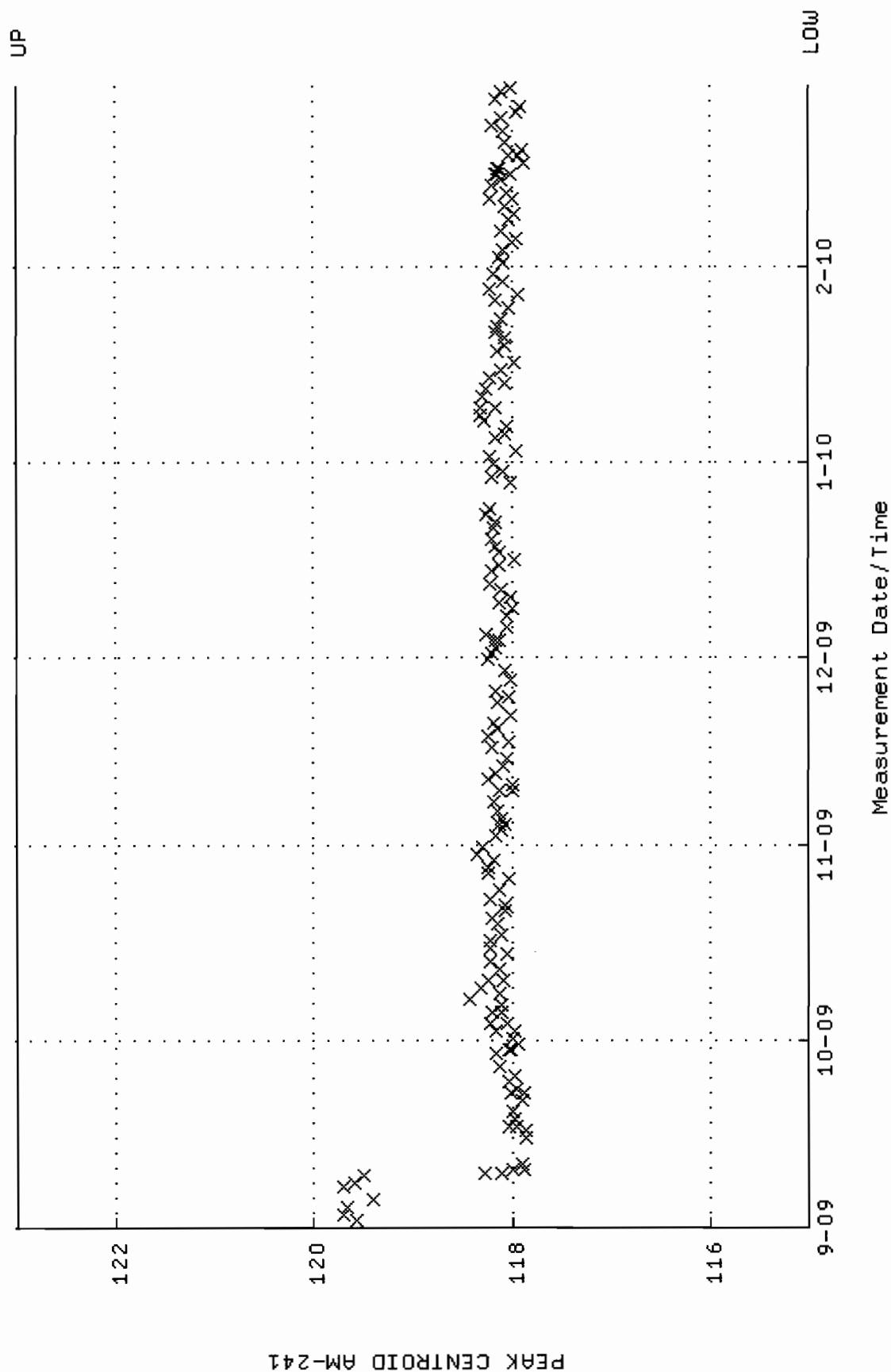
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QA filename      : DKA100:[CABERRA.GAMMA.SCUSR.QA]LBC-GAM11.QAF;1
Parameter Name   : BACKRATE (Spectrum Background Rate)
Start/End Dates  : 6-SEP-2009 11:41:47 through 1-MAR-2010 12:00:00
Mean +- Std Dev : 1.65552 +- 3.175806E-02 (1.92 %)

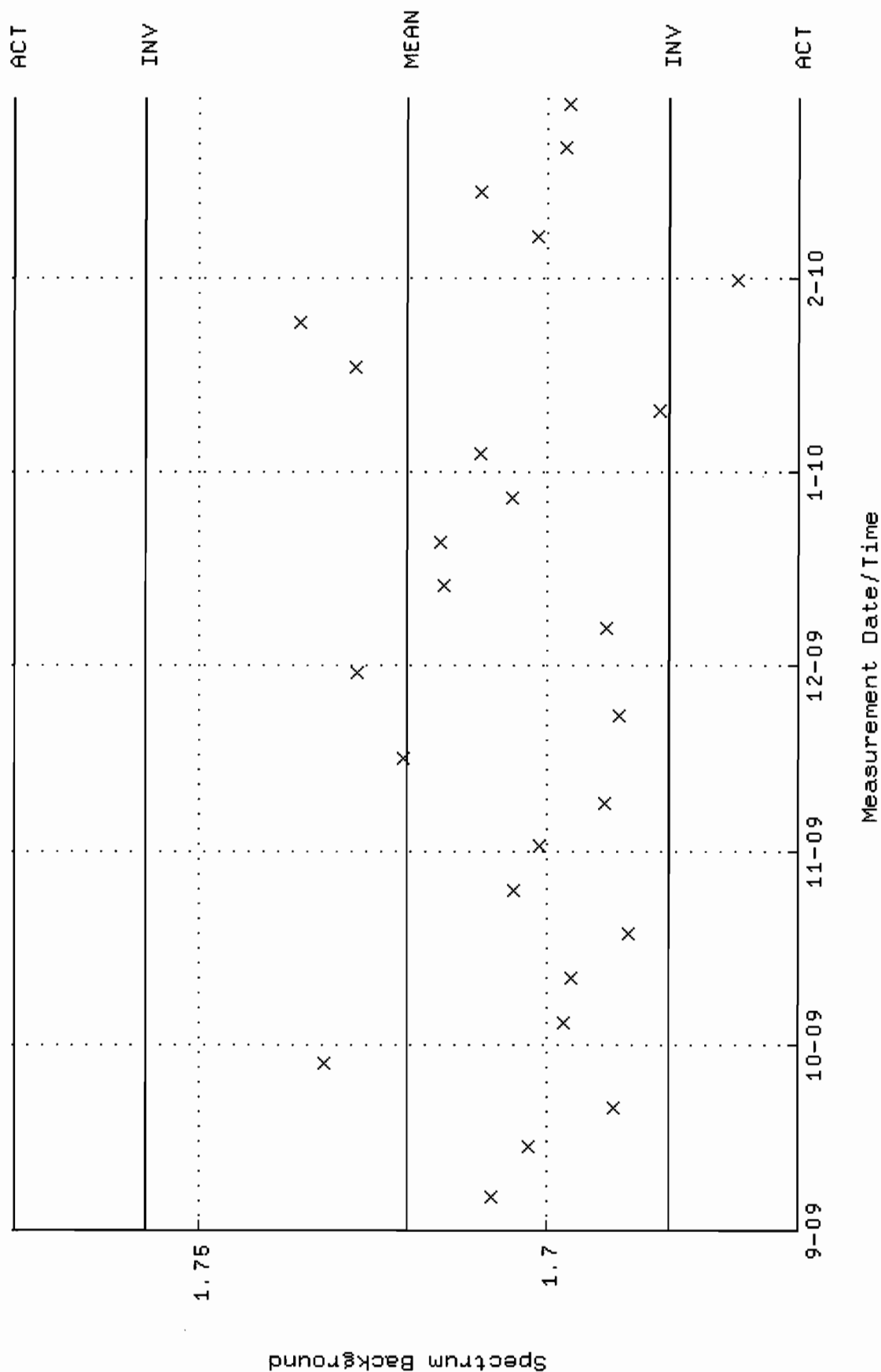
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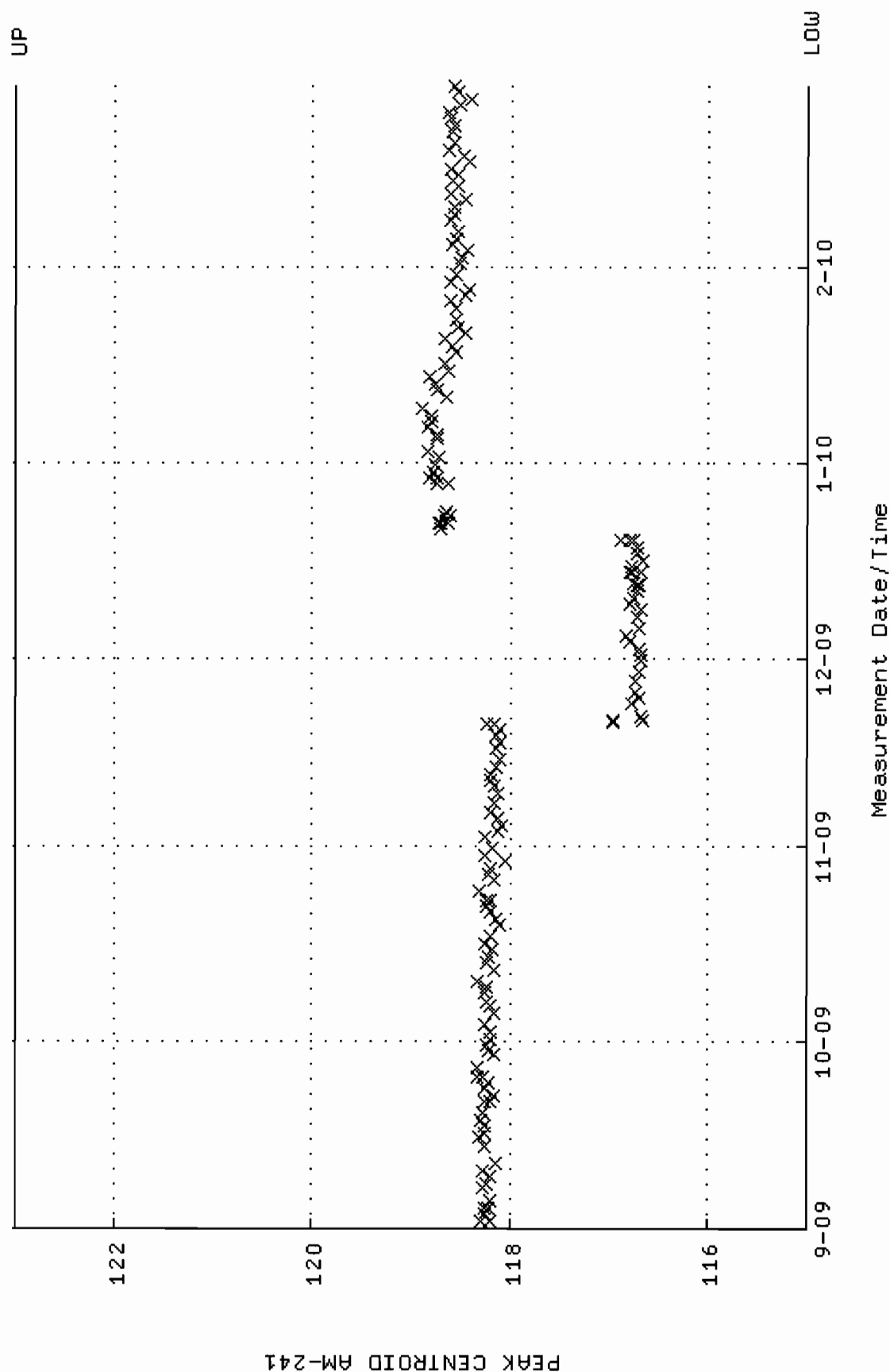
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM15\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 06:32:23 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



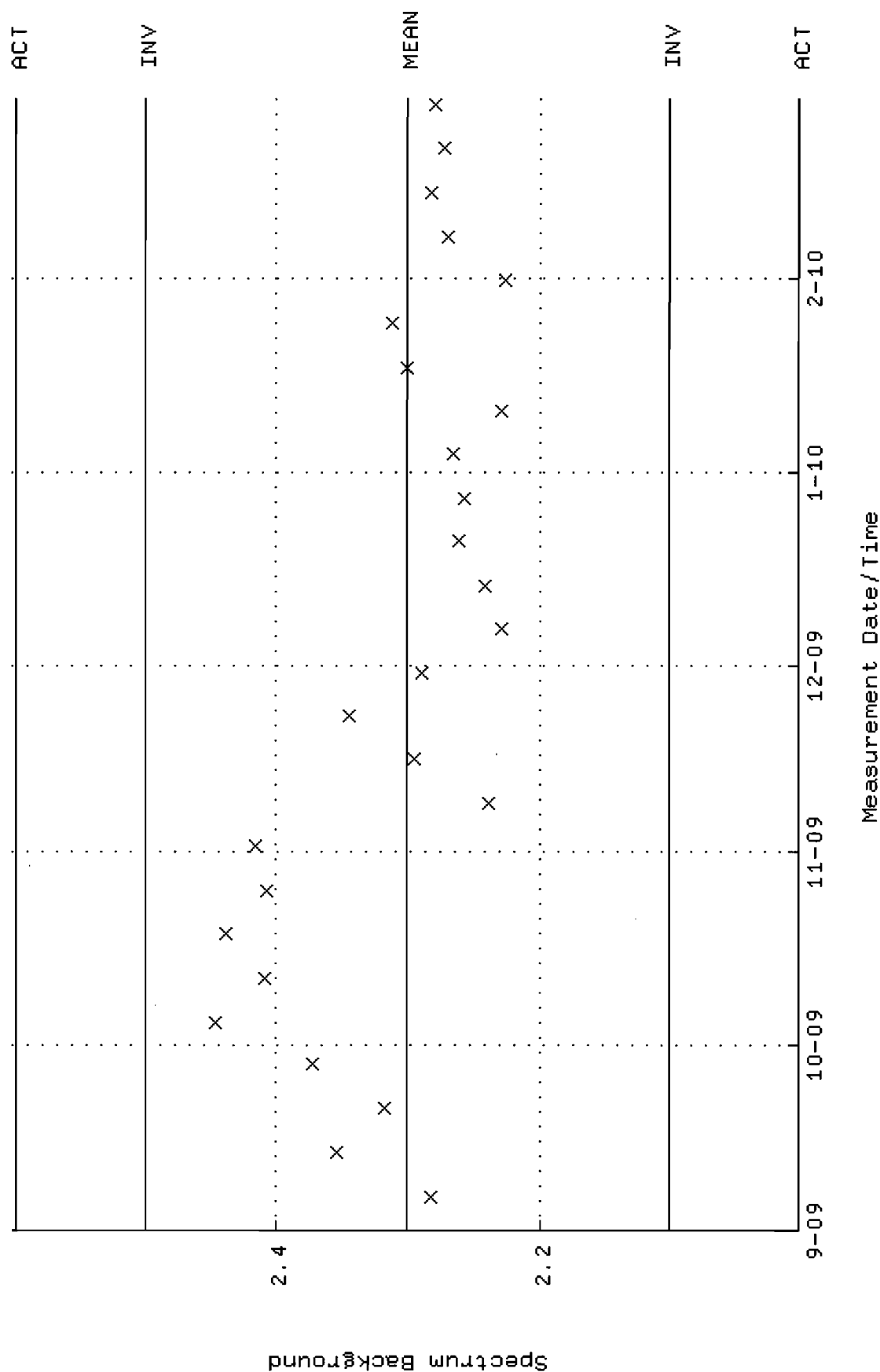
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM15.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:43:44 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.72024 +- 1.875820E-02 (1.09 %)



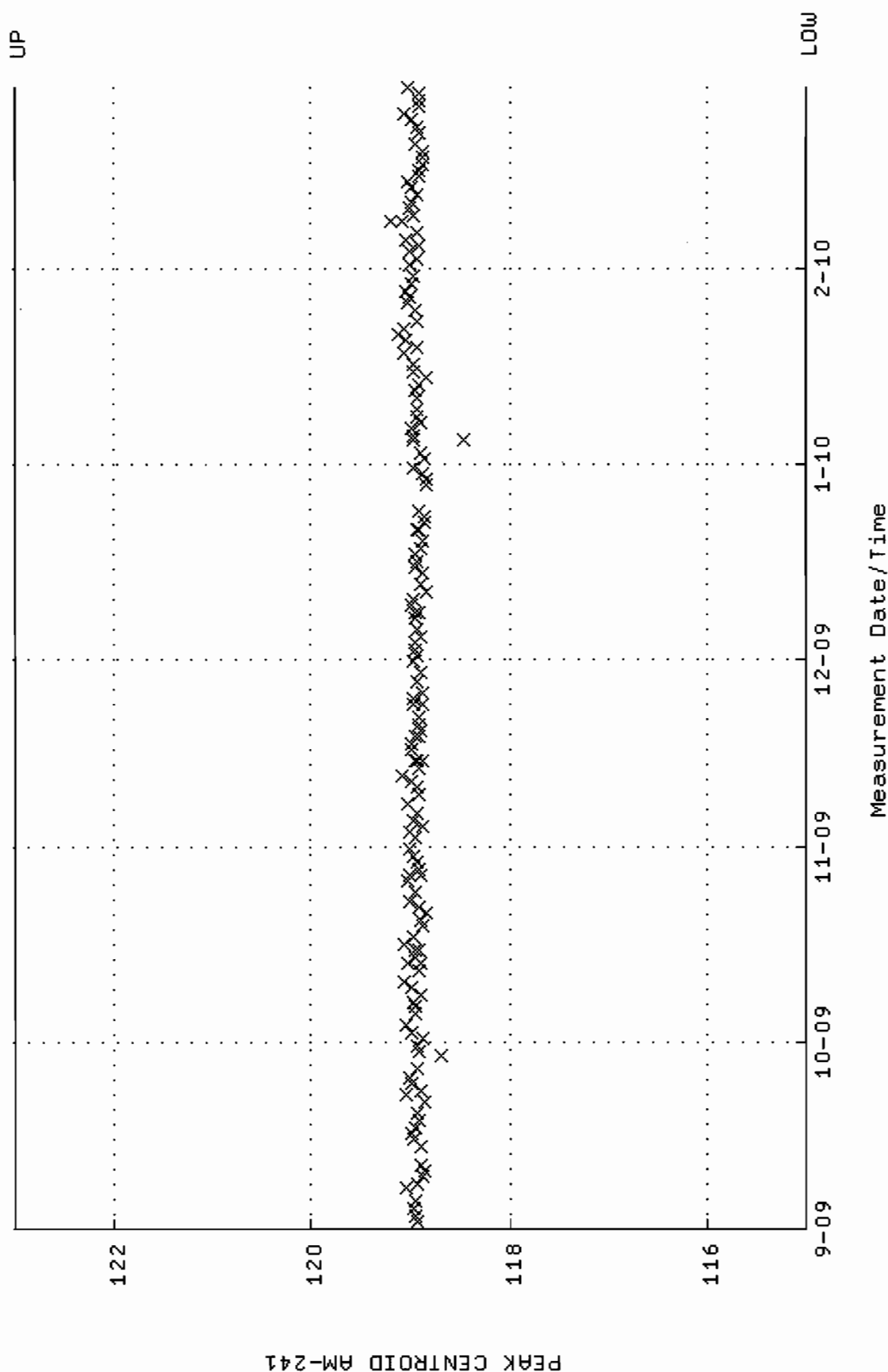
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM18\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 06:13:07 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



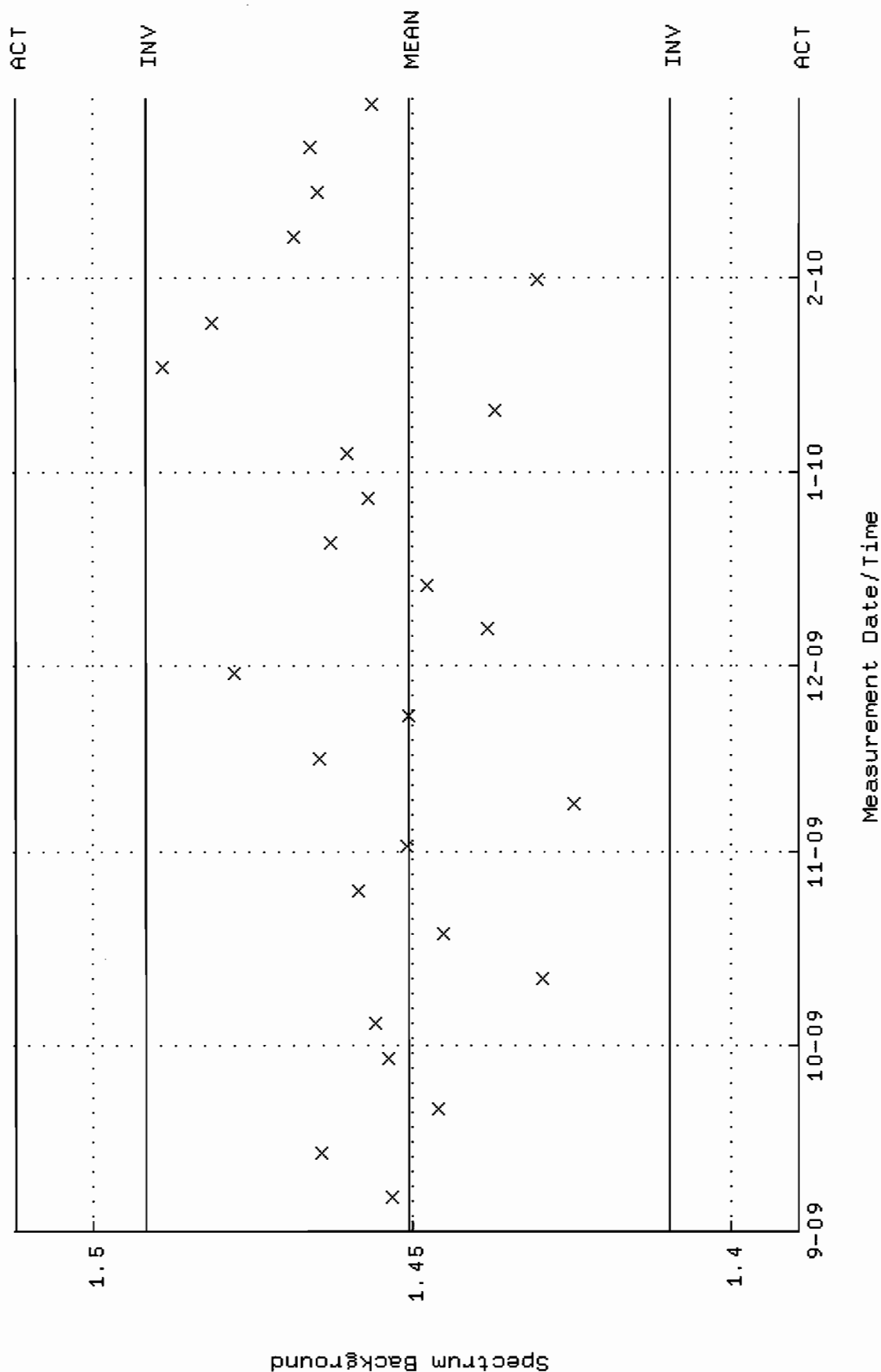
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM18.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:45:03 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 2.30164 +- 9.930626E-02 (4.31 %)



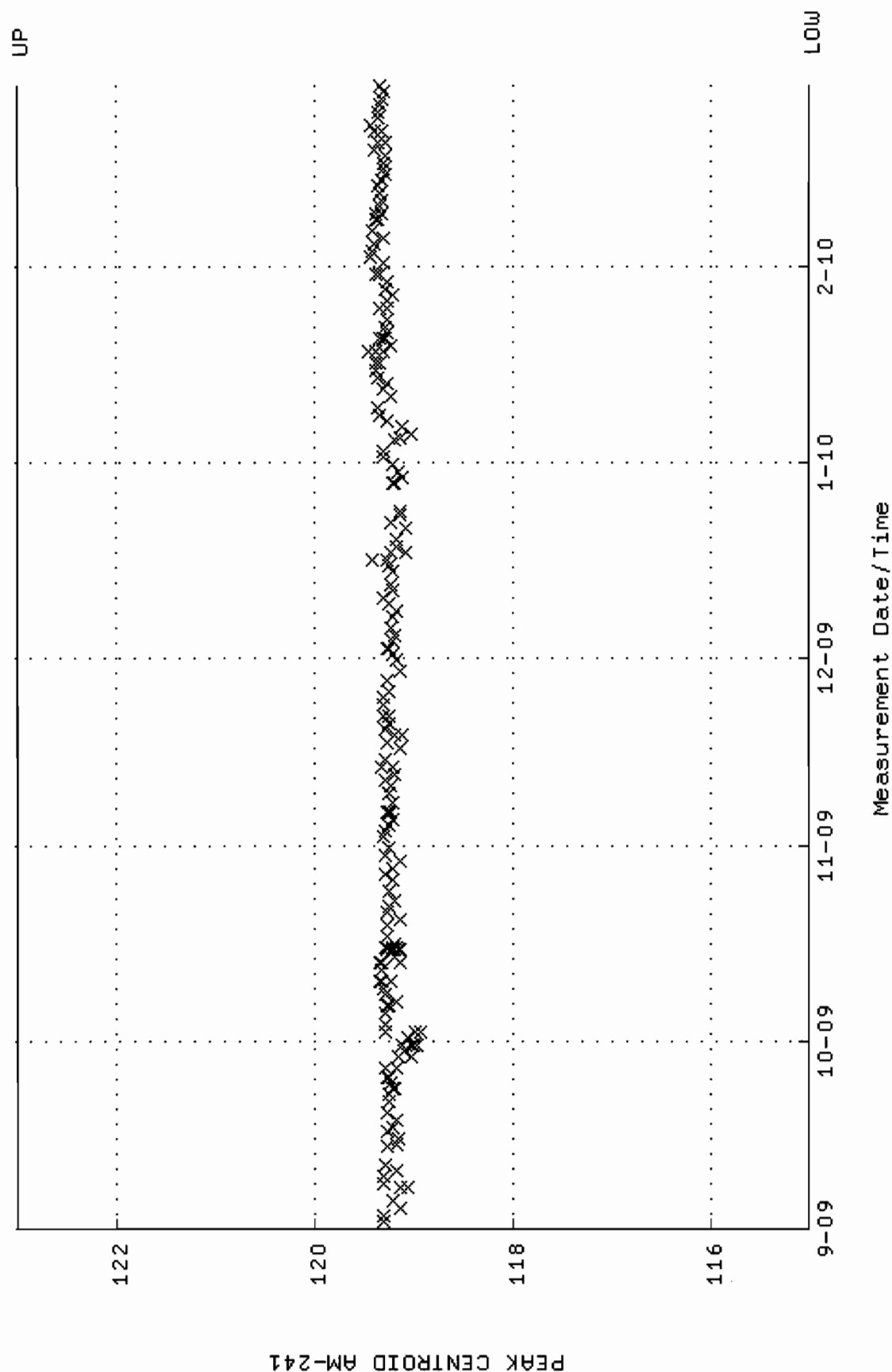
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM19\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 05:06:58 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



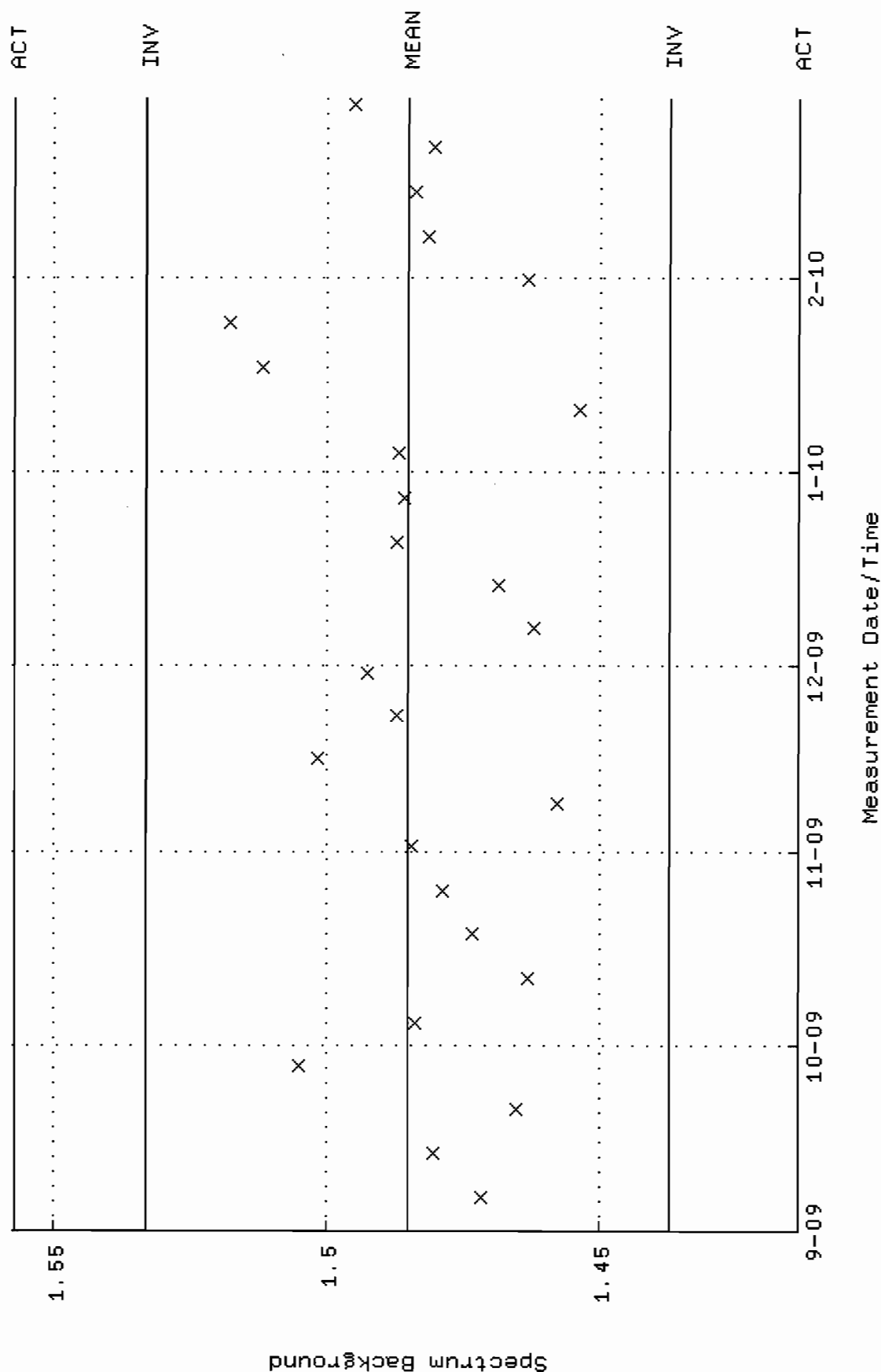
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM19.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:45:39 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.45067 +- 2.046038E-02 (1.41 %)



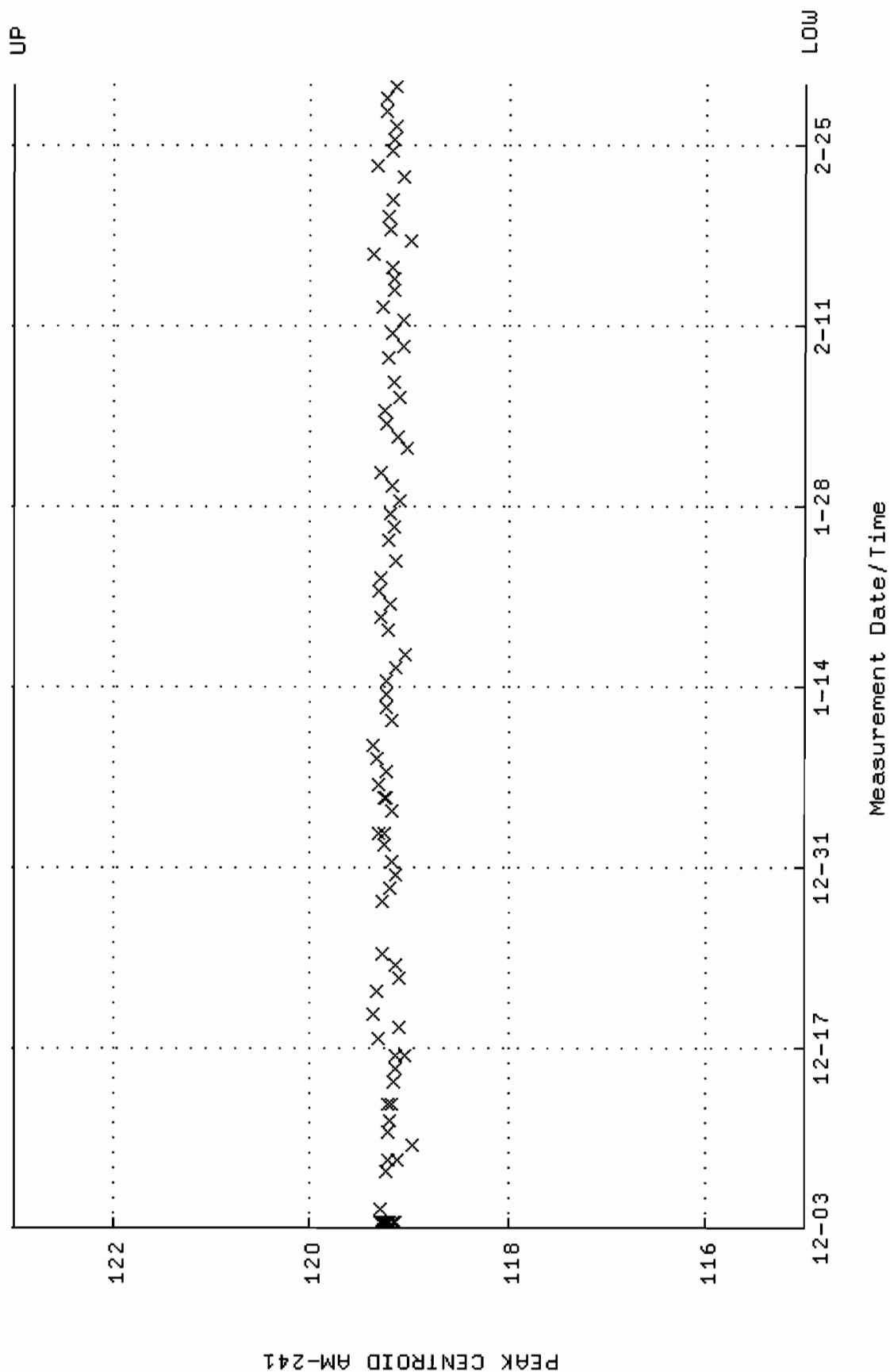
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM20\_500MLMB.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 04:53:11 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



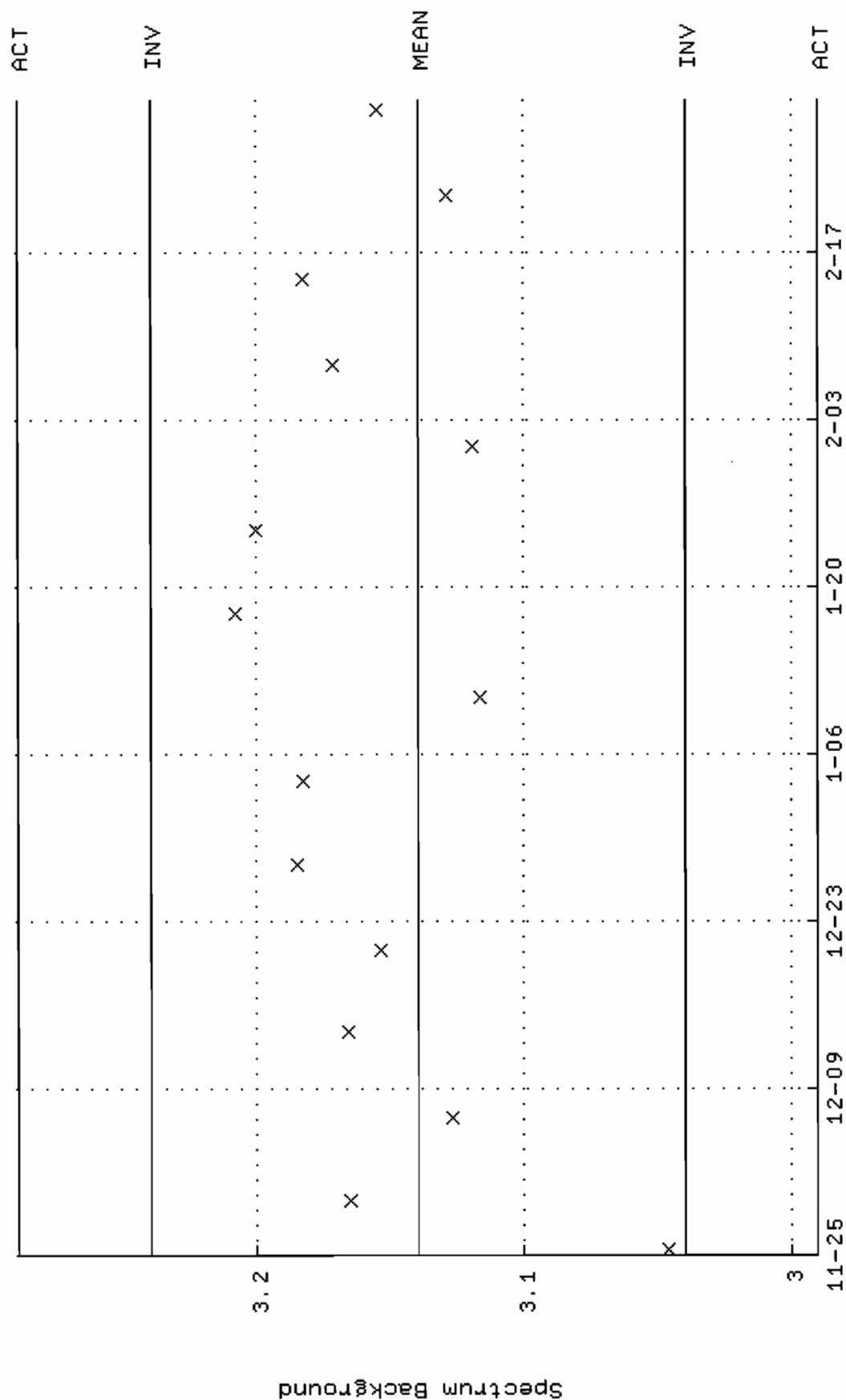
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM20.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:46:04 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.48527 +- 2.388665E-02 (1.61 %)



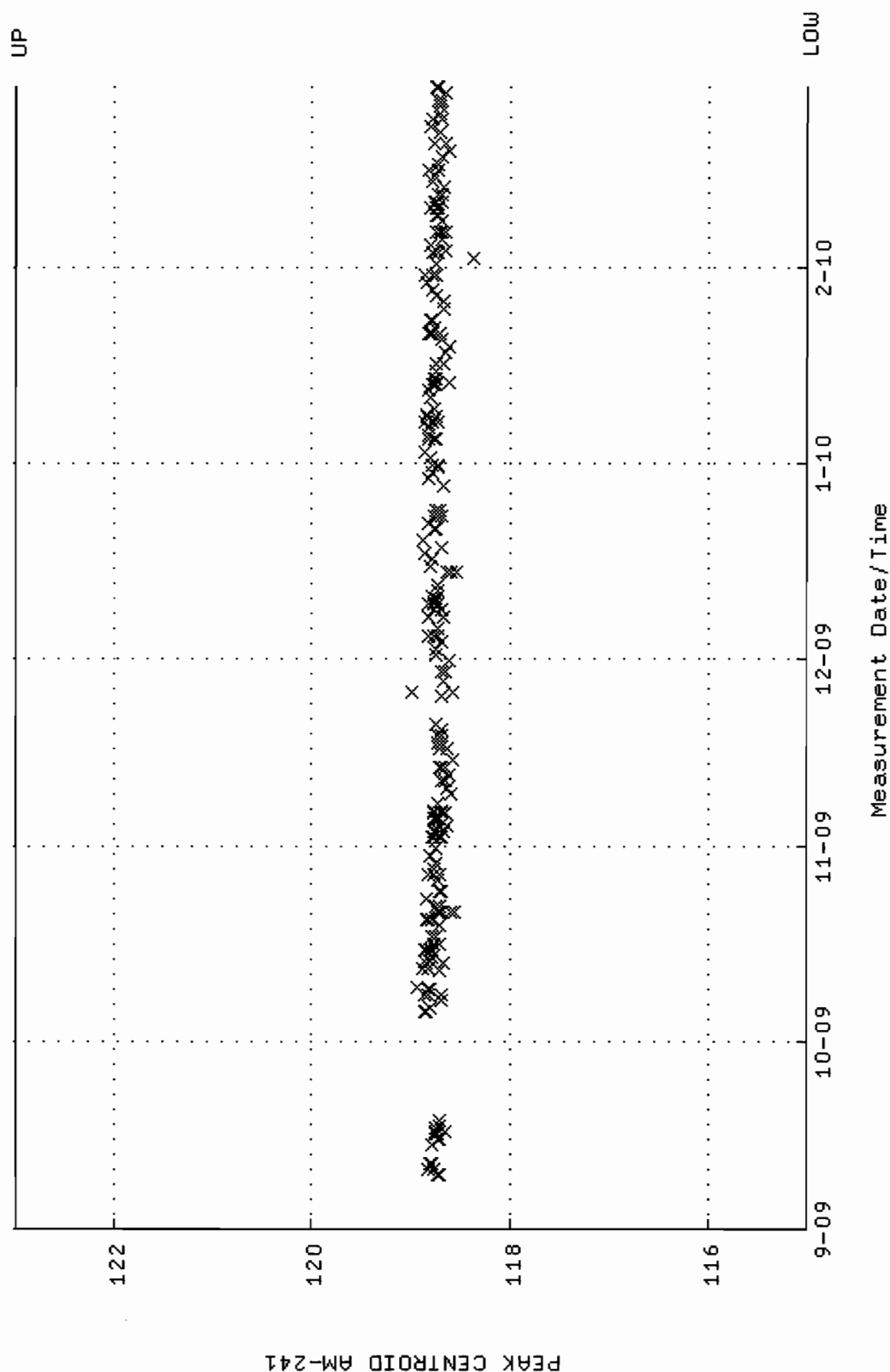
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM22\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 3-DEC-2009 09:11:39 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



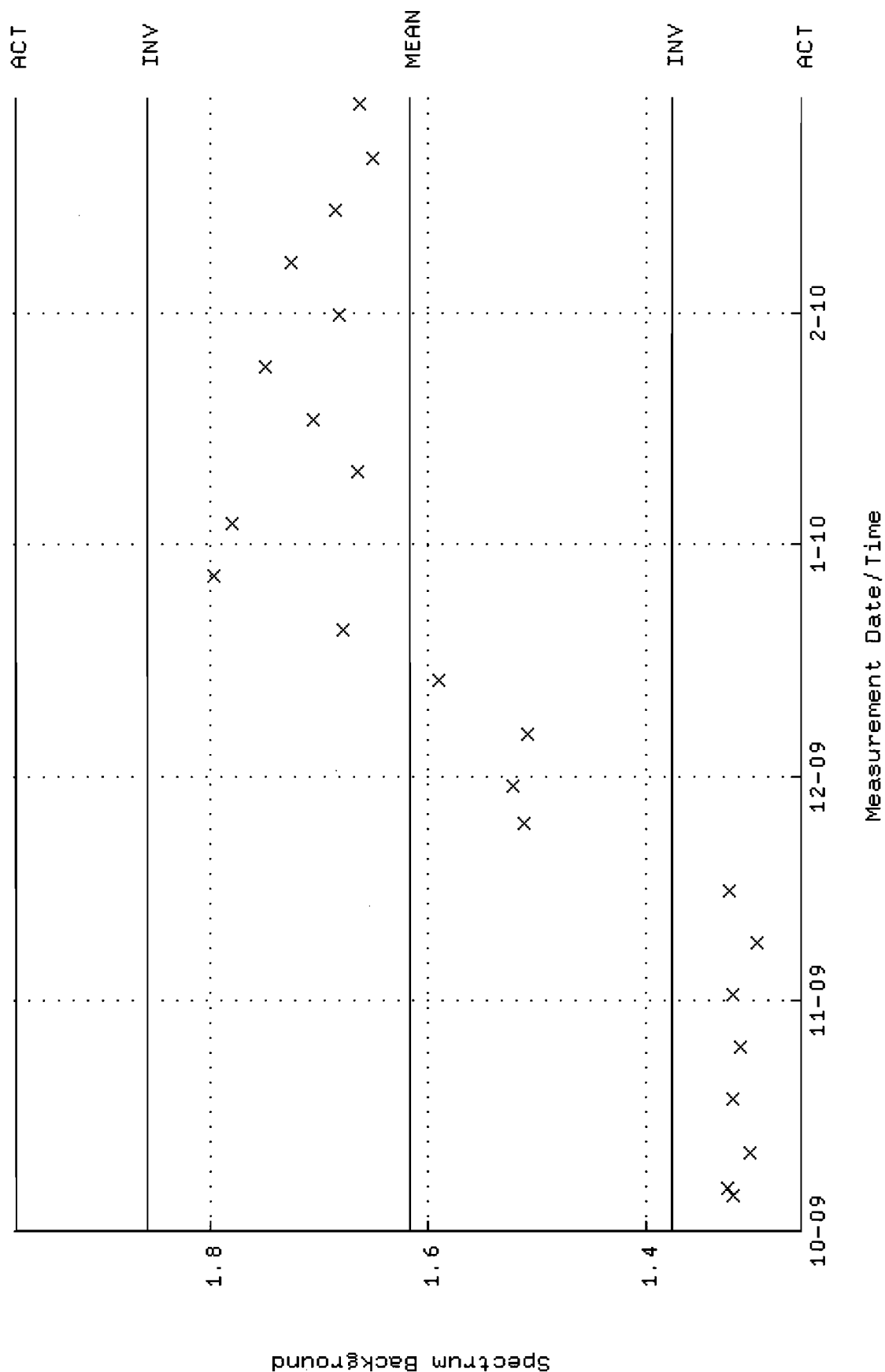
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM22.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 25-NOV-2009 10:28:37 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 3.13961 +- 4.985064E-02 (1.59 %)



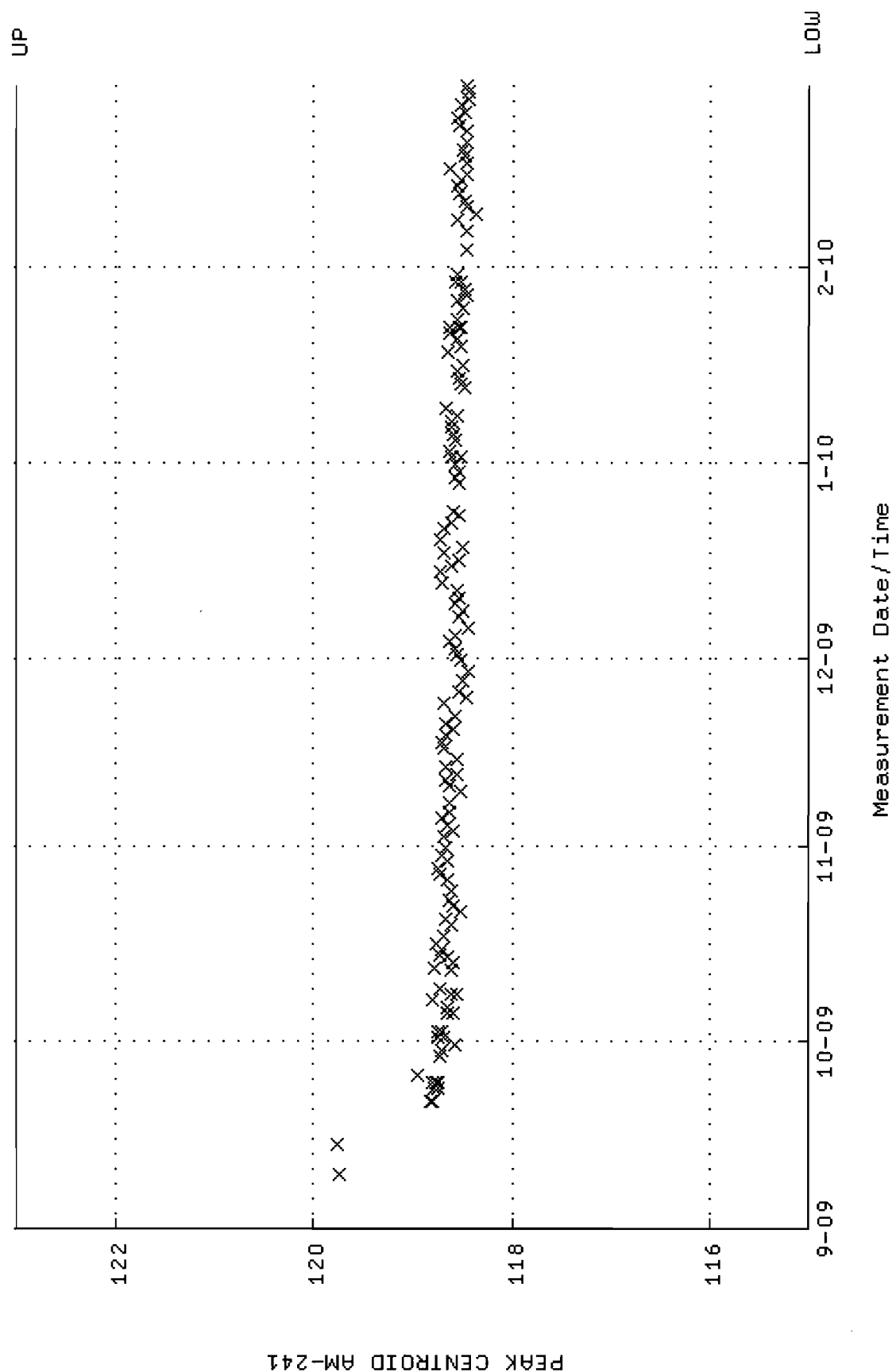
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM23-CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 9-SEP-2009 16:19:12 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



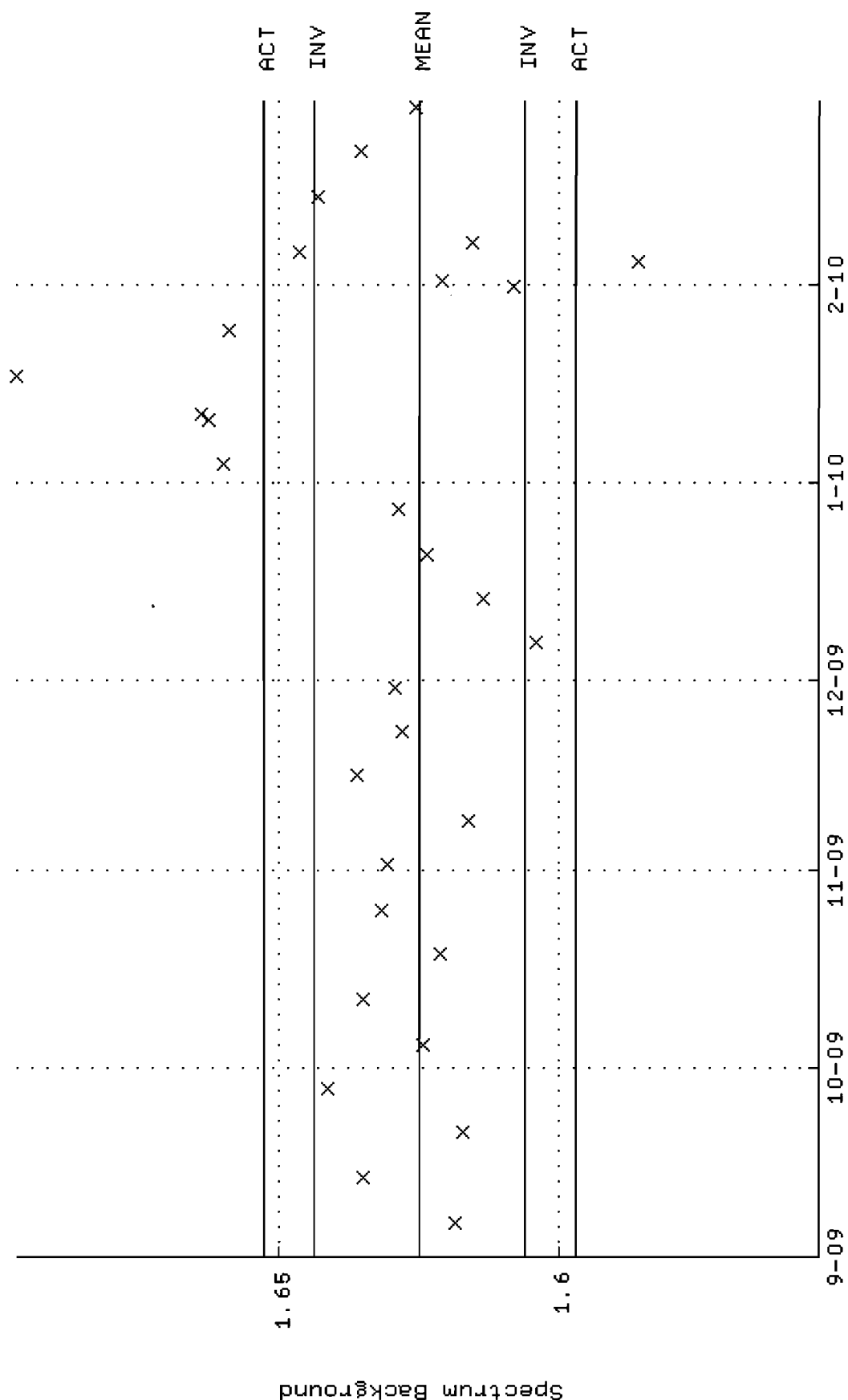
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC-GAM23.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-OCT-2009 15:13:53 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.61827 +- 0.119991 (7.41 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM25\_2LMB.QAF;1  
 Parameter Name : PSCENTRD-59 (PEAK CENTROID AM-241)  
 Start/End Dates : 9-SEP-2009 16:18:34 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM25.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:47:27 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.62502 +- 9.370414E-03 (0.58 %)



# STANDARDS DATA

0134



CALIBRATION  
No. 0146

**Description** Radionuclide: TRITIUM (HYDROGEN-3) Product code: TRY-64  
Chemical form: water Batch: 111

**Measurement** Reference time: 1200 GMT on 1 March 1996  
Radioactive concentration of tritium: 488.0 kilobecquerels per gram of water  
which is equivalent to: 13.19 microcuries per gram of water  
or:  $2.93 \times 10^7$  disintegrations per minute per gram of water

**Method of Measurement**

This reference material was calibrated by direct comparison with a standard of tritium-labelled water obtained from the National Institute of Standards and Technology, USA.

**Accuracy** The OVERALL UNCERTAINTY of the result quoted above is estimated to be less than  $\pm 2.5\%$

This estimate of uncertainty was calculated in accordance with the recommendations of the International Commission on Radiation Units and Measurements (ICRU Report 12). The limits of uncertainty were taken as the arithmetic sum of the uncertainty due to random variations, calculated at the 99.7% confidence level, and the estimated systematic uncertainties.

**Purity** No radioactive impurities were detected. (Impurities with total activity greater than 0.001% of the activity of the tritium would have been detected).

**Physical Data** Half-life of tritium:  $12.43 \pm 0.11$  years  
Maximum beta energy of tritium: 18.6 keV

**Remarks:** The S.I. unit of radioactivity is the becquerel.

1 becquerel (Bq) = 1 nuclear transformation per second, therefore  
1 curie (Ci) =  $3.7 \times 10^{10}$  becquerels exactly.

Useful conversion factors are:

1 microcurie ( $\mu\text{Ci}$ ) =  $3.7 \times 10^4$  Bq = 37 kilobecquerels (kBq)

1 kilobecquerel (kBq) = 27.027 nanocuries (nCi)

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST (NBS) traceability as defined in NCRP58 (1985).

Approved  
signatory

2C-5-023-061a

# Standard Traceability Log Rad

Source Material Info		A Solution Material Info	
Parent Code:	0134	Isotope:	Tritium
Prepared By:	Angela Johnson	Prepared By:	Angela Johnson
Carrier Conc:	DI WATER	Prep Date:	02/21/2001
Reference Date:	03/01/1996	Verification Date:	09/10/2008
Ampoule Mass (g):	5 g	Expiration Date:	03/27/2010
Uncertainty:	+/- 2.5 %	Primary Code:	0134-A
LogBook No:	RC S 023 061	Dilution(mL):	100 mL
		Mass of Parent(g):	3.3659 g
		Density(g/mL):	1.0004
		Balance ID:	38080204

## Calculations Converting parent activity to dpm/mL|dpm/g

$(\text{Mass of parent(g)}) * (\text{Parm Activity (kBq/g)}) * (\text{conversion dpm to kBq}) / (\text{Dilution Vol}) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)}) * (\text{Parm Activity (kBq/g)}) * (\text{conversion dpm to kBq}) / \text{Density (g/mL)} / (\text{Dilution Vol}) = \text{Parent Activity (dpm/g)}$
$(3.3659 \text{ g}) * (488 \text{ kBq/g}) * (60000 \text{ dpm/kBq}) / (100 \text{ mL}) = 985535.5200 \text{ dpm/mL}$
$(3.3659 \text{ g}) * (488 \text{ kBq/g}) * (60000 \text{ dpm/kBq}) / (1.0004 \text{ g/mL}) / (100 \text{ mL}) = 985180.3116 \text{ dpm/g}$

## Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
07/20/2004	Amanda Fehr	5.86	1000	0134-H	5773.1566 dpm/mL	07/25/2006	07/25/2007
12/20/2005	Amanda Fehr	5.5451	1000	0134-I	5462.92 dpm/mL	12/20/2006	12/20/2007
07/11/2007	Daniel Roy	5.5863	1000	0134-J	5503.5128 dpm/ml	07/29/2008	07/29/2009
03/25/2009	Mary Aders	5.4917	1000	0134-K	5410.3147 dpm/ml	03/27/2009	03/27/2010

GEL Laboratories LLC  
Version 1.0 9/18/2000

# Verification for H-3 Standard 0134-K

M. Aders  
4/9/2009

Mean Value (Counting) = 2709.776428  
Stdev = 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

## Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 10% of the certificate value.

The analyst prepared three standard verification sources for H-3 source 0134-K by transferring 0.1 mL portions of the standard into glass liquid scintillation vials. Ten mL of Ecosint Ultra liquid scintillation cocktail was added to each vial and the vials were shaken to mix. A Blank vial was prepared in a similar fashion using 1 mL of DI water and 10 mL of Ecosint Ultra liquid scintillation cocktail. The standard verification vials and Background source were dark adapted for two hours and counted on Silver for H-3 source standard verification. The H-3 efficiency calibration which was used for verification calculations was performed on 4/9/09 using 0020-A (H-3). Calibration data is recorded in this logbook under H-3 0020. Each verification source calculation was performed as follows:

$$\text{Source dpm/g} = (A - B)/(C/D)$$

where:

- A = Ver. source cpm,
- B = BKG cpm,
- C = System efficiency, (cpm/dpm), and
- D = mass used for standard verification.

Reference RAD SOP M-001

## Standard

Detector Eff Mass. Used (mL) Source DPM/mL  
0.380548 1.0000 2741.3099  
0.380548 1.0000 2678.242955  
0.380548 1.0000 2709.776428  
Average = 2709.776428

NET CPM BKG CPM  
1043.2000 54.0000  
1019.2000 54.0000  
1031.2000 54.0000  
Pass  
Rule 3 (Pass/Fail)

Handwritten signature: Amanda J. Dehn 4/9/09

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. Analytisc maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Rev. 1, February, 1979.

Calibration date: October 1, 2006 12:00 EST

ISOTOPE	GAMMA-RAY ENERGY	HALF-LIFE	GAMMA-RAYS PER SECOND	TOTAL UNCERTAINTY %
Am-241	59.5	432 y	3339	3.0
Cd-109	88	462.6 d	4815	3.3
Co-57	122	271.79 d	2409	3.0
Ce-139	166	137.6 d	3408	2.8
Hg-203	279	46.61 d	7522	2.7
Sn-113	392	115.1 d	4728	2.6
Cs-137	662	30.07 y	2973	3.0
Y-88	898	106.6 d	11600	2.6
Co-60	1173	5.2714 y	5780	2.7
Co-60	1332	5.2714 y	5783	2.6
Y-88	1836	106.6 d	12260	2.6

5.31725 grams 4M HCl solution.  
P O NUMBER 2734RD, Item 1

SOURCE PREPARED BY:

M. Dimitrova  
M. Dimitrova, Radiochemist

Q A APPROVED:

Wm. M. J. 11-28-06

This standard will expire one year after the calibration date.

rec'd 11/30/06  
RC-S-045-073-0

1380 Seaboard Industrial Blvd.  
 Atlanta, Georgia 30318

Tel 404-352-8677

Fax 404-352-2837

www.analytisticsinc.com

**ANALYSIS OF UNCERTAINTY FOR MIXED GAMMA STANDARDS**
**BATCH 127**
**CALIBRATION DATE: October 1, 2006 12:00 EST**

Isotope	Energy (keV)	Calibration Method <sup>1</sup>	Statistics <sup>2</sup>	Calibration <sup>2</sup>	Peak Fitting <sup>2</sup>	Geometry <sup>2</sup>	Impurities <sup>2</sup>	Weighing	Combined Standard Uncertainty	Relative Expanded Uncertainty (k=2)
Cd-109	88	HPGe	0.16	1.1	0.88	0.8	0	0.2	1.64	3.3
Co-57	122	HPGe	0.23	1.1	0.71	0.7	0	0.2	1.52	3.0
Ce-139	166	HPGe	0.17	1.0	0.58	0.7	0	0.2	1.38	2.8
Hg-203	279	HPGe	0.11	1.1	0.34	0.7	0	0.2	1.37	2.7
Sn-113	392	HPGe	0.21	1.0	0.35	0.7	0	0.2	1.30	2.6
Cs-137	662	HPGe	0.36	1.1	0.60	0.7	0	0.2	1.49	3.0
Y-88	898	HPGe	0.19	1.0	0.33	0.7	0	0.2	1.29	2.6
Co-60	1173	HPGe	0.31	.97	0.45	0.7	0	0.2	1.33	2.7
Co-60	1332	HPGe	0.33	.93	0.48	0.7	0	0.2	1.32	2.6
Y-88	1836	HPGe	0.24	1.0	0.35	0.7	0	0.2	1.31	2.6

**Optional Additional Isotopes**

Pb-210	46.5	4π LS	0.33	1.1	0	0.9	0.30	0.2	1.50	3.0
Am-241	59.5	4π LS	0.33	1.1	0	0.9	0.30	0.2	1.50	3.0
Sr-85	514	IC	0.30	1.1	0	0.7	0.17	0.2	1.36	2.7
Cs-134	605	IC	0.30	1.0	0	0.8	0.17	0.2	1.34	2.7
Cs-134	796	IC	0.30	1.0	0	0.8	0.17	0.2	1.34	2.7
Mn-54	835	IC	0.30	1.0	0	0.8	0.17	0.2	1.34	2.7
Zn-65	1116	IC	0.30	1.0	0	0.8	0.17	0.2	1.34	2.7

**Calibration Methods:**

4π LS (4 pi Liquid Scintillation Counting)

HPGe (High Purity Germanium Gamma Ray Spectrometer)

IC (Gamma Ray Ionization Chamber)

<sup>2</sup>As Percent (%) from counting data

No interfering gamma emitting impurities were detected during calibration. Depending on the resolution and energy dispersion (keV/channel) of the measuring system, the following spectral conflicts may occur: (1) between the 88 keV gamma-ray and the X-rays emitted in the decay of Hg-203, (2) between the 1333 keV gamma-ray and the 1325 keV single escape peak from the 1836 keV gamma-ray.

# Standard Traceability Log Rad

Source Material Info		A Solution Material Info	
Parent Code:	1032	Isotope:	Mixed Gamma
Prepared By:	Daniel Roy	Prepared By:	Daniel Roy
Carrier Conc:	4 M HCL	Prep Date:	11/30/2006
Reference Date:	10/01/2006	Verification Date:	12/02/2009
Ampoule Mass (g):	5.31725 g	Expiration Date:	12/02/2010
Uncertainty:	+/- 2.81 %	Primary Code:	1032-A
LogBook No:	RC-S-045-073	Dilution(mL):	100 mL
		Mass of Parent(g):	5.2579 g
		Density(g/mL):	1.0611
		Balance ID:	38080204

## Calculations Converting parent activity to dpm/mL|dpm/g

$(\text{Mass of parent(g)}) * (\text{Parm Activity (dpm)}) * (\text{conversion dpm to dpm}) / (\text{Ampoule Mass(g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)}) * (\text{Parm Activity (dpm)}) * (\text{conversion dpm to dpm}) / \text{Density} / (\text{Ampoule Mass (g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/g)}$
$(5.2579 \text{ g}) * (218817 \text{ dpm}) * (1 \text{ dpm/dpm}) / (5.31725 \text{ g} * 100 \text{ mL}) = 2163.7461 \text{ dpm/mL}$
$(5.2579 \text{ g}) * (218817 \text{ dpm}) * (1 \text{ dpm/dpm}) / (1.0611 \text{ g/mL}) / (5.31725 \text{ g} * 100 \text{ mL}) = 2039.2400 \text{ dpm/g}$

## Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
-----------	----------	--------------	---------------	------	-------------	-------------------	-----------------

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 Pass  
Stdev = 64.065 Rule 3 (Pass/Fail)

Certificate Value = 2485.68018 pCi/L  
Lower Limit = 2357.536524 pCi/L  
Upper Limit = 2613.796809 pCi/L  
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	pCi/L - Ver. 1A2-1
Mixed Gamma N1	854.2	pCi/L
Mixed Gamma N2	907.6	pCi/L - Ver. 1A2-3
Mixed Gamma N3	898.9	pCi/L - Ver. 1A2-2

Mean Value (Counting) = 886.90  
Stdev = 28.651

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:* 12/2/09  
12/2/09  
12/2/09

# Verification for Mixed Gamma Standard 1032-A

M. Stamps  
12/2/2009

Co-60 (1332.5)

Isotope	Result	pCi/L - VER-1Ae-5
Mixed Gamma N1	1572	pCi/L
Mixed Gamma N2	1495	pCi/L - VER-1Ae-2
Mixed Gamma N3	1501	pCi/L - VER-1Ae-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

*U.S. Stamp issued 12/2/09*  
*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 l. johnson 12/13/04*

TRM

Invoice:

5 boxes of TRM-1  
 10 " " TRM-2 and 3  
 5 " each of TRM-1 through 6  
 7 " baghouse dirt

Use 1/4 gm x 10 samples with together  
 for TRM-2

Table 7. Recommended Concentrations of Tailings Reference Materials (pCi/g)

	TRM-1	TRM-2	TRM-3	TRM-4
U-238	99 ± 6	6.0 ± 4.0	19.6 ± 1.4	44.9 ± 1.6
U-234	105 ± 6	6.2 ± 4.0	19.6 ± 1.9	44.6 ± 1.2
Tn-230	471 ± 11	24.5 ± 0.6	58.5 ± 2.1	44.0 ± 1.6
Ra-226	489 ± 17	25.4 ± 0.9	60.3 ± 2.3	42.9 ± 1.2
Pb-210	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 DATA 4/14/2000

Amanda L. Lehn 4/30/04  
 Lott & 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.

Attention Nancy Slater At GEL  
Not For Log In  
991627-01-20  
Page 1 of 1  
AR/COC- 602945

SF 2001-COC (10-97)  
Supersedes (5-97) Issue

Internal Lab  
Batch No.

SARWR No. N/A  
ANALYSIS REQUEST AND CHAIN OF CUSTODY  
Press F1 for Instructions for each field.

Dept. No./Mail Stop: 7132 / 1042 Project/Task Manager: PAM PUISSANT Project Name: Record Center Code: N/A Logbook Ref. No.: N/A Service Order No.:		Date Samples Shipped: 11-16-99 Carrier/Waybill No.: 526794 Lab Contact: EDIE KENT Lab Destination: G.E.L. SMO Contact/Phone: Doug Salimi / 844-3110 Send Report to SMO: Suzi Jensen/844-3184		Contract No.: AJ-2480A Case No.: 10204 13 SMO Authorization: [Signature] Bill to: Sandia National Laboratories Supplier Services, Dept. P.O. Box 5800 MS 0154	
Location Building: N/A Sample No. - Fraction: 050484 - 001 050485 - 001 050486 - 001		Tech Area: VI Room: N/A ER Sample ID or Sample Location Detail: PEM-1 TRM-2 HRM-2 N3H2		Reference LOV (available at SMO) Sample Type: S Collection Method: G Preservative: 4C Volume: 1L Type: P G G	
RMMA <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Ref. No.		Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by lab		Special Instructions/QC Requirements EDD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Raw data package <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No These "samples" are well characterized and intended being sent to GEL for backup at Hawk Division	
Turnaround Time <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush Required Report Date		Sample Tracking (init, SMO USE) Data Entered (mm/dd/yy): Entered by: [Signature] QC Initials: [Signature]		Abnormal Conditions on Receipt Lab Use	
Sample Team Members Name: Douglas E. Perry Signature: [Signature]		Init: [Signature] Company/Organization/Phone: Weston / 757 / 845-0887		Please list as separate report.	
1. Relinquished by [Signature]		Date: 11-16-99 Time: 0900		Date	
1. Received by		Date		Date	
2. Relinquished by		Date		Date	
2. Received by		Date		Date	
3. Relinquished by		Date		Date	
3. Received by		Date		Date	

Original To Accompany Samples, Laboratory Copy (White)  
1<sup>st</sup> Copy To Accompany Samples, Return to SMO (Blue)  
2<sup>nd</sup> Copy SMO Suspense Copy (Yellow)  
3<sup>rd</sup> Copy Field Copy (Pink)

# 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		A Solution Material Info	
Parent Code:	445-96-2	Isotope:	Americium-243
Prepared By:	Genie Bost	Prepared By:	Angela Johnson
Carrier Conc:	2M HNO3	Prep Date:	01/05/1994
Reference Date:	01/01/1994	Verification Date:	05/11/2009
Ampoule Mass (g):	5.3739 g	Expiration Date:	05/11/2010
Uncertainty:	+/- 3 %	Primary Code:	445-96-2-A
LogBook No:	RC S 005 032	Dilution(mL):	100 mL
		Mass of Parent(g):	5.3419 g
		Density(g/mL):	1.0785
		Balance ID:	38080204

## Calculations Converting parent activity to dpm/mL|dpm/g

$(\text{Mass of parent(g)}) * (\text{Parm Activity (uCi/g)}) * (\text{conversion dpm to uCi}) / (\text{Dilution Vol}) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)}) * (\text{Parm Activity (uCi/g)}) * (\text{conversion dpm to uCi}) / \text{Density (g/mL)} / (\text{Dilution Vol}) = \text{Parent Activity (dpm/g)}$
$(5.3419 \text{ g}) * (18.84 \text{ uCi/g}) * (2220000 \text{ dpm/uCi}) / (100 \text{ mL}) = 2234238.9912 \text{ dpm/mL}$
$(5.3419 \text{ g}) * (18.84 \text{ uCi/g}) * (2220000 \text{ dpm/uCi}) / (1.0785 \text{ g/mL}) / (100 \text{ mL}) = 2071617.0528 \text{ dpm/g}$

## Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
01/05/1994	Genie Bost	.0058	100	445-96-2-B	120.1 dpm/ml	01/05/1995	01/05/1996
09/10/2004	Amanda Fehr	.0325	1000	445-96-2-BB	67.328 dpm/mL	09/10/2005	09/10/2006
01/05/1994	Genie Bost	.0025	100	445-96-2-C	51.77 dpm/ml	01/05/1995	01/05/1996
05/27/2005	Brenda Burke	.000246	100	445-96-2-CC	5.10613 dpm/mL	05/31/2005	05/31/2006
03/25/1994	Genie Bost	.0064	100	445-96-2-D	132.53 dpm/ml	01/05/1995	01/05/1996
08/16/2005	Brenda Burke	.001224	500	445-96-2-DD	5.07144 dpm/mL	08/18/2007	08/18/2008
08/04/1994	Genie Bost	.0094	100	445-96-2-E	194.65 dpm/ml	01/05/1995	01/05/1996
10/13/2005	Brenda Burke	.0017	500	445-96-2-EE	7.0435 dpm/mL	11/15/2005	11/15/2006
08/04/1994	Genie Bost	.0046	100	445-96-2-F	95.25 dpm/ml	01/05/1995	01/05/1996
10/14/2005	Mary Aders	.0141	500	445-96-2-FF	58.4196 dpm/mL	10/14/2005	10/14/2006
09/01/1994	Genie Bost	.0031	100	445-96-2-G	64.19 dpm/ml	01/05/1995	01/05/1996
05/10/2006	Mary Aders	2.0753	1000	445-96-2-GG	4299.227 dpm/mL	09/30/2008	09/30/2009
10/17/1994	Genie Bost	.0969	100	445-96-2-H	2006.52 dpm/ml	01/05/1995	01/05/1996
06/07/2006	Mary Aders	.0365	1000	445-96-2-HH	75.614 dpm/mL	06/19/2006	06/19/2007
02/06/1995	Genie Bost	.0043	100	445-96-2-I	89.04 dpm/ml	01/05/1995	01/05/1996
05/11/2006	Brenda Burke	.000009739	100	445-96-2-II	.201761 dpm/mL	07/26/2006	07/26/2007
07/20/1995	Theresa Austin	.0041	100	445-96-2-J	84.9 dpm/ml	01/05/1995	01/05/1996
05/01/2007	Daniel Roy	.0352	1000	445-96-2-JJ	72.9209 dpm/ml	04/30/2008	04/30/2009
08/10/1995	Garret Ray	.0952	100	445-96-2-K	1971.32 dpm/ml	01/05/1995	01/05/1996
06/12/2007	Julie Strock	.01038	250	445-96-2-KK	22.1496 dpm/mL	05/28/2008	05/28/2009

09/11/1995	Theresa Austin	1.0525	100	445-96-2-L	21794.23 dpm/ml	01/05/1995	01/05/1996
09/11/1995	Theresa Austin	.5107	100	445-96-2-L-1	111.3 dpm/ml	01/05/1995	01/05/1996
04/28/1998	Richard Kinney	.1264	100	445-96-2-M	2617.4 dpm/ml	04/28/1998	04/28/1999
11/01/2007	Eric Williamson	.001274	500	445-96-2-MM	5.27945 dpm/mL	04/06/2008	04/06/2010
10/12/1998	Gregory Smith	.1348	100	445-96-2-N	2791.32 dpm/mL	01/05/1995	01/05/1996
01/25/1999	Gregory Smith	1.9382	100	445-96-2-N-1	50.16 dpm/ml	01/05/1995	01/05/1996
04/19/2008	Daniel Roy	.0424	1000	445-96-2-NN	87.8366 dpm/ml	04/16/2009	04/16/2010
04/21/1999	Greg Smith	.1645	100	445-96-2-O	3406.32 dpm/mL	04/21/1999	04/21/2000
07/27/1999	Gregory Smith	1.567	100	445-96-2-O-2	50.56 dpm/ml	05/13/1999	05/13/2000
10/12/1999	Richard Kinney	1.5589	100	445-96-2-O-3	50.31 dpm/mL	05/13/1999	05/13/2000
04/21/1999	Greg Smith	1.5309	100	445-96-2-O-1	49.4 dpm/mL	04/21/1999	04/21/2000
11/10/1999	Joe Davis	.1809	100	445-96-2-P	3745.92 dpm/mL	05/13/1999	05/13/2000
01/04/2008	Julie Ströck	.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.

*M. Aders 5/15/09*  
*Taheri*  
*07509*



Eckert & Ziegler

Analytics

1380 Seaboard Industrial Blvd.  
Atlanta, Georgia 30318  
Tel 404-352-8677  
Fax 404-352-2837  
www.analyticsinc.com

**CERTIFICATE OF CALIBRATION**  
Standard Radionuclide Source

**78747-278**

1283

**U-232 5 mL Liquid in Flame Sealed Vial**

**Customer:** GEL Laboratories, LLC  
**P.O. No.:** 7319 RD, Item 1

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

Isotope:	U-232
Activity (Bq):	3.754 E3
Half-Life:	68.9 years
Calibration Date:	December 9, 2008 12:00 EST
Relative Expanded Uncertainty (k=2):	5.0%

**Comments:**

Impurities: U-233 <0.3%, Am-241 <0.15%  
5.20453 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

<b>Analyst: A. Drochter</b>	<b>Serial #</b>	<b>Value</b>	<b>Uncertainty</b>					
<b>Date: 12/10/09</b>	1283-H N1	2.020	pCi/L	0.238	pCi/L			
	1283-H N2	2.000	pCi/L	0.234	pCi/L			
	1283-H N3	2.060	pCi/L	0.242	pCi/L			
<b>Mean Value (Counting) =</b>	2.027	pCi/L	<b>99.66904</b>	<b>Pass</b>				
<b>Stdev =</b>	0.030550505	pCi/L	<b>Rule 3 (Pass/Fail)</b>					
<b>Target =</b>	2.033	pCi/L						
<b>Lower Limit =</b>	1.965565657	pCi/L						
<b>Upper Limit =</b>	2.087767676	pCi/L						
<b>Rule 1 Pass/Fail</b>	<b>Pass</b>							
<b>Two sigma =</b>	0.061101009							
<b>10 % of Mean =</b>	0.202666667							
<b>Rule 2 (Pass/Fail)</b>	<b>Pass</b>							

**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. Drochta*  
12/14/09



# 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.

**RECEIVED**  
17/07/09  
AM

### MEASUREMENTS

The samples were prepared by gravimetric dilution of a  $^{236}\text{Pu}$  solution, which had been previously standardised using liquid scintillation counting. The accuracy of the dilution factor was checked using liquid scintillation counting.

Reference: 2009100356

Page 1 of 3

Date of Issue: 4 November 2009

Signed:

(Authorised Signatory)

Checked by:

Name: Dr Arvic Harms

for Managing Director

Page 698 of 704

## 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:

*Ci ell*

## 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

# RUNLOGS

# Instrument Run Log

**Instrument Type: GAMMA SPECTROMETER**

**Batch ID: 956157**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247469001	SAMPLE	MXR1	GAM17	02-MAR-10 20:52	DONE	CAN	06-JAN-10 00:00
247469002	SAMPLE	MXR1	GAM19	02-MAR-10 20:53	DONE	CAN	12-MAR-09 00:00
247469003	SAMPLE	MXR1	GAM20	02-MAR-10 20:53	DONE	CAN	26-AUG-09 00:00
247544001	SAMPLE	MXR1	GAM25	02-MAR-10 20:54	DONE	CAN	07-OCT-09 00:00
247544002	SAMPLE	MXR1	GAM10	02-MAR-10 23:19	DONE	CAN	16-MAR-09 00:00
247544003	SAMPLE	MXR1	GAM15	02-MAR-10 23:20	DONE	CAN	03-FEB-10 00:00
247544004	SAMPLE	MXR1	GAM18	02-MAR-10 23:20	DONE	CAN	23-APR-09 00:00
247563001	SAMPLE	MXR1	GAM20	02-MAR-10 23:21	DONE	CAN	26-AUG-09 00:00
247563002	SAMPLE	MXR1	GAM23	02-MAR-10 23:21	DONE	CAN	02-JUN-09 00:00
247563003	SAMPLE	MXR1	GAM25	02-MAR-10 23:22	DONE	CAN	07-OCT-09 00:00
247563004	SAMPLE	MXR1	GAM18	03-MAR-10 18:50	DONE	CAN	23-APR-09 00:00
247563005	SAMPLE	MXR1	GAM22	03-MAR-10 18:50	DONE	CAN	02-DEC-09 00:00
247563006	SAMPLE	MXR1	GAM15	03-MAR-10 19:20	DONE	CAN	03-FEB-10 00:00
247563007	SAMPLE	MXR1	GAM04	03-MAR-10 20:42	DONE	CAN	05-MAY-09 00:00
247563008	SAMPLE	MXR1	GAM05	03-MAR-10 20:43	DONE	CAN	11-JUN-09 00:00
247564001	SAMPLE	MXR1	GAM06	03-MAR-10 20:43	DONE	CAN	16-FEB-10 00:00
247564002	SAMPLE	MXR1	GAM10	03-MAR-10 20:44	DONE	CAN	16-MAR-09 00:00
247564003	SAMPLE	MXR1	GAM14	03-MAR-10 20:44	DONE	CAN	06-MAR-09 00:00
247564004	SAMPLE	MXR1	GAM16	03-MAR-10 20:45	DONE	CAN	16-NOV-09 00:00
247564005	SAMPLE	MXR1	GAM17	03-MAR-10 20:46	DONE	CAN	06-JAN-10 00:00
1202050251	MB	MXR1	GAM11	03-MAR-10 20:49	DONE	CAN	18-NOV-09 00:00
1202050252	DUP	MXR1	GAM19	03-MAR-10 20:50	DONE	CAN	12-MAR-09 00:00
1202050253	LCS	MXR1	GAM23	03-MAR-10 21:20	DONE	CAN	02-JUN-09 00:00

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID: 957107**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247564004	SAMPLE	KXM4	1230	08-MAR-10 09:33	DONE		
247469001	SAMPLE	KXM4	1233	08-MAR-10 09:33	DONE		
247544004	SAMPLE	KXM4	1234	08-MAR-10 09:34	DONE		
247469002	SAMPLE	KXM4	1235	08-MAR-10 09:34	DONE		
247563001	SAMPLE	KXM4	1236	08-MAR-10 09:34	DONE		
247469003	SAMPLE	KXM4	1237	08-MAR-10 09:34	DONE		
247563002	SAMPLE	KXM4	1238	08-MAR-10 09:34	DUSE		
247544001	SAMPLE	KXM4	1239	08-MAR-10 09:34	DUSE		
247563003	SAMPLE	KXM4	1240	08-MAR-10 09:34	DONE		
247544002	SAMPLE	KXM4	1241	08-MAR-10 09:34	DONE		
247563004	SAMPLE	KXM4	1242	08-MAR-10 09:34	DONE		
247544003	SAMPLE	KXM4	1243	08-MAR-10 09:34	DUSE		
247563005	SAMPLE	KXM4	1244	08-MAR-10 09:34	DONE		
247563006	SAMPLE	KXM4	1245	08-MAR-10 09:34	DONE		
247563007	SAMPLE	KXM4	1246	08-MAR-10 09:34	DUSE		
247563008	SAMPLE	KXM4	1247	08-MAR-10 09:34	DUSE		
247564002	SAMPLE	KXM4	1249	08-MAR-10 09:34	DONE		
247564003	SAMPLE	KXM4	1250	08-MAR-10 09:34	DONE		
1202052164	MB	KXM4	1251	08-MAR-10 09:35	DONE		
1202052165	DUP	KXM4	1252	08-MAR-10 09:35	DONE		
1202052166	LCS	KXM4	1253	08-MAR-10 09:35	DONE		
247564005	SAMPLE	KXM4	1254	08-MAR-10 09:35	DONE		
247564001	SAMPLE	KXM4	1248	08-MAR-10 09:47	DUSE		
247544001	SAMPLE	KXM4	1091	10-MAR-10 16:36	DONE		
247544003	SAMPLE	KXM4	1092	10-MAR-10 16:36	DONE		
247563002	SAMPLE	KXM4	1093	10-MAR-10 16:36	DONE		
247563007	SAMPLE	KXM4	1094	10-MAR-10 16:36	DONE		
247563008	SAMPLE	KXM4	1095	10-MAR-10 16:36	DONE		
247564001	SAMPLE	KXM4	1097	10-MAR-10 16:36	DONE		

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID: 957108**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247469001	SAMPLE	KXM4	1019	08-MAR-10 17:26	DONE		
247469002	SAMPLE	KXM4	1020	08-MAR-10 17:26	DONE		
247469003	SAMPLE	KXM4	1022	08-MAR-10 17:26	DONE		
247544001	SAMPLE	KXM4	1023	08-MAR-10 17:26	DONE		
247544002	SAMPLE	KXM4	1024	08-MAR-10 17:26	DUSE		
247544003	SAMPLE	KXM4	1065	08-MAR-10 17:26	DONE		
247544004	SAMPLE	KXM4	1066	08-MAR-10 17:26	DONE		
247563001	SAMPLE	KXM4	1067	08-MAR-10 17:26	DONE		
247563002	SAMPLE	KXM4	1068	08-MAR-10 17:26	DONE		
247563003	SAMPLE	KXM4	1069	08-MAR-10 17:26	DUSE		
247563004	SAMPLE	KXM4	1070	08-MAR-10 17:26	DUSE		
247563005	SAMPLE	KXM4	1013	08-MAR-10 17:51	DUSE		
247563006	SAMPLE	KXM4	1014	08-MAR-10 17:51	DONE		
247563007	SAMPLE	KXM4	1016	08-MAR-10 17:51	DUSE		
247563008	SAMPLE	KXM4	1017	08-MAR-10 17:51	DONE		
247564001	SAMPLE	KXM4	1018	08-MAR-10 17:51	DUSE		
247564002	SAMPLE	KXM4	1217	08-MAR-10 19:08	DUSE		
247564003	SAMPLE	KXM4	1218	08-MAR-10 19:08	DUSE		
247564004	SAMPLE	KXM4	1219	08-MAR-10 19:08	DUSE		
247564005	SAMPLE	KXM4	1220	08-MAR-10 19:08	DUSE		
1202052167	MB	KXM4	1221	08-MAR-10 19:09	DUSE		
1202052169	LCS	KXM4	1223	08-MAR-10 19:09	DONE		
247544002	SAMPLE	KXM4	1229	10-MAR-10 18:56	DONE		
247563003	SAMPLE	KXM4	1230	10-MAR-10 18:56	DONE		
247563004	SAMPLE	KXM4	1107	10-MAR-10 19:01	DONE		
247563005	SAMPLE	KXM4	1108	10-MAR-10 19:01	DONE		
247563007	SAMPLE	KXM4	1109	10-MAR-10 19:01	DONE		
1202052167	MB	KXM4	1111	10-MAR-10 19:01	DONE		
1202052168	DUP	KXM4	1112	10-MAR-10 19:01	DONE		

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID: 957113**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1202052186	MB	KXM4	1007	05-MAR-10 12:23	DONE		
1202052187	DUP	KXM4	1009	05-MAR-10 12:23	DONE		
1202052188	LCS	KXM4	1010	05-MAR-10 12:23	DUSE		
247469003	SAMPLE	KXM4	1142	06-MAR-10 22:03	DONE		
247544001	SAMPLE	KXM4	1143	06-MAR-10 22:03	DONE		
247544002	SAMPLE	KXM4	1144	06-MAR-10 22:03	DONE		
247544003	SAMPLE	KXM4	1145	06-MAR-10 22:03	DONE		
247544004	SAMPLE	KXM4	1146	06-MAR-10 22:03	DONE		
247563001	SAMPLE	KXM4	1147	06-MAR-10 22:03	DONE		
247563002	SAMPLE	KXM4	1148	06-MAR-10 22:03	DONE		
247563003	SAMPLE	KXM4	1149	06-MAR-10 22:03	DONE		
247563004	SAMPLE	KXM4	1150	06-MAR-10 22:03	DONE		
247563005	SAMPLE	KXM4	1151	06-MAR-10 22:03	DUSE		
247563006	SAMPLE	KXM4	1152	06-MAR-10 22:03	DONE		
247563007	SAMPLE	KXM4	1153	06-MAR-10 22:03	DONE		
247563008	SAMPLE	KXM4	1154	06-MAR-10 22:03	DONE		
247564001	SAMPLE	KXM4	1155	06-MAR-10 22:03	DONE		
247564002	SAMPLE	KXM4	1156	06-MAR-10 22:03	DONE		
247564003	SAMPLE	KXM4	1157	06-MAR-10 22:03	DONE		
247564004	SAMPLE	KXM4	1159	06-MAR-10 22:04	DONE		
247564005	SAMPLE	KXM4	1160	06-MAR-10 22:04	DONE		
247469001	SAMPLE	KXM4	1113	08-MAR-10 07:03	DONE		
247469002	SAMPLE	KXM4	1114	08-MAR-10 07:03	DONE		
247563005	SAMPLE	KXM4	1009	10-MAR-10 16:36	DUSE		
1202052188	LCS	KXM4	1010	10-MAR-10 16:36	DONE		

# Instrument Run Log

Instrument Type: LSC

Batch ID: 960227

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247563001	SAMPLE	KXK2	LSCRED	11-MAR-10 11:33	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563002	SAMPLE	KXK2	LSCRED	11-MAR-10 13:11	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563003	SAMPLE	KXK2	LSCRED	11-MAR-10 14:50	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563004	SAMPLE	KXK2	LSCRED	11-MAR-10 16:29	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563005	SAMPLE	KXK2	LSCRED	11-MAR-10 18:08	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563006	SAMPLE	KXK2	LSCRED	11-MAR-10 19:46	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563007	SAMPLE	KXK2	LSCRED	11-MAR-10 23:03	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563008	SAMPLE	KXK2	LSCRED	12-MAR-10 00:41	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568001	SAMPLE	KXK2	LSCRED	12-MAR-10 02:19	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568002	SAMPLE	KXK2	LSCRED	12-MAR-10 10:51	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568003	SAMPLE	KXK2	LSCRED	12-MAR-10 12:29	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568004	SAMPLE	KXK2	LSCRED	12-MAR-10 14:08	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568005	SAMPLE	KXK2	LSCRED	12-MAR-10 15:46	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568006	SAMPLE	KXK2	LSCRED	12-MAR-10 17:25	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568007	SAMPLE	KXK2	LSCRED	12-MAR-10 19:03	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568008	SAMPLE	KXK2	LSCRED	12-MAR-10 20:43	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568009	SAMPLE	KXK2	LSCRED	12-MAR-10 22:23	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568010	SAMPLE	KXK2	LSCRED	13-MAR-10 00:01	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202059604	MB	KXK2	LSCRED	13-MAR-10 03:18	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202059605	DUP	KXK2	LSCRED	13-MAR-10 04:56	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202059606	LCS	KXK2	LSCRED	13-MAR-10 06:34	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248203002	SAMPLE	KXK2	LSCYELLOW	15-MAR-10 21:09	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID: 964412**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247563005	SAMPLE	KXM4	1164	17-MAR-10 08:11	DONE		
1202069004	MB	KXM4	1165	17-MAR-10 08:11	DONE		
1202069005	DUP	KXM4	1166	17-MAR-10 08:11	DONE		
1202069006	LCS	KXM4	1167	17-MAR-10 08:11	DONE		