

Wednesday, April 07, 2010

LOS ALAMOS**NATIONAL LABORATORY**

REQUEST NUMBER: 10-2689

ATTN: Mike Franks

These Samples are on:

Severn Trent Laboratories, Inc., St. Louis

LANL Request Number: 10-2689

13715 Rider Trail N.

Per Agreement Number: 126310021

Earth City, MO 63045

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples
according to the schedule indicated:

SHIP DATE: 4/7/2010


TURNAROUND/REPORT DUE: 4/17/2010

TURNAROUND REQ'D: 10 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS: 10 full data package

LANL ER SMO CONTACT:

Signature: 

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPAS901.1		1	RE12-10-15442	R	4/6/2010	
		1	RE12-10-15443	R	4/6/2010	
		1	RE12-10-15444	R	4/6/2010	
		1	RE12-10-15445	R	4/6/2010	
		1	RE12-10-15446	R	4/6/2010	
		1	RE12-10-15447	R	4/6/2010	
		1	RE12-10-15448	R	4/6/2010	
		1	RE12-10-15442	R	4/6/2010	
HASL-300:AM-241		1	RE12-10-15443	R	4/6/2010	

Wednesday, April 07, 2010

REQUEST NUMBER: 10-2689

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
HASL-300:AM-241	1	1	RE12-10-15445	R	4/6/2010	
	1	1	RE12-10-15446	R	4/6/2010	
	1	1	RE12-10-15447	R	4/6/2010	
	1	1	RE12-10-15448	R	4/6/2010	
	1	1	RE12-10-15442	R	4/6/2010	
HASL-300:ISOPU	1	1	RE12-10-15443	R	4/6/2010	
	1	1	RE12-10-15444	R	4/6/2010	
	1	1	RE12-10-15445	R	4/6/2010	
	1	1	RE12-10-15446	R	4/6/2010	
	1	1	RE12-10-15447	R	4/6/2010	
HASL-300:ISOU	1	1	RE12-10-15448	R	4/6/2010	
	1	1	RE12-10-15442	R	4/6/2010	
	1	1	RE12-10-15443	R	4/6/2010	
	1	1	RE12-10-15444	R	4/6/2010	
	1	1	RE12-10-15445	R	4/6/2010	
	1	1	RE12-10-15446	R	4/6/2010	
	1	1	RE12-10-15447	R	4/6/2010	
	1	1	RE12-10-15448	R	4/6/2010	

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LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-2689C

REQUEST NUMBER: 10-2689

Wednesday, April 07, 2010

LOS ALAMOS

NATIONAL LABORATORY

ATTN: Mike Franks

Severn Trent Laboratories, Inc., St. Louis

TURNAROUND REQ'D: 10

TURNAROUND/REPORT DUE: 4/17/2010

13715 Rider Trail N.

Earth City, MO 63045

LAB REQUEST COMMENTS: 10 full data package

SAMPLE ID	CTNR CTNR DESC	ORDER	PRESERV	MATRIX
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RE12-10-15444	1	POLY	AM241+GS+ISOPU+	None	R
RE12-10-15443	1	POLY	AM241+GS+ISOPU+	None	R
RE12-10-15442	1	POLY	AM241+GS+ISOPU+	None	R
RE12-10-15448	1	POLY	AM241+GS+ISOPU+	None	R
RE12-10-15446	1	POLY	AM241+GS+ISOPU+	None	R
RE12-10-15445	1	POLY	AM241+GS+ISOPU+	None	R
RE12-10-15447	1	POLY	AM241+GS+ISOPU+	None	R

Relinquished By: Date Time Received By: Date Time

Printed Name Signature
Printed Name Signature
Printed Name Signature
Printed Name Signature

Printed Name Signature
Printed Name Signature

Received for DISPOSAL By: Date Time Remarks:

Printed Name Signature
Printed Name Signature

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2728

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(b) - Threemile Cyn.

SAMPLE ID: RE12-10-15442

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		04/06/2010		MEDIA:	OBT3		Allh
TIME COLLECTED (HH:MM)		0959		SUB-MEDIA:	TUFF 1		NA
PRS ID:	12-004(b)	OK		SAMPLE TECH CODE:	HA		OK
LOCATION ID:	12-611939	↓		FIELD QC TYPE:	NA		↓
LOCATION TYPE:	GENERIC	↓		FIELD PREP:	NA		↓
TOP DEPTH:	0	0.0		SAMPLE USAGE:	INV		↓
BOTTOM DEPTH:	0	0.5		SCREEN/PORT DESC:	NA		
FIELD MATRIX:	R	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	10 day	8082+8270+ NMED-EXP	500 ML AMBER GLASS	Ice	Y	10 day full data package
1	10 day	AM241+GS+ ISOPU+ISOU	1 LITER POLY	None	Y	
1	10 day	Met+U+CLO4+ CN	1 GAT POLY Litter RS 03.31.10	Ice	Y	
1	10 day	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Brown sandy silt

SAMPLE COMMENTS:

FD: RE12-10-15448 12m 4/6/10

NA

LOCATION DESC:

6 inches east of pipe location

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha ≤ 25 dpm

Beta/Gamma ≤ 796 dpm

PID $\frac{\text{Ambient Reading}}{\text{Background}} = \text{ppm}$
 RS 03.31.10

COLLECTED BY (PRINT) TLMcFarland

REVIEWED BY (PRINT) Darrell Byers

RELINQUISHED BY (Printed Name) TLMcFarland (Signature) <i>TLMcFarland</i>	Date/Time 4/6/10 1230	RECEIVED BY (Printed Name) <i>Melise Montez</i> (Signature) <i>Melise Montez</i>	Date/Time 4/6/10 1230
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2728

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(b) - Threemile Cyn.

SAMPLE ID: RE12-10-15443

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		04/06/2010		MEDIA: QBT3		ok	
TIME COLLECTED (HH:MM)		1010		SUB-MEDIA: TUFF 1		↓	
PRS ID:	12-004(b)	OK		SAMPLE TECH CODE: HA		OK	
LOCATION ID:	12-611939	↓		FIELD QC TYPE: NA		↓	
LOCATION TYPE:	GENERIC	↓		FIELD PREP: NA		↓	
TOP DEPTH:	0	2.0		SAMPLE USAGE: INV		↓	
BOTTOM DEPTH:	0	12m 4/6/103.0 2.5		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: N/A			

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	10 day	8082+8270+ NMED-EXP	500 ML AMBER GLASS	Ice	y	10 day full data package
1	10 day	AM241+GS+ ISOPU+ISOU	1 LITER POLY	None	y	
1	10 day	Met+U+CLO4+ CN	1 GAL POLY L.H. R5 03-31-10	Ice	y	
1	10 day	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	y	

SAMPLE DESC:

Light brownish tan tuff (weathered) and brown sandy silt

SAMPLE COMMENTS:

Tuff at 2.2 ft

LOCATION DESC:

6 inches east of pipe location

FIELD SCREENING/MEASUREMENT RESULTS:

PID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$
 R5 03-31-10

Alpha ≤ 25 dpm
 Beta/Gamma ≤ 796 dpm

COLLECTED BY (PRINT) TLMcFarland

REVIEWED BY (PRINT)

Daniel Byers

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) TLMcFarland	4/6/10	(Printed Name) Melisa May	4/6/10
(Signature) Tray 2	1230	(Signature)	1230
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2728

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(b) - Threemile Cyn.

SAMPLE ID: RE12-10-15444

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		04/06/2010		MEDIA:		OBT3	
TIME COLLECTED (HH:MM)		1039		SUB-MEDIA:		TUFF 1	
PRS ID: 12-004(b)		OK		SAMPLE TECH CODE: HA		OK	
LOCATION ID: 12-611939		↓		FIELD QC TYPE: NA		↓	
LOCATION TYPE: GENERIC		↓		FIELD PREP: NA		↓	
TOP DEPTH: 0		5.0		SAMPLE USAGE: INV		↓	
BOTTOM DEPTH: 0		5.4		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	10 day	8082+8270+ NMED-EXP	500 ML AMBER GLASS	Ice	Y	10 day full data package
1	10 day	AM241+GS+ ISOPU+ISOU	1 LITER POLY	None	Y	
1	10 day	Met+U+CLO4+ CN	1 LITER POLY Litter RS 03-31-10	Ice	Y	
1	10 day	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Orangy brown stuff

SAMPLE COMMENTS:

NA

LOCATION DESC:

6 inches east of pipe location

FIELD SCREENING/MEASUREMENT RESULTS:

PID $\frac{\text{Ambient Reading}}{\text{RS 03-31-10}} = \text{ppm}$

Alpha ≤ 25 dpm
Beta/Gamma ≤ 716 dpm

COLLECTED BY (PRINT) TLMcFarlane

REVIEWED BY (PRINT) Daniel Byers

RELINQUISHED BY (Printed Name) TLMcFarlane (Signature) Tracy [Signature]	Date/Time 4/6/10 1230	RECEIVED BY (Printed Name) [Signature] (Signature) [Signature]	Date/Time 4/6/10 1230
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2728

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(b) - Threemile Cyn.

SAMPLE ID: RE12-10-15445

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		04/06/2010		MEDIA:		OBT3	
TIME COLLECTED (HH:MM)		1044		SUB-MEDIA:		TUFF 1	
PRS ID: 12-004(b)		OK		SAMPLE TECH CODE:		HA	
LOCATION ID: 12-611940		↓		FIELD QC TYPE:		NA	
LOCATION TYPE: GENERIC		↓		FIELD PREP:		NA	
TOP DEPTH: 0		0.0		SAMPLE USAGE:		INV	
BOTTOM DEPTH: 0		0.5		SCREEN/PORT DESC:		NA	
FIELD MATRIX: R		S		EXCAVATED: YES/NO/NA		NA	
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA		WATER FLOWING: YES/NO/NA		NA	
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION: NA		BOREHOLE DIRECTION: NA			

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	10 day	8270C+NMED Exp	500 ML AMBER GLASS	Ice	Y	10 day full data package
1	10 day	AM241+GS+ISOPU+ISOU	1 LITER POLY	None	Y	
1	10 day	Met+U+CLO4+CN	1 GAL POLY Litter RS 03-31-10	Ice	Y	
1	10 day	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Brown sandy, silt

SAMPLE COMMENTS:

FD RE12-10-15446

NA

LOCATION DESC:

1 ft NW of pipe location

FIELD SCREENING/MEASUREMENT RESULTS:

PID ~~Ambient Reading~~ = ppm
RS 03-31-10

Alpha ≤ 25 dpm
Beta/Gamma ≤ 796 dpm

COLLECTED BY (PRINT) TLMcFarland

REVIEWED BY (PRINT) Daniel Byers

RELINQUISHED BY (Printed Name) TLMcFarland (Signature) Tracy Zet	Date/Time 4/6/10 1230	RECEIVED BY (Printed Name) Melisa Montez (Signature) [Signature]	Date/Time 4/6/10 1230
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2728

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(b) - Threemile Cyn.

SAMPLE ID: RE12-10-15446

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>	<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED(MM/DD/YYYY):		04/06/2010	MEDIA:	OBT3
TIME COLLECTED (HH:MM)		1059	SUB-MEDIA:	TUFF 1
PRS ID:	12-004(b)	OK	SAMPLE TECH CODE:	HA
LOCATION ID:	12-611940	↓	FIELD QC TYPE:	NA
LOCATION TYPE:	GENERIC	↓	FIELD PREP:	NA
TOP DEPTH:	0	2.0	SAMPLE USAGE:	INV
BOTTOM DEPTH:	0	2.5	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	10 day	8270C+NMED Exp	500 ML AMBER GLASS	Ice	Y	10 day full data package ↓
1	10 day	AM241+GS+ISOPU+ISOU	1 LITER POLY	None	Y	
1	10 day	Met+U+CLO4+CN	1 LITER POLY 6.4 liter RS 03-31-10	Ice	Y	
1	10 day	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Orangy pink gray tuff

SAMPLE COMMENTS:

Hit tuff at 1.5 ft

LOCATION DESC:

1 ft NW of pipe location

FIELD SCREENING/MEASUREMENT RESULTS:

PID ~~Ambient Reading~~ = ppm
RS 03-31-10

Alpha ± 25 dpm
Beta/Gamma ± 716 dpm

COLLECTED BY (PRINT) TLMcFarland

REVIEWED BY (PRINT) Daniel Byers

RELINQUISHED BY (Printed Name) TLMcFarland (Signature) <i>TLMcFarland</i>	Date/Time 4/6/10 1230	RECEIVED BY (Printed Name) <i>Michael McIntz</i> (Signature) <i>Michael McIntz</i>	Date/Time 4/6/10 1230
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2728

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(b) - Threemile Cyn.

SAMPLE ID: RE12-10-15447

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		04/06/2010	MEDIA:	OBT3		ok	
TIME COLLECTED (HH:MM)		1121	SUB-MEDIA:	TUFF 1		↓	
PRS ID:	12-004(b)	OK	SAMPLE TECH CODE:	HA		OK	
LOCATION ID:	12-611940	↓	FIELD QC TYPE:	NA		↓	
LOCATION TYPE:	GENERIC	↓	FIELD PREP:	NA		↓	
TOP DEPTH:	0	5.0	SAMPLE USAGE:	INV		↓	
BOTTOM DEPTH:	0	5.5	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	10 day	8270C+NMED Exp	500 ML AMBER GLASS	Ice	Y	10 day full data package
1	10 day	AM241+GS+ISOPU+ISOU	1 LITER POLY	None	Y	
1	10 day	Met+U+CLO4+CN	1 CAT POLY C.P.P.P. RS 03-31-10	Ice	Y	
1	10 day	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

whitish gray tuff

SAMPLE COMMENTS:

NA

FR RE12-10-15449

LOCATION DESC:

1 ft NW of pipe location

FIELD SCREENING/MEASUREMENT RESULTS:

PID ~~Ambient~~ Reading = ppm
RS 03-31-10

Alpha = 25 dpm
Beta/Gamma = 796 dpm

COLLECTED BY (PRINT) TLMcFarland

REVIEWED BY (PRINT) Dankel Byers

RELINQUISHED BY (Printed Name) TLMcFarland (Signature) Tray 3	Date/Time 4/6/10 1230	RECEIVED BY (Printed Name) Michael M. Byers (Signature) [Signature]	Date/Time 4/6/10 1230
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2728

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(b) - Threemile Cyn.

SAMPLE ID: RE12-10-15448

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		04/06/2010		MEDIA:	QBT3		Alth
TIME COLLECTED (HH:MM)		73m 4/6/10		SUB-MEDIA:	TUFF1		NA
PRS ID:	12-004(b)	OK		SAMPLE TECH CODE:	HA		OK
LOCATION ID:	UNK	12-011946		FIELD QC TYPE:	FD		
LOCATION TYPE:	GENERIC	12-011939-73m		FIELD PREP:	NA		
TOP DEPTH:	0	OK		SAMPLE USAGE:	QC		
BOTTOM DEPTH:	0	0.0		SCREEN/PORT DESC:			
FIELD MATRIX:	R	0.5		EXCAVATED: YES/NO NA			
COMPOSITE TYPE:	NA	S		COMPOSITE TIME INTERVAL:	NA		
BOREHOLE: YES/NO NA		WATER FLOWING: YES/NO NA					
BOREHOLE DECLINATION:	NA			BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	10 day	73m 4/6/10 8082+8270+ NMED-EXP	500 ML AMBER GLASS	Ice	Y	10 day full data package
1	10 day	AM241+GS+ ISOPU+ISOU	1 LITER POLY	None	Y	
1	10 day	Met+U+CLO4+ CN	1 GAL POLY 2.7 liter RS 0331/10	Ice	Y	
1	10 day	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC: QC Sample of RE 12-10-15442-73m 4/6/10

Brown sandy silt

SAMPLE COMMENTS:

NA

LOCATION DESC:

1 ft NW of pipe location

FIELD SCREENING/MEASUREMENT RESULTS:

PID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$
 RS 0331/10

Alpha ≤ 25 dpm
 Beta/Gamma ≤ 796 dpm

COLLECTED BY (PRINT) TLMcFarland

REVIEWED BY (PRINT) Daniel Byers

RELINQUISHED BY (Printed Name) TLMcFarland (Signature) <i>TLMcFarland</i>	Date/Time 4/6/10 1230	RECEIVED BY (Printed Name) <i>Alise Nator</i> (Signature) <i>Alise Nator</i>	Date/Time 4/6/10 1230
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2728

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(b) - Threemile Cyn.

SAMPLE ID: RE12-10-15449

WORK ORDER:

AS PLANNED	AS COLLECTED	AS PLANNED	AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):	04/06/2010	MEDIA:	NA
TIME COLLECTED (HH:MM)	1150	SUB-MEDIA:	OTHER
PRS ID: 12-004(b)	OK	SAMPLE TECH CODE:	DC
LOCATION ID: UNK	12-611940	FIELD QC TYPE:	ER
LOCATION TYPE: GENERIC	OK	FIELD PREP:	UF
TOP DEPTH: 0		SAMPLE USAGE:	QC
BOTTOM DEPTH: 0		SCREEN/PORT DESC:	NA
FIELD MATRIX: W		EXCAVATED: YES/NO/NA	
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA	
		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	10 day	METALS+U-GEL	1 LITER POLY	Nitric Acid	Y	10 day full data package
1	↓	SW-846:6850	250 ML POLY	Ice	Y	↓
1	↓	TCN	500 ML POLY	Sodium Hydroxide	Y	↓

SAMPLE DESC: QC Sample of RE12-10-15447

SAMPLE COMMENTS:

Rinsate

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

TLMcFarland

REVIEWED BY (PRINT)

Dante B. yers

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) TLMcFarland	4/6/10	(Printed Name) Melissa Montez	4/6/10
(Signature) TLMcFarland	1230	(Signature) [Signature]	1230
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	



133 State Road 4, White Rock, NM 87544
505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00101
Client Sample ID: RE12-10-15442
Sample Collection Date: 04/06/10 09:59
Sample Matrix: Soil/Solid

Request or PO Number:
ARS Sample ID: ARS2-10-00101-001
Date Received: 04/06/10 13:24
Report Date: 04/06/10 19:37

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	TPU	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
GROSS ALPHA	4.28	14.03	31.34	14.06		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
GROSS BETA	22.36	13.08	18.71	13.36		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
NA-22	-0.03	30.58	0.10	30.58		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
K-40	22.42	7.58	1.05	7.61		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CO-60	0.00	0.00	0.10	0.00		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-134	0.03	0.06	0.07	0.06		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-137	0.50	0.27	0.06	0.27		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
EU-152	0.29	0.35	0.27	0.35		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
PB-212	1.41	0.44	0.11	0.44		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
RA-228	1.95	0.87	0.26	0.87		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-235	0.59	0.67	0.37	0.67		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-238	5.58	2.75	0.98	3.03		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
AM-241	0.28	0.33	0.13	0.33		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
NOTES: % Moisture: 1.66										

Matthew J. Eden
Quality Assurance Review

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

LELAP Certificate# 30658

NELAP Certificate # E87558



133 State Road 4, White Rock, NM 87544
505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00101
Client Sample ID: RE12-10-15443
Sample Collection Date: 04/06/10 10:10
Sample Matrix: Soil/Solid

Request or PO Number:
ARS Sample ID: ARS2-10-00101-002
Date Received: 04/06/10 13:24
Report Date: 04/06/10 19:37

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	TPU	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
GROSS ALPHA	8.63	15.90	29.20	15.93		pCi/g	EPA 900.0M	4/6/2010	ME	N/A
GROSS BETA	20.98	12.48	17.50	12.74		pCi/g	EPA 900.0M	4/6/2010	ME	N/A
NA-22	-0.03	33.20	0.11	33.20		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
K-40	1.39	5.45	2.56	5.45		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CO-60	0.00	0.00	0.11	0.00		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-134	0.17	0.14	0.08	0.14		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-137	0.00	0.00	0.08	0.00		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
EU-152	-0.03	-0.06	0.31	-0.06		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
PB-212	1.47	0.50	0.15	0.50		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
RA-228	1.77	0.76	0.28	0.76		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-235	-0.30	-3.08	0.48	-3.08		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-238	0.19	1.79	1.11	1.79		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
AM-241	-0.01	-0.18	0.08	-0.18		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
NOTES: % Moisture: 1.58										

Quality Assurance Review

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

LELAP Certificate# 30658

NELAP Certificate # E87558



133 State Road 4, White Rock, NM 87544

505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00101
 Client Sample ID: RE12-10-15444
 Sample Collection Date: 04/06/10 10:39
 Sample Matrix: Soil/Solid

Request or PO Number:
 ARS Sample ID: ARS2-10-00101-003
 Date Received: 04/06/10 13:24
 Report Date: 04/06/10 19:37

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	TPU	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
GROSS ALPHA	9.42	16.61	29.97	16.65		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
GROSS BETA	21.83	13.39	18.87	13.66		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
NA-22	-0.04	36.60	0.12	36.60		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
K-40	32.97	10.06	1.26	10.10		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CO-60	0.00	0.00	0.12	0.00		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-134	0.08	0.13	0.17	0.13		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-137	0.13	0.15	0.07	0.15		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
EU-152	0.12	0.16	0.32	0.16		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
PB-212	1.17	0.51	0.19	0.51		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
RA-226	2.36	0.88	0.31	0.89		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-235	0.13	0.18	0.49	0.18		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-238	2.37	3.08	1.42	3.12		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
AM-241	0.55	0.54	0.19	0.54		pCi/g	EPA 901.1M	4/6/2010	ME	N/A

NOTES: % Moisture: 1.60

Matthew A. Eden
 Quality Assurance Review

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

LELAP Certificate# 30658

NELAP Certificate # E87558



133 State Road 4, White Rock, NM 87544

505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00101
 Client Sample ID: RE12-10-15445
 Sample Collection Date: 04/06/10 10:44
 Sample Matrix: Soil/Solid

Request or PO Number:
 ARS Sample ID: ARS2-10-00101-004
 Date Received: 04/06/10 13:24
 Report Date: 04/06/10 19:37

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	TPU	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Treosor/Chem Recovery
GROSS ALPHA	15.71	20.38	32.12	20.47		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
GROSS BETA	33.88	14.27	17.61	14.86		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
NA-22	-0.03	33.85	0.11	33.85		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
K-40	19.26	8.74	1.96	8.76		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CO-60	0.00	0.00	0.11	0.00		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-134	0.18	0.24	0.08	0.24		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-137	0.01	0.03	0.07	0.03		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
EU-152	0.21	0.23	0.29	0.23		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
PB-212	1.55	0.49	0.13	0.50		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
RA-228	2.27	0.87	0.28	0.88		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-235	1.35	0.70	0.42	0.70		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-238	4.98	3.76	1.43	3.93		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
AM-241	0.32	0.28	0.11	0.28		pCi/g	EPA 901.1M	4/6/2010	ME	N/A

NOTES: % Moisture: 1.43

Matthew J. Eder
 Quality Assurance Review

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

LELAP Certificate# 30658

NELAP Certificate # E87558



133 State Road 4, White Rock, NM 87544

505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00101
 Client Sample ID: RE12-10-15446
 Sample Collection Date: 04/06/10 10:59
 Sample Matrix: Soil/Solid

Request or PO Number:
 ARS Sample ID: ARS2-10-00101-005
 Date Received: 04/06/10 13:24
 Report Date: 04/06/10 19:37

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	TPU	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
GROSS ALPHA	14.18	19.65	31.34	19.73		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
GROSS BETA	26.74	13.80	18.71	14.18		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
NA-22	-0.03	30.38	0.10	30.38		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
K-40	21.00	7.31	1.05	7.34		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CO-60	0.00	0.00	0.10	0.00		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-134	0.04	0.10	0.14	0.10		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-137	0.00	0.00	0.06	0.00		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
EU-152	-0.41	117.60	0.26	117.60		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
PB-212	1.13	0.40	0.10	0.40		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
RA-228	0.91	0.53	0.25	0.53		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-235	0.74	0.62	0.37	0.62		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-238	2.50	3.13	1.32	3.18		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
AM-241	-0.02	28.77	0.06	28.77		pCi/g	EPA 901.1M	4/6/2010	ME	N/A

NOTES: % Moisture: 0.64

M. J. Edr
 Quality Assurance Review

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

LELAP Certificate# 30658

NELAP Certificate # E87558



133 State Road 4, White Rock, NM 87544
505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00101
Client Sample ID: RE12-10-15447
Sample Collection Date: 04/06/10 11:21
Sample Matrix: Soil/Solid

Request or PO Number:
ARS Sample ID: ARS2-10-00101-006
Date Received: 04/06/10 13:24
Report Date: 04/06/10 19:37

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	TPU	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
GROSS ALPHA	-0.61	9.45	29.20	9.45		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
GROSS BETA	38.07	14.39	17.80	15.13		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
NA-22	-0.03	35.39	0.11	35.39		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
K-40	28.17	9.14	1.22	9.18		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CO-60	0.07	0.14	0.12	0.14		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-134	0.19	0.25	0.11	0.25		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-137	0.08	0.12	0.07	0.12		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
EU-152	-0.11	-0.24	0.31	-0.24		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
PB-212	1.97	0.56	0.14	0.57		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
RA-228	2.74	1.16	0.30	1.17		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-235	0.75	0.85	0.52	0.85		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-238	4.62	4.00	1.53	4.14		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
AM-241	-0.01	-0.19	0.09	-0.19		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
NOTES: % Moisture: 0.28										

Matthew J. Baker
Quality Assurance Review

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

LELAP Certificate# 30658

NELAP Certificate # E87558



133 State Road 4, White Rock, NM 87544
505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00101
Client Sample ID: RE12-10-15448
Sample Collection Date: 04/06/10 10:44
Sample Matrix: Soil/Solid

Request or PO Number:
ARS Sample ID: ARS2-10-00101-007
Date Received: 04/06/10 13:24
Report Date: 04/06/10 19:37

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	TPU	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
GROSS ALPHA	19.07	21.33	29.97	21.46		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
GROSS BETA	57.17	17.67	18.87	19.01		pCi/g	EPA 900.0M	4/4/2010	ME	N/A
NA-22	-0.03	29.54	0.09	29.54		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
K-40	17.95	6.67	1.02	6.69		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CO-60	0.30	0.27	0.10	0.27		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-134	-0.01	-0.03	0.09	-0.03		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
CS-137	0.14	0.14	0.06	0.14		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
EU-152	0.01	0.02	0.26	0.02		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
PB-212	1.48	0.46	0.13	0.46		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
RA-228	2.42	1.07	0.25	1.07		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-235	0.25	0.79	0.44	0.79		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
U-238	3.77	3.09	1.55	4.06		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
AM-241	0.19	0.27	0.12	0.27		pCi/g	EPA 901.1M	4/6/2010	ME	N/A
NOTES: % Moisture: 1.39										

Quality Assurance Review

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LELAP Certificate# 30658

NELAP Certificate # E87558

Rad Screening Data Release Form

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

RE12-10-15442

15443

15444

15445

15446

15447

15448

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

.....


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

RE12-10-15449

Reason: Rinsate

.....

Print Last Name McFarland Signature Tracy Date 4/6/10

DATA VALIDATION COVER SHEET	
5119-1	Records Use only
<div style="text-align: center;">Data Validation Cover Sheet</div> <div style="text-align: right;">  </div>	

Section I.

REQUEST NUMBER: 10-2689 VALIDATION DATE: 05/05/10 LAB CODE: STSL

CONTRACT LABORATORY NAME: Test America Laboratories, Inc. – St. Louis

VALIDATOR: David Schwent ORGANIZATION: Analytical Quality Associates, Inc.

ANALYTICAL SUITE (CHECK ALL THAT APPLY):

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


Section II. Completeness Check


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

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


1. It should be noted that the matrix QC analyses for the isotopic-Am, -Pu, and -U analyses were performed on LANL samples from other RNs. No sample data were qualified as a result.

Reviewed by: Monica Dymerski **Level I** **Date:** 05/05/10


DATA VALIDATION COVER SHEET	
5119-1	Records Use only
Data Validation Cover Sheet	 * Los Alamos NATIONAL LABORATORY EST 1947
VALIDATOR'S SIGNATURE: <u>David Schwant</u> DATE: <u>05/05/10</u>	
Form 5119-1, Revision 0.0	LOS ALAMOS Environmental Restoration Project

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

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

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

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

Los Alamos National Laboratory

Client Sample ID: RE12-10-15444

Radiochemistry

Lab Sample ID: F0D080501-001
 Work Order: LXNMR
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.565		0.058	0.038	0.015	04/09/10	04/20/10	0099259	85
Uranium 235/236	0.028	U	0.014	0.032	0.009	04/09/10	04/20/10	0099259	85
Uranium 238	0.587		0.059	0.013	0.0	04/09/10	04/20/10	0099259	85
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0141	U	0.0073	0.021	0.0073	04/09/10	04/20/10	0099258	95
Plutonium 239/40	0.0103		0.0052	0.0070	0.0	04/09/10	04/20/10	0099258	95
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.0055	U	0.0073	0.030	0.010	04/09/10	04/21/10	0099257	91
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	-0.005	U	0.080	0.27	0.13	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	0.16	U	0.14	0.47	0.21	04/12/10	04/18/10	0102353	
Bismuth 214	1.33	U	0.14	2.7	1.2	04/12/10	04/18/10	0102353	
Cadmium 109	4.26		0.67	1.8	0.87	04/12/10	04/18/10	0102353	
Cerium 139	0.004	U	0.021	0.072	0.034	04/12/10	04/18/10	0102353	
Cesium 134	0.000006	U	0.021	0.082	0.035	04/12/10	04/18/10	0102353	
Cesium 137	0.0	U	0.044	0.16	0.073	04/12/10	04/18/10	0102353	
Cobalt 60	-0.027	U	0.051	0.18	0.080	04/12/10	04/18/10	0102353	
Europium 152	-0.13	U	0.24	0.86	0.37	04/12/10	04/18/10	0102353	
Lead 212	1.68		0.11	0.17	0.08	04/12/10	04/18/10	0102353	
Lead 214	1.25	U	0.13	14	6.1	04/12/10	04/18/10	0102353	
Mercury 203	-0.007	U	0.027	0.097	0.045	04/12/10	04/18/10	0102353	
Potassium 40	28.8		1.8	0.7	0.2	04/12/10	04/18/10	0102353	
Radium (226)	1.37	U	0.14	3.6	1.6	04/12/10	04/18/10	0102353	
Radium 228	1.78		0.16	0.23	0.08	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	0.16	U	0.14	0.47	0.21	04/12/10	04/18/10	0102353	
Radium 224	-5.5	U	1.5	4.8	2.4	04/12/10	04/18/10	0102353	
Ruthenium 106	0.0008	U	0.33	1.2	0.55	04/12/10	04/18/10	0102353	
Sodium 22	0.035	U	0.047	0.17	0.073	04/12/10	04/18/10	0102353	
Strontium 85	-0.060	U	0.049	0.16	0.077	04/12/10	04/18/10	0102353	
Thallium 208	0.612		0.068	0.11	0.046	04/12/10	04/18/10	0102353	
Thorium 227	0.16	U	0.14	0.47	0.21	04/12/10	04/18/10	0102353	
Thorium 231	0.26	U	0.18	0.61	0.29	04/12/10	04/18/10	0102353	
Thorium 234	2.70		0.59	1.4	0.68	04/12/10	04/18/10	0102353	
Tin 113	0.002	U	0.034	0.13	0.056	04/12/10	04/18/10	0102353	
Uranium 235	0.26	U	0.18	0.61	0.29	04/12/10	04/18/10	0102353	
Yttrium 88	-0.035	U	0.044	0.15	0.067	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.78		0.16	0.23	0.08	04/12/10	04/18/10	0102353	

DJS
05/05/10

Los Alamos National Laboratory
Client Sample ID: RE12-10-15443

Radiochemistry

Lab Sample ID: F0D080501-002
 Work Order: LXNMV
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.795		0.072	0.045	0.019	04/09/10	04/20/10	0099259	82
Uranium 235/236	0.029	U	0.014	0.033	0.009	04/09/10	04/20/10	0099259	82
Uranium 238	0.878		0.076	0.039	0.015	04/09/10	04/20/10	0099259	82
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0202		0.0072	0.0069	0.0	04/09/10	04/20/10	0099258	87
Plutonium 239/40	0.0032	U	0.0041	0.016	0.0051	04/09/10	04/20/10	0099258	87
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.010	U	0.013	0.048	0.021	04/09/10	04/22/10	0099257	94
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	-0.008	U	0.088	0.30	0.14	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	-0.76	U	0.39	1.3	0.61	04/12/10	04/18/10	0102353	
Bismuth 214	1.47	U	0.15	2.5	1.1	04/12/10	04/18/10	0102353	
Cadmium 109	-1.31	U	0.95	3.1	1.5	04/12/10	04/18/10	0102353	
Cerium 139	0.001	U	0.028	0.097	0.046	04/12/10	04/18/10	0102353	
Cesium 134	-0.034	U	0.042	0.14	0.067	04/12/10	04/18/10	0102353	
Cesium 137	-0.002	U	0.037	0.13	0.060	04/12/10	04/18/10	0102353	
Cobalt 60	-0.003	U	0.043	0.16	0.070	04/12/10	04/18/10	0102353	
Europium 152	0.19	U	0.20	0.68	0.29	04/12/10	04/18/10	0102353	
Lead 212	1.85		0.14	0.23	0.11	04/12/10	04/18/10	0102353	
Lead 214	0.0	U	0.37	0.31	0.15	04/12/10	04/18/10	0102353	
Mercury 203	0.026	U	0.034	0.12	0.055	04/12/10	04/18/10	0102353	
Potassium 40	18.9		1.3	1.6	0.7	04/12/10	04/18/10	0102353	
Radium (226)	1.56	U	0.14	3.0	1.3	04/12/10	04/18/10	0102353	
Radium 228	1.75		0.16	0.27	0.11	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	-0.76	U	0.39	1.3	0.61	04/12/10	04/18/10	0102353	
Radium 224	-0.2	U	1.1	3.7	1.8	04/12/10	04/18/10	0102353	
Ruthenium 106	-0.0005	U	0.27	1.0	0.45	04/12/10	04/18/10	0102353	
Sodium 22	-0.025	U	0.039	0.14	0.061	04/12/10	04/18/10	0102353	
Strontium 85	-0.043	U	0.049	0.17	0.078	04/12/10	04/18/10	0102353	
Thallium 208	0.511		0.069	0.13	0.057	04/12/10	04/18/10	0102353	
Thorium 227	-0.76	U	0.39	1.3	0.61	04/12/10	04/18/10	0102353	
Thorium 231	0.04	U	0.19	0.68	0.32	04/12/10	04/18/10	0102353	
Thorium 234	-0.8	U	6.1	2.1	1.0	04/12/10	04/18/10	0102353	
Tin 113	-0.021	U	0.036	0.13	0.058	04/12/10	04/18/10	0102353	
Uranium 235	0.04	U	0.19	0.68	0.32	04/12/10	04/18/10	0102353	
Yttrium 88	-0.004	U	0.034	0.13	0.055	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.75		0.16	0.27	0.11	04/12/10	04/18/10	0102353	
Bismuth 212	3.36		0.49	0.50	0.16	04/12/10	04/18/10	0102353	

DJS
05/05/10

Los Alamos National Laboratory

Client Sample ID: RE12-10-15442

Radiochemistry

Lab Sample ID: F0D080501-003

Date Collected: 04/06/10 0000

Work Order: LXNMW

Date Received: 04/08/10 0915

Matrix: SOLID

Parameter	Result	Qual	Total Uncert. (1 σ /-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD			pCi/g		A-01-R MOD				
Uranium 234	0.825		0.070	0.035	0.013	04/09/10	04/21/10	0099259	92
Uranium 235/236	0.023	U	0.013	0.035	0.012	04/09/10	04/21/10	0099259	92
Uranium 238	1.34		0.096	0.028	0.009	04/09/10	04/21/10	0099259	92
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD			pCi/g		A-01-R MOD				
Plutonium 238	0.0195		0.0074	0.0076	0.0	04/09/10	04/20/10	0099258	84
Plutonium 239/40	0.0175	U	0.0077	0.018	0.0056	04/09/10	04/20/10	0099258	84
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD			pCi/g		A-01-R MOD				
Americium 241	0.0015	U	0.0073	0.034	0.013	04/09/10	04/21/10	0099257	95
Gamma Cs-137 & Hits by EPA 901.1 MOD			pCi/g		901.1 MOD				
Americium 241	-0.056	U	0.098	0.33	0.16	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	0.02	U	0.69	2.3	1.1	04/12/10	04/18/10	0102353	
Bismuth 214	1.21	U	0.13	2.9	1.3	04/12/10	04/18/10	0102353	
Cadmium 109	0.27	U	0.79	2.7	1.3	04/12/10	04/18/10	0102353	
Cerium 139	-0.003	U	0.025	0.089	0.042	04/12/10	04/18/10	0102353	
Cesium 134	-0.000004	U	0.037	0.14	0.062	04/12/10	04/18/10	0102353	
Cesium 137	0.527		0.068	0.092	0.038	04/12/10	04/18/10	0102353	
Cobalt 60	0.013	U	0.046	0.17	0.073	04/12/10	04/18/10	0102353	
Europium 152	0.32	U	0.23	0.76	0.32	04/12/10	04/18/10	0102353	
Lead 212	1.47		0.12	0.19	0.09	04/12/10	04/18/10	0102353	
Lead 214	0.0	U	0.053	0.22	0.098	04/12/10	04/18/10	0102353	
Mercury 203	-0.029	U	0.038	0.13	0.060	04/12/10	04/18/10	0102353	
Potassium 40	20.2		1.5	1.1	0.4	04/12/10	04/18/10	0102353	
Radium (226)	1.40	U	0.14	3.2	1.4	04/12/10	04/18/10	0102353	
Radium 228	1.15		0.17	0.38	0.16	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	0.02	U	0.69	2.3	1.1	04/12/10	04/18/10	0102353	
Radium 224	-5.8	U	1.6	5.2	2.5	04/12/10	04/18/10	0102353	
Ruthenium 106	0.14	U	0.32	1.2	0.51	04/12/10	04/18/10	0102353	
Sodium 22	-0.003	U	0.045	0.17	0.074	04/12/10	04/18/10	0102353	
Strontium 85	-0.023	U	0.043	0.15	0.069	04/12/10	04/18/10	0102353	
Thallium 208	0.439		0.059	0.11	0.046	04/12/10	04/18/10	0102353	
Thorium 227	0.02	U	0.69	2.3	1.1	04/12/10	04/18/10	0102353	
Thorium 231	0.28	U	0.19	0.62	0.29	04/12/10	04/18/10	0102353	
Thorium 234	3.78		0.64	1.5	0.73	04/12/10	04/18/10	0102353	
Tin 113	-0.041	U	0.050	0.17	0.078	04/12/10	04/18/10	0102353	
Uranium 235	0.28	U	0.19	0.62	0.29	04/12/10	04/18/10	0102353	
Yttrium 88	-0.002	U	0.043	0.16	0.070	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.15		0.17	0.38	0.16	04/12/10	04/18/10	0102353	
Bismuth 212	3.84		0.58	0.61	0.19	04/12/10	04/18/10	0102353	

DJS
05/05/10

Los Alamos National Laboratory
Client Sample ID: RE12-10-15448

Radiochemistry

Lab Sample ID: F0D080501-004
 Work Order: LXNMX
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.758		0.068	0.044	0.019	04/09/10	04/21/10	0099259	92
Uranium 235/236	0.044		0.017	0.030	0.009	04/09/10	04/21/10	0099259	92
Uranium 238	0.868		0.073	0.013	0.0	04/09/10	04/21/10	0099259	92
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0163		0.0067	0.0073	0.0	04/09/10	04/20/10	0099258	89
Plutonium 239/40	0.026		0.010	0.025	0.009	04/09/10	04/20/10	0099258	89
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.0086	U	0.0061	0.012	0.0065	04/09/10	04/21/10	0099257	99
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	0.053	U	0.093	0.32	0.15	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	-0.07	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Bismuth 214	1.25	U	0.14	2.8	1.2	04/12/10	04/18/10	0102353	
Cadmium 109	-0.04	U	0.69	2.4	1.1	04/12/10	04/18/10	0102353	
Cerium 139	0.027	U	0.025	0.084	0.040	04/12/10	04/18/10	0102353	
Cesium 134	-0.028	U	0.039	0.13	0.061	04/12/10	04/18/10	0102353	
Cesium 137	0.061	U	0.041	0.14	0.061	04/12/10	04/18/10	0102353	
Cobalt 60	0.014	U	0.041	0.15	0.064	04/12/10	04/18/10	0102353	
Europium 152	0.0	U	0.24	0.93	0.40	04/12/10	04/18/10	0102353	
Lead 212	1.37		0.11	0.20	0.09	04/12/10	04/18/10	0102353	
Lead 214	0.0	U	2.9	0.3	0.1	04/12/10	04/18/10	0102353	
Mercury 203	0.024	U	0.031	0.11	0.049	04/12/10	04/18/10	0102353	
Potassium 40	18.7		1.4	1.4	0.6	04/12/10	04/18/10	0102353	
Radium (226)	1.31	U	0.12	3.6	1.6	04/12/10	04/18/10	0102353	
Radium 228	1.69		0.20	0.23	0.08	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	-0.07	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Radium 224	-1.7	U	1.2	3.9	1.9	04/12/10	04/18/10	0102353	
Ruthenium 106	-0.02	U	0.25	0.95	0.41	04/12/10	04/18/10	0102353	
Sodium 22	0.0	U	0.063	0.23	0.10	04/12/10	04/18/10	0102353	
Strontium 85	-0.020	U	0.041	0.14	0.065	04/12/10	04/18/10	0102353	
Thallium 208	0.635		0.068	0.10	0.045	04/12/10	04/18/10	0102353	
Thorium 227	-0.07	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Thorium 231	0.008	U	0.20	0.69	0.33	04/12/10	04/18/10	0102353	
Thorium 234	1.09	U	0.56	1.9	0.89	04/12/10	04/18/10	0102353	
Tin 113	-0.019	U	0.042	0.15	0.068	04/12/10	04/18/10	0102353	
Uranium 235	0.008	U	0.20	0.69	0.33	04/12/10	04/18/10	0102353	
Yttrium 88	-0.021	U	0.048	0.17	0.077	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.69		0.20	0.23	0.08	04/12/10	04/18/10	0102353	DJS
Bismuth 212	2.69		0.56	0.89	0.34	04/12/10	04/18/10	0102353	05/05/10

Los Alamos National Laboratory
Client Sample ID: RE12-10-15446

Radiochemistry

Lab Sample ID: F0D080501-005
 Work Order: LXNM2
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DEC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.525		0.056	0.026	0.007	04/09/10	04/21/10	0099259	81
Uranium 235/236	0.016	U	0.011	0.032	0.009	04/09/10	04/21/10	0099259	81
Uranium 238	0.585		0.059	0.013	0.0	04/09/10	04/21/10	0099259	81
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0116		0.0058	0.0078	0.0	04/09/10	04/20/10	0099258	79
Plutonium 239/40	0.0036	U	0.0046	0.019	0.0058	04/09/10	04/20/10	0099258	79
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.0075	U	0.0070	0.025	0.0071	04/09/10	04/21/10	0099257	90
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	0.035	U	0.094	0.32	0.15	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	-0.37	U	0.32	1.1	0.51	04/12/10	04/18/10	0102353	
Bismuth 214	1.10	U	0.14	2.4	1.1	04/12/10	04/18/10	0102353	
Cadmium 109	0.17	U	0.65	2.2	1.1	04/12/10	04/18/10	0102353	
Cerium 139	0.0009	U	0.023	0.081	0.038	04/12/10	04/18/10	0102353	
Cesium 134	0.009	U	0.12	0.39	0.19	04/12/10	04/18/10	0102353	
Cesium 137	0.004	U	0.028	0.11	0.046	04/12/10	04/18/10	0102353	
Cobalt 60	-0.006	U	0.037	0.14	0.059	04/12/10	04/18/10	0102353	
Europium 152	0.08	U	0.19	0.71	0.30	04/12/10	04/18/10	0102353	
Lead 212	1.22		0.13	0.23	0.11	04/12/10	04/18/10	0102353	
Lead 214	1.21	U	0.11	14	6.4	04/12/10	04/18/10	0102353	
Mercury 203	-0.0008	U	0.028	0.10	0.046	04/12/10	04/18/10	0102353	
Potassium 40	23.5		1.6	1	0.4	04/12/10	04/18/10	0102353	
Radium (226)	1.25	U	0.12	3.4	1.5	04/12/10	04/18/10	0102353	
Radium 228	1.37		0.14	0.21	0.08	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	-0.37	U	0.32	1.1	0.51	04/12/10	04/18/10	0102353	
Radium 224	-0.08	U	0.91	3.1	1.5	04/12/10	04/18/10	0102353	
Ruthenium 106	-0.01	U	0.30	1.1	0.49	04/12/10	04/18/10	0102353	
Sodium 22	0.0	U	0.0078	0.058	0.018	04/12/10	04/18/10	0102353	
Strontium 85	-0.054	U	0.044	0.15	0.069	04/12/10	04/18/10	0102353	
Thallium 208	0.580		0.069	0.11	0.049	04/12/10	04/18/10	0102353	
Thorium 227	-0.37	U	0.32	1.1	0.51	04/12/10	04/18/10	0102353	
Thorium 231	0.123	U	0.036	0.71	0.33	04/12/10	04/18/10	0102353	
Thorium 234	1.17	U	0.57	2.0	0.95	04/12/10	04/18/10	0102353	
Tin 113	-0.001	U	0.035	0.13	0.058	04/12/10	04/18/10	0102353	
Uranium 235	0.123	U	0.036	0.71	0.33	04/12/10	04/18/10	0102353	
Yttrium 88	0.039	U	0.029	0.099	0.041	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.37		0.14	0.21	0.08	04/12/10	04/18/10	0102353	

DJS
05/05/10

Los Alamos National Laboratory
Client Sample ID: RE12-10-15445

Radiochemistry

Lab Sample ID: F0D080501-006
 Work Order: LXNM4
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Isotopes (LONG CT) DOE A-01-R MOD									
Uranium 234	0.784		0.074	0.039	0.014	04/09/10	04/21/10	0099259	78
Uranium 235/236	0.019	U	0.014	0.048	0.018	04/09/10	04/21/10	0099259	78
Uranium 238	0.883		0.079	0.042	0.016	04/09/10	04/21/10	0099259	78
Isotopes (LONG CT) DOE A-01-R MOD									
Plutonium 238	0.043		0.011	0.008	0.0	04/09/10	04/21/10	0099258	65
Plutonium 239/240	0.037		0.010	0.008	0.0	04/09/10	04/21/10	0099258	65
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD									
Americium 241	0.026	U	0.013	0.032	0.011	04/09/10	04/21/10	0099257	87
Gamma Cs-137 & Hits by EPA 901.1 MOD									
Americium 241	0.051	U	0.078	0.27	0.13	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	0.08	U	0.25	0.87	0.41	04/12/10	04/18/10	0102353	
Bismuth 214	1.27	U	0.12	2.2	1.0	04/12/10	04/18/10	0102353	
Cadmium 109	2.01	U	0.83	2.7	1.3	04/12/10	04/18/10	0102353	
Cerium 139	-0.023	U	0.027	0.092	0.044	04/12/10	04/18/10	0102353	
Cesium 134	-0.067	U	0.045	0.15	0.070	04/12/10	04/18/10	0102353	
Cesium 137	0.074	U	0.038	0.12	0.056	04/12/10	04/18/10	0102353	
Cobalt 60	0.017	U	0.030	0.11	0.046	04/12/10	04/18/10	0102353	
Europium 152	0.0	U	0.14	0.54	0.23	04/12/10	04/18/10	0102353	
Lead 212	1.30		0.13	0.23	0.11	04/12/10	04/18/10	0102353	
Lead 214	1.39		0.11	0.21	0.1	04/12/10	04/18/10	0102353	
Mercury 203	-0.028	U	0.034	0.12	0.054	04/12/10	04/18/10	0102353	
Potassium 40	18.3		1.2	1	0.4	04/12/10	04/18/10	0102353	
Radium (226)	1.43	U	0.12	2.4	1.1	04/12/10	04/18/10	0102353	
Radium 228	1.85		0.19	0.25	0.11	04/12/10	04/18/10	0102353	
Radium 223 (assumes e)	0.08	U	0.25	0.87	0.41	04/12/10	04/18/10	0102353	
Radium 224	1.70	U	0.84	2.7	1.3	04/12/10	04/18/10	0102353	
Ruthenium 106	-0.11	U	0.27	0.96	0.44	04/12/10	04/18/10	0102353	
Sodium 22	0.0007	U	0.033	0.12	0.053	04/12/10	04/18/10	0102353	
Strontium 85	-0.052	U	0.039	0.13	0.061	04/12/10	04/18/10	0102353	
Thallium 208	0.619		0.066	0.11	0.048	04/12/10	04/18/10	0102353	
Thorium 227	0.08	U	0.25	0.87	0.41	04/12/10	04/18/10	0102353	
Thorium 231	-0.03	U	0.21	0.72	0.35	04/12/10	04/18/10	0102353	
Thorium 234	1.69	U	0.60	2.0	0.95	04/12/10	04/18/10	0102353	
Tin 113	-0.001	U	0.034	0.12	0.056	04/12/10	04/18/10	0102353	
Uranium 235	-0.03	U	0.21	0.72	0.35	04/12/10	04/18/10	0102353	
Yttrium 88	0.015	U	0.034	0.12	0.055	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.85		0.19	0.25	0.11	04/12/10	04/18/10	0102353	
Bismuth 212	2.11		0.45	0.81	0.33	04/12/10	04/18/10	0102353	

DJS
05/05/10

Los Alamos National Laboratory
Client Sample ID: RE12-10-15447

Radiochemistry

Lab Sample ID: F0D080501-007
 Work Order: LXNM9
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Isotopes URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.504		0.054	0.040	0.016	04/09/10	04/21/10	0099259	91
Uranium 235/236	0.027	U	0.014	0.031	0.009	04/09/10	04/21/10	0099259	91
Uranium 238	0.532		0.055	0.013	0.0	04/09/10	04/21/10	0099259	91
Isotopes PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0128	U	0.0063	0.016	0.0049	04/09/10	04/20/10	0099258	95
Plutonium 239/40	0.0122		0.0055	0.0066	0.0	04/09/10	04/20/10	0099258	95
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.002	U	0.011	0.048	0.022	04/09/10	04/22/10	0099257	101
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	-0.023	U	0.084	0.29	0.14	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	-0.1	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Bismuth 214	1.22	U	0.14	2.4	1.0	04/12/10	04/18/10	0102353	
Cadmium 109	0.0	U	0.69	2.4	1.1	04/12/10	04/18/10	0102353	
Cerium 139	-0.0002	U	0.024	0.082	0.039	04/12/10	04/18/10	0102353	
Cesium 134	-0.015	U	0.032	0.11	0.051	04/12/10	04/18/10	0102353	
Cesium 137	0.028	U	0.037	0.13	0.057	04/12/10	04/18/10	0102353	
Cobalt 60	-0.047	U	0.056	0.20	0.087	04/12/10	04/18/10	0102353	
Europium 152	-0.003	U	0.13	0.53	0.21	04/12/10	04/18/10	0102353	
Lead 212	1.56		0.11	0.17	0.08	04/12/10	04/18/10	0102353	
Lead 214	1.27	U	0.11	11	4.6	04/12/10	04/18/10	0102353	
Mercury 203	-0.004	U	0.029	0.10	0.047	04/12/10	04/18/10	0102353	
Potassium 40	33.5		1.9	0.6	0.2	04/12/10	04/18/10	0102353	
Radium (226)	1.25	U	0.12	3.7	1.7	04/12/10	04/18/10	0102353	
Radium 228	1.61		0.16	0.31	0.13	04/12/10	04/18/10	0102353	
Radium 223 (assumes e)	-0.1	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Radium 224	-5.6	U	1.5	4.7	2.3	04/12/10	04/18/10	0102353	
Ruthenium 106	0.28	U	0.29	1.0	0.45	04/12/10	04/18/10	0102353	
Sodium 22	0.020	U	0.050	0.18	0.079	04/12/10	04/18/10	0102353	
Strontium 85	-0.043	U	0.045	0.15	0.071	04/12/10	04/18/10	0102353	
Thallium 208	0.601		0.074	0.12	0.055	04/12/10	04/18/10	0102353	
Thorium 227	-0.1	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Thorium 231	0.26	U	0.18	0.58	0.28	04/12/10	04/18/10	0102353	
Thorium 234	2.36		0.53	1.4	0.65	04/12/10	04/18/10	0102353	
Tin 113	0.002	U	0.039	0.14	0.065	04/12/10	04/18/10	0102353	
Uranium 235	0.26	U	0.18	0.58	0.28	04/12/10	04/18/10	0102353	
Yttrium 88	0.014	U	0.040	0.14	0.064	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.61		0.16	0.31	0.13	04/12/10	04/18/10	0102353	

DJS
05/05/10

Hard Copy Required

Wednesday, April 07, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-2689C

LOS ALAMOS

REQUEST NUMBER: 10-2689

NATIONAL LABORATORY

cur 93

ATTN: Mike Franks

TURNAROUND/REPORT DUE: 4/17/2010

Severn Trent Laboratories, Inc., St. Louis

TURNAROUND REQ'D: 10

13715 Rider Trail N.

Earth City, MO 63045

LAB REQUEST COMMENTS: 10 full data package

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE12-10-15444	1	POLY <i>LP</i>	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15443	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15442	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15448	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15446	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15445	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15447	1	POLY	AM241+GS+ISOPU+ ISOU	None	R

Relinquished By: Date Time Received By: Date Time

Printed Name	Signature	Printed Name	Signature
<i>Spencer</i>	<i>[Signature]</i>	<i>NICHOLAS OWENS</i>	<i>[Signature]</i>
Printed Name	Signature	Printed Name	Signature

Printed Name	Signature	Printed Name	Signature

Received for DISPOSAL By: Date Time Remarks:

Printed Name	Signature

Page 1 of 2

Hard Copy Required

Wednesday, April 07, 2010

REQUEST NUMBER: 10-2689

**LOS ALAMOS
NATIONAL LABORATORY**

ATTN: Mike Franks

These Samples are on:

Severn Trent Laboratories, Inc., St. Louis

LANL Request Number: 10-2689

13715 Rider Trail N.

Per Agreement Number: 126310021

Earth City, MO 63045

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples
according to the schedule indicated:

SHIP DATE: 4/7/2010

TURNAROUND/REPORT DUE: 4/17/2010

TURNAROUND REQ'D: 10 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS: 10 full data package

LANL ER SMO CONTACT:

Signature:



PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA-901.1	1	RE12-10-15442	R	4/6/2010	
		1	RE12-10-15443	R	4/6/2010	
		1	RE12-10-15444	R	4/6/2010	
		1	RE12-10-15445	R	4/6/2010	
		1	RE12-10-15446	R	4/6/2010	
		1	RE12-10-15447	R	4/6/2010	
		1	RE12-10-15448	R	4/6/2010	
	HASL-300-AM-241	1	RE12-10-15442	R	4/6/2010	
		1	RE12-10-15443	R	4/6/2010	

LOT # F0D080501

8 of 611

Page 2 of 2

Hard Copy Required

REQUEST NUMBER: 10-2689

Wednesday, April 07, 2010

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	HASL-300:AM-241	1	RE12-10-15445	R	4/6/2010	
		1	RE12-10-15446	R	4/6/2010	
		1	RE12-10-15447	R	4/6/2010	
		1	RE12-10-15448	R	4/6/2010	
	HASL-300:ISOPU	1	RE12-10-15442	R	4/6/2010	
		1	RE12-10-15443	R	4/6/2010	
		1	RE12-10-15444	R	4/6/2010	
		1	RE12-10-15445	R	4/6/2010	
		1	RE12-10-15446	R	4/6/2010	
		1	RE12-10-15447	R	4/6/2010	
		1	RE12-10-15448	R	4/6/2010	
	HASL-300:ISOU	1	RE12-10-15442	R	4/6/2010	
		1	RE12-10-15443	R	4/6/2010	
		1	RE12-10-15444	R	4/6/2010	
		1	RE12-10-15445	R	4/6/2010	
		1	RE12-10-15446	R	4/6/2010	
		1	RE12-10-15447	R	4/6/2010	
		1	RE12-10-15448	R	4/6/2010	

Final Page of REQUEST NUMBER 10-2689



TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 10-2689

Los Alamos National Lab

Lot #: F0D080501

Joylene Valdez or Keith Greene

Los Alamos National Laboratory

SMO TA-00 Bldg 1237

DP: 03U; MS: 707

Los Alamos, NM 87545

TESTAMERICA LABORATORIES, INC.

A handwritten signature in black ink, appearing to read "mcf", is positioned above the printed name of the Project Manager.

Michael C. Franks
Project Manager

April 26, 2010

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TOTAL # OF PAGES IN PACKAGE	611

Case Narrative
LOT NUMBER: F0D080501
LANL Request Number: 10-2689

This report contains the analytical results for the seven samples received under chain of custody number 10-2689 by TestAmerica St. Louis on April 8, 2010. These samples are associated with your Los Alamos National Lab project.

All applicable quality control procedures met method-specified acceptance criteria.

This report shall not be reproduced, except in full, without the written approval of the laboratory.

This report is incomplete without the case narrative. All chemical analysis results are based upon dry weight correction as required per the statement of work. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances

Sample Receiving

Samples were received at 3 °C. No problems were noted at the time of sample receipt.

Gamma Cs-137 Method 901.1

QC Batch: 0102353

The Method Blank shows no contamination above the MDA.

The LCS is within stated limits.

The Batch QC Sample Duplicate was performed on F0D080501-001 (this request). The Duplicate RPD/RER values are within stated limits.

Isotopic Americium Method A-01-R

QC Batch: 0099257

The Method Blank shows no contamination above the MDA.

The LCS is within stated limits.

The Batch QC Sample Duplicate was performed on F0C310488-001 (request 10-2627). The Duplicate RPD/RER value is within stated limits.

Isotopic Plutonium Method A-01-R

QC Batch: 0099258

Plutonium 238 was detected in the Method Blank above the MDC but below the required detection limit.

The LCS is within stated limits.

The Batch QC Sample Duplicate was performed on F0C310488-001 (request 10-2627). The Duplicate RPD/RER values are within stated limits.

Isotopic Uranium Method A-01-R

QC Batch: 0099259

Uranium 238 was detected in the Method Blank above the MDC but below the required detection limit.

The LCS is within stated limits.

The Batch QC Sample Duplicate was performed on F0C310488-001 (request 10-2627). The Duplicate RPD/RER values are within stated limits.

I certify that this data is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the signature on the front page, has authorized release of the data contained in this hardcopy.

F0D080501

CLIENT ANALYSIS SUMMARY

Storage Loc:

RAD

Project Manager: MCF Quote #: 85705 SDG: F0D080501✓
 Project: 10-2689✓ Los Alamos National Lab
 PO#: 63639-001-10 Report to: Joylene Valdez or Keith
 Client: 108581 Los Alamos National Laboratory

Date Received: 2010-04-08✓
 Analytical Due Date: 2010-04-16✓
 Report Due Date: 2010-04-19✓
 Report Type: D Expanded Deliverable
 EDD Code: 99

#SMPS in LOT: 7

Sample Receiving: LOS ALAMOS CLIENT REQUIREMENTS Enter COC NUMBER in the COC Field; SDG = "Lot Number" Project Name = "Request number"

LOG QC AS DETAILED BELOW FOR EACH DEPT. EXCEPT RAD ***** METALS AND WETCHEMISTRY ***** Can batch multiple Lots together and report Client sp

Batch QC: Matrix Spike and Sample Duplicate Met Prep: GFAA Spike Level and Standard Spike Level Sb spike at 100 ppb

Pb - Spike Solids at 100 ppb, spike Waters at 20 - Perform analytical spike when matrix spike is swamped with indigenous analyte.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
1	RE12-10-15444 ✓			2010-04-06 / 0 ✓	LXNMR	SOLID ✓
SAMPLE COMMENTS:						
XX ZV	RAD SCREEN	SOLID, RAD SCREEN ✓	RA IN-HOUSE RAD SCREEN	01 STANDARD TEST SET	PROT: A	WRK LOC 06
XX 2L	EML A-01-R MOD	SOLID, Iso PLUTONIUM ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX 2M	EML A-01-R MOD	SOLID, Iso URANIUM ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX 2N	EML A-01-R MOD	SOLID, Iso AM-241 ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX Z7	EPA 901.1 MOD	SOLID, Gamma Scan ✓	G6 Dry, Grind, and Fill Geometry	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
2	RE12-10-15443 ✓			2010-04-06 / 0 ✓	LXNMV	SOLID ✓
SAMPLE COMMENTS:						
XX ZV	RAD SCREEN	SOLID, RAD SCREEN ✓	RA IN-HOUSE RAD SCREEN	01 STANDARD TEST SET	PROT: A	WRK LOC 06
XX 2L	EML A-01-R MOD	SOLID, Iso PLUTONIUM ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX 2M	EML A-01-R MOD	SOLID, Iso URANIUM ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX 2N	EML A-01-R MOD	SOLID, Iso AM-241 ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX Z7	EPA 901.1 MOD	SOLID, Gamma Scan ✓	G6 Dry, Grind, and Fill Geometry	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
3	RE12-10-15442 ✓			2010-04-06 / 0 ✓	LXNMW	SOLID ✓
SAMPLE COMMENTS:						
XX ZV	RAD SCREEN	SOLID, RAD SCREEN ✓	RA IN-HOUSE RAD SCREEN	01 STANDARD TEST SET	PROT: A	WRK LOC 06
XX 2L	EML A-01-R MOD	SOLID, Iso PLUTONIUM ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX 2M	EML A-01-R MOD	SOLID, Iso URANIUM ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX 2N	EML A-01-R MOD	SOLID, Iso AM-241 ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX Z7	EPA 901.1 MOD	SOLID, Gamma Scan ✓	G6 Dry, Grind, and Fill Geometry	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
4	RE12-10-15448 ✓			2010-04-06 / 0 ✓	LXNMX	SOLID ✓
SAMPLE COMMENTS:						
XX ZV	RAD SCREEN	SOLID, RAD SCREEN ✓	RA IN-HOUSE RAD SCREEN	01 STANDARD TEST SET	PROT: A	WRK LOC 06
XX 2L	EML A-01-R MOD	SOLID, Iso PLUTONIUM ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX 2M	EML A-01-R MOD	SOLID, Iso URANIUM ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX 2N	EML A-01-R MOD	SOLID, Iso AM-241 ✓	J2 Extraction Chromatography - Sequential Actinides	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
XX Z7	EPA 901.1 MOD	SOLID, Gamma Scan ✓	G6 Dry, Grind, and Fill Geometry	9Q ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC 06
5	RE12-10-15446 ✓			2010-04-06 / 0 ✓	LXNM2	SOLID ✓
SAMPLE COMMENTS:						
XX ZV	RAD SCREEN	SOLID, RAD SCREEN ✓	RA IN-HOUSE RAD SCREEN	01 STANDARD TEST SET	PROT: A	WRK LOC 06

F0D080501

CLIENT ANALYSIS SUMMARY

Storage Loc:

RAD

Project Manager: MCF Quote #: 85705 SDG: F0D080501
 Project: 10-2689 Los Alamos National Lab
 PO#: 63639-001-10 Report to: Joylene Valdez or Keith
 Client: 108581 Los Alamos National Laboratory

Date Received: 2010-04-08
 Analytical Due Date: 2010-04-16
 Report Due Date: 2010-04-19
 Report Type: D Expanded Deliverable
 EDD Code: 99

#SMPS in LOT: 7

Sample Receiving: LOS ALAMOS CLIENT REQUIREMENTS Enter COC NUMBER in the COC Field; SDG = "Lot Number" Project Name = "Request number"

LOG QC AS DETAILED BELOW FOR EACH DEPT. EXCEPT RAD ***** METALS AND WETCHEMISTRY ***** Can batch multiple Lots together and report Client as

Batch QC: Matrix Spike and Sample Duplicate Met Prep: GFAA Spike Level and Standard Spike Level Sb spike at 100 ppb

Pb - Spike Solids at 100 ppb, spike Waters at 20 - Perform analytical spike when matrix spike is swamped with indigenous analyte.

XX 2L	EML	A-01-R MOD	SOLID, Iso PLUTONIUM ✓	J2	Extraction Chromatography - Sequential Actinides	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06
XX 2M	EML	A-01-R MOD	SOLID, Iso URANIUM ✓	J2	Extraction Chromatography - Sequential Actinides	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06
XX 2N	EML	A-01-R MOD	SOLID, Iso AM-241 ✓	J2	Extraction Chromatography - Sequential Actinides	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06
XX Z7	EPA	901.1 MOD	SOLID, Gamma Scan ✓	G6	Dry, Grind, and Fill Geometry	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
6	RE12-10-15445 ✓			2010-04-06 / 0 ✓	LXNM4	SOLID ✓

SAMPLE COMMENTS:

XX ZV	RAD SCREEN	SOLID, RAD SCREEN, ✓	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 2L	EML	A-01-R MOD	SOLID, Iso PLUTONIUM ✓	J2	Extraction Chromatography - Sequential Actinides	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06
XX 2M	EML	A-01-R MOD	SOLID, Iso URANIUM ✓	J2	Extraction Chromatography - Sequential Actinides	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06
XX 2N	EML	A-01-R MOD	SOLID, Iso AM-241 ✓	J2	Extraction Chromatography - Sequential Actinides	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06
XX Z7	EPA	901.1 MOD	SOLID, Gamma Scan ✓	G6	Dry, Grind, and Fill Geometry	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
7	RE12-10-15447 ✓			2010-04-06 / 0 ✓	LXNM9	SOLID ✓

SAMPLE COMMENTS:

XX ZV	RAD SCREEN	SOLID, RAD SCREEN, ✓	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 2L	EML	A-01-R MOD	SOLID, Iso PLUTONIUM ✓	J2	Extraction Chromatography - Sequential Actinides	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06
XX 2M	EML	A-01-R MOD	SOLID, Iso URANIUM ✓	J2	Extraction Chromatography - Sequential Actinides	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06
XX 2N	EML	A-01-R MOD	SOLID, Iso AM-241 ✓	J2	Extraction Chromatography - Sequential Actinides	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06
XX Z7	EPA	901.1 MOD	SOLID, Gamma Scan ✓	G6	Dry, Grind, and Fill Geometry	9Q	ORG FLAGS FOR INORG; STANDARD	PROT: R	WRK LOC	06

Hard Copy Required

Wednesday, April 07, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-2689C

LOS ALAMOS
NATIONAL LABORATORY

REQUEST NUMBER: 10-2689

cur 93

ATTN: Mike Franks

TURNAROUND/REPORT DUE: 4/17/2010

Severn Trent Laboratories, Inc., St. Louis

TURNAROUND REQ'D: 10

13715 Rider Trail N.

Earth City, MO 63045

LAB REQUEST COMMENTS: 10 full data package

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE12-10-15444	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15443	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15442	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15448	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15446	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15445	1	POLY	AM241+GS+ISOPU+ ISOU	None	R
RE12-10-15447	1	POLY	AM241+GS+ISOPU+ ISOU	None	R

Relinquished By:

Date

Time

Received By:

Date

Time

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:

Printed Name

Signature

Page 1 of 2

Hard Copy Required

Wednesday, April 07, 2010

REQUEST NUMBER: 10-2689

**LOS ALAMOS
NATIONAL LABORATORY**

ATTN: Mike Franks

Severn Trent Laboratories, Inc., St. Louis

13715 Rider Trail N.

Earth City, MO 63045

These Samples are on:

LANL Request Number:10-2689

Per Agreement Number:126310021

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples according to the schedule indicated:

SHIP DATE: 4/7/2010

TURNAROUND/REPORT DUE: 4/17/2010

TURNAROUND REQ'D: 10 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS: 10 full data package

LANL ER SMO CONTACT:

Signature: (

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:901.1	1	RE12-10-15442	R	4/6/2010	
		1	RE12-10-15443	R	4/6/2010	
		1	RE12-10-15444	R	4/6/2010	
		1	RE12-10-15445	R	4/6/2010	
		1	RE12-10-15446	R	4/6/2010	
		1	RE12-10-15447	R	4/6/2010	
		1	RE12-10-15448	R	4/6/2010	
	HASL-300:AM-241	1	RE12-10-15442	R	4/6/2010	
		1	RE12-10-15443	R	4/6/2010	

Page 2 of 2

Hard Copy Required

Wednesday, April 07, 2010

REQUEST NUMBER: 10-2689

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	HASL-300:AM-241	1	RE12-10-15445	R	4/6/2010	
		1	RE12-10-15446	R	4/6/2010	
		1	RE12-10-15447	R	4/6/2010	
		1	RE12-10-15448	R	4/6/2010	
	HASL-300:ISOPU	1	RE12-10-15442	R	4/6/2010	
		1	RE12-10-15443	R	4/6/2010	
		1	RE12-10-15444	R	4/6/2010	
		1	RE12-10-15445	R	4/6/2010	
		1	RE12-10-15446	R	4/6/2010	
		1	RE12-10-15447	R	4/6/2010	
		1	RE12-10-15448	R	4/6/2010	
	HASL-300:ISOU	1	RE12-10-15442	R	4/6/2010	
		1	RE12-10-15443	R	4/6/2010	
		1	RE12-10-15444	R	4/6/2010	
		1	RE12-10-15445	R	4/6/2010	
		1	RE12-10-15446	R	4/6/2010	
		1	RE12-10-15447	R	4/6/2010	
		1	RE12-10-15448	R	4/6/2010	

Final Page of REQUEST NUMBER 10-2689

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F00080487489495501**CONDITION UPON RECEIPT FORM**Client: LANLQuote No: 85724/85705COC/RFA No: SEE BELOW

93

Initiated By: NVODate: 4/8/10Time: 0915**Shipping Information**Shipper: FedEx UPS DHL Courier Client Other: _____ Multiple Packages: 0 N

Shipping # (s):*

Sample Temperature (s):**

1. 7209 7850 68402. 7209 7850 6830

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

1. 32. AMBIENT

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1. <u>(Y)</u> N	Are there custody seals present on the cooler?	8. <u>(Y)</u> N	Are there custody seals present on bottles?
2. Y <u>(N)</u> N/A	Do custody seals on cooler appear to be tampered with?	9. Y <u>(N)</u> N/A	Do custody seals on bottles appear to be tampered with?
3. <u>(Y)</u> N	Were contents of cooler frisked after opening, but before unpacking?	10. <u>(Y)</u> N N/A	Was sample received with proper pH? (If not, make note below)
4. <u>(Y)</u> N	Sample received with Chain of Custody?	11. <u>(Y)</u> N	Sample received in proper containers?
5. <u>(Y)</u> N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12. Y N <u>(N/A)</u>	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
6. Y <u>(N)</u>	Was sample received broken?	13. Y N <u>(N/A)</u>	Was Internal COC/Workshare received?
7. <u>(Y)</u> N	Is sample volume sufficient for analysis?	14. Y N <u>(N/A)</u>	Was pH taken by original TestAmerica lab?

† For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes:

10-2684 - TAT STO per MF10-2687 - TAT 4/16 - 4/19 per MF10-268910-2688

Corrective Action:

☐ Client Contact Name: _____☐ Sample(s) processed "as is"☐ Sample(s) on hold until: _____Project Management Review: Jayna Pohl

Informed by: _____

If released, notify: _____

Date: 4/9/10

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

ADMIN-0004, REVISED 10/21/08 \\slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin004 rev11.doc

METHODS SUMMARY

F0D080501

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Americium241, Curim243/244 by Alpha Spectroscopy	EML A-01-R MOD	
Gamma Spectroscopy - Cesium-137 & Hits	EPA 901.1 MOD	
Isotopic Plutonium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	

References:

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL"
HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY
PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

SAMPLE SUMMARY**F0D080501**

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
LXNMR	001	RE12-10-15444	04/06/10	
LXNMV	002	RE12-10-15443	04/06/10	
LXNMW	003	RE12-10-15442	04/06/10	
LXNMX	004	RE12-10-15448	04/06/10	
LXNM2	005	RE12-10-15446	04/06/10	
LXNM4	006	RE12-10-15445	04/06/10	
LXNM9	007	RE12-10-15447	04/06/10	

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Los Alamos National Laboratory
Client Sample ID: RE12-10-15444

Radiochemistry

Lab Sample ID: F0D080501-001
 Work Order: LXNMR
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.565		0.058	0.038	0.015	04/09/10	04/20/10	0099259	85
Uranium 235/236	0.028	U	0.014	0.032	0.009	04/09/10	04/20/10	0099259	85
Uranium 238	0.587		0.059	0.013	0.0	04/09/10	04/20/10	0099259	85
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0141	U	0.0073	0.021	0.0073	04/09/10	04/20/10	0099258	95
Plutonium 239/40	0.0103		0.0052	0.0070	0.0	04/09/10	04/20/10	0099258	95
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.0055	U	0.0073	0.030	0.010	04/09/10	04/21/10	0099257	91
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	-0.005	U	0.080	0.27	0.13	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	0.16	U	0.14	0.47	0.21	04/12/10	04/18/10	0102353	
Bismuth 214	1.33	U	0.14	2.7	1.2	04/12/10	04/18/10	0102353	
Cadmium 109	4.26		0.67	1.8	0.87	04/12/10	04/18/10	0102353	
Cerium 139	0.004	U	0.021	0.072	0.034	04/12/10	04/18/10	0102353	
Cesium 134	0.000006	U	0.021	0.082	0.035	04/12/10	04/18/10	0102353	
Cesium 137	0.0	U	0.044	0.16	0.073	04/12/10	04/18/10	0102353	
Cobalt 60	-0.027	U	0.051	0.18	0.080	04/12/10	04/18/10	0102353	
Europium 152	-0.13	U	0.24	0.86	0.37	04/12/10	04/18/10	0102353	
Lead 212	1.68		0.11	0.17	0.08	04/12/10	04/18/10	0102353	
Lead 214	1.25	U	0.13	14	6.1	04/12/10	04/18/10	0102353	
Mercury 203	-0.007	U	0.027	0.097	0.045	04/12/10	04/18/10	0102353	
Potassium 40	28.8		1.8	0.7	0.2	04/12/10	04/18/10	0102353	
Radium (226)	1.37	U	0.14	3.6	1.6	04/12/10	04/18/10	0102353	
Radium 228	1.78		0.16	0.23	0.08	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	0.16	U	0.14	0.47	0.21	04/12/10	04/18/10	0102353	
Radium 224	-5.5	U	1.5	4.8	2.4	04/12/10	04/18/10	0102353	
Ruthenium 106	0.0008	U	0.33	1.2	0.55	04/12/10	04/18/10	0102353	
Sodium 22	0.035	U	0.047	0.17	0.073	04/12/10	04/18/10	0102353	
Strontium 85	-0.060	U	0.049	0.16	0.077	04/12/10	04/18/10	0102353	
Thallium 208	0.612		0.068	0.11	0.046	04/12/10	04/18/10	0102353	
Thorium 227	0.16	U	0.14	0.47	0.21	04/12/10	04/18/10	0102353	
Thorium 231	0.26	U	0.18	0.61	0.29	04/12/10	04/18/10	0102353	
Thorium 234	2.70		0.59	1.4	0.68	04/12/10	04/18/10	0102353	
Tin 113	0.002	U	0.034	0.13	0.056	04/12/10	04/18/10	0102353	
Uranium 235	0.26	U	0.18	0.61	0.29	04/12/10	04/18/10	0102353	
Yttrium 88	-0.035	U	0.044	0.15	0.067	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.78		0.16	0.23	0.08	04/12/10	04/18/10	0102353	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

LOT # ~~1401030301~~ **1401030301** than the sample detection limit.

Los Alamos National Laboratory
Client Sample ID: RE12-10-15443

Radiochemistry

Lab Sample ID: F0D080501-002
 Work Order: LXNMV
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.795		0.072	0.045	0.019	04/09/10	04/20/10	0099259	82
Uranium 235/236	0.029	U	0.014	0.033	0.009	04/09/10	04/20/10	0099259	82
Uranium 238	0.878		0.076	0.039	0.015	04/09/10	04/20/10	0099259	82
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0202		0.0072	0.0069	0.0	04/09/10	04/20/10	0099258	87
Plutonium 239/40	0.0032	U	0.0041	0.016	0.0051	04/09/10	04/20/10	0099258	87
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.010	U	0.013	0.048	0.021	04/09/10	04/22/10	0099257	94
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	-0.008	U	0.088	0.30	0.14	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	-0.76	U	0.39	1.3	0.61	04/12/10	04/18/10	0102353	
Bismuth 214	1.47	U	0.15	2.5	1.1	04/12/10	04/18/10	0102353	
Cadmium 109	-1.31	U	0.95	3.1	1.5	04/12/10	04/18/10	0102353	
Cerium 139	0.001	U	0.028	0.097	0.046	04/12/10	04/18/10	0102353	
Cesium 134	-0.034	U	0.042	0.14	0.067	04/12/10	04/18/10	0102353	
Cesium 137	-0.002	U	0.037	0.13	0.060	04/12/10	04/18/10	0102353	
Cobalt 60	-0.003	U	0.043	0.16	0.070	04/12/10	04/18/10	0102353	
Europium 152	0.19	U	0.20	0.68	0.29	04/12/10	04/18/10	0102353	
Lead 212	1.85		0.14	0.23	0.11	04/12/10	04/18/10	0102353	
Lead 214	0.0	U	0.37	0.31	0.15	04/12/10	04/18/10	0102353	
Mercury 203	0.026	U	0.034	0.12	0.055	04/12/10	04/18/10	0102353	
Potassium 40	18.9		1.3	1.6	0.7	04/12/10	04/18/10	0102353	
Radium (226)	1.56	U	0.14	3.0	1.3	04/12/10	04/18/10	0102353	
Radium 228	1.75		0.16	0.27	0.11	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	-0.76	U	0.39	1.3	0.61	04/12/10	04/18/10	0102353	
Radium 224	-0.2	U	1.1	3.7	1.8	04/12/10	04/18/10	0102353	
Ruthenium 106	-0.0005	U	0.27	1.0	0.45	04/12/10	04/18/10	0102353	
Sodium 22	-0.025	U	0.039	0.14	0.061	04/12/10	04/18/10	0102353	
Strontium 85	-0.043	U	0.049	0.17	0.078	04/12/10	04/18/10	0102353	
Thallium 208	0.511		0.069	0.13	0.057	04/12/10	04/18/10	0102353	
Thorium 227	-0.76	U	0.39	1.3	0.61	04/12/10	04/18/10	0102353	
Thorium 231	0.04	U	0.19	0.68	0.32	04/12/10	04/18/10	0102353	
Thorium 234	-0.8	U	6.1	2.1	1.0	04/12/10	04/18/10	0102353	
Tin 113	-0.021	U	0.036	0.13	0.058	04/12/10	04/18/10	0102353	
Uranium 235	0.04	U	0.19	0.68	0.32	04/12/10	04/18/10	0102353	
Yttrium 88	-0.004	U	0.034	0.13	0.055	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.75		0.16	0.27	0.11	04/12/10	04/18/10	0102353	
Bismuth 212	3.36		0.49	0.50	0.16	04/12/10	04/18/10	0102353	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

LOT # ~~101030301~~ **101030301** than the sample detection limit.

Los Alamos National Laboratory
Client Sample ID: RE12-10-15442

Radiochemistry

Lab Sample ID: F0D080501-003
 Work Order: LXNMW
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.825		0.070	0.035	0.013	04/09/10	04/21/10	0099259	92
Uranium 235/236	0.023	U	0.013	0.035	0.012	04/09/10	04/21/10	0099259	92
Uranium 238	1.34		0.096	0.028	0.009	04/09/10	04/21/10	0099259	92
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0195		0.0074	0.0076	0.0	04/09/10	04/20/10	0099258	84
Plutonium 239/40	0.0175	U	0.0077	0.018	0.0056	04/09/10	04/20/10	0099258	84
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.0015	U	0.0073	0.034	0.013	04/09/10	04/21/10	0099257	95
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	-0.056	U	0.098	0.33	0.16	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	0.02	U	0.69	2.3	1.1	04/12/10	04/18/10	0102353	
Bismuth 214	1.21	U	0.13	2.9	1.3	04/12/10	04/18/10	0102353	
Cadmium 109	0.27	U	0.79	2.7	1.3	04/12/10	04/18/10	0102353	
Cerium 139	-0.003	U	0.025	0.089	0.042	04/12/10	04/18/10	0102353	
Cesium 134	-0.000004	U	0.037	0.14	0.062	04/12/10	04/18/10	0102353	
Cesium 137	0.527		0.068	0.092	0.038	04/12/10	04/18/10	0102353	
Cobalt 60	0.013	U	0.046	0.17	0.073	04/12/10	04/18/10	0102353	
Europium 152	0.32	U	0.23	0.76	0.32	04/12/10	04/18/10	0102353	
Lead 212	1.47		0.12	0.19	0.09	04/12/10	04/18/10	0102353	
Lead 214	0.0	U	0.053	0.22	0.098	04/12/10	04/18/10	0102353	
Mercury 203	-0.029	U	0.038	0.13	0.060	04/12/10	04/18/10	0102353	
Potassium 40	20.2		1.5	1.1	0.4	04/12/10	04/18/10	0102353	
Radium (226)	1.40	U	0.14	3.2	1.4	04/12/10	04/18/10	0102353	
Radium 228	1.15		0.17	0.38	0.16	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	0.02	U	0.69	2.3	1.1	04/12/10	04/18/10	0102353	
Radium 224	-5.8	U	1.6	5.2	2.5	04/12/10	04/18/10	0102353	
Ruthenium 106	0.14	U	0.32	1.2	0.51	04/12/10	04/18/10	0102353	
Sodium 22	-0.003	U	0.045	0.17	0.074	04/12/10	04/18/10	0102353	
Strontium 85	-0.023	U	0.043	0.15	0.069	04/12/10	04/18/10	0102353	
Thallium 208	0.439		0.059	0.11	0.046	04/12/10	04/18/10	0102353	
Thorium 227	0.02	U	0.69	2.3	1.1	04/12/10	04/18/10	0102353	
Thorium 231	0.28	U	0.19	0.62	0.29	04/12/10	04/18/10	0102353	
Thorium 234	3.78		0.64	1.5	0.73	04/12/10	04/18/10	0102353	
Tin 113	-0.041	U	0.050	0.17	0.078	04/12/10	04/18/10	0102353	
Uranium 235	0.28	U	0.19	0.62	0.29	04/12/10	04/18/10	0102353	
Yttrium 88	-0.002	U	0.043	0.16	0.070	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.15		0.17	0.38	0.16	04/12/10	04/18/10	0102353	
Bismuth 212	3.84		0.58	0.61	0.19	04/12/10	04/18/10	0102353	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

LOT # ~~PCD080501~~ ~~PCD080501~~ than the sample detection limit.

Los Alamos National Laboratory
Client Sample ID: RE12-10-15448

Radiochemistry

Lab Sample ID: F0D080501-004
 Work Order: LXNMX
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.758		0.068	0.044	0.019	04/09/10	04/21/10	0099259	92
Uranium 235/236	0.044		0.017	0.030	0.009	04/09/10	04/21/10	0099259	92
Uranium 238	0.868		0.073	0.013	0.0	04/09/10	04/21/10	0099259	92
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0163		0.0067	0.0073	0.0	04/09/10	04/20/10	0099258	89
Plutonium 239/40	0.026		0.010	0.025	0.009	04/09/10	04/20/10	0099258	89
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.0086	U	0.0061	0.012	0.0065	04/09/10	04/21/10	0099257	99
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	0.053	U	0.093	0.32	0.15	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	-0.07	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Bismuth 214	1.25	U	0.14	2.8	1.2	04/12/10	04/18/10	0102353	
Cadmium 109	-0.04	U	0.69	2.4	1.1	04/12/10	04/18/10	0102353	
Cerium 139	0.027	U	0.025	0.084	0.040	04/12/10	04/18/10	0102353	
Cesium 134	-0.028	U	0.039	0.13	0.061	04/12/10	04/18/10	0102353	
Cesium 137	0.061	U	0.041	0.14	0.061	04/12/10	04/18/10	0102353	
Cobalt 60	0.014	U	0.041	0.15	0.064	04/12/10	04/18/10	0102353	
Europium 152	0.0	U	0.24	0.93	0.40	04/12/10	04/18/10	0102353	
Lead 212	1.37		0.11	0.20	0.09	04/12/10	04/18/10	0102353	
Lead 214	0.0	U	2.9	0.3	0.1	04/12/10	04/18/10	0102353	
Mercury 203	0.024	U	0.031	0.11	0.049	04/12/10	04/18/10	0102353	
Potassium 40	18.7		1.4	1.4	0.6	04/12/10	04/18/10	0102353	
Radium (226)	1.31	U	0.12	3.6	1.6	04/12/10	04/18/10	0102353	
Radium 228	1.69		0.20	0.23	0.08	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	-0.07	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Radium 224	-1.7	U	1.2	3.9	1.9	04/12/10	04/18/10	0102353	
Ruthenium 106	-0.02	U	0.25	0.95	0.41	04/12/10	04/18/10	0102353	
Sodium 22	0.0	U	0.063	0.23	0.10	04/12/10	04/18/10	0102353	
Strontium 85	-0.020	U	0.041	0.14	0.065	04/12/10	04/18/10	0102353	
Thallium 208	0.635		0.068	0.10	0.045	04/12/10	04/18/10	0102353	
Thorium 227	-0.07	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Thorium 231	0.008	U	0.20	0.69	0.33	04/12/10	04/18/10	0102353	
Thorium 234	1.09	U	0.56	1.9	0.89	04/12/10	04/18/10	0102353	
Tin 113	-0.019	U	0.042	0.15	0.068	04/12/10	04/18/10	0102353	
Uranium 235	0.008	U	0.20	0.69	0.33	04/12/10	04/18/10	0102353	
Yttrium 88	-0.021	U	0.048	0.17	0.077	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.69		0.20	0.23	0.08	04/12/10	04/18/10	0102353	
Bismuth 212	2.69		0.56	0.89	0.34	04/12/10	04/18/10	0102353	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

LOT # ~~FE0084501~~ **FE0084501** than the sample detection limit.

Los Alamos National Laboratory
Client Sample ID: RE12-10-15446

Radiochemistry

Lab Sample ID: F0D080501-005
 Work Order: LXNM2
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.525		0.056	0.026	0.007	04/09/10	04/21/10	0099259	81
Uranium 235/236	0.016	U	0.011	0.032	0.009	04/09/10	04/21/10	0099259	81
Uranium 238	0.585		0.059	0.013	0.0	04/09/10	04/21/10	0099259	81
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0116		0.0058	0.0078	0.0	04/09/10	04/20/10	0099258	79
Plutonium 239/40	0.0036	U	0.0046	0.019	0.0058	04/09/10	04/20/10	0099258	79
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.0075	U	0.0070	0.025	0.0071	04/09/10	04/21/10	0099257	90
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	0.035	U	0.094	0.32	0.15	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	-0.37	U	0.32	1.1	0.51	04/12/10	04/18/10	0102353	
Bismuth 214	1.10	U	0.14	2.4	1.1	04/12/10	04/18/10	0102353	
Cadmium 109	0.17	U	0.65	2.2	1.1	04/12/10	04/18/10	0102353	
Cerium 139	0.0009	U	0.023	0.081	0.038	04/12/10	04/18/10	0102353	
Cesium 134	0.009	U	0.12	0.39	0.19	04/12/10	04/18/10	0102353	
Cesium 137	0.004	U	0.028	0.11	0.046	04/12/10	04/18/10	0102353	
Cobalt 60	-0.006	U	0.037	0.14	0.059	04/12/10	04/18/10	0102353	
Europium 152	0.08	U	0.19	0.71	0.30	04/12/10	04/18/10	0102353	
Lead 212	1.22		0.13	0.23	0.11	04/12/10	04/18/10	0102353	
Lead 214	1.21	U	0.11	14	6.4	04/12/10	04/18/10	0102353	
Mercury 203	-0.0008	U	0.028	0.10	0.046	04/12/10	04/18/10	0102353	
Potassium 40	23.5		1.6	1	0.4	04/12/10	04/18/10	0102353	
Radium (226)	1.25	U	0.12	3.4	1.5	04/12/10	04/18/10	0102353	
Radium 228	1.37		0.14	0.21	0.08	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	-0.37	U	0.32	1.1	0.51	04/12/10	04/18/10	0102353	
Radium 224	-0.08	U	0.91	3.1	1.5	04/12/10	04/18/10	0102353	
Ruthenium 106	-0.01	U	0.30	1.1	0.49	04/12/10	04/18/10	0102353	
Sodium 22	0.0	U	0.0078	0.058	0.018	04/12/10	04/18/10	0102353	
Strontium 85	-0.054	U	0.044	0.15	0.069	04/12/10	04/18/10	0102353	
Thallium 208	0.580		0.069	0.11	0.049	04/12/10	04/18/10	0102353	
Thorium 227	-0.37	U	0.32	1.1	0.51	04/12/10	04/18/10	0102353	
Thorium 231	0.123	U	0.036	0.71	0.33	04/12/10	04/18/10	0102353	
Thorium 234	1.17	U	0.57	2.0	0.95	04/12/10	04/18/10	0102353	
Tin 113	-0.001	U	0.035	0.13	0.058	04/12/10	04/18/10	0102353	
Uranium 235	0.123	U	0.036	0.71	0.33	04/12/10	04/18/10	0102353	
Yttrium 88	0.039	U	0.029	0.099	0.041	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.37		0.14	0.21	0.08	04/12/10	04/18/10	0102353	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

LOT # ~~201080501~~ **201080501** less than the sample detection limit.

Los Alamos National Laboratory
Client Sample ID: RE12-10-15445

Radiochemistry

Lab Sample ID: F0D080501-006
 Work Order: LXNM4
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.784		0.074	0.039	0.014	04/09/10	04/21/10	0099259	78
Uranium 235/236	0.019	U	0.014	0.048	0.018	04/09/10	04/21/10	0099259	78
Uranium 238	0.883		0.079	0.042	0.016	04/09/10	04/21/10	0099259	78
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.043		0.011	0.008	0.0	04/09/10	04/21/10	0099258	65
Plutonium 239/40	0.037		0.010	0.008	0.0	04/09/10	04/21/10	0099258	65
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.026	U	0.013	0.032	0.011	04/09/10	04/21/10	0099257	87
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	0.051	U	0.078	0.27	0.13	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	0.08	U	0.25	0.87	0.41	04/12/10	04/18/10	0102353	
Bismuth 214	1.27	U	0.12	2.2	1.0	04/12/10	04/18/10	0102353	
Cadmium 109	2.01	U	0.83	2.7	1.3	04/12/10	04/18/10	0102353	
Cerium 139	-0.023	U	0.027	0.092	0.044	04/12/10	04/18/10	0102353	
Cesium 134	-0.067	U	0.045	0.15	0.070	04/12/10	04/18/10	0102353	
Cesium 137	0.074	U	0.038	0.12	0.056	04/12/10	04/18/10	0102353	
Cobalt 60	0.017	U	0.030	0.11	0.046	04/12/10	04/18/10	0102353	
Europium 152	0.0	U	0.14	0.54	0.23	04/12/10	04/18/10	0102353	
Lead 212	1.30		0.13	0.23	0.11	04/12/10	04/18/10	0102353	
Lead 214	1.39		0.11	0.21	0.1	04/12/10	04/18/10	0102353	
Mercury 203	-0.028	U	0.034	0.12	0.054	04/12/10	04/18/10	0102353	
Potassium 40	18.3		1.2	1	0.4	04/12/10	04/18/10	0102353	
Radium (226)	1.43	U	0.12	2.4	1.1	04/12/10	04/18/10	0102353	
Radium 228	1.85		0.19	0.25	0.11	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	0.08	U	0.25	0.87	0.41	04/12/10	04/18/10	0102353	
Radium 224	1.70	U	0.84	2.7	1.3	04/12/10	04/18/10	0102353	
Ruthenium 106	-0.11	U	0.27	0.96	0.44	04/12/10	04/18/10	0102353	
Sodium 22	0.0007	U	0.033	0.12	0.053	04/12/10	04/18/10	0102353	
Strontium 85	-0.052	U	0.039	0.13	0.061	04/12/10	04/18/10	0102353	
Thallium 208	0.619		0.066	0.11	0.048	04/12/10	04/18/10	0102353	
Thorium 227	0.08	U	0.25	0.87	0.41	04/12/10	04/18/10	0102353	
Thorium 231	-0.03	U	0.21	0.72	0.35	04/12/10	04/18/10	0102353	
Thorium 234	1.69	U	0.60	2.0	0.95	04/12/10	04/18/10	0102353	
Tin 113	-0.001	U	0.034	0.12	0.056	04/12/10	04/18/10	0102353	
Uranium 235	-0.03	U	0.21	0.72	0.35	04/12/10	04/18/10	0102353	
Yttrium 88	0.015	U	0.034	0.12	0.055	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.85		0.19	0.25	0.11	04/12/10	04/18/10	0102353	
Bismuth 212	2.11		0.45	0.81	0.33	04/12/10	04/18/10	0102353	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

LOT # ~~FE0D080501~~ ~~FE0D080501~~ than the sample detection limit.

Los Alamos National Laboratory
Client Sample ID: RE12-10-15447

Radiochemistry

Lab Sample ID: F0D080501-007
 Work Order: LXNM9
 Matrix: SOLID

Date Collected: 04/06/10 0000
 Date Received: 04/08/10 0915

Parameter	Result	Qual	Total Uncert. (1 σ +/-)	MDC	DLC	Prep Date	Analysis Date	Batch #	Yld %
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Uranium 234	0.504		0.054	0.040	0.016	04/09/10	04/21/10	0099259	91
Uranium 235/236	0.027	U	0.014	0.031	0.009	04/09/10	04/21/10	0099259	91
Uranium 238	0.532		0.055	0.013	0.0	04/09/10	04/21/10	0099259	91
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Plutonium 238	0.0128	U	0.0063	0.016	0.0049	04/09/10	04/20/10	0099258	95
Plutonium 239/40	0.0122		0.0055	0.0066	0.0	04/09/10	04/20/10	0099258	95
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD				pCi/g		A-01-R MOD			
Americium 241	0.002	U	0.011	0.048	0.022	04/09/10	04/22/10	0099257	101
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g		901.1 MOD			
Americium 241	-0.023	U	0.084	0.29	0.14	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	-0.1	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Bismuth 214	1.22	U	0.14	2.4	1.0	04/12/10	04/18/10	0102353	
Cadmium 109	0.0	U	0.69	2.4	1.1	04/12/10	04/18/10	0102353	
Cerium 139	-0.0002	U	0.024	0.082	0.039	04/12/10	04/18/10	0102353	
Cesium 134	-0.015	U	0.032	0.11	0.051	04/12/10	04/18/10	0102353	
Cesium 137	0.028	U	0.037	0.13	0.057	04/12/10	04/18/10	0102353	
Cobalt 60	-0.047	U	0.056	0.20	0.087	04/12/10	04/18/10	0102353	
Europium 152	-0.003	U	0.13	0.53	0.21	04/12/10	04/18/10	0102353	
Lead 212	1.56		0.11	0.17	0.08	04/12/10	04/18/10	0102353	
Lead 214	1.27	U	0.11	11	4.6	04/12/10	04/18/10	0102353	
Mercury 203	-0.004	U	0.029	0.10	0.047	04/12/10	04/18/10	0102353	
Potassium 40	33.5		1.9	0.6	0.2	04/12/10	04/18/10	0102353	
Radium (226)	1.25	U	0.12	3.7	1.7	04/12/10	04/18/10	0102353	
Radium 228	1.61		0.16	0.31	0.13	04/12/10	04/18/10	0102353	
Radium 223 (assumes e	-0.1	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Radium 224	-5.6	U	1.5	4.7	2.3	04/12/10	04/18/10	0102353	
Ruthenium 106	0.28	U	0.29	1.0	0.45	04/12/10	04/18/10	0102353	
Sodium 22	0.020	U	0.050	0.18	0.079	04/12/10	04/18/10	0102353	
Strontium 85	-0.043	U	0.045	0.15	0.071	04/12/10	04/18/10	0102353	
Thallium 208	0.601		0.074	0.12	0.055	04/12/10	04/18/10	0102353	
Thorium 227	-0.1	U	0.63	2.1	1.0	04/12/10	04/18/10	0102353	
Thorium 231	0.26	U	0.18	0.58	0.28	04/12/10	04/18/10	0102353	
Thorium 234	2.36		0.53	1.4	0.65	04/12/10	04/18/10	0102353	
Tin 113	0.002	U	0.039	0.14	0.065	04/12/10	04/18/10	0102353	
Uranium 235	0.26	U	0.18	0.58	0.28	04/12/10	04/18/10	0102353	
Yttrium 88	0.014	U	0.040	0.14	0.064	04/12/10	04/18/10	0102353	
--- Other Detected Radionuclides ---									
Actinium 228	1.61		0.16	0.31	0.13	04/12/10	04/18/10	0102353	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

LOT # ~~100084501~~ **100084501** than the sample detection limit.

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F0D080501
Matrix: SOLID

Parameter	Result	Qual	Total Uncert.	MDC	DLC	Prep Date	Lab Sample ID		
			(1 σ +/-)				Analysis Date	Batch #	Yld %
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD			pCi/g	A-01-R MOD		F0D090000-258B			
Plutonium 238	0.0085		0.0032	0.0033	0.0	04/09/10	04/20/10	0099258	98
Plutonium 239/40	0.0	U	0.0011	0.0033	0.0	04/09/10	04/20/10	0099258	98
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD			pCi/g	A-01-R MOD		F0D090000-257B			
Americium 241	0.0051	U	0.0048	0.017	0.0	04/09/10	04/22/10	0099257	99
Iso URANIUM (LONG CT) DOE A-01-R MOD			pCi/g	A-01-R MOD		F0D090000-259B			
Uranium 234	0.0060	U	0.0042	0.012	0.0035	04/09/10	04/20/10	0099259	89
Uranium 235/236	-0.0012	U	0.0012	0.015	0.0044	04/09/10	04/20/10	0099259	89
Uranium 238	0.0093		0.0047	0.0063	0.0	04/09/10	04/20/10	0099259	89
Gamma Cs-137 & Hits by EPA 901.1 MOD			pCi/g	901.1 MOD		F0D120000-353B			
Americium 241	-0.011	U	0.024	0.085	0.038	04/12/10	04/18/10	0102353	
Bismuth 211 eq Th-22	0.0	U	0.18	0.63	0.30	04/12/10	04/18/10	0102353	
Bismuth 214	-0.02	U	0.38	1.4	0.62	04/12/10	04/18/10	0102353	
Cadmium 109	-0.07	U	0.23	0.81	0.37	04/12/10	04/18/10	0102353	
Cerium 139	0.0062	U	0.0093	0.033	0.015	04/12/10	04/18/10	0102353	
Cesium 134	-0.002	U	0.017	0.065	0.029	04/12/10	04/18/10	0102353	
Cesium 137	-0.017	U	0.021	0.074	0.033	04/12/10	04/18/10	0102353	
Cobalt 60	0.0	U	0.026	0.10	0.044	04/12/10	04/18/10	0102353	
Europium 152	0.0	U	0.025	0.18	0.058	04/12/10	04/18/10	0102353	
Lead 212	0.073	U	0.030	0.092	0.042	04/12/10	04/18/10	0102353	
Lead 214	0.082	U	0.038	0.14	0.062	04/12/10	04/18/10	0102353	
Mercury 203	0.014	U	0.011	0.039	0.017	04/12/10	04/18/10	0102353	
Potassium 40	-0.06	U	0.26	0.95	0.41	04/12/10	04/18/10	0102353	
Radium (226)	0.289	U	0.049	1.5	0.67	04/12/10	04/18/10	0102353	
Radium 228	0.090	U	0.046	0.14	0.051	04/12/10	04/18/10	0102353	
Radium 223 (assumes ϵ)	0.0	U	0.18	0.63	0.30	04/12/10	04/18/10	0102353	
Radium 224	0.01	U	0.29	1.1	0.48	04/12/10	04/18/10	0102353	
Ruthenium 106	-0.11	U	0.16	0.59	0.25	04/12/10	04/18/10	0102353	
Sodium 22	0.0	U	0.025	0.096	0.042	04/12/10	04/18/10	0102353	
Strontium 85	-0.027	U	0.026	0.088	0.041	04/12/10	04/18/10	0102353	
Thallium 208	0.007	U	0.018	0.071	0.031	04/12/10	04/18/10	0102353	
Thorium 227	0.0	U	0.18	0.63	0.30	04/12/10	04/18/10	0102353	
Thorium 231	-0.04	U	0.84	0.31	0.14	04/12/10	04/18/10	0102353	
Thorium 234	0.07	U	0.19	0.73	0.34	04/12/10	04/18/10	0102353	
Tin 113	0.005	U	0.017	0.062	0.027	04/12/10	04/18/10	0102353	
Uranium 235	-0.04	U	0.84	0.31	0.14	04/12/10	04/18/10	0102353	
Yttrium 88	0.002	U	0.014	0.057	0.023	04/12/10	04/18/10	0102353	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only

Bold results are greater than the MDC

LOT # F0P080501
U Result is less than the sample detection limit.

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F0D080501

Matrix: SOLID

Parameter	Spike Amount	Result	Total Uncert. (1 σ +/-)	MDC	% Yld	% Rec	Lab Sample ID QC Control Limits
Am241, Cm243/244 (LONG CT) DOE A-01-R MOD							
		pCi/g		A-01-R MOD			F0D090000-257C
Americium 241	1.93	1.77	0.095	0.014	105	92	(73 - 126)
Batch #:	0099257			Analysis Date:	04/22/10		
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD							
		pCi/g		A-01-R MOD			F0D090000-258C
Plutonium 238	8.02	7.64	0.45	0.08	90	95	(76 - 111)
Plutonium 239/40	41.0	40.7	1.9	0.03	90	99	(81 - 115)
Batch #:	0099258			Analysis Date:	04/20/10		
Iso URANIUM (LONG CT) DOE A-01-R MOD							
		pCi/g		A-01-R MOD			F0D090000-259C
Uranium 234	1.64	1.70	0.097	0.016	81	103	(78 - 125)
Uranium 238	1.71	1.81	0.10	0.007	81	106	(76 - 122)
Batch #:	0099259			Analysis Date:	04/20/10		
Gamma Cs-137 & Hits by EPA 901.1 MOD							
		pCi/g		901.1 MOD			F0D120000-353C
Americium 241	98.8	98.7	4.2	2.9		100	(87 - 121)
Cesium 137	37.1	40.7	1.3	0.3		110	(90 - 120)
Cobalt 60	61.4	63.1	1.8	0.3		103	(90 - 113)
Batch #:	0102353			Analysis Date:	04/18/10		

NOTE(S)

LOT # F0D080501

MDC is determined by instrument performance only

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DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F0D080501
Matrix: SOLID

Date Sampled: 03/26/10
Date Received: 03/31/10

Parameter	SAMPLE Result	Total Uncert. (1σ+/-)	% Yld	DUPLICATE Result	Total Uncert. (1σ+/-)	% Yld	QC Sample ID	Precision
Am241, Cm243/244 (LONG CT) DOE A-01-R MO				pCi/g	A-01-R MOD		F0C310488-001	
Americium 241	0.020 U	0.021	83	-0.0013 U	0.0063	83	0.4	RER
Batch #: 0099257 (Sample)				0099257 (Duplicate)				
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g	A-01-R MOD		F0C310488-001	
Plutonium 238	0.030	0.010	83	0.0170	0.0070	85	0.4	RER
Plutonium 239/40	0.0175	0.0072	83	0.0113	0.0057	85	0.2	RER
Batch #: 0099258 (Sample)				0099258 (Duplicate)				
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g	A-01-R MOD		F0C310488-001	
Uranium 234	0.265	0.040	80	0.382	0.049	79	0.7	RER
Uranium 235/236	0.021	0.012	80	0.024 U	0.014	79	0.06	RER
Uranium 238	0.273	0.041	80	0.353	0.047	79	0.5	RER
Batch #: 0099259 (Sample)				0099259 (Duplicate)				
Gamma Cs-137 & Hits by EPA 901.1 MOD				pCi/g	901.1 MOD		F0D080501-001	
Americium 241	-0.005 U	0.080		-0.045 U	0.088		0.1	RER
Bismuth 211 eq Th-227	0.16 U	0.14		-0.09 U	0.68		0.2	RER
Bismuth 214	1.33 U	0.14		1.30 U	0.14		0.06	RER
Cadmium 109	4.26	0.67		0.04 U	0.74		2	RER
Cerium 139	0.004 U	0.021		-0.018 U	0.027		0.2	RER
Cesium 134	0.000006 U	0.021		-0.041 U	0.043		0.3	RER
Cesium 137	0.0 U	0.044		-0.007 U	0.036		0.04	RER
Cobalt 60	-0.027 U	0.051		0.036 U	0.035		0.4	RER
Europium 152	-0.13 U	0.24		0.30 U	0.16		0.5	RER
Lead 212	1.68	0.11		1.48	0.12		0.5	RER
Lead 214	1.25 U	0.13		0.0 U	7.1		0.09	RER
Mercury 203	-0.007 U	0.027		0.067 U	0.026		0.7	RER
Potassium 40	28.8	1.8		26.6	1.5		0.3	RER
Radium (226)	1.37 U	0.14		1.34 U	0.14		0.05	RER
Radium 223 (assumes eq	0.16 U	0.14		-0.09 U	0.68		0.2	RER
Radium 224	-5.5 U	1.5		-1.7 U	1.1		0.7	RER
Radium 228	1.78	0.16		2.01	0.18		0.3	RER
Ruthenium 106	0.0008 U	0.33		0.08 U	0.24		0.07	RER
Sodium 22	0.035 U	0.047		0.042 U	0.040		0.04	RER
Strontium 85	-0.060 U	0.049		-0.045 U	0.040		0.09	RER
Thallium 208	0.612	0.068		0.596	0.070		0.06	RER
Thorium 227	0.16 U	0.14		-0.09 U	0.68		0.2	RER
Thorium 231	0.26 U	0.18		0.17 U	0.20		0.1	RER
Thorium 234	2.70	0.59		2.25	0.59		0.2	RER
Tin 113	0.002 U	0.034		0.029 U	0.033		0.2	RER
Uranium 235	0.26 U	0.18		0.17 U	0.20		0.1	RER
Yttrium 88	-0.035 U	0.044		-0.026 U	0.039		0.06	RER
---Other Dedected Radionuclides---								
Actinium 228	1.78	0.16		2.01	0.18		0.3	RER
Batch #: 0102353 (Sample)				0102353 (Duplicate)				

NOTE(S)

Data are incomplete without the case narrative.

Calculations are performed before rounding to avoid round-off error in calculated results

LOT # F0D080501
U Result is less than the sample detection limit.

ALPHA SPECTROSCOPY

Alpha Spectroscopy

Americium

Test America St. Louis

Isotopic Actinide DLC calculation when decay and ingrowth calculations are not required.

Sample ID	Isotope	Total Bkgd Cts	L/g Sample Volume	decimal det. eff.	minutes ct. length	decimal yield	decimal abundance	DLC
F0C310488-001	Am241	8.3333	1.0036	0.2557	400	0.8259	0.98	0.0364
F0C310488-001X	Am241	1.25	1.0031	0.2667	400	0.8344	0.98	0.0134
F0C310488-002	Am241	1.25	1.0023	0.2533	400	0.9751	0.98	0.0121
F0C310498-001	Am241	0.8333	1.0005	0.2655	400	0.7822	0.98	0.0117

Calculated by: *EW*Date: *4/23/10*Reviewed by: *RU*Date: *4/28/10*

Analysis Report for Alpha Spectroscopy

Batch: 0099257 Operator: 403233

TestAmerica St. Louis

Sample ID	Work Order #	Aliquot	Dilution	Siema	Instrument	RunDate/Time	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
FOC310488-001	LX09E1CK	2.0072 g	2.00	1.00	AV9	4/21/10 16:25	400.00	rad10-0046	Am-243	2.993E+000	82.59%
						Analyte	Activity	Count/Sec	TotalUnc	MDA	DLC
						Am-241	1.988E-002 pCi/g	2.133E-002	2.134E-002	7.596E-002	3.641E-002
						Am-243	2.472E+000 pCi/g	1.264E-001	1.636E-001	4.124E-002	1.596E-002
FOC310488-001X	LX09E1EJ	2.0061 g	2.00	1.00	AV12	4/21/10 16:25	400.00	rad10-0046	Am-243	2.995E+000	83.44%
						Analyte	Activity	Count/Sec	TotalUnc	MDA	DLC
						Am-241	-1.287E-003 pCi/g	6.348E-003	6.348E-003	3.846E-002	1.339E-002
						Am-243	2.499E+000 pCi/g	1.234E-001	1.620E-001	4.972E-002	2.143E-002
FOC310488-002	LX0951CK	2.0046 g	2.00	1.00	AV20	4/21/10 16:25	400.00	rad10-0046	Am-243	2.997E+000	97.51%
						Analyte	Activity	Count/Sec	TotalUnc	MDA	DLC
						Am-241	3.482E-003 pCi/g	7.371E-003	7.372E-003	3.289E-002	1.207E-002
						Am-243	2.922E+000 pCi/g	1.189E-001	1.895E-001	3.223E-002	1.183E-002
FOC310488-001	LXDEA1AE	2.0010 g	2.00	1.00	AV86	4/21/10 16:25	400.00	rad10-0046	Am-243	3.002E+000	78.22%
						Analyte	Activity	Count/Sec	TotalUnc	MDA	DLC
						Am-241	1.198E-002 pCi/g	1.012E-002	1.013E-002	3.473E-002	1.174E-002
						Am-243	2.349E+000 pCi/g	1.276E-001	1.612E-001	1.467E-002	8.138E-003
FOC310488-002	LXDEG1AE	2.0031 g	2.00	1.00	AV92	4/21/10 16:25	400.00	rad10-0046	Am-243	2.999E+000	83.84%
						Analyte	Activity	Count/Sec	TotalUnc	MDA	DLC
						Am-241	-1.293E-003 pCi/g	6.380E-003	6.380E-003	3.665E-002	1.346E-002
						Am-243	2.515E+000 pCi/g	1.234E-001	1.624E-001	2.653E-002	7.613E-003
FOC310488-003	LXDEK1AE	2.0052 g	2.00	1.00	AV93	4/21/10 16:25	400.00	rad10-0046	Am-243	2.996E+000	88.81%
						Analyte	Activity	Count/Sec	TotalUnc	MDA	DLC
						Am-241	9.352E-003 pCi/g	1.077E-002	1.077E-002	4.078E-002	1.638E-002
						Am-243	2.661E+000 pCi/g	1.197E-001	1.638E-001	2.503E-002	7.180E-003
FOC310488-004	LXDEL1AE	2.0045 g	2.00	1.00	AV19	4/22/10 18:11	400.00	rad10-0046	Am-243	2.997E+000	93.94%
						Analyte	Activity	Count/Sec	TotalUnc	MDA	DLC
						Am-241	-6.634E-003 pCi/g	1.171E-002	1.172E-002	5.535E-002	2.535E-002
						Am-243	2.816E+000 pCi/g	1.176E-001	1.668E-001	4.311E-002	1.823E-002
FOC310488-005	LXDEM1AE	2.0006 g	2.00	1.00	AV63	4/21/10 16:25	400.00	rad10-0046	Am-243	3.003E+000	87.14%
						Analyte	Activity	Count/Sec	TotalUnc	MDA	DLC
						Am-241	-7.820E-003 pCi/g	7.449E-003	7.457E-003	4.639E-002	1.918E-002
						Am-243	2.617E+000 pCi/g	1.241E-001	1.657E-001	3.620E-002	1.329E-002
FOC310489-002	LXDEB1CH	2.0006 g	2.00	1.00	AV66	4/21/10 16:25	400.00	rad10-0046	Am-243	3.003E+000	86.20%
						Analyte	Activity	Count/Sec	TotalUnc	MDA	DLC

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4/23/2010

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Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDate/Time	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
FOC310499-003	LXDFN1CH	2.0044	2.00	1.00	AV67	4/21/10 16:25	400.00	rad10-0046	Am-243	2.997E+000	76.28%
		g				Analyte	Activity	Count/unc	TotalUnc	MDA	DLC
						Am-241	3.693E-003	pCi/g	7.818E-003	3.488E-002	1.281E-002
						Am-243	2.589E+000	pCi/g	1.206E-001	3.745E-002	1.449E-002
FOC310499-004	LXDFR1CH	2.0022	2.00	1.00	AV68	4/21/10 16:25	400.00	rad10-0046	Am-243	3.001E+000	97.08%
		g				Analyte	Activity	Count/unc	TotalUnc	MDA	DLC
						Am-241	1.792E-002	pCi/g	1.613E-002	5.673E-002	2.484E-002
						Am-243	2.286E+000	pCi/g	1.275E-001	3.828E-002	1.405E-002
FOC070439-002	LXLP41CH	2.0014	2.00	1.00	AV69	4/21/10 16:25	400.00	rad10-0046	Am-243	3.002E+000	84.03%
		g				Analyte	Activity	Count/unc	TotalUnc	MDA	DLC
						Am-241	3.636E-003	pCi/g	7.698E-003	3.435E-002	1.261E-002
						Am-243	2.522E+000	pCi/g	1.196E-001	3.368E-002	1.236E-002
FOC080501-001	LXNMR1AE	2.0025	2.00	1.00	AV70	4/21/10 16:25	400.00	rad10-0046	Am-243	3.000E+000	91.08%
		g				Analyte	Activity	Count/unc	TotalUnc	MDA	DLC
						Am-241	5.531E-003	pCi/g	7.263E-003	2.978E-002	1.007E-002
						Am-243	2.732E+000	pCi/g	1.182E-001	3.291E-002	1.208E-002
FOC080501-002	LXNMV1AE	2.0036	2.00	1.00	AV20	4/22/10 18:11	400.00	rad10-0046	Am-243	2.999E+000	94.08%
		g				Analyte	Activity	Count/unc	TotalUnc	MDA	DLC
						Am-241	1.043E-002	pCi/g	1.275E-002	4.770E-002	2.089E-002
						Am-243	2.821E+000	pCi/g	1.176E-001	5.965E-002	2.813E-002
FOC080501-003	LXNMW1AE	2.0038	2.00	1.00	AV72	4/21/10 16:25	400.00	rad10-0046	Am-243	3.003E+000	94.60%
		g				Analyte	Activity	Count/unc	TotalUnc	MDA	DLC
						Am-241	1.477E-003	pCi/g	7.273E-003	3.439E-002	1.331E-002
						Am-243	2.841E+000	pCi/g	1.145E-001	3.864E-002	1.597E-002
FOC080501-004	LXNMX1AE	2.0063	2.00	1.00	AV73	4/21/10 16:25	400.00	rad10-0046	Am-243	2.995E+000	99.36%
		g				Analyte	Activity	Count/unc	TotalUnc	MDA	DLC
						Am-241	8.634E-003	pCi/g	6.105E-003	1.168E-002	6.483E-003
						Am-243	2.975E+000	pCi/g	1.127E-001	2.987E-002	1.100E-002
FOC080501-005	LXNM21AE	2.0012	2.00	1.00	AV74	4/21/10 16:25	400.00	rad10-0046	Am-243	3.002E+000	90.22%
		g				Analyte	Activity	Count/unc	TotalUnc	MDA	DLC
						Am-241	7.470E-003	pCi/g	6.955E-003	2.469E-002	7.084E-003
						Am-243	2.708E+000	pCi/g	1.180E-001	3.588E-002	1.389E-002
FOC080501-006	LXNM41AE	2.0021	2.00	1.00	AV87	4/21/10 16:25	400.00	rad10-0046	Am-243	3.001E+000	87.32%
		g				Analyte	Activity	Count/unc	TotalUnc	MDA	DLC
						Am-241	2.628E-002	pCi/g	1.281E-002	3.195E-002	1.080E-002
						Am-243	2.620E+000	pCi/g	1.223E-001	1.349E-002	7.485E-003

LOT

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDate/Time	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F00080501-007	LXNM91AE	2.0037	2.00	1.00	AV24	4/22/10 7:59	400.00	rad10-0046	Am-243	2.988E+000	100.92%
		g				Analyte	Activity		TotalUnc	MDA	DLC
						Am-241	1.799E-003 pCi/g		1.135E-002	4.789E-002	2.151E-002
						Am-243	3.026E+000 pCi/g		1.129E-001	3.766E-002	1.557E-002
F00090000-257B	LXQQT1AA	2.0000	1.00	1.00	AV64	4/22/10 7:59	400.00	rad10-0046	Am-243	1.502E+000	99.17%
		g				Analyte	Activity		TotalUnc	MDA	DLC
						Am-241	5.134E-003 pCi/g		4.767E-003	1.708E-002	6.608E-003
						Am-243	1.490E+000 pCi/g		5.693E-002	1.129E-002	3.238E-003
F00090000-257C	LXQQT1AC	2.0000	1.00	1.00	AV85	4/22/10 7:59	400.00	rad10-0046	Am-243	1.502E+000	104.66%
		g				Analyte	Activity		TotalUnc	MDA	DLC
						Am-241	1.766E+000 pCi/g		6.015E-002	1.448E-002	5.318E-003
						Am-243	1.572E+000 pCi/g		5.488E-002	1.049E-002	3.009E-003

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity	StdAdded	Recovery	LCL	UCL
F00090000-257C	LXQQT1AC	Am-241	1.766E+000	1.928E+000	91.60%	73.00	126.00

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F0C310488-001	Am-241	1.988E-002	F0C310488-001X	-1.287E-003	227.69%	3.822E-001	9.508E-001	

Matrix Spike Information

Sample ID	SampMSID	Analyte	Sample Activity	MS Activity	StdAdded	MSRecovery
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Sample Name: F0D080501-001

SampleType: Sample

: LXNMR1AE

Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099257

AnalysisID: 398170

Sample

Spectrum #1 Analysis #1

Sample Weight: 1.0013g

Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

Tracer

Tracer Name: Rad10-0046_Am234

Tracer Activity: 66.69 DPM/mL x (Vol.)0.10 mL = 6.67 DPM

Tracer Ref. Date: 11/3/2009 12:00:23PM

Tracer Nuclide: Am-243

Tracer Recovery: 91.08%

Acquisition

Detector: AV70

Serial Number: 48-158FF1

Acquisition Start Date: 4/21/2010 4:25:36PM

Live Time: 400.00 min.

Real Time: 400.01 min.

Background Date: 3/26/2010 5:14:37PM

Background Info: Sample: AV70; Det: AV70; Spectrum #1; Mar-26-2010

Calibration Name: March2010_AV70

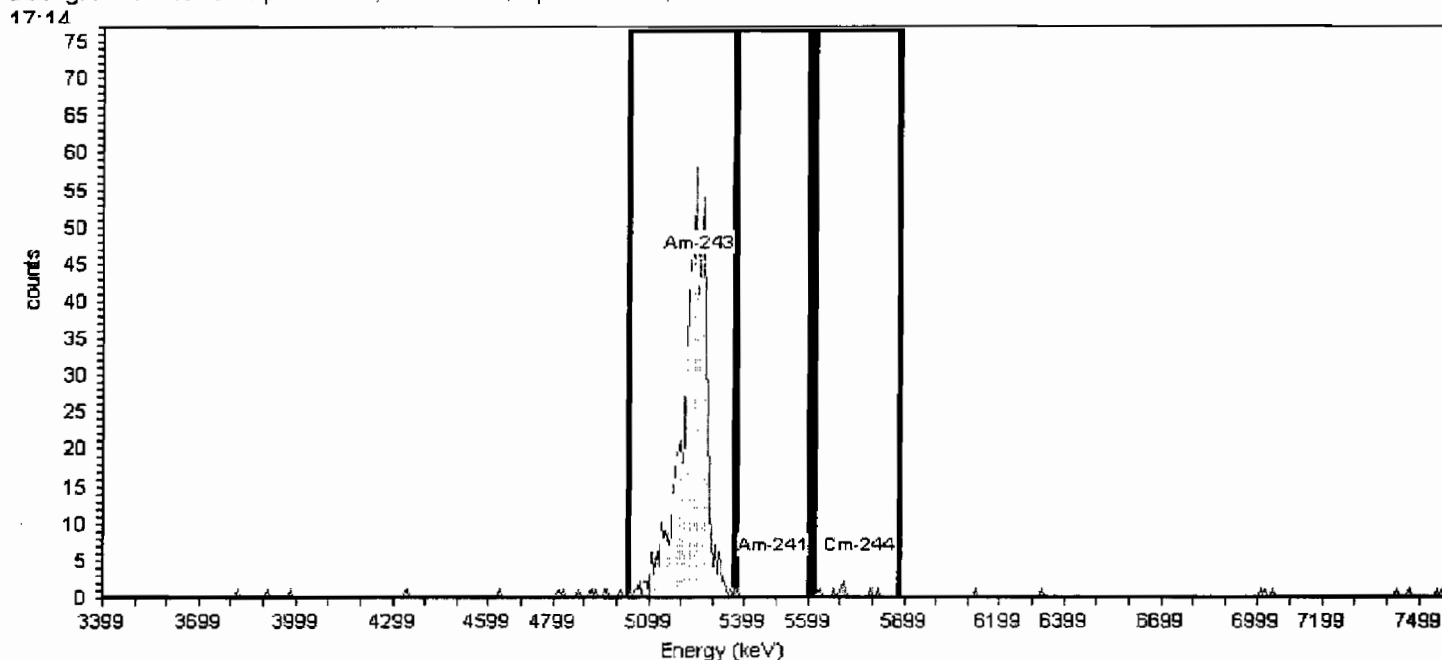
Calibration Date: 3/31/2010 4:00:57PM

Gain = 7.3291 keV / Ch

Energy Cal: Offset = 3,392.07 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.58% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI

Decay Correction: 4/21/2010 4:18:01PM

MDA Constants: K α = 1.65, K β = 1.65

Nuclide Library: Americium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Am-243	5253.673	5033.799	5363.610	73.636	100.0	647	1.2500	645.75	2.732E+000	1.182E-001	1.65E-001	1.208E-002	3.291E-002
Am-241	5488.206	5370.939	5598.143	.000	98.0	2	0.8333	1.17	5.531E-003	7.263E-003	7.27E-003	1.007E-002	2.978E-002
Cm-244	5759.384	5620.130	5883.979	98.973	100.0	8	4.5833	3.42	1.587E-002	1.463E-002	1.46E-002	2.314E-002	5.152E-002

Sample Name: F0D080501-002

SampleType: Sample

: LXNMV1AE

Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099257

AnalysisID: 398489

Tracer Name: Rad10-0046_Am234

Tracer Activity: 66.69 DPM/mL x (Vol.)0.10 mL = 6.67 DPM

Tracer Ref. Date: 11/3/2009 12:00:23PM

Sample

Spectrum #2 Analysis #1

Sample Weight : 1.0018g

Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

Tracer

Tracer Nuclide: Am-243

Tracer Recovery: 94.08%

Acquisition

Detector: AV20

Serial Number: 48-121A7

Acquisition Start Date: 4/22/2010 6:11:56PM

Live Time: 400.00 min.

Real Time: 400.02 min.

Background Date: 3/26/2010 5:14:03PM

Background Info: Sample: AV20; Det: AV20; Spectrum #1; Mar-26-2010

Calibration Name: March2010_AV20

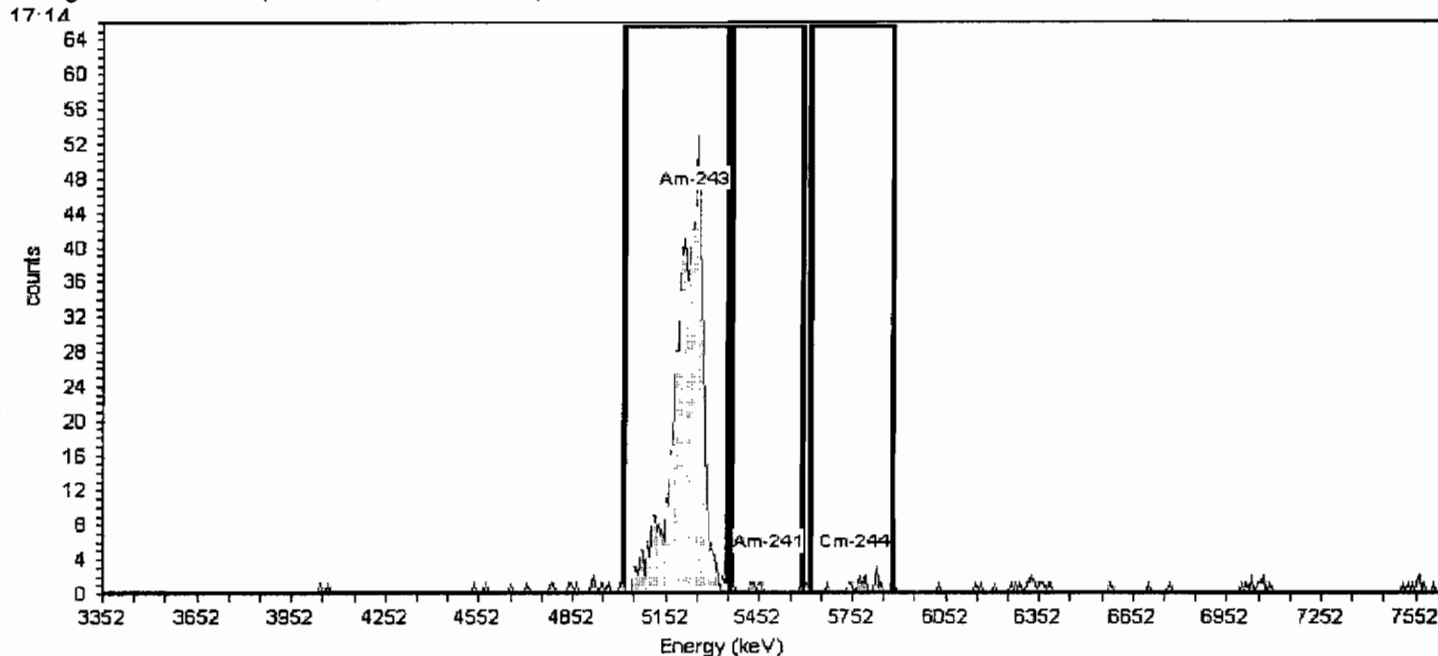
Calibration Date: 3/31/2010 3:17:20PM

Gain = 7.4651 keV / Ch

Energy Cal: Offset = 3,345.28 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.30% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI

Decay Correction: 4/21/2010 4:18:01PM

MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Americium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Am-243	5241.417	5017.464	5353.394	98.703	100.0	667	7.0833	659.92	2.821E+000	1.176E-001	1.67E-001	2.813E-002	5.965E-002
Am-241	5480.300	5360.859	5592.277	162.579	98.0	6	3.7500	2.25	1.043E-002	1.275E-002	1.28E-002	2.089E-002	4.770E-002
Cm-244	5756.509	5614.672	5883.416	87.187	100.0	14	14.1667	-0.17	-7.574E-004	2.027E-002	2.03E-002	3.979E-002	7.927E-002

Sample Name: F0D080501-003
SampleType: Sample
: LXNMW1AE
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099257
AnalysisID: 398172

Tracer Name: Rad10-0046_Am234
Tracer Activity: 66.69 DPM/mL x (Vol.)0.10 mL = 6.67 DPM
Tracer Ref. Date: 11/3/2009 12:00:23PM

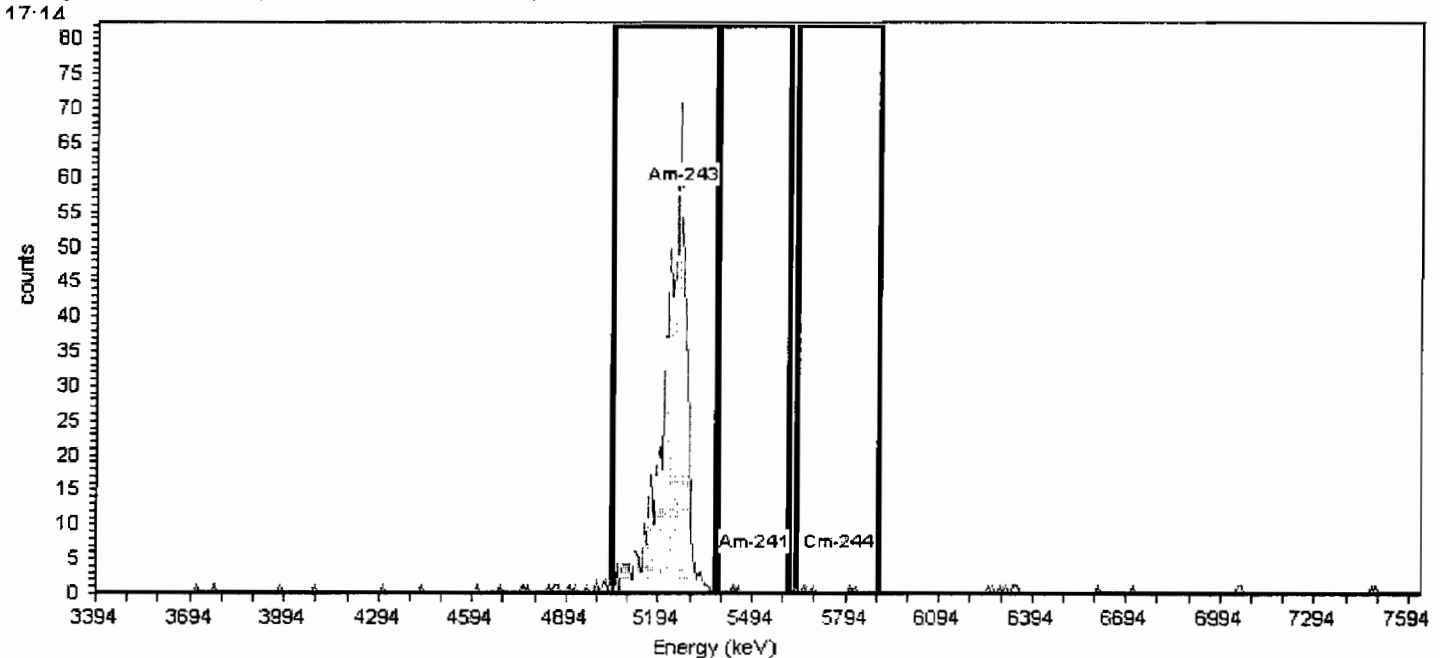
Detector: AV72
Serial Number:
Acquisition Start Date: 4/21/2010 4:25:40PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:41PM
Background Info: Sample: AV72; Det: AV72; Spectrum #1; Mar-26-2010

Spectrum #1 Analysis #1
Sample Weight : 1.0004g
Aliquot: N/A Aliquot Fraction: N/A

Analyst: 60040

Tracer Nuclide: Am-243
Tracer Recovery: 94.60%

Calibration Name: Feb2010_AV72
Calibration Date: 3/1/2010 12:01:35AM
Gain = 7.3931 keV / Ch
Offset = 3,386.95 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 27.40% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 4/21/2010 4:18:01PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Am-243	5264.788	5042.996	5375.684	79.266	100.0	694	2.5000	691.50	2.841E+000	1.145E-001	1.65E-001	1.597E-002	3.864E-002
Am-241	5501.366	5383.077	5612.262	29.572	98.0	2	1.6667	0.33	1.477E-003	7.273E-003	7.27E-003	1.331E-002	3.439E-002
Cm-244	5774.910	5634.441	5900.592	.000	100.0	5	2.5000	2.50	1.086E-002	1.067E-002	1.07E-002	1.597E-002	3.864E-002

Sample Name: F0D080501-004
SampleType: Sample
: LXNMX1AE
Sample Collection Date: 4/6/2010 12:00:00AM

Sample

Spectrum #1 Analysis #1
Sample Weight : 1.0032g
Aliquot: N/A Aliquot Fraction: N/A

Batch Name: 0099257
AnalysisID: 398173

Batch

Analyst: 60040

Tracer Name: Rad10-0046_Am234
Tracer Activity: 66.69 DPM/mL x (Vol.)0.10 mL = 6.67 DPM
Tracer Ref. Date: 11/3/2009 12:00:23PM

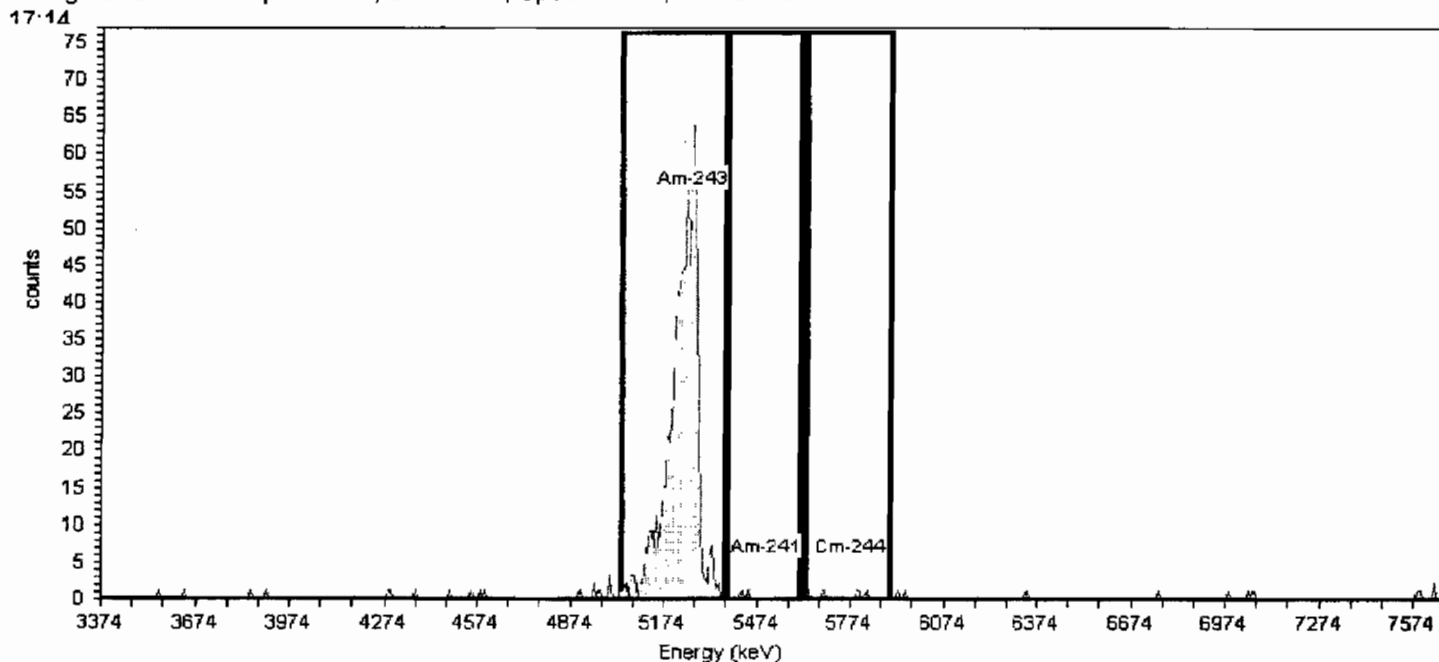
Tracer

Tracer Nuclide: Am-243
Tracer Recovery: 99.36%

Detector: AV73
Serial Number: 49-155N4
Acquisition Start Date: 4/21/2010 4:25:42PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:43PM
Background Info: Sample: AV73; Det: AV73; Spectrum #1; Mar-26-2010

Acquisition

Calibration Name: March2010_AV73
Calibration Date: 3/31/2010 4:02:36PM
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 26.70% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 4/21/2010 4:18:01PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Am-243	5261.170	5037.444	5373.033	85.974	100.0	709	1.2500	707.75	2.975E+000	1.127E-001	1.68E-001	1.100E-002	2.997E-002
Am-241	5499.812	5380.491	5611.675	40.267	98.0	2	0.0000	2.00	8.634E-003	6.105E-003	6.12E-003	6.483E-003	1.168E-002
Cm-244	5775.741	5634.047	5902.520	193.977	100.0	6	0.0000	6.00	2.539E-002	1.036E-002	1.04E-002	6.353E-003	1.145E-002

Sample Name: F0D080501-005
SampleType: Sample
: LXNM21AE
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099257
AnalysisID: 398174

Tracer Name: Rad10-0046_Am234
Tracer Activity: 66.69 DPM/mL x (Vol.)0.10 mL = 6.67 DPM
Tracer Ref. Date: 11/3/2009 12:00:23PM

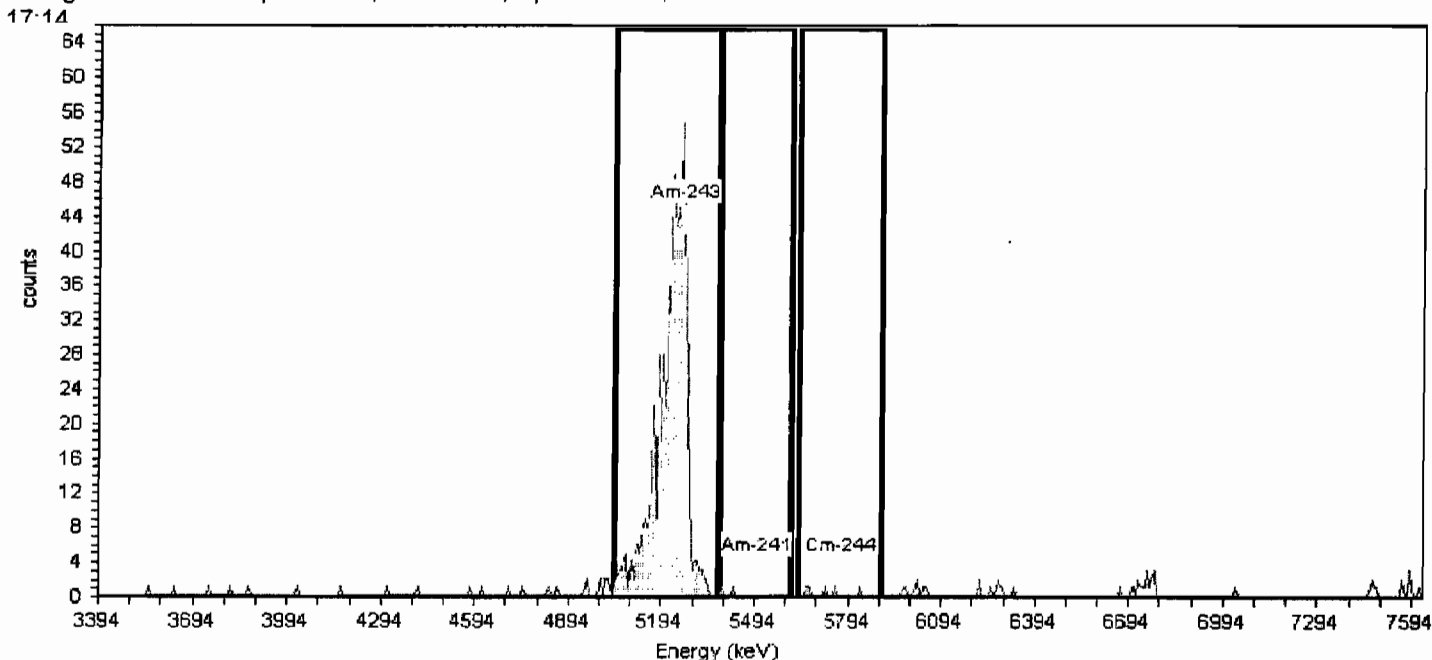
Detector: AV74
Serial Number: 49-155M3
Acquisition Start Date: 4/21/2010 4:25:43PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:46PM
Background Info: Sample: AV74; Det: AV74; Spectrum #1; Mar-26-2010

Spectrum #1 Analysis #1
Sample Weight : 1.0006g
Aliquot: N/A Aliquot Fraction: N/A

Analyst: 60040

Tracer Nuclide: Am-243
Tracer Recovery: 90.22%

Calibration Name: March2010_AV74
Calibration Date: 3/31/2010 4:03:18PM
Gain = 7.3931 keV / Ch
Offset = 3,386.95 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 26.98% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 4/21/2010 4:18:01PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Am-243	5264.788	5042.996	5375.684	79.730	100.0	651	1.6667	649.33	2.708E+000	1.180E-001	1.64E-001	1.389E-002	3.588E-002
Am-241	5501.366	5383.077	5612.262	12.724	98.0	2	0.4167	1.58	7.470E-003	6.955E-003	6.96E-003	7.084E-003	2.469E-002
Cm-244	5774.910	5634.441	5900.592	31.460	100.0	5	2.0833	2.92	1.348E-002	1.120E-002	1.12E-002	1.552E-002	3.864E-002

Sample Name: F0D080501-006

SampleType: Sample

: LXNM41AE

Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099257

AnalysisID: 398177

Tracer Name: Rad10-0046_Am234

Tracer Activity: 66.69 DPM/mL x (Vol.)0.10 mL = 6.67 DPM

Tracer Ref. Date: 11/3/2009 12:00:23PM

Sample

Spectrum #1 Analysis #1

Sample Weight : 1.0011g

Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

Tracer

Tracer Nuclide: Am-243

Tracer Recovery: 87.32%

Acquisition

Detector: AV87

Serial Number: 46-033FF5

Acquisition Start Date: 4/21/2010 4:25:14PM

Live Time: 400.00 min.

Real Time: 400.01 min.

Background Date: 3/26/2010 5:14:03PM

Background Info: Sample: AV87; Det: AV87; Spectrum #1; Mar-26-2010

Calibration Name: March2010_AV87

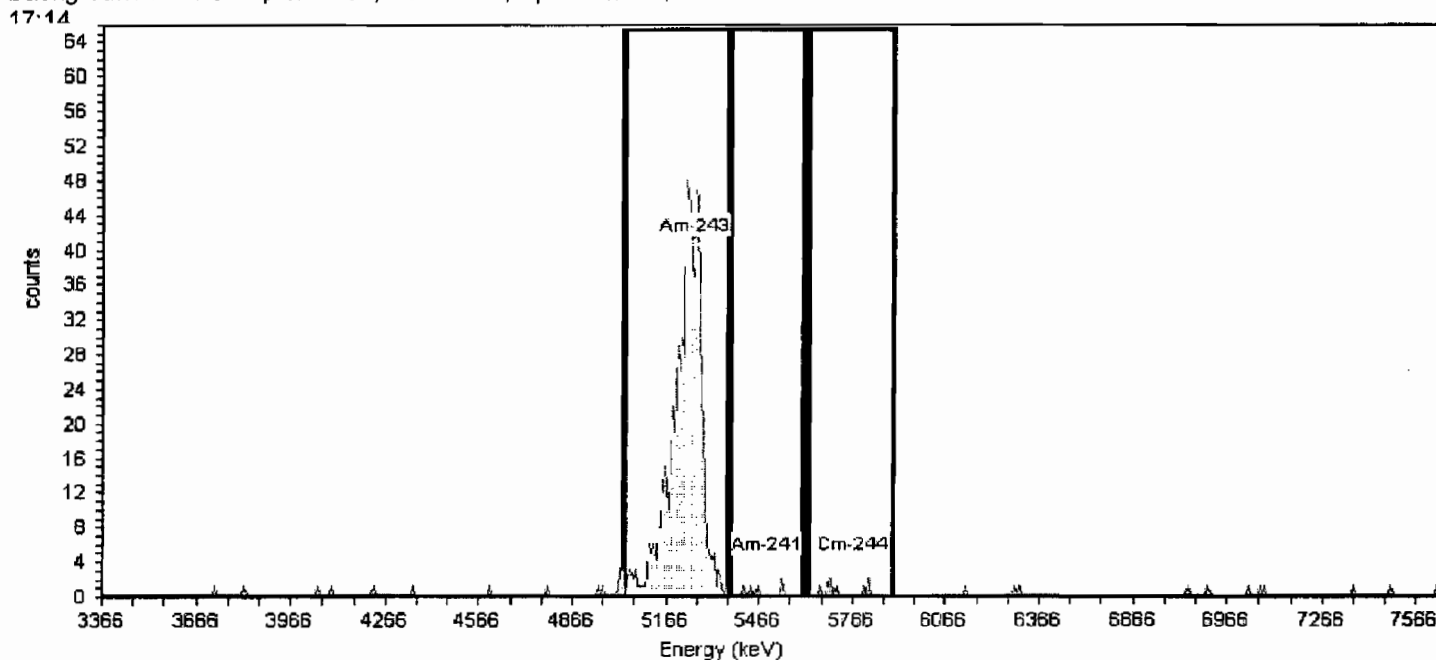
Calibration Date: 3/31/2010 4:12:41PM

Gain = 7.4576 keV / Ch

Energy Cal: Offset = 3,359.49 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.85% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI

Decay Correction: 4/21/2010 4:18:01PM

MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Americium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Am-243	5253.713	5029.986	5365.576	84.546	100.0	602	0.0000	602.00	2.620E+000	1.223E-001	1.65E-001	7.465E-003	1.349E-002
Am-241	5492.354	5373.034	5604.218	17.741	98.0	6	0.8333	5.17	2.628E-002	1.281E-002	1.29E-002	1.080E-002	3.195E-002
Cm-244	5768.284	5626.590	5895.062	49.155	100.0	10	3.7500	6.25	3.115E-002	1.695E-002	1.70E-002	2.246E-002	5.129E-002

Sample Name: F0D080501-007
SampleType: Sample
: LXNM91AE
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099257
AnalysisID: 398380

Tracer Name: Rad10-0046_Am234
Tracer Activity: 66.69 DPM/mL x (Vol.)0.10 mL = 6.67 DPM
Tracer Ref. Date: 11/3/2009 12:00:23PM

Sample

Spectrum #1 Analysis #1
Sample Weight : 1.0019g
Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

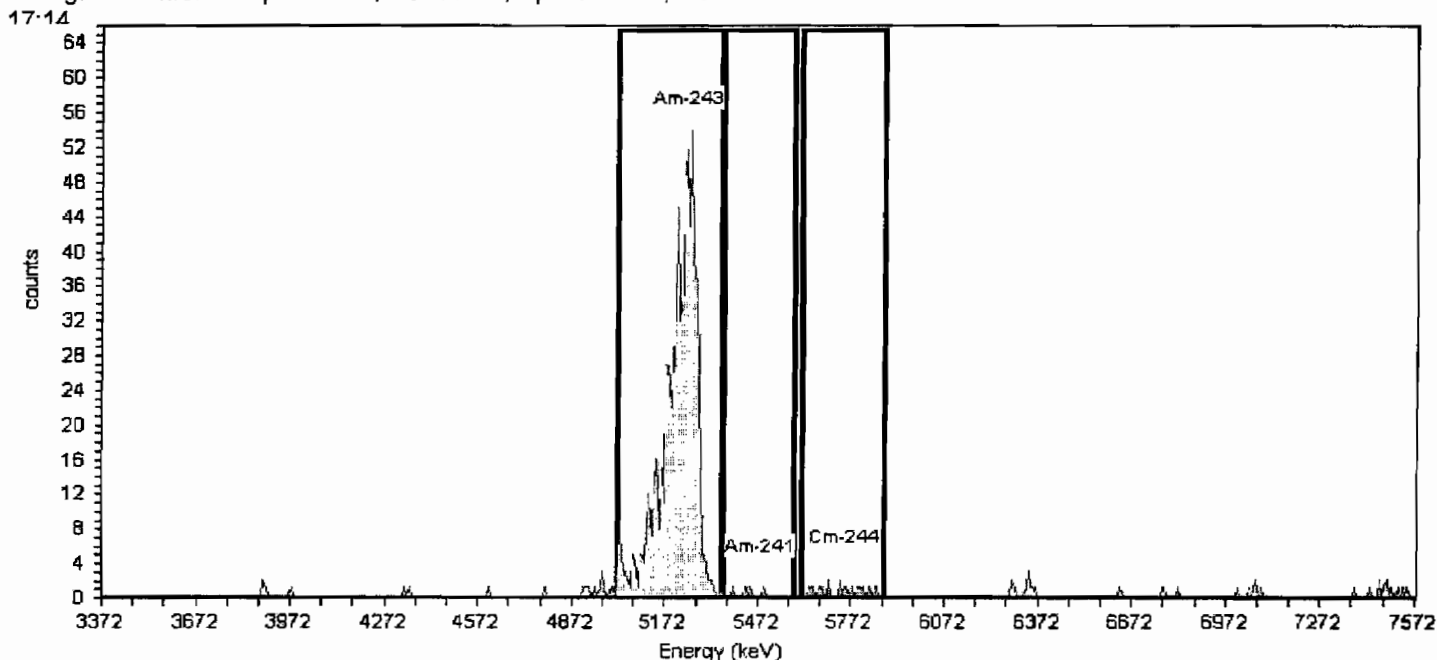
Tracer

Tracer Nuclide: Am-243
Tracer Recovery: 100.92%

Acquisition

Detector: AV24
Serial Number: 47-137Q4
Acquisition Start Date: 4/22/2010 7:59:54AM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 3/26/2010 5:14:10PM
Background Info: Sample: AV24; Det: AV24; Spectrum #1; Mar-26-2010

Calibration Name: March2010_AV24a
Calibration Date: 4/1/2010 2:50:12PM
Gain = 7.3931 keV / Ch
Energy Cal: Offset = 3,364.77 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 26.32% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 4/21/2010 4:18:01PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Am-243	5242.608	5020.816	5353.505	95.879	100.0	711	2.5000	708.50	3.026E+000	1.129E-001	1.70E-001	1.557E-002	3.766E-002
Am-241	5479.187	5360.898	5590.083	62.402	98.0	5	4.5833	0.42	1.799E-003	1.135E-002	1.14E-002	2.151E-002	4.789E-002
Cm-244	5752.730	5612.262	5878.413	15.567	100.0	17	17.0833	-0.08	-3.527E-004	2.078E-002	2.08E-002	4.069E-002	7.995E-002

Sample Name: F0D090000-257B
SampleType: Blank
: LXQQT1AA
Sample Collection Date: 3/26/2010 12:00:00AM

Batch Name: 0099257
AnalysisID: 398381

Tracer Name: Rad10-0046_Am234
Tracer Activity: 66.69 DPM/mL x (Vol.)0.10 mL = 6.67 DPM
Tracer Ref. Date: 11/3/2009 12:00:23PM

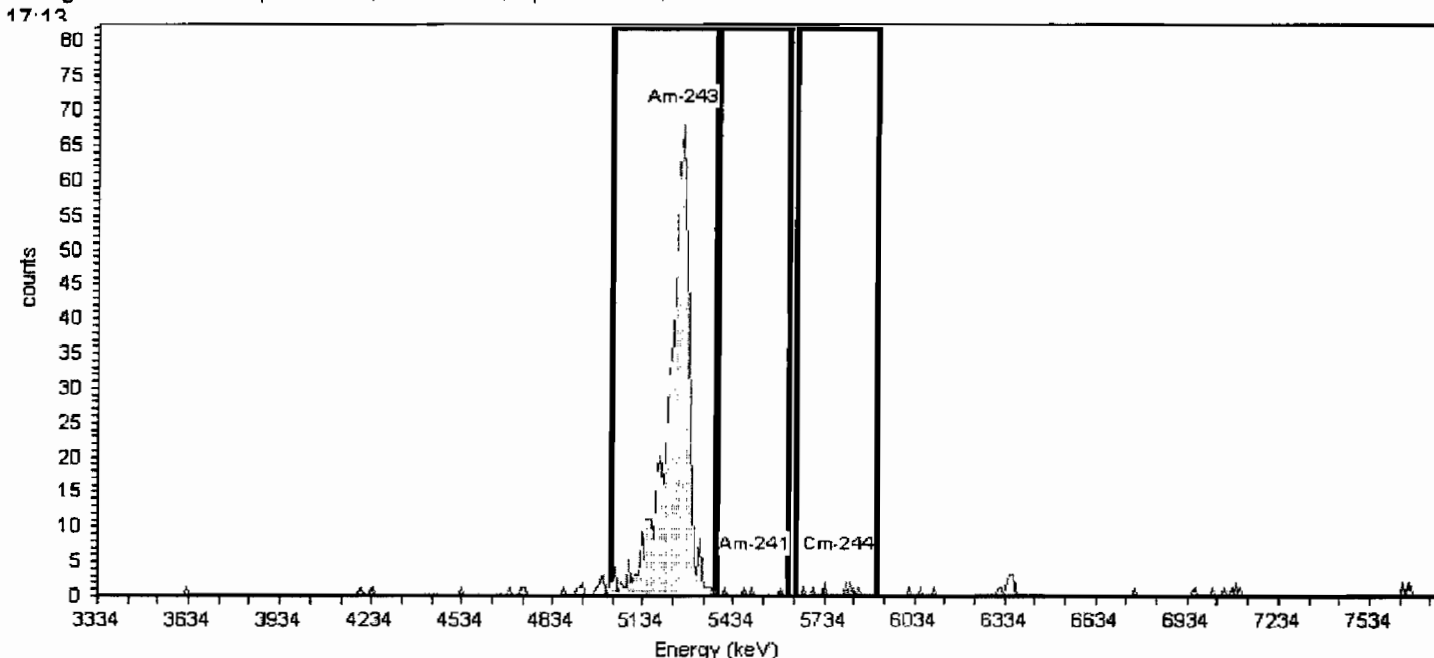
Detector: AV84
Serial Number: 46-033FF3
Acquisition Start Date: 4/22/2010 7:59:56AM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 3/26/2010 5:13:57PM
Background Info: Sample: AV84; Det: AV84; Spectrum #1; Mar-26-2010

Spectrum #1 Analysis #1
Sample Weight : 2.0000g
Aliquot: N/A Aliquot Fraction: N/A

Analyst: 60040

Tracer Nuclide: Am-243
Tracer Recovery: 99.17%

Calibration Name: March2010_AV84
Calibration Date: 3/31/2010 4:10:18PM
Gain = 7.6062 keV / Ch
Offset = 3,327.15 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 26.33% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 4/21/2010 4:18:01PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Am-243	5259.122	5030.936	5373.214	65.935	100.0	697	0.4167	696.58	1.490E+000	5.693E-002	8.46E-002	3.238E-003	1.129E-002
Am-241	5502.519	5380.820	5616.611	109.422	96.0	4	1.6667	2.33	5.134E-003	4.767E-003	4.77E-003	6.608E-003	1.708E-002
Cm-244	5783.947	5639.430	5913.252	55.386	100.0	11	8.3333	2.67	5.750E-003	8.202E-003	8.21E-003	1.448E-002	3.021E-002

Sample Name: F0D090000-257C
Sample Type: Control
: LXQQT1AC
Sample Collection Date: 3/26/2010 12:00:00AM

Sample

Spectrum #1 Analysis #1
Sample Weight : 2.0000g
Aliquot: N/A Aliquot Fraction: N/A

Batch Name: 0099257
AnalysisID: 398383

Batch

Analyst: 60040

Tracer Name: Rad10-0046_Am234
Tracer Activity: 66.69 DPM/mL x (Vol.)0.10 mL = 6.67 DPM
Tracer Ref. Date: 11/3/2009 12:00:23PM

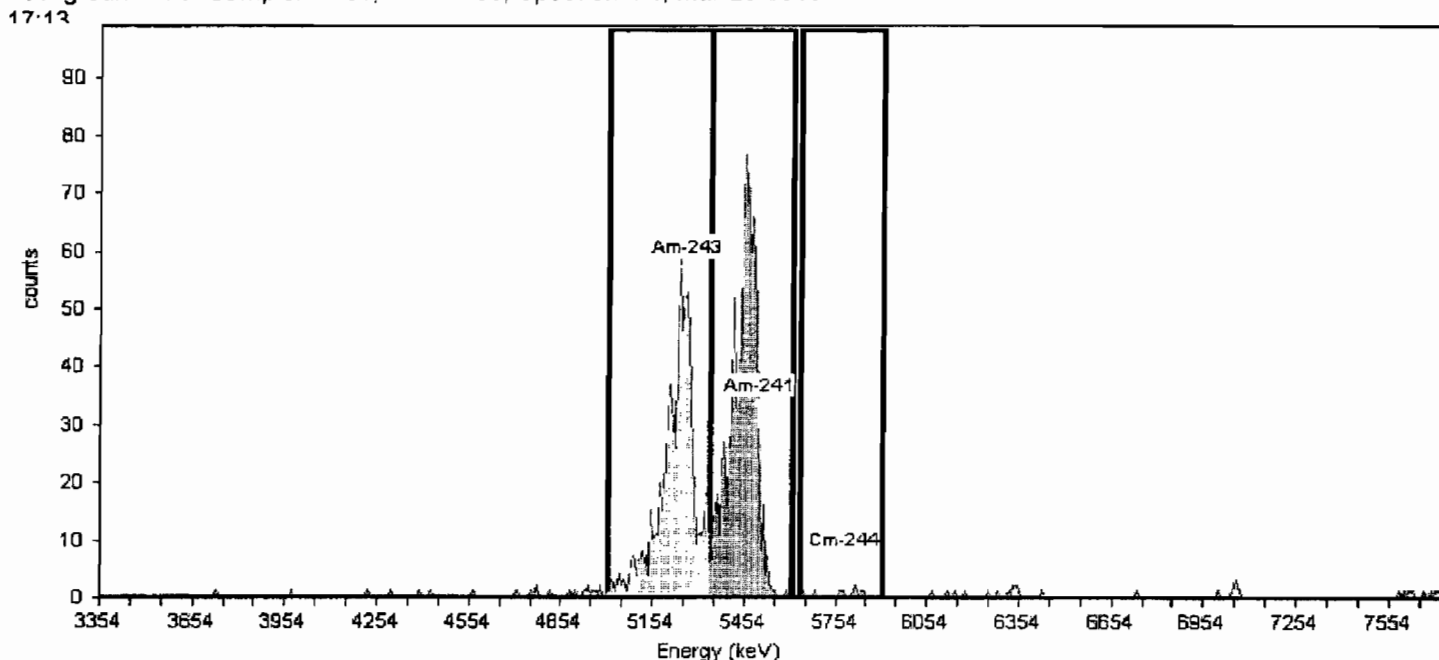
Tracer

Tracer Nuclide: Am-243
Tracer Recovery: 104.66%

Detector: AV85
Serial Number: 46-032EE7
Acquisition Start Date: 4/22/2010 7:59:58AM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 3/26/2010 5:13:59PM
Background Info: Sample: AV85; Det: AV85; Spectrum #1; Mar-26-2010

Acquisition

Calibration Name: March2010_AV85
Calibration Date: 3/31/2010 4:11:04PM
Gain = 7.5313 keV / Ch
Energy Cal: Offset = 3,347.21 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 26.85% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 4/21/2010 4:18:01PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Am-243	5260.159	5004.096	5343.003	84.990	100.0	750	0.4167	749.58	1.572E+000	5.488E-002	8.59E-002	3.009E-003	1.049E-002
Am-241	5501.160	5343.003	5614.129	76.871	98.0	865	1.2500	863.75	1.766E+000	6.015E-002	9.55E-002	5.318E-003	1.448E-002
Cm-244	5779.817	5636.723	5907.849	203.699	100.0	9	8.3333	0.67	1.336E-003	7.076E-003	7.08E-003	1.346E-002	2.807E-002

manual sheet
um 4/22/10

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Daily Pulsers

AlphaVision Daily Pulser Check for: 4/21/2010

Detector	Date/Time	Gross Counts		P/F	FWHM (keV)		P/F	Pulser Center		P/F	Result	Energy (keV)		P/F
		Result	Criteria		Result	Criteria		Result	Criteria					
AV1	04/21/2010 6:00	7396	7218.7 +/- 5%	Pass	15.2	10-20	Pass	224.1	229.0 +/- 5%	Pass	5025	5051.1 +/- 25%	Pass	
AV3	04/21/2010 6:00	7371	7484.9 +/- 5%	Pass	16.8	10-20	Pass	228.0	225.9 +/- 5%	Pass	5053	5028.8 +/- 25%	Pass	
AV4	04/21/2010 5:59	7307	7413.7 +/- 5%	Pass	13.7	10-20	Pass	224.0	224.9 +/- 5%	Pass	5037	5021.6 +/- 25%	Pass	
AV6	04/21/2010 5:59	7423	7476.7 +/- 5%	Pass	13.9	10-20	Pass	219.1	224.0 +/- 5%	Pass	4989	5015.3 +/- 25%	Pass	
AV7	04/21/2010 5:59	7416	7477.0 +/- 5%	Pass	14.0	10-20	Pass	227.0	224.9 +/- 5%	Pass	5050	5021.9 +/- 25%	Pass	
AV8	04/21/2010 5:59	7415	7327.4 +/- 5%	Pass	13.9	10-20	Pass	222.0	228.0 +/- 5%	Pass	5021	5044.6 +/- 25%	Pass	
AV9	04/21/2010 6:00	7739	7519.3 +/- 5%	Pass	16.2	10-20	Pass	221.9	227.9 +/- 5%	Pass	5013	5043.3 +/- 25%	Pass	
AV104	04/21/2010 6:23	7595	7632.0 +/- 5%	Pass	13.8	10-20	Pass	218.9	223.0 +/- 5%	Pass	5002	5029.9 +/- 25%	Pass	
AV109	04/21/2010 6:00	7634	7639.8 +/- 5%	Pass	14.5	10-20	Pass	220.1	220.5 +/- 5%	Pass	5007	5011.7 +/- 25%	Pass	
AV108	04/21/2010 5:59	7643	7536.6 +/- 5%	Pass	13.7	10-20	Pass	222.1	223.0 +/- 5%	Pass	5029	5029.7 +/- 25%	Pass	
AV107	04/21/2010 5:59	7640	7652.4 +/- 5%	Pass	14.9	10-20	Pass	223.1	224.1 +/- 5%	Pass	5018	5037.8 +/- 25%	Pass	
AV105	04/21/2010 6:23	7593	7627.3 +/- 5%	Pass	13.5	10-20	Pass	219.0	221.6 +/- 5%	Pass	5006	5019.3 +/- 25%	Pass	
AV103	04/21/2010 6:23	7597	7630.0 +/- 5%	Pass	14.0	10-20	Pass	222.0	223.9 +/- 5%	Pass	5028	5036.8 +/- 25%	Pass	
AV102	04/21/2010 6:23	7600	7634.5 +/- 5%	Pass	14.1	10-20	Pass	223.0	224.4 +/- 5%	Pass	5037	5040.3 +/- 25%	Pass	
AV101	04/21/2010 6:23	7603	7639.5 +/- 5%	Pass	13.4	10-20	Pass	223.0	225.0 +/- 5%	Pass	5026	5045.2 +/- 25%	Pass	
AV100	04/21/2010 6:23	7605	7639.6 +/- 5%	Pass	13.9	10-20	Pass	221.0	223.0 +/- 5%	Pass	5015	5029.9 +/- 25%	Pass	
AV10	04/21/2010 6:00	7613	7749.6 +/- 5%	Pass	12.5	10-20	Pass	221.0	226.1 +/- 5%	Pass	5017	5030.3 +/- 25%	Pass	
AV106	04/21/2010 5:59	7517	7625.3 +/- 5%	Pass	13.7	10-20	Pass	223.0	223.2 +/- 5%	Pass	5028	5031.6 +/- 25%	Pass	
AV112	04/21/2010 6:23	7512	7642.2 +/- 5%	Pass	23.4	10-20	FAIL	221.0	222.0 +/- 5%	Pass	5020	5022.7 +/- 25%	Pass	
AV119	04/21/2010 6:23	7585	7699.0 +/- 5%	Pass	14.7	10-20	Pass	235.1	222.0 +/- 5%	FAIL	5110	5022.6 +/- 25%	Pass	
AV119	04/21/2010 6:00	7689	7699.0 +/- 5%	Pass	14.0	10-20	Pass	236.0	222.0 +/- 5%	FAIL	5117	5022.6 +/- 25%	Pass	
AV118	04/21/2010 6:00	7693	7701.5 +/- 5%	Pass	13.5	10-20	Pass	223.0	224.0 +/- 5%	Pass	5021	5037.1 +/- 25%	Pass	
AV117	04/21/2010 6:00	7696	7664.0 +/- 5%	Pass	13.6	10-20	Pass	223.0	223.7 +/- 5%	Pass	5030	5035.4 +/- 25%	Pass	
AV116	04/21/2010 6:00	7697	7703.0 +/- 5%	Pass	13.7	10-20	Pass	221.0	221.5 +/- 5%	Pass	5010	5019.2 +/- 25%	Pass	
AV115	04/21/2010 6:23	7595	7681.0 +/- 5%	Pass	13.3	10-20	Pass	223.0	224.0 +/- 5%	Pass	5031	5037.7 +/- 25%	Pass	
AV115	04/21/2010 6:00	7699	7681.0 +/- 5%	Pass	13.7	10-20	Pass	224.1	224.0 +/- 5%	Pass	5040	5037.7 +/- 25%	Pass	
AV114	04/21/2010 6:00	7627	7635.0 +/- 5%	Pass	13.3	10-20	Pass	222.0	224.1 +/- 5%	Pass	5021	5038.3 +/- 25%	Pass	
AV112	04/21/2010 6:00	7630	7642.2 +/- 5%	Pass	23.4	10-20	FAIL	221.0	222.0 +/- 5%	Pass	5020	5022.7 +/- 25%	Pass	
AV111	04/21/2010 6:00	7636	7634.5 +/- 5%	Pass	13.6	10-20	Pass	221.9	224.0 +/- 5%	Pass	5022	5037.7 +/- 25%	Pass	
AV110	04/21/2010 6:00	7626	7631.8 +/- 5%	Pass	15.9	10-20	Pass	220.9	227.0 +/- 5%	Pass	5014	5060.0 +/- 25%	Pass	
AV110	04/21/2010 6:22	7620	7666.2 +/- 5%	Pass	22.7	10-20	FAIL	222.0	225.0 +/- 5%	Pass	5033	5022.1 +/- 25%	Pass	
AV110	04/21/2010 6:00	7752	7666.2 +/- 5%	Pass	23.1	10-20	FAIL	222.0	225.0 +/- 5%	Pass	5034	5022.1 +/- 25%	Pass	

Detector	Date/Time	Gross Counts		FWHM (keV)		Pulser Center		Energy (keV)	
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria
AV113	04/21/2010 6:00	7629	7637.3 +/- 5%	Pass	13.7	10-20	Pass	5009	5030.5 +/- 25%
AV122	04/21/2010 6:00	7655	7676.6 +/- 5%	Pass	13.5	10-20	Pass	5006	5021.8 +/- 25%
AV12	04/21/2010 6:00	7732	7588.7 +/- 5%	Pass	16.1	10-20	Pass	5006	5058.4 +/- 25%
AV120	04/21/2010 6:00	7685	7696.0 +/- 5%	Pass	14.0	10-20	Pass	5004	5022.6 +/- 25%
AV121	04/21/2010 6:00	7685	7692.5 +/- 5%	Pass	13.7	10-20	Pass	5036	5037.8 +/- 25%
AV13	04/21/2010 6:00	7744	7584.6 +/- 5%	Pass	14.5	10-20	Pass	5014	5044.1 +/- 25%
AV14	04/21/2010 6:00	7725	7638.3 +/- 5%	Pass	15.3	10-20	Pass	5029	5037.2 +/- 25%
AV15	04/21/2010 6:00	7709	7770.5 +/- 5%	Pass	16.0	10-20	Pass	5050	5036.6 +/- 25%
AV16	04/21/2010 6:00	7726	7456.0 +/- 5%	Pass	15.0	10-20	Pass	5029	5036.2 +/- 25%
AV17	04/21/2010 6:00	7496	7619.1 +/- 5%	Pass	12.8	10-20	Pass	5031	5058.3 +/- 25%
AV18	04/21/2010 6:00	7435	7714.5 +/- 5%	Pass	12.6	10-20	Pass	5036	5036.4 +/- 25%
AV19	04/21/2010 6:00	7652	7269.8 +/- 5%	FAIL	18.0	10-20	Pass	5048	5041.9 +/- 25%
AV19	04/21/2010 6:22	7554	7269.8 +/- 5%	Pass	18.0	10-20	Pass	5048	5041.9 +/- 25%
AV20	04/21/2010 6:00	7707	7503.6 +/- 5%	Pass	14.4	10-20	Pass	5017	5029.9 +/- 25%
AV21	04/21/2010 6:00	7689	7550.9 +/- 5%	Pass	16.0	10-20	Pass	5025	5029.6 +/- 25%
AV22	04/21/2010 6:22	7590	7691.4 +/- 5%	Pass	40.1	10-20	FAIL	5036	5022.4 +/- 25%
AV22	04/21/2010 6:00	7676	7691.4 +/- 5%	Pass	42.5	10-20	FAIL	5034	5022.4 +/- 25%
AV23	04/21/2010 6:00	7686	7665.3 +/- 5%	Pass	15.5	10-20	Pass	5014	5057.0 +/- 25%
AV24	04/21/2010 6:00	7696	7354.0 +/- 5%	Pass	14.2	10-20	Pass	4991	5036.4 +/- 25%
AV51	04/21/2010 6:00	7385	7070.5 +/- 5%	Pass	13.8	10-20	Pass	5019	5007.6 +/- 25%
AV52	04/21/2010 6:00	7378	7156.4 +/- 5%	Pass	14.4	10-20	Pass	5028	5022.4 +/- 25%
AV53	04/21/2010 6:00	7360	7144.1 +/- 5%	Pass	16.5	10-20	Pass	5031	5007.8 +/- 25%
AV54	04/21/2010 6:00	7375	7313.1 +/- 5%	Pass	14.0	10-20	Pass	5073	5029.5 +/- 25%
AV55	04/21/2010 6:00	7267	7132.9 +/- 5%	Pass	17.7	10-20	Pass	5031	5029.7 +/- 25%
AV57	04/21/2010 6:00	7357	7309.5 +/- 5%	Pass	16.1	10-20	Pass	5019	5000.6 +/- 25%
AV58	04/21/2010 6:00	7366	7249.2 +/- 5%	Pass	14.8	10-20	Pass	5038	5008.0 +/- 25%
AV60	04/21/2010 6:00	7260	7019.7 +/- 5%	Pass	19.0	10-20	Pass	5034	5007.5 +/- 25%
AV61	04/21/2010 6:00	7235	7078.3 +/- 5%	Pass	16.9	10-20	Pass	5031	5022.2 +/- 25%
AV63	04/21/2010 6:00	7253	7120.8 +/- 5%	Pass	19.6	10-20	Pass	5024	5007.9 +/- 25%
AV64	04/21/2010 6:00	7251	7133.7 +/- 5%	Pass	14.8	10-20	Pass	5038	5015.3 +/- 25%
AV65	04/21/2010 6:00	7234	7233.4 +/- 5%	Pass	21.0	10-20	FAIL	5023	5015.3 +/- 25%
AV65	04/21/2010 6:23	7164	7233.4 +/- 5%	Pass	21.0	10-20	FAIL	5023	5015.3 +/- 25%
AV66	04/21/2010 6:00	7210	7165.5 +/- 5%	Pass	16.1	10-20	Pass	5041	5000.5 +/- 25%
AV67	04/21/2010 6:00	7216	7128.1 +/- 5%	Pass	13.0	10-20	Pass	4999	5015.6 +/- 25%
AV68	04/21/2010 6:00	7432	7259.5 +/- 5%	Pass	18.5	10-20	Pass	5015	5000.8 +/- 25%
AV69	04/21/2010 6:23	7096	7305.4 +/- 5%	Pass	12.9	10-20	Pass	5033	5000.6 +/- 25%

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Wednesday, April 21, 2010

Detector	Date/Time	Gross Counts		FWHM (keV)		Pulser Center		Energy (keV)		P/F			
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria				
AV70	04/21/2010 6:23	7109	7406.5 +/- 5%	Pass	12.9	10-20	Pass	220.1	222.6 +/- 5%	Pass	5005	5004.7 +/- 25%	Pass
AV71	04/21/2010 6:22	7383	7187.3 +/- 5%	Pass	15.4	10-20	Pass	217.0	225.0 +/- 5%	Pass	4987	5022.7 +/- 25%	Pass
AV72	04/21/2010 6:22	7033	7090.0 +/- 5%	Pass	13.3	10-20	Pass	224.9	223.9 +/- 5%	Pass	5050	5014.6 +/- 25%	Pass
AV73	04/21/2010 6:22	7196	7251.3 +/- 5%	Pass	12.3	10-20	Pass	223.0	225.0 +/- 5%	Pass	5030	5022.4 +/- 25%	Pass
AV74	04/21/2010 6:22	7246	7227.1 +/- 5%	Pass	13.0	10-20	Pass	224.0	224.0 +/- 5%	Pass	5043	5015.0 +/- 25%	Pass
AV74	04/21/2010 6:22	7246	7227.1 +/- 5%	Pass	13.0	10-20	Pass	224.0	224.0 +/- 5%	Pass	5043	5015.0 +/- 25%	Pass
AV75	04/21/2010 6:22	7574	7267.9 +/- 5%	Pass	13.5	10-20	Pass	222.0	224.1 +/- 5%	Pass	5009	5015.5 +/- 25%	Pass
AV76	04/21/2010 6:22	7186	7374.3 +/- 5%	Pass	13.2	10-20	Pass	224.1	224.0 +/- 5%	Pass	5031	5015.2 +/- 25%	Pass
AV77	04/21/2010 6:22	7399	7497.1 +/- 5%	Pass	12.7	10-20	Pass	223.0	224.0 +/- 5%	Pass	5030	5015.4 +/- 25%	Pass
AV78	04/21/2010 6:22	7537	7183.8 +/- 5%	FAIL	15.4	10-20	Pass	225.1	223.3 +/- 5%	Pass	5035	5009.8 +/- 25%	Pass
AV79	04/21/2010 6:22	7563	7349.7 +/- 5%	Pass	13.9	10-20	Pass	222.0	222.0 +/- 5%	Pass	5008	5000.4 +/- 25%	Pass
AV80	04/21/2010 6:22	7560	7226.4 +/- 5%	Pass	13.8	10-20	Pass	224.1	224.1 +/- 5%	Pass	5022	5015.5 +/- 25%	Pass
AV82	04/21/2010 6:22	7558	7529.2 +/- 5%	Pass	13.8	10-20	Pass	225.0	224.0 +/- 5%	Pass	5021	5015.2 +/- 25%	Pass
AV83	04/21/2010 6:22	7479	7523.7 +/- 5%	Pass	12.9	10-20	Pass	223.0	222.0 +/- 5%	Pass	5019	5000.4 +/- 25%	Pass
AV84	04/21/2010 6:22	7364	7637.7 +/- 5%	Pass	13.3	10-20	Pass	223.9	223.0 +/- 5%	Pass	5031	5007.7 +/- 25%	Pass
AV85	04/21/2010 6:22	7410	7549.7 +/- 5%	Pass	13.0	10-20	Pass	221.9	223.0 +/- 5%	Pass	5019	5008.0 +/- 25%	Pass
AV86	04/21/2010 6:22	7719	7679.0 +/- 5%	Pass	13.9	10-20	Pass	223.9	223.9 +/- 5%	Pass	5023	5014.3 +/- 25%	Pass
AV87	04/21/2010 6:23	7708	7512.4 +/- 5%	Pass	15.2	10-20	Pass	223.0	223.0 +/- 5%	Pass	5023	5007.7 +/- 25%	Pass
AV88	04/21/2010 6:23	7711	7716.1 +/- 5%	Pass	13.7	10-20	Pass	223.9	224.0 +/- 5%	Pass	5024	5015.4 +/- 25%	Pass
AV89	04/21/2010 6:23	7710	7553.8 +/- 5%	Pass	13.9	10-20	Pass	219.9	222.6 +/- 5%	Pass	4998	5004.7 +/- 25%	Pass
AV90	04/21/2010 6:23	7708	7474.4 +/- 5%	Pass	13.8	10-20	Pass	224.0	224.1 +/- 5%	Pass	5024	5015.6 +/- 25%	Pass
AV92	04/21/2010 6:23	7484	7358.9 +/- 5%	Pass	12.7	10-20	Pass	222.0	223.9 +/- 5%	Pass	5022	5014.6 +/- 25%	Pass
AV93	04/21/2010 6:23	7433	7393.5 +/- 5%	Pass	13.1	10-20	Pass	223.0	223.0 +/- 5%	Pass	5030	5008.3 +/- 25%	Pass
AV94	04/21/2010 6:23	7425	7477.9 +/- 5%	Pass	13.1	10-20	Pass	222.0	222.0 +/- 5%	Pass	5023	5000.5 +/- 25%	Pass
AV95	04/21/2010 6:23	7347	7432.4 +/- 5%	Pass	13.1	10-20	Pass	223.0	222.2 +/- 5%	Pass	5018	5001.9 +/- 25%	Pass
AV96	04/21/2010 6:23	7628	7654.3 +/- 5%	Pass	21.3	10-20	FAIL	220.8	222.6 +/- 5%	Pass	5034	5005.3 +/- 25%	Pass
AV97	04/21/2010 6:23	7640	7649.9 +/- 5%	Pass	14.7	10-20	Pass	224.1	223.8 +/- 5%	Pass	5033	5014.0 +/- 25%	Pass
AV98	04/21/2010 6:23	7206	7582.0 +/- 5%	Pass	13.4	10-20	Pass	223.9	223.0 +/- 5%	Pass	5017	5007.6 +/- 25%	Pass
AV99	04/21/2010 6:23	7605	7646.9 +/- 5%	Pass	14.4	10-20	Pass	224.0	222.0 +/- 5%	Pass	5032	5022.4 +/- 25%	Pass

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AlphaVision Daily Pulser Check for: 4/22/2010

Detector	Date/Time	Gross Counts		P/F	FWHM (keV)		P/F	Pulser Center		P/F	Energy (keV)		P/F
		Result	Criteria		Result	Criteria		Result	Criteria		Result	Criteria	
AV1	04/22/2010 6:25	7365	7218.7 +/- 5%	Pass	15.0	10 - 20	Pass	224.0	229.0 +/- 5%	Pass	5024	5051.1 +/- 25%	Pass
AV3	04/22/2010 6:25	7321	7484.9 +/- 5%	Pass	17.1	10 - 20	Pass	228.0	225.9 +/- 5%	Pass	5052	5028.8 +/- 25%	Pass
AV3	04/22/2010 6:25	7321	7484.9 +/- 5%	Pass	17.1	10 - 20	Pass	228.0	225.9 +/- 5%	Pass	5052	5028.8 +/- 25%	Pass
AV4	04/22/2010 6:25	7371	7413.7 +/- 5%	Pass	13.7	10 - 20	Pass	224.0	224.9 +/- 5%	Pass	5037	5021.6 +/- 25%	Pass
AV6	04/22/2010 5:42	7427	7476.7 +/- 5%	Pass	13.6	10 - 20	Pass	220.0	224.0 +/- 5%	Pass	4997	5015.3 +/- 25%	Pass
AV7	04/22/2010 5:42	7425	7477.0 +/- 5%	Pass	13.9	10 - 20	Pass	227.0	224.9 +/- 5%	Pass	5050	5021.9 +/- 25%	Pass
AV8	04/22/2010 5:42	7420	7327.4 +/- 5%	Pass	14.0	10 - 20	Pass	222.0	228.0 +/- 5%	Pass	5021	5044.6 +/- 25%	Pass
AV9	04/22/2010 5:42	7749	7519.3 +/- 5%	Pass	15.1	10 - 20	Pass	223.1	227.9 +/- 5%	Pass	5023	5043.3 +/- 25%	Pass
AV103	04/22/2010 5:42	7616	7630.0 +/- 5%	Pass	13.9	10 - 20	Pass	222.0	223.9 +/- 5%	Pass	5028	5036.8 +/- 25%	Pass
AV109	04/22/2010 5:43	7641	7639.8 +/- 5%	Pass	14.1	10 - 20	Pass	219.0	220.5 +/- 5%	Pass	4999	5011.7 +/- 25%	Pass
AV108	04/22/2010 5:43	7321	7536.6 +/- 5%	Pass	13.1	10 - 20	Pass	222.1	223.0 +/- 5%	Pass	5029	5029.7 +/- 25%	Pass
AV107	04/22/2010 5:43	7640	7652.4 +/- 5%	Pass	14.5	10 - 20	Pass	223.1	224.1 +/- 5%	Pass	5017	5037.8 +/- 25%	Pass
AV106	04/22/2010 5:43	7609	7625.3 +/- 5%	Pass	13.5	10 - 20	Pass	223.0	223.2 +/- 5%	Pass	5028	5031.6 +/- 25%	Pass
AV104	04/22/2010 5:42	7615	7632.0 +/- 5%	Pass	13.8	10 - 20	Pass	218.9	223.0 +/- 5%	Pass	5002	5029.9 +/- 25%	Pass
AV102	04/22/2010 5:42	7618	7634.5 +/- 5%	Pass	14.0	10 - 20	Pass	223.0	224.4 +/- 5%	Pass	5037	5040.3 +/- 25%	Pass
AV101	04/22/2010 5:42	7622	7639.5 +/- 5%	Pass	13.4	10 - 20	Pass	223.0	225.0 +/- 5%	Pass	5026	5045.2 +/- 25%	Pass
AV100	04/22/2010 5:42	7623	7639.6 +/- 5%	Pass	13.9	10 - 20	Pass	221.0	223.0 +/- 5%	Pass	5015	5029.9 +/- 25%	Pass
AV10	04/22/2010 5:42	7577	7749.6 +/- 5%	Pass	12.7	10 - 20	Pass	221.0	226.1 +/- 5%	Pass	5017	5030.3 +/- 25%	Pass
AV105	04/22/2010 5:43	7612	7627.3 +/- 5%	Pass	13.4	10 - 20	Pass	219.0	221.6 +/- 5%	Pass	5006	5019.3 +/- 25%	Pass
AV114	04/22/2010 5:43	7628	7635.0 +/- 5%	Pass	13.8	10 - 20	Pass	222.0	224.1 +/- 5%	Pass	5021	5038.3 +/- 25%	Pass
AV113	04/22/2010 5:43	7629	7637.3 +/- 5%	Pass	13.9	10 - 20	Pass	222.0	223.1 +/- 5%	Pass	5009	5030.5 +/- 25%	Pass
AV119	04/22/2010 6:24	7581	7699.0 +/- 5%	Pass	13.7	10 - 20	Pass	235.0	222.0 +/- 5%	FAIL	5110	5022.6 +/- 25%	Pass
AV119	04/22/2010 5:43	7671	7699.0 +/- 5%	Pass	16.3	10 - 20	Pass	240.1	222.0 +/- 5%	FAIL	5147	5022.6 +/- 25%	Pass
AV118	04/22/2010 5:43	7697	7701.5 +/- 5%	Pass	13.4	10 - 20	Pass	223.0	224.0 +/- 5%	Pass	5021	5037.1 +/- 25%	Pass
AV117	04/22/2010 5:43	7699	7664.0 +/- 5%	Pass	13.6	10 - 20	Pass	223.0	223.7 +/- 5%	Pass	5030	5035.4 +/- 25%	Pass
AV116	04/22/2010 5:43	7701	7703.0 +/- 5%	Pass	13.8	10 - 20	Pass	221.0	221.5 +/- 5%	Pass	5010	5019.2 +/- 25%	Pass
AV112	04/22/2010 6:24	7515	7642.2 +/- 5%	Pass	22.8	10 - 20	FAIL	220.9	222.0 +/- 5%	Pass	5020	5022.7 +/- 25%	Pass
AV112	04/22/2010 5:43	7597	7642.2 +/- 5%	Pass	22.0	10 - 20	FAIL	220.9	222.0 +/- 5%	Pass	5020	5022.7 +/- 25%	Pass
AV111	04/22/2010 5:43	7634	7634.5 +/- 5%	Pass	14.2	10 - 20	Pass	221.9	224.0 +/- 5%	Pass	5022	5037.7 +/- 25%	Pass
AV110	04/22/2010 5:43	7629	7631.8 +/- 5%	Pass	15.5	10 - 20	Pass	222.1	227.0 +/- 5%	Pass	5023	5060.0 +/- 25%	Pass
AV110	04/22/2010 6:25	7620	7666.2 +/- 5%	Pass	24.2	10 - 20	FAIL	222.0	225.0 +/- 5%	Pass	5033	5022.1 +/- 25%	Pass
AV111	04/22/2010 5:42	7749	7666.2 +/- 5%	Pass	23.9	10 - 20	FAIL	222.0	225.0 +/- 5%	Pass	5033	5022.1 +/- 25%	Pass

Thursday, April 22, 2010

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Detector	Date/Time	Gross Counts			FWHM (keV)			Pulser Center			Energy (keV)		
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F
AV115	04/22/2010 5:43	7704	7681.0 +/- 5%	Pass	13.3	10-20	Pass	224.1	224.0 +/- 5%	Pass	5039	5037.7 +/- 25%	Pass
AV12	04/22/2010 5:42	7733	7588.7 +/- 5%	Pass	15.6	10-20	Pass	219.9	230.0 +/- 5%	Pass	5005	5058.4 +/- 25%	Pass
AV120	04/22/2010 5:43	7686	7696.0 +/- 5%	Pass	14.6	10-20	Pass	222.1	222.0 +/- 5%	Pass	5012	5022.6 +/- 25%	Pass
AV121	04/22/2010 5:43	7689	7692.5 +/- 5%	Pass	13.7	10-20	Pass	223.0	224.1 +/- 5%	Pass	5036	5037.8 +/- 25%	Pass
AV122	04/22/2010 5:43	7683	7676.6 +/- 5%	Pass	13.7	10-20	Pass	220.0	221.9 +/- 5%	Pass	5006	5021.8 +/- 25%	Pass
AV13	04/22/2010 5:42	7745	7584.6 +/- 5%	Pass	14.7	10-20	Pass	222.0	228.0 +/- 5%	Pass	5014	5044.1 +/- 25%	Pass
AV14	04/22/2010 5:42	7724	7638.3 +/- 5%	Pass	16.0	10-20	Pass	224.1	227.0 +/- 5%	Pass	5029	5037.2 +/- 25%	Pass
AV15	04/22/2010 5:42	7726	7770.5 +/- 5%	Pass	15.5	10-20	Pass	226.1	226.9 +/- 5%	Pass	5050	5036.6 +/- 25%	Pass
AV16	04/22/2010 5:42	7739	7456.0 +/- 5%	Pass	14.1	10-20	Pass	222.0	226.9 +/- 5%	Pass	5028	5036.2 +/- 25%	Pass
AV18	04/22/2010 5:42	7507	7714.5 +/- 5%	Pass	12.2	10-20	Pass	224.0	226.9 +/- 5%	Pass	5036	5036.4 +/- 25%	Pass
AV19	04/22/2010 5:42	7702	7269.8 +/- 5%	FAIL	18.3	10-20	Pass	225.0	227.7 +/- 5%	Pass	5048	5041.9 +/- 25%	Pass
AV19	04/22/2010 6:25	7617	7269.8 +/- 5%	Pass	18.6	10-20	Pass	224.9	227.7 +/- 5%	Pass	5048	5041.9 +/- 25%	Pass
AV20	04/22/2010 5:42	7695	7503.6 +/- 5%	Pass	14.1	10-20	Pass	223.9	226.0 +/- 5%	Pass	5017	5029.9 +/- 25%	Pass
AV21	04/22/2010 5:42	7679	7550.9 +/- 5%	Pass	15.9	10-20	Pass	224.0	226.0 +/- 5%	Pass	5025	5029.6 +/- 25%	Pass
AV22	04/22/2010 5:42	7686	7691.4 +/- 5%	Pass	30.7	10-20	FAIL	222.7	225.0 +/- 5%	Pass	5025	5022.4 +/- 25%	Pass
AV22	04/22/2010 6:25	7605	7691.4 +/- 5%	Pass	41.0	10-20	FAIL	224.3	225.0 +/- 5%	Pass	5037	5022.4 +/- 25%	Pass
AV23	04/22/2010 5:42	7685	7665.3 +/- 5%	Pass	14.4	10-20	Pass	226.2	229.8 +/- 5%	Pass	5015	5057.0 +/- 25%	Pass
AV24	04/22/2010 5:42	7684	7354.0 +/- 5%	Pass	14.3	10-20	Pass	220.0	226.9 +/- 5%	Pass	4991	5036.4 +/- 25%	Pass
AV31	04/22/2010 5:43	7390	7070.5 +/- 5%	Pass	13.7	10-20	Pass	222.0	223.0 +/- 5%	Pass	5019	5007.6 +/- 25%	Pass
AV32	04/22/2010 5:43	7385	7156.4 +/- 5%	Pass	14.1	10-20	Pass	224.0	225.0 +/- 5%	Pass	5028	5022.4 +/- 25%	Pass
AV33	04/22/2010 5:43	7371	7144.1 +/- 5%	Pass	15.2	10-20	Pass	224.1	223.0 +/- 5%	Pass	5031	5007.8 +/- 25%	Pass
AV34	04/22/2010 5:43	7380	7313.1 +/- 5%	Pass	14.4	10-20	Pass	231.0	226.0 +/- 5%	Pass	5073	5029.5 +/- 25%	Pass
AV35	04/22/2010 5:43	7247	7132.9 +/- 5%	Pass	17.9	10-20	Pass	221.8	226.0 +/- 5%	Pass	5021	5029.7 +/- 25%	Pass
AV37	04/22/2010 5:43	7366	7309.5 +/- 5%	Pass	13.5	10-20	Pass	222.1	222.0 +/- 5%	Pass	5018	5000.6 +/- 25%	Pass
AV38	04/22/2010 5:43	7372	7249.2 +/- 5%	Pass	15.1	10-20	Pass	227.0	223.0 +/- 5%	Pass	5038	5008.0 +/- 25%	Pass
AV60	04/22/2010 5:43	7264	7019.7 +/- 5%	Pass	19.2	10-20	Pass	225.0	223.0 +/- 5%	Pass	5034	5007.5 +/- 25%	Pass
AV61	04/22/2010 5:43	7249	7078.3 +/- 5%	Pass	17.3	10-20	Pass	224.0	225.0 +/- 5%	Pass	5031	5022.2 +/- 25%	Pass
AV63	04/22/2010 5:43	7255	7120.8 +/- 5%	Pass	19.8	10-20	Pass	221.9	223.0 +/- 5%	Pass	5024	5007.9 +/- 25%	Pass
AV64	04/22/2010 5:43	7256	7153.7 +/- 5%	Pass	14.6	10-20	Pass	225.0	224.0 +/- 5%	Pass	5038	5015.3 +/- 25%	Pass
AV65	04/22/2010 5:43	7236	7233.4 +/- 5%	Pass	21.2	10-20	FAIL	222.1	224.0 +/- 5%	Pass	5023	5015.3 +/- 25%	Pass
AV65	04/22/2010 6:25	7170	7233.4 +/- 5%	Pass	21.4	10-20	FAIL	222.1	224.0 +/- 5%	Pass	5023	5015.3 +/- 25%	Pass
AV66	04/22/2010 5:43	7232	7165.5 +/- 5%	Pass	15.8	10-20	Pass	224.1	222.0 +/- 5%	Pass	5041	5000.5 +/- 25%	Pass
AV67	04/22/2010 5:43	7260	7128.1 +/- 5%	Pass	12.8	10-20	Pass	219.0	224.1 +/- 5%	Pass	4999	5015.6 +/- 25%	Pass
AV68	04/22/2010 5:43	7437	7259.5 +/- 5%	Pass	18.6	10-20	Pass	222.1	222.0 +/- 5%	Pass	5014	5000.8 +/- 25%	Pass
AV69	04/22/2010 5:43	7362	7305.4 +/- 5%	Pass	11.9	10-20	Pass	226.0	222.0 +/- 5%	Pass	5042	5000.6 +/- 25%	Pass
AV70	04/22/2010 5:43	7299	7406.5 +/- 5%	Pass	13.0	10-20	Pass	220.0	222.6 +/- 5%	Pass	5005	5004.7 +/- 25%	Pass

Detector	Date/Time	Gross Counts		FWHM (keV)		Pulser Center		Energy (keV)	
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria
AV71	04/22/2010 5:43	7416	7187.3 +/- 5%	Pass	15.9	10-20	Pass	4989	5022.7 +/- 25%
AV72	04/22/2010 6:25	7352	7090.0 +/- 5%	Pass	13.9	10-20	Pass	5059	5014.6 +/- 25%
AV72	04/22/2010 6:25	7352	7090.0 +/- 5%	Pass	13.9	10-20	Pass	5059	5014.6 +/- 25%
AV73	04/22/2010 6:25	7192	7251.3 +/- 5%	Pass	12.6	10-20	Pass	5030	5022.4 +/- 25%
AV74	04/22/2010 6:25	7348	7227.1 +/- 5%	Pass	13.4	10-20	Pass	5028	5015.0 +/- 25%
AV74	04/22/2010 6:25	7348	7227.1 +/- 5%	Pass	13.4	10-20	Pass	5028	5015.0 +/- 25%
AV75	04/22/2010 6:25	7168	7267.9 +/- 5%	Pass	13.5	10-20	Pass	5009	5015.5 +/- 25%
AV76	04/22/2010 8:02	7065	7374.3 +/- 5%	Pass	13.2	10-20	Pass	5031	5015.2 +/- 25%
AV77	04/22/2010 6:25	7345	7497.1 +/- 5%	Pass	13.0	10-20	Pass	5030	5015.4 +/- 25%
AV77	04/22/2010 6:25	7345	7497.1 +/- 5%	Pass	13.0	10-20	Pass	5030	5015.4 +/- 25%
AV78	04/22/2010 6:44	7456	7183.8 +/- 5%	Pass	15.1	10-20	Pass	5035	5009.8 +/- 25%
AV78	04/22/2010 6:25	7547	7183.8 +/- 5%	FAIL	15.1	10-20	Pass	5035	5009.8 +/- 25%
AV79	04/22/2010 6:25	7550	7349.7 +/- 5%	Pass	13.4	10-20	Pass	5008	5000.4 +/- 25%
AV80	04/22/2010 6:25	7546	7226.4 +/- 5%	Pass	13.8	10-20	Pass	5021	5015.5 +/- 25%
AV80	04/22/2010 6:25	7546	7226.4 +/- 5%	Pass	13.8	10-20	Pass	5021	5015.5 +/- 25%
AV82	04/22/2010 6:25	7545	7529.2 +/- 5%	Pass	13.9	10-20	Pass	5021	5015.2 +/- 25%
AV82	04/22/2010 6:25	7545	7529.2 +/- 5%	Pass	13.9	10-20	Pass	5021	5015.2 +/- 25%
AV83	04/22/2010 6:24	7689	7523.7 +/- 5%	Pass	13.8	10-20	Pass	5020	5000.4 +/- 25%
AV83	04/22/2010 6:24	7689	7523.7 +/- 5%	Pass	13.8	10-20	Pass	5020	5000.4 +/- 25%
AV84	04/22/2010 6:24	7251	7637.7 +/- 5%	FAIL	13.6	10-20	Pass	5030	5007.7 +/- 25%
AV84	04/22/2010 6:44	7257	7637.7 +/- 5%	Pass	13.3	10-20	Pass	5030	5007.7 +/- 25%
AV85	04/22/2010 6:24	7229	7549.7 +/- 5%	Pass	13.7	10-20	Pass	5018	5008.0 +/- 25%
AV86	04/22/2010 6:24	7680	7679.0 +/- 5%	Pass	14.0	10-20	Pass	5023	5014.3 +/- 25%
AV86	04/22/2010 6:24	7680	7679.0 +/- 5%	Pass	14.0	10-20	Pass	5023	5014.3 +/- 25%
AV87	04/22/2010 6:24	7674	7512.4 +/- 5%	Pass	15.1	10-20	Pass	5023	5007.7 +/- 25%
AV87	04/22/2010 6:24	7674	7512.4 +/- 5%	Pass	15.1	10-20	Pass	5023	5007.7 +/- 25%
AV88	04/22/2010 6:24	7671	7716.1 +/- 5%	Pass	14.3	10-20	Pass	5033	5015.4 +/- 25%
AV88	04/22/2010 6:24	7671	7716.1 +/- 5%	Pass	14.3	10-20	Pass	5033	5015.4 +/- 25%
AV89	04/22/2010 5:42	7711	7553.8 +/- 5%	Pass	13.6	10-20	Pass	4998	5004.7 +/- 25%
AV90	04/22/2010 5:42	7495	7474.4 +/- 5%	Pass	13.5	10-20	Pass	5024	5015.6 +/- 25%
AV92	04/22/2010 5:42	7507	7358.9 +/- 5%	Pass	12.6	10-20	Pass	5022	5014.6 +/- 25%
AV93	04/22/2010 5:42	7457	7393.5 +/- 5%	Pass	12.9	10-20	Pass	5030	5008.3 +/- 25%
AV94	04/22/2010 5:42	7434	7477.9 +/- 5%	Pass	13.1	10-20	Pass	5022	5000.5 +/- 25%
AV95	04/22/2010 5:42	7649	7432.4 +/- 5%	Pass	13.8	10-20	Pass	5018	5001.9 +/- 25%
AV96	04/22/2010 5:42	7618	7654.3 +/- 5%	Pass	20.8	10-20	FAIL	5045	5005.3 +/- 25%
AV96	04/22/2010 6:24	7502	7654.3 +/- 5%	Pass	21.7	10-20	FAIL	5044	5005.3 +/- 25%

Detector	Date/Time	Gross Counts		P/F	FWHM (keV)		P/F	Pulser Center		P/F	Energy (keV)		P/F
		Result	Criteria		Result	Criteria		Result	Criteria		Result	Criteria	
AV97	04/22/2010 5:42	7641	7649.9 +/- 5%	Pass	14.5	10 - 20	Pass	224.1	223.8 +/- 5%	Pass	5033	5014.0 +/- 25%	Pass
AV98	04/22/2010 5:42	7640	7582.0 +/- 5%	Pass	14.8	10 - 20	Pass	223.9	223.0 +/- 5%	Pass	5017	5007.6 +/- 25%	Pass
AV99	04/22/2010 5:42	7620	7646.9 +/- 5%	Pass	15.3	10 - 20	Pass	223.9	222.0 +/- 5%	Pass	5032	5022.4 +/- 25%	Pass

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Run Log

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20	0099258	FOD080501-001	111	720min	PV	NB/um	um
2			-002	113				
3			-003	114				
4			-004	115				
5			-005	116				
6			-006	117				
7			-007	118				
8			FOD090000-258 B	120				
9			-258C	121				
10		0099259	F0C310488-001	13	400min	Uu		um
11			-001X	14				
12			-002	83				
13			F0C310498-001	86				
14			-002	87				
15			-003	92				
16			-004	93				
17			-005	97				
18			FOD090000-259B	94				
19			1 -259C	98				
20		0099259	F0C310499-002	21	400min	Uu	Emw	
21			-003	23				
22			-004	54				
23			FOD070439-002	55				
24			FOD080501-001	57				
25			-002	58				
26	4/21/10	Daily	Pulsero	1-122	1min	QA	8	-
27		0099259	FOD080501-003	67	400min	u		um
28			-004	68				
29			-005	69				

Reviewed By: EDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0099259	F0D080501-006	70	400min	U	SE	umw
2			-007	71				
3		0109095	F0D070451-003	9	180min	Np		umw
4			-006	10				
5			F0D190000-095B	88				
6			-095C	89				
7			-095L	90				
8		0102265	F0C240459-002	12				umw
9			-002K	13				
10			-003	14				
11			-004	15				
12			-005	16				
13			-006	18				
14			F0D120000-215B	78				
15			-215C	82				
16		0099126	F0C260551-005	20				umw
17			-005K	21				
18			-006	23				
19			-007	24				
20			-008	51				
21			-009	52				
22			-010	53				
23			-011	54				
24			-012	55				
25			F0D090000-126B	79				
26			-126C	80				
27		0104309	F0D080530-001	57		Pu		umw
28			-001K	58				
29			-002	60				

Reviewed By: SEDate: 4/21/10

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TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0104309	FOD080530-003	61	180min	Pu	SE	umw
2			FOD080539-003	63				
3			-004	64				
4			-007	66				
5			FOD140000-309B	75				
6			-309C	76				
7		0104239	FOD240459-001	72	360min	Am		umw
8			FOD140000-239B	77				
9			-239C	84				
10			-239L	85				
11		0104241	FOD240459-001	73		U		umw
12			FOD140000-241B	94				
13			-241C	95				
14			-241L	98				
15		0104238	FOD240459-001	74		Th		umw
16			FOD140000-238B	83				
17			-238C	86				
18			-238L	87				
19		0109098	FOD070451-003	92		Pu		umw
20			-006	93				
21			FOD190000-098B	97				
22		0103265	FOD240459-005	103	180min	Np	umw	umw
23		0103254	FOD070441-001	9		Pu		umw
24			-001K	12				
25		0099123	FOD260551-005	10	180min	Am		umw
26			-005X	18				
27			-006	51				
28			-007	51				
29			-008	52				

Reviewed By: umwDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0099123	FOC 260551-010	20	600mins	Am	um	
2		0109098	FO D190000-096C	75	360mins	Pu		um
3			FOC 260551-098L	76	360mins			
4		0102263	FOC 240459-002	53	720mins			um
5			-002x	55				
6			-003	57				
7			-004	58				
8			-005	60				
9			-006	61				
10			FO D120000-263B	78				
11			FOC 260551-263C	82				
12		0104240	FOC 240459-001	24				um
13			FO D140000-240B	88				
14			-240C	89				
15			-240L	90				
16		0102262	FOC 240459-002	14	400mins	Am		um
17			-002x	15				
18			-003	16				
19			-004	64				
20			-005	21				
21			-006	23				
22			FO D120000-262B	79				
23			FOC 260551-262C	80				
24		0103240	FOC 250601-041	13	960mins	Pu		um
25		0099258	FOC 310498-001	99				um
26			-002	100				
27			-004 ^{um}	101				
28			-005 ^{4/21/10}	102				
29			FOC 310499-003	103				

Reviewed By: umDate: 4/21/10

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TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0099258	FOD080501-006	104	96mins	Pu	um	um
2		0099257	FOC310488-001	9	400min	Am	NB	
3			-001x	12				
4			-002	83				
5			FOC310498-001	86				
6			-002	92				
7			-003	93				
8			-004	97				
9			-005	103				
10			FOC310499-002	106				
11			-003	107				
12			-004	108				
13			FUD070439-002	109				
14			FOD080501-001	70				
15			-002	71				
16			-003	72				
17			-004	73				
18			-005	74				
19			-006	87				
20		0104312	FOC200520-001	1	180min	U		um
21			-001x	3				
22			FOD140000-312B	77				
23			-312c	84				
24		0100037	FOC230524-001	4				um
25			FOC230524-001x	7				
26			-002	8				
27			FUD100000-037B	85				
28			-037c	94				
29		0109101	FOC240744-001	17				

Reviewed By: NB

Date: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0109101	FOD190000-101C	95	180min	U	NB	
2		15	-101L	98		+	+	
3		0102263	FOD120000-265B	75		NP	um	um
4		0102263	FOD120000-263B	76	720ms	pu	+	um
5	4/22/10	Daily	Pulvers	1-172	1min	QA	SE	—
6		0109101	FOD240544-001	1	180min	U		
7			-002	3				
8			FOD190000-101B	4				
9			-101C	89				
10			-101L	90				
11		0099257	FOD080501-007	24	400min	Am		
12			FOD090000-257B	84				
13			-257C	85				
14		0104319	FOD300453-014	9	180min	NP		
15			-0144	10				
16			-015	12				
17			-016	13				
18			-017	14				
19			-018	15				
20			-019	16				
21			-020	18				
22			FOD310495-001	19				
23			-002	20				
24			-003	21				
25			-004	23				
26			FOD140000-319B	94				
27			-319C	98				
28		0109096	FOD070451-003	92	240min	Th		
29			-006	93				

Reviewed By: SEDate: 4/22/10

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TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0109101	FOD190000-101C	95	180min	U	NB	um
2			-101L	98		+	+	+
3		0102263	FOD120000-265B	75		NP	um	um
4		0102263	FOD120000-263B	76	72mins	pu	+	um
5	4/22/10	Nails	Pulvers	1-172	1min	OA	SE	—
6		0109101	FOC240549-001	1	180min	U		um
7			-002	3				
8			FOD190000-101B	4				
9			-101C	89				
10			-101L	90				
11		0099257	FOD080501-007	24	400min	Am		um
12			FOD090000-257B	84				
13			-257C	85				
14		0104319	FOC300453-014	9	180min	NP		um
15			-0144	10				
16			-015	12				
17			-016	13				
18			-017	14				
19			-018	15				
20			-019	16				
21			-020	18				
22			FOC310495-001	19				
23			-002	20				
24			-003	21				
25			-004	23				
26			FOD140000-39B	94				
27			-39C	98				
28		0109096	FOD070451-003	92	240min	Th		um
29			-006	93				

Reviewed By: SEDate: 4/22/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/22/10	0109096	F0D190000-096B	79	240min	Th	SE	umy
2			-096C	80				
3			-096L	82				
4		0109373	F0D070451-008	53		Am		umy
5			-008B	54				
6			-010	55				
7			-012	57				
8			-014	58				
9			-017	60				
10			-019	61				
11			-022	63				
12			-024	64				
13			-026	66				
14			-028	67				
15			-030	68				
16			-032	69				
17			F0D190000-373B	78				
18			↓ -373C	88				
19		0109102	F0D070451-003	51		Th		umy
20			↓ -006	52				
21			F0D190000-102B	75				
22			-102C	76				
23			-102L	77				
24		0109382	F0D070451-008	70	360min	Th 220		umy
25			-008C	71				
26			-010	72				
27			-012	73				
28			-014	74				
29			-017	83				

Reviewed By: SEDate: 4/22/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/22/10	0109382	FOD070451-019	86	360min	Th229	RE	um
2			-022	87				
3			-024	97				
4			FOD190000-3820	95				
5		0103166	FOD070441-001	6	180min	L		um
6			-001K	7				
7			-002	8				
8			-003	17				
9		0109374	FOD070451-008	60	400mins	pu	um	um
10			-008X ^{amc} 11ed 61	63				
11			-010	63				
12			-012	64				
13			-014	66				
14			-017	67				
15			-019	68				
16			-022	69				
17			-024	15				
18			FOD190000-374B-022	77				
19			-374C ^{umc} 41ed 10	78				
20		0109377	FOD070451-034	16	240mins	Am		um
21			-034X	19				
22			-036	20				
23			-040	21				
24			-042	23				
25			-044	51				
26			-046	52				
27			-048	53				
28			-050	54				
29			-052	55				

Reviewed By: umDate: 4/22/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/22/10	0109377	FOD070451-052	51	240mins	Am	um	um
2			054	58				
3			FOD190000-377B	79				
4			-377C	80				
5		0103166	FOD070441-004	1	180mins	U		um
6			-005	3				
7			-006	4				
8			-007	6				
9			-008	7				
10			-009	8				
11			FOD130000-116B	94				
12			-116C	98				
13		0109382	FOD070451-026	9	360mins	Th229		um
14			-028	12				
15			-030	13				
16			-032	14				
17			FOD190000-382B	89				
18		0102262	FOD240459-004	18	400mins	Am		um
19			-006	10				
20		0100037	FOD100000-037C	75	180mins	U		um
21		0109102	FOD190000-102C	76	240mins	Th		um
22		0102263	FOD120000-263C	88	720mins	Ph		um
23		0104240	FOD240459-001	93	960mins			um
24		0109098	FOD070451-006	92	500mins			um
25		0103166	FOD070441-004	74	180min	U	NB	um
26			-012	83				
27			-013	87				
28			-014	97				
29			-015	86				

Reviewed By: NB

Date: 4/22/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/22/10	0103166	FOD070441-016	95	180min	U	NB	Wm
2		0109374	FOD070451-026	70	400min	Pa		Wm
3			-028	71				
4			-030	72				
5			-032	73				
6		0109096	FOD070451-003	21	240min	Th	NB	Wm
7			-006	23				
8			FUD190000-096B	79				
9			-096C	80				
10			-096L	82				
11		0110314	FOD270415-015	24	400min	U		Wm
12			FUD200000-314B	75				
13			-314C	76				
14			-314L	84				
15		0109375	FOD070451-008	99	180min	NP		Wm
16			-008X	100				
17			-010	101				
18			-012	102				
19			-014	103				
20			-017	104				
21			-019	105				
22			-022	106				
23			-024	107				
24			-026	108				
25			-028	109				
26			-030	110				
27			-032	111				
28			FOD190000-375B	113				
29			-375C	114				

Reviewed By: NB

Date: 4/22/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/22/10	0103164	FOD070441-001	51	180min	Am	NB	umv
2			-001X	52				
3			-002	53				
4			-003	54				
5			-004	55				
6			-005	57				
7			-006	58				
8			-007	3				
9			-008	4				
10			-009	6				
11			-010	7				
12			-011	8				
13			-012	17				
14			0103164 =0103164					NB 4/22
15	4/22	0103164	FOD070441-011	74	180min	U	NB	umv
16			-012	83				
17			-013	87				
18			-014	97				
19			-015	86				
20			-016	95				
21			-017	1				
22		0103164	FOD130000-1164B	85	180min	Am		umv
23			-1164C	90				
24			FOD070441-013	9			umv	
25			-014	12				
26			-015	13				
27			-016	14				
28			-017	16				
29		0109384	FOD070451-034	74	300min	Th229		umv

Reviewed By: umvDate: 4/22/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/23/10	0109384	FOD070451-034x	83	360mins	Th229	um	um
2			-036	86				
3			-038	87				
4			-040	97				
5			-042	60				
6			-044	61				
7			-046	63				
8			-048	64				
9			-050	66				
10			-052	67				
11			-054	69				
12			FOD190000-384B	89				
13			-384C	95				
14		0109380	FOD070451-034	10	240mins	Th		um
15			-036x	15				
16			-038	18				
17			-040	69				
18			FOD190000-380B	77				
19			-380C	78				
20	4/23/10	Daily	Pulvers	1-122	1min	Th	82	—
21		0109380	FOD070451-040	9	240min	Th	1	um
22			-042	10				
23			-044	12				
24			-046	13				
25			-048	14				
26			-050	15				
27			-052	16				
28			-054	18				
29		0109379	FOD070451-034	99	180min	Th	82	um

Reviewed By: 82Date: 4/23/10

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Prep Report for Americium, Isotopic by Alpha Spectroscopy

Batch: 0099257

Prep Analyst: 403301

SampleID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F0C310488-001	LXC9E1CK	2.0072E+000 g	2.00	1.0036E+000 g	rad10-0046	Am-243	0.10	N
F0C310488-001X	LXC9E1EJ	2.0061E+000 g	2.00	1.0031E+000 g	rad10-0046	Am-243	0.10	N
F0C310488-002	LXC9E1CK	2.0046E+000 g	2.00	1.0023E+000 g	rad10-0046	Am-243	0.10	N
F0C310498-001	LXDEA1AE	2.0010E+000 g	2.00	1.0005E+000 g	rad10-0046	Am-243	0.10	N
F0C310498-002	LXDEG1AE	2.0031E+000 g	2.00	1.0016E+000 g	rad10-0046	Am-243	0.10	N
F0C310498-003	LXDEK1AE	2.0052E+000 g	2.00	1.0026E+000 g	rad10-0046	Am-243	0.10	N
F0C310498-004	LXDEL1AE	2.0045E+000 g	2.00	1.0022E+000 g	rad10-0046	Am-243 Smear RC = 19	0.10	N
F0C310498-005	LXDEM1AE	2.0006E+000 g	2.00	1.0003E+000 g	rad10-0046	Am-243	0.10	N
F0C310499-002	LXDE61CH	2.0006E+000 g	2.00	1.0003E+000 g	rad10-0046	Am-243	0.10	N
F0C310499-003	LXDFN1CH	2.0044E+000 g	2.00	1.0022E+000 g	rad10-0046	Am-243	0.10	N
F0C310499-004	LXDFR1CH	2.0022E+000 g	2.00	1.0011E+000 g	rad10-0046	Am-243	0.10	N
F0D070439-002	LXLR41CH	2.0014E+000 g	2.00	1.0007E+000 g	rad10-0046	Am-243	0.10	N
F0D080501-001	LXNMR1AE	2.0025E+000 g	2.00	1.0013E+000 g	rad10-0046	Am-243	0.10	N
F0D080501-002	LXNMV1AE	2.0036E+000 g	2.00	1.0018E+000 g	rad10-0046	Am-243 Smear RC = 20	0.10	N
F0D080501-003	LXNMW1AE	2.0008E+000 g	2.00	1.0004E+000 g	rad10-0046	Am-243	0.10	N
F0D080501-004	LXNMX1AE	2.0063E+000 g	2.00	1.0032E+000 g	rad10-0046	Am-243	0.10	N
F0D080501-005	LXNM21AE	2.0012E+000 g	2.00	1.0006E+000 g	rad10-0046	Am-243	0.10	N

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F0D080501-006	LXNM41AE	2.0021E+000 g	2.00	1.0011E+000 g	rad10-0046	Am-243	0.10	N
87								
F0D080501-007	LXNM91AE	2.0037E+000 g	2.00	1.0018E+000 g	rad10-0046	Am-243	0.10	N
24								
F0D090000-257B	LXQQT1AA	2.0000E+000 g	1.00	2.0000E+000 g	rad10-0046	Am-243	0.10	N
84								
F0D090000-257C	LXQQT1AC	2.0000E+000 g	1.00	2.0000E+000 g	rad10-0046	Am-243	0.10	N
85								

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F0D090000-257C	RAD04-0006	AM-241	8.560E+001 dpm/mL	0.10 mL	4/18/1996 12:00:00AM	1.928E+000 pCi/g

Spiked By

Spike Verified By

Spike Date

Standard Operating Procedures

SOPNumber	Title	Revision
240		

Column Analyst

Date

Coprecipitated By

Precip Date

Reviewed By

Review Date

Analyst/Relinquished By

Release Date

Received By

Receipt Date

SV142B1 DO 4/18/10

Balance ID / Initials / Date

Alpha Spectroscopy

Plutonium

Test America St. Louis

Isotopic Actinide DLC calculation when decay and ingrowth calculations are not required.

Sample ID	Isotope	Total Bkgd Cts	L/g Sample Volume	decimal det. eff.	minutes ct. length	decimal yield	decimal abundance	DLC
F0C310488-001	Pu238	0.75 ✓	1.0036 ✓	0.2567 ✓	720 ✓	0.8319 ✓	0.999	0.0059
F0C310488-001	Pu239/240	0 ✓	1.0036	0.2567	720	0.8319	0.999	0.0000
F0C310498-001	Pu238	1 ✓	1.0005 ✓	0.2567	960	0.6817 ✓	0.999	0.0062
F0C310498-001	Pu239/240	0 ✓	1.0005	0.2567	960	0.6817	0.999	0.0000
F0C310498-003	Pu238	0 ✓	1.0026 ✓	0.2557	720 ✓	0.9161 ✓	0.999	0.0000
F0C310498-003	Pu239/240	0 ✓	1.0026	0.2557	720	0.9161	0.999	0.0000
F0C310499-003	Pu238	0 ✓	1.0022 ✓	0.2563	960	0.7281 ✓	0.999	0.0000
F0C310499-003	Pu239/240	0 ✓	1.0022 ✓	0.2563	960	0.7281	0.999	0.0000

Calculated by: *wm*Date: *4/22/10*Reviewed by: *rw*Date: *4/22/10*

Analysis Report for Alpha Spectroscopy

Batch: 0099258 Operator: 403293

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDate/Time	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F0C310488-001	LXC9E1CJ	2.0072 g	2.00	1.00	AV99	4/20/10 16:05 Analyte	720.00 Activity	rad10-0034	Pu-236 CountUnc	3.784E+000 MDA	83.19% DLC
						Pu-236	3.148E+000 pCi/g		5.939E-002	2.479E-002	5.888E-003
						Pu-238	2.993E-002 pCi/g		9.927E-003	1.890E-002	5.882E-003
						Pu-239	1.753E-002 pCi/g		7.196E-003	7.908E-003	5.888E-003
F0C310488-001X	LXC9E1EK	2.0061 g	2.00	1.00	AV100	4/20/10 16:06 Analyte	720.00 Activity	rad10-0034	Pu-236 CountUnc	3.786E+000 MDA	84.70% DLC
						Pu-236	3.207E+000 pCi/g		5.844E-002	2.399E-002	5.698E-003
						Pu-238	1.695E-002 pCi/g		6.921E-003	7.645E-003	5.692E-003
						Pu-239	1.131E-002 pCi/g		5.656E-003	7.653E-003	5.698E-003
F0C310488-002	LXC9E1CJ	2.0046 g	2.00	1.00	AV101	4/20/10 16:06 Analyte	720.00 Activity	rad10-0034	Pu-236 CountUnc	3.789E+000 MDA	86.19% DLC
						Pu-236	3.265E+000 pCi/g		5.684E-002	2.268E-002	5.387E-003
						Pu-238	6.678E-003 pCi/g		6.047E-003	2.147E-002	7.611E-003
						Pu-239	1.337E-002 pCi/g		5.979E-003	7.235E-003	5.387E-003
F0C310498-001	LXDEA1AD	2.0010 g	2.00	1.00	AV99	4/21/10 11:55 Analyte	960.00 Activity	rad10-0034	Pu-236 CountUnc	3.796E+000 MDA	68.17% DLC
						Pu-236	2.587E+000 pCi/g		5.698E-002	2.277E-002	6.242E-003
						Pu-238	1.340E-002 pCi/g		7.092E-003	1.972E-002	6.236E-003
						Pu-239	2.683E-003 pCi/g		2.685E-003	7.260E-003	6.242E-003
F0C310498-002	LXDEG1AD	2.0031 g	2.00	1.00	AV100	4/21/10 11:55 Analyte	960.00 Activity	rad10-0034	Pu-236 CountUnc	3.792E+000 MDA	81.57% DLC
						Pu-236	3.093E+000 pCi/g		5.164E-002	1.872E-002	5.132E-003
						Pu-238	1.763E-002 pCi/g		6.233E-003	5.963E-003	5.126E-003
						Pu-239	2.206E-002 pCi/g		6.975E-003	5.969E-003	5.132E-003
F0C310498-003	LXDEK1AD	2.0052 g	2.00	1.00	AV104	4/20/10 16:06 Analyte	720.00 Activity	rad10-0034	Pu-236 CountUnc	3.788E+000 MDA	91.61% DLC
						Pu-236	3.470E+000 pCi/g		5.677E-002	2.263E-002	5.373E-003
						Pu-238	1.332E-002 pCi/g		5.988E-003	7.210E-003	5.388E-003
						Pu-239	1.600E-002 pCi/g		6.533E-003	7.217E-003	5.373E-003
F0C310498-004	LXDEL1AD	2.0045 g	2.00	1.00	AV101	4/21/10 11:54 Analyte	960.00 Activity	rad10-0034	Pu-236 CountUnc	3.789E+000 MDA	86.86% DLC
						Pu-236	3.291E+000 pCi/g		4.903E-002	1.689E-002	4.630E-003
						Pu-238	2.386E-002 pCi/g		7.952E-003	1.846E-002	6.541E-003
						Pu-239	9.950E-003 pCi/g		4.450E-003	5.385E-003	4.630E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDate/Time	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
FOC310498-005	LXDEM1AD	2.0006 g	2.00	1.00	AV102	4/21/10 11:54	960.00 Activity	rad10-0034	Pu-236	3.796E+000	78.52% DLC
						Analyte			CountUnc	TotalUnc	MDA
						Pu-236	2.981E+000 pCi/g		5.147E-002	1.354E-001	1.858E-002 5.091E-003
						Pu-238	1.968E-002 pCi/g		6.559E-003	6.611E-003	5.916E-003 5.086E-003
						Pu-239	3.064E-002 pCi/g		8.189E-003	8.289E-003	5.922E-003 5.091E-003
FOC310499-002	LXDE61CG	2.0006 g	2.00	1.00	AV107	4/20/10 16:06	720.00 Activity	rad10-0034	Pu-236	3.796E+000	85.87% DLC
						Analyte			CountUnc	TotalUnc	MDA
						Pu-236	3.260E+000 pCi/g		5.813E-002	1.487E-001	2.367E-002 5.621E-003
						Pu-238	1.672E-002 pCi/g		6.828E-003	6.864E-003	7.543E-003 5.616E-003
						Pu-239	1.674E-002 pCi/g		6.835E-003	6.871E-003	7.550E-003 5.621E-003
FOC310499-003	LXDFN1CG	2.0044 g	2.00	1.00	AV103	4/21/10 11:54	960.00 Activity	rad10-0034	Pu-236	3.789E+000	72.81% DLC
						Analyte			CountUnc	TotalUnc	MDA
						Pu-236	2.759E+000 pCi/g		5.508E-002	1.283E-001	2.132E-002 5.843E-003
						Pu-238	2.760E-002 pCi/g		8.321E-003	8.401E-003	6.789E-003 5.837E-003
						Pu-239	1.683E-001 pCi/g		2.056E-002	2.174E-002	6.796E-003 5.843E-003
FOC310499-004	LXDFR1CG	2.0022 g	2.00	1.00	AV109	4/20/10 16:06	720.00 Activity	rad10-0034	Pu-236	3.793E+000	81.01% DLC
						Analyte			CountUnc	TotalUnc	MDA
						Pu-236	3.073E+000 pCi/g		5.883E-002	1.418E-001	2.427E-002 5.763E-003
						Pu-238	2.000E-002 pCi/g		7.561E-003	7.607E-003	7.733E-003 5.757E-003
						Pu-239	1.437E-001 pCi/g		2.054E-002	2.141E-002	1.852E-002 5.763E-003
FOD070439-002	LXLR41CG	2.0014 g	2.00	1.00	AV110	4/20/10 16:06	720.00 Activity	rad10-0034	Pu-236	3.795E+000	91.15% DLC
						Analyte			CountUnc	TotalUnc	MDA
						Pu-236	3.459E+000 pCi/g		5.554E-002	1.555E-001	5.160E-002 5.121E-003
						Pu-238	1.777E-002 pCi/g		6.718E-003	6.759E-003	6.871E-003 5.116E-003
						Pu-239	3.558E-002 pCi/g		9.510E-003	9.627E-003	6.878E-003 5.121E-003
FOD080501-001	LXNMR1AD	2.0025 g	2.00	1.00	AV111	4/20/10 16:06	720.00 Activity	rad10-0034	Pu-236	3.793E+000	94.87% DLC
						Analyte			CountUnc	TotalUnc	MDA
						Pu-236	3.598E+000 pCi/g		5.574E-002	1.611E-001	2.179E-002 5.175E-003
						Pu-238	1.411E-002 pCi/g		7.314E-003	7.338E-003	2.062E-002 7.311E-003
						Pu-239	1.027E-002 pCi/g		5.137E-003	5.155E-003	6.951E-003 5.175E-003
FOD080501-002	LXNMV1AD	2.0036 g	2.00	1.00	AV113	4/20/10 16:06	720.00 Activity	rad10-0034	Pu-236	3.791E+000	87.17% DLC
						Analyte			CountUnc	TotalUnc	MDA
						Pu-236	3.304E+000 pCi/g		5.536E-002	1.494E-001	2.150E-002 5.107E-003
						Pu-238	2.026E-002 pCi/g		7.163E-003	7.213E-003	6.853E-003 5.102E-003
						Pu-239	3.169E-003 pCi/g		4.058E-003	4.060E-003	1.641E-002 5.107E-003
FOD080501-003	LXNMV1AD	2.0008 g	2.00	1.00	AV114	4/20/10 16:06	720.00 Activity	rad10-0034	Pu-236	3.796E+000	83.59% DLC
						Analyte			CountUnc	TotalUnc	MDA
						Pu-236	3.173E+000 pCi/g		5.826E-002	1.454E-001	5.673E-002 5.631E-003
						Pu-238	1.954E-002 pCi/g		7.387E-003	7.432E-003	7.555E-003 5.625E-003
						Pu-239	1.747E-002 pCi/g		7.686E-003	7.721E-003	1.810E-002 5.631E-003

RadCapture, version 4.1.01, released 8/26/2008

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LOT

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDate/Time	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F00080501-004	LXNM41AD	2.0063	2.00	1.00	AV115	4/20/10 16:06	720.00	rad10-0034	Pu-236	3.786E+000	88.79%
		g					Activity		Count/unc	MDA	DLC
							3.361E+000 pCi/g		5.724E-002	2.302E-002	5.467E-003
							1.626E-002 pCi/g		6.640E-003	7.336E-003	5.461E-003
							2.646E-002 pCi/g		1.004E-002	2.506E-002	9.469E-003
F00080501-005	LXNM21AD	2.0012	2.00	1.00	AV116	4/20/10 16:06	720.00	rad10-0034	Pu-236	3.795E+000	79.17%
		g					Activity		Count/unc	MDA	DLC
							3.005E+000 pCi/g		5.921E-002	2.457E-002	5.835E-003
							1.157E-002 pCi/g		5.787E-003	7.829E-003	5.829E-003
							3.620E-003 pCi/g		4.636E-003	1.875E-002	5.835E-003
F00080501-006	LXNM41AD	2.0021	2.00	1.00	AV104	4/21/10 11:54	960.00	rad10-0034	Pu-236	3.793E+000	64.65%
		g					Activity		Count/unc	MDA	DLC
							2.452E+000 pCi/g		5.859E-002	2.410E-002	6.604E-003
							4.254E-002 pCi/g		1.098E-002	7.675E-003	6.598E-003
							3.691E-002 pCi/g		1.024E-002	7.682E-003	6.604E-003
F00080501-007	LXNM91AD	2.0037	2.00	1.00	AV118	4/20/10 16:06	720.00	rad10-0034	Pu-236	3.790E+000	95.18%
		g					Activity		Count/unc	MDA	DLC
							3.608E+000 pCi/g		5.440E-002	2.076E-002	4.931E-003
							1.284E-002 pCi/g		6.287E-003	1.583E-002	4.926E-003
							1.224E-002 pCi/g		5.473E-003	6.623E-003	4.931E-003
F00090000-258B	LXQ001AA	2.0000	1.00	1.00	AV120	4/20/10 16:06	720.00	rad10-0034	Pu-236	1.899E+000	98.06%
		g					Activity		Count/unc	MDA	DLC
							1.862E+000 pCi/g		2.711E-002	1.030E-002	2.445E-003
							8.488E-003 pCi/g		3.208E-003	3.281E-003	2.443E-003
							0.000E+000 pCi/g		1.051E-003	3.284E-003	2.445E-003
F00090000-258C	LXQ001AC	0.2002	1.00	1.00	AV121	4/20/10 16:06	720.00	rad10-0034	Pu-236	1.897E+001	90.33%
		g					Activity		Count/unc	MDA	DLC
							1.713E+001 pCi/g		2.776E-001	1.081E-001	2.566E-002
							7.638E+000 pCi/g		3.121E-001	8.240E-002	2.564E-002
							4.070E+001 pCi/g		7.200E-001	3.447E-002	2.566E-002

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity	StdAdded	Recovery	LCL	UCL
F00090000-258C	LXQ001AC	Pu-238	7.638E+000	8.018E+000	95.26%	76.00	111.00
	LXQ001AC	Pu-239	4.070E+001	4.099E+001	99.26%	81.00	115.00

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F0C310488-001	Pu-238	2.993E-002	F0C310488-001X	1.695E-002	55.36%	3.824E-001	1.064E+000	
F0C310488-001	Pu-239	1.763E-002	F0C310488-001X	1.131E-002	43.14%	2.417E-001	6.788E-001	

11:19:57AM

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RadCapture, version 4.1.01, released 8/26/2008

Sample ID Work Order # Aliquot Dilution Sigma Instrument RunDateTime RunDuration TracerID TracerAnalyte TracerAdded TracerYield

Matrix Spike Information

Sample ID Samp/MSID Analyte Sample Activity MS Activity StdAdded MSRecovery

LOT F 000501

75 611

9/22/2010 11:19:57AM

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RadCapture, version 4.1.01, released 8/26/2008

Sample Name: F0D080501-001

SampleType: Sample

: LXNMR1AD

Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099258

AnalysisID: 397937

Tracer Name: Rad10-0034_Pu236

Tracer Activity: 84.30 DPM/mL x (Vol.)0.10 mL = 8.43 DPM

Tracer Ref. Date: 8/8/2005 12:00:27PM

Sample

Spectrum #1 Analysis #1

Sample Weight : 1.0013g

Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

Tracer

Tracer Nuclide: Pu-236

Tracer Recovery: 94.87%

Acquisition

Detector: AV111

Serial Number: 49-037E6

Acquisition Start Date: 4/20/2010 4:06:21PM

Live Time: 720.00 min.

Real Time: 720.01 min.

Background Date: 3/26/2010 5:14:49PM

Background Info: Sample: AV111; Det: AV111; Spectrum #1;

Mar-26-2010 17:14

Calibration Name: March2010_AV111a

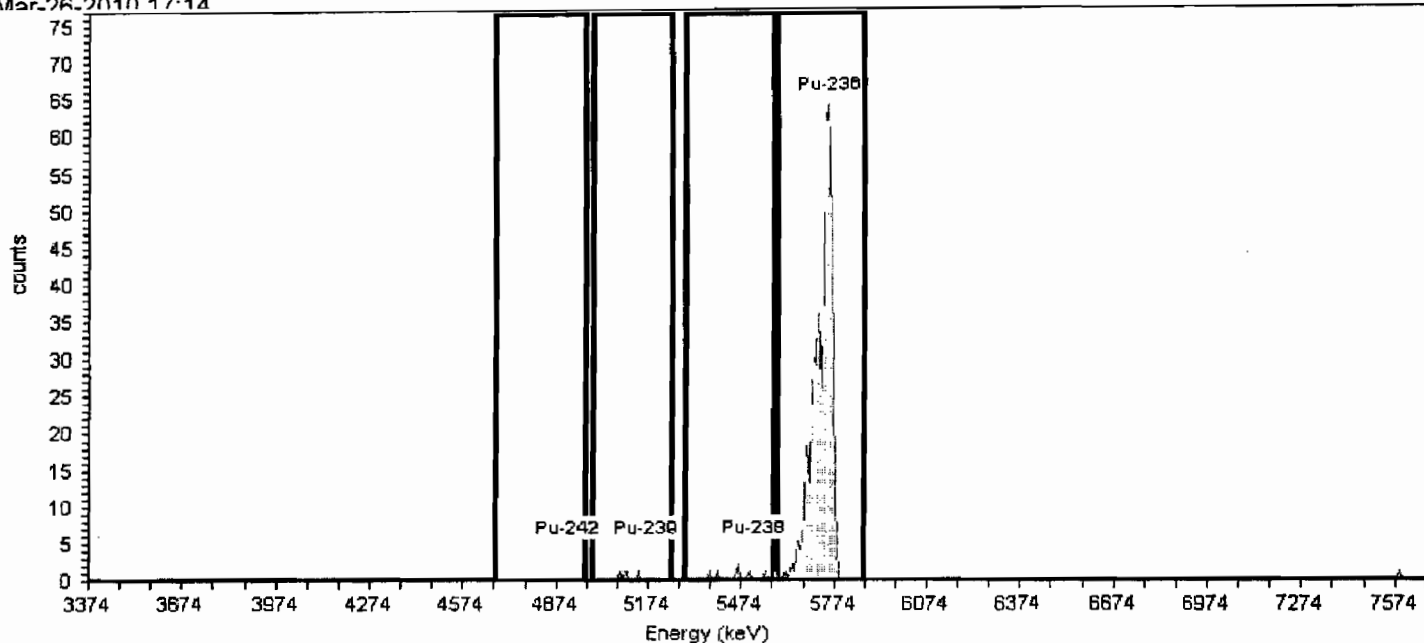
Calibration Date: 3/31/2010 5:05:32PM

Gain = 7.4575 keV / Ch

Energy Cal: Offset = 3,366.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.67% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name =

Rad10-0034-Tracer

MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Plutonium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Pu-242	4910.666	4672.024	4970.326	.000	100.0	0	0.0000	0.00	0.000E+000	2.222E-003	2.22E-003	5.170E-003	6.944E-003
Pu-239	5164.222	4992.698	5246.255	45.129	99.9	4	0.0000	4.00	1.027E-002	5.137E-003	5.16E-003	5.175E-003	6.951E-003
Pu-238	5514.727	5291.000	5574.387	21.509	100.0	7	1.5000	5.50	1.411E-002	7.314E-003	7.34E-003	7.311E-003	2.062E-002
Pu-236	5760.826	5589.302	5872.689	62.721	99.9	471	0.0000	471.00	3.598E+000	5.574E-002	1.61E-001	5.175E-003	2.179E-002

Sample Name: F0D080501-002
Sample Type: Sample
: LXNMV1AD
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099258
Analysis ID: 397917

Tracer Name: Rad10-0034_Pu236
Tracer Activity: 84.30 DPM/mL x (Vol.)0.10 mL = 8.43 DPM
Tracer Ref. Date: 8/8/2005 12:00:27PM

Sample

Spectrum #1 Analysis #1
Sample Weight : 1.0018g
Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

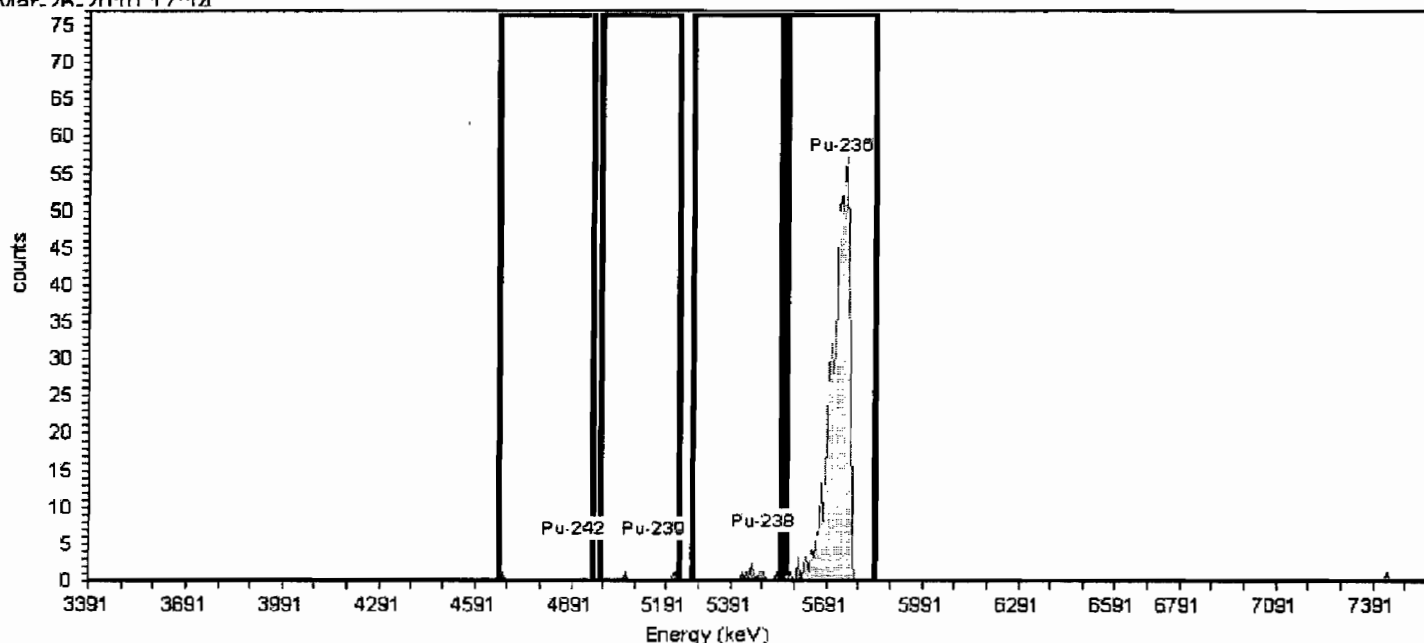
Tracer

Tracer Nuclide: Pu-236
Tracer Recovery: 87.17%

Acquisition

Detector: AV113
Serial Number: 49-037X5
Acquisition Start Date: 4/20/2010 4:06:24PM
Live Time: 720.00 min.
Real Time: 720.01 min.
Background Date: 3/26/2010 5:14:52PM
Background Info: Sample: AV113; Det: AV113; Spectrum #1;
Mar-26-2010 17:14

Calibration Name: March2010_AV113a
Calibration Date: 3/31/2010 5:11:44PM
Gain = 7.3221 keV / Ch
Offset = 3,383.95 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 28.29% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name =
Pu-236
Background Date: 3/26/2010 4:01:04PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Pu-242	4899.632	4665.324	4958.209	17.653	100.0	1	0.0000	1.00	2.532E-003	2.532E-003	2.53E-003	5.102E-003	6.853E-003
Pu-239	5148.584	4980.176	5229.128	10.459	99.9	2	0.7500	1.25	3.169E-003	4.058E-003	4.06E-003	5.107E-003	1.641E-002
Pu-238	5492.725	5273.061	5551.302	105.080	100.0	8	0.0000	8.00	2.026E-002	7.163E-003	7.21E-003	5.102E-003	6.853E-003
Pu-236	5734.355	5565.946	5844.187	60.632	99.9	477	0.0000	477.00	3.304E+000	5.536E-002	1.49E-001	5.107E-003	2.150E-002

Sample Name: F0D080501-003

SampleType: Sample

: LXNMW1AD

Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099258

AnalysisID: 397918

Tracer Name: Rad10-0034_Pu236

Tracer Activity: 84.30 DPM/mL x (Vol.)0.10 mL = 8.43 DPM

Tracer Ref. Date: 8/8/2005 12:00:27PM

Detector: AV114

Serial Number: 49-037E7

Acquisition Start Date: 4/20/2010 4:06:27PM

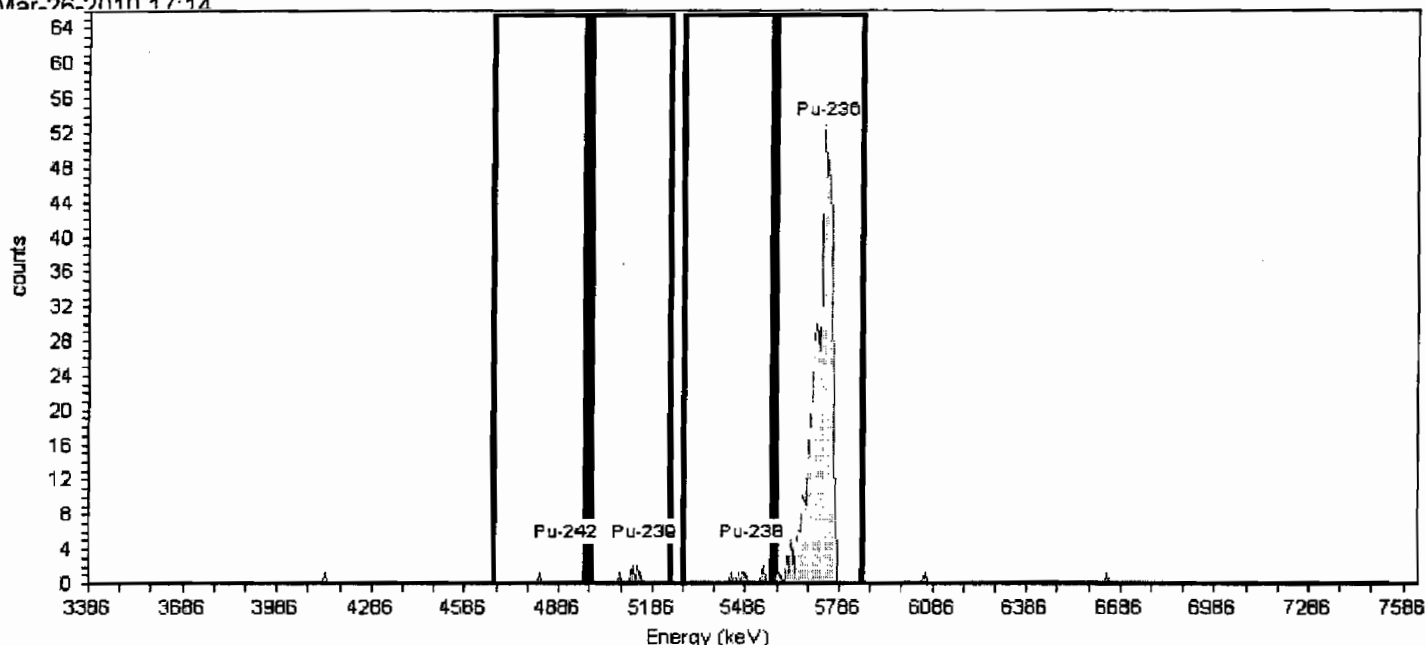
Live Time: 720.00 min.

Real Time: 720.01 min.

Background Date: 3/26/2010 5:14:54PM

Background Info: Sample: AV114; Det: AV114; Spectrum #1;

Mar 26 2010 17:14



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name =

Background Date: 3/26/2010 4:01:04PM

MDA Constants: $K_{\alpha} = 1.65$, $K_{\beta} = 1.65$

Nuclide Library: Plutonium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Pu-242	4909.920	4673.342	4969.065	44.080	100.0	1	0.0000	1.00	2.792E-003	2.792E-003	2.79E-003	5.625E-003	7.555E-003
Pu-239	5161.285	4991.244	5242.608	41.049	99.9	7	0.7500	6.25	1.747E-002	7.686E-003	7.72E-003	5.631E-003	1.810E-002
Pu-238	5508.759	5286.967	5567.904	13.834	100.0	7	0.0000	7.00	1.954E-002	7.387E-003	7.43E-003	5.625E-003	7.555E-003
Pu-236	5752.730	5582.690	5863.626	63.474	99.9	434	0.7500	433.25	3.173E+000	5.826E-002	1.45E-001	5.631E-003	5.673E-002

Sample Name: F0D080501-004

SampleType: Sample

: LXNMX1AD

Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099258

AnalysisID: 397919

Sample

Spectrum #1 Analysis #1

Sample Weight : 1.0032g

Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

Tracer

Tracer Name: Rad10-0034_Pu236

Tracer Activity: 84.30 DPM/mL x (Vol.)0.10 mL = 8.43 DPM

Tracer Ref. Date: 8/8/2005 12:00:27PM

Tracer Nuclide: Pu-236

Tracer Recovery: 88.79%

Acquisition

Detector: AV115

Serial Number: 49-037E4

Acquisition Start Date: 4/20/2010 4:06:28PM

Live Time: 720.00 min.

Real Time: 720.01 min.

Background Date: 3/26/2010 5:14:56PM

Background Info: Sample: AV115; Det: AV115; Spectrum #1;

Mar-26-2010 17:14

Calibration Name: Mar2010_AV115

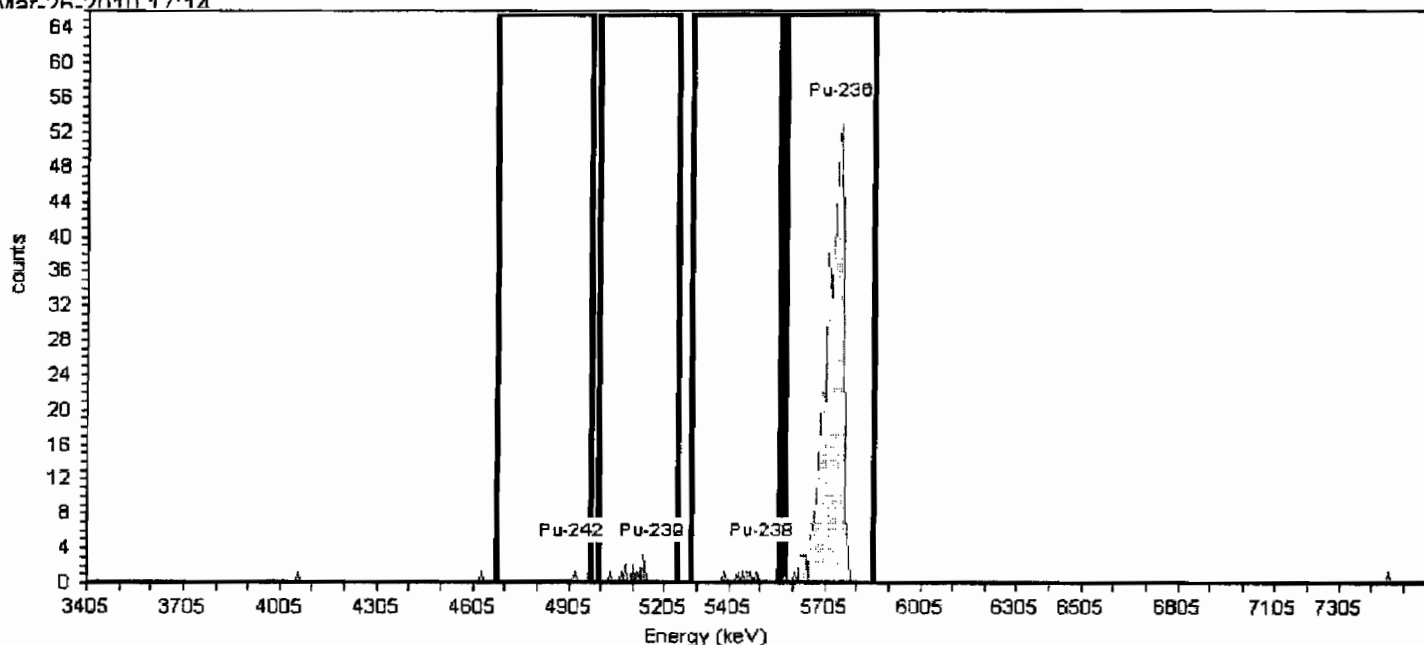
Calibration Date: 3/31/2010 5:13:08PM

Gain = 7.3221 keV / Ch

Energy Cal: Offset = 3,398.60 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.91% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name =

Rad10-0034-Tracer

MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Plutonium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	1.00 Sigma UncCount pCi/g	TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Pu-242	4914.277	4679.969	4972.854	41.626	100.0	1	0.0000	1.00	2.711E-003	2.711E-003	2.71E-003	5.461E-003	7.336E-003
Pu-239	5163.229	4994.820	5243.772	76.600	99.9	12	2.2500	9.75	2.646E-002	1.004E-002	1.01E-002	9.469E-003	2.506E-002
Pu-238	5507.369	5287.705	5565.946	58.955	100.0	6	0.0000	6.00	1.626E-002	6.640E-003	6.68E-003	5.461E-003	7.336E-003
Pu-236	5748.999	5580.590	5858.831	68.220	99.9	445	0.0000	445.00	3.361E+000	5.724E-002	1.52E-001	5.467E-003	2.302E-002

Sample Name: F0D080501-005

Sample Type: Sample

: LXNM21AD

Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099258

AnalysisID: 397920

Sample

Spectrum #1 Analysis #1

Sample Weight : 1.0006g

Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

Tracer

Tracer Name: Rad10-0034_Pu236

Tracer Activity: 84.30 DPM/mL x (Vol.)0.10 mL = 8.43 DPM

Tracer Ref. Date: 8/8/2005 12:00:27PM

Tracer Nuclide: Pu-236

Tracer Recovery: 79.17%

Acquisition

Detector: AV116

Serial Number: 49-034G1

Acquisition Start Date: 4/20/2010 4:06:31PM

Live Time: 720.00 min.

Real Time: 720.01 min.

Background Date: 3/26/2010 5:14:58PM

Background Info: Sample: AV116; Det: AV116; Spectrum #1;

Mar 26 2010 17:14

Calibration Name: Mar2010_AV116

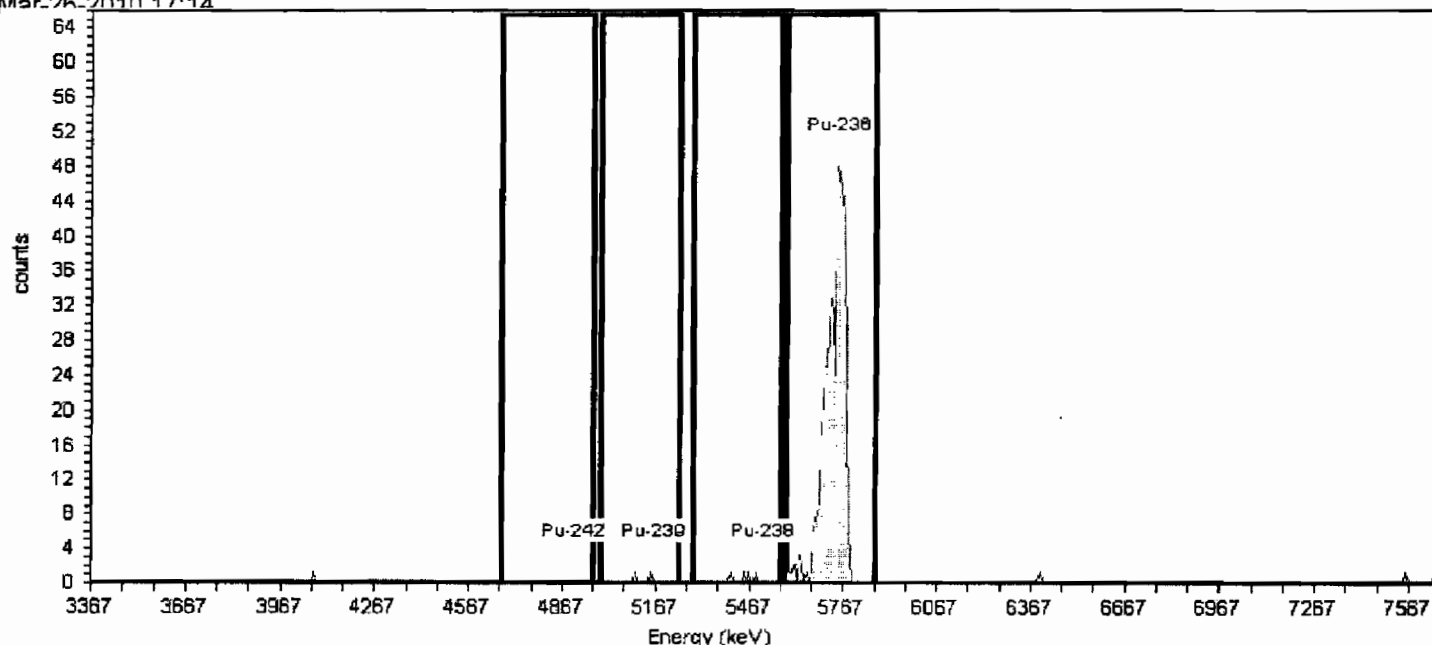
Calibration Date: 3/31/2010 5:15:38PM

Gain = 7.4651 keV / Ch

Energy Cal: Offset = 3,360.21 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.30% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name =

Background Date: 3/26/2010 4:01:04PM

MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Plutonium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Pu-242	4905.487	4666.604	4965.208	.000	100.0	0	0.0000	0.00	0.000E+000	2.506E-003	2.51E-003	5.829E-003	7.829E-003
Pu-239	5159.301	4987.604	5241.417	34.295	99.9	2	0.7500	1.25	3.620E-003	4.636E-003	4.64E-003	5.835E-003	1.875E-002
Pu-238	5510.161	5286.208	5569.882	40.275	100.0	4	0.0000	4.00	1.157E-002	5.787E-003	5.81E-003	5.829E-003	7.829E-003
Pu-236	5756.509	5584.812	5868.486	74.027	99.9	418	0.0000	418.00	3.005E+000	5.921E-002	1.39E-001	5.835E-003	2.457E-002

Sample Name: F0D080501-006
SampleType: Sample
: LXNM41AD
Sample Collection Date: 4/6/2010 12:00:00AM

Sample

Spectrum #1 Analysis #1
Sample Weight : 1.0011g
Aliquot: N/A Aliquot Fraction: N/A

Batch Name: 0099258
AnalysisID: 398202

Batch

Analyst: 60040

Tracer Name: Rad10-0034_Pu236
Tracer Activity: 84.30 DPM/mL x (Vol.)0.10 mL = 8.43 DPM
Tracer Ref. Date: 8/8/2005 12:00:27PM

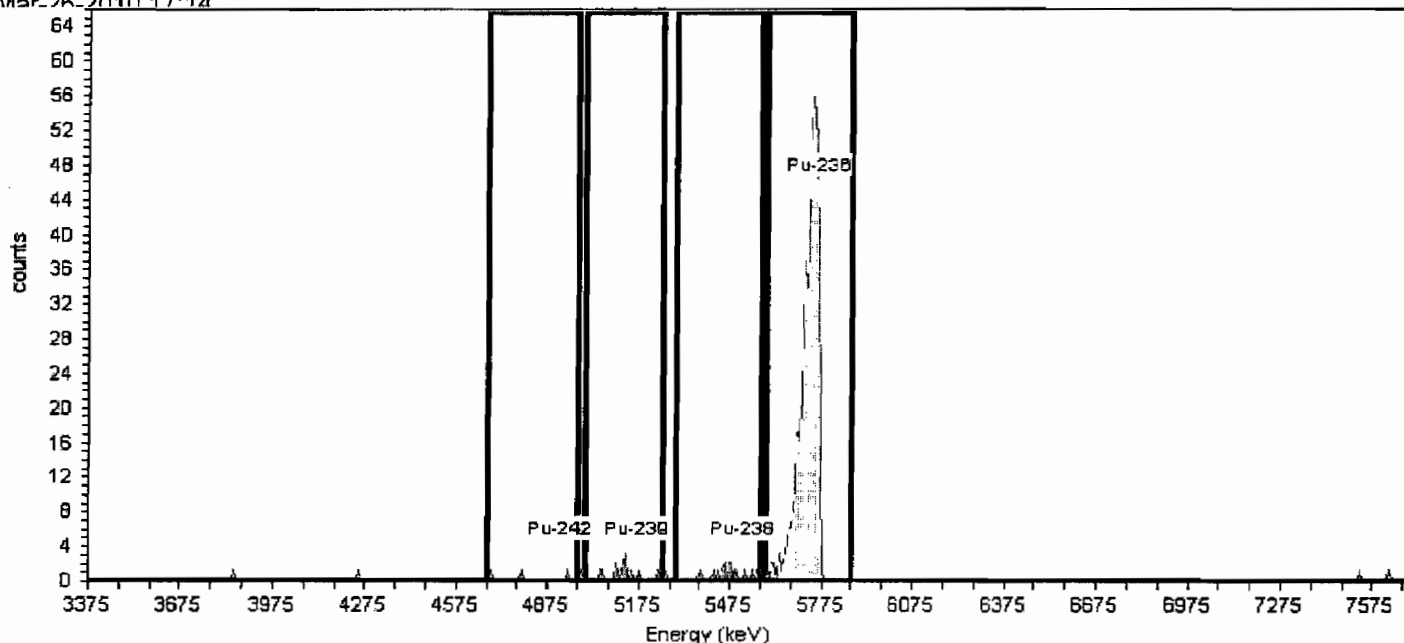
Tracer

Tracer Nuclide: Pu-236
Tracer Recovery: 64.65%

Detector: AV104
Serial Number: 49-037E5
Acquisition Start Date: 4/21/2010 11:54:28AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 3/26/2010 5:14:35PM
Background Info: Sample: AV104; Det: AV104; Spectrum #1;
Mar-26-2010 17:14

Acquisition

Calibration Name: Mar2010_AV104
Calibration Date: 3/31/2010 4:59:48PM
Gain = 7.4651 keV / Ch
Energy Cal: Offset = 3,367.67 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 25.57% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name =
Pu-236
Date: 4/21/2010 11:51:29AM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	1.00 Sigma			Critical Level pCi/g	MDA pCi/g
										Uncount pCi/g	TPU pCi/g			
Pu-242	4912.952	4674.069	4972.673	9.812	100.0	3	1.0000	2.00	5.672E-003	5.672E-003	5.68E-003		6.598E-003	2.087E-002
Pu-239	5166.766	4995.068	5248.882	148.793	99.9	13	0.0000	13.00	3.691E-002	1.024E-002	1.04E-002		6.604E-003	7.682E-003
Pu-238	5517.626	5293.573	5577.347	123.002	100.0	15	0.0000	15.00	4.254E-002	1.098E-002	1.11E-002		6.598E-003	7.675E-003
Pu-236	5763.975	5592.277	5875.951	58.492	99.9	426	0.0000	426.00	2.452E+000	5.859E-002	1.19E-001		6.604E-003	2.410E-002

Sample Name: F0D080501-007

Sample Type: Sample

: LXNM91AD

Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099258

AnalysisID: 397922

Sample

Spectrum #1 Analysis #1

Sample Weight : 1.0019g

Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

Tracer

Tracer Name: Rad10-0034_Pu236

Tracer Activity: 84.30 DPM/mL x (Vol.)0.10 mL = 8.43 DPM

Tracer Ref. Date: 8/8/2005 12:00:27PM

Tracer Nuclide: Pu-236

Tracer Recovery: 95.18%

Acquisition

Detector: AV118

Serial Number: 49-037F4

Acquisition Start Date: 4/20/2010 4:06:34PM

Live Time: 720.00 min.

Real Time: 720.01 min.

Background Date: 3/26/2010 5:15:02PM

Background Info: Sample: AV118; Det: AV118; Spectrum #1;

Mar 26 2010 17:15

Calibration Name: Mar2010_AV118

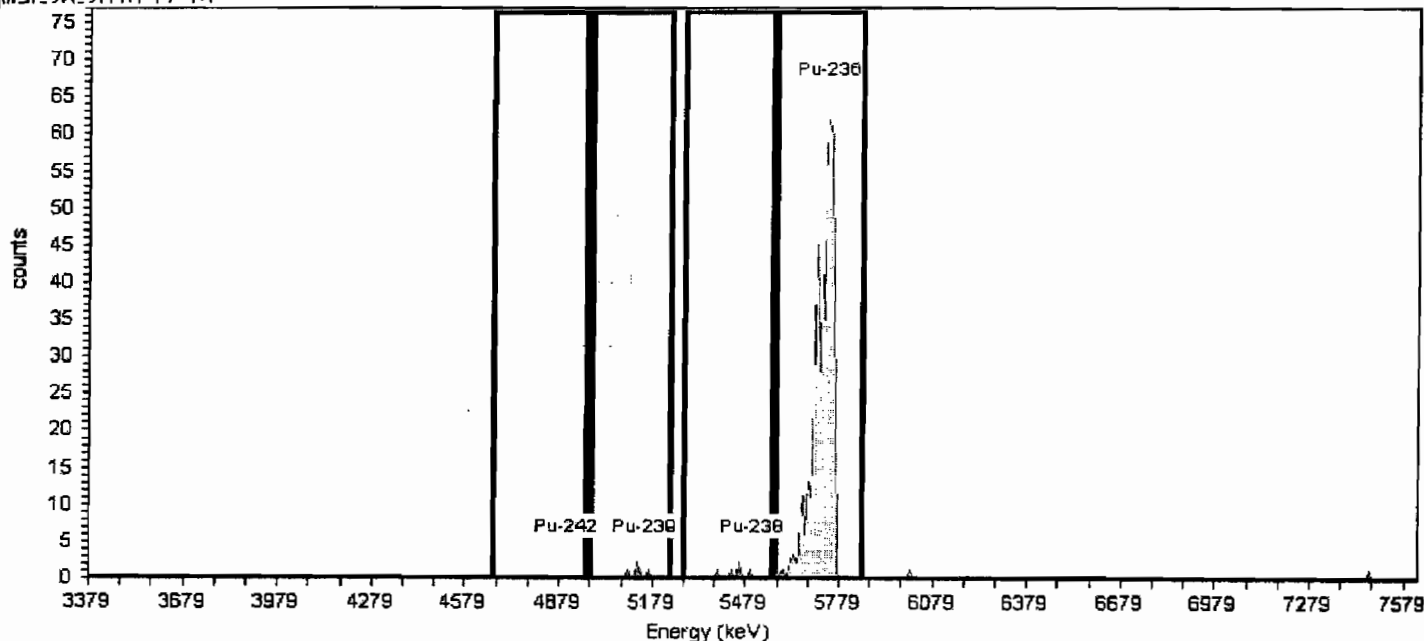
Calibration Date: 3/31/2010 5:16:47PM

Gain = 7.3931 keV / Ch

Energy Cal: Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.83% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name =

Background Date: 3/26/2010 5:15:02PM

MDA Constants: $K_{\alpha} = 1.65$, $K_{\beta} = 1.65$

Nuclide Library: Plutonium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Pu-242	4902.527	4665.949	4961.672	.000	100.0	0	0.0000	0.00	0.000E+000	2.118E-003	2.12E-003	4.926E-003	6.616E-003
Pu-239	5153.892	4983.851	5235.215	54.904	99.9	5	0.0000	5.00	1.224E-002	5.473E-003	5.50E-003	4.931E-003	6.623E-003
Pu-238	5501.366	5279.574	5560.511	52.938	100.0	6	0.7500	5.25	1.284E-002	6.264E-003	6.29E-003	4.926E-003	1.583E-002
Pu-236	5745.337	5575.297	5856.233	64.113	99.9	494	0.0000	494.00	3.608E+000	5.440E-002	1.61E-001	4.931E-003	2.076E-002

Sample Name: F0D090000-258B
SampleType: Blank
LXQQ01AA
Sample Collection Date: 3/26/2010 12:00:00AM

Sample

Spectrum #1 Analysis #1
Sample Weight : 2.0000g
Aliquot: N/A Aliquot Fraction: N/A

Batch Name: 0099258
AnalysisID: 397923

Batch

Analyst: 60040

Tracer Name: Rad10-0034_Pu236
Tracer Activity: 84.30 DPM/mL x (Vol.)0.10 mL = 8.43 DPM
Tracer Ref. Date: 8/8/2005 12:00:27PM

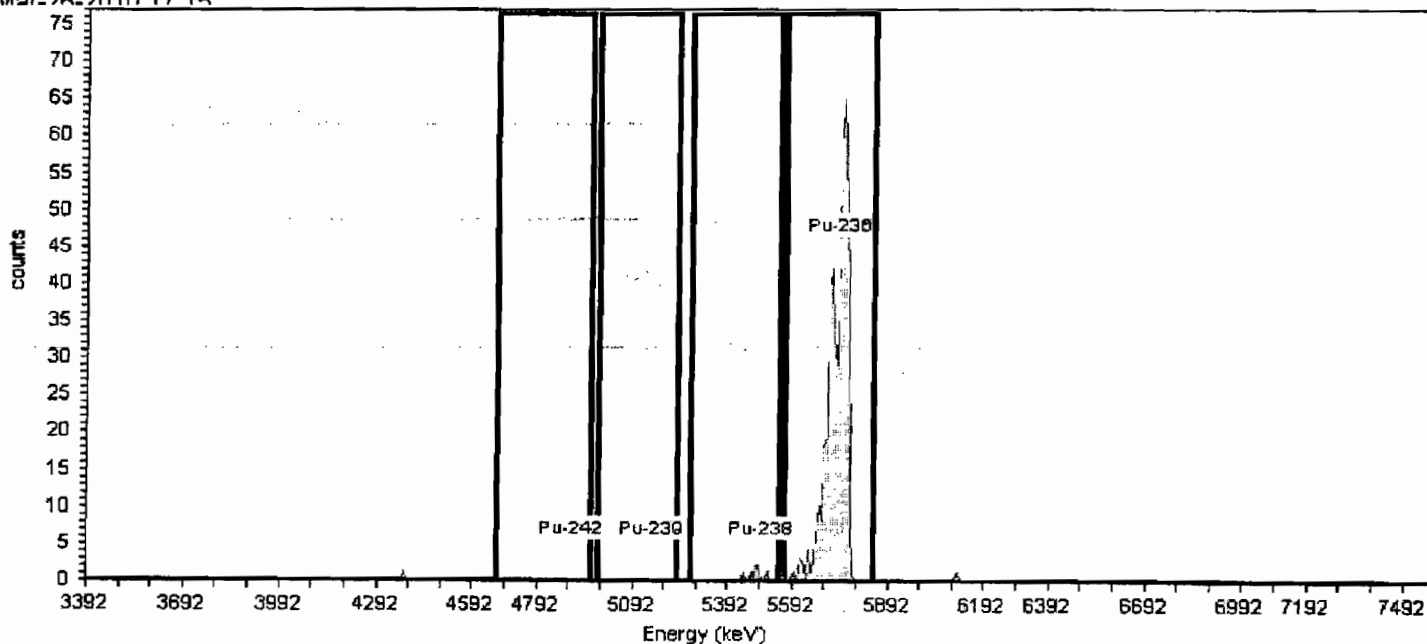
Tracer

Tracer Nuclide: Pu-236
Tracer Recovery: 98.06%

Acquisition

Detector: AV120
Serial Number: 49-037W3
Acquisition Start Date: 4/20/2010 4:06:37PM
Live Time: 720.00 min.
Real Time: 720.01 min.
Background Date: 3/26/2010 5:15:06PM
Background Info: Sample: AV120; Det: AV120; Spectrum #1;
Mar-26-2010 17:15

Calibration Name: Mar2010_AV120
Calibration Date: 3/31/2010 5:18:16PM
Gain = 7.3291 keV / Ch
Offset = 3,384.74 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 26.31% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name =
B-501-Pu-236-Trace
Date: 4/20/2010 4:01:04PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Pu-242	4901.875	4667.342	4960.507	.000	100.0	0	0.0000	0.00	0.000E+000	1.050E-003	1.05E-003	2.443E-003	3.281E-003
Pu-239	5151.065	4982.495	5231.686	.000	99.9	0	0.0000	0.00	0.000E+000	1.051E-003	1.05E-003	2.445E-003	3.284E-003
Pu-238	5495.535	5275.661	5554.168	64.199	100.0	7	0.0000	7.00	8.488E-003	3.208E-003	3.23E-003	2.443E-003	3.281E-003
Pu-236	5737.396	5568.826	5847.333	67.725	99.9	499	0.0000	499.00	1.862E+000	2.711E-002	8.28E-002	2.445E-003	1.030E-002

Sample Name: F0D090000-258C
SampleType: Control
: LXQQ01AC
Sample Collection Date: 3/26/2010 12:00:00AM

Batch Name: 0099258
AnalysisID: 397924

Tracer Name: Rad10-0034_Pu236
Tracer Activity: 84.30 DPM/mL x (Vol.)0.10 mL = 8.43 DPM
Tracer Ref. Date: 8/8/2005 12:00:27PM

Sample

Spectrum #1 Analysis #1
Sample Weight : 0.2002g
Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

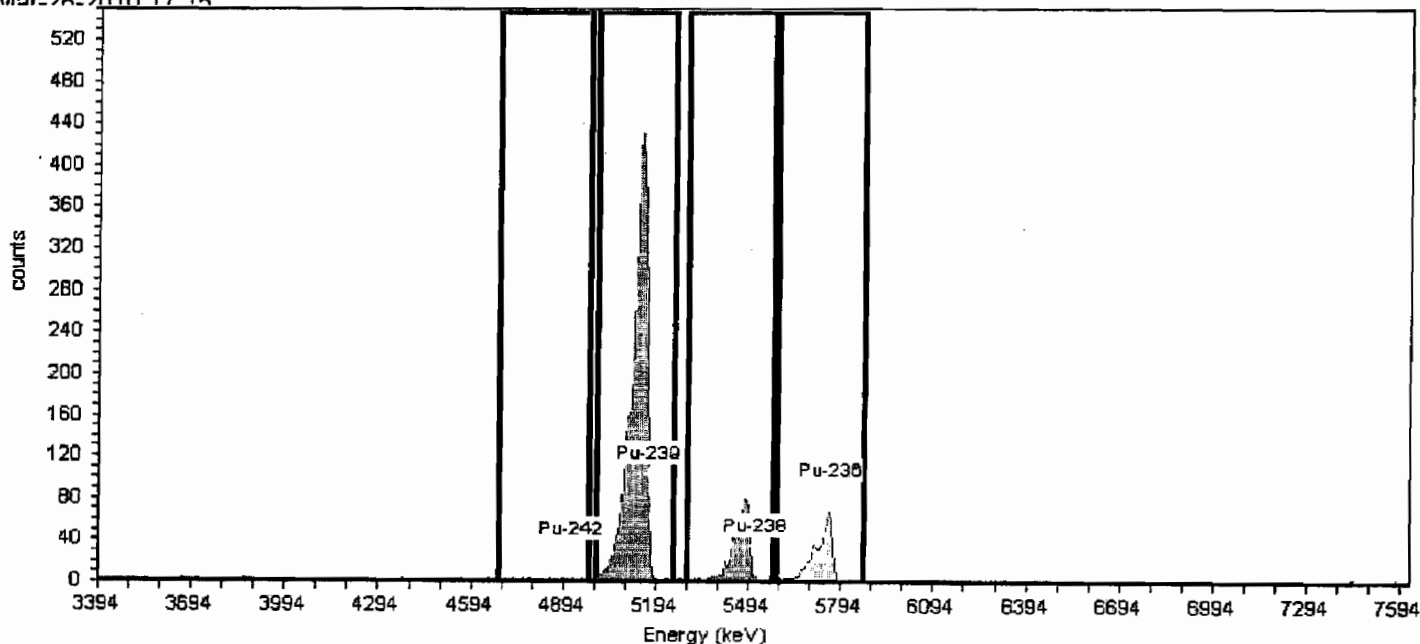
Tracer

Tracer Nuclide: Pu-236
Tracer Recovery: 90.33%

Acquisition

Detector: AV121
Serial Number: 49-037W2
Acquisition Start Date: 4/20/2010 4:06:39PM
Live Time: 720.00 min.
Real Time: 720.01 min.
Background Date: 3/26/2010 5:15:07PM
Background Info: Sample: AV121; Det: AV121; Spectrum #1;
Mar-26-2010 17:15

Calibration Name: Mar2010_AV121
Calibration Date: 3/31/2010 5:18:54PM
Gain = 7.3931 keV / Ch
Offset = 3,386.95 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 27.19% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name =
B-001 Pu-236
Date: 4/20/2010 4:01:04PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Pu-242	4917.313	4680.735	4976.458	.360	100.0	12	0.7500	11.25	1.432E-001	4.510E-002	4.55E-002	2.564E-002	8.240E-002
Pu-239	5168.678	4998.637	5250.001	55.930	99.9	3195	0.0000	3195.00	4.070E+001	7.200E-001	1.85E+000	2.566E-002	3.447E-002
Pu-238	5516.152	5294.360	5575.297	60.803	100.0	601	0.7500	600.25	7.638E+000	3.121E-001	4.48E-001	2.564E-002	8.240E-002
Pu-236	5760.124	5590.083	5871.020	70.869	99.9	475	0.0000	475.00	1.713E+001	2.776E-001	7.71E-001	2.566E-002	1.081E-001

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Daily Pulsers

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AlphaVision Daily Pulser Check for: 4/20/2010

TestAmerica St. Louis

Detector	Date/Time	Gross Counts		P/F	FWHM (keV)		P/F	Pulser Center		P/F	Result	Energy (keV)		P/F
		Result	Criteria		Result	Criteria		Result	Criteria					
AV1	04/20/2010 7:29	7350	7218.7 +/-5%	Pass	15.0	10-20	Pass	224.0	229.0 +/-5%	Pass	5024	5051.1 +/-25%	Pass	
AV3	04/20/2010 7:29	7299	7484.9 +/-5%	Pass	16.8	10-20	Pass	228.1	225.9 +/-5%	Pass	5053	5028.8 +/-25%	Pass	
AV3	04/20/2010 7:29	7299	7484.9 +/-5%	Pass	16.8	10-20	Pass	228.1	225.9 +/-5%	Pass	5053	5028.8 +/-25%	Pass	
AV4	04/20/2010 7:07	7404	7413.7 +/-5%	Pass	13.5	10-20	Pass	224.0	224.9 +/-5%	Pass	5038	5021.6 +/-25%	Pass	
AV6	04/20/2010 7:07	7062	7476.7 +/-5%	FAIL	13.3	10-20	Pass	218.9	224.0 +/-5%	Pass	4988	5015.3 +/-25%	Pass	
AV6	04/20/2010 7:29	6978	7476.7 +/-5%	FAIL	13.4	10-20	Pass	218.9	224.0 +/-5%	Pass	4988	5015.3 +/-25%	Pass	
AV7	04/20/2010 7:07	7397	7477.0 +/-5%	Pass	13.8	10-20	Pass	227.0	224.9 +/-5%	Pass	5050	5021.9 +/-25%	Pass	
AV8	04/20/2010 7:07	7393	7327.4 +/-5%	Pass	13.9	10-20	Pass	222.0	228.0 +/-5%	Pass	5021	5044.6 +/-25%	Pass	
AV9	04/20/2010 7:07	7742	7519.3 +/-5%	Pass	14.9	10-20	Pass	222.0	227.9 +/-5%	Pass	5014	5043.3 +/-25%	Pass	
AV102	04/20/2010 7:07	7607	7634.5 +/-5%	Pass	13.6	10-20	Pass	223.0	224.4 +/-5%	Pass	5038	5040.3 +/-25%	Pass	
AV109	04/20/2010 7:07	7626	7639.8 +/-5%	Pass	14.2	10-20	Pass	220.1	220.5 +/-5%	Pass	5007	5011.7 +/-25%	Pass	
AV108	04/20/2010 7:07	7633	7536.6 +/-5%	Pass	13.4	10-20	Pass	222.0	223.0 +/-5%	Pass	5029	5029.7 +/-25%	Pass	
AV107	04/20/2010 7:07	7632	7652.4 +/-5%	Pass	14.0	10-20	Pass	221.9	224.1 +/-5%	Pass	5009	5037.8 +/-25%	Pass	
AV106	04/20/2010 7:07	7598	7625.3 +/-5%	Pass	13.5	10-20	Pass	223.0	223.2 +/-5%	Pass	5029	5031.6 +/-25%	Pass	
AV105	04/20/2010 7:07	7598	7627.3 +/-5%	Pass	14.0	10-20	Pass	219.1	221.6 +/-5%	Pass	5007	5019.3 +/-25%	Pass	
AV103	04/20/2010 7:07	7603	7630.0 +/-5%	Pass	14.6	10-20	Pass	222.1	223.9 +/-5%	Pass	5029	5036.8 +/-25%	Pass	
AV101	04/20/2010 7:29	7091	7639.5 +/-5%	FAIL	13.2	10-20	Pass	223.1	225.0 +/-5%	Pass	5026	5045.2 +/-25%	Pass	
AV101	04/20/2010 7:07	7232	7639.5 +/-5%	FAIL	13.1	10-20	Pass	223.1	225.0 +/-5%	Pass	5026	5045.2 +/-25%	Pass	
AV100	04/20/2010 7:07	7612	7639.6 +/-5%	Pass	13.7	10-20	Pass	221.0	223.0 +/-5%	Pass	5015	5029.9 +/-25%	Pass	
AV10	04/20/2010 7:07	7565	7749.6 +/-5%	Pass	12.5	10-20	Pass	221.0	226.1 +/-5%	Pass	5018	5030.3 +/-25%	Pass	
AV104	04/20/2010 7:07	7602	7632.0 +/-5%	Pass	13.4	10-20	Pass	219.0	223.0 +/-5%	Pass	5003	5029.9 +/-25%	Pass	
AV112	04/20/2010 7:29	7505	7642.2 +/-5%	Pass	23.0	10-20	FAIL	221.1	222.0 +/-5%	Pass	5022	5022.7 +/-25%	Pass	
AV119	04/20/2010 7:29	7587	7699.0 +/-5%	Pass	14.2	10-20	Pass	225.0	222.0 +/-5%	FAIL	5110	5022.6 +/-25%	Pass	
AV119	04/20/2010 7:08	7662	7699.0 +/-5%	Pass	13.7	10-20	Pass	236.0	222.0 +/-5%	FAIL	5117	5022.6 +/-25%	Pass	
AV118	04/20/2010 7:08	7665	7701.5 +/-5%	Pass	13.4	10-20	Pass	223.0	224.0 +/-5%	Pass	5021	5037.1 +/-25%	Pass	
AV117	04/20/2010 7:08	7666	7664.0 +/-5%	Pass	14.0	10-20	Pass	223.1	223.7 +/-5%	Pass	5030	5035.4 +/-25%	Pass	
AV116	04/20/2010 7:08	7670	7703.0 +/-5%	Pass	13.9	10-20	Pass	221.0	221.5 +/-5%	Pass	5010	5019.2 +/-25%	Pass	
AV115	04/20/2010 7:08	7673	7681.0 +/-5%	Pass	13.4	10-20	Pass	223.0	224.0 +/-5%	Pass	5031	5037.7 +/-25%	Pass	
AV114	04/20/2010 7:08	7615	7635.0 +/-5%	Pass	13.7	10-20	Pass	221.9	224.1 +/-5%	Pass	5020	5038.3 +/-25%	Pass	
AV112	04/20/2010 7:08	7620	7642.2 +/-5%	Pass	24.0	10-20	FAIL	221.1	222.0 +/-5%	Pass	5021	5022.7 +/-25%	Pass	
AV111	04/20/2010 7:08	7625	7634.5 +/-5%	Pass	13.7	10-20	Pass	221.9	224.0 +/-5%	Pass	5022	5037.7 +/-25%	Pass	
AV110	04/20/2010 7:08	7621	7631.8 +/-5%	Pass	15.0	10-20	Pass	220.9	227.0 +/-5%	Pass	5015	5060.0 +/-25%	Pass	

Detector	Date/Time	Gross Counts		FWHM (keV)		Pulser Center		Energy (keV)	
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria
AV118	04/20/2010 7:29	7605	7666.2 \pm 5%	Pass	24.4	10 - 20	FAIL	5034	5022.1 \pm 25%
AV115	04/20/2010 7:07	7734	7666.2 \pm 5%	Pass	24.6	10 - 20	FAIL	5034	5022.1 \pm 25%
AV113	04/20/2010 7:08	7619	7637.3 \pm 5%	Pass	13.4	10 - 20	Pass	5009	5030.5 \pm 25%
AV12	04/20/2010 7:07	7729	7588.7 \pm 5%	Pass	15.6	10 - 20	Pass	5006	5058.4 \pm 25%
AV120	04/20/2010 7:08	7659	7696.0 \pm 5%	Pass	13.9	10 - 20	Pass	5004	5022.6 \pm 25%
AV121	04/20/2010 7:29	7581	7692.5 \pm 5%	Pass	14.6	10 - 20	Pass	5036	5037.8 \pm 25%
AV121	04/20/2010 7:29	7581	7692.5 \pm 5%	Pass	14.6	10 - 20	Pass	5036	5037.8 \pm 25%
AV13	04/20/2010 7:07	7728	7584.6 \pm 5%	Pass	14.8	10 - 20	Pass	5005	5044.1 \pm 25%
AV14	04/20/2010 7:07	7699	7638.3 \pm 5%	Pass	15.5	10 - 20	Pass	5020	5037.2 \pm 25%
AV15	04/20/2010 7:07	7696	7770.5 \pm 5%	Pass	16.0	10 - 20	Pass	5041	5036.6 \pm 25%
AV16	04/20/2010 7:07	7721	7456.0 \pm 5%	Pass	14.8	10 - 20	Pass	5028	5036.2 \pm 25%
AV17	04/20/2010 7:07	7499	7619.1 \pm 5%	Pass	12.7	10 - 20	Pass	5031	5058.3 \pm 25%
AV18	04/20/2010 7:07	7260	7714.5 \pm 5%	FAIL	13.2	10 - 20	Pass	5037	5036.4 \pm 25%
AV18	04/20/2010 7:29	7204	7714.5 \pm 5%	FAIL	13.1	10 - 20	Pass	5036	5036.4 \pm 25%
AV19	04/20/2010 7:07	7643	7269.8 \pm 5%	FAIL	17.7	10 - 20	Pass	5048	5041.9 \pm 25%
AV19	04/20/2010 7:29	7618	7269.8 \pm 5%	Pass	18.4	10 - 20	Pass	5048	5041.9 \pm 25%
AV20	04/20/2010 7:07	7695	7503.6 \pm 5%	Pass	14.0	10 - 20	Pass	5017	5029.9 \pm 25%
AV21	04/20/2010 7:07	7661	7550.9 \pm 5%	Pass	16.3	10 - 20	Pass	5025	5029.6 \pm 25%
AV22	04/20/2010 7:07	7687	7691.4 \pm 5%	Pass	28.5	10 - 20	Pass	5026	5022.4 \pm 25%
AV22	04/20/2010 7:29	7613	7691.4 \pm 5%	Pass	27.3	10 - 20	FAIL	5026	5022.4 \pm 25%
AV23	04/20/2010 7:07	7673	7665.3 \pm 5%	Pass	15.7	10 - 20	Pass	5014	5057.0 \pm 25%
AV24	04/20/2010 7:07	7679	7354.0 \pm 5%	Pass	14.3	10 - 20	Pass	4991	5036.4 \pm 25%
AV51	04/20/2010 7:07	7359	7070.5 \pm 5%	Pass	13.5	10 - 20	Pass	5019	5007.6 \pm 25%
AV52	04/20/2010 7:07	7355	7156.4 \pm 5%	Pass	14.3	10 - 20	Pass	5028	5022.4 \pm 25%
AV53	04/20/2010 7:07	7349	7144.1 \pm 5%	Pass	14.7	10 - 20	Pass	5022	5007.8 \pm 25%
AV54	04/20/2010 7:07	7344	7313.1 \pm 5%	Pass	14.9	10 - 20	Pass	5065	5029.5 \pm 25%
AV55	04/20/2010 7:07	7296	7132.9 \pm 5%	Pass	17.0	10 - 20	Pass	5022	5029.7 \pm 25%
AV57	04/20/2010 7:07	7343	7309.5 \pm 5%	Pass	14.7	10 - 20	Pass	5010	5000.6 \pm 25%
AV58	04/20/2010 7:07	7337	7249.2 \pm 5%	Pass	15.3	10 - 20	Pass	5039	5008.0 \pm 25%
AV60	04/20/2010 7:08	7239	7019.7 \pm 5%	Pass	18.1	10 - 20	Pass	5035	5007.5 \pm 25%
AV61	04/20/2010 7:08	7224	7078.3 \pm 5%	Pass	17.2	10 - 20	Pass	5031	5022.2 \pm 25%
AV63	04/20/2010 7:08	7232	7120.8 \pm 5%	Pass	19.3	10 - 20	Pass	5024	5007.9 \pm 25%
AV64	04/20/2010 7:08	7226	7153.7 \pm 5%	Pass	14.7	10 - 20	Pass	5038	5015.3 \pm 25%
AV65	04/20/2010 7:29	7149	7233.4 \pm 5%	Pass	20.8	10 - 20	FAIL	5013	5015.3 \pm 25%
AV65	04/20/2010 7:08	7209	7233.4 \pm 5%	Pass	20.6	10 - 20	FAIL	5014	5015.3 \pm 25%
AV66	04/20/2010 7:08	7199	7165.5 \pm 5%	Pass	16.6	10 - 20	Pass	5032	5000.5 \pm 25%

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Tuesday, April 20, 2010

Detector	Date/Time	Gross Counts		FWHM (keV)		Pulser Center		Energy (keV)	
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria
AV67	04/20/2010 7:08	7130	7128.1 +/- 5%	Pass	12.9	10-20	Pass	219.0	224.1 +/- 5%
AV68	04/20/2010 7:08	7405	7259.5 +/- 5%	Pass	18.3	10-20	Pass	221.0	222.0 +/- 5%
AV69	04/20/2010 7:08	7264	7305.4 +/- 5%	Pass	11.9	10-20	Pass	225.0	222.0 +/- 5%
AV70	04/20/2010 7:08	7219	7406.5 +/- 5%	Pass	13.0	10-20	Pass	219.0	222.6 +/- 5%
AV71	04/20/2010 7:29	7345	7187.3 +/- 5%	Pass	14.9	10-20	Pass	216.1	225.0 +/- 5%
AV72	04/20/2010 7:29	7347	7090.0 +/- 5%	Pass	13.6	10-20	Pass	225.1	223.9 +/- 5%
AV73	04/20/2010 7:29	7129	7251.3 +/- 5%	Pass	12.5	10-20	Pass	223.9	225.0 +/- 5%
AV73	04/20/2010 7:29	7129	7251.3 +/- 5%	Pass	12.5	10-20	Pass	223.9	225.0 +/- 5%
AV74	04/20/2010 7:29	7125	7227.1 +/- 5%	Pass	13.1	10-20	Pass	224.0	224.0 +/- 5%
AV74	04/20/2010 7:29	7125	7227.1 +/- 5%	Pass	13.1	10-20	Pass	224.0	224.0 +/- 5%
AV75	04/20/2010 7:29	7565	7267.9 +/- 5%	Pass	13.8	10-20	Pass	221.9	224.1 +/- 5%
AV76	04/20/2010 7:29	7178	7374.3 +/- 5%	Pass	13.1	10-20	Pass	222.9	224.0 +/- 5%
AV76	04/20/2010 7:29	7178	7374.3 +/- 5%	Pass	13.1	10-20	Pass	222.9	224.0 +/- 5%
AV77	04/20/2010 7:29	7335	7497.1 +/- 5%	Pass	13.0	10-20	Pass	223.0	224.0 +/- 5%
AV77	04/20/2010 7:29	7335	7497.1 +/- 5%	Pass	13.0	10-20	Pass	223.0	224.0 +/- 5%
AV78	04/20/2010 7:29	7530	7183.8 +/- 5%	Pass	15.0	10-20	Pass	223.1	223.3 +/- 5%
AV79	04/20/2010 7:29	7543	7349.7 +/- 5%	Pass	13.8	10-20	Pass	222.0	222.0 +/- 5%
AV79	04/20/2010 7:29	7543	7349.7 +/- 5%	Pass	13.8	10-20	Pass	222.0	222.0 +/- 5%
AV80	04/20/2010 7:29	7540	7226.4 +/- 5%	Pass	13.9	10-20	Pass	224.1	224.1 +/- 5%
AV80	04/20/2010 7:29	7540	7226.4 +/- 5%	Pass	13.9	10-20	Pass	224.1	224.1 +/- 5%
AV82	04/20/2010 7:29	7538	7529.2 +/- 5%	Pass	13.7	10-20	Pass	225.0	224.0 +/- 5%
AV82	04/20/2010 7:29	7538	7529.2 +/- 5%	Pass	13.7	10-20	Pass	225.0	224.0 +/- 5%
AV83	04/20/2010 7:29	7620	7523.7 +/- 5%	Pass	13.5	10-20	Pass	223.0	222.0 +/- 5%
AV84	04/20/2010 7:29	7362	7637.7 +/- 5%	Pass	12.9	10-20	Pass	224.0	223.0 +/- 5%
AV84	04/20/2010 7:29	7362	7637.7 +/- 5%	Pass	12.9	10-20	Pass	224.0	223.0 +/- 5%
AV85	04/20/2010 7:29	7425	7549.7 +/- 5%	Pass	13.2	10-20	Pass	222.0	223.0 +/- 5%
AV85	04/20/2010 7:29	7425	7549.7 +/- 5%	Pass	13.2	10-20	Pass	222.0	223.0 +/- 5%
AV86	04/20/2010 7:07	7685	7679.0 +/- 5%	Pass	14.3	10-20	Pass	223.9	223.9 +/- 5%
AV87	04/20/2010 7:07	7673	7512.4 +/- 5%	Pass	15.2	10-20	Pass	223.0	223.0 +/- 5%
AV88	04/20/2010 7:07	7679	7716.1 +/- 5%	Pass	13.8	10-20	Pass	223.9	224.0 +/- 5%
AV89	04/20/2010 7:07	7678	7553.8 +/- 5%	Pass	13.6	10-20	Pass	220.0	222.6 +/- 5%
AV90	04/20/2010 7:07	7675	7474.4 +/- 5%	Pass	13.8	10-20	Pass	224.0	224.1 +/- 5%
AV92	04/20/2010 7:07	7459	7358.9 +/- 5%	Pass	12.8	10-20	Pass	222.0	223.9 +/- 5%
AV93	04/20/2010 7:07	7451	7393.5 +/- 5%	Pass	12.9	10-20	Pass	223.0	223.0 +/- 5%
AV94	04/20/2010 7:07	7441	7477.9 +/- 5%	Pass	12.9	10-20	Pass	222.0	222.0 +/- 5%
AV95	04/20/2010 7:07	7288	7432.4 +/- 5%	Pass	13.2	10-20	Pass	223.1	222.2 +/- 5%

Detector	Date/Time	Gross Counts		P/F	FWHM (keV)		P/F	Pulser Center		P/F	Energy (keV)		P/F
		Result	Criteria		Result	Criteria		Result	Criteria		Result	Criteria	
AV96	04/20/2010 7:07	7619	7654.3 \pm 5%	Pass	20.8	10-20	FAIL	221.0	222.6 \pm 5%	Pass	5036	5005.3 \pm 25%	Pass
AV96	04/20/2010 7:29	7513	7654.3 \pm 5%	Pass	21.4	10-20	FAIL	221.0	222.6 \pm 5%	Pass	5036	5005.3 \pm 25%	Pass
AV97	04/20/2010 7:07	7632	7649.9 \pm 5%	Pass	14.3	10-20	Pass	222.9	223.8 \pm 5%	Pass	5024	5014.0 \pm 25%	Pass
AV98	04/20/2010 7:07	7310	7582.0 \pm 5%	Pass	13.3	10-20	Pass	223.9	223.0 \pm 5%	Pass	5017	5007.6 \pm 25%	Pass
AV99	04/20/2010 7:07	7609	7646.9 \pm 5%	Pass	15.2	10-20	Pass	224.0	222.0 \pm 5%	Pass	5032	5022.4 \pm 25%	Pass

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AlphaVision Daily Pulser Check for: 4/21/2010

Detector	Date/Time	Gross Counts		P/F	FWHM (keV)		P/F	Pulser Center		P/F	Energy (keV)		P/F
		Result	Criteria		Result	Criteria		Result	Criteria		Result	Criteria	
AV1	04/21/2010 6:00	7396	7218.7 +/- 5%	Pass	15.2	10-20	Pass	224.1	229.0 +/- 5%	Pass	5025	5031.1 +/- 25%	Pass
AV3	04/21/2010 6:00	7371	7484.9 +/- 5%	Pass	16.8	10-20	Pass	228.0	225.9 +/- 5%	Pass	5053	5028.8 +/- 25%	Pass
AV4	04/21/2010 5:59	7307	7413.7 +/- 5%	Pass	13.7	10-20	Pass	224.0	224.9 +/- 5%	Pass	5037	5021.6 +/- 25%	Pass
AV6	04/21/2010 5:59	7423	7476.7 +/- 5%	Pass	13.9	10-20	Pass	219.1	224.0 +/- 5%	Pass	4989	5015.3 +/- 25%	Pass
AV7	04/21/2010 5:59	7416	7477.0 +/- 5%	Pass	14.0	10-20	Pass	227.0	224.9 +/- 5%	Pass	5050	5021.9 +/- 25%	Pass
AV8	04/21/2010 5:59	7415	7327.4 +/- 5%	Pass	13.9	10-20	Pass	222.0	228.0 +/- 5%	Pass	5021	5044.6 +/- 25%	Pass
AV9	04/21/2010 6:00	7739	7519.3 +/- 5%	Pass	16.2	10-20	Pass	221.9	227.9 +/- 5%	Pass	5013	5043.3 +/- 25%	Pass
AV104	04/21/2010 6:23	7595	7632.0 +/- 5%	Pass	13.8	10-20	Pass	218.9	223.0 +/- 5%	Pass	5002	5029.9 +/- 25%	Pass
AV109	04/21/2010 6:00	7634	7639.8 +/- 5%	Pass	14.5	10-20	Pass	220.1	220.5 +/- 5%	Pass	5007	5011.7 +/- 25%	Pass
AV108	04/21/2010 5:59	7643	7536.6 +/- 5%	Pass	13.7	10-20	Pass	222.1	223.0 +/- 5%	Pass	5029	5029.7 +/- 25%	Pass
AV107	04/21/2010 5:59	7640	7652.4 +/- 5%	Pass	14.9	10-20	Pass	223.1	224.1 +/- 5%	Pass	5018	5037.8 +/- 25%	Pass
AV105	04/21/2010 6:23	7593	7627.3 +/- 5%	Pass	13.5	10-20	Pass	219.0	221.6 +/- 5%	Pass	5006	5019.3 +/- 25%	Pass
AV103	04/21/2010 6:23	7597	7630.0 +/- 5%	Pass	14.0	10-20	Pass	222.0	223.9 +/- 5%	Pass	5028	5036.8 +/- 25%	Pass
AV102	04/21/2010 6:23	7600	7634.5 +/- 5%	Pass	14.1	10-20	Pass	223.0	224.4 +/- 5%	Pass	5037	5040.3 +/- 25%	Pass
AV101	04/21/2010 6:23	7603	7639.5 +/- 5%	Pass	13.4	10-20	Pass	223.0	225.0 +/- 5%	Pass	5026	5045.2 +/- 25%	Pass
AV100	04/21/2010 6:23	7605	7639.6 +/- 5%	Pass	13.9	10-20	Pass	221.0	223.0 +/- 5%	Pass	5015	5029.9 +/- 25%	Pass
AV10	04/21/2010 6:00	7613	7749.6 +/- 5%	Pass	12.5	10-20	Pass	221.0	226.1 +/- 5%	Pass	5017	5030.3 +/- 25%	Pass
AV106	04/21/2010 5:59	7517	7625.3 +/- 5%	Pass	13.7	10-20	Pass	223.0	223.2 +/- 5%	Pass	5028	5031.6 +/- 25%	Pass
AV112	04/21/2010 6:23	7512	7642.2 +/- 5%	Pass	23.4	10-20	FAIL	221.0	222.0 +/- 5%	Pass	5020	5022.7 +/- 25%	Pass
AV119	04/21/2010 6:23	7585	7699.0 +/- 5%	Pass	14.7	10-20	Pass	235.1	222.0 +/- 5%	FAIL	5110	5022.6 +/- 25%	Pass
AV119.1	04/21/2010 6:00	7689	7699.0 +/- 5%	Pass	14.0	10-20	Pass	236.0	222.0 +/- 5%	FAIL	5117	5022.6 +/- 25%	Pass
AV118	04/21/2010 6:00	7693	7701.5 +/- 5%	Pass	13.5	10-20	Pass	223.0	224.0 +/- 5%	Pass	5021	5037.1 +/- 25%	Pass
AV117	04/21/2010 6:00	7696	7664.0 +/- 5%	Pass	13.6	10-20	Pass	223.0	223.7 +/- 5%	Pass	5030	5035.4 +/- 25%	Pass
AV116	04/21/2010 6:00	7697	7703.0 +/- 5%	Pass	13.7	10-20	Pass	221.0	221.5 +/- 5%	Pass	5010	5019.2 +/- 25%	Pass
AV115	04/21/2010 6:23	7595	7681.0 +/- 5%	Pass	13.3	10-20	Pass	223.0	224.0 +/- 5%	Pass	5031	5037.7 +/- 25%	Pass
AV115	04/21/2010 6:00	7699	7681.0 +/- 5%	Pass	13.7	10-20	Pass	224.1	224.0 +/- 5%	Pass	5040	5037.7 +/- 25%	Pass
AV114	04/21/2010 6:00	7627	7635.0 +/- 5%	Pass	13.3	10-20	Pass	222.0	224.1 +/- 5%	Pass	5021	5038.3 +/- 25%	Pass
AV112	04/21/2010 6:00	7630	7642.2 +/- 5%	Pass	23.4	10-20	FAIL	221.0	222.0 +/- 5%	Pass	5020	5022.7 +/- 25%	Pass
AV111	04/21/2010 6:00	7636	7634.5 +/- 5%	Pass	13.6	10-20	Pass	221.9	224.0 +/- 5%	Pass	5022	5037.7 +/- 25%	Pass
AV110	04/21/2010 6:00	7626	7631.8 +/- 5%	Pass	15.9	10-20	Pass	220.9	227.0 +/- 5%	Pass	5014	5060.0 +/- 25%	Pass
AV110	04/21/2010 6:22	7620	7666.2 +/- 5%	Pass	22.7	10-20	FAIL	222.0	225.0 +/- 5%	Pass	5033	5022.1 +/- 25%	Pass
AV115	04/21/2010 6:00	7752	7666.2 +/- 5%	Pass	23.1	10-20	FAIL	222.0	225.0 +/- 5%	Pass	5034	5022.1 +/- 25%	Pass

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Wednesday, April 21, 2010

Detector	Date/Time	Gross Counts		FWHM (keV)		Pulser Center		Energy (keV)	
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria
AV113	04/21/2010 6:00	7629	7637.3 +/- 5%	Pass	13.7	10-20	Pass	222.0	223.1 +/- 5%
AV122	04/21/2010 6:00	7655	7676.6 +/- 5%	Pass	13.5	10-20	Pass	220.0	221.9 +/- 5%
AV12	04/21/2010 6:00	7732	7588.7 +/- 5%	Pass	16.1	10-20	Pass	220.0	230.0 +/- 5%
AV120	04/21/2010 6:00	7685	7696.0 +/- 5%	Pass	14.0	10-20	Pass	220.9	222.0 +/- 5%
AV121	04/21/2010 6:00	7685	7692.5 +/- 5%	Pass	13.7	10-20	Pass	223.0	224.1 +/- 5%
AV13	04/21/2010 6:00	7744	7584.6 +/- 5%	Pass	14.5	10-20	Pass	222.1	228.0 +/- 5%
AV14	04/21/2010 6:00	7725	7638.3 +/- 5%	Pass	15.3	10-20	Pass	224.1	227.0 +/- 5%
AV15	04/21/2010 6:00	7709	7770.5 +/- 5%	Pass	16.0	10-20	Pass	226.1	226.9 +/- 5%
AV16	04/21/2010 6:00	7726	7456.0 +/- 5%	Pass	15.0	10-20	Pass	222.1	226.9 +/- 5%
AV17	04/21/2010 6:00	7496	7619.1 +/- 5%	Pass	12.8	10-20	Pass	225.0	229.9 +/- 5%
AV18	04/21/2010 6:00	7435	7714.5 +/- 5%	Pass	12.6	10-20	Pass	224.0	226.9 +/- 5%
AV19	04/21/2010 6:00	7652	7269.8 +/- 5%	FAIL	18.0	10-20	Pass	224.9	227.7 +/- 5%
AV19	04/21/2010 6:22	7554	7269.8 +/- 5%	Pass	18.0	10-20	Pass	225.0	227.7 +/- 5%
AV20	04/21/2010 6:00	7707	7503.6 +/- 5%	Pass	14.4	10-20	Pass	223.9	226.0 +/- 5%
AV21	04/21/2010 6:00	7689	7530.9 +/- 5%	Pass	16.0	10-20	Pass	224.0	226.0 +/- 5%
AV22	04/21/2010 6:22	7590	7691.4 +/- 5%	Pass	40.1	10-20	FAIL	224.2	225.0 +/- 5%
AV22	04/21/2010 6:00	7676	7691.4 +/- 5%	Pass	42.5	10-20	FAIL	224.0	225.0 +/- 5%
AV23	04/21/2010 6:00	7686	7665.3 +/- 5%	Pass	15.5	10-20	Pass	226.1	229.8 +/- 5%
AV24	04/21/2010 6:00	7696	7354.0 +/- 5%	Pass	14.2	10-20	Pass	220.0	226.9 +/- 5%
AV51	04/21/2010 6:00	7385	7070.5 +/- 5%	Pass	13.8	10-20	Pass	222.0	223.0 +/- 5%
AV52	04/21/2010 6:00	7378	7156.4 +/- 5%	Pass	14.4	10-20	Pass	224.0	225.0 +/- 5%
AV53	04/21/2010 6:00	7360	7144.1 +/- 5%	Pass	16.5	10-20	Pass	224.1	223.0 +/- 5%
AV54	04/21/2010 6:00	7375	7313.1 +/- 5%	Pass	14.0	10-20	Pass	231.0	226.0 +/- 5%
AV55	04/21/2010 6:00	7267	7132.9 +/- 5%	Pass	17.7	10-20	Pass	223.2	226.0 +/- 5%
AV57	04/21/2010 6:00	7357	7309.5 +/- 5%	Pass	16.1	10-20	Pass	222.2	222.0 +/- 5%
AV58	04/21/2010 6:00	7366	7249.2 +/- 5%	Pass	14.8	10-20	Pass	227.0	223.0 +/- 5%
AV60	04/21/2010 6:00	7260	7019.7 +/- 5%	Pass	19.0	10-20	Pass	225.0	223.0 +/- 5%
AV61	04/21/2010 6:00	7235	7078.3 +/- 5%	Pass	16.9	10-20	Pass	224.0	225.0 +/- 5%
AV63	04/21/2010 6:00	7253	7120.8 +/- 5%	Pass	19.6	10-20	Pass	221.9	223.0 +/- 5%
AV64	04/21/2010 6:00	7251	7133.7 +/- 5%	Pass	14.8	10-20	Pass	225.0	224.0 +/- 5%
AV65	04/21/2010 6:00	7234	7233.4 +/- 5%	Pass	21.0	10-20	FAIL	222.1	224.0 +/- 5%
AV65	04/21/2010 6:23	7164	7233.4 +/- 5%	Pass	21.0	10-20	FAIL	222.1	224.0 +/- 5%
AV66	04/21/2010 6:00	7210	7165.5 +/- 5%	Pass	16.1	10-20	Pass	224.1	222.0 +/- 5%
AV67	04/21/2010 6:00	7216	7128.1 +/- 5%	Pass	13.0	10-20	Pass	219.0	224.1 +/- 5%
AV68	04/21/2010 6:00	7432	7259.5 +/- 5%	Pass	18.5	10-20	Pass	222.1	222.0 +/- 5%
AV69	04/21/2010 6:23	7096	7305.4 +/- 5%	Pass	12.9	10-20	Pass	224.9	222.0 +/- 5%

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Wednesday, April 21, 2010

Detector	Date/Time	Gross Counts		FWHM (keV)		Pulser Center		Energy (keV)	
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria
AV70	04/21/2010 6:23	7109	7406.5 \pm 5%	Pass	12.9	10-20	Pass	220.1	222.6 \pm 5%
AV71	04/21/2010 6:22	7383	7187.3 \pm 5%	Pass	15.4	10-20	Pass	217.0	225.0 \pm 5%
AV72	04/21/2010 6:22	7033	7090.0 \pm 5%	Pass	13.3	10-20	Pass	224.9	223.9 \pm 5%
AV73	04/21/2010 6:22	7196	7251.3 \pm 5%	Pass	12.3	10-20	Pass	223.0	223.0 \pm 5%
AV74	04/21/2010 6:22	7246	7227.1 \pm 5%	Pass	13.0	10-20	Pass	224.0	224.0 \pm 5%
AV74	04/21/2010 6:22	7246	7227.1 \pm 5%	Pass	13.0	10-20	Pass	224.0	224.0 \pm 5%
AV75	04/21/2010 6:22	7574	7267.9 \pm 5%	Pass	13.5	10-20	Pass	222.0	224.1 \pm 5%
AV76	04/21/2010 6:22	7186	7374.3 \pm 5%	Pass	13.2	10-20	Pass	224.1	224.0 \pm 5%
AV77	04/21/2010 6:22	7399	7497.1 \pm 5%	Pass	12.7	10-20	Pass	223.0	224.0 \pm 5%
AV78	04/21/2010 6:22	7537	7183.8 \pm 5%	FAIL	15.4	10-20	Pass	225.1	223.3 \pm 5%
AV79	04/21/2010 6:22	7563	7349.7 \pm 5%	Pass	13.9	10-20	Pass	222.0	222.0 \pm 5%
AV80	04/21/2010 6:22	7560	7226.4 \pm 5%	Pass	13.8	10-20	Pass	224.1	224.1 \pm 5%
AV82	04/21/2010 6:22	7558	7529.2 \pm 5%	Pass	13.8	10-20	Pass	225.0	224.0 \pm 5%
AV83	04/21/2010 6:22	7479	7523.7 \pm 5%	Pass	12.9	10-20	Pass	223.0	222.0 \pm 5%
AV84	04/21/2010 6:22	7364	7637.7 \pm 5%	Pass	13.3	10-20	Pass	223.9	223.0 \pm 5%
AV85	04/21/2010 6:22	7410	7549.7 \pm 5%	Pass	13.0	10-20	Pass	221.9	223.0 \pm 5%
AV86	04/21/2010 6:22	7719	7679.0 \pm 5%	Pass	13.9	10-20	Pass	223.9	223.9 \pm 5%
AV87	04/21/2010 6:23	7708	7512.4 \pm 5%	Pass	15.2	10-20	Pass	223.0	223.0 \pm 5%
AV88	04/21/2010 6:23	7711	7716.1 \pm 5%	Pass	13.7	10-20	Pass	223.9	224.0 \pm 5%
AV89	04/21/2010 6:23	7710	7553.8 \pm 5%	Pass	13.9	10-20	Pass	219.9	222.6 \pm 5%
AV90	04/21/2010 6:23	7708	7474.4 \pm 5%	Pass	13.8	10-20	Pass	224.0	224.1 \pm 5%
AV92	04/21/2010 6:23	7484	7358.9 \pm 5%	Pass	12.7	10-20	Pass	222.0	223.9 \pm 5%
AV93	04/21/2010 6:23	7433	7393.5 \pm 5%	Pass	13.1	10-20	Pass	223.0	223.0 \pm 5%
AV94	04/21/2010 6:23	7425	7477.9 \pm 5%	Pass	13.1	10-20	Pass	222.0	222.0 \pm 5%
AV95	04/21/2010 6:23	7347	7432.4 \pm 5%	Pass	13.1	10-20	Pass	223.0	222.2 \pm 5%
AV96	04/21/2010 6:23	7628	7654.3 \pm 5%	Pass	21.3	10-20	FAIL	220.8	222.6 \pm 5%
AV97	04/21/2010 6:23	7640	7649.9 \pm 5%	Pass	14.7	10-20	Pass	224.1	223.8 \pm 5%
AV98	04/21/2010 6:23	7206	7582.0 \pm 5%	Pass	13.4	10-20	Pass	223.9	223.0 \pm 5%
AV99	04/21/2010 6:23	7605	7646.9 \pm 5%	Pass	14.4	10-20	Pass	224.0	222.0 \pm 5%
AV70	04/21/2010 6:23	5005	5004.7 \pm 25%	Pass	5005	5004.7 \pm 25%	Pass	5005	5004.7 \pm 25%
AV71	04/21/2010 6:22	4987	5022.7 \pm 25%	Pass	4987	5022.7 \pm 25%	Pass	4987	5022.7 \pm 25%
AV72	04/21/2010 6:22	5050	5014.6 \pm 25%	Pass	5050	5014.6 \pm 25%	Pass	5050	5014.6 \pm 25%
AV73	04/21/2010 6:22	5030	5022.4 \pm 25%	Pass	5030	5022.4 \pm 25%	Pass	5030	5022.4 \pm 25%
AV74	04/21/2010 6:22	5043	5015.0 \pm 25%	Pass	5043	5015.0 \pm 25%	Pass	5043	5015.0 \pm 25%
AV74	04/21/2010 6:22	5043	5015.0 \pm 25%	Pass	5043	5015.0 \pm 25%	Pass	5043	5015.0 \pm 25%
AV75	04/21/2010 6:22	5009	5015.5 \pm 25%	Pass	5009	5015.5 \pm 25%	Pass	5009	5015.5 \pm 25%
AV76	04/21/2010 6:22	5031	5015.2 \pm 25%	Pass	5031	5015.2 \pm 25%	Pass	5031	5015.2 \pm 25%
AV77	04/21/2010 6:22	5030	5015.4 \pm 25%	Pass	5030	5015.4 \pm 25%	Pass	5030	5015.4 \pm 25%
AV78	04/21/2010 6:22	5035	5009.8 \pm 25%	Pass	5035	5009.8 \pm 25%	Pass	5035	5009.8 \pm 25%
AV79	04/21/2010 6:22	5008	5000.4 \pm 25%	Pass	5008	5000.4 \pm 25%	Pass	5008	5000.4 \pm 25%
AV80	04/21/2010 6:22	5022	5015.5 \pm 25%	Pass	5022	5015.5 \pm 25%	Pass	5022	5015.5 \pm 25%
AV82	04/21/2010 6:22	5021	5015.2 \pm 25%	Pass	5021	5015.2 \pm 25%	Pass	5021	5015.2 \pm 25%
AV83	04/21/2010 6:22	5019	5000.4 \pm 25%	Pass	5019	5000.4 \pm 25%	Pass	5019	5000.4 \pm 25%
AV84	04/21/2010 6:22	5031	5007.7 \pm 25%	Pass	5031	5007.7 \pm 25%	Pass	5031	5007.7 \pm 25%
AV85	04/21/2010 6:22	5019	5008.0 \pm 25%	Pass	5019	5008.0 \pm 25%	Pass	5019	5008.0 \pm 25%
AV86	04/21/2010 6:22	5023	5014.3 \pm 25%	Pass	5023	5014.3 \pm 25%	Pass	5023	5014.3 \pm 25%
AV87	04/21/2010 6:22	5023	5007.7 \pm 25%	Pass	5023	5007.7 \pm 25%	Pass	5023	5007.7 \pm 25%
AV88	04/21/2010 6:23	5024	5015.4 \pm 25%	Pass	5024	5015.4 \pm 25%	Pass	5024	5015.4 \pm 25%
AV89	04/21/2010 6:23	4998	5004.7 \pm 25%	Pass	4998	5004.7 \pm 25%	Pass	4998	5004.7 \pm 25%
AV90	04/21/2010 6:23	5024	5015.6 \pm 25%	Pass	5024	5015.6 \pm 25%	Pass	5024	5015.6 \pm 25%
AV92	04/21/2010 6:23	5022	5014.6 \pm 25%	Pass	5022	5014.6 \pm 25%	Pass	5022	5014.6 \pm 25%
AV93	04/21/2010 6:23	5030	5008.3 \pm 25%	Pass	5030	5008.3 \pm 25%	Pass	5030	5008.3 \pm 25%
AV94	04/21/2010 6:23	5023	5000.5 \pm 25%	Pass	5023	5000.5 \pm 25%	Pass	5023	5000.5 \pm 25%
AV95	04/21/2010 6:23	5018	5001.9 \pm 25%	Pass	5018	5001.9 \pm 25%	Pass	5018	5001.9 \pm 25%
AV96	04/21/2010 6:23	5034	5005.3 \pm 25%	Pass	5034	5005.3 \pm 25%	Pass	5034	5005.3 \pm 25%
AV97	04/21/2010 6:23	5033	5014.0 \pm 25%	Pass	5033	5014.0 \pm 25%	Pass	5033	5014.0 \pm 25%
AV98	04/21/2010 6:23	5017	5007.6 \pm 25%	Pass	5017	5007.6 \pm 25%	Pass	5017	5007.6 \pm 25%
AV99	04/21/2010 6:23	5032	5022.4 \pm 25%	Pass	5032	5022.4 \pm 25%	Pass	5032	5022.4 \pm 25%

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Run Log

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20/10	Daily	Pulsers	1-122	1min	DA	SE	—
2		0099141	F00260551-009	24	600min	U		Wm
3			-010	51				
4			-011	52				
5			-012	53				
6		0103258	F00070441-007	1	180min	Th		Wm
7			-008	3				
8			-009	4				
9			-010	7				
10			-011	8				
11			-012	17				
12			-013	9				
13			-014	10				
14			-015	12				
15			-016	13				
16			-017	14				
17		0103244	F00250604-011	19	240min			Wm
18			-012	20				
19			-013	21				
20			-014	23				
21			F00130000-244B	88				
22			-244C	89				
23			-244L	90				
24		0103276	F00200422-001	15	360min			Wm
25			-0010	16				
26			F00130000-276B	75				
27			-276C	76				
28		0103212	F00260551-001	54	240min			Wm
29			-002	55				

Reviewed By: SEDate: 4/20/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20/10	0103812	FOC 260551-803	57	240min	Th	82	umw
2			↓ -004	58				
3			FOC 130000-212B	79				
4			↓ -212C	80				
5			↓ -212L	82				
6		0099123	FOC 260551-005	60	600min	Am		umw
7			↓ -005K	61				
8			↓ -006	63				
9			↓ -007	64				
10			↓ -008	70				
11			↓ -009	66				
12			↓ -010	67				
13			↓ -011	68				
14			↓ -012	69				
15			FOC 090000-123B	77				
16			↓ -123C	78				
17		0103081	FOC 300436-001	71	180min	Th		umw
18			↓ -001K	72				
19			FOC 300438-001	73				
20			FOC 130000-081B	84				
21			↓ -081C	85				
22		0103254	FOC 070441-001	74		Pu		umw
23			↓ -001K	83				
24			↓ -002	86				
25			↓ -003	87				
26			↓ -004	92				
27			↓ -005	93				
28			↓ -006	97				
29			FOC 130000-254B	94				

Reviewed By: 82Date: 4/20/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20/10	0103254	FOD130000-254C	98	180min	Pu	E	um
2		0103260	FOD130000-260C	95	L	Pu241	E	um
3		0103254	FOD070441-007	9 ^{comp} ₁₃₀	9 ¹³⁰ ₁₃₀	Pu	Emu	um
4			-008	10	10			
5			-009	12	12			
6			-010	13	13			
7			-011	14	14			
8			-012	83	83			
9			-013	86	86			
10			-014	87	87			
11			-015	92	92			
12			-016	93	93			
13			-017	97	97			
14		0096136	FOD190543-001	1	180min	Uu		um
15			-001X	3				
16			FOD060000-136B	85				
17			-136C	94				
18		0106068	FOD190543-001	4		Th		um
19			-001X	7				
20			FOD160000-068B	95				
21			-068C	98				
22		0102264	FOD240459-002	71	400mins	Uu		um
23			-002X	72				
24			-003	73				
25			-004	74				
26		0102240	POC250001-014	90	90mins	Pu	um	um
27		0098140	POC250001-01X	82	60mins	Pu		um
28		0102264	FOD240459-005	19	400mins	U		um
29			-006	20				

Reviewed By: umDate: 4/20/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20/10	0102264	FOD120000-264B	79	400mins	U	umg	umg
2			1 -264C	80				
3		0109085	FOD030406-002	21	240mins	Th		umg
4			-002X	23				
5			-001	55				
6			-004	51				
7			-006	58				
8			-010	54				
9			FOD190000-085B	88				
10			1 -085C	89				
11			FOD030406-012	9			UB/umg	
12			-014	10				
13			-016	12				
14		0103276	FOC200422-001	15	720mins			umg
15			1 -001X	16	720min			
16			FOD130000 - 270B	75				
17			1 -270C	76				
18		0099258	FOC310488-001	99		PU		umg
19			1 -001X	100				
20			-002	101				
21			FOC310498-001	102				
22			1 -002	103				
23			-003	104				
24			-004	105				
25			-005	106				
26			FOC310499-002	107				
27			1 -003	108				
28			-004	109				
29			FOD070439-002	110				

Reviewed By: UB

Date: 4/20/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20	0099258	F0D080501-001	111	720min	Pu	NB/MLM	
2			-002	113				
3			-003	114				
4			-004	115				
5			-005	116				
6			-006	117				
7			-007	118				
8			F0D090000-258B	120				
9			-258C	121				
10		0099259	F0C310488-001	13	400min	Lu		
11			-001X	14				
12			-002	83				
13			F0C310498-001	86				
14			-002	87				
15			-003	92				
16			-004	93				
17			-005	97				
18			F0D090000-259B	94				
19			-259C	98				
20		0099259	F0C310499-002	21	400min	Lu	EMW	
21			-003	23				
22			-004	54				
23			F0D070439-002	55				
24			F0D080501-001	57				
25			-002	58				
26	4/21/10	Drills	Pulvers	1-122	1min	QA	S	-
27		0099259	F0A080501-003	67	400min	u		
28			-004	68				
29			-005	69				

Reviewed By: SEDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20	0099258	FOD080501-001	111	720min	Pu	NB/mm	mm
2			-002	113				
3			-003	114				
4			-004	115				
5			-005	116				
6			-006	117				
7			-007	118				
8			FOD090000-258B	120				
9			-258C	121				
10		0099259	FUC310428-001	13	400min	Lu		mm
11			-001X	14				
12			-002	83				
13			FUC310498-001	86				
14			-002	87				
15			-003	92				
16			-004	93				
17			-005	97				
18			FOD090000-259B	94				
19			-259C	98				
20		0099259	FUC310499-002	21	400mins	Lu	EMW	
21			-003	23				
22			-004	54				
23			FOD070439-002	55				
24			FOD080501-001	57				
25			-002	58				
26	4/21/10	Daily	Pulsero	1-122	1min	QA	&	-
27		0099259	FOD080501-003	67	400min	u		mm
28			-004	68				
29			-005	69				

Reviewed By: EDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0099259	FOD080501-006	70	400min	U	SE	um
2			-007	71				
3		0109095	FOD070451-003	9	180min	No		um
4			-006	10				
5			FOD90000-095B	88				
6			-095C	89				
7			-095L	90				
8		0102265	FOD240459-002	12				um
9			-002K	13				
10			-003	14				
11			-004	15				
12			-005	16				
13			-006	18				
14			FOD120000-265B	78				
15			-265C	82				
16		0099126	FOD260551-005	20				um
17			-005K	21				
18			-006	23				
19			-007	24				
20			-008	51				
21			-009	52				
22			-010	53				
23			-011	54				
24			-012	55				
25			FOD090000-126B	79				
26			-126C	80				
27		0104309	FOD080530-001	57		Pu		emv
28			-001K	58				
29			-002	60				

Reviewed By: SEDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0104309	FOD080530-003	61	180min	Pu	SE	umw
2			FOD080539-003	63				
3			-004	64				
4			-007	66				
5			FOD140000-309B	75				
6			-309C	76				
7		0104239	FOD240459-001	72	360min	Am		umw
8			FOD140000-239B	77				
9			-239C	84				
10			-239L	85				
11		0104241	FOD240459-001	73		U		umw
12			FOD140000-241B	94				
13			-241C	95				
14			-241L	98				
15		0104238	FOD240459-001	74		Th		umw
16			FOD140000-238B	83				
17			-238C	86				
18			-238L	87				
19		0109098	FOD070451-003	92		Pu		umw
20			-006	93				
21			FOD190000-098B	97				
22		0102265	FOD240459-005	103	180mins	Np	umw	umw
23		0103254	FOD070451-001	9		Pu		umw
24			-001L	12				
25		0099123	FOD260551-005	10	100mins	Am		umw
26			-005X	18				
27			-006	51				
28			-007	51				
29			-008	52				

Reviewed By: umwDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0099123	FOC 260551-010	20	600mins	Am	um	
2		0109098	FO D 190000-098C	75	360mins	Pu		um
3			-098L	76	+			
4		0102263	FOC 240459-002	53	720mins			um
5			-002x	55				
6			-003	57				
7			-004	58				
8			-005	60				
9			-006	61				
10			FO D 120000-203B	78				
11			-203C	82				
12		0104210	FOC 240459-001	24				um
13			FO D 140000-240B	88				
14			-240C	89				
15			-240L	90				
16		0102062	FOC 240459-002	14	400mins	Am		um
17			-002x	15				
18			-003	16				
19			-004	64				
20			-005	21				
21			-006	23				
22			FO D 120000-202B	79				
23			-202C	80				
24		0103240	FOC 250604-041	13	960mins	Pu		um
25		0099258	FOC 310498-001	99				um
26			-002	100				
27			-004	101				
28			-005	102				
29			FOC 310499-003	103				

Reviewed By: umDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0099256	FOD080501-006	104	960mins	Pu	Wm	Wm
2		0099257	FOC310488-001	9	400min	Am	NB	
3			-001x	12				
4			-002	83				
5			FOC310498-001	86				
6			-002	92				
7			-003	93				
8			-004	97				
9			-005	103				
10			FOC310499-002	106				
11			-003	107				
12			-004	108				
13			FOD070439-002	109				
14			FOD080501-001	70				
15			-002	71				
16			-003	72				
17			-004	73				
18			-005	74				
19			-006	87				
20		0104312	FOC2100380-001	1	180min	U		Wm
21			-001x	3				
22			FOD140000-312B	77				
23			-312c	84				
24		0100037	FOC230524-001	4				Wm
25			FOC230524-001x	7				
26			-002	8				
27			FOD100000-037B	85				
28			-037c	94				
29		0109101	FOC240544-001	17				

Reviewed By: NB

Date: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0109101	FOD190000-101C	95	180min	U	NB	
2		1	↓ -101L	98		+	+	
3		0102263	FOD120000-263B	75		NP	um	um
4		0102263	FOD120000-263B	76	720min	pu	+	um
5	4/22/10	Daily	Pulvers	1-172	1min	QA	SE	—
6		0109101	FOC240549-001	1	180min	U		
7			↓ -002	3				
8			FOD190000-101B	4				
9			-101C	89				
10			-101L	90				
11		0099257	FOD080501-007	24	400min	Am		
12			FOD090000-257B	84				
13			↓ -257C	85				
14		0104319	FOC300453-014	9	180min	NP		
15			-0144	10				
16			-015	12				
17			-016	13				
18			-017	14				
19			-018	15				
20			-019	16				
21			-020	18				
22			FOD310495-001	19				
23			-002	20				
24			-003	21				
25			-004	23				
26			FOD140000-319B	94				
27			↓ -319C	98				
28		0109096	FOD070451-003	92	240min	Th		
29			↓ -006	93				

Reviewed By: SEDate: 4/22/10

720mg LANA ULL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Prep Report for Plutonium, Isotopic by Alpha Spectroscopy

Batch: 0099258

Prep Analyst: 403301

SampID	WRKNO	Aliquot	X	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F0C310488-001	LXC9E1CJ	2.0072E+000 g	99	2.00	1.0036E+000 g	rad10-0034	Pu-236	0.10	N
F0C310488-001X	LXC9E1EK	2.0061E+000 g	100	2.00	1.0031E+000 g	rad10-0034	Pu-236	0.10	N
F0C310488-002	LXC9E1CJ	2.0046E+000 g	101	2.00	1.0023E+000 g	rad10-0034	Pu-236	0.10	N
F0C310498-001	LXDEA1AD	2.0010E+000 g	102	2.00	1.0005E+000 g	rad10-0034	Pu-236	0.10	N
F0C310498-002	LXDEG1AD	2.0031E+000 g	103	2.00	1.0016E+000 g	rad10-0034	Pu-236	0.10	N
F0C310498-003	LXDEK1AD	2.0052E+000 g	104	2.00	1.0026E+000 g	rad10-0034	Pu-236	0.10	N
F0C310498-004	LXDEL1AD	2.0045E+000 g	105	2.00	1.0022E+000 g	rad10-0034	Pu-236	0.10	N
F0C310498-005	LXDEM1AD	2.0006E+000 g	106	2.00	1.0003E+000 g	rad10-0034	Pu-236	0.10	N
F0C310499-002	LXDE61CG	2.0006E+000 g	107	2.00	1.0003E+000 g	rad10-0034	Pu-236	0.10	N
F0C310499-003	LXDFN1CG	2.0044E+000 g	108	2.00	1.0022E+000 g	rad10-0034	Pu-236	0.10	N
F0C310499-004	LXDFR1CG	2.0022E+000 g	109	2.00	1.0011E+000 g	rad10-0034	Pu-236	0.10	N
F0D070439-002	LXLR41CG	2.0014E+000 g	110	2.00	1.0007E+000 g	rad10-0034	Pu-236	0.10	N
F0D080501-001	LXNMR1AD	2.0025E+000 g	111	2.00	1.0013E+000 g	rad10-0034	Pu-236	0.10	N
F0D080501-002	LXNMV1AD	2.0036E+000 g	113	2.00	1.0018E+000 g	rad10-0034	Pu-236	0.10	N
F0D080501-003	LXNMW1AD	2.0008E+000 g	114	2.00	1.0004E+000 g	rad10-0034	Pu-236	0.10	N
F0D080501-004	LXNMX1AD	2.0063E+000 g	115	2.00	1.0032E+000 g	rad10-0034	Pu-236	0.10	N
F0D080501-005	LXNMZ1AD	2.0012E+000 g	116	2.00	1.0006E+000 g	rad10-0034	Pu-236	0.10	N

960
RC = 99960
RC = 100960
RC = 101960
RC = 102960
RC = 103

SampleID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F0D080501-006	LXNM41AD	2.0021E+000 g	2.00	1.0011E+000 g	rad10-0034	Pu-238	0.10	N
			114				940 RC=104	
F0D080501-007	LXNM91AD	2.0037E+000 g	2.00	1.0018E+000 g	rad10-0034	Pu-238	0.10	N
			118					
F0D090000-258B	LXQQ01AA	2.0000E+000 g	1.00	2.0000E+000 g	rad10-0034	Pu-238	0.10	N
			120					
F0D090000-258C	LXQQ01AC	2.0020E-001 g	1.00	2.0020E-001 g	rad10-0034	Pu-238	0.10	N
			121					

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	Std Added
F0D090000-258C	PEM-1 Iso-Pu	Pu-238	1.780E+001 dpm/mL	0.20 mL	4/12/2002 12:00:00AM	8.018E+000 pCi/g
F0D090000-258C	PEM-1 Iso-Pu	PU-239/240	9.100E+001 dpm/mL	0.20 mL	4/12/2002 12:00:00AM	4.099E+001 pCi/g

Spiked By

Spike Verified By

Spike Date

Standard Operating Procedures

SOP Number	Title	Revision
240HI		
<u>Column Analyst</u>	<u>Date</u>	<u>Coprecipitated By</u>
<u>Reviewed By</u>	<u>Review Date</u>	<u>Precip Date</u>
<u>Analyst/Relinquished By</u>	<u>Release Date</u>	<u>Received By</u>
		<u>Receipt Date</u>

SV142B1 DO 24
4/13/10
 Balance ID / Initials / Date

Alpha Spectroscopy

Uranium

Test America St. Louis

Isotopic Actinide DLC calculation when decay and ingrowth calculations are not required.

Sample ID	Isotope	Total Bkgd Cts	L/g Sample Volume	decimal det. eff.	minutes ct. length	decimal yield	decimal abundance	DLC
F0C310488-002	U234	0.4167	1.0023	0.2533	400	0.9188	0.998	0.0073
F0C310488-002	U235	0	1.0023	0.2533	400	0.9188	0.809	0.0000
F0C310488-002	U238	0.4167	1.0023	0.2533	400	0.9188	1	0.0072
F0C310498-002	U234	0.8333	1.0016	0.2585	400	0.8744	0.998	0.0106
F0C310498-002	U235	0	1.0016	0.2585	400	0.8744	0.809	0.0000
F0C310498-002	U238	0	1.0016	0.2585	400	0.8744	1	0.0000
F0C310499-004	U234	1.6667	1.0011	0.2684	400	0.7505	0.998	0.0168
F0C310499-004	U235	0	1.0011	0.2684	400	0.7505	0.809	0.0000
F0C310499-004	U238	2.0833	1.0011	0.2684	400	0.7505	1	0.0188
F0D080501-004	U234	2.9167	1.0032	0.2607	400	0.9225	0.998	0.0186
F0D080501-004	U235	0.4167	1.0032	0.2607	400	0.9225	0.809	0.0087
F0D080501-004	U238	0	1.0032	0.2607	400	0.9225	1	0.0000

Calculated by: *um*Date: *4/22/10*Reviewed by: *gr*Date: *4/22/10*

488-001 U235
 -002 U235
 498-001 U238
 -002 U235+238
 -003 U238
 499-002 U238
 -004 U235
 501-001 U238
 -004 U238
 -005 U238

501-001 U238
 Blk U238
 LCS U238

Analysis Report for Alpha Spectroscopy

Batch: 0099259 Operator: 403293

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDate/Time	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F0C310488-001	LXC9E1CH	2.0072 g	2.00	1.00	AV43	4/20/10 16:16	400.00	rad10-0001	U-232	3.477E+000	79.92%
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC
						U-232	2.779E+000 pCi/g	1.349E-001	1.784E-001	5.862E-002	2.361E-002
						U-234	2.652E-001 pCi/g	3.869E-002	4.026E-002	2.917E-002	8.370E-003
						U-235	2.081E-002 pCi/g	1.201E-002	1.204E-002	1.877E-002	1.042E-002
						U-238	2.735E-001 pCi/g	3.947E-002	4.111E-002	3.494E-002	1.181E-002
F0C310488-001X	LXC9E1EL	2.0061 g	2.00	1.00	AV14	4/20/10 16:16	400.00	rad10-0001	U-232	3.479E+000	79.19%
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC
						U-232	2.755E+000 pCi/g	1.322E-001	1.757E-001	6.902E-002	2.979E-002
						U-234	3.825E-001 pCi/g	4.601E-002	4.873E-002	4.445E-002	1.786E-002
						U-235	2.371E-002 pCi/g	1.352E-002	1.355E-002	3.463E-002	9.937E-003
						U-238	3.529E-001 pCi/g	4.441E-002	4.682E-002	4.722E-002	1.952E-002
F0C310488-002	LXC9S1CH	2.0046 g	2.00	1.00	AV83	4/20/10 16:17	400.00	rad10-0001	U-232	3.482E+000	91.88%
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC
						U-232	3.199E+000 pCi/g	1.256E-001	1.839E-001	4.593E-002	1.774E-002
						U-234	4.576E-001 pCi/g	4.719E-002	5.096E-002	2.532E-002	7.264E-003
						U-235	1.204E-002 pCi/g	8.513E-003	8.528E-003	1.629E-002	9.040E-003
						U-238	5.435E-001 pCi/g	5.136E-002	5.621E-002	2.527E-002	7.250E-003
F0C310498-001	LXDEA1AC	2.0010 g	2.00	1.00	AV86	4/20/10 16:17	400.00	rad10-0001	U-232	3.488E+000	72.51%
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC
						U-232	2.529E+000 pCi/g	1.380E-001	1.741E-001	1.692E-002	8.772E-003
						U-234	2.378E-001 pCi/g	3.759E-002	3.899E-002	3.066E-002	8.797E-003
						U-235	1.883E-002 pCi/g	1.299E-002	1.301E-002	3.815E-002	1.095E-002
						U-238	2.280E-001 pCi/g	3.651E-002	3.776E-002	1.582E-002	8.779E-003
F0C310498-002	LXDEG1AC	2.0031 g	2.00	1.00	AV87	4/20/10 16:17	400.00	rad10-0001	U-232	3.484E+000	87.44%
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC
						U-232	3.047E+000 pCi/g	1.272E-001	1.805E-001	1.440E-002	7.465E-003
						U-234	3.149E-001 pCi/g	3.999E-002	4.212E-002	3.132E-002	1.059E-002
						U-235	2.481E-002 pCi/g	1.241E-002	1.245E-002	1.679E-002	9.318E-003
						U-238	2.886E-001 pCi/g	3.789E-002	3.978E-002	1.348E-002	7.471E-003
F0C310498-003	LXDEK1AC	2.0052 g	2.00	1.00	AV92	4/20/10 16:17	400.00	rad10-0001	U-232	3.481E+000	84.46%
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC
						U-232	2.940E+000 pCi/g	1.279E-001	1.778E-001	2.813E-002	7.543E-003
						U-234	4.198E-001 pCi/g	4.663E-002	4.985E-002	3.910E-002	1.513E-002
						U-235	2.246E-002 pCi/g	1.281E-002	1.284E-002	3.281E-002	9.413E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDate/Time	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield	
FOC310498-004	LXDEL1AC	2.0045 g	2.00	1.00	AV93	U-238	4/20/10 16:17	4.223E-001 pCi/g	4.607E-002	4.937E-002	1.360E-002	7.549E-003
						Activity	U-232	3.482E+000	88.13%	DLC		
						Count/unc	TotalUnc	MDA				
						3.069E+000 pCi/g	1.252E-001	1.797E-001	2.698E-002	7.233E-003		
						6.558E-001 pCi/g	5.664E-002	6.298E-002	3.422E-002	1.256E-002		
FOC310498-005	LXDEM1AC	2.0006 g	2.00	1.00	AV97	U-235	4/20/10 16:17	5.760E-002 pCi/g	1.917E-002	1.932E-002	3.148E-002	9.026E-003
						Activity	U-232	2.523E-002	7.239E-003			
						Count/unc	TotalUnc	MDA				
						7.837E-001 pCi/g	6.158E-002	6.982E-002	2.523E-002	7.239E-003		
						2.798E+000 pCi/g	1.348E-001	1.788E-001	3.738E-002	1.181E-002		
FOC310499-002	LXDEB1CF	2.0006 g	2.00	1.00	AV21	U-234	4/20/10 17:14	2.320E-001 pCi/g	3.622E-002	3.751E-002	2.920E-002	8.376E-003
						Activity	U-232	2.913E-002	8.359E-003			
						Count/unc	TotalUnc	MDA				
						5.206E-003 pCi/g	1.102E-002	1.102E-002	4.917E-002	1.805E-002		
						2.426E-001 pCi/g	3.700E-002	3.837E-002	2.913E-002	8.359E-003		
FOC310499-003	LXDFN1CF	2.0044 g	2.00	1.00	AV23	U-238	4/20/10 17:14	6.888E-001 pCi/g	6.065E-002	6.719E-002	1.445E-002	8.018E-003
						Activity	U-232	3.482E+000	60.84%	DLC		
						Count/unc	TotalUnc	MDA				
						2.118E+000 pCi/g	1.524E-001	1.765E-001	6.342E-002	2.381E-002		
						7.621E-001 pCi/g	7.402E-002	8.064E-002	4.467E-002	1.510E-002		
FOC310499-004	LXDFR1CF	2.0022 g	2.00	1.00	AV54	U-235	4/20/10 17:15	4.940E-002 pCi/g	2.199E-002	2.208E-002	4.631E-002	1.329E-002
						Activity	U-232	2.383E-002	7.505%	DLC		
						Count/unc	TotalUnc	MDA				
						8.936E-001 pCi/g	8.056E-002	8.887E-002	5.931E-002	2.383E-002		
						2.616E+000 pCi/g	1.352E-001	1.742E-001	4.990E-002	1.873E-002		
FOD070439-002	LXLR41CF	2.0014 g	2.00	1.00	AV55	U-234	4/20/10 17:15	8.356E-001 pCi/g	6.891E-002	7.733E-002	4.343E-002	1.680E-002
						Activity	U-232	4.667E-002	1.875E-002			
						Count/unc	TotalUnc	MDA				
						6.266E-002 pCi/g	2.089E-002	2.105E-002	1.884E-002	1.045E-002		
						9.878E-001 pCi/g	7.488E-002	8.561E-002	4.667E-002	1.875E-002		
FOD080501-001	LXNMR1AC	2.0025 g	2.00	1.00	AV57	U-238	4/20/10 17:15	4.782E-001 pCi/g	5.091E-002	5.473E-002	5.276E-002	2.310E-002
						Activity	U-232	3.486E+000	84.94%	DLC		
						Count/unc	TotalUnc	MDA				
						2.961E+000 pCi/g	1.268E-001	1.776E-001	2.762E-002	7.405E-003		

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield	
F0D080501-002	LXNMV1AC	2.0036	2.00	1.00	AV58	4/20/10 17:15	400.00	rad10-0001	U-232	3.484E+000	81.54%	
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC	
						U-232	2.841E+000	pCi/g	1.285E-001	1.753E-001	5.309E-002	2.138E-002
						U-234	7.952E-001	pCi/g	6.406E-002	7.225E-002	4.492E-002	1.857E-002
						U-235	2.879E-002	pCi/g	1.429E-002	1.434E-002	3.288E-002	9.434E-003
U-238	8.783E-001	pCi/g	6.697E-002	7.646E-002	3.910E-002	1.513E-002						
F0D080501-003	LXNMW1AC	2.0008	2.00	1.00	AV67	4/21/10 7:31	400.00	rad10-0001	U-232	3.488E+000	92.42%	
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC	
						U-232	3.224E+000	pCi/g	1.208E-001	1.815E-001	3.707E-002	1.341E-002
						U-234	8.252E-001	pCi/g	6.116E-002	7.030E-002	3.475E-002	1.344E-002
						U-235	2.321E-002	pCi/g	1.288E-002	1.292E-002	3.498E-002	1.183E-002
U-238	1.336E+000	pCi/g	7.742E-002	9.563E-002	2.805E-002	9.487E-003						
F0D080501-004	LXNMX1AC	2.0063	2.00	1.00	AV68	4/21/10 7:31	400.00	rad10-0001	U-232	3.479E+000	92.25%	
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC	
						U-232	3.210E+000	pCi/g	1.235E-001	1.828E-001	4.688E-002	1.853E-002
						U-234	7.581E-001	pCi/g	6.030E-002	6.819E-002	4.394E-002	1.858E-002
						U-235	4.413E-002	pCi/g	1.664E-002	1.674E-002	3.046E-002	8.739E-003
U-238	8.682E-001	pCi/g	6.366E-002	7.336E-002	1.263E-002	7.009E-003						
F0D080501-005	LXNM21AC	2.0012	2.00	1.00	AV69	4/21/10 7:31	400.00	rad10-0001	U-232	3.488E+000	80.52%	
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC	
						U-232	2.808E+000	pCi/g	1.273E-001	1.735E-001	3.756E-002	1.289E-002
						U-234	5.247E-001	pCi/g	5.120E-002	5.574E-002	2.601E-002	7.462E-003
						U-235	1.597E-002	pCi/g	1.102E-002	1.104E-002	3.236E-002	9.286E-003
U-238	5.852E-001	pCi/g	5.387E-002	5.921E-002	1.342E-002	7.447E-003						
F0D080501-006	LXNM41AC	2.0021	2.00	1.00	AV70	4/21/10 7:31	400.00	rad10-0001	U-232	3.486E+000	77.80%	
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC	
						U-232	2.712E+000	pCi/g	1.333E-001	1.754E-001	4.515E-002	1.633E-002
						U-234	7.837E-001	pCi/g	6.576E-002	7.353E-002	3.852E-002	1.418E-002
						U-235	1.865E-002	pCi/g	1.442E-002	1.444E-002	4.805E-002	1.764E-002
U-238	8.831E-001	pCi/g	6.981E-002	7.906E-002	4.222E-002	1.634E-002						
F0D080501-007	LXNM91AC	2.0037	2.00	1.00	AV71	4/21/10 7:31	400.00	rad10-0001	U-232	3.483E+000	91.16%	
						Analyte	Activity	CountUnc	TotalUnc	MDA	DLC	
						U-232	3.175E+000	pCi/g	1.246E-001	1.825E-001	4.515E-002	1.744E-002
						U-234	5.037E-001	pCi/g	4.961E-002	5.394E-002	3.975E-002	1.597E-002
						U-235	2.712E-002	pCi/g	1.346E-002	1.351E-002	3.097E-002	8.886E-003
U-238	5.315E-001	pCi/g	5.022E-002	5.496E-002	1.284E-002	7.126E-003						

LOT # F0D080501

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDate/Time	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F0D090000-259B	LXGRE1AA	2.0000	1.00	1.00	AV94	4/20/10 16:17	400.00	rad10-0001	U-232	1.745E+000	88.90%
		g									
						Analyte	Activity		Count/unc	MDA	DLC
						U-232	1.551E+000 pCi/g		6.177E-002	1.937E-002	7.003E-003
						U-234	6.041E-003 pCi/g		4.166E-003	1.224E-002	3.511E-003
						U-235	-1.212E-003 pCi/g		1.212E-003	1.523E-002	4.369E-003
						U-238	9.334E-003 pCi/g		4.667E-003	6.315E-003	3.504E-003
F0D090000-259C	LXGRE1AC	2.0000	1.00	1.00	AV98	4/20/10 16:17	400.00	rad10-0001	U-232	1.745E+000	80.53%
		g									
						Analyte	Activity		Count/unc	MDA	DLC
						U-232	1.405E+000 pCi/g		6.406E-002	8.710E-002	3.779E-003
						U-234	1.699E+000 pCi/g		6.553E-002	1.585E-002	5.359E-003
						U-235	1.243E-001 pCi/g		1.990E-002	1.644E-002	4.716E-003
						U-238	1.813E+000 pCi/g		6.758E-002	1.018E-001	3.782E-003

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity	Std Added	Recovery	LCL	UCL
F0D090000-259C	LXGRE1AC	U-234	1.699E+000	1.642E+000	103.46% ✓	78.00	125.00
	LXGRE1AC	U-238	1.813E+000	1.706E+000	106.28% ✓	76.00	122.00

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F0C310488-001	U-238	2.735E-001	F0C310488-001X	3.529E-001	25.36% ✓	4.516E-001	1.275E+000	
F0C310488-001	U-234	2.652E-001	F0C310488-001X	3.825E-001	36.21% ✓	6.588E-001	1.855E+000	
F0C310488-001	U-235	2.081E-002	F0C310488-001X	2.371E-002	13.04% ✓	5.671E-002	1.601E-001	

Matrix Spike Information

SampleID	SampleMSID	Analyte	Sample Activity	MS Activity	Std Added	MS Recovery
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Sample Name: F0D080501-001
Sample Type: Sample
: LXNMR1AC
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099259
Analysis ID: 397910

Tracer Name: Rad10-0001_U232
Tracer Activity: 77.48 DPM/mL x (Vol.)0.10 mL = 7.75 DPM
Tracer Ref. Date: 4/7/2003 12:00:31PM

Sample

Spectrum #1 Analysis #1
Sample Weight : 1.0013g
Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

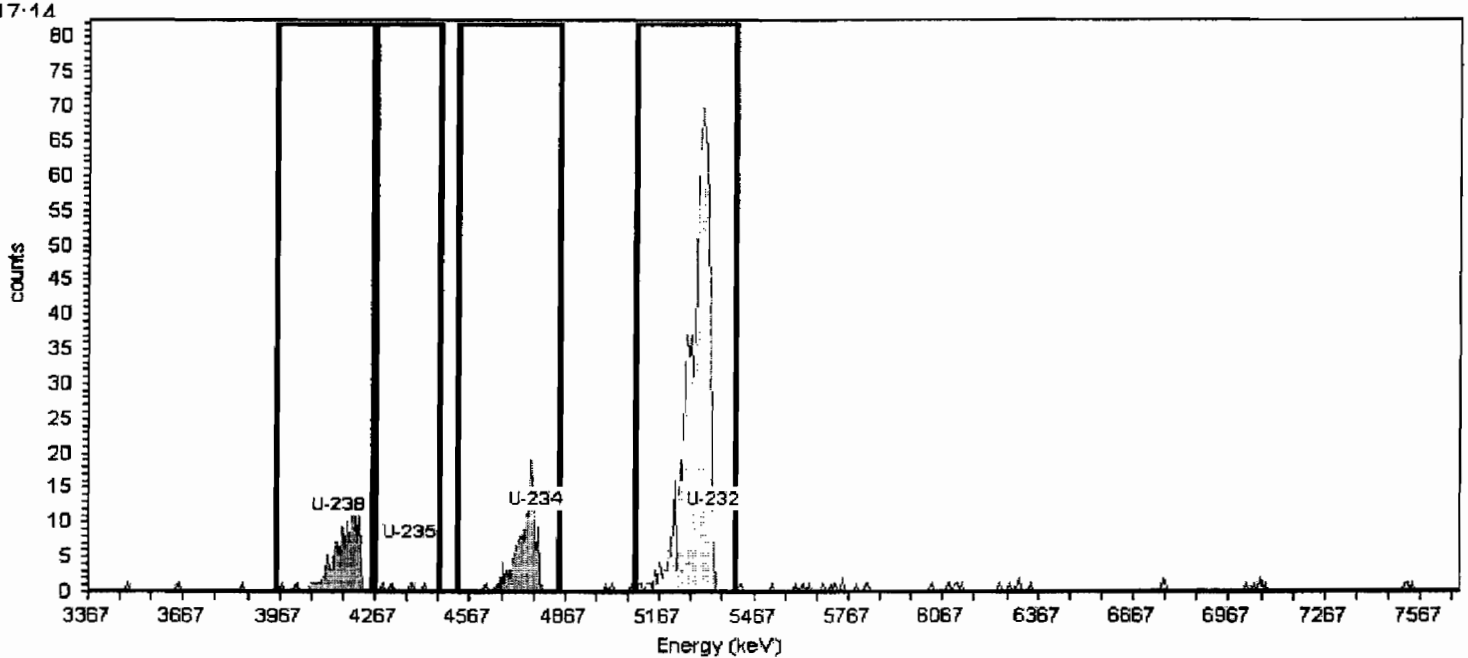
Tracer

Tracer Nuclide: U-232
Tracer Recovery: 84.94%

Acquisition

Detector: AV57
Serial Number: 48-158EE3
Acquisition Start Date: 4/20/2010 5:15:06PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:19PM
Background Info: Sample: AV57; Det: AV57; Spectrum #1; Mar-26-2010

Calibration Name: March2010_AV57
Calibration Date: 4/1/2010 12:16:29PM
Gain = 7.4651 keV / Ch
Energy Cal: Offset = 3,360.21 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 26.83% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4151.511	3949.953	4256.023	88.032	100.0	119	0.0000	119.00	5.872E-001	5.383E-002	5.92E-002	7.410E-003	1.335E-002
U-235	4375.464	4263.488	4465.046	105.707	80.2	5	0.4167	4.58	2.820E-002	1.400E-002	1.40E-002	9.240E-003	3.220E-002
U-234	4771.115	4524.767	4845.766	60.993	99.8	116	1.6667	114.33	5.654E-001	5.342E-002	5.85E-002	1.485E-002	3.838E-002
U-232	5338.463	5092.115	5405.649	69.034	100.1	661	0.4167	660.58	2.961E+000	1.268E-001	1.78E-001	7.405E-003	2.762E-002

Sample Name: F0D080501-002

SampleType: Sample

: LXNMV1AC

Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099259

AnalysisID: 397911

Tracer Name: Rad10-0001_U232

Tracer Activity: 77.48 DPM/mL x (Vol.)0.10 mL = 7.75 DPM

Tracer Ref. Date: 4/7/2003 12:00:31PM

Detector: AV58

Serial Number: 48-158EE4

Acquisition Start Date: 4/20/2010 5:15:08PM

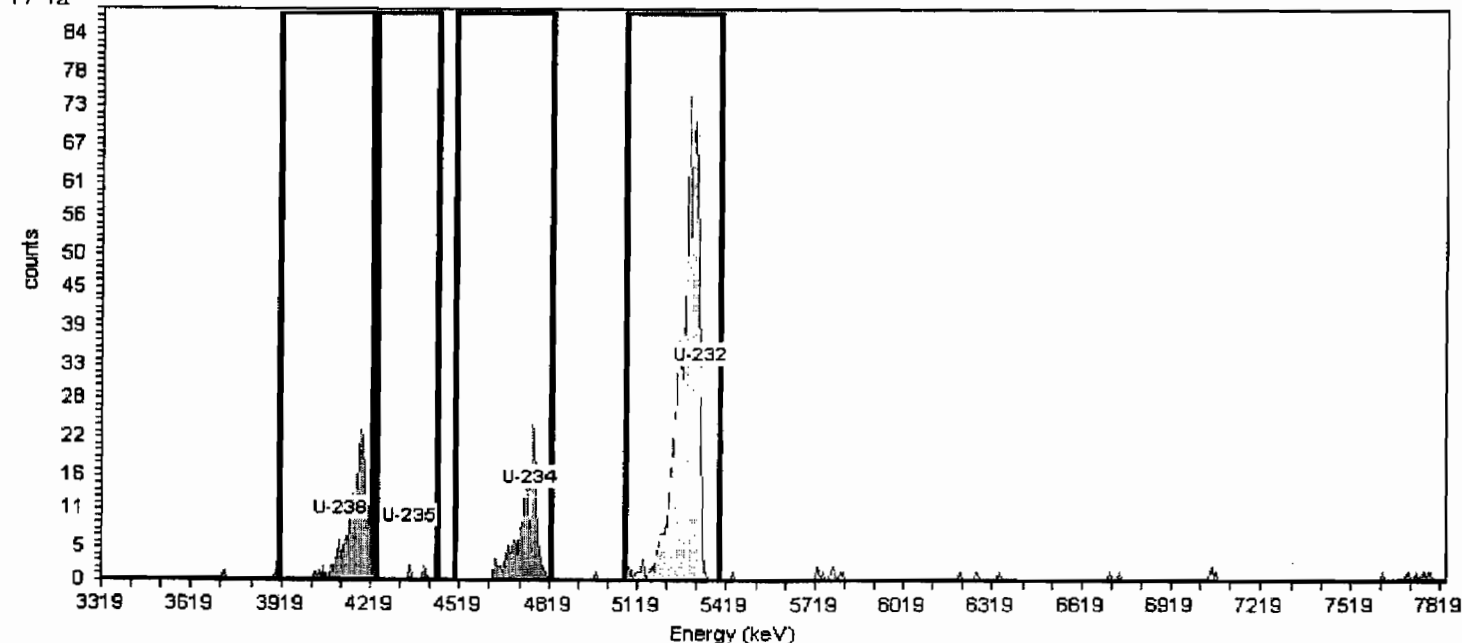
Live Time: 400.00 min.

Real Time: 400.01 min.

Background Date: 3/26/2010 5:14:21PM

Background Info: Sample: AV58; Det: AV58; Spectrum #1; Mar-26-2010

17-14



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI

Decay Correction:

MDA Constants: $K_{\alpha} = 1.65$, $K_{\beta} = 1.65$

Nuclide Library: Uranium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	1.00 Sigma UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4118.196	3912.829	4224.682	27.830	100.0	176	1.6667	174.33	8.783E-001	6.697E-002	7.65E-002	1.513E-002	3.910E-002
U-235	4346.381	4232.289	4437.655	64.426	80.2	5	0.4167	4.58	2.879E-002	1.429E-002	1.43E-002	9.434E-003	3.288E-002
U-234	4749.508	4498.504	4825.570	63.925	99.8	160	2.5000	157.50	7.952E-001	6.406E-002	7.22E-002	1.857E-002	4.492E-002
U-232	5327.577	5076.573	5396.032	66.617	100.1	650	3.3333	646.67	2.841E+000	1.285E-001	1.75E-001	2.138E-002	5.309E-002

Sample Name: F0D080501-003
Sample Type: Sample
: LXNMW1AC
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099259
AnalysisID: 398138

Tracer Name: Rad10-0001_U232
Tracer Activity: 77.48 DPM/mL x (Vol.)0.10 mL = 7.75 DPM
Tracer Ref. Date: 4/7/2003 12:00:31PM

Sample

Spectrum #1 Analysis #1
Sample Weight: 1.0004g
Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

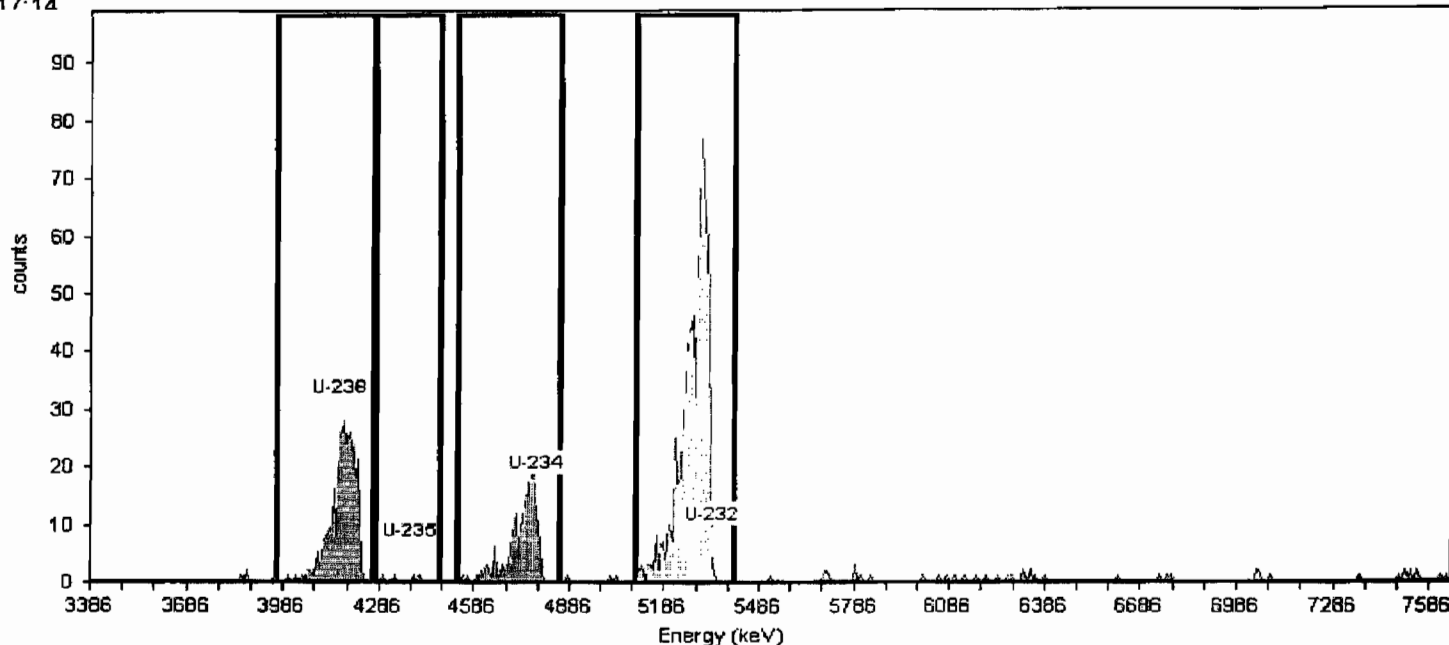
Tracer

Tracer Nuclide: U-232
Tracer Recovery: 92.42%

Acquisition

Detector: AV67
Serial Number: 48-046117
Acquisition Start Date: 4/21/2010 7:31:16AM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:32PM
Background Info: Sample: AV67; Det: AV67; Spectrum #1; Mar-26-2010

Calibration Name: March2010_AV67
Calibration Date: 3/31/2010 3:58:38PM
Gain = 7.3931 keV / Ch
Offset = 3,379.56 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 27.26% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4163.220	3963.607	4266.724	74.871	100.0	300	0.8333	299.17	1.336E+000	7.742E-002	9.56E-002	9.487E-003	2.806E-002
U-235	4385.013	4274.117	4473.729	129.053	80.2	5	0.8333	4.17	2.321E-002	1.288E-002	1.29E-002	1.183E-002	3.498E-002
U-234	4776.845	4532.874	4850.776	69.512	99.8	186	1.6667	184.33	8.252E-001	6.116E-002	7.03E-002	1.344E-002	3.475E-002
U-232	5338.719	5094.747	5405.256	80.631	100.1	732	1.6667	730.33	3.224E+000	1.208E-001	1.81E-001	1.341E-002	3.707E-002

Sample Name: F0D080501-004
Sample Type: Sample
: LXNMX1AC
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099259
AnalysisID: 398134

Tracer Name: Rad10-0001_U232
Tracer Activity: 77.48 DPM/mL x (Vol.)0.10 mL = 7.75 DPM
Tracer Ref. Date: 4/7/2003 12:00:31PM

Sample

Spectrum #1 Analysis #1
Sample Weight : 1.0032g
Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

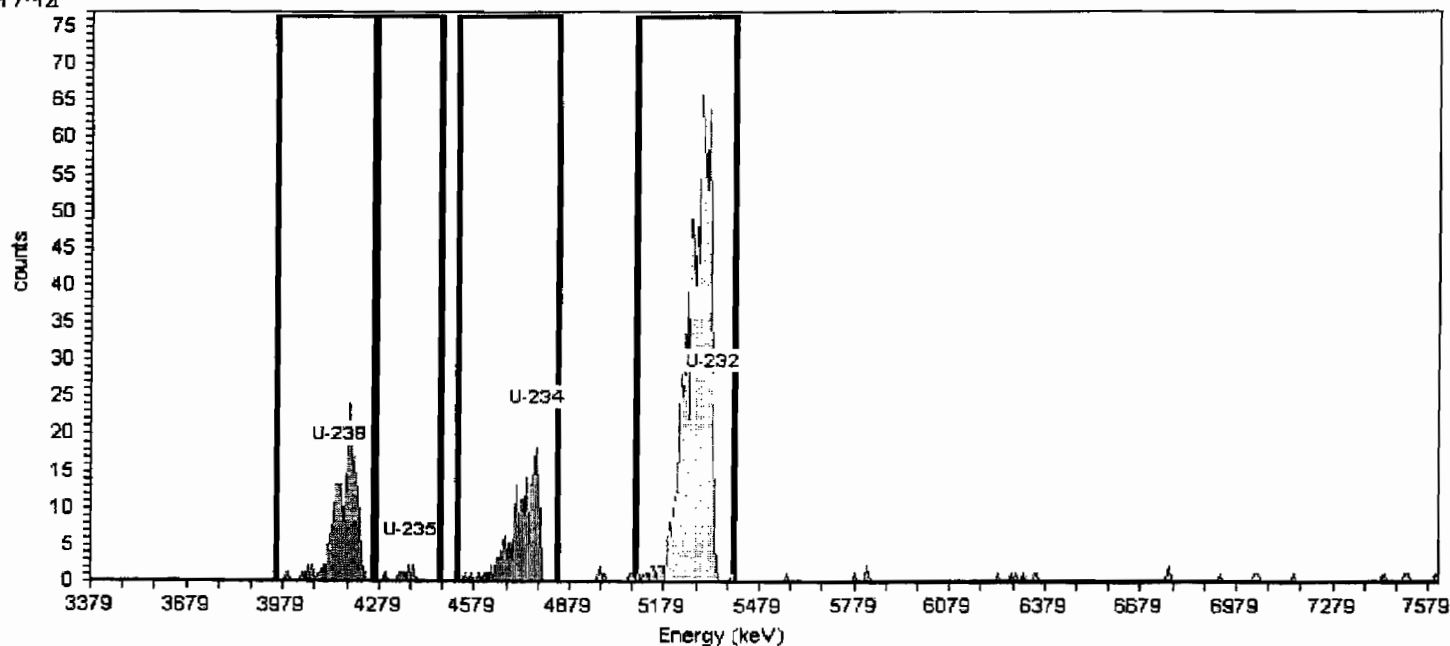
Tracer

Tracer Nuclide: U-232
Tracer Recovery: 92.25%

Acquisition

Detector: AV68
Serial Number: 48-45884
Acquisition Start Date: 4/21/2010 7:31:13AM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:33PM
Background Info: Sample: AV68; Det: AV68; Spectrum #1; Mar-26-2010
17-14

Calibration Name: March2010_AV68
Calibration Date: 3/31/2010 3:59:18PM
Gain = 7.3931 keV / Ch
Offset = 3,372.16 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 26.07% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4155.827	3956.214	4259.331	80.753	100.0	186	0.0000	186.00	8.682E-001	6.366E-002	7.34E-002	7.009E-003	1.263E-002
U-235	4377.620	4266.724	4466.336	52.479	80.2	8	0.4167	7.58	4.413E-002	1.664E-002	1.67E-002	8.739E-003	3.046E-002
U-234	4769.452	4525.481	4843.383	84.335	99.8	165	2.9167	162.08	7.581E-001	6.030E-002	6.82E-002	1.858E-002	4.394E-002
U-232	5331.326	5087.354	5397.863	85.170	100.1	700	2.9167	697.08	3.210E+000	1.235E-001	1.83E-001	1.853E-002	4.688E-002

Sample Name: F0D080501-005
SampleType: Sample
: LXNM21AC
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099259
AnalysisID: 398135

Tracer Name: Rad10-0001_U232
Tracer Activity: 77.48 DPM/mL x (Vol.)0.10 mL = 7.75 DPM
Tracer Ref. Date: 4/7/2003 12:00:31PM

Sample

Spectrum #1 Analysis #1
Sample Weight : 1.0006g
Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

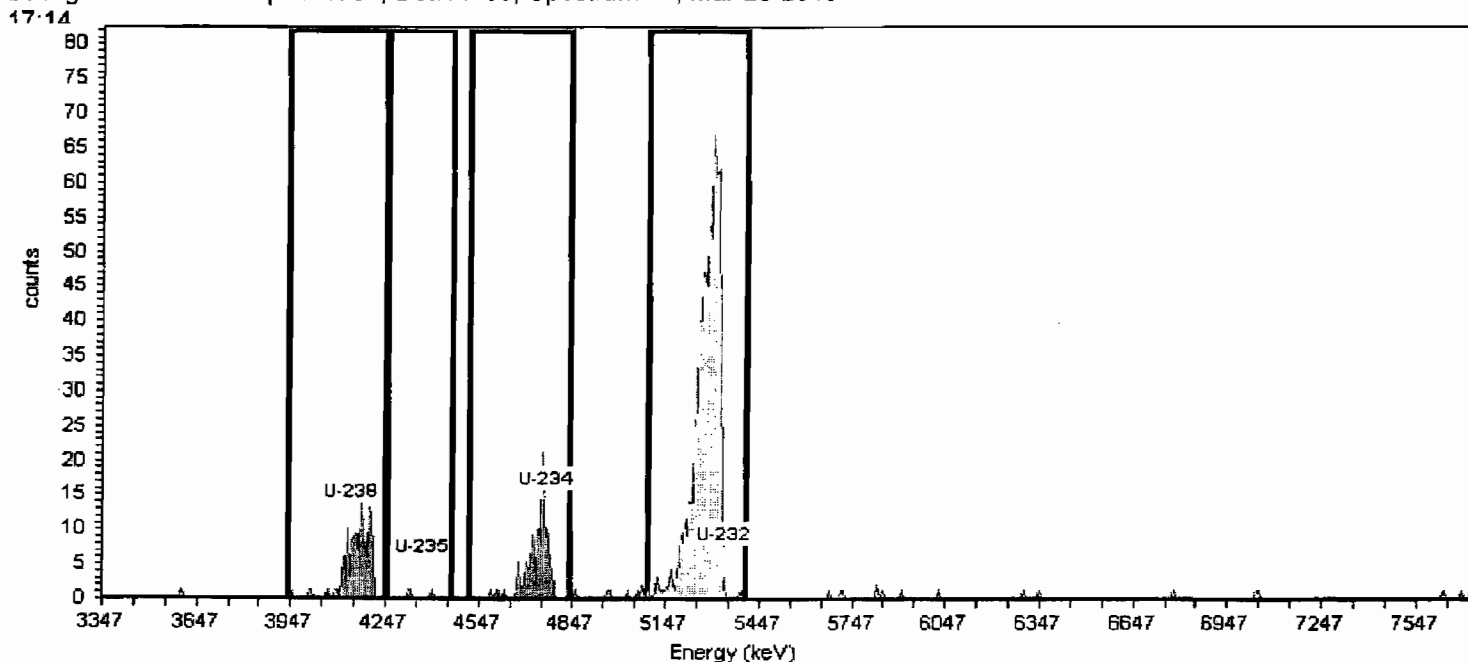
Tracer

Tracer Nuclide: U-232
Tracer Recovery: 80.52%

Acquisition

Detector: AV69
Serial Number: 49-155DD5
Acquisition Start Date: 4/21/2010 7:31:15AM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:36PM
Background Info: Sample: AV69; Det: AV69; Spectrum #1; Mar-26-2010

Calibration Name: March2010_AV69
Calibration Date: 3/31/2010 4:00:19PM
Gain = 7.5313 keV / Ch
Offset = 3,339.68 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 28.19% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

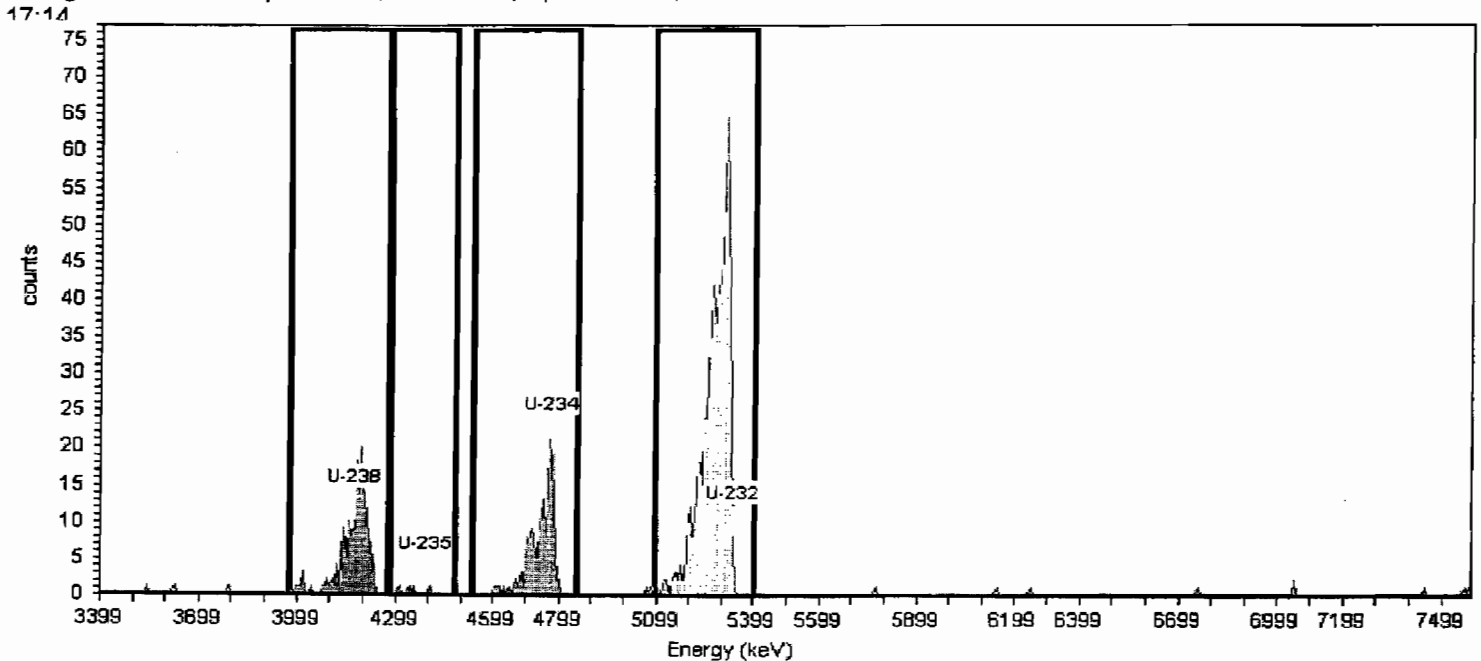
Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4137.999	3934.654	4243.437	90.534	100.0	118	0.0000	118.00	5.852E-001	5.387E-002	5.92E-002	7.447E-003	1.342E-002
U-235	4363.937	4250.968	4454.312	17.569	80.2	3	0.4167	2.58	1.597E-002	1.102E-002	1.10E-002	9.286E-003	3.236E-002
U-234	4763.095	4514.563	4838.407	56.802	99.8	106	0.4167	105.58	5.247E-001	5.120E-002	5.57E-002	7.462E-003	2.601E-002
U-232	5335.472	5086.939	5403.253	77.229	100.1	659	1.2500	657.75	2.808E+000	1.273E-001	1.74E-001	1.289E-002	3.756E-002

Sample Name: F0D080501-006
Sample Type: Sample
: LXNM41AC
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099259
Analysis ID: 398136

Tracer Name: Rad10-0001_U232
Tracer Activity: 77.48 DPM/mL x (Vol.) 0.10 mL = 7.75 DPM
Tracer Ref. Date: 4/7/2003 12:00:31PM

Detector: AV70
Serial Number: 48-158FF1
Acquisition Start Date: 4/21/2010 7:31:17AM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:37PM
Background Info: Sample: AV70; Det: AV70; Spectrum #1; Mar-26-2010



Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

General Analysis

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4168.960	3971.074	4271.568	67.472	100.0	164	1.6667	162.33	8.831E-001	6.981E-002	7.91E-002	1.634E-002	4.222E-002
U-235	4388.834	4278.897	4476.784	58.633	80.2	4	1.2500	2.75	1.865E-002	1.442E-002	1.44E-002	1.764E-002	4.805E-002
U-234	4777.279	4535.417	4850.570	70.325	99.8	145	1.2500	143.75	7.837E-001	6.576E-002	7.35E-002	1.418E-002	3.862E-002
U-232	5334.293	5092.432	5400.256	81.492	100.1	601	1.6667	599.33	2.712E+000	1.333E-001	1.75E-001	1.633E-002	4.515E-002

Sample Name: F0D080501-007
SampleType: Sample
: LXNM91AC
Sample Collection Date: 4/6/2010 12:00:00AM

Batch Name: 0099259
AnalysisID: 398137

Tracer Name: Rad10-0001_U232
Tracer Activity: 77.48 DPM/mL x (Vol.)0.10 mL = 7.75 DPM
Tracer Ref. Date: 4/7/2003 12:00:31PM

Sample

Spectrum #1 Analysis #1
Sample Weight: 1.0019g
Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

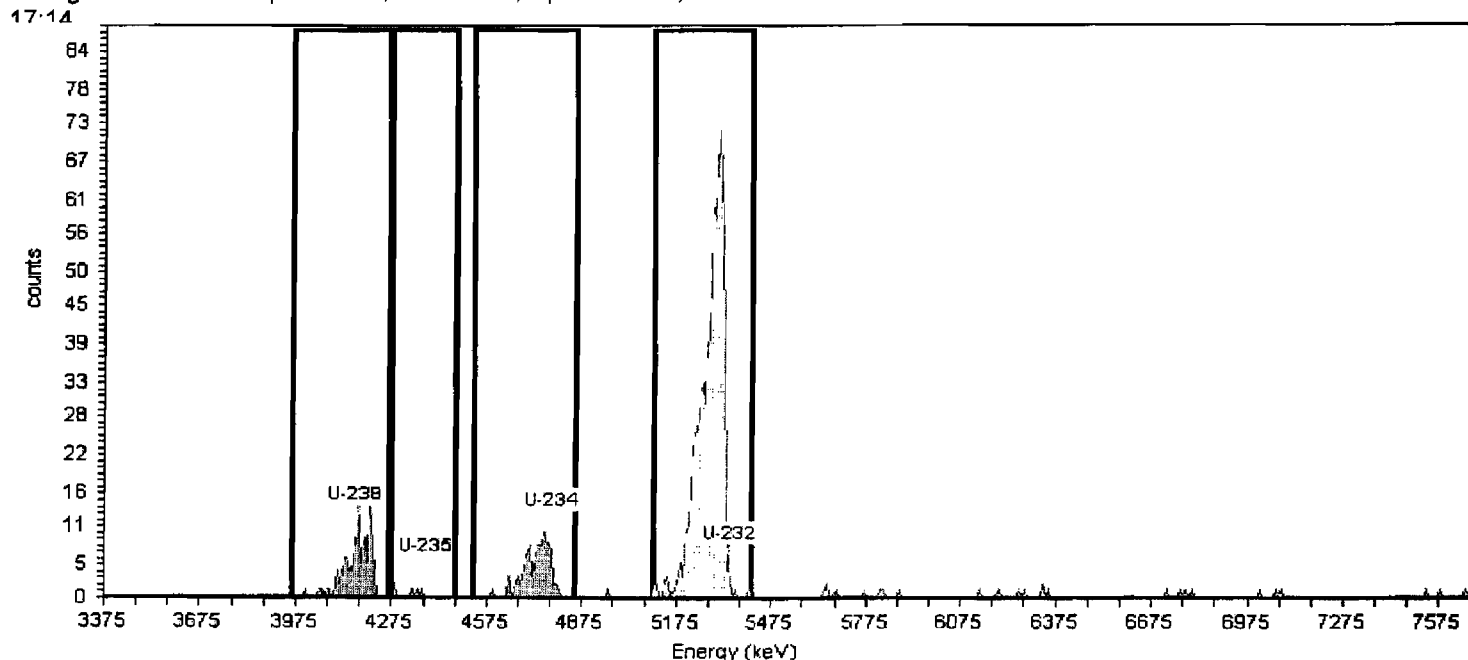
Tracer

Tracer Nuclide: U-232
Tracer Recovery: 91.16%

Acquisition

Detector: AV71
Serial Number: 48-158EE6
Acquisition Start Date: 4/21/2010 7:31:18AM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:40PM
Background Info: Sample: AV71; Det: AV71; Spectrum #1; Mar-26-2010

Calibration Name: March2010_AV71
Calibration Date: 3/31/2010 4:01:37PM
Gain = 7.4651 keV / Ch
Energy Cal: Offset = 3,367.67 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 25.98% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-234	4778.580	4532.232	4853.231	95.390	99.8	108	2.0833	105.92	5.037E-001	4.961E-002	5.39E-002	1.597E-002	3.975E-002
U-232	5345.928	5099.580	5413.114	69.886	100.1	689	2.5000	686.50	3.175E+000	1.246E-001	1.82E-001	1.744E-002	4.515E-002
U-238	4158.977	3957.418	4263.488	81.008	100.0	112	0.0000	112.00	5.315E-001	5.022E-002	5.50E-002	7.126E-003	1.284E-002
U-235	4382.930	4270.953	4472.511	12.716	80.2	5	0.4167	4.58	2.712E-002	1.346E-002	1.35E-002	8.866E-003	3.097E-002

Sample Name: F0D090000-259B

Sample Type: Blank

: LXQRE1AA

Sample Collection Date: 3/26/2010 12:00:00AM

Batch Name: 0099259

AnalysisID: 397900

Sample

Spectrum #1 Analysis #1

Sample Weight : 2.0000g

Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

Tracer

Tracer Name: Rad10-0001_U232

Tracer Activity: 77.48 DPM/mL x (Vol.)0.10 mL = 7.75 DPM

Tracer Ref. Date: 4/7/2003 12:00:31PM

Tracer Nuclide: U-232

Tracer Recovery: 88.90%

Acquisition

Detector: AV94

Serial Number: 46-032EE6

Acquisition Start Date: 4/20/2010 4:17:38PM

Live Time: 400.00 min.

Real Time: 400.01 min.

Background Date: 3/26/2010 5:14:15PM

Background Info: Sample: AV94; Det: AV94; Spectrum #1; Mar-26-2010

Calibration Name: March2010_AV94

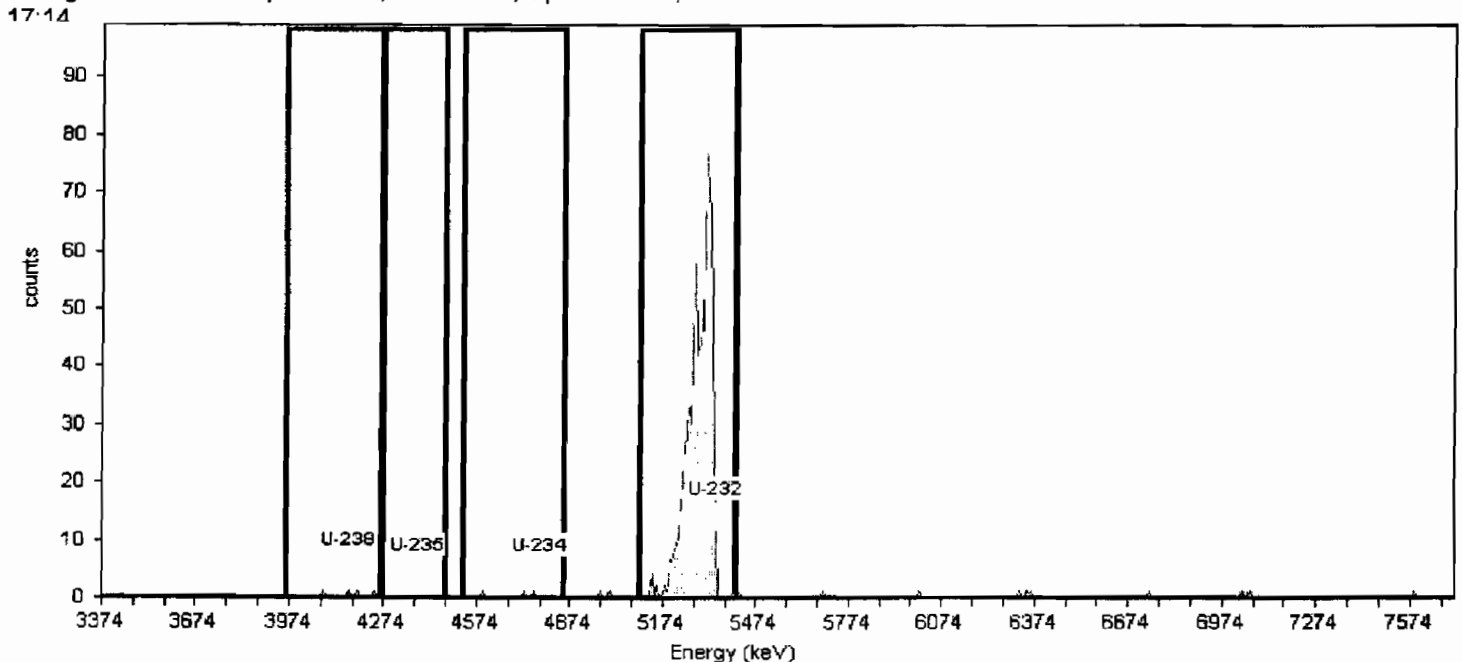
Calibration Date: 4/1/2010 4:50:05AM

Gain = 7.4575 keV / Ch

Energy Cal: Offset = 3,366.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.14% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI

Decay Correction: 4/20/2010 4:11:11PM

MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Uranium

MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	1.00 Sigma		Critical Level pCi/g	MDA pCi/g
										UncCount pCi/g	TPU pCi/g		
U-238	4157.453	3956.099	4261.858	10.241	100.0	4	0.0000	4.00	9.334E-003	4.667E-003	4.68E-003	3.504E-003	6.315E-003
U-235	4381.179	4269.316	4470.670	.000	80.2	0	0.4167	-0.42	-1.212E-003	1.212E-003	1.21E-003	4.369E-003	1.523E-002
U-234	4776.430	4530.331	4851.005	182.549	99.8	3	0.4167	2.58	6.041E-003	4.166E-003	4.17E-003	3.511E-003	1.224E-002
U-232	5343.203	5097.104	5410.321	83.774	100.1	701	1.6667	699.33	1.551E+000	6.177E-002	8.98E-002	7.003E-003	1.937E-002

Sample Name: F0D090000-259C
SampleType: Control
: LXQRE1AC
Sample Collection Date: 3/26/2010 12:00:00AM

Batch Name: 0099259
AnalysisID: 397902

Tracer Name: Rad10-0001_U232
Tracer Activity: 77.48 DPM/mL x (Vol.)0.10 mL = 7.75 DPM
Tracer Ref. Date: 4/7/2003 12:00:31PM

Sample

Spectrum #1 Analysis #1
Sample Weight : 2.0000g
Aliquot: N/A Aliquot Fraction: N/A

Batch

Analyst: 60040

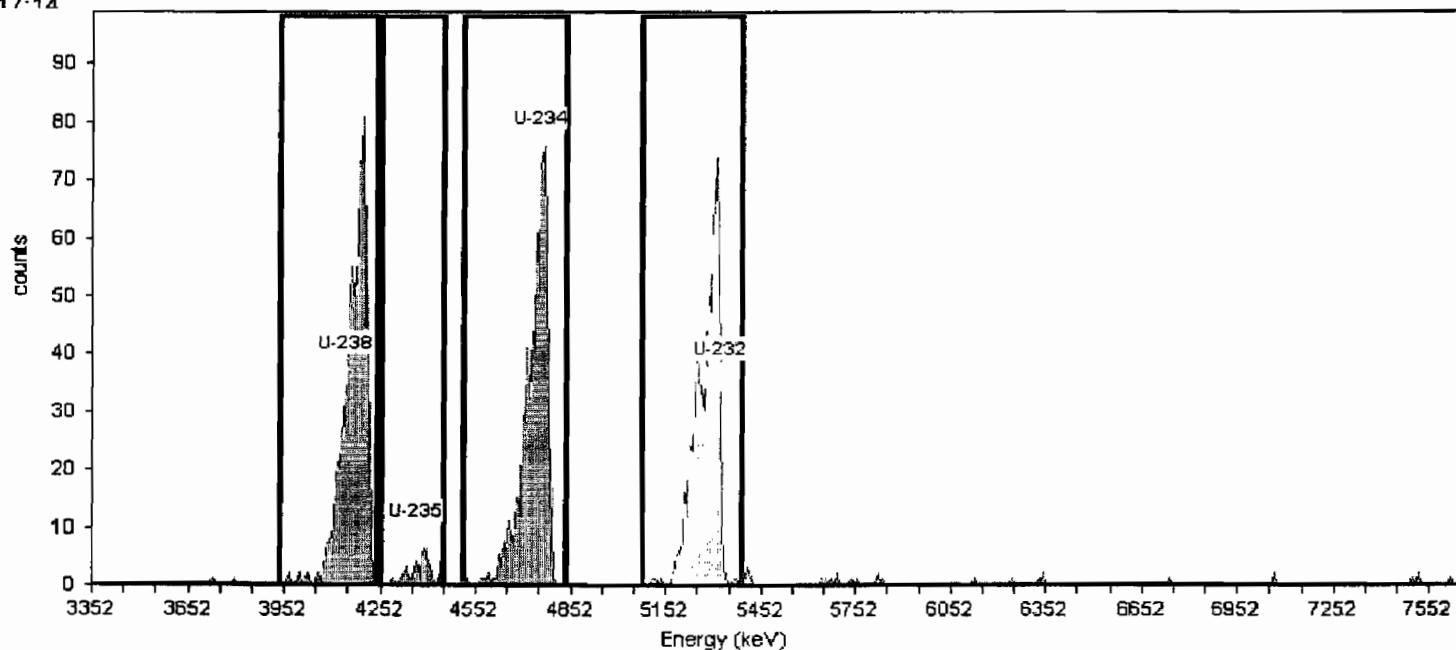
Tracer

Tracer Nuclide: U-232
Tracer Recovery: 80.53%

Acquisition

Detector: AV98
Serial Number: 46-033Q3
Acquisition Start Date: 4/20/2010 4:17:41PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 3/26/2010 5:14:22PM
Background Info: Sample: AV98; Det: AV98; Spectrum #1; Mar-26-2010
17:14

Calibration Name: March2010_AV98
Calibration Date: 3/31/2010 4:54:52PM
Gain = 7.4651 keV / Ch
Offset = 3,345.28 keV
Energy Cal: Quadratic = 0.0000 keV / Ch²
Efficiency: 27.76% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 4/20/2010 4:11:14PM
MDA Constants: $K\alpha = 1.65$, $K\beta = 1.65$

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity pCi/g	UncCount pCi/g	1.00 Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4136.581	3935.023	4241.093	53.809	100.0	720	0.0000	720.00	1.813E+000	6.758E-002	1.02E-001	3.782E-003	6.815E-003
U-235	4360.534	4248.558	4450.116	48.591	80.2	40	0.4167	39.58	1.243E-001	1.990E-002	2.06E-002	4.716E-003	1.644E-002
U-234	4756.185	4509.836	4830.836	71.731	99.8	674	0.8333	673.17	1.699E+000	6.553E-002	9.69E-002	5.359E-003	1.585E-002
U-232	5323.533	5077.185	5390.719	88.330	100.1	648	0.0000	648.00	1.405E+000	6.406E-002	8.71E-002	3.779E-003	7.287E-003

TestAmerica

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Daily Pulsers

Detector	Date/Time	Gross Counts			P/F	FWHM (keV)			P/F	Pulser Center			P/F	Energy (keV)			P/F
		Result	Criteria			Result	Criteria			Result	Criteria			Result	Criteria		
AV1	04/20/2010 7:29	7350	7218.7	± 5%	Pass	15.0	10 - 20		Pass	224.0	± 5%		Pass	5024	5051.1	± 25%	Pass
AV3	04/20/2010 7:29	7299	7484.9	± 5%	Pass	16.8	10 - 20		Pass	228.1	± 5%		Pass	5053	5028.8	± 25%	Pass
AV3	04/20/2010 7:29	7299	7484.9	± 5%	Pass	16.8	10 - 20		Pass	228.1	± 5%		Pass	5053	5028.8	± 25%	Pass
AV4	04/20/2010 7:07	7404	7413.7	± 5%	Pass	13.5	10 - 20		Pass	224.0	± 5%		Pass	5038	5021.6	± 25%	Pass
AV6	04/20/2010 7:07	7062	7476.7	± 5%	FAIL	13.3	10 - 20		FAIL	218.9	± 5%		Pass	4988	5015.3	± 25%	Pass
AV6	04/20/2010 7:29	6978	7476.7	± 5%	FAIL	13.4	10 - 20		FAIL	218.9	± 5%		Pass	4988	5015.3	± 25%	Pass
AV7	04/20/2010 7:07	7397	7477.0	± 5%	Pass	13.8	10 - 20		Pass	227.0	± 5%		Pass	5050	5021.9	± 25%	Pass
AV8	04/20/2010 7:07	7393	7327.4	± 5%	Pass	13.9	10 - 20		Pass	222.0	± 5%		Pass	5021	5044.6	± 25%	Pass
AV9	04/20/2010 7:07	7742	7519.3	± 5%	Pass	14.9	10 - 20		Pass	222.0	± 5%		Pass	5014	5043.3	± 25%	Pass
AV102	04/20/2010 7:07	7607	7634.5	± 5%	Pass	13.6	10 - 20		Pass	223.0	± 5%		Pass	5038	5040.3	± 25%	Pass
AV109	04/20/2010 7:07	7626	7639.8	± 5%	Pass	14.2	10 - 20		Pass	220.1	± 5%		Pass	5007	5011.7	± 25%	Pass
AV108	04/20/2010 7:07	7633	7536.6	± 5%	Pass	13.4	10 - 20		Pass	222.0	± 5%		Pass	5029	5029.7	± 25%	Pass
AV107	04/20/2010 7:07	7632	7652.4	± 5%	Pass	14.0	10 - 20		Pass	221.9	± 5%		Pass	5009	5037.8	± 25%	Pass
AV106	04/20/2010 7:07	7598	7625.3	± 5%	Pass	13.5	10 - 20		Pass	223.0	± 5%		Pass	5029	5031.6	± 25%	Pass
AV105	04/20/2010 7:07	7598	7627.3	± 5%	Pass	14.0	10 - 20		Pass	219.1	± 5%		Pass	5007	5019.3	± 25%	Pass
AV103	04/20/2010 7:07	7603	7630.0	± 5%	Pass	14.6	10 - 20		Pass	222.1	± 5%		Pass	5029	5036.8	± 25%	Pass
AV101	04/20/2010 7:29	7091	7639.5	± 5%	FAIL	13.2	10 - 20		FAIL	223.1	± 5%		Pass	5026	5045.2	± 25%	Pass
AV101	04/20/2010 7:07	7232	7639.5	± 5%	FAIL	13.1	10 - 20		FAIL	223.1	± 5%		Pass	5026	5045.2	± 25%	Pass
AV100	04/20/2010 7:07	7612	7639.6	± 5%	Pass	13.7	10 - 20		Pass	221.0	± 5%		Pass	5015	5029.9	± 25%	Pass
AV10	04/20/2010 7:07	7565	7749.6	± 5%	Pass	12.5	10 - 20		Pass	221.0	± 5%		Pass	5018	5030.5	± 25%	Pass
AV104	04/20/2010 7:07	7602	7632.0	± 5%	Pass	13.4	10 - 20		Pass	219.0	± 5%		Pass	5003	5029.9	± 25%	Pass
AV112	04/20/2010 7:29	7505	7642.2	± 5%	Pass	23.0	10 - 20		Pass	221.1	± 5%		Pass	5022	5022.7	± 25%	Pass
AV119	04/20/2010 7:29	7587	7699.0	± 5%	Pass	14.2	10 - 20		Pass	235.0	± 5%		FAIL	5110	5022.6	± 25%	Pass
AV119	04/20/2010 7:08	7662	7699.0	± 5%	Pass	13.7	10 - 20		Pass	236.0	± 5%		FAIL	5117	5022.6	± 25%	Pass
AV118	04/20/2010 7:08	7665	7701.5	± 5%	Pass	13.4	10 - 20		Pass	223.0	± 5%		Pass	5021	5037.1	± 25%	Pass
AV117	04/20/2010 7:08	7666	7664.0	± 5%	Pass	14.0	10 - 20		Pass	223.1	± 5%		Pass	5030	5035.4	± 25%	Pass
AV116	04/20/2010 7:08	7670	7703.0	± 5%	Pass	13.9	10 - 20		Pass	221.0	± 5%		Pass	5010	5019.2	± 25%	Pass
AV115	04/20/2010 7:08	7673	7681.0	± 5%	Pass	13.4	10 - 20		Pass	223.0	± 5%		Pass	5031	5037.7	± 25%	Pass
AV114	04/20/2010 7:08	7615	7635.0	± 5%	Pass	13.7	10 - 20		Pass	221.9	± 5%		Pass	5020	5038.3	± 25%	Pass
AV112	04/20/2010 7:08	7620	7642.2	± 5%	Pass	24.0	10 - 20		FAIL	221.1	± 5%		Pass	5021	5022.7	± 25%	Pass
AV111	04/20/2010 7:08	7625	7634.5	± 5%	Pass	13.7	10 - 20		Pass	221.9	± 5%		Pass	5022	5037.7	± 25%	Pass
AV110	04/20/2010 7:08	7621	7631.8	± 5%	Pass	15.0	10 - 20		Pass	220.9	± 5%		Pass	5015	5060.0	± 25%	Pass

Detector	Date/Time	Gross Counts		FWHM (keV)		Pulser Center		Energy (keV)	
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria
AV111	04/20/2010 7:29	7605	7666.2 \pm 5%	Pass	24.4	10-20	FAIL	5034	5022.1 \pm 25%
AV112	04/20/2010 7:07	7734	7666.2 \pm 5%	Pass	24.6	10-20	FAIL	5034	5022.1 \pm 25%
AV113	04/20/2010 7:08	7619	7637.3 \pm 5%	Pass	13.4	10-20	Pass	5009	5030.5 \pm 25%
AV12	04/20/2010 7:07	7729	7588.7 \pm 5%	Pass	15.6	10-20	Pass	5006	5058.4 \pm 25%
AV120	04/20/2010 7:08	7659	7696.0 \pm 5%	Pass	13.9	10-20	Pass	5004	5022.6 \pm 25%
AV121	04/20/2010 7:29	7581	7692.5 \pm 5%	Pass	14.6	10-20	Pass	5036	5037.8 \pm 25%
AV121	04/20/2010 7:29	7581	7692.5 \pm 5%	Pass	14.6	10-20	Pass	5036	5037.8 \pm 25%
AV13	04/20/2010 7:07	7728	7584.6 \pm 5%	Pass	14.8	10-20	Pass	5005	5044.1 \pm 25%
AV14	04/20/2010 7:07	7699	7638.3 \pm 5%	Pass	15.5	10-20	Pass	5020	5037.2 \pm 25%
AV15	04/20/2010 7:07	7696	7770.5 \pm 5%	Pass	16.0	10-20	Pass	5041	5036.6 \pm 25%
AV16	04/20/2010 7:07	7721	7456.0 \pm 5%	Pass	14.8	10-20	Pass	5028	5036.2 \pm 25%
AV17	04/20/2010 7:07	7499	7619.1 \pm 5%	Pass	12.7	10-20	Pass	5031	5038.3 \pm 25%
AV18	04/20/2010 7:07	7260	7714.5 \pm 5%	FAIL	13.2	10-20	Pass	5037	5036.4 \pm 25%
AV18	04/20/2010 7:29	7204	7714.5 \pm 5%	FAIL	13.1	10-20	Pass	5036	5036.4 \pm 25%
AV19	04/20/2010 7:07	7643	7269.8 \pm 5%	FAIL	17.7	10-20	Pass	5048	5041.9 \pm 25%
AV19	04/20/2010 7:29	7618	7269.8 \pm 5%	Pass	18.4	10-20	Pass	5048	5041.9 \pm 25%
AV20	04/20/2010 7:07	7695	7503.6 \pm 5%	Pass	14.0	10-20	Pass	5017	5029.9 \pm 25%
AV21	04/20/2010 7:07	7661	7550.9 \pm 5%	Pass	16.3	10-20	Pass	5025	5029.6 \pm 25%
AV22	04/20/2010 7:07	7687	7691.4 \pm 5%	Pass	28.5	10-20	FAIL	5026	5022.4 \pm 25%
AV22	04/20/2010 7:29	7613	7691.4 \pm 5%	Pass	27.3	10-20	FAIL	5026	5022.4 \pm 25%
AV23	04/20/2010 7:07	7673	7665.3 \pm 5%	Pass	15.7	10-20	Pass	5014	5057.0 \pm 25%
AV24	04/20/2010 7:07	7679	7354.0 \pm 5%	Pass	14.3	10-20	Pass	4991	5036.4 \pm 25%
AV51	04/20/2010 7:07	7359	7070.5 \pm 5%	Pass	13.5	10-20	Pass	5019	5007.6 \pm 25%
AV52	04/20/2010 7:07	7355	7156.4 \pm 5%	Pass	14.3	10-20	Pass	5028	5022.4 \pm 25%
AV53	04/20/2010 7:07	7349	7144.1 \pm 5%	Pass	14.7	10-20	Pass	5022	5007.8 \pm 25%
AV54	04/20/2010 7:07	7344	7313.1 \pm 5%	Pass	14.9	10-20	Pass	5065	5029.5 \pm 25%
AV55	04/20/2010 7:07	7296	7132.9 \pm 5%	Pass	17.0	10-20	Pass	5022	5029.7 \pm 25%
AV57	04/20/2010 7:07	7343	7309.5 \pm 5%	Pass	14.7	10-20	Pass	5010	5000.6 \pm 25%
AV58	04/20/2010 7:07	7337	7249.2 \pm 5%	Pass	15.3	10-20	Pass	5039	5008.0 \pm 25%
AV60	04/20/2010 7:08	7239	7019.7 \pm 5%	Pass	18.1	10-20	Pass	5035	5007.5 \pm 25%
AV61	04/20/2010 7:08	7224	7078.3 \pm 5%	Pass	17.2	10-20	Pass	5031	5022.2 \pm 25%
AV63	04/20/2010 7:08	7232	7120.8 \pm 5%	Pass	19.3	10-20	Pass	5024	5007.9 \pm 25%
AV64	04/20/2010 7:08	7226	7153.7 \pm 5%	Pass	14.7	10-20	Pass	5038	5015.3 \pm 25%
AV65	04/20/2010 7:29	7149	7233.4 \pm 5%	Pass	20.8	10-20	FAIL	5013	5015.3 \pm 25%
AV65	04/20/2010 7:08	7209	7233.4 \pm 5%	Pass	20.6	10-20	FAIL	5014	5015.3 \pm 25%
AV66	04/20/2010 7:08	7199	7165.5 \pm 5%	Pass	16.6	10-20	Pass	5032	5000.5 \pm 25%

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Tuesday, April 20, 2010

Detector	Date/Time	Gross Counts			FWHM (keV)			Pulser Center			Energy (keV)		
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F
AV67	04/20/2010 7:08	7130	7128.1 \pm 5%	Pass	12.9	10-20	Pass	219.0	224.1 \pm 5%	Pass	4999	5015.6 \pm 25%	Pass
AV68	04/20/2010 7:08	7405	7259.5 \pm 5%	Pass	18.3	10-20	Pass	221.0	222.0 \pm 5%	Pass	5006	5000.8 \pm 25%	Pass
AV69	04/20/2010 7:08	7264	7305.4 \pm 5%	Pass	11.9	10-20	Pass	225.0	222.0 \pm 5%	Pass	5034	5000.6 \pm 25%	Pass
AV70	04/20/2010 7:08	7219	7406.5 \pm 5%	Pass	13.0	10-20	Pass	219.0	222.6 \pm 5%	Pass	4997	5004.7 \pm 25%	Pass
AV71	04/20/2010 7:29	7345	7187.3 \pm 5%	Pass	14.9	10-20	Pass	216.1	225.0 \pm 5%	Pass	4981	5022.7 \pm 25%	Pass
AV72	04/20/2010 7:29	7347	7090.0 \pm 5%	Pass	13.6	10-20	Pass	225.1	223.9 \pm 5%	Pass	5051	5014.6 \pm 25%	Pass
AV73	04/20/2010 7:29	7129	7251.3 \pm 5%	Pass	12.5	10-20	Pass	223.9	225.0 \pm 5%	Pass	5037	5022.4 \pm 25%	Pass
AV73	04/20/2010 7:29	7129	7251.3 \pm 5%	Pass	12.5	10-20	Pass	223.9	225.0 \pm 5%	Pass	5037	5022.4 \pm 25%	Pass
AV74	04/20/2010 7:29	7125	7227.1 \pm 5%	Pass	13.1	10-20	Pass	224.0	224.0 \pm 5%	Pass	5043	5015.0 \pm 25%	Pass
AV74	04/20/2010 7:29	7125	7227.1 \pm 5%	Pass	13.1	10-20	Pass	224.0	224.0 \pm 5%	Pass	5043	5015.0 \pm 25%	Pass
AV75	04/20/2010 7:29	7565	7267.9 \pm 5%	Pass	13.8	10-20	Pass	221.9	224.1 \pm 5%	Pass	5009	5015.5 \pm 25%	Pass
AV76	04/20/2010 7:29	7178	7374.3 \pm 5%	Pass	13.1	10-20	Pass	222.9	224.0 \pm 5%	Pass	5022	5015.2 \pm 25%	Pass
AV76	04/20/2010 7:29	7178	7374.3 \pm 5%	Pass	13.1	10-20	Pass	222.9	224.0 \pm 5%	Pass	5022	5015.2 \pm 25%	Pass
AV77	04/20/2010 7:29	7335	7497.1 \pm 5%	Pass	13.0	10-20	Pass	223.0	224.0 \pm 5%	Pass	5030	5015.4 \pm 25%	Pass
AV77	04/20/2010 7:29	7335	7497.1 \pm 5%	Pass	13.0	10-20	Pass	223.0	224.0 \pm 5%	Pass	5030	5015.4 \pm 25%	Pass
AV78	04/20/2010 7:29	7530	7183.8 \pm 5%	Pass	15.0	10-20	Pass	225.1	223.3 \pm 5%	Pass	5035	5009.8 \pm 25%	Pass
AV79	04/20/2010 7:29	7543	7349.7 \pm 5%	Pass	13.8	10-20	Pass	222.0	222.0 \pm 5%	Pass	5008	5000.4 \pm 25%	Pass
AV79	04/20/2010 7:29	7543	7349.7 \pm 5%	Pass	13.8	10-20	Pass	222.0	222.0 \pm 5%	Pass	5008	5000.4 \pm 25%	Pass
AV80	04/20/2010 7:29	7540	7226.4 \pm 5%	Pass	13.9	10-20	Pass	224.1	224.1 \pm 5%	Pass	5022	5015.5 \pm 25%	Pass
AV80	04/20/2010 7:29	7540	7226.4 \pm 5%	Pass	13.9	10-20	Pass	224.1	224.1 \pm 5%	Pass	5022	5015.5 \pm 25%	Pass
AV82	04/20/2010 7:29	7538	7529.2 \pm 5%	Pass	13.7	10-20	Pass	225.0	224.0 \pm 5%	Pass	5021	5015.2 \pm 25%	Pass
AV82	04/20/2010 7:29	7538	7529.2 \pm 5%	Pass	13.7	10-20	Pass	225.0	224.0 \pm 5%	Pass	5021	5015.2 \pm 25%	Pass
AV83	04/20/2010 7:29	7620	7523.7 \pm 5%	Pass	13.5	10-20	Pass	223.0	222.0 \pm 5%	Pass	5019	5000.4 \pm 25%	Pass
AV84	04/20/2010 7:29	7362	7637.7 \pm 5%	Pass	12.9	10-20	Pass	224.0	223.0 \pm 5%	Pass	5031	5007.7 \pm 25%	Pass
AV84	04/20/2010 7:29	7362	7637.7 \pm 5%	Pass	12.9	10-20	Pass	224.0	223.0 \pm 5%	Pass	5031	5007.7 \pm 25%	Pass
AV85	04/20/2010 7:29	7425	7549.7 \pm 5%	Pass	13.2	10-20	Pass	222.0	223.0 \pm 5%	Pass	5019	5008.0 \pm 25%	Pass
AV85	04/20/2010 7:29	7425	7549.7 \pm 5%	Pass	13.2	10-20	Pass	222.0	223.0 \pm 5%	Pass	5019	5008.0 \pm 25%	Pass
AV86	04/20/2010 7:07	7685	7679.0 \pm 5%	Pass	14.3	10-20	Pass	223.9	223.9 \pm 5%	Pass	5023	5014.3 \pm 25%	Pass
AV87	04/20/2010 7:07	7673	7512.4 \pm 5%	Pass	15.2	10-20	Pass	223.0	223.0 \pm 5%	Pass	5023	5007.7 \pm 25%	Pass
AV88	04/20/2010 7:07	7679	7716.1 \pm 5%	Pass	13.8	10-20	Pass	223.9	224.0 \pm 5%	Pass	5024	5015.4 \pm 25%	Pass
AV89	04/20/2010 7:07	7678	7553.8 \pm 5%	Pass	13.6	10-20	Pass	220.0	222.6 \pm 5%	Pass	4998	5004.7 \pm 25%	Pass
AV90	04/20/2010 7:07	7675	7474.4 \pm 5%	Pass	13.8	10-20	Pass	224.0	224.1 \pm 5%	Pass	5024	5015.6 \pm 25%	Pass
AV92	04/20/2010 7:07	7459	7358.9 \pm 5%	Pass	12.8	10-20	Pass	222.0	223.9 \pm 5%	Pass	5023	5014.6 \pm 25%	Pass
AV93	04/20/2010 7:07	7451	7393.5 \pm 5%	Pass	12.9	10-20	Pass	223.0	223.0 \pm 5%	Pass	5030	5008.3 \pm 25%	Pass
AV94	04/20/2010 7:07	7441	7477.9 \pm 5%	Pass	12.9	10-20	Pass	222.0	222.0 \pm 5%	Pass	5023	5000.5 \pm 25%	Pass
AV95	04/20/2010 7:07	7288	7432.4 \pm 5%	Pass	13.2	10-20	Pass	223.1	222.2 \pm 5%	Pass	5018	5001.9 \pm 25%	Pass

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Tuesday, April 20, 2010

Detector	Date/Time	Gross Counts			FWHM (keV)			Pulser Center			Energy (keV)		
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F
AV96	04/20/2010 7:07	7619	7654.3 \pm 5%	Pass	20.8	10 - 20	FAIL	221.0	222.6 \pm 5%	Pass	5036	5005.3 \pm 25%	Pass
AV96	04/20/2010 7:29	7513	7654.3 \pm 5%	Pass	21.4	10 - 20	FAIL	221.0	222.6 \pm 5%	Pass	5036	5005.3 \pm 25%	Pass
AV97	04/20/2010 7:07	7632	7649.9 \pm 5%	Pass	14.3	10 - 20	Pass	222.9	223.8 \pm 5%	Pass	5024	5014.0 \pm 25%	Pass
AV98	04/20/2010 7:07	7310	7582.0 \pm 5%	Pass	13.3	10 - 20	Pass	223.9	223.0 \pm 5%	Pass	5017	5007.6 \pm 25%	Pass
AV99	04/20/2010 7:07	7609	7646.9 \pm 5%	Pass	15.2	10 - 20	Pass	224.0	222.0 \pm 5%	Pass	5032	5022.4 \pm 25%	Pass

AlphaVision Daily Pulser Check for: 4/21/2010

Detector	Date/Time	Gross Counts		P/F	FWHM (keV)		P/F	Pulser Center		P/F	Energy (keV)		P/F
		Result	Criteria		Result	Criteria		Result	Criteria		Result	Criteria	
AV1	04/21/2010 6:00	7396	7218.7 \pm 5%	Pass	15.2	10-20	Pass	224.1	229.0 \pm 5%	Pass	5025	5051.1 \pm 25%	Pass
AV3	04/21/2010 6:00	7371	7484.9 \pm 5%	Pass	16.8	10-20	Pass	228.0	225.9 \pm 5%	Pass	5053	5028.8 \pm 25%	Pass
AV4	04/21/2010 5:59	7307	7413.7 \pm 5%	Pass	13.7	10-20	Pass	224.0	224.9 \pm 5%	Pass	5037	5021.6 \pm 25%	Pass
AV6	04/21/2010 5:59	7423	7476.7 \pm 5%	Pass	13.9	10-20	Pass	219.1	224.0 \pm 5%	Pass	4989	5015.3 \pm 25%	Pass
AV7	04/21/2010 5:59	7416	7477.0 \pm 5%	Pass	14.0	10-20	Pass	227.0	224.9 \pm 5%	Pass	5050	5021.9 \pm 25%	Pass
AV8	04/21/2010 5:59	7415	7327.4 \pm 5%	Pass	13.9	10-20	Pass	222.0	228.0 \pm 5%	Pass	5021	5044.6 \pm 25%	Pass
AV9	04/21/2010 6:00	7739	7519.3 \pm 5%	Pass	16.2	10-20	Pass	221.9	227.9 \pm 5%	Pass	5013	5043.3 \pm 25%	Pass
AV104	04/21/2010 6:23	7595	7632.0 \pm 5%	Pass	13.8	10-20	Pass	218.9	223.0 \pm 5%	Pass	5002	5029.9 \pm 25%	Pass
AV109	04/21/2010 6:00	7634	7639.8 \pm 5%	Pass	14.5	10-20	Pass	220.1	220.5 \pm 5%	Pass	5007	5011.7 \pm 25%	Pass
AV108	04/21/2010 5:59	7643	7536.6 \pm 5%	Pass	13.7	10-20	Pass	222.1	223.0 \pm 5%	Pass	5029	5029.7 \pm 25%	Pass
AV107	04/21/2010 5:59	7640	7632.4 \pm 5%	Pass	14.9	10-20	Pass	223.1	224.1 \pm 5%	Pass	5018	5037.8 \pm 25%	Pass
AV105	04/21/2010 6:23	7593	7627.3 \pm 5%	Pass	13.5	10-20	Pass	219.0	221.6 \pm 5%	Pass	5006	5019.3 \pm 25%	Pass
AV103	04/21/2010 6:23	7597	7630.0 \pm 5%	Pass	14.0	10-20	Pass	222.0	223.9 \pm 5%	Pass	5028	5036.8 \pm 25%	Pass
AV102	04/21/2010 6:23	7600	7634.5 \pm 5%	Pass	14.1	10-20	Pass	223.0	224.4 \pm 5%	Pass	5037	5040.3 \pm 25%	Pass
AV101	04/21/2010 6:23	7603	7619.5 \pm 5%	Pass	13.4	10-20	Pass	223.0	225.0 \pm 5%	Pass	5026	5043.2 \pm 25%	Pass
AV100	04/21/2010 6:23	7605	7639.6 \pm 5%	Pass	13.9	10-20	Pass	221.0	223.0 \pm 5%	Pass	5015	5029.9 \pm 25%	Pass
AV10	04/21/2010 6:00	7613	7749.6 \pm 5%	Pass	12.5	10-20	Pass	221.0	226.1 \pm 5%	Pass	5017	5030.3 \pm 25%	Pass
AV106	04/21/2010 5:59	7517	7625.3 \pm 5%	Pass	13.7	10-20	Pass	223.0	223.2 \pm 5%	Pass	5028	5031.6 \pm 25%	Pass
AV112	04/21/2010 6:23	7512	7642.2 \pm 5%	Pass	23.4	10-20	FAIL	221.0	222.0 \pm 5%	Pass	5020	5022.7 \pm 25%	Pass
AV119	04/21/2010 6:23	7585	7699.0 \pm 5%	Pass	14.7	10-20	Pass	235.1	222.0 \pm 5%	FAIL	5110	5022.6 \pm 25%	Pass
AV119	04/21/2010 6:00	7689	7699.0 \pm 5%	Pass	14.0	10-20	Pass	236.0	222.0 \pm 5%	FAIL	5117	5022.6 \pm 25%	Pass
AV118	04/21/2010 6:00	7693	7701.5 \pm 5%	Pass	13.5	10-20	Pass	223.0	224.0 \pm 5%	Pass	5021	5037.1 \pm 25%	Pass
AV117	04/21/2010 6:00	7696	7664.0 \pm 5%	Pass	13.6	10-20	Pass	223.0	223.7 \pm 5%	Pass	5030	5035.4 \pm 25%	Pass
AV116	04/21/2010 6:00	7697	7703.0 \pm 5%	Pass	13.7	10-20	Pass	221.0	221.5 \pm 5%	Pass	5010	5019.2 \pm 25%	Pass
AV115	04/21/2010 6:23	7595	7681.0 \pm 5%	Pass	13.3	10-20	Pass	223.0	224.0 \pm 5%	Pass	5031	5037.7 \pm 25%	Pass
AV115	04/21/2010 6:00	7699	7681.0 \pm 5%	Pass	13.7	10-20	Pass	224.1	224.0 \pm 5%	Pass	5040	5037.7 \pm 25%	Pass
AV114	04/21/2010 6:00	7627	7635.0 \pm 5%	Pass	13.3	10-20	Pass	222.0	224.1 \pm 5%	Pass	5021	5038.3 \pm 25%	Pass
AV112	04/21/2010 6:00	7630	7642.2 \pm 5%	Pass	23.4	10-20	FAIL	221.0	222.0 \pm 5%	Pass	5020	5022.7 \pm 25%	Pass
AV111	04/21/2010 6:00	7636	7634.5 \pm 5%	Pass	13.6	10-20	Pass	221.9	224.0 \pm 5%	Pass	5022	5037.7 \pm 25%	Pass
AV110	04/21/2010 6:00	7626	7631.8 \pm 5%	Pass	15.9	10-20	Pass	220.9	227.0 \pm 5%	Pass	5014	5060.0 \pm 25%	Pass
AV110	04/21/2010 6:22	7620	7666.2 \pm 5%	Pass	22.7	10-20	FAIL	222.0	225.0 \pm 5%	Pass	5033	5022.1 \pm 25%	Pass
AV115	04/21/2010 6:00	7752	7666.2 \pm 5%	Pass	23.1	10-20	FAIL	222.0	225.0 \pm 5%	Pass	5034	5022.1 \pm 25%	Pass

Detector	Date/Time	Gross Counts		FWHM (keV)		Pulser Center		Energy (keV)	
		Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria
AV113	04/21/2010 6:00	7629	7637.3 +/- 5%	Pass	13.7	10-20	Pass	5009	5030.5 +/- 25%
AV122	04/21/2010 6:00	7655	7676.6 +/- 5%	Pass	13.5	10-20	Pass	5006	5021.8 +/- 25%
AV12	04/21/2010 6:00	7732	7588.7 +/- 5%	Pass	16.1	10-20	Pass	5006	5058.4 +/- 25%
AV120	04/21/2010 6:00	7685	7696.0 +/- 5%	Pass	14.0	10-20	Pass	5004	5022.6 +/- 25%
AV121	04/21/2010 6:00	7685	7692.5 +/- 5%	Pass	13.7	10-20	Pass	5036	5037.8 +/- 25%
AV13	04/21/2010 6:00	7744	7584.6 +/- 5%	Pass	14.5	10-20	Pass	5014	5044.1 +/- 25%
AV14	04/21/2010 6:00	7725	7638.3 +/- 5%	Pass	15.3	10-20	Pass	5029	5037.2 +/- 25%
AV15	04/21/2010 6:00	7709	7770.5 +/- 5%	Pass	16.0	10-20	Pass	5050	5036.6 +/- 25%
AV16	04/21/2010 6:00	7726	7436.0 +/- 5%	Pass	15.0	10-20	Pass	5029	5036.2 +/- 25%
AV17	04/21/2010 6:00	7496	7619.1 +/- 5%	Pass	12.8	10-20	Pass	5031	5058.3 +/- 25%
AV18	04/21/2010 6:00	7435	7714.5 +/- 5%	Pass	12.6	10-20	Pass	5036	5036.4 +/- 25%
AV19	04/21/2010 6:00	7652	7269.8 +/- 5%	FAIL	18.0	10-20	Pass	5048	5041.9 +/- 25%
AV19	04/21/2010 6:22	7554	7269.8 +/- 5%	Pass	18.0	10-20	Pass	5048	5041.9 +/- 25%
AV20	04/21/2010 6:00	7707	7503.6 +/- 5%	Pass	14.4	10-20	Pass	5017	5029.9 +/- 25%
AV21	04/21/2010 6:00	7689	7550.9 +/- 5%	Pass	16.0	10-20	Pass	5025	5029.6 +/- 25%
AV22	04/21/2010 6:22	7590	7691.4 +/- 5%	Pass	40.1	10-20	FAIL	5036	5022.4 +/- 25%
AV22	04/21/2010 6:00	7676	7691.4 +/- 5%	Pass	42.5	10-20	FAIL	5034	5022.4 +/- 25%
AV23	04/21/2010 6:00	7686	7665.3 +/- 5%	Pass	15.5	10-20	Pass	5014	5057.0 +/- 25%
AV24	04/21/2010 6:00	7696	7354.0 +/- 5%	Pass	14.2	10-20	Pass	4991	5036.4 +/- 25%
AV31	04/21/2010 6:00	7385	7070.5 +/- 5%	Pass	13.8	10-20	Pass	5019	5007.6 +/- 25%
AV32	04/21/2010 6:00	7378	7156.4 +/- 5%	Pass	14.4	10-20	Pass	5028	5022.4 +/- 25%
AV33	04/21/2010 6:00	7360	7144.1 +/- 5%	Pass	16.5	10-20	Pass	5031	5007.8 +/- 25%
AV34	04/21/2010 6:00	7375	7313.1 +/- 5%	Pass	14.0	10-20	Pass	5073	5029.5 +/- 25%
AV35	04/21/2010 6:00	7267	7132.9 +/- 5%	Pass	17.7	10-20	Pass	5031	5029.7 +/- 25%
AV37	04/21/2010 6:00	7357	7309.5 +/- 5%	Pass	16.1	10-20	Pass	5019	5000.6 +/- 25%
AV38	04/21/2010 6:00	7366	7249.2 +/- 5%	Pass	14.8	10-20	Pass	5038	5008.0 +/- 25%
AV39	04/21/2010 6:00	7260	7019.7 +/- 5%	Pass	19.0	10-20	Pass	5034	5007.5 +/- 25%
AV41	04/21/2010 6:00	7235	7078.3 +/- 5%	Pass	16.9	10-20	Pass	5031	5022.2 +/- 25%
AV43	04/21/2010 6:00	7253	7120.8 +/- 5%	Pass	19.6	10-20	Pass	5024	5007.9 +/- 25%
AV44	04/21/2010 6:00	7251	7153.7 +/- 5%	Pass	14.8	10-20	Pass	5038	5015.3 +/- 25%
AV45	04/21/2010 6:00	7234	7233.4 +/- 5%	Pass	21.0	10-20	Pass	5023	5015.3 +/- 25%
AV45	04/21/2010 6:23	7164	7233.4 +/- 5%	Pass	21.0	10-20	Pass	5023	5015.3 +/- 25%
AV46	04/21/2010 6:00	7210	7165.5 +/- 5%	Pass	16.1	10-20	Pass	5041	5000.5 +/- 25%
AV47	04/21/2010 6:00	7216	7128.1 +/- 5%	Pass	13.0	10-20	Pass	4999	5015.6 +/- 25%
AV48	04/21/2010 6:00	7432	7259.5 +/- 5%	Pass	18.5	10-20	Pass	5015	5000.8 +/- 25%
AV49	04/21/2010 6:23	7096	7305.4 +/- 5%	Pass	12.9	10-20	Pass	5033	5000.6 +/- 25%

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Wednesday, April 21, 2010

Detector	Date/Time	Gross Counts		P/F	FWHM (keV)		P/F	Pulser Center		P/F	Energy (keV)		P/F
		Result	Criteria		Result	Criteria		Result	Criteria		Result	Criteria	
AV70	04/21/2010 6:23	7109	7406.5 +/-5%	Pass	12.9	10-20	Pass	220.1	222.6 +/-5%	Pass	5005	5004.7 +/-25%	Pass
AV71	04/21/2010 6:22	7383	7187.3 +/-5%	Pass	15.4	10-20	Pass	217.0	225.0 +/-5%	Pass	4987	5022.7 +/-25%	Pass
AV72	04/21/2010 6:22	7033	7090.0 +/-5%	Pass	13.3	10-20	Pass	224.9	223.9 +/-5%	Pass	5050	5014.6 +/-25%	Pass
AV73	04/21/2010 6:22	7196	7251.3 +/-5%	Pass	12.3	10-20	Pass	223.0	225.0 +/-5%	Pass	5030	5022.4 +/-25%	Pass
AV74	04/21/2010 6:22	7246	7227.1 +/-5%	Pass	13.0	10-20	Pass	224.0	224.0 +/-5%	Pass	5043	5015.0 +/-25%	Pass
AV74	04/21/2010 6:22	7246	7227.1 +/-5%	Pass	13.0	10-20	Pass	224.0	224.0 +/-5%	Pass	5043	5015.0 +/-25%	Pass
AV75	04/21/2010 6:22	7574	7267.9 +/-5%	Pass	13.5	10-20	Pass	222.0	224.1 +/-5%	Pass	5009	5015.5 +/-25%	Pass
AV76	04/21/2010 6:22	7186	7374.3 +/-5%	Pass	13.2	10-20	Pass	224.1	224.0 +/-5%	Pass	5031	5015.2 +/-25%	Pass
AV77	04/21/2010 6:22	7399	7497.1 +/-5%	Pass	12.7	10-20	Pass	223.0	224.0 +/-5%	Pass	5030	5015.4 +/-25%	Pass
AV78	04/21/2010 6:22	7557	7183.8 +/-5%	FAIL	15.4	10-20	Pass	225.1	223.3 +/-5%	Pass	5035	5009.8 +/-25%	Pass
AV79	04/21/2010 6:22	7563	7349.7 +/-5%	Pass	13.9	10-20	Pass	222.0	222.0 +/-5%	Pass	5008	5000.4 +/-25%	Pass
AV80	04/21/2010 6:22	7560	7226.4 +/-5%	Pass	13.8	10-20	Pass	224.1	224.1 +/-5%	Pass	5022	5015.5 +/-25%	Pass
AV82	04/21/2010 6:22	7558	7529.2 +/-5%	Pass	13.8	10-20	Pass	225.0	224.0 +/-5%	Pass	5021	5015.2 +/-25%	Pass
AV83	04/21/2010 6:22	7479	7523.7 +/-5%	Pass	12.9	10-20	Pass	223.0	222.0 +/-5%	Pass	5019	5000.4 +/-25%	Pass
AV84	04/21/2010 6:22	7364	7637.7 +/-5%	Pass	13.3	10-20	Pass	223.9	223.0 +/-5%	Pass	5031	5007.7 +/-25%	Pass
AV85	04/21/2010 6:22	7410	7549.7 +/-5%	Pass	13.0	10-20	Pass	221.9	223.0 +/-5%	Pass	5019	5008.0 +/-25%	Pass
AV86	04/21/2010 6:22	7719	7679.0 +/-5%	Pass	13.9	10-20	Pass	223.9	223.9 +/-5%	Pass	5023	5014.3 +/-25%	Pass
AV87	04/21/2010 6:23	7708	7512.4 +/-5%	Pass	15.2	10-20	Pass	223.0	223.0 +/-5%	Pass	5023	5007.7 +/-25%	Pass
AV88	04/21/2010 6:23	7711	7716.1 +/-5%	Pass	13.7	10-20	Pass	223.9	224.0 +/-5%	Pass	5024	5015.4 +/-25%	Pass
AV89	04/21/2010 6:23	7710	7553.8 +/-5%	Pass	13.9	10-20	Pass	219.9	222.6 +/-5%	Pass	4998	5004.7 +/-25%	Pass
AV90	04/21/2010 6:23	7708	7474.4 +/-5%	Pass	13.8	10-20	Pass	224.0	224.1 +/-5%	Pass	5024	5015.6 +/-25%	Pass
AV92	04/21/2010 6:23	7484	7358.9 +/-5%	Pass	12.7	10-20	Pass	222.0	223.9 +/-5%	Pass	5022	5014.6 +/-25%	Pass
AV93	04/21/2010 6:23	7433	7393.5 +/-5%	Pass	13.1	10-20	Pass	223.0	223.0 +/-5%	Pass	5030	5008.3 +/-25%	Pass
AV94	04/21/2010 6:23	7425	7477.9 +/-5%	Pass	13.1	10-20	Pass	222.0	222.0 +/-5%	Pass	5023	5000.5 +/-25%	Pass
AV95	04/21/2010 6:23	7347	7432.4 +/-5%	Pass	13.1	10-20	Pass	223.0	222.2 +/-5%	Pass	5018	5001.9 +/-25%	Pass
AV96	04/21/2010 6:23	7628	7654.3 +/-5%	Pass	21.3	10-20	FAIL	220.8	222.6 +/-5%	Pass	5034	5005.3 +/-25%	Pass
AV97	04/21/2010 6:23	7640	7649.9 +/-5%	Pass	14.7	10-20	Pass	224.1	223.8 +/-5%	Pass	5033	5014.0 +/-25%	Pass
AV98	04/21/2010 6:23	7206	7582.0 +/-5%	Pass	13.4	10-20	Pass	223.9	223.0 +/-5%	Pass	5017	5007.6 +/-25%	Pass
AV99	04/21/2010 6:23	7605	7646.9 +/-5%	Pass	14.4	10-20	Pass	224.0	222.0 +/-5%	Pass	5032	5022.4 +/-25%	Pass

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Run Log

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20/10	Daily	Pulsers	1-122	1min	QA	SE	—
2		0099141	FOC260551-009	24	600min	U		Wm
3			-010	51				
4			-011	52				
5			-012	53				
6		0103258	FOD070441-007	1	180min	Th		Wm
7			-008	3				
8			-009	4				
9			-010	7				
10			-011	8				
11			-012	17				
12			-013	9				
13			-014	10				
14			-015	12				
15			-016	13				
16			-017	14				
17		0103244	FOC250604-011	19	240min			Wm
18			-012	20				
19			-013	21				
20			-014	23				
21			FOD130000-244B	88				
22			-244C	89				
23			-244L	90				
24		0103276	FOC200422-001	15	360min			Wm
25			↓ -0010	16				
26			FOD130000-276B	75				
27			↓ -276C	76				
28		0103212	FOC260551-001	54	240min			Wm
29			↓ -002	55	↓			

Reviewed By: SEDate: 4/20/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20/10	0103212	FOC 210551-003	57	240min	Th	SE	umw
2			↓ -004	58				
3			FOC 130000-212B	79				
4			↓ -212C	80				
5			↓ -212L	82				
6		0099123	FOC 260551-005	60	600min	Am		umw
7			↓ -005K	61				
8			↓ -006	63				
9			↓ -007	64				
10			↓ -008	70				
11			↓ -009	66				
12			↓ -010	67				
13			↓ -011	68				
14			↓ -012	69				
15			FOC 090000-123B	77				
16			↓ -123C	78				
17		0103081	FOC 300436-001	71	180min	Th		umw
18			↓ -001K	72				
19			FOC 300438-001	73				
20			FOC 130000-081B	84				
21			↓ -081C	85				
22		0103254	FOC 070441-001	74		Pu		umw
23			↓ -001K	83				
24			↓ -002	86				
25			↓ -003	87				
26			↓ -004	92				
27			↓ -005	93				
28			↓ -006	97				
29			FOC 130000-254B	94				

Reviewed By: SEDate: 4/20/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20/10	0103254	FOD130000-254C	98	180min	Pu	EE	um
2		0103260	FOD130000-260C	95	L	Pu241	+	um
3		0103254	FOD070441-007	9 ^{comp 27.40 min}	27.40 min	Pu	Emm	um
4			-008	10	10			
5			-009	12	12			
6			-010	13	13			
7			-011	14	14			
8			-012	83	83			
9			-013	86	86			
10			-014	87	87			
11			-015	92	92			
12			-016	93	93			
13			-017	97	97			
14		0096136	FOD190543-001	1	180min	Uu		um
15			-001X	3				
16			FOD060000-136B	85				
17			-136C	94				
18		0106068	FOD190543-001	4		Th		um
19			-001X	7				
20			FOD160000-068B	95				
21			-068C	98				
22		0102264	FOD240459-002	71	400mins	Uu		um
23			-002X	72				
24			-003	73				
25			-004	74				
26		0102240	POC250001-014	90	90mins	Pu	um	um
27		0098140	POC250001-014	82	600mins	Am		um
28		0102264	FOD240459-005	19	400mins	U		um
29			-006	20				

Reviewed By: umDate: 4/20/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20/10	010204	FOD120000-264B	79	400mins	u	um	um
2			264C	80				
3		0109085	FOD030400-002	21	240mins	Th		um
4			-002x	23				
5			-001	55				
6			-006	57				
7			-008	60				
8			-010	54				
9			FOD190000-085B	80				
10			-005C	89				
11			FOD030400-012	9			NB/um	
12			-014	10				
13			-016	12				
14		0103276	FOD200400-001	15	720min			um
15			-001x	10	720min			
16			FOD130000 - 270B	75				
17			-276C	76				
18		0099258	FUC310488-001	99		PU		um
19			-001x	100				
20			-002	101				
21			FUC310498-001	102				
22			-002	103				
23			-003	104				
24			-004	105				
25			-005	106				
26			FUC310499-002	107				
27			-003	108				
28			-004	109				
29			FOD070439-002	110				

Reviewed By: NB

Date: 4/20/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20	0099258	F0D080501-001	111	720min	PV	NB/um	um
2			-002	113				
3			-003	114				
4			-004	115				
5			-005	116				
6			-006	117				
7			-007	118				
8			F0D090000-258B	120				
9			-258C	121				
10		0099259	F0C310488-001	13	400min	Uu		
11			-001X	14				
12			-002	83				
13			F0C310498-001	86				
14			-002	87				
15			-003	92				
16			-004	93				
17			-005	97				
18			F0D090000-259B	94				
19			-259C	98				
20		0099259	F0C310499-002	21	400min	Uu	EMW	
21			-003	23				
22			-004	54				
23			F0D070439-002	55				
24			F0D080501-001	57				
25			-002	58				
26	4/21/10	Daily	Pulsers	1-122	1min	QA	8	-
27		0099259	F0D080501-003	67	400min	U		
28			-004	68				
29			-005	69				

Reviewed By: 8Date: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/20	0099258	FOD080501-001	111	720min	PV	NB/um	um
2			-002	113				
3			-003	114				
4			-004	115				
5			-005	116				
6			-006	117				
7			-007	118				
8			FOD090000-258B	120				
9			-258C	121				
10		0099259	FUC310488-001	13	400min	Uu		um
11			-001X	14				
12			-002	83				
13			FUC310498-001	86				
14			-002	87				
15			-003	92				
16			-004	93				
17			-005	97				
18			FOD090000-259B	94				
19			-259C	98				
20		0099259	FDC310499-002	21	400mins	Uu	EMW	
21			-003	23				
22			-004	54				
23			FOD070439-002	55				
24			FOD080501-001	57				
25			-002	58				
26	4/21/10	Daily	Pulsers	1-122	1min	QA	8	-
27		0099259	FOD080501-003	67	400min	U		um
28			-004	68				
29			-005	69				

Reviewed By: 8Date: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0099259	FOD080501-006	70	400min	U	SE	um
2			-007	71				
3		0109095	FOD070451-003	9	180min	Np		um
4			-006	10				
5			FOD190000-095B	88				
6			-095C	89				
7			-095L	90				
8		0102265	FOD240459-002	12				um
9			-002C	13				
10			-003	14				
11			-004	15				
12			-005	16				
13			-006	18				
14			FOD120000-215B	78				
15			-215C	82				
16		0099126	FOD260551-005	20				um
17			-005C	21				
18			-006	23				
19			-007	24				
20			-008	51				
21			-009	52				
22			-010	53				
23			-011	54				
24			-012	55				
25			FOD090000-126B	79				
26			-126C	80				
27		0104309	FOD080530-001	57		Pu		em
28			-001C	58				
29			-002	60				

Reviewed By: SEDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0104309	FOD080530-003	61	180min	Pu	SE	umw
2			FOD080539-003	63				
3			-004	64				
4			-007	66				
5			FOD140000-309B	75				
6			+ -309C	76				
7		0104239	FOD240459-001	72	360min	Am		umw
8			FOD140000-239B	77				
9			-239C	84				
10			-239L	85				
11		0104241	FOD240459-001	73		U		umw
12			FOD140000-241B	94				
13			-241C	95				
14			-241L	98				
15		0104238	FOD240459-001	74		Th		umw
16			FOD140000-238B	83				
17			-238C	86				
18			-238L	87				
19		0109098	FOD070451-003	92		Pu		umw
20			-006	93				
21			FOD190000-098B	97				
22		0103265	FOD240459-005	103	180mins	Np	umw	umw
23		0103254	FOD070441-001	9		Pu		umw
24			+ -001X	12				
25		0099123	FOD260551-005	10	100mins	Am		umw
26			-005X	18				
27			-006	51				
28			-007	51				
29			-008	52				

Reviewed By: umwDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0099123	FOC 260551-010	20	600mins	Am	um	
2		0109098	FOD 190000-098C	75	360mins	pu		um
3			-098C	76	+			
4		0102263	FOC 240459-002	53	70mins			um
5			-002x	55				
6			-003	57				
7			-004	58				
8			-005	60				
9			-006	61				
10			FOD 120000-263B	78				
11			-263C	82				
12		0104240	FOC 240459-001	24				um
13			FOD 140000-240B	88				
14			-240C	89				
15			-240L	90				
16		0102262	FOC 240459-002	14	40mins	Am		um
17			-002x	15				
18			-003	16				
19			-004	64				
20			-005	21				
21			-006	23				
22			FOD 120000-262B	79				
23			-262C	80				
24		0103240	FOC 250601-041	13	960mins	pu		um
25		0099258	FOC 310498-001	99				um
26			-002	100				
27			-004 ^{um} 4/21/10	101				
28			-005	102				
29			FOC 310499-003	103				

Reviewed By: umDate: 4/21/10

Logbook No.: 3476

TESTAMERICA
 St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0099258	FOD080501-006	104	96mins	Pu	Wm	Wm
2		0099257	FOC310488-001	9	400min	Am	NB	
3			-001x	12				
4			-002	83				
5			FOC310498-001	86				
6			-002	92				
7			-003	93				
8			-004	97				
9			-005	103				
10			FOC310499-002	106				
11			-003	107				
12			-004	108				
13			FOD070439-002	109				
14			FOD080501-001	70				
15			-002	71				
16			-003	72				
17			-004	73				
18			-005	74				
19			-006	87				
20		0104312	FOC2100320-001	1	180min	U		Wm
21			-001x	3				
22			FOD140000-312B	77				
23			-312C	84				
24		0100037	FOC230524-001	4				Wm
25			FOC230524-001x	7				
26			-002	8				
27			FOD100000-037B	85				
28			-037C	94				
29		0109101	FOC240544-001	17				

Reviewed By: NB

Date: 4/21/10

Logbook No.: 3476

TESTAMERICA
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	4/21/10	0109101	FOD190000-101C	95	180min	U	NB	
2			↓ -101L	98		+	+	
3		0102263	FOD120000-265B	75		NP	um	um
4		0102263	FOD120000-263B	76	72mins	pu	+	um
5	4/22/10	Nail	Pulley	1-172	1min	QA	SE	—
6		0109101	FOD240544-001	1	180min	U		
7			↓ -002	3				
8			FOD190000-101B	4				
9			-101C	89				
10			-101L	90				
11		0099257	FOD080501-007	24	400min	Am		
12			FOD090000-257B	84				
13			↓ -257C	85				
14		0104319	FOD300453-014	9	180min	NP		
15			-0144	10				
16			-015	12				
17			-016	13				
18			-017	14				
19			-018	15				
20			-019	16				
21			-020	18				
22			FOD310495-001	19				
23			-002	20				
24			-003	21				
25			-004	23				
26			FOD140000-319B	94				
27			↓ -319C	98				
28		0109096	FOD070451-003	92	240min	Th		
29			↓ -006	93				

Reviewed By: SEDate: 4/22/10

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

400mins LANL LC TestAmerica St. Louis

Prep Report for Uranium, Isotopic by Alpha Spectroscopy

Batch: 0099259

Prep Analyst: 403301

exported

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F0C310488-001	LXC9E1CH	2.0072E+000 g	2.00	1.0036E+000 g	rad10-0001	U-232	0.10	N
		13						
F0C310488-001X	LXC9E1EL	2.0061E+000 g	2.00	1.0031E+000 g	rad10-0001	U-232	0.10	N
		14						
F0C310488-002	LXC951CH	2.0046E+000 g	2.00	1.0023E+000 g	rad10-0001	U-232	0.10	N
		83						
F0C310498-001	LXDEA1AC	2.0010E+000 g	2.00	1.0005E+000 g	rad10-0001	U-232	0.10	N
		86						
F0C310498-002	LXDEG1AC	2.0031E+000 g	2.00	1.0016E+000 g	rad10-0001	U-232	0.10	N
		87						
F0C310498-003	LXDEK1AC	2.0052E+000 g	2.00	1.0026E+000 g	rad10-0001	U-232	0.10	N
		92						
F0C310498-004	LXDEL1AC	2.0045E+000 g	2.00	1.0022E+000 g	rad10-0001	U-232	0.10	N
		93						
F0C310498-005	LXDEM1AC	2.0006E+000 g	2.00	1.0003E+000 g	rad10-0001	U-232	0.10	N
		97						
F0C310499-002	LXDE61CF	2.0006E+000 g	2.00	1.0003E+000 g	rad10-0001	U-232	0.10	N
		21						
F0C310499-003	LXD FN1CF	2.0044E+000 g	2.00	1.0022E+000 g	rad10-0001	U-232	0.10	N
		23						
F0C310499-004	LXD FR1CF	2.0022E+000 g	2.00	1.0011E+000 g	rad10-0001	U-232	0.10	N
		54						
F0D070439-002	LXLR41CF	2.0014E+000 g	2.00	1.0007E+000 g	rad10-0001	U-232	0.10	N
		55						
F0D080501-001	LXNMR1AC	2.0025E+000 g	2.00	1.0013E+000 g	rad10-0001	U-232	0.10	N
		57						
F0D080501-002	LXNMV1AC	2.0036E+000 g	2.00	1.0018E+000 g	rad10-0001	U-232	0.10	N
		58						
F0D080501-003	LXNMV1AC	2.0008E+000 g	2.00	1.0004E+000 g	rad10-0001	U-232	0.10	N
							67	
F0D080501-004	LXNMX1AC	2.0063E+000 g	2.00	1.0032E+000 g	rad10-0001	U-232	0.10	N
							68	
F0D080501-005	LXNM21AC	2.0012E+000 g	2.00	1.0006E+000 g	rad10-0001	U-232	0.10	N
							69	

SampleID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F0D080501-006	LXNM41AC	2.0021E+000 g	2.00	1.0011E+000 g	rad10-0001	U-232	0.10	N
70								
F0D080501-007	LXNM51AC	2.0037E+000 g	2.00	1.0018E+000 g	rad10-0001	U-232	0.10	N
71								
F0D090000-259B	LXQRE1AA	2.0000E+000 g	1.00	2.0000E+000 g	rad10-0001	U-232	0.10	N
94								
F0D090000-259C	LXQRE1AC	2.0000E+000 g	1.00	2.0000E+000 g	rad10-0001	U-232	0.10	N
98								

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	Std Added
F0D090000-259C	Rad09-0065	U-234	7.290E+001 dpm/mL	0.10 mL	1/1/1992 12:00:00AM	1.642E+000 pCi/g
F0D090000-259C	Rad09-0065	U-238	7.575E+001 dpm/mL	0.10 mL	1/1/1992 12:00:00AM	1.706E+000 pCi/g

Spike By

Spike Verified By

Spike Date

Standard Operating Procedures

SOP Number	Title	Revision
240HI		
Column Analyst	Date	Coprecipitated By
Reviewed By	Review Date	Precip Date
Analyst/Relinquished By	Release Date	Received By
		Receipt Date

SV14281 DO Per 4/13/10
Balance ID / Initials / Date

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Monthly Backgrounds Alpha Vision March 2010

Sample Name: AV1

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV1, SN: 41-158W6

Acquisition Start Date: 3/26/2010 5:15:11PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV1

Calibration Date: 2/27/2010 5:31:08PM

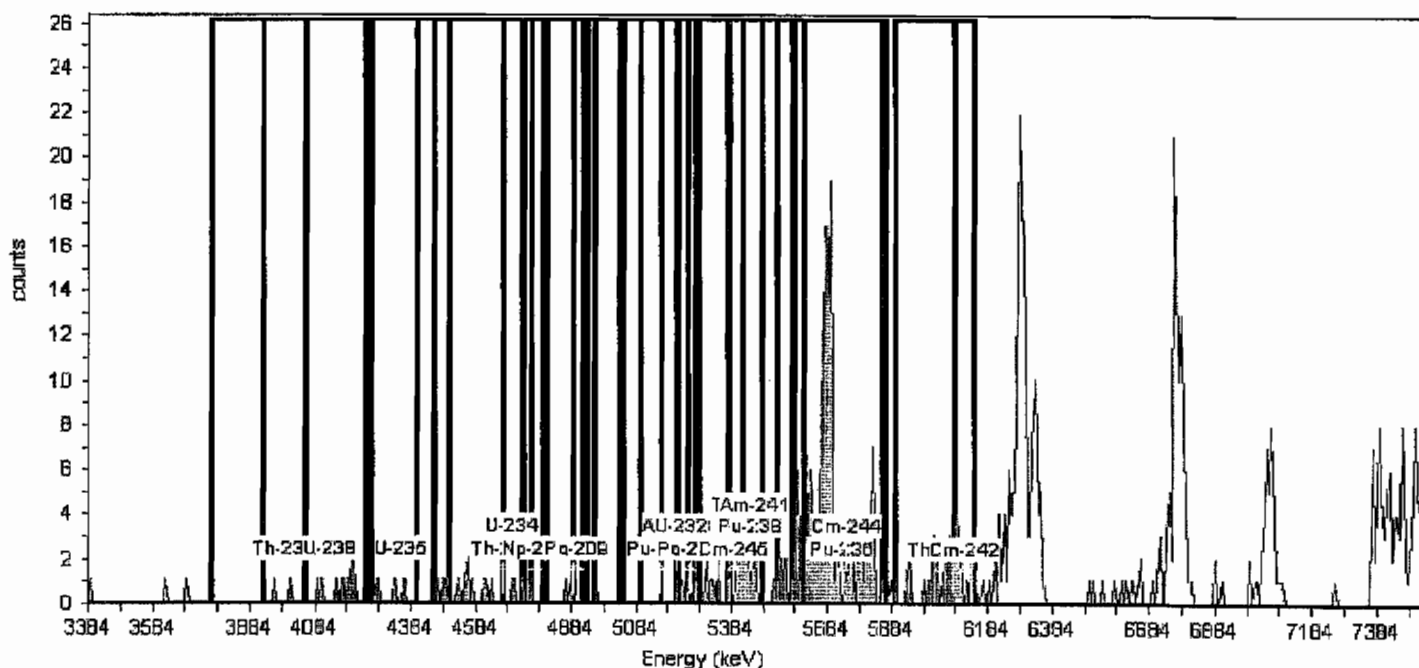
Energy Calibration Equation:

Gain = 7.3291 keV / Ch

Offset = 3,377.41 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.27% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background ROI, Nuclide Library: Background ROI Library

Total Background Counts: 663.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.05	2.00	2.083E-003	1.804E-003
U-238	4.13	3.92	4.23	11.00	1.146E-002	3.608E-003
U-235	4.35	4.26	4.45	4.00	4.167E-003	2.329E-003
Th-230	4.67	4.40	4.73	15.00	1.563E-002	4.167E-003
U-234	4.70	4.50	4.81	14.00	1.458E-002	4.034E-003
Pu-242	4.89	4.67	4.93	8.00	8.333E-003	3.125E-003
Th-229	4.84	4.73	5.10	7.00	7.292E-003	2.946E-003
Np-237	4.77	4.76	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.95	5.22	2.00	2.083E-003	1.804E-003
Am-243	5.21	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.38	14.00	1.458E-002	4.034E-003
Th-228	5.42	5.17	5.48	33.00	3.437E-002	6.074E-003
Po-210	5.25	5.21	5.27	5.00	5.208E-003	2.552E-003
Pu-238	5.44	5.25	5.52	33.00	3.437E-002	6.074E-003
Am-241	5.46	5.28	5.58	38.00	3.958E-002	6.505E-003
Cm-245	5.39	5.37	5.42	12.00	1.250E-002	3.756E-003
Pu-236	5.73	5.58	5.85	148.00	1.542E-001	1.272E-002
Cm-244	5.74	5.61	5.87	139.00	1.448E-001	1.233E-002
Th-227	6.04	5.90	6.14	42.00	4.375E-002	6.831E-003
Cm-242	6.11	6.08	6.14	17.00	1.771E-002	4.419E-003

Sample Name: AV3

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV3, SN: 41-158X5

Acquisition Start Date: 3/26/2010 5:15:14PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV3

Calibration Date: 2/27/2010 5:31:12PM

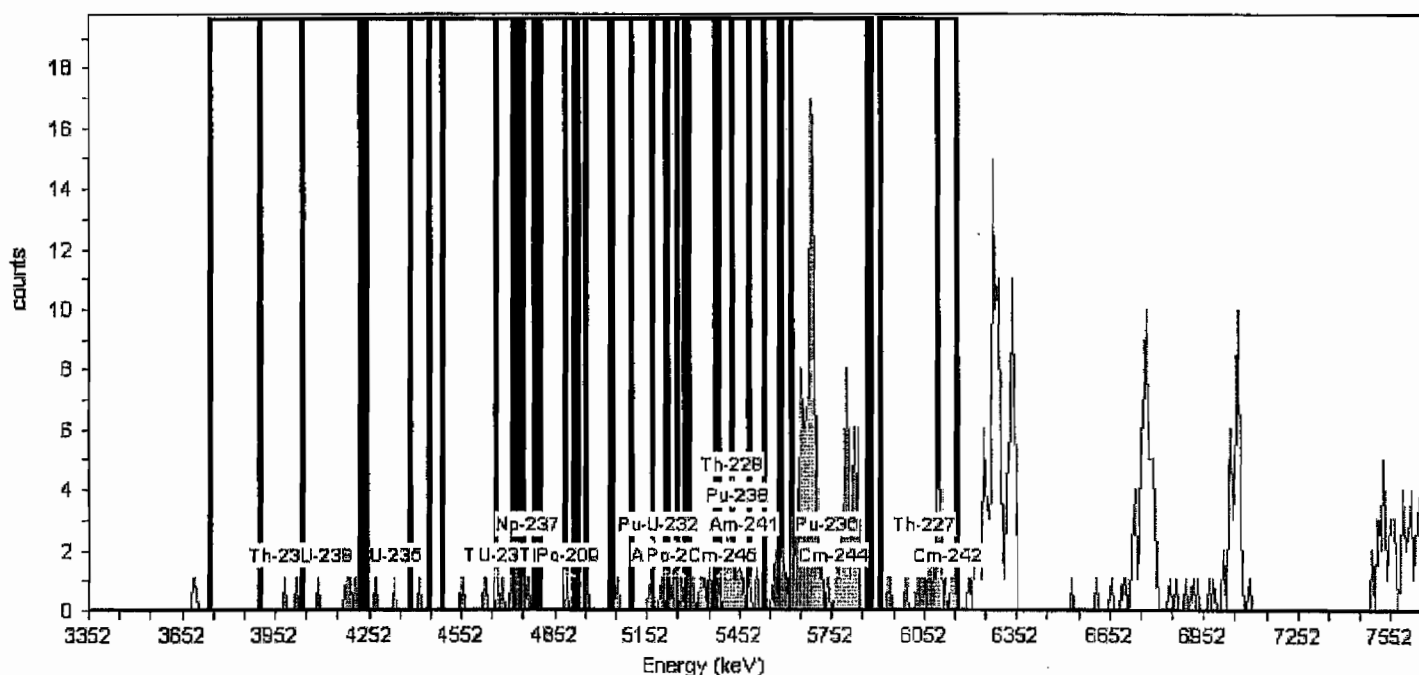
Energy Calibration Equation:

Gain = 7.4651 keV / Ch

Offset = 3,345.28 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.05% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 473.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.96	3.73	4.03	2.00	2.083E-003	1.804E-003
U-238	4.11	3.90	4.22	7.00	7.292E-003	2.946E-003
U-235	4.34	4.24	4.44	3.00	3.125E-003	2.083E-003
Th-230	4.66	4.38	4.73	10.00	1.042E-002	3.455E-003
U-234	4.69	4.49	4.80	11.00	1.146E-002	3.608E-003
Pu-242	4.88	4.66	4.93	8.00	8.333E-003	3.125E-003
Th-229	4.84	4.72	5.10	7.00	7.292E-003	2.946E-003
Np-237	4.76	4.75	4.79	2.00	2.083E-003	1.804E-003
Po-209	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.16	4.95	5.22	4.00	4.167E-003	2.329E-003
Am-243	5.21	5.03	5.29	8.00	8.333E-003	3.125E-003
U-232	5.23	5.04	5.38	15.00	1.563E-002	4.167E-003
Th-228	5.43	5.17	5.49	30.00	3.125E-002	5.800E-003
Po-210	5.26	5.21	5.27	4.00	4.167E-003	2.329E-003
Pu-238	5.45	5.25	5.53	28.00	2.917E-002	5.610E-003
Am-241	5.47	5.28	5.58	31.00	3.229E-002	5.893E-003
Cm-245	5.40	5.38	5.43	11.00	1.146E-002	3.608E-003
Pu-236	5.74	5.59	5.87	130.00	1.354E-001	1.192E-002
Cm-244	5.76	5.62	5.88	126.00	1.313E-001	1.174E-002
Th-227	6.06	5.91	6.16	24.00	2.500E-002	5.208E-003
Cm-242	6.13	6.10	6.16	11.00	1.146E-002	3.608E-003

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.75	4.05	0.00	0.000E+000	1.473E-003
U-238	4.14	3.92	4.24	4.00	4.167E-003	2.329E-003
U-235	4.36	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.68	4.40	4.75	9.00	9.375E-003	3.294E-003
U-234	4.71	4.51	4.82	15.00	1.563E-002	4.167E-003
Pu-242	4.90	4.68	4.95	12.00	1.250E-002	3.758E-003
Th-229	4.86	4.74	5.12	9.00	9.375E-003	3.294E-003
Np-237	4.78	4.77	4.81	4.00	4.167E-003	2.329E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.05	5.31	2.00	2.083E-003	1.804E-003
U-232	5.25	5.06	5.40	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.19	5.51	7.00	7.292E-003	2.946E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	8.00	8.333E-003	3.125E-003
Am-241	5.48	5.30	5.60	10.00	1.042E-002	3.455E-003
Cm-245	5.42	5.40	5.45	3.00	3.125E-003	2.083E-003
Pu-236	5.76	5.61	5.89	22.00	2.292E-002	4.996E-003
Cm-244	5.78	5.64	5.90	22.00	2.292E-002	4.996E-003
Th-227	6.07	5.93	6.18	7.00	7.292E-003	2.946E-003
Cm-242	6.15	6.12	6.18	1.00	1.042E-003	1.473E-003

Sample Name: AV6

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV6, SN: 47-27FF2

Acquisition Start Date: 3/26/2010 5:13:41PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV6

Calibration Date: 2/27/2010 5:31:18PM

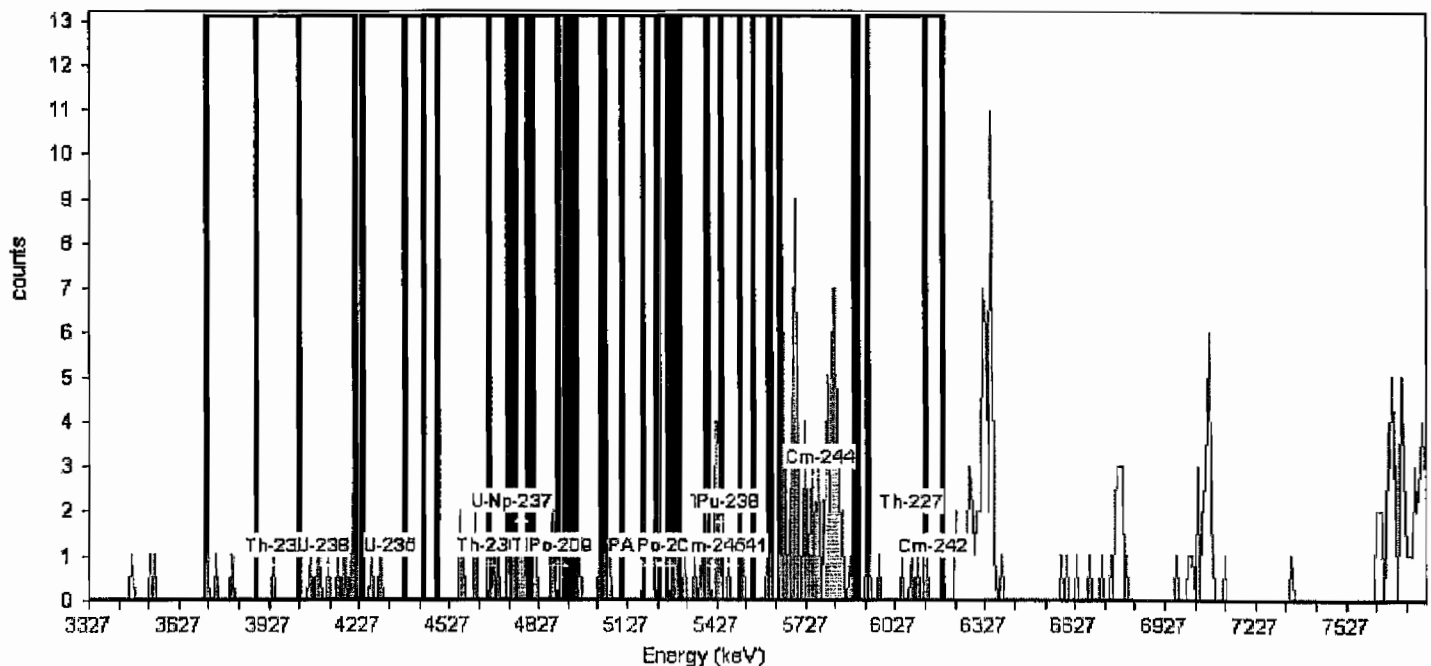
Energy Calibration Equation:

Gain = 7.6062 keV / Ch

Offset = 3,319.55 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.54% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 303.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.95	3.72	4.02	4.00	4.167E-003	2.329E-003
U-238	4.10	3.88	4.21	10.00	1.042E-002	3.455E-003
U-235	4.33	4.23	4.44	2.00	2.083E-003	1.804E-003
Th-230	4.66	4.38	4.73	9.00	9.375E-003	3.294E-003
U-234	4.69	4.48	4.80	14.00	1.458E-002	4.034E-003
Pu-242	4.89	4.66	4.93	12.00	1.250E-002	3.756E-003
Th-229	4.84	4.72	5.11	15.00	1.563E-002	4.167E-003
Np-237	4.76	4.75	4.79	4.00	4.167E-003	2.329E-003
Po-209	4.90	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.95	5.23	5.00	5.208E-003	2.552E-003
Am-243	5.22	5.04	5.30	4.00	4.167E-003	2.329E-003
U-232	5.24	5.05	5.40	10.00	1.042E-002	3.455E-003
Th-228	5.44	5.18	5.50	20.00	2.083E-002	4.774E-003
Po-210	5.27	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.55	21.00	2.187E-002	4.886E-003
Am-241	5.48	5.29	5.60	22.00	2.292E-002	4.996E-003
Cm-245	5.41	5.39	5.44	15.00	1.563E-002	4.167E-003
Pu-236	5.76	5.61	5.89	84.00	8.750E-002	9.604E-003
Cm-244	5.78	5.64	5.91	83.00	8.646E-002	9.547E-003
Th-227	6.08	5.94	6.19	7.00	7.292E-003	2.946E-003
Cm-242	6.16	6.13	6.19	2.00	2.083E-003	1.804E-003

Sample Name: AV7

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV7, SN: 48-158EE5

Acquisition Start Date: 3/26/2010 5:13:43PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV7

Calibration Date: 2/27/2010 5:29:44PM

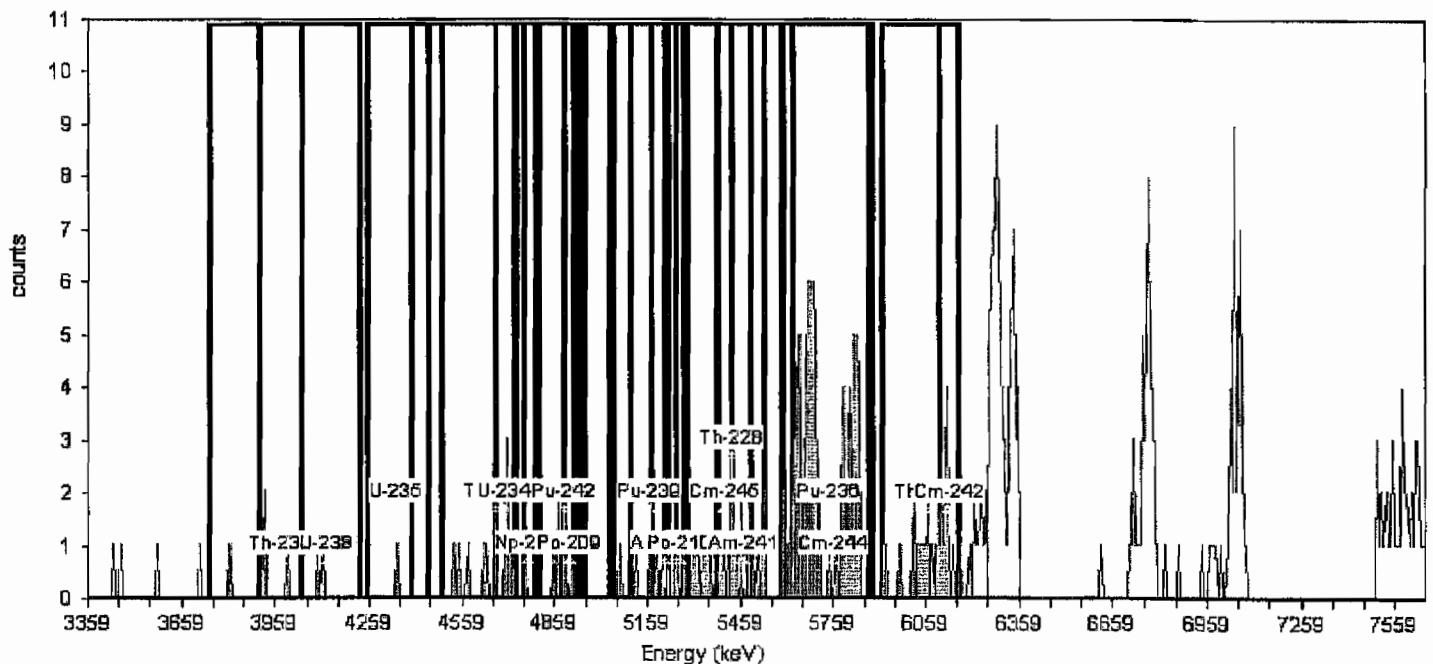
Energy Calibration Equation:

Gain = 7.4576 keV / Ch

Offset = 3,352.04 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.61% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 351.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.97	3.74	4.04	4.00	4.167E-003	2.329E-003
U-238	4.12	3.90	4.22	5.00	5.208E-003	2.552E-003
U-235	4.34	4.25	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.66	4.39	4.73	12.00	1.250E-002	3.756E-003
U-234	4.69	4.49	4.81	13.00	1.354E-002	3.898E-003
Pu-242	4.89	4.66	4.93	13.00	1.354E-002	3.898E-003
Th-229	4.84	4.72	5.10	7.00	7.292E-003	2.946E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.89	4.92	2.00	2.083E-003	1.804E-003
Pu-239	5.16	4.96	5.22	6.00	6.250E-003	2.756E-003
Am-243	5.22	5.04	5.29	8.00	8.333E-003	3.125E-003
U-232	5.24	5.04	5.39	15.00	1.563E-002	4.167E-003
Th-228	5.43	5.17	5.49	23.00	2.396E-002	5.103E-003
Po-210	5.26	5.22	5.28	3.00	3.125E-003	2.083E-003
Pu-238	5.46	5.25	5.54	25.00	2.604E-002	5.311E-003
Am-241	5.47	5.28	5.59	23.00	2.396E-002	5.103E-003
Cm-245	5.40	5.38	5.43	5.00	5.208E-003	2.552E-003
Pu-236	5.75	5.60	5.87	82.00	8.542E-002	9.490E-003
Cm-244	5.76	5.63	5.89	78.00	8.125E-002	9.259E-003
Th-227	6.06	5.92	6.16	24.00	2.500E-002	5.208E-003
Cm-242	6.13	6.10	6.16	10.00	1.042E-002	3.455E-003

Sample Name: AV8

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV8 , SN: 41-137Q6

Acquisition Start Date: 3/26/2010 5:13:44PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV8

Calibration Date: 2/27/2010 5:30:47PM

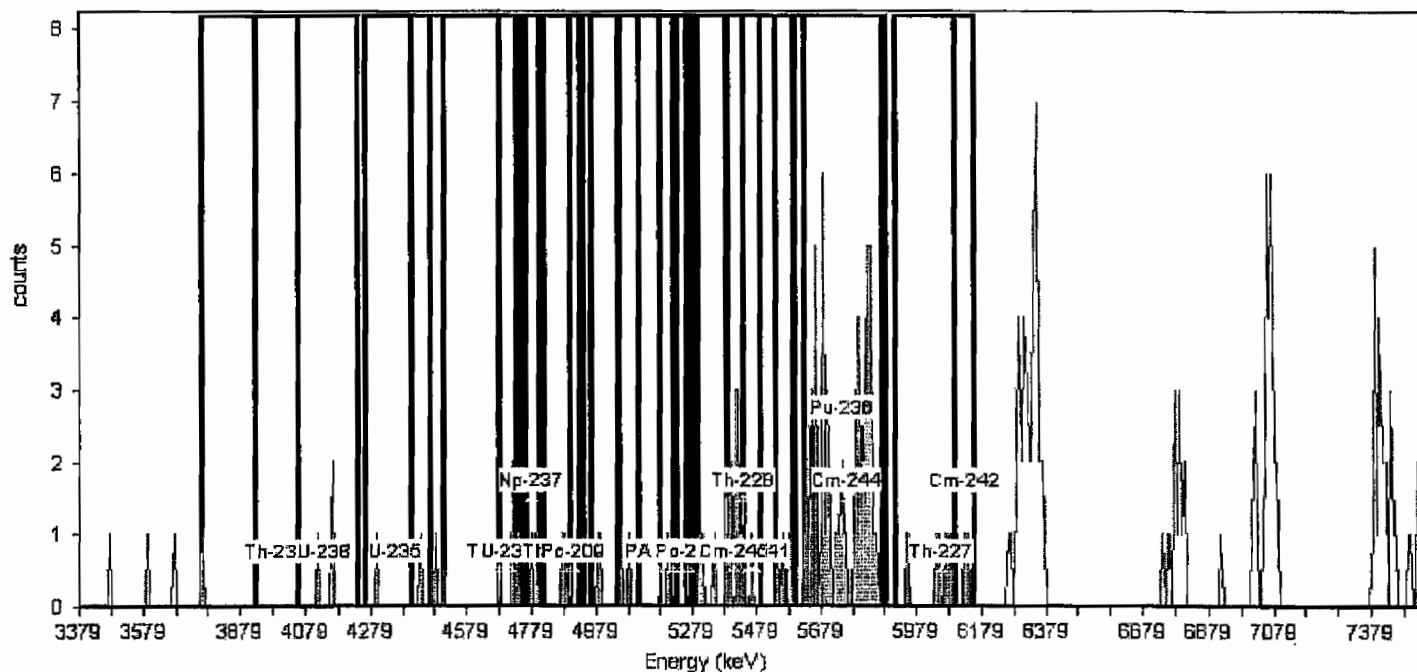
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.87% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 221.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.05	1.00	1.042E-003	1.473E-003
U-238	4.13	3.92	4.24	3.00	3.125E-003	2.083E-003
U-235	4.36	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.74	7.00	7.292E-003	2.946E-003
U-234	4.70	4.50	4.81	6.00	6.250E-003	2.756E-003
Pu-242	4.90	4.67	4.94	7.00	7.292E-003	2.946E-003
Th-229	4.85	4.73	5.11	9.00	9.375E-003	3.294E-003
Np-237	4.78	4.76	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	5.00	5.208E-003	2.552E-003
Am-243	5.22	5.04	5.29	3.00	3.125E-003	2.083E-003
U-232	5.24	5.05	5.39	9.00	9.375E-003	3.294E-003
Th-228	5.43	5.18	5.49	18.00	1.875E-002	4.541E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	17.00	1.771E-002	4.419E-003
Am-241	5.47	5.29	5.59	20.00	2.083E-002	4.774E-003
Cm-245	5.41	5.38	5.43	13.00	1.354E-002	3.898E-003
Pu-236	5.75	5.60	5.87	59.00	6.146E-002	8.069E-003
Cm-244	5.76	5.63	5.89	59.00	6.146E-002	8.069E-003
Th-227	6.06	5.92	6.16	8.00	8.333E-003	3.125E-003
Cm-242	6.13	6.10	6.16	2.00	2.083E-003	1.804E-003

Sample Name: AV9

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV9, SN: 47-043HH4

Acquisition Start Date: 3/26/2010 5:13:47PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV9

Calibration Date: 2/27/2010 6:22:56PM

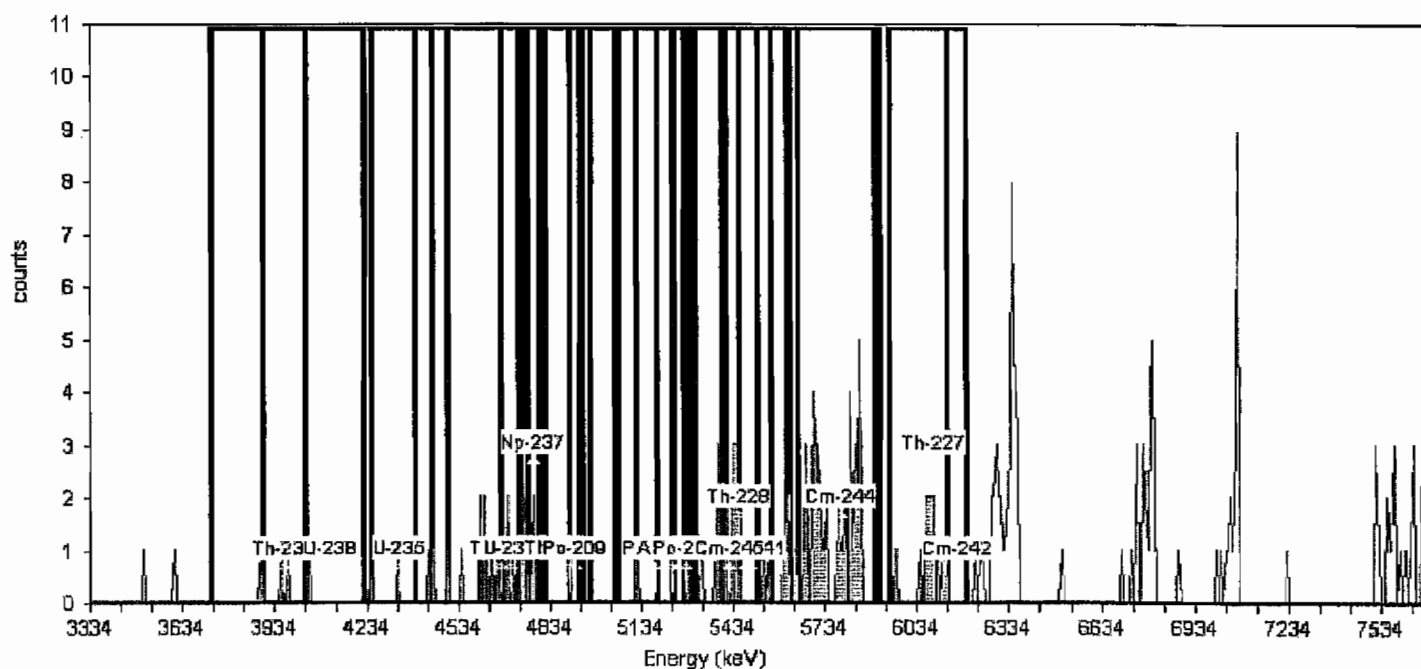
Energy Calibration Equation:

Gain = 7.6062 keV / Ch

Offset = 3,327.15 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.31% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 218.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.96	3.72	4.03	3.00	3.125E-003	2.083E-003
U-238	4.11	3.89	4.22	3.00	3.125E-003	2.083E-003
U-235	4.34	4.24	4.45	4.00	4.167E-003	2.329E-003
Th-230	4.67	4.38	4.73	14.00	1.458E-002	4.034E-003
U-234	4.70	4.49	4.81	18.00	1.875E-002	4.541E-003
Pu-242	4.89	4.67	4.94	10.00	1.042E-002	3.455E-003
Th-229	4.85	4.73	5.11	8.00	8.333E-003	3.125E-003
Np-237	4.77	4.76	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.96	5.24	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.05	5.30	2.00	2.083E-003	1.804E-003
U-232	5.25	5.05	5.40	8.00	8.333E-003	3.125E-003
Th-228	5.45	5.18	5.51	17.00	1.771E-002	4.419E-003
Po-210	5.27	5.23	5.29	1.00	1.042E-003	1.473E-003
Pu-238	5.47	5.27	5.56	19.00	1.979E-002	4.658E-003
Am-241	5.49	5.30	5.61	22.00	2.292E-002	4.996E-003
Cm-245	5.42	5.40	5.45	11.00	1.146E-002	3.608E-003
Pu-236	5.77	5.62	5.90	47.00	4.896E-002	7.217E-003
Cm-244	5.78	5.65	5.91	45.00	4.688E-002	7.065E-003
Th-227	6.09	5.94	6.19	14.00	1.458E-002	4.034E-003
Cm-242	6.16	6.13	6.19	1.00	1.042E-003	1.473E-003

Sample Name: AV10

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV10, SN: 49-155N2

Acquisition Start Date: 3/26/2010 5:13:49PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV10

Calibration Date: 3/3/2010 4:58:37PM

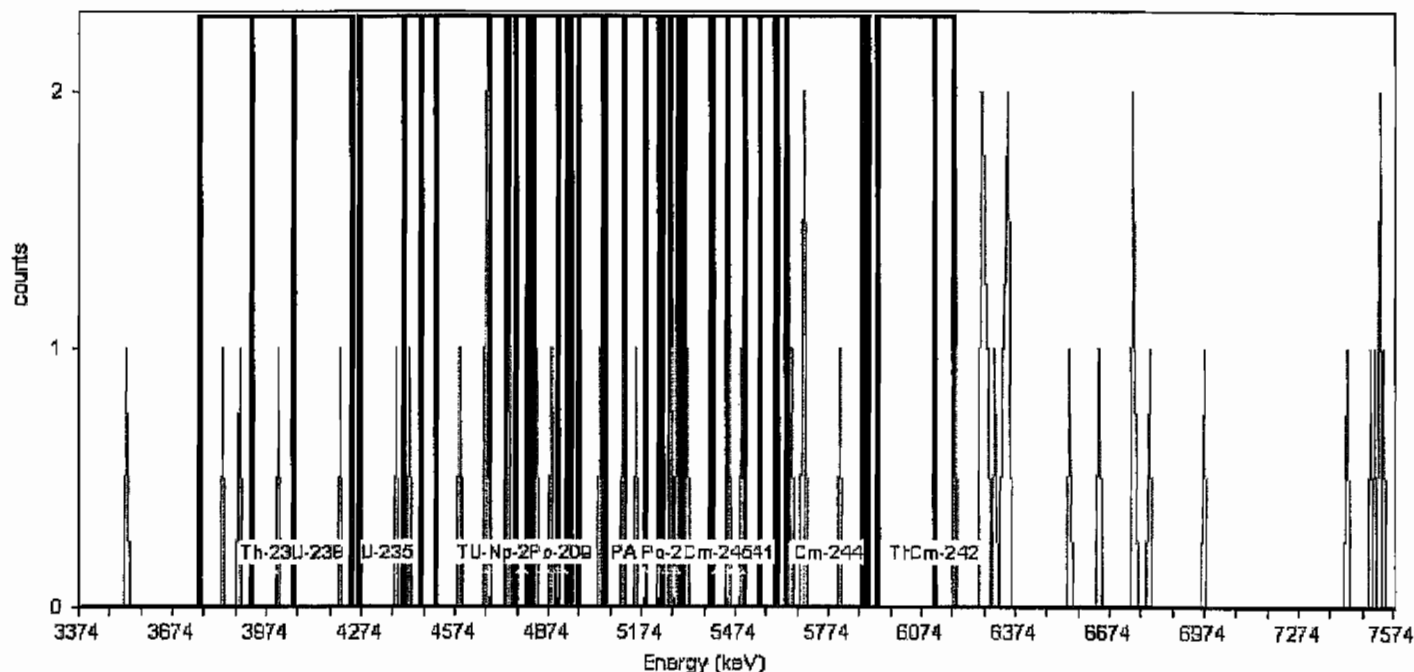
Energy Calibration Equation:

Gain = 7.4575 keV / Ch

Offset = 3,366.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.77% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background ROI, Nuclide Library: Background ROI Library

Total Background Counts: 54.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.75	4.05	3.00	3.125E-003	2.083E-003
U-238	4.14	3.92	4.24	2.00	2.083E-003	1.804E-003
U-235	4.36	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.68	4.40	4.75	6.00	6.250E-003	2.756E-003
U-234	4.71	4.51	4.82	5.00	5.208E-003	2.552E-003
Pu-242	4.90	4.68	4.95	3.00	3.125E-003	2.083E-003
Th-229	4.86	4.74	5.12	5.00	5.208E-003	2.552E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.05	5.31	4.00	4.167E-003	2.329E-003
U-232	5.25	5.06	5.40	5.00	5.208E-003	2.552E-003
Th-228	5.45	5.19	5.51	5.00	5.208E-003	2.552E-003
Po-210	5.28	5.23	5.29	2.00	2.083E-003	1.804E-003
Pu-238	5.47	5.27	5.55	5.00	5.208E-003	2.552E-003
Am-241	5.48	5.30	5.60	3.00	3.125E-003	2.083E-003
Cm-245	5.42	5.40	5.45	0.00	0.000E+000	1.473E-003
Pu-236	5.76	5.61	5.89	5.00	5.208E-003	2.552E-003
Cm-244	5.78	5.64	5.90	5.00	5.208E-003	2.552E-003
Th-227	6.07	5.93	6.18	0.00	0.000E+000	1.473E-003
Cm-242	6.15	6.12	6.18	0.00	0.000E+000	1.473E-003

Sample Name: AV11

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Energy Calibration Equation:

Detector: AV11 , SN: 49-155DD2

Acquisition Start Date: 3/26/2010 5:13:50PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV11a

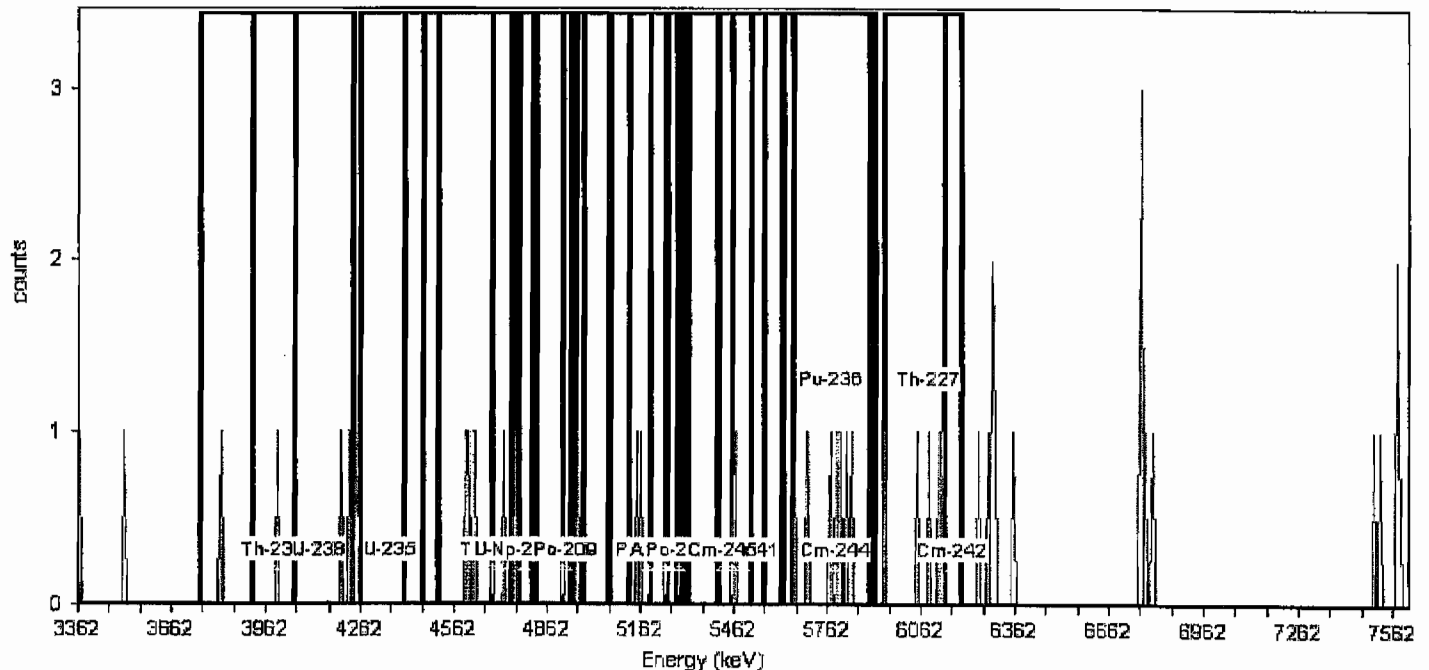
Calibration Date: 3/5/2010 9:32:38AM

Gain = 7.5313 keV / Ch

Offset = 3,354.75 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.19% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background, Nucleide Library: Background ROI Library

Total Background Counts: 45.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.98	3.75	4.05	2.00	2.083E-003	1.804E-003
U-238	4.13	3.91	4.24	3.00	3.125E-003	2.083E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.40	4.75	5.00	5.208E-003	2.552E-003
U-234	4.71	4.51	4.82	6.00	6.250E-003	2.756E-003
Pu-242	4.91	4.68	4.95	2.00	2.083E-003	1.804E-003
Th-229	4.86	4.74	5.12	2.00	2.083E-003	1.804E-003
Np-237	4.79	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.25	2.00	2.083E-003	1.804E-003
Am-243	5.24	5.06	5.31	2.00	2.083E-003	1.804E-003
U-232	5.26	5.06	5.41	2.00	2.083E-003	1.804E-003
Th-228	5.46	5.19	5.52	1.00	1.042E-003	1.473E-003
Po-210	5.28	5.24	5.30	0.00	0.000E+000	1.473E-003
Pu-238	5.48	5.28	5.56	1.00	1.042E-003	1.473E-003
Am-241	5.49	5.31	5.61	1.00	1.042E-003	1.473E-003
Cm-245	5.43	5.40	5.46	0.00	0.000E+000	1.473E-003
Pu-236	5.77	5.62	5.90	7.00	7.292E-003	2.946E-003
Cm-244	5.79	5.65	5.92	7.00	7.292E-003	2.946E-003
Th-227	6.09	5.95	6.19	5.00	5.208E-003	2.552E-003
Cm-242	6.16	6.13	6.19	0.00	0.000E+000	1.473E-003

Sample Name: AV12

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010a

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV12 , SN: 49-155N3
Acquisition Start Date: 4/1/2010 9:19:54AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: March2010_AV12
Calibration Date: 4/1/2010 9:23:14AM

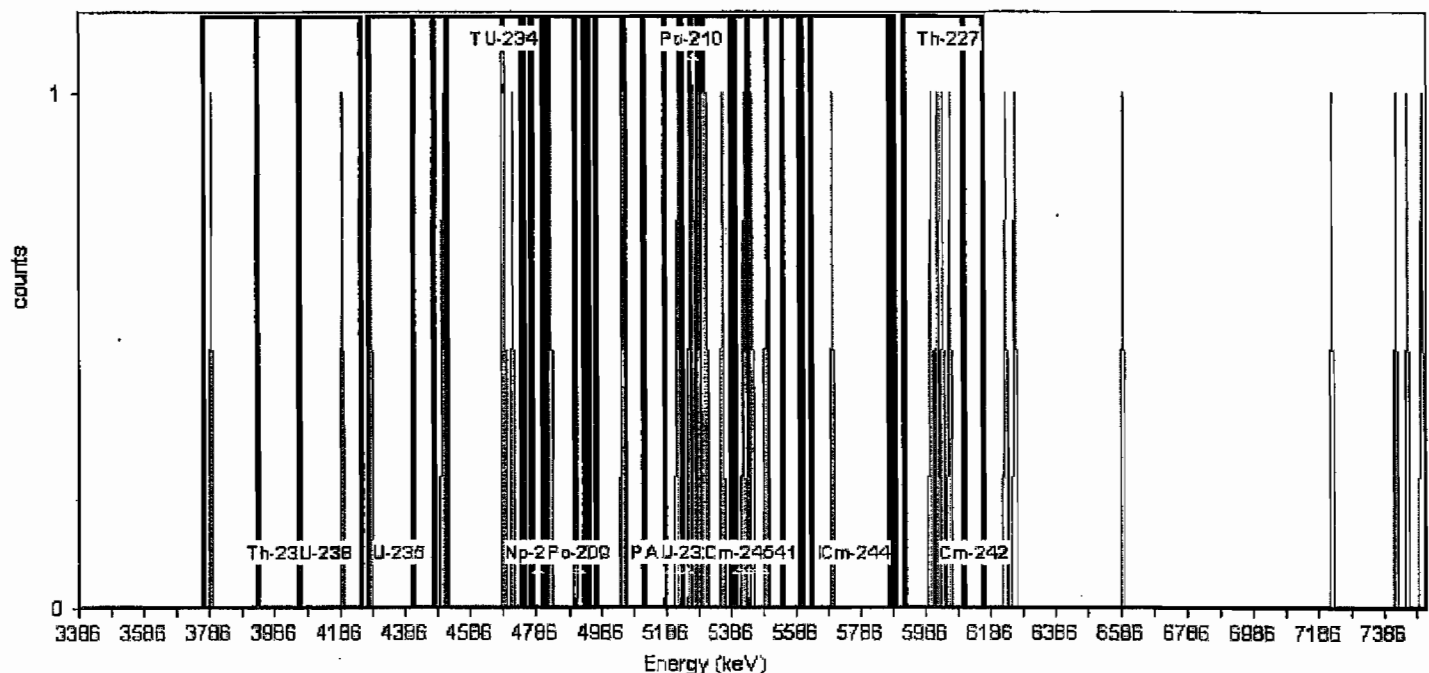
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,379.56 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.67% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 31.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	1.00	1.042E-003	1.473E-003
U-235	4.36	4.27	4.47	1.00	1.042E-003	1.473E-003
Th-230	4.68	4.41	4.75	4.00	4.167E-003	2.329E-003
U-234	4.71	4.51	4.82	3.00	3.125E-003	2.083E-003
Pu-242	4.90	4.68	4.95	4.00	4.167E-003	2.329E-003
Th-229	4.86	4.74	5.12	2.00	2.083E-003	1.804E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.05	5.30	6.00	6.250E-003	2.756E-003
U-232	5.25	5.06	5.40	7.00	7.292E-003	2.946E-003
Th-228	5.44	5.18	5.50	10.00	1.042E-002	3.455E-003
Po-210	5.27	5.23	5.29	3.00	3.125E-003	2.083E-003
Pu-238	5.46	5.26	5.55	8.00	8.333E-003	3.125E-003
Am-241	5.48	5.29	5.60	6.00	6.250E-003	2.756E-003
Cm-245	5.41	5.39	5.44	1.00	1.042E-003	1.473E-003
Pu-236	5.75	5.60	5.88	1.00	1.042E-003	1.473E-003
Cm-244	5.77	5.63	5.89	1.00	1.042E-003	1.473E-003
Th-227	6.06	5.92	6.17	4.00	4.167E-003	2.329E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Sample Name: AV13

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV13, SN: 44-049W5

Acquisition Start Date: 3/26/2010 5:13:52PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV13

Calibration Date: 2/27/2010 6:25:08PM

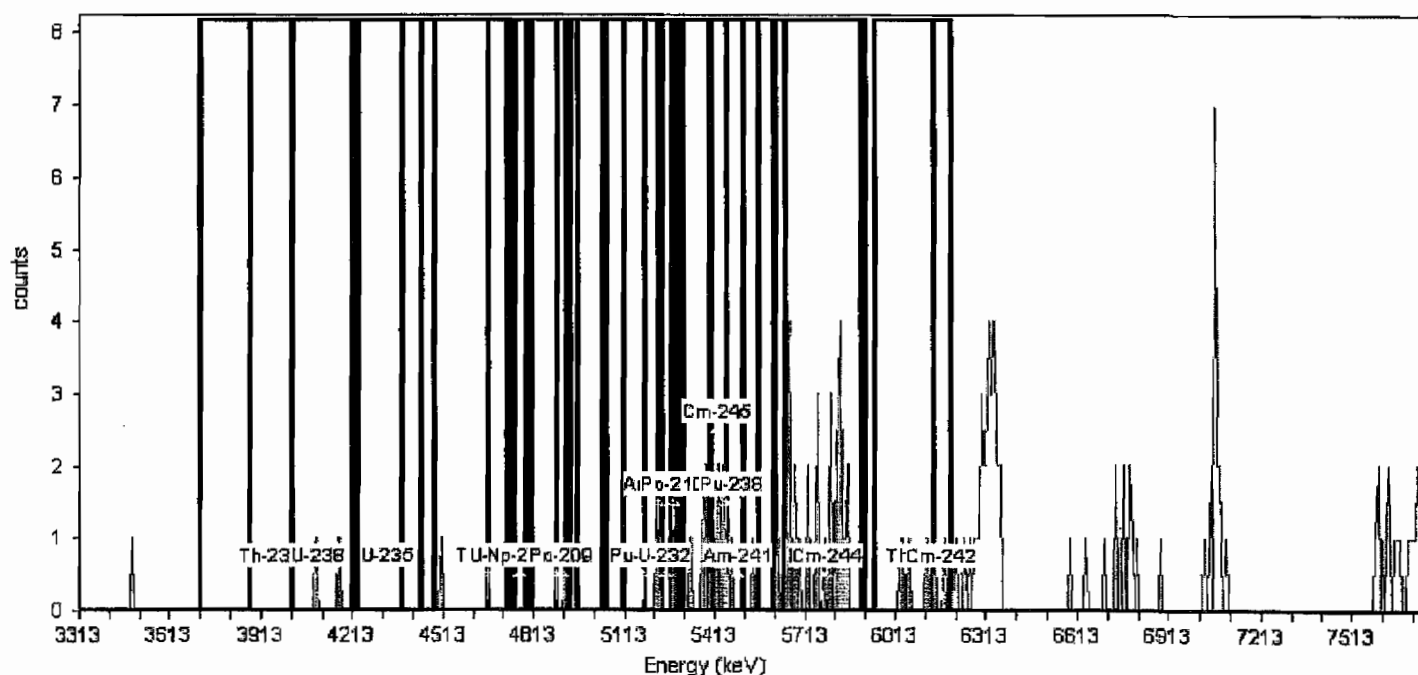
Energy Calibration Equation:

Gain = 7.6747 keV / Ch

Offset = 3,305.98 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.52% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 145.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.94	3.71	4.01	0.00	0.000E+000	1.473E-003
U-238	4.10	3.87	4.20	2.00	2.083E-003	1.804E-003
U-235	4.33	4.23	4.43	0.00	0.000E+000	1.473E-003
Th-230	4.66	4.37	4.73	1.00	1.042E-003	1.473E-003
U-234	4.69	4.48	4.80	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.66	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.76	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.89	4.92	1.00	1.042E-003	1.473E-003
Pu-239	5.17	4.96	5.23	2.00	2.083E-003	1.804E-003
Am-243	5.22	5.04	5.30	3.00	3.125E-003	2.083E-003
U-232	5.25	5.05	5.40	8.00	8.333E-003	3.125E-003
Th-228	5.45	5.18	5.51	18.00	1.875E-002	4.541E-003
Po-210	5.27	5.22	5.29	2.00	2.083E-003	1.804E-003
Pu-238	5.47	5.26	5.55	17.00	1.771E-002	4.419E-003
Am-241	5.49	5.29	5.61	16.00	1.667E-002	4.295E-003
Cm-245	5.42	5.39	5.45	9.00	9.375E-003	3.294E-003
Pu-236	5.77	5.62	5.90	34.00	3.542E-002	6.163E-003
Cm-244	5.78	5.65	5.92	33.00	3.437E-002	6.074E-003
Th-227	6.09	5.95	6.20	7.00	7.292E-003	2.946E-003
Cm-242	6.17	6.14	6.20	2.00	2.083E-003	1.804E-003

Sample Name: AV14

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV14 , SN: 48-102BB7

Acquisition Start Date: 3/26/2010 5:13:53PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV14

Calibration Date: 2/27/2010 6:26:05PM

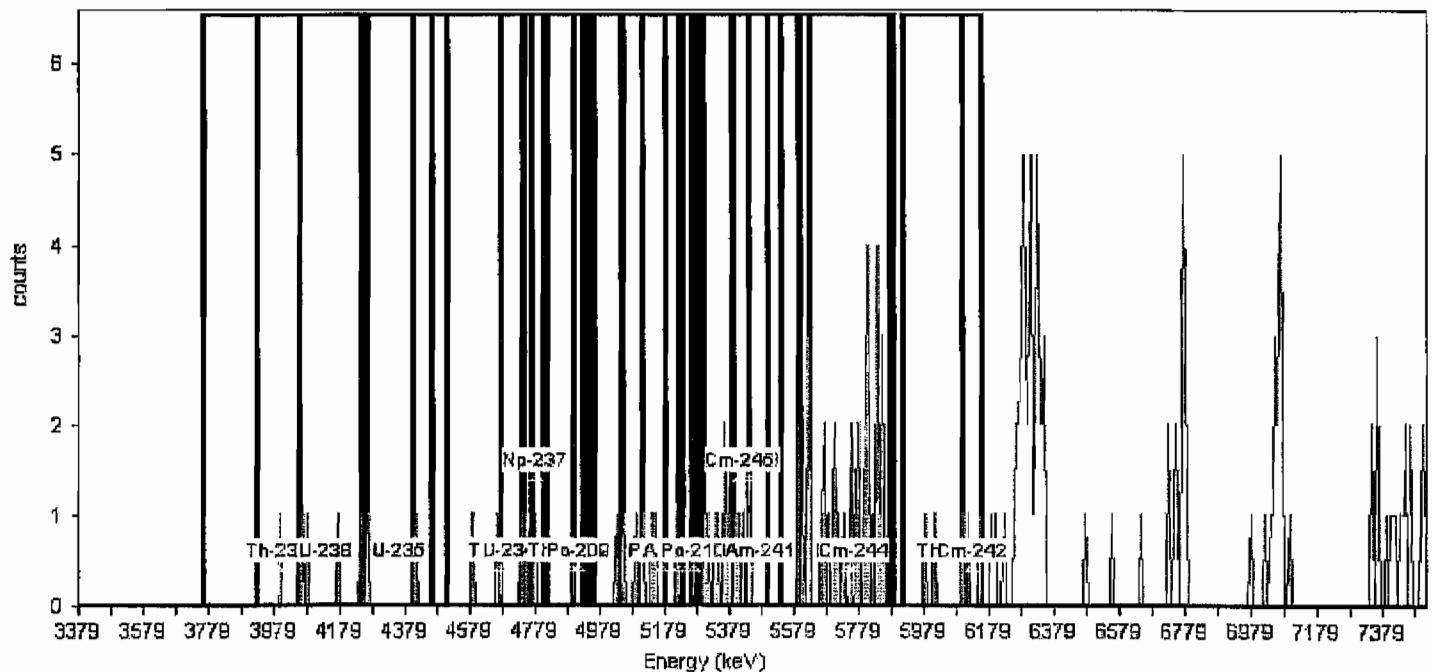
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.73% \pm 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 172.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.78	4.05	1.00	1.042E-003	1.473E-003
U-238	4.13	3.92	4.24	5.00	5.208E-003	2.552E-003
U-235	4.36	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.74	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.81	5.00	5.208E-003	2.552E-003
Pu-242	4.90	4.67	4.94	3.00	3.125E-003	2.083E-003
Th-229	4.85	4.73	5.11	7.00	7.292E-003	2.946E-003
Np-237	4.78	4.76	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	7.00	7.292E-003	2.946E-003
Am-243	5.22	5.04	5.29	6.00	6.250E-003	2.756E-003
U-232	5.24	5.05	5.39	14.00	1.458E-002	4.034E-003
Th-228	5.43	5.18	5.49	14.00	1.458E-002	4.034E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	13.00	1.354E-002	3.898E-003
Am-241	5.47	5.29	5.59	15.00	1.563E-002	4.167E-003
Cm-245	5.41	5.38	5.43	4.00	4.167E-003	2.329E-003
Pu-236	5.75	5.60	5.87	38.00	3.958E-002	6.505E-003
Cm-244	5.76	5.63	5.89	34.00	3.542E-002	6.163E-003
Th-227	6.06	5.92	6.16	5.00	5.208E-003	2.552E-003
Cm-242	6.13	6.10	6.16	3.00	3.125E-003	2.083E-003

Sample Name: AV15

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV15, SN: 41-172C5

Acquisition Start Date: 3/26/2010 5:13:55PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV15

Calibration Date: 2/27/2010 6:27:27PM

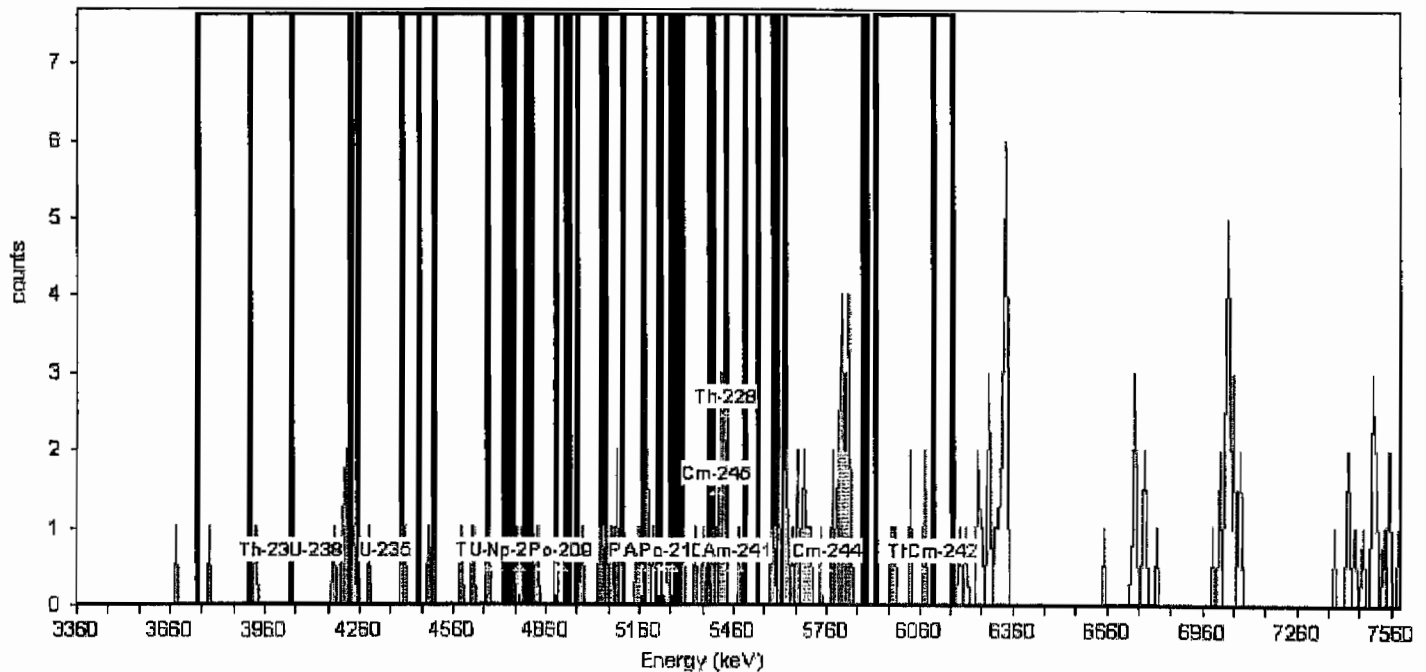
Energy Calibration Equation:

Gain = 7.4651 keV / Ch

Offset = 3,352.74 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.76% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 166.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.97	3.74	4.04	2.00	2.083E-003	1.804E-003
U-238	4.12	3.91	4.23	5.00	5.208E-003	2.552E-003
U-235	4.35	4.25	4.45	3.00	3.125E-003	2.083E-003
Th-230	4.67	4.39	4.73	7.00	7.292E-003	2.946E-003
U-234	4.70	4.49	4.81	6.00	6.250E-003	2.756E-003
Pu-242	4.89	4.67	4.94	4.00	4.167E-003	2.329E-003
Th-229	4.85	4.73	5.11	11.00	1.146E-002	3.608E-003
Np-237	4.77	4.76	4.79	2.00	2.083E-003	1.804E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	14.00	1.458E-002	4.034E-003
Am-243	5.22	5.04	5.29	13.00	1.354E-002	3.898E-003
U-232	5.24	5.05	5.39	16.00	1.667E-002	4.295E-003
Th-228	5.44	5.17	5.50	19.00	1.979E-002	4.658E-003
Po-210	5.26	5.22	5.28	1.00	1.042E-003	1.473E-003
Pu-238	5.46	5.26	5.54	14.00	1.458E-002	4.034E-003
Am-241	5.47	5.29	5.59	16.00	1.667E-002	4.295E-003
Cm-245	5.41	5.38	5.44	10.00	1.042E-002	3.455E-003
Pu-236	5.75	5.60	5.88	33.00	3.437E-002	6.074E-003
Cm-244	5.76	5.63	5.89	31.00	3.229E-002	5.893E-003
Th-227	6.06	5.92	6.17	6.00	6.250E-003	2.756E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Sample Name: AV16

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV16 , SN: 41-172Q7

Acquisition Start Date: 3/26/2010 5:13:56PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV16

Calibration Date: 2/27/2010 6:28:09PM

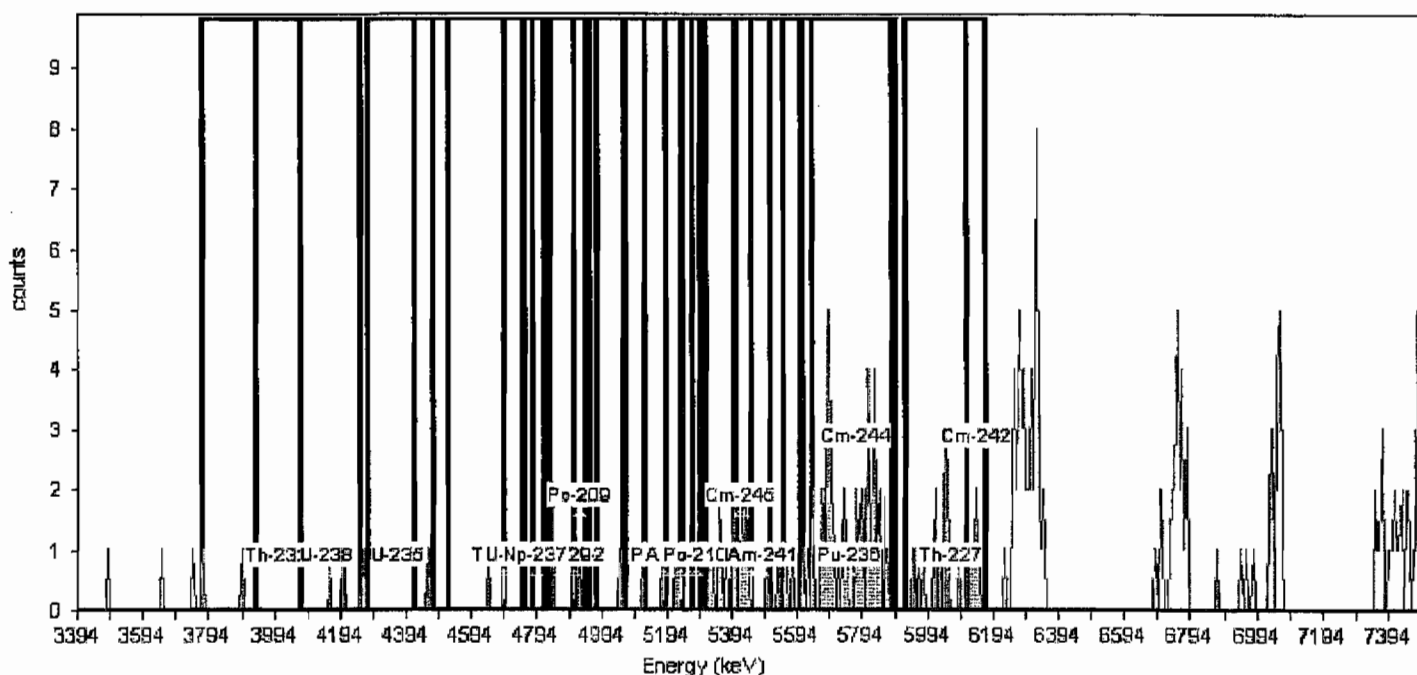
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3.386.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.95% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 219.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	4.00	3.77	4.07	2.00	2.083E-003	1.804E-003
U-238	4.15	3.93	4.25	2.00	2.083E-003	1.804E-003
U-235	4.37	4.27	4.47	1.00	1.042E-003	1.473E-003
Th-230	4.69	4.41	4.75	2.00	2.083E-003	1.804E-003
U-234	4.72	4.52	4.83	1.00	1.042E-003	1.473E-003
Pu-242	4.91	4.69	4.95	3.00	3.125E-003	2.083E-003
Th-229	4.87	4.75	5.12	5.00	5.208E-003	2.552E-003
Np-237	4.79	4.78	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	1.00	1.042E-003	1.473E-003
Pu-239	5.18	4.98	5.24	5.00	5.208E-003	2.552E-003
Am-243	5.24	5.06	5.31	4.00	4.167E-003	2.329E-003
U-232	5.26	5.07	5.41	14.00	1.458E-002	4.034E-003
Th-228	5.45	5.19	5.51	19.00	1.979E-002	4.658E-003
Po-210	5.28	5.24	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	18.00	1.875E-002	4.541E-003
Am-241	5.49	5.30	5.60	20.00	2.083E-002	4.774E-003
Cm-245	5.42	5.40	5.45	10.00	1.042E-002	3.455E-003
Pu-236	5.76	5.61	5.89	46.00	4.792E-002	7.141E-003
Cm-244	5.77	5.64	5.90	44.00	4.583E-002	6.988E-003
Th-227	6.07	5.93	6.17	18.00	1.875E-002	4.541E-003
Cm-242	6.14	6.11	6.17	6.00	6.250E-003	2.756E-003

Sample Name: AV17

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV17, SN: 49-155M4

Acquisition Start Date: 3/26/2010 5:13:59PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV17

Calibration Date: 3/3/2010 4:58:07PM

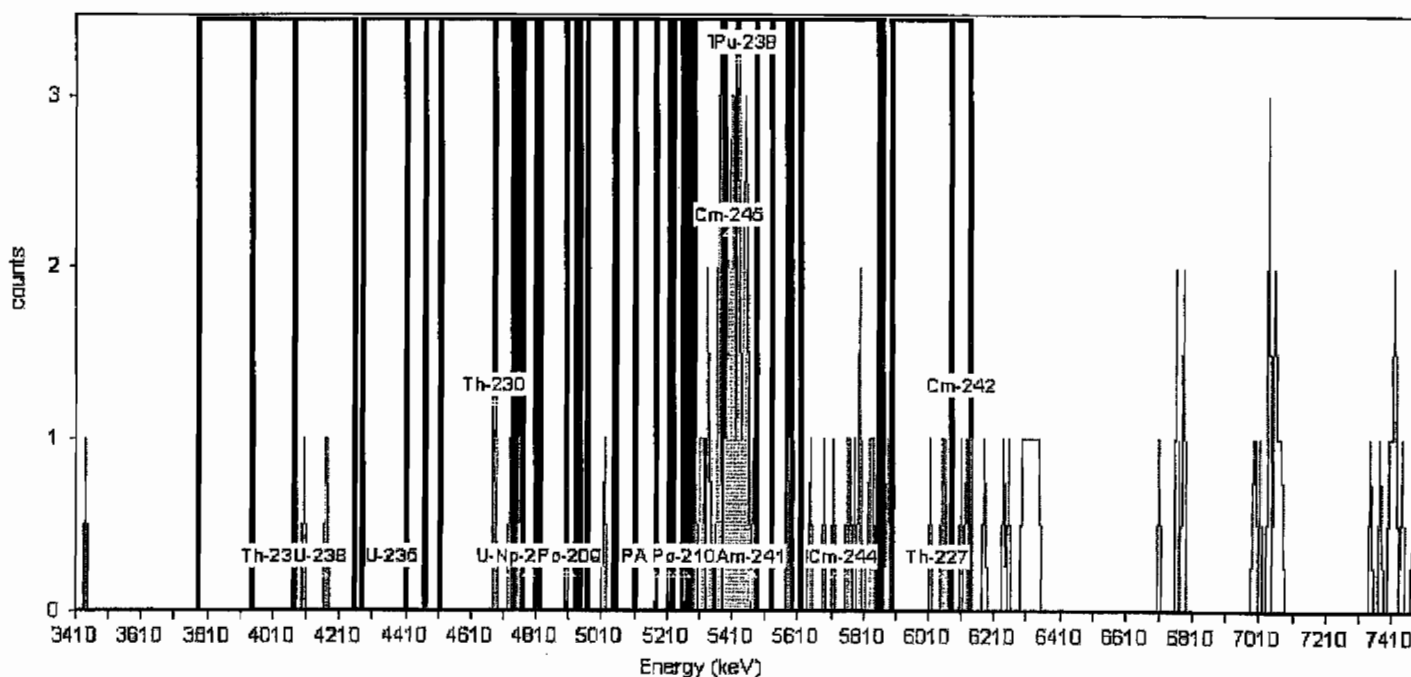
Energy Calibration Equation:

Gain = 7.2598 keV / Ch

Offset = 3,403.48 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.05% +/- 0.25% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 98.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	4.01	3.78	4.07	0.00	0.000E+000	1.473E-003
U-238	4.15	3.94	4.25	2.00	2.083E-003	1.804E-003
U-235	4.37	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.41	4.75	2.00	2.083E-003	1.804E-003
U-234	4.71	4.51	4.82	3.00	3.125E-003	2.083E-003
Pu-242	4.90	4.68	4.94	3.00	3.125E-003	2.083E-003
Th-229	4.86	4.74	5.11	2.00	2.083E-003	1.804E-003
Np-237	4.78	4.77	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	1.00	1.042E-003	1.473E-003
Am-243	5.22	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.05	5.39	11.00	1.146E-002	3.608E-003
Th-228	5.43	5.17	5.49	33.00	3.437E-002	6.074E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.45	5.25	5.53	33.00	3.437E-002	6.074E-003
Am-241	5.47	5.28	5.58	34.00	3.542E-002	6.163E-003
Cm-245	5.40	5.38	5.43	14.00	1.458E-002	4.034E-003
Pu-236	5.73	5.59	5.86	11.00	1.146E-002	3.608E-003
Cm-244	5.75	5.62	5.87	11.00	1.146E-002	3.608E-003
Th-227	6.04	5.90	6.14	6.00	6.250E-003	2.756E-003
Cm-242	6.11	6.08	6.14	3.00	3.125E-003	2.083E-003

Sample Name: AV18

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010a

Analyst: 60040

Description:

Acquisition

Detector: AV18, SN: 49-155N5

Acquisition Start Date: 4/1/2010 9:20:03AM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: March2010_AV18

Calibration Date: 3/31/2010 3:15:35PM

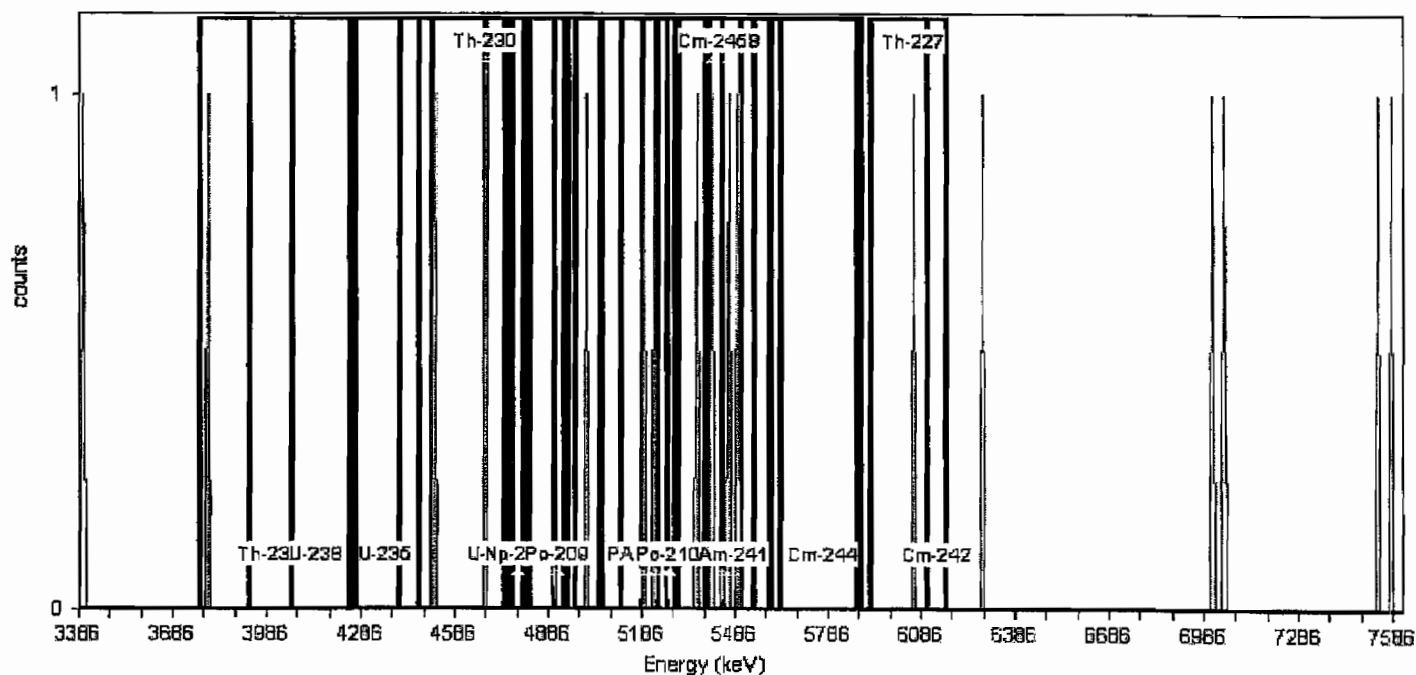
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,379.56 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.20% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 17.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.41	4.75	2.00	2.083E-003	1.804E-003
U-234	4.71	4.51	4.82	2.00	2.083E-003	1.804E-003
Pu-242	4.90	4.68	4.95	1.00	1.042E-003	1.473E-003
Th-229	4.86	4.74	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.05	5.30	2.00	2.083E-003	1.804E-003
U-232	5.25	5.06	5.40	3.00	3.125E-003	2.083E-003
Th-228	5.44	5.18	5.50	6.00	6.250E-003	2.756E-003
Po-210	5.27	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.55	4.00	4.167E-003	2.329E-003
Am-241	5.48	5.29	5.60	4.00	4.167E-003	2.329E-003
Cm-245	5.41	5.39	5.44	1.00	1.042E-003	1.473E-003
Pu-236	5.75	5.60	5.88	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.17	1.00	1.042E-003	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Alpha-Spectroscopy Background Report

TestAmerica St. Louis

TestAmerica St. Louis

13715 Rider Trail North

Earth City, MO 63045

9:19:50AM 3/27/2010

Sample Name: AV19

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV19, SN: 44-022N3

Acquisition Start Date: 3/26/2010 5:14:00PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV19

Calibration Date: 2/27/2010 6:31:12PM

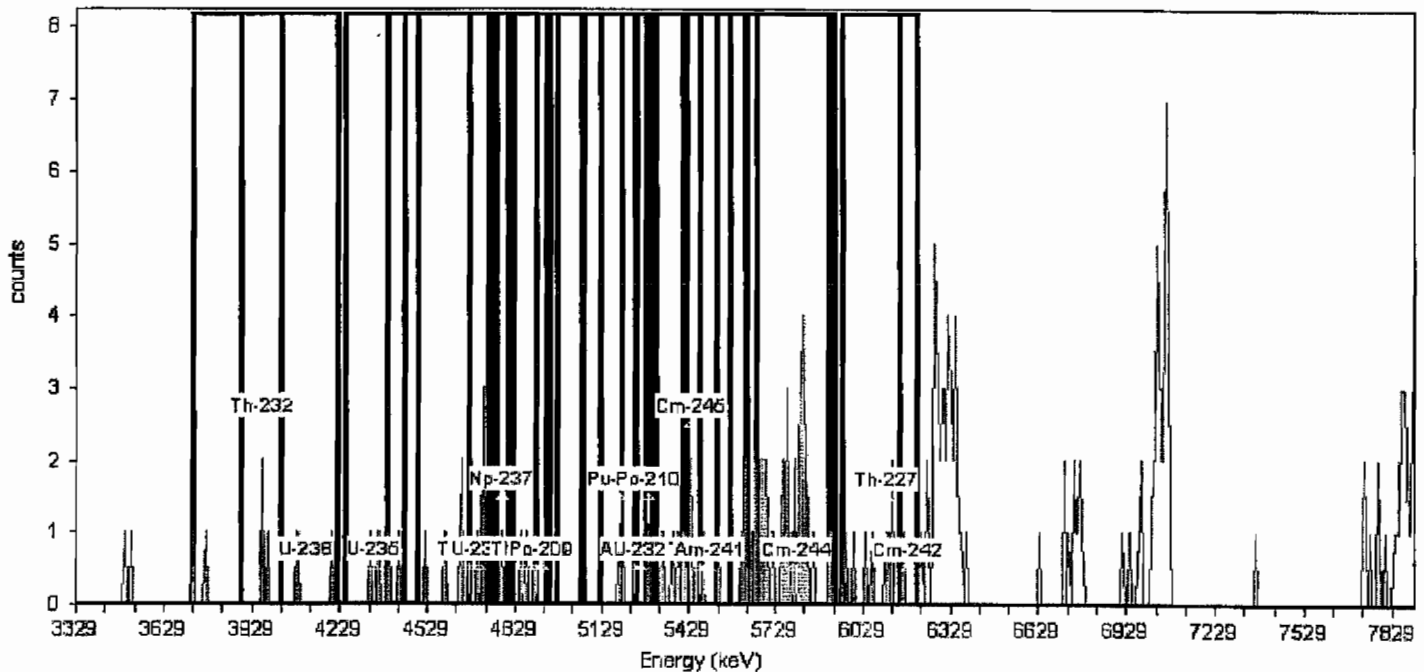
Energy Calibration Equation:

Gain = 7.6747 keV / Ch

Offset = 3,321.33 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.28% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 203.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.96	3.72	4.03	5.00	5.208E-003	2.552E-003
U-238	4.11	3.89	4.22	5.00	5.208E-003	2.552E-003
U-235	4.34	4.24	4.45	5.00	5.208E-003	2.552E-003
Th-230	4.67	4.39	4.74	11.00	1.146E-002	3.608E-003
U-234	4.70	4.50	4.82	9.00	9.375E-003	3.294E-003
Pu-242	4.90	4.67	4.95	8.00	8.333E-003	3.125E-003
Th-229	4.86	4.73	5.12	4.00	4.167E-003	2.329E-003
Np-237	4.78	4.76	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.19	4.97	5.25	2.00	2.083E-003	1.804E-003
Am-243	5.24	5.06	5.32	3.00	3.125E-003	2.083E-003
U-232	5.26	5.06	5.42	10.00	1.042E-002	3.455E-003
Th-228	5.46	5.19	5.52	13.00	1.354E-002	3.898E-003
Po-210	5.29	5.24	5.30	1.00	1.042E-003	1.473E-003
Pu-238	5.49	5.28	5.57	13.00	1.354E-002	3.898E-003
Am-241	5.50	5.31	5.62	16.00	1.667E-002	4.295E-003
Cm-245	5.43	5.41	5.46	5.00	5.208E-003	2.552E-003
Pu-236	5.78	5.63	5.92	38.00	3.958E-002	6.505E-003
Cm-244	5.80	5.66	5.93	35.00	3.646E-002	6.250E-003
Th-227	6.11	5.96	6.21	9.00	9.375E-003	3.294E-003
Cm-242	6.18	6.15	6.21	1.00	1.042E-003	1.473E-003

Sample Name: AV20

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV20, SN: 48-121A7

Acquisition Start Date: 3/26/2010 5:14:03PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV20

Calibration Date: 2/27/2010 6:32:03PM

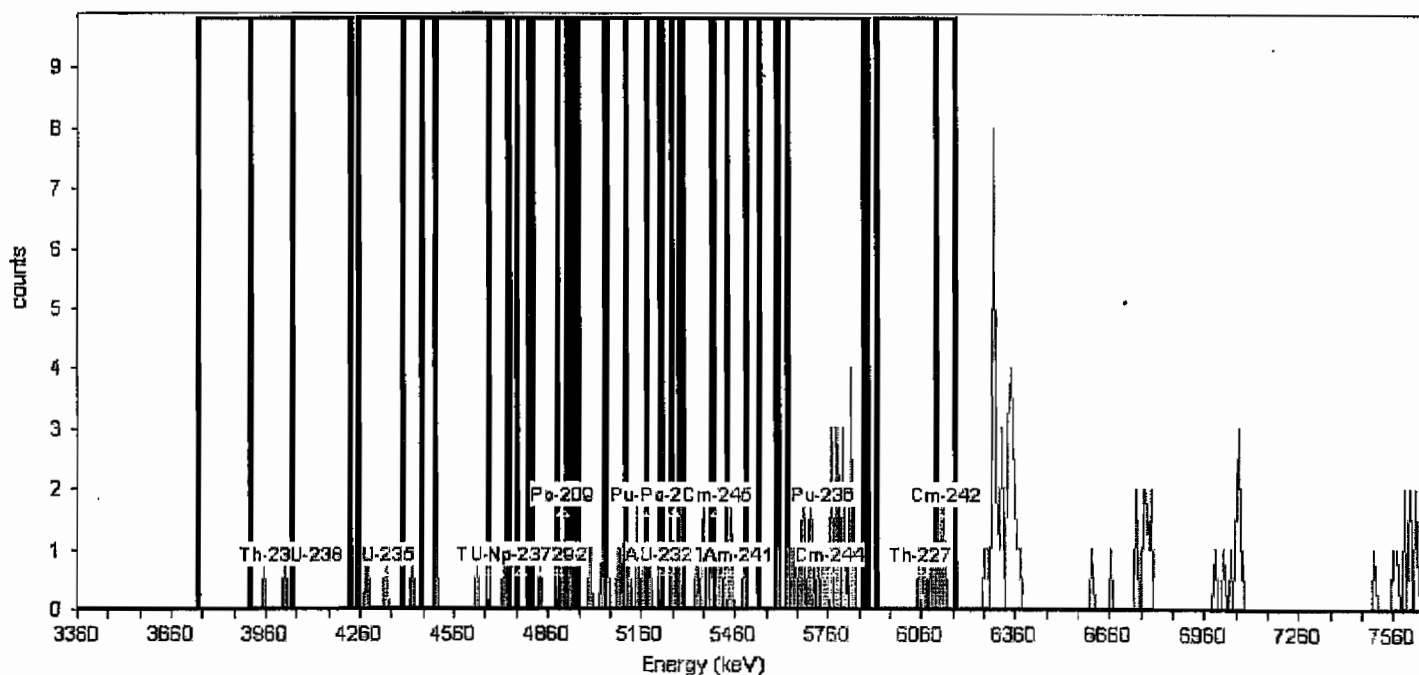
Energy Calibration Equation:

Gain = 7.4651 keV / Ch

Offset = 3,352.74 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.10% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background ROI, Nuclide Library: Background ROI Library

Total Background Counts: 152.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.97	3.74	4.04	2.00	2.083E-003	1.804E-003
U-238	4.12	3.91	4.23	2.00	2.083E-003	1.804E-003
U-235	4.35	4.25	4.45	3.00	3.125E-003	2.083E-003
Th-230	4.67	4.39	4.73	4.00	4.167E-003	2.329E-003
U-234	4.70	4.49	4.81	3.00	3.125E-003	2.083E-003
Pu-242	4.89	4.67	4.94	4.00	4.167E-003	2.329E-003
Th-229	4.85	4.73	5.11	9.00	9.375E-003	3.294E-003
Np-237	4.77	4.76	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	1.00	1.042E-003	1.473E-003
Pu-239	5.17	4.96	5.23	11.00	1.146E-002	3.608E-003
Am-243	5.22	5.04	5.29	12.00	1.250E-002	3.756E-003
U-232	5.24	5.05	5.39	17.00	1.771E-002	4.419E-003
Th-228	5.44	5.17	5.50	16.00	1.667E-002	4.295E-003
Po-210	5.26	5.22	5.28	1.00	1.042E-003	1.473E-003
Pu-238	5.46	5.26	5.54	15.00	1.563E-002	4.167E-003
Am-241	5.47	5.29	5.59	14.00	1.458E-002	4.034E-003
Cm-245	5.41	5.38	5.44	4.00	4.167E-003	2.329E-003
Pu-236	5.75	5.60	5.88	35.00	3.646E-002	6.250E-003
Cm-244	5.76	5.63	5.89	34.00	3.542E-002	6.163E-003
Th-227	6.06	5.92	6.17	11.00	1.146E-002	3.608E-003
Cm-242	6.14	6.11	6.17	7.00	7.292E-003	2.946E-003

Sample Name: AV21

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV21 , SN: 48-102BB6

Acquisition Start Date: 3/26/2010 5:14:04PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010 AV21

Calibration Date: 2/27/2010 6:33:06PM

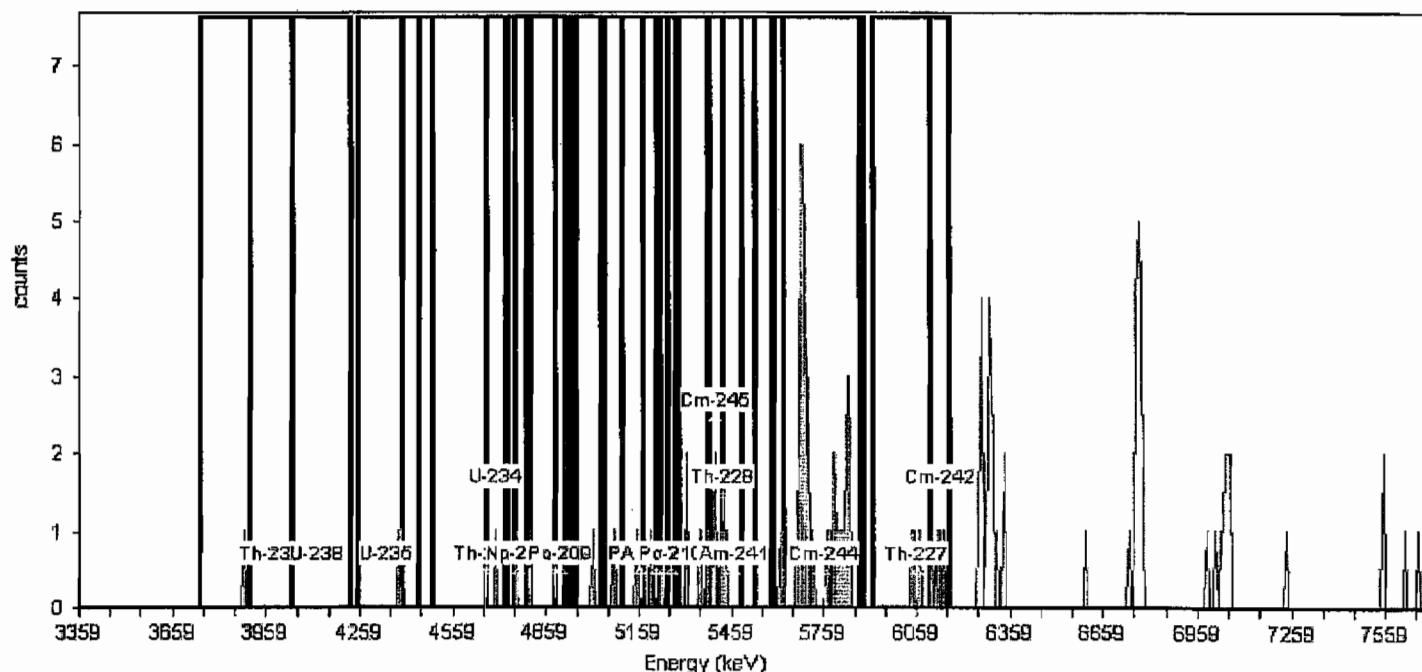
Energy Calibration Equation:

Gain = 7.4576 keV / Ch

Offset = 3,352.04 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.70% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05 Background ROI Library: Background ROI Library

Total Background Counts: 112.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.97	3.74	4.04	1.00	1.042E-003	1.473E-003
U-238	4.12	3.90	4.22	0.00	0.000E+000	1.473E-003
U-235	4.34	4.25	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.66	4.39	4.73	1.00	1.042E-003	1.473E-003
U-234	4.69	4.49	4.81	3.00	3.125E-003	2.083E-003
Pu-242	4.89	4.66	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	4.00	4.167E-003	2.329E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.96	5.22	4.00	4.167E-003	2.329E-003
Am-243	5.22	5.04	5.29	4.00	4.167E-003	2.329E-003
U-232	5.24	5.04	5.39	8.00	8.333E-003	3.125E-003
Th-228	5.43	5.17	5.49	11.00	1.146E-002	3.608E-003
Po-210	5.26	5.22	5.28	1.00	1.042E-003	1.473E-003
Pu-238	5.46	5.25	5.54	9.00	9.375E-003	3.294E-003
Am-241	5.47	5.28	5.59	9.00	9.375E-003	3.294E-003
Cm-245	5.40	5.38	5.43	5.00	5.208E-003	2.552E-003
Pu-236	5.75	5.60	5.87	35.00	3.646E-002	6.250E-003
Cm-244	5.76	5.63	5.89	34.00	3.542E-002	6.163E-003
Th-227	6.06	5.92	6.16	8.00	8.333E-003	3.125E-003
Cm-242	6.13	6.10	6.16	4.00	4.167E-003	2.329E-003

Sample Name: AV22

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV22 , SN: 49-155N1

Acquisition Start Date: 3/26/2010 5:14:06PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV22

Calibration Date: 3/4/2010 10:15:01AM

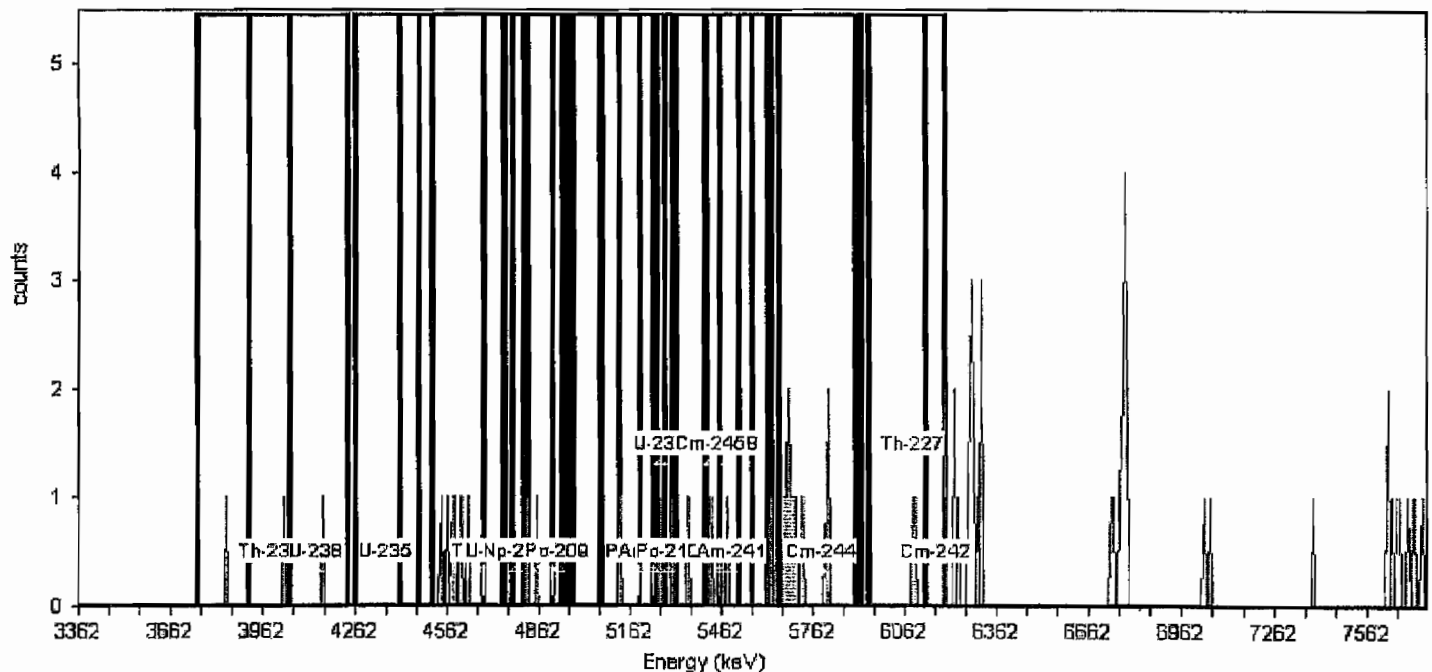
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,354.75 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.35% \pm 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundNo, Nucleide Library: Background ROI Library

Total Background Counts: 69.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.98	3.75	4.05	2.00	2.083E-003	1.804E-003
U-238	4.13	3.91	4.24	2.00	2.083E-003	1.804E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.40	4.75	6.00	6.250E-003	2.756E-003
U-234	4.71	4.51	4.82	7.00	7.292E-003	2.946E-003
Pu-242	4.91	4.68	4.95	2.00	2.083E-003	1.804E-003
Th-229	4.86	4.74	5.12	3.00	3.125E-003	2.083E-003
Np-237	4.79	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.25	1.00	1.042E-003	1.473E-003
Am-243	5.24	5.06	5.31	3.00	3.125E-003	2.083E-003
U-232	5.26	5.06	5.41	4.00	4.167E-003	2.329E-003
Th-228	5.46	5.19	5.52	5.00	5.208E-003	2.552E-003
Po-210	5.28	5.24	5.30	2.00	2.083E-003	1.804E-003
Pu-238	5.48	5.28	5.56	4.00	4.167E-003	2.329E-003
Am-241	5.49	5.31	5.61	3.00	3.125E-003	2.083E-003
Cm-245	5.43	5.40	5.46	1.00	1.042E-003	1.473E-003
Pu-236	5.77	5.62	5.90	12.00	1.250E-002	3.756E-003
Cm-244	5.79	5.65	5.92	11.00	1.146E-002	3.608E-003
Th-227	6.09	5.95	6.19	4.00	4.167E-003	2.329E-003
Cm-242	6.16	6.13	6.19	2.00	2.083E-003	1.804E-003

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.95	3.72	4.02	1.00	1.042E-003	1.473E-003
U-238	4.10	3.88	4.20	5.00	5.208E-003	2.552E-003
U-235	4.32	4.22	4.43	1.00	1.042E-003	1.473E-003
Th-230	4.64	4.37	4.71	3.00	3.125E-003	2.083E-003
U-234	4.67	4.47	4.78	2.00	2.083E-003	1.804E-003
Pu-242	4.87	4.64	4.91	2.00	2.083E-003	1.804E-003
Th-229	4.82	4.70	5.08	0.00	0.000E+000	1.473E-003
Np-237	4.75	4.73	4.77	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.87	4.90	0.00	0.000E+000	1.473E-003
Pu-239	5.14	4.93	5.20	2.00	2.083E-003	1.804E-003
Am-243	5.19	5.02	5.27	3.00	3.125E-003	2.083E-003
U-232	5.22	5.02	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.15	5.47	12.00	1.250E-002	3.756E-003
Po-210	5.24	5.19	5.25	1.00	1.042E-003	1.473E-003
Pu-238	5.43	5.23	5.51	11.00	1.146E-002	3.608E-003
Am-241	5.45	5.26	5.57	11.00	1.146E-002	3.608E-003
Cm-245	5.38	5.36	5.41	5.00	5.208E-003	2.552E-003
Pu-236	5.72	5.57	5.85	29.00	3.021E-002	5.705E-003
Cm-244	5.74	5.60	5.87	29.00	3.021E-002	5.705E-003
Th-227	6.04	5.90	6.14	6.00	6.250E-003	2.756E-003
Cm-242	6.11	6.08	6.14	2.00	2.083E-003	1.804E-003

Sample Name: AV24

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV24, SN: 47-137Q4

Acquisition Start Date: 3/26/2010 5:14:10PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV24

Calibration Date: 2/27/2010 6:35:07PM

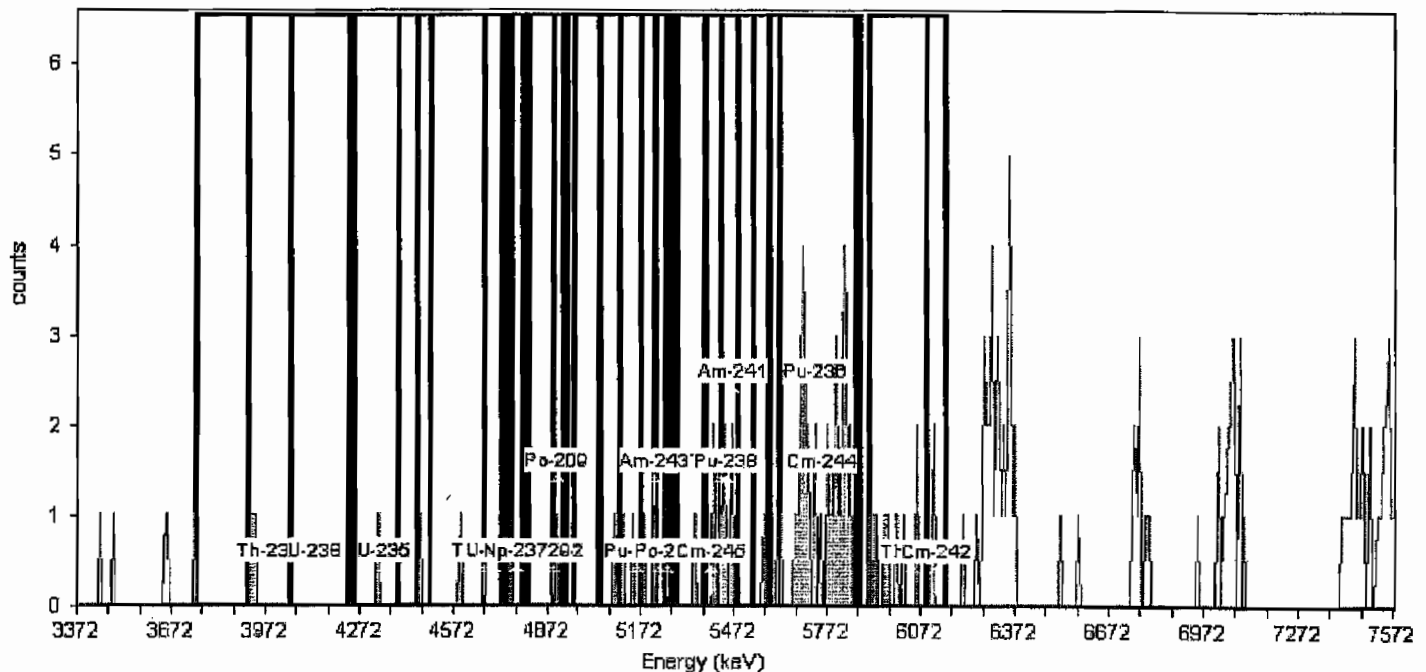
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,364.77 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.93% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 173.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.98	3.75	4.04	2.00	2.083E-003	1.804E-003
U-238	4.13	3.91	4.23	2.00	2.083E-003	1.804E-003
U-235	4.35	4.25	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.39	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.81	2.00	2.083E-003	1.804E-003
Pu-242	4.89	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.73	5.10	3.00	3.125E-003	2.083E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.89	4.92	1.00	1.042E-003	1.473E-003
Pu-239	5.16	4.95	5.22	5.00	5.208E-003	2.552E-003
Am-243	5.21	5.04	5.29	5.00	5.208E-003	2.552E-003
U-232	5.24	5.04	5.38	6.00	6.250E-003	2.756E-003
Th-228	5.43	5.17	5.49	13.00	1.354E-002	3.898E-003
Po-210	5.26	5.21	5.27	1.00	1.042E-003	1.473E-003
Pu-238	5.45	5.25	5.53	11.00	1.146E-002	3.608E-003
Am-241	5.46	5.28	5.58	12.00	1.250E-002	3.756E-003
Cm-245	5.40	5.38	5.43	4.00	4.167E-003	2.329E-003
Pu-236	5.74	5.59	5.86	41.00	4.271E-002	6.751E-003
Cm-244	5.75	5.62	5.88	40.00	4.167E-002	6.670E-003
Th-227	6.05	5.91	6.15	11.00	1.146E-002	3.608E-003
Cm-242	6.12	6.09	6.15	2.00	2.083E-003	1.804E-003

Sample Name: AV51

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV51, SN: 48-10911

Acquisition Start Date: 3/26/2010 5:14:11PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV51

Calibration Date: 2/27/2010 6:36:08PM

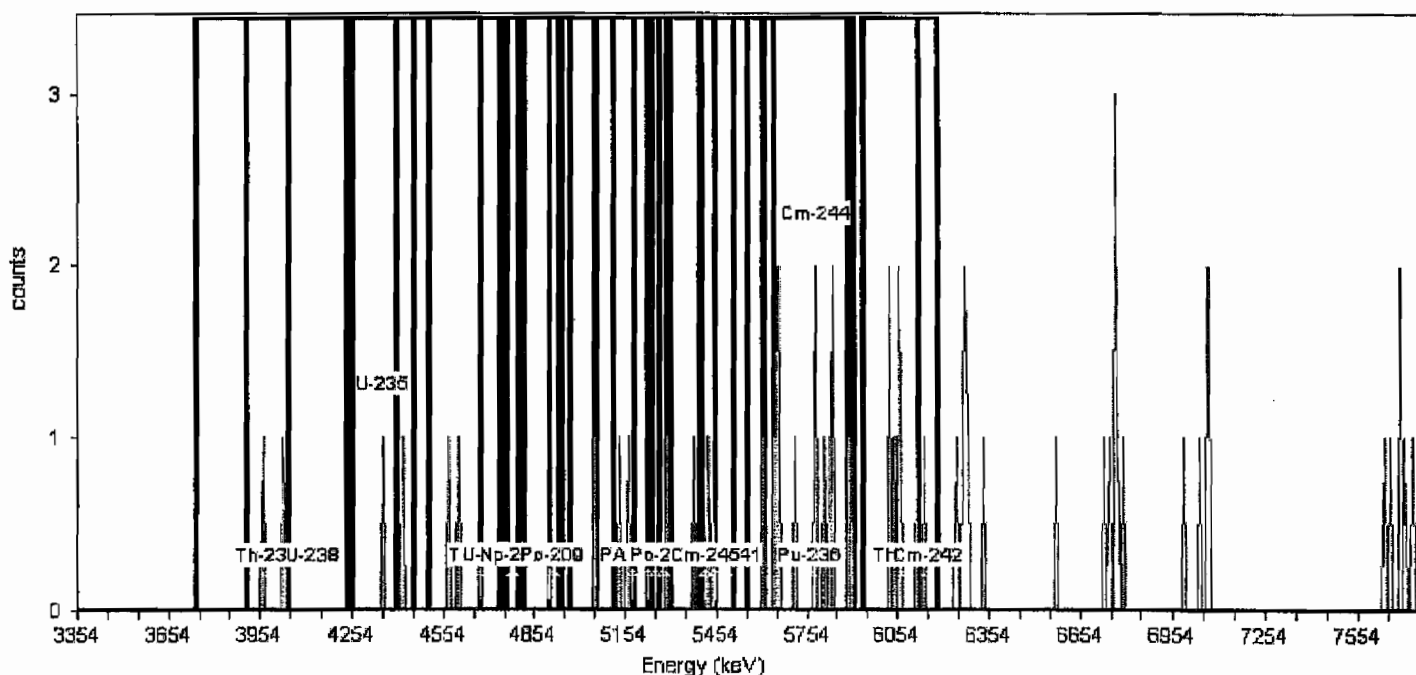
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,347.21 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.98% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 67.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.97	3.74	4.04	2.00	2.083E-003	1.804E-003
U-238	4.12	3.90	4.23	2.00	2.083E-003	1.804E-003
U-235	4.35	4.25	4.45	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.39	4.74	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.82	3.00	3.125E-003	2.083E-003
Pu-242	4.90	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.05	5.31	4.00	4.167E-003	2.329E-003
U-232	5.25	5.06	5.40	4.00	4.167E-003	2.329E-003
Th-228	5.45	5.18	5.51	4.00	4.167E-003	2.329E-003
Po-210	5.28	5.23	5.29	1.00	1.042E-003	1.473E-003
Pu-238	5.47	5.27	5.55	4.00	4.167E-003	2.329E-003
Am-241	5.49	5.30	5.61	4.00	4.167E-003	2.329E-003
Cm-245	5.42	5.40	5.45	2.00	2.083E-003	1.804E-003
Pu-236	5.76	5.61	5.89	13.00	1.354E-002	3.898E-003
Cm-244	5.78	5.64	5.91	14.00	1.458E-002	4.034E-003
Th-227	6.08	5.94	6.19	8.00	8.333E-003	3.125E-003
Cm-242	6.16	6.13	6.19	1.00	1.042E-003	1.473E-003

Sample Name: AV52

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV52 , SN:
Acquisition Start Date: 3/26/2010 5:14:13PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2010_AV52
Calibration Date: 2/27/2010 6:37:21PM

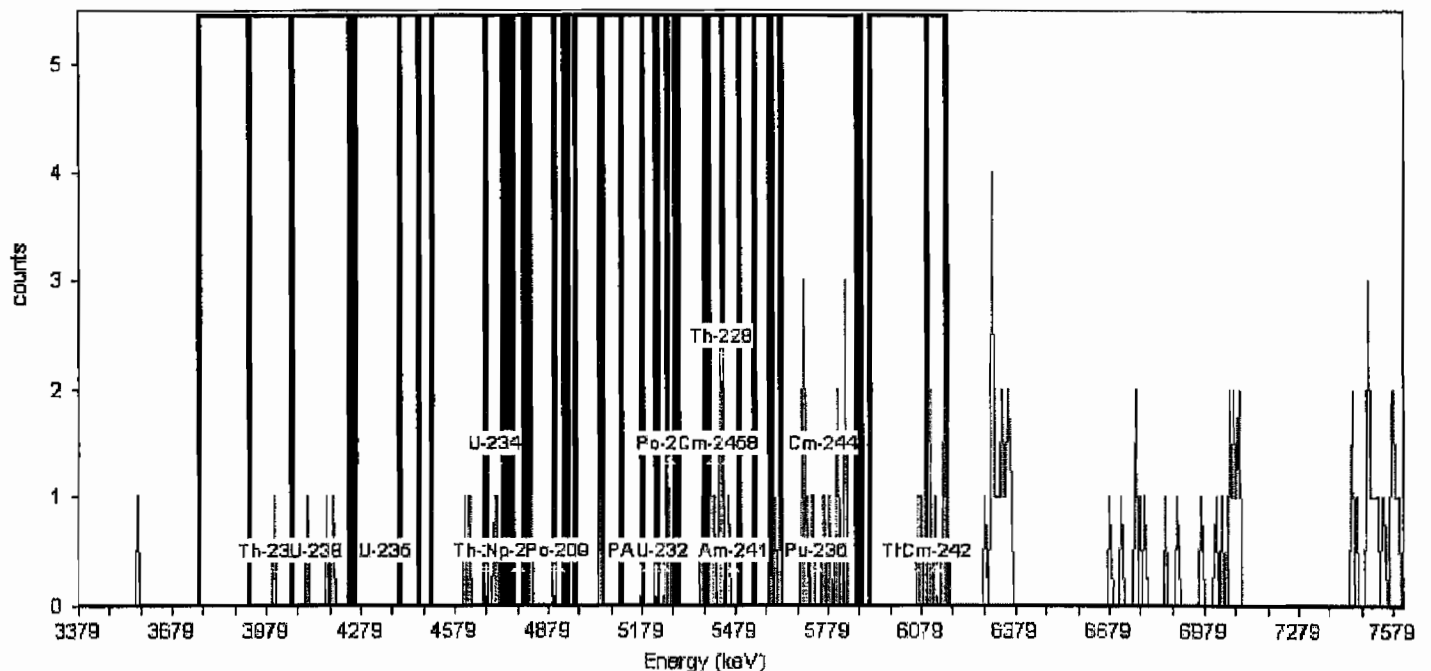
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.36% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 103.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.05	1.00	1.042E-003	1.473E-003
U-238	4.13	3.92	4.24	4.00	4.167E-003	2.329E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.81	4.00	4.167E-003	2.329E-003
Pu-242	4.90	4.67	4.94	3.00	3.125E-003	2.083E-003
Th-229	4.85	4.73	5.11	2.00	2.083E-003	1.804E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	1.00	1.042E-003	1.473E-003
Am-243	5.22	5.04	5.29	3.00	3.125E-003	2.083E-003
U-232	5.24	5.05	5.39	3.00	3.125E-003	2.083E-003
Th-228	5.43	5.18	5.49	11.00	1.146E-002	3.608E-003
Po-210	5.26	5.22	5.28	2.00	2.083E-003	1.804E-003
Pu-238	5.46	5.26	5.54	10.00	1.042E-002	3.455E-003
Am-241	5.47	5.29	5.59	9.00	9.375E-003	3.294E-003
Cm-245	5.41	5.38	5.43	7.00	7.292E-003	2.946E-003
Pu-236	5.75	5.60	5.87	18.00	1.875E-002	4.541E-003
Cm-244	5.76	5.63	5.89	16.00	1.667E-002	4.295E-003
Th-227	6.06	5.92	6.16	8.00	8.333E-003	3.125E-003
Cm-242	6.13	6.10	6.16	5.00	5.208E-003	2.552E-003

Sample Name: AV53

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

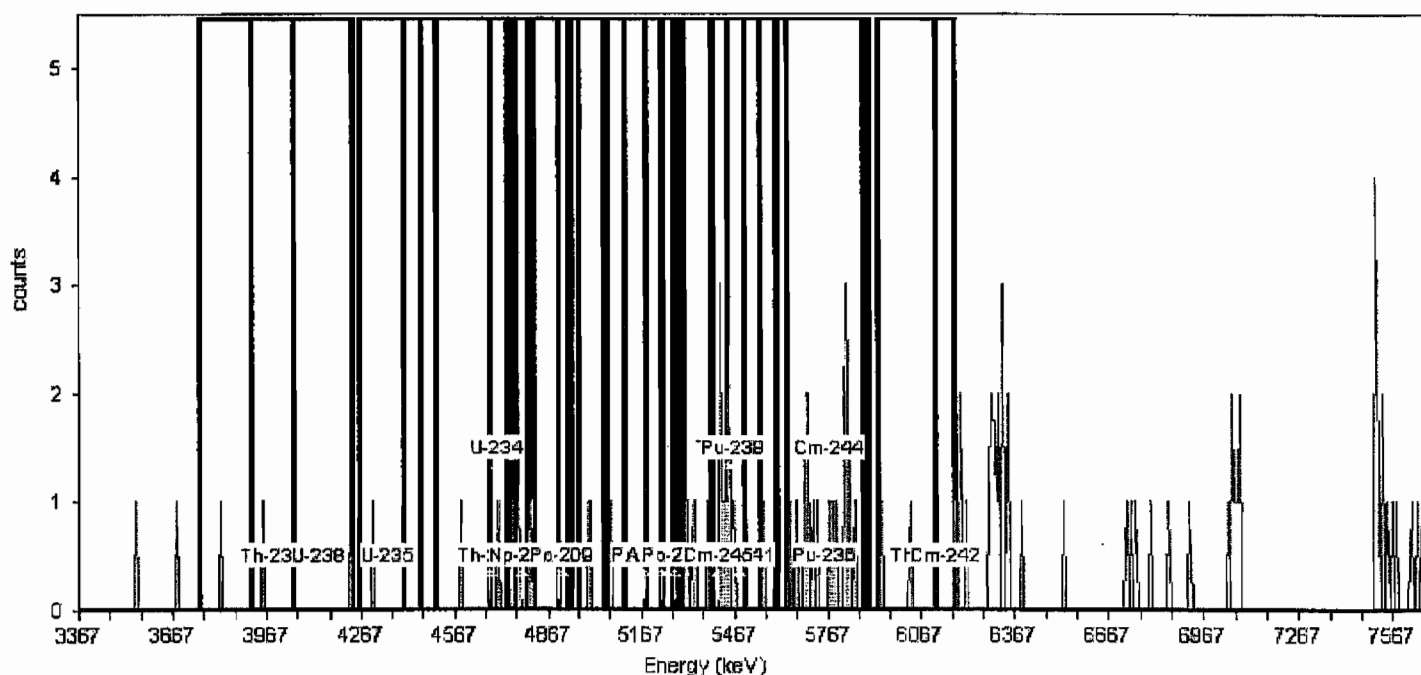
Acquisition

Detector: AV53, SN:
Acquisition Start Date: 3/26/2010 5:14:14PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2010_AV53
Calibration Date: 2/27/2010 6:38:07PM

Energy Calibration Equation:

Gain = 7.4651 keV / Ch
Offset = 3,360.21 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 27.37% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 98.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.98	3.75	4.05	2.00	2.083E-003	1.804E-003
U-238	4.13	3.91	4.23	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.74	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.82	5.00	5.208E-003	2.552E-003
Pu-242	4.90	4.67	4.94	4.00	4.167E-003	2.329E-003
Th-229	4.85	4.73	5.11	6.00	6.250E-003	2.756E-003
Np-237	4.78	4.76	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.91	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.97	5.23	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.05	5.30	1.00	1.042E-003	1.473E-003
U-232	5.25	5.05	5.40	6.00	6.250E-003	2.756E-003
Th-228	5.44	5.18	5.50	15.00	1.563E-002	4.167E-003
Po-210	5.27	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.26	5.55	15.00	1.563E-002	4.167E-003
Am-241	5.48	5.29	5.60	16.00	1.667E-002	4.295E-003
Cm-245	5.41	5.39	5.44	6.00	6.250E-003	2.756E-003
Pu-236	5.76	5.61	5.88	20.00	2.083E-002	4.774E-003
Cm-244	5.77	5.64	5.90	20.00	2.083E-002	4.774E-003
Th-227	6.07	5.93	6.17	3.00	3.125E-003	2.083E-003
Cm-242	6.14	6.11	6.17	1.00	1.042E-003	1.473E-003

Sample Name: AV54

Comment:

Sample

Spectrum #1 Analysis #1

Batch

Batch Name: March2010

Description:

Analyst: 60040

Acquisition

Detector: AV54, SN: 48-046116
Acquisition Start Date: 3/26/2010 5:14:16PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2010_AV54
Calibration Date: 2/27/2010 6:39:04PM

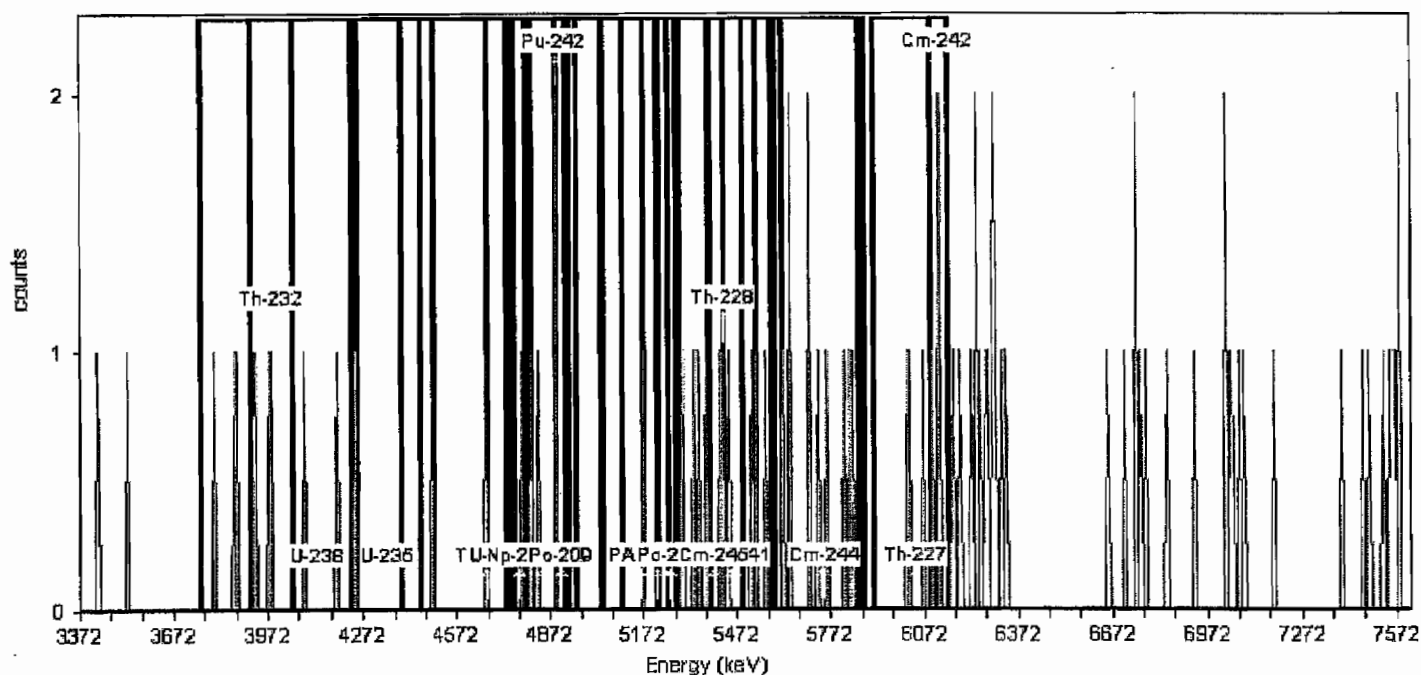
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,364.77 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 28.86% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 84.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.98	3.75	4.04	6.00	6.250E-003	2.756E-003
U-238	4.13	3.91	4.23	5.00	5.208E-003	2.552E-003
U-235	4.35	4.25	4.45	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.39	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.81	3.00	3.125E-003	2.083E-003
Pu-242	4.89	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.73	5.10	5.00	5.208E-003	2.552E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.89	4.92	2.00	2.083E-003	1.804E-003
Pu-239	5.16	4.95	5.22	1.00	1.042E-003	1.473E-003
Am-243	5.21	5.04	5.29	1.00	1.042E-003	1.473E-003
U-232	5.24	5.04	5.38	5.00	5.208E-003	2.552E-003
Th-228	5.43	5.17	5.49	9.00	9.375E-003	3.294E-003
Po-210	5.26	5.21	5.27	0.00	0.000E+000	1.473E-003
Pu-238	5.45	5.25	5.53	10.00	1.042E-002	3.455E-003
Am-241	5.46	5.28	5.58	11.00	1.146E-002	3.608E-003
Cm-245	5.40	5.38	5.43	3.00	3.125E-003	2.083E-003
Pu-236	5.74	5.59	5.86	11.00	1.146E-002	3.608E-003
Cm-244	5.75	5.62	5.88	11.00	1.146E-002	3.608E-003
Th-227	6.05	5.91	6.15	6.00	6.250E-003	2.756E-003
Cm-242	6.12	6.09	6.15	3.00	3.125E-003	2.083E-003

Sample Name: AV55

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV55 , SN: 46-33Q7

Acquisition Start Date: 3/26/2010 5:14:17PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010 AV55

Calibration Date: 2/28/2010 11:50:12PM

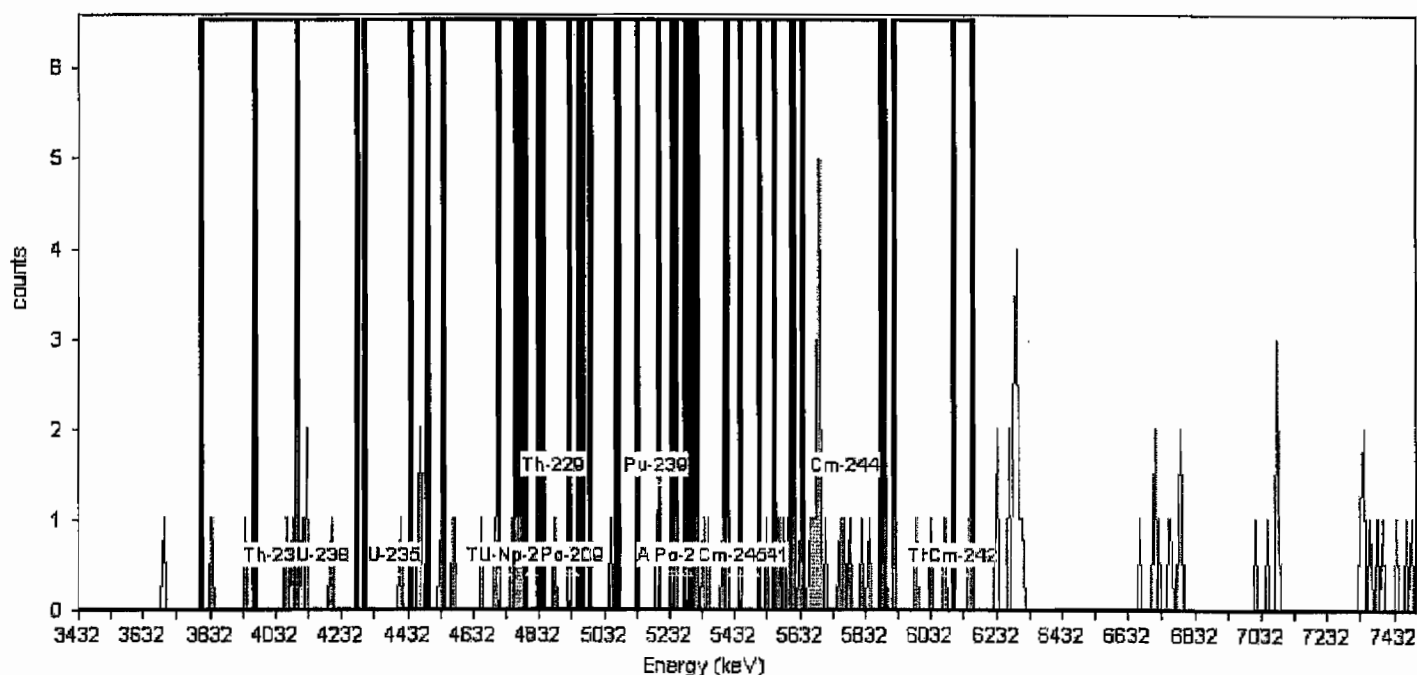
Energy Calibration Equation:

Gain = 7.2598 keV / Ch

Offset = 3,425,26 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.88% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundNo, Plide Library: Background ROI Library

Total Background Counts: 101.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	4.03	3.80	4.09	7.00	7.292E-003	2.946E-003
U-238	4.17	3.96	4.27	9.00	9.375E-003	3.294E-003
U-235	4.39	4.30	4.49	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.43	4.77	11.00	1.146E-002	3.608E-003
U-234	4.73	4.54	4.84	8.00	8.333E-003	3.125E-003
Pu-242	4.92	4.70	4.96	5.00	5.208E-003	2.552E-003
Th-229	4.88	4.76	5.13	5.00	5.208E-003	2.552E-003
Np-237	4.80	4.79	4.83	0.00	0.000E+000	1.473E-003
Po-209	4.94	4.92	4.95	0.00	0.000E+000	1.473E-003
Pu-239	5.19	4.99	5.25	3.00	3.125E-003	2.083E-003
Am-243	5.24	5.07	5.31	3.00	3.125E-003	2.083E-003
U-232	5.26	5.07	5.41	7.00	7.292E-003	2.946E-003
Th-228	5.45	5.20	5.51	6.00	6.250E-003	2.756E-003
Po-210	5.28	5.24	5.30	1.00	1.042E-003	1.473E-003
Pu-238	5.47	5.28	5.55	6.00	6.250E-003	2.756E-003
Am-241	5.49	5.31	5.60	9.00	9.375E-003	3.294E-003
Cm-245	5.42	5.40	5.45	1.00	1.042E-003	1.473E-003
Pu-236	5.76	5.61	5.88	19.00	1.979E-002	4.658E-003
Cm-244	5.77	5.64	5.89	18.00	1.875E-002	4.541E-003
Th-227	6.06	5.92	6.16	6.00	6.250E-003	2.756E-003
Cm-242	6.13	6.10	6.16	2.00	2.083E-003	1.804E-003

Alpha-Spectroscopy Background Report

TestAmerica St. Louis

TestAmerica St. Louis

13715 Rider Trail North

Earth City, MO 63045

9:20:26AM 3/27/2010

Sample Name: AV57

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV57 , SN: 48-158EE3

Acquisition Start Date: 3/26/2010 5:14:19PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV57

Calibration Date: 2/28/2010 11:51:20PM

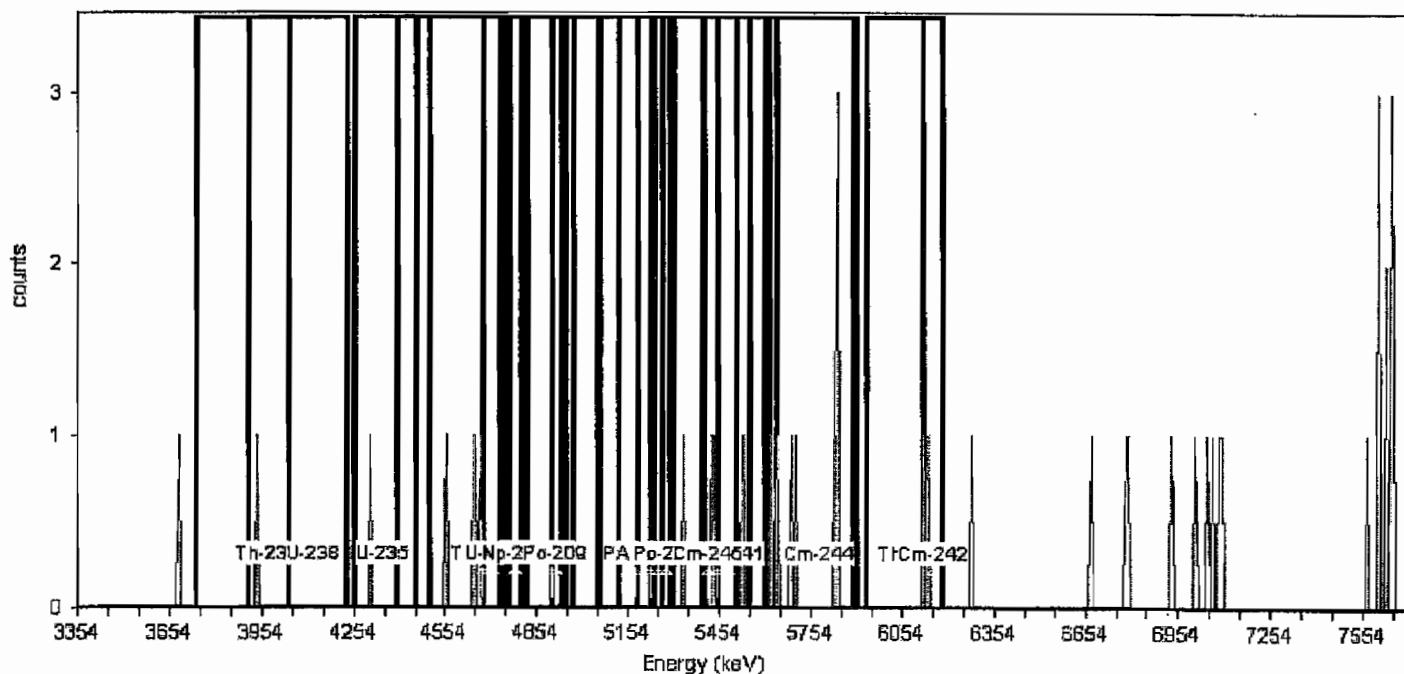
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,347.21 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.94% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 41.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.97	3.74	4.04	1.00	1.042E-003	1.473E-003
U-238	4.12	3.90	4.23	1.00	1.042E-003	1.473E-003
U-235	4.35	4.25	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.39	4.74	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.82	4.00	4.167E-003	2.329E-003
Pu-242	4.90	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.12	0.00	0.000E+000	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.05	5.31	0.00	0.000E+000	1.473E-003
U-232	5.25	5.06	5.40	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.18	5.51	3.00	3.125E-003	2.083E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	4.00	4.167E-003	2.329E-003
Am-241	5.49	5.30	5.61	4.00	4.167E-003	2.329E-003
Cm-245	5.42	5.40	5.45	2.00	2.083E-003	1.804E-003
Pu-236	5.76	5.61	5.89	8.00	8.333E-003	3.125E-003
Cm-244	5.78	5.64	5.91	7.00	7.292E-003	2.946E-003
Th-227	6.08	5.94	6.19	2.00	2.083E-003	1.804E-003
Cm-242	6.16	6.13	6.19	2.00	2.083E-003	1.804E-003

Alpha-Spectroscopy Background Report

TestAmerica St. Louis

TestAmerica St. Louis

13715 Rider Trail North

Earth City, MO 63045

9:20:29AM 3/27/2010

Sample Name: AV58

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV58, SN: 48-158EE4

Acquisition Start Date: 3/26/2010 5:14:21PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV58

Calibration Date: 2/28/2010 11:52:21PM

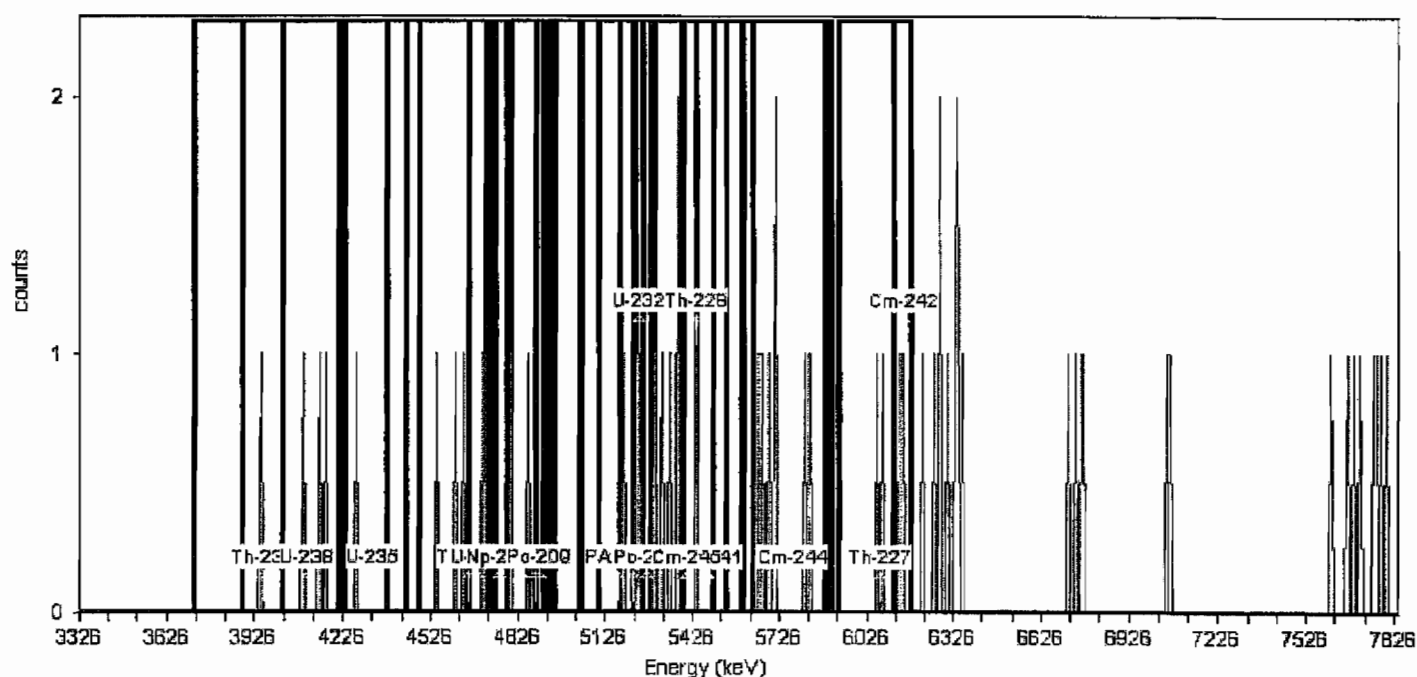
Energy Calibration Equation:

Gain = 7.5980 keV / Ch

Offset = 3,318.93 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.23% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 58.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.95	3.71	4.02	1.00	1.042E-003	1.473E-003
U-238	4.10	3.88	4.21	4.00	4.167E-003	2.329E-003
U-235	4.33	4.23	4.44	1.00	1.042E-003	1.473E-003
Th-230	4.66	4.38	4.72	5.00	5.208E-003	2.552E-003
U-234	4.69	4.48	4.80	6.00	6.250E-003	2.756E-003
Pu-242	4.88	4.66	4.93	4.00	4.167E-003	2.329E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
Np-237	4.76	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.95	5.23	1.00	1.042E-003	1.473E-003
Am-243	5.22	5.04	5.29	4.00	4.167E-003	2.329E-003
U-232	5.24	5.04	5.39	8.00	8.333E-003	3.125E-003
Th-228	5.44	5.17	5.50	9.00	9.375E-003	3.294E-003
Po-210	5.26	5.22	5.28	2.00	2.083E-003	1.804E-003
Pu-238	5.46	5.26	5.55	6.00	6.250E-003	2.756E-003
Am-241	5.48	5.29	5.60	6.00	6.250E-003	2.756E-003
Cm-245	5.41	5.39	5.44	1.00	1.042E-003	1.473E-003
Pu-236	5.76	5.61	5.89	10.00	1.042E-002	3.455E-003
Cm-244	5.77	5.64	5.90	10.00	1.042E-002	3.455E-003
Th-227	6.08	5.93	6.18	4.00	4.167E-003	2.329E-003
Cm-242	6.15	6.12	6.18	2.00	2.083E-003	1.804E-003

Sample Name: AV60

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV60, SN:

Acquisition Start Date: 3/26/2010 5:14:22PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV60

Calibration Date: 2/28/2010 11:53:18PM

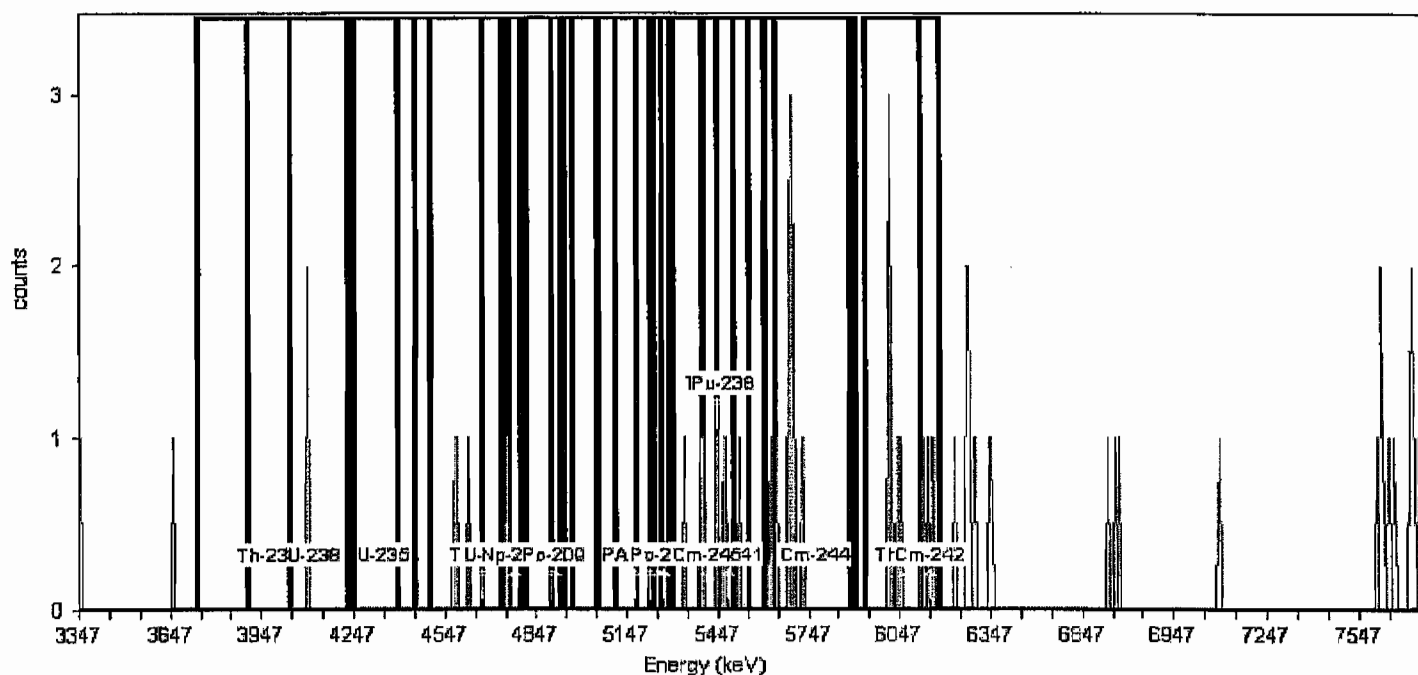
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,339.68 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 24.86% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 60.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.96	3.73	4.03	0.00	0.000E+000	1.473E-003
U-238	4.12	3.90	4.22	2.00	2.083E-003	1.804E-003
U-235	4.34	4.24	4.45	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.39	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.49	4.81	4.00	4.167E-003	2.329E-003
Pu-242	4.89	4.67	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.85	4.73	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.77	4.76	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.30	0.00	0.000E+000	1.473E-003
U-232	5.25	5.05	5.40	3.00	3.125E-003	2.083E-003
Th-228	5.44	5.18	5.50	6.00	6.250E-003	2.756E-003
Po-210	5.27	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.55	7.00	7.292E-003	2.946E-003
Am-241	5.48	5.29	5.60	7.00	7.292E-003	2.946E-003
Cm-245	5.41	5.39	5.44	3.00	3.125E-003	2.083E-003
Pu-236	5.76	5.61	5.89	10.00	1.042E-002	3.455E-003
Cm-244	5.77	5.64	5.90	9.00	9.375E-003	3.294E-003
Th-227	6.07	5.93	6.18	9.00	9.375E-003	3.294E-003
Cm-242	6.15	6.12	6.18	3.00	3.125E-003	2.083E-003

TestAmerica St. Louis

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:20:35AM 3/27/20

Sample Name: AV61

Comment:

Sample

Spectrum #1	Analysis #1
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Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV61 , SN: 49-115M5

Acquisition Start Date: 3/26/2010 5:14:24PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010 AV61

Calibration Date: 3/4/2010 10:12:58AM

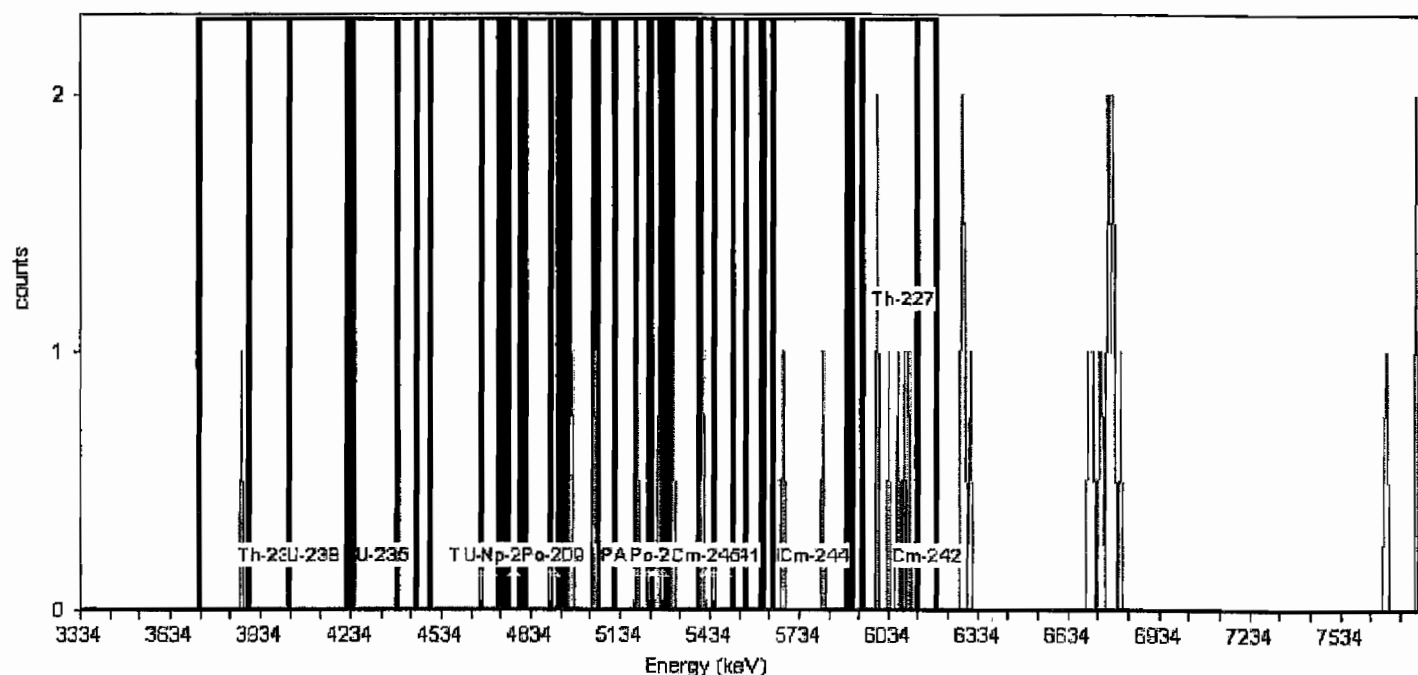
Energy Calibration Equation:

Gain = 7.6062 keV / Ch

Offset = 3,327.15 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.82% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background ROI, Nucleide Library: Background ROI Library

Total Background Counts: 40.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.96	3.72	4.03	1.00	1.042E-003	1.473E-003
U-238	4.11	3.89	4.22	0.00	0.000E+000	1.473E-003
U-235	4.34	4.24	4.45	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.38	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.49	4.81	0.00	0.000E+000	1.473E-003
Pu-242	4.89	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.11	2.00	2.083E-003	1.804E-003
Np-237	4.77	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.96	5.24	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.05	5.30	3.00	3.125E-003	2.083E-003
U-232	5.25	5.05	5.40	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.18	5.51	4.00	4.167E-003	2.329E-003
Po-210	5.27	5.23	5.29	1.00	1.042E-003	1.473E-003
Pu-238	5.47	5.27	5.56	2.00	2.083E-003	1.804E-003
Am-241	5.49	5.30	5.61	2.00	2.083E-003	1.804E-003
Cm-245	5.42	5.40	5.45	1.00	1.042E-003	1.473E-003
Pu-236	5.77	5.62	5.90	3.00	3.125E-003	2.083E-003
Cm-244	5.78	5.65	5.91	3.00	3.125E-003	2.083E-003
Th-227	6.09	5.94	6.19	6.00	6.250E-003	2.756E-003
Cm-242	6.16	6.13	6.19	0.00	0.000E+000	1.473E-003

Sample Name: AV63

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV63, SN:

Acquisition Start Date: 3/26/2010 5:14:25PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV63

Calibration Date: 2/28/2010 11:54:16PM

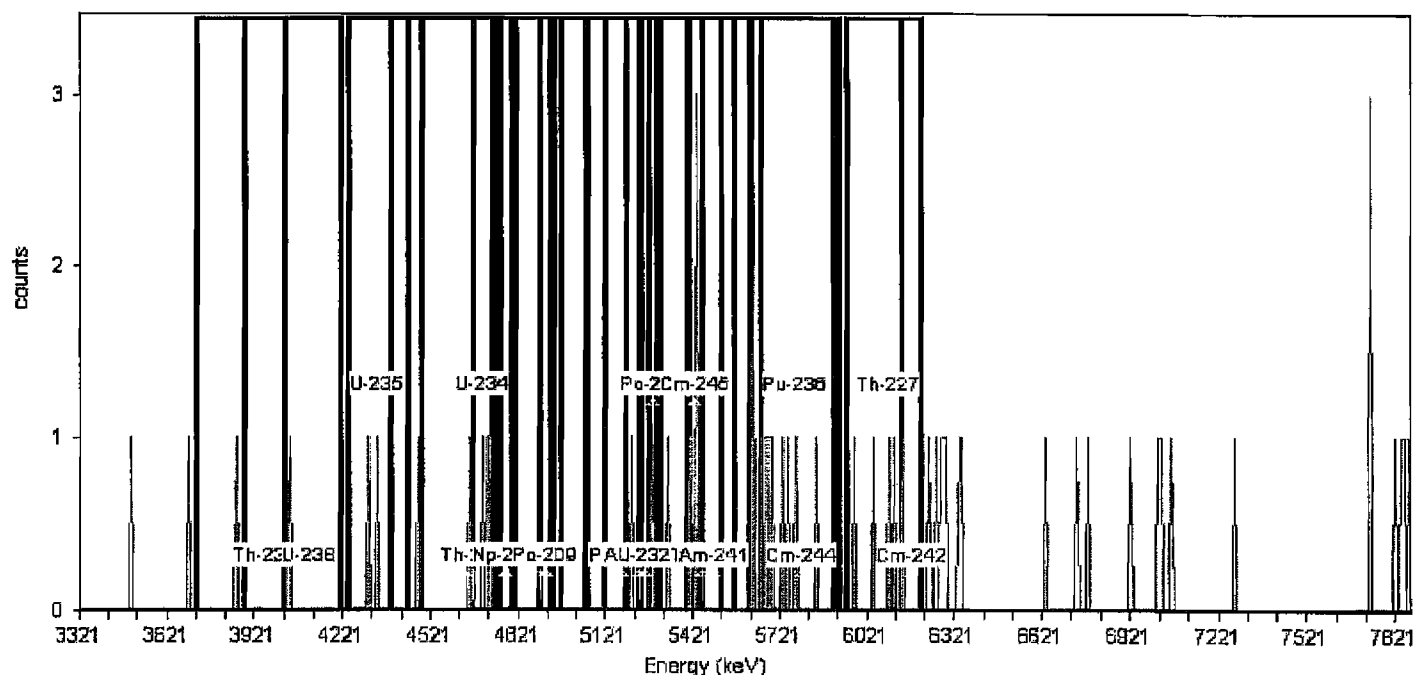
Energy Calibration Equation:

Gain = 7.6747 keV / Ch

Offset = 3,313.65 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.82% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 58.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.95	3.71	4.02	1.00	1.042E-003	1.473E-003
U-238	4.10	3.88	4.21	1.00	1.042E-003	1.473E-003
U-235	4.33	4.23	4.44	2.00	2.083E-003	1.804E-003
Th-230	4.66	4.38	4.73	5.00	5.208E-003	2.552E-003
U-234	4.70	4.49	4.81	4.00	4.167E-003	2.329E-003
Pu-242	4.89	4.66	4.94	3.00	3.125E-003	2.083E-003
Th-229	4.85	4.73	5.12	0.00	0.000E+000	1.473E-003
Np-237	4.77	4.76	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.96	5.24	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.05	5.31	2.00	2.083E-003	1.804E-003
U-232	5.26	5.06	5.41	4.00	4.167E-003	2.329E-003
Th-228	5.45	5.19	5.52	8.00	8.333E-003	3.125E-003
Po-210	5.28	5.23	5.29	1.00	1.042E-003	1.473E-003
Pu-238	5.48	5.27	5.56	7.00	7.292E-003	2.946E-003
Am-241	5.49	5.30	5.62	6.00	6.250E-003	2.756E-003
Cm-245	5.42	5.40	5.45	5.00	5.208E-003	2.552E-003
Pu-236	5.78	5.62	5.91	12.00	1.250E-002	3.756E-003
Cm-244	5.79	5.65	5.92	9.00	9.375E-003	3.294E-003
Th-227	6.10	5.95	6.21	5.00	5.208E-003	2.552E-003
Cm-242	6.18	6.15	6.21	1.00	1.042E-003	1.473E-003

Sample Name: AV64

Sample

Spectrum #1

Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV64, SN:

Acquisition Start Date: 3/26/2010 5:14:26PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV64

Calibration Date: 2/28/2010 11:55:15PM

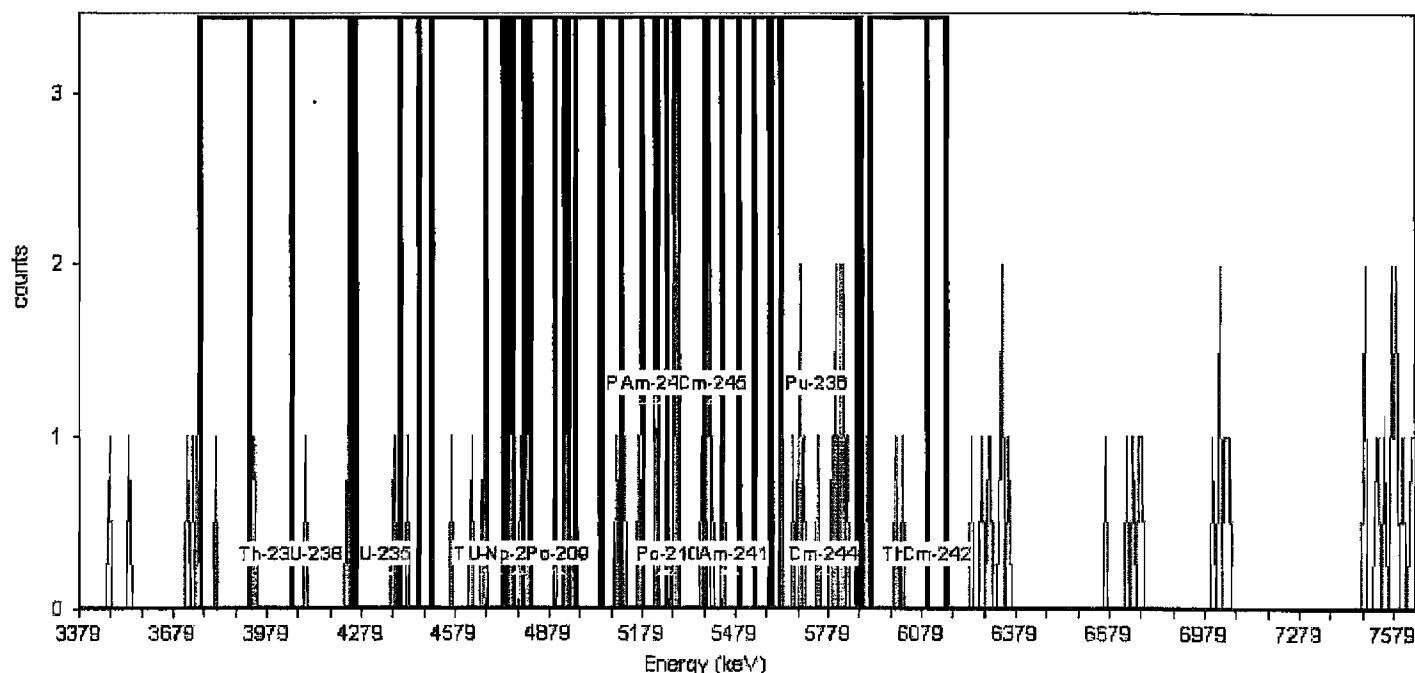
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 28.41% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 86.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.05	2.00	2.083E-003	1.804E-003
U-238	4.13	3.92	4.24	3.00	3.125E-003	2.083E-003
U-235	4.36	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.74	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.81	6.00	6.250E-003	2.756E-003
Pu-242	4.90	4.67	4.94	4.00	4.167E-003	2.329E-003
Th-229	4.85	4.73	5.11	5.00	5.208E-003	2.552E-003
Np-237	4.78	4.76	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	4.00	4.167E-003	2.329E-003
Am-243	5.22	5.04	5.29	8.00	8.333E-003	3.125E-003
U-232	5.24	5.05	5.39	11.00	1.146E-002	3.608E-003
Th-228	5.43	5.18	5.49	10.00	1.042E-002	3.455E-003
Po-210	5.26	5.22	5.28	2.00	2.083E-003	1.804E-003
Pu-238	5.46	5.26	5.54	9.00	9.375E-003	3.294E-003
Am-241	5.47	5.29	5.59	8.00	8.333E-003	3.125E-003
Cm-245	5.41	5.38	5.43	3.00	3.125E-003	2.083E-003
Pu-236	5.75	5.60	5.87	16.00	1.667E-002	4.295E-003
Cm-244	5.76	5.63	5.89	16.00	1.667E-002	4.295E-003
Th-227	6.06	5.92	6.16	2.00	2.083E-003	1.804E-003
Cm-242	6.13	6.10	6.16	0.00	0.000E+000	1.473E-003

TestAmerica St. Louis
TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:20:45AM 3/27/2010

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

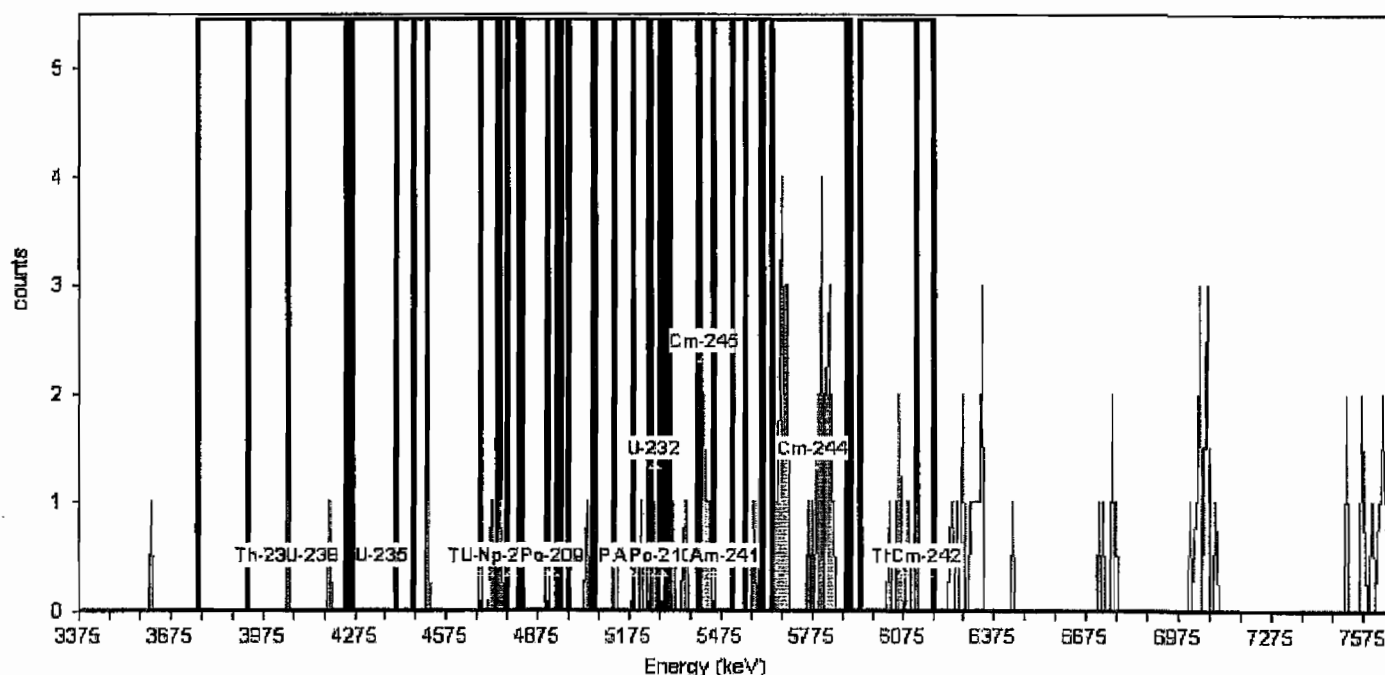
Acquisition

Detector: AV65 , SN:
Acquisition Start Date: 3/26/2010 5:14:28PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2010_AV65a
Calibration Date: 3/1/2010 3:33:31PM

Energy Calibration Equation:

Gain = 7.4651 keV / Ch
Offset = 3,367.67 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 26.89% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05 Background ROI Library: Background ROI Library

Total Background Counts: 100.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.05	1.00	1.042E-003	1.473E-003
U-238	4.14	3.92	4.24	2.00	2.083E-003	1.804E-003
U-235	4.36	4.26	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.41	4.75	3.00	3.125E-003	2.083E-003
U-234	4.71	4.51	4.82	3.00	3.125E-003	2.083E-003
Pu-242	4.91	4.68	4.95	2.00	2.083E-003	1.804E-003
Th-229	4.86	4.74	5.12	2.00	2.083E-003	1.804E-003
Np-237	4.79	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.05	5.31	3.00	3.125E-003	2.083E-003
U-232	5.26	5.06	5.41	6.00	6.250E-003	2.756E-003
Th-228	5.45	5.19	5.51	9.00	9.375E-003	3.294E-003
Po-210	5.28	5.23	5.29	1.00	1.042E-003	1.473E-003
Pu-238	5.47	5.27	5.55	7.00	7.292E-003	2.946E-003
Am-241	5.49	5.30	5.61	8.00	8.333E-003	3.125E-003
Cm-245	5.42	5.40	5.45	4.00	4.167E-003	2.329E-003
Pu-236	5.76	5.61	5.89	31.00	3.229E-002	5.893E-003
Cm-244	5.78	5.64	5.91	31.00	3.229E-002	5.893E-003
Th-227	6.08	5.94	6.18	7.00	7.292E-003	2.946E-003
Cm-242	6.15	6.12	6.18	1.00	1.042E-003	1.473E-003

Sample Name: AV66

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV66, SN: 48-158EE2

Acquisition Start Date: 3/26/2010 5:14:29PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV66

Calibration Date: 2/28/2010 11:57:55PM

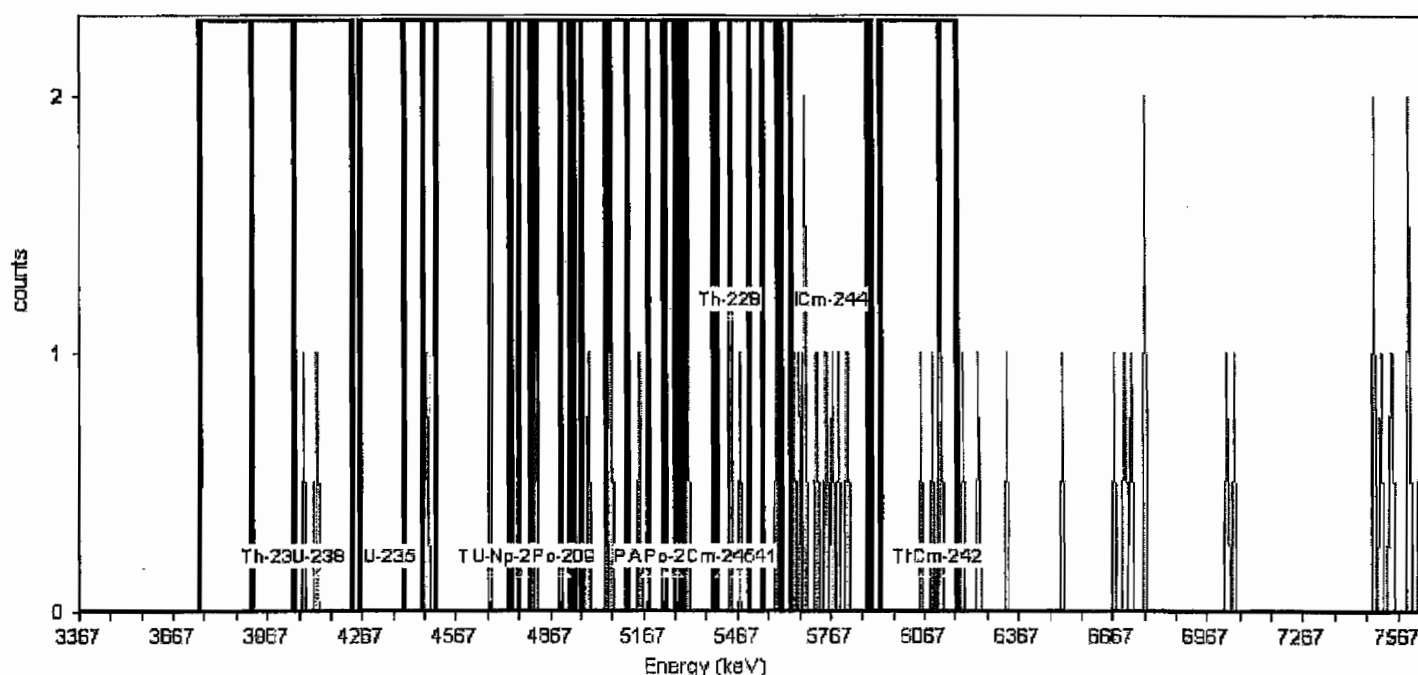
Energy Calibration Equation:

Gain = 7.4651 keV / Ch

Offset = 3,360.21 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.30% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 50.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.98	3.75	4.05	0.00	0.000E+000	1.473E-003
U-238	4.13	3.91	4.23	3.00	3.125E-003	2.083E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.82	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.67	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.85	4.73	5.11	4.00	4.167E-003	2.329E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.97	5.23	4.00	4.167E-003	2.329E-003
Am-243	5.23	5.05	5.30	3.00	3.125E-003	2.083E-003
U-232	5.25	5.05	5.40	4.00	4.167E-003	2.329E-003
Th-228	5.44	5.18	5.50	3.00	3.125E-003	2.083E-003
Po-210	5.27	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.26	5.55	3.00	3.125E-003	2.083E-003
Am-241	5.48	5.29	5.60	4.00	4.167E-003	2.329E-003
Cm-245	5.41	5.39	5.44	1.00	1.042E-003	1.473E-003
Pu-236	5.76	5.61	5.88	13.00	1.354E-002	3.898E-003
Cm-244	5.77	5.64	5.90	13.00	1.354E-002	3.898E-003
Th-227	6.07	5.93	6.17	4.00	4.167E-003	2.329E-003
Cm-242	6.14	6.11	6.17	2.00	2.083E-003	1.804E-003

Sample Name: AV67

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV67, SN: 48-046117

Acquisition Start Date: 3/26/2010 5:14:32PM

Live Time: 960.00 min.

Real Time: 960.03 min.

Calibration Name: Feb2010_AV67

Calibration Date: 2/28/2010 11:58:34PM

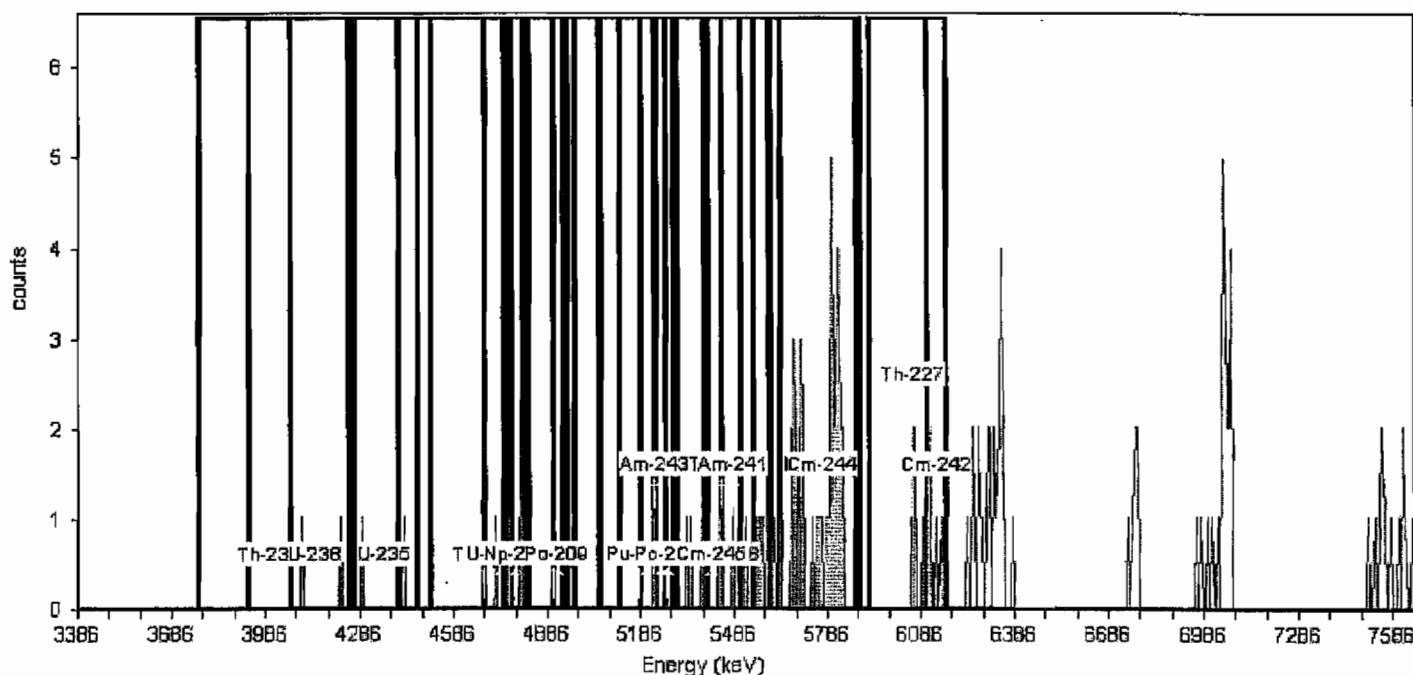
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,379.56 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.31% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 126.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.06	0.00	0.000E+000	1.473E-003
U-238	4.14	3.93	4.24	2.00	2.083E-003	1.804E-003
U-235	4.36	4.27	4.47	2.00	2.083E-003	1.804E-003
Th-230	4.68	4.41	4.75	2.00	2.083E-003	1.804E-003
U-234	4.71	4.51	4.82	4.00	4.167E-003	2.329E-003
Pu-242	4.90	4.68	4.95	4.00	4.167E-003	2.329E-003
Th-229	4.86	4.74	5.12	3.00	3.125E-003	2.083E-003
Np-237	4.78	4.77	4.81	2.00	2.083E-003	1.804E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.05	5.30	1.00	1.042E-003	1.473E-003
U-232	5.25	5.06	5.40	4.00	4.167E-003	2.329E-003
Th-228	5.44	5.18	5.50	7.00	7.292E-003	2.946E-003
Po-210	5.27	5.23	5.29	1.00	1.042E-003	1.473E-003
Pu-238	5.46	5.26	5.55	7.00	7.292E-003	2.946E-003
Am-241	5.48	5.29	5.60	11.00	1.146E-002	3.608E-003
Cm-245	5.41	5.39	5.44	2.00	2.083E-003	1.804E-003
Pu-236	5.75	5.60	5.88	36.00	3.750E-002	6.336E-003
Cm-244	5.77	5.63	5.89	35.00	3.646E-002	6.250E-003
Th-227	6.06	5.92	6.17	9.00	9.375E-003	3.294E-003
Cm-242	6.14	6.11	6.17	4.00	4.167E-003	2.329E-003

9:20:54AM 3/27/2010

Comment:

Batch

Analyst: 60040

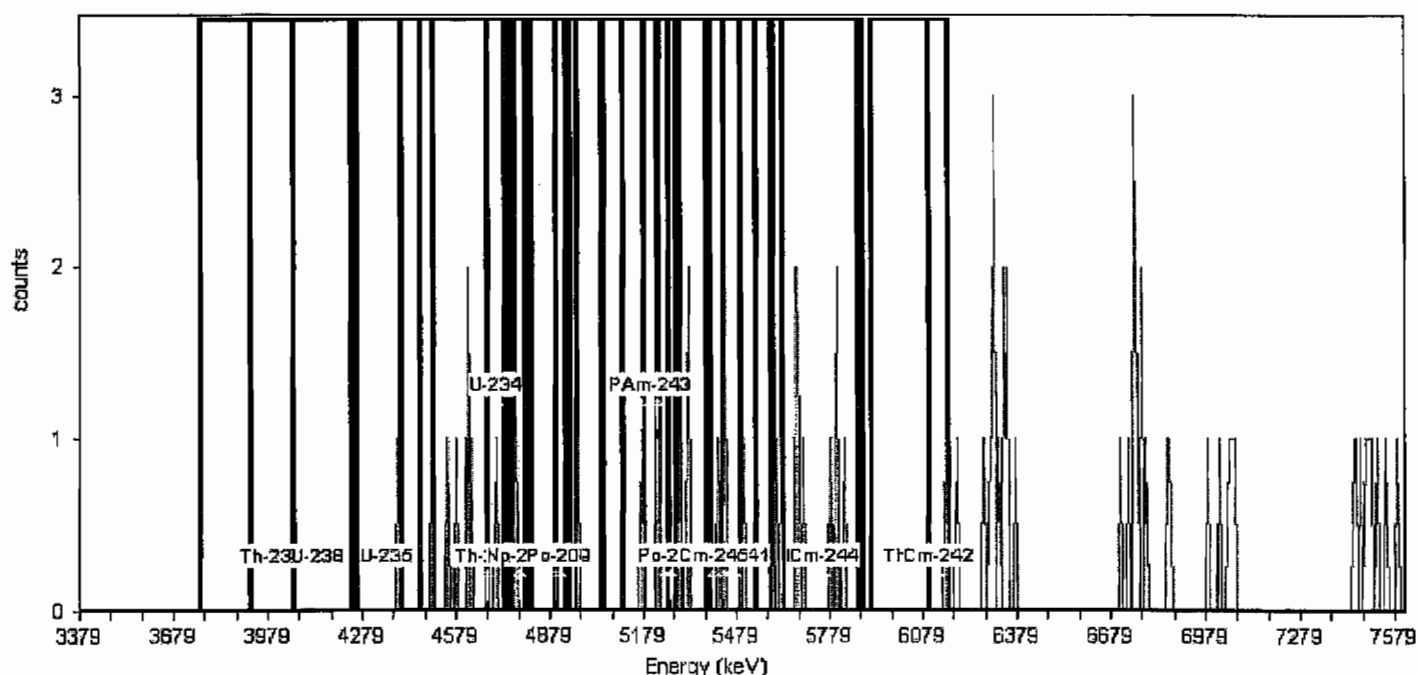
Batch Name: March2010

Description:

Acquisition

Calibration Date: 2/28/2010 11:59:54PM

Efficiency: 26.02% +/- 0.28% TPU(2 sigma)



General Analysis

Total Background Counts: 75.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.05	0.00	0.000E+000	1.473E-003
U-238	4.13	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.74	7.00	7.292E-003	2.946E-003
U-234	4.70	4.50	4.81	7.00	7.292E-003	2.946E-003
Pu-242	4.90	4.67	4.94	2.00	2.083E-003	1.804E-003
Th-229	4.85	4.73	5.11	2.00	2.083E-003	1.804E-003
Np-237	4.78	4.76	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	4.00	4.167E-003	2.329E-003
Am-243	5.22	5.04	5.29	4.00	4.167E-003	2.329E-003
U-232	5.24	5.05	5.39	7.00	7.292E-003	2.946E-003
Th-228	5.43	5.18	5.49	9.00	9.375E-003	3.294E-003
Po-210	5.26	5.22	5.28	2.00	2.083E-003	1.804E-003
Pu-238	5.46	5.26	5.54	8.00	8.333E-003	3.125E-003
Am-241	5.47	5.29	5.59	8.00	8.333E-003	3.125E-003
Cm-245	5.41	5.38	5.43	1.00	1.042E-003	1.473E-003
Pu-236	5.75	5.60	5.87	11.00	1.146E-002	3.608E-003
Cm-244	5.76	5.63	5.89	9.00	9.375E-003	3.294E-003
Th-227	6.06	5.92	6.16	1.00	1.042E-003	1.473E-003
Cm-242	6.13	6.10	6.16	1.00	1.042E-003	1.473E-003

Sample Name: AV69

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV69, SN: 49-155DD5

Acquisition Start Date: 3/26/2010 5:14:36PM

Live Time: 960.00 min.

Real Time: 960.03 min.

Calibration Name: Feb2010_AV69

Calibration Date: 3/3/2010 4:56:03PM

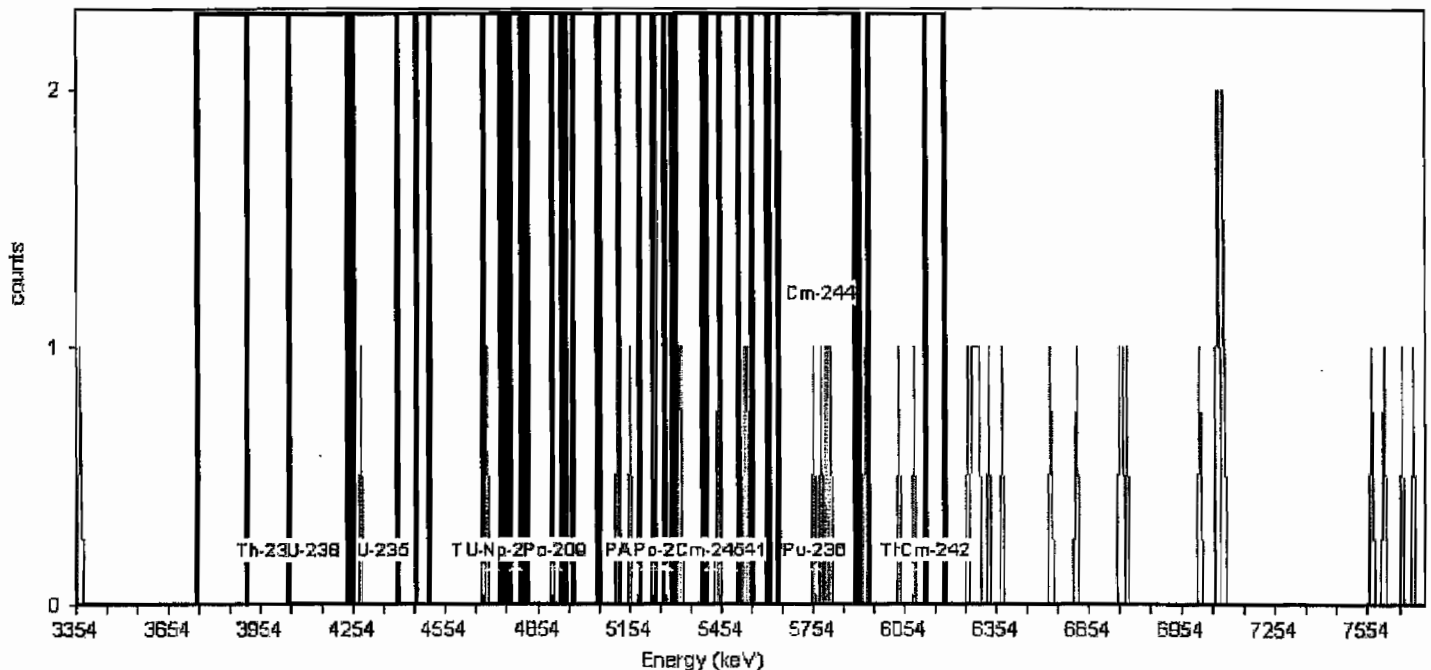
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,347.21 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.74% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 40.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.97	3.74	4.04	0.00	0.000E+000	1.473E-003
U-238	4.12	3.90	4.23	0.00	0.000E+000	1.473E-003
U-235	4.35	4.25	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.39	4.74	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.82	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.67	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.85	4.73	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.05	5.31	2.00	2.083E-003	1.804E-003
U-232	5.25	5.06	5.40	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.18	5.51	2.00	2.083E-003	1.804E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	4.00	4.167E-003	2.329E-003
Am-241	5.49	5.30	5.61	4.00	4.167E-003	2.329E-003
Cm-245	5.42	5.40	5.45	1.00	1.042E-003	1.473E-003
Pu-236	5.76	5.61	5.89	5.00	5.208E-003	2.552E-003
Cm-244	5.78	5.64	5.91	5.00	5.208E-003	2.552E-003
Th-227	6.08	5.94	6.19	2.00	2.083E-003	1.804E-003
Cm-242	6.16	6.13	6.19	0.00	0.000E+000	1.473E-003

TestAmerica St. Louis
TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:21:01AM 3/27/2010

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV70 , SN: 48-158FF1
Acquisition Start Date: 3/26/2010 5:14:37PM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Feb2010_AV70
Calibration Date: 3/1/2010 3:29:41PM

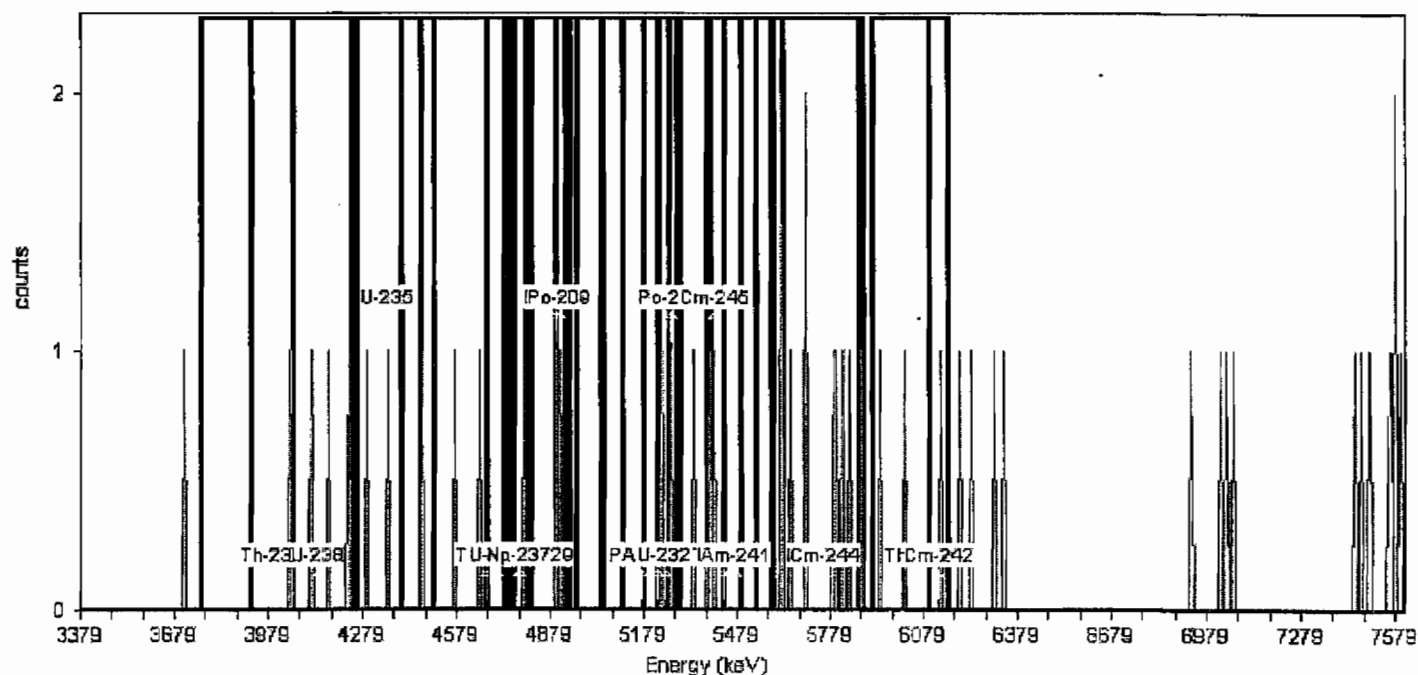
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.94% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05 Background ROI Library: Background ROI Library

Total Background Counts: 49.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.05	1.00	1.042E-003	1.473E-003
U-238	4.13	3.92	4.24	4.00	4.167E-003	2.329E-003
U-235	4.36	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.74	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.81	3.00	3.125E-003	2.083E-003
Pu-242	4.90	4.67	4.94	3.00	3.125E-003	2.083E-003
Th-229	4.85	4.73	5.11	3.00	3.125E-003	2.083E-003
Np-237	4.78	4.76	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.91	4.90	4.92	2.00	2.083E-003	1.804E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.29	2.00	2.083E-003	1.804E-003
U-232	5.24	5.05	5.39	4.00	4.167E-003	2.329E-003
Th-228	5.43	5.18	5.49	5.00	5.208E-003	2.552E-003
Po-210	5.26	5.22	5.28	2.00	2.083E-003	1.804E-003
Pu-238	5.46	5.26	5.54	4.00	4.167E-003	2.329E-003
Am-241	5.47	5.29	5.59	3.00	3.125E-003	2.083E-003
Cm-245	5.41	5.38	5.43	2.00	2.083E-003	1.804E-003
Pu-236	5.75	5.60	5.87	10.00	1.042E-002	3.455E-003
Cm-244	5.76	5.63	5.89	9.00	9.375E-003	3.294E-003
Th-227	6.06	5.92	6.16	3.00	3.125E-003	2.083E-003
Cm-242	6.13	6.10	6.16	1.00	1.042E-003	1.473E-003

Sample Name: AV71

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV71, SN: 48-158EE6

Acquisition Start Date: 3/26/2010 5:14:40PM

Live Time: 960.00 min.

Real Time: 960.03 min.

Calibration Name: Feb2010_AV71

Calibration Date: 3/1/2010 12:00:44AM

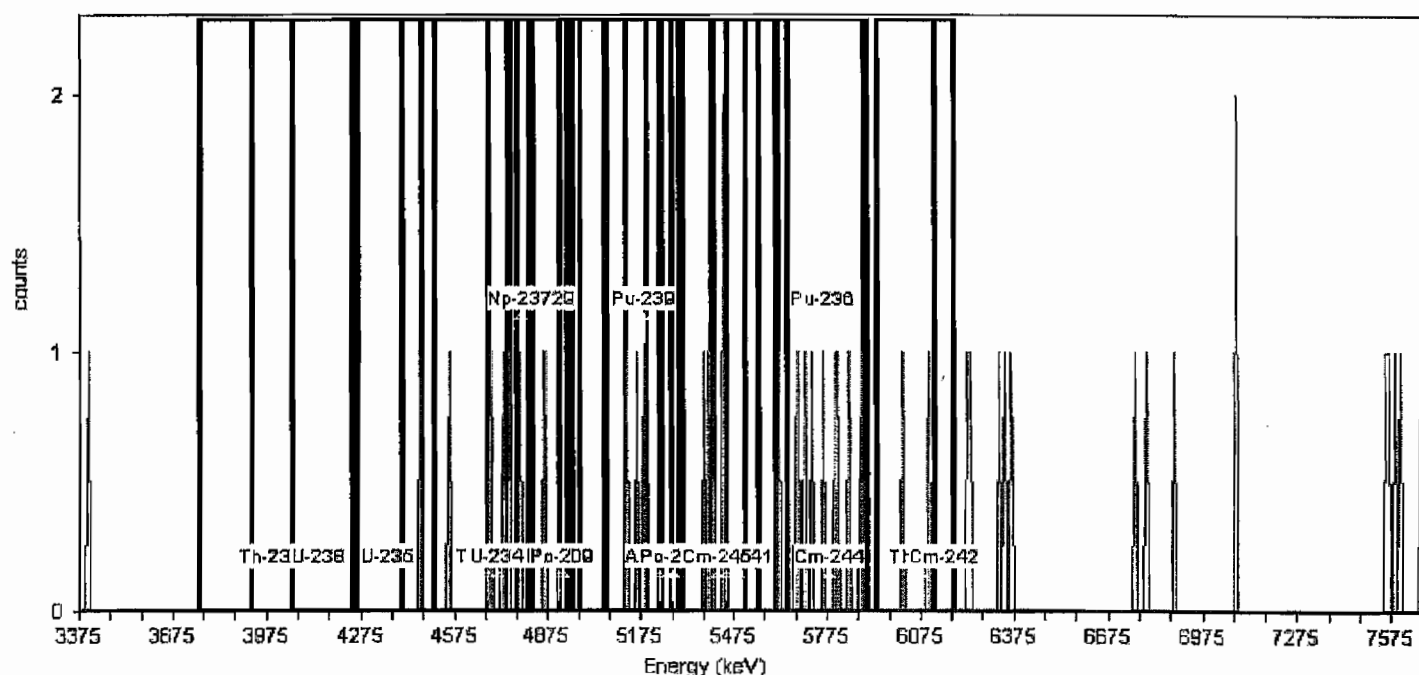
Energy Calibration Equation:

Gain = 7.4651 keV / Ch

Offset = 3,367.67 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.59% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 43.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.05	0.00	0.000E+000	1.473E-003
U-238	4.14	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.47	1.00	1.042E-003	1.473E-003
Th-230	4.68	4.41	4.75	5.00	5.208E-003	2.552E-003
U-234	4.71	4.51	4.82	5.00	5.208E-003	2.552E-003
Pu-242	4.91	4.68	4.95	5.00	5.208E-003	2.552E-003
Th-229	4.86	4.74	5.12	3.00	3.125E-003	2.083E-003
Np-237	4.79	4.77	4.81	1.00	1.042E-003	1.473E-003
Po-209	4.92	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.05	5.31	3.00	3.125E-003	2.083E-003
U-232	5.26	5.06	5.41	6.00	6.250E-003	2.756E-003
Th-228	5.45	5.19	5.51	5.00	5.208E-003	2.552E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	5.00	5.208E-003	2.552E-003
Am-241	5.49	5.30	5.61	5.00	5.208E-003	2.552E-003
Cm-245	5.42	5.40	5.45	3.00	3.125E-003	2.083E-003
Pu-236	5.76	5.61	5.89	10.00	1.042E-002	3.455E-003
Cm-244	5.78	5.64	5.91	9.00	9.375E-003	3.294E-003
Th-227	6.08	5.94	6.18	2.00	2.083E-003	1.804E-003
Cm-242	6.15	6.12	6.18	0.00	0.000E+000	1.473E-003

9:21:07AM 3/27/2010

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV72 , SN:

Acquisition Start Date: 3/26/2010 5:14:41PM

Live Time: 960.00 min.

Real Time: 960.03 min.

Calibration Name: Feb2010_AV72

Calibration Date: 3/1/2010 12:01:35AM

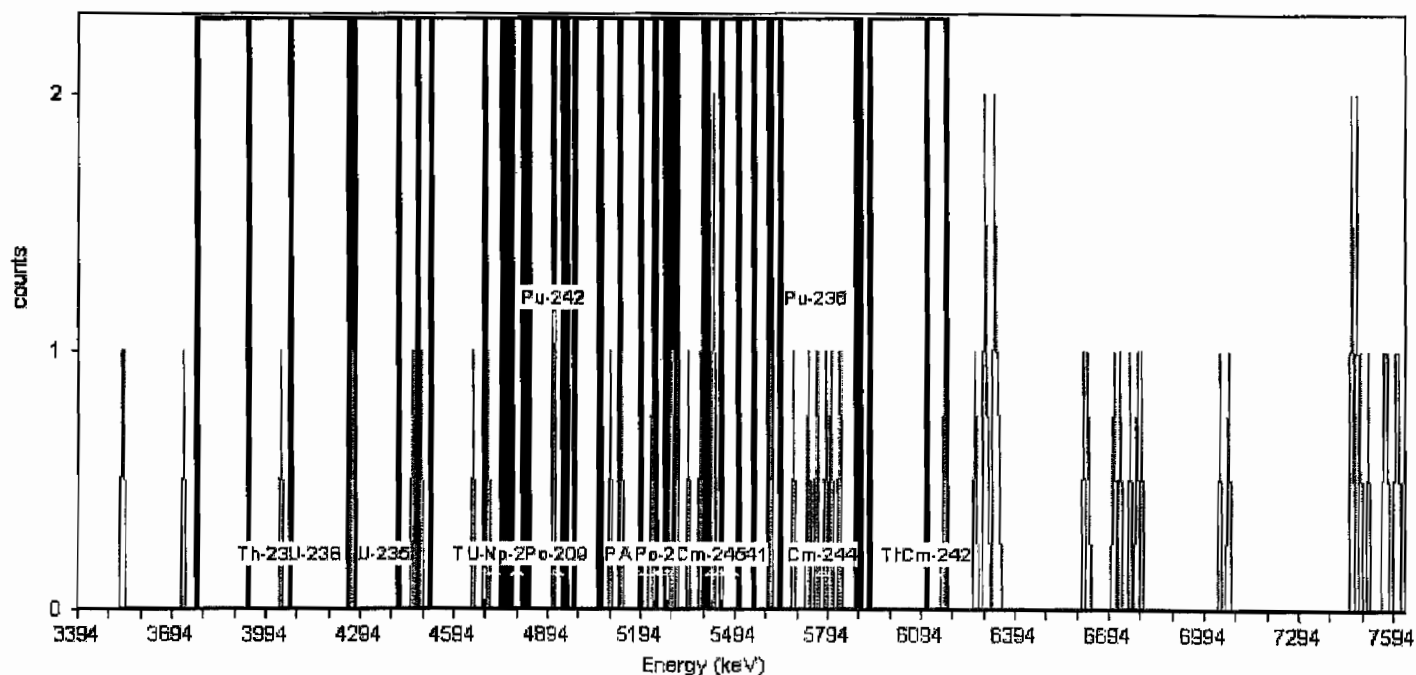
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,386.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.40% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05 Background ROI, Nucleide Library: Background ROI Library

Total Background Counts: 54.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	4.00	3.77	4.07	1.00	1.042E-003	1.473E-003
U-238	4.15	3.93	4.25	1.00	1.042E-003	1.473E-003
U-235	4.37	4.27	4.47	1.00	1.042E-003	1.473E-003
Th-230	4.69	4.41	4.75	4.00	4.167E-003	2.329E-003
U-234	4.72	4.52	4.83	2.00	2.083E-003	1.804E-003
Pu-242	4.91	4.69	4.95	2.00	2.083E-003	1.804E-003
Th-229	4.87	4.75	5.12	2.00	2.083E-003	1.804E-003
Np-237	4.79	4.78	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	1.00	1.042E-003	1.473E-003
Pu-239	5.18	4.98	5.24	3.00	3.125E-003	2.083E-003
Am-243	5.24	5.06	5.31	5.00	5.208E-003	2.552E-003
U-232	5.26	5.07	5.41	7.00	7.292E-003	2.946E-003
Th-228	5.45	5.19	5.51	7.00	7.292E-003	2.946E-003
Po-210	5.28	5.24	5.29	1.00	1.042E-003	1.473E-003
Pu-238	5.47	5.27	5.55	6.00	6.250E-003	2.756E-003
Am-241	5.49	5.30	5.60	5.00	5.208E-003	2.552E-003
Cm-245	5.42	5.40	5.45	2.00	2.083E-003	1.804E-003
Pu-236	5.76	5.61	5.89	7.00	7.292E-003	2.946E-003
Cm-244	5.77	5.64	5.90	6.00	6.250E-003	2.756E-003
Th-227	6.07	5.93	6.17	1.00	1.042E-003	1.473E-003
Cm-242	6.14	6.11	6.17	1.00	1.042E-003	1.473E-003

Sample Name: AV73

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV73, SN: 49-155N4

Acquisition Start Date: 3/26/2010 5:14:43PM

Live Time: 960.00 min.

Real Time: 960.03 min.

Calibration Name: Feb2010_AV73

Calibration Date: 3/8/2010 9:13:39AM

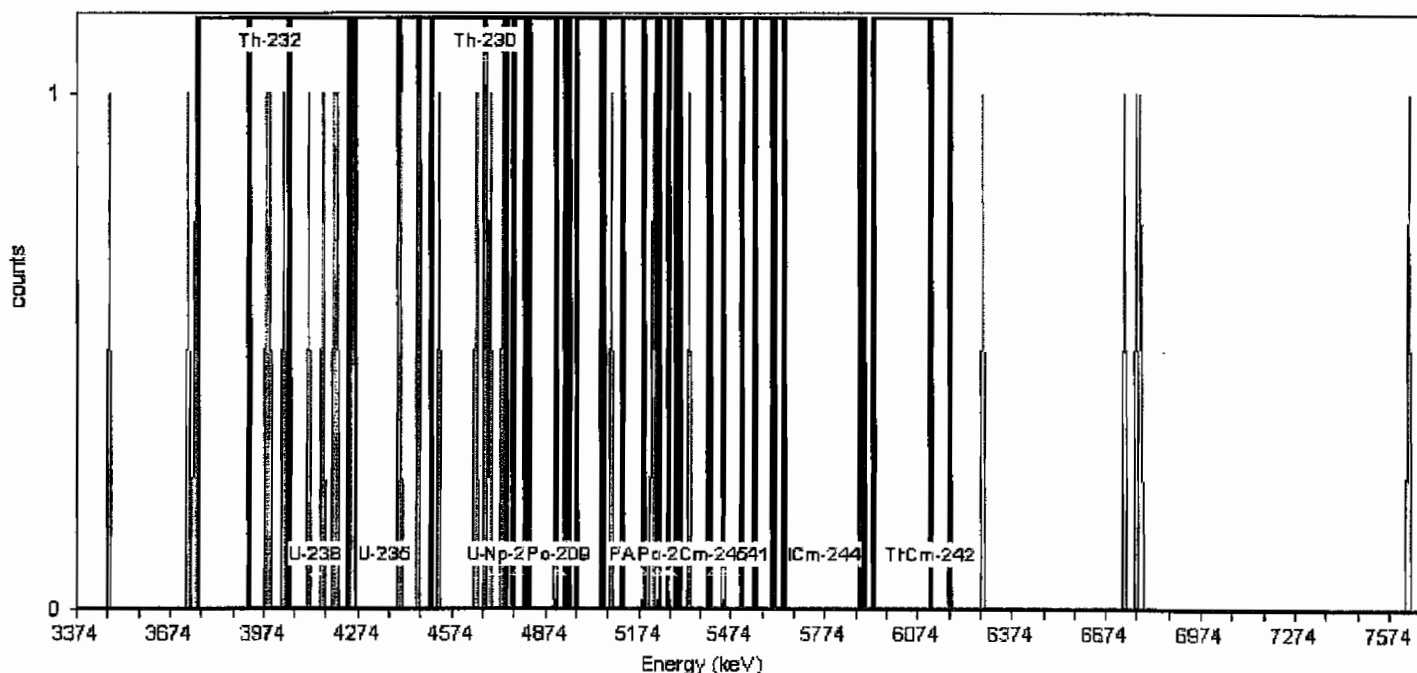
Energy Calibration Equation:

Gain = 7.4575 keV / Ch

Offset = 3,366.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.11% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 26.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.75	4.05	3.00	3.125E-003	2.083E-003
U-238	4.14	3.92	4.24	7.00	7.292E-003	2.946E-003
U-235	4.36	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.68	4.40	4.75	7.00	7.292E-003	2.946E-003
U-234	4.71	4.51	4.82	5.00	5.208E-003	2.552E-003
Pu-242	4.90	4.68	4.95	3.00	3.125E-003	2.083E-003
Th-229	4.86	4.74	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.05	5.31	2.00	2.083E-003	1.804E-003
U-232	5.25	5.06	5.40	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.19	5.51	2.00	2.083E-003	1.804E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	1.00	1.042E-003	1.473E-003
Am-241	5.48	5.30	5.60	1.00	1.042E-003	1.473E-003
Cm-245	5.42	5.40	5.45	0.00	0.000E+000	1.473E-003
Pu-236	5.76	5.61	5.89	0.00	0.000E+000	1.473E-003
Cm-244	5.78	5.64	5.90	0.00	0.000E+000	1.473E-003
Th-227	6.07	5.93	6.18	0.00	0.000E+000	1.473E-003
Cm-242	6.15	6.12	6.18	0.00	0.000E+000	1.473E-003

Sample Name: AV74

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV74 , SN: 49-155M3

Acquisition Start Date: 3/26/2010 5:14:46PM

Live Time: 960.00 min.

Real Time: 960.03 min.

Calibration Name: Feb2010 AV74

Calibration Date: 3/3/2010 4:56:41PM

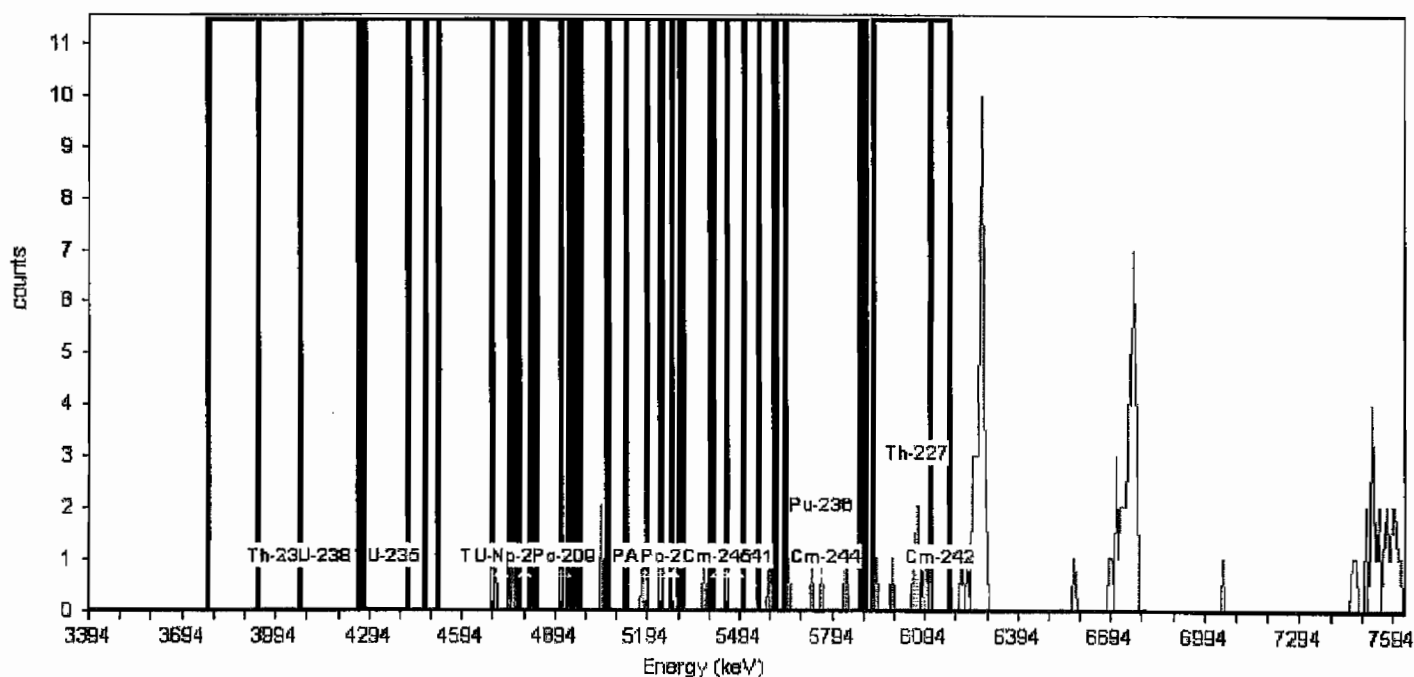
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,386.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.18% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background Nuc, Nuc Library: Background ROI Library

Total Background Counts: 117.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	4.00	3.77	4.07	0.00	0.000E+000	1.473E-003
U-238	4.15	3.93	4.25	0.00	0.000E+000	1.473E-003
U-235	4.37	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.69	4.41	4.75	2.00	2.083E-003	1.804E-003
U-234	4.72	4.52	4.83	2.00	2.083E-003	1.804E-003
Pu-242	4.91	4.69	4.95	2.00	2.083E-003	1.804E-003
Th-229	4.87	4.75	5.12	3.00	3.125E-003	2.083E-003
Np-237	4.79	4.78	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.98	5.24	3.00	3.125E-003	2.083E-003
Am-243	5.24	5.06	5.31	1.00	1.042E-003	1.473E-003
U-232	5.26	5.07	5.41	2.00	2.083E-003	1.804E-003
Th-228	5.45	5.19	5.51	1.00	1.042E-003	1.473E-003
Po-210	5.28	5.24	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	1.00	1.042E-003	1.473E-003
Am-241	5.49	5.30	5.60	2.00	2.083E-003	1.804E-003
Cm-245	5.42	5.40	5.45	0.00	0.000E+000	1.473E-003
Pu-236	5.76	5.61	5.89	5.00	5.208E-003	2.552E-003
Cm-244	5.77	5.64	5.90	5.00	5.208E-003	2.552E-003
Th-227	6.07	5.93	6.17	11.00	1.146E-002	3.608E-003
Cm-242	6.14	6.11	6.17	1.00	1.042E-003	1.473E-003

Sample Name: AV75

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

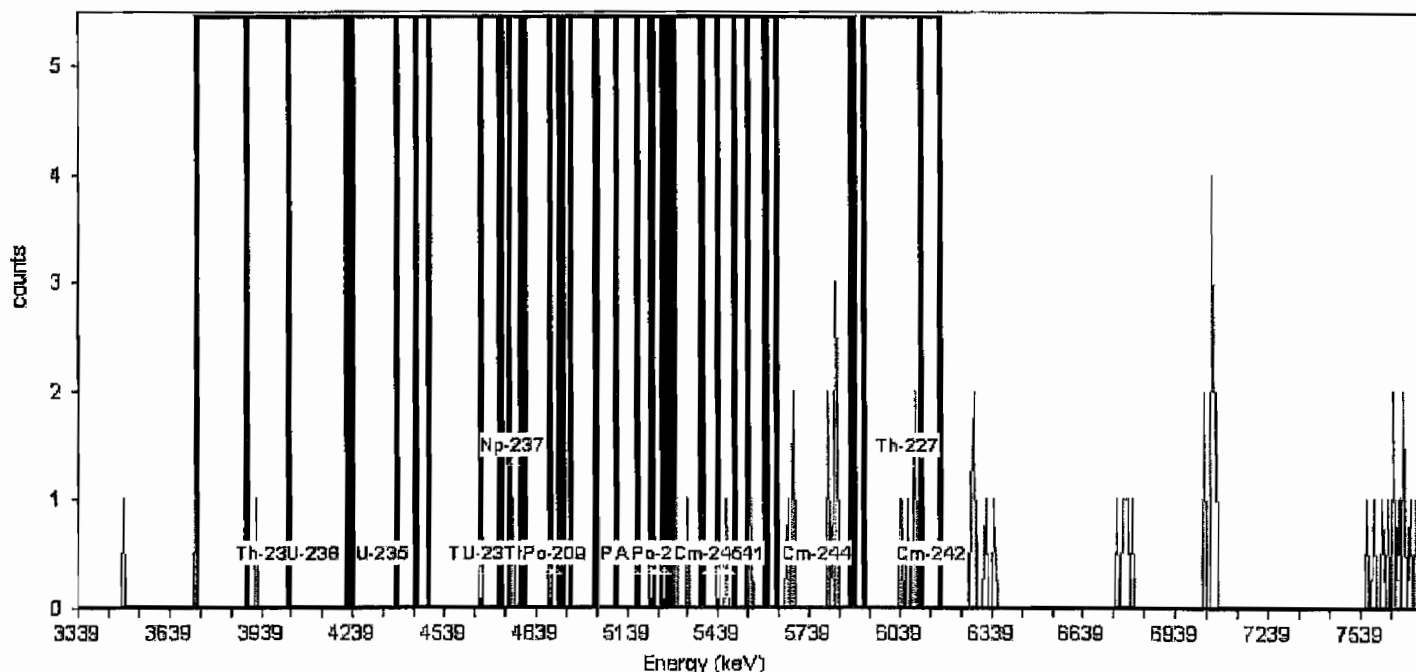
Acquisition

Detector: AV75, SN: 46-033P6
Acquisition Start Date: 3/26/2010 5:13:42PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2010_AV75
Calibration Date: 3/1/2010 12:02:24AM

Energy Calibration Equation:

Gain = 7.5313 keV / Ch
Offset = 3,332.15 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 25.85% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background, Nuclide Library: Background ROI Library

Total Background Counts: 57.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.96	3.72	4.03	1.00	1.042E-003	1.473E-003
U-238	4.11	3.89	4.21	1.00	1.042E-003	1.473E-003
U-235	4.33	4.24	4.44	0.00	0.000E+000	1.473E-003
Th-230	4.66	4.38	4.73	0.00	0.000E+000	1.473E-003
U-234	4.69	4.48	4.80	1.00	1.042E-003	1.473E-003
Pu-242	4.88	4.66	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	1.00	1.042E-003	1.473E-003
Np-237	4.76	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.95	5.22	0.00	0.000E+000	1.473E-003
Am-243	5.21	5.03	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.04	5.39	2.00	2.083E-003	1.804E-003
Th-228	5.43	5.17	5.49	3.00	3.125E-003	2.083E-003
Po-210	5.26	5.21	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.25	5.54	3.00	3.125E-003	2.083E-003
Am-241	5.47	5.28	5.59	4.00	4.167E-003	2.329E-003
Cm-245	5.40	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.88	12.00	1.250E-002	3.756E-003
Cm-244	5.76	5.63	5.89	12.00	1.250E-002	3.756E-003
Th-227	6.07	5.92	6.17	4.00	4.167E-003	2.329E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Sample Name: AV76

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV76, SN: 49-155N6

Acquisition Start Date: 3/26/2010 5:13:44PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV76a

Calibration Date: 3/5/2010 9:34:55AM

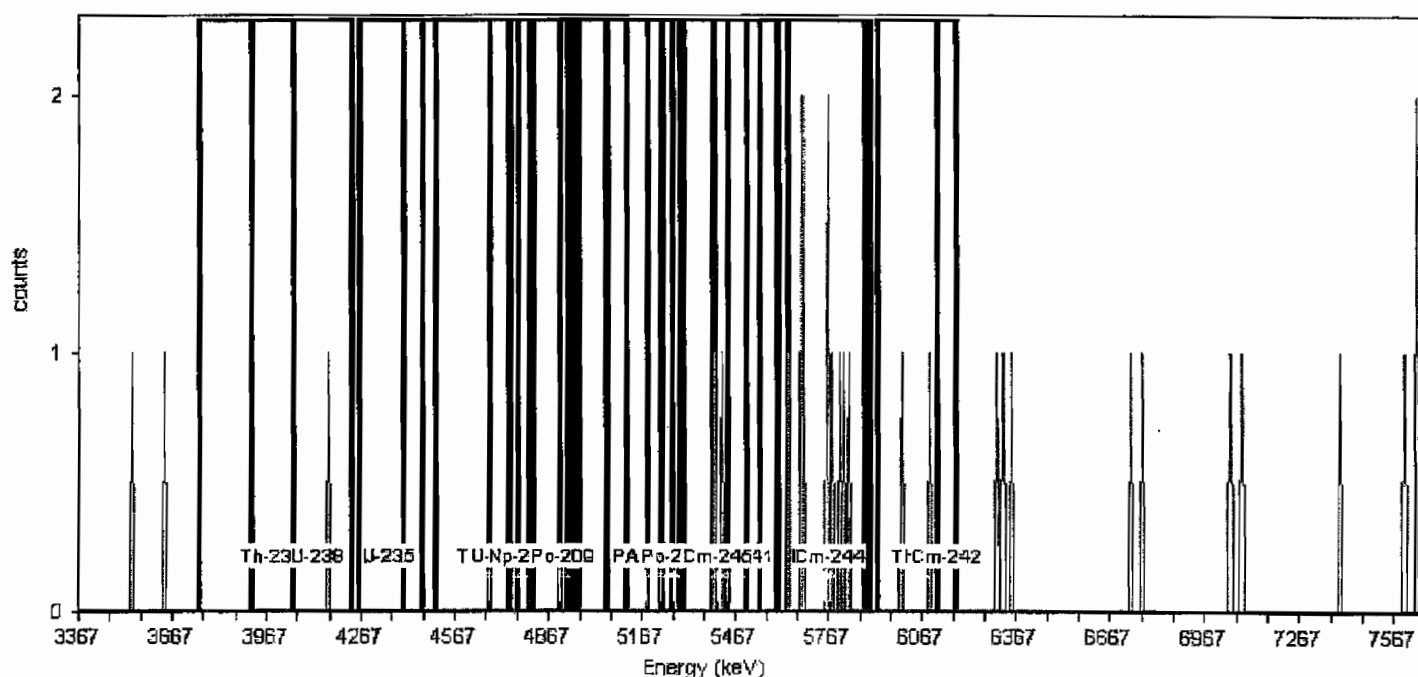
Energy Calibration Equation:

Gain = 7.4651 keV / Ch

Offset = 3,360.21 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.71% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 31.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.98	3.75	4.05	0.00	0.000E+000	1.473E-003
U-238	4.13	3.91	4.23	1.00	1.042E-003	1.473E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.82	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.11	0.00	0.000E+000	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.97	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.05	5.30	0.00	0.000E+000	1.473E-003
U-232	5.25	5.05	5.40	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.18	5.50	2.00	2.083E-003	1.804E-003
Po-210	5.27	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.26	5.55	2.00	2.083E-003	1.804E-003
Am-241	5.48	5.29	5.60	2.00	2.083E-003	1.804E-003
Cm-245	5.41	5.39	5.44	2.00	2.083E-003	1.804E-003
Pu-236	5.76	5.61	5.88	9.00	9.375E-003	3.294E-003
Cm-244	5.77	5.64	5.90	9.00	9.375E-003	3.294E-003
Th-227	6.07	5.93	6.17	2.00	2.083E-003	1.804E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:21:20AM 3/27/20

Comment:

Analyst: 60040

Description:

Acquisition

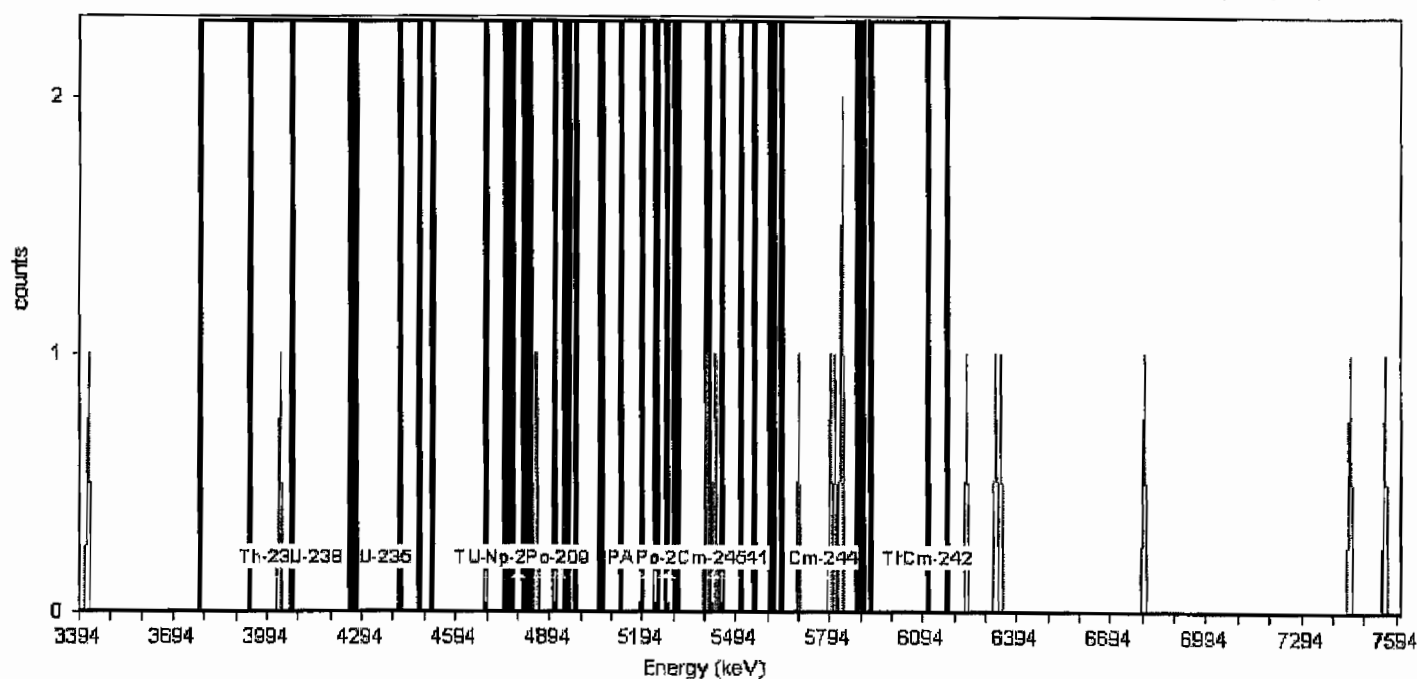
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,386.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.17% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library
Total Background Counts: 16.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	4.00	3.77	4.07	1.00	1.042E-003	1.473E-003
U-238	4.15	3.93	4.25	1.00	1.042E-003	1.473E-003
U-235	4.37	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.69	4.41	4.75	0.00	0.000E+000	1.473E-003
U-234	4.72	4.52	4.83	0.00	0.000E+000	1.473E-003
Pu-242	4.91	4.69	4.95	1.00	1.042E-003	1.473E-003
Th-229	4.87	4.75	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.79	4.78	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.98	5.24	0.00	0.000E+000	1.473E-003
Am-243	5.24	5.06	5.31	0.00	0.000E+000	1.473E-003
U-232	5.26	5.07	5.41	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.19	5.51	2.00	2.083E-003	1.804E-003
Po-210	5.28	5.24	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	2.00	2.083E-003	1.804E-003
Am-241	5.49	5.30	5.60	2.00	2.083E-003	1.804E-003
Cm-245	5.42	5.40	5.45	2.00	2.083E-003	1.804E-003
Pu-236	5.76	5.61	5.89	5.00	5.208E-003	2.552E-003
Cm-244	5.77	5.64	5.90	5.00	5.208E-003	2.552E-003
Th-227	6.07	5.93	6.17	0.00	0.000E+000	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

9:21:23AM 3/27/2010

Comment:

Analyst: 60040

Description:

Acquisition

Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Live Time: 960.00 min.

Offset = 3,339.68 keV

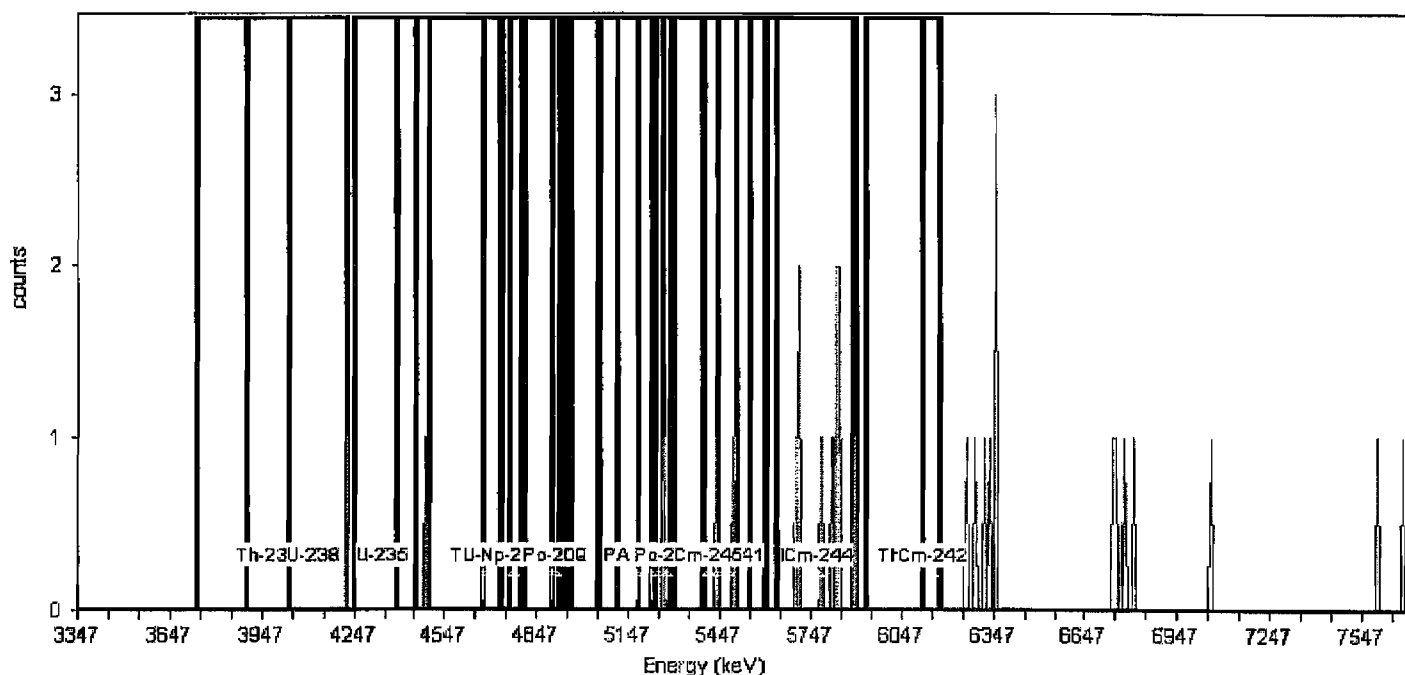
Real Time: 960.01 min.

Quadratic = 0.0000 keV / Ch²

Calibration Name: Feb2010_AV78

Calibration Date: 3/1/2010 3:30:38PM

Efficiency: 26.79% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 32.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.96	3.73	4.03	0.00	0.000E+000	1.473E-003
U-238	4.12	3.90	4.22	1.00	1.042E-003	1.473E-003
U-235	4.34	4.24	4.45	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.39	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.49	4.81	0.00	0.000E+000	1.473E-003
Pu-242	4.89	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.11	0.00	0.000E+000	1.473E-003
Np-237	4.77	4.76	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.30	1.00	1.042E-003	1.473E-003
U-232	5.25	5.05	5.40	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.18	5.50	3.00	3.125E-003	2.083E-003
Po-210	5.27	5.22	5.28	1.00	1.042E-003	1.473E-003
Pu-238	5.46	5.26	5.55	3.00	3.125E-003	2.083E-003
Am-241	5.48	5.29	5.60	2.00	2.083E-003	1.804E-003
Cm-245	5.41	5.39	5.44	1.00	1.042E-003	1.473E-003
Pu-236	5.76	5.61	5.89	11.00	1.146E-002	3.608E-003
Cm-244	5.77	5.64	5.90	12.00	1.250E-002	3.756E-003
Th-227	6.07	5.93	6.18	0.00	0.000E+000	1.473E-003
Cm-242	6.15	6.12	6.18	0.00	0.000E+000	1.473E-003

Sample Name: AV79

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV79 , SN: 46-033Q5

Acquisition Start Date: 3/26/2010 5:13:50PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010 AV79

Calibration Date: 3/1/2010 3:26:06PM

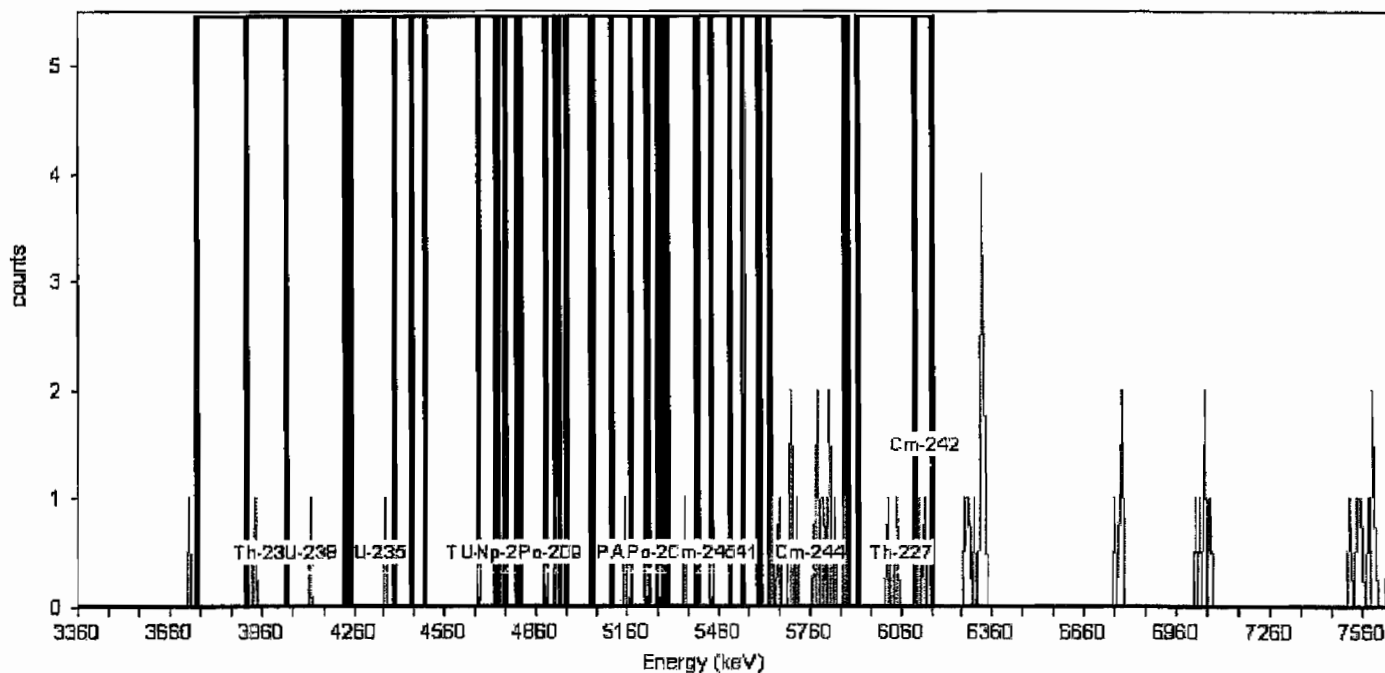
Energy Calibration Equation:

Gain = 7.4651 keV / Ch

Offset = 3.352.74 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.88% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 56.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.97	3.74	4.04	1.00	1.042E-003	1.473E-003
U-238	4.12	3.91	4.23	2.00	2.083E-003	1.804E-003
U-235	4.35	4.25	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.39	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.49	4.81	0.00	0.000E+000	1.473E-003
Pu-242	4.89	4.67	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.85	4.73	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.77	4.76	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	1.00	1.042E-003	1.473E-003
Am-243	5.22	5.04	5.29	1.00	1.042E-003	1.473E-003
U-232	5.24	5.05	5.39	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.17	5.50	1.00	1.042E-003	1.473E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	1.00	1.042E-003	1.473E-003
Am-241	5.47	5.29	5.59	1.00	1.042E-003	1.473E-003
Cm-245	5.41	5.38	5.44	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.88	16.00	1.867E-002	4.295E-003
Cm-244	5.76	5.63	5.89	16.00	1.867E-002	4.295E-003
Th-227	6.06	5.92	6.17	4.00	4.167E-003	2.329E-003
Cm-242	6.14	6.11	6.17	2.00	2.083E-003	1.804E-003

Sample Name: AV80

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV80, SN: 46-03305

Acquisition Start Date: 3/26/2010 5:13:52PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV80

Calibration Date: 3/1/2010 3:27:32PM

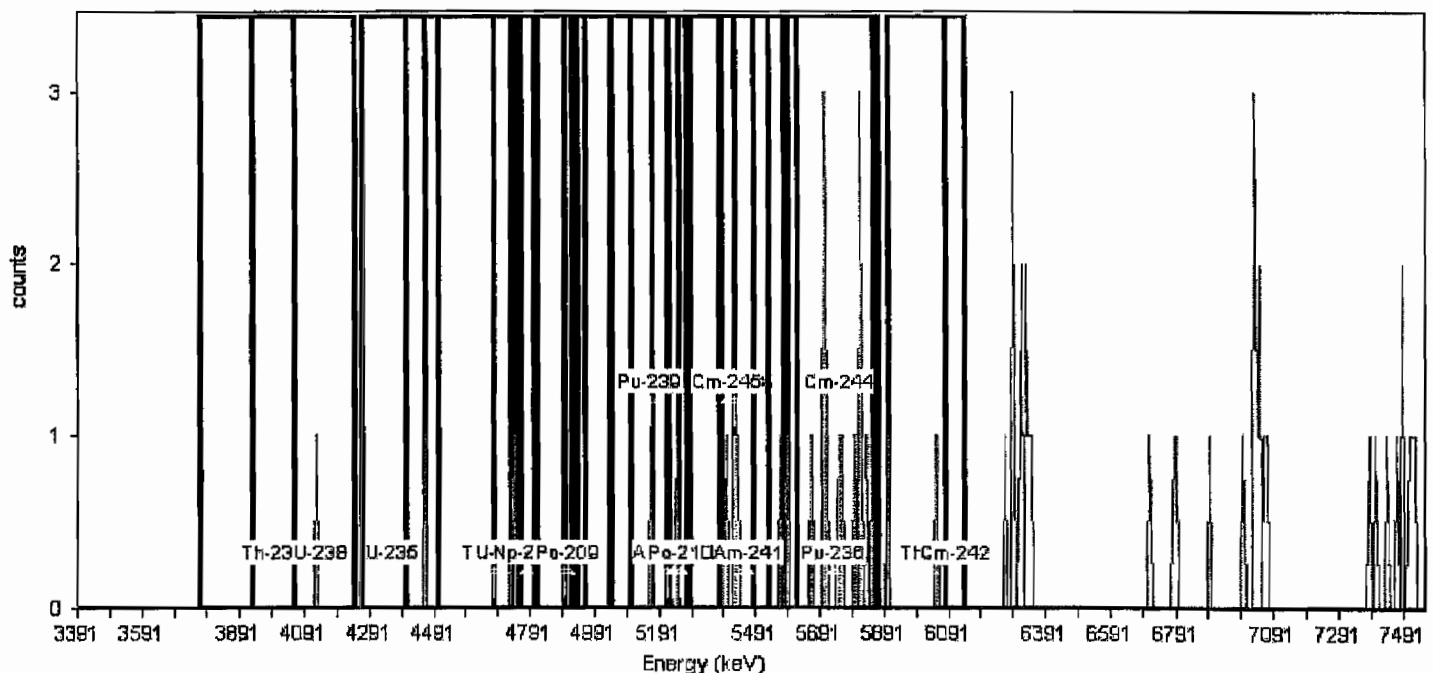
Energy Calibration Equation:

Gain = 7.3221 keV / Ch

Offset = 3,383.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.24% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 63.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.06	0.00	0.000E+000	1.473E-003
U-238	4.14	3.93	4.24	1.00	1.042E-003	1.473E-003
U-235	4.36	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.74	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.81	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.67	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.85	4.73	5.10	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.96	5.22	1.00	1.042E-003	1.473E-003
Am-243	5.21	5.04	5.29	2.00	2.083E-003	1.804E-003
U-232	5.24	5.05	5.38	2.00	2.083E-003	1.804E-003
Th-228	5.43	5.17	5.49	4.00	4.167E-003	2.329E-003
Po-210	5.26	5.21	5.27	1.00	1.042E-003	1.473E-003
Pu-238	5.45	5.25	5.53	3.00	3.125E-003	2.083E-003
Am-241	5.46	5.28	5.58	4.00	4.167E-003	2.329E-003
Cm-245	5.40	5.38	5.43	2.00	2.083E-003	1.804E-003
Pu-236	5.73	5.59	5.86	17.00	1.771E-002	4.419E-003
Cm-244	5.75	5.62	5.87	16.00	1.667E-002	4.295E-003
Th-227	6.04	5.90	6.14	2.00	2.083E-003	1.804E-003
Cm-242	6.12	6.09	6.14	0.00	0.000E+000	1.473E-003

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.97	3.74	4.04	0.00	0.000E+000	1.473E-003
U-238	4.12	3.90	4.22	1.00	1.042E-003	1.473E-003
U-235	4.34	4.24	4.44	0.00	0.000E+000	1.473E-003
Th-230	4.66	4.39	4.73	2.00	2.083E-003	1.804E-003
U-234	4.69	4.49	4.80	1.00	1.042E-003	1.473E-003
Pu-242	4.88	4.66	4.92	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.09	0.00	0.000E+000	1.473E-003
Np-237	4.76	4.75	4.78	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.21	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	5.23	5.04	5.38	2.00	2.083E-003	1.804E-003
Th-228	5.42	5.16	5.48	1.00	1.042E-003	1.473E-003
Po-210	5.25	5.21	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.46	5.27	5.58	3.00	3.125E-003	2.083E-003
Cm-245	5.39	5.37	5.42	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.58	5.86	11.00	1.146E-002	3.608E-003
Cm-244	5.75	5.61	5.87	11.00	1.146E-002	3.608E-003
Th-227	6.04	5.90	6.14	4.00	4.167E-003	2.329E-003
Cm-242	6.11	6.09	6.14	2.00	2.083E-003	1.804E-003

9:21:36AM 3/27/2010

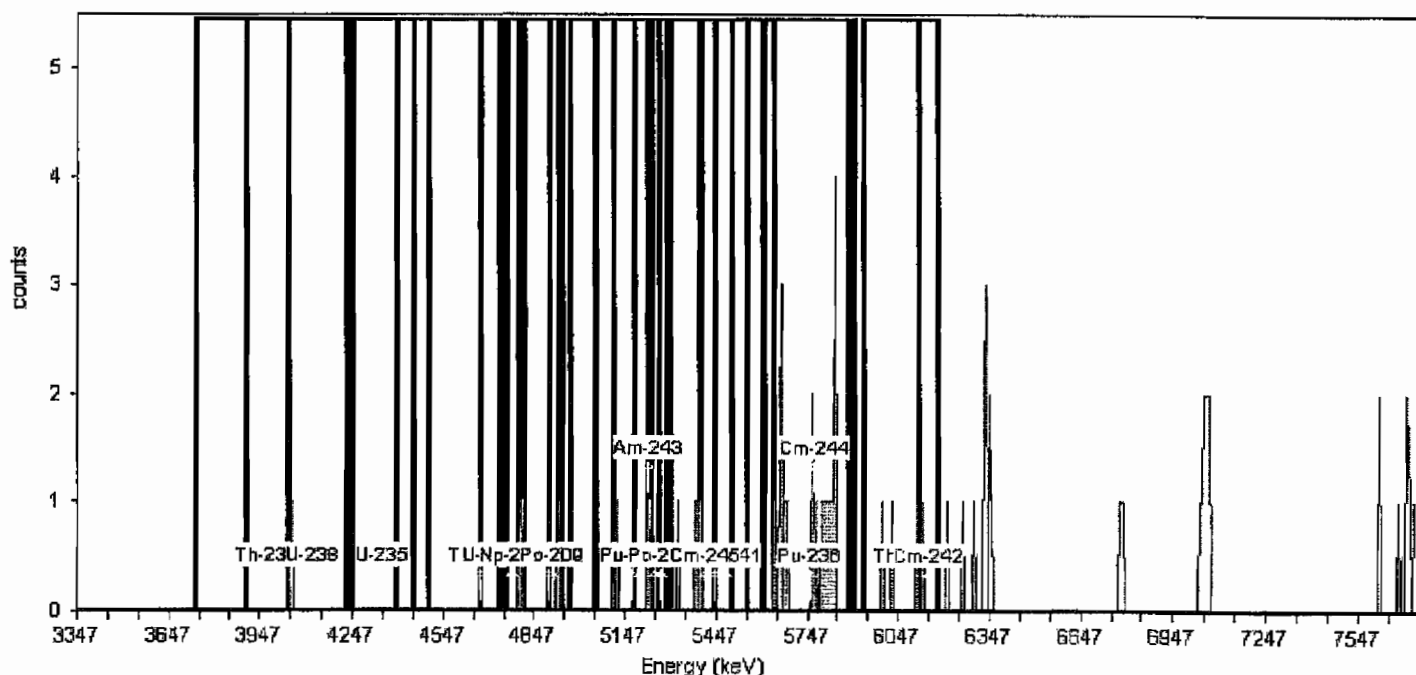
Comment:

Analyst: 60040

Description:

Acquisition

Efficiency: 26.05% +/- 0.26% TPU(2 sigma)



General Analysis

Total Background Counts: 62.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.96	3.73	4.03	0.00	0.000E+000	1.473E-003
U-238	4.12	3.90	4.22	1.00	1.042E-003	1.473E-003
U-235	4.34	4.24	4.45	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.39	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.49	4.81	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.67	4.94	2.00	2.083E-003	1.804E-003
Th-229	4.85	4.73	5.11	2.00	2.083E-003	1.804E-003
Np-237	4.77	4.76	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	1.00	1.042E-003	1.473E-003
Pu-239	5.17	4.96	5.23	2.00	2.083E-003	1.804E-003
Am-243	5.22	5.04	5.30	2.00	2.083E-003	1.804E-003
U-232	5.25	5.05	5.40	6.00	6.250E-003	2.756E-003
Th-228	5.44	5.18	5.50	5.00	5.208E-003	2.552E-003
Po-210	5.27	5.22	5.28	1.00	1.042E-003	1.473E-003
Pu-238	5.46	5.26	5.55	4.00	4.167E-003	2.329E-003
Am-241	5.48	5.29	5.60	4.00	4.167E-003	2.329E-003
Cm-245	5.41	5.39	5.44	2.00	2.083E-003	1.804E-003
Pu-236	5.76	5.61	5.89	20.00	2.083E-002	4.774E-003
Cm-244	5.77	5.64	5.90	20.00	2.083E-002	4.774E-003
Th-227	6.07	5.93	6.18	4.00	4.167E-003	2.329E-003
Cm-242	6.15	6.12	6.18	1.00	1.042E-003	1.473E-003

Sample Name: AV84

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV84 , SN: 46-033FF3

Acquisition Start Date: 3/26/2010 5:13:57PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV84

Calibration Date: 3/1/2010 12:04:41AM

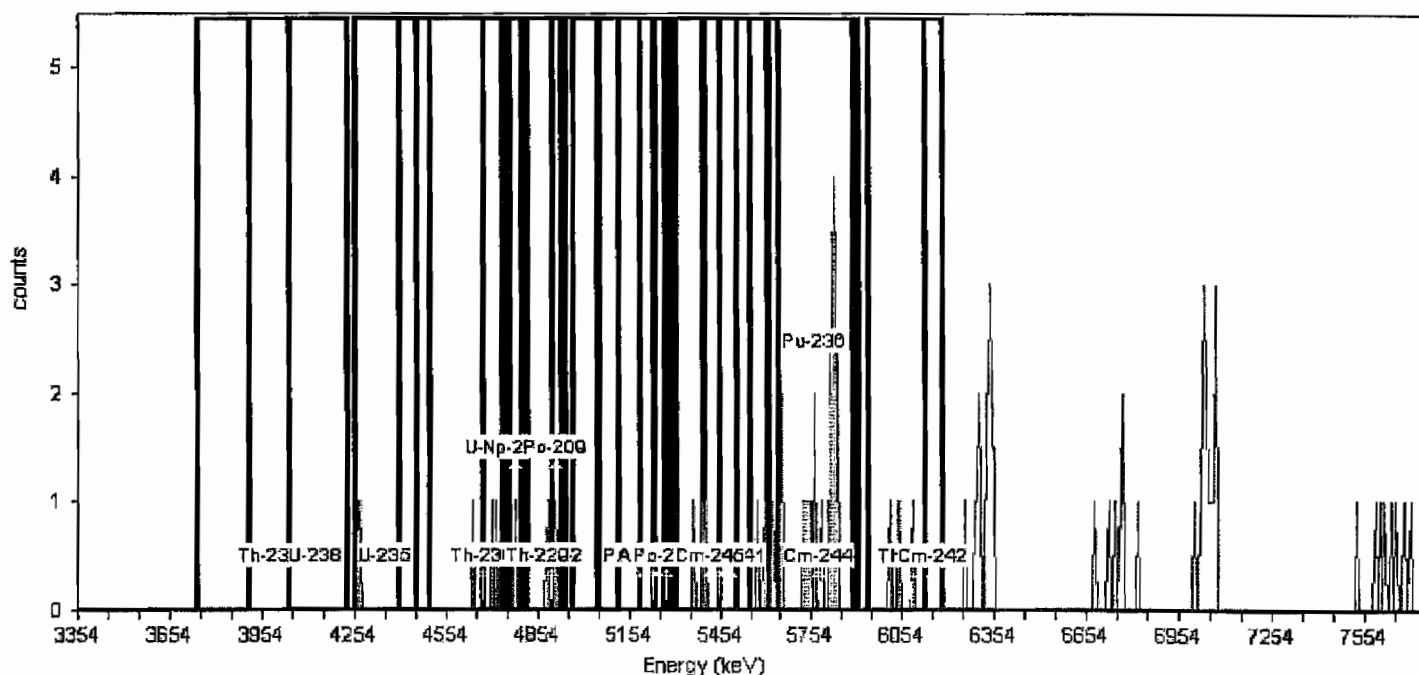
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,347.21 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.40% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 80.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.97	3.74	4.04	0.00	0.000E+000	1.473E-003
U-238	4.12	3.90	4.23	0.00	0.000E+000	1.473E-003
U-235	4.35	4.25	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.39	4.74	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.82	4.00	4.167E-003	2.329E-003
Pu-242	4.90	4.67	4.94	5.00	5.208E-003	2.552E-003
Th-229	4.85	4.73	5.12	3.00	3.125E-003	2.083E-003
Np-237	4.78	4.76	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.91	4.90	4.93	1.00	1.042E-003	1.473E-003
Pu-239	5.18	4.97	5.24	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.05	5.31	0.00	0.000E+000	1.473E-003
U-232	5.25	5.06	5.40	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.18	5.51	3.00	3.125E-003	2.083E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	3.00	3.125E-003	2.083E-003
Am-241	5.49	5.30	5.61	5.00	5.208E-003	2.552E-003
Cm-245	5.42	5.40	5.45	2.00	2.083E-003	1.804E-003
Pu-236	5.76	5.61	5.89	21.00	2.187E-002	4.886E-003
Cm-244	5.78	5.64	5.91	20.00	2.083E-002	4.774E-003
Th-227	6.08	5.94	6.19	3.00	3.125E-003	2.083E-003
Cm-242	6.16	6.13	6.19	0.00	0.000E+000	1.473E-003

Alpha-Spectroscopy Background Report

TestAmerica St. Louis

TestAmerica St. Louis

13715 Rider Trail North

Earth City, MO 63045

9:21:45AM 3/27/2010

Sample Name: AV85

Comment:

Sample

Spectrum #1 Analysis #1

Batch

Batch Name: March2010

Description:

Analyst: 60040

Acquisition

Detector: AV85, SN: 46-032EE7

Acquisition Start Date: 3/26/2010 5:13:59PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV85

Calibration Date: 3/1/2010 12:05:15AM

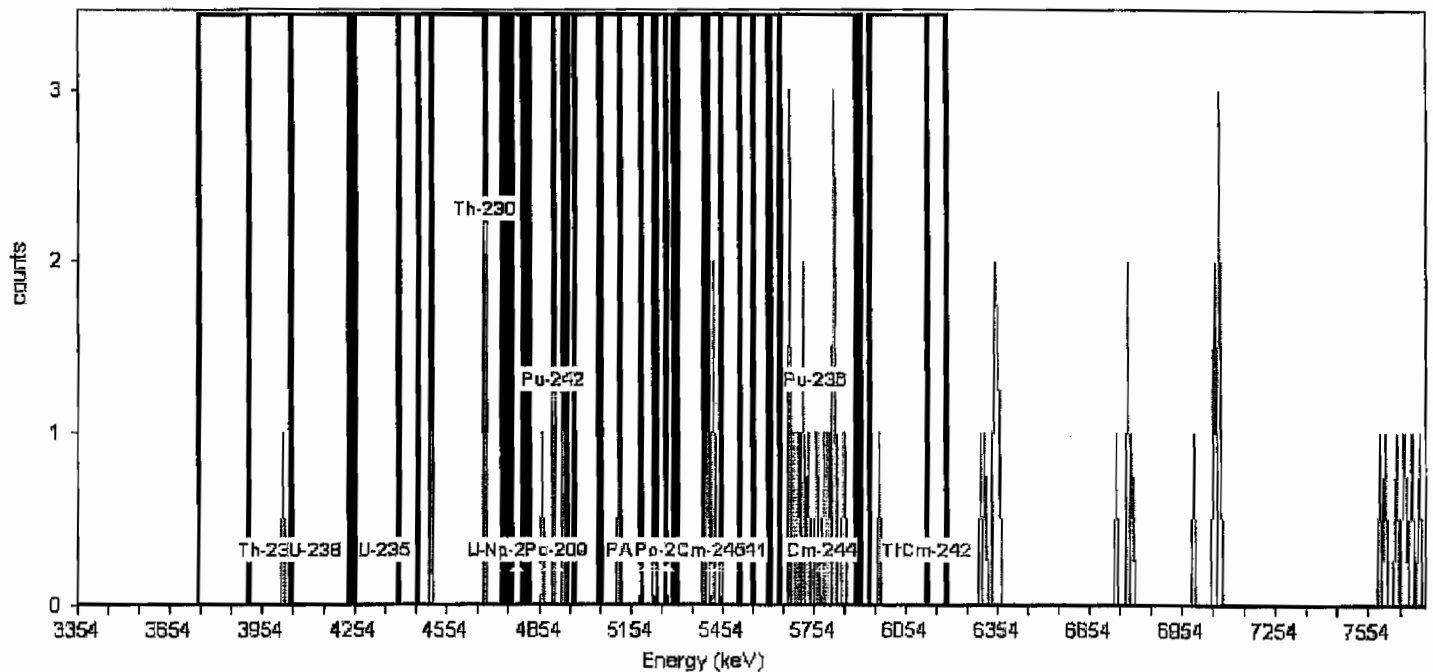
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,347.21 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.41% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 58.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.97	3.74	4.04	1.00	1.042E-003	1.473E-003
U-238	4.12	3.90	4.23	1.00	1.042E-003	1.473E-003
U-235	4.35	4.25	4.45	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.39	4.74	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.82	3.00	3.125E-003	2.083E-003
Pu-242	4.90	4.67	4.94	5.00	5.208E-003	2.552E-003
Th-229	4.85	4.73	5.12	4.00	4.167E-003	2.329E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.93	2.00	2.083E-003	1.804E-003
Pu-239	5.18	4.97	5.24	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.05	5.31	1.00	1.042E-003	1.473E-003
U-232	5.25	5.06	5.40	2.00	2.083E-003	1.804E-003
Th-228	5.45	5.18	5.51	3.00	3.125E-003	2.083E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	3.00	3.125E-003	2.083E-003
Am-241	5.49	5.30	5.61	3.00	3.125E-003	2.083E-003
Cm-245	5.42	5.40	5.45	3.00	3.125E-003	2.083E-003
Pu-236	5.76	5.61	5.89	20.00	2.083E-002	4.774E-003
Cm-244	5.78	5.64	5.91	20.00	2.083E-002	4.774E-003
Th-227	6.08	5.94	6.19	1.00	1.042E-003	1.473E-003
Cm-242	6.16	6.13	6.19	0.00	0.000E+000	1.473E-003

9:21:48AM 3/27/2010

Comment:

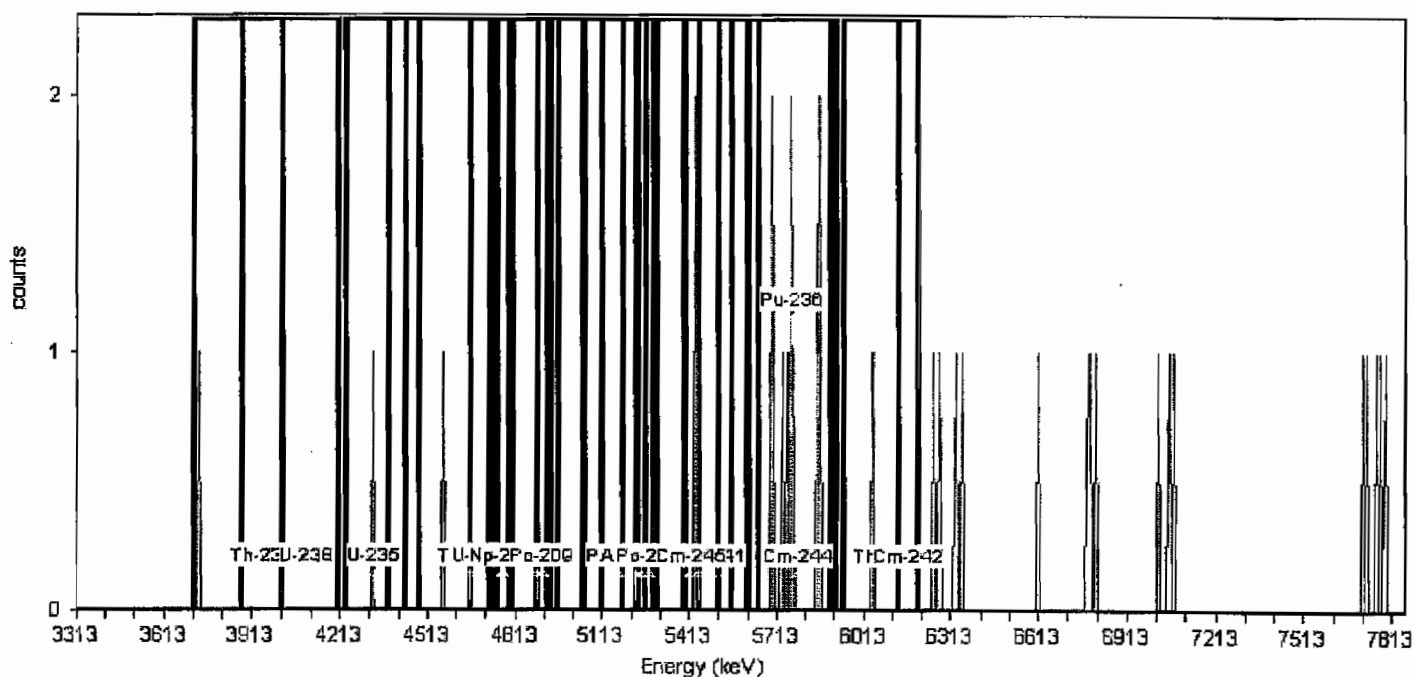
Analyst: 60040

Description:

Acquisition

Calibration Date: 3/1/2010 12:06:12AM

Efficiency: 24.62% +/- 0.26% TPU(2 sigma)



General Analysis

Total Background Counts: 33.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.94	3.71	4.01	1.00	1.042E-003	1.473E-003
U-238	4.10	3.87	4.20	0.00	0.000E+000	1.473E-003
U-235	4.33	4.23	4.43	1.00	1.042E-003	1.473E-003
Th-230	4.66	4.37	4.73	1.00	1.042E-003	1.473E-003
U-234	4.69	4.48	4.80	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.68	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.11	0.00	0.000E+000	1.473E-003
Np-237	4.76	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.30	0.00	0.000E+000	1.473E-003
U-232	5.25	5.05	5.40	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.18	5.51	2.00	2.083E-003	1.804E-003
Po-210	5.27	5.22	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.26	5.55	2.00	2.083E-003	1.804E-003
Am-241	5.49	5.29	5.61	2.00	2.083E-003	1.804E-003
Cm-245	5.42	5.39	5.45	2.00	2.083E-003	1.804E-003
Pu-236	5.77	5.62	5.90	11.00	1.146E-002	3.608E-003
Cm-244	5.78	5.65	5.92	11.00	1.146E-002	3.608E-003
Th-227	6.09	5.95	6.20	1.00	1.042E-003	1.473E-003
Cm-242	6.17	6.14	6.20	0.00	0.000E+000	1.473E-003

Sample Name: AV87

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV87, SN: 46-033FF5
Acquisition Start Date: 3/26/2010 5:14:03PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2010_AV87
Calibration Date: 3/1/2010 12:06:59AM

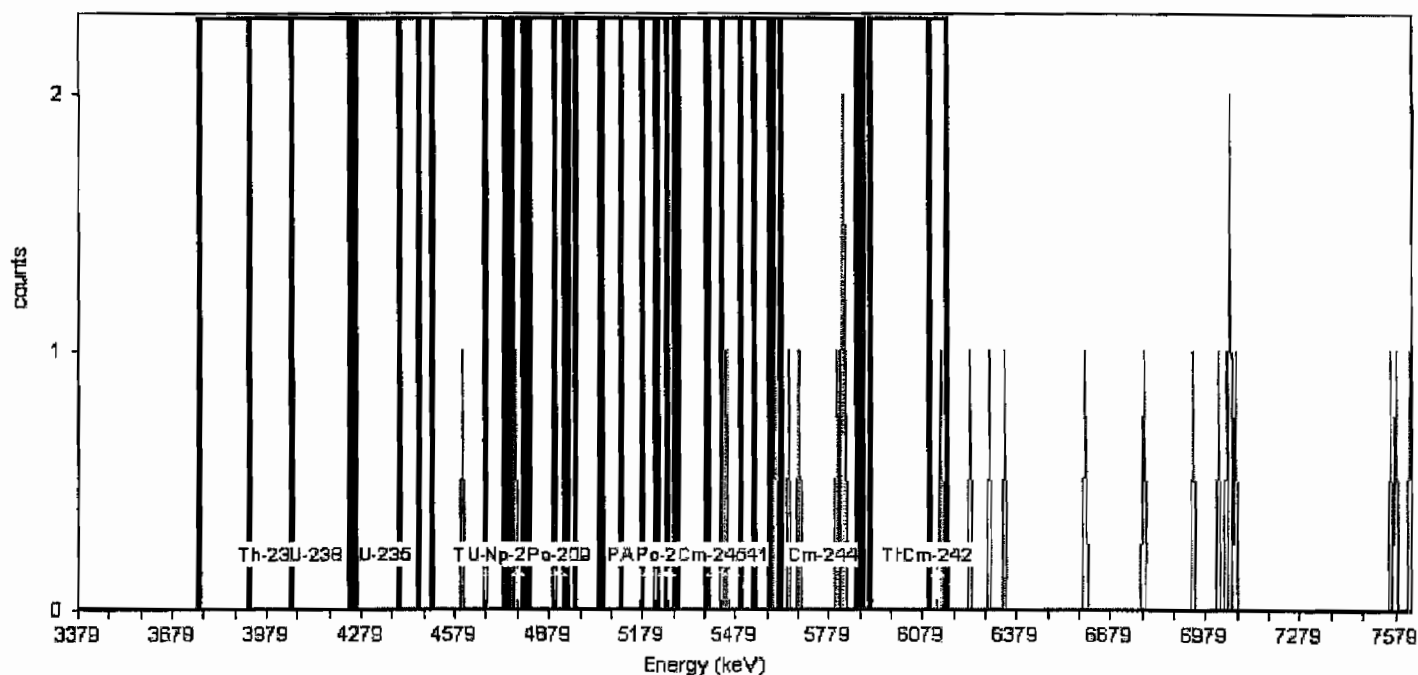
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.83% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library
Total Background Counts: 29.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.05	0.00	0.000E+000	1.473E-003
U-238	4.13	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.81	2.00	2.083E-003	1.804E-003
Pu-242	4.90	4.67	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.85	4.73	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.05	5.39	0.00	0.000E+000	1.473E-003
Th-228	5.43	5.18	5.49	2.00	2.083E-003	1.804E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	2.00	2.083E-003	1.804E-003
Am-241	5.47	5.29	5.59	2.00	2.083E-003	1.804E-003
Cm-245	5.41	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.87	10.00	1.042E-002	3.455E-003
Cm-244	5.76	5.63	5.89	9.00	9.375E-003	3.294E-003
Th-227	6.06	5.92	6.16	1.00	1.042E-003	1.473E-003
Cm-242	6.13	6.10	6.16	1.00	1.042E-003	1.473E-003

Sample Name: AV88

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV88 , SN: 76-033FF1

Acquisition Start Date: 3/26/2010 5:14:04PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV88

Calibration Date: 3/1/2010 12:07:48AM

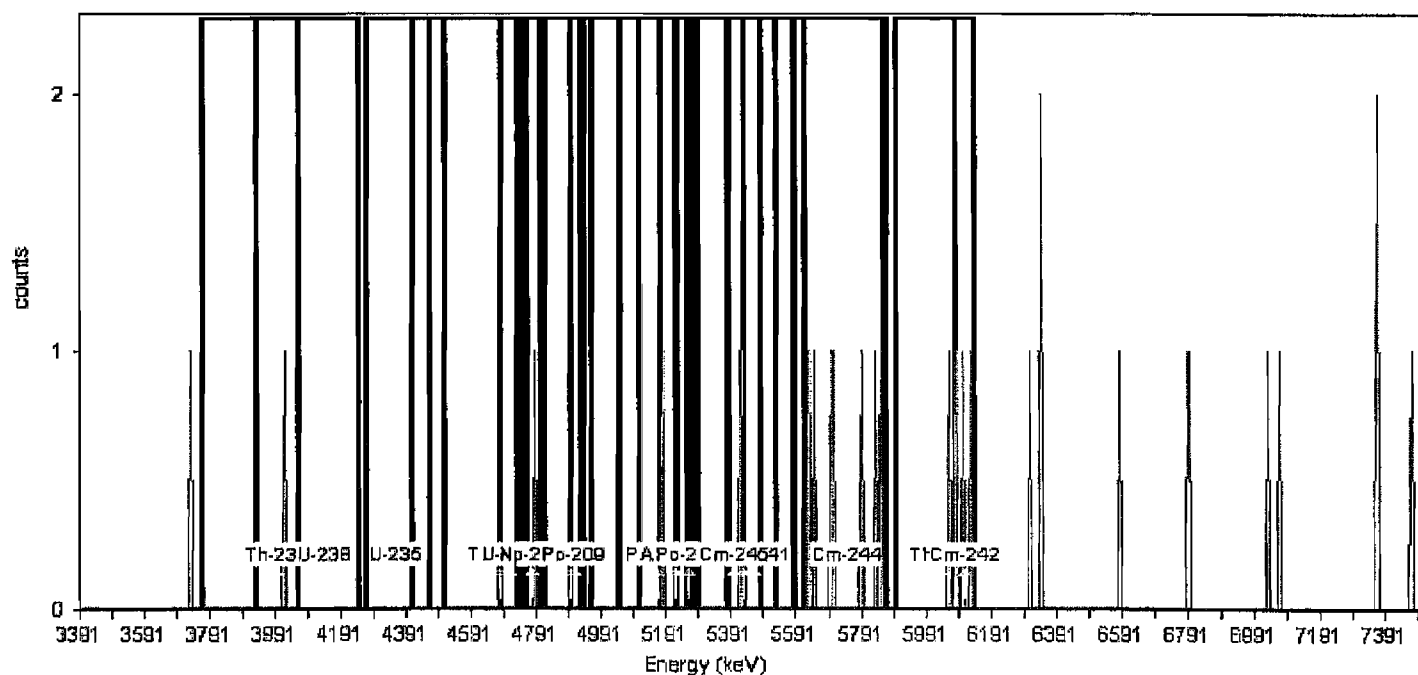
Energy Calibration Equation:

Gain = 7.3221 keV / Ch

Offset = 3,383.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.13% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 28.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	1.00	1.042E-003	1.473E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.81	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.67	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.85	4.73	5.10	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.96	5.22	1.00	1.042E-003	1.473E-003
Am-243	5.21	5.04	5.29	1.00	1.042E-003	1.473E-003
U-232	5.24	5.05	5.38	1.00	1.042E-003	1.473E-003
Th-228	5.43	5.17	5.49	2.00	2.083E-003	1.804E-003
Po-210	5.26	5.21	5.27	0.00	0.000E+000	1.473E-003
Pu-238	5.45	5.25	5.53	1.00	1.042E-003	1.473E-003
Am-241	5.46	5.28	5.58	1.00	1.042E-003	1.473E-003
Cm-245	5.40	5.38	5.43	1.00	1.042E-003	1.473E-003
Pu-236	5.73	5.59	5.86	7.00	7.292E-003	2.946E-003
Cm-244	5.75	5.62	5.87	7.00	7.292E-003	2.946E-003
Th-227	6.04	5.90	6.14	4.00	4.167E-003	2.329E-003
Cm-242	6.12	6.09	6.14	3.00	3.125E-003	2.083E-003

Sample Name: AV89

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

Acquisition

Detector: AV89, SN: 46-033P5

Acquisition Start Date: 3/26/2010 5:14:07PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV89

Calibration Date: 3/1/2010 12:08:36AM

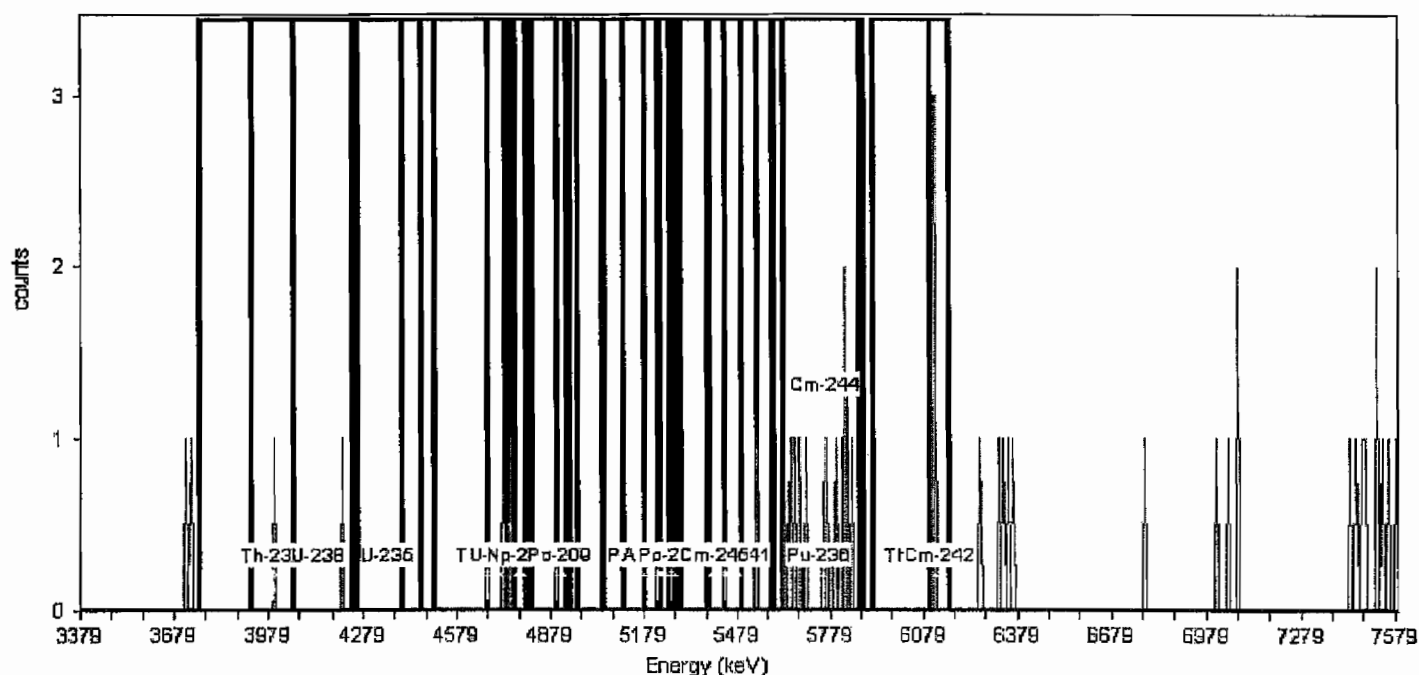
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.70% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 42.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.05	1.00	1.042E-003	1.473E-003
U-238	4.13	3.92	4.24	2.00	2.083E-003	1.804E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.81	2.00	2.083E-003	1.804E-003
Pu-242	4.90	4.67	4.94	2.00	2.083E-003	1.804E-003
Th-229	4.85	4.73	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.05	5.39	0.00	0.000E+000	1.473E-003
Th-228	5.43	5.18	5.49	0.00	0.000E+000	1.473E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	1.00	1.042E-003	1.473E-003
Am-241	5.47	5.29	5.59	1.00	1.042E-003	1.473E-003
Cm-245	5.41	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.87	12.00	1.250E-002	3.756E-003
Cm-244	5.76	5.63	5.89	12.00	1.250E-002	3.756E-003
Th-227	6.06	5.92	6.16	3.00	3.125E-003	2.083E-003
Cm-242	6.13	6.10	6.16	3.00	3.125E-003	2.083E-003

Sample Name: AV90

Comment:

Sample

Spectrum #1 Analysis #1

Batch

Batch Name: March2010

Description:

Analyst: 60040

Acquisition

Detector: AV90 , SN: 46-033Q1

Acquisition Start Date: 3/26/2010 5:14:09PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV90

Calibration Date: 3/1/2010 12:09:17AM

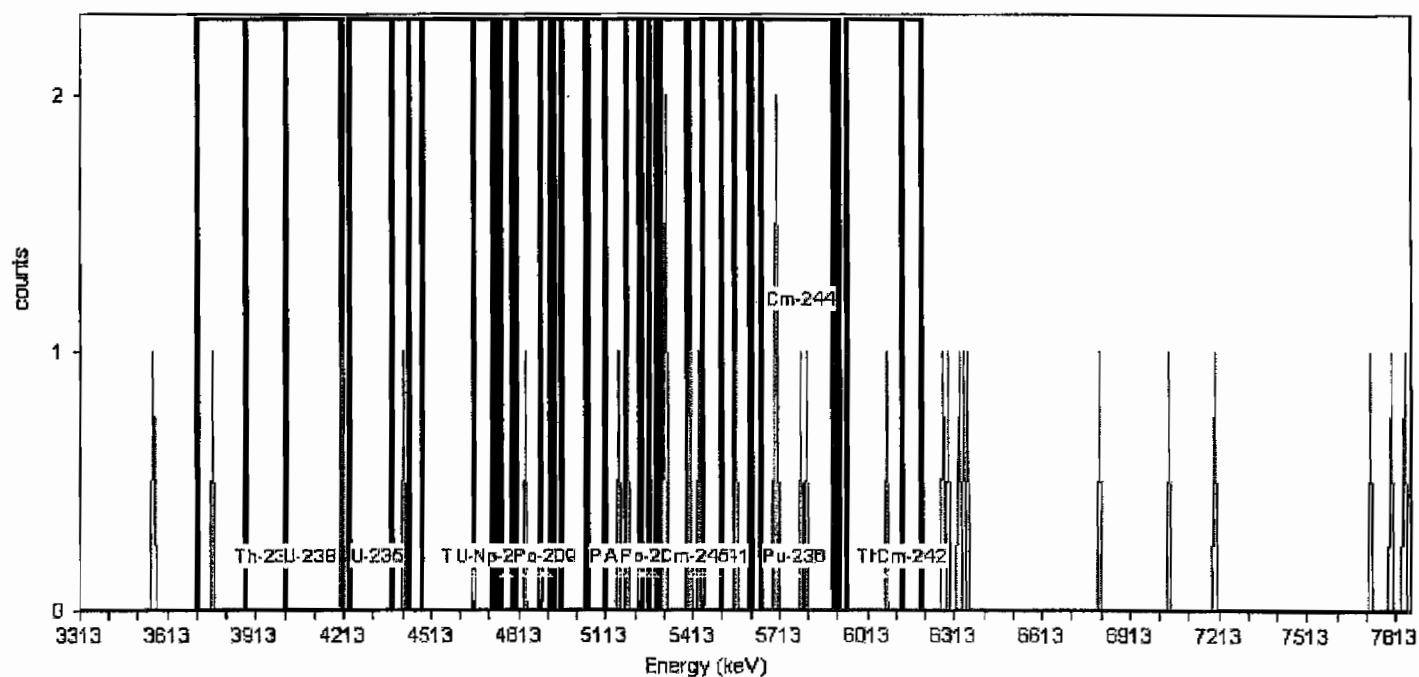
Energy Calibration Equation:

Gain = 7.6747 keV / Ch

Offset = 3,305.98 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.38% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 30.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.94	3.71	4.01	1.00	1.042E-003	1.473E-003
U-238	4.10	3.87	4.20	1.00	1.042E-003	1.473E-003
U-235	4.33	4.23	4.43	1.00	1.042E-003	1.473E-003
Th-230	4.66	4.37	4.73	1.00	1.042E-003	1.473E-003
U-234	4.69	4.48	4.80	0.00	0.000E+000	1.473E-003
Pu-242	4.89	4.66	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.76	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	2.00	2.083E-003	1.804E-003
Am-243	5.22	5.04	5.30	2.00	2.083E-003	1.804E-003
U-232	5.25	5.05	5.40	5.00	5.208E-003	2.552E-003
Th-228	5.45	5.18	5.51	5.00	5.208E-003	2.552E-003
Po-210	5.27	5.22	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.26	5.55	4.00	4.167E-003	2.329E-003
Am-241	5.49	5.29	5.61	5.00	5.208E-003	2.552E-003
Cm-245	5.42	5.39	5.45	2.00	2.083E-003	1.804E-003
Pu-236	5.77	5.62	5.90	6.00	6.250E-003	2.756E-003
Cm-244	5.78	5.65	5.92	6.00	6.250E-003	2.756E-003
Th-227	6.09	5.95	6.20	1.00	1.042E-003	1.473E-003
Cm-242	6.17	6.14	6.20	0.00	0.000E+000	1.473E-003

Sample Name: AV92

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV92 , SN: 46-033FF2
Acquisition Start Date: 3/26/2010 5:14:12PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2010_AV92
Calibration Date: 3/1/2010 11:46:15AM

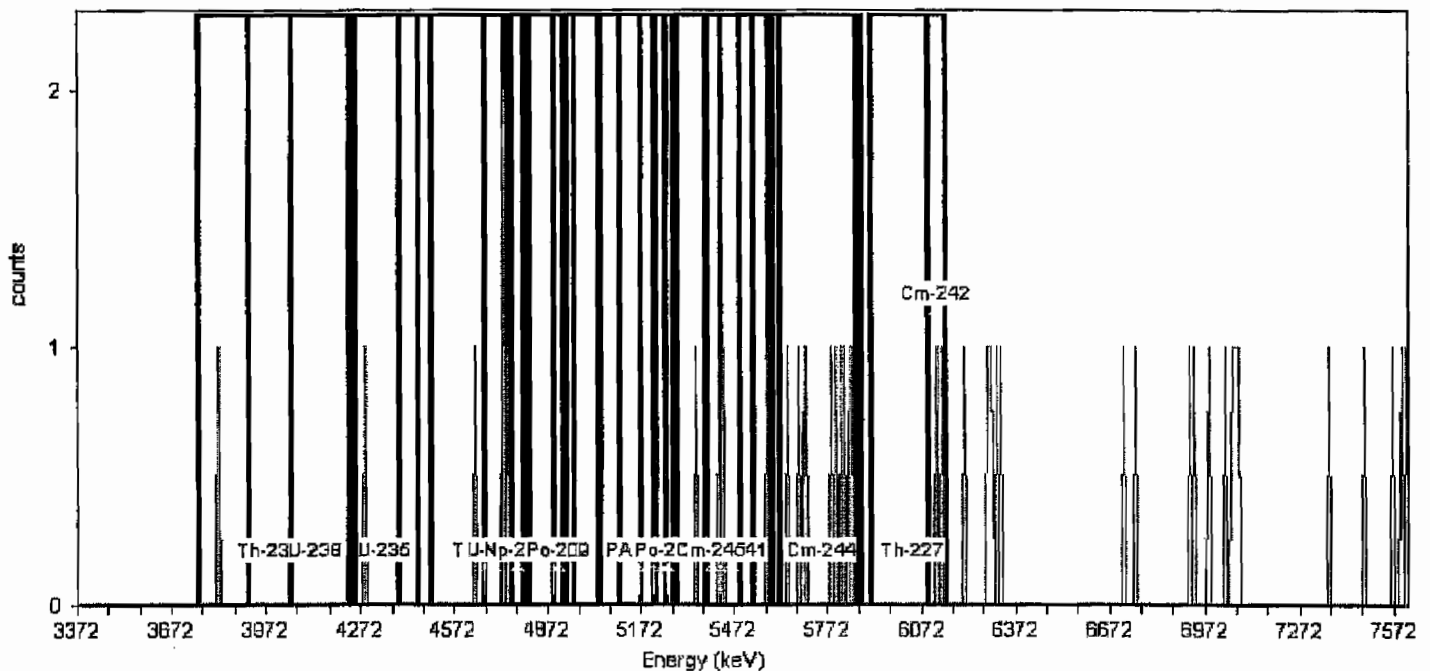
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,364.77 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.32% \pm 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 44.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.98	3.75	4.04	1.00	1.042E-003	1.473E-003
U-238	4.13	3.91	4.23	0.00	0.000E+000	1.473E-003
U-235	4.35	4.25	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.39	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.81	4.00	4.167E-003	2.329E-003
Pu-242	4.89	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.73	5.10	3.00	3.125E-003	2.083E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.95	5.22	0.00	0.000E+000	1.473E-003
Am-243	5.21	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.04	5.38	1.00	1.042E-003	1.473E-003
Th-228	5.43	5.17	5.49	3.00	3.125E-003	2.083E-003
Po-210	5.26	5.21	5.27	0.00	0.000E+000	1.473E-003
Pu-238	5.45	5.25	5.53	3.00	3.125E-003	2.083E-003
Am-241	5.46	5.28	5.58	4.00	4.167E-003	2.329E-003
Cm-245	5.40	5.38	5.43	1.00	1.042E-003	1.473E-003
Pu-236	5.74	5.59	5.86	11.00	1.146E-002	3.608E-003
Cm-244	5.75	5.62	5.88	11.00	1.146E-002	3.608E-003
Th-227	6.05	5.91	6.15	2.00	2.083E-003	1.804E-003
Cm-242	6.12	6.09	6.15	2.00	2.083E-003	1.804E-003

Sample Name: AV93

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV93 , SN: 46-033Q2

Acquisition Start Date: 3/26/2010 5:14:14PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV93

Calibration Date: 3/1/2010 12:10:16AM

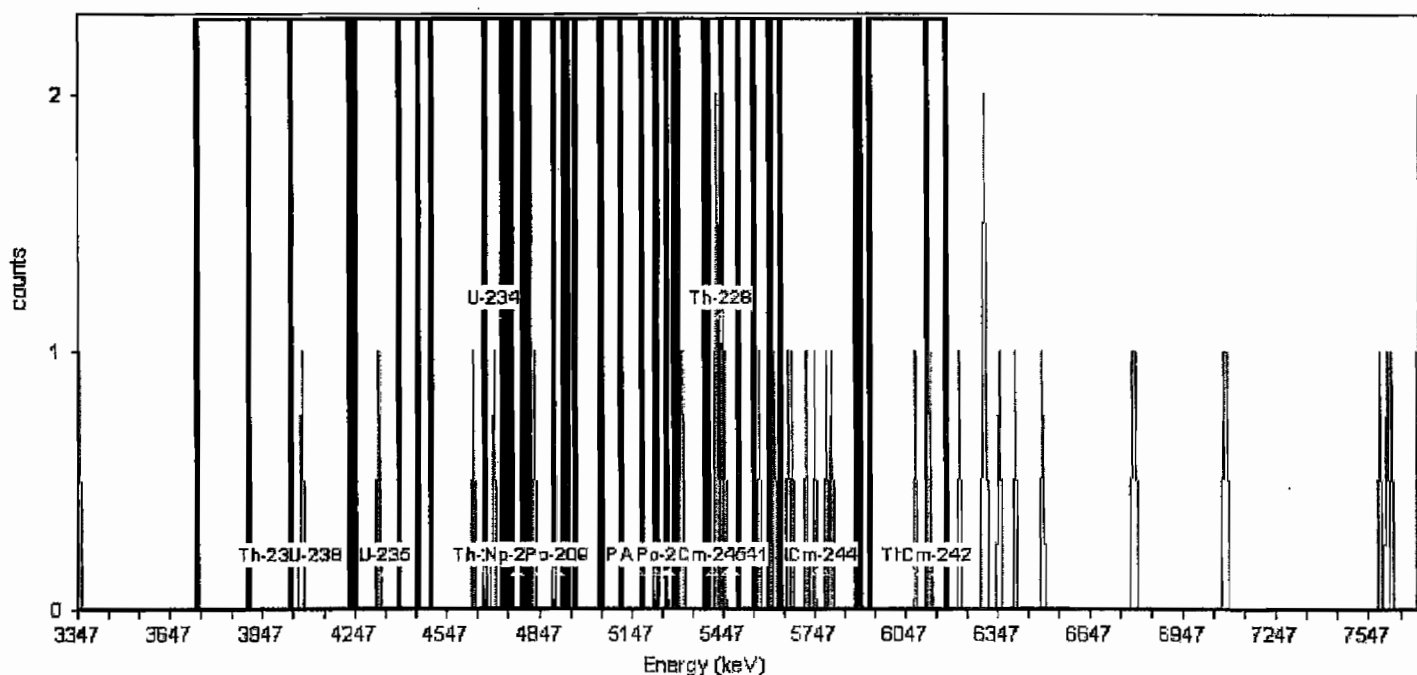
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,339.68 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.77% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 38.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.96	3.73	4.03	0.00	0.000E+000	1.473E-003
U-238	4.12	3.90	4.22	1.00	1.042E-003	1.473E-003
U-235	4.34	4.24	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.39	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.49	4.81	2.00	2.083E-003	1.804E-003
Pu-242	4.89	4.67	4.94	2.00	2.083E-003	1.804E-003
Th-229	4.85	4.73	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.77	4.76	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.30	0.00	0.000E+000	1.473E-003
U-232	5.25	5.05	5.40	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.18	5.50	5.00	5.208E-003	2.552E-003
Po-210	5.27	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.55	5.00	5.208E-003	2.552E-003
Am-241	5.48	5.29	5.60	6.00	6.250E-003	2.756E-003
Cm-245	5.41	5.39	5.44	3.00	3.125E-003	2.083E-003
Pu-236	5.76	5.61	5.89	7.00	7.292E-003	2.946E-003
Cm-244	5.77	5.64	5.90	6.00	6.250E-003	2.756E-003
Th-227	6.07	5.93	6.18	2.00	2.083E-003	1.804E-003
Cm-242	6.15	6.12	6.18	1.00	1.042E-003	1.473E-003

Sample Name: AV94

Sample

Spectrum #1	Analysis #1
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Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV94 , SN: 46-032EE6

Acquisition Start Date: 3/26/2010 5:14:15PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010 AV94

Calibration Date: 3/1/2010 12:11:17AM

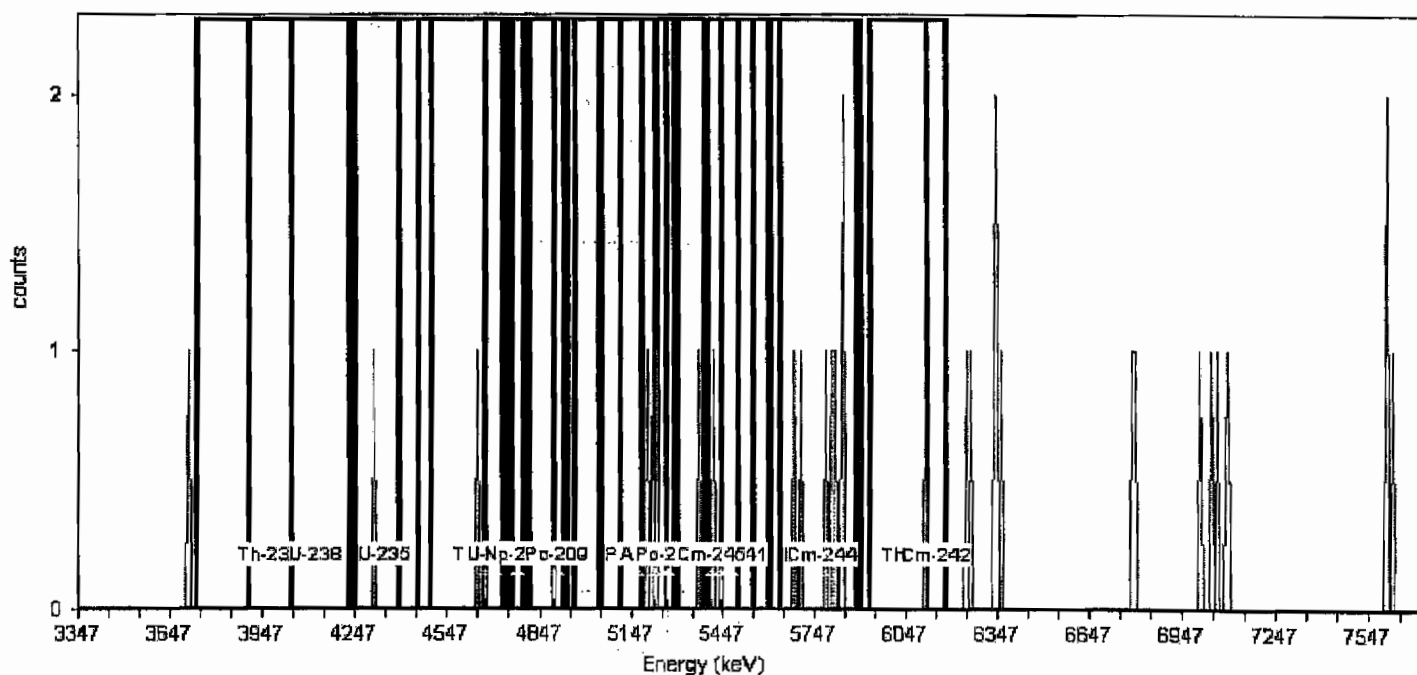
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,339.68 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.69% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05 Background ROI, Nuclide Library: Background ROI Library

Total Background Counts: 33.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.96	3.73	4.03	0.00	0.000E+000	1.473E-003
U-238	4.12	3.90	4.22	0.00	0.000E+000	1.473E-003
U-235	4.34	4.24	4.45	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.39	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.49	4.81	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.11	0.00	0.000E+000	1.473E-003
Np-237	4.77	4.76	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	3.00	3.125E-003	2.083E-003
Am-243	5.22	5.04	5.30	3.00	3.125E-003	2.083E-003
U-232	5.25	5.05	5.40	4.00	4.167E-003	2.329E-003
Th-228	5.44	5.18	5.50	5.00	5.208E-003	2.552E-003
Po-210	5.27	5.22	5.28	1.00	1.042E-003	1.473E-003
Pu-238	5.46	5.26	5.55	2.00	2.083E-003	1.804E-003
Am-241	5.48	5.29	5.60	2.00	2.083E-003	1.804E-003
Cm-245	5.41	5.39	5.44	1.00	1.042E-003	1.473E-003
Pu-236	5.76	5.61	5.89	8.00	8.333E-003	3.125E-003
Cm-244	5.77	5.64	5.90	8.00	8.333E-003	3.125E-003
Th-227	6.07	5.93	6.18	1.00	1.042E-003	1.473E-003
Cm-242	6.15	6.12	6.18	0.00	0.000E+000	1.473E-003

Sample Name: AV95

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV95 , SN: 46-033P4

Acquisition Start Date: 3/26/2010 5:14:17PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV95

Calibration Date: 3/1/2010 12:12:17AM

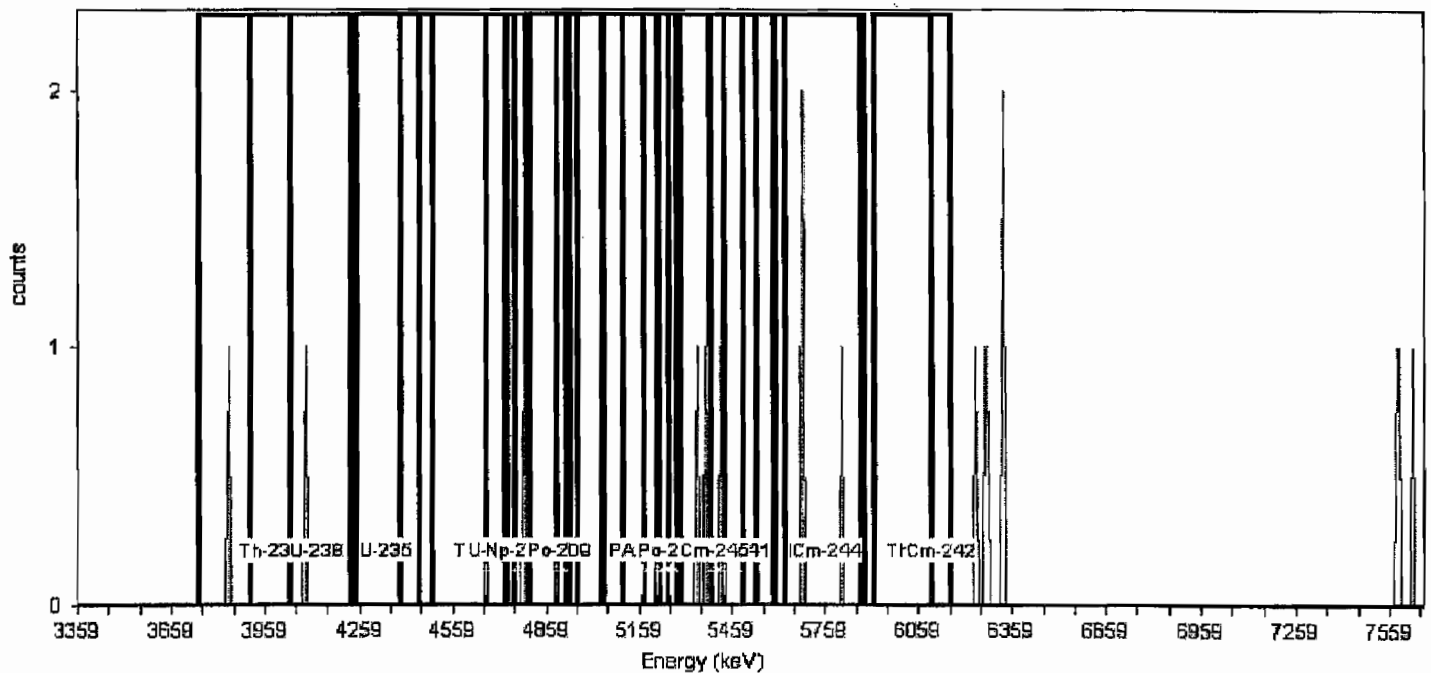
Energy Calibration Equation:

Gain = 7.4576 keV / Ch

Offset = 3,352.04 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.69% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background ROI, Nucleide Library: Background ROI Library

Total Background Counts: 18.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.97	3.74	4.04	1.00	1.042E-003	1.473E-003
U-238	4.12	3.90	4.22	1.00	1.042E-003	1.473E-003
U-235	4.34	4.25	4.45	0.00	0.000E+000	1.473E-003
Th-230	4.66	4.39	4.73	0.00	0.000E+000	1.473E-003
U-234	4.69	4.49	4.81	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.66	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	1.00	1.042E-003	1.473E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.96	5.22	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.04	5.39	2.00	2.083E-003	1.804E-003
Th-228	5.43	5.17	5.49	3.00	3.125E-003	2.083E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.25	5.54	3.00	3.125E-003	2.083E-003
Am-241	5.47	5.28	5.59	3.00	3.125E-003	2.083E-003
Cm-245	5.40	5.38	5.43	1.00	1.042E-003	1.473E-003
Pu-236	5.75	5.60	5.87	3.00	3.125E-003	2.083E-003
Cm-244	5.76	5.63	5.89	3.00	3.125E-003	2.083E-003
Th-227	6.06	5.92	6.16	0.00	0.000E+000	1.473E-003
Cm-242	6.13	6.10	6.16	0.00	0.000E+000	1.473E-003

Sample Name: AV96

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV96 , SN: 46-033P1
Acquisition Start Date: 3/26/2010 5:14:18PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2010_AV96
Calibration Date: 3/1/2010 12:13:27AM

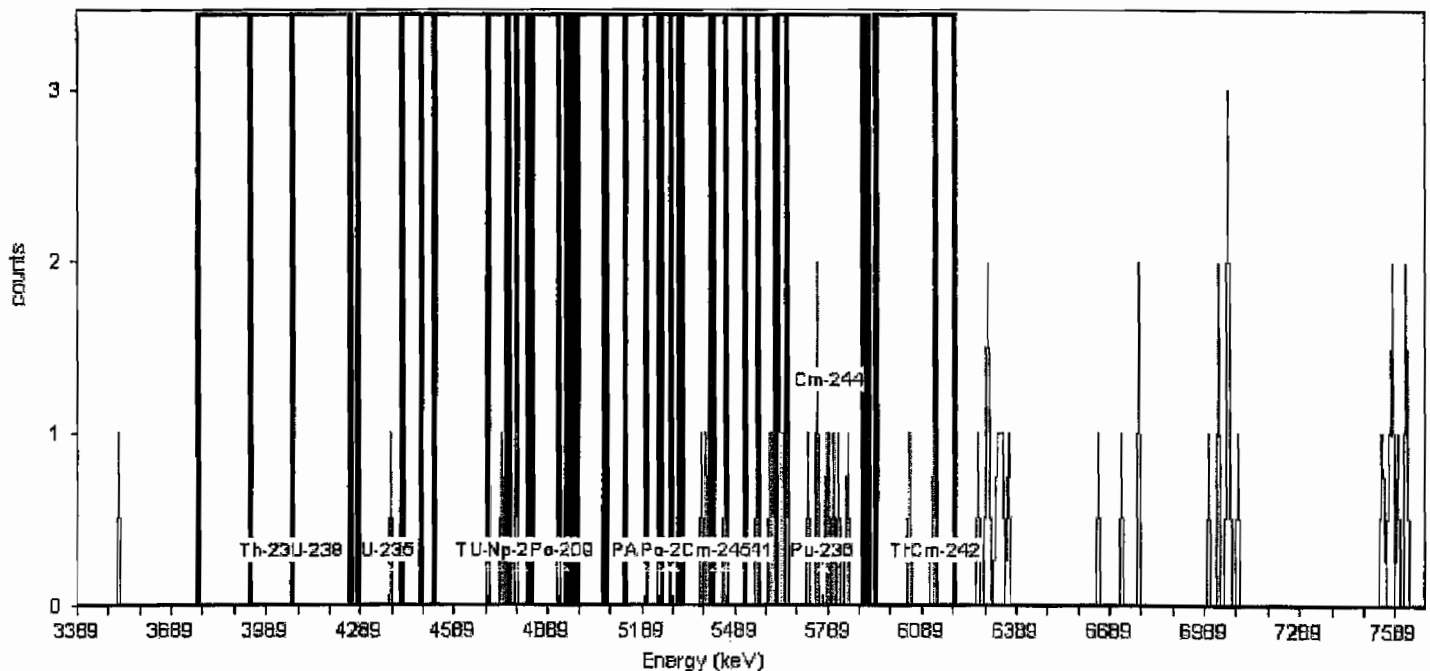
Energy Calibration Equation:

Gain = 7.4576 keV / Ch

Offset = 3,381.87 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.04% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundNoNuclide Library: Background ROI Library

Total Background Counts: 54.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	4.00	3.77	4.07	0.00	0.000E+000	1.473E-003
U-238	4.15	3.93	4.25	0.00	0.000E+000	1.473E-003
U-235	4.37	4.28	4.48	1.00	1.042E-003	1.473E-003
Th-230	4.69	4.42	4.76	1.00	1.042E-003	1.473E-003
U-234	4.72	4.52	4.84	2.00	2.083E-003	1.804E-003
Pu-242	4.92	4.69	4.96	2.00	2.083E-003	1.804E-003
Th-229	4.87	4.75	5.13	1.00	1.042E-003	1.473E-003
Np-237	4.80	4.78	4.82	1.00	1.042E-003	1.473E-003
Po-209	4.93	4.92	4.95	0.00	0.000E+000	1.473E-003
Pu-239	5.19	4.99	5.25	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.07	5.32	0.00	0.000E+000	1.473E-003
U-232	5.27	5.07	5.42	2.00	2.083E-003	1.804E-003
Th-228	5.46	5.20	5.52	3.00	3.125E-003	2.083E-003
Po-210	5.29	5.25	5.31	0.00	0.000E+000	1.473E-003
Pu-238	5.48	5.28	5.57	4.00	4.167E-003	2.329E-003
Am-241	5.50	5.31	5.62	6.00	6.250E-003	2.756E-003
Cm-245	5.43	5.41	5.46	1.00	1.042E-003	1.473E-003
Pu-236	5.78	5.63	5.90	11.00	1.146E-002	3.608E-003
Cm-244	5.79	5.66	5.92	9.00	9.375E-003	3.294E-003
Th-227	6.09	5.95	6.19	2.00	2.083E-003	1.804E-003
Cm-242	6.16	6.13	6.19	0.00	0.000E+000	1.473E-003

Sample Name: AV97

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV97, SN: 76-03393

Acquisition Start Date: 3/26/2010 5:14:20PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV97

Calibration Date: 3/1/2010 12:14:11AM

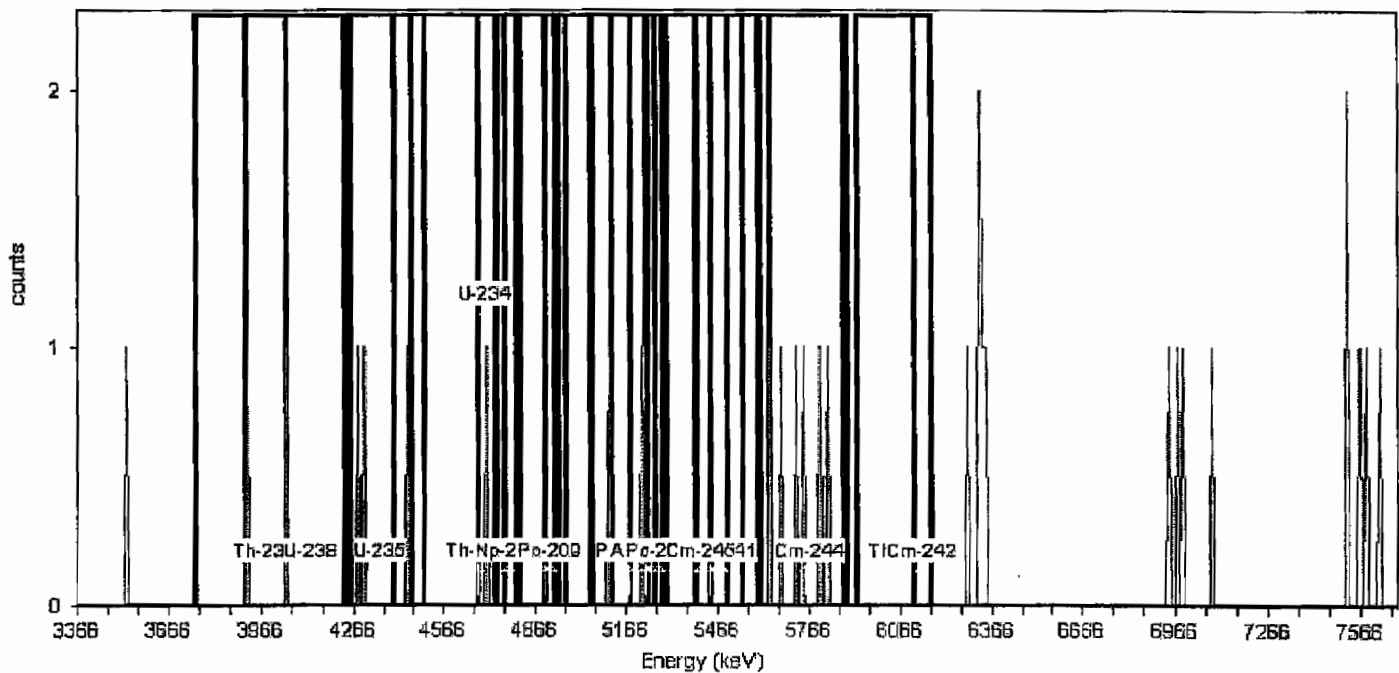
Energy Calibration Equation:

Gain = 7.4576 keV / Ch

Offset = 3,359.49 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.88% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 33.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.98	3.75	4.05	2.00	2.083E-003	1.804E-003
U-238	4.13	3.91	4.23	2.00	2.083E-003	1.804E-003
U-235	4.35	4.25	4.46	3.00	3.125E-003	2.083E-003
Th-230	4.67	4.40	4.74	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.81	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.67	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.85	4.73	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	2.00	2.083E-003	1.804E-003
Am-243	5.22	5.04	5.30	2.00	2.083E-003	1.804E-003
U-232	5.25	5.05	5.40	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.18	5.50	1.00	1.042E-003	1.473E-003
Po-210	5.27	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	0.00	0.000E+000	1.473E-003
Am-241	5.48	5.29	5.60	0.00	0.000E+000	1.473E-003
Cm-245	5.41	5.39	5.44	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.88	7.00	7.292E-003	2.946E-003
Cm-244	5.77	5.63	5.90	7.00	7.292E-003	2.946E-003
Th-227	6.07	5.92	6.17	0.00	0.000E+000	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

TestAmerica St. Louis
TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:15:48AM 3/27/2010

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV98 , SN: 46-033Q3
Acquisition Start Date: 3/26/2010 5:14:22PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2010_AV98
Calibration Date: 3/1/2010 12:15:05AM

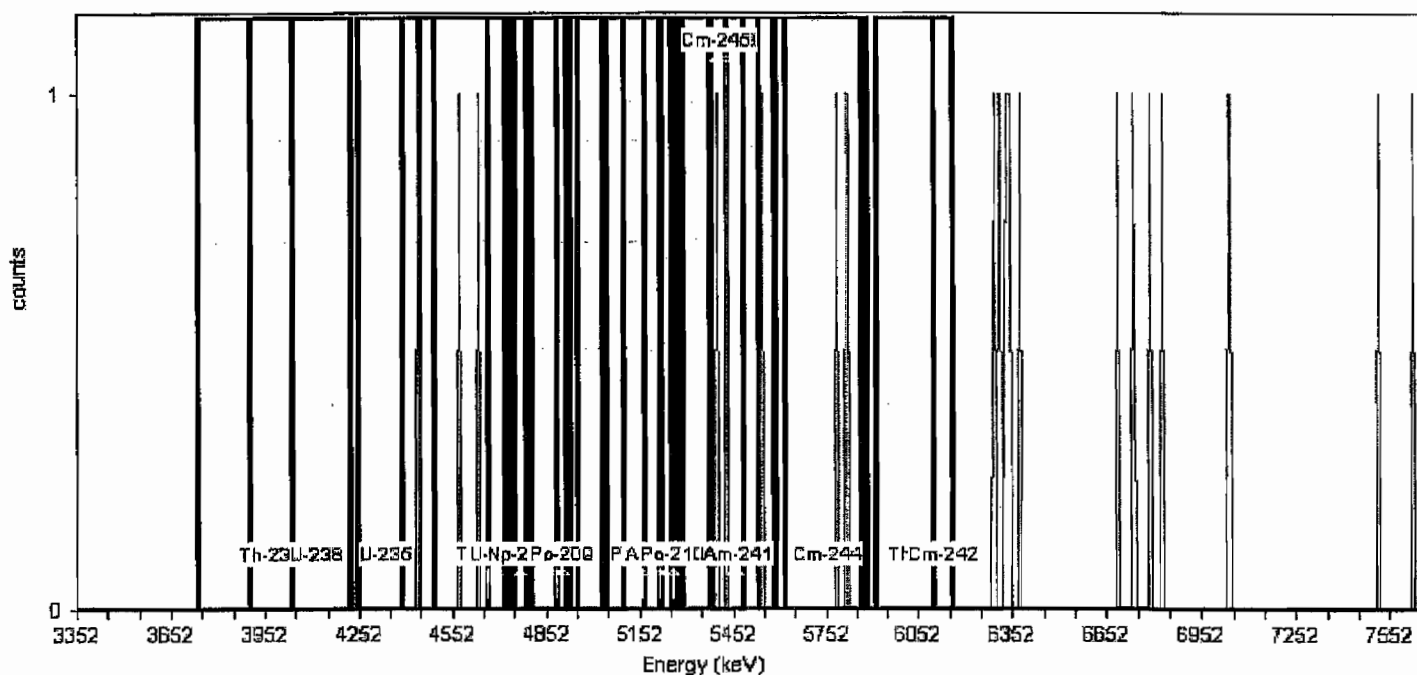
Energy Calibration Equation:

Gain = 7.4651 keV / Ch

Offset = 3,345.28 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.67% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 24.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.96	3.73	4.03	0.00	0.000E+000	1.473E-003
U-238	4.11	3.90	4.22	0.00	0.000E+000	1.473E-003
U-235	4.34	4.24	4.44	1.00	1.042E-003	1.473E-003
Th-230	4.66	4.38	4.73	3.00	3.125E-003	2.083E-003
U-234	4.69	4.49	4.80	2.00	2.083E-003	1.804E-003
Pu-242	4.88	4.66	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.10	0.00	0.000E+000	1.473E-003
Np-237	4.76	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.95	5.22	0.00	0.000E+000	1.473E-003
Am-243	5.21	5.03	5.29	0.00	0.000E+000	1.473E-003
U-232	5.23	5.04	5.38	0.00	0.000E+000	1.473E-003
Th-228	5.43	5.17	5.49	2.00	2.083E-003	1.804E-003
Po-210	5.26	5.21	5.27	0.00	0.000E+000	1.473E-003
Pu-238	5.45	5.25	5.53	2.00	2.083E-003	1.804E-003
Am-241	5.47	5.28	5.58	3.00	3.125E-003	2.083E-003
Cm-245	5.40	5.38	5.43	2.00	2.083E-003	1.804E-003
Pu-236	5.74	5.59	5.87	3.00	3.125E-003	2.083E-003
Cm-244	5.76	5.62	5.88	3.00	3.125E-003	2.083E-003
Th-227	6.06	5.91	6.16	0.00	0.000E+000	1.473E-003
Cm-242	6.13	6.10	6.16	0.00	0.000E+000	1.473E-003

Sample Name: AV99

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV99 , SN: 49-155DD3
Acquisition Start Date: 3/26/2010 5:14:26PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2010_AV99a
Calibration Date: 3/5/2010 12:23:13PM

Energy Calibration Equation:

Gain = 7.4576 keV / Ch
Offset = 3,359.49 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 25.50% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background Nuc, Nuc Library: Background ROI Library

Total Background Counts: 9.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.98	3.75	4.05	0.00	0.000E+000	1.473E-003
U-238	4.13	3.91	4.23	0.00	0.000E+000	1.473E-003
U-235	4.35	4.25	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.74	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.81	2.00	2.083E-003	1.804E-003
Pu-242	4.90	4.67	4.94	2.00	2.083E-003	1.804E-003
Th-229	4.85	4.73	5.11	0.00	0.000E+000	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.30	0.00	0.000E+000	1.473E-003
U-232	5.25	5.05	5.40	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.18	5.50	0.00	0.000E+000	1.473E-003
Po-210	5.27	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	0.00	0.000E+000	1.473E-003
Am-241	5.48	5.29	5.60	1.00	1.042E-003	1.473E-003
Cm-245	5.41	5.39	5.44	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.88	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.63	5.90	0.00	0.000E+000	1.473E-003
Th-227	6.07	5.92	6.17	1.00	1.042E-003	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.96	3.72	4.03	0.00	0.000E+000	1.473E-003
U-238	4.11	3.89	4.22	0.00	0.000E+000	1.473E-003
U-235	4.34	4.24	4.45	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.39	4.74	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.82	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.67	4.95	1.00	1.042E-003	1.473E-003
Th-229	4.86	4.73	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.19	4.97	5.25	0.00	0.000E+000	1.473E-003
Am-243	5.24	5.06	5.32	0.00	0.000E+000	1.473E-003
U-232	5.26	5.06	5.42	0.00	0.000E+000	1.473E-003
Th-228	5.46	5.19	5.52	0.00	0.000E+000	1.473E-003
Po-210	5.29	5.24	5.30	0.00	0.000E+000	1.473E-003
Pu-238	5.49	5.28	5.57	0.00	0.000E+000	1.473E-003
Am-241	5.50	5.31	5.62	0.00	0.000E+000	1.473E-003
Cm-245	5.43	5.41	5.46	0.00	0.000E+000	1.473E-003
Pu-236	5.78	5.63	5.92	0.00	0.000E+000	1.473E-003
Cm-244	5.80	5.66	5.93	0.00	0.000E+000	1.473E-003
Th-227	6.11	5.96	6.21	0.00	0.000E+000	1.473E-003
Cm-242	6.18	6.15	6.21	0.00	0.000E+000	1.473E-003

TestAmerica St. Louis

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:55AM 3/27/20

Sample

Spectrum #1	Analysis #1
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Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV101 , SN: 49-037X6

Acquisition Start Date: 3/26/2010 5:14:29PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010 AV101

Calibration Date: 3/1/2010 12:16:52AM

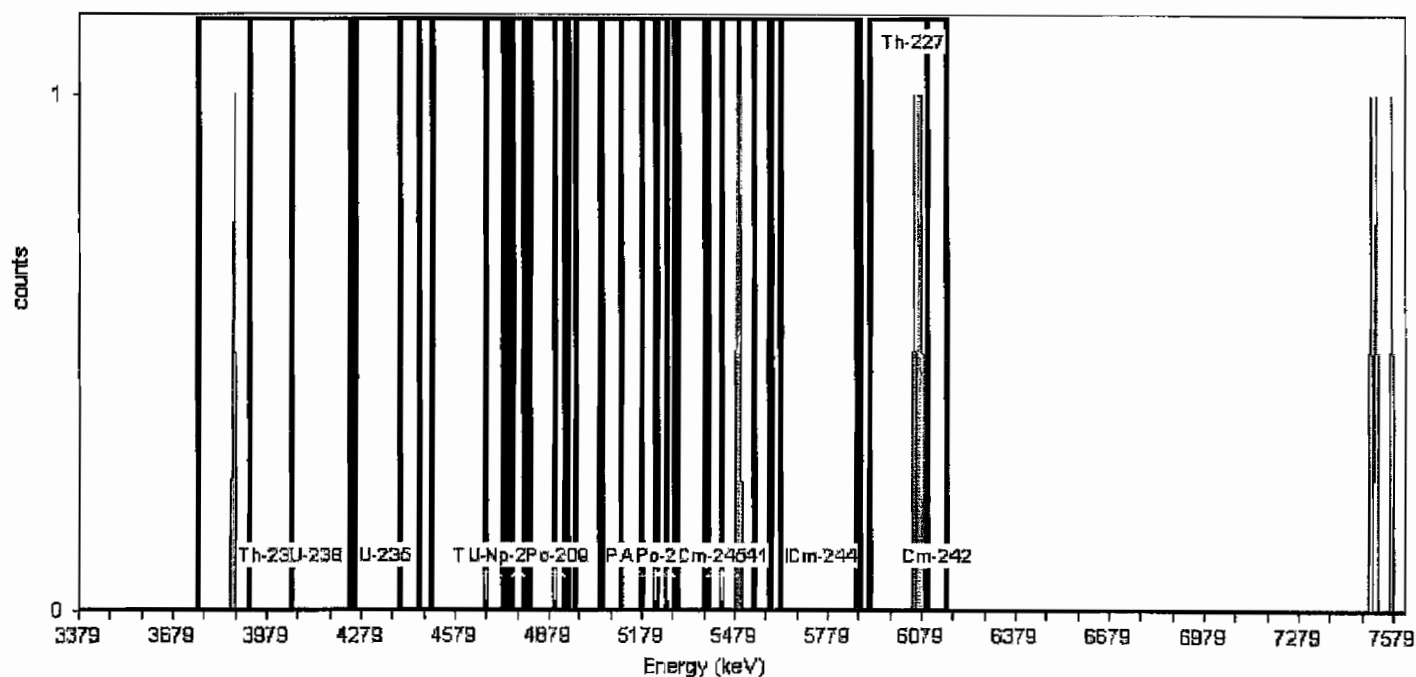
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.24% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05 Background ROI Library: Background ROI Library

Total Background Counts: 9.00

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.05	1.00	1.042E-003	1.473E-003
U-238	4.13	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.81	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.11	0.00	0.000E+000	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.05	5.39	0.00	0.000E+000	1.473E-003
Th-228	5.43	5.18	5.49	2.00	2.083E-003	1.804E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	2.00	2.083E-003	1.804E-003
Am-241	5.47	5.29	5.59	2.00	2.083E-003	1.804E-003
Cm-245	5.41	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.87	0.00	0.000E+000	1.473E-003
Cm-244	5.76	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.16	3.00	3.125E-003	2.083E-003
Cm-242	6.13	6.10	6.16	0.00	0.000E+000	1.473E-003

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:58AM 3/27/20

Comment:

Analyst: 60040

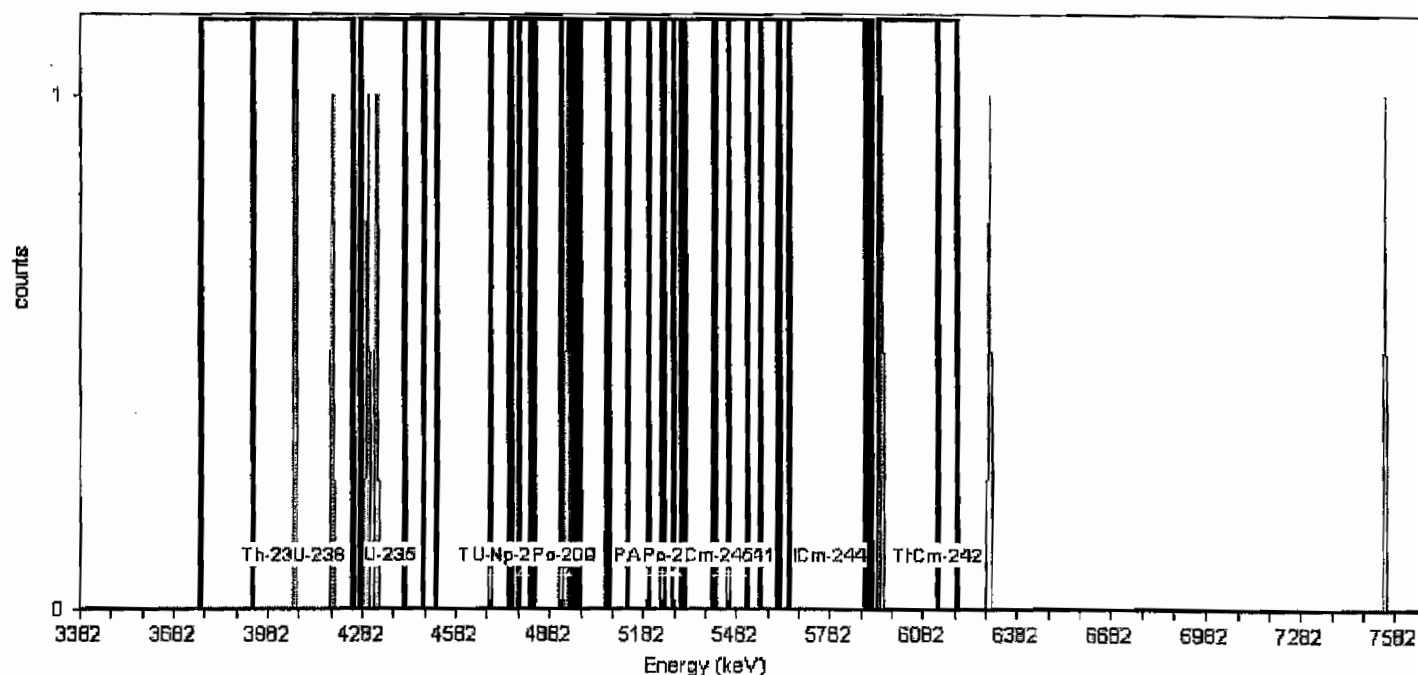
Description:

Acquisition

Energy Calibration Equation:

Gain = 7.4651 keV / Ch
Offset = 3,375.14 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 27.27% \pm 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background Nuc, Nuc Library: Background ROI Library

Total Background Counts: 8.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.25	2.00	2.083E-003	1.804E-003
U-235	4.37	4.27	4.47	2.00	2.083E-003	1.804E-003
Th-230	4.69	4.41	4.76	0.00	0.000E+000	1.473E-003
U-234	4.72	4.52	4.83	0.00	0.000E+000	1.473E-003
Pu-242	4.91	4.69	4.96	1.00	1.042E-003	1.473E-003
Th-229	4.87	4.75	5.13	1.00	1.042E-003	1.473E-003
Np-237	4.79	4.78	4.82	0.00	0.000E+000	1.473E-003
Po-209	4.93	4.91	4.94	1.00	1.042E-003	1.473E-003
Pu-239	5.19	4.98	5.25	0.00	0.000E+000	1.473E-003
Am-243	5.24	5.06	5.32	0.00	0.000E+000	1.473E-003
U-232	5.26	5.07	5.41	0.00	0.000E+000	1.473E-003
Th-228	5.46	5.20	5.52	0.00	0.000E+000	1.473E-003
Po-210	5.29	5.24	5.30	0.00	0.000E+000	1.473E-003
Pu-238	5.48	5.28	5.56	0.00	0.000E+000	1.473E-003
Am-241	5.50	5.31	5.61	0.00	0.000E+000	1.473E-003
Cm-245	5.43	5.41	5.46	0.00	0.000E+000	1.473E-003
Pu-236	5.77	5.62	5.90	0.00	0.000E+000	1.473E-003
Cm-244	5.79	5.65	5.91	0.00	0.000E+000	1.473E-003
Th-227	6.08	5.94	6.19	1.00	1.042E-003	1.473E-003
Cm-242	6.16	6.13	6.19	0.00	0.000E+000	1.473E-003

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV103 , SN: 49-037F3

Acquisition Start Date: 3/26/2010 5:14:33PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010 AV103

Calibration Date: 3/1/2010 12:18:18AM

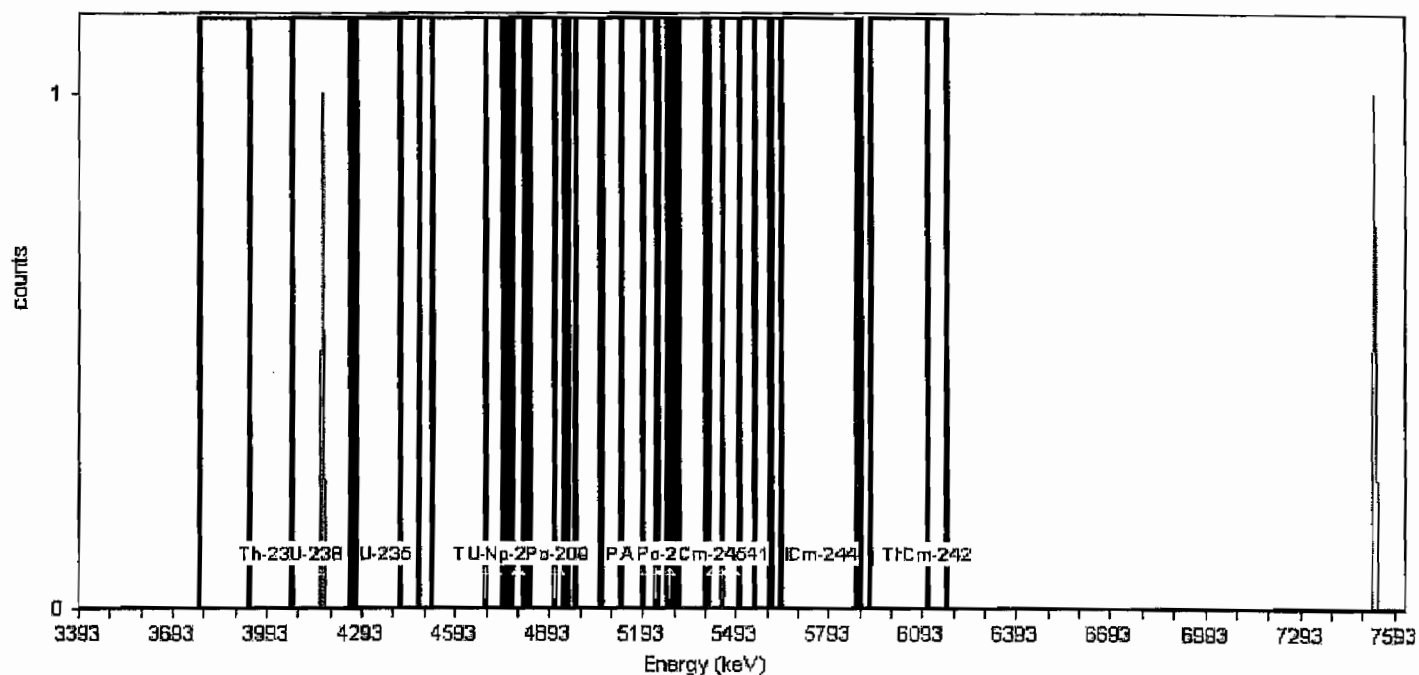
Energy Calibration Equation:

Gain = 7.3850 keV / Ch

Offset = 3,386.37 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 25.65% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundNo, Nuclide Library: Background ROI Library

Total Background Counts: 2.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	4.00	3.77	4.07	0.00	0.000E+000	1.473E-003
U-238	4.15	3.93	4.25	1.00	1.042E-003	1.473E-003
U-235	4.37	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.69	4.41	4.75	0.00	0.000E+000	1.473E-003
U-234	4.72	4.52	4.83	0.00	0.000E+000	1.473E-003
Pu-242	4.91	4.69	4.95	0.00	0.000E+000	1.473E-003
Th-229	4.86	4.75	5.12	0.00	0.000E+000	1.473E-003
Np-237	4.79	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.81	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.06	5.31	0.00	0.000E+000	1.473E-003
U-232	5.25	5.06	5.40	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.19	5.51	0.00	0.000E+000	1.473E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	0.00	0.000E+000	1.473E-003
Am-241	5.48	5.30	5.60	0.00	0.000E+000	1.473E-003
Cm-245	5.42	5.40	5.45	0.00	0.000E+000	1.473E-003
Pu-236	5.76	5.61	5.88	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.64	5.90	0.00	0.000E+000	1.473E-003
Th-227	6.07	5.93	6.17	0.00	0.000E+000	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Sample Name: AV104

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV104 , SN: 49-037E5

Acquisition Start Date: 3/26/2010 5:14:35PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV104

Calibration Date: 3/1/2010 12:19:14AM

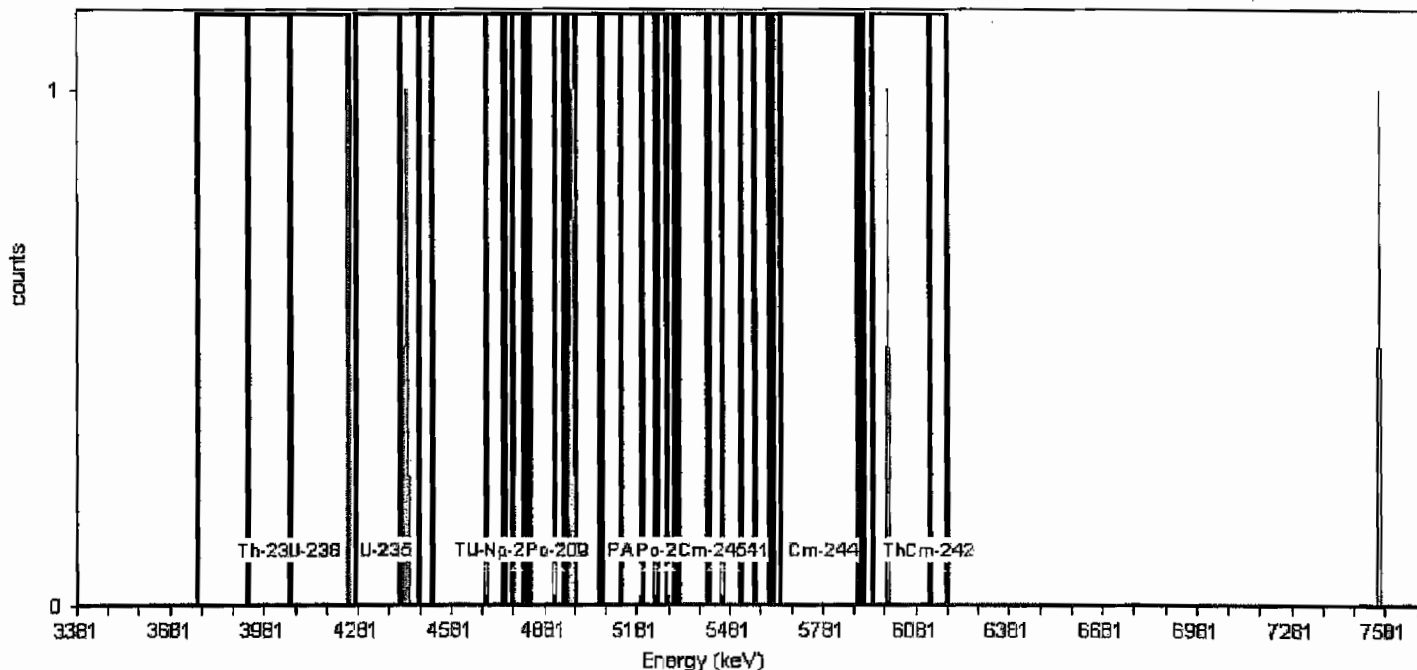
Energy Calibration Equation:

Gain = 7.4576 keV / Ch

Offset = 3,374.41 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.13% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 5.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.06	0.00	0.000E+000	1.473E-003
U-238	4.14	3.93	4.25	1.00	1.042E-003	1.473E-003
U-235	4.37	4.27	4.47	1.00	1.042E-003	1.473E-003
Th-230	4.69	4.41	4.75	1.00	1.042E-003	1.473E-003
U-234	4.72	4.52	4.83	0.00	0.000E+000	1.473E-003
Pu-242	4.91	4.69	4.96	0.00	0.000E+000	1.473E-003
Th-229	4.87	4.75	5.13	1.00	1.042E-003	1.473E-003
Np-237	4.79	4.78	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.93	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.19	4.98	5.25	0.00	0.000E+000	1.473E-003
Am-243	5.24	5.06	5.31	0.00	0.000E+000	1.473E-003
U-232	5.26	5.07	5.41	0.00	0.000E+000	1.473E-003
Th-228	5.46	5.19	5.51	0.00	0.000E+000	1.473E-003
Po-210	5.28	5.24	5.30	0.00	0.000E+000	1.473E-003
Pu-238	5.48	5.28	5.56	0.00	0.000E+000	1.473E-003
Am-241	5.49	5.31	5.61	0.00	0.000E+000	1.473E-003
Cm-245	5.43	5.40	5.46	0.00	0.000E+000	1.473E-003
Pu-236	5.77	5.62	5.90	0.00	0.000E+000	1.473E-003
Cm-244	5.78	5.65	5.91	0.00	0.000E+000	1.473E-003
Th-227	6.08	5.94	6.19	1.00	1.042E-003	1.473E-003
Cm-242	6.16	6.13	6.19	0.00	0.000E+000	1.473E-003

Sample Name: AV105

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV105 , SN: 49-037F1
Acquisition Start Date: 3/26/2010 5:14:37PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2010_AV105
Calibration Date: 3/1/2010 12:19:51AM

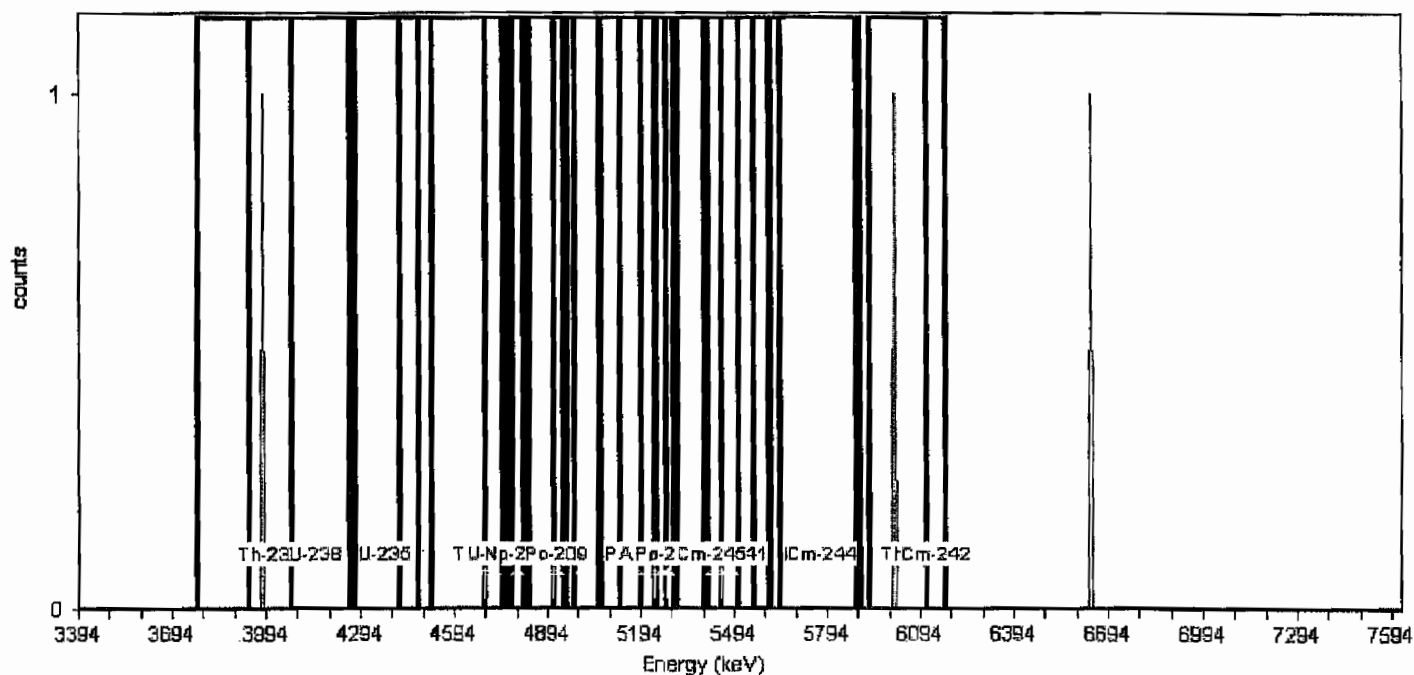
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,386.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 24.83% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 3.00

Nuclide Summary (ROI)

TestAmerica St. Louis

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	4.00	3.77	4.07	1.00	1.042E-003	1.473E-003
U-238	4.15	3.93	4.25	1.00	1.042E-003	1.473E-003
U-235	4.37	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.69	4.41	4.75	0.00	0.000E+000	1.473E-003
U-234	4.72	4.52	4.83	0.00	0.000E+000	1.473E-003
Pu-242	4.91	4.69	4.95	0.00	0.000E+000	1.473E-003
Th-229	4.87	4.75	5.12	0.00	0.000E+000	1.473E-003
Np-237	4.79	4.78	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.98	5.24	0.00	0.000E+000	1.473E-003
Am-243	5.24	5.06	5.31	0.00	0.000E+000	1.473E-003
U-232	5.26	5.07	5.41	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.19	5.51	0.00	0.000E+000	1.473E-003
Po-210	5.28	5.24	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	0.00	0.000E+000	1.473E-003
Am-241	5.49	5.30	5.60	0.00	0.000E+000	1.473E-003
Cm-245	5.42	5.40	5.45	0.00	0.000E+000	1.473E-003
Pu-236	5.76	5.61	5.89	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.64	5.90	0.00	0.000E+000	1.473E-003
Th-227	6.07	5.93	6.17	1.00	1.042E-003	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Sample Name: AV106

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV106 , SN: 49-037F6

Acquisition Start Date: 3/26/2010 5:14:39PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV106

Calibration Date: 3/1/2010 12:20:25AM

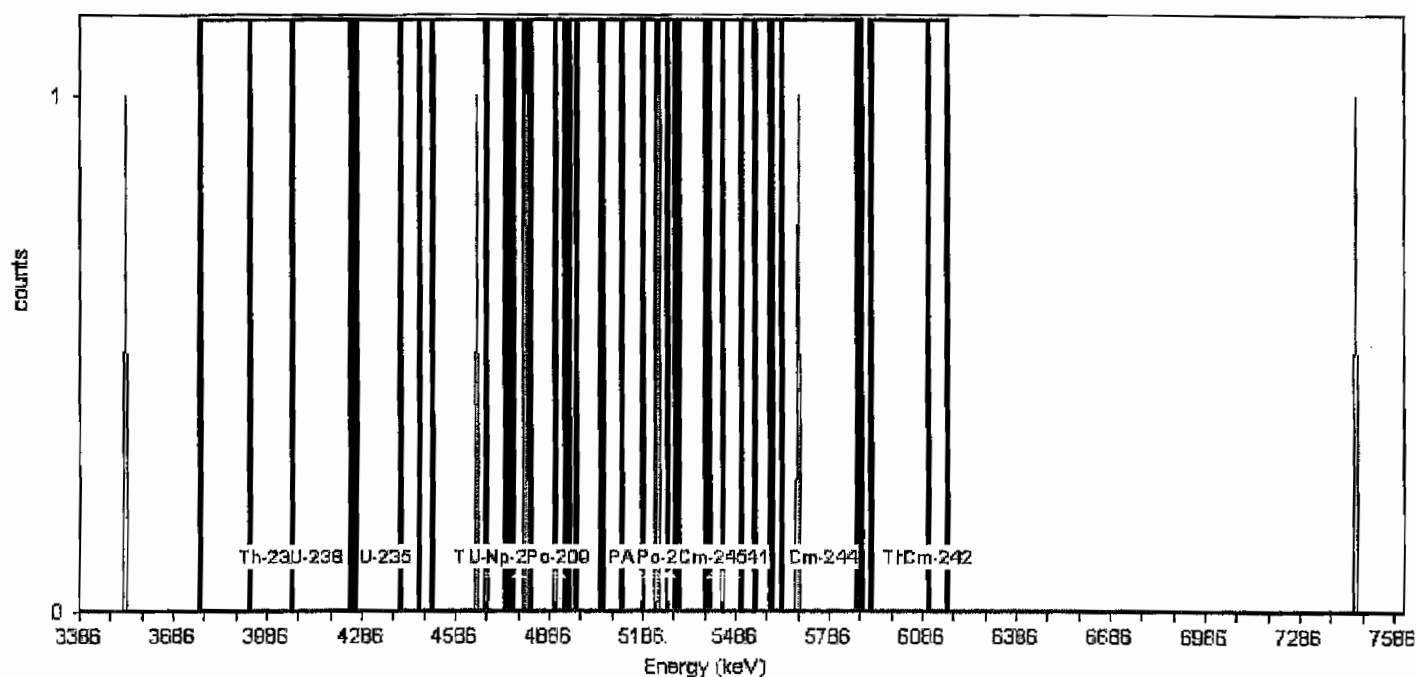
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,379.56 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.96% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background ROI, Nuclide Library: Background ROI Library

Total Background Counts: 6.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.06	0.00	0.000E+000	1.473E-003
U-238	4.14	3.93	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.41	4.75	1.00	1.042E-003	1.473E-003
U-234	4.71	4.51	4.82	2.00	2.083E-003	1.804E-003
Pu-242	4.90	4.68	4.95	1.00	1.042E-003	1.473E-003
Th-229	4.86	4.74	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.77	4.81	1.00	1.042E-003	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.05	5.30	1.00	1.042E-003	1.473E-003
U-232	5.25	5.06	5.40	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.18	5.50	1.00	1.042E-003	1.473E-003
Po-210	5.27	5.23	5.29	1.00	1.042E-003	1.473E-003
Pu-238	5.46	5.26	5.55	0.00	0.000E+000	1.473E-003
Am-241	5.48	5.29	5.60	0.00	0.000E+000	1.473E-003
Cm-245	5.41	5.39	5.44	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.88	1.00	1.042E-003	1.473E-003
Cm-244	5.77	5.63	5.89	1.00	1.042E-003	1.473E-003
Th-227	6.06	5.92	6.17	0.00	0.000E+000	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Sample Name: AV107

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV107 , SN: 49-037X7

Acquisition Start Date: 3/26/2010 5:14:40PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV107

Calibration Date: 3/1/2010 12:21:17AM

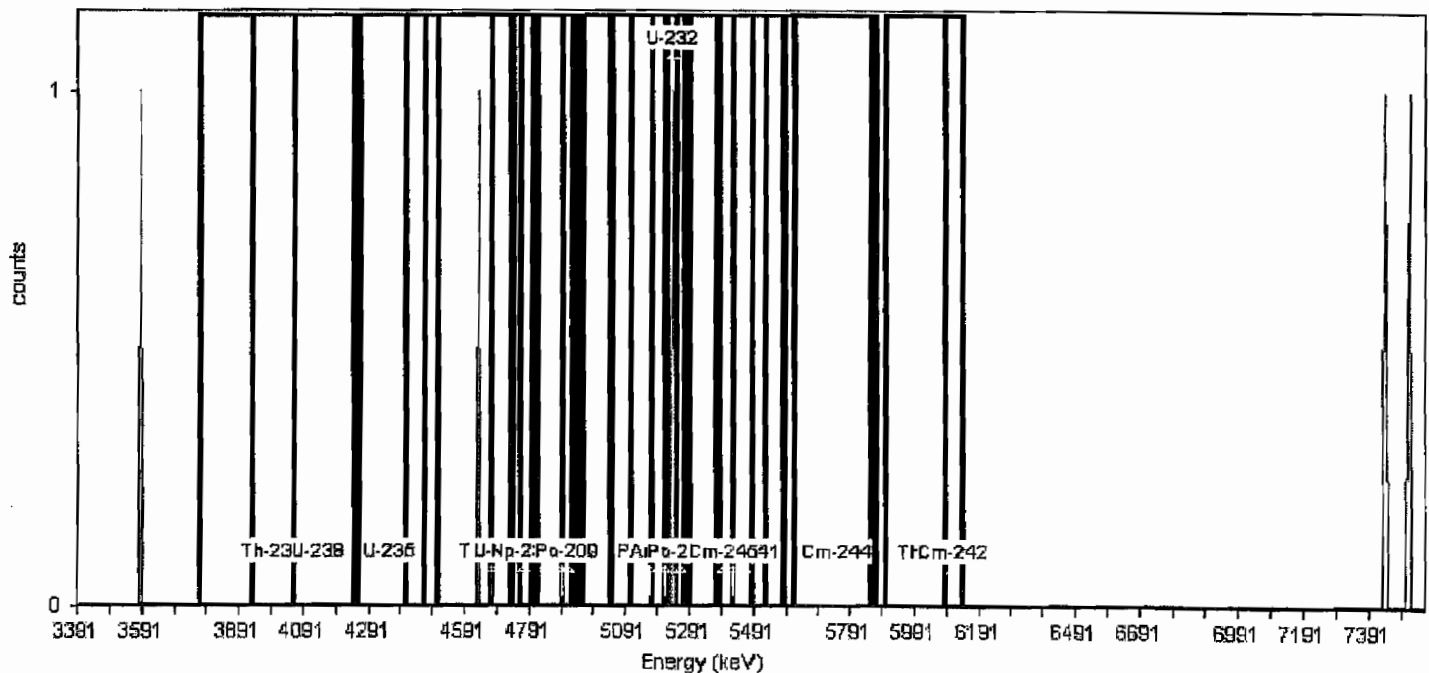
Energy Calibration Equation:

Gain = 7.3221 keV / Ch

Offset = 3,383.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.21% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background Nucplde Library: Background ROI Library

Total Background Counts: 5.00

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.06	0.00	0.000E+000	1.473E-003
U-238	4.14	3.93	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.81	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.10	0.00	0.000E+000	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.69	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.96	5.22	0.00	0.000E+000	1.473E-003
Am-243	5.21	5.04	5.29	1.00	1.042E-003	1.473E-003
U-232	5.24	5.05	5.38	1.00	1.042E-003	1.473E-003
Th-228	5.43	5.17	5.49	1.00	1.042E-003	1.473E-003
Po-210	5.26	5.21	5.27	1.00	1.042E-003	1.473E-003
Pu-238	5.45	5.25	5.53	0.00	0.000E+000	1.473E-003
Am-241	5.46	5.28	5.58	0.00	0.000E+000	1.473E-003
Cm-245	5.40	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.59	5.86	0.00	0.000E+000	1.473E-003
Cm-244	5.75	5.62	5.87	0.00	0.000E+000	1.473E-003
Th-227	6.04	5.90	6.14	0.00	0.000E+000	1.473E-003
Cm-242	6.12	6.09	6.14	0.00	0.000E+000	1.473E-003

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	4.00	3.77	4.07	0.00	0.000E+000	1.473E-003
U-238	4.15	3.93	4.25	0.00	0.000E+000	1.473E-003
U-235	4.37	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.69	4.41	4.75	0.00	0.000E+000	1.473E-003
U-234	4.72	4.52	4.83	0.00	0.000E+000	1.473E-003
Pu-242	4.91	4.69	4.95	0.00	0.000E+000	1.473E-003
Th-229	4.87	4.75	5.12	0.00	0.000E+000	1.473E-003
Np-237	4.79	4.78	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.98	5.24	0.00	0.000E+000	1.473E-003
Am-243	5.24	5.06	5.31	0.00	0.000E+000	1.473E-003
U-232	5.26	5.07	5.41	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.19	5.51	0.00	0.000E+000	1.473E-003
Po-210	5.28	5.24	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	0.00	0.000E+000	1.473E-003
Am-241	5.49	5.30	5.60	0.00	0.000E+000	1.473E-003
Cm-245	5.42	5.40	5.45	0.00	0.000E+000	1.473E-003
Pu-236	5.76	5.61	5.89	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.64	5.90	0.00	0.000E+000	1.473E-003
Th-227	6.07	5.93	6.17	1.00	1.042E-003	1.473E-003
Cm-242	6.14	6.11	6.17	1.00	1.042E-003	1.473E-003

Sample Name: AV109

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV109, SN: 49-037W5

Acquisition Start Date: 3/26/2010 5:14:45PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV109

Calibration Date: 3/1/2010 12:22:47AM

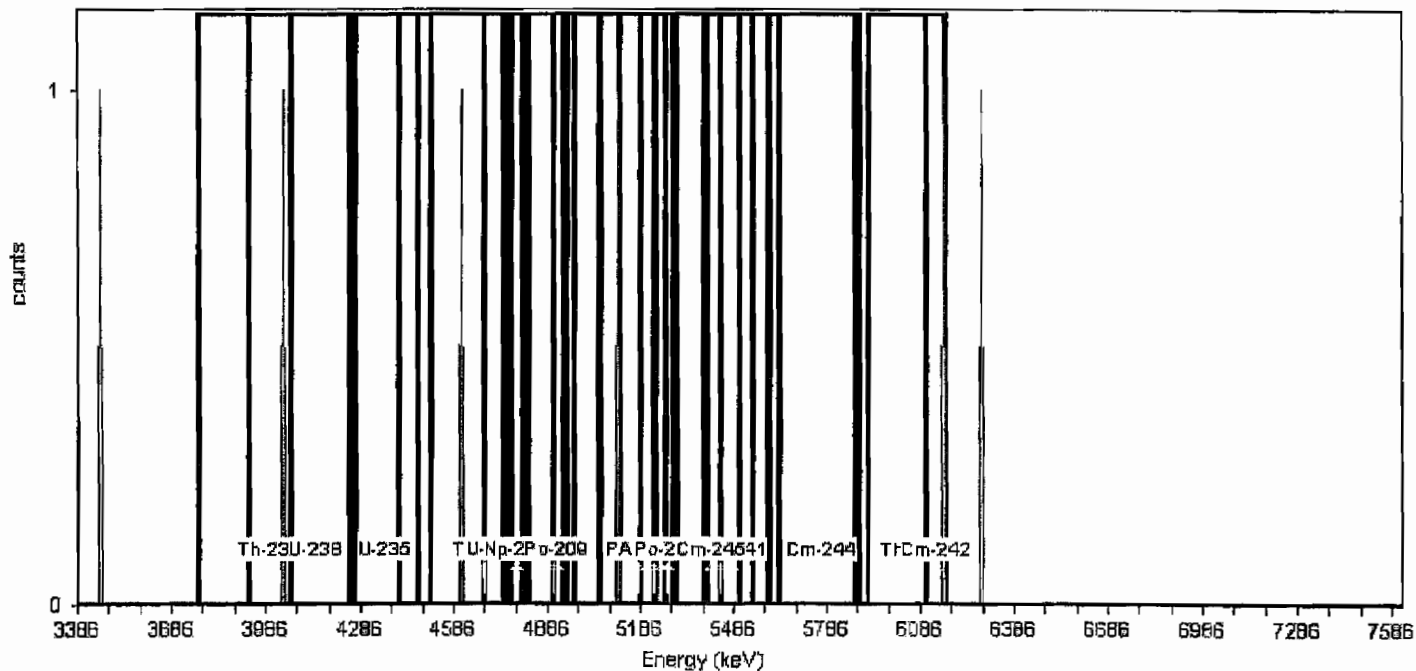
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,379.56 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.00% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 6.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	1.00	1.042E-003	1.473E-003
U-235	4.36	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.41	4.75	1.00	1.042E-003	1.473E-003
U-234	4.71	4.51	4.82	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.68	4.95	0.00	0.000E+000	1.473E-003
Th-229	4.86	4.74	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.05	5.30	1.00	1.042E-003	1.473E-003
U-232	5.25	5.06	5.40	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.18	5.50	0.00	0.000E+000	1.473E-003
Po-210	5.27	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.55	0.00	0.000E+000	1.473E-003
Am-241	5.48	5.29	5.60	0.00	0.000E+000	1.473E-003
Cm-245	5.41	5.39	5.44	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.88	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.17	1.00	1.042E-003	1.473E-003
Cm-242	6.14	6.11	6.17	1.00	1.042E-003	1.473E-003

Sample Name: AV110

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV110 , SN: 49-034G5

Acquisition Start Date: 3/26/2010 5:14:47PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010 AV110

Calibration Date: 3/1/2010 12:23:15AM

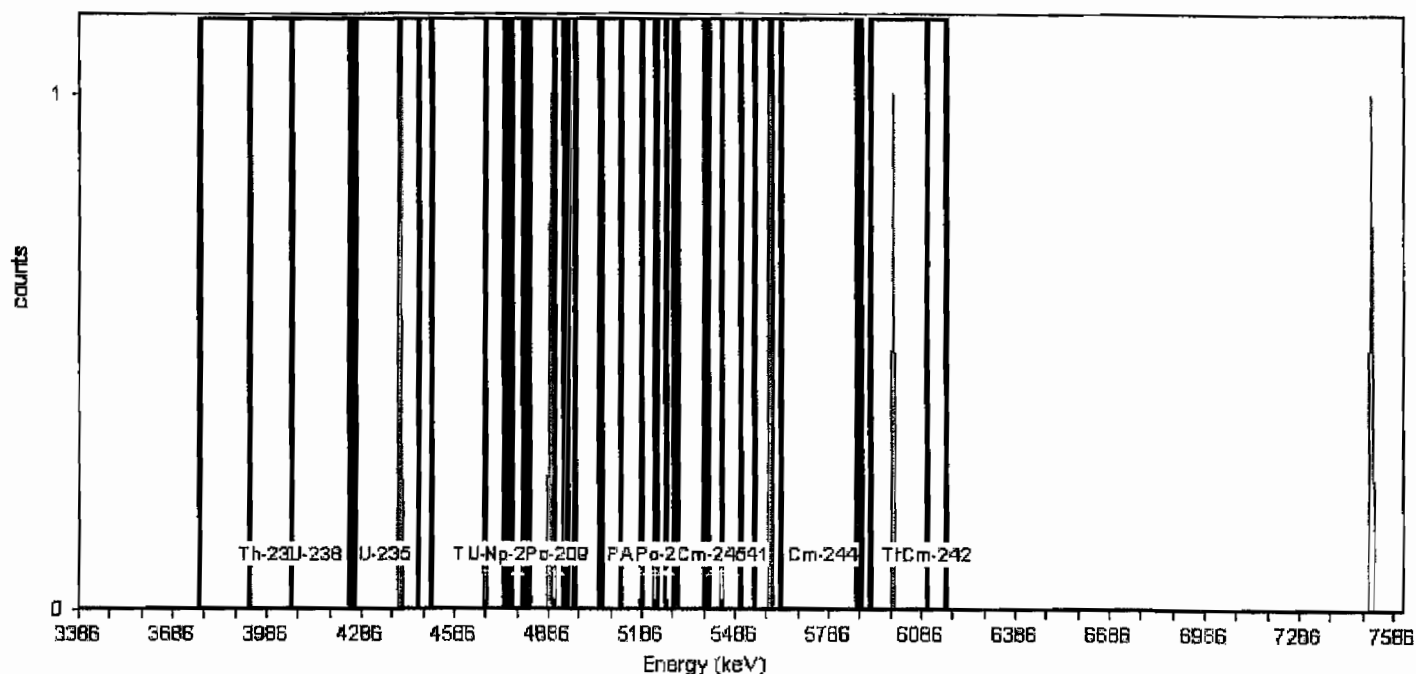
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,379.56 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.11% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 5.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.06	0.00	0.000E+000	1.473E-003
U-238	4.14	3.93	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.27	4.47	1.00	1.042E-003	1.473E-003
Th-230	4.68	4.41	4.75	1.00	1.042E-003	1.473E-003
U-234	4.71	4.51	4.82	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.68	4.95	1.00	1.042E-003	1.473E-003
Th-229	4.86	4.74	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.05	5.30	0.00	0.000E+000	1.473E-003
U-232	5.25	5.06	5.40	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.18	5.50	0.00	0.000E+000	1.473E-003
Po-210	5.27	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.55	0.00	0.000E+000	1.473E-003
Am-241	5.48	5.29	5.60	1.00	1.042E-003	1.473E-003
Cm-245	5.41	5.39	5.44	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.88	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.17	1.00	1.042E-003	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Sample Name: AV111

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2010

Analyst: 60040

Description:

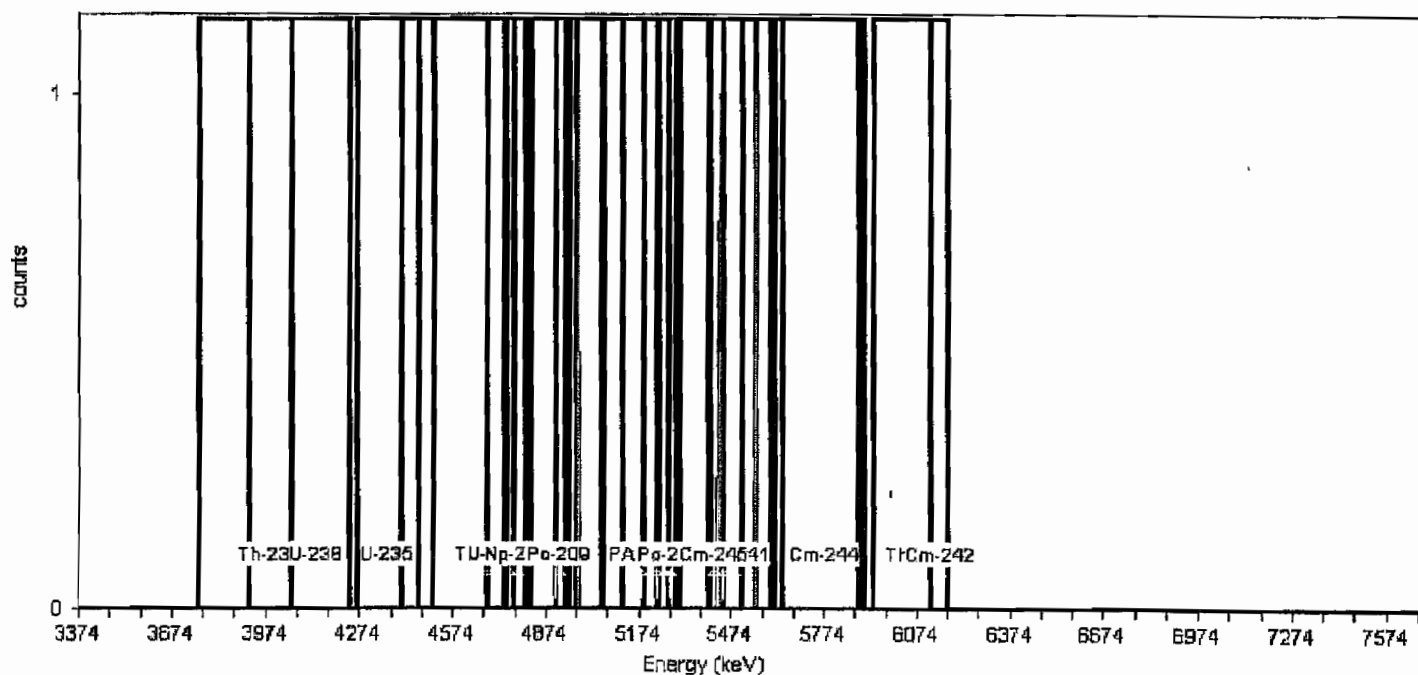
Acquisition

Detector: AV111, SN: 49-037E6
Acquisition Start Date: 3/26/2010 5:14:49PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2010_AV111
Calibration Date: 3/1/2010 12:23:42AM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 26.06% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library
Total Background Counts: 3.00

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.75	4.05	0.00	0.000E+000	1.473E-003
U-238	4.14	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.40	4.75	0.00	0.000E+000	1.473E-003
U-234	4.71	4.51	4.82	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.68	4.95	0.00	0.000E+000	1.473E-003
Th-229	4.86	4.74	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.05	5.31	0.00	0.000E+000	1.473E-003
U-232	5.25	5.06	5.40	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.19	5.51	1.00	1.042E-003	1.473E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	2.00	2.083E-003	1.804E-003
Am-241	5.48	5.30	5.60	2.00	2.083E-003	1.804E-003
Cm-245	5.42	5.40	5.45	1.00	1.042E-003	1.473E-003
Pu-236	5.76	5.61	5.89	0.00	0.000E+000	1.473E-003
Cm-244	5.78	5.64	5.90	0.00	0.000E+000	1.473E-003
Th-227	6.07	5.93	6.18	0.00	0.000E+000	1.473E-003
Cm-242	6.15	6.12	6.18	0.00	0.000E+000	1.473E-003

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV112 , SN: 49-037G7

Acquisition Start Date: 3/26/2010 5:14:50PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV112

Calibration Date: 3/1/2010 12:24:27AM

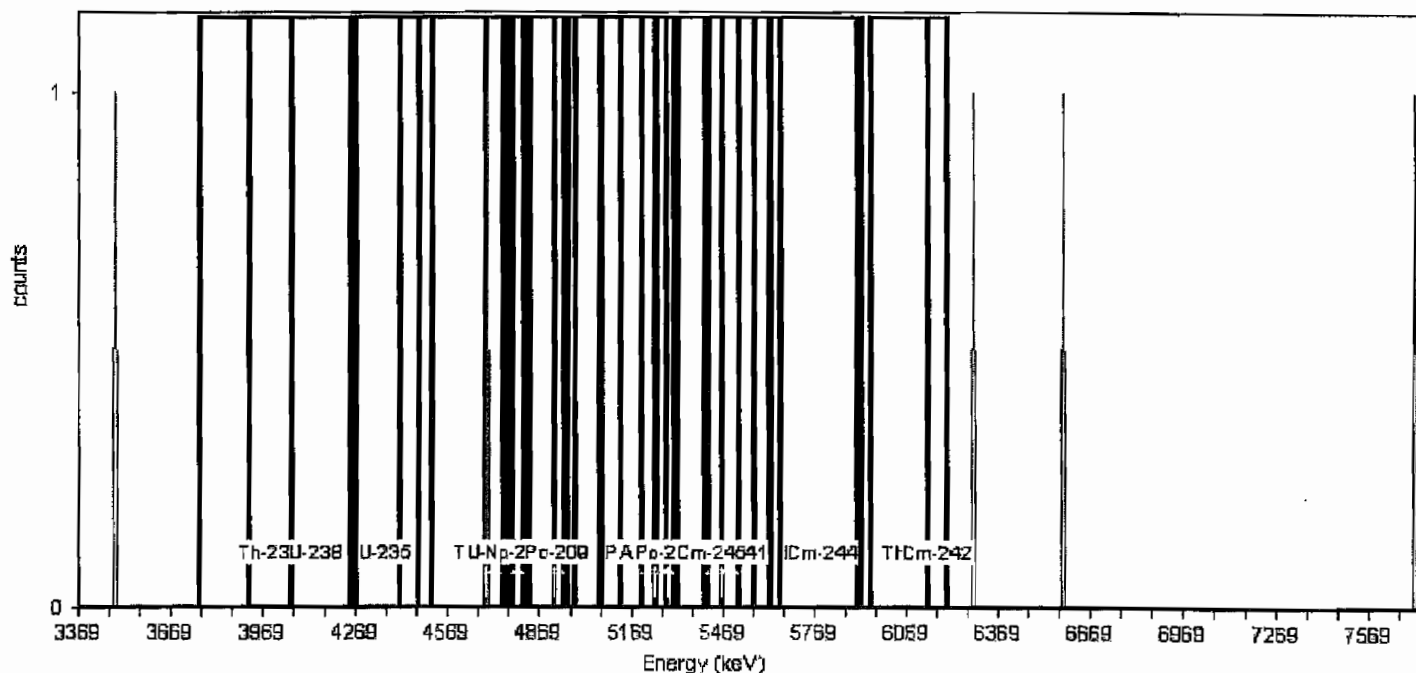
Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,362.28 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 24.18% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundNo, Nucleide Library: Background ROI Library

Total Background Counts: 5.00

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.75	4.06	0.00	0.000E+000	1.473E-003
U-238	4.14	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.69	4.41	4.76	1.00	1.042E-003	1.473E-003
U-234	4.72	4.51	4.83	1.00	1.042E-003	1.473E-003
Pu-242	4.91	4.69	4.96	1.00	1.042E-003	1.473E-003
Th-229	4.87	4.75	5.13	0.00	0.000E+000	1.473E-003
Np-237	4.79	4.78	4.82	0.00	0.000E+000	1.473E-003
Po-209	4.93	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.19	4.98	5.25	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.06	5.32	0.00	0.000E+000	1.473E-003
U-232	5.27	5.07	5.42	0.00	0.000E+000	1.473E-003
Th-228	5.46	5.20	5.52	0.00	0.000E+000	1.473E-003
Po-210	5.29	5.25	5.31	0.00	0.000E+000	1.473E-003
Pu-238	5.49	5.28	5.57	0.00	0.000E+000	1.473E-003
Am-241	5.50	5.31	5.62	0.00	0.000E+000	1.473E-003
Cm-245	5.43	5.41	5.46	0.00	0.000E+000	1.473E-003
Pu-236	5.78	5.63	5.91	0.00	0.000E+000	1.473E-003
Cm-244	5.79	5.66	5.92	0.00	0.000E+000	1.473E-003
Th-227	6.10	5.95	6.20	0.00	0.000E+000	1.473E-003
Cm-242	6.17	6.14	6.20	0.00	0.000E+000	1.473E-003

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.98	3.75	4.04	0.00	0.000E+000	1.473E-003
U-238	4.13	3.91	4.23	0.00	0.000E+000	1.473E-003
U-235	4.35	4.25	4.45	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.39	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.81	0.00	0.000E+000	1.473E-003
Pu-242	4.89	4.67	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.73	5.10	1.00	1.042E-003	1.473E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.16	4.95	5.22	1.00	1.042E-003	1.473E-003
Am-243	5.21	5.04	5.29	1.00	1.042E-003	1.473E-003
U-232	5.24	5.04	5.38	1.00	1.042E-003	1.473E-003
Th-228	5.43	5.17	5.49	0.00	0.000E+000	1.473E-003
Po-210	5.26	5.21	5.27	0.00	0.000E+000	1.473E-003
Pu-238	5.45	5.25	5.53	0.00	0.000E+000	1.473E-003
Am-241	5.46	5.28	5.58	0.00	0.000E+000	1.473E-003
Cm-245	5.40	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.74	5.59	5.88	0.00	0.000E+000	1.473E-003
Cm-244	5.75	5.62	5.88	0.00	0.000E+000	1.473E-003
Th-227	6.05	5.91	6.15	0.00	0.000E+000	1.473E-003
Cm-242	6.12	6.09	6.15	0.00	0.000E+000	1.473E-003

TestAmerica St. Louis
TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:18:37AM 3/27/2010

Sample

Spectrum #1 Analysis #1

Comment:

Batch

Analyst: 60040

Batch Name: March2010

Description:

Acquisition

Detector: AV114 , SN: 49-037E7

Acquisition Start Date: 3/26/2010 5:14:54PM

Live Time: 960.00 min.

Real Time: 960.02 min.

Calibration Name: Feb2010_AV114

Calibration Date: 3/1/2010 12:25:58AM

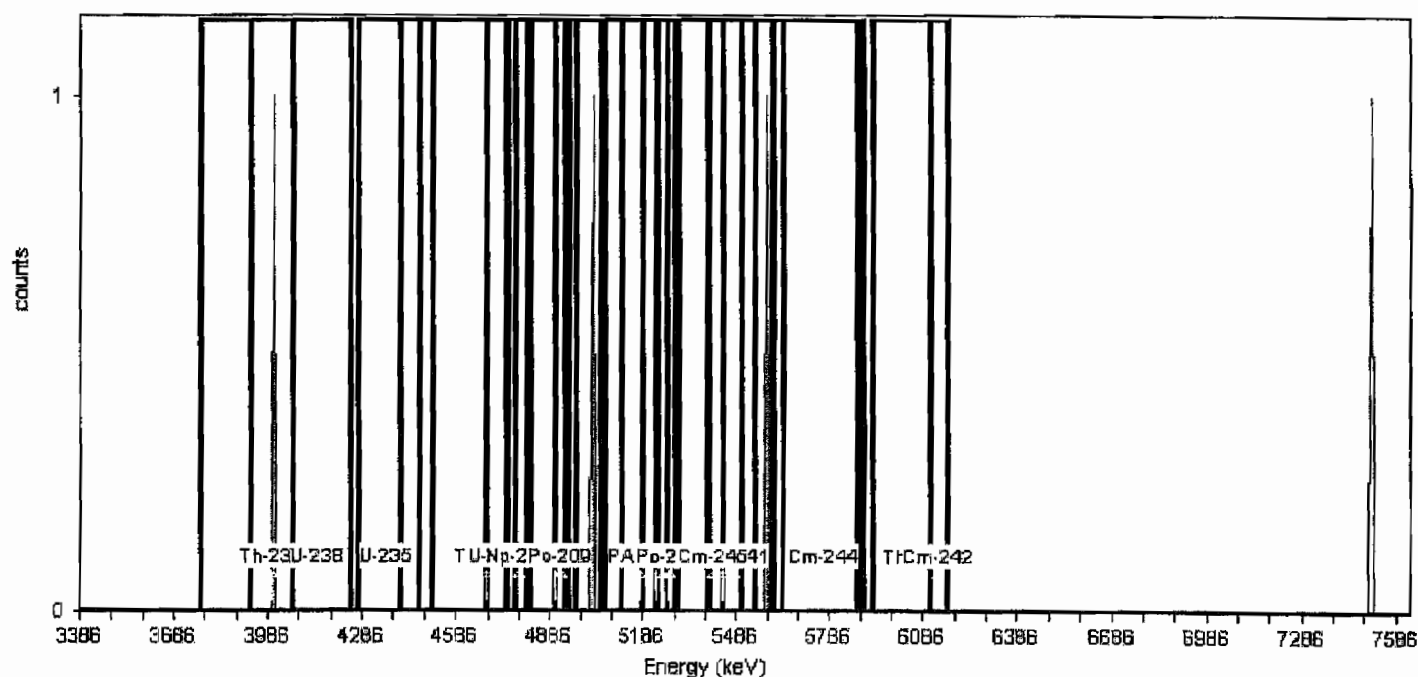
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,379.56 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.99% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05 Background ROI Library: Background ROI Library

Total Background Counts: 4.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	1.00	1.042E-003	1.473E-003
U-235	4.36	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.41	4.75	0.00	0.000E+000	1.473E-003
U-234	4.71	4.51	4.82	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.68	4.95	0.00	0.000E+000	1.473E-003
Th-229	4.86	4.74	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.05	5.30	0.00	0.000E+000	1.473E-003
U-232	5.25	5.06	5.40	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.18	5.50	0.00	0.000E+000	1.473E-003
Po-210	5.27	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.55	0.00	0.000E+000	1.473E-003
Am-241	5.48	5.29	5.60	1.00	1.042E-003	1.473E-003
Cm-245	5.41	5.39	5.44	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.88	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.17	0.00	0.000E+000	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Sample Name: AV115

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV115 , SN: 49-037E4

Acquisition Start Date: 3/26/2010 5:14:56PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV115

Calibration Date: 3/1/2010 12:26:54AM

Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,379.56 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.28% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 9.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.06	0.00	0.000E+000	1.473E-003
U-238	4.14	3.93	4.24	1.00	1.042E-003	1.473E-003
U-235	4.36	4.27	4.47	1.00	1.042E-003	1.473E-003
Th-230	4.68	4.41	4.75	0.00	0.000E+000	1.473E-003
U-234	4.71	4.51	4.82	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.68	4.95	0.00	0.000E+000	1.473E-003
Th-229	4.86	4.74	5.12	2.00	2.083E-003	1.804E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.05	5.30	1.00	1.042E-003	1.473E-003
U-232	5.25	5.06	5.40	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.18	5.50	1.00	1.042E-003	1.473E-003
Po-210	5.27	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.55	0.00	0.000E+000	1.473E-003
Am-241	5.48	5.29	5.60	0.00	0.000E+000	1.473E-003
Cm-245	5.41	5.39	5.44	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.88	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.17	0.00	0.000E+000	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u>	<u>Start Energy</u>	<u>End Energy</u>	<u>GrossCounts</u>	<u>Count Rate</u>	<u>CR Uncertainty</u>
	(MeV)	(MeV)	(MeV)		(CPM)	(CPM)
Th-232	3.99	3.76	4.05	0.00	0.000E+000	1.473E-003
U-238	4.13	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.81	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	1.00	1.042E-003	1.473E-003
Am-243	5.22	5.04	5.29	1.00	1.042E-003	1.473E-003
U-232	5.24	5.05	5.39	1.00	1.042E-003	1.473E-003
Th-228	5.43	5.18	5.49	0.00	0.000E+000	1.473E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	0.00	0.000E+000	1.473E-003
Am-241	5.47	5.29	5.59	0.00	0.000E+000	1.473E-003
Cm-245	5.41	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.87	0.00	0.000E+000	1.473E-003
Cm-244	5.76	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.16	0.00	0.000E+000	1.473E-003
Cm-242	6.13	6.10	6.16	0.00	0.000E+000	1.473E-003

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.75	4.05	0.00	0.000E+000	1.473E-003
U-238	4.14	3.92	4.24	1.00	1.042E-003	1.473E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.68	4.40	4.75	2.00	2.083E-003	1.804E-003
U-234	4.71	4.51	4.82	2.00	2.083E-003	1.804E-003
Pu-242	4.90	4.68	4.95	1.00	1.042E-003	1.473E-003
Th-229	4.86	4.74	5.12	0.00	0.000E+000	1.473E-003
Np-237	4.78	4.77	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.90	4.93	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.97	5.24	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.05	5.31	1.00	1.042E-003	1.473E-003
U-232	5.25	5.08	5.40	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.19	5.51	1.00	1.042E-003	1.473E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	0.00	0.000E+000	1.473E-003
Am-241	5.48	5.30	5.60	0.00	0.000E+000	1.473E-003
Cm-245	5.42	5.40	5.45	0.00	0.000E+000	1.473E-003
Pu-236	5.76	5.61	5.89	0.00	0.000E+000	1.473E-003
Cm-244	5.78	5.64	5.90	0.00	0.000E+000	1.473E-003
Th-227	6.07	5.93	6.18	0.00	0.000E+000	1.473E-003
Cm-242	6.15	6.12	6.18	0.00	0.000E+000	1.473E-003

Sample Name: AV118

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV118 , SN: 49-037F4

Acquisition Start Date: 3/26/2010 5:15:02PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010_AV118

Calibration Date: 3/1/2010 12:29:39AM

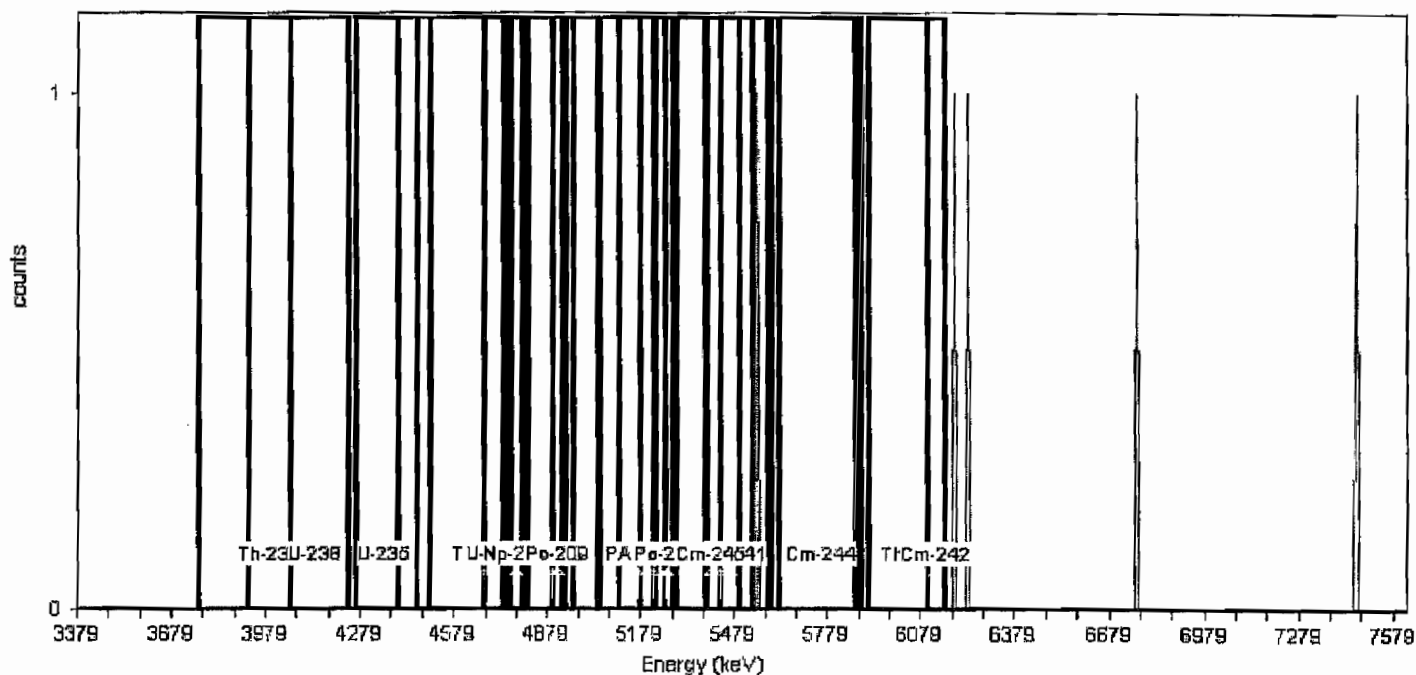
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.67% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nucleide Library: Background ROI Library

Total Background Counts: 5.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.05	0.00	0.000E+000	1.473E-003
U-238	4.13	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.81	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.11	0.00	0.000E+000	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.05	5.39	0.00	0.000E+000	1.473E-003
Th-228	5.43	5.18	5.49	0.00	0.000E+000	1.473E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	0.00	0.000E+000	1.473E-003
Am-241	5.47	5.29	5.59	1.00	1.042E-003	1.473E-003
Cm-245	5.41	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.87	0.00	0.000E+000	1.473E-003
Cm-244	5.76	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.16	0.00	0.000E+000	1.473E-003
Cm-242	6.13	6.10	6.16	0.00	0.000E+000	1.473E-003

9:18:56AM 3/27/2010

Comment:

Analyst: 60040

Description:

Acquisition

Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Live Time: 960.00 min.

Offset = 3,372.16 keV

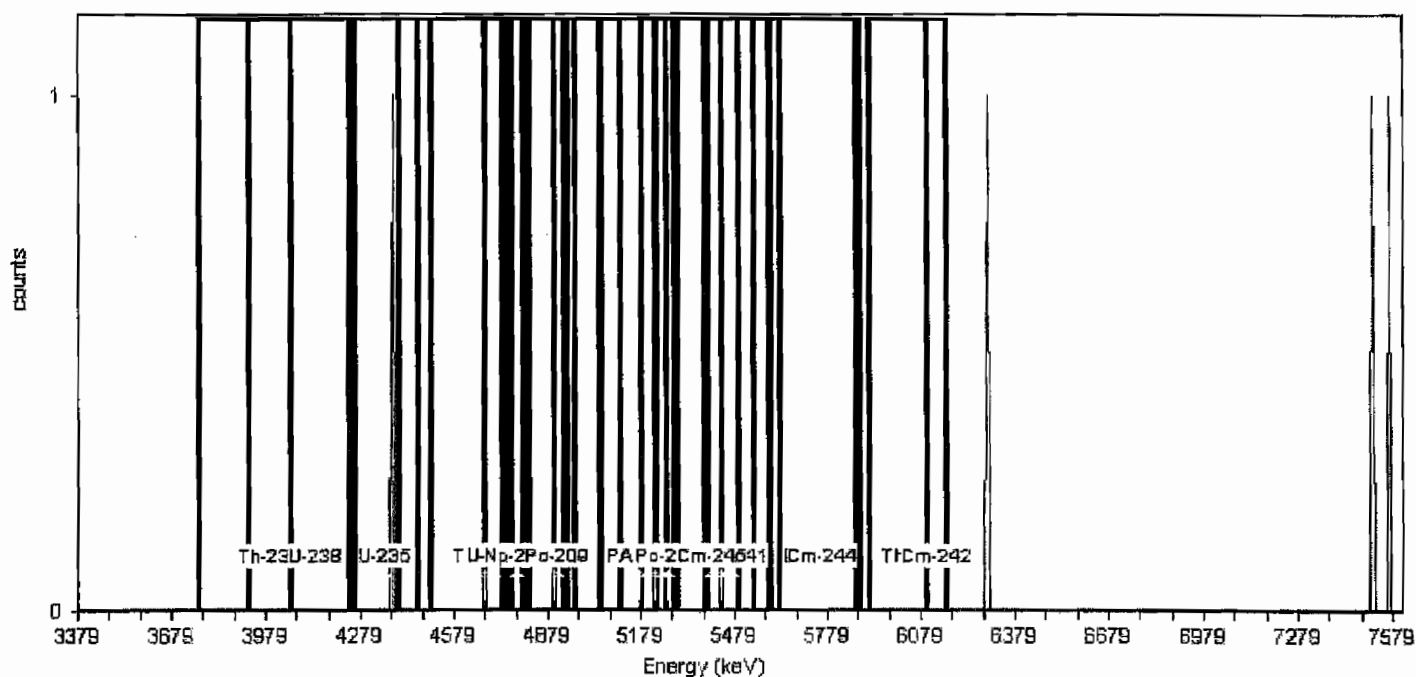
Real Time: 960.01 min.

Quadratic = 0.0000 keV / Ch²

Calibration Name: Feb2010 AV119

Calibration Date: 3/1/2010 12:30:24AM

Efficiency: 25.87% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundNo, Nuclide Library: Background ROI Library

Total Background Counts: 4.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.05	0.00	0.000E+000	1.473E-003
U-238	4.13	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.74	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.81	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.11	0.00	0.000E+000	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.05	5.39	0.00	0.000E+000	1.473E-003
Th-228	5.43	5.18	5.49	0.00	0.000E+000	1.473E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	0.00	0.000E+000	1.473E-003
Am-241	5.47	5.29	5.59	0.00	0.000E+000	1.473E-003
Cm-245	5.41	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.87	0.00	0.000E+000	1.473E-003
Cm-244	5.76	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.16	0.00	0.000E+000	1.473E-003
Cm-242	6.13	6.10	6.16	0.00	0.000E+000	1.473E-003

Sample Name: AV120

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV120 , SN: 49-037W3
Acquisition Start Date: 3/26/2010 5:15:06PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2010_AV120
Calibration Date: 3/1/2010 12:31:12AM

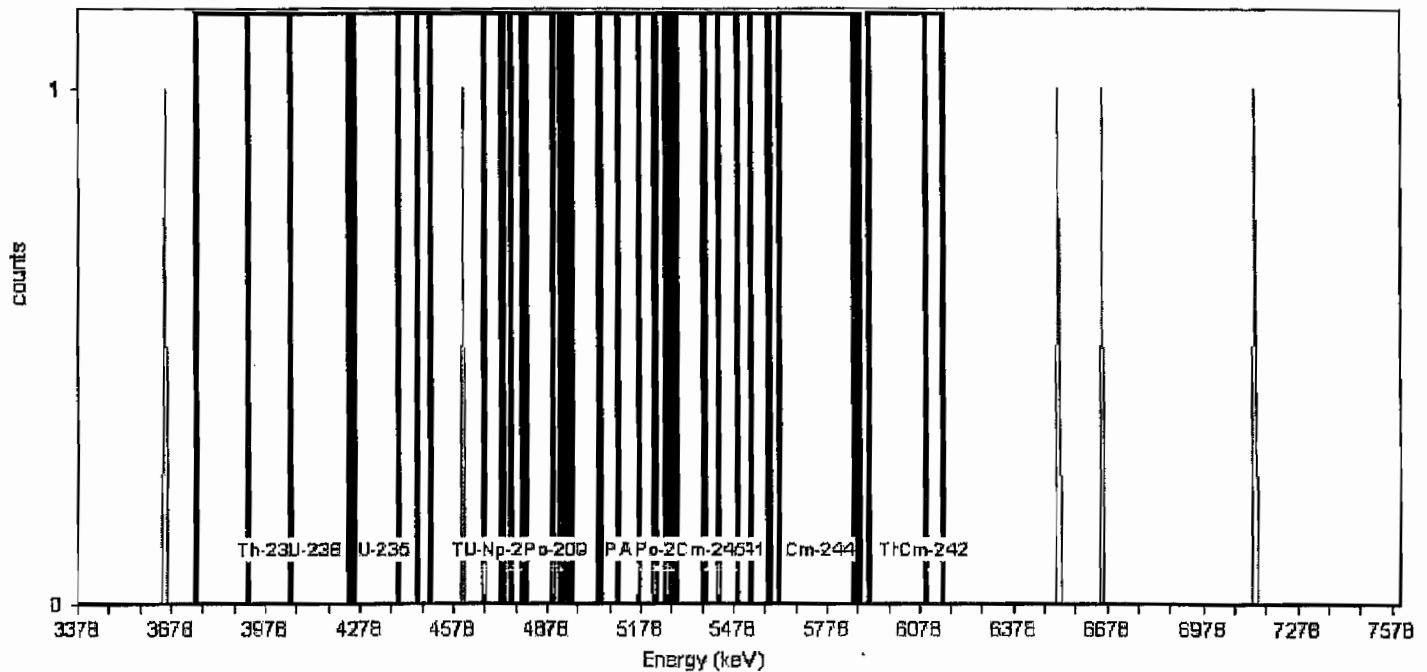
Energy Calibration Equation:

Gain = 7.3850 keV / Ch

Offset = 3,371.60 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 26.27% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI, Nuclide Library: Background ROI Library

Total Background Counts: 5.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.98	3.76	4.05	0.00	0.000E+000	1.473E-003
U-238	4.13	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.74	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.81	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.67	4.94	0.00	0.000E+000	1.473E-003
Th-229	4.85	4.73	5.11	0.00	0.000E+000	1.473E-003
Np-237	4.77	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.05	5.39	0.00	0.000E+000	1.473E-003
Th-228	5.43	5.17	5.49	0.00	0.000E+000	1.473E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.45	5.25	5.54	0.00	0.000E+000	1.473E-003
Am-241	5.47	5.28	5.59	0.00	0.000E+000	1.473E-003
Cm-245	5.40	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.74	5.59	5.87	0.00	0.000E+000	1.473E-003
Cm-244	5.76	5.62	5.88	0.00	0.000E+000	1.473E-003
Th-227	6.05	5.91	6.16	0.00	0.000E+000	1.473E-003
Cm-242	6.13	6.10	6.16	0.00	0.000E+000	1.473E-003

Sample Name: AV121

Comment:

Sample

Spectrum #1 Analysis #1

Batch Name: March2010

Description:

Batch

Analyst: 60040

Acquisition

Detector: AV121 , SN: 49-037W2

Acquisition Start Date: 3/26/2010 5:15:07PM

Live Time: 960.00 min.

Real Time: 960.01 min.

Calibration Name: Feb2010 AV121

Calibration Date: 3/1/2010 12:31:51AM

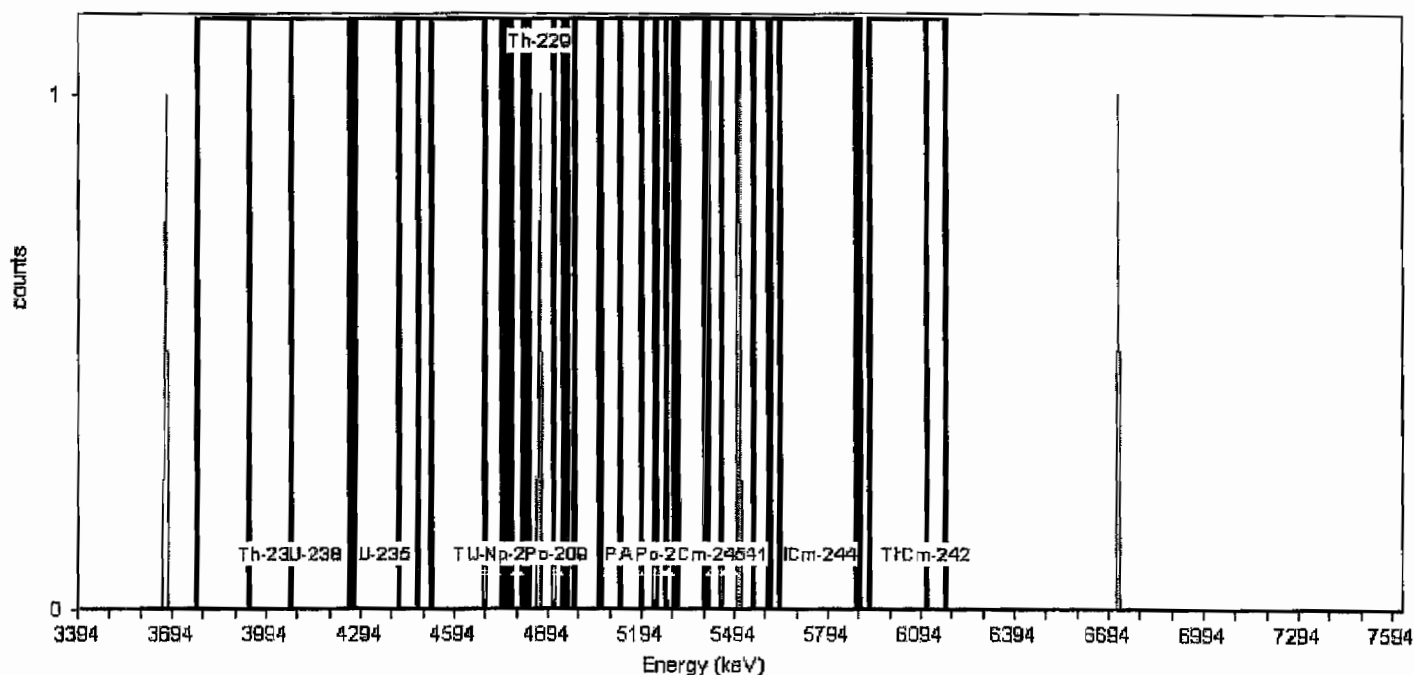
Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,386.95 keV

Quadratic = 0.0000 keV / Ch²

Efficiency: 27.32% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background ROI, Nucleide Library: Background ROI Library

Total Background Counts: 4.00

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	4.00	3.77	4.07	0.00	0.000E+000	1.473E-003
U-238	4.15	3.93	4.25	0.00	0.000E+000	1.473E-003
U-235	4.37	4.27	4.47	0.00	0.000E+000	1.473E-003
Th-230	4.69	4.41	4.75	0.00	0.000E+000	1.473E-003
U-234	4.72	4.52	4.83	0.00	0.000E+000	1.473E-003
Pu-242	4.91	4.69	4.95	1.00	1.042E-003	1.473E-003
Th-229	4.87	4.75	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.79	4.78	4.81	0.00	0.000E+000	1.473E-003
Po-209	4.92	4.91	4.94	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.98	5.24	0.00	0.000E+000	1.473E-003
Am-243	5.24	5.06	5.31	0.00	0.000E+000	1.473E-003
U-232	5.26	5.07	5.41	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.19	5.51	1.00	1.042E-003	1.473E-003
Po-210	5.28	5.24	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.47	5.27	5.55	1.00	1.042E-003	1.473E-003
Am-241	5.49	5.30	5.60	1.00	1.042E-003	1.473E-003
Cm-245	5.42	5.40	5.45	0.00	0.000E+000	1.473E-003
Pu-236	5.76	5.61	5.89	0.00	0.000E+000	1.473E-003
Cm-244	5.77	5.64	5.90	0.00	0.000E+000	1.473E-003
Th-227	6.07	5.93	6.17	0.00	0.000E+000	1.473E-003
Cm-242	6.14	6.11	6.17	0.00	0.000E+000	1.473E-003

Nuclide Summary (ROI)

<u>RegionName</u>	<u>Peak Energy</u> (MeV)	<u>Start Energy</u> (MeV)	<u>End Energy</u> (MeV)	<u>GrossCounts</u>	<u>Count Rate</u> (CPM)	<u>CR Uncertainty</u> (CPM)
Th-232	3.99	3.76	4.05	1.00	1.042E-003	1.473E-003
U-238	4.13	3.92	4.24	0.00	0.000E+000	1.473E-003
U-235	4.36	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.74	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.81	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.67	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.65	4.73	5.11	1.00	1.042E-003	1.473E-003
Np-237	4.78	4.76	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.90	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.17	4.96	5.23	0.00	0.000E+000	1.473E-003
Am-243	5.22	5.04	5.29	0.00	0.000E+000	1.473E-003
U-232	5.24	5.05	5.39	0.00	0.000E+000	1.473E-003
Th-228	5.43	5.18	5.49	0.00	0.000E+000	1.473E-003
Po-210	5.26	5.22	5.28	0.00	0.000E+000	1.473E-003
Pu-238	5.46	5.26	5.54	0.00	0.000E+000	1.473E-003
Am-241	5.47	5.29	5.59	0.00	0.000E+000	1.473E-003
Cm-245	5.41	5.38	5.43	0.00	0.000E+000	1.473E-003
Pu-236	5.75	5.60	5.87	0.00	0.000E+000	1.473E-003
Cm-244	5.76	5.63	5.89	0.00	0.000E+000	1.473E-003
Th-227	6.06	5.92	6.16	0.00	0.000E+000	1.473E-003
Cm-242	6.13	6.10	6.16	0.00	0.000E+000	1.473E-003

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Monthly Calibrations Alpha Vision March 2010

Calibration

Name: March2010_AV1
Description:
Detector: AV1

Calibration Date: 3/31/2010 3:05:34PM
Analyst: 60040

Source Info

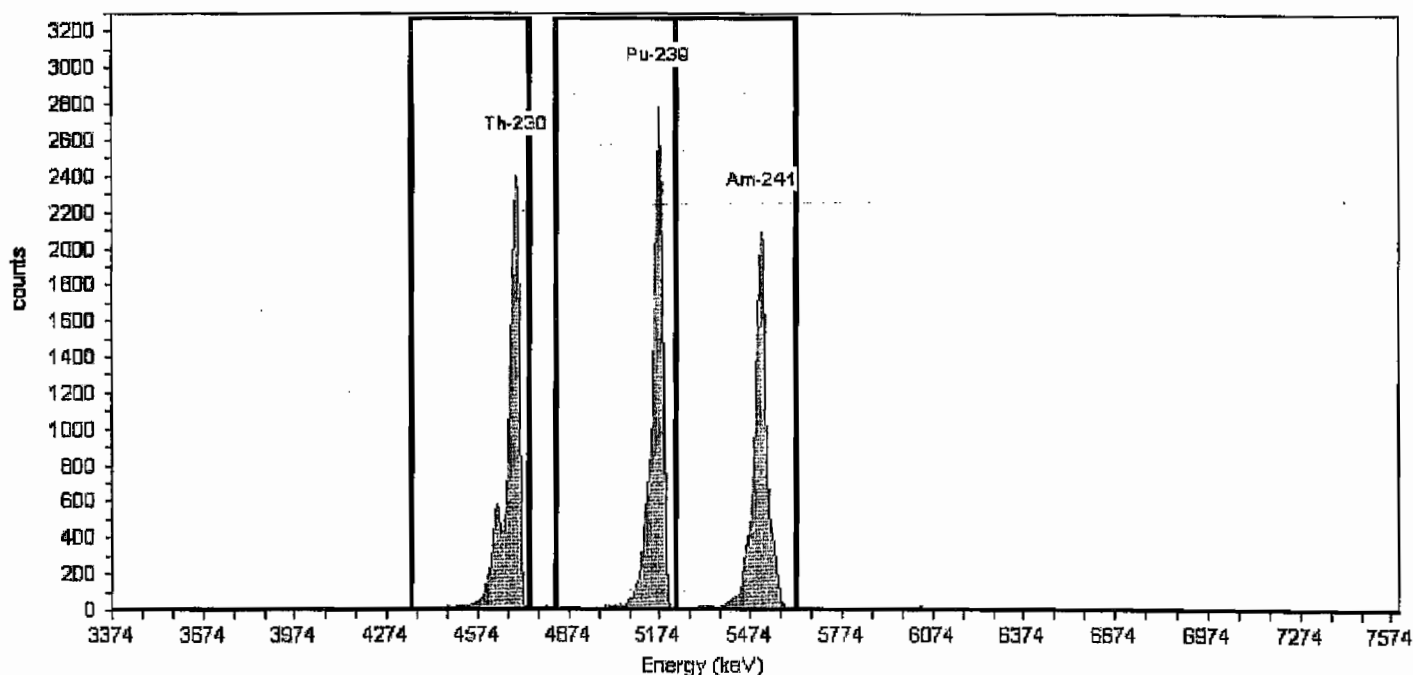
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV1, SN: 41-158W6
Acquisition Start Date: 3/30/2010 11:50:53AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.19% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3221 keV / Ch
Offset = 3,383.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	184	14,684.00	104.89
Pu-239	242	5.16	196	249	15,232.00	108.80
Am-241	287	5.49	249	303	13,672.00	97.66

Calibration

Name: March2010_AV3
Description:
Detector: AV3

Calibration Date: 3/31/2010 3:06:24PM
Analyst: 60040

Source Info

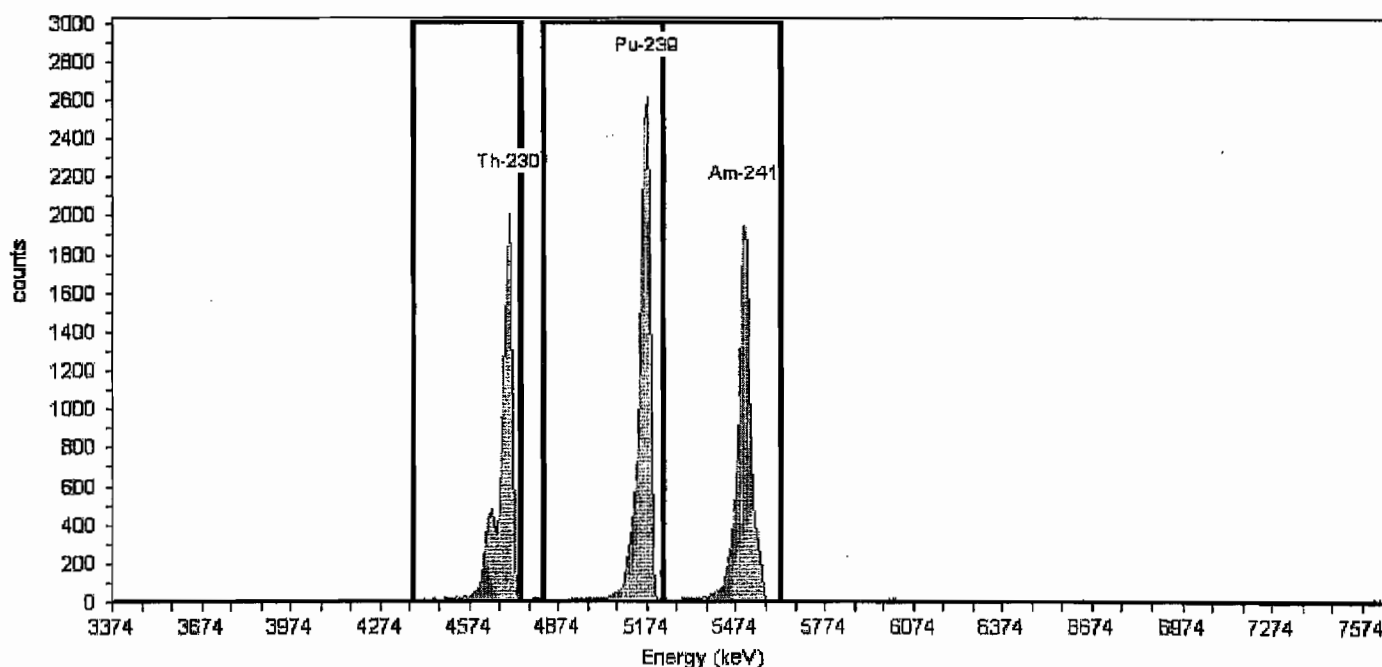
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV3, SN: 41-158X5
Acquisition Start Date: 3/30/2010 11:50:53AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.69% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4576 keV / Ch
Offset = 3,352.04 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	136	184	11,951.00	85.36
Pu-239	242	5.16	195	249	14,404.00	102.89
Am-241	286	5.49	249	303	13,114.00	93.67

Calibration

Name: March2010_AV4
Description:
Detector: AV4

Calibration Date: 3/31/2010 3:06:52PM
Analyst: 60040

Source Info

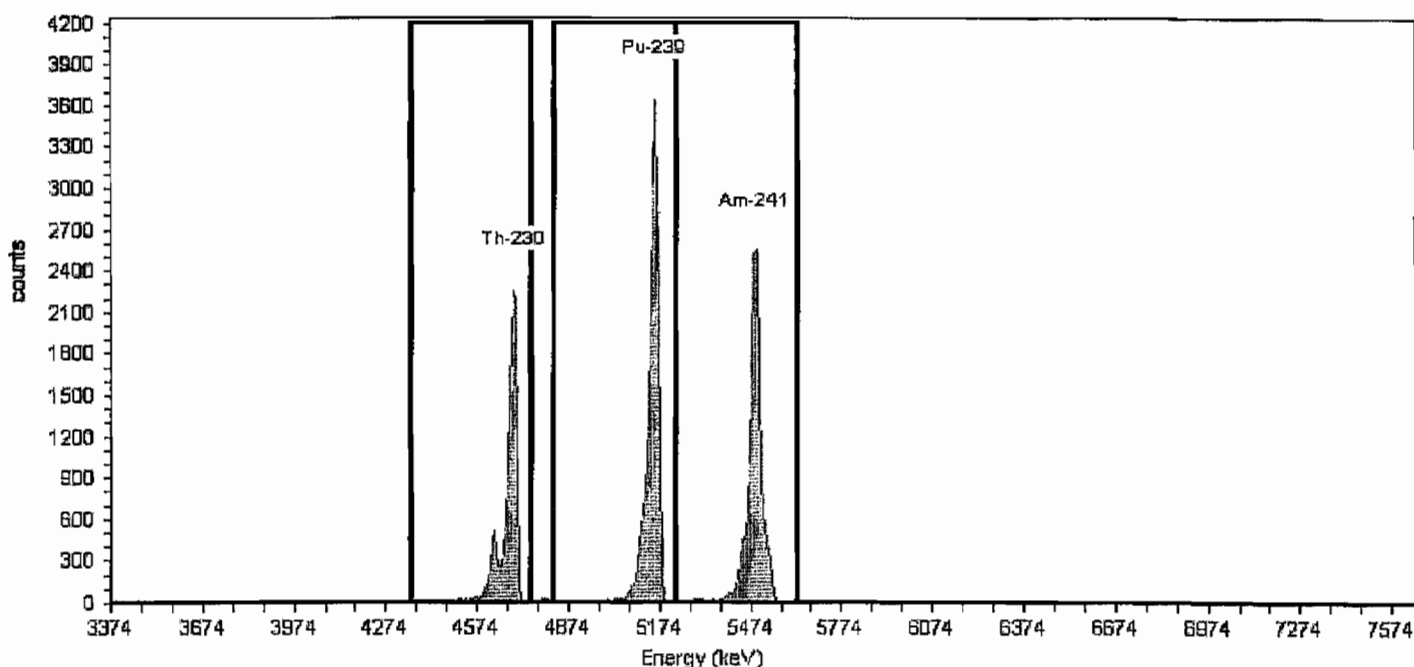
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV4 , SN: 46-033Q4
Acquisition Start Date: 3/30/2010 11:52:24AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.40% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	185	11,238.00	80.27
Pu-239	240	5.16	195	249	17,325.00	123.75
Am-241	284	5.49	249	303	14,836.00	105.97

Calibration

Name: March2010_AV6
Description:
Detector: AV6

Calibration Date: 3/31/2010 3:07:41PM
Analyst: 60040

Source Info

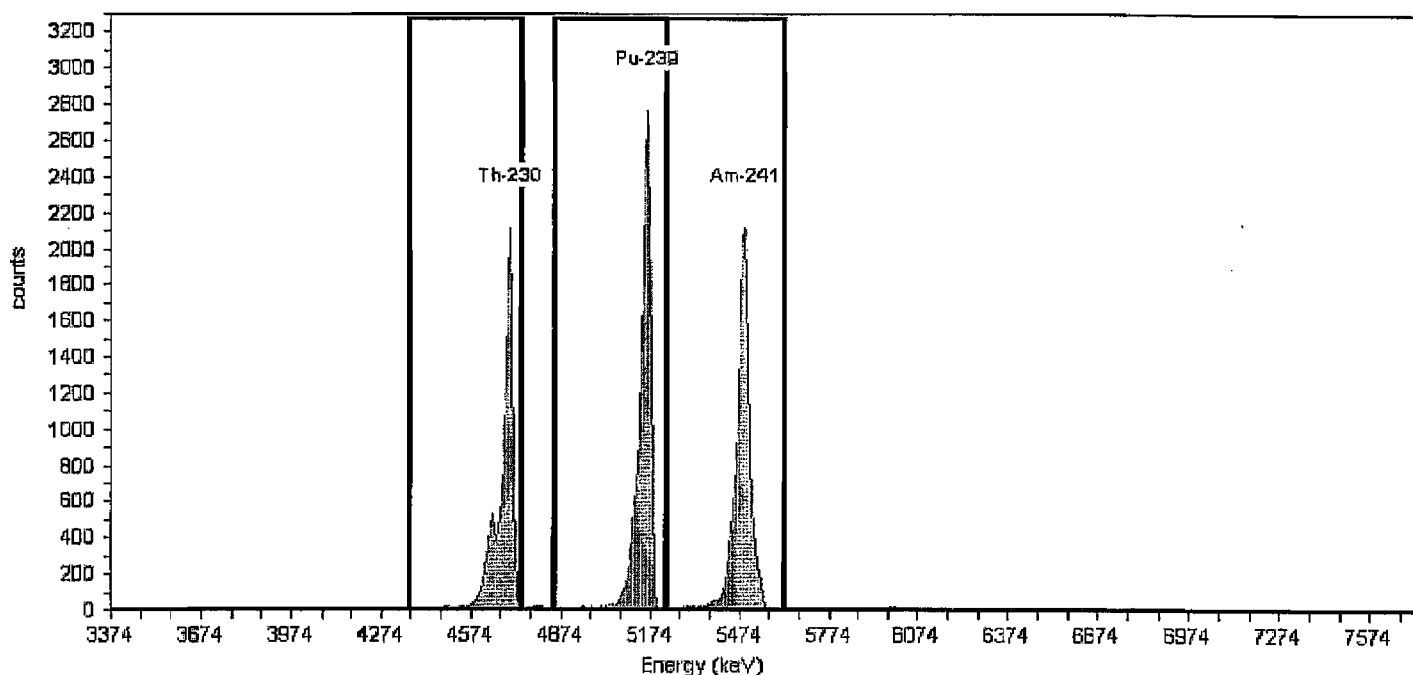
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV6, SN: 47-27FF2
Acquisition Start Date: 3/30/2010 11:50:54AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.29% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5313 keV / Ch
Offset = 3,339.68 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	133	184	12,195.00	87.11
Pu-239	241	5.16	199	249	14,817.00	105.84
Am-241	285	5.49	249	303	13,915.00	99.39

Calibration

Name: March2010a_AV7
Description:
Detector: AV7

Calibration Date: 4/1/2010 9:12:30AM
Analyst: 60040

Source Info

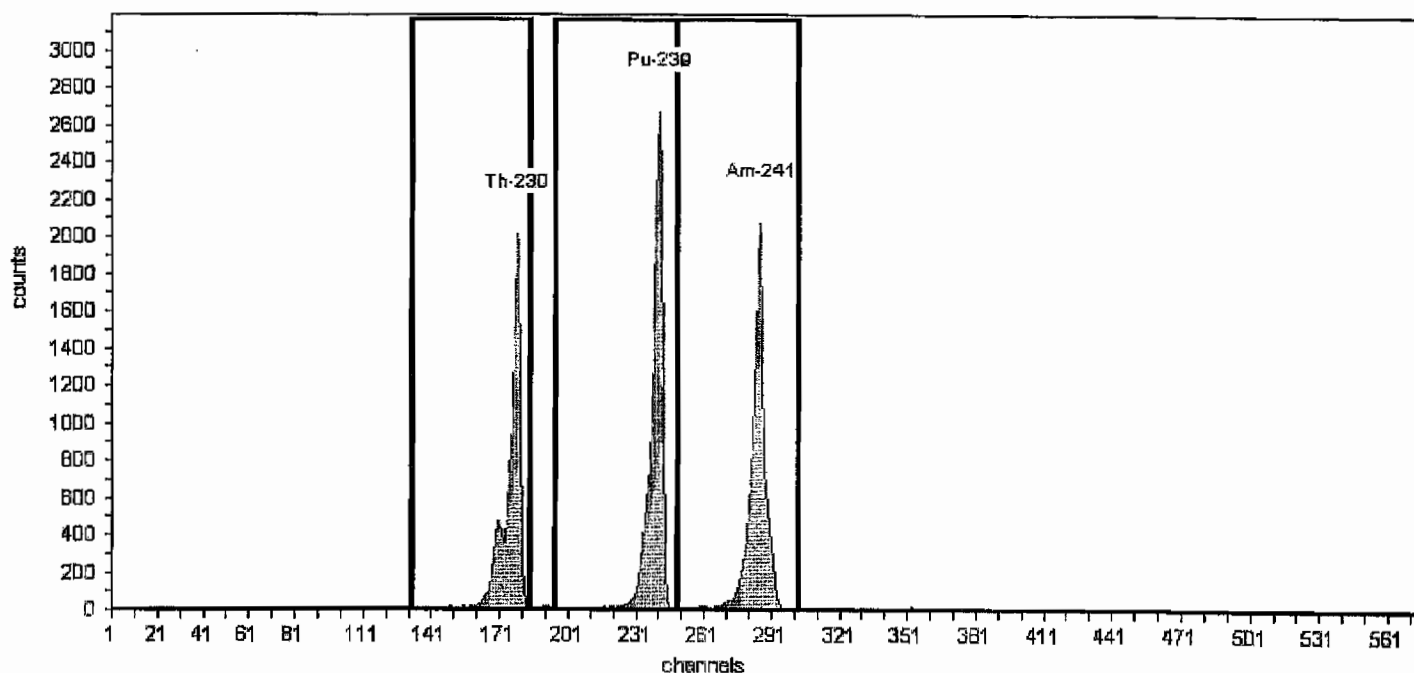
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV7, SN: 48-158EE5
Acquisition Start Date: 4/1/2010 6:21:21AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.15% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,372.16 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	184	11,841.00	84.58
Pu-239	241	5.16	195	249	13,981.00	99.86
Am-241	286	5.49	249	303	12,819.00	91.56

Calibration

Name: March2010a_AV8
Description:
Detector: AV8

Calibration Date: 4/1/2010 9:13:35AM
Analyst: 60040

Source Info

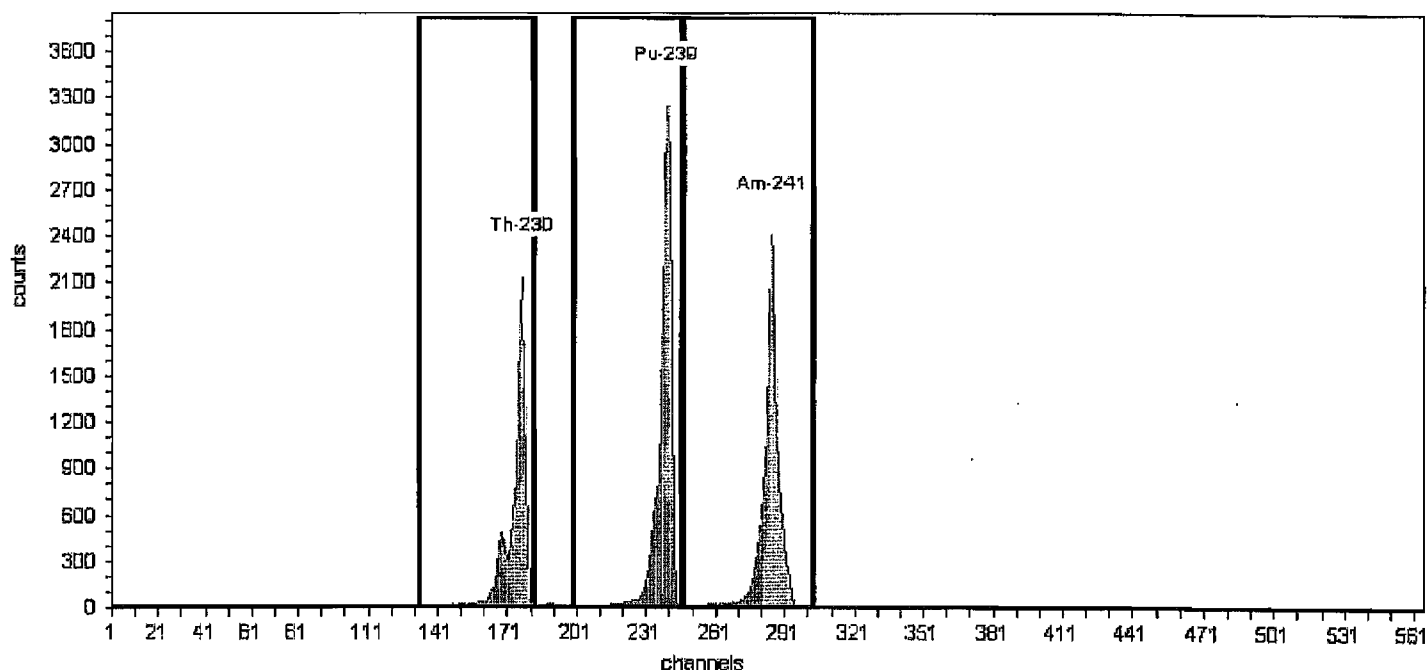
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV8 , SN: 41-137Q6
Acquisition Start Date: 4/1/2010 6:21:40AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.83% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,379.56 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	182	11,542.00	82.44
Pu-239	240	5.16	199	246	17,429.00	124.49
Am-241	285	5.49	247	303	15,156.00	108.26

Calibration

Name: March2010_AV9
Description:
Detector: AV9

Calibration Date: 4/1/2010 9:21:13AM
Analyst: 60040

Source Info

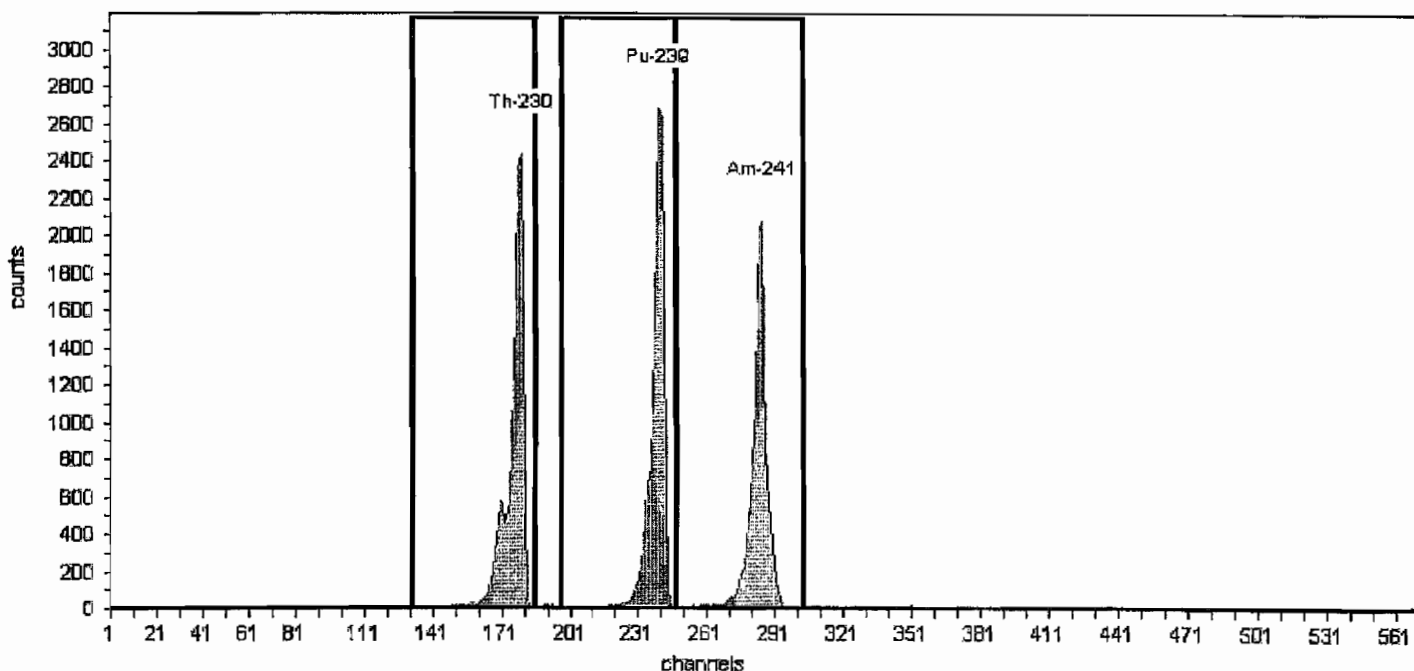
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV9, SN: 47-043HH4
Acquisition Start Date: 3/31/2010 6:14:15PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.57% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5383 keV / Ch
Offset = 3,340.56 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	185	14,985.00	107.04
Pu-239	240	5.16	197	247	15,410.00	110.07
Am-241	285	5.49	247	303	13,876.00	99.11

Calibration

Name: March2010_AV10
Description:
Detector: AV10

Calibration Date: 4/1/2010 9:22:02AM
Analyst: 60040

Source Info

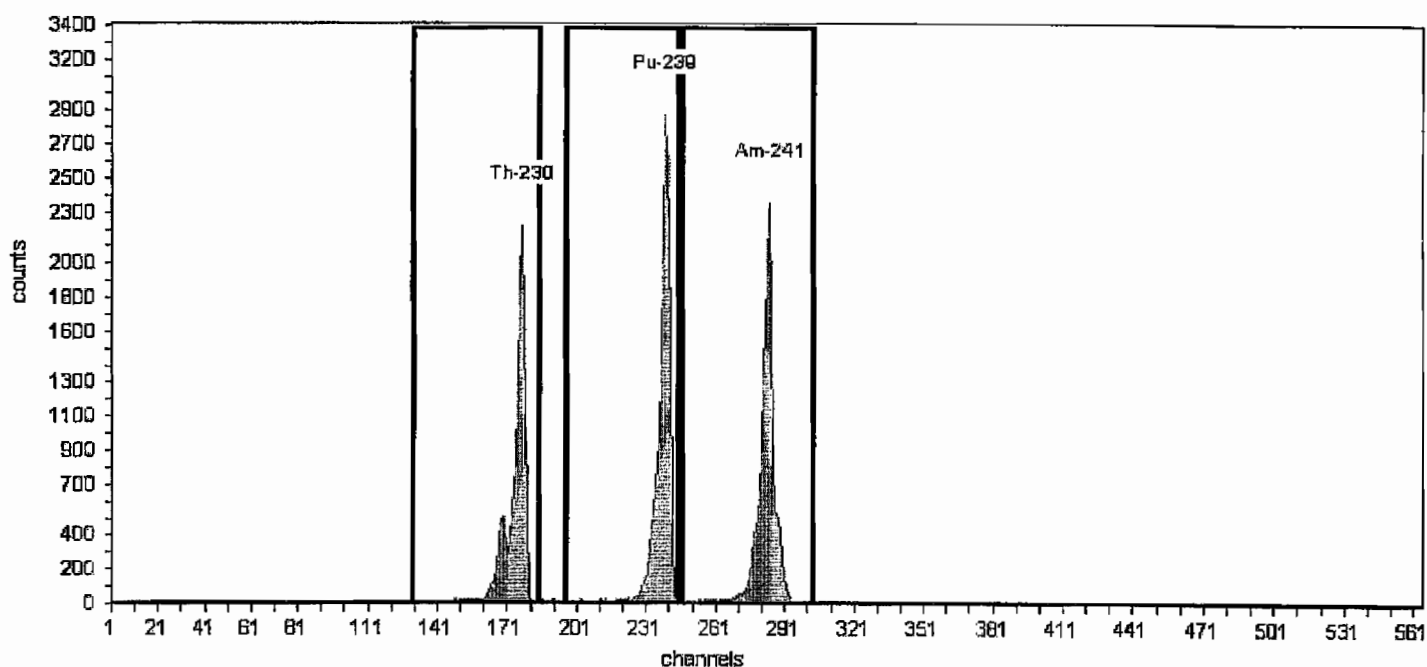
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV10, SN: 49-155N2
Acquisition Start Date: 3/31/2010 6:14:25PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.59% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,367.67 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	130	184	11,838.00	84.56
Pu-239	239	5.16	196	245	14,553.00	103.95
Am-241	284	5.49	246	303	13,477.00	96.26

Calibration

Name: March2010_AV11
Description:
Detector: AV11

Calibration Date: 4/1/2010 9:22:46AM
Analyst: 60040

Source Info

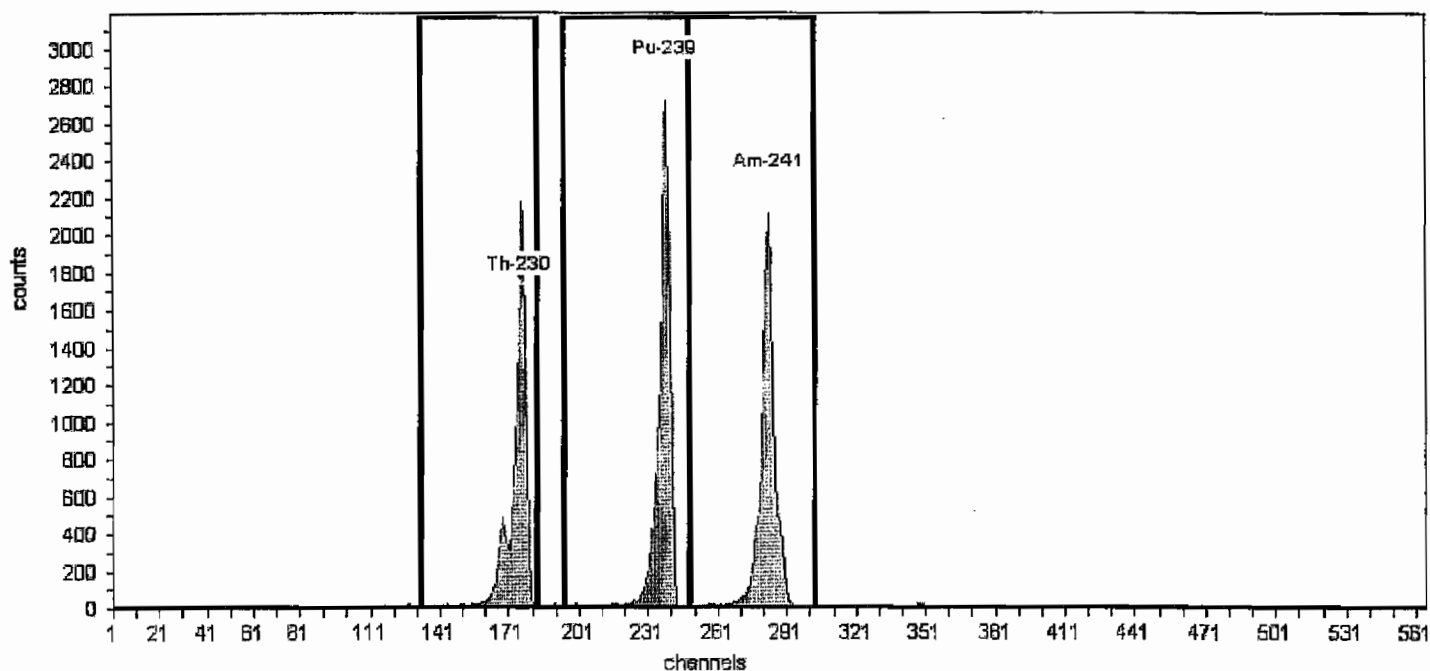
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV11, SN: 49-155DD2
Acquisition Start Date: 3/31/2010 6:14:36PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.91% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3850 keV / Ch
Offset = 3,393.76 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	175	4.69	132	183	12,204.00	87.17
Pu-239	239	5.16	194	249	14,483.00	103.45
Am-241	283	5.49	249	303	13,060.00	93.29

Calibration

Name: March2010_AV12
Description:
Detector: AV12

Calibration Date: 4/1/2010 9:23:14AM
Analyst: 60040

Source Info

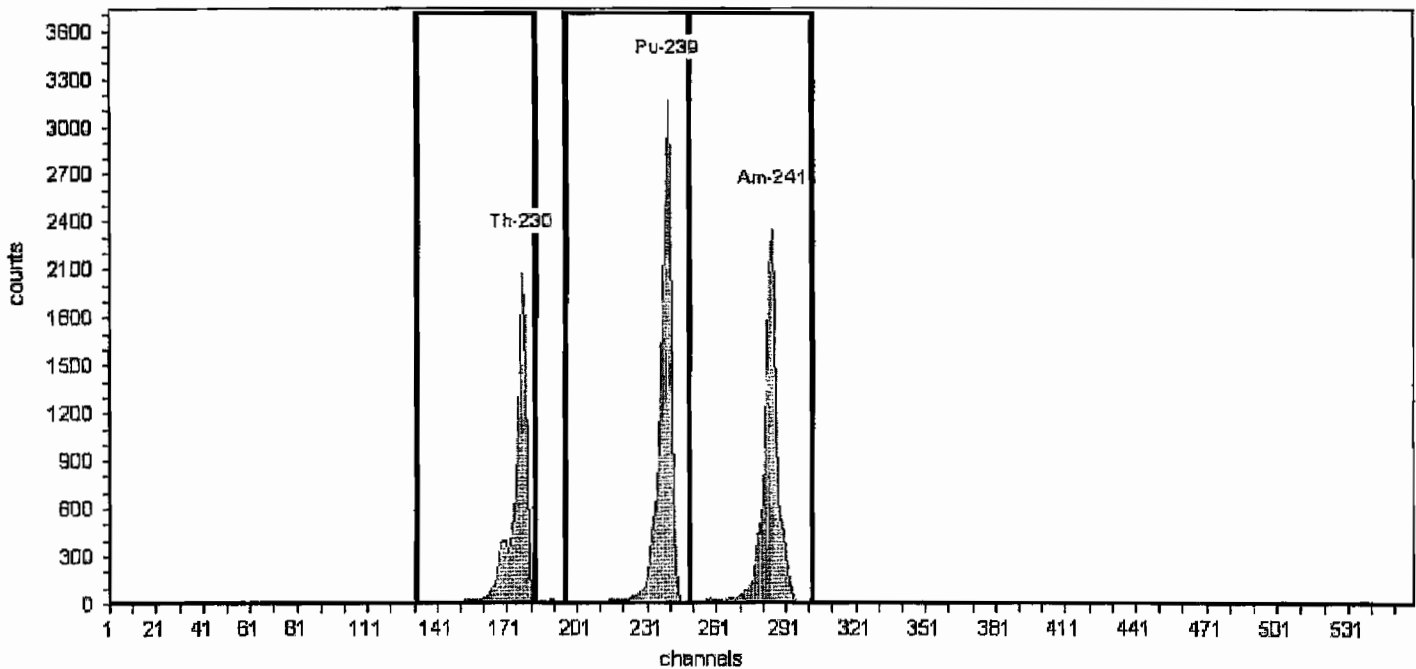
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV12, SN: 49-155N3
Acquisition Start Date: 3/31/2010 6:15:02PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.67% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,379.56 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	183	11,545.00	82.46
Pu-239	240	5.16	196	249	17,369.00	124.06
Am-241	285	5.49	249	303	14,933.00	106.66

Calibration

Name: March2010a_AV13
Description:
Detector: AV13

Calibration Date: 3/31/2010 3:09:56PM
Analyst: 60040

Source Info

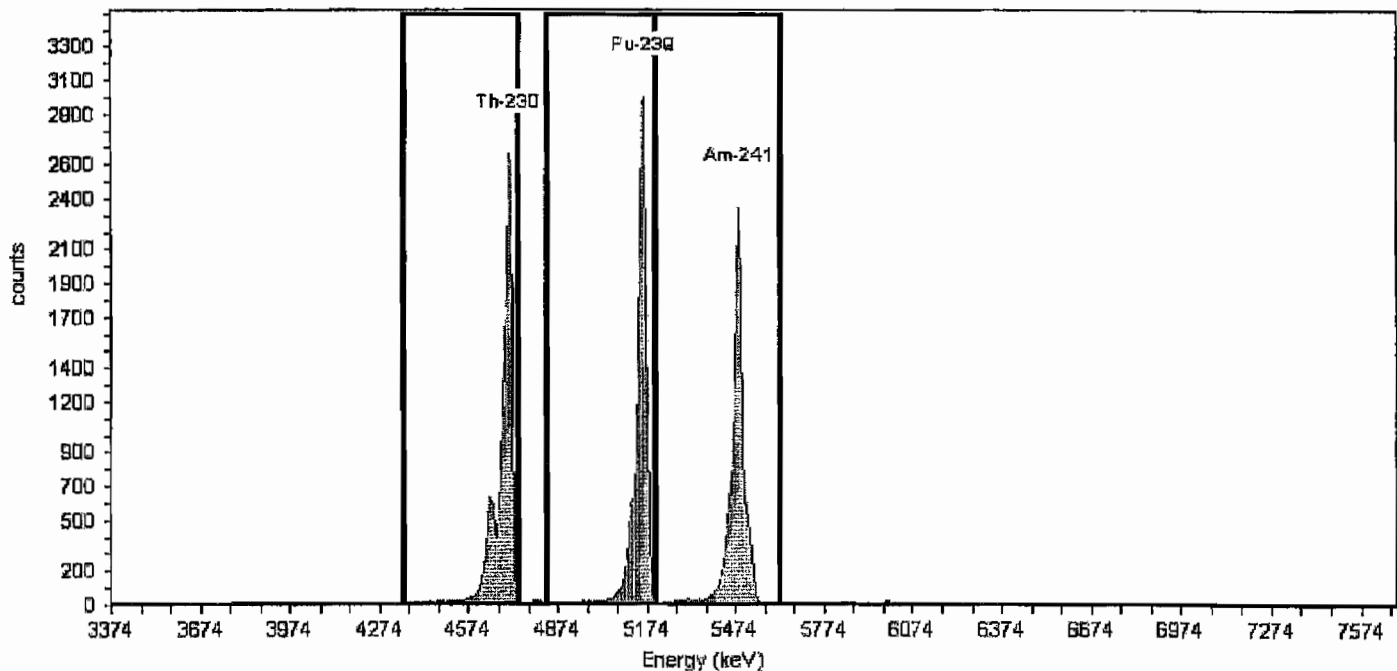
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV13, SN: 44-049W5
Acquisition Start Date: 3/29/2010 10:23:23AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 25.24% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5980 keV / Ch
Offset = 3,326.53 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	184	14,642.00	104.59
Pu-239	241	5.16	197	246	15,472.00	110.51
Am-241	284	5.49	246	303	13,589.00	97.06

Calibration

Name: March2010a_AV14
Description:
Detector: AV14

Calibration Date: 3/31/2010 3:10:50PM
Analyst: 60040

Source Info

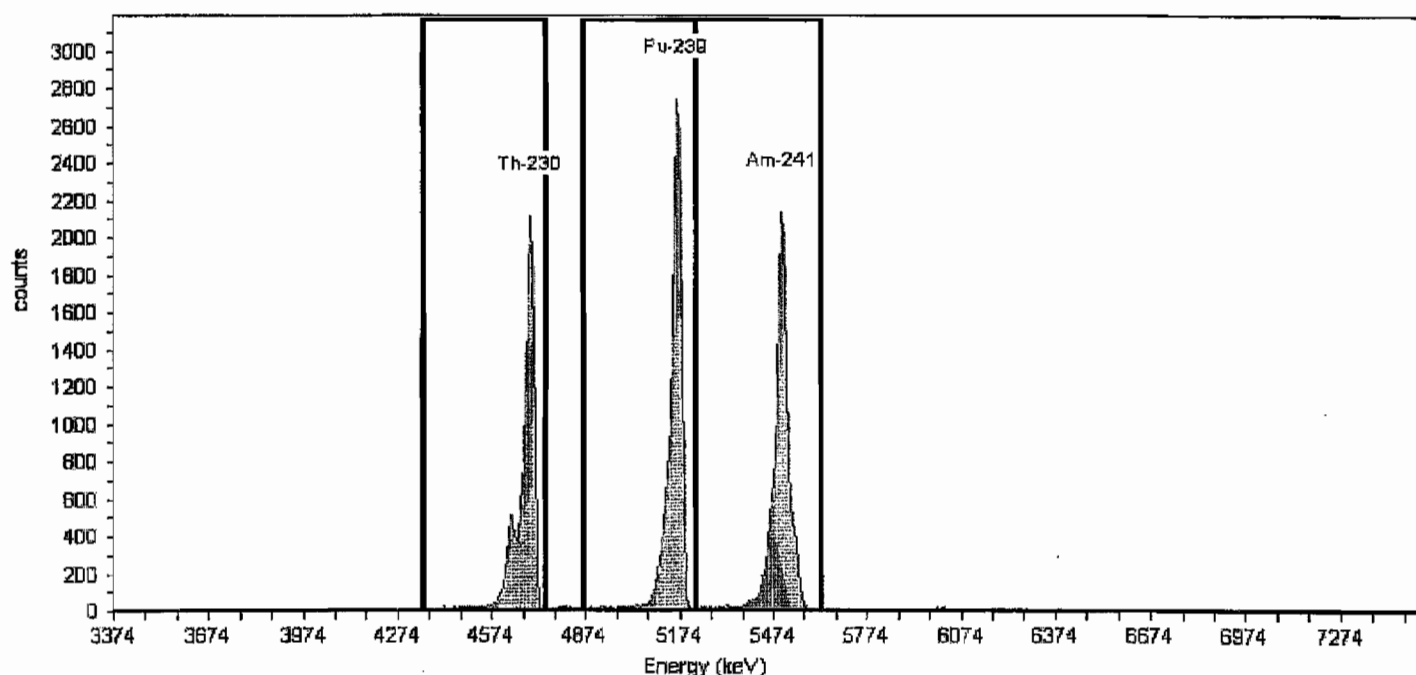
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV14, SN: 48-102BB7
Acquisition Start Date: 3/29/2010 10:23:37AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.72% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,372.16 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	184	12,429.00	88.78
Pu-239	241	5.16	201	249	14,960.00	106.86
Am-241	286	5.49	249	303	14,213.00	101.52

Calibration

Name: March2010a_AV15

Description:

Detector: AV15

Calibration Date: 3/31/2010 3:11:45PM

Analyst: 60040

Source Info

Certificate ID: 63508A-334

Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM

Description:

Acquisition

Detector: AV15, SN: 41-172C5

Acquisition Start Date: 3/29/2010 10:23:52AM

Live Time: 140.00 min.

Real Time: 140.05 min.

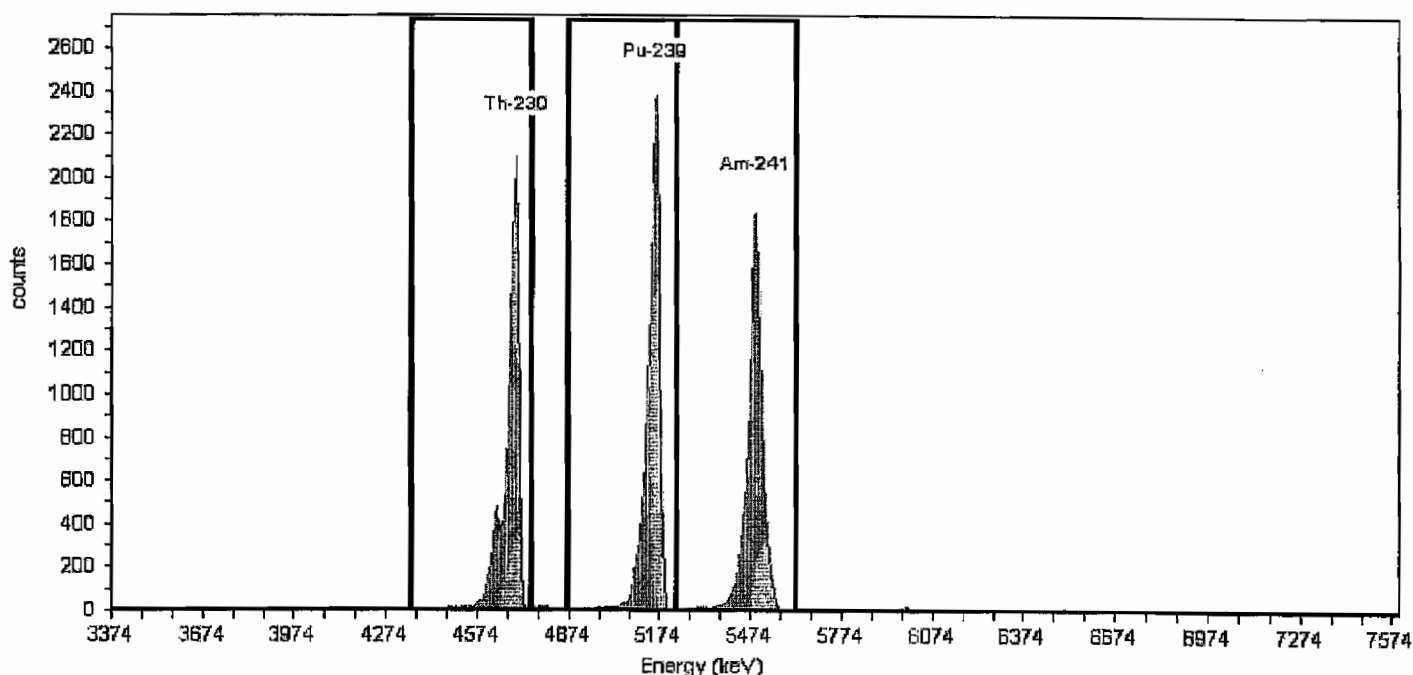
Efficiency: 26.52% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:

Gain = 7.5313 keV / Ch

Offset = 3,347.21 keV

Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)

Algorithm: Linear

Initial Calibration: No

Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	185	12,191.00	87.08
Pu-239	240	5.16	201	249	14,143.00	101.02
Am-241	284	5.49	249	303	12,882.00	92.01

Calibration

Name: March2010a_AV16
Description:
Detector: AV16

Calibration Date: 3/31/2010 3:12:41PM
Analyst: 60040

Source Info

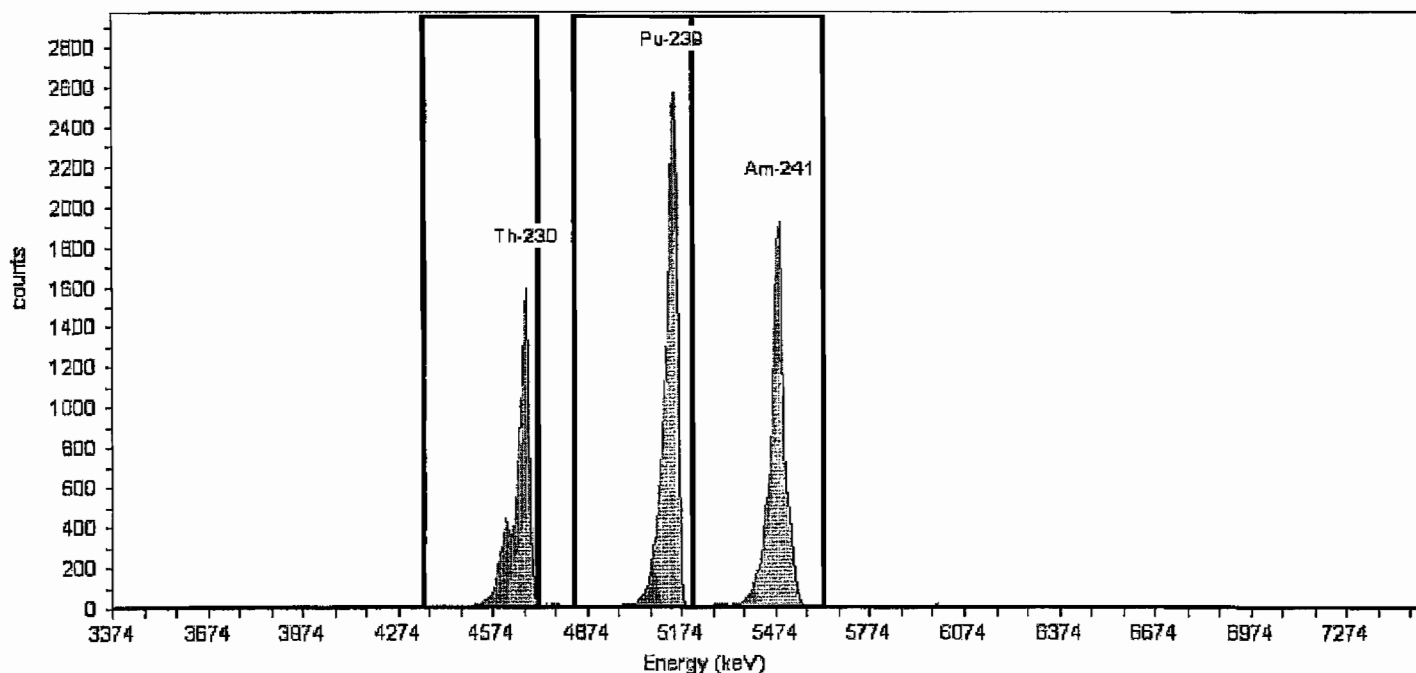
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV16, SN: 41-172Q7
Acquisition Start Date: 3/29/2010 10:24:01AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 24.12% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,386.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	176	4.69	132	181	10,334.00	73.81
Pu-239	239	5.16	196	247	15,878.00	113.41
Am-241	284	5.49	247	303	13,415.00	95.82

Calibration

Name: March2010_AV17
Description:
Detector: AV17

Calibration Date: 3/31/2010 3:13:56PM
Analyst: 60040

Source Info

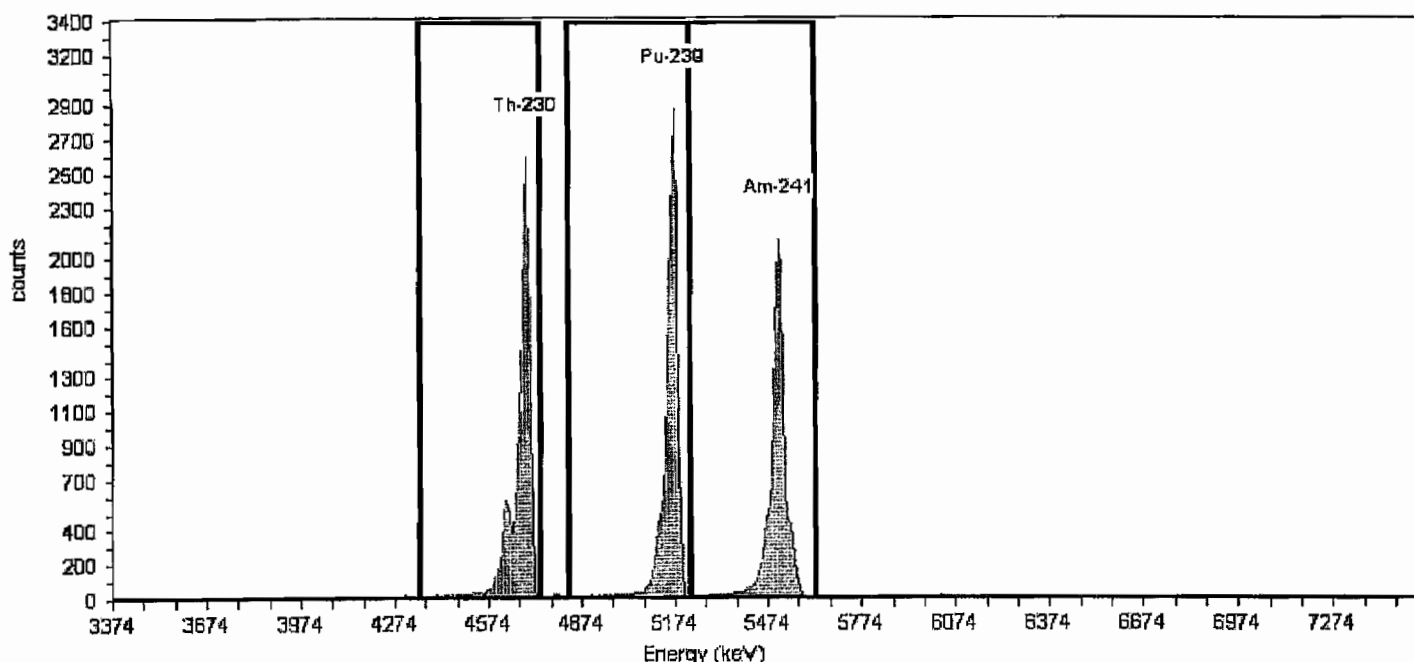
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV17, SN: 49-155M4
Acquisition Start Date: 3/31/2010 10:13:36AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 24.73% +/- 0.25% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3221 keV / Ch
Offset = 3,383.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	184	14,516.00	103.69
Pu-239	242	5.16	196	249	14,988.00	107.06
Am-241	287	5.49	249	303	13,327.00	95.19

Calibration

Name: March2010_AV18
Description:
Detector: AV18

Calibration Date: 3/31/2010 3:15:35PM
Analyst: 60040

Source Info

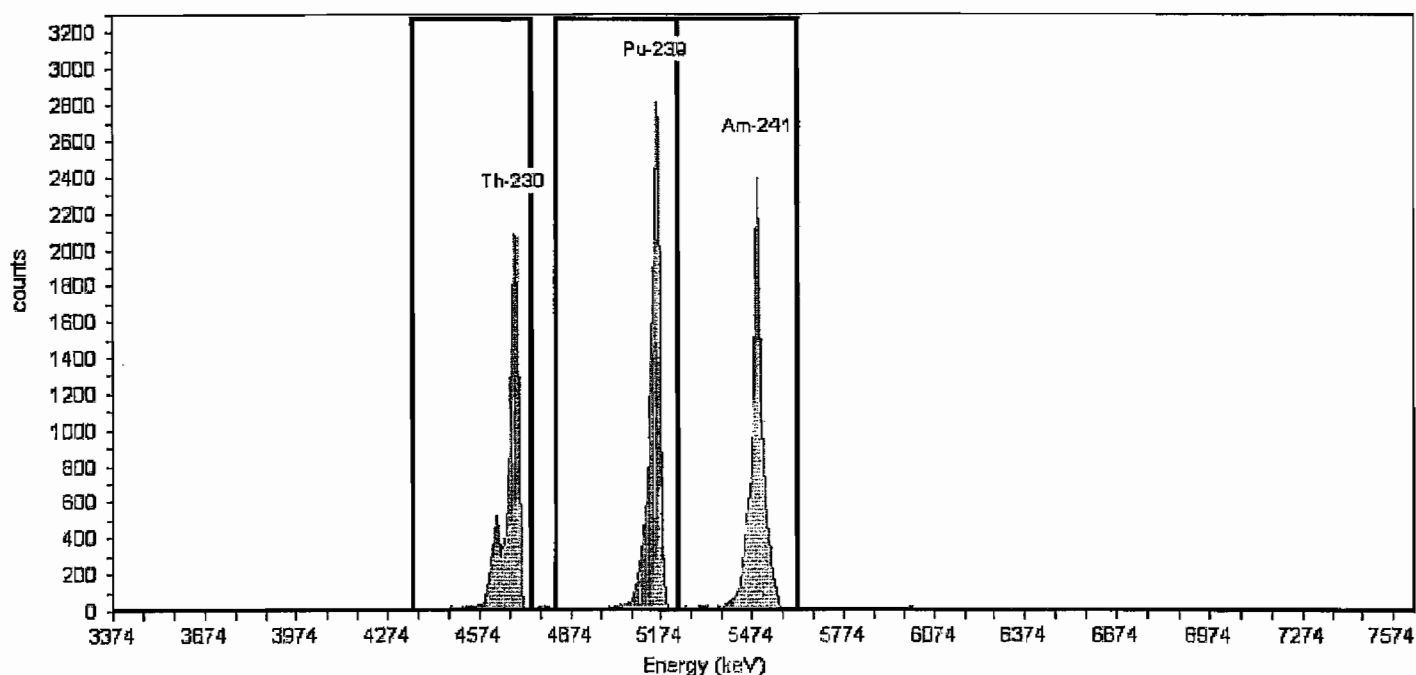
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV18, SN: 49-155N5
Acquisition Start Date: 3/31/2010 10:14:22AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 25.20% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,379.56 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	184	11,646.00	83.19
Pu-239	240	5.16	195	249	14,154.00	101.10
Am-241	285	5.49	249	303	13,451.00	96.08

Calibration

Name: March2010_AV19

Description:

Detector: AV19

Calibration Date: 3/31/2010 3:16:26PM

Analyst: 60040

Source Info

Certificate ID: 63508A-334

Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM

Description:

Acquisition

Detector: AV19, SN: 44-022N3

Acquisition Start Date: 3/31/2010 10:14:24AM

Live Time: 140.00 min.

Real Time: 140.05 min.

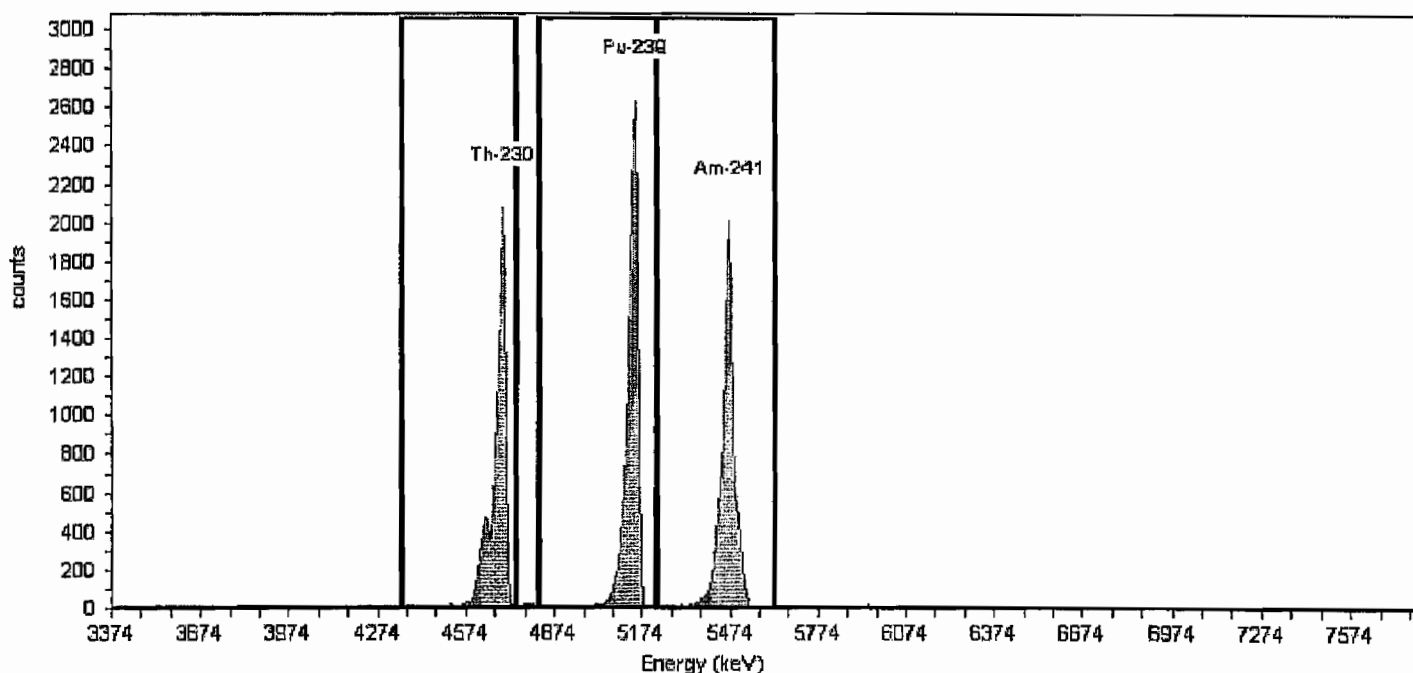
Efficiency: 26.06% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:

Gain = 7.6747 keV / Ch

Offset = 3,321.33 keV

Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)

Algorithm: Linear

Initial Calibration: No

Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	184	11,825.00	84.46
Pu-239	239	5.16	195	249	13,982.00	99.87
Am-241	282	5.49	249	303	12,725.00	90.89

Calibration

Name: March2010_AV20
Description:
Detector: AV20

Calibration Date: 3/31/2010 3:17:20PM
Analyst: 60040

Source Info

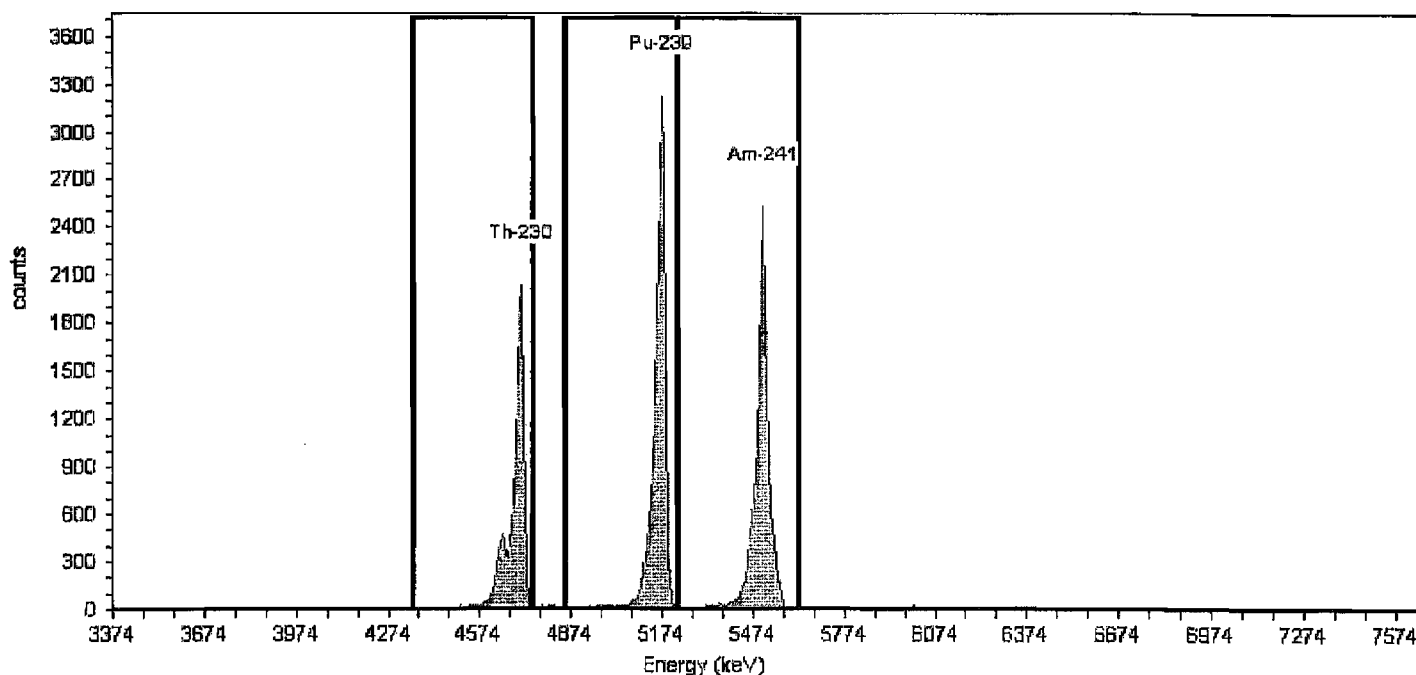
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV20 , SN: 48-121A7
Acquisition Start Date: 3/31/2010 10:14:26AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.30% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,345.28 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	180	4.69	132	185	11,433.00	81.66
Pu-239	242	5.16	199	249	17,012.00	121.51
Am-241	287	5.49	249	303	14,804.00	105.74

Calibration

Name: March2010_AV21
Description:
Detector: AV21

Calibration Date: 3/31/2010 3:18:09PM
Analyst: 60040

Source Info

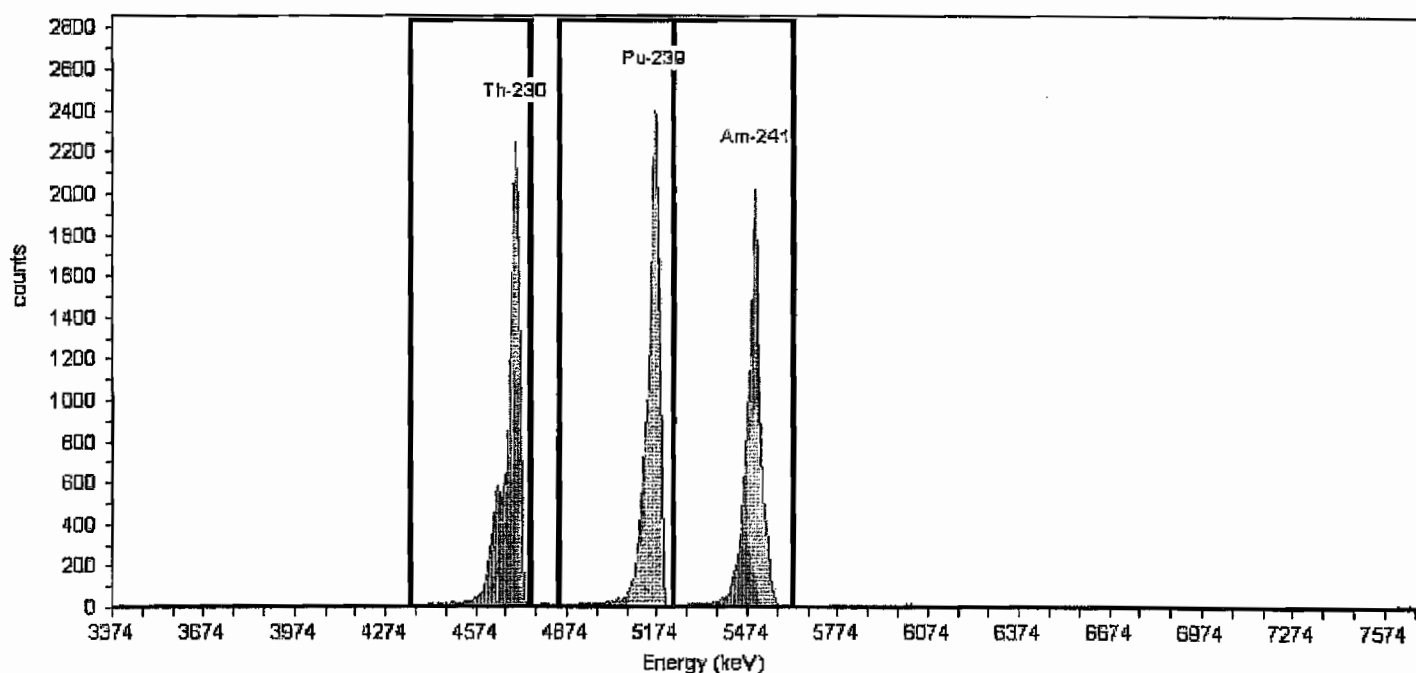
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV21, SN: 48-102BB6
Acquisition Start Date: 3/29/2010 12:48:36PM
Live Time: 140.00 min.
Real Time: 140.38 min.
Efficiency: 24.81% +/- 0.25% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,352.74 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	186	14,702.00	105.01
Pu-239	241	5.16	198	249	14,999.00	107.14
Am-241	286	5.49	249	303	13,313.00	95.09

Calibration

Name: March2010_AV22
Description:
Detector: AV22

Calibration Date: 3/31/2010 3:53:07PM
Analyst: 60040

Source Info

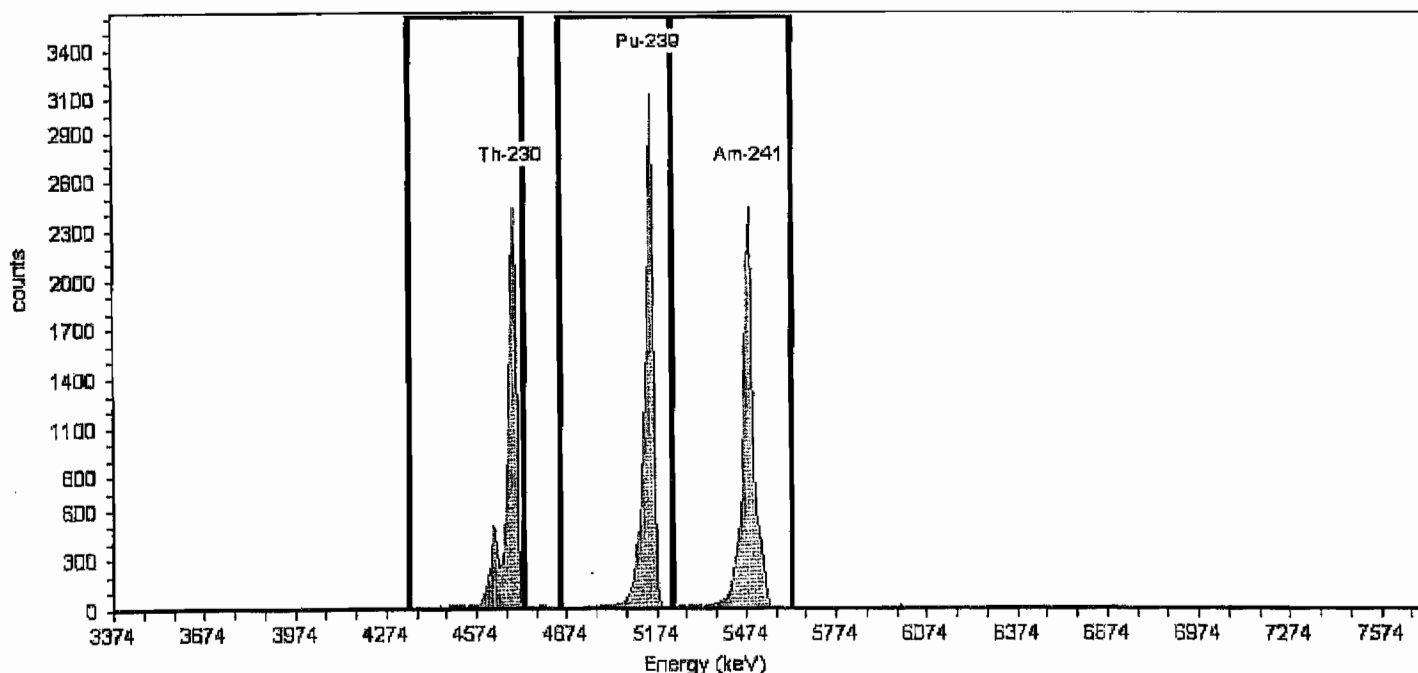
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV22, SN: 49-155N1
Acquisition Start Date: 3/29/2010 12:48:56PM
Live Time: 140.00 min.
Real Time: 140.38 min.
Efficiency: 25.30% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5313 keV / Ch
Offset = 3,347.21 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	183	11,752.00	83.94
Pu-239	240	5.16	199	249	14,255.00	101.82
Am-241	284	5.49	249	303	13,360.00	95.43

Calibration

Name: March2010_AV23
Description:
Detector: AV23

Calibration Date: 3/31/2010 3:54:22PM
Analyst: 60040

Source Info

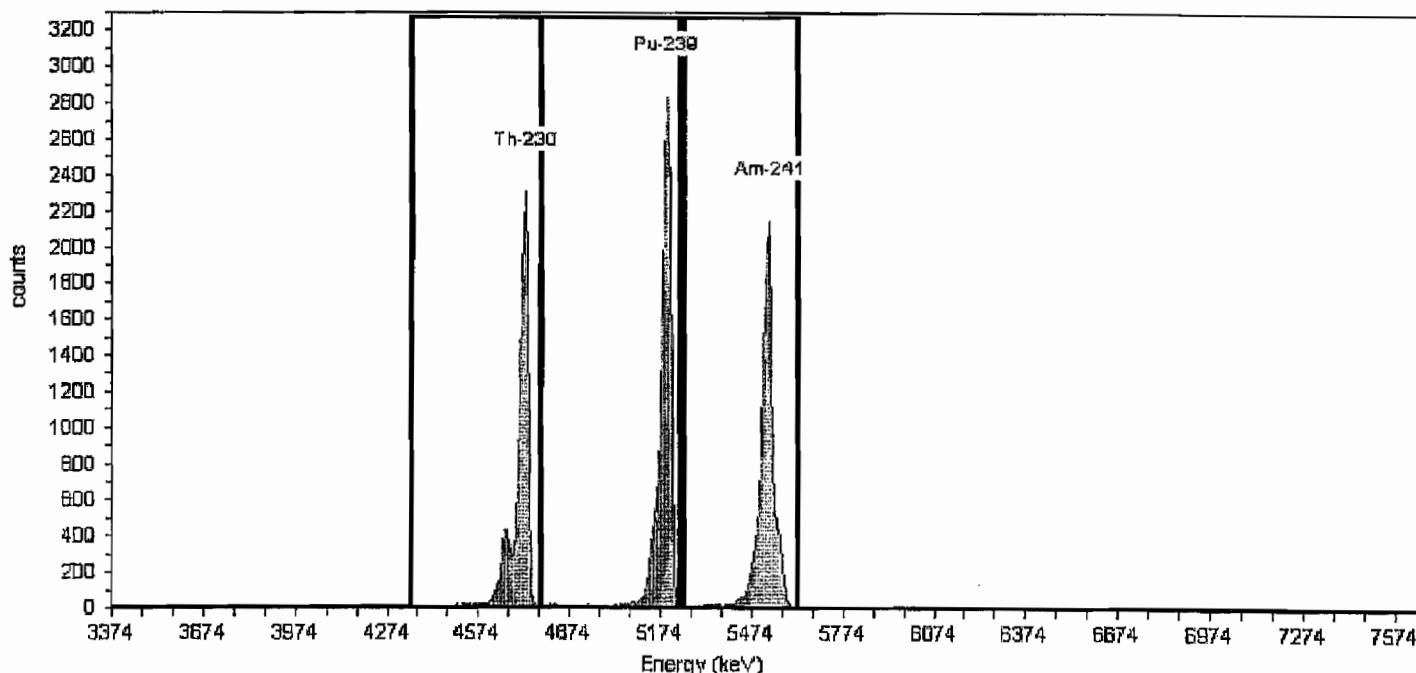
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV23, SN: 48-158FF3
Acquisition Start Date: 3/29/2010 12:49:21PM
Live Time: 140.00 min.
Real Time: 140.38 min.
Efficiency: 26.03% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,342.59 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	182	4.69	132	189	11,773.00	84.09
Pu-239	245	5.16	189	251	14,007.00	100.05
Am-241	290	5.49	252	303	12,685.00	90.61

Calibration

Name: March2010_AV24a
Description:
Detector: AV24

Calibration Date: 4/1/2010 2:50:12PM
Analyst: 60040

Source Info

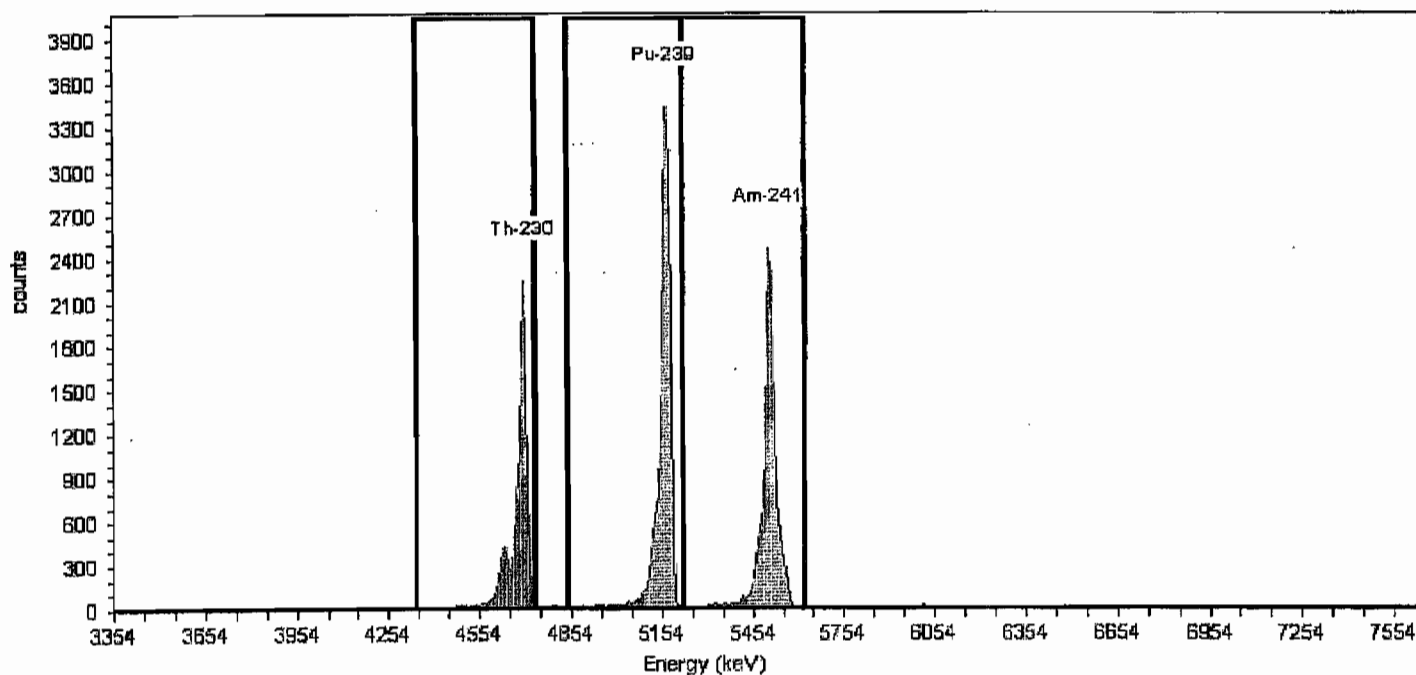
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV24, SN: 47-137Q4
Acquisition Start Date: 4/1/2010 12:19:13PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.32% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,364.77 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	184	11,230.00	80.21
Pu-239	242	5.16	198	249	17,277.00	123.41
Am-241	287	5.49	249	303	14,760.00	105.43

Calibration

Name: March2010_AV51
Description:
Detector: AV51

Calibration Date: 3/31/2010 3:55:23PM
Analyst: 60040

Source Info

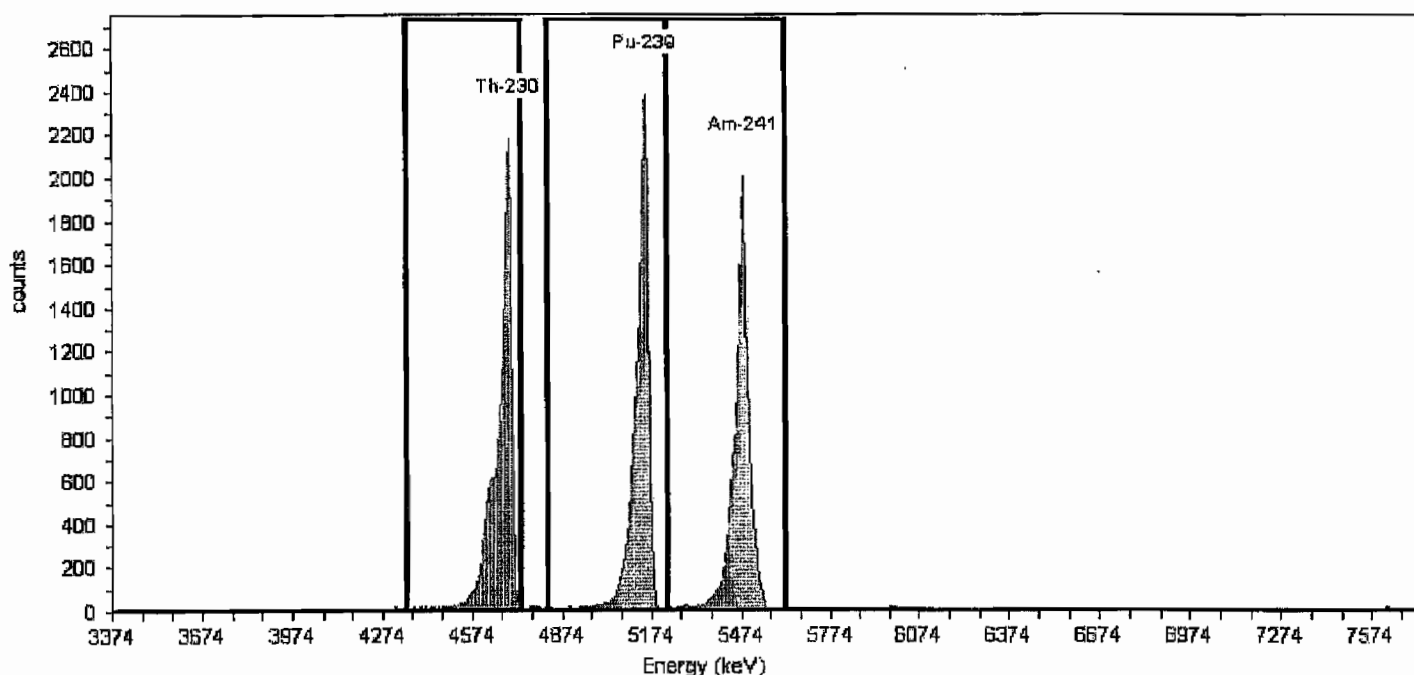
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV51, SN: 48-10911
Acquisition Start Date: 3/29/2010 3:14:12PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.85% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5313 keV / Ch
Offset = 3,347.21 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	183	15,360.00	109.71
Pu-239	240	5.16	195	249	15,552.00	111.09
Am-241	284	5.49	249	303	13,926.00	99.47

Calibration

Name: March2010_AV52
Description:
Detector: AV52

Calibration Date: 3/31/2010 3:56:19PM
Analyst: 60040

Source Info

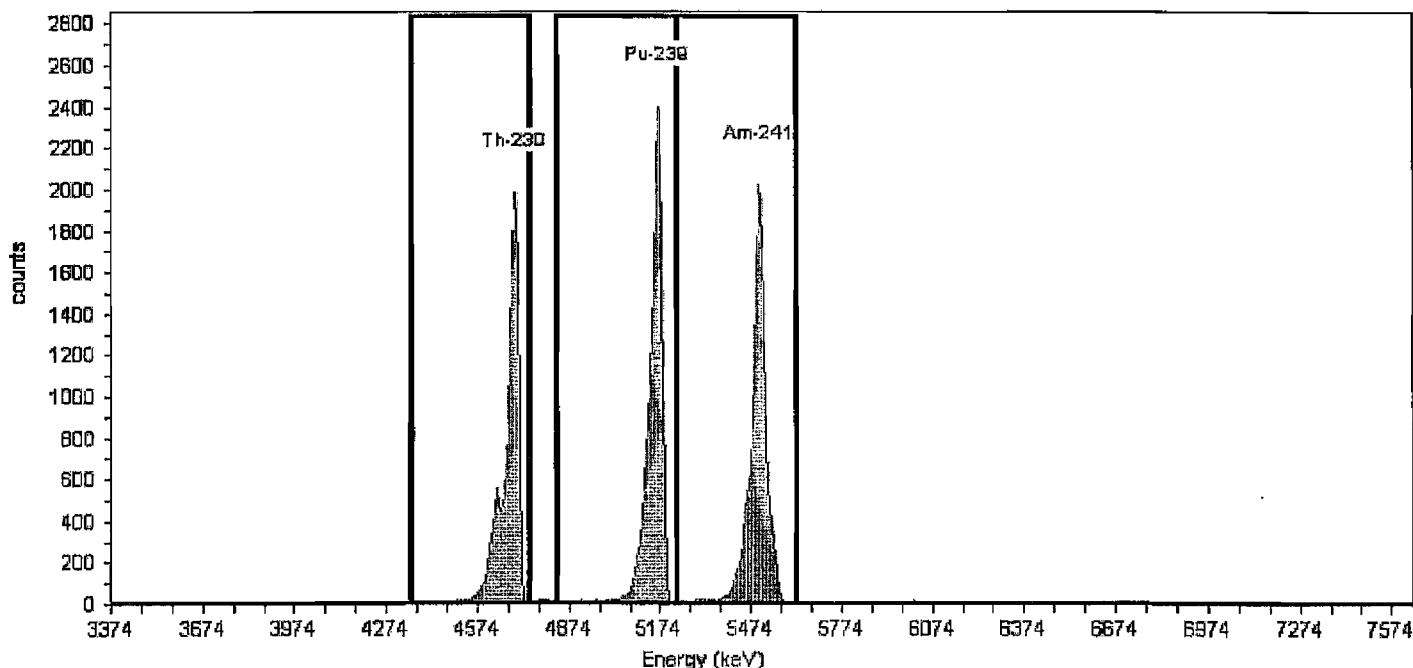
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV52 , SN:
Acquisition Start Date: 3/29/2010 3:14:23PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.07% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,372.16 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	184	12,581.00	89.86
Pu-239	241	5.16	196	249	15,211.00	108.65
Am-241	286	5.49	249	303	14,332.00	102.37

Calibration

Name: March2010_AV53
Description:
Detector: AV53

Calibration Date: 3/31/2010 3:57:01PM
Analyst: 60040

Source Info

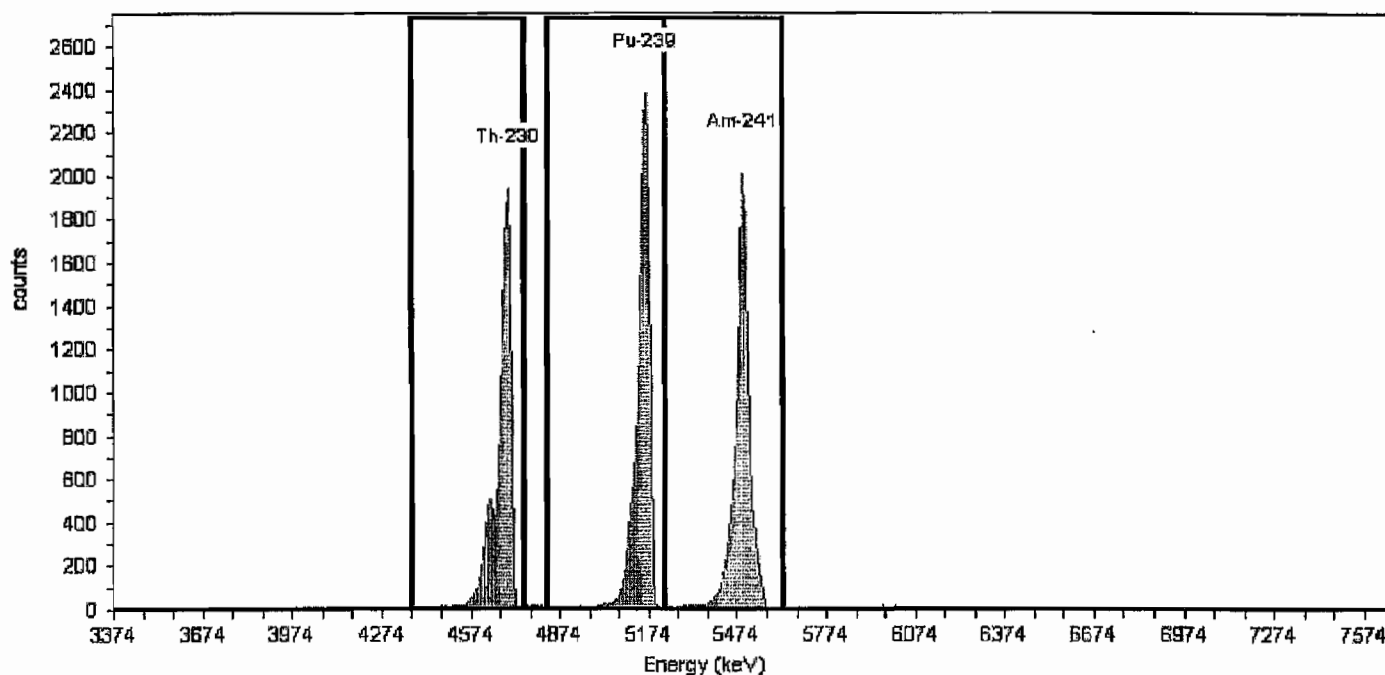
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV53 , SN:
Acquisition Start Date: 3/29/2010 3:14:44PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.15% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4576 keV / Ch
Offset = 3,359.49 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	134	185	12,340.00	88.14
Pu-239	241	5.16	196	249	14,384.00	102.74
Am-241	285	5.49	249	303	13,389.00	95.64

Calibration

Name: March2010_AV54

Description:

Detector: AV54

Calibration Date: 3/31/2010 3:57:51PM

Analyst: 60040

Source Info

Certificate ID: 63509A-334

Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM

Description:

Acquisition

Detector: AV54, SN: 48-046116

Acquisition Start Date: 3/29/2010 3:14:57PM

Live Time: 140.00 min.

Real Time: 140.06 min.

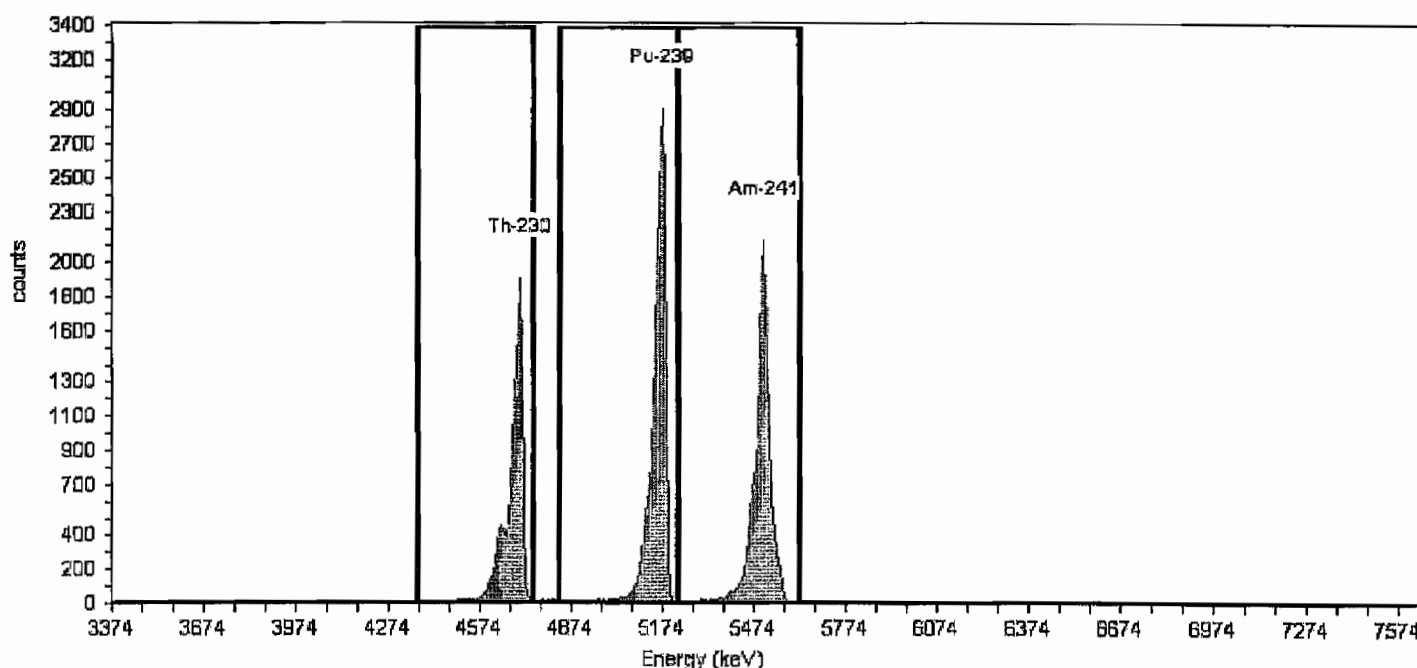
Efficiency: 26.84% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,364.77 keV

Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)

Algorithm: Linear

Initial Calibration: No

Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	134	185	11,675.00	83.39
Pu-239	242	5.16	197	249	17,581.00	125.58
Am-241	287	5.49	249	303	14,874.00	106.24

Calibration

Name: March2010_AV55
Description:
Detector: AV55

Calibration Date: 4/1/2010 4:49:54AM
Analyst: 60040

Source Info

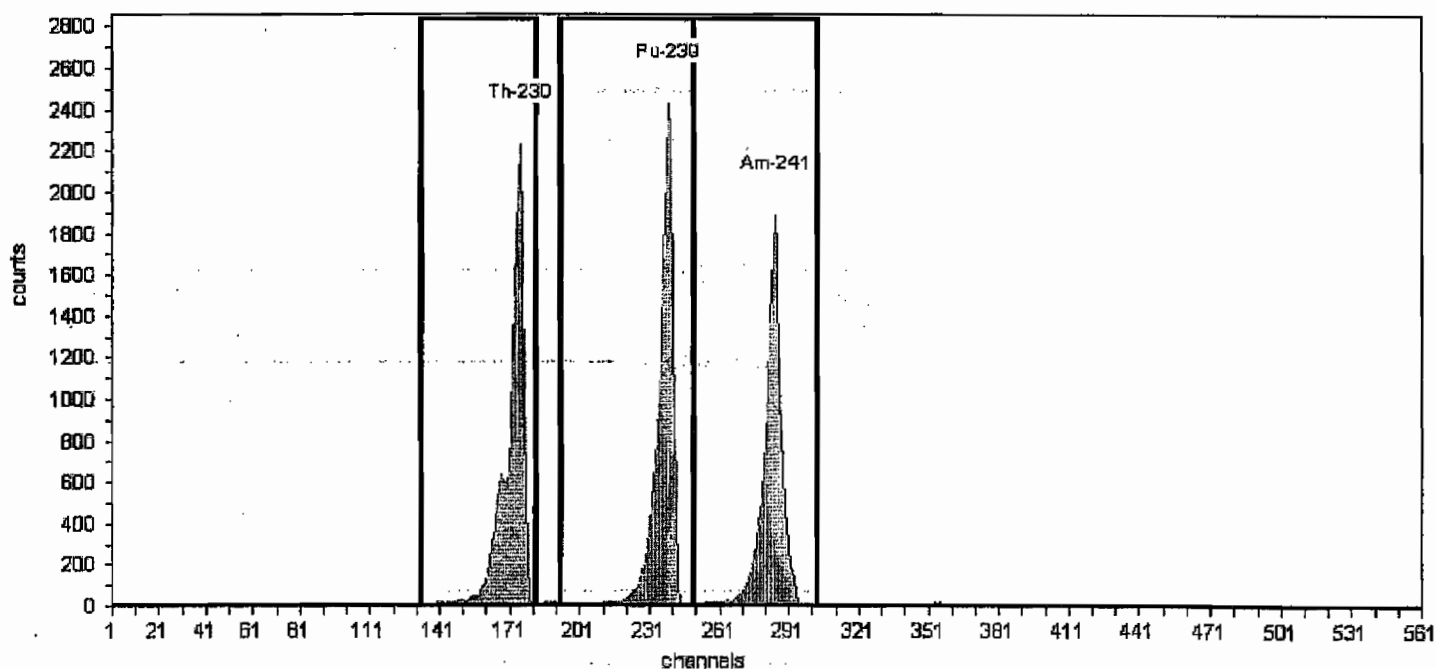
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV55, SN: 46-33Q7
Acquisition Start Date: 3/31/2010 10:06:12PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.93% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	175	4.69	132	182	15,831.00	113.08
Pu-239	239	5.16	192	250	16,183.00	115.59
Am-241	285	5.49	250	303	14,577.00	104.12

Calibration

Name: March2010_AV57
Description:
Detector: AV57

Calibration Date: 4/1/2010 12:16:29PM
Analyst: 60040

Source Info

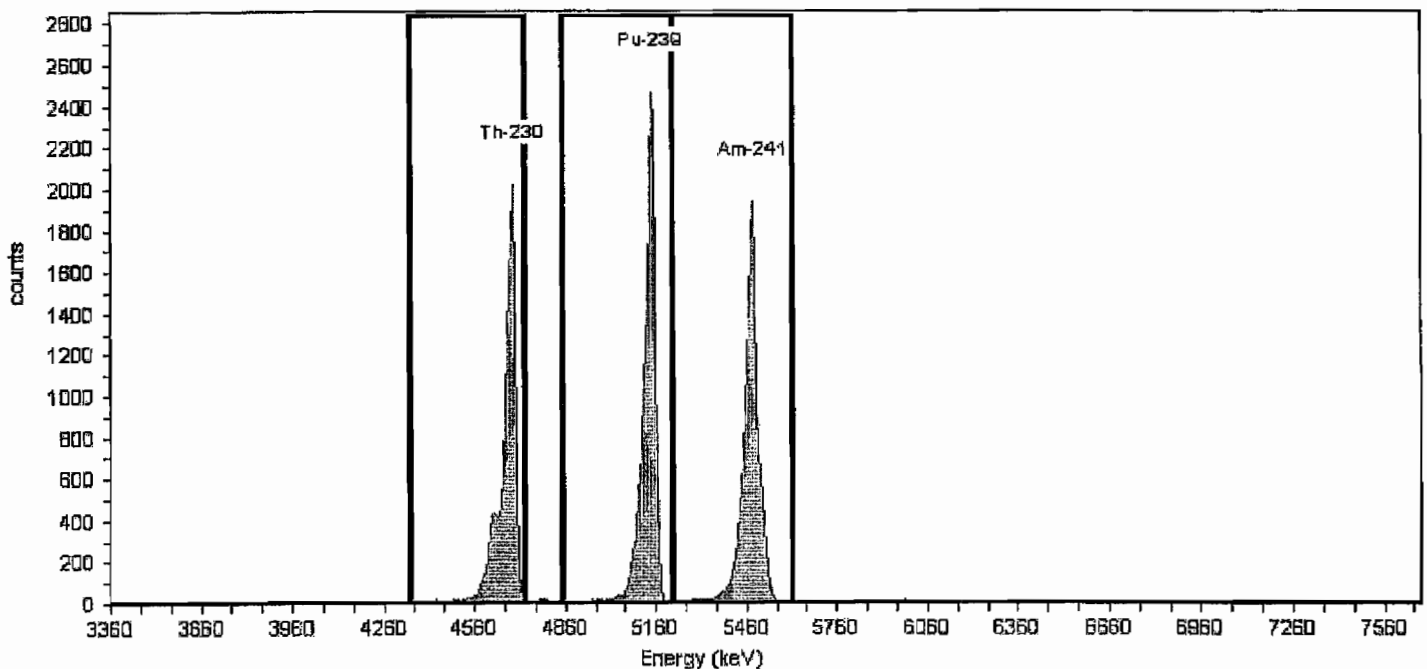
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV57, SN: 48-158EE3
Acquisition Start Date: 4/1/2010 9:31:18AM
Live Time: 140.00 min.
Real Time: 140.59 min.
Efficiency: 26.83% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,360.21 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	183	12,084.00	86.31
Pu-239	240	5.16	200	249	14,303.00	102.16
Am-241	285	5.49	249	303	13,279.00	94.85

Calibration

Name: March2010_AV58
Description:
Detector: AV58

Calibration Date: 4/1/2010 12:17:33PM
Analyst: 60040

Source Info

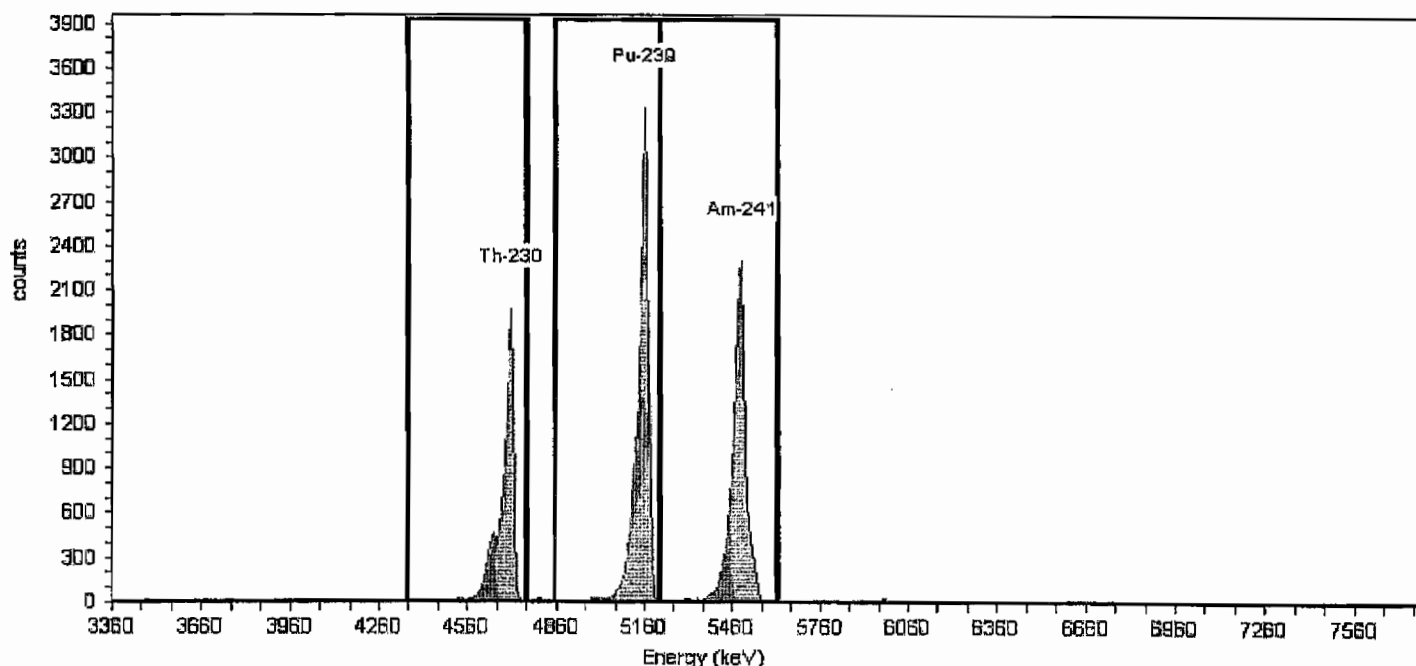
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV58 , SN: 48-158EE4
Acquisition Start Date: 4/1/2010 9:31:20AM
Live Time: 140.00 min.
Real Time: 140.66 min.
Efficiency: 27.36% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.6062 keV / Ch
Offset = 3,311.94 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	181	4.69	134	188	11,651.00	83.22
Pu-239	242	5.16	201	249	18,038.00	128.84
Am-241	286	5.49	249	303	15,299.00	109.28

Calibration

Name: March2010_AV60
Description:
Detector: AV60

Calibration Date: 4/1/2010 12:15:51PM
Analyst: 60040

Source Info

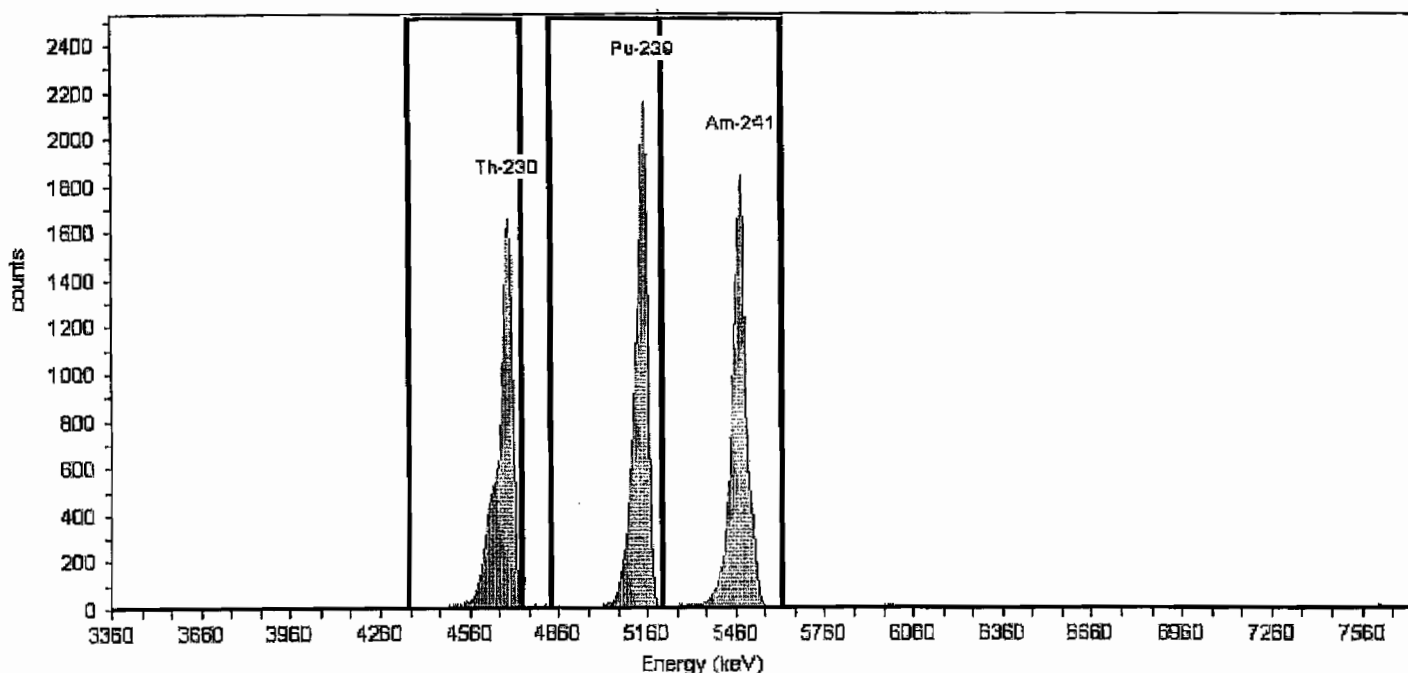
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV60, SN:
Acquisition Start Date: 4/1/2010 9:31:21AM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.29% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5313 keV / Ch
Offset = 3,339.68 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	134	185	12,186.00	87.04
Pu-239	241	5.16	198	249	14,764.00	105.46
Am-241	285	5.49	249	303	13,973.00	99.81

Calibration

Name: March2010_AV61
Description:
Detector: AV61

Calibration Date: 4/1/2010 2:50:58PM
Analyst: 60040

Source Info

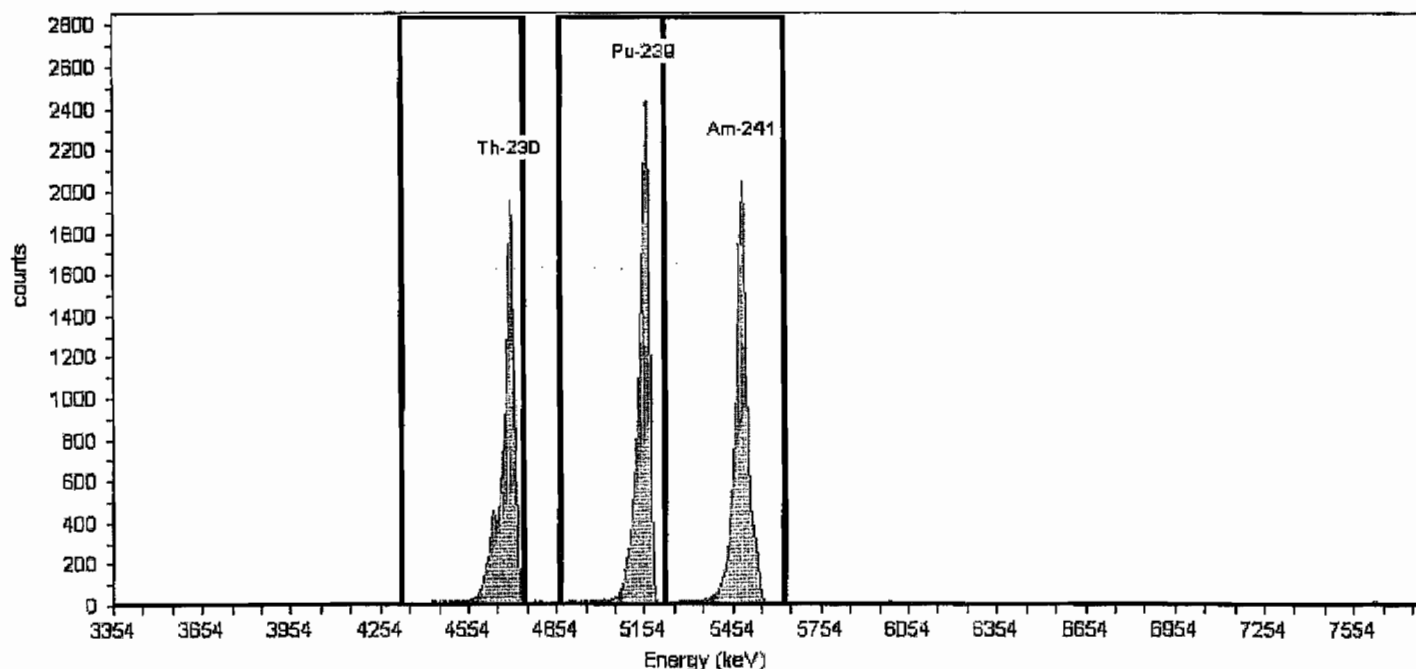
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV61, SN: 49-115M5
Acquisition Start Date: 4/1/2010 12:18:34PM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.73% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.6062 keV / Ch
Offset = 3,327.15 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	130	185	12,014.00	85.81
Pu-239	240	5.16	201	249	14,211.00	101.51
Am-241	284	5.49	249	303	13,286.00	94.90

Calibration

Name: March2010_AV63
Description:
Detector: AV63

Calibration Date: 3/31/2010 6:09:36PM
Analyst: 60040

Source Info

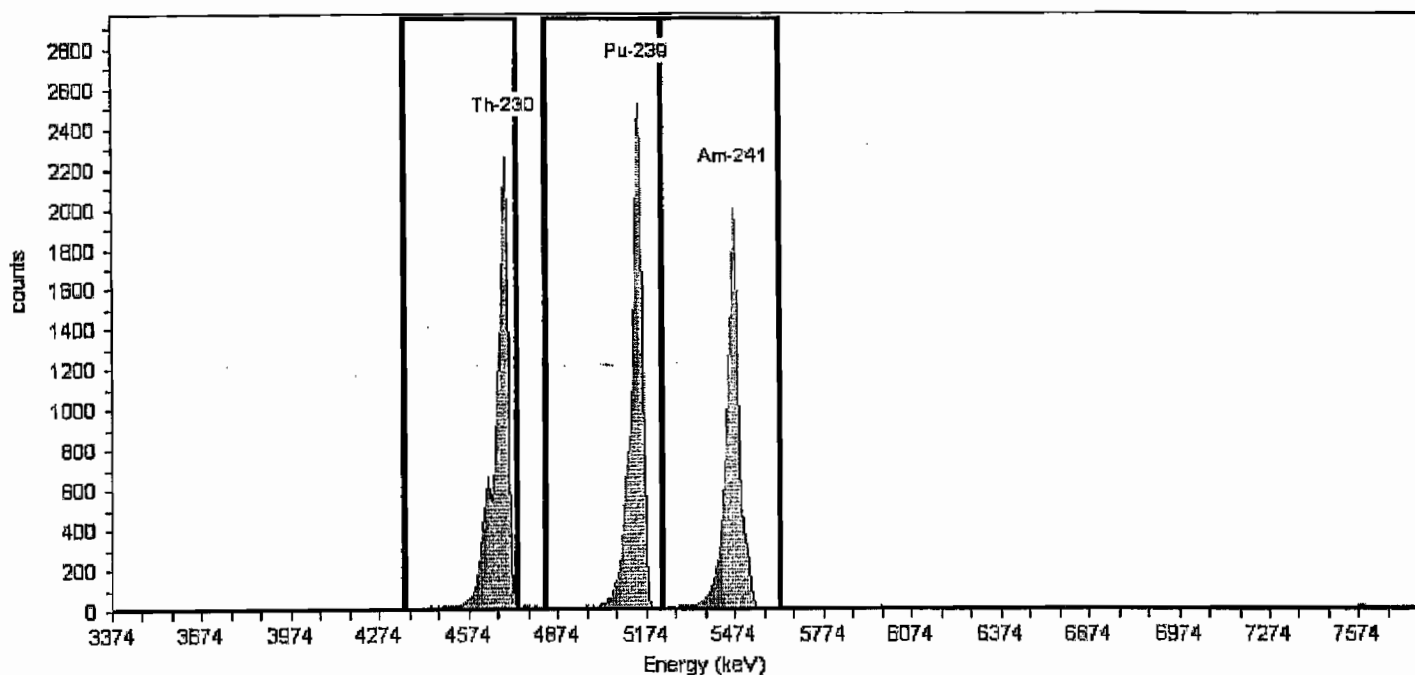
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV63, SN:
Acquisition Start Date: 3/31/2010 3:08:16PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.29% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.6747 keV / Ch
Offset = 3,321.33 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	183	14,834.00	105.96
Pu-239	239	5.16	196	249	15,420.00	110.14
Am-241	282	5.49	249	303	13,561.00	96.86

Calibration

Name: March2010_AV64

Description:

Detector: AV64

Calibration Date: 3/31/2010 6:10:32PM

Analyst: 60040

Source Info

Certificate ID: 63507-334

Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM

Description:

Acquisition

Detector: AV64, SN:

Acquisition Start Date: 3/31/2010 3:08:29PM

Live Time: 140.00 min.

Real Time: 140.06 min.

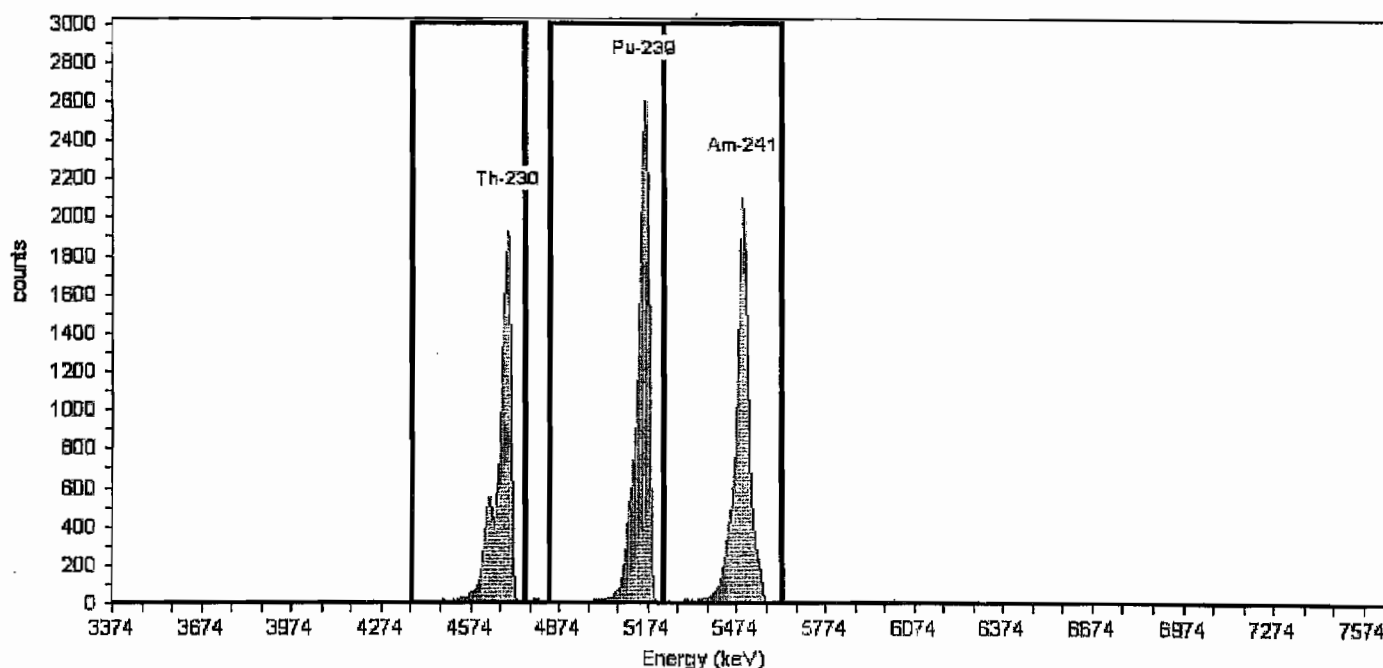
Efficiency: 27.12% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:

Gain = 7.4576 keV / Ch

Offset = 3,359.49 keV

Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)

Algorithm: Linear

Initial Calibration: No

Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	135	186	12,568.00	89.77
Pu-239	241	5.16	197	249	15,375.00	109.82
Am-241	285	5.49	249	303	14,280.00	102.00

Calibration

Name: March2010_AV65
Description:
Detector: AV65

Calibration Date: 3/31/2010 6:11:04PM
Analyst: 60040

Source Info

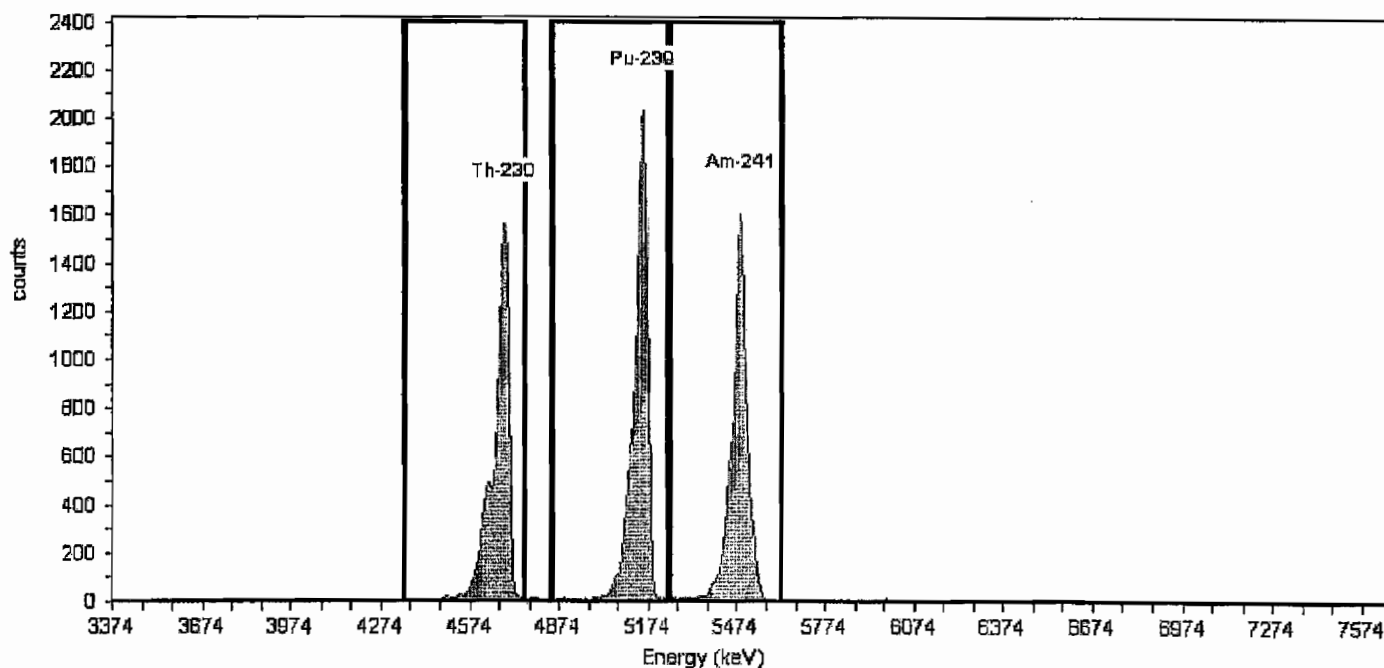
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV65, SN:
Acquisition Start Date: 3/31/2010 3:08:43PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.26% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	186	11,863.00	84.74
Pu-239	240	5.16	198	251	14,183.00	101.31
Am-241	284	5.49	252	303	12,776.00	91.26

Calibration

Name: March2010_AV66
Description:
Detector: AV66

Calibration Date: 3/31/2010 6:11:35PM
Analyst: 60040

Source Info

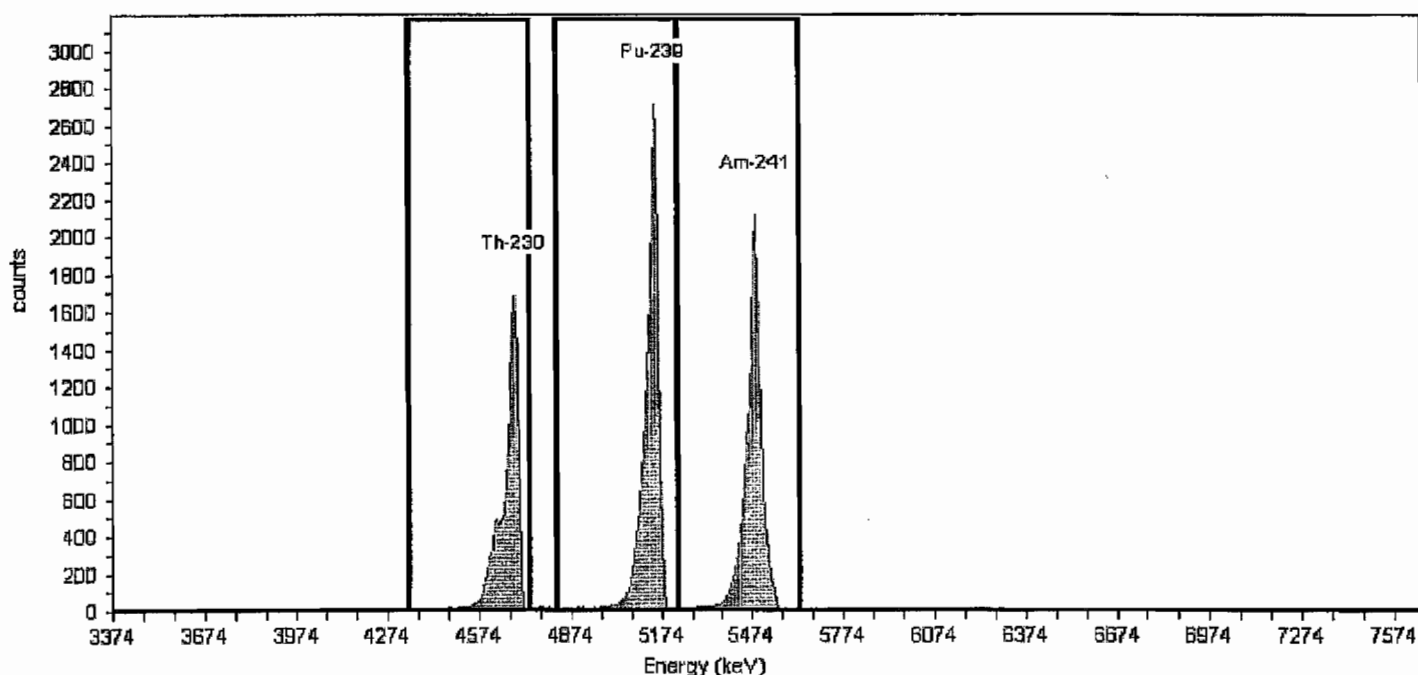
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV66, SN: 48-158EE2
Acquisition Start Date: 3/31/2010 3:09:02PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.07% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,367.67 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	130	183	11,761.00	84.01
Pu-239	239	5.16	195	249	17,623.00	125.88
Am-241	284	5.49	249	303	15,110.00	107.93

Calibration

Name: March2010_AV67
Description:
Detector: AV67

Calibration Date: 3/31/2010 3:58:38PM
Analyst: 60040

Source Info

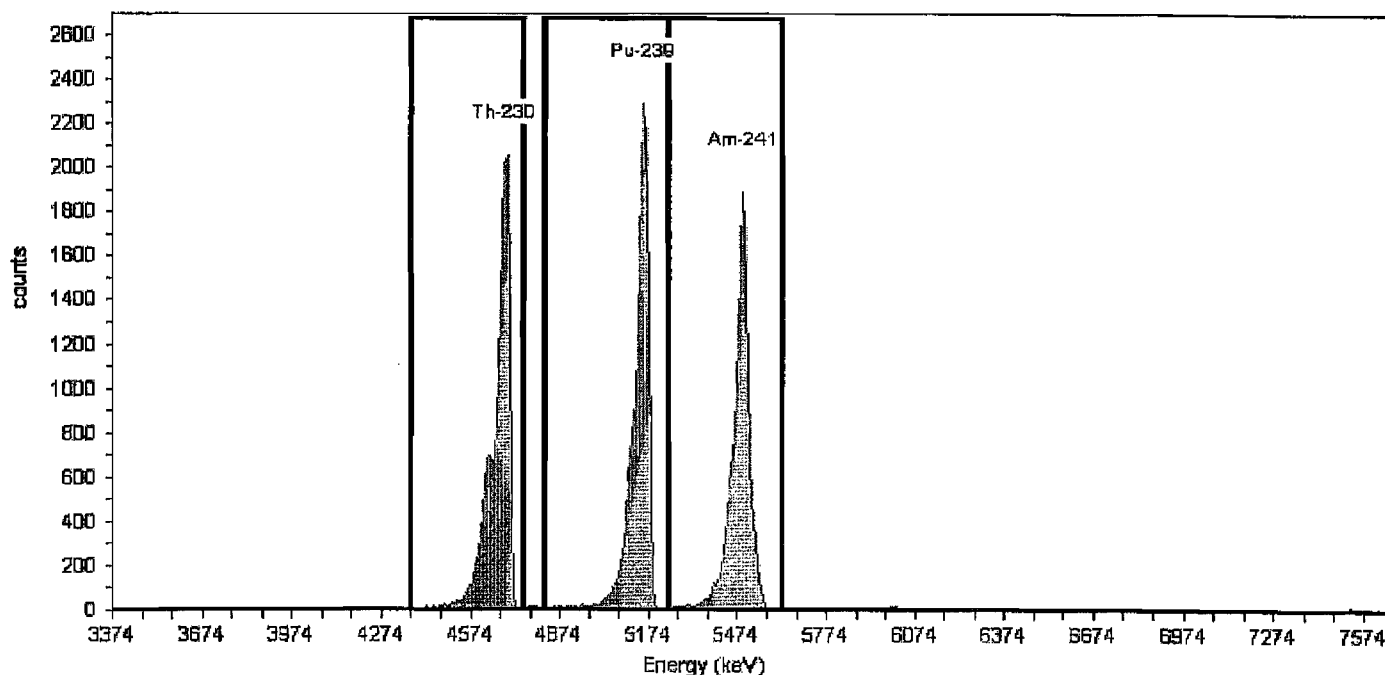
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV67, SN: 48-046117
Acquisition Start Date: 3/29/2010 5:50:54PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.26% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,379.56 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	134	185	16,191.00	115.65
Pu-239	240	5.16	195	251	16,287.00	116.34
Am-241	285	5.49	251	303	14,758.00	105.41

Calibration

Name: March2010_AV68

Description:

Detector: AV68

Calibration Date: 3/31/2010 3:59:18PM

Analyst: 60040

Source Info

Certificate ID: 63507-334

Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM

Description:

Acquisition

Detector: AV68 , SN: 48-45884

Acquisition Start Date: 3/29/2010 5:51:05PM

Live Time: 140.00 min.

Real Time: 140.06 min.

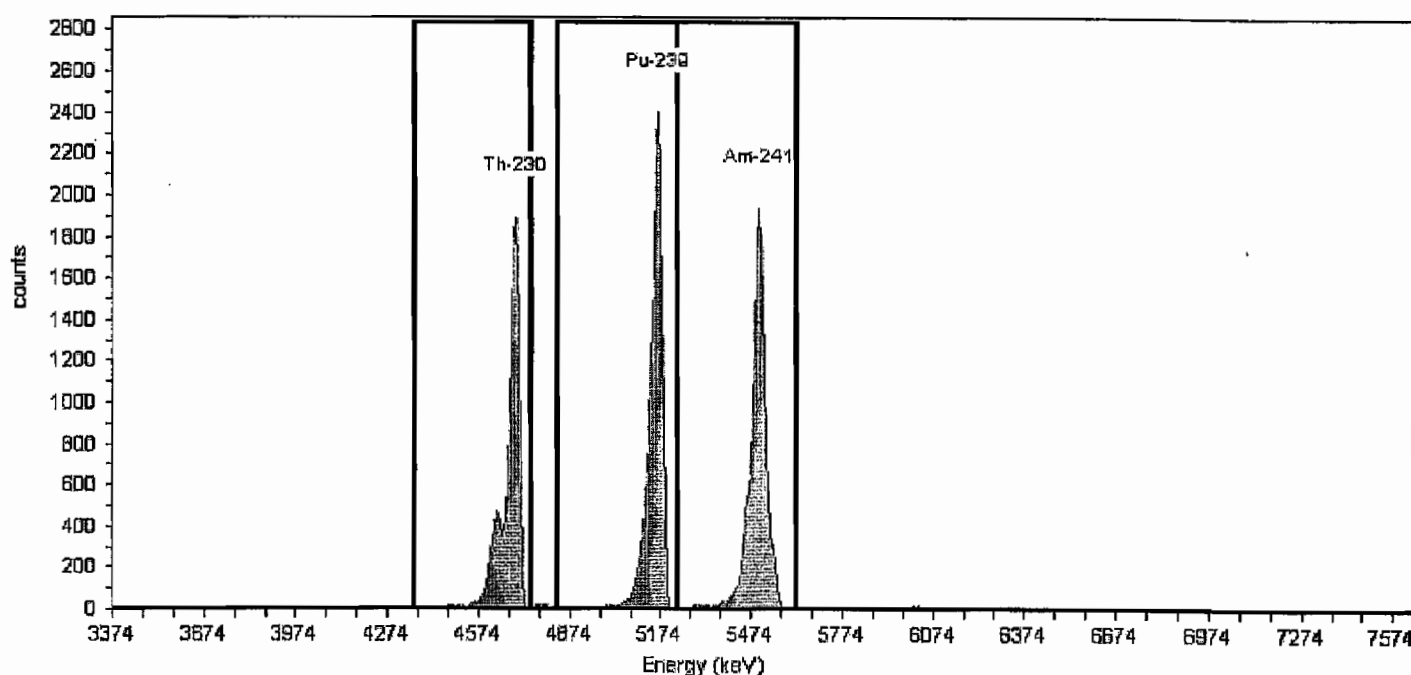
Efficiency: 26.07% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:

Gain = 7.3931 keV / Ch

Offset = 3,372.16 keV

Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)

Algorithm: Linear

Initial Calibration: No

Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	133	184	12,070.00	86.21
Pu-239	241	5.16	196	249	14,717.00	105.12
Am-241	286	5.49	249	303	13,829.00	98.78

Calibration

Name: March2010_AV69
Description:
Detector: AV69

Calibration Date: 3/31/2010 4:00:19PM
Analyst: 60040

Source Info

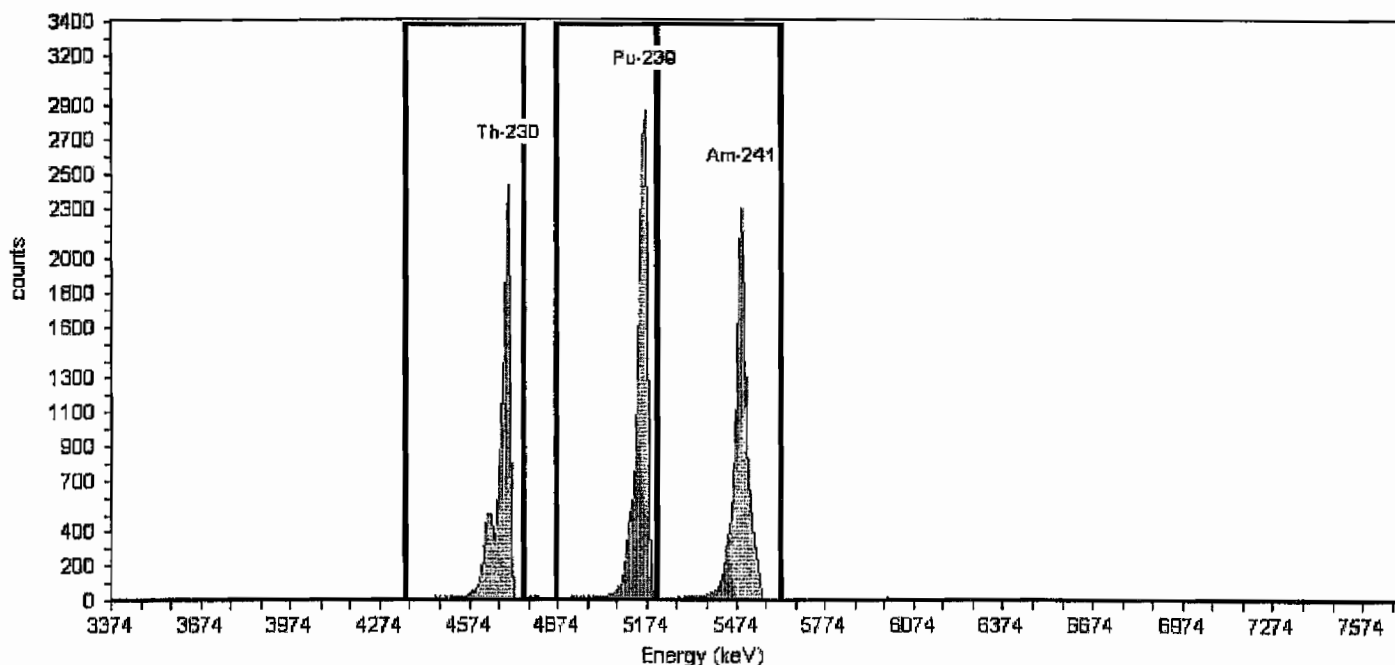
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV69, SN: 49-155DD5
Acquisition Start Date: 3/29/2010 5:51:25PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 28.19% +/- 0.30% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5313 keV / Ch
Offset = 3,339.68 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	186	12,840.00	91.71
Pu-239	241	5.16	201	247	14,863.00	106.16
Am-241	285	5.49	247	303	13,947.00	99.62

Calibration

Name: March2010_AV70
Description:
Detector: AV70

Calibration Date: 3/31/2010 4:00:57PM
Analyst: 60040

Source Info

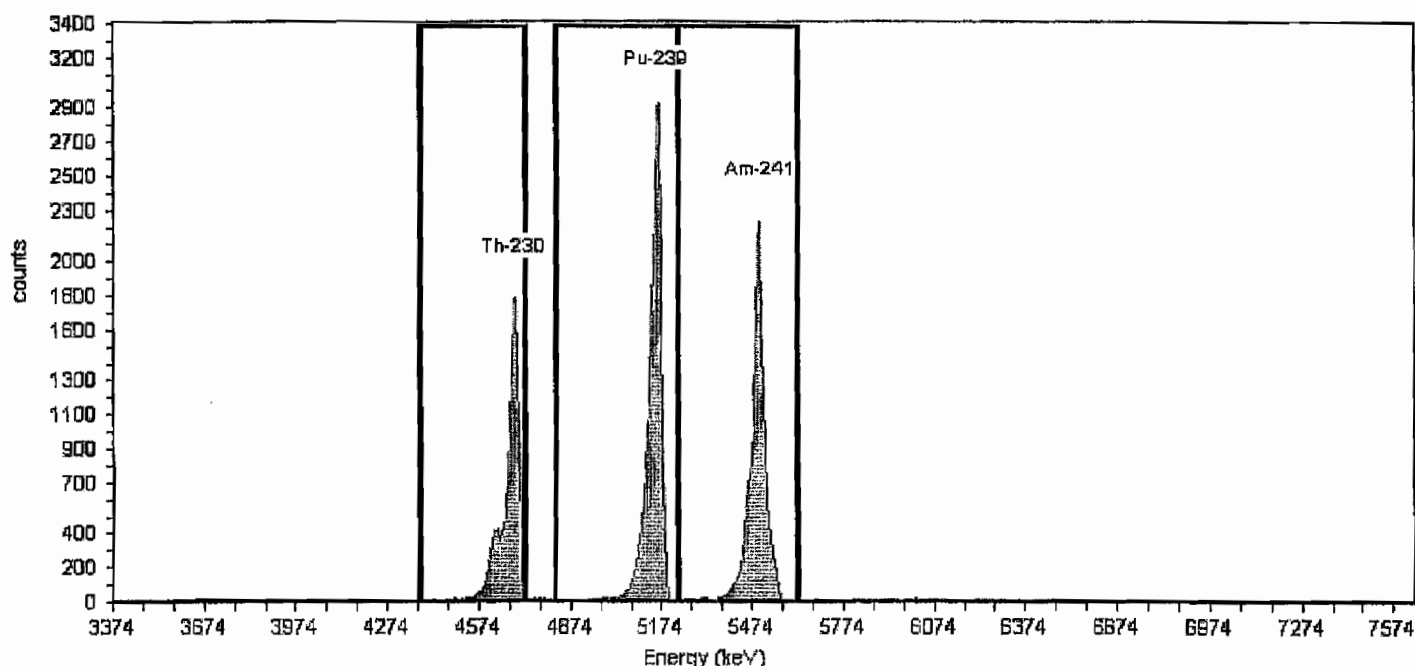
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV70, SN: 48-158FF1
Acquisition Start Date: 3/29/2010 5:51:43PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.58% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3291 keV / Ch
Offset = 3,392.07 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	135	182	11,259.00	80.42
Pu-239	240	5.16	195	249	17,634.00	125.96
Am-241	286	5.49	249	303	14,773.00	105.52

Calibration

Name: March2010_AV71
Description:
Detector: AV71

Calibration Date: 3/31/2010 4:01:37PM
Analyst: 60040

Source Info

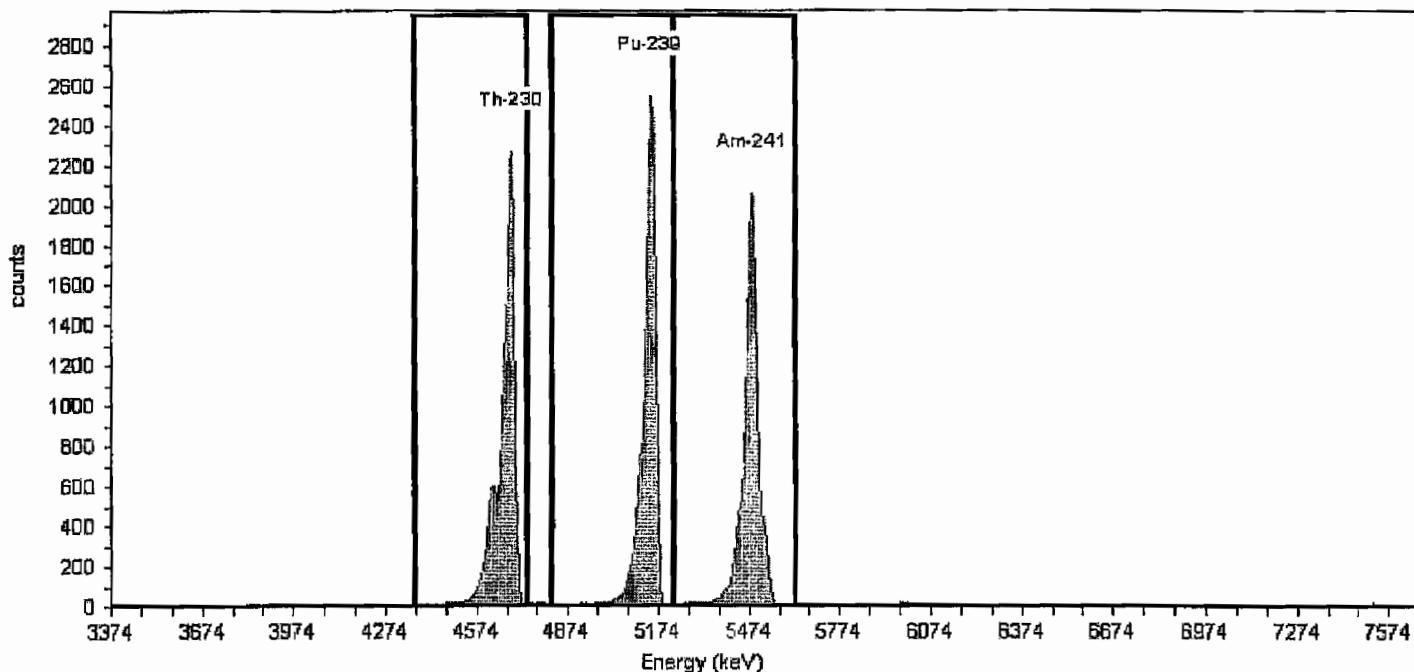
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV71, SN: 48-158EE6
Acquisition Start Date: 3/29/2010 10:06:30PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.98% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,367.67 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	134	184	15,359.00	109.71
Pu-239	239	5.16	195	249	15,636.00	111.69
Am-241	284	5.49	249	303	14,014.00	100.10

Calibration

Name: March2010_AV72

Description:

Detector: AV72

Calibration Date: 3/31/2010 4:02:05PM

Analyst: 60040

Source Info

Certificate ID: 63507-334

Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM

Description:

Acquisition

Detector: AV72, SN:

Acquisition Start Date: 3/29/2010 10:06:45PM

Live Time: 140.00 min.

Real Time: 140.06 min.

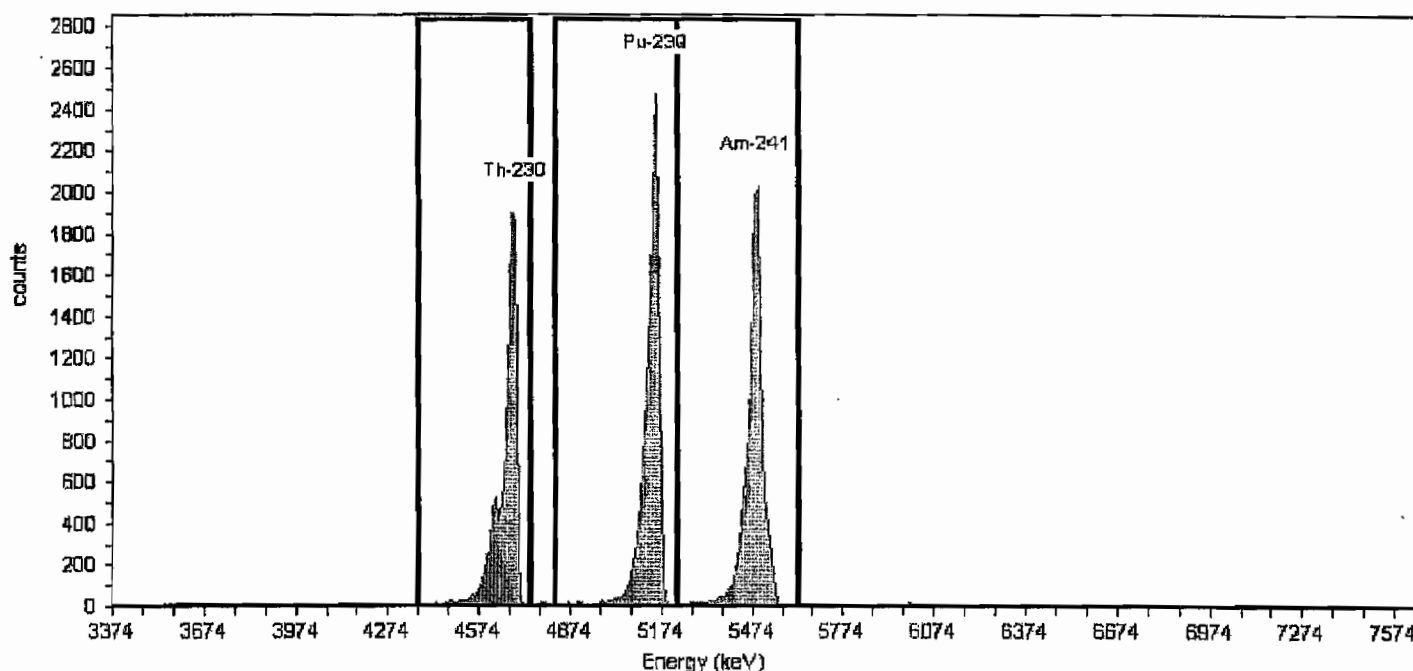
Efficiency: 27.14% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:

Gain = 7.4575 keV / Ch

Offset = 3,366.95 keV

Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)

Algorithm: Linear

Initial Calibration: No

Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	134	184	12,563.00	89.74
Pu-239	240	5.16	195	249	15,231.00	108.79
Am-241	284	5.49	249	303	14,459.00	103.28

Calibration

Name: March2010_AV73
Description:
Detector: AV73

Calibration Date: 3/31/2010 4:02:36PM
Analyst: 60040

Source Info

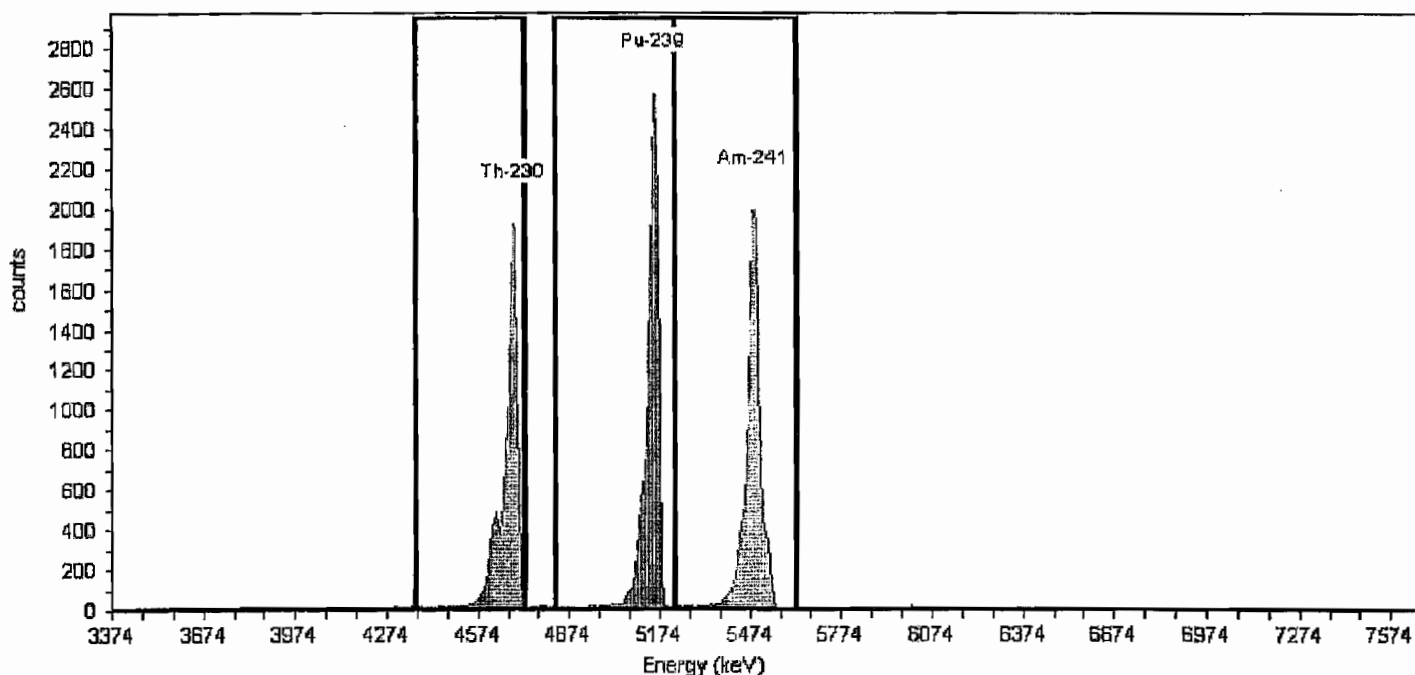
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV73, SN: 49-155N4
Acquisition Start Date: 3/29/2010 10:07:01PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.70% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

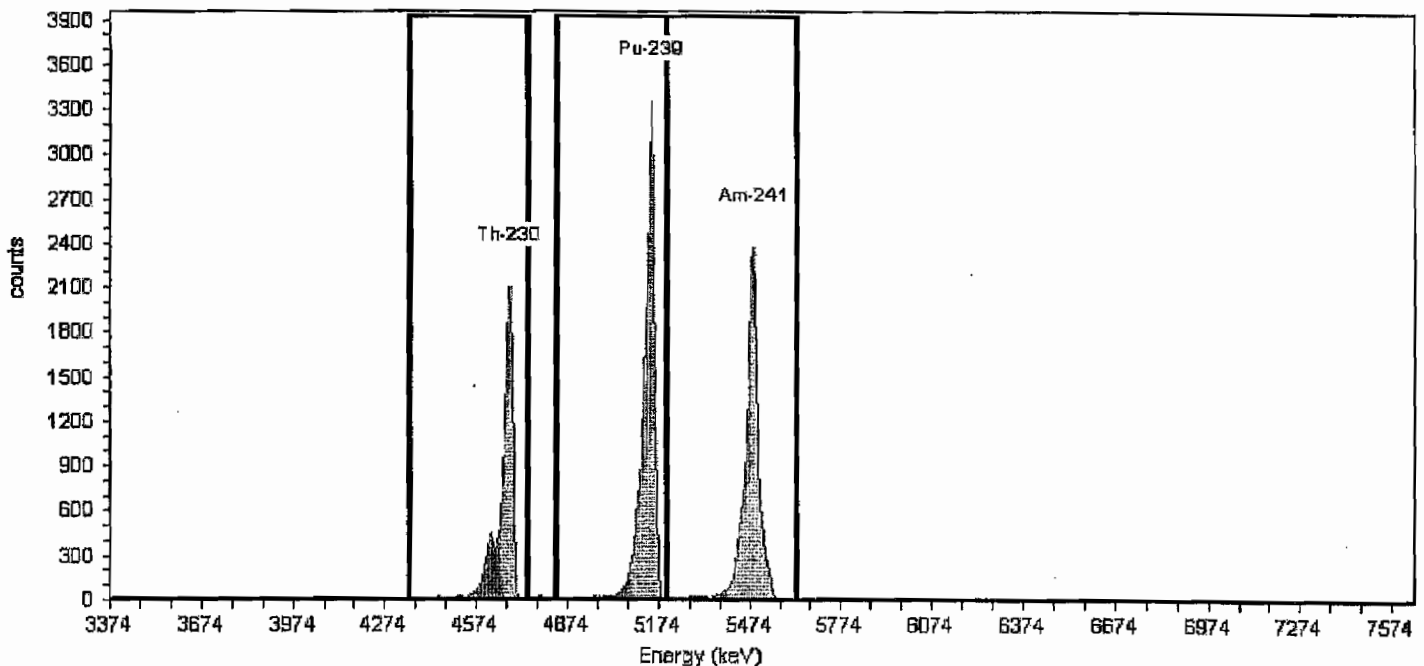
Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	134	182	12,133.00	86.66
Pu-239	240	5.16	196	249	14,206.00	101.47
Am-241	284	5.49	249	303	13,119.00	93.71

Name: March2010_AV74 Description: Detector: AV74	Calibration Calibration Date: 3/31/2010 4:03:18PM Analyst: 60040
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Certificate ID: 63509A-334 Prepared by: Analytics	Source Info Certification Date: 5/30/2002 12:00:00PM Description:
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Acquisition Detector: AV74 , SN: 49-155M3 Acquisition Start Date: 3/29/2010 10:07:20PM Live Time: 140.00 min. Real Time: 140.06 min. Efficiency: 26.98% +/- 0.27% TPU(2 sigma)	Energy Calibration Equation: Gain = 7.3931 keV / Ch Offset = 3,386.95 keV Quadratic = 0.0000 keV / Ch ²
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General Analysis Method: Manual (ROI) Algorithm: Linear	Initial Calibration: No Shelf: 1
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Nuclide Activity Summary						
Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	176	4.69	132	184	11,499.00	82.14
Pu-239	239	5.16	197	246	17,812.00	127.23
Am-241	284	5.49	246	303	15,050.00	107.50

Calibration

Name: March2010_AV75
Description:
Detector: AV75

Calibration Date: 3/31/2010 4:04:15PM
Analyst: 60040

Source Info

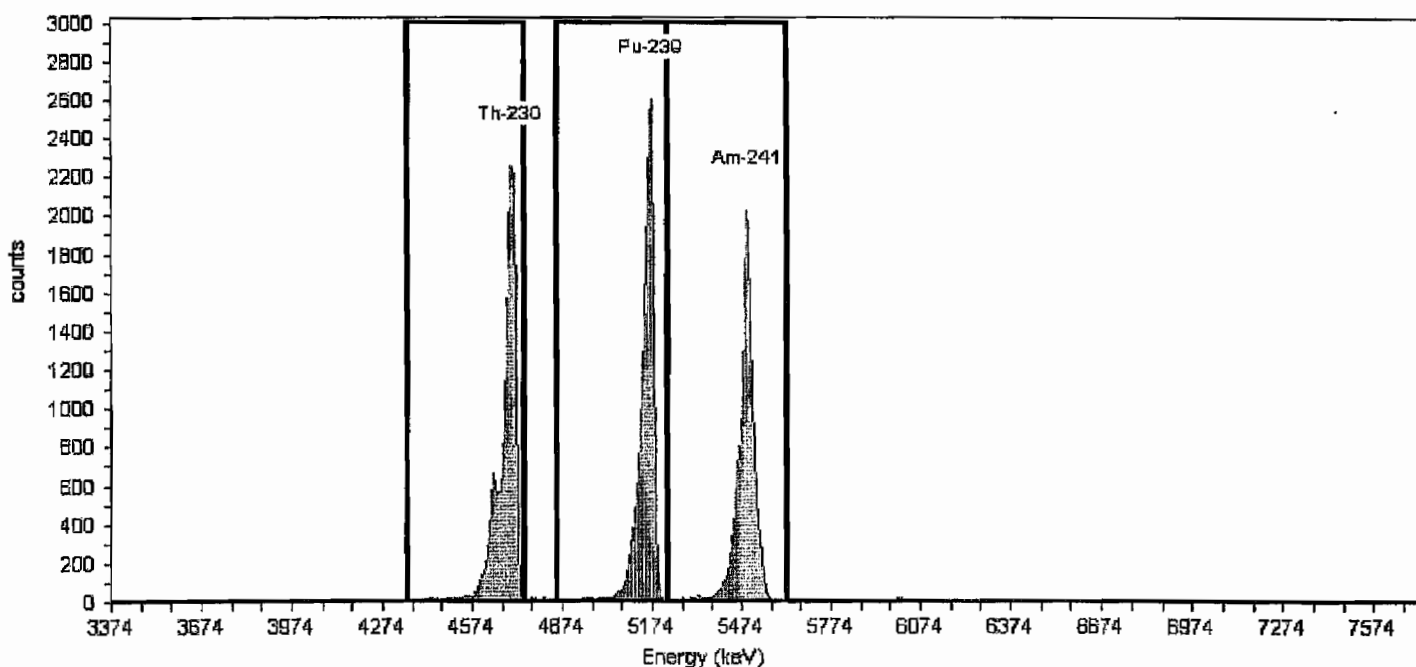
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV75, SN: 46-033P6
Acquisition Start Date: 3/31/2010 12:38:21PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.49% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5226 keV / Ch
Offset = 3,339.22 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	185	14,918.00	106.56
Pu-239	242	5.16	199	249	15,348.00	109.63
Am-241	285	5.49	249	303	13,865.00	99.04

Calibration

Name: March2010_AV76
Description:
Detector: AV76

Calibration Date: 3/31/2010 4:05:12PM
Analyst: 60040

Source Info

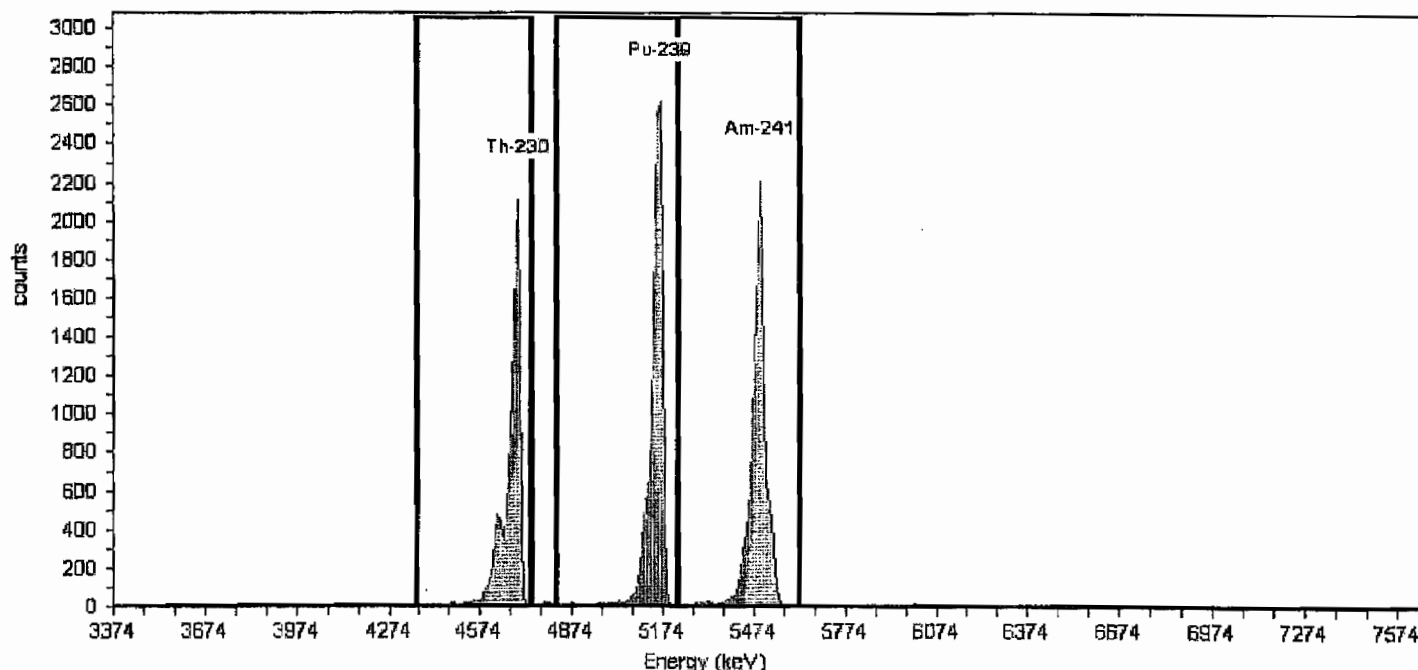
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV76 , SN: 49-155N6
Acquisition Start Date: 3/31/2010 12:38:33PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.86% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4576 keV / Ch
Offset = 3,359.49 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	133	184	12,053.00	86.09
Pu-239	241	5.16	195	249	14,474.00	103.39
Am-241	285	5.49	249	303	13,703.00	97.88

Calibration

Name: March2010_AV77
Description:
Detector: AV77

Calibration Date: 3/31/2010 4:05:41PM
Analyst: 60040

Source Info

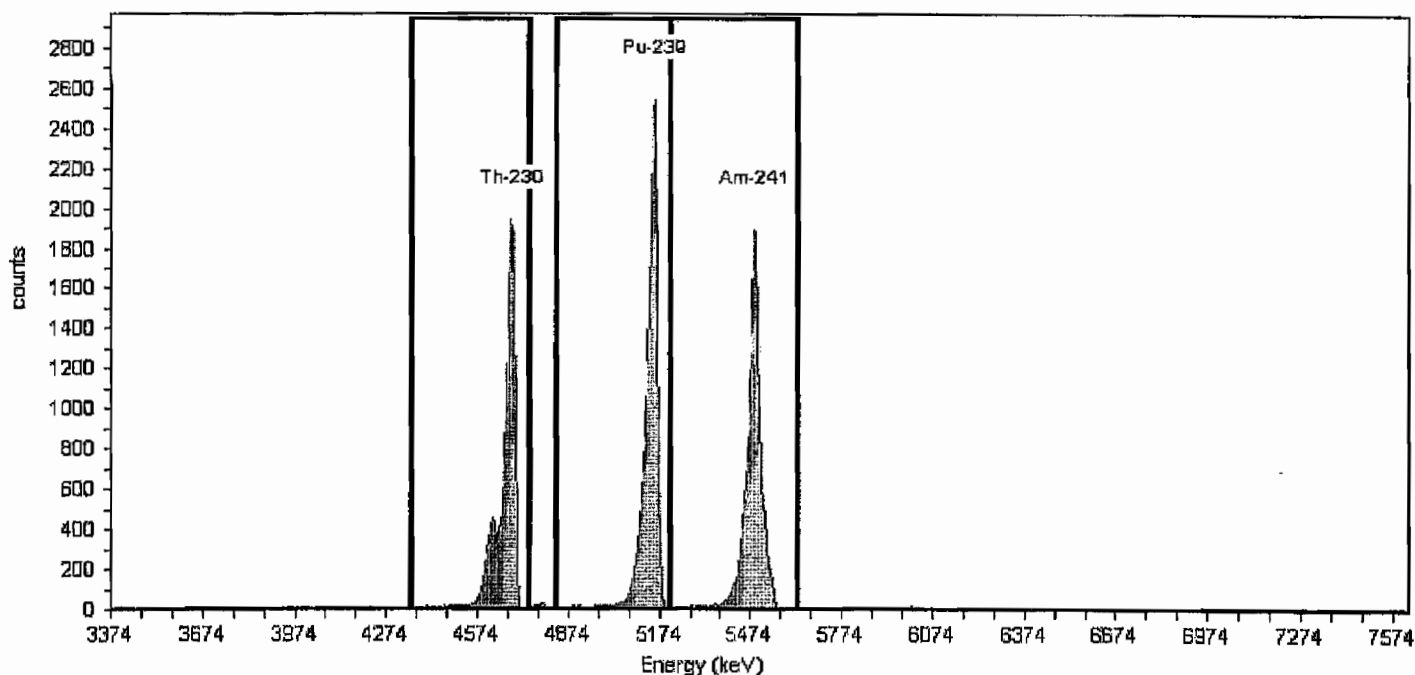
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV77, SN: 49-155N7
Acquisition Start Date: 3/31/2010 12:38:48PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.92% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	184	11,701.00	83.58
Pu-239	240	5.16	196	247	14,034.00	100.24
Am-241	284	5.49	247	303	12,604.00	90.03

Calibration

Name: March2010_AV78
Description:
Detector: AV78

Calibration Date: 3/31/2010 4:06:34PM
Analyst: 60040

Source Info

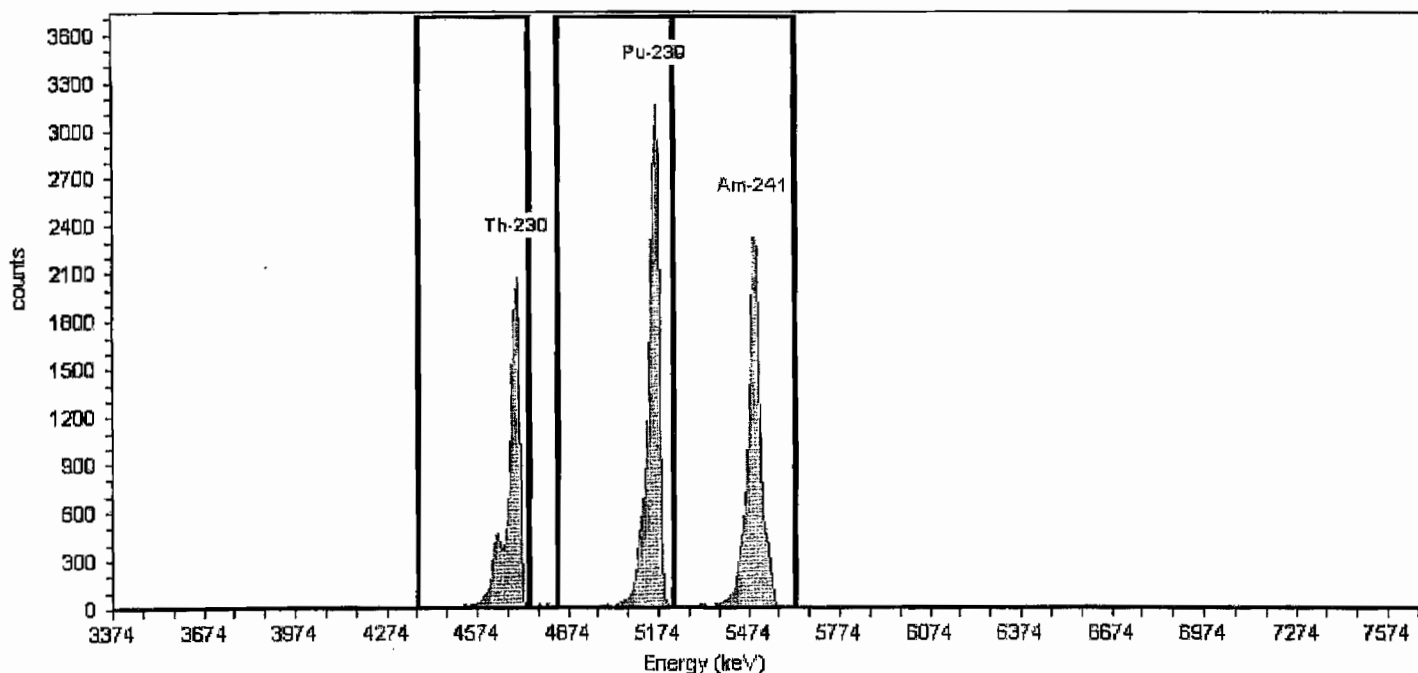
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV78, SN: 46-033FF4
Acquisition Start Date: 3/31/2010 12:39:07PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.92% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5313 keV / Ch
Offset = 3,339.68 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	135	184	11,742.00	83.87
Pu-239	241	5.16	197	249	17,546.00	125.33
Am-241	285	5.49	249	303	14,966.00	106.90

Calibration

Name: March2010_AV79
Description:
Detector: AV79

Calibration Date: 4/1/2010 9:14:37AM
Analyst: 60040

Source Info

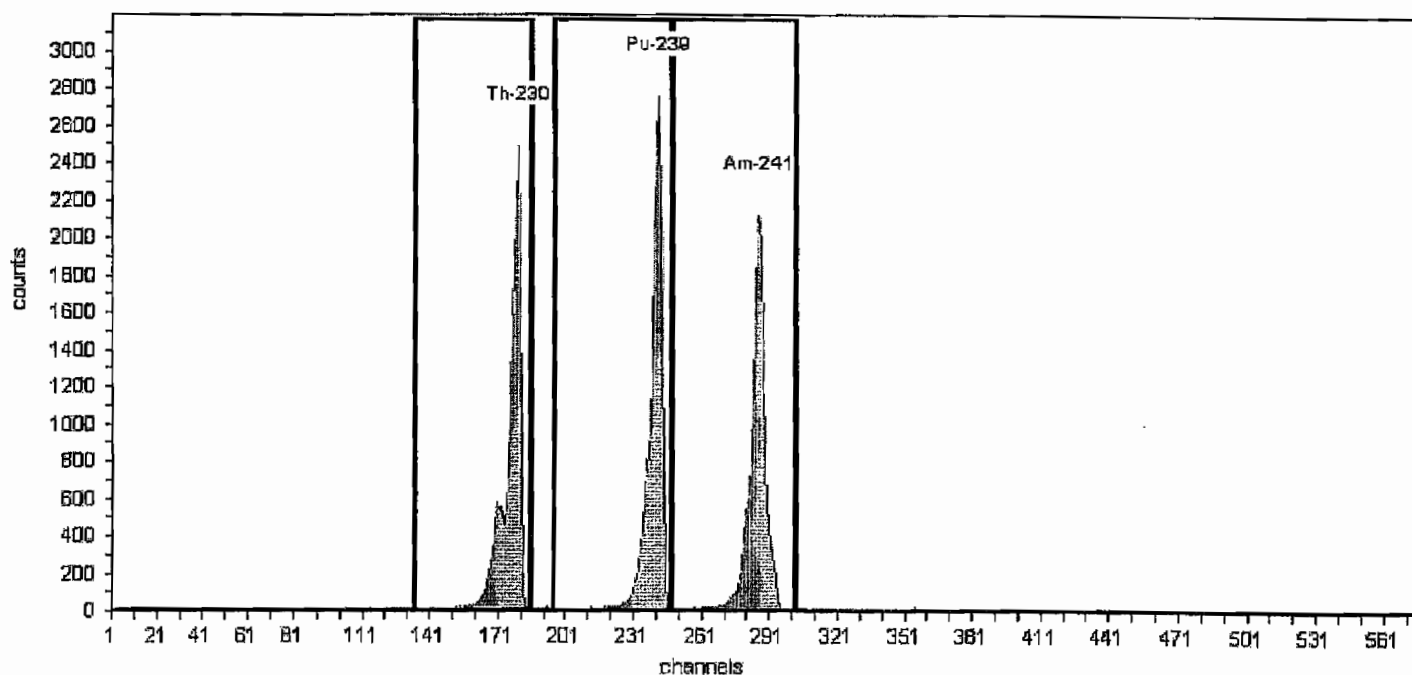
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV79 , SN: 46-033Q5
Acquisition Start Date: 4/1/2010 6:17:22AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 25.63% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4576 keV / Ch
Offset = 3,352.04 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

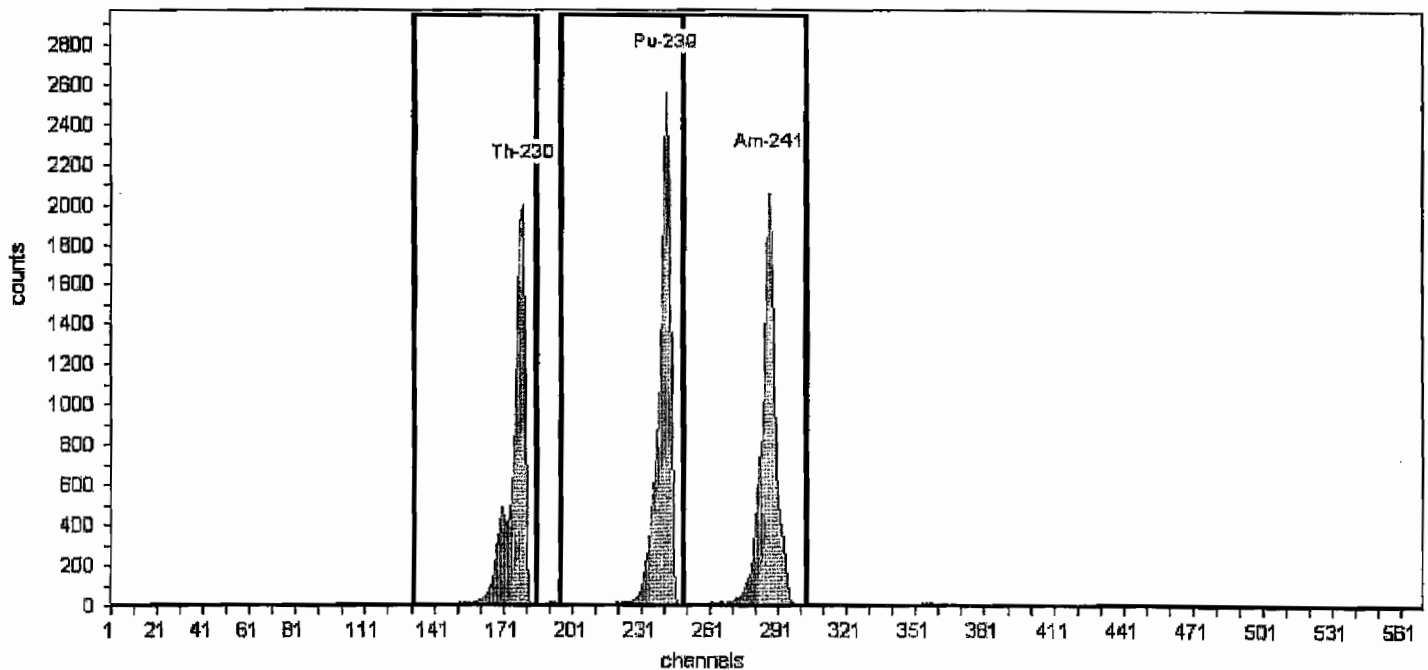
Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	134	185	14,883.00	106.31
Pu-239	242	5.16	195	248	15,450.00	110.36
Am-241	286	5.49	248	303	13,974.00	99.81

Calibration	
Name: March2010_AV80	Calibration Date: 4/1/2010 9:15:46AM
Description:	Analyst: 60040
Detector: AV80	

Source Info	
Certificate ID: 63507-334	Certification Date: 5/30/2002 12:00:00PM
Prepared by: Analytics	Description:

Acquisition	
Detector: AV80 , SN: 46-03305	Energy Calibration Equation:
Acquisition Start Date: 4/1/2010 6:17:35AM	Gain = 7.3931 keV / Ch
Live Time: 140.00 min.	Offset = 3,364.77 keV
Real Time: 140.03 min.	Quadratic = 0.0000 keV / Ch ²
Efficiency: 25.47% +/- 0.27% TPU(2 sigma)	



General Analysis	
Method: Manual (ROI)	Initial Calibration: No
Algorithm: Linear	Shelf: 1

Nuclide Activity Summary						
Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	185	11,840.00	84.57
Pu-239	242	5.16	196	249	14,248.00	101.77
Am-241	287	5.49	249	303	13,530.00	96.64

Calibration

Name: March2010_AV83
Description:
Detector: AV83

Calibration Date: 3/31/2010 4:07:53PM
Analyst: 60040

Source Info

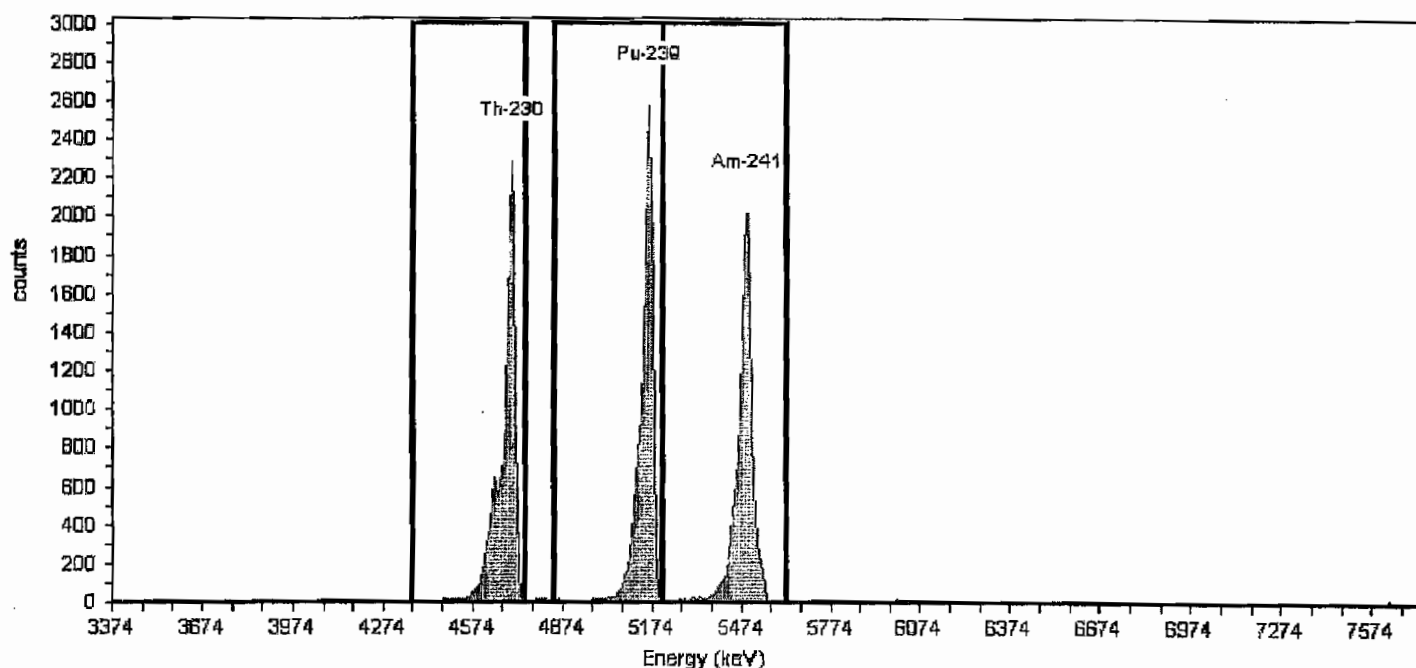
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV83, SN: 46-03306
Acquisition Start Date: 3/30/2010 8:40:35AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.33% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5313 keV / Ch
Offset = 3,339.68 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	134	185	14,874.00	106.24
Pu-239	241	5.16	198	247	15,265.00	109.04
Am-241	285	5.49	247	303	13,729.00	98.06

Calibration

Name: March2010_AV84
Description:
Detector: AV84

Calibration Date: 3/31/2010 4:10:18PM
Analyst: 60040

Source Info

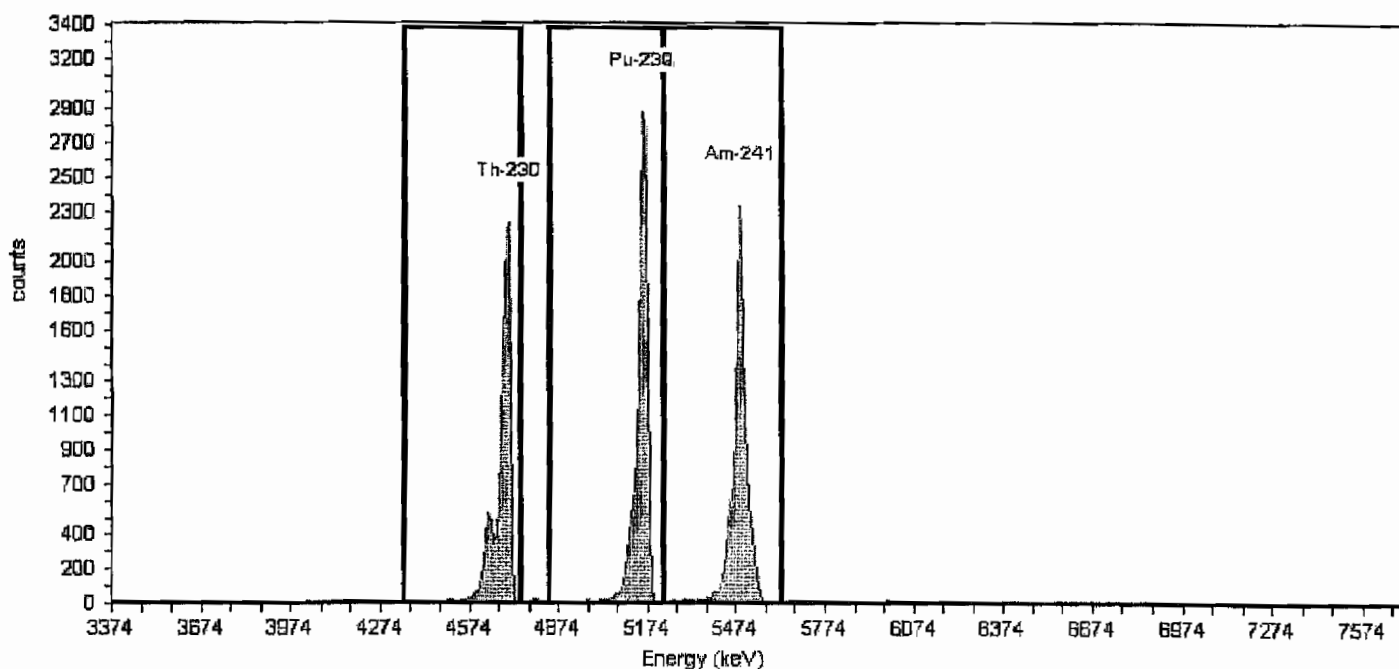
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV84, SN: 46-033FF3
Acquisition Start Date: 3/30/2010 8:40:51AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.33% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.6062 keV / Ch
Offset = 3,327.15 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	184	12,200.00	87.14
Pu-239	240	5.16	197	249	14,701.00	105.01
Am-241	284	5.49	249	303	14,105.00	100.75

Calibration

Name: March2010_AV85
Description:
Detector: AV85

Calibration Date: 3/31/2010 4:11:04PM
Analyst: 60040

Source Info

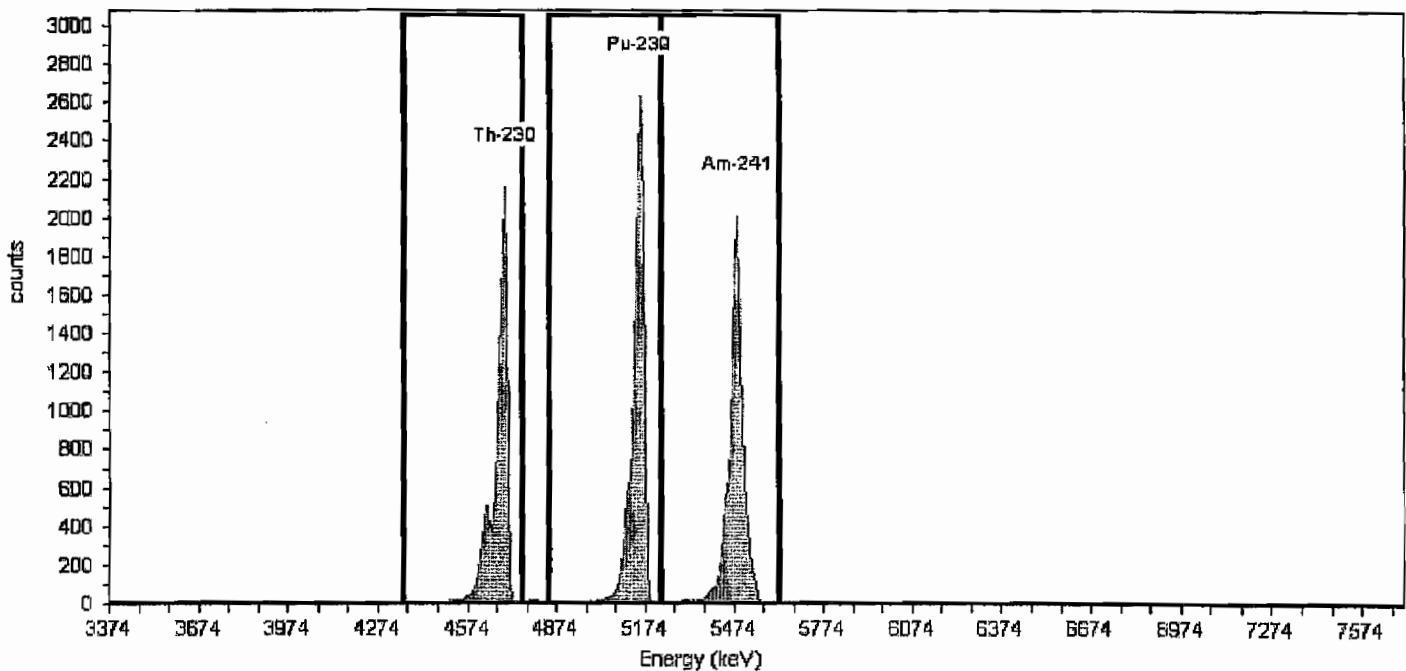
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV85, SN: 46-032EE7
Acquisition Start Date: 3/30/2010 8:41:04AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.85% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.5313 keV / Ch
Offset = 3,347.21 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	186	12,306.00	87.90
Pu-239	240	5.16	198	249	14,283.00	102.02
Am-241	284	5.49	249	303	13,087.00	93.48

Calibration

Name: March2010_AV86a
Description:
Detector: AV86

Calibration Date: 4/1/2010 5:51:58PM
Analyst: 60040

Source Info

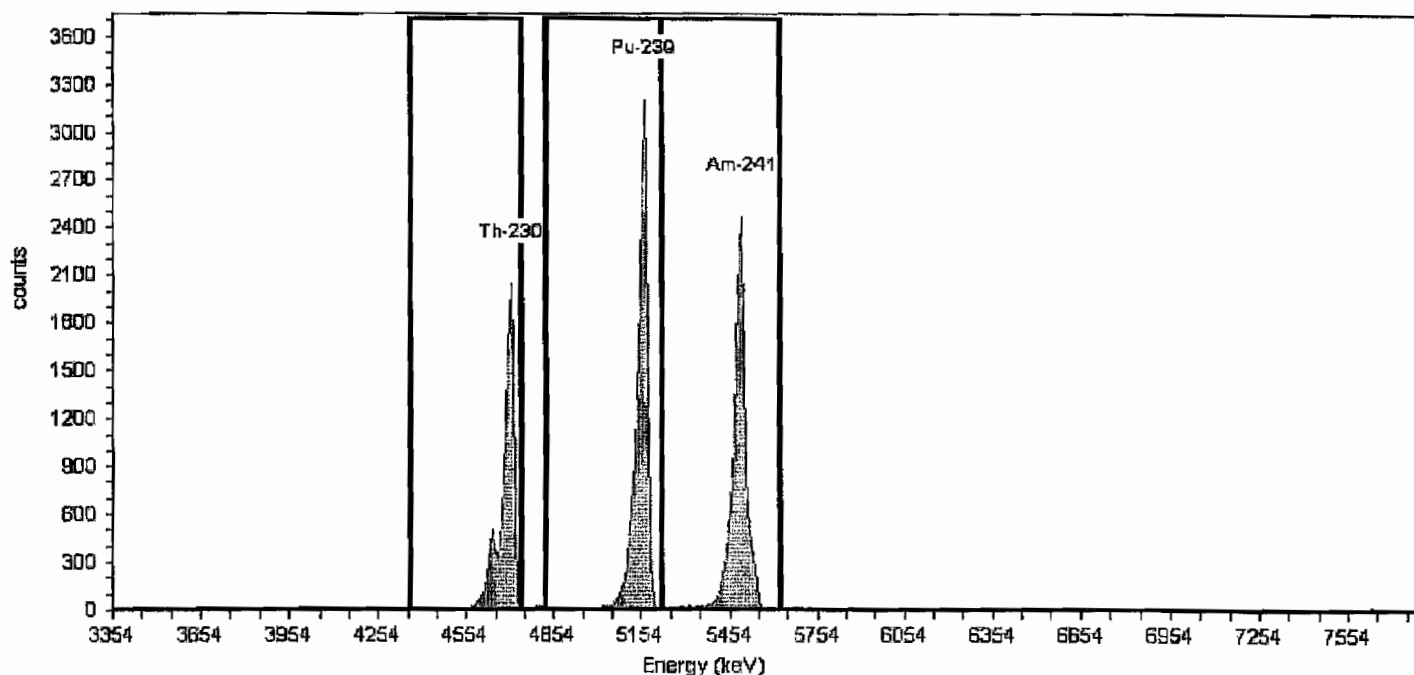
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV86, SN: 46-033Q6
Acquisition Start Date: 4/1/2010 3:10:54PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.55% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.6062 keV / Ch
Offset = 3,319.55 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	180	4.69	134	185	11,274.00	80.53
Pu-239	241	5.16	196	249	17,389.00	124.21
Am-241	285	5.49	249	303	14,988.00	107.06

Calibration

Name: March2010_AV87
Description:
Detector: AV87

Calibration Date: 3/31/2010 4:12:41PM
Analyst: 60040

Source Info

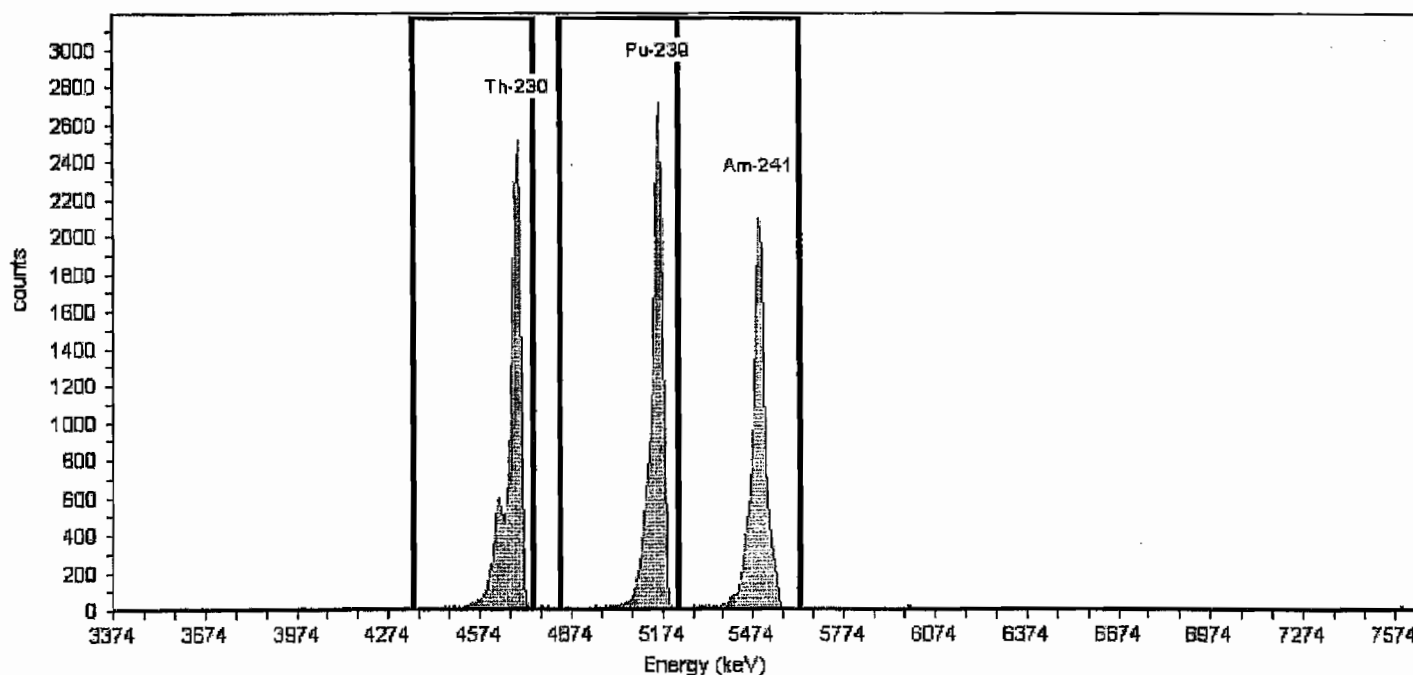
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV87, SN: 46-033FF5
Acquisition Start Date: 3/30/2010 4:36:26PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.85% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4576 keV / Ch
Offset = 3,359.49 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	185	15,269.00	109.06
Pu-239	241	5.16	197	249	15,654.00	111.81
Am-241	285	5.49	249	303	13,890.00	99.21

Calibration

Name: March2010_AV88
Description:
Detector: AV88

Calibration Date: 3/31/2010 4:13:27PM
Analyst: 60040

Source Info

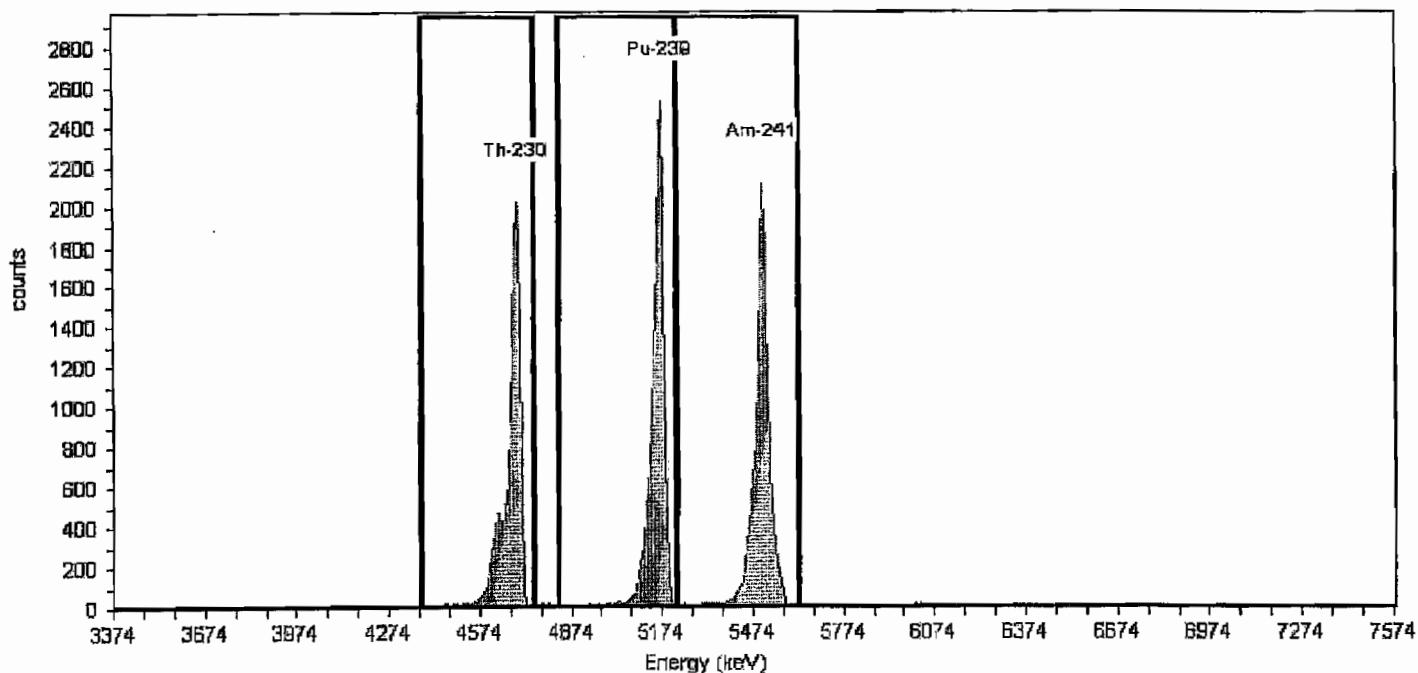
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV88, SN: 76-033FF1
Acquisition Start Date: 3/30/2010 4:36:36PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.12% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3221 keV / Ch
Offset = 3,383.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	135	185	12,228.00	87.34
Pu-239	242	5.16	196	249	14,484.00	103.46
Am-241	287	5.49	249	303	13,792.00	98.51

Calibration

Name: March2010_AV89
Description:
Detector: AV89

Calibration Date: 3/31/2010 4:14:10PM
Analyst: 60040

Source Info

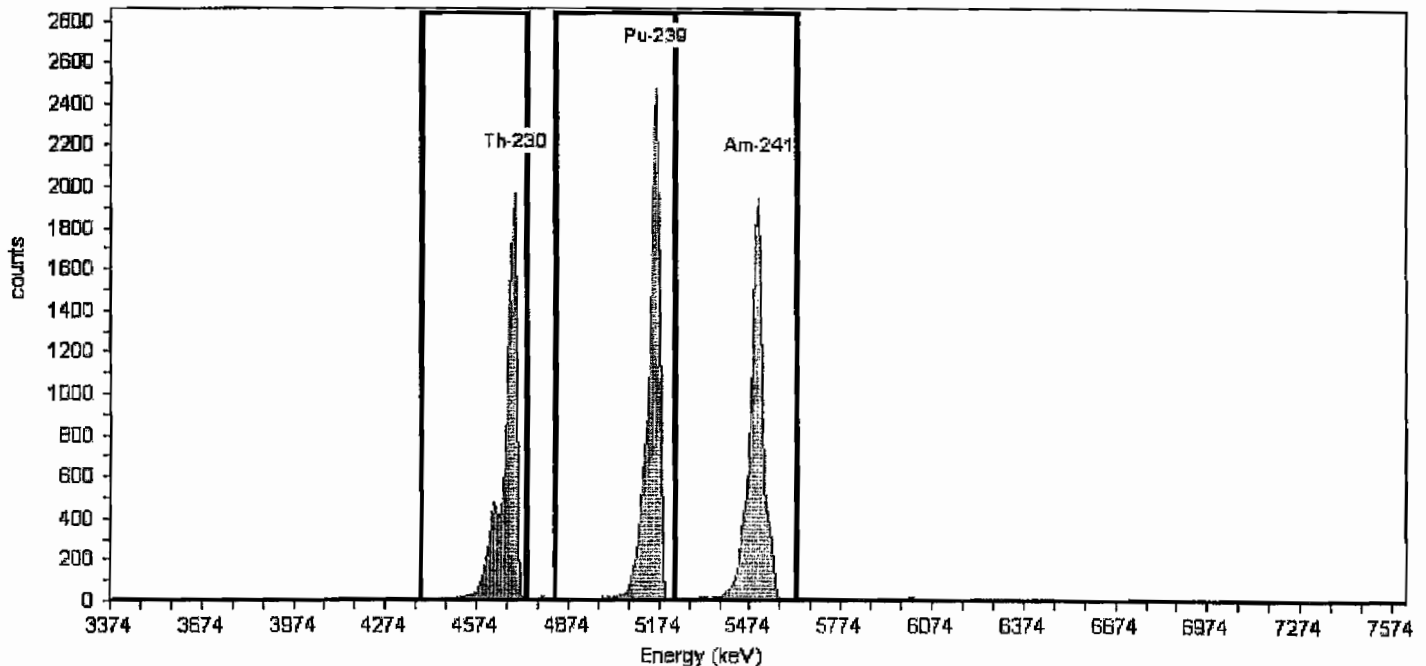
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV89, SN: 46-033P5
Acquisition Start Date: 3/30/2010 4:36:55PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.59% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,372.16 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	137	183	12,015.00	85.82
Pu-239	241	5.16	196	249	14,327.00	102.34
Am-241	286	5.49	249	303	12,918.00	92.27

Calibration

Name: March2010_AV90
Description:
Detector: AV90

Calibration Date: 3/31/2010 4:15:09PM
Analyst: 60040

Source Info

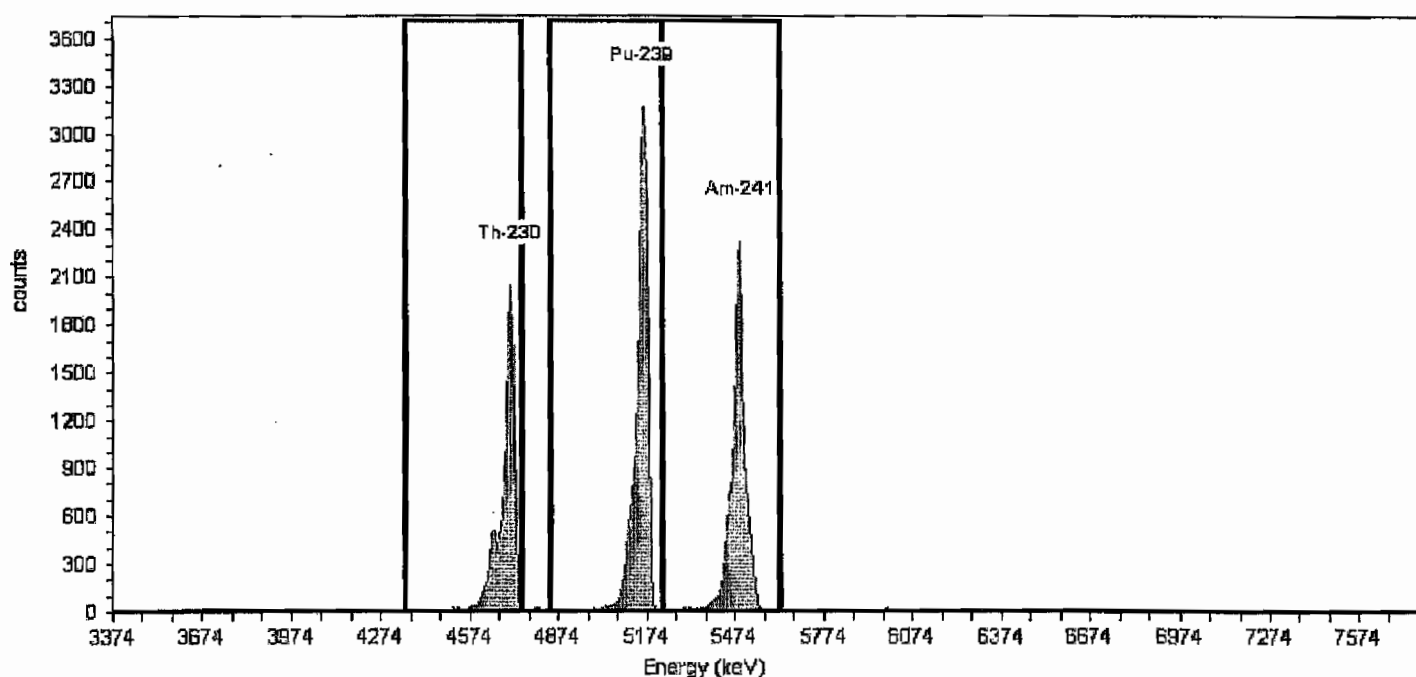
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV90 , SN: 46-033Q1
Acquisition Start Date: 3/30/2010 4:37:08PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.58% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.6062 keV / Ch
Offset = 3,319.55 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	180	4.69	132	185	11,975.00	85.54
Pu-239	241	5.16	198	249	18,064.00	129.03
Am-241	285	5.49	249	303	15,307.00	109.34

Calibration

Name: March2010_AV92
Description:
Detector: AV92

Calibration Date: 4/1/2010 4:49:59AM
Analyst: 60040

Source Info

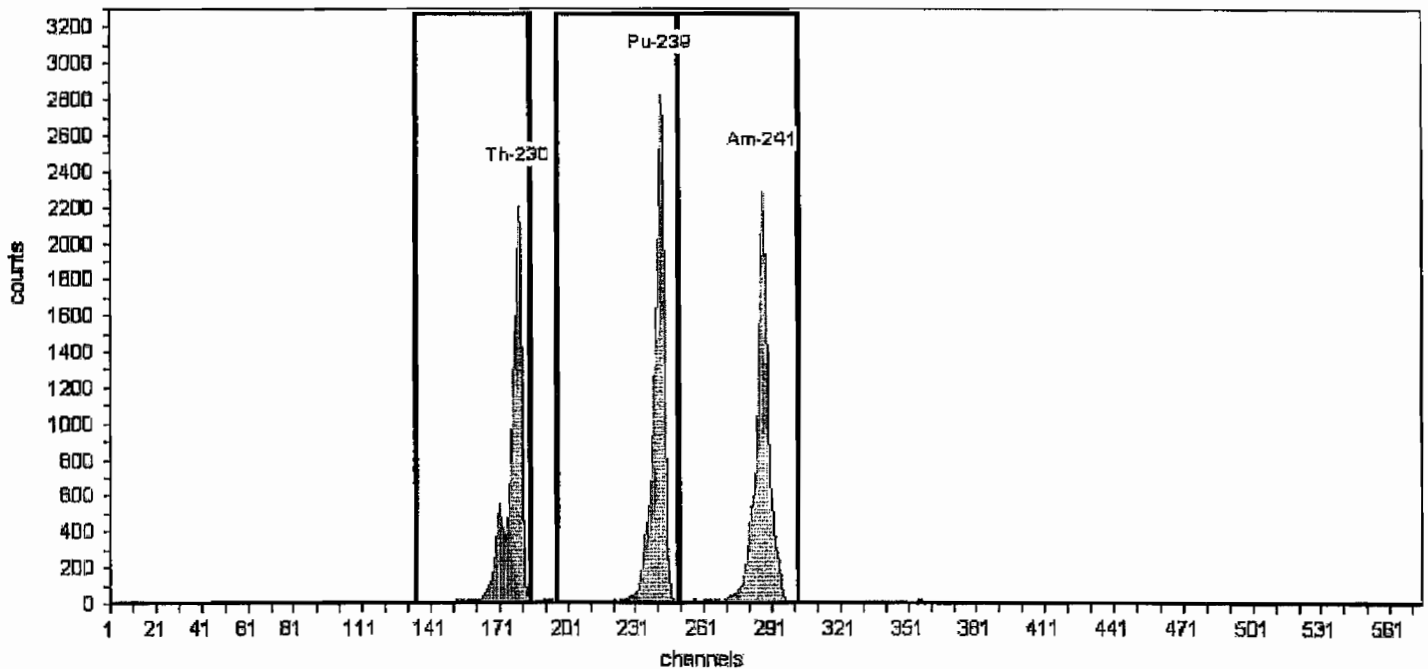
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV92, SN: 46-033FF2
Acquisition Start Date: 3/31/2010 10:06:24PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.45% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	134	184	12,475.00	89.11
Pu-239	242	5.16	196	250	14,666.00	104.76
Am-241	287	5.49	250	303	13,839.00	98.85

Calibration

Name: March2010_AV93
Description:
Detector: AV93

Calibration Date: 4/1/2010 4:50:02AM
Analyst: 60040

Source Info

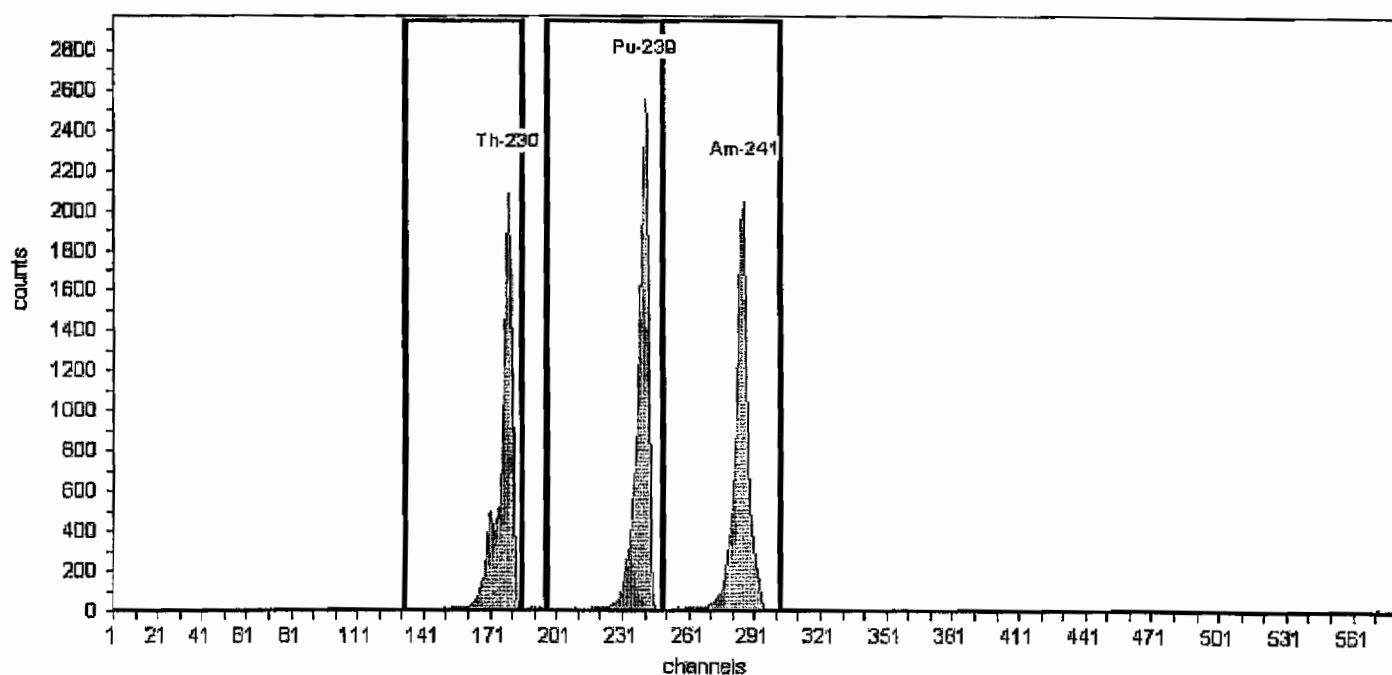
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV93, SN: 46-033Q2
Acquisition Start Date: 3/31/2010 10:06:37PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.45% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	185	11,883.00	84.88
Pu-239	241	5.16	196	249	14,212.00	101.51
Am-241	286	5.49	249	303	12,970.00	92.64

Calibration

Name: March2010_AV94
Description:
Detector: AV94

Calibration Date: 4/1/2010 4:50:05AM
Analyst: 60040

Source Info

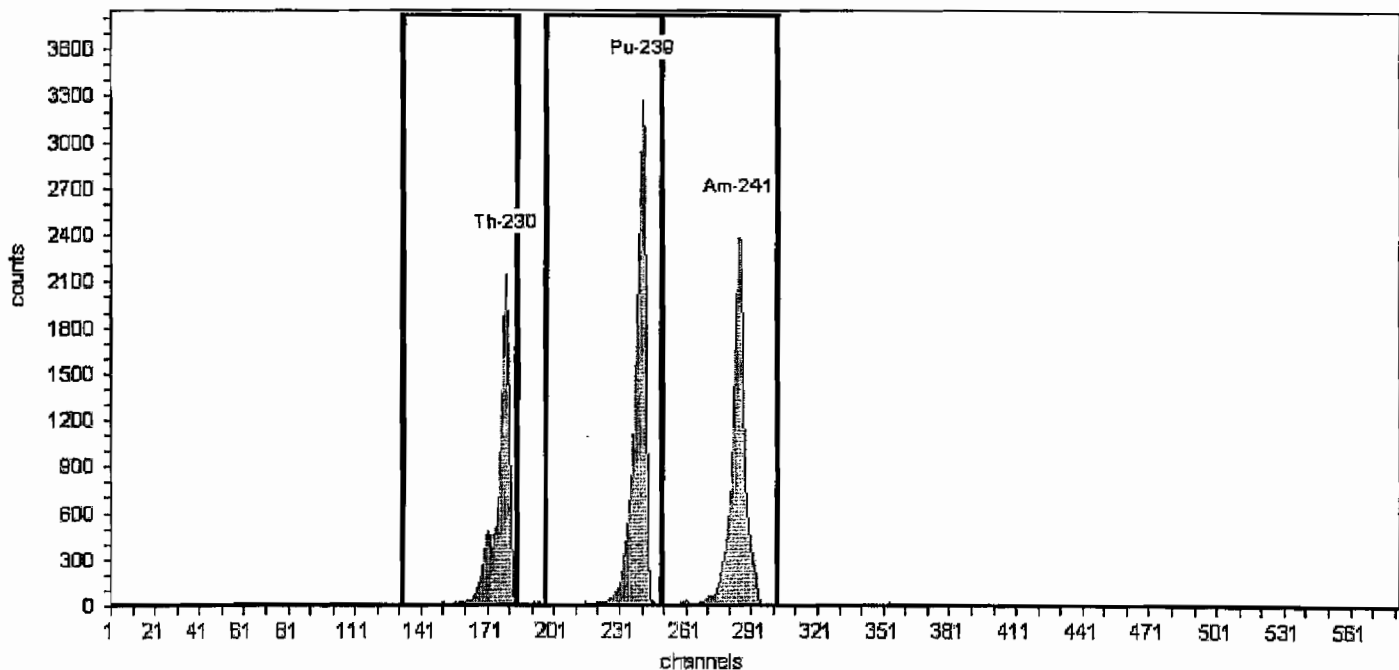
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV94 , SN: 46-032EE6
Acquisition Start Date: 3/31/2010 10:06:55PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.14% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	132	184	11,682.00	83.44
Pu-239	241	5.16	197	250	17,706.00	126.47
Am-241	285	5.49	250	303	15,183.00	108.45

Calibration

Name: March2010_AV95
Description:
Detector: AV95

Calibration Date: 3/31/2010 4:15:59PM
Analyst: 60040

Source Info

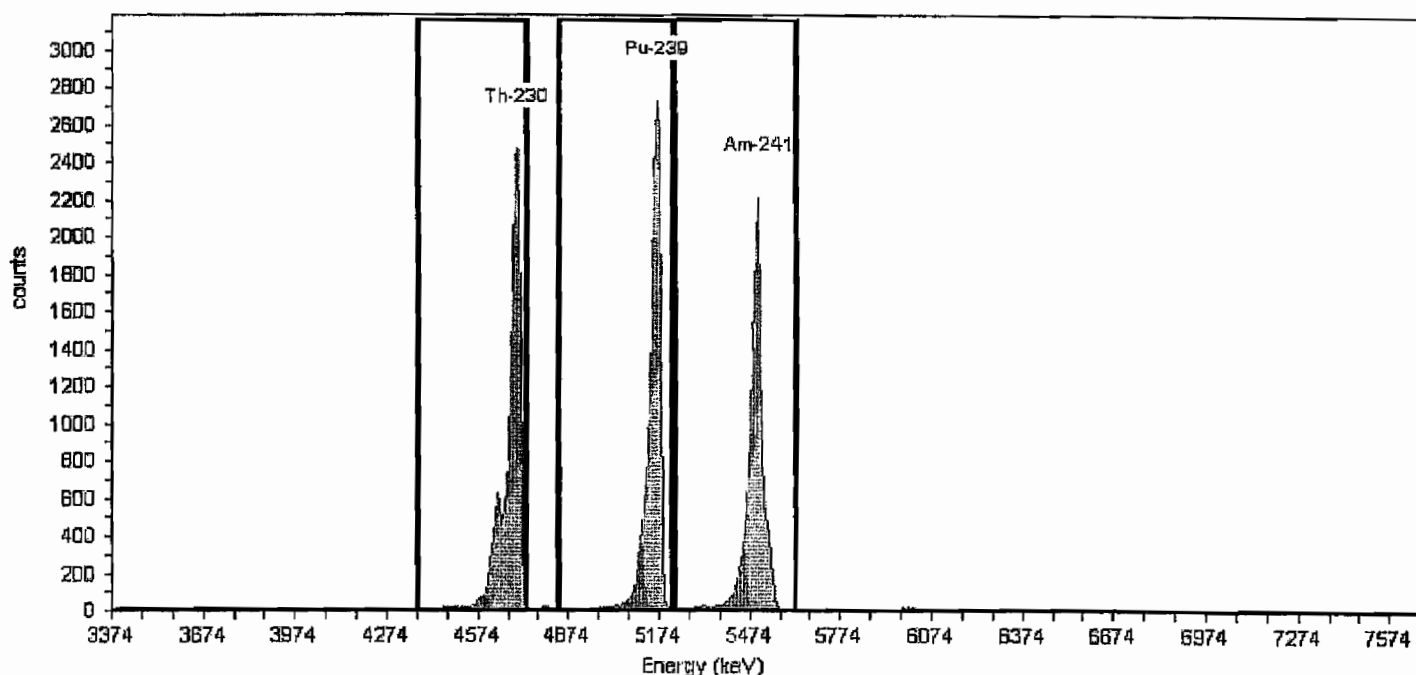
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV95, SN: 46-033P4
Acquisition Start Date: 3/31/2010 7:23:35AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.55% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,352.74 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	179	4.69	135	183	15,079.00	107.71
Pu-239	241	5.16	197	248	15,411.00	110.08
Am-241	286	5.49	249	303	13,795.00	98.54

Calibration

Name: March2010_AV96
Description:
Detector: AV96

Calibration Date: 3/31/2010 4:53:14PM
Analyst: 60040

Source Info

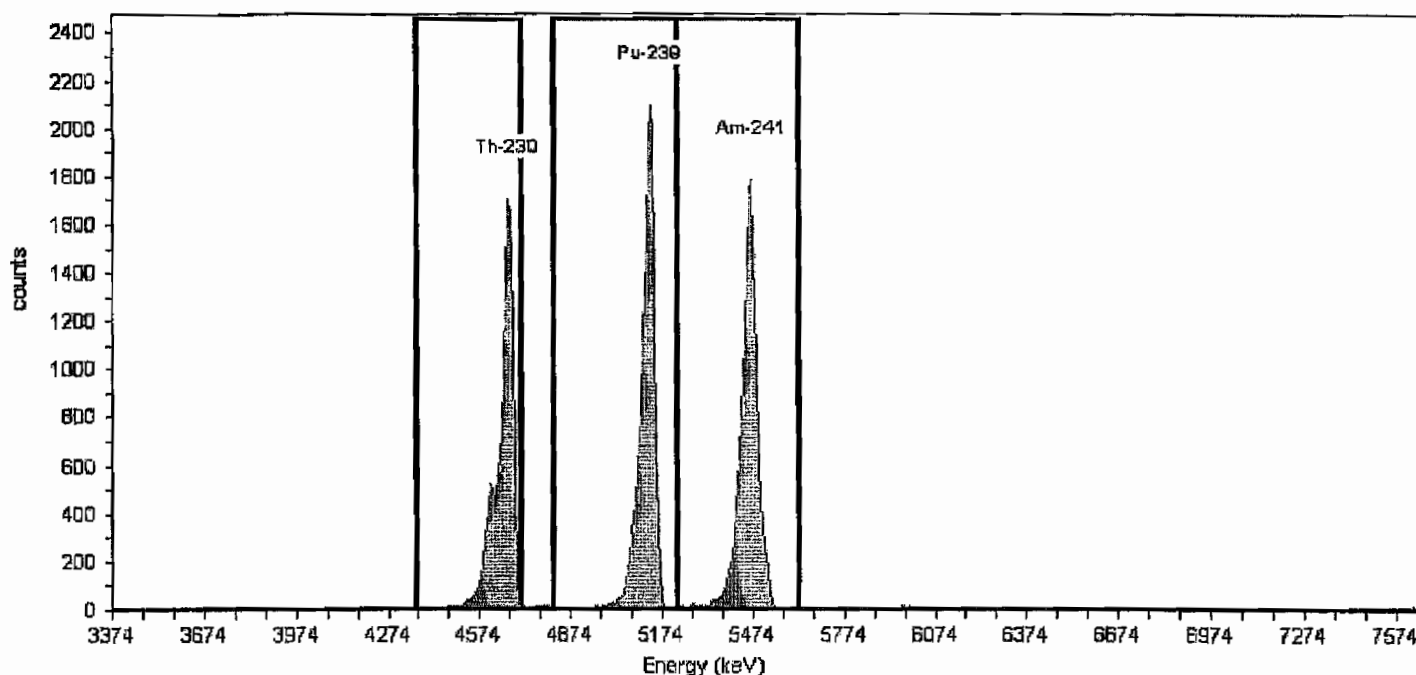
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV96 , SN: 46-033P1
Acquisition Start Date: 3/31/2010 7:23:46AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.15% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,401.73 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	174	4.69	133	180	12,195.00	87.11
Pu-239	237	5.16	194	249	14,376.00	102.69
Am-241	282	5.49	249	303	14,041.00	100.29

Calibration

Name: March2010_AV97
Description:
Detector: AV97

Calibration Date: 3/31/2010 4:54:05PM
Analyst: 60040

Source Info

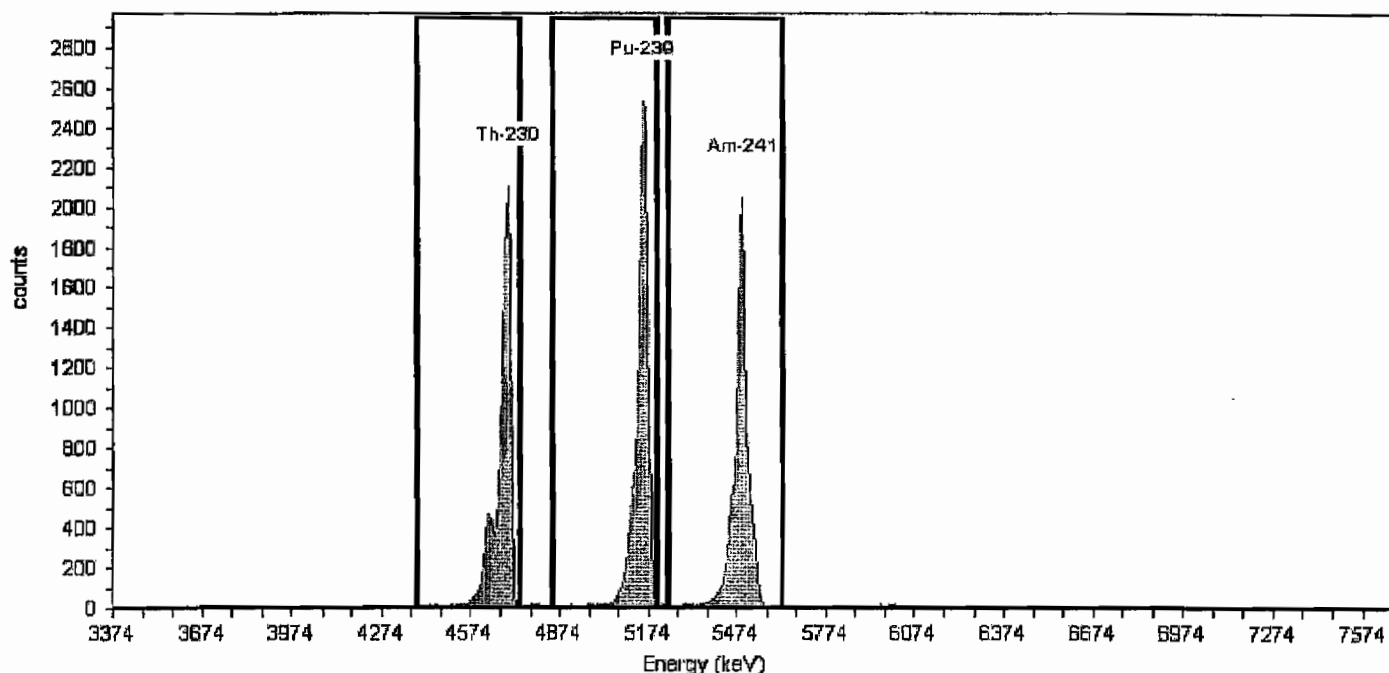
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV97, SN: 76-03393
Acquisition Start Date: 3/31/2010 7:24:00AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.22% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,360.21 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	137	184	11,915.00	85.11
Pu-239	240	5.16	198	246	14,167.00	101.19
Am-241	285	5.49	251	303	12,967.00	92.62

Calibration

Name: March2010_AV98
Description:
Detector: AV98

Calibration Date: 3/31/2010 4:54:52PM
Analyst: 60040

Source Info

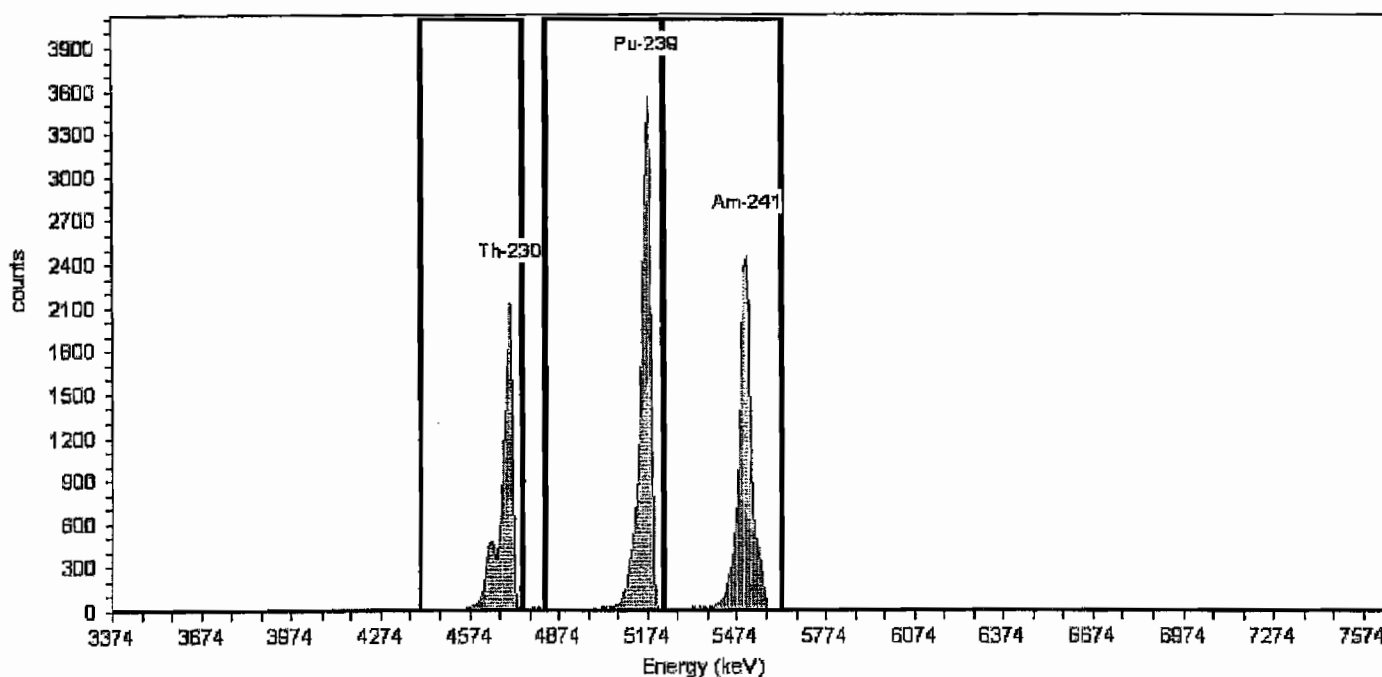
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV98, SN: 46-033Q3
Acquisition Start Date: 3/31/2010 7:24:15AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.76% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,345.28 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	180	4.69	139	185	12,030.00	85.93
Pu-239	242	5.16	196	249	17,877.00	127.69
Am-241	287	5.49	249	303	15,704.00	112.17

Name: Mar2010_AV99
Description:
Detector: AV99

Calibration

Calibration Date: 3/31/2010 4:55:38PM
Analyst: 60040

Certificate ID: 63506-334
Prepared by: Analytics

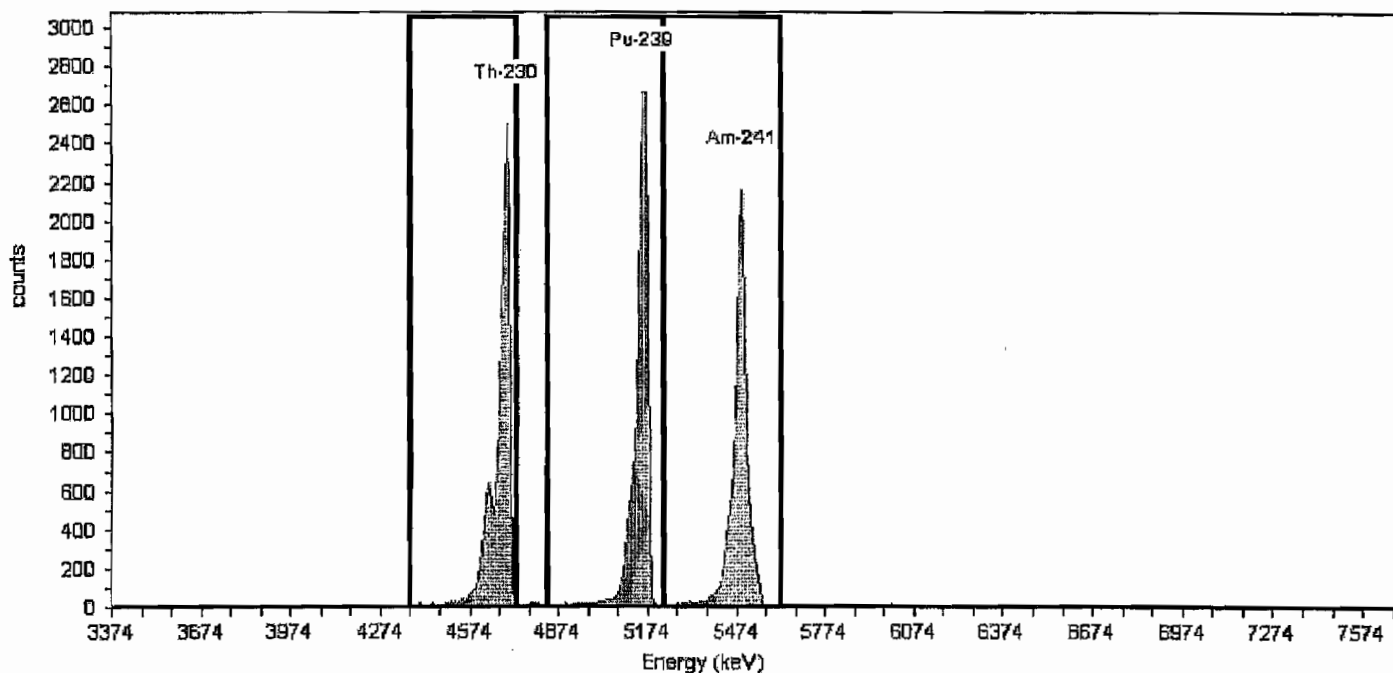
Source Info

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV99, SN: 49-155DD3
Acquisition Start Date: 3/27/2010 3:15:11PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 25.67% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,360.21 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	134	183	15,132.00	108.09
Pu-239	240	5.16	196	249	15,639.00	111.71
Am-241	285	5.49	249	303	13,753.00	98.24

Calibration

Name: March2010_AV100a
Description:
Detector: AV100

Calibration Date: 4/2/2010 6:19:58AM
Analyst: 60040

Source Info

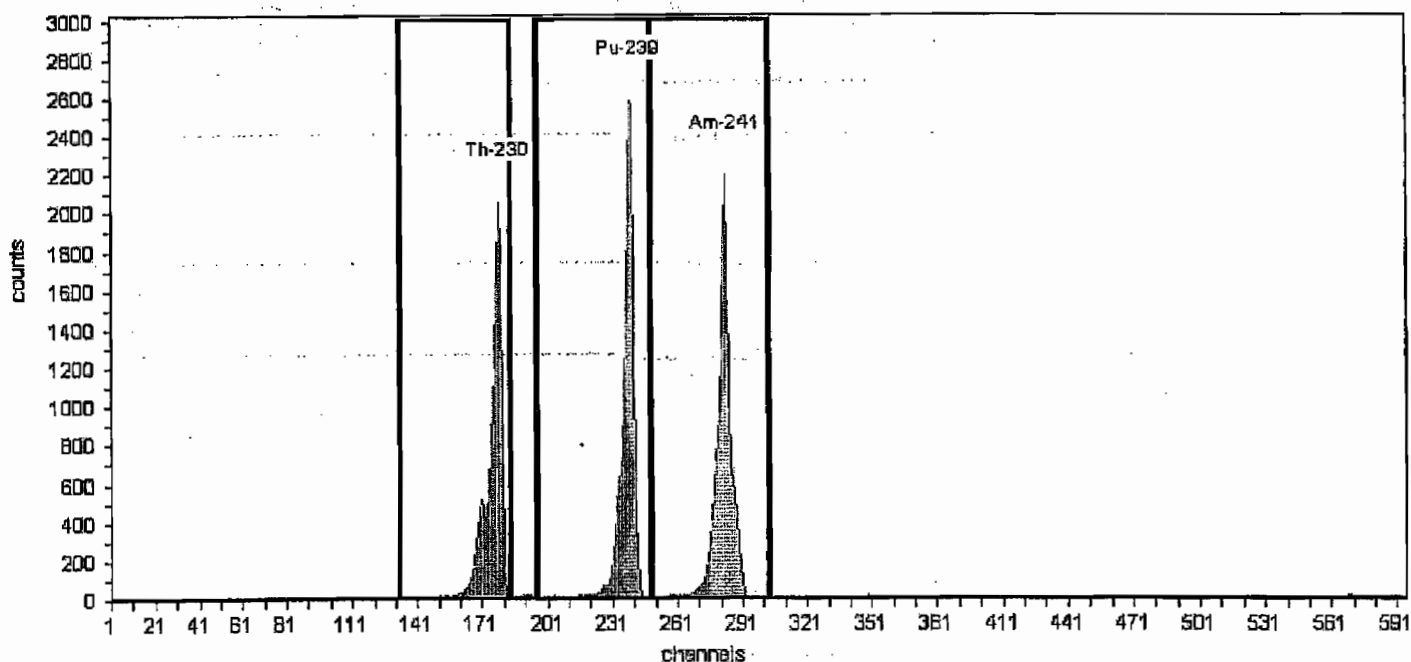
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV100 , SN: 49-037W4
Acquisition Start Date: 4/1/2010 5:54:50PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.06% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	183	12,091.00	86.36
Pu-239	239	5.16	196	249	14,506.00	103.61
Am-241	283	5.49	249	303	13,934.00	99.53

Calibration

Name: Mar2010_AV101
Description:
Detector: AV101

Calibration Date: 3/31/2010 4:57:00PM
Analyst: 60040

Source Info

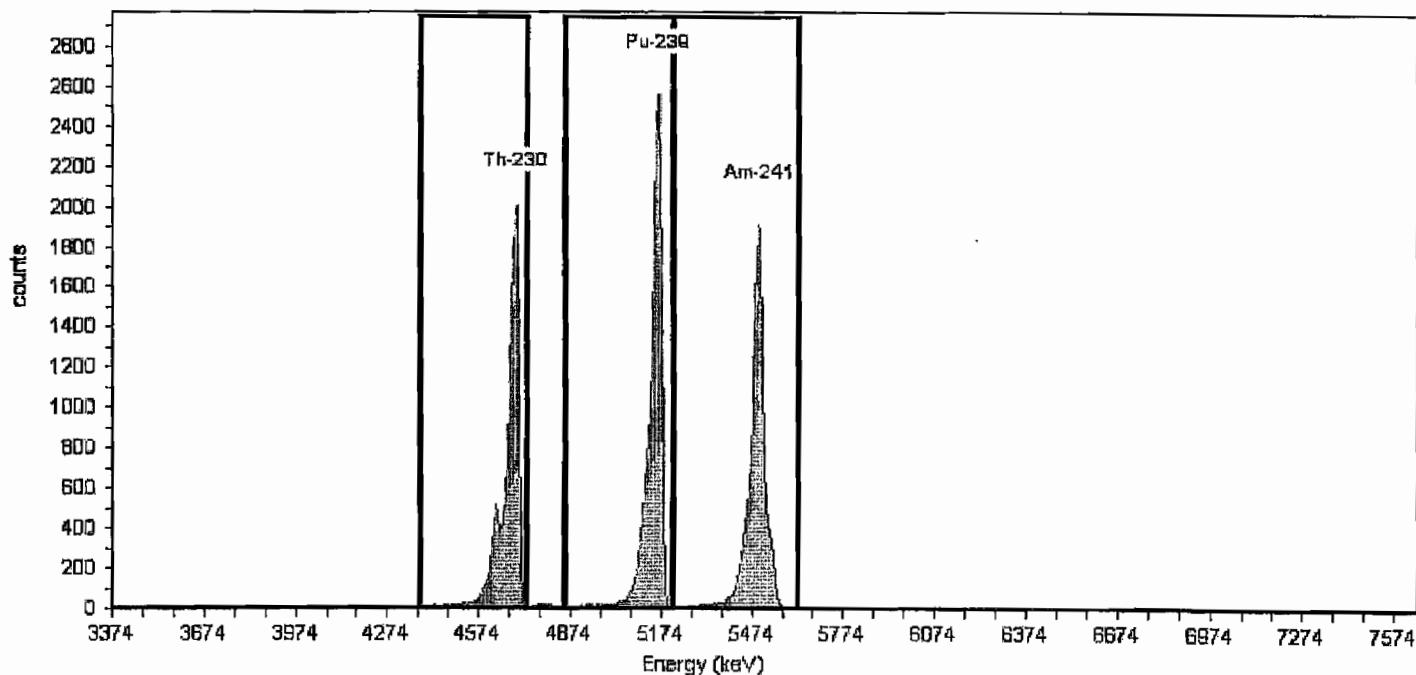
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV101, SN: 49-037X6
Acquisition Start Date: 3/27/2010 3:15:39PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.11% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3850 keV / Ch
Offset = 3,378.99 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	135	182	12,449.00	88.92
Pu-239	241	5.16	199	247	14,444.00	103.17
Am-241	285	5.49	247	303	13,166.00	94.04

Calibration

Name: Mar2010_AV102
Description:
Detector: AV102

Calibration Date: 3/31/2010 4:58:26PM
Analyst: 60040

Source Info

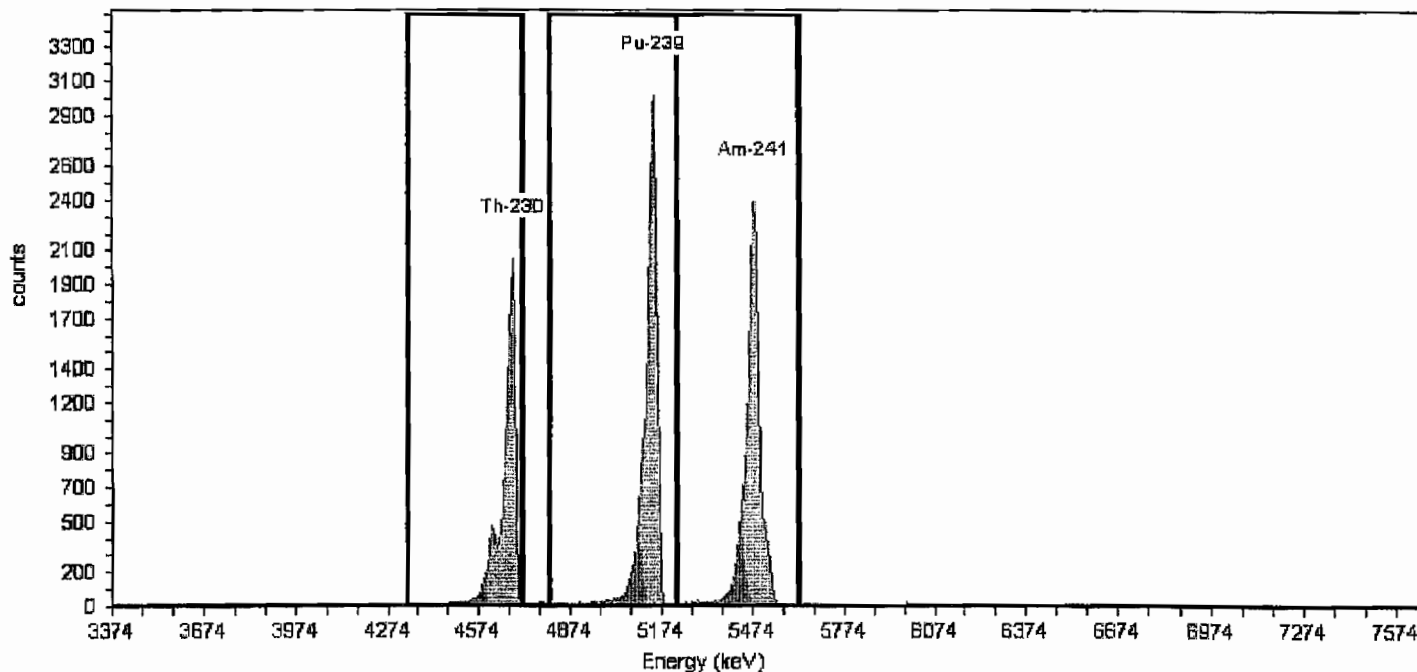
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV102, SN: 49-037X1
Acquisition Start Date: 3/27/2010 3:15:56PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.32% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4576 keV / Ch
Offset = 3,374.41 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	176	4.69	130	181	11,635.00	83.11
Pu-239	239	5.16	192	249	17,732.00	126.66
Am-241	283	5.49	249	303	15,545.00	111.04

Name: Mar2010_AV103
Description:
Detector: AV103

Calibration

Calibration Date: 3/31/2010 4:59:12PM
Analyst: 60040

Certificate ID: 63506-334
Prepared by: Analytics

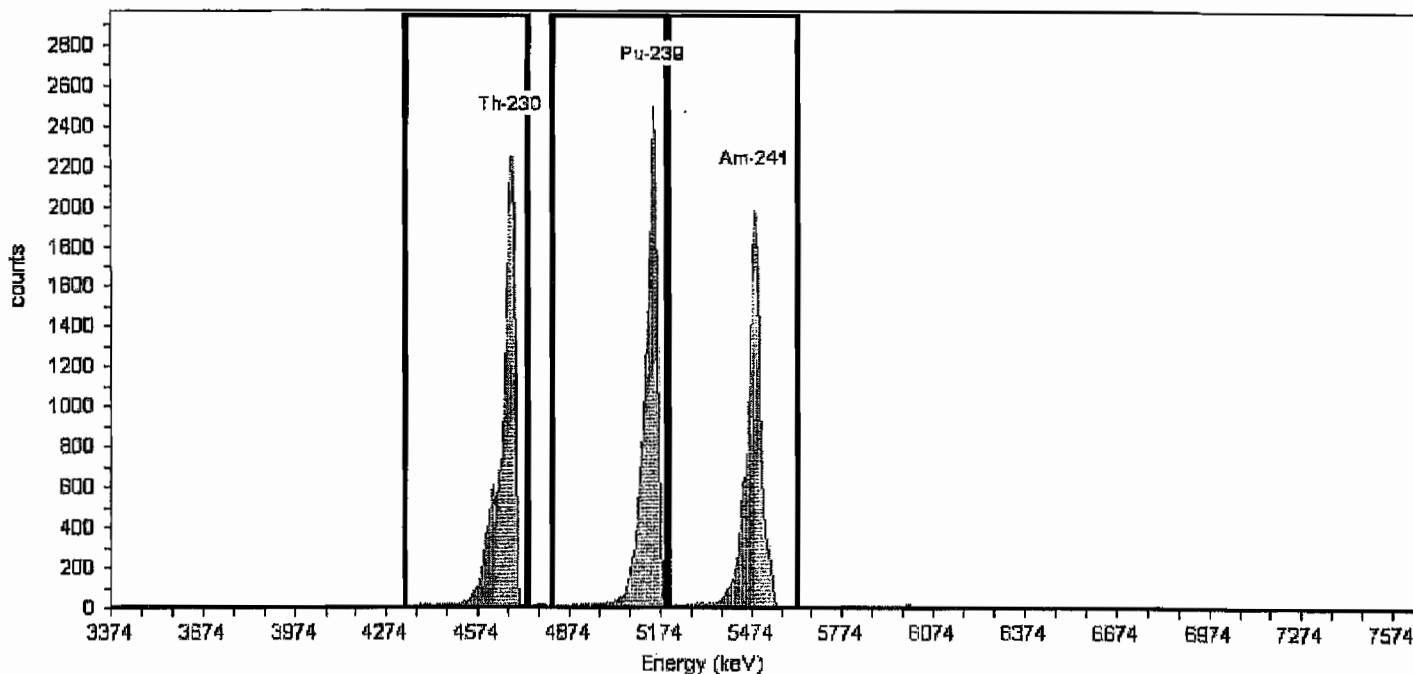
Source Info

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV103, SN: 49-037F3
Acquisition Start Date: 3/27/2010 5:46:39PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.63% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,386.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	176	4.69	129	183	15,109.00	107.92
Pu-239	239	5.16	194	245	15,499.00	110.71
Am-241	284	5.49	246	303	13,809.00	98.64

Calibration

Name: Mar2010_AV104
Description:
Detector: AV104

Calibration Date: 3/31/2010 4:59:48PM
Analyst: 60040

Source Info

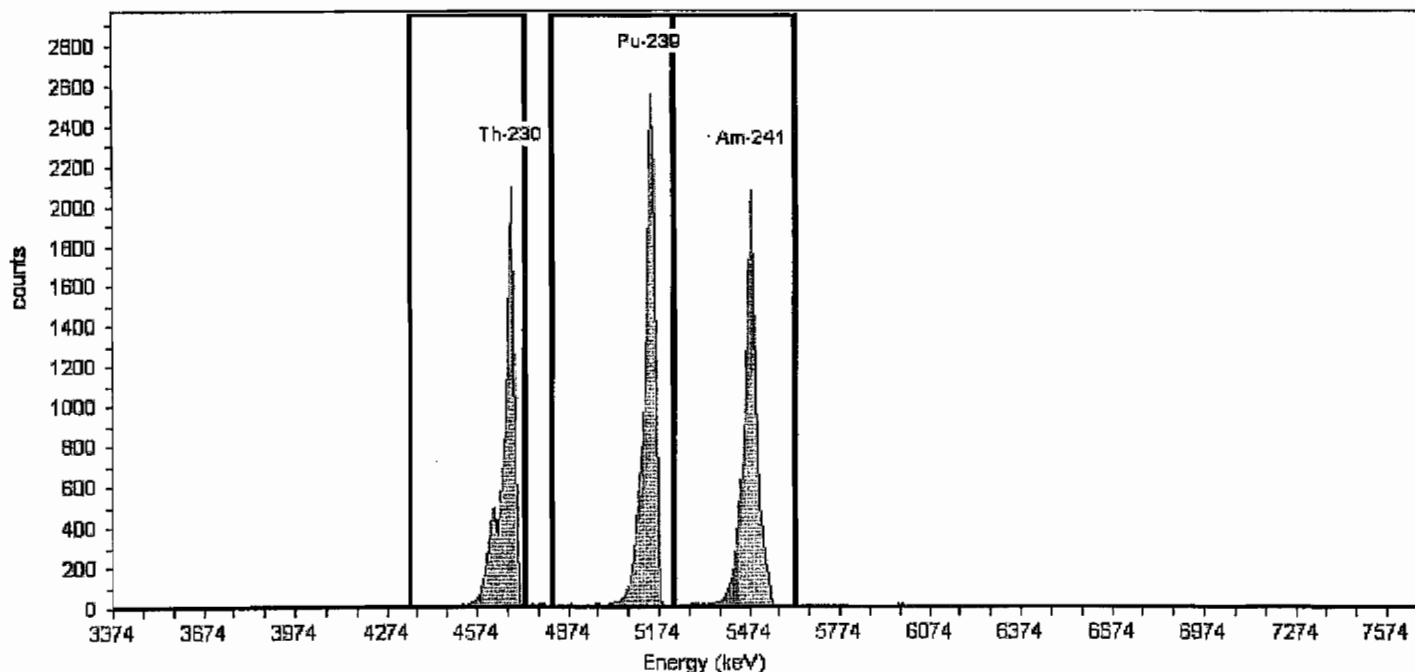
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV104, SN: 49-037E5
Acquisition Start Date: 3/27/2010 5:46:40PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.57% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,367.67 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	183	11,892.00	84.94
Pu-239	239	5.16	195	249	14,360.00	102.57
Am-241	284	5.49	249	303	13,515.00	96.54

Calibration

Name: Mar2010_AV105
Description:
Detector: AV105

Calibration Date: 3/31/2010 5:01:07PM
Analyst: 60040

Source Info

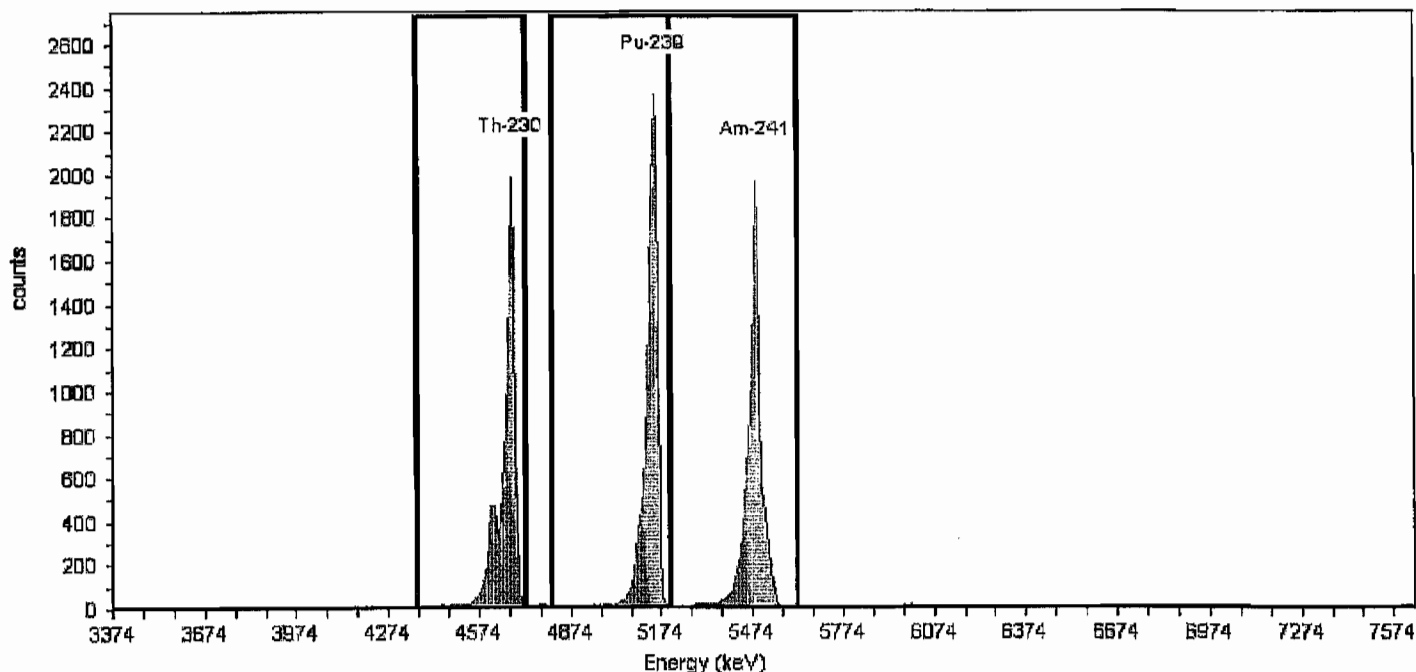
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV105, SN: 49-037F1
Acquisition Start Date: 3/27/2010 5:46:41PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.00% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,386.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	176	4.69	134	182	11,343.00	81.02
Pu-239	239	5.16	194	246	13,316.00	95.11
Am-241	284	5.49	246	303	12,262.00	87.59

Name: Mar2010_AV106
Description:
Detector: AV106

Calibration

Calibration Date: 3/31/2010 5:01:59PM
Analyst: 60040

Certificate ID: 63509A-334
Prepared by: Analytics

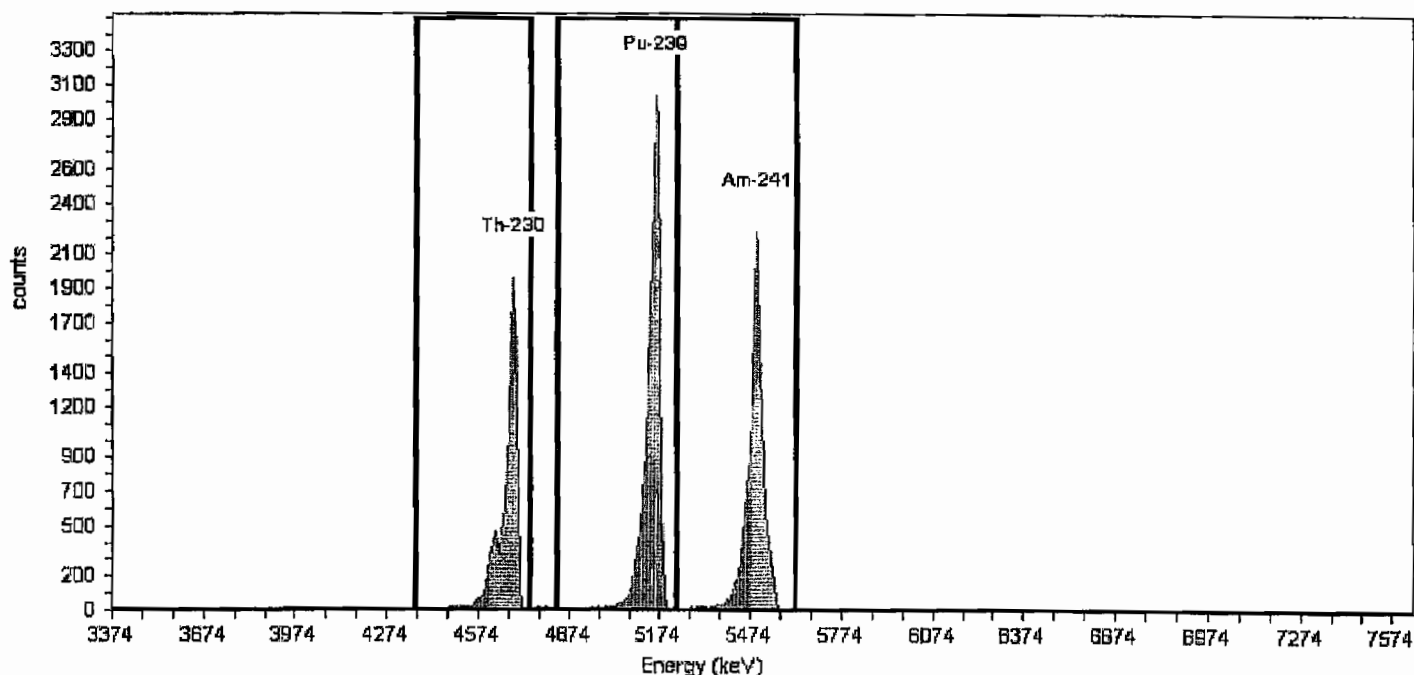
Source Info

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV106 , SN: 49-037F6
Acquisition Start Date: 3/27/2010 5:48:16PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.29% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,379.56 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	134	184	11,572.00	82.66
Pu-239	240	5.16	196	249	17,913.00	127.95
Am-241	285	5.49	249	303	15,336.00	109.54

Calibration

Name: Mar2010_AV107
Description:
Detector: AV107

Calibration Date: 3/31/2010 5:02:51PM
Analyst: 60040

Source Info

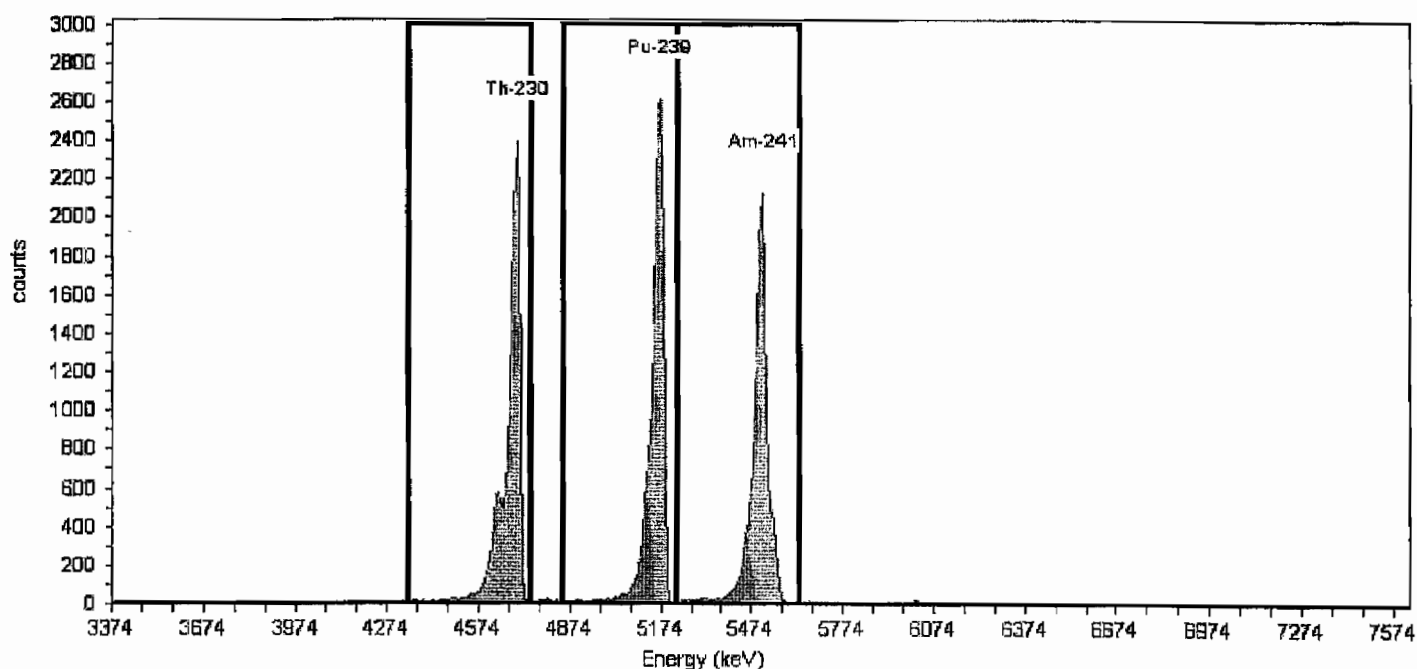
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV107, SN: 49-037X7
Acquisition Start Date: 3/27/2010 9:15:10PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.13% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3221 keV / Ch
Offset = 3,383.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	130	184	15,323.00	109.45
Pu-239	242	5.16	199	249	15,728.00	112.34
Am-241	287	5.49	249	303	14,207.00	101.48

Calibration

Name: Mar2010_AV108
Description:
Detector: AV108

Calibration Date: 3/31/2010 5:03:36PM
Analyst: 60040

Source Info

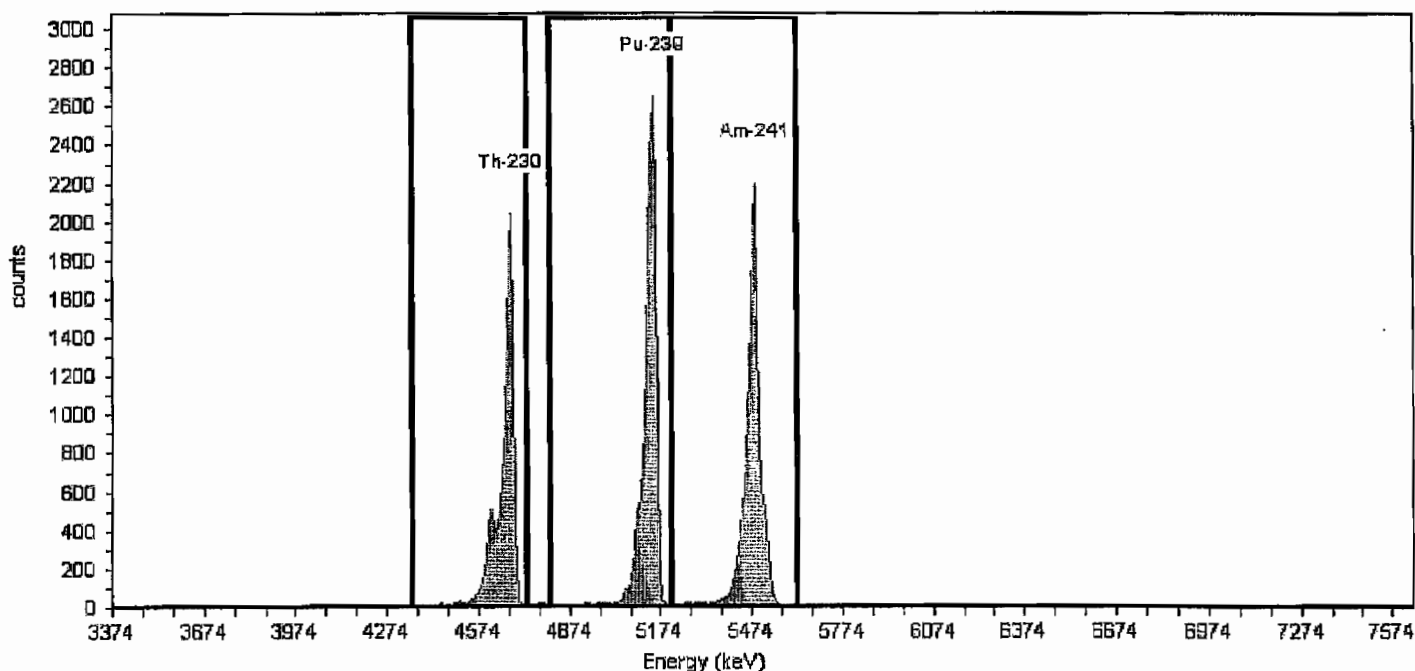
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV108, SN: 49-037W1
Acquisition Start Date: 3/27/2010 9:15:27PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.51% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,386.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	176	4.69	132	183	12,177.00	86.98
Pu-239	239	5.16	193	247	14,898.00	106.41
Am-241	284	5.49	247	303	14,296.00	102.11

Calibration

Name: Mar2010_AV109
Description:
Detector: AV109

Calibration Date: 3/31/2010 5:04:07PM
Analyst: 60040

Source Info

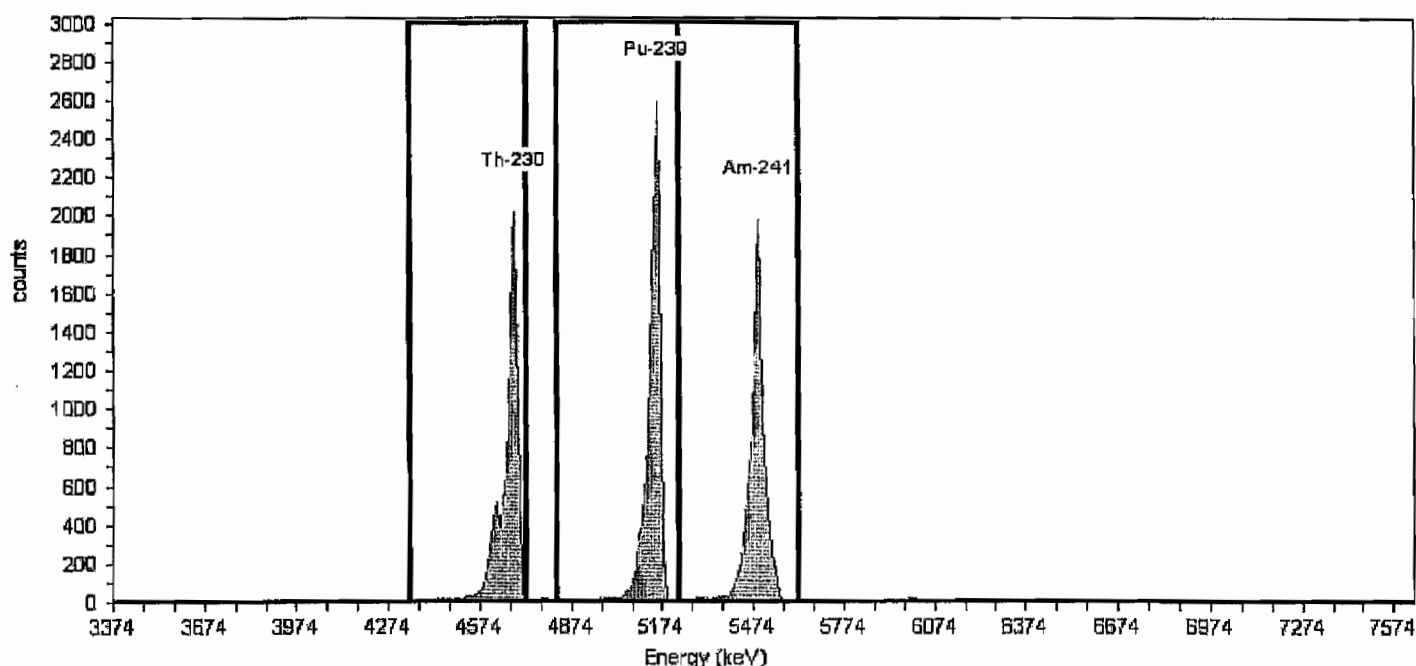
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV109, SN: 49-037W5
Acquisition Start Date: 3/27/2010 9:15:42PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.99% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,379.56 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	130	182	12,391.00	88.51
Pu-239	240	5.16	195	249	14,473.00	103.38
Am-241	285	5.49	249	303	13,039.00	93.14

Calibration

Name: March2010_AV110a
Description:
Detector: AV110

Calibration Date: 4/2/2010 6:20:02AM
Analyst: 60040

Source Info

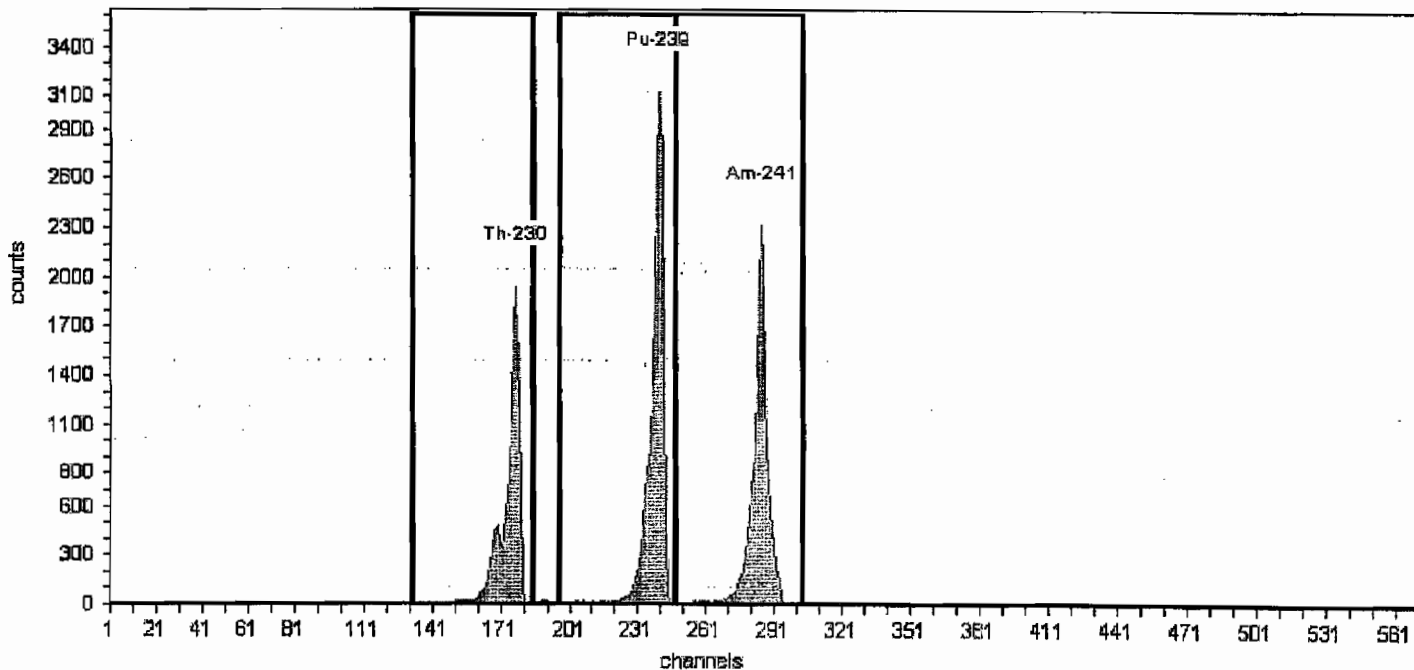
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV110, SN: 49-034G5
Acquisition Start Date: 4/1/2010 5:55:03PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.01% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	184	11,576.00	82.69
Pu-239	240	5.16	196	247	17,625.00	125.89
Am-241	285	5.49	247	303	15,158.00	108.27

Calibration

Name: March2010_AV111a
Description:
Detector: AV111

Calibration Date: 3/31/2010 5:05:32PM
Analyst: 60040

Source Info

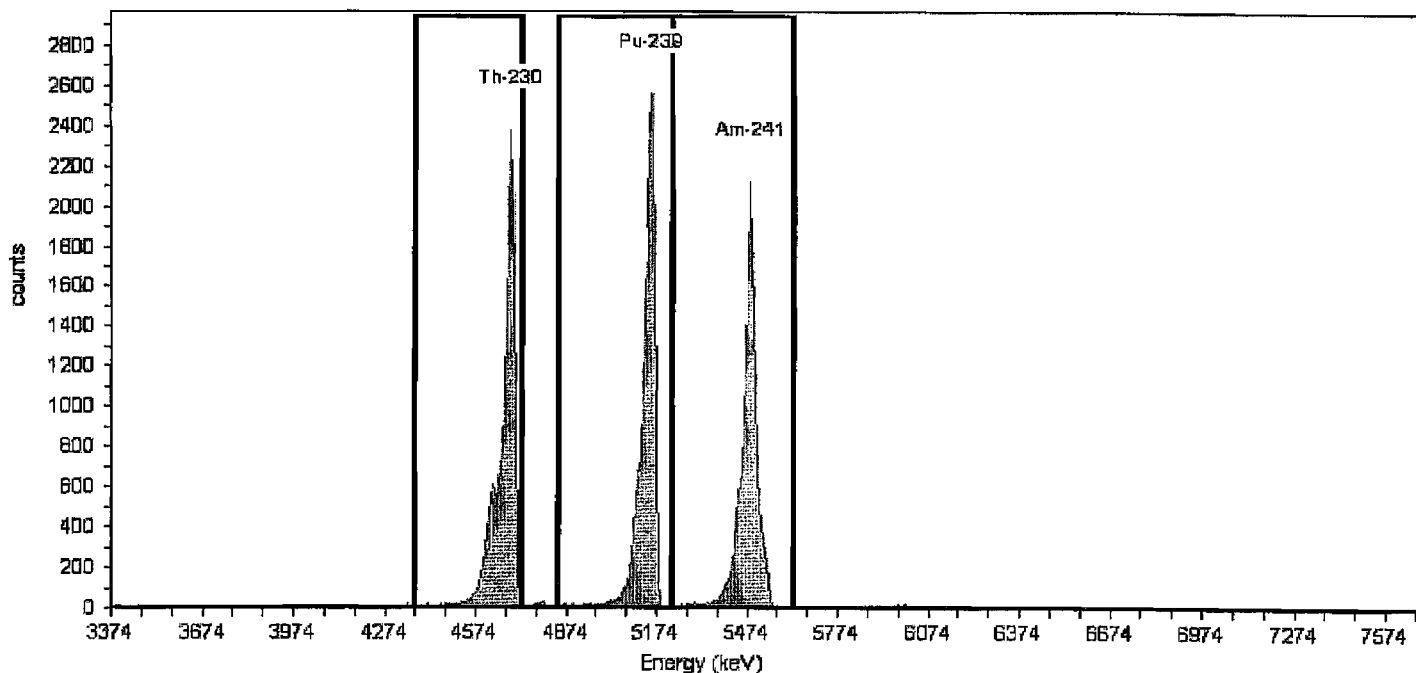
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV111, SN: 49-037E6
Acquisition Start Date: 3/28/2010 12:34:29PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.67% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	134	182	15,172.00	108.37
Pu-239	240	5.16	198	249	15,322.00	109.44
Am-241	284	5.49	249	303	13,975.00	99.82

Name: March2010_AV112a
Description:
Detector: AV112

Calibration

Calibration Date: 3/31/2010 5:07:42PM
Analyst: 60040

Certificate ID: 63507-334
Prepared by: Analytics

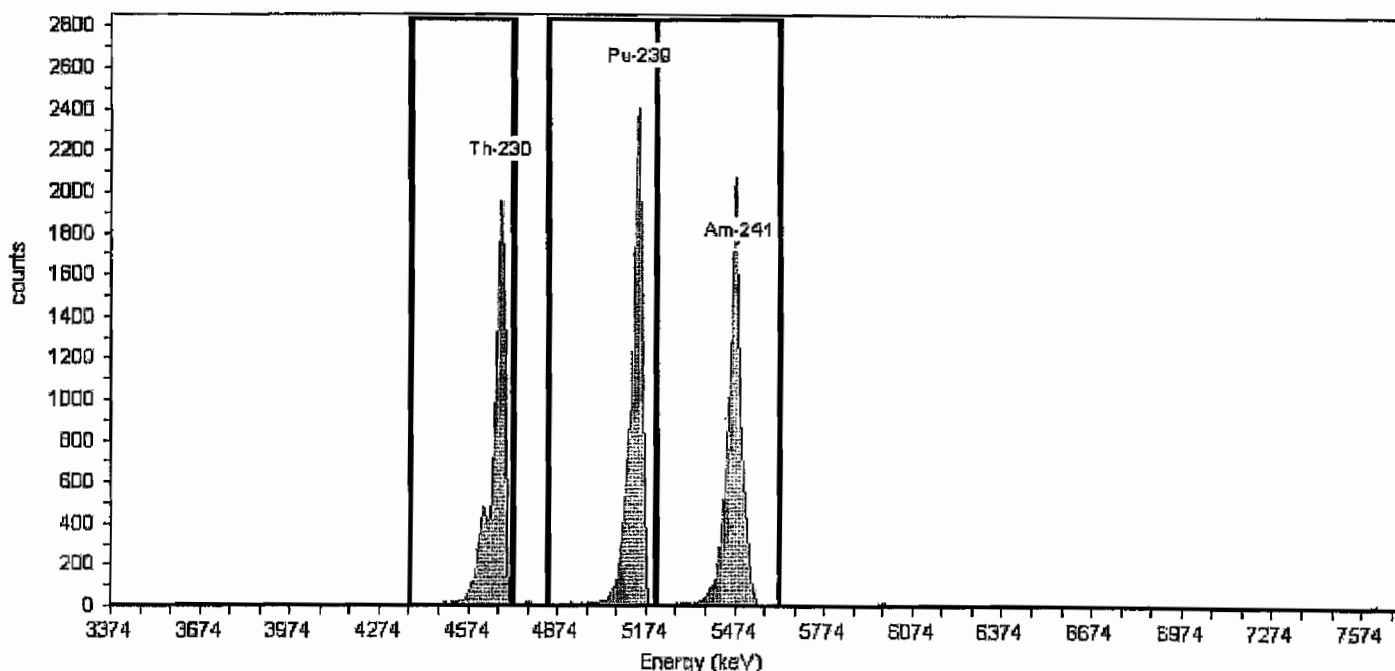
Source Info

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV112, SN: 49-037G7
Acquisition Start Date: 3/28/2010 12:34:31PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.12% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,386.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	176	4.69	135	182	12,075.00	86.25
Pu-239	239	5.16	197	247	14,507.00	103.62
Am-241	284	5.49	247	303	14,045.00	100.32

Calibration

Name: March2010_AV113a
Description:
Detector: AV113

Calibration Date: 3/31/2010 5:11:44PM
Analyst: 60040

Source Info

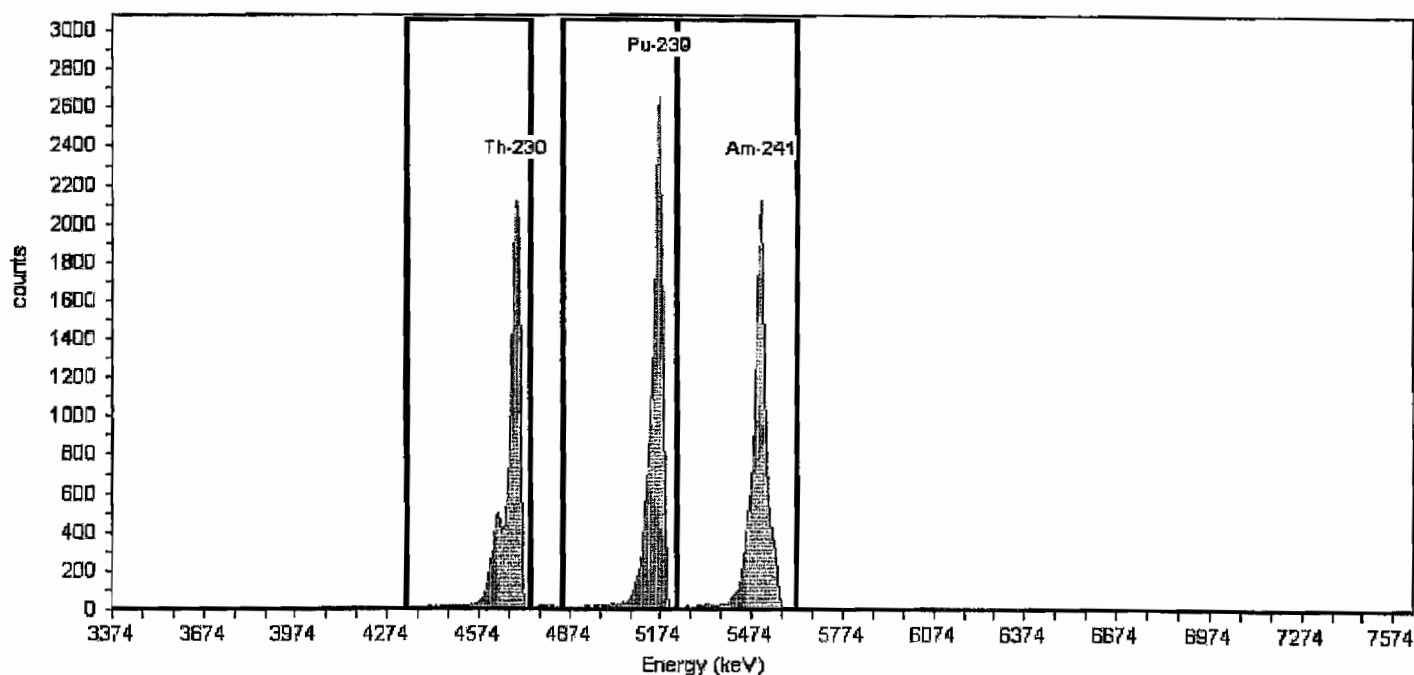
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV113, SN: 49-037X5
Acquisition Start Date: 3/28/2010 12:35:04PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 28.29% +/- 0.30% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3221 keV / Ch
Offset = 3,383.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	129	184	12,932.00	92.37
Pu-239	242	5.16	199	249	15,045.00	107.46
Am-241	287	5.49	249	303	13,837.00	98.84

Calibration

Name: March2010_AV114
Description:
Detector: AV114

Calibration Date: 3/31/2010 5:12:29PM
Analyst: 60040

Source Info

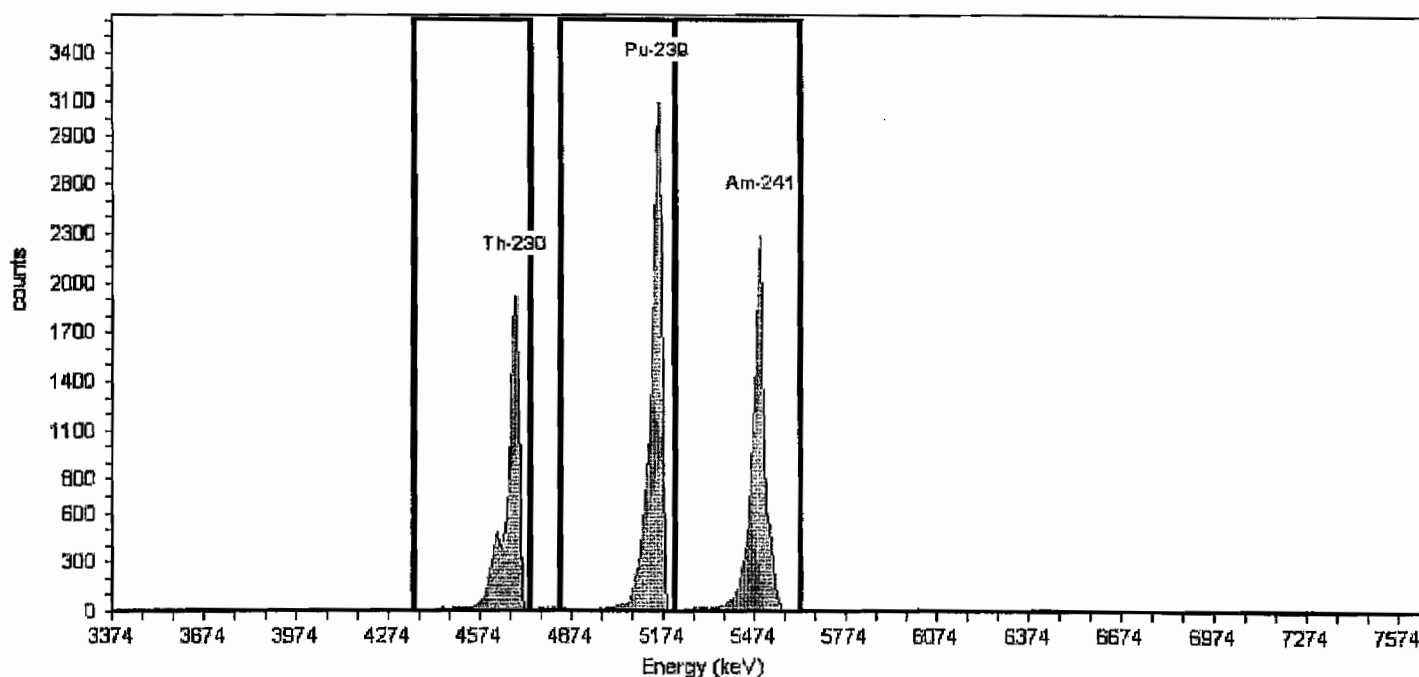
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV114, SN: 49-037E7
Acquisition Start Date: 3/28/2010 12:35:05PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.80% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,379.56 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	183	11,577.00	82.69
Pu-239	240	5.16	197	247	17,559.00	125.42
Am-241	285	5.49	247	303	14,926.00	106.61

Calibration

Name: Mar2010_AV115
Description:
Detector: AV115

Calibration Date: 3/31/2010 5:13:08PM
Analyst: 60040

Source Info

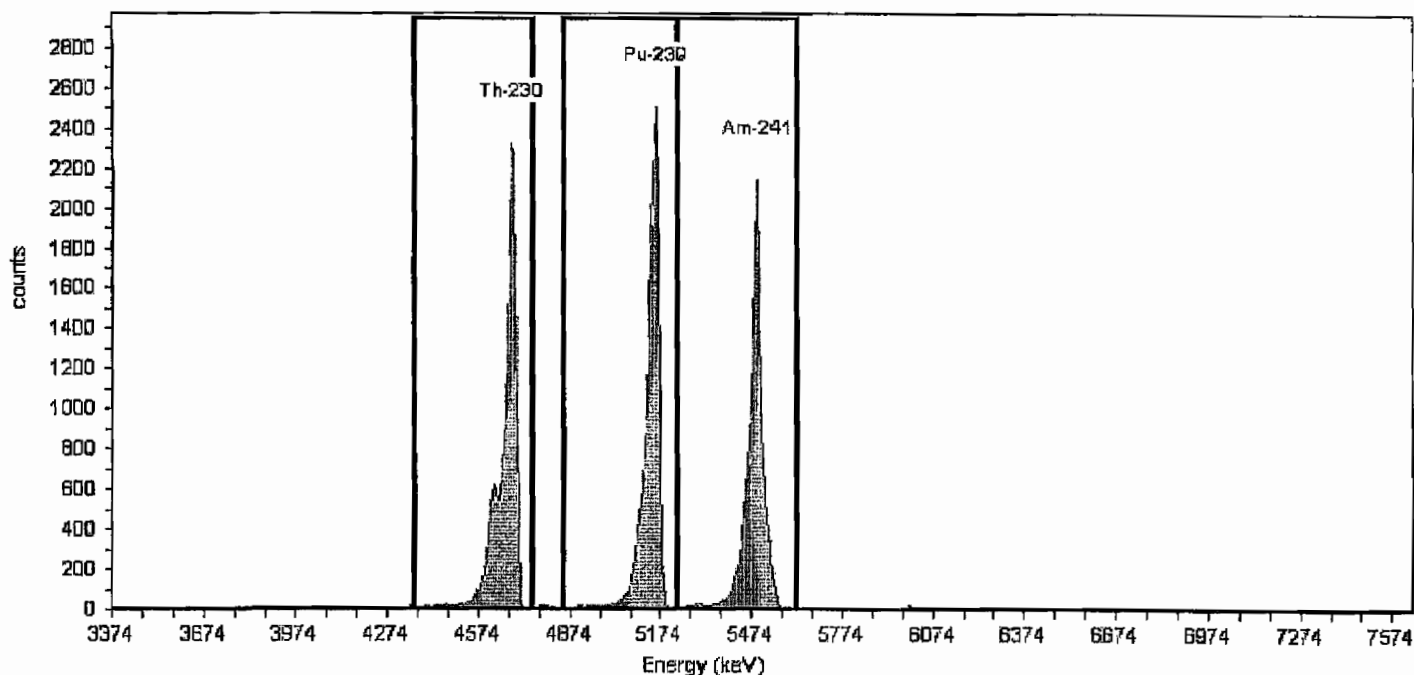
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV115 , SN: 49-037E4
Acquisition Start Date: 3/28/2010 3:50:25PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 25.91% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3221 keV / Ch
Offset = 3,398.60 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	176	4.69	133	185	15,439.00	110.28
Pu-239	240	5.16	199	249	15,558.00	111.13
Am-241	285	5.49	249	303	13,933.00	99.52

Calibration

Name: Mar2010_AV116
Description:
Detector: AV116

Calibration Date: 3/31/2010 5:15:38PM
Analyst: 60040

Source Info

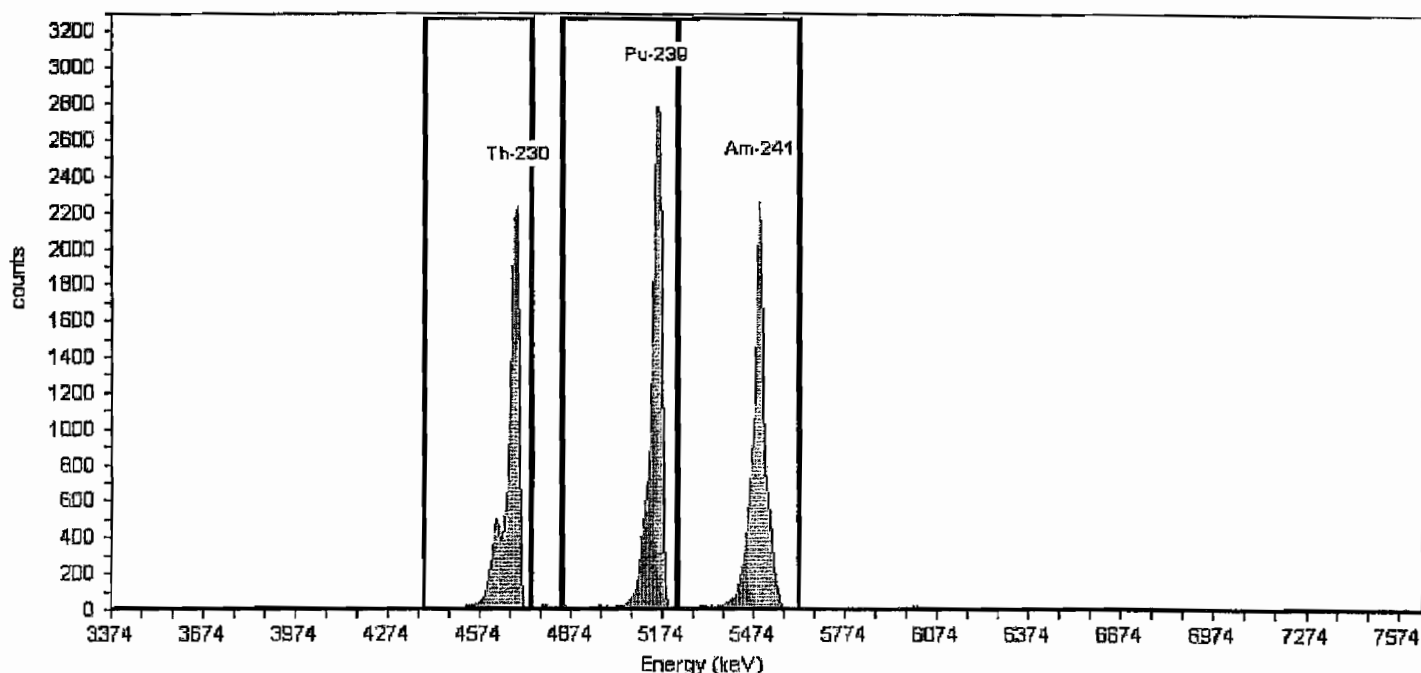
Certificate ID: 63507-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV116, SN: 49-034G1
Acquisition Start Date: 3/28/2010 3:50:40PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.30% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4651 keV / Ch
Offset = 3,360.21 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	137	184	12,710.00	90.79
Pu-239	240	5.16	198	249	15,259.00	108.99
Am-241	285	5.49	249	303	14,413.00	102.95

Calibration

Name: Mar2010_AV117
Description:
Detector: AV117

Calibration Date: 3/31/2010 5:16:07PM
Analyst: 60040

Source Info

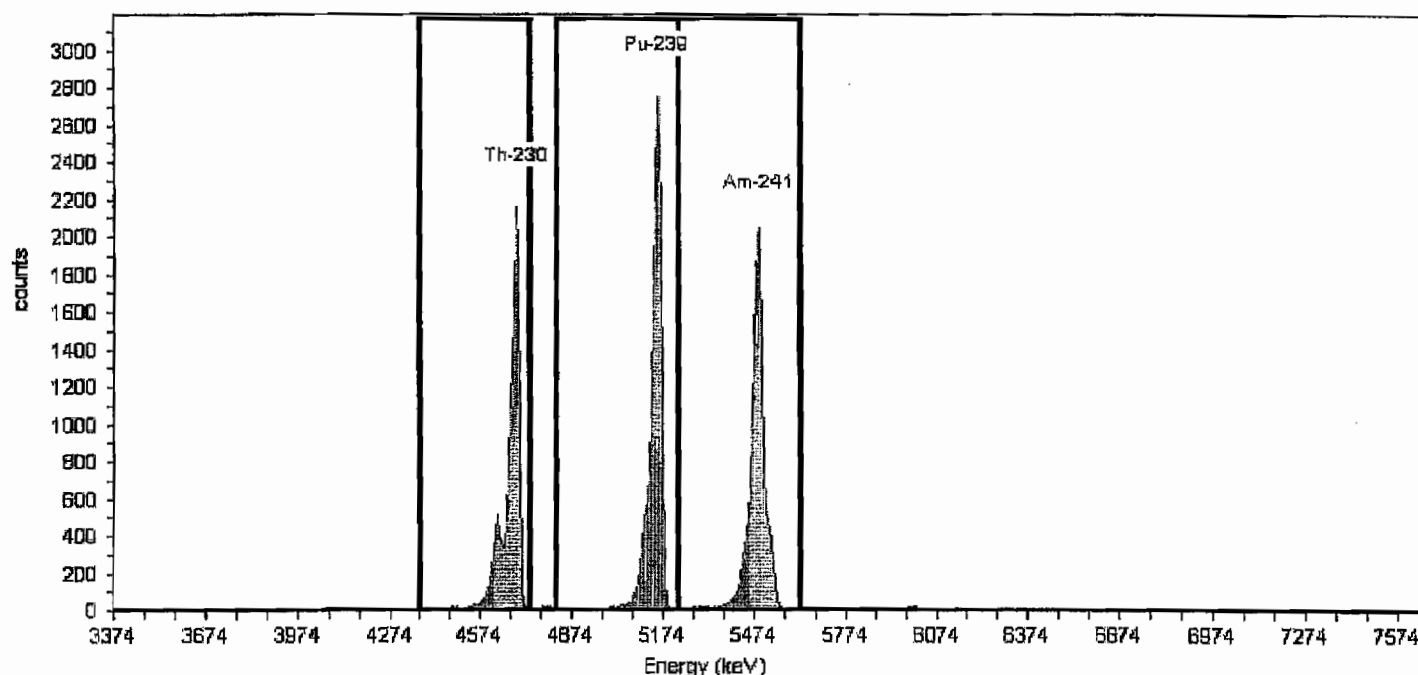
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV117, SN: 49-037X4
Acquisition Start Date: 3/28/2010 3:50:55PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.11% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	134	183	11,877.00	84.84
Pu-239	240	5.16	195	249	13,853.00	98.95
Am-241	284	5.49	249	303	12,833.00	91.66

Calibration

Name: Mar2010_AV118
Description:
Detector: AV118

Calibration Date: 3/31/2010 5:16:47PM
Analyst: 60040

Source Info

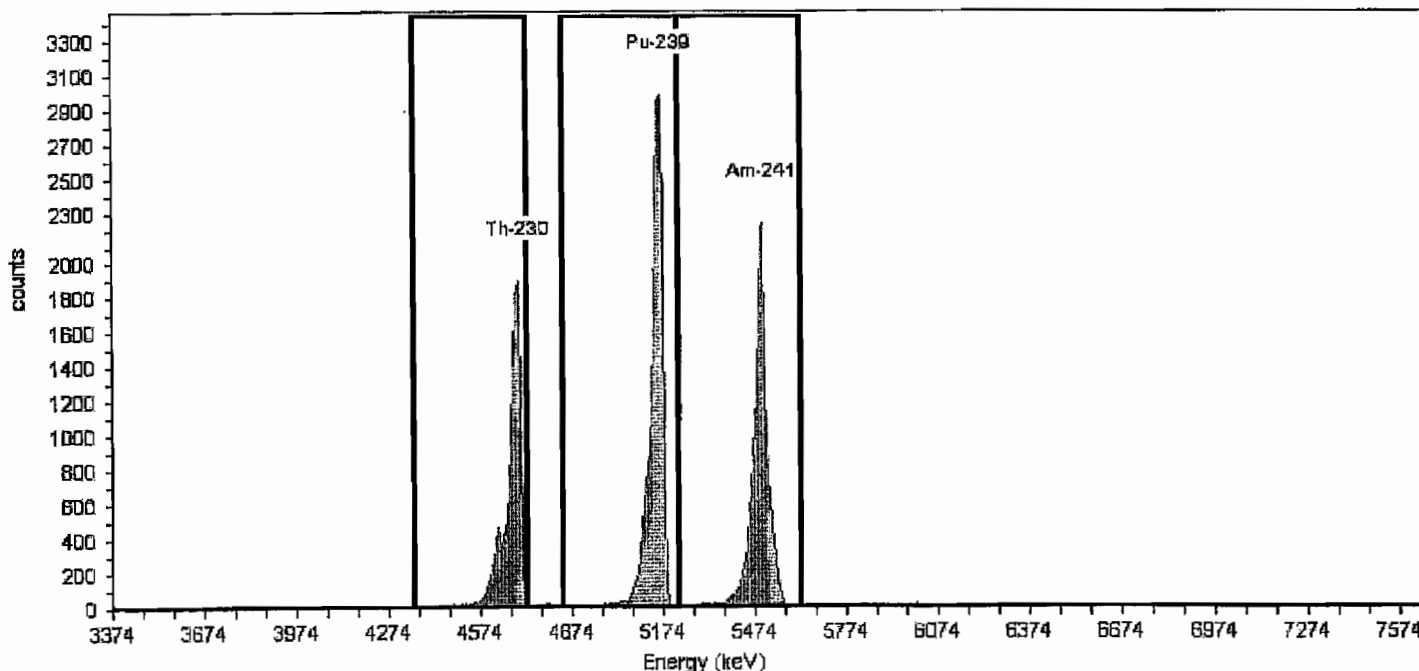
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV118, SN: 49-037F4
Acquisition Start Date: 3/28/2010 3:51:12PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.83% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,372.16 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	182	11,477.00	81.98
Pu-239	241	5.16	198	249	17,513.00	125.09
Am-241	286	5.49	249	303	15,123.00	108.02

Calibration

Name: Mar2010_AV119
Description:
Detector: AV119

Calibration Date: 3/31/2010 5:17:27PM
Analyst: 60040

Source Info

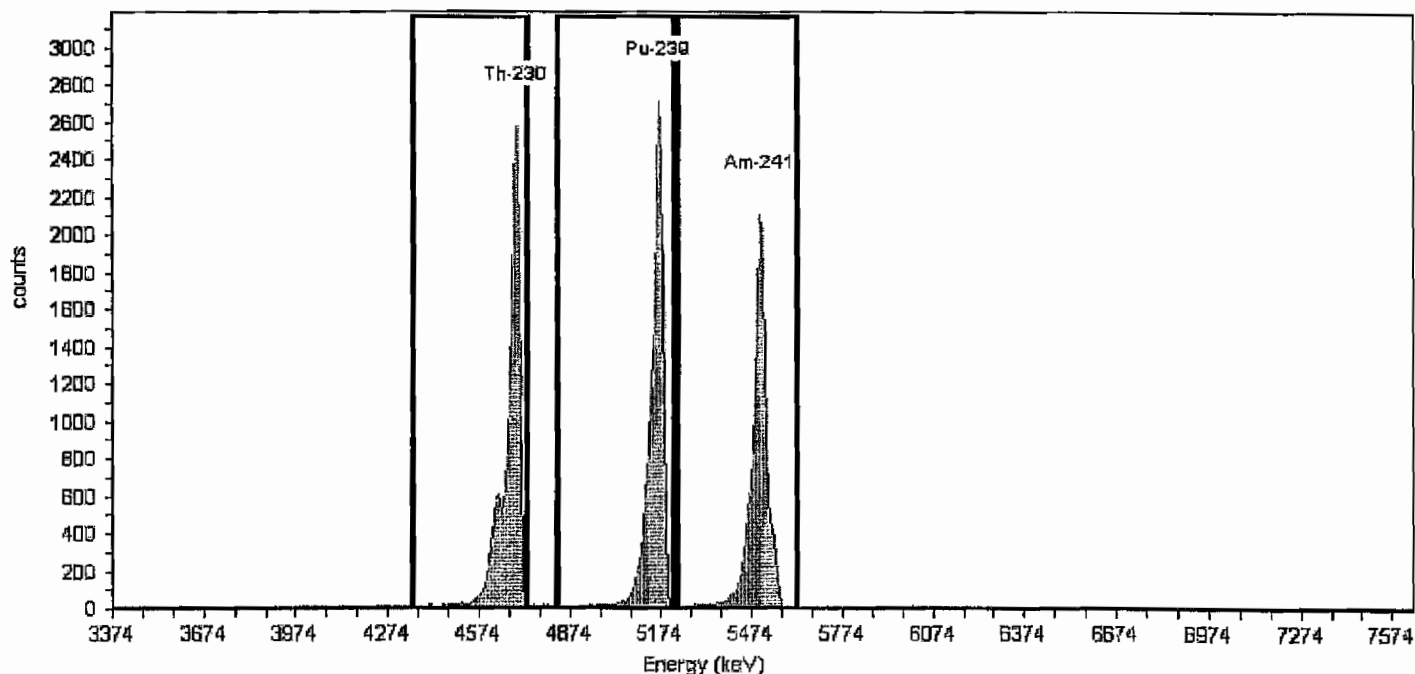
Certificate ID: 63506-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:07PM
Description:

Acquisition

Detector: AV119, SN: 49-037G6
Acquisition Start Date: 3/28/2010 6:24:58PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.91% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,372.16 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	183	15,971.00	114.08
Pu-239	241	5.16	196	248	16,091.00	114.94
Am-241	286	5.49	249	303	14,592.00	104.23

Calibration

Name: Mar2010_AV120

Description:

Detector: AV120

Calibration Date: 3/31/2010 5:18:16PM

Analyst: 60040

Source Info

Certificate ID: 63507-334

Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM

Description:

Acquisition

Detector: AV120 , SN: 49-037W3

Acquisition Start Date: 3/28/2010 6:25:01PM

Live Time: 140.00 min.

Real Time: 140.05 min.

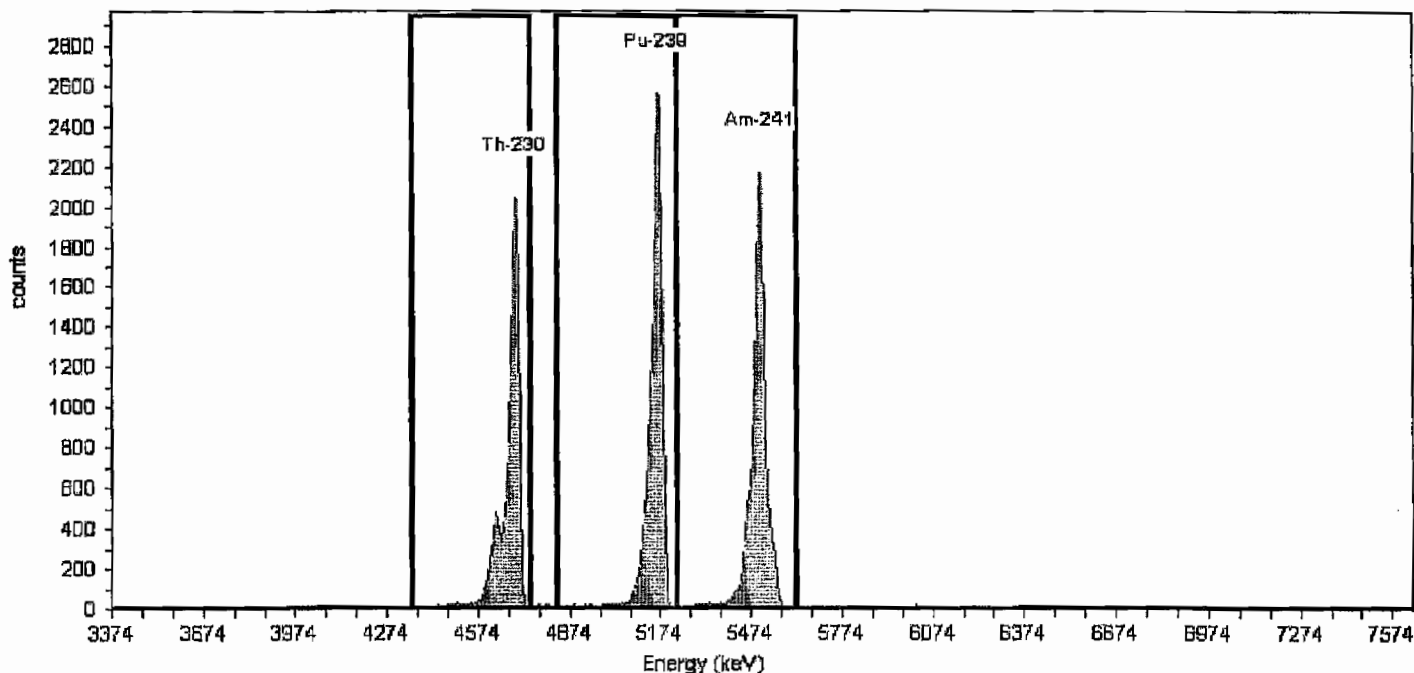
Efficiency: 26.31% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:

Gain = 7.3291 keV / Ch

Offset = 3,384.74 keV

Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)

Algorithm: Linear

Initial Calibration: No

Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	178	4.69	132	184	12,113.00	86.52
Pu-239	241	5.16	196	249	14,939.00	106.71
Am-241	287	5.49	249	303	13,980.00	99.86

Calibration

Name: Mar2010_AV121
Description:
Detector: AV121

Calibration Date: 3/31/2010 5:18:54PM
Analyst: 60040

Source Info

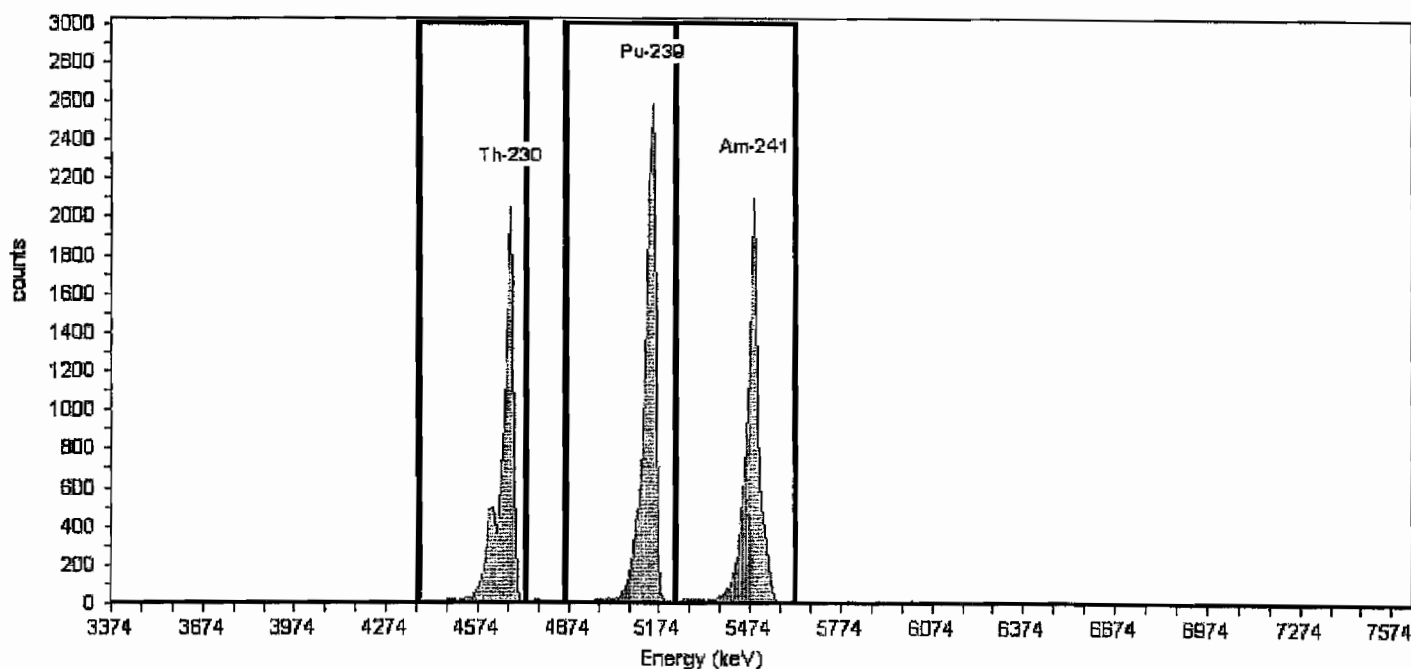
Certificate ID: 63508A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV121, SN: 49-037W2
Acquisition Start Date: 3/28/2010 6:25:21PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.19% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,386.95 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	176	4.69	135	183	12,370.00	88.36
Pu-239	239	5.16	200	249	14,516.00	103.69
Am-241	284	5.49	249	303	13,262.00	94.73

Calibration

Name: Mar2010_AV122
Description:
Detector: AV122

Calibration Date: 3/31/2010 5:19:29PM
Analyst: 60040

Source Info

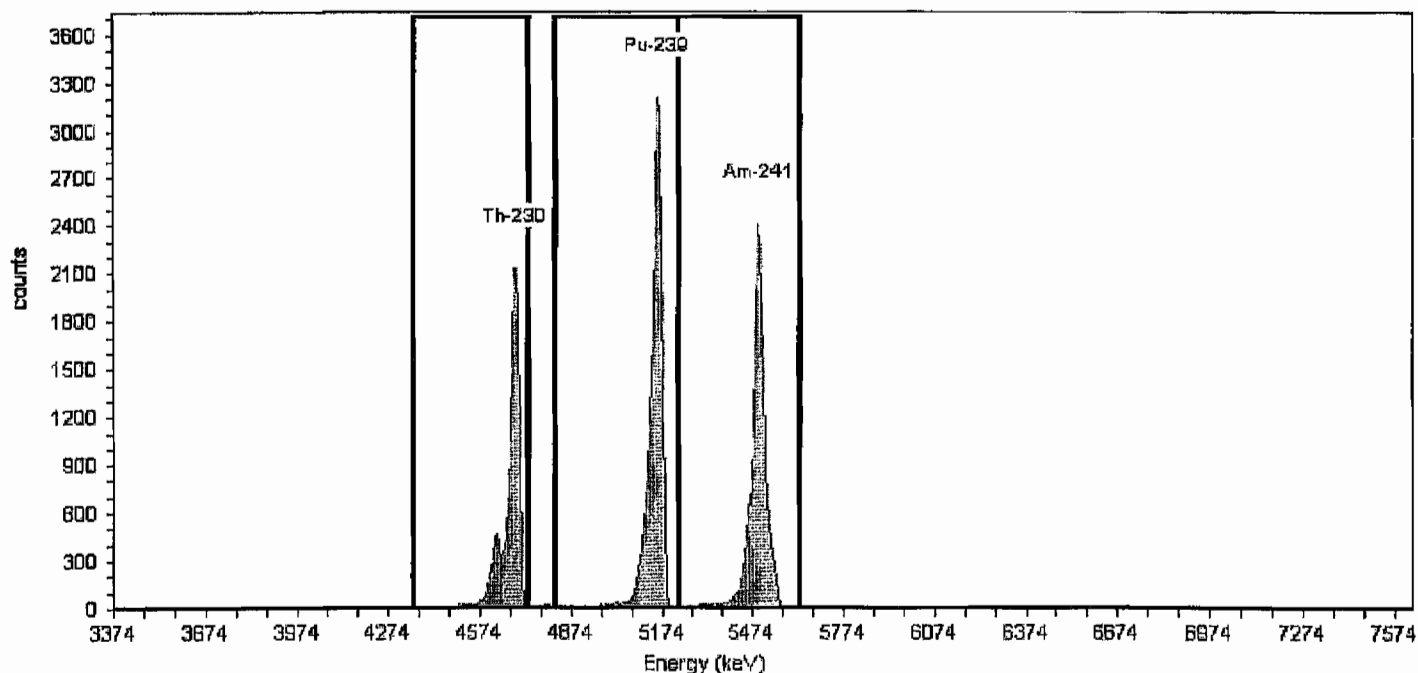
Certificate ID: 63509A-334
Prepared by: Analytics

Certification Date: 5/30/2002 12:00:00PM
Description:

Acquisition

Detector: AV122 , SN: 49-037G4
Acquisition Start Date: 3/28/2010 6:25:34PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.01% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.3931 keV / Ch
Offset = 3,379.56 keV
Quadratic = 0.0000 keV / Ch²



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy MeV	ROI Start Channel	ROI End Channel	Gross Counts	Net Count Rate (cpm)
Th-230	177	4.69	132	183	11,821.00	84.44
Pu-239	240	5.16	194	249	17,691.00	126.36
Am-241	285	5.49	249	303	14,915.00	106.54

GAMMA SPECTROSCOPY

GAMMA SPECTROSCOPY

Cesium-137

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gamma Spectroscopy

Batch: 0102353

Operator: 60040

SampleID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDate	Time	CountDuration
F0D080501-001	LXNMR1AF	276.50g	1.00	GammaVision	GV02	4 / 18 / 10	12:51	30
Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA	
AC-228	1501	1.784E+000 pCi/g	1.561E-001	1.472E-001	2.265E-001	8.351E-002	7.87	
AM-241	1493	-5.074E-003 pCi/g	7.971E-002	7.971E-002	2.747E-001	1.311E-001	-0.02	
BI-211	1906	1.563E-001 pCi/g	1.394E-001	1.393E-001	4.717E-001	2.143E-001	0.33	
BI-214	1505	1.334E+000 pCi/g	1.362E-001	1.304E-001	2.727E+000	1.211E+000	0.49	
CD-109	1908	4.262E+000 pCi/g	6.713E-001	6.524E-001	1.841E+000	8.746E-001	2.32	
CE-139	1909	3.701E-003 pCi/g	2.072E-002	2.072E-002	7.235E-002	3.389E-002	0.05	
CO-60	1515	-2.650E-002 pCi/g	5.064E-002	5.064E-002	1.830E-001	7.952E-002	-0.14	
CS-134	1517	5.767E-006 pCi/g	2.106E-002	2.106E-002	8.166E-002	3.469E-002	0.00	
CS-137	1518	0.000E+000 pCi/g	4.437E-002	4.437E-002	1.615E-001	7.310E-002	0.00	
EU-152	1519	-1.300E-001 pCi/g	2.371E-001	2.371E-001	8.613E-001	3.697E-001	-0.15	
HG-203	1910	-7.008E-003 pCi/g	2.745E-002	2.744E-002	9.662E-002	4.464E-002	-0.07	
K-40	1527	2.884E+001 pCi/g	1.810E+000	1.612E+000	6.641E-001	2.100E-001	43.42	
NA-22	1530	3.523E-002 pCi/g	4.737E-002	4.736E-002	1.683E-001	7.262E-002	0.21	
PB-212	1540	1.684E+000 pCi/g	1.138E-001	1.013E-001	1.732E-001	8.098E-002	9.73	
PB-214	1541	1.254E+000 pCi/g	1.302E-001	1.249E-001	1.351E+001	6.060E+000	0.09	
RA-223	1912	1.563E-001 pCi/g	1.394E-001	1.393E-001	4.717E-001	2.143E-001	0.33	
RA-224	1548	-5.452E+000 pCi/g	1.528E+000	1.519E+000	4.848E+000	2.361E+000	-1.12	
RA-226	578	1.368E+000 pCi/g	1.385E-001	1.330E-001	3.622E+000	1.622E+000	0.38	
RA-228	579	1.784E+000 pCi/g	1.561E-001	1.472E-001	2.265E-001	8.351E-002	7.87	
RU-106	1551	7.799E-004 pCi/g	3.342E-001	3.342E-001	1.227E+000	5.505E-001	0.00	
SN-113	1653	1.620E-003 pCi/g	3.437E-002	3.437E-002	1.251E-001	5.646E-002	0.01	
SR-85	1554	-6.024E-002 pCi/g	4.930E-002	4.927E-002	1.648E-001	7.723E-002	-0.37	
TH-227	1915	1.563E-001 pCi/g	1.394E-001	1.393E-001	4.717E-001	2.143E-001	0.33	
TH-231	1560	2.599E-001 pCi/g	1.811E-001	1.809E-001	6.051E-001	2.863E-001	0.43	
TH-234	1562	2.702E+000 pCi/g	5.853E-001	5.768E-001	1.429E+000	6.837E-001	1.89	
TL-208	1563	6.120E-001 pCi/g	6.814E-002	6.578E-002	1.060E-001	4.624E-002	5.78	
U-235	1566	2.599E-001 pCi/g	1.811E-001	1.809E-001	6.051E-001	2.863E-001	0.43	
Y-88	1569	-3.550E-002 pCi/g	4.371E-002	4.370E-002	1.529E-001	6.734E-002	-0.23	

SampleID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDate	Time	CountDuration
F0D080501-001X	LXNMR1AG	276.50g	1.00	GammaVision	GV03	4 / 20 / 10	12:37	30
Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA	
AC-228	1501	2.009E+000 pCi/g	1.839E-001	1.743E-001	1.967E-001	7.583E-002	10.21	
AM-241	1493	-4.483E-002 pCi/g	8.830E-002	8.829E-002	2.993E-001	1.436E-001	-0.15	
BI-211	1906	-9.066E-002 pCi/g	6.779E-001	6.778E-001	2.272E+000	1.115E+000	-0.04	
BI-214	1505	1.300E+000 pCi/g	1.446E-001	1.395E-001	2.474E+000	1.119E+000	0.53	
CD-109	1908	4.408E-002 pCi/g	7.421E-001	7.421E-001	2.535E+000	1.221E+000	0.02	
CE-139	1909	-1.834E-002 pCi/g	2.689E-002	2.689E-002	9.129E-002	4.332E-002	-0.20	
CO-60	1515	3.554E-002 pCi/g	3.503E-002	3.501E-002	1.214E-001	5.210E-002	0.29	
CS-134	1517	-4.079E-002 pCi/g	4.254E-002	4.253E-002	1.441E-001	6.711E-002	-0.28	
CS-137	1518	-6.990E-003 pCi/g	3.571E-002	3.571E-002	1.284E-001	5.810E-002	-0.05	
EU-152	1519	2.985E-001 pCi/g	1.615E-001	1.612E-001	5.093E-001	2.112E-001	0.59	
HG-203	1910	6.734E-002 pCi/g	2.642E-002	2.634E-002	8.224E-002	3.769E-002	0.82	
K-40	1527	2.664E+001 pCi/g	1.521E+000	1.318E+000	1.030E+000	4.285E-001	25.86	
NA-22	1530	4.215E-002 pCi/g	4.010E-002	4.008E-002	1.376E-001	6.046E-002	0.31	
PB-212	1540	1.477E+000 pCi/g	1.196E-001	1.106E-001	2.074E-001	9.829E-002	7.12	
PB-214	1541	0.000E+000 pCi/g	7.118E+000	7.118E+000	2.792E-001	1.310E-001	0.00	
RA-223	1912	-9.066E-002 pCi/g	6.779E-001	6.778E-001	2.272E+000	1.115E+000	-0.04	
RA-224	1548	-1.718E+000 pCi/g	1.150E+000	1.148E+000	3.793E+000	1.836E+000	-0.45	
RA-226	578	1.341E+000 pCi/g	1.352E-001	1.298E-001	2.680E+000	1.203E+000	0.50	

RA-228	579	2.009E+000	pCi/g	1.839E-001	1.743E-001	1.967E-001	7.583E-002	10.21
RU-106	1551	8.394E-002	pCi/g	2.388E-001	2.388E-001	8.659E-001	3.825E-001	0.10
SN-113	1653	2.913E-002	pCi/g	3.331E-002	3.330E-002	1.146E-001	5.194E-002	0.25
SR-85	1554	-4.510E-002	pCi/g	4.012E-002	4.010E-002	1.347E-001	6.304E-002	-0.33
TH-227	1915	-9.066E-002	pCi/g	6.779E-001	6.778E-001	2.272E+000	1.115E+000	-0.04
TH-231	1560	1.748E-001	pCi/g	2.019E-001	2.018E-001	6.867E-001	3.266E-001	0.25
TH-234	1562	2.252E+000	pCi/g	5.926E-001	5.868E-001	1.429E+000	6.831E-001	1.58
TL-208	1563	5.958E-001	pCi/g	7.025E-002	6.808E-002	1.172E-001	5.311E-002	5.08
U-235	1566	1.748E-001	pCi/g	2.019E-001	2.018E-001	6.867E-001	3.266E-001	0.25
Y-88	1569	-2.566E-002	pCi/g	3.902E-002	3.901E-002	1.367E-001	6.145E-002	-0.19

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDate	Time	CountDuration
F0D080501-002	LXNMV1AF	253.40g	1.00	GammaVision	GV03	4 / 18 / 10	12:52	30
Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA	
AC-228	1501	1.750E+000 pCi/g	1.646E-001	1.566E-001	2.728E-001	1.118E-001	6.41	
AM-241	1493	-8.437E-003 pCi/g	8.811E-002	8.810E-002	3.029E-001	1.448E-001	-0.03	
BI-211	1906	-7.622E-001 pCi/g	3.901E-001	3.894E-001	1.273E+000	6.140E-001	-0.60	
BI-212	1907	3.362E+000 pCi/g	4.855E-001	4.754E-001	4.955E-001	1.567E-001	6.78	
BI-214	1505	1.475E+000 pCi/g	1.504E-001	1.440E-001	2.486E+000	1.114E+000	0.59	
CD-109	1908	-1.314E+000 pCi/g	9.515E-001	9.503E-001	3.146E+000	1.522E+000	-0.42	
CE-139	1909	1.222E-003 pCi/g	2.798E-002	2.798E-002	9.714E-002	4.603E-002	0.01	
CO-60	1515	-3.251E-003 pCi/g	4.259E-002	4.259E-002	1.583E-001	6.973E-002	-0.02	
CS-134	1517	-3.410E-002 pCi/g	4.228E-002	4.227E-002	1.447E-001	6.694E-002	-0.24	
CS-137	1518	-2.126E-003 pCi/g	3.670E-002	3.670E-002	1.337E-001	6.023E-002	-0.02	
EU-152	1519	1.945E-001 pCi/g	1.953E-001	1.953E-001	6.780E-001	2.916E-001	0.29	
HG-203	1910	2.568E-002 pCi/g	3.429E-002	3.428E-002	1.170E-001	5.474E-002	0.22	
K-40	1527	1.887E+001 pCi/g	1.319E+000	1.205E+000	1.568E+000	6.897E-001	12.03	
NA-22	1530	-2.498E-002 pCi/g	3.940E-002	3.939E-002	1.408E-001	6.129E-002	-0.18	
PB-212	1540	1.851E+000 pCi/g	1.389E-001	1.267E-001	2.319E-001	1.101E-001	7.98	
PB-214	1541	0.000E+000 pCi/g	3.734E-001	3.734E-001	3.099E-001	1.456E-001	0.00	
RA-223	1912	-7.622E-001 pCi/g	3.901E-001	3.894E-001	1.273E+000	6.140E-001	-0.60	
RA-224	1548	-1.935E-001 pCi/g	1.100E+000	1.100E+000	3.743E+000	1.805E+000	-0.05	
RA-226	578	1.561E+000 pCi/g	1.394E-001	1.322E-001	2.982E+000	1.341E+000	0.52	
RA-228	579	1.750E+000 pCi/g	1.646E-001	1.566E-001	2.728E-001	1.118E-001	6.41	
RU-106	1551	-4.545E-004 pCi/g	2.731E-001	2.731E-001	1.010E+000	4.499E-001	0.00	
SN-113	1653	-2.130E-002 pCi/g	3.629E-002	3.629E-002	1.270E-001	5.766E-002	-0.17	
SR-85	1554	-4.280E-002 pCi/g	4.896E-002	4.895E-002	1.656E-001	7.810E-002	-0.26	
TH-227	1915	-7.622E-001 pCi/g	3.901E-001	3.894E-001	1.273E+000	6.140E-001	-0.60	
TH-231	1560	3.974E-002 pCi/g	1.935E-001	1.934E-001	6.767E-001	3.201E-001	0.06	
TH-234	1562	-7.532E-001 pCi/g	6.142E+000	6.142E+000	2.079E+000	1.005E+000	-0.36	
TL-208	1563	5.111E-001 pCi/g	6.897E-002	6.735E-002	1.269E-001	5.749E-002	4.03	
U-235	1566	3.974E-002 pCi/g	1.935E-001	1.934E-001	6.767E-001	3.201E-001	0.06	
Y-88	1569	-4.030E-003 pCi/g	3.388E-002	3.387E-002	1.256E-001	5.526E-002	-0.03	

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDate	Time	CountDuration
F0D080501-003	LXNMW1AF	306.30g	1.00	GammaVision	GV04	4 / 18 / 10	12:53	30
Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA	
AC-228	1501	1.154E+000 pCi/g	1.728E-001	1.695E-001	3.758E-001	1.566E-001	3.07	
AM-241	1493	-5.581E-002 pCi/g	9.818E-002	9.815E-002	3.328E-001	1.592E-001	-0.17	
BI-211	1906	2.431E-002 pCi/g	6.921E-001	6.921E-001	2.329E+000	1.140E+000	0.01	
BI-212	1907	3.838E+000 pCi/g	5.769E-001	5.658E-001	6.149E-001	1.944E-001	6.24	
BI-214	1505	1.210E+000 pCi/g	1.332E-001	1.284E-001	2.890E+000	1.284E+000	0.42	
CD-109	1908	2.709E-001 pCi/g	7.879E-001	7.878E-001	2.680E+000	1.287E+000	0.10	
CE-139	1909	-3.295E-003 pCi/g	2.539E-002	2.539E-002	8.852E-002	4.162E-002	-0.04	
CO-60	1515	1.294E-002 pCi/g	4.558E-002	4.558E-002	1.708E-001	7.291E-002	0.08	
CS-134	1517	-3.971E-006 pCi/g	3.740E-002	3.740E-002	1.364E-001	6.161E-002	0.00	
CS-137	1518	5.272E-001 pCi/g	6.816E-002	6.639E-002	9.218E-002	3.794E-002	5.72	
EU-152	1519	3.244E-001 pCi/g	2.294E-001	2.292E-001	7.637E-001	3.187E-001	0.42	
HG-203	1910	-2.948E-002 pCi/g	3.755E-002	3.754E-002	1.279E-001	5.985E-002	-0.23	
K-40	1527	2.017E+001 pCi/g	1.500E+000	1.386E+000	1.131E+000	4.391E-001	17.83	

NA-22	1530	-3.022E-003	pCi/g	4.520E-002	4.520E-002	1.720E-001	7.398E-002	-0.02
PB-212	1540	1.473E+000	pCi/g	1.150E-001	1.057E-001	1.888E-001	8.805E-002	7.80
PB-214	1541	0.000E+000	pCi/g	5.301E-002	5.301E-002	2.173E-001	9.803E-002	0.00
RA-223	1912	2.431E-002	pCi/g	6.921E-001	6.921E-001	2.329E+000	1.140E+000	0.01
RA-224	1548	-5.839E+000	pCi/g	1.549E+000	1.640E+000	5.227E+000	2.542E+000	-1.12
RA-226	578	1.403E+000	pCi/g	1.444E-001	1.389E-001	3.162E+000	1.384E+000	0.44
RA-228	579	1.154E+000	pCi/g	1.728E-001	1.695E-001	3.758E-001	1.566E-001	3.07
RU-106	1551	1.374E-001	pCi/g	3.226E-001	3.226E-001	1.162E+000	5.138E-001	0.12
SN-113	1653	-4.064E-002	pCi/g	4.968E-002	4.966E-002	1.702E-001	7.842E-002	-0.24
SR-85	1554	-2.300E-002	pCi/g	4.311E-002	4.310E-002	1.495E-001	6.917E-002	-0.15
TH-227	1915	2.431E-002	pCi/g	6.921E-001	6.921E-001	2.329E+000	1.140E+000	0.01
TH-231	1560	2.791E-001	pCi/g	1.861E-001	1.859E-001	6.202E-001	2.912E-001	0.45
TH-234	1562	3.783E+000	pCi/g	6.411E-001	6.259E-001	1.522E+000	7.251E-001	2.49
TL-208	1563	4.389E-001	pCi/g	5.919E-002	5.780E-002	1.066E-001	4.608E-002	4.12
U-235	1566	2.791E-001	pCi/g	1.861E-001	1.859E-001	6.202E-001	2.912E-001	0.45
Y-88	1569	-1.630E-003	pCi/g	4.291E-002	4.291E-002	1.602E-001	7.048E-002	-0.01

<u>SampID</u>	<u>WRKNO</u>	<u>Aliquot</u>	<u>Sigma</u>	<u>Instrument</u>	<u>Detector</u>	<u>CountDate</u>	<u>Time</u>	<u>CountDuration</u>
F0D080501-004	LXNMX1AF	324.20g	1.00	GammaVision	GV05	4 / 18 / 10	12:54	30
<u>Analyte</u>	<u>Compnd#</u>	<u>Activity</u>	<u>TotalUnc</u>	<u>CountUnc</u>	<u>MDA</u>	<u>MLCC</u>	<u>Act/MDA</u>	
AC-228	1501	1.692E+000 pCi/g	2.027E-001	1.965E-001	2.272E-001	8.378E-002	7.45	
AM-241	1493	5.273E-002 pCi/g	9.313E-002	9.310E-002	3.156E-001	1.511E-001	0.17	
BI-211	1906	-7.267E-002 pCi/g	6.273E-001	6.273E-001	2.112E+000	1.032E+000	-0.03	
BI-212	1907	2.686E+000 pCi/g	5.589E-001	5.533E-001	8.948E-001	3.393E-001	3.00	
BI-214	1505	1.250E+000 pCi/g	1.408E-001	1.359E-001	2.766E+000	1.229E+000	0.45	
CD-109	1908	-3.523E-002 pCi/g	6.942E-001	6.942E-001	2.389E+000	1.142E+000	-0.01	
CE-139	1909	2.737E-002 pCi/g	2.511E-002	2.510E-002	8.439E-002	3.957E-002	0.32	
CO-60	1515	1.395E-002 pCi/g	4.062E-002	4.061E-002	1.525E-001	6.439E-002	0.09	
CS-134	1517	-2.779E-002 pCi/g	3.862E-002	3.861E-002	1.342E-001	6.079E-002	-0.21	
CS-137	1518	6.074E-002 pCi/g	4.125E-002	4.121E-002	1.366E-001	6.050E-002	0.44	
EU-152	1519	0.000E+000 pCi/g	2.447E-001	2.447E-001	9.266E-001	4.031E-001	0.00	
HG-203	1910	2.371E-002 pCi/g	3.073E-002	3.072E-002	1.054E-001	4.869E-002	0.22	
K-40	1527	1.871E+001 pCi/g	1.419E+000	1.314E+000	1.395E+000	5.772E-001	13.41	
NA-22	1530	0.000E+000 pCi/g	6.279E-002	6.279E-002	2.298E-001	1.034E-001	0.00	
PB-212	1540	1.366E+000 pCi/g	1.148E-001	1.071E-001	1.962E-001	9.185E-002	6.96	
PB-214	1541	0.000E+000 pCi/g	2.913E+000	2.913E+000	2.745E-001	1.270E-001	0.00	
RA-223	1912	-7.267E-002 pCi/g	6.273E-001	6.273E-001	2.112E+000	1.032E+000	-0.03	
RA-224	1548	-1.665E+000 pCi/g	1.193E+000	1.192E+000	3.947E+000	1.903E+000	-0.42	
RA-226	578	1.308E+000 pCi/g	1.164E-001	1.104E-001	3.555E+000	1.590E+000	0.37	
RA-228	579	1.692E+000 pCi/g	2.027E-001	1.965E-001	2.272E-001	8.378E-002	7.45	
RU-106	1551	-2.351E-002 pCi/g	2.524E-001	2.524E-001	9.531E-001	4.122E-001	-0.02	
SN-113	1653	-1.942E-002 pCi/g	4.241E-002	4.240E-002	1.490E-001	6.803E-002	-0.13	
SR-85	1554	-1.980E-002 pCi/g	4.064E-002	4.063E-002	1.414E-001	6.533E-002	-0.14	
TH-227	1915	-7.267E-002 pCi/g	6.273E-001	6.273E-001	2.112E+000	1.032E+000	-0.03	
TH-231	1560	8.193E-003 pCi/g	1.963E-001	1.963E-001	6.881E-001	3.253E-001	0.01	
TH-234	1562	1.092E+000 pCi/g	5.570E-001	5.556E-001	1.852E+000	8.907E-001	0.59	
TL-208	1563	6.353E-001 pCi/g	6.786E-002	6.528E-002	1.029E-001	4.453E-002	6.17	
U-235	1566	8.193E-003 pCi/g	1.963E-001	1.963E-001	6.881E-001	3.253E-001	0.01	
Y-88	1569	-2.143E-002 pCi/g	4.832E-002	4.832E-002	1.725E-001	7.710E-002	-0.12	

<u>SampID</u>	<u>WRKNO</u>	<u>Aliquot</u>	<u>Sigma</u>	<u>Instrument</u>	<u>Detector</u>	<u>CountDate</u>	<u>Time</u>	<u>CountDuration</u>
F0D080501-005	LXNM21AF	288.70g	1.00	GammaVision	GV08	4 / 18 / 10	12:54	30
<u>Analyte</u>	<u>Compnd#</u>	<u>Activity</u>	<u>TotalUnc</u>	<u>CountUnc</u>	<u>MDA</u>	<u>MLCC</u>	<u>Act/MDA</u>	
AC-228	1501	1.369E+000 pCi/g	1.442E-001	1.385E-001	2.114E-001	7.794E-002	6.48	
AM-241	1493	3.545E-002 pCi/g	9.446E-002	9.445E-002	3.215E-001	1.541E-001	0.11	
BI-211	1906	-3.699E-001 pCi/g	3.167E-001	3.165E-001	1.056E+000	5.051E-001	-0.35	
BI-214	1505	1.104E+000 pCi/g	1.377E-001	1.338E-001	2.442E+000	1.077E+000	0.45	
CD-109	1908	1.725E-001 pCi/g	6.473E-001	6.473E-001	2.217E+000	1.058E+000	0.08	
CE-139	1909	8.594E-004 pCi/g	2.323E-002	2.323E-002	8.139E-002	3.821E-002	0.01	
CO-60	1515	-5.962E-003 pCi/g	3.670E-002	3.670E-002	1.407E-001	5.937E-002	-0.04	

CS-134	1517	8.897E-003	pCi/g	1.160E-001	1.160E-001	3.935E-001	1.908E-001	0.02
CS-137	1518	3.520E-003	pCi/g	2.840E-002	2.840E-002	1.071E-001	4.623E-002	0.03
EU-152	1519	8.454E-002	pCi/g	1.898E-001	1.898E-001	7.055E-001	2.973E-001	0.12
HG-203	1910	-7.913E-004	pCi/g	2.815E-002	2.815E-002	1.002E-001	4.632E-002	-0.01
K-40	1527	2.354E+001	pCi/g	1.553E+000	1.399E+000	9.790E-001	3.784E-001	24.04
NA-22	1530	0.000E+000	pCi/g	7.811E-003	7.811E-003	5.757E-002	1.820E-002	0.00
PB-212	1540	1.217E+000	pCi/g	1.270E-001	1.215E-001	2.331E-001	1.107E-001	5.22
PB-214	1541	1.206E+000	pCi/g	1.124E-001	1.066E-001	1.409E+001	6.388E+000	0.09
RA-223	1912	-3.699E-001	pCi/g	3.167E-001	3.165E-001	1.056E+000	5.051E-001	-0.35
RA-224	1548	-8.383E-002	pCi/g	9.109E-001	9.109E-001	3.127E+000	1.497E+000	-0.03
RA-226	578	1.250E+000	pCi/g	1.230E-001	1.178E-001	3.357E+000	1.505E+000	0.37
RA-228	579	1.369E+000	pCi/g	1.442E-001	1.385E-001	2.114E-001	7.794E-002	6.48
RU-106	1551	-9.638E-003	pCi/g	2.962E-001	2.962E-001	1.094E+000	4.868E-001	-0.01
SN-113	1653	-1.340E-003	pCi/g	3.518E-002	3.518E-002	1.279E-001	5.783E-002	-0.01
SR-85	1554	-5.406E-002	pCi/g	4.429E-002	4.426E-002	1.482E-001	6.906E-002	-0.36
TH-227	1915	-3.699E-001	pCi/g	3.167E-001	3.165E-001	1.056E+000	5.051E-001	-0.35
TH-231	1560	1.230E-001	pCi/g	3.635E-002	3.616E-002	7.051E-001	3.347E-001	0.17
TH-234	1562	1.166E+000	pCi/g	5.737E-001	5.721E-001	1.959E+000	9.455E-001	0.60
TL-208	1563	5.803E-001	pCi/g	6.862E-002	6.649E-002	1.106E-001	4.878E-002	5.25
U-235	1566	1.230E-001	pCi/g	3.635E-002	3.616E-002	7.051E-001	3.347E-001	0.17
Y-88	1569	3.864E-002	pCi/g	2.941E-002	2.939E-002	9.914E-002	4.105E-002	0.39

<u>SampID</u>	<u>WRKNO</u>	<u>Aliquot</u>	<u>Sigma</u>	<u>Instrument</u>	<u>Detector</u>	<u>CountDate</u>	<u>Time</u>	<u>CountDuration</u>
F0D080501-006	LXNM41AF	327.70g	1.00	GammaVision	GV10	4 / 18 / 10	12:50	30
<u>Analyte</u>	<u>Cmpnd#</u>	<u>Activity</u>	<u>TotalUnc</u>	<u>CountUnc</u>	<u>MDA</u>	<u>MLCC</u>	<u>Act/MDA</u>	
AC-228	1501	1.846E+000 pCi/g	1.916E-001	1.839E-001	2.532E-001	1.060E-001	7.29	
AM-241	1493	5.094E-002 pCi/g	7.844E-002	7.842E-002	2.652E-001	1.269E-001	0.19	
BI-211	1906	8.099E-002 pCi/g	2.533E-001	2.533E-001	8.654E-001	4.136E-001	0.09	
BI-212	1907	2.109E+000 pCi/g	4.525E-001	4.482E-001	8.085E-001	3.284E-001	2.61	
BI-214	1505	1.266E+000 pCi/g	1.239E-001	1.182E-001	2.232E+000	1.008E+000	0.57	
CD-109	1908	2.008E+000 pCi/g	8.306E-001	8.273E-001	2.680E+000	1.295E+000	0.75	
CE-139	1909	-2.316E-002 pCi/g	2.743E-002	2.742E-002	9.242E-002	4.404E-002	-0.25	
CO-60	1515	1.735E-002 pCi/g	2.960E-002	2.959E-002	1.075E-001	4.584E-002	0.16	
CS-134	1517	-6.698E-002 pCi/g	4.532E-002	4.527E-002	1.499E-001	7.042E-002	-0.45	
CS-137	1518	7.448E-002 pCi/g	3.828E-002	3.821E-002	1.231E-001	5.603E-002	0.60	
EU-152	1519	0.000E+000 pCi/g	1.386E-001	1.386E-001	5.367E-001	2.283E-001	0.00	
HG-203	1910	-2.850E-002 pCi/g	3.404E-002	3.403E-002	1.152E-001	5.446E-002	-0.25	
K-40	1527	1.828E+001 pCi/g	1.176E+000	1.054E+000	9.984E-001	4.192E-001	18.31	
NA-22	1530	6.888E-004 pCi/g	3.250E-002	3.250E-002	1.223E-001	5.345E-002	0.01	
PB-212	1540	1.296E+000 pCi/g	1.257E-001	1.193E-001	2.319E-001	1.110E-001	5.59	
PB-214	1541	1.395E+000 pCi/g	1.053E-001	9.705E-002	2.135E-001	9.896E-002	6.53	
RA-223	1912	8.099E-002 pCi/g	2.533E-001	2.533E-001	8.654E-001	4.136E-001	0.09	
RA-224	1548	1.703E+000 pCi/g	8.357E-001	8.341E-001	2.718E+000	1.303E+000	0.63	
RA-226	578	1.429E+000 pCi/g	1.215E-001	1.146E-001	2.385E+000	1.066E+000	0.60	
RA-228	579	1.846E+000 pCi/g	1.916E-001	1.839E-001	2.532E-001	1.060E-001	7.29	
RU-106	1551	-1.096E-001 pCi/g	2.716E-001	2.716E-001	9.637E-001	4.361E-001	-0.11	
SN-113	1653	-1.149E-003 pCi/g	3.418E-002	3.418E-002	1.221E-001	5.621E-002	-0.01	
SR-85	1554	-5.214E-002 pCi/g	3.926E-002	3.923E-002	1.306E-001	6.139E-002	-0.40	
TH-227	1915	8.099E-002 pCi/g	2.533E-001	2.533E-001	8.654E-001	4.136E-001	0.09	
TH-231	1560	-2.692E-002 pCi/g	2.109E-001	2.109E-001	7.241E-001	3.462E-001	-0.04	
TH-234	1562	1.692E+000 pCi/g	5.950E-001	5.918E-001	1.968E+000	9.531E-001	0.86	
TL-208	1563	6.190E-001 pCi/g	6.565E-002	6.314E-002	1.055E-001	4.776E-002	5.87	
U-235	1566	-2.692E-002 pCi/g	2.109E-001	2.109E-001	7.241E-001	3.462E-001	-0.04	
Y-88	1569	1.471E-002 pCi/g	3.425E-002	3.424E-002	1.221E-001	5.475E-002	0.12	

<u>SampID</u>	<u>WRKNO</u>	<u>Aliquot</u>	<u>Sigma</u>	<u>Instrument</u>	<u>Detector</u>	<u>CountDate</u>	<u>Time</u>	<u>CountDuration</u>
F0D080501-007	LXNM91AF	302.30g	1.00	GammaVision	GV02	4 / 18 / 10	13:33	30
<u>Analyte</u>	<u>Cmpnd#</u>	<u>Activity</u>	<u>TotalUnc</u>	<u>CountUnc</u>	<u>MDA</u>	<u>MLCC</u>	<u>Act/MDA</u>	
AC-228	1501	1.612E+000 pCi/g	1.633E-001	1.564E-001	3.078E-001	1.267E-001	5.24	
AM-241	1493	-2.301E-002 pCi/g	8.443E-002	8.443E-002	2.878E-001	1.381E-001	-0.08	

BI-211	1906	-9.576E-002	pCi/g	6.324E-001	6.324E-001	2.120E+000	1.040E+000	-0.05
BI-214	1505	1.225E+000	pCi/g	1.361E-001	1.313E-001	2.372E+000	1.047E+000	0.52
CD-109	1908	0.000E+000	pCi/g	6.938E-001	6.938E-001	2.370E+000	1.143E+000	0.00
CE-139	1909	-1.971E-004	pCi/g	2.350E-002	2.350E-002	8.162E-002	3.871E-002	0.00
CO-60	1515	-4.654E-002	pCi/g	5.619E-002	5.617E-002	1.956E-001	8.684E-002	-0.24
CS-134	1517	-1.475E-002	pCi/g	3.206E-002	3.206E-002	1.137E-001	5.122E-002	-0.13
CS-137	1518	2.781E-002	pCi/g	3.669E-002	3.668E-002	1.282E-001	5.712E-002	0.22
EU-152	1519	-3.163E-003	pCi/g	1.261E-001	1.261E-001	5.252E-001	2.069E-001	-0.01
HG-203	1910	-3.786E-003	pCi/g	2.850E-002	2.850E-002	1.001E-001	4.669E-002	-0.04
K-40	1527	3.355E+001	pCi/g	1.918E+000	1.663E+000	6.075E-001	1.920E-001	55.22
NA-22	1530	2.013E-002	pCi/g	4.957E-002	4.957E-002	1.792E-001	7.901E-002	0.11
PB-212	1540	1.557E+000	pCi/g	1.069E-001	9.558E-002	1.693E-001	7.955E-002	9.19
PB-214	1541	1.274E+000	pCi/g	1.140E-001	1.077E-001	1.056E+001	4.646E+000	0.12
RA-223	1912	-9.576E-002	pCi/g	6.324E-001	6.324E-001	2.120E+000	1.040E+000	-0.05
RA-224	1548	-5.637E+000	pCi/g	1.489E+000	1.479E+000	4.713E+000	2.299E+000	-1.20
RA-226	578	1.255E+000	pCi/g	1.206E-001	1.153E-001	3.673E+000	1.663E+000	0.34
RA-228	579	1.612E+000	pCi/g	1.633E-001	1.564E-001	3.078E-001	1.267E-001	5.24
RU-106	1551	2.753E-001	pCi/g	2.930E-001	2.929E-001	1.012E+000	4.486E-001	0.27
SN-113	1653	2.113E-003	pCi/g	3.929E-002	3.929E-002	1.403E-001	6.456E-002	0.02
SR-85	1554	-4.271E-002	pCi/g	4.460E-002	4.458E-002	1.508E-001	7.063E-002	-0.28
TH-227	1915	-9.576E-002	pCi/g	6.324E-001	6.324E-001	2.120E+000	1.040E+000	-0.05
TH-231	1560	2.560E-001	pCi/g	1.751E-001	1.749E-001	5.839E-001	2.771E-001	0.44
TH-234	1562	2.363E+000	pCi/g	5.302E-001	5.230E-001	1.350E+000	6.469E-001	1.75
TL-208	1563	6.007E-001	pCi/g	7.361E-002	7.151E-002	1.223E-001	5.500E-002	4.91
U-235	1566	2.560E-001	pCi/g	1.751E-001	1.749E-001	5.839E-001	2.771E-001	0.44
Y-88	1569	1.418E-002	pCi/g	3.983E-002	3.983E-002	1.443E-001	6.379E-002	0.10

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDate	Time	CountDuration
F0D120000-353B	LXVGT1AA	358.80g	1.00	GammaVision	GV03	4 / 18 / 10	13:34	30
Analyte	Compnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Δcu/MDA	
AM-241	1493	-1.106E-002	pCi/g	2.381E-002	2.381E-002	8.515E-002	3.787E-002	-0.13
BI-211	1906	0.000E+000	pCi/g	1.823E-001	1.823E-001	6.328E-001	3.003E-001	0.00
BI-214	1505	-1.619E-002	pCi/g	3.759E-001	3.759E-001	1.416E+000	6.169E-001	-0.01
CD-109	1908	-6.679E-002	pCi/g	2.278E-001	2.278E-001	8.094E-001	3.688E-001	-0.08
CE-139	1909	6.239E-003	pCi/g	9.307E-003	9.306E-003	3.275E-002	1.458E-002	0.19
CO-60	1515	0.000E+000	pCi/g	2.642E-002	2.642E-002	1.004E-001	4.353E-002	0.00
CS-134	1517	-1.508E-003	pCi/g	1.748E-002	1.748E-002	6.484E-002	2.860E-002	-0.02
CS-137	1518	-1.717E-002	pCi/g	2.119E-002	2.119E-002	7.441E-002	3.252E-002	-0.23
EU-152	1519	0.000E+000	pCi/g	2.468E-002	2.468E-002	1.819E-001	5.751E-002	0.00
HG-203	1910	1.391E-002	pCi/g	1.144E-002	1.144E-002	3.883E-002	1.677E-002	0.36
K-40	1527	-5.610E-002	pCi/g	2.569E-001	2.569E-001	9.458E-001	4.062E-001	-0.06
NA-22	1530	0.000E+000	pCi/g	2.529E-002	2.529E-002	9.619E-002	4.166E-002	0.00
PB-212	1540	7.330E-002	pCi/g	2.985E-002	2.977E-002	9.190E-002	4.179E-002	0.80
PB-214	1541	8.171E-002	pCi/g	3.834E-002	3.826E-002	1.377E-001	6.222E-002	0.59
RA-223	1912	0.000E+000	pCi/g	1.823E-001	1.823E-001	6.328E-001	3.003E-001	0.00
RA-224	1548	9.598E-003	pCi/g	2.937E-001	2.937E-001	1.060E+000	4.830E-001	0.01
RA-226	578	2.888E-001	pCi/g	4.901E-002	4.833E-002	1.547E+000	6.675E-001	0.19
RA-228	579	9.040E-002	pCi/g	4.612E-002	4.605E-002	1.369E-001	5.111E-002	0.66
RU-106	1551	-1.076E-001	pCi/g	1.643E-001	1.642E-001	5.871E-001	2.546E-001	-0.18
SN-113	1653	4.585E-003	pCi/g	1.680E-002	1.680E-002	6.222E-002	2.699E-002	0.07
SR-85	1554	-2.674E-002	pCi/g	2.606E-002	2.605E-002	8.822E-002	4.078E-002	-0.30
TH-227	1915	0.000E+000	pCi/g	1.823E-001	1.823E-001	6.328E-001	3.003E-001	0.00
TH-231	1560	-3.713E-002	pCi/g	8.371E-001	8.371E-001	3.055E-001	1.399E-001	-0.12
TH-234	1562	6.926E-002	pCi/g	1.888E-001	1.887E-001	7.265E-001	3.388E-001	0.10
TL-208	1563	6.786E-003	pCi/g	1.774E-002	1.774E-002	7.088E-002	3.121E-002	0.10
U-235	1566	-3.713E-002	pCi/g	8.371E-001	8.371E-001	3.055E-001	1.399E-001	-0.12
Y-88	1569	2.012E-003	pCi/g	1.422E-002	1.422E-002	5.660E-002	2.297E-002	0.04

SampleID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F0D120000-353C	LXVGT1AC	341.90g	1.00	GammaVision	GV06	4 / 18 / 10 13:32	30
Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AM-241	1493	9.870E+001 pCi/g	4.219E+000	1.612E+000	2.854E+000	1.411E+000	34.59
CO-60	1515	6.314E+001 pCi/g	1.839E+000	4.453E-001	2.981E-001	1.412E-001	211.78
CS-137	1518	4.070E+001 pCi/g	1.256E+000	3.798E-001	3.295E-001	1.609E-001	123.50

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity	StdAdded	Recovery
F0D120000-353C	LXVGT1AC	CS-137	4.070E+001 pCi/g	3.707E+001	109.78% ✓
		CO-60	6.314E+001 pCi/g	6.144E+001	102.76% ✓
		AM-241	9.870E+001 pCi/g	9.883E+001	99.87% ✓

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Samp Activity	Dup Activity	RPD	RER	DER	Flag
F0D080501-001	F0D080501-001X	Y-88	-3.550E-002 pCi/g	-2.566E-002	32.18% / 5.946E-002	1.679E-001	< MDA	
		TH-234	2.702E+000 pCi/g	2.252E+000	18.17% / 1.911E-001	5.405E-001	< MDA	
		AM-241	-5.074E-003 pCi/g	-4.483E-002	159.33% / 1.183E-001	3.342E-001	< MDA	
		BI-211	1.563E-001 pCi/g	-9.066E-002	752.26% / 1.511E-001	3.569E-001	< MDA	
		TL-208	6.120E-001 pCi/g	5.958E-001	2.67% / 5.834E-002	1.650E-001	< MDA	
		U-235	2.599E-001 pCi/g	1.748E-001	39.15% / 1.111E-001	3.138E-001	< MDA	
		SR-85	-6.024E-002 pCi/g	-4.510E-002	28.74% / 8.465E-002	2.382E-001	< MDA	
		TH-227	1.563E-001 pCi/g	-9.066E-002	752.26% / 1.511E-001	3.569E-001	< MDA	
		TH-231	2.599E-001 pCi/g	1.748E-001	39.15% / 1.111E-001	3.138E-001	< MDA	
		RA-228	1.784E+000 pCi/g	2.009E+000	11.87% / 3.310E-001	9.330E-001	< MDA	
		RU-106	7.799E-004 pCi/g	8.394E-002	196.32% / 7.256E-002	2.025E-001	< MDA	
		SN-113	1.620E-003 pCi/g	2.913E-002	178.93% / 2.033E-001	5.748E-001	< MDA	
		RA-223	1.563E-001 pCi/g	-9.066E-002	752.26% / 1.511E-001	3.569E-001	< MDA	
		RA-224	-5.452E+000 pCi/g	-1.718E+000	104.17% / 6.973E-001	1.953E+000	< MDA	
		RA-226	1.368E+000 pCi/g	1.341E+000	1.93% / 4.769E-002	1.349E-001	< MDA	
		NA-22	3.523E-002 pCi/g	4.215E-002	17.89% / 3.957E-002	1.115E-001	< MDA	
		PB-212	1.684E+000 pCi/g	1.477E+000	13.09% / 4.435E-001	1.254E+000	< MDA	
		PB-214	1.254E+000 pCi/g	0.000E+000	200.00% / 8.650E-002	1.761E-001	< MDA	
		EU-152	-1.300E-001 pCi/g	2.985E-001	508.77% / 5.376E-001	1.494E+000	< MDA	
		HG-203	-7.008E-003 pCi/g	6.734E-002	246.46% / 6.902E-001	1.952E+000	< MDA	
		K-40	2.884E+001 pCi/g	2.664E+001	7.93% / 3.302E-001	9.305E-001	< MDA	
		CO-60	-2.650E-002 pCi/g	3.554E-002	1,372.42% / 3.621E-001	1.008E+000	< MDA	
		CS-134	5.767E-006 pCi/g	-4.079E-002	200.06% / 3.207E-001	8.594E-001	< MDA	
		CS-137	0.000E+000 pCi/g	-6.990E-003	200.00% / 4.365E-002	1.227E-001	< MDA	
		BI-214	1.334E+000 pCi/g	1.300E+000	2.53% / 5.931E-002	1.677E-001	< MDA	
		CD-109	4.262E+000 pCi/g	4.408E-002	195.90% / 1.492E+000	4.215E+000	< MDA	
		CE-139	3.701E-003 pCi/g	-1.834E-002	301.11% / 2.315E-001	6.493E-001	< MDA	
		AC-228	1.784E+000 pCi/g	2.009E+000	11.87% / 3.310E-001	9.330E-001	< MDA	

DB Analysis ID: 86,465**Sample Description:** 0102353_LXNMR1AF_F0D080501-001**Spectrum Filename:** LXNMR1AF.An1**Acquisition Information**

Start Time:	18-Apr-2010	12:51:47PM	
Live Time:	1800.00		Real Time: 1807.58
Dead Time:	0.42 %		
Detector ID:	2		

Detector System: Ge 2 SN/182**Calibration**

Description:	Ge2_TunaCanCal_84127_334_022310		
Filename:	C:\User\Calibrations\Ge2 calibrations\Ge2_TunaCanCal_84127_334_022310.Clb		
Energy Created:	23-Feb-2010 9:33:18PM	Efficiency Created:	23-Feb-2010 9:33:54PM
Zero Offset:	0.193 keV	Gain:	0.250 keV/Channel

Library 1 File: lanl.lib

Library based peak stripping used.

Library 2 File: Null.Lib**Library 3 File:** Null.Lib**Analysis Parameters**

Start Channel:	150 for an energy of 37.68 keV
Stop Channel:	8,000 for an energy of 1999.85 keV
Peak rejection level:	30.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections

<u>Status</u>	<u>Comments</u>
Decay Correct to Date:	YES 18-Apr-2010 12:00:00PM
Decay During Acquisition:	NO
Peaked Background Correction:	YES Ge2 PBC table 03_31 10.Pbc
Absorption:	NO
Geometry Correction:	NO
Random Summing:	NO

Energy Calibration Normalized Differe 0.2078

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
298.52	74.79	186.33	194.67	0.108	14.39	0.677	TH-234	M
307.91	77.14	130.17	307.83	0.171	8.45	0.761	PB-212	M
348.62	87.31	251.27	22.73	0.013	100.85	0.995		sM
359.93	90.13	78.83	85.17	0.047	18.30	1.102	AC-228	sM

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

<u>Nuclide</u>	<u>Library Used</u>	<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Code</u>
Bi-212	1	160.63	40.33	79.81	11.75	0.007	111.43	0.753	s
Pb-210	1	184.62	46.33	98.88	57.13	0.032	18.93	0.809	
Th-227	1	201.84	50.63	108.10	18.59	0.010	82.44	0.763	s
Am-241	1	237.48	59.54	147.34	-1.09	-0.001	1570.78	0.771	s
Th-234	1	252.15	63.20	190.84	16.28	0.009	45.12	0.774	s
cd-109	1	348.74	87.34	123.70	126.28	0.070	15.31	0.797	
Th-234	1	371.32	92.98	165.51	118.49	0.066	16.79	1.120	s
Co-57	1	487.41	121.99	97.05	8.56	0.005	166.31	0.827	s
Eu-152	1	487.63	122.05	98.41	8.22	0.005	174.12	0.826	s
Co-57	1	544.29	136.20	88.23	-1.55	-0.001	858.79	0.839	s
U-235	1	574.10	143.65	104.79	21.66	0.012	58.65	0.846	s
Ce-139	1	660.91	165.35	74.22	2.19	0.001	559.84	0.865	s
U-235	1	743.27	185.93	130.33	42.42	0.024	29.65	0.882	s
ra-226	1	743.89	186.09	90.00	75.00	0.042	26.33	0.630	s
U-235	1	821.74	205.54	84.10	6.69	0.004	197.75	0.899	s
Ac-228	1	837.10	209.38	51.33	72.67	0.040	21.49	0.552	s
Th-227	1	936.82	234.30	33.30	9.81	0.005	89.12	0.925	s
Pb-212	1	954.74	238.78	70.64	407.36	0.226	5.81	0.984	
Ra-224	1	960.31	240.17	472.36	-116.95	-0.065	27.86	0.929	
Pb-214	1	967.32	241.92	45.83	51.24	0.028	10.11	0.646	s D
ra-226	1	967.56	241.98	119.00	7.13	0.004	152.84	0.931	D
Eu-152	1	979.78	245.03	66.92	-5.74	-0.003	205.78	0.933	s
Th-227	1	1022.40	255.68	69.95	-0.18	0.000	6520.18	0.943	s
Ac-228	1	1082.54	270.71	62.36	19.47	0.011	61.67	0.954	s
Tl-208	1	1104.82	276.28	55.19	-9.03	-0.005	121.01	0.960	s
Hg-203	1	1116.41	279.18	50.11	-2.59	-0.001	391.62	0.962	s
Pb-214	1	1180.09	295.09	50.71	109.08	0.061	10.09	0.975	D
ra-226	1	1180.60	295.22	46.00	118.91	0.066	9.86	0.548	s D
Pb-212	1	1199.78	300.01	41.37	23.00	0.013	44.72	0.980	
Ac-228	1	1353.98	338.55	27.50	91.50	0.051	14.98	0.940	
Eu-152	1	1371.68	342.97	33.28	-0.99	-0.001	830.88	1.016	s
Pb-214	1	1407.27	351.87	60.68	177.12	0.098	10.07	1.023	D
ra-226	1	1407.49	351.92	42.17	193.66	0.108	9.84	0.843	s D
sn-113	1	1565.55	391.42	28.98	0.36	0.000	2122.02	1.055	s
Sr-85	1	2053.97	513.49	74.90	-15.73	-0.009	81.80	1.153	s
Cs-134	1	2253.03	563.24	13.41	0.00	0.000	1000.00	1.191	s
Cs-134	1	2277.37	569.32	34.97	0.00	0.000	1000.00	1.196	s
Tl-208	1	2333.06	583.24	15.93	123.07	0.068	10.42	1.166	
Cs-134	1	2407.10	601.74	10.79	0.00	0.000	166909.72	1.223	s
Bi-214	1	2437.38	609.31	17.90	138.04	0.077	9.89	1.254	D
ra-226	1	2437.42	609.32	23.15	142.18	0.079	9.84	1.226	D
ru-106	1	2494.20	623.51	26.04	0.02	0.000	42855.39	1.236	s
Cs-137	1	2646.80	661.65	30.95	0.00	0.000	1000.00	1.266	s
Bi-214	1	2661.97	665.44	25.00	0.00	0.000	1000.00	1.268	s
Bi-212	1	2911.13	727.72	23.68	25.96	0.014	32.99	1.314	s

Bi-214	1	3076.25	768.99	21.43	5.33	0.003	130.31	1.344	s
Eu-152	1	3119.37	779.76	20.42	0.83	0.000	775.15	1.351	s
Bi-212	1	3141.77	785.36	18.29	4.61	0.003	139.11	1.356	s
Pb-214	1	3142.32	785.50	25.72	-0.88	0.000	818.05	1.356	s
Cs-134	1	3180.78	795.11	17.77	1.53	0.001	398.76	1.363	s
Cs-134	1	3208.05	801.93	49.76	0.00	0.000	1000.00	1.368	s
Mn-54	1	3338.09	834.43	18.22	3.37	0.002	187.03	1.391	s
Tl-208	1	3444.86	861.12	16.86	7.26	0.004	88.18	1.409	s
y-88	1	3585.47	896.26	18.43	-5.27	-0.003	123.11	1.435	s
Ac-228	1	3645.65	911.30	2.67	77.33	0.043	12.07	0.420	s
Eu-152	1	3862.01	965.39	21.55	4.18	0.002	164.62	1.479	s
Ac-228	1	3877.35	969.22	2.50	48.50	0.027	15.60	0.298	s
Eu-152	1	4355.08	1088.63	11.50	3.68	0.002	140.34	1.559	s
Eu-152	1	4448.09	1111.88	17.89	-0.98	-0.001	616.35	1.576	s
Zn-65	1	4477.28	1119.18	17.44	-2.31	-0.001	264.42	1.578	s
Bi-214	1	4481.65	1120.27	13.99	0.00	0.000	692.82	1.581	s D
ra-226	1	4481.68	1120.28	13.98	27.14	0.015	9.84	1.581	s D
Co-60	1	4696.55	1173.99	22.74	-0.63	0.000	1072.23	1.614	s
ra-226	1	4947.30	1236.67	24.80	-4.17	-0.002	175.77	1.654	s
Na-22	1	5097.24	1274.15	13.35	4.13	0.002	134.43	1.675	s
Co-60	1	5330.09	1332.36	14.84	-2.99	-0.002	191.08	1.709	s
Eu-152	1	5632.58	1407.98	12.47	-2.89	-0.002	182.31	1.752	s
K-40	1	5845.77	1461.27	0.00	320.00	0.178	5.59	1.217	s
Ac-228	1	6353.59	1588.23	17.72	0.00	0.000	1000.00	1.848	s
Bi-212	1	6485.39	1621.18	6.94	3.68	0.002	114.00	1.865	s
ra-226	1	7058.62	1764.49	3.28	18.85	0.010	9.91	1.935	s D
Bi-214	1	7058.62	1764.49	0.00	18.53	0.010	9.97	1.935	s D
y-88	1	7344.68	1836.01	0.00	0.00	0.000	1000.00	1.968	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Activity Bq	Peak Analysis Code	MDA Value Bq	Code	T 1/2 (y)	% Abn.
ru-106		I	1	7.978E-003	621.84	7.978E-003 % (	1.255E+001	G	3.7E+002	9.80
Hg-203		I	1	-7.166E-002	279.19	-7.166E-002 & (	9.880E-001	G	4.7E+001	77.30
				6.261E+000	860.30	3.748E+000 %	1.128E+001	G	7.0E+002	12.00
				6.261E+000	277.28	-2.828E+000 &	1.169E+001	G	7.0E+002	6.79
Tl-208	F	N	1	6.261E+000	583.02	6.261E+000 (P	1.084E+000	G	7.0E+002	86.00
Sr-85		I	1	-6.160E-001	513.99	-6.160E-001 % (	1.686E+000	G	6.5E+001	99.27
				5.900E-005	569.32	0.000E+000 %	8.395E+000	G	7.5E+002	15.43
				5.900E-005	801.93	0.000E+000 &	2.375E+001	G	7.5E+002	8.73
				5.900E-005	563.24	0.000E+000 %	9.993E+000	G	7.5E+002	8.39
Cs-134	T F	I	1	5.900E-005	604.71	5.900E-005 & (	8.354E-001	G	7.5E+002	97.60
				5.900E-005	795.84	1.035E-001 &	1.515E+000	G	7.5E+002	85.40
Ra-224		N	1	-5.577E+001	240.76	-5.577E+001 (	4.959E+001	G	7.0E+002	3.90
Am-241	T		1	-5.191E-002	59.54	-5.191E-002 % (	2.810E+000	G	1.6E+005	35.70
cd-109	T F		1	4.360E+001	88.03	4.360E+001 (	1.883E+001	G	4.6E+002	3.72
Pb-210		N	1	4.063E+001	46.52	4.063E+001 % (P	3.489E+001	G	8.1E+003	4.05
Ce-139	T F		1	3.786E-002	165.85	3.786E-002 % (	7.400E-001	G	1.4E+002	80.35
y-88	T F		1	-3.631E-001	898.02	-3.631E-001 & (	1.564E+000	G	1.1E+002	93.40

			-3.631E-001	1836.01	0.000E+000 %		9.037E-001 G	1.1E+002	99.38
Na-22	F C	1	3.604E-001	1274.53	3.604E-001 % (		1.722E+000 G	9.5E+002	99.84
Zn-65	T F	1	-3.525E-001	1115.52	-3.525E-001 % (		3.388E+000 G	2.4E+002	50.75
K-40	N	1	2.950E+002	1460.83	2.950E+002 (		6.794E+000 G	4.7E+011	10.67
Th-234	N	1	2.762E+001	92.59	2.762E+001 * (P		1.461E+001 G	2.4E+001	5.41
			2.762E+001	63.29	6.787E+000 % P		2.797E+001 G	2.4E+001	3.81
Co-60	T F	1	-2.711E-001	1332.50	-2.711E-001 % (		1.873E+000 G	1.9E+003	99.98
			-2.711E-001	1173.24	-5.137E-002 %		2.022E+000 G	1.9E+003	99.90
U-235	N	1	2.659E+000	143.79	2.659E+000 % (P		6.190E+000 G	2.6E+011	10.50
			2.659E+000	185.74	1.198E+000 % P		1.579E+000 G	A 2.6E+011	53.00
			2.659E+000	205.33	2.303E+000 %		1.565E+001 G	2.6E+011	4.70
			2.087E+001	39.86	5.099E+001 %		1.925E+002 G	7.0E+002	1.02
Bi-212	N	1	2.087E+001	727.25	2.087E+001 % (		2.041E+001 G	7.0E+002	6.65
			2.087E+001	1620.66	2.634E+001 %		1.074E+002 G	7.0E+002	1.51
			2.087E+001	785.51	2.385E+001 %		1.170E+002 G	7.0E+002	1.11
Mn-54	F C	1	2.036E-001	834.83	2.036E-001 & (		1.364E+000 G	3.1E+002	99.98
Ac-228	N	1	1.825E+001	911.16	1.737E+001 (		2.317E+000 G	2.1E+003	29.00
			1.825E+001	968.97	1.912E+001 (		3.973E+000 G	2.1E+003	17.42
			1.825E+001	338.42	1.908E+001 (		5.660E+000 G	2.1E+003	12.40

			1.825E+001	209.39	2.902E+001 *		1.441E+001 G	2.1E+003	4.12
			1.825E+001	270.26	1.071E+001 %		2.173E+001 G	2.1E+003	3.77
			1.825E+001	1588.23	0.000E+000 %		6.586E+001 G	2.1E+003	3.60
Pb-212	N	1	1.723E+001	238.58	1.723E+001 (P		1.771E+000 G	7.0E+002	43.60
			1.723E+001	300.03	1.578E+001 %		2.243E+001 G	7.0E+002	3.34
sn-113	T F	1	1.657E-002	391.69	1.657E-002 % (		1.280E+000 G	1.2E+002	64.90
Th-227	N	1	1.599E+000	235.97	1.599E+000 & (		4.826E+000 G	8.0E+003	11.20
			1.599E+000	50.14	4.952E+000 %		1.363E+001 G	8.0E+003	8.50
			1.599E+000	256.24	-5.311E-002 %		1.220E+001 G	8.0E+003	6.74
ra-226		1	1.399E+001	609.32	1.399E+001 E		2.473E+000 G	5.8E+005	46.30
			1.399E+001	1764.49	1.399E+001 ? E		8.272E+000 G	5.8E+005	15.80
			1.399E+001	1238.11	-5.965E+000 % (		3.706E+001 G	5.8E+005	5.94
			1.399E+001	1120.28	1.399E+001 % E		1.038E+001 G	5.8E+005	15.10
			1.399E+001	351.92	1.399E+001		2.382E+000 G	5.8E+005	37.20
			1.399E+001	295.22	1.399E+001		4.038E+000 G	5.8E+005	19.20
			1.399E+001	241.98	1.780E+000 %		1.336E+001 G	5.8E+005	7.49
			1.399E+001	186.21	3.214E+001 (		2.011E+001 G	5.8E+005	3.50
Bi-214	N	1	1.365E+001	609.31	1.365E+001 PE		2.217E+000 G	5.8E+005	46.09
			1.365E+001	1764.49	1.365E+001 % E		5.428E+000 G	5.8E+005	15.92

			1.365E+001	1120.27	0.000E+000 %	E	1.042E+001 G	5.8E+005	15.04
			1.365E+001	768.35	6.120E+000 & (		2.790E+001 G	5.8E+005	4.89
			1.365E+001	665.44	0.000E+000 &		8.215E+001 G	5.8E+005	1.56
Eu-152	T F	1	-1.330E+000	1407.95	-1.330E+000 % (		8.811E+000 G	5.0E+003	20.70
			-1.330E+000	121.78	3.562E-001 &		2.120E+000 G	5.0E+003	28.40
			-1.330E+000	344.27	-9.816E-002 %		2.937E+000 G	5.0E+003	26.50
			-1.330E+000	964.01	1.983E+000 %		1.156E+001 G	5.0E+003	14.40
			-1.330E+000	1112.02	-5.722E-001 %		1.304E+001 G	5.0E+003	13.30
			-1.330E+000	778.89	3.713E-001 &		1.060E+001 G	5.0E+003	12.74
			-1.330E+000	1085.78	2.789E+000 %		1.403E+001 G	5.0E+003	10.00
			-1.330E+000	244.69	-1.447E+000 &		1.029E+001 G	5.0E+003	7.49
Pb-214	N	1	1.283E+001	351.87	1.283E+001 !		2.825E+000 G	5.8E+005	37.10
			1.283E+001	295.09	1.283E+001 !		4.222E+000 G	5.8E+005	19.20
			1.283E+001	241.92	1.283E+001		8.577E+000 G	5.8E+005	7.46
			1.283E+001	785.83	-4.639E+000 % (		1.382E+002 G	5.8E+005	1.09
Co-57	PC	1	1.232E-001	122.06	1.232E-001 & (		6.996E-001 G	2.7E+002	85.51
			1.232E-001	136.47	-1.853E-001 %		5.544E+000 G	2.7E+002	10.60
Cs-137	T F I	1	0.000E+000	661.65	0.000E+000 % (		1.652E+000 G	1.1E+004	85.12

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- | | | | | | |
|----|---|---|---|---|---|
| - | = | Peak activity lower than counting uncertainty range | = | = | Peak outside analysis energy range |
| (| = | This peak is used in the nuclide activity average | P | = | Peakbackground subtraction |
| * | = | Peak is too wide, but only one peak in library | @ | = | Peak is too wide at FW25M, but OK at FWHM |
| A | = | Derived Average Activity | E | = | Energy Duplication |
| + | = | Peak activity higher than counting uncertainty range | | | |
| ! | = | Peak is part of a multiplet and this area went negative during deconvolution | | | |
| \$ | = | Peak identified, but first peak of this nuclide failed one or more qualification tests | | | |
| & | = | Calculated peak centroid is not close enough to the library energy centroid for positive identification | | | |

Nuclide Codes:

- | | | | | | | | | |
|---|---|----------------------------|---|---|-----------------------------|---|---|---------------------------|
| T | = | Thermal Neutron Activation | F | = | Fast Neutron Activation | I | = | Fission Product |
| P | = | Photon Reaction | N | = | Naturally Occurring Isotope | C | = | Charged Particle Reaction |
| M | = | No MDA Calculation | | | | | | |

Peak Codes:

- | | | | | | | | | |
|---|---|-----------------|---|---|-----------------|---|---|----------------|
| G | = | Gamma Ray | X | = | X-Ray | P | = | Positron Decay |
| S | = | Single - Escape | D | = | Double - Escape | K | = | Key Line |
| A | = | Not in Average | | | | | | |

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
K-40		2.950E+002	2.950E+002	5.59	6.28	6.794E+000
Mn-54	<	2.036E-001	2.036E-001	187.03	187.06	1.364E+000
Co-57	<	1.232E-001	1.232E-001	166.31	166.34	6.996E-001
Co-60	<	-2.711E-001	-2.711E-001	191.08	191.10	1.873E+000
Zn-65	<	-3.525E-001	-3.525E-001	264.42	264.44	3.388E+000
Cs-137	<			1,000.00	1,000.00	1.652E+000
Ce-139	<	3.786E-002	3.786E-002	559.84	559.84	7.400E-001
Eu-152	<	-1.330E+000	-1.330E+000	182.31	182.33	8.811E+000
sn-113	<	1.657E-002	1.657E-002	2,122.02	2,122.02	1.280E+000
Pb-210		4.063E+001	4.063E+001	30.16	30.42	3.489E+001
Pb-212		1.723E+001	1.723E+001	6.01	6.75	1.771E+000
Pb-214	<	1.283E+001	1.283E+001	9.96	10.38	1.382E+002
Bi-214	<	1.365E+001	1.365E+001	9.78	10.21	2.790E+001
Ac-228		1.825E+001	1.825E+001	8.25	8.75	2.317E+000
Na-22	<	3.604E-001	3.604E-001	134.43	134.46	1.722E+000
Sr-85	<	-6.160E-001	-6.163E-001	81.80	81.85	1.686E+000
y-88	<	-3.631E-001	-3.631E-001	123.11	123.14	1.564E+000
ru-106	<	7.978E-003	7.979E-003	42,855.39	42,855.39	1.255E+001
cd-109	<	4.360E+001	4.360E+001	15.31	15.75	1.883E+001
Cs-134	<	5.900E-005	5.900E-005	366,909.72	366,909.72	8.354E-001
Tl-208		6.261E+000	6.261E+000	10.75	11.14	1.084E+000
Hg-203	<	-7.166E-002	-7.170E-002	391.62	391.63	9.880E-001
Bi-212	<	2.087E+001	2.087E+001	32.99	33.12	2.041E+001
U-235	<	2.659E+000	2.659E+000	69.60	69.66	6.190E+000
ra-226	<	1.399E+001	1.399E+001	9.73	10.13	3.706E+001
Am-241	<	-5.191E-002	-5.191E-002	1,570.78	1,570.79	2.810E+000
Th-227	<	1.599E+000	1.599E+000	89.12	89.17	4.826E+000
Th-234	#	2.762E+001	2.765E+001	21.34	21.66	1.461E+001
Ra-224	<	-5.577E+001	-5.577E+001	27.86	28.03	4.959E+001

= All peaks for activity calculation had bad shape

Total Activity (37.68 to 1,999.85 keV) 364.37 Bq/sample

Analyzed by:

430030

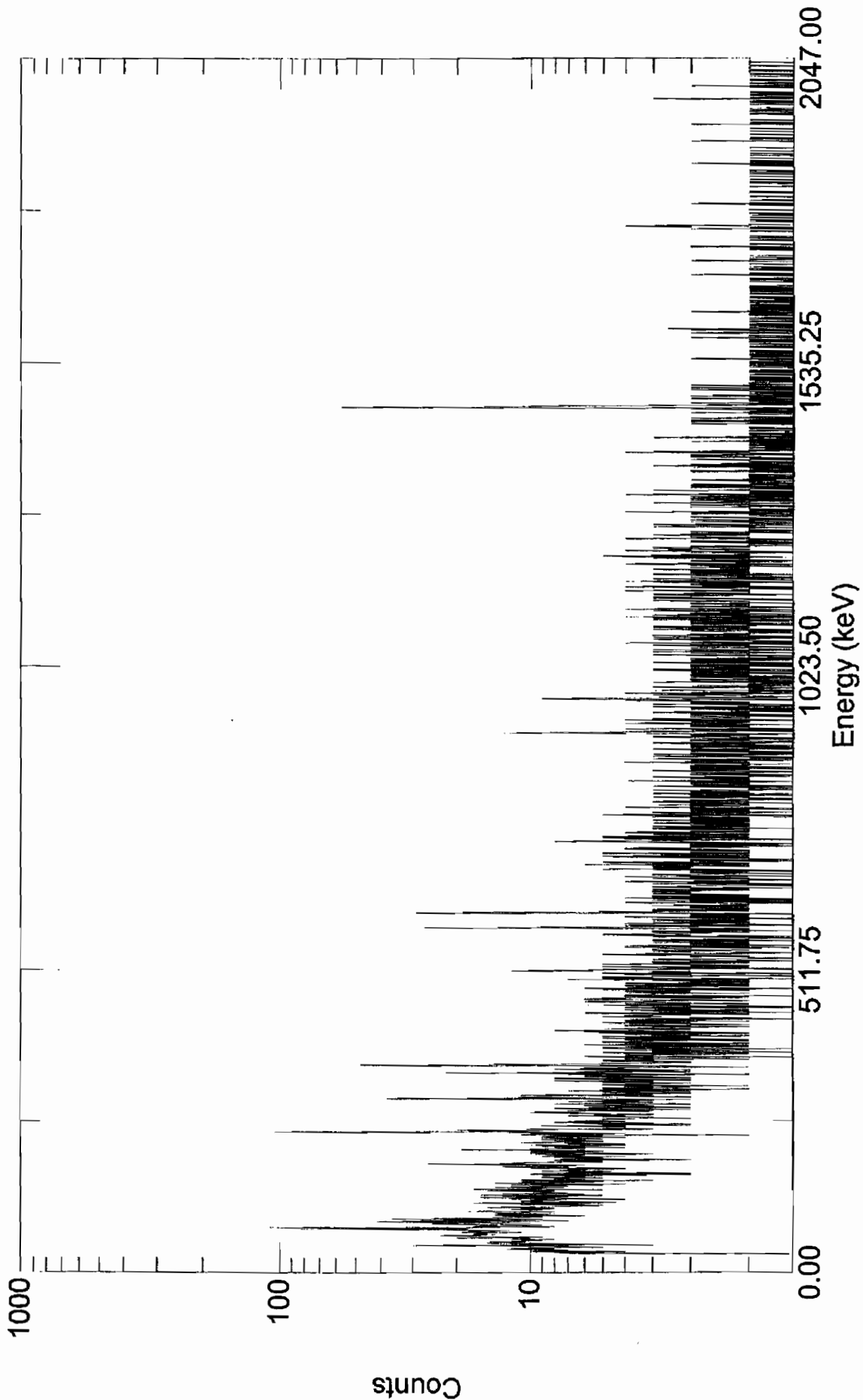
Reviewed by:

Supervisor

Laboratory: Test America

LXNMR1AF

0102353_LXNMR1AF_F0D080501-001



Acquired: 18-Apr-2010 12:51:48 PM
 File: C:\User\spectra\LXNMR1AF.spc
 Detector: #0 Ge 2 SN/182

Real Time: 1807.58 s. Live Time: 1800.00 s.
 Channels: 8192

DB Analysis ID: 86,645

Sample Description: 0102353_LXNMR1AG_F0D080501-001X ✓

Spectrum Filename: LXNMR1AG_RC.An1 ✓

Acquisition Information

Start Time:	20-Apr-2010	12:37:21PM	
Live Time:	1800.00		Real Time: 1807.64
Dead Time:	0.42 %		
Detector ID:	3		

Detector System: Ge 3 SN/131 ✓

Calibration

Description:	Ge3_TunaCanCal_81427_334_022410 ✓		
Filename:	C:\User\Calibrations\Ge3 Calibrations post 08_15_08\Ge3_TunaCanCal_81427_334_0		
Energy Created:	24-Feb-2010 5:06:56PM	Efficiency Created:	24-Feb-2010 5:07:21PM
Zero Offset:	0.173 keV	Gain:	0.250 keV/Channel

Library 1 File: lanl.lib ✓

Library based peak stripping used.

Library 2 File: Null.Lib

Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.64 keV
Stop Channel:	8,000 for an energy of 2000.72 keV
Peak rejection level:	30.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections

	<u>Status</u>	<u>Comments</u>
Decay Correct to Date:	YES	20-Apr-2010 12:00:00PM ✓
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge3 PBC table 03_31_10.Pbc ✓
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.1094

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
298.58	74.75	231.83	242.17	0.135	12.90	0.734	TH-234	M
308.00	77.10	183.33	275.67	0.153	10.23	0.877	PB-212	M
2044.99	511.10	10.47	166.53	0.093	8.22	1.217	NA-22	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

<u>Nuclide</u>	<u>Library Used</u>	<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Code</u>
Bi-212	1	159.40	39.99	96.99	21.50	0.012	68.28	0.858	
Pb-210	1	186.55	46.77	170.95	5.57	0.003	58.37	0.864	s
Th-227	1	201.97	50.62	143.70	-3.76	-0.002	454.29	0.867	s
Am-241	1	238.68	59.79	186.88	-9.95	-0.006	196.94	0.876	s
Th-234	1	253.22	63.42	168.40	76.60	0.043	27.05	1.374	s
cd-109	1	351.74	88.03	232.00	1.28	0.001	1683.46	0.902	
Th-234	1	371.53	92.97	157.56	96.44	0.054	20.79	0.927	s
Co-57	1	487.10	121.84	143.74	-1.12	-0.001	1515.92	0.933	s
Eu-152	1	489.42	122.42	128.25	22.94	0.013	72.88	0.933	s
Co-57	1	546.97	136.80	127.23	6.98	0.004	231.69	0.946	s
U-235	1	574.12	143.58	128.52	14.14	0.008	86.54	0.953	
Ce-139	1	663.39	165.88	117.20	-10.68	-0.006	146.57	0.973	s
U-235	1	743.87	185.99	124.36	40.08	0.022	29.43	0.992	
ra-226	1	744.86	186.23	76.50	83.50	0.046	23.25	0.862	
U-235	1	821.13	205.29	126.92	-7.08	-0.004	228.20	1.009	s
Ac-228	1	836.70	209.18	92.49	25.53	0.014	56.83	1.013	s
Th-227	1	943.94	235.97	967.80	-5.89	-0.003	747.70	1.037	s
Pb-212	1	955.06	238.75	112.13	370.88	0.206	7.17	0.937	
Ra-224	1	961.51	240.36	308.83	-38.31	-0.021	66.86	1.042	
Pb-214	1	967.76	241.92	101.20	53.27	0.030	139.19	1.043	A
ra-226	1	968.00	241.98	138.92	57.25	0.032	28.21	1.043	D
Eu-152	1	976.93	244.21	131.89	-17.92	-0.010	93.64	1.045	s
Th-227	1	1030.63	257.63	73.38	-10.93	-0.006	114.92	1.056	s
Ac-228	1	1080.79	270.16	26.00	57.00	0.032	20.71	0.528	s
Tl-208	1	1110.14	277.49	60.73	22.65	0.013	52.99	1.075	s
Hg-203	1	1110.23	277.52	40.80	26.60	0.015	39.11	1.077	s
Pb-214	1	1180.58	295.09	69.59	0.00	0.000	1000.00	1.091	A
ra-226	1	1181.09	295.22	40.33	126.02	0.070	9.81	1.105	s D
Pb-212	1	1201.29	300.27	34.67	47.33	0.026	27.90	0.962	s
Ac-228	1	1353.42	338.28	33.00	115.00	0.064	14.26	0.929	
Eu-152	1	1375.53	343.80	41.69	17.13	0.010	58.53	1.136	s
Pb-214	1	1407.80	351.87	78.91	0.00	0.000	1000.00	1.143	A
ra-226	1	1408.02	351.92	38.50	212.42	0.118	9.79	0.876	D
sn-113	1	1567.07	391.66	31.98	7.39	0.004	114.30	1.179	s
Sr-85	1	2058.52	514.48	72.09	-14.15	-0.008	88.91	1.289	s
Cs-134	1	2255.06	563.60	41.03	-3.80	-0.002	243.94	1.333	s
Cs-134	1	2280.16	569.87	45.78	-5.51	-0.003	178.87	1.338	s
Tl-208	1	2333.35	583.17	31.74	147.26	0.082	10.93	1.111	
Cs-134	1	2427.60	606.72	61.79	-11.13	-0.006	104.26	1.370	s
Bi-214	1	2437.95	609.31	38.19	166.67	0.093	10.83	0.662	s D
ra-226	1	2437.99	609.32	35.05	0.00	0.000	1944.22	1.374	s D
ru-106	1	2488.81	622.02	19.41	2.25	0.001	284.47	1.385	s
Cs-137	1	2647.44	661.67	30.83	-1.56	-0.001	510.81	1.421	s
Bi-214	1	2662.27	665.38	30.60	1.06	0.001	741.50	1.424	s
Bi-212	1	2908.06	726.82	12.50	56.50	0.031	19.48	1.146	

Bi-214	1	3075.34	768.64	30.27	4.75	0.003	169.95	1.515	s
Eu-152	1	3116.34	778.89	14.76	0.00	0.000	1000.00	1.525	s
Bi-212	1	3142.82	785.51	23.21	8.90	0.005	19.53	1.531	s D
Pb-214	1	3144.09	785.83	24.85	4.75	0.003	155.34	1.531	A
Cs-134	1	3181.42	795.16	15.20	18.31	0.010	38.11	1.540	s
Cs-134	1	3206.38	801.40	20.61	2.45	0.001	269.36	1.545	s
Mn-54	1	3337.70	834.23	31.89	-1.15	-0.001	701.37	1.574	s
Tl-208	1	3443.08	860.58	16.92	13.78	0.008	50.07	1.597	s
y-88	1	3603.70	900.74	26.65	-5.02	-0.003	152.06	1.630	s
Ac-228	1	3645.17	911.11	3.83	118.17	0.066	9.89	0.901	s
Eu-152	1	3852.50	962.95	29.57	-0.23	0.000	3351.97	1.688	
Ac-228	1	3877.38	969.17	3.83	85.17	0.047	11.96	1.602	
Eu-152	1	4342.18	1085.41	22.03	-1.22	-0.001	552.61	1.794	s
Eu-152	1	4452.30	1112.95	27.67	-6.00	-0.003	130.49	1.817	s
Zn-65	1	4464.61	1116.03	44.93	-7.50	-0.004	131.51	1.820	s
Bi-214	1	4481.58	1120.27	13.04	34.96	0.019	10.83	0.808	s D
ra-226	1	4481.61	1120.28	22.18	36.20	0.020	9.79	1.824	s D
Co-60	1	4680.36	1169.99	27.84	-6.45	-0.004	122.14	1.870	s
ra-226	1	4955.74	1238.87	25.93	15.39	0.009	53.29	1.926	s
Na-22	1	5095.05	1273.72	17.73	6.84	0.004	95.08	1.957	s
Co-60	1	5332.49	1333.12	12.36	5.59	0.003	98.51	2.007	s
Eu-152	1	5629.10	1407.32	8.01	9.32	0.005	54.02	2.071	s
K-40	1	5842.78	1460.79	8.28	416.72	0.232	4.85	2.180	
Ac-228	1	6351.65	1588.12	17.23	4.81	0.003	130.36	2.225	s
Bi-212	1	6481.69	1620.66	0.00	0.00	0.000	1000.00	2.252	s
ra-226	1	7056.36	1764.49	6.30	26.73	0.015	9.87	2.373	s D
Bi-214	1	7056.36	1764.49	11.11	26.11	0.015	10.90	2.373	s D
y-88	1	7342.09	1836.01	0.00	0.00	0.000	1000.00	2.432	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Activity Bq	Peak Analysis Code	MDA Value Bq	Code	T 1/2 (y)	% Abn.
Th-227		N	1 -9.275E-001	235.97	-9.275E-001 % (		2.324E+001	G	8.0E+003	11.20
			-9.275E-001	50.14	-9.470E-001 %		1.477E+001	G	8.0E+003	8.50
			-9.275E-001	256.24	-3.040E+000 &		1.186E+001	G	8.0E+003	6.74
ru-106		I	1 8.587E-001	621.84	8.587E-001 % (		8.858E+000	G	3.7E+002	9.80
Zn-65	T F		1 -8.437E-001	1115.52	-8.437E-001 & (		3.817E+000	G	2.4E+002	50.75
Cs-137	T F I		1 -7.151E-002	661.65	-7.151E-002 % (		1.313E+000	G	1.1E+004	85.12
Hg-203		I	1 6.887E-001	279.19	6.887E-001 % (		8.410E-001	G	4.7E+001	77.30
Tl-208	F N		1 6.095E+000	583.02	6.095E+000 (P		1.199E+000	G	7.0E+002	86.00
			6.095E+000	860.30	5.435E+000 %		8.628E+000	G	7.0E+002	12.00
			6.095E+000	277.28	6.647E+000 %		1.145E+001	G	7.0E+002	6.79
Mn-54	F C		1 -5.321E-002	834.83	-5.321E-002 % (		1.344E+000	G	3.1E+002	99.98
Sr-85		I	1 -4.613E-001	513.99	-4.613E-001 % (		1.378E+000	G	6.5E+001	99.27
Am-241	T		1 -4.586E-001	59.54	-4.586E-001 % (		3.062E+000	G	1.6E+005	35.70
cd-109	T F		1 4.509E-001	88.03	4.509E-001 % (		2.593E+001	G	4.6E+002	3.72
Na-22	F C		1 4.312E-001	1274.53	4.312E-001 % (		1.408E+000	G	9.5E+002	99.84
Cs-134	T F I		1 -4.173E-001	604.71	-4.173E-001 & (		1.475E+000	G	7.5E+002	97.60
			-4.173E-001	795.84	9.594E-001 %		1.094E+000	G	7.5E+002	85.40

			-4.173E-001	569.32	-1.248E+000 %	7.759E+000 G	7.5E+002	15.43
			-4.173E-001	801.93	1.264E+000 %	1.230E+001 G	7.5E+002	8.73
			-4.173E-001	563.24	-1.571E+000 %	1.347E+001 G	7.5E+002	8.39
Pb-210	N	1	3.665E+000	46.52	3.665E+000 * (P	4.187E+001 G	8.1E+003	4.05
Co-60	T F	1	3.636E-001	1332.50	3.636E-001 % (	1.242E+000 G	1.9E+003	99.98
			3.636E-001	1173.24	-3.825E-001 %	1.618E+000 G	1.9E+003	99.90
Bi-212	N	1	3.561E+001	727.25	3.561E+001 (	1.209E+001 G	7.0E+002	6.65
			3.561E+001	1620.66	0.000E+000 %	3.695E+001 G	7.0E+002	1.51
			3.561E+001	785.51	3.561E+001 &	1.007E+002 G	7.0E+002	1.11
			3.561E+001	39.86	8.087E+001 %	1.828E+002 G	7.0E+002	1.02
Eu-152	T F	1	3.054E+000	1407.95	3.054E+000 % (	5.210E+000 G	5.0E+003	20.70
			3.054E+000	121.78	1.030E+000 %	2.491E+000 G	5.0E+003	28.40
			3.054E+000	344.27	1.526E+000 %	2.923E+000 G	5.0E+003	26.50
			3.054E+000	964.01	-8.198E-002 %	1.000E+001 G	5.0E+003	14.40
			3.054E+000	1112.02	-2.570E+000 %	1.165E+001 G	5.0E+003	13.30
			3.054E+000	778.89	0.000E+000 &	7.128E+000 G	5.0E+003	12.74
			3.054E+000	1085.78	-6.814E-001 %	1.376E+001 G	5.0E+003	10.00
			3.054E+000	244.69	-4.333E+000 %	1.359E+001 G	5.0E+003	7.49
sn-113	T F	1	2.980E-001	391.69	2.980E-001 & (	1.172E+000 G	1.2E+002	64.90

K-40	N	1	2.725E+002	1460.83	2.725E+002	(P	1.054E+001	G	4.7E+011	10.67
y-88	T F	1	-2.624E-001	898.02	-2.624E-001 %	(	1.399E+000	G	1.1E+002	93.40
			-2.624E-001	1836.01	0.000E+000 %		6.220E-001	G	1.1E+002	99.38
Th-234	N	1	2.303E+001	92.59	2.303E+001	(P	1.461E+001	G	2.4E+001	5.41
			2.303E+001	63.29	3.130E+001 %	P	2.581E+001	G	2.4E+001	3.81
			2.055E+001	1588.23	9.946E+000 %		4.563E+001	G	2.1E+003	3.60
Ac-228	N	1	2.055E+001	911.16	2.010E+001	(	2.012E+000	G	2.1E+003	29.00
			2.055E+001	968.97	2.520E+001 +		3.502E+000	G	2.1E+003	17.42
			2.055E+001	338.42	2.161E+001	(	5.539E+000	G	2.1E+003	12.40
			2.055E+001	209.39	1.004E+001 %		1.869E+001	G	2.1E+003	4.12
			2.055E+001	270.26	2.951E+001 +		1.371E+001	G	2.1E+003	3.77
Ce-139	T F	1	-1.876E-001	165.85	-1.876E-001 %	(	9.338E-001	G	1.4E+002	80.35
U-235	N	1	1.789E+000	143.79	1.789E+000 %	(P	7.026E+000	G	2.6E+011	10.50
			1.789E+000	185.74	1.136E+000 %	P	1.549E+000	G	A 2.6E+011	53.00
			1.789E+000	205.33	-2.409E+000 %		1.879E+001	G	2.6E+011	4.70
Ra-224	N	1	-1.757E+001	240.76	-1.757E+001 %	(	3.881E+001	G	7.0E+002	3.90
Co-57	PC	1	-1.671E-002	122.06	-1.671E-002 %	(	8.737E-001	G	2.7E+002	85.51
			-1.671E-002	136.47	8.601E-001 &		6.812E+000	G	2.7E+002	10.60
Pb-212	N	1	1.512E+001	238.58	1.512E+001	(P	2.121E+000	G	7.0E+002	43.60

			1.512E+001	300.03	2.998E+001 +		1.909E+001 G	7.0E+002	3.34
			1.372E+001	351.92	1.372E+001		2.043E+000 G	5.8E+005	37.20
			1.372E+001	295.22	1.372E+001		3.518E+000 G	5.8E+005	19.20
			1.372E+001	241.98	1.372E+001 %		1.382E+001 G	5.8E+005	7.49
			1.372E+001	186.21	3.588E+001 (		1.868E+001 G	5.8E+005	3.50
ra-226		1	1.372E+001	609.32	0.000E+000 %	E	2.408E+000 G	5.8E+005	46.30
			1.372E+001	1764.49	1.372E+001 ?	E	7.399E+000 G	5.8E+005	15.80
			1.372E+001	1238.11	1.596E+001 & (		2.742E+001 G	5.8E+005	5.94
			1.372E+001	1120.28	1.372E+001 %	E	9.347E+000 G	5.8E+005	15.10
Bi-214	N	1	1.330E+001	609.31	1.330E+001	PE	2.515E+000 G	5.8E+005	46.09
			1.330E+001	1764.49	1.330E+001 %	PE	9.296E+000 G	5.8E+005	15.92
			1.330E+001	1120.27	1.330E+001	PE	7.437E+000 G	5.8E+005	15.04
			1.330E+001	768.35	4.245E+000 % (		2.531E+001 G	5.8E+005	4.89
			1.330E+001	665.44	2.674E+000 %		7.158E+001 G	5.8E+005	1.56
Pb-214	N	1	0.000E+000	351.87	0.000E+000 -	PA	2.857E+000 G	5.8E+005	37.10
			0.000E+000	295.09	0.000E+000 -	PA	4.527E+000 G	5.8E+005	19.20
			0.000E+000	241.92	1.282E+001 -	PA	1.193E+001 G	5.8E+005	7.46
			0.000E+000	785.83	1.930E+001 %	A	1.054E+002 G	5.8E+005	1.09

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range
- (= This peak is used in the nuclide activity average
- * = Peak is too wide, but only one peak in library
- A = Derived Average Activity
- + = Peak activity higher than counting uncertainty range
- ! = Peak is part of a multiplet and this area went negative during deconvolution
- \$ = Peak identified, but first peak of this nuclide failed one or more qualification tests
- & = Calculated peak centroid is not close enough to the library energy centroid for positive identification
- = = Peak outside analysis energy range
- P = Peakbackground subtraction
- @ = Peak is too wide at FW25M, but OK at FWHM
- E = Energy Duplication

Nuclide Codes:

- | | | |
|--------------------------------|---------------------------------|-------------------------------|
| T = Thermal Neutron Activation | F = Fast Neutron Activation | I = Fission Product |
| P = Photon Reaction | N = Naturally Occurring Isotope | C = Charged Particle Reaction |
| M = No MDA Calculation | | |

Peak Codes:

- | | | |
|---------------------|---------------------|--------------------|
| G = Gamma Ray | X = X-Ray | P = Positron Decay |
| S = Single - Escape | D = Double - Escape | K = Key Line |
| A = Not in Average | | |

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
Co-60	<	3.636E-001	3.636E-001	98.51	98.55	1.242E+000
Zn-65	<	-8.437E-001	-8.437E-001	131.51	131.54	3.817E+000
Sr-85	<	-4.613E-001	-4.614E-001	88.91	88.95	1.378E+000
y-88	<	-2.624E-001	-2.625E-001	152.06	152.09	1.399E+000
ru-106	<	8.587E-001	8.587E-001	284.47	284.49	8.858E+000
Ce-139	<	-1.876E-001	-1.877E-001	146.57	146.60	9.338E-001
Eu-152	<	3.054E+000	3.054E+000	54.02	54.09	5.210E+000
Pb-212		1.512E+001	1.512E+001	7.49	8.09	2.121E+000
Pb-214	<				2.52	2.857E+000
Hg-203	<	6.887E-001	6.890E-001	39.11	39.23	8.410E-001
Na-22	<	4.312E-001	4.312E-001	95.08	95.12	1.408E+000
K-40		2.725E+002	2.725E+002	4.95	5.71	1.054E+001
Mn-54	<	-5.321E-002	-5.322E-002	701.37	701.38	1.344E+000
Co-57	<	-1.671E-002	-1.672E-002	1,515.92	1,515.92	8.737E-001
cd-109	<	4.509E-001	4.510E-001	1,683.46	1,683.46	2.593E+001
Cs-134	<	-4.173E-001	-4.173E-001	104.26	104.30	1.475E+000
Cs-137	<	-7.151E-002	-7.151E-002	510.81	510.82	1.313E+000
Tl-208		6.095E+000	6.096E+000	11.43	11.79	1.199E+000
sn-113	<	2.980E-001	2.980E-001	114.30	114.33	1.172E+000
Pb-210	<	3.665E+000	3.665E+000	322.33	322.35	4.187E+001
Bi-212		3.561E+001	3.561E+001	19.48	19.70	1.209E+001
Bi-214	<	1.330E+001	1.330E+001	10.73	11.12	2.531E+001
U-235	<	1.789E+000	1.789E+000	115.45	115.49	7.026E+000
Am-241	<	-4.586E-001	-4.586E-001	196.94	196.98	3.062E+000
Th-227	<	-9.275E-001	-9.275E-001	747.70	747.70	2.324E+001
Ra-224	<	-1.757E+001	-1.757E+001	66.86	66.93	3.881E+001
Ac-228		2.055E+001	2.055E+001	8.68	9.15	2.012E+000
Th-234	#	2.303E+001	2.304E+001	26.05	26.31	1.461E+001
ra-226		1.372E+001	1.372E+001	9.68	10.08	2.742E+001

= All peaks for activity calculation had bad shape

Total Activity (37.64 to 2,000.72 keV) 386.63 Bq/sample

Analyzed by: _____

403233

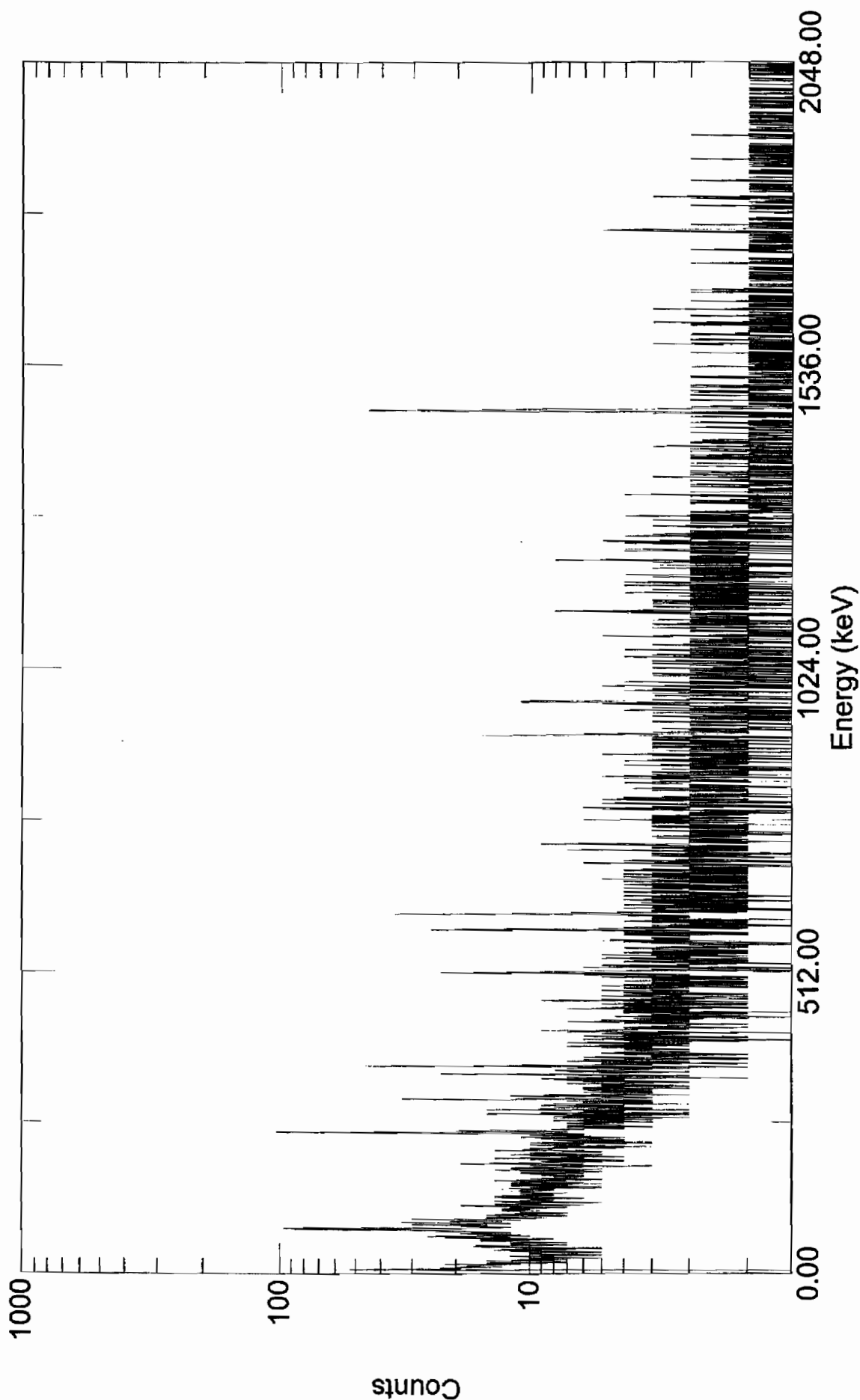
Reviewed by: _____

Supervisor

Laboratory: Test America

LXNMR1AG_RC

0102353_LXNMR1AG_F0D080501-001X



Real Time: 1807.64 s. Live Time: 1800.00 s.
Channels: 8192

Acquired: 20-Apr-2010 12:37:22 PM
File: C:\User\spectra\LXNMR1AG_RC.spc
Detector: #0 Ge 3 SN/131

DB Analysis ID: 86,466**Sample Description:** 0102353_LXNMV1AF_F0D080501-002**Spectrum Filename:** LXNMV1AF.An1**Acquisition Information**

Start Time: 18-Apr-2010 12:52:26PM
Live Time: 1800.00 Real Time: 1807.74
Dead Time: 0.43 %
Detector ID: 3

Detector System: Ge 3 SN/131**Calibration**

Description: Ge3_TunaCanCal_81427_334_022410
Filename: C:\User\Calibrations\Ge3 Calibrations post 08_15_08\Ge3_TunaCanCal_81427_334_0
Energy Created: 24-Feb-2010 5:06:56PM Efficiency Created: 24-Feb-2010 5:07:21PM
Zero Offset: 0.173 keV Gain: 0.250 keV/Channel

Library 1 File: lanl.lib

Library based peak stripping used.

Library 2 File: Null.Lib**Library 3 File:** Null.Lib**Analysis Parameters**

Start Channel: 150 for an energy of 37.64 keV
Stop Channel: 8,000 for an energy of 2000.72 keV
Peak rejection level: 30.000 %
Activity Scaling Factor: 1.0000 / 1.0000 = 1.0000
Detection Limit Method: Nureg method 4.16
Sample Size: 1.00E+000
Additional random error: 0.0000
Additional systematic error: 0.0000
Fraction Limit: 0.0000%
Background Width: Average of three points

Corrections

Status	Comments
Decay Correct to Date: YES	18-Apr-2010 12:00:00PM
Decay During Acquisition: NO	
Peaked Background Correction: YES	Ge3 PBC table 03_31_10.Pbc
Absorption: NO	
Geometry Correction: NO	
Random Summing: NO	

Energy Calibration Normalized Differe 0.1426

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
298.86	74.82	176.00	199.00	0.111	13.27	0.940	TH-234	M
308.46	77.22	148.00	285.00	0.158	9.47	0.879	PB-212	M
371.38	92.94	149.65	139.65	0.078	15.00	0.761	TH-234	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
Bi-212	1	156.63	39.30	93.92	1.14	0.001	1207.82	0.858	s
Pb-210	1	185.80	46.58	106.19	50.81	0.028	26.32	0.971	s
Th-227	1	198.41	49.73	90.22	17.30	0.010	81.29	0.867	s
Am-241	1	234.25	58.68	159.62	-1.72	-0.001	1044.28	0.876	s
Th-234	1	253.16	63.40	226.13	21.96	0.012	56.55	0.879	s
cd-109	1	354.39	88.69	302.91	-35.01	-0.019	72.31	0.902	
Th-234	1	370.00	92.59	286.32	-29.54	-0.016	446.69	0.906	s
Eu-152	1	489.39	122.41	126.86	11.16	0.006	145.83	0.933	
Co-57	1	490.68	122.74	139.95	-0.12	0.000	13485.90	0.933	
Co-57	1	542.91	135.78	74.89	9.03	0.005	139.63	0.946	s
U-235	1	576.10	144.08	103.67	2.95	0.002	186.98	0.953	s
Ce-139	1	666.96	166.77	111.14	0.65	0.000	2289.98	0.973	s
ra-226	1	744.11	186.04	70.00	81.00	0.045	22.29	0.854	
U-235	1	744.39	186.11	128.97	51.08	0.028	25.50	0.992	
U-235	1	820.55	205.14	117.09	-15.52	-0.009	101.79	1.009	s
Ac-228	1	837.20	209.30	83.24	33.64	0.019	42.05	1.013	s
Th-227	1	947.08	236.75	246.43	-45.40	-0.025	51.10	1.037	s
Pb-212	1	954.76	238.67	118.13	425.88	0.237	6.60	0.992	
Ra-224	1	958.53	239.61	250.73	-3.96	-0.002	568.42	1.042	
Pb-214	1	967.76	241.92	81.61	41.33	0.023	30.52	0.551	s A
ra-226	1	968.00	241.98	211.61	47.77	0.027	32.72	1.043	D
Eu-152	1	969.11	242.26	98.15	-0.25	0.000	5662.79	1.045	s
Th-227	1	1025.08	256.24	93.45	0.00	0.000	1000.00	1.056	s
Ac-228	1	1081.38	270.31	69.19	36.24	0.020	36.47	1.069	s
Tl-208	1	1110.28	277.53	59.30	11.21	0.006	101.67	1.075	s
Hg-203	1	1116.74	279.14	72.28	9.29	0.005	133.48	1.077	s
Pb-214	1	1180.58	295.09	72.91	0.00	0.000	1000.00	1.091	A
ra-226	1	1181.09	295.22	38.00	134.40	0.075	8.63	0.636	s D
Pb-212	1	1200.77	300.14	48.40	26.81	0.015	41.47	1.096	s
Ac-228	1	1354.01	338.43	27.00	96.00	0.053	14.88	0.910	s
Eu-152	1	1380.01	344.92	48.25	0.02	0.000	46319.60	1.136	s
Pb-214	1	1407.80	351.87	81.81	0.00	0.000	1000.00	1.143	A
ra-226	1	1408.02	351.92	32.50	226.54	0.126	8.60	1.199	D
sn-113	1	1563.97	390.89	33.10	-4.95	-0.003	170.32	1.179	s
Sr-85	1	2056.49	513.97	92.91	-12.31	-0.007	114.36	1.289	s
Cs-134	1	2254.60	563.48	28.09	-1.03	-0.001	736.47	1.333	s
Cs-134	1	2277.69	569.25	27.90	7.49	0.004	106.15	1.338	s
Tl-208	1	2334.47	583.45	31.24	115.76	0.064	12.45	1.532	
Cs-134	1	2424.70	606.00	51.63	-8.53	-0.005	123.97	1.370	s
Bi-214	1	2437.95	609.31	38.53	173.20	0.096	9.88	1.023	s D
ra-226	1	2437.99	609.32	27.90	184.19	0.102	8.60	1.374	s D
ru-106	1	2491.35	622.66	22.56	-0.01	0.000	60092.57	1.385	s
Cs-137	1	2650.57	662.45	27.83	-0.43	0.000	1726.72	1.421	s
Bi-214	1	2664.19	665.86	19.95	8.78	0.005	79.46	1.424	s
Bi-212	1	2912.54	727.94	0.00	50.00	0.028	14.14	1.396	

Bi-214	1	3075.29	768.63	25.21	12.92	0.007	61.60	1.515	s
Eu-152	1	3108.39	776.90	15.26	-0.09	0.000	6042.75	1.525	s
Bi-212	1	3142.82	785.51	31.10	7.87	0.004	14.22	1.531	s D
Pb-214	1	3144.09	785.83	33.01	0.00	0.000	1000.00	1.531	A
Cs-134	1	3182.89	795.53	25.75	4.62	0.003	162.01	1.540	s
Cs-134	1	3201.62	800.21	23.58	-4.85	-0.003	148.59	1.545	s
Mn-54	1	3339.49	834.68	16.70	1.49	0.001	396.52	1.574	s
Tl-208	1	3442.08	860.33	2.33	29.67	0.016	20.63	1.347	
y-88	1	3595.88	898.79	18.10	-0.72	0.000	840.55	1.630	s
Ac-228	1	3646.41	911.42	7.00	97.00	0.054	11.69	1.379	
Eu-152	1	3858.62	964.48	33.27	7.84	0.004	110.01	1.688	s
Ac-228	1	3877.15	969.12	10.00	51.00	0.028	19.04	0.390	s
Eu-152	1	4343.10	1085.64	27.89	-4.37	-0.002	177.48	1.794	s
Eu-152	1	4440.91	1110.10	20.32	-3.45	-0.002	192.38	1.817	s
Zn-65	1	4470.77	1117.57	52.05	-10.93	-0.006	98.13	1.820	s
Bi-214	1	4481.58	1120.27	11.04	0.00	0.000	938.08	0.663	s D
ra-226	1	4481.61	1120.28	16.88	38.61	0.021	8.60	1.824	s D
Co-60	1	4692.24	1172.96	23.65	0.01	0.000	21533.54	1.870	s
ra-226	1	4950.42	1237.54	27.08	7.17	0.004	109.22	1.926	s
Na-22	1	5099.57	1274.85	15.31	-3.72	-0.002	157.69	1.957	s
Co-60	1	5329.16	1332.28	18.59	-0.47	0.000	1310.12	2.007	s
Eu-152	1	5633.43	1408.41	12.83	5.57	0.003	100.39	2.071	s
K-40	1	5843.96	1461.08	18.01	270.52	0.150	6.19	2.117	s
Ac-228	1	6350.28	1587.78	9.25	2.84	0.002	162.37	2.225	s
Bi-212	1	6482.44	1620.85	8.50	1.72	0.001	251.44	2.252	s
ra-226	1	7056.36	1764.49	8.05	0.00	0.000	787.40	2.373	s D
Bi-214	1	7056.36	1764.49	3.92	27.13	0.015	9.95	2.373	s D
y-88	1	7342.09	1836.01	0.00	0.00	0.000	1000.00	2.432	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Activity Bq	Peak Analysis Code	MDA Value Bq	Code	T 1/2 (y)	% Abn.
Am-241	T	1	-7.910E-002	59.54	-7.910E-002 % (		2.840E+000	G	1.6E+005	35.70
Th-227		N 1	-7.146E+000	235.97	-7.146E+000 % (		1.194E+001	G	8.0E+003	11.20
			-7.146E+000	50.14	4.362E+000 %		1.184E+001	G	8.0E+003	8.50
			-7.146E+000	256.24	0.000E+000 %		1.329E+001	G	8.0E+003	6.74
Th-234		N 1	-7.054E+000	92.59	-7.054E+000 * (P		1.947E+001	G	2.4E+001	5.41
			-7.054E+000	63.29	8.972E+000 % P		2.974E+001	G	2.4E+001	3.81
Mn-54	F C	1	6.901E-002	834.83	6.901E-002 % (		1.008E+000	G	3.1E+002	99.98
Tl-208	F N	1	4.792E+000	583.02	4.792E+000 (P		1.190E+000	G	7.0E+002	86.00
			4.792E+000	860.30	1.170E+001 +		3.876E+000	G	7.0E+002	12.00
			4.792E+000	277.28	3.288E+000 %		1.132E+001	G	7.0E+002	6.79
ru-106	I	1	-4.261E-003	621.84	-4.261E-003 % (		9.469E+000	G	3.7E+002	9.80
Sr-85	I	1	-4.011E-001	513.99	-4.011E-001 % (		1.552E+000	G	6.5E+001	99.27
y-88	T F	1	-3.778E-002	898.02	-3.778E-002 % (		1.178E+000	G	1.1E+002	93.40
			-3.778E-002	1836.01	0.000E+000 %		6.220E-001	G	1.1E+002	99.38
U-235		N 1	3.726E-001	143.79	3.726E-001 % (P		6.345E+000	G	2.6E+011	10.50
			3.726E-001	185.74	1.448E+000 % P		1.576E+000	G A	2.6E+011	53.00
			3.726E-001	205.33	-5.284E+000 %		1.808E+001	G	2.6E+011	4.70

Pb-210	N	1	3.343E+001	46.52	3.343E+001 % (	P	3.338E+001	G	8.1E+003	4.05
Cs-134	T F I	1	-3.197E-001	604.71	-3.197E-001 % (		1.357E+000	G	7.5E+002	97.60
			-3.197E-001	795.84	2.422E-001 &		1.381E+000	G	7.5E+002	85.40
			-3.197E-001	569.32	1.698E+000 &		6.192E+000	G	7.5E+002	15.43
			-3.197E-001	801.93	-2.501E+000 %		1.306E+001	G	7.5E+002	8.73
			-3.197E-001	563.24	-4.248E-001 %		1.134E+001	G	7.5E+002	8.39
Bi-212	N	1	3.152E+001	727.25	3.152E+001 (		4.646E+000	G	7.0E+002	6.65
			3.152E+001	1620.66	8.625E+000 %		8.168E+001	G	7.0E+002	1.51
			3.152E+001	785.51	3.152E+001 %		1.149E+002	G	7.0E+002	1.11
			3.152E+001	39.86	4.281E+000 &		1.801E+002	G	7.0E+002	1.02
Co-60	T F	1	-3.048E-002	1332.50	-3.048E-002 % (		1.484E+000	G	1.9E+003	99.98
			-3.048E-002	1173.24	3.350E-004 %		1.504E+000	G	1.9E+003	99.90
Hg-203	I	1	2.406E-001	279.19	2.406E-001 & (		1.096E+000	G	4.7E+001	77.30
Na-22	F C	1	-2.342E-001	1274.53	-2.342E-001 % (		1.320E+000	G	9.5E+002	99.84
sn-113	T F	1	-1.997E-001	391.69	-1.997E-001 & (		1.190E+000	G	1.2E+002	64.90
Cs-137	T F I	1	-1.993E-002	661.65	-1.993E-002 % (		1.254E+000	G	1.1E+004	85.12
Co-57	PC	1	-1.851E-003	122.06	-1.851E-003 % (		8.627E-001	G	2.7E+002	85.51
			-1.851E-003	136.47	1.112E+000 %		5.304E+000	G	2.7E+002	10.60
			1.824E+000	1085.78	-2.445E+000 %		1.529E+001	G	5.0E+003	10.00

			1.824E+000	244.69	-5.984E-002 %		1.181E+001 G	5.0E+003	7.49
Eu-152	T F	1	1.824E+000	1407.95	1.824E+000 % (		6.357E+000 G	5.0E+003	20.70
			1.824E+000	121.78	5.010E-001 %		2.478E+000 G	5.0E+003	28.40
			1.824E+000	344.27	1.890E-003 %		3.126E+000 G	5.0E+003	26.50
			1.824E+000	964.01	2.796E+000 %		1.055E+001 G	5.0E+003	14.40
			1.824E+000	1112.02	-1.478E+000 %		1.015E+001 G	5.0E+003	13.30
			1.824E+000	778.89	-3.166E-002 %		7.231E+000 G	5.0E+003	12.74
Ra-224	N	1	-1.814E+000	240.76	-1.814E+000 % (		3.509E+001 G	7.0E+002	3.90
K-40	N	1	1.769E+002	1460.83	1.769E+002 % (P		1.470E+001 G	4.7E+011	10.67
Pb-212	N	1	1.736E+001	238.58	1.736E+001 % (P		2.175E+000 G	7.0E+002	43.60
			1.736E+001	300.03	1.698E+001 %		2.225E+001 G	7.0E+002	3.34
			1.640E+001	1588.23	5.887E+000 %		3.493E+001 G	2.1E+003	3.60
Ac-228	N	1	1.640E+001	911.16	1.650E+001 % (		2.558E+000 G	2.1E+003	29.00
			1.640E+001	968.97	1.509E+001 % (		5.163E+000 G	2.1E+003	17.42
			1.640E+001	338.42	1.804E+001 % * (		5.059E+000 G	2.1E+003	12.40
			1.640E+001	209.39	1.323E+001 %		1.779E+001 G	2.1E+003	4.12
			1.640E+001	270.26	1.876E+001 %		2.147E+001 G	2.1E+003	3.77
			1.464E+001	351.92	1.464E+001 %		1.891E+000 G	5.8E+005	37.20
			1.464E+001	295.22	1.464E+001 %		3.423E+000 G	5.8E+005	19.20

			1.464E+001	241.98	1.145E+001 +		1.690E+001 G	5.8E+005	7.49
			1.464E+001	186.21	3.481E+001 (		1.792E+001 G	5.8E+005	3.50
ra-226		1	1.464E+001	609.32	1.464E+001	E	2.171E+000 G	5.8E+005	46.30
			1.464E+001	1764.49	0.000E+000 %	E	8.179E+000 G	5.8E+005	15.80
			1.464E+001	1238.11	7.435E+000 % (		2.796E+001 G	5.8E+005	5.94
			1.464E+001	1120.28	1.464E+001 %	E	8.285E+000 G	5.8E+005	15.10
Bi-214	N	1	1.383E+001	609.31	1.383E+001	PE	2.525E+000 G	5.8E+005	46.09
			1.383E+001	1764.49	1.383E+001 %	PE	6.081E+000 G	5.8E+005	15.92
			1.383E+001	1120.27	0.000E+000 %	PE	6.925E+000 G	5.8E+005	15.04
			1.383E+001	768.35	1.154E+001 % (		2.331E+001 G	5.8E+005	4.89
			1.383E+001	665.44	2.207E+001 %		5.911E+001 G	5.8E+005	1.56
cd-109	T F	1	-1.232E+001	88.03	-1.232E+001 % (		2.950E+001 G	4.6E+002	3.72
Zn-65	T F	1	-1.229E+000	1115.52	-1.229E+000 % (		4.085E+000 G	2.4E+002	50.75
Ce-139	T F	1	1.145E-002	165.85	1.145E-002 & (		9.106E-001 G	1.4E+002	80.35
Pb-214	N	1	0.000E+000	351.87	0.000E+000 %	PA	2.906E+000 G	5.8E+005	37.10
			0.000E+000	295.09	0.000E+000 %	PA	4.627E+000 G	5.8E+005	19.20
			0.000E+000	241.92	9.945E+000 %	PA	1.078E+001 G	5.8E+005	7.46
			0.000E+000	785.83	0.000E+000 %	A	1.198E+002 G	5.8E+005	1.09

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- | | |
|---|---|
| - = Peak activity lower than counting uncertainty range | = = Peak outside analysis energy range |
| (= This peak is used in the nuclide activity average | P = Peakbackground subtraction |
| * = Peak is too wide, but only one peak in library | @ = Peak is too wide at FW25M, but OK at FWHM |
| A = Derived Average Activity | E = Energy Duplication |
| + = Peak activity higher than counting uncertainty range | |
| ! = Peak is part of a multiplet and this area went negative during deconvolution | |
| \$ = Peak Identified, but first peak of this nuclide failed one or more qualification tests | |
| & = Calculated peak centroid is not close enough to the library energy centroid for positive identification | |

Nuclide Codes:

- | | | |
|--------------------------------|---------------------------------|-------------------------------|
| T = Thermal Neutron Activation | F = Fast Neutron Activation | I = Fission Product |
| P = Photon Reaction | N = Naturally Occurring Isotope | C = Charged Particle Reaction |
| M = No MDA Calculation | | |

Peak Codes:

- | | | |
|---------------------|---------------------|--------------------|
| G = Gamma Ray | X = X-Ray | P = Positron Decay |
| S = Single - Escape | D = Double - Escape | K = Key Line |
| A = Not in Average | | |

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
Co-60	<	-3.048E-002	-3.048E-002	1,310.12	1,310.12	1.484E+000
Zn-65	<	-1.229E+000	-1.229E+000	98.13	98.17	4.085E+000
Sr-85	<	-4.011E-001	-4.013E-001	114.36	114.40	1.552E+000
y-88	<	-3.778E-002	-3.779E-002	840.55	840.55	1.178E+000
ru-106	<	-4.261E-003	-4.261E-003	60,092.57	60,092.57	9.469E+000
Na-22	<	-2.342E-001	-2.342E-001	157.69	157.71	1.320E+000
K-40	<	1.769E+002	1.769E+002	6.38	6.99	1.470E+001
Mn-54	<	6.901E-002	6.901E-002	396.52	396.53	1.008E+000
Co-57	<	-1.851E-003	-1.851E-003	13,485.90	13,485.90	8.627E-001
cd-109	<	-1.232E+001	-1.232E+001	72.31	72.40	2.950E+001
Cs-134	<	-3.197E-001	-3.197E-001	123.97	124.00	1.357E+000
Cs-137	<	-1.993E-002	-1.993E-002	1,726.72	1,726.72	1.254E+000
Tl-208		4.792E+000	4.792E+000	13.18	13.50	1.190E+000
sn-113	<	-1.997E-001	-1.997E-001	170.32	170.34	1.190E+000
Pb-210	#	3.343E+001	3.343E+001	39.36	39.56	3.338E+001
Bi-212		3.152E+001	3.152E+001	14.14	14.44	4.646E+000
Bi-214		1.383E+001	1.383E+001	9.77	10.20	2.331E+001
U-235	<	3.726E-001	3.726E-001	486.74	486.75	6.345E+000
Am-241	<	-7.910E-002	-7.910E-002	1,044.28	1,044.29	2.840E+000
Th-227	<	-7.146E+000	-7.146E+000	51.10	51.19	1.194E+001
Ra-224	<	-1.814E+000	-1.814E+000	568.42	568.43	3.509E+001
Ce-139	<	1.145E-002	1.146E-002	2,289.98	2,289.98	9.106E-001
Eu-152	<	1.824E+000	1.824E+000	100.39	100.43	6.357E+000
Pb-212		1.736E+001	1.736E+001	6.85	7.50	2.175E+000
Pb-214	<				2.52	2.906E+000
Hg-203	<	2.406E-001	2.408E-001	133.48	133.51	1.096E+000
Ac-228		1.640E+001	1.641E+001	8.95	9.41	2.558E+000
Th-234	<	-7.054E+000	-7.061E+000	815.53	815.54	1.947E+001
ra-226	<	1.464E+001	1.464E+001	8.47	8.93	2.796E+001

= All peaks for activity calculation had bad shape

Total Activity (37.64 to 2,000.72 keV) 83.89 Bq/sample

Analyzed by: _____

430030

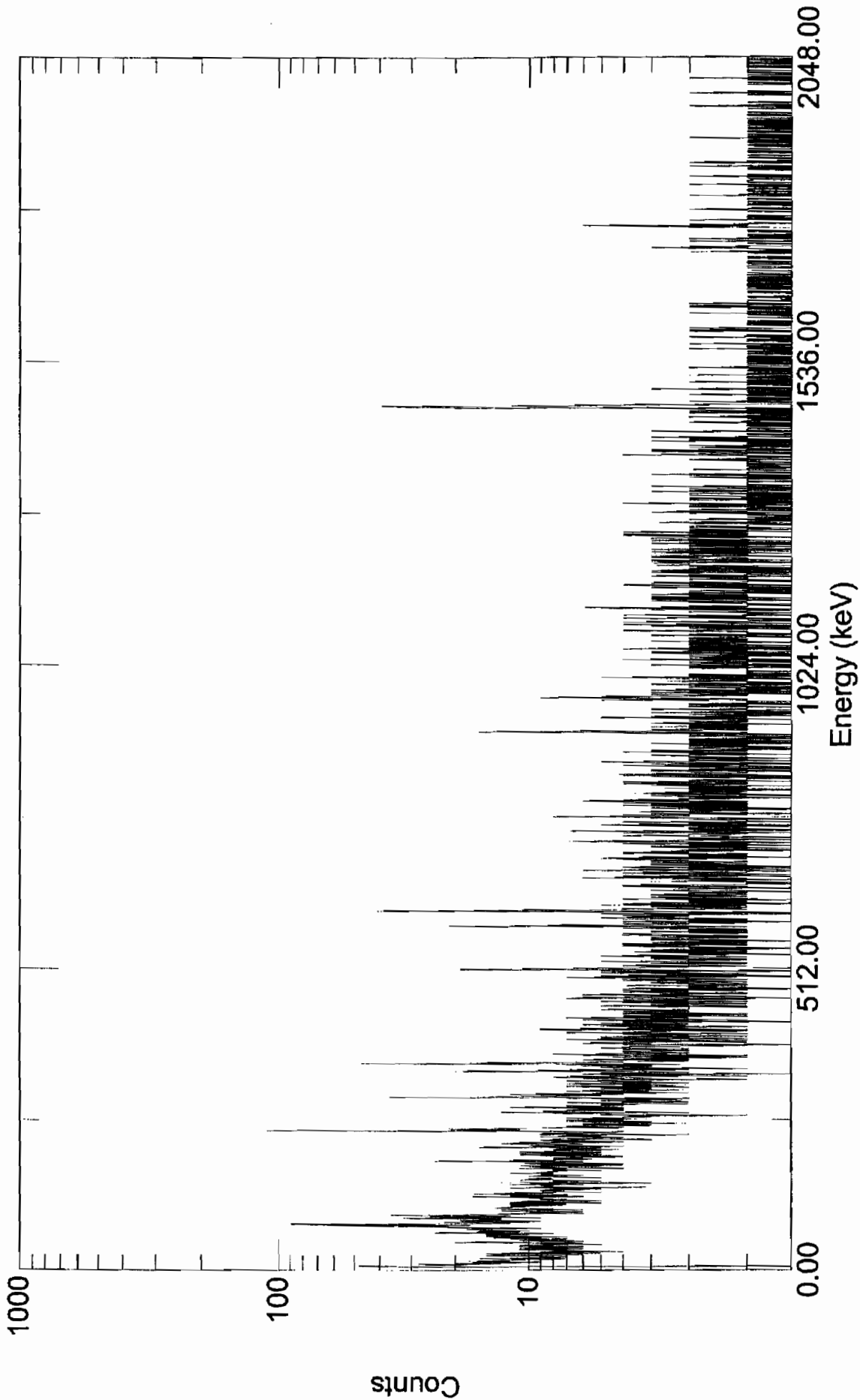
Reviewed by: _____

Supervisor

Laboratory: Test America

LXNMV1AF

0102353_LXNMV1AF_F0D080501-002



Real Time: 1807.74 s. Live Time: 1800.00 s.
Channels: 8192

Acquired: 18-Apr-2010 12:52:26 PM
File: C:\User\spectra\LXNMV1AF.spc
Detector: #0 Ge 3 SN/131

DB Analysis ID: 86,467**Sample Description:** 0102353_LXNMW1AF_F0D080501-003**Spectrum Filename:** LXNMW1AF.An1**Acquisition Information**

Start Time: 18-Apr-2010 12:53:05PM
Live Time: 1800.00 Real Time: 1804.68
Dead Time: 0.26 %
Detector ID: 4

Detector System: Ge 4 SN/181**Calibration**

Description: Ge4_TunaCanCal_81427_334_022310
Filename: C:\User\Calibrations\Ge4 Post 09_07_07(Ge6)\Ge4_TunaCanCal_81427_334_022310.
Energy Created: 23-Feb-2010 2:37:50PM Efficiency Created: 23-Feb-2010 2:38:42PM
Zero Offset: 0.008 keV Gain: 0.250 keV/Channel

Library 1 File: lanl.lib Library based peak stripping used.**Library 2 File:** Null.Lib**Library 3 File:** Null.Lib**Analysis Parameters**

Start Channel: 150 for an energy of 37.54 keV
Stop Channel: 8,000 for an energy of 1999.04 keV
Peak rejection level: 30.000 %
Activity Scaling Factor: 1.0000 / 1.0000 = 1.0000
Detection Limit Method: Nureg method 4.16
Sample Size: 1.00E+000
Additional random error: 0.0000
Additional systematic error: 0.0000
Fraction Limit: 0.0000%
Background Width: Average of three points

Corrections

Status	Comments
Decay Correct to Date:	YES 18-Apr-2010 12:00:00PM
Decay During Acquisition:	NO
Peaked Background Correction:	YES Ge4 PBC table 03_31 10.Pbc
Absorption:	NO
Geometry Correction:	NO
Random Summing:	NO

Energy Calibration Normalized Differe 0.1188

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
299.28	74.88	164.00	130.00	0.072	19.18	0.919	TH-234	M
308.52	77.20	128.00	246.00	0.137	10.20	0.997	PB-212	sM
348.36	87.16	97.75	97.25	0.054	17.59	1.076	PB-212	sM

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
Bi-212	1	159.16	39.83	77.20	1.59	0.001	785.60	0.767	s
Pb-210	1	186.01	46.55	103.21	6.19	0.003	69.96	0.773	s
Th-227	1	196.54	49.18	56.85	16.27	0.009	70.06	0.777	s
Am-241	1	239.11	59.83	166.83	-10.55	-0.006	175.88	0.786	s
Th-234	1	252.46	63.17	185.10	46.26	0.026	34.07	0.789	s
cd-109	1	351.83	88.03	199.03	6.92	0.004	290.87	0.813	
Th-234	1	371.20	92.88	138.13	142.88	0.079	14.59	1.095	s
Co-57	1	487.86	122.06	110.93	0.00	0.000	1000.00	0.845	s
Eu-152	1	493.99	123.59	74.96	-0.09	0.000	14183.14	0.845	s
Co-57	1	545.37	136.45	84.26	12.64	0.007	106.46	0.859	s
U-235	1	575.45	143.97	80.90	20.08	0.011	57.98	0.865	s
Ce-139	1	666.32	166.70	84.31	-1.69	-0.001	770.55	0.886	s
U-235	1	742.32	185.72	112.26	33.95	0.019	35.32	0.904	s
ra-226	1	743.70	186.06	74.67	70.33	0.039	26.37	1.241	s
U-235	1	822.17	205.69	69.63	-1.03	-0.001	1154.69	0.922	s
Ac-228	1	835.65	209.06	48.00	64.00	0.036	24.21	1.092	s
Th-227	1	943.23	235.97	735.18	1.35	0.001	2847.33	0.950	s
Pb-212	1	953.50	238.54	65.25	314.75	0.175	6.97	1.089	
Ra-224	1	958.71	239.84	428.45	-110.77	-0.062	28.08	0.954	
Pb-214	1	967.02	241.92	92.92	0.00	0.000	1000.00	0.955	A
ra-226	1	967.26	241.98	77.54	50.90	0.028	10.05	0.955	D
Eu-152	1	974.81	243.87	92.06	-19.81	-0.011	72.09	0.958	s
Th-227	1	1024.24	256.23	45.58	2.09	0.001	462.69	0.968	s
Ac-228	1	1079.79	270.13	38.29	28.76	0.016	35.69	0.980	s
Tl-208	1	1108.21	277.23	41.31	27.45	0.015	38.22	0.987	s
Hg-203	1	1115.45	279.04	71.72	-9.72	-0.005	127.33	0.988	s
Pb-214	1	1179.61	295.09	39.42	0.00	0.000	1000.00	0.858	A
ra-226	1	1180.12	295.22	31.47	109.25	0.061	10.03	1.002	D
Pb-212	1	1199.17	299.98	47.86	12.74	0.007	81.72	1.007	s
Ac-228	1	1352.27	338.27	31.67	57.33	0.032	24.00	0.991	
Eu-152	1	1378.28	344.78	45.41	-3.37	-0.002	287.85	1.045	s
Pb-214	1	1406.62	351.87	28.94	0.00	0.000	1000.00	0.930	A
ra-226	1	1406.83	351.92	208.00	179.89	0.100	10.01	1.052	D
sn-113	1	1565.01	391.48	46.43	-8.23	-0.005	122.20	1.086	s
Sr-85	1	2055.98	514.25	51.49	-5.56	-0.003	187.39	1.186	s
Cs-134	1	2248.34	562.34	18.59	0.14	0.000	4490.60	1.226	s
Cs-134	1	2273.95	568.75	18.09	3.56	0.002	176.83	1.230	s
Tl-208	1	2330.59	582.91	13.74	82.26	0.046	12.31	0.939	s
Cs-134	1	2416.81	604.46	29.68	0.00	0.000	141777.73	1.258	s
Bi-214	1	2436.21	609.31	21.67	116.94	0.065	10.72	1.307	D
ra-226	1	2436.24	609.32	19.70	136.25	0.076	10.01	1.261	D
ru-106	1	2489.96	622.75	19.83	2.78	0.002	234.72	1.271	s
Cs-137	1	2646.26	661.82	7.33	87.67	0.049	12.59	0.707	s
Bi-214	1	2660.29	665.33	45.34	-8.47	-0.005	117.60	1.304	s
Bi-212	1	2906.57	726.90	0.00	46.00	0.026	14.74	0.783	s

Bi-214	1	3072.41	768.35	21.46	0.00	0.000	1000.00	1.380	s
Eu-152	1	3118.73	779.93	12.53	6.19	0.003	90.32	1.387	s
Bi-212	1	3141.07	785.51	16.43	3.53	0.002	145.73	1.392	s D
Pb-214	1	3142.34	785.83	16.19	0.00	0.000	1000.00	1.392	s A
Cs-134	1	3179.71	795.17	20.73	-0.16	0.000	4144.44	1.399	s
Cs-134	1	3204.62	801.39	8.37	2.89	0.002	153.21	1.404	s
Mn-54	1	3337.76	834.67	17.73	-0.11	0.000	5323.52	1.427	s
Tl-208	1	3441.83	860.68	12.50	14.26	0.008	43.94	1.444	s
y-88	1	3589.72	897.64	18.23	-0.23	0.000	2632.16	1.470	s
Ac-228	1	3644.43	911.31	8.48	47.42	0.026	16.92	1.478	s
Eu-152	1	3858.28	964.76	19.82	6.67	0.004	101.99	1.513	s
Ac-228	1	3875.80	969.13	3.00	50.00	0.028	15.75	0.878	s
Eu-152	1	4342.63	1085.78	20.58	0.00	0.000	1000.00	1.590	s
Eu-152	1	4444.41	1111.21	13.69	0.53	0.000	988.48	1.606	s
Zn-65	1	4459.03	1114.86	16.01	-0.28	0.000	2008.91	1.608	s
Bi-214	1	4480.69	1120.27	12.53	22.89	0.013	10.72	1.611	s D
ra-226	1	4480.72	1120.28	12.53	3.49	0.002	237.24	1.611	s D
Co-60	1	4693.69	1173.49	19.74	0.95	0.001	669.43	1.642	s
ra-226	1	4953.36	1238.36	16.65	6.06	0.003	103.56	1.678	s
Na-22	1	5097.52	1274.37	12.80	-0.34	0.000	1495.80	1.698	s
Co-60	1	5329.67	1332.35	11.56	1.41	0.001	352.27	1.729	s
Eu-152	1	5631.65	1407.78	8.61	6.96	0.004	70.65	1.768	s
K-40	1	5843.80	1460.76	4.07	215.93	0.120	6.74	1.498	
Ac-228	1	6354.27	1588.23	54.07	0.00	0.000	1000.00	1.852	s
Bi-212	1	6480.33	1619.70	0.00	6.00	0.003	40.82	0.250	s
ra-226	1	7060.28	1764.49	0.28	18.74	0.010	10.08	1.923	s D
Bi-214	1	7060.28	1764.49	0.00	16.28	0.009	10.79	1.923	s D
y-88	1	7346.79	1836.01	0.00	0.00	0.000	1000.00	1.949	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Activity Bq	Peak Analysis Code	MDA Value Bq	Code	T 1/2 (y)	% Abn.
Mn-54	F C	1	-7.908E-003	834.83	-7.908E-003 % (		1.576E+000	G	3.1E+002	99.98
Ra-224		N 1	-6.617E+001	240.76	-6.617E+001 (		5.924E+001	G	7.0E+002	3.90
Am-241	T	1	-6.325E-001	59.54	-6.325E-001 % (		3.771E+000	G	1.6E+005	35.70
Cs-137	T F I	1	5.975E+000	661.65	5.975E+000 (		1.045E+000	G	1.1E+004	85.12
Pb-210		N 1	5.269E+000	46.52	5.269E+000 % (P		4.262E+001	G	8.1E+003	4.05
Zn-65	T F	1	-5.003E-002	1115.52	-5.003E-002 % (		3.776E+000	G	2.4E+002	50.75
Tl-208	F N	1	4.974E+000	583.02	4.974E+000 (P		1.208E+000	G	7.0E+002	86.00
			4.974E+000	860.30	8.597E+000 %		1.157E+001	G	7.0E+002	12.00
			4.974E+000	277.28	1.068E+001 %		1.270E+001	G	7.0E+002	6.79
sn-113	T F	1	-4.605E-001	391.69	-4.605E-001 % (		1.929E+000	G	1.2E+002	64.90
Cs-134	T F I	1	-4.500E-005	604.71	-4.500E-005 % (		1.545E+000	G	7.5E+002	97.60
			-4.500E-005	795.84	-1.236E-002 %		1.900E+000	G	7.5E+002	85.40
			-4.500E-005	569.32	1.177E+000 %		7.436E+000	G	7.5E+002	15.43
			-4.500E-005	801.93	2.260E+000 &		1.266E+001	G	7.5E+002	8.73
			-4.500E-005	563.24	8.185E-002 %		1.372E+001	G	7.5E+002	8.39
Bi-212		N 1	4.349E+001	727.25	4.349E+001 (		6.968E+000	G	7.0E+002	6.65
			4.349E+001	1620.66	4.925E+001 &		6.049E+001	G	7.0E+002	1.51

			4.349E+001	785.51	2.139E+001 %		1.309E+002 G	7.0E+002	1.11
			4.349E+001	39.86	7.732E+000 %		2.123E+002 G	7.0E+002	1.02
Th-234	N	1	4.283E+001	92.59	4.283E+001 * (P		1.723E+001 G	2.4E+001	5.41
			4.283E+001	63.29	2.450E+001 % P		3.502E+001 G	2.4E+001	3.81
Ce-139	T F	1	-3.733E-002	165.85	-3.733E-002 % (		1.003E+000 G	1.4E+002	80.35
			3.677E+000	964.01	3.684E+000 &		1.295E+001 G	5.0E+003	14.40
			3.677E+000	1112.02	3.598E-001 &		1.343E+001 G	5.0E+003	13.30
			3.677E+000	778.89	3.235E+000 %		1.004E+001 G	5.0E+003	12.74
			3.677E+000	1085.78	0.000E+000 %		2.093E+001 G	5.0E+003	10.00
			3.677E+000	244.69	-6.248E+000 &		1.496E+001 G	5.0E+003	7.49
Eu-152	T F	1	3.677E+000	1407.95	3.677E+000 & (		8.655E+000 G	5.0E+003	20.70
			3.677E+000	121.78	-4.813E-003 %		2.400E+000 G	5.0E+003	28.40
			3.677E+000	344.27	-4.099E-001 &		4.147E+000 G	5.0E+003	26.50
Na-22	F C	1	-3.425E-002	1274.53	-3.425E-002 % (		1.949E+000 G	9.5E+002	99.84
Hg-203	I	1	-3.339E-001	279.19	-3.339E-001 % (		1.449E+000 G	4.7E+001	77.30
U-235	N	1	3.163E+000	143.79	3.163E+000 % (P		7.028E+000 G	2.6E+011	10.50
			3.163E+000	185.74	1.218E+000 % P		1.869E+000 G	A 2.6E+011	53.00
			3.163E+000	205.33	-4.465E-001 %		1.811E+001 G	2.6E+011	4.70
cd-109	T F	1	3.069E+000	88.03	3.069E+000 % (		3.037E+001 G	4.6E+002	3.72

Th-227	N	1	2.755E-001	235.97	2.755E-001 % (	2.639E+001	G	8.0E+003	11.20
			2.755E-001	50.14	5.331E+000 %	1.240E+001	G	8.0E+003	8.50
			2.755E-001	256.24	7.621E-001 %	1.248E+001	G	8.0E+003	6.74
Sr-85	I	1	-2.606E-001	513.99	-2.606E-001 % (	1.694E+000	G	6.5E+001	99.27
K-40	N	1	2.286E+002	1460.83	2.286E+002 (P	1.282E+001	G	4.7E+011	10.67
y-88	T F	1	-1.847E-002	898.02	-1.847E-002 % (	1.815E+000	G	1.1E+002	93.40
			-1.847E-002	1836.01	0.000E+000 %	1.033E+000	G	1.1E+002	99.38
Pb-212	N	1	1.669E+001	238.58	1.669E+001 (P	2.139E+000	G	7.0E+002	43.60
			1.669E+001	300.03	1.081E+001 &	2.964E+001	G	7.0E+002	3.34
ra-226		1	1.590E+001	609.32	1.590E+001 E	2.730E+000	G	5.8E+005	46.30
			1.590E+001	1764.49	1.590E+001 ? E	6.254E+000	G	5.8E+005	15.80
			1.590E+001	1238.11	9.991E+000 % (	3.583E+001	G	5.8E+005	5.94
			1.590E+001	1120.28	2.081E+000 % E	1.146E+001	G	5.8E+005	15.10
			1.590E+001	351.92	1.590E+001 %	6.181E+000	G	5.8E+005	37.20
			1.590E+001	295.22	1.590E+001 %	4.200E+000	G	5.8E+005	19.20
			1.590E+001	241.98	1.590E+001 %	1.367E+001	G	5.8E+005	7.49
			1.590E+001	186.21	3.829E+001 * (	2.340E+001	G	5.8E+005	3.50
ru-106	I	1	1.557E+000	621.84	1.557E+000 % (	1.317E+001	G	3.7E+002	9.80
Co-60	T F	1	1.466E-001	1332.50	1.466E-001 & (	1.935E+000	G	1.9E+003	99.98

			1.466E-001	1173.24	8.902E-002 %		2.194E+000 G	1.9E+003	99.90
Bi-214	N	1	1.371E+001	609.31	1.371E+001	PE	2.861E+000 G	5.8E+005	46.09
			1.371E+001	1764.49	1.371E+001 %	E	6.207E+000 G	5.8E+005	15.92
			1.371E+001	1120.27	1.371E+001 %	E	1.150E+001 G	5.8E+005	15.04
			1.371E+001	768.35	0.000E+000 % (		3.275E+001 G	5.8E+005	4.89
			1.371E+001	665.44	-3.158E+001 %		1.271E+002 G	5.8E+005	1.56
			1.308E+001	338.42	1.466E+001 (		7.399E+000 G	2.1E+003	12.40
			1.308E+001	209.39	3.227E+001 +		1.764E+001 G	2.1E+003	4.12
			1.308E+001	270.26	1.967E+001 %		2.158E+001 G	2.1E+003	3.77
			1.308E+001	1588.23	0.000E+000 %		1.250E+002 G	2.1E+003	3.60
Ac-228	N	1	1.308E+001	911.16	1.241E+001 ? (		4.259E+000 G	2.1E+003	29.00
			1.308E+001	968.97	2.292E+001 +		4.942E+000 G	2.1E+003	17.42
Co-57	PC	1	0.000E+000	122.06	0.000E+000 & (		9.590E-001 G	2.7E+002	85.51
			0.000E+000	136.47	1.937E+000 %		6.968E+000 G	2.7E+002	10.60
			0.000E+000	241.92	0.000E+000 %	PA	1.493E+001 G	5.8E+005	7.46
			0.000E+000	785.83	0.000E+000 %	A	1.320E+002 G	5.8E+005	1.09
Pb-214	N	1	0.000E+000	351.87	0.000E+000 %	PA	2.462E+000 G	5.8E+005	37.10
			0.000E+000	295.09	0.000E+000 %	PA	4.651E+000 G	5.8E+005	19.20

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- | | |
|---|---|
| - = Peak activity lower than counting uncertainty range | = = Peak outside analysis energy range |
| (= This peak is used in the nuclide activity average | P = Peakbackground subtraction |
| * = Peak is too wide, but only one peak in library | @ = Peak is too wide at FW25M, but OK at FWHM |
| A = Derived Average Activity | E = Energy Duplication |
| + = Peak activity higher than counting uncertainty range | |
| ! = Peak is part of a multiplet and this area went negative during deconvolution | |
| \$ = Peak identified, but first peak of this nuclide failed one or more qualification tests | |
| & = Calculated peak centroid is not close enough to the library energy centroid for positive identification | |

Nuclide Codes:

- | | | |
|--------------------------------|---------------------------------|-------------------------------|
| T = Thermal Neutron Activation | F = Fast Neutron Activation | I = Fission Product |
| P = Photon Reaction | N = Naturally Occurring Isotope | C = Charged Particle Reaction |
| M = No MDA Calculation | | |

Peak Codes:

- | | | |
|---------------------|---------------------|--------------------|
| G = Gamma Ray | X = X-Ray | P = Positron Decay |
| S = Single - Escape | D = Double - Escape | K = Key Line |
| A = Not in Average | | |

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
Na-22	<	-3.425E-002	-3.425E-002	1,495.80	1,495.80	1.949E+000
K-40		2.286E+002	2.286E+002	6.87	7.44	1.282E+001
Mn-54	<	-7.908E-003	-7.909E-003	5,323.52	5,323.52	1.576E+000
Co-57	<			1,000.00	1,000.01	9.590E-001
Co-60	<	1.466E-001	1.466E-001	352.27	352.28	1.935E+000
Zn-65	<	-5.003E-002	-5.003E-002	2,008.91	2,008.91	3.776E+000
Sr-85	<	-2.606E-001	-2.607E-001	187.39	187.41	1.694E+000
y-88	<	-1.847E-002	-1.848E-002	2,632.16	2,632.16	1.815E+000
ru-106	<	1.557E+000	1.558E+000	234.72	234.73	1.317E+001
cd-109	<	3.069E+000	3.070E+000	290.87	290.89	3.037E+001
Cs-134	<	-4.500E-005	-4.500E-005	941,777.73	941,777.73	1.545E+000
Tl-208		4.974E+000	4.974E+000	13.17	13.48	1.208E+000
Hg-203	<	-3.339E-001	-3.341E-001	127.33	127.37	1.449E+000
Bi-212		4.349E+001	4.349E+001	14.74	15.03	6.968E+000
U-235	<	3.163E+000	3.163E+000	66.61	66.68	7.028E+000
Cs-137		5.975E+000	5.975E+000	12.59	12.93	1.045E+000
Ce-139	<	-3.733E-002	-3.734E-002	770.55	770.55	1.003E+000
Eu-152	<	3.677E+000	3.677E+000	70.65	70.70	8.655E+000
sn-113	<	-4.605E-001	-4.606E-001	122.20	122.23	1.929E+000
Pb-210	<	5.269E+000	5.269E+000	227.79	227.83	4.262E+001
Pb-212		1.669E+001	1.669E+001	7.18	7.81	2.139E+000
Pb-214	<				2.52	2.462E+000
Bi-214	<	1.371E+001	1.371E+001	10.62	11.01	3.275E+001
Ac-228		1.308E+001	1.308E+001	14.68	14.97	4.259E+000
Am-241	<	-6.325E-001	-6.325E-001	175.88	175.92	3.771E+000
Th-227	<	2.755E-001	2.755E-001	2,847.33	2,847.33	2.639E+001
Th-234	#	4.283E+001	4.288E+001	16.54	16.94	1.723E+001
ra-226	<	1.590E+001	1.590E+001	9.90	10.29	3.583E+001
Ra-224	<	-6.617E+001	-6.617E+001	28.08	28.25	5.924E+001

= All peaks for activity calculation had bad shape

Total Activity (37.54 to 1,999.04 keV) 355.63 Bq/sample

Analyzed by: _____

430030

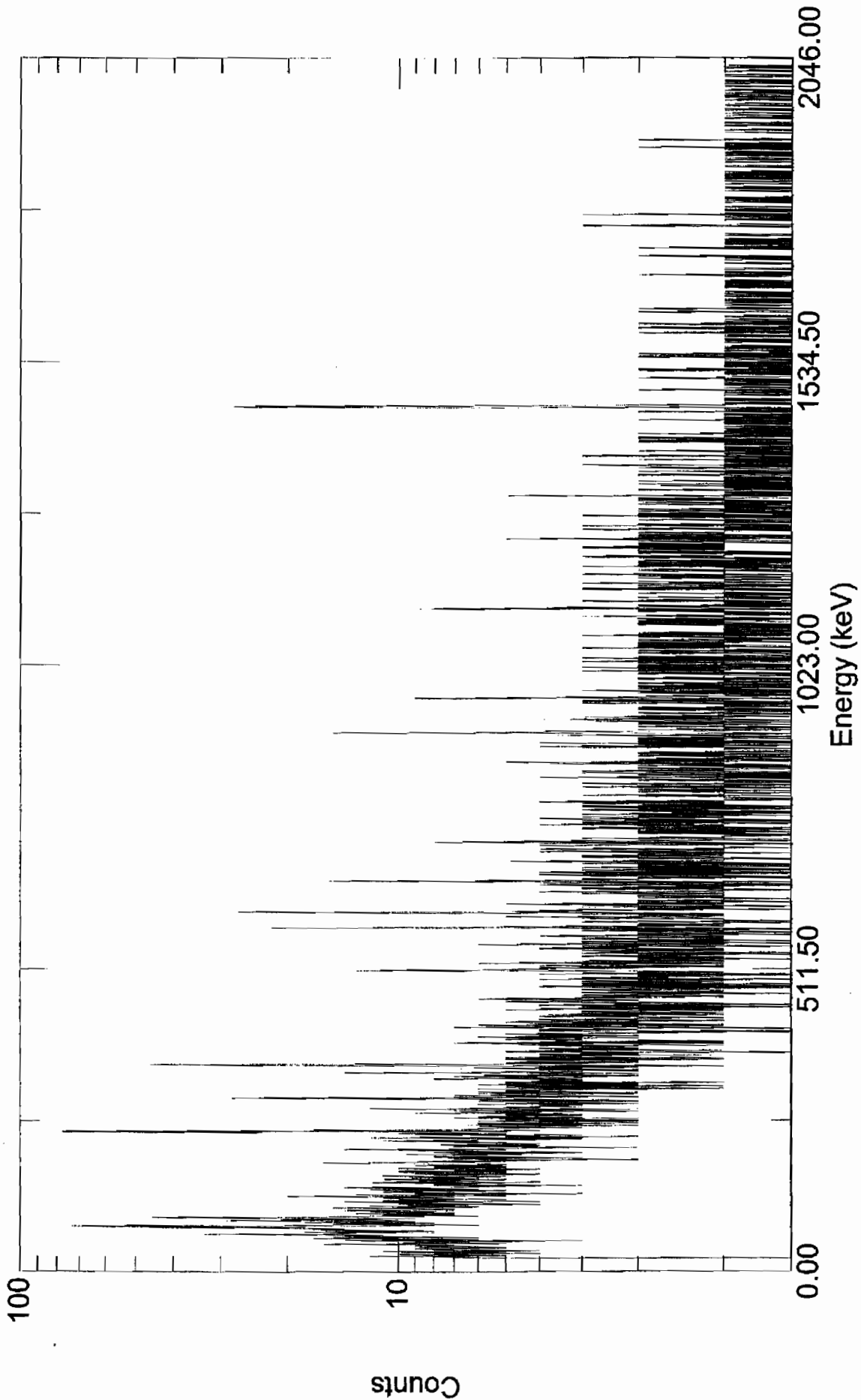
Reviewed by: _____

Supervisor

Laboratory: Test America

LXNMW1AF

0102353_LXNMW1AF_F0D080501-003



Real Time: 1804.68 s. Live Time: 1800.00 s.
Channels: 8192

Acquired: 18-Apr-2010 12:53:05 PM
File: C:\User\spectra\LXNMW1AF.spc
Detector: #0 Ge 4 SN/181

DB Analysis ID: 86,468

Sample Description: 0102353_LXNMX1AF_F0D080501-004

Spectrum Filename: LXNMX1AF.An1

Acquisition Information

Start Time:	18-Apr-2010	12:54:02PM	
Live Time:	1800.00		Real Time: 1814.44
Dead Time:	0.80 %		
Detector ID:	5		

Detector System: Ge 5 SN/157

Calibration

Description:	Ge5_TunaCanCal_81427_334_030410		
Filename:	C:\User\Calibrations\Ge5 calibrations\Ge5_TunaCanCal_81428_334_030410.Clb		
Energy Created:	04-Mar-2010 1:09:16PM	Efficiency Created:	04-Mar-2010 1:10:01PM
Zero Offset:	0.270 keV	Gain:	0.250 keV/Channel

Library 1 File: lanl.lib Library based peak stripping used.

Library 2 File: Null.Lib

Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.73 keV
Stop Channel:	8,000 for an energy of 2000.16 keV
Peak rejection level:	30.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections

	<u>Status</u>	<u>Comments</u>
Decay Correct to Date:	YES	18-Apr-2010 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge5 PBC table 03_31_10.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.1764

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
308.07	77.20	148.33	155.67	0.086	15.08	0.804	PB-212	M

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

<u>Nuclide</u>	<u>Library Used</u>	<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Code</u>
Bi-212	1	166.72	41.90	71.07	3.31	0.002	364.88	0.762	
Pb-210	1	183.86	46.19	96.25	15.94	0.009	59.70	0.769	s
Th-227	1	200.42	50.32	125.13	2.93	0.002	543.13	0.773	s
Am-241	1	237.34	59.54	169.55	10.59	0.006	176.58	0.783	s
Th-234	1	252.37	63.29	193.92	27.81	0.015	56.23	0.786	s
cd-109	1	359.89	90.15	161.41	-0.91	-0.001	1970.24	0.812	
Th-234	1	369.81	92.62	213.22	41.70	0.023	35.75	0.816	s
Co-57	1	486.91	121.87	68.90	14.62	0.008	84.46	0.846	s
Eu-152	1	486.98	121.89	74.25	14.21	0.008	89.79	0.846	s
Co-57	1	540.25	135.19	71.94	6.66	0.004	184.18	0.861	s
U-235	1	575.03	143.88	101.64	0.59	0.000	391.55	0.868	s
Ce-139	1	661.47	165.47	77.10	14.15	0.008	91.69	0.890	s
U-235	1	744.23	186.14	127.94	36.49	0.020	32.14	0.910	s
ra-226	1	744.27	186.15	96.00	78.00	0.043	27.56	0.664	s
U-235	1	820.68	205.23	75.81	4.30	0.002	290.61	0.930	s
Ac-228	1	837.25	209.37	35.00	43.00	0.024	29.39	0.921	s
Th-227	1	943.74	235.97	621.65	-4.09	-0.002	863.31	0.960	s
Pb-212	1	954.91	238.76	73.31	296.69	0.165	7.43	1.004	s
Ra-224	1	961.99	240.53	248.09	-32.10	-0.018	71.60	0.965	
Pb-214	1	967.56	241.92	302.24	0.00	0.000	1000.00	0.966	A
ra-226	1	967.80	241.98	45.71	48.25	0.027	8.60	0.966	D
Eu-152	1	980.11	245.05	85.02	-11.98	-0.007	112.64	0.969	s
Th-227	1	1028.48	257.14	45.86	-2.30	-0.001	421.29	0.980	s
Ac-228	1	1082.05	270.52	48.29	31.66	0.018	35.77	0.994	s
Tl-208	1	1110.69	277.67	47.27	14.41	0.008	72.42	1.001	s
Hg-203	1	1117.47	279.37	49.51	7.98	0.004	129.58	1.002	s
Pb-214	1	1180.42	295.09	80.12	0.00	0.000	1000.00	1.018	A
ra-226	1	1180.94	295.22	47.50	104.21	0.058	8.58	1.131	s D
Pb-212	1	1201.98	300.48	51.30	12.98	0.007	82.83	1.023	s
Ac-228	1	1354.25	338.51	14.00	80.00	0.044	14.07	0.822	s
Eu-152	1	1374.64	343.61	41.88	-4.24	-0.002	221.30	1.065	s
Pb-214	1	1407.70	351.87	51.38	0.00	0.000	1000.00	1.073	A
ra-226	1	1407.92	351.92	10.67	172.54	0.096	8.57	1.099	D
sn-113	1	1568.99	392.16	37.21	-4.06	-0.002	218.39	1.111	s
Sr-85	1	2058.16	514.37	49.60	-4.97	-0.003	205.16	1.225	s
Cs-134	1	2255.58	563.70	22.29	-2.33	-0.001	293.91	1.271	s
Cs-134	1	2279.86	569.77	17.81	-0.57	0.000	1048.49	1.276	s
Tl-208	1	2334.34	583.38	13.93	124.07	0.069	9.73	1.000	
Cs-134	1	2427.37	606.63	31.41	-5.97	-0.003	138.90	1.308	s
Bi-214	1	2438.11	609.31	29.71	126.02	0.070	10.97	1.798	s D
ra-226	1	2438.15	609.32	24.85	132.47	0.074	8.57	1.312	s D
ru-106	1	2492.18	622.82	13.89	-0.50	0.000	1073.56	1.324	s
Cs-137	1	2646.99	661.51	20.34	10.55	0.006	67.84	1.359	s
Bi-214	1	2660.73	664.94	39.33	0.44	0.000	2001.10	1.363	s
Bi-212	1	2910.21	727.29	3.33	33.67	0.019	20.60	0.965	s
Bi-214	1	3074.01	768.23	21.56	4.19	0.002	86.85	1.453	s

Eu-152	1	3117.64	779.13	18.73	-1.81	-0.001	346.39	1.462	s
Bi-212	1	3143.17	785.51	18.29	5.26	0.003	20.66	1.468	s D
Pb-214	1	3144.44	785.83	13.95	3.70	0.002	152.07	1.468	A
Cs-134	1	3188.74	796.90	22.94	-2.33	-0.001	298.49	1.477	s
Cs-134	1	3206.23	801.27	27.22	-5.84	-0.003	132.88	1.482	s
Mn-54	1	3340.95	834.94	14.33	-0.75	0.000	721.59	1.510	s
Tl-208	1	3444.01	860.70	13.18	4.55	0.003	122.06	1.532	s
y-88	1	3592.39	897.79	23.98	-3.17	-0.002	225.42	1.563	s
Ac-228	1	3645.53	911.07	2.67	74.33	0.041	12.34	1.267	
Eu-152	1	3857.31	964.01	133.46	0.00	0.000	1000.00	1.618	s
Ac-228	1	3877.79	969.13	28.65	20.37	0.011	43.26	1.622	s
Eu-152	1	4342.82	1085.38	15.23	3.28	0.002	176.86	1.717	s
Eu-152	1	4447.82	1111.63	15.83	0.73	0.000	774.35	1.737	s
Zn-65	1	4466.17	1116.22	34.83	-8.31	-0.005	106.25	1.740	s
Bi-214	1	4482.37	1120.27	21.02	24.84	0.014	10.97	1.744	s D
ra-226	1	4482.39	1120.28	15.86	26.09	0.014	8.57	1.744	s D
Co-60	1	4694.20	1173.24	22.74	0.00	0.000	1000.00	1.785	s
ra-226	1	4956.96	1238.94	24.24	0.98	0.001	719.41	1.835	s
Na-22	1	5099.30	1274.53	27.60	0.00	0.000	1000.00	1.862	s
Co-60	1	5330.34	1332.30	9.94	1.59	0.001	291.19	1.906	s
Eu-152	1	5632.81	1407.95	15.18	0.00	0.000	1000.00	1.961	s
K-40	1	5844.24	1460.83	7.75	210.25	0.117	6.77	1.667	
Ac-228	1	6353.58	1588.23	36.08	0.00	0.000	1000.00	2.087	s
Bi-212	1	6480.36	1619.94	2.43	6.20	0.003	53.59	2.109	s
ra-226	1	7058.16	1764.49	3.46	0.00	0.000	529.15	2.204	s D
Bi-214	1	7058.16	1764.49	9.65	17.64	0.010	11.05	2.204	s D
y-88	1	7344.02	1836.01	0.00	0.00	0.000	1000.00	2.249	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Peak		MDA Value Bq	Code	T 1/2 (y)	% Abn.
					Activity Bq	Analysis Code				
U-235		N	1	9.828E-002	143.79	9.828E-002 & (P	8.254E+000	G	2.6E+011	10.50
				9.828E-002	185.74	1.374E+000 % P	2.087E+000	G	2.6E+011	53.00
				9.828E-002	205.33	1.957E+000 &	1.972E+001	G	2.6E+011	4.70
Th-227		N	1	-8.717E-001	235.97	-8.717E-001 % (	2.533E+001	G	8.0E+003	11.20
				-8.717E-001	50.14	9.261E-001 %	1.734E+001	G	8.0E+003	8.50
				-8.717E-001	256.24	-8.734E-001 &	1.300E+001	G	8.0E+003	6.74
Tl-208	F	N	1	7.621E+000	583.02	7.621E+000 (P	1.235E+000	G	7.0E+002	86.00
				7.621E+000	860.30	2.773E+000 &	1.195E+001	G	7.0E+002	12.00
				7.621E+000	277.28	5.811E+000 %	1.401E+001	G	7.0E+002	6.79
Cs-137	T F I		1	7.287E-001	661.65	7.287E-001 % (	1.639E+000	G	1.1E+004	85.12
Am-241	T		1	6.325E-001	59.54	6.325E-001 % (	3.786E+000	G	1.6E+005	35.70
Mn-54	F C		1	-5.358E-002	834.83	-5.358E-002 % (	1.451E+000	G	3.1E+002	99.98
cd-109	T F		1	-4.226E-001	88.03	-4.226E-001 % (	2.865E+001	G	4.6E+002	3.72
Cs-134	T F I		1	-3.334E-001	604.71	-3.334E-001 % (	1.610E+000	G	7.5E+002	97.60
				-3.334E-001	795.84	-1.867E-001 %	2.009E+000	G	7.5E+002	85.40
				-3.334E-001	569.32	-1.925E-001 %	7.507E+000	G	7.5E+002	15.43
				-3.334E-001	801.93	-4.616E+000 %	2.135E+001	G	7.5E+002	8.73

			-3.334E-001	563.24	-1.426E+000 %	1.512E+001 G	7.5E+002	8.39
Ce-139	T F	1	3.283E-001	165.85	3.283E-001 % (	1.012E+000 G	1.4E+002	80.35
Bi-212	N	1	3.221E+001	727.25	3.221E+001 (	1.073E+001 G	7.0E+002	6.65
			3.221E+001	1620.66	5.137E+001 %	8.253E+001 G	7.0E+002	1.51
			3.221E+001	785.51	3.221E+001 %	1.387E+002 G	7.0E+002	1.11
			3.221E+001	39.86	1.446E+001 %	1.838E+002 G	7.0E+002	1.02
Co-57	PC	1	2.855E-001	122.06	2.855E-001 % (	8.086E-001 G	2.7E+002	85.51
			2.855E-001	136.47	1.077E+000 &	6.827E+000 G	2.7E+002	10.60
Hg-203	I	1	2.842E-001	279.19	2.842E-001 & (	1.264E+000 G	4.7E+001	77.30
ru-106	I	1	-2.820E-001	621.84	-2.820E-001 % (	1.143E+001 G	3.7E+002	9.80
y-88	T F	1	-2.570E-001	898.02	-2.570E-001 % (	2.069E+000 G	1.1E+002	93.40
			-2.570E-001	1836.01	0.000E+000 %	1.043E+000 G	1.1E+002	99.38
Sr-85	I	1	-2.375E-001	513.99	-2.375E-001 % (	1.696E+000 G	6.5E+001	99.27
sn-113	T F	1	-2.328E-001	391.69	-2.328E-001 % (	1.787E+000 G	1.2E+002	64.90
K-40	N	1	2.244E+002	1460.83	2.244E+002 (P	1.674E+001 G	4.7E+011	10.67
Ac-228	N	1	2.030E+001	911.16	1.963E+001 (	2.726E+000 G	2.1E+003	29.00
			2.030E+001	968.97	9.420E+000 %	1.279E+001 G	2.1E+003	17.42
			2.030E+001	338.42	2.107E+001 (	5.307E+000 G	2.1E+003	12.40
			2.030E+001	209.39	2.267E+001 @ (	1.597E+001 G	2.1E+003	4.12

			2.030E+001	270.26	2.247E+001 %		2.491E+001 G	2.1E+003	3.77
			2.030E+001	1588.23	0.000E+000 %		1.047E+002 G	2.1E+003	3.60
Ra-224	N	1	-1.997E+001	240.76	-1.997E+001 % (		4.735E+001 G	7.0E+002	3.90
Co-60	T F	1	1.673E-001	1332.50	1.673E-001 & (		1.830E+000 G	1.9E+003	99.98
			1.673E-001	1173.24	0.000E+000 %		2.355E+000 G	1.9E+003	99.90
Pb-212	N	1	1.639E+001	238.58	1.639E+001 @ (P		2.353E+000 G	7.0E+002	43.60
			1.639E+001	300.03	1.138E+001 %		3.165E+001 G	7.0E+002	3.34
			1.569E+001	295.22	1.569E+001		5.244E+000 G	5.8E+005	19.20
			1.569E+001	241.98	1.569E+001 %		1.113E+001 G	5.8E+005	7.49
			1.569E+001	186.21	4.456E+001 * (		2.763E+001 G	5.8E+005	3.50
ra-226		1	1.569E+001	609.32	1.569E+001 E		3.073E+000 G	5.8E+005	46.30
			1.569E+001	1764.49	0.000E+000 % E		9.745E+000 G	5.8E+005	15.80
			1.569E+001	1238.11	1.625E+000 % (		4.264E+001 G	5.8E+005	5.94
			1.569E+001	1120.28	1.569E+001 % E		1.279E+001 G	5.8E+005	15.10
			1.569E+001	351.92	1.569E+001		1.631E+000 G	5.8E+005	37.20
Bi-214	N	1	1.500E+001	609.31	1.500E+001 PE		3.345E+000 G	5.8E+005	46.09
			1.500E+001	1764.49	1.500E+001 % PE		1.461E+001 G	5.8E+005	15.92
			1.500E+001	1120.27	1.500E+001 % PE		1.454E+001 G	5.8E+005	15.04
			1.500E+001	768.35	5.708E+000 % (P		3.318E+001 G	5.8E+005	4.89
			1.500E+001	665.44	1.680E+000 &		1.207E+002 G	5.8E+005	1.56

Zn-65	T F	1	-1.482E+000	1115.52	-1.482E+000 % (	5.388E+000	G	2.4E+002	50.75
Th-234	N	1	1.308E+001	92.59	1.308E+001 * (P	2.219E+001	G	2.4E+001	5.41
			1.308E+001	63.29	1.482E+001 % P	3.602E+001	G	2.4E+001	3.81
Pb-210	N	1	1.291E+001	46.52	1.291E+001 * (P	3.922E+001	G	8.1E+003	4.05
Na-22	F C	1	0.000E+000	1274.53	0.000E+000 % (	2.756E+000	G	9.5E+002	99.84
Eu-152	T F	1	0.000E+000	1407.95	0.000E+000 & (	1.111E+001	G	5.0E+003	20.70
			0.000E+000	121.78	8.353E-001 %	2.520E+000	G	5.0E+003	28.40
			0.000E+000	344.27	-5.306E-001 %	4.114E+000	G	5.0E+003	26.50
			0.000E+000	964.01	0.000E+000 %	3.150E+001	G	5.0E+003	14.40
			0.000E+000	1112.02	4.987E-001 %	1.442E+001	G	5.0E+003	13.30
			0.000E+000	778.89	-9.560E-001 %	1.209E+001	G	5.0E+003	12.74
			0.000E+000	1085.78	2.907E+000 &	1.849E+001	G	5.0E+003	10.00
Pb-214	N	1	0.000E+000	351.87	0.000E+000 % PA	3.293E+000	G	5.8E+005	37.10
			0.000E+000	295.09	0.000E+000 % PA	6.686E+000	G	5.8E+005	19.20
			0.000E+000	241.92	0.000E+000 % PA	2.733E+001	G	5.8E+005	7.46
			0.000E+000	785.83	2.298E+001 % A	1.250E+002	G	5.8E+005	1.09
			0.000E+000	244.69	-3.932E+000 %	1.500E+001	G	5.0E+003	7.49

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average P = Peakbackground subtraction
* = Peak is too wide, but only one peak in library @ = Peak is too wide at FW25M, but OK at FWHM
A = Derived Average Activity E = Energy Duplication
+ = Peak activity higher than counting uncertainty range
! = Peak is part of a multiplet and this area went negative during deconvolution
\$ = Peak identified, but first peak of this nuclide failed one or more qualification tests
& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
Na-22	<			1,000.00	1,000.00	2.756E+000
K-40		2.244E+002	2.244E+002	7.02	7.59	1.674E+001
Mn-54	<	-5.358E-002	-5.359E-002	721.59	721.60	1.451E+000
Co-57	<	2.855E-001	2.856E-001	84.46	84.52	8.086E-001
Co-60	<	1.673E-001	1.673E-001	291.19	291.20	1.830E+000
Zn-65	<	-1.482E+000	-1.482E+000	106.25	106.29	5.386E+000
Sr-85	<	-2.375E-001	-2.376E-001	205.16	205.18	1.696E+000
y-88	<	-2.570E-001	-2.571E-001	225.42	225.44	2.069E+000
ru-106	<	-2.820E-001	-2.820E-001	1,073.56	1,073.57	1.143E+001
cd-109	<	-4.226E-001	-4.226E-001	1,970.24	1,970.25	2.865E+001
Eu-152	<			1,000.00	1,000.00	1.111E+001
Pb-212	#	1.639E+001	1.639E+001	7.84	8.40	2.353E+000
Pb-214	<				2.52	3.293E+000
Bi-212	#	3.221E+001	3.221E+001	20.60	20.81	1.073E+001
Cs-134	<	-3.334E-001	-3.334E-001	138.90	138.93	1.610E+000
Cs-137	<	7.287E-001	7.287E-001	67.84	67.91	1.639E+000
Ce-139	<	3.283E-001	3.283E-001	91.69	91.74	1.012E+000
Tl-208		7.621E+000	7.621E+000	10.27	10.68	1.235E+000
sn-113	<	-2.328E-001	-2.329E-001	218.39	218.41	1.787E+000
Hg-203	<	2.842E-001	2.844E-001	129.58	129.61	1.264E+000
Pb-210	<	1.291E+001	1.291E+001	88.88	88.97	3.922E+001
Bi-214	<	1.500E+001	1.500E+001	10.87	11.26	3.318E+001
U-235	<	9.828E-002	9.828E-002	2,395.23	2,395.23	8.254E+000
Am-241	<	6.325E-001	6.325E-001	176.58	176.62	3.786E+000
Th-227	<	-8.717E-001	-8.717E-001	863.31	863.31	2.533E+001
Ra-224	<	-1.997E+001	-1.997E+001	71.60	71.67	4.735E+001
Ac-228		2.030E+001	2.030E+001	11.61	11.97	2.726E+000
Th-234	<	1.308E+001	1.309E+001	50.90	51.03	2.219E+001
ra-226	<	1.569E+001	1.569E+001	8.44	8.90	4.264E+001

= All peaks for activity calculation had bad shape

Total Activity (37.73 to 2,000.16 keV) 300.93 Bq/sample

Analyzed by:

430030

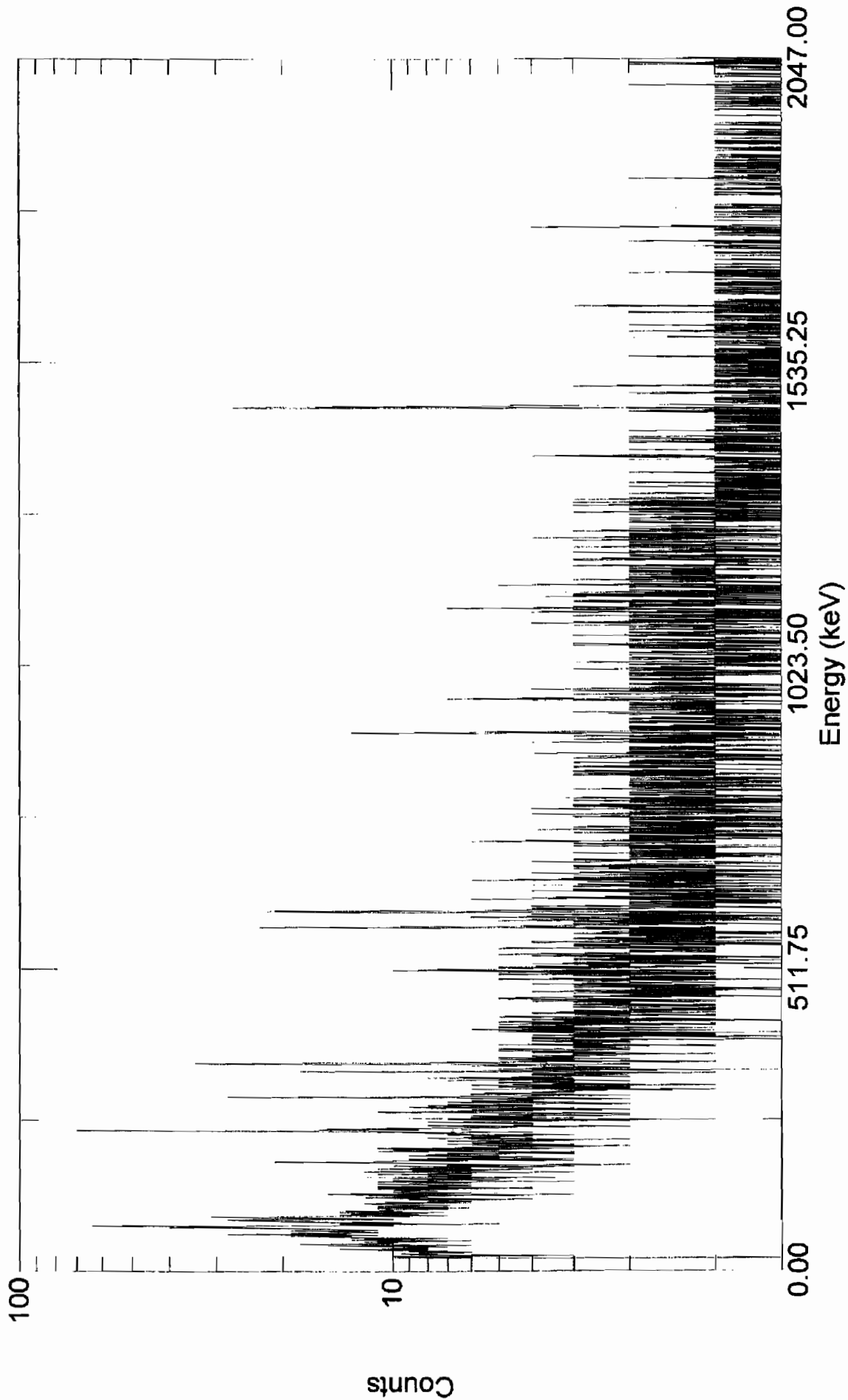
Reviewed by:

Supervisor

Laboratory:

STL- Test America

LXNMX1AF
0102353_LXNMX1AF_F0D080501-004



Acquired: 18-Apr-2010 12:54:02 PM
File: C:\User\spectra\LXNMX1AF.spc
Detector: #0 Ge 5 SN/157

Real Time: 1814.44 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 86,469**Sample Description:** 0102353_LXNM21AF_F0D080501-005**Spectrum Filename:** LXNM21AF.An1**Acquisition Information**

Start Time: 18-Apr-2010 12:54:43PM

Live Time: 1800.00

Real Time: 1824.48

Dead Time: 1.34 %

Detector ID: 8

Detector System: Ge 8 SN/174**Calibration**

Description: Ge8_TunaCanCal_81427_334_031010

Filename: C:\User\Calibrations\Ge8 post 11_03_06\Ge8_TunaCanCal_81427_334_031010.Clb

Energy Created: 10-Mar-2010 1:56:17PM

Efficiency Created: 10-Mar-2010 1:57:59PM

Zero Offset: 0.171 keV

Gain: 0.250 keV/Channel

Library 1 File: lanl.lib

Library based peak stripping used.

Library 2 File: Null.Lib**Library 3 File:** Null.Lib**Analysis Parameters**

Start Channel: 150 for an energy of 37.66 keV

Stop Channel: 8,000 for an energy of 1999.72 keV

Peak rejection level: 30.000 %

Activity Scaling Factor: 1.0000 / 1.0000 = 1.0000

Detection Limit Method: Nureg method 4.16

Sample Size: 1.00E+000

Additional random error: 0.0000

Additional systematic error: 0.0000

Fraction Limit: 0.0000%

Background Width: Average of three points

Corrections**Status****Comments**

Decay Correct to Date: YES 18-Apr-2010 12:00:00PM

Decay During Acquisition: NO

Peaked Background Correction: YES Ge8 PBC table 03_31_10.Pbc

Absorption: NO

Geometry Correction: NO

Random Summing: NO

Energy Calibration Normalized Differe 0.0698

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
298.46	74.85	174.61	139.39	0.077	15.86	1.085	TL-208	D
308.09	77.26	148.68	266.32	0.148	8.91	1.087	PB-212	D
347.60	87.05	126.00	85.00	0.047	26.44	1.060	TH-234	M

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

<u>Nuclide</u>	<u>Library Used</u>	<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Code</u>
Bi-212	1	157.43	39.52	63.90	11.66	0.006	101.25	1.059	
Pb-210	1	186.31	46.74	114.61	6.37	0.004	240.97	1.064	s
Th-227	1	198.43	49.77	121.94	1.60	0.001	978.89	1.067	s
Am-241	1	239.38	60.00	182.63	7.24	0.004	266.43	1.074	s
Th-234	1	252.95	63.39	236.89	6.84	0.004	52.06	1.076	s
cd-109	1	364.67	91.32	150.87	4.66	0.003	375.32	1.094	
Th-234	1	370.94	92.88	262.47	46.56	0.026	23.72	1.098	s
Eu-152	1	482.87	120.86	83.24	16.68	0.009	81.13	1.119	s
Co-57	1	482.98	120.88	79.30	16.62	0.009	79.66	1.119	s
Co-57	1	545.20	136.43	124.77	-5.53	-0.003	288.63	1.130	s
U-235	1	576.58	144.28	119.25	-5.16	-0.003	1067.00	1.135	s
Ce-139	1	669.23	167.43	79.81	0.47	0.000	2702.57	1.151	s
ra-226	1	743.29	185.94	70.00	107.00	0.059	18.93	0.916	s
U-235	1	744.02	186.13	113.08	54.00	0.030	19.37	1.165	s
U-235	1	819.74	205.05	107.27	-5.63	-0.003	3797.77	1.178	s
Ac-228	1	838.30	209.69	77.61	21.18	0.012	62.70	1.181	s
Th-227	1	939.09	234.88	166.21	-22.00	-0.012	85.58	1.200	s
Pb-212	1	953.89	238.58	118.77	279.23	0.155	9.63	1.069	
Ra-224	1	962.62	240.76	171.33	-1.71	-0.001	1086.58	1.203	
Pb-214	1	967.24	241.92	219.68	3.12	0.002	532.98	1.204	s D
ra-226	1	967.49	241.98	382.13	0.00	0.000	2323.79	1.204	D
Eu-152	1	978.88	244.83	110.81	-11.35	-0.006	134.47	1.206	s
Th-227	1	1018.20	254.65	42.39	1.04	0.001	893.97	1.214	s
Ac-228	1	1079.56	269.99	48.92	16.39	0.009	65.19	1.223	s
Hg-203	1	1107.19	276.90	50.14	-0.28	0.000	3557.57	1.229	s
Tl-208	1	1109.29	277.42	58.99	16.43	0.009	70.55	1.228	s
Pb-214	1	1179.98	295.09	44.53	101.74	0.057	8.97	1.240	D
ra-226	1	1180.50	295.22	57.34	6.93	0.004	213.60	1.240	D
Pb-212	1	1200.41	300.20	21.00	41.00	0.023	25.70	0.779	s
Ac-228	1	1352.68	338.25	33.00	75.00	0.042	20.18	1.120	
Eu-152	1	1372.51	343.21	39.62	-6.01	-0.003	153.54	1.273	s
Pb-214	1	1407.14	351.87	34.60	168.27	0.093	8.96	1.278	D
ra-226	1	1407.36	351.92	31.50	174.82	0.097	9.55	1.167	D
sn-113	1	1556.62	389.23	30.31	-0.30	0.000	2625.94	1.304	s
Sr-85	1	2056.00	514.04	62.93	-14.47	-0.008	81.87	1.382	s
Cs-134	1	2252.83	563.24	35.06	0.00	0.000	1000.00	1.413	s
Cs-134	1	2271.48	567.90	21.73	-0.83	0.000	805.25	1.416	s
Tl-208	1	2332.15	583.06	19.04	120.96	0.067	10.87	1.474	
Cs-134	1	2418.76	604.71	353.10	2.04	0.001	1303.78	1.438	s
Bi-214	1	2437.17	609.31	29.81	118.82	0.066	12.22	0.985	s D
ra-226	1	2437.21	609.32	29.27	0.00	0.000	1743.56	1.441	s D
ru-106	1	2484.25	621.08	22.11	-0.22	0.000	3073.10	1.448	s
Cs-137	1	2660.79	665.20	13.58	0.65	0.000	806.67	1.472	s
Bi-214	1	2666.30	666.58	17.61	-0.60	0.000	1004.33	1.474	s
Bi-212	1	2909.30	727.31	25.39	6.57	0.004	115.34	1.509	s
Bi-214	1	3073.75	768.42	19.02	6.79	0.004	98.58	1.532	s

Eu-152	1	3115.65	778.89	23.19	0.00	0.000	1000.00	1.538	s
Bi-212	1	3138.04	784.49	26.73	2.74	0.002	273.64	1.542	
Pb-214	1	3143.08	785.75	32.17	0.02	0.000	41324.12	1.542	s
Cs-134	1	3181.44	795.34	15.31	8.99	0.005	69.99	1.548	s
Cs-134	1	3207.83	801.93	23.50	0.00	0.000	1000.00	1.551	s
Mn-54	1	3342.74	835.65	15.12	4.70	0.003	125.67	1.569	s
Tl-208	1	3439.26	859.77	12.52	8.21	0.005	70.23	1.583	s
y-88	1	3586.36	896.54	7.85	6.15	0.003	76.06	1.603	s
Ac-228	1	3644.60	911.10	2.67	58.33	0.032	14.15	0.988	s
Eu-152	1	3858.57	964.58	30.36	1.88	0.001	420.60	1.637	s
Ac-228	1	3876.59	969.08	3.33	42.67	0.024	17.71	0.903	s
Eu-152	1	4343.81	1085.86	10.04	5.76	0.003	88.28	1.697	s
Eu-152	1	4442.48	1110.52	13.76	-0.22	0.000	2380.38	1.709	s
Zn-65	1	4475.77	1118.84	20.16	-0.63	0.000	1016.13	1.711	s
Bi-214	1	4481.49	1120.27	15.67	0.00	0.000	800.00	1.713	s D
ra-226	1	4481.52	1120.28	15.76	26.90	0.015	9.55	1.713	s D
Co-60	1	4692.13	1172.92	18.66	-0.04	0.000	17051.10	1.737	s
ra-226	1	4952.94	1238.11	25.39	0.00	0.000	1000.00	1.766	s
Na-22	1	5098.65	1274.53	0.00	0.00	0.000	1000.00	1.782	s
Co-60	1	5331.31	1332.68	9.91	-0.74	0.000	615.63	1.807	s
Eu-152	1	5630.32	1407.42	9.71	2.06	0.001	224.49	1.837	s
K-40	1	5842.36	1460.42	3.92	287.08	0.159	5.86	2.200	
Ac-228	1	6353.86	1588.27	6.49	4.66	0.003	90.08	1.904	s
Bi-212	1	6483.46	1620.66	0.00	0.00	0.000	1000.00	1.915	s
ra-226	1	7058.89	1764.49	0.00	19.08	0.011	9.64	1.962	s D
Bi-214	1	7058.89	1764.49	3.13	16.98	0.009	12.29	1.962	s D
y-88	1	7364.46	1840.87	4.46	-0.94	-0.001	335.67	1.983	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Peak		MDA Value Bq	Code	T 1/2 (y)	% Abn.
					Activity Bq	Analysis Code				
			9.503E-002	563.24	0.000E+000	&	1.547E+001	G	7.5E+002	8.39
Cs-134	T F I	1	9.503E-002	604.71	9.503E-002	% (	4.203E+000	G	7.5E+002	97.60
			9.503E-002	795.84	5.993E-001	%	1.396E+000	G	7.5E+002	85.40
			9.503E-002	569.32	-2.314E-001	%	6.841E+000	G	7.5E+002	15.43
			9.503E-002	801.93	0.000E+000	%	1.659E+001	G	7.5E+002	8.73
Zn-65	T F	1	-9.268E-002	1115.52	-9.268E-002	% (	3.478E+000	G	2.4E+002	50.75
Ce-139	T F	1	9.178E-003	165.85	9.178E-003	% (	8.693E-001	G	1.4E+002	80.35
Eu-152	T F	1	9.031E-001	1407.95	9.031E-001	% (	7.536E+000	G	5.0E+003	20.70
			9.031E-001	121.78	8.312E-001	%	2.253E+000	G	5.0E+003	28.40
			9.031E-001	344.27	-6.322E-001	%	3.368E+000	G	5.0E+003	26.50
			9.031E-001	964.01	8.674E-001	%	1.309E+001	G	5.0E+003	14.40
			9.031E-001	1112.02	-1.239E-001	%	1.120E+001	G	5.0E+003	13.30
			9.031E-001	778.89	0.000E+000	%	1.104E+001	G	5.0E+003	12.74
			9.031E-001	1085.78	4.207E+000	&	1.277E+001	G	5.0E+003	10.00
			9.031E-001	244.69	-3.140E+000	%	1.432E+001	G	5.0E+003	7.49
Ra-224	N	1	-8.954E-001	240.76	-8.954E-001	% (	3.340E+001	G	7.0E+002	3.90
Hg-203	I	1	-8.448E-003	279.19	-8.448E-003	% (	1.070E+000	G	4.7E+001	77.30

Co-60	T F	1	-6.368E-002	1332.50	-6.368E-002 % (	1.503E+000	G	1.9E+003	99.98
			-6.368E-002	1173.24	-2.792E-003 %	1.779E+000	G	1.9E+003	99.90
Tl-208	F N	1	6.199E+000	583.02	6.199E+000 (P	1.181E+000	G	7.0E+002	86.00
			6.199E+000	860.30	4.146E+000 %	9.693E+000	G	7.0E+002	12.00
			6.199E+000	277.28	5.577E+000 %	1.307E+001	G	7.0E+002	6.79
Sr-85	I	1	-5.772E-001	513.99	-5.772E-001 % (	1.583E+000	G	6.5E+001	99.27
Bi-212	N	1	5.224E+000	727.25	5.224E+000 % (	2.084E+001	G	7.0E+002	6.65
			5.224E+000	1620.86	0.000E+000 %	4.995E+001	G	7.0E+002	1.51
			5.224E+000	785.51	1.394E+001 %	1.363E+002	G	7.0E+002	1.11
			5.224E+000	39.86	4.636E+001 %	1.588E+002	G	7.0E+002	1.02
Pb-210	N	1	4.606E+000	46.52	4.606E+000 % (	3.804E+001	G	8.1E+003	4.05
y-88	T F	1	4.127E-001	898.02	4.127E-001 % (	1.059E+000	G	1.1E+002	93.40
			4.127E-001	1836.01	-1.080E-001 %	1.449E+000	G	1.1E+002	99.38
Th-227	N	1	-3.951E+000	235.97	-3.951E+000 % (	1.128E+001	G	8.0E+003	11.20
			-3.951E+000	50.14	4.498E-001 %	1.522E+001	G	8.0E+003	8.50
			-3.951E+000	256.24	3.312E-001 %	1.056E+001	G	8.0E+003	6.74
Am-241	T	1	3.787E-001	59.54	3.787E-001 % (	3.434E+000	G	1.6E+005	35.70
Cs-137	T F I	1	3.760E-002	661.65	3.760E-002 % (	1.144E+000	G	1.1E+004	85.12
Mn-54	F C	1	2.783E-001	834.83	2.783E-001 & (	1.232E+000	G	3.1E+002	99.98

Co-57	PC	1	2.751E-001	122.06	2.751E-001 & (	7.318E-001 G	2.7E+002	85.51
			2.751E-001	136.47	-7.570E-001 &	7.492E+000 G	2.7E+002	10.60
K-40	N	1	2.514E+002	1460.83	2.514E+002 (P	1.046E+001 G	4.7E+011	10.67
cd-109	T F	1	1.842E+000	88.03	1.842E+000 % (	2.368E+001 G	4.6E+002	3.72
Ac-228	N	1	1.463E+001	911.16	1.276E+001 (	2.258E+000 G	2.1E+003	29.00
			1.463E+001	968.97	1.633E+001 (	4.293E+000 G	2.1E+003	17.42
			1.463E+001	338.42	1.660E+001 (	6.523E+000 G	2.1E+003	12.40
			1.463E+001	209.39	9.424E+000 %	1.947E+001 G	2.1E+003	4.12
			1.463E+001	270.26	9.796E+000 %	2.109E+001 G	2.1E+003	3.77
			1.463E+001	1588.23	1.302E+001 %	4.071E+001 G	2.1E+003	3.60
sn-113	T F	1	-1.431E-002	391.69	-1.431E-002 & (	1.366E+000 G	1.2E+002	64.90
ra-226		1	1.335E+001	609.32	0.000E+000 % E	2.758E+000 G	5.8E+005	46.30
			1.335E+001	1764.49	1.335E+001 % E	5.156E+000 G	5.8E+005	15.80
			1.335E+001	1238.11	0.000E+000 % (	3.586E+001 G	5.8E+005	5.94
			1.335E+001	1120.28	1.335E+001 % E	1.053E+001 G	5.8E+005	15.10
			1.335E+001	351.92	1.335E+001	2.204E+000 G	5.8E+005	37.20
			1.335E+001	295.22	8.778E-001 %	4.813E+000 G	5.8E+005	19.20
			1.335E+001	241.98	0.000E+000 %	2.571E+001 G	5.8E+005	7.49
			1.335E+001	186.21	5.162E+001 * (	2.012E+001 G	5.8E+005	3.50
U-235	N	1	1.314E+000	143.79	-7.249E-001 % (P	7.532E+000 G	2.6E+011	10.50

			1.314E+000	185.74	1.717E+000 * (	P	1.662E+000	G	2.6E+011	53.00
			1.314E+000	205.33	-2.166E+000 %	P	1.960E+001	G	2.6E+011	4.70
Pb-212	N	1	1.300E+001	238.58	1.300E+001 (	P	2.490E+000	G	7.0E+002	43.60
			1.300E+001	300.03	3.025E+001 +		1.775E+001	G	7.0E+002	3.34
			1.288E+001	241.92	8.589E-001 %		1.975E+001	G	5.8E+005	7.46
			1.288E+001	785.83	1.002E-001 % (		1.505E+002	G	5.8E+005	1.09
Pb-214	N	1	1.288E+001	351.87	1.288E+001 !		2.306E+000	G	5.8E+005	37.10
			1.288E+001	295.09	1.288E+001		4.281E+000	G	5.8E+005	19.20
Th-234	N	1	1.244E+001	92.59	1.244E+001 * (	P	2.090E+001	G	2.4E+001	5.41
			1.244E+001	63.29	3.173E+000 %	P	3.453E+001	G	2.4E+001	3.81
Bi-214	N	1	1.179E+001	609.31	1.179E+001	PE	2.793E+000	G	5.8E+005	46.09
			1.179E+001	1764.49	1.179E+001 %	PE	7.607E+000	G	5.8E+005	15.92
			1.179E+001	1120.27	0.000E+000 %	E	1.054E+001	G	5.8E+005	15.04
			1.179E+001	768.35	7.691E+000 % (		2.608E+001	G	5.8E+005	4.89
			1.179E+001	665.44	-1.876E+000 %		7.008E+001	G	5.8E+005	1.56
ru-106	I	1	-1.029E-001	621.84	-1.029E-001 % (		1.168E+001	G	3.7E+002	9.80
Na-22	F C	1	0.000E+000	1274.53	0.000E+000 % (		6.149E-001	G	9.5E+002	99.84

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(	= This peak is used in the nuclide activity average	P	= Peakbackground subtraction
*	= Peak is too wide, but only one peak in library	@	= Peak is too wide at FW25M, but OK at FWHM
A	= Derived Average Activity	E	= Energy Duplication
+	= Peak activity higher than counting uncertainty range		
!	= Peak is part of a multiplet and this area went negative during deconvolution		
\$	= Peak identified, but first peak of this nuclide failed one or more qualification tests		
&	= Calculated peak centroid is not close enough to the library energy centroid for positive identification		

Nuclide Codes:

T	= Thermal Neutron Activation	F	= Fast Neutron Activation	I	= Fission Product
P	= Photon Reaction	N	= Naturally Occurring Isotope	C	= Charged Particle Reaction
M	= No MDA Calculation				

Peak Codes:

G	= Gamma Ray	X	= X-Ray	P	= Positron Decay
S	= Single - Escape	D	= Double - Escape	K	= Key Line
A	= Not in Average				

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
Na-22	<			1,000.00	1,000.00	6.149E-001
K-40		2.514E+002	2.514E+002	5.94	6.60	1.046E+001
Mn-54	<	2.783E-001	2.783E-001	125.67	125.70	1.232E+000
Co-57	<	2.751E-001	2.751E-001	79.66	79.73	7.318E-001
Co-60	<	-6.368E-002	-6.368E-002	615.63	615.63	1.503E+000
Zn-65	<	-9.268E-002	-9.269E-002	1,016.13	1,016.13	3.478E+000
Sr-85	<	-5.772E-001	-5.775E-001	81.87	81.92	1.583E+000
y-88	<	4.127E-001	4.128E-001	76.06	76.11	1.059E+000
Cs-137	<	3.760E-002	3.760E-002	806.67	806.67	1.144E+000
Ce-139	<	9.178E-003	9.180E-003	2,702.57	2,702.57	8.693E-001
Eu-152	<	9.031E-001	9.031E-001	224.49	224.51	7.536E+000
ru-106	<	-1.029E-001	-1.030E-001	3,073.10	3,073.10	1.168E+001
cd-109	<	1.842E+000	1.842E+000	375.32	375.33	2.368E+001
Cs-134	<	9.503E-002	9.504E-002	1,303.78	1,303.78	4.203E+000
Tl-208		6.199E+000	6.199E+000	11.46	11.82	1.181E+000
Bi-212	<	5.224E+000	5.224E+000	115.34	115.37	2.084E+001
Bi-214	<	1.179E+001	1.179E+001	12.13	12.48	2.608E+001
Ac-228		1.463E+001	1.463E+001	10.12	10.53	2.258E+000
Th-227	<	-3.951E+000	-3.951E+000	85.58	85.63	1.128E+001
Th-234	<	1.244E+001	1.246E+001	49.06	49.20	2.090E+001
ra-226	<	1.335E+001	1.335E+001	9.43	9.84	3.586E+001
sn-113	<	-1.431E-002	-1.431E-002	2,625.94	2,625.94	1.366E+000
Hg-203	<	-8.448E-003	-8.453E-003	3,557.57	3,557.57	1.070E+000
Pb-210	<	4.606E+000	4.606E+000	240.97	241.00	3.804E+001
Pb-212		1.300E+001	1.300E+001	9.99	10.43	2.490E+000
Pb-214	<	1.288E+001	1.288E+001	8.84	9.32	1.505E+002
U-235	<	1.314E+000	1.314E+000	29.41	29.56	7.532E+000
Am-241	<	3.787E-001	3.787E-001	266.43	266.46	3.434E+000
Ra-224	<	-8.954E-001	-8.954E-001	1,086.58	1,086.58	3.340E+001

= All peaks for activity calculation had bad shape

Total Activity (37.66 to 1,999.72 keV) 285.26 Bq/sample

Analyzed by: _____

430030

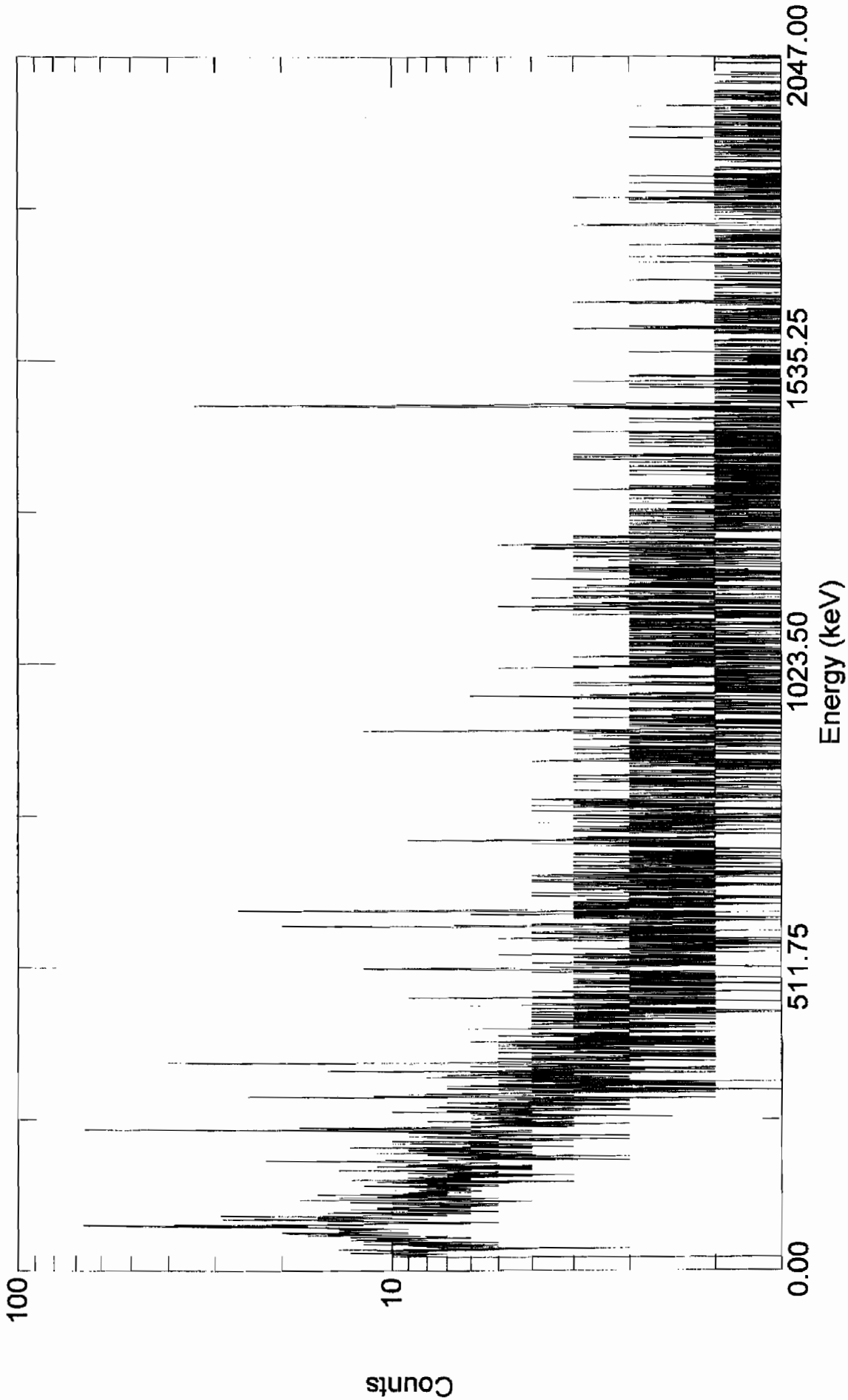
Reviewed by: _____

Supervisor

Laboratory: STL- Test America

LXNM21AF

0102353_LXNM21AF_F0D080501-005



Real Time: 1824.48 s. Live Time: 1800.00 s.
Channels: 8192

Acquired: 18-Apr-2010 12:54:43 PM
File: C:\User\spectra\LXNM21AF.spc
Detector: #0 Ge 8 SN/174

DB Analysis ID: 86,463

Sample Description: 0102353_LXNM41AF_F0D080501-006

Spectrum Filename: LXNM41AF.An1

Acquisition Information

Start Time:	18-Apr-2010	12:50:17PM	
Live Time:	1800.00		Real Time: 1802.86
Dead Time:	0.16 %		
Detector ID:	10		

Detector System: Ge 10 SN/129

Calibration

Description:	Ge10_TunaCanCal_81427_334_031210		
Filename:	C:\User\Calibrations\Ge10 calibrations\Ge10_TunaCanCal_81427_334_031210.Clb		
Energy Created:	12-Mar-2010 3:10:58PM	Efficiency Created:	12-Mar-2010 3:11:22PM
Zero Offset:	0.131 keV	Gain:	0.250 keV/Channel

Library 1 File:	lanl.lib	Library based peak stripping used.
Library 2 File:	Null.Lib	
Library 3 File:	Null.Lib	

Analysis Parameters

Start Channel:	150 for an energy of 37.64 keV
Stop Channel:	8,000 for an energy of 1999.49 keV
Peak rejection level:	30.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections

	<u>Status</u>	<u>Comments</u>
Decay Correct to Date:	YES	18-Apr-2010 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge10 PBC tables 03 31 10.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.0823

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
299.16	74.91	237.45	188.55	0.105	13.66	1.079	TL-208	D
308.61	77.27	242.71	294.29	0.163	9.49	1.081	PB-212	D
372.17	93.20	296.60	63.40	0.035	40.41	1.204		sM

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

<u>Nuclide</u>	<u>Library Used</u>	<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Code</u>
Bi-212	1	157.88	39.61	151.04	-9.24	-0.005	190.94	1.049	s
Pb-210	1	186.01	46.64	154.11	33.84	0.019	24.78	1.055	
Th-227	1	199.88	50.11	118.62	21.33	0.012	75.40	1.058	s
Am-241	1	232.64	58.31	167.83	12.11	0.007	153.94	1.066	s
Th-234	1	253.11	63.42	248.70	44.69	0.025	28.89	1.069	
cd-109	1	349.29	87.48	278.39	60.30	0.034	41.19	1.090	s
Th-234	1	371.57	93.05	327.51	74.85	0.042	21.95	1.094	
Eu-152	1	489.13	122.44	149.52	20.90	0.012	85.57	1.118	s
Co-57	1	489.28	122.48	153.01	22.32	0.012	81.19	1.118	s
Co-57	1	545.24	136.47	198.11	0.00	0.000	1000.00	1.130	s
U-235	1	573.85	143.63	162.41	-2.31	-0.001	783.36	1.136	s
Ce-139	1	666.97	166.91	138.99	-14.45	-0.008	118.36	1.154	s
ra-226	1	742.34	185.76	120.93	113.07	0.063	17.66	1.343	s
U-235	1	743.32	186.00	130.32	96.14	0.053	19.65	1.171	s
U-235	1	817.73	204.61	144.01	-2.44	-0.001	697.55	1.187	s
Ac-228	1	836.81	209.38	153.44	16.32	0.009	110.17	1.190	s
Th-227	1	939.64	235.09	158.76	5.75	0.003	312.75	1.212	s
Pb-212	1	954.15	238.72	170.71	355.29	0.197	8.51	1.175	
ra-226	1	961.17	240.47	427.61	-84.87	-0.047	36.13	1.217	
Pb-214	1	961.17	240.47	445.77	-91.17	-0.051	34.39	1.217	
Ra-224	1	965.11	241.46	185.90	41.50	0.023	48.98	1.216	s
Eu-152	1	976.77	244.37	170.34	-27.69	-0.015	69.32	1.219	s
Th-227	1	1025.84	256.64	54.54	10.88	0.006	100.64	1.229	s
Ac-228	1	1081.75	270.62	81.95	27.12	0.015	50.96	1.240	s
Tl-208	1	1108.39	277.28	127.34	0.00	0.000	1000.00	1.246	s
Hg-203	1	1117.41	279.54	102.71	-12.36	-0.007	119.42	1.248	s
Pb-214	1	1179.98	295.18	65.93	143.10	0.079	11.59	1.260	
ra-226	1	1180.32	295.27	69.33	170.67	0.095	13.62	1.109	
Pb-212	1	1199.78	300.13	80.05	14.91	0.008	88.75	1.264	s
Ac-228	1	1353.81	338.64	46.00	108.00	0.060	16.83	1.884	s
Eu-152	1	1372.44	343.30	52.82	0.62	0.000	1669.40	1.300	s
Pb-214	1	1407.28	352.01	54.75	243.84	0.135	7.71	1.306	
ra-226	1	1407.42	352.05	40.33	265.67	0.148	8.02	1.303	
sn-113	1	1567.09	391.97	45.65	-0.32	0.000	2973.29	1.339	s
Sr-85	1	2054.12	513.72	83.34	-18.07	-0.010	75.24	1.436	s
Cs-134	1	2247.17	561.98	21.66	8.38	0.005	85.82	1.475	s
Cs-134	1	2274.87	568.91	25.94	0.29	0.000	2460.51	1.480	s
Tl-208	1	2331.58	583.09	31.24	168.76	0.094	9.41	1.275	
Cs-134	1	2424.98	606.43	82.76	-20.16	-0.011	67.59	1.507	s
Bi-214	1	2436.49	609.31	25.46	178.88	0.099	9.46	1.258	s D
ra-226	1	2436.53	609.32	32.01	0.00	0.000	1959.59	1.511	D
ru-106	1	2485.86	621.65	30.67	-3.24	-0.002	247.86	1.521	s
Cs-137	1	2647.37	662.03	34.80	18.27	0.010	51.31	1.552	
Bi-214	1	2662.67	665.85	38.59	2.54	0.001	351.63	1.555	s
Bi-212	1	2909.19	727.47	6.33	37.67	0.021	21.25	0.619	s
Bi-214	1	3073.39	768.52	29.71	17.84	0.010	49.27	1.634	s

Eu-152	1	3116.28	779.24	22.82	-2.11	-0.001	326.84	1.642	s
Pb-214	1	3142.54	785.80	26.55	3.15	0.002	238.40	1.647	s
Bi-212	1	3143.03	785.92	26.85	3.04	0.002	248.04	1.647	s
Cs-134	1	3164.67	791.33	21.90	-5.42	-0.003	129.49	1.655	s
Cs-134	1	3200.43	800.27	21.52	-0.17	0.000	3799.03	1.660	s
Mn-54	1	3336.15	834.19	32.54	-4.06	-0.002	205.05	1.685	s
Tl-208	1	3442.15	860.69	18.80	12.82	0.007	55.40	1.704	s
y-88	1	3594.31	898.72	25.42	3.16	0.002	232.83	1.732	s
Ac-228	1	3643.63	911.04	9.00	123.00	0.068	10.68	1.810	s
Eu-152	1	3857.42	964.48	31.46	14.09	0.008	62.28	1.782	s
Ac-228	1	3876.40	969.22	0.00	53.00	0.029	13.74	0.916	s
Eu-152	1	4345.62	1086.48	19.33	5.29	0.003	125.38	1.871	s
Eu-152	1	4450.79	1112.77	19.76	5.73	0.003	117.34	1.891	s
Zn-65	1	4461.80	1115.52	194.90	0.00	0.000	1000.00	1.893	s
Bi-214	1	4480.83	1120.27	20.42	37.11	0.021	9.46	1.897	s D
ra-226	1	4480.85	1120.28	17.99	42.06	0.023	8.16	1.897	s D
Co-60	1	4708.42	1177.15	30.98	-4.84	-0.003	168.88	1.935	s
ra-226	1	4953.99	1238.51	24.14	10.88	0.006	70.67	1.982	s
Na-22	1	5097.82	1274.45	16.39	0.12	0.000	4718.76	2.008	s
Co-60	1	5330.20	1332.52	11.28	2.96	0.002	170.51	2.049	s
Eu-152	1	5630.80	1407.63	11.00	0.00	0.000	1000.00	0.375	s
K-40	1	5843.68	1460.82	9.29	309.71	0.172	5.60	1.853	
Ac-228	1	6355.66	1588.73	13.93	5.82	0.003	99.78	2.226	s
Bi-212	1	6487.28	1621.61	7.04	4.28	0.002	100.10	2.248	s
ra-226	1	7059.20	1764.49	2.22	30.64	0.017	8.25	2.344	s D
Bi-214	1	7059.20	1764.49	9.52	27.34	0.015	9.53	2.344	s D
y-88	1	7345.50	1836.01	22.65	0.00	0.000	1000.00	2.391	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Average Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Peak		MDA Value Bq	Code	T 1/2 (y)	% Abn.
					Activity Bq	Analysis Code				
Th-227	N	1	9.820E-001	235.97	9.820E-001 % (		1.049E+001	G	8.0E+003	11.20
			9.820E-001	50.14	5.793E+000 %		1.452E+001	G	8.0E+003	8.50
			9.820E-001	256.24	3.276E+000 %		1.118E+001	G	8.0E+003	6.74
Cs-137	T F I	1	9.031E-001	661.65	9.031E-001 % (		1.493E+000	G	1.1E+004	85.12
Na-22	F C	1	8.352E-003	1274.53	8.352E-003 % (		1.482E+000	G	9.5E+002	99.84
Cs-134	T F I	1	-8.121E-001	604.71	-8.121E-001 % (		1.817E+000	G	7.5E+002	97.60
			-8.121E-001	795.84	-3.062E-001 %		1.386E+000	G	7.5E+002	85.40
			-8.121E-001	569.32	7.145E-002 %		6.436E+000	G	7.5E+002	15.43
			-8.121E-001	801.93	-9.620E-002 %		1.353E+001	G	7.5E+002	8.73
			-8.121E-001	563.24	3.722E+000 %		1.084E+001	G	7.5E+002	8.39
Tl-208	F N	1	7.505E+000	583.02	7.505E+000 (P		1.279E+000	G	7.0E+002	86.00
			7.505E+000	860.30	5.460E+000 &		9.763E+000	G	7.0E+002	12.00
			7.505E+000	277.28	0.000E+000 &		1.751E+001	G	7.0E+002	6.79
Sr-85	I	1	-6.320E-001	513.99	-6.320E-001 % (		1.583E+000	G	6.5E+001	99.27
Am-241	T	1	6.176E-001	59.54	6.176E-001 & (		3.216E+000	G	1.6E+005	35.70
Co-57	PC	1	3.765E-001	122.06	3.765E-001 % (		1.018E+000	G	2.7E+002	85.51
			3.765E-001	136.47	0.000E+000 %		9.444E+000	G	2.7E+002	10.60

Hg-203	I	1	-3.454E-001	279.19	-3.454E-001 % (	1.396E+000	G	4.7E+001	77.30
U-235	N	1	-3.264E-001	143.79	-3.264E-001 % (	8.779E+000	G	2.6E+011	10.50
			-3.264E-001	185.74	2.993E+000	1.740E+000	G	A 2.6E+011	53.00
			-3.264E-001	205.33	-9.083E-001 &	2.180E+001	G	2.6E+011	4.70
Ce-139	T F	1	-2.808E-001	165.85	-2.808E-001 & (	1.120E+000	G	1.4E+002	80.35
Bi-212	N	1	2.558E+001	727.25	2.558E+001 (	9.803E+000	G	7.0E+002	6.65
			2.558E+001	1620.66	2.357E+001 %	8.301E+001	G	7.0E+002	1.51
			2.558E+001	785.51	1.311E+001 %	1.160E+002	G	7.0E+002	1.11
			2.558E+001	39.86	-3.644E+001 %	2.365E+002	G	7.0E+002	1.02
cd-109	T F	1	2.435E+001	88.03	2.435E+001 & (	3.249E+001	G	4.6E+002	3.72
Pb-210	N	1	2.402E+001	46.52	2.402E+001 % (P	4.297E+001	G	8.1E+003	4.05
Ac-228	N	1	2.238E+001	911.16	2.262E+001 @ (	3.070E+000	G	2.1E+003	29.00
			2.238E+001	968.97	1.698E+001 -	2.362E+000	G	2.1E+003	17.42
			2.238E+001	338.42	2.181E+001 * (	6.931E+000	G	2.1E+003	12.40
			2.238E+001	209.39	7.005E+000 %	2.594E+001	G	2.1E+003	4.12
			2.238E+001	270.26	1.517E+001 %	2.511E+001	G	2.1E+003	3.77
			2.238E+001	1588.23	1.321E+001 &	4.565E+001	G	2.1E+003	3.60
K-40	N	1	2.217E+002	1460.83	2.217E+002 (P	1.211E+001	G	4.7E+011	10.67
Co-60	T F	1	2.104E-001	1332.50	2.104E-001 & (	1.304E+000	G	1.9E+003	99.98

			2.104E-001	1173.24	-3.120E-001 %		1.847E+000 G	1.9E+003	99.90
Ra-224	N	1	2.065E+001	240.76	2.065E+001 % (		3.295E+001 G	7.0E+002	3.90
			2.049E+001	63.29	2.040E+001 % P		3.479E+001 G	2.4E+001	3.81
Th-234	N	1	2.049E+001	92.59	2.049E+001 % (P		2.383E+001 G	2.4E+001	5.41
Mn-54	F C	1	-2.028E-001	834.83	-2.028E-001 % (		1.465E+000 G	3.1E+002	99.98
y-88	T F	1	1.783E-001	898.02	1.783E-001 % (		1.480E+000 G	1.1E+002	93.40
			1.783E-001	1836.01	0.000E+000 %		2.317E+000 G	1.1E+002	99.38
ra-226		1	1.733E+001	609.32	0.000E+000 % E		2.483E+000 G	5.8E+005	46.30
			1.733E+001	1764.49	1.733E+001 ? E		5.459E+000 G	5.8E+005	15.80
			1.733E+001	1238.11	1.229E+001 % (		2.892E+001 G	5.8E+005	5.94
			1.733E+001	1120.28	1.733E+001 ? E		9.257E+000 G	5.8E+005	15.10
			1.733E+001	351.92	1.844E+001 (		2.243E+000 G	5.8E+005	37.20
			1.733E+001	295.22	2.003E+001 (		4.872E+000 G	5.8E+005	19.20
			1.733E+001	241.98	-2.206E+001 %		2.575E+001 G	5.8E+005	7.49
			1.733E+001	186.21	5.337E+001 (P		2.547E+001 G	5.8E+005	3.50
Pb-214	N	1	1.691E+001	351.87	1.697E+001 (		2.588E+000 G	5.8E+005	37.10
			1.691E+001	295.09	1.679E+001 (		4.757E+000 G	5.8E+005	19.20
			1.691E+001	241.92	-2.378E+001 %		2.638E+001 G	5.8E+005	7.46
			1.691E+001	785.83	1.379E+001 %		1.171E+002 G	5.8E+005	1.09
Pb-212	N	1	1.571E+001	238.58	1.571E+001 (P		2.812E+000 G	7.0E+002	43.60

			1.571E+001	300.03	1.017E+001 %		3.030E+001 G	7.0E+002	3.34
Bi-214	N	1	1.535E+001	609.31	1.535E+001	PE	2.250E+000 G	5.8E+005	46.09
			1.535E+001	1764.49	1.535E+001 %	PE	9.590E+000 G	5.8E+005	15.92
			1.535E+001	1120.27	1.535E+001 ?	PE	9.828E+000 G	5.8E+005	15.04
			1.535E+001	768.35	1.718E+001 % (		2.706E+001 G	5.8E+005	4.89
			1.535E+001	665.44	6.864E+000 %		8.558E+001 G	5.8E+005	1.56
sn-113	T F	1	-1.393E-002	391.69	-1.393E-002 % (		1.480E+000 G	1.2E+002	64.90
ru-106	I	1	-1.328E+000	621.84	-1.328E+000 % (		1.168E+001 G	3.7E+002	9.80
Zn-65	T F	1	0.000E+000	1115.52	0.000E+000 % (		8.278E+000 G	2.4E+002	50.75
			0.000E+000	121.78	1.062E+000 &		3.032E+000 G	5.0E+003	28.40
			0.000E+000	344.27	5.915E-002 &		3.504E+000 G	5.0E+003	26.50
			0.000E+000	964.01	5.442E+000 &		1.114E+001 G	5.0E+003	14.40
			0.000E+000	1112.02	2.666E+000 %		1.089E+001 G	5.0E+003	13.30
			0.000E+000	778.89	-7.884E-001 %		9.311E+000 G	5.0E+003	12.74
			0.000E+000	1085.78	3.212E+000 %		1.409E+001 G	5.0E+003	10.00
			0.000E+000	244.69	-7.254E+000 %		1.664E+001 G	5.0E+003	7.49
Eu-152	T F	1	0.000E+000	1407.95	0.000E+000 % (		6.508E+000 G	5.0E+003	20.70

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(	=	This peak is used in the nuclide activity average	P	=	Peakbackground subtraction
*	=	Peak is too wide, but only one peak in library	@	=	Peak is too wide at FW25M, but OK at FWHM
A	=	Derived Average Activity	E	=	Energy Duplication
+	=	Peak activity higher than counting uncertainty range			
!	=	Peak is part of a multiplet and this area went negative during deconvolution			
\$	=	Peak identified, but first peak of this nuclide failed one or more qualification tests			
&	=	Calculated peak centroid is not close enough to the library energy centroid for positive identification			

Nuclide Codes:

T	=	Thermal Neutron Activation	F	=	Fast Neutron Activation	I	=	Fission Product
P	=	Photon Reaction	N	=	Naturally Occurring Isotope	C	=	Charged Particle Reaction
M	=	No MDA Calculation						

Peak Codes:

G	=	Gamma Ray	X	=	X-Ray	P	=	Positron Decay
S	=	Single - Escape	D	=	Double - Escape	K	=	Key Line
A	=	Not in Average						

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
Na-22	<	8.352E-003	8.352E-003	4,718.76	4,718.76	1.482E+000
K-40		2.217E+002	2.217E+002	5.77	6.43	1.211E+001
Mn-54	<	-2.028E-001	-2.028E-001	205.05	205.07	1.465E+000
Co-57	<	3.765E-001	3.766E-001	81.19	81.25	1.018E+000
Co-60	<	2.104E-001	2.104E-001	170.51	170.53	1.304E+000
Zn-65	<			1,000.00	1,000.00	8.278E+000
Sr-85	<	-6.320E-001	-6.322E-001	75.24	75.29	1.583E+000
y-88	<	1.783E-001	1.783E-001	232.83	232.85	1.480E+000
ru-106	<	-1.328E+000	-1.329E+000	247.86	247.87	1.168E+001
cd-109	<	2.435E+001	2.435E+001	41.19	41.36	3.249E+001
Cs-134	<	-8.121E-001	-8.122E-001	67.59	67.65	1.817E+000
Pb-214	<	1.691E+001	1.691E+001	6.96	7.55	2.588E+000
Hg-203	<	-3.454E-001	-3.455E-001	119.42	119.46	1.396E+000
Bi-212		2.558E+001	2.558E+001	21.25	21.45	9.803E+000
Ac-228		2.238E+001	2.238E+001	9.97	10.38	3.070E+000
U-235	<	-3.264E-001	-3.264E-001	783.36	783.36	8.779E+000
ra-226	<	1.733E+001	1.733E+001	8.02	8.50	2.892E+001
Cs-137	<	9.031E-001	9.031E-001	51.31	51.39	1.493E+000
Ce-139	<	-2.808E-001	-2.809E-001	118.36	118.40	1.120E+000
Eu-152	<			1,000.00	1,000.00	6.508E+000
Tl-208		7.505E+000	7.505E+000	10.20	10.61	1.279E+000
sn-113	<	-1.393E-002	-1.394E-002	2,973.29	2,973.29	1.480E+000
Pb-210		2.402E+001	2.402E+001	51.63	51.79	4.297E+001
Pb-212		1.571E+001	1.571E+001	9.21	9.71	2.812E+000
Bi-214	#	1.535E+001	1.535E+001	9.34	9.79	2.706E+001
Am-241	<	6.176E-001	6.176E-001	153.94	153.99	3.216E+000
Th-227	<	9.820E-001	9.820E-001	312.75	312.77	1.049E+001
Th-234		2.049E+001	2.051E+001	34.98	35.17	2.383E+001
Ra-224	<	2.065E+001	2.065E+001	48.98	49.08	3.295E+001

= All peaks for activity calculation had bad shape

Total Activity (37.64 to 1,999.49 keV) 308.18 Bq/sample

Analyzed by:

430030

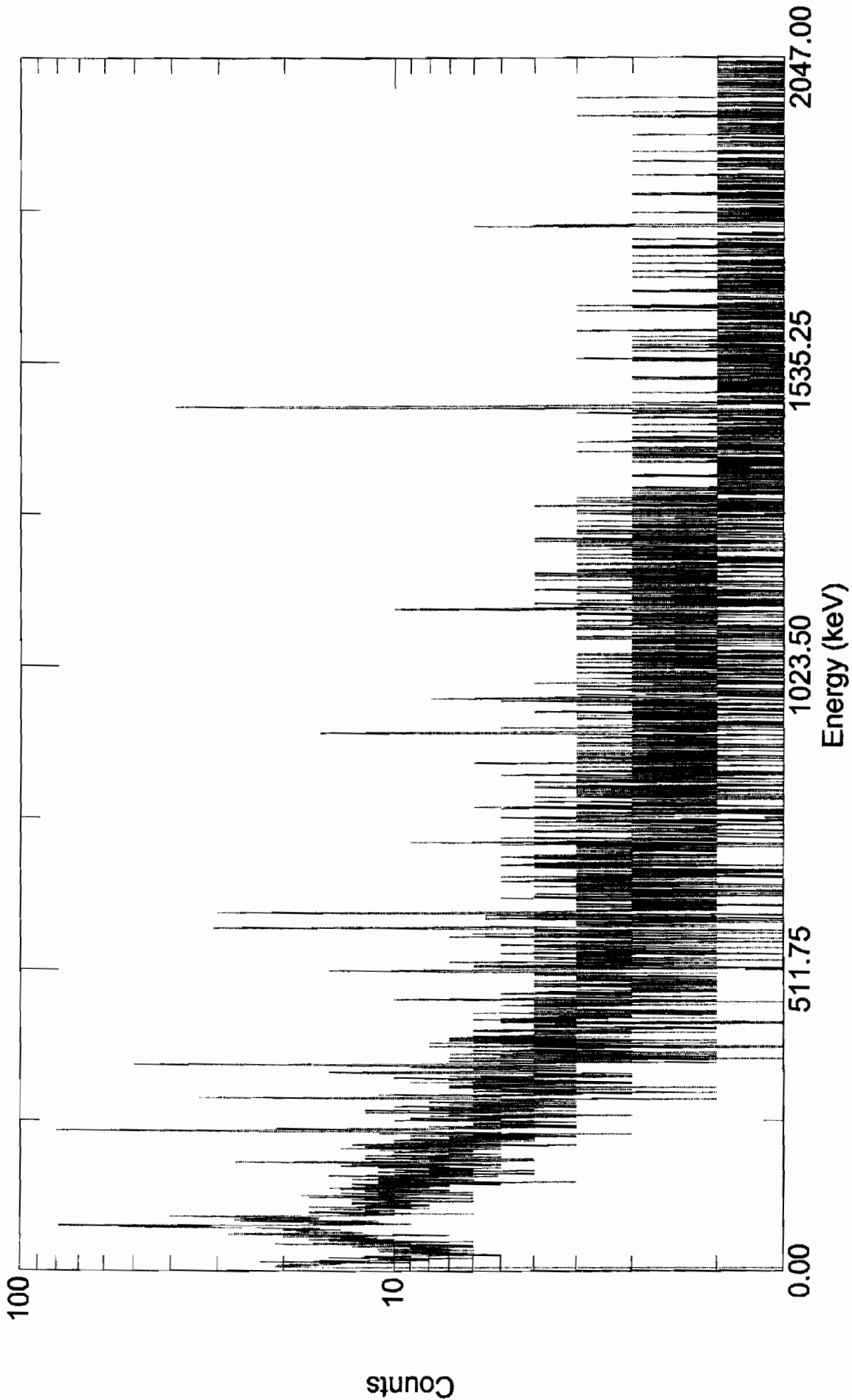
Reviewed by:

Supervisor

Laboratory:

TestAmerica, Inc.

LXNM41AF
0102353_LXNM41AF_F0D080501-006



Real Time: 1802.86 s. Live Time: 1800.00 s.
Channels: 8192

Acquired: 18-Apr-2010 12:50:17 PM
File: C:\User\spectra\LXNM41AF.spc
Detector: #0 Ge 10 SN/129

DB Analysis ID: 86,472**Sample Description:** 0102353_LXNM91AF_F0D080501-007**Spectrum Filename:** LXNM91AF.An1**Acquisition Information**

Start Time: 18-Apr-2010 1:33:43PM
Live Time: 1800.00 Real Time: 1808.14
Dead Time: 0.45 %
Detector ID: 2

Detector System: Ge 2 SN/182**Calibration**

Description: Ge2_TunaCanCal_84127_334_022310
Filename: C:\User\Calibrations\Ge2 calibrations\Ge2_TunaCanCal_84127_334_022310.Clb
Energy Created: 23-Feb-2010 9:33:18PM Efficiency Created: 23-Feb-2010 9:33:54PM
Zero Offset: 0.193 keV Gain: 0.250 keV/Channel

Library 1 File: lanl.lib Library based peak stripping used.**Library 2 File:** Null.Lib**Library 3 File:** Null.Lib**Analysis Parameters**

Start Channel: 150 for an energy of 37.68 keV
Stop Channel: 8,000 for an energy of 1999.85 keV
Peak rejection level: 30.000 %
Activity Scaling Factor: 1.0000 / 1.0000 = 1.0000
Detection Limit Method: Nureg method 4.16
Sample Size: 1.00E+000
Additional random error: 0.0000
Additional systematic error: 0.0000
Fraction Limit: 0.0000%
Background Width: Average of three points

Corrections

	<u>Status</u>	<u>Comments</u>
Decay Correct to Date:	YES	18-Apr-2010 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge2 PBC table 03_31_10.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.2265

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
298.58	74.80	161.33	221.67	0.123	11.75	0.671	TH-234	M
307.99	77.15	192.50	308.50	0.171	10.16	0.736	PB-212	M
347.72	87.08	143.00	119.00	0.066	16.91	1.193	TL-208	sM
359.09	89.92	111.83	70.17	0.039	24.43	0.643	AC-228	M

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

<u>Nuclide</u>	<u>Library Used</u>	<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Code</u>
Bi-212	1	159.08	39.94	82.41	8.45	0.005	155.84	0.753	
Pb-210	1	185.10	46.45	142.96	13.05	0.007	34.70	0.759	
Th-227	1	197.22	49.48	96.65	14.55	0.008	99.07	0.763	s
Am-241	1	238.77	59.86	195.62	-5.43	-0.003	366.87	0.771	s
Th-234	1	252.75	63.35	171.61	54.39	0.030	28.76	0.384	s
cd-109	1	351.51	88.03	252.59	0.00	0.000	1000.00	0.797	
Th-234	1	370.34	92.74	176.85	113.15	0.063	17.24	1.445	s
Eu-152	1	488.56	122.28	136.26	-10.66	-0.006	157.90	0.826	
Co-57	1	488.92	122.37	142.91	-12.09	-0.007	142.79	0.827	s
Co-57	1	548.88	137.35	101.33	11.31	0.006	129.35	0.839	s
U-235	1	575.30	143.95	117.33	23.32	0.013	58.23	0.846	s
Ce-139	1	664.27	166.19	115.76	-0.13	0.000	11924.95	0.865	s
ra-226	1	743.67	186.03	97.50	80.50	0.045	25.51	0.961	s
U-235	1	743.80	186.06	161.52	37.67	0.021	35.42	0.882	s
U-235	1	824.27	206.17	97.90	-4.13	-0.002	342.64	0.899	s
Ac-228	1	836.94	209.34	118.09	36.00	0.020	45.82	0.903	s
Th-227	1	943.51	235.97	937.75	-6.57	-0.004	660.35	0.925	s
Pb-212	1	954.60	238.74	81.47	411.53	0.229	5.93	0.932	
Ra-224	1	959.88	240.06	535.41	-132.19	-0.073	26.24	0.929	
Pb-214	1	967.32	241.92	59.78	56.92	0.032	8.63	0.930	D
ra-226	1	967.56	241.98	98.16	17.64	0.010	71.78	0.931	D
Eu-152	1	978.05	244.60	90.44	-0.49	0.000	2770.04	0.933	s
Th-227	1	1025.39	256.43	63.53	-5.62	-0.003	205.05	0.943	s
Ac-228	1	1081.48	270.45	78.46	27.89	0.015	48.75	0.954	s
Tl-208	1	1107.43	276.93	52.88	17.37	0.010	63.87	0.960	s
Hg-203	1	1116.64	279.23	65.46	-1.53	-0.001	752.93	0.962	s
Pb-214	1	1180.09	295.09	53.48	0.00	0.000	1800.00	0.975	D
ra-226	1	1180.60	295.22	35.00	119.27	0.066	9.33	0.696	s D
Pb-212	1	1200.84	300.28	32.50	45.50	0.025	27.74	0.565	s
Ac-228	1	1353.25	338.37	34.67	74.33	0.041	18.25	1.371	s
Eu-152	1	1369.51	342.43	18.65	6.36	0.004	103.91	1.016	s
Pb-214	1	1407.27	351.87	45.44	196.75	0.109	8.58	1.023	D
ra-226	1	1407.49	351.92	43.33	194.24	0.108	9.31	1.155	D
sn-113	1	1564.55	391.17	45.28	0.51	0.000	1859.99	1.055	s
Sr-85	1	2054.08	513.51	74.84	-12.19	-0.007	104.39	1.153	s
Cs-134	1	2252.45	563.09	26.25	1.54	0.001	478.42	1.191	s
Cs-134	1	2277.09	569.25	30.08	0.70	0.000	1119.25	1.196	s
Tl-208	1	2333.51	583.35	26.93	132.07	0.073	11.56	1.126	
Cs-134	1	2424.36	606.06	28.13	-3.56	-0.002	217.30	1.223	s
Bi-214	1	2437.38	609.31	18.56	0.00	0.000	1685.23	0.463	s D
ra-226	1	2437.42	609.32	16.82	142.60	0.079	9.31	1.226	s D
ru-106	1	2489.20	622.26	20.66	6.50	0.004	106.38	1.236	s
Cs-137	1	2649.17	662.24	22.59	5.39	0.003	131.89	1.266	s
Bi-214	1	2661.56	665.34	30.08	0.31	0.000	2513.16	1.268	s
Bi-212	1	2901.45	725.30	30.18	-4.58	-0.003	175.99	1.314	

Bi-214	1	3073.92	768.40	19.14	10.76	0.006	65.09	1.344	s
Eu-152	1	3120.68	780.09	19.27	-3.21	-0.002	201.35	1.351	s
Bi-212	1	3142.36	785.51	19.54	0.00	0.000	1000.00	1.356	
Pb-214	1	3144.51	786.05	18.08	2.34	0.001	264.88	1.356	s
Cs-134	1	3176.41	794.02	21.76	4.46	0.002	155.43	1.363	s
Cs-134	1	3208.94	802.15	27.49	7.66	0.004	103.37	1.368	s
Mn-54	1	3331.52	832.79	20.97	-0.53	0.000	1220.75	1.391	s
Tl-208	1	3443.38	860.75	3.83	25.17	0.014	26.27	0.518	s
y-88	1	3594.81	898.60	19.77	2.30	0.001	280.95	1.435	s
Ac-228	1	3646.80	911.59	7.33	74.67	0.041	13.98	0.944	s
Eu-152	1	3844.13	960.92	0.96	0.21	0.000	706.57	1.479	s
Ac-228	1	3877.35	969.22	8.33	55.67	0.031	17.85	1.593	
Eu-152	1	4344.71	1086.04	21.88	1.85	0.001	364.85	1.559	s
Eu-152	1	4452.06	1112.87	32.74	-5.15	-0.003	163.12	1.576	s
Zn-65	1	4462.32	1115.44	23.48	3.32	0.002	213.32	1.578	s
Bi-214	1	4481.65	1120.27	5.33	26.47	0.015	10.82	0.653	s D
ra-226	1	4481.68	1120.28	22.35	0.00	0.000	871.78	1.581	s D
Co-60	1	4693.80	1173.30	29.61	2.07	0.001	378.61	1.614	s
ra-226	1	4948.27	1236.91	31.18	3.99	0.002	204.29	1.654	s
Na-22	1	5096.80	1274.04	18.89	2.58	0.001	246.27	1.675	s
Co-60	1	5332.40	1332.94	21.16	-5.74	-0.003	120.69	1.709	s
Eu-152	1	5633.35	1408.17	4.67	-0.08	0.000	3986.32	1.752	s
K-40	1	5845.86	1461.30	0.00	407.00	0.226	4.96	1.693	
Ac-228	1	6351.94	1587.81	8.11	0.61	0.000	676.00	1.848	s
Bi-212	1	6483.32	1620.66	0.00	0.00	0.000	1000.00	1.865	
ra-226	1	7058.62	1764.49	2.36	18.91	0.011	9.39	1.935	s D
Bi-214	1	7058.62	1764.49	2.31	18.60	0.010	10.89	1.935	s D
y-88	1	7344.68	1836.01	0.00	0.00	0.000	1000.00	1.968	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Activity Bq	Peak Analysis Code	MDA Value Bq	Code	T 1/2 (y)	% Abn.
Pb-210		N	1	9.283E+000	46.52	9.283E+000 % (P	4.156E+001	G	8.1E+003	4.05
				6.718E+000	277.28	5.441E+000 %	1.146E+001	G	7.0E+002	6.79
Tl-208	F	N	1	6.718E+000	583.02	6.718E+000 (P	1.368E+000	G	7.0E+002	86.00
				6.718E+000	860.30	1.299E+001 +	6.109E+000	G	7.0E+002	12.00
Ra-224		N	1	-6.304E+001	240.76	-6.304E+001 (	5.271E+001	G	7.0E+002	3.90
Co-60	T F		1	-5.206E-001	1332.50	-5.206E-001 % (	2.188E+000	G	1.9E+003	99.98
				-5.206E-001	1173.24	1.677E-001 %	2.277E+000	G	1.9E+003	99.90
Zn-65	T F		1	5.081E-001	1115.52	5.081E-001 % (	3.866E+000	G	2.4E+002	50.75
Sr-85		I	1	-4.773E-001	513.99	-4.773E-001 % (	1.685E+000	G	6.5E+001	99.27
Hg-203		I	1	-4.230E-002	279.19	-4.230E-002 % (	1.118E+000	G	4.7E+001	77.30
K-40		N	1	3.752E+002	1460.83	3.752E+002 (	6.794E+000	G	4.7E+011	10.67
Bi-212		N	1	-3.681E+000	727.25	-3.681E+000 % (	2.276E+001	G	7.0E+002	6.65
				-3.681E+000	1620.66	0.000E+000 %	5.281E+001	G	7.0E+002	1.51
				-3.681E+000	785.51	0.000E+000 %	1.205E+002	G	7.0E+002	1.11
				-3.681E+000	39.86	3.666E+001 %	1.954E+002	G	7.0E+002	1.02
Eu-152	T F		1	-3.538E-002	1407.95	-3.538E-002 % (	5.874E+000	G	5.0E+003	20.70
				-3.538E-002	121.78	-4.616E-001 %	2.473E+000	G	5.0E+003	28.40

			-3.538E-002	344.27	6.309E-001 %		2.266E+000 G	5.0E+003	26.50
			-3.538E-002	964.01	9.779E-002 %		3.499E+000 G	5.0E+003	14.40
			-3.538E-002	1112.02	-2.997E+000 %		1.709E+001 G	5.0E+003	13.30
			-3.538E-002	778.89	-1.431E+000 %		1.033E+001 G	5.0E+003	12.74
			-3.538E-002	1085.78	1.403E+000 %		1.857E+001 G	5.0E+003	10.00
			-3.538E-002	244.69	-1.225E-001 %		1.185E+001 G	5.0E+003	7.49
Mn-54	F C	1	-3.222E-002	834.83	-3.222E-002 % (		1.452E+000 G	3.1E+002	99.98
Cs-137	T F I	1	3.111E-001	661.65	3.111E-001 % (		1.434E+000 G	1.1E+004	85.12
ru-106	I	1	3.079E+000	621.84	3.079E+000 % (		1.132E+001 G	3.7E+002	9.80
U-235	N	1	2.864E+000	143.79	2.864E+000 % (P		6.531E+000 G	2.6E+011	10.50
			2.864E+000	185.74	1.064E+000 % P		1.750E+000 G	A 2.6E+011	53.00
			2.864E+000	205.33	-1.421E+000 %		1.681E+001 G	2.6E+011	4.70
Th-234	N	1	2.638E+001	92.59	2.638E+001 * (P		1.508E+001 G	2.4E+001	5.41
			2.638E+001	63.29	2.268E+001 % P		2.658E+001 G	2.4E+001	3.81
Am-241	T	1	-2.574E-001	59.54	-2.574E-001 % (		3.219E+000 G	1.6E+005	35.70
sn-113	T F	1	2.362E-002	391.69	2.362E-002 % (		1.568E+000 G	1.2E+002	64.90
Na-22	F C	1	2.251E-001	1274.53	2.251E-001 % (		2.004E+000 G	9.5E+002	99.84
Ce-139	T F	1	-2.204E-003	165.85	-2.204E-003 % (		9.126E-001 G	1.4E+002	80.35
			1.803E+001	338.42	1.550E+001 (		6.285E+000 G	2.1E+003	12.40

			1.803E+001	209.39	1.438E+001 %		2.130E+001 G	2.1E+003	4.12
			1.803E+001	270.26	1.534E+001 %		2.419E+001 G	2.1E+003	3.77
			1.803E+001	1588.23	1.789E+000 %		4.712E+001 G	2.1E+003	3.60
Ac-228	N	1	1.803E+001	911.16	1.677E+001 (		3.442E+000 G	2.1E+003	29.00
			1.803E+001	968.97	2.195E+001 (		6.372E+000 G	2.1E+003	17.42
Pb-212	N	1	1.741E+001	238.58	1.741E+001 (P		1.894E+000 G	7.0E+002	43.60
			1.741E+001	300.03	3.123E+001 +		2.009E+001 G	7.0E+002	3.34
Co-57	PC	1	-1.739E-001	122.06	-1.739E-001 % (		8.406E-001 G	2.7E+002	85.51
			-1.739E-001	136.47	1.349E+000 &		5.919E+000 G	2.7E+002	10.60
			-1.650E-001	801.93	5.110E+000 %		1.812E+001 G	7.5E+002	8.73
			-1.650E-001	563.24	7.764E-001 %		1.343E+001 G	7.5E+002	8.39
Cs-134	T F I	1	-1.650E-001	604.71	-1.650E-001 % (		1.271E+000 G	7.5E+002	97.60
			-1.650E-001	795.84	3.020E-001 %		1.657E+000 G	7.5E+002	85.40
			-1.650E-001	569.32	1.933E-001 %		7.840E+000 G	7.5E+002	15.43
y-88	T F	1	1.585E-001	898.02	1.585E-001 & (		1.613E+000 G	1.1E+002	93.40
			1.585E-001	1836.01	0.000E+000 %		9.037E-001 G	1.1E+002	99.38
Pb-214	N	1	1.425E+001	351.87	1.425E+001 !		2.472E+000 G	5.8E+005	37.10
			1.425E+001	295.09	0.000E+000 %		4.326E+000 G	5.8E+005	19.20
			1.425E+001	241.92	1.425E+001 %		9.700E+000 G	5.8E+005	7.46

1.425E+001	785.83	1.229E+001 % (	1.182E+002 G	5.8E+005	1.09
1.403E+001	1764.49	1.403E+001 ? E	7.326E+000 G	5.8E+005	15.80
1.403E+001	1238.11	5.701E+000 & (	4.108E+001 G	5.8E+005	5.94
1.403E+001	1120.28	0.000E+000 % E	1.276E+001 G	5.8E+005	15.10
1.403E+001	351.92	1.403E+001	2.412E+000 G	5.8E+005	37.20
1.403E+001	295.22	1.403E+001	3.563E+000 G	5.8E+005	19.20
1.403E+001	241.98	4.401E+000 %	1.219E+001 G	5.8E+005	7.49
1.403E+001	186.21	3.450E+001 * (2.088E+001 G	5.8E+005	3.50

ra-226	1	1.403E+001	609.32	1.403E+001	E	2.147E+000 G	5.8E+005	46.30
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Bi-214	N	1	1.370E+001	609.31	0.000E+000 %	PE	2.253E+000 G	5.8E+005	46.09
			1.370E+001	1764.49	1.370E+001 %	E	7.216E+000 G	5.8E+005	15.92
			1.370E+001	1120.27	1.370E+001	E	6.974E+000 G	5.8E+005	15.04
			1.370E+001	768.35	1.236E+001 % (		2.653E+001 G	5.8E+005	4.89
			1.370E+001	665.44	9.772E-001 %		8.928E+001 G	5.8E+005	1.56

Th-227	N	1	-1.071E+000	235.97	-1.071E+000 & (		2.371E+001 G	8.0E+003	11.20
			-1.071E+000	50.14	3.877E+000 %		1.293E+001 G	8.0E+003	8.50
			-1.071E+000	256.24	-1.644E+000 %		1.166E+001 G	8.0E+003	6.74

cd-109	T F	1	0.000E+000	88.03	0.000E+000 % (2.651E+001 G	4.6E+002	3.72
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Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

-	=	Peak activity lower than counting uncertainty range	=	=	Peak outside analysis energy range
(	=	This peak is used in the nuclide activity average	P	=	Peakbackground subtraction
*	=	Peak is too wide, but only one peak in library	@	=	Peak is too wide at FW25M, but OK at FWHM
A	=	Derived Average Activity	E	=	Energy Duplication
+	=	Peak activity higher than counting uncertainty range			
!	=	Peak is part of a multiplet and this area went negative during deconvolution			
\$	=	Peak identified, but first peak of this nuclide failed one or more qualification tests			
&	=	Calculated peak centroid is not close enough to the library energy centroid for positive identification			

Nuclide Codes:

T	=	Thermal Neutron Activation	F	=	Fast Neutron Activation	I	=	Fission Product
P	=	Photon Reaction	N	=	Naturally Occurring Isotope	C	=	Charged Particle Reaction
M	=	No MDA Calculation						

Peak Codes:

G	=	Gamma Ray	X	=	X-Ray	P	=	Positron Decay
S	=	Single - Escape	D	=	Double - Escape	K	=	Key Line
A	=	Not in Average						

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
Na-22	<	2.251E-001	2.251E-001	246.27	246.29	2.004E+000
K-40		3.752E+002	3.752E+002	4.96	5.72	6.794E+000
Mn-54	<	-3.222E-002	-3.223E-002	1,220.75	1,220.75	1.452E+000
Co-57	<	-1.739E-001	-1.740E-001	142.79	142.83	8.406E-001
Co-60	<	-5.206E-001	-5.206E-001	120.69	120.72	2.188E+000
Zn-65	<	5.081E-001	5.082E-001	213.32	213.34	3.866E+000
Sr-85	<	-4.773E-001	-4.777E-001	104.39	104.43	1.685E+000
Cs-137	<	3.111E-001	3.111E-001	131.89	131.93	1.434E+000
Ce-139	<	-2.204E-003	-2.205E-003	11,924.95	11,924.95	9.126E-001
Eu-152	<	-3.538E-002	-3.538E-002	3,986.32	3,986.32	5.874E+000
sn-113	<	2.362E-002	2.363E-002	1,859.99	1,859.99	1.568E+000
Pb-210	<	9.283E+000	9.283E+000	124.75	124.81	4.156E+001
Pb-212		1.741E+001	1.741E+001	6.14	6.87	1.894E+000
Pb-214	<	1.425E+001	1.425E+001	8.45	8.95	1.182E+002
y-88	<	1.585E-001	1.586E-001	280.95	280.97	1.613E+000
ru-106	<	3.079E+000	3.080E+000	106.38	106.42	1.132E+001
cd-109	<			1,000.00	1,000.01	2.651E+001
Cs-134	<	-1.650E-001	-1.650E-001	217.30	217.32	1.271E+000
Tl-208		6.718E+000	6.719E+000	11.90	12.25	1.368E+000
Hg-203	<	-4.230E-002	-4.234E-002	752.93	752.94	1.118E+000
Bi-212	<	-3.681E+000	-3.681E+000	175.99	176.01	2.276E+001
U-235	<	2.864E+000	2.864E+000	68.32	68.39	6.531E+000
Bi-214		1.370E+001	1.370E+001	10.72	11.11	2.653E+001
Ac-228		1.803E+001	1.803E+001	9.70	10.13	3.442E+000
Am-241	<	-2.574E-001	-2.574E-001	366.87	366.89	3.219E+000
Th-227	<	-1.071E+000	-1.071E+000	660.35	660.35	2.371E+001
Th-234	#	2.638E+001	2.643E+001	22.14	22.44	1.508E+001
ra-226	<	1.403E+001	1.403E+001	9.19	9.61	4.108E+001
Ra-224	<	-6.304E+001	-6.305E+001	26.24	26.42	5.271E+001

= All peaks for activity calculation had bad shape

Total Activity (37.68 to 1,999.85 keV) 457.45 Bq/sample

Analyzed by: _____

430030

Reviewed by: _____

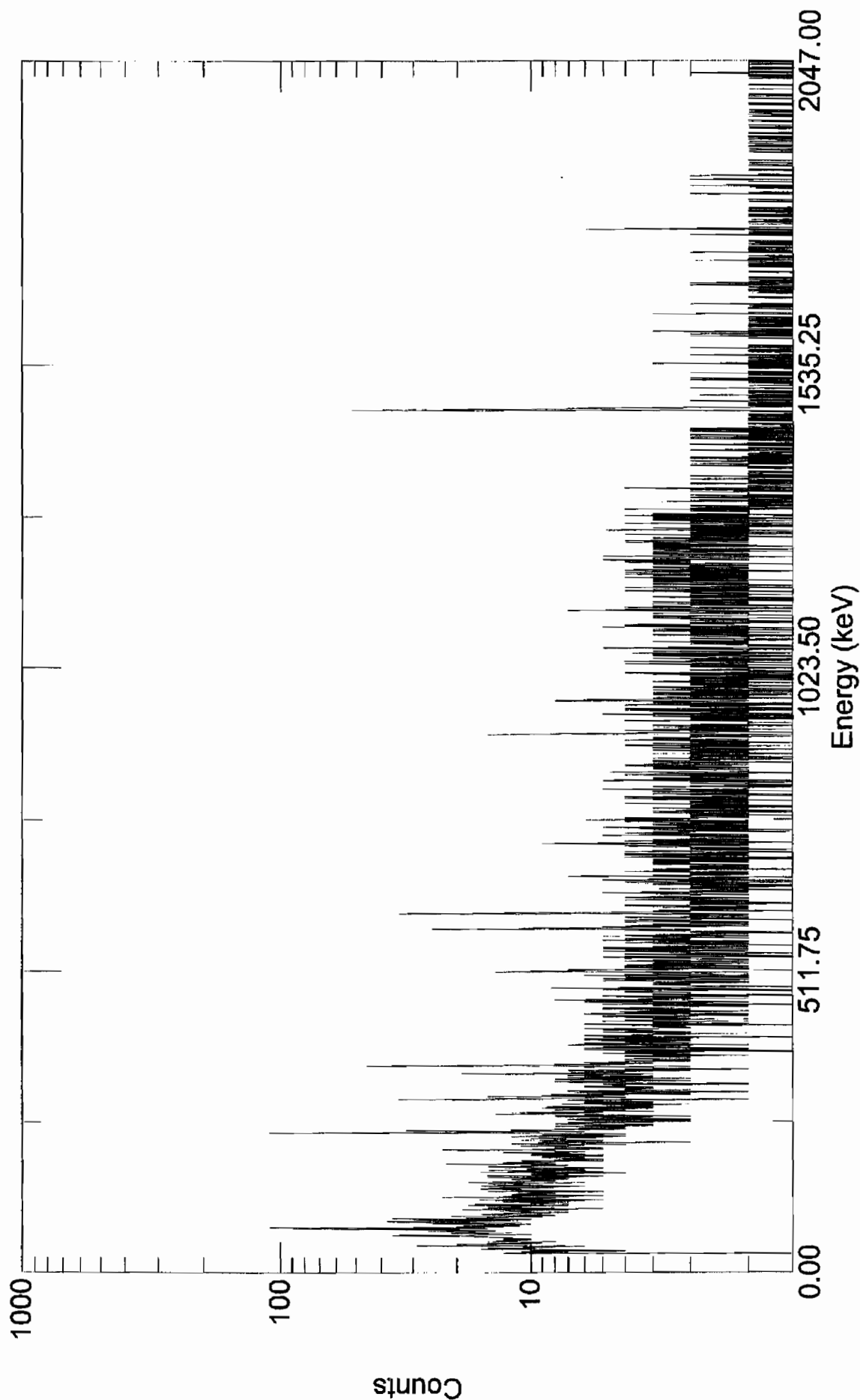
Supervisor

Laboratory:

Test America

LXNM91AF

0102353_LXNM91AF_F0D080501-007



Real Time: 1808.14 s. Live Time: 1800.00 s.
Channels: 8192

Acquired: 18-Apr-2010 1:33:43 PM
File: C:\User\spectra\LXNM91AF.spc
Detector: #0 Ge 2 SN/182

DB Analysis ID: 86,473**Sample Description:** 0102353_LXVGT1AA_F0D120000-353B**Spectrum Filename:** LXVGT1AA.An1**Acquisition Information**

Start Time:	18-Apr-2010	1:34:19PM		
Live Time:	1800.00		Real Time:	1807.04
Dead Time:	0.39 %			
Detector ID:	3			

Detector System: Ge 3 SN/131**Calibration**

Description:	Ge3_TunaCanCal_81427_334_022410			
Filename:	C:\User\Calibrations\Ge3 Calibrations post 08_15_08\Ge3_TunaCanCal_81427_334_0			
Energy Created:	24-Feb-2010 5:06:56PM	Efficiency Created:	24-Feb-2010 5:07:21PM	
Zero Offset:	0.173 keV	Gain:	0.250 keV/Channel	

Library 1 File: lanl.lib

Library based peak stripping used.

Library 2 File: Null.Lib**Library 3 File:** Null.Lib**Analysis Parameters**

Start Channel:	150 for an energy of 37.64 keV
Stop Channel:	8,000 for an energy of 2000.72 keV
Peak rejection level:	30.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections

	<u>Status</u>	<u>Comments</u>
Decay Correct to Date:	YES	18-Apr-2010 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge3 PBC table 03_31_10.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.1749

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
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s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

<u>Nuclide</u>	<u>Library Used</u>	<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Code</u>
Bi-212	1	158.30	39.71	34.12	4.89	0.003	174.80	0.858	
Pb-210	1	186.00	46.63	38.19	18.81	0.010	20.97	0.737	
Th-227	1	201.21	50.43	29.37	8.65	0.005	94.89	0.867	s
Am-241	1	235.44	58.98	21.89	-3.19	-0.002	215.16	0.876	s
Th-234	1	252.44	63.23	54.19	6.76	0.004	43.97	0.879	s
cd-109	1	346.64	86.75	35.64	-2.52	-0.001	341.00	0.902	s
Th-234	1	369.55	92.48	65.14	3.84	0.002	37.09	0.906	s
Co-57	1	488.38	122.16	35.80	-1.42	-0.001	603.78	0.933	s
Eu-152	1	492.51	123.19	28.14	2.19	0.001	348.48	0.933	s
Co-57	1	540.43	135.17	14.39	6.85	0.004	87.14	0.946	s
U-235	1	574.33	143.63	39.68	-3.90	-0.002	1019.25	0.953	s
Ce-139	1	664.78	166.23	22.35	4.71	0.003	149.16	0.973	s
ra-226	1	742.90	185.74	5.00	39.00	0.022	19.27	0.468	s
U-235	1	744.14	186.05	36.62	5.43	0.003	36.86	0.992	s
U-235	1	820.61	205.16	24.27	-0.20	0.000	3520.10	1.009	s
Ac-228	1	839.43	209.86	25.13	-1.49	-0.001	484.18	1.013	
Th-227	1	943.94	235.97	118.23	0.00	0.000	1000.00	1.037	s
Pb-212	1	955.31	238.81	34.13	23.88	0.013	24.24	0.716	s
Ra-224	1	959.44	239.84	36.00	0.28	0.000	3060.59	1.042	s
Pb-214	1	966.80	241.68	38.99	1.13	0.001	139.10	1.043	s
ra-226	1	967.00	241.73	32.06	6.30	0.003	133.28	1.043	s
Eu-152	1	978.29	244.55	23.51	-2.72	-0.002	258.87	1.045	s
Th-227	1	1025.08	256.24	36.23	0.00	0.000	1000.00	1.056	s
Ac-228	1	1079.79	269.91	19.03	5.72	0.003	115.59	1.069	
Tl-208	1	1110.41	277.56	27.06	-3.63	-0.002	209.23	1.075	s
Hg-203	1	1119.59	279.85	13.59	7.13	0.004	82.20	1.077	s
Pb-214	1	1180.31	295.02	29.47	-3.10	-0.002	141.53	1.091	s
ra-226	1	1181.74	295.38	19.54	6.16	0.003	109.23	1.091	s
Pb-212	1	1198.79	299.64	19.40	0.40	0.000	1547.68	1.096	
Ac-228	1	1356.44	339.03	23.61	1.75	0.001	398.97	1.130	
Eu-152	1	1376.52	344.05	29.10	-4.36	-0.002	181.34	1.136	s
Pb-214	1	1408.29	351.99	29.96	16.75	0.009	24.57	1.143	s
ra-226	1	1408.53	352.05	4.00	50.00	0.028	16.73	1.073	s
sn-113	1	1567.02	391.65	14.53	1.51	0.001	366.42	1.179	s
Sr-85	1	2057.27	514.17	50.77	-10.88	-0.006	97.41	1.289	s
Cs-134	1	2252.50	562.96	14.37	-2.84	-0.002	198.07	1.333	s
Cs-134	1	2276.31	568.91	17.17	-3.31	-0.002	185.35	1.338	s
Tl-208	1	2332.92	583.06	18.46	2.18	0.001	63.83	1.351	
Cs-134	1	2420.76	605.01	18.89	-0.53	0.000	1159.31	1.370	s
Bi-214	1	2437.95	609.31	23.46	-0.32	0.000	46.33	1.374	s D
ra-226	1	2437.99	609.32	10.60	48.25	0.027	16.80	1.374	s D
ru-106	1	2488.84	622.03	14.49	-3.75	-0.002	152.65	1.385	s
Cs-137	1	2638.01	659.32	16.26	-4.96	-0.003	123.44	1.421	s
Bi-214	1	2662.30	665.39	11.70	-1.25	-0.001	397.46	1.424	s
Bi-212	1	2912.90	728.03	11.02	0.05	0.000	9081.88	1.479	s

Bi-214	1	3077.23	769.11	15.49	-0.24	0.000	2322.23	1.515	s
Eu-152	1	3113.24	778.12	18.67	-5.34	-0.003	122.31	1.525	s
Pb-214	1	3140.07	784.82	14.79	-4.10	-0.002	141.52	1.531	s
Bi-212	1	3140.10	784.83	14.13	-3.76	-0.002	150.40	1.531	s
Cs-134	1	3194.26	798.37	10.31	0.24	0.000	1882.42	1.540	s
Cs-134	1	3206.09	801.33	9.44	-2.42	-0.001	190.46	1.545	s
Mn-54	1	3337.10	834.08	10.52	1.24	0.001	382.05	1.574	s
Tl-208	1	3440.68	859.98	8.02	-2.40	-0.001	178.84	1.597	s
y-88	1	3584.61	895.97	6.27	0.51	0.000	706.95	1.630	s
Ac-228	1	3646.82	911.52	2.93	7.06	0.004	50.94	1.641	
Eu-152	1	3856.55	963.97	2.97	3.27	0.002	92.89	1.688	s
Ac-228	1	3884.36	970.92	5.59	-1.68	-0.001	213.35	1.692	
Eu-152	1	4346.36	1086.45	7.98	-1.00	-0.001	410.64	1.794	s
Eu-152	1	4444.82	1111.08	10.82	-2.10	-0.001	231.56	1.817	s
Zn-65	1	4462.57	1115.52	46.88	0.00	0.000	1000.00	1.820	s
Bi-214	1	4481.58	1120.27	16.22	-0.56	0.000	125.60	1.824	s D
ra-226	1	4481.61	1120.28	11.52	10.11	0.006	16.80	1.824	s D
Co-60	1	4705.26	1176.22	6.28	-0.78	0.000	468.37	1.870	s
ra-226	1	4952.70	1238.11	13.45	0.00	0.000	1000.00	1.926	s
Na-22	1	5098.29	1274.53	14.18	0.00	0.000	1000.00	1.957	s
Co-60	1	5330.03	1332.50	14.53	0.00	0.000	1000.00	2.007	s
Eu-152	1	5631.61	1407.95	0.00	0.00	0.000	1000.00	2.071	s
K-40	1	5841.25	1460.40	12.52	-1.14	-0.001	55.38	2.117	s
Ac-228	1	6349.40	1587.56	1.85	2.86	0.002	89.71	2.225	
Bi-212	1	6481.69	1620.66	0.00	0.00	0.000	1000.00	2.252	s
ra-226	1	7056.36	1764.49	0.00	4.16	0.002	67.32	2.373	s D
Bi-214	1	7056.36	1764.49	3.92	-3.92	-0.002	1000.00	2.373	s D
y-88	1	7342.09	1836.01	0.00	0.00	0.000	1000.00	2.432	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Activity Bq	Peak Analysis Code	MDA Value Bq	Code	T 1/2 (y)	% Abn.
Pb-212		N	1	9.730E-001	238.58	9.730E-001 % (P	1.220E+000	G	7.0E+002	43.60
				9.730E-001	300.03	2.562E-001 %	1.471E+001	G	7.0E+002	3.34
Th-234		N	1	9.177E-001	92.59	9.177E-001 % (P	9.627E+000	G	2.4E+001	5.41
				9.177E-001	63.29	2.762E+000 % P	1.512E+001	G	2.4E+001	3.81
Tl-208	F	N	1	9.008E-002	583.02	9.008E-002 % (P	9.409E-001	G	7.0E+002	86.00
				9.008E-002	860.30	-9.470E-001 %	6.273E+000	G	7.0E+002	12.00
				9.008E-002	277.28	-1.066E+000 %	7.907E+000	G	7.0E+002	6.79
cd-109	T F		1	-8.866E-001	88.03	-8.866E-001 % (	1.074E+001	G	4.6E+002	3.72
Ce-139	T F		1	8.279E-002	165.85	8.279E-002 % (	4.346E-001	G	1.4E+002	80.35
K-40		N	1	-7.447E-001	1460.83	-7.447E-001 % (P	1.256E+001	G	4.7E+011	10.67
sn-113	T F		1	6.085E-002	391.69	6.085E-002 % (	8.256E-001	G	1.2E+002	64.90
Mn-54	F C		1	5.723E-002	834.83	5.723E-002 & (	8.258E-001	G	3.1E+002	99.98
U-235		N	1	-4.930E-001	143.79	-4.930E-001 % (P	4.056E+000	G	2.6E+011	10.50
				-4.930E-001	185.74	1.538E-001 % P	8.759E-001	G A	2.6E+011	53.00
				-4.930E-001	205.33	-6.751E-002 &	8.737E+000	G	2.6E+011	4.70
ra-226			1	3.834E+000	609.32	3.834E+000 % E	1.421E+000	G	5.8E+005	46.30
				3.834E+000	1764.49	2.136E+000 % E	3.784E+000	G	5.8E+005	15.80

			3.834E+000	1238.11	0.000E+000 % (	2.053E+001 G	5.8E+005	5.94
			3.834E+000	1120.28	3.834E+000 % E	7.023E+000 G	5.8E+005	15.10
			3.834E+000	351.92	3.230E+000 (	7.772E-001 G	5.8E+005	37.20
			3.834E+000	295.22	6.706E-001 %	2.539E+000 G	5.8E+005	19.20
			3.834E+000	241.98	1.509E+000 %	6.975E+000 G	5.8E+005	7.49
			3.834E+000	186.21	1.676E+001 * (	5.643E+000 G	5.8E+005	3.50
Sr-85	I	1	-3.547E-001	513.99	-3.547E-001 % (	1.170E+000 G	6.5E+001	99.27
Bi-212	N	1	3.262E-002	727.25	3.262E-002 & (	1.146E+001 G	7.0E+002	6.65
			3.262E-002	1620.66	0.000E+000 %	3.695E+001 G	7.0E+002	1.51
			3.262E-002	785.51	-1.506E+001 %	8.098E+001 G	7.0E+002	1.11
			3.262E-002	39.86	1.840E+001 %	1.126E+002 G	7.0E+002	1.02
y-88	T F	1	2.669E-002	898.02	2.669E-002 % (	7.511E-001 G	1.1E+002	93.40
			2.669E-002	1836.01	0.000E+000 %	6.220E-001 G	1.1E+002	99.38
Cs-137	T F I	1	-2.279E-001	661.65	-2.279E-001 & (	9.879E-001 G	1.1E+004	85.12
			-2.149E-001	665.44	-3.139E+000 %	4.686E+001 G	5.8E+005	1.56
Bi-214	N	1	-2.149E-001	609.31	-2.593E-002 % PE	2.018E+000 G	5.8E+005	46.09
			-2.149E-001	1764.49	-1.996E+000 % PE	6.081E+000 G	5.8E+005	15.92
			-2.149E-001	1120.27	-2.120E-001 % PE	8.176E+000 G	5.8E+005	15.04
			-2.149E-001	768.35	-2.149E-001 % (	1.880E+001 G	5.8E+005	4.89

Co-57	PC	1	-2.111E-002	122.06	-2.111E-002 % (	4.563E-001	G	2.7E+002	85.51
			-2.111E-002	136.47	8.443E-001 %	2.513E+000	G	2.7E+002	10.60
Cs-134	T F I	1	-2.001E-002	604.71	-2.001E-002 & (	8.608E-001	G	7.5E+002	97.60
			-2.001E-002	795.84	1.271E-002 %	9.259E-001	G	7.5E+002	85.40
			-2.001E-002	569.32	-7.502E-001 %	4.990E+000	G	7.5E+002	15.43
			-2.001E-002	801.93	-1.249E+000 %	8.777E+000	G	7.5E+002	8.73
			-2.001E-002	563.24	-1.174E+000 %	8.428E+000	G	7.5E+002	8.39
Hg-203	I	1	1.845E-001	279.19	1.845E-001 & (	5.150E-001	G	4.7E+001	77.30
Am-241	T	1	-1.469E-001	59.54	-1.469E-001 % (	1.130E+000	G	1.6E+005	35.70
ru-106	I	1	-1.428E+000	621.84	-1.428E+000 % (	7.793E+000	G	3.7E+002	9.80
Ra-224	N	1	1.274E-001	240.76	1.274E-001 & (	1.407E+001	G	7.0E+002	3.90
Pb-210	N	1	1.238E+001	46.52	1.238E+001 % (P	2.073E+001	G	8.1E+003	4.05
Ac-228	N	1	1.200E+000	911.16	1.200E+000 % (	1.818E+000	G	2.1E+003	29.00
			1.200E+000	968.97	-4.974E-001 %	4.062E+000	G	2.1E+003	17.42
			1.200E+000	338.42	3.295E-001 %	4.763E+000	G	2.1E+003	12.40
			1.200E+000	209.39	-5.845E-001 %	1.026E+001	G	2.1E+003	4.12
			1.200E+000	270.26	2.964E+000 %	1.193E+001	G	2.1E+003	3.77
			1.200E+000	1588.23	5.909E+000 %	1.874E+001	G	2.1E+003	3.60
Pb-214	N	1	1.085E+000	351.87	1.085E+000 % (P	1.828E+000	G	5.8E+005	37.10

			1.085E+000	295.09	-3.373E-001 %	P	3.049E+000 G	5.8E+005	19.20
			1.085E+000	241.92	2.721E-001 %	P	7.653E+000 G	5.8E+005	7.46
			1.085E+000	785.83	-1.666E+001 %		8.383E+001 G	5.8E+005	1.09
			0.000E+000	1173.24	-4.622E-002 %		8.528E-001 G	1.9E+003	99.90
Zn-65	T F	1	0.000E+000	1115.52	0.000E+000 % (		3.892E+000 G	2.4E+002	50.75
Eu-152	T F	1	0.000E+000	1407.95	0.000E+000 % (		2.415E+000 G	5.0E+003	20.70
			0.000E+000	121.78	9.852E-002 %		1.231E+000 G	5.0E+003	28.40
			0.000E+000	344.27	-3.888E-001 %		2.482E+000 G	5.0E+003	26.50
			0.000E+000	964.01	1.165E+000 %		3.830E+000 G	5.0E+003	14.40
			0.000E+000	1112.02	-9.008E-001 %		7.722E+000 G	5.0E+003	13.30
			0.000E+000	778.89	-1.847E+000 %		7.900E+000 G	5.0E+003	12.74
			0.000E+000	1085.78	-5.614E-001 %		8.884E+000 G	5.0E+003	10.00
			0.000E+000	244.69	-6.585E-001 %		6.116E+000 G	5.0E+003	7.49
Na-22	F C	1	0.000E+000	1274.53	0.000E+000 % (		1.277E+000 G	9.5E+002	99.84
Co-60	T F	1	0.000E+000	1332.50	0.000E+000 % (		1.332E+000 G	1.9E+003	99.98
Th-227	N	1	0.000E+000	235.97	0.000E+000 % (		8.401E+000 G	8.0E+003	11.20
			0.000E+000	50.14	2.181E+000 %		7.051E+000 G	8.0E+003	8.50
			0.000E+000	256.24	0.000E+000 %		8.558E+000 G	8.0E+003	6.74

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range
- (= This peak is used in the nuclide activity average
- * = Peak is too wide, but only one peak in library
- A = Derived Average Activity
- + = Peak activity higher than counting uncertainty range
- ! = Peak is part of a multiplet and this area went negative during deconvolution
- \$ = Peak identified, but first peak of this nuclide failed one or more qualification tests
- & = Calculated peak centroid is not close enough to the library energy centroid for positive identification
- = = Peak outside analysis energy range
- P = Peakbackground subtraction
- @ = Peak is too wide at FW25M, but OK at FWHM
- E = Energy Duplication

Nuclide Codes:

- | | | |
|--------------------------------|---------------------------------|-------------------------------|
| T = Thermal Neutron Activation | F = Fast Neutron Activation | I = Fission Product |
| P = Photon Reaction | N = Naturally Occurring Isotope | C = Charged Particle Reaction |
| M = No MDA Calculation | | |

Peak Codes:

- | | | |
|---------------------|---------------------|--------------------|
| G = Gamma Ray | X = X-Ray | P = Positron Decay |
| S = Single - Escape | D = Double - Escape | K = Key Line |
| A = Not in Average | | |

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
Zn-65	<			1,000.00	1,000.00	3.892E+000
Sr-85	<	-3.547E-001	-3.550E-001	97.41	97.46	1.170E+000
y-88	<	2.669E-002	2.670E-002	706.95	706.96	7.511E-001
ru-106	<	-1.428E+000	-1.428E+000	152.65	152.67	7.793E+000
cd-109	<	-8.866E-001	-8.867E-001	341.00	341.02	1.074E+001
Eu-152	<			1,000.00	1,000.00	2.415E+000
Tl-208	<	9.008E-002	9.008E-002	261.39	261.40	9.409E-001
sn-113	<	6.085E-002	6.087E-002	366.42	366.43	8.256E-001
Pb-210		1.238E+001	1.238E+001	49.06	49.22	2.073E+001
Pb-212		9.730E-001	9.731E-001	40.61	40.73	1.220E+000
Na-22	<			1,000.00	1,000.00	1.277E+000
K-40	<	-7.447E-001	-7.447E-001	457.94	457.95	1.256E+001
Mn-54	<	5.723E-002	5.724E-002	382.05	382.06	8.258E-001
Co-57	<	-2.111E-002	-2.111E-002	603.78	603.79	4.563E-001
Co-60	<			1,000.00	1,000.00	1.332E+000
Cs-134	<	-2.001E-002	-2.002E-002	1,159.31	1,159.31	8.608E-001
Cs-137	<	-2.279E-001	-2.279E-001	123.44	123.47	9.879E-001
Ce-139	<	8.279E-002	8.282E-002	149.16	149.19	4.346E-001
Pb-214	<	1.085E+000	1.085E+000	46.83	46.92	1.828E+000
Hg-203	<	1.845E-001	1.847E-001	82.20	82.26	5.150E-001
Bi-212	<	3.262E-002	3.262E-002	9,081.88	9,081.88	1.146E+001
Ac-228	<	1.200E+000	1.200E+000	50.94	51.02	1.818E+000
Th-234	<	9.177E-001	9.194E-001	272.53	272.55	9.627E+000
ra-226	<	3.834E+000	3.834E+000	16.73	16.97	2.053E+001
Bi-214	<	-2.149E-001	-2.149E-001	2,322.23	2,322.23	1.880E+001
U-235	<	-4.930E-001	-4.930E-001	2,254.32	2,254.33	4.056E+000
Am-241	<	-1.469E-001	-1.469E-001	215.16	215.20	1.130E+000
Th-227	<			1,000.00	1,000.00	8.401E+000
Ra-224	<	1.274E-001	1.274E-001	3,060.59	3,060.59	1.407E+001

= All peaks for activity calculation had bad shape

Total Activity (37.64 to 2,000.72 keV) 0.00 Bq/sample

Analyzed by: _____

430030

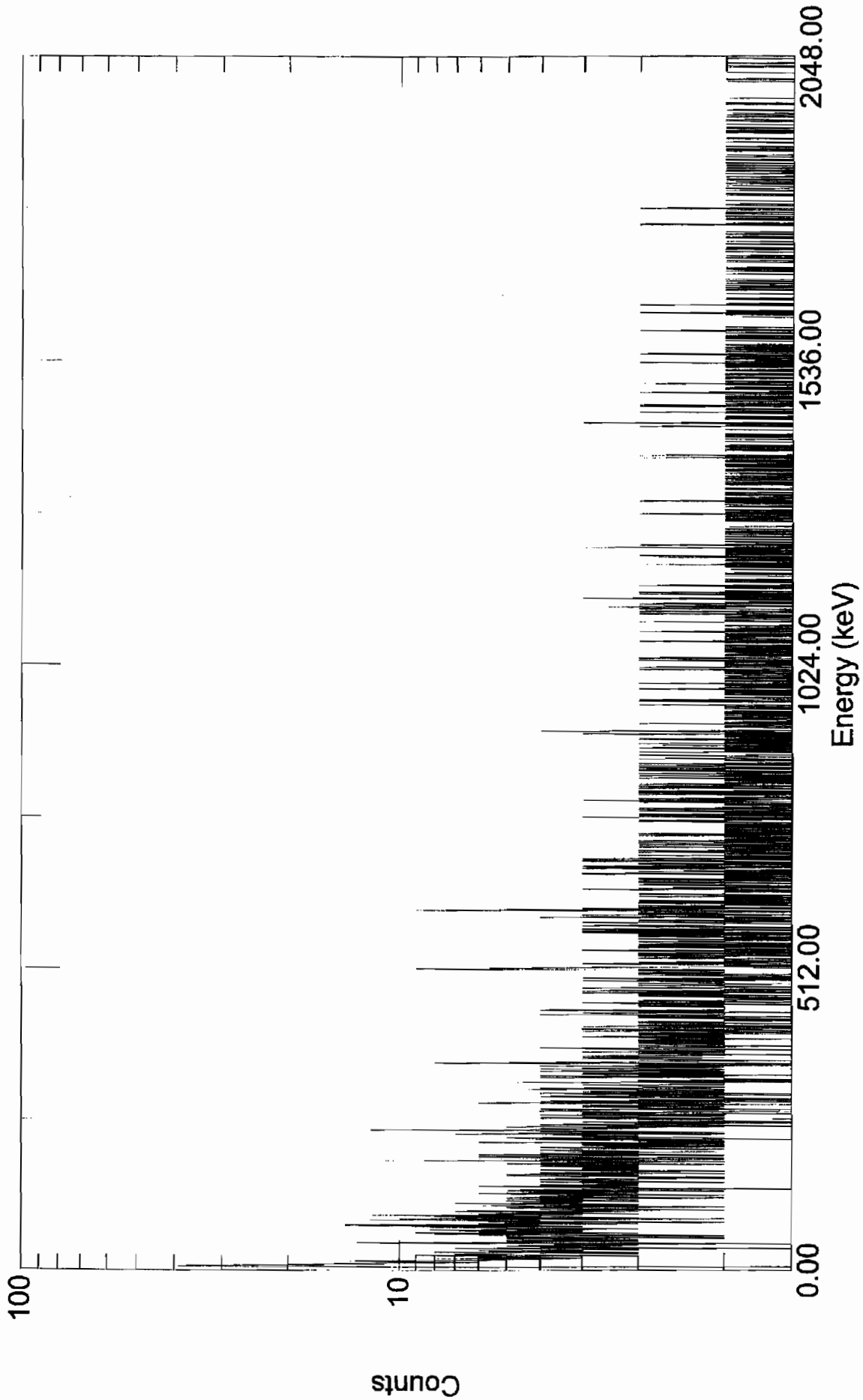
Reviewed by: _____

Supervisor

Laboratory: Test America

LXVGT1AA

0102353_LXVGT1AA_F0D120000-353B



Real Time: 1807.04 s. Live Time: 1800.00 s.
Channels: 8192

Acquired: 18-Apr-2010 1:34:18 PM
File: C:\User\spectra\LXVGT1AA.spc
Detector: #0 Ge 3 SN/131

DB Analysis ID: 86,470

Sample Description: 0102353_LXVGT1AC_F0D120000-353C

Spectrum Filename: LXVGT1AC.An1

Acquisition Information

Start Time:	18-Apr-2010	1:32:18PM	
Live Time:	1800.00		Real Time: 1814.18
Dead Time:	0.78 %		
Detector ID:	6		

Detector System: Ge 6 SN/164

Calibration

Description:	Ge6_TunaCanCal_81427_334_030110		
Filename:	C:\User\Calibrations\Ge 6 post 09_07_07\Ge6_TunaCanCal_81427_334_030110.Clb		
Energy Created:	01-Mar-2010 9:59:33AM	Efficiency Created:	01-Mar-2010 10:00:17AM
Zero Offset:	0.206 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib

Library based peak stripping used.

Library 2 File: Null.Lib

Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.70 keV
Stop Channel:	8,000 for an energy of 1999.99 keV
Peak rejection level:	30.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections

	<u>Status</u>	<u>Comments</u>
Decay Correct to Date:	YES	01-Oct-2006 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge6 PBC table 03 31 10.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.1431

UNIDENTIFIED PEAK SUMMARY

<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Suspected Nuclide</u>	<u>Code</u>
351.29	88.01	6254.82	749.18	0.416	15.37	0.819	PB-212	s
487.49	122.06	2162.66	143.34	0.080	46.63	0.829		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

<u>Nuclide</u>	<u>Library Used</u>	<u>Peak Channel</u>	<u>Centroid Energy</u>	<u>Background Counts</u>	<u>Net Area Counts</u>	<u>Intensity Cts/Sec</u>	<u>Uncertainty 1 Sigma%</u>	<u>FWHM keV</u>	<u>Code</u>
PB-210	1	185.20	46.50	1848.79	1871.21	1.040	4.76	0.722	s
AM-241	1	237.27	59.51	2501.83	8155.17	4.531	1.63	0.719	s
TH-234	1	252.36	63.29	1453.10	-9.18	-0.005	4968.35	0.762	
EU-155	1	351.46	88.06	2045.06	4792.84	2.663	1.97	0.784	s
TH-234	1	369.44	92.55	1325.62	7.97	0.004	200.42	0.790	s
AC-228	1	372.63	93.35	1235.03	-0.50	0.000	9851.35	0.791	s D
U-235	1	372.63	93.35	1235.03	-0.50	0.000	9851.35	0.791	s D
EU-155	1	421.34	105.52	1385.15	-43.95	-0.024	120.72	0.802	s
EU-152	1	487.70	122.11	1338.82	944.32	0.525	6.37	0.817	s
EU-154	1	500.44	125.30	936.92	22.42	0.012	194.20	0.818	s
Pa-234	1	524.40	131.29	1306.07	-32.82	-0.018	156.72	0.826	s
U-235	1	574.40	143.79	1233.11	-1.84	-0.001	4173.82	0.837	s
U-235	1	653.09	163.45	1064.05	30.43	0.017	152.70	0.855	s
U-235	1	822.79	205.87	1277.97	-13.78	-0.008	367.93	0.894	s
PB-212	1	954.54	238.81	907.65	208.35	0.116	25.16	0.997	
PB-214	1	966.38	241.76	1275.52	4.34	0.002	621.47	0.927	
TL-208	1	1106.78	276.86	942.25	-9.80	-0.005	444.17	0.959	s
I-131	1	1137.35	284.50	985.82	-47.69	-0.026	94.22	0.965	s
PB-214	1	1176.67	294.33	827.33	-2.86	-0.002	658.08	0.975	s
PB-212	1	1197.50	299.54	807.59	37.82	0.021	107.51	0.979	
AC-228	1	1352.98	338.40	855.59	46.62	0.026	89.94	1.013	s
EU-152	1	1377.10	344.43	890.74	-29.15	-0.016	145.99	1.018	s
PB-214	1	1406.97	351.90	573.61	149.39	0.083	27.64	1.021	s
I-131	1	1456.42	364.26	841.35	4.97	0.003	827.41	1.036	s
BE-7	1	1910.36	477.73	895.17	-8.76	-0.005	484.33	1.134	
CS-134	1	2255.99	564.12	543.52	20.31	0.011	163.83	1.207	s
CS-134	1	2277.66	569.54	557.86	0.69	0.000	4828.14	1.212	s
Pa-234	1	2285.28	571.45	423.12	-4.04	-0.002	722.63	1.212	s
TL-208	1	2332.14	583.16	336.93	143.07	0.079	25.56	1.145	s
CS-134	1	2409.63	602.53	350.48	24.68	0.014	109.14	1.242	s
BI-214	1	2435.65	609.03	372.38	147.63	0.082	25.31	1.533	s
I-131	1	2547.79	637.06	524.45	4.78	0.003	679.20	1.268	s
CS-137	1	2646.67	661.78	599.33	14423.67	8.013	0.93	1.372	
EU-154	1	2895.21	723.91	429.92	30.77	0.017	96.97	1.339	s
BI-212	1	2913.10	728.38	469.81	-25.41	-0.014	122.25	1.342	s
PA-234M	1	3060.41	765.20	411.13	0.45	0.000	6328.91	1.374	s
EU-152	1	3114.74	778.78	496.09	-0.03	0.000	24395.03	1.384	s
BI-212	1	3138.68	784.77	410.24	46.62	0.026	63.17	1.389	s
CS-134	1	3182.53	795.73	562.47	-20.82	-0.012	162.61	1.397	s
CS-134	1	3201.57	800.49	479.17	-33.68	-0.019	93.51	1.402	s
TL-208	1	3442.96	860.83	602.61	18.59	0.010	188.15	1.448	
EU-154	1	3497.01	874.34	549.99	0.16	0.000	21049.39	1.458	s
Pa-234	1	3505.17	876.38	274.41	3.33	0.002	705.40	1.463	s
Pa-234	1	3546.82	886.79	461.61	-1.03	-0.001	2944.66	1.466	s
AC-228	1	3643.79	911.03	729.80	60.68	0.034	64.25	1.487	
Pa-234	1	3781.95	945.57	780.19	37.29	0.021	107.19	1.514	s

AC-228	1	3878.06	969.59	660.52	23.91	0.013	153.37	1.531	s
EU-154	1	3991.05	997.84	541.12	11.90	0.007	277.98	1.552	s
PA-234M	1	4004.24	1001.13	599.96	-15.81	-0.009	220.60	1.555	s
EU-154	1	4018.81	1004.77	703.16	0.00	0.000	1000.00	1.558	s
EU-152	1	4440.55	1110.20	528.38	12.73	0.007	256.94	1.638	s
BI-214	1	4480.90	1120.29	510.62	-7.50	-0.004	1364.30	1.644	s
CO-60	1	4693.64	1173.47	332.50	11874.50	6.597	1.00	1.643	
EU-154	1	5085.42	1271.40	60.07	4.49	0.002	248.88	1.754	s
CO-60	1	5330.95	1332.78	108.00	10846.00	6.026	0.99	1.871	
EU-152	1	5632.96	1408.27	37.18	2.74	0.002	320.60	1.845	s
K-40	1	5843.94	1461.01	42.53	3.58	0.002	79.37	1.880	s
BI-214	1	7060.01	1765.01	29.85	13.04	0.007	45.09	2.071	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Bq	Energy keV	Peak		MDA Value Bq	Code	T 1/2 (y)	% Abn.
					Activity Bq	Analysis Code				
BI-214	N	1	8.464E+000	609.31	8.464E+000 @ (	P	5.311E+000	G	5.8E+005	46.09
			8.464E+000	1120.29	-2.022E+000 %	P	2.912E+001	G	5.8E+005	15.10
			8.464E+000	1764.49	4.894E+000 %	P	1.057E+001	G	5.8E+005	15.40
			7.349E+000	338.32	6.722E+000 %		2.005E+001	G	2.1E+003	12.01
			7.349E+000	93.35	-1.470E-001 &	E	4.850E+001	G	A 2.1E+003	5.56
AC-228	N	1	7.349E+000	911.07	7.349E+000 % (		1.557E+001	G	2.1E+003	29.00
			7.349E+000	968.97	5.024E+000 %		2.573E+001	G	2.1E+003	17.46
PA-234M	N	1	-7.090E+001	1001.00	-7.090E+001 % (		5.242E+002	GK	1.6E+012	.84
			-7.090E+001	766.41	4.792E+000 &		1.028E+003	GK	1.6E+012	.29
PB-214	N	1	7.075E+000	351.93	7.075E+000 * (	P	5.414E+000	G	5.8E+005	37.60
			7.075E+000	295.09	-2.339E-001 &	P	1.117E+001	G	5.8E+005	19.30
			7.075E+000	242.00	8.152E-001 %	P	3.174E+001	G	5.8E+005	7.43
PB-212	N	1	6.657E+000	238.63	6.657E+000 (	P	4.573E+000	G	7.0E+002	43.30
			6.657E+000	300.03	1.839E+001 %		6.570E+001	G	7.0E+002	3.28
CS-134	T F I	1	6.645E-001	604.71	6.645E-001 % (		2.422E+000	G	7.5E+002	97.62
			6.645E-001	795.87	-7.770E-001 &		4.227E+000	G	7.5E+002	85.53
			6.645E-001	569.32	1.133E-001 &		1.846E+001	G	7.5E+002	15.38

			6.645E-001	801.95	-1.244E+001 %		3.868E+001 G	7.5E+002	8.69
			6.645E-001	563.24	6.077E+000 &		3.331E+001 G	7.5E+002	8.35
BI-212	N	1	-6.441E+000	727.33	-6.441E+000 & (		2.629E+001 G	7.0E+002	11.82
			-6.441E+000	785.51	1.341E+002 %		2.792E+002 G	7.0E+002	1.10
CO-60	T F	1	5.010E+002	1332.50	5.018E+002 (		2.366E+000 G	1.9E+003	99.98
			5.010E+002	1173.24	5.003E+002 (		3.694E+000 G	1.9E+003	99.90
CS-137	T F I	1	4.743E+002	661.66	4.743E+002 (		3.841E+000 G	1.1E+004	85.21
			4.377E-002	723.36	4.543E+000 &		1.466E+001 G	3.1E+003	20.22
			4.377E-002	1004.77	0.000E+000 %		2.640E+001 G	3.1E+003	18.01
			4.377E-002	996.33	4.201E+000 &		3.922E+001 G	3.1E+003	10.60
EU-154	T F I	1	4.377E-002	873.23	4.377E-002 % (		3.111E+001 G	3.1E+003	12.27
			4.377E-002	123.10	6.914E-001 %		4.482E+000 G	3.1E+003	40.79
			4.377E-002	1274.54	5.703E-001 %		4.936E+000 G	3.1E+003	35.19
TL-208	F N	1	4.335E+000	583.02	4.335E+000 * (P		2.674E+000 G	7.0E+002	84.50
			4.335E+000	277.28	-2.352E+000 %		3.498E+001 G	7.0E+002	6.31
			4.335E+000	860.56	5.050E+000 %		3.181E+001 G	7.0E+002	12.42
EU-155	T F I	1	-2.915E+000	105.31	-2.915E+000 % (		1.168E+001 G	1.8E+003	21.20
			-2.915E+000	86.54	2.847E+002 ?		1.268E+001 G A	1.8E+003	30.70
Pa-234	N	1	-2.234E+000	131.29	-2.234E+000 % (		1.165E+001 G	1.6E+012	18.00

			-2.234E+000	569.47	-1.239E+000 &		3.026E+001 G	1.6E+012	8.20
			-2.234E+000	946.02	1.004E+001 &		3.577E+001 G	1.6E+012	13.40
			-2.234E+000	883.24	-3.695E-001 &		3.680E+001 G	1.6E+012	9.60
			-2.234E+000	880.53	1.904E+000 %		4.566E+001 G	1.6E+012	6.00
EU-152	T F	1	2.075E+001	344.29	-1.928E+000 & (		9.381E+000 G	4.9E+003	26.50
			2.075E+001	121.78	4.178E+001 @ (		7.664E+000 G	4.9E+003	28.58
			2.075E+001	778.92	-6.154E-003 &		2.588E+001 G	4.9E+003	12.94
			2.075E+001	1112.07	3.777E+000 &		3.259E+001 G	4.9E+003	13.64
			2.075E+001	1408.00	6.289E-001 %		7.147E+000 G	4.9E+003	21.00
			-2.016E-001	93.35	-1.407E-001 & E		4.642E+001 X	2.6E+011	5.81
U-235	N	1	-2.016E-001	143.79	-2.016E-001 % (P		1.823E+001 G	2.6E+011	10.96
			-2.016E-001	205.33	-3.531E+000 &		4.339E+001 G	2.6E+011	5.01
			-2.016E-001	163.38	7.202E+000 %		3.662E+001 G	2.6E+011	5.08
BE-7	N	1	-1.847E+000	477.60	-1.847E+000 % (		2.997E+001 G	5.3E+001	10.52
	PC								
K-40	N	1	1.666E+000	1460.83	1.666E+000 % (P		1.539E+001 G	4.7E+011	10.67
PB-210	N	1	1.438E+004	46.54	1.438E+004 * (P		1.560E+003 G	8.1E+003	4.25
AM-241	T	1	1.242E+003	59.54	1.242E+003 * (		3.590E+001 G	1.6E+005	35.90
I-131	T F I	1	1.109E-001	364.48	1.109E-001 & (		3.081E+000 G	8.0E+000	81.70
			1.109E-001	284.30	-1.195E+001 %		3.735E+001 G	8.0E+000	6.14
			1.109E-001	636.97	1.818E+000 %		4.163E+001 G	8.0E+000	7.17

TH-234	N	1	-1.013E+001	63.29	-1.013E+001 %	(	P	1.990E+002	G	1.6E+012	3.81
			-1.013E+001	92.59	2.339E+000 %		P	5.059E+001	G	1.6E+012	5.58

Analysis Codes:

% = Peak fails sensitivity test	? = Peak is too narrow
- = Peak activity lower than counting uncertainty range	= = Peak outside analysis energy range
(= This peak is used in the nuclide activity average	P = Peakbackground subtraction
* = Peak is too wide, but only one peak in library	@ = Peak is too wide at FW25M, but OK at FWHM
A = Derived Average Activity	E = Energy Duplication
+ = Peak activity higher than counting uncertainty range	
! = Peak is part of a multiplet and this area went negative during deconvolution	
\$ = Peak identified, but first peak of this nuclide failed one or more qualification tests	
& = Calculated peak centroid is not close enough to the library energy centroid for positive identification	

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

<u>Nuclide</u>		<u>Time of Count Activity Bq/sample</u>	<u>Time Corrected Activity Bq/sample</u>	<u>Uncertainty Counts 1 Sigma %</u>	<u>Uncertainty Total 1 Sigma %</u>	<u>Minimum Detectable Activity</u>
BE-7	<	-1.847E+000		484.33	484.34	2.997E+001
K-40	<	1.666E+000	1.666E+000	251.09	251.10	1.539E+001
CO-60		5.010E+002	7.987E+002	0.71	2.91	2.366E+000
I-131	<	1.109E-001		827.41	827.42	3.081E+000
CS-134	<	6.645E-001	2.185E+000	109.14	109.18	2.422E+000
CS-137		4.743E+002	5.148E+002	0.93	3.09	3.841E+000
EU-152	<	2.075E+001	2.488E+001	6.37	7.01	9.381E+000
EU-155	<	-2.915E+000	-4.784E+000	120.72	120.76	1.168E+001
TL-208	#	4.335E+000	1.570E+001	26.80	26.96	2.674E+000
PB-210	#	1.438E+004	1.605E+004	4.78	6.21	1.560E+003
PB-212		6.657E+000	2.411E+001	27.13	27.30	4.573E+000
PB-214	#	7.075E+000	7.085E+000	30.16	30.30	5.414E+000
Pa-234	<	-2.234E+000	-2.234E+000	156.72	156.75	1.165E+001
AM-241	#	1.242E+003	1.249E+003	1.63	4.27	3.590E+001
EU-154	<	4.377E-002	5.827E-002	21,049.39	21,049.39	3.111E+001
BI-212	<	-6.441E+000	-2.333E+001	122.25	122.29	2.629E+001
BI-214	#	8.464E+000	8.477E+000	28.00	28.16	5.311E+000
AC-228	<	7.349E+000	1.127E+001	64.25	64.32	1.557E+001
TH-234	<	-1.013E+001	-1.013E+001	9,350.95	9,350.95	1.990E+002
PA-234M	<	-7.090E+001	-7.090E+001	220.60	220.62	5.242E+002
U-235	<	-2.016E-001	-2.016E-001	11,045.22	11,045.22	1.823E+001

= All peaks for activity calculation had bad shape

Total Activity (37.70 to 1,999.99 keV) 16,613.77 Bq/sample

Analyzed by:

430030

Reviewed by:

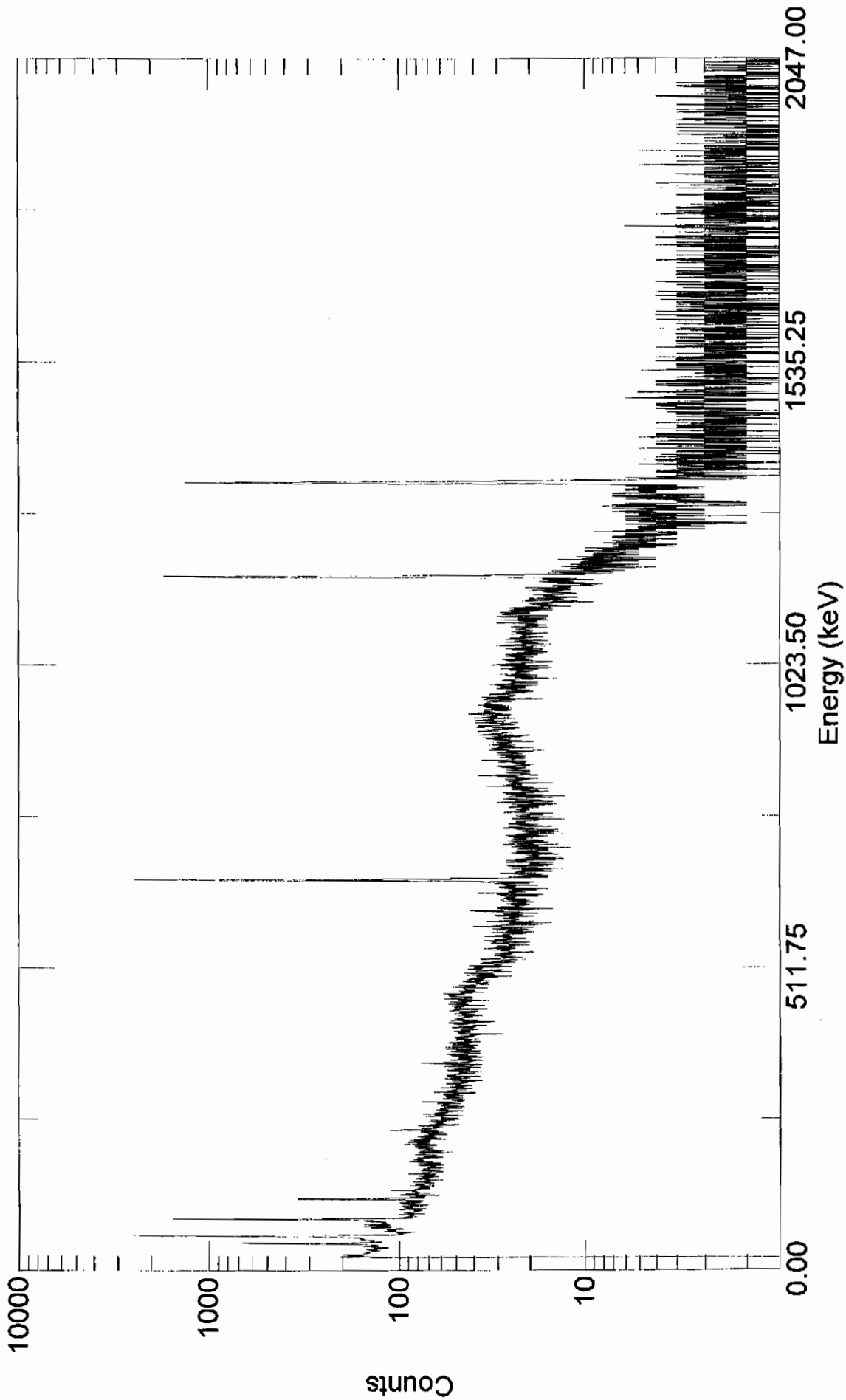
Supervisor

Laboratory:

STL- Test America

LXVGT1AC

0102353_LXVGT1AC_F0D120000-353C



Acquired: 18-Apr-2010 1:32:17 PM
 File: C:\User\spectra\LXVGT1AC.spc
 Detector: #0 Ge 6 SN/164

Real Time: 1814.18 s. Live Time: 1800.00 s.
 Channels: 8192

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Instrument Checks



Gamma Spectroscopy Daily Check Summary

Detector: 1

Measurement Date/Time: 4/18/2010 8:53:28 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	3.035	3.285	3.493	4.035	4.285	ok
Total Activity (Bq)	1841.0	1880.0	1850.2	1996.0	2035.0	Low
Peak Shift (keV)	-0.3000	-0.2000	0.1763	0.2000	0.2500	ok
Avg FWHM Ratio	0.9000	0.9500	0.9650	1.0500	1.1000	ok
Avg FWTM Ratio	0.9000	0.9500	1.0118	1.1000	1.1500	ok

Detector: 2

Measurement Date/Time: 4/18/2010 8:53:43 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	1.458	1.508	1.546	1.708	1.758	ok
Total Activity (Bq)	1835.6	1874.2	1942.1	1990.2	2028.8	ok
Peak Shift (keV)	-0.2000	-0.1500	0.0550	0.1500	0.2000	ok
Avg FWHM Ratio	0.8500	0.9000	0.9460	1.1000	1.1500	ok
Avg FWTM Ratio	0.8500	0.9000	0.9564	1.1000	1.1500	ok

Detector: 3

Measurement Date/Time: 4/18/2010 8:53:39 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	2.500	2.750	2.886	3.250	3.500	ok
Total Activity (Bq)	1829.0	1868.0	1929.6	1984.0	2022.0	ok
Peak Shift (keV)	-0.3000	-0.2500	0.0670	0.2500	0.3000	ok
Avg FWHM Ratio	0.8500	0.9000	0.9646	1.1500	1.2500	ok
Avg FWTM Ratio	0.9000	0.9500	1.0266	1.1500	1.2500	ok

Detector: 4

Measurement Date/Time: 4/18/2010 8:53:35 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	0.925	1.075	1.380	1.575	1.725	ok
Total Activity (Bq)	1833.7	1872.3	1928.1	1988.2	2026.8	ok
Peak Shift (keV)	-0.5000	-0.2500	0.1483	0.2500	0.5000	ok
Avg FWHM Ratio	0.8200	0.9000	0.9616	1.1000	1.1830	ok
Avg FWTM Ratio	0.8200	0.9000	0.9990	1.1000	1.1830	ok

Gamma Spectroscopy Daily Check Summary

Detector: 5**Measurement Date/Time: 4/18/2010 8:55:15 A**

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	1.500	1.750	1.580	2.250	2.500	Low
Total Activity (Bq)	2966.0	3160.0	3573.9	3937.0	4132.0	ok
Peak Shift (keV)	-0.0010	0.0480	0.1557	0.2440	0.2930	ok
Avg FWHM Ratio	0.7250	0.8390	1.0491	1.2950	1.4090	ok
Avg FWTM Ratio	0.8910	0.9770	1.1999	1.3190	1.4040	ok

Detector: 6**Measurement Date/Time: 4/18/2010 8:54:09 A**

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	2.263	2.355	2.531	2.721	2.813	ok
Total Activity (Bq)	1829.3	1867.8	1904.2	1983.3	2021.8	ok
Peak Shift (keV)	-0.5000	-0.2500	0.0600	0.2500	0.5000	ok
Avg FWHM Ratio	0.8430	0.9000	1.0158	1.1000	1.1700	ok
Avg FWTM Ratio	0.9500	1.0000	1.0900	1.1500	1.2000	ok

Detector: 7**Measurement Date/Time: 4/18/2010 10:15:44**

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	0.750	1.000	1.280	1.750	2.000	ok
Total Activity (Bq)	1850.0	1875.0	1845.1	1975.0	2000.0	< MIN !!
Peak Shift (keV)	-0.5000	-0.2500	0.0534	0.2500	0.5000	ok
Avg FWHM Ratio	0.8000	0.8500	1.0024	1.1500	1.2000	ok
Avg FWTM Ratio	0.8000	0.8500	1.0776	1.2000	1.2500	ok

Detector: 8**Measurement Date/Time: 4/18/2010 8:55:54 A**

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	0.827	1.077	1.453	1.627	1.877	ok
Total Activity (Bq)	3431.0	3538.0	3735.7	3965.0	4072.0	ok
Peak Shift (keV)	-0.0360	-0.0040	0.0251	0.1230	0.1550	ok
Avg FWHM Ratio	0.8920	0.9280	1.0190	1.0700	1.1500	ok
Avg FWTM Ratio	0.8870	0.9280	1.0122	1.0890	1.1300	ok

Gamma Spectroscopy Daily Check Summary

Detector: 10**Measurement Date/Time:** 4/18/2010 8:52:19 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	2.000	2.500	3.352	3.500	4.000	ok
Total Activity (Bq)	1836.8	1875.5	1905.1	1991.5	2030.2	ok
Peak Shift (keV)	-0.1500	-0.1000	0.0075	0.1000	0.1500	ok
Avg FWHM Ratio	0.8000	0.9000	1.0445	1.0800	1.1800	ok
Avg FWTM Ratio	0.7500	0.8500	1.0722	1.1500	1.2500	ok

Notes: Low and High are 2 sigma warning limits. Minimum (<MIN) and Maximum (>MAX) are 3 sigma control limits (Fail).

Analyst KM
Date 04-18-10



Gamma Spectroscopy Daily Check Summary

Detector: 1

Measurement Date/Time: 4/20/2010 9:21:10 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	3.035	3.285	3.795	4.035	4.285	ok
Total Activity (Bq)	1841.0	1880.0	1841.4	1996.0	2035.0	Low
Peak Shift (keV)	-0.3000	-0.2000	0.0876	0.2000	0.2500	ok
Avg FWHM Ratio	0.9000	0.9500	0.9974	1.0500	1.1000	ok
Avg FWTM Ratio	0.9000	0.9500	1.0109	1.1000	1.1500	ok

Detector: 2

Measurement Date/Time: 4/20/2010 8:36:38 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	1.458	1.508	1.574	1.708	1.758	ok
Total Activity (Bq)	1835.6	1874.2	1931.4	1990.2	2028.8	ok
Peak Shift (keV)	-0.2000	-0.1500	0.0214	0.1500	0.2000	ok
Avg FWHM Ratio	0.8500	0.9000	0.9379	1.1000	1.1500	ok
Avg FWTM Ratio	0.8500	0.9000	0.9656	1.1000	1.1500	ok

Detector: 3

Measurement Date/Time: 4/20/2010 8:36:43 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	2.500	2.750	2.965	3.250	3.500	ok
Total Activity (Bq)	1829.0	1868.0	1927.0	1984.0	2022.0	ok
Peak Shift (keV)	-0.3000	-0.2500	0.0433	0.2500	0.3000	ok
Avg FWHM Ratio	0.8500	0.9000	0.9923	1.1500	1.2500	ok
Avg FWTM Ratio	0.9000	0.9500	1.0121	1.1500	1.2500	ok

Detector: 4

Measurement Date/Time: 4/20/2010 8:36:46 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	0.925	1.075	1.375	1.575	1.725	ok
Total Activity (Bq)	1833.7	1872.3	1903.5	1988.2	2026.8	ok
Peak Shift (keV)	-0.5000	-0.2500	0.0825	0.2500	0.5000	ok
Avg FWHM Ratio	0.8200	0.9000	1.0424	1.1000	1.1830	ok
Avg FWTM Ratio	0.8200	0.9000	1.0569	1.1000	1.1830	ok

Gamma Spectroscopy Daily Check Summary

Detector: 5**Measurement Date/Time: 4/20/2010 8:38:32 A**

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	1.500	1.750	1.604	2.250	2.500	Low
Total Activity (Bq)	2966.0	3160.0	3513.2	3937.0	4132.0	ok
Peak Shift (keV)	-0.0010	0.0480	0.1275	0.2440	0.2930	ok
Avg FWHM Ratio	0.7250	0.8390	1.0569	1.2950	1.4090	ok
Avg FWTM Ratio	0.8910	0.9770	1.2067	1.3190	1.4040	ok

Detector: 6**Measurement Date/Time: 4/20/2010 8:37:13 A**

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	2.263	2.355	2.574	2.721	2.813	ok
Total Activity (Bq)	1829.3	1867.8	1916.2	1983.3	2021.8	ok
Peak Shift (keV)	-0.5000	-0.2500	0.0553	0.2500	0.5000	ok
Avg FWHM Ratio	0.8430	0.9000	1.0031	1.1000	1.1700	ok
Avg FWTM Ratio	0.9500	1.0000	1.0939	1.1500	1.2000	ok

Detector: 7**Measurement Date/Time: 4/20/2010 9:40:03 A**

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	0.750	1.000	1.257	1.750	2.000	ok
Total Activity (Bq)	1850.0	1875.0	1844.5	1975.0	2000.0	< MIN !!
Peak Shift (keV)	-0.5000	-0.2500	0.0391	0.2500	0.5000	ok
Avg FWHM Ratio	0.8000	0.8500	0.9883	1.1500	1.2000	ok
Avg FWTM Ratio	0.8000	0.8500	1.0453	1.2000	1.2500	ok

Detector: 8**Measurement Date/Time: 4/20/2010 8:39:26 A**

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	0.827	1.077	1.510	1.627	1.877	ok
Total Activity (Bq)	3431.0	3538.0	3621.8	3965.0	4072.0	ok
Peak Shift (keV)	-0.0360	-0.0040	0.0574	0.1230	0.1550	ok
Avg FWHM Ratio	0.8920	0.9280	1.0023	1.0700	1.1500	ok
Avg FWTM Ratio	0.8870	0.9280	1.0137	1.0890	1.1300	ok

Gamma Spectroscopy Daily Check Summary

Detector: 10

Measurement Date/Time: 4/20/2010 8:52:13 A

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	2.000	2.500	2.812	3.500	4.000	ok
Total Activity (Bq)	1836.8	1875.5	1903.3	1991.5	2030.2	ok
Peak Shift (keV)	-0.1500	-0.1000	0.0507	0.1000	0.1500	ok
Avg FWHM Ratio	0.8000	0.9000	1.0334	1.0800	1.1800	ok
Avg FWTM Ratio	0.7500	0.8500	1.0725	1.1500	1.2500	ok

Notes: Low and High are 2 sigma warning limits. Minimum (<MIN) and Maximum (>MAX) are 3 sigma control limits (Fail).

Analyst

Date



4/20/10

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Run Log

Logbook No.: 3470

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
4-17-10	0096295	LXKQDIAA	1	1hr	1wml solid	Kay
X	X	LXKQDIAL	2	X	X	X
4-17-10	0098598	LW5QD1CG	4	1hr	1L Morn	Kay
4-17-10		LW7EHIAL	7			
		LW7EXIAL	8			
		LW9E3IAA	10			
4-17-10	0099160	LXLR41CJ	1	30min	Thin	Kay
X	X	LXPR41AA	3	X	X	X
4-17-10	0095418	LWTKQ1AG	2	6hr	0.5L Morn	Kay
		LXJWP1AA	4	X		
		LXJWFIAL	5	2hr		
4-17-10	0095194	LWTR1AG	6	4hr	Air filter	Kay
4-17-10	0090376	LW2XVIAK	7	12hr	1L Morn	Kay
4-17-10	0084363	LW3KVIAL	8	1hr	1L Morn	Kay
	X	LW3MBIAL	10	X		X
4-18-10	D227	Bkgd & Source	1-8, 10	20-130min	QA	Kay
4-18-10	0099160	LXLR41FC	3	30min	Thin	Kay
	X	LXPR41AL	1	X	X	X
4-18-10	0084363	LW3KVIAL	2	1hr	1L Morn	Kay
		LW3MW1AG	4			
		LW5M91AA	8			
		LW5M11AG	5			
4-18-10	M101639	F0C100450-005x	6	1hr	Air filter	Kay
4-18-10	0085399	LW7WC1AA	10	1hr	1L Morn	Kay
		LW7WC1AK	2			
		LW7WD1AA	4			
		LW9E41AA	8			

Reviewed By: Kay Date: 04-18-10

SOP Reference: STL-RD-0101 Rev 11 07/31/2009

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Form No.: SL-RAD-0026, Revised 7/20/08

QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike;
D=Matrix Spike Duplicate; X=Sample Duplicate.

Logbook No.: 3470

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
4-18-10	0088399	LW9E4IAC	10	1hr	1C Mark	katy
4-18-10	M101659	FOC180456-005xv	5	1hr	Air filter	katy
x	L	LCS	6	L	L	L
4-18-10	0092223	LXC9E1CL	1	30min	Tuna	katy
		LXC9S1CL	3			
		LXC9E1EH	10			
		LXDEA1AF	1			
		LXDEG1AF	2			
		LXDEK1AF	3			
		LXDEL1AF	4			
		LXDEM1AF	5			
		LXG1H1AA	8			
		LXG1H1AC	6			
4-18-10	0089449	LWTD1AD	1	30min	Tuna	katy
4-18-10	0102353	LXNM2IAF	2			
		LXNMVIAF	3			
		LXNMWIAF	4			
		LXNMXIAF	5			
		LXNM2IAF	8			
		LXNM4IAF	10			
		LXNM2IAC	1			
		LXNM9IAF	2			
		LXVGT1AA	3			
		LXVGT1AC	6			
4-18-10	0099158	LXLTJ1AD	4	30min	Tuna	katy
		LXLTIC1AD	5			
		LXLTMIAD	8			

Reviewed By: katy Date: 4-18-10

SOP Reference: STL-RD-0101 Rev 11 07/31/2009

33

Form No.: SL-RAD-0026, Revised 7/20/06

QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike;
D=Matrix Spike Duplicate; X=Sample Duplicate.

Logbook No.: 3470

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
4-18-10	0099158	LXLTN1AD	10	30min	Tuna	Kay
		LXLR91AD	2			
		LXLTH1AD	3			
		LXLTH1AD	1			
		LXLTT1AD	4			
		LXLTV1AD	5			
		LXLTW1AD	8			
		LXLTO1AD	10			
4-18-10	0095298	LW20W1AE	1	4hr	Tuna	Kay
		LW2091AQ	2			
		LW21A1AQ	3			
		LW21E1AQ	5			
		LW21F1AQ	8			
4-18-10	0095419	LWTK81AA	10	6hr	Tuna	Kay
4-18-10	0095418	LWTKQ1A9	4	6hr	O.S.L.Morn	Kay
4/19/10	Daily	BKG + Source	1-8,10	20+30min	QA	gal
	0085298	LW20W1LR	3	4hr	TUNA Can	
	1	LW7DN1AA	2	1	1	
	M101639	FOC180456-005	4	1hr	Air Filter	
	0099158	LXLR91AL	5	30min	TUNA Can	
		LXLTH1AD	7			
		LXLTH2AD	8			
		LXLTH3AD	10			
		LXLTH4AD	5			
		LXLTH5AD	7			
		LXLTH6AD	8			
		LXPH41AC	4			

Reviewed By: _____

Date: 4/19/10

SOP Reference: STL-RD-0101 Rev 11 07/31/2009

Form No.: SL-RAD-0026, Revised 7/20/06

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Logbook No.: 3470

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
4/19/10	0109257	LWTR81AA	7	4 hour	Marin Soil	EMW
	1	LX62J1AA	8	1	1	1
	0095347	LXE5N1AJ	10	30mins	TunaCan	1
	0090376	LXDR71AX	10	12hrs	1Lmem	um
4/20/10	Daily	BK6 + Seau	1-8,10	20 & 30min	QA	gw
	0102402	LXL851AE	8	30min	Marin 0.5L	
		LXL881AE	4			
		LXL9C1AE	5			
		LXL9F1AE	8			
	0095347	LXE5P1AJ	3		TUNA CAN	
		LXE5Q1AJ	10			
		LXE5R1AJ	1			
		LXE5T1AJ	3			
	0102402	LXL9K1AE	2		Marin 0.5L	
		LXL9R1AE	4			
		LXL9I1AE	5			
		LXMAE1AE	8			
		LXVL91AD	2			
		LXVL91AC	4			
	00962A5	LXKQDIAC-rc	1			
	0095347	LXJPP1AA	10		TUNA CAN	
	1	LXJPP1AC	3			
	0102403	LXMA61AE	5		Marin 0.5L	
		LXMAH1AE	8			
		LXMAH1AD	8			
		LXMAT1AE	5			
		LXVMD1AA	2			

Reviewed By: gw Date: 4/20/10

SOP Reference: STL-RD-0101 Rev 11 07/31/2009

Form No.: SL-RAD-0026, Revised 7/20/06

QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike; D=Matrix Spike Duplicate; X=Sample Duplicate.

Logbook No.: 3470

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
4/20/10	0102403	LXKMDIAC	4	30min	Micro 0.5L	gn
	0098342	LXN4N1AA	10	1hr	1Lmarn	1
	0089454	LW61G1AV	1	30mins	TunaCan	emm
	0102353	LXNMRIAG	3			
	0099160	LXLR41CJ	5			
	M101651	ID2010-1	4			
	0098342	LXL181AD	2	1 hour	1Lmarn	
		LXL3G1AD	4			
		LXN4N1AC	8			
	M101651	ID2010-2	1	30min	TUNACAN	gn
		- 3	3			
		- 4	5			
		2D1510-1	6			
	0096295	LXKQDIAC	10	1hr	100mL solid	km
	M101651	2D1510-2	1	30min	tunacan	NB
		2D1510-3	3			
		2D1510-4	5			
		1000 4D0910-2	6			
	0098342	LXL181AV	8	1hr	1Lmarn	NB
	0103250	LX ^{VB} VBX1AA	2	1.5hr	1Lmarn	1
	0099160	LXLR41FC	4	30min	TunaCan	1
	0096296	LXHVFICE		30mins	TunaCan	emm
		LXHVGI CE	8			
		LXKQE1AC	10			
	0089454	LW61G1CN	3			
		LXA721AC	4			
	0095341	LXHNT1AA	5		250mL Solid	

Reviewed By: emm Date: 4/20/10

SOP Reference: STL-RD-0101 Rev 11 07/31/2009

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Form No.: SL-RAD-0026, Revised 7/20/06

QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike; D=Matrix Spike Duplicate; X=Sample Duplicate.

Logbook No.: 3470

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
4/20/10	M101651	4D0910-3	6	30 mins	Tuna Can	EMW
	0089454	LXA721AA	2	1	1	1
	0089449	LW7TN1AK	5	1	1	NB
	0089449	LW7TT1AK	10	1	1	1
	M101652	Blank	6	1	1	1
	0092224	LXDDTICA	2	45 min	1	1
		LXDEDICA	8	1	1	1
	0095341	LXHNTIAC	1	30 min	250mL Solid	1
	0096296	LXHVFIEV	3	1	Tuna can	1
		LXIVGIEE	4	1	1	1
4/20/10	00916296	LXKQF1AA	4	30 min	Tuna Can	NB
	0109251	LX621AC	10	30 mins	Mar soil	um
	0090376	LXDR1IAC	5	1 hr	1L mem	NB/um
	0095419	LWTK81AK	4	1 hrs	Tuna can	1
	0092224	LXDDJICL	1	45 min	1	NB
		LXDEEICA	3	1	Solid 100mL	1
		LXDEHICA	2	1	Tuna can	1
		LXGIN1AA	8	1	1	1
4/21/10	Daily	BKG + Source	1-8,10	20 + 30 min	QA	JW
	0095449	LXJWG1AC	3	30 min	TUNA CAN	1
	0091274	LW9221CA	2	45 min	1	1
		LW9281CA	4	1	1	1
		LW93E1CA	5	1	1	1
	0088400	LW9ES1AA	8	1 hr	Mar, 1L	1
		LW9ES1AC	10	1	1	1
	0092224	LXGIN1AC	3	30 min	TUNA CAN	1
	0091274	LW9221CQ	1	45 min	1	1

Reviewed By: JWDate: 4/21/10

SOP Reference: STL-RD-0101 Rev 11 07/31/2009

Form No.: SL-RAD-0026, Revised 7/20/06

QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike;
D=Matrix Spike Duplicate; X=Sample Duplicate.

CS137

Prep Report for Gamma Spectroscopy

Batch: 0102353

Prep Analyst: 189

Sample ID	WRKNO	Aliquot	Dilution	Adjusted Aliquot	Geometry Desc
F0D080501-001	LXNMR1AF	2.7650E+002 g	1.00	2.7650E+002 g	Tuna Can
F0D080501-001X	LXNMR1AG	2.7650E+002 g	1.00	2.7650E+002 g	Tuna Can
F0D080501-002	LXNMV1AF	2.5340E+002 g	1.00	2.5340E+002 g	Tuna Can
F0D080501-003	LXNMW1AF	3.0630E+002 g	1.00	3.0630E+002 g	Tuna Can
F0D080501-004	LXNMX1AF	3.2420E+002 g	1.00	3.2420E+002 g	Tuna Can
F0D080501-005	LXNM21AF	2.8870E+002 g	1.00	2.8870E+002 g	Tuna Can
F0D080501-006	LXNM41AF	3.2770E+002 g	1.00	3.2770E+002 g	Tuna Can
F0D080501-007	LXNM91AF	3.0230E+002 g	1.00	3.0230E+002 g	Tuna Can
F0D120000-353B	LXVGT1AA	3.5880E+002 g	1.00	3.5880E+002 g	Tuna Can
F0D120000-353C	LXVGT1AC	3.4190E+002 g	1.00	3.4190E+002 g	Tuna Can

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	Std Added
F0D120000-353C	Rad06-0133	AM-241	2.194E+002 dpm/g	341.90 g	10/1/2006 12:00:00AM	9.883E+001 pCi/g
F0D120000-353C	Rad06-0133	CO-60	1.364E+002 dpm/g	341.90 g	10/1/2006 12:00:00AM	6.144E+001 pCi/g
F0D120000-353C	Rad06-0133	CS-137	8.230E+001 dpm/g	341.90 g	10/1/2006 12:00:00AM	3.707E+001 pCi/g

Spike By

Spike Verified By

Spike Date

Standard Operating Procedures

SOP Number	Title	Revision
<input type="checkbox"/>		

<u>SampleID</u>	<u>WRKNO</u>	<u>Aliquot</u>	<u>Dilution</u>	<u>Adjusted Aliquot</u>	<u>GeometryDesc</u>
<u>emm</u>	<u>4/21/10</u>				
Reviewed By	Review Date				
<u>gm</u>	<u>4/12/10</u>		<u>Um</u>	<u>4/12/10</u>	
Analyst/Relinquished By	Release Date		Received By	Receipt Date	
<u>1121432711 gm</u>	<u>4/12/10</u>				
Balance ID / Initials / Date					



Gamma Vision Long Backgrounds

March 2010

Ge1 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:58:33 AM Page 1
Test America Spectrum name: Ge1 background 03_31_10.An1

Sample description
Ge1 background 03_31_10

Spectrum Filename: C:\User\spectra\Ge1 bkgd\Ge1 background 03_31_10.A

Acquisition information

Start time: 3/31/2010 5:52:53 PM
Live time: 43200
Real time: 43489
Dead time: 0.66 %
Detector ID: 1

Detector system

Ge 1 SN/242

Calibration

Filename: Ge1_AirFilterCal_81428_334_021710.Clb
Ge1_AirFilterCal_81428_334_021710

Energy Calibration

Created: 2/17/2010 12:33:49 PM
Zero offset: 0.215 keV
Gain: 0.250 keV/channel
Quadratic: -8.470E-09 keV/channel^2

Efficiency Calibration

Created: 2/17/2010 4:08:54 PM
Type: Polynomial
Uncertainty: 1.611 %
Coefficients: -0.403898 -4.209184 0.469331
-0.047428 0.002127 -0.000035

Library Files

Main analysis library: long bkgd_pbc.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters

Analysis engine: Env32 G53W4.24
Start channel: 90 (22.72keV)
Stop channel: 8000 (1999.82keV)
Peak rejection level: 30.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00
Activity scaling factor: $1.0000E+00 / (1.0000E+00 * 1.0000E+00) = 1.0000E+00$
Detection limit method: Reg. Guide 4.16 Method
Random error: 0.0000000E+00

Ge1 background 03_31_10.Rpt

Systematic error: 0.000000E+00
 Fraction Limit: 0.000%
 Background width: average of three points.
 Half lives decay limit: 12.000

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:58:33 AM Page 2
 Test America Spectrum name: Ge1 background 03_31_10.An1

Activity range factor: 2.000
 Min. step backg. energy 0.000
 Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 24 cutoff 20.00000 %
 Energy Calibration
 Normalized diff: 0.1273

***** SUMMARY OF PEAKS IN RANGE *****

Peak Energy	Area	Uncert	FWHM Factor	Corrctn Energy	Nuclide Brnch. Ratio	Act. Nuc Bq/sampl
29.78	908.	7.83	0.88	8.566E-02	29.46 20.350 1.205E+00 I129	
				29.78 37.840 6.482E-01 I129		
33.76	367.	15.94	0.91	8.542E-02	33.61 10.230 9.721E-01 I129	
39.70	304.	15.93	0.74	8.507E-02	39.57 7.500 1.103E+00 I129	
46.73	604.	9.10	0.76	8.461E-02	46.54 4.250 3.894E+00 PB210	
63.43	871.	8.30	0.79	8.438E-02	63.29 3.810 6.270E+00 TH234	
74.88	291.	14.03	0.83	8.303E-02		
77.24	285.	14.59	0.83	8.281E-02		
92.69	1234.	5.11	1.06	8.114E-02	92.59 5.570 6.317E+00 TH234	
185.88	486.	11.65	0.91	5.898E-02	185.71 57.200 3.330E-01 U235	
				186.21 3.590 5.316E+00 Ra226		
238.60	463.	9.81	0.81	4.851E-02	238.63 43.300 5.107E-01 PB212	
242.27	169.	28.27	1.23	4.795E-02	242.00 7.430 1.100E+00 PB214	
295.21	192.	22.64	0.72	4.057E-02	295.22 19.300 5.692E-01 PB214	
352.09	387.	11.95	0.90	3.492E-02	351.93 37.600 6.819E-01 PB214	
511.12	1324.	5.24	2.44	2.564E-02		
583.19	187.	21.42	0.76	2.308E-02	583.19 84.500 2.220E-01 TL208	
609.29	359.	15.48	1.49	2.229E-02	609.31 46.090 8.089E-01 Bi214	
1120.25	104.	21.11	1.78	1.386E-02	1120.29 15.100 1.151E+00 Bi214	
1461.29	334.	8.08	1.76	1.111E-02	1460.83 10.670 6.510E+00 K40	
1764.38	138.	16.83	1.31	9.365E-03	1764.49 15.400 2.207E+00 Bi214	

***** UNIDENTIFIED PEAK SUMMARY *****

Ge1 background 03_31_10.Rpt

Peak Centroid Background Net Area Intensity Uncert FWHM Suspected
Channel Energy Counts Counts Cts/Sec 2 Sigma % keV Nuclide

298.78	74.91	741.	311.	0.007	31.54	0.888	TH-234	M
308.19	77.27	792.	269.	0.006	38.24	0.825	PB-212	M
2043.62	511.12	616.	1324.	0.031	10.48	2.436	NA-22	s

□

ORTEC g v - I (1087) Env32 G53W4.24 4/1/2010 5:58:33 AM Page 3
Test America Spectrum name: Ge1 background 03_31_10.An1

s - Peak falls shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: long bkgd_pbc.lib

***** IDENTIFIED PEAK SUMMARY *****

Nuclide Peak Centroid Background Net Area Intensity Uncert FWHM
Channel Energy Counts Counts Cts/Sec 2 Sigma % keV

I-129	118.26	29.78	996.	1034.	0.024	31.40	0.786D
I-129	133.55	33.61	782.	279.	0.006	30.81	0.790D
I-129	157.91	39.70	680.	304.	0.007	31.85	0.737s
PB-210	186.06	46.73	723.	604.	0.014	18.19	0.758s
TH-234	252.83	63.43	1089.	871.	0.020	16.60	0.791
RA-223	0.00	83.79	0.	0.	0.000	0.00	0.000
TH-234	369.89	92.69	821.	1234.	0.029	10.22	1.057s
RA-223	0.00	144.23	0.	0.	0.000	0.00	0.000
RA-223	0.00	154.21	0.	0.	0.000	0.00	0.000
U-235	0.00	163.36	0.	0.	0.000	0.00	0.000
U-235	742.61	185.88	741.	486.	0.011	23.31	0.913s
Ra-226	0.00	186.21	0.	0.	0.000	0.00	0.000
U-235	0.00	205.31	0.	0.	0.000	0.00	0.000
PB-212	953.51	238.60	481.	463.	0.011	19.62	0.810
RA-224	0.00	240.99	0.	0.	0.000	0.00	0.000
PB-214	968.18	242.27	579.	169.	0.004	56.53	1.225s
RA-223	0.00	269.46	0.	0.	0.000	0.00	0.000
PB-214	1179.95	295.21	488.	192.	0.004	45.27	0.725s
PB-212	0.00	300.10	0.	0.	0.000	0.00	0.000
RA-223	0.00	323.87	0.	0.	0.000	0.00	0.000
RA-223	0.00	338.28	0.	0.	0.000	0.00	0.000
PB-214	1407.46	352.09	438.	387.	0.009	23.90	0.897s
TL-208	2331.92	583.19	315.	187.	0.004	42.84	0.756s
BI-214	2436.41	609.31	359.	304.	0.007	29.31	1.465D
BI-214	0.00	768.36	0.	0.	0.000	0.00	0.000
TL-208	0.00	860.56	0.	0.	0.000	0.00	0.000
BI-214	4480.51	1120.25	84.	104.	0.002	42.22	1.782
K-40	5845.05	1461.29	60.	334.	0.008	16.17	1.761
BI-214	7057.85	1764.38	56.	138.	0.003	33.65	1.312s

Ge1 background 03_31_10.Rpt

s - Peak fails shape tests.
 D - Peak area deconvoluted.
 A Derived peak area.

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:58:33 AM Page 4
 Test America Spectrum name: Ge1 background 03_31_10.An1

***** SUMMARY OF LIBRARY PEAK USAGE *****

- Nuclide - Average ----- Peak -----
 Name Code Activity Energy Activity Code MDA Value
 Bq/sample keV Bq/sample Bq/sample COMMENTS

Be-7 C 0.0000E+00
 477.61 0.000E+00 & 5.997E-01 1.00E+03 G

K-40 N 6.5095E+00
 1460.83 6.510E+00 (7.604E-01 8.08E+00 G

CO-60 F 0.0000E+00
 1332.50 0.000E+00 % 1.125E-01 1.00E+03 G
 1173.24 0.000E+00 & 1.147E-01 1.00E+03 G

I-129 I 7.3809E-01
 29.78 7.381E-01 } 1.070E-01 1.57E+01 X
 29.46 0.000E+00 } 2.559E-01 5.87E+03 X
 33.61 7.381E-01 (3.524E-01 1.54E+01 X
 39.57 1.103E+00 + 4.507E-01 1.59E+01 G
 34.61 0.000E+00 % 1.671E+00 6.82E+01 X

CS-137 I 0.0000E+00
 661.66 0.000E+00 & 9.319E-02 1.00E+03 G

TL-208 N 2.2200E-01
 583.19 2.220E-01 (1.014E-01 2.14E+01 G
 860.56 0.000E+00 8.061E-02 0.00E+00 G

PB-210 N 3.8939E+00
 46.54 3.894E+00 @(8.259E-01 9.10E+00 G

PB-212 N 5.1066E-01
 238.63 5.107E-01 (1.156E-01 9.81E+00 G
 300.10 0.000E+00 1.300E-01 0.00E+00 G

PB-214 N 6.4369E-01
 351.93 6.819E-01 @(1.766E-01 1.20E+01 G
 295.22 5.692E-01 (3.122E-01 2.26E+01 G
 242.00 1.100E+00 + 7.460E-01 2.83E+01 G

BI-214 N 6.8423E-01
 609.31 6.842E-01 (2.051E-01 1.47E+01 G
 1764.49 2.207E+00 + 6.007E-01 1.68E+01 G
 1120.29 1.151E+00 + 5.025E-01 2.11E+01 G

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Ge1 background 03_31_10.Rpt
768.36 0.000E+00 1.856E-01 0.00E+00 G

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:58:33 AM Page 5
Test America Spectrum name: Ge1 background 03_31_10.An1

Nuclide Ave activity Energy Activity Code Peak MDA Comments

RA-223 N 0.0000E+00

83.79 0.000E+00 1.475E-01 0.00E+00 X
269.46 0.000E+00 3.386E-01 0.00E+00 G
154.21 0.000E+00 7.869E-01 0.00E+00 G
144.23 0.000E+00 1.121E+00 0.00E+00 G
323.87 0.000E+00 1.101E+00 0.00E+00 G
338.28 0.000E+00 1.761E+00 0.00E+00 G

RA-224 N 0.0000E+00

240.99 0.000E+00 1.289E+00 0.00E+00 G

AC-228 N 0.0000E+00

911.20 0.000E+00 % 4.794E-01 1.00E+03 G
968.97 0.000E+00 % 7.189E-01 1.00E+03 G
338.32 0.000E+00 % 4.938E-01 1.00E+03 G

TH-234 N 6.2980E+00

63.29 6.270E+00 (1.126E+00 8.30E+00 G
92.59 6.317E+00 *(6.978E-01 5.11E+00 G

U-235 N 3.3300E-01

185.71 3.330E-01 @(8.885E-02 1.17E+01 G
143.76 0.000E+00 % 3.313E-01 3.61E+01 G
163.36 0.000E+00 5.207E-02 0.00E+00 G
205.31 0.000E+00 6.223E-02 0.00E+00 G

Ra-226 N 0.0000E+00

186.21 0.000E+00 1.606E+00 0.00E+00 G

AM-241 T 0.0000E+00

59.54 0.000E+00 % 8.863E-02 1.00E+03 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.

! - Peak is part of a multiplet and this area went negative during deconvolution.

? - Peak is too narrow.

@ - Peak is too wide at FW25M, but ok at FWHM.

% - Peak fails sensitivity test.

\$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.

+ - Peak activity higher than counting uncertainty range.

-- Peak activity lower than counting uncertainty range.

= - Peak outside analysis energy range.

& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.

□

Ge1 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:58:33 AM Page 6
 Test America Spectrum name: Ge1 background 03_31_10.An1

P - Peakbackground subtraction
 } - Peak is too close to another for the activity
 to be found directly.

Nuclide Codes: Peak Codes:
 T - Thermal Neutron Activation G - Gamma Ray
 F - Fast Neutron Activation X - X-Ray
 I - Fission Product P - Positron Decay
 N - Naturally Occurring Isotope S - Single-Escape
 P - Photon Reaction D - Double-Escape
 C - Charged Particle Reaction K - Key Line
 M - No MDA Calculation A - Not in Average
 R - Coincidence Corrected C - Coincidence Peak
 H - Half-life limit exceeded

***** DISCARDED ISOTOPE PEAKS *****

Nuclide Centroid Background Net Area Intensity Uncert Activity
 Energy Counts Counts Cts/Sec 2 Sigma %

P - Peakbackground subtraction

***** SUMMARY OF NUCLIDES IN SAMPLE *****

Nuclide	Activity	Counting	MDA
	Bq/sample		
Be-7	< 5.9973E-01		
K-40	6.5095E+00	1.6167E+01%	7.604E-01
CO-60	< 1.1254E-01		
I-129	7.3809E-01	3.0814E+01%	3.524E-01
CS-137	< 9.3185E-02		
TL-208	2.2200E-01	4.2841E+01%	1.014E-01
PB-210 #	3.8939E+00	1.8191E+01%	8.259E-01
PB-212	5.1066E-01	1.9618E+01%	1.156E-01
PB-214	6.4369E-01	2.3901E+01%	1.766E-01
BI-214	6.8423E-01	2.9311E+01%	2.051E-01
RA-223	< 3.3861E-01		
RA-224	< 1.2887E+00		
AC-228	< 4.7943E-01		
TH-234	6.2980E+00	9.7465E+00%	1.126E+00
U-235 #	3.3300E-01	2.3309E+01%	8.885E-02
Ra-226	< 1.6060E+00		
AM-241	< 8.8628E-02		

- All peaks for activity calculation had bad shape.

* - Activity omitted from total

& - Activity omitted from total and all peaks had bad shape.

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:58:33 AM Page 7

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Ge1 background 03_31_10.Rpt
Test America Spectrum name: Ge1 background 03_31_10.An1

- < - MDA value printed.
- A - Activity printed, but activity < MDA.
- B - Activity < MDA and failed test.
- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half-life limit exceeded

----- S U M M A R Y -----
Total Activity (39.5 to 1999.8 keV) 1.983E+01 Bq/sample

Analyzed by: _____
 403233

Reviewed by: _____
 Supervisor

Laboratory: Test America

Ge2 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:00 AM Page 1
 Test America Spectrum name: Ge2 background 03_31_10.An1

Sample description
 Ge2 background 03_31_10

Spectrum Filename: C:\User\spectra\Ge2 bkgd\Ge2 background 03_31_10.A

Acquisition information

Start time: 3/31/2010 5:53:56 PM
 Live time: 43200
 Real time: 43350
 Dead time: 0.35 %
 Detector ID: 2

Detector system

Ge 2 SN/182

Calibration

Filename: Ge2_AirfilterCal_81428_334_022210.Clb
 Ge2_AirfilterCal_81428_334_022210

Energy Calibration

Created: 2/4/2009 10:15:19 AM
 Zero offset: 0.192 keV
 Gain: 0.250 keV/channel
 Quadratic: 1.020E-08 keV/channel^2

Efficiency Calibration

Created: 2/22/2010 1:05:52 PM
 Knee Energy: 119.38 keV
 Above the Knee: Quadratic Uncertainty = 1.36 %
 Log(Eff): $9.484184E-01 + (-5.924407E-01 * \text{Log}(E)) + (-3.020974E-02 * \text{Log}(E)^2)$
 Below the Knee: Quadratic Uncertainty = 0.05 %
 Log(Eff): $-7.949243E+00 + (2.499539E+00 * \text{Log}(E)) + (-2.876940E-01 * \text{Log}(E)^2)$

Library Files

Main analysis library: long bkgd_pbc.lib
 Library Match Width: 0.500
 Peak stripping: Library based

Analysis parameters

Analysis engine: Env32 G53W4.24
 Start channel: 90 (22.68keV)
 Stop channel: 8000 (1999.83keV)
 Peak rejection level: 30.000%
 Peak search sensitivity: 3
 Sample Size: 1.0000E+00
 Activity scaling factor: $1.0000E+00 / (1.0000E+00 * 1.0000E+00) =$

Ge2 background 03_31_10.Rpt

1.0000E+00

Detection limit method: Reg. Guide 4.16 Method

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:00 AM Page 2
 Test America Spectrum name: Ge2 background 03_31_10.An1

Random error: 0.0000000E+00
 Systematic error: 0.0000000E+00
 Fraction Limit: 0.000%
 Background width: average of three points.
 Half lives decay limit: 12.000
 Activity range factor: 2.000
 Min. step backg. energy 0.000
 Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 10 cutoff 20.00000 %
 Energy Calibration
 Normalized diff: 0.0432

***** SUMMARY OF PEAKS IN RANGE *****

Peak Energy	Area	Uncert	FWHM Factor	Corrctn Energy	Nuclide Ratio	Bmch. Bq/sampl	Act. Nuc
46.53	813.	6.77	0.77	7.478E-02	46.54	4.250	5.921E+00 PB210
63.16	635.	8.02	0.75	7.954E-02	63.29	3.810	4.847E+00 TH234
74.62	147.	21.15	0.78	8.043E-02			
77.13	209.	15.17	0.78	8.045E-02			
92.57	772.	6.07	0.94	7.967E-02	92.59	5.570	4.029E+00 TH234
185.71	356.	11.47	0.82	5.125E-02	185.71	57.200	2.811E-01 U235
238.64	343.	9.89	1.03	4.073E-02	238.63	43.300	4.506E-01 PB212
583.22	94.	25.36	1.03	1.743E-02	583.19	84.500	1.483E-01 TL208
609.59	126.	23.01	0.86	1.669E-02	609.31	46.090	3.776E-01 BI214
1763.98	18.	26.61	1.49	5.692E-03	1764.49	15.400	4.797E-01 BI214

***** UNIDENTIFIED PEAK SUMMARY *****

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma	FWHM % keV	Suspected Nuclide
297.93	74.64	444.	147.	0.003	50.87	0.773	TH-234
307.98	77.15	460.	219.	0.005	36.52	0.695	PB-212 s

s - Peak fails shape tests.
 D - Peak area deconvoluted.

Ge2 background 03_31_10.Rpt

L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: long bkgd_pbc.lib

□

ORTEC g v - I (1087) Env32 G53W4.24 4/1/2010 5:57:00 AM Page 3
Test America Spectrum name: Ge2 background 03_31_10.An1

***** IDENTIFIED PEAK SUMMARY *****

Nuclide Peak Centroid Background Net Area Intensity Uncert FWHM
Channel Energy Counts Counts Cts/Sec 2 Sigma % keV

PB-210	185.44	46.53	665.	813.	0.019	13.54	0.774
TH-234	252.01	63.16	533.	635.	0.015	16.04	0.752s
TH-234	369.68	92.57	451.	772.	0.018	12.14	0.942s
U-235	0.00	163.36	0.	0.	0.000	0.00	0.000
U-235	742.43	185.71	375.	356.	0.008	22.95	0.817
Ra-226	0.00	186.21	0.	0.	0.000	0.00	0.000
PB-212	954.24	238.64	256.	343.	0.008	19.78	1.028
PB-212	0.00	300.10	0.	0.	0.000	0.00	0.000
TL-208	2333.06	583.22	125.	94.	0.002	50.72	1.032
BI-214	2438.59	609.59	158.	126.	0.003	46.03	0.858s
TL-208	0.00	860.56	0.	0.	0.000	0.00	0.000
BI-214	7056.71	1763.98	2.	18.	0.000	53.21	1.488s

s - Peak fails shape tests.

D - Peak area deconvoluted.

A Derived peak area.

***** SUMMARY OF LIBRARY PEAK USAGE *****

- Nuclide - Average ----- Peak -----
Name Code Activity Energy Activity Code MDA Value
Bq/sample keV Bq/sample Bq/sample COMMENTS

Be-7	C	0.0000E+00					
		477.61	0.000E+00 %	3.941E-01	1.00E+03	G	
K-40	N	0.0000E+00					
		1460.83	0.000E+00 %	1.431E+00	1.00E+03	G	
CO-60	F	0.0000E+00					
		1332.50	0.000E+00 %	3.659E-02	1.00E+03	G	
		1173.24	0.000E+00 %	6.695E-02	1.00E+03	G	
I-129	I	0.0000E+00					
		29.78	0.000E+00 %	7.266E-03	1.00E+03	X	
		29.46	0.000E+00 %	1.359E-02	1.00E+03	X	
		33.61	0.000E+00 %	3.980E-01	1.00E+03	X	
		39.57	0.000E+00 %	3.780E-01	1.00E+03	G	
		34.61	0.000E+00 %	1.417E+00	1.00E+03	X	

Page 3

Ge2 background 03_31_10.Rpt

CS-137 I 0.0000E+00
661.66 0.000E+00 % 8.235E-02 1.00E+03 G

□

ORTEC g v - I (1087) Env32 G53W4.24 4/1/2010 5:57:00 AM Page 4
Test America Spectrum name: Ge2 background 03_31_10.An1

Nuclide Ave activity Energy Activity Code Peak MDA Comments

TL-208 N 1.4830E-01
583.19 1.483E-01 (8.605E-02 2.54E+01 G
860.56 0.000E+00 1.158E-01 0.00E+00 G

PB-210 N 5.9212E+00
46.54 5.921E+00 (8.950E-01 6.77E+00 G

PB-212 N 4.5059E-01
238.63 4.506E-01 (1.013E-01 9.89E+00 G
300.10 0.000E+00 1.580E-01 0.00E+00 G

PB-214 N 0.0000E+00
351.93 0.000E+00 % 1.868E-01 1.00E+03 G
295.22 0.000E+00 % 2.762E-01 1.00E+03 G
242.00 0.000E+00 % 7.285E-01 1.00E+03 G

BI-214 N 4.0315E-01
609.31 3.776E-01 @ (1.841E-01 2.30E+01 G
1764.49 4.797E-01 ? (2.382E-01 2.66E+01 G
1120.29 0.000E+00 % 3.791E-01 3.33E+01 G
768.36 0.000E+00 % 1.011E+00 4.00E+02 G

RA-223 N 0.0000E+00
83.79 0.000E+00 % 9.735E-02 1.00E+03 X
269.46 0.000E+00 % 2.862E-01 1.00E+03 G
154.21 0.000E+00 & 5.577E-01 1.00E+03 G
144.23 0.000E+00 % 1.146E+00 1.00E+03 G
323.87 0.000E+00 % 1.483E+00 1.00E+03 G
338.28 0.000E+00 % 2.233E+00 1.00E+03 G

RA-224 N 0.0000E+00
240.99 0.000E+00 & 1.238E+00 1.00E+03 G

AC-228 N 0.0000E+00
911.20 0.000E+00 & 4.341E-01 1.00E+03 G
968.97 0.000E+00 % 6.141E-01 1.00E+03 G
338.32 0.000E+00 % 5.528E-01 1.00E+03 G

TH-234 N 4.8466E+00
63.29 4.847E+00 * (8.425E-01 8.02E+00 G
92.59 4.029E+00 - 5.302E-01 6.07E+00 G

U-235 N 2.8113E-01
185.71 2.811E-01 (7.340E-02 1.15E+01 G
143.76 0.000E+00 % 2.991E-01 3.55E+01 G
163.36 0.000E+00 5.836E-02 0.00E+00 G

Page 4

Ge2 background 03_31_10.Rpt

205.31 0.000E+00 % 6.693E-01 9.51E+02 G

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:00 AM Page 5
 Test America Spectrum name: Ge2 background 03_31_10.An1

Nuclide Ave activity Energy Activity Code Peak MDA Comments

Ra-226 N 0.0000E+00
 186.21 0.000E+00 1.473E+00 0.00E+00 G

AM-241 T 0.0000E+00
 59.54 0.000E+00 % 6.663E-02 1.00E+03 G
 (- This peak used in the nuclide activity average.

- * - Peak is too wide, but only one peak in library.
- ! - Peak is part of a multiplet and this area went negative during deconvolution.
- ? - Peak is too narrow.
- @ - Peak is too wide at FW25M, but ok at FWHM.
- % - Peak fails sensitivity test.
- \$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
- + - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
- = - Peak outside analysis energy range.
- & - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
- P - Peakbackground subtraction
- } - Peak is too close to another for the activity to be found directly.

Nuclide Codes: Peak Codes:
 T - Thermal Neutron Activation G - Gamma Ray
 F - Fast Neutron Activation X - X-Ray
 I - Fission Product P - Positron Decay
 N - Naturally Occurring Isotope S - Single-Escape
 P - Photon Reaction D - Double-Escape
 C - Charged Particle Reaction K - Key Line
 M - No MDA Calculation A - Not in Average
 R - Coincidence Corrected C - Coincidence Peak
 H - Half-life limit exceeded

***** DISCARDED ISOTOPE PEAKS *****

Nuclide Centroid Background Net Area Intensity Uncert Activity
 Energy Counts Counts Cts/Sec 2 Sigma %

 P - Peakbackground subtraction

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:00 AM Page 6
 Test America Spectrum name: Ge2 background 03_31_10.An1

Ge2 background 03_31_10.Rpt

***** SUMMARY OF NUCLIDES IN SAMPLE *****

Nuclide	Time of Count	Activity	Uncertainty	2 Sigma	Counting	MDA
		Bq/sample				
Be-7	<	3.9411E-01				
K-40	<	1.4308E+00				
CO-60	<	3.6586E-02				
I-129	<	3.7798E-01				
CS-137	<	8.2352E-02				
TL-208		1.4830E-01	5.0716E+01%			8.605E-02
PB-210		5.9212E+00	1.3541E+01%			8.950E-01
PB-212		4.5059E-01	1.9780E+01%			1.013E-01
PB-214	<	1.8678E-01				
BI-214 #		4.0315E-01	3.5179E+01%			1.841E-01
RA-223	<	2.8622E-01				
RA-224	<	1.2379E+00				
AC-228	<	4.3406E-01				
TH-234 #		4.8466E+00	1.6038E+01%			8.425E-01
U-235		2.8113E-01	2.2948E+01%			7.340E-02
Ra-226	<	1.4727E+00				
AM-241	<	6.6627E-02				

- All peaks for activity calculation had bad shape.

* - Activity omitted from total

& - Activity omitted from total and all peaks had bad shape.

< - MDA value printed.

A - Activity printed, but activity < MDA.

B - Activity < MDA and failed test.

C - Area < Critical level.

F - Failed fraction or key line test.

H - Half-life limit exceeded

S U M M A R Y

Total Activity (22.7 to 1999.8 keV) 1.205E+01 Bq/sample

Analyzed by: _____
403233Reviewed by: _____
Supervisor

Laboratory: Test America

Ge3 background 03_31_10.Rpt

ORTEC g v - I (1087) Env32 G53W4.24 4/1/2010 6:28:28 AM Page 1
 Test America Spectrum name: Ge3 background 03_31_10.An1

Sample description
 Ge3 background 03_31_10

Spectrum Filename: C:\User\spectra\Ge3 Bkd post 5_8_06\Ge3 background
 03_31_10.An1

Acquisition Information

Start time: 3/31/2010 5:43:59 PM
 Live time: 43200
 Real time: 43332
 Dead time: 0.30 %
 Detector ID: 3

Detector system

Ge 3 SN/131

Calibration

Filename: Ge3_AirFilterCal_84128_334_022310.Clb
 Ge3_AirFilterCal_84128_334_022310

Energy Calibration

Created: 2/23/2010 9:35:35 PM
 Zero offset: 0.143 keV
 Gain: 0.250 keV/channel
 Quadratic: 3.598E-08 keV/channel^2

Efficiency Calibration

Created: 2/23/2010 9:36:26 PM
 Knee Energy: 116.80 keV
 Above the Knee: Quadratic Uncertainty = 1.07 %
 $\text{Log(Eff): } -2.796104\text{E-}01 + (-2.931774\text{E-}01 * \text{Log(E)}) + (-4.143813\text{E-}02 * \text{Log(E)}^2)$
 Below the Knee: Quadratic Uncertainty = 0.53 %
 $\text{Log(Eff): } -7.229316\text{E+}00 + (2.249887\text{E+}00 * \text{Log(E)}) + (-2.687958\text{E-}01 * \text{Log(E)}^2)$

Library Files

Main analysis library: long bkgd_pbc.lib
 Library Match Width: 0.500
 Peak stripping: Library based

Analysis parameters

Analysis engine: Env32 G53W4.24
 Start channel: 90 (22.62keV)
 Stop channel: 8000 (2000.70keV)
 Peak rejection level: 30.000%
 Peak search sensitivity: 3
 Sample Size: 1.0000E+00

Ge3 background 03_31_10.Rpt

Activity scaling factor: $1.0000\text{E}+00 / (1.0000\text{E}+00 * 1.0000\text{E}+00) =$
 $1.0000\text{E}+00$

□

ORTEC g v - I (1087) Env32 G53W4.24 4/1/2010 6:28:28 AM Page 2
 Test America Spectrum name: Ge3 background 03_31_10.An1

Detection limit method: Reg. Guide 4.16 Method
 Random error: 0.0000000E+00
 Systematic error: 0.0000000E+00
 Fraction Limit: 0.000%
 Background width: average of three points.
 Half lives decay limit: 12.000
 Activity range factor: 2.000
 Min. step backg. energy 0.000
 Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 18 cutoff 20.00000 %
 Energy Calibration
 Normalized diff: 0.0909

***** SUMMARY OF PEAKS IN RANGE *****

Peak Energy	Area	Uncert	FWHM Factor	Corrctn Energy	Nuclide Brnch. Ratio	Act. Bq/samp	Nuc
46.52	604.	9.79	0.73	7.782E-02	46.54 4.250	4.230E+00	PB210
63.35	382.	15.32	0.83	8.033E-02	63.29 3.810	2.886E+00	TH234
72.75	368.	12.13	0.88	8.013E-02			
74.94	831.	5.90	0.89	7.998E-02			
77.01	225.	18.00	0.89	7.981E-02			
84.60	410.	10.39	0.90	7.899E-02	83.79 25.180	4.766E-01	RA223
87.33	210.	18.19	0.90	7.863E-02			
92.50	586.	10.63	1.12	7.787E-02	92.59 5.570	3.125E+00	TH234
143.50	113.	28.79	1.13	6.336E-02	143.76 10.960	3.778E-01	U235
				144.23 3.220	1.289E+00		RA223
185.88	385.	14.34	1.01	5.272E-02	185.71 57.200	2.954E-01	U235
				186.21 3.590	4.715E+00		Ra226
198.38	192.	20.63	0.85	5.028E-02			
238.70	433.	8.36	1.05	4.385E-02	238.63 43.300	5.272E-01	PB212
241.95	132.	24.41	1.06	4.341E-02	242.00 7.430	9.500E-01	PB214
295.25	192.	22.46	1.45	3.734E-02	295.22 19.300	6.156E-01	PB214
351.95	364.	14.39	1.17	3.260E-02	351.93 37.600	6.873E-01	PB214
511.07	1374.	5.05	2.32	2.424E-02			
583.40	162.	24.51	0.96	2.176E-02	583.19 84.500	2.035E-01	TL208
609.13	309.	13.85	1.28	2.100E-02	609.31 46.090	7.383E-01	BI214

Ge3 background 03_31_10.Rpt

910.69 157. 18.80 0.91 1.497E-02 911.20 25.800 9.412E-01 AC228
 1120.40 113. 24.12 1.12 1.251E-02 1120.29 15.100 1.384E+00 BI214
 1435.86 95. 19.22 0.61 1.004E-02
 1460.68 199. 9.90 2.32 9.891E-03 1460.83 10.670 4.358E+00 K40
 1764.17 94. 19.05 0.70 8.337E-03 1764.49 15.400 1.695E+00 BI214

□

ORTEC g v - I (1087) Env32 G53W4.24 4/1/2010 6:28:28 AM Page 3
 Test America Spectrum name: Ge3 background 03_31_10.An1

***** UNIDENTIFIED PEAK SUMMARY *****

Peak Centroid Background Net Area Intensity Uncert FWHM Suspected
 Channel Energy Counts Counts Cts/Sec 2 Sigma % keV Nuclide

290.67	72.74	815.	368.	0.009	24.26	0.883	U-235	D
299.42	74.92	788.	831.	0.019	11.80	0.885	TH-234	D
307.71	76.99	704.	225.	0.005	36.00	0.888	PB-212	D
338.02	84.58	854.	396.	0.009	28.76	1.071	HG-203	
348.93	87.30	592.	190.	0.004	45.53	0.796	PB-212	
793.53	198.38	433.	192.	0.004	41.27	0.846	SE-75	s
2044.91	511.07	558.	1374.	0.032	10.10	2.321	NA-22	s
3643.46	910.69	126.	157.	0.004	37.60	0.909	AC-228	s
5743.14	1435.86	37.	95.	0.002	38.44	0.610	CS-138	s

s - Peak fails shape tests.

D - Peak area deconvoluted.

L - Peak written from unknown list.

C - Area < Critical level.

 This section based on library: long bkgd_pbc.lib

***** IDENTIFIED PEAK SUMMARY *****

Nuclide Peak Centroid Background Net Area Intensity Uncert FWHM
 Channel Energy Counts Counts Cts/Sec 2 Sigma % keV

PB-210	185.67	46.52	756.	604.	0.014	19.59	0.731s
TH-234	253.05	63.35	868.	382.	0.009	30.65	0.834
TH-234	369.73	92.50	858.	586.	0.014	21.27	1.124s
U-235	573.87	143.50	357.	113.	0.003	57.57	1.134
U-235	0.00	163.36	0.	0.	0.000	0.00	0.000
U-235	743.51	185.88	666.	385.	0.009	28.68	1.007s
Ra-226	0.00	186.21	0.	0.	0.000	0.00	0.000
PB-212	954.65	238.63	442.	387.	0.009	21.84	1.055D
PB-214	1181.27	295.25	453.	192.	0.004	44.93	1.448s
PB-212	0.00	300.10	0.	0.	0.000	0.00	0.000
PB-214	1408.17	351.95	476.	364.	0.008	28.78	1.170
TL-208	2334.27	583.40	291.	162.	0.004	49.01	0.960s
BI-214	2437.24	609.13	314.	309.	0.007	27.70	1.279s
BI-214	0.00	768.36	0.	0.	0.000	0.00	0.000
BI-214	4482.07	1120.40	105.	113.	0.003	48.24	1.123s
K-40	5842.33	1460.68	40.	199.	0.005	19.80	2.319
BI-214	7055.12	1764.17	34.	94.	0.002	38.10	0.698s

Ge3 background 03_31_10.Rpt

s - Peak fails shape tests.
 D - Peak area deconvoluted.
 A Derived peak area.

□

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 Test America Spectrum name: Ge3 background 03_31_10.An1

***** SUMMARY OF LIBRARY PEAK USAGE *****

- Nuclide - Average ----- Peak -----
 Name Code Activity Energy Activity Code MDA Value
 Bq/sample keV Bq/sample Bq/sample COMMENTS

Be-7 C 0.0000E+00
 477.61 0.000E+00 % 5.408E-01 1.00E+03 G

K-40 N 4.3576E+00
 1460.83 4.358E+00 (7.086E-01 9.90E+00 G

CO-60 F 0.0000E+00
 1332.50 0.000E+00 % 9.848E-02 1.00E+03 G
 1173.24 0.000E+00 % 9.508E-02 1.00E+03 G

I-129 I 0.0000E+00
 29.78 0.000E+00 & 1.086E-01 1.00E+03 X
 29.46 0.000E+00 & 2.101E-01 1.00E+03 X
 33.61 0.000E+00 % 4.499E-01 1.00E+03 X
 39.57 0.000E+00 % 4.519E-01 1.00E+03 G
 34.61 0.000E+00 & 1.897E+00 1.00E+03 X

CS-137 I 0.0000E+00
 661.66 0.000E+00 % 1.094E-01 1.00E+03 G

TL-208 N 2.0346E-01
 583.19 2.035E-01 (1.035E-01 2.45E+01 G
 860.56 0.000E+00 & 4.110E-01 8.58E+01 G

PB-210 N 4.2304E+00
 46.54 4.230E+00 *(9.159E-01 9.79E+00 G

PB-212 N 4.7174E-01
 238.63 4.717E-01 (1.227E-01 1.09E+01 G
 300.10 0.000E+00 1.410E-01 0.00E+00 G

PB-214 N 6.6298E-01
 351.93 6.873E-01 (1.971E-01 1.44E+01 G
 295.22 6.156E-01 (3.274E-01 2.25E+01 G
 242.00 0.000E+00 % 7.901E-01 3.75E+01 G

BI-214 N 7.3834E-01
 609.31 7.383E-01 (2.041E-01 1.39E+01 G
 1764.49 1.695E+00 + 5.388E-01 1.91E+01 G

Page 4

Ge3 background 03_31_10.Rpt

1120.29 1.384E+00 + 6.182E-01 2.41E+01 G
 768.36 0.000E+00 1.996E-01 0.00E+00 G

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 6:28:28 AM Page 5
 Test America Spectrum name: Ge3 background 03_31_10.An1

Nuclide Ave activity Energy Activity Code Peak MDA Comments

RA-223 N 0.0000E+00

83.79 0.000E+00 % 1.283E-01 1.00E+03 X
 269.46 0.000E+00 & 3.200E-01 1.00E+03 G
 154.21 0.000E+00 % 5.117E-01 1.00E+03 G
 144.23 0.000E+00 & 1.180E+00 1.00E+03 G
 323.87 0.000E+00 & 1.314E+00 1.00E+03 G
 338.28 0.000E+00 % 2.530E+00 1.00E+03 G

RA-224 N 0.0000E+00

240.99 0.000E+00 % 9.396E-01 1.00E+03 G

AC-228 N 0.0000E+00

911.20 0.000E+00 % 4.862E-01 1.00E+03 G
 968.97 0.000E+00 % 6.624E-01 1.00E+03 G
 338.32 0.000E+00 % 6.265E-01 1.00E+03 G

TH-234 N 3.0280E+00

63.29 2.886E+00 (1.059E+00 1.53E+01 G
 92.59 3.125E+00 (7.433E-01 1.06E+01 G

U-235 N 3.0861E-01

185.71 2.954E-01 *(9.434E-02 1.43E+01 G
 143.76 3.778E-01 (3.024E-01 2.88E+01 G
 163.36 0.000E+00 5.804E-02 0.00E+00 G
 205.31 0.000E+00 % 7.113E-01 2.28E+02 G

Ra-226 N 0.0000E+00

186.21 0.000E+00 1.648E+00 0.00E+00 G

AM-241 T 0.0000E+00

59.54 0.000E+00 % 9.919E-02 1.00E+03 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.

! - Peak is part of a multiplet and this area went negative during deconvolution.

? - Peak is too narrow.

@ - Peak is too wide at FW25M, but ok at FWHM.

% - Peak fails sensitivity test.

\$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.

+ - Peak activity higher than counting uncertainty range.

-- Peak activity lower than counting uncertainty range.

= - Peak outside analysis energy range.

& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.

□

Ge3 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 6:28:28 AM Page 6
 Test America Spectrum name: Ge3 background 03_31_10.An1

P - Peakbackground subtraction
 } - Peak is too close to another for the activity
 to be found directly.

Nuclide Codes: Peak Codes:
 T - Thermal Neutron Activation G - Gamma Ray
 F - Fast Neutron Activation X - X-Ray
 I - Fission Product P - Positron Decay
 N - Naturally Occurring Isotope S - Single-Escape
 P - Photon Reaction D - Double-Escape
 C - Charged Particle Reaction K - Key Line
 M - No MDA Calculation A - Not in Average
 R - Coincidence Corrected C - Coincidence Peak
 H - Half-life limit exceeded

***** DISCARDED ISOTOPE PEAKS *****

Nuclide Centroid Background Net Area Intensity Uncert Activity
 Energy Counts Counts Cts/Sec 2 Sigma %

P - Peakbackground subtraction

***** SUMMARY OF NUCLIDES IN SAMPLE *****

Nuclide	Activity Bq/sample	Counting Uncertainty 2 Sigma	MDA
Be-7 <	5.4084E-01		
K-40	4.3576E+00	1.9802E+01%	7.086E-01
CO-60 <	9.8484E-02		
I-129 <	4.5186E-01		
CS-137 <	1.0943E-01		
TL-208	2.0346E-01	4.9015E+01%	1.035E-01
PB-210 #	4.2304E+00	1.9586E+01%	9.159E-01
PB-212	4.7174E-01	2.1844E+01%	1.227E-01
PB-214	6.6298E-01	2.6679E+01%	1.971E-01
BI-214	7.3834E-01	2.7703E+01%	2.041E-01
RA-223 <	3.1997E-01		
RA-224 <	9.3961E-01		
AC-228 <	4.8622E-01		
TH-234	3.0280E+00	1.8652E+01%	1.059E+00
U-235	3.0861E-01	2.8685E+01%	9.434E-02
Ra-226 <	1.6481E+00		
AM-241 <	9.9194E-02		

- All peaks for activity calculation had bad shape.

* - Activity omitted from total

& - Activity omitted from total and all peaks had bad shape.

□

Ge3 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 6:28:28 AM Page 7
Test America Spectrum name: Ge3 background 03_31_10.An1

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Half-life limit exceeded

S U M M A R Y

Total Activity (84.6 to 2000.7 keV) 1.400E+01 Bq/sample

Analyzed by: _____
403233

Reviewed by: _____
Supervisor

Laboratory: Test America

Ge4 background 03_31_10.Rpt

ORTEC g v - I (1087) Env32 G53W4.24 4/1/2010 5:47:28 AM Page 1
Test America Spectrum name: Ge4 background 03_31_10.An1

Sample description
Ge4 background 03_31_10

Spectrum Filename: C:\User\spectra\Ge4 Bkd post 09_07\Ge4 background
03_31_10.An1

Acquisition information

Start time: 3/31/2010 5:44:38 PM
Live time: 43200
Real time: 43294
Dead time: 0.22 %
Detector ID: 4

Detector system

Ge 4 SN/181

Calibration

Filename: Ge4_AirfilterCal_81428_334_022210.Clb
Ge4_AirfilterCal_81428_334_022210

Energy Calibration

Created: 2/22/2010 4:55:41 PM
Zero offset: -0.001 keV
Gain: 0.250 keV/channel
Quadratic: -4.109E-08 keV/channel^2

Efficiency Calibration

Created: 2/22/2010 4:56:57 PM
Knee Energy: 160.11 keV
Above the Knee: Quadratic Uncertainty = 1.10 %
Log(Eff): $1.545141E+00 + (-8.380898E-01 * \text{Log}(E)) + (-8.507147E-03 * \text{Log}(E)^2)$
Below the Knee: Quadratic Uncertainty = 0.77 %
Log(Eff): $-1.022633E+01 + (3.557424E+00 * \text{Log}(E)) + (-4.174443E-01 * \text{Log}(E)^2)$

Library Files

Main analysis library: long bkgd_pbc.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters

Analysis engine: Env32 G53W4.24
Start channel: 90 (22.52keV)
Stop channel: 8000 (1999.01keV)
Peak rejection level: 30.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00

Ge4 background 03_31_10.Rpt

Activity scaling factor: $1.0000\text{E}+00 / (1.0000\text{E}+00 * 1.0000\text{E}+00) = 1.0000\text{E}+00$

□

ORTEC g v - l (1087) Env32 G53W4.24 4/1/2010 5:47:28 AM Page 2
 Test America Spectrum name: Ge4 background 03_31_10.An1

Detection limit method: Reg. Guide 4.16 Method
 Random error: 0.0000000E+00
 Systematic error: 0.0000000E+00
 Fraction Limit: 0.000%
 Background width: average of three points.
 Half lives decay limit: 12.000
 Activity range factor: 2.000
 Min. step backg. energy 0.000
 Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 15 cutoff 20.00000 %
 Energy Calibration
 Normalized diff: 0.0643

***** SUMMARY OF PEAKS IN RANGE *****

Peak Energy	Area	Uncert	FWHM Factor	Corrctn Energy	Nuclide	Brnch.	Act. Ratio	Nuc Bq/sampl
46.43	335.	12.31	0.60	6.574E-02	46.54	4.250	2.773E+00	PB210
63.27	305.	10.97	0.74	7.046E-02	63.29	3.810	2.631E+00	TH234
74.76	120.	23.20	0.83	7.076E-02				
77.13	131.	21.46	0.83	7.063E-02				
92.66	459.	9.61	0.91	6.875E-02	92.59	5.570	2.774E+00	TH234
185.67	255.	14.82	1.13	4.665E-02	185.71	57.200	2.213E-01	U235
					186.21	3.590	3.534E+00	Ra226
238.23	222.	15.92	1.19	3.700E-02	238.63	43.300	3.212E-01	PB212
295.26	113.	25.77	1.03	3.029E-02	295.22	19.300	4.474E-01	PB214
351.83	143.	19.94	0.71	2.570E-02	351.93	37.600	3.434E-01	PB214
510.76	780.	6.49	1.98	1.810E-02				
583.26	138.	20.35	1.26	1.597E-02	583.19	84.500	2.362E-01	TL208
609.29	160.	19.28	0.47	1.532E-02	609.31	46.090	5.246E-01	BI214
1460.58	98.	13.97	0.38	6.647E-03	1460.83	10.670	3.187E+00	K40

***** UNIDENTIFIED PEAK SUMMARY *****

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide
--------------	-----------------	-------------------	-----------------	-------------------	------------------	----------	-------------------

Ge4 background 03_31_10.Rpt

308.41 77.16 364. 123. 0.003 56.68 0.679 PB-212 M
 2042.05 510.76 304. 780. 0.018 12.97 1.984 TL-208 s

□

ORTEC g v - l (1087) Env32 G53W4.24 4/1/2010 5:47:28 AM Page 3
 Test America Spectrum name: Ge4 background 03_31_10.An1

s - Peak fails shape tests.
 D - Peak area deconvoluted.
 L - Peak written from unknown list.
 C - Area < Critical level.
 M - Peak is close to a library peak.

 This section based on library: long bkgd_pbc.lib

***** IDENTIFIED PEAK SUMMARY *****

Nuclide Peak Centroid Background Net Area Intensity Uncert FWHM
 Channel Energy Counts Counts Cts/Sec 2 Sigma % keV

PB-210	185.58	46.43	390.	335.	0.008	24.62	0.602
TH-234	252.90	63.27	288.	305.	0.007	21.94	0.738
RA-223	0.00	83.79	0.	0.	0.000	0.00	0.000
TH-234	370.36	92.66	425.	459.	0.011	19.22	0.910
RA-223	0.00	144.23	0.	0.	0.000	0.00	0.000
RA-223	0.00	154.21	0.	0.	0.000	0.00	0.000
U-235	0.00	163.36	0.	0.	0.000	0.00	0.000
U-235	742.17	185.67	320.	255.	0.006	29.64	1.134s
Ra-226	0.00	186.21	0.	0.	0.000	0.00	0.000
PB-212	952.30	238.23	280.	222.	0.005	31.83	1.192s
RA-223	0.00	269.46	0.	0.	0.000	0.00	0.000
PB-214	1180.32	295.26	210.	113.	0.003	51.54	1.027
PB-212	0.00	300.10	0.	0.	0.000	0.00	0.000
RA-223	0.00	323.87	0.	0.	0.000	0.00	0.000
RA-223	0.00	338.28	0.	0.	0.000	0.00	0.000
PB-214	1406.48	351.83	176.	143.	0.003	39.88	0.715s
TL-208	2332.00	583.26	121.	138.	0.003	40.70	1.255s
BI-214	2436.14	609.29	144.	160.	0.004	38.57	0.470s
K-40	5843.13	1460.58	12.	98.	0.002	27.93	0.380s

s - Peak fails shape tests.
 D - Peak area deconvoluted.
 A Derived peak area.

***** SUMMARY OF LIBRARY PEAK USAGE *****

- Nuclide - Average ----- Peak -----
 Name Code Activity Energy Activity Code MDA Value
 Bq/sample keV Bq/sample Bq/sample COMMENTS

Be-7 C 0.0000E+00
 477.61 0.000E+00 % 5.600E-01 1.00E+03 G

Ge4 background 03_31_10.Rpt

K-40 N 3.1874E+00
1460.83 3.187E+00 *(6.225E-01 1.40E+01 G

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:47:28 AM Page 4
Test America Spectrum name: Ge4 background 03_31_10.An1

Nuclide Ave activity Energy Activity Code Peak MDA Comments

CO-60 F 0.0000E+00
1332.50 0.000E+00 & 1.116E-01 1.00E+03 G
1173.24 0.000E+00 % 4.247E-02 1.00E+03 G

I-129 I 0.0000E+00
29.78 0.000E+00 % 1.360E-01 1.00E+03 X
29.46 0.000E+00 % 2.476E-01 1.00E+03 X
33.61 0.000E+00 & 3.775E-01 1.00E+03 X
39.57 0.000E+00 % 4.255E-01 1.00E+03 G
34.61 0.000E+00 % 1.213E+00 1.00E+03 X

CS-137 I 0.0000E+00
661.66 0.000E+00 % 1.175E-01 1.00E+03 G

TL-208 N 2.3620E-01
583.19 2.362E-01 *(9.272E-02 2.03E+01 G
860.56 0.000E+00 % 4.911E-01 3.74E+01 G

PB-210 N 2.7731E+00
46.54 2.773E+00 (7.842E-01 1.23E+01 G

PB-212 N 3.2124E-01
238.63 3.212E-01 @(1.168E-01 1.59E+01 G
300.10 0.000E+00 1.744E-01 0.00E+00 G

PB-214 N 3.7869E-01
351.93 3.434E-01 (1.545E-01 1.99E+01 G
295.22 4.474E-01 (2.781E-01 2.58E+01 G
242.00 0.000E+00 & 6.804E-01 4.30E+01 G

BI-214 N 5.2462E-01
609.31 5.246E-01 (1.922E-01 1.93E+01 G
1764.49 0.000E+00 & 6.196E-01 1.54E+02 G
1120.29 0.000E+00 & 6.072E-01 1.43E+02 G
768.36 0.000E+00 % 6.926E-01 1.00E+03 G

RA-223 N 0.0000E+00
83.79 0.000E+00 1.157E-01 0.00E+00 X
269.46 0.000E+00 3.394E-01 0.00E+00 G
154.21 0.000E+00 3.846E-01 0.00E+00 G
144.23 0.000E+00 9.443E-01 0.00E+00 G
323.87 0.000E+00 1.300E+00 0.00E+00 G
338.28 0.000E+00 1.524E+00 0.00E+00 G

RA-224 N 0.0000E+00
240.99 0.000E+00 % 1.347E+00 1.00E+03 G

□

Ge4 background 03_31_10.Rpt

ORTEC g v - I (1087) Env32 G53W4.24 4/1/2010 5:47:28 AM Page 5
 Test America Spectrum name: Ge4 background 03_31_10.An1

Nuclide Ave activity Energy Activity Code Peak MDA Comments

AC-228 N 0.0000E+00
 911.20 0.000E+00 % 4.689E-01 1.00E+03 G
 968.97 0.000E+00 % 7.297E-01 1.00E+03 G
 338.32 0.000E+00 % 4.364E-01 1.00E+03 G

TH-234 N 2.7161E+00
 63.29 2.631E+00 (7.051E-01 1.10E+01 G
 92.59 2.774E+00 (5.970E-01 9.61E+00 G

U-235 N 2.2128E-01
 185.71 2.213E-01 * (7.469E-02 1.48E+01 G
 143.76 0.000E+00 % 2.405E-01 3.10E+01 G
 163.36 0.000E+00 6.395E-02 0.00E+00 G
 205.31 0.000E+00 % 7.205E-01 8.85E+01 G

Ra-226 N 0.0000E+00
 186.21 0.000E+00 1.366E+00 0.00E+00 G

AM-241 T 0.0000E+00
 59.54 0.000E+00 % 8.098E-02 1.00E+03 G
 (- This peak used in the nuclide activity average.

- * - Peak is too wide, but only one peak in library.
- ! - Peak is part of a multiplet and this area went negative during deconvolution.
- ? - Peak is too narrow.
- @ - Peak is too wide at FW25M, but ok at FWHM.
- % - Peak fails sensitivity test.
- \$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
- + - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
- = - Peak outside analysis energy range.
- & - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
- P - Peakbackground subtraction
- } - Peak is too close to another for the activity to be found directly.

Nuclide Codes: Peak Codes:
 T - Thermal Neutron Activation G - Gamma Ray
 F - Fast Neutron Activation X - X-Ray
 I - Fission Product P - Positron Decay
 N - Naturally Occurring Isotope S - Single-Escape
 P - Photon Reaction D - Double-Escape
 C - Charged Particle Reaction K - Key Line
 M - No MDA Calculation A - Not in Average

□

ORTEC g v - I (1087) Env32 G53W4.24 4/1/2010 5:47:28 AM Page 6

Ge4 background 03_31_10.Rpt
 Test America Spectrum name: Ge4 background 03_31_10.An1

R - Coincidence Corrected C - Coincidence Peak
 H - Halflife limit exceeded

***** DISCARDED ISOTOPE PEAKS *****

Nuclide Centroid Background Net Area Intensity Uncert Activity
 Energy Counts Counts Cts/Sec 2 Sigma %

P - Peakbackground subtraction

***** SUMMARY OF NUCLIDES IN SAMPLE *****

Nuclide	Activity Bq/sample	Counting	MDA
Be-7 <	5.6005E-01		
K-40 #	3.1874E+00	2.7932E+01%	6.225E-01
CO-60 <	1.1158E-01		
I-129 <	4.2554E-01		
CS-137 <	1.1752E-01		
TL-208 #	2.3620E-01	4.0698E+01%	9.272E-02
PB-210	2.7731E+00	2.4616E+01%	7.842E-01
PB-212 #	3.2124E-01	3.1835E+01%	1.168E-01
PB-214	3.7869E-01	3.2583E+01%	1.545E-01
BI-214	5.2462E-01	3.8568E+01%	1.922E-01
RA-223 <	3.3940E-01		
RA-224 <	1.3473E+00		
AC-228 <	4.6888E-01		
TH-234	2.7161E+00	1.4585E+01%	7.051E-01
U-235 #	2.2128E-01	2.9642E+01%	7.469E-02
Ra-226 <	1.3662E+00		
AM-241 <	8.0985E-02		

- All peaks for activity calculation had bad shape.
 * - Activity omitted from total
 & - Activity omitted from total and all peaks had bad shape.
 < - MDA value printed.
 A - Activity printed, but activity < MDA.
 B - Activity < MDA and failed test.
 C - Area < Critical level.
 F - Failed fraction or key line test.
 H - Halflife limit exceeded

S U M M A R Y

Total Activity (22.5 to 1999.0 keV) 1.036E+01 Bq/sample

Analyzed by: _____
 403233

Reviewed by: _____
 Supervisor

Laboratory: Test America

Ge5 background 03_31_10.Rpt

Random error: 0.0000000E+00
 Systematic error: 0.0000000E+00
 Fraction Limit: 0.000%
 Background width: average of three points.

Half lives decay limit: 12.000
 Activity range factor: 2.000
 Min. step backg. energy 0.000
 Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 14 cutoff 20.00000 %
 Energy Calibration
 Normalized diff: 0.2516

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/samp]	Nuc
23.89	863.	8.74	1.83	5.052E-02				
46.62	379.	16.95	0.92	6.909E-02	46.54	4.250	2.986E+00	PB210
63.09	280.	16.71	0.91	7.144E-02	63.29	3.810	2.385E+00	TH234
92.53	502.	11.92	1.17	6.766E-02	92.59	5.570	3.082E+00	TH234
186.05	153.	19.24	0.91	4.512E-02	185.71	57.200	1.369E-01	U235
					186.21	3.590	2.186E+00	Ra226
238.57	233.	18.49	0.84	3.606E-02	238.63	43.300	3.450E-01	PB212
295.49	83.	26.62	0.80	2.973E-02	295.22	19.300	3.348E-01	PB214
351.61	241.	19.82	1.04	2.536E-02	351.93	37.600	5.855E-01	PB214
609.80	200.	16.74	0.98	1.531E-02	609.31	46.090	6.541E-01	BI214
661.93	140.	22.97	1.44	1.419E-02	661.66	85.210	2.686E-01	CS137
1123.51	93.	27.04	0.27	8.701E-03	1120.29	15.100	1.633E+00	BI214
1461.61	122.	15.59	0.44	6.784E-03	1460.83	10.670	3.917E+00	K40
1763.76	52.	21.96	0.39	5.679E-03	1764.49	15.400	1.385E+00	BI214

***** U N I D E N T I F I E D P E A K S U M M A R Y *****

Peak Centroid Channel	Background Energy	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide
94.64	23.89	1034.	863.	0.020	17.48	1.832 RH-106 s

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:50:40 AM Page 3
 STL- Test America Spectrum name: Ge5 background 03_31_10.An1

s - Peak fails shape tests.
 D - Peak area deconvoluted.
 L - Peak written from unknown list.
 C - Area < Critical level.

Ge5 background 03_31_10.rpt

This section based on library: long bkgd_pbc.lib

***** I D E N T I F I E D P E A K S U M M A R Y *****							
Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
PB-210	185.64	46.62	863.	379.	0.009	33.90	0.917s
TH-234	251.59	63.09	548.	280.	0.006	33.42	0.913s
TH-234	369.46	92.53	636.	502.	0.012	23.84	1.170s
U-235	0.00	143.76	0.	0.	0.000	0.00	0.000
U-235	0.00	163.36	0.	0.	0.000	0.00	0.000
U-235	743.87	186.05	251.	153.	0.004	38.48	0.912
Ra-226	0.00	186.21	0.	0.	0.000	0.00	0.000
U-235	0.00	205.31	0.	0.	0.000	0.00	0.000
PB-212	954.14	238.57	373.	233.	0.005	36.98	0.838s
PB-214	1181.98	295.49	143.	83.	0.002	53.24	0.799
PB-212	0.00	300.10	0.	0.	0.000	0.00	0.000
PB-214	1406.61	351.61	340.	241.	0.006	39.63	1.038s
BI-214	2439.96	609.80	166.	200.	0.005	33.48	0.980s
CS-137	2648.55	661.93	159.	140.	0.003	45.95	1.442
BI-214	0.00	768.36	0.	0.	0.000	0.00	0.000
BI-214	4495.09	1123.51	68.	93.	0.002	54.08	0.267s
K-40	5847.14	1461.61	26.	122.	0.003	31.18	0.436s
BI-214	7055.00	1763.76	12.	52.	0.001	43.92	0.389s

s - Peak fails shape tests.

D - Peak area deconvoluted.

A - Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****							
- Nuclide -	Average	----- Peak -----					
Name	Code	Activity	Energy	Activity	Code	MDA Value	COMMENTS
		Bq/sample	keV	Bq/sample		Bq/sample	

Be-7	C	0.0000E+00	477.61	0.000E+00 %	8.156E-01	1.00E+03	G
K-40	N	3.9172E+00	1460.83	3.917E+00 @	8.391E-01	1.56E+01	G
0							

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:50:40 AM Page 4
 STL- Test America Spectrum name: Ge5 background 03_31_10.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CO-60	F	0.0000E+00	1332.50	0.000E+00 %	1.445E-01	1.00E+03	G
			1173.24	0.000E+00 %	1.828E-01	1.00E+03	G
I-129	I	0.0000E+00	29.78	0.000E+00 %	1.601E-01	1.00E+03	X
			29.46	0.000E+00 %	2.995E-01	1.00E+03	X
			33.61	0.000E+00 %	6.746E-01	1.00E+03	X
			39.57	0.000E+00 %	5.268E-01	1.00E+03	G
			34.61	0.000E+00 %	1.877E+00	1.00E+03	X
CS-137	I	2.6857E-01	661.66	2.686E-01 (	1.175E-01	2.30E+01	G

Ge5 background 03_31_10.Rpt

TL-208	N	0.0000E+00	583.19 0.000E+00 %	1.354E-01 1.00E+03 G
			860.56 0.000E+00 %	6.891E-01 1.00E+03 G
PB-210	N	2.9861E+00	46.54 2.986E+00 *(	1.101E+00 1.70E+01 G
PB-212	N	3.4501E-01	238.63 3.450E-01 *(	1.375E-01 1.85E+01 G
			300.10 0.000E+00	1.776E-01 0.00E+00 G
PB-214	N	5.8554E-01	351.93 5.855E-01 *(	2.154E-01 1.98E+01 G
			295.22 3.348E-01 -	2.357E-01 2.66E+01 G
			242.00 0.000E+00 %	7.126E-01 5.23E+01 G
BI-214	N	6.5414E-01	609.31 6.541E-01 *(	2.060E-01 1.67E+01 G
			1764.49 1.385E+00 +	4.931E-01 2.20E+01 G
			1120.29 1.633E+00 &	7.264E-01 2.70E+01 G
			768.36 0.000E+00	2.794E-01 0.00E+00 G
RA-223	N	0.0000E+00	83.79 0.000E+00 %	1.610E-01 1.00E+03 X
			269.46 0.000E+00 %	5.250E-01 1.00E+03 G
			154.21 0.000E+00 &	8.101E-01 1.00E+03 G
			144.23 0.000E+00 %	1.140E+00 1.00E+03 G
			323.87 0.000E+00 &	1.450E+00 1.00E+03 G
			338.28 0.000E+00 %	3.080E+00 1.00E+03 G
RA-224	N	0.0000E+00	240.99 0.000E+00 &	1.341E+00 1.00E+03 G

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:50:40 AM Page 5
STL- Test America Spectrum name: Ge5 background 03_31_10.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AC-228	N	0.0000E+00	911.20 0.000E+00 %	5.665E-01	1.00E+03	G	
			968.97 0.000E+00 &	8.060E-01	1.00E+03	G	
			338.32 0.000E+00 %	7.626E-01	1.00E+03	G	
TH-234	N	2.7991E+00	63.29 2.385E+00 @	9.503E-01	1.67E+01	G	
			92.59 3.082E+00 *(	7.388E-01	1.19E+01	G	
U-235	N	1.3686E-01	185.71 1.369E-01 (	6.856E-02	1.92E+01	G	
			143.76 0.000E+00	2.800E-02	0.00E+00	G	
			163.36 0.000E+00	6.623E-02	0.00E+00	G	
			205.31 0.000E+00	8.247E-02	0.00E+00	G	
Ra-226	N	0.0000E+00	186.21 0.000E+00	1.274E+00	0.00E+00	G	
AM-241	T	0.0000E+00	59.54 0.000E+00 %	1.154E-01	1.00E+03	G	

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.

! - Peak is part of a multiplet and this area went

Page 4

Ge5 background 03_31_10.Rpt

negative during deconvolution.

- ? - Peak is too narrow.
 @ - Peak is too wide at FW25M, but ok at FWHM.
 % - Peak fails sensitivity test.
 \$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
 + - Peak activity higher than counting uncertainty range.
 - - Peak activity lower than counting uncertainty range.
 = - Peak outside analysis energy range.
 & - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
 P - Peakbackground subtraction
 } - Peak is too close to another for the activity to be found directly.

Nuclide Codes:

T - Thermal Neutron Activation
 F - Fast Neutron Activation
 I - Fission Product
 N - Naturally Occurring Isotope
 P - Photon Reaction
 C - Charged Particle Reaction
 M - No MDA Calculation

Peak Codes:

G - Gamma Ray
 X - X-Ray
 P - Positron Decay
 S - Single-Escape
 D - Double-Escape
 K - Key Line
 A - Not in Average

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:50:40 AM Page 6
 STL- Test America Spectrum name: Ge5 background 03_31_10.An1

R - Coincidence Corrected
 H - Halflife limit exceeded

C - Coincidence Peak

***** D I S C A R D E D I S O T O P E P E A K S *****
 Nuclide Centroid Background Net Area Intensity Uncert Activity
 Energy Counts Counts Cts/Sec 2 Sigma %

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****
 Time of Count Uncertainty 2 Sigma
 Nuclide Activity Counting MDA
 Bq/sample

Be-7	<	8.1564E-01		
K-40	#	3.9172E+00	3.1181E+01%	8.391E-01
CO-60	<	1.4455E-01		
I-129	<	5.2676E-01		
CS-137		2.6857E-01	4.5948E+01%	1.175E-01
TL-208	<	1.3544E-01		
PB-210	#	2.9861E+00	3.3901E+01%	1.101E+00
PB-212	#	3.4501E-01	3.6977E+01%	1.375E-01
PB-214		5.8554E-01	3.9635E+01%	2.154E-01
BI-214	#	6.5414E-01	3.3479E+01%	2.060E-01
RA-223	<	5.2496E-01		
RA-224	<	1.3413E+00		
AC-228	<	5.6645E-01		
TH-234	#	2.7991E+00	2.0527E+01%	9.503E-01
U-235		1.3686E-01	3.8476E+01%	6.856E-02
Ra-226	<	1.2737E+00		
AM-241	<	1.1537E-01		

Ge5 background 03_31_10.Rpt

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

----- S U M M A R Y -----
Total Activity (22.7 to 2000.2 keV) 1.169E+01 Bq/sample

Analyzed by: _____
403233

Reviewed by: _____
Supervisor

Laboratory: STL- Test America

Ge7 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:40 AM Page 1
 STL- Test America Spectrum name: Ge7 background 03_31_10.An1

Sample description
 Ge7 background 03_31_10

Spectrum Filename: C:\User\spectra\Ge7 bkgd\Ge7 background 03_31_10.A

Acquisition information

Start time: 3/31/2010 5:44:25 PM
 Live time: 43200
 Real time: 43930
 Dead time: 1.66 %
 Detector ID: 7

Detector system
 Ge 7 SN/154

Calibration

Filename: Ge7_AirFilterCal_81428_334_030510.Clb
 Ge7_AirFilterCal_81428_334_030510

Energy Calibration

Created: 3/5/2010 10:54:44 AM
 Zero offset: 0.136 keV
 Gain: 0.250 keV/channel
 Quadratic: 4.024E-09 keV/channel^2

Efficiency Calibration

Created: 3/5/2010 11:34:02 AM
 Knee Energy: 162.61 keV
 Above the Knee: Quadratic Uncertainty = 1.28 %
 Log(Eff): $1.275647E+00 + (-6.319211E-01 * \text{Log}(E)) + (-2.650080E-02 * \text{Log}(E)^2)$
 Below the Knee: Quadratic Uncertainty = 0.63 %
 Log(Eff): $-1.035429E+01 + (3.785630E+00 * \text{Log}(E)) + (-4.452979E-01 * \text{Log}(E)^2)$

Library Files

Main analysis library: long bkgd_pbc.lib
 Library Match width: 0.750
 Peak stripping: Library based

Analysis parameters

Analysis engine: Env32 G53W4.24
 Start channel: 90 (22.63keV)
 Stop channel: 8000 (2000.07keV)
 Peak rejection level: 30.000%
 Peak search sensitivity: 4
 Sample Size: 1.0000E+00
 Activity scaling factor: $1.0000E+00 / (1.0000E+00 * 1.0000E+00) = 1.0000E+00$
 Detection limit method: Reg. Guide 4.16 Method

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:40 AM Page 2
 STL- Test America Spectrum name: Ge7 background 03_31_10.An1
 Page 1

Ge6 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:42 AM Page 1
 STL- Test America Spectrum name: Ge6 background 03_31_10.An1

Sample description
 Ge6 background 03_31_10

Spectrum Filename: C:\User\spectra\Ge6_bkgd\Ge6 background 03_31_10.A

Acquisition information

Start time: 3/31/2010 5:53:24 PM
 Live time: 43200
 Real time: 43390
 Dead time: 0.44 %
 Detector ID: 6

Detector system
 Ge 6 SN/164

Calibration

Filename: Ge6_AirFilterCal_81428_334_022410.Clb
 Ge6_AirFilterCal_81428_334_022410

Energy Calibration

Created: 2/24/2010 1:04:21 PM
 Zero offset: 0.205 keV
 Gain: 0.250 keV/channel
 Quadratic: 1.399E-09 keV/channel²

Efficiency Calibration

Created: 2/24/2010 1:15:34 PM
 Type: Polynomial
 Uncertainty: 1.003 %
 Coefficients: -0.369941 -4.011765 0.502644
 -0.057258 0.002524 -0.000048

Library Files

Main analysis library: long bkgd_pbc.lib
 Library Match Width: 0.750
 Peak stripping: Library based

Analysis parameters

Analysis engine: Env32 G53W4.24
 Start channel: 90 (22.70keV)
 Stop channel: 8000 (1999.89keV)
 Peak rejection level: 30.000%
 Peak search sensitivity: 4
 Sample Size: 1.0000E+00
 Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) =
 1.0000E+00
 Detection limit method: Reg. Guide 4.16 Method
 Random error: 0.0000000E+00
 Systematic error: 0.0000000E+00
 Fraction Limit: 0.000%
 Background width: average of three points.
 Half lives decay limit: 12.000

0

Ge6 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:42 AM Page 2
 STL- Test America Spectrum name: Ge6 background 03_31_10.An1

Activity range factor: 2.000
 Min. step backg. energy 0.000
 Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 17 cutoff 20.00000 %
 Energy Calibration
 Normalized diff: 0.1148

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/samp]	Nuc
23.83	2214.	4.63	1.47	0.000E+00				
46.56	209.	29.07	0.87	7.043E-03	46.54	4.250	1.623E+01	PB210
63.55	194.	25.83	0.66	3.201E-02	63.29	3.810	3.732E+00	TH234
72.56	143.	25.13	0.78	4.377E-02				
75.02	476.	8.21	0.78	4.661E-02				
77.36	184.	18.06	0.79	4.917E-02				
84.77	340.	13.83	1.19	5.630E-02	83.79	25.180	5.633E-01	RA223
92.86	424.	13.63	1.06	6.245E-02	92.59	5.570	2.831E+00	TH234
185.87	367.	16.47	0.88	6.848E-02	185.71	57.200	2.168E-01	U235
					186.21	3.590	3.458E+00	Ra226
198.31	210.	27.34	0.63	6.626E-02				
238.56	392.	14.40	0.78	5.912E-02	238.63	43.300	3.541E-01	PB212
295.42	216.	26.86	1.19	5.061E-02	295.22	19.300	5.131E-01	PB214
351.76	327.	17.83	1.22	4.412E-02	351.93	37.600	4.560E-01	PB214
511.04	1867.	4.24	2.14	3.277E-02				
583.46	166.	24.04	1.21	2.955E-02	583.19	84.500	1.542E-01	TL208
609.51	377.	13.71	1.38	2.856E-02	609.31	46.090	6.629E-01	BI214
1460.74	186.	12.90	1.47	1.449E-02	1460.83	10.670	2.784E+00	K40
1764.09	124.	15.41	1.56	1.231E-02	1764.49	15.400	1.521E+00	BI214

***** U N I D E N T I F I E D P E A K S U M M A R Y *****

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide
94.53	23.83	1913.	2214.	0.051	9.26	1.468	RH-106 s
299.31	75.02	561.	439.	0.010	20.52	0.828	TH-234 s
308.67	77.36	455.	186.	0.004	41.22	0.942	PB-212 s
338.32	84.77	589.	340.	0.008	27.65	1.195	HG-203 s
792.58	198.31	682.	210.	0.005	54.68	0.630	SE-75 sM
2043.72	511.04	585.	1867.	0.043	8.47	2.138	NA-22 s

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:42 AM Page 3
 STL- Test America Spectrum name: Ge6 background 03_31_10.An1

Ge6 background 03_31_10.Rpt

s - Peak fails shape tests.
 D - Peak area deconvoluted.
 L - Peak written from unknown list.
 C - Area < Critical level.
 M - Peak is close to a library peak.

 This section based on library: long bkgd_pbc.lib

***** I D E N T I F I E D P E A K S U M M A R Y *****							
Nuclide	Peak channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
PB-210	185.26	46.51	630.	187.	0.004	51.15	0.869
TH-234	253.42	63.55	698.	194.	0.004	51.66	0.658s
TH-234	370.67	92.86	700.	424.	0.010	27.25	1.063s
U-235	0.00	163.36	0.	0.	0.000	0.00	0.000
U-235	742.80	185.87	704.	367.	0.008	32.93	0.880s
Ra-226	0.00	186.21	0.	0.	0.000	0.00	0.000
U-235	0.00	205.31	0.	0.	0.000	0.00	0.000
PB-212	953.62	238.56	620.	392.	0.009	28.80	0.781
PB-214	1181.09	295.42	612.	216.	0.005	53.72	1.188s
PB-214	1406.48	351.76	541.	327.	0.008	35.67	1.221s
TL-208	2333.45	583.46	269.	166.	0.004	48.08	1.207
BI-214	2437.69	609.51	372.	377.	0.009	27.42	1.379s
TL-208	0.00	860.56	0.	0.	0.000	0.00	0.000
K-40	5843.13	1460.74	52.	186.	0.004	25.81	1.470
BI-214	7056.66	1764.09	32.	124.	0.003	30.83	1.558s

s - Peak fails shape tests.
 D - Peak area deconvoluted.
 A - Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****						
- Nuclide - Name	Code	Average Activity Bq/sample	Energy keV	Peak Activity Bq/sample	Code MDA Value Bq/sample	COMMENTS

Be-7	C	0.0000E+00	477.61	0.000E+00	& 6.331E-01	1.00E+03 G
K-40	N	2.7844E+00	1460.83	2.784E+00	(5.436E-01	1.29E+01 G
CO-60	F	0.0000E+00	1332.50	0.000E+00	% 6.987E-02	1.00E+03 G
			1173.24	0.000E+00	& 8.456E-02	1.00E+03 G

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:42 AM Page 4
 STL- Test America Spectrum name: Ge6 background 03_31_10.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
I-129	I	0.0000E+00	29.78	0.000E+00	% 0.000E+00	1.00E+03 X
			29.46	0.000E+00	& 0.000E+00	1.00E+03 X
			33.61	0.000E+00	% 0.000E+00	1.00E+03 X
			39.57	0.000E+00	% 0.000E+00	1.00E+03 G

Page 3

Ge6 background 03_31_10.Rpt

34.61 0.000E+00 % 0.000E+00 1.00E+03 X

CS-137	I	0.0000E+00	661.66	0.000E+00	%	1.055E-01	1.00E+03	G
TL-208	N	1.5420E-01	583.19	1.542E-01	(	7.332E-02	2.40E+01	G
			860.56	0.000E+00		6.261E-02	0.00E+00	G
PB-210	N	1.4518E+01	46.54	1.452E+01	(	9.291E+00	2.56E+01	G
PB-212	N	3.5409E-01	238.63	3.541E-01	(	1.074E-01	1.44E+01	G
			300.10	0.000E+00	%	1.135E+00	7.98E+01	G
PB-214	N	4.7538E-01	351.93	4.560E-01	@(	1.551E-01	1.78E+01	G
			295.22	5.131E-01	*(	2.797E-01	2.69E+01	G
			242.00	0.000E+00	%	6.081E-01	5.48E+01	G
BI-214	N	6.6291E-01	609.31	6.629E-01	*(	1.628E-01	1.37E+01	G
			1764.49	1.521E+00	+	3.576E-01	1.54E+01	G
			1120.29	0.000E+00	%	5.335E-01	3.03E+01	G
			768.36	0.000E+00	%	1.170E+00	3.44E+01	G
RA-223	N	0.0000E+00	83.79	0.000E+00	%	1.119E-01	1.00E+03	X
			269.46	0.000E+00	&	3.148E-01	1.00E+03	G
			154.21	0.000E+00	&	5.746E-01	1.00E+03	G
			144.23	0.000E+00	%	1.279E+00	1.00E+03	G
			323.87	0.000E+00	&	1.603E+00	1.00E+03	G
			338.28	0.000E+00	%	1.936E+00	1.00E+03	G
RA-224	N	0.0000E+00	240.99	0.000E+00	&	1.039E+00	1.00E+03	G
AC-228	N	0.0000E+00	911.20	0.000E+00	%	3.331E-01	1.00E+03	G
			968.97	0.000E+00	%	4.425E-01	1.00E+03	G
			338.32	0.000E+00	%	4.793E-01	1.00E+03	G

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:42 AM Page 5
 STL- Test America spectrum name: Ge6 background 03_31_10.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-234	N	3.1967E+00	63.29	3.732E+00	@(	2.416E+00	2.58E+01 G
			92.59	2.831E+00	*(	8.407E-01	1.36E+01 G
U-235	N	2.1679E-01	185.71	2.168E-01	@(	7.464E-02	1.65E+01 G
			143.76	0.000E+00	%	3.089E-01	5.81E+01 G
			163.36	0.000E+00		4.659E-02	0.00E+00 G
			205.31	0.000E+00		5.240E-02	0.00E+00 G
Ra-226	N	0.0000E+00	186.21	0.000E+00		1.146E+00	0.00E+00 G
AM-241	T	0.0000E+00					

Ge6 background 03_31_10.Rpt

59.54 0.000E+00 & 2.642E-01 1.00E+03 G

(- This peak used in the nuclide activity average.

- * - Peak is too wide, but only one peak in library.
- ! - Peak is part of a multiplet and this area went negative during deconvolution.
- ? - Peak is too narrow.
- @ - Peak is too wide at FW25M, but ok at FWHM.
- % - Peak fails sensitivity test.
- \$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
- + - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
- = - Peak outside analysis energy range.
- & - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
- P - Peakbackground subtraction
- } - Peak is too close to another for the activity to be found directly.

Nuclide Codes:

T - Thermal Neutron Activation
 F - Fast Neutron Activation
 I - Fission Product
 N - Naturally Occurring Isotope
 P - Photon Reaction
 C - Charged Particle Reaction
 M - No MDA Calculation
 R - Coincidence Corrected
 H - Halflife limit exceeded

Peak Codes:

G - Gamma Ray
 X - X-Ray
 P - Positron Decay
 S - Single-Escape
 D - Double-Escape
 K - Key Line
 A - Not in Average
 C - Coincidence Peak

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:42 AM Page 6
 STL- Test America Spectrum name: Ge6 background 03_31_10.An1

***** DISCARDED ISOTOPE PEAKS *****

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	Activity
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P - Peakbackground subtraction

***** SUMMARY OF NUCLIDES IN SAMPLE *****

Nuclide	Time of Count	Activity Bq/sample	Uncertainty Counting	2 Sigma	MDA
Be-7	<	6.3306E-01			
K-40		2.7844E+00	2.5806E+01%		5.436E-01
CO-60	<	6.9872E-02			
CS-137	<	1.0546E-01			
TL-208		1.5420E-01	4.8084E+01%		7.332E-02
PB-210		1.4518E+01	5.1147E+01%		9.291E+00
PB-212		3.5409E-01	2.8805E+01%		1.074E-01
PB-214 #		4.7538E-01	3.2240E+01%		1.551E-01
BI-214		6.6291E-01	2.7417E+01%		1.628E-01
RA-223	<	3.1483E-01			
RA-224	<	1.0390E+00			
AC-228	<	3.3313E-01			

Ge6 background 03_31_10.Rpt
TH-234 # 3.1967E+00 2.7251E+01% 2.416E+00
U-235 # 2.1679E-01 3.2934E+01% 7.464E-02
Ra-226 < 1.1456E+00
AM-241 < 2.6416E-01

- # - All peaks for activity calculation had bad shape.
- * - Activity omitted from total
- & - Activity omitted from total and all peaks had bad shape.
- < - MDA value printed.
- A - Activity printed, but activity < MDA.
- B - Activity < MDA and failed test.
- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half-life limit exceeded

----- S U M M A R Y -----
Total Activity (22.7 to 1999.9 keV) 2.236E+01 Bq/sample

Analyzed by: _____
403233

Reviewed by: _____
Supervisor

Laboratory: STL- Test America

Ge7 background 03_31_10.Rpt

Random error: 0.000000E+00
 Systematic error: 0.000000E+00
 Fraction Limit: 0.000%
 Background width: average of three points.

Half lives decay limit: 12.000
 Activity range factor: 2.000
 Min. step backg. energy: 0.000
 Multiplet shift channel: 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff 20.00000 %
 Energy Calibration
 Normalized diff: 0.0254

***** S U M M A R Y O F P E A K S I N R A N G E *****								
Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/samp	Nuc
23.80	316.	14.35	1.52	5.907E-02				
29.84	300.	18.29	1.11	7.179E-02	29.46	20.350	4.800E-01	I129
					29.78	37.840	2.560E-01	I129
46.56	488.	13.10	0.89	9.224E-02	46.54	4.250	2.879E+00	PB210
63.28	445.	8.66	0.87	9.894E-02	63.29	3.810	2.735E+00	TH234
77.11	87.	28.77	0.91	9.901E-02				
92.71	631.	7.10	1.07	9.602E-02	92.59	5.570	2.730E+00	TH234
185.74	283.	13.99	1.07	6.399E-02	185.71	57.200	1.790E-01	U235
					186.21	3.590	2.858E+00	Ra226
238.23	144.	27.36	1.26	5.087E-02	238.63	43.300	1.517E-01	PB212
1460.56	72.	22.12	0.52	8.773E-03	1460.83	10.670	1.768E+00	K40

***** U N I D E N T I F I E D P E A K S U M M A R Y *****							
Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide
94.66	23.80	435.	316.	0.007	28.70	1.522	RH-106 sM
307.96	77.11	229.	87.	0.002	57.54	0.908	PB-212 s

s - Peak fails shape tests.
 D - Peak area deconvoluted.
 L - Peak written from unknown list.
 C - Area < Critical level.
 M - Peak is close to a library peak.

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:40 AM Page 3
 STL- Test America Spectrum name: Ge7 background 03_31_10.An1

 This section based on library: long bkgd_pbc.lib
 Page 2

Ge7 background 03_31_10.Rpt

***** I D E N T I F I E D P E A K S U M M A R Y *****

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM kev
I-129	0.00	29.46	0.	0.	0.000	0.00	0.000
I-129	118.84	29.84	678.	300.	0.007	36.59	1.108
I-129	0.00	33.61	0.	0.	0.000	0.00	0.000
I-129	0.00	34.61	0.	0.	0.000	0.00	0.000
I-129	0.00	39.57	0.	0.	0.000	0.00	0.000
PB-210	185.73	46.56	652.	488.	0.011	26.19	0.893
TH-234	252.62	63.28	313.	445.	0.010	17.32	0.865s
TH-234	370.34	92.71	376.	631.	0.015	14.21	1.071s
U-235	0.00	163.36	0.	0.	0.000	0.00	0.000
U-235	742.51	185.74	321.	283.	0.007	27.98	1.074s
Ra-226	0.00	186.21	0.	0.	0.000	0.00	0.000
U-235	0.00	205.31	0.	0.	0.000	0.00	0.000
PB-212	952.53	238.23	327.	144.	0.003	54.73	1.258s
PB-212	0.00	300.10	0.	0.	0.000	0.00	0.000
BI-214	0.00	609.31	0.	0.	0.000	0.00	0.000
BI-214	0.00	768.36	0.	0.	0.000	0.00	0.000
BI-214	0.00	1120.29	0.	0.	0.000	0.00	0.000
K-40	5842.11	1460.56	28.	72.	0.002	44.25	0.515s
BI-214	0.00	1764.49	0.	0.	0.000	0.00	0.000

s - Peak fails shape tests.

D - Peak area deconvoluted.

A - Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide -	Name	Code	Average Activity Bq/sample	Energy kev	Peak Activity Bq/sample	Code	MDA Value Bq/sample	COMMENTS
Be-7	C		0.0000E+00	477.61	0.000E+00 %		3.370E-01 1.00E+03 G	
K-40	N		1.7682E+00	1460.83	1.768E+00 ?(		6.713E-01 2.21E+01 G	
CO-60	F		0.0000E+00	1332.50	0.000E+00 %		9.957E-02 1.00E+03 G	
				1173.24	0.000E+00 &		9.555E-02 1.00E+03 G	

D

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:40 AM Page 4
 STL- Test America Spectrum name: Ge7 background 03_31_10.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
I-129	I	2.5600E-01				
		29.78	2.560E-01 (		1.059E-01 1.83E+01 X	
		29.46	0.000E+00		1.985E-01 0.00E+00 X	
		33.61	0.000E+00		2.615E-01 0.00E+00 X	
		39.57	0.000E+00		3.807E-01 0.00E+00 G	
		34.61	0.000E+00		1.213E+00 0.00E+00 X	
CS-137	I	0.0000E+00				
		661.66	0.000E+00 %		1.098E-01 1.00E+03 G	

Ge7 background 03_31_10.Rpt

TL-208	N	0.0000E+00	583.19 0.000E+00 %	1.010E-01 1.00E+03 G
			860.56 0.000E+00 &	6.216E-01 1.00E+03 G
PB-210	N	2.8791E+00	46.54 2.879E+00 (	7.190E-01 1.31E+01 G
PB-212	N	1.5167E-01	238.63 1.517E-01 @C	9.135E-02 2.74E+01 G
			300.10 0.000E+00	1.265E-01 0.00E+00 G
PB-214	N	0.0000E+00	351.93 0.000E+00 %	1.541E-01 1.00E+03 G
			295.22 0.000E+00 &	2.453E-01 1.00E+03 G
			242.00 0.000E+00 %	4.132E-01 1.00E+03 G
BI-214	N	0.0000E+00	609.31 0.000E+00	1.354E-01 0.00E+00 G
			1764.49 0.000E+00	2.376E-01 0.00E+00 G
			1120.29 0.000E+00	3.657E-01 0.00E+00 G
			768.36 0.000E+00	8.683E-01 0.00E+00 G
RA-223	N	0.0000E+00	83.79 0.000E+00 %	1.126E-01 1.00E+03 X
			269.46 0.000E+00 &	3.100E-01 1.00E+03 G
			154.21 0.000E+00 &	4.099E-01 1.00E+03 G
			144.23 0.000E+00 &	1.006E+00 1.00E+03 G
			323.87 0.000E+00 %	1.377E+00 1.00E+03 G
			338.28 0.000E+00 %	1.946E+00 1.00E+03 G
RA-224	N	0.0000E+00	240.99 0.000E+00 %	7.459E-01 1.00E+03 G
AC-228	N	0.0000E+00	911.20 0.000E+00 %	4.027E-01 1.00E+03 G
			968.97 0.000E+00 %	6.624E-01 1.00E+03 G
			338.32 0.000E+00 %	4.817E-01 1.00E+03 G

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ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:40 AM Page 5
 STL- Test America spectrum name: Ge7 background 03_31_10.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-234	N	2.7320E+00	63.29 2.735E+00 @C	5.227E-01	8.66E+00	G	
			92.59 2.730E+00 *C	4.027E-01	7.10E+00	G	
U-235	N	1.7895E-01	185.71 1.790E-01 (	5.451E-02	1.40E+01	G	
			143.76 0.000E+00 %	2.684E-01	4.93E+01	G	
			163.36 0.000E+00	4.672E-02	0.00E+00	G	
			205.31 0.000E+00	5.830E-02	0.00E+00	G	
Ra-226	N	0.0000E+00	186.21 0.000E+00	1.083E+00	0.00E+00	G	
AM-241	T	0.0000E+00	59.54 0.000E+00 %	5.750E-02	1.00E+03	G	

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.

! - Peak is part of a multiplet and this area went

Page 4

Ge7 background 03_31_10.Rpt

negative during deconvolution.

- ? - Peak is too narrow.
- @ - Peak is too wide at FW25M, but ok at FWHM.
- % - Peak fails sensitivity test.
- \$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
- + - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
- = - Peak outside analysis energy range.
- & - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
- P - Peakbackground subtraction
- } - Peak is too close to another for the activity to be found directly.

Nuclide Codes:

T - Thermal Neutron Activation
 F - Fast Neutron Activation
 I - Fission Product
 N - Naturally Occurring Isotope
 P - Photon Reaction
 C - Charged Particle Reaction
 M - No MDA Calculation
 R - Coincidence Corrected
 H - Half-life limit exceeded

Peak Codes:

G - Gamma Ray
 X - X-Ray
 P - Positron Decay
 S - Single-Escape
 D - Double-Escape
 K - Key Line
 A - Not in Average
 C - Coincidence Peak

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:57:40 AM Page 6
 STL- Test America Spectrum name: Ge7 background 03_31_10.An1

***** DISCARDED ISOTOPE PEAKS *****

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	Activity
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P - Peakbackground subtraction

***** SUMMARY OF NUCLIDES IN SAMPLE *****

Nuclide	Time of Count	Activity Bq/sample	Uncertainty Counting	2 Sigma	MDA
Be-7	<	3.3698E-01			
K-40	#	1.7682E+00	4.4250E+01%		6.713E-01
CO-60	<	9.9566E-02			
I-129	#	2.5600E-01	3.6588E+01%		1.059E-01
CS-137	<	1.0985E-01			
TL-208	<	1.0099E-01			
PB-210		2.8791E+00	2.6193E+01%		7.190E-01
PB-212	#	1.5167E-01	5.4728E+01%		9.135E-02
PB-214	<	1.5409E-01			
BI-214	<	1.3540E-01			
RA-223	<	3.1004E-01			
RA-224	<	7.4591E-01			
AC-228	<	4.0269E-01			
TH-234	#	2.7320E+00	1.1202E+01%		5.227E-01
U-235	#	1.7895E-01	2.7976E+01%		5.451E-02
Ra-226	<	1.0826E+00			
AM-241	<	5.7504E-02			

Ge7 background 03_31_10.Rpt

- # - All peaks for activity calculation had bad shape.
- * - Activity omitted from total
- & - Activity omitted from total and all peaks had bad shape.
- < - MDA value printed.
- A - Activity printed, but activity < MDA.
- B - Activity < MDA and failed test.
- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half-life limit exceeded

----- S U M M A R Y -----
Total Activity (22.6 to 2000.1 keV) 7.966E+00 Bq/sample

Analyzed by: _____
063303

Reviewed by: _____
Supervisor

Laboratory: STL- Test America

Ge8 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:44:19 AM Page 1
 STL- Test America Spectrum name: Ge8 background 03_31_10.An1

Sample description
 Ge8 background 03_31_10

Spectrum Filename: C:\User\spectra\Ge8 bkgd\Ge8 background 03_31_10.A

Acquisition information

Start time: 3/31/2010 5:34:05 PM
 Live time: 43200
 Real time: 43768
 Dead time: 1.30 %
 Detector ID: 8

Detector system
 Ge 8 SN/174

Calibration

Filename: Ge8_AirFilterCal_81428_334_030510.Clb
 Ge8_AirFilterCal_81428_334_030510

Energy Calibration

Created: 3/5/2010 3:49:44 PM
 Zero offset: 0.166 keV
 Gain: 0.250 keV/channel
 Quadratic: $-5.170E-10 \text{ keV/channel}^2$

Efficiency Calibration

Created: 3/5/2010 3:51:06 PM
 Knee Energy: 165.15 keV
 Above the Knee: Quadratic Uncertainty = 1.56 %
 Log(Eff): $1.120452E+00 + (-6.993874E-01 * \text{Log}(E)) + (-1.682553E-02 * \text{Log}(E)^2)$
 Below the Knee: Quadratic Uncertainty = 0.97 %
 Log(Eff): $-8.620516E+00 + (2.995816E+00 * \text{Log}(E)) + (-3.667606E-01 * \text{Log}(E)^2)$

Library Files

Main analysis library: long bkgd_pbc.lib
 Library Match Width: 0.750
 Peak stripping: Library based

Analysis parameters

Analysis engine: Env32 G53W4.24
 Start channel: 90 (22.66keV)
 Stop channel: 8000 (1999.90keV)
 Peak rejection level: 30.000%
 Peak search sensitivity: 4
 Sample Size: 1.0000E+00
 Activity scaling factor: $1.0000E+00 / (1.0000E+00 * 1.0000E+00) = 1.0000E+00$
 Detection limit method: Reg. Guide 4.16 Method

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:44:19 AM Page 2
 STL- Test America Spectrum name: Ge8 background 03_31_10.An1
 Page 1

Ge8 background 03_31_10.Rpt

Random error: 0.0000000E+00
 Systematic error: 0.0000000E+00
 Fraction Limit: 0.000%
 Background width: average of three points.

Half lives decay limit: 12.000
 Activity range factor: 2.000
 Min. step backg. energy: 0.000
 Multiplet shift channel: 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 16 cutoff 20.00000 %
 Energy Calibration
 Normalized diff: 0.1668

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/samp]	Nuc
23.46	466.	10.08	0.98	5.965E-02				
29.72	330.	16.30	0.81	6.866E-02	29.46	20.350	5.500E-01	I129
					29.78	37.840	2.942E-01	I129
63.39	810.	9.70	1.04	8.173E-02	63.29	3.810	6.024E+00	TH234
83.82	172.	28.78	1.13	7.837E-02	83.79	25.180	2.019E-01	RA223
92.68	1194.	5.64	1.00	7.612E-02	92.59	5.570	6.518E+00	TH234
143.79	158.	23.51	0.83	6.145E-02	143.76	10.960	5.419E-01	U235
					144.23	3.220	1.848E+00	RA223
185.81	593.	7.70	1.06	5.014E-02	185.71	57.200	4.781E-01	U235
					186.21	3.590	7.636E+00	Ra226
238.57	246.	13.32	1.40	4.025E-02	238.63	43.300	3.275E-01	Pb212
267.30	150.	25.73	0.30	3.613E-02	269.46	13.700	7.015E-01	RA223
510.99	902.	6.69	2.04	2.033E-02				
583.42	157.	25.69	1.16	1.802E-02	583.19	84.500	2.386E-01	TL208
609.07	183.	22.29	1.05	1.732E-02	609.31	46.090	5.317E-01	BI214
1460.35	94.	22.99	0.51	7.680E-03	1460.83	10.670	2.660E+00	K40
1764.43	75.	15.98	1.07	6.421E-03	1764.49	15.400	1.760E+00	BI214

***** U N I D E N T I F I E D P E A K S U M M A R Y *****

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide
93.18	23.46	523.	466.	0.011	20.16	0.978	AG-110M SM

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:44:19 AM Page 3
 STL- Test America spectrum name: Ge8 background 03_31_10.An1

Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	Suspected
2043.56	510.99	322.	902.	0.021	13.39	2.042	NA-22 s

s - Peak fails shape tests.

Ge8 background 03_31_10.Rpt

D - Peak area deconvoluted.
 L - Peak written from unknown list.
 C - Area < Critical level.
 M - Peak is close to a library peak.

 This section based on library: long bkgd_pbc.lib

***** I D E N T I F I E D P E A K S U M M A R Y *****							
Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
I-129	0.00	29.46	0.	0.	0.000	0.00	0.000
I-129	118.24	29.72	812.	330.	0.008	32.61	0.813
I-129	0.00	33.61	0.	0.	0.000	0.00	0.000
I-129	0.00	34.61	0.	0.	0.000	0.00	0.000
I-129	0.00	39.57	0.	0.	0.000	0.00	0.000
TH-234	252.94	63.39	805.	810.	0.019	19.39	1.042s
RA-223	334.66	83.82	548.	172.	0.004	57.56	1.127s
TH-234	370.09	92.68	646.	1194.	0.028	11.27	1.001
U-235	574.57	143.79	317.	158.	0.004	47.02	0.826
RA-223	0.00	144.23	0.	0.	0.000	0.00	0.000
U-235	742.27	185.71	237.	672.	0.016	47.19	1.081D
PB-212	953.73	238.57	238.	246.	0.006	26.64	1.398s
PB-214	0.00	242.00	0.	0.	0.000	0.00	0.000
RA-223	1068.67	267.30	268.	150.	0.003	51.47	0.295s
PB-214	0.00	295.22	0.	0.	0.000	0.00	0.000
PB-212	0.00	300.10	0.	0.	0.000	0.00	0.000
RA-223	0.00	323.87	0.	0.	0.000	0.00	0.000
RA-223	0.00	338.28	0.	0.	0.000	0.00	0.000
PB-214	0.00	351.93	0.	0.	0.000	0.00	0.000
TL-208	2333.28	583.42	210.	157.	0.004	51.38	1.163
BI-214	2435.92	609.07	235.	183.	0.004	44.57	1.051
BI-214	0.00	768.36	0.	0.	0.000	0.00	0.000
TL-208	0.00	860.56	0.	0.	0.000	0.00	0.000
K-40	5841.49	1460.35	41.	94.	0.002	45.97	0.506s
BI-214	7058.00	1764.43	8.	75.	0.002	31.97	1.074s

s - Peak fails shape tests.
 D - Peak area deconvoluted.
 A - Derived peak area.

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:44:19 AM Page 4
 STL- Test America Spectrum name: Ge8 background 03_31_10.An1

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****							
- Nuclide - Name	Code	Average Activity Bq/sample	Energy keV	Peak Activity Bq/sample	Code	MDA Value Bq/sample	COMMENTS
Be-7	C	0.0000E+00	477.61	0.000E+00	&	6.313E-01 1.00E+03	G
K-40	N	2.6602E+00	1460.83	2.660E+00	(	9.178E-01 2.30E+01	G
CO-60	F	0.0000E+00	1332.50	0.000E+00	%	8.585E-02 1.00E+03	G

Page 3

Ge8 background 03_31_10.Rpt
 1173.24 0.000E+00 % 1.096E-01 1.00E+03 G

I-129	I	2.9416E-01	29.78 2.942E-01 (1.206E-01 1.63E+01 X
			29.46 0.000E+00 2.256E-01 0.00E+00 X
			33.61 0.000E+00 3.549E-01 0.00E+00 X
			39.57 0.000E+00 4.324E-01 0.00E+00 G
			34.61 0.000E+00 1.504E+00 0.00E+00 X
CS-137	I	0.0000E+00	661.66 0.000E+00 & 1.231E-01 1.00E+03 G
TL-208	N	2.3861E-01	583.19 2.386E-01 (1.068E-01 2.57E+01 G
			860.56 0.000E+00 1.090E-01 0.00E+00 G
PB-210	N	0.0000E+00	46.54 0.000E+00 % 7.157E-01 1.00E+03 G
PB-212	N	3.2751E-01	238.63 3.275E-01 (9.902E-02 1.33E+01 G
			300.10 0.000E+00 1.584E-01 0.00E+00 G
PB-214	N	0.0000E+00	351.93 0.000E+00 1.984E-01 0.00E+00 G
			295.22 0.000E+00 2.715E-01 0.00E+00 G
			242.00 0.000E+00 6.143E-01 0.00E+00 G
BI-214	N	5.3172E-01	609.31 5.317E-01 (2.149E-01 2.23E+01 G
			1764.49 1.760E+00 + 3.688E-01 1.60E+01 G
			1120.29 0.000E+00 % 5.957E-01 4.35E+01 G
			768.36 0.000E+00 2.468E-01 0.00E+00 G

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:44:19 AM Page 5
 STL- Test America Spectrum name: Ge8 background 03_31_10.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
RA-223	N	2.0195E-01	83.79 2.019E-01 *(1.311E-01 2.88E+01 X				
			269.46 7.015E-01 & 3.694E-01 2.57E+01 G				
			154.21 0.000E+00 % 4.890E-01 1.48E+02 G				
			144.23 0.000E+00 8.639E-02 0.00E+00 G				
			323.87 0.000E+00 1.415E-01 0.00E+00 G				
			338.28 0.000E+00 2.073E-01 0.00E+00 G				
RA-224	N	0.0000E+00	240.99 0.000E+00 % 1.267E+00 1.00E+03 G				
AC-228	N	0.0000E+00	911.20 0.000E+00 % 3.857E-01 1.00E+03 G				
			968.97 0.000E+00 % 7.143E-01 1.00E+03 G				
			338.32 0.000E+00 % 4.732E-01 1.00E+03 G				
TH-234	N	6.3170E+00	63.29 6.024E+00 *(1.003E+00 9.70E+00 G				
			92.59 6.518E+00 (6.611E-01 5.64E+00 G				
U-235	N	5.4186E-01	185.71 5.419E-01 } 6.002E-02 2.36E+01 G				
			143.76 5.419E-01 (2.946E-01 2.35E+01 G				

Page 4

Ge8 background 03_31_10.Rpt
 163.36 0.000E+00 % 7.138E-01 3.75E+01 G
 205.31 0.000E+00 % 8.655E-01 3.03E+01 G

Ra-226 N 0.0000E+00

Derived Ave Activity
 186.21 0.000E+00 } 1.731E+00 1.00E+03 G

AM-241 T 0.0000E+00

59.54 0.000E+00 % 4.069E-02 1.00E+03 G

(- This peak used in the nuclide activity average.

- * - Peak is too wide, but only one peak in library.
- ! - Peak is part of a multiplet and this area went negative during deconvolution.
- ? - Peak is too narrow.
- @ - Peak is too wide at FW25M, but ok at FWHM.
- % - Peak fails sensitivity test.
- \$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
- + - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
- = - Peak outside analysis energy range.
- & - Calculated peak centroid is not close enough to the

0

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:44:19 AM Page 6
 STL- Test America Spectrum name: Ge8 background 03_31_10.An1

library energy centroid for positive identification.

- P - Peakbackground subtraction
- } - Peak is too close to another for the activity to be found directly.

Nuclide Codes:

T - Thermal Neutron Activation
 F - Fast Neutron Activation
 I - Fission Product
 N - Naturally Occurring Isotope
 P - Photon Reaction
 C - Charged Particle Reaction
 M - No MDA Calculation
 R - Coincidence Corrected
 H - Halflife limit exceeded

Peak Codes:

G - Gamma Ray
 X - X-Ray
 P - Positron Decay
 S - Single-Escape
 D - Double-Escape
 K - Key Line
 A - Not in Average
 C - Coincidence Peak

***** DISCARDED ISOTOPE PEAKS *****

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma	Activity %
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P - Peakbackground subtraction

***** SUMMARY OF NUCLIDES IN SAMPLE *****

Nuclide	Time of Count	Activity Bq/sample	Uncertainty Counting	2 Sigma	MDA
---------	---------------	--------------------	----------------------	---------	-----

Be-7	<	6.3128E-01			
K-40		2.6602E+00	4.5970E+01%		9.178E-01
CO-60	<	8.5852E-02			
I-129		2.9416E-01	3.2607E+01%		1.206E-01

Ge8 background 03_31_10.Rpt

CS-137	<	1.2311E-01		
TL-208		2.3861E-01	5.1384E+01%	1.068E-01
PB-210	<	7.1565E-01		
PB-212		3.2751E-01	2.6636E+01%	9.902E-02
PB-214	<	1.9836E-01		
BI-214		5.3172E-01	4.4575E+01%	2.149E-01
RA-223	#	2.0195E-01	5.7556E+01%	1.311E-01
RA-224	<	1.2670E+00		
AC-228	<	3.8566E-01		
TH-234		6.3170E+00	1.1216E+01%	1.003E+00
U-235		5.4186E-01	4.7022E+01%	2.946E-01
Ra-226	<	1.7314E+00		
AM-241	<	4.0687E-02		

- All peaks for activity calculation had bad shape.

* - Activity omitted from total

& - Activity omitted from total and all peaks had bad shape.

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:44:19 AM Page 7
 STL- Test America Spectrum name: Ge8 background 03_31_10.An1

< - MDA value printed.

A - Activity printed, but activity < MDA.

B - Activity < MDA and failed test.

C - Area < Critical level.

F - Failed fraction or key line test.

H - Half-life limit exceeded

----- S U M M A R Y -----
 Total Activity (205.1 to 1999.9 keV) 1.111E+01 Bq/sample

Analyzed by: _____
 403293

Reviewed by: _____
 Supervisor

Laboratory: STL- Test America

Ge5 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:50:40 AM Page 1
 STL- Test America Spectrum name: Ge5 background 03_31_10.An1

Sample description
 Ge5 background 03_31_10

Spectrum Filename: C:\User\spectra\Ge5 bkgd\Ge5 background 03_31_10.A

Acquisition information

Start time: 3/31/2010 5:45:14 PM
 Live time: 43200
 Real time: 43481
 Dead time: 0.65 %
 Detector ID: 5

Detector system
 Ge 5 SN/157

Calibration

Filename: Ge5_AirFilterCal_81428_334_022610.Clb
 Ge5_AirFilterCal_81428_334_022610

Energy Calibration

Created: 2/26/2010 11:39:08 AM
 Zero offset: 0.252 keV
 Gain: 0.250 keV/channel
 Quadratic: $3.140\text{E-}08 \text{ keV/channel}^2$

Efficiency Calibration

Created: 2/26/2010 11:40:25 AM
 Knee Energy: 162.60 keV
 Above the Knee: Quadratic Uncertainty = 1.58 %
 Log(Eff): $1.324265\text{E}+00 + (-7.938530\text{E-}01 * \text{Log}(E)) + (-1.003425\text{E-}02 * \text{Log}(E)^2)$
 Below the Knee: Quadratic Uncertainty = 0.81 %
 Log(Eff): $-8.962880\text{E}+00 + (3.052721\text{E}+00 * \text{Log}(E)) + (-3.684018\text{E-}01 * \text{Log}(E)^2)$

Library Files

Main analysis library: long bkgd_pbc.lib
 Library Match width: 0.750
 Peak stripping: Library based

Analysis parameters

Analysis engine: Env32 G53W4.24
 Start channel: 90 (22.73keV)
 Stop channel: 8000 (2000.21keV)
 Peak rejection level: 30.000%
 Peak search sensitivity: 4
 Sample Size: 1.0000E+00
 Activity scaling factor: $1.0000\text{E}+00 / (1.0000\text{E}+00 * 1.0000\text{E}+00) = 1.0000\text{E}+00$
 Detection limit method: Reg. Guide 4.16 Method

□

ORTEC g v - i (1087) Env32 G53W4.24 4/1/2010 5:50:40 AM Page 2
 STL- Test America Spectrum name: Ge5 background 03_31_10.An1
 Page 1

Ge10 background 03_31_10.Rpt

ORTEC g v - i (1087) Env32 G53W4.22 01-APR-2010 05:37:50 Page 1
 TestAmerica, Inc. Spectrum name: Ge10 background 03_31_10.An1

Sample description
 Ge10 background 03_31_10

Spectrum Filename: C:\User\spectra\Ge10 bkgd\Ge10 background 03_31_10
 .An1

Acquisition information

Start time: 31-Mar-2010 17:36:26
 Live time: 43200
 Real time: 43261
 Dead time: 0.14 %
 Detector ID: 10

Detector system
 Ge 10 SN/129

Calibration

Filename: Ge10_AirfilterCal_81428_334_031010.c1b
 Ge10_AirfilterCal_81428_334_031010

Energy Calibration

Created: 10-Mar-2010 14:07:09
 Zero offset: -0.023 keV
 Gain: 0.250 keV/channel
 Quadratic: -2.059E-08 keV/channel^2

Efficiency Calibration

Created: 10-Mar-2010 14:13:50
 Knee Energy: 277.56 keV
 Above the Knee: Quadratic Uncertainty = 0.98 %
 Log(Eff): $2.693793E+00 + (-1.226836E+00 * \text{Log}(E)) + (2.912649E-02 * \text{Log}(E)^2)$
 Below the Knee: Quadratic Uncertainty = 0.70 %
 Log(Eff): $-7.698901E+00 + (2.461573E+00 * \text{Log}(E)) + (-2.983257E-01 * \text{Log}(E)^2)$

Library Files

Main analysis library: long bkgd_pbc.lib
 Library Match width: 0.500
 Peak stripping: Library based

Analysis parameters

Analysis engine: Env32 G53W4.22
 Start channel: 90 (22.49keV)
 Stop channel: 8000 (1999.41keV)
 Peak rejection level: 30.000%
 Peak search sensitivity: 3
 Sample Size: 1.0000E+00
 Activity scaling factor: $1.0000E+00 / (1.0000E+00 * 1.0000E+00) = 1.0000E+00$

□

ORTEC g v - i (1087) Env32 G53W4.22 01-APR-2010 05:37:50 Page 2
 TestAmerica, Inc. Spectrum name: Ge10 background 03_31_10.An1

Ge10 background 03_31_10.Rpt

Detection limit method: Reg. Guide 4.16 Method

Random error: 0.0000000E+00
 Systematic error: 0.0000000E+00
 Fraction Limit: 0.000%
 Background width: average of three points.

Half lives decay limit: 12.000
 Activity range factor: 2.000
 Min. step backg. energy: 0.000
 Multiplet shift channel: 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff 20.00000 %
 Energy Calibration
 Normalized diff: 0.1757

***** S U M M A R Y O F P E A K S I N R A N G E *****									
Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/samp1	Nuc	
44.27	193.	28.00	1.02	7.034E-02					
46.60	880.	6.66	1.03	7.100E-02	46.54	4.250	6.755E+00	PB210	
63.38	788.	5.90	1.04	7.271E-02	63.29	3.810	6.581E+00	TH234	
74.87	296.	14.84	1.05	7.194E-02					
77.06	349.	12.65	1.05	7.168E-02					
92.69	1066.	7.31	1.21	6.927E-02	92.59	5.570	6.394E+00	TH234	
185.64	550.	11.50	1.18	5.075E-02	186.21	3.590	7.007E+00	Ra226	
238.51	693.	9.50	1.17	4.226E-02	238.63	43.300	8.769E-01	PB212	
351.84	275.	18.12	1.23	3.026E-02					
583.00	342.	15.16	1.42	1.949E-02	583.19	84.500	4.803E-01	TL208	
609.21	259.	16.31	0.90	1.877E-02	609.31	46.090	6.930E-01	BI214	
1461.01	223.	10.60	1.89	9.101E-03	1460.83	10.670	5.316E+00	K40	
1763.90	89.	21.52	1.25	7.830E-03	1764.49	15.400	1.712E+00	BI214	

***** U N I D E N T I F I E D P E A K S U M M A R Y *****								
Peak Centroid Channel Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma	FWHM keV	Suspected Nuclide		
177.50	44.31	1358.	199.	0.005	54.22	1.023	EU-154	D
299.47	74.92	814.	296.	0.007	29.68	1.050	HG-203	D
308.22	77.11	798.	349.	0.008	25.29	1.052	PB-212	D
1407.09	351.84	473.	275.	0.006	36.23	1.228	PB-214	s

□

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s - Peak fails shape tests.
 D - Peak area deconvoluted.
 L - Peak written from unknown list.

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C - Area < Critical level.

This section based on library: long bkgd_pbc.lib

```
***** I D E N T I F I E D   P E A K   S U M M A R Y *****
Nuclide   Peak   Centroid   Background   Net Area   Intensity   Uncert   FWHM
          Channel Energy      Counts      Counts      Cts/Sec    2 Sigma %   keV
-----
PB-210    186.18    46.54      1279.      880.        0.020      13.32     1.025D
TH-234    253.62    63.41       904.      801.        0.019      16.30     0.870
TH-234    370.72    92.69     1113.     1066.        0.025      14.62     1.211
Ra-226    742.42   185.64       797.      550.        0.013      22.99     1.179
PB-212    953.87   238.51       781.      693.        0.016      19.01     1.172
PB-212     0.00    300.10        0.        0.         0.000       0.00     0.000
TL-208   2331.66   583.00       351.      342.        0.008      30.33     1.425s
BI-214   2436.49   609.21       286.      259.        0.006      32.62     0.897s
BI-214     0.00    768.36        0.        0.         0.000       0.00     0.000
K-40     5844.77  1461.01        48.      223.        0.005      21.20     1.886
BI-214   7057.16  1763.90        41.       89.        0.002      43.04     1.248s
```

s - Peak fails shape tests.

D - Peak area deconvoluted.

A - Derived peak area.

```
***** S U M M A R Y   O F   L I B R A R Y   P E A K   U S A G E   *****
- Nuclide - Average      Energy      Activity      Code MDA Value      COMMENTS
  Name    Code Activity      keV      Bq/sample
         Bq/sample
-----
Be-7      C    0.0000E+00
          477.61 0.000E+00 %    3.163E-01 1.00E+03 G
K-40      N    5.3156E+00
          1460.83 5.316E+00 (    8.342E-01 1.06E+01 G
CO-60     F    0.0000E+00
          1332.50 0.000E+00 %    8.187E-02 1.00E+03 G
          1173.24 0.000E+00 %    9.240E-02 1.00E+03 G
I-129     I    0.0000E+00
          29.78 0.000E+00 %    1.279E-01 1.00E+03 X
          29.46 0.000E+00 &    2.391E-01 1.00E+03 X
          33.61 0.000E+00 &    4.861E-01 1.00E+03 X
          39.57 0.000E+00 %    5.629E-01 1.00E+03 G
[]
```

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```
Nuclide Ave activity Energy Activity Code Peak MDA Comments
          34.61 0.000E+00 %    9.915E-01 1.00E+03 X
CS-137    I    0.0000E+00
          661.66 0.000E+00 %    1.268E-01 1.00E+03 G
TL-208    N    4.8031E-01
          583.19 4.803E-01 @C    1.266E-01 1.52E+01 G
          860.56 0.000E+00 %    8.076E-01 4.96E+01 G
```

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PB-210	N	6.7549E+00	46.54	6.755E+00	(1.300E+00	6.66E+00	G
PB-212	N	8.7693E-01	238.63	8.769E-01	(1.682E-01	9.50E+00	G
			300.10	0.000E+00		1.492E-01	0.00E+00	G
PB-214	N	0.0000E+00	351.93	0.000E+00	%	2.649E-01	1.00E+03	G
			295.22	0.000E+00	%	4.033E-01	1.00E+03	G
			242.00	0.000E+00	%	9.352E-01	1.00E+03	G
BI-214	N	6.9300E-01	609.31	6.930E-01	*(	2.181E-01	1.63E+01	G
			1764.49	1.712E+00	+	6.237E-01	2.15E+01	G
			1120.29	0.000E+00	%	6.054E-01	3.57E+01	G
			768.36	0.000E+00		2.239E-01	0.00E+00	G
RA-223	N	0.0000E+00	83.79	0.000E+00	%	1.786E-01	1.00E+03	X
			269.46	0.000E+00	&	4.320E-01	1.00E+03	G
			154.21	0.000E+00	%	6.750E-01	1.00E+03	G
			144.23	0.000E+00	%	1.557E+00	1.00E+03	G
			323.87	0.000E+00	&	1.811E+00	1.00E+03	G
			338.28	0.000E+00	%	3.085E+00	1.00E+03	G
RA-224	N	0.0000E+00	240.99	0.000E+00	&	1.525E+00	1.00E+03	G
AC-228	N	0.0000E+00	911.20	0.000E+00	%	5.034E-01	1.00E+03	G
			968.97	0.000E+00	%	7.497E-01	1.00E+03	G
			338.32	0.000E+00	%	7.637E-01	1.00E+03	G
TH-234	N	6.5158E+00	63.29	6.694E+00	(1.193E+00	8.15E+00	G
			92.59	6.394E+00	(9.487E-01	7.31E+00	G

E

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Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
U-235	N	0.0000E+00	185.71 0.000E+00 %	1.386E-01	1.00E+03	G	
			143.76 0.000E+00 %	5.455E-01	1.00E+03	G	
			163.36 0.000E+00 %	1.100E+00	1.00E+03	G	
			205.31 0.000E+00 %	7.925E-01	1.00E+03	G	
Ra-226	N	7.0065E+00	186.21 7.007E+00	(	1.709E+00	1.15E+01	G
AM-241	T	0.0000E+00	59.54 0.000E+00 %	1.201E-01	1.00E+03	G	
			(- This peak used in the nuclide activity average.				

* - Peak is too wide, but only one peak in library.
 ! - Peak is part of a multiplet and this area went negative during deconvolution.
 ? - Peak is too narrow.
 @ - Peak is too wide at FW25M, but ok at FWHM.
 % - Peak fails sensitivity test.

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Ge10 background 03_31_10.Rpt

- \$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
 + - Peak activity higher than counting uncertainty range.
 - - Peak activity lower than counting uncertainty range.
 = - Peak outside analysis energy range.
 & - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
 P - Peakbackground subtraction
 } - Peak is too close to another for the activity to be found directly.

Nuclide Codes:

T - Thermal Neutron Activation
 F - Fast Neutron Activation
 I - Fission Product
 N - Naturally Occurring Isotope
 P - Photon Reaction
 C - Charged Particle Reaction
 M - No MDA Calculation
 R - Coincidence Corrected
 H - Half-life limit exceeded

Peak Codes:

G - Gamma Ray
 X - X-Ray
 P - Positron Decay
 S - Single-Escape
 D - Double-Escape
 K - Key Line
 A - Not in Average
 C - Coincidence Peak

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 TestAmerica, Inc. Spectrum name: Ge10 background 03_31_10.An1

***** DISCARDED ISOTOPE PEAKS *****

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	Activity
---------	-----------------	-------------------	-----------------	-------------------	------------------	----------

P - Peakbackground subtraction

***** SUMMARY OF NUCLIDES IN SAMPLE *****

Nuclide	Time of Count	Uncertainty	2 Sigma	MDA
	Activity Bq/sample	Counting		

Be-7	<	3.1626E-01		
K-40		5.3156E+00	2.1205E+01%	8.342E-01
CO-60	<	8.1875E-02		
I-129	<	5.6292E-01		
CS-137	<	1.2676E-01		
TL-208	#	4.8031E-01	3.0326E+01%	1.266E-01
PB-210		6.7549E+00	1.3322E+01%	1.300E+00
PB-212		8.7693E-01	1.9007E+01%	1.682E-01
PB-214	<	2.6491E-01		
BI-214		6.9300E-01	3.2619E+01%	2.181E-01
RA-223	<	4.3203E-01		
RA-224	<	1.5246E+00		
AC-228	<	5.0335E-01		
TH-234		6.5158E+00	1.0951E+01%	1.193E+00
U-235	<	1.3858E-01		
Ra-226		7.0065E+00	2.2992E+01%	1.709E+00
AM-241	<	1.2014E-01		

- # - All peaks for activity calculation had bad shape.
 * - Activity omitted from total
 & - Activity omitted from total and all peaks had bad shape.
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Ge10 background 03_31_10.Rpt

- < - MDA value printed.
- A - Activity printed, but activity < MDA.
- B - Activity < MDA and failed test.
- C - Area < Critical level.
- F - Failed fraction or key line test.
- H - Half-life limit exceeded

S U M M A R Y

Total Activity (1065.5 to 1999.4 keV) 2.764E+01 Bq/sample

Analyzed by: _____
 403293

Reviewed by: _____
 Supervisor

Laboratory: TestAmerica, Inc.