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SEVERN TRENT STL

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

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ANALYTICAL REPORT

PROJECT NO. 5601

Li-Tungsten

Lot #: F7E050113

Ted Johnson

Environmental Chemical Corpora
1746 Cole Blvd
Bldg 21, Suite 350
Golden, CO 80401

SEVERN TRENT LABORATORIES, INC.

Terry Romanko
Project Manager

May 29, 2007

Case Narrative
LOT NUMBER: F7E050113

This report contains the analytical results for the nine samples received under chain of custody by STL St. Louis on May 5, 2007. These samples are associated with your Li-Tungsten project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by STL St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. 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

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Radium-228 by GFPC

The sample carrier recovery was slightly low with the possibility of a high bias to the sample result. The duplicate was analyzed on this same sample with acceptable carrier recovery. The RER/REP was within QC limits indicating this potential bias did not adversely affect the sample results. The MDC was elevated due to the reduced Barium carrier recovery.
Affected Samples:
F7E050113 (1): 5601-FSS-SU9-1002

There were no nonconformances or observations noted with any other analysis on this lot.

Chain of Custody Record

ENVIRONMENTAL CHEMICAL CORPORATION
1746 Colorado Blvd., Suite 350
Lakewood, CO 80401
Phone: (303) 298-7607
Fax: (303) 298-7837

COC Number: _____

Customer Name: ECC - Li Tungsten
Address: 63 Herbhill Rd, Glen Cove, NY 11542
Contact: T. Johnson
Phone: 303-472-8834
Fax: 516-665-8531

ECC Project Manager: Glenn Henderson
Sampler Name: M. LaBanc
ECC Project Number: 5601
Customer Project Name: Li Tungsten

SAMPLE NUMBER	DATE	TIME	TYPE	CLIENT SAMPLE IDENTIFIER	TESTS	CONTAINER(S)	MATRIX
5601-FSS-SU7-1009	5-4-07	1110	FSS	Parcel B	Ra226/Ra228, Iso-Th, Iso-U	1 Gallon Plastic Bag	Soil
5601-FSS-SU7-1010	↓	1120	↓	↓	↓	↓	↓
5601-FSS-SU7-1011	↓	1055	↓	↓	↓	↓	↓
5601-FSS-SU7-1012	↓	1140	↓	↓	↓	↓	↓
5601-FSS-SU7-1019	↓	1055	↓	↓	↓	↓	↓
5601-FSS-SU7-1020	↓	1055	↓	↓	↓	↓	↓
				N/A			

Notes: Ship to: Severn Trent Laboratory, St Louis
13715 Rider Trail N., Earth City, Mo 63045
Phone 314-298-8566
Request Turnaround Time: 7 Day

Laboratory Receipt Information
Cooler/Container Intact? Yes____ No____
Samples Received at below 4°C? Yes____ No____
Sample Containers Intact? Yes____ No____
Cooler/Container Custody Seal? Yes____ No____

CUSTODY TRANSFER RECORD

Relinquished by: (signature)	Company:	Date:	Time:	Received by: (signature)	Company:	Date:	Time:
M. LaBanc Michael P. LaBanc	ECC	5-4-07	1610	Angela Bunn	STL	5-5-07	8:45

J:\Belding\Figures\cimcust.wpd

CHR - 1225

Environmental Chemical Corporation
1746 Cole Blvd.
Bldg. 21, Suite 350
Lakewood, CO 80401
Phone: (303) 298-7607
Fax: (303) 298-7837

COC Number:

Customer Name: ECC – LI Tungsten
Address: 63 Herb Hill Road, Glen Cove, NY 11542

Contact: Theodore Johnson
Phone: (303) 472 - 8834
Fax: (516) 665- 8531

ECC Project Manager: Phil O'Dwyer
Address: 63 Herb Hill Road, Glen Cove, NY 11542

Phone: (614) 402 - 2020
Customer Project Name: LI Tungsten

SAMPLE NUMBER	DATE	TIME	TYPE	CLIENT SAMPLE IDENTIFIER	TESTS	CONTAINER(S)	MATRIX
5601 -FSS-SU9-1002	4/20/2007	12:00	FSS	Parcel C	Ra-226/Ra-228, Iso-Th, Iso-U	1 Gallon Pl Bag	Soil
5601 -FSS-SU9-1016	4/20/2007	12:00	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU9-1017	4/20/2007	12:00	FSS	Parcel C		1 Gallon Pl Bag	Soil
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							

Notes:
Ship to: Severn Trent Laboratory, St Louis
13715 Rider Trail N., Earth City, Mo 63045
Phone: 314-298-8566
Request Turnaround Time: 7 Day

MA 5-2-07
~~Samples checked below 4 C~~

Laboratory Receipt Information
Cooler/Container Intact? Yes____ No____
Samples Received At Below 4 C? Yes____ No____
Samples Containers Intact? Yes____ No____
Cooler/Container Custody Seal? Yes____ No____

CUSTODY TRANSFER RECORD

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Print: Ted Johnson Sign: [signature]	ECC	4/20/2007	16:15	Print: Angela Bacon	STL	5-5-07	8:45
Print:		MA		Print:			
Print:				Print:			

STL

Lot #(s): F7E050113
- 1255 -

Condition Upon Receipt Form

Client: ECC
Quote No: 72311
COC/RFA No:
Initiated By: AB
Date: 5-8-07
Time: 8:45

Shipping Information

Shipper Name: ~~Fed~~ AB 5-5-07 Fed Ex
Multiple Packages Y (N)

Shipping # (s):*
1. 8604 0193 5254
2.
3.
4.
5.
6.
7.
8.
9.
10.

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

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

Notes:

Corrective Action:
- ☐ Client Contact Name:
- ☐ Sample(s) processed "as is"
- ☐ Sample(s) on hold until:

Informed by:
If released, notify:
Project Management Review: Sarah Daniels
Date: 5-8-07

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.

METHODS SUMMARY

F7E050113

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	
Radium-226 by GFPC	EPA 903.0 MOD	
Radium-228 by GFPC	EPA 904 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

F7E050113

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
JWDDT	001	5601-FSS-SU9-1002	04/20/07	12:00
JWDE1	002	5601-FSS-SU9-1016	04/20/07	12:00
JWDE3	003	5601-FSS-SU9-1017	04/20/07	12:00
JWDTD	004	5601-FSS-SU7-1009	05/04/07	11:10
JWDTF	005	5601-FSS-SU7-1010	05/04/07	11:20
JWDTG	006	5601-FSS-SU7-1011	05/04/07	10:55
JWDTH	007	5601-FSS-SU7-1012	05/04/07	11:40
JWDTJ	008	5601-FSS-SU7-1019	05/04/07	10:55
JWDTK	009	5601-FSS-SU7-1020	05/04/07	10:55

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.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU9-1002

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-001
Work Order: JWDDT
Matrix: SOLID

Date Collected: 04/20/07 1200
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7125097**	**Yld % 42**
Radium (226)	**0.80**	**J**	**0.31**	1.00	**0.30**	**05/05/07**	**05/25/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7125098**	**Yld % 37**
Radium 228	1.1	U	1.0	1.0	1.7	05/05/07	05/25/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7131144**	**Yld % 95**
Uranium 234	**0.53**		**0.11**	0.10	**0.03**	**05/11/07**	**05/14/07**
Uranium 235/236	**0.047**	**J**	**0.032**	0.100	**0.013**	**05/11/07**	**05/14/07**
Uranium 238	**0.56**		**0.12**	0.10	**0.03**	**05/11/07**	**05/14/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7131141**	**Yld % 92**
Thorium 228	**0.54**		**0.12**	0.10	**0.04**	**05/11/07**	**05/14/07**
Thorium 230	**0.52**		**0.11**	0.10	**0.02**	**05/11/07**	**05/14/07**
Thorium 232	**0.59**		**0.13**	0.10	**0.02**	**05/11/07**	**05/14/07**

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU9-1002 DUP

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-001X
Work Order: JWDDT
Matrix: SOLID

Date Collected: 04/20/07 1200
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7125097	Yld % 86
Radium (226)	**0.70**	**J**	**0.21**	1.00	**0.19**	**05/05/07**	**05/25/07**
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7125098	Yld % 83
Radium 228	**0.77**	**J**	**0.45**	1.00	**0.70**	**05/05/07**	**05/25/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131141	Yld % 85
Thorium 228	**0.55**		**0.13**	0.10	**0.04**	**05/11/07**	**05/14/07**
Thorium 230	**0.58**		**0.13**	0.10	**0.02**	**05/11/07**	**05/14/07**
Thorium 232	**0.52**		**0.12**	0.10	**0.03**	**05/11/07**	**05/14/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131144	Yld % 97
Uranium 234	**0.57**		**0.12**	0.10	**0.03**	**05/11/07**	**05/14/07**
Uranium 235/236	0.013	U	0.017	0.100	0.021	05/11/07	05/14/07
Uranium 238	**0.49**		**0.11**	0.10	**0.02**	**05/11/07**	**05/14/07**

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU9-1016

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-002
Work Order: JWDE1
Matrix: SOLID

Date Collected: 04/20/07 1200
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7125097	Yld % 81
Radium (226)	0.71	J	0.22	1.00	0.19	05/05/07	05/25/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7125098	Yld % 75
Radium 228	0.87	J	0.50	1.00	0.78	05/05/07	05/25/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131144	Yld % 93
Uranium 234	0.67		0.13	0.10	0.02	05/11/07	05/14/07
Uranium 235/236	0.062	J	0.037	0.100	0.013	05/11/07	05/14/07
Uranium 238	0.58		0.12	0.10	0.02	05/11/07	05/14/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131141	Yld % 80
Thorium 228	0.67		0.15	0.10	0.04	05/11/07	05/14/07
Thorium 230	0.71		0.15	0.10	0.02	05/11/07	05/14/07
Thorium 232	0.78		0.16	0.10	0.03	05/11/07	05/14/07

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU9-1017

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-003
Work Order: JWDE3
Matrix: SOLID

Date Collected: 04/20/07 1200
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7125097**	**Yld % 65**
Radium (226)	**0.65**	**J**	**0.22**	1.00	**0.18**	**05/05/07**	**05/25/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7125098**	**Yld % 57**
Radium 228	0.65	U	0.64	1.00	1.0	05/05/07	05/25/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7131144**	**Yld % 92**
Uranium 234	**0.392**		**0.093**	0.100	**0.024**	**05/11/07**	**05/14/07**
Uranium 235/236	0.021	U	0.022	0.100	0.025	05/11/07	05/14/07
Uranium 238	**0.53**		**0.11**	0.10	**0.02**	**05/11/07**	**05/14/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7131141**	**Yld % 82**
Thorium 228	**0.69**		**0.15**	0.10	**0.04**	**05/11/07**	**05/14/07**
Thorium 230	**0.45**		**0.11**	0.10	**0.02**	**05/11/07**	**05/14/07**
Thorium 232	**0.61**		**0.13**	0.10	**0.03**	**05/11/07**	**05/14/07**

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU7-1009

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-004
Work Order: JWDTD
Matrix: SOLID

Date Collected: 05/04/07 1110
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7125097	Yld % 70
Radium (226)	1.08		0.28	1.00	0.19	05/05/07	05/25/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7125098	Yld % 64
Radium 228	1.15		0.61	1.00	0.94	05/05/07	05/25/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7135101	Yld % 97
Uranium 234	0.65		0.13	0.10	0.02	05/15/07	05/19/07
Uranium 235/236	0.035	J	0.026	0.100	0.021	05/15/07	05/19/07
Uranium 238	0.65		0.13	0.10	0.02	05/15/07	05/19/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7135099	Yld % 76
Thorium 228	1.05		0.21	0.10	0.04	05/15/07	05/19/07
Thorium 230	0.82		0.17	0.10	0.02	05/15/07	05/19/07
Thorium 232	1.04		0.21	0.10	0.03	05/15/07	05/19/07

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU7-1009 DUP

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-004X
Work Order: JWDTD
Matrix: SOLID

Date Collected: 05/04/07 1110
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7135099**	**Yld % 94**
Thorium 228	**0.80**		**0.16**	0.10	**0.04**	**05/15/07**	**05/19/07**
Thorium 230	**0.75**		**0.15**	0.10	**0.02**	**05/15/07**	**05/19/07**
Thorium 232	**0.81**		**0.16**	0.10	**0.02**	**05/15/07**	**05/19/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7135101**	**Yld % 103**
Uranium 234	**0.50**		**0.11**	0.10	**0.02**	**05/15/07**	**05/19/07**
Uranium 235/236	**0.013**	**J**	**0.017**	0.100	**0.012**	**05/15/07**	**05/19/07**
Uranium 238	**0.62**		**0.12**	0.10	**0.02**	**05/15/07**	**05/19/07**

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU7-1010

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-005
Work Order: JWDTF
Matrix: SOLID

Date Collected: 05/04/07 1120
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7125097**	**Yld % 66**
Radium (226)	**1.01**		**0.28**	1.00	**0.20**	**05/05/07**	**05/25/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7125098**	**Yld % 62**
Radium 228	0.74	U	0.60	1.00	0.96	05/05/07	05/25/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7131144**	**Yld % 87**
Uranium 234	**0.74**		**0.15**	0.10	**0.02**	**05/11/07**	**05/14/07**
Uranium 235/236	**0.023**	**J**	**0.023**	0.100	**0.022**	**05/11/07**	**05/14/07**
Uranium 238	**0.62**		**0.13**	0.10	**0.02**	**05/11/07**	**05/14/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7131141**	**Yld % 89**
Thorium 228	**0.79**		**0.16**	0.10	**0.03**	**05/11/07**	**05/14/07**
Thorium 230	**0.73**		**0.15**	0.10	**0.02**	**05/11/07**	**05/14/07**
Thorium 232	**0.89**		**0.17**	0.10	**0.02**	**05/11/07**	**05/14/07**

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU7-1011

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-006
Work Order: JWDTG
Matrix: SOLID

Date Collected: 05/04/07 1055
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7125097	Yld % 76
Radium (226)	0.97	J	0.26	1.00	0.18	05/05/07	05/25/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7125098	Yld % 76
Radium 228	0.81	J	0.51	1.00	0.80	05/05/07	05/25/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131144	Yld % 83
Uranium 234	0.86		0.17	0.10	0.03	05/11/07	05/14/07
Uranium 235/236	0.050	J	0.034	0.100	0.028	05/11/07	05/14/07
Uranium 238	0.81		0.16	0.10	0.01	05/11/07	05/14/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131141	Yld % 88
Thorium 228	0.90		0.17	0.10	0.04	05/11/07	05/14/07
Thorium 230	0.78		0.16	0.10	0.02	05/11/07	05/14/07
Thorium 232	1.03		0.19	0.10	0.02	05/11/07	05/14/07

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU7-1012

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-007
Work Order: JWDTH
Matrix: SOLID

Date Collected: 05/04/07 1140
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7125097**	**Yld % 75**
Radium (226)	**0.44**	**J**	**0.18**	1.00	**0.17**	**05/05/07**	**05/25/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7125098**	**Yld % 66**
Radium 228	0.56	U	0.60	1.00	0.98	05/05/07	05/25/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7131144**	**Yld % 93**
Uranium 234	**0.417**		**0.095**	0.100	**0.017**	**05/11/07**	**05/14/07**
Uranium 235/236	0.009	U	0.016	0.100	0.012	05/11/07	05/14/07
Uranium 238	**0.45**		**0.10**	0.10	**0.02**	**05/11/07**	**05/14/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7131141**	**Yld % 86**
Thorium 228	**0.59**		**0.13**	0.10	**0.03**	**05/11/07**	**05/14/07**
Thorium 230	**0.56**		**0.12**	0.10	**0.02**	**05/11/07**	**05/14/07**
Thorium 232	**0.50**		**0.12**	0.10	**0.03**	**05/11/07**	**05/14/07**

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU7-1019

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-008
Work Order: JWDTJ
Matrix: SOLID

Date Collected: 05/04/07 1055
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7125097	Yld % 82
Radium (226)	1.01		0.26	1.00	0.20	05/05/07	05/25/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7125098	Yld % 68
Radium 228	0.99	J	0.59	1.00	0.92	05/05/07	05/25/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131144	Yld % 92
Uranium 234	0.64		0.13	0.10	0.03	05/11/07	05/14/07
Uranium 235/236	0.021	U	0.026	0.100	0.034	05/11/07	05/14/07
Uranium 238	0.67		0.13	0.10	0.03	05/11/07	05/14/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131141	Yld % 97
Thorium 228	0.97		0.18	0.10	0.02	05/11/07	05/14/07
Thorium 230	0.76		0.15	0.10	0.02	05/11/07	05/14/07
Thorium 232	0.84		0.16	0.10	0.02	05/11/07	05/14/07

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU7-1020

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7E050113-009
Work Order: JWDTK
Matrix: SOLID

Date Collected: 05/04/07 1055
Date Received: 05/05/07 0845

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7125097	Yld % 87
Radium (226)	1.04		0.25	1.00	0.15	05/05/07	05/25/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7125098	Yld % 87
Radium 228	0.79	J	0.46	1.00	0.71	05/05/07	05/25/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131144	Yld % 95
Uranium 234	0.72		0.14	0.10	0.02	05/11/07	05/14/07
Uranium 235/236	0.037	J	0.028	0.100	0.012	05/11/07	05/14/07
Uranium 238	0.56		0.12	0.10	0.03	05/11/07	05/14/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7131141	Yld % 99
Thorium 228	1.00		0.19	0.10	0.04	05/11/07	05/14/07
Thorium 230	0.87		0.17	0.10	0.03	05/11/07	05/14/07
Thorium 232	1.06		0.20	0.10	0.03	05/11/07	05/14/07

NOTE(S)

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J Result is greater than sample detection limit but less than stated reporting limit.

METHOD BLANK REPORT

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7E050113
Matrix: SOLID

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date	Lab Sample ID
Iso THORIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**Batch # 7135099**		**Yld % 94**		**F7E150000-099B**
Thorium 228	0.018	U	0.027	0.100	0.038	05/15/07	05/19/07	
Thorium 230	0.017	U	0.018	0.100	0.020	05/15/07	05/19/07	
Thorium 232	**0.011**	**J**	**0.015**	0.100	**0.010**	**05/15/07**	**05/19/07**	
Iso URANIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**Batch # 7135101**		**Yld % 103**		**F7E150000-101B**
Uranium 234	**0.010**	**J**	**0.014**	0.100	**0.009**	**05/15/07**	**05/19/07**	
Uranium 235/236	-0.0011	U	0.0095	0.100	0.019	05/15/07	05/19/07	
Uranium 238	0.005	U	0.011	0.100	0.018	05/15/07	05/19/07	
Radium 226 by EPA 903.0 MOD			**pCi/g**	**Batch # 7125097**		**Yld % 100**		**F7E050000-097B**
Radium (226)	0.067	U	0.088	1.00	0.14	05/05/07	05/25/07	
Radium 228 by GFPC EPA 904 MOD			**pCi/g**	**Batch # 7125098**		**Yld % 71**		**F7E050000-098B**
Radium 228	0.22	U	0.50	1.00	0.84	05/05/07	05/25/07	
Iso URANIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**Batch # 7131144**		**Yld % 97**		**F7E110000-144B**
Uranium 234	**0.017**	**J**	**0.017**	0.100	**0.016**	**05/11/07**	**05/14/07**	
Uranium 235/236	-0.00111	U	0.00998	0.100	0.020	05/11/07	05/14/07	
Uranium 238	-0.0009	U	0.0080	0.100	0.016	05/11/07	05/14/07	
Iso THORIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**Batch # 7131141**		**Yld % 42**		**F7E110000-141B**
Thorium 228	-0.052	U	0.054	0.100	0.11	05/11/07	05/14/07	
Thorium 230	0.041	U	0.044	0.100	0.053	05/11/07	05/14/07	
Thorium 232	0.002	U	0.022	0.100	0.049	05/11/07	05/14/07	

NOTE(S)

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Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

Laboratory Control Sample Report

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7E050113
Matrix: SOLID

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID / QC Control Limits
Radium 226 by EPA 903.0 MOD			**pCi/g**	**903.0 MOD**			**F7E050000-097C**
Radium (226)	11.2	11.1	1.3	0.2	95	100	(53 - 113)
	Batch #:	7125097		**Analysis Date:**	05/25/07		
Radium 228 by GFPC EPA 904 MOD			**pCi/g**	**904 MOD**			**F7E050000-098C**
Radium 228	8.94	8.0	1.1	0.7	84	90	(54 - 130)
	Batch #:	7125098		**Analysis Date:**	05/25/07		
Iso THORIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**A-01-R MOD**			**F7E110000-141C**
Thorium 230	58.5	55.1	8.6	0.3	92	94	(81 - 124)
	Batch #:	7131141		**Analysis Date:**	05/14/07		
Iso URANIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**A-01-R MOD**			**F7E110000-144C**
Uranium 234	19.6	19.0	3.2	0.3	98	97	(78 - 125)
Uranium 238	19.6	17.4	3.0	0.2	98	89	(76 - 122)
	Batch #:	7131144		**Analysis Date:**	05/14/07		
Iso THORIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**A-01-R MOD**			**F7E150000-099C**
Thorium 230	58.5	69	14	1	38	118	(81 - 124)
	Batch #:	7135099		**Analysis Date:**	05/19/07		
Iso URANIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**A-01-R MOD**			**F7E150000-101C**
Uranium 234	19.6	17.8	3.0	0.3	99	91	(78 - 125)
Uranium 238	19.6	18.2	3.1	0.2	99	93	(76 - 122)
	Batch #:	7135101		**Analysis Date:**	05/19/07		

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

DUPLICATE EVALUATION REPORT

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7E050113 Date Sampled: 04/20/07
Matrix: SOLID Date Received: 05/05/07

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2σ+/-)	% Yld	QC Sample ID Precision	
Radium 226 by EPA 903.0 MOD				**pCi/g**	**903.0 MOD**				**F7E050113-001**	
Radium (226)	**0.80**	J	**0.31**	42	**0.70**	J	**0.21**	86	14	%RPD
	Batch #:		7125097	(Sample)	7125097		(Duplicate)			
Radium 228 by GFPC EPA 904 MOD				**pCi/g**	**904 MOD**				**F7E050113-001**	
Radium 228	1.1	U	1.0	37	**0.77**	J	**0.45**	83	38	%RPD
	Batch #:		7125098	(Sample)	7125098		(Duplicate)			
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**	**A-01-R MOD**				**F7E050113-001**	
Thorium 228	**0.54**		**0.12**	92	**0.55**		**0.13**	85	1	%RPD
Thorium 230	**0.52**		**0.11**	92	**0.58**		**0.13**	85	11	%RPD
Thorium 232	**0.59**		**0.13**	92	**0.52**		**0.12**	85	13	%RPD
	Batch #:		7131141	(Sample)	7131141		(Duplicate)			
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**	**A-01-R MOD**				**F7E050113-001**	
Uranium 234	**0.53**		**0.11**	95	**0.57**		**0.12**	97	8	%RPD
Uranium 235/236	**0.047**	J	**0.032**	95	0.013	U	0.017	97	116	%RPD
Uranium 238	**0.56**		**0.12**	95	**0.49**		**0.11**	97	14	%RPD
	Batch #:		7131144	(Sample)	7131144		(Duplicate)			
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**	**A-01-R MOD**				**F7E050113-004**	
Thorium 228	**1.05**		**0.21**	76	**0.80**		**0.16**	94	27	%RPD
Thorium 230	**0.82**		**0.17**	76	**0.75**		**0.15**	94	9	%RPD
Thorium 232	**1.04**		**0.21**	76	**0.81**		**0.16**	94	25	%RPD
	Batch #:		7135099	(Sample)	7135099		(Duplicate)			
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**	**A-01-R MOD**				**F7E050113-004**	
Uranium 234	**0.65**		**0.13**	97	**0.50**		**0.11**	103	26	%RPD
Uranium 235/236	**0.035**	J	**0.026**	97	**0.013**	J	**0.017**	103	93	%RPD
Uranium 238	**0.65**		**0.13**	97	**0.62**		**0.12**	103	5	%RPD
	Batch #:		7135101	(Sample)	7135101		(Duplicate)			

NOTE(S)

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J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

ALPHA SPECTROSCOPY

Alpha Spectroscopy

Thorium

SEVERN TRENT STL

Analysis Report for Alpha Spectroscopy

Batch: 7131141 **Operator:** 403424

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-001	JWDDT1AE	2.0025	1.00	2.00	AV4	5/14/07 11:02	240.00	rad05-0088	Th-229	3.656E+000	91.91%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	5.390E-001	pCi/g	9.371E-002	1.202E-001	4.092E-002	1.530E-002
Th-229	1.513E+000	pCi/g	1.590E-001	2.109E-001	2.439E-002	7.026E-003
Th-230	5.155E-001	pCi/g	8.938E-002	1.148E-001	2.438E-002	7.023E-003
Th-232	5.946E-001	pCi/g	9.536E-002	1.265E-001	2.016E-002	4.941E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-001X	JWDDT1AH	2.0088	1.00	2.00	AV6	5/14/07 11:02	240.00	rad05-0088	Th-229	3.644E+000	85.31%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	5.469E-001	pCi/g	9.834E-002	1.255E-001	4.495E-002	1.691E-002
Th-229	1.400E+000	pCi/g	1.649E-001	1.990E-001	2.807E-002	8.464E-003
Th-230	5.780E-001	pCi/g	9.788E-002	1.279E-001	2.183E-002	5.350E-003
Th-232	5.230E-001	pCi/g	9.344E-002	1.195E-001	2.791E-002	8.418E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-002	JWDE11AE	2.0033	1.00	2.00	AV1	5/14/07 16:58	240.00	rad05-0088	Th-229	3.654E+000	79.85%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	6.733E-001	pCi/g	1.119E-001	1.486E-001	4.261E-002	1.529E-002
Th-229	1.314E+000	pCi/g	1.716E-001	1.903E-001	2.840E-002	8.181E-003
Th-230	7.103E-001	pCi/g	1.126E-001	1.526E-001	2.021E-002	4.089E-003
Th-232	7.786E-001	pCi/g	1.180E-001	1.634E-001	2.824E-002	8.136E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-003	JWDE31AE	2.0009	1.00	2.00	AV8	5/14/07 11:02	240.00	rad05-0088	Th-229	3.658E+000	81.84%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	6.899E-001	pCi/g	1.091E-001	1.471E-001	3.677E-002	1.273E-002
Th-229	1.349E+000	pCi/g	1.667E-001	1.923E-001	3.165E-002	1.017E-002
Th-230	4.491E-001	pCi/g	8.703E-002	1.081E-001	2.217E-002	5.433E-003
Th-232	6.131E-001	pCi/g	1.020E-001	1.345E-001	2.997E-002	9.363E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-005	JWDTF1AE	2.0047	1.00	2.00	AV9	5/14/07 11:02	240.00	rad05-0088	Th-229	3.652E+000	89.26%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	7.857E-001	pCi/g	1.127E-001	1.581E-001	2.869E-002	8.960E-003
Th-229	1.468E+000	pCi/g	1.623E-001	2.068E-001	2.543E-002	7.325E-003
Th-230	7.264E-001	pCi/g	1.078E-001	1.488E-001	2.112E-002	5.176E-003
Th-232	8.931E-001	pCi/g	1.192E-001	1.735E-001	2.102E-002	5.151E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-006	JWDTG1AE	2.0154	1.00	2.00	AV11	5/14/07 11:02	240.00	rad05-0088	Th-229	3.632E+000	87.52%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	8.977E-001	pCi/g	1.206E-001	1.748E-001	4.020E-002	1.481E-002
Th-229	1.432E+000	pCi/g	1.607E-001	2.013E-001	2.962E-002	9.517E-003
Th-230	7.780E-001	pCi/g	1.109E-001	1.559E-001	2.496E-002	7.190E-003
Th-232	1.031E+000	pCi/g	1.271E-001	1.931E-001	2.484E-002	7.154E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-007	JWDTH1AE	2.0063	1.00	2.00	AV13	5/14/07 11:02	240.00	rad05-0088	Th-229	3.649E+000	86.40%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte		TracerAdded	TracerYield
						Th-228	5.916E-001	pCi/g	9.875E-002	1.296E-001	2.912E-002	9.096E-003
						Th-229	1.420E+000	pCi/g	1.636E-001	2.009E-001	2.915E-002	9.107E-003
						Th-230	5.586E-001	pCi/g	9.554E-002	1.241E-001	2.381E-002	6.436E-003
						Th-232	5.026E-001	pCi/g	9.062E-002	1.153E-001	2.567E-002	7.395E-003
F7E050113-008	JWDTJ1AE	2.0009	1.00	2.00	AV14	5 / 14 / 07 11:02	240.00	rad05-0088	Th-229		3.658E+000	96.72%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	9.669E-001	pCi/g	1.189E-001	1.789E-001	1.933E-002	4.736E-003
						Th-229	1.594E+000	pCi/g	1.554E-001	2.197E-001	2.328E-002	6.705E-003
						Th-230	7.616E-001	pCi/g	1.059E-001	1.493E-001	2.326E-002	6.702E-003
						Th-232	8.439E-001	pCi/g	1.107E-001	1.608E-001	1.648E-002	3.334E-003
F7E050113-009	JWDTK1AE	2.0055	1.00	2.00	AV15	5 / 14 / 07 11:02	240.00	rad05-0088	Th-229		3.650E+000	98.71%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.004E+000	pCi/g	1.309E-001	1.937E-001	4.479E-002	1.685E-002
						Th-229	1.623E+000	pCi/g	1.644E-001	2.301E-001	1.865E-002	3.773E-003
						Th-230	8.724E-001	pCi/g	1.203E-001	1.728E-001	2.796E-002	8.431E-003
						Th-232	1.057E+000	pCi/g	1.318E-001	1.999E-001	2.605E-002	7.504E-003
F7E110000-141B	JWQMP1AA	2.0000	1.00	2.00	AV20	5 / 14 / 07 11:02	240.00	rad05-0088	Th-229		3.660E+000	41.51%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	-5.179E-002	pCi/g	5.305E-002	5.382E-002	1.100E-001	4.377E-002
						Th-229	6.844E-001	pCi/g	2.353E-001	1.195E-001	5.656E-002	1.706E-002
						Th-230	4.145E-002	pCi/g	4.387E-002	4.446E-002	5.293E-002	1.525E-002
						Th-232	2.062E-003	pCi/g	2.183E-002	2.183E-002	4.860E-002	1.314E-002
F7E110000-141C	JWQMP1AC	0.1319	1.00	2.00	AV22	5 / 14 / 07 11:02	240.00	rad05-0088	Th-229		5.550E+001	91.96%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.069E+000	pCi/g	5.422E-001	5.628E-001	4.108E-001	1.239E-001
						Th-229	2.299E+001	pCi/g	2.459E+000	3.234E+000	3.201E-001	7.843E-002
						Th-230	5.512E+001	pCi/g	3.648E+000	8.589E+000	3.199E-001	7.839E-002
						Th-232	1.200E+000	pCi/g	5.626E-001	5.875E-001	3.829E-001	1.103E-001

Laboratory Control Sample Information

Sample ID	WRKNO	RegionName	Activity	StdAdded	Recovery	LCL	UCL
F7E110000-141C	JWQMP1AC	Th-230	5.512E+001	5.850E+001	94.23%	81.00	124.00

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F7E050113-001	Th-228	5.390E-001	F7E050113-001X	5.469E-001	1.44%	3.193E-002	4.514E-002	
	Th-230	5.155E-001	F7E050113-001X	5.780E-001	11.44%	2.578E-001	3.640E-001	
	Th-232	5.946E-001	F7E050113-001X	5.230E-001	12.82%	2.911E-001	4.115E-001	

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

Matrix Spike Information

SampID	SampMSID	RegionName	Sample Activity	MS Activity	StdAdded	MSRecovery

SEVERN TRENT STL

Analysis Report for Alpha Spectroscopy

Batch: 7135099 **Operator:** 403293

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-004	JWDTD1AE	2.0012	1.00	2.00	AV1	5/19/07 15:50	240.00	rad05-0088	Th-229	3.658E+000	75.97%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	1.050E+000	pCi/g	1.423E-001	2.099E-001	4.483E-002	1.609E-002
Th-229	1.252E+000	pCi/g	1.761E-001	1.836E-001	2.988E-002	8.609E-003
Th-230	8.222E-001	pCi/g	1.242E-001	1.733E-001	2.126E-002	4.302E-003
Th-232	1.038E+000	pCi/g	1.396E-001	2.069E-001	2.972E-002	8.561E-003

F7E050113-004X	JWDTD1AF	2.0034	1.00	2.00	AV2	5/19/07 15:50	240.00	rad05-0088	Th-229	3.654E+000	93.86%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	7.962E-001	pCi/g	1.132E-001	1.588E-001	4.328E-002	1.647E-002
Th-229	1.545E+000	pCi/g	1.592E-001	2.155E-001	2.757E-002	8.612E-003
Th-230	7.499E-001	pCi/g	1.075E-001	1.502E-001	2.251E-002	6.086E-003
Th-232	8.108E-001	pCi/g	1.114E-001	1.590E-001	2.240E-002	6.056E-003

F7E150000-099B	JW0A41AA	2.0000	1.00	2.00	AV3	5/19/07 15:50	240.00	rad05-0088	Th-229	3.660E+000	93.93%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	1.774E-002	pCi/g	2.720E-002	2.731E-002	3.844E-002	1.416E-002
Th-229	1.549E+000	pCi/g	1.571E-001	2.146E-001	1.982E-002	4.856E-003
Th-230	1.682E-002	pCi/g	1.753E-002	1.769E-002	1.984E-002	4.861E-003
Th-232	1.116E-002	pCi/g	1.288E-002	1.496E-002	1.006E-002	0.000E+000

F7E150000-099C	JW0A41AC	0.1309	1.00	2.00	AV4	5/19/07 15:50	240.00	rad05-0088	Th-229	5.592E+001	38.38%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	1.573E+000	pCi/g	1.273E+000	1.305E+000	1.499E+000	5.603E-001
Th-229	9.669E+000	pCi/g	3.776E+000	1.745E+000	8.934E-001	2.574E-001
Th-230	6.934E+001	pCi/g	6.244E+000	1.400E+001	9.537E-001	2.876E-001
Th-232	1.322E+000	pCi/g	9.019E-001	9.330E-001	7.386E-001	1.810E-001

Laboratory Control Sample Information

Sample ID	WRKNO	RegionName	Activity	StdAdded	Recovery	LCL	UCL
F7E150000-099C	JW0A41AC	Th-230	6.934E+001	5.850E+001	118.53%	81.00	124.00

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F7E050113-004	Th-228	1.050E+000	F7E050113-004X	7.962E-001	27.46%	6.874E-001	9.629E-001	
	Th-230	8.222E-001	F7E050113-004X	7.499E-001	9.20%	2.236E-001	3.154E-001	
	Th-232	1.038E+000	F7E050113-004X	8.108E-001	24.59%	6.212E-001	8.710E-001	

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

Matrix Spike Information

SampID	SampMSID	RegionName	Sample Activity	MS Activity	StdAdded	MSRecovery

TestAmerica STL

Daily Pulsers

Daily Pulser Check - Severn Trent Lab

Pulser Date: 5/14/2007

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria	P/F	FWHM (keV) Result	FWHM (keV) Criteria	P/F	Pulser Center Result	Pulser Center Criteria	P/F	Energy (keV) Result	Energy (keV) Criteria	P/F
AV1	05/14/2007 6:16	7449	7218.7 +/- 5%	Pass	14.0	10 - 20	Pass	222.0	229.0 +/- 5%	Pass	5001	5051.1 +/- 25%	Pass
AV1	05/14/2007 6:16	7449	7218.7 +/- 5%	Pass	14.0	10 - 20	Pass	222.0	229.0 +/- 5%	Pass	5001	5051.1 +/- 25%	Pass
AV1*	05/14/2007 5:16	6731	7218.7 +/- 5%	FAIL	13.9	10 - 20	Pass	222.0	229.0 +/- 5%	Pass	5001	5051.1 +/- 25%	Pass
AV2*	05/14/2007 5:16	6676	7468.7 +/- 5%	FAIL	14.4	10 - 20	Pass	226.9	222.9 +/- 5%	Pass	5036	5007.5 +/- 25%	Pass
AV2	05/14/2007 6:16	7449	7468.7 +/- 5%	Pass	14.0	10 - 20	Pass	226.9	222.9 +/- 5%	Pass	5036	5007.5 +/- 25%	Pass
AV3*	05/14/2007 5:16	6595	7484.9 +/- 5%	FAIL	13.9	10 - 20	Pass	222.0	225.9 +/- 5%	Pass	5001	5028.8 +/- 25%	Pass
AV3	05/14/2007 6:16	7446	7484.9 +/- 5%	Pass	13.9	10 - 20	Pass	222.0	225.9 +/- 5%	Pass	5001	5028.8 +/- 25%	Pass
AV4*	05/14/2007 5:16	6544	7413.7 +/- 5%	FAIL	14.6	10 - 20	Pass	225.9	224.9 +/- 5%	Pass	5029	5021.6 +/- 25%	Pass
AV4	05/14/2007 6:16	7432	7413.7 +/- 5%	Pass	14.9	10 - 20	Pass	225.9	224.9 +/- 5%	Pass	5029	5021.6 +/- 25%	Pass
AV6*	05/14/2007 5:16	6390	7476.7 +/- 5%	FAIL	11.2	10 - 20	Pass	221.0	224.0 +/- 5%	Pass	4993	5015.3 +/- 25%	Pass
AV6	05/14/2007 6:16	7335	7476.7 +/- 5%	Pass	11.2	10 - 20	Pass	221.0	224.0 +/- 5%	Pass	4993	5015.3 +/- 25%	Pass
AV7	05/14/2007 6:16	7438	7477.0 +/- 5%	Pass	13.5	10 - 20	Pass	226.9	224.9 +/- 5%	Pass	5036	5021.9 +/- 25%	Pass
AV7*	05/14/2007 5:16	6440	7477.0 +/- 5%	FAIL	13.3	10 - 20	Pass	226.9	224.9 +/- 5%	Pass	5037	5021.9 +/- 25%	Pass
AV8*	05/14/2007 5:16	6495	7327.4 +/- 5%	FAIL	13.9	10 - 20	Pass	223.9	228.0 +/- 5%	Pass	5014	5044.6 +/- 25%	Pass
AV8	05/14/2007 6:16	7427	7327.4 +/- 5%	Pass	15.1	10 - 20	Pass	225.1	228.0 +/- 5%	Pass	5023	5044.6 +/- 25%	Pass
AV8	05/14/2007 6:16	7427	7327.4 +/- 5%	Pass	15.1	10 - 20	Pass	225.1	228.0 +/- 5%	Pass	5023	5044.6 +/- 25%	Pass
AV9*	05/14/2007 5:16	6535	7519.3 +/- 5%	FAIL	13.3	10 - 20	Pass	225.0	227.9 +/- 5%	Pass	5023	5043.3 +/- 25%	Pass
AV9	05/14/2007 6:16	7717	7519.3 +/- 5%	Pass	13.5	10 - 20	Pass	225.0	227.9 +/- 5%	Pass	5023	5043.3 +/- 25%	Pass
AV11	05/14/2007 6:17	7590	7666.2 +/- 5%	Pass	16.1	10 - 20	Pass	217.9	225.0 +/- 5%	Pass	4971	5022.1 +/- 25%	Pass
AV11	05/14/2007 6:17	7590	7666.2 +/- 5%	Pass	16.1	10 - 20	Pass	217.9	225.0 +/- 5%	Pass	4971	5022.1 +/- 25%	Pass
AV11*	05/14/2007 5:16	6448	7666.2 +/- 5%	FAIL	25.7	10 - 20	FAIL	217.9	225.0 +/- 5%	Pass	4971	5022.1 +/- 25%	Pass
AV12	05/14/2007 6:17	7594	7588.7 +/- 5%	Pass	16.2	10 - 20	Pass	225.0	230.0 +/- 5%	Pass	5022	5058.4 +/- 25%	Pass
AV12	05/14/2007 6:17	7594	7588.7 +/- 5%	Pass	16.2	10 - 20	Pass	225.0	230.0 +/- 5%	Pass	5022	5058.4 +/- 25%	Pass
AV12*	05/14/2007 5:16	6369	7588.7 +/- 5%	FAIL	16.4	10 - 20	Pass	225.0	230.0 +/- 5%	Pass	5022	5058.4 +/- 25%	Pass
AV13	05/14/2007 6:17	7451	7584.6 +/- 5%	Pass	11.9	10 - 20	Pass	226.0	228.0 +/- 5%	Pass	5029	5044.1 +/- 25%	Pass
AV14	05/14/2007 6:17	7625	7638.3 +/- 5%	Pass	13.1	10 - 20	Pass	221.9	227.0 +/- 5%	Pass	5000	5037.2 +/- 25%	Pass
AV15	05/14/2007 6:17	7622	7770.5 +/- 5%	Pass	13.6	10 - 20	Pass	223.1	226.9 +/- 5%	Pass	5008	5036.6 +/- 25%	Pass
AV15	05/14/2007 6:17	7622	7770.5 +/- 5%	Pass	13.6	10 - 20	Pass	223.1	226.9 +/- 5%	Pass	5008	5036.6 +/- 25%	Pass
AV17	05/14/2007 6:17	7730	7619.1 +/- 5%	Pass	13.2	10 - 20	Pass	225.0	229.9 +/- 5%	Pass	5023	5058.3 +/- 25%	Pass
AV17	05/14/2007 6:17	7730	7619.1 +/- 5%	Pass	13.2	10 - 20	Pass	225.0	229.9 +/- 5%	Pass	5023	5058.3 +/- 25%	Pass
AV17*	05/14/2007 5:15	6174	7619.1 +/- 5%	FAIL	13.3	10 - 20	Pass	225.0	229.9 +/- 5%	Pass	5023	5058.3 +/- 25%	Pass
00S AV18	05/14/2007 5:19	7078	7714.5 +/- 5%	FAIL	13.3	10 - 20	Pass	223.1	226.9 +/- 5%	Pass	5009	5036.4 +/- 25%	Pass

* Pulsers were not on

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria	P/F	FWHM (keV) Result	FWHM (keV) Criteria	P/F	Pulser Center Result	Pulser Center Criteria	P/F	Energy (keV) Result	Energy (keV) Criteria	P/F
AV18	05/14/2007 6:17	7124	7714.5 +/- 5%	FAIL	13.2	10 - 20	Pass	223.2	226.9 +/- 5%	Pass	5009	5036.4 +/- 25%	Pass
AV18 *	05/14/2007 5:15	6201	7714.5 +/- 5%	FAIL	13.9	10 - 20	Pass	223.2	226.9 +/- 5%	Pass	5009	5036.4 +/- 25%	Pass
AV19 *	05/14/2007 5:15	6155	7269.8 +/- 5%	FAIL	14.2	10 - 20	Pass	220.9	227.7 +/- 5%	Pass	4993	5041.9 +/- 25%	Pass
AV19	05/14/2007 5:19	7725	7269.8 +/- 5%	FAIL	14.1	10 - 20	Pass	220.9	227.7 +/- 5%	Pass	4993	5041.9 +/- 25%	Pass
AV19	05/14/2007 6:17	7725	7269.8 +/- 5%	FAIL	13.3	10 - 20	Pass	220.9	227.7 +/- 5%	Pass	4993	5041.9 +/- 25%	Pass
AV20 *	05/14/2007 5:15	6106	7503.6 +/- 5%	FAIL	13.8	10 - 20	Pass	225.9	226.0 +/- 5%	Pass	5029	5029.9 +/- 25%	Pass
AV20	05/14/2007 5:19	7718	7503.6 +/- 5%	Pass	14.6	10 - 20	Pass	225.9	226.0 +/- 5%	Pass	5029	5029.9 +/- 25%	Pass
AV20	05/14/2007 6:17	7713	7503.6 +/- 5%	Pass	14.7	10 - 20	Pass	225.9	226.0 +/- 5%	Pass	5029	5029.9 +/- 25%	Pass
AV21 *	05/14/2007 5:15	4318	7550.9 +/- 5%	FAIL	13.5	10 - 20	Pass	223.0	226.0 +/- 5%	Pass	5008	5029.6 +/- 25%	Pass
AV21	05/14/2007 6:17	7718	7550.9 +/- 5%	Pass	13.6	10 - 20	Pass	223.0	226.0 +/- 5%	Pass	5008	5029.6 +/- 25%	Pass
AV21	05/14/2007 5:19	7721	7550.9 +/- 5%	Pass	13.5	10 - 20	Pass	223.0	226.0 +/- 5%	Pass	5008	5029.6 +/- 25%	Pass
AV22 *	05/14/2007 5:15	4375	7691.4 +/- 5%	FAIL	13.8	10 - 20	Pass	224.0	225.0 +/- 5%	Pass	5015	5022.4 +/- 25%	Pass
AV22	05/14/2007 5:19	7719	7691.4 +/- 5%	Pass	13.9	10 - 20	Pass	224.0	225.0 +/- 5%	Pass	5015	5022.4 +/- 25%	Pass
AV22	05/14/2007 6:17	7716	7691.4 +/- 5%	Pass	13.9	10 - 20	Pass	224.0	225.0 +/- 5%	Pass	5015	5022.4 +/- 25%	Pass
AV24 *	05/14/2007 5:15	4428	7354.0 +/- 5%	FAIL	14.3	10 - 20	Pass	224.0	226.9 +/- 5%	Pass	5015	5036.4 +/- 25%	Pass
AV24	05/14/2007 5:20	7712	7354.0 +/- 5%	Pass	14.6	10 - 20	Pass	224.0	226.9 +/- 5%	Pass	5015	5036.4 +/- 25%	Pass
AV24	05/14/2007 6:17	7707	7354.0 +/- 5%	Pass	14.9	10 - 20	Pass	224.0	226.9 +/- 5%	Pass	5015	5036.4 +/- 25%	Pass
AV45	05/14/2007 5:19	7655	7593.5 +/- 5%	Pass	21.7	10 - 20	FAIL	228.1	225.6 +/- 5%	Pass	5045	5026.9 +/- 25%	Pass
AV45	05/14/2007 6:17	7652	7593.5 +/- 5%	Pass	22.5	10 - 20	FAIL	228.1	225.6 +/- 5%	Pass	5045	5026.9 +/- 25%	Pass
AV45 *	05/14/2007 5:16	2521	7593.5 +/- 5%	FAIL	22.2	10 - 20	FAIL	228.1	225.6 +/- 5%	Pass	5045	5026.9 +/- 25%	Pass
AV46	05/14/2007 5:19	7543	7722.7 +/- 5%	Pass	12.8	10 - 20	Pass	224.0	225.8 +/- 5%	Pass	5015	5028.0 +/- 25%	Pass
AV46	05/14/2007 6:17	7554	7722.7 +/- 5%	Pass	12.8	10 - 20	Pass	224.0	225.8 +/- 5%	Pass	5015	5028.0 +/- 25%	Pass
AV46 *	05/14/2007 5:16	2399	7722.7 +/- 5%	FAIL	12.7	10 - 20	Pass	224.0	225.8 +/- 5%	Pass	5015	5028.0 +/- 25%	Pass
AV47 *	05/14/2007 5:16	2226	7532.5 +/- 5%	FAIL	13.9	10 - 20	Pass	221.0	226.0 +/- 5%	Pass	4993	5029.6 +/- 25%	Pass
AV47	05/14/2007 5:19	7646	7532.5 +/- 5%	Pass	14.1	10 - 20	Pass	221.0	226.0 +/- 5%	Pass	4993	5029.6 +/- 25%	Pass
AV47	05/14/2007 6:17	7645	7532.5 +/- 5%	Pass	14.2	10 - 20	Pass	221.0	226.0 +/- 5%	Pass	4993	5029.6 +/- 25%	Pass
AV48 *	05/14/2007 5:16	2278	7717.5 +/- 5%	FAIL	14.4	10 - 20	Pass	223.0	224.0 +/- 5%	Pass	5008	5015.2 +/- 25%	Pass
AV48	05/14/2007 5:19	7620	7717.5 +/- 5%	Pass	15.1	10 - 20	Pass	222.9	224.0 +/- 5%	Pass	5007	5015.2 +/- 25%	Pass
AV48	05/14/2007 6:17	7635	7717.5 +/- 5%	Pass	15.0	10 - 20	Pass	223.0	224.0 +/- 5%	Pass	5008	5015.2 +/- 25%	Pass
AV49 *	05/14/2007 5:16	2329	7703.4 +/- 5%	FAIL	14.5	10 - 20	Pass	231.9	226.0 +/- 5%	Pass	5072	5029.5 +/- 25%	Pass
AV49	05/14/2007 6:17	7635	7703.4 +/- 5%	Pass	14.3	10 - 20	Pass	231.8	226.0 +/- 5%	Pass	5072	5029.5 +/- 25%	Pass
AV49	05/14/2007 5:19	7583	7703.4 +/- 5%	Pass	14.5	10 - 20	Pass	233.2	226.0 +/- 5%	Pass	5082	5029.5 +/- 25%	Pass
AV50 *	05/14/2007 5:16	2387	7660.9 +/- 5%	FAIL	15.3	10 - 20	Pass	226.0	227.0 +/- 5%	Pass	5030	5037.2 +/- 25%	Pass
AV50	05/14/2007 5:20	7556	7660.9 +/- 5%	Pass	15.4	10 - 20	Pass	226.0	227.0 +/- 5%	Pass	5030	5037.2 +/- 25%	Pass
AV50	05/14/2007 6:17	7625	7660.9 +/- 5%	Pass	15.4	10 - 20	Pass	226.0	227.0 +/- 5%	Pass	5030	5037.2 +/- 25%	Pass
AV51 *	05/14/2007 5:16	2093	7070.5 +/- 5%	FAIL	13.4	10 - 20	Pass	227.0	223.0 +/- 5%	Pass	5037	5007.6 +/- 25%	Pass

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria		Gross Counts P/F	FWHM (keV) Result	FWHM (keV) Criteria	FWHM (keV) P/F	Pulser Center Result	Pulser Center Criteria		Pulser Center P/F	Energy (keV) Result	Energy (keV) Criteria		Energy (keV) P/F
AV51	05/14/2007 5:20	7356	7070.5	+/- 5%	Pass	13.5	10 - 20	Pass	227.0	223.0	+/- 5%	Pass	5037	5007.6	+/- 25%	Pass
AV51	05/14/2007 6:17	7353	7070.5	+/- 5%	Pass	13.6	10 - 20	Pass	227.0	223.0	+/- 5%	Pass	5037	5007.6	+/- 25%	Pass
AV52	05/14/2007 5:20	6957	7156.4	+/- 5%	Pass	12.9	10 - 20	Pass	222.9	225.0	+/- 5%	Pass	5007	5022.4	+/- 25%	Pass
AV52	05/14/2007 6:17	7027	7156.4	+/- 5%	Pass	12.8	10 - 20	Pass	222.9	225.0	+/- 5%	Pass	5007	5022.4	+/- 25%	Pass
AV52 *	05/14/2007 5:16	1961	7156.4	+/- 5%	FAIL	12.8	10 - 20	Pass	222.9	225.0	+/- 5%	Pass	5007	5022.4	+/- 25%	Pass
AV53	05/14/2007 5:20	7143	7144.1	+/- 5%	Pass	12.9	10 - 20	Pass	224.0	223.0	+/- 5%	Pass	5015	5007.8	+/- 25%	Pass
AV53	05/14/2007 6:17	7350	7144.1	+/- 5%	Pass	13.1	10 - 20	Pass	224.0	223.0	+/- 5%	Pass	5015	5007.8	+/- 25%	Pass
AV53 *	05/14/2007 5:16	1999	7144.1	+/- 5%	FAIL	13.1	10 - 20	Pass	224.0	223.0	+/- 5%	Pass	5015	5007.8	+/- 25%	Pass
AV54 *	05/14/2007 5:16	1867	7313.1	+/- 5%	FAIL	12.9	10 - 20	Pass	226.9	226.0	+/- 5%	Pass	5037	5029.5	+/- 25%	Pass
AV54	05/14/2007 5:20	7348	7313.1	+/- 5%	Pass	14.1	10 - 20	Pass	226.9	226.0	+/- 5%	Pass	5036	5029.5	+/- 25%	Pass
AV54	05/14/2007 6:17	7345	7313.1	+/- 5%	Pass	14.1	10 - 20	Pass	226.9	226.0	+/- 5%	Pass	5036	5029.5	+/- 25%	Pass
AV55 *	05/14/2007 5:16	1684	7132.9	+/- 5%	FAIL	13.2	10 - 20	Pass	221.9	226.0	+/- 5%	Pass	5000	5029.7	+/- 25%	Pass
AV55	05/14/2007 5:20	7096	7132.9	+/- 5%	Pass	12.4	10 - 20	Pass	222.0	226.0	+/- 5%	Pass	5000	5029.7	+/- 25%	Pass
AV56	05/14/2007 5:20	7164	7163.7	+/- 5%	Pass	12.9	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.7	+/- 25%	Pass
AV56 *	05/14/2007 5:16	1736	7163.7	+/- 5%	FAIL	12.9	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.7	+/- 25%	Pass
AV57	05/14/2007 5:20	7341	7309.5	+/- 5%	Pass	13.9	10 - 20	Pass	221.9	222.0	+/- 5%	Pass	5000	5000.6	+/- 25%	Pass
AV57 *	05/14/2007 5:16	1790	7309.5	+/- 5%	FAIL	14.2	10 - 20	Pass	221.9	222.0	+/- 5%	Pass	5000	5000.6	+/- 25%	Pass
AV58 *	05/14/2007 5:16	1841	7249.2	+/- 5%	FAIL	13.7	10 - 20	Pass	222.0	223.0	+/- 5%	Pass	5001	5008.0	+/- 25%	Pass
AV58	05/14/2007 5:20	7339	7249.2	+/- 5%	Pass	13.3	10 - 20	Pass	222.0	223.0	+/- 5%	Pass	5001	5008.0	+/- 25%	Pass
AV59 *	05/14/2007 5:16	1583	7141.4	+/- 5%	FAIL	13.0	10 - 20	Pass	286.0	284.0	+/- 5%	Pass	5465	5450.6	+/- 25%	Pass
AV59	05/14/2007 5:20	7239	7141.4	+/- 5%	Pass	12.9	10 - 20	Pass	286.0	284.0	+/- 5%	Pass	5465	5450.6	+/- 25%	Pass
AV59	05/14/2007 6:17	7236	7141.4	+/- 5%	Pass	12.9	10 - 20	Pass	286.0	284.0	+/- 5%	Pass	5465	5450.6	+/- 25%	Pass
AV66	05/14/2007 6:17	7227	7165.5	+/- 5%	Pass	14.0	10 - 20	Pass	219.9	222.0	+/- 5%	Pass	4986	5000.5	+/- 25%	Pass
AV66 *	05/14/2007 5:16	1399	7165.5	+/- 5%	FAIL	13.4	10 - 20	Pass	221.1	222.0	+/- 5%	Pass	4994	5000.5	+/- 25%	Pass
AV66	05/14/2007 5:20	7227	7165.5	+/- 5%	Pass	14.4	10 - 20	Pass	219.9	222.0	+/- 5%	Pass	4985	5000.5	+/- 25%	Pass
AV67 *	05/14/2007 5:16	809	7128.1	+/- 5%	FAIL	19.4	10 - 20	Pass	224.2	224.1	+/- 5%	Pass	5016	5015.6	+/- 25%	Pass
AV67	05/14/2007 5:20	7423	7128.1	+/- 5%	Pass	18.4	10 - 20	Pass	224.1	224.1	+/- 5%	Pass	5016	5015.6	+/- 25%	Pass
AV68 *	05/14/2007 5:16	885	7259.5	+/- 5%	FAIL	13.8	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5000	5000.8	+/- 25%	Pass
AV68	05/14/2007 5:20	7418	7259.5	+/- 5%	Pass	13.5	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.8	+/- 25%	Pass
AV69 *	05/14/2007 5:16	1080	7305.4	+/- 5%	FAIL	16.1	10 - 20	Pass	221.1	222.0	+/- 5%	Pass	4994	5000.6	+/- 25%	Pass
AV69	05/14/2007 5:20	7382	7305.4	+/- 5%	Pass	16.0	10 - 20	Pass	221.1	222.0	+/- 5%	Pass	4994	5000.6	+/- 25%	Pass
AV70 *	05/14/2007 5:16	1033	7406.5	+/- 5%	FAIL	13.1	10 - 20	Pass	219.9	222.6	+/- 5%	Pass	4986	5004.7	+/- 25%	Pass
AV70	05/14/2007 5:20	7416	7406.5	+/- 5%	Pass	13.0	10 - 20	Pass	220.0	222.6	+/- 5%	Pass	4986	5004.7	+/- 25%	Pass
AV71 *	05/14/2007 5:16	1308	7187.3	+/- 5%	FAIL	14.4	10 - 20	Pass	219.8	225.0	+/- 5%	Pass	4985	5022.7	+/- 25%	Pass
AV71	05/14/2007 5:20	7413	7187.3	+/- 5%	Pass	13.5	10 - 20	Pass	221.1	225.0	+/- 5%	Pass	4994	5022.7	+/- 25%	Pass
AV72 *	05/14/2007 5:16	1208	7090.0	+/- 5%	FAIL	13.9	10 - 20	Pass	224.0	223.9	+/- 5%	Pass	5015	5014.6	+/- 25%	Pass

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria		Gross Counts P/F	FWHM (keV) Result	FWHM (keV) Criteria	FWHM (keV) P/F	Pulser Center Result	Pulser Center Criteria		Pulser Center P/F	Energy (keV) Result	Energy (keV) Criteria		Energy (keV) P/F
AV72	05/14/2007 5:20	7411	7090.0	+/- 5%	Pass	13.2	10 - 20	Pass	225.0	223.9	+/- 5%	Pass	5023	5014.6	+/- 25%	Pass
AV73*	05/14/2007 5:16	1139	7251.3	+/- 5%	FAIL	13.9	10 - 20	Pass	224.1	225.0	+/- 5%	Pass	5016	5022.4	+/- 25%	Pass
AV73	05/14/2007 5:20	7408	7251.3	+/- 5%	Pass	13.3	10 - 20	Pass	224.1	225.0	+/- 5%	Pass	5016	5022.4	+/- 25%	Pass
AV75*	05/14/2007 5:16	2691	7267.9	+/- 5%	FAIL	12.4	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV75	05/14/2007 5:20	7375	7267.9	+/- 5%	Pass	13.0	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV75	05/14/2007 6:16	7292	7267.9	+/- 5%	Pass	12.5	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV76*	05/14/2007 5:16	2732	7374.3	+/- 5%	FAIL	12.7	10 - 20	Pass	222.9	224.0	+/- 5%	Pass	5008	5015.2	+/- 25%	Pass
AV76	05/14/2007 5:20	7247	7374.3	+/- 5%	Pass	12.6	10 - 20	Pass	222.9	224.0	+/- 5%	Pass	5007	5015.2	+/- 25%	Pass
AV76	05/14/2007 6:16	7304	7374.3	+/- 5%	Pass	12.4	10 - 20	Pass	223.0	224.0	+/- 5%	Pass	5008	5015.2	+/- 25%	Pass
AV77	05/14/2007 5:20	7554	7497.1	+/- 5%	Pass	12.9	10 - 20	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV77	05/14/2007 6:16	7552	7497.1	+/- 5%	Pass	13.0	10 - 20	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV77*	05/14/2007 5:15	2888	7497.1	+/- 5%	FAIL	13.2	10 - 20	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV78	05/14/2007 5:20	7107	7183.8	+/- 5%	Pass	13.1	10 - 20	Pass	222.9	223.3	+/- 5%	Pass	5007	5009.8	+/- 25%	Pass
AV78	05/14/2007 6:16	7550	7183.8	+/- 5%	FAIL	13.1	10 - 20	Pass	222.9	223.3	+/- 5%	Pass	5007	5009.8	+/- 25%	Pass
AV78*	05/14/2007 5:15	2938	7183.8	+/- 5%	FAIL	13.5	10 - 20	Pass	222.9	223.3	+/- 5%	Pass	5007	5009.8	+/- 25%	Pass
AV79*	05/14/2007 5:15	3197	7349.7	+/- 5%	FAIL	13.0	10 - 20	Pass	221.0	222.0	+/- 5%	Pass	4993	5000.4	+/- 25%	Pass
AV79	05/14/2007 5:20	7232	7349.7	+/- 5%	Pass	12.8	10 - 20	Pass	220.9	222.0	+/- 5%	Pass	4993	5000.4	+/- 25%	Pass
AV79	05/14/2007 6:16	7547	7349.7	+/- 5%	Pass	13.5	10 - 20	Pass	220.9	222.0	+/- 5%	Pass	4993	5000.4	+/- 25%	Pass
AV80	05/14/2007 6:16	7367	7226.4	+/- 5%	Pass	12.8	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV80*	05/14/2007 5:15	3089	7226.4	+/- 5%	FAIL	12.8	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV80	05/14/2007 5:20	7374	7226.4	+/- 5%	Pass	12.8	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV81	05/14/2007 6:16	7542	7453.4	+/- 5%	Pass	13.0	10 - 20	Pass	222.0	223.0	+/- 5%	Pass	5001	5008.1	+/- 25%	Pass
AV81	05/14/2007 5:20	7544	7453.4	+/- 5%	Pass	13.1	10 - 20	Pass	222.0	223.0	+/- 5%	Pass	5000	5008.1	+/- 25%	Pass
AV81*	05/14/2007 5:15	3095	7453.4	+/- 5%	FAIL	12.9	10 - 20	Pass	222.0	223.0	+/- 5%	Pass	5000	5008.1	+/- 25%	Pass
AV82*	05/14/2007 5:15	2979	7529.2	+/- 5%	FAIL	13.6	10 - 20	Pass	223.9	224.0	+/- 5%	Pass	5015	5015.2	+/- 25%	Pass
AV82	05/14/2007 5:20	7541	7529.2	+/- 5%	Pass	13.6	10 - 20	Pass	223.9	224.0	+/- 5%	Pass	5015	5015.2	+/- 25%	Pass
AV82	05/14/2007 6:16	7539	7529.2	+/- 5%	Pass	13.6	10 - 20	Pass	223.9	224.0	+/- 5%	Pass	5015	5015.2	+/- 25%	Pass
AV83*	05/14/2007 5:15	3244	7523.7	+/- 5%	FAIL	12.5	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV83	05/14/2007 5:20	7493	7523.7	+/- 5%	Pass	12.9	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV83	05/14/2007 6:16	7453	7523.7	+/- 5%	Pass	12.4	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV84	05/14/2007 5:20	7310	7637.7	+/- 5%	Pass	12.9	10 - 20	Pass	222.9	223.0	+/- 5%	Pass	5007	5007.7	+/- 25%	Pass
AV84	05/14/2007 6:16	7450	7637.7	+/- 5%	Pass	12.3	10 - 20	Pass	222.9	223.0	+/- 5%	Pass	5007	5007.7	+/- 25%	Pass
AV84*	05/14/2007 5:16	3276	7637.7	+/- 5%	FAIL	12.5	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.7	+/- 25%	Pass
AV85	05/14/2007 5:20	7553	7549.7	+/- 5%	Pass	12.7	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.0	+/- 25%	Pass
AV85	05/14/2007 6:16	7538	7549.7	+/- 5%	Pass	12.8	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.0	+/- 25%	Pass
AV85*	05/14/2007 5:16	3401	7549.7	+/- 5%	FAIL	12.6	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.0	+/- 25%	Pass

OOS

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria		Gross Counts P/F	FWHM (keV) Result	FWHM (keV) Criteria	FWHM (keV) P/F	Pulser Center Result	Pulser Center Criteria		Pulser Center P/F	Energy (keV) Result	Energy (keV) Criteria		Energy (keV) P/F
AV86 *	05/14/2007 5:16	3525	7679.0	+/- 5%	FAIL	17.3	10 - 20	Pass	224.1	223.9	+/- 5%	Pass	5016	5014.3	+/- 25%	Pass
AV86	05/14/2007 6:17	7667	7679.0	+/- 5%	Pass	17.2	10 - 20	Pass	224.1	223.9	+/- 5%	Pass	5016	5014.3	+/- 25%	Pass
AV87 *	05/14/2007 5:16	3594	7512.4	+/- 5%	FAIL	12.9	10 - 20	Pass	221.9	223.0	+/- 5%	Pass	5000	5007.7	+/- 25%	Pass
AV87	05/14/2007 6:17	7363	7512.4	+/- 5%	Pass	12.8	10 - 20	Pass	221.9	223.0	+/- 5%	Pass	5000	5007.7	+/- 25%	Pass
AV88	05/14/2007 6:17	7710	7716.1	+/- 5%	Pass	13.9	10 - 20	Pass	224.1	224.0	+/- 5%	Pass	5016	5015.4	+/- 25%	Pass
AV88	05/14/2007 6:17	7710	7716.1	+/- 5%	Pass	13.9	10 - 20	Pass	224.1	224.0	+/- 5%	Pass	5016	5015.4	+/- 25%	Pass
AV88 *	05/14/2007 5:16	3689	7716.1	+/- 5%	FAIL	14.1	10 - 20	Pass	224.1	224.0	+/- 5%	Pass	5016	5015.4	+/- 25%	Pass
AV89 *	05/14/2007 5:16	3647	7553.8	+/- 5%	FAIL	13.5	10 - 20	Pass	219.9	222.6	+/- 5%	Pass	4986	5004.7	+/- 25%	Pass
AV89	05/14/2007 6:17	7398	7553.8	+/- 5%	Pass	12.8	10 - 20	Pass	219.9	222.6	+/- 5%	Pass	4986	5004.7	+/- 25%	Pass
AV90 *	05/14/2007 5:16	3602	7474.4	+/- 5%	FAIL	13.7	10 - 20	Pass	222.9	224.1	+/- 5%	Pass	5007	5015.6	+/- 25%	Pass
AV90	05/14/2007 6:17	7710	7474.4	+/- 5%	Pass	13.8	10 - 20	Pass	222.9	224.1	+/- 5%	Pass	5007	5015.6	+/- 25%	Pass
AV92 *	05/14/2007 5:16	3644	7358.9	+/- 5%	FAIL	12.6	10 - 20	Pass	222.9	223.9	+/- 5%	Pass	5007	5014.6	+/- 25%	Pass
AV92	05/14/2007 6:17	7241	7358.9	+/- 5%	Pass	12.9	10 - 20	Pass	222.9	223.9	+/- 5%	Pass	5007	5014.6	+/- 25%	Pass
AV93	05/14/2007 6:17	7436	7393.5	+/- 5%	Pass	12.6	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.3	+/- 25%	Pass
AV93 *	05/14/2007 5:16	3920	7393.5	+/- 5%	FAIL	12.8	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.3	+/- 25%	Pass
AV93	05/14/2007 6:17	7436	7393.5	+/- 5%	Pass	12.6	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.3	+/- 25%	Pass
AV94 *	05/14/2007 5:16	3921	7477.9	+/- 5%	FAIL	12.8	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.5	+/- 25%	Pass
AV94	05/14/2007 6:17	7440	7477.9	+/- 5%	Pass	12.6	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.5	+/- 25%	Pass
AV95 *	05/14/2007 5:16	3966	7432.4	+/- 5%	FAIL	13.2	10 - 20	Pass	219.9	222.2	+/- 5%	Pass	4985	5001.9	+/- 25%	Pass
AV95	05/14/2007 6:16	7171	7432.4	+/- 5%	Pass	13.2	10 - 20	Pass	219.9	222.2	+/- 5%	Pass	4985	5001.9	+/- 25%	Pass
AV95	05/14/2007 6:16	7171	7432.4	+/- 5%	Pass	13.2	10 - 20	Pass	219.9	222.2	+/- 5%	Pass	4985	5001.9	+/- 25%	Pass
AV96 *	05/14/2007 5:16	4177	7654.3	+/- 5%	FAIL	13.4	10 - 20	Pass	222.0	222.6	+/- 5%	Pass	5000	5005.3	+/- 25%	Pass
AV96	05/14/2007 6:16	7641	7654.3	+/- 5%	Pass	13.3	10 - 20	Pass	222.0	222.6	+/- 5%	Pass	5001	5005.3	+/- 25%	Pass
AV97 *	05/14/2007 5:16	4096	7649.9	+/- 5%	FAIL	14.0	10 - 20	Pass	222.9	223.8	+/- 5%	Pass	5008	5014.0	+/- 25%	Pass
AV97	05/14/2007 6:16	7634	7649.9	+/- 5%	Pass	13.8	10 - 20	Pass	222.9	223.8	+/- 5%	Pass	5008	5014.0	+/- 25%	Pass
AV98	05/14/2007 6:16	7303	7582.0	+/- 5%	Pass	12.9	10 - 20	Pass	222.9	223.0	+/- 5%	Pass	5007	5007.6	+/- 25%	Pass
AV98 *	05/14/2007 5:16	4052	7582.0	+/- 5%	FAIL	13.5	10 - 20	Pass	222.9	223.0	+/- 5%	Pass	5007	5007.6	+/- 25%	Pass

Daily Pulser Check - Severn Trent Lab

Pulser Date: 5/19/2007

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria	P/F	FWHM (keV) Result	FWHM (keV) Criteria	P/F	Pulser Center Result	Pulser Center Criteria	P/F	Energy (keV) Result	Energy (keV) Criteria	P/F
AV1	05/19/2007 10:12	7341	7218.7 +/- 5%	Pass	15.2	10 - 20	Pass	221.9	229.0 +/- 5%	Pass	5000	5051.1 +/- 25%	Pass
AV2	05/19/2007 9:41	7431	7468.7 +/- 5%	Pass	15.7	10 - 20	Pass	227.9	222.9 +/- 5%	Pass	5043	5007.5 +/- 25%	Pass
AV3	05/19/2007 9:41	7450	7484.9 +/- 5%	Pass	14.2	10 - 20	Pass	222.0	225.9 +/- 5%	Pass	5000	5028.8 +/- 25%	Pass
AV4	05/19/2007 9:41	7419	7413.7 +/- 5%	Pass	15.0	10 - 20	Pass	225.9	224.9 +/- 5%	Pass	5029	5021.6 +/- 25%	Pass
AV6	05/19/2007 9:41	7350	7476.7 +/- 5%	Pass	11.6	10 - 20	Pass	222.0	224.0 +/- 5%	Pass	5001	5015.3 +/- 25%	Pass
AV7	05/19/2007 9:41	7427	7477.0 +/- 5%	Pass	14.3	10 - 20	Pass	227.9	224.9 +/- 5%	Pass	5044	5021.9 +/- 25%	Pass
AV8	05/19/2007 9:41	7390	7327.4 +/- 5%	Pass	15.5	10 - 20	Pass	225.1	228.0 +/- 5%	Pass	5023	5044.6 +/- 25%	Pass
AV9	05/19/2007 9:41	7720	7519.3 +/- 5%	Pass	13.6	10 - 20	Pass	225.0	227.9 +/- 5%	Pass	5023	5043.3 +/- 25%	Pass
AV11	05/19/2007 9:41	7701	7666.2 +/- 5%	Pass	15.2	10 - 20	Pass	222.0	225.0 +/- 5%	Pass	5001	5022.1 +/- 25%	Pass
AV12	05/19/2007 9:41	7653	7588.7 +/- 5%	Pass	16.8	10 - 20	Pass	225.0	230.0 +/- 5%	Pass	5023	5058.4 +/- 25%	Pass
AV13	05/19/2007 9:41	7711	7584.6 +/- 5%	Pass	13.4	10 - 20	Pass	226.0	228.0 +/- 5%	Pass	5029	5044.1 +/- 25%	Pass
AV14	05/19/2007 9:41	7709	7638.3 +/- 5%	Pass	13.1	10 - 20	Pass	222.0	227.0 +/- 5%	Pass	5000	5037.2 +/- 25%	Pass
AV15	05/19/2007 9:41	7704	7770.5 +/- 5%	Pass	13.3	10 - 20	Pass	223.1	226.9 +/- 5%	Pass	5008	5036.6 +/- 25%	Pass
AV17	05/19/2007 9:41	7730	7619.1 +/- 5%	Pass	13.3	10 - 20	Pass	225.0	229.9 +/- 5%	Pass	5023	5058.3 +/- 25%	Pass
AV18	05/19/2007 9:41	7721	7714.5 +/- 5%	Pass	15.2	10 - 20	Pass	221.9	226.9 +/- 5%	Pass	5000	5036.4 +/- 25%	Pass
AV19	05/19/2007 9:41	7722	7269.8 +/- 5%	FAIL	13.9	10 - 20	Pass	221.0	227.7 +/- 5%	Pass	4993	5041.9 +/- 25%	Pass
AV19 ok	05/19/2007 10:12	7622	7269.8 +/- 5%	Pass	13.6	10 - 20	Pass	221.0	227.7 +/- 5%	Pass	4993	5041.9 +/- 25%	Pass
AV20	05/19/2007 9:42	7719	7503.6 +/- 5%	Pass	14.2	10 - 20	Pass	225.9	226.0 +/- 5%	Pass	5029	5029.9 +/- 25%	Pass
AV21	05/19/2007 9:42	7719	7550.9 +/- 5%	Pass	13.5	10 - 20	Pass	223.0	226.0 +/- 5%	Pass	5008	5029.6 +/- 25%	Pass
AV22	05/19/2007 9:42	7713	7691.4 +/- 5%	Pass	14.2	10 - 20	Pass	224.1	225.0 +/- 5%	Pass	5016	5022.4 +/- 25%	Pass
AV24	05/19/2007 9:42	7695	7354.0 +/- 5%	Pass	15.5	10 - 20	Pass	224.0	226.9 +/- 5%	Pass	5015	5036.4 +/- 25%	Pass
AV46	05/19/2007 9:41	7633	7722.7 +/- 5%	Pass	12.9	10 - 20	Pass	224.0	225.8 +/- 5%	Pass	5015	5028.0 +/- 25%	Pass
AV47	05/19/2007 9:41	7625	7532.5 +/- 5%	Pass	14.5	10 - 20	Pass	221.9	226.0 +/- 5%	Pass	5000	5029.6 +/- 25%	Pass
AV48	05/19/2007 9:41	7619	7717.5 +/- 5%	Pass	15.3	10 - 20	Pass	223.1	224.0 +/- 5%	Pass	5009	5015.2 +/- 25%	Pass
AV49	05/19/2007 9:41	7617	7703.4 +/- 5%	Pass	14.6	10 - 20	Pass	231.9	226.0 +/- 5%	Pass	5072	5029.5 +/- 25%	Pass
AV50	05/19/2007 9:41	7595	7660.9 +/- 5%	Pass	16.0	10 - 20	Pass	226.0	227.0 +/- 5%	Pass	5030	5037.2 +/- 25%	Pass
AV51	05/19/2007 9:41	7353	7070.5 +/- 5%	Pass	13.3	10 - 20	Pass	227.0	223.0 +/- 5%	Pass	5037	5007.6 +/- 25%	Pass
AV52	05/19/2007 9:41	7116	7156.4 +/- 5%	Pass	13.0	10 - 20	Pass	223.0	225.0 +/- 5%	Pass	5008	5022.4 +/- 25%	Pass
AV53	05/19/2007 9:41	7349	7144.1 +/- 5%	Pass	13.3	10 - 20	Pass	224.1	223.0 +/- 5%	Pass	5016	5007.8 +/- 25%	Pass
AV54	05/19/2007 9:41	7345	7313.1 +/- 5%	Pass	14.1	10 - 20	Pass	228.1	226.0 +/- 5%	Pass	5045	5029.5 +/- 25%	Pass
AV55	05/19/2007 9:41	7188	7132.9 +/- 5%	Pass	12.3	10 - 20	Pass	222.0	226.0 +/- 5%	Pass	5001	5029.7 +/- 25%	Pass
AV56	05/19/2007 9:41	7342	7163.7 +/- 5%	Pass	13.1	10 - 20	Pass	222.0	222.0 +/- 5%	Pass	5001	5000.7 +/- 25%	Pass

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria	P/F	FWHM (keV) Result	FWHM (keV) Criteria	P/F	Pulser Center Result	Pulser Center Criteria	P/F	Energy (keV) Result	Energy (keV) Criteria	P/F
AV57	05/19/2007 9:41	7336	7309.5 +/- 5%	Pass	14.2	10 - 20	Pass	221.9	222.0 +/- 5%	Pass	5000	5000.6 +/- 25%	Pass
AV58	05/19/2007 9:42	7335	7249.2 +/- 5%	Pass	14.1	10 - 20	Pass	222.1	223.0 +/- 5%	Pass	5001	5008.0 +/- 25%	Pass
AV59	05/19/2007 9:42	7234	7141.4 +/- 5%	Pass	13.7	10 - 20	Pass	287.0	284.0 +/- 5%	Pass	5472	5450.6 +/- 25%	Pass
AV66	05/19/2007 9:42	7225	7165.5 +/- 5%	Pass	14.0	10 - 20	Pass	220.0	222.0 +/- 5%	Pass	4986	5000.5 +/- 25%	Pass
AV67	05/19/2007 9:42	7413	7128.1 +/- 5%	Pass	18.8	10 - 20	Pass	224.1	224.1 +/- 5%	Pass	5016	5015.6 +/- 25%	Pass
AV68	05/19/2007 9:42	7412	7259.5 +/- 5%	Pass	13.8	10 - 20	Pass	222.0	222.0 +/- 5%	Pass	5001	5000.8 +/- 25%	Pass
AV69	05/19/2007 9:42	7352	7305.4 +/- 5%	Pass	16.1	10 - 20	Pass	221.2	222.0 +/- 5%	Pass	4995	5000.6 +/- 25%	Pass
AV70	05/19/2007 9:42	7410	7406.5 +/- 5%	Pass	13.4	10 - 20	Pass	220.0	222.6 +/- 5%	Pass	4986	5004.7 +/- 25%	Pass
AV71	05/19/2007 9:42	7407	7187.3 +/- 5%	Pass	13.0	10 - 20	Pass	221.0	225.0 +/- 5%	Pass	4994	5022.7 +/- 25%	Pass
AV72	05/19/2007 9:42	7404	7090.0 +/- 5%	Pass	13.7	10 - 20	Pass	222.1	223.9 +/- 5%	Pass	5001	5014.6 +/- 25%	Pass
AV73	05/19/2007 9:42	7397	7251.3 +/- 5%	Pass	13.6	10 - 20	Pass	224.0	225.0 +/- 5%	Pass	5015	5022.4 +/- 25%	Pass
AV75	05/19/2007 9:59	7165	7267.9 +/- 5%	Pass	12.9	10 - 20	Pass	223.1	224.1 +/- 5%	Pass	5008	5015.5 +/- 25%	Pass
AV76	05/19/2007 9:59	7317	7374.3 +/- 5%	Pass	12.4	10 - 20	Pass	223.0	224.0 +/- 5%	Pass	5008	5015.2 +/- 25%	Pass
AV77	05/19/2007 9:59	7551	7497.1 +/- 5%	Pass	13.1	10 - 20	Pass	224.0	224.0 +/- 5%	Pass	5015	5015.4 +/- 25%	Pass
AV78	05/19/2007 10:00	7548	7183.8 +/- 5%	FAIL	13.1	10 - 20	Pass	222.9	223.3 +/- 5%	Pass	5007	5009.8 +/- 25%	Pass
AV78	05/19/2007 10:12	7426	7183.8 +/- 5%	Pass	13.4	10 - 20	Pass	222.9	223.3 +/- 5%	Pass	5008	5009.8 +/- 25%	Pass
AV79	05/19/2007 10:00	7366	7349.7 +/- 5%	Pass	12.8	10 - 20	Pass	221.0	222.0 +/- 5%	Pass	4993	5000.4 +/- 25%	Pass
AV80	05/19/2007 10:00	7413	7226.4 +/- 5%	Pass	12.8	10 - 20	Pass	223.0	224.1 +/- 5%	Pass	5008	5015.5 +/- 25%	Pass
AV81	05/19/2007 10:00	7541	7453.4 +/- 5%	Pass	13.2	10 - 20	Pass	222.0	223.0 +/- 5%	Pass	5001	5008.1 +/- 25%	Pass
AV82	05/19/2007 10:00	7536	7529.2 +/- 5%	Pass	13.7	10 - 20	Pass	224.0	224.0 +/- 5%	Pass	5015	5015.2 +/- 25%	Pass
AV83	05/19/2007 10:00	7490	7523.7 +/- 5%	Pass	12.9	10 - 20	Pass	222.0	222.0 +/- 5%	Pass	5001	5000.4 +/- 25%	Pass
AV84	05/19/2007 10:00	7498	7637.7 +/- 5%	Pass	12.3	10 - 20	Pass	223.0	223.0 +/- 5%	Pass	5008	5007.7 +/- 25%	Pass
AV85	05/19/2007 10:00	7726	7549.7 +/- 5%	Pass	13.1	10 - 20	Pass	223.0	223.0 +/- 5%	Pass	5008	5008.0 +/- 25%	Pass
AV86	05/19/2007 10:00	7667	7679.0 +/- 5%	Pass	17.0	10 - 20	Pass	224.1	223.9 +/- 5%	Pass	5016	5014.3 +/- 25%	Pass
AV87	05/19/2007 10:00	7345	7512.4 +/- 5%	Pass	12.8	10 - 20	Pass	221.9	223.0 +/- 5%	Pass	5000	5007.7 +/- 25%	Pass
AV88	05/19/2007 10:00	7716	7716.1 +/- 5%	Pass	13.8	10 - 20	Pass	224.1	224.0 +/- 5%	Pass	5016	5015.4 +/- 25%	Pass
AV89	05/19/2007 10:00	7715	7553.8 +/- 5%	Pass	13.3	10 - 20	Pass	219.9	222.6 +/- 5%	Pass	4986	5004.7 +/- 25%	Pass
AV90	05/19/2007 10:00	7712	7474.4 +/- 5%	Pass	13.5	10 - 20	Pass	222.9	224.1 +/- 5%	Pass	5007	5015.6 +/- 25%	Pass
AV92	05/19/2007 10:00	7429	7358.9 +/- 5%	Pass	12.2	10 - 20	Pass	223.0	223.9 +/- 5%	Pass	5008	5014.6 +/- 25%	Pass
AV93	05/19/2007 10:00	7445	7393.5 +/- 5%	Pass	12.6	10 - 20	Pass	223.0	223.0 +/- 5%	Pass	5008	5008.3 +/- 25%	Pass
AV94	05/19/2007 10:00	7648	7477.9 +/- 5%	Pass	13.7	10 - 20	Pass	222.1	222.0 +/- 5%	Pass	5001	5000.5 +/- 25%	Pass
AV95	05/19/2007 10:00	7645	7432.4 +/- 5%	Pass	13.5	10 - 20	Pass	219.9	222.2 +/- 5%	Pass	4986	5001.9 +/- 25%	Pass
AV96	05/19/2007 10:00	7643	7654.3 +/- 5%	Pass	13.4	10 - 20	Pass	222.0	222.6 +/- 5%	Pass	5001	5005.3 +/- 25%	Pass
AV97	05/19/2007 10:00	7639	7649.9 +/- 5%	Pass	13.7	10 - 20	Pass	223.0	223.8 +/- 5%	Pass	5008	5014.0 +/- 25%	Pass
AV98	05/19/2007 10:00	7635	7582.0 +/- 5%	Pass	13.1	10 - 20	Pass	223.0	223.0 +/- 5%	Pass	5008	5007.6 +/- 25%	Pass

OK

TestAmerica STL

Run Log

Logbook No.: 2945

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	5-13-07	7129405	F7E010186-014	67	400min	U	GS	MW
2			F7E090000-405B	68				
3			-405C	69				
4	5/14/7	Daily	Pulsers	1-98	1min	QA	SE	—
5		7130259	F7E010186-002	75	600	Am	[illegible]	
6			-003	76				
7			-003X	77				
8			-005	85				
9			-007	79				
10			-008	80				
11			-012	81				
12			-014	82				
13			F7E100000-259B	83				
14			-259C	84				
15	5/14/07	7129405	F7XE010186-012	21	400min	U	MW	MW
16			F7E090000-405C	46				
17		7131156	F7E110000-156C	1	180min	Th		
18		7127240	F7E030137-012	2	240min			
19		7127244	-012	3		U		
20		7128245	F7D270291-001	86	600min	Pu		
21			-003	87				
22		7131144	F7E050113-001	17	240min	U	[illegible]	
23			-001X	24				
24			-002	48				
25			-003	50				
26			-005	52				
27			-006	54				
28			-007	57				
29			-008	~~53~~ 73				

Reviewed By: [illegible] Date: 5/14/07

SOP References: STL-RD-0210 Rev 7 05/02/07. Form: SL-RAD-0030, Revised 7/07/06
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.: 2945

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	5/14/07	7131144	F7E050113-009	51	240min	U	M	
2			F7E110000-144B	71				
3			-144C	72				
4		7131141	F7E050113-001	4		Th		
5			-001X	6				
6			-002	7				
7			-003	8				
8			-005	9				
9			-006	11				
10			-007	13				
11			-008	14				
12			-009	15				
13			F7E110000-141B	20				
14			-141C	22				
15	5/14/07	7128125	F7D270291-003	88	600min	Am	MW	
16			F7D270294-007	89				
17			-010	90				
18			F7DE010227-006	92				
19		7131141	F7E050113-002	1	240min	Th		
20		7130165	F7D280140-003	21	960min	U		
21			-003X	46	960min			
22			-004	47				
23			-005	49				
24			-007	53				
25			-009	55				
26			-010	56				
27			-011	58				
28			-012	59				
29		7128373	F7E050163-001	98	600min	Pu		

Reviewed By: MW Date: 5/19/07

SOP References: STL-RD-0210 Rev 7 05/02/07. Form: SL-RAD-0030, Revised 7/07/06
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.: 2945

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	5/14/07	7128374	F7E050163-001	66	400min	U	KW	
2			-001X	67				
3			-002	68				
4			F7E080000-374B	69				
5			-374C	70				
6		7130261	F7D280140-003	93	960min	Am		
7			-003X	94				
8			-005	95				
9			-009	96				
10			-011	97				
11	5-14-07	7128373	F7E050163-001X	75	600min.	Pu	GS	
12			-002	76				
13			F7E080000-373B	77				
14			-373C	79				
15								
16								
17								
18								
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20								
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22								
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24								
25								
26								
27								
28								
29								

Reviewed By:_____ Date:_____

SOP References: STL-RD-0210 Rev 7 05/02/07. Form: SL-RAD-0030, Revised 7/07/06
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.: 2945

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	5-19-07	Daily	Pulse	1-98	1 min.	QA	G	
2	5-19-07	7132168	F7E030169-029	21	500 min.	U	GS	
3			F7E120000-1688	46				
4			-168C	47				
5			-168L	49				
6	5-19-07	7134366	F7E020173-001	53	500 min.	U	GS	W
7			-001X	55				
8			-002	56				
9			-003	58				
10			-004	59				
11			-005	66				
12			-006	67				
13			-007	68				
14			-008	69				
15			-009	70				
16			-010	71				
17			-011	72				
18	5-19-07	7135101	F7E050113-004	1	240 min.	U	GS	
19			F7E050113-004X	2				
20			F7E150000-101B	3				
21			-101C	4				
22	5-19-07	7136131	F7E030317-001	9	180 min	Am	GS	
23			-001X	11				
24			F7E160000-131B	12				
25			-131C	13				
26	5-19-07	7134367	F7E110187-010	14	180 min.	Pu	GS	W
27			-011	15				
28			-012	18				
29			-013	19				

Reviewed By: GS Date: 5-19-07

SOP References: STL-RD-0210 Rev 7 05/02/07. Form: SL-RAD-0030, Revised 7/07/06
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.: 2945

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	5-19-07	7134367	F7E110187-014	20	180min.	Pv	GS	WW
2			-015	22				
3			-016	24				
4			-017	48				
5			-018	50				
6			-019	51				
7			-020	52				
8			-021	54				
9			-022	57				
10			-023	73				
11	5-19-07	7136132	F7E030317-001	6	180min.	Pv	GS	WW
12			-001X	7				
13			F7E160000-132B	8				
14			-132C	17				
15	5-19-07	7134367	F7E110187-024	9	180min.	Pv	GS	WW
16			F7E140000-367B	11				
17			-367C	12				
18			-367L	13				
19	5-19-07	7135099	F7E050113-004	1	240min.	Th	GS	WW
20			-004X	2				
21			F7E150000-099B	3				
22			-099C	4				
23	5-20-07	Daily	Pulsers	1-98	1min.	QA	GS	—
24	5-20-07	7134366	F7E020173-012	21	500min.	U	GS	WW
25			-013	46				
26			-014	47				
27			-015	49				
28			-016	53				
29			-017	55				

Reviewed By: GS Date: 5-20-07

SOP References: STL-RD-0210 Rev 7 05/02/07. Form: SL-RAD-0030, Revised 7/07/06
QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike; D=Matrix Spike Duplicate; X=Sample Duplicate.

 240min LLcrR 5/24

SEVERN TRENT **STL**

Prep Report for:
Thorium, Isotopic by Alpha Spectroscopy

Batch: 7131141 **Prep Analyst:** 403301

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F7E050113-001	JWDDT1AE	2.0025E+000 g	1.00	2.0025E+000 g	rad05-0088	Th-229	0.10	N
F7E050113-001X	JWDDT1AH	2.0088E+000 g	1.00	2.0088E+000 g	rad05-0088	Th-229	0.10	N
F7E050113-002	JWDE11AE	2.0033E+000 g	1.00	2.0033E+000 g	rad05-0088	Th-229	0.10	N
F7E050113-003	JWDE31AE	2.0009E+000 g	1.00	2.0009E+000 g	rad05-0088	Th-229	0.10	N
F7E050113-005	JWDTF1AE	2.0047E+000 g	1.00	2.0047E+000 g	rad05-0088	Th-229	0.10	N
F7E050113-006	JWDTG1AE	2.0154E+000 g	1.00	2.0154E+000 g	rad05-0088	Th-229	0.10	N
F7E050113-007	JWDTH1AE	2.0063E+000 g	1.00	2.0063E+000 g	rad05-0088	Th-229	0.10	N
F7E050113-008	JWDTJ1AE	2.0009E+000 g	1.00	2.0009E+000 g	rad05-0088	Th-229	0.10	N
F7E050113-009	JWDTK1AE	2.0055E+000 g	1.00	2.0055E+000 g	rad05-0088	Th-229	0.10	N
F7E110000-141B	JWQMP1AA	2.0000E+000 g	1.00	2.0000E+000 g	rad05-0088	Th-229	0.10	N
F7E110000-141C	JWQMP1AC	1.3190E-001 g	1.00	1.3190E-001 g	rad05-0088	Th-229	0.10	N

4 6 7 8 9 11 13 14 15 20 22

Rc= 1

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7E110000-141C	TRM-3_IsoTh	TH-230	1.299E+002 dpm/g	0.13 g	5/29/2003 12:00:00AM	5.850E+001 pCi/g

BS — Spiked By

F [illegible] — Spike Verified By

5/11/07 — Spike Date

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level

Standard Operating Procedures

	SOPNumber	Title	Revision
☐	STL-RC-0002	Planchet Preparation For Radiochemistry And Radiological Screening Analysis	4.00
☐	STL-RC-0003	Drying And Grinding Of Soil And Solid Samples	6.00
☐	STL-RC-0004	Preparation Of Soil, Sludge, And Filter Paper Samples For Radiochemical Analysis	10.00
☐	STL-RC-0090	Preparation Of Samples For Sequential Determination Of Isotopic Americium, Currium, Neptunium, Plutonium, Tho	4.00
☑	STL-RC-0100	Actinide Coprecipitation	9.00
☐	STL-RC-0232	Isotopic Thorium And/oR Neptunium in Water, Soil, Sludge, and Filters by Eichrom TEVA Separation Resins	7.00
☐	STL-RC-0238	Isotopic Uranium By Eichrom UTEVA Resin for Water, Soil, Sludge and Filters	7.00
☐	STL-RC-0240	Isotopic Americium, Curium, Plutonium, Thorium, and Uranium in Water, Soil, Sludge and Filters by Eichrome Sepa	5.00
☐	STL-RC-0241	Isotopic Americium, Plutonium, Curium, and Uranium in Water, Soil, Sludge and Filters by Eichrome Uteva and Tr	3.00
☑	STL-RC-0242	Isotopic Thorium, Plutonium and Uranium in Water, Soil, Sludge and Filters by Eichrome Separation Resin	6.00
☐	STL-RD-0201	Daily Operations Of An Alpha Spectroscopy System	2.00
☐	STL-RD-0203	Calibration And Maintenance Of A Alpha Spectroscopy System	1.00

MB per BS	5/13/07	BS	5/14/07
Column Analyst	Date	Coprecipitated By	Precip Date
[signature]	5/16/07.		
Reviewed By	Review Date		
BS	5/14/07	[signature]	5-14-7
Analyst/Relenquished By	Release Date	Received By	Receipt Date

240 min. pCi, 20 5/24

SEVERN TRENT **STL**

Prep Report for:

Thorium, Isotopic by Alpha Spectroscopy

Batch: 7135099 **Prep Analyst:** 403301

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F7E050113-004	JWDTD1AE	2.0012E+000 g	1.00	2.0012E+000 g	rad05-0088	Th-229	0.10	N
F7E050113-004X	JWDTD1AF	2.0034E+000 g	1.00	2.0034E+000 g	rad05-0088	Th-229	0.10	N
F7E150000-099B	JW0A41AA	2.0000E+000 g	1.00	2.0000E+000 g	rad05-0088	Th-229	0.10	N
F7E150000-099C	JW0A41AC	1.3090E-001 g	1.00	1.3090E-001 g	rad05-0088	Th-229	0.10	N

1 2 3 4

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7E150000-099C	TRM-3_IsoTh	TH-230	1.299E+002 dpm/g	0.13 g	5/29/2003 12:00:00AM	5.850E+001 pCi/g

SM — Spiked By
BS — Spike Verified By
5/15/07 — Spike Date

Standard Operating Procedures

	SOPNumber	Title	Revision
☐	STL-RC-0002	Planchet Preparation For Radiochemistry And Radiological Screening Analysis	4.00
☑	STL-RC-0003	Drying And Grinding Of Soil And Solid Samples	6.00
☑	STL-RC-0004	Preparation Of Soil, Sludge, And Filter Paper Samples For Radiochemical Analysis	10.00
☐	STL-RC-0090	Preparation Of Samples For Sequential Determination Of Isotopic Americium, Currium, Neptunium, Plutonium, Tho	4.00
☑	STL-RC-0100	Actinide Coprecipitation	9.00
☐	STL-RC-0232	Isotopic Thorium And/oR Neptunium in Water, Soil, Sludge, and Filters by Eichrom TEVA Separation Resins	7.00
☐	STL-RC-0238	Isotopic Uranium By Eichrom UTEVA Resin for Water, Soil, Sludge and Filters	7.00
☐	STL-RC-0240	Isotopic Americium, Curium, Plutonium, Thorium, and Uranium in Water, Soil, Sludge and Filters by Eichrome Sepa	5.00
☐	STL-RC-0241	Isotopic Americium, Plutonium, Curium, and Uranium in Water, Soil, Sludge and Filters by Eichrome Uteva and Tr	3.00
☑	STL-RC-0242	Isotopic Thorium, Plutonium and Uranium in Water, Soil, Sludge and Filters by Eichrome Separation Resin	6.00
☐	STL-RD-0201	Daily Operations Of An Alpha Spectroscopy System	2.00
☐	STL-RD-0203	Calibration And Maintenance Of A Alpha Spectroscopy System	1.00

JW — Column Analyst
5-18-7 — Date
BS — Coprecipitated By
5/19/07 — Precip Date

JW — Reviewed By
5/21/07 — Review Date

BS — Analyst/Relenquished By
5/19/07 — Release Date
GS — Received By
5-19-07 — Receipt Date

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 2:43:56PM 5/15/2007

Sample

Sample Name: F7E050113-001
SampleType: Sample
: JWDDT1AE
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0025g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

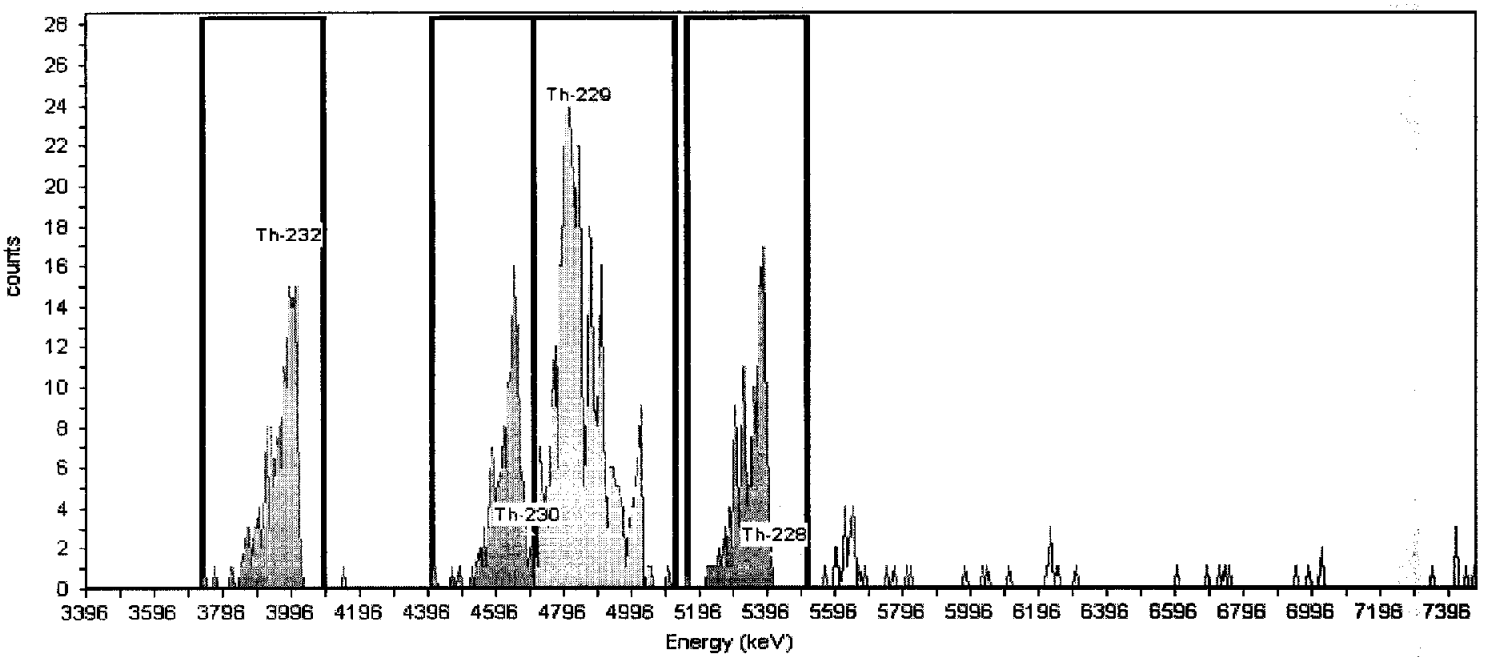
Tracer Nuclide: Th-229
Tracer Recovery: 91.91%

Acquisition

Detector: AV4
Serial Number: 41-172B5
Acquisition Start Date: 5/14/2007 11:02:01AM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:09PM

Calibration Name: April2007_AV4
Calibration Date: 4/23/2007 1:09:59PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.79% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV4; Det: AV4; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	60.680	100.2	157.00	0.5000	157	5.946E-001	1.265E-001	4.941E-003	2.016E-002
Th-230	4688.465	4405.333	4702.985	59.630	99.7	136.00	1.0000	135	5.155E-001	1.148E-001	7.023E-003	2.438E-002
Th-229	4840.921	4702.985	5124.053	89.286	99.6	432.00	1.0000	431	1.513E+000	2.109E-001	7.026E-003	2.439E-002
Th-228	5421.705	5160.352	5516.082	54.627	99.8	146.00	4.7500	141	5.390E-001	1.202E-001	1.530E-002	4.092E-002

manual integration
shifting hw 5/15/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:02:46PM 5/14/2007

Sample

Sample Name: F7E050113-001X
SampleType: Sample
: JWDDT1AH
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0088g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

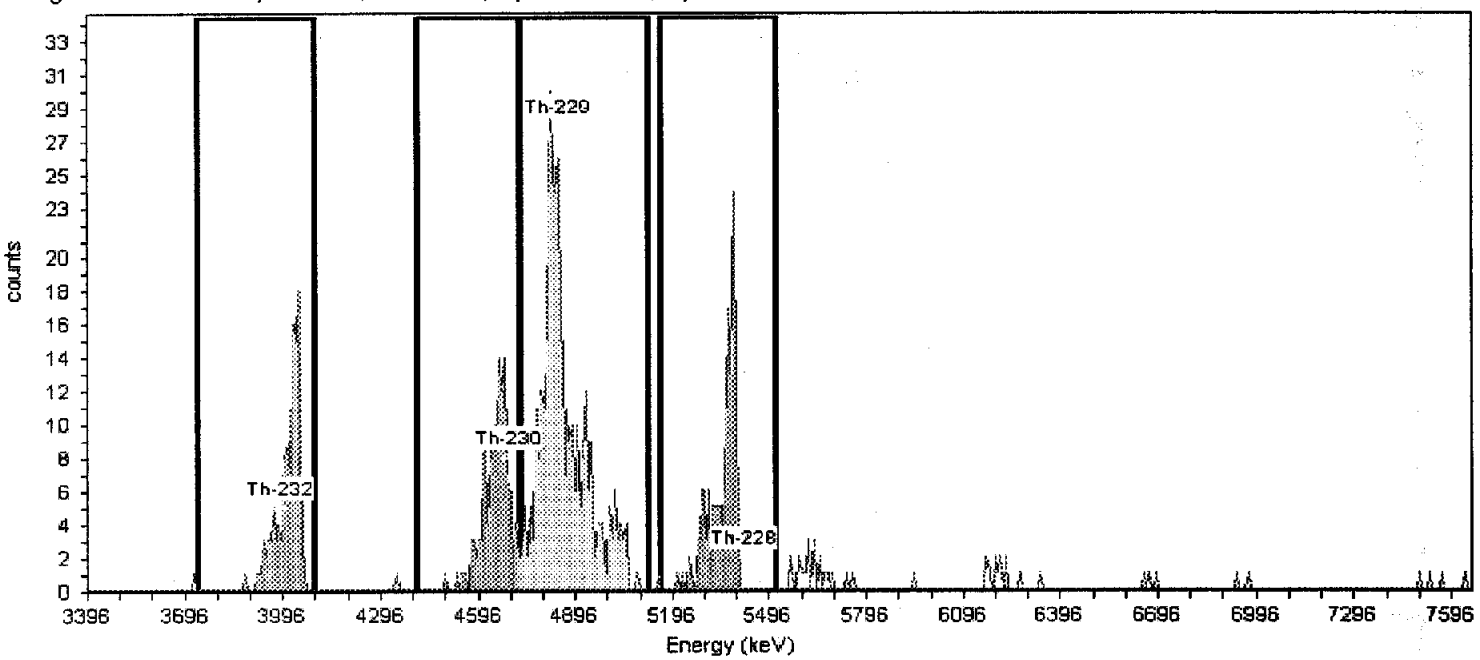
Tracer Nuclide: Th-229
Tracer Recovery: 85.31%

Acquisition

Detector: AV6
Serial Number:
Acquisition Start Date: 5/14/2007 11:02:02AM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:10PM

Calibration Name: April2007_AV6
Calibration Date: 4/23/2007 3:32:19PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.70% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV6; Det: AV6; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	54.121	100.2	129.00	1.2500	128	5.230E-001	1.195E-001	8.418E-003	2.791E-002
Th-230	4688.465	4405.333	4717.504	62.050	99.7	141.00	0.5000	141	5.780E-001	1.279E-001	5.350E-003	2.183E-002
Th-229	4840.921	4724.764	5124.053	67.394	99.6	400.00	1.2500	399	1.400E+000	1.990E-001	8.464E-003	2.807E-002
Th-228	5421.705	5160.352	5516.082	46.934	99.8	138.00	5.0000	133	5.469E-001	1.255E-001	1.691E-002	4.495E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 2:45:45PM 5/15/2007

Sample

Sample Name: F7E050113-002
SampleType: Sample
: JWDE11AE
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #2 Analysis #1
Sample Weight : 2.0033g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

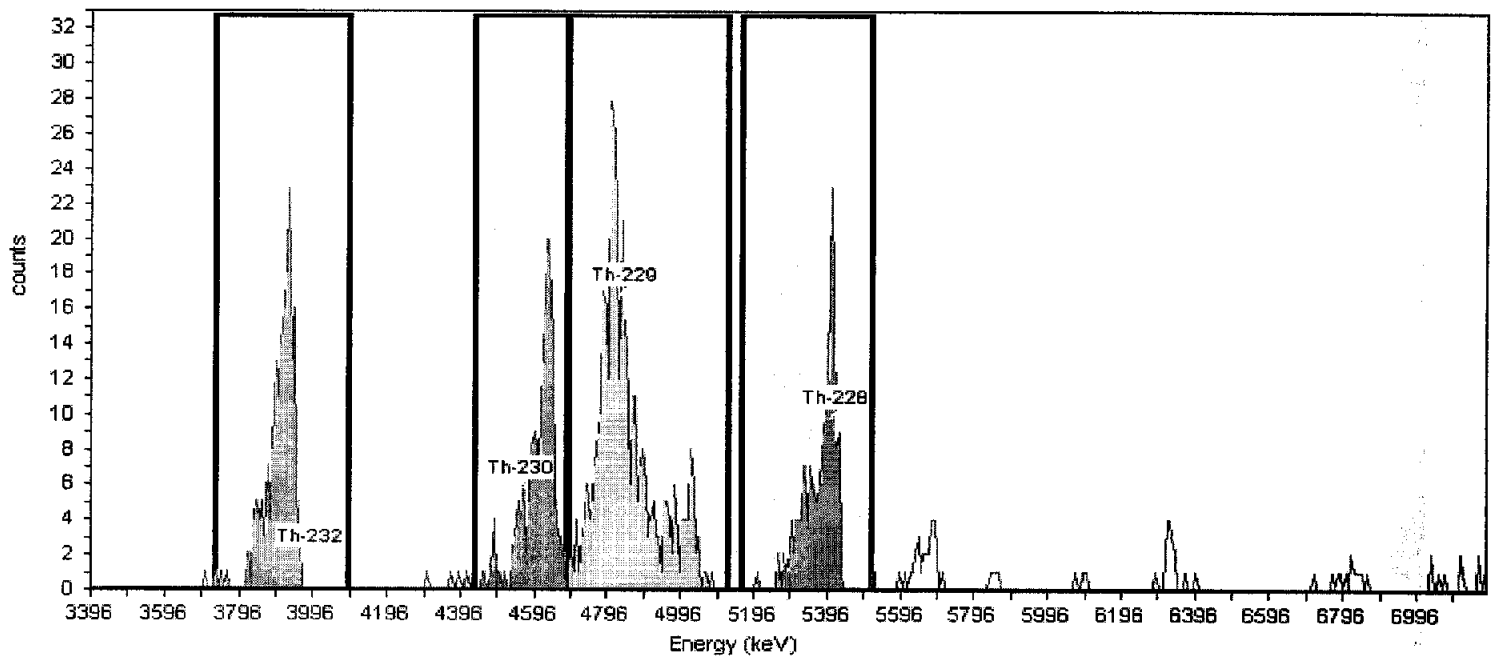
Tracer Nuclide: Th-229
Tracer Recovery: 79.85%

Acquisition

Detector: AV1
Serial Number: 41-158W6
Acquisition Start Date: 5/14/2007 4:58:38PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:17PM

Calibration Name: April2007_AV1
Calibration Date: 4/23/2007 1:09:33PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.47% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV1; Det: AV1; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	59.440	100.2	177.00	1.0000	176	7.786E-001	1.634E-001	8.136E-003	2.824E-002
Th-230	4557.789	4434.372	4681.205	38.909	99.7	160.00	0.2500	160	7.103E-001	1.526E-001	4.089E-003	2.021E-002
Th-229	4840.921	4688.465	5124.053	82.220	99.6	371.00	1.0000	370	1.314E+000	1.903E-001	8.181E-003	2.840E-002
Th-228	5421.705	5160.352	5516.082	51.248	99.8	155.00	3.5000	152	6.733E-001	1.486E-001	1.529E-002	4.261E-002

Manual integration
Shifting KW 5/15/07

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 2:46:21PM 5/15/2007

Sample

Sample Name: F7E050113-003
SampleType: Sample
: JWDE31AE
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0009g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

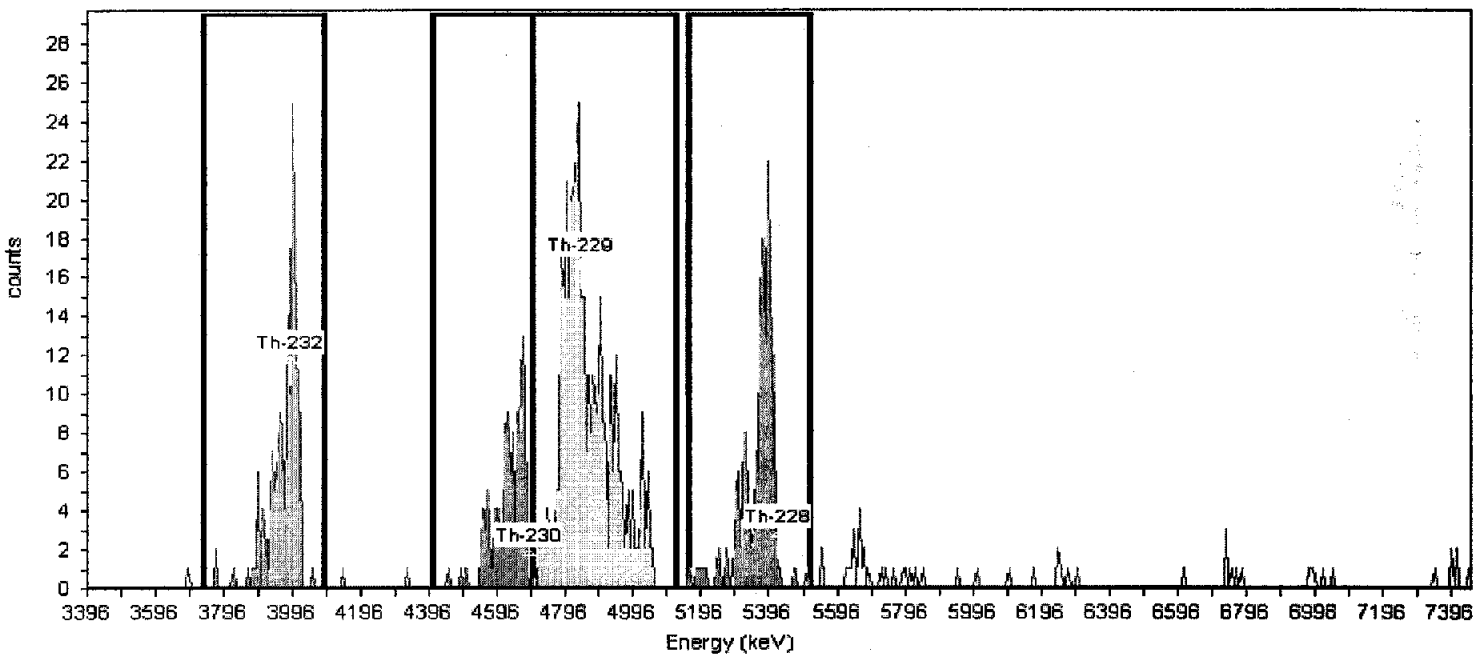
Tracer Nuclide: Th-229
Tracer Recovery: 81.84%

Acquisition

Detector: AV8
Serial Number: 41-158X1
Acquisition Start Date: 5/14/2007 11:02:05AM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:14PM

Calibration Name: April2007_AV8
Calibration Date: 4/23/2007 3:32:41PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.52% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV8; Det: AV8; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	52.971	100.2	149.00	1.5000	148	6.131E-001	1.345E-001	9.363E-003	2.997E-002
Th-230	4688.465	4405.333	4695.725	24.060	99.7	108.00	0.5000	108	4.491E-001	1.081E-001	5.433E-003	2.217E-002
Th-229	4840.921	4695.725	5124.053	78.543	99.6	396.00	1.7500	394	1.349E+000	1.923E-001	1.017E-002	3.165E-002
Th-228	5421.705	5160.352	5516.082	48.284	99.8	168.00	2.7500	165	6.899E-001	1.471E-001	1.273E-002	3.677E-002

manual integration
Shifting KW 5/15/07

ST

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 9:22:51AM 5/21/2007

Sample

Sample Name: F7E050113-004
SampleType: Sample
: JWDTD1AE
Sample Collection Date: 5/4/2007 11:10:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0012g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7135099
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

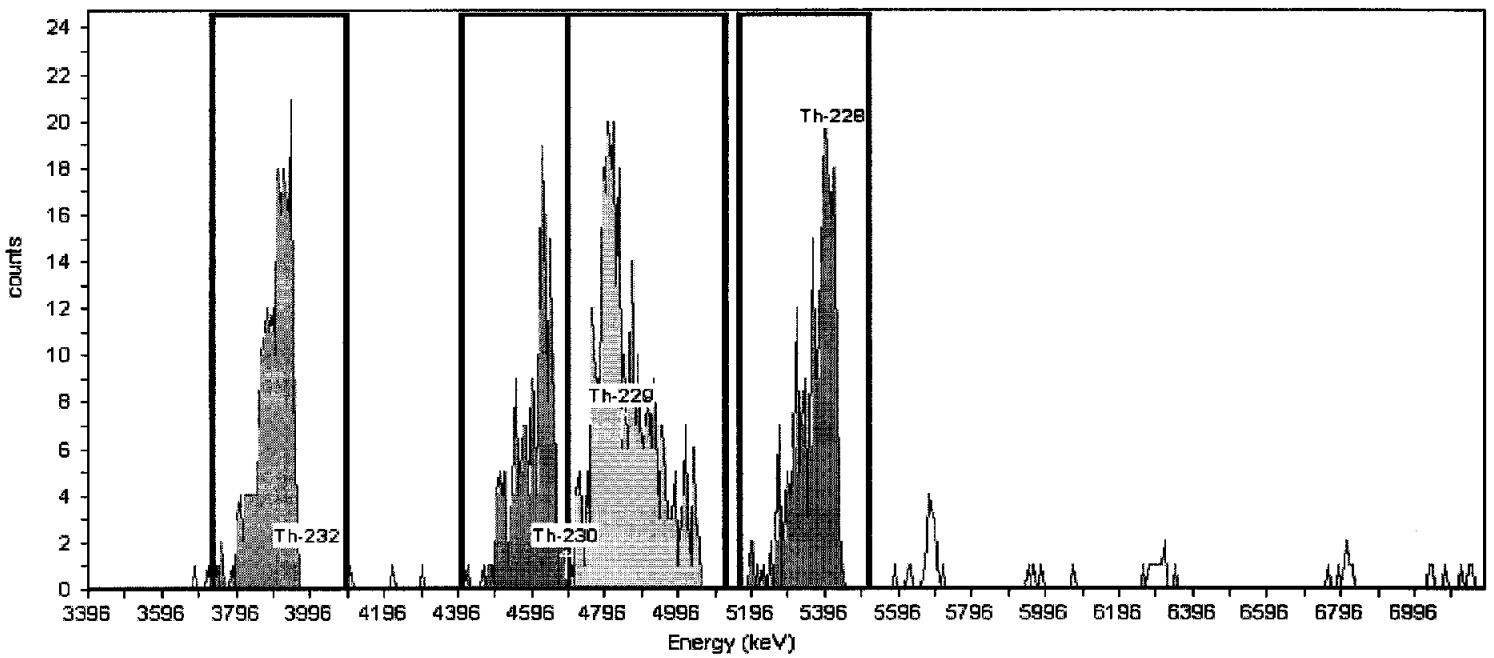
Tracer Nuclide: Th-229
Tracer Recovery: 75.97%

Acquisition

Detector: AV1
Serial Number: 41-158W6
Acquisition Start Date: 5/19/2007 3:50:26PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:17PM

Calibration Name: April2007_AV1
Calibration Date: 4/23/2007 1:09:33PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.47% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV1; Det: AV1; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/19/2007 3:48:05PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	86.108	100.2	224.00	1.0000	223	1.038E+000	2.069E-001	8.561E-003	2.972E-002
Th-230	4688.465	4405.333	4695.725	68.630	99.7	176.00	0.2500	176	8.222E-001	1.733E-001	4.302E-003	2.126E-002
Th-229	4840.921	4695.725	5124.053	77.544	99.6	353.00	1.0000	352	1.252E+000	1.836E-001	8.609E-003	2.988E-002
Th-228	5421.705	5160.352	5516.082	65.227	99.8	228.00	3.5000	225	1.050E+000	2.099E-001	1.609E-002	4.483E-002

manual integration
Shifang hu 5/21/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 9:23:30AM 5/21/2007

Sample

Sample Name: F7E050113-004X
SampleType: Sample
: JWDTD1AF
Sample Collection Date: 5/4/2007 11:10:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0034g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7135099
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

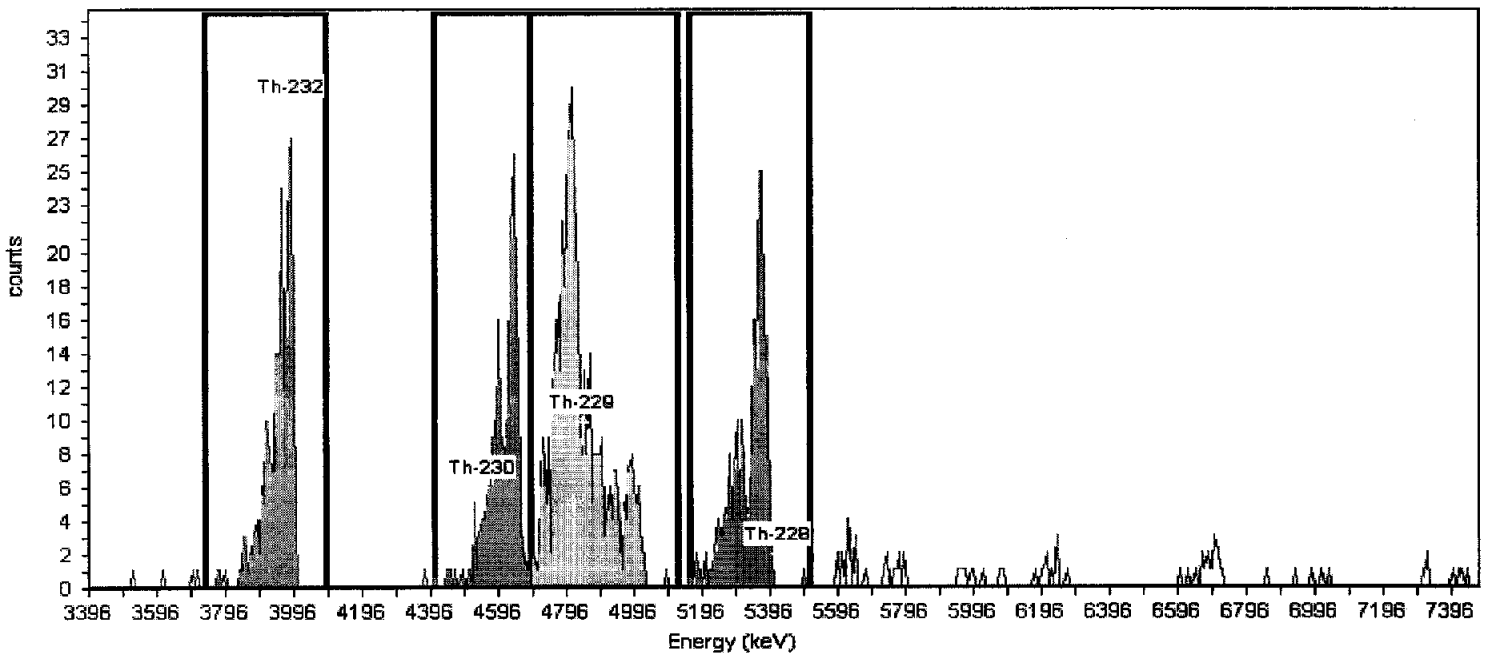
Tracer Nuclide: Th-229
Tracer Recovery: 93.86%

Acquisition

Detector: AV2
Serial Number: 41-158W7
Acquisition Start Date: 5/19/2007 3:50:28PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:19PM

Calibration Name: April2007_AV2
Calibration Date: 4/23/2007 1:09:41PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.20% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV2; Det: AV2; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/19/2007 3:48:05PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	66.523	100.2	214.00	0.7500	213	8.108E-001	1.590E-001	6.056E-003	2.240E-002
Th-230	4546.899	4405.333	4688.465	42.007	99.7	197.00	0.7500	196	7.499E-001	1.502E-001	6.086E-003	2.251E-002
Th-229	4840.921	4688.465	5124.053	72.442	99.6	432.00	1.5000	431	1.545E+000	2.155E-001	8.612E-003	2.757E-002
Th-228	5421.705	5160.352	5516.082	50.881	99.8	214.00	5.5000	209	7.962E-001	1.588E-001	1.647E-002	4.328E-002

manual integration
Shifting WS 5/21/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 2:46:57PM 5/15/2007

Sample

Sample Name: F7E050113-005
SampleType: Sample
: JWDTF1AE
Sample Collection Date: 5/4/2007 11:20:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0047g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

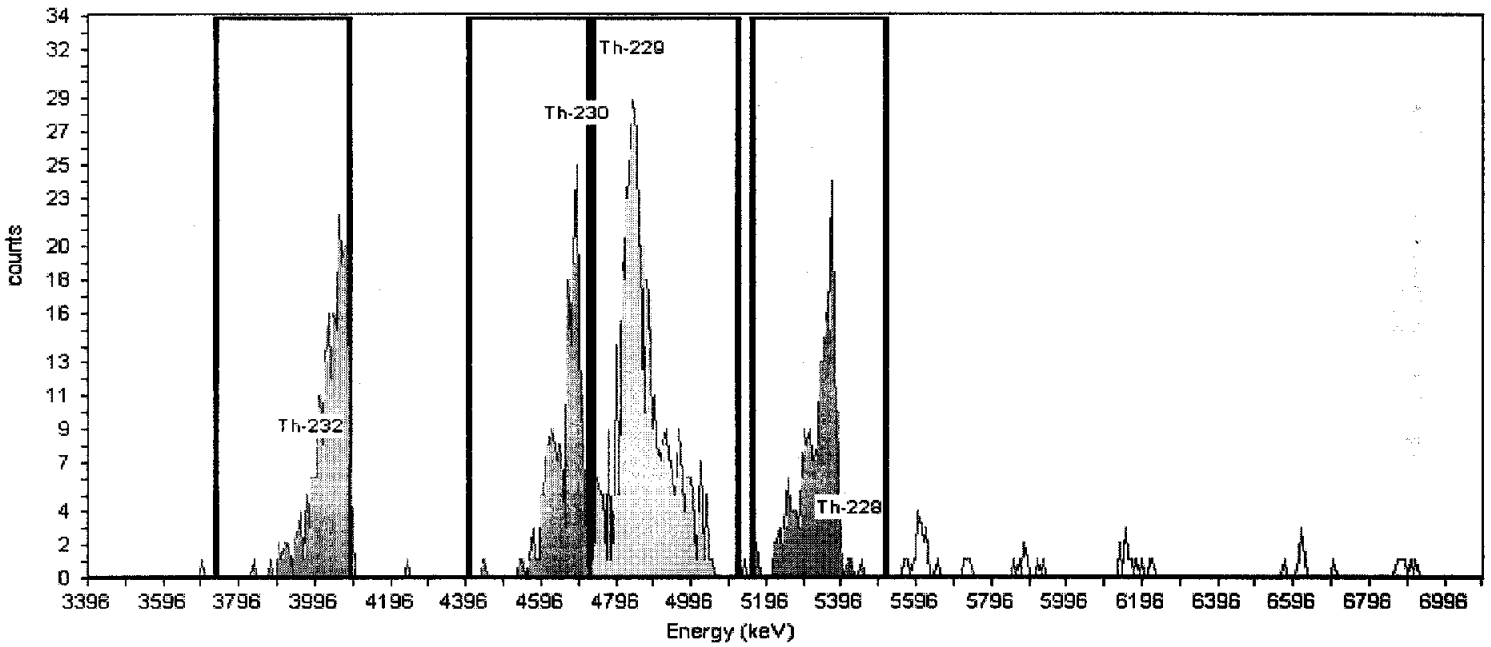
Tracer Nuclide: Th-229
Tracer Recovery: 89.26%

Acquisition

Detector: AV9
Serial Number: 41-172R1
Acquisition Start Date: 5/14/2007 11:02:07AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:16PM

Calibration Name: April2007_AV9
Calibration Date: 4/23/2007 3:32:12PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.43% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV9; Det: AV9; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	39.956	100.2	226.00	0.5000	226	8.931E-001	1.735E-001	5.151E-003	2.102E-002
Th-230	4688.465	4405.333	4724.764	21.144	99.7	183.00	0.5000	183	7.264E-001	1.488E-001	5.176E-003	2.112E-002
Th-229	4840.921	4732.024	5124.053	75.398	99.6	414.00	1.0000	413	1.468E+000	2.068E-001	7.325E-003	2.543E-002
Th-228	5421.705	5160.352	5516.082	64.479	99.8	199.00	1.5000	198	7.857E-001	1.581E-001	8.960E-003	2.869E-002

Manual integration
Shifting MW 5/15/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:02:56PM 5/14/2007

Sample

Sample Name: F7E050113-006
SampleType: Sample
: JWDTG1AE
Sample Collection Date: 5/4/2007 10:55:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0154g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

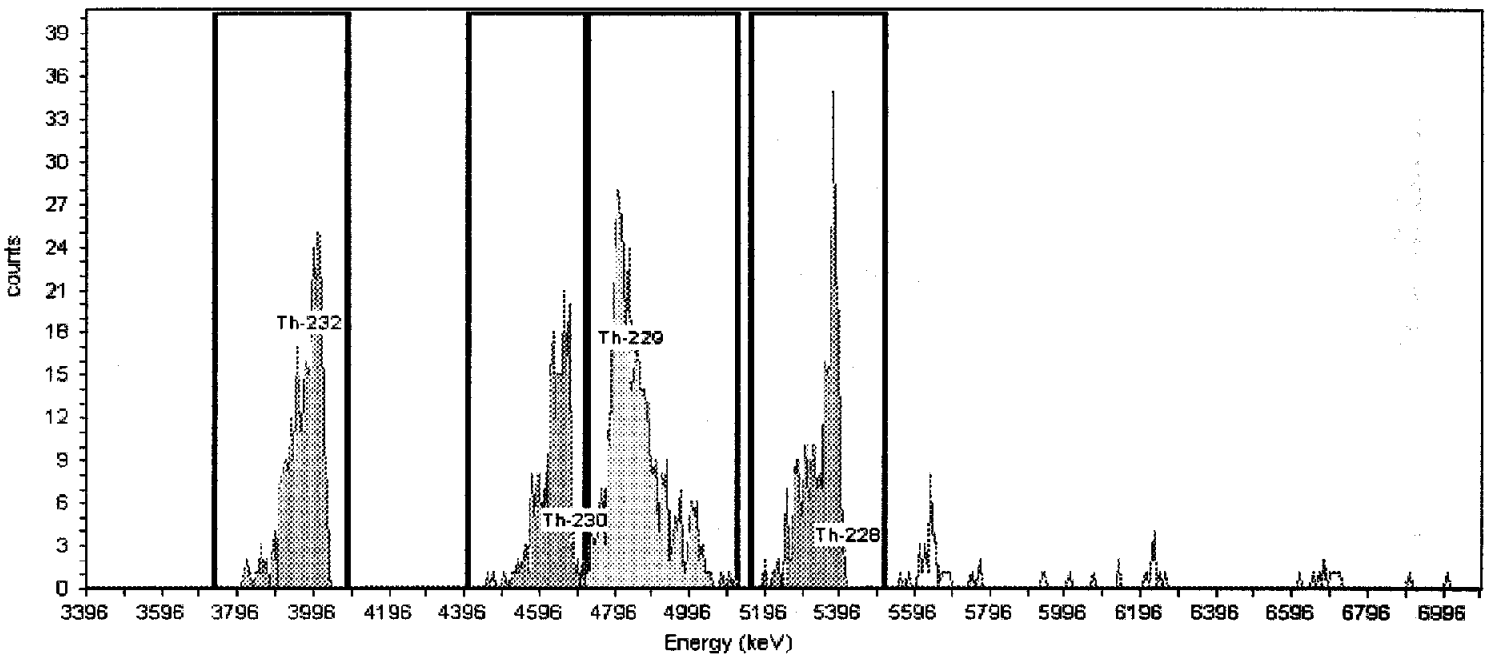
Tracer Nuclide: Th-229
Tracer Recovery: 87.52%

Acquisition

Detector: AV11
Serial Number: 41-172Q3
Acquisition Start Date: 5/14/2007 11:02:09AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:17PM

Calibration Name: May2007_AV11
Calibration Date: 5/10/2007 5:27:44PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.30% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV11; Det: AV11; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	93.246	100.2	266.00	1.0000	265	1.031E+000	1.931E-001	7.154E-003	2.484E-002
Th-230	4688.465	4405.333	4717.504	72.152	99.7	200.00	1.0000	199	7.780E-001	1.559E-001	7.190E-003	2.496E-002
Th-229	4840.921	4724.764	5124.053	100.680	99.6	420.00	1.7500	418	1.432E+000	2.013E-001	9.517E-003	2.962E-002
Th-228	5421.705	5160.352	5516.082	52.077	99.8	234.00	4.2500	230	8.977E-001	1.748E-001	1.481E-002	4.020E-002

ST

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:02:59PM 5/14/2007

Sample

Sample Name: F7E050113-007
SampleType: Sample
: JWDTH1AE
Sample Collection Date: 5/4/2007 11:40:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0063g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

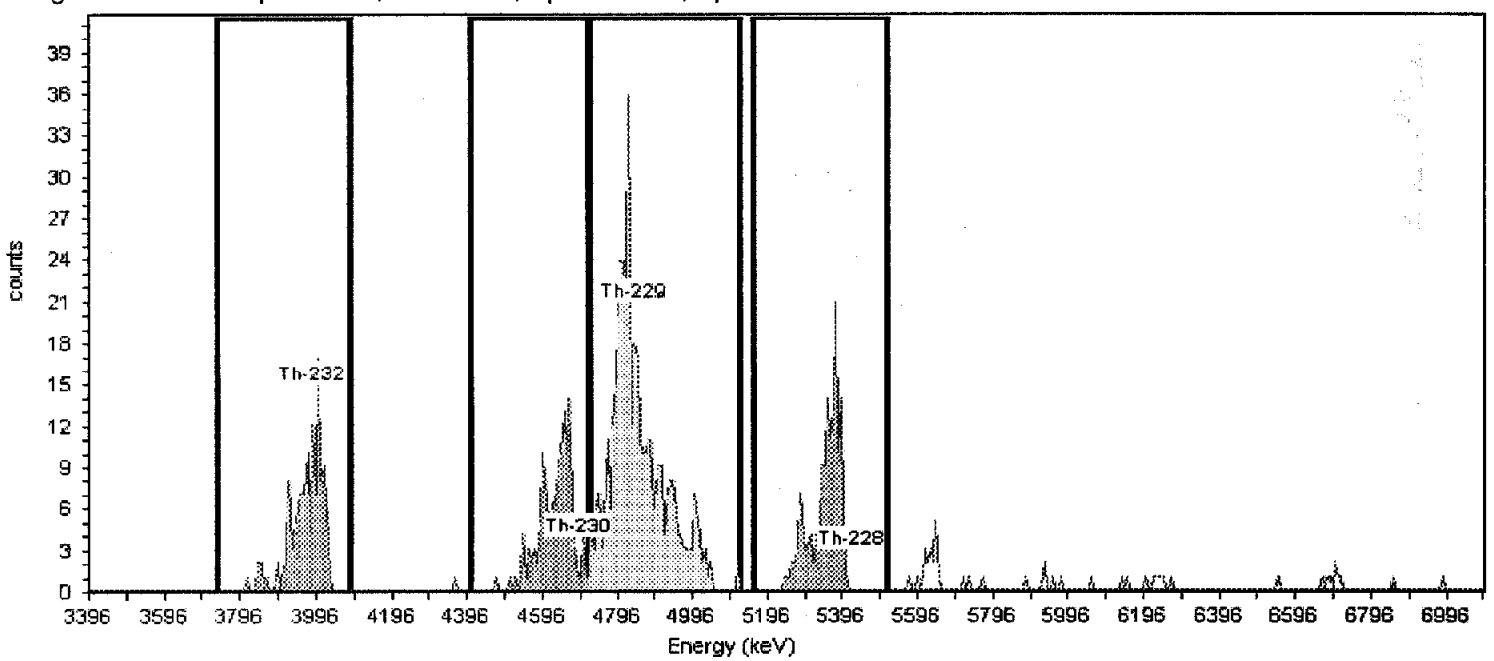
Tracer Nuclide: Th-229
Tracer Recovery: 86.40%

Acquisition

Detector: AV13
Serial Number: 41-172Q1
Acquisition Start Date: 5/14/2007 11:02:12AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:21PM

Calibration Name: April2007_AV13
Calibration Date: 4/23/2007 6:09:23PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.88% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV13; Det: AV13; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	85.432	100.2	126.00	1.0000	125	5.026E-001	1.153E-001	7.395E-003	2.567E-002
Th-230	4688.465	4405.333	4717.504	95.806	99.7	139.00	0.7500	138	5.586E-001	1.241E-001	6.436E-003	2.381E-002
Th-229	4840.921	4724.764	5124.053	74.831	99.6	408.00	1.5000	407	1.420E+000	2.009E-001	9.107E-003	2.915E-002
Th-228	5421.705	5160.352	5516.082	55.285	99.8	148.00	1.5000	147	5.916E-001	1.296E-001	9.096E-003	2.912E-002

STL SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:03:03PM 5/14/2007

Sample

Sample Name: F7E050113-008
SampleType: Sample
: JWDTJ1AE
Sample Collection Date: 5/4/2007 10:55:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0009g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

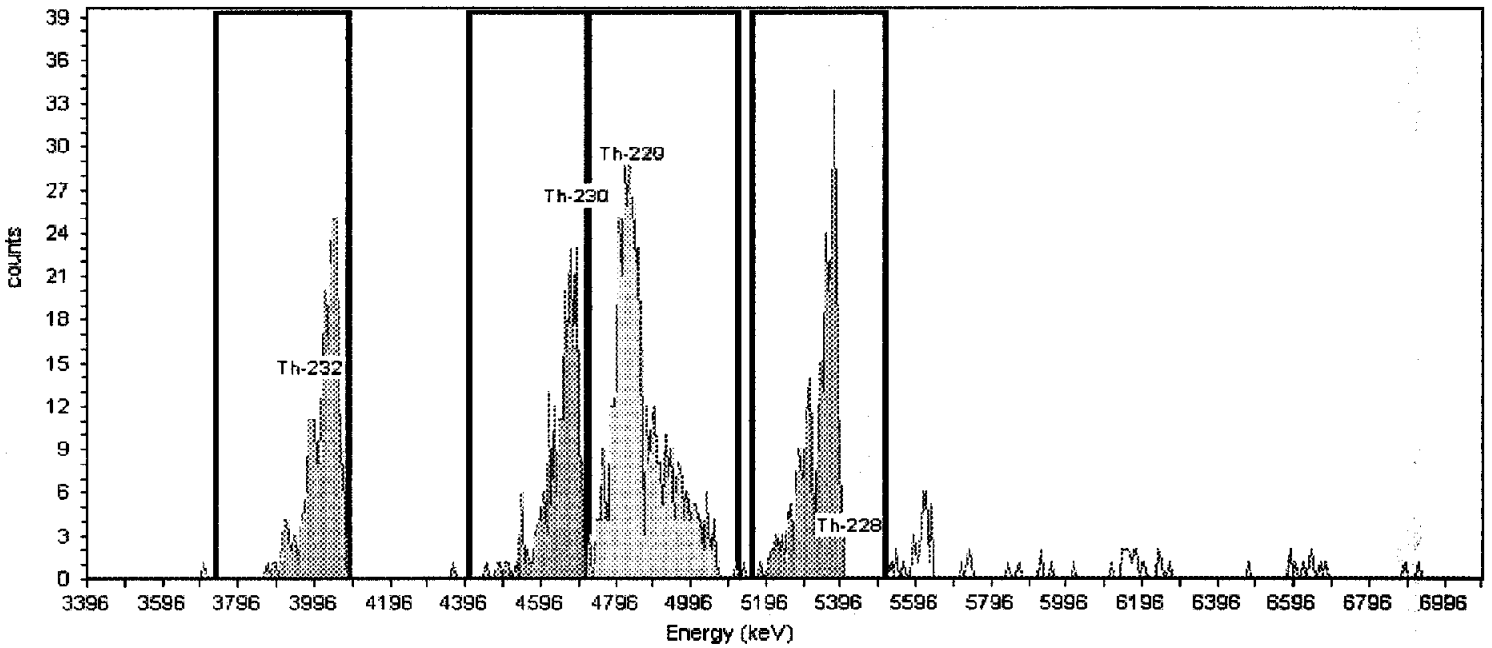
Tracer Nuclide: Th-229
Tracer Recovery: 96.72%

Acquisition

Detector: AV14
Serial Number: 41-172C4
Acquisition Start Date: 5/14/2007 11:02:13AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:22PM

Calibration Name: April2007_AV14
Calibration Date: 4/23/2007 6:09:35PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.70% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV14; Det: AV14; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	28.969	100.2	233.00	0.2500	233	8.439E-001	1.608E-001	3.334E-003	1.648E-002
Th-230	4688.465	4405.333	4717.504	22.033	99.7	210.00	1.0000	209	7.616E-001	1.493E-001	6.702E-003	2.326E-002
Th-229	4840.921	4724.764	5124.053	70.369	99.6	453.00	1.0000	452	1.594E+000	2.197E-001	6.705E-003	2.328E-002
Th-228	5421.705	5160.352	5516.082	50.114	99.8	266.00	0.5000	266	9.669E-001	1.789E-001	4.736E-003	1.933E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 2:51:10PM 5/15/2007

Sample

Sample Name: F7E050113-009
SampleType: Sample
: JWDTK1AE
Sample Collection Date: 5/4/2007 10:55:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0055g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

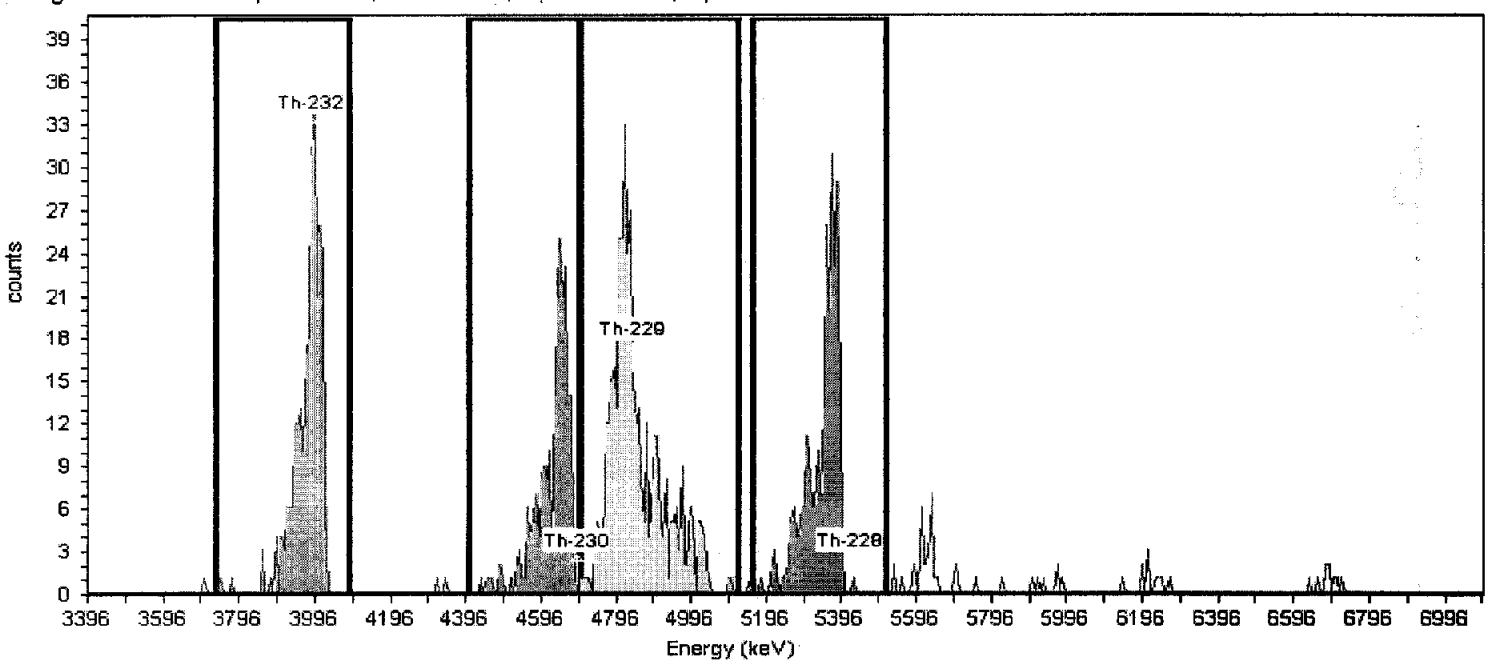
Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

Tracer Nuclide: Th-229
Tracer Recovery: 98.71%

Acquisition

Detector: AV15
Serial Number: 41-172C5
Acquisition Start Date: 5/14/2007 11:02:15AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:24PM
Background Info: Sample: AV15; Det: AV15; Spectrum #1; Apr-20-2007 16:36

Calibration Name: May2007_AV15
Calibration Date: 5/11/2007 1:31:46PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 23.19% +/- 0.24% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	57.099	100.2	260.00	1.0000	259	1.057E+000	1.999E-001	7.504E-003	2.605E-002
Th-230	4688.465	4405.333	4695.725	23.251	99.7	214.00	1.2500	213	8.724E-001	1.728E-001	8.431E-003	2.796E-002
Th-229	4840.921	4702.985	5124.053	68.859	99.6	401.00	0.2500	401	1.623E+000	2.301E-001	3.773E-003	1.865E-002
Th-228	5421.705	5160.352	5516.082	50.070	99.8	250.00	5.0000	245	1.004E+000	1.937E-001	1.685E-002	4.479E-002

Manual integration
Shifting mw 5/15/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040

2:52:07PM 5/15/2007

Sample

Sample Name: F7E110000-141B
SampleType: Blank
: JWQMP1AA
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

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

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

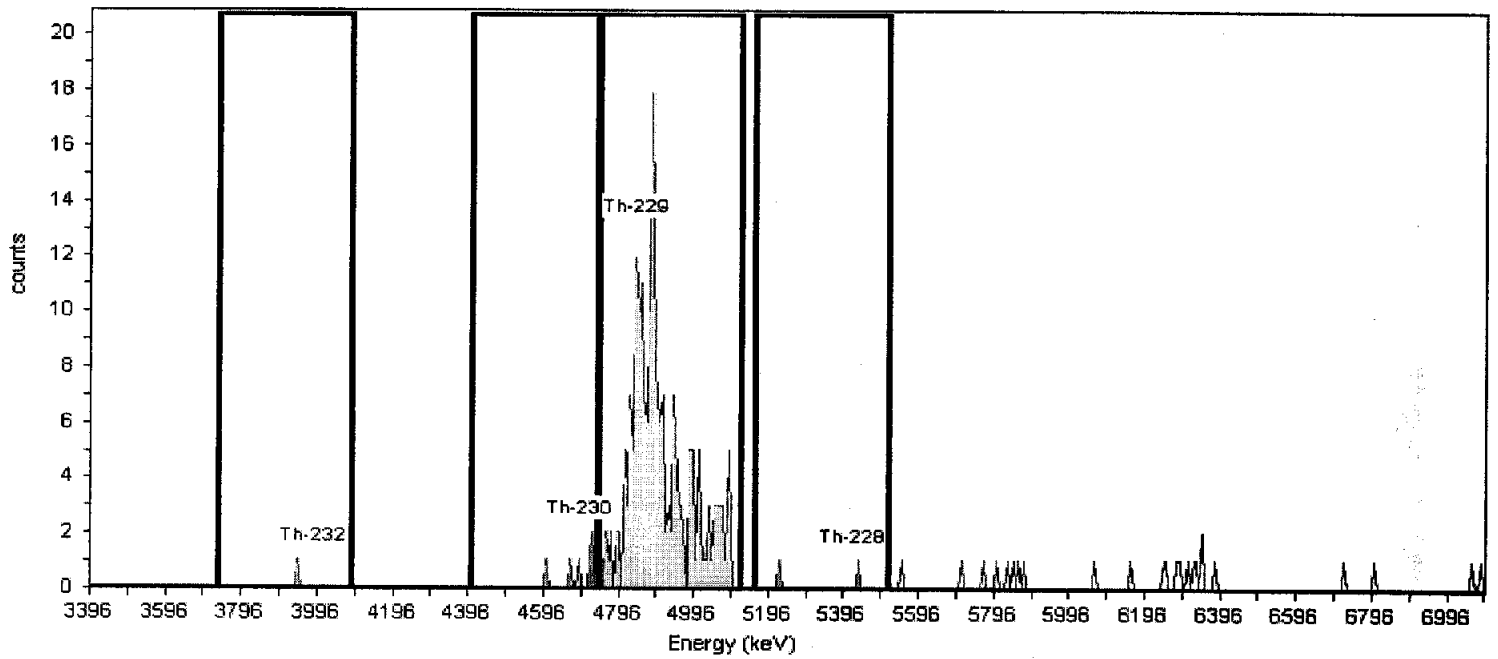
Tracer Nuclide: Th-229
Tracer Recovery: 41.51%

Acquisition

Detector: AV20
Serial Number: 41-172R2
Acquisition Start Date: 5/14/2007 11:02:16AM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:30PM

Calibration Name: April2007_AV20
Calibration Date: 4/24/2007 10:43:28AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 27.35% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV20; Det: AV20; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	43.286	100.2	1.00	0.7500	0	2.062E-003	2.183E-002	1.314E-002	4.860E-002
Th-230	4688.465	4405.333	4739.284	13.813	99.7	6.00	1.0000	5	4.145E-002	4.446E-002	1.525E-002	5.293E-002
Th-229	4840.921	4746.543	5124.053	90.122	99.6	200.00	1.2500	199	6.844E-001	1.195E-001	1.706E-002	5.656E-002
Th-228	5421.705	5160.352	5516.082	43.295	99.8	2.00	8.2500	-6	-5.179E-002	5.382E-002	4.377E-002	1.100E-001

manual integration
Shifting NW 5/15/07

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:02:01PM 5/14/2007

Analyst: 60040

Sample

Sample Name: F7E110000-141C
SampleType: Control
: JWQMP1AC
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 0.1319g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131141
:
Description:

Client Name: Undefined
Client Contact:

Tracer

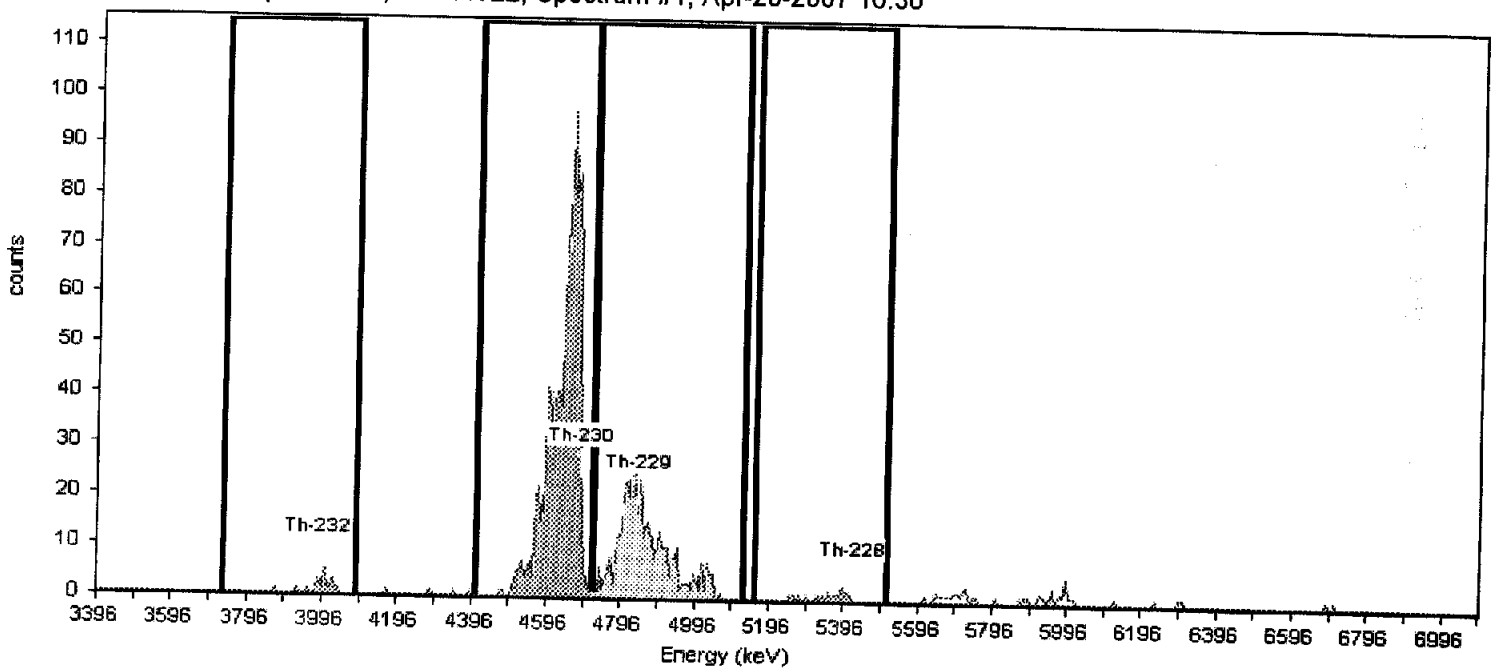
Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

Tracer Nuclide: Th-229
Tracer Recovery: 91.96%

Acquisition

Detector: AV22
Serial Number: 41-172Q5
Acquisition Start Date: 5/14/2007 11:02:20AM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:32PM
Background Info: Sample: AV22; Det: AV22; Spectrum #1; Apr-20-2007 16:36

Calibration Name: April2007_AV22
Calibration Date: 4/24/2007 6:49:30PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 25.75% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/14/2007 10:57:03AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	53.579	100.2	21.00	1.0000	20	1.200E+000	5.875E-001	1.103E-001	3.829E-001
Th-230	4688.465	4405.333	4717.504	50.120	99.7	915.00	0.5000	915	5.512E+001	8.589E+000	7.839E-002	3.199E-001
Th-229	4840.921	4724.764	5124.053	75.806	99.6	415.00	0.5000	415	2.299E+001	3.234E+000	7.843E-002	3.201E-001
Th-228	5421.705	5160.352	5516.082	72.435	99.8	19.00	1.2500	18	1.069E+000	5.628E-001	1.239E-001	4.108E-001

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 9:24:01AM 5/21/2007

Sample

Sample Name: F7E150000-099B
SampleType: Blank
: JW0A41AA
Sample Collection Date: 5/4/2007 11:10:00AM
Comment:

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

Batch

Batch Name: 7135099
:
Description:

Client Name: Undefined
Client Contact:

Tracer

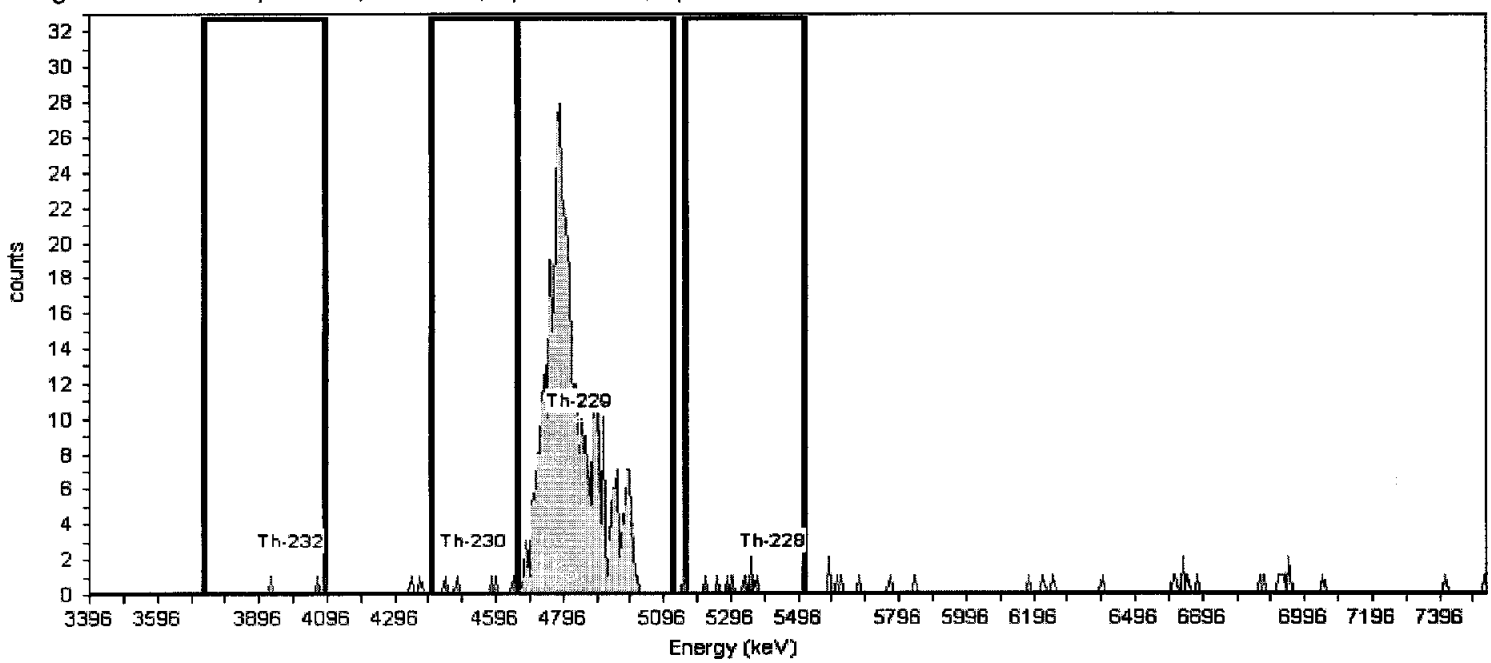
Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

Tracer Nuclide: Th-229
Tracer Recovery: 93.93%

Acquisition

Detector: AV3
Serial Number: 41-158X5
Acquisition Start Date: 5/19/2007 3:50:30PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:21PM
Background Info: Sample: AV3; Det: AV3; Spectrum #1; Apr-20-2007 16:36

Calibration Name: April2007_AV3
Calibration Date: 4/23/2007 1:09:49PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.81% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/19/2007 3:48:05PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	20.880	100.2	3.00	0.0000	3	1.116E-002	1.496E-002	0.000E+000	1.006E-002
Th-230	4532.379	4405.333	4659.426	10.400	99.7	5.00	0.5000	5	1.682E-002	1.769E-002	4.861E-003	1.984E-002
Th-229	4840.921	4659.426	5124.053	83.742	99.8	442.00	0.5000	442	1.549E+000	2.146E-001	4.856E-003	1.982E-002
Th-228	5421.705	5160.352	5516.082	.000	99.8	9.00	4.2500	5	1.774E-002	2.731E-002	1.416E-002	3.844E-002

Manual integration
Shifting JW 5/21/07

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:50:21PM 5/19/2007

Analyst: 60040

Sample

Sample Name: F7E150000-099C
SampleType: Control
: JW0A41AC
Sample Collection Date: 5/4/2007 11:10:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 0.1309g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7135099
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

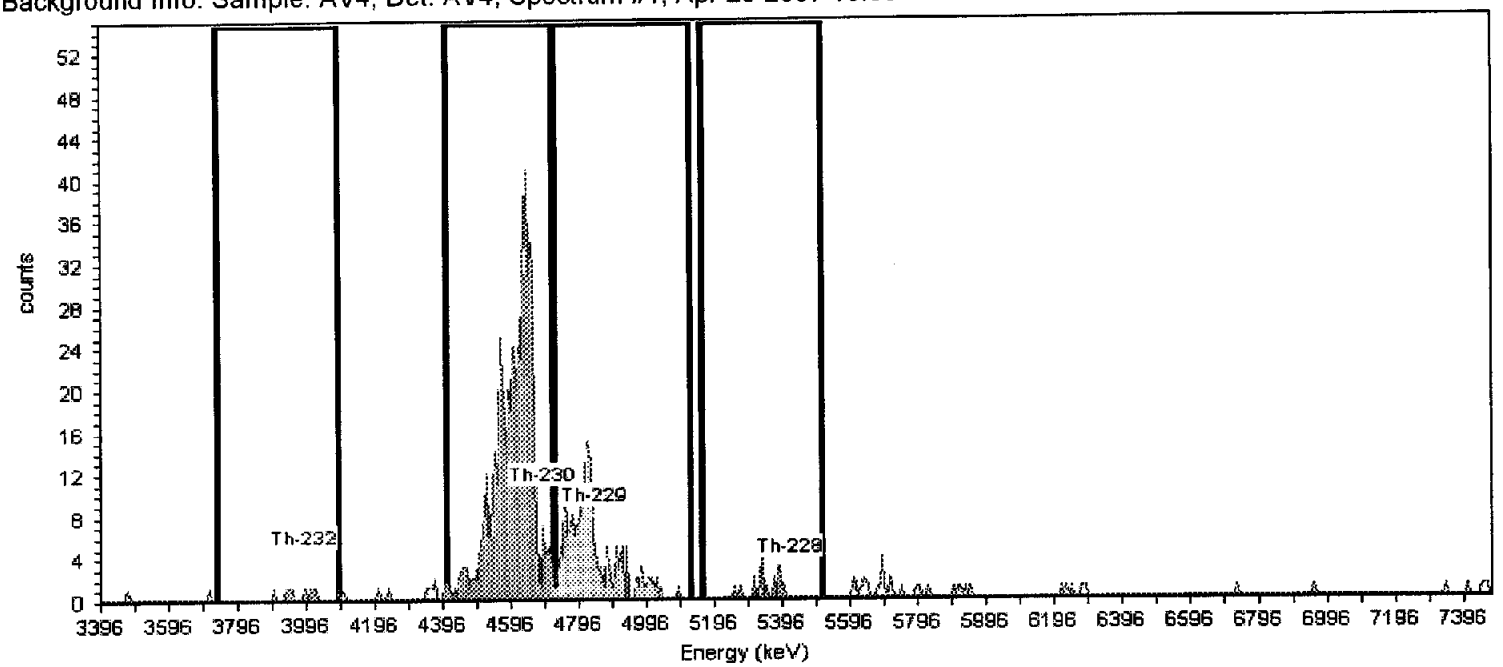
Tracer Nuclide: Th-229
Tracer Recovery: 38.38%

Acquisition

Detector: AV4
Serial Number: 41-172B5
Acquisition Start Date: 5/19/2007 3:50:31PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:09PM

Calibration Name: April2007_AV4
Calibration Date: 4/23/2007 1:09:59PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.79% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV4; Det: AV4; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 5/19/2007 3:48:05PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Thorium
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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
Th-232	3984.265	3730.172	4085.902	89.317	100.2	10.00	0.5000	10	1.322E+000	9.330E-001	1.810E-001	7.386E-001
Th-230	4688.465	4405.333	4717.504	102.228	99.7	496.00	1.0000	495	6.923E+001	1.398E+001	2.572E-001	8.929E-001
Th-229	4840.921	4724.764	5124.053	99.501	99.6	181.00	1.0000	180	9.669E+000	1.745E+000	2.574E-001	8.934E-001
Th-228	5421.705	5160.352	5516.082	93.531	99.8	16.00	4.7500	11	1.573E+000	1.305E+000	5.603E-001	1.499E+000

Alpha Spectroscopy

Uranium

SEVERN TRENT STL

Analysis Report for Alpha Spectroscopy

Batch: 7131144 **Operator:** 403424

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-001	JWDDT1AD	2.0025	1.00	2.00	AV17	5/14/07 11:06	240.00	rad04-0093	U-232	5.490E+000	94.69%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	2.151E+000	pCi/g	1.878E-001	2.800E-001	4.657E-002	1.815E-002
U-234	5.282E-001	pCi/g	9.048E-002	1.138E-001	2.596E-002	7.827E-003
U-235	4.737E-002	pCi/g	2.996E-002	3.202E-002	1.282E-002	0.000E+000
U-238	5.651E-001	pCi/g	9.344E-002	1.190E-001	2.590E-002	7.812E-003

F7E050113-001X	JWDDT1AJ	2.0088	1.00	2.00	AV24	5/14/07 11:06	240.00	rad04-0093	U-232	5.473E+000	96.69%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	2.190E+000	pCi/g	1.830E-001	2.825E-001	2.907E-002	9.563E-003
U-234	5.694E-001	pCi/g	9.250E-002	1.183E-001	2.657E-002	8.301E-003
U-235	1.261E-002	pCi/g	1.653E-002	1.662E-002	2.084E-002	4.217E-003
U-238	4.901E-001	pCi/g	8.539E-002	1.064E-001	2.167E-002	5.858E-003

F7E050113-002	JWDE11AD	2.0033	1.00	2.00	AV48	5/14/07 11:06	240.00	rad04-0093	U-232	5.488E+000	92.86%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	2.109E+000	pCi/g	1.869E-001	2.741E-001	2.899E-002	9.314E-003
U-234	6.744E-001	pCi/g	1.019E-001	1.346E-001	1.744E-002	3.529E-003
U-235	6.207E-002	pCi/g	3.443E-002	3.664E-002	1.292E-002	0.000E+000
U-238	5.782E-001	pCi/g	9.474E-002	1.211E-001	2.445E-002	7.043E-003

F7E050113-003	JWDE31AD	2.0009	1.00	2.00	AV50	5/14/07 11:06	240.00	rad04-0093	U-232	5.495E+000	91.54%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	2.081E+000	pCi/g	1.868E-001	2.703E-001	3.729E-002	1.351E-002
U-234	3.917E-001	pCi/g	7.794E-002	9.316E-002	2.428E-002	6.995E-003
U-235	2.130E-002	pCi/g	2.220E-002	2.237E-002	2.512E-002	6.155E-003
U-238	5.342E-001	pCi/g	9.022E-002	1.139E-001	1.725E-002	3.490E-003

F7E050113-005	JWDTF1AD	2.0047	1.00	2.00	AV52	5/14/07 11:06	240.00	rad04-0093	U-232	5.484E+000	87.29%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.981E+000	pCi/g	1.886E-001	2.585E-001	2.814E-002	8.791E-003
U-234	7.442E-001	pCi/g	1.083E-001	1.457E-001	2.305E-002	6.231E-003
U-235	2.312E-002	pCi/g	2.231E-002	2.251E-002	2.213E-002	4.477E-003
U-238	6.198E-001	pCi/g	9.854E-002	1.276E-001	1.774E-002	3.590E-003

F7E050113-006	JWDTG1AD	2.0154	1.00	2.00	AV54	5/14/07 11:06	240.00	rad04-0093	U-232	5.455E+000	83.00%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.874E+000	pCi/g	1.946E-001	2.481E-001	2.669E-002	7.688E-003
U-234	8.590E-001	pCi/g	1.206E-001	1.660E-001	2.675E-002	7.707E-003
U-235	4.954E-002	pCi/g	3.379E-002	3.443E-002	2.767E-002	6.781E-003
U-238	8.071E-001	pCi/g	1.162E-001	1.583E-001	1.132E-002	0.000E+000

F7E050113-007	JWDTH1AD	2.0063	1.00	2.00	AV57	5/14/07 11:06	240.00	rad04-0093	U-232	5.480E+000	93.14%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
						U-232	2.112E+000 pCi/g		1.833E-001	2.725E-001	2.661E-002	8.312E-003
						U-234	4.171E-001 pCi/g		7.873E-002	9.545E-002	1.681E-002	3.401E-003
						U-235	9.206E-003 pCi/g		1.302E-002	1.599E-002	1.246E-002	0.000E+000
						U-238	4.531E-001 pCi/g		8.196E-002	1.008E-001	1.678E-002	3.395E-003
F7E050113-008	JWDTJ1AD	2.0009	1.00	2.00	AV73	5 / 14 / 07 11:06	240.00	rad04-0093	U-232		5.495E+000	92.11%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	2.094E+000 pCi/g		1.854E-001	2.712E-001	2.972E-002	9.775E-003
						U-234	6.395E-001 pCi/g		9.888E-002	1.291E-001	2.569E-002	7.746E-003
						U-235	2.110E-002 pCi/g		2.568E-002	2.582E-002	3.380E-002	1.056E-002
						U-238	6.711E-001 pCi/g		1.013E-001	1.336E-001	2.711E-002	8.469E-003
F7E050113-009	JWDTK1AD	2.0055	1.00	2.00	AV51	5 / 14 / 07 11:06	240.00	rad04-0093	U-232		5.482E+000	94.58%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	2.146E+000 pCi/g		1.836E-001	2.769E-001	3.434E-002	1.220E-002
						U-234	7.162E-001 pCi/g		1.032E-001	1.387E-001	2.172E-002	5.872E-003
						U-235	3.670E-002 pCi/g		2.595E-002	2.793E-002	1.242E-002	0.000E+000
						U-238	5.648E-001 pCi/g		9.206E-002	1.176E-001	2.653E-002	8.288E-003
F7E110000-144B	JWQM51AA	2.0000	1.00	2.00	AV71	5 / 14 / 07 11:06	240.00	rad04-0093	U-232		5.497E+000	97.02%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	2.207E+000 pCi/g		1.807E-001	2.827E-001	2.440E-002	7.357E-003
						U-234	1.704E-002 pCi/g		1.644E-002	1.658E-002	1.630E-002	3.298E-003
						U-235	-1.116E-003 pCi/g		4.463E-003	9.981E-003	2.029E-002	4.104E-003
						U-238	-8.948E-004 pCi/g		3.579E-003	8.005E-003	1.627E-002	3.292E-003
F7E110000-144C	JWQM51AC	0.1319	1.00	2.00	AV72	5 / 14 / 07 11:06	240.00	rad04-0093	U-232		8.335E+001	97.75%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	3.372E+001 pCi/g		2.726E+000	4.312E+000	3.430E-001	9.881E-002
						U-234	1.897E+001 pCi/g		2.026E+000	3.167E+000	3.173E-001	8.578E-002
						U-235	7.707E-001 pCi/g		4.739E-001	4.841E-001	3.556E-001	8.715E-002
						U-238	1.745E+001 pCi/g		1.939E+000	2.962E+000	2.443E-001	4.942E-002

Laboratory Control Sample Information

Sample ID	WRKNO	RegionName	Activity	StdAdded	Recovery	LCL	UCL
F7E110000-144C	JWQM51AC	U-234	1.897E+001	1.960E+001	96.79%	78.00	125.00
	JWQM51AC	U-238	1.745E+001	1.960E+001	89.05%	76.00	122.00

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F7E050113-001	U-234	5.282E-001	F7E050113-001X	5.694E-001	7.51%	1.776E-001	2.512E-001	
	U-235	4.737E-002	F7E050113-001X	1.261E-002	115.90%	7.146E-001	9.634E-001	NA: Activity < MDA
	U-238	5.651E-001	F7E050113-001X	4.901E-001	14.22%	3.328E-001	4.699E-001	

SEVERN TRENT STL

Analysis Report for Alpha Spectroscopy

Batch: 7135101 **Operator:** 403293

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7E050113-004	JWDTD1AD	2.0012	1.00	2.00	AV1	5/19/07 11:27	240.00	rad04-0093	U-232	5.494E+000	97.20%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	2.210E+000	pCi/g	1.826E-001	2.843E-001	2.997E-002	1.005E-002
U-234	6.493E-001	pCi/g	9.754E-002	1.286E-001	1.660E-002	3.359E-003
U-235	3.523E-002	pCi/g	2.611E-002	2.651E-002	2.066E-002	4.180E-003
U-238	6.480E-001	pCi/g	9.789E-002	1.287E-001	2.486E-002	7.496E-003

F7E050113-004X	JWDTD1AG	2.0034	1.00	2.00	AV2	5/19/07 11:27	240.00	rad04-0093	U-232	5.488E+000	103.43%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	2.349E+000	pCi/g	1.782E-001	2.996E-001	3.478E-002	1.271E-002
U-234	5.023E-001	pCi/g	8.400E-002	1.058E-001	2.212E-002	6.371E-003
U-235	1.293E-002	pCi/g	1.493E-002	1.732E-002	1.167E-002	0.000E+000
U-238	6.180E-001	pCi/g	9.309E-002	1.222E-001	2.357E-002	7.109E-003

F7E150000-101B	JW0A51AA	2.0000	1.00	2.00	AV3	5/19/07 11:27	240.00	rad04-0093	U-232	5.497E+000	102.69%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	2.336E+000	pCi/g	1.769E-001	2.971E-001	3.267E-002	1.173E-002
U-234	1.025E-002	pCi/g	1.183E-002	1.372E-002	9.242E-003	0.000E+000
U-235	-1.063E-003	pCi/g	4.250E-003	9.505E-003	1.932E-002	3.908E-003
U-238	5.113E-003	pCi/g	1.078E-002	1.080E-002	1.809E-002	4.433E-003

F7E150000-101C	JW0A51AC	0.1309	1.00	2.00	AV4	5/19/07 11:27	240.00	rad04-0093	U-232	8.399E+001	99.00%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	3.441E+001	pCi/g	2.752E+000	4.404E+000	4.906E-001	1.722E-001
U-234	1.777E+001	pCi/g	1.968E+000	3.013E+000	3.459E-001	9.963E-002
U-235	4.382E-001	pCi/g	3.692E-001	3.735E-001	3.578E-001	8.767E-002
U-238	1.821E+001	pCi/g	1.986E+000	3.067E+000	2.457E-001	4.972E-002

Laboratory Control Sample Information

Sample ID	WRKNO	RegionName	Activity	StdAdded	Recovery	LCL	UCL
F7E150000-101C	JW0A51AC	U-234	1.777E+001	1.960E+001	90.66%	78.00	125.00
	JW0A51AC	U-238	1.821E+001	1.960E+001	92.89%	76.00	122.00

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F7E050113-004	U-234	6.493E-001	F7E050113-004X	5.023E-001	25.53%	6.271E-001	8.828E-001	
	U-235	3.523E-002	F7E050113-004X	1.293E-002	92.59%	5.087E-001	7.041E-001	
	U-238	6.480E-001	F7E050113-004X	6.180E-001	4.74%	1.196E-001	1.691E-001	

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

Matrix Spike Information

SampID	SampMSID	RegionName	Sample Activity	MS Activity	StdAdded	MSRecovery

TestAmerica STL

Daily Pulsers

Daily Pulser Check - Severn Trent Lab

Pulser Date: 5/14/2007

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria	P/F	FWHM (keV) Result	FWHM (keV) Criteria	P/F	Pulser Center Result	Pulser Center Criteria	P/F	Energy (keV) Result	Energy (keV) Criteria	P/F
AV1	05/14/2007 6:16	7449	7218.7 +/- 5%	Pass	14.0	10 - 20	Pass	222.0	229.0 +/- 5%	Pass	5001	5051.1 +/- 25%	Pass
AV1	05/14/2007 6:16	7449	7218.7 +/- 5%	Pass	14.0	10 - 20	Pass	222.0	229.0 +/- 5%	Pass	5001	5051.1 +/- 25%	Pass
AV1*	05/14/2007 5:16	6731	7218.7 +/- 5%	FAIL	13.9	10 - 20	Pass	222.0	229.0 +/- 5%	Pass	5001	5051.1 +/- 25%	Pass
AV2*	05/14/2007 5:16	6676	7468.7 +/- 5%	FAIL	14.4	10 - 20	Pass	226.9	222.9 +/- 5%	Pass	5036	5007.5 +/- 25%	Pass
AV2	05/14/2007 6:16	7449	7468.7 +/- 5%	Pass	14.0	10 - 20	Pass	226.9	222.9 +/- 5%	Pass	5036	5007.5 +/- 25%	Pass
AV3*	05/14/2007 5:16	6595	7484.9 +/- 5%	FAIL	13.9	10 - 20	Pass	222.0	225.9 +/- 5%	Pass	5001	5028.8 +/- 25%	Pass
AV3	05/14/2007 6:16	7446	7484.9 +/- 5%	Pass	13.9	10 - 20	Pass	222.0	225.9 +/- 5%	Pass	5001	5028.8 +/- 25%	Pass
AV4*	05/14/2007 5:16	6544	7413.7 +/- 5%	FAIL	14.6	10 - 20	Pass	225.9	224.9 +/- 5%	Pass	5029	5021.6 +/- 25%	Pass
AV4	05/14/2007 6:16	7432	7413.7 +/- 5%	Pass	14.9	10 - 20	Pass	225.9	224.9 +/- 5%	Pass	5029	5021.6 +/- 25%	Pass
AV6*	05/14/2007 5:16	6390	7476.7 +/- 5%	FAIL	11.2	10 - 20	Pass	221.0	224.0 +/- 5%	Pass	4993	5015.3 +/- 25%	Pass
AV6	05/14/2007 6:16	7335	7476.7 +/- 5%	Pass	11.2	10 - 20	Pass	221.0	224.0 +/- 5%	Pass	4993	5015.3 +/- 25%	Pass
AV7	05/14/2007 6:16	7438	7477.0 +/- 5%	Pass	13.5	10 - 20	Pass	226.9	224.9 +/- 5%	Pass	5036	5021.9 +/- 25%	Pass
AV7*	05/14/2007 5:16	6440	7477.0 +/- 5%	FAIL	13.3	10 - 20	Pass	226.9	224.9 +/- 5%	Pass	5037	5021.9 +/- 25%	Pass
AV8*	05/14/2007 5:16	6495	7327.4 +/- 5%	FAIL	13.9	10 - 20	Pass	223.9	228.0 +/- 5%	Pass	5014	5044.6 +/- 25%	Pass
AV8	05/14/2007 6:16	7427	7327.4 +/- 5%	Pass	15.1	10 - 20	Pass	225.1	228.0 +/- 5%	Pass	5023	5044.6 +/- 25%	Pass
AV8	05/14/2007 6:16	7427	7327.4 +/- 5%	Pass	15.1	10 - 20	Pass	225.1	228.0 +/- 5%	Pass	5023	5044.6 +/- 25%	Pass
AV9*	05/14/2007 5:16	6535	7519.3 +/- 5%	FAIL	13.3	10 - 20	Pass	225.0	227.9 +/- 5%	Pass	5023	5043.3 +/- 25%	Pass
AV9	05/14/2007 6:16	7717	7519.3 +/- 5%	Pass	13.5	10 - 20	Pass	225.0	227.9 +/- 5%	Pass	5023	5043.3 +/- 25%	Pass
AV11	05/14/2007 6:17	7590	7666.2 +/- 5%	Pass	16.1	10 - 20	Pass	217.9	225.0 +/- 5%	Pass	4971	5022.1 +/- 25%	Pass
AV11	05/14/2007 6:17	7590	7666.2 +/- 5%	Pass	16.1	10 - 20	Pass	217.9	225.0 +/- 5%	Pass	4971	5022.1 +/- 25%	Pass
AV11*	05/14/2007 5:16	6448	7666.2 +/- 5%	FAIL	25.7	10 - 20	FAIL	217.9	225.0 +/- 5%	Pass	4971	5022.1 +/- 25%	Pass
AV12	05/14/2007 6:17	7594	7588.7 +/- 5%	Pass	16.2	10 - 20	Pass	225.0	230.0 +/- 5%	Pass	5022	5058.4 +/- 25%	Pass
AV12	05/14/2007 6:17	7594	7588.7 +/- 5%	Pass	16.2	10 - 20	Pass	225.0	230.0 +/- 5%	Pass	5022	5058.4 +/- 25%	Pass
AV12*	05/14/2007 5:16	6369	7588.7 +/- 5%	FAIL	16.4	10 - 20	Pass	225.0	230.0 +/- 5%	Pass	5022	5058.4 +/- 25%	Pass
AV13	05/14/2007 6:17	7451	7584.6 +/- 5%	Pass	11.9	10 - 20	Pass	226.0	228.0 +/- 5%	Pass	5029	5044.1 +/- 25%	Pass
AV14	05/14/2007 6:17	7625	7638.3 +/- 5%	Pass	13.1	10 - 20	Pass	221.9	227.0 +/- 5%	Pass	5000	5037.2 +/- 25%	Pass
AV15	05/14/2007 6:17	7622	7770.5 +/- 5%	Pass	13.6	10 - 20	Pass	223.1	226.9 +/- 5%	Pass	5008	5036.6 +/- 25%	Pass
AV15	05/14/2007 6:17	7622	7770.5 +/- 5%	Pass	13.6	10 - 20	Pass	223.1	226.9 +/- 5%	Pass	5008	5036.6 +/- 25%	Pass
AV17	05/14/2007 6:17	7730	7619.1 +/- 5%	Pass	13.2	10 - 20	Pass	225.0	229.9 +/- 5%	Pass	5023	5058.3 +/- 25%	Pass
AV17	05/14/2007 6:17	7730	7619.1 +/- 5%	Pass	13.2	10 - 20	Pass	225.0	229.9 +/- 5%	Pass	5023	5058.3 +/- 25%	Pass
AV17*	05/14/2007 5:15	6174	7619.1 +/- 5%	FAIL	13.3	10 - 20	Pass	225.0	229.9 +/- 5%	Pass	5023	5058.3 +/- 25%	Pass
005 AV18	05/14/2007 5:19	7078	7714.5 +/- 5%	FAIL	13.3	10 - 20	Pass	223.1	226.9 +/- 5%	Pass	5009	5036.4 +/- 25%	Pass

* Pulsers were not on

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria		P/F	FWHM (keV) Result	FWHM (keV) Criteria	P/F	Pulser Center Result	Pulser Center Criteria		P/F	Energy (keV) Result	Energy (keV) Criteria		P/F
AV18	05/14/2007 6:17	7124	7714.5	+/- 5%	FAIL	13.2	10 - 20	Pass	223.2	226.9	+/- 5%	Pass	5009	5036.4	+/- 25%	Pass
AV18 *	05/14/2007 5:15	6201	7714.5	+/- 5%	FAIL	13.9	10 - 20	Pass	223.2	226.9	+/- 5%	Pass	5009	5036.4	+/- 25%	Pass
AV19 *	05/14/2007 5:15	6155	7269.8	+/- 5%	FAIL	14.2	10 - 20	Pass	220.9	227.7	+/- 5%	Pass	4993	5041.9	+/- 25%	Pass
AV19	05/14/2007 5:19	7725	7269.8	+/- 5%	FAIL	14.1	10 - 20	Pass	220.9	227.7	+/- 5%	Pass	4993	5041.9	+/- 25%	Pass
AV19	05/14/2007 6:17	7725	7269.8	+/- 5%	FAIL	13.3	10 - 20	Pass	220.9	227.7	+/- 5%	Pass	4993	5041.9	+/- 25%	Pass
AV20 *	05/14/2007 5:15	6106	7503.6	+/- 5%	FAIL	13.8	10 - 20	Pass	225.9	226.0	+/- 5%	Pass	5029	5029.9	+/- 25%	Pass
AV20	05/14/2007 5:19	7718	7503.6	+/- 5%	Pass	14.6	10 - 20	Pass	225.9	226.0	+/- 5%	Pass	5029	5029.9	+/- 25%	Pass
AV20	05/14/2007 6:17	7713	7503.6	+/- 5%	Pass	14.7	10 - 20	Pass	225.9	226.0	+/- 5%	Pass	5029	5029.9	+/- 25%	Pass
AV21 *	05/14/2007 5:15	4318	7550.9	+/- 5%	FAIL	13.5	10 - 20	Pass	223.0	226.0	+/- 5%	Pass	5008	5029.6	+/- 25%	Pass
AV21	05/14/2007 6:17	7718	7550.9	+/- 5%	Pass	13.6	10 - 20	Pass	223.0	226.0	+/- 5%	Pass	5008	5029.6	+/- 25%	Pass
AV21	05/14/2007 5:19	7721	7550.9	+/- 5%	Pass	13.5	10 - 20	Pass	223.0	226.0	+/- 5%	Pass	5008	5029.6	+/- 25%	Pass
AV22 *	05/14/2007 5:15	4375	7691.4	+/- 5%	FAIL	13.8	10 - 20	Pass	224.0	225.0	+/- 5%	Pass	5015	5022.4	+/- 25%	Pass
AV22	05/14/2007 5:19	7719	7691.4	+/- 5%	Pass	13.9	10 - 20	Pass	224.0	225.0	+/- 5%	Pass	5015	5022.4	+/- 25%	Pass
AV22	05/14/2007 6:17	7716	7691.4	+/- 5%	Pass	13.9	10 - 20	Pass	224.0	225.0	+/- 5%	Pass	5015	5022.4	+/- 25%	Pass
AV24 *	05/14/2007 5:15	4428	7354.0	+/- 5%	FAIL	14.3	10 - 20	Pass	224.0	226.9	+/- 5%	Pass	5015	5036.4	+/- 25%	Pass
AV24	05/14/2007 5:20	7712	7354.0	+/- 5%	Pass	14.6	10 - 20	Pass	224.0	226.9	+/- 5%	Pass	5015	5036.4	+/- 25%	Pass
AV24	05/14/2007 6:17	7707	7354.0	+/- 5%	Pass	14.9	10 - 20	Pass	224.0	226.9	+/- 5%	Pass	5015	5036.4	+/- 25%	Pass
AV45	05/14/2007 5:19	7655	7593.5	+/- 5%	Pass	21.7	10 - 20	FAIL	228.1	225.6	+/- 5%	Pass	5045	5026.9	+/- 25%	Pass
AV45	05/14/2007 6:17	7652	7593.5	+/- 5%	Pass	22.5	10 - 20	FAIL	228.1	225.6	+/- 5%	Pass	5045	5026.9	+/- 25%	Pass
AV45 *	05/14/2007 5:16	2521	7593.5	+/- 5%	FAIL	22.2	10 - 20	FAIL	228.1	225.6	+/- 5%	Pass	5045	5026.9	+/- 25%	Pass
AV46	05/14/2007 5:19	7543	7722.7	+/- 5%	Pass	12.8	10 - 20	Pass	224.0	225.8	+/- 5%	Pass	5015	5028.0	+/- 25%	Pass
AV46	05/14/2007 6:17	7554	7722.7	+/- 5%	Pass	12.8	10 - 20	Pass	224.0	225.8	+/- 5%	Pass	5015	5028.0	+/- 25%	Pass
AV46 *	05/14/2007 5:16	2399	7722.7	+/- 5%	FAIL	12.7	10 - 20	Pass	224.0	225.8	+/- 5%	Pass	5015	5028.0	+/- 25%	Pass
AV47 *	05/14/2007 5:16	2226	7532.5	+/- 5%	FAIL	13.9	10 - 20	Pass	221.0	226.0	+/- 5%	Pass	4993	5029.6	+/- 25%	Pass
AV47	05/14/2007 5:19	7646	7532.5	+/- 5%	Pass	14.1	10 - 20	Pass	221.0	226.0	+/- 5%	Pass	4993	5029.6	+/- 25%	Pass
AV47	05/14/2007 6:17	7645	7532.5	+/- 5%	Pass	14.2	10 - 20	Pass	221.0	226.0	+/- 5%	Pass	4993	5029.6	+/- 25%	Pass
AV48 *	05/14/2007 5:16	2278	7717.5	+/- 5%	FAIL	14.4	10 - 20	Pass	223.0	224.0	+/- 5%	Pass	5008	5015.2	+/- 25%	Pass
AV48	05/14/2007 5:19	7620	7717.5	+/- 5%	Pass	15.1	10 - 20	Pass	222.9	224.0	+/- 5%	Pass	5007	5015.2	+/- 25%	Pass
AV48	05/14/2007 6:17	7635	7717.5	+/- 5%	Pass	15.0	10 - 20	Pass	223.0	224.0	+/- 5%	Pass	5008	5015.2	+/- 25%	Pass
AV49 *	05/14/2007 5:16	2329	7703.4	+/- 5%	FAIL	14.5	10 - 20	Pass	231.9	226.0	+/- 5%	Pass	5072	5029.5	+/- 25%	Pass
AV49	05/14/2007 6:17	7635	7703.4	+/- 5%	Pass	14.3	10 - 20	Pass	231.8	226.0	+/- 5%	Pass	5072	5029.5	+/- 25%	Pass
AV49	05/14/2007 5:19	7583	7703.4	+/- 5%	Pass	14.5	10 - 20	Pass	233.2	226.0	+/- 5%	Pass	5082	5029.5	+/- 25%	Pass
AV50 *	05/14/2007 5:16	2387	7660.9	+/- 5%	FAIL	15.3	10 - 20	Pass	226.0	227.0	+/- 5%	Pass	5030	5037.2	+/- 25%	Pass
AV50	05/14/2007 5:20	7556	7660.9	+/- 5%	Pass	15.4	10 - 20	Pass	226.0	227.0	+/- 5%	Pass	5030	5037.2	+/- 25%	Pass
AV50	05/14/2007 6:17	7625	7660.9	+/- 5%	Pass	15.4	10 - 20	Pass	226.0	227.0	+/- 5%	Pass	5030	5037.2	+/- 25%	Pass
AV51 *	05/14/2007 5:16	2093	7070.5	+/- 5%	FAIL	13.4	10 - 20	Pass	227.0	223.0	+/- 5%	Pass	5037	5007.6	+/- 25%	Pass

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria	P/F	FWHM (keV) Result	FWHM (keV) Criteria	P/F	Pulser Center Result	Pulser Center Criteria	P/F	Energy (keV) Result	Energy (keV) Criteria	P/F
AV51	05/14/2007 5:20	7356	7070.5 +/- 5%	Pass	13.5	10 - 20	Pass	227.0	223.0 +/- 5%	Pass	5037	5007.6 +/- 25%	Pass
AV51	05/14/2007 6:17	7353	7070.5 +/- 5%	Pass	13.6	10 - 20	Pass	227.0	223.0 +/- 5%	Pass	5037	5007.6 +/- 25%	Pass
AV52	05/14/2007 5:20	6957	7156.4 +/- 5%	Pass	12.9	10 - 20	Pass	222.9	225.0 +/- 5%	Pass	5007	5022.4 +/- 25%	Pass
AV52	05/14/2007 6:17	7027	7156.4 +/- 5%	Pass	12.8	10 - 20	Pass	222.9	225.0 +/- 5%	Pass	5007	5022.4 +/- 25%	Pass
AV52 *	05/14/2007 5:16	1961	7156.4 +/- 5%	FAIL	12.8	10 - 20	Pass	222.9	225.0 +/- 5%	Pass	5007	5022.4 +/- 25%	Pass
AV53	05/14/2007 5:20	7143	7144.1 +/- 5%	Pass	12.9	10 - 20	Pass	224.0	223.0 +/- 5%	Pass	5015	5007.8 +/- 25%	Pass
AV53	05/14/2007 6:17	7350	7144.1 +/- 5%	Pass	13.1	10 - 20	Pass	224.0	223.0 +/- 5%	Pass	5015	5007.8 +/- 25%	Pass
AV53 *	05/14/2007 5:16	1999	7144.1 +/- 5%	FAIL	13.1	10 - 20	Pass	224.0	223.0 +/- 5%	Pass	5015	5007.8 +/- 25%	Pass
AV54 *	05/14/2007 5:16	1867	7313.1 +/- 5%	FAIL	12.9	10 - 20	Pass	226.9	226.0 +/- 5%	Pass	5037	5029.5 +/- 25%	Pass
AV54	05/14/2007 5:20	7348	7313.1 +/- 5%	Pass	14.1	10 - 20	Pass	226.9	226.0 +/- 5%	Pass	5036	5029.5 +/- 25%	Pass
AV54	05/14/2007 6:17	7345	7313.1 +/- 5%	Pass	14.1	10 - 20	Pass	226.9	226.0 +/- 5%	Pass	5036	5029.5 +/- 25%	Pass
AV55 *	05/14/2007 5:16	1684	7132.9 +/- 5%	FAIL	13.2	10 - 20	Pass	221.9	226.0 +/- 5%	Pass	5000	5029.7 +/- 25%	Pass
AV55	05/14/2007 5:20	7096	7132.9 +/- 5%	Pass	12.4	10 - 20	Pass	222.0	226.0 +/- 5%	Pass	5000	5029.7 +/- 25%	Pass
AV56	05/14/2007 5:20	7164	7163.7 +/- 5%	Pass	12.9	10 - 20	Pass	222.0	222.0 +/- 5%	Pass	5001	5000.7 +/- 25%	Pass
AV56 *	05/14/2007 5:16	1736	7163.7 +/- 5%	FAIL	12.9	10 - 20	Pass	222.0	222.0 +/- 5%	Pass	5001	5000.7 +/- 25%	Pass
AV57	05/14/2007 5:20	7341	7309.5 +/- 5%	Pass	13.9	10 - 20	Pass	221.9	222.0 +/- 5%	Pass	5000	5000.6 +/- 25%	Pass
AV57 *	05/14/2007 5:16	1790	7309.5 +/- 5%	FAIL	14.2	10 - 20	Pass	221.9	222.0 +/- 5%	Pass	5000	5000.6 +/- 25%	Pass
AV58 *	05/14/2007 5:16	1841	7249.2 +/- 5%	FAIL	13.7	10 - 20	Pass	222.0	223.0 +/- 5%	Pass	5001	5008.0 +/- 25%	Pass
AV58	05/14/2007 5:20	7339	7249.2 +/- 5%	Pass	13.3	10 - 20	Pass	222.0	223.0 +/- 5%	Pass	5001	5008.0 +/- 25%	Pass
AV59 *	05/14/2007 5:16	1583	7141.4 +/- 5%	FAIL	13.0	10 - 20	Pass	286.0	284.0 +/- 5%	Pass	5465	5450.6 +/- 25%	Pass
AV59	05/14/2007 5:20	7239	7141.4 +/- 5%	Pass	12.9	10 - 20	Pass	286.0	284.0 +/- 5%	Pass	5465	5450.6 +/- 25%	Pass
AV59	05/14/2007 6:17	7236	7141.4 +/- 5%	Pass	12.9	10 - 20	Pass	286.0	284.0 +/- 5%	Pass	5465	5450.6 +/- 25%	Pass
AV66	05/14/2007 6:17	7227	7165.5 +/- 5%	Pass	14.0	10 - 20	Pass	219.9	222.0 +/- 5%	Pass	4986	5000.5 +/- 25%	Pass
AV66 *	05/14/2007 5:16	1399	7165.5 +/- 5%	FAIL	13.4	10 - 20	Pass	221.1	222.0 +/- 5%	Pass	4994	5000.5 +/- 25%	Pass
AV66	05/14/2007 5:20	7227	7165.5 +/- 5%	Pass	14.4	10 - 20	Pass	219.9	222.0 +/- 5%	Pass	4985	5000.5 +/- 25%	Pass
AV67 *	05/14/2007 5:16	809	7128.1 +/- 5%	FAIL	19.4	10 - 20	Pass	224.2	224.1 +/- 5%	Pass	5016	5015.6 +/- 25%	Pass
AV67	05/14/2007 5:20	7423	7128.1 +/- 5%	Pass	18.4	10 - 20	Pass	224.1	224.1 +/- 5%	Pass	5016	5015.6 +/- 25%	Pass
AV68 *	05/14/2007 5:16	885	7259.5 +/- 5%	FAIL	13.8	10 - 20	Pass	222.0	222.0 +/- 5%	Pass	5000	5000.8 +/- 25%	Pass
AV68	05/14/2007 5:20	7418	7259.5 +/- 5%	Pass	13.5	10 - 20	Pass	222.0	222.0 +/- 5%	Pass	5001	5000.8 +/- 25%	Pass
AV69 *	05/14/2007 5:16	1080	7305.4 +/- 5%	FAIL	16.1	10 - 20	Pass	221.1	222.0 +/- 5%	Pass	4994	5000.6 +/- 25%	Pass
AV69	05/14/2007 5:20	7382	7305.4 +/- 5%	Pass	16.0	10 - 20	Pass	221.1	222.0 +/- 5%	Pass	4994	5000.6 +/- 25%	Pass
AV70 *	05/14/2007 5:16	1033	7406.5 +/- 5%	FAIL	13.1	10 - 20	Pass	219.9	222.6 +/- 5%	Pass	4986	5004.7 +/- 25%	Pass
AV70	05/14/2007 5:20	7416	7406.5 +/- 5%	Pass	13.0	10 - 20	Pass	220.0	222.6 +/- 5%	Pass	4986	5004.7 +/- 25%	Pass
AV71 *	05/14/2007 5:16	1308	7187.3 +/- 5%	FAIL	14.4	10 - 20	Pass	219.8	225.0 +/- 5%	Pass	4985	5022.7 +/- 25%	Pass
AV71	05/14/2007 5:20	7413	7187.3 +/- 5%	Pass	13.5	10 - 20	Pass	221.1	225.0 +/- 5%	Pass	4994	5022.7 +/- 25%	Pass
AV72 *	05/14/2007 5:16	1208	7090.0 +/- 5%	FAIL	13.9	10 - 20	Pass	224.0	223.9 +/- 5%	Pass	5015	5014.6 +/- 25%	Pass

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria		Gross Counts P/F	FWHM (keV) Result	FWHM (keV) Criteria	FWHM (keV) P/F	Pulser Center Result	Pulser Center Criteria		Pulser Center P/F	Energy (keV) Result	Energy (keV) Criteria		Energy (keV) P/F
AV72	05/14/2007 5:20	7411	7090.0	+/- 5%	Pass	13.2	10 - 20	Pass	225.0	223.9	+/- 5%	Pass	5023	5014.6	+/- 25%	Pass
AV73*	05/14/2007 5:16	1139	7251.3	+/- 5%	FAIL	13.9	10 - 20	Pass	224.1	225.0	+/- 5%	Pass	5016	5022.4	+/- 25%	Pass
AV73	05/14/2007 5:20	7408	7251.3	+/- 5%	Pass	13.3	10 - 20	Pass	224.1	225.0	+/- 5%	Pass	5016	5022.4	+/- 25%	Pass
AV75*	05/14/2007 5:16	2691	7267.9	+/- 5%	FAIL	12.4	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV75	05/14/2007 5:20	7375	7267.9	+/- 5%	Pass	13.0	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV75	05/14/2007 6:16	7292	7267.9	+/- 5%	Pass	12.5	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV76*	05/14/2007 5:16	2732	7374.3	+/- 5%	FAIL	12.7	10 - 20	Pass	222.9	224.0	+/- 5%	Pass	5008	5015.2	+/- 25%	Pass
AV76	05/14/2007 5:20	7247	7374.3	+/- 5%	Pass	12.6	10 - 20	Pass	222.9	224.0	+/- 5%	Pass	5007	5015.2	+/- 25%	Pass
AV76	05/14/2007 6:16	7304	7374.3	+/- 5%	Pass	12.4	10 - 20	Pass	223.0	224.0	+/- 5%	Pass	5008	5015.2	+/- 25%	Pass
AV77	05/14/2007 5:20	7554	7497.1	+/- 5%	Pass	12.9	10 - 20	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV77	05/14/2007 6:16	7552	7497.1	+/- 5%	Pass	13.0	10 - 20	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV77*	05/14/2007 5:15	2888	7497.1	+/- 5%	FAIL	13.2	10 - 20	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV78	05/14/2007 5:20	7107	7183.8	+/- 5%	Pass	13.1	10 - 20	Pass	222.9	223.3	+/- 5%	Pass	5007	5009.8	+/- 25%	Pass
AV78	05/14/2007 6:16	7550	7183.8	+/- 5%	FAIL	13.1	10 - 20	Pass	222.9	223.3	+/- 5%	Pass	5007	5009.8	+/- 25%	Pass
AV78*	05/14/2007 5:15	2938	7183.8	+/- 5%	FAIL	13.5	10 - 20	Pass	222.9	223.3	+/- 5%	Pass	5007	5009.8	+/- 25%	Pass
AV79*	05/14/2007 5:15	3197	7349.7	+/- 5%	FAIL	13.0	10 - 20	Pass	221.0	222.0	+/- 5%	Pass	4993	5000.4	+/- 25%	Pass
AV79	05/14/2007 5:20	7232	7349.7	+/- 5%	Pass	12.8	10 - 20	Pass	220.9	222.0	+/- 5%	Pass	4993	5000.4	+/- 25%	Pass
AV79	05/14/2007 6:16	7547	7349.7	+/- 5%	Pass	13.5	10 - 20	Pass	220.9	222.0	+/- 5%	Pass	4993	5000.4	+/- 25%	Pass
AV80	05/14/2007 6:16	7367	7226.4	+/- 5%	Pass	12.8	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV80*	05/14/2007 5:15	3089	7226.4	+/- 5%	FAIL	12.8	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV80	05/14/2007 5:20	7374	7226.4	+/- 5%	Pass	12.8	10 - 20	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV81	05/14/2007 6:16	7542	7453.4	+/- 5%	Pass	13.0	10 - 20	Pass	222.0	223.0	+/- 5%	Pass	5001	5008.1	+/- 25%	Pass
AV81	05/14/2007 5:20	7544	7453.4	+/- 5%	Pass	13.1	10 - 20	Pass	222.0	223.0	+/- 5%	Pass	5000	5008.1	+/- 25%	Pass
AV81*	05/14/2007 5:15	3095	7453.4	+/- 5%	FAIL	12.9	10 - 20	Pass	222.0	223.0	+/- 5%	Pass	5000	5008.1	+/- 25%	Pass
AV82*	05/14/2007 5:15	2979	7529.2	+/- 5%	FAIL	13.6	10 - 20	Pass	223.9	224.0	+/- 5%	Pass	5015	5015.2	+/- 25%	Pass
AV82	05/14/2007 5:20	7541	7529.2	+/- 5%	Pass	13.6	10 - 20	Pass	223.9	224.0	+/- 5%	Pass	5015	5015.2	+/- 25%	Pass
AV82	05/14/2007 6:16	7539	7529.2	+/- 5%	Pass	13.6	10 - 20	Pass	223.9	224.0	+/- 5%	Pass	5015	5015.2	+/- 25%	Pass
AV83*	05/14/2007 5:15	3244	7523.7	+/- 5%	FAIL	12.5	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV83	05/14/2007 5:20	7493	7523.7	+/- 5%	Pass	12.9	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV83	05/14/2007 6:16	7453	7523.7	+/- 5%	Pass	12.4	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV84	05/14/2007 5:20	7310	7637.7	+/- 5%	Pass	12.9	10 - 20	Pass	222.9	223.0	+/- 5%	Pass	5007	5007.7	+/- 25%	Pass
AV84	05/14/2007 6:16	7450	7637.7	+/- 5%	Pass	12.3	10 - 20	Pass	222.9	223.0	+/- 5%	Pass	5007	5007.7	+/- 25%	Pass
AV84*	05/14/2007 5:16	3276	7637.7	+/- 5%	FAIL	12.5	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.7	+/- 25%	Pass
AV85	05/14/2007 5:20	7553	7549.7	+/- 5%	Pass	12.7	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.0	+/- 25%	Pass
AV85	05/14/2007 6:16	7538	7549.7	+/- 5%	Pass	12.8	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.0	+/- 25%	Pass
AV85*	05/14/2007 5:16	3401	7549.7	+/- 5%	FAIL	12.6	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.0	+/- 25%	Pass

OOS

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria		Gross Counts P/F	FWHM (keV) Result	FWHM (keV) Criteria	FWHM (keV) P/F	Pulser Center Result	Pulser Center Criteria		Pulser Center P/F	Energy (keV) Result	Energy (keV) Criteria		Energy (keV) P/F
AV86 *	05/14/2007 5:16	3525	7679.0	+/- 5%	FAIL	17.3	10 - 20	Pass	224.1	223.9	+/- 5%	Pass	5016	5014.3	+/- 25%	Pass
AV86	05/14/2007 6:17	7667	7679.0	+/- 5%	Pass	17.2	10 - 20	Pass	224.1	223.9	+/- 5%	Pass	5016	5014.3	+/- 25%	Pass
AV87 *	05/14/2007 5:16	3594	7512.4	+/- 5%	FAIL	12.9	10 - 20	Pass	221.9	223.0	+/- 5%	Pass	5000	5007.7	+/- 25%	Pass
AV87	05/14/2007 6:17	7363	7512.4	+/- 5%	Pass	12.8	10 - 20	Pass	221.9	223.0	+/- 5%	Pass	5000	5007.7	+/- 25%	Pass
AV88	05/14/2007 6:17	7710	7716.1	+/- 5%	Pass	13.9	10 - 20	Pass	224.1	224.0	+/- 5%	Pass	5016	5015.4	+/- 25%	Pass
AV88	05/14/2007 6:17	7710	7716.1	+/- 5%	Pass	13.9	10 - 20	Pass	224.1	224.0	+/- 5%	Pass	5016	5015.4	+/- 25%	Pass
AV88 *	05/14/2007 5:16	3689	7716.1	+/- 5%	FAIL	14.1	10 - 20	Pass	224.1	224.0	+/- 5%	Pass	5016	5015.4	+/- 25%	Pass
AV89 *	05/14/2007 5:16	3647	7553.8	+/- 5%	FAIL	13.5	10 - 20	Pass	219.9	222.6	+/- 5%	Pass	4986	5004.7	+/- 25%	Pass
AV89	05/14/2007 6:17	7398	7553.8	+/- 5%	Pass	12.8	10 - 20	Pass	219.9	222.6	+/- 5%	Pass	4986	5004.7	+/- 25%	Pass
AV90 *	05/14/2007 5:16	3602	7474.4	+/- 5%	FAIL	13.7	10 - 20	Pass	222.9	224.1	+/- 5%	Pass	5007	5015.6	+/- 25%	Pass
AV90	05/14/2007 6:17	7710	7474.4	+/- 5%	Pass	13.8	10 - 20	Pass	222.9	224.1	+/- 5%	Pass	5007	5015.6	+/- 25%	Pass
AV92 *	05/14/2007 5:16	3644	7358.9	+/- 5%	FAIL	12.6	10 - 20	Pass	222.9	223.9	+/- 5%	Pass	5007	5014.6	+/- 25%	Pass
AV92	05/14/2007 6:17	7241	7358.9	+/- 5%	Pass	12.9	10 - 20	Pass	222.9	223.9	+/- 5%	Pass	5007	5014.6	+/- 25%	Pass
AV93	05/14/2007 6:17	7436	7393.5	+/- 5%	Pass	12.6	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.3	+/- 25%	Pass
AV93 *	05/14/2007 5:16	3920	7393.5	+/- 5%	FAIL	12.8	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.3	+/- 25%	Pass
AV93	05/14/2007 6:17	7436	7393.5	+/- 5%	Pass	12.6	10 - 20	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.3	+/- 25%	Pass
AV94 *	05/14/2007 5:16	3921	7477.9	+/- 5%	FAIL	12.8	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.5	+/- 25%	Pass
AV94	05/14/2007 6:17	7440	7477.9	+/- 5%	Pass	12.6	10 - 20	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.5	+/- 25%	Pass
AV95 *	05/14/2007 5:16	3966	7432.4	+/- 5%	FAIL	13.2	10 - 20	Pass	219.9	222.2	+/- 5%	Pass	4985	5001.9	+/- 25%	Pass
AV95	05/14/2007 6:16	7171	7432.4	+/- 5%	Pass	13.2	10 - 20	Pass	219.9	222.2	+/- 5%	Pass	4985	5001.9	+/- 25%	Pass
AV95	05/14/2007 6:16	7171	7432.4	+/- 5%	Pass	13.2	10 - 20	Pass	219.9	222.2	+/- 5%	Pass	4985	5001.9	+/- 25%	Pass
AV96 *	05/14/2007 5:16	4177	7654.3	+/- 5%	FAIL	13.4	10 - 20	Pass	222.0	222.6	+/- 5%	Pass	5000	5005.3	+/- 25%	Pass
AV96	05/14/2007 6:16	7641	7654.3	+/- 5%	Pass	13.3	10 - 20	Pass	222.0	222.6	+/- 5%	Pass	5001	5005.3	+/- 25%	Pass
AV97 *	05/14/2007 5:16	4096	7649.9	+/- 5%	FAIL	14.0	10 - 20	Pass	222.9	223.8	+/- 5%	Pass	5008	5014.0	+/- 25%	Pass
AV97	05/14/2007 6:16	7634	7649.9	+/- 5%	Pass	13.8	10 - 20	Pass	222.9	223.8	+/- 5%	Pass	5008	5014.0	+/- 25%	Pass
AV98	05/14/2007 6:16	7303	7582.0	+/- 5%	Pass	12.9	10 - 20	Pass	222.9	223.0	+/- 5%	Pass	5007	5007.6	+/- 25%	Pass
AV98 *	05/14/2007 5:16	4052	7582.0	+/- 5%	FAIL	13.5	10 - 20	Pass	222.9	223.0	+/- 5%	Pass	5007	5007.6	+/- 25%	Pass

Daily Pulser Check - Severn Trent Lab

Pulser Date: 5/19/2007

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria	P/F	FWHM (keV) Result	FWHM (keV) Criteria	P/F	Pulser Center Result	Pulser Center Criteria	P/F	Energy (keV) Result	Energy (keV) Criteria	P/F
AV1	05/19/2007 10:12	7341	7218.7 +/- 5%	Pass	15.2	10 - 20	Pass	221.9	229.0 +/- 5%	Pass	5000	5051.1 +/- 25%	Pass
AV2	05/19/2007 9:41	7431	7468.7 +/- 5%	Pass	15.7	10 - 20	Pass	227.9	222.9 +/- 5%	Pass	5043	5007.5 +/- 25%	Pass
AV3	05/19/2007 9:41	7450	7484.9 +/- 5%	Pass	14.2	10 - 20	Pass	222.0	225.9 +/- 5%	Pass	5000	5028.8 +/- 25%	Pass
AV4	05/19/2007 9:41	7419	7413.7 +/- 5%	Pass	15.0	10 - 20	Pass	225.9	224.9 +/- 5%	Pass	5029	5021.6 +/- 25%	Pass
AV6	05/19/2007 9:41	7350	7476.7 +/- 5%	Pass	11.6	10 - 20	Pass	222.0	224.0 +/- 5%	Pass	5001	5015.3 +/- 25%	Pass
AV7	05/19/2007 9:41	7427	7477.0 +/- 5%	Pass	14.3	10 - 20	Pass	227.9	224.9 +/- 5%	Pass	5044	5021.9 +/- 25%	Pass
AV8	05/19/2007 9:41	7390	7327.4 +/- 5%	Pass	15.5	10 - 20	Pass	225.1	228.0 +/- 5%	Pass	5023	5044.6 +/- 25%	Pass
AV9	05/19/2007 9:41	7720	7519.3 +/- 5%	Pass	13.6	10 - 20	Pass	225.0	227.9 +/- 5%	Pass	5023	5043.3 +/- 25%	Pass
AV11	05/19/2007 9:41	7701	7666.2 +/- 5%	Pass	15.2	10 - 20	Pass	222.0	225.0 +/- 5%	Pass	5001	5022.1 +/- 25%	Pass
AV12	05/19/2007 9:41	7653	7588.7 +/- 5%	Pass	16.8	10 - 20	Pass	225.0	230.0 +/- 5%	Pass	5023	5058.4 +/- 25%	Pass
AV13	05/19/2007 9:41	7711	7584.6 +/- 5%	Pass	13.4	10 - 20	Pass	226.0	228.0 +/- 5%	Pass	5029	5044.1 +/- 25%	Pass
AV14	05/19/2007 9:41	7709	7638.3 +/- 5%	Pass	13.1	10 - 20	Pass	222.0	227.0 +/- 5%	Pass	5000	5037.2 +/- 25%	Pass
AV15	05/19/2007 9:41	7704	7770.5 +/- 5%	Pass	13.3	10 - 20	Pass	223.1	226.9 +/- 5%	Pass	5008	5036.6 +/- 25%	Pass
AV17	05/19/2007 9:41	7730	7619.1 +/- 5%	Pass	13.3	10 - 20	Pass	225.0	229.9 +/- 5%	Pass	5023	5058.3 +/- 25%	Pass
AV18	05/19/2007 9:41	7721	7714.5 +/- 5%	Pass	15.2	10 - 20	Pass	221.9	226.9 +/- 5%	Pass	5000	5036.4 +/- 25%	Pass
AV19	05/19/2007 9:41	7722	7269.8 +/- 5%	FAIL	13.9	10 - 20	Pass	221.0	227.7 +/- 5%	Pass	4993	5041.9 +/- 25%	Pass
AV19 ok	05/19/2007 10:12	7622	7269.8 +/- 5%	Pass	13.6	10 - 20	Pass	221.0	227.7 +/- 5%	Pass	4993	5041.9 +/- 25%	Pass
AV20	05/19/2007 9:42	7719	7503.6 +/- 5%	Pass	14.2	10 - 20	Pass	225.9	226.0 +/- 5%	Pass	5029	5029.9 +/- 25%	Pass
AV21	05/19/2007 9:42	7719	7550.9 +/- 5%	Pass	13.5	10 - 20	Pass	223.0	226.0 +/- 5%	Pass	5008	5029.6 +/- 25%	Pass
AV22	05/19/2007 9:42	7713	7691.4 +/- 5%	Pass	14.2	10 - 20	Pass	224.1	225.0 +/- 5%	Pass	5016	5022.4 +/- 25%	Pass
AV24	05/19/2007 9:42	7695	7354.0 +/- 5%	Pass	15.5	10 - 20	Pass	224.0	226.9 +/- 5%	Pass	5015	5036.4 +/- 25%	Pass
AV46	05/19/2007 9:41	7633	7722.7 +/- 5%	Pass	12.9	10 - 20	Pass	224.0	225.8 +/- 5%	Pass	5015	5028.0 +/- 25%	Pass
AV47	05/19/2007 9:41	7625	7532.5 +/- 5%	Pass	14.5	10 - 20	Pass	221.9	226.0 +/- 5%	Pass	5000	5029.6 +/- 25%	Pass
AV48	05/19/2007 9:41	7619	7717.5 +/- 5%	Pass	15.3	10 - 20	Pass	223.1	224.0 +/- 5%	Pass	5009	5015.2 +/- 25%	Pass
AV49	05/19/2007 9:41	7617	7703.4 +/- 5%	Pass	14.6	10 - 20	Pass	231.9	226.0 +/- 5%	Pass	5072	5029.5 +/- 25%	Pass
AV50	05/19/2007 9:41	7595	7660.9 +/- 5%	Pass	16.0	10 - 20	Pass	226.0	227.0 +/- 5%	Pass	5030	5037.2 +/- 25%	Pass
AV51	05/19/2007 9:41	7353	7070.5 +/- 5%	Pass	13.3	10 - 20	Pass	227.0	223.0 +/- 5%	Pass	5037	5007.6 +/- 25%	Pass
AV52	05/19/2007 9:41	7116	7156.4 +/- 5%	Pass	13.0	10 - 20	Pass	223.0	225.0 +/- 5%	Pass	5008	5022.4 +/- 25%	Pass
AV53	05/19/2007 9:41	7349	7144.1 +/- 5%	Pass	13.3	10 - 20	Pass	224.1	223.0 +/- 5%	Pass	5016	5007.8 +/- 25%	Pass
AV54	05/19/2007 9:41	7345	7313.1 +/- 5%	Pass	14.1	10 - 20	Pass	228.1	226.0 +/- 5%	Pass	5045	5029.5 +/- 25%	Pass
AV55	05/19/2007 9:41	7188	7132.9 +/- 5%	Pass	12.3	10 - 20	Pass	222.0	226.0 +/- 5%	Pass	5001	5029.7 +/- 25%	Pass
AV56	05/19/2007 9:41	7342	7163.7 +/- 5%	Pass	13.1	10 - 20	Pass	222.0	222.0 +/- 5%	Pass	5001	5000.7 +/- 25%	Pass

Detector	Date/Time	Gross Counts Result	Gross Counts Criteria	P/F	FWHM (keV) Result	FWHM (keV) Criteria	P/F	Pulser Center Result	Pulser Center Criteria	P/F	Energy (keV) Result	Energy (keV) Criteria	P/F
AV57	05/19/2007 9:41	7336	7309.5 +/-5%	Pass	14.2	10 - 20	Pass	221.9	222.0 +/-5%	Pass	5000	5000.6 +/-25%	Pass
AV58	05/19/2007 9:42	7335	7249.2 +/-5%	Pass	14.1	10 - 20	Pass	222.1	223.0 +/-5%	Pass	5001	5008.0 +/-25%	Pass
AV59	05/19/2007 9:42	7234	7141.4 +/-5%	Pass	13.7	10 - 20	Pass	287.0	284.0 +/-5%	Pass	5472	5450.6 +/-25%	Pass
AV66	05/19/2007 9:42	7225	7165.5 +/-5%	Pass	14.0	10 - 20	Pass	220.0	222.0 +/-5%	Pass	4986	5000.5 +/-25%	Pass
AV67	05/19/2007 9:42	7413	7128.1 +/-5%	Pass	18.8	10 - 20	Pass	224.1	224.1 +/-5%	Pass	5016	5015.6 +/-25%	Pass
AV68	05/19/2007 9:42	7412	7259.5 +/-5%	Pass	13.8	10 - 20	Pass	222.0	222.0 +/-5%	Pass	5001	5000.8 +/-25%	Pass
AV69	05/19/2007 9:42	7352	7305.4 +/-5%	Pass	16.1	10 - 20	Pass	221.2	222.0 +/-5%	Pass	4995	5000.6 +/-25%	Pass
AV70	05/19/2007 9:42	7410	7406.5 +/-5%	Pass	13.4	10 - 20	Pass	220.0	222.6 +/-5%	Pass	4986	5004.7 +/-25%	Pass
AV71	05/19/2007 9:42	7407	7187.3 +/-5%	Pass	13.0	10 - 20	Pass	221.0	225.0 +/-5%	Pass	4994	5022.7 +/-25%	Pass
AV72	05/19/2007 9:42	7404	7090.0 +/-5%	Pass	13.7	10 - 20	Pass	222.1	223.9 +/-5%	Pass	5001	5014.6 +/-25%	Pass
AV73	05/19/2007 9:42	7397	7251.3 +/-5%	Pass	13.6	10 - 20	Pass	224.0	225.0 +/-5%	Pass	5015	5022.4 +/-25%	Pass
AV75	05/19/2007 9:59	7165	7267.9 +/-5%	Pass	12.9	10 - 20	Pass	223.1	224.1 +/-5%	Pass	5008	5015.5 +/-25%	Pass
AV76	05/19/2007 9:59	7317	7374.3 +/-5%	Pass	12.4	10 - 20	Pass	223.0	224.0 +/-5%	Pass	5008	5015.2 +/-25%	Pass
AV77	05/19/2007 9:59	7551	7497.1 +/-5%	Pass	13.1	10 - 20	Pass	224.0	224.0 +/-5%	Pass	5015	5015.4 +/-25%	Pass
AV78	05/19/2007 10:00	7548	7183.8 +/-5%	FAIL	13.1	10 - 20	Pass	222.9	223.3 +/-5%	Pass	5007	5009.8 +/-25%	Pass
AV78	05/19/2007 10:12	7426	7183.8 +/-5%	Pass	13.4	10 - 20	Pass	222.9	223.3 +/-5%	Pass	5008	5009.8 +/-25%	Pass
AV79	05/19/2007 10:00	7366	7349.7 +/-5%	Pass	12.8	10 - 20	Pass	221.0	222.0 +/-5%	Pass	4993	5000.4 +/-25%	Pass
AV80	05/19/2007 10:00	7413	7226.4 +/-5%	Pass	12.8	10 - 20	Pass	223.0	224.1 +/-5%	Pass	5008	5015.5 +/-25%	Pass
AV81	05/19/2007 10:00	7541	7453.4 +/-5%	Pass	13.2	10 - 20	Pass	222.0	223.0 +/-5%	Pass	5001	5008.1 +/-25%	Pass
AV82	05/19/2007 10:00	7536	7529.2 +/-5%	Pass	13.7	10 - 20	Pass	224.0	224.0 +/-5%	Pass	5015	5015.2 +/-25%	Pass
AV83	05/19/2007 10:00	7490	7523.7 +/-5%	Pass	12.9	10 - 20	Pass	222.0	222.0 +/-5%	Pass	5001	5000.4 +/-25%	Pass
AV84	05/19/2007 10:00	7498	7637.7 +/-5%	Pass	12.3	10 - 20	Pass	223.0	223.0 +/-5%	Pass	5008	5007.7 +/-25%	Pass
AV85	05/19/2007 10:00	7726	7549.7 +/-5%	Pass	13.1	10 - 20	Pass	223.0	223.0 +/-5%	Pass	5008	5008.0 +/-25%	Pass
AV86	05/19/2007 10:00	7667	7679.0 +/-5%	Pass	17.0	10 - 20	Pass	224.1	223.9 +/-5%	Pass	5016	5014.3 +/-25%	Pass
AV87	05/19/2007 10:00	7345	7512.4 +/-5%	Pass	12.8	10 - 20	Pass	221.9	223.0 +/-5%	Pass	5000	5007.7 +/-25%	Pass
AV88	05/19/2007 10:00	7716	7716.1 +/-5%	Pass	13.8	10 - 20	Pass	224.1	224.0 +/-5%	Pass	5016	5015.4 +/-25%	Pass
AV89	05/19/2007 10:00	7715	7553.8 +/-5%	Pass	13.3	10 - 20	Pass	219.9	222.6 +/-5%	Pass	4986	5004.7 +/-25%	Pass
AV90	05/19/2007 10:00	7712	7474.4 +/-5%	Pass	13.5	10 - 20	Pass	222.9	224.1 +/-5%	Pass	5007	5015.6 +/-25%	Pass
AV92	05/19/2007 10:00	7429	7358.9 +/-5%	Pass	12.2	10 - 20	Pass	223.0	223.9 +/-5%	Pass	5008	5014.6 +/-25%	Pass
AV93	05/19/2007 10:00	7445	7393.5 +/-5%	Pass	12.6	10 - 20	Pass	223.0	223.0 +/-5%	Pass	5008	5008.3 +/-25%	Pass
AV94	05/19/2007 10:00	7648	7477.9 +/-5%	Pass	13.7	10 - 20	Pass	222.1	222.0 +/-5%	Pass	5001	5000.5 +/-25%	Pass
AV95	05/19/2007 10:00	7645	7432.4 +/-5%	Pass	13.5	10 - 20	Pass	219.9	222.2 +/-5%	Pass	4986	5001.9 +/-25%	Pass
AV96	05/19/2007 10:00	7643	7654.3 +/-5%	Pass	13.4	10 - 20	Pass	222.0	222.6 +/-5%	Pass	5001	5005.3 +/-25%	Pass
AV97	05/19/2007 10:00	7639	7649.9 +/-5%	Pass	13.7	10 - 20	Pass	223.0	223.8 +/-5%	Pass	5008	5014.0 +/-25%	Pass
AV98	05/19/2007 10:00	7635	7582.0 +/-5%	Pass	13.1	10 - 20	Pass	223.0	223.0 +/-5%	Pass	5008	5007.6 +/-25%	Pass

OK

TestAmerica STL

Run Log

Logbook No.: 2945

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	5-13-07	7129405	F7B010186-014	67	400 min.	U	GJ	MW
2			F7B090000-405B	68				
3			-405C	69				
4	5/14/7	Daily	Pulsera	1-98	1min	QA	SC	—
5		7130259	F7E010186-002	75	600	Am	DT	
6			-003	76				
7			-003X	77				
8			-005	85				
9			-007	79				
10			-008	80				
11			-012	81				
12			-014	82				
13			F7E100000-259B	83				
14			-259C	84				
15	5/14/07	7129405	F7E010186-012	21	400mm	U	MW	MW
16			F7E090000-405C	46				
17		7131156	F7E110000-156C	1	180min	Th		
18		7127240	F7E030137-012	2	240min			
19		7127244	-012	3		U		
20		7128245	F7D270291-001	86	600min	Pu		
21			-003	87				
22		7131144	F7E050113-001	17	240min	U	DT	
23			-001X	24				
24			-002	48				
25			-003	50				
26			-005	52				
27			-006	54				
28			-007	57				
29			-008	~~57~~ 73				

Reviewed By: DT Date: 5/14/07

SOP References: STL-RD-0210 Rev 7 05/02/07. Form: SL-RAD-0030, Revised 7/07/06
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.: 2945

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	5/14/07	7131144	F7E050113-009	51	240min	U	M	
2			F7E110000-144B	71				
3			-144C	72				
4		7131141	F7E050113-001	4		Th		
5			-001X	6				
6			-002	7				
7			-003	8				
8			-005	9				
9			-006	11				
10			-007	13				
11			-008	14				
12			-009	15				
13			F7E110000-141B	20				
14			-141C	22				
15	5/14/07	7128125	F7D270291-003	88	600min	Am	MW	
16			F7D270294-007	89				
17			-010	90				
18			F7DE010227-006	92				
19		7131141	F7E050113-002	1	240min	Th		
20		7130165	F7D280140-003	21	960min	U		
21			-003X	46	960min			
22			-004	47				
23			-005	49				
24			-007	53				
25			-009	55				
26			-010	56				
27			-011	58				
28			-012	59				
29		7128373	F7E050163-001	98	600min	Pu		

Reviewed By: MW Date: 5/14/07

SOP References: STL-RD-0210 Rev 7 05/02/07. Form: SL-RAD-0030, Revised 7/07/06
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.: 2945

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	5-19-07	Daily	Pulsar	1-98	1 min.	QA	GS	
2	5-19-07	7132168	F7E080169-029	81	500 min	U	GS	
3			F7E120000-1688	46				
4			-168C	47				
5			-168L	49				
6	5-19-07	7134366	F7E070173-001	53	500 min.	U	GS	WW
7			-001X	55				
8			-002	56				
9			-003	58				
10			-004	59				
11			-005	66				
12			-006	67				
13			-007	68				
14			-008	69				
15			-009	70				
16			-010	71				
17			-011	72				
18	5-19-07	7135101	F7E050113-004	1	240 min.	U	GS	
19			F7E050113-004X	2				
20			F7E150000-101B	3				
21			-101C	4				
22	5-19-07	7136131	F7E030317-001	9	180 min	Am	GS	
23			-001X	11				
24			F7E160000-131B	12				
25			-131C	13				
26	5-19-07	7134317	F7E110187-010	14	180 min	Pu	GS	WW
27			-011	15				
28			-012	18				
29			-013	19				

Reviewed By: GS Date: 5-19-07

SOP References: STL-RD-0210 Rev 7 05/02/07. Form: SL-RAD-0030, Revised 7/07/06
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.: 2945

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	5-19-07	7134367	F7E110187-014	20	180min.	Pu	GS	WW
2			-015	22				
3			-016	24				
4			-017	48				
5			-018	50				
6			-019	51				
7			-020	52				
8			-021	54				
9			-022	57				
10			-023	73				
11	5-19-07	7136132	F7E030317-001	6	180min.	Pu	GS	WW
12			-001X	7				
13			F7E160000-132B	8				
14			-132C	17				
15	5-19-07	7134367	F7E110187-024	9	180min.	Pu	GS	WW
16			F7E190000-367B	11				
17			-367C	12				
18			-367L	13				
19	5-19-07	7135099	F7E050113-004	1	240min.	Th	GS	WW
20			-004X	2				
21			F7E150000-099B	3				
22			-099C	4				
23	5-20-07	Daily	Pulsers	1-98	1min.	QA	GS	—
24	5-20-07	7134366	F7E020173-012	21	500min.	U	GS	WW
25			-013	46				
26			-014	47				
27			-015	49				
28			-016	53				
29			-017	55				

Reviewed By: GS Date: 5-20-07

SOP References: STL-RD-0210 Rev 7 05/02/07. Form: SL-RAD-0030, Revised 7/07/06
QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike; D=Matrix Spike Duplicate; X=Sample Duplicate.

240 min LLOR 5/24

SEVERN TRENT **STL**

Prep Report for:

Uranium, Isotopic by Alpha Spectroscopy

Batch: 7131144 **Prep Analyst:** 403301

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F7E050113-001	JWDDT1AD	2.0025E+000 g	1.00	2.0025E+000 g	rad04-0093	U-232	0.10	N
F7E050113-001X	JWDDT1AJ	2.0088E+000 g	1.00	2.0088E+000 g	rad04-0093	U-232	0.10	N
F7E050113-002	JWDE11AD	2.0033E+000 g	1.00	2.0033E+000 g	rad04-0093	U-232	0.10	N
F7E050113-003	JWDE31AD	2.0009E+000 g	1.00	2.0009E+000 g	rad04-0093	U-232	0.10	N
F7E050113-005	JWDTF1AD	2.0047E+000 g	1.00	2.0047E+000 g	rad04-0093	U-232	0.10	N
F7E050113-006	JWDTG1AD	2.0154E+000 g	1.00	2.0154E+000 g	rad04-0093	U-232	0.10	N
F7E050113-007	JWDTH1AD	2.0063E+000 g	1.00	2.0063E+000 g	rad04-0093	U-232	0.10	N
F7E050113-008	JWDTJ1AD	2.0009E+000 g	1.00	2.0009E+000 g	rad04-0093	U-232	0.10	N
F7E050113-009	JWDTK1AD	2.0055E+000 g	1.00	2.0055E+000 g	rad04-0093	U-232	0.10	N
F7E110000-144B	JWQM51AA	2.0000E+000 g	1.00	2.0000E+000 g	rad04-0093	U-232	0.10	N
F7E110000-144C	JWQM51AC	1.3190E-001 g	1.00	1.3190E-001 g	rad04-0093	U-232	0.10	N

17 X 24 48 50 52 54 57 73. 51 71 72

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7E110000-144C	TRM-3_IsoU	U-234	4.351E+001 dpm/g	0.13 g	5/29/2003 12:00:00AM	1.960E+001 pCi/g
F7E110000-144C	TRM-3_IsoU	U-238	4.351E+001 dpm/g	0.13 g	5/29/2003 12:00:00AM	1.960E+001 pCi/g

BS — Spiked By

Flip — Spike Verified By

5/11/07 — Spike Date

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level

Standard Operating Procedures

	SOPNumber	Title	Revision
☐	STL-RC-0002	Planchet Preparation For Radiochemistry And Radiological Screening Analysis	4.00
☐	STL-RC-0003	Drying And Grinding Of Soil And Solid Samples	6.00
☐	STL-RC-0004	Preparation Of Soil, Sludge, And Filter Paper Samples For Radiochemical Analysis	10.00
☐	STL-RC-0090	Preparation Of Samples For Sequential Determination Of Isotopic Americium, Currium, Neptunium, Plutonium, Tho	4.00
☑	STL-RC-0100	Actinide Coprecipitation	9.00
☐	STL-RC-0232	Isotopic Thorium And/oR Neptunium in Water, Soil, Sludge, and Filters by Eichrom TEVA Separation Resins	7.00
☐	STL-RC-0238	Isotopic Uranium By Eichrom UTEVA Resin for Water, Soil, Sludge and Filters	7.00
☐	STL-RC-0240	Isotopic Americium, Curium, Plutonium, Thorium, and Uranium in Water, Soil, Sludge and Filters by Eichrome Sepa	5.00
☐	STL-RC-0241	Isotopic Americium, Plutonium, Curium, and Uranium in Water, Soil, Sludge and Filters by Eichrome Uteva and Tr	3.00
☑	STL-RC-0242	Isotopic Thorium, Plutonium and Uranium in Water, Soil, Sludge and Filters by Eichrome Separation Resin	6.00
☐	STL-RD-0201	Daily Operations Of An Alpha Spectroscopy System	2.00
☐	STL-RD-0203	Calibration And Maintenance Of A Alpha Spectroscopy System	1.00

MB per BS	5/13/07	BS	5/14/07
Column Analyst	Date	Coprecipitated By	Precip Date
[illegible]	5/15/07		
Reviewed By	Review Date		
BS	5/14/07	[illegible]	5-19-7
Analyst/Relenquished By	Release Date	Received By	Receipt Date

240 min. pCi/g, Lo 5/24

SEVERN TRENT **STL**

Prep Report for:
Uranium, Isotopic by Alpha Spectroscopy

Batch: 7135101 **Prep Analyst:** 403301

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F7E050113-004	JWDTD1AD	2.0012E+000 g	1.00	2.0012E+000 g	rad04-0093	U-232	0.10	N
F7E050113-004X	JWDTD1AG	2.0034E+000 g	1.00	2.0034E+000 g	rad04-0093	U-232	0.10	N
F7E150000-101B	JW0A51AA	2.0000E+000 g	1.00	2.0000E+000 g	rad04-0093	U-232	0.10	N
F7E150000-101C	JW0A51AC	1.3090E-001 g	1.00	1.3090E-001 g	rad04-0093	U-232	0.10	N

1 2 3 4

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7E150000-101C	TRM-3_IsoU	U-234	4.351E+001 dpm/g	0.13 g	5/29/2003 12:00:00AM	1.960E+001 pCi/g
F7E150000-101C	TRM-3_IsoU	U-238	4.351E+001 dpm/g	0.13 g	5/29/2003 12:00:00AM	1.960E+001 pCi/g

SR — Spiked By
BS — Spike Verified By
5/15/07 — Spike Date

Standard Operating Procedures

	SOPNumber	Title	Revision
☐	STL-RC-0002	Planchet Preparation For Radiochemistry And Radiological Screening Analysis	4.00
☑	STL-RC-0003	Drying And Grinding Of Soil And Solid Samples	6.00
☑	STL-RC-0004	Preparation Of Soil, Sludge, And Filter Paper Samples For Radiochemical Analysis	10.00
☐	STL-RC-0090	Preparation Of Samples For Sequential Determination Of Isotopic Americium, Currium, Neptunium, Plutonium, Tho	4.00
☑	STL-RC-0100	Actinide Coprecipitation	9.00
☐	STL-RC-0232	Isotopic Thorium And/oR Neptunium in Water, Soil, Sludge, and Filters by Eichrom TEVA Separation Resins	7.00
☐	STL-RC-0238	Isotopic Uranium By Eichrom UTEVA Resin for Water, Soil, Sludge and Filters	7.00
☐	STL-RC-0240	Isotopic Americium, Curium, Plutonium, Thorium, and Uranium in Water, Soil, Sludge and Filters by Eichrome Sepa	5.00
☐	STL-RC-0241	Isotopic Americium, Plutonium, Curium, and Uranium in Water, Soil, Sludge and Filters by Eichrome Uteva and Tr	3.00
☑	STL-RC-0242	Isotopic Thorium, Plutonium and Uranium in Water, Soil, Sludge and Filters by Eichrome Separation Resin	6.00
☐	STL-RD-0201	Daily Operations Of An Alpha Spectroscopy System	2.00
☐	STL-RD-0203	Calibration And Maintenance Of A Alpha Spectroscopy System	1.00

VW — Column Analyst
5-18-7 — Date
RA — Coprecipitated By
05/19/07 — Precip Date

WW RA RA 05/19/07 — Reviewed By
~~05/19/07~~ RA 05/19/07 — Review Date
5/21/07

RA — Analyst/Relenquished By
05/19/07 — Release Date
GI — Received By
5-19-07 — Receipt Date

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 — 12:51:38PM 5/15/2007

Sample

Sample Name: F7E050113-001
SampleType: Sample
: JWDDT1AD
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0025g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

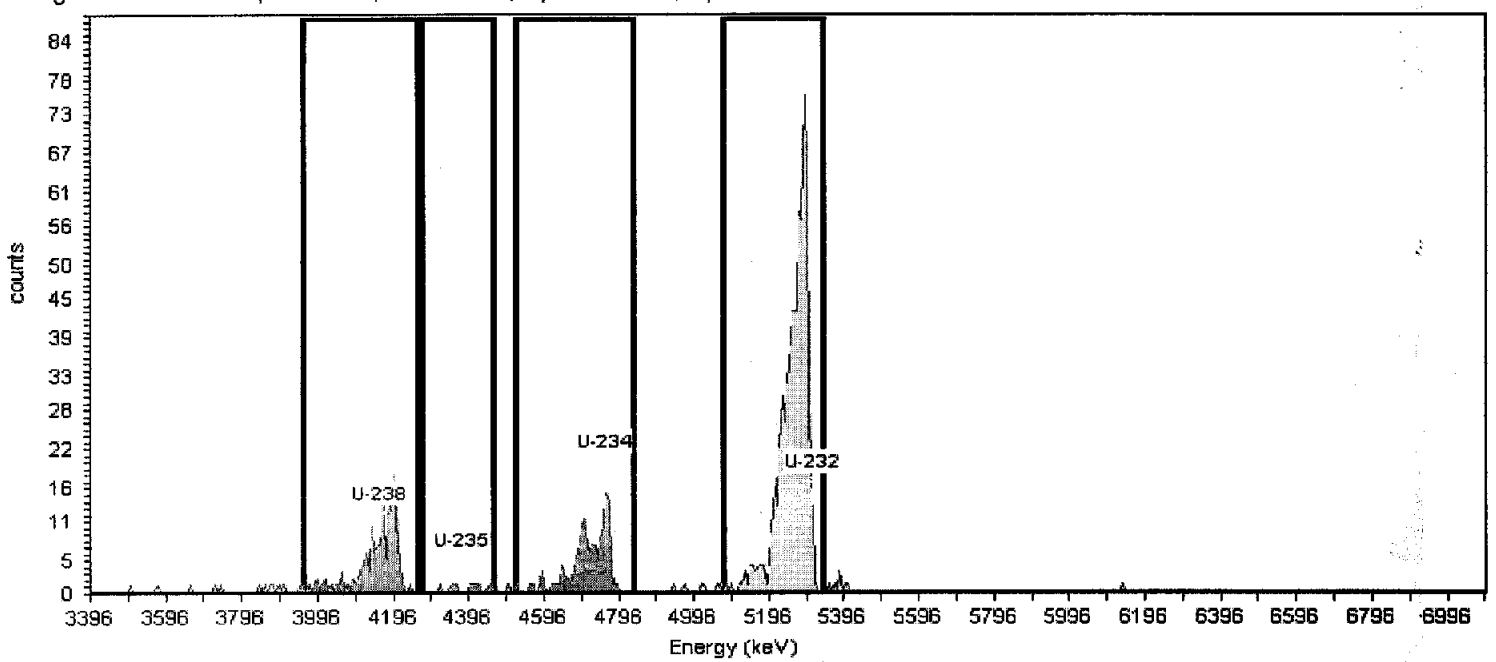
Tracer Nuclide: U-232
Tracer Recovery: 94.69%

Acquisition

Detector: AV17
Serial Number: 41-172Q4
Acquisition Start Date: 5/14/2007 11:06:51AM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:25PM

Calibration Name: Apr2007_AV17
Calibration Date: 4/10/2007 8:52:02AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.06% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV17; Det: AV17; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3955.226	4260.137	76.242	100.0	150.00	1.2500	149	5.651E-001	1.190E-001	7.812E-003	2.590E-002
U-235	4376.294	4267.397	4463.412	107.737	80.2	10.00	0.0000	10	4.737E-002	3.202E-002	0.000E+000	1.282E-002
U-234	4761.063	4521.490	4833.661	101.245	99.8	140.00	1.2500	139	5.282E-001	1.138E-001	7.827E-003	2.596E-002
U-232	5312.808	5073.234	5341.847	67.123	100.1	605.00	6.7500	598	2.151E+000	2.800E-001	1.815E-002	4.657E-002

manual integration
shifting hw 5/15/07

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:06:07PM 5/14/2007

Sample

Sample Name: F7E050113-001X
SampleType: Sample
: JWDDT1AJ
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0088g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

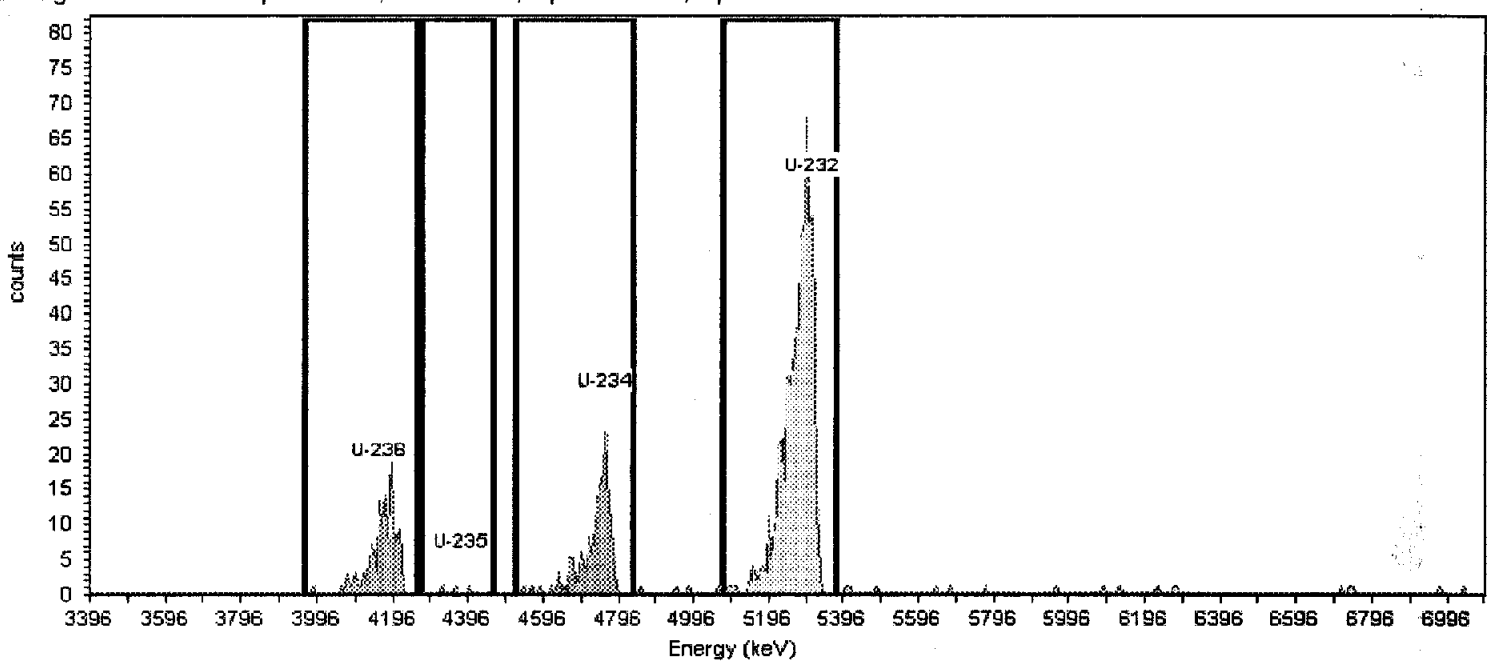
Tracer Nuclide: U-232
Tracer Recovery: 96.69%

Acquisition

Detector: AV24
Serial Number: 41-172R5
Acquisition Start Date: 5/14/2007 11:06:59AM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 4/20/2007 4:36:34PM

Calibration Name: April2007_AV24
Calibration Date: 4/24/2007 6:49:47PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.27% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV24; Det: AV24; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	66.741	100.0	134.00	0.7500	133	4.901E-001	1.064E-001	5.858E-003	2.167E-002
U-235	4376.294	4267.397	4463.412	17.934	80.2	3.00	0.2500	3	1.261E-002	1.662E-002	4.217E-003	2.084E-002
U-234	4761.063	4521.490	4833.661	52.554	99.8	156.00	1.5000	155	5.694E-001	1.183E-001	8.301E-003	2.657E-002
U-232	5312.808	5073.234	5378.146	69.612	100.1	618.00	2.0000	616	2.190E+000	2.825E-001	9.563E-003	2.907E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:06:12PM 5/14/2007

Sample

Sample Name: F7E050113-002
SampleType: Sample
: JWDE11AD
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0033g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

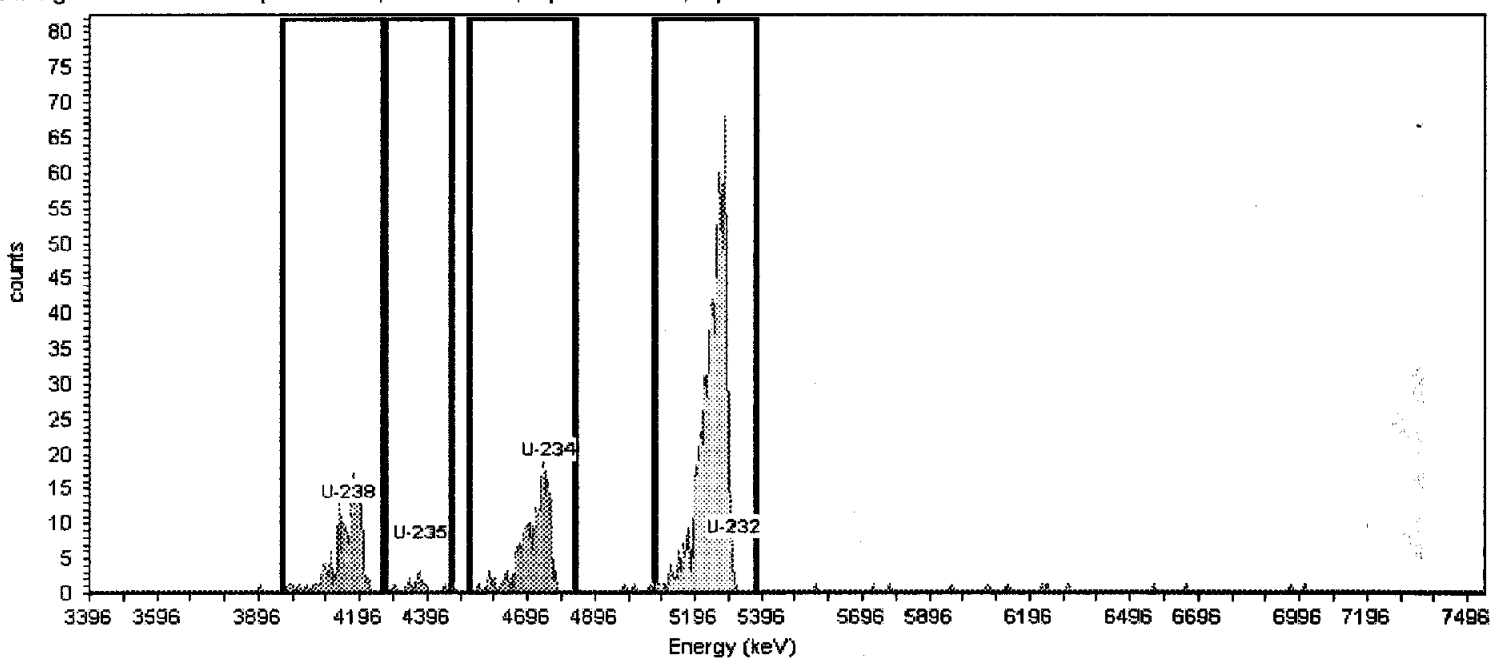
Tracer Nuclide: U-232
Tracer Recovery: 92.86%

Acquisition

Detector: AV48
Serial Number: AV48
Acquisition Start Date: 5/14/2007 11:06:06AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:41PM

Calibration Name: April2007_AV48
Calibration Date: 4/25/2007 2:06:17PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.35% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV48; Det: AV48; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	76.518	100.0	152.00	1.0000	151	5.783E-001	1.211E-001	7.043E-003	2.445E-002
U-235	4376.294	4267.397	4463.412	46.254	80.2	13.00	0.0000	13	6.207E-002	3.664E-002	0.000E+000	1.292E-002
U-234	4761.063	4521.490	4833.661	79.314	99.8	176.00	0.2500	176	6.744E-001	1.346E-001	3.529E-003	1.744E-002
U-232	5312.808	5073.234	5378.146	76.999	100.1	595.00	1.7500	593	2.109E+000	2.741E-001	9.314E-003	2.899E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:06:17PM 5/14/2007

Sample

Sample Name: F7E050113-003
SampleType: Sample
: JWDE31AD
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0009g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

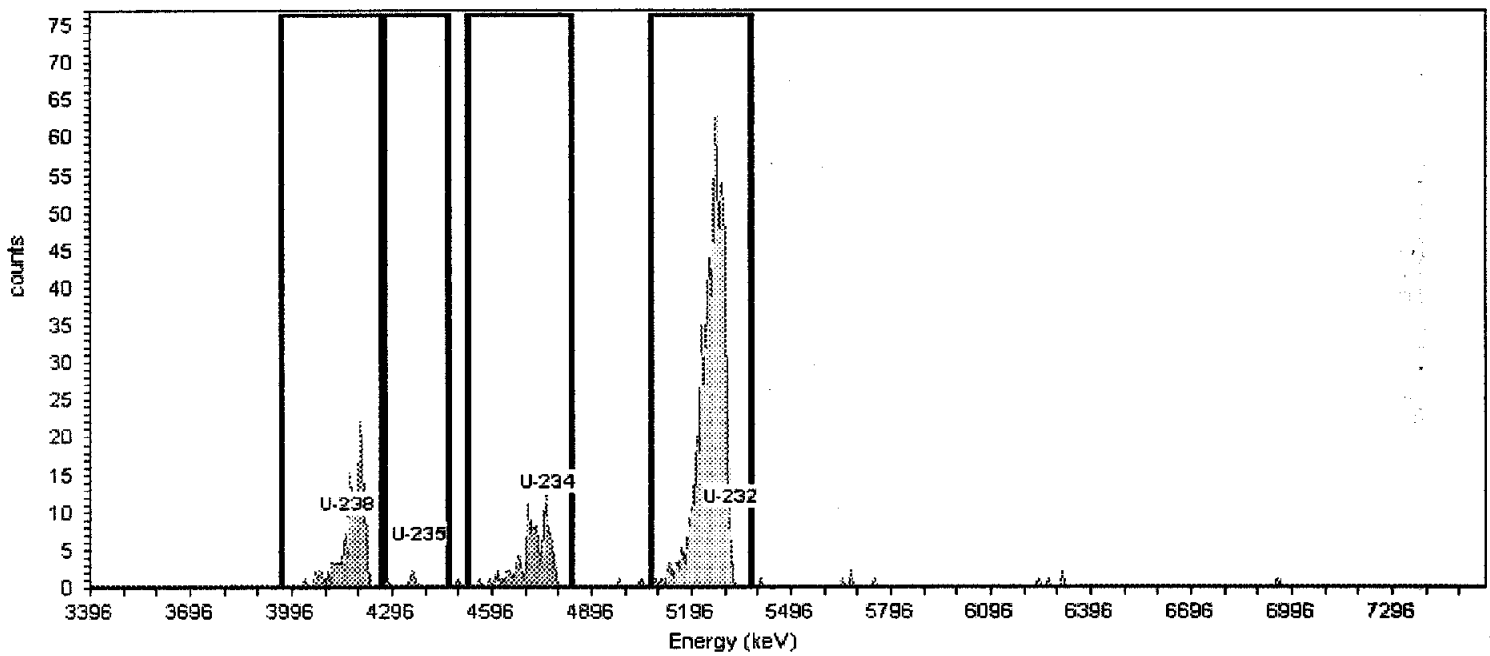
Tracer Nuclide: U-232
Tracer Recovery: 91.54%

Acquisition

Detector: AV50
Serial Number: AV50
Acquisition Start Date: 5/14/2007 11:06:09AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:43PM

Calibration Name: April2007_AV50
Calibration Date: 4/25/2007 2:07:09PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.00% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV50; Det: AV50; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	54.571	100.0	141.00	0.2500	141	5.342E-001	1.139E-001	3.490E-003	1.725E-002
U-235	4376.294	4267.397	4463.412	18.302	80.2	5.00	0.5000	5	2.130E-002	2.237E-002	6.155E-003	2.512E-002
U-234	4761.063	4521.490	4833.661	95.147	99.8	104.00	1.0000	103	3.917E-001	9.316E-002	6.995E-003	2.428E-002
U-232	5312.808	5073.234	5378.146	73.495	100.1	603.00	3.7500	599	2.081E+000	2.703E-001	1.351E-002	3.729E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:27:37PM 5/19/2007

Analyst: 60040

Sample

Sample Name: F7E050113-004
SampleType: Sample
: JWDTD1AD
Sample Collection Date: 5/4/2007 11:10:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0012g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7135101
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

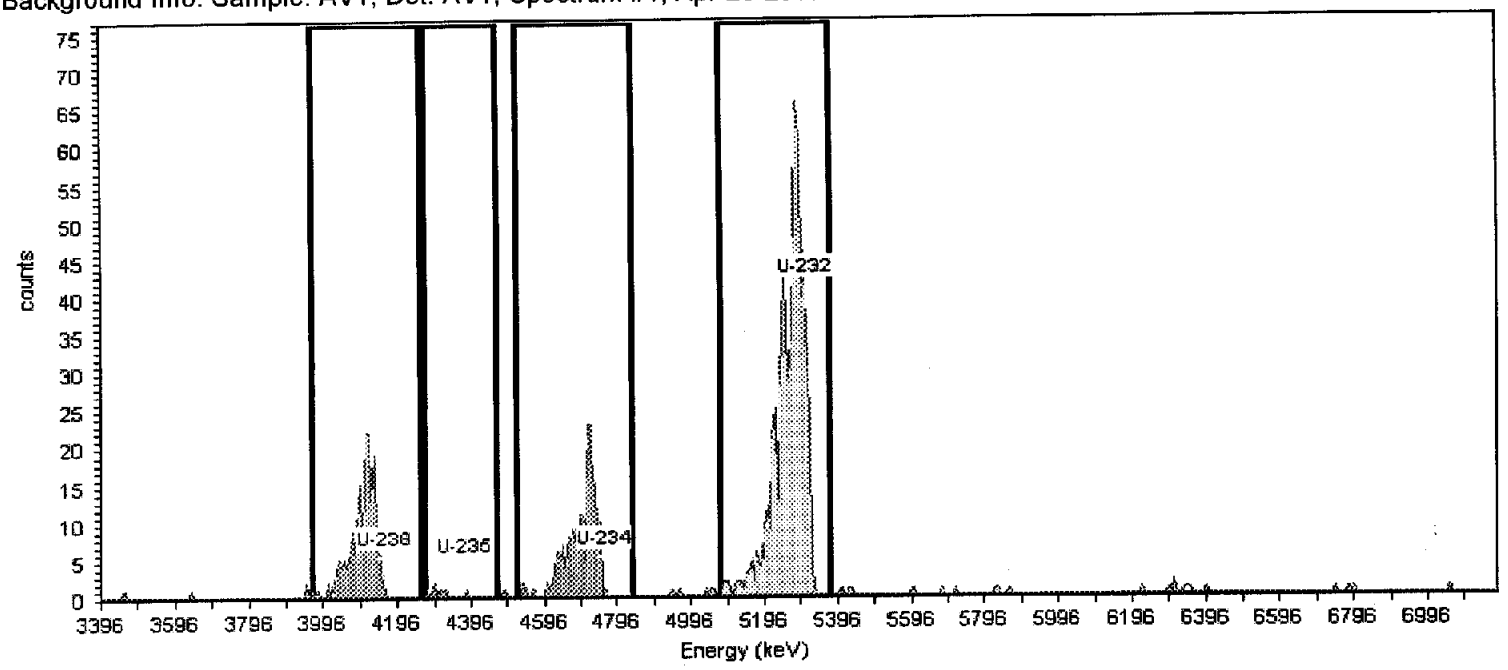
Tracer Nuclide: U-232
Tracer Recovery: 97.20%

Acquisition

Detector: AV1
Serial Number: 41-158W6
Acquisition Start Date: 5/19/2007 11:27:18AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:17PM

Calibration Name: April2007_AV1
Calibration Date: 4/23/2007 1:09:33PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.47% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV1; Det: AV1; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/19/2007 11:25:05AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	61.177	100.0	179.00	1.2500	178	6.480E-001	1.287E-001	7.496E-003	2.486E-002
U-235	4376.294	4267.397	4463.412	23.377	80.2	8.00	0.2500	8	3.523E-002	2.651E-002	4.180E-003	2.066E-002
U-234	4761.063	4521.490	4833.661	58.128	99.8	178.00	0.2500	178	6.493E-001	1.286E-001	3.359E-003	1.660E-002
U-232	5312.808	5073.234	5378.146	78.410	100.1	626.00	2.2500	624	2.210E+000	2.843E-001	1.005E-002	2.997E-002

SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:27:40PM 5/19/2007

Analyst: 60040

Sample

Sample Name: F7E050113-004X
SampleType: Sample
: JWDTD1AG
Sample Collection Date: 5/4/2007 11:10:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0034g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7135101
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

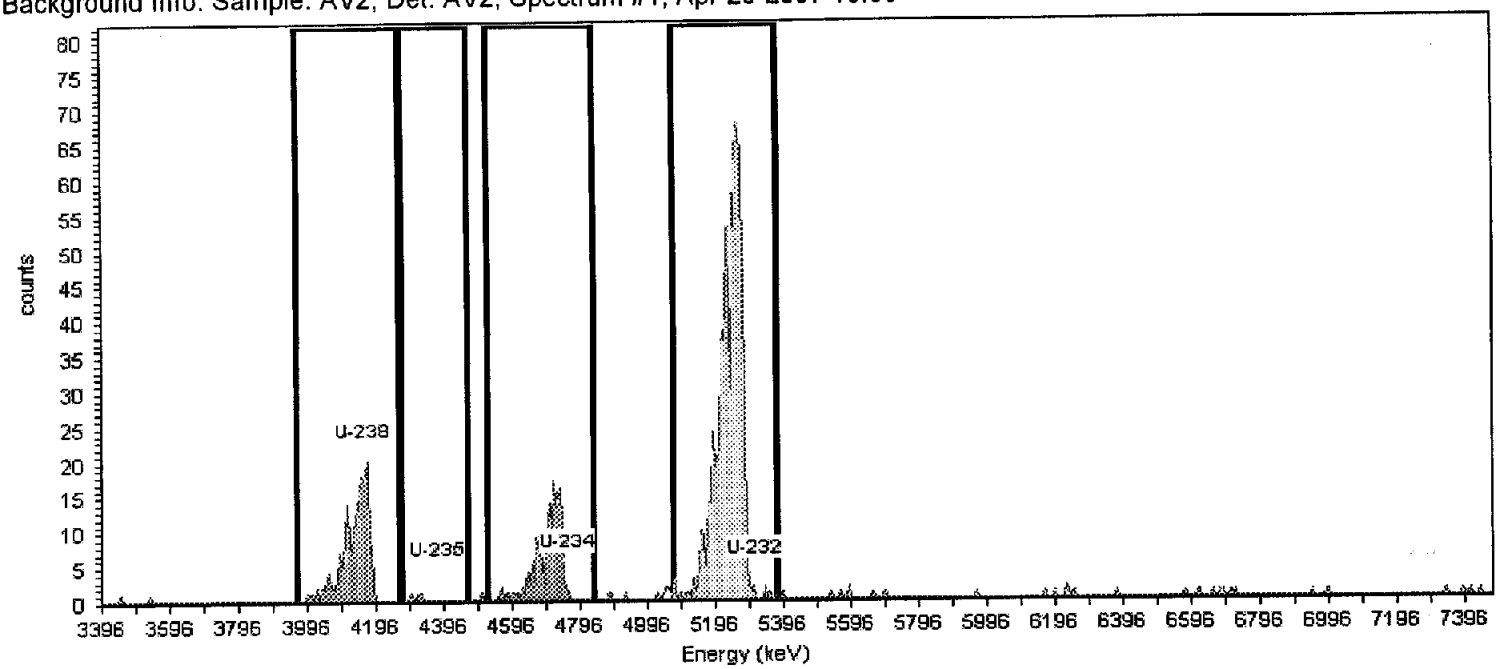
Tracer Nuclide: U-232
Tracer Recovery: 103.43%

Acquisition

Detector: AV2
Serial Number: 41-158W7
Acquisition Start Date: 5/19/2007 11:27:19AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:19PM

Calibration Name: April2007_AV2
Calibration Date: 4/23/2007 1:09:41PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.20% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV2; Det: AV2; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/19/2007 11:25:05AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	65.552	100.0	180.00	1.2500	179	6.180E-001	1.222E-001	7.109E-003	2.357E-002
U-235	4376.294	4267.397	4463.412	37.513	80.2	3.00	0.0000	3	1.293E-002	1.732E-002	0.000E+000	1.167E-002
U-234	4761.063	4521.490	4833.661	57.483	99.8	146.00	1.0000	145	5.023E-001	1.058E-001	6.371E-003	2.212E-002
U-232	5312.808	5073.234	5378.146	78.211	100.1	661.00	4.0000	657	2.349E+000	2.996E-001	1.271E-002	3.478E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:06:25PM 5/14/2007

Sample

Sample Name: F7E050113-005
SampleType: Sample
: JWDTF1AD
Sample Collection Date: 5/4/2007 11:20:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0047g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

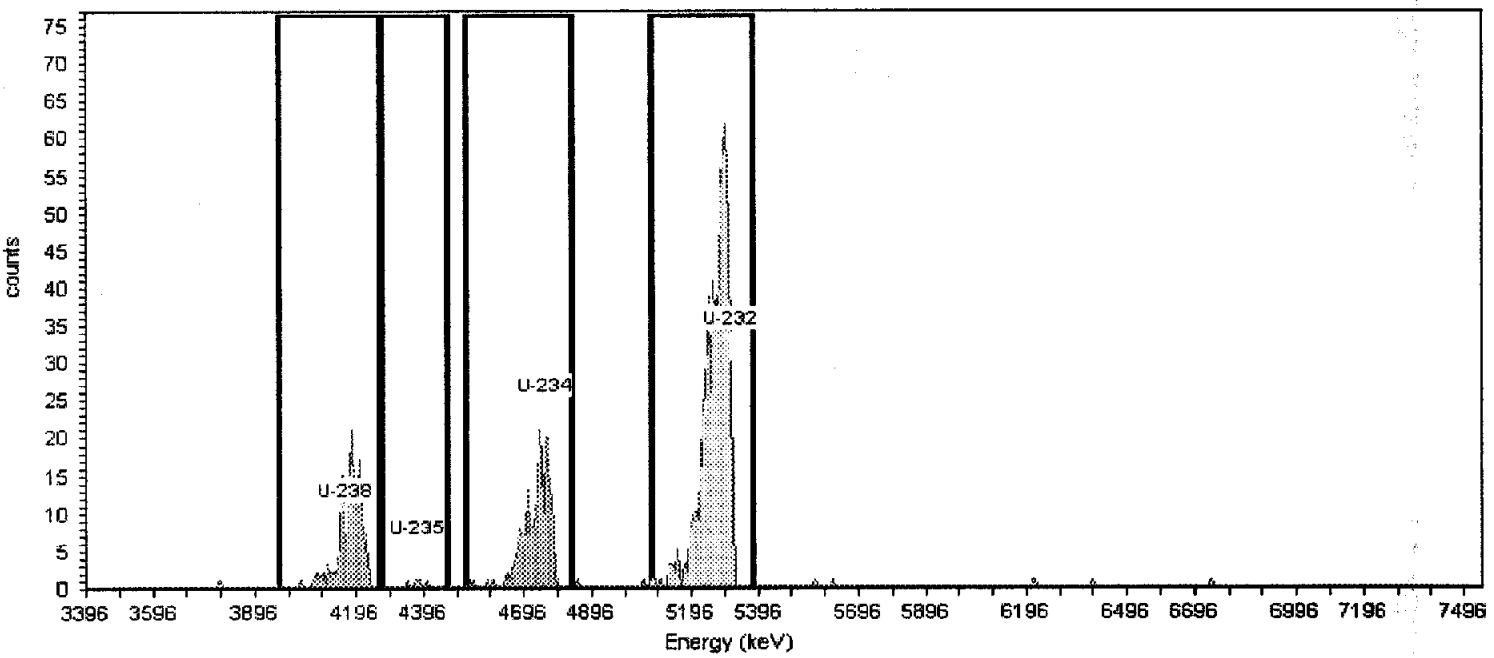
Tracer Nuclide: U-232
Tracer Recovery: 87.29%

Acquisition

Detector: AV52
Serial Number:
Acquisition Start Date: 5/14/2007 11:06:13AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:47PM

Calibration Name: May2007_AV52a
Calibration Date: 5/10/2007 5:28:33PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.47% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV52; Det: AV52; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-234	4761.063	4521.490	4833.661	69.752	99.8	191.00	0.7500	190	7.442E-001	1.457E-001	6.231E-003	2.305E-002
U-232	5312.808	5073.234	5378.146	74.816	100.1	583.00	1.5000	582	1.981E+000	2.585E-001	8.791E-003	2.814E-002
U-238	4158.500	3962.485	4260.137	64.001	100.0	159.00	0.2500	159	6.198E-001	1.276E-001	3.590E-003	1.774E-002
U-235	4376.294	4267.397	4463.412	17.813	80.2	5.00	0.2500	5	2.312E-002	2.251E-002	4.477E-003	2.213E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:06:45PM 5/14/2007

Sample

Sample Name: F7E050113-006
SampleType: Sample
: JWDTG1AD
Sample Collection Date: 5/4/2007 10:55:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0154g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

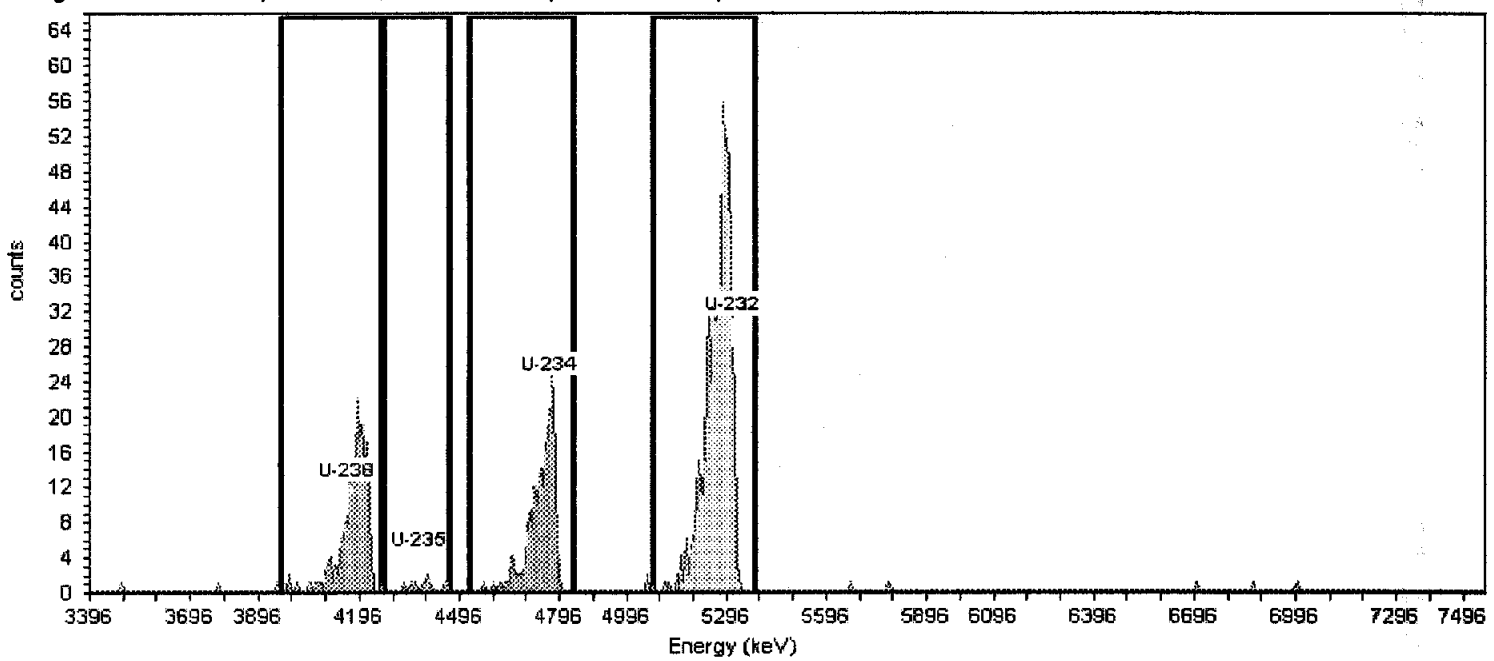
Tracer Nuclide: U-232
Tracer Recovery: 83.00%

Acquisition

Detector: AV54
Serial Number:
Acquisition Start Date: 5/14/2007 11:06:17AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:51PM

Calibration Name: April2007_AV54
Calibration Date: 4/26/2007 6:14:23AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.83% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV54; Det: AV54; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	73.137	100.0	193.00	0.0000	193	8.071E-001	1.583E-001	0.000E+000	1.132E-002
U-235	4376.294	4267.397	4463.412	72.507	80.2	10.00	0.5000	10	4.954E-002	3.443E-002	6.781E-003	2.767E-002
U-234	4761.063	4521.490	4833.661	72.836	99.8	206.00	1.0000	205	8.590E-001	1.660E-001	7.707E-003	2.675E-002
U-232	5312.808	5073.234	5378.146	71.598	100.1	541.00	1.0000	540	1.874E+000	2.481E-001	7.688E-003	2.669E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:06:50PM 5/14/2007

Sample

Sample Name: F7E050113-007
SampleType: Sample
: JWDTH1AD
Sample Collection Date: 5/4/2007 11:40:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0063g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

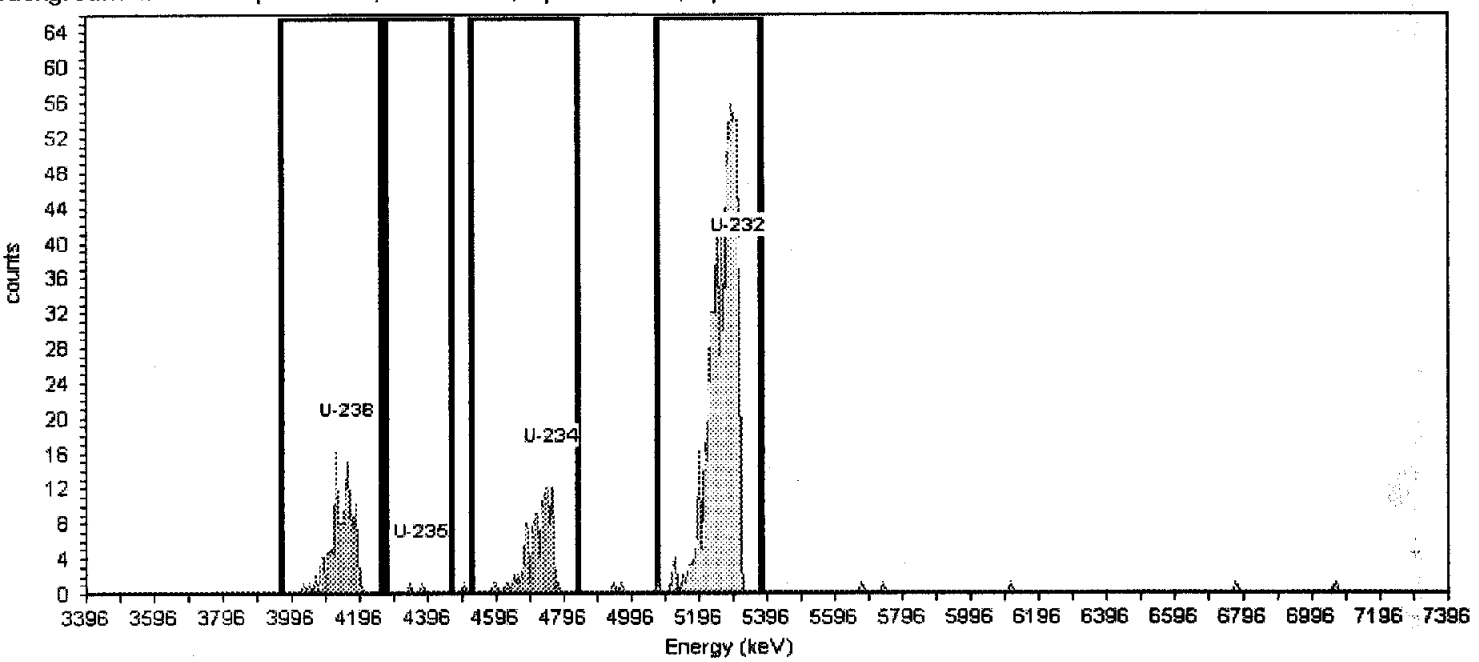
Tracer Nuclide: U-232
Tracer Recovery: 93.14%

Acquisition

Detector: AV57
Serial Number:
Acquisition Start Date: 5/14/2007 11:06:22AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:55PM

Calibration Name: Apr2007_AV57
Calibration Date: 4/10/2007 8:54:16AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.21% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV57; Det: AV57; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	80.397	100.0	123.00	0.2500	123	4.531E-001	1.008E-001	3.395E-003	1.678E-002
U-235	4376.294	4267.397	4463.412	17.934	80.2	2.00	0.0000	2	9.206E-003	1.599E-002	0.000E+000	1.246E-002
U-234	4761.063	4521.490	4833.661	78.983	99.8	113.00	0.2500	113	4.171E-001	9.545E-002	3.401E-003	1.681E-002
U-232	5312.808	5073.234	5378.146	83.735	100.1	616.00	1.5000	615	2.112E+000	2.725E-001	8.312E-003	2.661E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:07:00PM 5/14/2007

Sample

Sample Name: F7E050113-008
SampleType: Sample
: JWDTJ1AD
Sample Collection Date: 5/4/2007 10:55:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0009g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

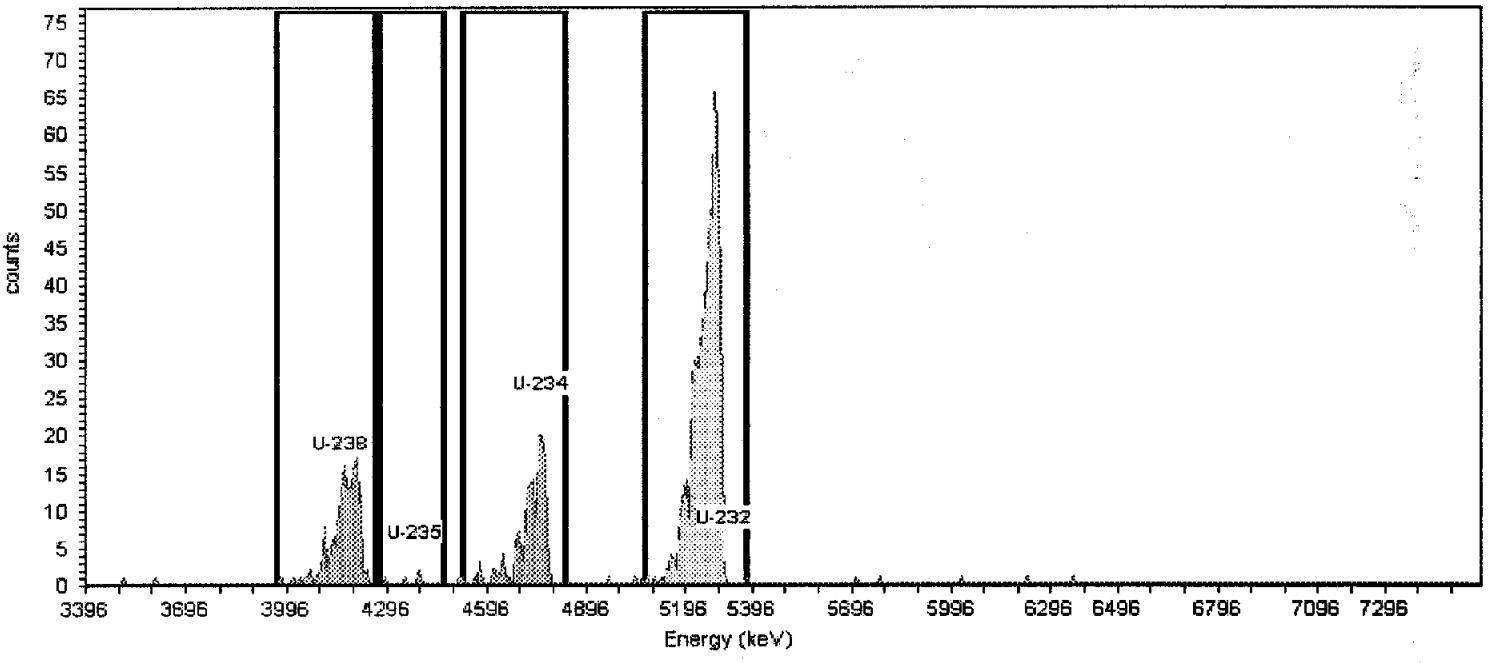
Tracer Nuclide: U-232
Tracer Recovery: 92.11%

Acquisition

Detector: AV73
Serial Number:
Acquisition Start Date: 5/14/2007 11:06:14AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:37:04PM

Calibration Name: Apr2007_AV72
Calibration Date: 4/10/2007 12:11:09PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.09% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV73; Det: AV73; Spectrum #1; Apr-20-2007 16:37



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	75.945	100.0	180.00	1.5000	179	6.711E-001	1.336E-001	8.469E-003	2.711E-002
U-235	4376.294	4267.397	4463.412	18.282	80.2	6.00	1.5000	5	2.110E-002	2.582E-002	1.056E-002	3.380E-002
U-234	4761.063	4521.490	4833.661	75.773	99.8	171.00	1.2500	170	6.395E-001	1.291E-001	7.746E-003	2.569E-002
U-232	5312.808	5073.234	5378.146	73.444	100.1	607.00	2.0000	605	2.094E+000	2.712E-001	9.775E-003	2.972E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:06:22PM 5/14/2007

Sample

Sample Name: F7E050113-009
SampleType: Sample
: JWDTK1AD
Sample Collection Date: 5/4/2007 10:55:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0055g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

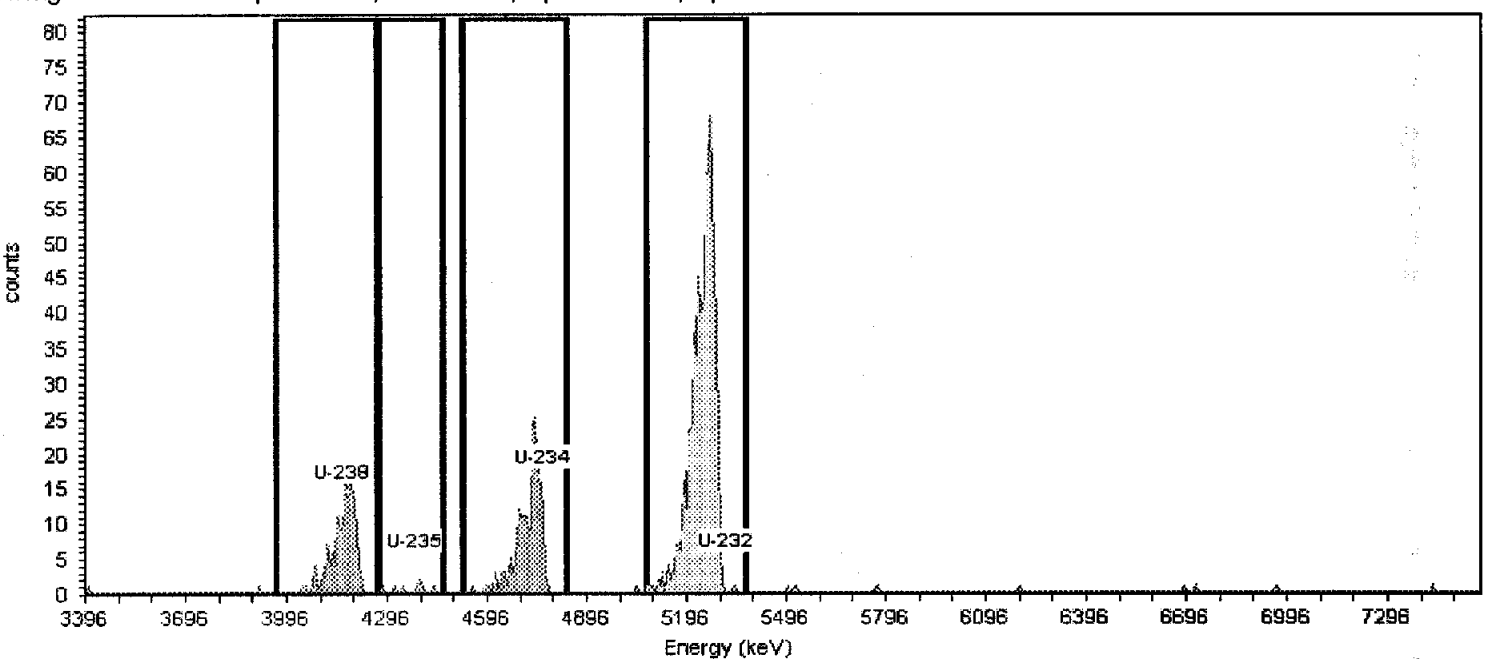
Tracer Nuclide: U-232
Tracer Recovery: 94.58%

Acquisition

Detector: AV51
Serial Number:
Acquisition Start Date: 5/14/2007 11:06:11AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:45PM

Calibration Name: April2007_AV51
Calibration Date: 4/25/2007 2:07:30PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.89% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV51; Det: AV51; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	62.824	100.0	155.00	1.5000	154	5.648E-001	1.176E-001	8.288E-003	2.653E-002
U-235	4376.294	4267.397	4463.412	18.287	80.2	8.00	0.0000	8	3.670E-002	2.793E-002	0.000E+000	1.242E-002
U-234	4761.063	4521.490	4833.661	62.037	99.8	195.00	0.7500	194	7.162E-001	1.387E-001	5.872E-003	2.172E-002
U-232	5312.808	5073.234	5378.146	74.138	100.1	620.00	3.2500	617	2.146E+000	2.769E-001	1.220E-002	3.434E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:06:54PM 5/14/2007

Sample

Sample Name: F7E110000-144B
SampleType: Blank
: JWQM51AA
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

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

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

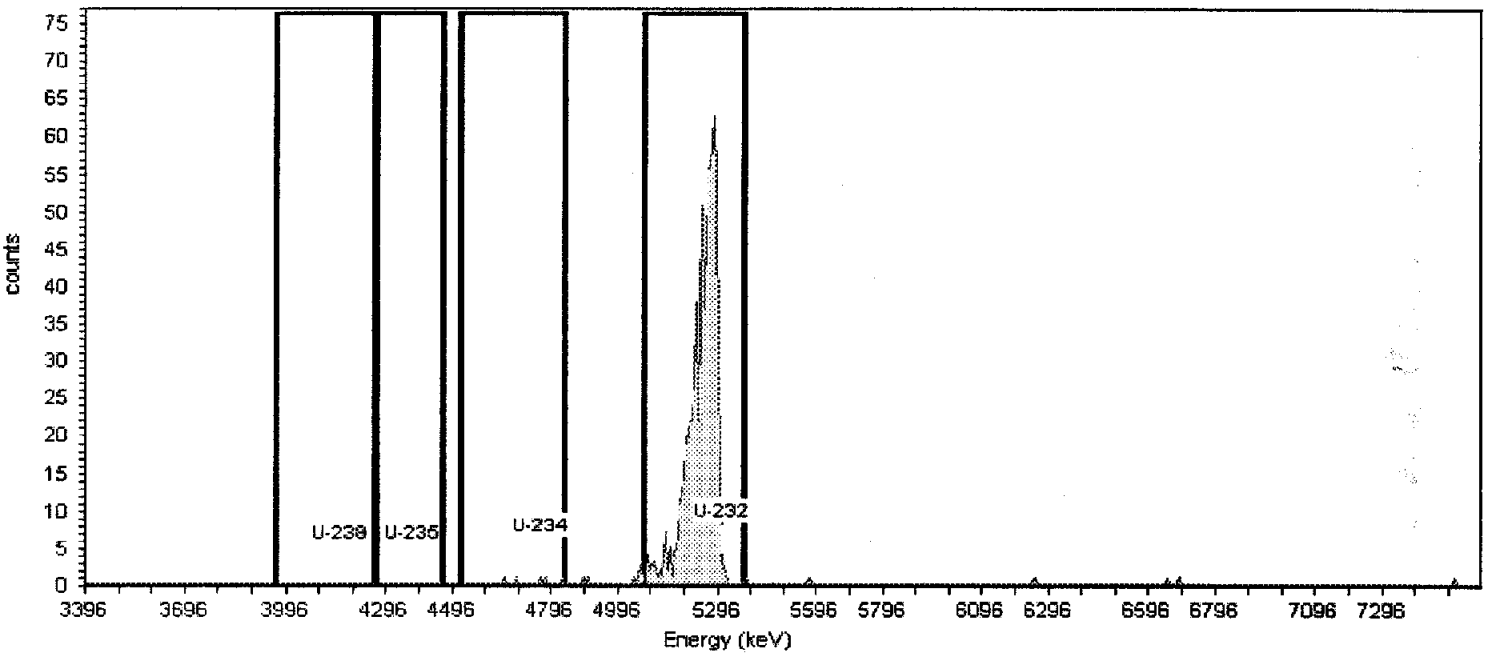
Tracer Nuclide: U-232
Tracer Recovery: 97.02%

Acquisition

Detector: AV71
Serial Number:
Acquisition Start Date: 5/14/2007 11:06:10AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:37:02PM

Calibration Name: April2007_AV71
Calibration Date: 4/26/2007 6:14:07AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.02% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV71; Det: AV71; Spectrum #1; Apr-20-2007 16:37



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	.000	100.0	0.00	0.2500	0	-8.948E-004	8.005E-003	3.292E-003	1.627E-002
U-235	4376.294	4267.397	4463.412	.000	80.2	0.00	0.2500	0	-1.116E-003	9.981E-003	4.104E-003	2.029E-002
U-234	4761.063	4521.490	4833.661	10.003	99.8	5.00	0.2500	5	1.704E-002	1.658E-002	3.298E-003	1.630E-002
U-232	5312.808	5073.234	5378.146	74.532	100.1	637.00	1.2500	636	2.207E+000	2.827E-001	7.357E-003	2.440E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:06:57PM 5/14/2007

Sample

Sample Name: F7E110000-144C
SampleType: Control
: JWQM51AC
Sample Collection Date: 4/20/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 0.1319g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7131144
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

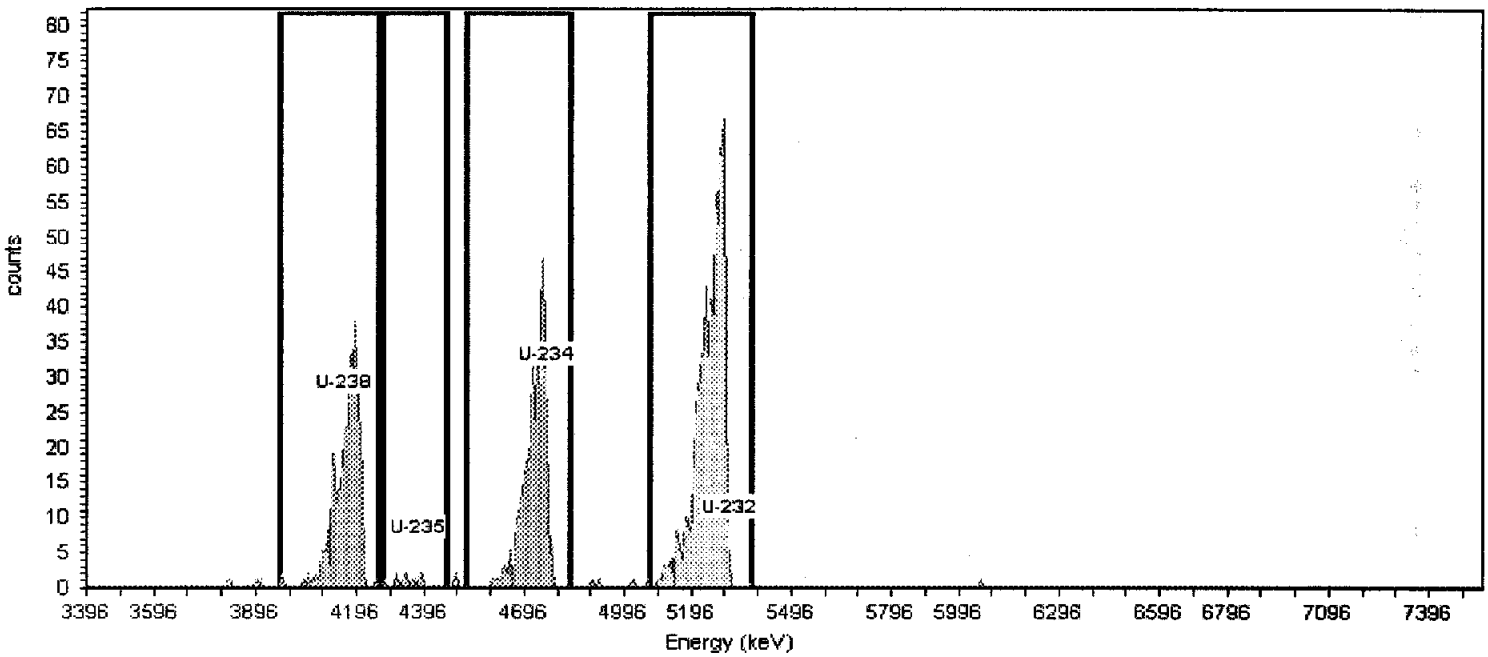
Tracer Nuclide: U-232
Tracer Recovery: 97.75%

Acquisition

Detector: AV72
Serial Number:
Acquisition Start Date: 5/14/2007 11:06:12AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:37:03PM

Calibration Name: Apr2007_AV72
Calibration Date: 4/10/2007 12:11:09PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.09% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV72; Det: AV72; Spectrum #1; Apr-20-2007 16:37



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/14/2007 11:02:22AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	63.314	100.0	325.00	0.2500	325	1.745E+001	2.962E+000	4.942E-002	2.443E-001
U-235	4376.294	4267.397	4463.412	62.715	80.2	12.00	0.5000	12	7.707E-001	4.841E-001	8.715E-002	3.556E-001
U-234	4761.063	4521.490	4833.661	68.582	99.8	353.00	0.7500	352	1.897E+001	3.167E+000	8.578E-002	3.173E-001
U-232	5312.808	5073.234	5378.146	83.930	100.1	643.00	1.0000	642	3.372E+001	4.312E+000	9.881E-002	3.430E-001

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:27:44PM 5/19/2007

Analyst: 60040

Sample

Sample Name: F7E150000-101B
SampleType: Blank
: JW0A51AA
Sample Collection Date: 5/4/2007 11:10:00AM
Comment:

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

Batch

Batch Name: 7135101
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

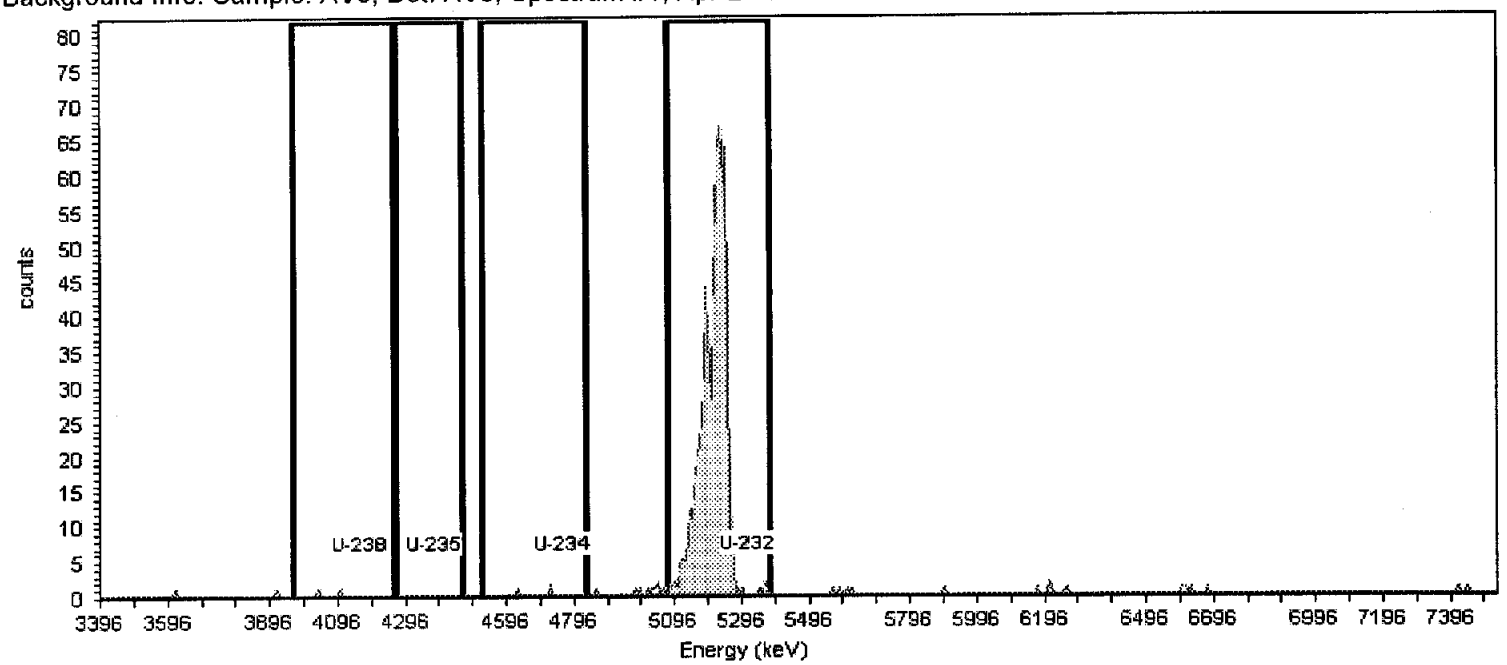
Tracer Nuclide: U-232
Tracer Recovery: 102.69%

Acquisition

Detector: AV3
Serial Number: 41-158X5
Acquisition Start Date: 5/19/2007 11:27:21AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:21PM

Calibration Name: April2007_AV3
Calibration Date: 4/23/2007 1:09:49PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.81% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV3; Det: AV3; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/19/2007 11:25:05AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	43.340	100.0	2.00	0.5000	2	5.113E-003	1.080E-002	4.433E-003	1.809E-002
U-235	4376.294	4267.397	4463.412	.000	80.2	0.00	0.2500	0	-1.063E-003	9.505E-003	3.908E-003	1.932E-002
U-234	4761.063	4521.490	4833.661	116.020	99.8	3.00	0.0000	3	1.025E-002	1.372E-002	0.000E+000	9.242E-003
U-232	5312.808	5073.234	5378.146	70.543	100.1	671.00	3.5000	668	2.336E+000	2.971E-001	1.173E-002	3.267E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 3:27:47PM 5/19/2007

Sample

Sample Name: F7E150000-101C
SampleType: Control
: JW0A51AC
Sample Collection Date: 5/4/2007 11:10:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 0.1309g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7135101
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad04-0093_U232
Tracer Activity: 101.00 DPM/mL x (Vol.)0.10 mL = 10.10 DPM
Tracer Ref. Date: 4/27/2007 12:05:46PM

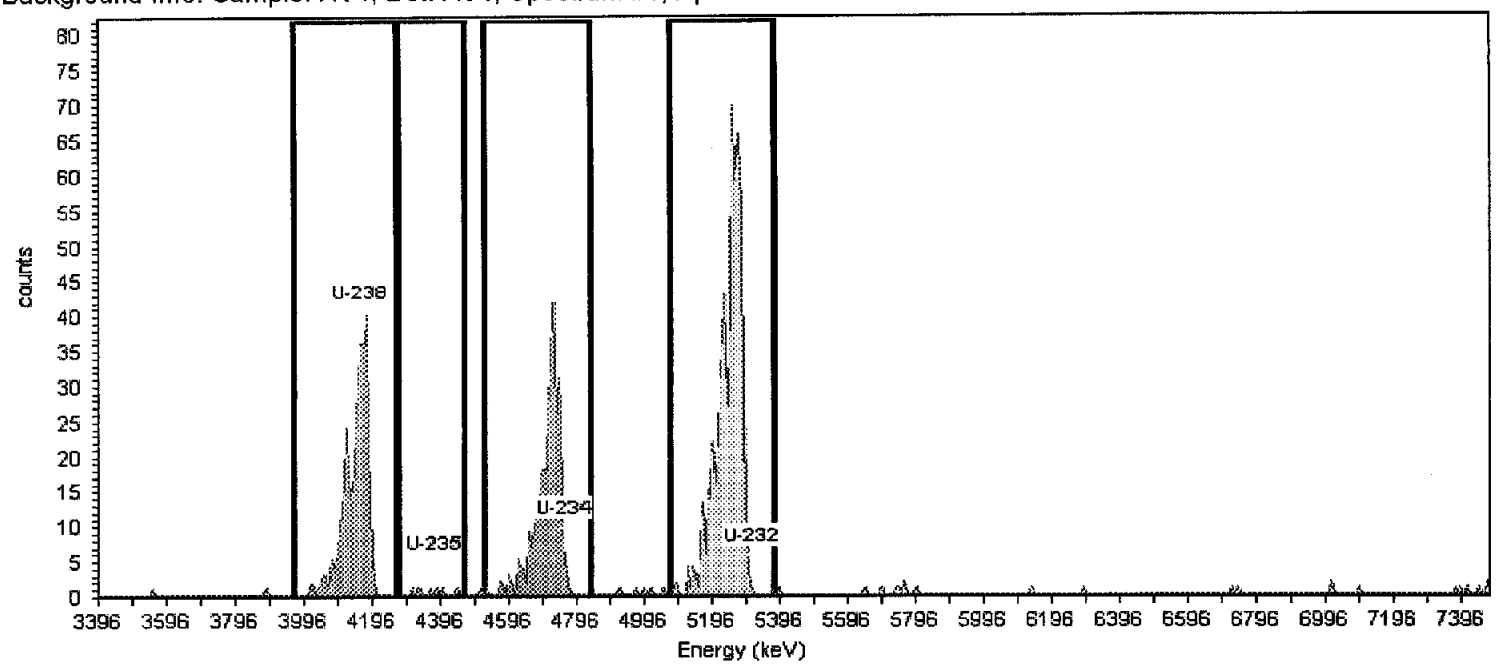
Tracer Nuclide: U-232
Tracer Recovery: 99.00%

Acquisition

Detector: AV4
Serial Number: 41-172B5
Acquisition Start Date: 5/19/2007 11:27:22AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 4/20/2007 4:36:09PM

Calibration Name: April2007_AV4
Calibration Date: 4/23/2007 1:09:59PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.79% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV4; Det: AV4; Spectrum #1; Apr-20-2007 16:36



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 5/19/2007 11:25:05AM
MDA Constants: Kα = 1.65 , Kβ = 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	2.00Sigma TPU pCi/g	Critical Level pCi/g	MDA pCi/g
U-238	4158.500	3962.485	4260.137	64.022	100.0	337.00	0.2500	337	1.821E+001	3.067E+000	4.972E-002	2.457E-001
U-235	4376.294	4267.397	4463.412	25.745	80.2	7.00	0.5000	7	4.382E-001	3.735E-001	8.767E-002	3.578E-001
U-234	4761.063	4521.490	4833.661	60.514	99.8	329.00	1.0000	328	1.777E+001	3.013E+000	9.963E-002	3.459E-001
U-232	5312.808	5073.234	5378.146	64.656	100.1	646.00	3.0000	643	3.441E+001	4.404E+000	1.722E-001	4.906E-001

TestAmerica STL

Monthly Backgrounds
April 2007

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:30AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV1
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

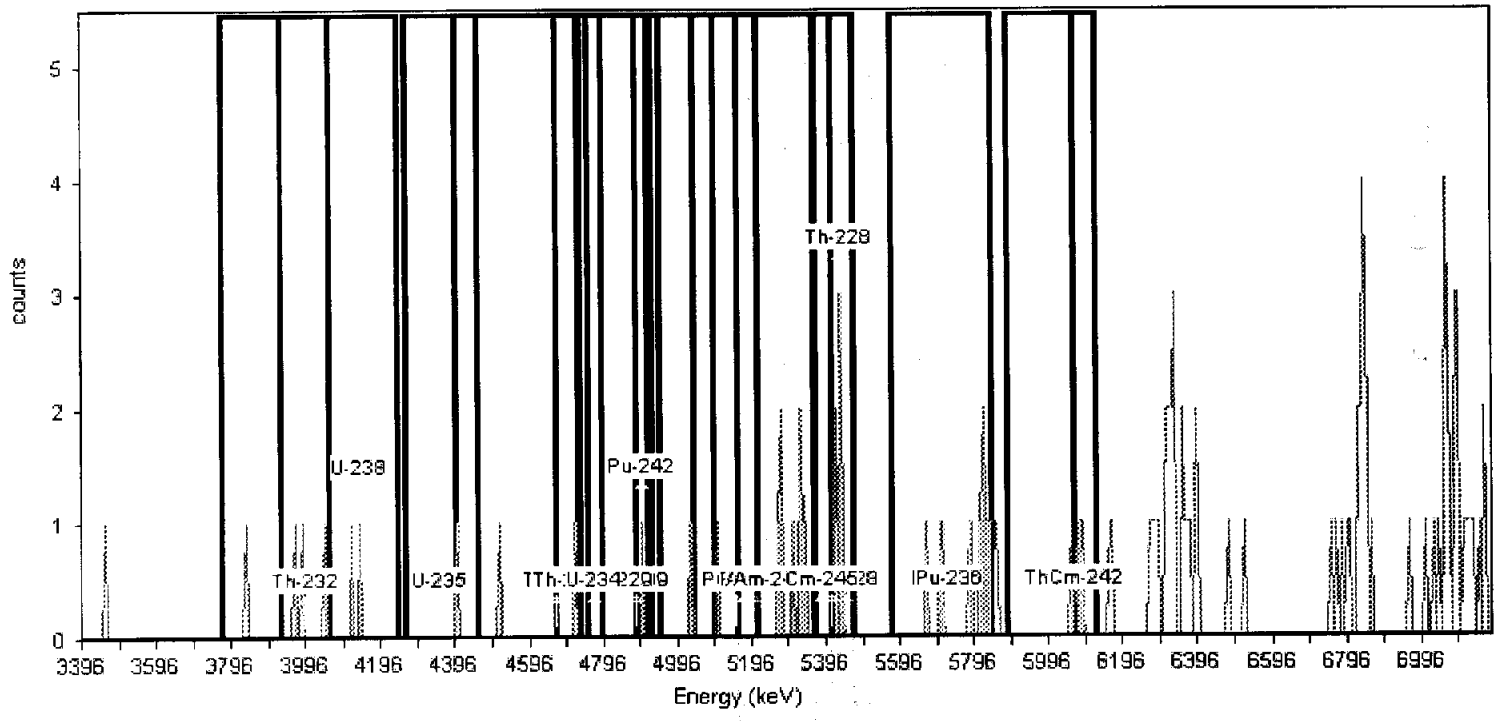
Acquisition

Detector: AV1 , SN: 41-158W6
Acquisition Start Date: 4/20/2007 4:36:17PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV1a
Calibration Date: 3/26/2007 11:53:54AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.58% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 110.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	4.00	4.167E-003	2.329E-003
U-238	4.14	3.93	4.24	5.00	5.208E-003	2.552E-003
U-235	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Pu-239	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
Am-243	5.23	5.04	5.37	9.00	9.375E-003	3.294E-003
Th-228	5.41	5.16	5.47	14.00	1.458E-002	4.034E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	14.00	1.458E-002	4.034E-003
Th-228	5.45	5.27	5.57	14.00	1.458E-002	4.034E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	11.00	1.146E-002	3.608E-003
Pu-236	5.73	5.60	5.86	13.00	1.354E-002	3.898E-003
Th-227	6.02	5.89	6.13	4.00	4.167E-003	2.329E-003
Cm-242	6.10	6.07	6.13	3.00	3.125E-003	2.083E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:39:33AM 4/21/2007

Sample

Sample Name: AV2 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

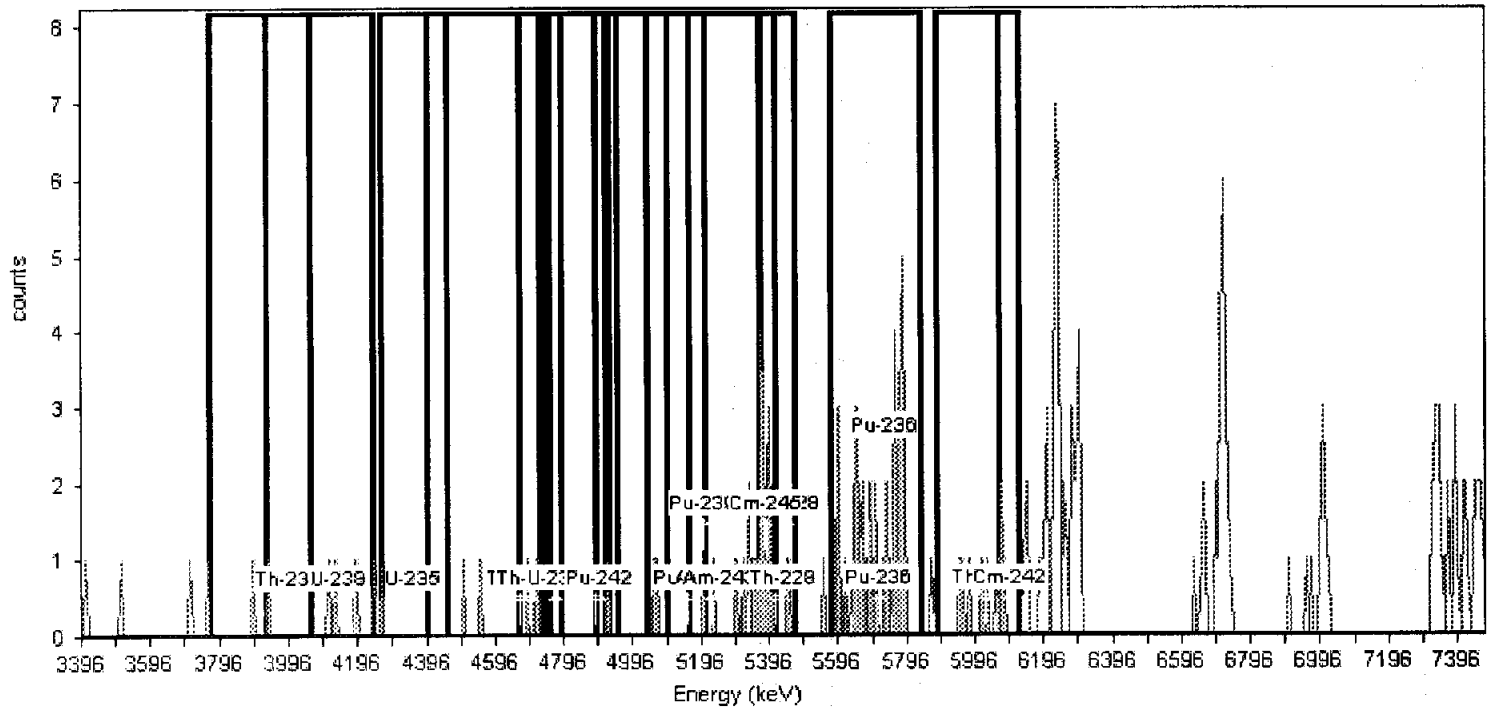
Acquisition

Detector: AV2 , SN: 41-158W7
Acquisition Start Date: 4/20/2007 4:36:19PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV2a
Calibration Date: 3/26/2007 11:54:01AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.26% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 199.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	2.00	2.083E-003	1.804E-003
U-238	4.14	3.93	4.24	5.00	5.208E-003	2.552E-003
U-235	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	5.00	5.208E-003	2.552E-003
Th-230	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Po-209	4.88	4.67	4.93	4.00	4.167E-003	2.329E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
Am-243	5.23	5.04	5.37	15.00	1.563E-002	4.167E-003
Th-228	5.41	5.16	5.47	22.00	2.292E-002	4.996E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	20.00	2.083E-002	4.774E-003
Th-228	5.45	5.27	5.57	21.00	2.187E-002	4.886E-003
Cm-245	5.39	5.36	5.41	13.00	1.354E-002	3.898E-003
Pu-236	5.72	5.57	5.84	39.00	4.062E-002	6.588E-003
Pu-236	5.73	5.60	5.86	36.00	3.750E-002	6.336E-003
Th-227	6.02	5.89	6.13	9.00	9.375E-003	3.294E-003
Cm-242	6.10	6.07	6.13	3.00	3.125E-003	2.083E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:37AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV3
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

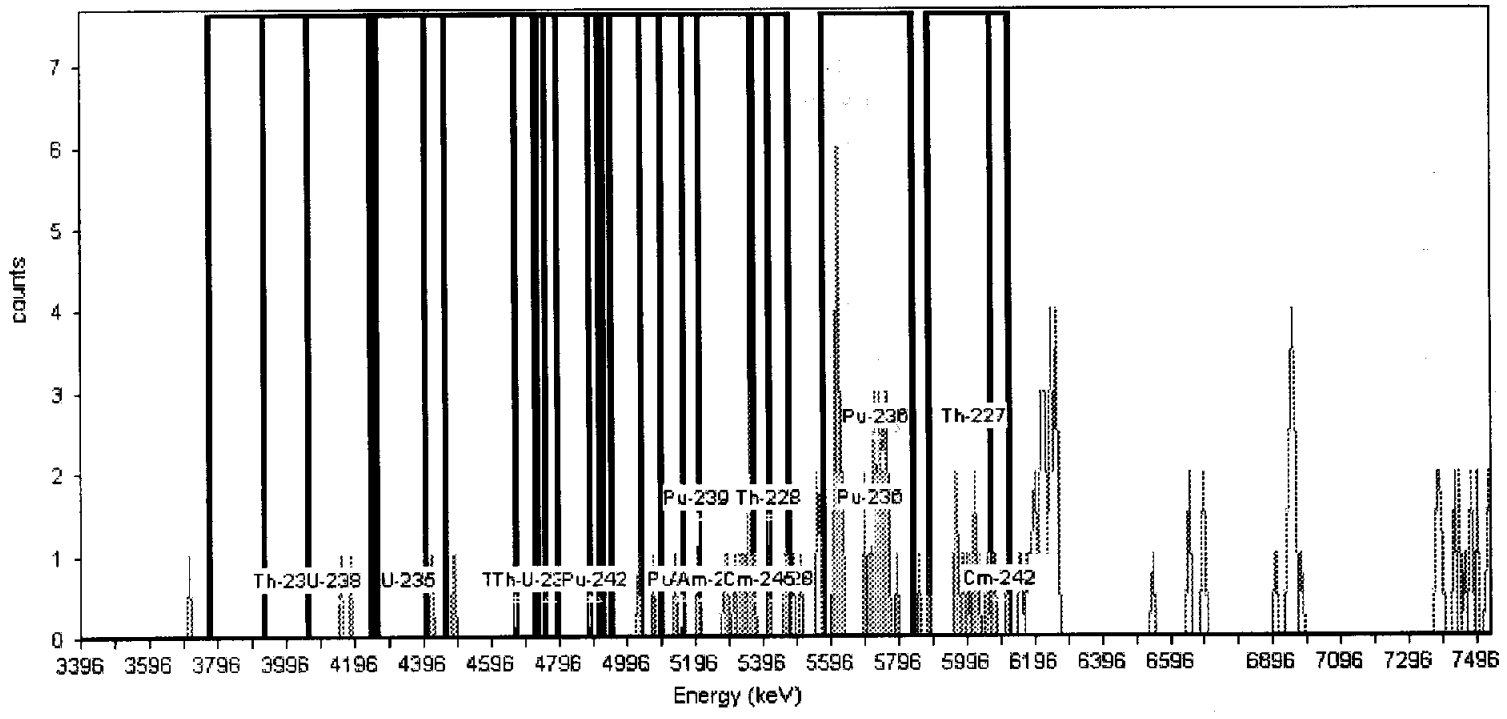
Acquisition

Detector: AV3 , SN: 41-158X5
Acquisition Start Date: 4/20/2007 4:36:21PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV3
Calibration Date: 3/26/2007 11:28:43AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.08% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Total Background Counts: 148.00

Nuclide Library: Background ROI Library

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	4.00	4.167E-003	2.329E-003
Pu-239	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
Am-243	5.23	5.04	5.37	14.00	1.458E-002	4.034E-003
Th-228	5.41	5.16	5.47	15.00	1.563E-002	4.167E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Th-228	5.45	5.27	5.57	19.00	1.979E-002	4.658E-003
Cm-245	5.39	5.36	5.41	3.00	3.125E-003	2.083E-003
Pu-236	5.72	5.57	5.84	35.00	3.646E-002	6.250E-003
Pu-236	5.73	5.60	5.86	36.00	3.750E-002	6.336E-003
Th-227	6.02	5.89	6.13	14.00	1.458E-002	4.034E-003
Cm-242	6.10	6.07	6.13	3.00	3.125E-003	2.083E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:40AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV4
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

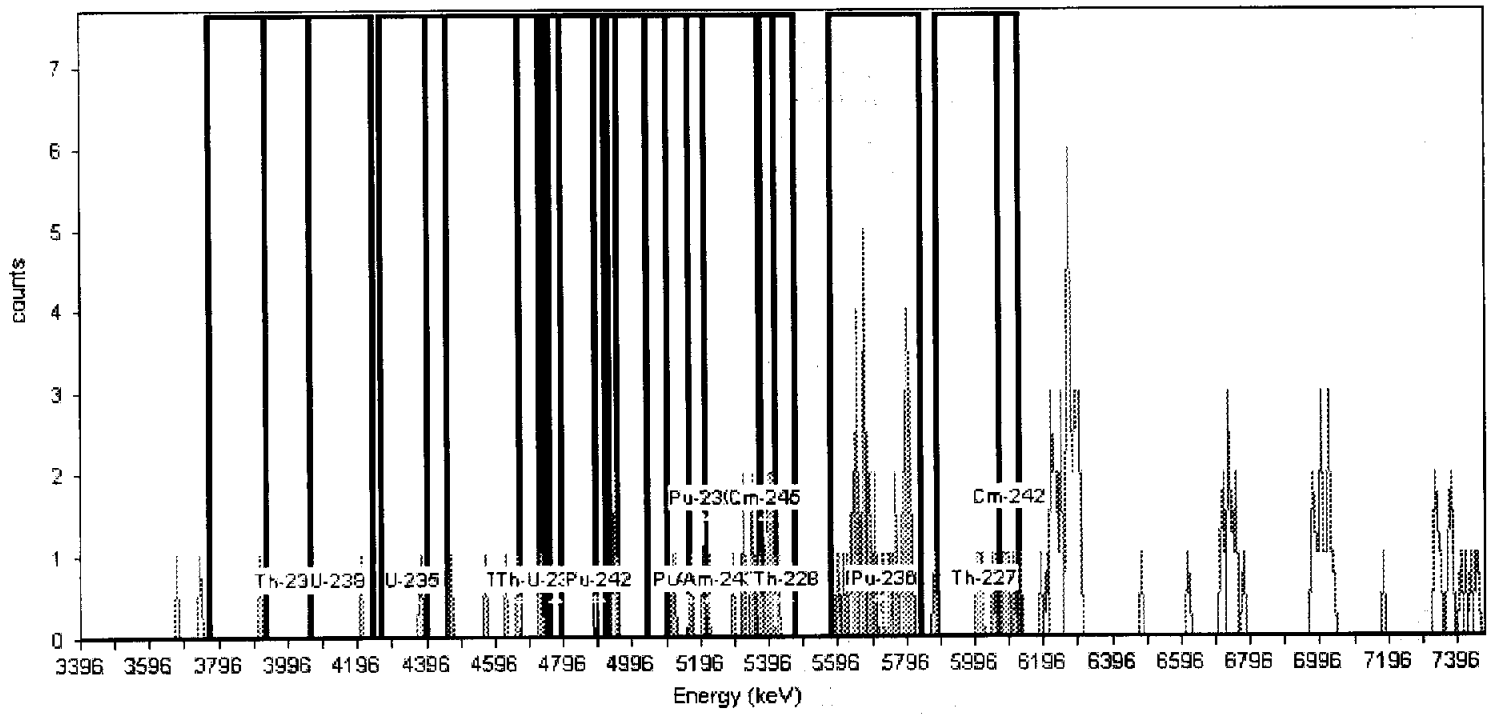
Acquisition

Detector: AV4 , SN: 41-172B5
Acquisition Start Date: 4/20/2007 4:36:09PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV4
Calibration Date: 3/26/2007 11:28:51AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.13% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 159.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	5.00	5.208E-003	2.552E-003
Th-230	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Po-209	4.88	4.67	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
Am-243	5.23	5.04	5.37	12.00	1.250E-002	3.756E-003
Th-228	5.41	5.16	5.47	19.00	1.979E-002	4.658E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Th-228	5.45	5.27	5.57	16.00	1.667E-002	4.295E-003
Cm-245	5.39	5.36	5.41	9.00	9.375E-003	3.294E-003
Pu-236	5.72	5.57	5.84	39.00	4.062E-002	6.588E-003
Pu-236	5.73	5.60	5.86	38.00	3.958E-002	6.505E-003
Th-227	6.02	5.89	6.13	8.00	8.333E-003	3.125E-003
Cm-242	6.10	6.07	6.13	4.00	4.167E-003	2.329E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:43AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV6
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

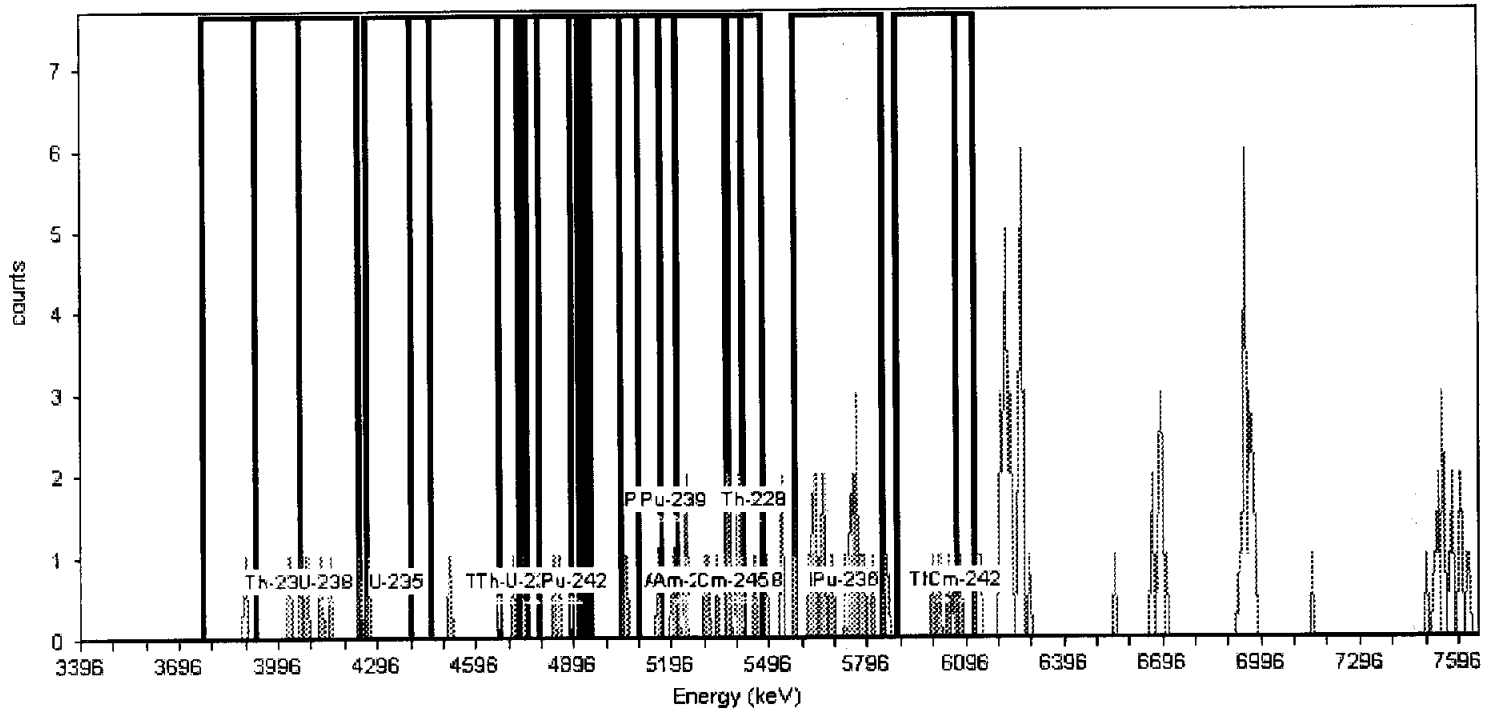
Acquisition

Detector: AV6 , SN:
Acquisition Start Date: 4/20/2007 4:36:10PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV6
Calibration Date: 3/26/2007 2:20:47PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.79% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 148.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	4.00	4.167E-003	2.329E-003
U-238	4.14	3.93	4.24	7.00	7.292E-003	2.946E-003
U-235	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	4.93	4.00	4.167E-003	2.329E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Pu-239	5.20	5.03	5.28	9.00	9.375E-003	3.294E-003
Am-243	5.23	5.04	5.37	16.00	1.667E-002	4.295E-003
Th-228	5.41	5.16	5.47	19.00	1.979E-002	4.658E-003
Am-243	5.25	5.20	5.26	5.00	5.208E-003	2.552E-003
Th-228	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Th-228	5.45	5.27	5.57	17.00	1.771E-002	4.419E-003
Cm-245	5.39	5.36	5.41	9.00	9.375E-003	3.294E-003
Pu-236	5.72	5.57	5.84	24.00	2.500E-002	5.208E-003
Pu-236	5.73	5.60	5.86	24.00	2.500E-002	5.208E-003
Th-227	6.02	5.89	6.13	5.00	5.208E-003	2.552E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:46AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV7
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

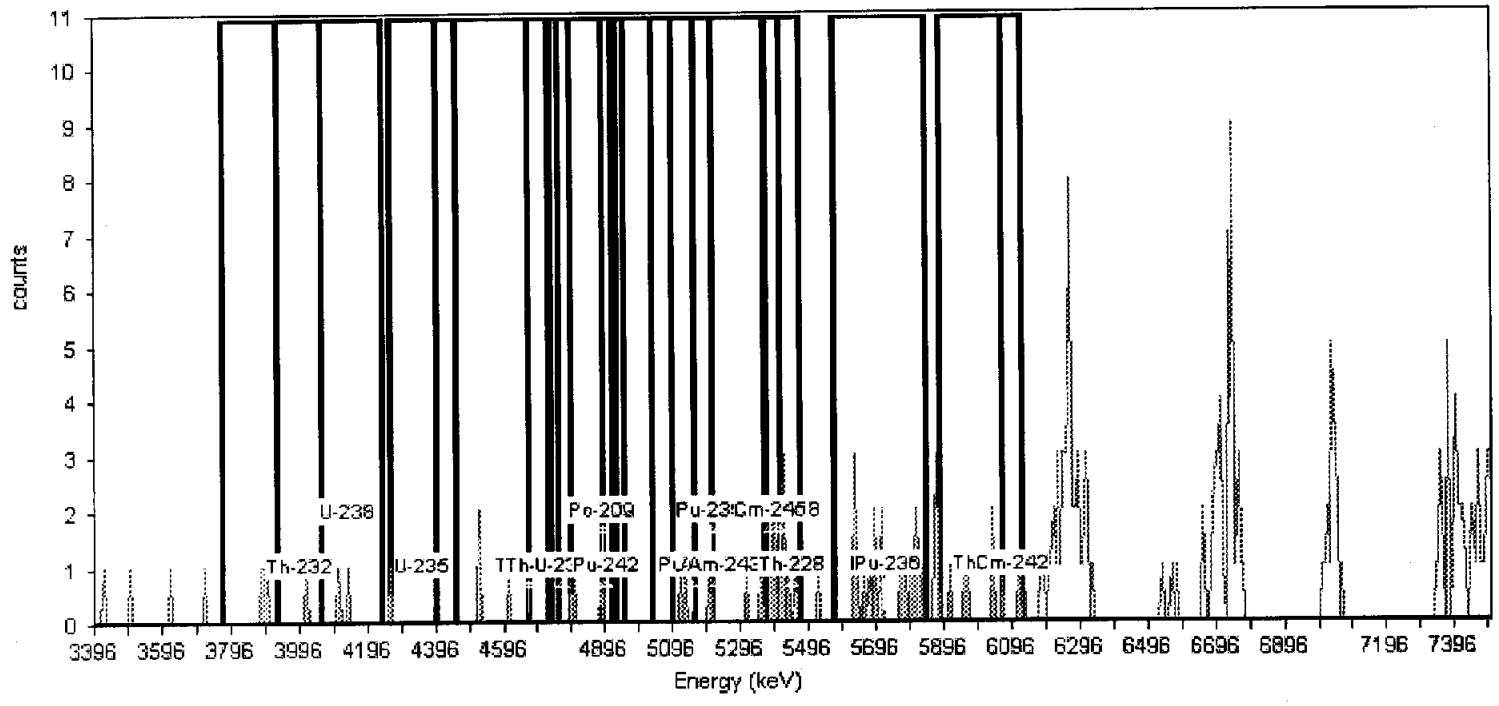
Acquisition

Detector: AV7 , SN: 41-158X6
Acquisition Start Date: 4/20/2007 4:36:12PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV7
Calibration Date: 3/26/2007 1:58:05PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.79% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 210.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	4.00	4.167E-003	2.329E-003
U-238	4.14	3.93	4.24	3.00	3.125E-003	2.083E-003
U-235	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
Th-230	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Po-209	4.88	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	13.00	1.354E-002	3.898E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	12.00	1.250E-002	3.756E-003
Th-228	5.45	5.27	5.57	13.00	1.354E-002	3.898E-003
Cm-245	5.39	5.36	5.41	5.00	5.208E-003	2.552E-003
Pu-236	5.72	5.57	5.84	20.00	2.083E-002	4.774E-003
Pu-236	5.73	5.60	5.86	20.00	2.083E-002	4.774E-003
Th-227	6.02	5.89	6.13	8.00	8.333E-003	3.125E-003
Cm-242	6.10	6.07	6.13	2.00	2.083E-003	1.804E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:50AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV8
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

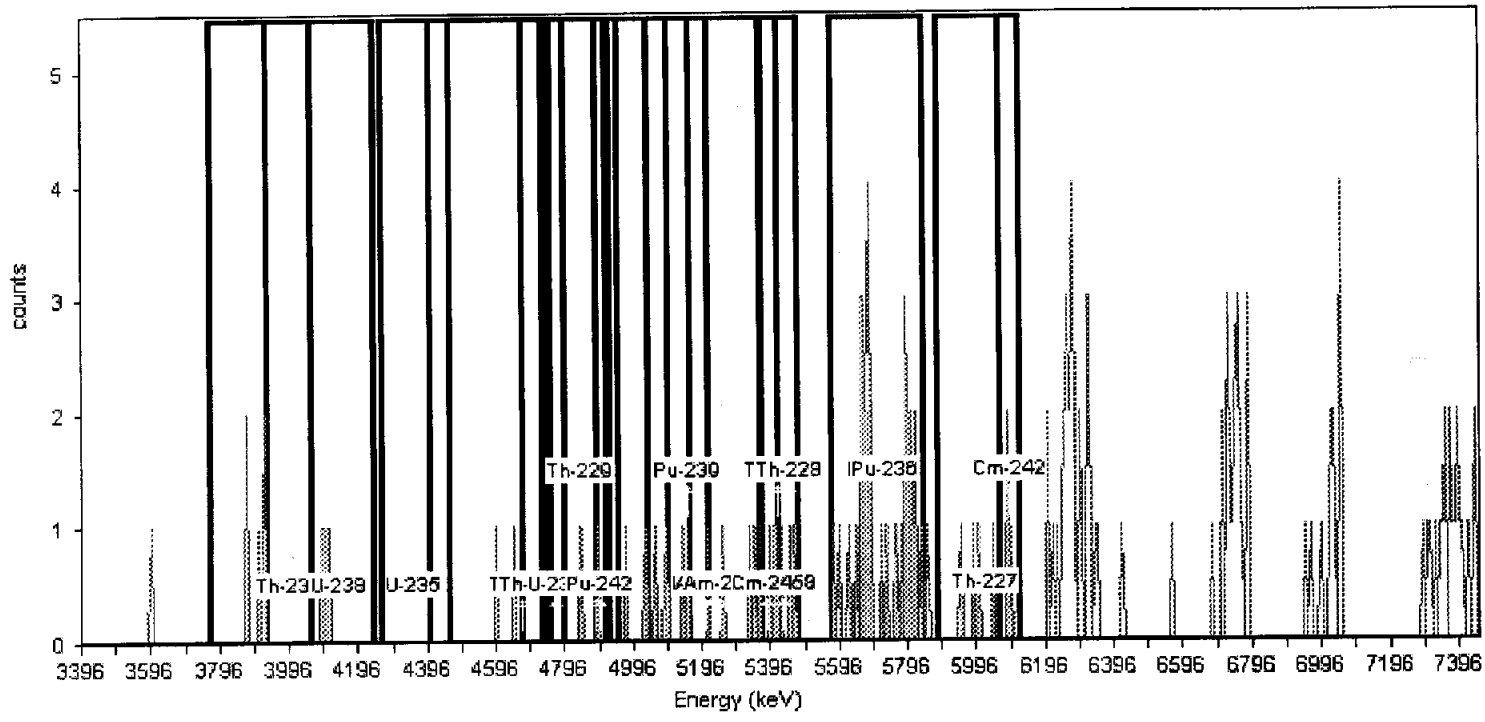
Acquisition

Detector: AV8 , SN: 41-158X1
Acquisition Start Date: 4/20/2007 4:36:14PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV8
Calibration Date: 3/26/2007 1:58:11PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 28.43% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 152.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	5.00	5.208E-003	2.552E-003
U-238	4.14	3.93	4.24	4.00	4.167E-003	2.329E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	7.00	7.292E-003	2.946E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	8.00	8.333E-003	3.125E-003
Pu-239	5.20	5.03	5.28	8.00	8.333E-003	3.125E-003
Am-243	5.23	5.04	5.37	10.00	1.042E-002	3.455E-003
Th-228	5.41	5.16	5.47	11.00	1.146E-002	3.608E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	10.00	1.042E-002	3.455E-003
Th-228	5.45	5.27	5.57	9.00	9.375E-003	3.294E-003
Cm-245	5.39	5.36	5.41	4.00	4.167E-003	2.329E-003
Pu-236	5.72	5.57	5.84	32.00	3.333E-002	5.984E-003
Pu-236	5.73	5.60	5.86	31.00	3.229E-002	5.893E-003
Th-227	6.02	5.89	6.13	7.00	7.292E-003	2.946E-003
Cm-242	6.10	6.07	6.13	3.00	3.125E-003	2.083E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:56AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV9
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

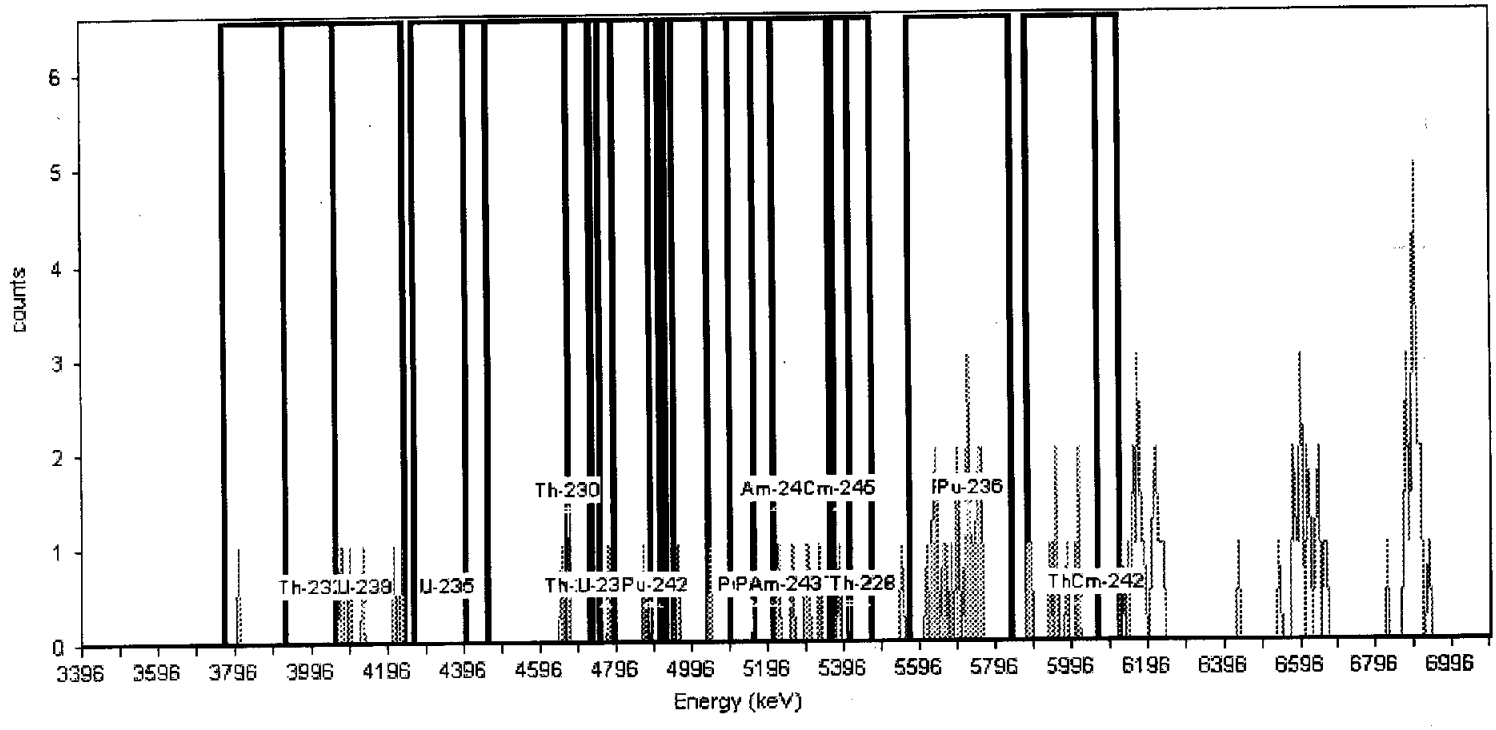
Acquisition

Detector: AV9 , SN: 41-172R1
Acquisition Start Date: 4/20/2007 4:36:16PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV9
Calibration Date: 3/26/2007 2:20:54PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.52% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 100.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	5.00	5.208E-003	2.552E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Pu-239	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	6.00	6.250E-003	2.756E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Th-228	5.45	5.27	5.57	5.00	5.208E-003	2.552E-003
Cm-245	5.39	5.36	5.41	1.00	1.042E-003	1.473E-003
Pu-236	5.72	5.57	5.84	22.00	2.292E-002	4.996E-003
Pu-236	5.73	5.60	5.86	22.00	2.292E-002	4.996E-003
Th-227	6.02	5.89	6.13	8.00	8.333E-003	3.125E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:02AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV11
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

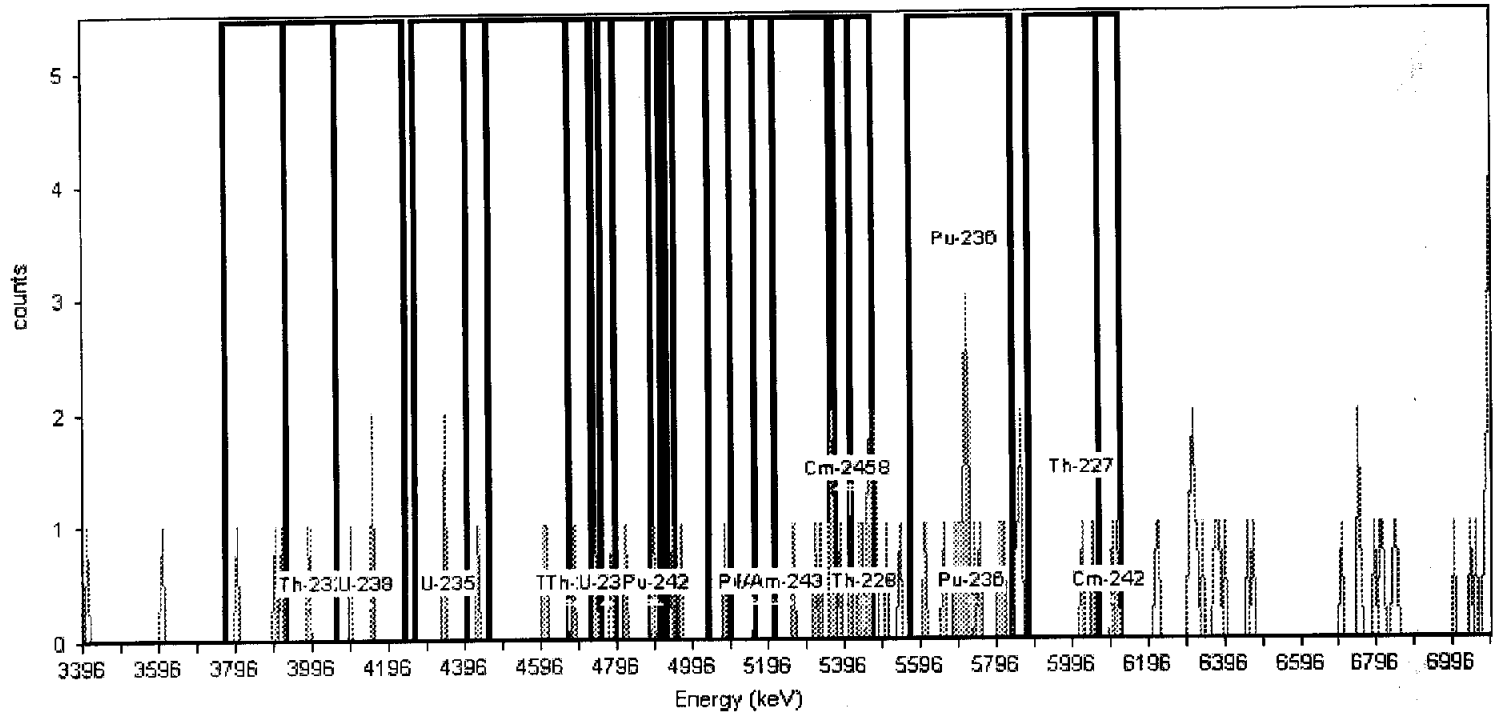
Acquisition

Detector: AV11 , SN: 41-172Q3
Acquisition Start Date: 4/20/2007 4:36:17PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV11
Calibration Date: 3/26/2007 4:58:21PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.69% +/- 0.29% TPU(2 sigma)



General Analysis

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

Total Background Counts: 97.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	4.00	4.167E-003	2.329E-003
U-238	4.14	3.93	4.24	4.00	4.167E-003	2.329E-003
U-235	4.35	4.26	4.46	3.00	3.125E-003	2.083E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Po-209	4.88	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.72	5.10	7.00	7.292E-003	2.946E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Pu-239	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.04	5.37	7.00	7.292E-003	2.946E-003
Th-228	5.41	5.16	5.47	14.00	1.458E-002	4.034E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	17.00	1.771E-002	4.419E-003
Th-228	5.45	5.27	5.57	17.00	1.771E-002	4.419E-003
Cm-245	5.39	5.36	5.41	5.00	5.208E-003	2.552E-003
Pu-236	5.72	5.57	5.84	16.00	1.667E-002	4.295E-003
Pu-236	5.73	5.60	5.86	18.00	1.875E-002	4.541E-003
Th-227	6.02	5.89	6.13	4.00	4.167E-003	2.329E-003
Cm-242	6.10	6.07	6.13	2.00	2.083E-003	1.804E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:12AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV12
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

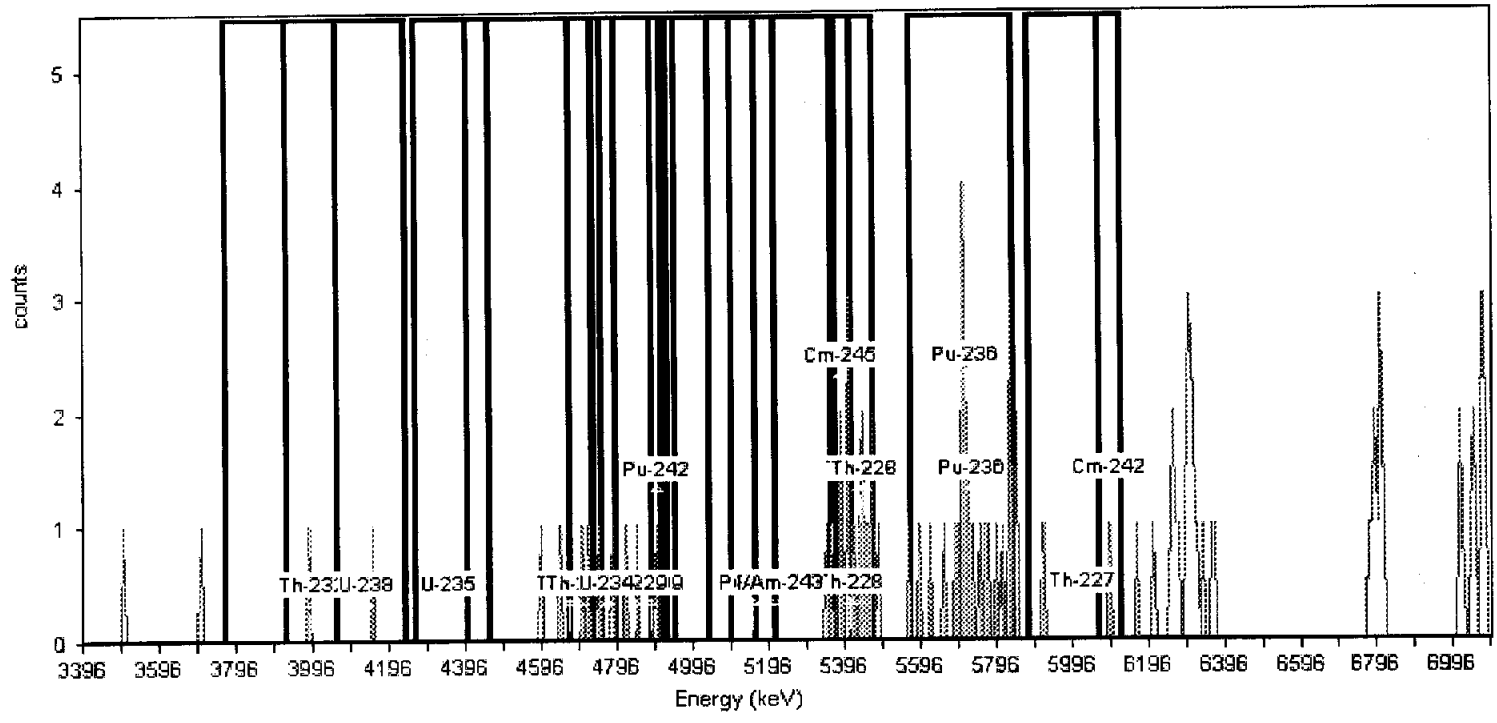
Acquisition

Detector: AV12 , SN: 41-172Q2
Acquisition Start Date: 4/20/2007 4:36:18PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV12
Calibration Date: 3/26/2007 4:58:58PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.04% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 99.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	6.00	6.250E-003	2.756E-003
Po-209	4.88	4.67	4.93	7.00	7.292E-003	2.946E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	2.00	2.083E-003	1.804E-003
Th-228	5.41	5.16	5.47	17.00	1.771E-002	4.419E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	18.00	1.875E-002	4.541E-003
Th-228	5.45	5.27	5.57	19.00	1.979E-002	4.658E-003
Cm-245	5.39	5.36	5.41	7.00	7.292E-003	2.946E-003
Pu-236	5.72	5.57	5.84	21.00	2.187E-002	4.886E-003
Pu-236	5.73	5.60	5.86	22.00	2.292E-002	4.996E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:18AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV13
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

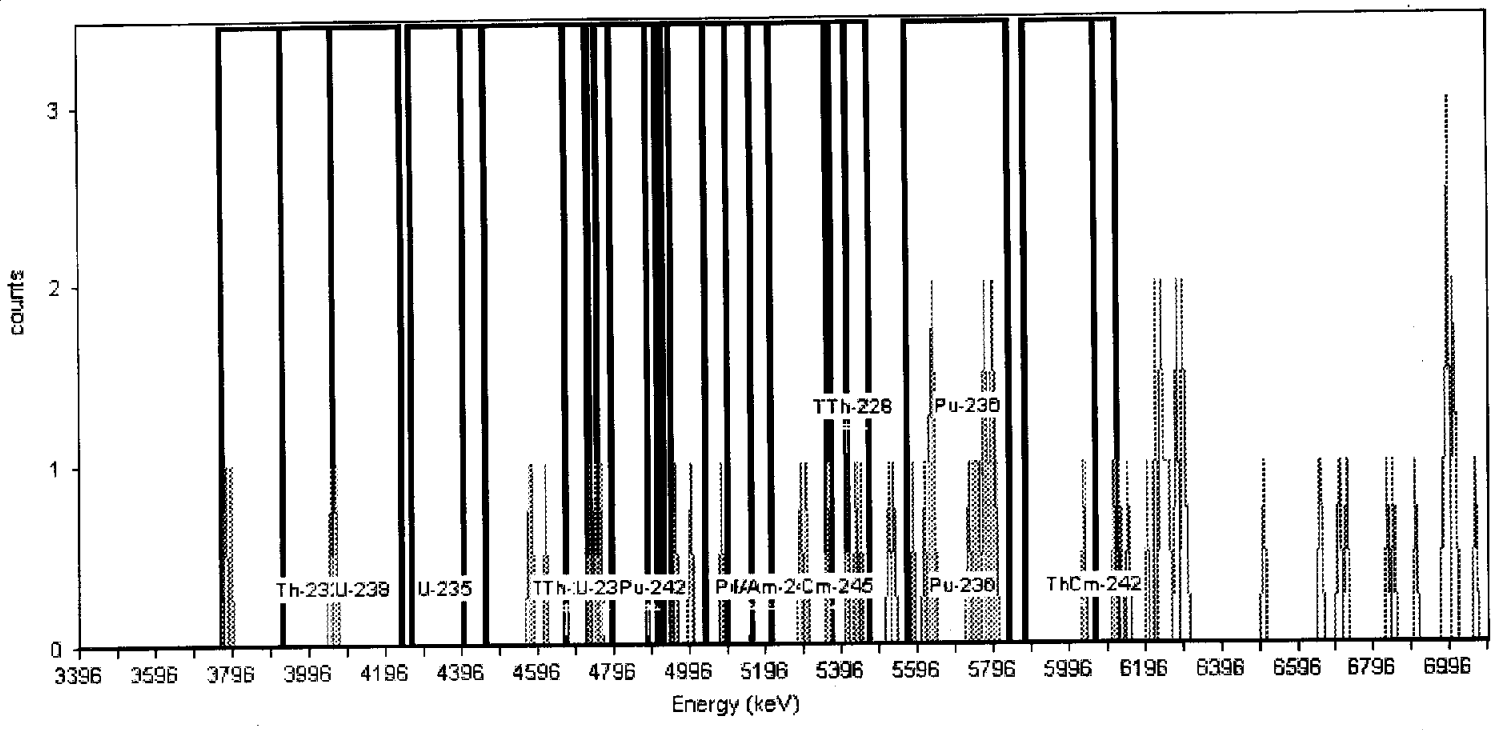
Acquisition

Detector: AV13 , SN: 41-172Q1
Acquisition Start Date: 4/20/2007 4:36:21PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV13
Calibration Date: 3/26/2007 4:58:01PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.07% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 74.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	3.00	3.125E-003	2.083E-003
U-238	4.14	3.93	4.24	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	6.00	6.250E-003	2.756E-003
Po-209	4.88	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	6.00	6.250E-003	2.756E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	4.00	4.167E-003	2.329E-003
Th-228	5.41	5.16	5.47	6.00	6.250E-003	2.756E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Th-228	5.45	5.27	5.57	8.00	8.333E-003	3.125E-003
Cm-245	5.39	5.36	5.41	2.00	2.083E-003	1.804E-003
Pu-236	5.72	5.57	5.84	17.00	1.771E-002	4.419E-003
Pu-236	5.73	5.60	5.86	16.00	1.667E-002	4.295E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:03AM 4/21/2007

Sample

Sample Name: AV14 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

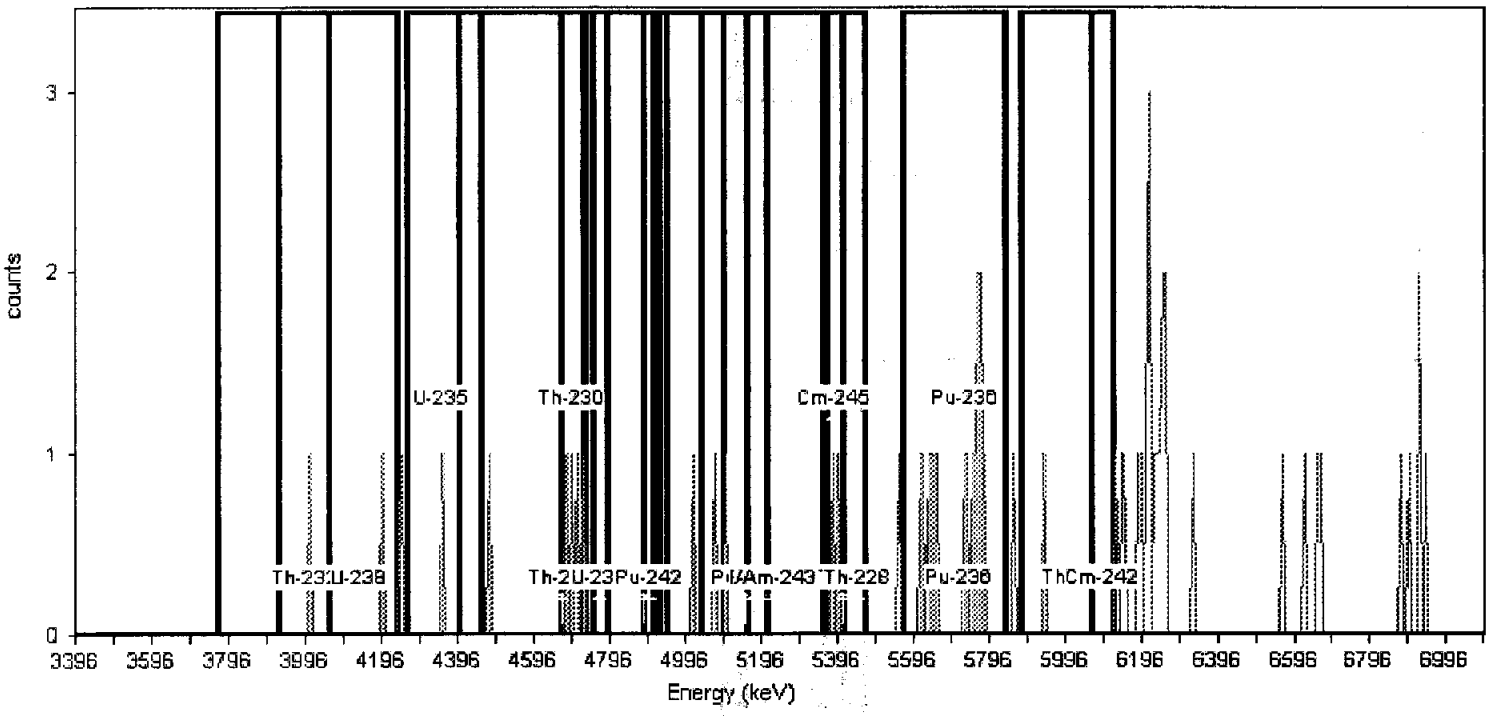
Acquisition

Detector: AV14 , SN: 41-172C4
Acquisition Start Date: 4/20/2007 4:36:22PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV14
Calibration Date: 3/26/2007 4:58:09PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.56% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 58.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	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	4.73	5.00	5.208E-003	2.552E-003
Th-230	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Po-209	4.88	4.67	4.93	4.00	4.167E-003	2.329E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.04	5.37	2.00	2.083E-003	1.804E-003
Th-228	5.41	5.16	5.47	2.00	2.083E-003	1.804E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Th-228	5.45	5.27	5.57	3.00	3.125E-003	2.083E-003
Cm-245	5.39	5.36	5.41	2.00	2.083E-003	1.804E-003
Pu-236	5.72	5.57	5.84	15.00	1.563E-002	4.167E-003
Pu-236	5.73	5.60	5.86	15.00	1.563E-002	4.167E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:16AM 4/21/2007

Sample

Sample Name: AV15 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

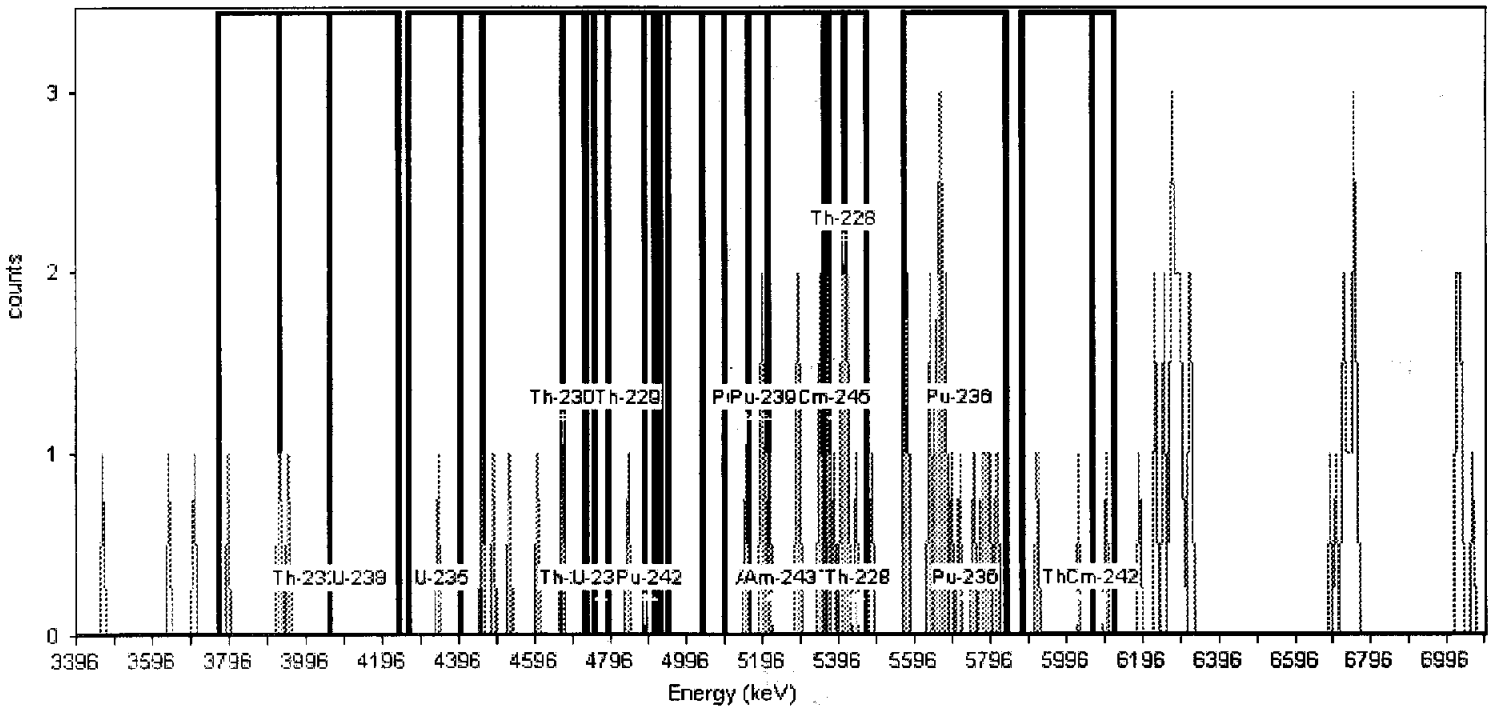
Acquisition

Detector: AV15 , SN: 41-172C5
Acquisition Start Date: 4/20/2007 4:36:24PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV15
Calibration Date: 3/27/2007 6:50:49AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.85% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 98.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	4.00	4.167E-003	2.329E-003
U-238	4.14	3.93	4.24	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	5.00	5.208E-003	2.552E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	1.00	1.042E-003	1.473E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	4.00	4.167E-003	2.329E-003
Pu-239	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
Am-243	5.23	5.04	5.37	12.00	1.250E-002	3.756E-003
Th-228	5.41	5.16	5.47	19.00	1.979E-002	4.658E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Th-228	5.45	5.27	5.57	16.00	1.667E-002	4.295E-003
Cm-245	5.39	5.36	5.41	7.00	7.292E-003	2.946E-003
Pu-236	5.72	5.57	5.84	23.00	2.396E-002	5.103E-003
Pu-236	5.73	5.60	5.86	20.00	2.083E-002	4.774E-003
Th-227	6.02	5.89	6.13	3.00	3.125E-003	2.083E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:06AM 4/21/2007

Sample

Sample Name: AV17 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

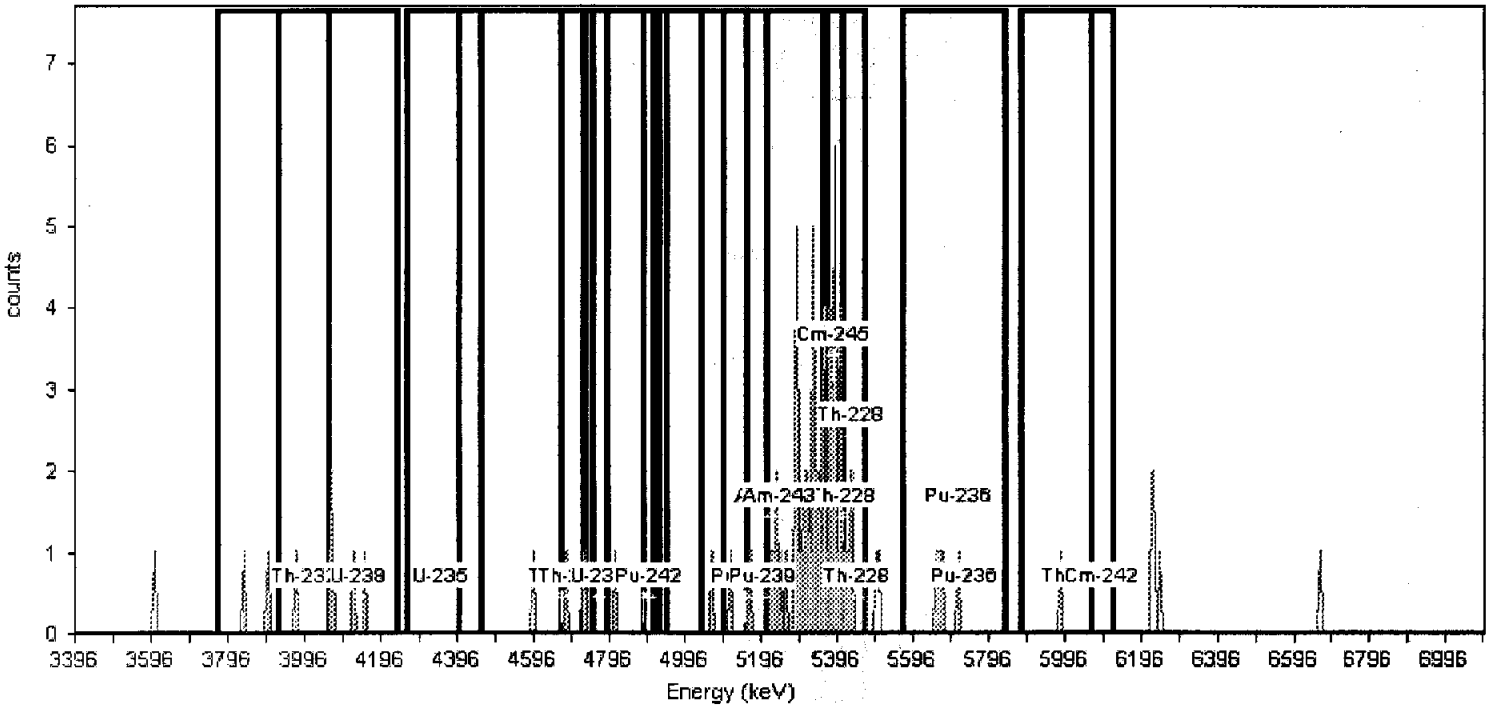
Acquisition

Detector: AV17 , SN: 41-172Q4
Acquisition Start Date: 4/20/2007 4:36:25PM
Live Time: 960.00 min.
Real Time: 960.04 min.
Calibration Name: Apr2007_AV17
Calibration Date: 4/10/2007 8:52:02AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.06% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 86.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	3.00	3.125E-003	2.083E-003
U-238	4.14	3.93	4.24	5.00	5.208E-003	2.552E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Po-209	4.88	4.67	4.93	4.00	4.167E-003	2.329E-003
Th-229	4.84	4.72	5.10	4.00	4.167E-003	2.329E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	9.00	9.375E-003	3.294E-003
Am-243	5.23	5.04	5.37	36.00	3.750E-002	6.336E-003
Th-228	5.41	5.16	5.47	58.00	6.042E-002	8.001E-003
Am-243	5.25	5.20	5.26	6.00	6.250E-003	2.756E-003
Th-228	5.44	5.24	5.52	57.00	5.937E-002	7.933E-003
Th-228	5.45	5.27	5.57	53.00	5.521E-002	7.655E-003
Cm-245	5.39	5.36	5.41	24.00	2.500E-002	5.208E-003
Pu-236	5.72	5.57	5.84	4.00	4.167E-003	2.329E-003
Pu-236	5.73	5.60	5.86	4.00	4.167E-003	2.329E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:19AM 4/21/2007

Sample

Sample Name: AV18 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

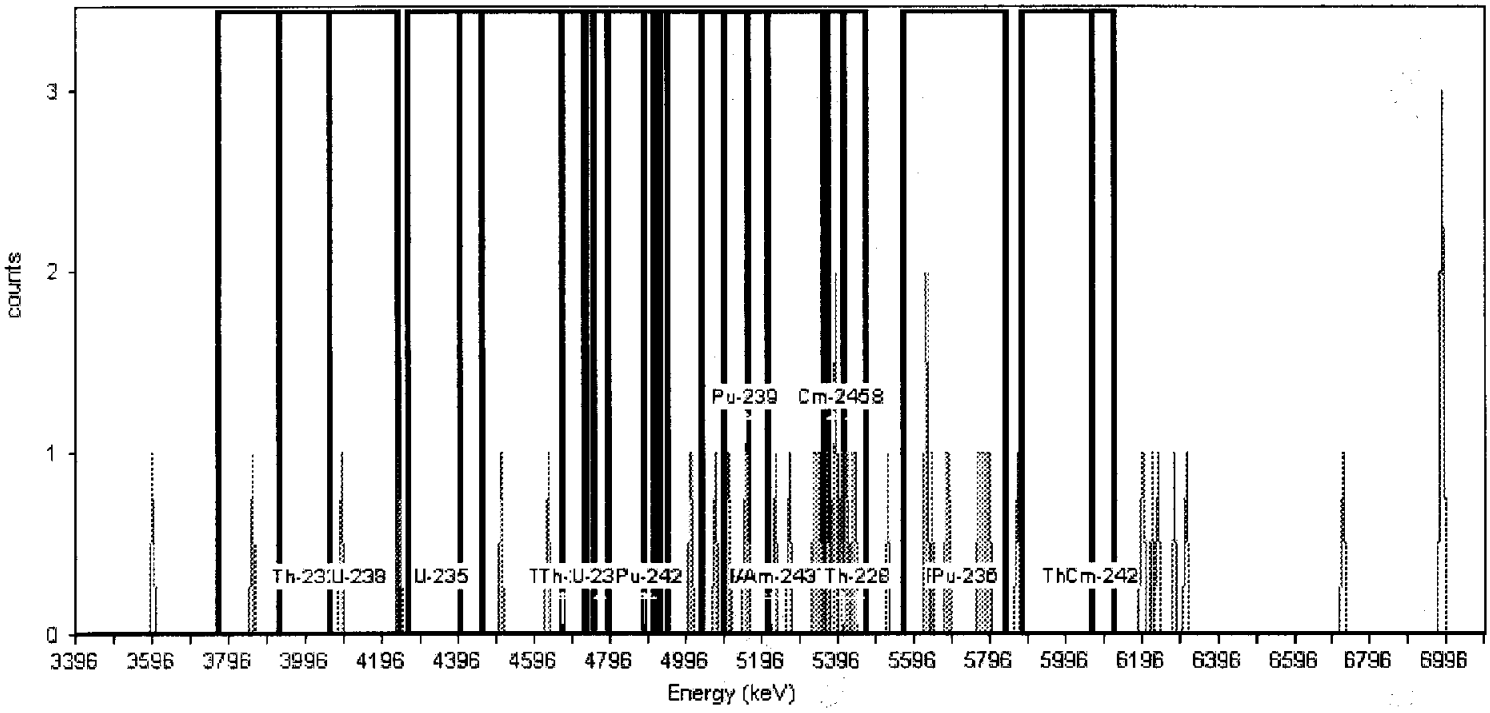
Acquisition

Detector: AV18 , SN: 41-172C6
Acquisition Start Date: 4/20/2007 4:36:26PM
Live Time: 960.00 min.
Real Time: 960.04 min.
Calibration Name: Mar2007_AV18
Calibration Date: 3/27/2007 6:50:43AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.21% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 47.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Pu-239	5.20	5.03	5.28	6.00	6.250E-003	2.756E-003
Am-243	5.23	5.04	5.37	10.00	1.042E-002	3.455E-003
Th-228	5.41	5.16	5.47	14.00	1.458E-002	4.034E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	12.00	1.250E-002	3.756E-003
Th-228	5.45	5.27	5.57	13.00	1.354E-002	3.898E-003
Cm-245	5.39	5.36	5.41	5.00	5.208E-003	2.552E-003
Pu-236	5.72	5.57	5.84	10.00	1.042E-002	3.455E-003
Pu-236	5.73	5.60	5.86	10.00	1.042E-002	3.455E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:26AM 4/21/2007

Sample

Sample Name: AV19 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

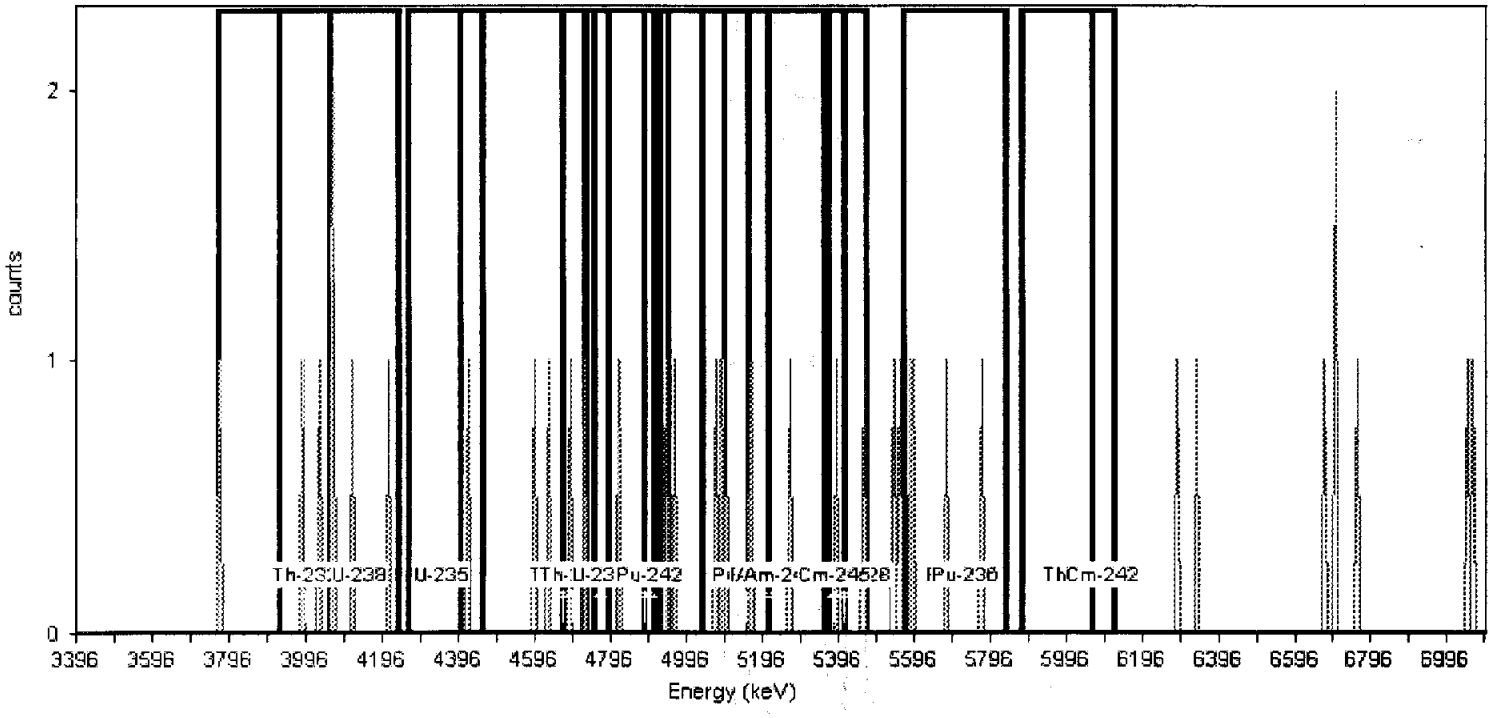
Acquisition

Detector: AV19 , SN: 41-172Q6
Acquisition Start Date: 4/20/2007 4:36:28PM
Live Time: 960.00 min.
Real Time: 960.04 min.
Calibration Name: Mar2007_AV19
Calibration Date: 3/27/2007 5:22:57PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.06% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 36.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	3.00	3.125E-003	2.083E-003
U-238	4.14	3.93	4.24	6.00	6.250E-003	2.756E-003
U-235	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	5.00	5.208E-003	2.552E-003
Th-230	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Po-209	4.88	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	6.00	6.250E-003	2.756E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Pu-239	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
Am-243	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.27	5.57	5.00	5.208E-003	2.552E-003
Cm-245	5.39	5.36	5.41	1.00	1.042E-003	1.473E-003
Pu-236	5.72	5.57	5.84	4.00	4.167E-003	2.329E-003
Pu-236	5.73	5.60	5.86	2.00	2.083E-003	1.804E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:32AM 4/21/2007

Sample

Sample Name: AV20 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

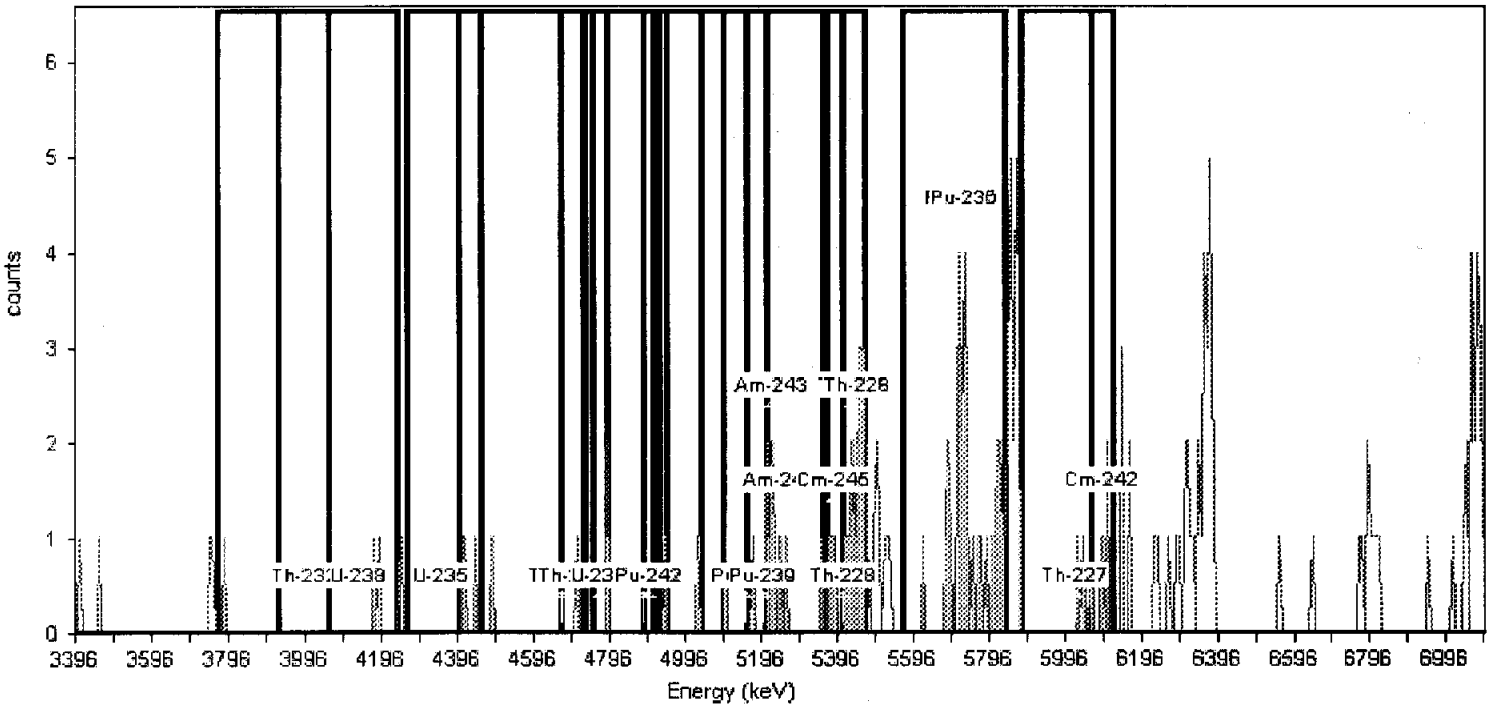
Acquisition

Detector: AV20 , SN: 41-172R2
Acquisition Start Date: 4/20/2007 4:36:30PM
Live Time: 960.00 min.
Real Time: 960.04 min.
Calibration Name: Mar2007_AV20
Calibration Date: 3/27/2007 6:50:56AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.03% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 170.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	2.00	2.083E-003	1.804E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Pu-239	5.20	5.03	5.28	10.00	1.042E-002	3.455E-003
Am-243	5.23	5.04	5.37	10.00	1.042E-002	3.455E-003
Th-228	5.41	5.16	5.47	28.00	2.917E-002	5.610E-003
Am-243	5.25	5.20	5.26	7.00	7.292E-003	2.946E-003
Th-228	5.44	5.24	5.52	27.00	2.813E-002	5.512E-003
Th-228	5.45	5.27	5.57	28.00	2.917E-002	5.610E-003
Cm-245	5.39	5.36	5.41	3.00	3.125E-003	2.083E-003
Pu-236	5.72	5.57	5.84	29.00	3.021E-002	5.705E-003
Pu-236	5.73	5.60	5.86	38.00	3.958E-002	6.505E-003
Th-227	6.02	5.89	6.13	6.00	6.250E-003	2.756E-003
Cm-242	6.10	6.07	6.13	4.00	4.167E-003	2.329E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:39AM 4/21/2007

Sample

Sample Name: AV21 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

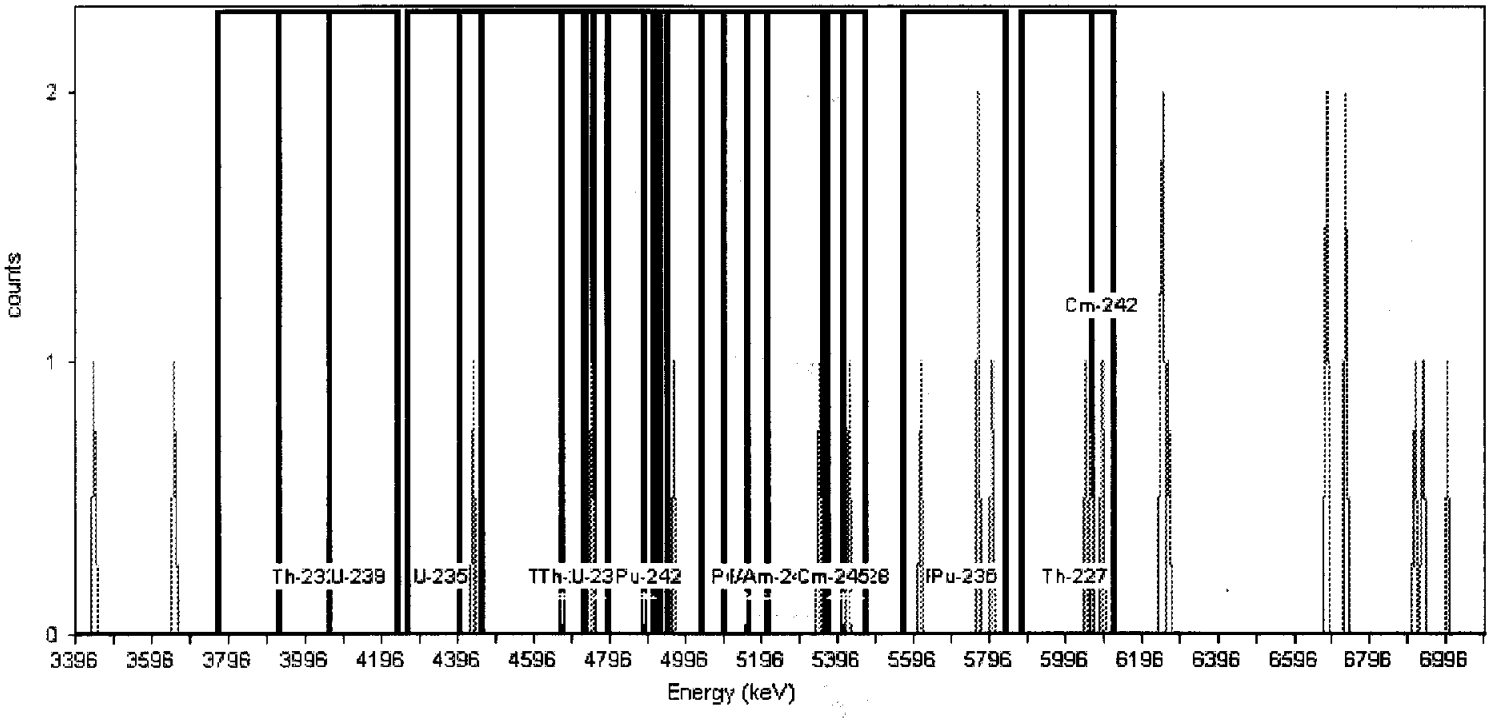
Acquisition

Detector: AV21 , SN: 41-172C7
Acquisition Start Date: 4/20/2007 4:36:31PM
Live Time: 960.00 min.
Real Time: 960.04 min.
Calibration Name: Mar2007_AV21
Calibration Date: 3/27/2007 5:23:05PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.40% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 25.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	2.00	2.083E-003	1.804E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Th-228	5.45	5.27	5.57	2.00	2.083E-003	1.804E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	4.00	4.167E-003	2.329E-003
Pu-236	5.73	5.60	5.86	4.00	4.167E-003	2.329E-003
Th-227	6.02	5.89	6.13	3.00	3.125E-003	2.083E-003
Cm-242	6.10	6.07	6.13	2.00	2.083E-003	1.804E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:45AM 4/21/2007

Sample

Sample Name: AV22 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

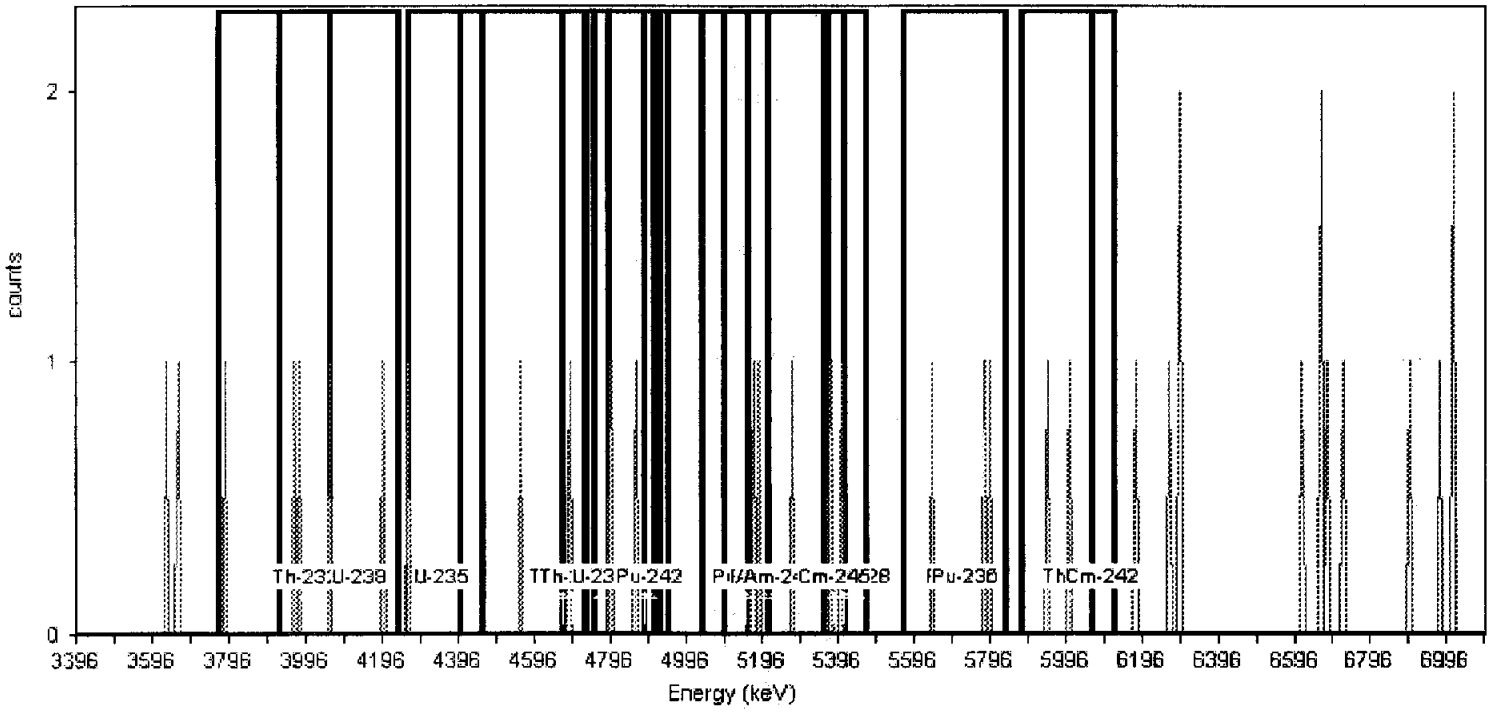
Acquisition

Detector: AV22 , SN: 41-172Q5
Acquisition Start Date: 4/20/2007 4:36:32PM
Live Time: 960.00 min.
Real Time: 960.04 min.
Calibration Name: Mar2007_AV22
Calibration Date: 3/27/2007 5:23:12PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.63% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 35.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	4.00	4.167E-003	2.329E-003
U-238	4.14	3.93	4.24	4.00	4.167E-003	2.329E-003
U-235	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Pu-239	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	5.00	5.208E-003	2.552E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.27	5.57	3.00	3.125E-003	2.083E-003
Cm-245	5.39	5.36	5.41	2.00	2.083E-003	1.804E-003
Pu-236	5.72	5.57	5.84	3.00	3.125E-003	2.083E-003
Pu-236	5.73	5.60	5.86	3.00	3.125E-003	2.083E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:48AM 4/21/2007

Sample

Sample Name: AV24 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

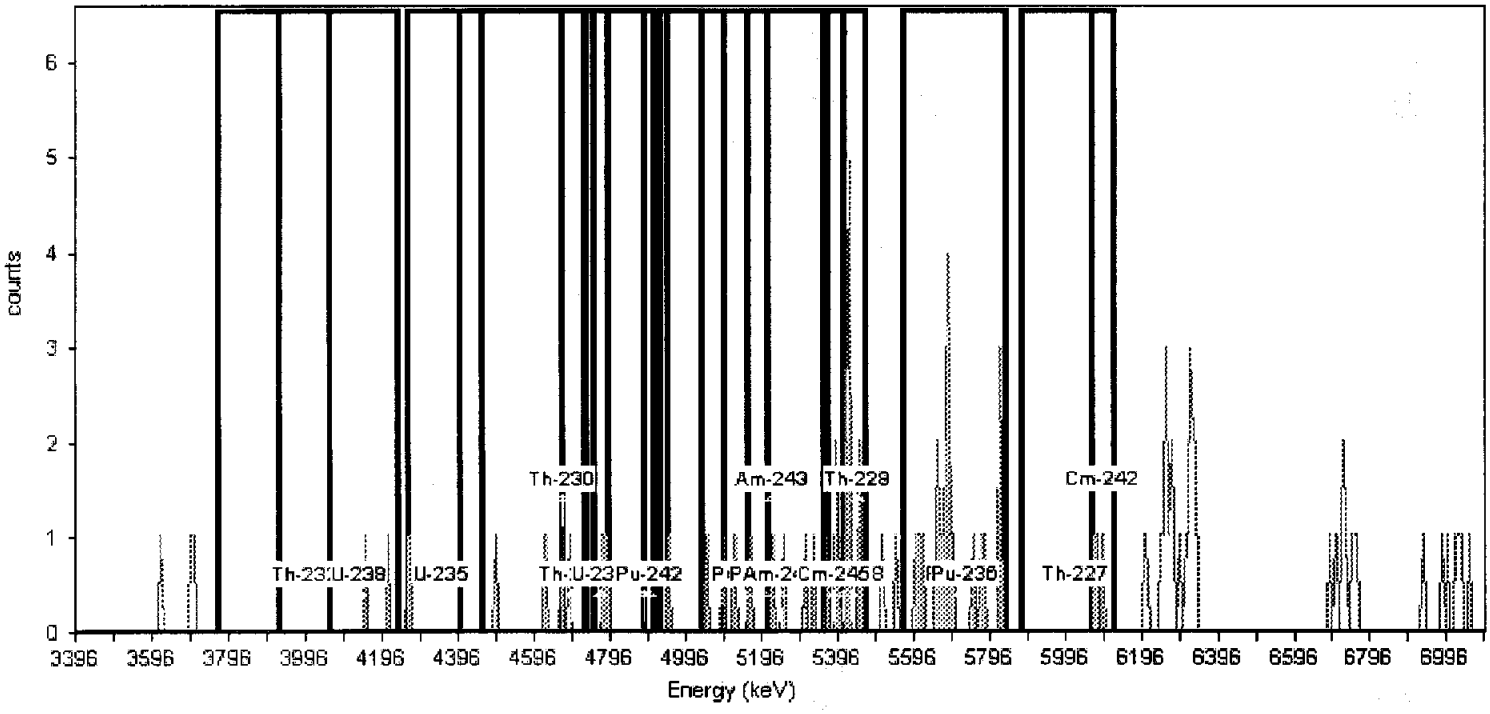
Acquisition

Detector: AV24 , SN: 41-172R5
Acquisition Start Date: 4/20/2007 4:36:34PM
Live Time: 960.00 min.
Real Time: 960.04 min.
Calibration Name: Mar2007_AV24
Calibration Date: 3/28/2007 7:11:08AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.02% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 101.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	6.00	6.250E-003	2.756E-003
Po-209	4.88	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.72	5.10	6.00	6.250E-003	2.756E-003
U-234	4.77	4.75	4.79	3.00	3.125E-003	2.083E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Pu-239	5.20	5.03	5.28	6.00	6.250E-003	2.756E-003
Am-243	5.23	5.04	5.37	9.00	9.375E-003	3.294E-003
Th-228	5.41	5.16	5.47	19.00	1.979E-002	4.658E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	18.00	1.875E-002	4.541E-003
Th-228	5.45	5.27	5.57	18.00	1.875E-002	4.541E-003
Cm-245	5.39	5.36	5.41	4.00	4.167E-003	2.329E-003
Pu-236	5.72	5.57	5.84	22.00	2.292E-002	4.996E-003
Pu-236	5.73	5.60	5.86	22.00	2.292E-002	4.996E-003
Th-227	6.02	5.89	6.13	3.00	3.125E-003	2.083E-003
Cm-242	6.10	6.07	6.13	3.00	3.125E-003	2.083E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:55AM 4/21/2007

Sample

Sample Name: AV45 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

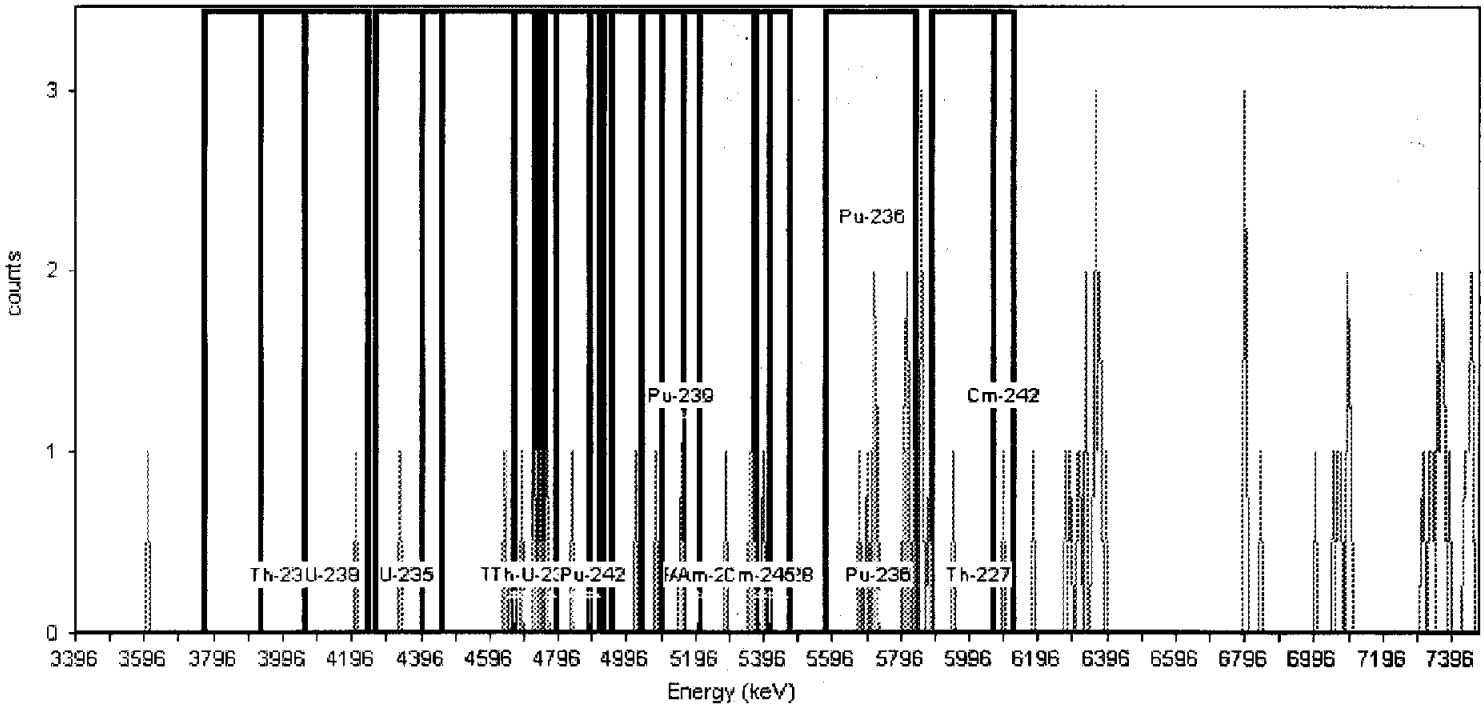
Acquisition

Detector: AV45 , SN: AV45
Acquisition Start Date: 4/20/2007 4:36:35PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV45
Calibration Date: 3/28/2007 11:11:54AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.62% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 74.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
Th-230	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Po-209	4.88	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.72	5.10	6.00	6.250E-003	2.756E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Th-228	5.45	5.27	5.57	4.00	4.167E-003	2.329E-003
Cm-245	5.39	5.36	5.41	2.00	2.083E-003	1.804E-003
Pu-236	5.72	5.57	5.84	10.00	1.042E-002	3.455E-003
Pu-236	5.73	5.60	5.86	13.00	1.354E-002	3.898E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:58AM 4/21/2007

Sample

Sample Name: AV46 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

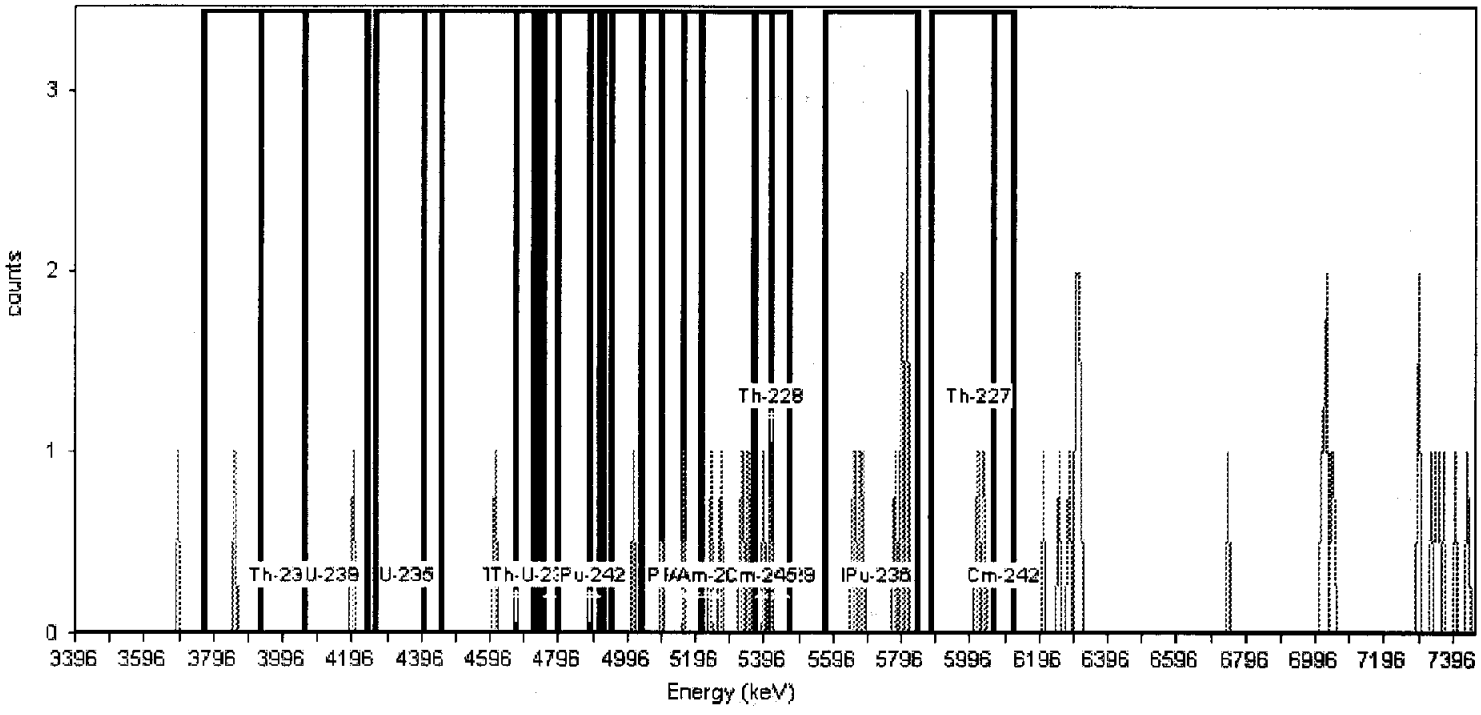
Acquisition

Detector: AV46 , SN: AV46
Acquisition Start Date: 4/20/2007 4:36:37PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV46
Calibration Date: 3/28/2007 11:12:17AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.48% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 50.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
Am-243	5.23	5.04	5.37	7.00	7.292E-003	2.946E-003
Th-228	5.41	5.16	5.47	8.00	8.333E-003	3.125E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	7.00	7.292E-003	2.946E-003
Th-228	5.45	5.27	5.57	6.00	6.250E-003	2.756E-003
Cm-245	5.39	5.36	5.41	2.00	2.083E-003	1.804E-003
Pu-236	5.72	5.57	5.84	10.00	1.042E-002	3.455E-003
Pu-236	5.73	5.60	5.86	10.00	1.042E-002	3.455E-003
Th-227	6.02	5.89	6.13	3.00	3.125E-003	2.083E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:39:08AM 4/21/2007

Sample

Sample Name: AV47 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

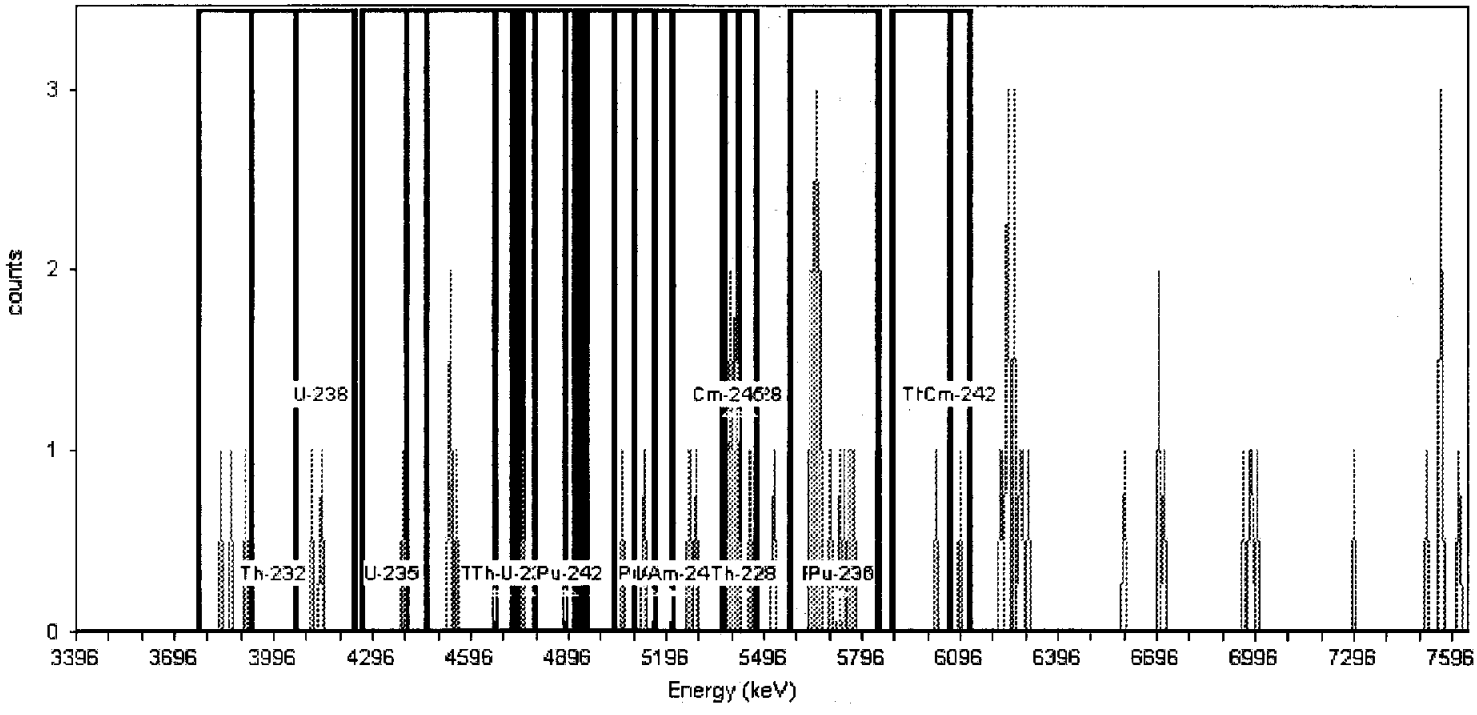
Acquisition

Detector: AV47 , SN: AV47
Acquisition Start Date: 4/20/2007 4:36:39PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV47
Calibration Date: 3/28/2007 11:12:02AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.21% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 69.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	3.00	3.125E-003	2.083E-003
U-238	4.14	3.93	4.24	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	4.73	3.00	3.125E-003	2.083E-003
Th-230	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Po-209	4.88	4.67	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Pu-239	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
Am-243	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	11.00	1.146E-002	3.608E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	11.00	1.146E-002	3.608E-003
Th-228	5.45	5.27	5.57	11.00	1.146E-002	3.608E-003
Cm-245	5.39	5.36	5.41	7.00	7.292E-003	2.946E-003
Pu-236	5.72	5.57	5.84	17.00	1.771E-002	4.419E-003
Pu-236	5.73	5.60	5.86	17.00	1.771E-002	4.419E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:39:14AM 4/21/2007

Sample

Sample Name: AV48 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

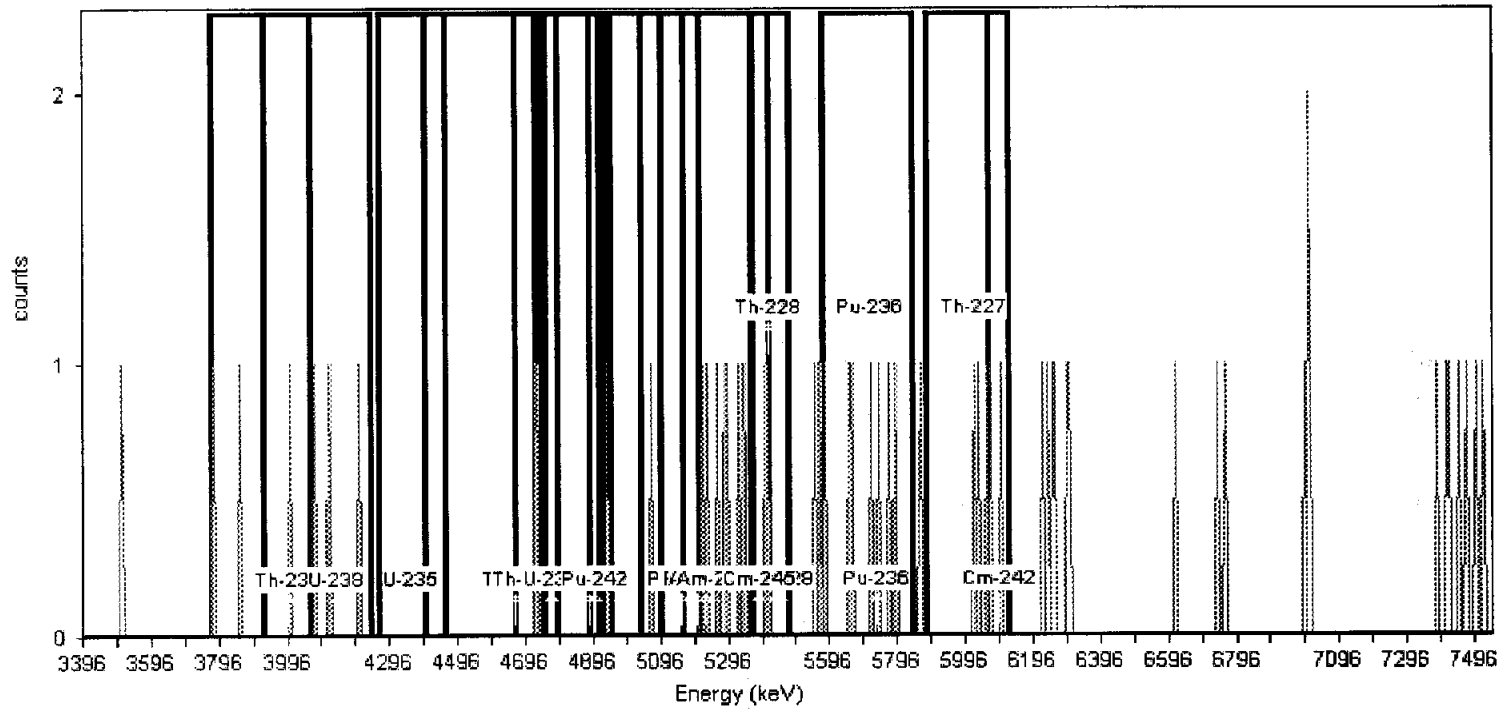
Acquisition

Detector: AV48 , SN: AV48
Acquisition Start Date: 4/20/2007 4:36:41PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV48
Calibration Date: 3/28/2007 4:08:22PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.56% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 53.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	3.00	3.125E-003	2.083E-003
U-238	4.14	3.93	4.24	4.00	4.167E-003	2.329E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
Am-243	5.23	5.04	5.37	8.00	8.333E-003	3.125E-003
Th-228	5.41	5.16	5.47	9.00	9.375E-003	3.294E-003
Am-243	5.25	5.20	5.26	3.00	3.125E-003	2.083E-003
Th-228	5.44	5.24	5.52	7.00	7.292E-003	2.946E-003
Th-228	5.45	5.27	5.57	8.00	8.333E-003	3.125E-003
Cm-245	5.39	5.36	5.41	2.00	2.083E-003	1.804E-003
Pu-236	5.72	5.57	5.84	7.00	7.292E-003	2.946E-003
Pu-236	5.73	5.60	5.86	6.00	6.250E-003	2.756E-003
Th-227	6.02	5.89	6.13	5.00	5.208E-003	2.552E-003
Cm-242	6.10	6.07	6.13	2.00	2.083E-003	1.804E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:39:17AM 4/21/2007

Sample

Sample Name: AV49 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

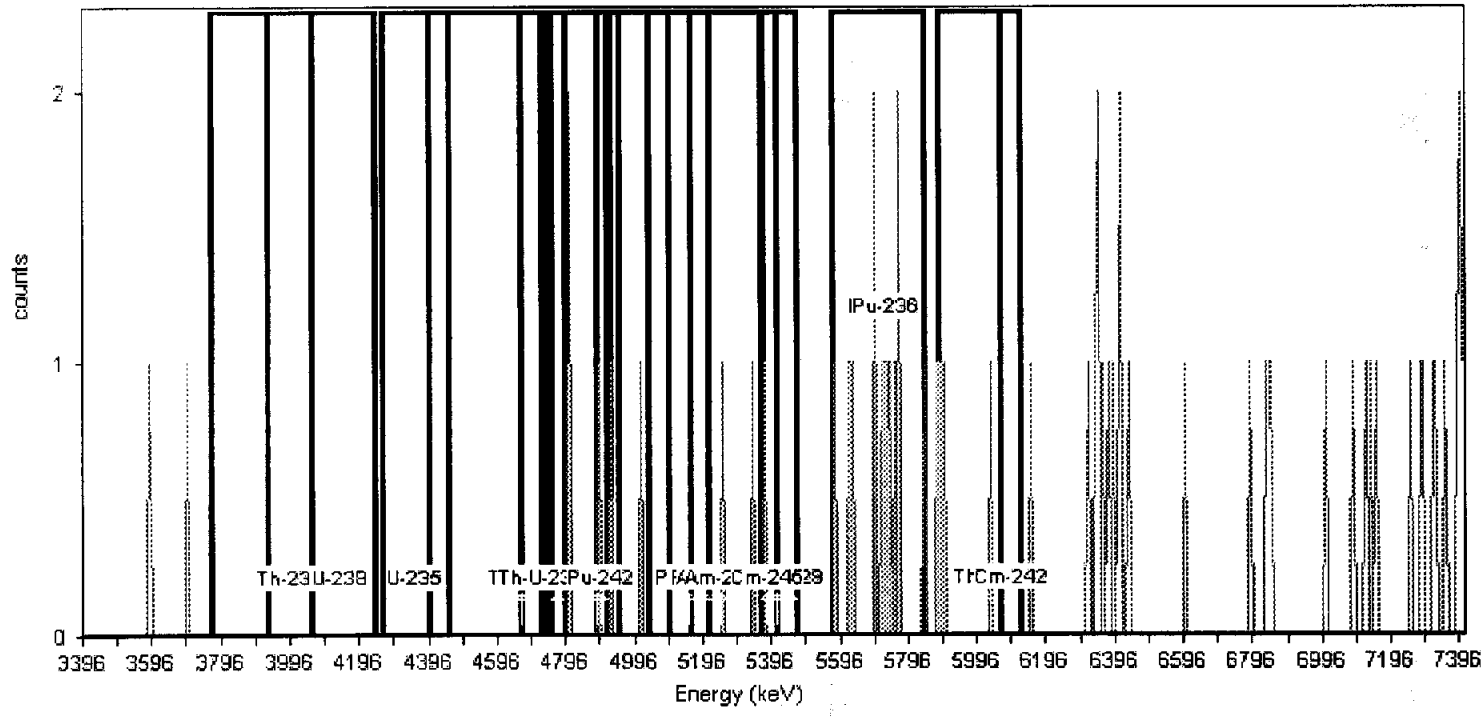
Acquisition

Detector: AV49 , SN: AV49
Acquisition Start Date: 4/20/2007 4:36:42PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV49
Calibration Date: 3/28/2007 4:09:09PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.73% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 60.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	4.93	4.00	4.167E-003	2.329E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	2.00	2.083E-003	1.804E-003
Th-228	5.41	5.16	5.47	3.00	3.125E-003	2.083E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.27	5.57	2.00	2.083E-003	1.804E-003
Cm-245	5.39	5.36	5.41	1.00	1.042E-003	1.473E-003
Pu-236	5.72	5.57	5.84	13.00	1.354E-002	3.898E-003
Pu-236	5.73	5.60	5.86	12.00	1.250E-002	3.756E-003
Th-227	6.02	5.89	6.13	4.00	4.167E-003	2.329E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:27AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV50
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

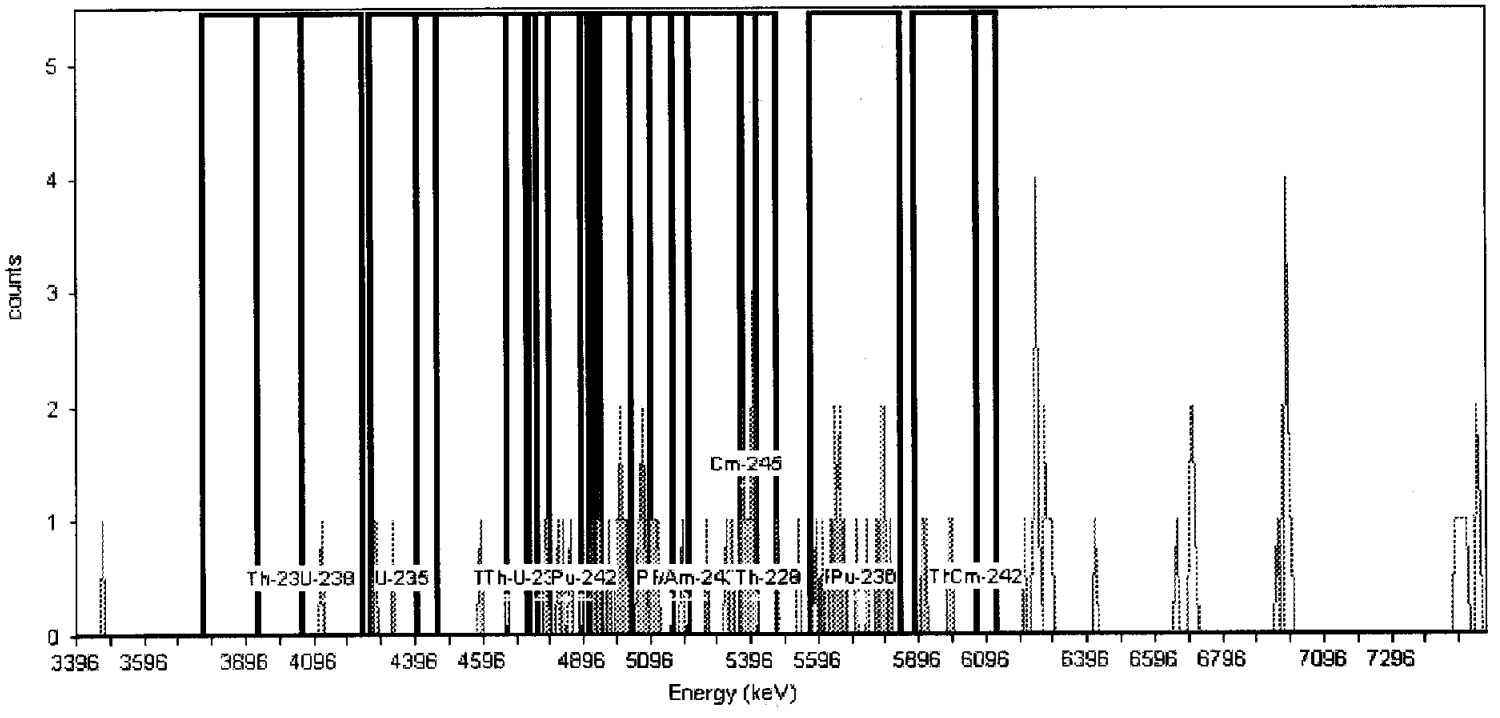
Acquisition

Detector: AV50 , SN: AV50
Acquisition Start Date: 4/20/2007 4:36:43PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV50
Calibration Date: 3/28/2007 4:09:16PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.19% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Total Background Counts: 104.00

Nuclide Library: Background ROI Library

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.72	5.10	20.00	2.083E-002	4.774E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	17.00	1.771E-002	4.419E-003
Pu-239	5.20	5.03	5.28	11.00	1.146E-002	3.608E-003
Am-243	5.23	5.04	5.37	16.00	1.667E-002	4.295E-003
Th-228	5.41	5.16	5.47	15.00	1.563E-002	4.167E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	14.00	1.458E-002	4.034E-003
Th-228	5.45	5.27	5.57	14.00	1.458E-002	4.034E-003
Cm-245	5.39	5.36	5.41	9.00	9.375E-003	3.294E-003
Pu-236	5.72	5.57	5.84	17.00	1.771E-002	4.419E-003
Pu-236	5.73	5.60	5.86	16.00	1.667E-002	4.295E-003
Th-227	6.02	5.89	6.13	4.00	4.167E-003	2.329E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:15AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV51
Comment:

Spectrum #1 Analysis #1

Batch

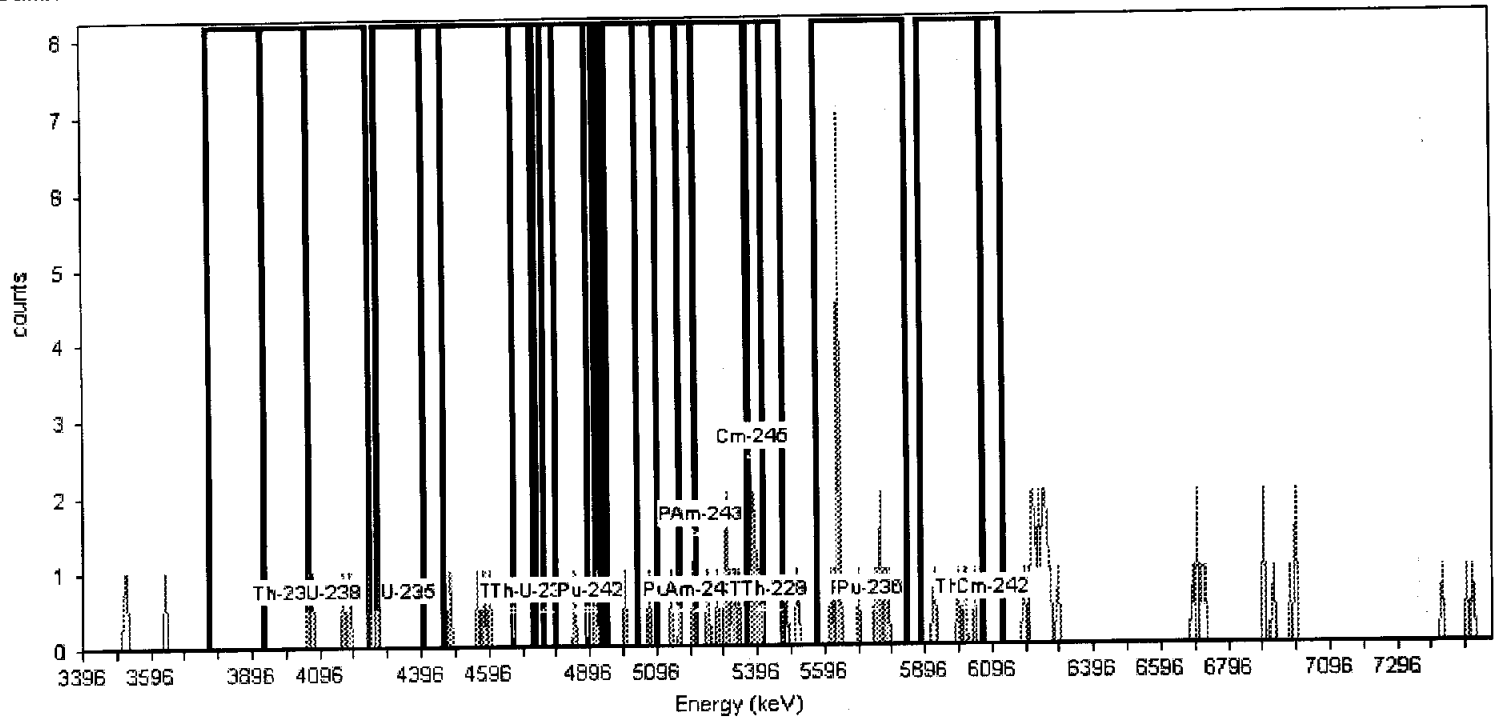
Batch Name: April2007
Description:

Acquisition

Detector: AV51 , SN:
Acquisition Start Date: 4/20/2007 4:36:45PM
Live Time: 960.00 min.
Real Time: 1,000.54 min.
Calibration Name: Mar2007_AV51
Calibration Date: 3/28/2007 4:07:55PM

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 26.74% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 88.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	5.00	5.208E-003	2.552E-003
U-235	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	4.00	4.167E-003	2.329E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Pu-239	5.20	5.03	5.28	6.00	6.250E-003	2.756E-003
Am-243	5.23	5.04	5.37	12.00	1.250E-002	3.756E-003
Th-228	5.41	5.16	5.47	16.00	1.667E-002	4.295E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Th-228	5.45	5.27	5.57	15.00	1.563E-002	4.167E-003
Cm-245	5.39	5.36	5.41	6.00	6.250E-003	2.756E-003
Pu-236	5.72	5.57	5.84	18.00	1.875E-002	4.541E-003
Pu-236	5.73	5.60	5.86	18.00	1.875E-002	4.541E-003
Th-227	6.02	5.89	6.13	4.00	4.167E-003	2.329E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:18AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV52
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

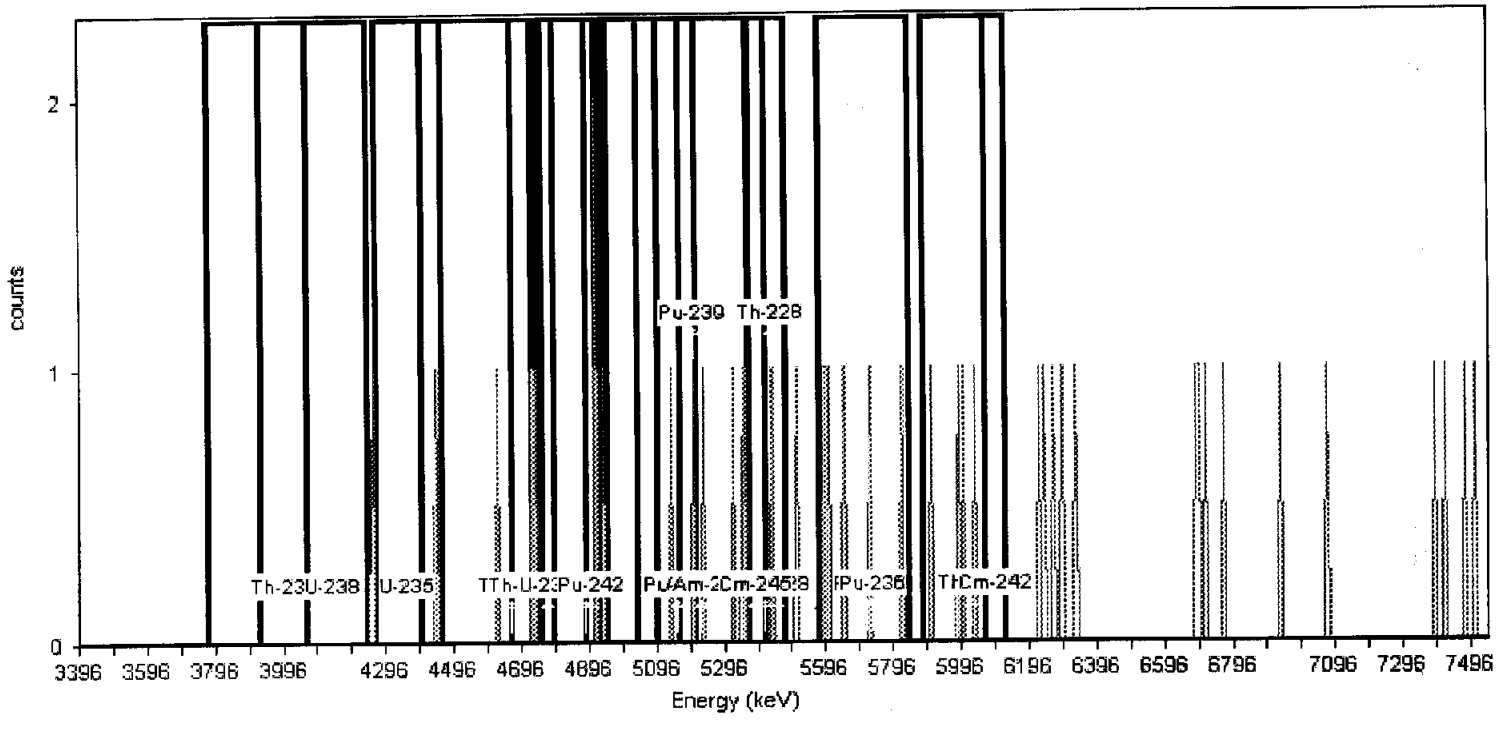
Acquisition

Detector: AV52 , SN:
Acquisition Start Date: 4/20/2007 4:36:47PM
Live Time: 960.00 min.
Real Time: 1,000.54 min.
Calibration Name: Mar2007_AV52
Calibration Date: 3/28/2007 1:39:54PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.48% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 43.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	4.93	4.00	4.167E-003	2.329E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	2.00	2.083E-003	1.804E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Pu-239	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	6.00	6.250E-003	2.756E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Th-228	5.45	5.27	5.57	5.00	5.208E-003	2.552E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	7.00	7.292E-003	2.946E-003
Pu-236	5.73	5.60	5.86	5.00	5.208E-003	2.552E-003
Th-227	6.02	5.89	6.13	4.00	4.167E-003	2.329E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:21AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV53
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

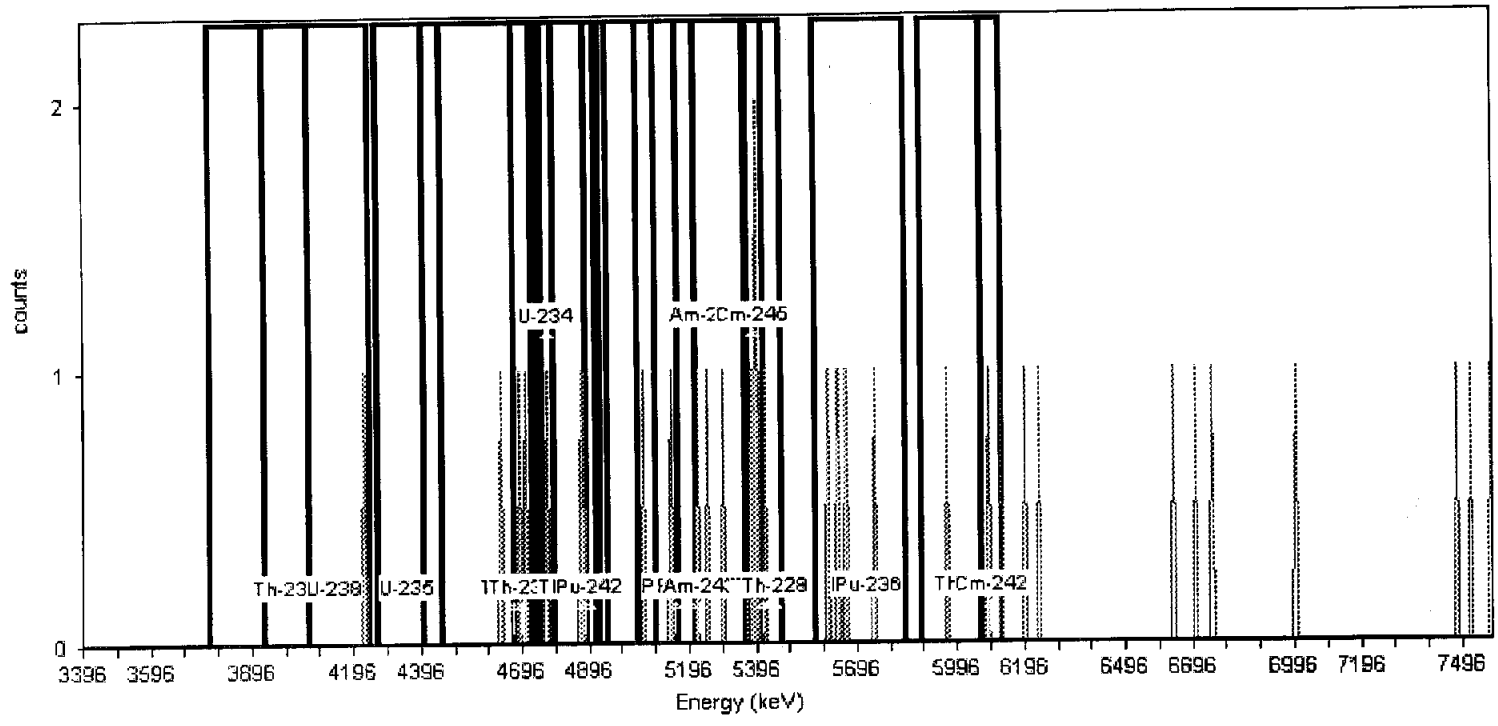
Acquisition

Detector: AV53 , SN:
Acquisition Start Date: 4/20/2007 4:36:49PM
Live Time: 960.00 min.
Real Time: 1,000.54 min.
Calibration Name: Mar2007_AV53
Calibration Date: 3/29/2007 7:57:48AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.62% +/- 0.30% TPU(2 sigma)



General Analysis

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

Total Background Counts: 35.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
Th-230	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Po-209	4.88	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.72	5.10	4.00	4.167E-003	2.329E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Pu-239	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
Am-243	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	9.00	9.375E-003	3.294E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	8.00	8.333E-003	3.125E-003
Th-228	5.45	5.27	5.57	7.00	7.292E-003	2.946E-003
Cm-245	5.39	5.36	5.41	5.00	5.208E-003	2.552E-003
Pu-236	5.72	5.57	5.84	5.00	5.208E-003	2.552E-003
Pu-236	5.73	5.60	5.86	5.00	5.208E-003	2.552E-003
Th-227	6.02	5.89	6.13	3.00	3.125E-003	2.083E-003
Cm-242	6.10	6.07	6.13	2.00	2.083E-003	1.804E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:25AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV54
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

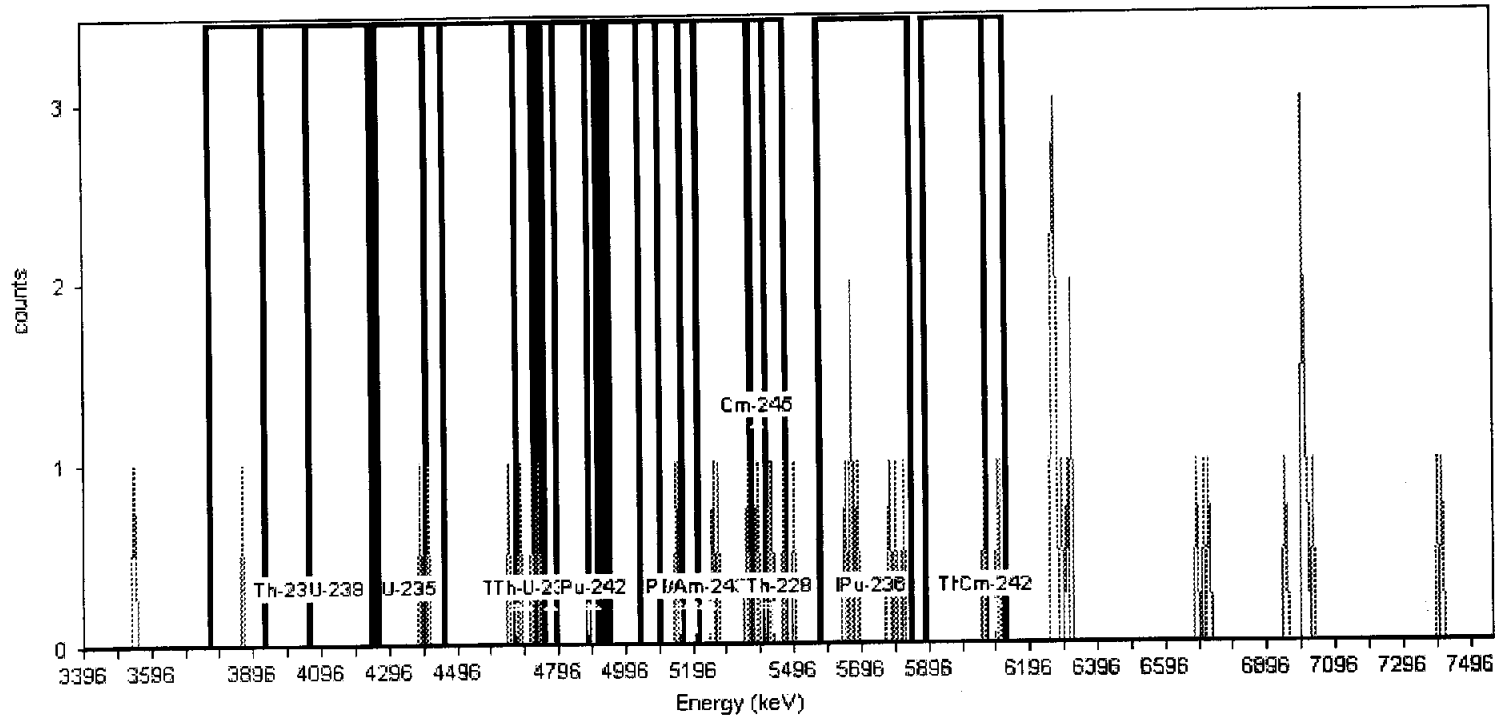
Acquisition

Detector: AV54 , SN:
Acquisition Start Date: 4/20/2007 4:36:51PM
Live Time: 960.00 min.
Real Time: 1,000.54 min.
Calibration Name: Mar2007_AV54
Calibration Date: 3/29/2007 7:57:55AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.90% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 48.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	5.00	5.208E-003	2.552E-003
Th-230	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Po-209	4.88	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	1.00	1.042E-003	1.473E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.04	5.37	4.00	4.167E-003	2.329E-003
Th-228	5.41	5.16	5.47	7.00	7.292E-003	2.946E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	8.00	8.333E-003	3.125E-003
Th-228	5.45	5.27	5.57	7.00	7.292E-003	2.946E-003
Cm-245	5.39	5.36	5.41	1.00	1.042E-003	1.473E-003
Pu-236	5.72	5.57	5.84	7.00	7.292E-003	2.946E-003
Pu-236	5.73	5.60	5.86	7.00	7.292E-003	2.946E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:28AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV55
Comment:

Spectrum #1 Analysis #1

Batch

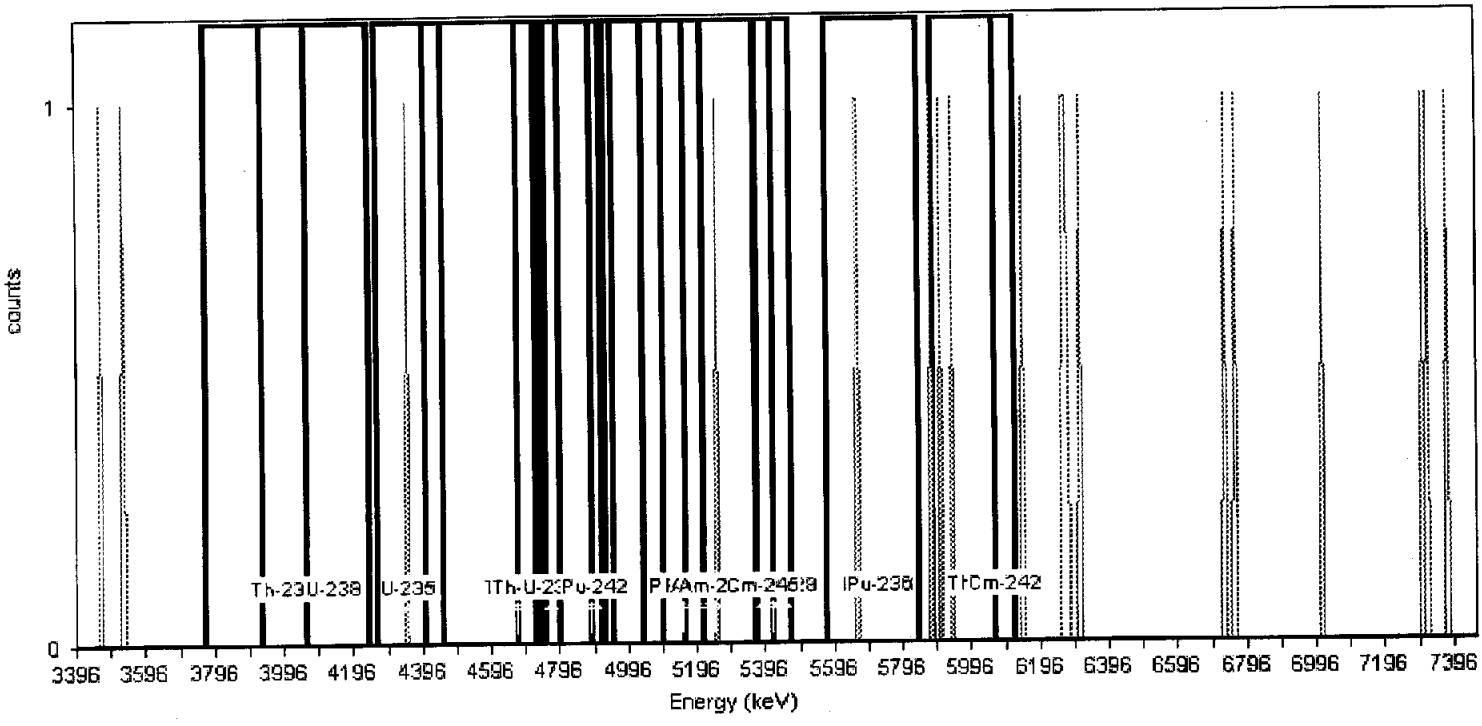
Batch Name: April2007
Description:

Acquisition

Detector: AV55 , SN:
Acquisition Start Date: 4/20/2007 4:36:53PM
Live Time: 960.00 min.
Real Time: 1,000.54 min.
Calibration Name: Mar2007_AV55
Calibration Date: 3/29/2007 7:57:37AM

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 26.62% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 20.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	2.00	2.083E-003	1.804E-003
Pu-236	5.73	5.60	5.86	2.00	2.083E-003	1.804E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:31AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV56
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

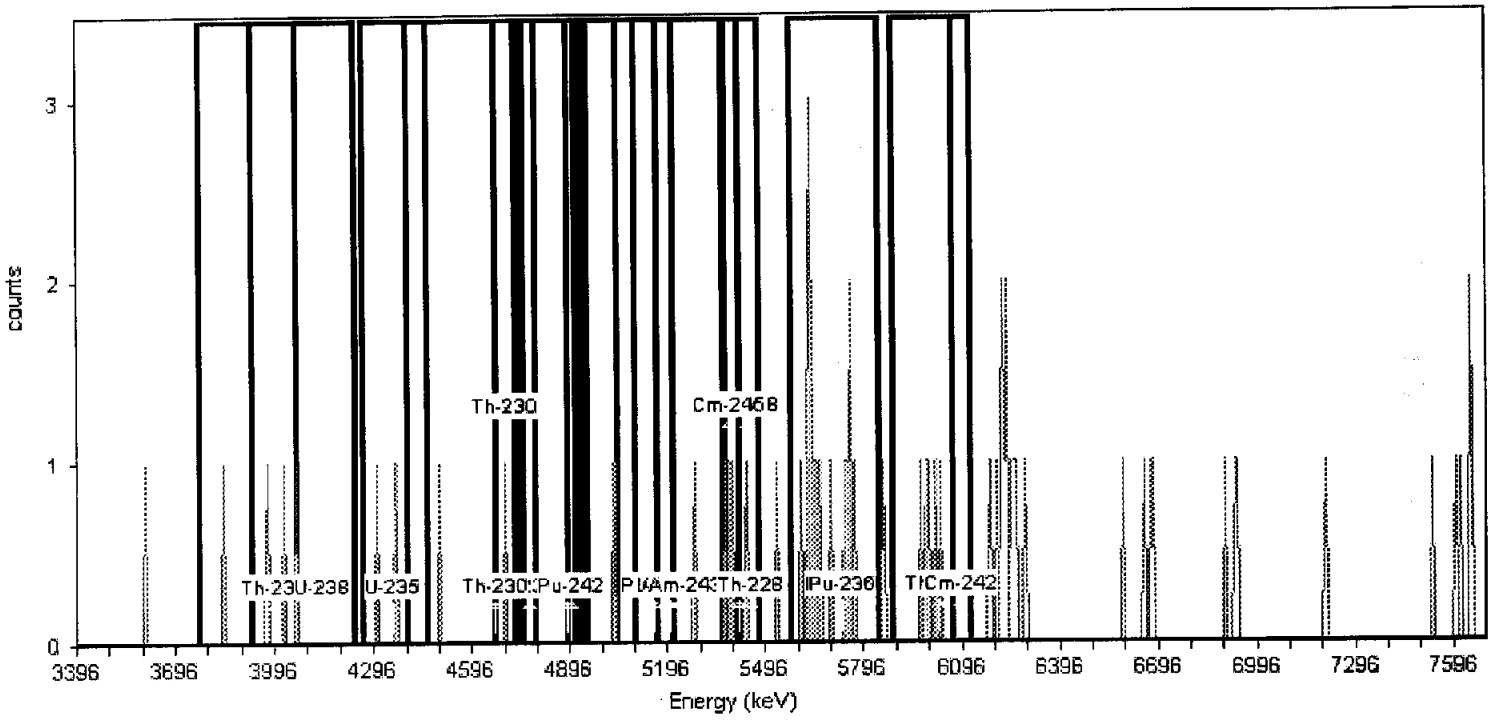
Acquisition

Detector: AV56 , SN:
Acquisition Start Date: 4/20/2007 4:36:54PM
Live Time: 960.00 min.
Real Time: 1,000.54 min.
Calibration Name: Mar2007_AV56
Calibration Date: 3/29/2007 7:57:42AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.20% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 62.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.04	5.37	2.00	2.083E-003	1.804E-003
Th-228	5.41	5.16	5.47	5.00	5.208E-003	2.552E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Th-228	5.45	5.27	5.57	6.00	6.250E-003	2.756E-003
Cm-245	5.39	5.36	5.41	3.00	3.125E-003	2.083E-003
Pu-236	5.72	5.57	5.84	15.00	1.563E-002	4.167E-003
Pu-236	5.73	5.60	5.86	16.00	1.667E-002	4.295E-003
Th-227	6.02	5.89	6.13	5.00	5.208E-003	2.552E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003
Th-232	3.99	3.77	4.06	4.00	4.167E-003	2.329E-003
U-238	4.14	3.93	4.24	3.00	3.125E-003	2.083E-003
U-235	4.35	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:34AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV57
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

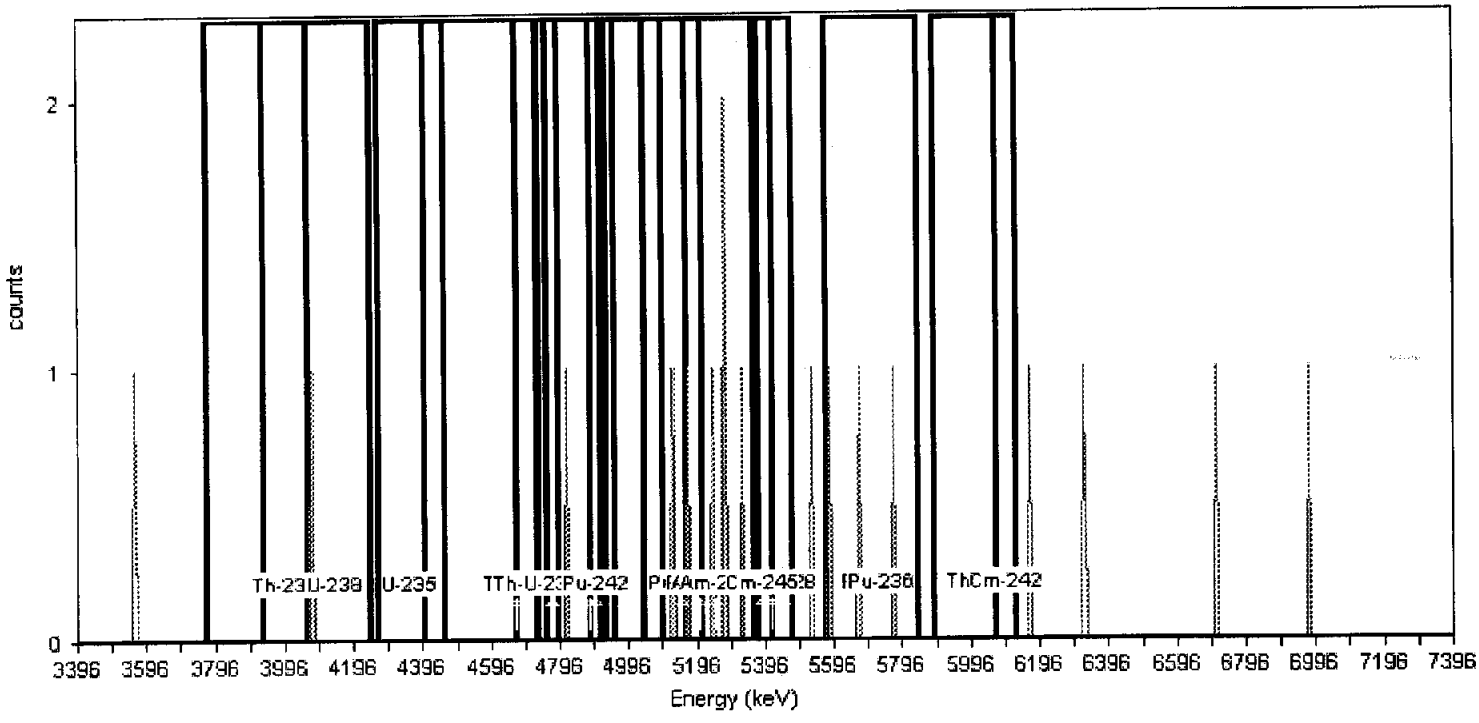
Acquisition

Detector: AV57 , SN:
Acquisition Start Date: 4/20/2007 4:36:55PM
Live Time: 960.00 min.
Real Time: 1,000.54 min.
Calibration Name: Apr2007_AV57
Calibration Date: 4/10/2007 8:54:16AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.21% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 17.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Pu-239	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
Am-243	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	5.00	5.208E-003	2.552E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Th-228	5.45	5.27	5.57	4.00	4.167E-003	2.329E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	3.00	3.125E-003	2.083E-003
Pu-236	5.73	5.60	5.86	2.00	2.083E-003	1.804E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:17:12AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV58
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

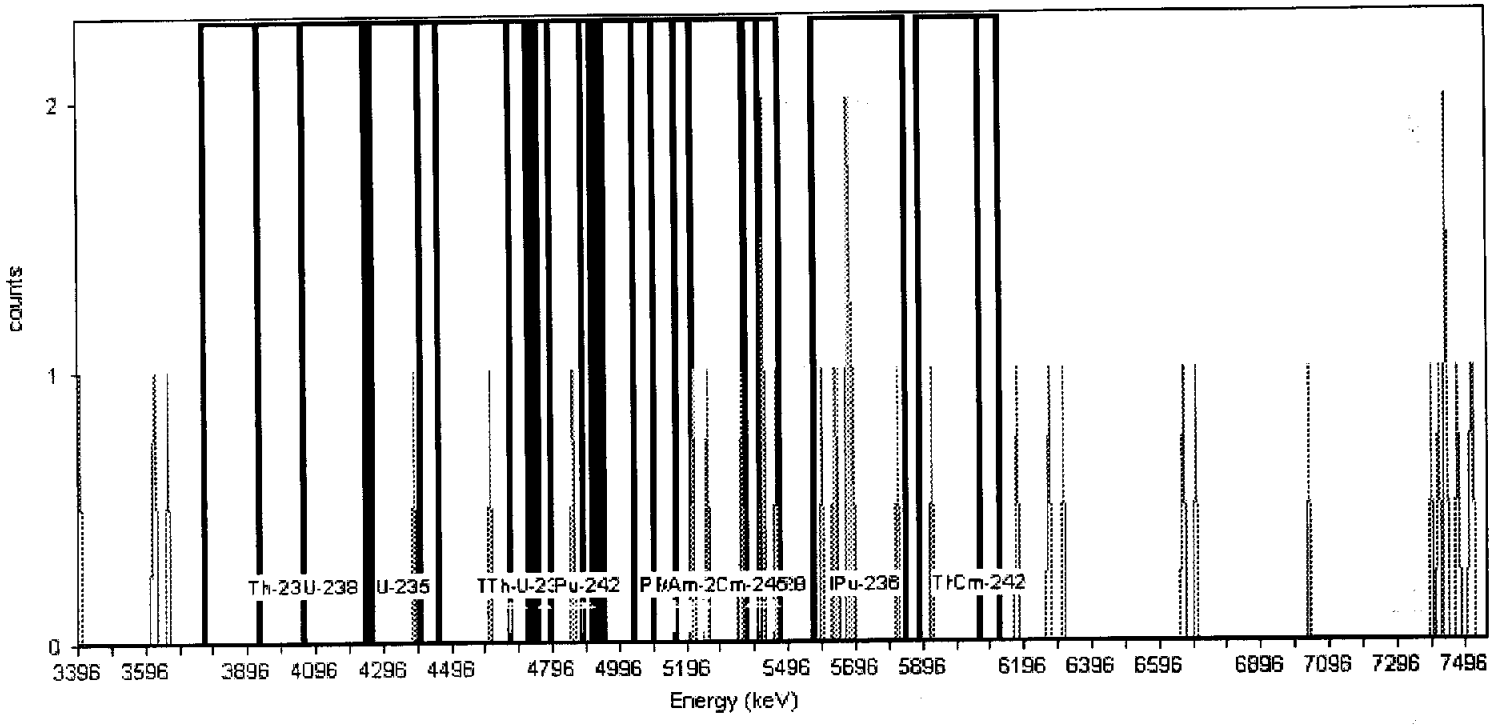
Acquisition

Detector: AV58 , SN:
Acquisition Start Date: 4/20/2007 4:36:56PM
Live Time: 960.00 min.
Real Time: 1,000.54 min.
Calibration Name: Mar2007_AV58
Calibration Date: 3/29/2007 11:27:10AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.69% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 35.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	6.00	6.250E-003	2.756E-003
Am-243	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Th-228	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Th-228	5.45	5.27	5.57	4.00	4.167E-003	2.329E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	8.00	8.333E-003	3.125E-003
Pu-236	5.73	5.60	5.86	7.00	7.292E-003	2.946E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:53AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV59
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

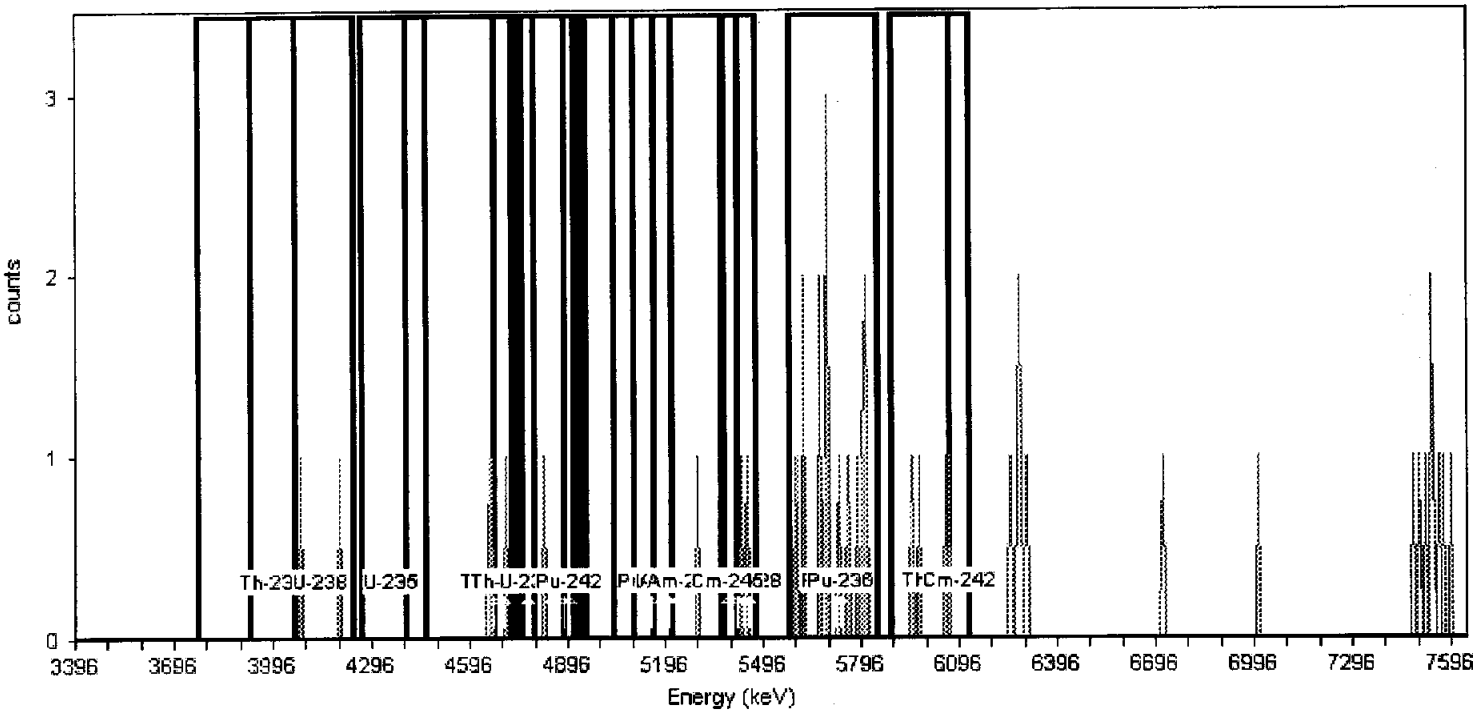
Acquisition

Detector: AV59 , SN:
Acquisition Start Date: 4/20/2007 4:36:57PM
Live Time: 960.00 min.
Real Time: 960.08 min.
Calibration Name: Mar2007_AV59
Calibration Date: 3/29/2007 11:36:54AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.84% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Total Background Counts: 47.00

Nuclide Library: Background ROI Library

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	1.00	1.042E-003	1.473E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	3.00	3.125E-003	2.083E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.27	5.57	3.00	3.125E-003	2.083E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	16.00	1.667E-002	4.295E-003
Pu-236	5.73	5.60	5.86	15.00	1.563E-002	4.167E-003
Th-227	6.02	5.89	6.13	4.00	4.167E-003	2.329E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:59AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV66
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

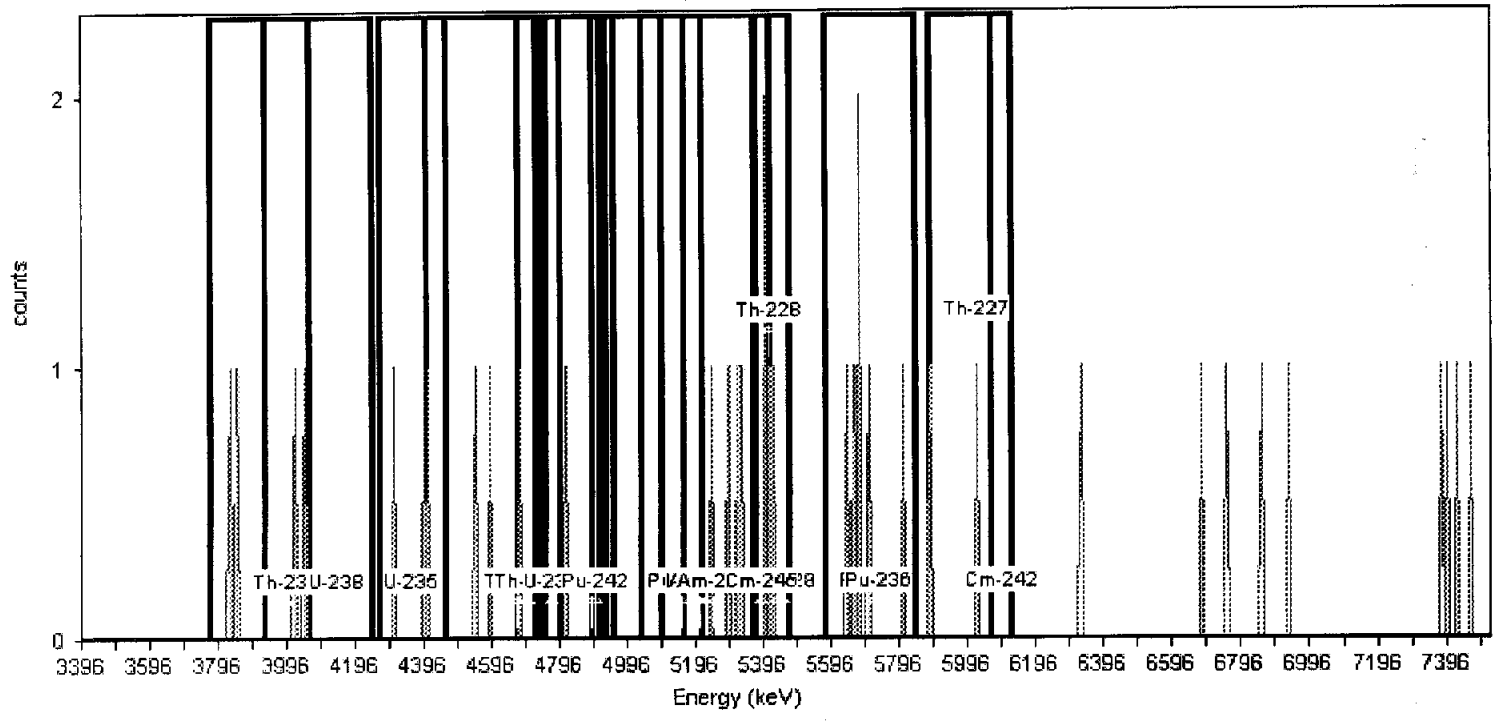
Acquisition

Detector: AV66 , SN:
Acquisition Start Date: 4/20/2007 4:36:58PM
Live Time: 960.00 min.
Real Time: 960.08 min.
Calibration Name: Mar2007_AV66
Calibration Date: 3/29/2007 2:15:00PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.33% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Total Background Counts: 36.00

Nuclide Library: Background ROI Library

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	4.00	4.167E-003	2.329E-003
U-238	4.14	3.93	4.24	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	3.00	3.125E-003	2.083E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	1.00	1.042E-003	1.473E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	4.00	4.167E-003	2.329E-003
Th-228	5.41	5.16	5.47	8.00	8.333E-003	3.125E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	8.00	8.333E-003	3.125E-003
Th-228	5.45	5.27	5.57	7.00	7.292E-003	2.946E-003
Cm-245	5.39	5.36	5.41	3.00	3.125E-003	2.083E-003
Pu-236	5.72	5.57	5.84	6.00	6.250E-003	2.756E-003
Pu-236	5.73	5.60	5.86	6.00	6.250E-003	2.756E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:06AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV67
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

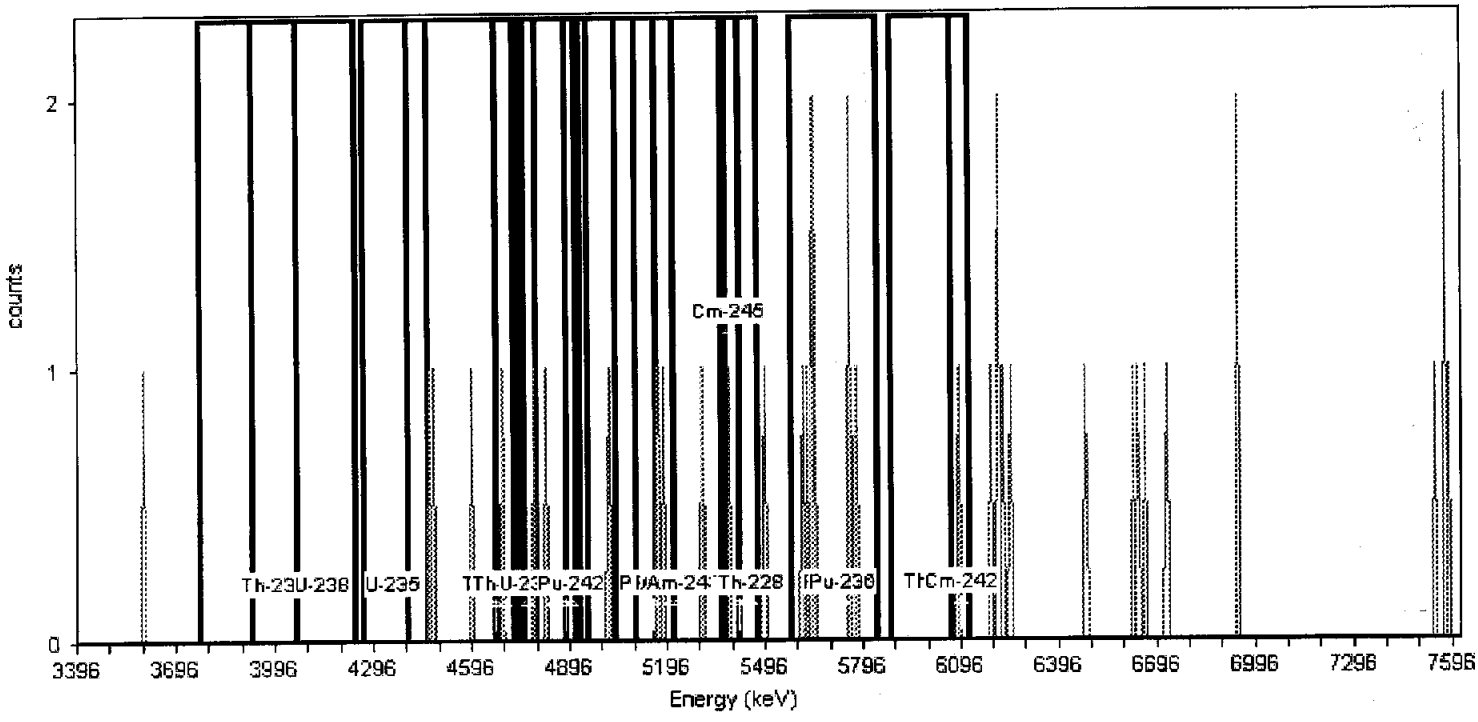
Acquisition

Detector: AV67 , SN:
Acquisition Start Date: 4/20/2007 4:36:59PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV67
Calibration Date: 3/29/2007 2:03:55PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.69% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 40.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.04	5.37	4.00	4.167E-003	2.329E-003
Th-228	5.41	5.16	5.47	5.00	5.208E-003	2.552E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Th-228	5.45	5.27	5.57	4.00	4.167E-003	2.329E-003
Cm-245	5.39	5.36	5.41	1.00	1.042E-003	1.473E-003
Pu-236	5.72	5.57	5.84	9.00	9.375E-003	3.294E-003
Pu-236	5.73	5.60	5.86	9.00	9.375E-003	3.294E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:09AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV68
Comment:

Spectrum #1 Analysis #1

Batch

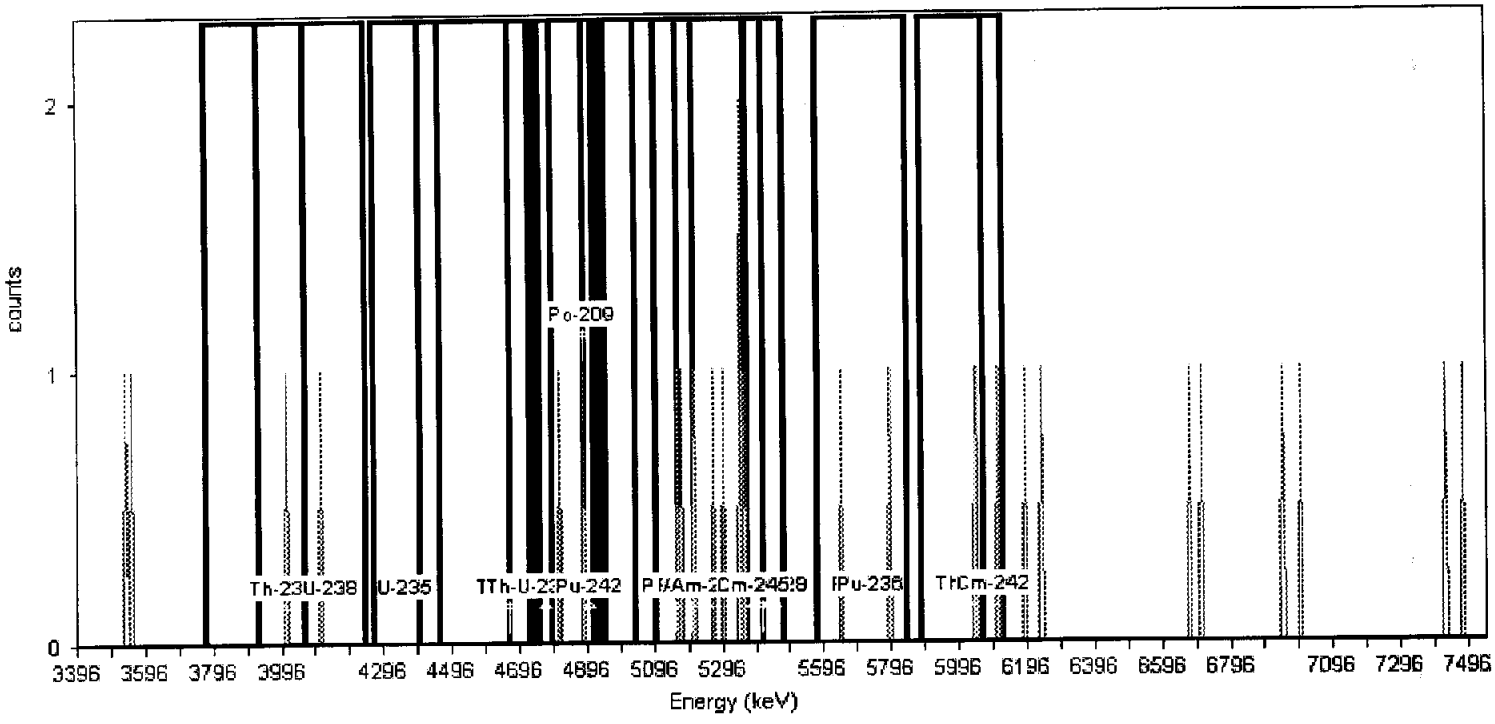
Batch Name: April2007
Description:

Acquisition

Detector: AV68 , SN:
Acquisition Start Date: 4/20/2007 4:37:00PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV68
Calibration Date: 3/29/2007 2:04:04PM

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.80% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 26.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
Am-243	5.23	5.04	5.37	8.00	8.333E-003	3.125E-003
Th-228	5.41	5.16	5.47	8.00	8.333E-003	3.125E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Th-228	5.45	5.27	5.57	5.00	5.208E-003	2.552E-003
Cm-245	5.39	5.36	5.41	1.00	1.042E-003	1.473E-003
Pu-236	5.72	5.57	5.84	2.00	2.083E-003	1.804E-003
Pu-236	5.73	5.60	5.86	2.00	2.083E-003	1.804E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:15AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV69
Comment:

Spectrum #1 Analysis #1

Batch

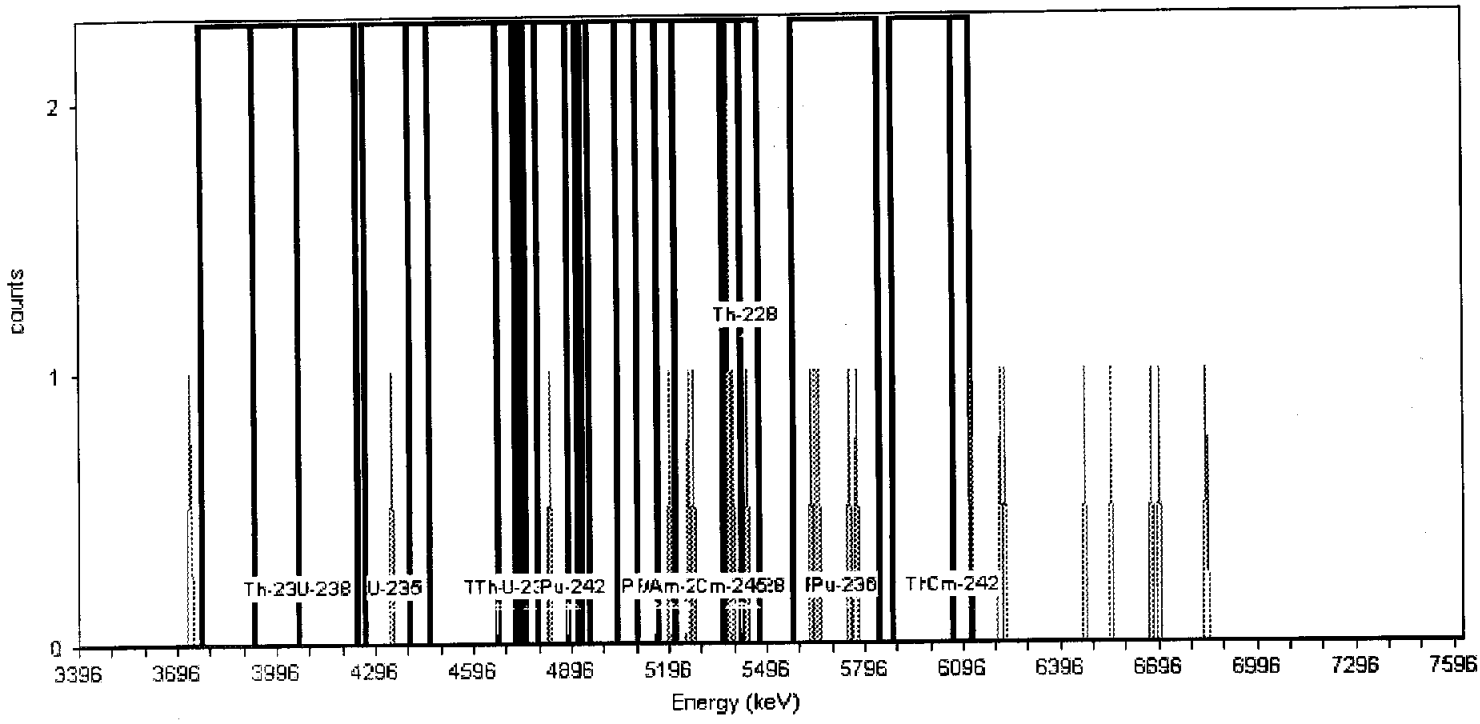
Batch Name: April2007
Description:

Acquisition

Detector: AV69 , SN:
Acquisition Start Date: 4/20/2007 4:37:01PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV69
Calibration Date: 3/29/2007 4:41:46PM

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.79% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 23.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	7.00	7.292E-003	2.946E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Th-228	5.45	5.27	5.57	5.00	5.208E-003	2.552E-003
Cm-245	5.39	5.36	5.41	3.00	3.125E-003	2.083E-003
Pu-236	5.72	5.57	5.84	5.00	5.208E-003	2.552E-003
Pu-236	5.73	5.60	5.86	5.00	5.208E-003	2.552E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:22AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV70
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

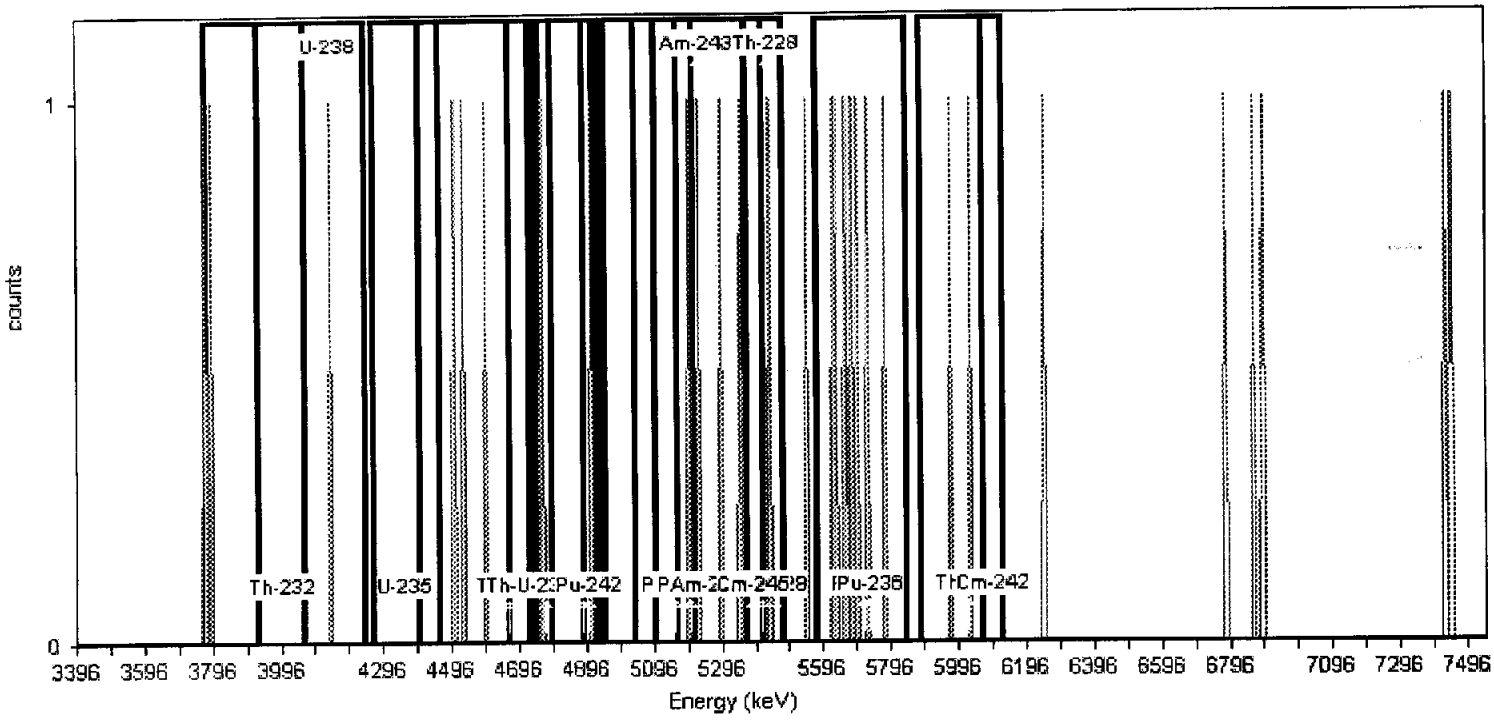
Acquisition

Detector: AV70 , SN:
Acquisition Start Date: 4/20/2007 4:37:02PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV70
Calibration Date: 3/28/2007 1:40:18PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.29% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 31.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	2.00	2.083E-003	1.804E-003
U-238	4.14	3.93	4.24	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	4.73	3.00	3.125E-003	2.083E-003
Th-230	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Po-209	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Pu-239	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.04	5.37	4.00	4.167E-003	2.329E-003
Th-228	5.41	5.16	5.47	5.00	5.208E-003	2.552E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.27	5.57	4.00	4.167E-003	2.329E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	8.00	8.333E-003	3.125E-003
Pu-236	5.73	5.60	5.86	8.00	8.333E-003	3.125E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:25AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV71
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

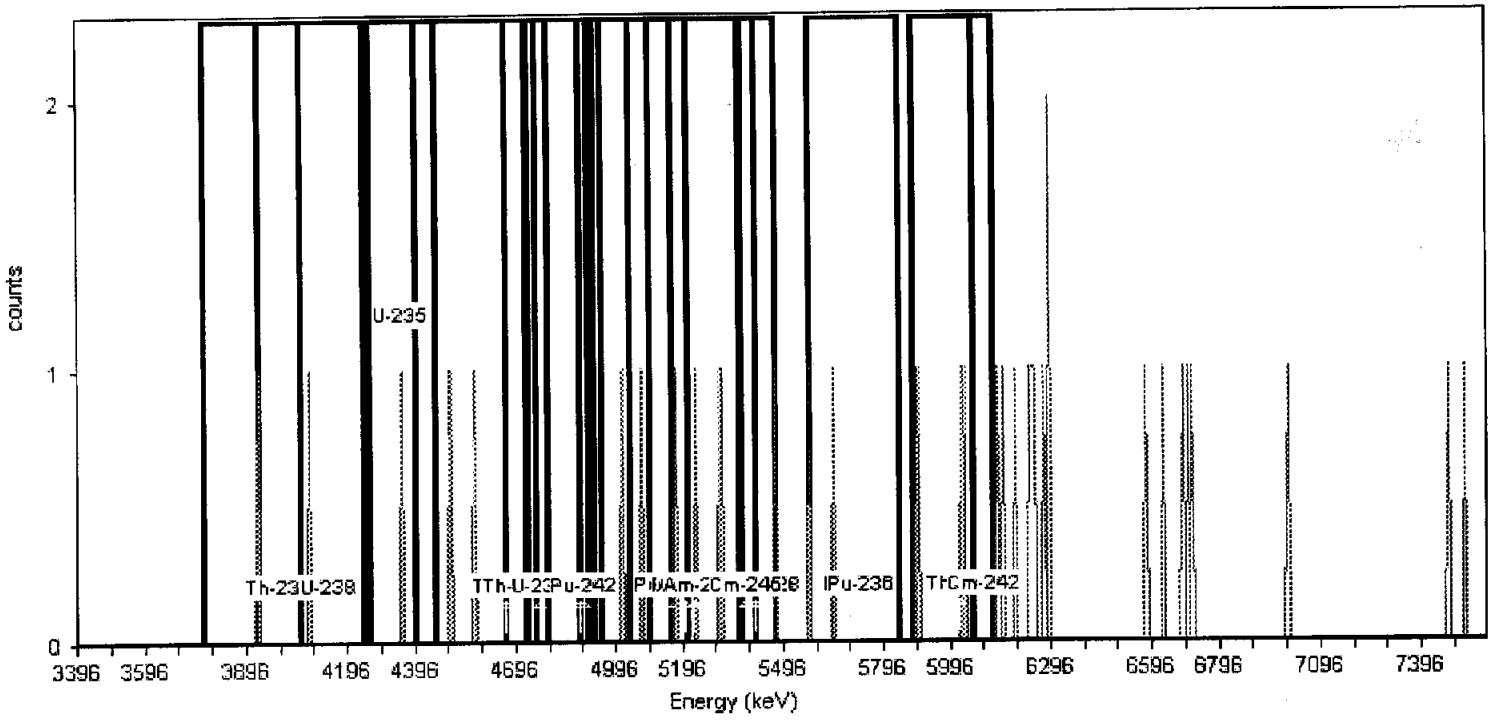
Acquisition

Detector: AV71 , SN:
Acquisition Start Date: 4/20/2007 4:37:02PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV71
Calibration Date: 3/29/2007 4:40:38PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.05% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 34.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	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	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Pu-239	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
Am-243	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	5.00	5.208E-003	2.552E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.27	5.57	3.00	3.125E-003	2.083E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	2.00	2.083E-003	1.804E-003
Pu-236	5.73	5.60	5.86	1.00	1.042E-003	1.473E-003
Th-227	6.02	5.89	6.13	3.00	3.125E-003	2.083E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:28AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV72
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

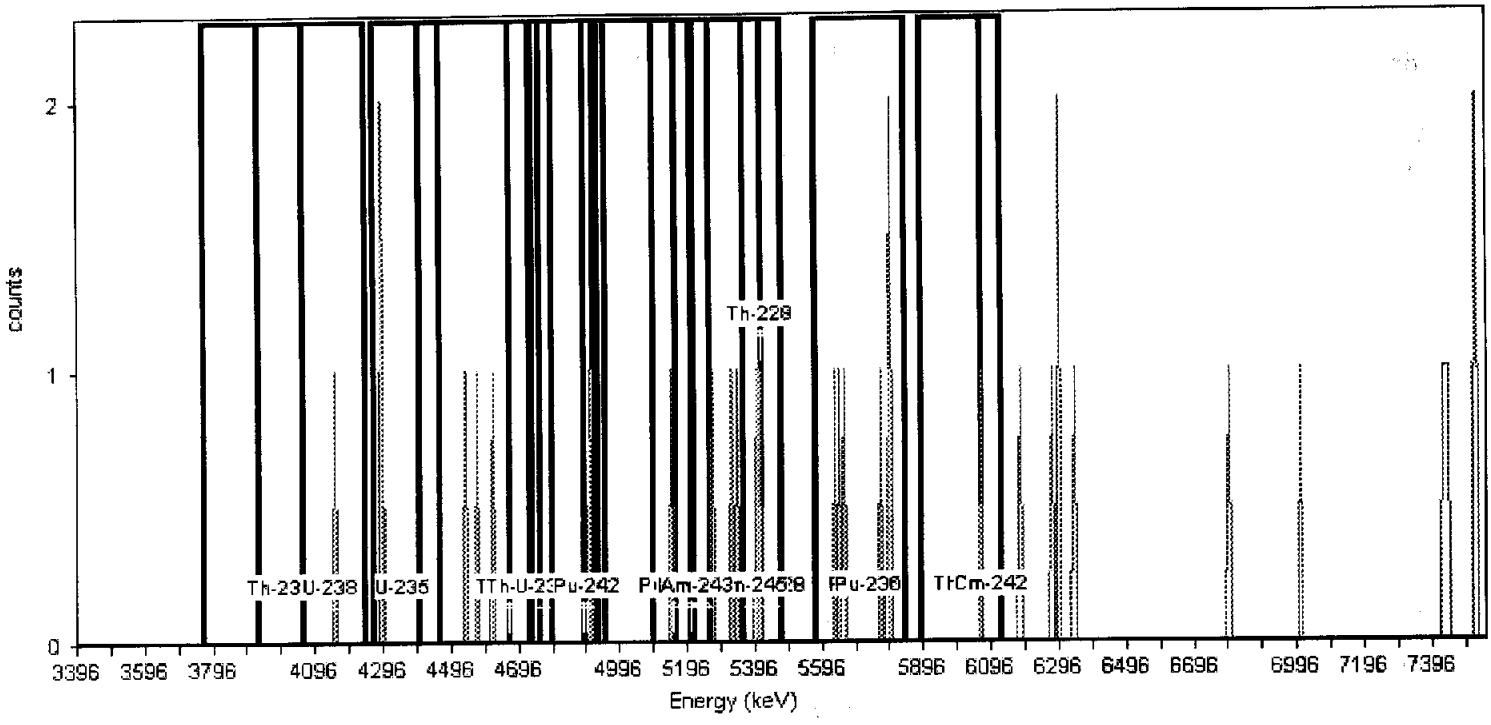
Acquisition

Detector: AV72 , SN:
Acquisition Start Date: 4/20/2007 4:37:03PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Apr2007_AV72
Calibration Date: 4/10/2007 12:11:09PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.09% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 36.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-228	5.41	5.16	5.47	6.00	6.250E-003	2.756E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Th-228	5.45	5.27	5.57	6.00	6.250E-003	2.756E-003
Cm-245	5.39	5.36	5.41	3.00	3.125E-003	2.083E-003
Pu-236	5.72	5.57	5.84	7.00	7.292E-003	2.946E-003
Pu-236	5.73	5.60	5.86	7.00	7.292E-003	2.946E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003
Th-232	3.99	3.77	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	4.35	4.26	4.46	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Pu-239	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.04	5.37	4.00	4.167E-003	2.329E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:31AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV73
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

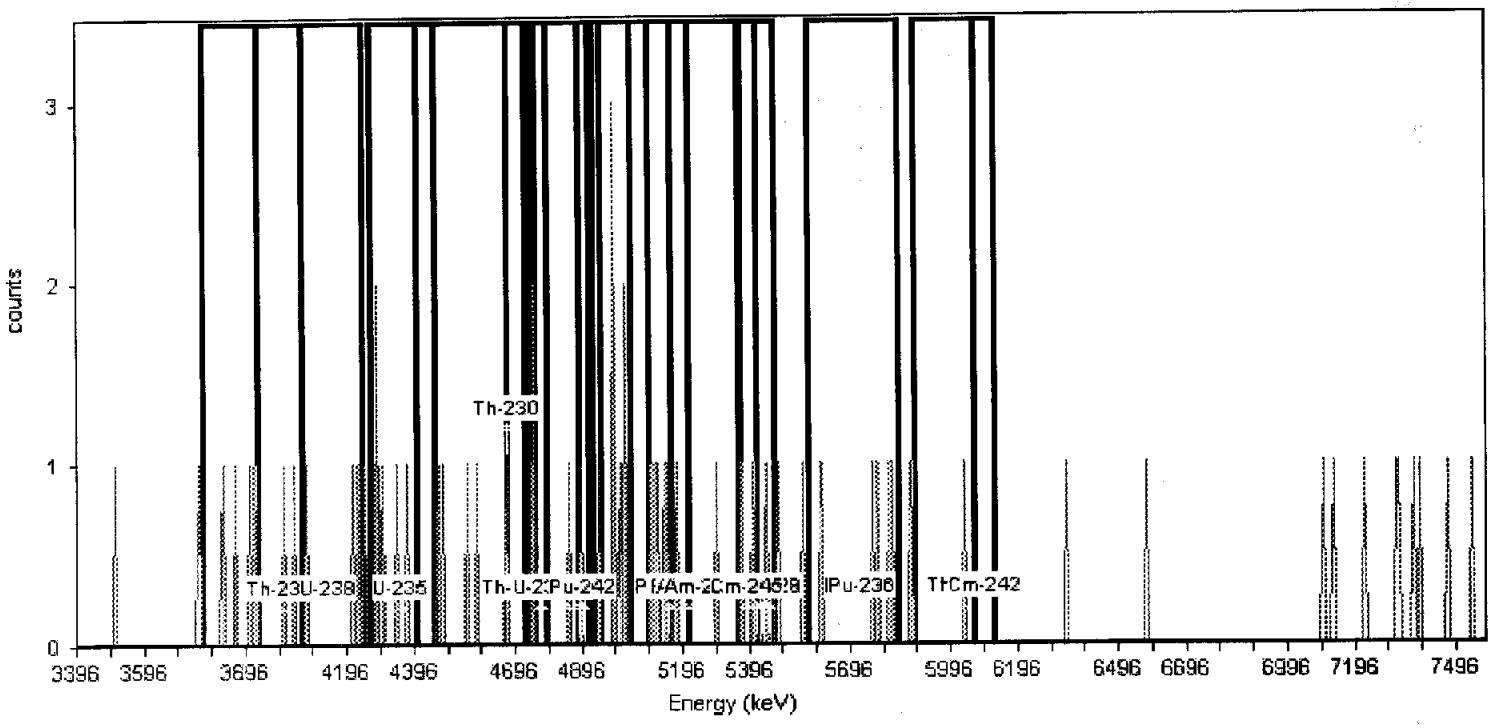
Acquisition

Detector: AV73 , SN:
Acquisition Start Date: 4/20/2007 4:37:04PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Apr2007_AV73a
Calibration Date: 4/10/2007 2:25:57PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.82% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Total Background Counts: 64.00

Nuclide Library: Background ROI Library

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	6.00	6.250E-003	2.756E-003
U-238	4.14	3.93	4.24	5.00	5.208E-003	2.552E-003
U-235	4.35	4.26	4.46	5.00	5.208E-003	2.552E-003
Th-230	4.67	4.40	4.73	5.00	5.208E-003	2.552E-003
Th-230	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Po-209	4.88	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.72	5.10	12.00	1.250E-002	3.756E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	13.00	1.354E-002	3.898E-003
Pu-239	5.20	5.03	5.28	6.00	6.250E-003	2.756E-003
Am-243	5.23	5.04	5.37	8.00	8.333E-003	3.125E-003
Th-228	5.41	5.16	5.47	5.00	5.208E-003	2.552E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Th-228	5.45	5.27	5.57	6.00	6.250E-003	2.756E-003
Cm-245	5.39	5.36	5.41	2.00	2.083E-003	1.804E-003
Pu-236	5.72	5.57	5.84	5.00	5.208E-003	2.552E-003
Pu-236	5.73	5.60	5.86	5.00	5.208E-003	2.552E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:34AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV75
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

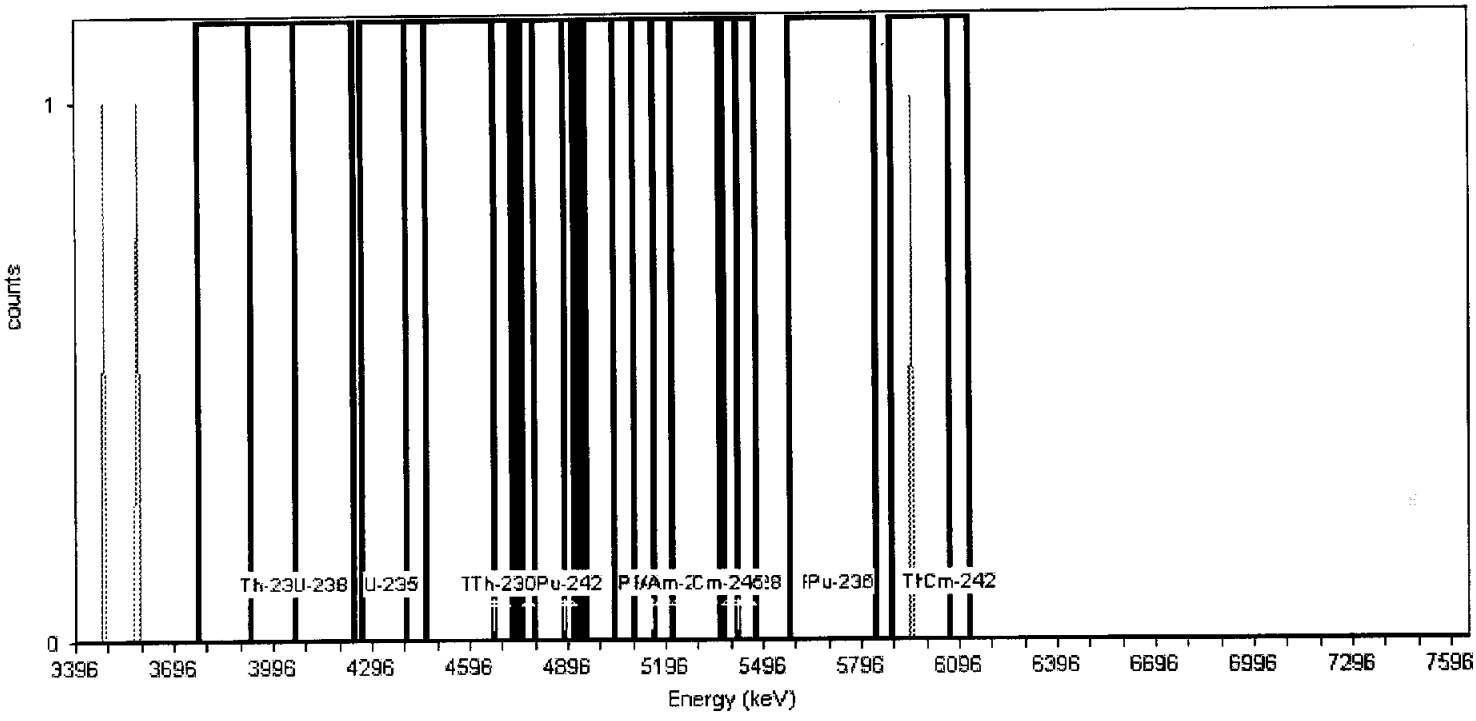
Acquisition

Detector: AV75 , SN: 46-033P6
Acquisition Start Date: 4/20/2007 4:37:06PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV75
Calibration Date: 3/28/2007 7:10:54AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.78% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 3.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:38AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV76
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

Acquisition

Detector: AV76 , SN: 46-033Q4
Acquisition Start Date: 4/20/2007 4:37:07PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV76
Calibration Date: 3/28/2007 7:10:59AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.36% +/- 0.28% TPU(2 sigma)

General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 9.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-003
U-238	4.14	3.93	4.24	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	0.00	0.000E+000	1.473E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:42AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV77
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

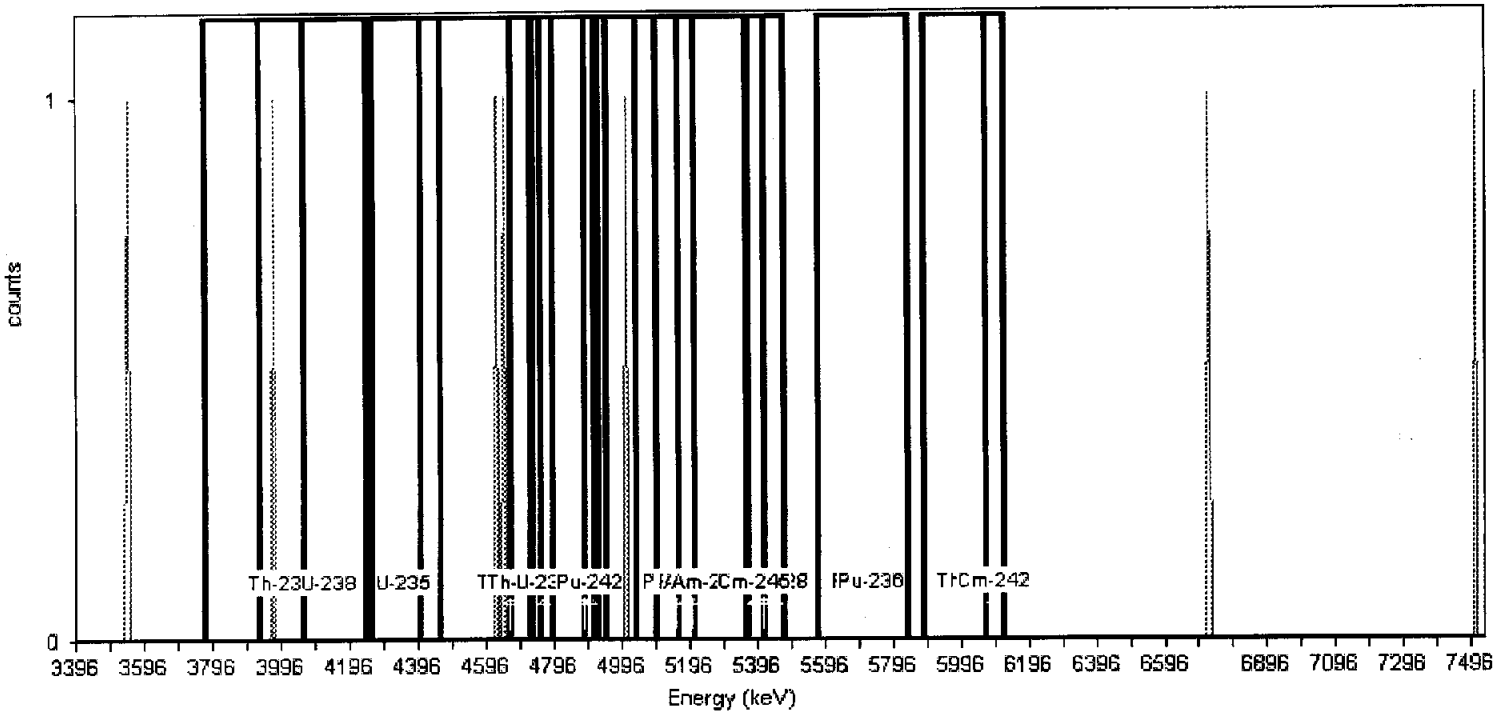
Acquisition

Detector: AV77 , SN: 46-033Q7
Acquisition Start Date: 4/20/2007 4:37:08PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV77
Calibration Date: 3/28/2007 1:40:06PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.77% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 7.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.10	1.00	1.042E-003	1.473E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:45AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV78
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

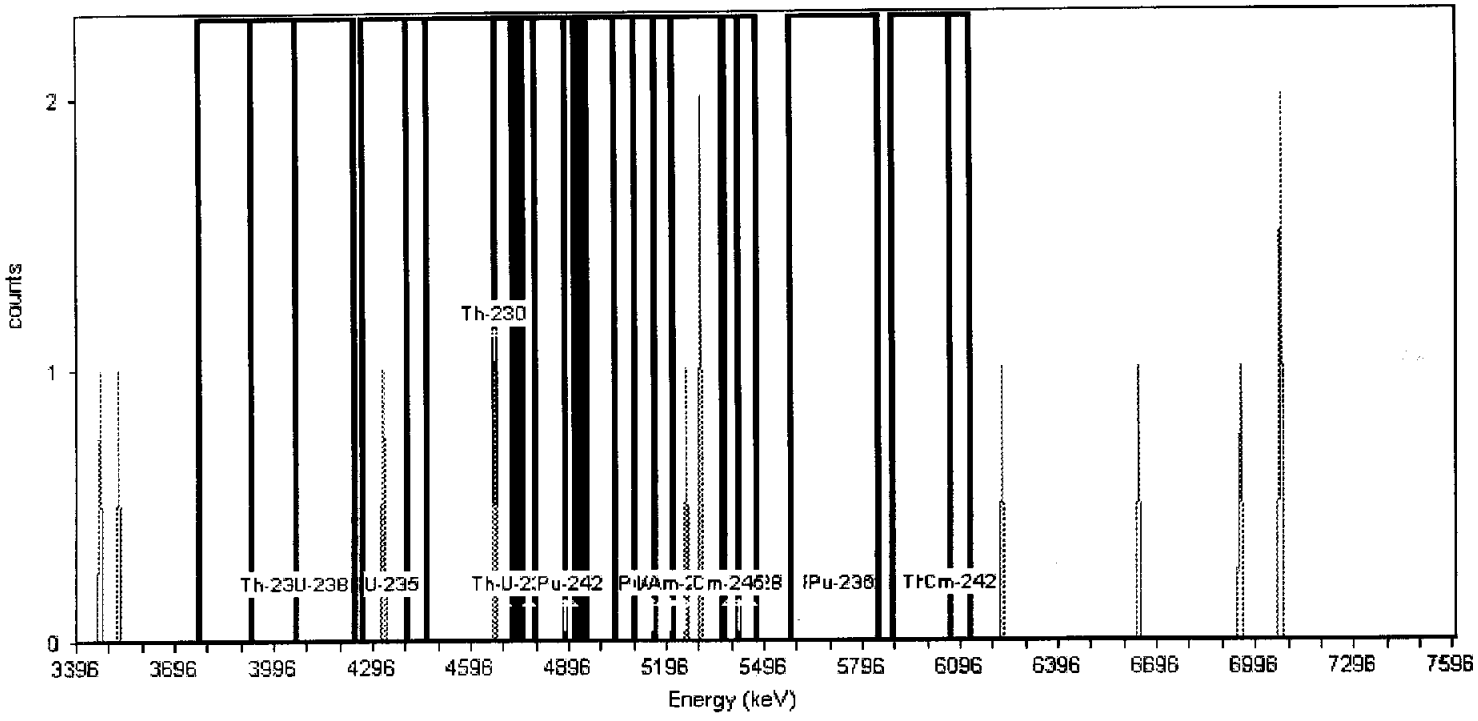
Acquisition

Detector: AV78 , SN: 46-033FF4
Acquisition Start Date: 4/20/2007 4:37:08PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV78a
Calibration Date: 3/27/2007 5:30:11PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

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



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 12.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	0.00	0.000E+000	1.473E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	3.00	3.125E-003	2.083E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Th-228	5.45	5.27	5.57	2.00	2.083E-003	1.804E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:48AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV79
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

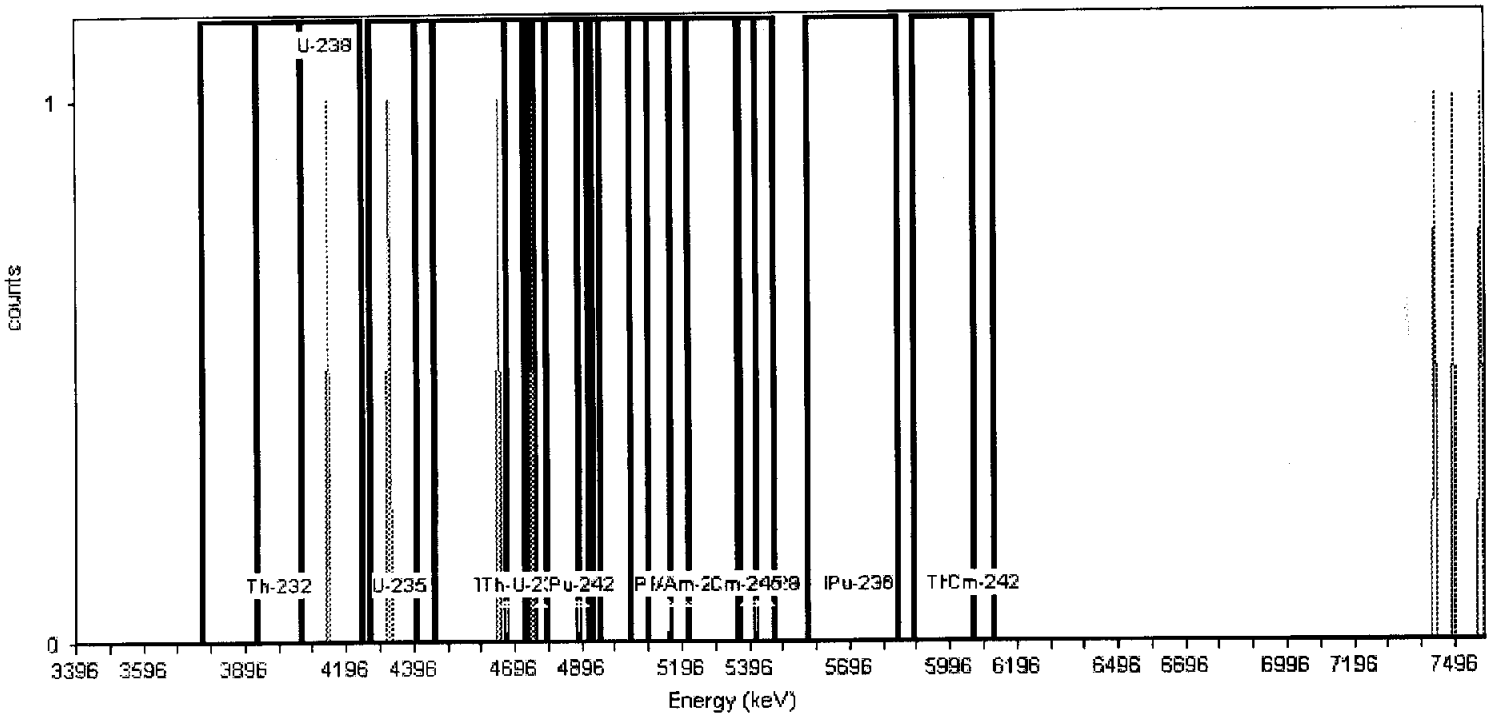
Acquisition

Detector: AV79 , SN: 46-033Q5
Acquisition Start Date: 4/20/2007 4:37:10PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV79
Calibration Date: 3/29/2007 7:09:10PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.00% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 7.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:51AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV80
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

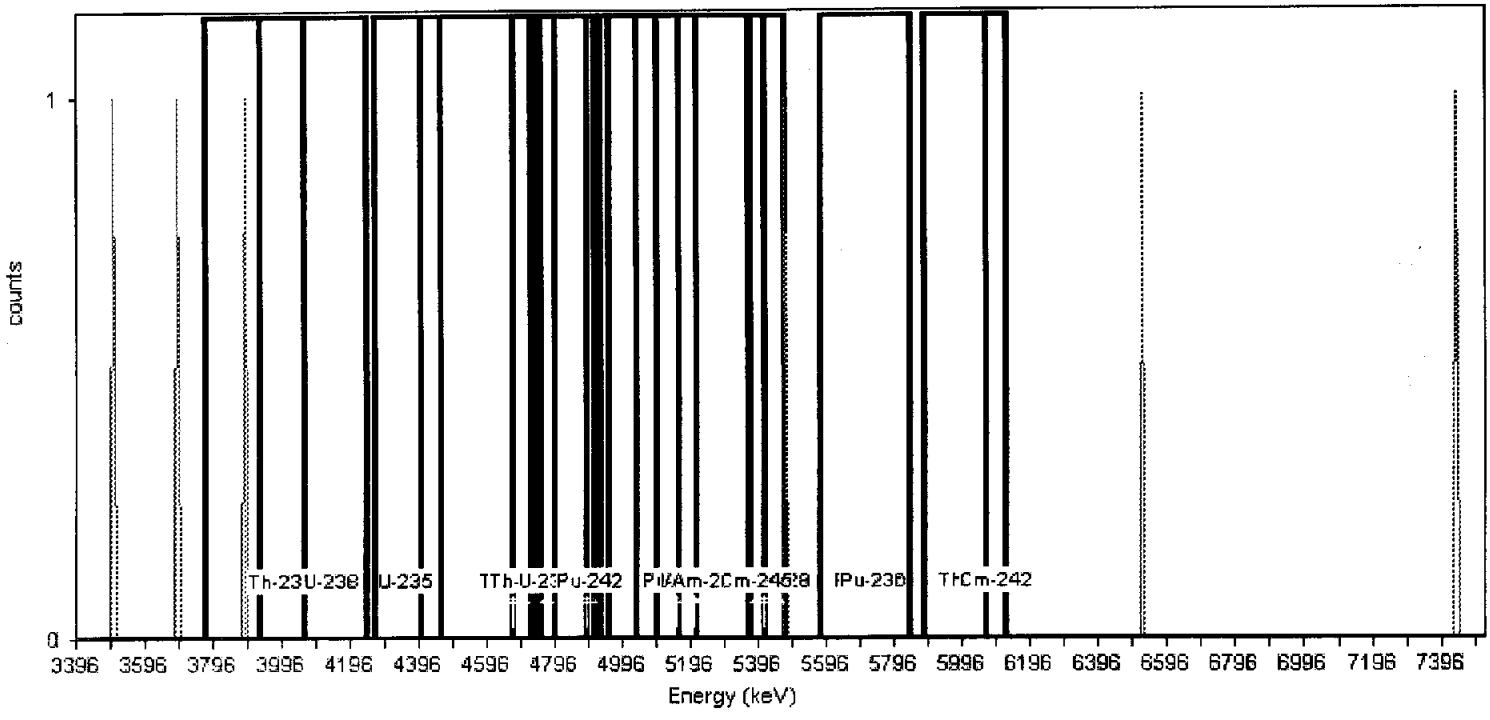
Acquisition

Detector: AV80 , SN: 46-03305
Acquisition Start Date: 4/20/2007 4:37:11PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV80
Calibration Date: 3/29/2007 7:09:18PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.89% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Total Background Counts: 6.00

Nuclide Library: Background ROI Library

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.27	5.57	1.00	1.042E-003	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:40:55AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV81
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

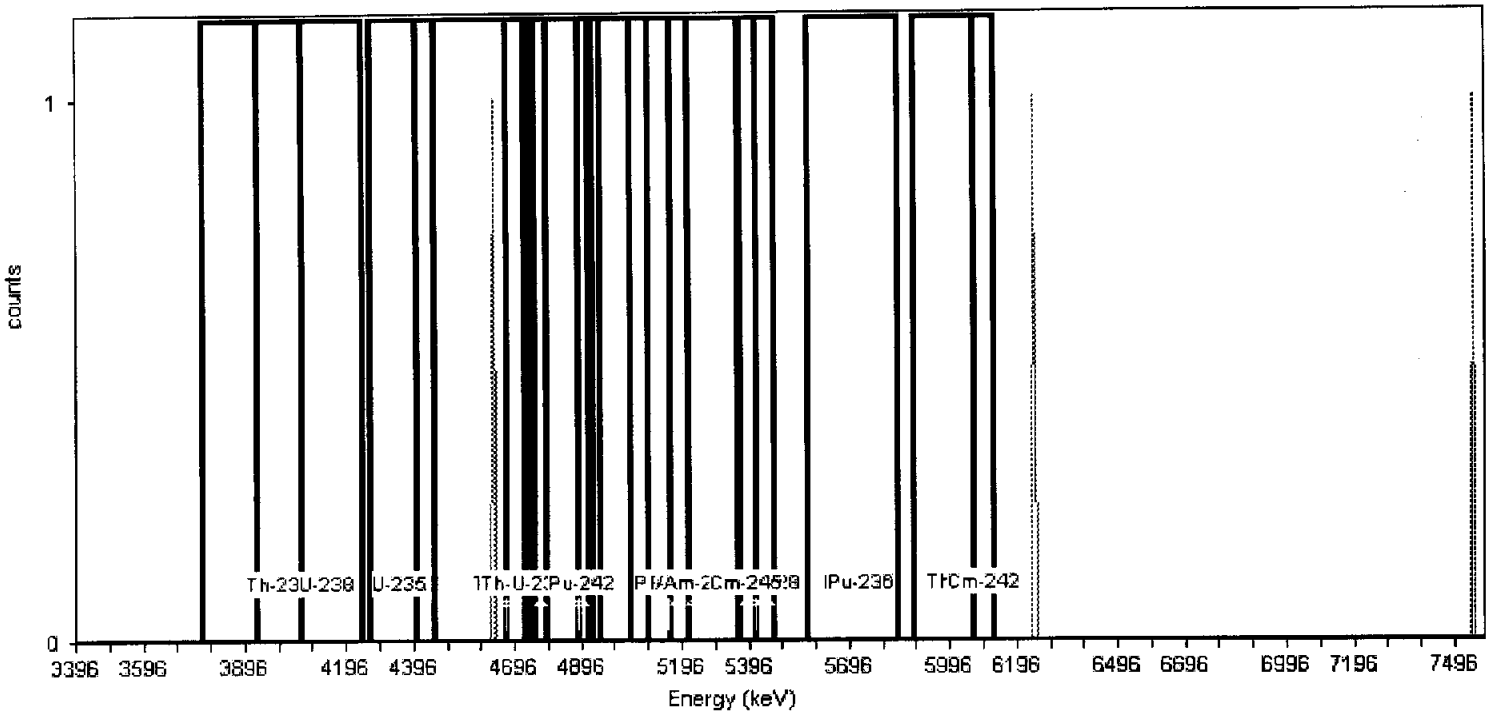
Acquisition

Detector: AV81 , SN: 46-03307
Acquisition Start Date: 4/20/2007 4:37:12PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV81
Calibration Date: 3/29/2007 9:32:32PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.00% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 3.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:40:58AM 4/21/2007

Sample

Sample Name: AV82 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

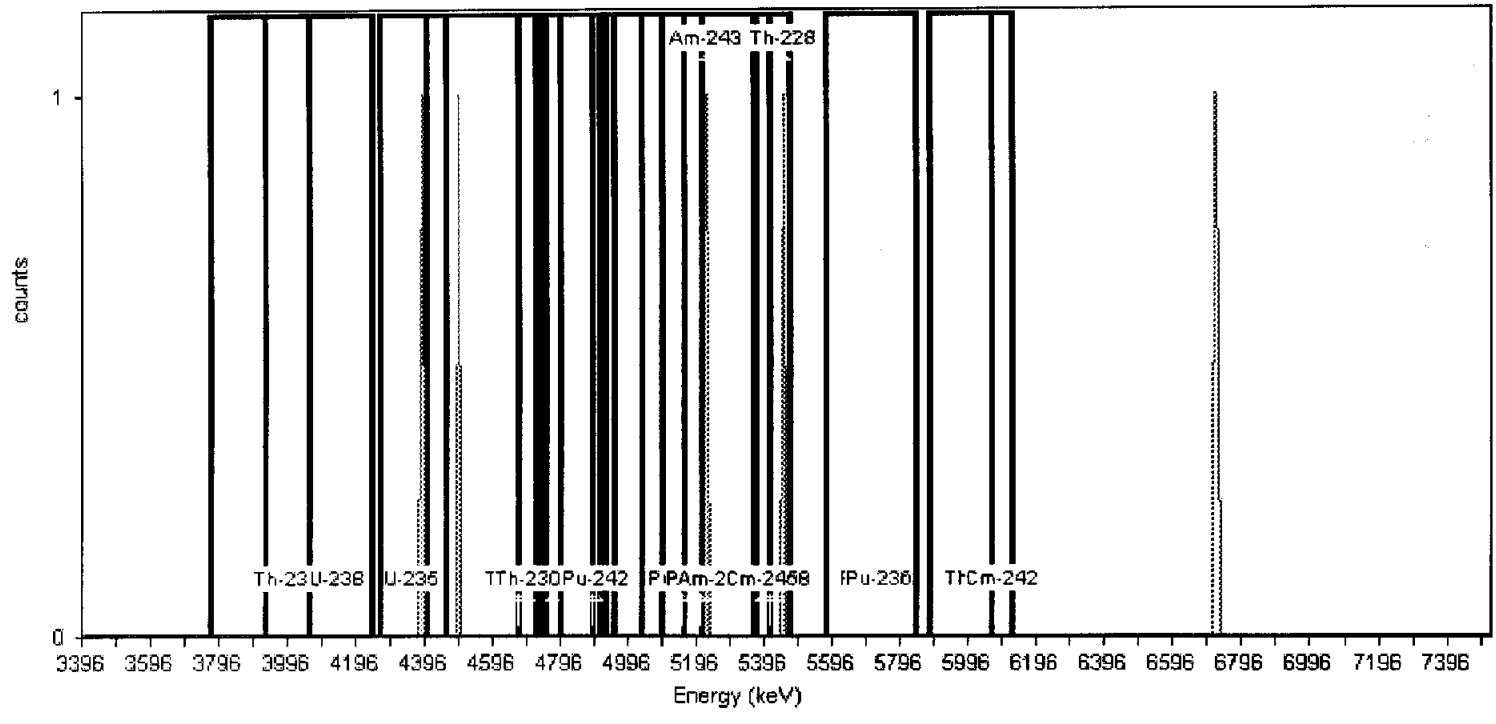
Acquisition

Detector: AV82 , SN: 46-032EE5
Acquisition Start Date: 4/20/2007 4:37:13PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV82
Calibration Date: 3/29/2007 4:42:16PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.86% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 6.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	2.00	2.083E-003	1.804E-003
Am-243	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Th-228	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.27	5.57	1.00	1.042E-003	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:41:01AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV83
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

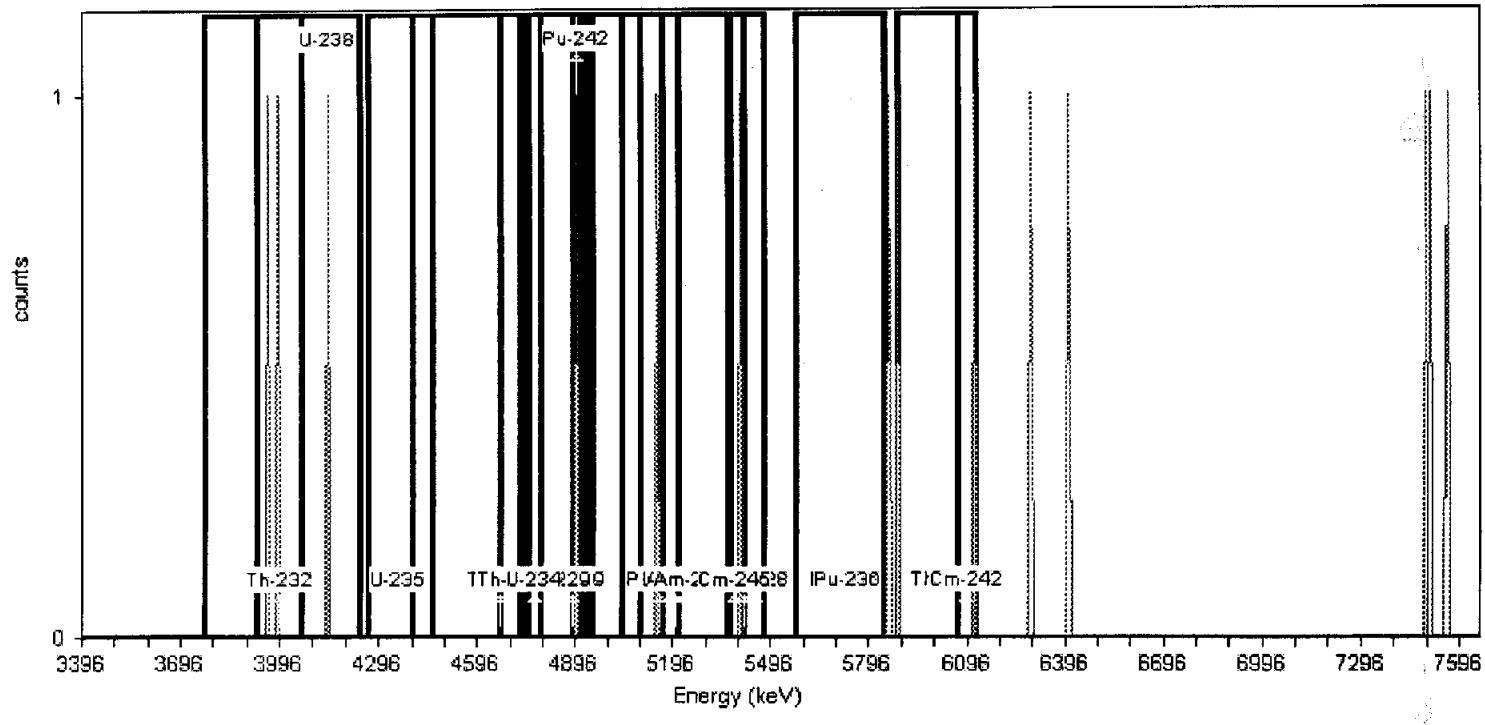
Acquisition

Detector: AV83 , SN: 46-03306
Acquisition Start Date: 4/20/2007 4:37:14PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV83
Calibration Date: 3/29/2007 9:32:03PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.55% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Total Background Counts: 14.00

Nuclide Library: Background ROI Library

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	2.00	2.083E-003	1.804E-003
U-238	4.14	3.93	4.24	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	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.27	5.57	1.00	1.042E-003	1.473E-003
Cm-245	5.39	5.36	5.41	1.00	1.042E-003	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	1.00	1.042E-003	1.473E-003
Th-227	6.02	5.89	6.13	2.00	2.083E-003	1.804E-003
Cm-242	6.10	6.07	6.13	1.00	1.042E-003	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:41:04AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV84
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

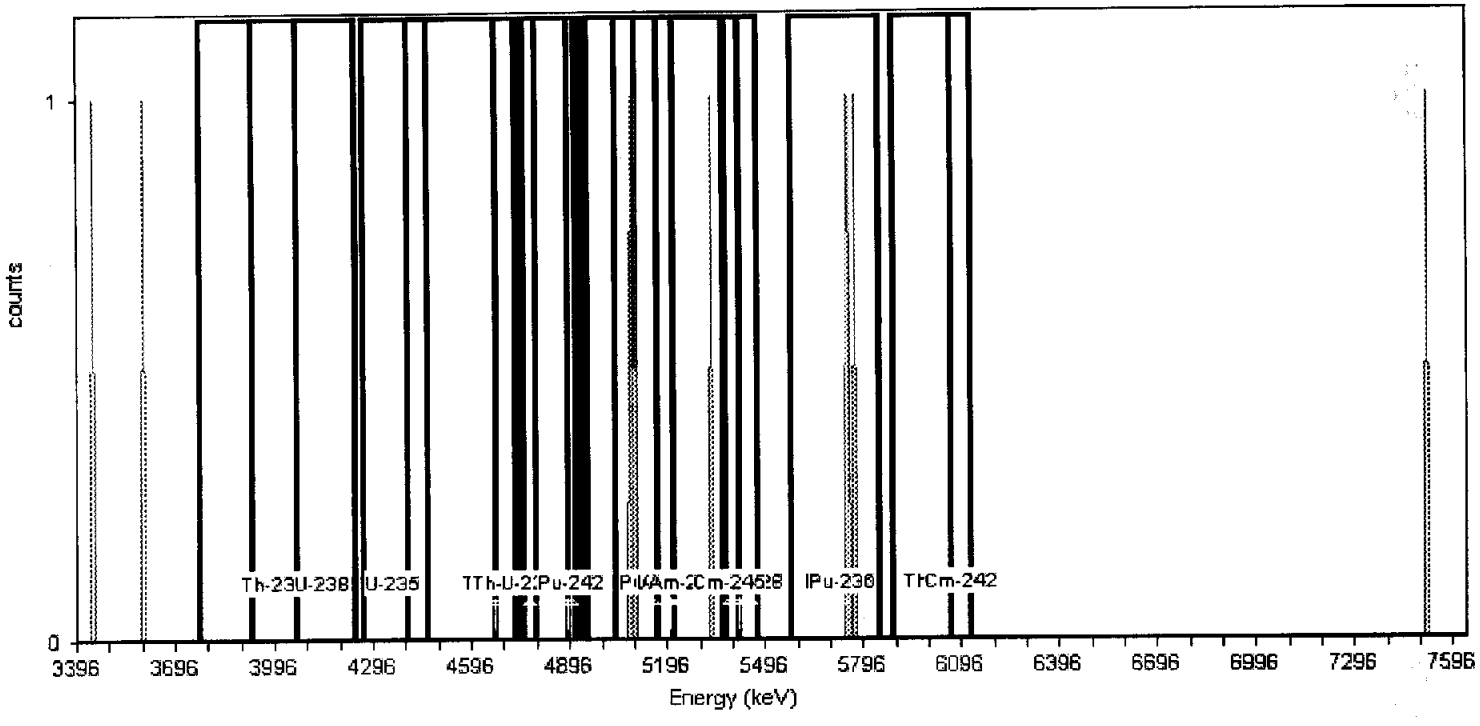
Acquisition

Detector: AV84 , SN: 46-033FF3
Acquisition Start Date: 4/20/2007 4:37:15PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV84
Calibration Date: 3/29/2007 9:32:20PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.63% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 8.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.10	2.00	2.083E-003	1.804E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Pu-239	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.27	5.57	1.00	1.042E-003	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	2.00	2.083E-003	1.804E-003
Pu-236	5.73	5.60	5.86	2.00	2.083E-003	1.804E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:41:07AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV85
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

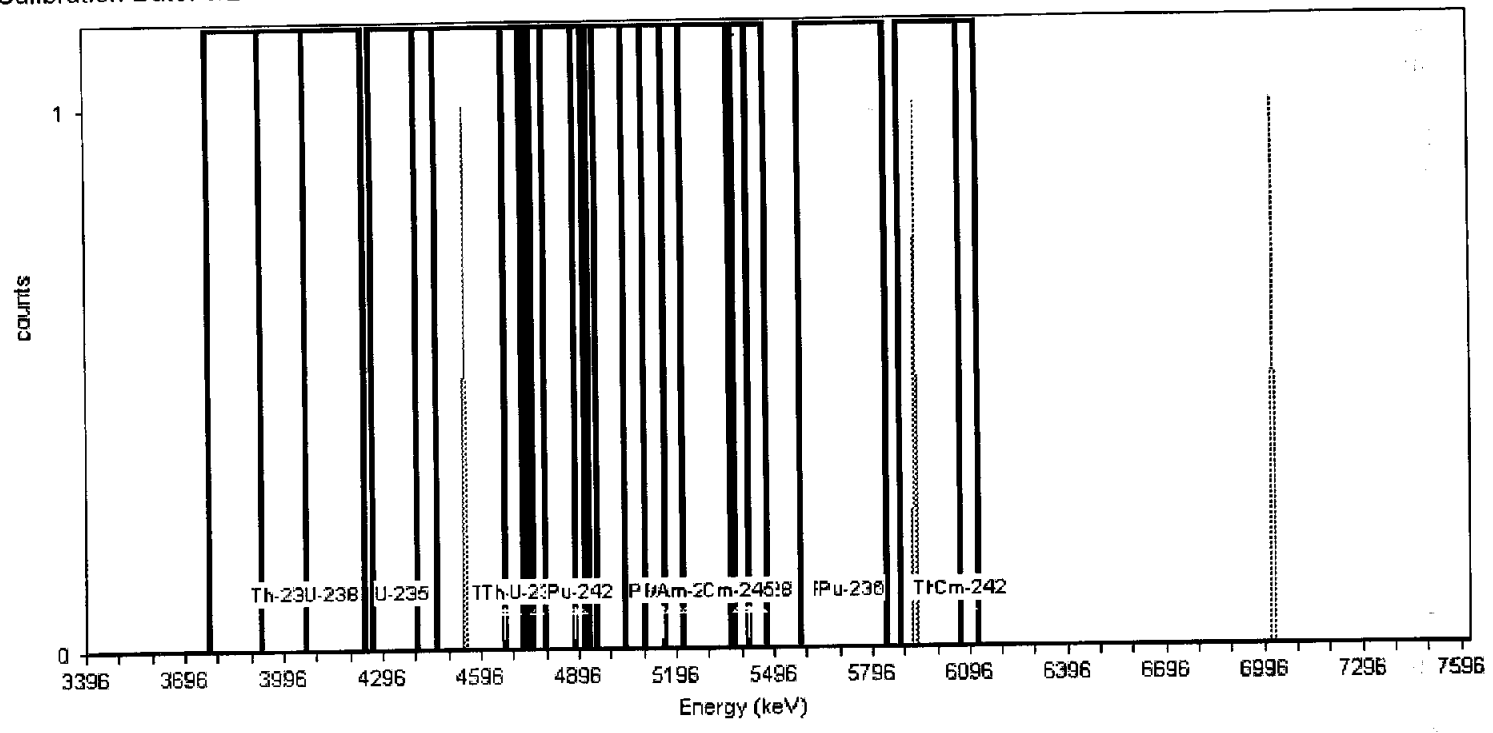
Acquisition

Detector: AV85 , SN: 46-032EE7
Acquisition Start Date: 4/20/2007 4:37:16PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV85
Calibration Date: 3/29/2007 11:55:08PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.76% +/- 0.30% TPU(2 sigma)



General Analysis

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

Total Background Counts: 3.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:10AM 4/21/2007

Sample

Sample Name: AV86 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

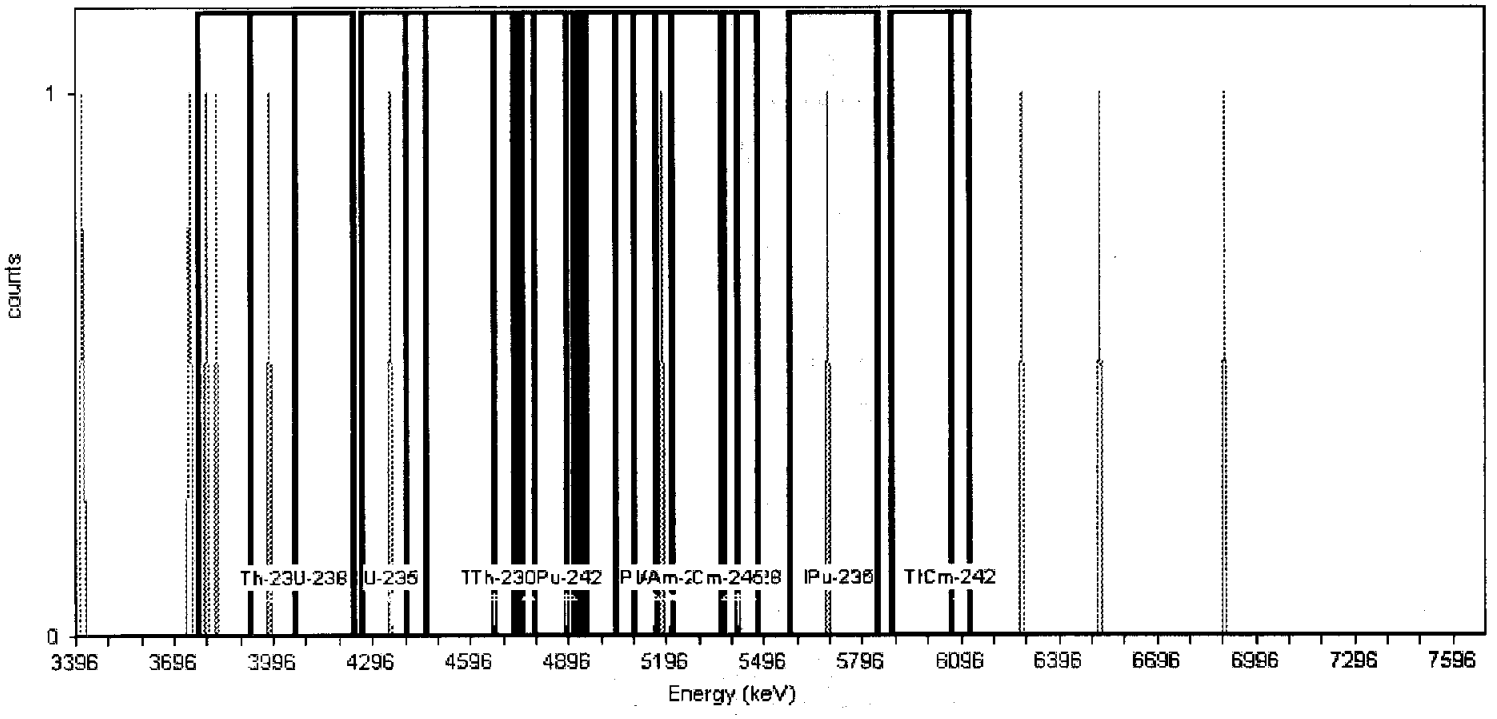
Acquisition

Detector: AV86 , SN: 46-033Q6
Acquisition Start Date: 4/20/2007 4:37:18PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV86
Calibration Date: 3/29/2007 7:09:30PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.17% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 11.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	1.00	1.042E-003	1.473E-003
Pu-236	5.73	5.60	5.86	1.00	1.042E-003	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003
Th-232	3.99	3.77	4.06	3.00	3.125E-003	2.083E-003
U-238	4.14	3.93	4.24	1.00	1.042E-003	1.473E-003
U-235	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:13AM 4/21/2007

Sample

Sample Name: AV87 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

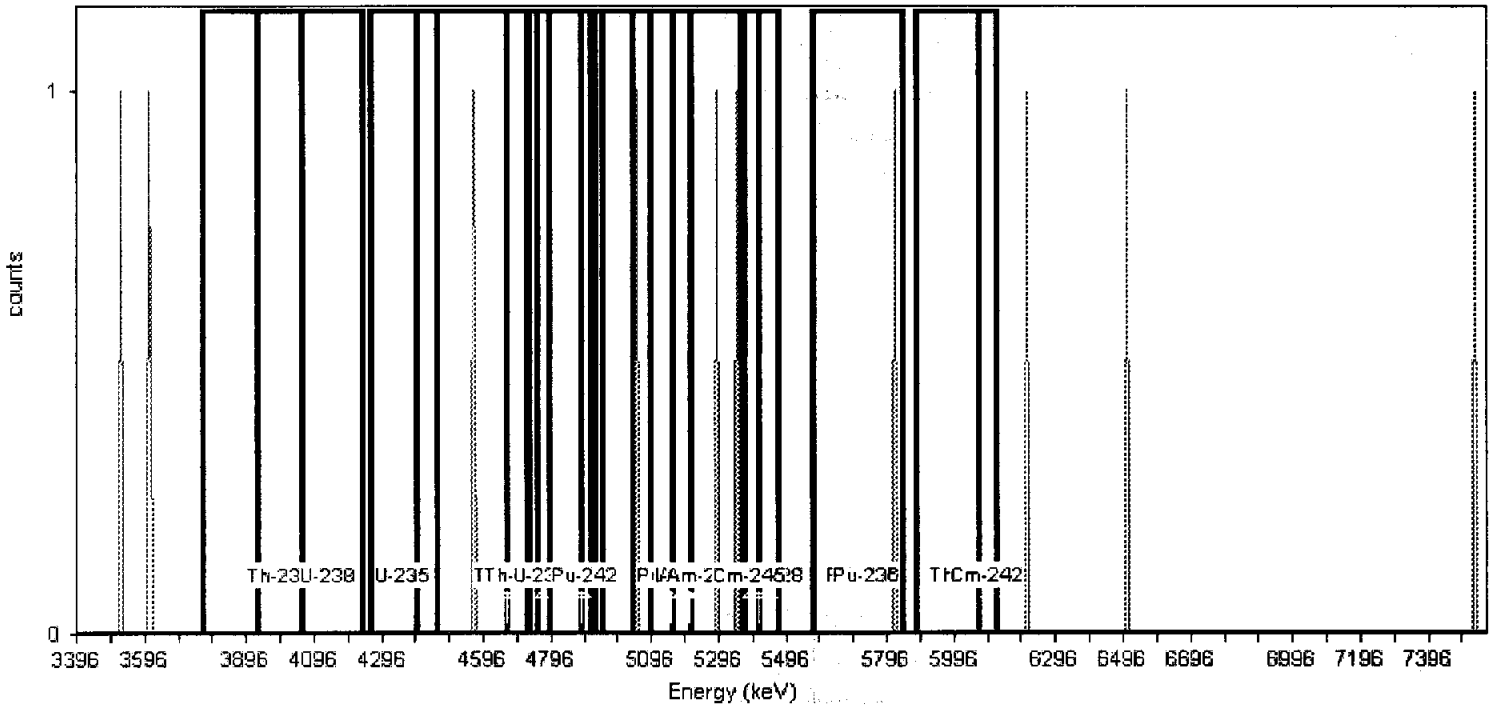
Acquisition

Detector: AV87 , SN: 46-033FF5
Acquisition Start Date: 4/20/2007 4:37:20PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV87
Calibration Date: 3/29/2007 11:54:38PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.70% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 10.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.10	1.00	1.042E-003	1.473E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	2.00	2.083E-003	1.804E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Th-228	5.45	5.27	5.57	2.00	2.083E-003	1.804E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	1.00	1.042E-003	1.473E-003
Pu-236	5.73	5.60	5.86	1.00	1.042E-003	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:23AM 4/21/2007

Sample

Sample Name: AV88 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

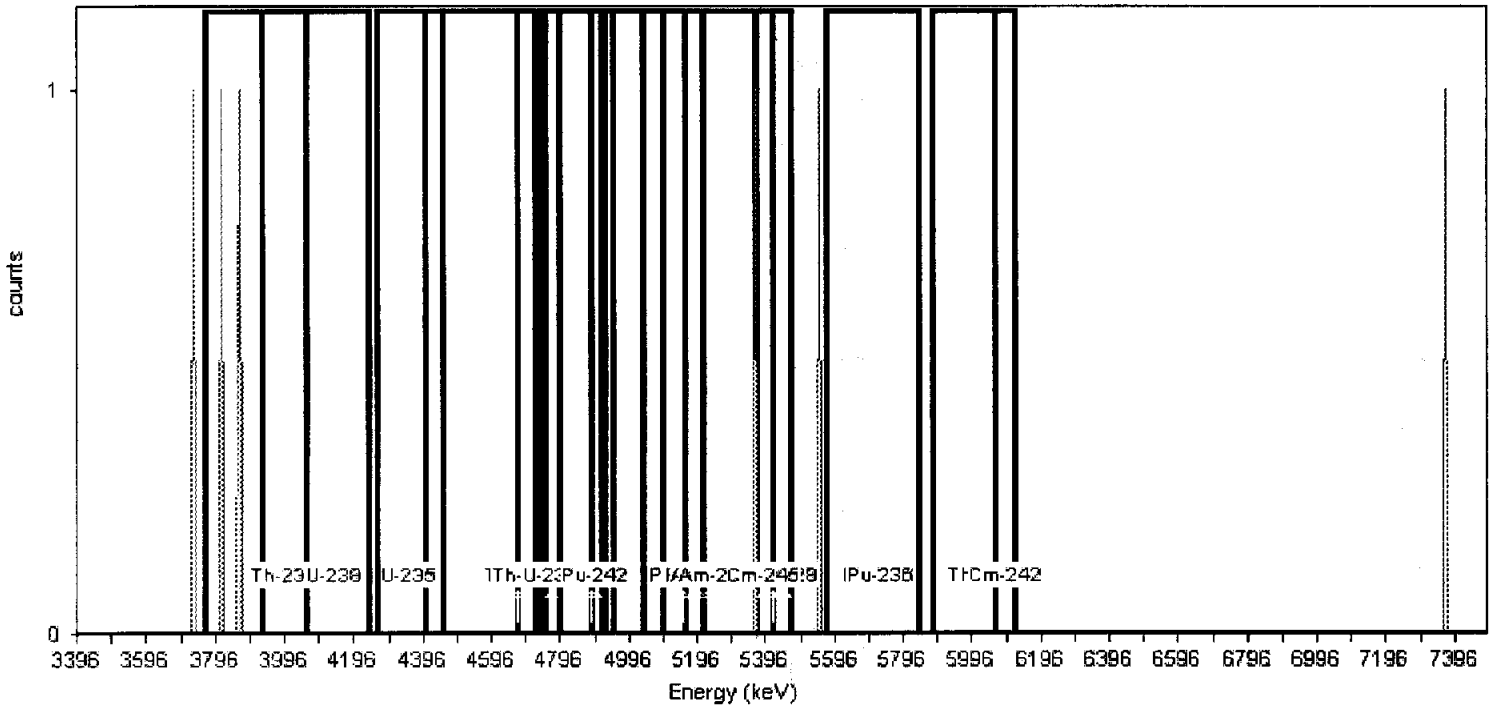
Acquisition

Detector: AV88 , SN: 76-033FF1
Acquisition Start Date: 4/20/2007 4:37:22PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV88
Calibration Date: 3/29/2007 11:55:16PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.30% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 6.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	2.00	2.083E-003	1.804E-003
U-238	4.14	3.93	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	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.27	5.57	2.00	2.083E-003	1.804E-003
Cm-245	5.39	5.36	5.41	1.00	1.042E-003	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:29AM 4/21/2007

Sample

Sample Name: AV89 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

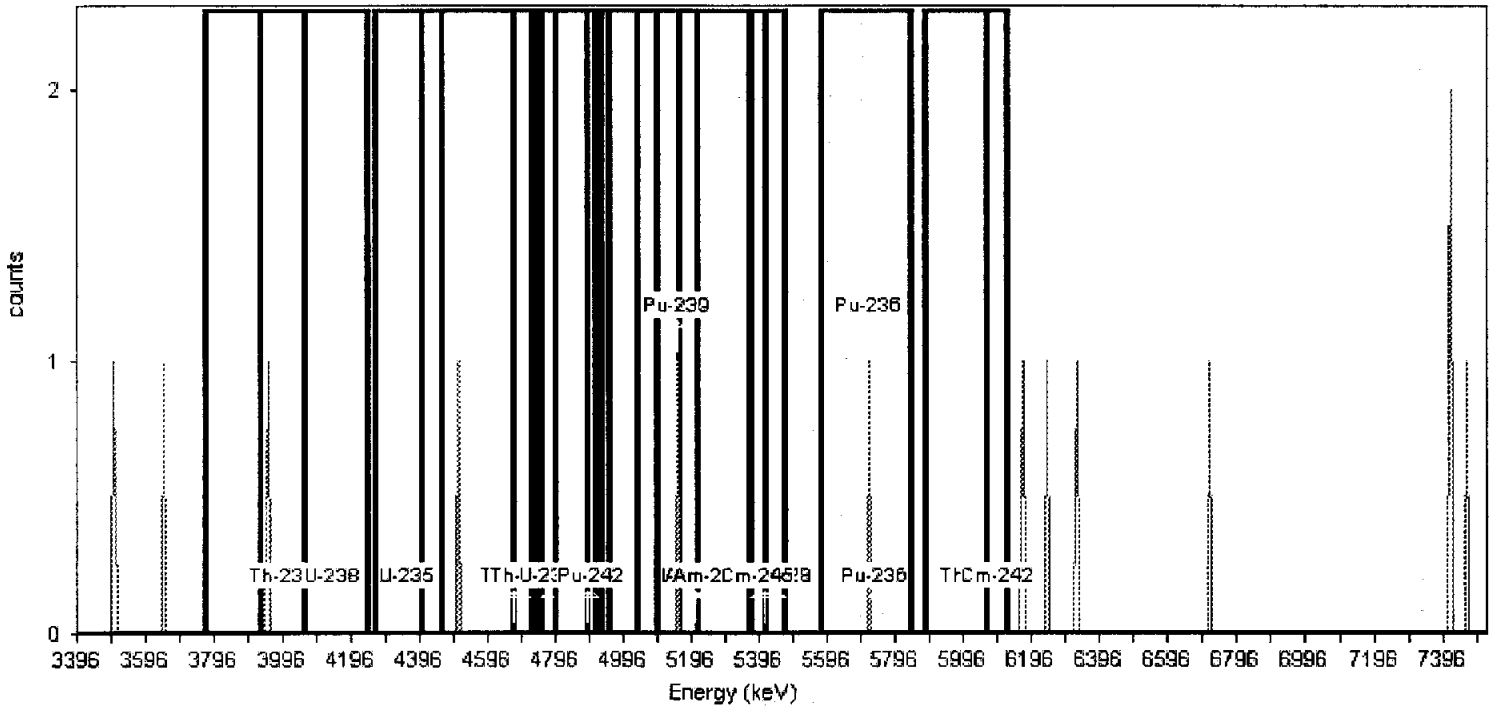
Acquisition

Detector: AV89 , SN: 46-033P5
Acquisition Start Date: 4/20/2007 4:37:24PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV89
Calibration Date: 3/30/2007 2:19:55AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.25% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 13.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	1.00	1.042E-003	1.473E-003
Pu-236	5.73	5.60	5.86	1.00	1.042E-003	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:35AM 4/21/2007

Sample

Sample Name: AV90 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

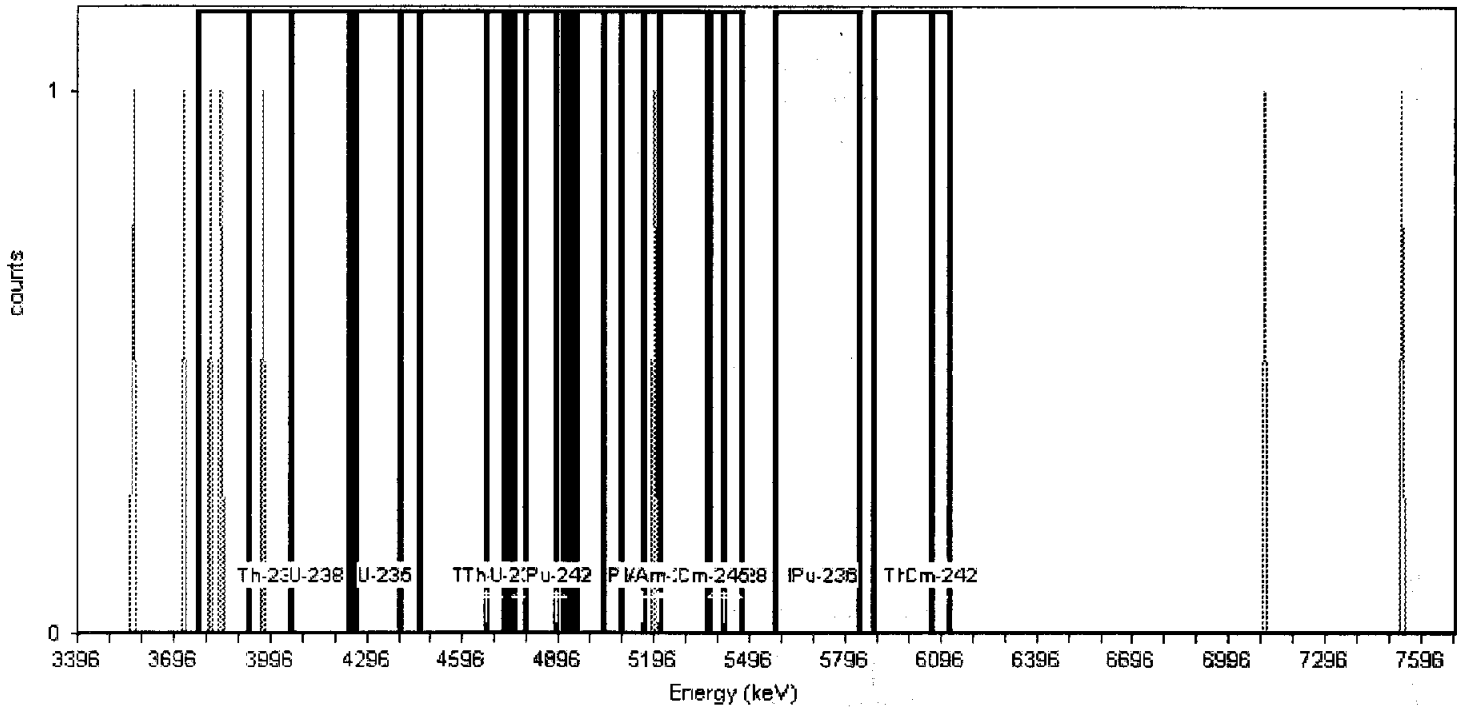
Acquisition

Detector: AV90 , SN: 46-033Q1
Acquisition Start Date: 4/20/2007 4:37:27PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Mar2007_AV90
Calibration Date: 3/29/2007 9:32:43PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.80% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 8.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	3.00	3.125E-003	2.083E-003
U-238	4.14	3.93	4.24	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	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	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
Pu-239	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:42AM 4/21/2007

Sample

Sample Name: AV92 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

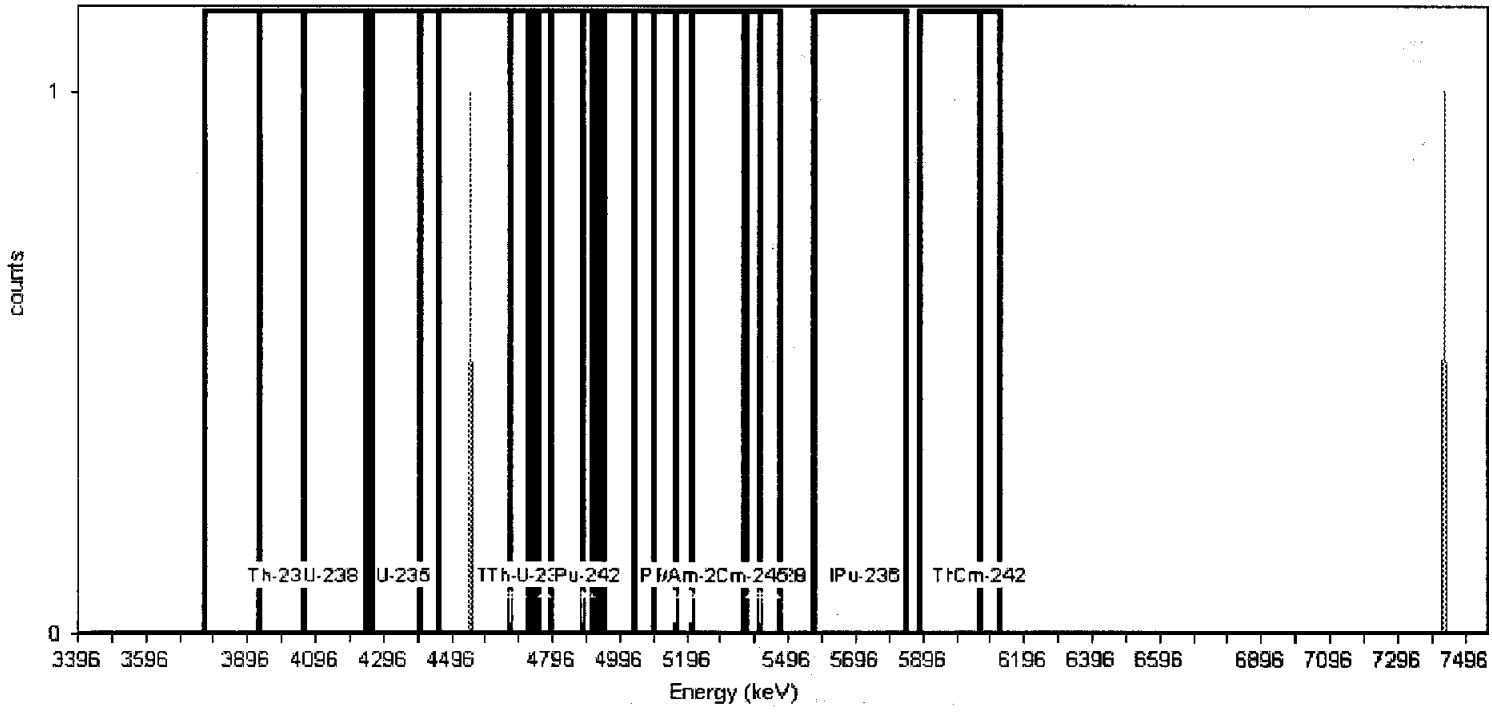
Acquisition

Detector: AV92 , SN: 46-033FF2
Acquisition Start Date: 4/20/2007 4:37:28PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV92
Calibration Date: 3/30/2007 2:17:23AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.39% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 2.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:38:52AM 4/21/2007

Sample

Sample Name: AV93 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

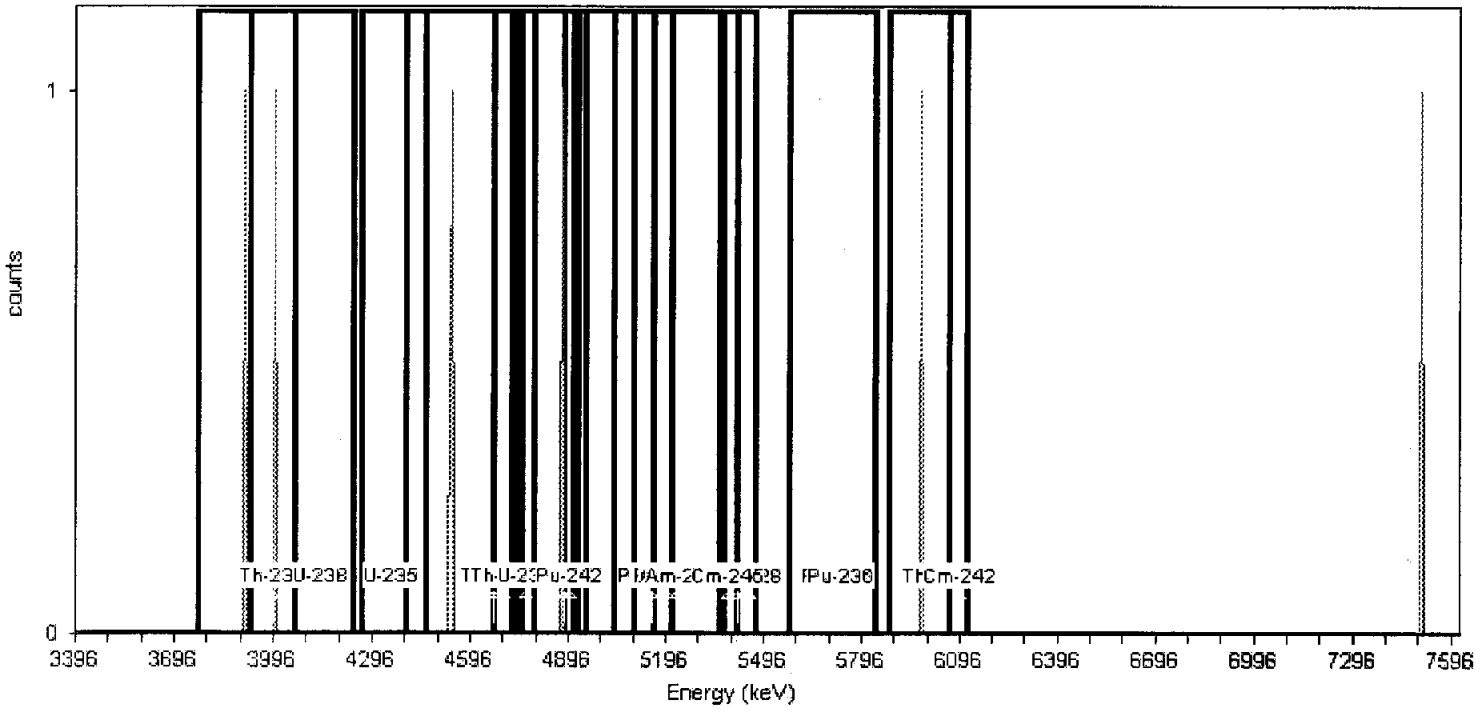
Acquisition

Detector: AV93 , SN: 46-033Q2
Acquisition Start Date: 4/20/2007 4:37:30PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV93
Calibration Date: 3/30/2007 5:23:24AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

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



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 6.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	2.00	2.083E-003	1.804E-003
U-238	4.14	3.93	4.24	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	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:01AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV94
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

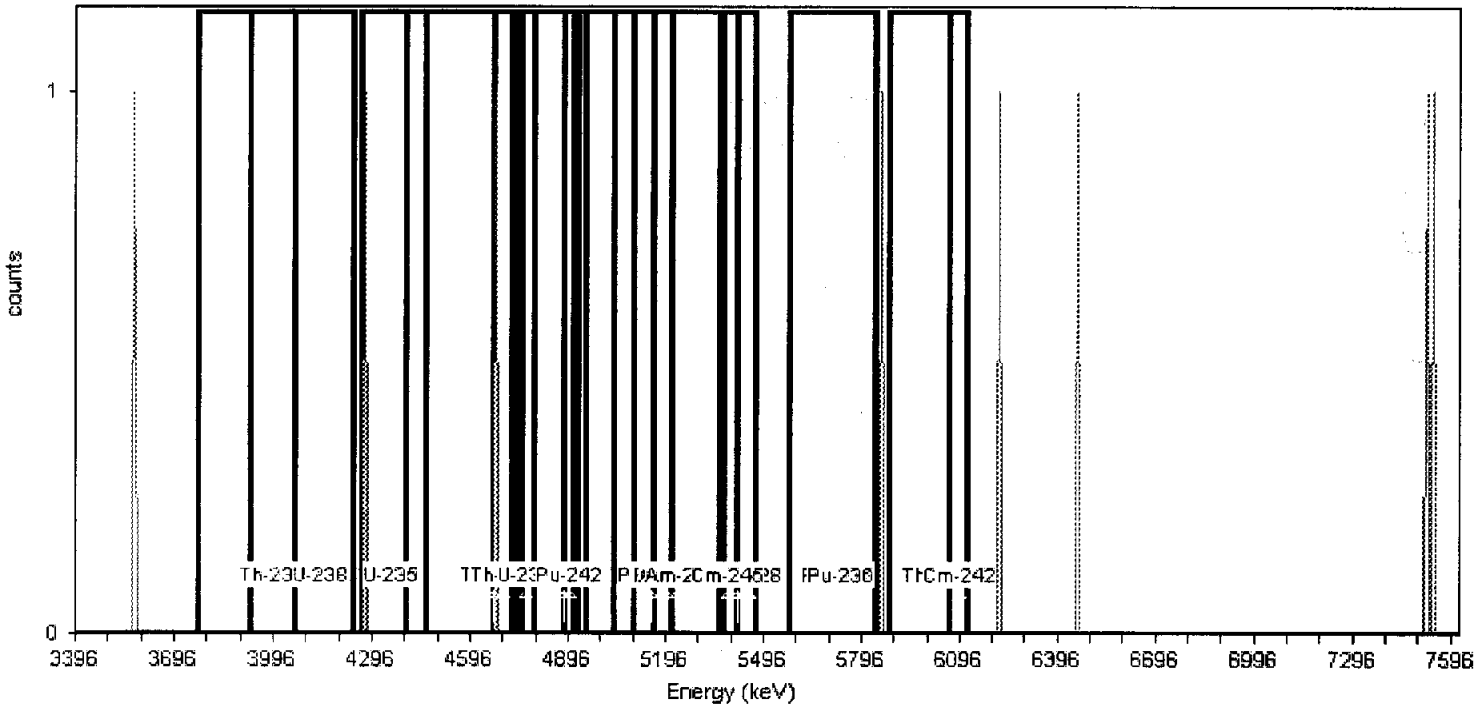
Acquisition

Detector: AV94 , SN: 46-032EE6
Acquisition Start Date: 4/20/2007 4:37:32PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV94
Calibration Date: 3/29/2007 11:55:23PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.63% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Total Background Counts: 8.00

Nuclide Library: Background ROI Library

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Po-209	4.88	4.67	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	0.00	0.000E+000	1.473E-003
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	1.00	1.042E-003	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:39:05AM 4/21/2007

Analyst: 60040

Sample

Sample Name: AV95
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: April2007
Description:

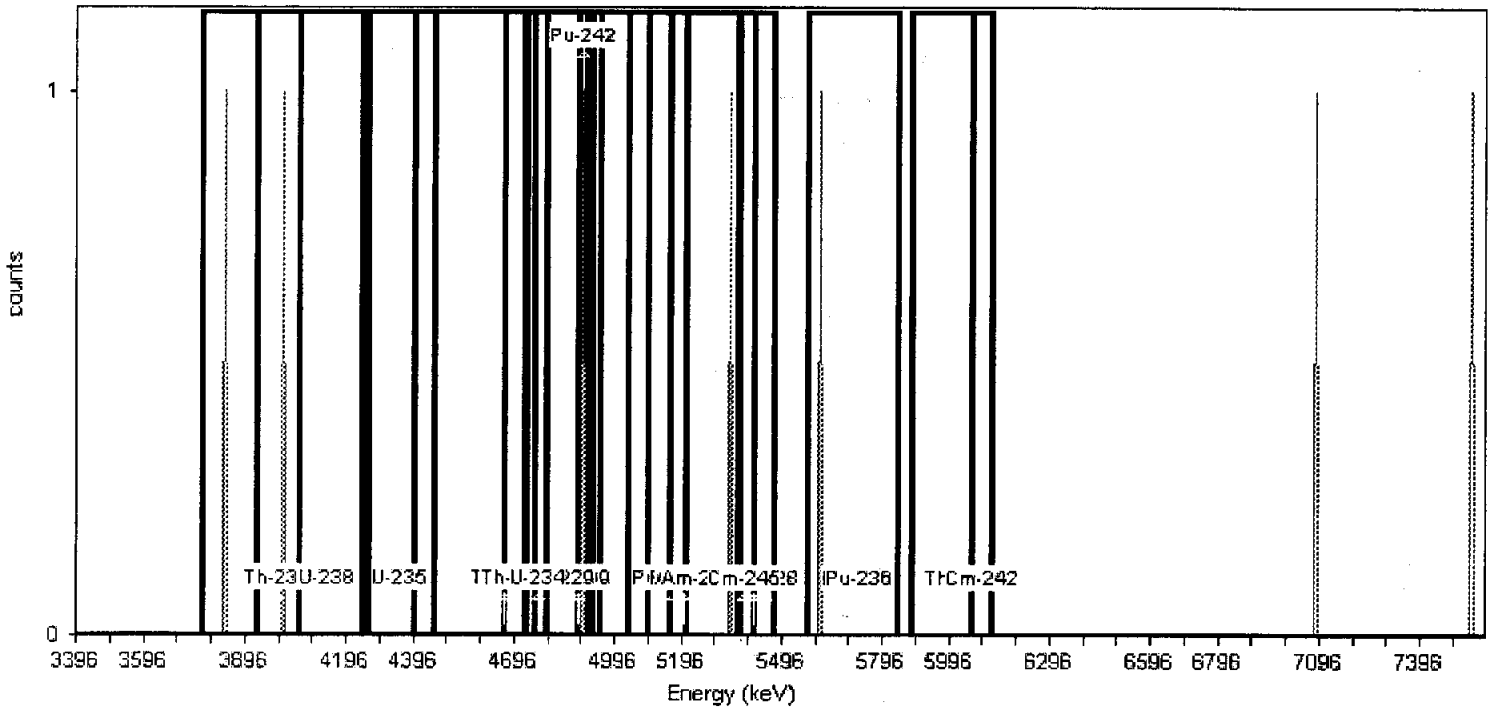
Acquisition

Detector: AV95 , SN: 46-033P4
Acquisition Start Date: 4/20/2007 4:37:34PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV95
Calibration Date: 3/27/2007 2:58:48PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.83% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI
Total Background Counts: 7.00

Nuclide Library: Background ROI Library

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	2.00	2.083E-003	1.804E-003
U-238	4.14	3.93	4.24	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	4.73	0.00	0.000E+000	1.473E-003
Th-230	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.27	5.57	1.00	1.042E-003	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	1.00	1.042E-003	1.473E-003
Pu-236	5.73	5.60	5.86	1.00	1.042E-003	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:39:11AM 4/21/2007

Sample

Sample Name: AV96 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

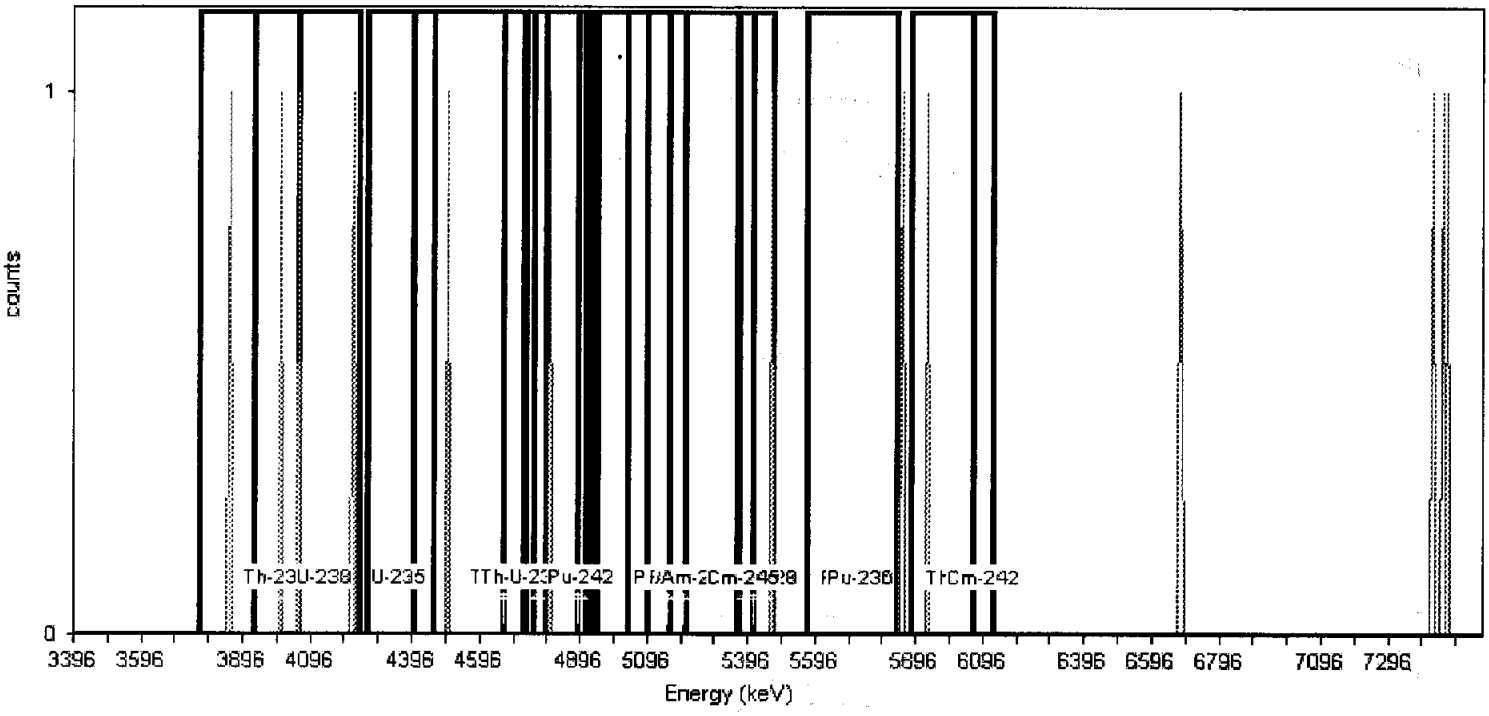
Acquisition

Detector: AV96 , SN: 46-033P1
Acquisition Start Date: 4/20/2007 4:36:12PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV96
Calibration Date: 3/27/2007 2:58:58PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.45% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 13.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	4.06	3.00	3.125E-003	2.083E-003
U-238	4.14	3.93	4.24	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	4.73	1.00	1.042E-003	1.473E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Th-228	5.45	5.27	5.57	1.00	1.042E-003	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	1.00	1.042E-003	1.473E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:39:24AM 4/21/2007

Sample

Sample Name: AV97 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

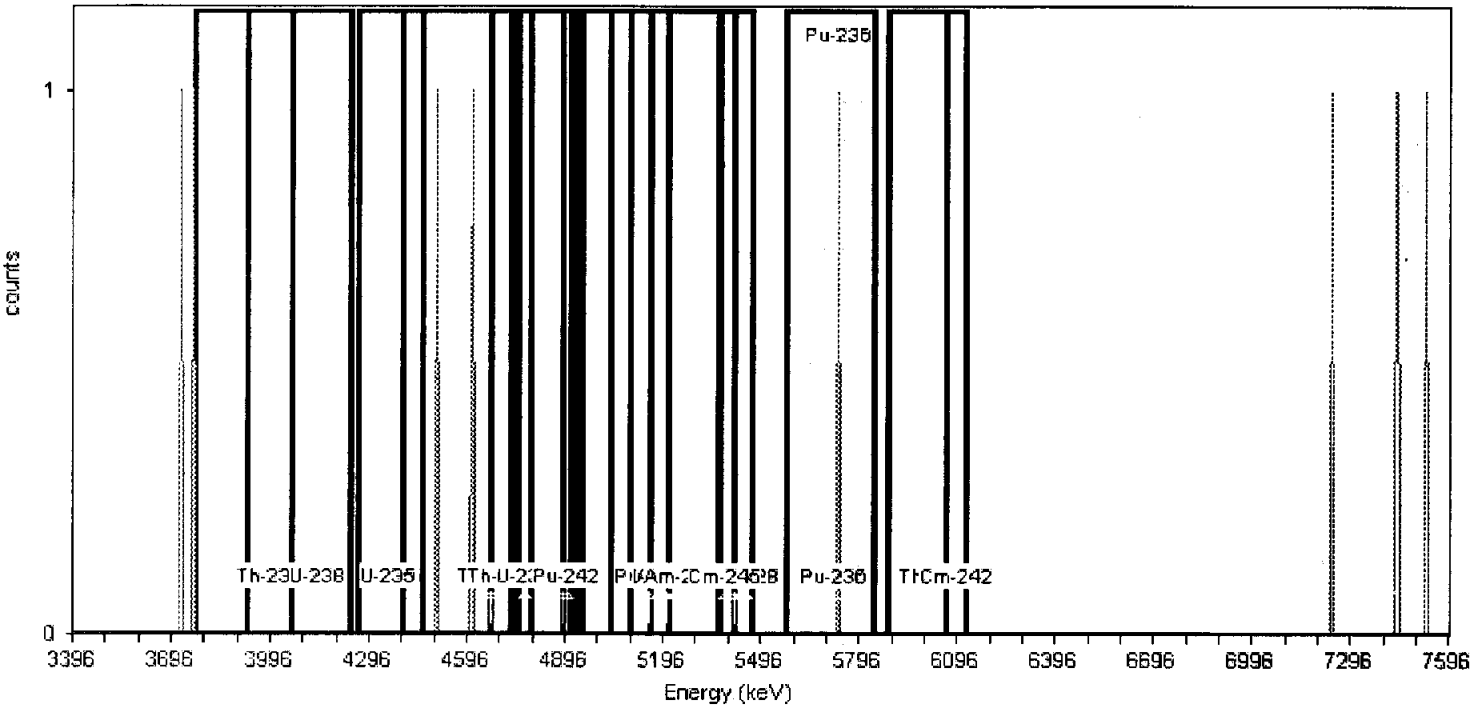
Acquisition

Detector: AV97 , SN: 76-03393
Acquisition Start Date: 4/20/2007 4:36:13PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV97
Calibration Date: 3/27/2007 2:59:08PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.14% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 9.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	1.00	1.042E-003	1.473E-003
Pu-236	5.73	5.60	5.86	1.00	1.042E-003	1.473E-003
Th-227	6.02	5.89	6.13	0.00	0.000E+000	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Analyst: 60040 8:39:21AM 4/21/2007

Sample

Sample Name: AV98 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: April2007

Description:

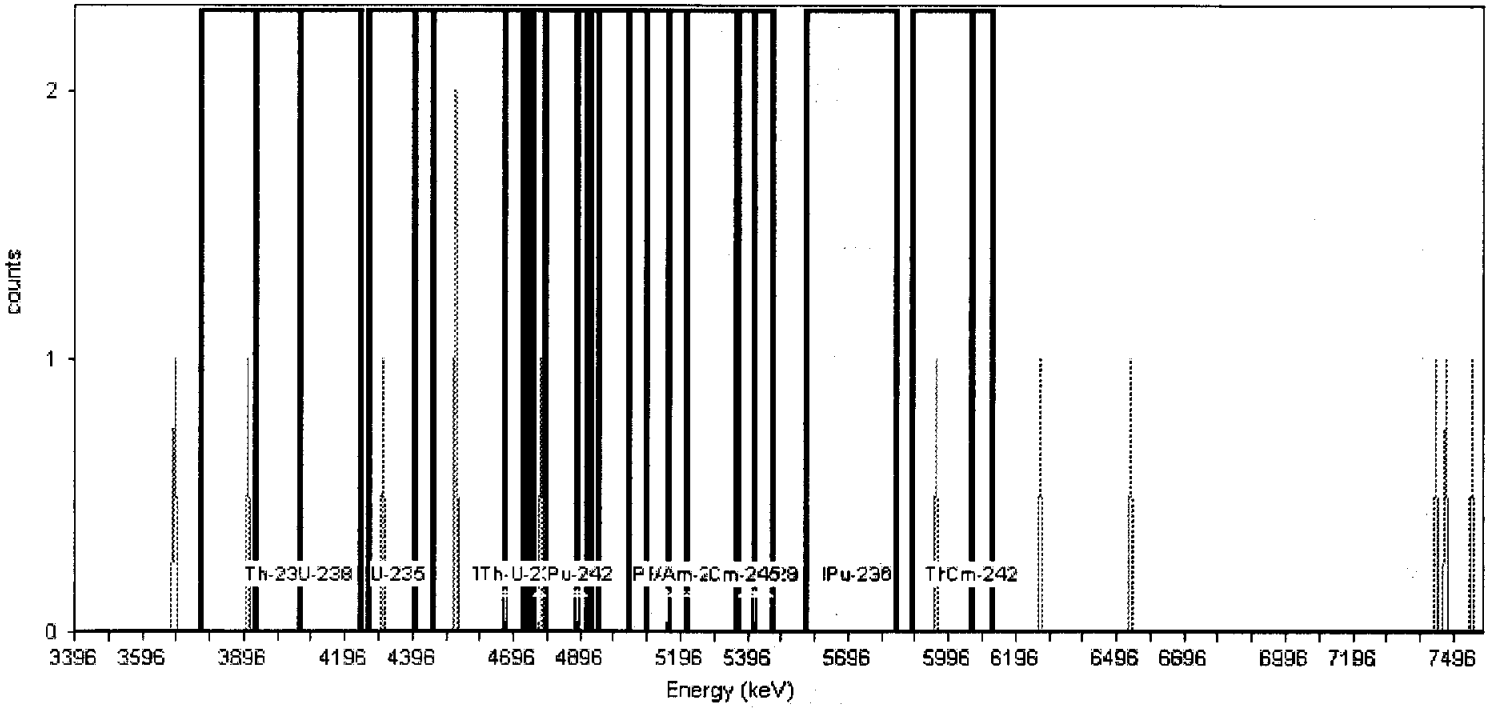
Acquisition

Detector: AV98 , SN: 46-033Q3
Acquisition Start Date: 4/20/2007 4:36:15PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Mar2007_AV98
Calibration Date: 3/27/2007 2:59:14PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 27.63% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = 11/05_BackgroundROI

Nuclide Library: Background ROI Library

Total Background Counts: 12.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3.99	3.77	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	4.35	4.26	4.46	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
Th-230	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Po-209	4.88	4.67	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
U-234	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Pu-242	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Pu-239	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
Am-243	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Am-243	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Th-228	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Th-228	5.45	5.27	5.57	0.00	0.000E+000	1.473E-003
Cm-245	5.39	5.36	5.41	0.00	0.000E+000	1.473E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Pu-236	5.73	5.60	5.86	0.00	0.000E+000	1.473E-003
Th-227	6.02	5.89	6.13	1.00	1.042E-003	1.473E-003
Cm-242	6.10	6.07	6.13	0.00	0.000E+000	1.473E-003

TestAmerica STL

Monthly Calibrations
Alphavision
April 2007

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:09:36PM 4/23/2007

Analyst: 60040
Detector: AV1

Calibration

Name: April2007_AV1
Description:

Calibration Date: 4/23/2007 1:09:33PM

Source Info

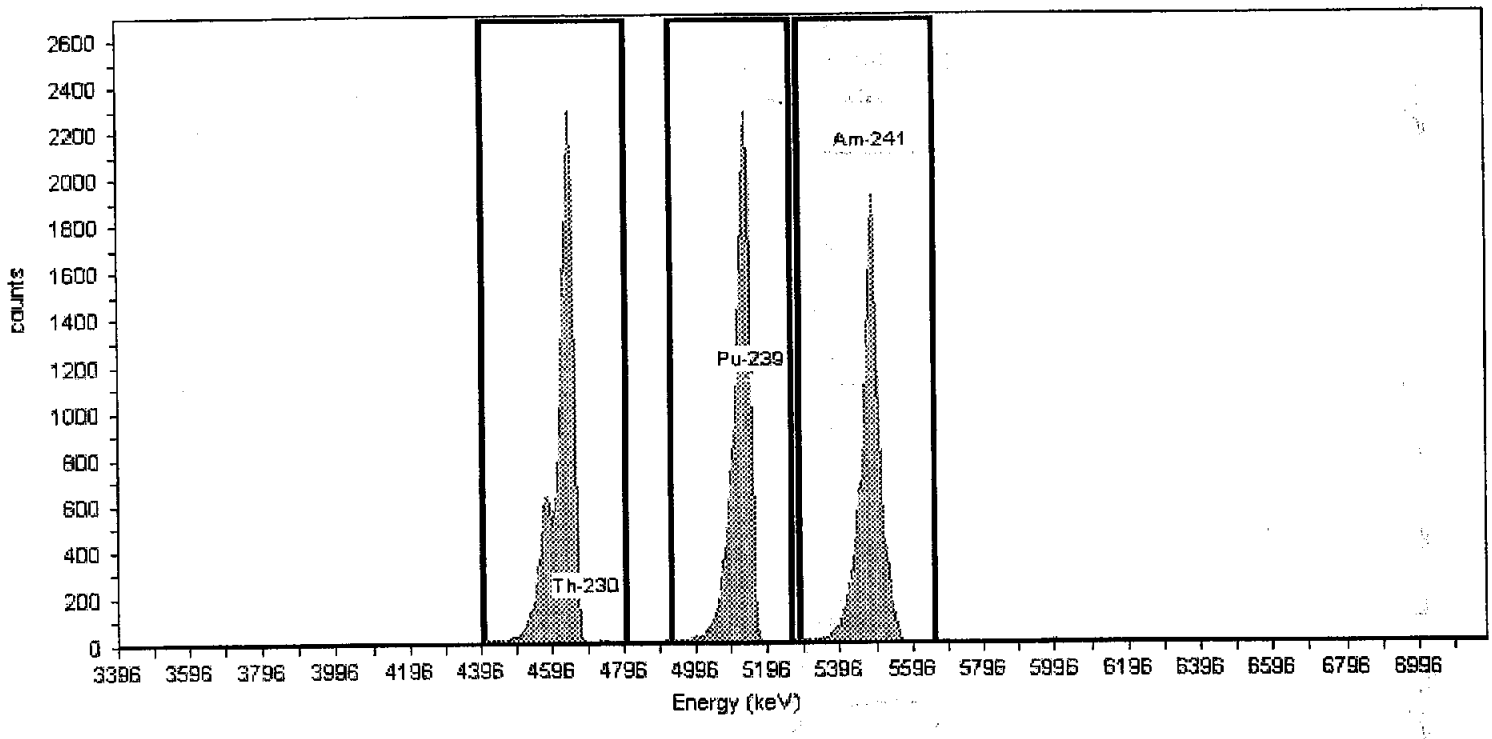
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV1 , SN: 41-158W6
Acquisition Start Date: 4/23/2007 10:45:50AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.47% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,227.00	115.91
Pu-239	243	5.16	212	258	15,269.00	109.06
Am-241	289	5.49	261	313	14,541.00	103.86

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:09:44PM 4/23/2007

Analyst: 60040
Detector: AV2

Calibration

Name: April2007_AV2
Description:

Calibration Date: 4/23/2007 1:09:41PM

Source Info

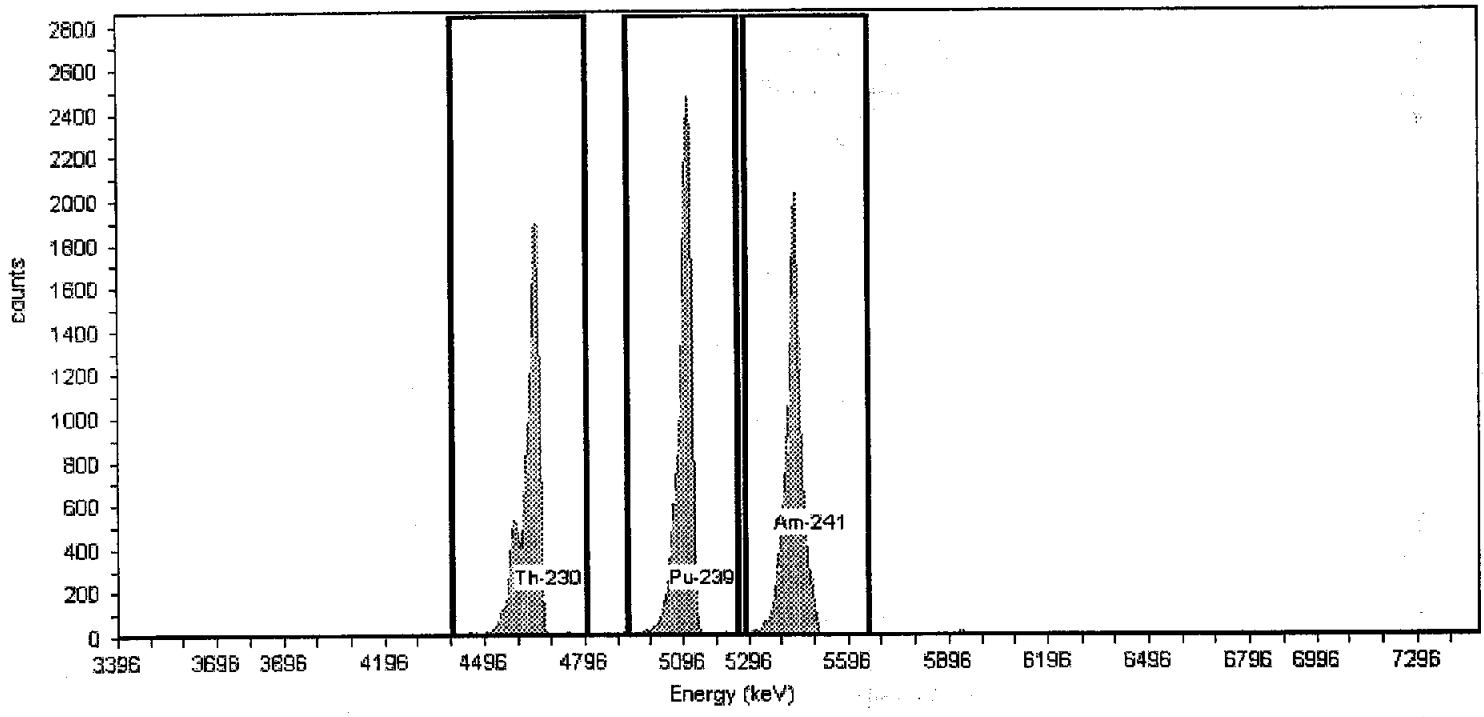
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV2 , SN: 41-158W7
Acquisition Start Date: 4/23/2007 10:46:01AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.20% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,198.00	87.13
Pu-239	243	5.16	212	258	14,591.00	104.22
Am-241	289	5.49	261	313	13,899.00	99.28

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:09:53PM 4/23/2007

Analyst: 60040
Detector: AV3

Calibration

Name: April2007_AV3
Description:

Calibration Date: 4/23/2007 1:09:49PM

Source Info

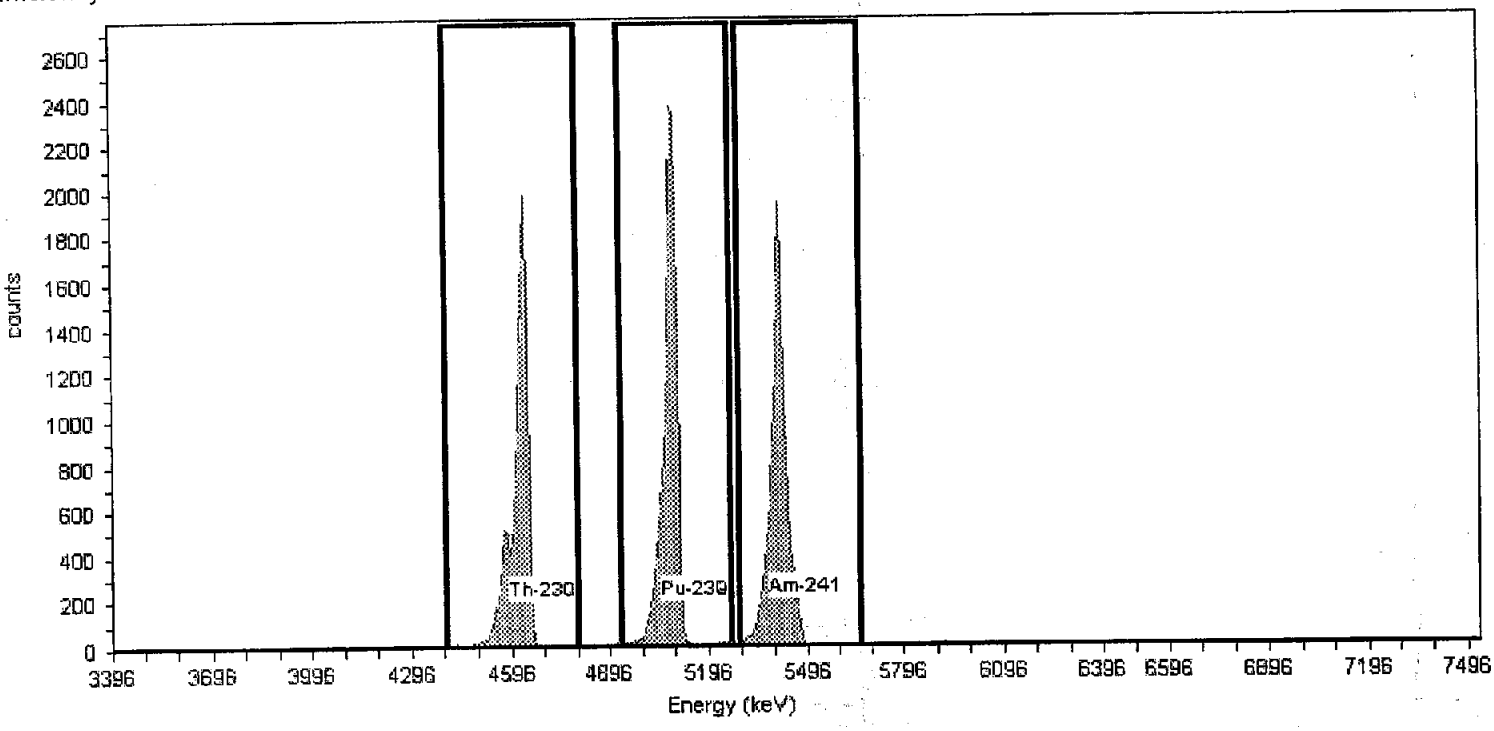
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV3 , SN: 41-158X5
Acquisition Start Date: 4/23/2007 10:46:15AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.81% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,351.00	88.22
Pu-239	243	5.16	212	258	14,141.00	101.01
Am-241	289	5.49	261	313	13,098.00	93.56

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:10:02PM 4/23/2007

Analyst: 60040
Detector: AV4

Calibration

Name: April2007_AV4
Description:

Calibration Date: 4/23/2007 1:09:59PM

Source Info

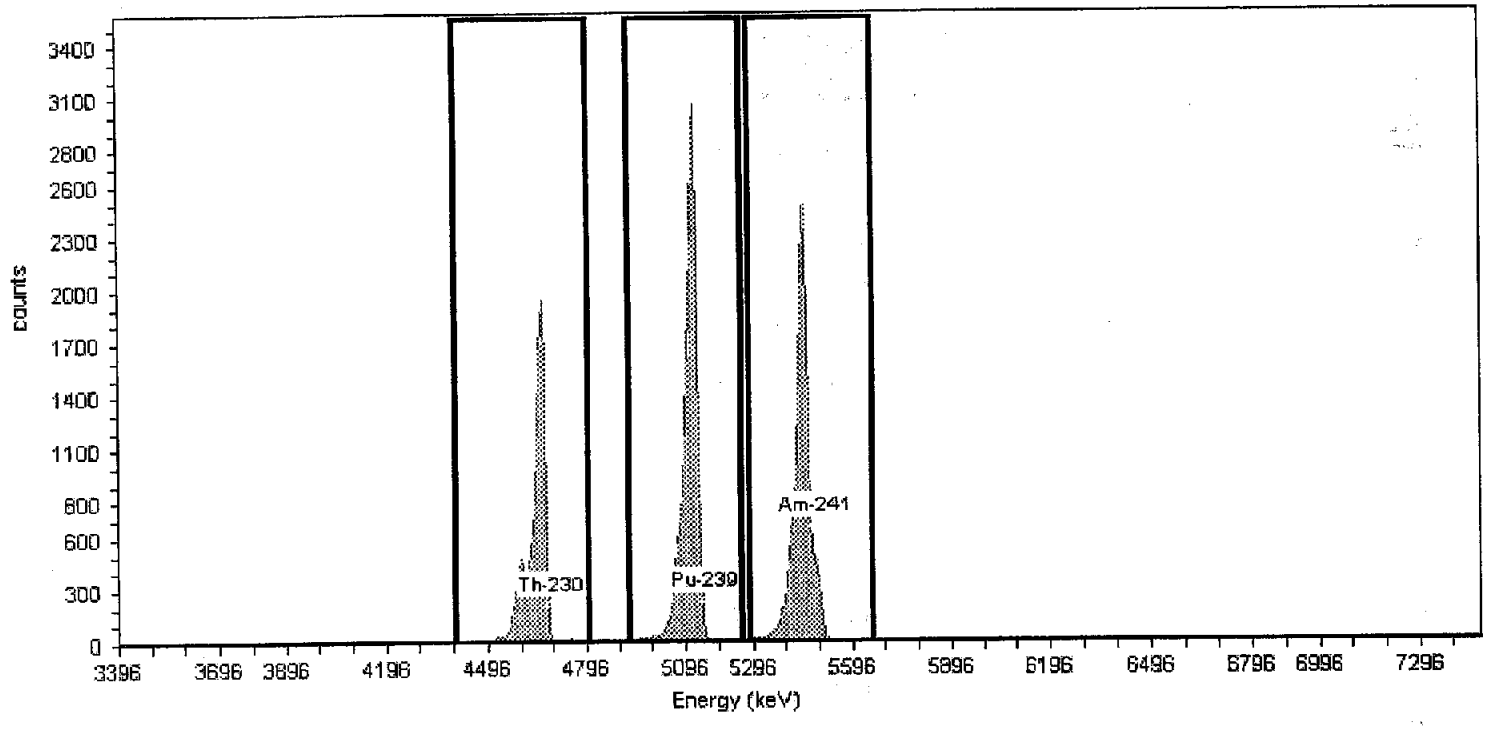
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV4 , SN: 41-172B5
Acquisition Start Date: 4/23/2007 10:46:32AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.79% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,422.00	81.59
Pu-239	243	5.16	212	258	17,372.00	124.09
Am-241	289	5.49	261	313	15,235.00	108.82

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:32:23PM 4/23/2007

Analyst: 60040
Detector: AV6

Calibration

Name: April2007_AV6
Description:

Calibration Date: 4/23/2007 3:32:19PM

Source Info

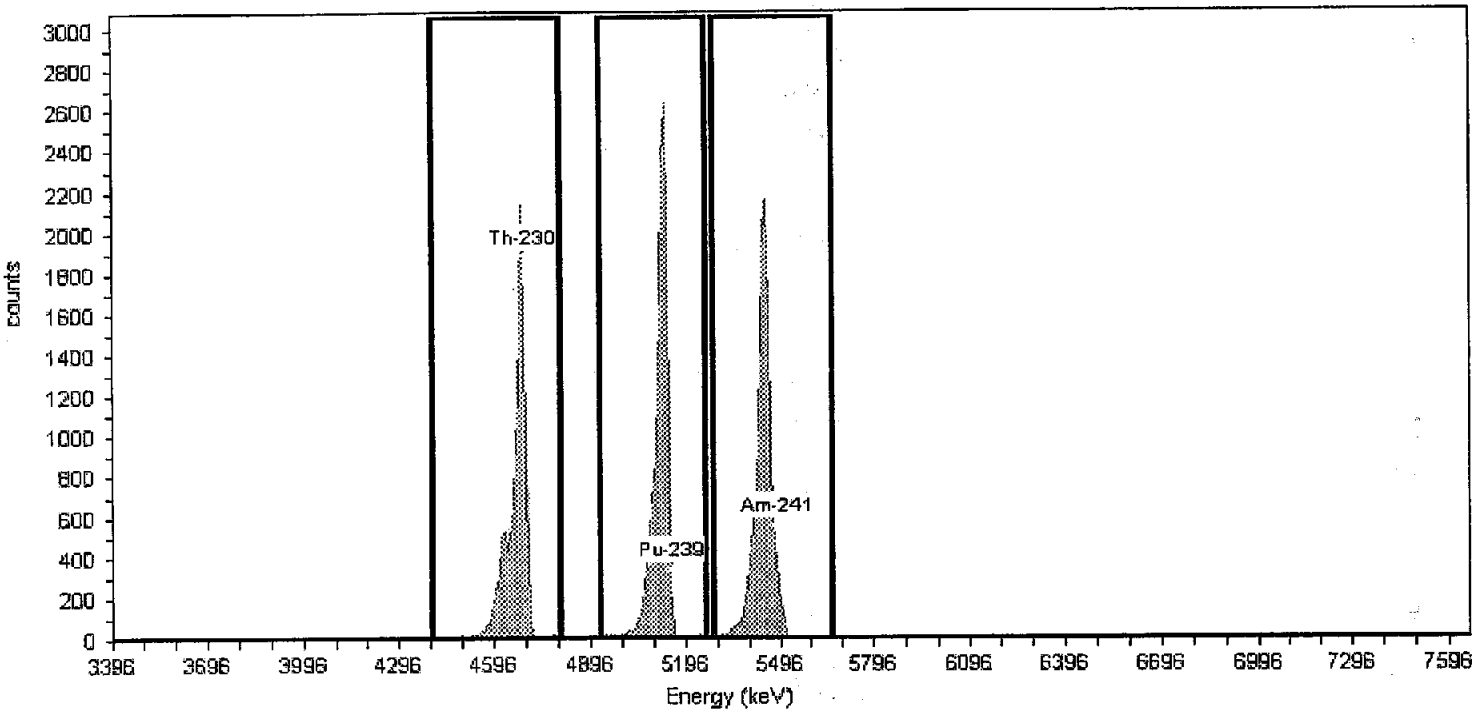
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV6 , SN:
Acquisition Start Date: 4/23/2007 1:11:53PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.70% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,516.00	89.40
Pu-239	243	5.16	212	258	14,811.00	105.79
Am-241	289	5.49	261	313	14,075.00	100.54

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:32:31PM 4/23/2007

Analyst: 60040
Detector: AV7

Calibration

Name: April2007_AV7
Description:

Calibration Date: 4/23/2007 3:32:28PM

Source Info

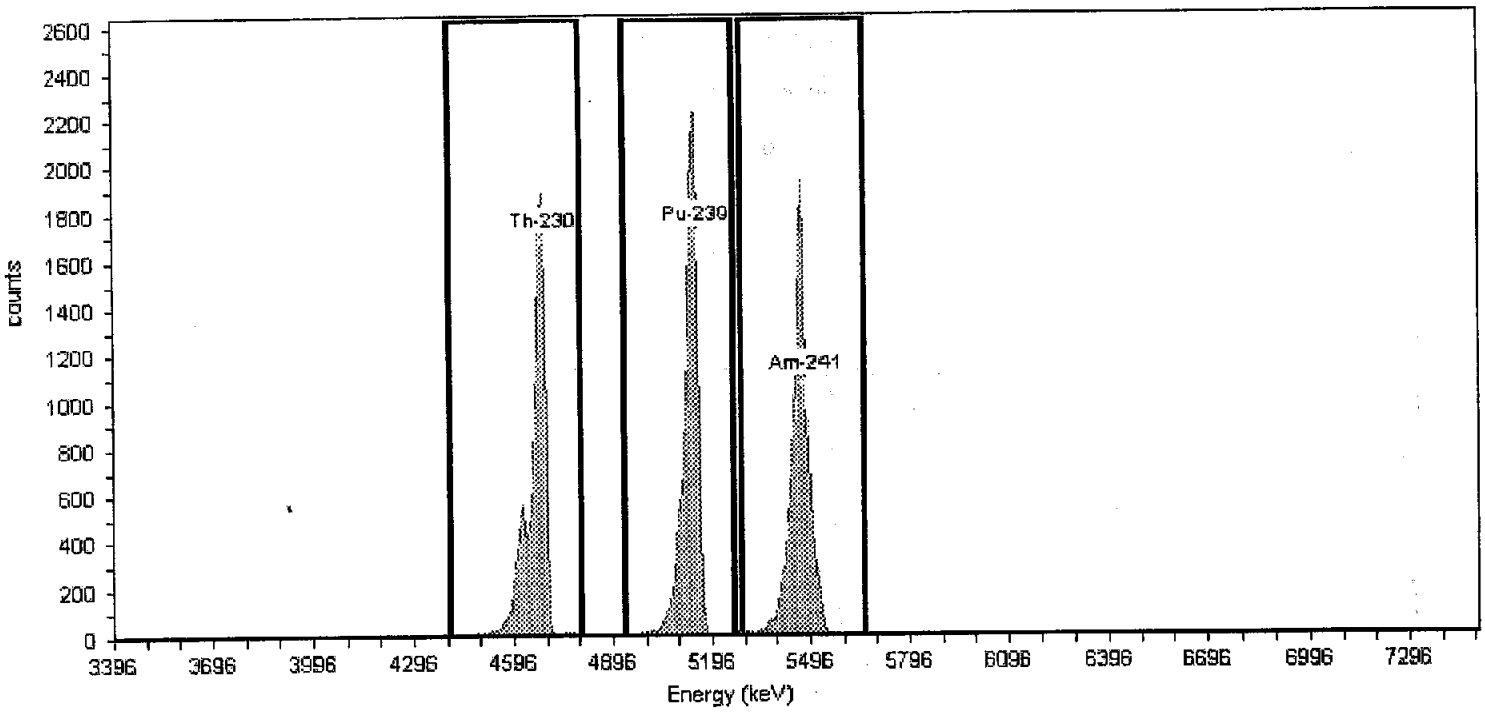
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV7 , SN: 41-158X6
Acquisition Start Date: 4/23/2007 1:12:14PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.95% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,419.00	88.71
Pu-239	243	5.16	212	258	13,925.00	99.46
Am-241	289	5.49	261	313	13,449.00	96.06

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:32:44PM 4/23/2007

Analyst: 60040
Detector: AV8

Calibration

Name: April2007_AV8
Description:

Calibration Date: 4/23/2007 3:32:41PM

Source Info

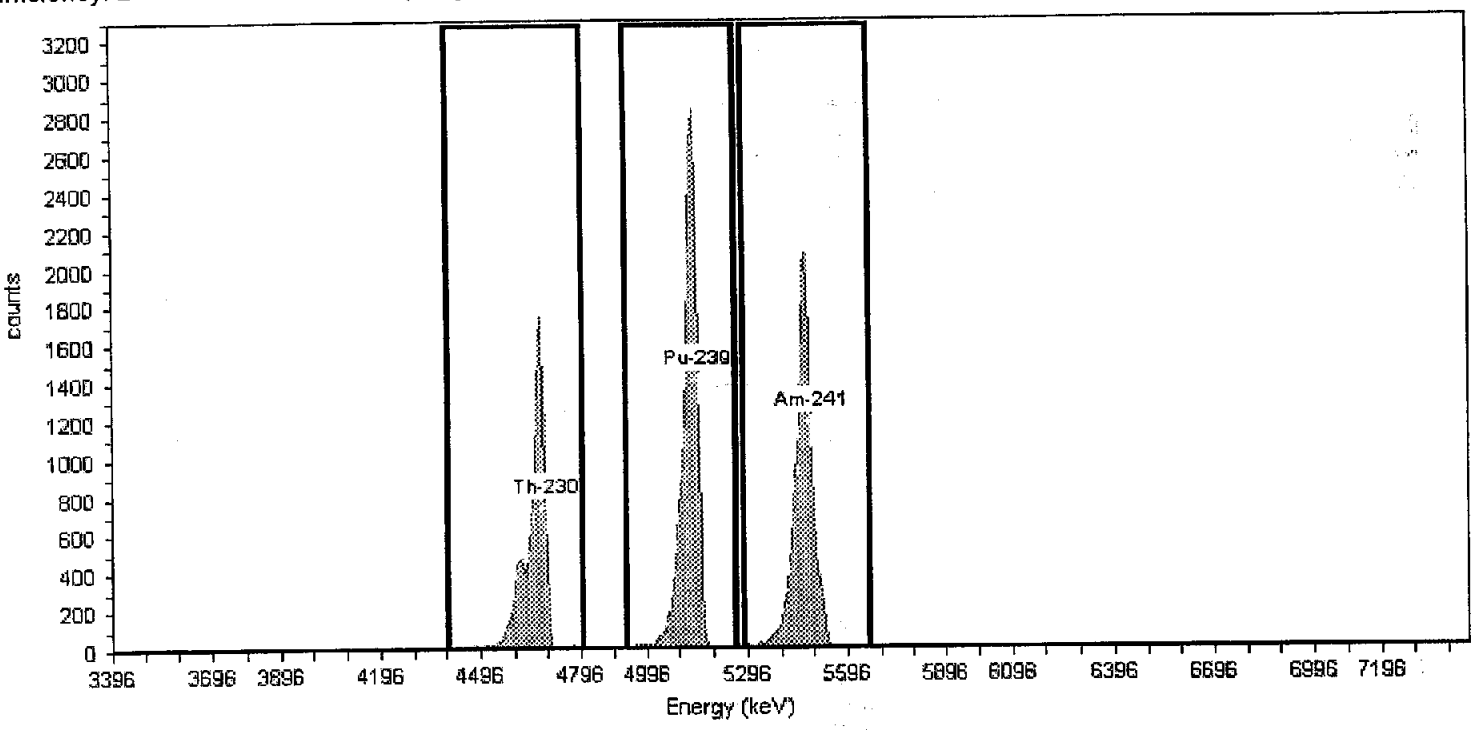
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV8 , SN: 41-158X1
Acquisition Start Date: 4/23/2007 1:12:34PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.52% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,835.00	84.54
Pu-239	243	5.16	212	258	17,980.00	128.43
Am-241	289	5.49	261	313	15,410.00	110.07

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:32:15PM 4/23/2007

Analyst: 60040
Detector: AV9

Calibration

Name: April2007_AV9
Description:

Calibration Date: 4/23/2007 3:32:12PM

Source Info

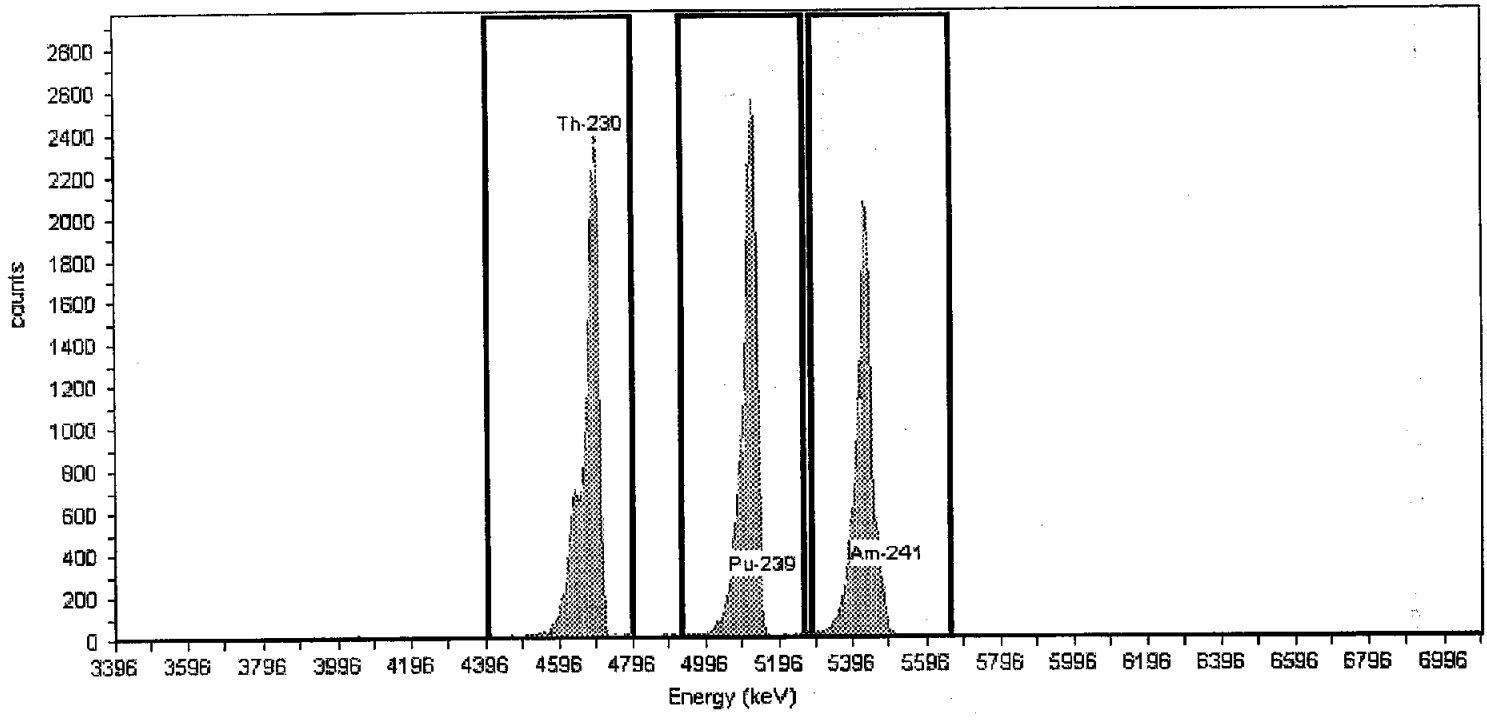
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV9 , SN: 41-172R1
Acquisition Start Date: 4/23/2007 1:11:39PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.43% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	15,989.00	114.21
Pu-239	243	5.16	212	258	15,640.00	111.71
Am-241	289	5.49	261	313	14,291.00	102.08

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:09:48PM 4/23/2007

Analyst: 60040
Detector: AV11

Calibration

Name: April2007_AV11
Description:

Calibration Date: 4/23/2007 6:09:45PM

Source Info

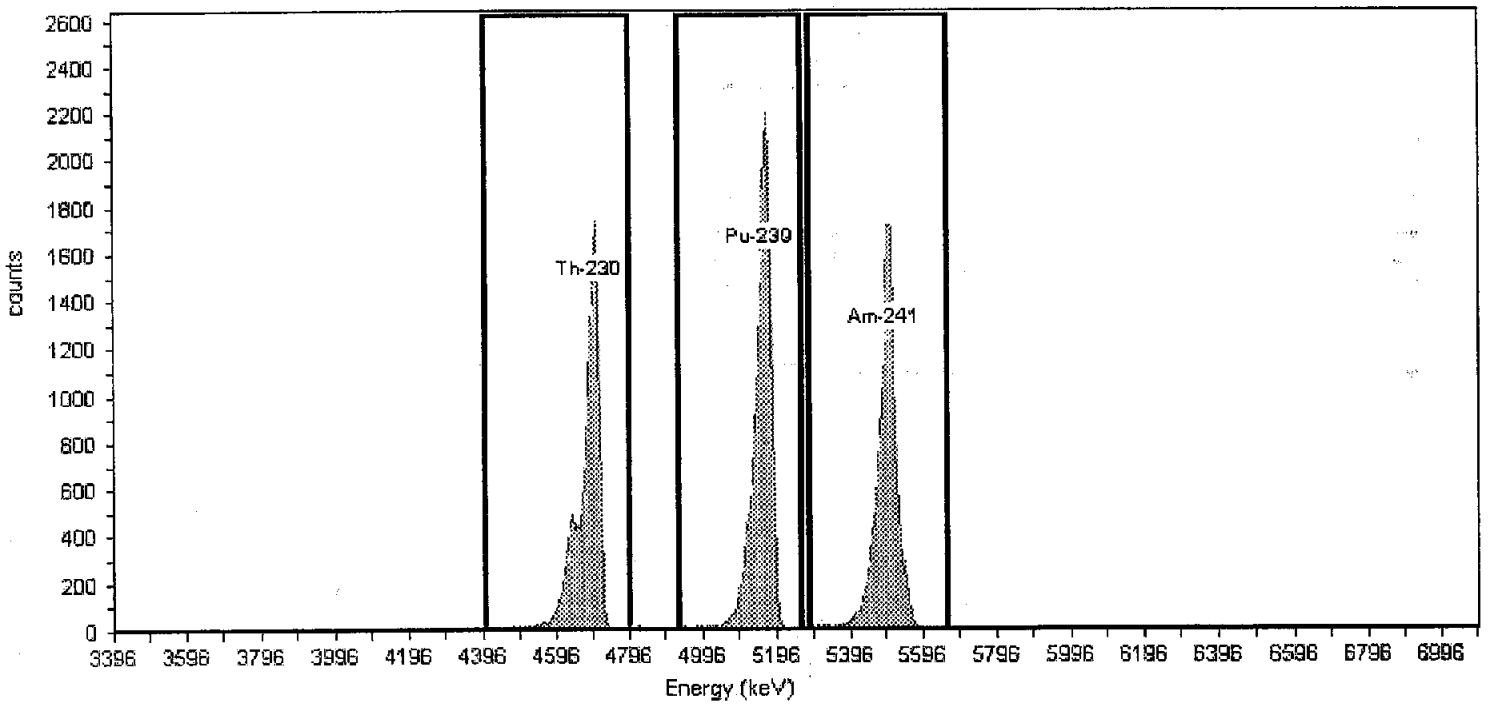
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV11 , SN: 41-172Q3
Acquisition Start Date: 4/23/2007 3:49:17PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.73% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,203.00	87.16
Pu-239	243	5.16	212	258	14,178.00	101.27
Am-241	289	5.49	261	313	13,098.00	93.56

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:09:55PM 4/23/2007

Analyst: 60040
Detector: AV12

Calibration

Name: April2007_AV12
Description:

Calibration Date: 4/23/2007 6:09:52PM

Source Info

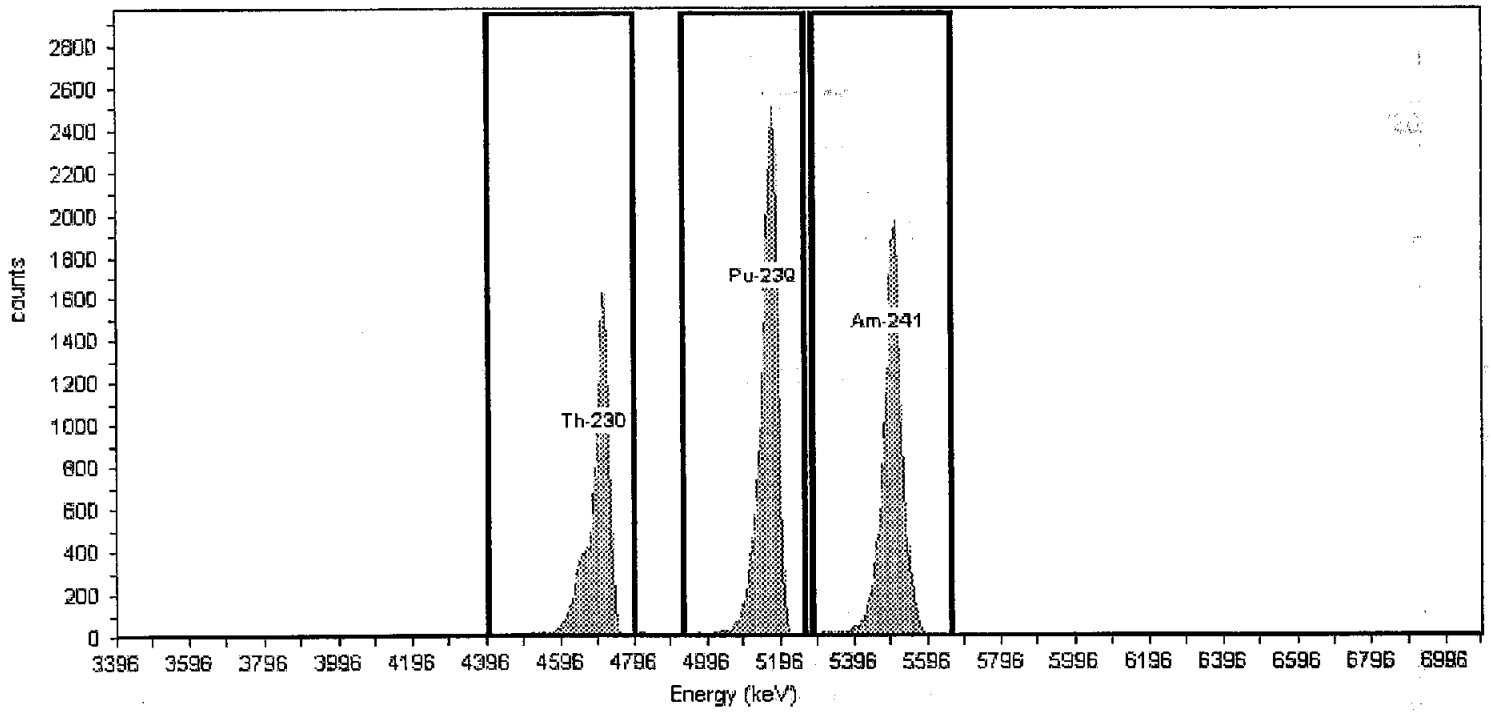
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV12 , SN: 41-172Q2
Acquisition Start Date: 4/23/2007 3:49:33PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.81% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,401.00	81.44
Pu-239	243	5.16	212	258	17,399.00	124.28
Am-241	289	5.49	261	313	15,267.00	109.05

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:09:27PM 4/23/2007

Analyst: 60040
Detector: AV13

Calibration

Name: April2007_AV13
Description:

Calibration Date: 4/23/2007 6:09:23PM

Source Info

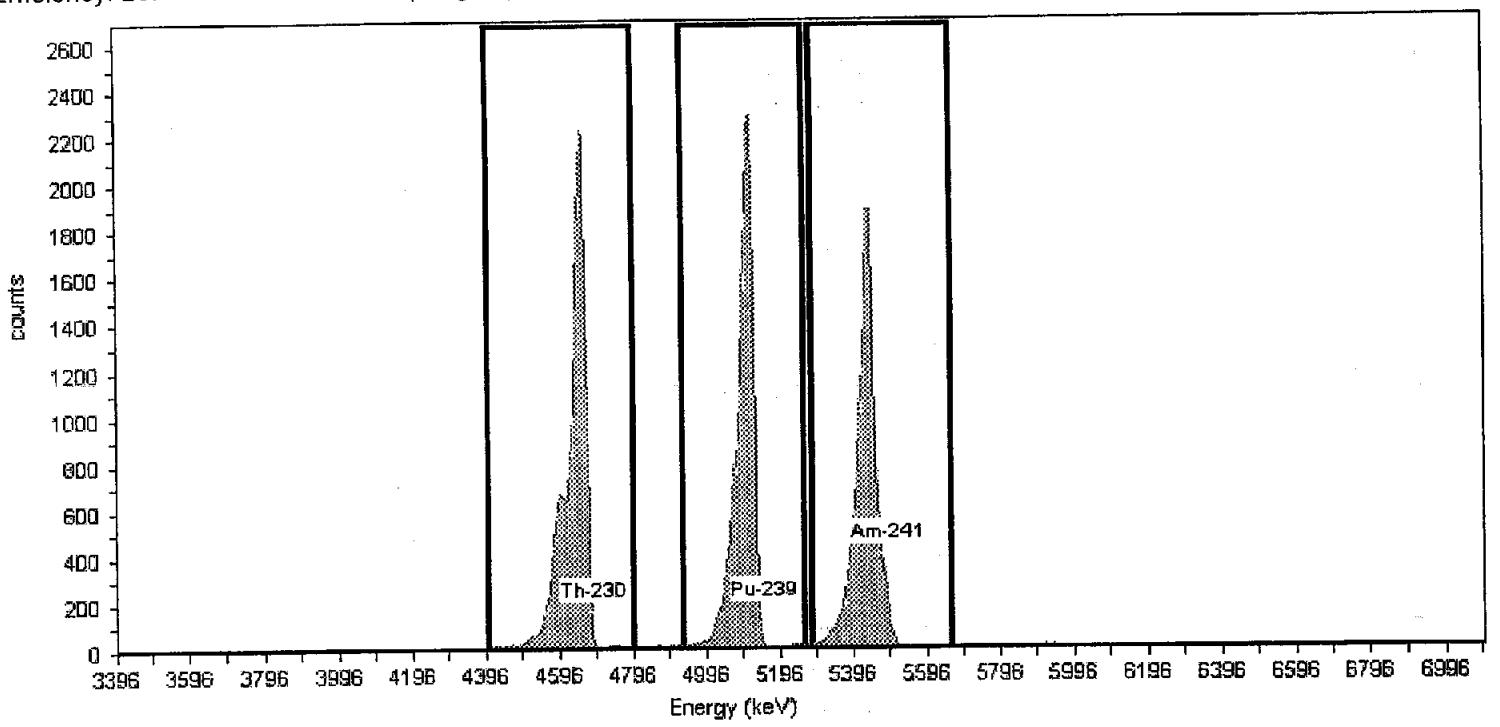
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV13 , SN: 41-172Q1
Acquisition Start Date: 4/23/2007 3:48:48PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.88% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,491.00	117.79
Pu-239	243	5.16	212	258	15,515.00	110.82
Am-241	289	5.49	261	313	14,748.00	105.34

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:09:38PM 4/23/2007

Analyst: 60040
Detector: AV14

Calibration

Name: April2007_AV14
Description:

Calibration Date: 4/23/2007 6:09:35PM

Source Info

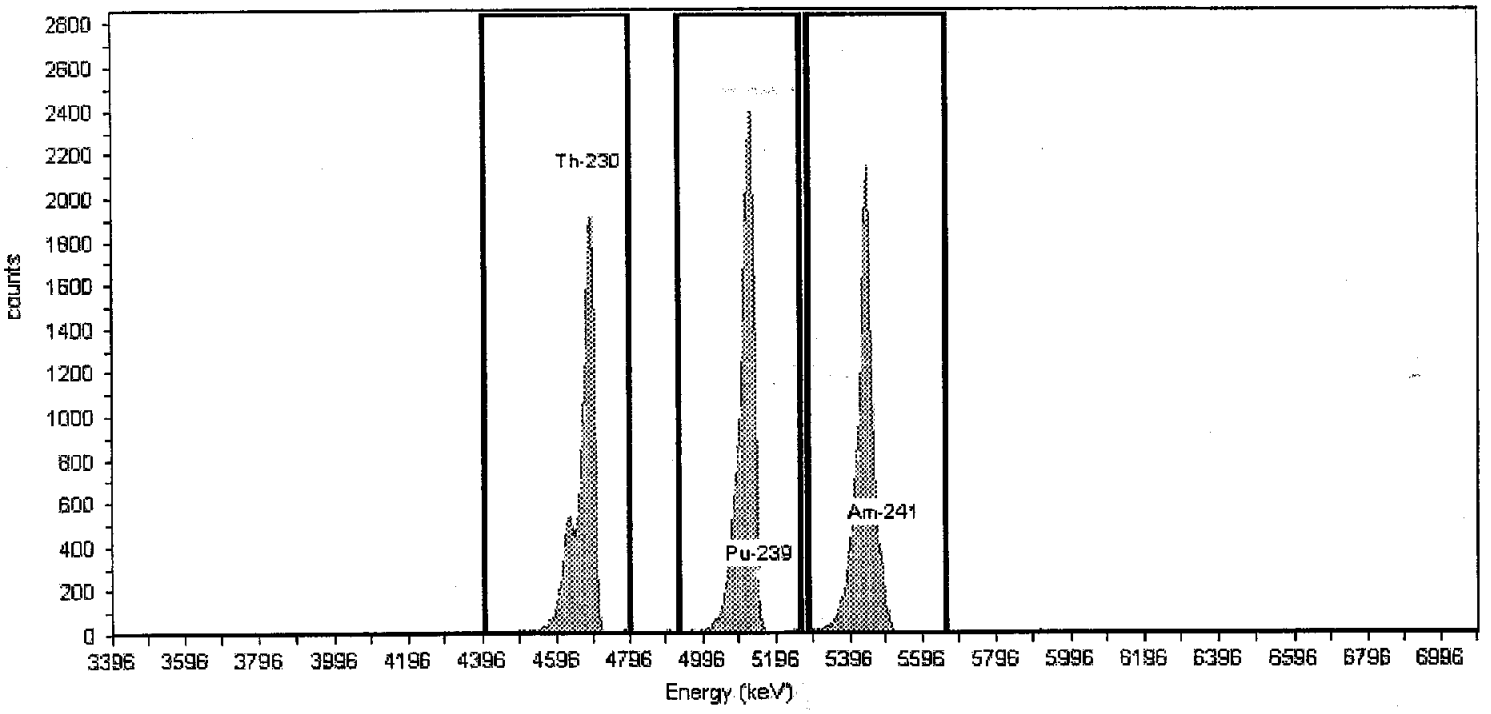
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV14 , SN: 41-172C4
Acquisition Start Date: 4/23/2007 3:49:05PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.70% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,424.00	88.74
Pu-239	243	5.16	212	258	14,852.00	106.09
Am-241	289	5.49	261	313	14,189.00	101.35

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:43:24AM 4/24/2007

Analyst: 60040
Detector: AV15

Calibration

Name: April2007_AV15
Description:

Calibration Date: 4/24/2007 10:43:21AM

Source Info

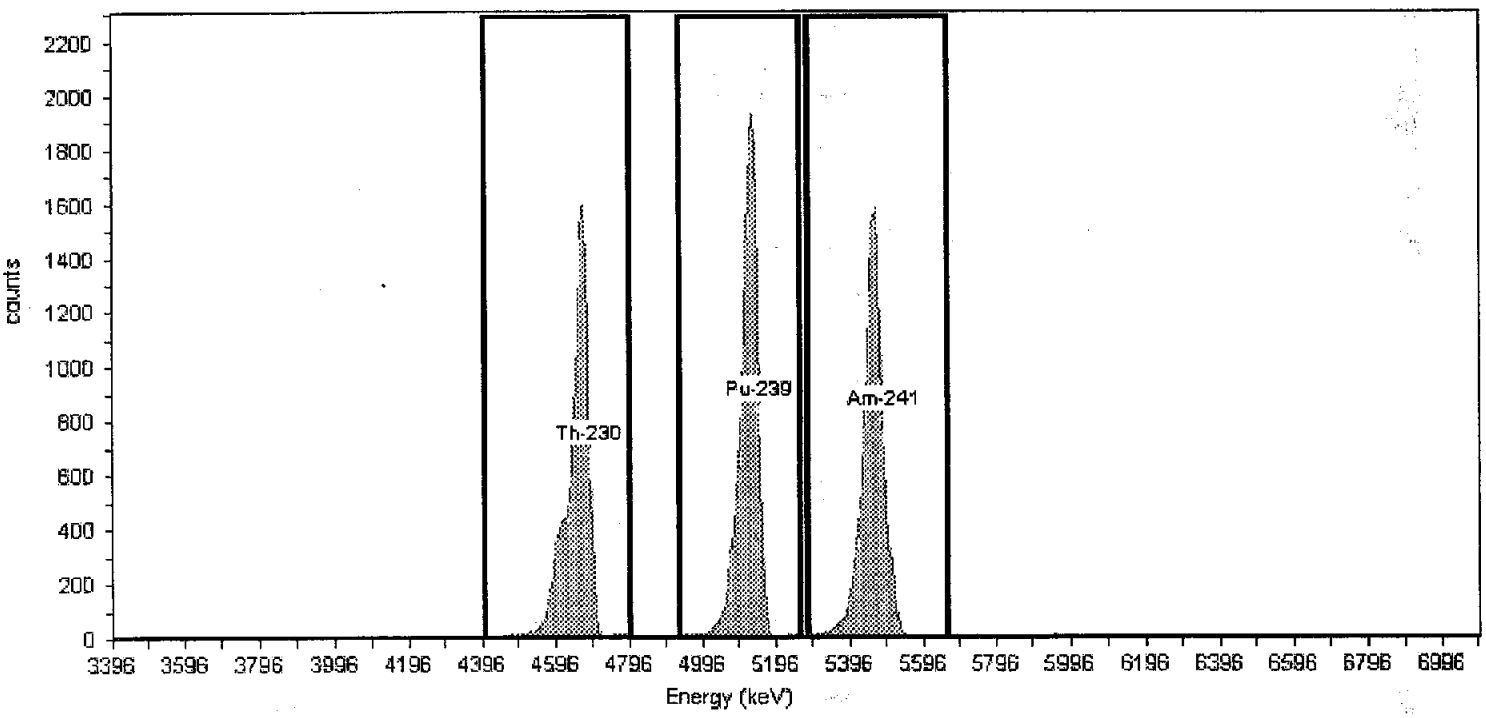
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV15 , SN: 41-172C5
Acquisition Start Date: 4/24/2007 8:19:50AM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.50% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,210.00	87.21
Pu-239	243	5.16	212	258	13,966.00	99.76
Am-241	289	5.49	261	313	12,962.00	92.59

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:52:20AM 4/10/2007

Analyst: 60040
Detector: AV17

Calibration

Name: Apr2007_AV17
Description:

Calibration Date: 4/10/2007 8:52:02AM

Source Info

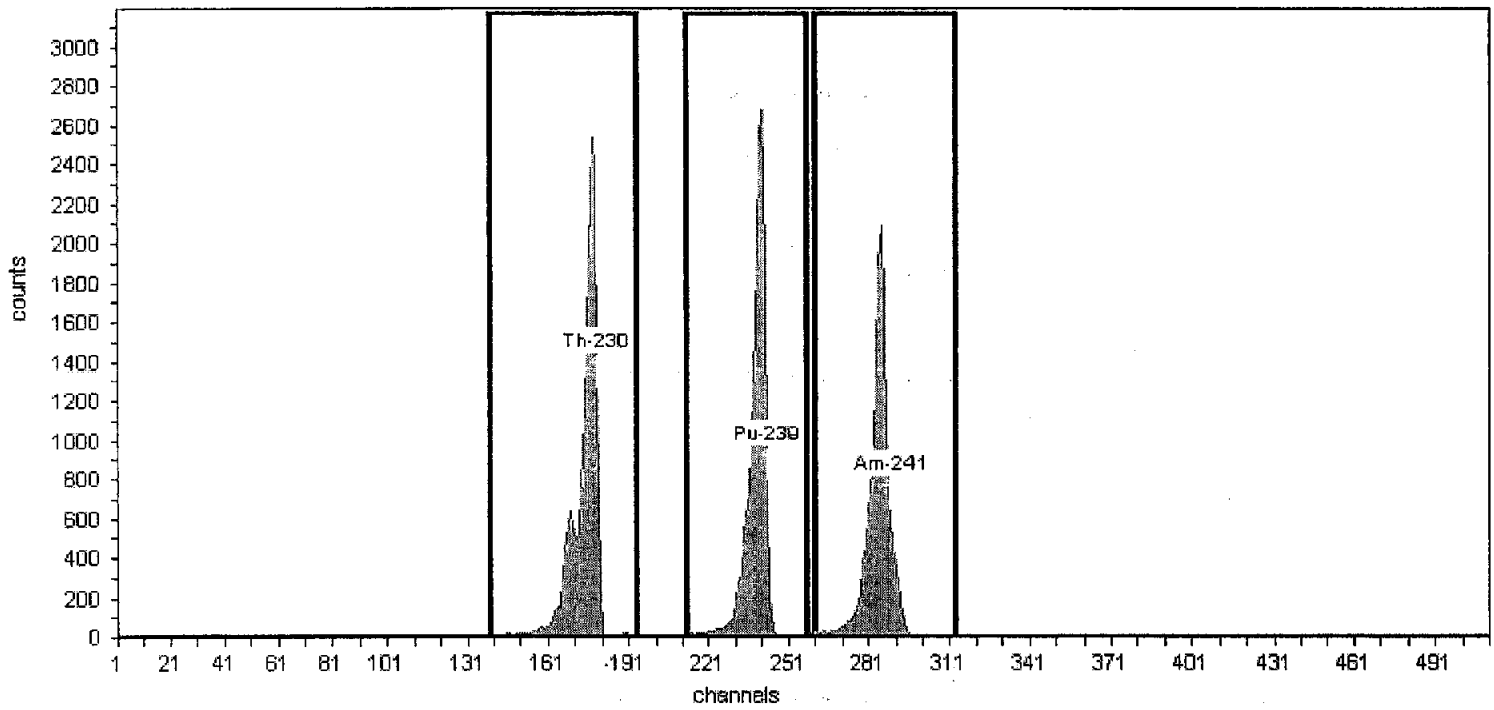
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV17 , SN: 41-172Q4
Acquisition Start Date: 4/9/2007 6:50:44PM
Live Time: 140.00 min.
Real Time: 140.07 min.
Efficiency: 26.06% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	15,973.00	114.09
Pu-239	243	5.16	212	258	15,319.00	109.42
Am-241	289	5.49	261	313	14,055.00	100.39

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:43:17AM 4/24/2007

Analyst: 60040
Detector: AV18

Calibration

Name: April2007_AV18
Description:

Calibration Date: 4/24/2007 10:43:13AM

Source Info

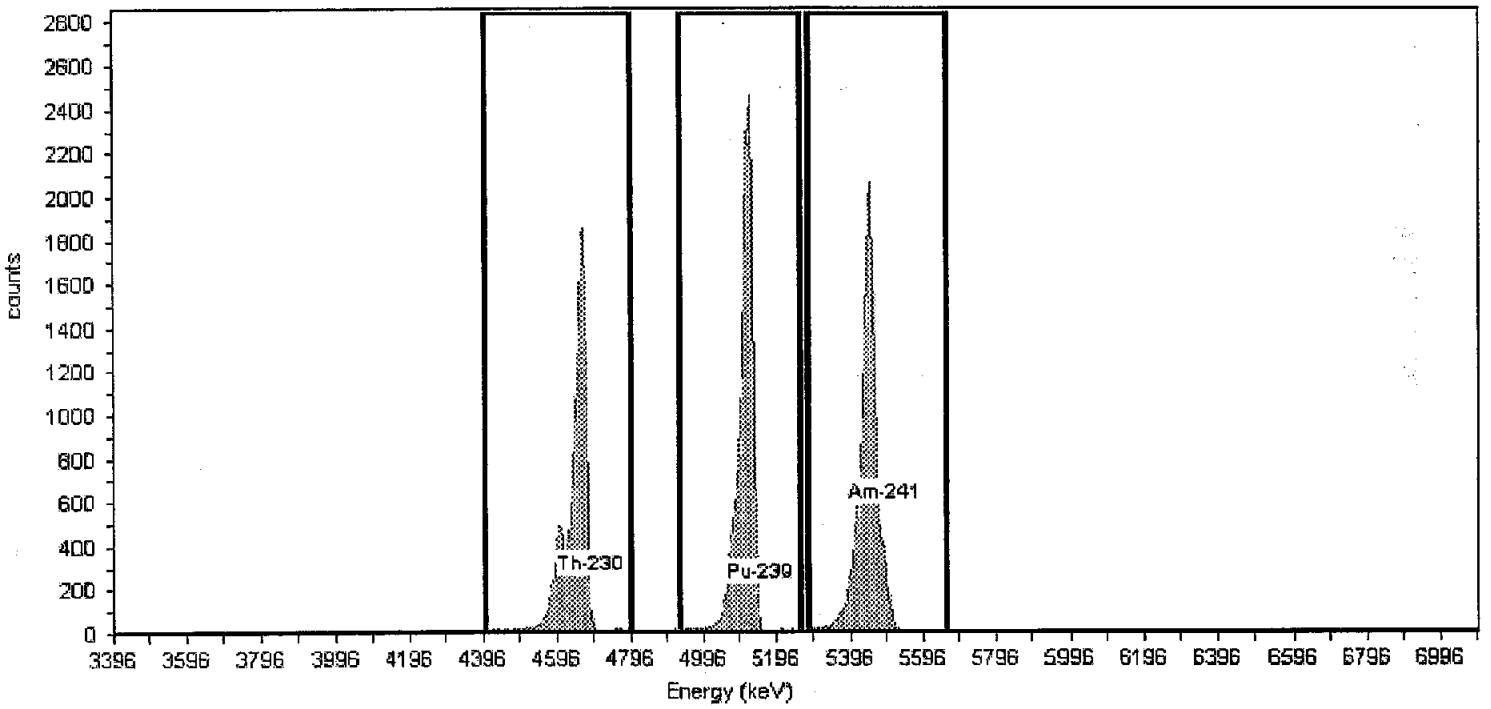
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV18 , SN: 41-172C6
Acquisition Start Date: 4/24/2007 8:19:25AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 25.26% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,780.00	84.14
Pu-239	243	5.16	212	258	13,947.00	99.62
Am-241	289	5.49	261	313	13,488.00	96.34

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:49:39PM 4/24/2007

Analyst: 60040
Detector: AV19

Calibration

Name: April2007_AV19
Description:

Calibration Date: 4/24/2007 6:49:35PM

Source Info

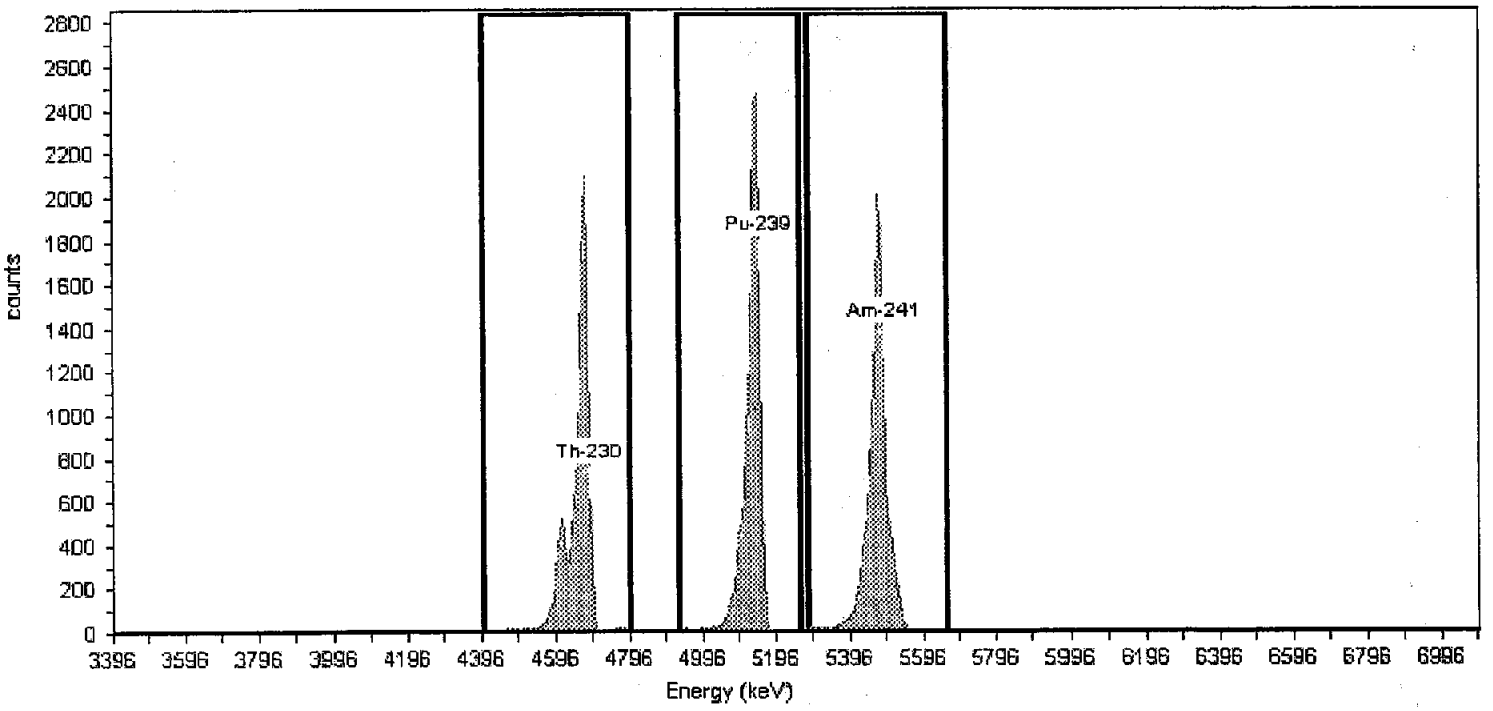
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV19 , SN: 41-172Q6
Acquisition Start Date: 4/24/2007 4:08:03PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 25.85% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,875.00	84.82
Pu-239	243	5.16	212	258	13,628.00	97.34
Am-241	289	5.49	261	313	12,668.00	90.49

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:43:31AM 4/24/2007

Analyst: 60040
Detector: AV20

Calibration

Name: April2007_AV20
Description:

Calibration Date: 4/24/2007 10:43:28AM

Source Info

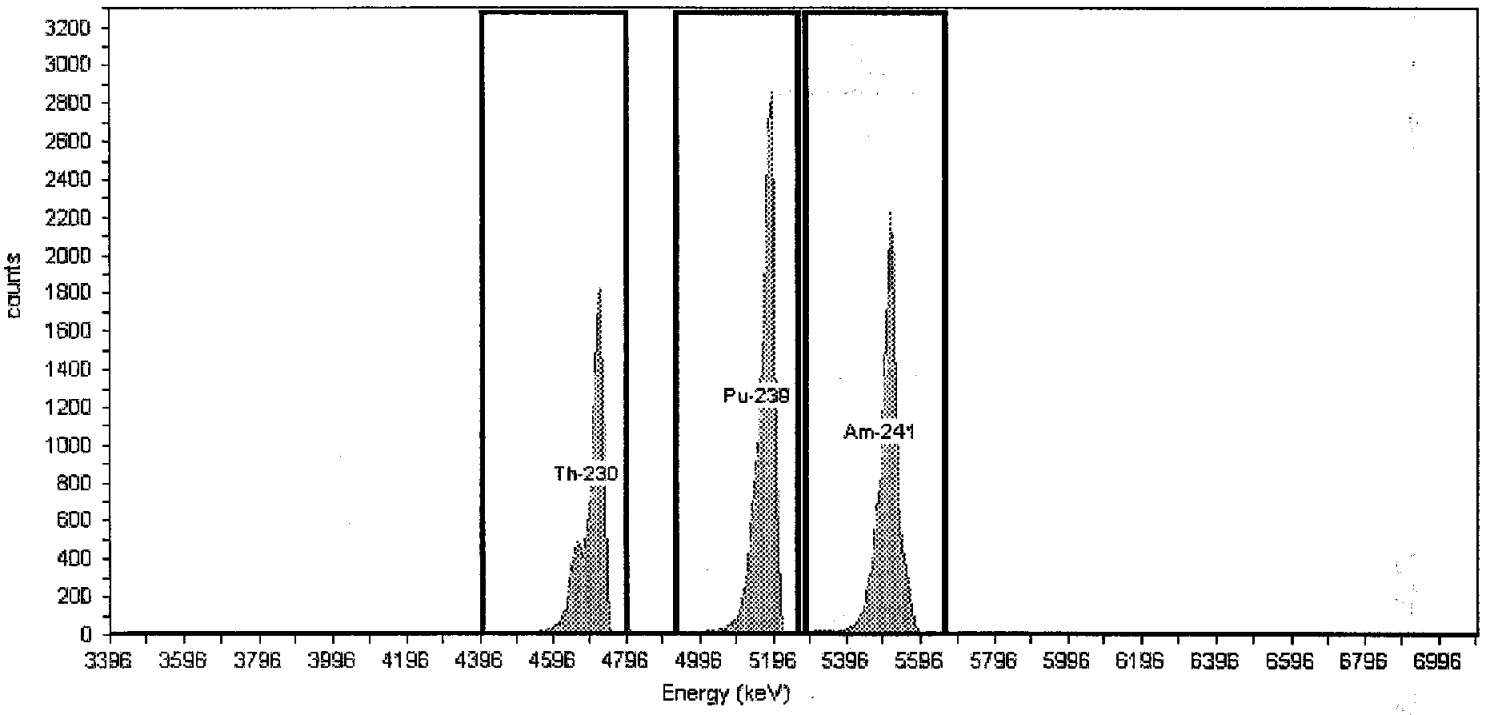
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV20 , SN: 41-172R2
Acquisition Start Date: 4/24/2007 8:20:07AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.35% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,027.00	85.91
Pu-239	243	5.16	212	258	17,603.00	125.74
Am-241	289	5.49	261	313	15,337.00	109.55

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:42:19AM 4/24/2007

Analyst: 60040
Detector: AV21

Calibration

Name: April2007_AV21
Description:

Calibration Date: 4/24/2007 10:42:15AM

Source Info

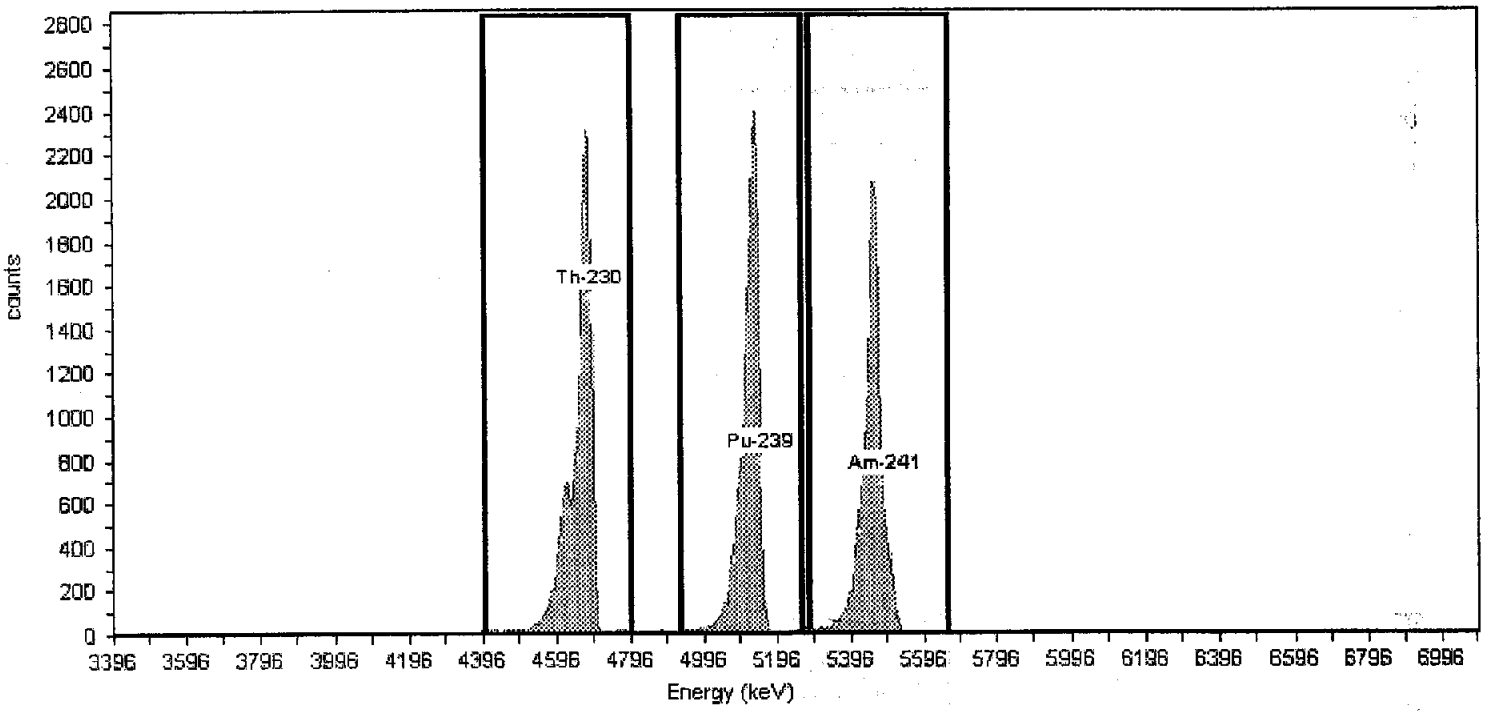
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV21 , SN: 41-172C7
Acquisition Start Date: 4/24/2007 8:19:07AM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.70% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,219.00	115.85
Pu-239	243	5.16	212	258	15,526.00	110.90
Am-241	289	5.49	261	313	14,639.00	104.56

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:49:33PM 4/24/2007

Analyst: 60040
Detector: AV22

Calibration

Name: April2007_AV22
Description:

Calibration Date: 4/24/2007 6:49:30PM

Source Info

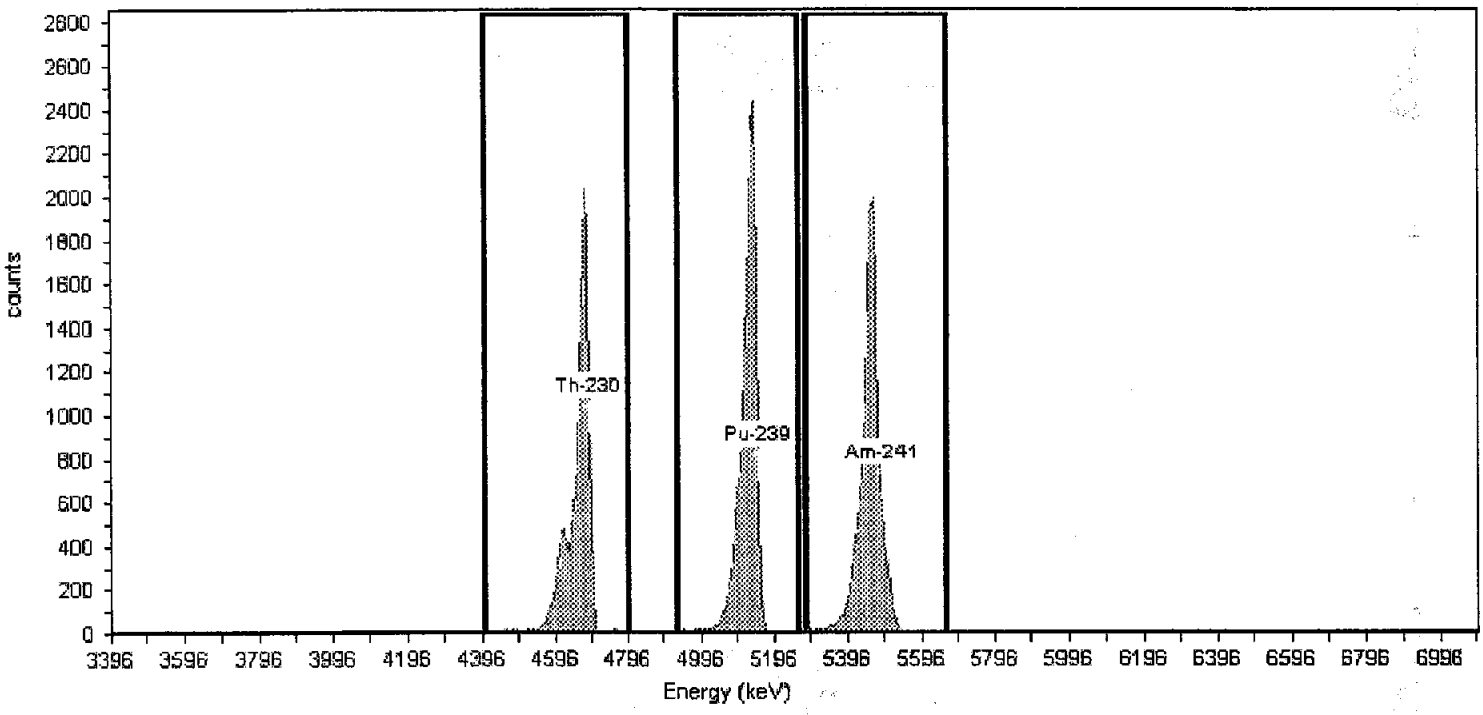
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV22 , SN: 41-172Q5
Acquisition Start Date: 4/24/2007 4:07:39PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 25.75% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,103.00	86.45
Pu-239	243	5.16	212	258	14,161.00	101.15
Am-241	289	5.49	261	313	13,640.00	97.43

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:53:11AM 4/10/2007

Analyst: 60040
Detector: AV23

Calibration

Name: Apr2007_AV23a
Calibration Date: 4/10/2007 8:52:52AM
Description:

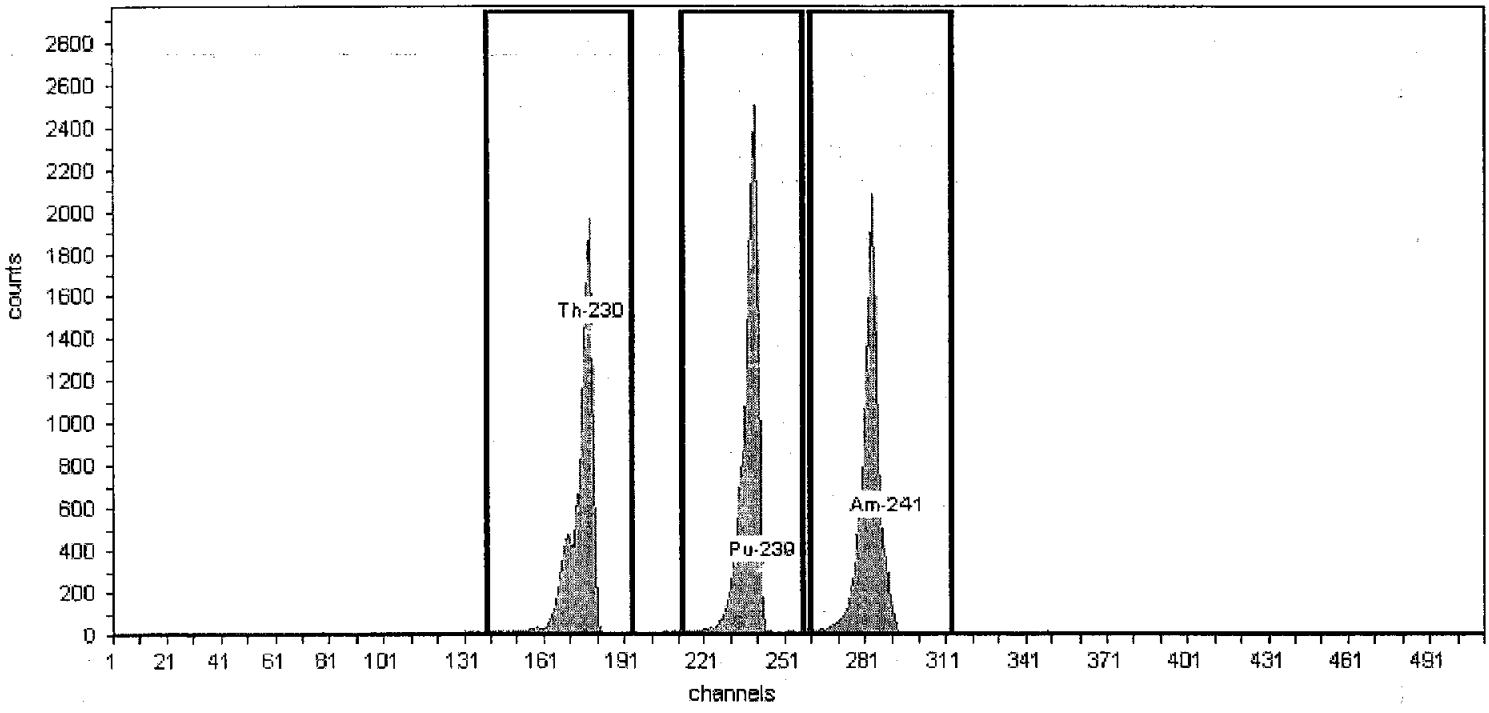
Source Info

Certificate ID: 63508A-334
Certification Date: 5/30/2002 12:00:00PM
Prepared by: Analytics
Description:

Acquisition

Detector: AV23 , SN: 41-172R4
Acquisition Start Date: 4/9/2007 7:09:10PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.94% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,206.00	87.19
Pu-239	243	5.16	212	258	14,477.00	103.41
Am-241	289	5.49	261	313	13,131.00	93.79

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:49:50PM 4/24/2007

Analyst: 60040
Detector: AV24

Calibration

Name: April2007_AV24
Description:

Calibration Date: 4/24/2007 6:49:47PM

Source Info

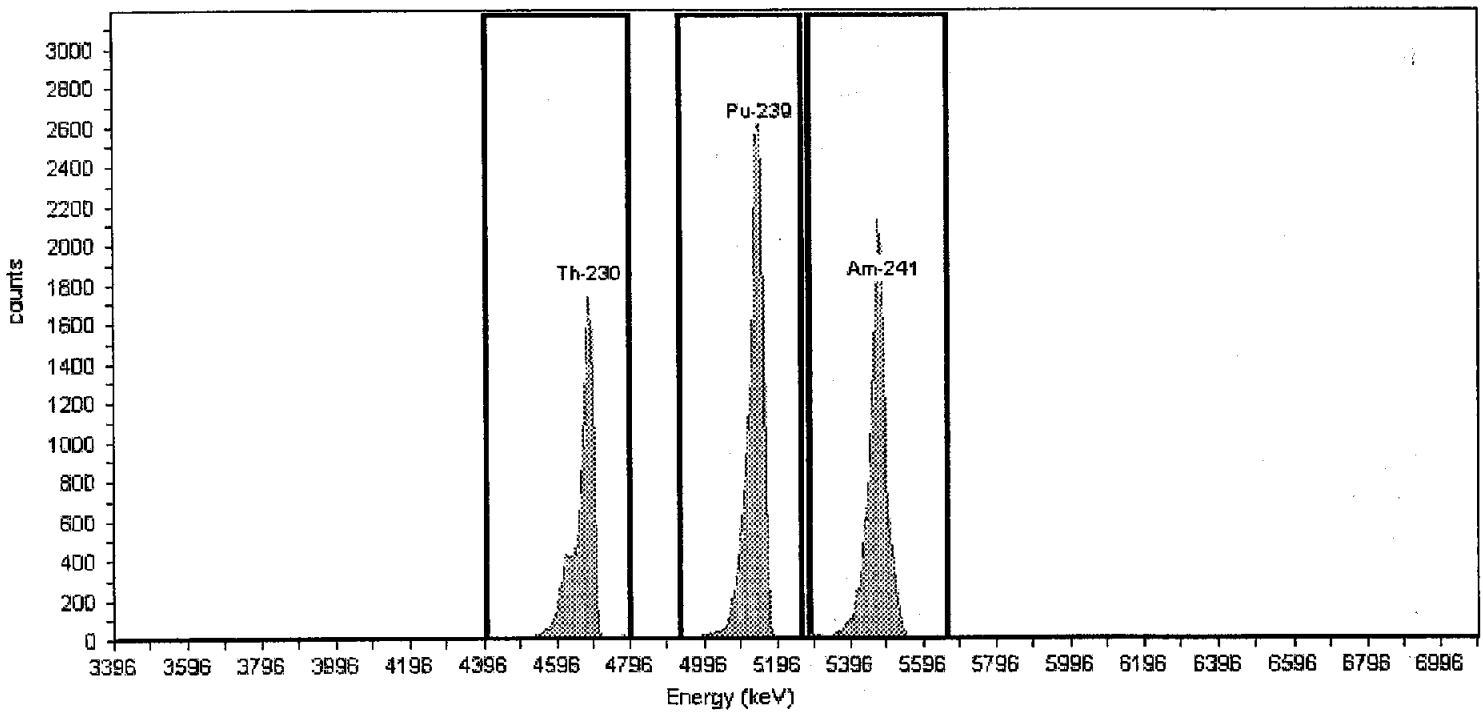
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV24 , SN: 41-172R5
Acquisition Start Date: 4/24/2007 4:08:15PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.27% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,274.00	80.53
Pu-239	243	5.16	212	258	16,927.00	120.91
Am-241	289	5.49	261	313	14,987.00	107.05

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:04:46PM 4/25/2007

Analyst: 60040
Detector: AV45

Calibration

Name: April2007_AV45
Description:

Calibration Date: 4/25/2007 2:04:36PM

Source Info

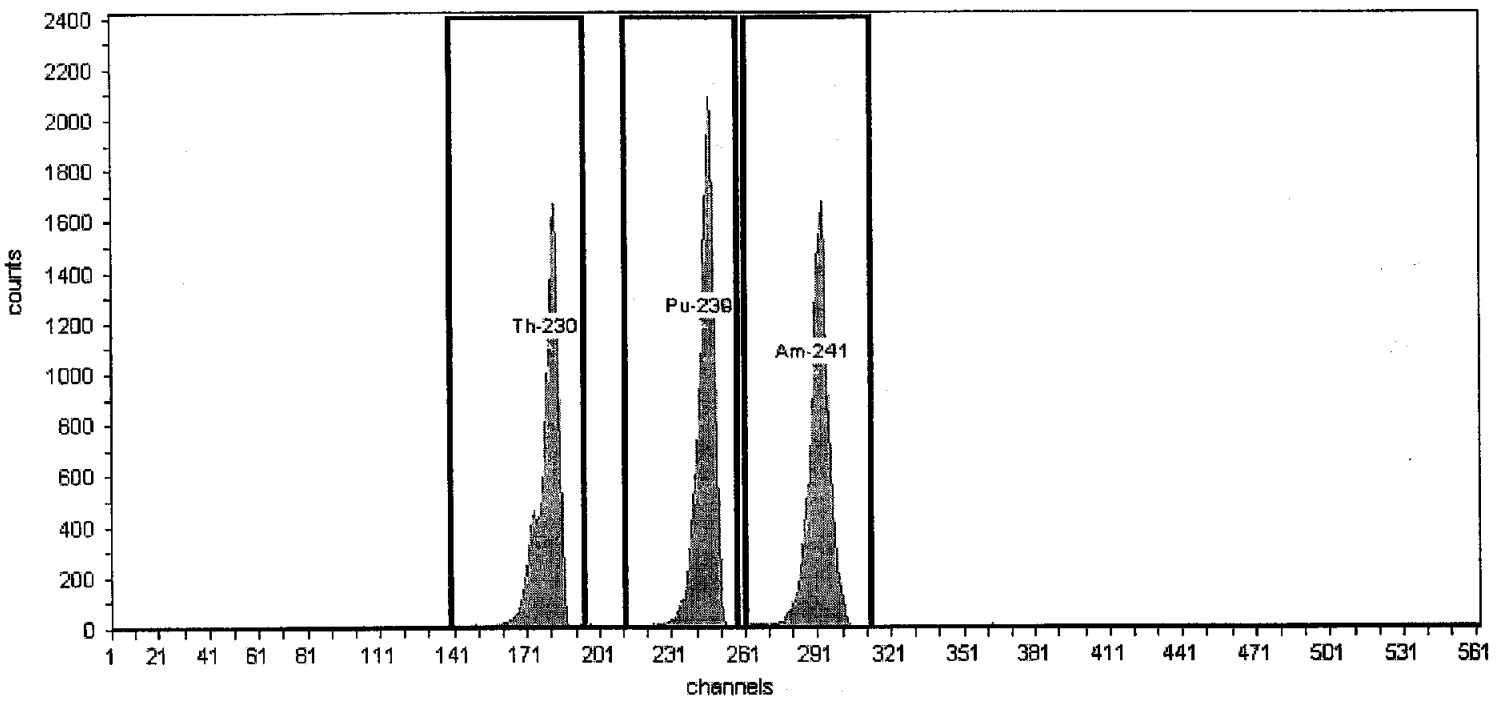
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV45 , SN: AV45
Acquisition Start Date: 4/25/2007 8:47:29AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.63% +/- 0.30% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,549.00	89.64
Pu-239	243	5.16	212	258	14,578.00	104.13
Am-241	289	5.49	261	313	13,678.00	97.70

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:05:45PM 4/25/2007

Analyst: 60040
Detector: AV46

Calibration

Name: April2007_AV46
Description:

Calibration Date: 4/25/2007 2:05:39PM

Source Info

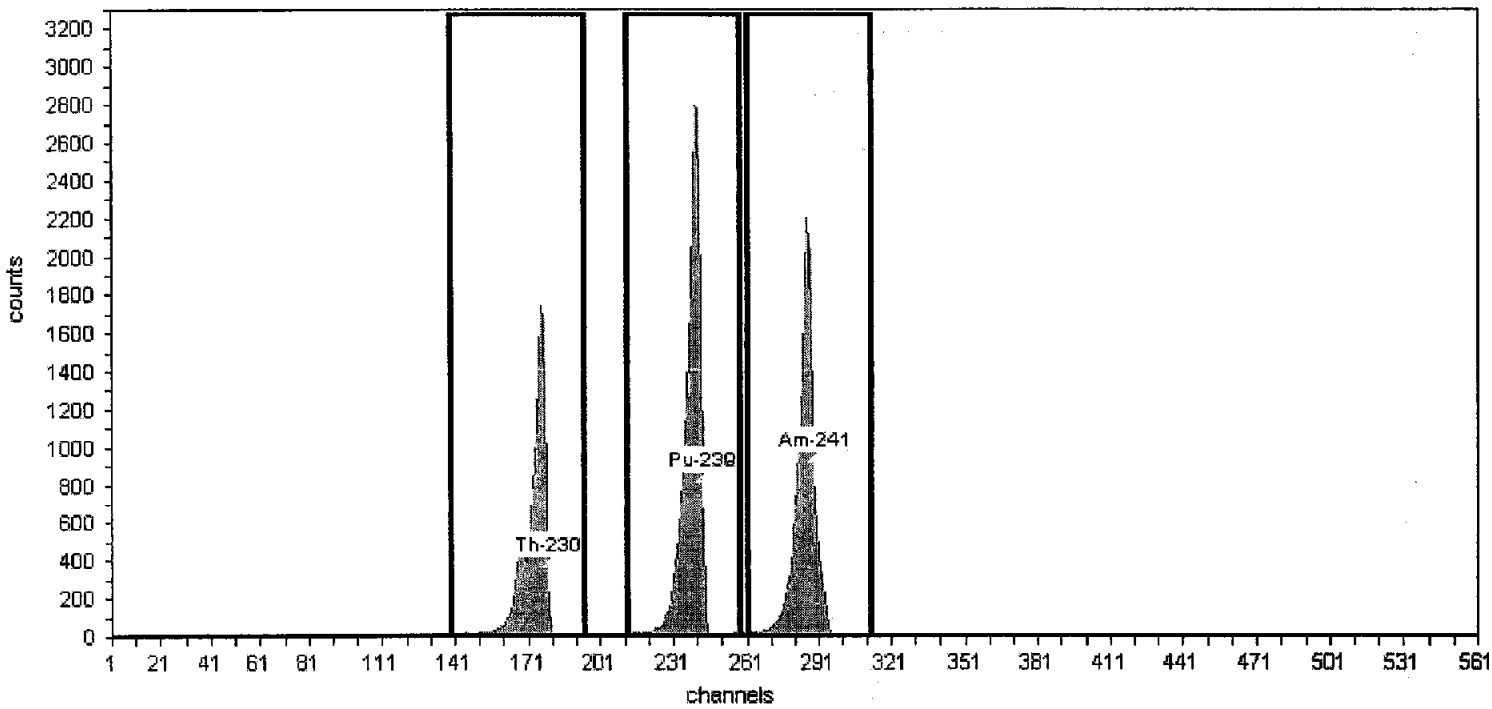
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV46 , SN: AV46
Acquisition Start Date: 4/25/2007 8:48:51AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.32% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,639.00	83.14
Pu-239	243	5.16	212	258	17,857.00	127.55
Am-241	289	5.49	261	313	15,411.00	110.08

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:49:25PM 4/24/2007

Analyst: 60040
Detector: AV47

Calibration

Name: April2007_AV47
Description:

Calibration Date: 4/24/2007 6:49:22PM

Source Info

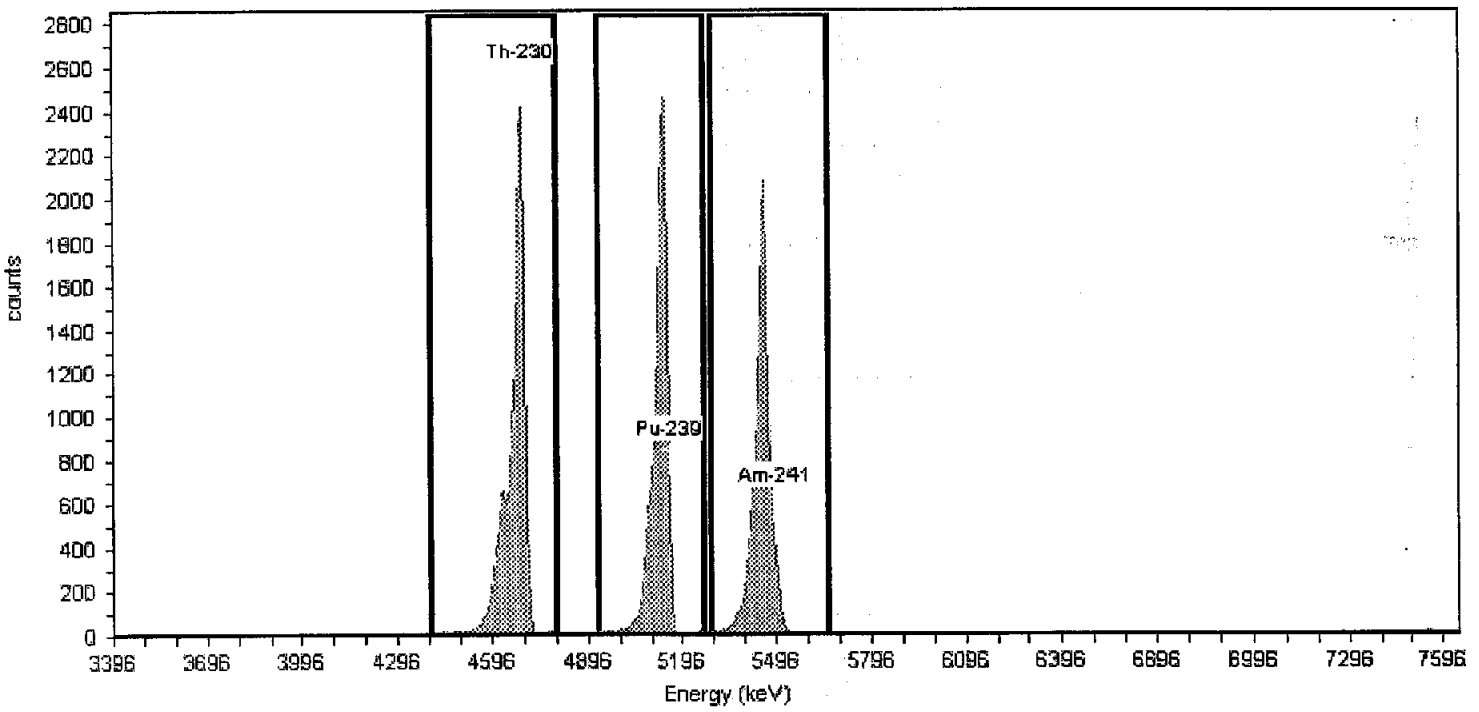
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV47 , SN: AV47
Acquisition Start Date: 4/24/2007 4:07:18PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.28% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,027.00	114.48
Pu-239	243	5.16	212	258	15,278.00	109.13
Am-241	289	5.49	261	313	14,375.00	102.68

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

Analyst: 60040
Detector: AV48

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:06:22PM 4/25/2007

Calibration

Name: April2007_AV48
Description:

Calibration Date: 4/25/2007 2:06:17PM

Source Info

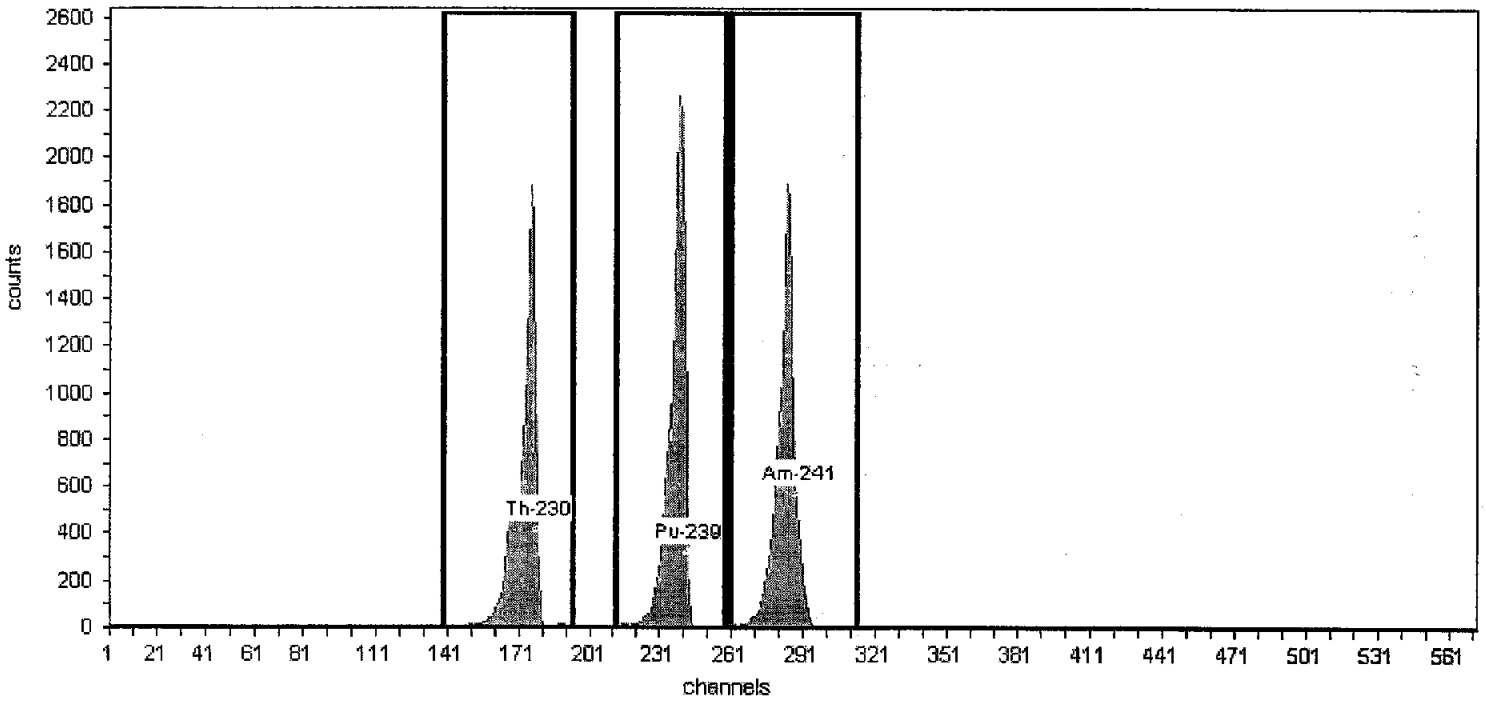
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV48 , SN: AV48
Acquisition Start Date: 4/25/2007 8:47:11AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.35% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,447.00	88.91
Pu-239	243	5.16	212	258	14,563.00	104.02
Am-241	289	5.49	261	313	13,776.00	98.40

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:06:50PM 4/25/2007

Analyst: 60040
Detector: AV49

Calibration

Name: April2007_AV49
Description:

Calibration Date: 4/25/2007 2:06:45PM

Source Info

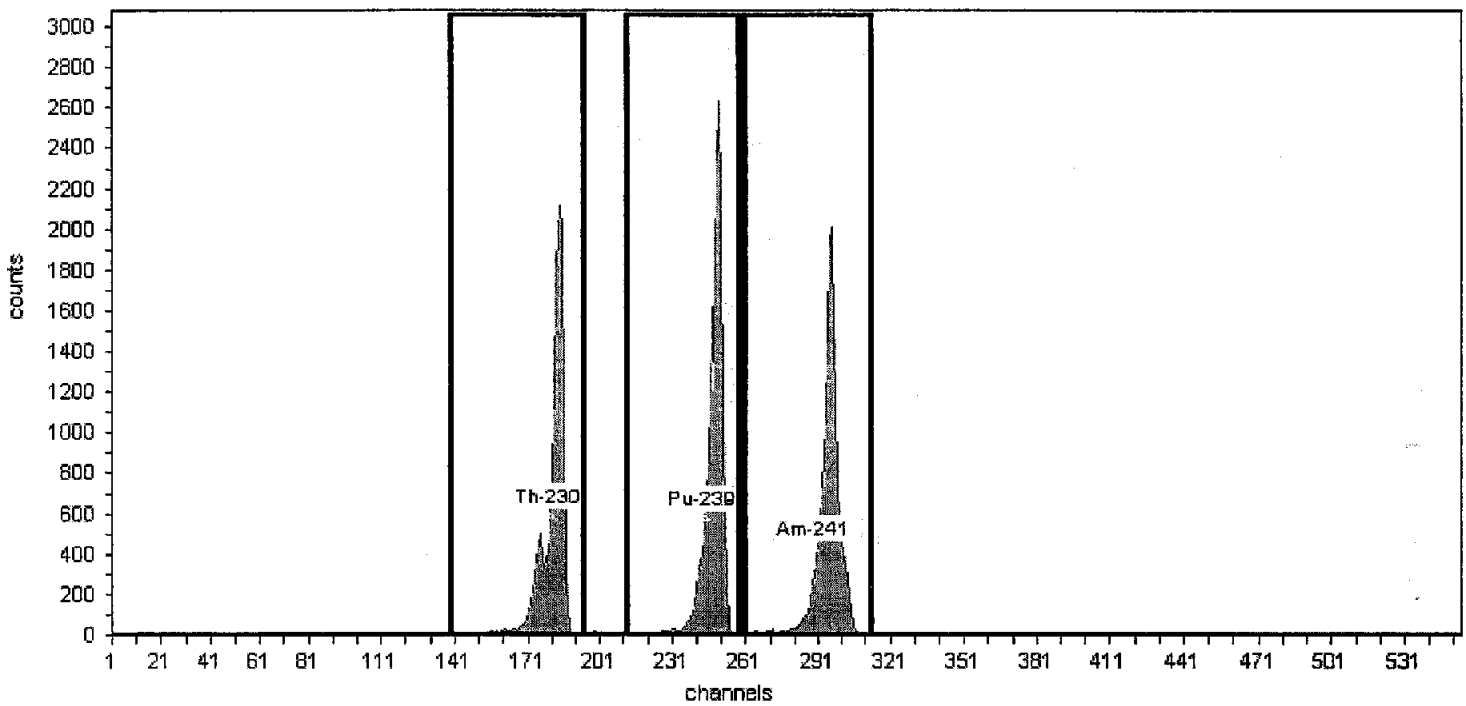
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV49 , SN: AV49
Acquisition Start Date: 4/25/2007 11:15:12AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 27.91% +/- 0.30% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,777.00	91.26
Pu-239	243	5.16	212	258	14,786.00	105.61
Am-241	289	5.49	261	313	13,661.00	97.58

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:28:10PM 4/26/2007

Analyst: 60040
Detector: AV50

Calibration

Name: April2007_AV50
Description:

Calibration Date: 4/25/2007 2:07:09PM

Source Info

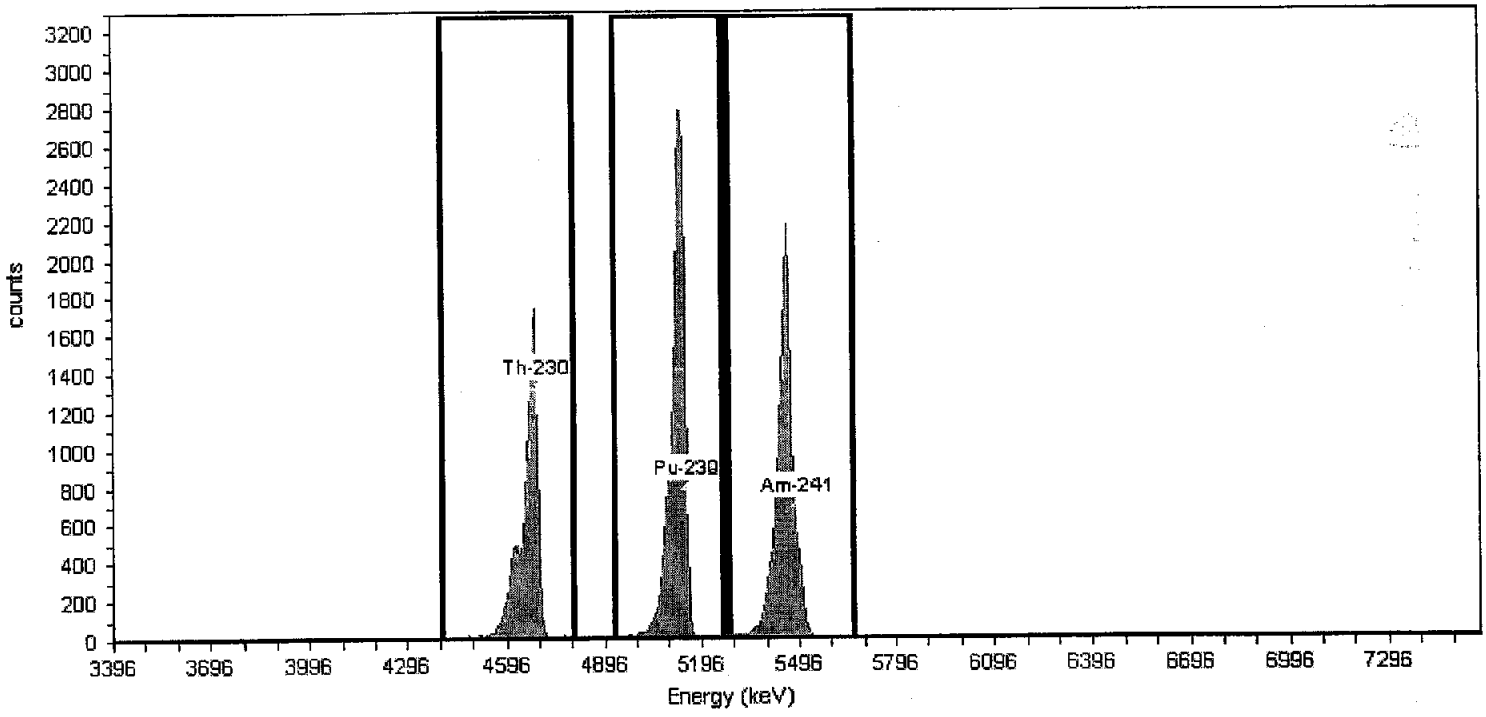
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV50 , SN: AV50
Acquisition Start Date: 4/25/2007 11:15:50AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 27.00% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,754.00	83.96
Pu-239	243	5.16	212	258	17,508.00	125.06
Am-241	289	5.49	261	313	15,113.00	107.95

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:07:35PM 4/25/2007

Analyst: 60040
Detector: AV51

Calibration

Name: April2007_AV51
Description:

Calibration Date: 4/25/2007 2:07:30PM

Source Info

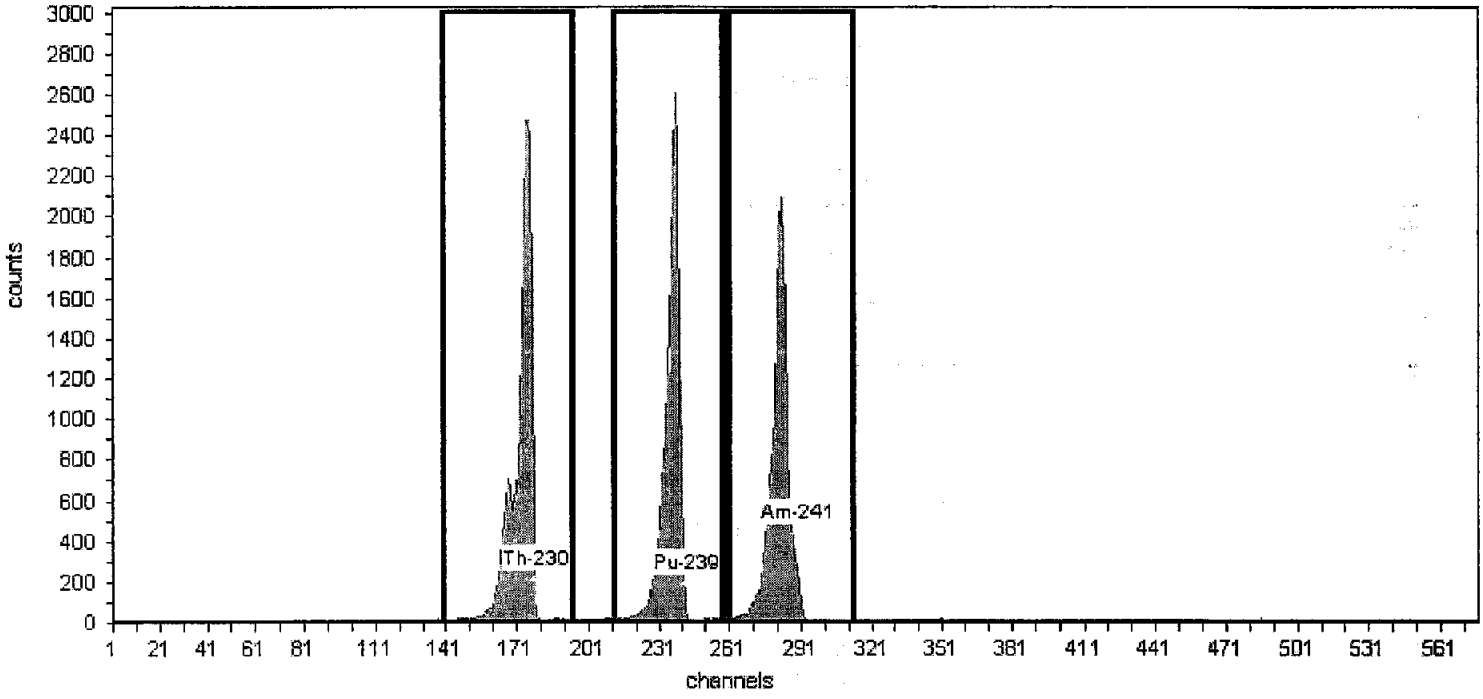
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV51 , SN:
Acquisition Start Date: 4/25/2007 8:46:58AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.89% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,418.00	117.27
Pu-239	243	5.16	212	258	15,835.00	113.11
Am-241	289	5.49	261	313	14,525.00	103.75

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:08:04PM 4/25/2007

Analyst: 60040
Detector: AV52

Calibration

Name: April2007_AV52
Description:

Calibration Date: 4/25/2007 2:07:56PM

Source Info

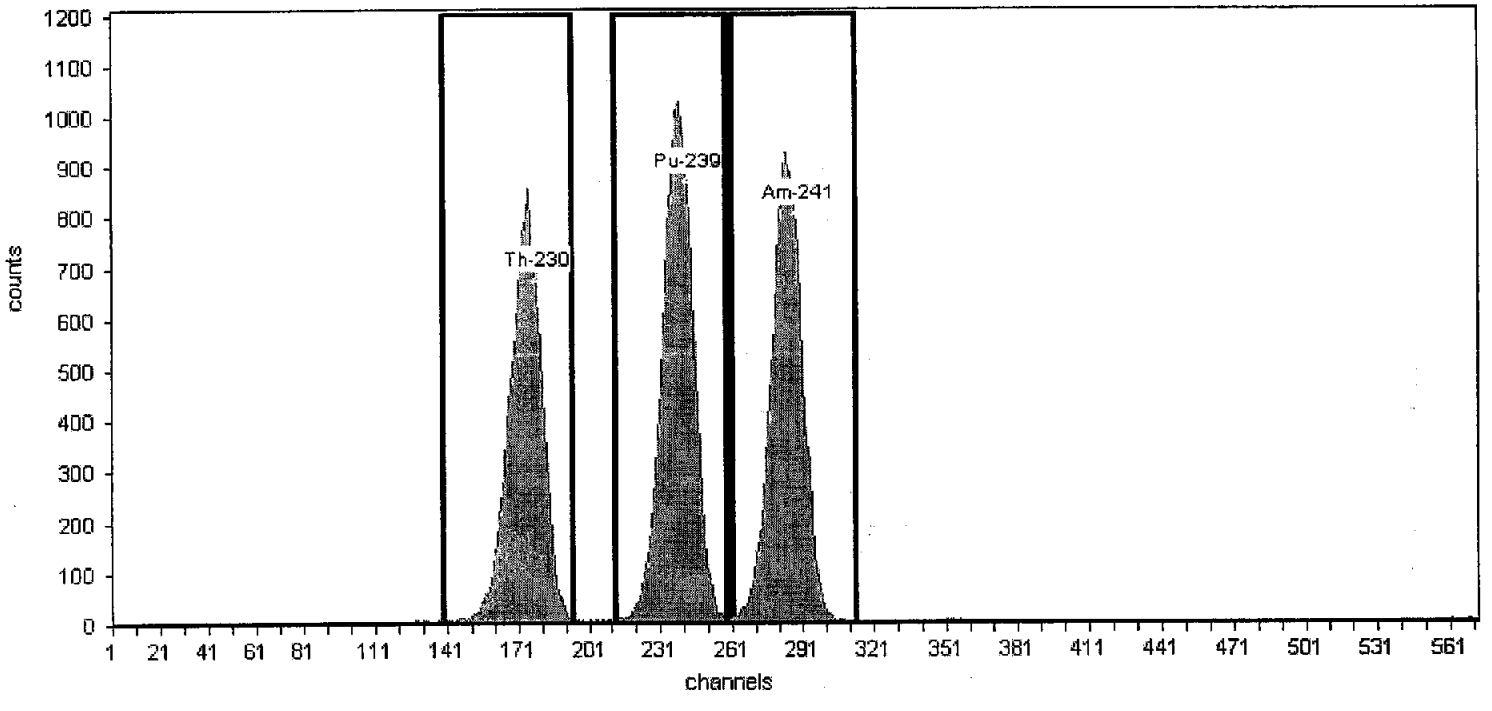
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV52 , SN:
Acquisition Start Date: 4/25/2007 11:15:14AM
Live Time: 140.00 min.
Real Time: 155.56 min.
Efficiency: 27.60% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,954.00	92.53
Pu-239	243	5.16	212	258	15,232.00	108.80
Am-241	289	5.49	261	313	14,601.00	104.29

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:14:21AM 4/26/2007

Analyst: 60040
Detector: AV53

Calibration

Name: April2007_AV53
Description:

Calibration Date: 4/26/2007 6:14:18AM

Source Info

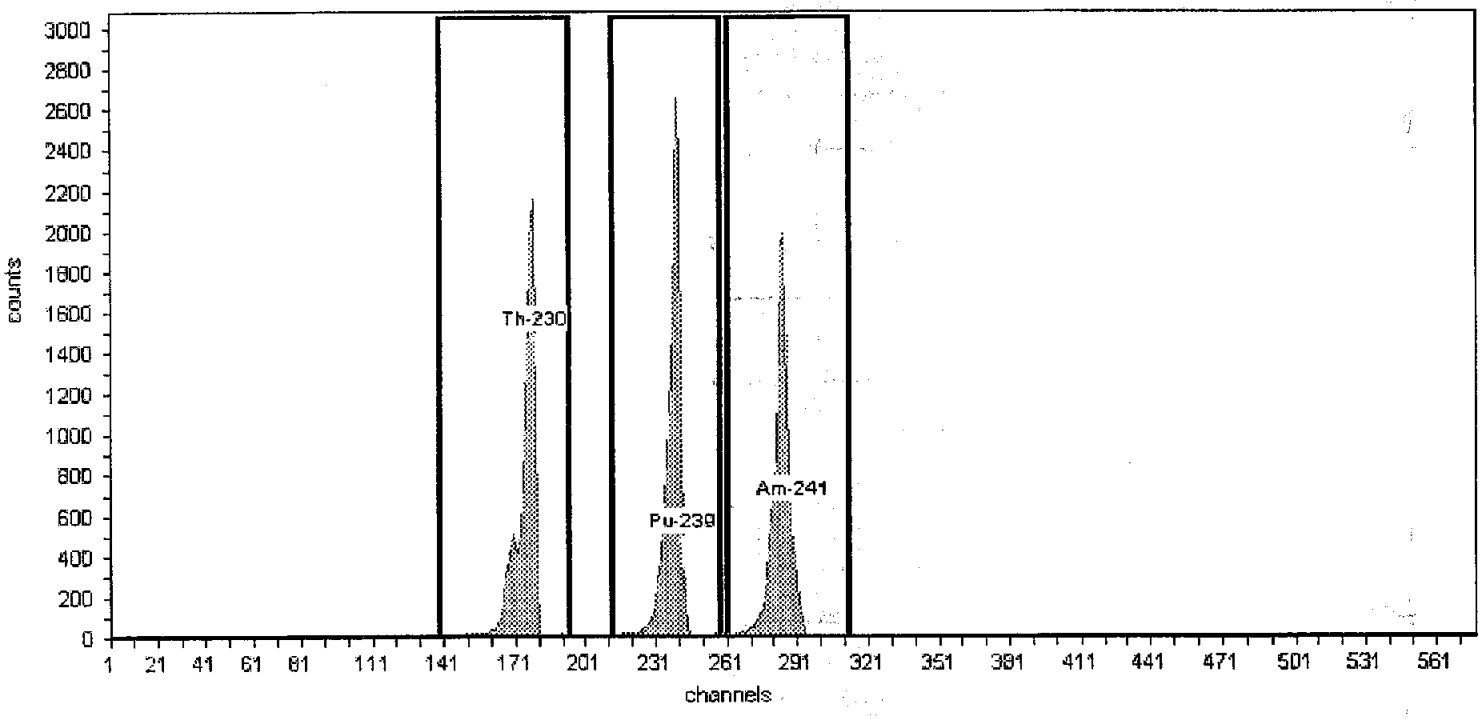
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV53 , SN:
Acquisition Start Date: 4/25/2007 2:12:39PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.28% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,596.00	89.97
Pu-239	243	5.16	212	258	14,549.00	103.92
Am-241	289	5.49	261	313	13,152.00	93.94

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:14:46AM 4/26/2007

Analyst: 60040
Detector: AV54

Calibration

Name: April2007_AV54
Description:

Calibration Date: 4/26/2007 6:14:23AM

Source Info

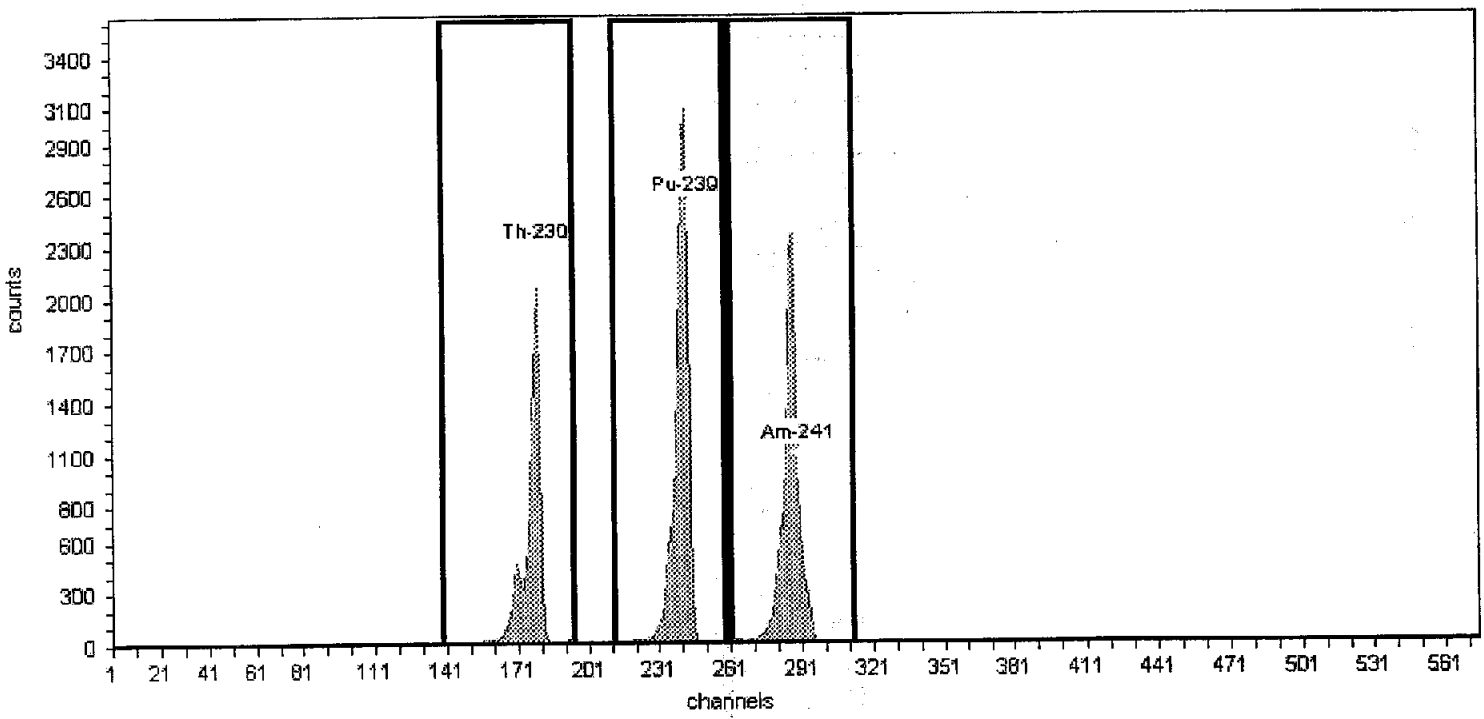
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV54 , SN:
Acquisition Start Date: 4/25/2007 2:13:14PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.83% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,418.00	81.56
Pu-239	243	5.16	212	258	17,647.00	126.05
Am-241	289	5.49	261	313	15,029.00	107.35

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:08:36PM 4/25/2007

Analyst: 60040
Detector: AV55

Calibration

Name: April2007_AV55
Description:

Calibration Date: 4/25/2007 2:08:30PM

Source Info

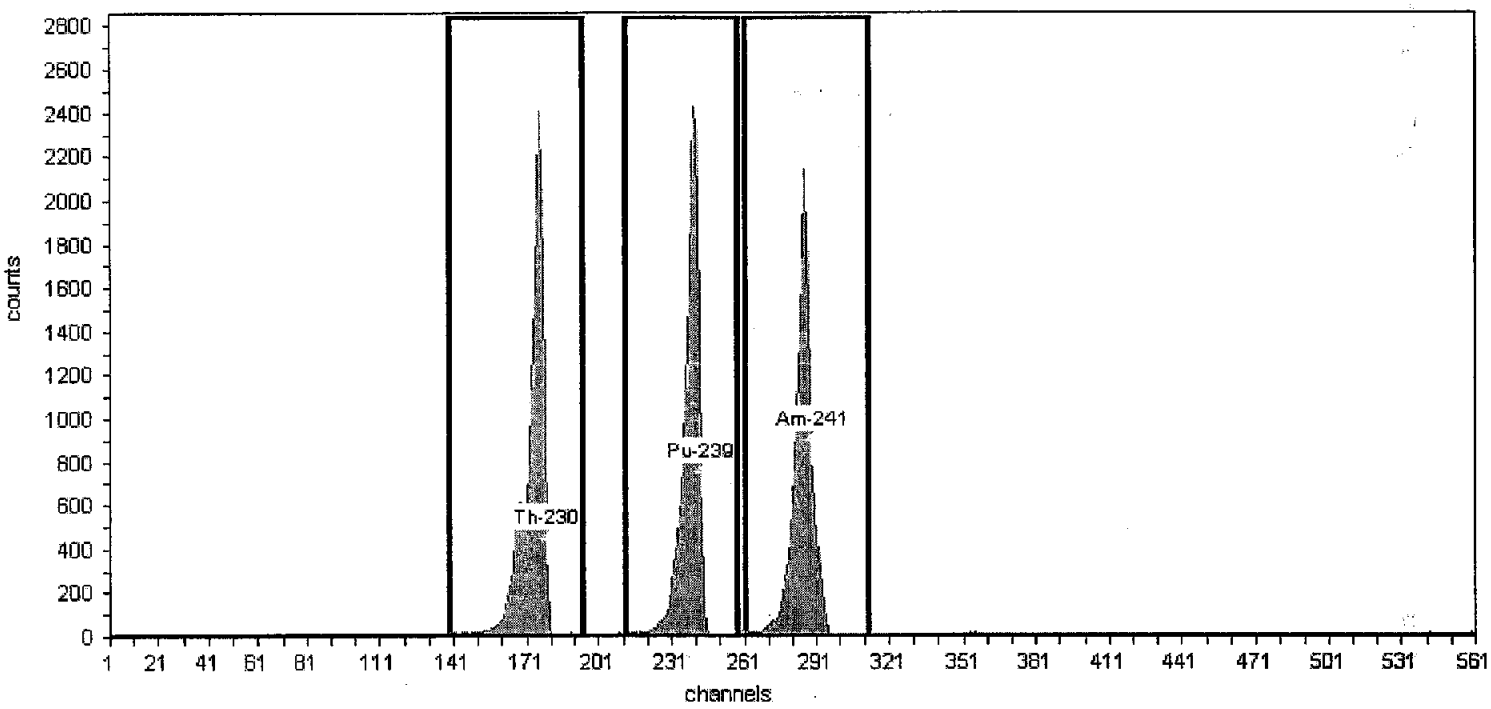
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV55 , SN:
Acquisition Start Date: 4/25/2007 11:15:16AM
Live Time: 140.00 min.
Real Time: 155.53 min.
Efficiency: 26.69% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,104.00	115.03
Pu-239	243	5.16	212	258	15,324.00	109.46
Am-241	289	5.49	261	313	14,890.00	106.36

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:14:17AM 4/26/2007

Analyst: 60040
Detector: AV56

Calibration

Name: April2007_AV56
Description:

Calibration Date: 4/26/2007 6:14:14AM

Source Info

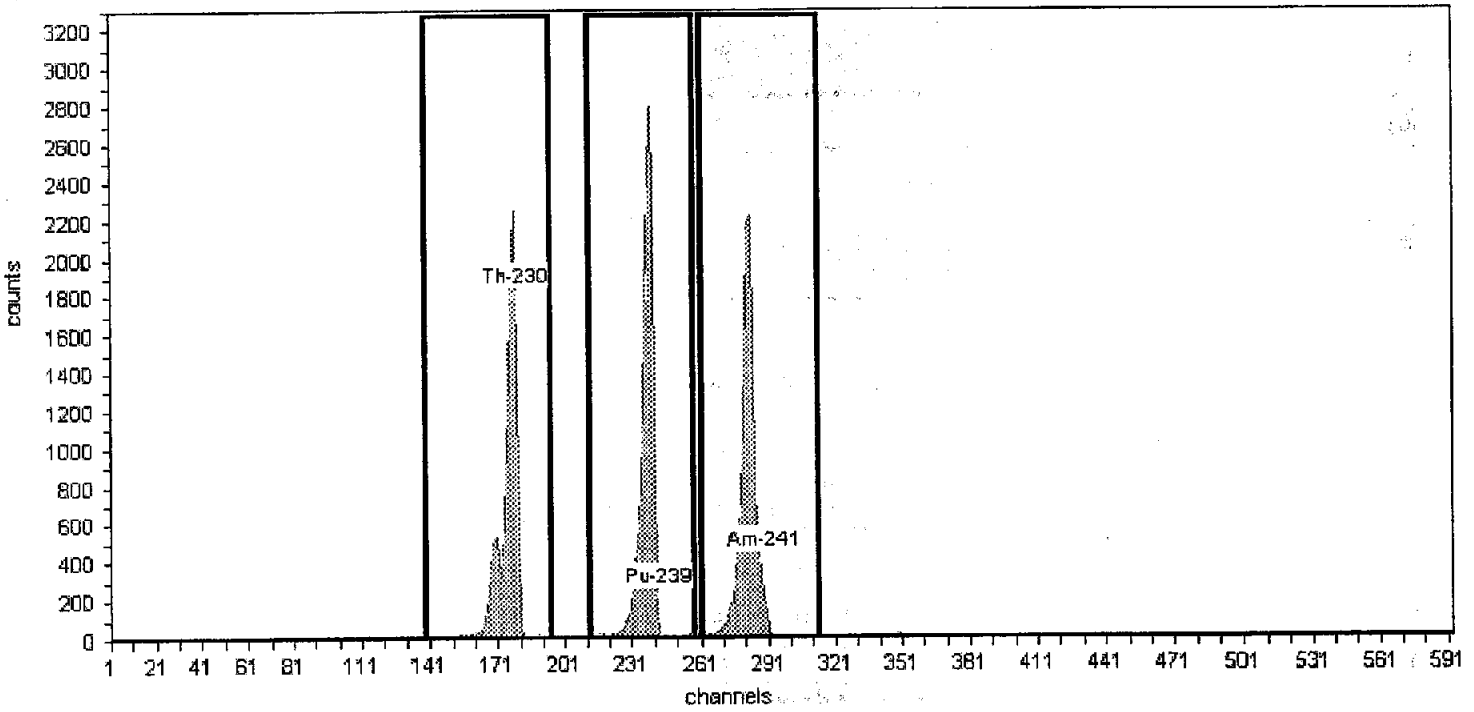
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV56 , SN:
Acquisition Start Date: 4/25/2007 2:12:09PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.04% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,173.00	86.95
Pu-239	243	5.16	212	258	14,557.00	103.98
Am-241	289	5.49	261	313	13,667.00	97.62

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:54:22AM 4/10/2007

Analyst: 60040
Detector: AV57

Calibration

Name: Apr2007_AV57
Description:

Calibration Date: 4/10/2007 8:54:16AM

Source Info

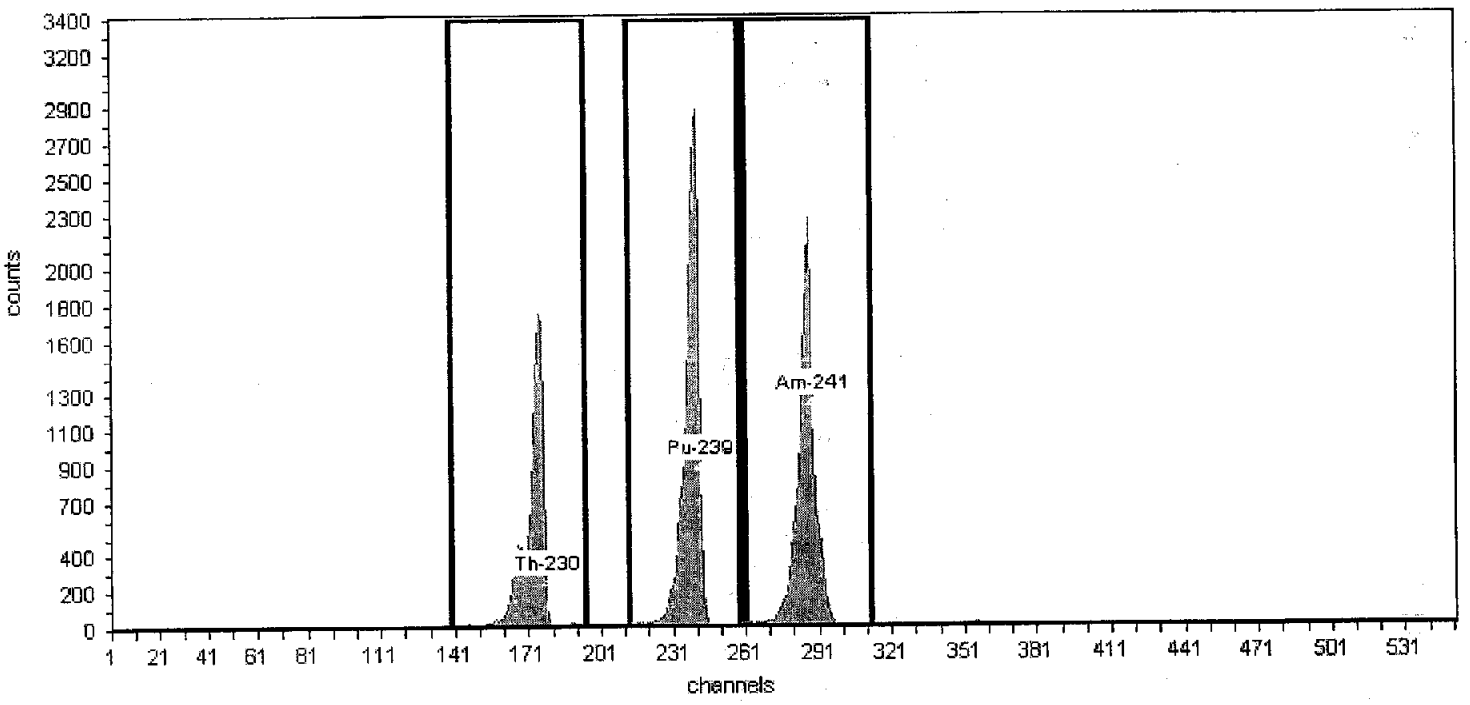
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV57 , SN:
Acquisition Start Date: 4/9/2007 6:51:48PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.21% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,628.00	83.06
Pu-239	243	5.16	212	258	17,761.00	126.86
Am-241	289	5.49	261	313	15,327.00	109.48

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:04:09PM 4/26/2007

Analyst: 60040
Detector: AV58

Calibration

Name: April2007_AV58
Description:

Calibration Date: 4/26/2007 12:04:05PM

Source Info

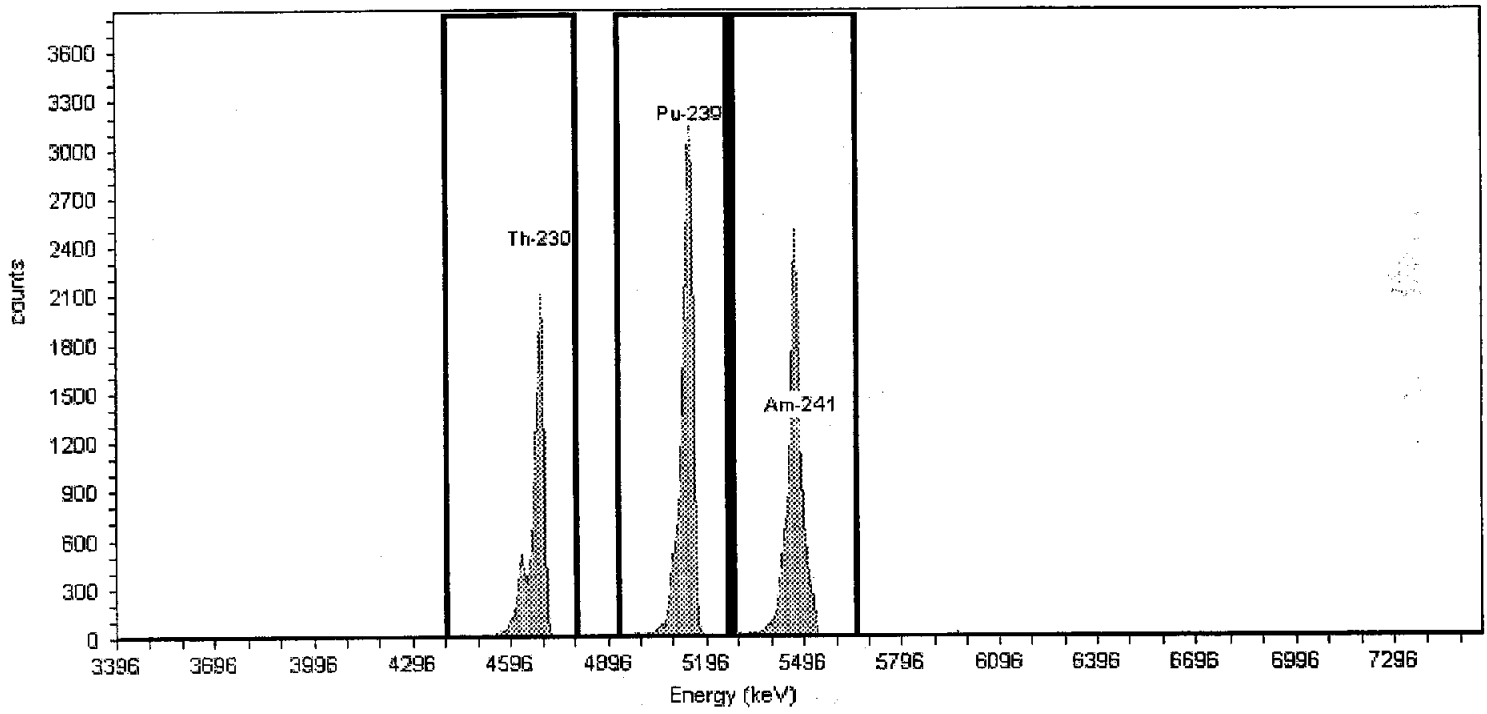
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV58 , SN:
Acquisition Start Date: 4/26/2007 9:28:59AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.20% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,815.00	84.39
Pu-239	243	5.16	212	258	17,631.00	125.94
Am-241	289	5.49	261	313	15,262.00	109.01

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:04:16PM 4/26/2007

Analyst: 60040
Detector: AV59

Calibration

Name: April2007_AV59
Description:

Calibration Date: 4/26/2007 12:04:13PM

Source Info

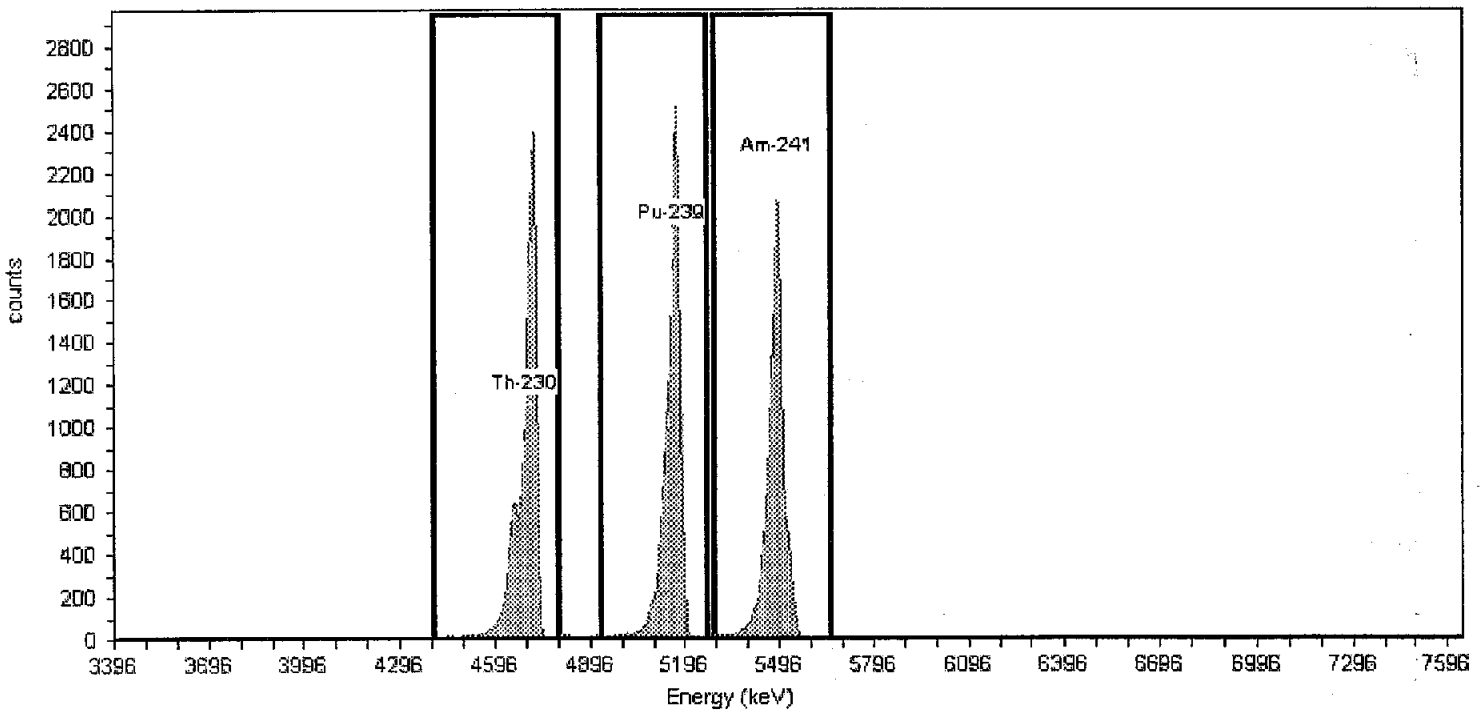
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV59 , SN:
Acquisition Start Date: 4/26/2007 9:28:06AM
Live Time: 140.00 min.
Real Time: 142.97 min.
Efficiency: 26.74% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	15,721.00	112.29
Pu-239	243	5.16	212	258	15,567.00	111.19
Am-241	289	5.49	261	313	14,973.00	106.95

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:53:52AM 4/10/2007

Analyst: 60040
Detector: AV64

Calibration

Name: Apr2007_AV64
Description:

Calibration Date: 4/10/2007 8:53:46AM

Source Info

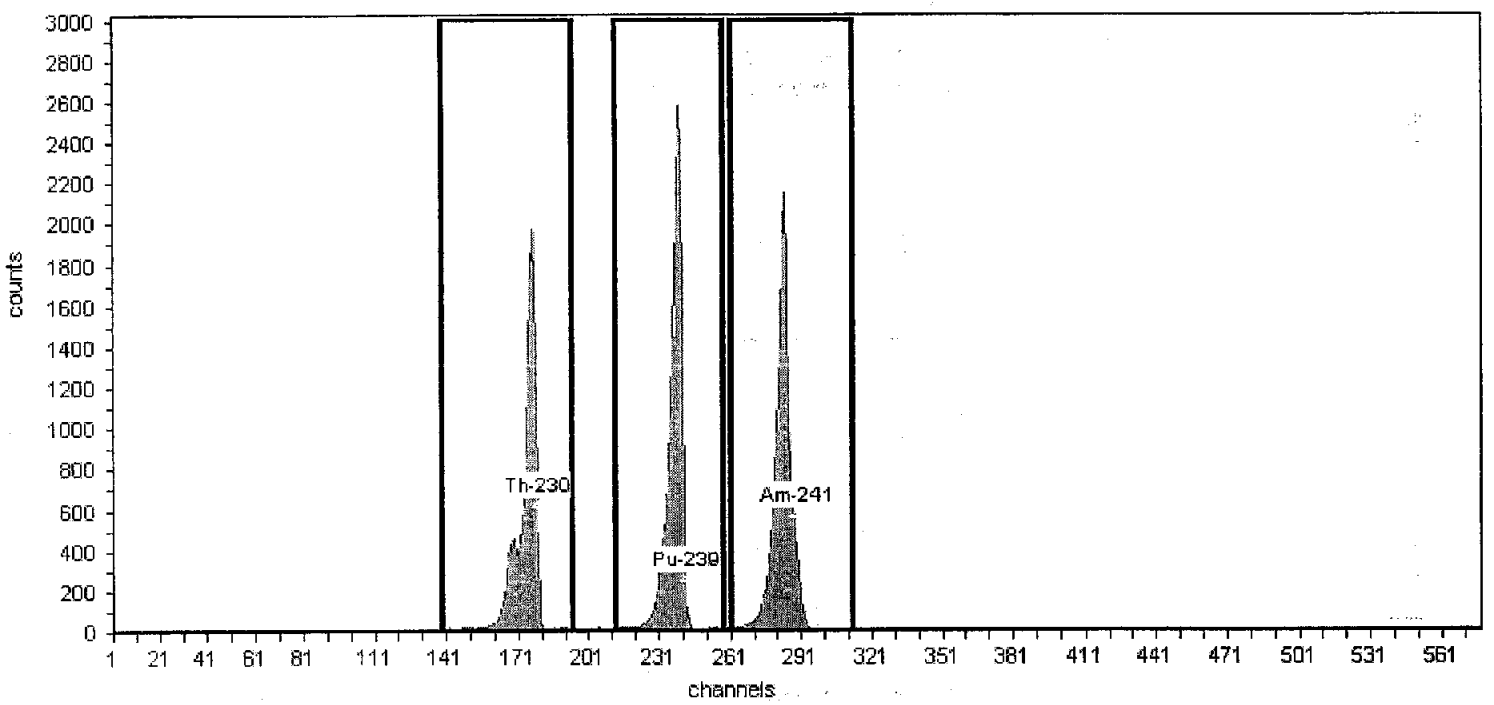
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV64 , SN:
Acquisition Start Date: 4/9/2007 6:51:33PM
Live Time: 140.00 min.
Real Time: 142.63 min.
Efficiency: 25.79% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,705.00	83.61
Pu-239	243	5.16	212	258	14,463.00	103.31
Am-241	289	5.49	261	313	14,160.00	101.14

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:31:22PM 4/26/2007

Analyst: 60040
Detector: AV66

Calibration

Name: April2007_AV66
Description:

Calibration Date: 4/26/2007 2:31:14PM

Source Info

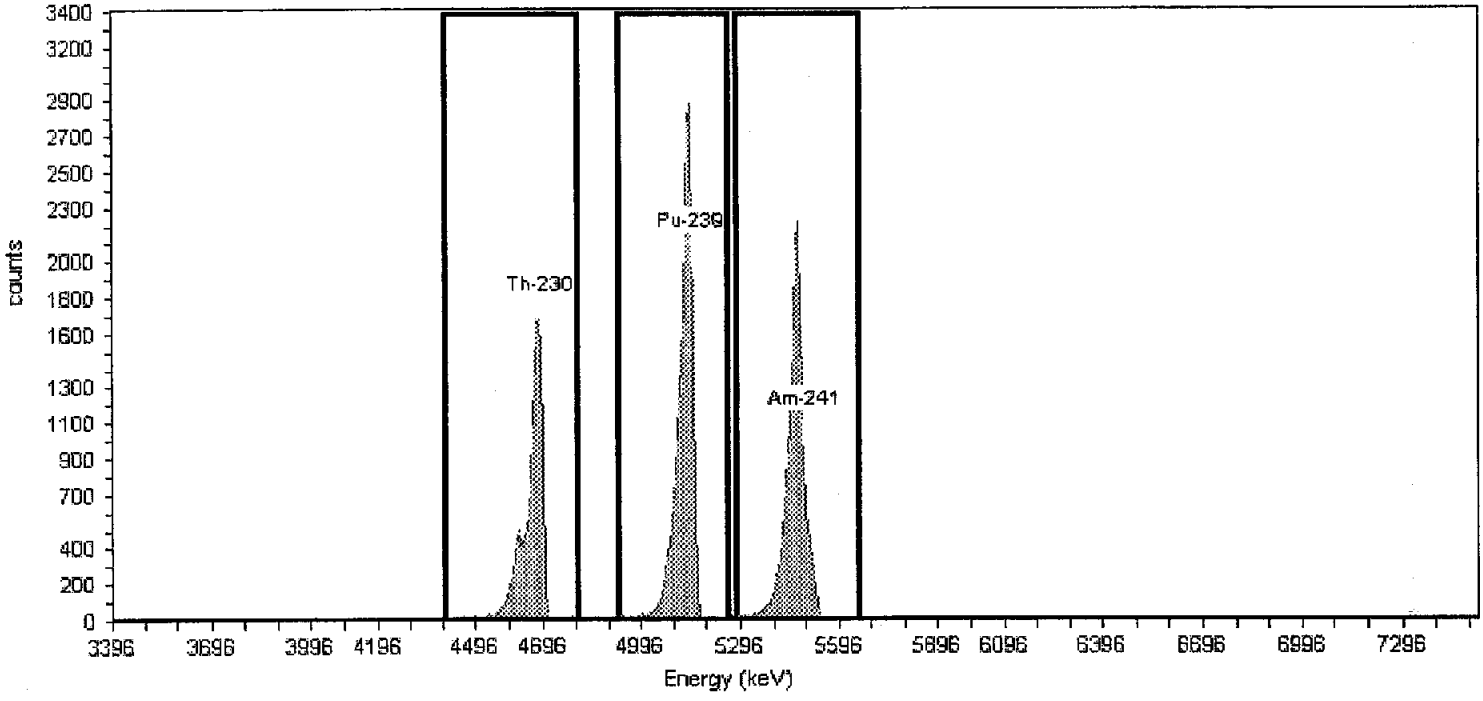
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV66 , SN:
Acquisition Start Date: 4/26/2007 12:08:18PM
Live Time: 140.00 min.
Real Time: 143.00 min.
Efficiency: 27.42% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,380.00	81.29
Pu-239	243	5.16	212	258	17,902.00	127.87
Am-241	289	5.49	261	313	15,797.00	112.84

SEVERN TRENT STL

Alpha Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:30:51PM 4/26/2007

Analyst: 60040
Detector: AV67

Calibration

Name: April2007_AV67
Description:

Calibration Date: 4/26/2007 2:30:47PM

Source Info

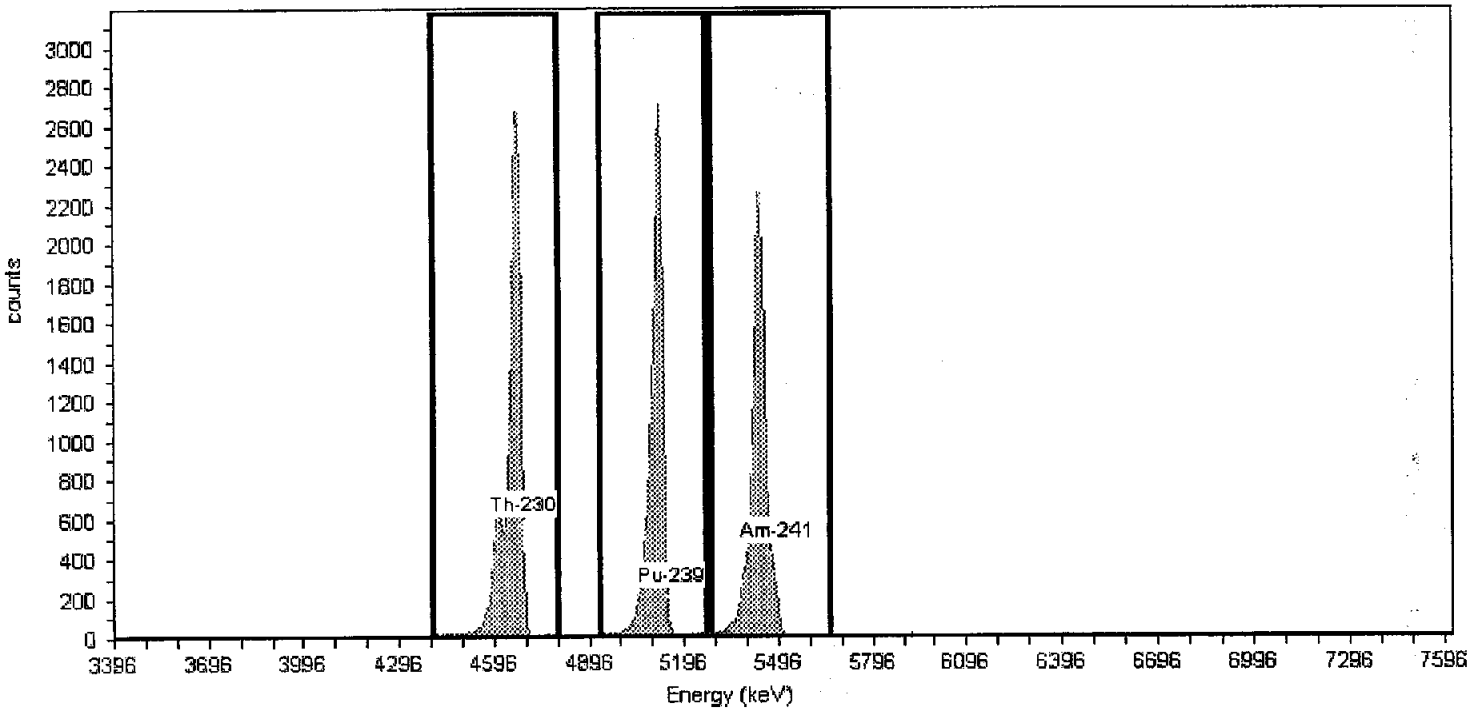
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV67 , SN:
Acquisition Start Date: 4/26/2007 12:07:14PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.54% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,735.00	119.54
Pu-239	243	5.16	212	258	16,073.00	114.81
Am-241	289	5.49	261	313	15,050.00	107.50

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:03:52PM 4/26/2007

Analyst: 60040
Detector: AV68

Calibration

Name: April2007_AV68
Description:

Calibration Date: 4/26/2007 12:03:48PM

Source Info

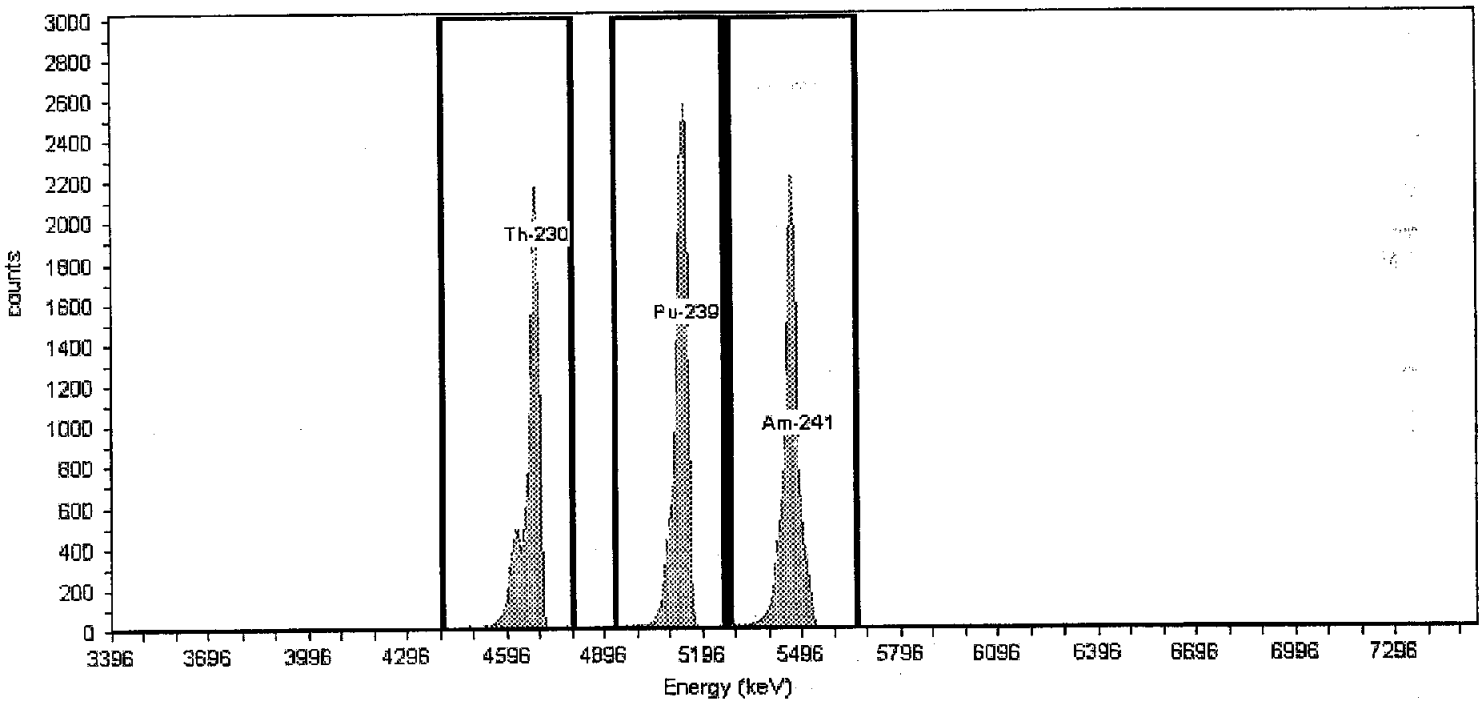
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV68 , SN:
Acquisition Start Date: 4/26/2007 9:28:24AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.77% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,526.00	89.47
Pu-239	243	5.16	212	258	14,808.00	105.77
Am-241	289	5.49	261	313	14,204.00	101.46

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:04:02PM 4/26/2007

Analyst: 60040
Detector: AV69

Calibration

Name: April2007_AV69
Description:

Calibration Date: 4/26/2007 12:03:59PM

Source Info

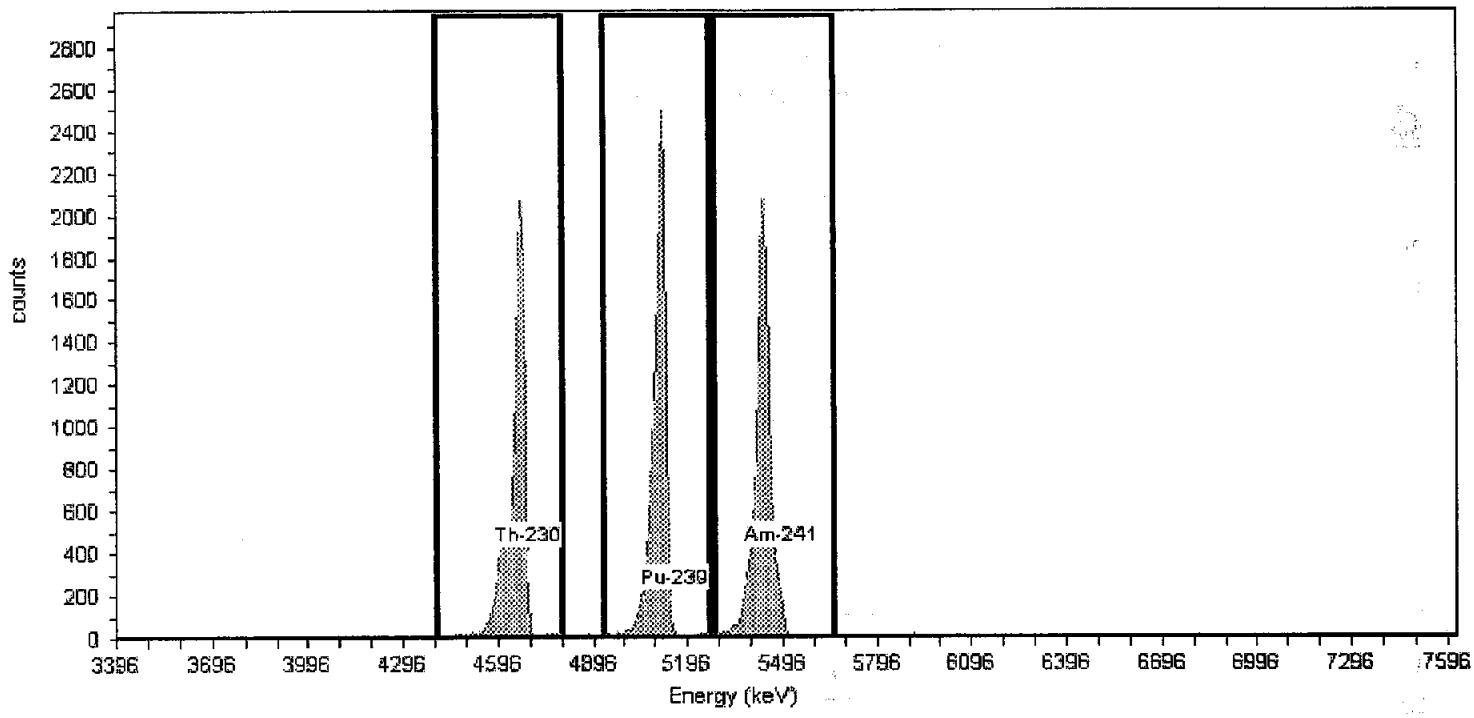
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV69 , SN:
Acquisition Start Date: 4/26/2007 9:28:42AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 27.97% +/- 0.30% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,899.00	92.14
Pu-239	243	5.16	212	258	14,615.00	104.39
Am-241	289	5.49	261	313	13,777.00	98.41

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:54:49PM 4/26/2007

Analyst: 60040
Detector: AV70

Calibration

Name: April2007_AV70
Description:

Calibration Date: 4/26/2007 4:54:46PM

Source Info

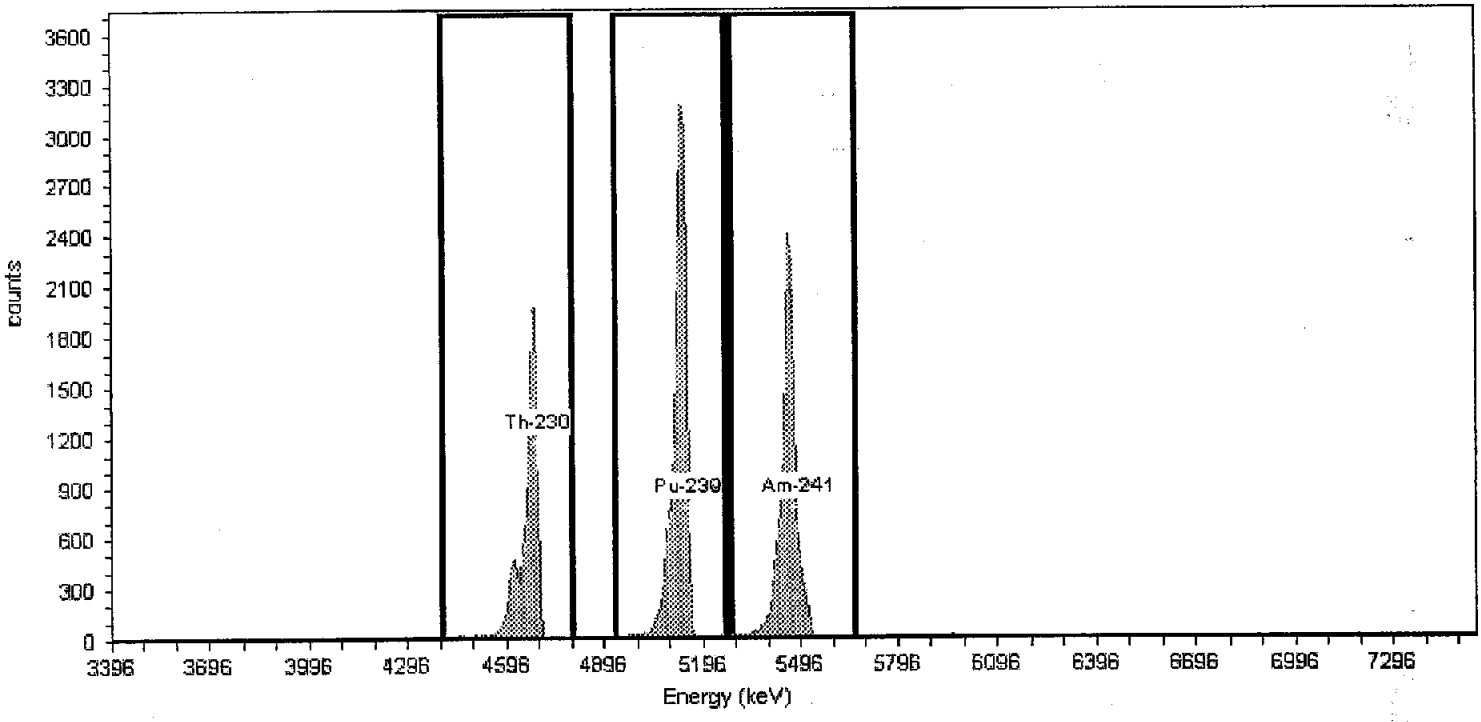
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV70 , SN:
Acquisition Start Date: 4/26/2007 2:34:16PM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 27.03% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,675.00	83.39
Pu-239	243	5.16	212	258	17,582.00	125.59
Am-241	289	5.49	261	313	15,167.00	108.34

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:14:10AM 4/26/2007

Analyst: 60040
Detector: AV71

Calibration

Name: April2007_AV71
Description:

Calibration Date: 4/26/2007 6:14:07AM

Source Info

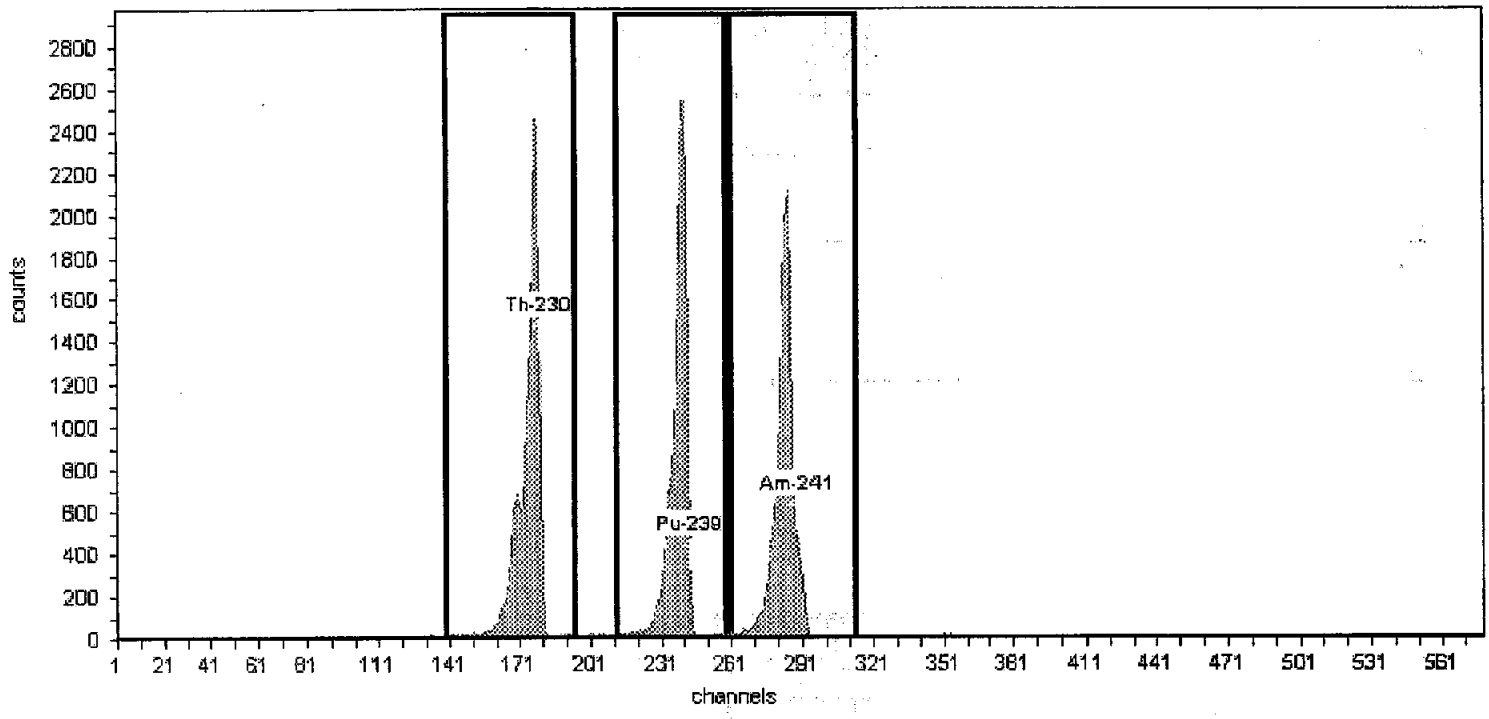
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV71 , SN:
Acquisition Start Date: 4/25/2007 2:11:50PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.02% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,461.00	117.58
Pu-239	243	5.16	212	258	15,694.00	112.10
Am-241	289	5.49	261	313	14,812.00	105.80

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:11:26PM 4/10/2007

Analyst: 60040
Detector: AV72

Calibration

Name: Apr2007_AV72
Description:

Calibration Date: 4/10/2007 12:11:09PM

Source Info

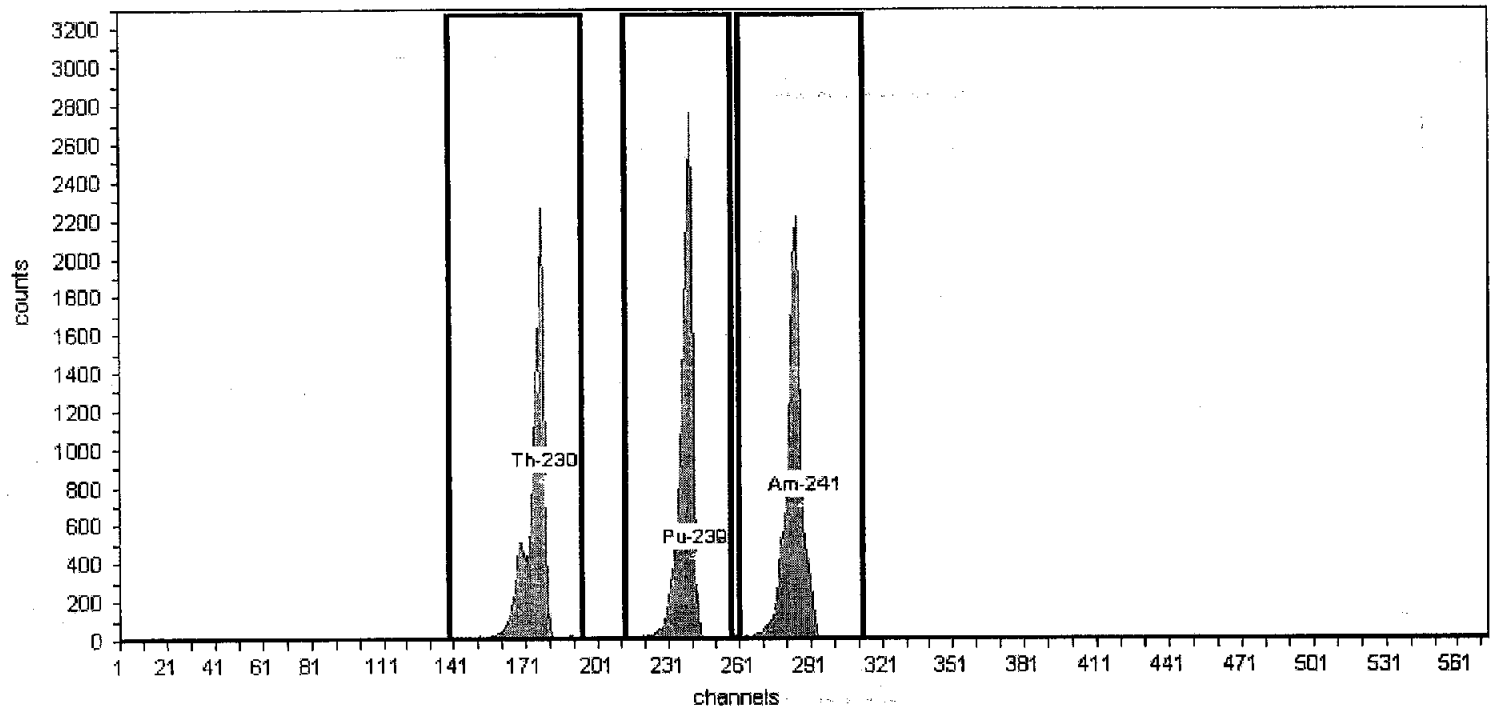
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV72 , SN:
Acquisition Start Date: 4/10/2007 9:43:07AM
Live Time: 140.00 min.
Real Time: 140.34 min.
Efficiency: 27.09% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,743.00	91.02
Pu-239	243	5.16	212	258	14,892.00	106.37
Am-241	289	5.49	261	313	14,337.00	102.41

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:26:00PM 4/10/2007

Analyst: 60040
Detector: AV73

Calibration

Name: Apr2007_AV73a
Description:

Calibration Date: 4/10/2007 2:25:57PM

Source Info

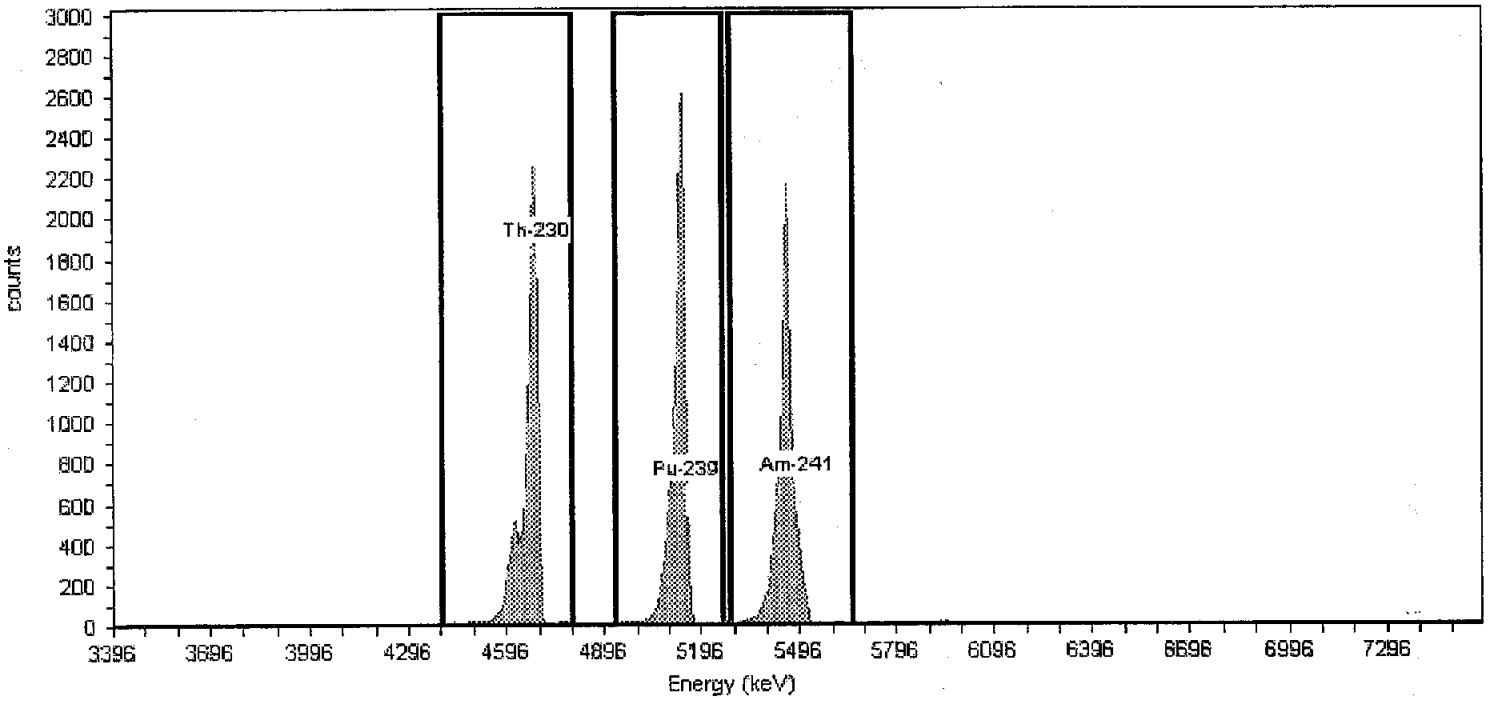
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV73 , SN:
Acquisition Start Date: 4/10/2007 11:54:00AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.82% +/- 0.30% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,975.00	92.68
Pu-239	243	5.16	212	258	14,563.00	104.02
Am-241	289	5.49	261	313	13,549.00	96.78

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:38:28PM 4/24/2007

Analyst: 60040
Detector: AV75

Calibration

Name: April2007_AV75
Description:

Calibration Date: 4/24/2007 1:38:25PM

Source Info

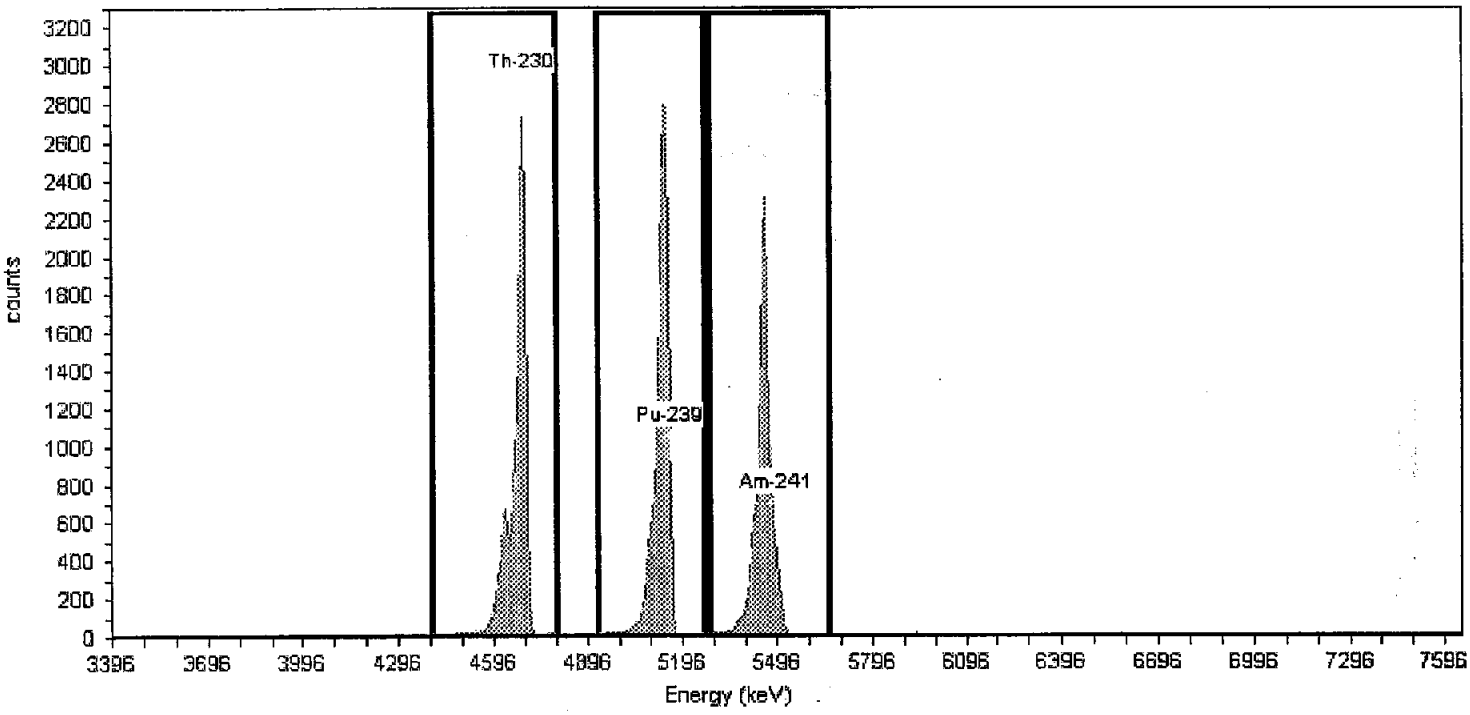
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV75 , SN: 46-033P6
Acquisition Start Date: 4/24/2007 10:51:27AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.55% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	15,921.00	113.72
Pu-239	243	5.16	212	258	15,569.00	111.21
Am-241	289	5.49	261	313	14,567.00	104.05

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:38:35PM 4/24/2007

Analyst: 60040
Detector: AV76

Calibration

Name: April2007_AV76
Description:

Calibration Date: 4/24/2007 1:38:32PM

Source Info

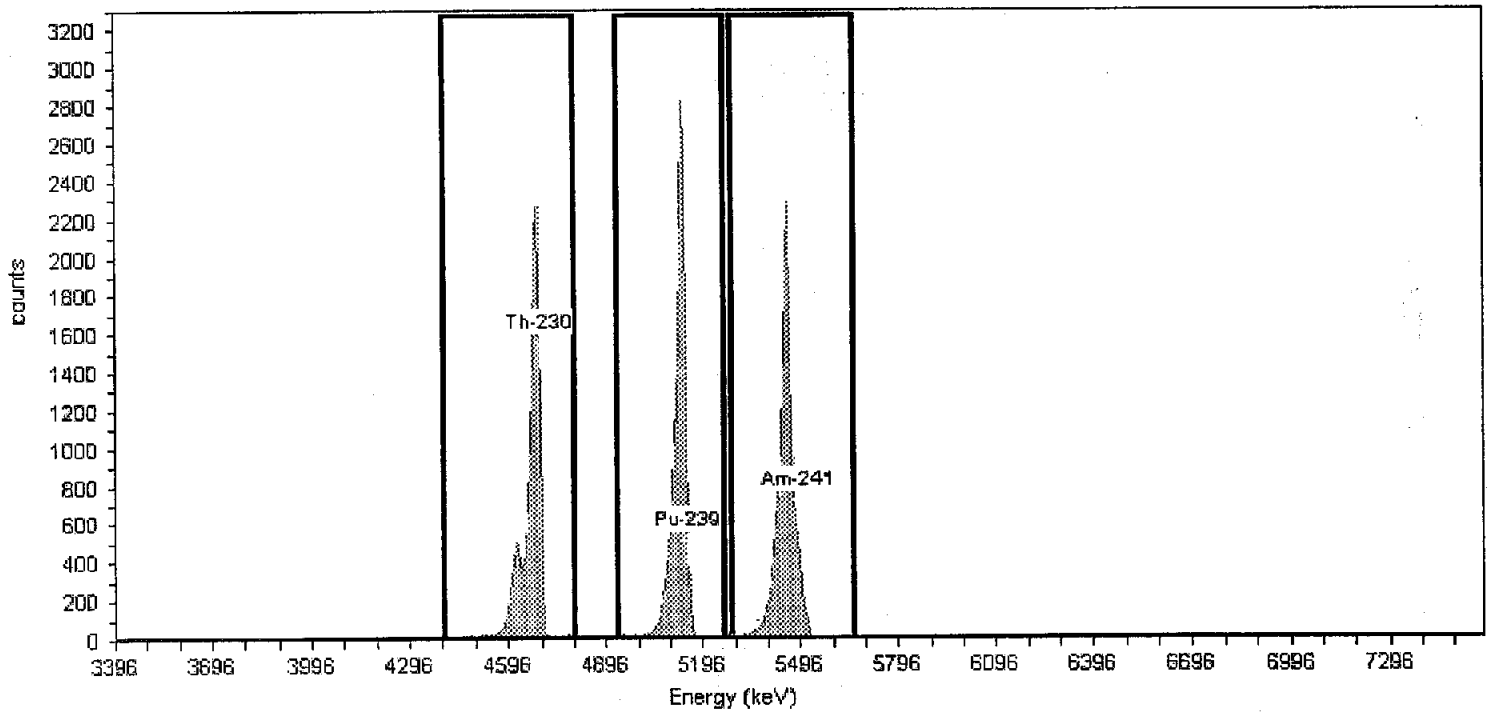
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV76 , SN: 46-033Q4
Acquisition Start Date: 4/24/2007 10:51:47AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.35% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,373.00	88.38
Pu-239	243	5.16	212	258	14,466.00	103.33
Am-241	289	5.49	261	313	14,006.00	100.04

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:38:42PM 4/24/2007

Analyst: 60040
Detector: AV77

Calibration

Name: April2007_AV77
Description:

Calibration Date: 4/24/2007 1:38:39PM

Source Info

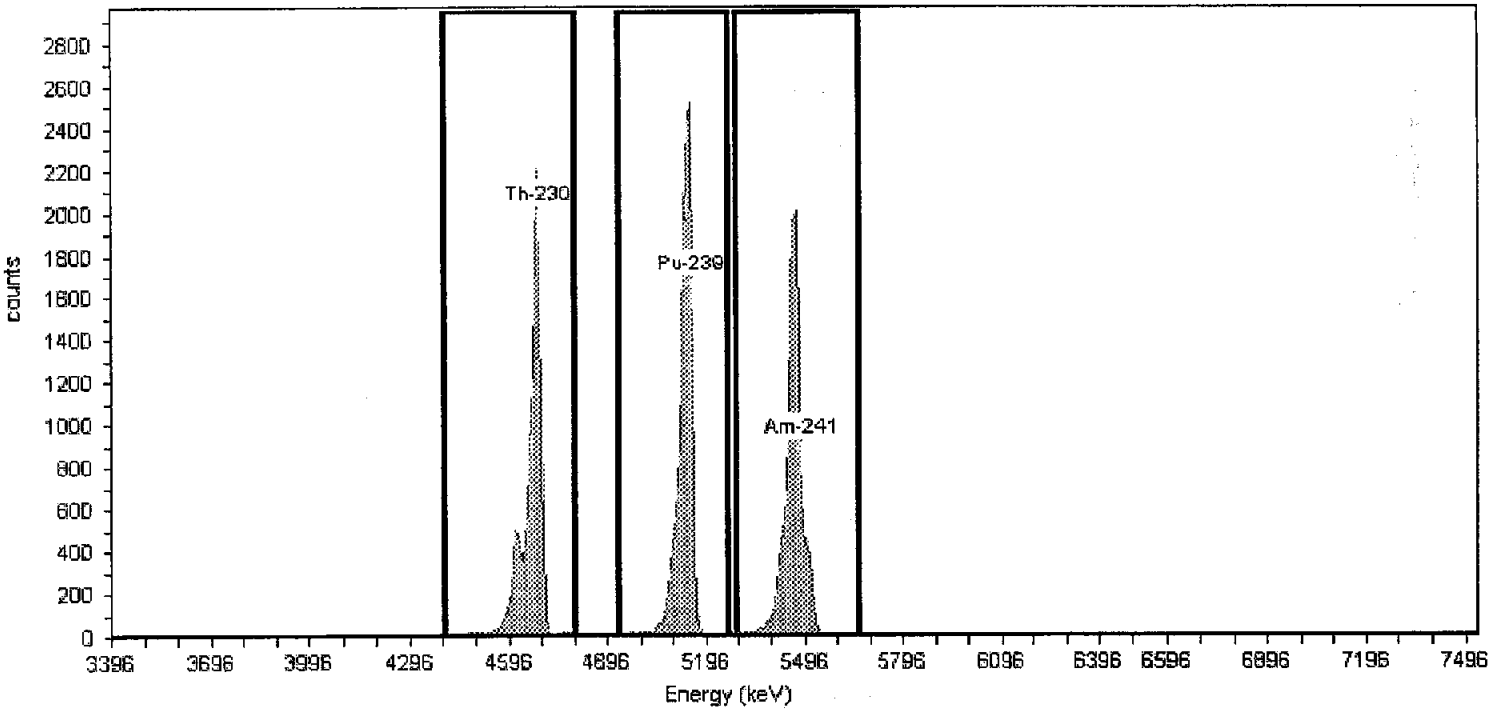
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV77 , SN: 46-033Q7
Acquisition Start Date: 4/24/2007 10:52:03AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.66% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,514.00	89.39
Pu-239	243	5.16	212	258	13,782.00	98.44
Am-241	289	5.49	261	313	13,073.00	93.38

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:38:50PM 4/24/2007

Analyst: 60040
Detector: AV78

Calibration

Name: April2007_AV78
Description:

Calibration Date: 4/24/2007 1:38:47PM

Source Info

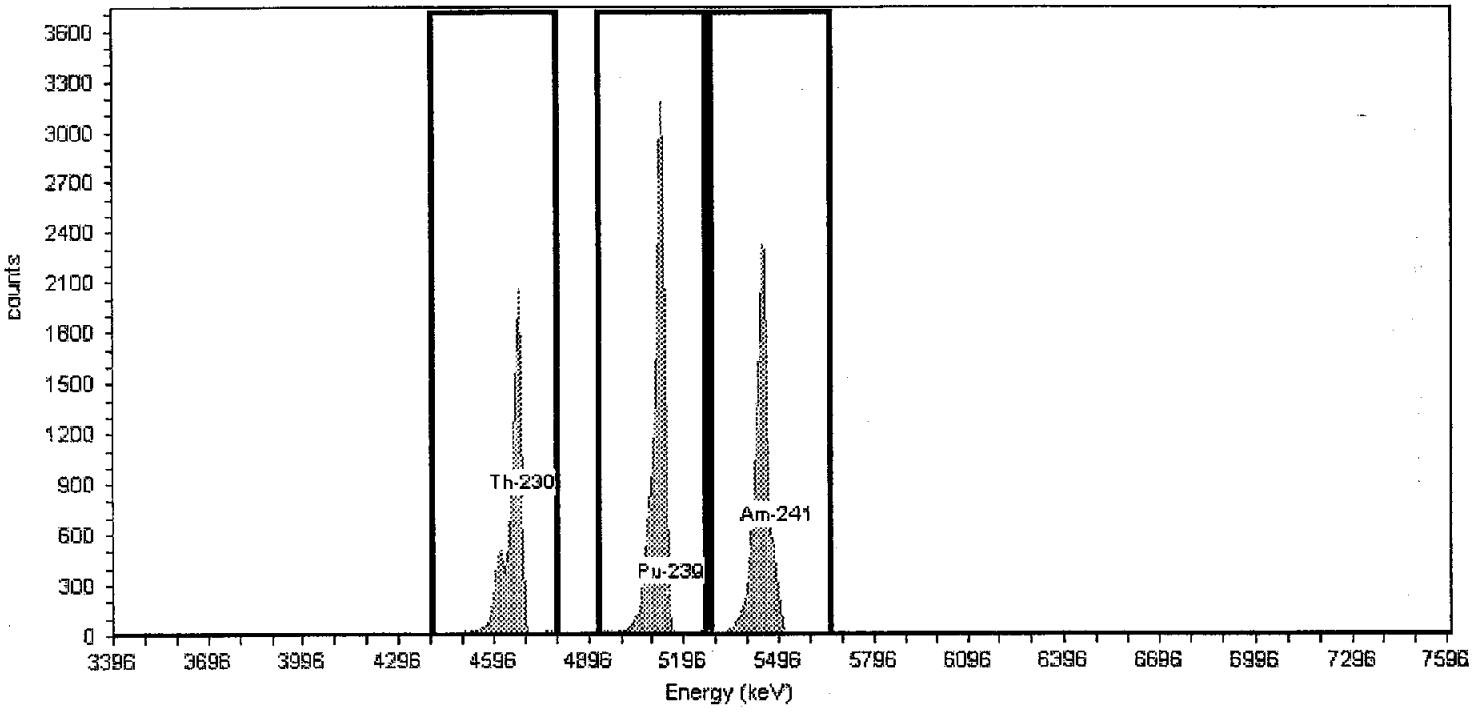
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV78 , SN: 46-033FF4
Acquisition Start Date: 4/24/2007 10:52:28AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.95% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,542.00	82.44
Pu-239	243	5.16	212	258	17,583.00	125.59
Am-241	289	5.49	261	313	15,159.00	108.28

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:04:07PM 4/24/2007

Analyst: 60040
Detector: AV79

Calibration

Name: April2007_AV79
Calibration Date: 4/24/2007 4:04:03PM
Description:

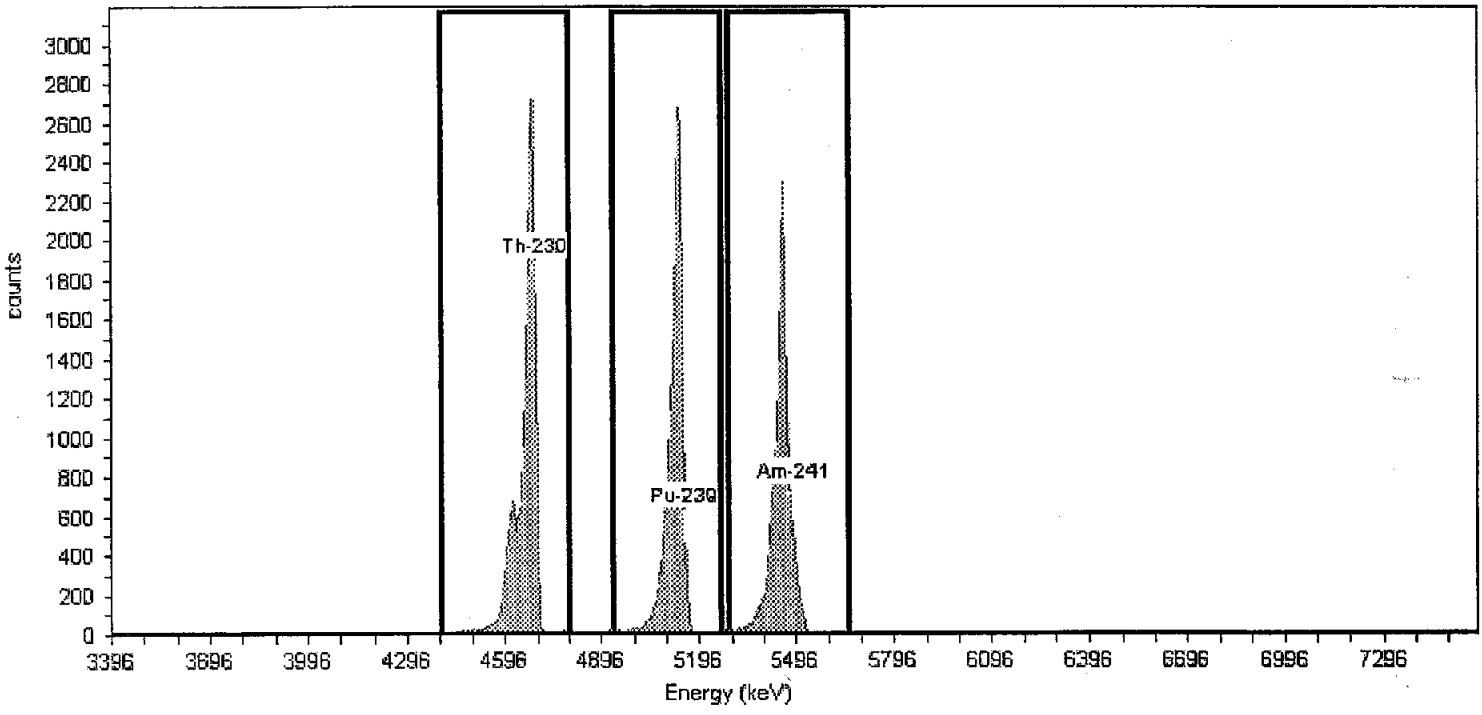
Source Info

Certificate ID: 63506-334
Certification Date: 5/30/2002 12:00:07PM
Prepared by: Analytics
Description:

Acquisition

Detector: AV79 , SN: 46-033Q5
Acquisition Start Date: 4/24/2007 1:40:21PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.91% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,559.00	118.28
Pu-239	243	5.16	212	258	15,594.00	111.39
Am-241	289	5.49	261	313	14,680.00	104.86

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:04:14PM 4/24/2007

Analyst: 60040
Detector: AV80

Calibration

Name: April2007_AV80
Description:

Calibration Date: 4/24/2007 4:04:10PM

Source Info

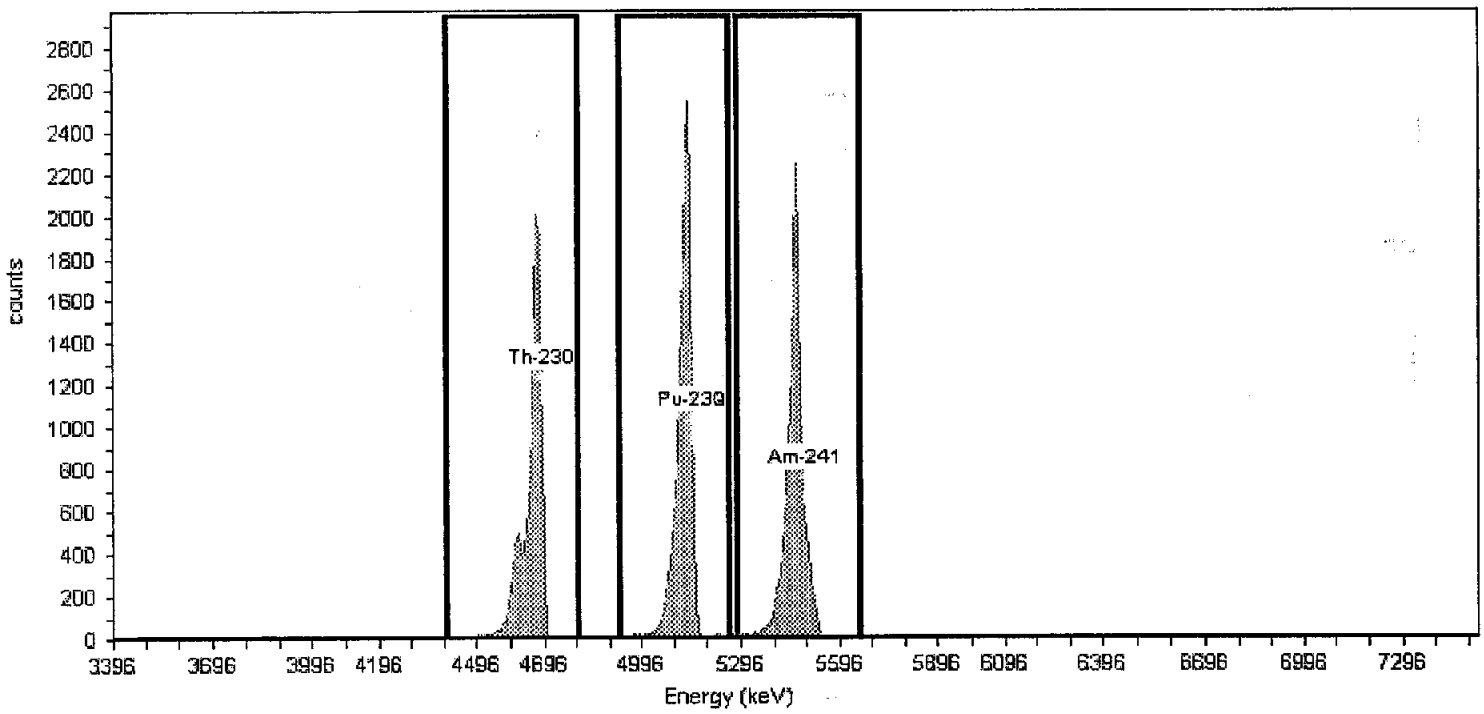
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV80 , SN: 46-03305
Acquisition Start Date: 4/24/2007 1:40:23PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.04% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,225.00	87.32
Pu-239	243	5.16	212	258	14,363.00	102.59
Am-241	289	5.49	261	313	13,775.00	98.39

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:04:21PM 4/24/2007

Analyst: 60040
Detector: AV81

Calibration

Name: April2007_AV81
Description:

Calibration Date: 4/24/2007 4:04:18PM

Source Info

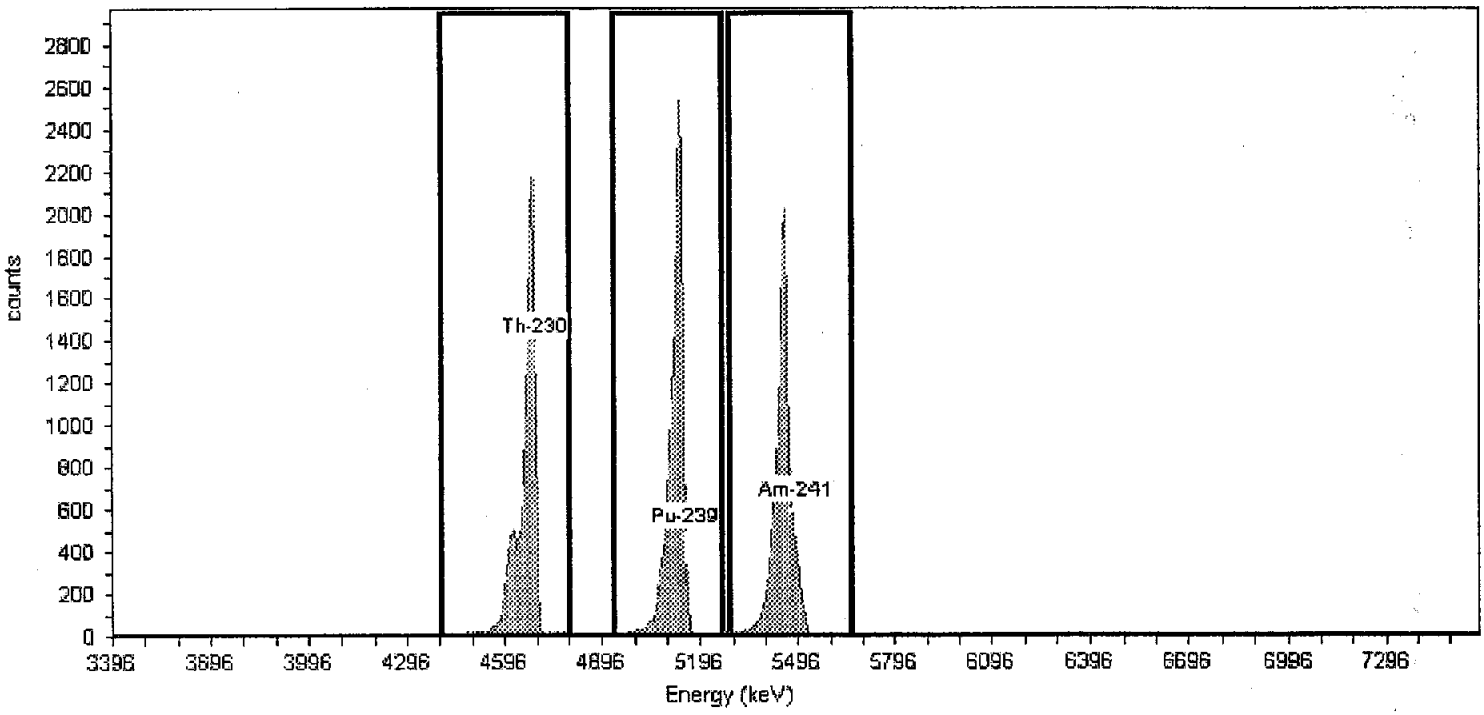
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV81 , SN: 46-03307
Acquisition Start Date: 4/24/2007 1:40:47PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.91% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,570.00	89.79
Pu-239	243	5.16	212	258	14,196.00	101.40
Am-241	289	5.49	261	313	12,987.00	92.76

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:04:29PM 4/24/2007

Analyst: 60040
Detector: AV82

Calibration

Name: April2007_AV82
Description:

Calibration Date: 4/24/2007 4:04:26PM

Source Info

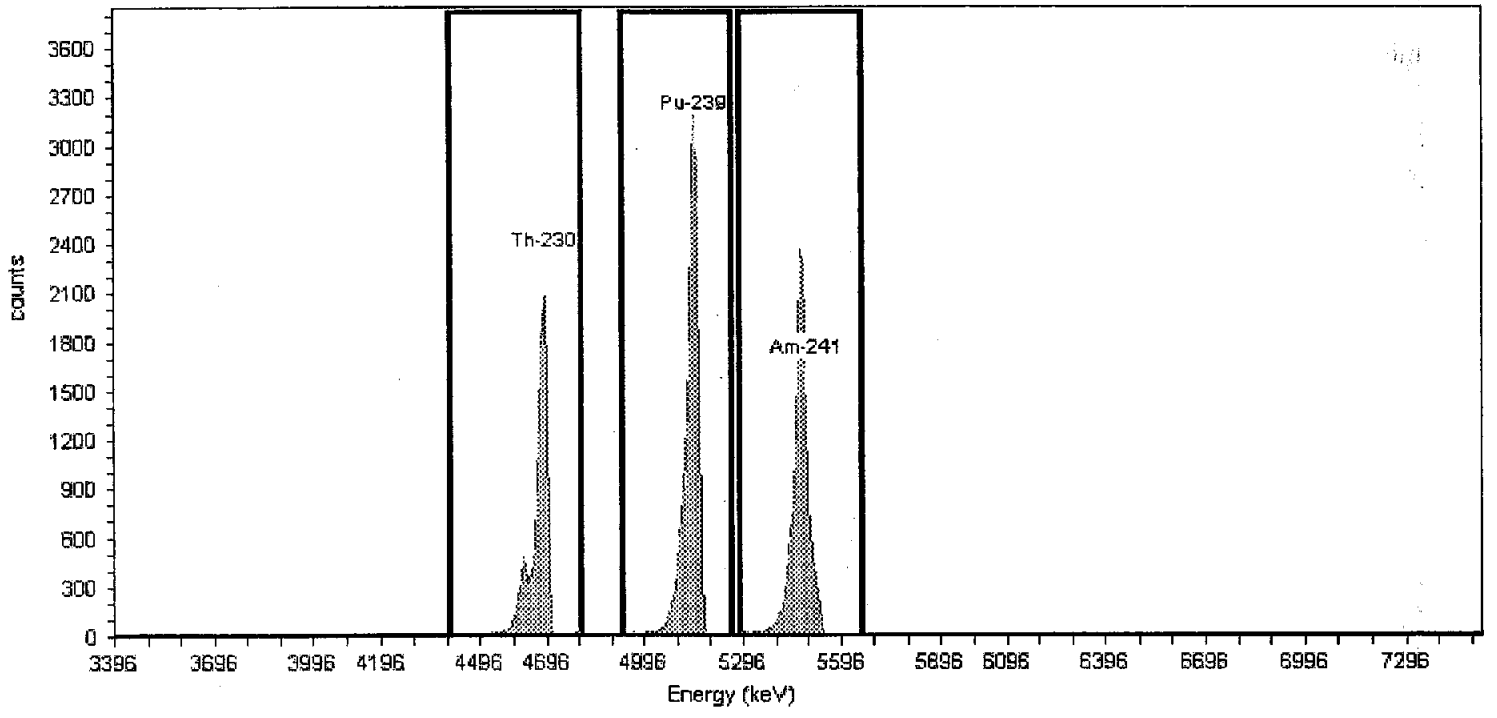
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV82 , SN: 46-032EE5
Acquisition Start Date: 4/24/2007 1:40:48PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.81% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,555.00	82.54
Pu-239	243	5.16	212	258	17,561.00	125.44
Am-241	289	5.49	261	313	14,956.00	106.83

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:54:27PM 4/26/2007

Analyst: 60040
Detector: AV83

Calibration

Name: April2007_AV83
Description:

Calibration Date: 4/26/2007 4:54:23PM

Source Info

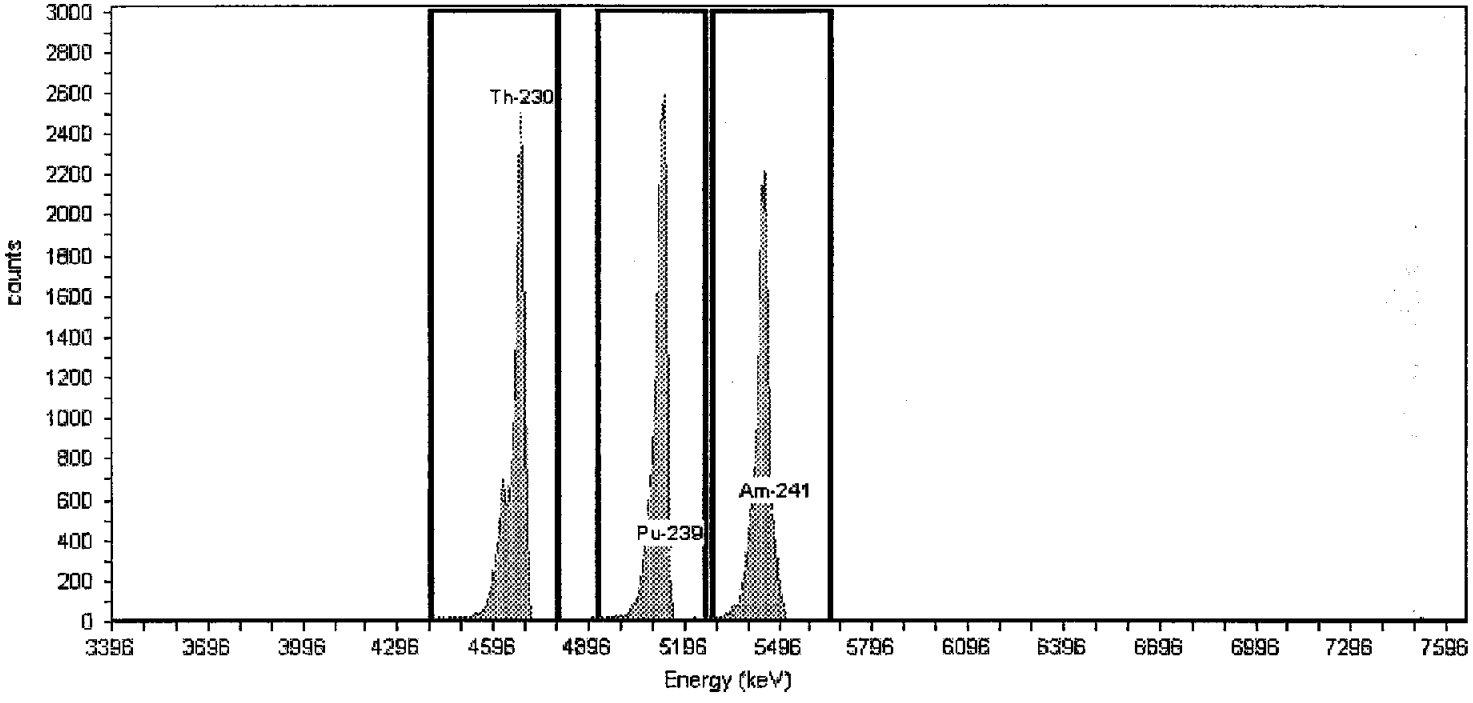
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV83 , SN: 46-03306
Acquisition Start Date: 4/26/2007 2:33:30PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.47% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,159.00	115.42
Pu-239	243	5.16	212	258	15,347.00	109.62
Am-241	289	5.49	261	313	14,503.00	103.59

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:54:34PM 4/26/2007

Analyst: 60040
Detector: AV84

Calibration

Name: April2007_AV84
Description:

Calibration Date: 4/26/2007 4:54:31PM

Source Info

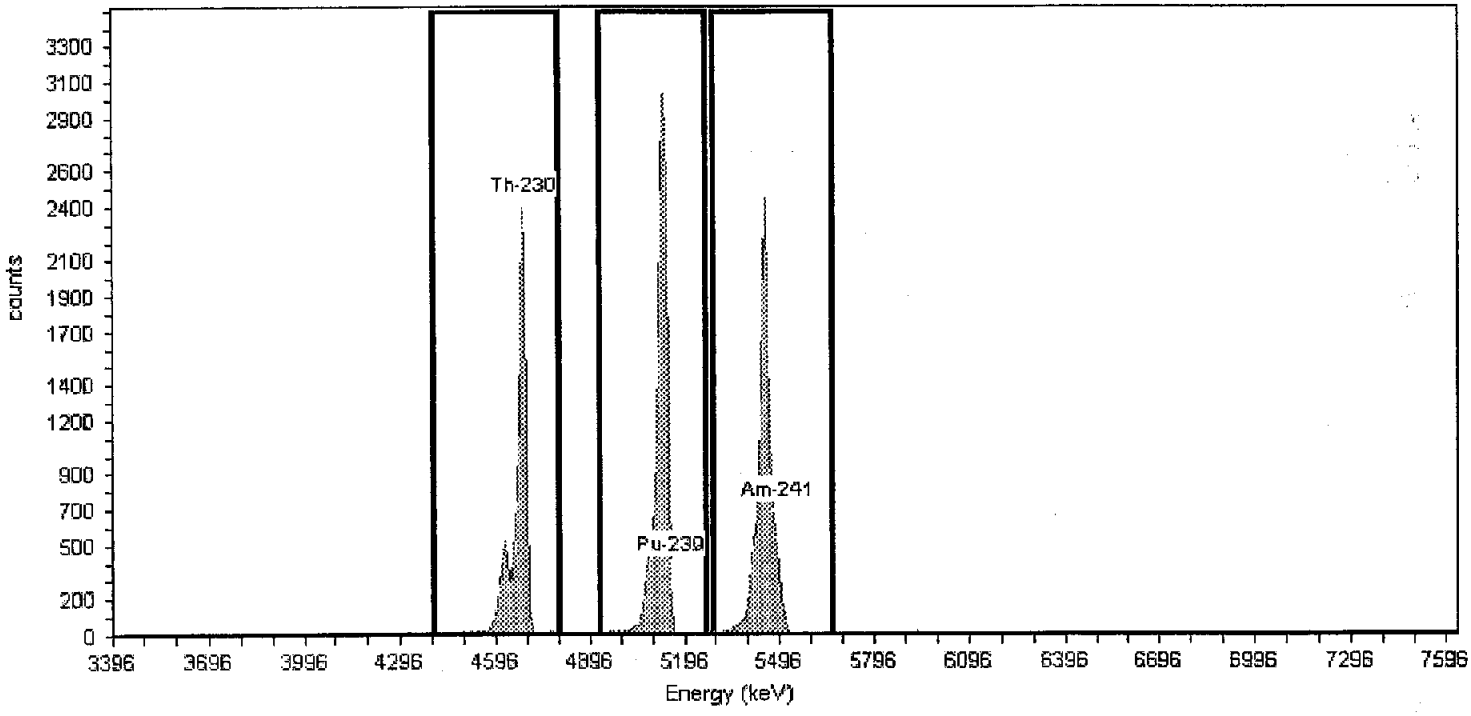
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV84 , SN: 46-033FF3
Acquisition Start Date: 4/26/2007 2:33:45PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.82% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,477.00	89.12
Pu-239	243	5.16	212	258	14,930.00	106.64
Am-241	289	5.49	261	313	14,263.00	101.88

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:54:42PM 4/26/2007

Analyst: 60040
Detector: AV85

Calibration

Name: April2007_AV85
Description:

Calibration Date: 4/26/2007 4:54:39PM

Source Info

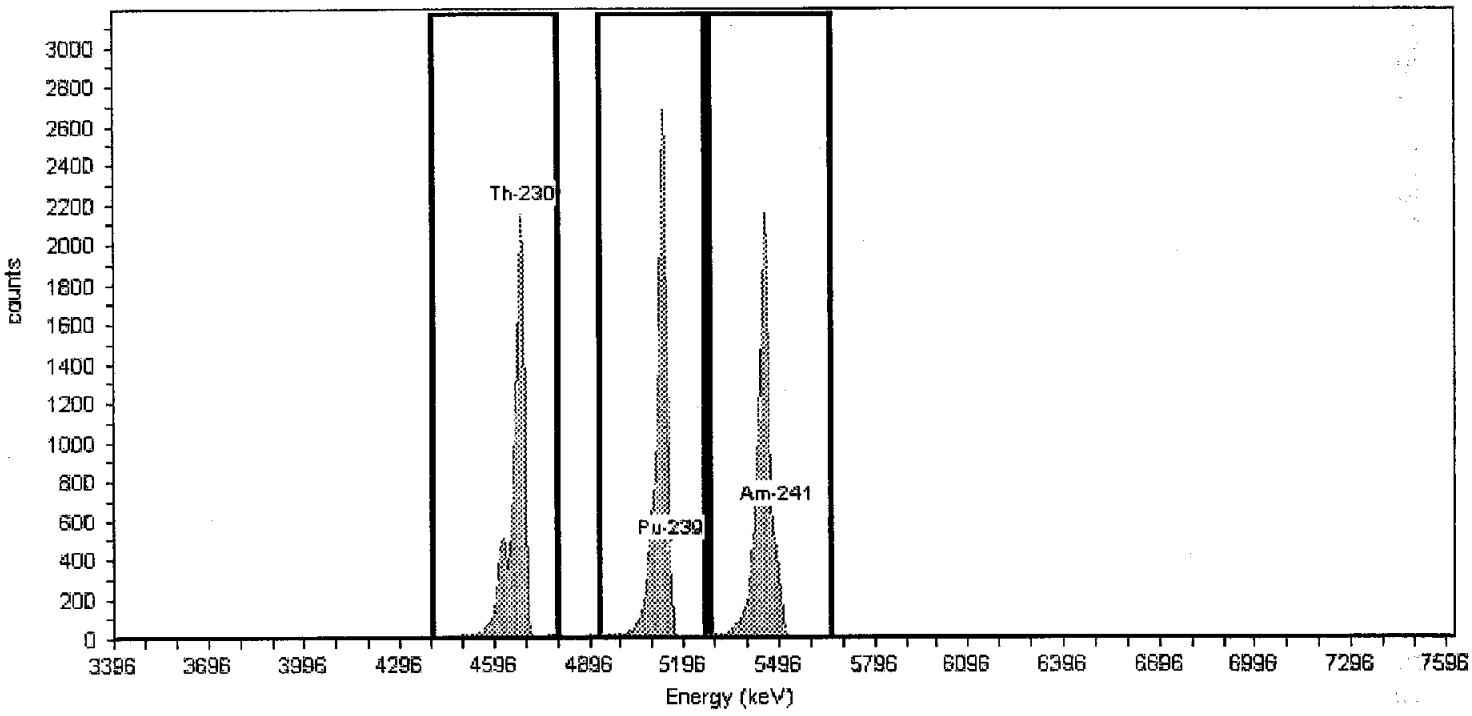
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV85 , SN: 46-032EE7
Acquisition Start Date: 4/26/2007 2:34:01PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.49% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,503.00	89.31
Pu-239	243	5.16	212	258	14,689.00	104.92
Am-241	289	5.49	261	313	13,415.00	95.82

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:31:00PM 4/26/2007

Analyst: 60040
Detector: AV92

Calibration

Name: April2007_AV92
Description:

Calibration Date: 4/26/2007 2:30:56PM

Source Info

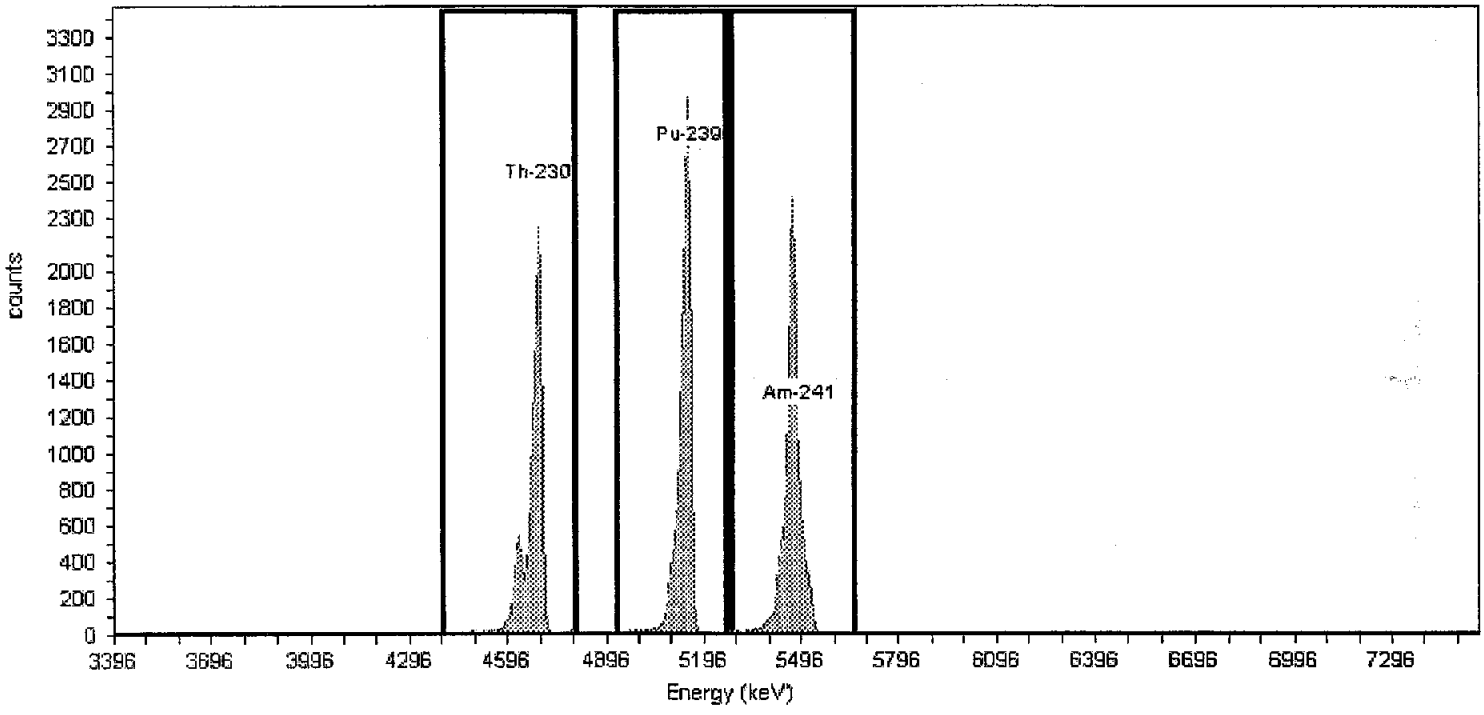
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV92 , SN: 46-033FF2
Acquisition Start Date: 4/26/2007 12:07:29PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.50% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,230.00	87.36
Pu-239	243	5.16	212	258	14,645.00	104.61
Am-241	289	5.49	261	313	14,367.00	102.62

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:31:09PM 4/26/2007

Analyst: 60040
Detector: AV93

Calibration

Name: April2007_AV93
Description:

Calibration Date: 4/26/2007 2:31:05PM

Source Info

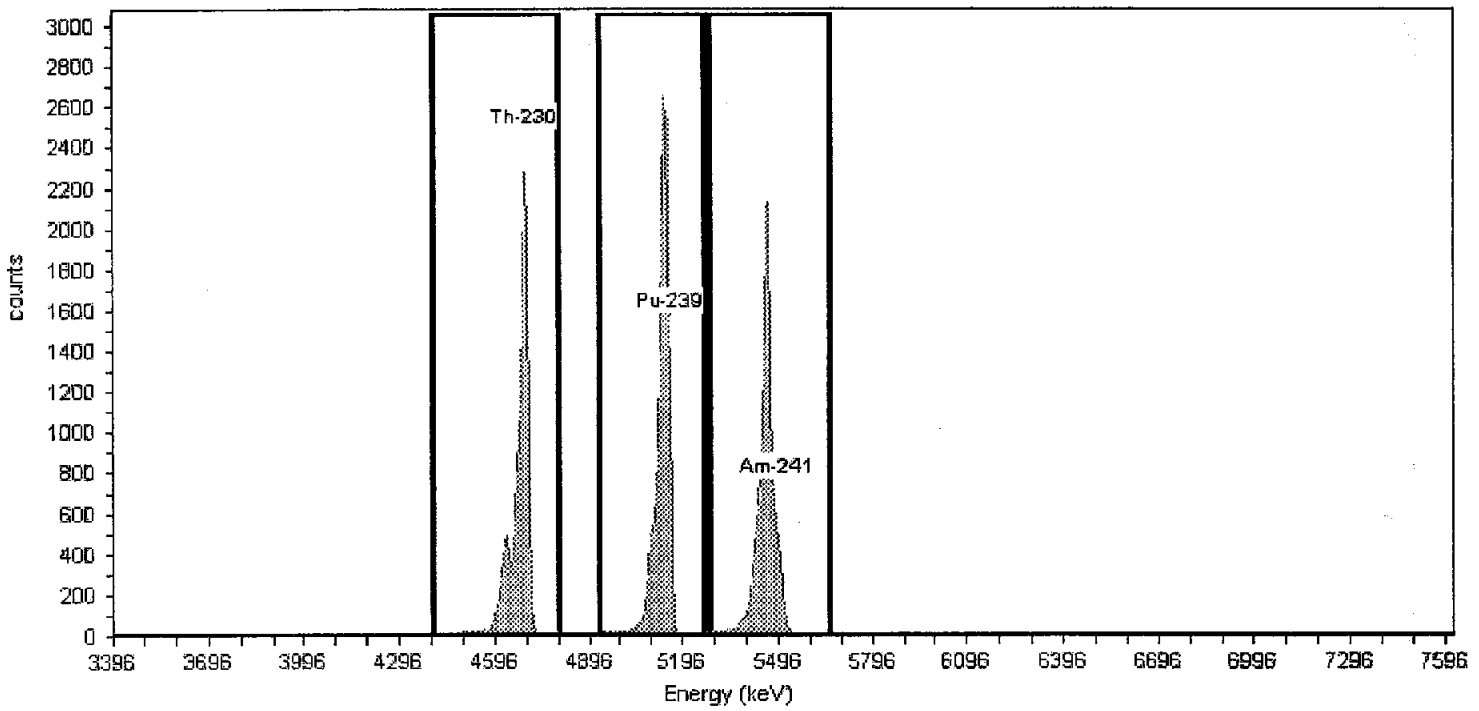
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV93 , SN: 46-033Q2
Acquisition Start Date: 4/26/2007 12:07:58PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.57% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,192.00	87.09
Pu-239	243	5.16	212	258	14,051.00	100.36
Am-241	289	5.49	261	313	12,995.00	92.82

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:43:02PM 4/27/2007

Analyst: 60040
Detector: AV86

Calibration

Name: April2007_AV86
Description:

Calibration Date: 4/27/2007 2:41:26PM

Source Info

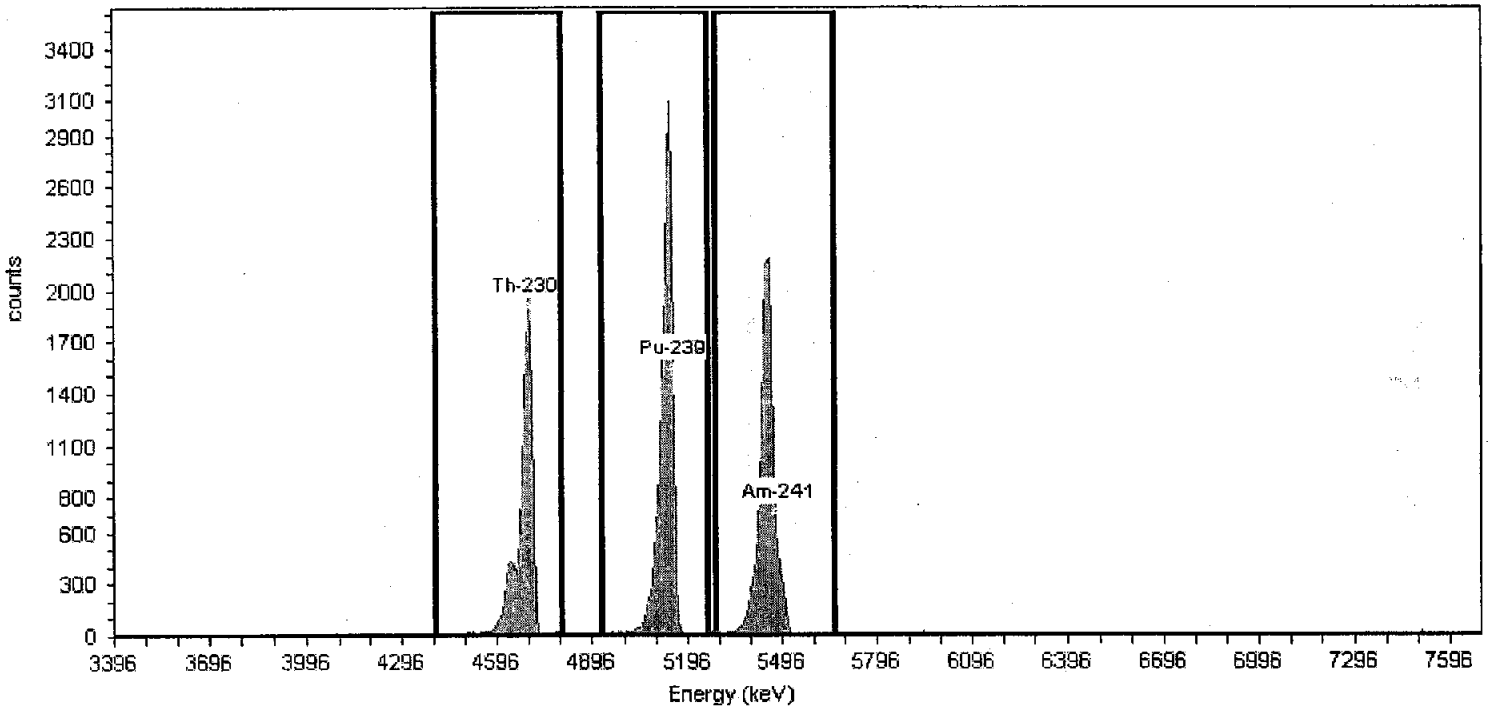
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV86 , SN: 46-033Q6
Acquisition Start Date: 4/27/2007 12:19:54PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.83% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,612.00	82.94
Pu-239	243	5.16	212	258	17,429.00	124.49
Am-241	289	5.49	261	313	15,060.00	107.57

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:42:57PM 4/27/2007

Analyst: 60040
Detector: AV87

Calibration

Name: April2007_AV87
Description:

Calibration Date: 4/27/2007 2:42:03PM

Source Info

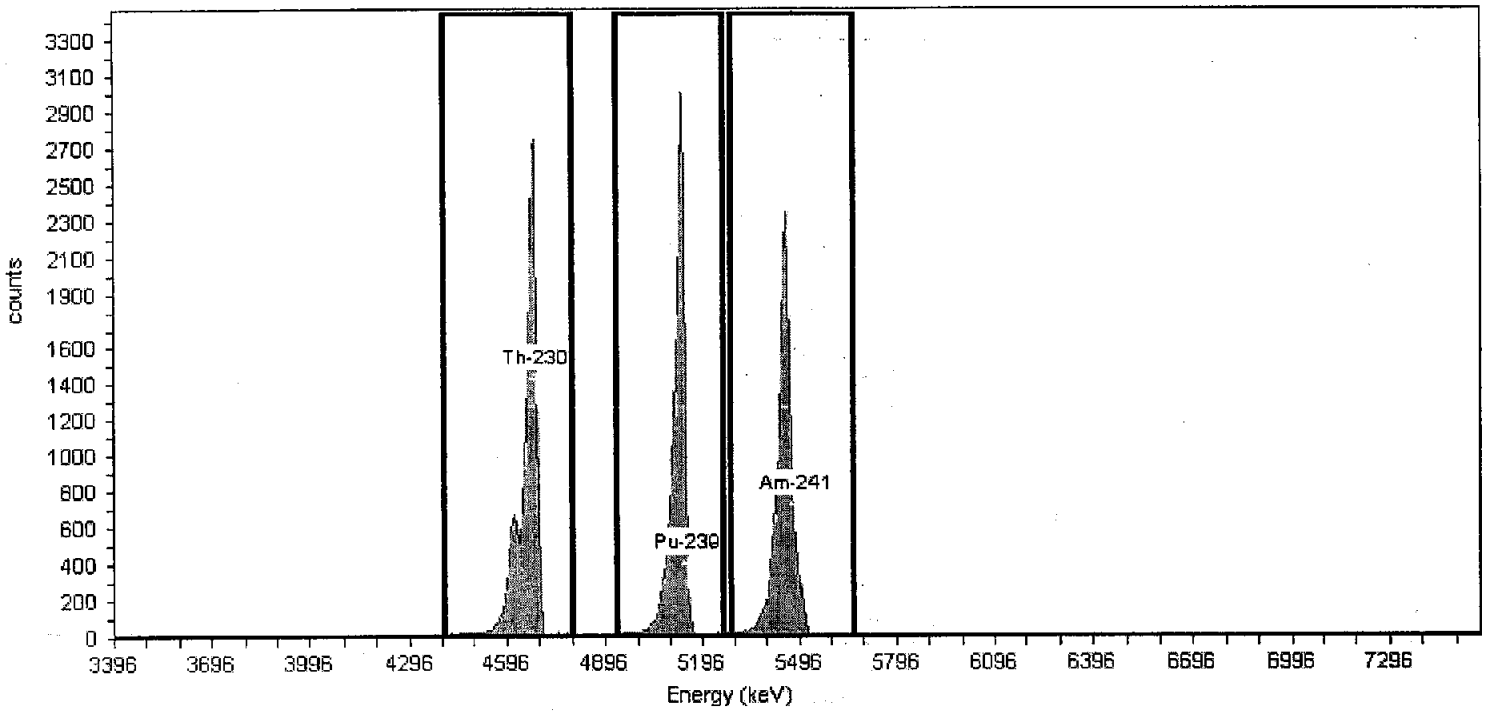
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV87 , SN: 46-033FF5
Acquisition Start Date: 4/27/2007 12:19:55PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.05% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,428.00	117.34
Pu-239	243	5.16	212	258	15,671.00	111.94
Am-241	289	5.49	261	313	14,884.00	106.31

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:41:36PM 4/27/2007

Analyst: 60040
Detector: AV88

Calibration

Name: April2007_AV88a
Description:

Calibration Date: 4/27/2007 2:41:33PM

Source Info

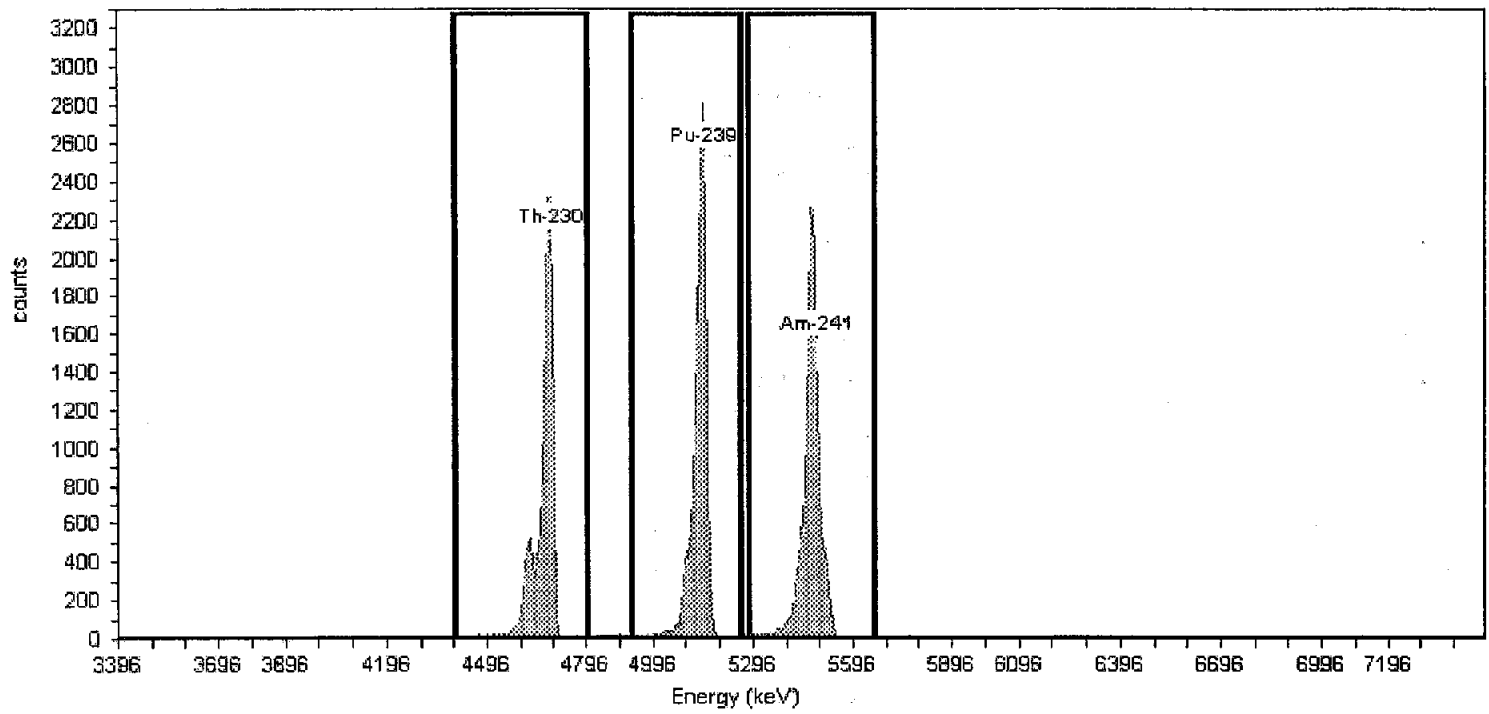
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV88 , SN: 76-033FF1
Acquisition Start Date: 4/27/2007 12:21:42PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.56% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,518.00	89.41
Pu-239	243	5.16	212	258	14,675.00	104.82
Am-241	289	5.49	261	313	13,949.00	99.64

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:40:55PM 4/27/2007

Analyst: 60040
Detector: AV89

Calibration

Name: April2007_AV89
Description:

Calibration Date: 4/27/2007 2:40:52PM

Source Info

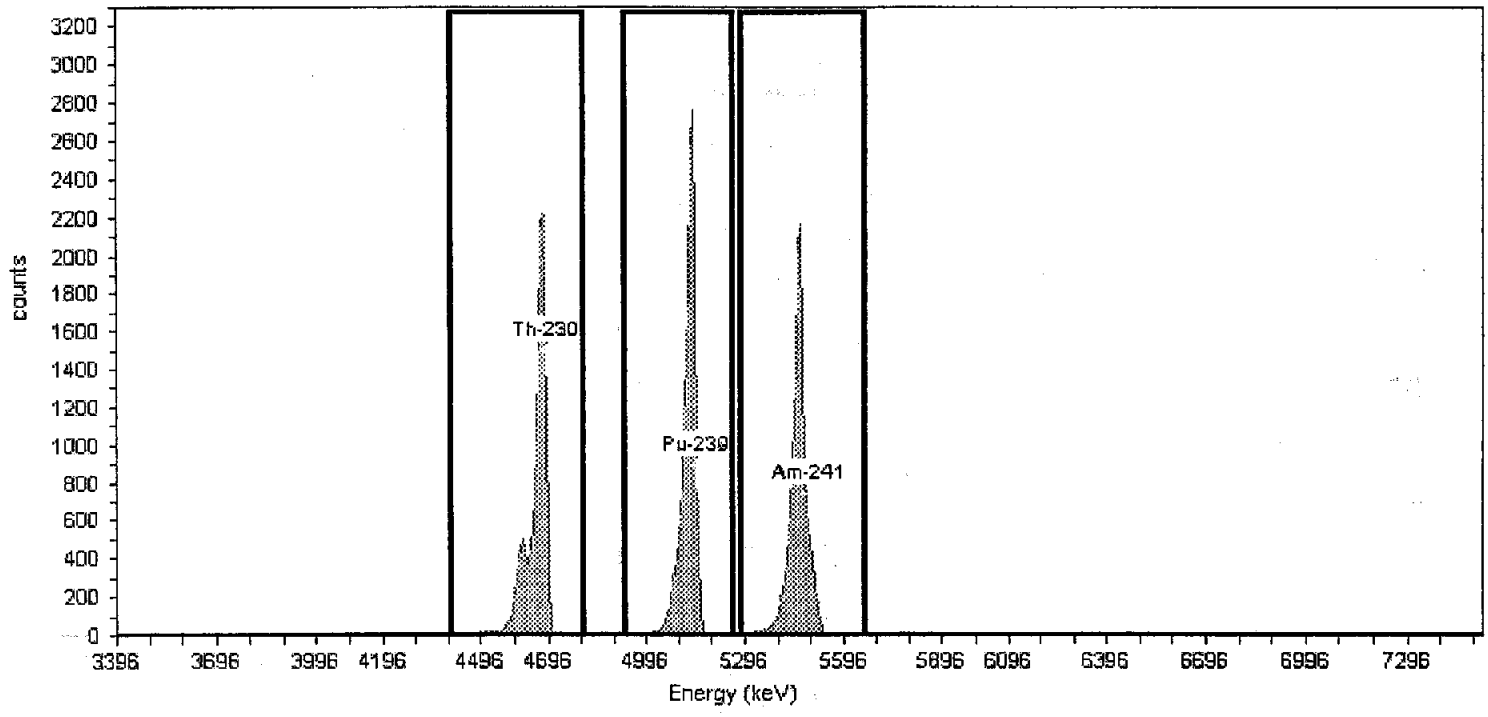
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV89 , SN: 46-033P5
Acquisition Start Date: 4/27/2007 12:20:47PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.10% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,615.00	90.11
Pu-239	243	5.16	212	258	14,272.00	101.94
Am-241	289	5.49	261	313	13,136.00	93.83

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:10:00PM 4/27/2007

Analyst: 60040
Detector: AV90

Calibration

Name: April2007_AV90
Description:

Calibration Date: 4/27/2007 5:09:56PM

Source Info

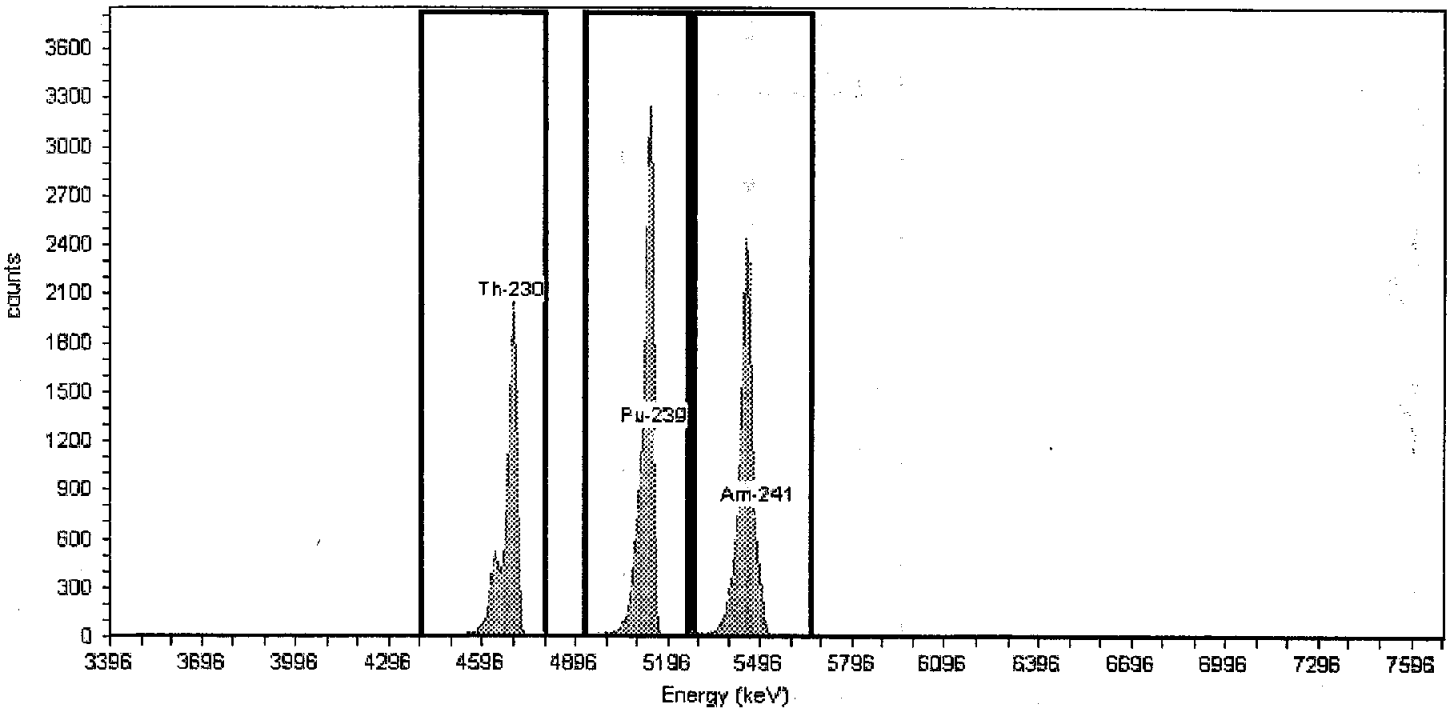
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV90 , SN: 46-033Q1
Acquisition Start Date: 4/27/2007 2:45:39PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.33% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,866.00	84.76
Pu-239	243	5.16	212	258	17,601.00	125.72
Am-241	289	5.49	261	313	15,464.00	110.46

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:15:06PM 4/30/2007

Analyst: 60040
Detector: AV94

Calibration

Name: April2007_AV94
Description:

Calibration Date: 4/30/2007 12:15:03PM

Source Info

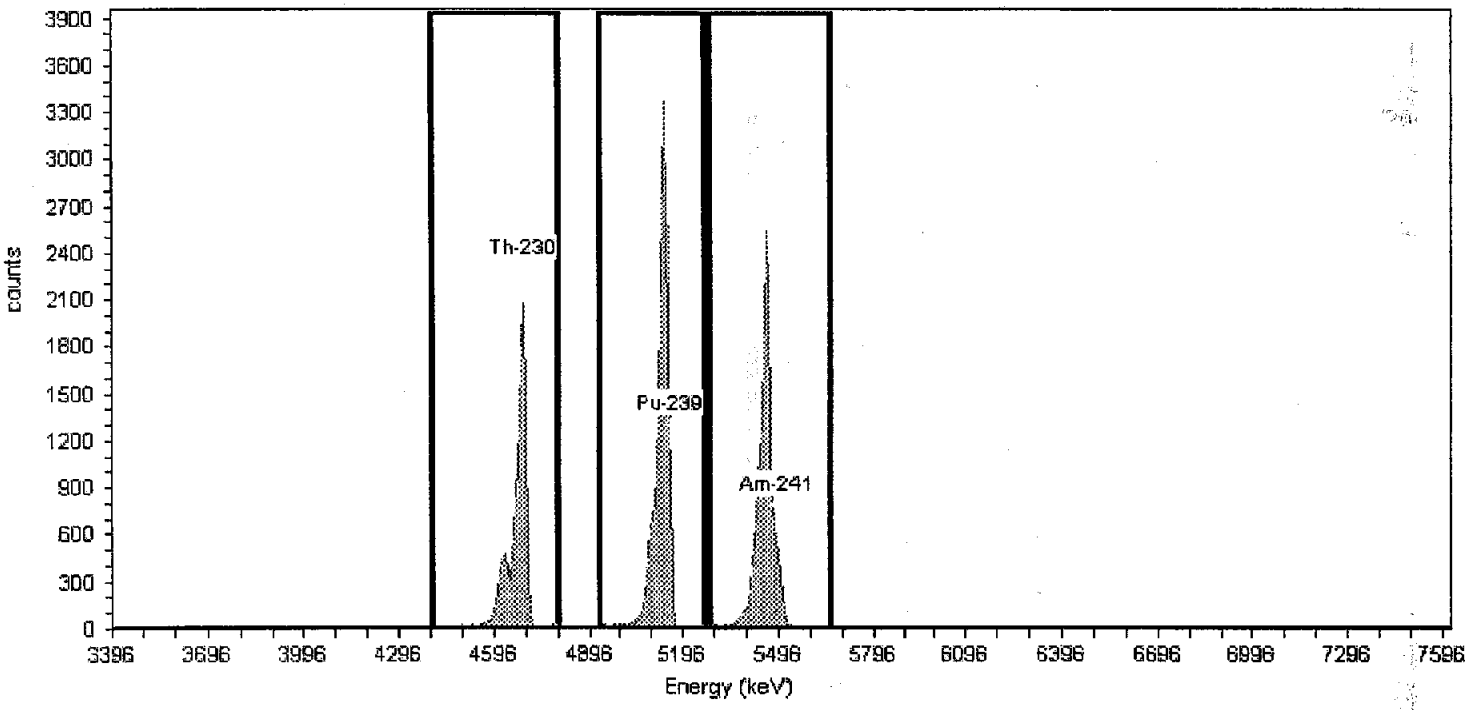
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV94 , SN: 46-032EE6
Acquisition Start Date: 4/30/2007 9:45:23AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.70% +/- 0.27% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	11,487.00	82.05
Pu-239	243	5.16	212	258	17,442.00	124.59
Am-241	289	5.49	261	313	14,956.00	106.83

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:10:07PM 4/27/2007

Analyst: 60040
Detector: AV95

Calibration

Name: April2007_AV95
Description:

Calibration Date: 4/27/2007 5:10:04PM

Source Info

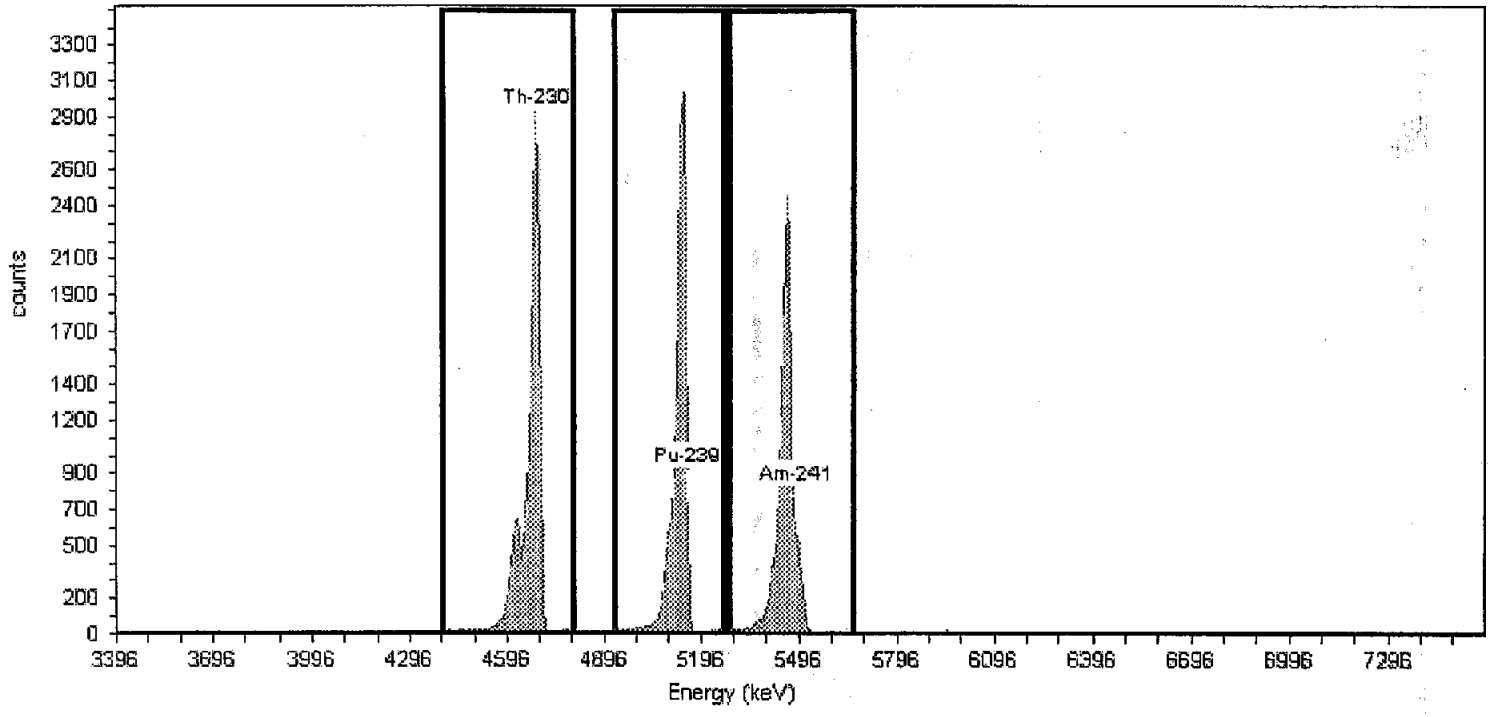
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV95 , SN: 46-033P4
Acquisition Start Date: 4/27/2007 2:45:40PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.79% +/- 0.26% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	16,352.00	116.80
Pu-239	243	5.16	212	258	15,617.00	111.55
Am-241	289	5.49	261	313	14,607.00	104.34

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:10:14PM 4/27/2007

Analyst: 60040
Detector: AV96

Calibration

Name: April2007_AV96
Description:

Calibration Date: 4/27/2007 5:10:11PM

Source Info

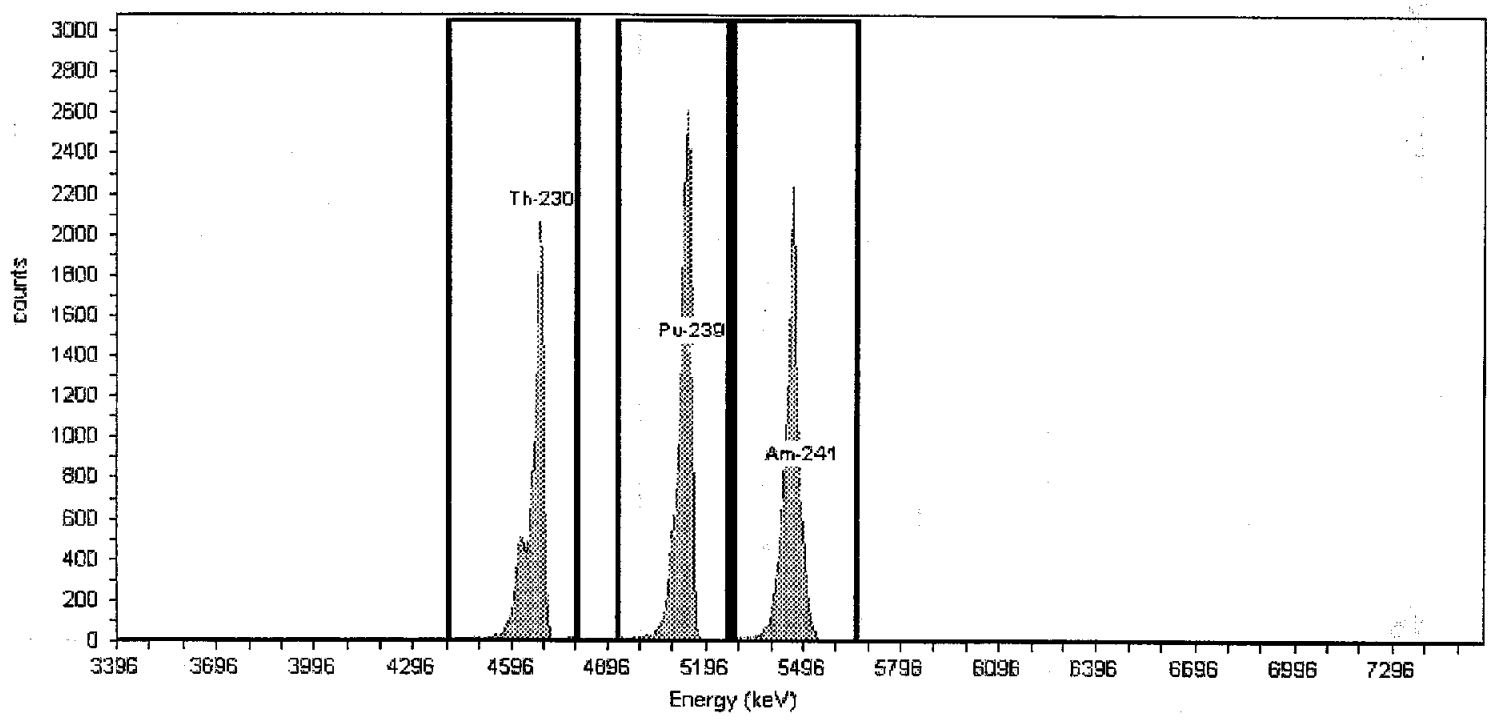
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV96 , SN: 46-033P1
Acquisition Start Date: 4/27/2007 2:46:27PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.37% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 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	139	194	12,331.00	88.08
Pu-239	243	5.16	212	258	14,549.00	103.92
Am-241	289	5.49	261	313	14,034.00	100.24

STL SEVERN TRENT

STL Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:10:19PM 4/27/2007

Analyst: 60040
Detector: AV97

Calibration

Name: April2007_AV97
Description:

Calibration Date: 4/27/2007 5:10:15PM

Source Info

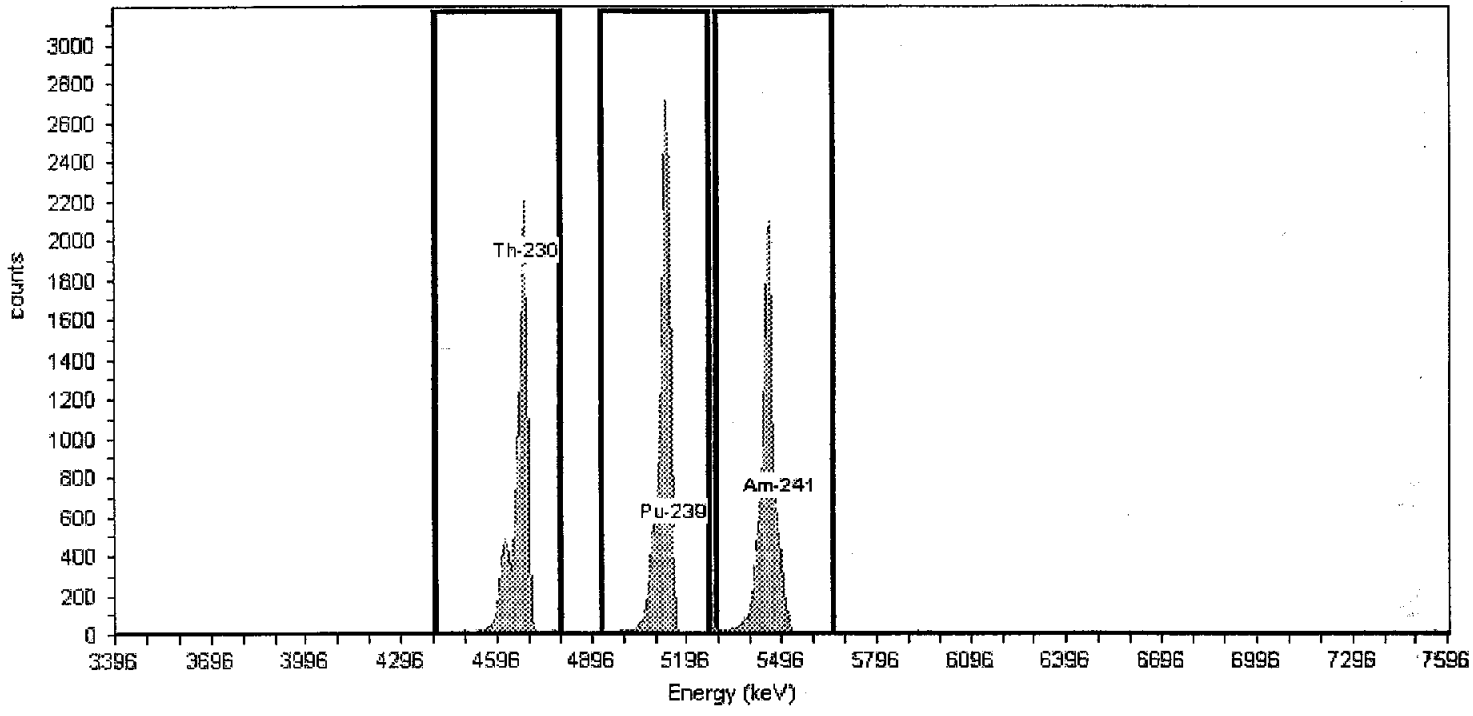
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV97 , SN: 76-03393
Acquisition Start Date: 4/27/2007 2:46:28PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.85% +/- 0.29% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,223.00	87.31
Pu-239	243	5.16	212	258	14,180.00	101.29
Am-241	289	5.49	261	313	13,243.00	94.59

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:59:40PM 4/30/2007

Analyst: 60040
Detector: AV98

Calibration

Name: April2007_AV98
Description:

Calibration Date: 4/30/2007 2:59:36PM

Source Info

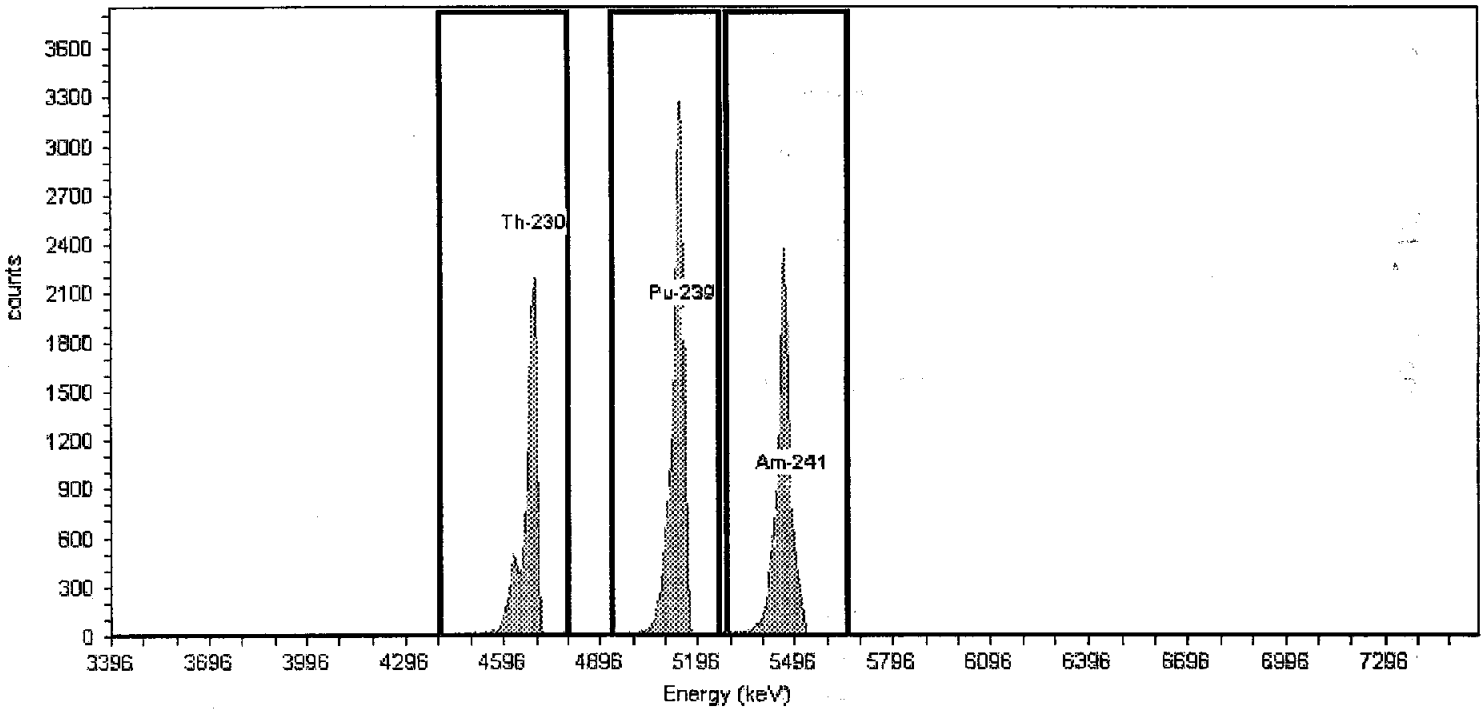
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV98 , SN: 46-033Q3
Acquisition Start Date: 4/30/2007 12:27:39PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.58% +/- 0.28% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2



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	139	194	12,141.00	86.72
Pu-239	243	5.16	212	258	17,958.00	128.27
Am-241	289	5.49	261	313	15,244.00	108.89

GAS FLOW PROPORTIONAL COUNTING

Gas Flow Proportional Counting Radium

SEVERN TRENT STL

Analysis Report for Radium 226

Batch: 7125097 **Operator:** 403058

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

SampID / WRKNO	Aliquot / Sigma	Truncate Yields / Dilution	Ba Mass / BaYield	Ingrowth / Eff	Cnt Date Time / InstrID	Ba Precip Time / Cal Type	SampCntDur / BkgCntDur	SampCnt / BkgCnt	Activity	UncTotal / UncCount	MDA / DLC
F7E050000-097B	1.0000g	False	0.0339	1.1383	5/25/07 15:35	5/25/07 11:00	200	12	**6.724E-002**	8.841E-002	1.441E-001
JWDM31AA	2.00	1.00	100.00%	0.1883	RedB1	2	1000	28	pCi/g	8.815E-002	5.784E-002
F7E050000-097C	1.0000g	False	0.0323	1.1383	5/25/07 15:35	5/25/07 11:00	200	1036	**1.114E+001**	1.315E+000	1.546E-001
JWDM31AC	2.00	1.00	95.28%	0.1919	RedB2	2	1000	31	pCi/g	6.987E-001	6.269E-002
F7E050113-001	1.0090g	False	0.0141	1.1383	5/25/07 15:35	5/25/07 11:00	200	45	**7.973E-001**	3.088E-001	3.043E-001
JWDDT1AA	2.00	1.00	41.59%	0.2271	RedB3	2	1000	33	pCi/g	2.983E-001	1.241E-001
F7E050113-001X	1.0114g	False	0.0290	1.1384	5/25/07 15:35	5/25/07 11:00	200	76	**6.963E-001**	2.116E-001	1.943E-001
JWDDT1AF	2.00	1.00	85.55%	0.2135	RedB4	2	1000	55	pCi/g	1.998E-001	8.266E-002
F7E050113-002	1.0079g	False	0.0274	1.1385	5/25/07 15:35	5/25/07 11:00	200	67	**7.080E-001**	2.196E-001	1.903E-001
JWDE11AA	2.00	1.00	80.83%	0.2024	RedC1	2	1000	40	pCi/g	2.078E-001	7.896E-002
F7E050113-003	1.0046g	False	0.0220	1.1385	5/25/07 15:35	5/25/07 11:00	200	52	**6.467E-001**	2.176E-001	1.804E-001
JWDE31AA	2.00	1.00	64.90%	0.2205	RedC2	2	1000	25	pCi/g	2.078E-001	7.158E-002
F7E050113-004	1.0083g	False	0.0238	1.1385	5/25/07 15:35	5/25/07 11:00	200	84	**1.076E+000**	2.829E-001	1.945E-001
JWDTD1AA	2.00	1.00	70.21%	0.2026	RedC3	2	1000	30	pCi/g	2.617E-001	7.859E-002
F7E050113-005	1.0068g	False	0.0225	1.1385	5/25/07 15:35	5/25/07 11:00	200	78	**1.015E+000**	2.766E-001	1.955E-001
JWDTF1AA	2.00	1.00	66.37%	0.2107	RedC4	2	1000	29	pCi/g	2.573E-001	7.874E-002
F7E050113-006	1.0047g	False	0.0256	1.1384	5/25/07 15:35	5/25/07 11:00	200	85	**9.745E-001**	2.563E-001	1.795E-001
JWDTG1AA	2.00	1.00	75.52%	0.2103	RedD1	2	1000	32	pCi/g	2.371E-001	7.297E-002
F7E050113-007	1.0057g	False	0.0254	1.1384	5/25/07 15:35	5/25/07 11:00	200	39	**4.421E-001**	1.767E-001	1.667E-001
JWDTH1AA	2.00	1.00	74.93%	0.2031	RedD2	2	1000	24	pCi/g	1.711E-001	6.588E-002
F7E050113-008	1.0054g	False	0.0278	1.1384	5/25/07 15:35	5/25/07 11:00	200	93	**1.010E+000**	2.622E-001	1.979E-001
JWDTJ1AA	2.00	1.00	82.01%	0.2001	RedD3	2	1000	44	pCi/g	2.420E-001	8.276E-002
F7E050113-009	1.0067g	False	0.0296	1.1384	5/25/07 15:35	5/25/07 11:00	200	97	**1.039E+000**	2.513E-001	1.507E-001
JWDTK1AA	2.00	1.00	87.32%	0.1989	RedD4	2	1000	26	pCi/g	2.288E-001	6.004E-002

Laboratory Control Sample Information

SampID	WRKNO	Analyte	Activity	StdAdded	Recovery	LCL	UCL
F7E050000-097C	JWDM31AC	RA-226	1.114E+001 pCi/g	1.119E+001	99.56 %	53.00	113.00

SampID / WRKNO	Aliquot / Sigma	Truncate Yields / Dilution	Ba Mass / BaYield	Ingrowth / Eff	Cnt Date Time / InstrID	Ba Precip Time / Cal Type	SampCntDur / BkgCntDur	SampCnt / BkgCnt	Activity	UncTotal / UncCount	MDA / DLC

Sample Duplicate Information

SampID	SampDupID	Activity	DupActivity	RPD	RER	DER
F7E050113-001	F7E050113-001X	7.973E-001	6.963E-001	13.52%	1.940E-001	2.696E-001

Matrix Spike Information

SampID	SampMSID	WRKNO	Analyte	Activity	MSActivity	StdAdded	Recovery

SEVERN TRENT STL

Analysis Report for Radium 228

Batch: 7125098 **Operator:** 403424

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

SampID / WRKNO	Aliquot Mass	Eff	BaYield / YYield	Truncate Yields	CountDateTime / InstrID	Y Ingrowth Time / Y Precip Time	SampCntD / BkgCntDur	SampCnt / BkgCnt	Cal Type / Sigma	Activity	UncTotal / UncCount	MDA / DLC
F7E050000-098B	1.0000 g	0.4344	100.00	False	5/25/07 11:33	5/11/07 14:00	200	239	1	2.250E-001	5.024E-001	8.395E-001
JWDM51AA	0.0339 g		70.88		RedA1	5/25/07 9:00	1000	1099	2.00	pCi/g	5.019E-001	4.041E-001
F7E050000-098C	1.0000 g	0.4321	95.28	False	5/25/07 11:33	5/11/07 14:00	200	1026	1	8.022E+000	1.063E+000	7.037E-001
JWDM51AC	0.0323 g		88.46		RedA2	5/25/07 9:00	1000	1080	2.00	pCi/g	6.981E-001	3.386E-001
F7E050113-001	1.0090 g	0.4279	41.59	False	5/25/07 11:33	5/11/07 14:00	200	274	1	1.129E+000	1.027E+000	1.654E+000
JWDDT1AC	0.0141 g		87.91		RedA3	5/25/07 9:00	1000	1123	2.00	pCi/g	1.021E+000	7.967E-001
F7E050113-001X	1.0114 g	0.4286	85.55	False	5/25/07 11:33	5/11/07 14:00	200	281	1	7.705E-001	4.499E-001	6.960E-001
JWDDT1AG	0.0290 g		96.70		RedA4	5/25/07 9:00	1000	1022	2.00	pCi/g	4.432E-001	3.346E-001
F7E050113-002	1.0079 g	0.4267	80.83	False	5/25/07 11:34	5/11/07 14:00	200	280	1	8.658E-001	5.018E-001	7.754E-001
JWDE11AC	0.0274 g		92.31		RedB1	5/25/07 9:00	1000	1015	2.00	pCi/g	4.942E-001	3.727E-001
F7E050113-003	1.0046 g	0.4256	64.90	False	5/25/07 11:33	5/11/07 14:00	200	256	1	6.468E-001	6.393E-001	1.035E+000
JWDE31AC	0.0220 g		88.46		RedB2	5/25/07 9:00	1000	1060	2.00	pCi/g	6.361E-001	4.980E-001
F7E050113-004	1.0083 g	0.4299	70.21	False	5/25/07 11:33	5/11/07 14:00	200	309	1	1.154E+000	6.130E-001	9.391E-001
JWDTD1AC	0.0238 g		90.66		RedB3	5/25/07 9:00	1000	1104	2.00	pCi/g	6.021E-001	4.521E-001
F7E050113-005	1.0068 g	0.4362	66.37	False	5/25/07 11:34	5/11/07 14:00	200	284	1	7.378E-001	6.008E-001	9.608E-001
JWDTF1AC	0.0225 g		93.96		RedB4	5/25/07 9:00	1000	1140	2.00	pCi/g	5.963E-001	4.628E-001
F7E050113-006	1.0047 g	0.4276	75.52	False	5/25/07 11:34	5/11/07 14:00	200	295	1	8.096E-001	5.093E-001	7.959E-001
JWDTG1AC	0.0256 g		100.55		RedC1	5/25/07 9:00	1000	1109	2.00	pCi/g	5.029E-001	3.832E-001
F7E050113-007	1.0057 g	0.4372	74.93	False	5/25/07 11:34	5/11/07 14:00	200	312	1	5.630E-001	6.020E-001	9.799E-001
JWDTH1AC	0.0254 g		87.91		RedC2	5/25/07 9:00	1000	1334	2.00	pCi/g	5.994E-001	4.733E-001
F7E050113-008	1.0054 g	0.4262	82.01	False	5/25/07 11:34	5/11/07 14:00	200	316	1	9.917E-001	5.940E-001	9.245E-001
JWDTJ1AC	0.0278 g		82.42		RedC3	5/25/07 9:00	1000	1182	2.00	pCi/g	5.856E-001	4.456E-001
F7E050113-009	1.0067 g	0.4286	87.32	False	5/25/07 11:34	5/11/07 14:00	200	315	1	7.896E-001	4.577E-001	7.096E-001
JWDTK1AC	0.0296 g		99.45		RedC4	5/25/07 9:00	1000	1165	2.00	pCi/g	4.509E-001	3.420E-001

Laboratory Control Sample Information

SampID	WRKNO	ComponentName	Activity	StdAdded	Recovery	LCL	UCL
F7E050000-098C	JWDM51AC	RA-228	8.022E+000 pCi/g	8.943E+000 pCi/g	89.71 %	54.00	130.00

SampID / WRKNO	Aliquot / Mass	Eff	BaYield / YYield	Truncate Yields	CountDateTime / InstrID	Y Ingrowth Time / Y Precip Time	SampCntD / BkgCntDur	SampCnt / BkgCnt	Cal Type / Sigma	Activity	UncTotal / UncCount	MDA / DLC

Sample Duplicate Information

SampID	SampDupID	Activity	DupActivity	RPD	RER	DER
F7E050113-001	F7E050113-001X	1.129E+000	7.705E-001	37.73%	2.427E-001	3.197E-001

Matrix Spike Information

SampID	SampMSID	Sample Activity	MS Activity	StdAdded	MSRecovery
					%

TestAmerica STL

Instrument Checks

SEVERN TRENT STL

Gas Proportional Counter Daily Quality Control Checks

Friday, May 25, 2007

Instrument: ***Red***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha Std. Dev.	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta Std. Dev.	Beta Deviation	Beta Flag
A1	Efficiency	13420.50	13329.55	85.91	90.95	Pass	42291.42	42313.25	116.45	-21.83	Pass
	Background	0.055	0.032	0.025	0.023	Pass	1.330	1.107	0.223	0.223	Pass
A2	Efficiency	11696.50	11853.45	82.05	-156.95	Pass	43350.66	43395.25	143.67	-44.59	Pass
	Background	0.100	0.038	0.029	0.062	Pass	1.280	1.153	0.223	0.127	Pass
A3	Efficiency	12520.00	12417.85	66.27	102.15	Pass	28611.34	28776.78	98.48	-165.43	Pass
	Background	0.070	0.043	0.041	0.027	Pass	1.525	1.117	0.252	0.408	Pass
A4	Efficiency	12654.50	12623.33	78.88	31.17	Pass	38447.94	38445.45	116.80	2.49	Pass
	Background	0.095	0.038	0.036	0.057	Pass	1.230	0.998	0.157	0.232	Pass
B1	Efficiency	12852.50	12857.63	84.18	-5.13	Pass	32599.04	32531.30	107.12	67.74	Pass
	Background	0.070	0.055	0.058	0.015	Pass	1.170	1.047	0.208	0.123	Pass
B2	Efficiency	12726.00	12719.13	67.48	6.88	Pass	28296.79	28336.95	86.53	-40.16	Pass
	Background	0.060	0.042	0.030	0.018	Pass	1.145	1.108	0.254	0.037	Pass
B3	Efficiency	12523.00	12578.45	116.33	-55.45	Pass	36468.16	36441.40	132.39	26.76	Pass
	Background	0.065	0.030	0.034	0.035	Pass	1.170	1.153	0.205	0.017	Pass
B4	Efficiency	13983.00	14021.75	77.64	-38.75	Pass	35736.54	35821.15	149.33	-84.61	Pass
	Background	0.105	0.077	0.045	0.028	Pass	1.235	1.152	0.194	0.083	Pass
C1	Efficiency	12938.00	13191.25	97.58	-253.25	WARNING	41589.46	41823.15	119.67	-233.69	Pass
	Background	0.085	0.040	0.055	0.045	Pass	1.170	1.093	0.244	0.077	Pass
C2	Efficiency	12037.50	12161.95	77.56	-124.45	Pass	43727.52	43965.10	126.72	-237.58	Pass
	Background	0.045	0.040	0.043	0.005	Pass	1.445	1.223	0.210	0.222	Pass
C3	Efficiency	12405.00	12486.35	103.66	-81.35	Pass	28738.97	28775.85	121.78	-36.88	Pass
	Background	0.085	0.042	0.026	0.043	Pass	1.165	1.142	0.145	0.023	Pass
C4	Efficiency	12501.00	12595.53	78.88	-94.52	Pass	38092.18	38190.35	142.11	-98.17	Pass
	Background	0.050	0.062	0.049	-0.012	Pass	1.340	1.173	0.204	0.167	Pass
D1	Efficiency	13220.00	13252.15	74.78	-32.15	Pass	33230.16	33075.80	127.27	154.36	Pass
	Background	0.085	0.048	0.045	0.037	Pass	1.435	1.107	0.122	0.328	Pass
D2	Efficiency	12890.00	12837.17	75.18	52.83	Pass	28767.61	28629.80	124.53	137.81	Pass
	Background	0.075	0.043	0.042	0.032	Pass	1.260	1.015	0.243	0.245	Pass
D3	Efficiency	12687.50	12785.88	90.30	-98.38	Pass	36715.88	36599.43	146.33	116.45	Pass
	Background	0.075	0.030	0.036	0.045	Pass	1.345	1.080	0.315	0.265	Pass
D4	Efficiency	13737.00	13762.60	85.17	-25.60	Pass	36040.54	35883.50	157.75	157.04	Pass
	Background	0.060	0.032	0.041	0.028	Pass	1.245	1.028	0.204	0.217	Pass

5/25/2007 10:39:15 AM

IQC version 2.3, updated 4/5/2006

TestAmerica STL

Long Backgrounds – Red
April 2007

Detector ID	Sample ID	Alpha	Beta	Guard	Count Count Time	Event	Voltage	TOD
A1	A1-01	34	1099	528425	1000	0	1380	39200.38
A2	A2-01	33	1080	528427	1000	0	1380	39200.38
A3	A3-01	24	1123	528427	1000	0	1380	39200.38
A4	A4-01	40	1022	528426	1000	0	1380	39200.38
B1	B1-01	28	1015	538589	1000	0	1380	39200.38
B2	B2-01	31	1060	538568	1000	0	1380	39200.38
B3	B3-01	33	1104	538570	1000	0	1380	39200.38
B4	B4-01	55	1140	538570	1000	0	1380	39200.38
C1	C1-01	40	1109	540274	1000	0	1380	39200.38
C2	C2-01	25	1334	540277	1000	0	1380	39200.38
C3	C3-01	30	1182	540280	1000	0	1380	39200.38
C4	C4-01	29	1165	540279	1000	0	1380	39200.38
D1	D1-01	32	1075	540728	1000	0	1380	39200.38
D2	D2-01	24	1057	540728	1000	0	1380	39200.38
D3	D3-01	44	1102	540729	1000	0	1380	39200.38
D4	D4-01	26	1124	540731	1000	0	1380	39200.38

TestAmerica STL

Run Log

Logbook No.: 2941

STL
St. Louis Laboratory

Gas Proportional Counter Runlog

Date	Batch #	kw 5/24/07 Sample #	Detector	Count Time	Analysis	Initials
5/24/07	7121380	F7D7E010197-004	Red B4	200 min	Ra228	kw
		-005	C2			
		-006	C3			
		-007	C4			
		-008	D1			
		-009	D2			
		F7E010000-380B	D3			
		-380C	D4			
		-380L	Blue A1			
	7129313	F7E090000-313B	A2			
		-313C	A4			
		-313L	B1			
		F7E090183-001	B2			
	7121379	F7E010000-379C	C2		Ra226	SE
		-379L	C3			
	7129312	F7E090000-312B	Red A1			
		-312C	A2			
		-312L	A3			
		F7E090183-001	A4			
	7129340	F7E090000-340B	B1			
		-340C	B2			
		-340L	B3			
		F7E090204-001	B4			
5/25/07	Daily	BKG + Source	Red/Blue	2min + 200min	QA	KW
5/25/07	7125098	F7E050000-098B	Red A1	200min	Ra228	KW
		-098C	A2			
		F7E050113-001	A3			

Reviewed By: KW Date: 5/25/07

SOP References: STL-RD-0403 Rev 6 03/27/07
Form: SL-RAD-0025, Revised 8/14/06
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.: 2941

STL
St. Louis Laboratory

Gas Proportional Counter Runlog

Date	Batch #	Sample #	Detector	Count Time	Analysis	Initials
5/25/07	7125098	F7E050113-00~~1~~X	Red A4	200min	Ra228	lw
		-002	B1			
		-003	B2			
		-004	B3			
		-005 lw 5/25/07	B4			
		-00~~7~~6	C1			
		-007	C2			
		-008	C3			
		-009	C4			
	M070616	Alpha Ver -1	D1		ABT	
		-2 lw 5/25/07	D2			
		-~~0~~3	D3			
		-4	D4			
		-5	Blue A1			
		-6	A2			
	7142234	F7E220124-001	A4			
		F~~3~~7E220124-001 lw 5/25/07	B1			
	7144110	F7E230333-001	B2			
		-002	B4			
		-003	C2			
		-004	C3			
		-005	C4			
		-006	Red A1		~~ABT~~ ABT	
		-007	A2			
		-008	A3			
		-009	A4			
	7125097	F7E050000-0973	Red B1		Ra 226	

Reviewed By: _____ Date: 5/25/07.

SOP References: STL-RD-0403 Rev 6 03/27/07
Form: SL-RAD-0025; Revised 8/14/06
QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike; D=Matrix Spike Duplicate; X=Sample Duplicate.

5/24

SEVERN TRENT **STL**

Prep Report for Radium 226

Batch: 7125097 **Prep Analyst:** 403301

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

SampID	WRKNO	Aliquot	Gross / Tare	Mass / Ba Yield	Dilution	Ba Precipitation Time / BaYieldAdjusted	Carrier ID / Carrier Added
F7E050000-097B	JWDM31AA	1.0000g	8.8916g / 8.8577g	0.0339g / 100.00%	1.00	5/25/07 11:00 / 100%	Ba 36 / 0.0339
F7E050000-097C	JWDM31AC	1.0000g	8.9042g / 8.8719g	0.0323g / 95.28%	1.00	5/25/07 11:00 / 95.28%	Ba 36 / 0.0339
F7E050113-001	JWDDT1AA	1.0090g	8.8150g / 8.8009g	0.0141g / 41.59%	1.00	5/25/07 11:00 / 41.59%	Ba 36 / 0.0339
F7E050113-001X	JWDDT1AF	1.0114g	8.9706g / 8.9416g	0.0290g / 85.55%	1.00	5/25/07 11:00 / 85.55%	Ba 36 / 0.0339
F7E050113-002	JWDE11AA	1.0079g	8.9018g / 8.8744g	0.0274g / 80.83%	1.00	5/25/07 11:00 / 80.83%	Ba 36 / 0.0339
F7E050113-003	JWDE31AA	1.0046g	8.8789g / 8.8569g	0.0220g / 64.90%	1.00	5/25/07 11:00 / 64.90%	Ba 36 / 0.0339
F7E050113-004	JWDTD1AA	1.0083g	8.8899g / 8.8661g	0.0238g / 70.21%	1.00	5/25/07 11:00 / 70.21%	Ba 36 / 0.0339
F7E050113-005	JWDTF1AA	1.0068g	8.9188g / 8.8963g	0.0225g / 66.37%	1.00	5/25/07 11:00 / 66.37%	Ba 36 / 0.0339
F7E050113-006	JWDTG1AA	1.0047g	8.9645g / 8.9389g	0.0256g / 75.52%	1.00	5/25/07 11:00 / 75.52%	Ba 36 / 0.0339
F7E050113-007	JWDTH1AA	1.0057g	8.8932g / 8.8678g	0.0254g / 74.93%	1.00	5/25/07 11:00 / 74.93%	Ba 36 / 0.0339
F7E050113-008	JWDTJ1AA	1.0054g	8.9010g / 8.8732g	0.0278g / 82.01%	1.00	5/25/07 11:00 / 82.01%	Ba 36 / 0.0339
F7E050113-009	JWDTK1AA	1.0067g	8.9006g / 8.8710g	0.0296g / 87.32%	1.00	5/25/07 11:00 / 87.32%	Ba 36 / 0.0339

Red B1
B2
B3
B4
BC1
C2
C3
C4
D1
D2
D3
D4

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7E050000-097C	rad06-0058	RA-226	2.502E+001 dpm/mL	1.00 mL	9/9/1991 12:00:00AM	1.119E+001 pCi/g

JB — Spiked By
GWM — Spike Verified By
05-08-07 — Spike Date

Standard Operating Procedures

SOPNumber	Title	Revision
☑ STL-RC-0002	Planchet Preparation For Radiochemistry And Radiological Screening Analysis	4.00
☐ STL-RC-0003	Drying And Grinding Of Soil And Solid Samples	6.00
☐ STL-RC-0004	Preparation Of Soil, Sludge, And Filter Paper Samples For Radiochemical Analysis	10.00
☐ STL-RC-0040	Total Alpha Emitting Isotopes Of Radium	3.00
☐ STL-RD-0403	Daily Calibration Verification And Maintenance Of The Low Background Gas Flow Proportional Counting System	3.00

SampID	WRKNO	Aliquot	Gross / Tare	Mass / Ba Yield	Dilution	Ba Precipitation Time / BaYieldAdjusted	Carrier ID / Carrier Added

GP	5-26-07		
Reviewed By	Review Date		
[signature]	05-25-07	[signature]	5/25/07
Analyst/Relenquished By	Release Date	Received By	Receipt Date

SEVERN TRENT **STL**

Prep Report for Radium 228

Batch: 7125098 **Prep Analyst:** 403301

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

SampID	WRKNO	Aliquot		Carrier ID	Carrier Added	Gross	Tare	Mass	Yield	Adj Yield	Precip Time
F7E050000-098B	JWDM51AA	1.0000g	Ba:	Ba 36	0.0339 g	8.8916 g	8.8577 g	0.0339 g	100.00%	100%	5/11/07 14:00
		Red A1	Y:	Y 42A	0.0182	8.9063	8.8934	0.0129	70.88%	70.88%	5/25/07 9:00
F7E050000-098C	JWDM51AC	1.0000g	Ba:	Ba 36	0.0339 g	8.9042 g	8.8719 g	0.0323 g	95.28%	95.28%	5/11/07 14:00
		A2	Y:	Y 42A	0.0182	8.9083	8.8922	0.0161	88.46%	88.46%	5/25/07 9:00
F7E050113-001	JWDDT1AC	1.0090g	Ba:	Ba 36	0.0339 g	8.8150 g	8.8009 g	0.0141 g	41.59%	41.59%	5/11/07 14:00
		A3	Y:	Y 42A	0.0182	8.8826	8.8666	0.0160	87.91%	87.91%	5/25/07 9:00
F7E050113-001X	JWDDT1AG	1.0114g	Ba:	Ba 36	0.0339 g	8.9706 g	8.9416 g	0.0290 g	85.55%	85.55%	5/11/07 14:00
		A4	Y:	Y 42A	0.0182	8.9654	8.9478	0.0176	96.70%	96.70%	5/25/07 9:00
F7E050113-002	JWDE11AC	1.0079g	Ba:	Ba 36	0.0339 g	8.9018 g	8.8744 g	0.0274 g	80.83%	80.83%	5/11/07 14:00
		B1	Y:	Y 42A	0.0182	8.9525	8.9357	0.0168	92.31%	92.31%	5/25/07 9:00
F7E050113-003	JWDE31AC	1.0046g	Ba:	Ba 36	0.0339 g	8.8789 g	8.8569 g	0.0220 g	64.90%	64.90%	5/11/07 14:00
		B2	Y:	Y 42A	0.0182	8.8971	8.8810	0.0161	88.46%	88.46%	5/25/07 9:00
F7E050113-004	JWDTD1AC	1.0083g	Ba:	Ba 36	0.0339 g	8.8899 g	8.8661 g	0.0238 g	70.21%	70.21%	5/11/07 14:00
		B3	Y:	Y 42A	0.0182	8.9223	8.9058	0.0165	90.66%	90.66%	5/25/07 9:00
F7E050113-005	JWDTF1AC	1.0068g	Ba:	Ba 36	0.0339 g	8.9188 g	8.8963 g	0.0225 g	66.37%	66.37%	5/11/07 14:00
		B4	Y:	Y 42A	0.0182	8.9090	8.8919	0.0171	93.96%	93.96%	5/25/07 9:00
F7E050113-006	JWDTG1AC	1.0047g	Ba:	Ba 36	0.0339 g	8.9645 g	8.9389 g	0.0256 g	75.52%	75.52%	5/11/07 14:00
		C1	Y:	Y 42A	0.0182	8.8939	8.8756	0.0183	100.55%	100%	5/25/07 9:00
F7E050113-007	JWDTH1AC	1.0057g	Ba:	Ba 36	0.0339 g	8.8932 g	8.8678 g	0.0254 g	74.93%	74.93%	5/11/07 14:00
		C2	Y:	Y 42A	0.0182	8.9178	8.9018	0.0160	87.91%	87.91%	5/25/07 9:00
F7E050113-008	JWDTJ1AC	1.0054g	Ba:	Ba 36	0.0339 g	8.9010 g	8.8732 g	0.0278 g	82.01%	82.01%	5/11/07 14:00
		C3	Y:	Y 42A	0.0182	8.9060	8.8910	0.0150	82.42%	82.42%	5/25/07 9:00

SampID	WRKNO	Aliquot		Carrier ID	Carrier Added	Gross	Tare	Mass	Yield	Adj Yield	Precip Time
F7E050113-009	JWDTK1AC	1.0067g	*Ba:*	Ba 36	0.0339 g	8.9006 g	8.8710 g	0.0296 g	87.32%	87.32%	5 / 11 / 07 14:00
		C4	*Y:*	Y 42A	0.0182	8.9801	8.9620	0.0181	99.45%	99.45%	5 / 25 / 07 9:00

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7E050000-098C	Rad07-0002	RA-228	2.324E+001 dpm/mL	1.00 mL	2/2/2006 12:00:00AM	9.217E+000 pCi/g

JB — Spiked By

GWM — Spike Verified By

05/08/07 — Spike Date

Standard Operating Procedures

	SOPNumber	Title	Revision
☑	STL-RC-0002	Planchet Preparation For Radiochemistry And Radiological Screening Analysis	4.00
☐	STL-RC-0003	Drying And Grinding Of Soil And Solid Samples	6.00
☐	STL-RC-0004	Preparation Of Soil, Sludge, And Filter Paper Samples For Radiochemical Analysis	10.00
☑	STL-RC-0041	Radium 228 In Water	3.00
☐	STL-RD-0403	Daily Calibration Verification And Maintenance Of The Low Background Gas Flow Proportional Counting System	3.00

Reviewed By — 5/25/07 Review Date

SH — Analyst/Relenquished By

05/25/07 — Release Date

Received By

5/25/07 — Receipt Date

SEVERN TRENT SERVICES

LB4100/W General Counting Application

Unit Type: LB4100/W
Counting Unit ID: Red
Data file name: 7125097

Reviewed By: GJ

Batch ID: RA226 5/25/07 DT

Date: 5-26-07

Sample ID		Det. ID	Count Date/Time	Count Duration	Sample Alpha	Sample Beta	Bkgd Time	Background Alpha	Background Beta	CalType	Net CPM Alpha	Net CPM Beta
F7E050000-097B	Red	B1	5/25/2007 15:35	200	12	248	1000	28	1015	1	0.03	0.23
F7E050000-097C	Red	B2	5/25/2007 15:35	200	1036	1347	1000	31	1060	1	5.15	5.68
F7E050113-001	Red	B3	5/25/2007 15:35	200	45	293	1000	33	1104	1	0.19	0.36
F7E050113-001X	Red	B4	5/25/2007 15:35	200	76	295	1000	55	1140	1	0.33	0.34
F7E050113-002	Red	C1	5/25/2007 15:35	200	67	332	1000	40	1109	1	0.30	0.55
F7E050113-003	Red	C2	5/25/2007 15:35	200	52	316	1000	25	1334	1	0.24	0.25
F7E050113-004	Red	C3	5/25/2007 15:35	200	84	328	1000	30	1182	1	0.39	0.46
F7E050113-005	Red	C4	5/25/2007 15:35	200	78	342	1000	29	1165	1	0.36	0.55
F7E050113-006	Red	D1	5/25/2007 15:35	200	85	314	1000	32	1075	1	0.39	0.50
F7E050113-007	Red	D2	5/25/2007 15:35	200	39	293	1000	24	1057	1	0.17	0.41
F7E050113-008	Red	D3	5/25/2007 15:35	200	93	324	1000	44	1102	1	0.42	0.52
F7E050113-009	Red	D4	5/25/2007 15:35	200	97	313	1000	26	1124	1	0.46	0.44

TestAmerica STL

Red 2007

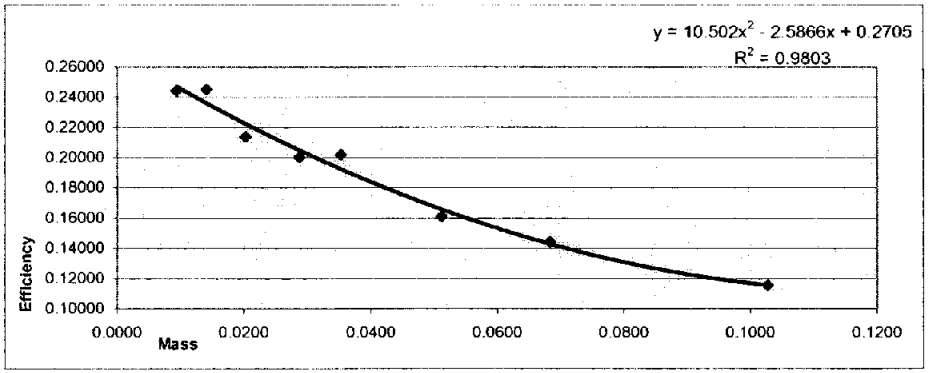
Th-230 $BaSO_4$ Calibration for Ra-226

TestAmerica STL

Detector Efficiency Curves

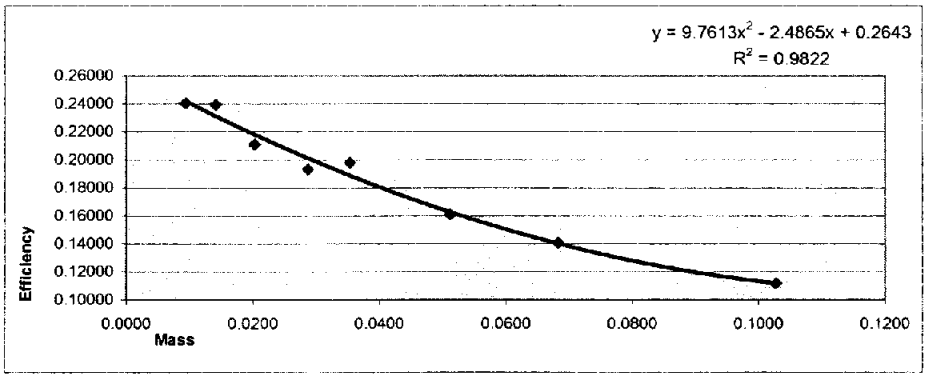
Alpha Th-230 Attenuation Red A1 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A1	0.0094	40.00	44649	1116.225	0.24436
A1	0.0142	40.00	44771	1119.275	0.24503
A1	0.0203	40.00	39092	977.300	0.21395
A1	0.0287	40.00	36612	915.300	0.20038
A1	0.0353	40.00	36922	923.050	0.20207
A1	0.0512	40.00	29414	735.350	0.16098
A1	0.0683	40.00	26362	659.050	0.14428
A1	0.1028	40.00	21096	527.400	0.11546



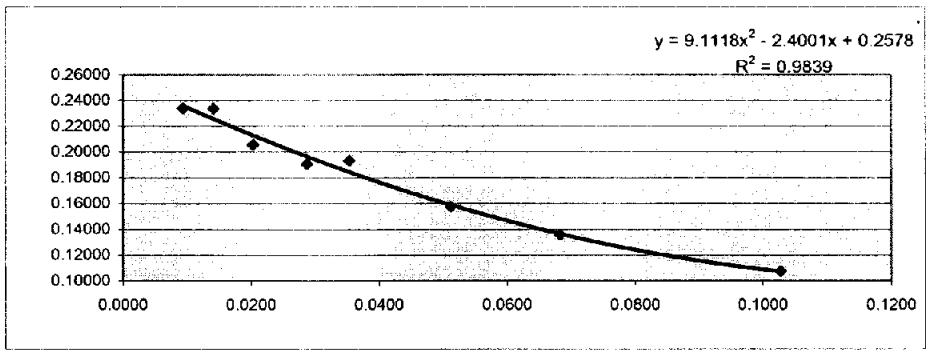
Alpha Th-230 Attenuation Red A2 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A2	0.0094	40.00	43925	1098.125	0.24040
A2	0.0142	40.00	43691	1092.275	0.23912
A2	0.0203	40.00	38547	963.675	0.21097
A2	0.0287	40.00	35303	882.575	0.19321
A2	0.0353	40.00	36155	903.875	0.19788
A2	0.0512	40.00	29422	735.550	0.16103
A2	0.0683	40.00	25703	642.575	0.14067
A2	0.1028	40.00	20398	509.950	0.11164



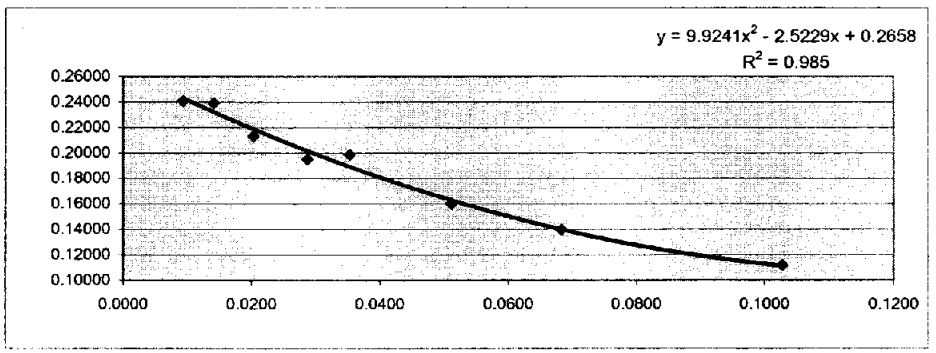
Alpha Th-230 Attenuation Red A3 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A3	0.0094	40.00	42746	1068.650	0.23395
A3	0.0142	40.00	42674	1066.850	0.23355
A3	0.0203	40.00	37561	939.025	0.20557
A3	0.0287	40.00	34825	870.625	0.19060
A3	0.0353	40.00	35285	882.125	0.19311
A3	0.0512	40.00	28774	719.350	0.15748
A3	0.0683	40.00	24806	620.150	0.13576
A3	0.1028	40.00	19633	490.825	0.10745



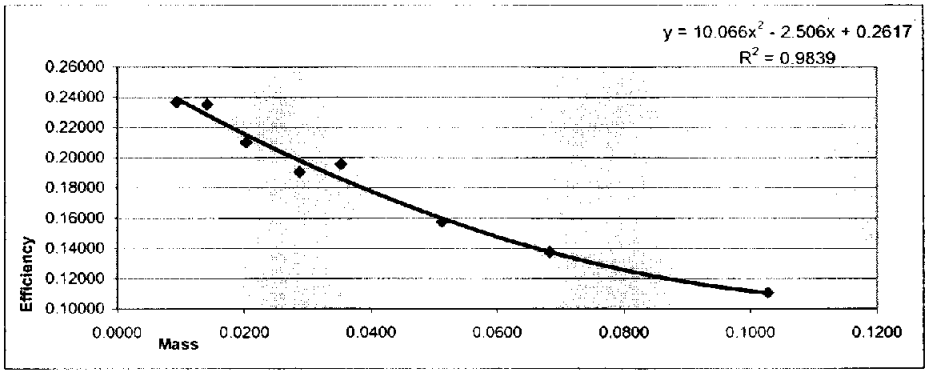
Alpha Th-230 Attenuation Red A4 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A4	0.0094	40.00	43962	1099.050	0.24060
A4	0.0142	40.00	43676	1091.900	0.23904
A4	0.0203	40.00	38941	973.525	0.21312
A4	0.0287	40.00	35654	891.350	0.19513
A4	0.0353	40.00	36320	908.000	0.19878
A4	0.0512	40.00	29254	731.350	0.16011
A4	0.0683	40.00	25491	637.275	0.13951
A4	0.1028	40.00	20366	509.150	0.11146



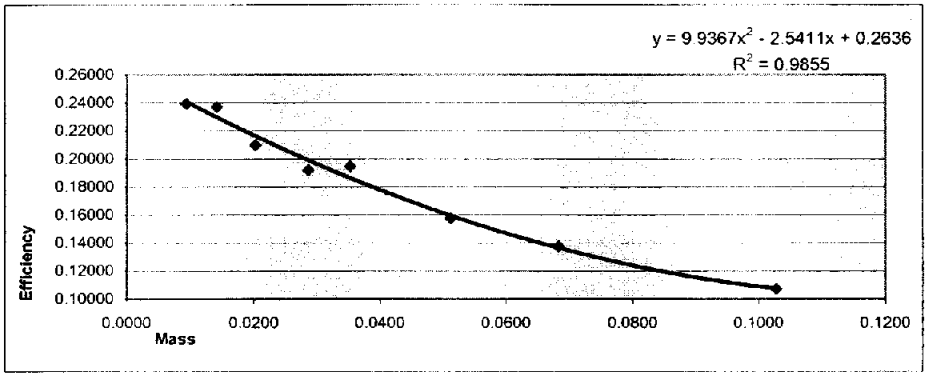
Alpha Th-230 Attenuation Red B1 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A1	0.0094	40.00	43268	1081.700	0.23680
A1	0.0142	40.00	42945	1073.625	0.23504
A1	0.0203	40.00	38398	959.950	0.21015
A1	0.0287	40.00	34825	870.625	0.19060
A1	0.0353	40.00	35747	893.675	0.19564
A1	0.0512	40.00	28757	718.925	0.15739
A1	0.0683	40.00	25109	627.725	0.13742
A1	0.1028	40.00	20198	504.950	0.11054



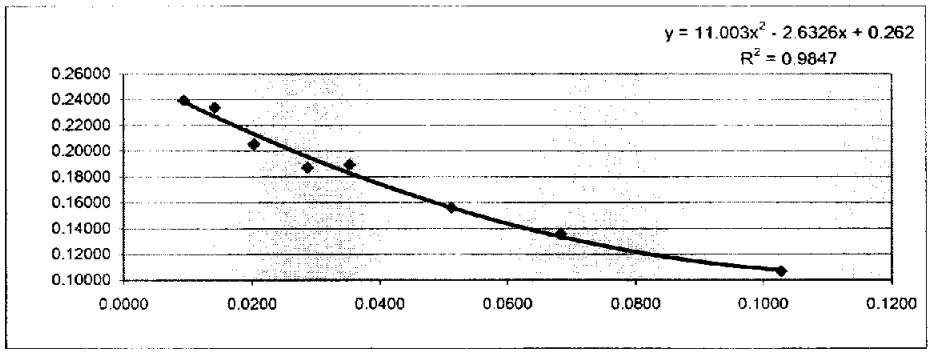
Alpha Th-230 Attenuation Red B2 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A2	0.0094	40.00	43718	1092.950	0.23927
A2	0.0142	40.00	43313	1082.825	0.23705
A2	0.0203	40.00	38333	958.325	0.20980
A2	0.0287	40.00	35058	876.450	0.19187
A2	0.0353	40.00	35594	889.850	0.19481
A2	0.0512	40.00	28807	720.175	0.15766
A2	0.0683	40.00	25093	627.325	0.13733
A2	0.1028	40.00	19579	489.475	0.10716



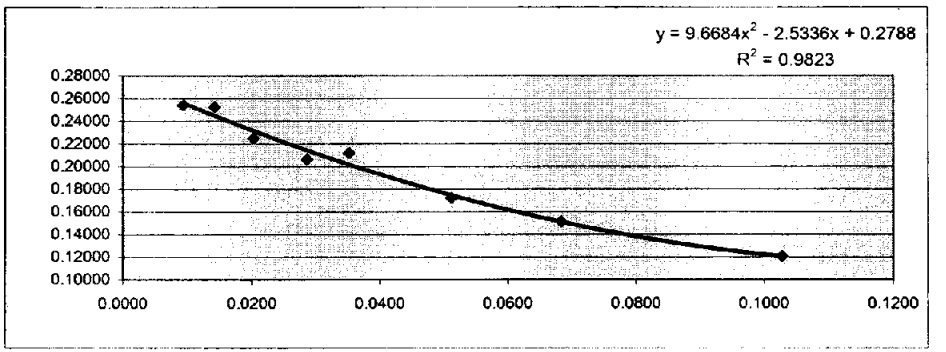
Alpha Th-230 Attenuation Red B3 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A3	0.0094	40.00	43772	1094.300	0.23956
A3	0.0142	40.00	42748	1068.700	0.23396
A3	0.0203	40.00	37520	938.000	0.20535
A3	0.0287	40.00	34195	854.875	0.18715
A3	0.0353	40.00	34593	864.825	0.18933
A3	0.0512	40.00	28518	712.950	0.15608
A3	0.0683	40.00	24827	620.675	0.13588
A3	0.1028	40.00	19501	487.525	0.10673



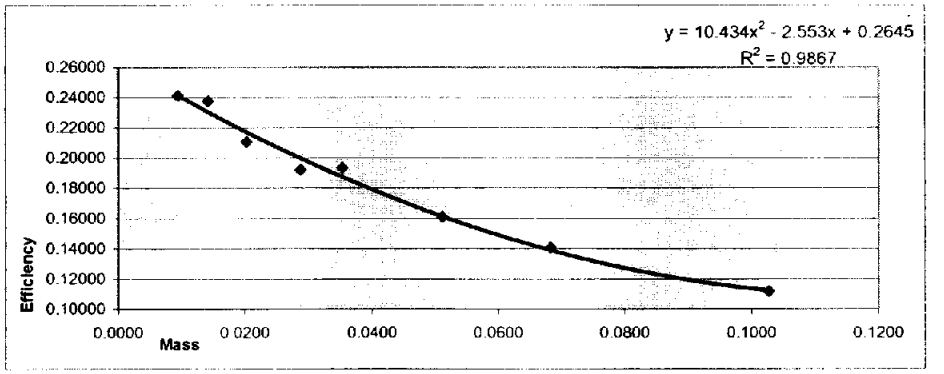
Alpha Th-230 Attenuation Red B4 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A4	0.0094	40.00	46439	1160.975	0.25416
A4	0.0142	40.00	46134	1153.350	0.25249
A4	0.0203	40.00	41056	1026.400	0.22470
A4	0.0287	40.00	37688	942.200	0.20627
A4	0.0353	40.00	38712	967.800	0.21187
A4	0.0512	40.00	31430	785.750	0.17202
A4	0.0683	40.00	27621	690.525	0.15117
A4	0.1028	40.00	22009	550.225	0.12045



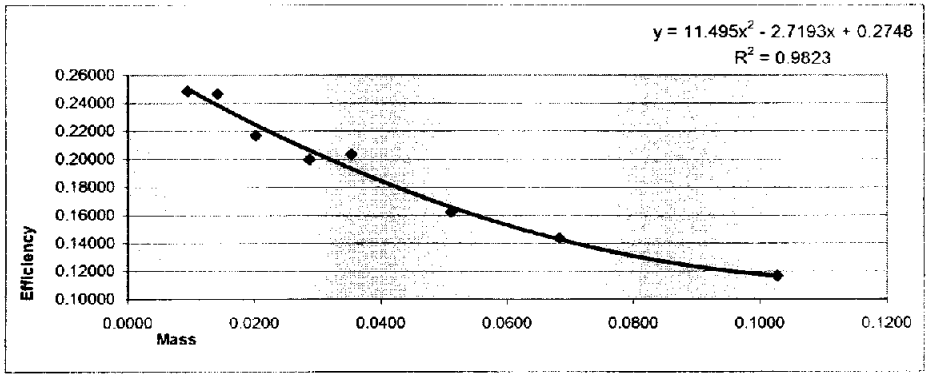
Alpha Th-230 Attenuation Red C1 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A1	0.0094	40.00	44086	1102.150	0.24128
A1	0.0142	40.00	43436	1085.900	0.23772
A1	0.0203	40.00	38481	962.025	0.21061
A1	0.0287	40.00	35104	877.600	0.19212
A1	0.0353	40.00	35349	883.725	0.19346
A1	0.0512	40.00	29405	735.125	0.16093
A1	0.0683	40.00	25673	641.825	0.14051
A1	0.1028	40.00	20395	509.875	0.11162



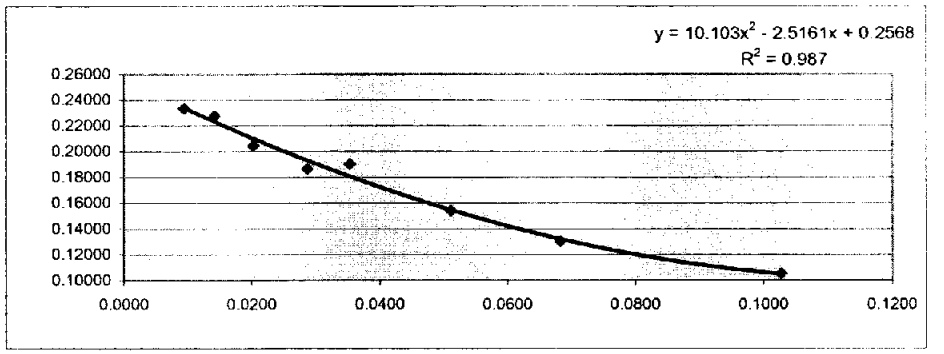
Alpha Th-230 Attenuation Red C2 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A2	0.0094	40.00	45369	1134.225	0.24830
A2	0.0142	40.00	45039	1125.975	0.24650
A2	0.0203	40.00	39635	990.875	0.21692
A2	0.0287	40.00	36512	912.800	0.19983
A2	0.0353	40.00	37156	928.900	0.20335
A2	0.0512	40.00	29640	741.000	0.16222
A2	0.0683	40.00	26226	655.650	0.14353
A2	0.1028	40.00	21304	532.600	0.11660



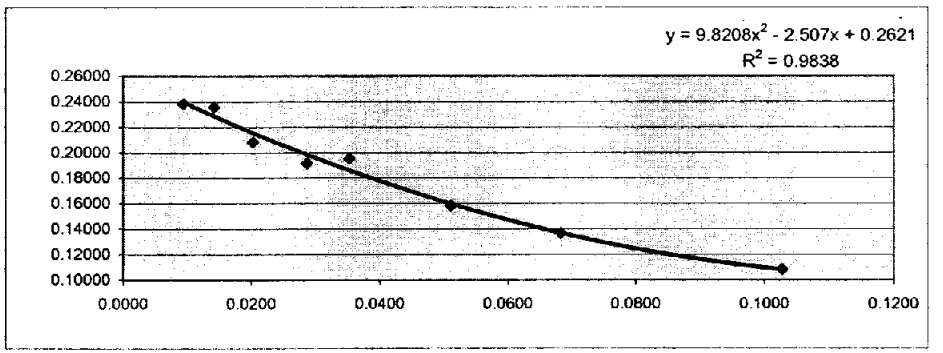
Alpha Th-230 Attenuation Red C3 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A3	0.0094	40.00	42659	1066.475	0.23347
A3	0.0142	40.00	41616	1040.400	0.22776
A3	0.0203	40.00	37323	933.075	0.20427
A3	0.0287	40.00	34086	852.150	0.18655
A3	0.0353	40.00	34746	868.650	0.19016
A3	0.0512	40.00	28127	703.175	0.15394
A3	0.0683	40.00	23789	594.725	0.13020
A3	0.1028	40.00	19239	480.975	0.10529



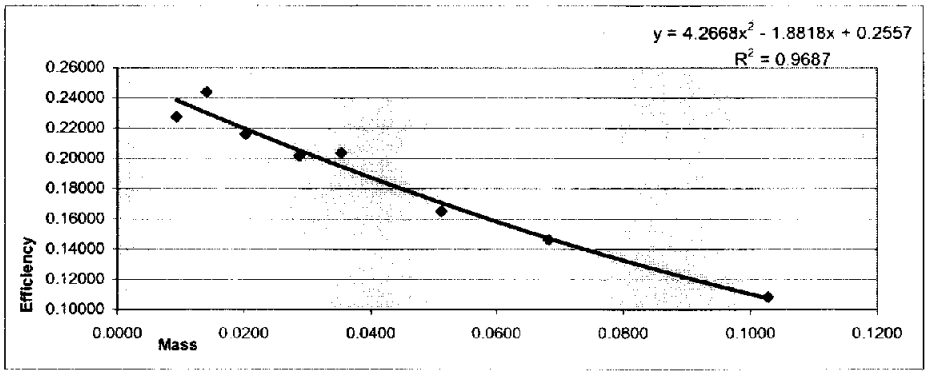
Alpha Th-230 Attenuation Red C4 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A4	0.0094	40.00	43527	1088.175	0.23822
A4	0.0142	40.00	43089	1077.225	0.23582
A4	0.0203	40.00	38022	950.550	0.20809
A4	0.0287	40.00	35005	875.125	0.19158
A4	0.0353	40.00	35700	892.500	0.19539
A4	0.0512	40.00	28888	722.200	0.15810
A4	0.0683	40.00	24929	623.225	0.13644
A4	0.1028	40.00	19777	494.425	0.10824



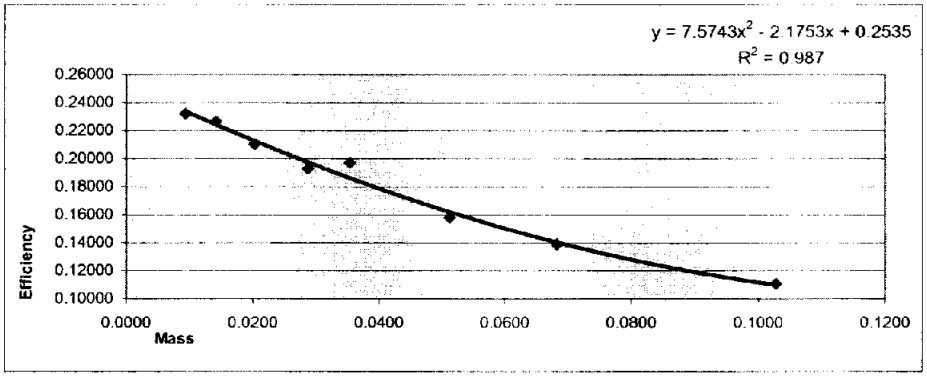
Alpha Th-230 Attenuation Red D1 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A1	0.0094	40.00	41584	1039.600	0.22759
A1	0.0142	40.00	44574	1114.350	0.24395
A1	0.0203	40.00	39465	986.625	0.21599
A1	0.0287	40.00	36873	921.825	0.20180
A1	0.0353	40.00	37226	930.650	0.20374
A1	0.0512	40.00	30143	753.575	0.16497
A1	0.0683	40.00	26706	667.650	0.14616
A1	0.1028	40.00	19794	494.850	0.10833



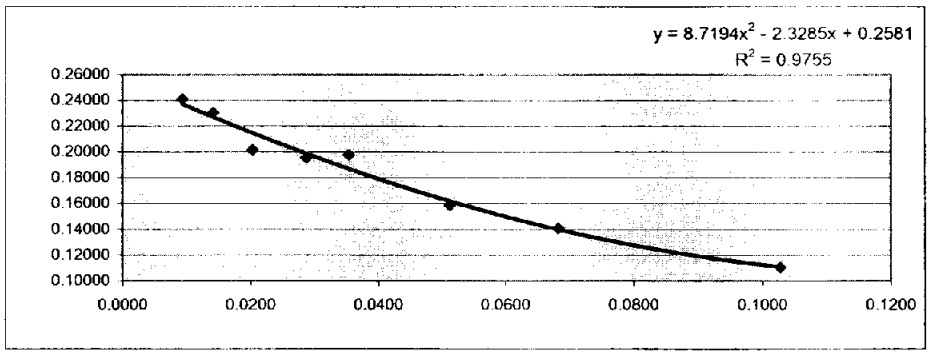
Alpha Th-230 Attenuation Red D2 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A2	0.0094	40.00	42364	1059.100	0.23186
A2	0.0142	40.00	41373	1034.325	0.22643
A2	0.0203	40.00	38425	960.625	0.21030
A2	0.0287	40.00	35233	880.825	0.19283
A2	0.0353	40.00	35995	899.875	0.19700
A2	0.0512	40.00	28846	721.150	0.15787
A2	0.0683	40.00	25365	634.125	0.13882
A2	0.1028	40.00	20219	505.475	0.11066



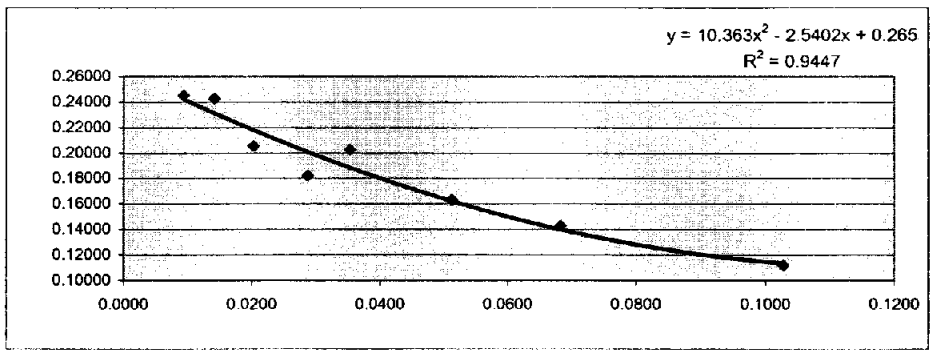
Alpha Th-230 Attenuation Red D3 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A3	0.0094	40.00	44021	1100.525	0.24093
A3	0.0142	40.00	42103	1052.575	0.23043
A3	0.0203	40.00	36792	919.800	0.20136
A3	0.0287	40.00	35701	892.525	0.19539
A3	0.0353	40.00	36134	903.350	0.19776
A3	0.0512	40.00	28971	724.275	0.15856
A3	0.0683	40.00	25736	643.400	0.14085
A3	0.1028	40.00	20196	504.900	0.11053



Alpha Th-230 Attenuation Red D4 2/26,27/2007

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A4	0.0094	40.00	44747	1118.675	0.24490
A4	0.0142	40.00	44291	1107.275	0.24240
A4	0.0203	40.00	37544	938.600	0.20548
A4	0.0287	40.00	33267	831.675	0.18207
A4	0.0353	40.00	36962	924.050	0.20229
A4	0.0512	40.00	29787	744.675	0.16302
A4	0.0683	40.00	26088	652.200	0.14278
A4	0.1028	40.00	20435	510.875	0.11184



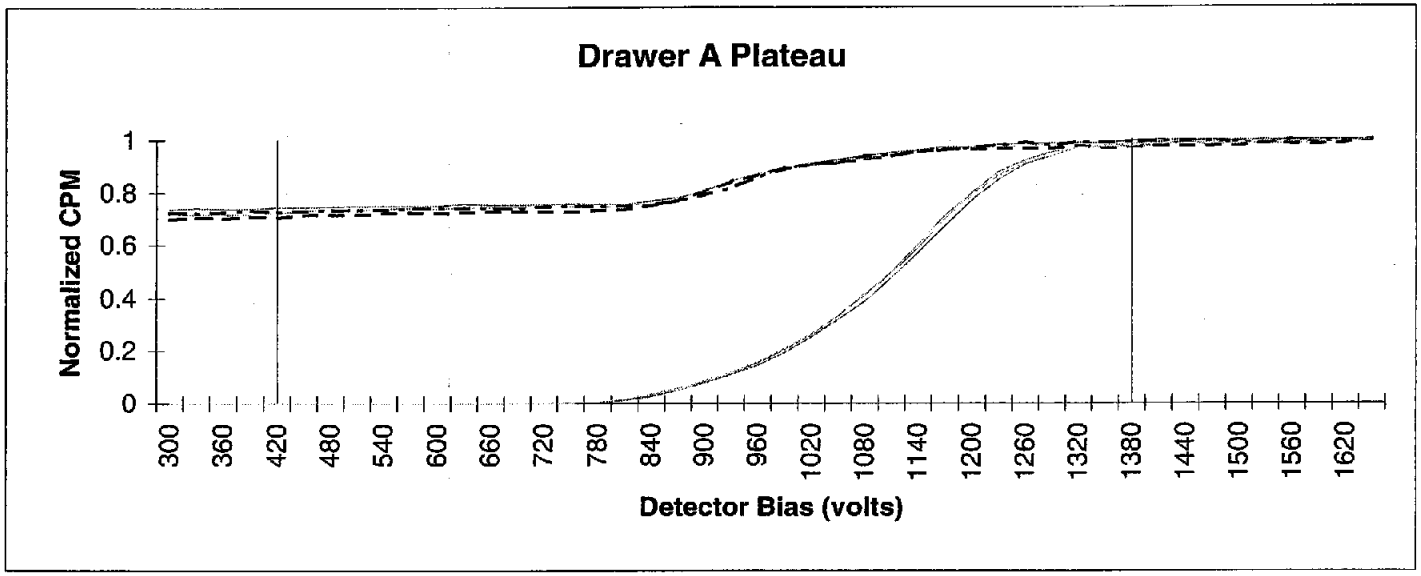
TestAmerica STL

Red 2007

Voltage Plateaus and Discriminator Settings

Unit Type: LB4100/W
Date Performed: 2/19/07 11:58
FileName: PLAT2007
Batch ID:

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

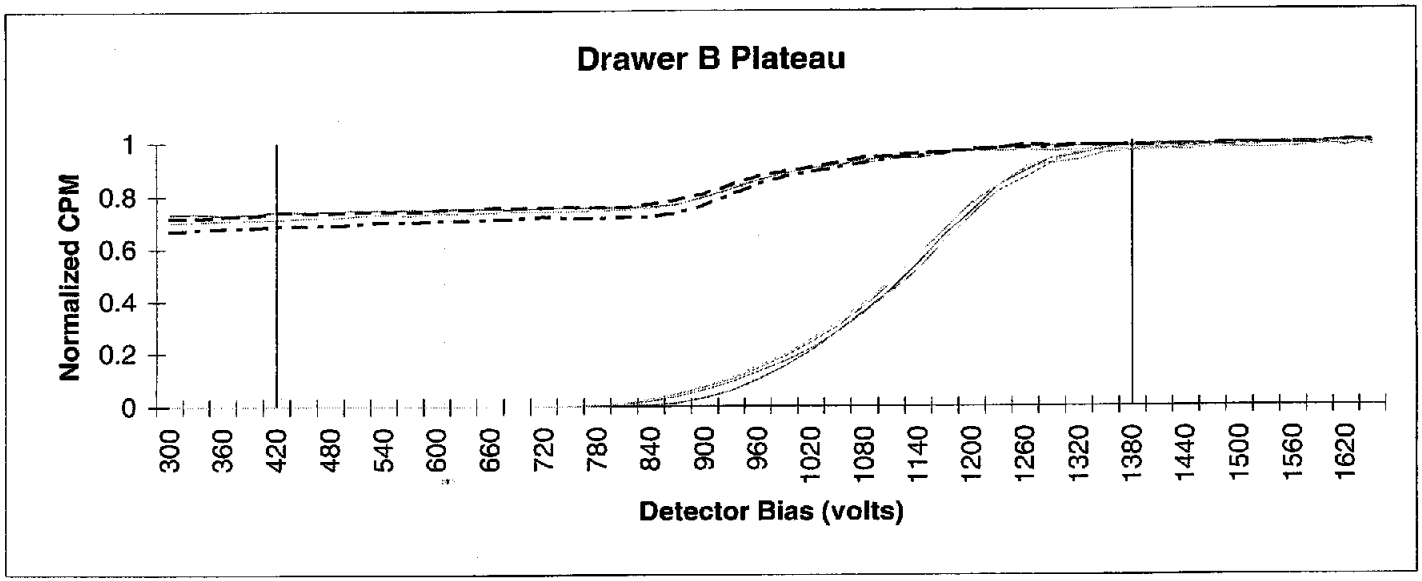
Optimum alpha only operating voltage: 420

	A1	A2	A3	A4
Beta slope at beta voltage	1.90%	2.05%	1.32%	2.19%
Alpha slope at beta voltage	1.02%	0.18%	0.62%	0.32%
Alpha slope at alpha voltage	1.08%	1.54%	2.61%	0.69%

Printed 2/19/2007 4:51 PM

Unit Type: LB4100/W
Date Performed: 2/19/07 11:58
FileName: PLAT2007
Batch ID:

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

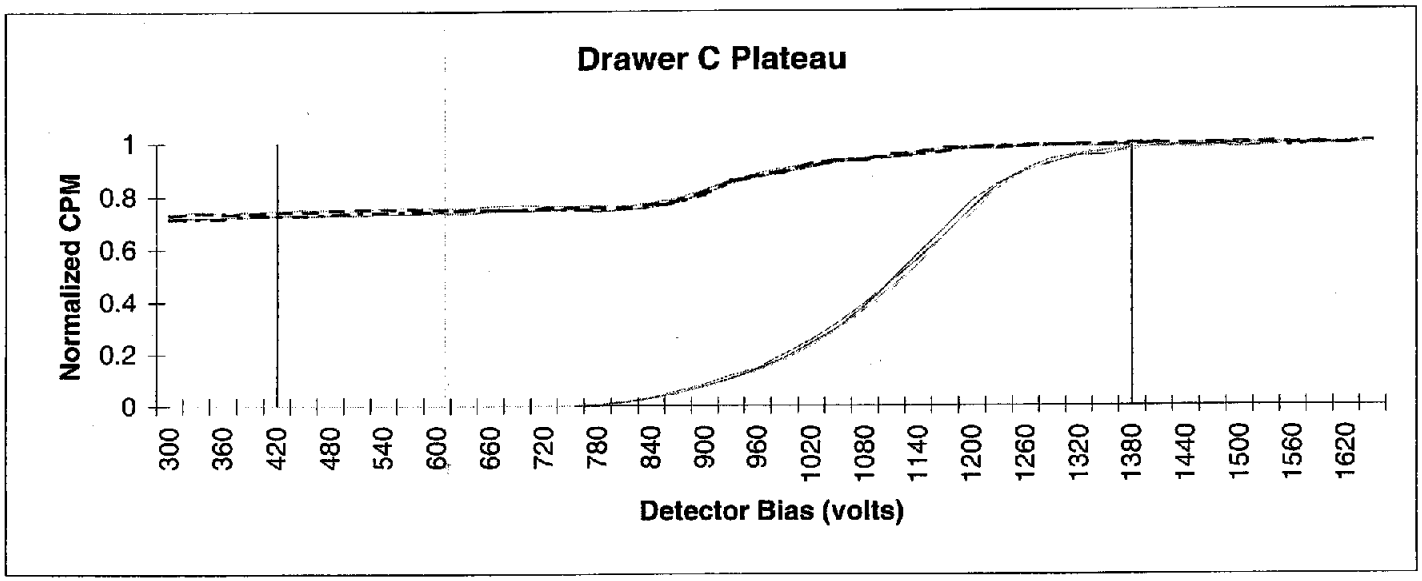
Optimum alpha only operating voltage: 420

	B1	B2	B3	B4
Beta slope at beta voltage	2.29%	3.38%	2.33%	1.55%
Alpha slope at beta voltage	0.81%	0.15%	0.14%	0.26%
Alpha slope at alpha voltage	1.69%	1.63%	1.39%	1.51%

Printed 2/19/2007 4:51 PM

Unit Type: LB4100/W
Date Performed: 2/19/07 11:58
FileName: PLAT2007
Batch ID:

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

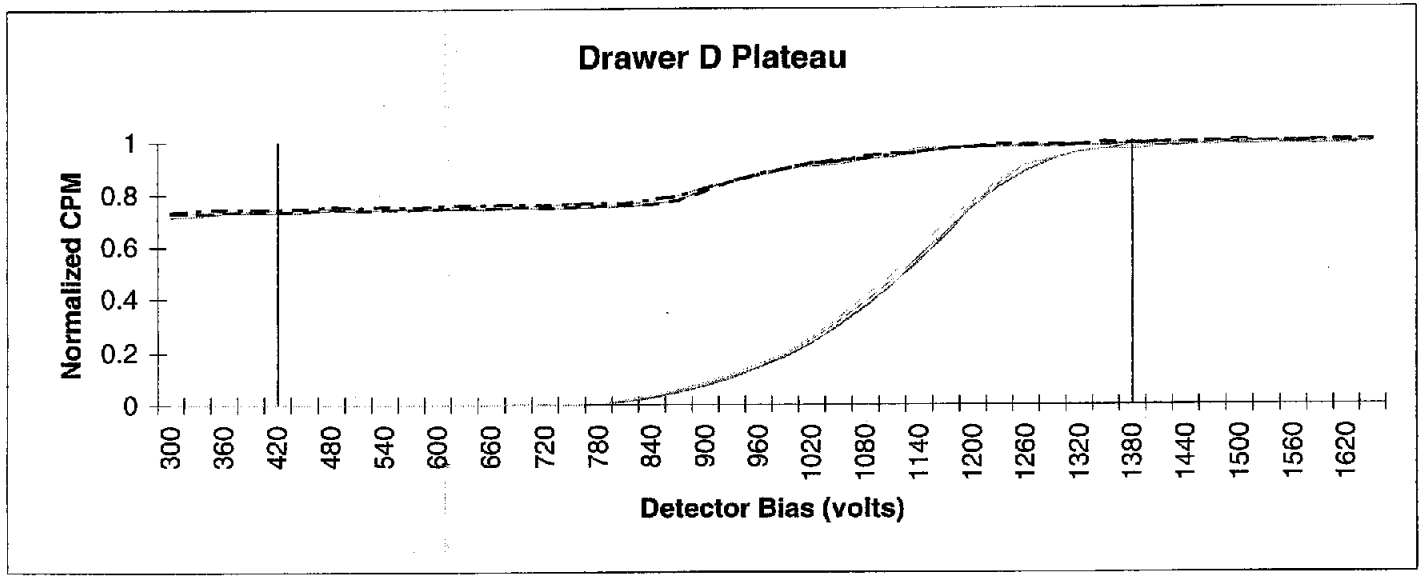
Optimum alpha only operating voltage: 420

	C1	C2	C3	C4
Beta slope at beta voltage	3.13%	2.21%	2.65%	2.67%
Alpha slope at beta voltage	0.40%	-0.09%	0.22%	0.31%
Alpha slope at alpha voltage	0.73%	1.23%	1.51%	1.34%

Printed 2/19/2007 4:51 PM

Unit Type: LB4100/W
Date Performed: 2/19/07 11:58
FileName: PLAT2007
Batch ID:

Unit Id: Red
Application Revision: 2
Application Version: Standard

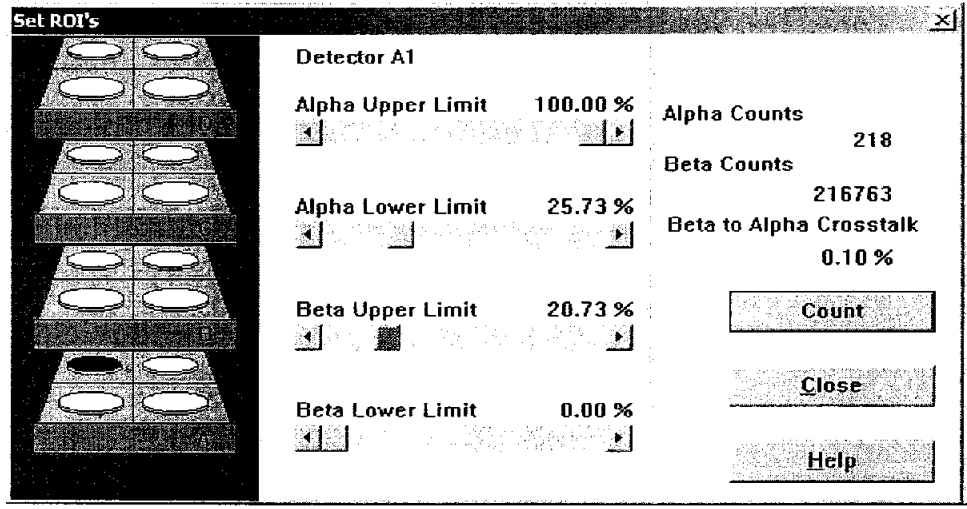


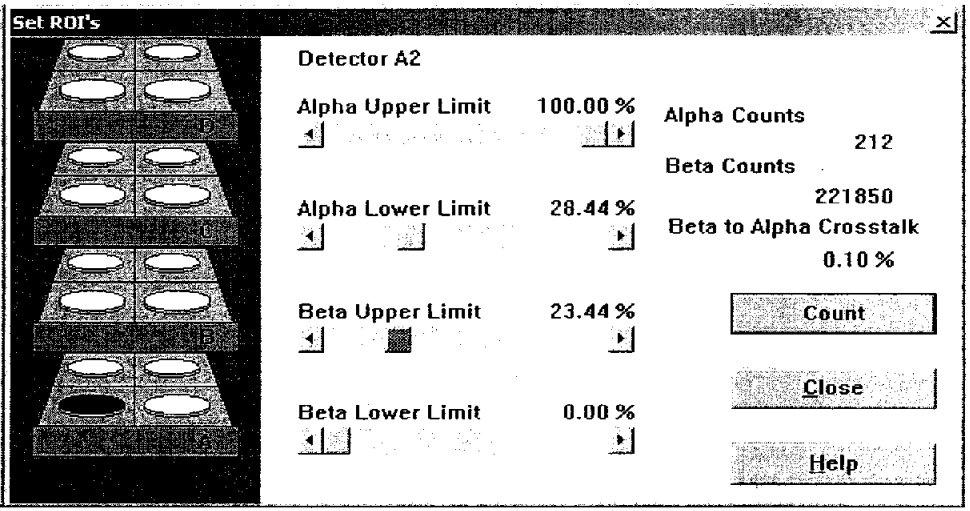
Optimum alpha beta simultaneous operating voltage: 1380

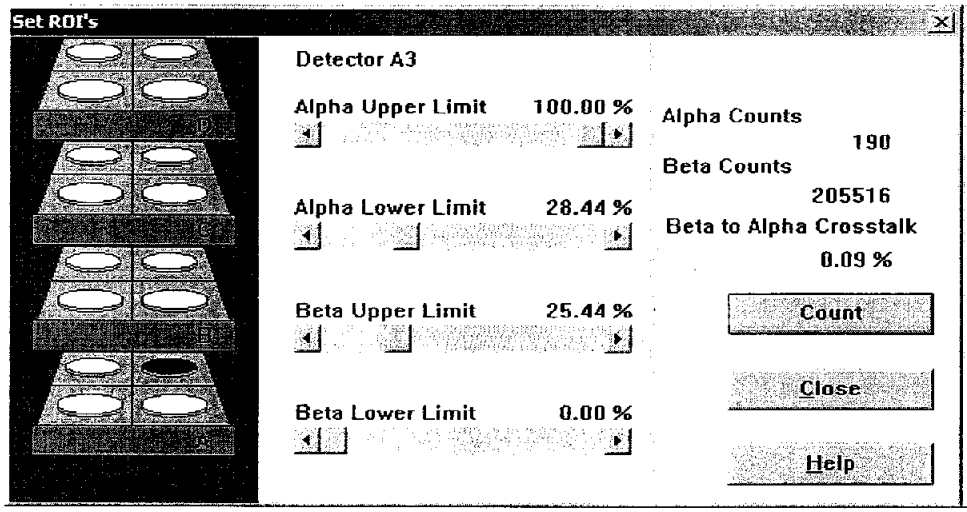
Optimum alpha only operating voltage: 420

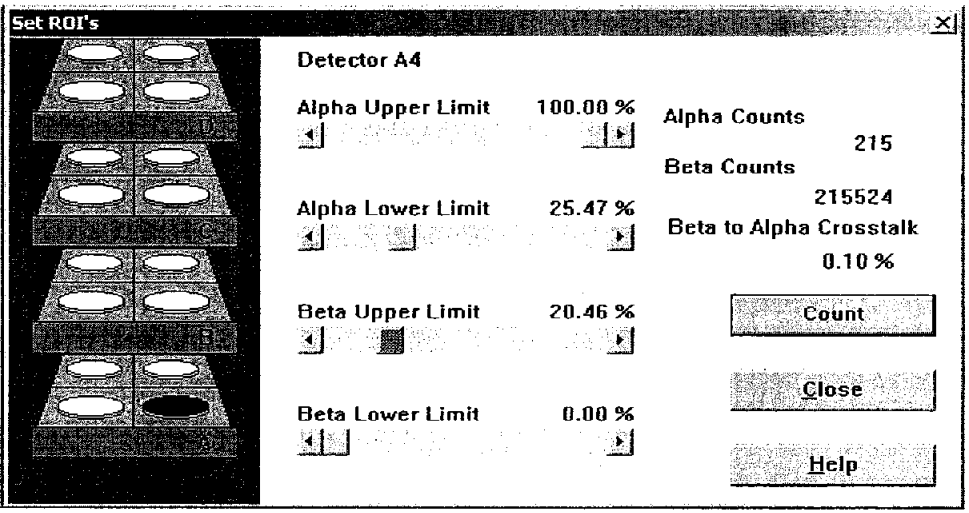
	D1	D2	D3	D4
Beta slope at beta voltage	1.81%	2.24%	2.13%	3.05%
Alpha slope at beta voltage	0.10%	0.43%	0.64%	0.58%
Alpha slope at alpha voltage	1.20%	1.08%	1.08%	1.08%

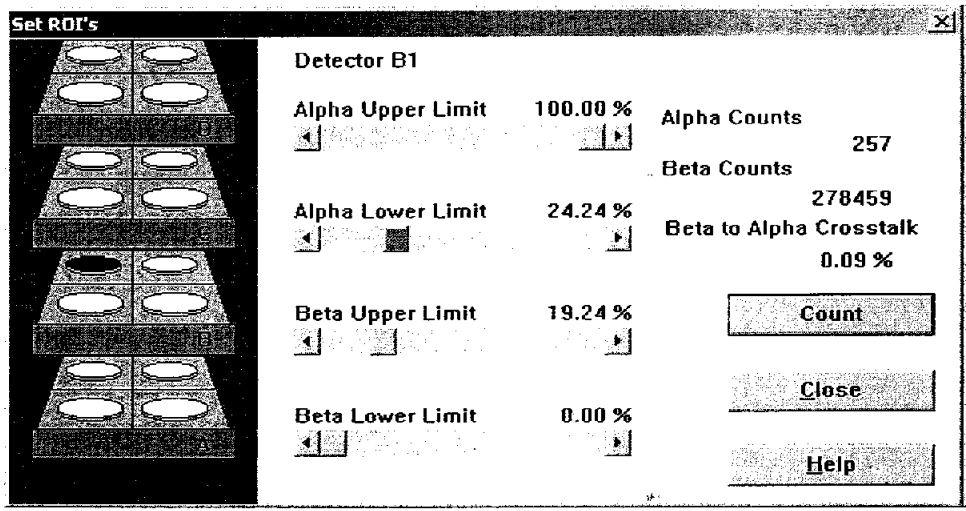
Printed 2/19/2007 4:51 PM

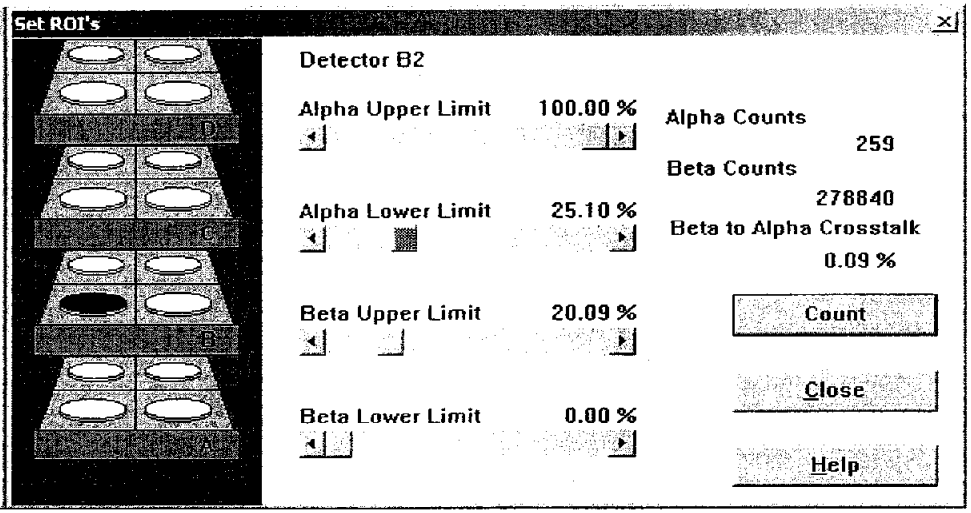

Set ROI's
Detector A1
Alpha Upper Limit 100.00 %
Alpha Lower Limit 25.73 %
Beta Upper Limit 20.73 %
Beta Lower Limit 0.00 %
Alpha Counts
218
Beta Counts
216763
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

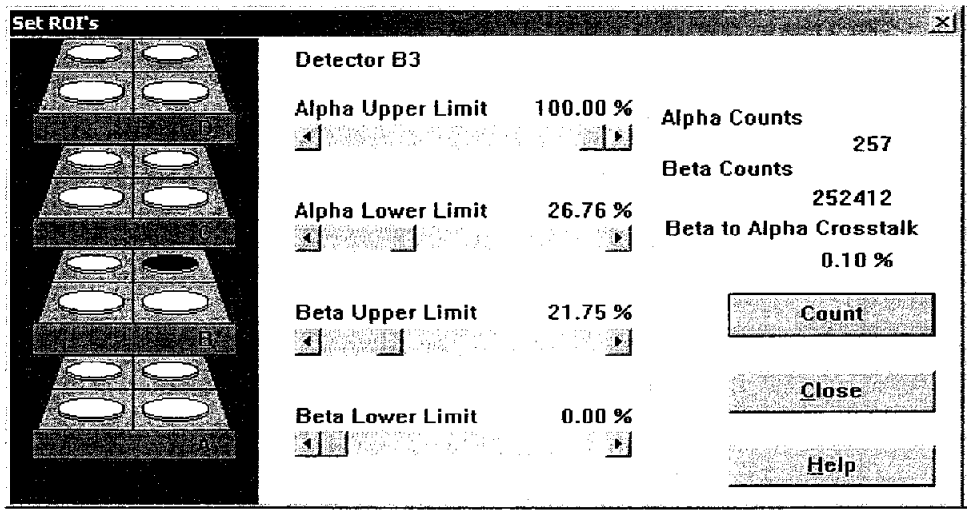

Set ROI's
Detector A2
Alpha Upper Limit 100.00 %
Alpha Lower Limit 28.44 %
Beta Upper Limit 23.44 %
Beta Lower Limit 0.00 %
Alpha Counts
212
Beta Counts
221850
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

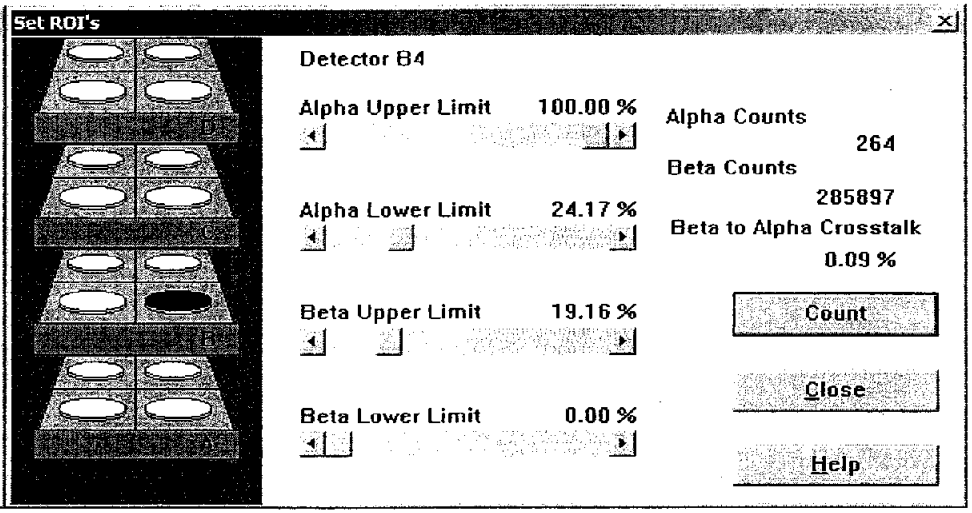

Set ROI's
Detector A3
Alpha Upper Limit 100.00 %
Alpha Lower Limit 28.44 %
Beta Upper Limit 25.44 %
Beta Lower Limit 0.00 %
Alpha Counts
190
Beta Counts
205516
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help

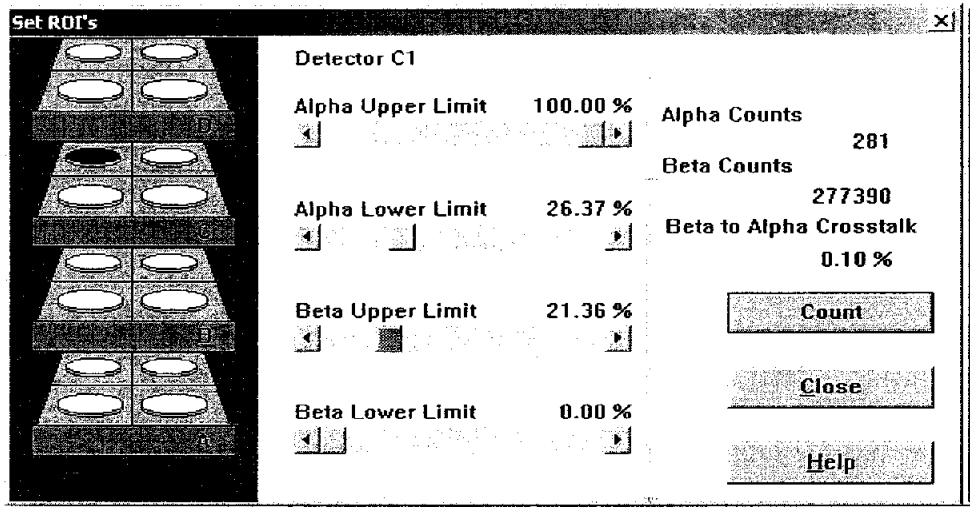

Set ROI's
Detector A4
Alpha Upper Limit 100.00 %
Alpha Lower Limit 25.47 %
Beta Upper Limit 20.46 %
Beta Lower Limit 0.00 %
Alpha Counts
215
Beta Counts
215524
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

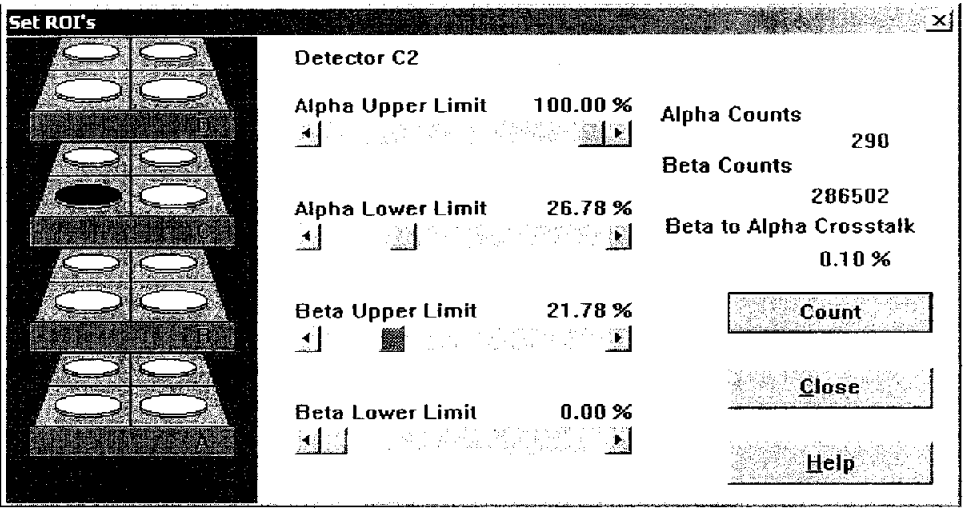

Set ROI's
Detector B1
Alpha Upper Limit 100.00 %
Alpha Lower Limit 24.24 %
Beta Upper Limit 19.24 %
Beta Lower Limit 0.00 %
Alpha Counts 257
Beta Counts 278459
Beta to Alpha Crosstalk 0.09 %
Count
Close
Help

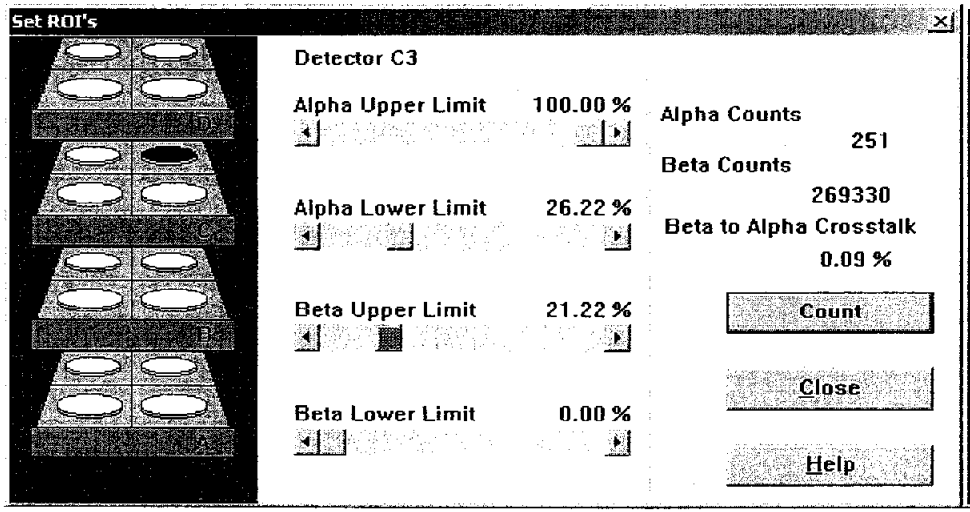

Set ROI's
Detector B2
Alpha Upper Limit 100.00 %
Alpha Lower Limit 25.10 %
Beta Upper Limit 20.09 %
Beta Lower Limit 0.00 %
Alpha Counts 259
Beta Counts 278840
Beta to Alpha Crosstalk 0.09 %
Count
Close
Help

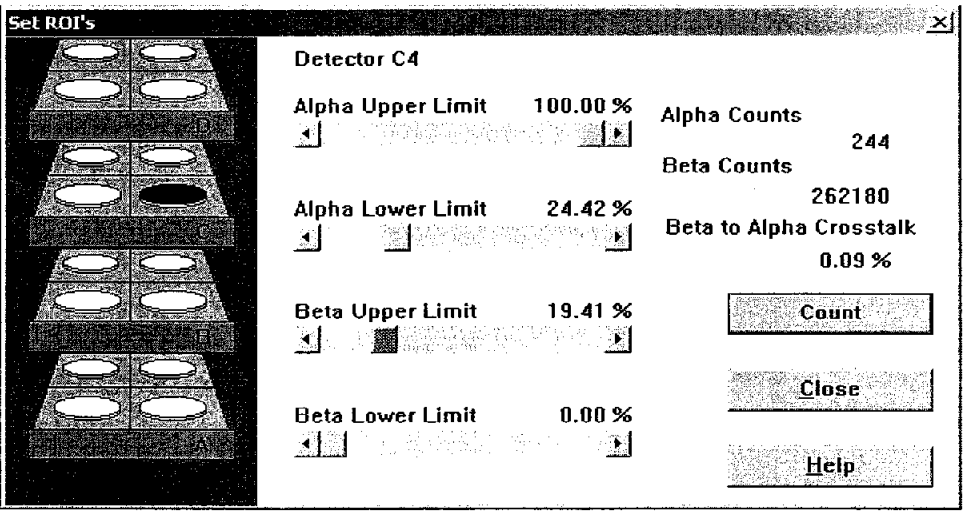

Set ROI's
Detector B3
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.76 %
Beta Upper Limit 21.75 %
Beta Lower Limit 0.00 %
Alpha Counts 257
Beta Counts 252412
Beta to Alpha Crosstalk 0.10 %
Count
Close
Help

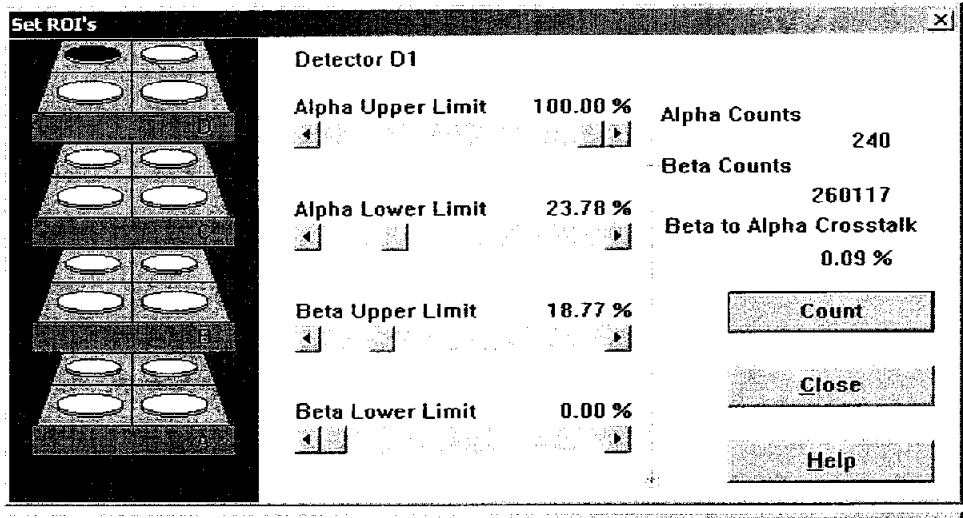

Set ROI's
Detector B4
Alpha Upper Limit 100.00 %
Alpha Lower Limit 24.17 %
Beta Upper Limit 19.16 %
Beta Lower Limit 0.00 %
Alpha Counts 264
Beta Counts 285897
Beta to Alpha Crosstalk 0.09 %
Count
Close
Help

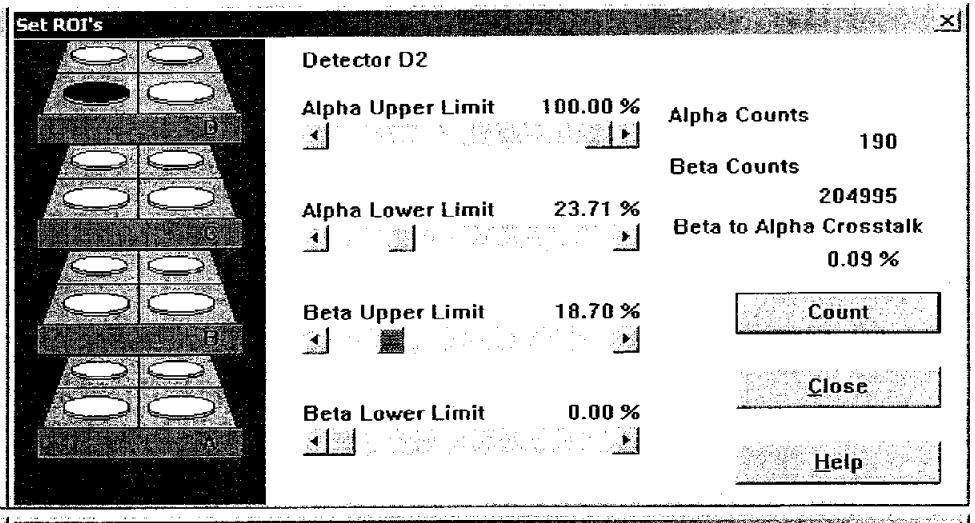

Set ROI's
Detector C1
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.37 %
Beta Upper Limit 21.36 %
Beta Lower Limit 0.00 %
Alpha Counts
281
Beta Counts
277390
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

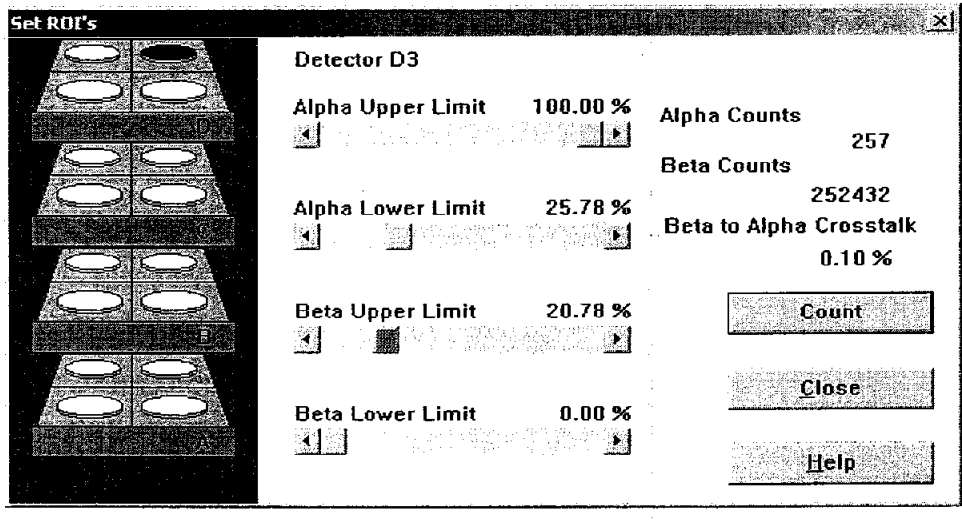

Set ROI's
Detector C2
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.78 %
Beta Upper Limit 21.78 %
Beta Lower Limit 0.00 %
Alpha Counts
290
Beta Counts
286502
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

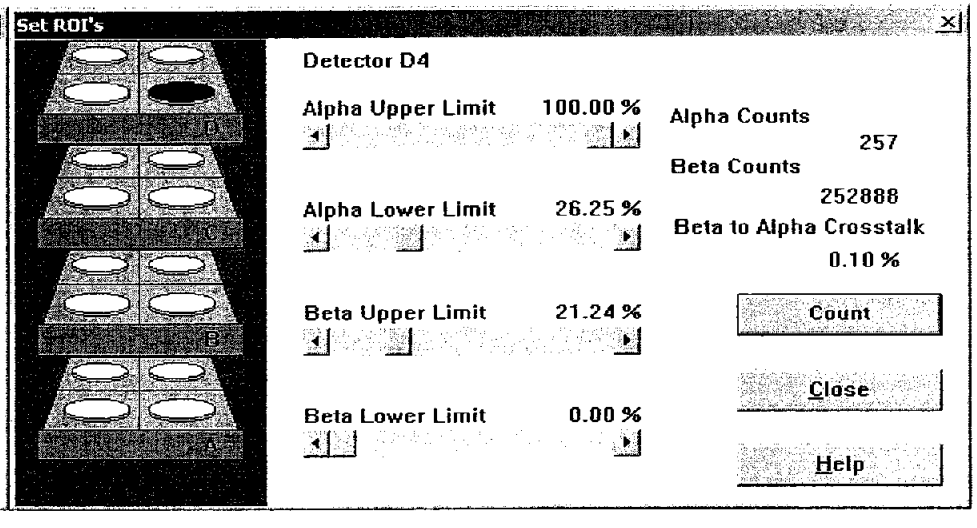

Set ROI's
Detector C3
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.22 %
Beta Upper Limit 21.22 %
Beta Lower Limit 0.00 %
Alpha Counts
251
Beta Counts
269330
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help


Set ROI's
Detector C4
Alpha Upper Limit 100.00 %
Alpha Lower Limit 24.42 %
Beta Upper Limit 19.41 %
Beta Lower Limit 0.00 %
Alpha Counts
244
Beta Counts
262180
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help


Set ROI's
Detector D1
Alpha Upper Limit 100.00 %
Alpha Lower Limit 23.78 %
Beta Upper Limit 18.77 %
Beta Lower Limit 0.00 %
Alpha Counts
240
Beta Counts
260117
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help


Set ROI's
Detector D2
Alpha Upper Limit 100.00 %
Alpha Lower Limit 23.71 %
Beta Upper Limit 18.70 %
Beta Lower Limit 0.00 %
Alpha Counts
190
Beta Counts
204995
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help


Set ROI's
Detector D3
Alpha Upper Limit 100.00 %
Alpha Lower Limit 25.78 %
Beta Upper Limit 20.78 %
Beta Lower Limit 0.00 %
Alpha Counts
257
Beta Counts
252432
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help


Set ROI's
Detector D4
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.25 %
Beta Upper Limit 21.24 %
Beta Lower Limit 0.00 %
Alpha Counts
257
Beta Counts
252888
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

TestAmerica STL

Calibration Standard Data

Alpha Calibration Standards for Ra-226

Standard used: 1mL of Th-230 03-071 4567.9 dpm/mL 12/24/03

Std #	mL Ba Carrier	Gross wt	Tare Wt	Mass BaSO4
1	0.25	8.4779	8.4682	0.0097
2	0.4	8.3925	8.3784	0.0141
3	0.6	8.4768	8.4557	0.0211
4	0.8	8.4605	8.4313	0.0292
5	1	8.4726	8.4372	0.0354
6	1.5	8.4687	8.4173	0.0514
7	2	8.5100	8.4419	0.0681
8	3	8.5684	8.4653	0.1031

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

65090-334

Th-230 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by liquid scintillation counting.

Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Th-230
ACTIVITY (dps):	7.654 E3
HALF-LIFE:	7.538 E4 Years
CALIBRATION DATE:	December 19, 2002 12:00 EST
TOTAL UNCERTAINTY*:	3.5%
SYSTEMATIC:	2.6%
RANDOM:	0.9%

*99% Confidence Level

Impurities: γ-impurities <0.1%, α-impurities <0.05%

5.17738 grams 0.5M HNO_3 solution.

P O NUMBER 1614557-000 OP, Item 3

SOURCE PREPARED BY: M. N. Currie for
M. Taskaeva, Radiochemist

Q A APPROVED: 12-19-02

SEVERN TRENT SERVICES

Logbook: 2060

Radiochemistry
Standards Preparation Logbook

Date Prep'd	Expir. Date	Standard ID Number	Isotope	Parent ID Number	Parent Activity	Parent Ref. Date	Aliquot	Dilution Volume	Change in Time	T½	Final Activity	Solvent/ Lot #	Prep'd Initials	Cal. Ver. Initials	Comments
											66.201	K9-15-03			
~~9-11-03~~	~~9-11-08~~	03-069 ~~03-0069~~ MC 9-22-03	Pu 238	02-026	132.98	2-23-02	25 ml	1	1.5 x 10^-6 yr	32022.4 d 0.75	33.10 dpm/g ~~66.41~~ dpm/g		MFM		re-certification of 03-031, 02-03-6 and 66.201
~~1~~	~~1~~	~~1~~	~~Pu 239~~	~~02-023~~	~~128.05~~	~~2-23-02~~	~~25 ml~~	~~1.50 ml~~	11-18-03 MC	~~24110 yr~~	~~32.165 dpm/g~~ ~~69.015 dpm/g~~	~~62.025 dpm/g~~	~~MFM~~		~~62.025 dpm/ml~~
9-11-03	9-11-08	03-070 ~~03-0070~~ MC 9-22-03	Am 243	98-011	1161 dpm/g	2-28-98	~~16 gram~~ 15 g	200 ml		7.37 E+3 yr	87.075 ~~9.22~~ dpm/g		MFM		
10-6-03	10-6-08	03-071	Th 230	65090-334	7,654 dps	12-19-02	5.1498 g	100 mL	N/A	7.538 E4	4,567.9 dpm/mL	0.5 M HNO_3	BH	BBF	
10-6-03	10-6-08	03-072	Th 230	03-071	4,567.9 dpm/mL	12-19-02	1 mL	200 mL	N/A	7.538 E4	22.84 dpm/mL	0.5 M HNO_3	BH	BBF	
10-11-03	10-11-0	03-073	Clean U-233	097-105	10994 dpm/ml	9-16-97	10 ml	1000 L		70 yr	103.85 dpm/mL	PI H_2O 2M H_2SO_4 KOH pH 1.5	MFM BBF		Rad 03-0078 in Rad Capture
10/31/03	10/31/08	03-074	I-129	681-78-4	1.059 uCi	1-1-2000	1 mL	100 mL	N/A	1.57 E+07	10.54 nCi/mL	0.1 M NaOH	BH	BBF	
10/31/03	10/31/04	03-075	I-129	03-074	10.54 nCi/mL	1-1-2000	1 mL	100 mL	N/A	1.57 E7	105.4 pCi/mL	0.1 M NaOH	BH	BBF	
10/31/03	10/31/04	03-076	Ra 228	01012	1,018 dpm/mL	2/16/01	2 mL	100 mL	NA	5.75 y	20.36 dpm/mL	0.5 M HNO_3	BH	BBF	
10/31/03	10/31/04	03-081	Pu-242	92-242-5-1	129.63 Bq/g	12/11/89	5.0723	100 mL	NA	3.73 X 10^5 y	78.9027	.5 M HNO_3	MFM	MO	
11/3/03	11/3/04	SR19	Std SR carrier	$Sr(NO_3)_2$	N/A	N/A	120.77 g	1 Liter	N/A	N/A		ditto	[illegible]	BBF	Reported in Rad capture
11-5-03	11-5-04	RD03-0032	Th-229	02-006	2134.75 dpm/mL	1-28-02	17.5 mL	500 mL	N/A	7.3 e+3	74.716 dpm/mL	.5 M HNO_3	MFM	JMW	

Additional Comments:

LI# F7E050113

TestAmerica STL

Red 2007

Alpha and Beta Calibration

with

Crosstalk Correction

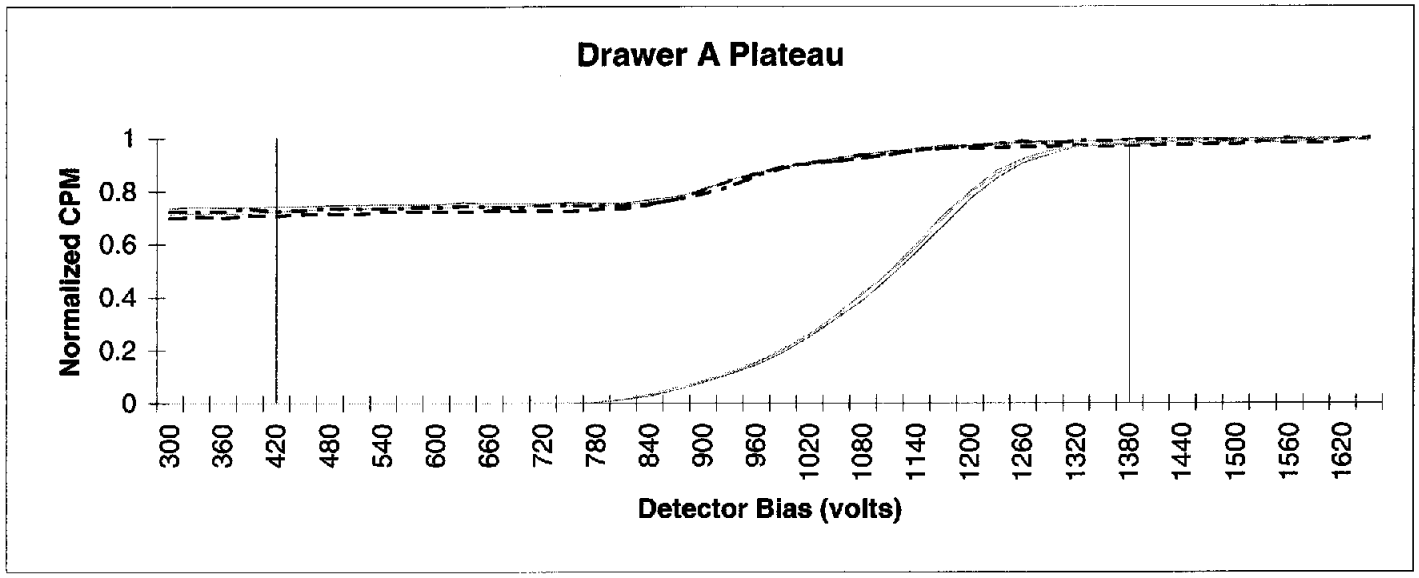
TestAmerica STL

Red 2007

Plateaus and Discriminator Settings

Unit Type: LB4100/W
Date Performed: 2/19/07 11:58
FileName: PLAT2007
Batch ID:

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

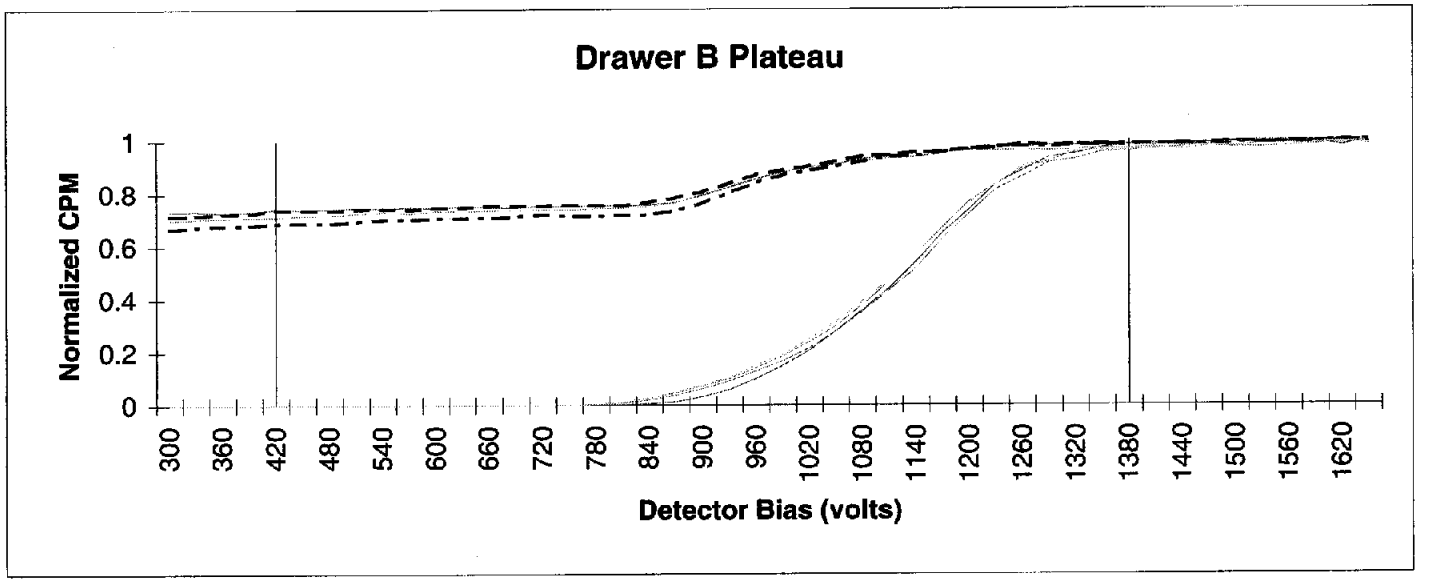
Optimum alpha only operating voltage: 420

	A1	A2	A3	A4
Beta slope at beta voltage	1.90%	2.05%	1.32%	2.19%
Alpha slope at beta voltage	1.02%	0.18%	0.62%	0.32%
Alpha slope at alpha voltage	1.08%	1.54%	2.61%	0.69%

Printed 2/19/2007 4:51 PM

Unit Type: LB4100/W
Date Performed: 2/19/07 11:58
FileName: PLAT2007
Batch ID:

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

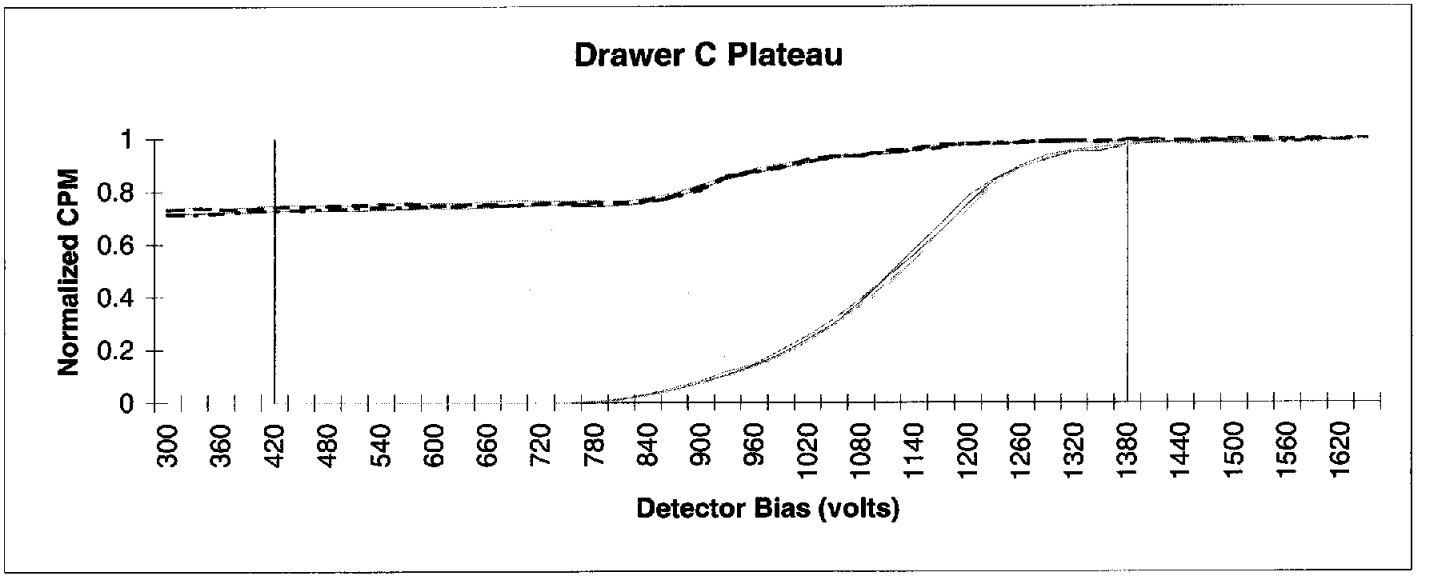
Optimum alpha only operating voltage: 420

	B1	B2	B3	B4
Beta slope at beta voltage	2.29%	3.38%	2.33%	1.55%
Alpha slope at beta voltage	0.81%	0.15%	0.14%	0.26%
Alpha slope at alpha voltage	1.69%	1.63%	1.39%	1.51%

Printed 2/19/2007 4:51 PM

Unit Type: LB4100/W
Date Performed: 2/19/07 11:58
FileName: PLAT2007
Batch ID:

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1380

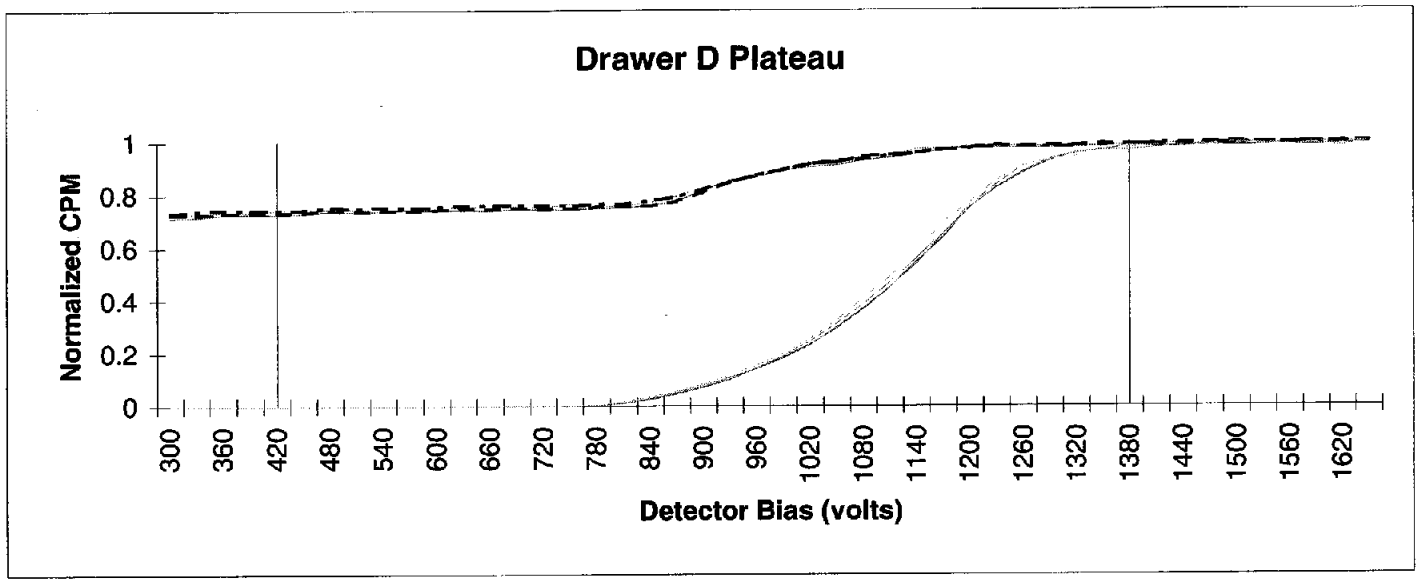
Optimum alpha only operating voltage: 420

	C1	C2	C3	C4
Beta slope at beta voltage	3.13%	2.21%	2.65%	2.67%
Alpha slope at beta voltage	0.40%	-0.09%	0.22%	0.31%
Alpha slope at alpha voltage	0.73%	1.23%	1.51%	1.34%

Printed 2/19/2007 4:51 PM

Unit Type: LB4100/W
Date Performed: 2/19/07 11:58
FileName: PLAT2007
Batch ID:

Unit Id: Red
Application Revision: 2
Application Version: Standard

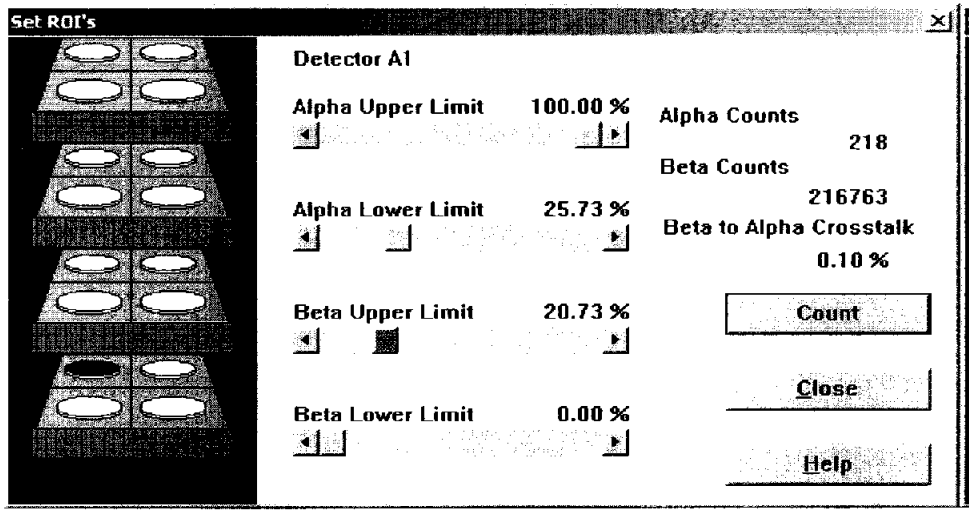


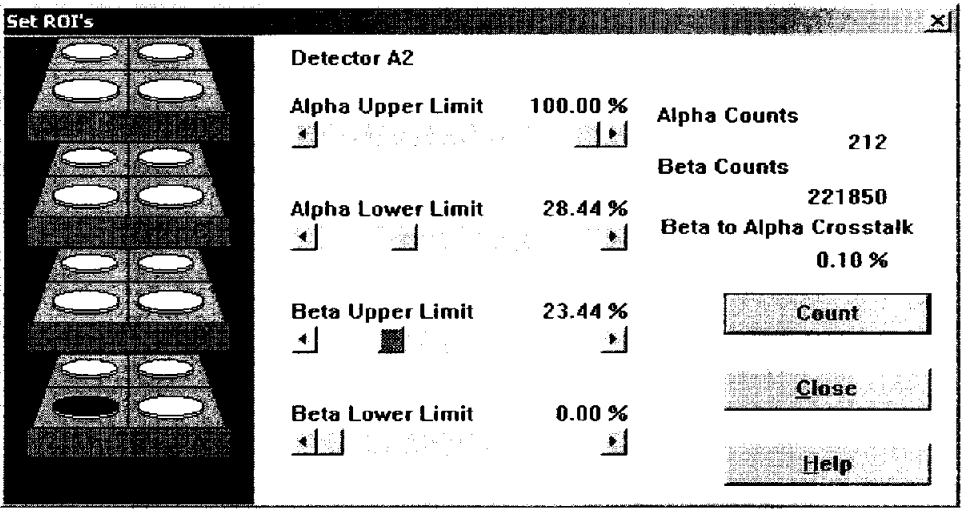
Optimum alpha beta simultaneous operating voltage: 1380

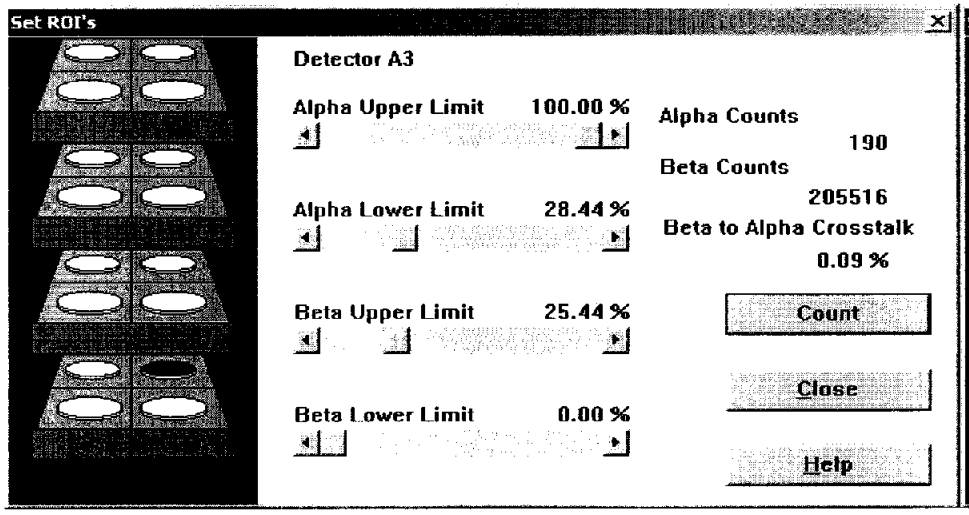
Optimum alpha only operating voltage: 420

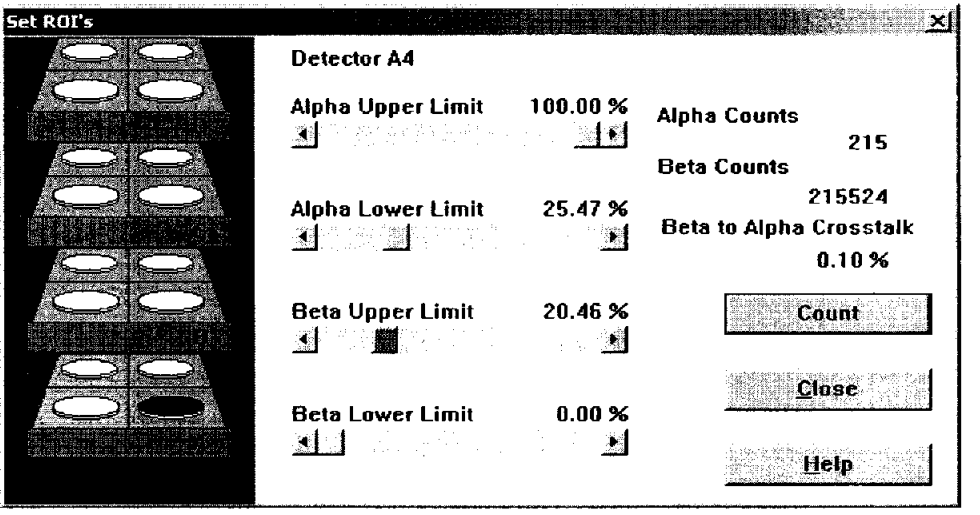
	D1	D2	D3	D4
Beta slope at beta voltage	1.81%	2.24%	2.13%	3.05%
Alpha slope at beta voltage	0.10%	0.43%	0.64%	0.58%
Alpha slope at alpha voltage	1.20%	1.08%	1.08%	1.08%

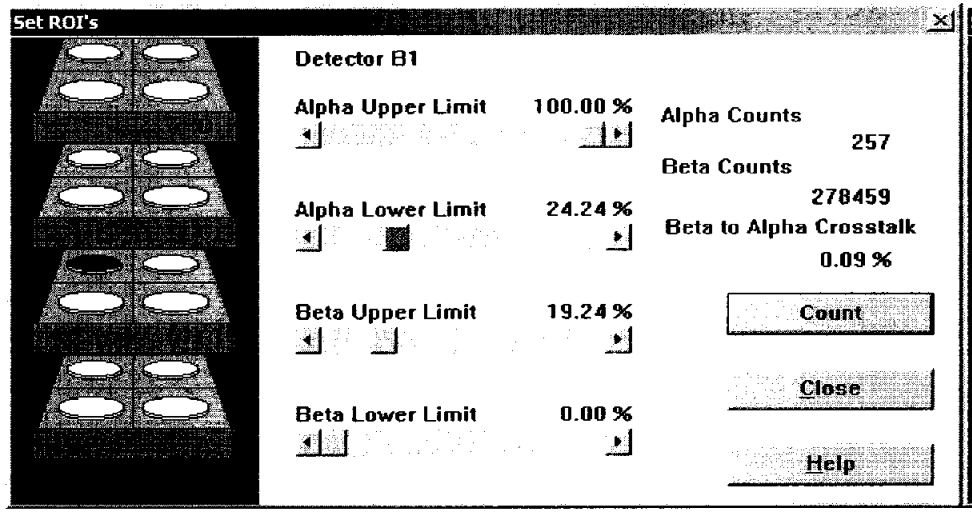
Printed 2/19/2007 4:51 PM

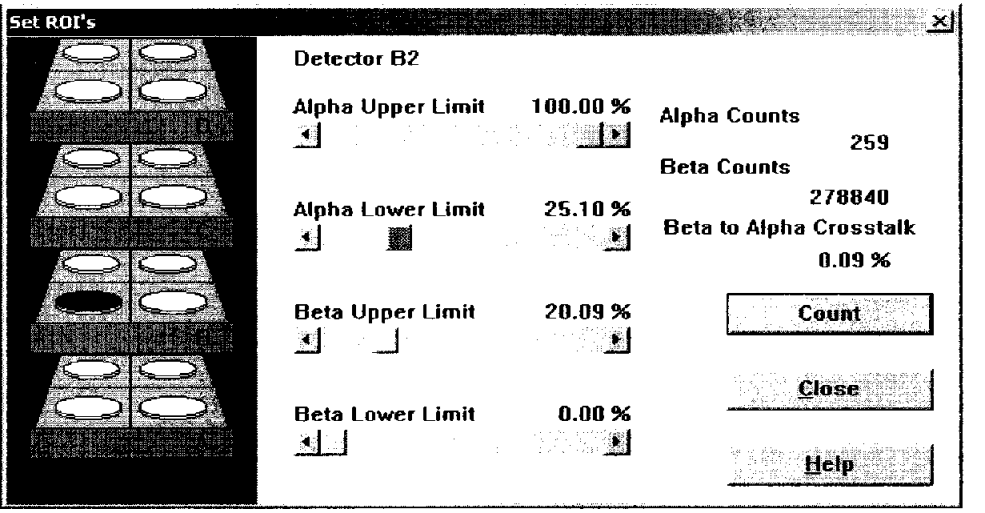

Set ROI's
Detector A1
Alpha Upper Limit 100.00 %
Alpha Lower Limit 25.73 %
Beta Upper Limit 20.73 %
Beta Lower Limit 0.00 %
Alpha Counts
218
Beta Counts
216763
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

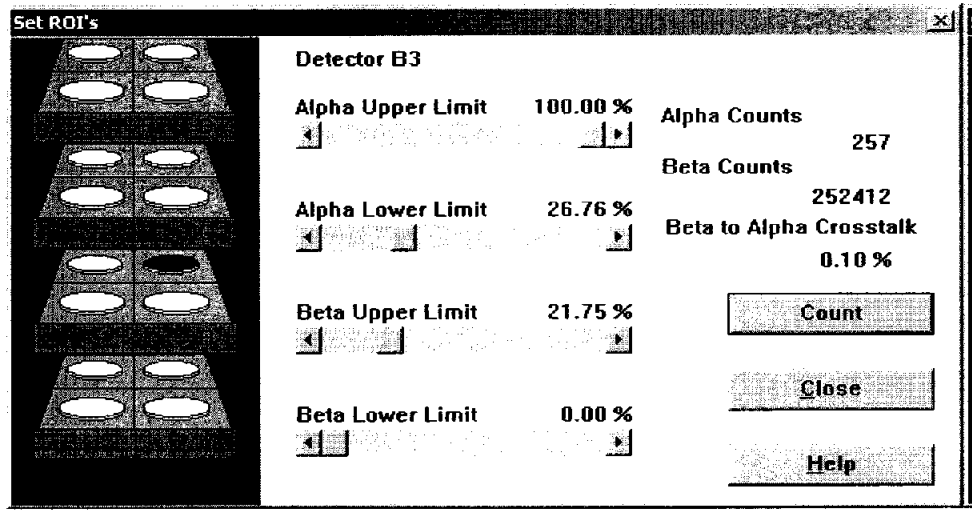

Set ROI's
Detector A2
Alpha Upper Limit 100.00 %
Alpha Lower Limit 28.44 %
Beta Upper Limit 23.44 %
Beta Lower Limit 0.00 %
Alpha Counts
212
Beta Counts
221850
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

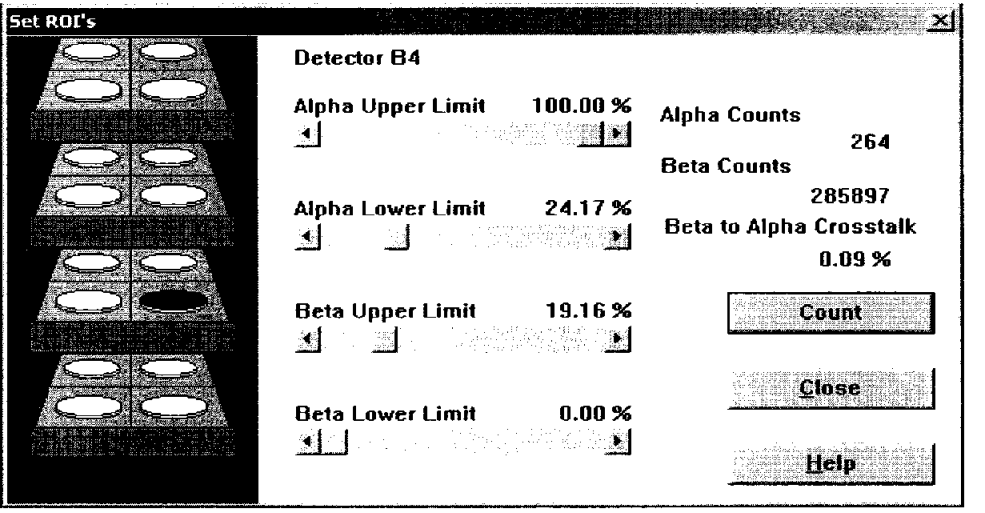

Set ROI's
Detector A3
Alpha Upper Limit 100.00 %
Alpha Lower Limit 28.44 %
Beta Upper Limit 25.44 %
Beta Lower Limit 0.00 %
Alpha Counts
190
Beta Counts
205516
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help

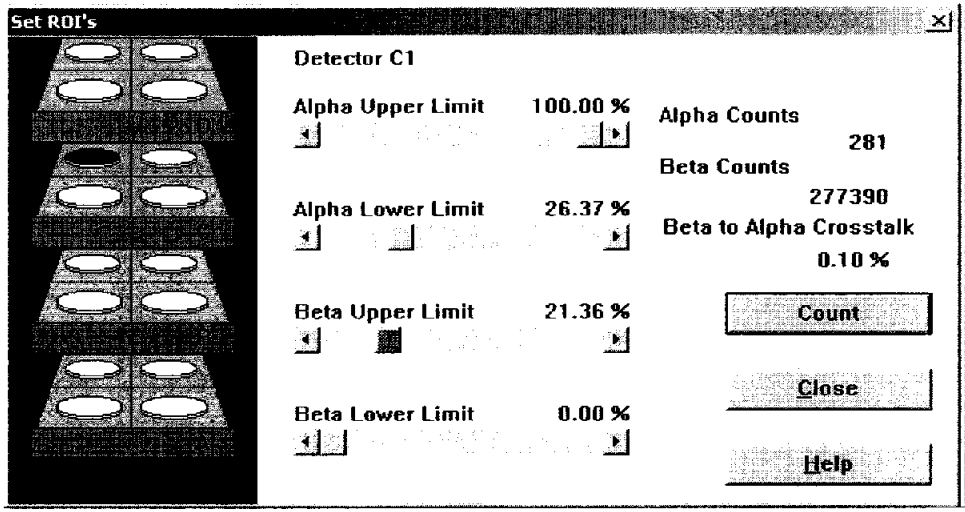

Set ROI's
Detector A4
Alpha Upper Limit 100.00 %
Alpha Lower Limit 25.47 %
Beta Upper Limit 20.46 %
Beta Lower Limit 0.00 %
Alpha Counts
215
Beta Counts
215524
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

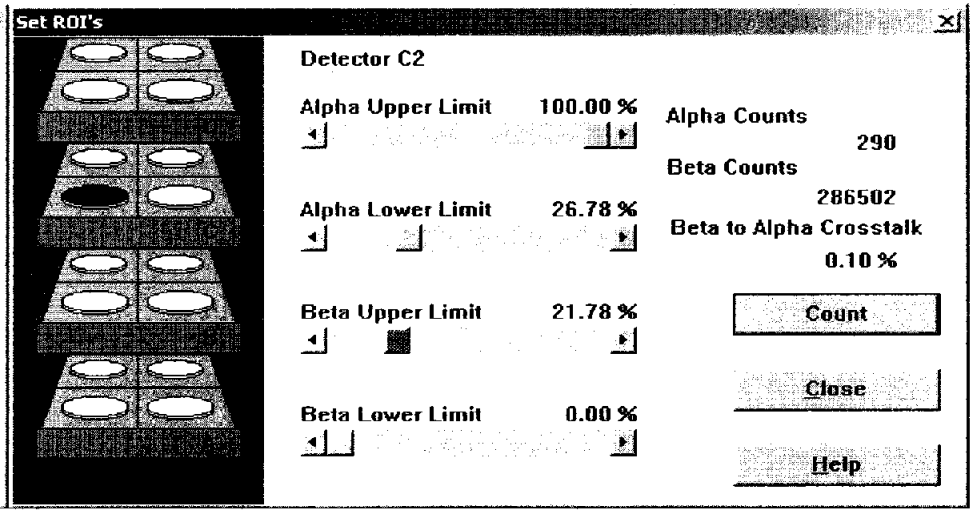

Set ROI's
Detector B1
Alpha Upper Limit 100.00 %
Alpha Lower Limit 24.24 %
Beta Upper Limit 19.24 %
Beta Lower Limit 0.00 %
Alpha Counts
257
Beta Counts
278459
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help

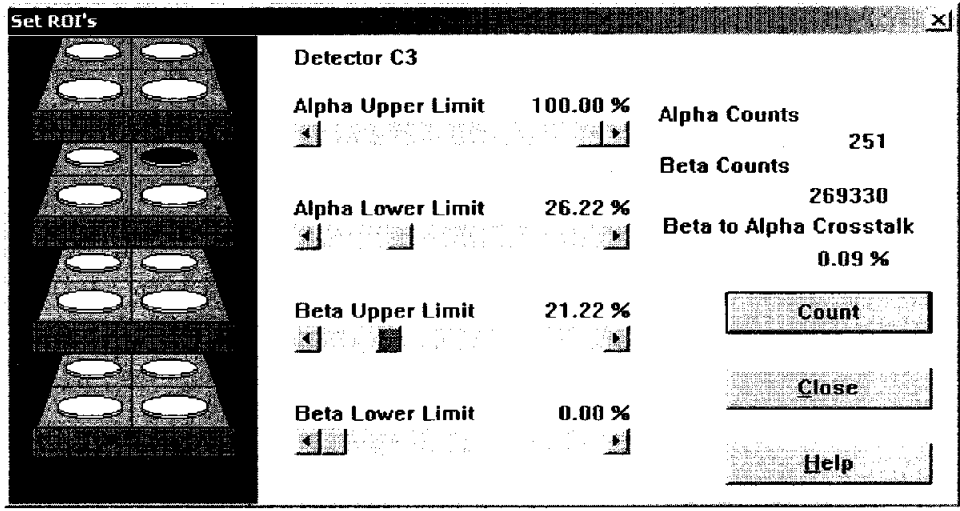

Set ROI's
Detector B2
Alpha Upper Limit 100.00 %
Alpha Lower Limit 25.10 %
Beta Upper Limit 20.09 %
Beta Lower Limit 0.00 %
Alpha Counts
259
Beta Counts
278840
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help

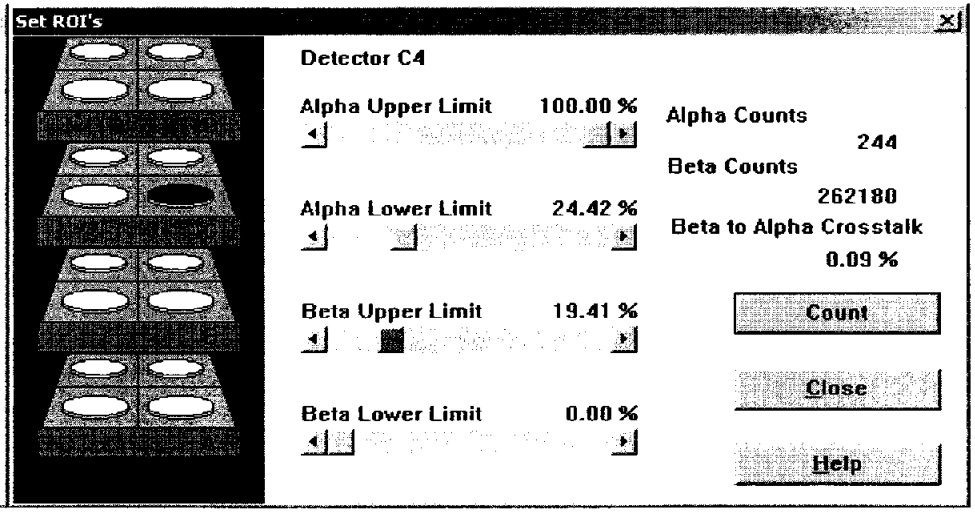

Set ROI's
Detector B3
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.76 %
Beta Upper Limit 21.75 %
Beta Lower Limit 0.00 %
Alpha Counts
257
Beta Counts
252412
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

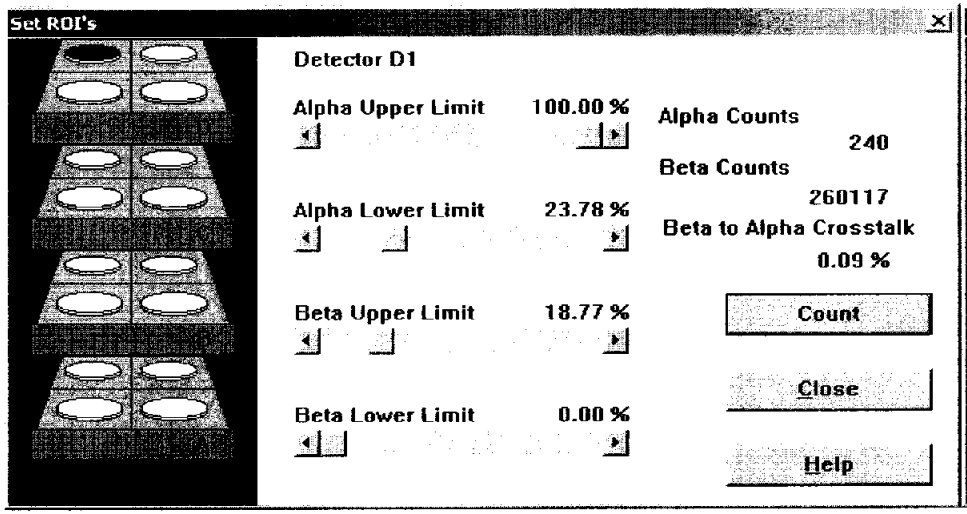

Set ROI's
Detector B4
Alpha Upper Limit 100.00 %
Alpha Lower Limit 24.17 %
Beta Upper Limit 19.16 %
Beta Lower Limit 0.00 %
Alpha Counts
264
Beta Counts
285897
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help

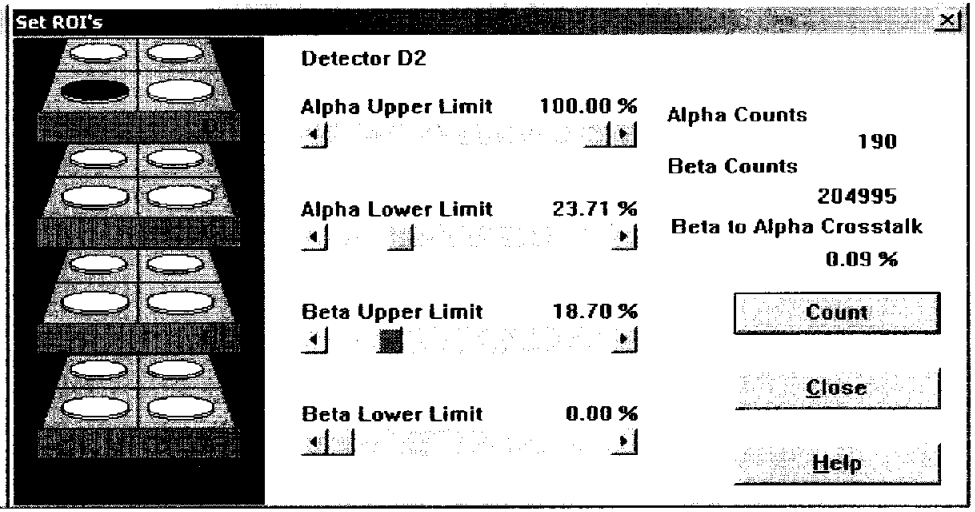

Set ROI's
Detector C1
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.37 %
Beta Upper Limit 21.36 %
Beta Lower Limit 0.00 %
Alpha Counts
281
Beta Counts
277390
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

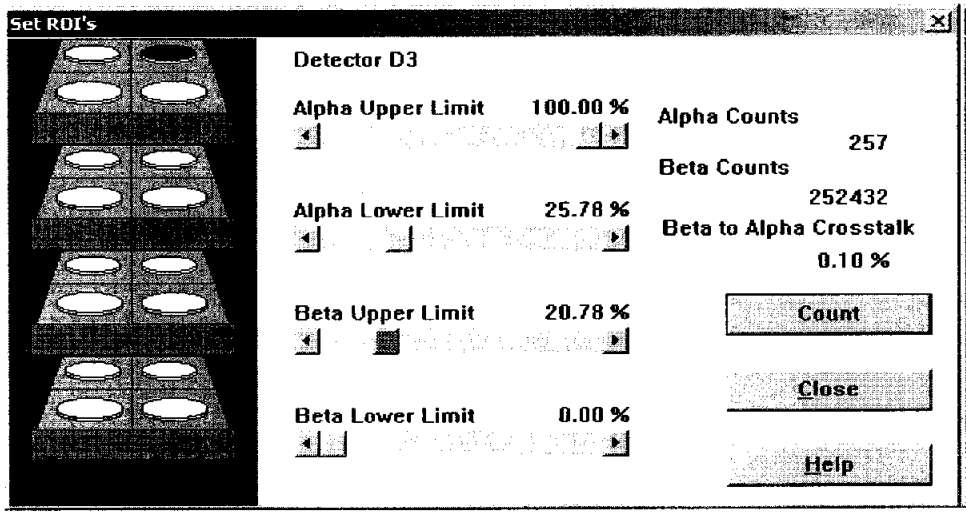

Set ROI's
Detector C2
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.78 %
Beta Upper Limit 21.78 %
Beta Lower Limit 0.00 %
Alpha Counts
290
Beta Counts
286502
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

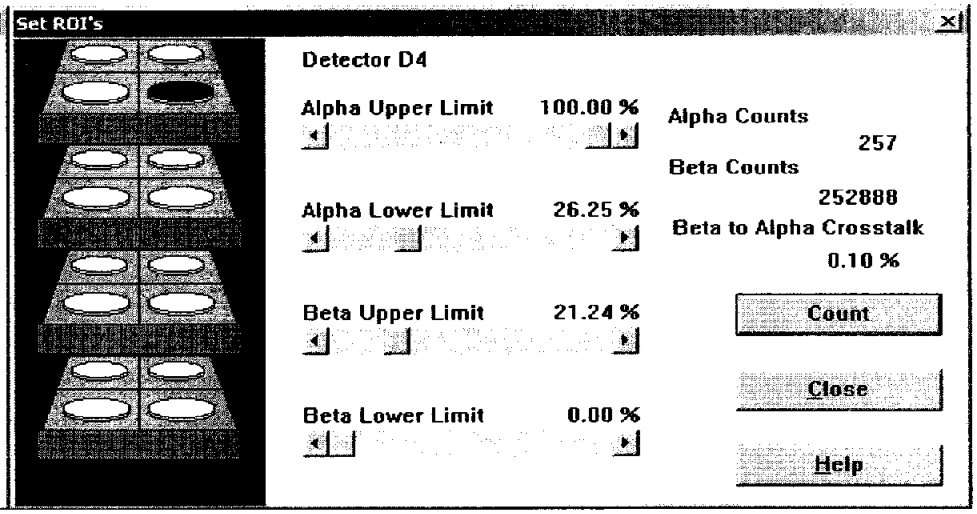

Set ROI's
Detector C3
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.22 %
Beta Upper Limit 21.22 %
Beta Lower Limit 0.00 %
Alpha Counts
251
Beta Counts
269330
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help


Set ROI's
Detector C4
Alpha Upper Limit 100.00 %
Alpha Lower Limit 24.42 %
Beta Upper Limit 19.41 %
Beta Lower Limit 0.00 %
Alpha Counts
244
Beta Counts
262180
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help


Set ROI's
Detector D1
Alpha Upper Limit 100.00 %
Alpha Lower Limit 23.78 %
Beta Upper Limit 18.77 %
Beta Lower Limit 0.00 %
Alpha Counts
240
Beta Counts
260117
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help


Set ROI's
Detector D2
Alpha Upper Limit 100.00 %
Alpha Lower Limit 23.71 %
Beta Upper Limit 18.70 %
Beta Lower Limit 0.00 %
Alpha Counts
190
Beta Counts
204995
Beta to Alpha Crosstalk
0.09 %
Count
Close
Help


Set ROI's
Detector D3
Alpha Upper Limit 100.00 %
Alpha Lower Limit 25.78 %
Beta Upper Limit 20.78 %
Beta Lower Limit 0.00 %
Alpha Counts
257
Beta Counts
252432
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help


Set ROI's
Detector D4
Alpha Upper Limit 100.00 %
Alpha Lower Limit 26.25 %
Beta Upper Limit 21.24 %
Beta Lower Limit 0.00 %
Alpha Counts
257
Beta Counts
252888
Beta to Alpha Crosstalk
0.10 %
Count
Close
Help

TestAmerica STL

Red 2007

Alpha Efficiency Curves

lpha Attenuation Red A1
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
A1	A11	0.0094	40.00	35745	893.625	4567.9	0.1956
A1	A12	0.0169	40.00	38711	967.775	4567.9	0.2119
A1	A13	0.0257	40.00	27785	694.625	4567.9	0.1521
A1	A14	0.0421	40.00	26048	651.200	4567.9	0.1426
A1	A15	0.0629	40.00	19799	494.975	4567.9	0.1084
A1	A16	0.0817	40.00	37913	947.825	9135.8	0.1037
A1	A17	0.1052	40.00	32238	805.950	9135.8	0.0882
A1	A18	0.1240	40.00	28324	708.100	9135.8	0.0775

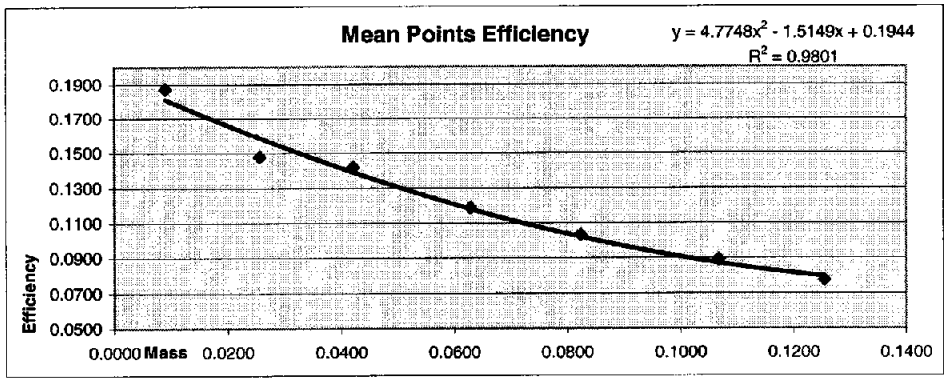
Alpha Attenuation Red A1
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
A1	A21	0.0086	40.00	32650	816.250	4567.9	0.1787
A1	A22	0.0172	40.00	27673	691.825	4567.9	0.1515
A1	A23	0.0256	40.00	26220	655.500	4567.9	0.1435
A1	A24	0.0422	40.00	25802	645.050	4567.9	0.1412
A1	A25	0.0628	40.00	23582	589.550	4567.9	0.1291
A1	A26	0.0830	40.00	37518	937.950	9135.8	0.1027
A1	A27	0.1082	40.00	32891	822.275	9135.8	0.0900
A1	A28	0.1269	40.00	28219	705.475	9135.8	0.0772

Red A1

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1956	0.1787	0.1872	4.53%	-4.53%
0.0257	0.0256	0.0257	0.1521	0.1435	0.1478	2.90%	-2.90%
0.0421	0.0422	0.0421	0.1426	0.1412	0.1419	0.47%	-0.47%
0.0629	0.0628	0.0629	0.1084	0.1291	0.1187	-8.72%	8.72%
0.0817	0.0830	0.0823	0.1037	0.1027	0.1032	0.52%	-0.52%
0.1052	0.1082	0.1067	0.0882	0.0900	0.0891	-1.00%	1.00%
0.1240	0.1269	0.1255	0.0775	0.0772	0.0774	0.19%	-0.19%



lpha Attenuation Red A2
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
A2	A11	0.0094	40.00	34631	865.775	4567.9	0.1895
A2	A12	0.0169	40.00	38079	951.975	4567.9	0.2084
A2	A13	0.0257	40.00	27234	680.850	4567.9	0.1491
A2	A14	0.0421	40.00	25024	625.600	4567.9	0.1370
A2	A15	0.0629	40.00	19303	482.575	4567.9	0.1056
A2	A16	0.0817	40.00	36805	920.125	9135.8	0.1007
A2	A17	0.1052	40.00	30735	768.375	9135.8	0.0841
A2	A18	0.1240	40.00	27563	689.075	9135.8	0.0754

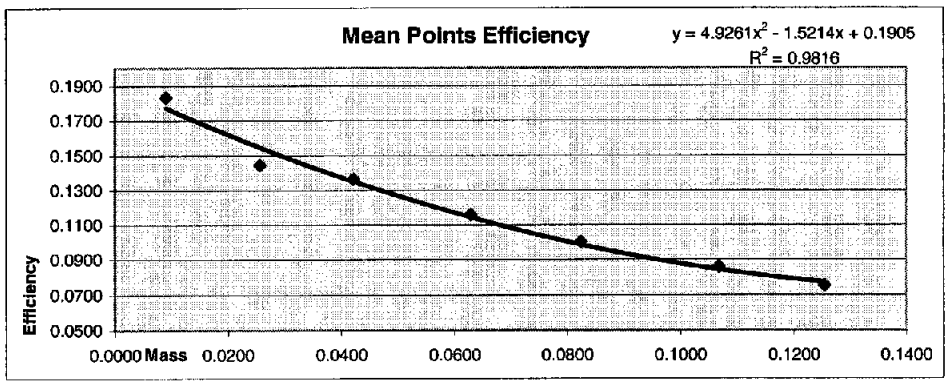
Alpha Attenuation Red A2
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
A2	A21	0.0086	40.00	32366	809.150	4567.9	0.1771
A2	A22	0.0172	40.00	26492	662.300	4567.9	0.1450
A2	A23	0.0256	40.00	25566	639.150	4567.9	0.1399
A2	A24	0.0422	40.00	24882	622.050	4567.9	0.1362
A2	A25	0.0628	40.00	23042	576.050	4567.9	0.1261
A2	A26	0.0830	40.00	36455	911.375	9135.8	0.0998
A2	A27	0.1082	40.00	32037	800.925	9135.8	0.0877
A2	A28	0.1269	40.00	27387	684.675	9135.8	0.0749

ed A2

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1895	0.1771	0.1833	3.38%	-3.38%
0.0257	0.0256	0.0257	0.1491	0.1399	0.1445	3.16%	-3.16%
0.0421	0.0422	0.0421	0.1370	0.1362	0.1366	0.28%	-0.28%
0.0629	0.0628	0.0629	0.1056	0.1261	0.1159	-8.83%	8.83%
0.0817	0.0830	0.0823	0.1007	0.0998	0.1002	0.48%	-0.48%
0.1052	0.1082	0.1067	0.0841	0.0877	0.0859	-2.07%	2.07%
0.1240	0.1269	0.1255	0.0754	0.0749	0.0752	0.32%	-0.32%



lpha Attenuation Red A3
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
A3	A11	0.0094	40.00	34219	855.475	4567.9	0.1873
A3	A12	0.0169	40.00	37272	931.800	4567.9	0.2040
A3	A13	0.0257	40.00	26862	671.550	4567.9	0.1470
A3	A14	0.0421	40.00	24550	613.750	4567.9	0.1344
A3	A15	0.0629	40.00	18535	463.375	4567.9	0.1014
A3	A16	0.0817	40.00	35209	880.225	9135.8	0.0963
A3	A17	0.1052	40.00	29901	747.525	9135.8	0.0818
A3	A18	0.1240	40.00	25821	645.525	9135.8	0.0707

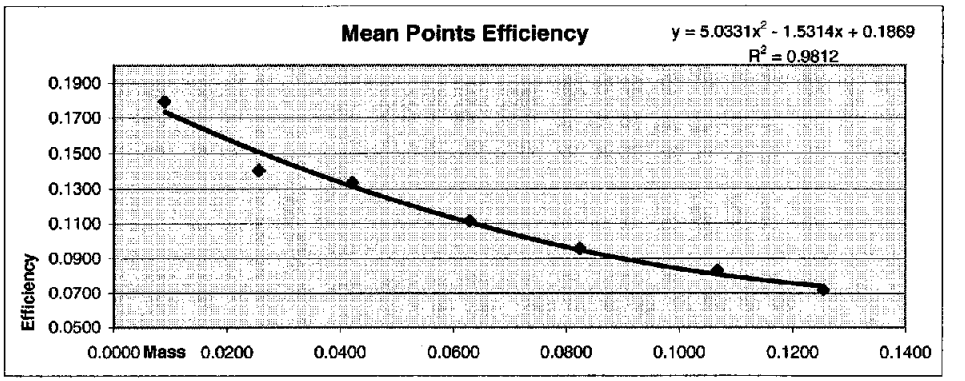
Alpha Attenuation Red A3
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
A3	A21	0.0086	40.00	31329	783.225	4567.9	0.1715
A3	A22	0.0172	40.00	25963	649.075	4567.9	0.1421
A3	A23	0.0256	40.00	24528	613.200	4567.9	0.1342
A3	A24	0.0422	40.00	24295	607.375	4567.9	0.1330
A3	A25	0.0628	40.00	22223	555.575	4567.9	0.1216
A3	A26	0.0830	40.00	34783	869.575	9135.8	0.0952
A3	A27	0.1082	40.00	30886	772.150	9135.8	0.0845
A3	A28	0.1269	40.00	26628	665.700	9135.8	0.0729

ed A3

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1873	0.1715	0.1794	4.41%	-4.41%
0.0257	0.0256	0.0257	0.1470	0.1342	0.1406	4.54%	-4.54%
0.0421	0.0422	0.0421	0.1344	0.1330	0.1337	0.52%	-0.52%
0.0629	0.0628	0.0629	0.1014	0.1216	0.1115	-9.05%	9.05%
0.0817	0.0830	0.0823	0.0963	0.0952	0.0958	0.61%	-0.61%
0.1052	0.1082	0.1067	0.0818	0.0845	0.0832	-1.62%	1.62%
0.1240	0.1269	0.1255	0.0707	0.0729	0.0718	-1.54%	1.54%



lpha Attenuation Red A4
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
A4	A11	0.0094	40.00	34593	864.825	4567.9	0.1893
A4	A12	0.0169	40.00	38096	952.400	4567.9	0.2085
A4	A13	0.0257	40.00	27725	693.125	4567.9	0.1517
A4	A14	0.0421	40.00	25428	635.700	4567.9	0.1392
A4	A15	0.0629	40.00	19354	483.850	4567.9	0.1059
A4	A16	0.0817	40.00	36857	921.425	9135.8	0.1009
A4	A17	0.1052	40.00	31039	775.975	9135.8	0.0849
A4	A18	0.1240	40.00	26757	668.925	9135.8	0.0732

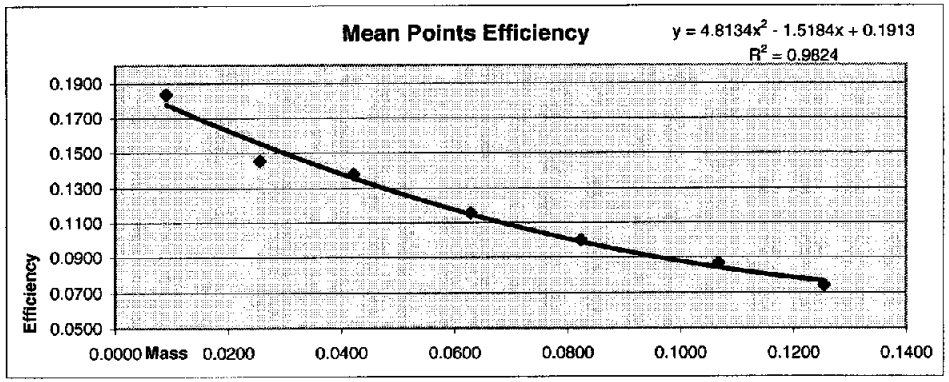
Alpha Attenuation Red A4
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
A4	A21	0.0086	40.00	32565	814.125	4567.9	0.1782
A4	A22	0.0172	40.00	26997	674.925	4567.9	0.1478
A4	A23	0.0256	40.00	25422	635.550	4567.9	0.1391
A4	A24	0.0422	40.00	25015	625.375	4567.9	0.1369
A4	A25	0.0628	40.00	22906	572.650	4567.9	0.1254
A4	A26	0.0830	40.00	36161	904.025	9135.8	0.0990
A4	A27	0.1082	40.00	32177	804.425	9135.8	0.0881
A4	A28	0.1269	40.00	27495	687.375	9135.8	0.0752

ed A4

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1893	0.1782	0.1838	3.02%	-3.02%
0.0257	0.0256	0.0257	0.1517	0.1391	0.1454	4.33%	-4.33%
0.0421	0.0422	0.0421	0.1392	0.1369	0.1380	0.82%	-0.82%
0.0629	0.0628	0.0629	0.1059	0.1254	0.1156	-8.41%	8.41%
0.0817	0.0830	0.0823	0.1009	0.0990	0.0999	0.95%	-0.95%
0.1052	0.1082	0.1067	0.0849	0.0881	0.0865	-1.80%	1.80%
0.1240	0.1269	0.1255	0.0732	0.0752	0.0742	-1.36%	1.36%



lpha Attenuation Red B1
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
B1	A11	0.0094	40.00	34489	862.225	4567.9	0.1888
B1	A12	0.0169	40.00	37707	942.675	4567.9	0.2064
B1	A13	0.0257	40.00	27207	680.175	4567.9	0.1489
B1	A14	0.0421	40.00	24522	613.050	4567.9	0.1342
B1	A15	0.0629	40.00	19517	487.925	4567.9	0.1068
B1	A16	0.0817	40.00	35833	895.825	9135.8	0.0981
B1	A17	0.1052	40.00	30386	759.650	9135.8	0.0832
B1	A18	0.1240	40.00	26365	659.125	9135.8	0.0721

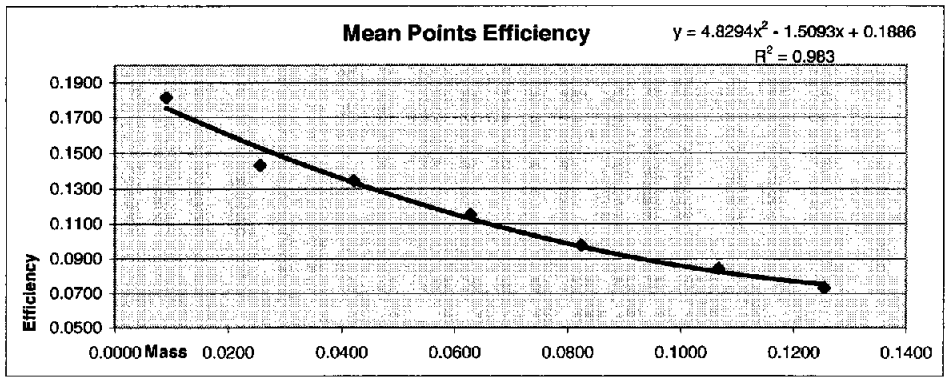
Alpha Attenuation Red B1
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
B1	A21	0.0086	40.00	31749	793.725	4567.9	0.1738
B1	A22	0.0172	40.00	26438	660.950	4567.9	0.1447
B1	A23	0.0256	40.00	25150	628.750	4567.9	0.1376
B1	A24	0.0422	40.00	24622	615.550	4567.9	0.1348
B1	A25	0.0628	40.00	22538	563.450	4567.9	0.1233
B1	A26	0.0830	40.00	35668	891.700	9135.8	0.0976
B1	A27	0.1082	40.00	31291	782.275	9135.8	0.0856
B1	A28	0.1269	40.00	27170	679.250	9135.8	0.0744

ed B1

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1888	0.1738	0.1813	4.14%	-4.14%
0.0257	0.0256	0.0257	0.1489	0.1376	0.1433	3.93%	-3.93%
0.0421	0.0422	0.0421	0.1342	0.1348	0.1345	-0.20%	0.20%
0.0629	0.0628	0.0629	0.1068	0.1233	0.1151	-7.18%	7.18%
0.0817	0.0830	0.0823	0.0981	0.0976	0.0978	0.23%	-0.23%
0.1052	0.1082	0.1067	0.0832	0.0856	0.0844	-1.47%	1.47%
0.1240	0.1269	0.1255	0.0721	0.0744	0.0732	-1.50%	1.50%



lpha Attenuation Red B2
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
B2	A11	0.0094	40.00	34228	855.700	4567.9	0.1873
B2	A12	0.0169	40.00	37453	936.325	4567.9	0.2050
B2	A13	0.0257	40.00	27139	678.475	4567.9	0.1485
B2	A14	0.0421	40.00	24918	622.950	4567.9	0.1364
B2	A15	0.0629	40.00	18986	474.650	4567.9	0.1039
B2	A16	0.0817	40.00	36258	906.450	9135.8	0.0992
B2	A17	0.1052	40.00	30293	757.325	9135.8	0.0829
B2	A18	0.1240	40.00	26402	660.050	9135.8	0.0722

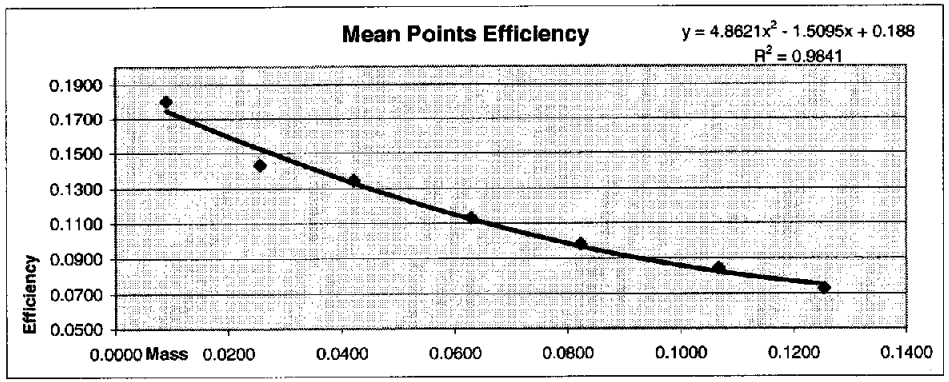
Alpha Attenuation Red B2
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
B2	A21	0.0086	40.00	31687	792.175	4567.9	0.1734
B2	A22	0.0172	40.00	26252	656.300	4567.9	0.1437
B2	A23	0.0256	40.00	25168	629.200	4567.9	0.1377
B2	A24	0.0422	40.00	24246	606.150	4567.9	0.1327
B2	A25	0.0628	40.00	22365	559.125	4567.9	0.1224
B2	A26	0.0830	40.00	35428	885.700	9135.8	0.0969
B2	A27	0.1082	40.00	31419	785.475	9135.8	0.0860
B2	A28	0.1269	40.00	26912	672.800	9135.8	0.0736

Red B2

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1873	0.1734	0.1804	3.85%	-3.85%
0.0257	0.0256	0.0257	0.1485	0.1377	0.1431	3.77%	-3.77%
0.0421	0.0422	0.0421	0.1364	0.1327	0.1345	1.37%	-1.37%
0.0629	0.0628	0.0629	0.1039	0.1224	0.1132	-8.17%	8.17%
0.0817	0.0830	0.0823	0.0992	0.0969	0.0981	1.16%	-1.16%
0.1052	0.1082	0.1067	0.0829	0.0860	0.0844	-1.82%	1.82%
0.1240	0.1269	0.1255	0.0722	0.0736	0.0729	-0.96%	0.96%



lpha Attenuation Red B3
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
B3	A11	0.0094	40.00	33892	847.300	4567.9	0.1855
B3	A12	0.0169	40.00	37656	941.400	4567.9	0.2061
B3	A13	0.0257	40.00	26621	665.525	4567.9	0.1457
B3	A14	0.0421	40.00	24345	608.625	4567.9	0.1332
B3	A15	0.0629	40.00	18733	468.325	4567.9	0.1025
B3	A16	0.0817	40.00	35795	894.875	9135.8	0.0980
B3	A17	0.1052	40.00	29945	748.625	9135.8	0.0819
B3	A18	0.1240	40.00	25815	645.375	9135.8	0.0706

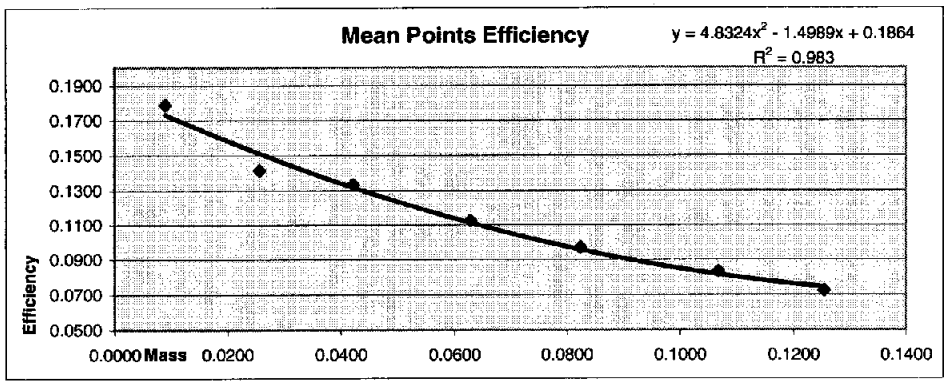
Alpha Attenuation Red B3
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
B3	A21	0.0086	40.00	31517	787.925	4567.9	0.1725
B3	A22	0.0172	40.00	26449	661.225	4567.9	0.1448
B3	A23	0.0256	40.00	25043	626.075	4567.9	0.1371
B3	A24	0.0422	40.00	24395	609.875	4567.9	0.1335
B3	A25	0.0628	40.00	22381	559.525	4567.9	0.1225
B3	A26	0.0830	40.00	35117	877.925	9135.8	0.0961
B3	A27	0.1082	40.00	30900	772.500	9135.8	0.0846
B3	A28	0.1269	40.00	27093	677.325	9135.8	0.0741

ed B3

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1855	0.1725	0.1790	3.63%	-3.63%
0.0257	0.0256	0.0257	0.1457	0.1371	0.1414	3.05%	-3.05%
0.0421	0.0422	0.0421	0.1332	0.1335	0.1334	-0.10%	0.10%
0.0629	0.0628	0.0629	0.1025	0.1225	0.1125	-8.87%	8.87%
0.0817	0.0830	0.0823	0.0980	0.0961	0.0970	0.96%	-0.96%
0.1052	0.1082	0.1067	0.0819	0.0846	0.0833	-1.57%	1.57%
0.1240	0.1269	0.1255	0.0706	0.0741	0.0724	-2.42%	2.42%



lpha Attenuation Red B4
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
B4	A11	0.0094	40.00	36870	921.750	4567.9	0.2018
B4	A12	0.0169	40.00	40325	1008.125	4567.9	0.2207
B4	A13	0.0257	40.00	29207	730.175	4567.9	0.1598
B4	A14	0.0421	40.00	26958	673.950	4567.9	0.1475
B4	A15	0.0629	40.00	20695	517.375	4567.9	0.1133
B4	A16	0.0817	40.00	39988	999.700	9135.8	0.1094
B4	A17	0.1052	40.00	33789	844.725	9135.8	0.0925
B4	A18	0.1240	40.00	29359	733.975	9135.8	0.0803

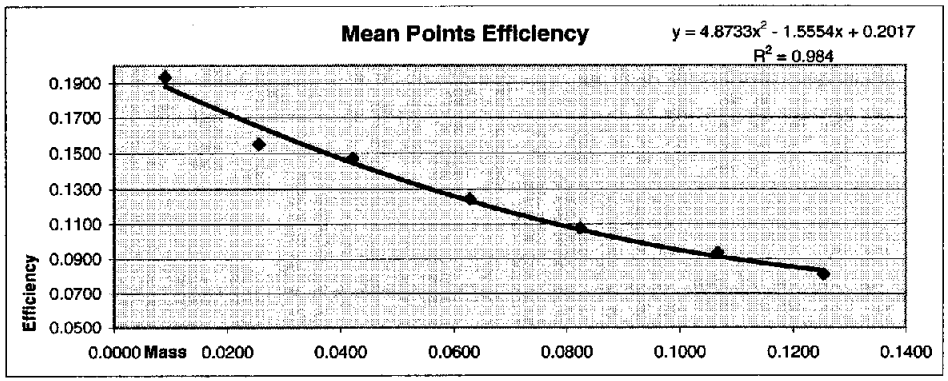
Alpha Attenuation Red B4
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
B4	A21	0.0086	40.00	33963	849.075	4567.9	0.1859
B4	A22	0.0172	40.00	28672	716.800	4567.9	0.1569
B4	A23	0.0256	40.00	27477	686.925	4567.9	0.1504
B4	A24	0.0422	40.00	26784	669.600	4567.9	0.1466
B4	A25	0.0628	40.00	24693	617.325	4567.9	0.1351
B4	A26	0.0830	40.00	38672	966.800	9135.8	0.1058
B4	A27	0.1082	40.00	34584	864.600	9135.8	0.0946
B4	A28	0.1269	40.00	29952	748.800	9135.8	0.0820

ed B4

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.2018	0.1859	0.1938	4.10%	-4.10%
0.0257	0.0256	0.0257	0.1598	0.1504	0.1551	3.05%	-3.05%
0.0421	0.0422	0.0421	0.1475	0.1466	0.1471	0.32%	-0.32%
0.0629	0.0628	0.0629	0.1133	0.1351	0.1242	-8.81%	8.81%
0.0817	0.0830	0.0823	0.1094	0.1058	0.1076	1.67%	-1.67%
0.1052	0.1082	0.1067	0.0925	0.0946	0.0936	-1.16%	1.16%
0.1240	0.1269	0.1255	0.0803	0.0820	0.0812	-1.00%	1.00%



lpha Attenuation Red C1
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
C1	A11	0.0094	40.00	34400	860.000	4567.9	0.1883
C1	A12	0.0169	40.00	37862	946.550	4567.9	0.2072
C1	A13	0.0257	40.00	27197	679.925	4567.9	0.1488
C1	A14	0.0421	40.00	24720	618.000	4567.9	0.1353
C1	A15	0.0629	40.00	18852	471.300	4567.9	0.1032
C1	A16	0.0817	40.00	36495	912.375	9135.8	0.0999
C1	A17	0.1052	40.00	30705	767.625	9135.8	0.0840
C1	A18	0.1240	40.00	26877	671.925	9135.8	0.0735

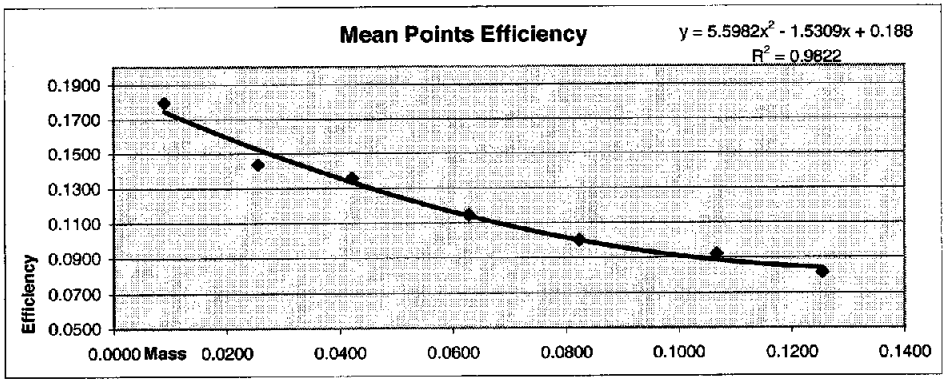
Alpha Attenuation Red C1
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
C1	A21	0.0086	40.00	31275	781.875	4567.9	0.1712
C1	A22	0.0172	40.00	26242	656.050	4567.9	0.1436
C1	A23	0.0256	40.00	25308	632.700	4567.9	0.1385
C1	A24	0.0422	40.00	24805	620.125	4567.9	0.1358
C1	A25	0.0628	40.00	22991	574.775	4567.9	0.1258
C1	A26	0.0830	40.00	36530	913.250	9135.8	0.1000
C1	A27	0.1082	40.00	36483	912.075	9135.8	0.0998
C1	A28	0.1269	40.00	32625	815.625	9135.8	0.0893

ed C1

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1883	0.1712	0.1797	4.76%	-4.76%
0.0257	0.0256	0.0257	0.1488	0.1385	0.1437	3.60%	-3.60%
0.0421	0.0422	0.0421	0.1353	0.1358	0.1355	-0.17%	0.17%
0.0629	0.0628	0.0629	0.1032	0.1258	0.1145	-9.89%	9.89%
0.0817	0.0830	0.0823	0.0999	0.1000	0.0999	-0.05%	0.05%
0.1052	0.1082	0.1067	0.0840	0.0998	0.0919	-8.60%	8.60%
0.1240	0.1269	0.1255	0.0735	0.0893	0.0814	-9.66%	9.66%



lpha Attenuation Red C2
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
C2	A11	0.0094	40.00	35843	896.075	4567.9	0.1962
C2	A12	0.0169	40.00	38834	970.850	4567.9	0.2125
C2	A13	0.0257	40.00	28848	721.200	4567.9	0.1579
C2	A14	0.0421	40.00	25708	642.700	4567.9	0.1407
C2	A15	0.0629	40.00	19870	496.750	4567.9	0.1087
C2	A16	0.0817	40.00	37448	936.200	9135.8	0.1025
C2	A17	0.1052	40.00	32454	811.350	9135.8	0.0888
C2	A18	0.1240	40.00	28289	707.225	9135.8	0.0774

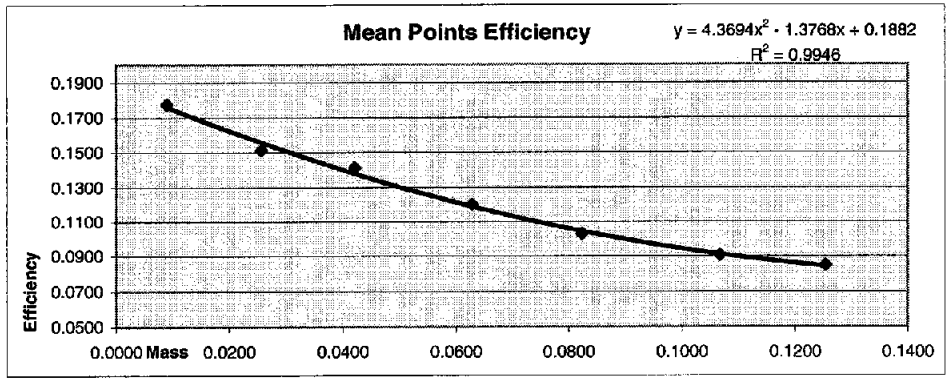
Alpha Attenuation Red C2
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
C2	A21	0.0086	40.00	29065	726.625	4567.9	0.1591
C2	A22	0.0172	40.00	27073	676.825	4567.9	0.1482
C2	A23	0.0256	40.00	26428	660.700	4567.9	0.1446
C2	A24	0.0422	40.00	25899	647.475	4567.9	0.1417
C2	A25	0.0628	40.00	24049	601.225	4567.9	0.1316
C2	A26	0.0830	40.00	37778	944.450	9135.8	0.1034
C2	A27	0.1082	40.00	33625	840.625	9135.8	0.0920
C2	A28	0.1269	40.00	33706	842.650	9135.8	0.0922

ed C2

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1962	0.1591	0.1776	10.44%	-10.44%
0.0257	0.0256	0.0257	0.1579	0.1446	0.1513	4.38%	-4.38%
0.0421	0.0422	0.0421	0.1407	0.1417	0.1412	-0.37%	0.37%
0.0629	0.0628	0.0629	0.1087	0.1316	0.1202	-9.52%	9.52%
0.0817	0.0830	0.0823	0.1025	0.1034	0.1029	-0.44%	0.44%
0.1052	0.1082	0.1067	0.0888	0.0920	0.0904	-1.77%	1.77%
0.1240	0.1269	0.1255	0.0774	0.0922	0.0848	-8.74%	8.74%



lpha Attenuation Red C3
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
C3	A11	0.0094	40.00	33301	832.525	4567.9	0.1823
C3	A12	0.0169	40.00	36527	913.175	4567.9	0.1999
C3	A13	0.0257	40.00	26268	656.700	4567.9	0.1438
C3	A14	0.0421	40.00	24104	602.600	4567.9	0.1319
C3	A15	0.0629	40.00	18012	450.300	4567.9	0.0986
C3	A16	0.0817	40.00	35016	875.400	9135.8	0.0958
C3	A17	0.1052	40.00	28950	723.750	9135.8	0.0792
C3	A18	0.1240	40.00	25436	635.900	9135.8	0.0696

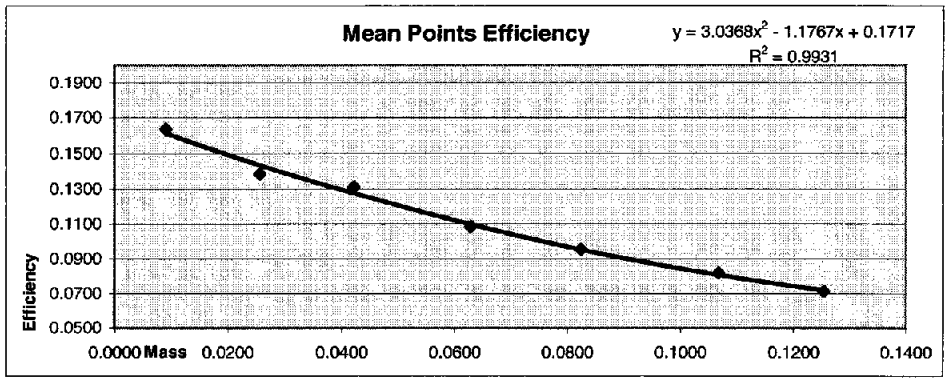
Alpha Attenuation Red C3
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
C3	A21	0.0086	40.00	26441	661.025	4567.9	0.1447
C3	A22	0.0172	40.00	31072	776.800	4567.9	0.1701
C3	A23	0.0256	40.00	24341	608.525	4567.9	0.1332
C3	A24	0.0422	40.00	23799	594.975	4567.9	0.1303
C3	A25	0.0628	40.00	21669	541.725	4567.9	0.1186
C3	A26	0.0830	40.00	34778	869.450	9135.8	0.0952
C3	A27	0.1082	40.00	30807	770.175	9135.8	0.0843
C3	A28	0.1269	40.00	26558	663.950	9135.8	0.0727

ed C3

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1823	0.1447	0.1635	11.48%	-11.48%
0.0257	0.0256	0.0257	0.1438	0.1332	0.1385	3.81%	-3.81%
0.0421	0.0422	0.0421	0.1319	0.1303	0.1311	0.64%	-0.64%
0.0629	0.0628	0.0629	0.0986	0.1186	0.1086	-9.22%	9.22%
0.0817	0.0830	0.0823	0.0958	0.0952	0.0955	0.34%	-0.34%
0.1052	0.1082	0.1067	0.0792	0.0843	0.0818	-3.11%	3.11%
0.1240	0.1269	0.1255	0.0696	0.0727	0.0711	-2.16%	2.16%



lpha Attenuation Red C4
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
C4	A11	0.0094	40.00	34460	861.500	4567.9	0.1886
C4	A12	0.0169	40.00	37771	944.275	4567.9	0.2067
C4	A13	0.0257	40.00	27241	681.025	4567.9	0.1491
C4	A14	0.0421	40.00	24859	621.475	4567.9	0.1361
C4	A15	0.0629	40.00	18747	468.675	4567.9	0.1026
C4	A16	0.0817	40.00	36298	907.450	9135.8	0.0993
C4	A17	0.1052	40.00	30655	766.375	9135.8	0.0839
C4	A18	0.1240	40.00	26777	669.425	9135.8	0.0733

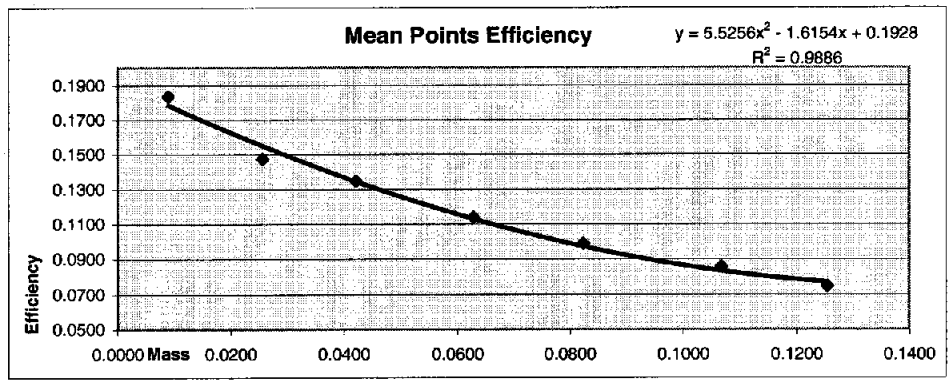
Alpha Attenuation Red C4
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
C4	A21	0.0086	40.00	32665	816.625	4567.9	0.1788
C4	A22	0.0172	40.00	32217	805.425	4567.9	0.1763
C4	A23	0.0256	40.00	26569	664.225	4567.9	0.1454
C4	A24	0.0422	40.00	24373	609.325	4567.9	0.1334
C4	A25	0.0628	40.00	22847	571.175	4567.9	0.1250
C4	A26	0.0830	40.00	35913	897.825	9135.8	0.0983
C4	A27	0.1082	40.00	32001	800.025	9135.8	0.0876
C4	A28	0.1269	40.00	27809	695.225	9135.8	0.0761

ed C4

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1886	0.1788	0.1837	2.67%	-2.67%
0.0257	0.0256	0.0257	0.1491	0.1454	0.1473	1.25%	-1.25%
0.0421	0.0422	0.0421	0.1361	0.1334	0.1347	0.99%	-0.99%
0.0629	0.0628	0.0629	0.1026	0.1250	0.1138	-9.86%	9.86%
0.0817	0.0830	0.0823	0.0993	0.0983	0.0988	0.53%	-0.53%
0.1052	0.1082	0.1067	0.0839	0.0876	0.0857	-2.15%	2.15%
0.1240	0.1269	0.1255	0.0733	0.0761	0.0747	-1.89%	1.89%



lpha Attenuation Red D1
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
D1	A11	0.0094	40.00	33615	840.375	4567.9	0.1840
D1	A12	0.0169	40.00	37627	940.675	4567.9	0.2059
D1	A13	0.0257	40.00	28030	700.750	4567.9	0.1534
D1	A14	0.0421	40.00	25823	645.575	4567.9	0.1413
D1	A15	0.0629	40.00	19905	497.625	4567.9	0.1089
D1	A16	0.0817	40.00	37645	941.125	9135.8	0.1030
D1	A17	0.1052	40.00	31994	799.850	9135.8	0.0876
D1	A18	0.1240	40.00	28013	700.325	9135.8	0.0767

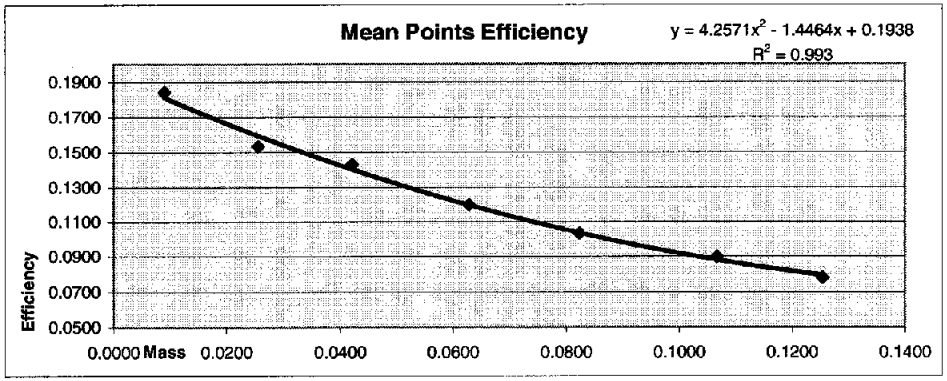
Alpha Attenuation Red D1
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
D1	A21	0.0086	40.00	33714	842.850	4567.9	0.1845
D1	A22	0.0172	40.00	27629	690.725	4567.9	0.1512
D1	A23	0.0256	40.00	27990	699.750	4567.9	0.1532
D1	A24	0.0422	40.00	26457	661.425	4567.9	0.1448
D1	A25	0.0628	40.00	23898	597.450	4567.9	0.1308
D1	A26	0.0830	40.00	37824	945.600	9135.8	0.1035
D1	A27	0.1082	40.00	33579	839.475	9135.8	0.0919
D1	A28	0.1269	40.00	29047	726.175	9135.8	0.0795

ed D1

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1840	0.1845	0.1842	-0.15%	0.15%
0.0257	0.0256	0.0257	0.1534	0.1532	0.1533	0.07%	-0.07%
0.0421	0.0422	0.0421	0.1413	0.1448	0.1431	-1.21%	1.21%
0.0629	0.0628	0.0629	0.1089	0.1308	0.1199	-9.12%	9.12%
0.0817	0.0830	0.0823	0.1030	0.1035	0.1033	-0.24%	0.24%
0.1052	0.1082	0.1067	0.0876	0.0919	0.0897	-2.42%	2.42%
0.1240	0.1269	0.1255	0.0767	0.0795	0.0781	-1.81%	1.81%



lpha Attenuation Red D2
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
D2	A11	0.0094	40.00	34185	854.625	4567.9	0.1871
D2	A12	0.0169	40.00	35278	881.950	4567.9	0.1931
D2	A13	0.0257	40.00	26366	659.150	4567.9	0.1443
D2	A14	0.0421	40.00	25048	626.200	4567.9	0.1371
D2	A15	0.0629	40.00	19363	484.075	4567.9	0.1060
D2	A16	0.0817	40.00	36555	913.875	9135.8	0.1000
D2	A17	0.1052	40.00	30601	765.025	9135.8	0.0837
D2	A18	0.1240	40.00	26880	672.000	9135.8	0.0736

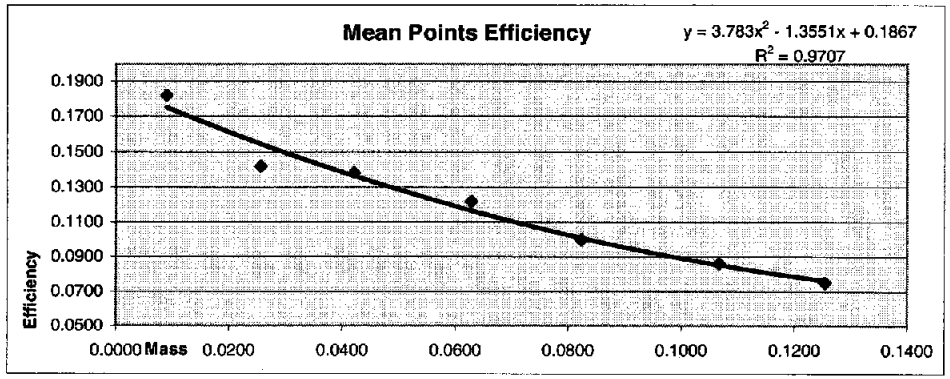
Alpha Attenuation Red D2
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
D2	A21	0.0086	40.00	32233	805.825	4567.9	0.1764
D2	A22	0.0172	40.00	26758	668.950	4567.9	0.1464
D2	A23	0.0256	40.00	25474	636.850	4567.9	0.1394
D2	A24	0.0422	40.00	25455	636.375	4567.9	0.1393
D2	A25	0.0628	40.00	25118	627.950	4567.9	0.1375
D2	A26	0.0830	40.00	36313	907.825	9135.8	0.0994
D2	A27	0.1082	40.00	32312	807.800	9135.8	0.0884
D2	A28	0.1269	40.00	27983	699.575	9135.8	0.0766

ed D2

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1871	0.1764	0.1818	2.94%	-2.94%
0.0257	0.0256	0.0257	0.1443	0.1394	0.1419	1.72%	-1.72%
0.0421	0.0422	0.0421	0.1371	0.1393	0.1382	-0.81%	0.81%
0.0629	0.0628	0.0629	0.1060	0.1375	0.1217	-12.94%	12.94%
0.0817	0.0830	0.0823	0.1000	0.0994	0.0997	0.33%	-0.33%
0.1052	0.1082	0.1067	0.0837	0.0884	0.0861	-2.72%	2.72%
0.1240	0.1269	0.1255	0.0736	0.0766	0.0751	-2.01%	2.01%



lpha Attenuation Red D3
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
D3	A11	0.0094	40.00	35427	885.675	4567.9	0.1939
D3	A12	0.0169	40.00	38747	968.675	4567.9	0.2121
D3	A13	0.0257	40.00	25892	647.300	4567.9	0.1417
D3	A14	0.0421	40.00	24458	611.450	4567.9	0.1339
D3	A15	0.0629	40.00	19326	483.150	4567.9	0.1058
D3	A16	0.0817	40.00	36581	914.525	9135.8	0.1001
D3	A17	0.1052	40.00	31170	779.250	9135.8	0.0853
D3	A18	0.1240	40.00	27160	679.000	9135.8	0.0743

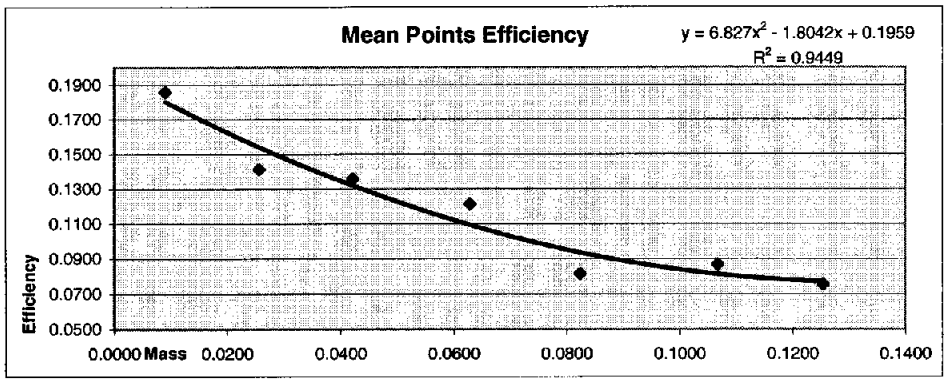
Alpha Attenuation Red D3
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
D3	A21	0.0086	40.00	32488	812.200	4567.9	0.1778
D3	A22	0.0172	40.00	27123	678.075	4567.9	0.1484
D3	A23	0.0256	40.00	25739	643.475	4567.9	0.1409
D3	A24	0.0422	40.00	25094	627.350	4567.9	0.1373
D3	A25	0.0628	40.00	24925	623.125	4567.9	0.1364
D3	A26	0.0830	40.00	22899	572.475	9135.8	0.0627
D3	A27	0.1082	40.00	32238	805.950	9135.8	0.0882
D3	A28	0.1269	40.00	27857	696.425	9135.8	0.0762

ed D3

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1939	0.1778	0.1858	4.33%	-4.33%
0.0257	0.0256	0.0257	0.1417	0.1409	0.1413	0.30%	-0.30%
0.0421	0.0422	0.0421	0.1339	0.1373	0.1356	-1.28%	1.28%
0.0629	0.0628	0.0629	0.1058	0.1364	0.1211	-12.65%	12.65%
0.0817	0.0830	0.0823	0.1001	0.0627	0.0814	23.00%	-23.00%
0.1052	0.1082	0.1067	0.0853	0.0882	0.0868	-1.68%	1.68%
0.1240	0.1269	0.1255	0.0743	0.0762	0.0753	-1.27%	1.27%



lpha Attenuation Red D4
2_2007

ata Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
D4	A11	0.0094	40.00	35538	888.450	4567.9	0.1945
D4	A12	0.0169	40.00	38571	964.275	4567.9	0.2111
D4	A13	0.0257	40.00	27914	697.850	4567.9	0.1528
D4	A14	0.0421	40.00	23918	597.950	4567.9	0.1309
D4	A15	0.0629	40.00	18894	472.350	4567.9	0.1034
D4	A16	0.0817	40.00	37490	937.250	9135.8	0.1026
D4	A17	0.1052	40.00	31132	778.300	9135.8	0.0852
D4	A18	0.1240	40.00	27415	685.375	9135.8	0.0750

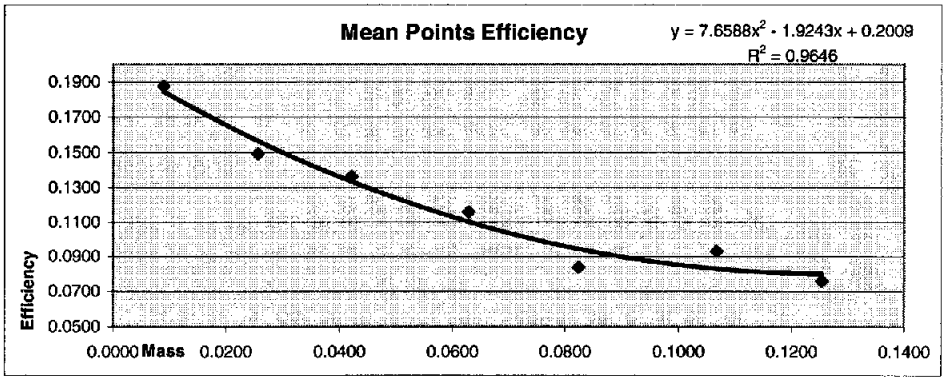
Alpha Attenuation Red D4
02_2007

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
D4	A21	0.0086	40.00	33000	825.000	4567.9	0.1806
D4	A22	0.0172	40.00	27885	697.125	4567.9	0.1526
D4	A23	0.0256	40.00	26655	666.375	4567.9	0.1459
D4	A24	0.0422	40.00	25937	648.425	4567.9	0.1420
D4	A25	0.0628	40.00	23448	586.200	4567.9	0.1283
D4	A26	0.0830	40.00	23594	589.850	9135.8	0.0646
D4	A27	0.1082	40.00	36840	921.000	9135.8	0.1008
D4	A28	0.1269	40.00	27990	699.750	9135.8	0.0766

ed D4

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0094	0.0086	0.0090	0.1945	0.1806	0.1876	3.70%	-3.70%
0.0257	0.0256	0.0257	0.1528	0.1459	0.1493	2.31%	-2.31%
0.0421	0.0422	0.0421	0.1309	0.1420	0.1364	-4.05%	4.05%
0.0629	0.0628	0.0629	0.1034	0.1283	0.1159	-10.76%	10.76%
0.0817	0.0830	0.0823	0.1026	0.0646	0.0836	22.75%	-22.75%
0.1052	0.1082	0.1067	0.0852	0.1008	0.0930	-8.40%	8.40%
0.1240	0.1269	0.1255	0.0750	0.0766	0.0758	-1.04%	1.04%



TestAmerica STL

Red 2007

Beta Efficiency Curves

eta Attenuation Red A1
et 1 2/20/2007

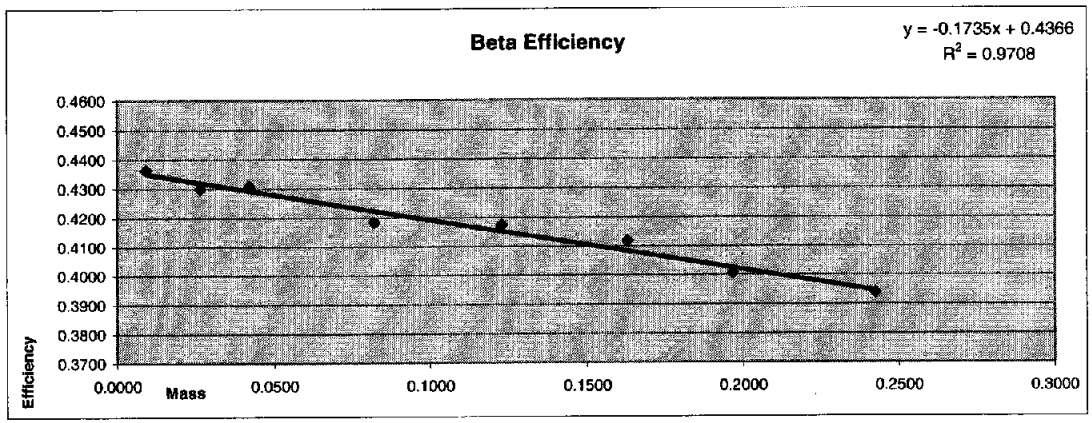
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36641	1832.050	0.4525
B12	0.0264	20	36151	1807.550	0.4464
B13	0.0425	20	35526	1776.300	0.4387
B14	0.0809	20	33781	1689.050	0.4172
B15	0.1227	20	33892	1694.600	0.4185
B16	0.1647	20	32785	1639.250	0.4049
B17	0.2003	20	32086	1604.300	0.3962
B18	0.2429	20	31875	1593.750	0.3936

Beta Attenuation Red A1
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B21	0.0091	20	34015	1700.750	0.4200
B22	0.0265	20	33483	1674.150	0.4135
B23	0.0415	20	34243	1712.150	0.4229
B24	0.0830	20	33981	1699.050	0.4196
B25	0.1230	20	33733	1686.650	0.4166
B26	0.1611	20	33919	1695.950	0.4189
B27	0.1932	20	32780	1639.000	0.4048
B28	0.2421	20	31896	1594.800	0.3939

ed A1

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4525	0.4200	0.4363	3.72%	-3.72%
0.0264	0.0265	0.0265	0.4464	0.4135	0.4299	3.83%	-3.83%
0.0425	0.0415	0.0420	0.4387	0.4229	0.4308	1.84%	-1.84%
0.0809	0.0830	0.0820	0.4172	0.4196	0.4184	-0.30%	0.30%
0.1227	0.1230	0.1229	0.4185	0.4166	0.4175	0.24%	-0.24%
0.1647	0.1611	0.1629	0.4049	0.4189	0.4119	-1.70%	1.70%
0.2003	0.1932	0.1968	0.3962	0.4048	0.4005	-1.07%	1.07%
0.2429	0.2421	0.2425	0.3936	0.3939	0.3937	-0.03%	0.03%



Beta Attenuation Red A2
Set 1 2/20/2007

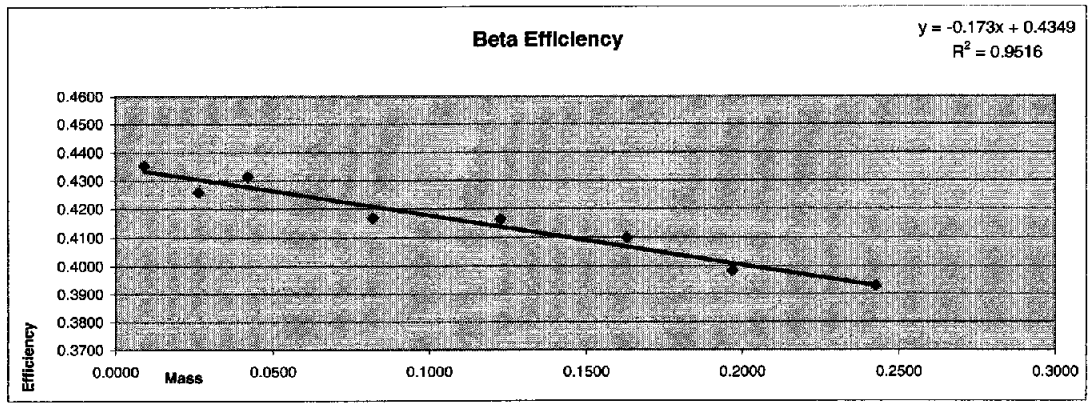
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36483	1824.150	0.45052
B12	0.0264	20	35673	1783.650	0.44052
B13	0.0425	20	35713	1785.650	0.44101
B14	0.0809	20	33707	1685.350	0.41624
B15	0.1227	20	33729	1686.450	0.41651
B16	0.1647	20	32740	1637.000	0.40430
B17	0.2003	20	31770	1588.500	0.39232
B18	0.2429	20	32078	1603.900	0.39612

Beta Attenuation Red A2
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B21	0.0091	20	34007	1700.350	0.41994
B22	0.0265	20	33294	1664.700	0.41114
B23	0.0415	20	34154	1707.700	0.42176
B24	0.0830	20	33794	1689.700	0.41731
B25	0.1230	20	33697	1684.850	0.41612
B26	0.1611	20	33632	1681.600	0.41531
B27	0.1932	20	32731	1636.550	0.40419
B28	0.2421	20	31553	1577.650	0.38964

Red A2

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4505	0.4199	0.4352	3.51%	-3.51%
0.0264	0.0265	0.0265	0.4405	0.4111	0.4258	3.45%	-3.45%
0.0425	0.0415	0.0420	0.4410	0.4218	0.4314	2.23%	-2.23%
0.0809	0.0830	0.0820	0.4162	0.4173	0.4168	-0.13%	0.13%
0.1227	0.1230	0.1229	0.4165	0.4161	0.4163	0.05%	-0.05%
0.1647	0.1611	0.1629	0.4043	0.4153	0.4098	-1.34%	1.34%
0.2003	0.1932	0.1968	0.3923	0.4042	0.3983	-1.49%	1.49%
0.2429	0.2421	0.2425	0.3961	0.3896	0.3929	0.83%	-0.83%



Beta Attenuation Red A3
Set 1 2/20/2007

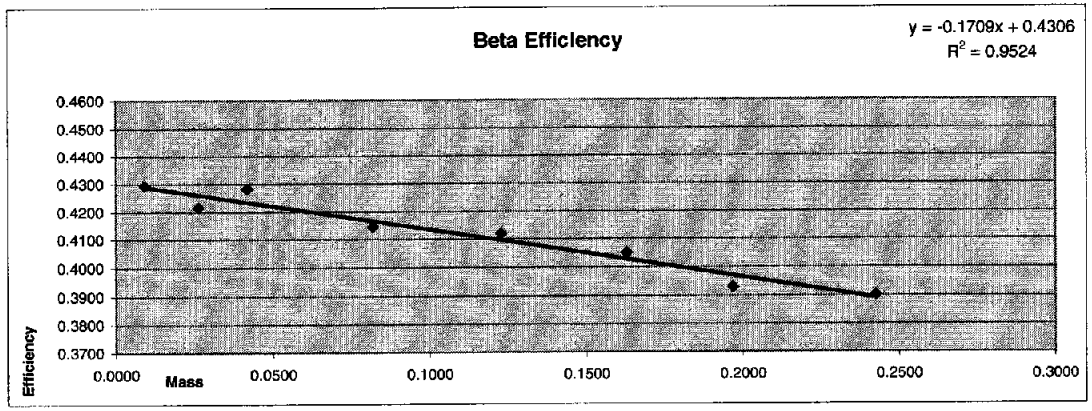
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	35970	1798.500	0.44418
B12	0.0264	20	35416	1770.800	0.43734
B13	0.0425	20	35541	1777.050	0.43889
B14	0.0809	20	33676	1683.800	0.41586
B15	0.1227	20	33272	1663.600	0.41087
B16	0.1647	20	32397	1619.850	0.40006
B17	0.2003	20	31279	1563.950	0.38626
B18	0.2429	20	31816	1590.800	0.39289

Beta Attenuation Red A3
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B21	0.0091	20	33560	1678.000	0.41442
B22	0.0265	20	32878	1643.900	0.40600
B23	0.0415	20	33808	1690.400	0.41749
B24	0.0830	20	33446	1672.300	0.41302
B25	0.1230	20	33432	1671.600	0.41284
B26	0.1611	20	33186	1659.300	0.40980
B27	0.1932	20	32362	1618.100	0.39963
B28	0.2421	20	31370	1568.500	0.38738

Red A3

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4442	0.4144	0.4293	3.47%	-3.47%
0.0264	0.0265	0.0265	0.4373	0.4060	0.4217	3.72%	-3.72%
0.0425	0.0415	0.0420	0.4389	0.4175	0.4282	2.50%	-2.50%
0.0809	0.0830	0.0820	0.4159	0.4130	0.4144	0.34%	-0.34%
0.1227	0.1230	0.1229	0.4109	0.4128	0.4119	-0.24%	0.24%
0.1647	0.1611	0.1629	0.4001	0.4098	0.4049	-1.20%	1.20%
0.2003	0.1932	0.1968	0.3863	0.3996	0.3929	-1.70%	1.70%
0.2429	0.2421	0.2425	0.3929	0.3874	0.3901	0.71%	-0.71%



Beta Attenuation Red A4
Set 1 2/20/2007

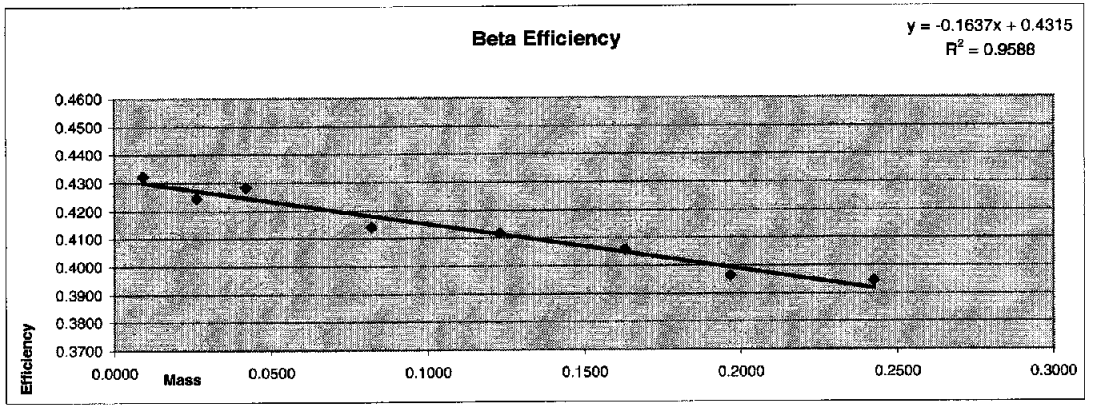
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	35901	1795.050	0.44333
B12	0.0264	20	35590	1779.500	0.43949
B13	0.0425	20	35306	1765.300	0.43598
B14	0.0809	20	33738	1686.900	0.41662
B15	0.1227	20	33538	1676.900	0.41415
B16	0.1647	20	32295	1614.750	0.39880
B17	0.2003	20	31822	1591.100	0.39296
B18	0.2429	20	32026	1601.300	0.39548

Beta Attenuation Red A4
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B21	0.0091	20	34085	1704.250	0.42091
B22	0.0265	20	33172	1658.600	0.40963
B23	0.0415	20	34073	1703.650	0.42076
B24	0.0830	20	33310	1665.500	0.41134
B25	0.1230	20	33153	1657.650	0.40940
B26	0.1611	20	33405	1670.250	0.41251
B27	0.1932	20	32372	1618.600	0.39975
B28	0.2421	20	31848	1592.400	0.39328

Red A4

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4433	0.4209	0.4321	2.59%	-2.59%
0.0264	0.0265	0.0265	0.4395	0.4096	0.4246	3.52%	-3.52%
0.0425	0.0415	0.0420	0.4360	0.4208	0.4284	1.78%	-1.78%
0.0809	0.0830	0.0820	0.4166	0.4113	0.4140	0.64%	-0.64%
0.1227	0.1230	0.1229	0.4142	0.4094	0.4118	0.58%	-0.58%
0.1647	0.1611	0.1629	0.3988	0.4125	0.4057	-1.69%	1.69%
0.2003	0.1932	0.1968	0.3930	0.3998	0.3964	-0.86%	0.86%
0.2429	0.2421	0.2425	0.3955	0.3933	0.3944	0.28%	-0.28%



Beta Attenuation Red B1
Set 1 2/20/2007

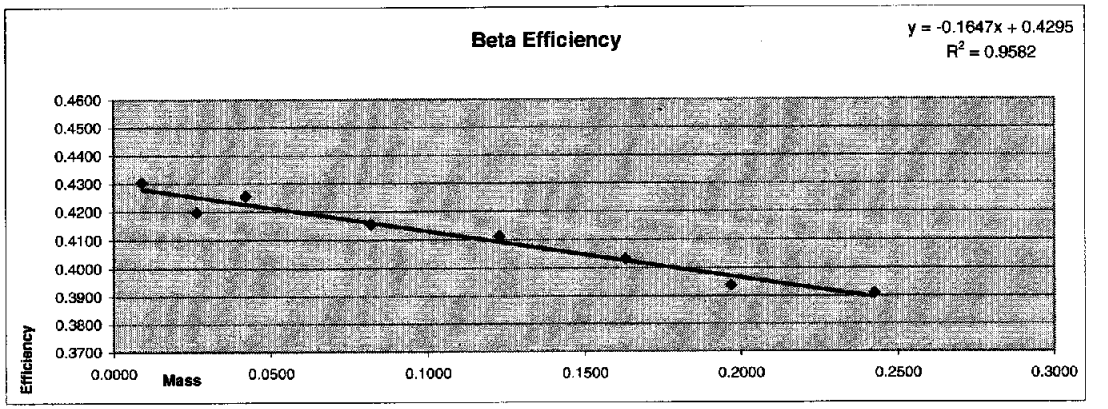
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	35948	1797.400	0.44391
B12	0.0264	20	35517	1775.850	0.43859
B13	0.0425	20	35113	1755.650	0.43360
B14	0.0809	20	33515	1675.750	0.41387
B15	0.1227	20	33041	1652.050	0.40801
B16	0.1647	20	32342	1617.100	0.39938
B17	0.2003	20	31314	1565.700	0.38669
B18	0.2429	20	31896	1594.800	0.39388

Beta Attenuation Red B1
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B21	0.0091	20	33747	1687.350	0.41673
B22	0.0265	20	32471	1623.550	0.40098
B23	0.0415	20	33788	1689.400	0.41724
B24	0.0830	20	33772	1688.600	0.41704
B25	0.1230	20	33560	1678.000	0.41442
B26	0.1611	20	32982	1649.100	0.40729
B27	0.1932	20	32462	1623.100	0.40086
B28	0.2421	20	31432	1571.600	0.38815

Red B1

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4439	0.4167	0.4303	3.16%	-3.16%
0.0264	0.0265	0.0265	0.4386	0.4010	0.4198	4.48%	-4.48%
0.0425	0.0415	0.0420	0.4336	0.4172	0.4254	1.92%	-1.92%
0.0809	0.0830	0.0820	0.4139	0.4170	0.4155	-0.38%	0.38%
0.1227	0.1230	0.1229	0.4080	0.4144	0.4112	-0.78%	0.78%
0.1647	0.1611	0.1629	0.3994	0.4073	0.4033	-0.98%	0.98%
0.2003	0.1932	0.1968	0.3867	0.4009	0.3938	-1.80%	1.80%
0.2429	0.2421	0.2425	0.3939	0.3881	0.3910	0.73%	-0.73%



Beta Attenuation Red B2
Set 1 2/20/2007

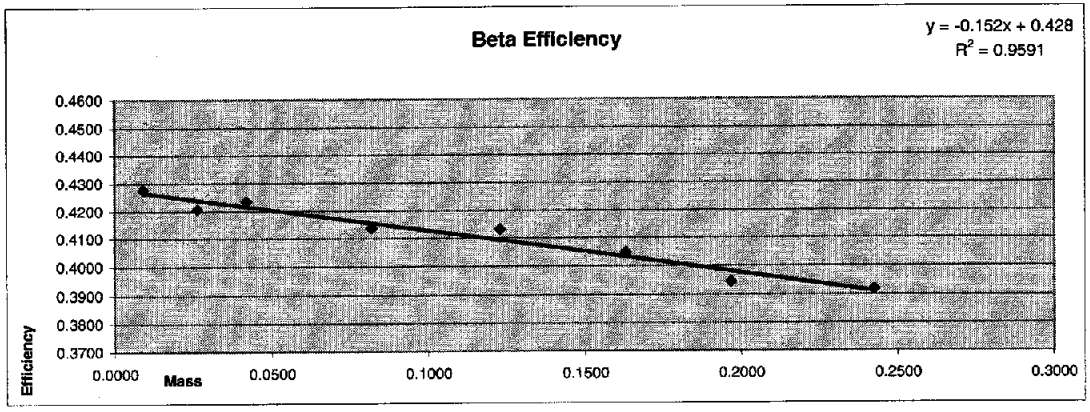
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	35896	1794.800	0.44327
B12	0.0264	20	35424	1771.200	0.43744
B13	0.0425	20	34941	1747.050	0.43148
B14	0.0809	20	33501	1675.050	0.41369
B15	0.1227	20	33478	1673.900	0.41341
B16	0.1647	20	32241	1612.050	0.39814
B17	0.2003	20	31771	1588.550	0.39233
B18	0.2429	20	31978	1598.900	0.39489

Beta Attenuation Red B2
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B21	0.0091	20	33363	1668.150	0.41199
B22	0.0265	20	32697	1634.850	0.40377
B23	0.0415	20	33640	1682.000	0.41541
B24	0.0830	20	33508	1675.400	0.41378
B25	0.1230	20	33425	1671.250	0.41276
B26	0.1611	20	33309	1665.450	0.41132
B27	0.1932	20	32100	1605.000	0.39639
B28	0.2421	20	31483	1574.150	0.38878

Red B2

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4433	0.4120	0.4276	3.66%	-3.66%
0.0264	0.0265	0.0265	0.4374	0.4038	0.4206	4.00%	-4.00%
0.0425	0.0415	0.0420	0.4315	0.4154	0.4234	1.90%	-1.90%
0.0809	0.0830	0.0820	0.4137	0.4138	0.4137	-0.01%	0.01%
0.1227	0.1230	0.1229	0.4134	0.4128	0.4131	0.08%	-0.08%
0.1647	0.1611	0.1629	0.3981	0.4113	0.4047	-1.63%	1.63%
0.2003	0.1932	0.1968	0.3923	0.3964	0.3944	-0.52%	0.52%
0.2429	0.2421	0.2425	0.3949	0.3888	0.3918	0.78%	-0.78%



Beta Attenuation Red B3
Set 1 2/20/2007

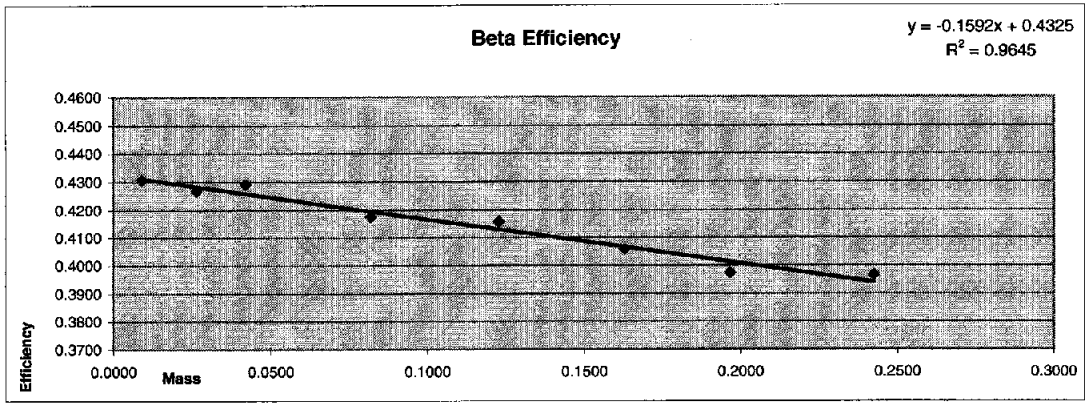
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36165	1808.250	0.44659
B12	0.0264	20	35905	1795.250	0.44338
B13	0.0425	20	35529	1776.450	0.43874
B14	0.0809	20	33494	1674.700	0.41361
B15	0.1227	20	33701	1685.050	0.41616
B16	0.1647	20	32748	1637.400	0.40440
B17	0.2003	20	31786	1589.300	0.39252
B18	0.2429	20	32163	1608.150	0.39717

Beta Attenuation Red B3
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B21	0.0091	20	33597	1679.850	0.41488
B22	0.0265	20	33215	1660.750	0.41016
B23	0.0415	20	33958	1697.900	0.41934
B24	0.0830	20	34130	1706.500	0.42146
B25	0.1230	20	33627	1681.350	0.41525
B26	0.1611	20	32981	1649.050	0.40727
B27	0.1932	20	32552	1627.600	0.40198
B28	0.2421	20	32065	1603.250	0.39596

Red B3

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4466	0.4149	0.4307	3.68%	-3.68%
0.0264	0.0265	0.0265	0.4434	0.4102	0.4268	3.89%	-3.89%
0.0425	0.0415	0.0420	0.4387	0.4193	0.4290	2.26%	-2.26%
0.0809	0.0830	0.0820	0.4136	0.4215	0.4175	-0.94%	0.94%
0.1227	0.1230	0.1229	0.4162	0.4153	0.4157	0.11%	-0.11%
0.1647	0.1611	0.1629	0.4044	0.4073	0.4058	-0.35%	0.35%
0.2003	0.1932	0.1968	0.3925	0.4020	0.3972	-1.19%	1.19%
0.2429	0.2421	0.2425	0.3972	0.3960	0.3966	0.15%	-0.15%



Beta Attenuation Red B4
Set 1 2/20/2007

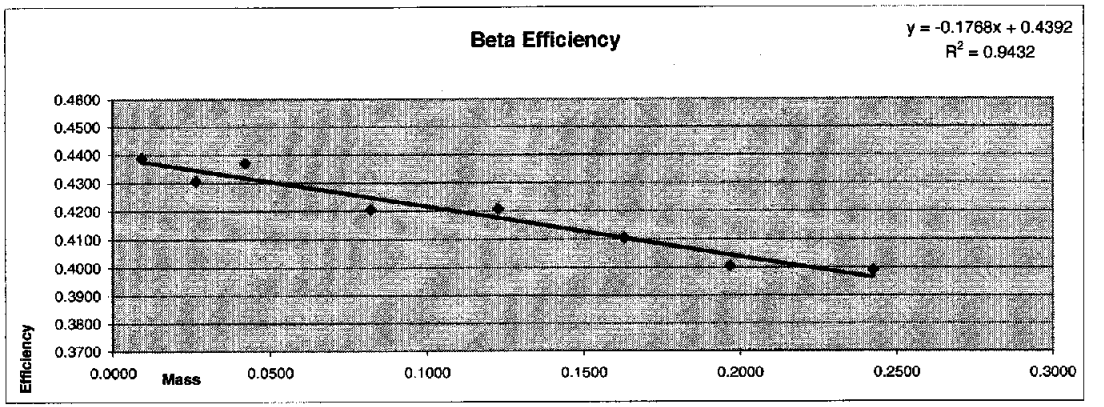
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36737	1836.850	0.45366
B12	0.0264	20	36371	1818.550	0.44914
B13	0.0425	20	36215	1810.750	0.44721
B14	0.0809	20	34203	1710.150	0.42236
B15	0.1227	20	34350	1717.500	0.42418
B16	0.1647	20	32719	1635.950	0.40404
B17	0.2003	20	32068	1603.400	0.39600
B18	0.2429	20	32381	1619.050	0.39986

Beta Attenuation Red B4
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B21	0.0091	20	34341	1717.050	0.42407
B22	0.0265	20	33379	1668.950	0.41219
B23	0.0415	20	34576	1728.800	0.42697
B24	0.0830	20	33890	1694.500	0.41850
B25	0.1230	20	33773	1688.650	0.41705
B26	0.1611	20	33753	1687.650	0.41681
B27	0.1932	20	32797	1639.850	0.40500
B28	0.2421	20	32234	1611.700	0.39805

Red B4

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4537	0.4241	0.4389	3.37%	-3.37%
0.0264	0.0265	0.0265	0.4491	0.4122	0.4307	4.29%	-4.29%
0.0425	0.0415	0.0420	0.4472	0.4270	0.4371	2.32%	-2.32%
0.0809	0.0830	0.0820	0.4224	0.4185	0.4204	0.46%	-0.46%
0.1227	0.1230	0.1229	0.4242	0.4171	0.4206	0.85%	-0.85%
0.1647	0.1611	0.1629	0.4040	0.4168	0.4104	-1.56%	1.56%
0.2003	0.1932	0.1968	0.3960	0.4050	0.4005	-1.12%	1.12%
0.2429	0.2421	0.2425	0.3999	0.3980	0.3990	0.23%	-0.23%



Beta Attenuation Red C1
Set 1 2/20/2007

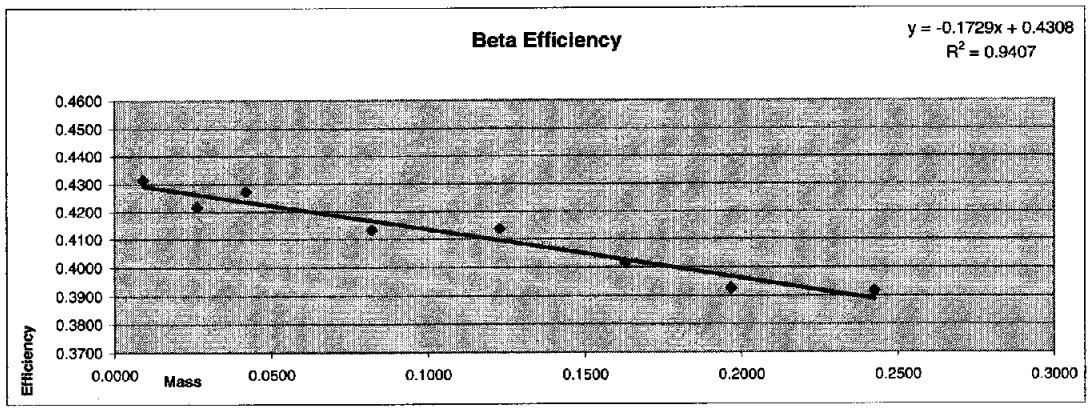
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36130	1806.500	0.44616
B12	0.0264	20	35498	1774.900	0.43836
B13	0.0425	20	35255	1762.750	0.43535
B14	0.0809	20	33516	1675.800	0.41388
B15	0.1227	20	33408	1670.400	0.41255
B16	0.1647	20	32316	1615.800	0.39906
B17	0.2003	20	31331	1566.550	0.38690
B18	0.2429	20	31736	1586.800	0.39190

Beta Attenuation Red C1
Set 2 2/28/2007

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4047 CPM	Sr-90 Eff
B21	0.0091	20	33737	1686.850	0.41681
B22	0.0265	20	32781	1639.050	0.40500
B23	0.0415	20	33927	1696.350	0.41916
B24	0.0830	20	33397	1669.850	0.41261
B25	0.1230	20	33585	1679.250	0.41494
B26	0.1611	20	32710	1635.500	0.40413
B27	0.1932	20	32233	1611.650	0.39823
B28	0.2421	20	31685	1584.250	0.39146

Red C1

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4462	0.4168	0.4315	3.40%	-3.40%
0.0264	0.0265	0.0265	0.4384	0.4050	0.4217	3.95%	-3.95%
0.0425	0.0415	0.0420	0.4354	0.4192	0.4273	1.89%	-1.89%
0.0809	0.0830	0.0820	0.4139	0.4126	0.4132	0.15%	-0.15%
0.1227	0.1230	0.1229	0.4125	0.4149	0.4137	-0.29%	0.29%
0.1647	0.1611	0.1629	0.3991	0.4041	0.4016	-0.63%	0.63%
0.2003	0.1932	0.1968	0.3869	0.3982	0.3926	-1.44%	1.44%
0.2429	0.2421	0.2425	0.3919	0.3915	0.3917	0.06%	-0.06%



Beta Attenuation Red C2
Set 1 2/20/2007

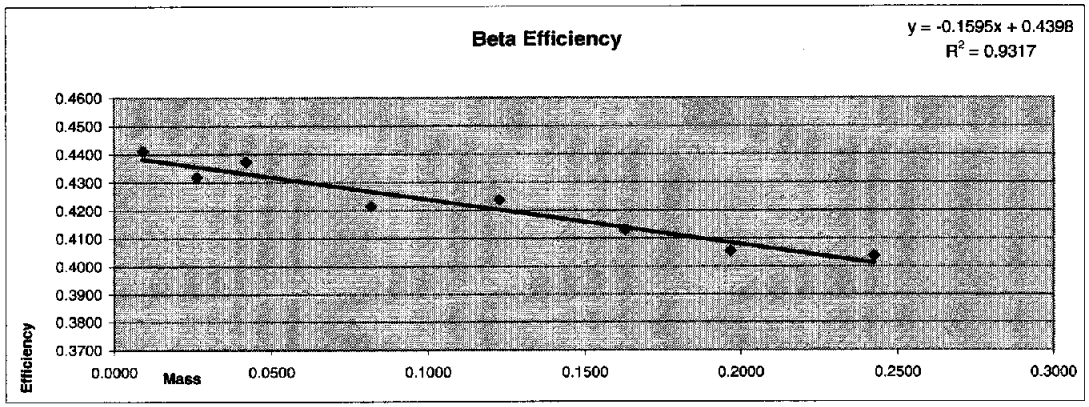
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36818	1840.900	0.45466
B12	0.0264	20	36386	1819.300	0.44932
B13	0.0425	20	36089	1804.450	0.44565
B14	0.0809	20	34199	1709.950	0.42231
B15	0.1227	20	34271	1713.550	0.42320
B16	0.1647	20	32889	1644.450	0.40614
B17	0.2003	20	32319	1615.950	0.39910
B18	0.2429	20	32795	1639.750	0.40498

Beta Attenuation Red C2
Set 2 2/28/2007

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4047 CPM	Sr-90 Eff
B21	0.0091	20	34591	1729.550	0.42737
B22	0.0265	20	33549	1677.450	0.41449
B23	0.0415	20	34714	1735.700	0.42889
B24	0.0830	20	34049	1702.450	0.42067
B25	0.1230	20	34338	1716.900	0.42424
B26	0.1611	20	33987	1699.350	0.41990
B27	0.1932	20	33331	1666.550	0.41180
B28	0.2421	20	32585	1629.250	0.40258

Red C2

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4547	0.4274	0.4410	3.09%	-3.09%
0.0264	0.0265	0.0265	0.4493	0.4145	0.4319	4.03%	-4.03%
0.0425	0.0415	0.0420	0.4457	0.4289	0.4373	1.92%	-1.92%
0.0809	0.0830	0.0820	0.4223	0.4207	0.4215	0.20%	-0.20%
0.1227	0.1230	0.1229	0.4232	0.4242	0.4237	-0.12%	0.12%
0.1647	0.1611	0.1629	0.4061	0.4199	0.4130	-1.67%	1.67%
0.2003	0.1932	0.1968	0.3991	0.4118	0.4054	-1.57%	1.57%
0.2429	0.2421	0.2425	0.4050	0.4026	0.4038	0.30%	-0.30%



Beta Attenuation Red C3
Set 1 2/20/2007

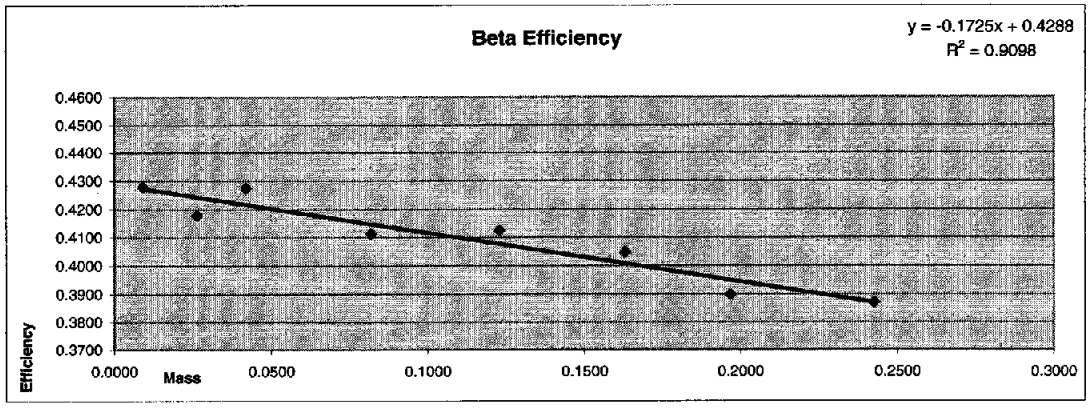
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	35516	1775.800	0.43858
B12	0.0264	20	35358	1767.900	0.43663
B13	0.0425	20	35243	1762.150	0.43521
B14	0.0809	20	33214	1660.700	0.41015
B15	0.1227	20	33470	1673.500	0.41331
B16	0.1647	20	32308	1615.400	0.39896
B17	0.2003	20	31172	1558.600	0.38493
B18	0.2429	20	31341	1567.050	0.38702

Beta Attenuation Red C3
Set 2 2/28/2007

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4047 CPM	Sr-90 Eff
B21	0.0091	20	33752	1687.600	0.41700
B22	0.0265	20	32318	1615.900	0.39928
B23	0.0415	20	33953	1697.650	0.41948
B24	0.0830	20	33375	1668.750	0.41234
B25	0.1230	20	33306	1665.300	0.41149
B26	0.1611	20	33210	1660.500	0.41030
B27	0.1932	20	31939	1596.950	0.39460
B28	0.2421	20	31319	1565.950	0.38694

Red C3

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4386	0.4170	0.4278	2.52%	-2.52%
0.0264	0.0265	0.0265	0.4366	0.3993	0.4180	4.47%	-4.47%
0.0425	0.0415	0.0420	0.4352	0.4195	0.4273	1.84%	-1.84%
0.0809	0.0830	0.0820	0.4102	0.4123	0.4112	-0.27%	0.27%
0.1227	0.1230	0.1229	0.4133	0.4115	0.4124	0.22%	-0.22%
0.1647	0.1611	0.1629	0.3990	0.4103	0.4046	-1.40%	1.40%
0.2003	0.1932	0.1968	0.3849	0.3946	0.3898	-1.24%	1.24%
0.2429	0.2421	0.2425	0.3870	0.3869	0.3870	0.01%	-0.01%



Beta Attenuation Red C4
Set 1 2/20/2007

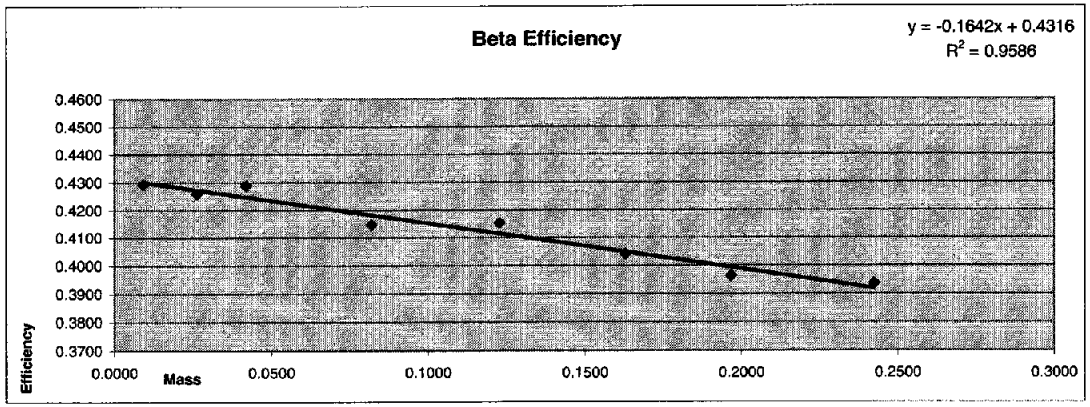
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	35706	1785.300	0.44092
B12	0.0264	20	35907	1795.350	0.44341
B13	0.0425	20	35606	1780.300	0.43969
B14	0.0809	20	33692	1684.600	0.41605
B15	0.1227	20	33731	1686.550	0.41653
B16	0.1647	20	32292	1614.600	0.39877
B17	0.2003	20	31840	1592.000	0.39318
B18	0.2429	20	31816	1590.800	0.39289

Beta Attenuation Red C4
Set 2 2/28/2007

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4047 CPM	Sr-90 Eff
B21	0.0091	20	33789	1689.450	0.41746
B22	0.0265	20	33056	1652.800	0.40840
B23	0.0415	20	33832	1691.600	0.41799
B24	0.0830	20	33453	1672.650	0.41331
B25	0.1230	20	33489	1674.450	0.41375
B26	0.1611	20	33134	1656.700	0.40936
B27	0.1932	20	32316	1615.800	0.39926
B28	0.2421	20	31918	1595.900	0.39434

Red C4

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4409	0.4175	0.4292	2.73%	-2.73%
0.0264	0.0265	0.0265	0.4434	0.4084	0.4259	4.11%	-4.11%
0.0425	0.0415	0.0420	0.4397	0.4180	0.4288	2.53%	-2.53%
0.0809	0.0830	0.0820	0.4161	0.4133	0.4147	0.33%	-0.33%
0.1227	0.1230	0.1229	0.4165	0.4138	0.4151	0.34%	-0.34%
0.1647	0.1611	0.1629	0.3988	0.4094	0.4041	-1.31%	1.31%
0.2003	0.1932	0.1968	0.3932	0.3993	0.3962	-0.77%	0.77%
0.2429	0.2421	0.2425	0.3929	0.3943	0.3936	-0.18%	0.18%



Beta Attenuation Red D1
Set 1 2/20/2007

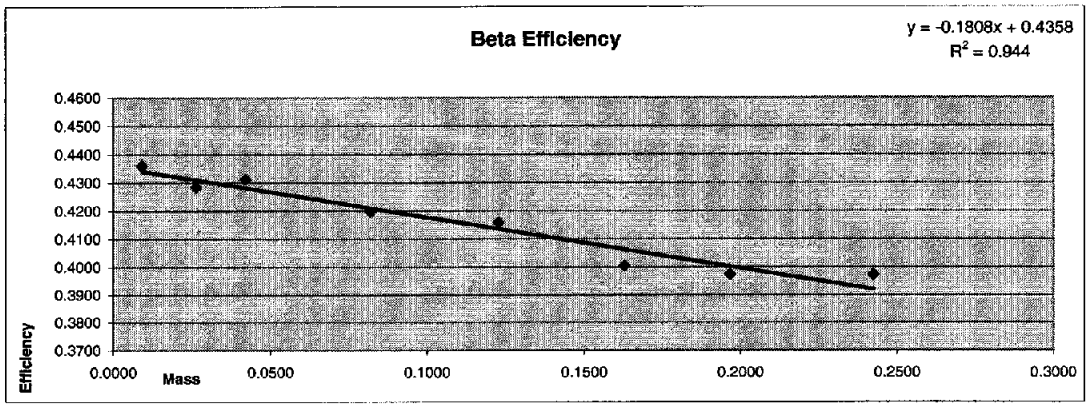
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36492	1824.600	0.45063
B12	0.0264	20	36171	1808.550	0.44667
B13	0.0425	20	35442	1772.100	0.43766
B14	0.0809	20	34013	1700.650	0.42002
B15	0.1227	20	33794	1689.700	0.41731
B16	0.1647	20	32781	1639.050	0.40480
B17	0.2003	20	31870	1593.500	0.39355
B18	0.2429	20	32080	1604.000	0.39615

Beta Attenuation Red D1
Set 2 2/28/2007

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4047 CPM	Sr-90 Eff
B21	0.0091	20	34113	1705.650	0.42146
B22	0.0265	20	33200	1660.000	0.41018
B23	0.0415	20	34391	1719.550	0.42489
B24	0.0830	20	33941	1697.050	0.41934
B25	0.1230	20	33550	1677.500	0.41450
B26	0.1611	20	32037	1601.850	0.39581
B27	0.1932	20	32472	1623.600	0.40119
B28	0.2421	20	32220	1611.000	0.39807

Red D1

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4506	0.4215	0.4360	3.34%	-3.34%
0.0264	0.0265	0.0265	0.4467	0.4102	0.4284	4.26%	-4.26%
0.0425	0.0415	0.0420	0.4377	0.4249	0.4313	1.48%	-1.48%
0.0809	0.0830	0.0820	0.4200	0.4193	0.4197	0.08%	-0.08%
0.1227	0.1230	0.1229	0.4173	0.4145	0.4159	0.34%	-0.34%
0.1647	0.1611	0.1629	0.4048	0.3958	0.4003	1.12%	-1.12%
0.2003	0.1932	0.1968	0.3936	0.4012	0.3974	-0.96%	0.96%
0.2429	0.2421	0.2425	0.3961	0.3981	0.3971	-0.24%	0.24%



Beta Attenuation Red D2
Set 1 2/20/2007

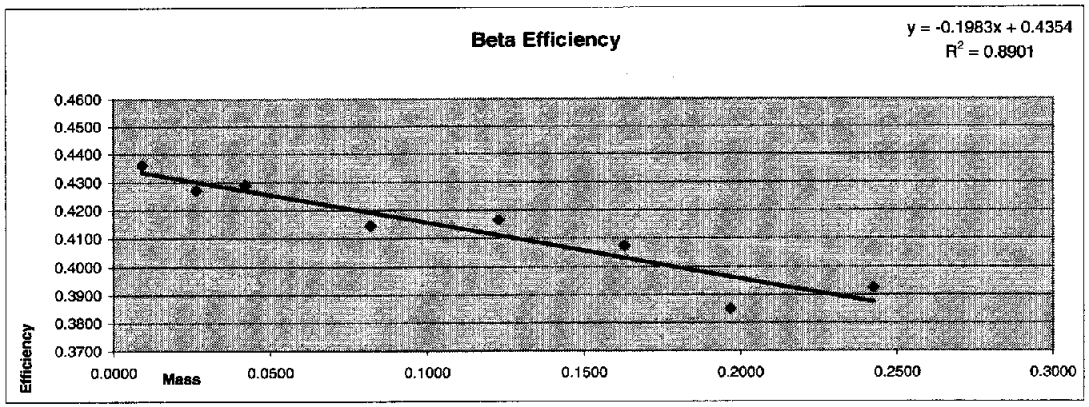
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36492	1824.600	0.45063
B12	0.0264	20	36171	1808.550	0.44667
B13	0.0425	20	35442	1772.100	0.43766
B14	0.0809	20	34013	1700.650	0.42002
B15	0.1227	20	33794	1689.700	0.41731
B16	0.1647	20	32781	1639.050	0.40480
B17	0.2003	20	31870	1593.500	0.39355
B18	0.2429	20	32080	1604.000	0.39615

Beta Attenuation Red D2
Set 2 2/28/2007

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4047 CPM	Sr-90 Eff
B21	0.0091	20	34105	1705.250	0.42136
B22	0.0265	20	32987	1649.350	0.40755
B23	0.0415	20	34014	1700.700	0.42024
B24	0.0830	20	33086	1654.300	0.40877
B25	0.1230	20	33642	1682.100	0.41564
B26	0.1611	20	33174	1658.700	0.40986
B27	0.1932	20	30463	1523.150	0.37637
B28	0.2421	20	31464	1573.200	0.38873

Red D2

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4506	0.4214	0.4360	3.36%	-3.36%
0.0264	0.0265	0.0265	0.4467	0.4075	0.4271	4.58%	-4.58%
0.0425	0.0415	0.0420	0.4377	0.4202	0.4290	2.03%	-2.03%
0.0809	0.0830	0.0820	0.4200	0.4088	0.4144	1.36%	-1.36%
0.1227	0.1230	0.1229	0.4173	0.4156	0.4165	0.20%	-0.20%
0.1647	0.1611	0.1629	0.4048	0.4099	0.4073	-0.62%	0.62%
0.2003	0.1932	0.1968	0.3936	0.3764	0.3850	2.23%	-2.23%
0.2429	0.2421	0.2425	0.3961	0.3887	0.3924	0.94%	-0.94%



Beta Attenuation Red D3
Set 1 2/20/2007

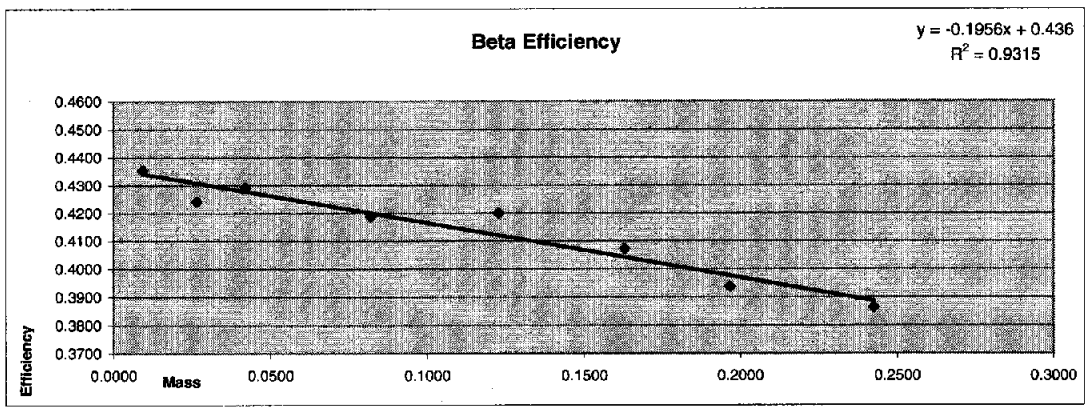
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36168	1808.400	0.44663
B12	0.0264	20	35426	1771.300	0.43747
B13	0.0425	20	35378	1768.900	0.43687
B14	0.0809	20	34054	1702.700	0.42052
B15	0.1227	20	34143	1707.150	0.42162
B16	0.1647	20	32519	1625.950	0.40157
B17	0.2003	20	31724	1586.200	0.39175
B18	0.2429	20	32163	1608.150	0.39717

Beta Attenuation Red D3
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4047 CPM	Sr-90 Eff
B21	0.0091	20	34339	1716.950	0.42425
B22	0.0265	20	33265	1663.250	0.41098
B23	0.0415	20	34115	1705.750	0.42149
B24	0.0830	20	33751	1687.550	0.41699
B25	0.1230	20	33861	1693.050	0.41835
B26	0.1611	20	33421	1671.050	0.41291
B27	0.1932	20	32016	1600.800	0.39555
B28	0.2421	20	30391	1519.550	0.37548

Red D3

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4466	0.4243	0.4354	2.57%	-2.57%
0.0264	0.0265	0.0265	0.4375	0.4110	0.4242	3.12%	-3.12%
0.0425	0.0415	0.0420	0.4369	0.4215	0.4292	1.79%	-1.79%
0.0809	0.0830	0.0820	0.4205	0.4170	0.4188	0.42%	-0.42%
0.1227	0.1230	0.1229	0.4216	0.4183	0.4200	0.39%	-0.39%
0.1647	0.1611	0.1629	0.4016	0.4129	0.4072	-1.39%	1.39%
0.2003	0.1932	0.1968	0.3918	0.3956	0.3937	-0.48%	0.48%
0.2429	0.2421	0.2425	0.3972	0.3755	0.3863	2.81%	-2.81%



Beta Attenuation Red D4
Set 1 2/20/2007

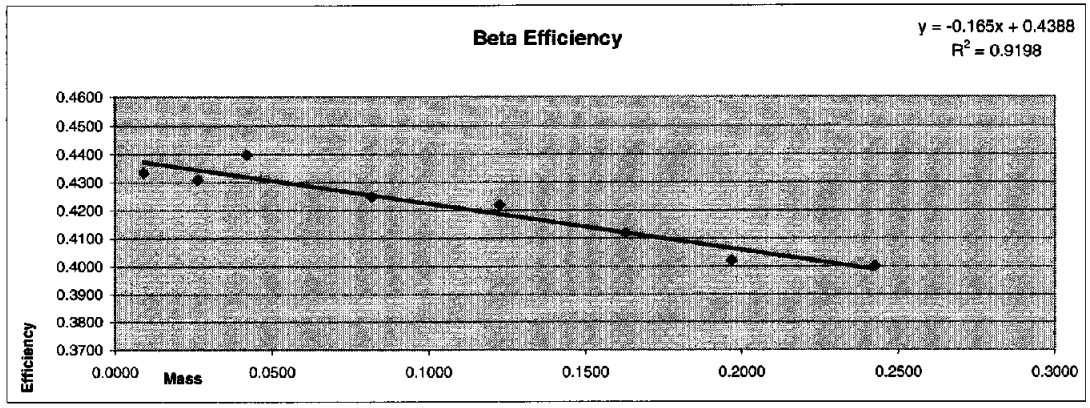
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4049 CPM	Sr-90 Eff
B11	0.0093	20	36834	1841.700	0.45485
B12	0.0264	20	36252	1812.600	0.44767
B13	0.0425	20	36452	1822.600	0.45014
B14	0.0809	20	34339	1716.950	0.42404
B15	0.1227	20	34119	1705.950	0.42133
B16	0.1647	20	32938	1646.900	0.40674
B17	0.2003	20	32132	1606.600	0.39679
B18	0.2429	20	32653	1632.650	0.40322

Beta Attenuation Red D4
Set 2

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4047 CPM	Sr-90 Eff
B21	0.0091	20	33363	1668.150	0.41219
B22	0.0265	20	33515	1675.750	0.41407
B23	0.0415	20	34758	1737.900	0.42943
B24	0.0830	20	34434	1721.700	0.42543
B25	0.1230	20	34169	1708.450	0.42215
B26	0.1611	20	33747	1687.350	0.41694
B27	0.1932	20	32970	1648.500	0.40734
B28	0.2421	20	32139	1606.950	0.39707

Red D4

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency	Percent Δ Efficiency Set 1	Percent Δ Efficiency Set 2
0.0093	0.0091	0.0092	0.4549	0.4122	0.4335	4.92%	-4.92%
0.0264	0.0265	0.0265	0.4477	0.4141	0.4309	3.90%	-3.90%
0.0425	0.0415	0.0420	0.4501	0.4294	0.4398	2.35%	-2.35%
0.0809	0.0830	0.0820	0.4240	0.4254	0.4247	-0.16%	0.16%
0.1227	0.1230	0.1229	0.4213	0.4222	0.4217	-0.10%	0.10%
0.1647	0.1611	0.1629	0.4067	0.4169	0.4118	-1.24%	1.24%
0.2003	0.1932	0.1968	0.3968	0.4073	0.4021	-1.31%	1.31%
0.2429	0.2421	0.2425	0.4032	0.3971	0.4001	0.77%	-0.77%

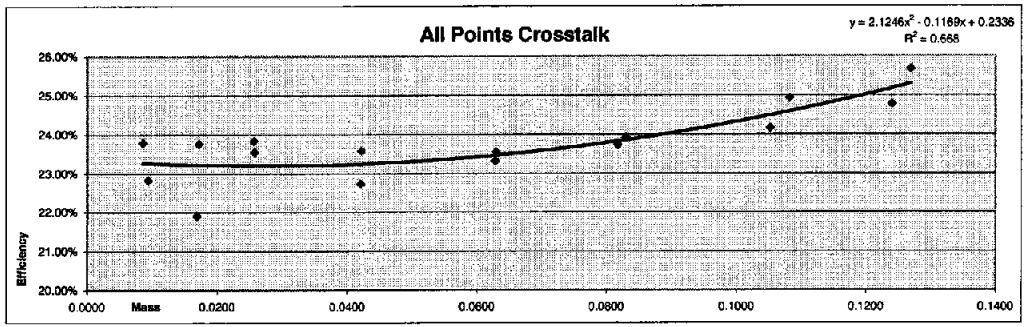


TestAmerica STL

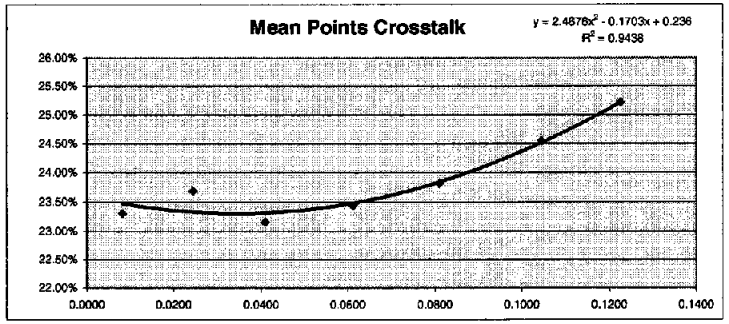
Red 2007

Crosstalk Correction Curves

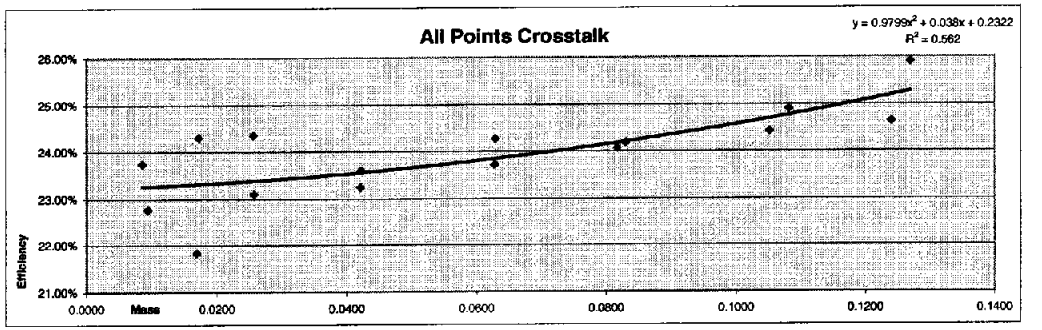
Red A1 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	35745	10574	893.63	264.35	22.83%	Min
0	A12	0.0169	40.00	38711	10857	967.78	271.43	21.90%	21.90%
0	A13	0.0257	40.00	27785	8558	694.63	213.95	23.55%	
0	A14	0.0421	40.00	26048	7663	651.20	191.58	22.73%	Max
0	A15	0.0629	40.00	19799	6101	494.98	152.53	23.56%	25.68%
0	A16	0.0817	40.00	37913	11792	947.83	294.80	23.72%	
0	A17	0.1052	40.00	32239	10270	805.95	256.75	24.16%	Mean
0	A18	0.1240	40.00	28324	9324	708.10	233.10	24.77%	23.75%
0	A21	0.0086	40.00	32650	10189	816.25	254.73	23.76%	
0	A22	0.0172	40.00	27673	8624	691.83	215.60	23.76%	
0	A23	0.0256	40.00	26220	8205	655.50	205.13	23.83%	
0	A24	0.0422	40.00	25802	7961	645.05	199.03	23.58%	
0	A25	0.0628	40.00	23582	7175	589.55	179.38	23.33%	
0	A26	0.0830	40.00	37518	11793	937.95	294.83	23.92%	
0	A27	0.1082	40.00	32891	10924	822.28	273.10	24.93%	
0	A28	0.1269	40.00	28219	9749	705.48	243.73	25.68%	



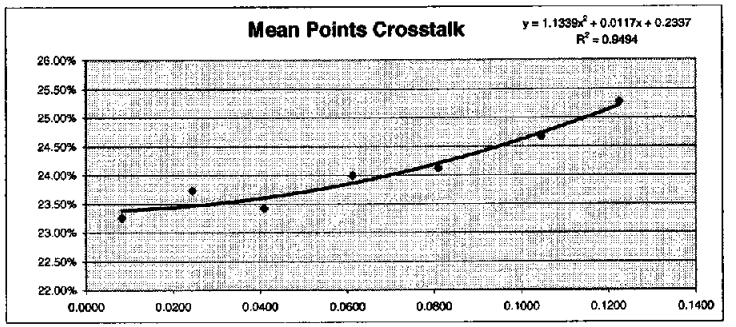
Red A1 Mean Mass	Mean % α into β	
0.0083	23.31%	Min
0.0245	23.69%	22.83%
0.0409	23.16%	Max
0.0612	23.44%	25.22%
0.0811	23.82%	Mean
0.1046	24.55%	23.75%
0.1226	25.22%	



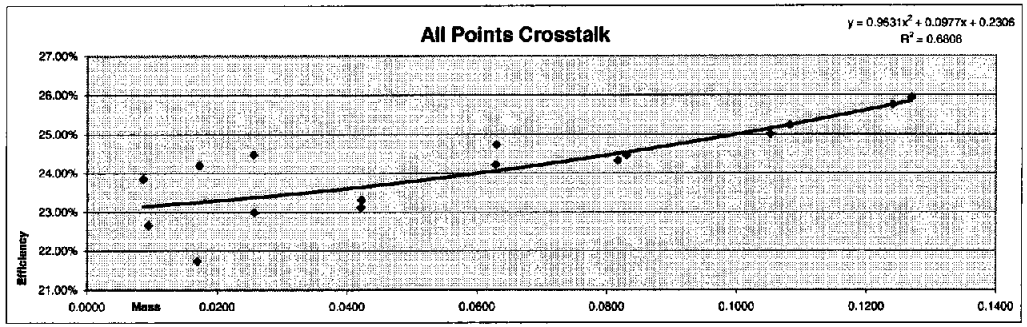
Red A2 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	34631	10207	865.78	255.18	22.76%	Min
0	A12	0.0169	40.00	38079	10632	951.98	265.80	21.83%	21.83%
0	A13	0.0257	40.00	27234	8181	680.85	204.53	23.10%	
0	A14	0.0421	40.00	25024	7578	625.60	189.45	23.24%	Max
0	A15	0.0629	40.00	19303	6186	482.58	154.65	24.27%	25.90%
0	A16	0.0817	40.00	36805	11662	920.13	291.55	24.06%	
0	A17	0.1052	40.00	30735	9933	768.38	248.33	24.42%	Mean
0	A18	0.1240	40.00	27563	9015	689.08	225.38	24.65%	23.94%
0	A21	0.0086	40.00	32366	10079	809.15	251.98	23.75%	
0	A22	0.0172	40.00	26492	8507	662.30	212.68	24.31%	
0	A23	0.0256	40.00	25568	8232	639.15	205.80	24.36%	
0	A24	0.0422	40.00	24862	7685	622.05	192.13	23.60%	
0	A25	0.0628	40.00	23042	7164	576.05	179.10	23.72%	
0	A26	0.0830	40.00	36455	11629	911.38	290.73	24.18%	
0	A27	0.1082	40.00	32037	10624	800.93	265.60	24.90%	
0	A28	0.1269	40.00	27387	9573	684.68	239.33	25.90%	



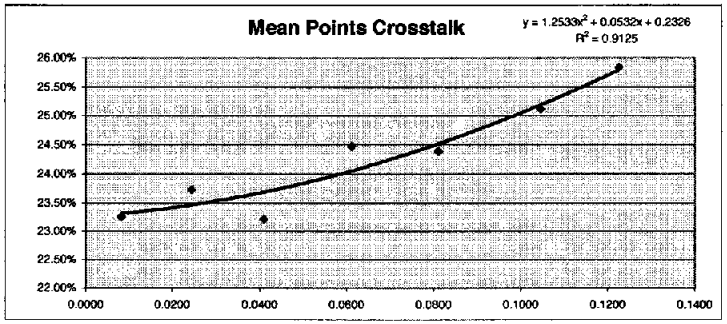
Red A2 Mean Mass	Mean % α into β	
0.0083	23.26%	Min
0.0245	23.73%	23.07%
0.0409	23.42%	Max
0.0612	23.99%	25.27%
0.0811	24.12%	Mean
0.1046	24.66%	23.94%
0.1226	25.27%	



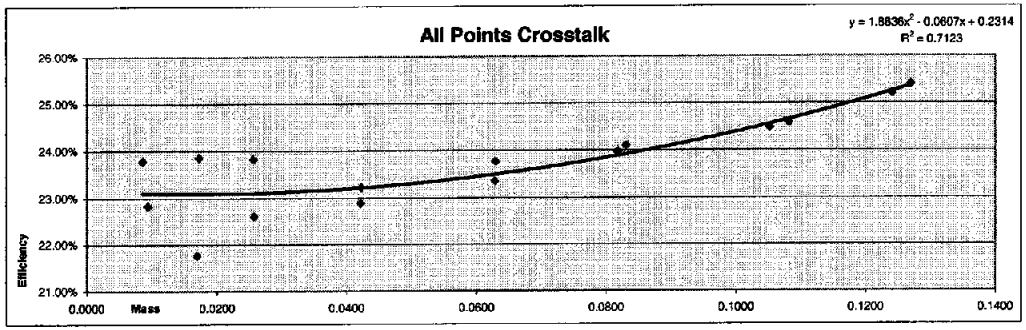
Red A3 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	34219	10029	855.48	250.73	22.67%	Min
0	A12	0.0169	40.00	37272	10346	931.80	258.65	21.73%	21.73%
0	A13	0.0257	40.00	26862	8020	671.55	200.50	22.99%	
0	A14	0.0421	40.00	24550	7382	613.75	184.55	23.12%	Max
0	A15	0.0629	40.00	18535	6086	463.38	152.20	24.72%	25.93%
0	A16	0.0817	40.00	35209	11310	880.23	282.75	24.31%	
0	A17	0.1052	40.00	29901	9968	747.53	249.20	25.00%	Mean
0	A18	0.1240	40.00	25821	8954	645.53	223.85	25.75%	24.12%
0	A21	0.0085	40.00	31329	9811	783.23	245.28	23.85%	
0	A22	0.0172	40.00	25963	8285	649.08	207.13	24.19%	
0	A23	0.0256	40.00	24528	7947	613.20	198.68	24.47%	
0	A24	0.0422	40.00	24295	7384	607.38	184.60	23.31%	
0	A25	0.0628	40.00	22223	7102	555.58	177.55	24.22%	
0	A26	0.0830	40.00	34783	11262	869.58	281.55	24.46%	
0	A27	0.1082	40.00	30886	10423	772.15	260.58	25.23%	
0	A28	0.1269	40.00	26628	9324	665.70	233.10	25.93%	



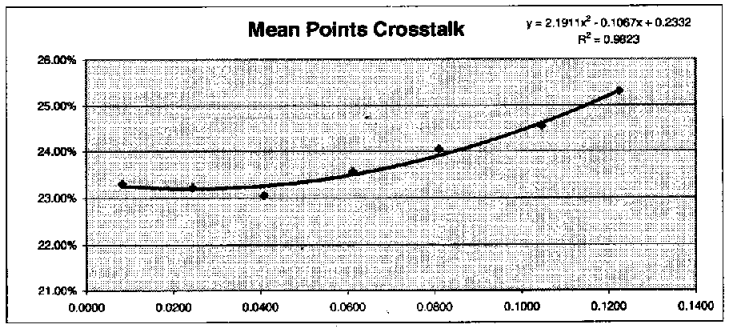
Red A3 Mean Mass	Mean % α into β	
0.0083	23.26%	Min
0.0245	23.73%	22.96%
0.0409	23.21%	Max
0.0612	24.47%	25.84%
0.0811	24.39%	Mean
0.1046	25.12%	24.12%
0.1226	25.84%	



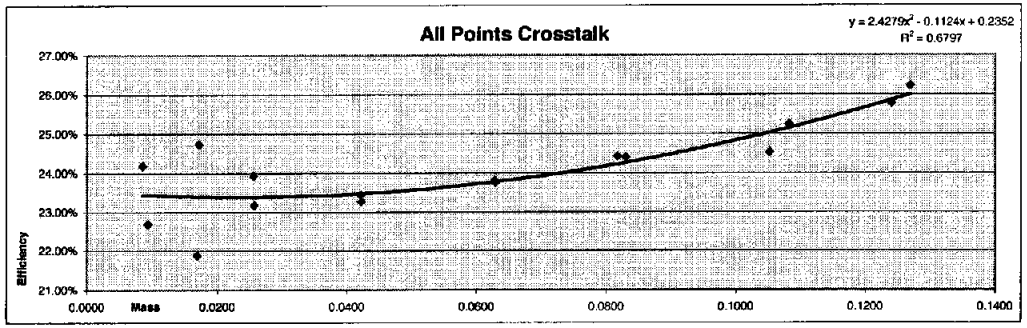
Red A4 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	34593	10233	864.83	255.83	22.83%	Min
0	A12	0.0169	40.00	38096	10593	952.40	264.83	21.76%	21.76%
0	A13	0.0257	40.00	27725	8100	693.13	202.50	22.61%	
0	A14	0.0421	40.00	25428	7546	635.70	188.65	22.88%	Max
0	A15	0.0629	40.00	19354	6033	483.85	150.83	23.76%	25.39%
0	A16	0.0817	40.00	36857	11618	921.43	290.45	23.97%	
0	A17	0.1052	40.00	31039	10061	775.98	251.53	24.48%	Mean
0	A18	0.1240	40.00	26757	9021	668.93	225.53	25.21%	23.73%
0	A21	0.0086	40.00	32565	10158	814.13	253.95	23.78%	
0	A22	0.0172	40.00	26997	8457	674.93	211.43	23.85%	
0	A23	0.0256	40.00	25422	7949	635.55	198.73	23.82%	
0	A24	0.0422	40.00	25015	7566	625.38	189.15	23.22%	
0	A25	0.0628	40.00	22906	6977	572.65	174.43	23.35%	
0	A26	0.0830	40.00	36161	11485	904.03	287.13	24.10%	
0	A27	0.1082	40.00	32177	10490	804.43	262.25	24.59%	
0	A28	0.1269	40.00	27495	9359	687.38	233.98	25.39%	



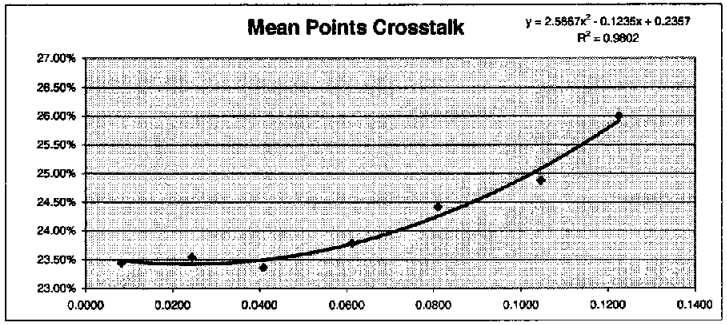
Red A4 Mean Mass	Mean % α into β	
0.0083	23.30%	Min
0.0245	23.21%	22.80%
0.0409	23.05%	Max
0.0612	23.56%	25.30%
0.0811	24.04%	Mean
0.1046	24.53%	23.73%
0.1226	25.30%	



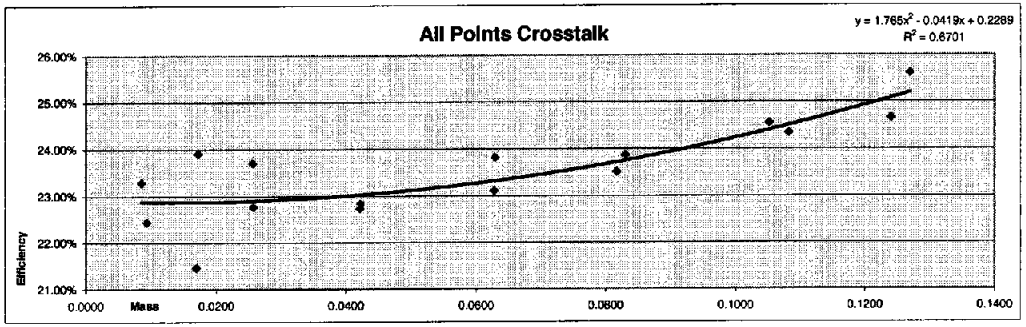
Red B1 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	34489	10125	862.23	253.13	22.69%	Min
0	A12	0.0169	40.00	37707	10562	942.68	264.05	21.88%	21.88%
0	A13	0.0257	40.00	27207	8206	680.18	205.15	23.17%	
0	A14	0.0421	40.00	24522	7510	613.05	187.75	23.45%	Max
0	A15	0.0629	40.00	19517	6083	487.93	152.08	23.76%	26.22%
0	A16	0.0817	40.00	35833	11581	895.83	289.53	24.43%	
0	A17	0.1052	40.00	30386	9872	759.65	246.80	24.52%	Mean
0	A18	0.1240	40.00	26365	9156	659.13	228.90	25.76%	24.09%
0	A21	0.0086	40.00	31749	10129	793.73	253.23	24.19%	
0	A22	0.0172	40.00	26439	8683	660.95	217.08	24.72%	
0	A23	0.0258	40.00	25150	7910	628.75	197.75	23.93%	
0	A24	0.0422	40.00	24622	7469	615.55	186.73	23.27%	
0	A25	0.0628	40.00	22538	7043	563.45	176.08	23.81%	
0	A26	0.0830	40.00	35668	11512	891.70	287.80	24.40%	
0	A27	0.1082	40.00	31291	10564	782.28	264.10	25.24%	
0	A28	0.1269	40.00	27170	9657	679.25	241.43	26.22%	



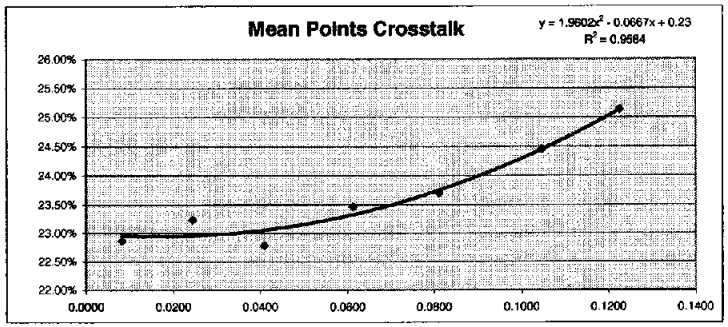
Red B1 Mean Mass	Mean % α into β	
0.0083	23.44%	Min
0.0245	23.55%	23.30%
0.0409	23.36%	Max
0.0612	23.79%	26.00%
0.0811	24.41%	Mean
0.1046	24.88%	24.09%
0.1226	26.00%	



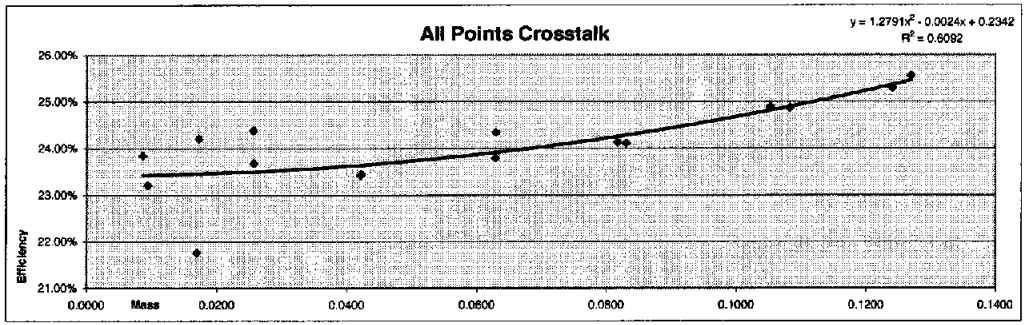
Red B2 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	34228	9897	855.70	247.43	22.43%	Min
0	A12	0.0169	40.00	37453	10238	936.33	255.95	21.47%	21.47%
0	A13	0.0257	40.00	27139	7995	678.48	199.88	22.76%	
0	A14	0.0421	40.00	24918	7328	622.95	183.20	22.73%	Max
0	A15	0.0629	40.00	18986	5937	474.65	148.43	23.82%	25.62%
0	A16	0.0817	40.00	36258	11150	906.45	278.75	23.52%	
0	A17	0.1052	40.00	30293	9857	757.33	246.43	24.56%	Mean
0	A18	0.1240	40.00	26402	8638	660.05	215.95	24.65%	23.54%
0	A21	0.0086	40.00	31667	9622	792.18	240.55	23.29%	
0	A22	0.0172	40.00	26252	8252	656.30	206.30	23.92%	
0	A23	0.0256	40.00	25168	7820	629.20	195.50	23.71%	
0	A24	0.0422	40.00	24246	7173	606.15	179.33	22.83%	
0	A25	0.0628	40.00	22365	6720	559.13	168.00	23.10%	
0	A26	0.0830	40.00	35428	11111	885.70	277.78	23.87%	
0	A27	0.1082	40.00	31419	10108	785.48	252.70	24.34%	
0	A28	0.1269	40.00	26912	9268	672.80	231.70	25.62%	



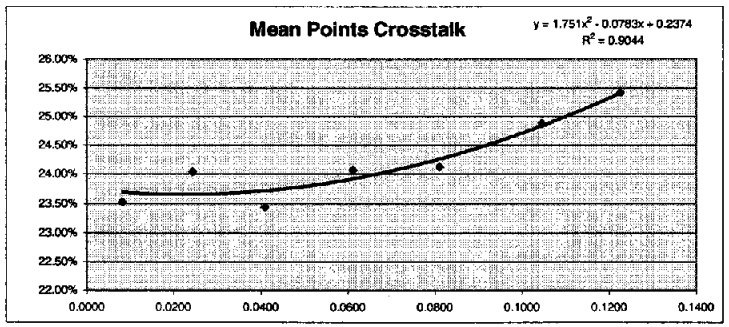
Red B2 Mean Mass	Mean % α into β	
0.0083	22.86%	Min
0.0245	23.23%	22.69%
0.0409	22.78%	Max
0.0612	23.46%	25.13%
0.0811	23.70%	Mean
0.1046	24.45%	23.54%
0.1226	25.13%	



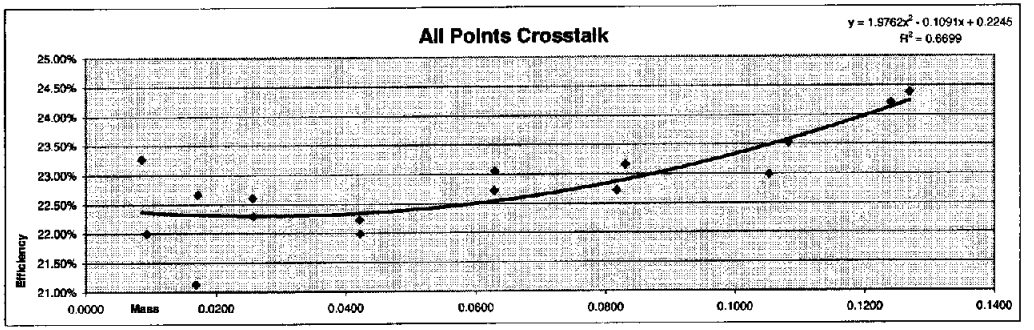
Red B3 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	33892	10243	847.30	256.08	23.21%	Min
0	A12	0.0169	40.00	37656	10474	941.40	261.85	21.76%	21.76%
0	A13	0.0257	40.00	26621	8260	665.53	206.50	23.68%	
0	A14	0.0421	40.00	24345	7445	608.63	186.13	23.42%	Max
0	A15	0.0629	40.00	18733	6029	468.33	150.73	24.35%	25.55%
0	A16	0.0817	40.00	35795	11386	894.88	284.65	24.13%	
0	A17	0.1052	40.00	29945	9923	748.63	248.08	24.89%	Mean
0	A18	0.1240	40.00	25815	8739	645.38	218.48	25.29%	24.06%
0	A21	0.0086	40.00	31517	9868	787.93	246.70	23.84%	
0	A22	0.0172	40.00	26449	8448	661.23	211.20	24.21%	
0	A23	0.0256	40.00	25043	8077	626.08	201.93	24.39%	
0	A24	0.0422	40.00	24395	7473	609.88	186.83	23.45%	
0	A25	0.0628	40.00	22381	6986	559.53	174.65	23.79%	
0	A26	0.0830	40.00	35117	11157	877.93	278.93	24.11%	
0	A27	0.1082	40.00	30900	10225	772.50	255.63	24.86%	
0	A28	0.1269	40.00	27093	9300	677.33	232.50	25.55%	



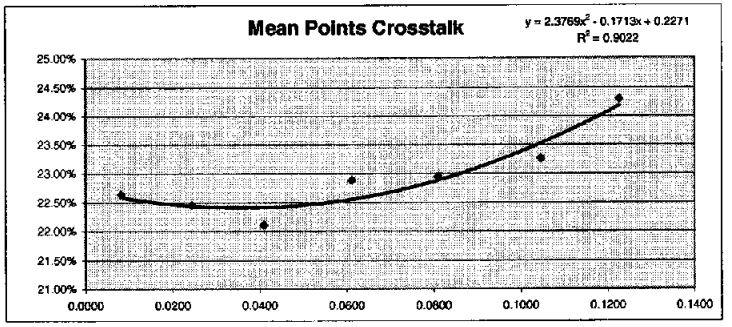
Red B3 Mean Mass	Mean % α into β	
0.0083	23.53%	Min
0.0245	24.03%	22.99%
0.0409	23.43%	Max
0.0612	24.07%	25.42%
0.0811	24.12%	Mean
0.1046	24.88%	24.06%
0.1226	25.42%	



Red B4 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	36870	10396	921.75	259.90	21.99%	Min
0	A12	0.0169	40.00	40325	10804	1008.13	270.10	21.13%	21.13%
0	A13	0.0257	40.00	29207	8379	730.18	209.48	22.29%	
0	A14	0.0421	40.00	26958	7703	673.95	192.58	22.22%	Max
0	A15	0.0629	40.00	20695	6198	517.38	154.95	23.05%	24.39%
0	A16	0.0817	40.00	39988	11757	999.70	293.93	22.72%	
0	A17	0.1052	40.00	33789	10085	844.73	252.13	22.99%	Mean
0	A18	0.1240	40.00	29359	9380	733.98	234.50	24.21%	22.81%
0	A21	0.0086	40.00	33963	10301	849.08	257.53	23.27%	
0	A22	0.0172	40.00	28672	8406	716.80	210.15	22.67%	
0	A23	0.0256	40.00	27477	8027	686.93	200.68	22.61%	
0	A24	0.0422	40.00	26784	7547	669.60	188.68	21.98%	
0	A25	0.0628	40.00	24693	7259	617.33	181.48	22.72%	
0	A26	0.0830	40.00	38672	11658	966.80	291.45	23.16%	
0	A27	0.1082	40.00	34584	10637	864.60	265.93	23.52%	
0	A28	0.1269	40.00	29952	9661	748.80	241.53	24.39%	

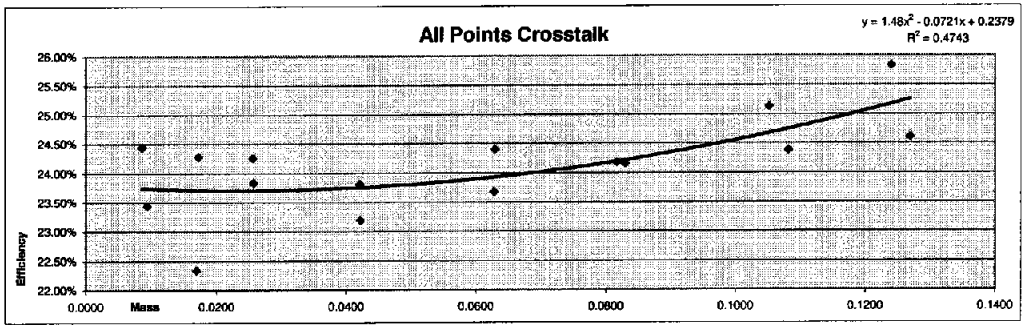


Red B4 Mean Mass	Mean % α into β	
0.0083	22.63%	Min
0.0245	22.45%	21.90%
0.0409	22.10%	Max
0.0612	22.88%	24.30%
0.0811	22.94%	Mean
0.1046	23.25%	22.81%
0.1226	24.30%	

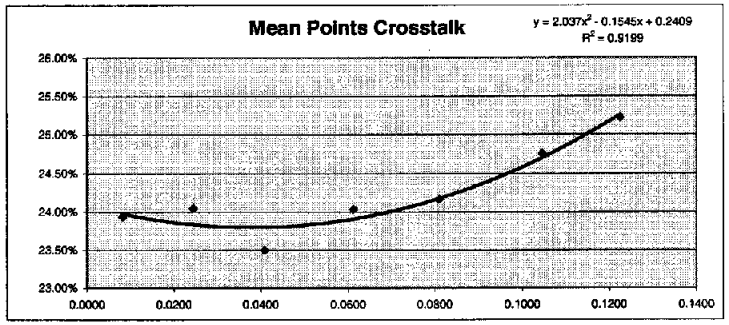


Red C1

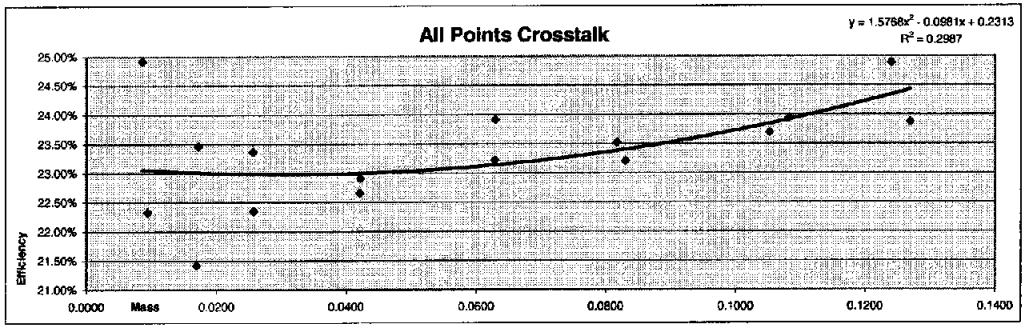
Red C1 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	34400	10531	860.00	263.28	23.44%	Min
0	A12	0.0169	40.00	37862	10892	946.55	272.30	22.34%	22.34%
0	A13	0.0257	40.00	27197	8511	679.93	212.78	23.83%	
0	A14	0.0421	40.00	24720	7726	618.00	193.15	23.81%	Max
0	A15	0.0629	40.00	18852	6083	471.30	152.08	24.40%	25.83%
0	A16	0.0817	40.00	36495	11636	912.38	290.90	24.18%	
0	A17	0.1052	40.00	30705	10306	767.63	257.65	25.13%	Mean
0	A18	0.1240	40.00	26877	9361	671.93	234.03	25.83%	24.12%
0	A21	0.0086	40.00	31275	10115	781.88	252.88	24.44%	
0	A22	0.0172	40.00	26242	8414	656.05	210.35	24.28%	
0	A23	0.0256	40.00	25308	8105	632.70	202.63	24.26%	
0	A24	0.0422	40.00	24805	7489	620.13	187.23	23.19%	
0	A25	0.0628	40.00	22991	7131	574.78	178.28	23.67%	
0	A26	0.0830	40.00	36530	11631	913.25	290.78	24.15%	
0	A27	0.1082	40.00	36483	11764	912.08	294.10	24.38%	
0	A28	0.1269	40.00	32625	10646	815.63	266.15	24.60%	



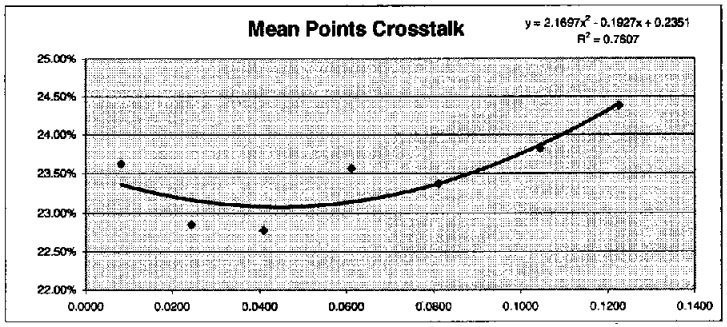
Red C1 Mean Mass	Mean % α into β	
0.0083	23.94%	Min
0.0245	24.05%	23.31%
0.0409	23.50%	Max
0.0612	24.03%	25.22%
0.0811	24.16%	Mean
0.1048	24.76%	24.12%
0.1226	25.22%	



Red C2 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	35843	10301	896.08	257.53	22.32%	Min
0	A12	0.0169	40.00	38834	10582	970.85	264.55	21.41%	21.41%
0	A13	0.0257	40.00	28848	8301	721.20	207.53	22.35%	
0	A14	0.0421	40.00	25708	7531	642.70	188.28	22.66%	Max
0	A15	0.0629	40.00	19870	6245	496.75	156.13	23.91%	24.92%
0	A16	0.0817	40.00	37448	11519	936.20	287.98	23.52%	
0	A17	0.1052	40.00	32454	10075	811.35	251.88	23.69%	Mean
0	A18	0.1240	40.00	28289	9373	707.23	234.33	24.89%	23.35%
0	A21	0.0086	40.00	29065	9647	726.63	241.18	24.92%	
0	A22	0.0172	40.00	27073	8300	676.83	207.50	23.46%	
0	A23	0.0256	40.00	26428	8058	660.70	201.45	23.37%	
0	A24	0.0422	40.00	25899	7694	647.48	192.35	22.90%	
0	A25	0.0628	40.00	24049	7274	601.23	181.85	23.22%	
0	A26	0.0830	40.00	37778	11417	944.45	285.43	23.21%	
0	A27	0.1082	40.00	33625	10582	840.63	264.55	23.94%	
0	A28	0.1269	40.00	33706	10569	842.65	264.23	23.87%	

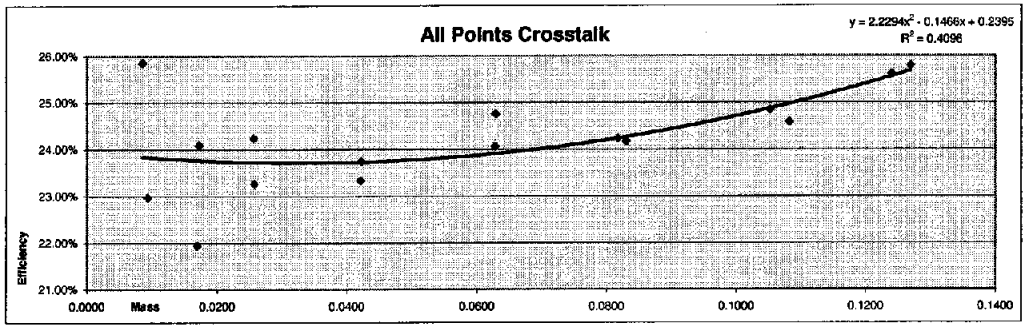


Red C2 Mean Mass	Mean % α into β	
0.0083	23.62%	Min
0.0245	22.86%	22.44%
0.0409	22.78%	Max
0.0612	23.57%	24.38%
0.0811	23.37%	Mean
0.1046	23.81%	23.35%
0.1226	24.38%	

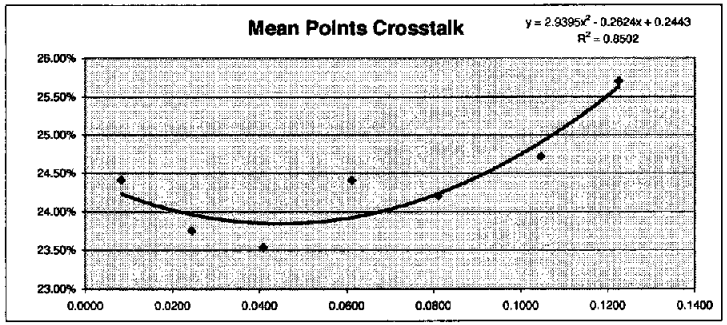


Red C3

Red C3 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	33301	9932	832.53	248.30	22.97%	Min
0	A12	0.0169	40.00	36527	10263	913.18	256.58	21.93%	21.93%
0	A13	0.0257	40.00	26268	7964	656.70	199.10	23.26%	
0	A14	0.0421	40.00	24104	7336	602.60	183.40	23.33%	Max
0	A15	0.0629	40.00	18012	5926	450.30	148.15	24.76%	25.86%
0	A16	0.0817	40.00	35016	11199	875.40	279.98	24.23%	
0	A17	0.1052	40.00	28950	9571	723.75	239.28	24.85%	Mean
0	A18	0.1240	40.00	25436	8758	635.90	218.95	25.61%	24.22%
0	A21	0.0086	40.00	26441	9221	661.03	230.53	25.86%	
0	A22	0.0172	40.00	31072	9862	776.80	246.55	24.09%	
0	A23	0.0256	40.00	24341	7790	608.53	194.75	24.24%	
0	A24	0.0422	40.00	23799	7411	594.98	185.28	23.75%	
0	A25	0.0628	40.00	21669	6866	541.73	171.65	24.06%	
0	A26	0.0830	40.00	34778	11089	869.45	277.23	24.18%	
0	A27	0.1082	40.00	30807	10042	770.18	251.05	24.58%	
0	A28	0.1269	40.00	26558	9228	663.95	230.70	25.79%	

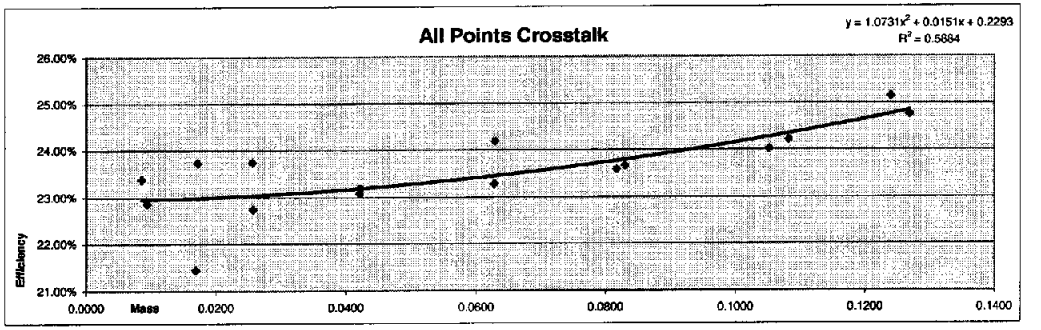


Red C3 Mean Mass	Mean % α into β	
0.0083	24.41%	Min
0.0245	23.75%	23.01%
0.0409	23.54%	Max
0.0612	24.41%	25.70%
0.0811	24.20%	Mean
0.1046	24.71%	24.22%
0.1226	25.70%	

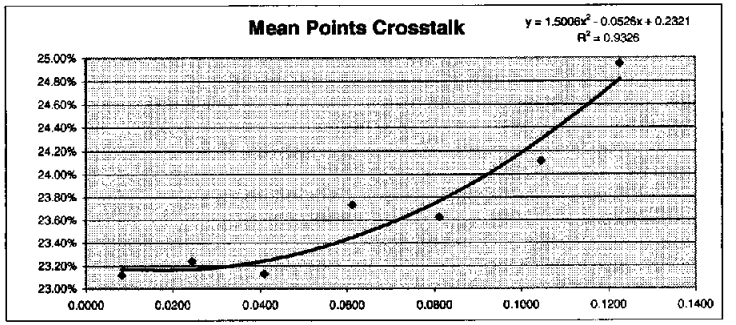


Red C4

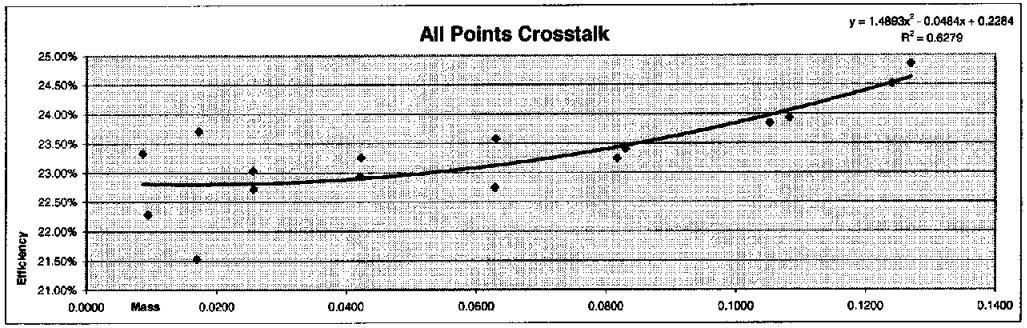
Red C4 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	34460	10211	861.50	255.28	22.86%	Min
0	A12	0.0169	40.00	37771	10305	944.28	257.63	21.43%	21.43%
0	A13	0.0257	40.00	27241	8016	681.03	200.40	22.74%	
0	A14	0.0421	40.00	24859	7455	621.48	186.38	23.07%	Max
0	A15	0.0629	40.00	18747	5982	468.68	149.55	24.19%	25.14%
0	A16	0.0817	40.00	36298	11204	907.45	280.10	23.59%	
0	A17	0.1052	40.00	30655	9689	766.36	242.23	24.02%	Mean
0	A18	0.1240	40.00	26777	8994	669.43	224.85	25.14%	23.56%
0	A21	0.0086	40.00	32665	9967	816.63	249.18	23.38%	
0	A22	0.0172	40.00	32217	10025	805.43	250.63	23.73%	
0	A23	0.0256	40.00	26569	8273	664.23	206.83	23.74%	
0	A24	0.0422	40.00	24373	7359	609.33	183.98	23.19%	
0	A25	0.0628	40.00	22847	6933	571.18	173.33	23.28%	
0	A26	0.0830	40.00	35913	11131	897.83	278.28	23.66%	
0	A27	0.1082	40.00	32001	10224	800.03	255.60	24.21%	
0	A28	0.1269	40.00	27809	9151	695.23	228.78	24.76%	



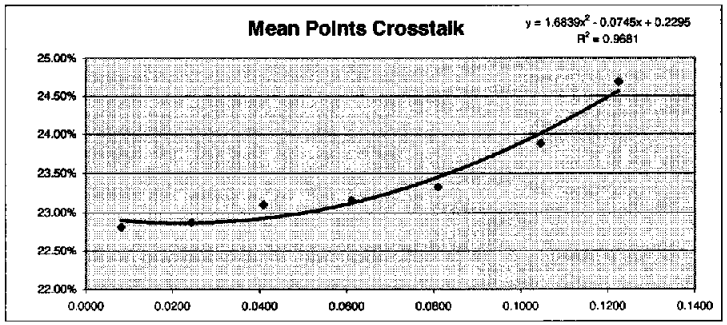
Red C4 Mean Mass	Mean % α into β	
0.0083	23.12%	Min
0.0245	23.24%	22.58%
0.0409	23.13%	Max
0.0612	23.74%	24.95%
0.0811	23.62%	Mean
0.1046	24.11%	23.56%
0.1226	24.95%	



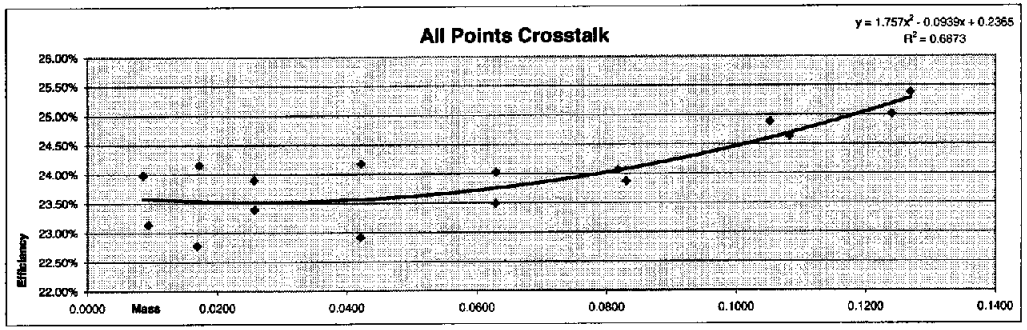
Red D1 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	33615	9640	840.38	241.00	22.29%	Min
0	A12	0.0169	40.00	37627	10324	940.68	258.10	21.53%	21.53%
0	A13	0.0257	40.00	28030	8241	700.75	206.03	22.72%	
0	A14	0.0421	40.00	25823	7685	645.58	192.13	22.93%	Max
0	A15	0.0629	40.00	19905	6142	497.63	153.55	23.58%	24.85%
0	A16	0.0817	40.00	37645	11401	941.13	285.03	23.25%	
0	A17	0.1052	40.00	31994	10015	799.85	250.38	23.84%	Mean
0	A18	0.1240	40.00	28013	9098	700.33	227.45	24.52%	23.31%
0	A21	0.0086	40.00	33714	10264	842.85	256.60	23.34%	
0	A22	0.0172	40.00	27629	8587	690.73	214.68	23.71%	
0	A23	0.0256	40.00	27990	8375	699.75	209.38	23.03%	
0	A24	0.0422	40.00	26457	8020	661.43	200.50	23.26%	
0	A25	0.0628	40.00	23698	7034	597.45	175.85	22.74%	
0	A26	0.0830	40.00	37824	11561	945.60	289.03	23.41%	
0	A27	0.1082	40.00	33579	10561	839.48	264.03	23.93%	
0	A28	0.1269	40.00	29047	9606	726.18	240.15	24.85%	



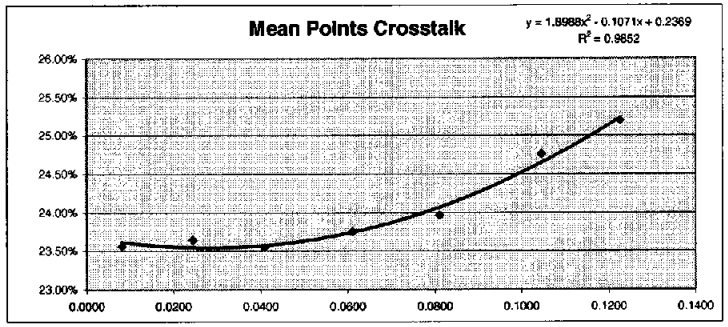
Red D1 Mean Mass	Mean % α into β	
0.0083	22.81%	Min
0.0245	22.88%	22.62%
0.0409	23.10%	Max
0.0612	23.16%	24.68%
0.0811	23.33%	Mean
0.1046	23.88%	23.31%
0.1226	24.68%	



Red D2 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	34185	10291	854.63	257.28	23.14%	Min
0	A12	0.0169	40.00	35278	10405	881.95	260.13	22.78%	22.78%
0	A13	0.0257	40.00	26366	8049	659.15	201.23	23.39%	
0	A14	0.0421	40.00	25048	7448	626.20	186.20	22.92%	Max
0	A15	0.0629	40.00	19363	6122	484.08	153.05	24.02%	25.38%
0	A16	0.0817	40.00	36555	11582	913.88	289.55	24.06%	
0	A17	0.1052	40.00	30601	10133	765.03	253.33	24.88%	Mean
0	A18	0.1240	40.00	26880	8965	672.00	224.13	25.01%	23.99%
0	A21	0.0086	40.00	32233	10169	805.83	254.23	23.98%	
0	A22	0.0172	40.00	26758	8523	668.95	213.08	24.16%	
0	A23	0.0256	40.00	25474	7999	636.85	199.98	23.90%	
0	A24	0.0422	40.00	25455	8117	636.38	202.93	24.18%	
0	A25	0.0628	40.00	25118	7711	627.95	192.78	23.49%	
0	A26	0.0830	40.00	36313	11384	907.83	284.60	23.87%	
0	A27	0.1082	40.00	32312	10562	807.80	264.05	24.63%	
0	A28	0.1269	40.00	27983	9516	699.58	237.90	25.38%	

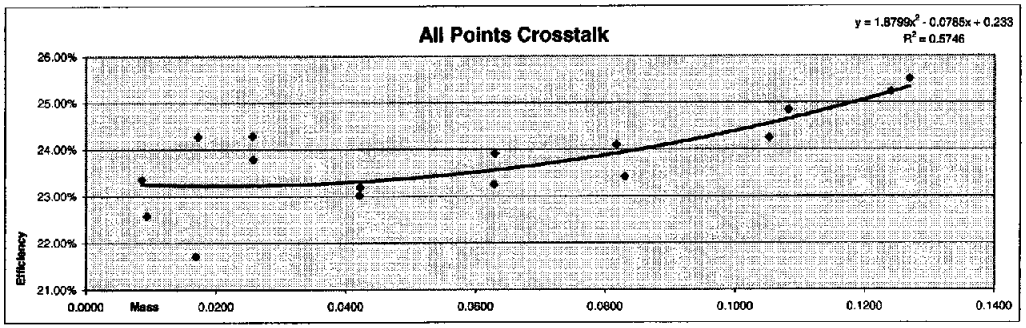


Red D2 Mean Mass	Mean % α into β	
0.0083	23.56%	Min
0.0245	23.64%	23.47%
0.0409	23.55%	Max
0.0612	23.76%	25.19%
0.0811	23.96%	Mean
0.1046	24.76%	23.99%
0.1226	25.19%	

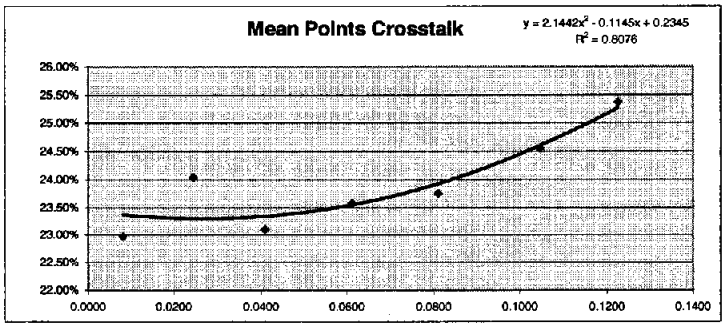


Red D3

Red D3 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	35427	10331	885.68	258.28	22.58%	Min
0	A12	0.0169	40.00	38747	10745	968.68	268.63	21.71%	21.71%
0	A13	0.0257	40.00	25892	8079	647.30	201.98	23.78%	
0	A14	0.0421	40.00	24458	7309	611.45	182.73	23.01%	Max
0	A15	0.0629	40.00	19326	6073	483.15	151.83	23.91%	25.51%
0	A16	0.0817	40.00	36581	11815	914.53	290.38	24.10%	
0	A17	0.1052	40.00	31170	9978	779.25	249.45	24.25%	Mean
0	A18	0.1240	40.00	27160	9167	679.00	229.18	25.23%	23.79%
0	A21	0.0086	40.00	32488	9897	812.20	247.43	23.35%	
0	A22	0.0172	40.00	27123	8694	678.08	217.35	24.27%	
0	A23	0.0256	40.00	25739	8260	643.48	206.50	24.29%	
0	A24	0.0422	40.00	25094	7575	627.35	189.38	23.19%	
0	A25	0.0628	40.00	24925	7549	623.13	188.73	23.25%	
0	A26	0.0830	40.00	22899	6998	572.48	174.95	23.41%	
0	A27	0.1082	40.00	32238	10657	805.95	266.43	24.84%	
0	A28	0.1269	40.00	27857	9540	696.43	238.50	25.51%	

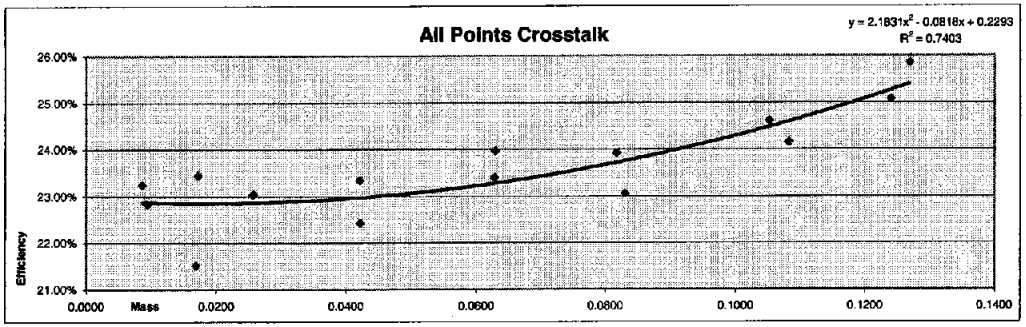


Red D3 Mean Mass	Mean % α into β	
0.0083	22.96%	Min
0.0245	24.04%	22.96%
0.0409	23.10%	Max
0.0612	23.58%	25.37%
0.0811	23.75%	Mean
0.1046	24.55%	23.79%
0.1226	25.37%	

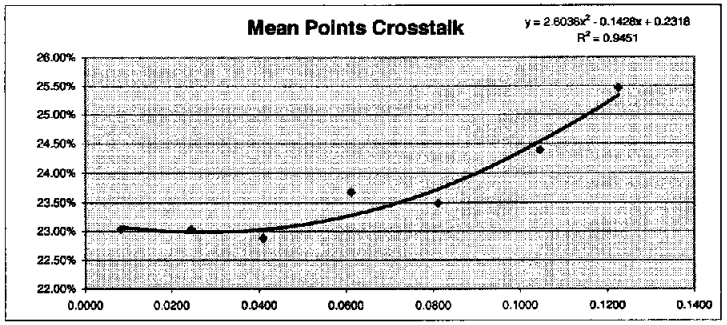


Red D4

Red D4 Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	A11	0.0094	40.00	35538	10512	888.45	262.80	22.83%	Min
0	A12	0.0169	40.00	38571	10571	964.28	264.28	21.51%	21.51%
0	A13	0.0257	40.00	27914	8358	697.85	208.95	23.04%	
0	A14	0.0421	40.00	23918	7281	597.95	182.03	23.34%	Max
0	A15	0.0629	40.00	18894	5954	472.35	148.85	23.96%	25.85%
0	A16	0.0817	40.00	37490	11788	937.25	294.70	23.92%	
0	A17	0.1052	40.00	31132	10167	778.30	254.18	24.62%	Mean
0	A18	0.1240	40.00	27415	9178	685.38	229.45	25.08%	23.56%
0	A21	0.0086	40.00	33000	9993	825.00	249.83	23.24%	
0	A22	0.0172	40.00	27885	8537	697.13	213.43	23.44%	
0	A23	0.0256	40.00	26655	7975	666.38	199.38	23.03%	
0	A24	0.0422	40.00	25937	7497	648.43	187.43	22.42%	
0	A25	0.0628	40.00	23448	7162	586.20	179.05	23.40%	
0	A26	0.0830	40.00	23594	7069	589.85	176.73	23.05%	
0	A27	0.1082	40.00	36840	11730	921.00	293.25	24.15%	
0	A28	0.1269	40.00	27990	9758	699.75	243.95	25.85%	



Red D4 Mean Mass	Mean % α into β	
0.0083	23.04%	Min
0.0245	23.04%	22.48%
0.0409	22.88%	Max
0.0612	23.68%	25.47%
0.0811	23.49%	Mean
0.1046	24.38%	23.56%
0.1226	25.47%	



SEVERN TRENT STL

2007
GFPC Red Alpha Efficiency Curves

TestAmerica STL

Calibration Standard Data

Beta calibration stds.	8/31/2005	salt solution SLRB-B		SET 1		
Beta standard, RAD04-0095, 2316.6 dpm/mL Sr/Y90 on 08/07/2001						
Std #	mLs RAD04-0095	mLs salt solution	gross mass	tare mass	reweigh 2/7/6	mass 2/7/6
1	1	0.1000	8.8980	8.8888	8.8981	0.0093
2	1	0.3000	8.9490	8.9230	8.9494	0.0264
3	1	0.5000	9.0149	8.9703	9.0128	0.0425
4	1	1.0000	9.0419	8.9602	9.0411	0.0809
5	1	1.5000	9.0033	8.8764	8.9991	0.1227
6	1	2.0000	9.0833	8.9072	9.0719	0.1647
7	1	2.5000	9.1219	8.9194	9.1197	0.2003
8	1	3.0000	9.1769	8.9241	9.167	0.2429

Alpha calibration standards		salt solution SLRB-B		SET 1		
Alpha standard, 03-071, 4567.9 dpm/mL Th-230 on 10/07/2003						
Std #	mLs 03-071	mLs salt solution	gross mass	tare mass	reweigh 3/7/7	mass 3/7/7
1	1	0.1000	8.9369	8.9273	8.9367	0.0094
2	1	0.2000	8.9958	8.9783	8.9952	0.0169
3	1	0.3000	8.9737	8.9470	8.9727	0.0257
4	1	0.5000	8.9206	8.8766	8.9187	0.0421
5	1	0.7500	8.9565	8.8888	8.9517	0.0629
6	2	1.0000	9.0043	8.9170	8.9987	0.0817
7	2	1.3000	9.0092	8.8992	9.0044	0.1052
8	2	1.5000	9.0413	8.9088	9.0328	0.1240

spiked by:	Joel Kempema	verified by:	Sarah Hurst

Alpha Beta calibration standards 9/02/05

Beta calibration stds.			salt solution SLRB-B		SET 2	
Beta standard, RAD04-0095, 1043.5 dpm/mL on 08/07/01 Sr/Y90.						
Std #	mLs RAD04-0095	mLs salt solution	gross mass	tare mass	reweigh 2/23/7	net mass 2/23/7
1	1	0.1000	8.9140	8.9056	8.9147	0.0091
2	1	0.3000	8.9197	8.8939	8.9204	0.0265
3	1	0.5000	8.8978	8.8559	8.8974	0.0415
4	1	1.0000	8.9580	8.8715	8.9545	0.0830
5	1	1.5000	9.0437	8.9139	9.0369	0.1230
6	1	2.0000	9.0249	8.8592	9.0203	0.1611
7	1	2.5000	9.1269	8.9239	9.1171	0.1932
8	1	3.0000	9.1390	8.8872	9.1293	0.2421

alpha calibration standards			salt solution SLRB-B		SET 2	
Alpha standard, 03-071, 4567.9 dpm/mL Th-230 on 12/19/02						
Std #	mLs	mLs salt solution	gross mass	tare mass	reweigh 3/7/7	mass 3/7/7
1	1	0.1000	8.9143	8.9061	8.9147	0.0086
2	1	0.2000	8.9348	8.9182	8.9354	0.0172
3	1	0.3000	8.9231	8.8980	8.9236	0.0256
4	1	0.5000	8.9518	8.9082	8.9504	0.0422
5	1	0.7500	8.9683	8.9026	8.9654	0.0628
6	2	1.0000	9.0179	8.9303	9.0133	0.0830
7	2	1.3000	8.9901	8.8763	8.9845	0.1082
8	2	1.5000	9.0533	8.9206	9.0475	0.1269
spiked by:	Joel Kempema		verified by:	N/A		

alpha beta standards second set

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

65090-334

Th-230 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by liquid scintillation counting.

Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Th-230
ACTIVITY (dps):	7.654 E3
HALF-LIFE:	7.538 E4 Years
CALIBRATION DATE:	December 19, 2002 12:00 EST
TOTAL UNCERTAINTY*:	3.5%
SYSTEMATIC:	2.6%
RANDOM:	0.9%

*99% Confidence Level

Impurities: γ-impurities <0.1%, α-impurities <0.05%

5.17738 grams 0.5M HNO_3 solution.

P O NUMBER 1614557-000 OP, Item 3

SOURCE PREPARED BY: M. D. Currie for
M. Taskaeva, Radiochemist

Q A APPROVED: 12-19-02

STL St. Louis

Standards Preparation Logbook Record

Jan-05-2006

Logbook: \\Qstlmo01\Stdslog\RAD_STD.std

RAD03-0085, Th 230 03-071 Analyst: hicksb

Vendor: Analytics
Solvent: 0.5M HNO3
Date Prep./Opened: 10-07-2003 Date Received: 12-19-2002
Date Expires(1): 10-07-2008 (5 Years)
Date Expires(2): 10-07-2008 (5 Years)
parent, vial# 65090-334

Component	Initial Conc (dpm/mL)	Final Conc (dpm/mL)
Th230	4,567.9	4,567.9

RAD06-0001, Th-230 Analyst: dillardj

Solvent: 0.5M HNO3 Volume (ml): 200.00
Date Prep./Opened: 01-04-2006
Date Expires(1): 01-04-2007 (1 Year)
Date Expires(2): 01-04-2007 (1 Year)

Parent Std No.: RAD03-0085, Th 230 03-071 Aliquot Amount (ml): 1.0000
Parent Date Expires(1): 10-07-2008 Parent Date Expires(2): 10-07-2008

Component	Initial Conc (dpm/mL)	Final Conc (dpm/mL)
Th230	4,567.9	22.840

Reviewed By: _____

119

Thorium 230

10/7/03

ANALYTICS

SOURCE ID: 65090-334

Radioactivity: 7,654 dps

Reference time: 12-19-2002 12:00 EST

Useful life: indefinite

Initial mass = 5.17738 grams

Mass transferred = 5.1498 grams

$$\frac{5.1498\,g}{5.17738\,g} \times 7{,}654\ dps \times \frac{60\ dpm}{1\ dps} \div 100\,mL = \boxed{4{,}567.9\ \frac{dpm}{mL}}$$

ANALYTICS

1380 Seaboard Ind Blvd * Atlanta, GA 30318 * USA : 404-352-8677

Th-230

SRS 65090-334 Amount 0.207 µCi QA

Date 12/19/02 12:00 EST Exp. ----------

PO # 1614557-000 OP, Item 3

5.17738 grams 0.5M HNO_3 solution

CAUTION RADIOACTIVE MATERIAL

Logbook: 2060

STERN TRENT SERVICES

Radiochemistry
Standards Preparation Logbook

Date Prep'd	Expir. Date	Standard ID Number	Isotope	Parent ID Number	Parent Activity	Parent Ref. Date	Aliquot	Dilution Volume	Change in Time	T ½	Final Activity	Solvent/ Lot #	Prep'd Initials	Cal. Ver. Initials	Comments
11-12-03	11-12-04	03-082	P32	IPL 7032	1.103 µCi/g ~~11,991.2 dpm~~	15 NOV 03	4.5989 g	100 ml		14.29 dy	119,957 dpm/ml ~~119,912.0~~	TRC-4-01	SDB	MFM	From Pg 10 STEVE'S
11-12-03	11-12-04	03-083	P32	03-082	119,957 dpm/ml ~~119,912.0~~	15 NOV 03	1 ml	50 ml		14.29 dy	dpm/ml ~~2,398.2~~ 2399.15 TRC-4-01		SDB	MFM	LAB Book
9-11-03	9-11-04	03-069	Pu238	02-032	68.235 ~~1,761.174~~	11-15-99 11-19-03 dpm/ml	95 ml	190 ml	1396 dy	87.7 y	decay corr ~~33.5069~~ 1622 to 11/03 1M HNO_3		MFM	TC	from page 28
9-11-03	9-11-04	03-069	Pu239	02-031 ~~02-033~~	64.025 ~~1,281.05~~ 11-19-03 dpm/ml	11-15-99	95 ml	190 ml	1396 dy	24110 y	32.0125 ~~32.0251~~ 1M HNO_3		MFM	TC	from page 28
11-7-03	11-21-04	Rad03-0083 ~~03-070~~	TC-99	02-028	95,341.2 dpm/ml	10-96	1 ml	200 ml		2.1E5	476.7 dpm/ml	KOH	SDB		Rad Gpl Ve IO Rad03-0083
12-9-03	12-9-04	03-084	Ra228	01012	1,018 dpm/mL	2/16/01	2 mL	100 mL		5.75 y	20.36 dpm/mL	0.5M HNO_3	BH	~~BHF~~	
12-9-03	12-9-04	03-085	Th230	03-071	4,567.9 dpm/mL	12/19/02	1 mL	200 mL		7538 E4	22.84 dpm/mL	0.5M HNO_3	BH	LE	
12/31/03	12/31/08	03-086	Fe-55	681-78-3	.203 µCi/g	1/1/2000	4.9917 g	100 mL		999 days	10,133.2 pCi/mL	0.5M HNO_3	BH		
12/31/03	12/31/04	03-087	Fe-55	03-086	10,133.2 pCi/mL	1/1/2000	5 mL	100 mL		999 days	506.7 pCi/mL	0.5M HNO_3	BH		
1-5-04	1-5-05	Rad04-0001	UNAT	01-018	235.76 dpm/mL	3-2001	20 mL	80 mL	N/A	4.5 E9 yrs	58.94 dpm/mL	0.5M HNO_3	MFM		
1/12/04	1/12/05	~~Rad04-0002~~	Ra228	01012	1,018 dpm/mL	2/16/01	2 mL	100 mL		5.75 y	20.36 dpm/mL	0.5M HNO_3	BH	BBF	
2/12/04	2/12/04	RAD-0015	Sr90	03-038	2,314.57 dpm/mL	9/19/01	5 mL	500 mL		28.5 y	23.16 dpm/mL	0.5M HNO_3	BH	BBF	

Additional Comments:

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

62204-334

Sr-90 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by liquid scintillation counting.

Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Sr-90
ACTIVITY (dps):	3.897 E4
HALF-LIFE:	28.79 years
CALIBRATION DATE:	August 7, 2001 12:00 EST
TOTAL UNCERTAINTY*:	4.0%
SYSTEMATIC:	3.5%
RANDOM:	0.5%

*99% Confidence Level

Impurities: γ-impurities <0.1%

4.99897 grams 0.1M HCl solution with 30 μg/g Sr carrier.

P O NUMBER 1097166, Item 1

SOURCE PREPARED BY: M. D. Currie
M. D. Currie, Radiochemist

Q A APPROVED: 8-8-01

STL St. Louis

Standards Preparation Logbook Record

Feb-14-2006

Logbook: \\Qstlmo01\Stdslog\RAD_STD.std

RAD01-0025, Sr 90 01-093 Analyst: hicksb

Vendor: Analytics Vendor's Expiration Date: 08-07-2006
Solvent: 1M HNO3
Date Prep./Opened: 09-19-2001 Date Received: 08-07-2001
Date Expires(1): 09-19-2006 (5 Years)
Date Expires(2): 09-19-2006 (5 Years)
Current Sr 90, beta spike parent, vial# 62204-334

Component	Initial Conc (dpm/mL)	Final Conc (dpm/mL)
Sr 90	23,166	23,166

RAD04-0095, Sr-90 Analyst: hicksb

Solvent: 0.5M HNO3 Volume (ml): 100.00
Date Prep./Opened: 10-07-2004 Date Consumed: 01-05-2006
Date Expires(1): 10-07-2005 (1 Year)
Date Expires(2): 04-17-2004 (1 Year)

Parent Std No.: RAD01-0025, Sr 90 01-093 Aliquot Amount (ml): 10.000
Parent Date Expires(1): 09-19-2006 Parent Date Expires(2): 09-19-2006

Component	Initial Conc (dpm/mL)	Final Conc (dpm/mL)
Sr 90	23,166	2,316.6

Reviewed By: _____

49

SR-90 Parent Ampoule for 2nd source CPC cal.

9/19/01
BMW

#62204-334

ampoule activity: ~~3,8970~~ dps 38,970 dps.
½ life : 28.79 yrs
Calibration date: August 7, 2001 12:00 EST
Uncertainty 4.0%

STANDARDS LOG PARENT DILUTION # 01-093

$\left(\frac{38970 \text{ decays}}{1 \text{ sec}}\right)\left(\frac{60 \text{ sec}}{1 \text{ min}}\right) = 2,338,200$ dpm in ampoule.

$\left(\frac{2338200}{2.22}\right) = 1053243.2$ pCi/m in ampoule - Actual, 1043553.363 pCi/L
÷100 = 10435.8 pCi/ml

Actual Amount Transferred.... 4.9531 g

093
PD
-094

4.9531 g / 4.99897 actual = 0.9908 0.9908 x 2.3382x10^6 = 2,316,688.56 dpm

$\left(\frac{2,316,688}{100 \text{ mL}}\right) = \boxed{23,166 \text{ dpm/mL}}$ or $\boxed{104.3 \text{ pCi/mL}}$

231.66 dpm/ml
MK 12-13-02

ANALYTICS
1380 Seaboard Ind Blvd * Atlanta, GA 30318 * USA * 404-352-8677
Sr-90
SRS 62204-334 Amount 1.053 µCi QA VMN
Date 08/07/01 12:00 EST Exp. ----------
PO # 1097166, Item 1
4.99897 grams 0.1M HCl solution

CAUTION RADIOACTIVE MATERIAL

SEVERN TRENT SERVICES

R ochemistry
Standards Preparation Logbook

Date Prep'd	Expir. Date	Standard ID Number	Isotope	Parent ID Number	Parent Activity	Parent Ref. Date	Aliquot	Dilution Volume	Change in Time	T ½	Final Activity	Solvent/ Lot #	Prep'd Initials	Cal. Ver. Initials	Comments
9/18/01	12/18/01	01-087	UNAT CAL STD	01085	10 µg/mL	9/18/01	1.5 mL	100 mL	N/A	N/A	150 ng/mL	.8 M HNO3	BMW	JTK	nanogram/mL
		01-088					1.0 mL				100 ng/mL			JTK	
		01-089					0.5 mL				50 ng/mL			JTK	
		01-090		01088	100 ng/mL		10 mL	100 mL			10 ng/mL			JTK	
		01-091		01-089	50 ng/mL		10 mL	100.0 mL			5 ng/mL			JTK	
		01-092		01-088	100 ng/mL		1.0 mL	100.0 mL			1 ng/mL			JTK	
9/19/01	9/19/02	01-093	SR-90	ampoule C2204-334	38,897 dps	8/7/01	4.9531 g	100.0 mL	N/A	28.79 K	~~104.3 pCi/mL~~ 10435 pCi/mL 23,166 dpm/mL	.8 M HNO3	BMW	JTK	
9/19/01	9/19/02	01-094	SR90	01093	10435.8 pCi/mL	9/19/01	1.0 mL	100.0 mL	N/A	28.79 K	104.3 pCi/mL 231.66 dpm/mL	.8 M HNO3	BMW	JTK	
9/20/01	9/20/02	Ba-28	STD. Barium Carrier	Mo28-KPCM BaCl2	N/A	3/23/98	28.46 g	1000.0 mL	N/A	N/A	27.2 mg/mL	Reagent 1/20	BMW	JTK	See Final Capture weight sheet.
10/4/01	10/4/02 ~~10/4/01~~ 2mo 3-10-01	01-095	U-232	97-105	10,994 dpm/mL	9-6-97	1 mL	500 mL	—	70 yr	21.99 dpm	1M HNO3	CAM	JTK	
10/12/01	10/12/02	01-096	Ra226	98-006	1316 dpm/mL	4/12/98	1.0 mL	100.0 mL	—	1600 yr	13.16 dpm/mL	1M HNO3	AM	JTK	
10/18/01	10/18/02 ~~10/18/01~~ 2mo 3-10-01	01-097	(ABT) SR90/Y90	01032	1765.4 dpm/mL	3/28/95	2.0 mL	100.0 mL	N/A	28.5 yr	(35.31) total Y: ~~23.99~~ dpm/mL decay corrected 34.83	~~1M HNO3~~ 1M HNO3	BMW	AW	Decay Correct = 1699.65 dpm/mL

JTK 10-29-01

Additional Comments:

SL-RAD-044, revised 3/2/01
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