TABLE OF CONTENTS - LOT# F7C010119

COVER PAGE 1
CHAIN OF CUSTODY 3
ALPHA SPECTROSCOPY 53
THORIUM..... 54
URANIUM..... 125
ALPHAVISION-FEBRUARY-2007 193
ALPHAVISION-MARCH-2007 398
GAS FLOW PROPORTIONAL COUNTING 612
RADIUM 613
PROTEAN ALPHA / BETA CALIBRATION 692
PROTEAN - RA-226 CALIBRATION 806
RED CALIBRATION 842
YELLOW CALIBRATION - RA226 ONLY 873

TOTAL # OF PAGES IN PACKAGE 898

SEVERN TRENT STL®

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

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT

PROJECT NO. 5601

Li-Tungsten

Lot #: F7C010119

Ted Johnson

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

SEVERN TRENT LABORATORIES, INC.

Terry Romanko
Project Manager

March 26, 2007

Case Narrative
LOT NUMBER: F7C010119

This report contains the analytical results for the 36 samples received under chain of custody by STL St. Louis on March 1, 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.

Isotopic Uranium by Alpha Spectroscopy

In the initial analysis, the duplicate exhibited contamination with other isotopes. The batch was reprepared and reanalyzed, yielding acceptable QC results. The reanalysis results are reported.
Affected Samples:
F7C010119 (1): 5601-FSS-SU9-1001
F7C010119 (2): 5601-FSS-SU9-1003
F7C010119 (3): 5601-FSS-SU9-1004
F7C010119 (4): 5601-FSS-SU9-1012
F7C010119 (5): 5601-FSS-SU9-1013
F7C010119 (6): 5601-FSS-SU9-1014
F7C010119 (7): 5601-FSS-SU9-1015
F7C010119 (8): 5601-FSS-SU4-1001
F7C010119 (9): 5601-FSS-SU4-1002
F7C010119 (10): 5601-FSS-SU4-1003
F7C010119 (11): 5601-FSS-SU4-1004
F7C010119 (12): 5601-FSS-SU4-1005
F7C010119 (13): 5601-FSS-SU4-1006
F7C010119 (14): 5601-FSS-SU4-1007
F7C010119 (15): 5601-FSS-SU4-1012
F7C010119 (16): 5601-FSS-SU4-1013
F7C010119 (17): 5601-FSS-SU4-1014
F7C010119 (18): 5601-FSS-SU4-1015
F7C010119 (19): 5601-FSS-SU4-1016
F7C010119 (20): 5601-FSS-SU4-1017

In the initial analyses, the Uranium 234 LCS recovery is outside the upper QC limit, indicating a potential positive bias for the analyte. The samples were reprepared and reanalyzed, yielding poor tracer recovery. The samples were reprepared and reanalyzed a second time, yielding acceptable QC results. The second reanalysis results are reported.
Affected Samples:
F7C010119 (21): 5601-FSS-SU8-1001
F7C010119 (22): 5601-FSS-SU8-1002
F7C010119 (23): 5601-FSS-SU8-1003
F7C010119 (24): 5601-FSS-SU8-1004
F7C010119 (25): 5601-FSS-SU8-1005
F7C010119 (26): 5601-FSS-SU8-1006
F7C010119 (27): 5601-FSS-SU8-1007
F7C010119 (28): 5601-FSS-SU8-1008
F7C010119 (29): 5601-FSS-SU8-1009
F7C010119 (30): 5601-FSS-SU8-1010
F7C010119 (31): 5601-FSS-SU8-1011
F7C010119 (32): 5601-FSS-SU8-1012
F7C010119 (33): 5601-FSS-SU8-1013
F7C010119 (34): 5601-FSS-SU8-1014
F7C010119 (35): 5601-FSS-SU8-1015
F7C010119 (36): 5601-FSS-SU8-1016

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

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

cur 6111

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-SU9-1001	2/1/2007	11:20	FSS	Parcel C	Ra-226/Ra-228, Iso-Th, Iso-U	1 Gallon Pl Bag	Soil
5601 -FSS-SU9-1003	2/1/2007	11:25	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU9-1004	2/2/2007	12:15	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU9-1012	2/1/2007	11:25	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU9-1013	2/1/2007	11:25	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU9-1014	2/2/2007	12:15	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU9-1015	2/2/2007	12:15	FSS	Parcel C		1 Gallon Pl Bag	Soil
N/A							
N/A							
N/A							
N/A							

Bag

SU 03.01.07

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

Samples cooled 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:	ECC	2/28/2007	16:15	Print: Sue Wilson	STL/STL	03.01.07	0900
Print:				Print:			
Print:				Print:			

Environmental Chemical Corporation
1746 Cole Blvd.
Bldg. 21, Suite 350
Lakewood, CO 80401
Phone: (303) 298-7607
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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-SU4-1001	2/2/2007	12:05	FSS	Parcel C	Ra-226/Ra-228, Iso-Th, Iso-U	1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1002	2/1/2007	11:45	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1003	2/1/2007	11:40	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1004	2/1/2007	11:50	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1005	2/15/2007	14:55	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1006	2/15/2007	14:50	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1007	2/15/2007	14:40	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1012	2/1/2007	11:45	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1013	2/1/2007	10:30	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1014	2/2/2007	12:05	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1015	2/2/2007	12:05:00	FSS	Parcel C		1 Gallon Pl Bag	Soil

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

Samples cooled 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: TJ	ECC	2/28/2007	16:15	Print: Sue Wilson	STL/STL	03.01.07	0900
Print:				Print:			
Print:				Print:			

Environmental Chemical Corporation
1746 Cole Blvd.
Bldg. 21, Suite 350
Lakewood, CO 80401
Phone: (303) 298-7607
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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-SU4-1016	2/15/2007	14:55	FSS	Parcel C	Ra-226/Ra-228, Iso-Th, Iso-U	1 Gallon Pl Bag	Soil
5601 -FSS-SU4-1017	2/15/2007	14:55	FSS	Parcel C		1 Gallon Pl Bag	Soil
N/A							
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

Samples cooled 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: TJ	ECC	2/28/2007	16:15	Print: Sue Wilson	STL/STL	03.01.07	0950
Print:				Print:			
Print:				Print:			

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1746 Cole Blvd.
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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-SU8-1001	2/2/2007	12:05	FSS	Parcel C	Ra-226/Ra-228, Iso-Th, Iso-U	1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1002	1/30/2007	13:20	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1003	1/31/2007	12:32	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1004	1/31/2007	13:38	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1005	1/31/2007	0:00	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1006	1/31/2007	13:15	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1007	1/31/2007	12:00	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1008	1/31/2007	12:40	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1009	2/2/2007	11:23	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1010	1/31/2007	13:40	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1011	1/31/2007	13:50:00	FSS	Parcel C		1 Gallon Pl Bag	Soil

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

Samples cooled 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: TJ	ECC	2/28/2007	16:15	Print: Sue Wilson	STL/STL	03-01-07	0900
Print:				Print:			
Print:				Print:			

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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-SU8-1012	1/31/2007	13:10	FSS	Parcel C	Ra-226/Ra-228, Iso-Th, Iso-U	1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1013	1/31/2007	13:15	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1014	2/2/2007	13:34	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1015	2/2/2007	11:26	FSS	Parcel C		1 Gallon Pl Bag	Soil
5601 -FSS-SU8-1016	1/31/2007	12:00	FSS	Parcel C		1 Gallon Pl Bag	Soil
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

Samples cooled 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: TJ	ECC	2/28/2007	16:15	Print: Sue Wilson	STL/STL	03.01.07	0900
Print:				Print:			
Print:				Print:			

STL St. Louis

- 6111 -

Lot #(s): F7C010119

Condition Upon Receipt Form

Client: ECC
Quote No:
COC/RFA No: SW
Initiated By: N/A
Date 03.01.07
Time: 0900

SW 03.01.07

Shipping Information

Shipper Name: FedX
Multiple Packages (Y) ~~N~~ N/A

Shipping # (s):*

1. 7990 9527 4539
2. 7912 4237 1316
3. 7906 8228 7869
4.
5.
6.
7.
8.
9.
10.

Sample Temperature (s):**

1. ambient
2. 1
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 the cooler frisked after opening	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: Informed by:
- ☐ Sample(s) processed "as is"
- ☐ Sample(s) on hold until: If released, notify:

Project Management Review: Date:

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

ADMIN-0004, REVISED 03/01/06\\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin004030106.doc

METHODS SUMMARY

F7C010119

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

F7C010119

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
JP92V	001	5601-FSS-SU9-1001	02/01/07	11:20
JP920	002	5601-FSS-SU9-1003	02/01/07	11:25
JP921	003	5601-FSS-SU9-1004	02/02/07	00:15
JP922	004	5601-FSS-SU9-1012	02/01/07	11:25
JP925	005	5601-FSS-SU9-1013	02/01/07	11:25
JP926	006	5601-FSS-SU9-1014	02/02/07	12:15
JP927	007	5601-FSS-SU9-1015	02/02/07	12:15
JP928	008	5601-FSS-SU4-1001	02/02/07	12:05
JP93A	009	5601-FSS-SU4-1002	02/01/07	11:45
JP93C	010	5601-FSS-SU4-1003	02/01/07	11:40
JP93D	011	5601-FSS-SU4-1004	02/01/07	11:50
JP93E	012	5601-FSS-SU4-1005	02/15/07	14:55
JP93F	013	5601-FSS-SU4-1006	02/15/07	14:50
JP93G	014	5601-FSS-SU4-1007	02/15/07	14:40
JP93H	015	5601-FSS-SU4-1012	02/01/07	11:45
JP93L	016	5601-FSS-SU4-1013	02/01/07	10:30
JP93N	017	5601-FSS-SU4-1014	02/02/07	12:05
JP93P	018	5601-FSS-SU4-1015	02/02/07	12:05
JP93Q	019	5601-FSS-SU4-1016	02/15/07	14:55
JP93R	020	5601-FSS-SU4-1017	02/15/07	14:55
JP93V	021	5601-FSS-SU8-1001	02/02/07	12:05
JP93W	022	5601-FSS-SU8-1002	01/30/07	13:20
JP93X	023	5601-FSS-SU8-1003	01/31/07	12:32
JP930	024	5601-FSS-SU8-1004	01/31/07	13:38
JP932	025	5601-FSS-SU8-1005	01/31/07	
JP934	026	5601-FSS-SU8-1006	01/31/07	13:15
JP937	027	5601-FSS-SU8-1007	01/31/07	12:00
JP939	028	5601-FSS-SU8-1008	01/31/07	12:40
JP94C	029	5601-FSS-SU8-1009	02/02/07	11:23
JP94H	030	5601-FSS-SU8-1010	01/31/07	13:40
JP94P	031	5601-FSS-SU8-1011	01/31/07	13:50
JP94R	032	5601-FSS-SU8-1012	01/31/07	13:10
JP940	033	5601-FSS-SU8-1013	01/31/07	13:15
JP944	034	5601-FSS-SU8-1014	02/02/07	13:34
JP948	035	5601-FSS-SU8-1015	02/02/07	11:26
JP95C	036	5601-FSS-SU8-1016	01/31/07	12:00

(Continued on next page)

SAMPLE SUMMARY

F7C010119

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME

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-SU9-1001

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-001
Work Order: JP92V
Matrix: SOLID

Date Collected: 02/01/07 1120
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 90**
Radium (226)	**0.87**	**J**	**0.24**	1.00	**0.18**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 78**
Radium 228	0.77	U	0.52	1.00	0.81	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 87**
Thorium 228	**0.56**		**0.10**	0.10	**0.03**	**03/06/07**	**03/17/07**
Thorium 230	**0.528**		**0.098**	0.100	**0.020**	**03/06/07**	**03/17/07**
Thorium 232	**0.59**		**0.11**	0.10	**0.01**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 85**
Uranium 234	**0.411**		**0.099**	0.100	**0.018**	**03/20/07**	**03/22/07**
Uranium 235/236	**0.015**	**J**	**0.020**	0.100	**0.013**	**03/20/07**	**03/22/07**
Uranium 238	**0.45**		**0.11**	0.10	**0.03**	**03/20/07**	**03/22/07**

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-SU9-1001 DUP

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-001X
Work Order: JP92V
Matrix: SOLID

Date Collected: 02/01/07 1120
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 92**
Radium (226)	**0.76**	**J**	**0.23**	1.00	**0.22**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 84**
Radium 228	**1.02**		**0.49**	1.00	**0.74**	**03/01/07**	**03/20/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 88**
Thorium 228	**0.65**		**0.12**	0.10	**0.03**	**03/06/07**	**03/17/07**
Thorium 230	**0.520**		**0.097**	0.100	**0.020**	**03/06/07**	**03/17/07**
Thorium 232	**0.61**		**0.11**	0.10	**0.01**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 74**
Uranium 234	**0.63**		**0.14**	0.10	**0.03**	**03/20/07**	**03/22/07**
Uranium 235/236	0.0	U	0.0	0.1	0.02	03/20/07	03/22/07
Uranium 238	**0.65**		**0.15**	0.10	**0.03**	**03/20/07**	**03/22/07**

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-SU9-1003

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-002
Work Order: JP920
Matrix: SOLID

Date Collected: 02/01/07 1125
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 96**
Radium (226)	**0.78**	**J**	**0.23**	1.00	**0.20**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 88**
Radium 228	0.29	U	0.44	1.00	0.73	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 94**
Thorium 228	**0.69**		**0.12**	0.10	**0.03**	**03/06/07**	**03/17/07**
Thorium 230	**0.473**		**0.089**	0.100	**0.018**	**03/06/07**	**03/17/07**
Thorium 232	**0.68**		**0.12**	0.10	**0.01**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 88**
Uranium 234	**0.56**		**0.12**	0.10	**0.03**	**03/20/07**	**03/22/07**
Uranium 235/236	**0.019**	**J**	**0.022**	0.100	**0.013**	**03/20/07**	**03/22/07**
Uranium 238	**0.51**		**0.11**	0.10	**0.02**	**03/20/07**	**03/22/07**

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-SU9-1004

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-003
Work Order: JP921
Matrix: SOLID

Date Collected: 02/02/07 0015
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 73**
Radium (226)	**0.64**	**J**	**0.23**	1.00	**0.22**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 71**
Radium 228	0.59	U	0.55	1.00	0.89	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 93**
Thorium 228	**0.499**		**0.093**	0.100	**0.022**	**03/06/07**	**03/17/07**
Thorium 230	**0.447**		**0.085**	0.100	**0.016**	**03/06/07**	**03/17/07**
Thorium 232	**0.547**		**0.098**	0.100	**0.014**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 76**
Uranium 234	**0.51**		**0.12**	0.10	**0.03**	**03/20/07**	**03/22/07**
Uranium 235/236	0.023	U	0.027	0.100	0.033	03/20/07	03/22/07
Uranium 238	**0.60**		**0.13**	0.10	**0.03**	**03/20/07**	**03/22/07**

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-SU9-1012

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-004
Work Order: JP922
Matrix: SOLID

Date Collected: 02/01/07 1125
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 91**
Radium (226)	**0.73**	**J**	**0.21**	1.00	**0.16**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 87**
Radium 228	0.34	U	0.45	1.00	0.75	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 90**
Thorium 228	**1.03**		**0.16**	0.10	**0.02**	**03/06/07**	**03/17/07**
Thorium 230	**0.68**		**0.12**	0.10	**0.02**	**03/06/07**	**03/17/07**
Thorium 232	**0.99**		**0.16**	0.10	**0.01**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 83**
Uranium 234	**0.70**		**0.15**	0.10	**0.03**	**03/20/07**	**03/22/07**
Uranium 235/236	**0.035**	**J**	**0.028**	0.100	**0.024**	**03/20/07**	**03/22/07**
Uranium 238	**0.69**		**0.15**	0.10	**0.03**	**03/20/07**	**03/22/07**

NOTE(S)

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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-SU9-1013

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-005
Work Order: JP925
Matrix: SOLID

Date Collected: 02/01/07 1125
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 92**
Radium (226)	**0.83**	J	**0.22**	1.00	**0.14**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 91**
Radium 228	**0.83**	J	**0.46**	1.00	**0.70**	**03/01/07**	**03/20/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 93**
Thorium 228	**0.90**		**0.15**	0.10	**0.03**	**03/06/07**	**03/17/07**
Thorium 230	**0.81**		**0.13**	0.10	**0.02**	**03/06/07**	**03/17/07**
Thorium 232	**0.81**		**0.13**	0.10	**0.02**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 76**
Uranium 234	**0.78**		**0.17**	0.10	**0.04**	**03/20/07**	**03/22/07**
Uranium 235/236	0.026	U	0.028	0.100	0.031	03/20/07	03/22/07
Uranium 238	**0.84**		**0.18**	0.10	**0.03**	**03/20/07**	**03/22/07**

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.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU9-1014

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-006
Work Order: JP926
Matrix: SOLID

Date Collected: 02/02/07 1215
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 100**
Radium (226)	**0.61**	**J**	**0.19**	1.00	**0.17**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 90**
Radium 228	0.70	U	0.46	1.00	0.72	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 82**
Thorium 228	**0.443**		**0.092**	0.100	**0.033**	**03/06/07**	**03/17/07**
Thorium 230	**0.377**		**0.080**	0.100	**0.014**	**03/06/07**	**03/17/07**
Thorium 232	**0.501**		**0.098**	0.100	**0.014**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 78**
Uranium 234	**0.312**		**0.088**	0.100	**0.033**	**03/20/07**	**03/22/07**
Uranium 235/236	0.015	U	0.020	0.100	0.025	03/20/07	03/22/07
Uranium 238	**0.331**		**0.090**	0.100	**0.020**	**03/20/07**	**03/22/07**

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.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU9-1015

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-007
Work Order: JP927
Matrix: SOLID

Date Collected: 02/02/07 1215
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 94**
Radium (226)	**0.58**	**J**	**0.19**	1.00	**0.17**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 90**
Radium 228	0.24	U	0.47	1.00	0.78	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 91**
Thorium 228	**0.446**		**0.088**	0.100	**0.024**	**03/06/07**	**03/17/07**
Thorium 230	**0.397**		**0.081**	0.100	**0.022**	**03/06/07**	**03/17/07**
Thorium 232	**0.456**		**0.088**	0.100	**0.017**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 85**
Uranium 234	**0.359**		**0.093**	0.100	**0.028**	**03/20/07**	**03/22/07**
Uranium 235/236	0.005	U	0.014	0.100	0.014	03/20/07	03/22/07
Uranium 238	**0.354**		**0.091**	0.100	**0.019**	**03/20/07**	**03/22/07**

NOTE(S)

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Bold results are greater than the MDC

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U Result is less than the sample detection limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU4-1001

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-008
Work Order: JP928
Matrix: SOLID

Date Collected: 02/02/07 1205
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060251	Yld % 91
Radium (226)	1.04		0.25	1.00	0.18	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060253	Yld % 80
Radium 228	0.89	J	0.54	1.00	0.84	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7065384	Yld % 86
Thorium 228	0.89		0.15	0.10	0.03	03/06/07	03/17/07
Thorium 230	0.66		0.12	0.10	0.02	03/06/07	03/17/07
Thorium 232	0.77		0.13	0.10	0.02	03/06/07	03/17/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7079167	Yld % 63
Uranium 234	0.89		0.20	0.10	0.04	03/20/07	03/22/07
Uranium 235/236	0.026	U	0.029	0.100	0.031	03/20/07	03/22/07
Uranium 238	0.74		0.17	0.10	0.03	03/20/07	03/22/07

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-SU4-1002

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-009
Work Order: JP93A
Matrix: SOLID

Date Collected: 02/01/07 1145
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 95**
Radium (226)	**0.40**	**J**	**0.16**	1.00	**0.17**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 82**
Radium 228	0.05	U	0.47	1.00	0.80	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 88**
Thorium 228	**0.299**		**0.066**	0.100	**0.031**	**03/06/07**	**03/17/07**
Thorium 230	**0.250**		**0.056**	0.100	**0.012**	**03/06/07**	**03/17/07**
Thorium 232	**0.275**		**0.060**	0.100	**0.015**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 82**
Uranium 234	**0.240**		**0.074**	0.100	**0.026**	**03/20/07**	**03/22/07**
Uranium 235/236	**0.032**	**J**	**0.029**	0.100	**0.015**	**03/20/07**	**03/22/07**
Uranium 238	**0.239**		**0.074**	0.100	**0.025**	**03/20/07**	**03/22/07**

NOTE(S)

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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-SU4-1003

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-010
Work Order: JP93C
Matrix: SOLID

Date Collected: 02/01/07 1140
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 93**
Radium (226)	**0.22**	**J**	**0.14**	1.00	**0.19**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 102**
Radium 228	0.19	U	0.37	1.00	0.62	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 96**
Thorium 228	**0.129**		**0.041**	0.100	**0.030**	**03/06/07**	**03/17/07**
Thorium 230	**0.132**		**0.039**	0.100	**0.019**	**03/06/07**	**03/17/07**
Thorium 232	**0.130**		**0.038**	0.100	**0.014**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 79**
Uranium 234	**0.181**		**0.063**	0.100	**0.026**	**03/20/07**	**03/22/07**
Uranium 235/236	0.005	U	0.015	0.100	0.015	03/20/07	03/22/07
Uranium 238	**0.171**		**0.061**	0.100	**0.028**	**03/20/07**	**03/22/07**

NOTE(S)

Data are incomplete without the case narrative.

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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.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU4-1004

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-011
Work Order: JP93D
Matrix: SOLID

Date Collected: 02/01/07 1150
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060251	Yld % 71
Radium (226)	1.33		0.30	1.00	0.19	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060253	Yld % 76
Radium 228	0.97	J	0.53	1.00	0.82	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7065384	Yld % 81
Thorium 228	1.09		0.17	0.10	0.02	03/06/07	03/17/07
Thorium 230	1.01		0.16	0.10	0.01	03/06/07	03/17/07
Thorium 232	1.10		0.18	0.10	0.01	03/06/07	03/17/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7079167	Yld % 74
Uranium 234	0.97		0.20	0.10	0.03	03/20/07	03/22/07
Uranium 235/236	0.071	J	0.044	0.100	0.016	03/20/07	03/22/07
Uranium 238	0.98		0.20	0.10	0.03	03/20/07	03/22/07

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-SU4-1005

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-012
Work Order: JP93E
Matrix: SOLID

Date Collected: 02/15/07 1455
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 68**
Radium (226)	**0.93**	**J**	**0.26**	1.00	**0.21**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 67**
Radium 228	0.71	U	0.60	1.00	0.96	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 77**
Thorium 228	**0.81**		**0.14**	0.10	**0.02**	**03/06/07**	**03/17/07**
Thorium 230	**0.64**		**0.12**	0.10	**0.02**	**03/06/07**	**03/17/07**
Thorium 232	**0.86**		**0.15**	0.10	**0.02**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 72**
Uranium 234	**0.70**		**0.16**	0.10	**0.03**	**03/20/07**	**03/22/07**
Uranium 235/236	**0.048**	**J**	**0.037**	0.100	**0.016**	**03/20/07**	**03/22/07**
Uranium 238	**0.68**		**0.15**	0.10	**0.02**	**03/20/07**	**03/22/07**

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-SU4-1006

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-013
Work Order: JP93F
Matrix: SOLID

Date Collected: 02/15/07 1450
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060251	Yld % 85
Radium (226)	1.40		0.30	1.00	0.17	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060253	Yld % 84
Radium 228	0.83	J	0.50	1.00	0.77	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7065384	Yld % 88
Thorium 228	0.84		0.14	0.10	0.03	03/06/07	03/17/07
Thorium 230	0.93		0.15	0.10	0.02	03/06/07	03/17/07
Thorium 232	0.89		0.15	0.10	0.01	03/06/07	03/17/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7079167	Yld % 70
Uranium 234	0.84		0.18	0.10	0.03	03/20/07	03/22/07
Uranium 235/236	0.059	J	0.040	0.100	0.028	03/20/07	03/22/07
Uranium 238	0.90		0.19	0.10	0.01	03/20/07	03/22/07

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-SU4-1007

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-014
Work Order: JP93G
Matrix: SOLID

Date Collected: 02/15/07 1440
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 93**
Radium (226)	**0.33**	**J**	**0.14**	1.00	**0.15**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 93**
Radium 228	-0.03	U	0.28	1.00	0.50	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 91**
Thorium 228	**0.417**		**0.081**	0.100	**0.019**	**03/06/07**	**03/17/07**
Thorium 230	**0.429**		**0.082**	0.100	**0.014**	**03/06/07**	**03/17/07**
Thorium 232	**0.425**		**0.082**	0.100	**0.017**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 95**
Uranium 234	**0.231**		**0.066**	0.100	**0.019**	**03/20/07**	**03/22/07**
Uranium 235/236	0.020	U	0.021	0.100	0.024	03/20/07	03/22/07
Uranium 238	**0.255**		**0.071**	0.100	**0.021**	**03/20/07**	**03/22/07**

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-SU4-1012

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-015
Work Order: JP93H
Matrix: SOLID

Date Collected: 02/01/07 1145
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 92**
Radium (226)	0.12	U	0.13	1.00	0.20	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 85**
Radium 228	0.16	U	0.29	1.00	0.49	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 97**
Thorium 228	**0.266**		**0.059**	0.100	**0.017**	**03/06/07**	**03/17/07**
Thorium 230	**0.212**		**0.051**	0.100	**0.017**	**03/06/07**	**03/17/07**
Thorium 232	**0.295**		**0.062**	0.100	**0.011**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 79**
Uranium 234	**0.242**		**0.076**	0.100	**0.032**	**03/20/07**	**03/22/07**
Uranium 235/236	0.008	U	0.017	0.100	0.029	03/20/07	03/22/07
Uranium 238	**0.185**		**0.065**	0.100	**0.030**	**03/20/07**	**03/22/07**

NOTE(S)

Data are incomplete without the case narrative.

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

U Result is less than the sample detection limit.

Environmental Chemical Corporation

Client Sample ID: 5601-FSS-SU4-1013

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-016
Work Order: JP93L
Matrix: SOLID

Date Collected: 02/01/07 1030
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 88**
Radium (226)	**0.45**	**J**	**0.18**	1.00	**0.19**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 82**
Radium 228	0.31	U	0.33	1.00	0.53	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 94**
Thorium 228	**0.246**		**0.058**	0.100	**0.021**	**03/06/07**	**03/17/07**
Thorium 230	**0.209**		**0.052**	0.100	**0.021**	**03/06/07**	**03/17/07**
Thorium 232	**0.293**		**0.065**	0.100	**0.020**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 80**
Uranium 234	**0.351**		**0.094**	0.100	**0.030**	**03/20/07**	**03/22/07**
Uranium 235/236	0.001	U	0.014	0.100	0.032	03/20/07	03/22/07
Uranium 238	**0.242**		**0.075**	0.100	**0.026**	**03/20/07**	**03/22/07**

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-SU4-1014

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-017
Work Order: JP93N
Matrix: SOLID

Date Collected: 02/02/07 1205
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060251**	**Yld % 76**
Radium (226)	**0.89**	**J**	**0.27**	1.00	**0.25**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060253**	**Yld % 83**
Radium 228	0.27	U	0.34	1.00	0.55	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7065384**	**Yld % 86**
Thorium 228	**0.77**		**0.13**	0.10	**0.02**	**03/06/07**	**03/17/07**
Thorium 230	**0.61**		**0.11**	0.10	**0.02**	**03/06/07**	**03/17/07**
Thorium 232	**0.76**		**0.13**	0.10	**0.006**	**03/06/07**	**03/17/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7079167**	**Yld % 87**
Uranium 234	**0.53**		**0.12**	0.10	**0.03**	**03/20/07**	**03/22/07**
Uranium 235/236	**0.031**	**J**	**0.028**	0.100	**0.014**	**03/20/07**	**03/22/07**
Uranium 238	**0.52**		**0.12**	0.10	**0.02**	**03/20/07**	**03/22/07**

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-SU4-1015

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-018
Work Order: JP93P
Matrix: SOLID

Date Collected: 02/02/07 1205
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060251	Yld % 84
Radium (226)	0.95	J	0.25	1.00	0.21	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060253	Yld % 90
Radium 228	0.64	J	0.33	1.00	0.49	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7065384	Yld % 80
Thorium 228	0.96		0.16	0.10	0.02	03/06/07	03/17/07
Thorium 230	0.72		0.13	0.10	0.02	03/06/07	03/17/07
Thorium 232	0.99		0.16	0.10	0.02	03/06/07	03/17/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7079167	Yld % 72
Uranium 234	0.73		0.16	0.10	0.03	03/20/07	03/22/07
Uranium 235/236	0.073	J	0.045	0.100	0.016	03/20/07	03/22/07
Uranium 238	0.63		0.15	0.10	0.04	03/20/07	03/22/07

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-SU4-1016

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-019
Work Order: JP93Q
Matrix: SOLID

Date Collected: 02/15/07 1455
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060251	Yld % 54
Radium (226)	0.96	J	0.29	1.00	0.24	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060253	Yld % 60
Radium 228	0.64	J	0.42	1.00	0.64	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7065384	Yld % 77
Thorium 228	0.72		0.13	0.10	0.03	03/06/07	03/18/07
Thorium 230	0.67		0.12	0.10	0.02	03/06/07	03/18/07
Thorium 232	0.88		0.15	0.10	0.02	03/06/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7079167	Yld % 69
Uranium 234	0.73		0.16	0.10	0.04	03/20/07	03/22/07
Uranium 235/236	0.044	J	0.036	0.100	0.017	03/20/07	03/22/07
Uranium 238	0.65		0.15	0.10	0.03	03/20/07	03/22/07

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-SU4-1017

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-020
Work Order: JP93R
Matrix: SOLID

Date Collected: 02/15/07 1455
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060251	Yld % 92
Radium (226)	1.07		0.27	1.00	0.19	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060253	Yld % 84
Radium 228	0.69	J	0.33	1.00	0.48	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7065384	Yld % 86
Thorium 228	0.70		0.12	0.10	0.03	03/06/07	03/18/07
Thorium 230	0.58		0.11	0.10	0.01	03/06/07	03/18/07
Thorium 232	0.65		0.12	0.10	0.02	03/06/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7079167	Yld % 68
Uranium 234	0.63		0.15	0.10	0.04	03/20/07	03/22/07
Uranium 235/236	0.021	U	0.028	0.100	0.038	03/20/07	03/22/07
Uranium 238	0.63		0.15	0.10	0.04	03/20/07	03/22/07

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-SU8-1001

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-021
Work Order: JP93V
Matrix: SOLID

Date Collected: 02/02/07 1205
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060252	Yld % 98
Radium (226)	0.83	J	0.23	1.00	0.20	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060254	Yld % 89
Radium 228	1.11		0.47	1.00	0.70	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7066129	Yld % 78
Thorium 228	0.68		0.15	0.10	0.04	03/07/07	03/18/07
Thorium 230	0.59		0.13	0.10	0.03	03/07/07	03/18/07
Thorium 232	0.80		0.17	0.10	0.02	03/07/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7082157	Yld % 91
Uranium 234	0.361		0.090	0.100	0.020	03/23/07	03/25/07
Uranium 235/236	0.022	U	0.023	0.100	0.025	03/23/07	03/25/07
Uranium 238	0.43		0.10	0.10	0.02	03/23/07	03/25/07

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-SU8-1001 DUP

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-021X
Work Order: JP93V
Matrix: SOLID

Date Collected: 02/02/07 1205
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060252	Yld % 94
Radium (226)	0.81	J	0.23	1.00	0.18	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060254	Yld % 83
Radium 228	0.86	J	0.47	1.00	0.73	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7066129	Yld % 86
Thorium 228	0.63		0.14	0.10	0.03	03/07/07	03/18/07
Thorium 230	0.62		0.13	0.10	0.02	03/07/07	03/18/07
Thorium 232	0.69		0.14	0.10	0.02	03/07/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7082157	Yld % 88
Uranium 234	0.49		0.11	0.10	0.02	03/23/07	03/25/07
Uranium 235/236	0.033	J	0.028	0.100	0.027	03/23/07	03/25/07
Uranium 238	0.397		0.098	0.100	0.011	03/23/07	03/25/07

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-SU8-1002

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-022
Work Order: JP93W
Matrix: SOLID

Date Collected: 01/30/07 1320
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060252	Yld % 102
Radium (226)	1.64		0.32	1.00	0.19	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060254	Yld % 97
Radium 228	1.59		0.47	1.00	0.65	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7066129	Yld % 94
Thorium 228	1.25		0.22	0.10	0.04	03/07/07	03/18/07
Thorium 230	0.97		0.18	0.10	0.02	03/07/07	03/18/07
Thorium 232	1.25		0.22	0.10	0.02	03/07/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7082157	Yld % 79
Uranium 234	0.85		0.17	0.10	0.03	03/23/07	03/25/07
Uranium 235/236	0.030	J	0.028	0.100	0.029	03/23/07	03/25/07
Uranium 238	0.85		0.17	0.10	0.03	03/23/07	03/25/07

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-SU8-1003

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-023
Work Order: JP93X
Matrix: SOLID

Date Collected: 01/31/07 1232
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060252**	**Yld % 94**
Radium (226)	**1.31**		**0.30**	1.00	**0.17**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060254**	**Yld % 87**
Radium 228	**0.96**	J	**0.48**	1.00	**0.72**	**03/01/07**	**03/20/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7066129**	**Yld % 59**
Thorium 228	**0.73**		**0.18**	0.10	**0.05**	**03/07/07**	**03/18/07**
Thorium 230	**0.65**		**0.16**	0.10	**0.04**	**03/07/07**	**03/18/07**
Thorium 232	**0.66**		**0.16**	0.10	**0.03**	**03/07/07**	**03/18/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7082157**	**Yld % 90**
Uranium 234	**0.56**		**0.12**	0.10	**0.02**	**03/23/07**	**03/25/07**
Uranium 235/236	0.018	U	0.020	0.100	0.022	03/23/07	03/25/07
Uranium 238	**0.55**		**0.12**	0.10	**0.02**	**03/23/07**	**03/25/07**

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-SU8-1004

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-024
Work Order: JP930
Matrix: SOLID

Date Collected: 01/31/07 1338
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060252**	**Yld % 94**
Radium (226)	**1.10**		**0.26**	1.00	**0.16**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060254**	**Yld % 81**
Radium 228	**0.80**	J	**0.46**	1.00	**0.72**	**03/01/07**	**03/20/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7066129**	**Yld % 84**
Thorium 228	**0.98**		**0.19**	0.10	**0.03**	**03/07/07**	**03/18/07**
Thorium 230	**0.69**		**0.15**	0.10	**0.03**	**03/07/07**	**03/18/07**
Thorium 232	**0.84**		**0.17**	0.10	**0.02**	**03/07/07**	**03/18/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7082157**	**Yld % 94**
Uranium 234	**0.374**		**0.091**	0.100	**0.020**	**03/23/07**	**03/25/07**
Uranium 235/236	0.013	U	0.017	0.100	0.021	03/23/07	03/25/07
Uranium 238	**0.46**		**0.10**	0.10	**0.01**	**03/23/07**	**03/25/07**

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-SU8-1005

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-025
Work Order: JP932
Matrix: SOLID

Date Collected: 01/31/07 0000
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060252**	**Yld % 105**
Radium (226)	**1.32**		**0.30**	1.00	**0.20**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060254**	**Yld % 95**
Radium 228	0.63	U	0.44	1.00	0.69	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7066129**	**Yld % 89**
Thorium 228	**1.29**		**0.23**	0.10	**0.04**	**03/07/07**	**03/18/07**
Thorium 230	**1.09**		**0.20**	0.10	**0.03**	**03/07/07**	**03/18/07**
Thorium 232	**1.14**		**0.21**	0.10	**0.02**	**03/07/07**	**03/18/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7082157**	**Yld % 87**
Uranium 234	**0.79**		**0.16**	0.10	**0.02**	**03/23/07**	**03/25/07**
Uranium 235/236	**0.032**	**J**	**0.027**	0.100	**0.026**	**03/23/07**	**03/25/07**
Uranium 238	**0.73**		**0.15**	0.10	**0.02**	**03/23/07**	**03/25/07**

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-SU8-1006

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-026
Work Order: JP934
Matrix: SOLID

Date Collected: 01/31/07 1315
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060252	Yld % 95
Radium (226)	0.99	J	0.26	1.00	0.20	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060254	Yld % 87
Radium 228	1.43		0.50	1.00	0.71	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7066129	Yld % 86
Thorium 228	1.12		0.21	0.10	0.04	03/07/07	03/18/07
Thorium 230	0.79		0.16	0.10	0.02	03/07/07	03/18/07
Thorium 232	1.06		0.20	0.10	0.02	03/07/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7082157	Yld % 86
Uranium 234	0.83		0.16	0.10	0.02	03/23/07	03/25/07
Uranium 235/236	0.051	J	0.034	0.100	0.014	03/23/07	03/25/07
Uranium 238	0.93		0.18	0.10	0.03	03/23/07	03/25/07

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-SU8-1007

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-027
Work Order: JP937
Matrix: SOLID

Date Collected: 01/31/07 1200
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060252**	**Yld % 94**
Radium (226)	**0.93**	**J**	**0.27**	1.00	**0.24**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060254**	**Yld % 86**
Radium 228	0.42	U	0.46	1.00	0.75	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7066129**	**Yld % 90**
Thorium 228	**0.67**		**0.14**	0.10	**0.03**	**03/07/07**	**03/18/07**
Thorium 230	**0.48**		**0.11**	0.10	**0.03**	**03/07/07**	**03/18/07**
Thorium 232	**0.63**		**0.14**	0.10	**0.02**	**03/07/07**	**03/18/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7082157**	**Yld % 85**
Uranium 234	**0.50**		**0.12**	0.10	**0.02**	**03/23/07**	**03/25/07**
Uranium 235/236	0.023	U	0.024	0.100	0.027	03/23/07	03/25/07
Uranium 238	**0.45**		**0.11**	0.10	**0.01**	**03/23/07**	**03/25/07**

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-SU8-1008

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-028
Work Order: JP939
Matrix: SOLID

Date Collected: 01/31/07 1240
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060252**	**Yld % 86**
Radium (226)	**1.55**		**0.34**	1.00	**0.22**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060254**	**Yld % 77**
Radium 228	**1.17**		**0.55**	1.00	**0.82**	**03/01/07**	**03/20/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7066129**	**Yld % 83**
Thorium 228	**1.52**		**0.27**	0.10	**0.04**	**03/07/07**	**03/18/07**
Thorium 230	**1.50**		**0.27**	0.10	**0.02**	**03/07/07**	**03/18/07**
Thorium 232	**1.54**		**0.27**	0.10	**0.02**	**03/07/07**	**03/18/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7082157**	**Yld % 89**
Uranium 234	**0.63**		**0.13**	0.10	**0.02**	**03/23/07**	**03/25/07**
Uranium 235/236	**0.038**	J	**0.029**	0.100	**0.022**	**03/23/07**	**03/25/07**
Uranium 238	**0.68**		**0.14**	0.10	**0.02**	**03/23/07**	**03/25/07**

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-SU8-1009

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-029
Work Order: JP94C
Matrix: SOLID

Date Collected: 02/02/07 1123
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060252	Yld % 105
Radium (226)	1.24		0.29	1.00	0.17	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060254	Yld % 105
Radium 228	1.30		0.43	1.00	0.59	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7066129	Yld % 68
Thorium 228	1.18		0.23	0.10	0.05	03/07/07	03/18/07
Thorium 230	0.96		0.20	0.10	0.02	03/07/07	03/18/07
Thorium 232	1.39		0.26	0.10	0.03	03/07/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7082157	Yld % 85
Uranium 234	0.81		0.17	0.10	0.03	03/23/07	03/25/07
Uranium 235/236	0.030	J	0.027	0.100	0.024	03/23/07	03/25/07
Uranium 238	0.74		0.15	0.10	0.03	03/23/07	03/25/07

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-SU8-1010

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-030
Work Order: JP94H
Matrix: SOLID

Date Collected: 01/31/07 1340
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060252**	**Yld % 87**
Radium (226)	**1.12**		**0.29**	1.00	**0.21**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060254**	**Yld % 78**
Radium 228	0.47	U	0.59	1.00	0.96	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7066129**	**Yld % 85**
Thorium 228	**0.87**		**0.18**	0.10	**0.04**	**03/07/07**	**03/18/07**
Thorium 230	**0.81**		**0.17**	0.10	**0.02**	**03/07/07**	**03/18/07**
Thorium 232	**0.90**		**0.18**	0.10	**0.02**	**03/07/07**	**03/18/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7082157**	**Yld % 90**
Uranium 234	**0.60**		**0.13**	0.10	**0.02**	**03/23/07**	**03/25/07**
Uranium 235/236	**0.041**	**J**	**0.030**	0.100	**0.026**	**03/23/07**	**03/25/07**
Uranium 238	**0.58**		**0.12**	0.10	**0.02**	**03/23/07**	**03/25/07**

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-SU8-1011

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-031
Work Order: JP94P
Matrix: SOLID

Date Collected: 01/31/07 1350
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060252**	**Yld % 90**
Radium (226)	**1.12**		**0.27**	1.00	**0.18**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060254**	**Yld % 78**
Radium 228	0.35	U	0.40	1.00	0.65	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7066129**	**Yld % 76**
Thorium 228	**0.81**		**0.17**	0.10	**0.03**	**03/07/07**	**03/18/07**
Thorium 230	**0.53**		**0.12**	0.10	**0.02**	**03/07/07**	**03/18/07**
Thorium 232	**0.85**		**0.17**	0.10	**0.02**	**03/07/07**	**03/18/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7082157**	**Yld % 85**
Uranium 234	**0.57**		**0.13**	0.10	**0.02**	**03/23/07**	**03/25/07**
Uranium 235/236	**0.041**	**J**	**0.031**	0.100	**0.014**	**03/23/07**	**03/25/07**
Uranium 238	**0.49**		**0.11**	0.10	**0.01**	**03/23/07**	**03/25/07**

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-SU8-1012

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-032
Work Order: JP94R
Matrix: SOLID

Date Collected: 01/31/07 1310
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060252	Yld % 104
Radium (226)	1.76		0.33	1.00	0.14	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060254	Yld % 100
Radium 228	1.02		0.34	1.00	0.45	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7066129	Yld % 93
Thorium 228	1.19		0.21	0.10	0.02	03/07/07	03/18/07
Thorium 230	0.95		0.18	0.10	0.02	03/07/07	03/18/07
Thorium 232	1.26		0.22	0.10	0.02	03/07/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7082157	Yld % 85
Uranium 234	0.78		0.16	0.10	0.02	03/23/07	03/25/07
Uranium 235/236	0.036	J	0.030	0.100	0.014	03/23/07	03/25/07
Uranium 238	0.73		0.15	0.10	0.03	03/23/07	03/25/07

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-SU8-1013

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-033
Work Order: JP940
Matrix: SOLID

Date Collected: 01/31/07 1315
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060252	Yld % 109
Radium (226)	1.20		0.27	1.00	0.18	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060254	Yld % 95
Radium 228	0.85	J	0.34	1.00	0.48	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7066129	Yld % 93
Thorium 228	1.19		0.21	0.10	0.03	03/07/07	03/18/07
Thorium 230	0.98		0.18	0.10	0.02	03/07/07	03/18/07
Thorium 232	1.11		0.20	0.10	0.02	03/07/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7082157	Yld % 91
Uranium 234	0.73		0.15	0.10	0.02	03/23/07	03/25/07
Uranium 235/236	0.029	J	0.026	0.100	0.013	03/23/07	03/25/07
Uranium 238	0.67		0.14	0.10	0.03	03/23/07	03/25/07

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-SU8-1014

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-034
Work Order: JP944
Matrix: SOLID

Date Collected: 02/02/07 1334
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060252	Yld % 108
Radium (226)	1.11		0.26	1.00	0.16	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060254	Yld % 100
Radium 228	0.79	J	0.30	1.00	0.41	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7066129	Yld % 79
Thorium 228	1.35		0.25	0.10	0.03	03/07/07	03/18/07
Thorium 230	0.91		0.18	0.10	0.02	03/07/07	03/18/07
Thorium 232	1.24		0.23	0.10	0.03	03/07/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7082157	Yld % 76
Uranium 234	0.82		0.17	0.10	0.03	03/23/07	03/25/07
Uranium 235/236	0.044	J	0.034	0.100	0.031	03/23/07	03/25/07
Uranium 238	0.81		0.17	0.10	0.02	03/23/07	03/25/07

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-SU8-1015

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-035
Work Order: JP948
Matrix: SOLID

Date Collected: 02/02/07 1126
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/g		Batch # 7060252	Yld % 109
Radium (226)	1.44		0.30	1.00	0.22	03/01/07	03/20/07
Radium 228 by GFPC EPA 904 MOD				pCi/g		Batch # 7060254	Yld % 117
Radium 228	0.57	J	0.23	1.00	0.32	03/01/07	03/20/07
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7066129	Yld % 79
Thorium 228	1.19		0.23	0.10	0.03	03/07/07	03/18/07
Thorium 230	1.01		0.20	0.10	0.03	03/07/07	03/18/07
Thorium 232	1.13		0.22	0.10	0.02	03/07/07	03/18/07
Iso URANIUM (LONG CT) DOE A-01-R MOD				pCi/g		Batch # 7082157	Yld % 90
Uranium 234	0.77		0.15	0.10	0.02	03/23/07	03/25/07
Uranium 235/236	0.034	J	0.027	0.100	0.023	03/23/07	03/25/07
Uranium 238	0.78		0.16	0.10	0.02	03/23/07	03/25/07

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-SU8-1016

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7C010119-036
Work Order: JP95C
Matrix: SOLID

Date Collected: 01/31/07 1200
Date Received: 03/01/07 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				**pCi/g**		**Batch # 7060252**	**Yld % 109**
Radium (226)	**1.32**		**0.28**	1.00	**0.16**	**03/01/07**	**03/20/07**
Radium 228 by GFPC EPA 904 MOD				**pCi/g**		**Batch # 7060254**	**Yld % 105**
Radium 228	**0.90**	**J**	**0.31**	1.00	**0.41**	**03/01/07**	**03/20/07**
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7066129**	**Yld % 95**
Thorium 228	**1.26**		**0.22**	0.10	**0.03**	**03/07/07**	**03/18/07**
Thorium 230	**1.03**		**0.19**	0.10	**0.03**	**03/07/07**	**03/18/07**
Thorium 232	**1.16**		**0.21**	0.10	**0.03**	**03/07/07**	**03/18/07**
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**		**Batch # 7082157**	**Yld % 93**
Uranium 234	**0.62**		**0.13**	0.10	**0.02**	**03/23/07**	**03/25/07**
Uranium 235/236	**0.025**	**J**	**0.023**	0.100	**0.024**	**03/23/07**	**03/25/07**
Uranium 238	**0.73**		**0.14**	0.10	**0.02**	**03/23/07**	**03/25/07**

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.

METHOD BLANK REPORT

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7C010119
Matrix: SOLID

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date	Lab Sample ID
Radium 226 by EPA 903.0 MOD			**pCi/g**	**Batch # 7060251**		**Yld % 89**		**F7C010000-251B**
Radium (226)	0.03	U	0.11	1.00	0.21	03/01/07	03/20/07	
Radium 228 by GFPC EPA 904 MOD			**pCi/g**	**Batch # 7060253**		**Yld % 85**		**F7C010000-253B**
Radium 228	-0.15	U	0.43	1.00	0.75	03/01/07	03/20/07	
Radium 226 by EPA 903.0 MOD			**pCi/g**	**Batch # 7060252**		**Yld % 89**		**F7C010000-252B**
Radium (226)	0.03	U	0.11	1.00	0.20	03/01/07	03/20/07	
Radium 228 by GFPC EPA 904 MOD			**pCi/g**	**Batch # 7060254**		**Yld % 91**		**F7C010000-254B**
Radium 228	0.30	U	0.41	1.00	0.68	03/01/07	03/20/07	
Iso THORIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**Batch # 7065384**		**Yld % 84**		**F7C060000-384B**
Thorium 228	-0.0004	U	0.021	0.100	0.036	03/06/07	03/18/07	
Thorium 230	**0.037**	**J**	**0.021**	0.100	**0.018**	**03/06/07**	**03/18/07**	
Thorium 232	0.0019	U	0.0089	0.100	0.017	03/06/07	03/18/07	
Iso THORIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**Batch # 7066129**		**Yld % 81**		**F7C070000-129B**
Thorium 228	0.004	U	0.019	0.100	0.033	03/07/07	03/18/07	
Thorium 230	**0.039**	**J**	**0.028**	0.100	**0.025**	**03/07/07**	**03/18/07**	
Thorium 232	0.004	U	0.012	0.100	0.011	03/07/07	03/18/07	
Iso URANIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**Batch # 7079167**		**Yld % 81**		**F7C200000-167B**
Uranium 234	0.022	U	0.022	0.100	0.025	03/20/07	03/22/07	
Uranium 235/236	0.004	U	0.012	0.100	0.024	03/20/07	03/22/07	
Uranium 238	0.006	U	0.013	0.100	0.023	03/20/07	03/22/07	
Iso URANIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**Batch # 7082157**		**Yld % 85**		**F7C230000-157B**
Uranium 234	0.003	U	0.015	0.100	0.028	03/23/07	03/25/07	
Uranium 235/236	-0.005	U	0.015	0.100	0.033	03/23/07	03/25/07	
Uranium 238	0.006	U	0.013	0.100	0.022	03/23/07	03/25/07	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using 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.

Laboratory Control Sample Report

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7C010119
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**			**F7C010000-251C**
Radium (226)	11.2	12.6	1.5	0.2	95	113	(53 - 113)
	Batch #:	7060251		**Analysis Date:**	03/20/07		
Radium 226 by EPA 903.0 MOD			**pCi/g**	**903.0 MOD**			**F7C010000-252C**
Radium (226)	11.2	11.9	1.3	0.1	93	106	(53 - 113)
	Batch #:	7060252		**Analysis Date:**	03/21/07		
Radium 228 by GFPC EPA 904 MOD			**pCi/g**	**904 MOD**			**F7C010000-253C**
Radium 228	9.14	9.2	1.2	0.7	92	101	(54 - 130)
	Batch #:	7060253		**Analysis Date:**	03/20/07		
Radium 228 by GFPC EPA 904 MOD			**pCi/g**	**904 MOD**			**F7C010000-254C**
Radium 228	9.14	8.4	1.1	0.6	102	92	(54 - 130)
	Batch #:	7060254		**Analysis Date:**	03/20/07		
Iso THORIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**A-01-R MOD**			**F7C060000-384C**
Thorium 230	58.5	58.9	8.1	0.2	86	101	(81 - 124)
	Batch #:	7065384		**Analysis Date:**	03/18/07		
Iso THORIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**A-01-R MOD**			**F7C070000-129C**
Thorium 230	58.5	55.9	8.9	0.5	84	96	(81 - 124)
	Batch #:	7066129		**Analysis Date:**	03/18/07		
Iso URANIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**A-01-R MOD**			**F7C200000-167C**
Uranium 234	19.6	17.6	3.1	0.3	98	90	(78 - 125)
Uranium 238	19.6	18.0	3.2	0.3	98	92	(76 - 122)
	Batch #:	7079167		**Analysis Date:**	03/22/07		
Iso URANIUM (LONG CT) DOE A-01-R MOD			**pCi/g**	**A-01-R MOD**			**F7C230000-157C**
Uranium 234	19.6	19.8	3.5	0.4	91	101	(78 - 125)
Uranium 238	19.6	20.3	3.6	0.4	91	104	(76 - 122)
	Batch #:	7082157		**Analysis Date:**	03/25/07		

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: F7C010119 Date Sampled: 02/01/07
Matrix: SOLID Date Received: 03/01/07

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2 σ+/-)	% Yld	QC Sample ID Precision	
Radium 226 by EPA 903.0 MOD				**pCi/g**	**903.0 MOD**				**F7C010119-001**	
Radium (226)	**0.87**	J	**0.24**	90	**0.76**	J	**0.23**	92	13	%RPD
	Batch #:		7060251	(Sample)	7060251	(Duplicate)				
Radium 228 by GFPC EPA 904 MOD				**pCi/g**	**904 MOD**				**F7C010119-001**	
Radium 228	0.77	U	0.52	78	**1.02**		**0.49**	84	28	%RPD
	Batch #:		7060253	(Sample)	7060253	(Duplicate)				
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**	**A-01-R MOD**				**F7C010119-001**	
Thorium 228	**0.56**		**0.10**	87	**0.65**		**0.12**	88	14	%RPD
Thorium 230	**0.528**		**0.098**	87	**0.520**		**0.097**	88	1	%RPD
Thorium 232	**0.59**		**0.11**	87	**0.61**		**0.11**	88	4	%RPD
	Batch #:		7065384	(Sample)	7065384	(Duplicate)				
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**	**A-01-R MOD**				**F7C010119-001**	
Uranium 234	**0.411**		**0.099**	85	**0.63**		**0.14**	74	42	%RPD
Uranium 235/236	**0.015**	J	**0.020**	85	0.0	U	0.0	74	200	%RPD
Uranium 238	**0.45**		**0.11**	85	**0.65**		**0.15**	74	36	%RPD
	Batch #:		7079167	(Sample)	7079167	(Duplicate)				
Radium 226 by EPA 903.0 MOD				**pCi/g**	**903.0 MOD**				**F7C010119-021**	
Radium (226)	**0.83**	J	**0.23**	98	**0.81**	J	**0.23**	94	2	%RPD
	Batch #:		7060252	(Sample)	7060252	(Duplicate)				
Radium 228 by GFPC EPA 904 MOD				**pCi/g**	**904 MOD**				**F7C010119-021**	
Radium 228	**1.11**		**0.47**	89	**0.86**	J	**0.47**	83	26	%RPD
	Batch #:		7060254	(Sample)	7060254	(Duplicate)				
Iso THORIUM (LONG CT) DOE A-01-R MOD				**pCi/g**	**A-01-R MOD**				**F7C010119-021**	
Thorium 228	**0.68**		**0.15**	78	**0.63**		**0.14**	86	8	%RPD
Thorium 230	**0.59**		**0.13**	78	**0.62**		**0.13**	86	5	%RPD
Thorium 232	**0.80**		**0.17**	78	**0.69**		**0.14**	86	14	%RPD
	Batch #:		7066129	(Sample)	7066129	(Duplicate)				
Iso URANIUM (LONG CT) DOE A-01-R MOD				**pCi/g**	**A-01-R MOD**				**F7C010119-021**	
Uranium 234	**0.361**		**0.090**	91	**0.49**		**0.11**	88	29	%RPD
Uranium 235/236	0.022	U	0.023	91	**0.033**	J	**0.028**	88	41	%RPD
Uranium 238	**0.43**		**0.10**	91	**0.397**		**0.098**	88	9	%RPD
	Batch #:		7082157	(Sample)	7082157	(Duplicate)				

NOTE(S)

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

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

SEVERN TRENT STL

Alpha Spectroscopy Thorium

SEVERN TRENT STL

Analysis Report for Alpha Spectroscopy

Batch: 7065384 **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
F7C010119-001	JP92V1AE	2.0043	1.00	2.00	AV9	3/17/07 13:40	400.00	rad05-0088	Th-229	3.652E+000	87.26%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	5.624E-001	pCi/g	7.522E-002	1.037E-001	2.683E-002	1.014E-002
Th-229	1.436E+000	pCi/g	1.268E-001	1.818E-001	2.276E-002	8.101E-003
Th-230	5.276E-001	pCi/g	7.217E-002	9.849E-002	2.024E-002	6.843E-003
Th-232	5.868E-001	pCi/g	7.533E-002	1.060E-001	1.261E-002	3.045E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-001X	JP92V1AH	2.0114	1.00	2.00	AV11	3/17/07 13:40	400.00	rad05-0088	Th-229	3.639E+000	87.76%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	6.480E-001	pCi/g	8.041E-002	1.150E-001	2.980E-002	1.167E-002
Th-229	1.439E+000	pCi/g	1.257E-001	1.820E-001	2.353E-002	8.534E-003
Th-230	5.200E-001	pCi/g	7.112E-002	9.703E-002	1.994E-002	6.743E-003
Th-232	6.129E-001	pCi/g	7.654E-002	1.091E-001	1.491E-002	4.243E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-002	JP9201AE	2.0115	1.00	2.00	AV12	3/17/07 13:40	400.00	rad05-0088	Th-229	3.639E+000	93.75%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	6.869E-001	pCi/g	8.110E-002	1.186E-001	2.802E-002	1.089E-002
Th-229	1.537E+000	pCi/g	1.232E-001	1.929E-001	1.634E-002	5.049E-003
Th-230	4.733E-001	pCi/g	6.660E-002	8.938E-002	1.789E-002	5.827E-003
Th-232	6.848E-001	pCi/g	7.938E-002	1.172E-001	1.200E-002	2.899E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-003	JP9211AE	2.0073	1.00	2.00	AV13	3/17/07 13:40	400.00	rad05-0088	Th-229	3.647E+000	92.97%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	4.986E-001	pCi/g	6.829E-002	9.264E-002	2.237E-002	8.113E-003
Th-229	1.527E+000	pCi/g	1.225E-001	1.911E-001	1.899E-002	6.422E-003
Th-230	4.468E-001	pCi/g	6.411E-002	8.519E-002	1.609E-002	4.971E-003
Th-232	5.472E-001	pCi/g	7.057E-002	9.849E-002	1.419E-002	4.039E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-004	JP9221AE	2.0039	1.00	2.00	AV14	3/17/07 13:40	400.00	rad05-0088	Th-229	3.653E+000	90.24%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	1.035E+000	pCi/g	9.926E-002	1.641E-001	2.408E-002	8.873E-003
Th-229	1.485E+000	pCi/g	1.245E-001	1.868E-001	1.818E-002	5.922E-003
Th-230	6.765E-001	pCi/g	8.017E-002	1.172E-001	1.957E-002	6.617E-003
Th-232	9.916E-001	pCi/g	9.622E-002	1.579E-001	1.219E-002	2.945E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-005	JP9251AE	2.0156	1.00	2.00	AV15	3/17/07 13:40	400.00	rad05-0088	Th-229	3.632E+000	93.05%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	8.971E-001	pCi/g	9.205E-002	1.457E-001	3.116E-002	1.251E-002
Th-229	1.522E+000	pCi/g	1.225E-001	1.909E-001	2.240E-002	8.126E-003
Th-230	8.103E-001	pCi/g	8.661E-002	1.338E-001	2.239E-002	8.121E-003
Th-232	8.087E-001	pCi/g	8.581E-002	1.331E-001	1.601E-002	4.949E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-006	JP9261AE	2.0031	1.00	2.00	AV18	3/17/07 13:40	400.00	rad05-0088	Th-229	3.654E+000	82.26%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
						Th-228	4.432E-001 pCi/g		7.137E-002	9.160E-002	3.264E-002	1.269E-002
						Th-229	1.354E+000 pCi/g		1.333E-001	1.748E-001	1.903E-002	5.881E-003
						Th-230	3.775E-001 pCi/g		6.386E-002	8.043E-002	1.405E-002	3.393E-003
						Th-232	5.011E-001 pCi/g		7.334E-002	9.795E-002	1.398E-002	3.376E-003
F7C010119-007	JP9271AE	2.0047	1.00	2.00	AV19	3 / 17 / 07 13:40	400.00	rad05-0088	Th-229		3.652E+000	90.62%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	4.455E-001 pCi/g		6.693E-002	8.769E-002	2.391E-002	8.671E-003
						Th-229	1.491E+000 pCi/g		1.267E-001	1.889E-001	1.885E-002	6.138E-003
						Th-230	3.968E-001 pCi/g		6.301E-002	8.073E-002	2.159E-002	7.514E-003
						Th-232	4.558E-001 pCi/g		6.679E-002	8.845E-002	1.711E-002	5.286E-003
F7C010119-008	JP9281AE	2.0087	1.00	2.00	AV20	3 / 17 / 07 13:40	400.00	rad05-0088	Th-229		3.644E+000	86.10%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	8.947E-001 pCi/g		9.498E-002	1.482E-001	3.318E-002	1.332E-002
						Th-229	1.413E+000 pCi/g		1.268E-001	1.791E-001	2.490E-002	9.176E-003
						Th-230	6.646E-001 pCi/g		8.055E-002	1.168E-001	1.714E-002	5.295E-003
						Th-232	7.706E-001 pCi/g		8.636E-002	1.306E-001	1.512E-002	4.302E-003
F7C010119-009	JP93A1AE	2.0078	1.00	2.00	AV23	3 / 17 / 07 13:40	400.00	rad05-0088	Th-229		3.646E+000	88.34%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	2.994E-001 pCi/g		5.449E-002	6.610E-002	3.140E-002	1.273E-002
						Th-229	1.451E+000 pCi/g		1.206E-001	1.806E-001	1.957E-002	6.810E-003
						Th-230	2.497E-001 pCi/g		4.704E-002	5.645E-002	1.151E-002	2.779E-003
						Th-232	2.751E-001 pCi/g		4.955E-002	6.031E-002	1.550E-002	4.789E-003
F7C010119-010	JP93C1AE	2.0072	1.00	2.00	AV24	3 / 17 / 07 13:40	400.00	rad05-0088	Th-229		3.647E+000	96.38%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.288E-001 pCi/g		3.815E-002	4.142E-002	3.009E-002	1.201E-002
						Th-229	1.583E+000 pCi/g		1.218E-001	1.978E-001	1.995E-002	6.943E-003
						Th-230	1.321E-001 pCi/g		3.561E-002	3.927E-002	1.873E-002	6.334E-003
						Th-232	1.297E-001 pCi/g		3.450E-002	3.814E-002	1.401E-002	3.986E-003
F7C010119-011	JP93D1AE	2.0152	1.00	2.00	AV45	3 / 17 / 07 13:40	400.00	rad05-0088	Th-229		3.632E+000	80.80%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.089E+000 pCi/g		1.050E-001	1.746E-001	2.346E-002	8.352E-003
						Th-229	1.322E+000 pCi/g		1.285E-001	1.687E-001	1.581E-002	4.498E-003
						Th-230	1.009E+000 pCi/g		1.005E-001	1.637E-001	1.308E-002	3.159E-003
						Th-232	1.098E+000 pCi/g		1.046E-001	1.753E-001	1.302E-002	3.143E-003
F7C010119-012	JP93E1AE	2.0071	1.00	2.00	AV48	3 / 17 / 07 13:40	400.00	rad05-0088	Th-229		3.647E+000	77.03%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	8.139E-001 pCi/g		9.489E-002	1.422E-001	1.943E-002	6.004E-003
						Th-229	1.265E+000 pCi/g		1.347E-001	1.642E-001	2.131E-002	6.940E-003
						Th-230	6.415E-001 pCi/g		8.436E-002	1.187E-001	1.944E-002	6.007E-003
						Th-232	8.610E-001 pCi/g		9.749E-002	1.485E-001	2.119E-002	6.902E-003
F7C010119-013	JP93F1AE	2.0178	1.00	2.00	AV50	3 / 17 / 07 13:40	400.00	rad05-0088	Th-229		3.628E+000	88.25%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
						Th-228	8.387E-001 pCi/g		9.017E-002	1.394E-001	2.780E-002	1.072E-002
						Th-229	1.442E+000 pCi/g		1.250E-001	1.821E-001	2.699E-002	1.031E-002
						Th-230	9.270E-001 pCi/g		9.391E-002	1.504E-001	1.967E-002	6.651E-003
						Th-232	8.949E-001 pCi/g		9.175E-002	1.459E-001	1.471E-002	4.185E-003
F7C010119-014	JP93G1AE	2.0052	1.00	2.00	AV53	3 / 17 / 07 13:39	400.00	rad05-0088	Th-229		3.651E+000	90.52%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	4.172E-001 pCi/g		6.188E-002	8.103E-002	1.876E-002	6.342E-003
						Th-229	1.488E+000 pCi/g		1.219E-001	1.860E-001	1.878E-002	6.349E-003
						Th-230	4.293E-001 pCi/g		6.236E-002	8.238E-002	1.410E-002	4.013E-003
						Th-232	4.253E-001 pCi/g		6.219E-002	8.192E-002	1.734E-002	5.648E-003
F7C010119-015	JP93H1AE	2.0129	1.00	2.00	AV54	3 / 17 / 07 13:39	400.00	rad05-0088	Th-229		3.637E+000	96.65%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	2.657E-001 pCi/g		4.849E-002	5.871E-002	1.672E-002	5.446E-003
						Th-229	1.583E+000 pCi/g		1.193E-001	1.965E-001	1.919E-002	6.677E-003
						Th-230	2.120E-001 pCi/g		4.347E-002	5.086E-002	1.673E-002	5.449E-003
						Th-232	2.951E-001 pCi/g		5.047E-002	6.243E-002	1.123E-002	2.711E-003
F7C010119-016	JP93L1AE	2.0114	1.00	2.00	AV56	3 / 17 / 07 13:39	400.00	rad05-0088	Th-229		3.639E+000	94.24%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	2.461E-001 pCi/g		4.881E-002	5.785E-002	2.056E-002	7.155E-003
						Th-229	1.545E+000 pCi/g		1.236E-001	1.942E-001	2.059E-002	7.163E-003
						Th-230	2.093E-001 pCi/g		4.520E-002	5.234E-002	2.058E-002	7.159E-003
						Th-232	2.934E-001 pCi/g		5.297E-002	6.462E-002	2.047E-002	7.123E-003
F7C010119-017	JP93N1AE	2.0101	1.00	2.00	AV58	3 / 17 / 07 13:39	400.00	rad05-0088	Th-229		3.642E+000	85.83%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	7.687E-001 pCi/g		8.647E-002	1.302E-001	2.348E-002	8.516E-003
						Th-229	1.408E+000 pCi/g		1.253E-001	1.777E-001	1.690E-002	5.221E-003
						Th-230	6.111E-001 pCi/g		7.683E-002	1.091E-001	1.850E-002	6.026E-003
						Th-232	7.567E-001 pCi/g		8.473E-002	1.280E-001	6.419E-003	0.000E+000
F7C010119-018	JP93P1AE	2.0176	1.00	2.00	AV73	3 / 17 / 07 13:40	400.00	rad05-0088	Th-229		3.628E+000	80.35%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	9.577E-001 pCi/g		9.991E-002	1.587E-001	2.288E-002	7.960E-003
						Th-229	1.313E+000 pCi/g		1.301E-001	1.685E-001	2.151E-002	7.274E-003
						Th-230	7.248E-001 pCi/g		8.675E-002	1.274E-001	1.822E-002	5.632E-003
						Th-232	9.859E-001 pCi/g		1.007E-001	1.620E-001	1.608E-002	4.575E-003
F7C010119-019	JP93Q1AE	2.0059	1.00	2.00	AV1	3 / 18 / 07 14:17	400.00	rad05-0088	Th-229		3.649E+000	76.99%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	7.250E-001 pCi/g		9.106E-002	1.312E-001	3.338E-002	1.298E-002
						Th-229	1.266E+000 pCi/g		1.348E-001	1.641E-001	2.294E-002	7.756E-003
						Th-230	6.714E-001 pCi/g		8.627E-002	1.228E-001	1.943E-002	6.005E-003
						Th-232	8.809E-001 pCi/g		9.845E-002	1.511E-001	1.934E-002	5.975E-003
F7C010119-020	JP93R1AE	2.0007	1.00	2.00	AV2	3 / 18 / 07 14:17	400.00	rad05-0088	Th-229		3.659E+000	86.02%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
						Th-228	7.023E-001 pCi/g		8.561E-002	1.240E-001	3.199E-002	1.262E-002
						Th-229	1.418E+000 pCi/g		1.284E-001	1.804E-001	1.568E-002	4.462E-003
						Th-230	5.828E-001 pCi/g		7.640E-002	1.066E-001	1.306E-002	3.153E-003
						Th-232	6.459E-001 pCi/g		8.035E-002	1.151E-001	1.559E-002	4.437E-003
F7C060000-384B	JQJK81AA	2.0000	1.00	2.00	AV3	3 / 18 / 07 14:17	400.00 rad05-0088		Th-229		3.660E+000	84.25%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	-4.136E-004 pCi/g		2.113E-002	2.115E-002	3.613E-002	1.471E-002
						Th-229	1.389E+000 pCi/g		1.282E-001	1.766E-001	1.923E-002	6.263E-003
						Th-230	3.659E-002 pCi/g		2.060E-002	2.113E-002	1.757E-002	5.430E-003
						Th-232	1.851E-003 pCi/g		8.898E-003	8.902E-003	1.748E-002	5.402E-003
F7C060000-384C	JQJK81AC	0.1319	1.00	2.00	AV4	3 / 18 / 07 14:17	400.00 rad05-0088		Th-229		5.550E+001	85.81%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.582E+000 pCi/g		5.716E-001	6.067E-001	5.159E-001	2.071E-001
						Th-229	2.145E+001 pCi/g		1.945E+000	2.727E+000	3.142E-001	1.062E-001
						Th-230	5.894E+001 pCi/g		2.977E+000	8.085E+000	1.967E-001	4.749E-002
						Th-232	1.305E+000 pCi/g		4.675E-001	4.962E-001	3.125E-001	1.057E-001

Laboratory Control Sample Information

Sample ID	WRKNO	RegionName	Activity	StdAdded	Recovery	LCL	UCL
F7C060000-384C	JQJK81AC	Th-230	5.894E+001	5.850E+001	100.76%	81.00	124.00

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F7C010119-001	Th-228	5.624E-001	F7C010119-001X	6.480E-001	14.15%	3.914E-001	5.527E-001	
	Th-230	5.276E-001	F7C010119-001X	5.200E-001	1.46%	3.922E-002	5.547E-002	
	Th-232	5.868E-001	F7C010119-001X	6.129E-001	4.35%	1.213E-001	1.715E-001	

Matrix Spike Information

SampID	SampMSID	RegionName	Sample Activity	MS Activity	StdAdded	MSRecovery

SEVERN TRENT STL

Analysis Report for Alpha Spectroscopy

Batch: 7066129 **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
F7C010119-021	JP93V1AE	2.0130	1.00	2.00	AV9	3/18/07 9:43	240.00	Rad05-0088	Th-229	3.636E+000	78.22%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	6.775E-001	pCi/g	1.122E-001	1.495E-001	3.945E-002	1.366E-002
Th-229	1.281E+000	pCi/g	1.722E-001	1.864E-001	3.396E-002	1.091E-002
Th-230	5.905E-001	pCi/g	1.039E-001	1.349E-001	3.056E-002	9.217E-003
Th-232	7.972E-001	pCi/g	1.194E-001	1.666E-001	2.027E-002	4.101E-003

F7C010119-021X	JP93V1AH	2.0028	1.00	2.00	AV73	3/18/07 9:44	240.00	Rad05-0088	Th-229	3.655E+000	85.58%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	6.262E-001	pCi/g	1.017E-001	1.351E-001	2.923E-002	9.129E-003
Th-229	1.409E+000	pCi/g	1.640E-001	1.994E-001	2.767E-002	8.343E-003
Th-230	6.215E-001	pCi/g	1.009E-001	1.340E-001	2.389E-002	6.459E-003
Th-232	6.920E-001	pCi/g	1.060E-001	1.445E-001	2.141E-002	5.248E-003

F7C010119-022	JP93W1AE	2.0187	1.00	2.00	AV12	3/18/07 9:43	240.00	Rad05-0088	Th-229	3.626E+000	94.03%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	1.245E+000	pCi/g	1.393E-001	2.232E-001	3.657E-002	1.312E-002
Th-229	1.536E+000	pCi/g	1.584E-001	2.145E-001	2.604E-002	7.852E-003
Th-230	9.713E-001	pCi/g	1.220E-001	1.827E-001	2.025E-002	4.963E-003
Th-232	1.248E+000	pCi/g	1.378E-001	2.226E-001	1.726E-002	3.492E-003

F7C010119-023	JP93X1AE	2.0027	1.00	2.00	AV13	3/18/07 9:43	240.00	Rad05-0088	Th-229	3.655E+000	59.11%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	7.336E-001	pCi/g	1.344E-001	1.773E-001	4.716E-002	1.551E-002
Th-229	9.731E-001	pCi/g	1.992E-001	1.530E-001	4.071E-002	1.228E-002
Th-230	6.520E-001	pCi/g	1.256E-001	1.623E-001	3.516E-002	9.505E-003
Th-232	6.561E-001	pCi/g	1.254E-001	1.625E-001	3.151E-002	7.722E-003

F7C010119-024	JP9301AE	2.0102	1.00	2.00	AV14	3/18/07 9:43	240.00	Rad05-0088	Th-229	3.642E+000	84.37%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	9.762E-001	pCi/g	1.286E-001	1.898E-001	3.420E-002	1.147E-002
Th-229	1.384E+000	pCi/g	1.657E-001	1.972E-001	2.658E-002	7.657E-003
Th-230	6.855E-001	pCi/g	1.076E-001	1.455E-001	2.837E-002	8.556E-003
Th-232	8.394E-001	pCi/g	1.180E-001	1.683E-001	1.882E-002	3.807E-003

F7C010119-025	JP9321AE	2.0169	1.00	2.00	AV15	3/18/07 9:43	240.00	Rad05-0088	Th-229	3.629E+000	88.79%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
Th-228	1.289E+000	pCi/g	1.450E-001	2.331E-001	4.250E-002	1.589E-002
Th-229	1.452E+000	pCi/g	1.619E-001	2.049E-001	3.138E-002	1.032E-002
Th-230	1.095E+000	pCi/g	1.327E-001	2.040E-001	3.136E-002	1.032E-002
Th-232	1.141E+000	pCi/g	1.346E-001	2.103E-001	2.325E-002	6.285E-003

F7C010119-026	JP9341AE	2.0062	1.00	2.00	AV18	3/18/07 9:43	240.00	Rad05-0088	Th-229	3.649E+000	86.19%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
						Th-228	1.123E+000 pCi/g		1.402E-001	2.137E-001	4.086E-002	1.466E-002
						Th-229	1.417E+000 pCi/g		1.678E-001	2.030E-001	2.513E-002	6.795E-003
						Th-230	7.920E-001 pCi/g		1.164E-001	1.628E-001	1.938E-002	3.921E-003
						Th-232	1.060E+000 pCi/g		1.342E-001	2.030E-001	1.928E-002	3.901E-003
F7C010119-027	JP9371AE	2.0049	1.00	2.00	AV19	3 / 18 / 07 9:43	240.00	Rad05-0088	Th-229		3.651E+000	89.64%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	6.661E-001 pCi/g		1.056E-001	1.419E-001	3.232E-002	1.063E-002
						Th-229	1.474E+000 pCi/g		1.645E-001	2.091E-001	2.612E-002	7.524E-003
						Th-230	4.764E-001 pCi/g		8.940E-002	1.122E-001	2.949E-002	9.210E-003
						Th-232	6.316E-001 pCi/g		1.019E-001	1.359E-001	2.397E-002	6.480E-003
F7C010119-028	JP9391AE	2.0153	1.00	2.00	AV20	3 / 18 / 07 9:43	240.00	Rad05-0088	Th-229		3.632E+000	82.78%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.522E+000 pCi/g		1.615E-001	2.717E-001	4.479E-002	1.674E-002
						Th-229	1.354E+000 pCi/g		1.669E-001	1.940E-001	3.461E-002	1.161E-002
						Th-230	1.497E+000 pCi/g		1.586E-001	2.671E-001	2.463E-002	6.658E-003
						Th-232	1.541E+000 pCi/g		1.603E-001	2.732E-001	2.207E-002	5.409E-003
F7C010119-029	JP94C1AE	2.0164	1.00	2.00	AV23	3 / 18 / 07 9:44	240.00	Rad05-0088	Th-229		3.630E+000	67.94%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.184E+000 pCi/g		1.530E-001	2.327E-001	5.279E-002	1.998E-002
						Th-229	1.111E+000 pCi/g		1.770E-001	1.641E-001	3.423E-002	1.069E-002
						Th-230	9.619E-001 pCi/g		1.353E-001	1.964E-001	2.156E-002	4.363E-003
						Th-232	1.394E+000 pCi/g		1.626E-001	2.628E-001	2.781E-002	7.519E-003
F7C010119-030	JP94H1AE	2.0169	1.00	2.00	AV24	3 / 18 / 07 9:44	240.00	Rad05-0088	Th-229		3.629E+000	84.65%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	8.736E-001 pCi/g		1.242E-001	1.767E-001	4.446E-002	1.651E-002
						Th-229	1.384E+000 pCi/g		1.673E-001	1.985E-001	3.349E-002	1.102E-002
						Th-230	8.096E-001 pCi/g		1.175E-001	1.654E-001	2.494E-002	6.742E-003
						Th-232	9.035E-001 pCi/g		1.237E-001	1.794E-001	2.235E-002	5.478E-003
F7C010119-031	JP94P1AE	2.0044	1.00	2.00	AV45	3 / 18 / 07 9:44	240.00	Rad05-0088	Th-229		3.652E+000	75.64%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	8.059E-001 pCi/g		1.212E-001	1.686E-001	3.386E-002	1.088E-002
						Th-229	1.244E+000 pCi/g		1.719E-001	1.804E-001	2.376E-002	5.821E-003
						Th-230	5.313E-001 pCi/g		9.771E-002	1.246E-001	2.033E-002	4.114E-003
						Th-232	8.491E-001 pCi/g		1.231E-001	1.744E-001	2.023E-002	4.094E-003
F7C010119-032	JP94R1AE	2.0167	1.00	2.00	AV48	3 / 18 / 07 9:44	240.00	Rad05-0088	Th-229		3.630E+000	93.50%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.193E+000 pCi/g		1.340E-001	2.136E-001	2.208E-002	5.970E-003
						Th-229	1.529E+000 pCi/g		1.571E-001	2.126E-001	2.558E-002	7.715E-003
						Th-230	9.544E-001 pCi/g		1.199E-001	1.791E-001	1.990E-002	4.877E-003
						Th-232	1.265E+000 pCi/g		1.378E-001	2.239E-001	2.382E-002	6.863E-003
F7C010119-033	JP9401AE	2.0196	1.00	2.00	AV50	3 / 18 / 07 9:44	240.00	Rad05-0088	Th-229		3.625E+000	92.77%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
						Th-228	1.191E+000	pCi/g	1.346E-001	2.139E-001	3.479E-002	1.235E-002
						Th-229	1.515E+000	pCi/g	1.572E-001	2.108E-001	3.482E-002	1.237E-002
						Th-230	9.766E-001	pCi/g	1.211E-001	1.824E-001	2.380E-002	6.856E-003
						Th-232	1.107E+000	pCi/g	1.284E-001	2.009E-001	1.968E-002	4.824E-003
F7C010119-034	JP9441AE	2.0124	1.00	2.00	AV53	3 / 18 / 07 9:44	240.00	Rad05-0088	Th-229		3.638E+000	78.89%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.346E+000	pCi/g	1.523E-001	2.465E-001	2.916E-002	8.793E-003
						Th-229	1.293E+000	pCi/g	1.680E-001	1.857E-001	2.919E-002	8.802E-003
						Th-230	9.135E-001	pCi/g	1.253E-001	1.817E-001	2.271E-002	5.564E-003
						Th-232	1.243E+000	pCi/g	1.460E-001	2.310E-001	2.718E-002	7.830E-003
F7C010119-035	JP9481AE	2.0186	1.00	2.00	AV54	3 / 18 / 07 9:44	240.00	Rad05-0088	Th-229		3.626E+000	79.43%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.194E+000	pCi/g	1.448E-001	2.255E-001	2.782E-002	8.013E-003
						Th-229	1.297E+000	pCi/g	1.695E-001	1.874E-001	3.145E-002	9.825E-003
						Th-230	1.007E+000	pCi/g	1.331E-001	1.974E-001	2.783E-002	8.018E-003
						Th-232	1.131E+000	pCi/g	1.402E-001	2.156E-001	1.972E-002	3.989E-003
F7C010119-036	JP95C1AE	2.0130	1.00	2.00	AV56	3 / 18 / 07 9:44	240.00	Rad05-0088	Th-229		3.636E+000	95.22%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.255E+000	pCi/g	1.389E-001	2.240E-001	2.747E-002	8.581E-003
						Th-229	1.560E+000	pCi/g	1.586E-001	2.177E-001	2.750E-002	8.591E-003
						Th-230	1.027E+000	pCi/g	1.258E-001	1.911E-001	2.749E-002	8.586E-003
						Th-232	1.162E+000	pCi/g	1.334E-001	2.105E-001	2.735E-002	8.543E-003
F7C070000-129B	JQKJD1AA	2.0000	1.00	2.00	AV58	3 / 18 / 07 9:44	240.00	Rad05-0088	Th-229		3.660E+000	81.41%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	4.207E-003	pCi/g	1.882E-002	1.883E-002	3.327E-002	1.094E-002
						Th-229	1.342E+000	pCi/g	1.670E-001	1.915E-001	2.685E-002	7.735E-003
						Th-230	3.894E-002	pCi/g	2.761E-002	2.816E-002	2.480E-002	6.705E-003
						Th-232	4.189E-003	pCi/g	8.378E-003	1.186E-002	1.134E-002	0.000E+000
F7C070000-129C	JQKJD1AC	0.1324	1.00	2.00	AV17	3 / 18 / 07 9:43	240.00	Rad05-0088	Th-229		5.529E+001	83.52%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						Th-228	1.126E+000	pCi/g	9.839E-001	9.972E-001	1.245E+000	5.356E-001
						Th-229	2.080E+001	pCi/g	2.560E+000	2.990E+000	6.625E-001	2.441E-001
						Th-230	5.591E+001	pCi/g	3.804E+000	8.910E+000	5.293E-001	1.776E-001
						Th-232	1.041E+000	pCi/g	5.396E-001	5.600E-001	3.773E-001	1.020E-001

Laboratory Control Sample Information

Sample ID	WRKNO	RegionName	Activity	StdAdded	Recovery	LCL	UCL
F7C070000-129C	JQKJD1AC	Th-230	5.591E+001	5.850E+001	95.58%	81.00	124.00

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

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F7C010119-021	Th-228	6.775E-001	F7C010119-021X	6.262E-001	7.88%	1.805E-001	2.549E-001	
	Th-230	5.905E-001	F7C010119-021X	6.215E-001	5.11%	1.151E-001	1.628E-001	
	Th-232	7.972E-001	F7C010119-021X	6.920E-001	14.12%	3.380E-001	4.768E-001	

Matrix Spike Information

SampID	SampMSID	RegionName	Sample Activity	MS Activity	StdAdded	MSRecovery

SEVERN TRENT STL

Daily Pulsers

3/17/07

Daily Pulser Check - Severn Trent Lab

Pulser Date: 3/17/2007

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	03/17/2007 8:51	7336	7218.7 +/- 5%	Pass	13.9	5 - 50	Pass	222.0	229.0 +/- 5%	Pass	5001	5051.1 +/- 25%	Pass
AV2	03/17/2007 8:51	7334	7468.7 +/- 5%	Pass	14.4	5 - 50	Pass	228.0	222.9 +/- 5%	Pass	5044	5007.5 +/- 25%	Pass
AV2	03/17/2007 8:51	7334	7468.7 +/- 5%	Pass	14.4	5 - 50	Pass	228.0	222.9 +/- 5%	Pass	5044	5007.5 +/- 25%	Pass
AV3	03/17/2007 7:53	7427	7484.9 +/- 5%	Pass	13.6	5 - 50	Pass	222.0	225.9 +/- 5%	Pass	5001	5028.8 +/- 25%	Pass
AV4	03/17/2007 7:53	7414	7413.7 +/- 5%	Pass	15.2	5 - 50	Pass	227.2	224.9 +/- 5%	Pass	5038	5021.6 +/- 25%	Pass
AV6	03/17/2007 7:53	7249	7476.7 +/- 5%	Pass	11.6	5 - 50	Pass	222.9	224.0 +/- 5%	Pass	5007	5015.3 +/- 25%	Pass
AV7	03/17/2007 7:53	7430	7477.0 +/- 5%	Pass	13.2	5 - 50	Pass	228.0	224.9 +/- 5%	Pass	5044	5021.9 +/- 25%	Pass
AV8	03/17/2007 7:53	7407	7327.4 +/- 5%	Pass	15.3	5 - 50	Pass	225.1	228.0 +/- 5%	Pass	5023	5044.6 +/- 25%	Pass
AV9	03/17/2007 7:53	7716	7519.3 +/- 5%	Pass	13.4	5 - 50	Pass	225.0	227.9 +/- 5%	Pass	5022	5043.3 +/- 25%	Pass
AV11	03/17/2007 7:53	7676	7666.2 +/- 5%	Pass	15.6	5 - 50	Pass	215.1	225.0 +/- 5%	Pass	4951	5022.1 +/- 25%	Pass
AV12	03/17/2007 7:53	7696	7588.7 +/- 5%	Pass	15.3	5 - 50	Pass	224.9	230.0 +/- 5%	Pass	5022	5058.4 +/- 25%	Pass
AV13	03/17/2007 7:53	7326	7584.6 +/- 5%	Pass	12.9	5 - 50	Pass	225.9	228.0 +/- 5%	Pass	5029	5044.1 +/- 25%	Pass
AV14	03/17/2007 7:53	7705	7638.3 +/- 5%	Pass	13.3	5 - 50	Pass	222.0	227.0 +/- 5%	Pass	5000	5037.2 +/- 25%	Pass
AV15	03/17/2007 7:53	7700	7770.5 +/- 5%	Pass	14.1	5 - 50	Pass	222.0	226.9 +/- 5%	Pass	5000	5036.6 +/- 25%	Pass
AV17	03/17/2007 7:53	7755	7619.1 +/- 5%	Pass	44.5	5 - 50	Pass	227.0	229.9 +/- 5%	Pass	5037	5058.3 +/- 25%	Pass
AV18	03/17/2007 7:53	7718	7714.5 +/- 5%	Pass	14.7	5 - 50	Pass	223.1	226.9 +/- 5%	Pass	5009	5036.4 +/- 25%	Pass
AV19	03/17/2007 8:51	7614	7269.8 +/- 5%	Pass	13.4	5 - 50	Pass	222.0	227.7 +/- 5%	Pass	5001	5041.9 +/- 25%	Pass
AV19	03/17/2007 7:53	7721	7269.8 +/- 5%	FAIL	13.3	5 - 50	Pass	222.0	227.7 +/- 5%	Pass	5000	5041.9 +/- 25%	Pass
AV20	03/17/2007 7:53	7719	7503.6 +/- 5%	Pass	13.7	5 - 50	Pass	227.0	226.0 +/- 5%	Pass	5037	5029.9 +/- 25%	Pass
AV21	03/17/2007 7:53	7720	7550.9 +/- 5%	Pass	13.2	5 - 50	Pass	223.0	226.0 +/- 5%	Pass	5008	5029.6 +/- 25%	Pass
AV22	03/17/2007 7:53	7707	7691.4 +/- 5%	Pass	14.5	5 - 50	Pass	223.1	225.0 +/- 5%	Pass	5008	5022.4 +/- 25%	Pass
AV23	03/17/2007 7:53	7708	7665.3 +/- 5%	Pass	18.5	5 - 50	Pass	230.0	229.8 +/- 5%	Pass	5058	5057.0 +/- 25%	Pass
AV24	03/17/2007 7:53	7687	7354.0 +/- 5%	Pass	16.1	5 - 50	Pass	224.0	226.9 +/- 5%	Pass	5015	5036.4 +/- 25%	Pass
AV45	03/17/2007 7:53	7646	7593.5 +/- 5%	Pass	18.4	5 - 50	Pass	226.9	225.6 +/- 5%	Pass	5036	5026.9 +/- 25%	Pass
AV46	03/17/2007 7:53	7645	7722.7 +/- 5%	Pass	13.3	5 - 50	Pass	222.9	225.8 +/- 5%	Pass	5007	5028.0 +/- 25%	Pass
AV47	03/17/2007 7:53	7628	7532.5 +/- 5%	Pass	15.1	5 - 50	Pass	222.9	226.0 +/- 5%	Pass	5007	5029.6 +/- 25%	Pass
AV48	03/17/2007 7:53	7634	7717.5 +/- 5%	Pass	14.3	5 - 50	Pass	225.0	224.0 +/- 5%	Pass	5022	5015.2 +/- 25%	Pass
AV49	03/17/2007 7:53	7624	7703.4 +/- 5%	Pass	15.2	5 - 50	Pass	232.0	226.0 +/- 5%	Pass	5073	5029.5 +/- 25%	Pass
AV50	03/17/2007 7:53	7619	7660.9 +/- 5%	Pass	15.6	5 - 50	Pass	225.0	227.0 +/- 5%	Pass	5022	5037.2 +/- 25%	Pass
AV51	03/17/2007 7:53	7348	7070.5 +/- 5%	Pass	14.5	5 - 50	Pass	226.9	223.0 +/- 5%	Pass	5036	5007.6 +/- 25%	Pass
AV52	03/17/2007 7:53	7344	7156.4 +/- 5%	Pass	19.6	5 - 50	Pass	222.9	225.0 +/- 5%	Pass	5007	5022.4 +/- 25%	Pass
AV53	03/17/2007 7:53	7349	7144.1 +/- 5%	Pass	13.2	5 - 50	Pass	224.1	223.0 +/- 5%	Pass	5016	5007.8 +/- 25%	Pass

		Gross Counts				FWHM (keV)			Pulser Center				Energy (keV)			
Detector	Date/Time	Result	Criteria		P/F	Result	Criteria	P/F	Result	Criteria		P/F	Result	Criteria		P/F
AV54	03/17/2007 7:53	7344	7313.1	+/- 5%	Pass	13.6	5 - 50	Pass	227.0	226.0	+/- 5%	Pass	5037	5029.5	+/- 25%	Pass
AV55	03/17/2007 7:53	7343	7132.9	+/- 5%	Pass	13.3	5 - 50	Pass	224.0	226.0	+/- 5%	Pass	5015	5029.7	+/- 25%	Pass
AV56	03/17/2007 7:53	7339	7163.7	+/- 5%	Pass	13.7	5 - 50	Pass	220.9	222.0	+/- 5%	Pass	4993	5000.7	+/- 25%	Pass
AV57	03/17/2007 7:53	7338	7309.5	+/- 5%	Pass	22.1	5 - 50	Pass	226.1	222.0	+/- 5%	Pass	5030	5000.6	+/- 25%	Pass
AV58	03/17/2007 7:53	7332	7249.2	+/- 5%	Pass	14.0	5 - 50	Pass	222.1	223.0	+/- 5%	Pass	5002	5008.0	+/- 25%	Pass
AV59	03/17/2007 7:53	7322	7141.4	+/- 5%	Pass	13.5	5 - 50	Pass	286.0	284.0	+/- 5%	Pass	5465	5450.6	+/- 25%	Pass
AV60	03/17/2007 7:53	7312	7019.7	+/- 5%	Pass	40.0	5 - 50	Pass	221.7	223.0	+/- 5%	Pass	4998	5007.5	+/- 25%	Pass
AV63	03/17/2007 7:53	7314	7120.8	+/- 5%	Pass	31.0	5 - 50	Pass	223.6	223.0	+/- 5%	Pass	5012	5007.9	+/- 25%	Pass
AV64	03/17/2007 7:53	7310	7153.7	+/- 5%	Pass	15.1	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.3	+/- 25%	Pass
AV65	03/17/2007 7:53	7248	7233.4	+/- 5%	Pass	24.8	5 - 50	Pass	217.0	224.0	+/- 5%	Pass	4964	5015.3	+/- 25%	Pass
AV66	03/17/2007 7:53	7301	7165.5	+/- 5%	Pass	16.0	5 - 50	Pass	220.0	222.0	+/- 5%	Pass	4986	5000.5	+/- 25%	Pass
AV67	03/17/2007 7:53	7439	7128.1	+/- 5%	Pass	18.8	5 - 50	Pass	225.1	224.1	+/- 5%	Pass	5023	5015.6	+/- 25%	Pass
AV68	03/17/2007 7:53	7436	7259.5	+/- 5%	Pass	13.9	5 - 50	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.8	+/- 25%	Pass
AV69	03/17/2007 7:53	7381	7305.4	+/- 5%	Pass	16.1	5 - 50	Pass	221.1	222.0	+/- 5%	Pass	4994	5000.6	+/- 25%	Pass
AV70	03/17/2007 7:54	7433	7406.5	+/- 5%	Pass	13.6	5 - 50	Pass	219.9	222.6	+/- 5%	Pass	4985	5004.7	+/- 25%	Pass
AV71	03/17/2007 7:54	7432	7187.3	+/- 5%	Pass	13.2	5 - 50	Pass	219.0	225.0	+/- 5%	Pass	4979	5022.7	+/- 25%	Pass
AV72	03/17/2007 7:54	6996	7090.0	+/- 5%	Pass	13.1	5 - 50	Pass	218.9	223.9	+/- 5%	Pass	4978	5014.6	+/- 25%	Pass
AV75	03/17/2007 8:27	7372	7267.9	+/- 5%	Pass	12.4	5 - 50	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV76	03/17/2007 8:27	7270	7374.3	+/- 5%	Pass	12.6	5 - 50	Pass	223.0	224.0	+/- 5%	Pass	5008	5015.2	+/- 25%	Pass
AV77	03/17/2007 8:28	7549	7497.1	+/- 5%	Pass	13.2	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV78	03/17/2007 8:28	7386	7183.8	+/- 5%	Pass	12.3	5 - 50	Pass	223.0	223.3	+/- 5%	Pass	5008	5009.8	+/- 25%	Pass
AV79	03/17/2007 8:28	7543	7349.7	+/- 5%	Pass	13.2	5 - 50	Pass	220.9	222.0	+/- 5%	Pass	4993	5000.4	+/- 25%	Pass
AV80	03/17/2007 8:28	7334	7226.4	+/- 5%	Pass	12.7	5 - 50	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV81	03/17/2007 8:28	7540	7453.4	+/- 5%	Pass	12.9	5 - 50	Pass	222.0	223.0	+/- 5%	Pass	5001	5008.1	+/- 25%	Pass
AV82	03/17/2007 8:28	7537	7529.2	+/- 5%	Pass	13.2	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.2	+/- 25%	Pass
AV83	03/17/2007 8:28	7524	7523.7	+/- 5%	Pass	12.6	5 - 50	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV84	03/17/2007 8:28	7514	7637.7	+/- 5%	Pass	12.3	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.7	+/- 25%	Pass
AV85	03/17/2007 8:28	7292	7549.7	+/- 5%	Pass	13.0	5 - 50	Pass	223.1	223.0	+/- 5%	Pass	5009	5008.0	+/- 25%	Pass
AV86	03/17/2007 8:28	7720	7679.0	+/- 5%	Pass	17.5	5 - 50	Pass	224.0	223.9	+/- 5%	Pass	5015	5014.3	+/- 25%	Pass
AV87	03/17/2007 8:28	7717	7512.4	+/- 5%	Pass	13.1	5 - 50	Pass	223.1	223.0	+/- 5%	Pass	5008	5007.7	+/- 25%	Pass
AV88	03/17/2007 8:28	7641	7716.1	+/- 5%	Pass	16.3	5 - 50	Pass	222.9	224.0	+/- 5%	Pass	5007	5015.4	+/- 25%	Pass
AV89	03/17/2007 8:28	7712	7553.8	+/- 5%	Pass	13.3	5 - 50	Pass	221.1	222.6	+/- 5%	Pass	4994	5004.7	+/- 25%	Pass
AV90	03/17/2007 8:28	7709	7474.4	+/- 5%	Pass	13.2	5 - 50	Pass	224.1	224.1	+/- 5%	Pass	5016	5015.6	+/- 25%	Pass
AV92	03/17/2007 8:28	7501	7358.9	+/- 5%	Pass	12.2	5 - 50	Pass	224.0	223.9	+/- 5%	Pass	5015	5014.6	+/- 25%	Pass
AV93	03/17/2007 8:28	7267	7393.5	+/- 5%	Pass	12.9	5 - 50	Pass	223.1	223.0	+/- 5%	Pass	5009	5008.3	+/- 25%	Pass
AV94	03/17/2007 8:28	7644	7477.9	+/- 5%	Pass	13.2	5 - 50	Pass	222.1	222.0	+/- 5%	Pass	5001	5000.5	+/- 25%	Pass

		Gross Counts				FWHM (keV)			Pulser Center				Energy (keV)			
Detector	Date/Time	Result	Criteria		P/F	Result	Criteria	P/F	Result	Criteria		P/F	Result	Criteria		P/F
AV95	03/17/2007 8:28	7642	7432.4	+/- 5%	Pass	13.2	5 - 50	Pass	221.0	222.2	+/- 5%	Pass	4994	5001.9	+/- 25%	Pass
AV96	03/17/2007 8:28	7638	7654.3	+/- 5%	Pass	13.2	5 - 50	Pass	222.0	222.6	+/- 5%	Pass	5001	5005.3	+/- 25%	Pass
AV97	03/17/2007 8:28	7634	7649.9	+/- 5%	Pass	14.6	5 - 50	Pass	222.9	223.8	+/- 5%	Pass	5024	5014.0	+/- 25%	Pass
AV98	03/17/2007 8:27	7631	7582.0	+/- 5%	Pass	13.2	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.6	+/- 25%	Pass

SEVERN TRENT STL

Run Log

Logbook No.: 2925

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	3/16/07	7068421	F7C070275-014 (3/16/07)	88	600min	Pu	LW	LW
2			-015	89				
3			F7C090000-421B	90				
4			-421C	92				
5			-421L	93				
6		7068424	F7C070275-001	21	500min	U		
7			-002	22				
8			-003	47				
9			-004	49				
10			-005	51				
11			-006	52				
12			-007	55				
13			-008	57				
14			-009	59				
15			-010	60				
16			-011	63				
17			-012	64				
18			-013	65				
19			-014	66				
20			-015	67				
21			F7C090000-424B	68				
22			-424C	69				
23			-424L	70				
24	3-17-07	Daily	Mixes	1-98	1min.	QA	GS	—
25	3-17-07	7072219	F7C090214-04	1	180min.	U	GS	LW
26			-014X	2				
27			-015	3				
28			F7C130000-219B	4				
29			-219C	6				

Reviewed By: GS Date: 3-17-07

SOP References: STL-RD-0210 Rev 5 01/16/06. 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.: 2925

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	3-17-07	7072216	F7C090214-014	7	180min.	Pu	GS	MW
2			-014X	8				
3			-015	17				
4			F7C130000-2168	9				
5			-2166	11				
6	3-17-07	7072211	F7C090214-014	12	180min	Am	GS	MW
7			-014X	13				
8			-015	14				
9			F7C ~~090214~~ 130000-2118	15				
10			-2116	18				
11	3-17-07	7068422	F7C070275-001	21	600min.	Th	GS	
12			-002	22				
13			-003	46				
14			-004	47				
15			-005	49				
16			-006	51				
17			-007	52				
18			-008	55				
19			-009	57				
20			-010	59				
21			-011	60				
22			-012	63				
23			-013	64				
24			-014	65				
25			-015	66				
26			F7C090000-422B	67				
27			-422C	68				
28			-422L	69				
29	3-17-07	7063384	F7C010119-001	9	400min.	Th	GS	MW

Reviewed By: GS Date: 3-17-07

SOP References: STL-RD-0210 Rev 5 01/16/06. 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.: 2925

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	3-17-07	7065384	F7C010119-001X	61 3-17 9 11	400min.	Th	GS	WW
2			-002	12				
3			-003	13				
4			-004	14				
5			-005	15				
6			-006	18				
7			-007	19				
8			-008	20				
9			-009	23				
10			-010	24				
11			-011	25				
12			-012	48				
13			-013	50				
14			-014	53				
15			-015	54				
16			-016	56				
17			-017	58				
18			-018	73				
19	3-18-07	Daily	Pulses	1-98	1min.	QA	GS	—
20	3-18-07	7066129	F7C010119-021	9	240min.	Th	GS	WW
21			-021X	73				
22			-022	12				
23			-023	13				
24			-024	14				
25			-025	15				
26			-026	18				
27			-027	19				
28			-028	20				
29			-029	23				

Reviewed By: GS Date: 3-18-07

SOP References: STL-RD-0210 Rev 5 01/16/06. 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.

SEVERN TRENT STL

Daily Pulsers

3/18/07

Daily Pulser Check - Severn Trent Lab

Pulser Date: 3/18/2007

		Gross Counts				FWHM (keV)			Pulser Center				Energy (keV)			
Detector	Date/Time	Result	Criteria		P/F	Result	Criteria	P/F	Result	Criteria		P/F	Result	Criteria		P/F
AV1	03/18/2007 7:26	7437	7218.7	+/- 5%	Pass	14.0	5 - 50	Pass	222.0	229.0	+/- 5%	Pass	5001	5051.1	+/- 25%	Pass
AV2	03/18/2007 7:26	7435	7468.7	+/- 5%	Pass	14.0	5 - 50	Pass	228.0	222.9	+/- 5%	Pass	5044	5007.5	+/- 25%	Pass
AV3	03/18/2007 7:26	7429	7484.9	+/- 5%	Pass	13.9	5 - 50	Pass	222.0	225.9	+/- 5%	Pass	5000	5028.8	+/- 25%	Pass
AV4	03/18/2007 7:26	7412	7413.7	+/- 5%	Pass	15.4	5 - 50	Pass	227.1	224.9	+/- 5%	Pass	5038	5021.6	+/- 25%	Pass
AV6	03/18/2007 7:26	7331	7476.7	+/- 5%	Pass	11.2	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.3	+/- 25%	Pass
AV7	03/18/2007 7:26	7422	7477.0	+/- 5%	Pass	13.4	5 - 50	Pass	226.9	224.9	+/- 5%	Pass	5036	5021.9	+/- 25%	Pass
AV8	03/18/2007 7:26	7399	7327.4	+/- 5%	Pass	15.3	5 - 50	Pass	225.1	228.0	+/- 5%	Pass	5023	5044.6	+/- 25%	Pass
AV9	03/18/2007 7:26	7716	7519.3	+/- 5%	Pass	13.5	5 - 50	Pass	225.0	227.9	+/- 5%	Pass	5022	5043.3	+/- 25%	Pass
AV11	03/18/2007 7:26	7690	7666.2	+/- 5%	Pass	15.0	5 - 50	Pass	210.8	225.0	+/- 5%	FAIL	4920	5022.1	+/- 25%	Pass
AV11	03/18/2007 8:04	7565	7666.2	+/- 5%	Pass	16.3	5 - 50	Pass	208.9	225.0	+/- 5%	FAIL	4906	5022.1	+/- 25%	Pass
AV12	03/18/2007 7:26	7707	7588.7	+/- 5%	Pass	14.3	5 - 50	Pass	224.9	230.0	+/- 5%	Pass	5022	5058.4	+/- 25%	Pass
AV13	03/18/2007 7:26	7261	7584.6	+/- 5%	Pass	13.1	5 - 50	Pass	225.9	228.0	+/- 5%	Pass	5029	5044.1	+/- 25%	Pass
AV14	03/18/2007 7:26	7706	7638.3	+/- 5%	Pass	13.3	5 - 50	Pass	222.0	227.0	+/- 5%	Pass	5000	5037.2	+/- 25%	Pass
AV15	03/18/2007 7:26	7697	7770.5	+/- 5%	Pass	14.2	5 - 50	Pass	222.0	226.9	+/- 5%	Pass	5000	5036.6	+/- 25%	Pass
AV17	03/18/2007 7:26	7756	7619.1	+/- 5%	Pass	47.2	5 - 50	Pass	226.9	229.9	+/- 5%	Pass	5036	5058.3	+/- 25%	Pass
AV18	03/18/2007 7:26	7743	7714.5	+/- 5%	Pass	14.3	5 - 50	Pass	223.1	226.9	+/- 5%	Pass	5008	5036.4	+/- 25%	Pass
AV19	03/18/2007 7:26	7741	7269.8	+/- 5%	FAIL	13.7	5 - 50	Pass	222.1	227.7	+/- 5%	Pass	5001	5041.9	+/- 25%	Pass
AV19	03/18/2007 8:04	7617	7269.8	+/- 5%	Pass	13.2	5 - 50	Pass	222.0	227.7	+/- 5%	Pass	5001	5041.9	+/- 25%	Pass
AV20	03/18/2007 7:26	7736	7503.6	+/- 5%	Pass	13.7	5 - 50	Pass	227.0	226.0	+/- 5%	Pass	5037	5029.9	+/- 25%	Pass
AV21	03/18/2007 7:26	7744	7550.9	+/- 5%	Pass	13.4	5 - 50	Pass	223.0	226.0	+/- 5%	Pass	5008	5029.6	+/- 25%	Pass
AV22	03/18/2007 7:26	7732	7691.4	+/- 5%	Pass	14.0	5 - 50	Pass	223.0	225.0	+/- 5%	Pass	5008	5022.4	+/- 25%	Pass
AV23	03/18/2007 7:26	7694	7665.3	+/- 5%	Pass	16.1	5 - 50	Pass	230.0	229.8	+/- 5%	Pass	5059	5057.0	+/- 25%	Pass
AV24	03/18/2007 7:26	7715	7354.0	+/- 5%	Pass	15.0	5 - 50	Pass	224.0	226.9	+/- 5%	Pass	5015	5036.4	+/- 25%	Pass
AV45	03/18/2007 7:26	7647	7593.5	+/- 5%	Pass	17.6	5 - 50	Pass	226.9	225.6	+/- 5%	Pass	5037	5026.9	+/- 25%	Pass
AV46	03/18/2007 7:26	7126	7722.7	+/- 5%	FAIL	13.4	5 - 50	Pass	222.8	225.8	+/- 5%	Pass	5007	5028.0	+/- 25%	Pass
AV46	03/18/2007 8:04	7085	7722.7	+/- 5%	FAIL	13.2	5 - 50	Pass	222.9	225.8	+/- 5%	Pass	5007	5028.0	+/- 25%	Pass
AV47	03/18/2007 7:27	7635	7532.5	+/- 5%	Pass	14.5	5 - 50	Pass	222.9	226.0	+/- 5%	Pass	5007	5029.6	+/- 25%	Pass
AV48	03/18/2007 7:27	7637	7717.5	+/- 5%	Pass	14.2	5 - 50	Pass	225.0	224.0	+/- 5%	Pass	5023	5015.2	+/- 25%	Pass
AV49	03/18/2007 7:27	7632	7703.4	+/- 5%	Pass	14.8	5 - 50	Pass	232.0	226.0	+/- 5%	Pass	5073	5029.5	+/- 25%	Pass
AV50	03/18/2007 7:27	7599	7660.9	+/- 5%	Pass	15.8	5 - 50	Pass	224.9	227.0	+/- 5%	Pass	5022	5037.2	+/- 25%	Pass
AV51	03/18/2007 7:27	7348	7070.5	+/- 5%	Pass	14.3	5 - 50	Pass	226.9	223.0	+/- 5%	Pass	5036	5007.6	+/- 25%	Pass
AV52	03/18/2007 7:27	7352	7156.4	+/- 5%	Pass	17.5	5 - 50	Pass	222.9	225.0	+/- 5%	Pass	5007	5022.4	+/- 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
AV53	03/18/2007 7:27	7348	7144.1	+/- 5%	Pass	13.4	5 - 50	Pass	224.1	223.0	+/- 5%	Pass	5016	5007.8	+/- 25%	Pass
AV54	03/18/2007 7:27	7344	7313.1	+/- 5%	Pass	14.0	5 - 50	Pass	226.9	226.0	+/- 5%	Pass	5036	5029.5	+/- 25%	Pass
AV55	03/18/2007 7:27	7344	7132.9	+/- 5%	Pass	13.4	5 - 50	Pass	224.0	226.0	+/- 5%	Pass	5015	5029.7	+/- 25%	Pass
AV56	03/18/2007 7:27	7342	7163.7	+/- 5%	Pass	13.1	5 - 50	Pass	221.0	222.0	+/- 5%	Pass	4993	5000.7	+/- 25%	Pass
AV57	03/18/2007 7:27	7309	7309.5	+/- 5%	Pass	21.8	5 - 50	Pass	226.1	222.0	+/- 5%	Pass	5031	5000.6	+/- 25%	Pass
AV58	03/18/2007 7:27	7334	7249.2	+/- 5%	Pass	14.0	5 - 50	Pass	220.9	223.0	+/- 5%	Pass	4993	5008.0	+/- 25%	Pass
AV59	03/18/2007 7:27	7319	7141.4	+/- 5%	Pass	13.0	5 - 50	Pass	287.0	284.0	+/- 5%	Pass	5472	5450.6	+/- 25%	Pass
AV60	03/18/2007 7:27	7321	7019.7	+/- 5%	Pass	38.3	5 - 50	Pass	221.8	223.0	+/- 5%	Pass	4999	5007.5	+/- 25%	Pass
AV63	03/18/2007 7:27	7315	7120.8	+/- 5%	Pass	29.4	5 - 50	Pass	223.8	223.0	+/- 5%	Pass	5014	5007.9	+/- 25%	Pass
AV64	03/18/2007 7:27	7314	7153.7	+/- 5%	Pass	15.0	5 - 50	Pass	224.1	224.0	+/- 5%	Pass	5016	5015.3	+/- 25%	Pass
AV65	03/18/2007 7:27	7252	7233.4	+/- 5%	Pass	24.6	5 - 50	Pass	216.9	224.0	+/- 5%	Pass	4963	5015.3	+/- 25%	Pass
AV66	03/18/2007 7:27	7315	7165.5	+/- 5%	Pass	13.4	5 - 50	Pass	220.0	222.0	+/- 5%	Pass	4986	5000.5	+/- 25%	Pass
AV67	03/18/2007 8:04	7435	7128.1	+/- 5%	Pass	19.1	5 - 50	Pass	225.1	224.1	+/- 5%	Pass	5023	5015.6	+/- 25%	Pass
AV68	03/18/2007 8:04	7433	7259.5	+/- 5%	Pass	14.2	5 - 50	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.8	+/- 25%	Pass
AV69	03/18/2007 8:04	7373	7305.4	+/- 5%	Pass	16.2	5 - 50	Pass	221.2	222.0	+/- 5%	Pass	4995	5000.6	+/- 25%	Pass
AV69	03/18/2007 8:05	7373	7305.4	+/- 5%	Pass	16.2	5 - 50	Pass	221.2	222.0	+/- 5%	Pass	4995	5000.6	+/- 25%	Pass
AV70	03/18/2007 8:05	7429	7406.5	+/- 5%	Pass	13.1	5 - 50	Pass	220.0	222.6	+/- 5%	Pass	4986	5004.7	+/- 25%	Pass
AV71	03/18/2007 8:05	7429	7187.3	+/- 5%	Pass	13.1	5 - 50	Pass	218.9	225.0	+/- 5%	Pass	4978	5022.7	+/- 25%	Pass
AV71	03/18/2007 8:05	7429	7187.3	+/- 5%	Pass	13.1	5 - 50	Pass	218.9	225.0	+/- 5%	Pass	4978	5022.7	+/- 25%	Pass
AV72	03/18/2007 8:05	7426	7090.0	+/- 5%	Pass	13.0	5 - 50	Pass	219.0	223.9	+/- 5%	Pass	4979	5014.6	+/- 25%	Pass
AV73	03/18/2007 8:05	7415	7251.3	+/- 5%	Pass	23.3	5 - 50	Pass	221.0	225.0	+/- 5%	Pass	4993	5022.4	+/- 25%	Pass
AV75	03/18/2007 7:40	7353	7267.9	+/- 5%	Pass	12.6	5 - 50	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV76	03/18/2007 7:40	7311	7374.3	+/- 5%	Pass	12.5	5 - 50	Pass	223.0	224.0	+/- 5%	Pass	5008	5015.2	+/- 25%	Pass
AV77	03/18/2007 7:40	7336	7497.1	+/- 5%	Pass	12.7	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV78	03/18/2007 7:40	7362	7183.8	+/- 5%	Pass	12.5	5 - 50	Pass	223.0	223.3	+/- 5%	Pass	5008	5009.8	+/- 25%	Pass
AV79	03/18/2007 7:40	7193	7349.7	+/- 5%	Pass	12.9	5 - 50	Pass	220.9	222.0	+/- 5%	Pass	4993	5000.4	+/- 25%	Pass
AV80	03/18/2007 7:40	7341	7226.4	+/- 5%	Pass	12.6	5 - 50	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV81	03/18/2007 7:40	7541	7453.4	+/- 5%	Pass	13.1	5 - 50	Pass	222.0	223.0	+/- 5%	Pass	5000	5008.1	+/- 25%	Pass
AV82	03/18/2007 7:40	7537	7529.2	+/- 5%	Pass	13.4	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.2	+/- 25%	Pass
AV83	03/18/2007 7:40	7568	7523.7	+/- 5%	Pass	12.3	5 - 50	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV84	03/18/2007 7:40	7514	7637.7	+/- 5%	Pass	12.2	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.7	+/- 25%	Pass
AV85	03/18/2007 7:40	7330	7549.7	+/- 5%	Pass	12.9	5 - 50	Pass	223.1	223.0	+/- 5%	Pass	5009	5008.0	+/- 25%	Pass
AV86	03/18/2007 7:40	7719	7679.0	+/- 5%	Pass	17.5	5 - 50	Pass	224.1	223.9	+/- 5%	Pass	5016	5014.3	+/- 25%	Pass
AV87	03/18/2007 7:40	7416	7512.4	+/- 5%	Pass	12.6	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.7	+/- 25%	Pass
AV88	03/18/2007 7:40	7676	7716.1	+/- 5%	Pass	15.9	5 - 50	Pass	222.9	224.0	+/- 5%	Pass	5007	5015.4	+/- 25%	Pass
AV89	03/18/2007 7:40	7710	7553.8	+/- 5%	Pass	13.1	5 - 50	Pass	221.0	222.6	+/- 5%	Pass	4994	5004.7	+/- 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
AV90	03/18/2007 7:40	7709	7474.4	+/- 5%	Pass	13.2	5 - 50	Pass	224.1	224.1	+/- 5%	Pass	5016	5015.6	+/- 25%	Pass
AV92	03/18/2007 7:40	7499	7358.9	+/- 5%	Pass	12.2	5 - 50	Pass	224.0	223.9	+/- 5%	Pass	5015	5014.6	+/- 25%	Pass
AV93	03/18/2007 7:40	7238	7393.5	+/- 5%	Pass	12.9	5 - 50	Pass	223.1	223.0	+/- 5%	Pass	5008	5008.3	+/- 25%	Pass
AV94	03/18/2007 7:40	7301	7477.9	+/- 5%	Pass	12.8	5 - 50	Pass	222.1	222.0	+/- 5%	Pass	5001	5000.5	+/- 25%	Pass
AV95	03/18/2007 7:40	7644	7432.4	+/- 5%	Pass	13.0	5 - 50	Pass	221.0	222.2	+/- 5%	Pass	4994	5001.9	+/- 25%	Pass
AV96	03/18/2007 7:40	7641	7654.3	+/- 5%	Pass	13.3	5 - 50	Pass	222.0	222.6	+/- 5%	Pass	5001	5005.3	+/- 25%	Pass
AV97	03/18/2007 7:40	7637	7649.9	+/- 5%	Pass	14.3	5 - 50	Pass	223.0	223.8	+/- 5%	Pass	5024	5014.0	+/- 25%	Pass
AV98	03/18/2007 7:40	7632	7582.0	+/- 5%	Pass	13.3	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.6	+/- 25%	Pass

SEVERN TRENT STL

Run Log

Logbook No.: 2925

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	3-17-07	7065384	F7C010119-001X	6' 3-17 9 11	400 min.	Th	GS	WW
2			-002	12				
3			-003	13				
4			-004	14				
5			-005	15				
6			-006	18				
7			-007	19				
8			-008	20				
9			-009	23				
10			-010	24				
11			-011	45				
12			-012	48				
13			-013	50				
14			-014	53				
15			-015	54				
16			-016	56				
17			-017	58				
18			-018	73				
19	3-18-07	Daily	Pulses	1-98	1 min.	QA	GS	—
20	3-18-07	7066129	F7C010119-021	9	240 min.	Th	GS	WW
21			-021X	73				
22			-022	12				
23			-023	13				
24			-024	14				
25			-025	15				
26			-026	18				
27			-027	19				
28			-028	20				
29			-029	23				

Reviewed By: GS Date: 3-18-07

SOP References: STL-RD-0210 Rev 5 01/16/06. 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.: 2925

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	3-18-07	7066129	F7C010119-030	29	240 min.	Th	GS	WW
2			-031	45				
3			-032	48				
4			-033	50				
5			-034	53				
6			-035	54				
7			-036	56				
8			F7C070000-129B	58				
9			-129C	17				
10	3-18-07	7066131	F7C010119-~~020~~ 021	9	240 min.	U	GS	WW
11			-021X	12				
12			-022	13				
13			-023	14				
14			-024	15				
15			-025	18				
16			-026	19				
17			-027	20				
18			-028	23				
19			-029	24				
20			-030	45				
21			-031	48				
22			-032	50				
23			-033	53				
24			-034	54				
25			-035	56				
26			-036	58				
27			F7C070000-131B	73				
28			-131C	17				
29	3-18-07	7065384	F7C010119-029	1	400 min.	Th	GS	

Reviewed By: GS Date: 3-18-07

SOP References: STL-RD-0210 Rev 5 01/16/06. 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.: 2925

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	3-18-07	7065389	F7C010119-020	2	400 min	Th	GS	
2			F7C060000-389B	3				
3			-389C	4				
4	3/19/7	Daily	Pulsers	1-98	1 min	QA	SE	SE
5		3/19/7	7072241	F7C090214-001	23	180 min	Np	
6			-001K	45				
7			F7C130000-241B	48				
8			-241C	50				
9		7072215	F7C090214-014	53				
10			-014K	54				
11			-015	56				
12			F7C130000-215B	58				
13			-215C	73				
14		7071179	F7C090214-002	1				
15			-002K	2				
16			-003	3				
17			-004	4				
18			-005	6				
19			-006	7				
20			-007	8				
21			-008	9				
22			-009	11				
23			-010	12				
24			-011	13				
25			-012	14				
26			-013	15				
27			-016	17				
28			-017	18				
29			-018	20				

Reviewed By: SE

Date: 3/19/7

SOP References: STL-RD-0210 Rev 5 01/16/06. 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.

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:02:44AM 3/19/2007

Sample

Sample Name: F7C010119-001
SampleType: Sample
: JP92V1AE
Sample Collection Date: 2/1/2007 11:20:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0043g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

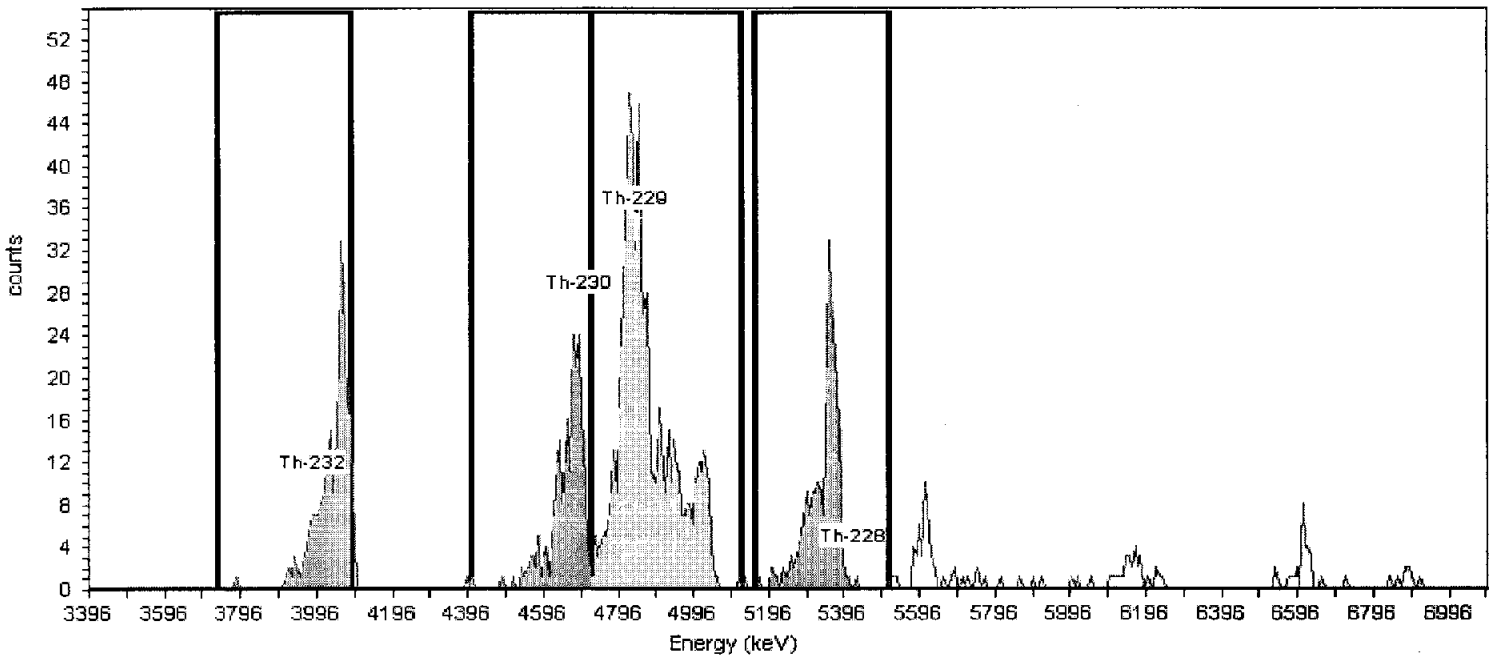
Tracer Nuclide: Th-229
Tracer Recovery: 87.26%

Acquisition

Detector: AV9
Serial Number: 41-172R1
Acquisition Start Date: 3/17/2007 1:40:13PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:49PM

Calibration Name: Feb2007_AV9
Calibration Date: 2/23/2007 4:50:27PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.67% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV9; Det: AV9; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	39.848	100.2	244.00	0.4167	244	5.868E-001	1.060E-001	3.045E-003	1.261E-002
Th-230	4688.465	4405.333	4724.764	23.603	99.7	220.00	2.0833	218	5.276E-001	9.849E-002	6.843E-003	2.024E-002
Th-229	4840.921	4724.764	5124.053	74.797	99.6	682.00	2.9167	679	1.436E+000	1.818E-001	8.101E-003	2.276E-002
Th-228	5421.705	5160.352	5516.082	52.068	99.8	237.00	4.5833	232	5.624E-001	1.037E-001	1.014E-002	2.683E-002

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3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:02:59AM 3/19/2007

Sample

Sample Name: F7C010119-001X
SampleType: Sample
: JP92V1AH
Sample Collection Date: 2/1/2007 11:20:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0114g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

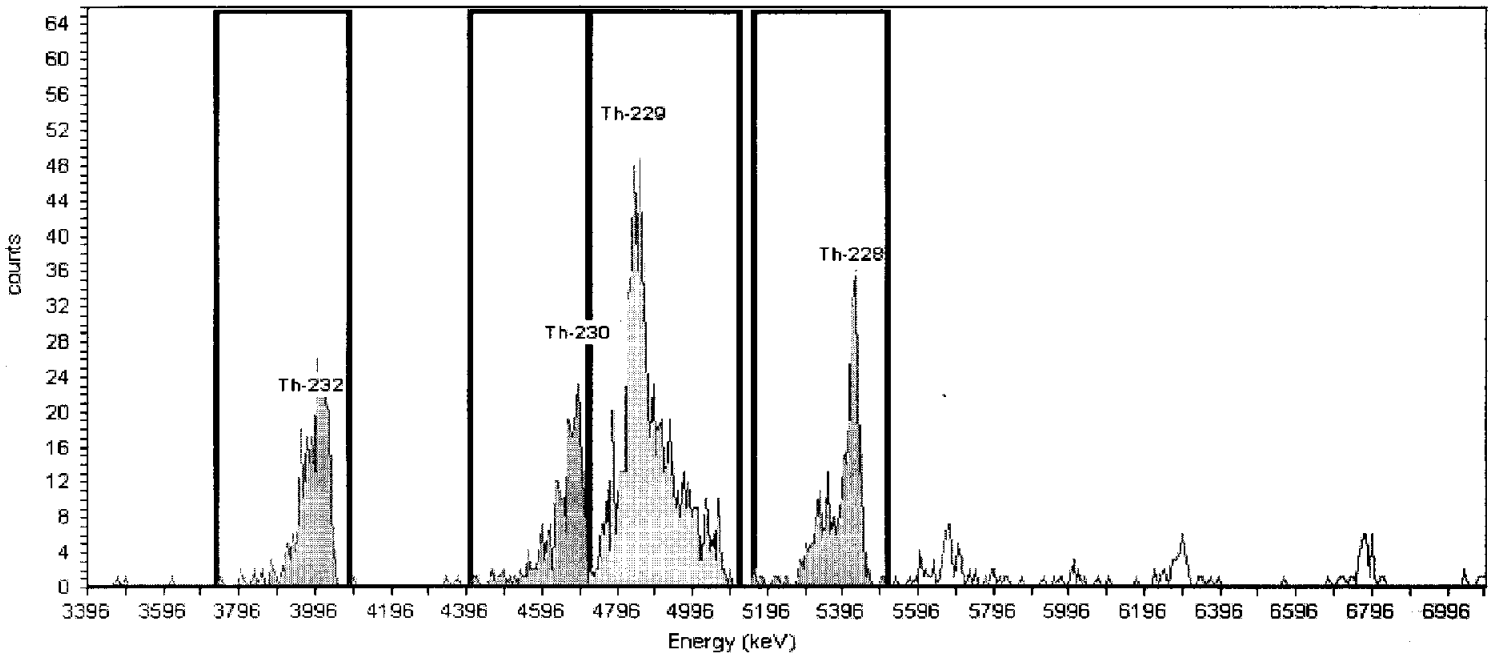
Tracer Nuclide: Th-229
Tracer Recovery: 87.76%

Acquisition

Detector: AV11
Serial Number: 41-172Q3
Acquisition Start Date: 3/17/2007 1:40:14PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:22PM

Calibration Name: FEB2007_AV11
Calibration Date: 2/28/2007 7:03:01AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.82% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV11; Det: AV11; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	80.094	100.2	259.00	0.8333	258	6.129E-001	1.091E-001	4.243E-003	1.491E-002
Th-230	4688.465	4405.333	4717.504	30.145	99.7	220.00	2.0833	218	5.200E-001	9.703E-002	6.743E-003	1.994E-002
Th-229	4840.921	4724.764	5124.053	65.761	99.6	690.00	3.3333	687	1.439E+000	1.820E-001	8.534E-003	2.353E-002
Th-228	5421.705	5160.352	5516.082	50.701	99.8	278.00	6.2500	272	6.480E-001	1.150E-001	1.167E-002	2.980E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:04:03AM 3/19/2007

Sample

Sample Name: F7C010119-002
SampleType: Sample
: JP9201AE
Sample Collection Date: 2/1/2007 11:25:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0115g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

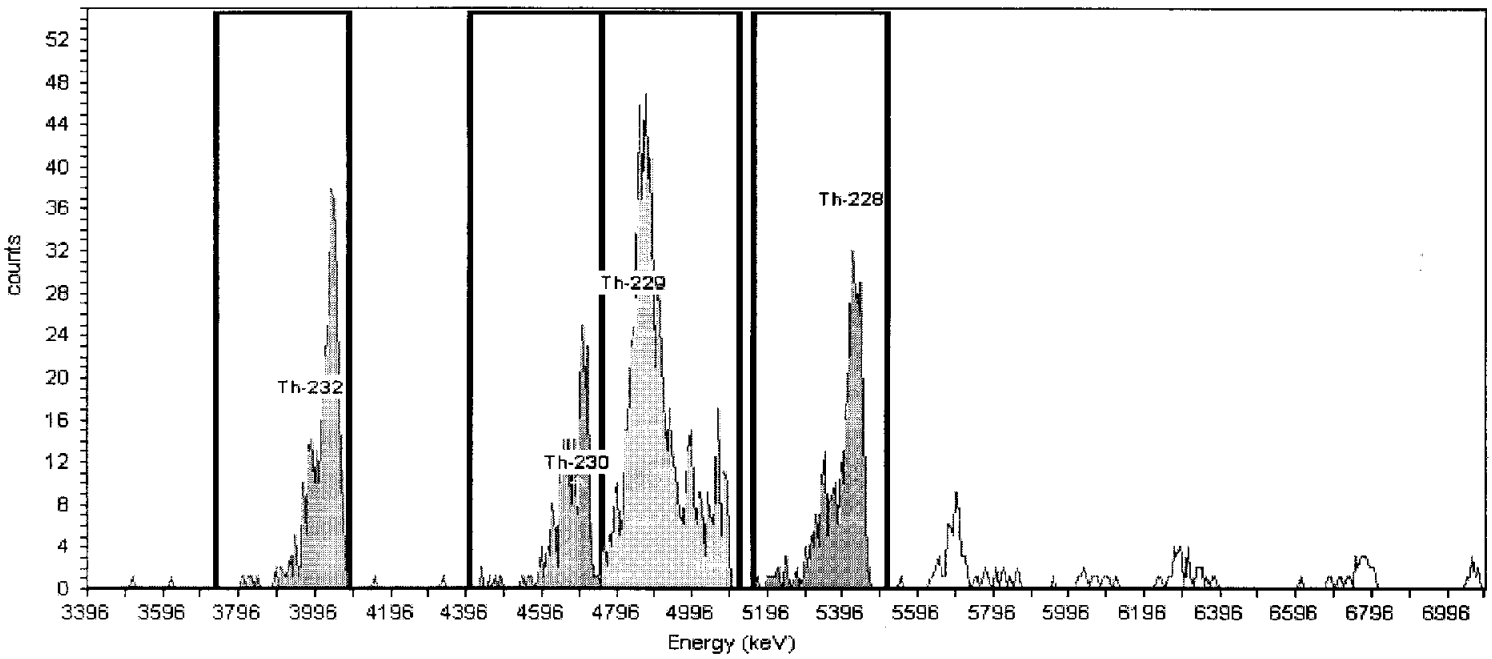
Tracer Nuclide: Th-229
Tracer Recovery: 93.75%

Acquisition

Detector: AV12
Serial Number: 41-172Q2
Acquisition Start Date: 3/17/2007 1:40:15PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:23PM

Calibration Name: Feb2007_AV12
Calibration Date: 2/24/2007 7:37:40AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.99% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV12; Det: AV12; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	34.755	100.2	299.00	0.4167	299	6.848E-001	1.172E-001	2.899E-003	1.200E-002
Th-230	4688.465	4405.333	4753.803	13.373	99.7	207.00	1.6667	205	4.733E-001	8.938E-002	5.827E-003	1.789E-002
Th-229	4840.921	4753.803	5124.053	78.996	99.6	712.00	1.2500	711	1.537E+000	1.929E-001	5.049E-003	1.634E-002
Th-228	5421.705	5160.352	5516.082	54.457	99.8	304.00	5.8333	298	6.869E-001	1.186E-001	1.089E-002	2.802E-002

manual
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3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:04:16AM 3/19/2007

Sample

Sample Name: F7C010119-003
SampleType: Sample
: JP9211AE
Sample Collection Date: 2/2/2007 12:15:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0073g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

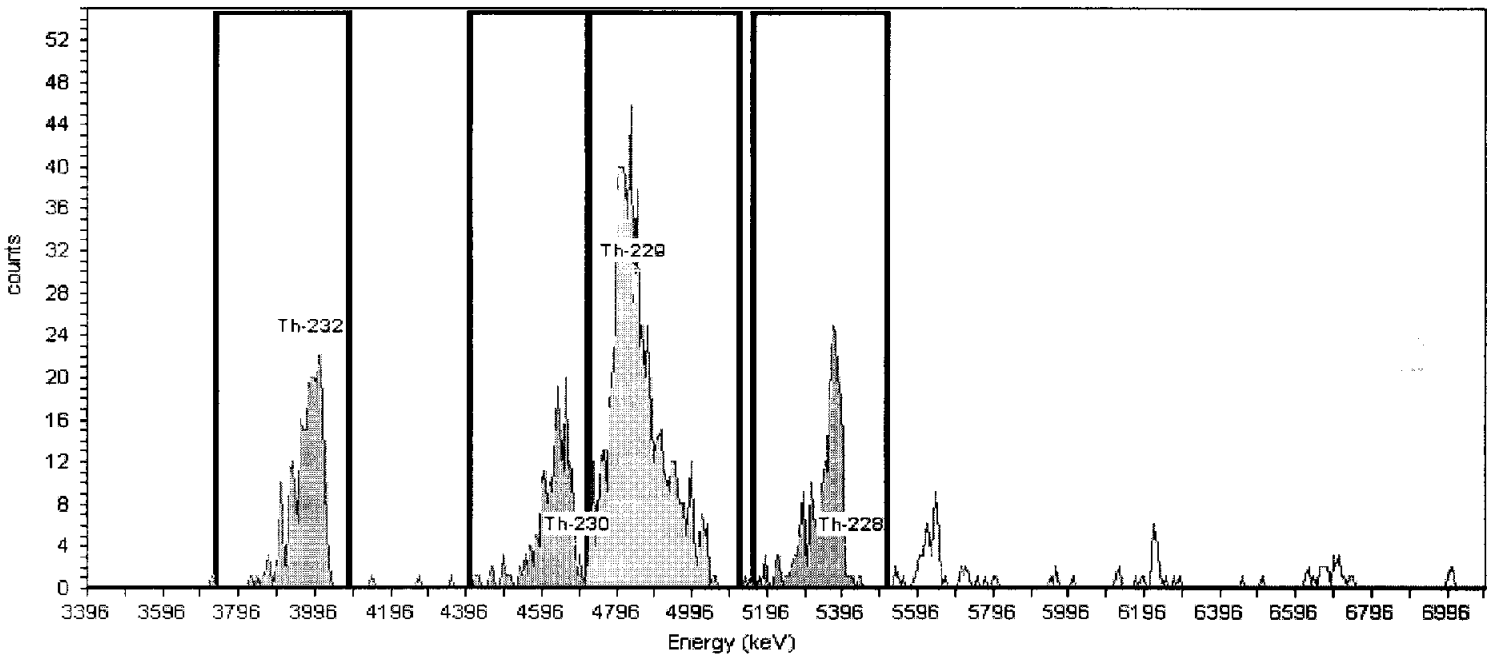
Tracer Nuclide: Th-229
Tracer Recovery: 92.97%

Acquisition

Detector: AV13
Serial Number: 41-172Q1
Acquisition Start Date: 3/17/2007 1:40:17PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:24PM

Calibration Name: FEB2007_AV13
Calibration Date: 2/28/2007 7:02:48AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.65% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV13; Det: AV13; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	76.497	100.2	243.00	0.8333	242	5.472E-001	9.849E-002	4.039E-003	1.419E-002
Th-230	4688.465	4405.333	4717.504	83.645	99.7	198.00	1.2500	197	4.468E-001	8.519E-002	4.971E-003	1.609E-002
Th-229	4840.921	4724.764	5124.053	95.466	99.6	725.00	2.0833	723	1.527E+000	1.911E-001	6.422E-003	1.899E-002
Th-228	5421.705	5160.352	5516.082	52.754	99.8	223.00	3.3333	220	4.986E-001	9.264E-002	8.113E-003	2.237E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:04:59AM 3/19/2007

Sample

Sample Name: F7C010119-004
SampleType: Sample
: JP9221AE
Sample Collection Date: 2/1/2007 11:25:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0039g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

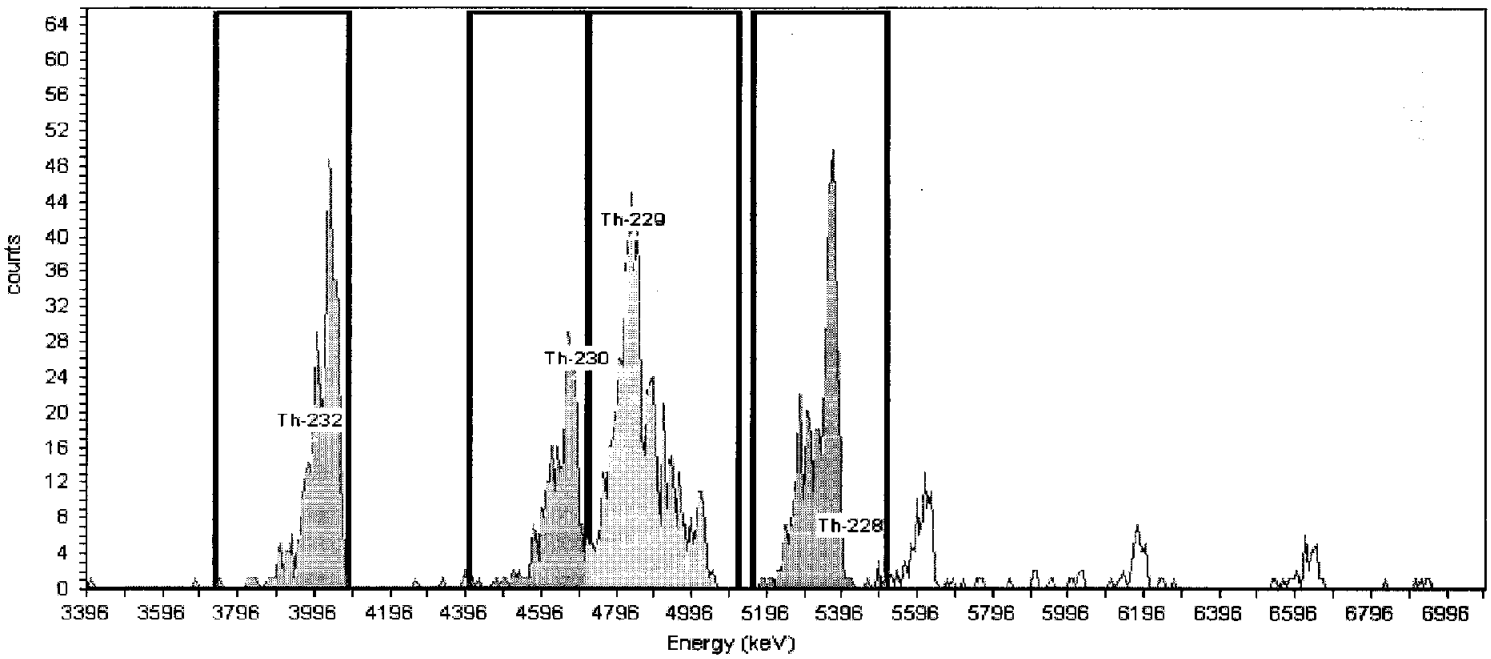
Tracer Nuclide: Th-229
Tracer Recovery: 90.24%

Acquisition

Detector: AV14
Serial Number: 41-172C4
Acquisition Start Date: 3/17/2007 1:40:19PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:26PM

Calibration Name: Feb2007_AV14
Calibration Date: 2/23/2007 4:50:55PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.68% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV14; Det: AV14; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	38.301	100.2	426.00	0.4167	426	9.916E-001	1.579E-001	2.945E-003	1.219E-002
Th-230	4688.465	4405.333	4717.504	18.354	99.7	291.00	2.0833	289	6.765E-001	1.172E-001	6.617E-003	1.957E-002
Th-229	4840.921	4724.764	5124.053	85.178	99.6	704.00	1.6667	702	1.485E+000	1.868E-001	5.922E-003	1.818E-002
Th-228	5421.705	5160.352	5516.082	51.759	99.8	446.00	3.7500	442	1.035E+000	1.641E-001	8.873E-003	2.408E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:05:12AM 3/19/2007

Sample

Sample Name: F7C010119-005
SampleType: Sample
: JP9251AE
Sample Collection Date: 2/1/2007 11:25:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0156g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

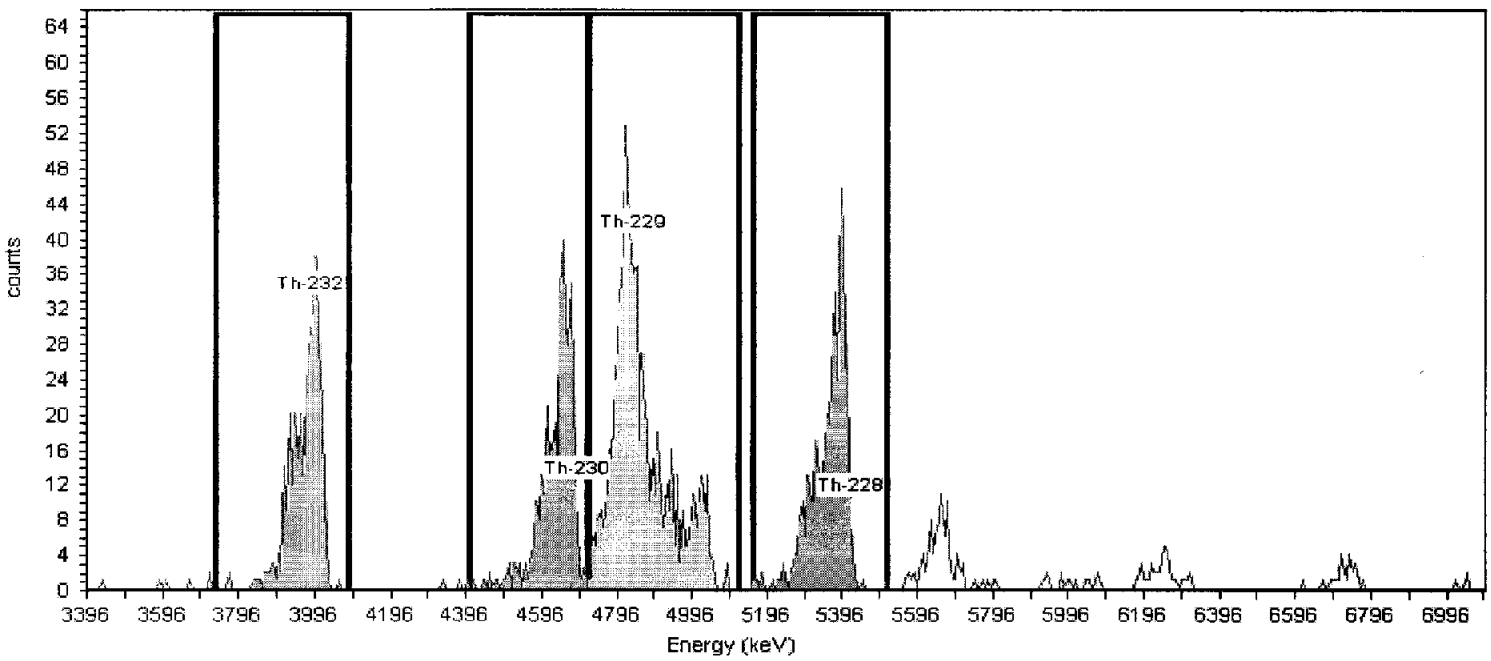
Tracer Nuclide: Th-229
Tracer Recovery: 93.05%

Acquisition

Detector: AV15
Serial Number: 41-172C5
Acquisition Start Date: 3/17/2007 1:40:20PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/23/2007 11:17:03AM

Calibration Name: Feb2007_AV15
Calibration Date: 2/22/2007 6:30:21PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 26.51% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV15; Det: AV15; Spectrum #1; Feb-23-2007 11:17



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	68.214	100.2	359.00	1.2500	358	8.087E-001	1.331E-001	4.949E-003	1.601E-002
Th-230	4688.465	4405.333	4717.504	59.672	99.7	360.00	3.3333	357	8.103E-001	1.338E-001	8.121E-003	2.239E-002
Th-229	4840.921	4724.764	5124.053	74.991	99.6	723.00	3.3333	720	1.522E+000	1.909E-001	8.126E-003	2.240E-002
Th-228	5421.705	5160.352	5516.082	64.074	99.8	403.00	7.9167	395	8.971E-001	1.457E-001	1.251E-002	3.116E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:05:29AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C010119-006
SampleType: Sample
: JP9261AE
Sample Collection Date: 2/2/2007 12:15:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0031g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

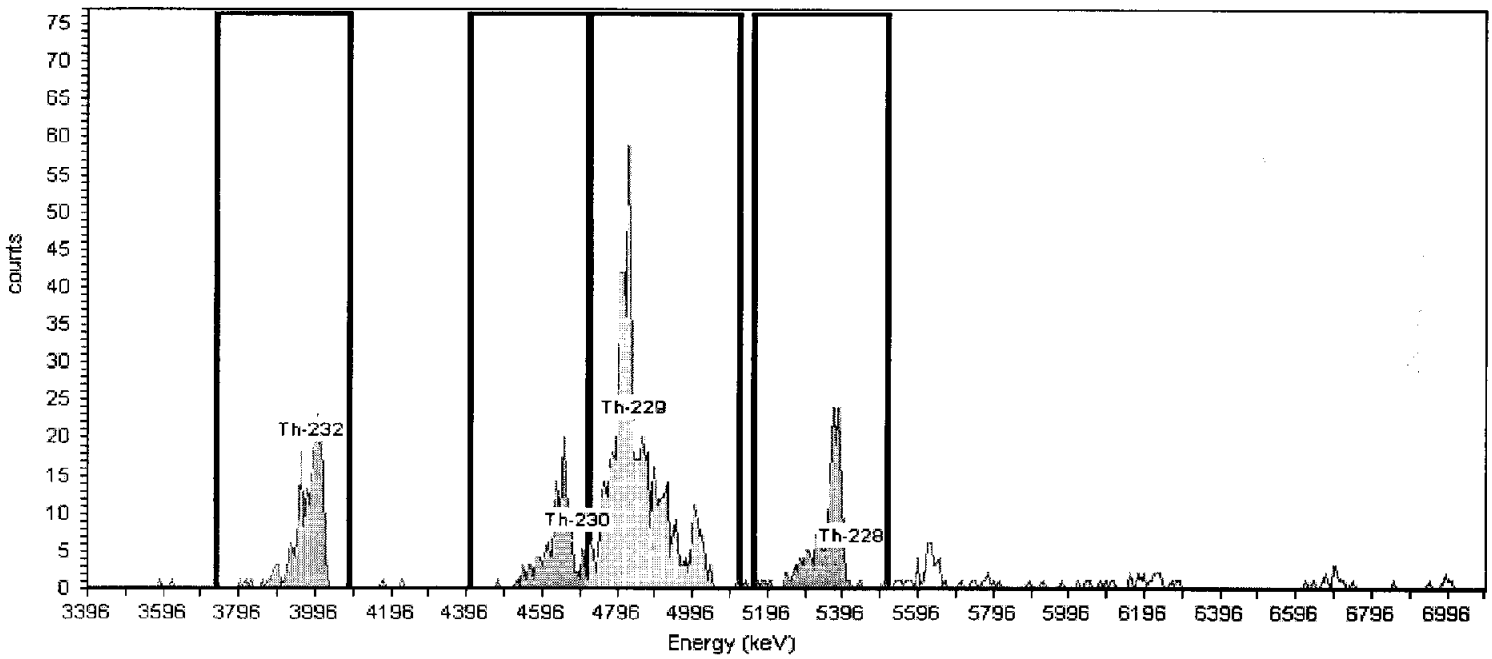
Tracer Nuclide: Th-229
Tracer Recovery: 82.26%

Acquisition

Detector: AV18
Serial Number: 41-172C6
Acquisition Start Date: 3/17/2007 1:40:21PM
Live Time: 400.00 min.
Real Time: 400.05 min.
Background Date: 2/18/2007 2:05:30PM

Calibration Name: Feb2007_AV18
Calibration Date: 2/24/2007 7:36:44AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.53% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV18; Det: AV18; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	70.955	100.2	188.00	0.4167	188	5.011E-001	9.795E-002	3.376E-003	1.398E-002
Th-230	4688.465	4405.333	4717.504	61.622	99.7	141.00	0.4167	141	3.775E-001	8.043E-002	3.393E-003	1.405E-002
Th-229	4840.921	4724.764	5124.053	65.467	99.6	614.00	1.2500	613	1.354E+000	1.748E-001	5.881E-003	1.903E-002
Th-228	5421.705	5160.352	5516.082	47.805	99.8	171.00	5.8333	165	4.432E-001	9.160E-002	1.269E-002	3.264E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:05:39AM 3/19/2007

Sample

Sample Name: F7C010119-007
SampleType: Sample
: JP9271AE
Sample Collection Date: 2/2/2007 12:15:00PM
Comment:

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

Batch

Batch Name: 7065384
:
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

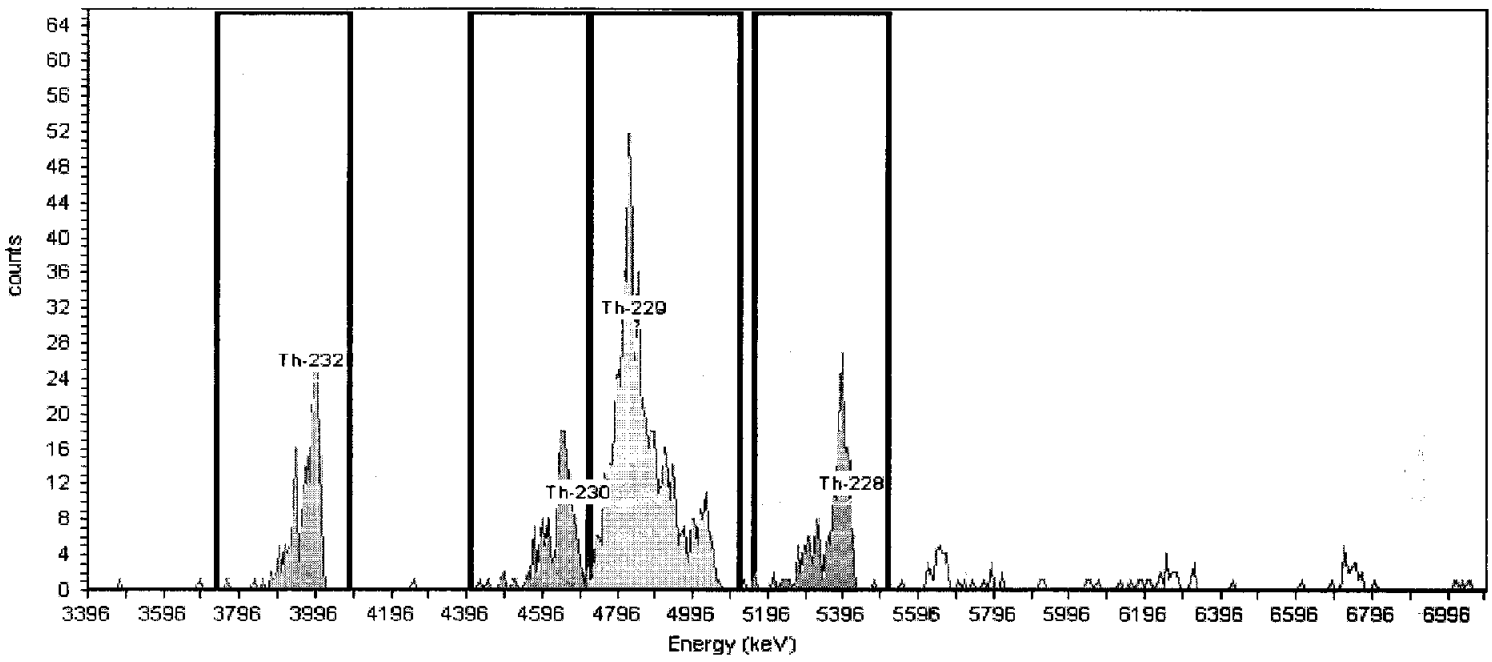
Tracer Nuclide: Th-229
Tracer Recovery: 90.62%

Acquisition

Detector: AV19
Serial Number: 41-172Q6
Acquisition Start Date: 3/17/2007 1:40:23PM
Live Time: 400.00 min.
Real Time: 400.05 min.
Background Date: 2/23/2007 11:17:07AM

Calibration Name: FEB2007_AV19
Calibration Date: 2/23/2007 6:25:50AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.62% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV19; Det: AV19; Spectrum #1; Feb-23-2007 11:17



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	51.851	100.2	190.00	1.2500	189	4.558E-001	8.845E-002	5.286E-003	1.711E-002
Th-230	4688.465	4405.333	4717.504	65.257	99.7	166.00	2.5000	164	3.968E-001	8.073E-002	7.514E-003	2.159E-002
Th-229	4840.921	4724.764	5124.053	83.291	99.6	679.00	1.6667	677	1.491E+000	1.889E-001	6.138E-003	1.885E-002
Th-228	5421.705	5160.352	5516.082	50.740	99.8	187.00	3.3333	184	4.455E-001	8.769E-002	8.671E-003	2.391E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:06:13AM 3/19/2007

Sample

Sample Name: F7C010119-008
SampleType: Sample
: JP9281AE
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0087g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

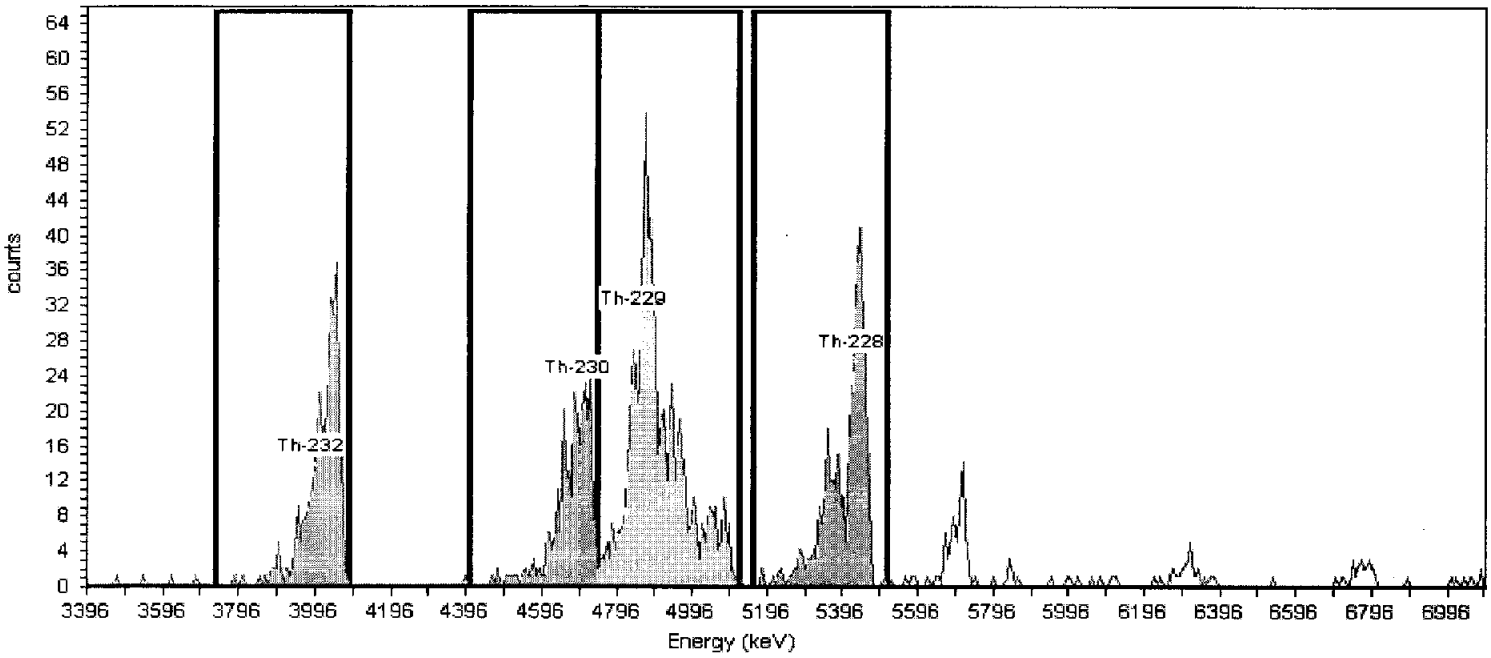
Tracer Nuclide: Th-229
Tracer Recovery: 86.10%

Acquisition

Detector: AV20
Serial Number: 41-172R2
Acquisition Start Date: 3/17/2007 1:40:24PM
Live Time: 400.00 min.
Real Time: 400.05 min.
Background Date: 2/18/2007 2:05:32PM

Calibration Name: Feb2007_AV20
Calibration Date: 2/26/2007 12:00:08PM
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: AV20; Det: AV20; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	18.501	100.2	321.00	0.8333	320	7.706E-001	1.306E-001	4.302E-003	1.512E-002
Th-230	4688.465	4405.333	4746.543	28.043	99.7	276.00	1.2500	275	6.646E-001	1.168E-001	5.295E-003	1.714E-002
Th-229	4840.921	4746.543	5124.053	73.645	99.6	682.00	3.7500	678	1.413E+000	1.791E-001	9.176E-003	2.490E-002
Th-228	5421.705	5160.352	5516.082	50.317	99.8	378.00	7.9167	370	8.947E-001	1.482E-001	1.332E-002	3.318E-002

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SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:06:59AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C010119-009
SampleType: Sample
: JP93A1AE
Sample Collection Date: 2/1/2007 11:45:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0078g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

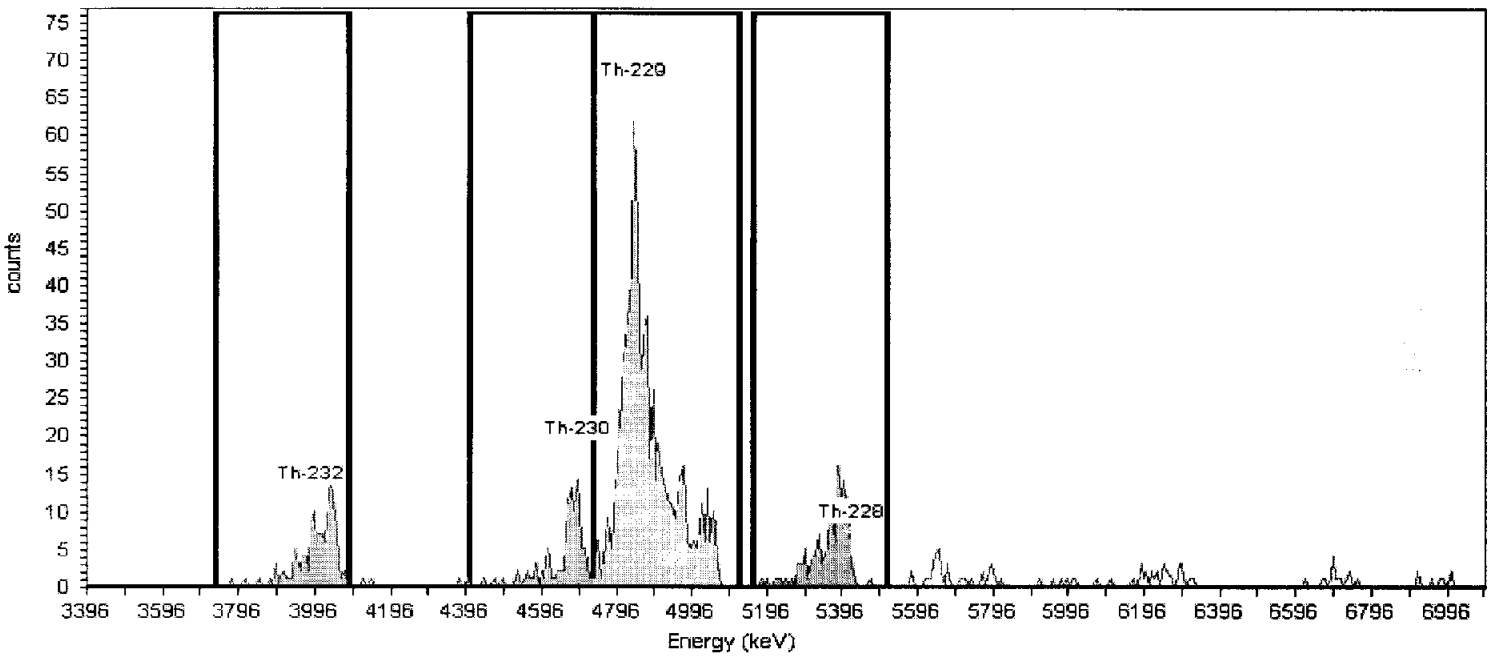
Tracer Nuclide: Th-229
Tracer Recovery: 88.34%

Acquisition

Detector: AV23
Serial Number: 41-172R4
Acquisition Start Date: 3/17/2007 1:40:28PM
Live Time: 400.00 min.
Real Time: 400.05 min.
Background Date: 2/18/2007 2:05:37PM

Calibration Name: Feb2007_AV23
Calibration Date: 2/26/2007 12:00:01PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 28.96% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV23; Det: AV23; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	48.400	100.2	127.00	1.2500	126	2.751E-001	6.031E-002	4.789E-003	1.550E-002
Th-230	4688.465	4405.333	4732.024	34.950	99.7	114.00	0.4167	114	2.497E-001	5.645E-002	2.779E-003	1.151E-002
Th-229	4840.921	4732.024	5124.053	84.731	99.6	749.00	2.5000	747	1.451E+000	1.806E-001	6.810E-003	1.957E-002
Th-228	5421.705	5160.352	5516.082	59.178	99.8	145.00	8.7500	136	2.994E-001	6.610E-002	1.273E-002	3.140E-002

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SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:07:53AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C010119-010
SampleType: Sample
: JP93C1AE
Sample Collection Date: 2/1/2007 11:40:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0072g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

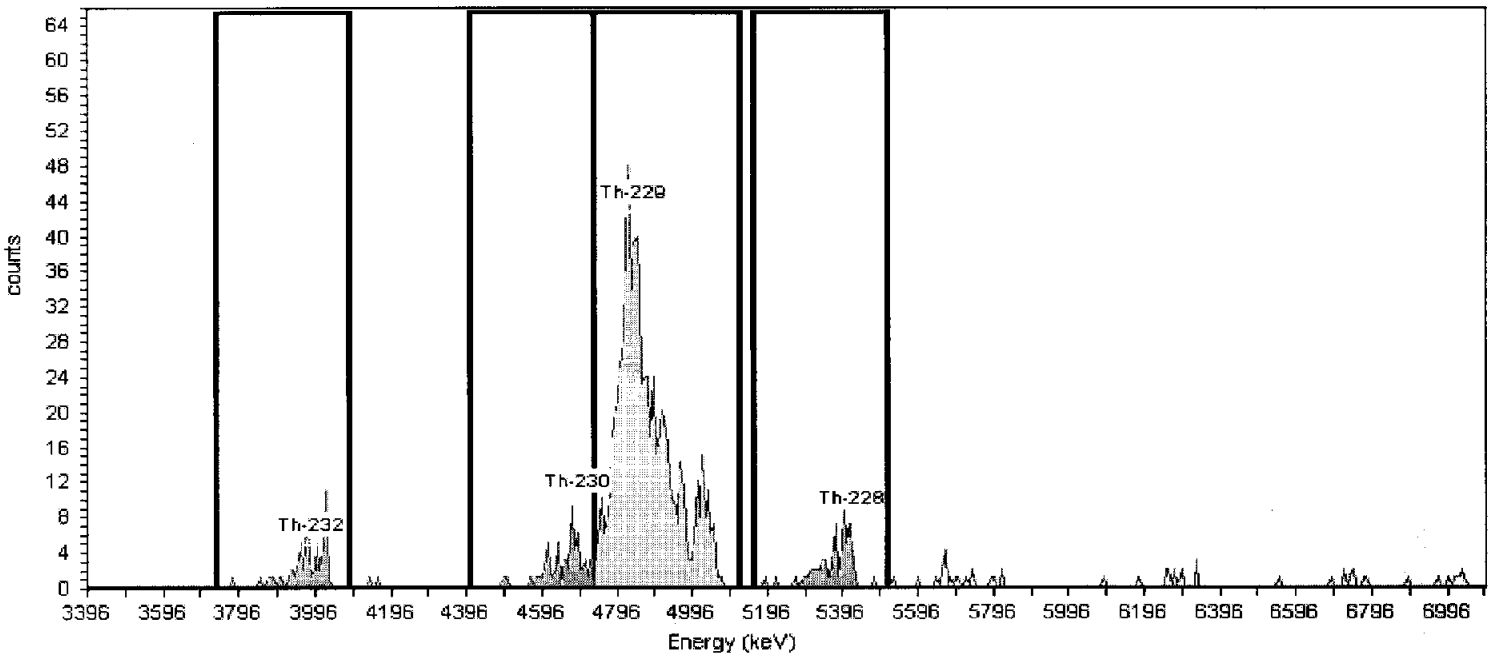
Tracer Nuclide: Th-229
Tracer Recovery: 96.38%

Acquisition

Detector: AV24
Serial Number: 41-172R5
Acquisition Start Date: 3/17/2007 1:40:30PM
Live Time: 400.00 min.
Real Time: 400.05 min.
Background Date: 2/18/2007 2:05:38PM

Calibration Name: Feb2007_AV24
Calibration Date: 2/27/2007 1:48:41PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.05% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV24; Det: AV24; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	94.156	100.2	59.00	0.8333	58	1.297E-001	3.814E-002	3.986E-003	1.401E-002
Th-230	4688.465	4405.333	4732.024	76.246	99.7	61.00	2.0833	59	1.321E-001	3.927E-002	6.334E-003	1.873E-002
Th-229	4840.921	4732.024	5124.053	88.089	99.6	735.00	2.5000	733	1.583E+000	1.978E-001	6.943E-003	1.995E-002
Th-228	5421.705	5160.352	5516.082	56.451	99.8	65.00	7.5000	58	1.288E-001	4.142E-002	1.201E-002	3.009E-002

Manual
KW
3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:08:34AM 3/19/2007

Sample

Sample Name: F7C010119-011
SampleType: Sample
: JP93D1AE
Sample Collection Date: 2/1/2007 11:50:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0152g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

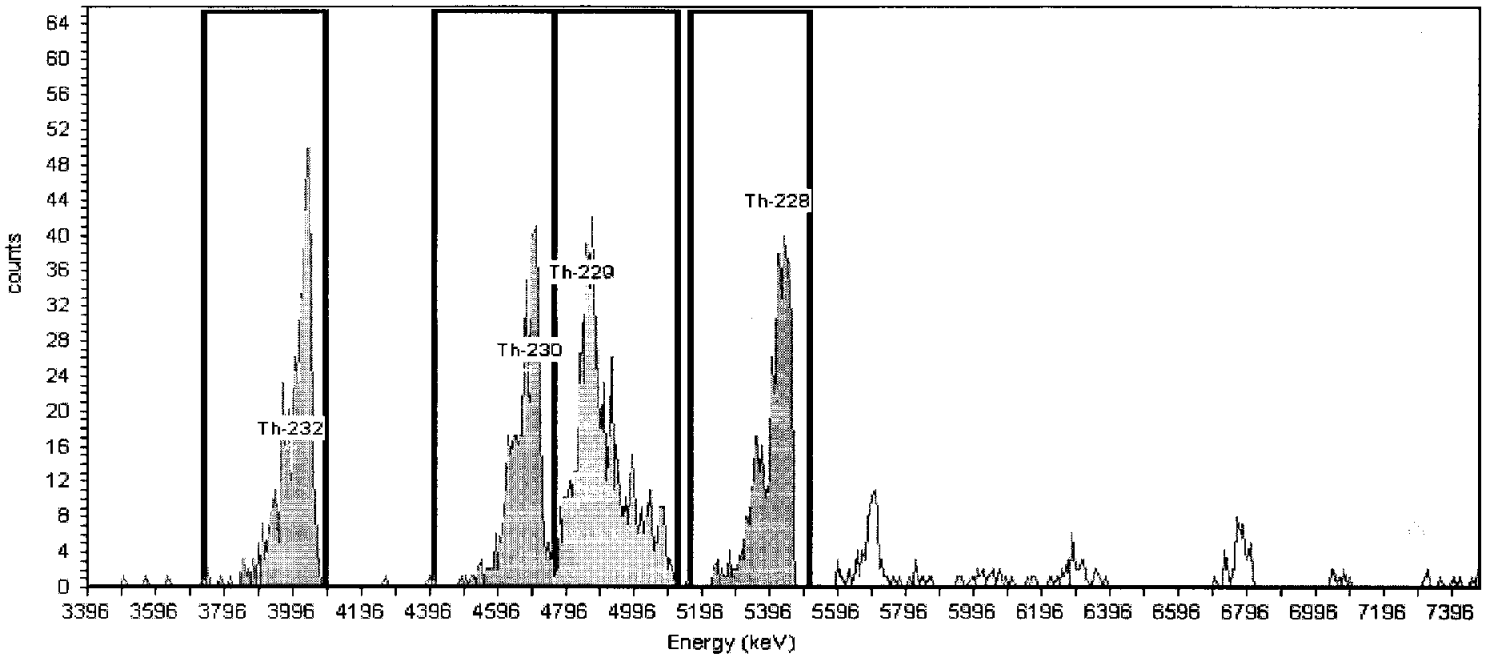
Tracer Nuclide: Th-229
Tracer Recovery: 80.80%

Acquisition

Detector: AV45
Serial Number: AV45
Acquisition Start Date: 3/17/2007 1:40:31PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:40PM

Calibration Name: Feb2007_AV45
Calibration Date: 2/27/2007 1:48:34PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.75% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV45; Det: AV45; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	70.655	100.2	442.00	0.4167	442	1.098E+000	1.753E-001	3.143E-003	1.302E-002
Th-230	4688.465	4405.333	4761.063	84.650	99.7	404.00	0.4167	404	1.009E+000	1.637E-001	3.159E-003	1.308E-002
Th-229	4840.921	4761.063	5124.053	76.506	99.0	651.00	0.8333	650	1.322E+000	1.687E-001	4.498E-003	1.581E-002
Th-228	5421.705	5160.352	5516.082	61.022	99.8	439.00	2.9167	436	1.089E+000	1.746E-001	8.352E-003	2.346E-002

manual
MJ
3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:08:46AM 3/19/2007

Sample

Sample Name: F7C010119-012
SampleType: Sample
: JP93E1AE
Sample Collection Date: 2/15/2007 2:55:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0071g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

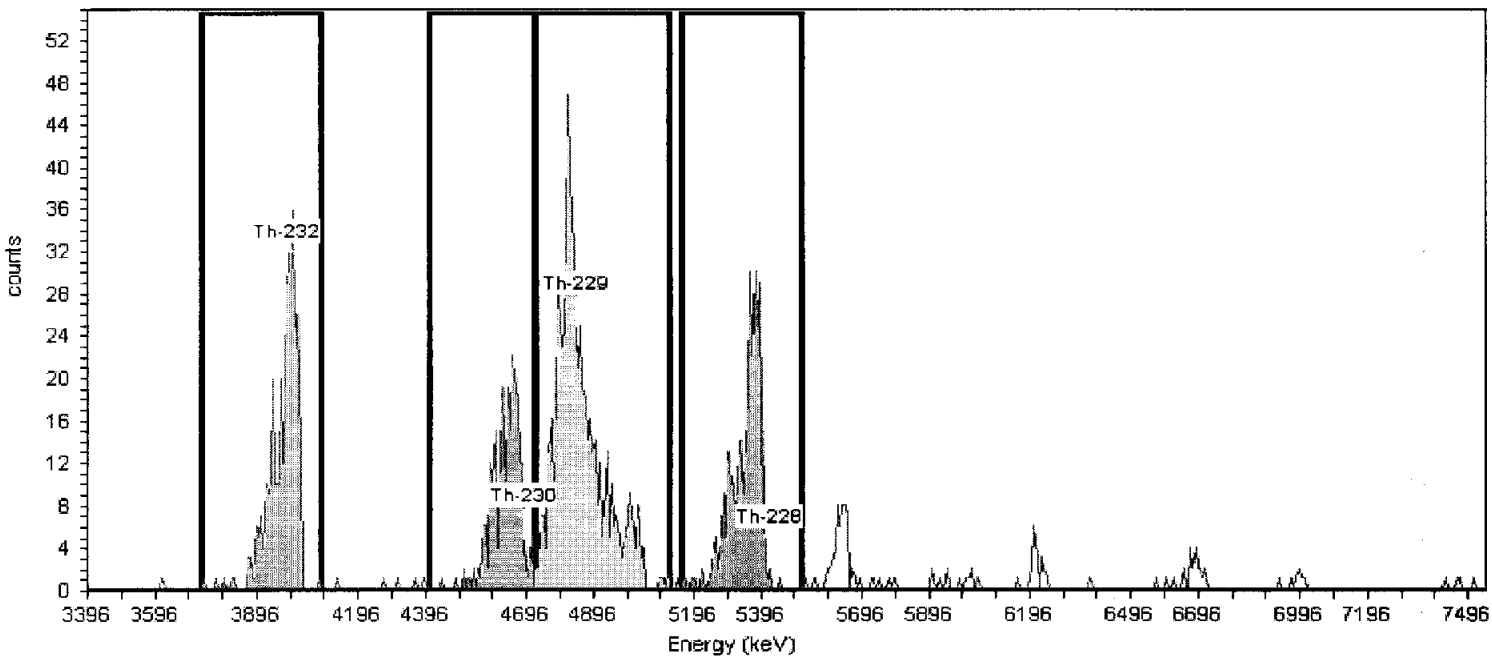
Tracer Nuclide: Th-229
Tracer Recovery: 77.03%

Acquisition

Detector: AV48
Serial Number: AV48
Acquisition Start Date: 3/17/2007 1:40:37PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:43PM

Calibration Name: Feb2007_AV48
Calibration Date: 2/26/2007 11:59:54AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.62% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV48; Det: AV48; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	56.704	100.2	317.00	1.6667	315	8.610E-001	1.485E-001	6.902E-003	2.119E-002
Th-230	4688.465	4405.333	4717.504	80.514	99.7	235.00	1.2500	234	6.415E-001	1.187E-001	6.007E-003	1.944E-002
Th-229	4840.921	4724.764	5124.053	85.762	99.6	600.00	1.6667	598	1.265E+000	1.642E-001	6.940E-003	2.131E-002
Th-228	5421.705	5160.352	5516.082	56.001	99.8	298.00	1.2500	297	8.139E-001	1.422E-001	6.004E-003	1.943E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:09:34AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C010119-013
SampleType: Sample
: JP93F1AE
Sample Collection Date: 2/15/2007 2:50:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0178g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

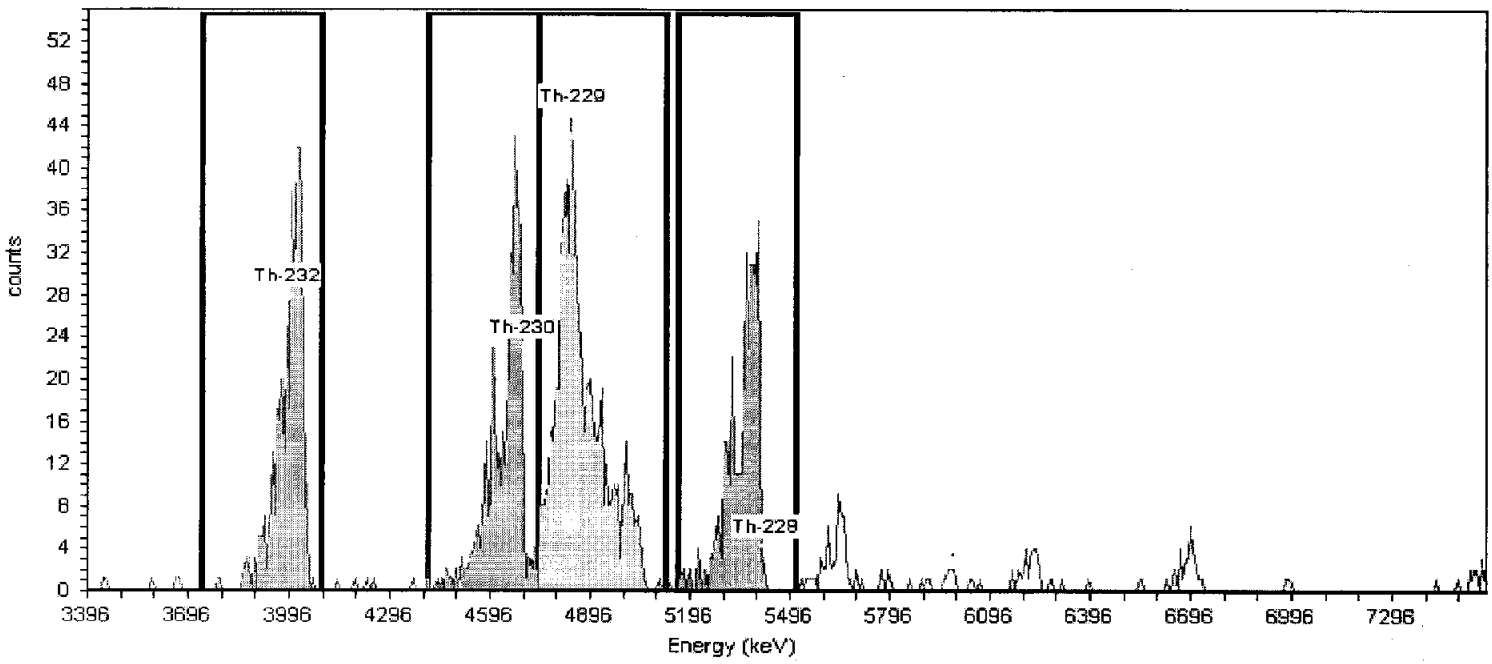
Tracer Nuclide: Th-229
Tracer Recovery: 88.25%

Acquisition

Detector: AV50
Serial Number: AV50
Acquisition Start Date: 3/17/2007 1:40:39PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:46PM

Calibration Name: Feb2007_AV50
Calibration Date: 2/27/2007 4:28:30PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.95% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV50; Det: AV50; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	59.999	100.2	383.00	0.8333	382	8.949E-001	1.459E-001	4.185E-003	1.471E-002
Th-230	4688.465	4405.333	4739.284	51.590	99.7	396.00	2.0833	394	9.270E-001	1.504E-001	6.651E-003	1.967E-002
Th-229	4840.921	4739.284	5124.053	81.935	99.6	699.00	5.0000	694	1.442E+000	1.821E-001	1.031E-002	2.699E-002
Th-228	5421.705	5160.352	5516.082	59.768	99.8	362.00	5.4167	357	8.387E-001	1.394E-001	1.072E-002	2.780E-002

Manual
KO
3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:10:11AM 3/19/2007

Sample

Sample Name: F7C010119-014
SampleType: Sample
: JP93G1AE
Sample Collection Date: 2/15/2007 2:40:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0052g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

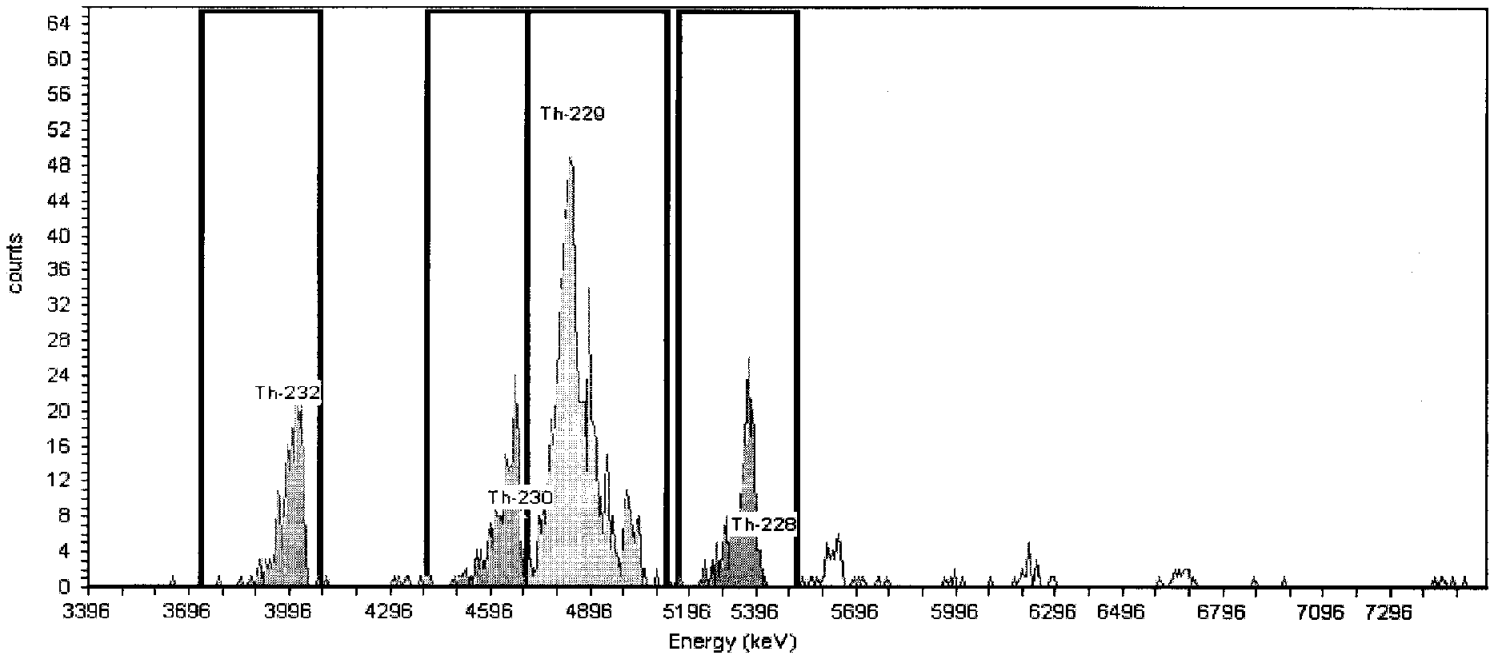
Tracer Nuclide: Th-229
Tracer Recovery: 90.52%

Acquisition

Detector: AV53
Serial Number:
Acquisition Start Date: 3/17/2007 1:39:48PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:50PM

Calibration Name: Feb2007_AV53
Calibration Date: 2/27/2007 7:37:38PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.71% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV53; Det: AV53; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:34PM
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	65.480	100.2	192.00	1.6667	190	4.253E-001	8.192E-002	5.648E-003	1.734E-002
Th-230	4688.465	4405.333	4702.985	24.858	99.7	192.00	0.8333	191	4.293E-001	8.238E-002	4.013E-003	1.410E-002
Th-229	4840.921	4702.985	5124.053	76.125	99.6	734.00	2.0833	732	1.488E+000	1.860E-001	6.349E-003	1.878E-002
Th-228	5421.705	5160.352	5516.082	54.173	99.8	188.00	2.0833	186	4.172E-001	8.103E-002	6.342E-003	1.876E-002

manual
KW
3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:10:24AM 3/19/2007

Sample

Sample Name: F7C010119-015
SampleType: Sample
: JP93H1AE
Sample Collection Date: 2/1/2007 11:45:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0129g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

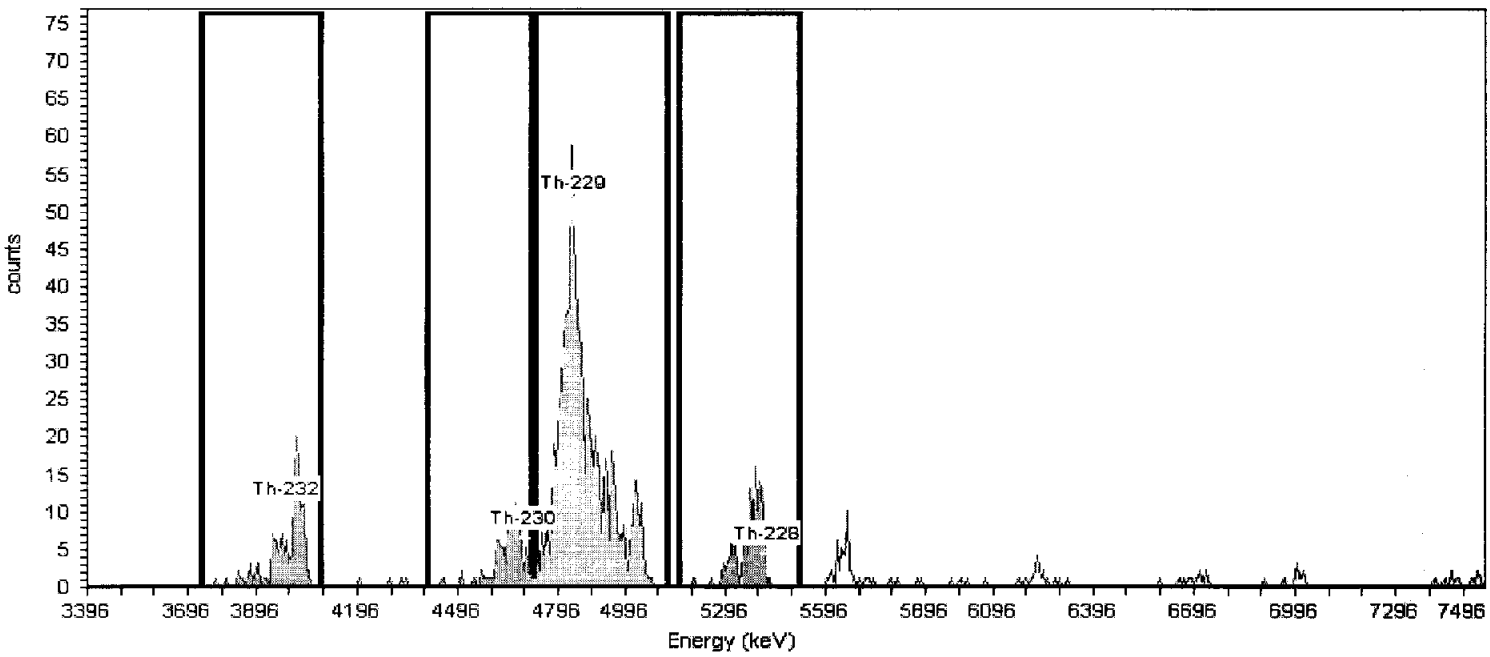
Tracer Nuclide: Th-229
Tracer Recovery: 96.65%

Acquisition

Detector: AV54
Serial Number:
Acquisition Start Date: 3/17/2007 1:39:49PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:51PM

Calibration Name: Feb2007_AV54
Calibration Date: 2/27/2007 7:37:44PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.93% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV54; Det: AV54; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:35PM
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	49.685	100.2	138.00	0.4167	138	2.951E-001	6.243E-002	2.711E-003	1.123E-002
Th-230	4688.465	4405.333	4717.504	42.465	99.7	100.00	1.6667	98	2.120E-001	5.086E-002	5.449E-003	1.673E-002
Th-229	4840.921	4724.764	5124.053	75.087	99.6	762.00	2.5000	760	1.583E+000	1.965E-001	6.677E-003	1.919E-002
Th-228	5421.705	5160.352	5516.082	54.250	99.8	125.00	1.6667	123	2.657E-001	5.871E-002	5.446E-003	1.672E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:11:05AM 3/19/2007

Sample

Sample Name: F7C010119-016
SampleType: Sample
: JP93L1AE
Sample Collection Date: 2/1/2007 10:30:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0114g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

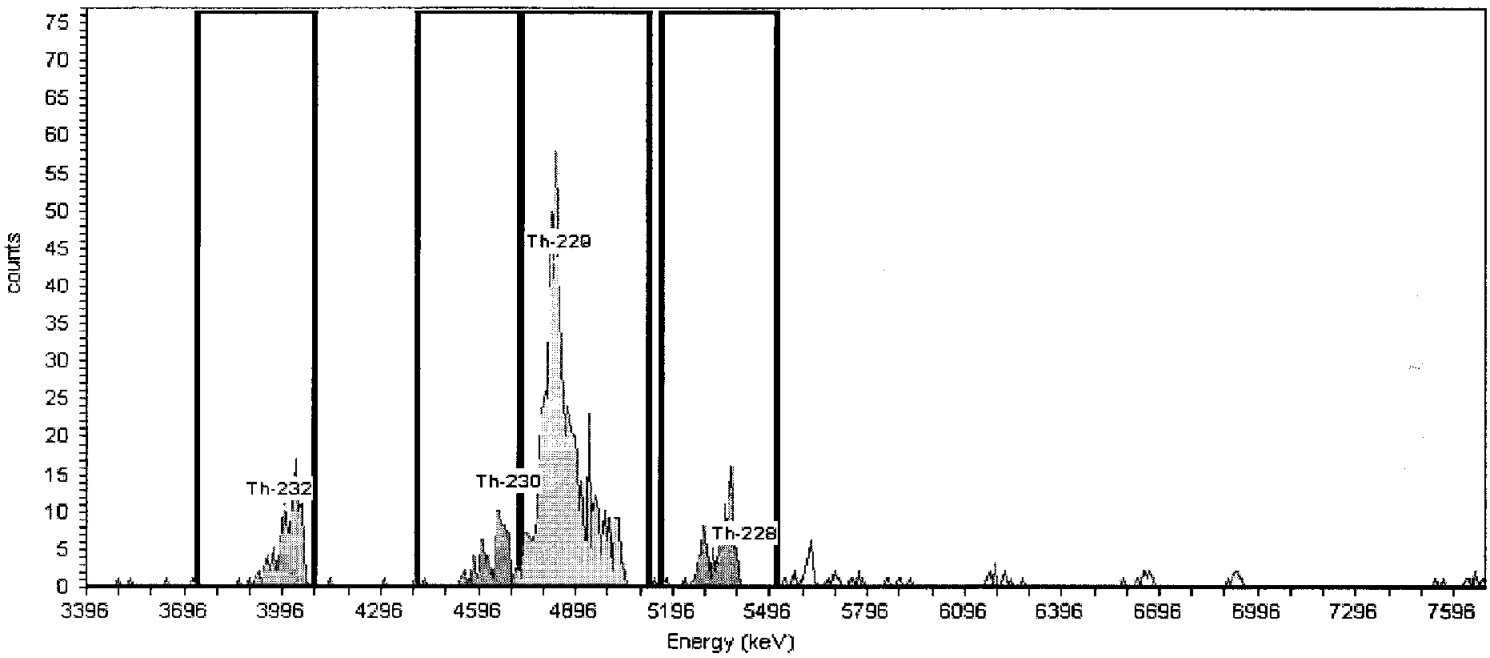
Tracer Nuclide: Th-229
Tracer Recovery: 94.24%

Acquisition

Detector: AV56
Serial Number:
Acquisition Start Date: 3/17/2007 1:39:52PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:53PM

Calibration Name: Feb2007_AV56
Calibration Date: 2/27/2007 4:28:15PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.77% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV56; Det: AV56; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:35PM
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	46.160	100.2	130.00	2.5000	128	2.934E-001	6.462E-002	7.123E-003	2.047E-002
Th-230	4688.465	4405.333	4717.504	37.014	99.7	93.00	2.5000	91	2.093E-001	5.234E-002	7.159E-003	2.058E-002
Th-229	4840.921	4724.764	5124.053	73.536	99.6	711.00	2.5000	709	1.545E+000	1.942E-001	7.163E-003	2.059E-002
Th-228	5421.705	5160.352	5516.082	50.218	99.8	109.00	2.5000	107	2.461E-001	5.785E-002	7.155E-003	2.056E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:11:22AM 3/19/2007

Sample

Sample Name: F7C010119-017
SampleType: Sample
: JP93N1AE
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0101g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

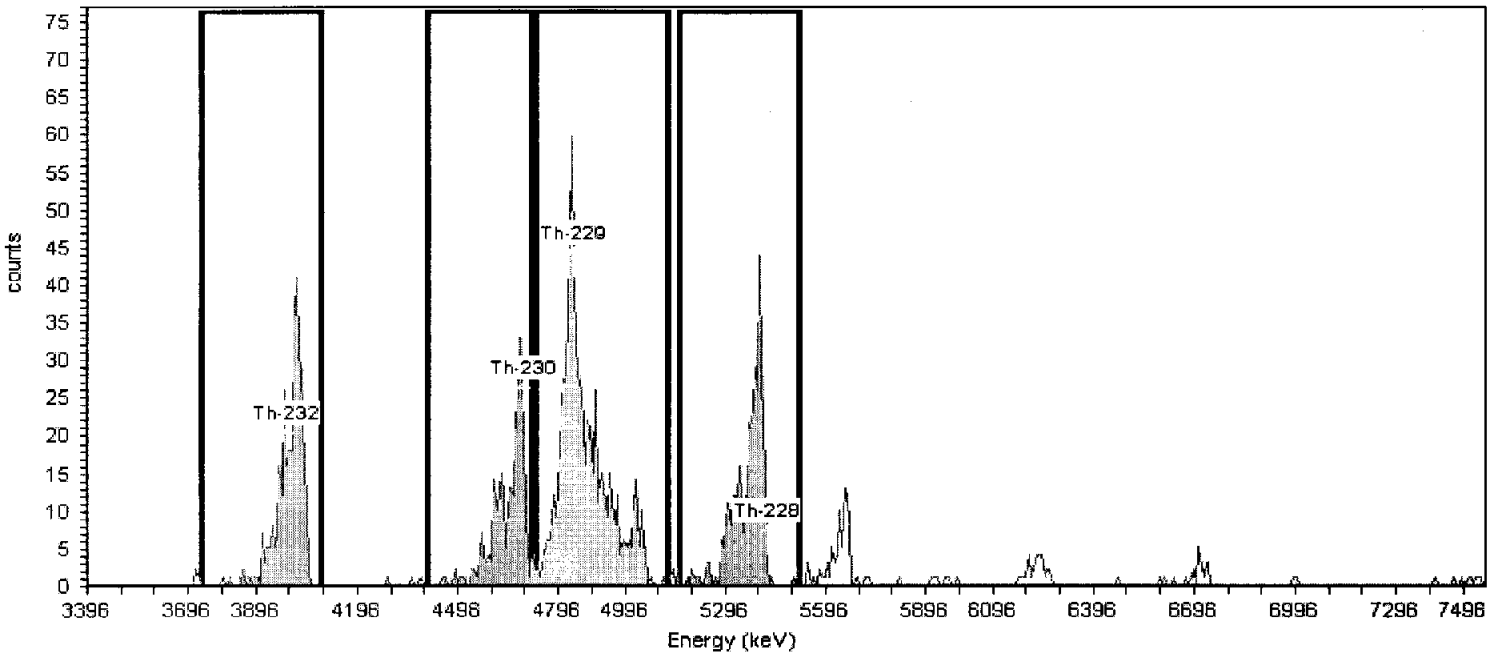
Tracer Nuclide: Th-229
Tracer Recovery: 85.83%

Acquisition

Detector: AV58
Serial Number:
Acquisition Start Date: 3/17/2007 1:39:56PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:55PM

Calibration Name: FEB2007_AV58
Calibration Date: 2/28/2007 7:03:13AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.46% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV58; Det: AV58; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:35PM
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	61.778	100.2	319.00	0.0000	319	7.567E-001	1.280E-001	0.000E+000	6.419E-003
Th-230	4688.465	4405.333	4717.504	17.459	99.7	258.00	1.6667	256	6.111E-001	1.091E-001	6.026E-003	1.850E-002
Th-229	4840.921	4724.764	5124.053	64.797	99.6	689.00	1.2500	688	1.408E+000	1.777E-001	5.221E-003	1.690E-002
Th-228	5421.705	5160.352	5516.082	50.821	99.8	326.00	3.3333	323	7.687E-001	1.302E-001	8.516E-003	2.348E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:11:38AM 3/19/2007

Sample

Sample Name: F7C010119-018
SampleType: Sample
: JP93P1AE
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0176g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

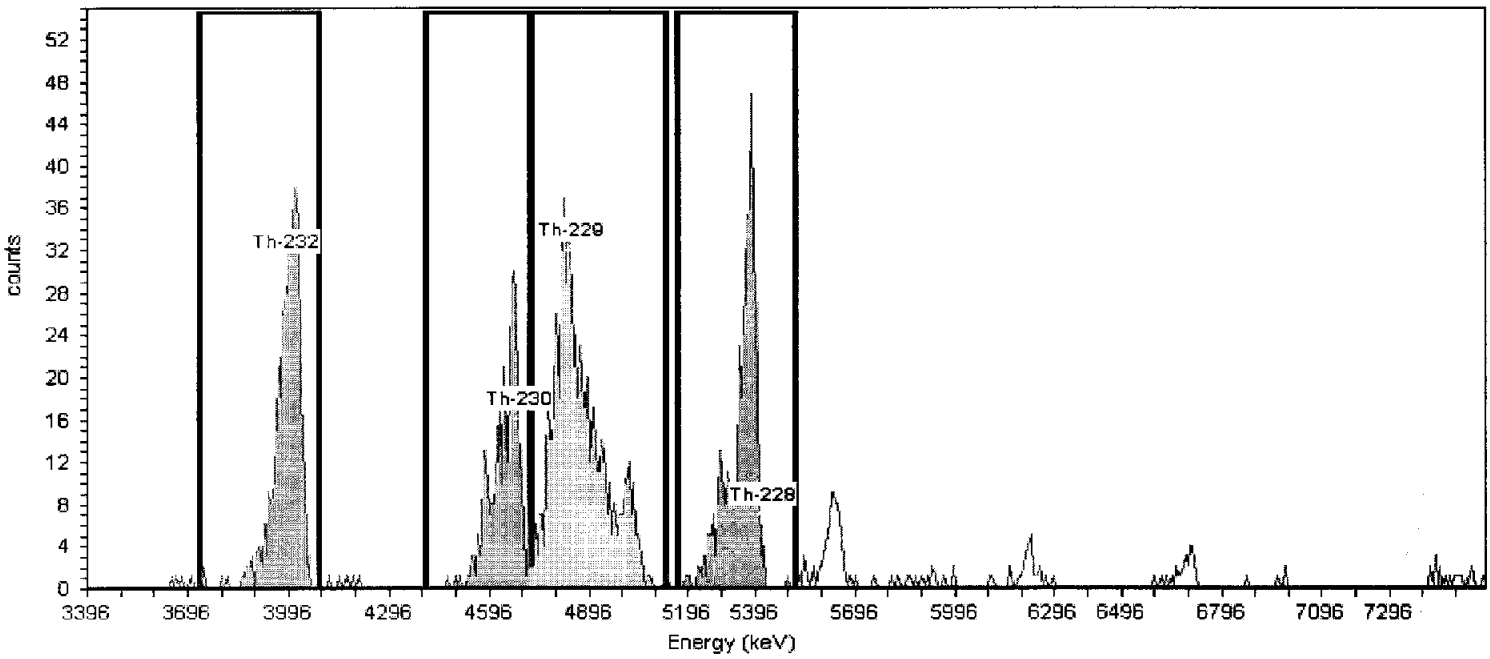
Tracer Nuclide: Th-229
Tracer Recovery: 80.35%

Acquisition

Detector: AV73
Serial Number:
Acquisition Start Date: 3/17/2007 1:40:11PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:06:15PM

Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.08% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV73; Det: AV73; Spectrum #1; Feb-18-2007 14:06



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:35PM
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	72.252	100.2	386.00	0.8333	385	9.859E-001	1.620E-001	4.575E-003	1.608E-002
Th-230	4688.465	4405.333	4717.504	49.694	99.7	283.00	1.2500	282	7.248E-001	1.274E-001	5.632E-003	1.822E-002
Th-229	4840.921	4724.764	5124.053	111.437	99.6	637.00	2.0833	635	1.313E+000	1.685E-001	7.274E-003	2.151E-002
Th-228	5421.705	5160.352	5516.082	52.704	99.8	375.00	2.5000	373	9.577E-001	1.587E-001	7.960E-003	2.288E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:12:37AM 3/19/2007

Sample

Sample Name: F7C010119-019
SampleType: Sample
: JP93Q1AE
Sample Collection Date: 2/15/2007 2:55:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0059g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

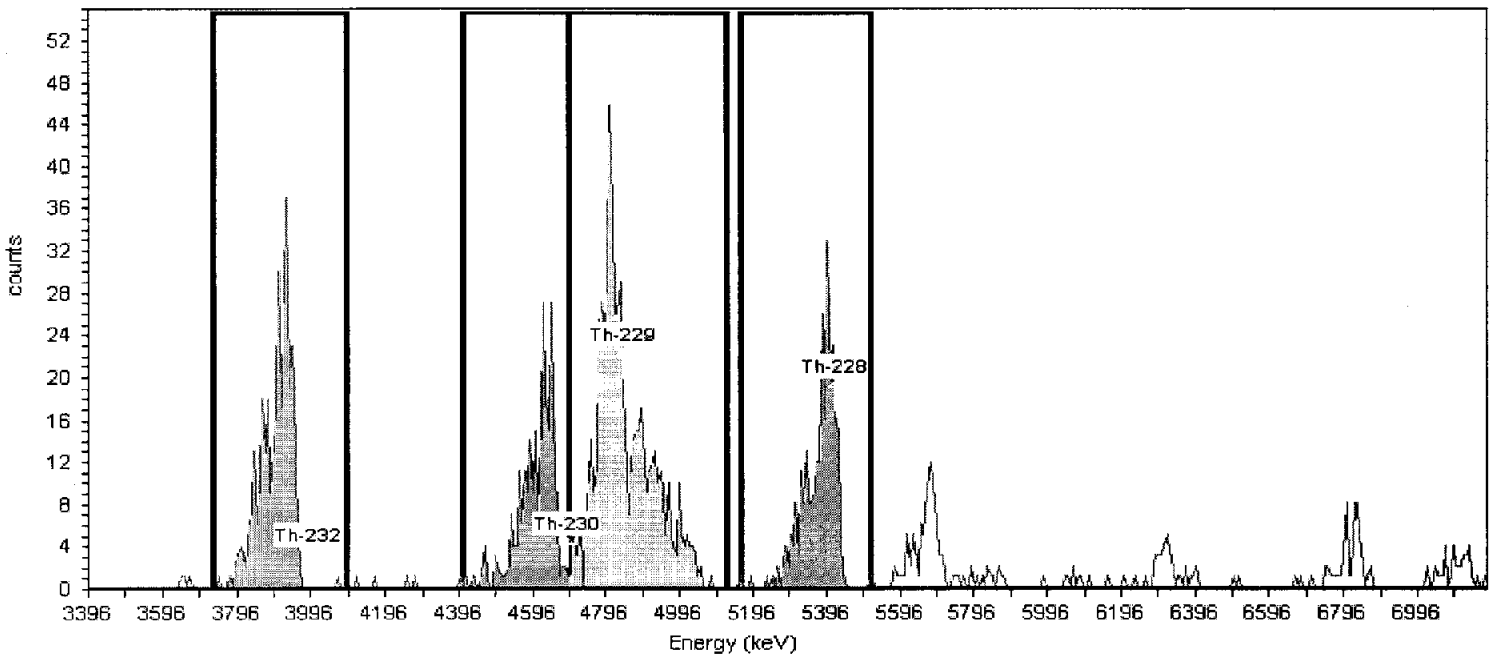
Tracer Nuclide: Th-229
Tracer Recovery: 76.99%

Acquisition

Detector: AV1
Serial Number: 41-158W6
Acquisition Start Date: 3/18/2007 2:17:30PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:37PM

Calibration Name: Feb2007_AV1
Calibration Date: 2/23/2007 2:25:38PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.66% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV1; Det: AV1; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:35PM
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	74.440	100.2	324.00	1.2500	323	8.809E-001	1.511E-001	5.975E-003	1.934E-002
Th-230	4688.465	4405.333	4695.725	89.137	99.7	246.00	1.2500	245	6.714E-001	1.228E-001	6.005E-003	1.943E-002
Th-229	4840.921	4695.725	5124.053	70.756	99.6	601.00	2.0833	599	1.266E+000	1.641E-001	7.756E-003	2.294E-002
Th-228	5421.705	5160.352	5516.082	60.925	99.8	270.00	5.8333	264	7.250E-001	1.312E-001	1.298E-002	3.338E-002

manual
3/19/07
MW

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:13:05AM 3/19/2007

Sample

Sample Name: F7C010119-020
SampleType: Sample
: JP93R1AE
Sample Collection Date: 2/15/2007 2:55:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0007g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7065384
:
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

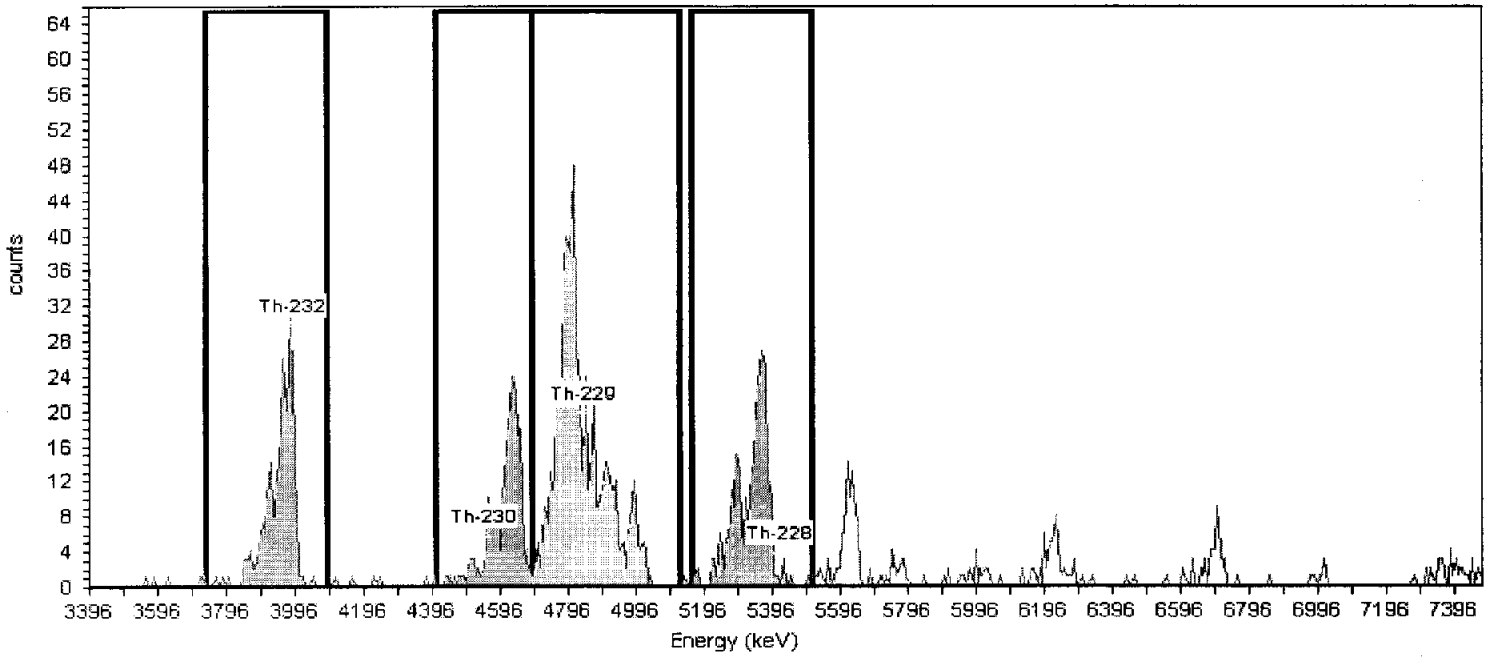
Tracer Nuclide: Th-229
Tracer Recovery: 86.02%

Acquisition

Detector: AV2
Serial Number: 41-158W7
Acquisition Start Date: 3/18/2007 2:17:31PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:39PM

Calibration Name: FEB2007_AV2
Calibration Date: 2/23/2007 6:25:41AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.30% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV2; Det: AV2; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:35PM
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	60.231	100.2	261.00	0.8333	260	6.459E-001	1.151E-001	4.437E-003	1.559E-002
Th-230	4546.899	4405.333	4688.465	47.231	99.7	234.00	0.4167	234	5.828E-001	1.066E-001	3.153E-003	1.306E-002
Th-229	4840.921	4688.465	5124.053	70.935	99.6	661.00	0.8333	660	1.418E+000	1.804E-001	4.462E-003	1.568E-002
Th-228	5421.705	5160.352	5516.082	53.688	99.8	288.00	6.6667	281	7.023E-001	1.240E-001	1.262E-002	3.199E-002

Manual
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3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:45:43AM 3/19/2007

Sample

Sample Name: F7C010119-021
SampleType: Sample
: JP93V1AE
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0130g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

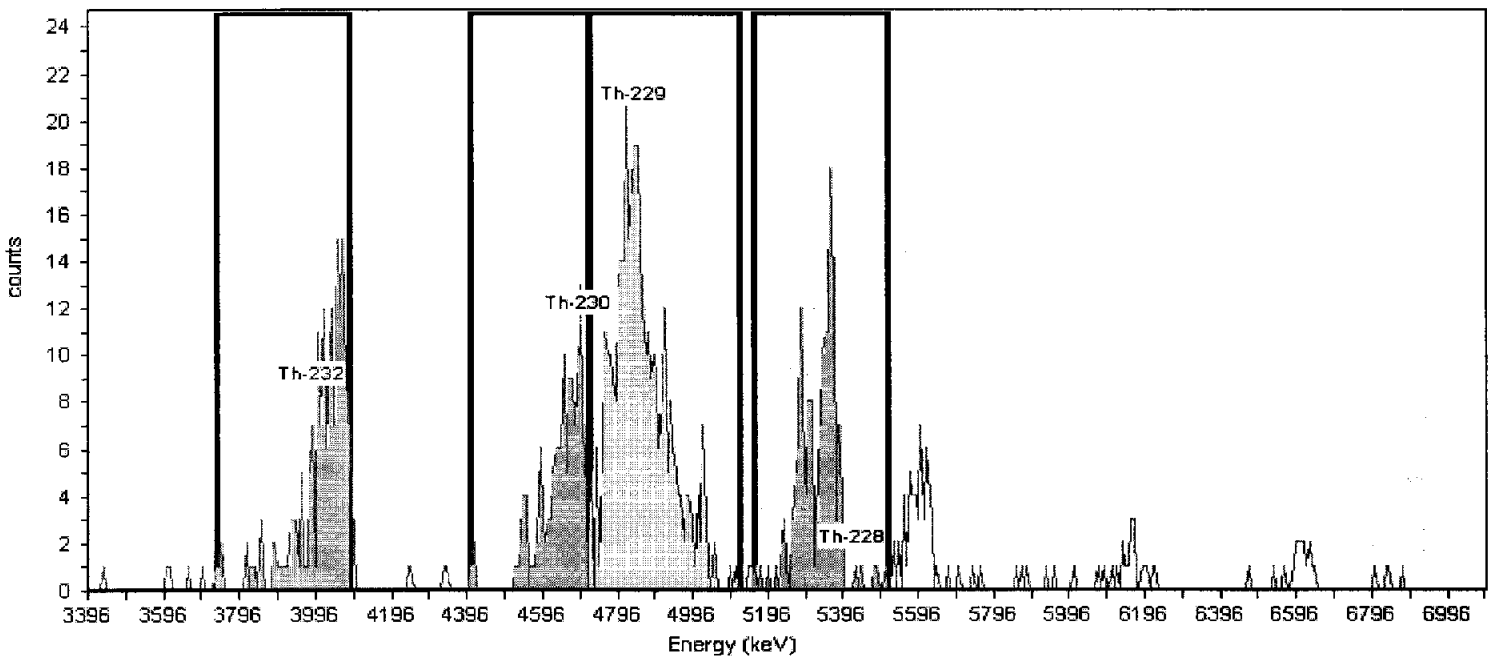
Tracer Nuclide: Th-229
Tracer Recovery: 78.22%

Acquisition

Detector: AV9
Serial Number: 41-172R1
Acquisition Start Date: 3/18/2007 9:43:50AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:49PM

Calibration Name: Feb2007_AV9
Calibration Date: 2/23/2007 4:50:27PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.67% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV9; Det: AV9; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	38.408	100.2	179.00	0.2500	179	7.972E-001	1.666E-001	4.101E-003	2.027E-002
Th-230	4688.465	4405.333	4717.504	31.230	99.7	133.00	1.2500	132	5.905E-001	1.349E-001	9.217E-003	3.056E-002
Th-229	4840.921	4724.764	5124.053	108.194	99.6	367.00	1.7500	365	1.281E+000	1.864E-001	1.091E-002	3.396E-002
Th-228	5421.705	5160.352	5516.082	104.747	99.8	154.00	2.7500	151	6.775E-001	1.495E-001	1.366E-002	3.945E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:46:35AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C010119-021X
SampleType: Sample
: JP93V1AH
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0028g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

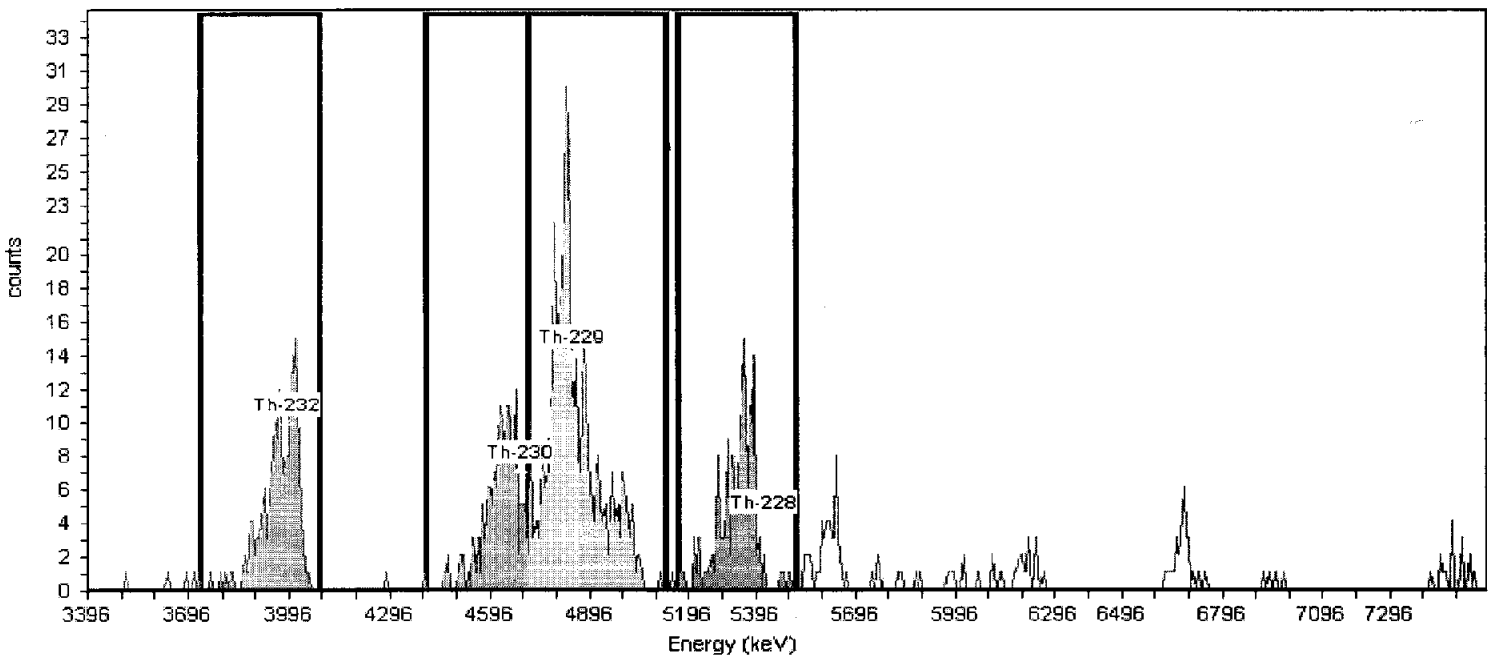
Tracer Nuclide: Th-229
Tracer Recovery: 85.58%

Acquisition

Detector: AV73
Serial Number:
Acquisition Start Date: 3/18/2007 9:44:12AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:06:15PM

Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.08% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV73; Det: AV73; Spectrum #1; Feb-18-2007 14:06



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	100.312	100.2	172.00	0.5000	172	6.920E-001	1.445E-001	5.248E-003	2.141E-002
Th-230	4688.465	4405.333	4710.245	40.456	99.7	154.00	0.7500	153	6.215E-001	1.340E-001	6.459E-003	2.389E-002
Th-229	4840.921	4710.245	5124.053	84.091	99.6	407.00	1.2500	406	1.409E+000	1.994E-001	8.343E-003	2.767E-002
Th-228	5421.705	5160.352	5516.082	70.336	99.8	156.00	1.5000	155	6.262E-001	1.351E-001	9.129E-003	2.923E-002

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3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:47:41AM 3/19/2007

Sample

Sample Name: F7C010119-022
SampleType: Sample
: JP93W1AE
Sample Collection Date: 1/30/2007 1:20:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0187g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

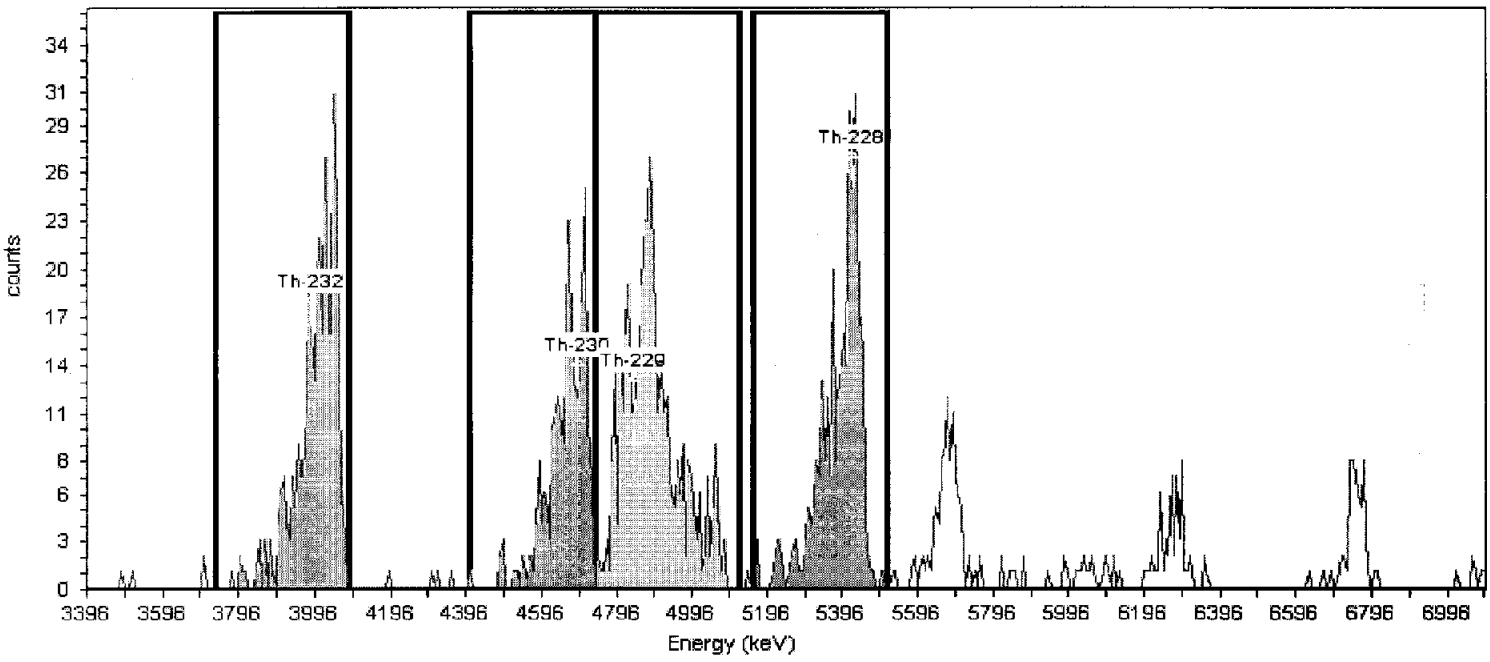
Tracer Nuclide: Th-229
Tracer Recovery: 94.03%

Acquisition

Detector: AV12
Serial Number: 41-172Q2
Acquisition Start Date: 3/18/2007 9:43:51AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:23PM

Calibration Name: Feb2007_AV12
Calibration Date: 2/24/2007 7:37:40AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.99% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV12; Det: AV12; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	39.756	100.2	329.00	0.2500	329	1.248E+000	2.226E-001	3.492E-003	1.726E-002
Th-230	4688.465	4405.333	4739.284	22.386	99.7	255.00	0.5000	255	9.713E-001	1.827E-001	4.963E-003	2.025E-002
Th-229	4840.921	4739.284	5124.053	118.660	99.6	429.00	1.2500	428	1.536E+000	2.145E-001	7.852E-003	2.604E-002
Th-228	5421.705	5160.352	5516.082	64.469	99.8	330.00	3.5000	327	1.245E+000	2.232E-001	1.312E-002	3.657E-002

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3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:49:08AM 3/19/2007

Sample

Sample Name: F7C010119-023
SampleType: Sample
: JP93X1AE
Sample Collection Date: 1/31/2007 12:32:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0027g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

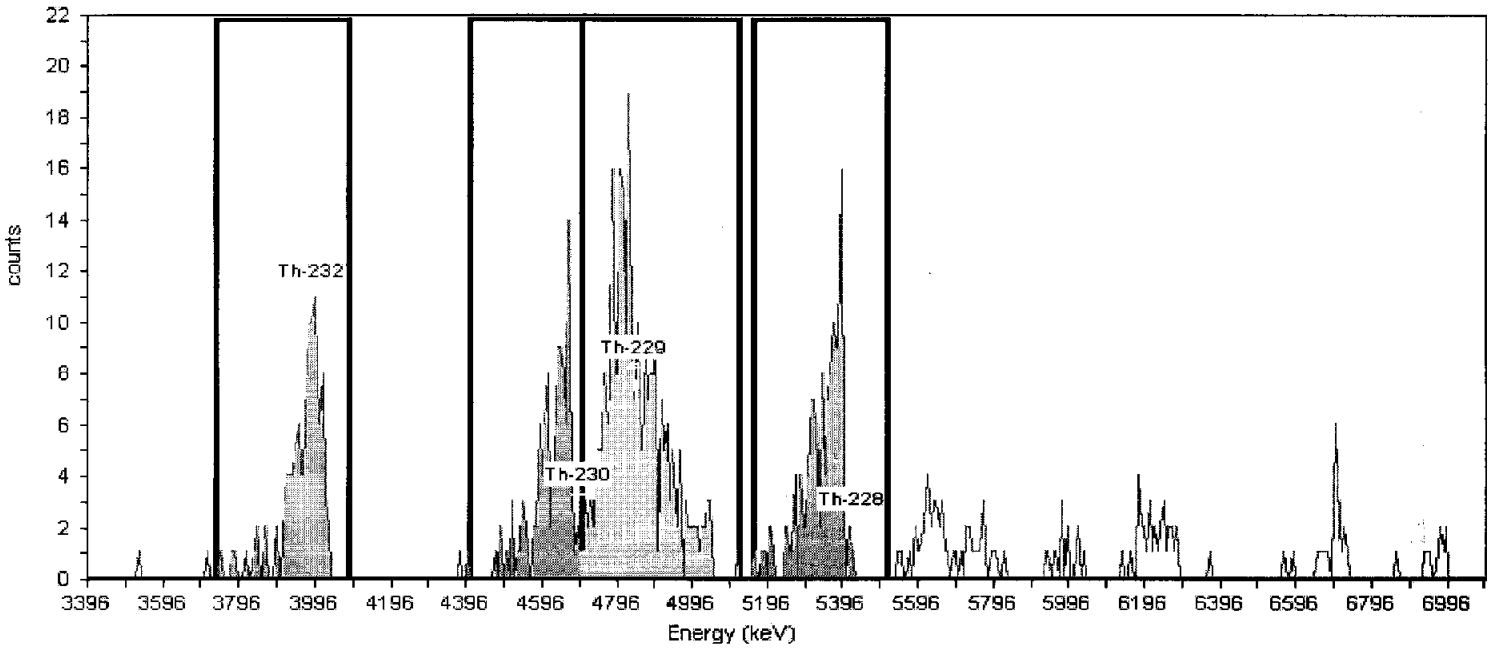
Tracer Nuclide: Th-229
Tracer Recovery: 59.11%

Acquisition

Detector: AV13
Serial Number: 41-172Q1
Acquisition Start Date: 3/18/2007 9:43:53AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:24PM

Calibration Name: FEB2007_AV13
Calibration Date: 2/28/2007 7:02:48AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.65% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV13; Det: AV13; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	66.341	100.2	111.00	0.5000	111	6.561E-001	1.625E-001	7.722E-003	3.151E-002
Th-230	4688.465	4405.333	4702.985	12.710	99.7	110.00	0.7500	109	6.520E-001	1.623E-001	9.505E-003	3.516E-002
Th-229	4840.921	4702.985	5124.053	101.265	99.6	277.00	1.2500	276	9.731E-001	1.530E-001	1.228E-002	4.071E-002
Th-228	5421.705	5160.352	5516.082	91.934	99.8	125.00	2.0000	123	7.336E-001	1.773E-001	1.551E-002	4.716E-002

manual
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3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:49:29AM 3/19/2007

Sample

Sample Name: F7C010119-024
SampleType: Sample
: JP9301AE
Sample Collection Date: 1/31/2007 1:38:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0102g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

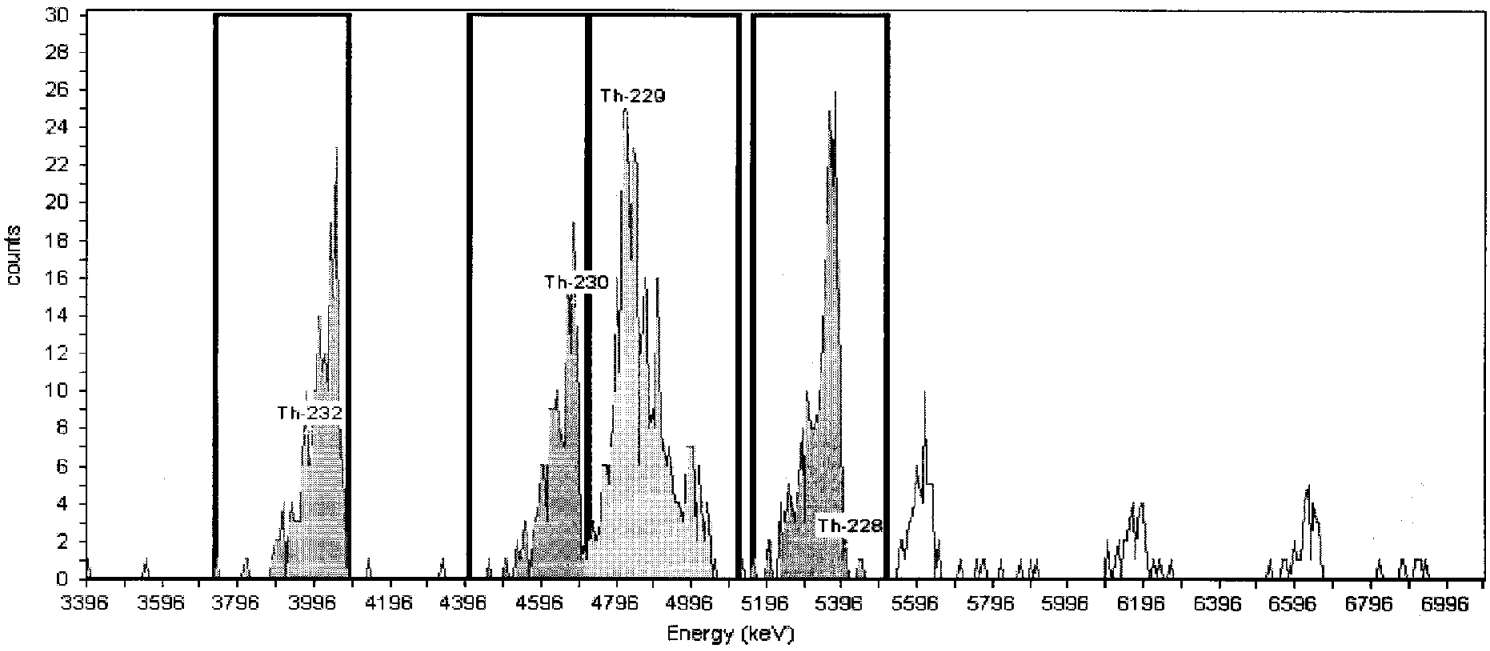
Tracer Nuclide: Th-229
Tracer Recovery: 84.37%

Acquisition

Detector: AV14
Serial Number: 41-172C4
Acquisition Start Date: 3/18/2007 9:43:56AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:26PM

Calibration Name: Feb2007_AV14
Calibration Date: 2/23/2007 4:50:55PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.68% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV14; Det: AV14; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	14.748	100.2	203.00	0.2500	203	8.394E-001	1.683E-001	3.807E-003	1.882E-002
Th-230	4688.465	4405.333	4717.504	20.103	99.7	166.00	1.2500	165	6.855E-001	1.455E-001	8.556E-003	2.837E-002
Th-229	4840.921	4724.764	5124.053	79.055	99.6	395.00	1.0000	394	1.384E+000	1.972E-001	7.657E-003	2.658E-002
Th-228	5421.705	5160.352	5516.082	56.094	99.8	237.00	2.2500	235	9.762E-001	1.898E-001	1.147E-002	3.420E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:49:42AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C010119-025
SampleType: Sample
: JP9321AE
Sample Collection Date: 1/31/2007 12:00:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0169g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

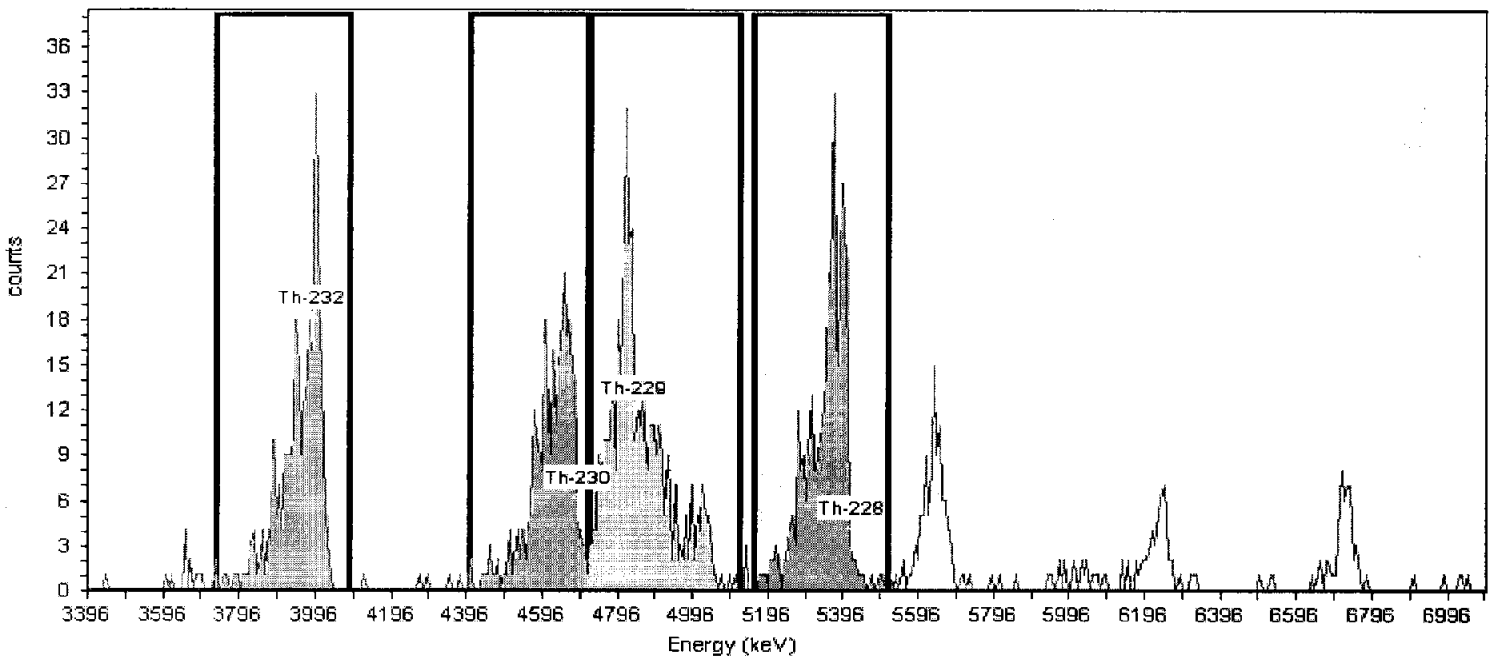
Tracer Nuclide: Th-229
Tracer Recovery: 88.79%

Acquisition

Detector: AV15
Serial Number: 41-172C5
Acquisition Start Date: 3/18/2007 9:43:57AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/23/2007 11:17:03AM

Calibration Name: Feb2007_AV15
Calibration Date: 2/22/2007 6:30:21PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.51% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV15; Det: AV15; Spectrum #1; Feb-23-2007 11:17



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	86.813	100.2	290.00	0.7500	289	1.141E+000	2.103E-001	6.285E-003	2.325E-002
Th-230	4688.465	4405.333	4717.504	69.795	99.7	278.00	2.0000	276	1.095E+000	2.040E-001	1.032E-002	3.136E-002
Th-229	4840.921	4724.764	5124.053	67.230	99.6	414.00	2.0000	412	1.452E+000	2.049E-001	1.032E-002	3.138E-002
Th-228	5421.705	5160.352	5516.082	71.190	99.8	330.00	4.7500	325	1.289E+000	2.331E-001	1.589E-002	4.250E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:50:30AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C010119-026
SampleType: Sample
: JP9341AE
Sample Collection Date: 1/31/2007 1:15:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0062g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

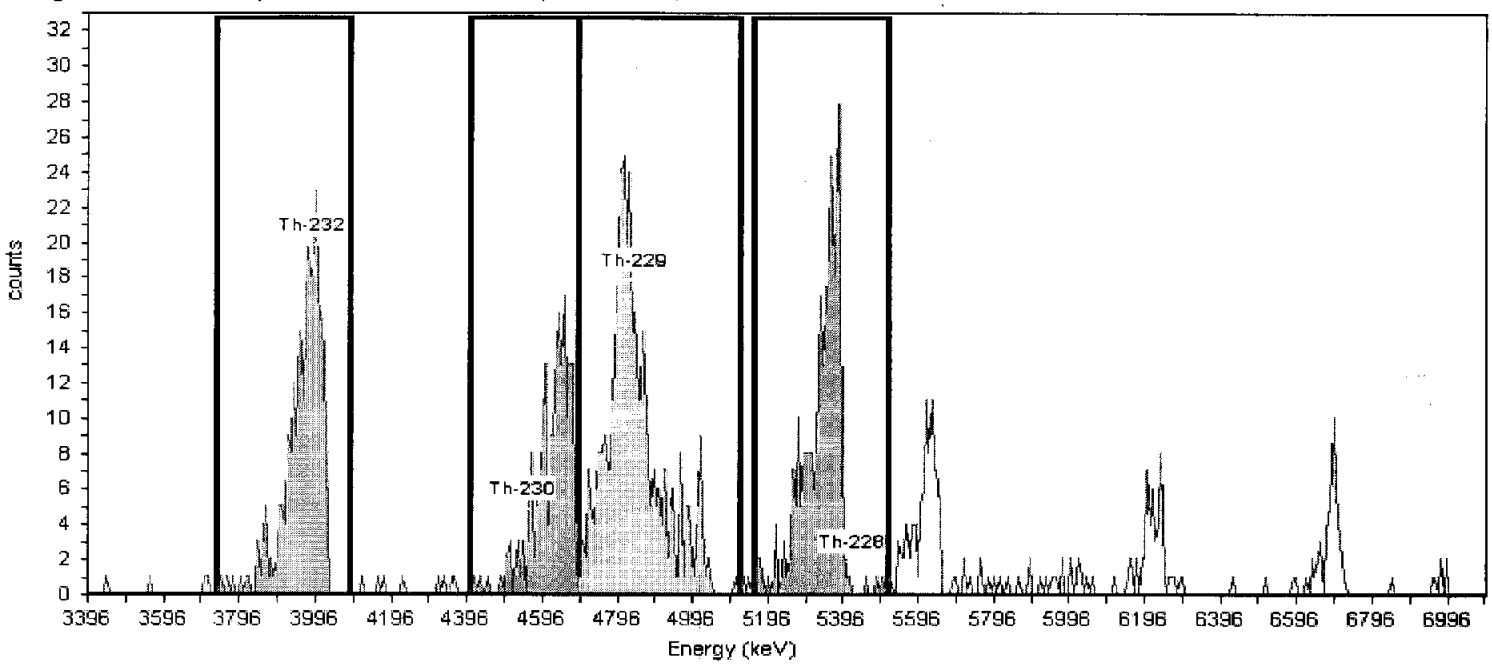
Tracer Nuclide: Th-229
Tracer Recovery: 86.19%

Acquisition

Detector: AV18
Serial Number: 41-172C6
Acquisition Start Date: 3/18/2007 9:43:51AM
Live Time: 240.00 min.
Real Time: 240.09 min.
Background Date: 2/18/2007 2:05:30PM

Calibration Name: Feb2007_AV18
Calibration Date: 2/24/2007 7:36:44AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 25.53% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV18; Det: AV18; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	82.181	100.2	250.00	0.2500	250	1.060E+000	2.030E-001	3.901E-003	1.928E-002
Th-230	4546.899	4405.333	4688.465	32.929	99.7	186.00	0.2500	186	7.920E-001	1.628E-001	3.921E-003	1.938E-002
Th-229	4840.921	4688.465	5124.053	78.291	99.6	386.00	0.7500	385	1.417E+000	2.030E-001	6.795E-003	2.513E-002
Th-228	5421.705	5160.352	5516.082	62.780	99.8	267.00	3.5000	264	1.123E+000	2.137E-001	1.466E-002	4.086E-002

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3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:51:13AM 3/19/2007

Sample

Sample Name: F7C010119-027
SampleType: Sample
: JP9371AE
Sample Collection Date: 1/31/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0049g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

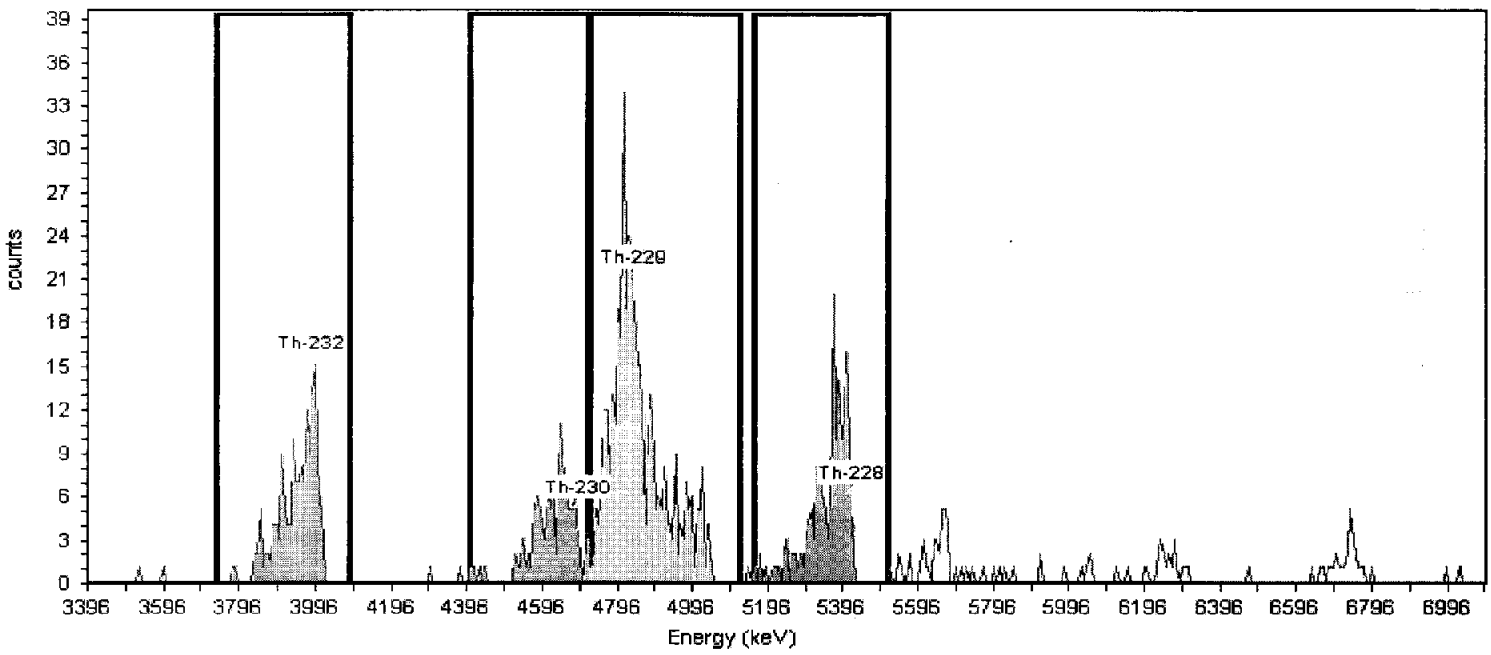
Tracer Nuclide: Th-229
Tracer Recovery: 89.64%

Acquisition

Detector: AV19
Serial Number: 41-172Q6
Acquisition Start Date: 3/18/2007 9:43:53AM
Live Time: 240.00 min.
Real Time: 240.09 min.
Background Date: 2/23/2007 11:17:07AM

Calibration Name: FEB2007_AV19
Calibration Date: 2/23/2007 6:25:50AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.62% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV19; Det: AV19; Spectrum #1; Feb-23-2007 11:17



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	88.967	100.2	156.00	0.7500	155	6.316E-001	1.359E-001	6.480E-003	2.397E-002
Th-230	4688.465	4405.333	4717.504	101.459	99.7	118.00	1.5000	117	4.764E-001	1.122E-001	9.210E-003	2.949E-002
Th-229	4840.921	4724.764	5124.053	80.905	99.6	403.00	1.0000	402	1.474E+000	2.091E-001	7.524E-003	2.612E-002
Th-228	5421.705	5160.352	5516.082	65.470	99.8	165.00	2.0000	163	6.661E-001	1.419E-001	1.063E-002	3.232E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:51:58AM 3/19/2007

Sample

Sample Name: F7C010119-028
SampleType: Sample
: JP9391AE
Sample Collection Date: 1/31/2007 12:40:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0153g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

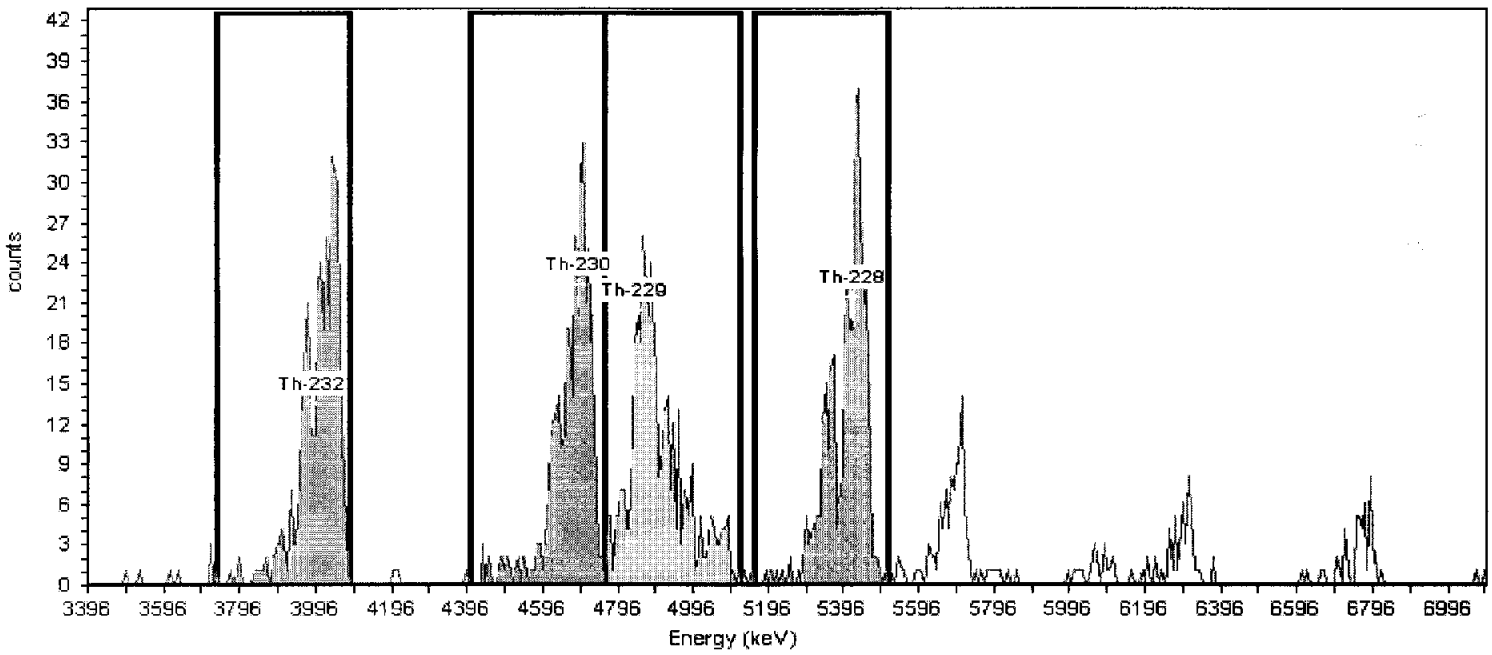
Tracer Nuclide: Th-229
Tracer Recovery: 82.78%

Acquisition

Detector: AV20
Serial Number: 41-172R2
Acquisition Start Date: 3/18/2007 9:43:55AM
Live Time: 240.00 min.
Real Time: 240.09 min.
Background Date: 2/18/2007 2:05:32PM

Calibration Name: Feb2007_AV20
Calibration Date: 2/26/2007 12:00:08PM
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: AV20; Det: AV20; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	36.533	100.2	371.00	0.5000	371	1.541E+000	2.732E-001	5.409E-003	2.207E-002
Th-230	4688.465	4405.333	4761.063	63.041	99.7	359.00	0.7500	358	1.497E+000	2.671E-001	6.658E-003	2.463E-002
Th-229	4840.921	4761.063	5124.053	80.628	99.0	391.00	2.2500	389	1.354E+000	1.940E-001	1.161E-002	3.461E-002
Th-228	5421.705	5160.352	5516.082	58.911	99.8	369.00	4.7500	364	1.522E+000	2.717E-001	1.674E-002	4.479E-002

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SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:52:13AM 3/19/2007

Sample

Sample Name: F7C010119-029
SampleType: Sample
: JP94C1AE
Sample Collection Date: 2/2/2007 11:23:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0164g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

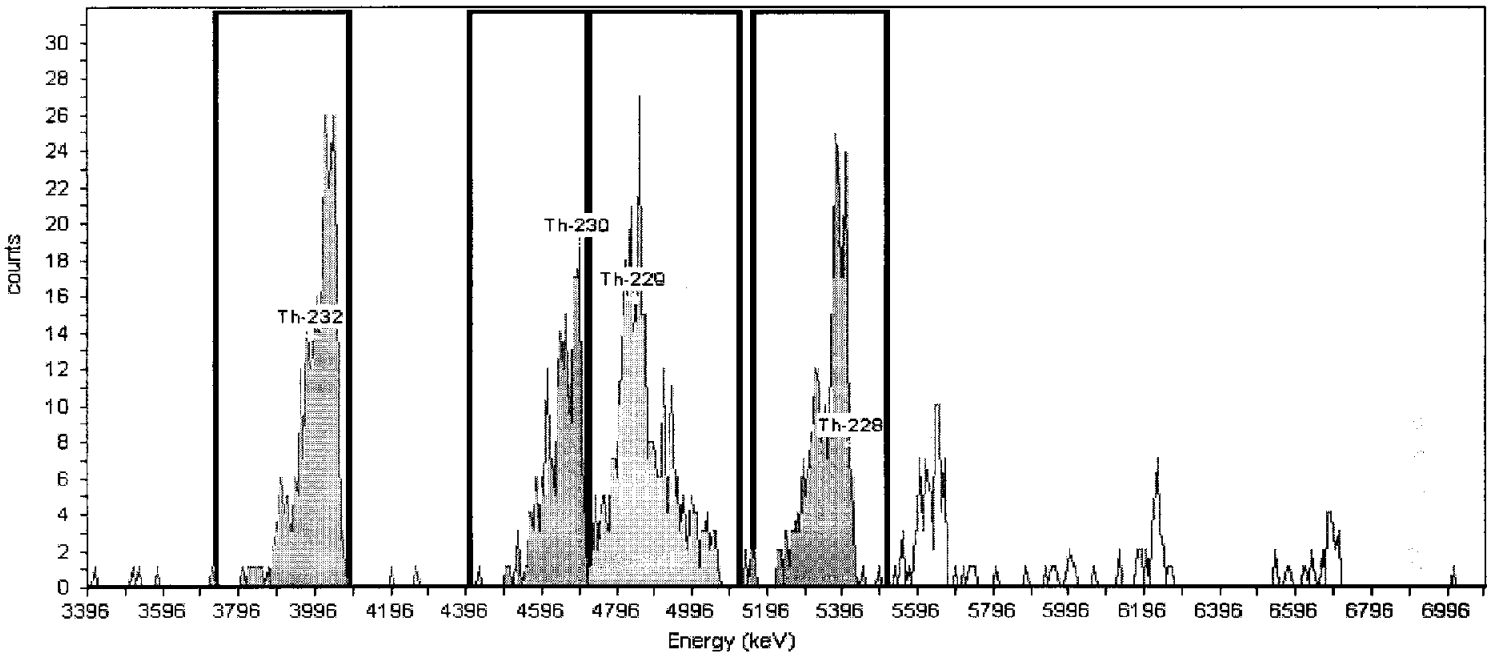
Tracer Nuclide: Th-229
Tracer Recovery: 67.94%

Acquisition

Detector: AV23
Serial Number: 41-172R4
Acquisition Start Date: 3/18/2007 9:44:00AM
Live Time: 240.00 min.
Real Time: 240.09 min.
Background Date: 2/18/2007 2:05:37PM

Calibration Name: Feb2007_AV23
Calibration Date: 2/26/2007 12:00:01PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 28.96% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV23; Det: AV23; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	50.355	100.2	296.00	0.7500	295	1.394E+000	2.628E-001	7.519E-003	2.781E-002
Th-230	4688.465	4405.333	4717.504	27.852	99.7	203.00	0.2500	203	9.619E-001	1.964E-001	4.363E-003	2.156E-002
Th-229	4840.921	4724.764	5124.053	81.270	99.6	346.00	1.5000	345	1.111E+000	1.641E-001	1.069E-002	3.423E-002
Th-228	5421.705	5160.352	5516.082	59.170	99.8	255.00	5.2500	250	1.184E+000	2.327E-001	1.998E-002	5.279E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:52:23AM 3/19/2007

Sample

Sample Name: F7C010119-030
SampleType: Sample
: JP94H1AE
Sample Collection Date: 1/31/2007 1:40:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0169g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

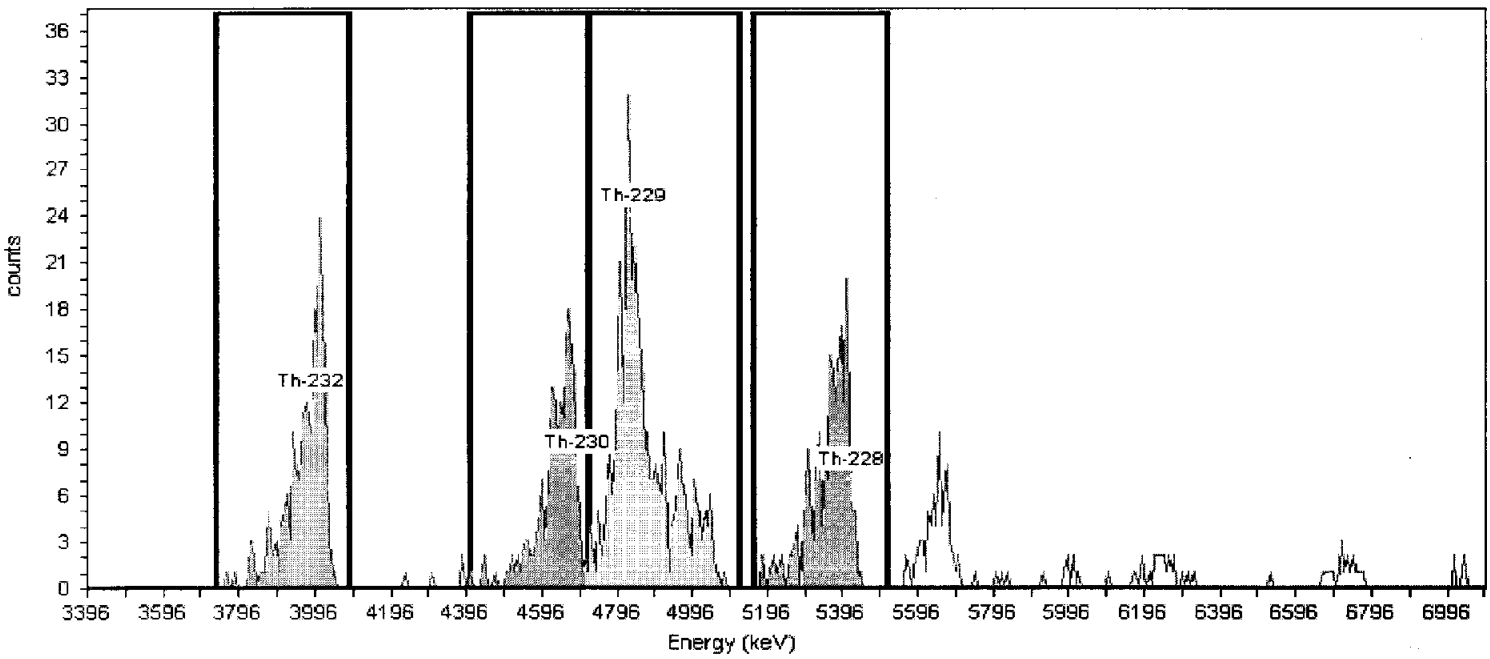
Tracer Nuclide: Th-229
Tracer Recovery: 84.65%

Acquisition

Detector: AV24
Serial Number: 41-172R5
Acquisition Start Date: 3/18/2007 9:44:02AM
Live Time: 240.00 min.
Real Time: 240.09 min.
Background Date: 2/18/2007 2:05:38PM

Calibration Name: Feb2007_AV24
Calibration Date: 2/27/2007 1:48:41PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.05% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV24; Det: AV24; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:28AM
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	71.029	100.2	215.00	0.5000	215	9.035E-001	1.794E-001	5.478E-003	2.235E-002
Th-230	4688.465	4405.333	4717.504	44.888	99.7	192.00	0.7500	191	8.096E-001	1.654E-001	6.742E-003	2.494E-002
Th-229	4840.921	4724.764	5124.053	77.707	99.6	388.00	2.0000	386	1.384E+000	1.985E-001	1.102E-002	3.349E-002
Th-228	5421.705	5160.352	5516.082	76.848	99.8	211.00	4.5000	207	8.736E-001	1.767E-001	1.651E-002	4.446E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:53:06AM 3/19/2007

Sample

Sample Name: F7C010119-031
SampleType: Sample
: JP94P1AE
Sample Collection Date: 1/31/2007 1:50:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0044g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

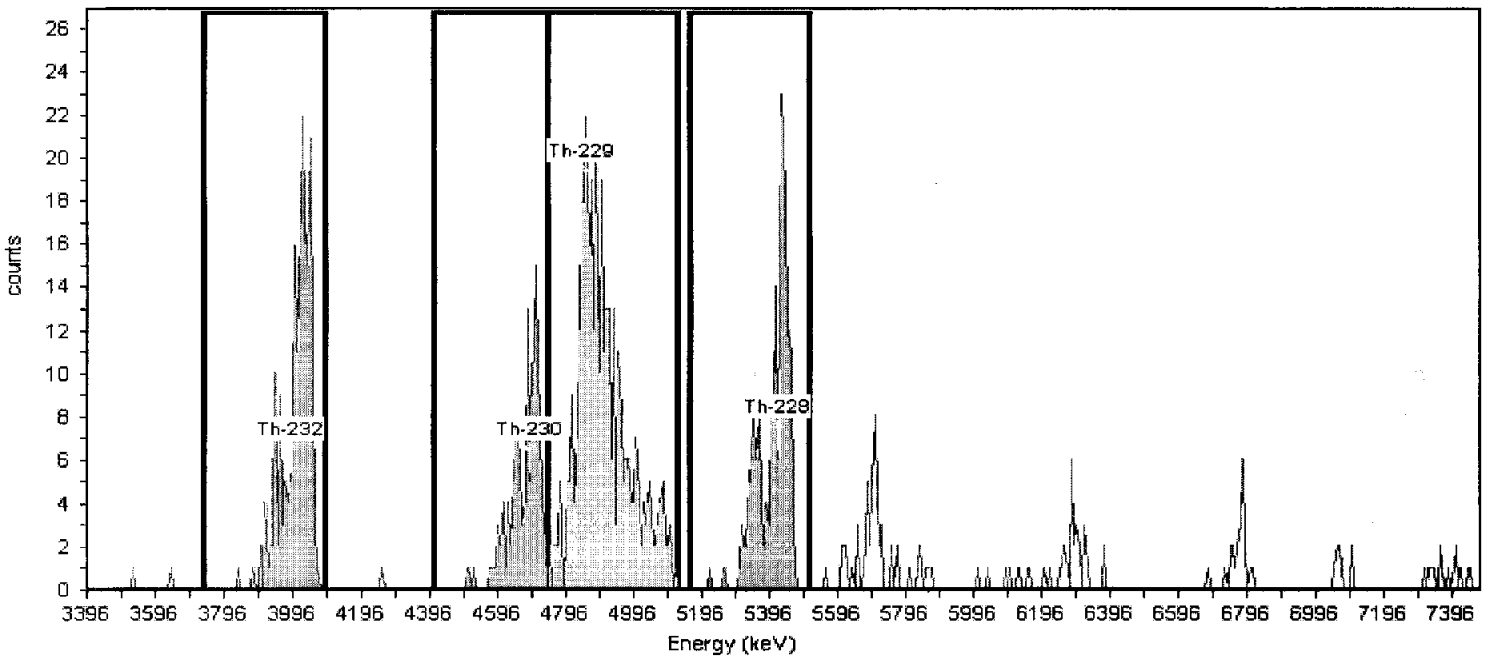
Tracer Nuclide: Th-229
Tracer Recovery: 75.64%

Acquisition

Detector: AV45
Serial Number: AV45
Acquisition Start Date: 3/18/2007 9:44:07AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:40PM

Calibration Name: Feb2007_AV45
Calibration Date: 2/27/2007 1:48:34PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.75% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV45; Det: AV45; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:29AM
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	61.499	100.2	191.00	0.2500	191	8.491E-001	1.744E-001	4.094E-003	2.023E-002
Th-230	4688.465	4405.333	4739.284	23.747	99.7	119.00	0.2500	119	5.313E-001	1.246E-001	4.114E-003	2.033E-002
Th-229	4840.921	4739.284	5124.053	107.874	99.6	368.00	0.5000	368	1.244E+000	1.804E-001	5.821E-003	2.376E-002
Th-228	5421.705	5160.352	5516.082	53.914	99.8	182.00	1.7500	180	8.059E-001	1.686E-001	1.088E-002	3.386E-002

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SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:53:41AM 3/19/2007

Sample

Sample Name: F7C010119-032
SampleType: Sample
: JP94R1AE
Sample Collection Date: 1/31/2007 1:10:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0167g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

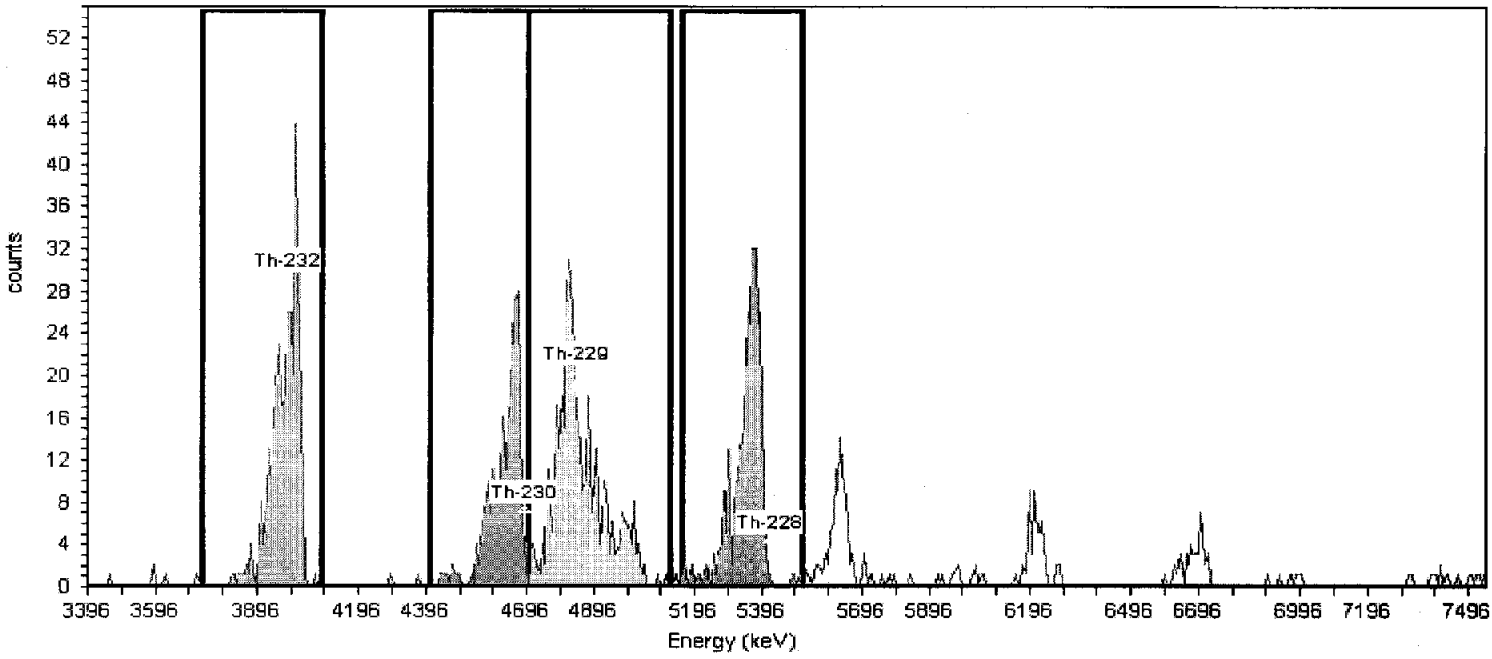
Tracer Nuclide: Th-229
Tracer Recovery: 93.50%

Acquisition

Detector: AV48
Serial Number: AV48
Acquisition Start Date: 3/18/2007 9:44:07AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:43PM

Calibration Name: Feb2007_AV48
Calibration Date: 2/26/2007 11:59:54AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.62% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV48; Det: AV48; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:29AM
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	85.483	100.2	340.00	1.0000	339	1.265E+000	2.239E-001	6.863E-003	2.382E-002
Th-230	4688.465	4405.333	4695.725	23.660	99.7	255.00	0.5000	255	9.544E-001	1.791E-001	4.877E-003	1.990E-002
Th-229	4840.921	4695.725	5124.053	73.161	99.6	437.00	1.2500	436	1.529E+000	2.126E-001	7.715E-003	2.558E-002
Th-228	5421.705	5160.352	5516.082	61.430	99.8	319.00	0.7500	318	1.193E+000	2.136E-001	5.970E-003	2.208E-002

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SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:53:53AM 3/19/2007

Sample

Sample Name: F7C010119-033
SampleType: Sample
: JP9401AE
Sample Collection Date: 1/31/2007 1:15:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0196g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

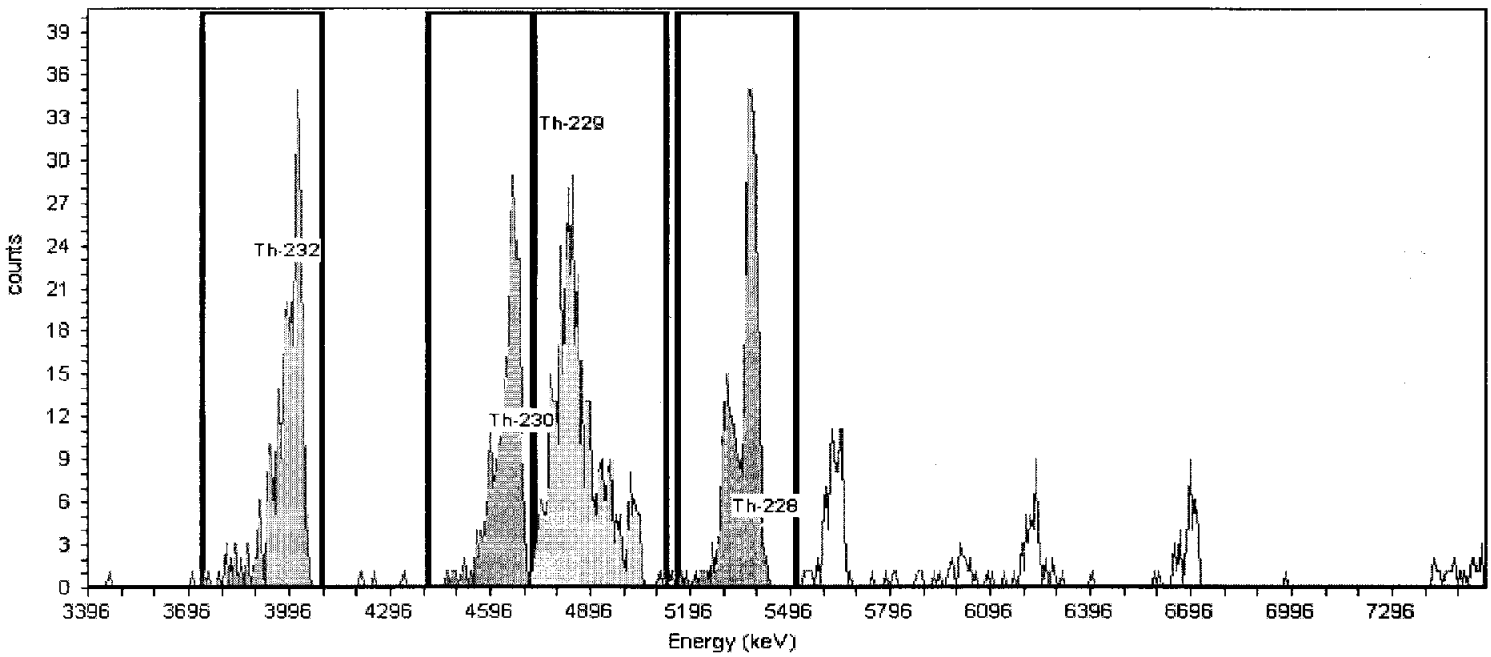
Tracer Nuclide: Th-229
Tracer Recovery: 92.77%

Acquisition

Detector: AV50
Serial Number: AV50
Acquisition Start Date: 3/18/2007 9:44:08AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:46PM

Calibration Name: Feb2007_AV50
Calibration Date: 2/27/2007 4:28:30PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.95% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV50; Det: AV50; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:29AM
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	73.724	100.2	299.00	0.5000	299	1.107E+000	2.009E-001	4.824E-003	1.968E-002
Th-230	4688.465	4405.333	4717.504	41.021	99.7	263.00	1.0000	262	9.766E-001	1.824E-001	6.856E-003	2.380E-002
Th-229	4840.921	4724.764	5124.053	87.679	99.6	441.00	3.2500	438	1.515E+000	2.108E-001	1.237E-002	3.482E-002
Th-228	5421.705	5160.352	5516.082	51.146	99.8	323.00	3.2500	320	1.191E+000	2.139E-001	1.235E-002	3.479E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:54:38AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C010119-034
SampleType: Sample
: JP9441AE
Sample Collection Date: 2/2/2007 1:34:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0124g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

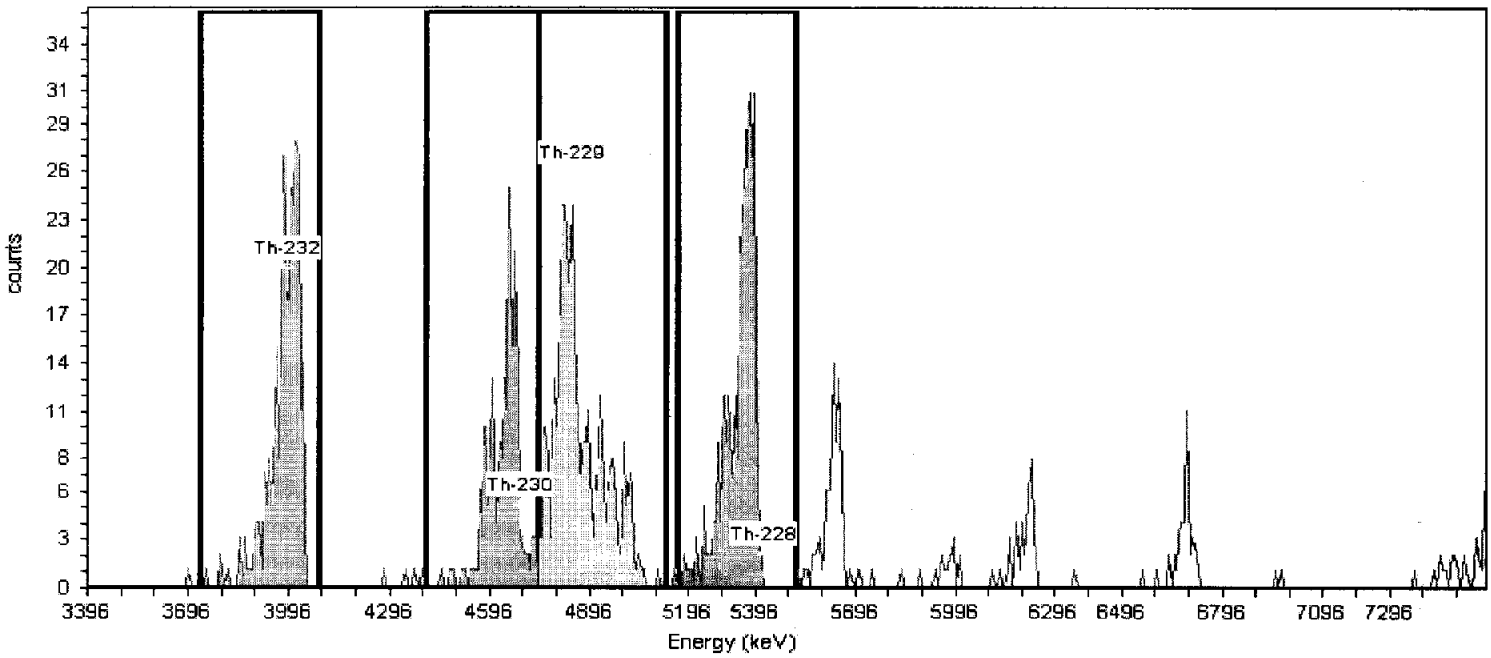
Tracer Nuclide: Th-229
Tracer Recovery: 78.89%

Acquisition

Detector: AV53
Serial Number:
Acquisition Start Date: 3/18/2007 9:44:09AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:50PM

Calibration Name: Feb2007_AV53
Calibration Date: 2/27/2007 7:37:38PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.71% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV53; Det: AV53; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:29AM
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	73.971	100.2	293.00	1.0000	292	1.243E+000	2.310E-001	7.830E-003	2.718E-002
Th-230	4688.465	4405.333	4739.284	60.408	99.7	214.00	0.5000	214	9.135E-001	1.817E-001	5.564E-003	2.271E-002
Th-229	4840.921	4739.284	5124.053	74.834	99.6	384.00	1.2500	383	1.293E+000	1.857E-001	8.802E-003	2.919E-002
Th-228	5421.705	5160.352	5516.082	56.289	99.8	316.00	1.2500	315	1.346E+000	2.465E-001	8.793E-003	2.916E-002

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3/19/07

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:54:51AM 3/19/2007

Sample

Sample Name: F7C010119-035
SampleType: Sample
: JP9481AE
Sample Collection Date: 2/2/2007 11:26:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0186g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

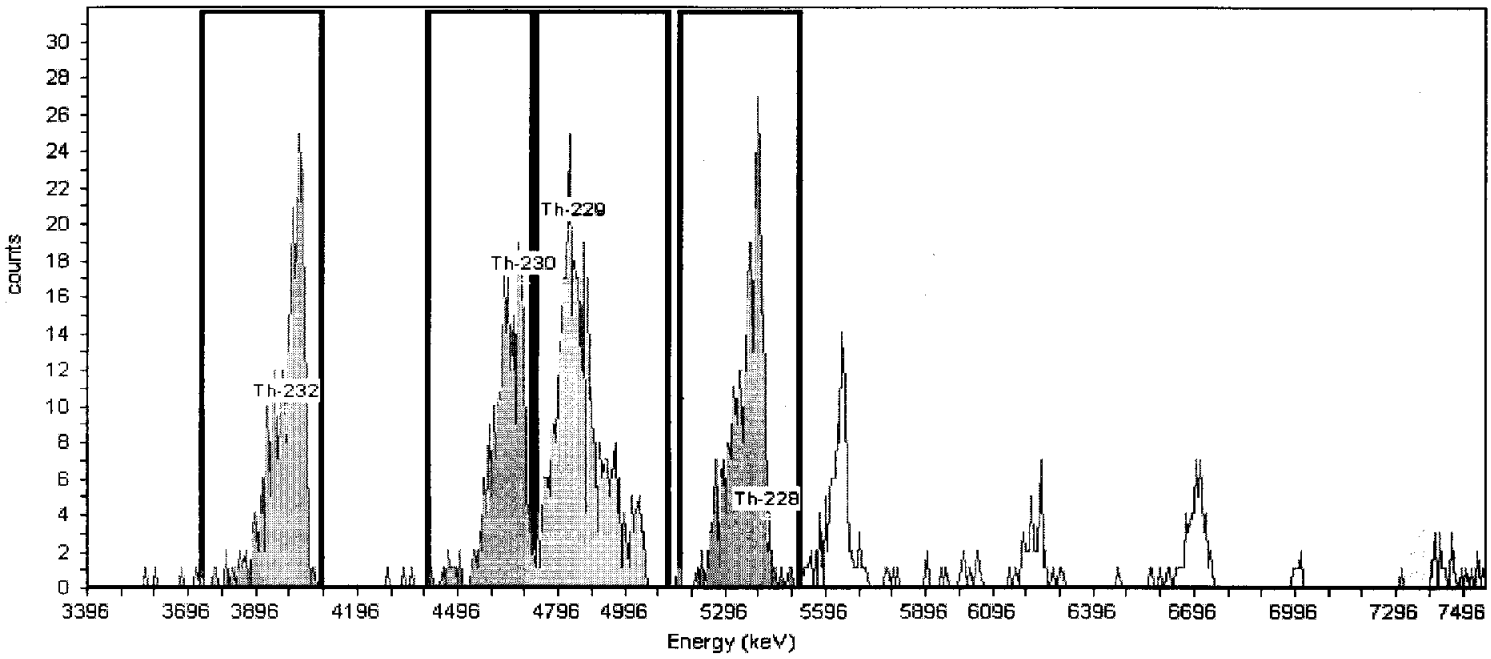
Tracer Nuclide: Th-229
Tracer Recovery: 79.43%

Acquisition

Detector: AV54
Serial Number:
Acquisition Start Date: 3/18/2007 9:44:10AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:51PM

Calibration Name: Feb2007_AV54
Calibration Date: 2/27/2007 7:37:44PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.93% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV54; Det: AV54; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:29AM
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	61.625	100.2	261.00	0.2500	261	1.131E+000	2.156E-001	3.989E-003	1.972E-002
Th-230	4688.465	4405.333	4717.504	19.356	99.7	232.00	1.0000	231	1.007E+000	1.974E-001	8.018E-003	2.783E-002
Th-229	4840.921	4724.764	5124.053	104.502	99.6	376.00	1.5000	375	1.297E+000	1.874E-001	9.825E-003	3.145E-002
Th-228	5421.705	5160.352	5516.082	74.295	99.8	275.00	1.0000	274	1.194E+000	2.255E-001	8.013E-003	2.782E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 8:55:02AM 3/19/2007

Sample

Sample Name: F7C010119-036
SampleType: Sample
: JP95C1AE
Sample Collection Date: 1/31/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0130g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
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

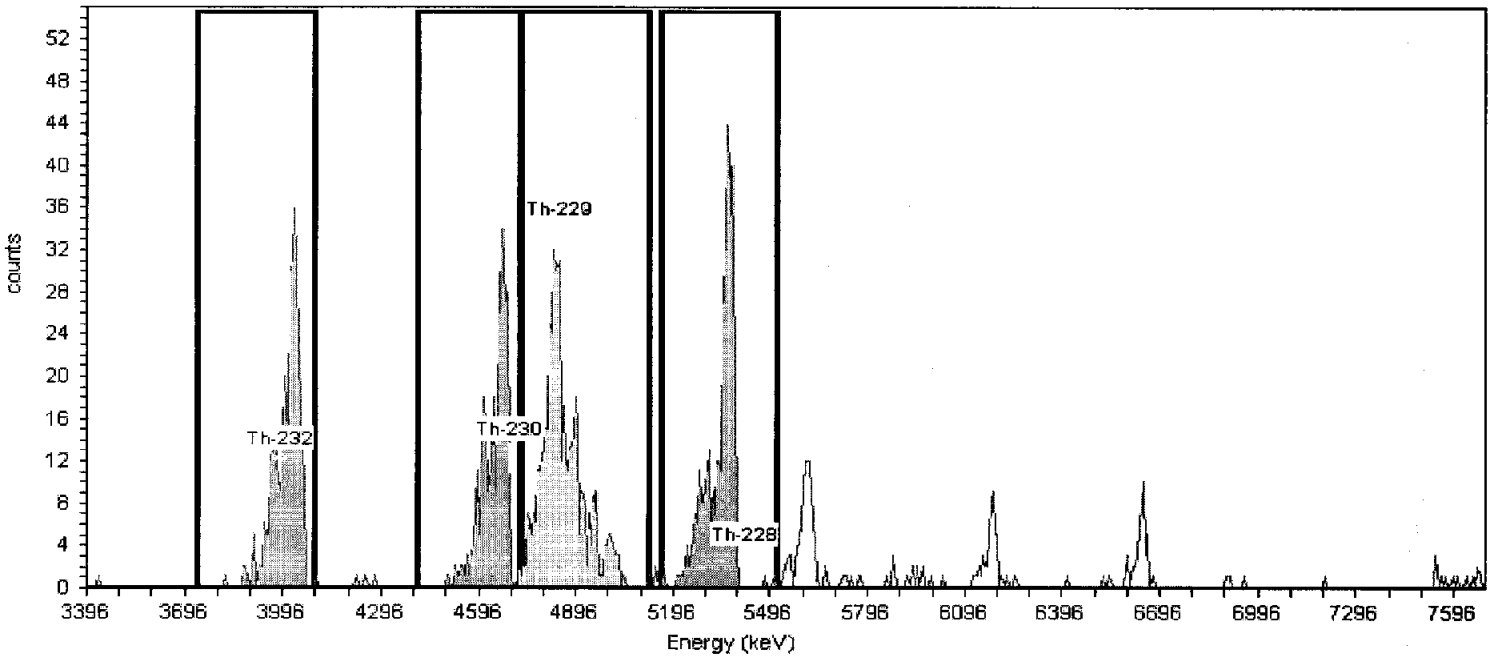
Tracer Nuclide: Th-229
Tracer Recovery: 95.22%

Acquisition

Detector: AV56
Serial Number:
Acquisition Start Date: 3/18/2007 9:44:11AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:53PM

Calibration Name: Feb2007_AV56
Calibration Date: 2/27/2007 4:28:15PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.77% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV56; Det: AV56; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:29AM
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	63.713	100.2	308.00	1.5000	307	1.162E+000	2.105E-001	8.543E-003	2.735E-002
Th-230	4688.465	4405.333	4717.504	30.484	99.7	271.00	1.5000	270	1.027E+000	1.911E-001	8.586E-003	2.749E-002
Th-229	4840.921	4724.764	5124.053	68.550	99.6	431.00	1.5000	430	1.560E+000	2.177E-001	8.591E-003	2.750E-002
Th-228	5421.705	5160.352	5516.082	46.339	99.8	331.00	1.5000	330	1.255E+000	2.240E-001	8.581E-003	2.747E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:13:32AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C060000-384B
SampleType: Blank
: JQJK81AA
Sample Collection Date: 2/1/2007 11:20:00AM
Comment:

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

Batch

Batch Name: 7065384
:
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

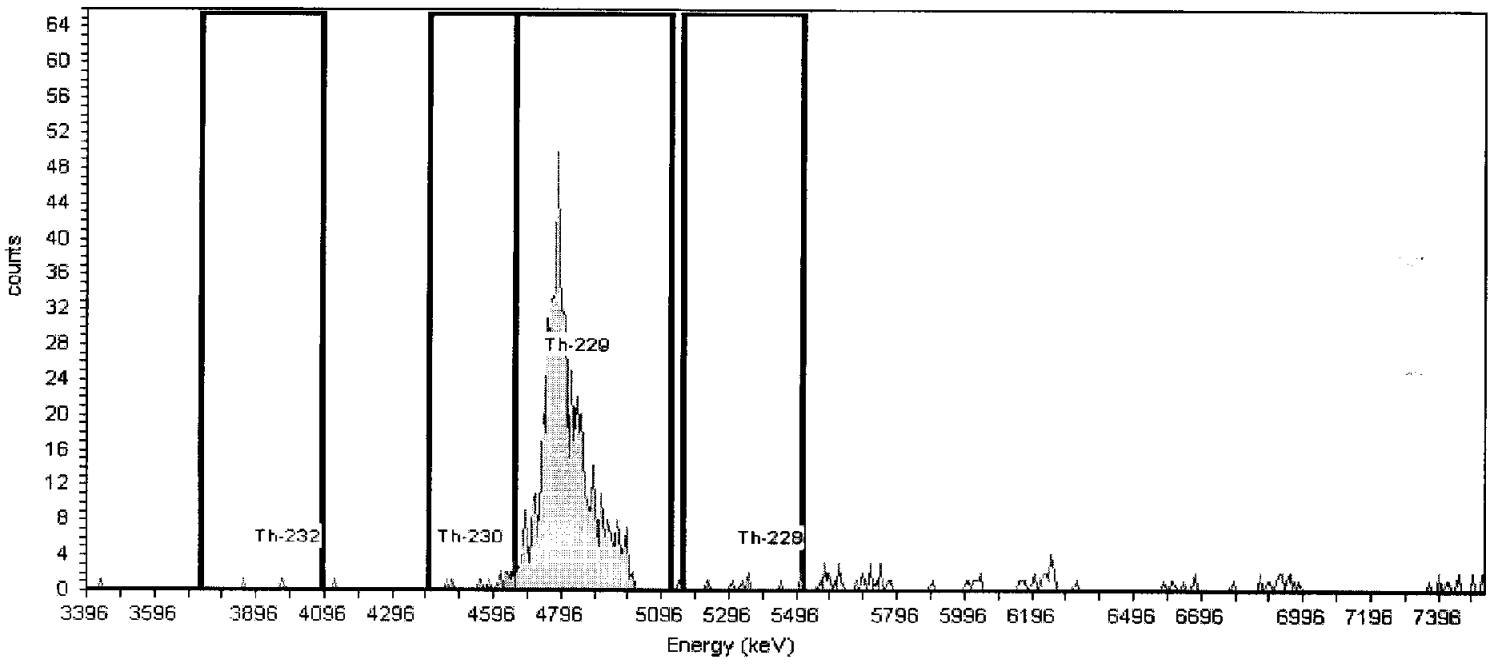
Tracer Nuclide: Th-229
Tracer Recovery: 84.25%

Acquisition

Detector: AV3
Serial Number: 41-158X5
Acquisition Start Date: 3/18/2007 2:17:34PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:40PM

Calibration Name: Feb2007_AV3
Calibration Date: 2/23/2007 2:25:56PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.03% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV3; Det: AV3; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:35PM
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	2.00	1.2500	1	1.851E-003	8.902E-003	5.402E-003	1.748E-002
Th-230	4532.379	4405.333	4659.426	30.436	99.7	16.00	1.2500	15	3.659E-002	2.113E-002	5.430E-003	1.757E-002
Th-229	4840.921	4659.426	5124.053	88.699	99.8	667.00	1.6667	665	1.389E+000	1.766E-001	6.263E-003	1.923E-002
Th-228	5421.705	5160.352	5516.082	9.999	99.8	9.00	9.1667	0	-4.136E-004	2.115E-002	1.471E-002	3.613E-002

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SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 9:13:50AM 3/19/2007

Sample

Sample Name: F7C060000-384C
SampleType: Control
: JQJK81AC
Sample Collection Date: 2/1/2007 11:20:00AM
Comment:

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

Batch

Batch Name: 7065384
:
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

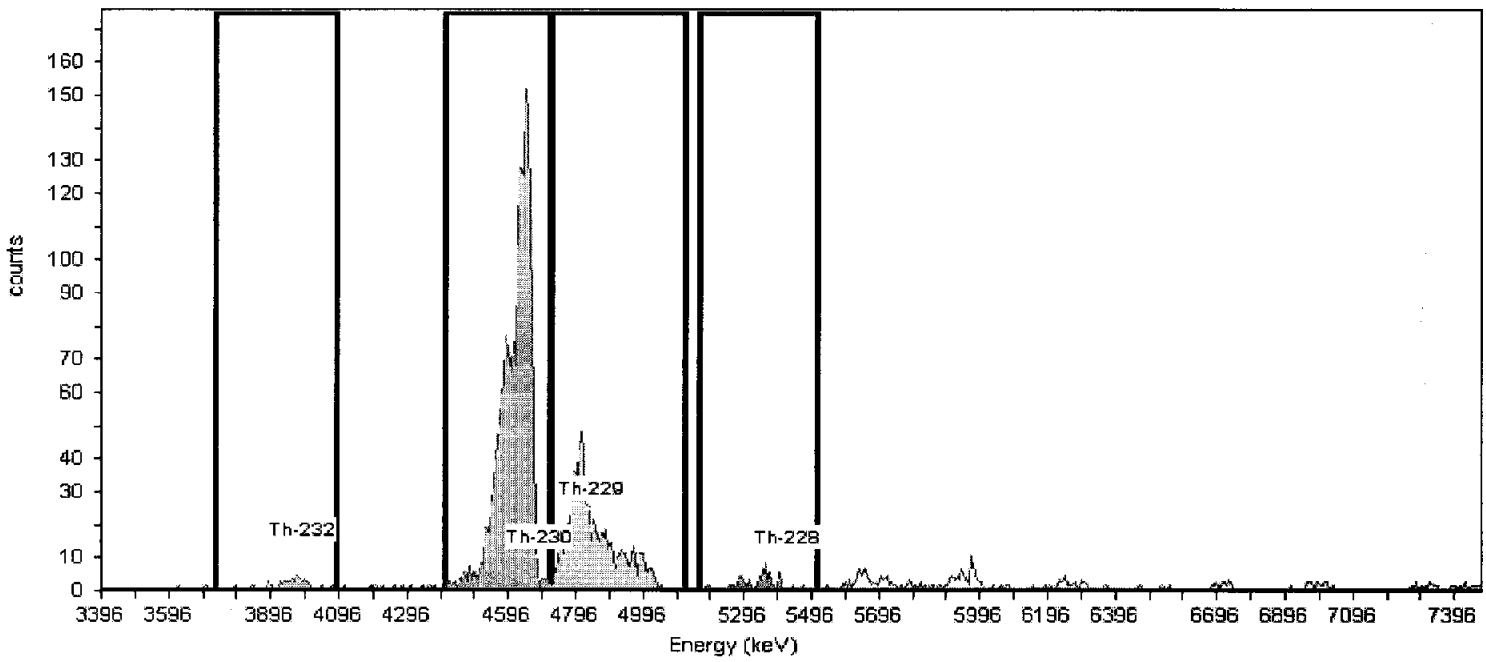
Tracer Nuclide: Th-229
Tracer Recovery: 85.81%

Acquisition

Detector: AV4
Serial Number: 41-172B5
Acquisition Start Date: 3/18/2007 2:17:35PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 2/18/2007 2:05:42PM

Calibration Name: Feb2007_AV4
Calibration Date: 2/23/2007 2:26:02PM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.56% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV4; Det: AV4; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/17/2007 1:31:35PM
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	69.618	100.2	37.00	2.0833	35	1.305E+000	4.962E-001	1.057E-001	3.125E-001
Th-230	4688.465	4405.333	4717.504	70.416	99.7	1,569.00	0.4167	1,569	5.894E+001	8.085E+000	4.749E-002	1.967E-001
Th-229	4840.921	4724.764	5124.053	68.398	99.6	667.00	2.0833	665	2.145E+001	2.727E+000	1.062E-001	3.142E-001
Th-228	5421.705	5160.352	5516.082	51.139	99.8	50.00	7.9167	42	1.582E+000	6.067E-001	2.071E-001	5.159E-001

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:55:42AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C070000-129B
SampleType: Blank
: JQKJD1AA
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

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

Batch

Batch Name: 7066129
:
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

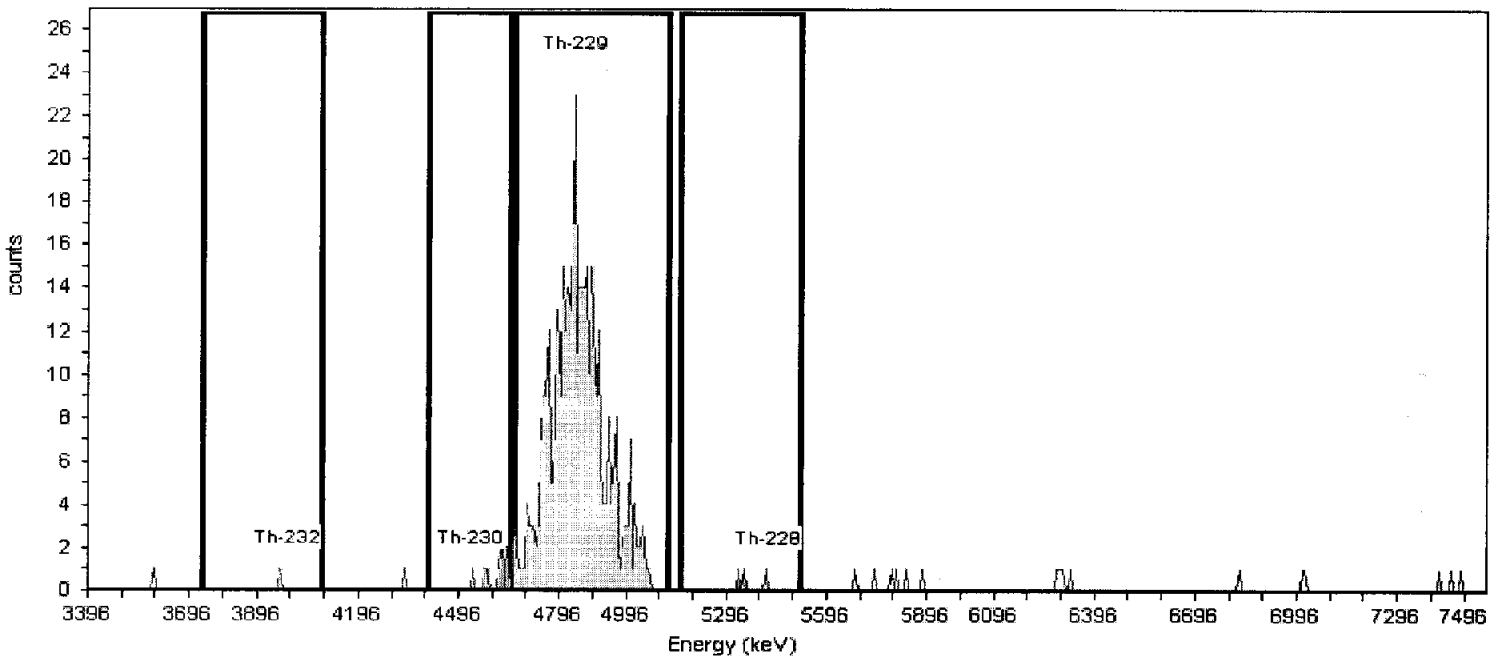
Tracer Nuclide: Th-229
Tracer Recovery: 81.41%

Acquisition

Detector: AV58
Serial Number:
Acquisition Start Date: 3/18/2007 9:44:12AM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:55PM

Calibration Name: FEB2007_AV58
Calibration Date: 2/28/2007 7:03:13AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.46% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV58; Det: AV58; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:29AM
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	0.0000	1	4.189E-003	1.186E-002	0.000E+000	1.134E-002
Th-230	4528.750	4405.333	4652.166	11.986	99.7	10.00	0.7500	9	3.894E-002	2.816E-002	6.705E-003	2.480E-002
Th-229	4840.921	4659.426	5124.053	159.532	99.8	393.00	1.0000	392	1.342E+000	1.915E-001	7.735E-003	2.685E-002
Th-228	5421.705	5160.352	5516.082	42.191	99.8	3.00	2.0000	1	4.207E-003	1.883E-002	1.094E-002	3.327E-002

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SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:56:22AM 3/19/2007

Analyst: 60040

Sample

Sample Name: F7C070000-129C
SampleType: Control
: JQKJD1AC
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 0.1324g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7066129
:
Description:

Client Name: Undefined
Client Contact:

Tracer

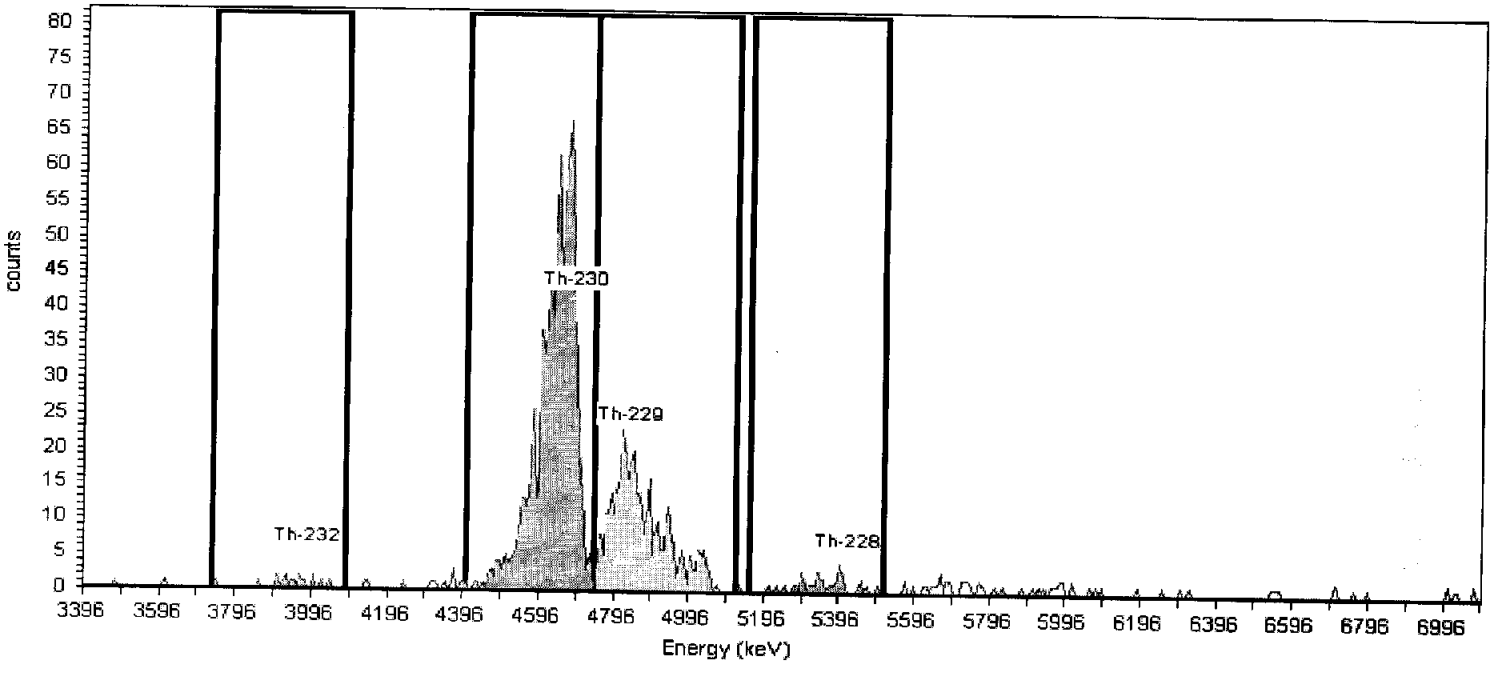
Tracer Name: Rad05-0088_Th229
Tracer Activity: 73.20 DPM/mL x (Vol.)0.10 mL = 7.32 DPM
Tracer Ref. Date: 3/19/2007 8:41:39AM

Tracer Nuclide: Th-229
Tracer Recovery: 83.52%

Acquisition

Detector: AV17
Serial Number: 41-172Q4
Acquisition Start Date: 3/18/2007 9:43:59AM
Live Time: 240.00 min.
Real Time: 240.09 min.
Background Date: 2/18/2007 2:05:29PM
Background Info: Sample: AV17; Det: AV17; Spectrum #1; Feb-18-2007 14:05

Calibration Name: Feb2007_AV17
Calibration Date: 2/26/2007 11:59:46AM
Energy Cal: Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.45% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = ThROI
Decay Correction: 3/18/2007 9:38:29AM
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	99.099	100.2	17.00	0.7500	16	1.041E+000	5.600E-001	1.020E-001	3.773E-001
Th-230	4688.465	4405.333	4746.543	91.279	99.7	871.00	2.2500	869	5.591E+001	8.910E+000	1.776E-001	5.293E-001
Th-229	4840.921	4746.543	5124.053	116.353	99.6	391.00	4.2500	387	2.080E+001	2.990E+000	2.441E-001	6.625E-001
Th-228	5421.705	5160.352	5516.082	127.487	99.8	38.00	20.5000	18	1.126E+000	9.972E-001	5.356E-001	1.245E+000

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SEVERN TRENT STL

Prep Report for:

Thorium, Isotopic by Alpha Spectroscopy

Batch: 7065384 **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
F7C010119-001	JP92V1AE	2.0043E+000 g	1.00	2.0043E+000 g	rad05-0088	Th-229	0.10	N
		9						
F7C010119-001X	JP92V1AH	2.0114E+000 g	1.00	2.0114E+000 g	rad05-0088	Th-229	0.10	N
		11						
F7C010119-002	JP9201AE	2.0115E+000 g	1.00	2.0115E+000 g	rad05-0088	Th-229	0.10	N
		12						
F7C010119-003	JP9211AE	2.0073E+000 g	1.00	2.0073E+000 g	rad05-0088	Th-229	0.10	N
		13						
F7C010119-004	JP9221AE	2.0039E+000 g	1.00	2.0039E+000 g	rad05-0088	Th-229	0.10	N
		14						
F7C010119-005	JP9251AE	2.0156E+000 g	1.00	2.0156E+000 g	rad05-0088	Th-229	0.10	N
		15						
F7C010119-006	JP9261AE	2.0031E+000 g	1.00	2.0031E+000 g	rad05-0088	Th-229	0.10	N
		18						
F7C010119-007	JP9271AE	2.0047E+000 g	1.00	2.0047E+000 g	rad05-0088	Th-229	0.10	N
		19						
F7C010119-008	JP9281AE	2.0087E+000 g	1.00	2.0087E+000 g	rad05-0088	Th-229	0.10	N
		20						
F7C010119-009	JP93A1AE	2.0078E+000 g	1.00	2.0078E+000 g	rad05-0088	Th-229	0.10	N
		23						
F7C010119-010	JP93C1AE	2.0072E+000 g	1.00	2.0072E+000 g	rad05-0088	Th-229	0.10	N
		24						
F7C010119-011	JP93D1AE	2.0152E+000 g	1.00	2.0152E+000 g	rad05-0088	Th-229	0.10	N
		45						
F7C010119-012	JP93E1AE	2.0071E+000 g	1.00	2.0071E+000 g	rad05-0088	Th-229	0.10	N
		48						
F7C010119-013	JP93F1AE	2.0178E+000 g	1.00	2.0178E+000 g	rad05-0088	Th-229	0.10	N
		50						
F7C010119-014	JP93G1AE	2.0052E+000 g	1.00	2.0052E+000 g	rad05-0088	Th-229	0.10	N
		53						
F7C010119-015	JP93H1AE	2.0129E+000 g	1.00	2.0129E+000 g	rad05-0088	Th-229	0.10	N
		54						
F7C010119-016	JP93L1AE	2.0114E+000 g	1.00	2.0114E+000 g	rad05-0088	Th-229	0.10	N
		56						

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F7C010119-017	JP93N1AE	2.0101E+000 g	1.00	2.0101E+000 g	rad05-0088	Th-229	0.10	N
F7C010119-018	JP93P1AE	2.0176E+000 g	1.00	2.0176E+000 g	rad05-0088	Th-229	0.10	N
F7C010119-019	JP93Q1AE	2.0059E+000 g	1.00	2.0059E+000 g	rad05-0088	Th-229	0.10	N
F7C010119-020	JP93R1AE	2.0007E+000 g	1.00	2.0007E+000 g	rad05-0088	Th-229	0.10	N
F7C060000-384B	JQJK81AA	2.0000E+000 g	1.00	2.0000E+000 g	rad05-0088	Th-229	0.10	N
F7C060000-384C	JQJK81AC	1.3190E-001 g	1.00	1.3190E-001 g	rad05-0088	Th-229	0.10	N

58 73 1 2 3 4

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7C060000-384C	TRM-3_IsoTh	TH-230	1.299E+002 dpm/g	0.13 g	5/29/2003 12:00:00AM	5.850E+001 pCi/g

Fap — Spiked By
BS — Spike Verified By
3/14/07 — 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

MB — Column Analyst
3/16/07 — Date
RW — Coprecipitated By
3-16-7 — Precip Date
NW — Reviewed By
3/19/07 — Review Date
RW — Analyst/Relenquished By
3-16-7 — Release Date
GS — Received By
3-17-07 — Receipt Date

3/20

SEVERN TRENT STL

Prep Report for:

Thorium, Isotopic by Alpha Spectroscopy

Batch: 7066129 **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
F7C010119-021	JP93V1AE	2.0130E+000 g	1.00	2.0130E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-021X	JP93V1AH	2.0028E+000 g	1.00	2.0028E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-022	JP93W1AE	2.0187E+000 g	1.00	2.0187E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-023	JP93X1AE	2.0027E+000 g	1.00	2.0027E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-024	JP9301AE	2.0102E+000 g	1.00	2.0102E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-025	JP9321AE	2.0169E+000 g	1.00	2.0169E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-026	JP9341AE	2.0062E+000 g	1.00	2.0062E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-027	JP9371AE	2.0049E+000 g	1.00	2.0049E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-028	JP9391AE	2.0153E+000 g	1.00	2.0153E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-029	JP94C1AE	2.0164E+000 g	1.00	2.0164E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-030	JP94H1AE	2.0169E+000 g	1.00	2.0169E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-031	JP94P1AE	2.0044E+000 g	1.00	2.0044E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-032	JP94R1AE	2.0167E+000 g	1.00	2.0167E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-033	JP9401AE	2.0196E+000 g	1.00	2.0196E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-034	JP9441AE	2.0124E+000 g	1.00	2.0124E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-035	JP9481AE	2.0186E+000 g	1.00	2.0186E+000 g	Rad05-0088	Th-229	0.10	N
F7C010119-036	JP95C1AE	2.0130E+000 g	1.00	2.0130E+000 g	Rad05-0088	Th-229	0.10	N

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F7C070000-129B	JQKJD1AA	2.0000E+000 g	1.00	2.0000E+000 g	Rad05-0088	Th-229	0.10	N
F7C070000-129C	JQKJD1AC	1.3240E-001 g	1.00	1.3240E-001 g	Rad05-0088	Th-229	0.10	N

58

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Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7C070000-129C	TRM-3_IsoTh	TH-230	1.299E+002 dpm/g	0.13 g	5/29/2003 12:00:00AM	5.850E+001 pCi/g

Flep — Spiked By

BS — Spike Verified By

3/14/~~03~~ 07 Flep 3/14/07 — 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

MB — Column Analyst

3/16/07 — Date

[illegible] — Coprecipitated By

3-16-7 — Precip Date

[illegible] — Reviewed By

3/19/07 — Review Date

[illegible] — Analyst/Relenquished By

3-16-7 — Release Date

GS — Received By

3-17-07 — Receipt Date

SEVERN TRENT STL

Alpha Spectroscopy Uranium

SEVERN TRENT STL

Analysis Report for Alpha Spectroscopy

Batch: 7079167 **Operator:** 60040

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
F7C010119-001	JP92V2AD	2.0072	1.00	2.00	AV45	3/22/07 14:09	240.00	rad06-0047	U-232	3.860E+000	85.19%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.487E+000	pCi/g	1.660E-001	2.064E-001	2.538E-002	7.312E-003
U-234	4.111E-001	pCi/g	8.092E-002	9.912E-002	1.801E-002	3.644E-003
U-235	1.479E-002	pCi/g	1.708E-002	1.983E-002	1.334E-002	0.000E+000
U-238	4.538E-001	pCi/g	8.565E-002	1.064E-001	2.697E-002	8.132E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-001X	JP92V1AK	2.0026	1.00	2.00	AV48	3/22/07 14:09	240.00	rad06-0047	U-232	3.869E+000	73.53%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.286E+000	pCi/g	1.832E-001	1.873E-001	3.471E-002	1.084E-002
U-234	6.296E-001	pCi/g	1.105E-001	1.438E-001	2.826E-002	7.640E-003
U-235	0.000E+000	pCi/g	0.000E+000	0.000E+000	1.615E-002	0.000E+000
U-238	6.499E-001	pCi/g	1.126E-001	1.472E-001	3.264E-002	9.844E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-002	JP9202AD	2.0196	1.00	2.00	AV50	3/22/07 14:09	240.00	rad06-0047	U-232	3.836E+000	88.32%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.532E+000	pCi/g	1.651E-001	2.127E-001	3.562E-002	1.250E-002
U-234	5.565E-001	pCi/g	9.445E-002	1.222E-001	2.962E-002	9.517E-003
U-235	1.947E-002	pCi/g	1.947E-002	2.194E-002	1.317E-002	0.000E+000
U-238	5.095E-001	pCi/g	8.954E-002	1.142E-001	2.072E-002	5.077E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-003	JP9212AD	2.0033	1.00	2.00	AV53	3/22/07 14:09	240.00	rad06-0047	U-232	3.867E+000	76.28%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.334E+000	pCi/g	1.757E-001	1.902E-001	2.365E-002	5.794E-003
U-234	5.063E-001	pCi/g	9.566E-002	1.200E-001	2.835E-002	8.168E-003
U-235	2.349E-002	pCi/g	2.650E-002	2.672E-002	3.256E-002	8.802E-003
U-238	5.994E-001	pCi/g	1.037E-001	1.345E-001	2.611E-002	7.059E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-004	JP9222AD	2.0059	1.00	2.00	AV54	3/22/07 14:09	240.00	rad06-0047	U-232	3.862E+000	83.24%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.454E+000	pCi/g	1.705E-001	2.043E-001	2.472E-002	6.683E-003
U-234	7.016E-001	pCi/g	1.091E-001	1.472E-001	2.852E-002	8.600E-003
U-235	3.513E-002	pCi/g	2.803E-002	2.846E-002	2.365E-002	4.786E-003
U-238	6.949E-001	pCi/g	1.087E-001	1.463E-001	3.010E-002	9.402E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-005	JP9252AD	2.0201	1.00	2.00	AV56	3/22/07 14:09	240.00	rad06-0047	U-232	3.835E+000	76.45%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.326E+000	pCi/g	1.809E-001	1.927E-001	3.233E-002	9.750E-003
U-234	7.798E-001	pCi/g	1.229E-001	1.674E-001	3.737E-002	1.229E-002
U-235	2.647E-002	pCi/g	2.759E-002	2.785E-002	3.121E-002	7.648E-003
U-238	8.431E-001	pCi/g	1.270E-001	1.767E-001	3.216E-002	9.699E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-006	JP9262AD	2.0072	1.00	2.00	AV58	3/22/07 14:09	240.00	rad06-0047	U-232	3.860E+000	77.80%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte		TracerAdded	TracerYield
						U-232	1.358E+000	pCi/g	1.747E-001	1.932E-001	3.000E-002	9.046E-003
						U-234	3.124E-001	pCi/g	7.582E-002	8.795E-002	3.320E-002	1.067E-002
						U-235	1.501E-002	pCi/g	1.967E-002	1.979E-002	2.480E-002	5.018E-003
						U-238	3.315E-001	pCi/g	7.643E-002	8.987E-002	1.989E-002	4.024E-003
F7C010119-007	JP9272AD	2.0019	1.00	2.00	AV73	3 / 22 / 07 14:09	240.00	rad06-0047	U-232		3.870E+000	84.82%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.484E+000	pCi/g	1.686E-001	2.074E-001	2.178E-002	5.336E-003
						U-234	3.589E-001	pCi/g	7.771E-002	9.256E-002	2.789E-002	8.410E-003
						U-235	5.089E-003	pCi/g	1.018E-002	1.441E-002	1.377E-002	0.000E+000
						U-238	3.541E-001	pCi/g	7.625E-002	9.097E-002	1.855E-002	3.753E-003
F7C010119-008	JP9282AD	2.0034	1.00	2.00	AV1	3 / 22 / 07 18:46	240.00	rad06-0047	U-232		3.867E+000	63.38%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.108E+000	pCi/g	1.970E-001	1.679E-001	3.800E-002	1.146E-002
						U-234	8.944E-001	pCi/g	1.419E-001	1.964E-001	3.547E-002	1.022E-002
						U-235	2.592E-002	pCi/g	2.850E-002	2.877E-002	3.142E-002	6.357E-003
						U-238	7.415E-001	pCi/g	1.285E-001	1.708E-001	2.520E-002	5.098E-003
F7C010119-009	JP93A2AD	2.0057	1.00	2.00	AV2	3 / 22 / 07 18:46	240.00	rad06-0047	U-232		3.863E+000	82.21%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.436E+000	pCi/g	1.744E-001	2.041E-001	3.708E-002	1.265E-002
						U-234	2.396E-001	pCi/g	6.533E-002	7.372E-002	2.555E-002	6.907E-003
						U-235	3.238E-002	pCi/g	2.643E-002	2.892E-002	1.460E-002	0.000E+000
						U-238	2.391E-001	pCi/g	6.520E-002	7.357E-002	2.550E-002	6.893E-003
F7C010119-010	JP93C2AD	2.0090	1.00	2.00	AV3	3 / 22 / 07 18:46	240.00	rad06-0047	U-232		3.856E+000	79.06%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.379E+000	pCi/g	1.763E-001	1.972E-001	4.894E-002	1.852E-002
						U-234	1.807E-001	pCi/g	5.729E-002	6.288E-002	2.581E-002	6.978E-003
						U-235	5.452E-003	pCi/g	1.090E-002	1.544E-002	1.475E-002	0.000E+000
						U-238	1.705E-001	pCi/g	5.599E-002	6.110E-002	2.791E-002	8.041E-003
F7C010119-011	JP93D2AD	2.0102	1.00	2.00	AV4	3 / 22 / 07 18:46	240.00	rad06-0047	U-232		3.854E+000	74.12%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.292E+000	pCi/g	1.829E-001	1.884E-001	4.572E-002	1.641E-002
						U-234	9.719E-001	pCi/g	1.363E-001	1.968E-001	2.522E-002	6.181E-003
						U-235	7.097E-002	pCi/g	4.097E-002	4.389E-002	1.600E-002	0.000E+000
						U-238	9.783E-001	pCi/g	1.367E-001	1.978E-001	2.794E-002	7.555E-003
F7C010119-012	JP93E2AD	2.0111	1.00	2.00	AV6	3 / 22 / 07 18:46	240.00	rad06-0047	U-232		3.852E+000	71.95%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.253E+000	pCi/g	1.841E-001	1.834E-001	4.270E-002	1.479E-002
						U-234	6.984E-001	pCi/g	1.166E-001	1.552E-001	2.565E-002	6.285E-003
						U-235	4.811E-002	pCi/g	3.402E-002	3.677E-002	1.627E-002	0.000E+000
						U-238	6.789E-001	pCi/g	1.147E-001	1.519E-001	2.192E-002	4.436E-003
F7C010119-013	JP93F2AD	2.0177	1.00	2.00	AV7	3 / 22 / 07 18:46	240.00	rad06-0047	U-232		3.840E+000	70.38%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte		TracerAdded	TracerYield
						U-232	1.222E+000 pCi/g		1.839E-001	1.791E-001	3.337E-002	1.006E-002
						U-234	8.367E-001 pCi/g		1.281E-001	1.776E-001	2.589E-002	6.344E-003
						U-235	5.919E-002 pCi/g		3.887E-002	3.983E-002	2.759E-002	5.583E-003
						U-238	9.007E-001 pCi/g		1.324E-001	1.875E-001	1.317E-002	0.000E+000
F7C010119-014	JP93G2AD	2.0040	1.00	2.00	AV8	3/22/07 18:46	240.00 rad06-0047		U-232		3.866E+000	95.45%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.669E+000 pCi/g		1.594E-001	2.271E-001	2.886E-002	9.493E-003
						U-234	2.310E-001 pCi/g		5.843E-002	6.639E-002	1.931E-002	4.731E-003
						U-235	2.037E-002 pCi/g		2.123E-002	2.141E-002	2.402E-002	5.887E-003
						U-238	2.550E-001 pCi/g		6.150E-002	7.067E-002	2.139E-002	5.782E-003
F7C010119-015	JP93H2AD	2.0185	1.00	2.00	AV9	3/22/07 18:46	240.00 rad06-0047		U-232		3.838E+000	78.75%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.367E+000 pCi/g		1.756E-001	1.955E-001	3.519E-002	1.158E-002
						U-234	2.417E-001 pCi/g		6.727E-002	7.568E-002	3.199E-002	9.992E-003
						U-235	8.280E-003 pCi/g		1.746E-002	1.750E-002	2.929E-002	7.178E-003
						U-238	1.848E-001 pCi/g		5.890E-002	6.458E-002	3.018E-002	9.103E-003
F7C010119-016	JP93L2AD	2.0035	1.00	2.00	AV11	3/22/07 18:46	240.00 rad06-0047		U-232		3.867E+000	79.63%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.393E+000 pCi/g		1.752E-001	1.983E-001	3.180E-002	9.934E-003
						U-234	3.506E-001 pCi/g		7.973E-002	9.415E-002	2.997E-002	9.039E-003
						U-235	1.367E-003 pCi/g		1.447E-002	1.447E-002	3.223E-002	8.712E-003
						U-238	2.424E-001 pCi/g		6.610E-002	7.461E-002	2.585E-002	6.987E-003
F7C010119-017	JP93N2AD	2.0016	1.00	2.00	AV12	3/22/07 18:46	240.00 rad06-0047		U-232		3.871E+000	87.20%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.526E+000 pCi/g		1.701E-001	2.141E-001	2.836E-002	8.554E-003
						U-234	5.297E-001 pCi/g		9.464E-002	1.204E-001	2.827E-002	8.526E-003
						U-235	3.096E-002 pCi/g		2.528E-002	2.765E-002	1.396E-002	0.000E+000
						U-238	5.245E-001 pCi/g		9.336E-002	1.190E-001	1.881E-002	3.805E-003
F7C010119-018	JP93P2AD	2.0113	1.00	2.00	AV13	3/22/07 18:46	240.00 rad06-0047		U-232		3.852E+000	71.69%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.249E+000 pCi/g		1.845E-001	1.829E-001	3.348E-002	1.010E-002
						U-234	7.292E-001 pCi/g		1.203E-001	1.610E-001	3.124E-002	9.001E-003
						U-235	7.308E-002 pCi/g		4.219E-002	4.521E-002	1.648E-002	0.000E+000
						U-238	6.325E-001 pCi/g		1.124E-001	1.458E-001	3.522E-002	1.100E-002
F7C010119-019	JP93Q2AD	2.0177	1.00	2.00	AV14	3/22/07 18:46	240.00 rad06-0047		U-232		3.840E+000	69.40%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.205E+000 pCi/g		1.874E-001	1.783E-001	4.154E-002	1.393E-002
						U-234	7.325E-001 pCi/g		1.227E-001	1.639E-001	3.630E-002	1.134E-002
						U-235	4.385E-002 pCi/g		3.315E-002	3.603E-002	1.695E-002	0.000E+000
						U-238	6.456E-001 pCi/g		1.144E-001	1.492E-001	2.667E-002	6.534E-003
F7C010119-020	JP93R2AD	2.0106	1.00	2.00	AV15	3/22/07 18:46	240.00 rad06-0047		U-232		3.853E+000	67.81%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
						U-232	1.182E+000 pCi/g		1.914E-001	1.766E-001	4.875E-002	1.731E-002
						U-234	6.323E-001 pCi/g		1.161E-001	1.499E-001	3.752E-002	1.172E-002
						U-235	2.105E-002 pCi/g		2.823E-002	2.840E-002	3.815E-002	1.031E-002
						U-238	6.310E-001 pCi/g		1.159E-001	1.496E-001	3.745E-002	1.170E-002
F7C200000-167B	JRDEW1AA	2.0000	1.00	2.00	AV46	3 / 22 / 07 14:09	240.00	rad06-0047	U-232		3.874E+000	81.21%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.422E+000 pCi/g		1.724E-001	2.007E-001	2.728E-002	7.858E-003
						U-234	2.236E-002 pCi/g		2.213E-002	2.235E-002	2.509E-002	6.783E-003
						U-235	3.974E-003 pCi/g		1.185E-002	1.186E-002	2.409E-002	4.873E-003
						U-238	6.375E-003 pCi/g		1.344E-002	1.347E-002	2.255E-002	5.527E-003
F7C200000-167C	JRDEW1AC	0.1314	1.00	2.00	AV47	3 / 22 / 07 14:09	240.00	rad06-0047	U-232		5.896E+001	97.69%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	2.605E+001 pCi/g		2.436E+000	3.547E+000	4.035E-001	1.260E-001
						U-234	1.755E+001 pCi/g		1.980E+000	3.109E+000	2.535E-001	5.129E-002
						U-235	6.940E-001 pCi/g		4.389E-001	4.700E-001	1.878E-001	0.000E+000
						U-238	1.796E+001 pCi/g		2.001E+000	3.166E+000	2.530E-001	5.118E-002

Laboratory Control Sample Information

Sample ID	WRKNO	RegionName	Activity	StdAdded	Recovery	LCL	UCL
F7C200000-167C	JRDEW1AC	U-234	1.755E+001	1.960E+001	89.56%	78.00	125.00
	JRDEW1AC	U-238	1.796E+001	1.960E+001	91.66%	76.00	122.00

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F7C010119-001	U-234	4.111E-001	F7C010119-001X	6.296E-001	41.98%	8.994E-001	1.251E+000	
	U-235	1.479E-002	F7C010119-001X	0.000E+000	200.00%	7.459E-001	7.459E-001	NA: Activity < MDA
	U-238	4.538E-001	F7C010119-001X	6.499E-001	35.53%	7.729E-001	1.079E+000	

Matrix Spike Information

SampID	SampMSID	RegionName	Sample Activity	MS Activity	StdAdded	MSRecovery

SEVERN TRENT STL

Analysis Report for Alpha Spectroscopy

Batch: 7082157 **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
F7C010119-021	JP93V3AD	2.0030	1.00	2.00	AV1	3/25/07 13:07	240.00	rad06-0047	U-232	3.868E+000	91.21%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.595E+000	pCi/g	1.642E-001	2.200E-001	2.794E-002	8.726E-003
U-234	3.610E-001	pCi/g	7.507E-002	9.014E-002	2.049E-002	5.021E-003
U-235	2.162E-002	pCi/g	2.254E-002	2.273E-002	2.550E-002	6.248E-003
U-238	4.335E-001	pCi/g	8.210E-002	1.016E-001	2.045E-002	5.011E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-021X	JP93V1AL	2.0027	1.00	2.00	AV2	3/25/07 13:07	240.00	rad06-0047	U-232	3.869E+000	87.84%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.537E+000	pCi/g	1.694E-001	2.152E-001	4.103E-002	1.500E-002
U-234	4.857E-001	pCi/g	8.922E-002	1.123E-001	2.157E-002	5.285E-003
U-235	3.287E-002	pCi/g	2.770E-002	2.808E-002	2.684E-002	6.577E-003
U-238	3.975E-001	pCi/g	8.030E-002	9.813E-002	1.098E-002	0.000E+000

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-022	JP93W3AD	2.0095	1.00	2.00	AV3	3/25/07 13:07	240.00	rad06-0047	U-232	3.855E+000	78.82%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.374E+000	pCi/g	1.762E-001	1.966E-001	4.633E-002	1.720E-002
U-234	8.479E-001	pCi/g	1.227E-001	1.728E-001	2.805E-002	8.080E-003
U-235	3.007E-002	pCi/g	2.788E-002	2.821E-002	2.901E-002	7.110E-003
U-238	8.550E-001	pCi/g	1.231E-001	1.738E-001	2.799E-002	8.064E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-023	JP93X3AD	2.0102	1.00	2.00	AV4	3/25/07 13:07	240.00	rad06-0047	U-232	3.854E+000	90.05%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.569E+000	pCi/g	1.651E-001	2.174E-001	3.104E-002	1.021E-002
U-234	5.614E-001	pCi/g	9.405E-002	1.222E-001	2.076E-002	5.088E-003
U-235	1.826E-002	pCi/g	2.007E-002	2.023E-002	2.213E-002	4.477E-003
U-238	5.534E-001	pCi/g	9.313E-002	1.208E-001	1.775E-002	3.590E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-024	JP9303AD	2.0086	1.00	2.00	AV6	3/25/07 13:07	240.00	rad06-0047	U-232	3.857E+000	93.64%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.633E+000	pCi/g	1.612E-001	2.237E-001	3.180E-002	1.085E-002
U-234	3.737E-001	pCi/g	7.492E-002	9.082E-002	1.973E-002	4.836E-003
U-235	1.272E-002	pCi/g	1.668E-002	1.677E-002	2.103E-002	4.255E-003
U-238	4.564E-001	pCi/g	8.231E-002	1.037E-001	1.004E-002	0.000E+000

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-025	JP9323AD	2.0075	1.00	2.00	AV7	3/25/07 13:07	240.00	rad06-0047	U-232	3.859E+000	86.86%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
U-232	1.516E+000	pCi/g	1.666E-001	2.108E-001	3.278E-002	1.100E-002
U-234	7.927E-001	pCi/g	1.125E-001	1.578E-001	2.109E-002	5.167E-003
U-235	3.214E-002	pCi/g	2.708E-002	2.745E-002	2.624E-002	6.430E-003
U-238	7.316E-001	pCi/g	1.080E-001	1.486E-001	2.104E-002	5.157E-003

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
F7C010119-026	JP9343AD	2.0020	1.00	2.00	AV8	3/25/07 13:07	240.00	rad06-0047	U-232	3.870E+000	85.59%
		g									

Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte		TracerAdded	TracerYield
						U-232	1.498E+000	pCi/g	1.688E-001	2.093E-001	3.472E-002	1.185E-002
						U-234	8.264E-001	pCi/g	1.161E-001	1.640E-001	2.155E-002	5.281E-003
						U-235	5.053E-002	pCi/g	3.196E-002	3.426E-002	1.367E-002	0.000E+000
						U-238	9.321E-001	pCi/g	1.235E-001	1.797E-001	2.587E-002	7.453E-003
F7C010119-027	JP9373AD	2.0246	1.00	2.00	AV9	3 / 25 / 07 13:07	240.00	rad06-0047	U-232		3.827E+000	85.11%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.473E+000	pCi/g	1.681E-001	2.065E-001	2.960E-002	9.247E-003
						U-234	5.002E-001	pCi/g	9.103E-002	1.150E-001	2.411E-002	6.517E-003
						U-235	2.291E-002	pCi/g	2.388E-002	2.410E-002	2.702E-002	6.621E-003
						U-238	4.492E-001	pCi/g	8.565E-002	1.067E-001	1.105E-002	0.000E+000
F7C010119-028	JP9393AD	2.0019	1.00	2.00	AV11	3 / 25 / 07 13:07	240.00	rad06-0047	U-232		3.870E+000	89.18%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.561E+000	pCi/g	1.655E-001	2.161E-001	2.516E-002	7.249E-003
						U-234	6.315E-001	pCi/g	9.977E-002	1.328E-001	1.785E-002	3.612E-003
						U-235	3.788E-002	pCi/g	2.808E-002	2.857E-002	2.222E-002	4.495E-003
						U-238	6.802E-001	pCi/g	1.036E-001	1.402E-001	2.081E-002	5.098E-003
F7C010119-029	JP94C3AD	2.0048	1.00	2.00	AV12	3 / 25 / 07 13:07	240.00	rad06-0047	U-232		3.865E+000	85.14%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.488E+000	pCi/g	1.723E-001	2.102E-001	3.499E-002	1.174E-002
						U-234	8.141E-001	pCi/g	1.181E-001	1.651E-001	2.707E-002	7.798E-003
						U-235	3.034E-002	pCi/g	2.638E-002	2.673E-002	2.398E-002	4.852E-003
						U-238	7.395E-001	pCi/g	1.127E-001	1.538E-001	2.885E-002	8.701E-003
F7C010119-030	JP94H3AD	2.0199	1.00	2.00	AV13	3 / 25 / 07 13:07	240.00	rad06-0047	U-232		3.836E+000	90.09%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.563E+000	pCi/g	1.641E-001	2.163E-001	3.200E-002	1.073E-002
						U-234	5.972E-001	pCi/g	9.687E-002	1.275E-001	2.476E-002	7.132E-003
						U-235	4.102E-002	pCi/g	2.975E-002	3.029E-002	2.561E-002	6.276E-003
						U-238	5.757E-001	pCi/g	9.456E-002	1.238E-001	1.759E-002	3.559E-003
F7C010119-031	JP94P3AD	2.0113	1.00	2.00	AV14	3 / 25 / 07 13:07	240.00	rad06-0047	U-232		3.852E+000	85.01%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.481E+000	pCi/g	1.691E-001	2.076E-001	2.642E-002	7.609E-003
						U-234	5.660E-001	pCi/g	9.714E-002	1.256E-001	2.429E-002	6.568E-003
						U-235	4.105E-002	pCi/g	2.903E-002	3.132E-002	1.389E-002	0.000E+000
						U-238	4.897E-001	pCi/g	8.979E-002	1.134E-001	1.114E-002	0.000E+000
F7C010119-032	JP94R3AD	2.0018	1.00	2.00	AV15	3 / 25 / 07 13:07	240.00	rad06-0047	U-232		3.870E+000	85.29%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.493E+000	pCi/g	1.707E-001	2.098E-001	3.429E-002	1.150E-002
						U-234	7.823E-001	pCi/g	1.145E-001	1.589E-001	2.448E-002	6.619E-003
						U-235	3.620E-002	pCi/g	2.736E-002	2.969E-002	1.399E-002	0.000E+000
						U-238	7.320E-001	pCi/g	1.111E-001	1.516E-001	2.991E-002	9.342E-003
F7C010119-033	JP9403AD	2.0064	1.00	2.00	AV20	3 / 25 / 07 13:45	240.00	rad06-0047	U-232		3.861E+000	90.57%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC

Sample ID	Work Order #	Aliquot	Dilution	Sigma	Instrument	RunDateTime	RunDuration	TracerID	TracerAnalyte	TracerAdded	TracerYield
						U-232	1.582E+000 pCi/g		1.636E-001	2.179E-001	3.041E-002	1.000E-002
						U-234	7.293E-001 pCi/g		1.062E-001	1.464E-001	2.258E-002	6.105E-003
						U-235	2.862E-002 pCi/g		2.337E-002	2.555E-002	1.291E-002	0.000E+000
						U-238	6.723E-001 pCi/g		1.021E-001	1.381E-001	2.608E-002	7.866E-003
F7C010119-034	JP9443AD	2.0157	1.00	2.00	AV23	3/25/07 13:45	240.00	rad06-0047	U-232		3.844E+000	75.55%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.313E+000 pCi/g		1.717E-001	1.857E-001	2.521E-002	6.814E-003
						U-234	8.229E-001 pCi/g		1.191E-001	1.667E-001	2.722E-002	7.842E-003
						U-235	4.377E-002 pCi/g		3.314E-002	3.371E-002	3.126E-002	8.451E-003
						U-238	8.149E-001 pCi/g		1.181E-001	1.652E-001	2.258E-002	5.534E-003
F7C010119-035	JP9483AD	2.0016	1.00	2.00	AV24	3/25/07 13:45	240.00	rad06-0047	U-232		3.871E+000	89.79%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.572E+000 pCi/g		1.672E-001	2.186E-001	2.375E-002	6.420E-003
						U-234	7.683E-001 pCi/g		1.115E-001	1.547E-001	2.367E-002	6.398E-003
						U-235	3.374E-002 pCi/g		2.692E-002	2.733E-002	2.272E-002	4.597E-003
						U-238	7.788E-001 pCi/g		1.122E-001	1.562E-001	2.362E-002	6.386E-003
F7C010119-036	JP95C3AD	2.0024	1.00	2.00	AV45	3/25/07 13:45	240.00	rad06-0047	U-232		3.869E+000	93.44%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.635E+000 pCi/g		1.590E-001	2.222E-001	2.620E-002	8.185E-003
						U-234	6.238E-001 pCi/g		9.547E-002	1.279E-001	2.134E-002	5.768E-003
						U-235	2.479E-002 pCi/g		2.298E-002	2.323E-002	2.392E-002	5.861E-003
						U-238	7.292E-001 pCi/g		1.028E-001	1.430E-001	1.643E-002	3.324E-003
F7C230000-157B	JRLL71AA	2.0000	1.00	2.00	AV17	3/25/07 13:07	240.00	rad06-0047	U-232		3.874E+000	85.16%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	1.492E+000 pCi/g		1.758E-001	2.125E-001	6.846E-002	2.856E-002
						U-234	3.131E-003 pCi/g		1.505E-002	1.506E-002	2.846E-002	8.583E-003
						U-235	-5.194E-003 pCi/g		1.039E-002	1.471E-002	3.316E-002	9.553E-003
						U-238	6.249E-003 pCi/g		1.317E-002	1.320E-002	2.211E-002	5.418E-003
F7C230000-157C	JRLL71AC	0.1323	1.00	2.00	AV18	3/25/07 13:07	240.00	rad06-0047	U-232		5.856E+001	90.76%
		g				Analyte	Activity		CountUnc	TotalUnc	MDA	DLC
						U-232	2.404E+001 pCi/g		2.554E+000	3.359E+000	5.420E-001	1.877E-001
						U-234	1.977E+001 pCi/g		2.207E+000	3.542E+000	3.614E-001	9.770E-002
						U-235	6.679E-001 pCi/g		4.643E-001	4.737E-001	3.469E-001	7.019E-002
						U-238	2.034E+001 pCi/g		2.237E+000	3.624E+000	3.607E-001	9.751E-002

Laboratory Control Sample Information

Sample ID	WRKNO	RegionName	Activity	StdAdded	Recovery	LCL	UCL
F7C230000-157C	JRLL71AC	U-234	1.977E+001	1.960E+001	100.86%	78.00	125.00
	JRLL71AC	U-238	2.034E+001	1.960E+001	103.78%	76.00	122.00

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

Sample Duplicate Information

Sample ID	Analyte	Sample Activity	Dup Sample ID	Dup Activity	RPD	RER	DER	Qualifier
F7C010119-021	U-234	3.610E-001	F7C010119-021X	4.857E-001	29.45%	6.157E-001	8.656E-001	
	U-235	2.162E-002	F7C010119-021X	3.287E-002	41.30%	2.214E-001	3.114E-001	NA: Activity < MDA
	U-238	4.335E-001	F7C010119-021X	3.975E-001	8.67%	1.802E-001	2.548E-001	

Matrix Spike Information

SampID	SampMSID	RegionName	Sample Activity	MS Activity	StdAdded	MSRecovery

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 6:10:20PM 3/22/2007

Sample

Sample Name: F7C010119-001
SampleType: Sample
: JP92V2AD
Sample Collection Date: 2/1/2007 11:20:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0072g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

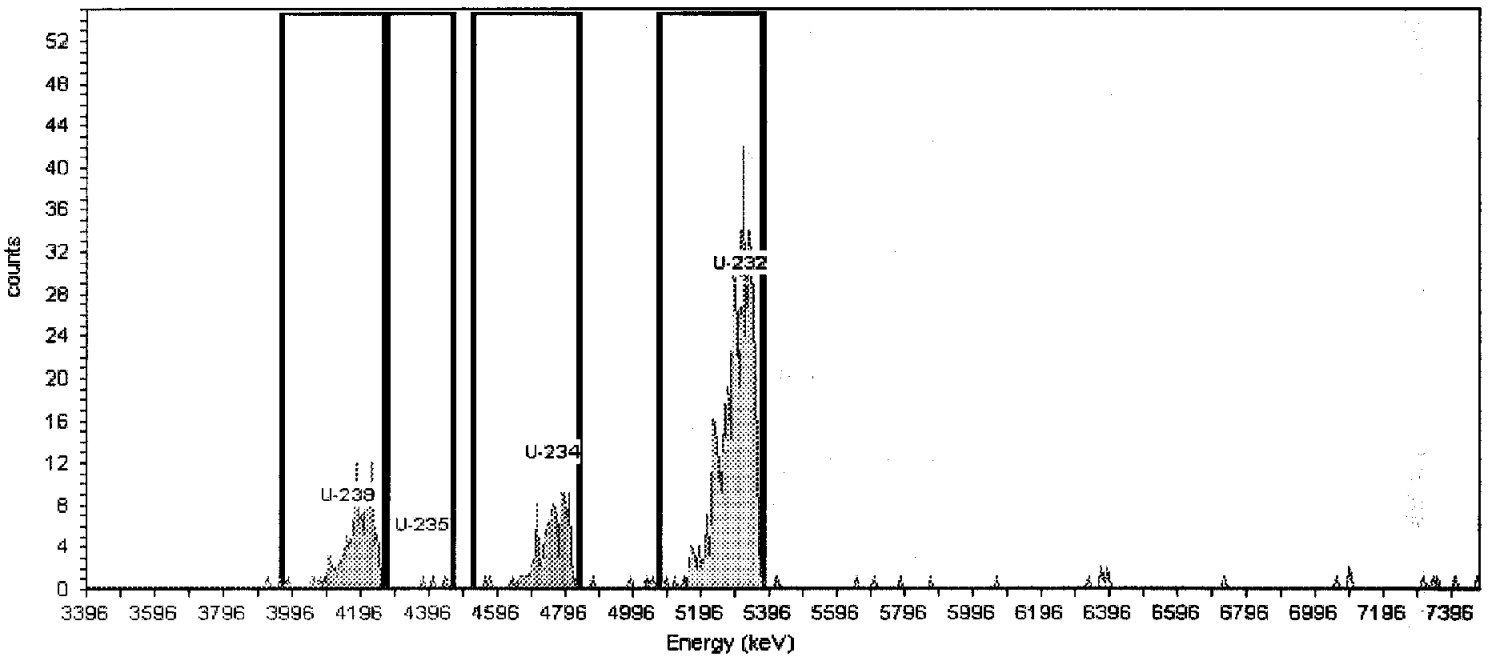
Tracer Nuclide: U-232
Tracer Recovery: 85.19%

Acquisition

Detector: AV45
Serial Number: AV45
Acquisition Start Date: 3/22/2007 2:09:26PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:40PM

Calibration Name: Feb2007_AV45
Calibration Date: 2/27/2007 1:48:34PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 27.75% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV45; Det: AV45; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	14.494	100.0	116.00	1.2500	115	4.538E-001	1.064E-001	8.132E-003	2.697E-002
U-235	4376.294	4267.397	4463.412	46.901	80.2	3.00	0.0000	3	1.479E-002	1.983E-002	0.000E+000	1.334E-002
U-234	4761.063	4521.490	4833.661	32.980	99.8	104.00	0.2500	104	4.111E-001	9.912E-002	3.644E-003	1.801E-002
U-232	5312.808	5073.234	5378.146	40.100	100.1	440.00	1.0000	439	1.487E+000	2.064E-001	7.312E-003	2.538E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:09:50PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-001X
SampleType: Sample
: JP92V1AK
Sample Collection Date: 2/1/2007 11:20:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0026g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

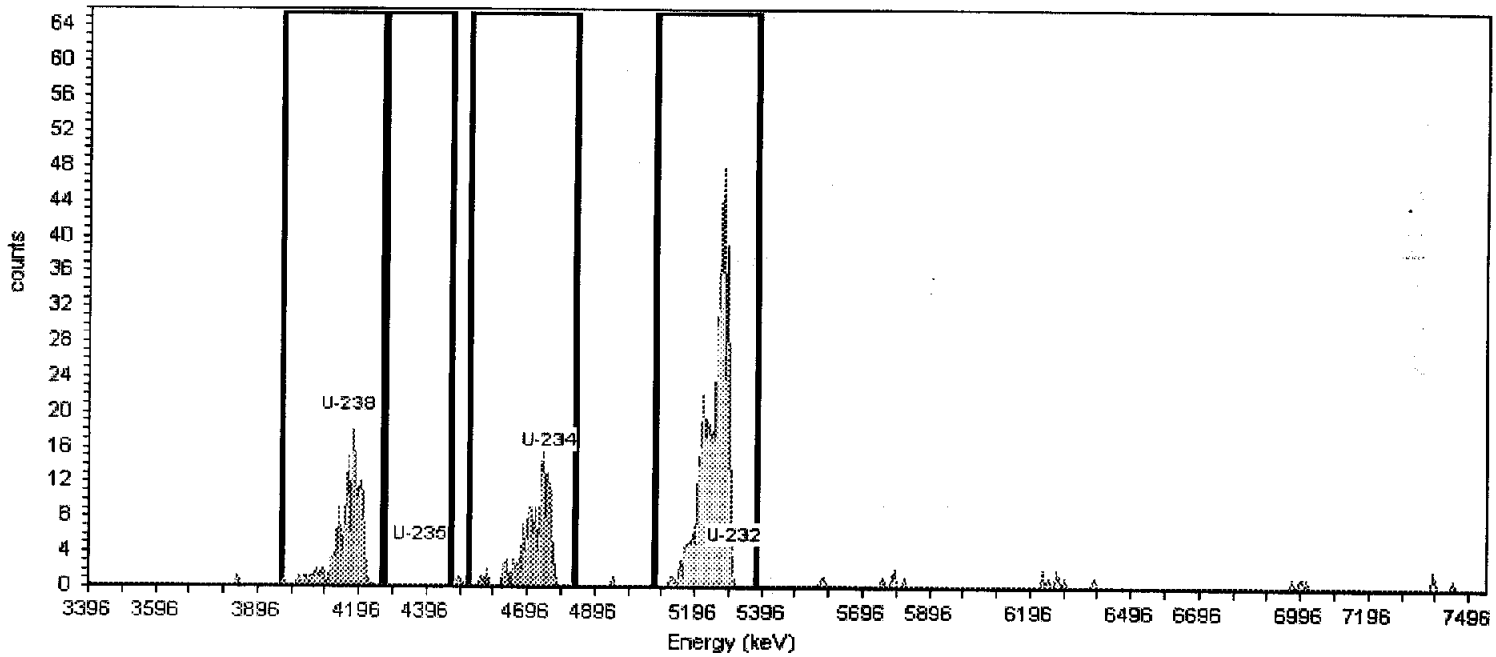
Tracer Nuclide: U-232
Tracer Recovery: 73.53%

Acquisition

Detector: AV48
Serial Number: AV48
Acquisition Start Date: 3/22/2007 2:09:32PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:43PM

Calibration Name: Feb2007_AV48
Calibration Date: 2/26/2007 11:59:54AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.62% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV48; Det: AV48; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	63.290	100.0	137.00	1.2500	136	6.499E-001	1.472E-001	9.844E-003	3.264E-002
U-235	4376.294	4267.397	4463.412	.000	80.2	0.00	0.0000	0	0.000E+000	0.000E+000	0.000E+000	1.615E-002
U-234	4761.063	4521.490	4833.661	81.603	99.8	132.00	0.7500	131	6.296E-001	1.438E-001	7.640E-003	2.826E-002
U-232	5312.808	5073.234	5378.146	80.991	100.1	365.00	1.5000	364	1.286E+000	1.873E-001	1.084E-002	3.471E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:09:54PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-002
SampleType: Sample
: JP9202AD
Sample Collection Date: 2/1/2007 11:25:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0196g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

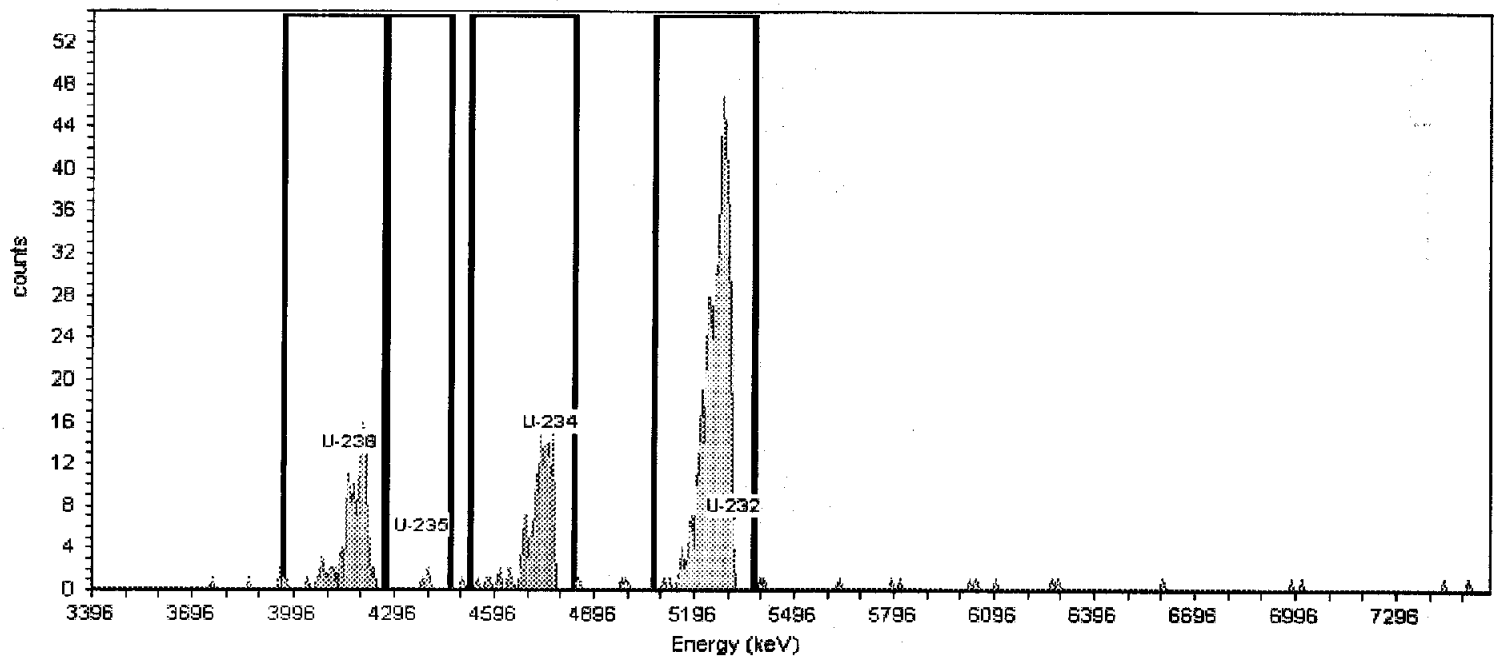
Tracer Nuclide: U-232
Tracer Recovery: 88.32%

Acquisition

Detector: AV50
Serial Number: AV50
Acquisition Start Date: 3/22/2007 2:09:33PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:46PM

Calibration Name: Feb2007_AV50
Calibration Date: 2/27/2007 4:28:30PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.95% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV50; Det: AV50; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	71.683	100.0	131.00	0.5000	131	5.095E-001	1.142E-001	5.077E-003	2.072E-002
U-235	4376.294	4267.397	4463.412	21.430	80.2	4.00	0.0000	4	1.947E-002	2.194E-002	0.000E+000	1.317E-002
U-234	4761.063	4521.490	4833.661	64.202	99.8	144.00	1.7500	142	5.565E-001	1.222E-001	9.517E-003	2.962E-002
U-232	5312.808	5073.234	5378.146	76.400	100.1	445.00	3.0000	442	1.532E+000	2.127E-001	1.250E-002	3.562E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 — 6:09:58PM 3/22/2007

Sample

Sample Name: F7C010119-003
SampleType: Sample
: JP9212AD
Sample Collection Date: 2/2/2007 12:15:00AM
Comment:

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

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

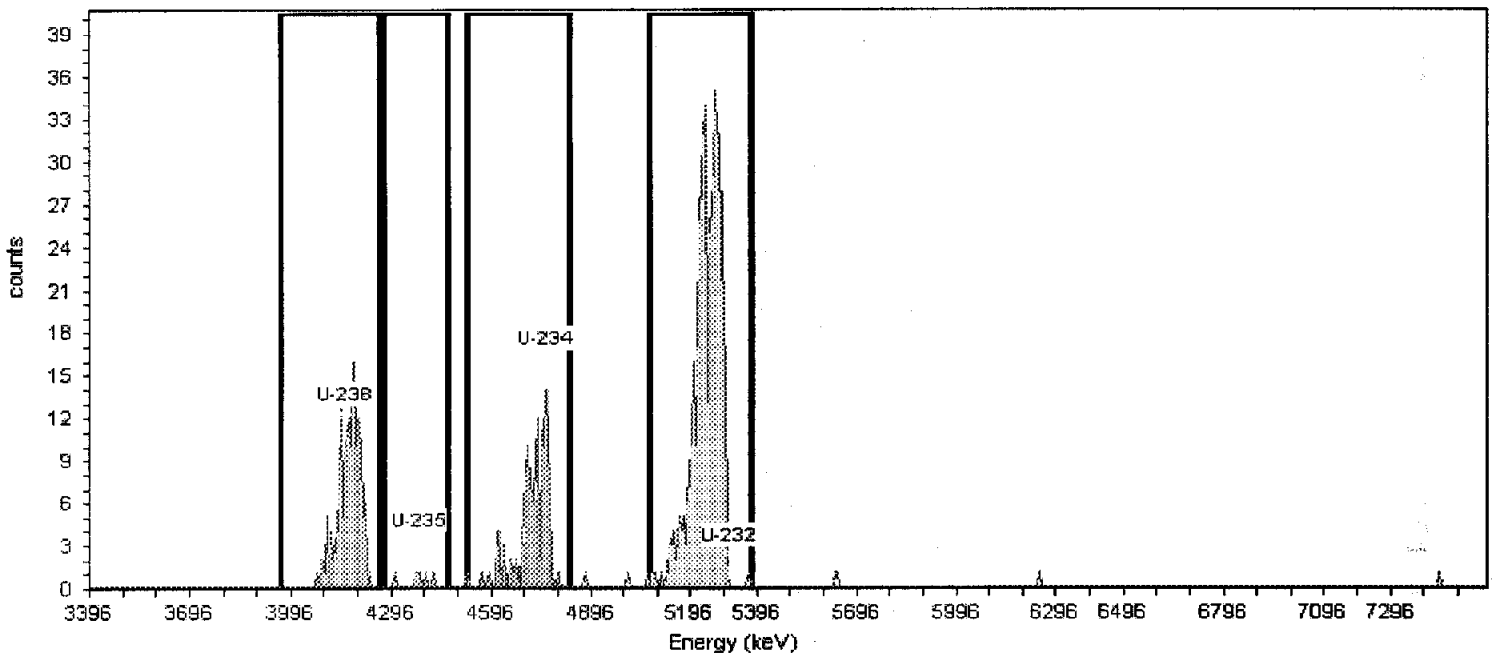
Tracer Nuclide: U-232
Tracer Recovery: 76.28%

Acquisition

Detector: AV53
Serial Number:
Acquisition Start Date: 3/22/2007 2:09:35PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:50PM

Calibration Name: Feb2007_AV53
Calibration Date: 2/27/2007 7:37:38PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.71% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV53; Det: AV53; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	74.962	100.0	136.00	0.7500	135	5.994E-001	1.345E-001	7.059E-003	2.611E-002
U-235	4376.294	4267.397	4463.412	79.133	80.2	5.00	0.7500	4	2.349E-002	2.672E-002	8.802E-003	3.256E-002
U-234	4761.063	4521.490	4833.661	82.654	99.8	115.00	1.0000	114	5.063E-001	1.200E-001	8.168E-003	2.835E-002
U-232	5312.808	5073.234	5378.146	90.014	100.1	393.00	0.5000	393	1.334E+000	1.902E-001	5.794E-003	2.365E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:10:01PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-004
SampleType: Sample
: JP9222AD
Sample Collection Date: 2/1/2007 11:25:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0059g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

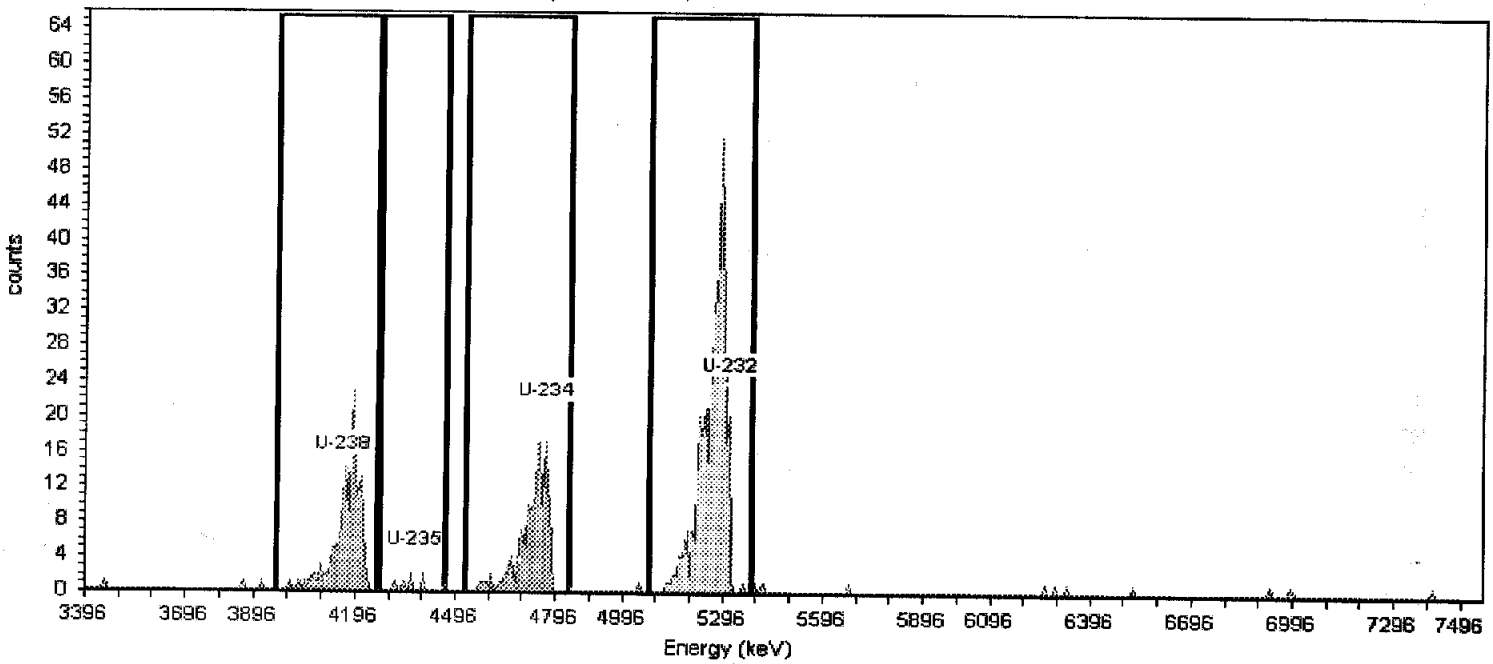
Tracer Nuclide: U-232
Tracer Recovery: 83.24%

Acquisition

Detector: AV54
Serial Number:
Acquisition Start Date: 3/22/2007 2:09:36PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:51PM

Calibration Name: Feb2007_AV54
Calibration Date: 2/27/2007 7:37:44PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.93% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV54; Det: AV54; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	61.246	100.0	168.00	1.5000	167	6.949E-001	1.463E-001	9.402E-003	3.010E-002
U-235	4376.294	4267.397	4463.412	103.094	80.2	7.00	0.2500	7	3.513E-002	2.846E-002	4.786E-003	2.365E-002
U-234	4761.063	4521.490	4833.661	68.841	99.8	169.00	1.2500	168	7.016E-001	1.472E-001	8.600E-003	2.852E-002
U-232	5312.808	5073.234	5378.146	64.167	100.1	417.00	0.7500	416	1.454E+000	2.043E-001	6.683E-003	2.472E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:10:04PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-005
SampleType: Sample
: JP9252AD
Sample Collection Date: 2/1/2007 11:25:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0201g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

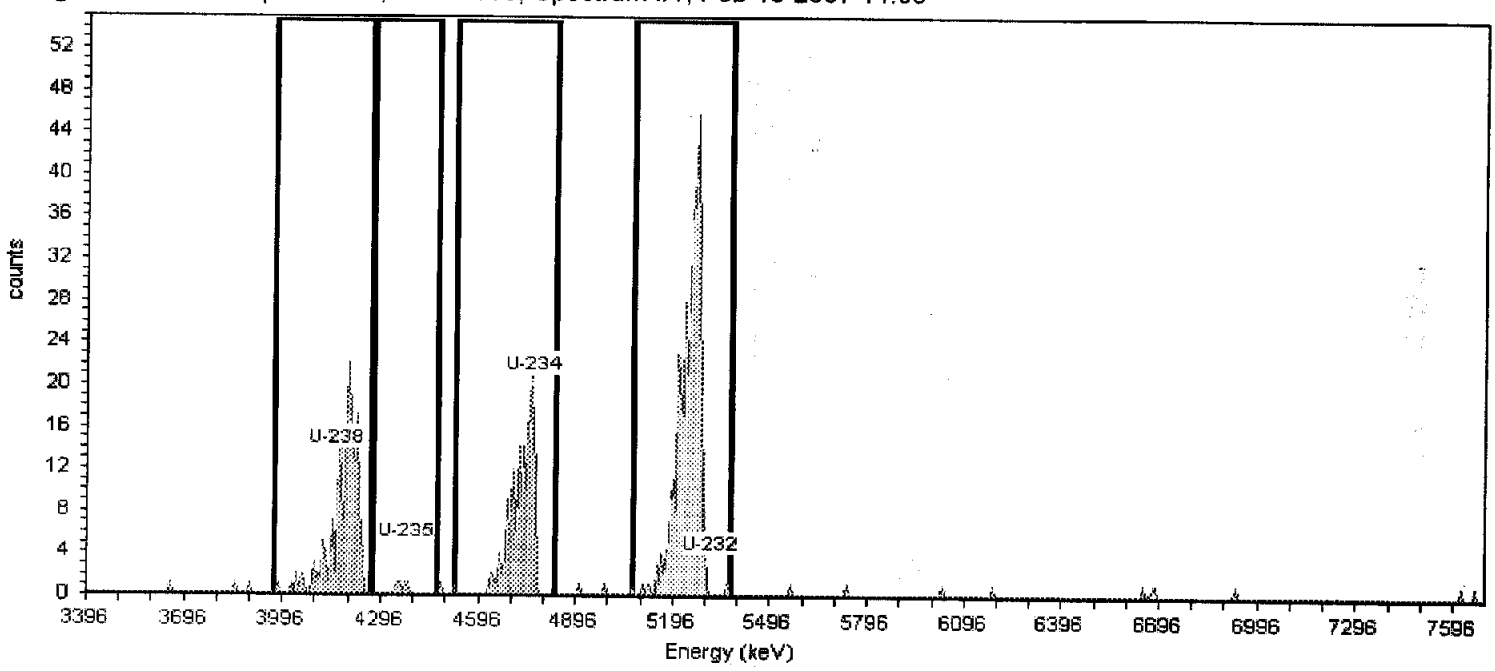
Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

Tracer Nuclide: U-232
Tracer Recovery: 76.45%

Acquisition

Detector: AV56
Serial Number:
Acquisition Start Date: 3/22/2007 2:09:38PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:53PM
Background Info: Sample: AV56; Det: AV56; Spectrum #1; Feb-18-2007 14:05

Calibration Name: Feb2007_AV56
Calibration Date: 2/27/2007 4:28:15PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 25.77% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	71.693	100.0	180.00	1.2500	179	8.431E-001	1.767E-001	9.699E-003	3.216E-002
U-235	4376.294	4267.397	4463.412	17.922	80.2	5.00	0.5000	5	2.647E-002	2.785E-002	7.648E-003	3.121E-002
U-234	4761.063	4521.490	4833.661	75.937	99.8	167.00	2.0000	165	7.798E-001	1.674E-001	1.229E-002	3.737E-002
U-232	5312.808	5073.234	5378.146	65.944	100.1	367.00	1.2500	366	1.326E+000	1.927E-001	9.750E-003	3.233E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 — 6:10:08PM 3/22/2007

Sample

Sample Name: F7C010119-006
SampleType: Sample
: JP9262AD
Sample Collection Date: 2/2/2007 12:15:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0072g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

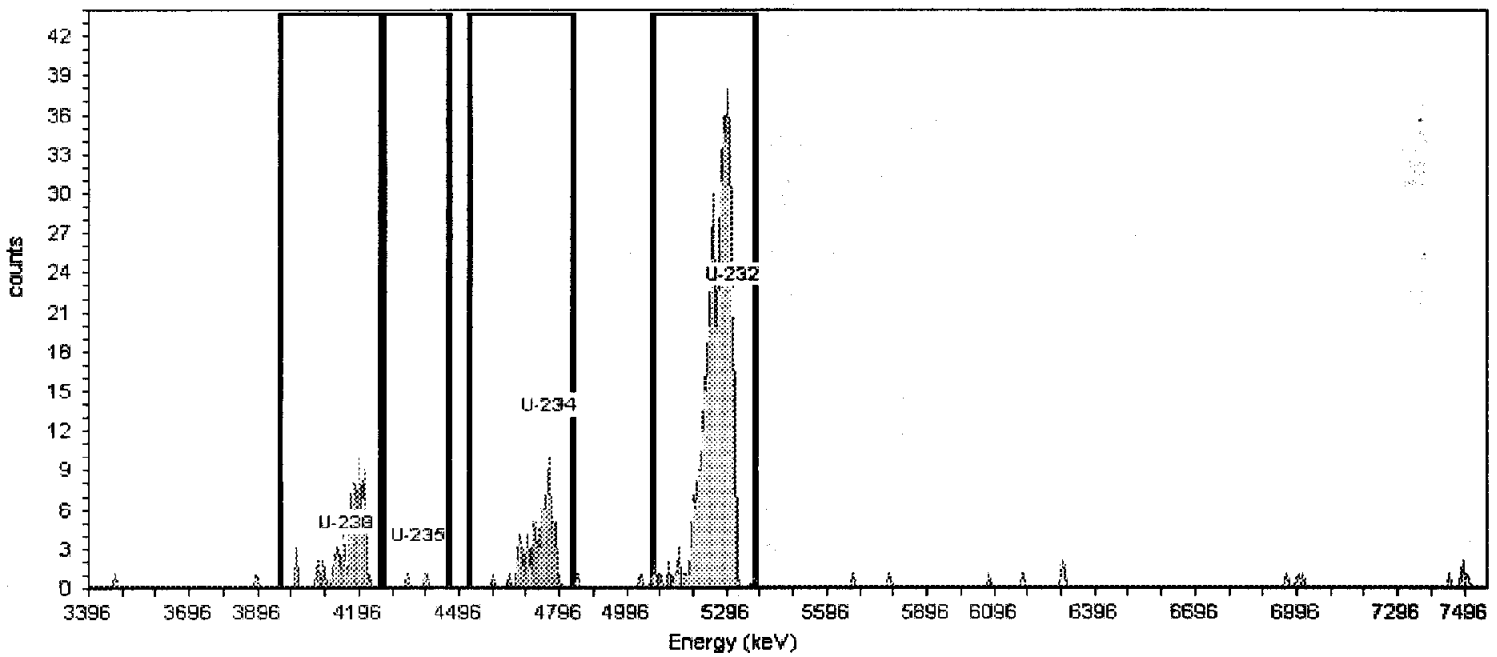
Tracer Nuclide: U-232
Tracer Recovery: 77.80%

Acquisition

Detector: AV58
Serial Number:
Acquisition Start Date: 3/22/2007 2:09:40PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:55PM

Calibration Name: FEB2007_AV58
Calibration Date: 2/28/2007 7:03:13AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.46% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV58; Det: AV58; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	53.022	100.0	76.00	0.2500	76	3.315E-001	8.987E-002	4.024E-003	1.989E-002
U-235	4376.294	4267.397	4463.412	66.547	80.2	3.00	0.2500	3	1.501E-002	1.979E-002	5.018E-003	2.480E-002
U-234	4761.063	4521.490	4833.661	59.325	99.8	73.00	1.7500	71	3.124E-001	8.795E-002	1.067E-002	3.320E-002
U-232	5312.808	5073.234	5378.146	83.729	100.1	398.00	1.2500	397	1.358E+000	1.932E-001	9.046E-003	3.000E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 6:10:11PM 3/22/2007

Sample

Sample Name: F7C010119-007
SampleType: Sample
: JP9272AD
Sample Collection Date: 2/2/2007 12:15:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0019g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

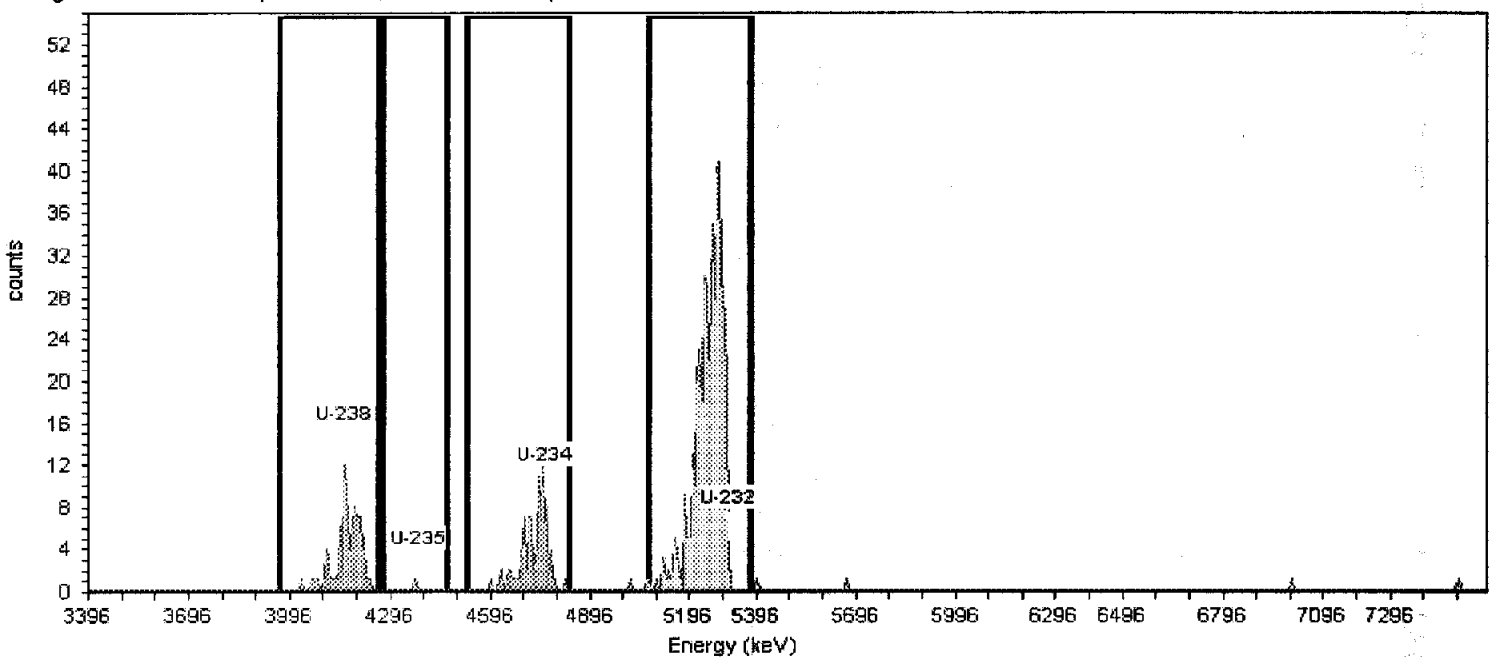
Tracer Nuclide: U-232
Tracer Recovery: 84.82%

Acquisition

Detector: AV73
Serial Number:
Acquisition Start Date: 3/22/2007 2:09:42PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:06:15PM

Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 27.08% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV73; Det: AV73; Spectrum #1; Feb-18-2007 14:06



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	76.690	100.0	87.00	0.2500	87	3.541E-001	9.097E-002	3.753E-003	1.855E-002
U-235	4376.294	4267.397	4463.412	17.776	80.2	1.00	0.0000	1	5.089E-003	1.441E-002	0.000E+000	1.377E-002
U-234	4761.063	4521.490	4833.661	80.208	99.8	89.00	1.2500	88	3.589E-001	9.256E-002	8.410E-003	2.789E-002
U-232	5312.808	5073.234	5378.146	85.830	100.1	427.00	0.5000	427	1.484E+000	2.074E-001	5.336E-003	2.178E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:15PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-008
SampleType: Sample
: JP9282AD
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

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

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

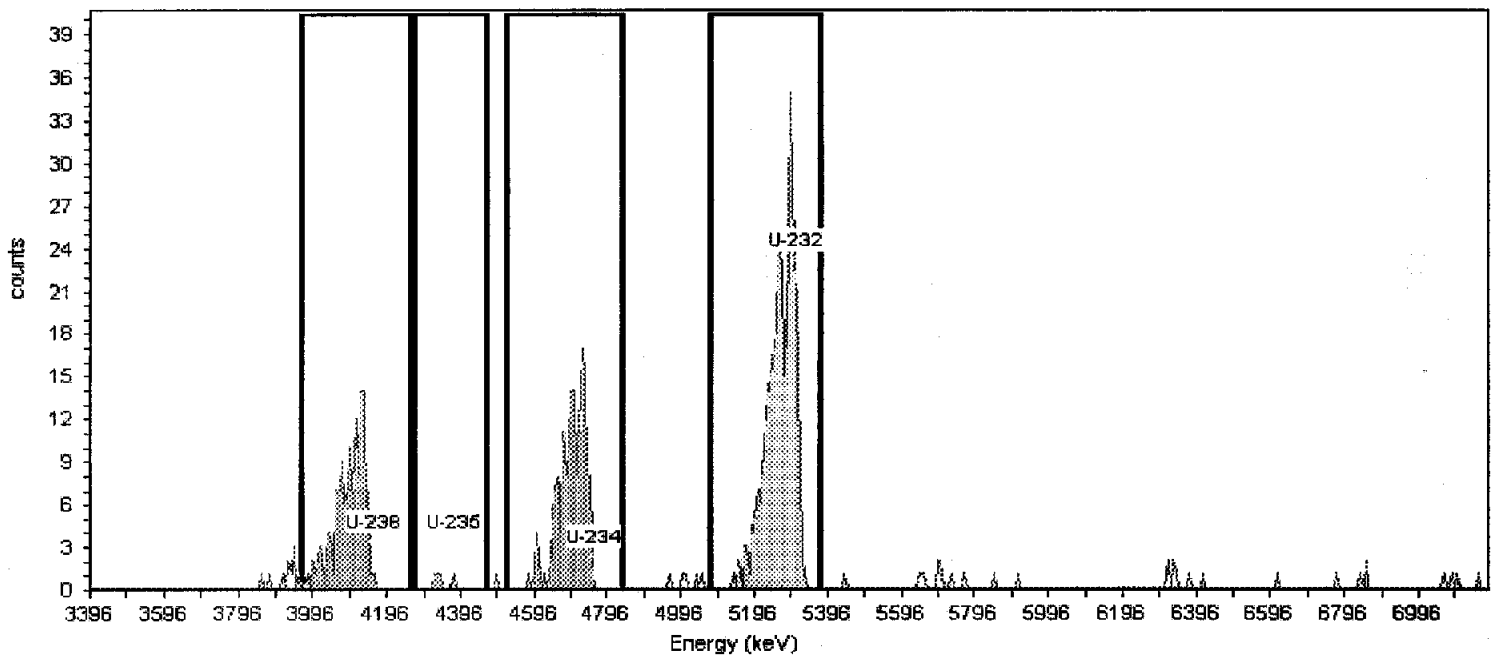
Tracer Nuclide: U-232
Tracer Recovery: 63.38%

Acquisition

Detector: AV1
Serial Number: 41-158W6
Acquisition Start Date: 3/22/2007 6:46:32PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 2/18/2007 2:05:37PM

Calibration Name: Feb2007_AV1
Calibration Date: 2/23/2007 2:25:38PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.66% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV1; Det: AV1; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	83.856	100.0	134.00	0.2500	134	7.415E-001	1.708E-001	5.098E-003	2.520E-002
U-235	4376.294	4267.397	4463.412	18.754	80.2	4.00	0.2500	4	2.592E-002	2.877E-002	6.357E-003	3.142E-002
U-234	4761.063	4521.490	4833.661	86.355	99.8	162.00	1.0000	161	8.944E-001	1.964E-001	1.022E-002	3.547E-002
U-232	5312.808	5073.234	5378.146	86.786	100.1	315.00	1.2500	314	1.108E+000	1.679E-001	1.146E-002	3.800E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:20PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-009
SampleType: Sample
: JP93A2AD
Sample Collection Date: 2/1/2007 11:45:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0057g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

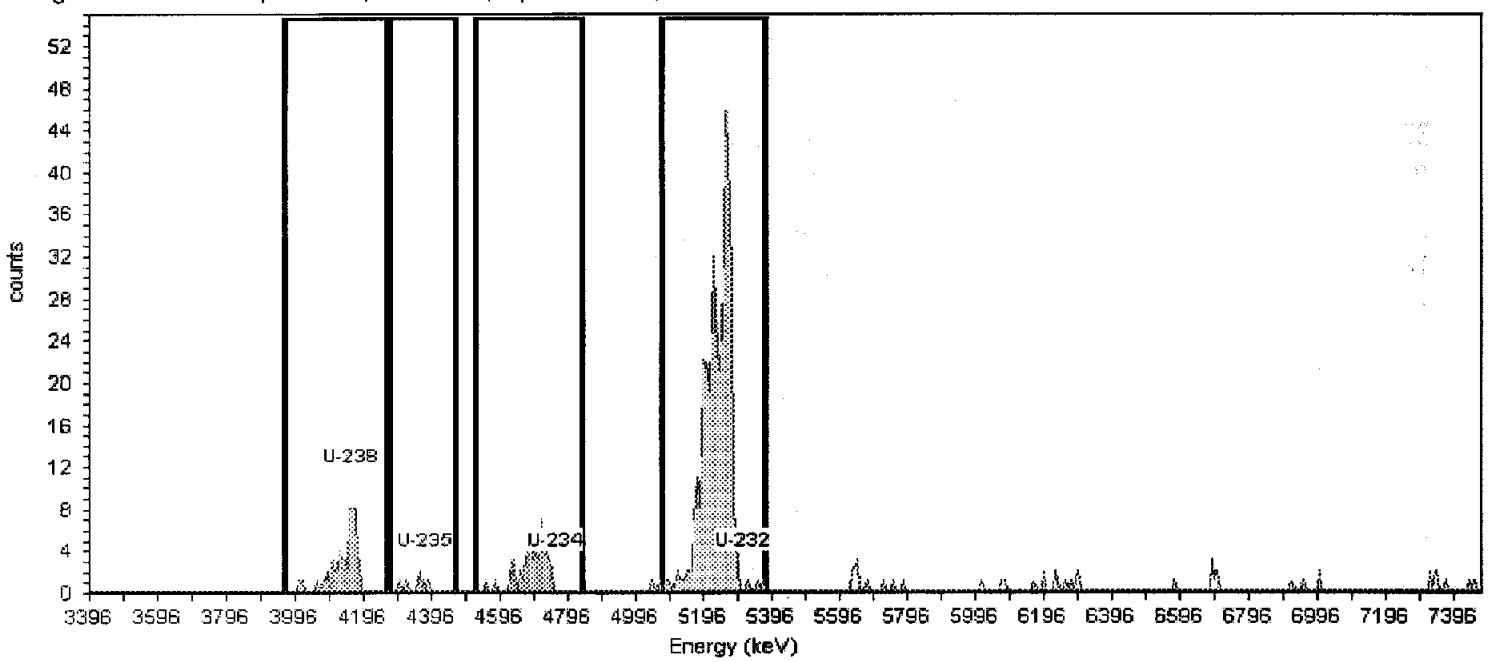
Tracer Nuclide: U-232
Tracer Recovery: 82.21%

Acquisition

Detector: AV2
Serial Number: 41-158W7
Acquisition Start Date: 3/22/2007 6:46:34PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 2/18/2007 2:05:39PM

Calibration Name: FEB2007_AV2
Calibration Date: 2/23/2007 6:25:41AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.30% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV2; Det: AV2; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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-235	4376.294	4267.397	4463.412	19.837	80.2	6.00	0.0000	6	3.238E-002	2.892E-002	0.000E+000	1.460E-002
U-234	4761.063	4521.490	4833.661	79.641	99.8	56.00	0.7500	55	2.396E-001	7.372E-002	6.907E-003	2.555E-002
U-232	5312.808	5073.234	5378.146	89.941	100.1	404.00	2.5000	402	1.436E+000	2.041E-001	1.265E-002	3.708E-002
U-238	4158.500	3962.485	4260.137	53.604	100.0	56.00	0.7500	55	2.391E-001	7.357E-002	6.893E-003	2.550E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:24PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-010
SampleType: Sample
: JP93C2AD
Sample Collection Date: 2/1/2007 11:40:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0090g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

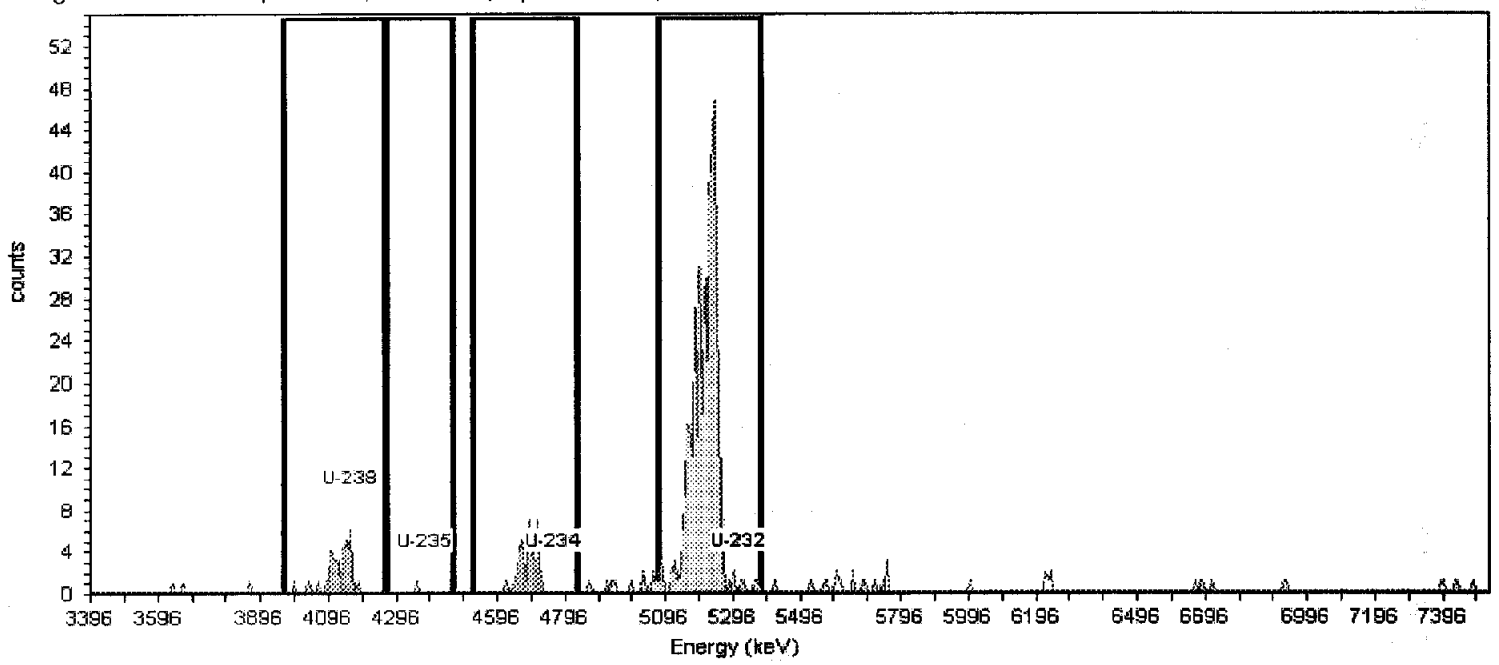
Tracer Nuclide: U-232
Tracer Recovery: 79.06%

Acquisition

Detector: AV3
Serial Number: 41-158X5
Acquisition Start Date: 3/22/2007 6:46:36PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 2/18/2007 2:05:40PM

Calibration Name: Feb2007_AV3
Calibration Date: 2/23/2007 2:25:56PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.03% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV3; Det: AV3; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	80.536	100.0	40.00	1.0000	39	1.705E-001	6.110E-002	8.041E-003	2.791E-002
U-235	4376.294	4267.397	4463.412	17.776	80.2	1.00	0.0000	1	5.452E-003	1.544E-002	0.000E+000	1.475E-002
U-234	4761.063	4521.490	4833.661	65.673	99.8	42.00	0.7500	41	1.807E-001	6.288E-002	6.978E-003	2.581E-002
U-232	5312.808	5073.234	5378.146	82.253	100.1	402.00	5.2500	397	1.379E+000	1.972E-001	1.852E-002	4.894E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:27PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-011
SampleType: Sample
: JP93D2AD
Sample Collection Date: 2/1/2007 11:50:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0102g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

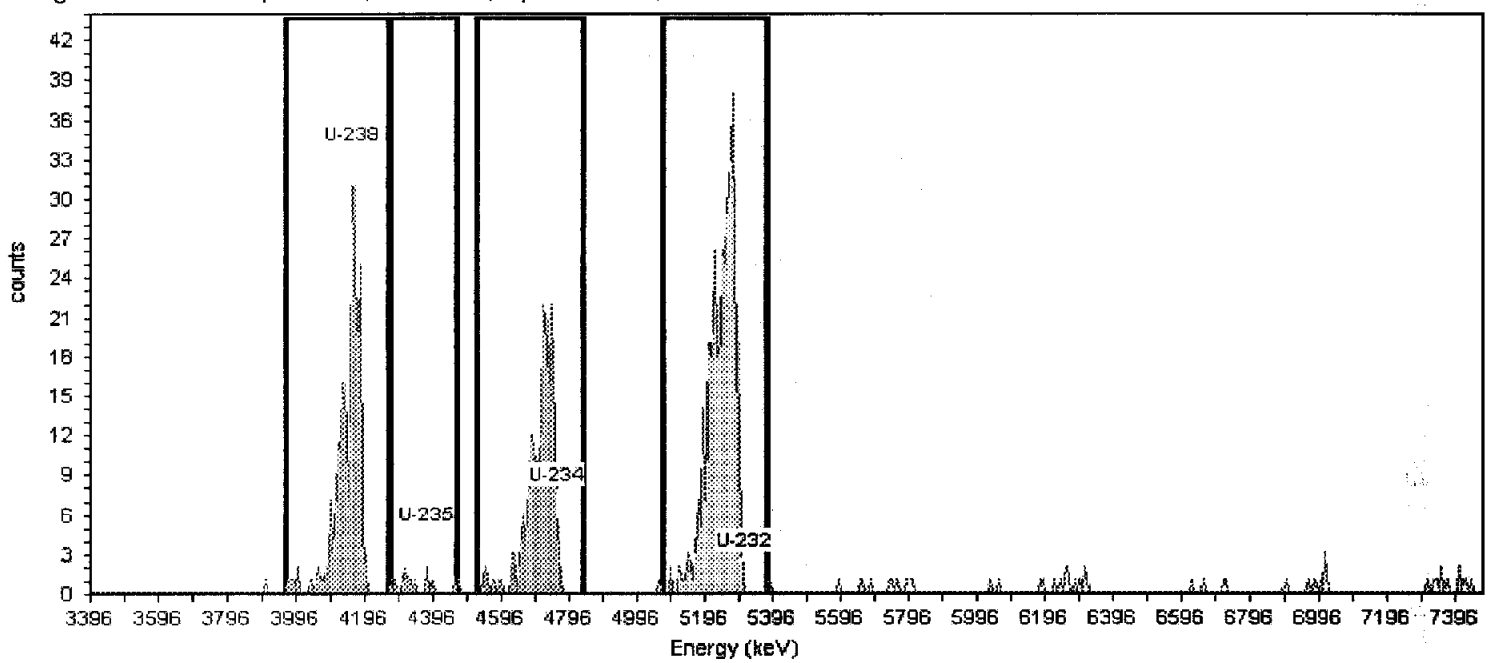
Tracer Nuclide: U-232
Tracer Recovery: 74.12%

Acquisition

Detector: AV4
Serial Number: 41-172B5
Acquisition Start Date: 3/22/2007 6:46:38PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 2/18/2007 2:05:42PM

Calibration Name: Feb2007_AV4
Calibration Date: 2/23/2007 2:26:02PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.56% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV4; Det: AV4; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	63.155	100.0	207.00	0.7500	206	9.783E-001	1.978E-001	7.555E-003	2.794E-002
U-235	4376.294	4267.397	4463.412	21.339	80.2	12.00	0.0000	12	7.097E-002	4.389E-002	0.000E+000	1.600E-002
U-234	4761.063	4521.490	4833.661	65.658	99.8	205.00	0.5000	205	9.719E-001	1.968E-001	6.181E-003	2.522E-002
U-232	5312.808	5073.234	5378.146	90.663	100.1	369.00	3.5000	366	1.292E+000	1.884E-001	1.641E-002	4.572E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:31PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-012
SampleType: Sample
: JP93E2AD
Sample Collection Date: 2/15/2007 2:55:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0111g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

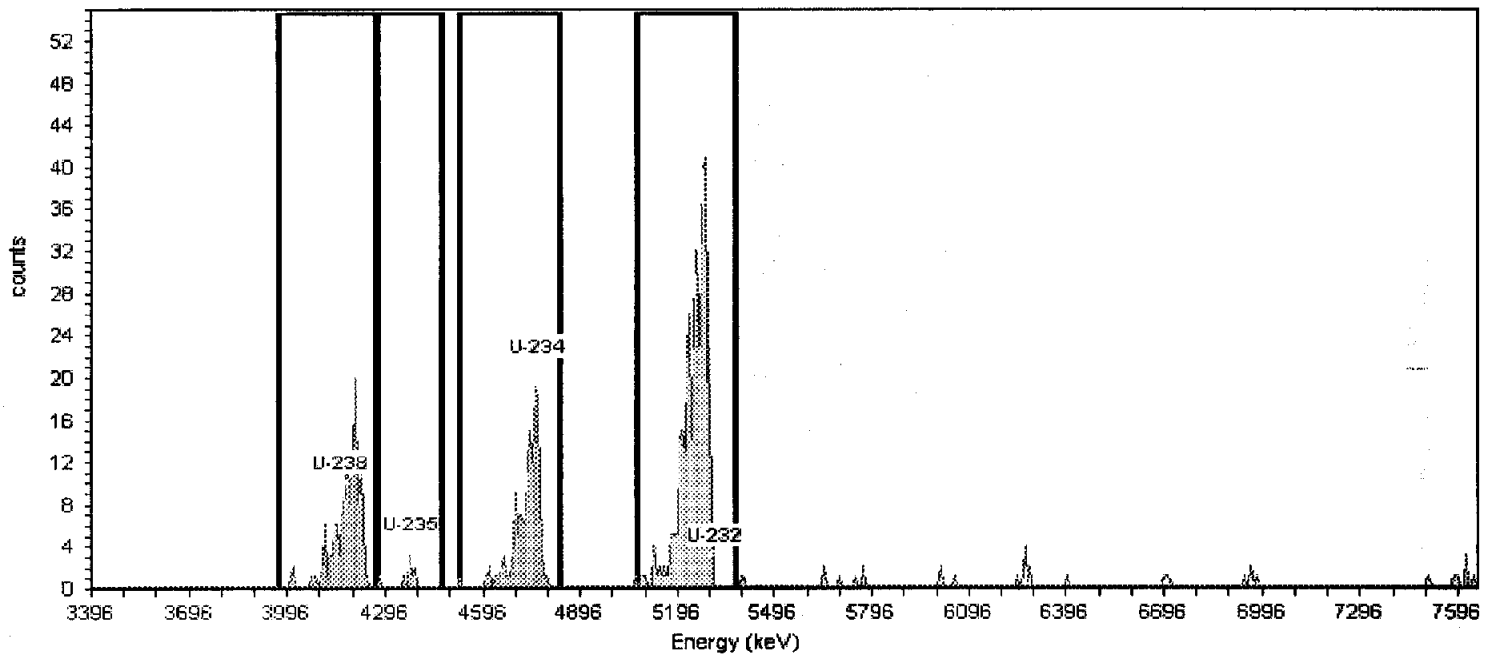
Tracer Nuclide: U-232
Tracer Recovery: 71.95%

Acquisition

Detector: AV6
Serial Number:
Acquisition Start Date: 3/22/2007 6:46:39PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 2/18/2007 2:05:44PM

Calibration Name: Feb2007_AV6
Calibration Date: 2/23/2007 11:02:51AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.89% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV6; Det: AV6; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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-232	5312.808	5073.234	5378.146	75.408	100.1	362.00	2.7500	359	1.253E+000	1.834E-001	1.479E-002	4.270E-002
U-238	4158.500	3962.485	4260.137	73.550	100.0	141.00	0.2500	141	6.789E-001	1.519E-001	4.436E-003	2.192E-002
U-235	4376.294	4267.397	4463.412	19.245	80.2	8.00	0.0000	8	4.811E-002	3.677E-002	0.000E+000	1.627E-002
U-234	4761.063	4521.490	4833.661	57.178	99.8	145.00	0.5000	145	6.984E-001	1.552E-001	6.285E-003	2.565E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 10:47:34PM 3/22/2007

Sample

Sample Name: F7C010119-013
SampleType: Sample
: JP93F2AD
Sample Collection Date: 2/15/2007 2:50:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0177g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

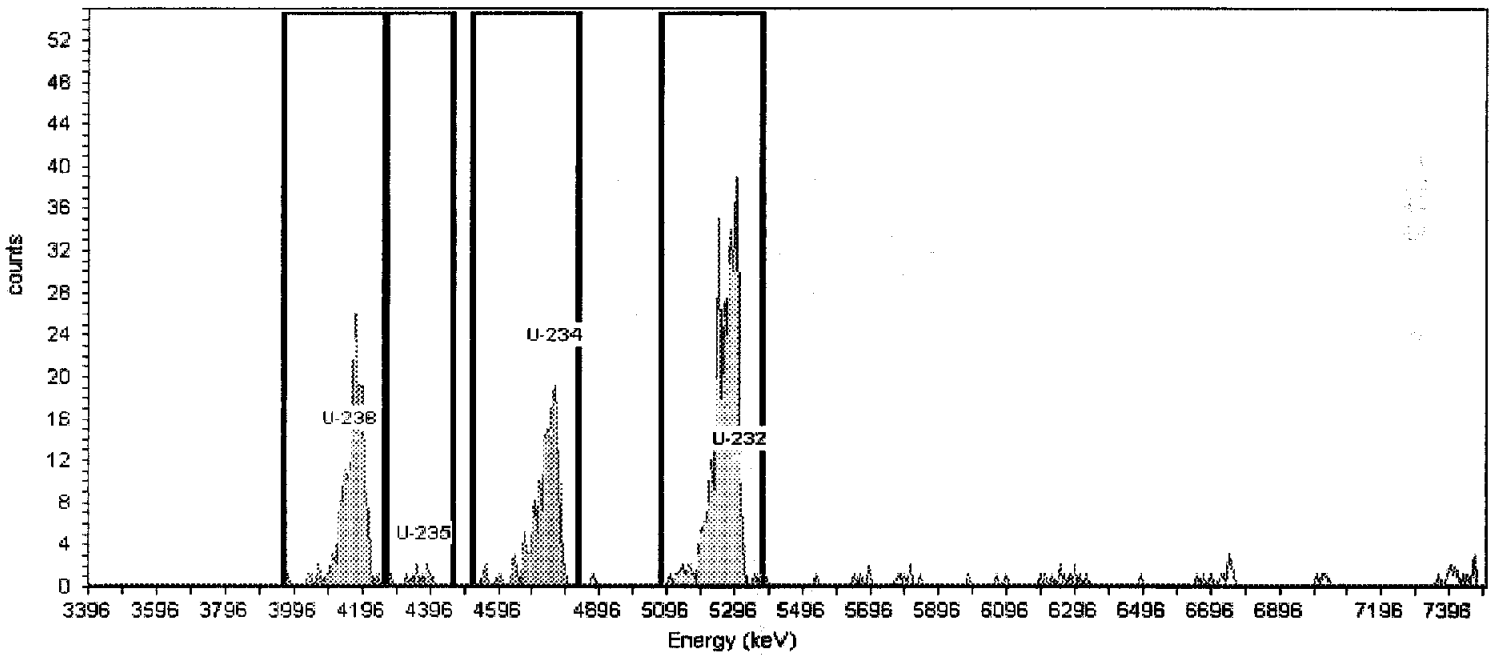
Tracer Nuclide: U-232
Tracer Recovery: 70.38%

Acquisition

Detector: AV7
Serial Number: 41-158X6
Acquisition Start Date: 3/22/2007 6:46:40PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 2/18/2007 2:05:46PM

Calibration Name: Feb2007_AV7
Calibration Date: 2/23/2007 4:51:36PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.15% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV7; Det: AV7; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	61.192	100.0	185.00	0.0000	185	9.007E-001	1.875E-001	0.000E+000	1.317E-002
U-235	4376.294	4267.397	4463.412	52.626	80.2	10.00	0.2500	10	5.919E-002	3.983E-002	5.583E-003	2.759E-002
U-234	4761.063	4521.490	4833.661	62.489	99.8	172.00	0.5000	172	8.367E-001	1.776E-001	6.344E-003	2.589E-002
U-232	5312.808	5073.234	5378.146	78.054	100.1	356.00	1.2500	355	1.222E+000	1.791E-001	1.006E-002	3.337E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:41PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-014
SampleType: Sample
: JP93G2AD
Sample Collection Date: 2/15/2007 2:40:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0040g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

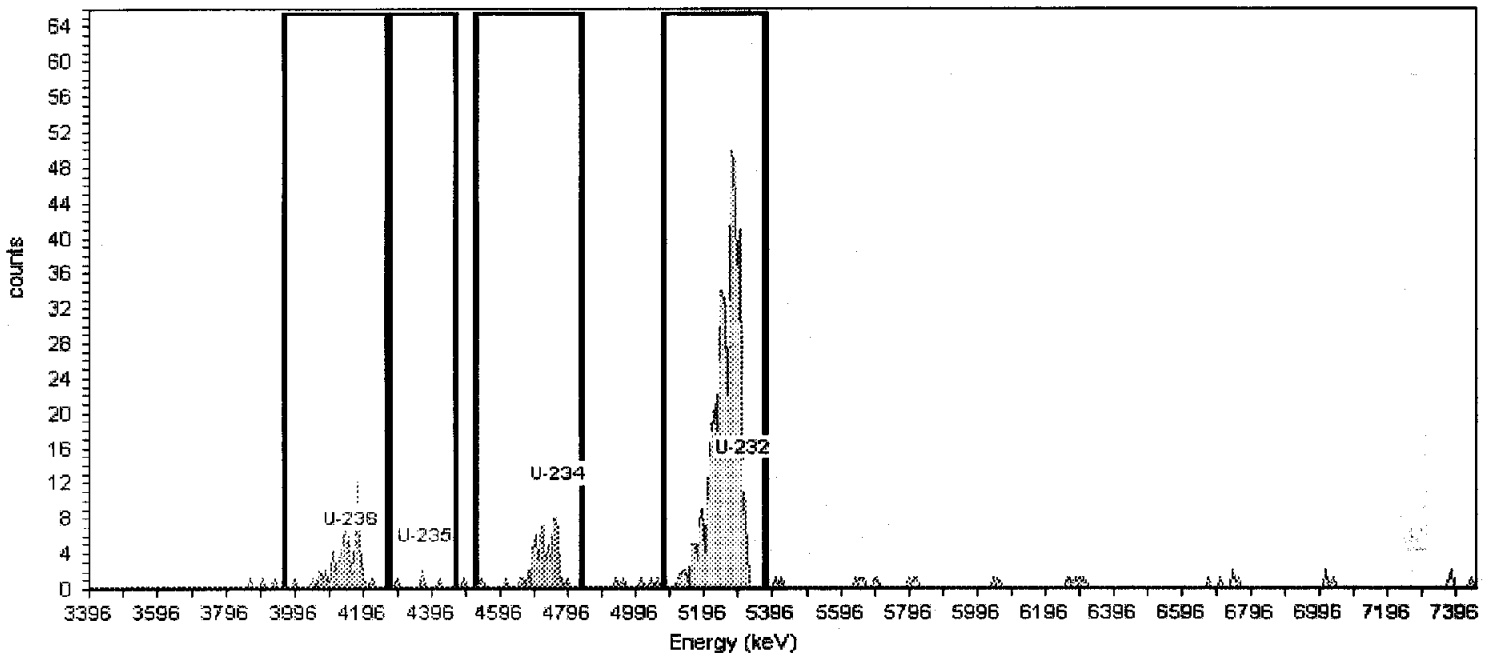
Tracer Nuclide: U-232
Tracer Recovery: 95.45%

Acquisition

Detector: AV8
Serial Number: 41-158X1
Acquisition Start Date: 3/22/2007 6:46:42PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 2/18/2007 2:05:48PM

Calibration Name: Feb2007_AV8
Calibration Date: 2/23/2007 4:51:43PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.03% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV8; Det: AV8; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	75.799	100.0	71.00	0.7500	70	2.550E-001	7.067E-002	5.782E-003	2.139E-002
U-235	4376.294	4267.397	4463.412	17.283	80.2	5.00	0.5000	5	2.037E-002	2.141E-002	5.887E-003	2.402E-002
U-234	4761.063	4521.490	4833.661	87.390	99.8	64.00	0.5000	64	2.310E-001	6.639E-002	4.731E-003	1.931E-002
U-232	5312.808	5073.234	5378.146	82.022	100.1	481.00	2.0000	479	1.669E+000	2.271E-001	9.493E-003	2.886E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:37PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-015
SampleType: Sample
: JP93H2AD
Sample Collection Date: 2/1/2007 11:45:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0185g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

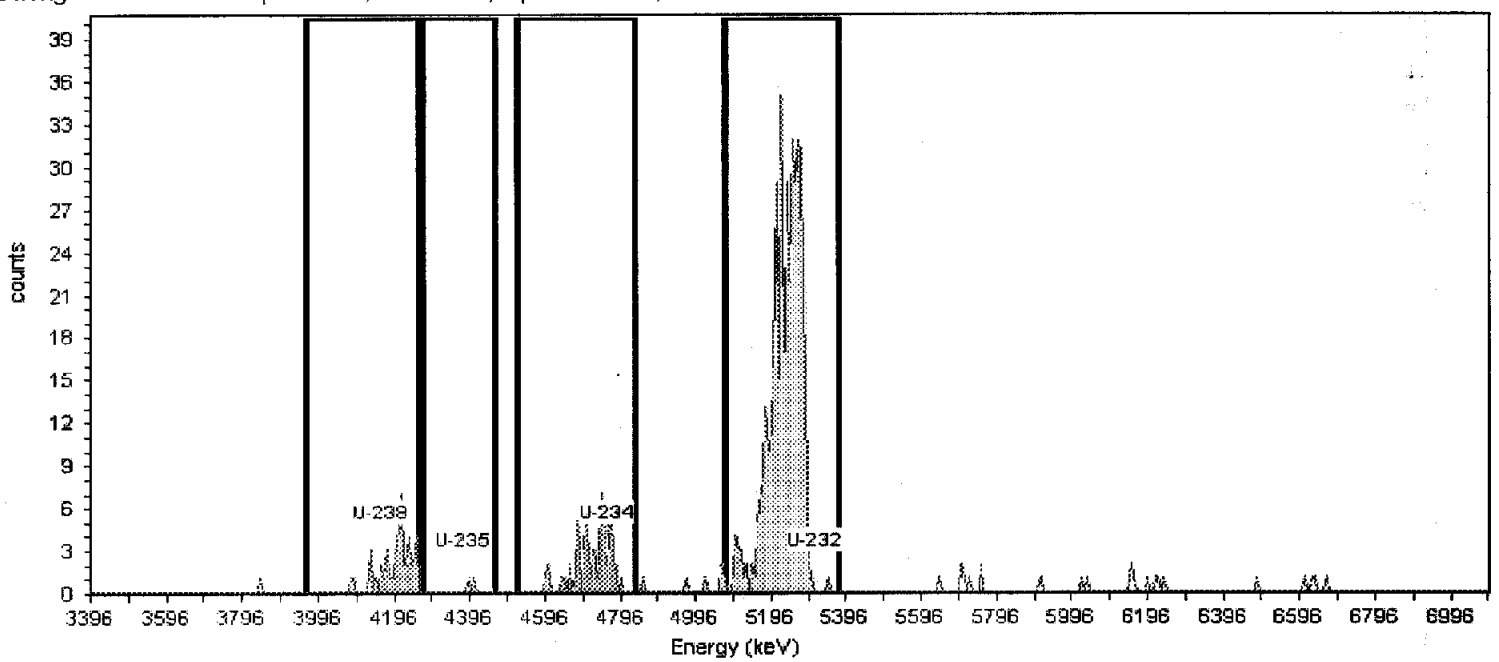
Tracer Nuclide: U-232
Tracer Recovery: 78.75%

Acquisition

Detector: AV9
Serial Number: 41-172R1
Acquisition Start Date: 3/22/2007 6:46:44PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:49PM

Calibration Name: Feb2007_AV9
Calibration Date: 2/23/2007 4:50:27PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.67% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV9; Det: AV9; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	39.885	100.0	43.00	1.2500	42	1.848E-001	6.458E-002	9.103E-003	3.018E-002
U-235	4376.294	4267.397	4463.412	29.039	80.2	2.00	0.5000	2	8.280E-003	1.750E-002	7.178E-003	2.929E-002
U-234	4761.063	4521.490	4833.661	99.702	99.8	56.00	1.5000	55	2.417E-001	7.568E-002	9.992E-003	3.199E-002
U-232	5312.808	5073.234	5378.146	91.684	100.1	392.00	2.0000	390	1.367E+000	1.955E-001	1.158E-002	3.519E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:44PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-016
SampleType: Sample
: JP93L2AD
Sample Collection Date: 2/1/2007 10:30:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0035g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

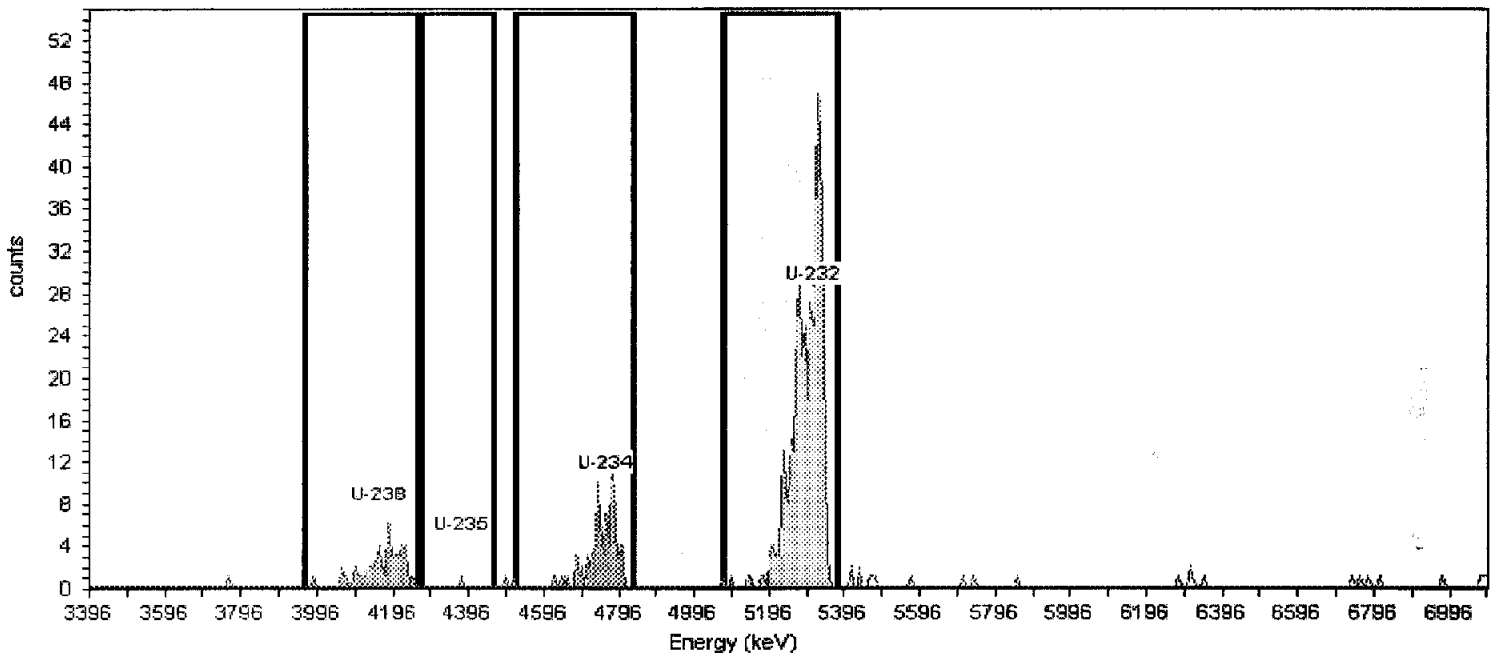
Tracer Nuclide: U-232
Tracer Recovery: 79.63%

Acquisition

Detector: AV11
Serial Number: 41-172Q3
Acquisition Start Date: 3/22/2007 6:46:45PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:22PM

Calibration Name: FEB2007_AV11
Calibration Date: 2/28/2007 7:03:01AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.82% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV11; Det: AV11; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	38.087	100.0	56.00	0.7500	55	2.424E-001	7.461E-002	6.987E-003	2.585E-002
U-235	4376.294	4267.397	4463.412	17.776	80.2	1.00	0.7500	0	1.367E-003	1.447E-002	8.712E-003	3.223E-002
U-234	4761.063	4521.490	4833.661	85.465	99.8	81.00	1.2500	80	3.506E-001	9.415E-002	9.039E-003	2.997E-002
U-232	5312.808	5073.234	5378.146	71.324	100.1	398.00	1.5000	397	1.393E+000	1.983E-001	9.934E-003	3.180E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:47PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-017
SampleType: Sample
: JP93N2AD
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0016g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

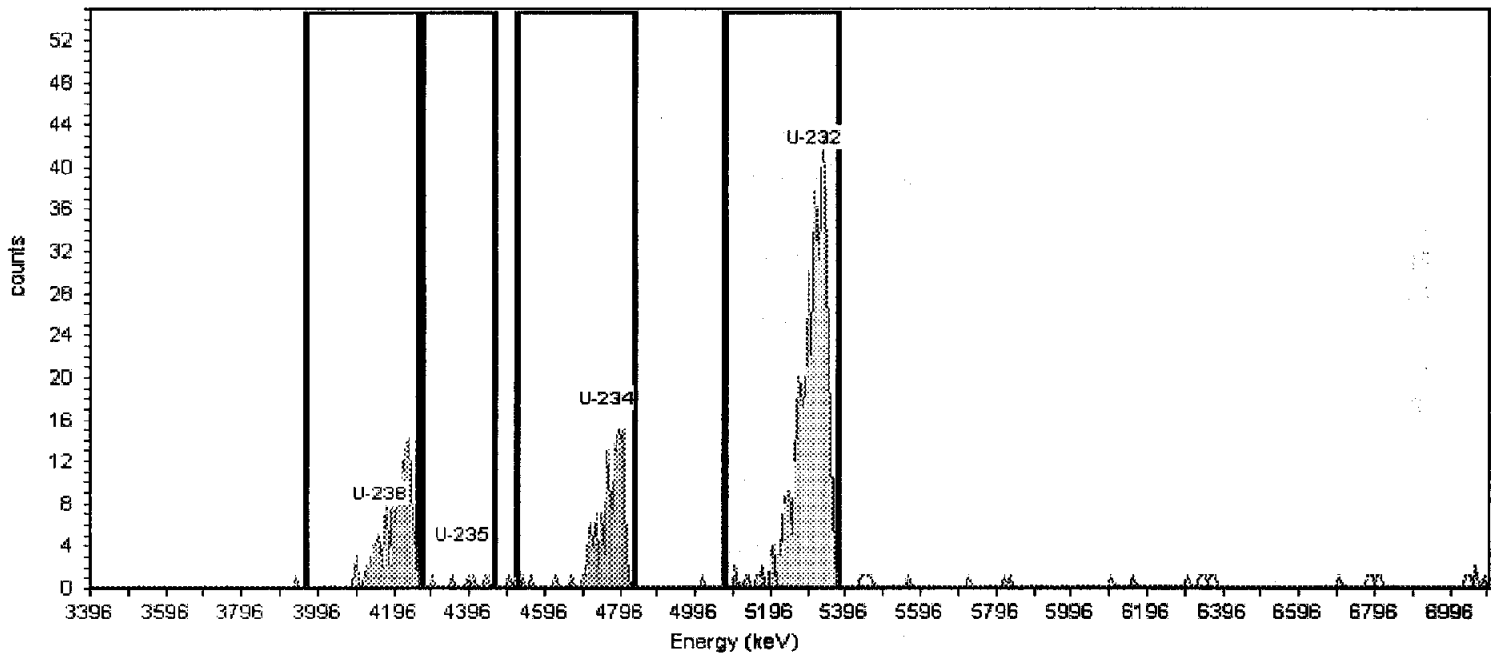
Tracer Nuclide: U-232
Tracer Recovery: 87.20%

Acquisition

Detector: AV12
Serial Number: 41-172Q2
Acquisition Start Date: 3/22/2007 6:46:46PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:23PM

Calibration Name: Feb2007_AV12
Calibration Date: 2/24/2007 7:37:40AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.99% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV12; Det: AV12; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	27.315	100.0	127.00	0.2500	127	5.245E-001	1.190E-001	3.805E-003	1.881E-002
U-235	4376.294	4267.397	4463.412	153.943	80.2	6.00	0.0000	6	3.096E-002	2.765E-002	0.000E+000	1.396E-002
U-234	4761.063	4521.490	4833.661	18.921	99.8	129.00	1.2500	128	5.297E-001	1.204E-001	8.526E-003	2.827E-002
U-232	5312.808	5073.234	5378.146	37.570	100.1	422.00	1.2500	421	1.526E+000	2.141E-001	8.554E-003	2.836E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:50PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-018
SampleType: Sample
: JP93P2AD
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0113g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

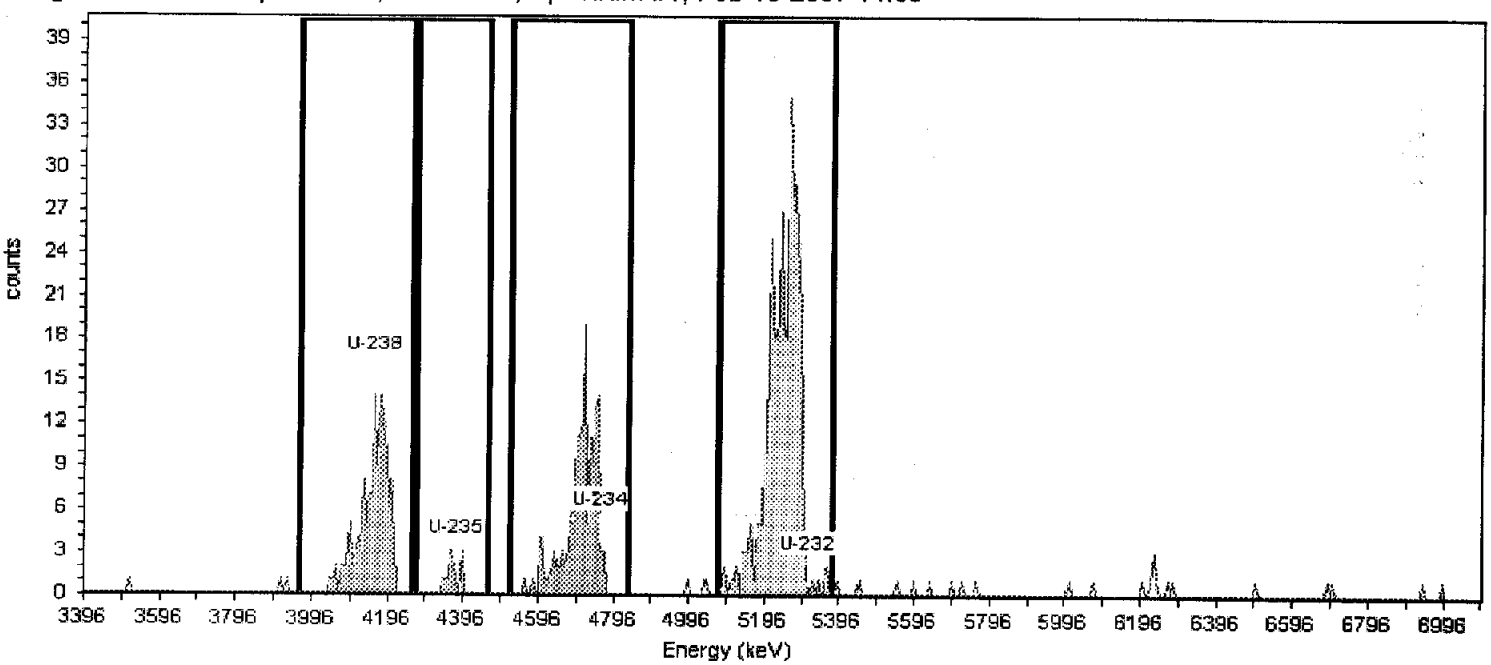
Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

Tracer Nuclide: U-232
Tracer Recovery: 71.69%

Acquisition

Detector: AV13
Serial Number: 41-172Q1
Acquisition Start Date: 3/22/2007 6:46:48PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:24PM
Background Info: Sample: AV13; Det: AV13; Spectrum #1; Feb-18-2007 14:05

Calibration Name: FEB2007_AV13
Calibration Date: 2/28/2007 7:02:48AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.65% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	68.271	100.0	131.00	1.5000	130	6.325E-001	1.458E-001	1.100E-002	3.522E-002
U-235	4376.294	4267.397	4463.412	21.808	80.2	12.00	0.0000	12	7.308E-002	4.521E-002	0.000E+000	1.648E-002
U-234	4761.063	4521.490	4833.661	79.492	99.8	150.00	1.0000	149	7.292E-001	1.610E-001	9.001E-003	3.124E-002
U-232	5312.808	5073.234	5378.146	89.698	100.1	356.00	1.2500	355	1.249E+000	1.829E-001	1.010E-002	3.348E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:54PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-019
SampleType: Sample
: JP93Q2AD
Sample Collection Date: 2/15/2007 2:55:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0177g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

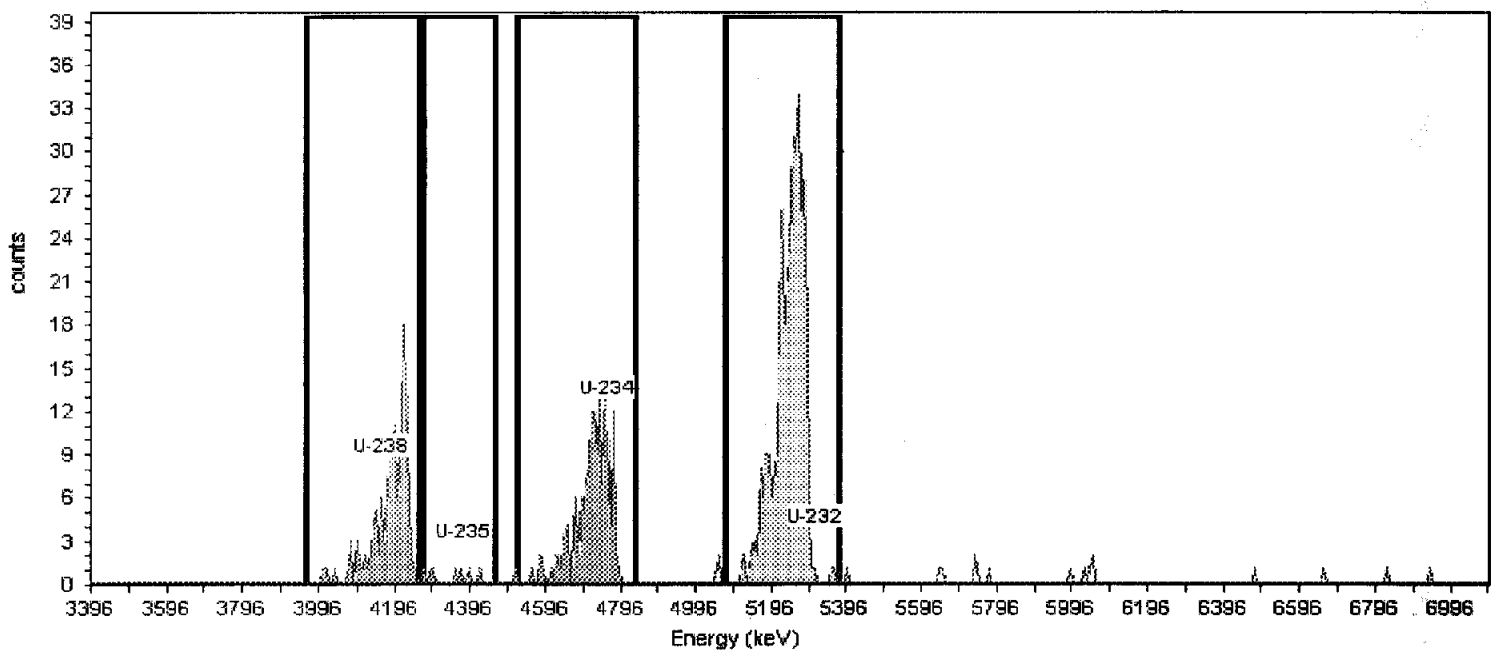
Tracer Nuclide: U-232
Tracer Recovery: 69.40%

Acquisition

Detector: AV14
Serial Number: 41-172C4
Acquisition Start Date: 3/22/2007 6:46:49PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:26PM

Calibration Name: Feb2007_AV14
Calibration Date: 2/23/2007 4:50:55PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.68% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV14; Det: AV14; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	33.717	100.0	129.00	0.5000	129	6.456E-001	1.492E-001	6.534E-003	2.667E-002
U-235	4376.294	4267.397	4463.412	.000	80.2	7.00	0.0000	7	4.385E-002	3.603E-002	0.000E+000	1.695E-002
U-234	4761.063	4521.490	4833.661	83.035	99.8	147.00	1.5000	146	7.325E-001	1.639E-001	1.134E-002	3.630E-002
U-232	5312.808	5073.234	5378.146	70.671	100.1	346.00	2.2500	344	1.205E+000	1.783E-001	1.393E-002	4.154E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:47:57PM 3/22/2007

Analyst: 60040

Sample

Sample Name: F7C010119-020
SampleType: Sample
: JP93R2AD
Sample Collection Date: 2/15/2007 2:55:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0106g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

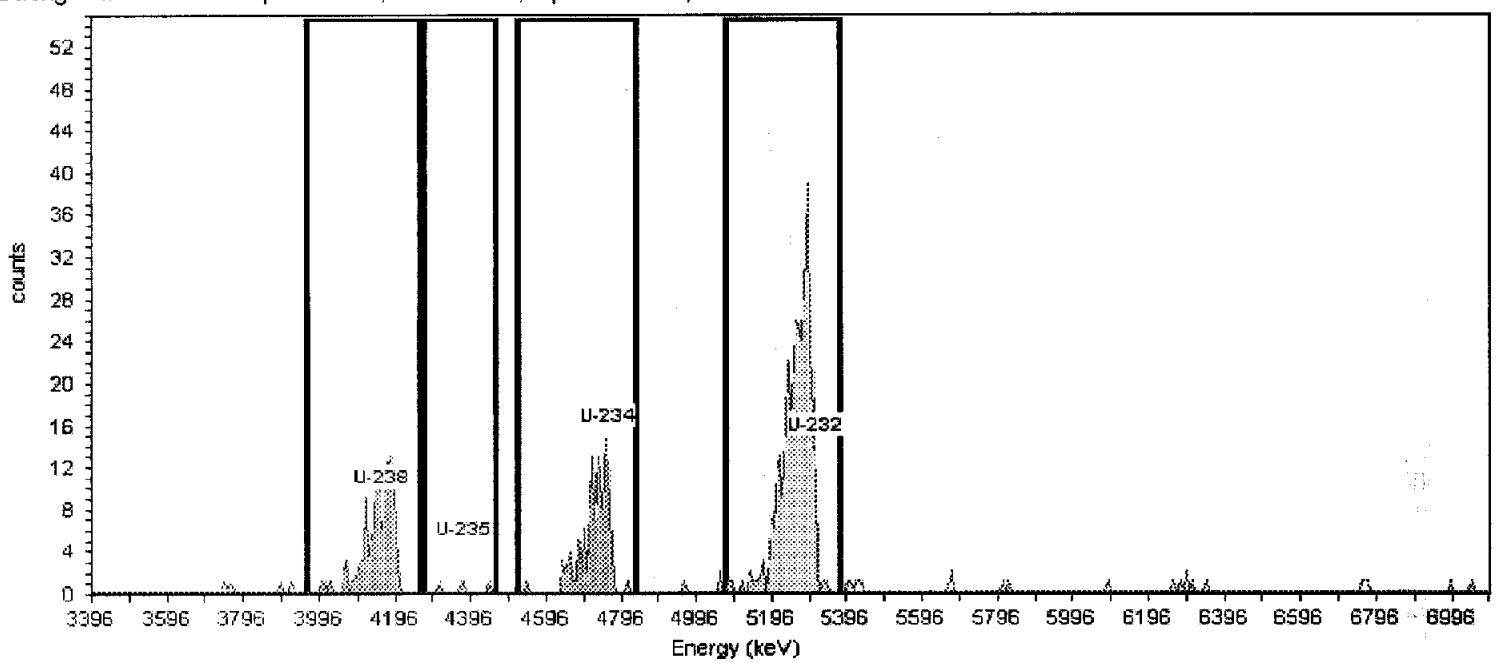
Tracer Nuclide: U-232
Tracer Recovery: 67.81%

Acquisition

Detector: AV15
Serial Number: 41-172C5
Acquisition Start Date: 3/22/2007 6:46:52PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/23/2007 11:17:03AM

Calibration Name: Feb2007_AV15
Calibration Date: 2/22/2007 6:30:21PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.51% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV15; Det: AV15; Spectrum #1; Feb-23-2007 11:17



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	76.545	100.0	123.00	1.5000	122	6.310E-001	1.496E-001	1.170E-002	3.745E-002
U-235	4376.294	4267.397	4463.412	73.805	80.2	4.00	0.7500	3	2.105E-002	2.840E-002	1.031E-002	3.815E-002
U-234	4761.063	4521.490	4833.661	63.476	99.8	123.00	1.5000	122	6.323E-001	1.499E-001	1.172E-002	3.752E-002
U-232	5312.808	5073.234	5378.146	78.757	100.1	337.00	3.2500	334	1.182E+000	1.766E-001	1.731E-002	4.875E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:08:06PM 3/25/2007

Sample

Sample Name: F7C010119-021
SampleType: Sample
: JP93V3AD
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0030g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

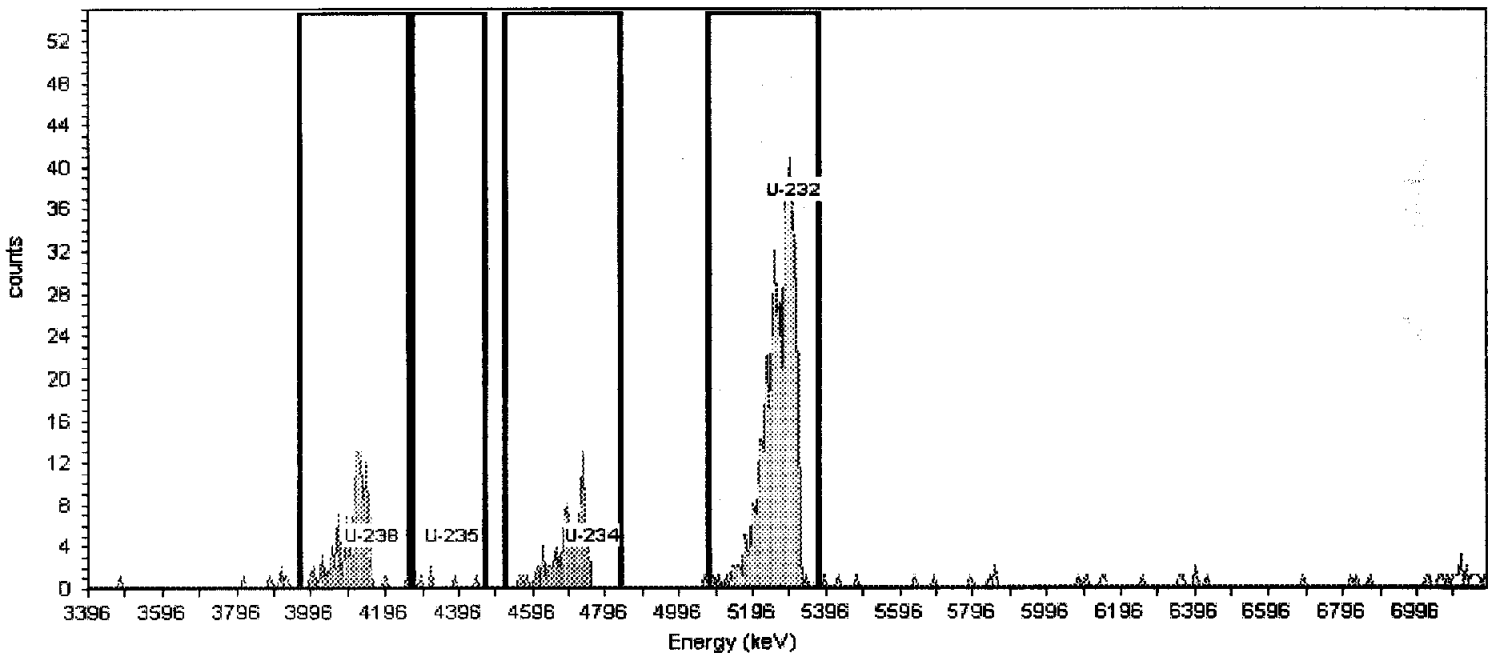
Tracer Nuclide: U-232
Tracer Recovery: 91.21%

Acquisition

Detector: AV1
Serial Number: 41-158W6
Acquisition Start Date: 3/25/2007 1:07:24PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:47:45AM

Calibration Name: Feb2007_AV1
Calibration Date: 2/23/2007 2:25:38PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.66% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV1; Det: AV1; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	55.808	100.0	113.00	0.5000	113	4.335E-001	1.016E-001	5.011E-003	2.045E-002
U-235	4376.294	4267.397	4463.412	37.854	80.2	5.00	0.5000	5	2.162E-002	2.273E-002	6.248E-003	2.550E-002
U-234	4761.063	4521.490	4833.661	83.136	99.8	94.00	0.5000	94	3.610E-001	9.014E-002	5.021E-003	2.049E-002
U-232	5312.808	5073.234	5378.146	87.889	100.1	453.00	1.5000	452	1.595E+000	2.200E-001	8.726E-003	2.794E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:08:09PM 3/25/2007

Sample

Sample Name: F7C010119-021X
SampleType: Sample
: JP93V1AL
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0027g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

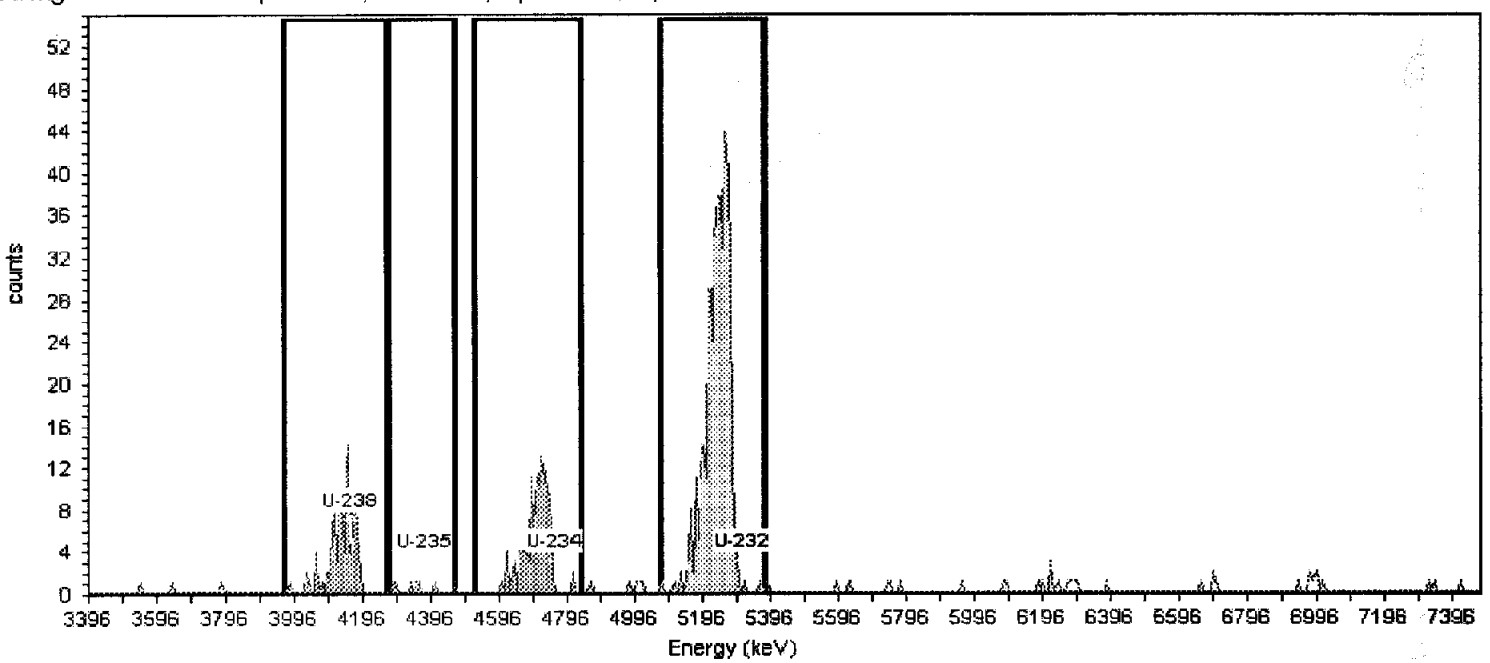
Tracer Nuclide: U-232
Tracer Recovery: 87.84%

Acquisition

Detector: AV2
Serial Number: 41-158W7
Acquisition Start Date: 3/25/2007 1:07:26PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:46:56AM

Calibration Name: FEB2007_AV2
Calibration Date: 2/23/2007 6:25:41AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.30% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV2; Det: AV2; Spectrum #1; Mar-24-2007 09:46



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	65.195	100.0	98.00	0.0000	98	3.975E-001	9.813E-002	0.000E+000	1.098E-002
U-235	4376.294	4267.397	4463.412	179.070	80.2	7.00	0.5000	7	3.287E-002	2.808E-002	6.577E-003	2.684E-002
U-234	4761.063	4521.490	4833.661	64.343	99.8	120.00	0.5000	120	4.857E-001	1.123E-001	5.285E-003	2.157E-002
U-232	5312.808	5073.234	5378.146	73.540	100.1	433.00	4.0000	429	1.537E+000	2.152E-001	1.500E-002	4.103E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:08:19PM 3/25/2007

Sample

Sample Name: F7C010119-022
SampleType: Sample
: JP93W3AD
Sample Collection Date: 1/30/2007 1:20:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0095g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

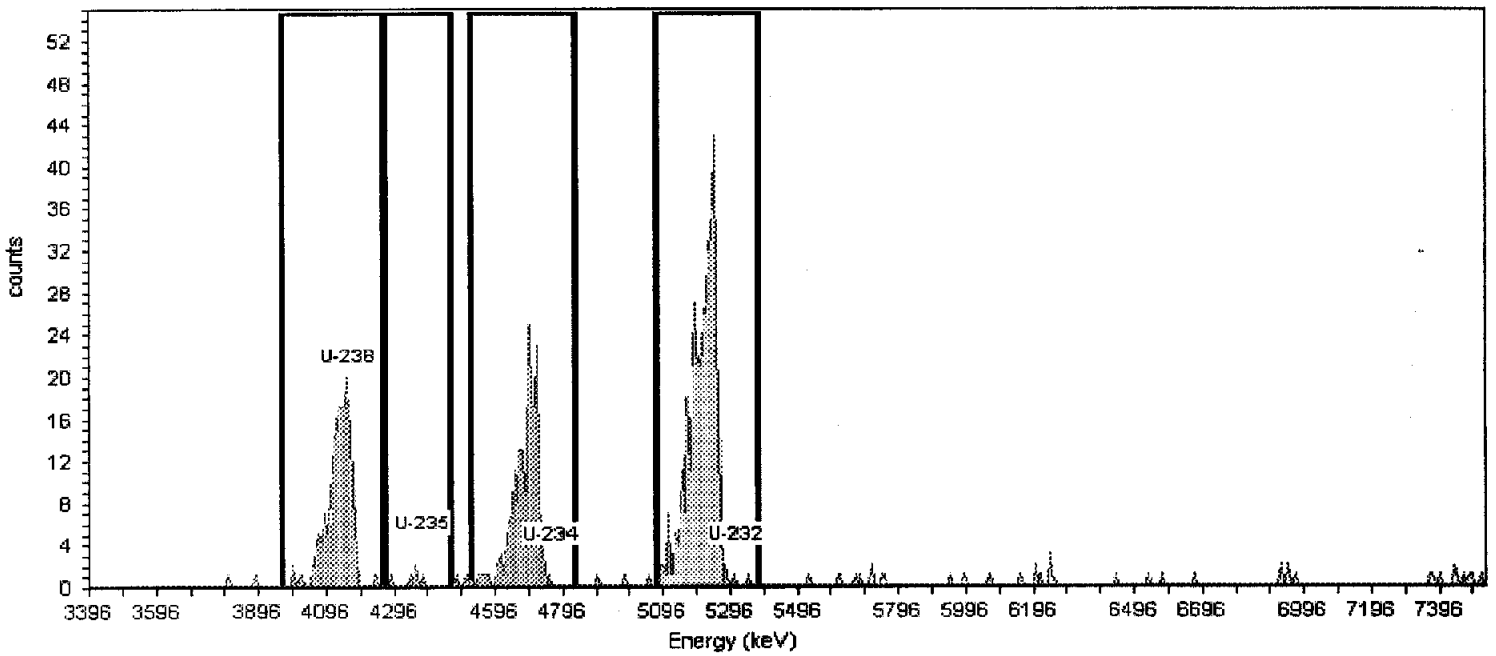
Tracer Nuclide: U-232
Tracer Recovery: 78.82%

Acquisition

Detector: AV3
Serial Number: 41-158X5
Acquisition Start Date: 3/25/2007 1:07:27PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:46:58AM

Calibration Name: Feb2007_AV3
Calibration Date: 2/23/2007 2:25:56PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.03% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV3; Det: AV3; Spectrum #1; Mar-24-2007 09:46



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	68.858	100.0	196.00	1.0000	195	8.550E-001	1.738E-001	8.064E-003	2.799E-002
U-235	4376.294	4267.397	4463.412	23.592	80.2	6.00	0.5000	6	3.007E-002	2.821E-002	7.110E-003	2.901E-002
U-234	4761.063	4521.490	4833.661	79.481	99.8	194.00	1.0000	193	8.479E-001	1.728E-001	8.080E-003	2.805E-002
U-232	5312.808	5073.234	5378.146	87.722	100.1	400.00	4.5000	396	1.374E+000	1.966E-001	1.720E-002	4.633E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:08:23PM 3/25/2007

Sample

Sample Name: F7C010119-023
SampleType: Sample
: JP93X3AD
Sample Collection Date: 1/31/2007 12:32:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0102g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

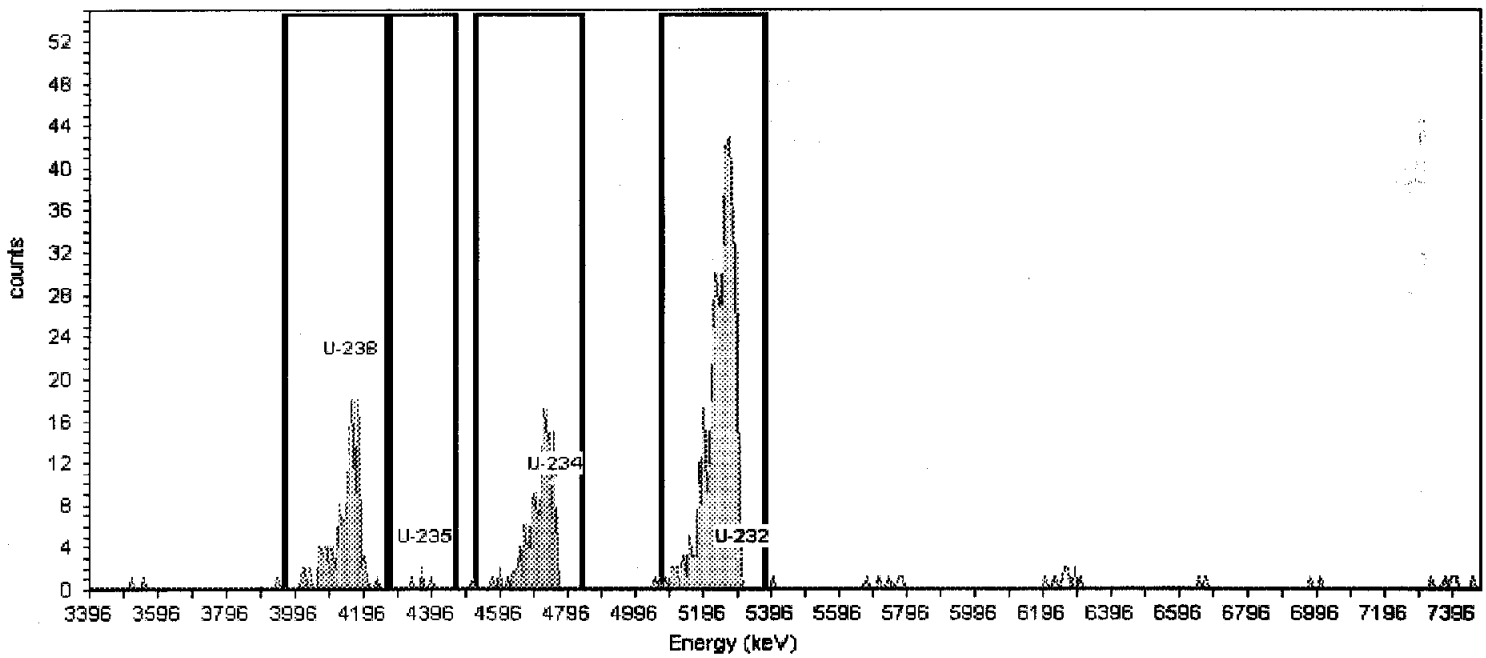
Tracer Nuclide: U-232
Tracer Recovery: 90.05%

Acquisition

Detector: AV4
Serial Number: 41-172B5
Acquisition Start Date: 3/25/2007 1:07:29PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:46:59AM

Calibration Name: Feb2007_AV4
Calibration Date: 2/23/2007 2:26:02PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.56% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV4; Det: AV4; Spectrum #1; Mar-24-2007 09:46



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	59.340	100.0	142.00	0.2500	142	5.534E-001	1.208E-001	3.590E-003	1.775E-002
U-235	4376.294	4267.397	4463.412	37.690	80.2	4.00	0.2500	4	1.826E-002	2.023E-002	4.477E-003	2.213E-002
U-234	4761.063	4521.490	4833.661	64.426	99.8	144.00	0.5000	144	5.614E-001	1.222E-001	5.088E-003	2.076E-002
U-232	5312.808	5073.234	5378.146	72.852	100.1	446.00	2.0000	444	1.569E+000	2.174E-001	1.021E-002	3.104E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:08:29PM 3/25/2007

Analyst: 60040

Sample

Sample Name: F7C010119-024
SampleType: Sample
: JP9303AD
Sample Collection Date: 1/31/2007 1:38:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0086g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

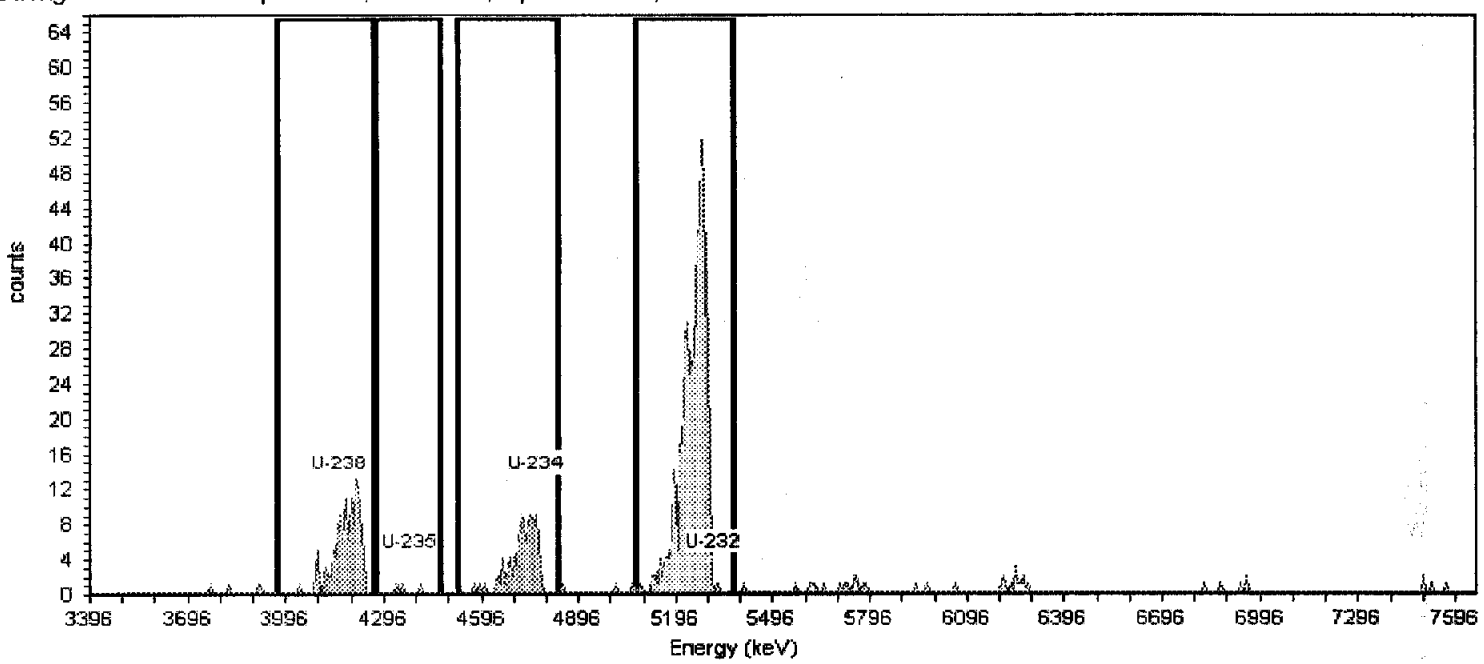
Tracer Nuclide: U-232
Tracer Recovery: 93.64%

Acquisition

Detector: AV6
Serial Number:
Acquisition Start Date: 3/25/2007 1:07:30PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:47:01AM

Calibration Name: Feb2007_AV6
Calibration Date: 2/23/2007 11:02:51AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.89% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV6; Det: AV6; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	82.708	100.0	123.00	0.0000	123	4.564E-001	1.037E-001	0.000E+000	1.004E-002
U-235	4376.294	4267.397	4463.412	29.039	80.2	3.00	0.2500	3	1.272E-002	1.677E-002	4.255E-003	2.103E-002
U-234	4761.063	4521.490	4833.661	74.807	99.8	101.00	0.5000	101	3.737E-001	9.082E-002	4.836E-003	1.973E-002
U-232	5312.808	5073.234	5378.146	72.055	100.1	470.00	2.5000	468	1.633E+000	2.237E-001	1.085E-002	3.179E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:08:33PM 3/25/2007

Sample

Sample Name: F7C010119-025
SampleType: Sample
: JP9323AD
Sample Collection Date: 1/31/2007 12:00:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0075g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

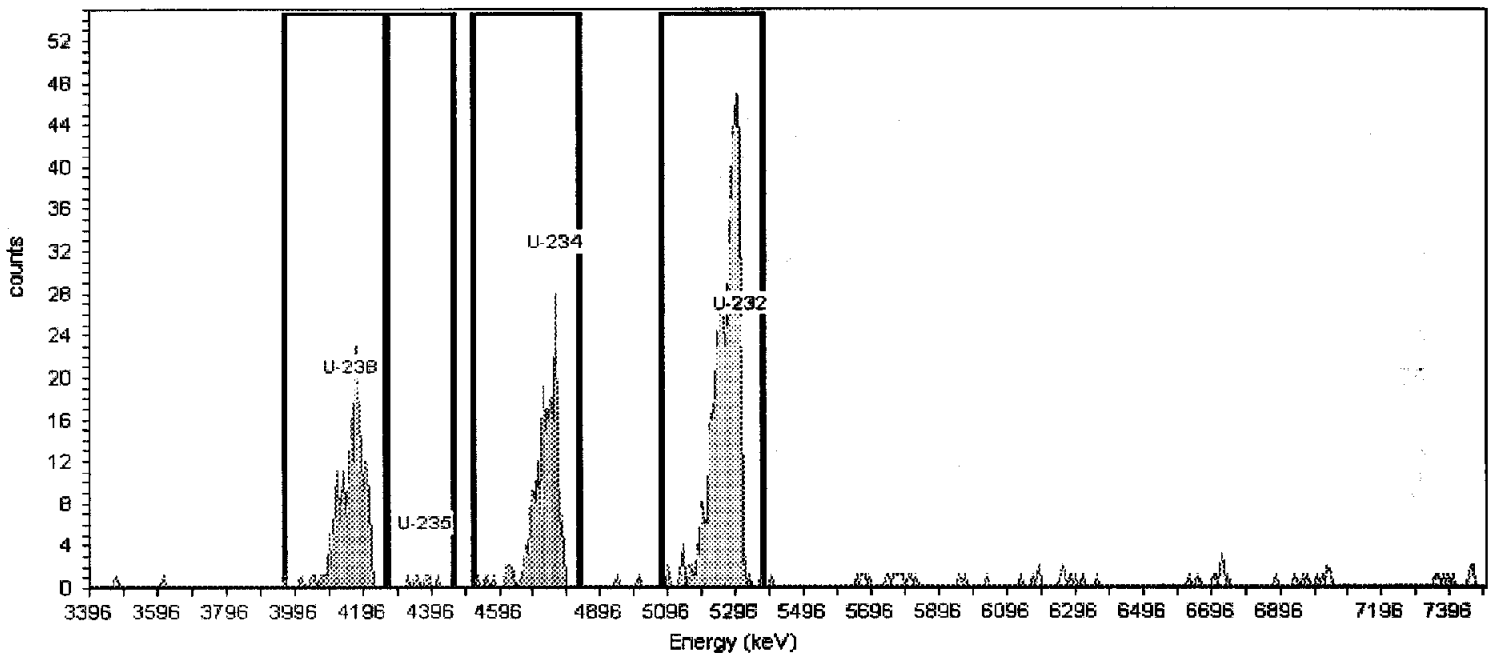
Tracer Nuclide: U-232
Tracer Recovery: 86.86%

Acquisition

Detector: AV7
Serial Number: 41-158X6
Acquisition Start Date: 3/25/2007 1:07:32PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:47:03AM

Calibration Name: Feb2007_AV7
Calibration Date: 2/23/2007 4:51:36PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.15% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV7; Det: AV7; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	77.888	100.0	185.00	0.5000	185	7.316E-001	1.486E-001	5.157E-003	2.104E-002
U-235	4376.294	4267.397	4463.412	47.822	80.2	7.00	0.5000	7	3.214E-002	2.745E-002	6.430E-003	2.624E-002
U-234	4761.063	4521.490	4833.661	71.930	99.8	200.00	0.5000	200	7.927E-001	1.578E-001	5.167E-003	2.109E-002
U-232	5312.808	5073.234	5378.146	79.777	100.1	440.00	2.2500	438	1.516E+000	2.108E-001	1.100E-002	3.278E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:07:46PM 3/25/2007

Sample

Sample Name: F7C010119-026
SampleType: Sample
: JP9343AD
Sample Collection Date: 1/31/2007 1:15:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0020g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

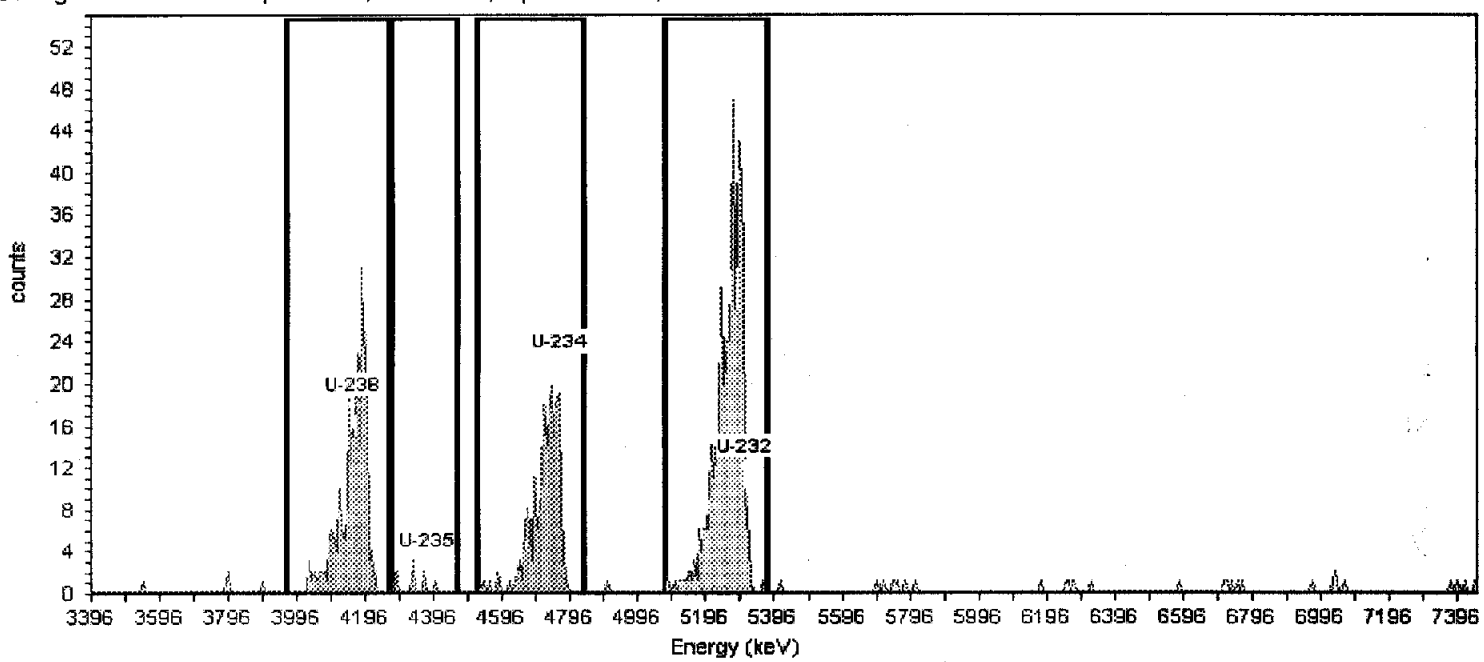
Tracer Nuclide: U-232
Tracer Recovery: 85.59%

Acquisition

Detector: AV8
Serial Number: 41-158X1
Acquisition Start Date: 3/25/2007 1:07:34PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:47:05AM

Calibration Name: Feb2007_AV8
Calibration Date: 2/23/2007 4:51:43PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.03% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV8; Det: AV8; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	60.406	100.0	231.00	1.0000	230	9.321E-001	1.797E-001	7.453E-003	2.587E-002
U-235	4376.294	4267.397	4463.412	64.818	80.2	10.00	0.0000	10	5.053E-002	3.426E-002	0.000E+000	1.367E-002
U-234	4761.063	4521.490	4833.661	65.397	99.8	204.00	0.5000	204	8.264E-001	1.640E-001	5.281E-003	2.155E-002
U-232	5312.808	5073.234	5378.146	69.140	100.1	432.00	2.5000	430	1.498E+000	2.093E-001	1.185E-002	3.472E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:07:53PM 3/25/2007

Analyst: 60040

Sample

Sample Name: F7C010119-027
SampleType: Sample
: JP9373AD
Sample Collection Date: 1/31/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0246g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

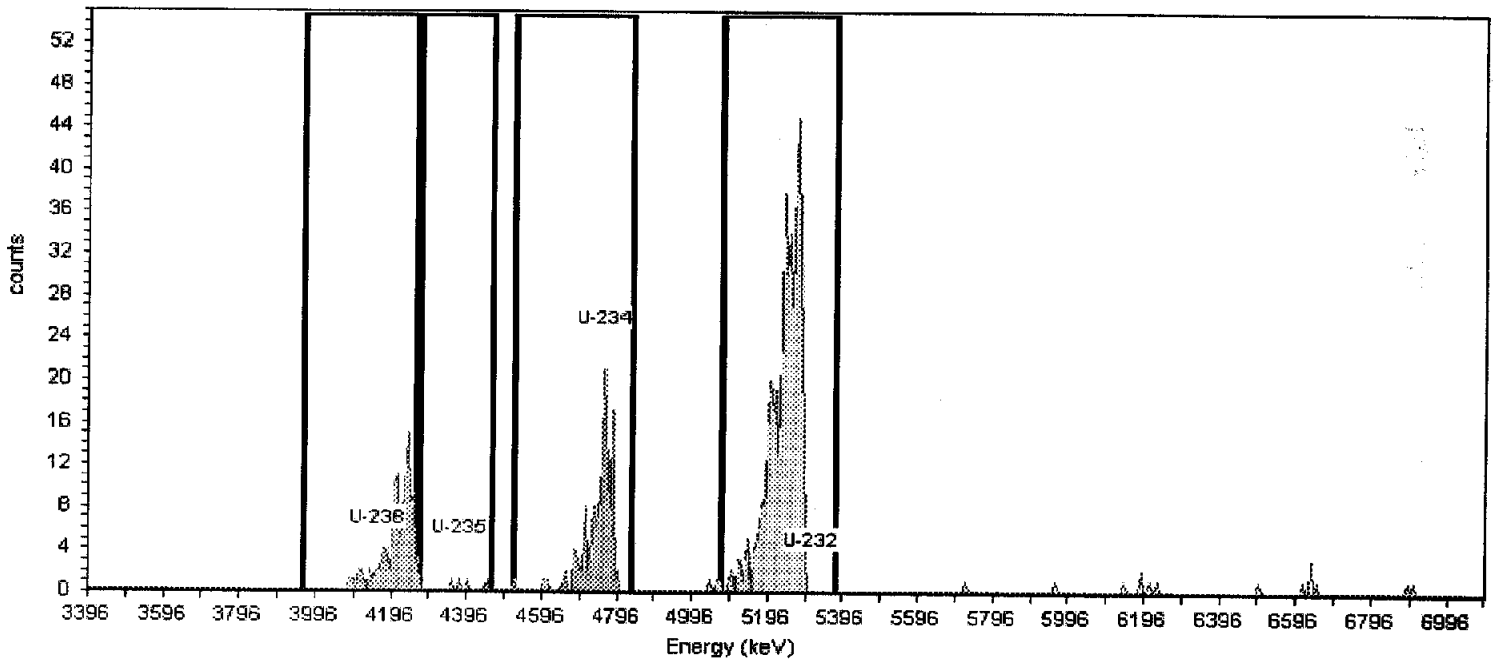
Tracer Nuclide: U-232
Tracer Recovery: 85.11%

Acquisition

Detector: AV9
Serial Number: 41-172R1
Acquisition Start Date: 3/25/2007 1:07:35PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 3/24/2007 9:47:07AM

Calibration Name: Feb2007_AV9
Calibration Date: 2/23/2007 4:50:27PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.67% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV9; Det: AV9; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	35.647	100.0	110.00	0.0000	110	4.492E-001	1.067E-001	0.000E+000	1.105E-002
U-235	4376.294	4267.397	4463.412	10.743	80.2	5.00	0.5000	5	2.291E-002	2.410E-002	6.621E-003	2.702E-002
U-234	4761.063	4521.490	4833.661	54.657	99.8	123.00	0.7500	122	5.002E-001	1.150E-001	6.517E-003	2.411E-002
U-232	5312.808	5073.234	5378.146	73.004	100.1	423.00	1.5000	422	1.473E+000	2.065E-001	9.247E-003	2.960E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:07:56PM 3/25/2007

Sample

Sample Name: F7C010119-028
SampleType: Sample
: JP9393AD
Sample Collection Date: 1/31/2007 12:40:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0019g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

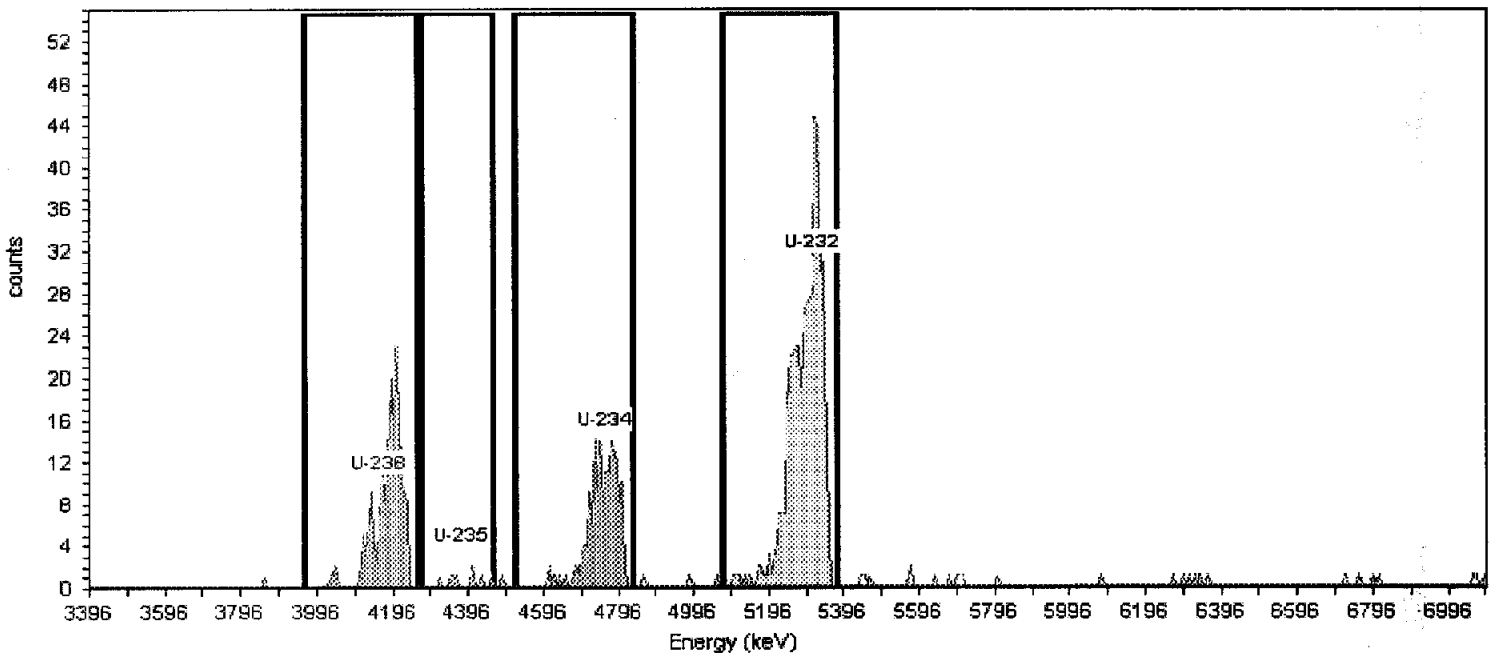
Tracer Nuclide: U-232
Tracer Recovery: 89.18%

Acquisition

Detector: AV11
Serial Number: 41-172Q3
Acquisition Start Date: 3/25/2007 1:07:37PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 3/24/2007 9:47:09AM

Calibration Name: FEB2007_AV11
Calibration Date: 2/28/2007 7:03:01AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.82% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV11; Det: AV11; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	64.278	100.0	174.00	0.5000	174	6.802E-001	1.402E-001	5.098E-003	2.081E-002
U-235	4376.294	4267.397	4463.412	113.173	80.2	8.00	0.2500	8	3.788E-002	2.857E-002	4.495E-003	2.222E-002
U-234	4761.063	4521.490	4833.661	82.892	99.8	161.00	0.2500	161	6.315E-001	1.328E-001	3.612E-003	1.785E-002
U-232	5312.808	5073.234	5378.146	49.397	100.1	445.00	1.0000	444	1.561E+000	2.161E-001	7.249E-003	2.516E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:07:59PM 3/25/2007

Sample

Sample Name: F7C010119-029
SampleType: Sample
: JP94C3AD
Sample Collection Date: 2/2/2007 11:23:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0048g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

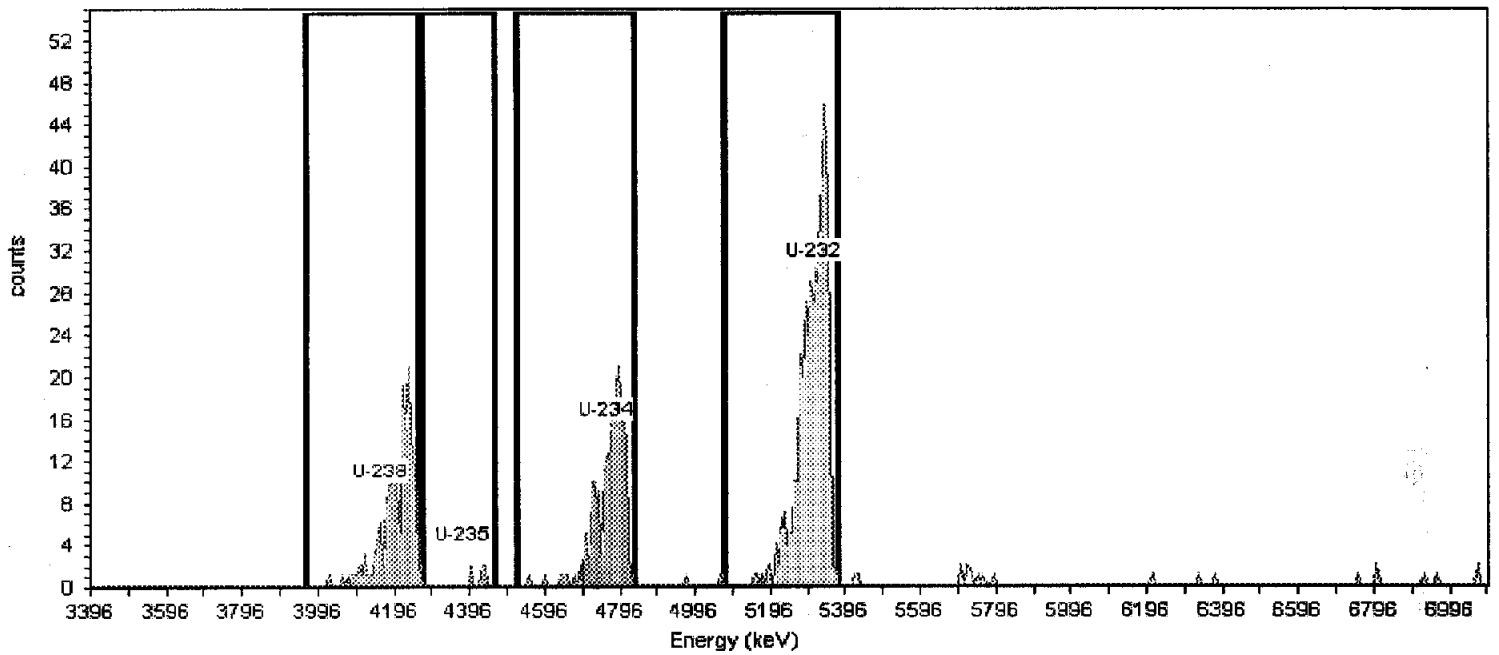
Tracer Nuclide: U-232
Tracer Recovery: 85.14%

Acquisition

Detector: AV12
Serial Number: 41-172Q2
Acquisition Start Date: 3/25/2007 1:07:38PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 3/24/2007 9:47:10AM

Calibration Name: Feb2007_AV12
Calibration Date: 2/24/2007 7:37:40AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.99% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV12; Det: AV12; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	32.086	100.0	176.00	1.2500	175	7.395E-001	1.538E-001	8.701E-003	2.885E-002
U-235	4376.294	4267.397	4463.412	44.695	80.2	6.00	0.2500	6	3.034E-002	2.673E-002	4.852E-003	2.398E-002
U-234	4761.063	4521.490	4833.661	36.258	99.8	193.00	1.0000	192	8.141E-001	1.651E-001	7.798E-003	2.707E-002
U-232	5312.808	5073.234	5378.146	20.424	100.1	413.00	2.2500	411	1.488E+000	2.102E-001	1.174E-002	3.499E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:08:03PM 3/25/2007

Sample

Sample Name: F7C010119-030
SampleType: Sample
: JP94H3AD
Sample Collection Date: 1/31/2007 1:40:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0199g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

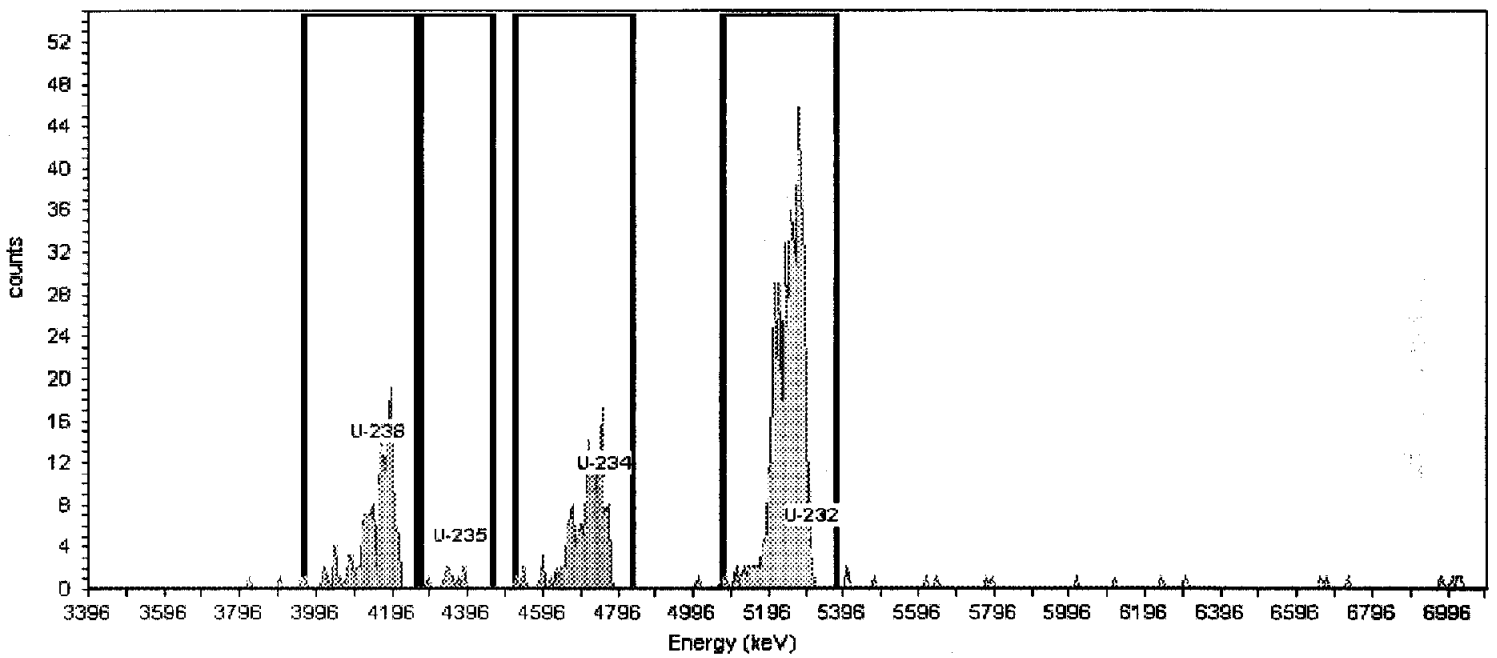
Tracer Nuclide: U-232
Tracer Recovery: 90.09%

Acquisition

Detector: AV13
Serial Number: 41-172Q1
Acquisition Start Date: 3/25/2007 1:07:40PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 3/24/2007 9:47:12AM

Calibration Name: FEB2007_AV13
Calibration Date: 2/28/2007 7:02:48AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 26.65% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV13; Det: AV13; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	64.765	100.0	149.00	0.2500	149	5.757E-001	1.238E-001	3.559E-003	1.759E-002
U-235	4376.294	4267.397	4463.412	21.513	80.2	9.00	0.5000	9	4.102E-002	3.029E-002	6.276E-003	2.561E-002
U-234	4761.063	4521.490	4833.661	70.027	99.8	155.00	1.0000	154	5.972E-001	1.275E-001	7.132E-003	2.476E-002
U-232	5312.808	5073.234	5378.146	89.075	100.1	448.00	2.2500	446	1.563E+000	2.163E-001	1.073E-002	3.200E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:08:13PM 3/25/2007

Analyst: 60040

Sample

Sample Name: F7C010119-031
SampleType: Sample
: JP94P3AD
Sample Collection Date: 1/31/2007 1:50:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0113g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

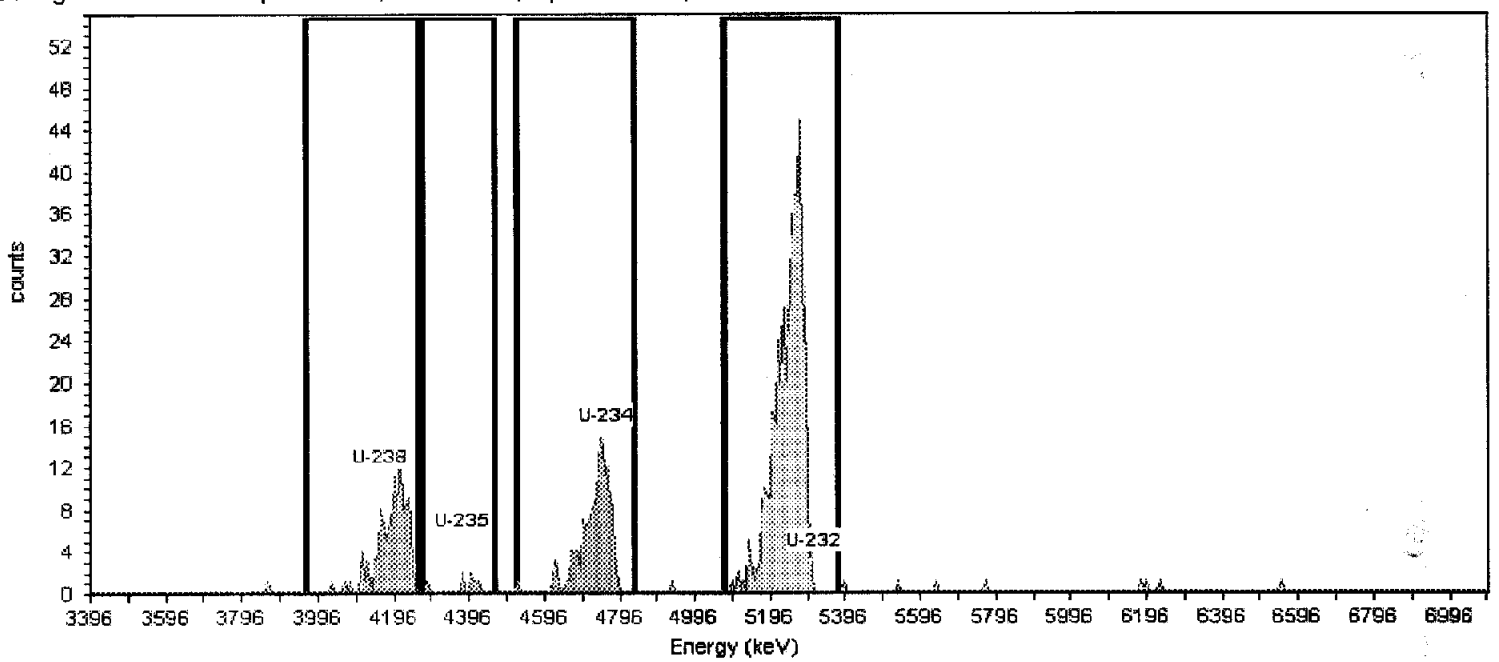
Tracer Nuclide: U-232
Tracer Recovery: 85.01%

Acquisition

Detector: AV14
Serial Number: 41-172C4
Acquisition Start Date: 3/25/2007 1:07:41PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 3/24/2007 9:47:13AM

Calibration Name: Feb2007_AV14
Calibration Date: 2/23/2007 4:50:55PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.68% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV14; Det: AV14; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	46.753	100.0	119.00	0.0000	119	4.897E-001	1.134E-001	0.000E+000	1.114E-002
U-235	4376.294	4267.397	4463.412	50.503	80.2	8.00	0.0000	8	4.105E-002	3.132E-002	0.000E+000	1.389E-002
U-234	4761.063	4521.490	4833.661	66.257	99.8	138.00	0.7500	137	5.660E-001	1.256E-001	6.568E-003	2.429E-002
U-232	5312.808	5073.234	5378.146	77.291	100.1	422.00	1.0000	421	1.481E+000	2.076E-001	7.609E-003	2.642E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:08:16PM 3/25/2007

Analyst: 60040

Sample

Sample Name: F7C010119-032
SampleType: Sample
: JP94R3AD
Sample Collection Date: 1/31/2007 1:10:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0018g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

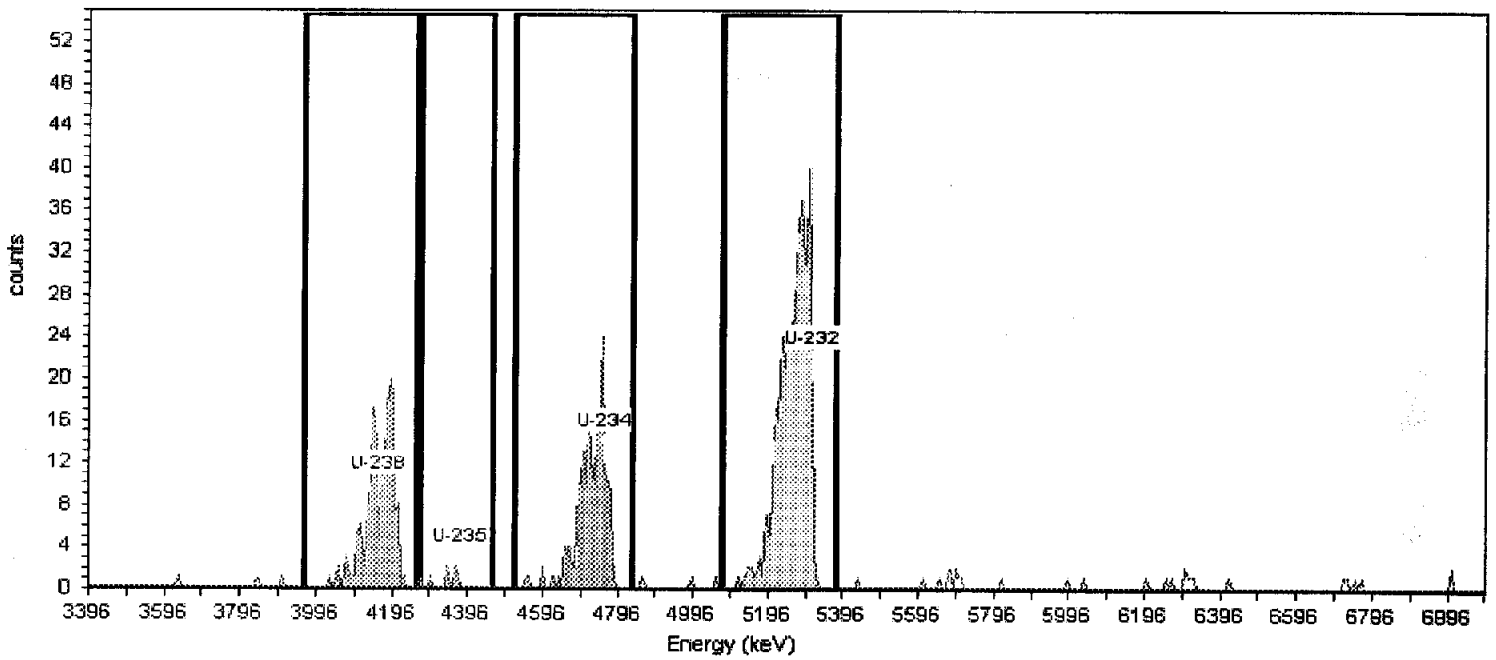
Tracer Nuclide: U-232
Tracer Recovery: 85.29%

Acquisition

Detector: AV15
Serial Number: 41-172C5
Acquisition Start Date: 3/25/2007 1:07:43PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 3/24/2007 9:47:15AM

Calibration Name: Feb2007_AV15
Calibration Date: 2/22/2007 6:30:21PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.51% +/- 0.29% TPU(2 sigma)

Background Info: Sample: AV15; Det: AV15; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	85.910	100.0	178.00	1.5000	177	7.320E-001	1.516E-001	9.342E-003	2.991E-002
U-235	4376.294	4267.397	4463.412	39.316	80.2	7.00	0.0000	7	3.620E-002	2.969E-002	0.000E+000	1.399E-002
U-234	4761.063	4521.490	4833.661	84.412	99.8	189.00	0.7500	188	7.823E-001	1.589E-001	6.619E-003	2.448E-002
U-232	5312.808	5073.234	5378.146	88.557	100.1	422.00	2.2500	420	1.493E+000	2.098E-001	1.150E-002	3.429E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:45:18PM 3/25/2007

Analyst: 60040

Sample

Sample Name: F7C010119-033
SampleType: Sample
: JP9403AD
Sample Collection Date: 1/31/2007 1:15:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0064g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

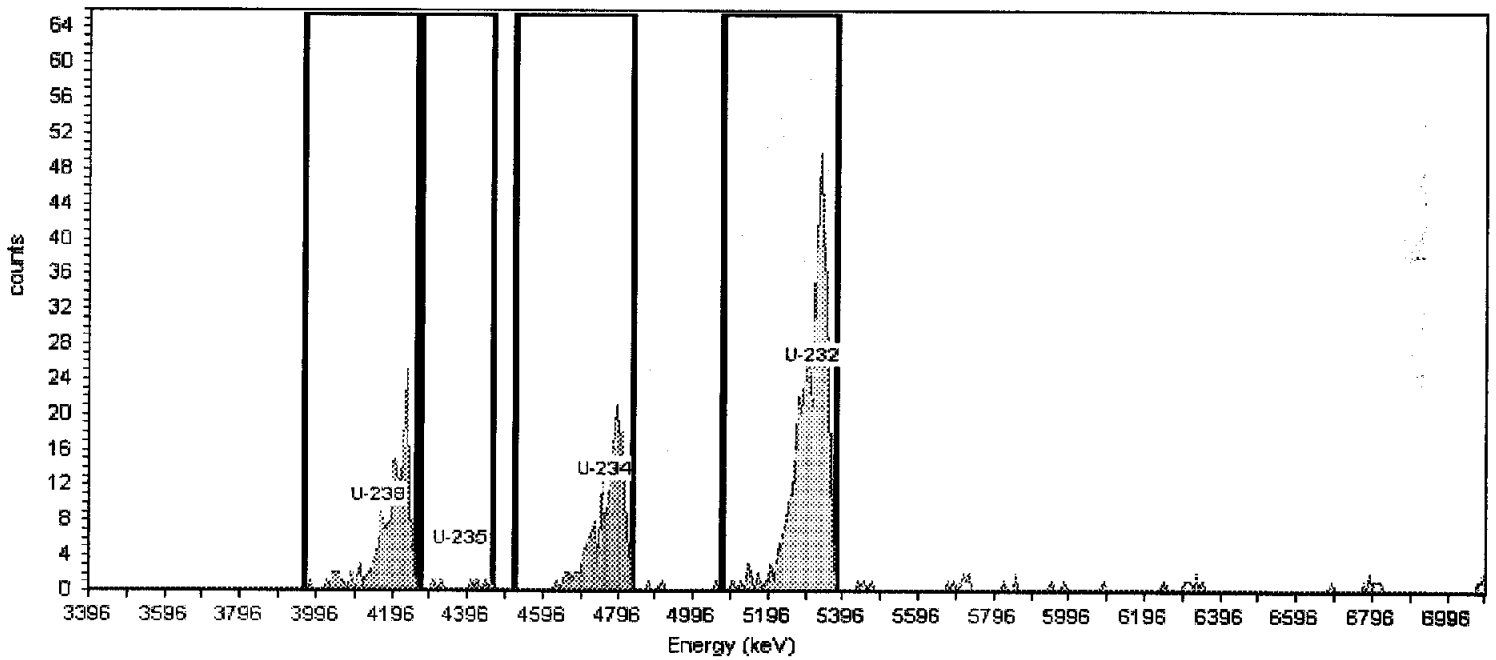
Tracer Nuclide: U-232
Tracer Recovery: 90.57%

Acquisition

Detector: AV20
Serial Number: 41-172R2
Acquisition Start Date: 3/25/2007 1:45:25PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:47:23AM

Calibration Name: Feb2007_AV20
Calibration Date: 2/26/2007 12:00:08PM
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: AV20; Det: AV20; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	19.694	100.0	177.00	1.2500	176	6.723E-001	1.381E-001	7.866E-003	2.608E-002
U-235	4376.294	4267.397	4463.412	11.711	80.2	6.00	0.0000	6	2.862E-002	2.555E-002	0.000E+000	1.291E-002
U-234	4761.063	4521.490	4833.661	24.543	99.8	191.00	0.7500	190	7.293E-001	1.464E-001	6.105E-003	2.258E-002
U-232	5312.808	5073.234	5378.146	23.522	100.1	456.00	2.0000	454	1.582E+000	2.179E-001	1.000E-002	3.041E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:45:22PM 3/25/2007

Analyst: 60040

Sample

Sample Name: F7C010119-034
SampleType: Sample
: JP9443AD
Sample Collection Date: 2/2/2007 1:34:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0157g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

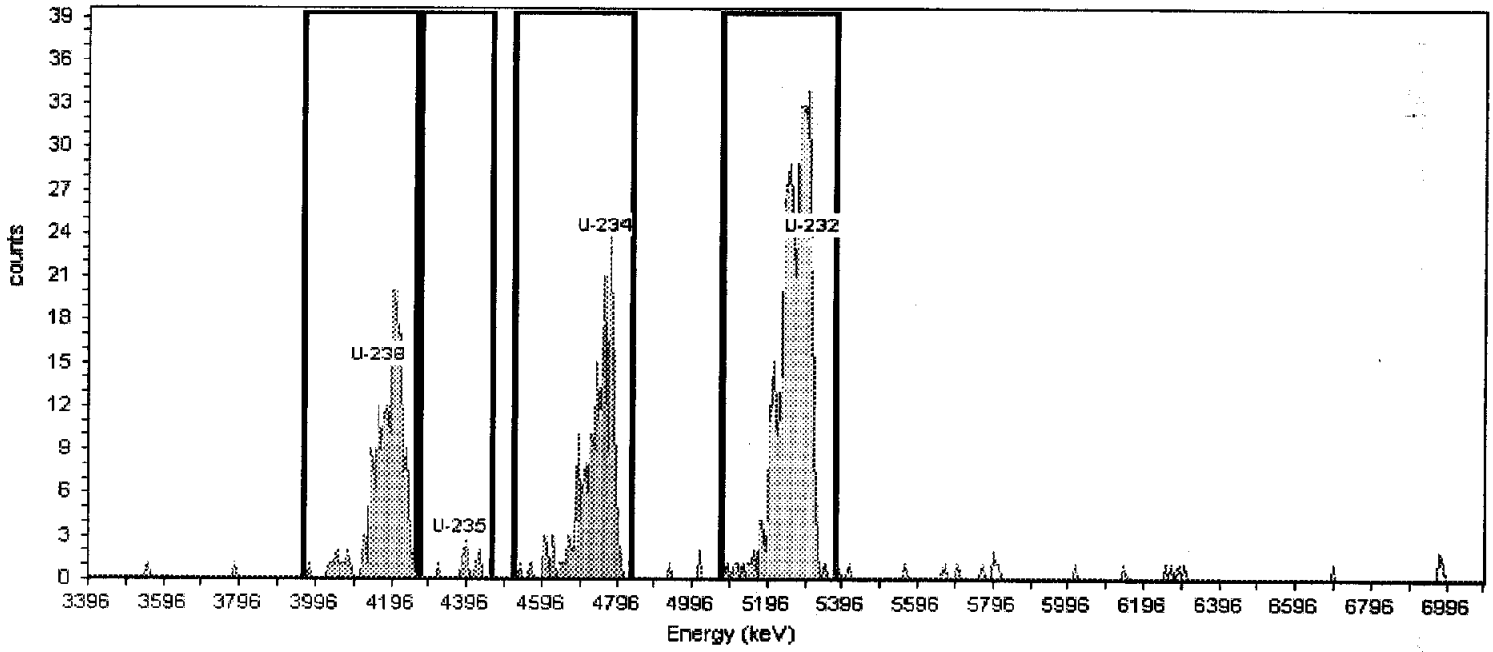
Tracer Nuclide: U-232
Tracer Recovery: 75.55%

Acquisition

Detector: AV23
Serial Number: 41-172R4
Acquisition Start Date: 3/25/2007 1:45:27PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:47:28AM

Calibration Name: Feb2007_AV23
Calibration Date: 2/26/2007 12:00:01PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 28.96% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV23; Det: AV23; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	75.762	100.0	192.00	0.5000	192	8.149E-001	1.652E-001	5.534E-003	2.258E-002
U-235	4376.294	4267.397	4463.412	18.051	80.2	9.00	0.7500	8	4.377E-002	3.371E-002	8.451E-003	3.126E-002
U-234	4761.063	4521.490	4833.661	72.659	99.8	194.00	1.0000	193	8.229E-001	1.667E-001	7.842E-003	2.722E-002
U-232	5312.808	5073.234	5378.146	92.760	100.1	407.00	0.7500	406	1.313E+000	1.857E-001	6.814E-003	2.521E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:45:25PM 3/25/2007

Analyst: 60040

Sample

Sample Name: F7C010119-035
SampleType: Sample
: JP9483AD
Sample Collection Date: 2/2/2007 11:26:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0016g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

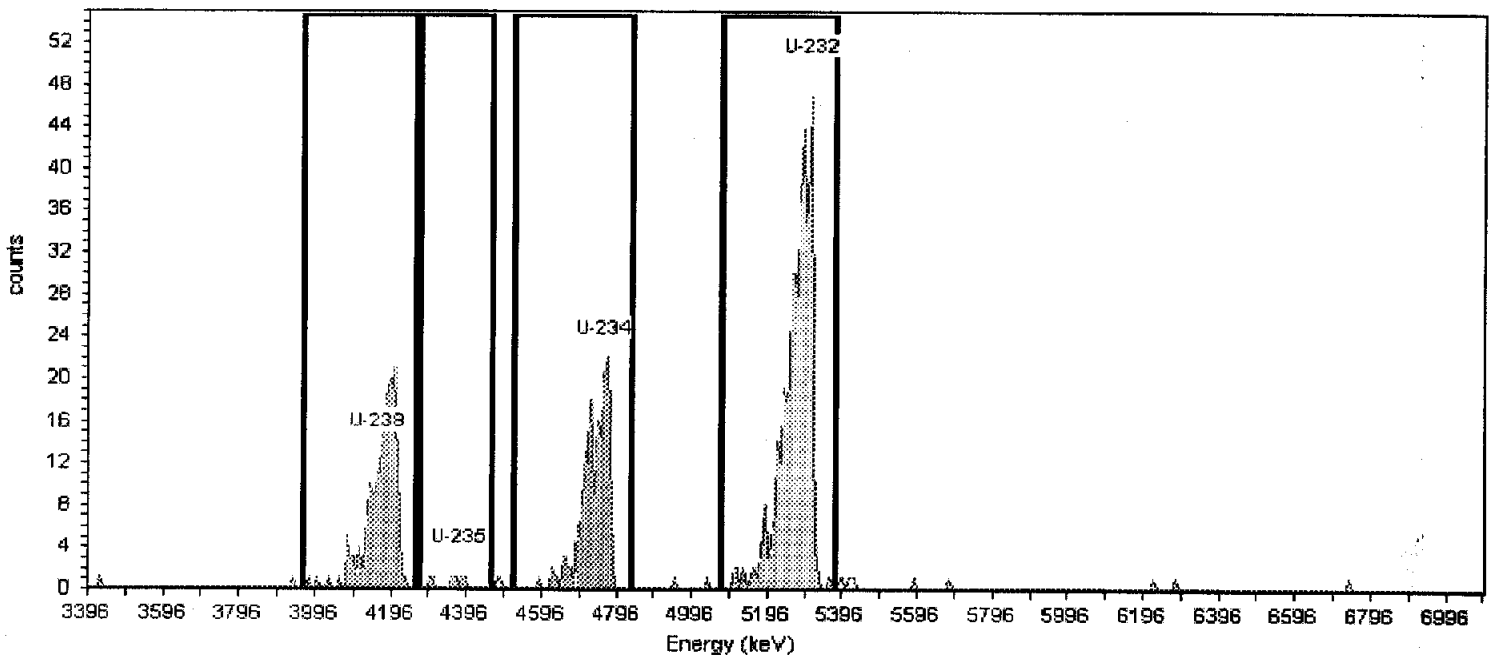
Tracer Nuclide: U-232
Tracer Recovery: 89.79%

Acquisition

Detector: AV24
Serial Number: 41-172R5
Acquisition Start Date: 3/25/2007 1:45:28PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:47:30AM

Calibration Name: Feb2007_AV24
Calibration Date: 2/27/2007 1:48:41PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.05% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV24; Det: AV24; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	64.350	100.0	195.00	0.7500	194	7.788E-001	1.562E-001	6.386E-003	2.362E-002
U-235	4376.294	4267.397	4463.412	77.310	80.2	7.00	0.2500	7	3.374E-002	2.733E-002	4.597E-003	2.272E-002
U-234	4761.063	4521.490	4833.661	80.010	99.8	192.00	0.7500	191	7.683E-001	1.547E-001	6.398E-003	2.367E-002
U-232	5312.808	5073.234	5378.146	70.983	100.1	435.00	0.7500	434	1.572E+000	2.186E-001	6.420E-003	2.375E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:45:29PM 3/25/2007

Sample

Sample Name: F7C010119-036
SampleType: Sample
: JP95C3AD
Sample Collection Date: 1/31/2007 12:00:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 2.0024g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

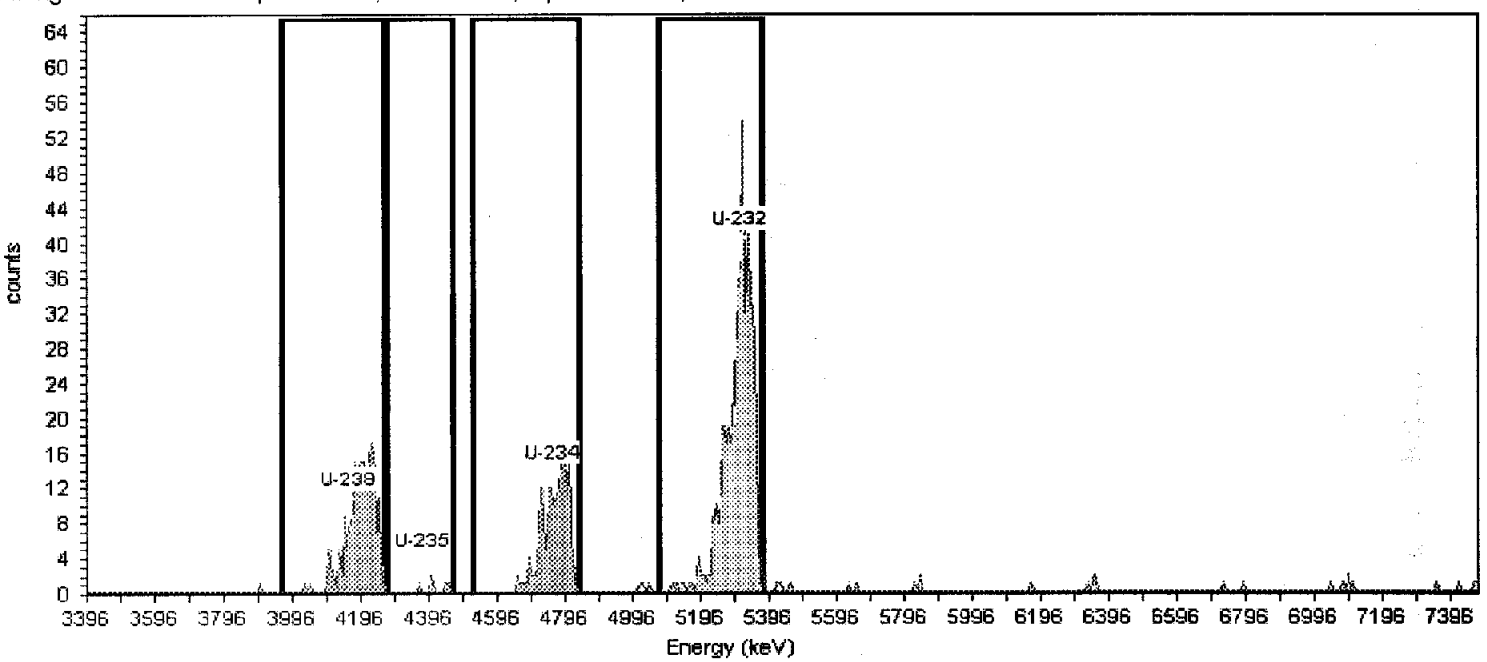
Tracer Nuclide: U-232
Tracer Recovery: 93.44%

Acquisition

Detector: AV45
Serial Number: AV45
Acquisition Start Date: 3/25/2007 1:45:30PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 3/24/2007 9:47:31AM

Calibration Name: Feb2007_AV45
Calibration Date: 2/27/2007 1:48:34PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.75% +/- 0.30% TPU(2 sigma)

Background Info: Sample: AV45; Det: AV45; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	30.385	100.0	202.00	0.2500	202	7.292E-001	1.430E-001	3.324E-003	1.643E-002
U-235	4376.294	4267.397	4463.412	60.102	80.2	6.00	0.5000	6	2.479E-002	2.323E-002	5.861E-003	2.392E-002
U-234	4761.063	4521.490	4833.661	21.653	99.8	173.00	0.7500	172	6.238E-001	1.279E-001	5.768E-003	2.134E-002
U-232	5312.808	5073.234	5378.146	53.287	100.1	483.00	1.5000	482	1.635E+000	2.222E-001	8.185E-003	2.620E-002

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 6:10:23PM 3/22/2007

Sample

Sample Name: F7C200000-167B
SampleType: Blank
: JRDEW1AA
Sample Collection Date: 2/1/2007 11:20:00AM
Comment:

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

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

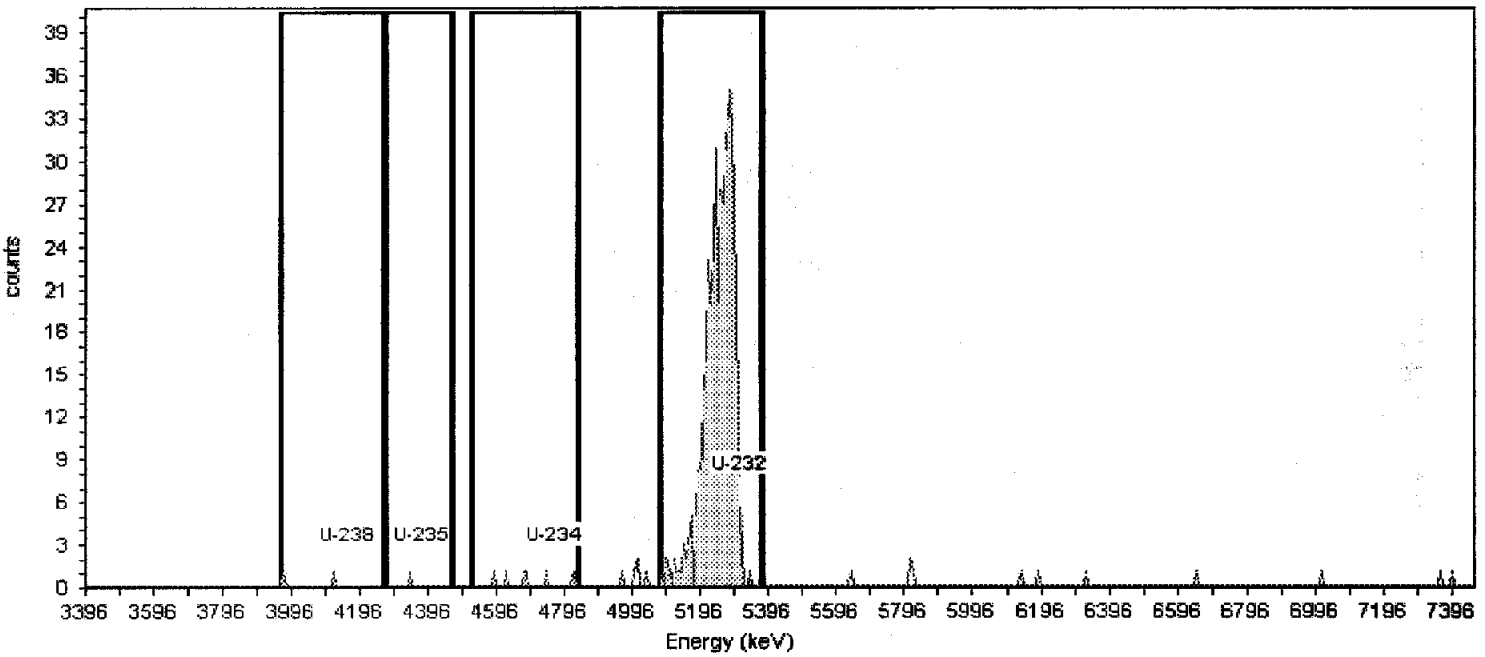
Tracer Nuclide: U-232
Tracer Recovery: 81.21%

Acquisition

Detector: AV46
Serial Number: AV46
Acquisition Start Date: 3/22/2007 2:09:28PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/18/2007 2:05:41PM

Calibration Name: Feb2007_AV46
Calibration Date: 2/23/2007 11:03:08AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.19% +/- 0.28% TPU(2 sigma)

Background Info: Sample: AV46; Det: AV46; Spectrum #1; Feb-18-2007 14:05



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	17.503	100.0	2.00	0.5000	2	6.375E-003	1.347E-002	5.527E-003	2.255E-002
U-235	4376.294	4267.397	4463.412	17.776	80.2	1.00	0.2500	1	3.974E-003	1.186E-002	4.873E-003	2.409E-002
U-234	4761.063	4521.490	4833.661	10.370	99.8	6.00	0.7500	5	2.236E-002	2.235E-002	6.783E-003	2.509E-002
U-232	5312.808	5073.234	5378.146	95.053	100.1	411.00	1.0000	410	1.422E+000	2.007E-001	7.858E-003	2.728E-002

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 6:10:26PM 3/22/2007

Sample

Sample Name: F7C200000-167C
SampleType: Control
: JRDEW1AC
Sample Collection Date: 2/1/2007 11:20:00AM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 0.1314g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7079167
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

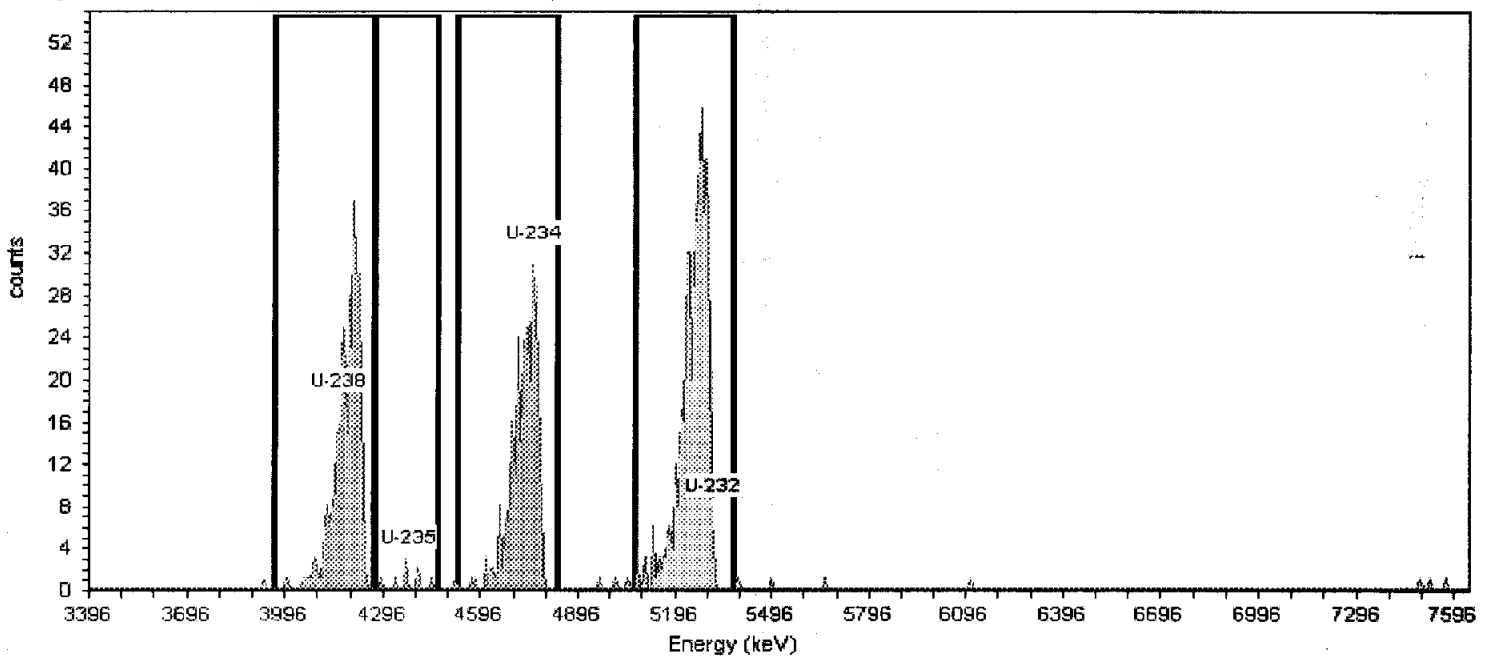
Tracer Nuclide: U-232
Tracer Recovery: 97.69%

Acquisition

Detector: AV47
Serial Number: AV47
Acquisition Start Date: 3/22/2007 2:09:30PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 2/23/2007 11:17:15AM

Calibration Name: Feb2007_AV47
Calibration Date: 2/22/2007 6:30:30PM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.27% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV47; Det: AV47; Spectrum #1; Feb-23-2007 11:17



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/22/2007 2:06:43PM
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	67.906	100.0	323.00	0.2500	323	1.796E+001	3.166E+000	5.118E-002	2.530E-001
U-235	4376.294	4267.397	4463.412	17.680	80.2	10.00	0.0000	10	6.940E-001	4.700E-001	0.000E+000	1.878E-001
U-234	4761.063	4521.490	4833.661	82.484	99.8	315.00	0.2500	315	1.755E+001	3.109E+000	5.129E-002	2.535E-001
U-232	5312.808	5073.234	5378.146	78.138	100.1	478.00	1.5000	477	2.605E+001	3.547E+000	1.260E-001	4.035E-001

ST SEVERN TRENT STL

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:08:26PM 3/25/2007

Sample

Sample Name: F7C230000-157B
SampleType: Blank
: JRLL71AA
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

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

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

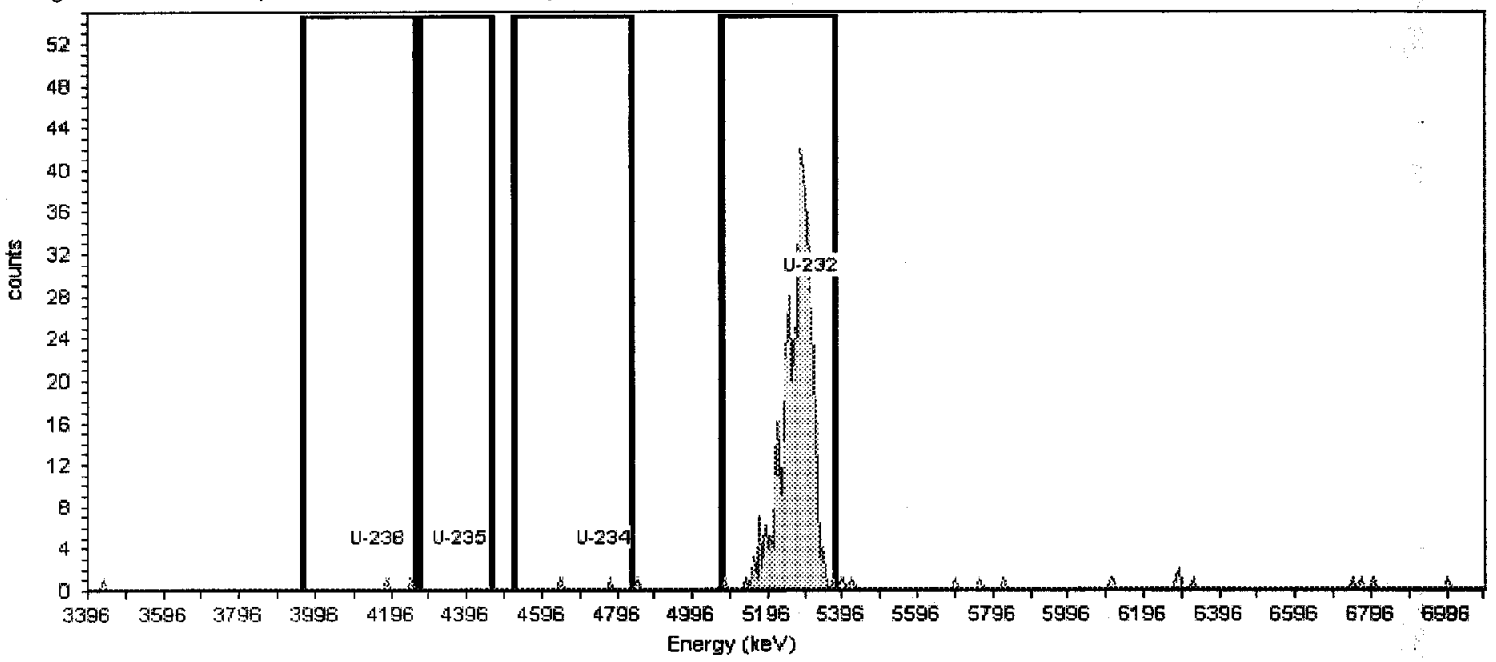
Tracer Nuclide: U-232
Tracer Recovery: 85.16%

Acquisition

Detector: AV17
Serial Number: 41-172Q4
Acquisition Start Date: 3/25/2007 1:07:44PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:47:19AM

Calibration Name: Feb2007_AV17
Calibration Date: 2/26/2007 11:59:46AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.45% +/- 0.26% TPU(2 sigma)

Background Info: Sample: AV17; Det: AV17; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	10.373	100.0	2.00	0.5000	2	6.249E-003	1.320E-002	5.418E-003	2.211E-002
U-235	4376.294	4267.397	4463.412	.000	80.2	0.00	1.0000	-1	-5.194E-003	1.471E-002	9.553E-003	3.316E-002
U-234	4761.063	4521.490	4833.661	43.286	99.8	2.00	1.2500	1	3.131E-003	1.506E-002	8.583E-003	2.846E-002
U-232	5312.808	5073.234	5378.146	75.306	100.1	432.00	13.7500	418	1.492E+000	2.125E-001	2.856E-002	6.846E-002

SEVERN TRENT **STL**

Alpha-Spectroscopy Analysis Report

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

Analyst: 60040 5:07:49PM 3/25/2007

Sample

Sample Name: F7C230000-157C
SampleType: Control
: JRLL71AC
Sample Collection Date: 2/2/2007 12:05:00PM
Comment:

Spectrum #1 Analysis #1
Sample Weight : 0.1323g
Aliquot: N/A Aliquot Fraction: N/A
Lab Preparation:

Batch

Batch Name: 7082157
:
Description:

Client Name: Undefined
Client Contact:

Tracer

Tracer Name: Rad06-0047_U232
Tracer Activity: 77.78 DPM/mL x (Vol.)0.10 mL = 7.78 DPM
Tracer Ref. Date: 8/3/2006 12:00:26PM

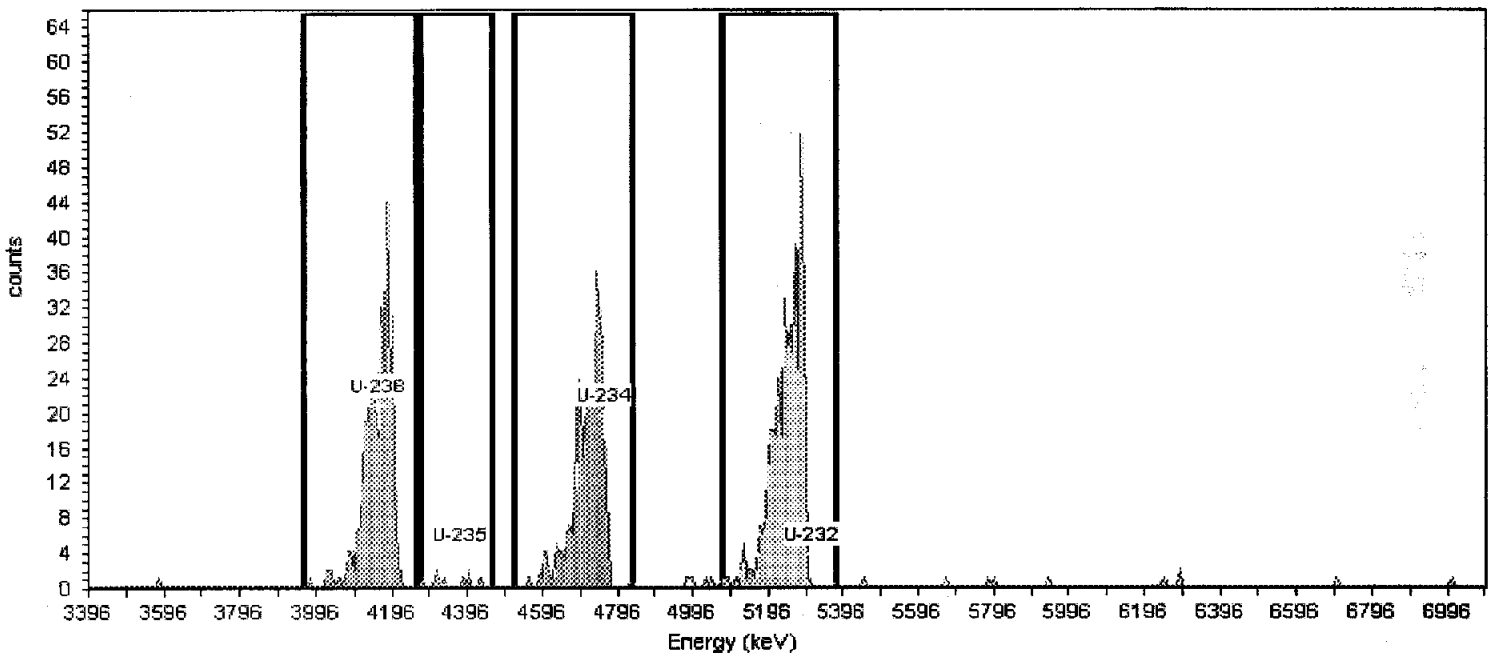
Tracer Nuclide: U-232
Tracer Recovery: 90.76%

Acquisition

Detector: AV18
Serial Number: 41-172C6
Acquisition Start Date: 3/25/2007 1:07:46PM
Live Time: 240.00 min.
Real Time: 240.01 min.
Background Date: 3/24/2007 9:47:20AM

Calibration Name: Feb2007_AV18
Calibration Date: 2/24/2007 7:36:44AM
Energy Cal Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.53% +/- 0.27% TPU(2 sigma)

Background Info: Sample: AV18; Det: AV18; Spectrum #1; Mar-24-2007 09:47



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction: 3/25/2007 1:03:47PM
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	80.597	99.8	323.00	0.7500	322	1.977E+001	3.542E+000	9.770E-002	3.614E-001
U-232	5312.808	5073.234	5378.146	84.319	100.1	433.00	2.7500	430	2.404E+001	3.359E+000	1.877E-001	5.420E-001
U-238	4158.500	3962.485	4260.137	82.915	100.0	333.00	0.7500	332	2.034E+001	3.624E+000	9.751E-002	3.607E-001
U-235	4376.294	4267.397	4463.412	18.900	80.2	9.00	0.2500	9	6.679E-001	4.737E-001	7.019E-002	3.469E-001

SEVERN TRENT STL

Daily Pulsers

Daily Pulser Check - Severn Trent Lab

Pulser Date: 3/22/2007

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	03/22/2007 7:35	7356	7218.7 +/- 5%	Pass	14.0	5 - 50	Pass	222.0	229.0 +/- 5%	Pass	5001	5051.1 +/- 25%	Pass
AV2	03/22/2007 7:34	7336	7468.7 +/- 5%	Pass	15.6	5 - 50	Pass	228.0	222.9 +/- 5%	Pass	5044	5007.5 +/- 25%	Pass
AV3	03/22/2007 7:00	7440	7484.9 +/- 5%	Pass	14.1	5 - 50	Pass	221.9	225.9 +/- 5%	Pass	5000	5028.8 +/- 25%	Pass
AV4	03/22/2007 7:00	7375	7413.7 +/- 5%	Pass	16.7	5 - 50	Pass	227.1	224.9 +/- 5%	Pass	5038	5021.6 +/- 25%	Pass
AV6	03/22/2007 7:00	7354	7476.7 +/- 5%	Pass	11.4	5 - 50	Pass	224.0	224.0 +/- 5%	Pass	5015	5015.3 +/- 25%	Pass
AV7	03/22/2007 7:00	7433	7477.0 +/- 5%	Pass	14.3	5 - 50	Pass	228.1	224.9 +/- 5%	Pass	5045	5021.9 +/- 25%	Pass
AV8	03/22/2007 7:00	7338	7327.4 +/- 5%	Pass	17.4	5 - 50	Pass	225.1	228.0 +/- 5%	Pass	5023	5044.6 +/- 25%	Pass
AV9	03/22/2007 7:00	7718	7519.3 +/- 5%	Pass	15.2	5 - 50	Pass	225.0	227.9 +/- 5%	Pass	5022	5043.3 +/- 25%	Pass
AV11	03/22/2007 7:00	7728	7666.2 +/- 5%	Pass	17.6	5 - 50	Pass	214.1	225.0 +/- 5%	Pass	4943	5022.1 +/- 25%	Pass
AV12	03/22/2007 7:00	7719	7588.7 +/- 5%	Pass	19.2	5 - 50	Pass	224.8	230.0 +/- 5%	Pass	5021	5058.4 +/- 25%	Pass
AV13	03/22/2007 7:00	7724	7584.6 +/- 5%	Pass	13.3	5 - 50	Pass	225.9	228.0 +/- 5%	Pass	5029	5044.1 +/- 25%	Pass
AV14	03/22/2007 7:00	7718	7638.3 +/- 5%	Pass	14.1	5 - 50	Pass	221.9	227.0 +/- 5%	Pass	5000	5037.2 +/- 25%	Pass
AV15	03/22/2007 7:00	7699	7770.5 +/- 5%	Pass	14.9	5 - 50	Pass	221.9	226.9 +/- 5%	Pass	5000	5036.6 +/- 25%	Pass
AV17	03/22/2007 7:00	7773	7619.1 +/- 5%	Pass	50.6	5 - 50	~~FAIL~~	228.5	229.9 +/- 5%	Pass	5048	5058.3 +/- 25%	Pass
AV17	03/22/2007 9:38	7639	7619.1 +/- 5%	Pass	49.7	5 - 50	Pass	226.8	229.9 +/- 5%	Pass	5036	5058.3 +/- 25%	Pass
AV18	03/22/2007 7:00	7739	7714.5 +/- 5%	Pass	15.1	5 - 50	Pass	223.1	226.9 +/- 5%	Pass	5009	5036.4 +/- 25%	Pass
AV19	03/22/2007 7:31	7628	7269.8 +/- 5%	Pass	14.0	5 - 50	Pass	222.1	227.7 +/- 5%	Pass	5001	5041.9 +/- 25%	Pass
AV19	03/22/2007 7:00	7750	7269.8 +/- 5%	~~FAIL~~	14.2	5 - 50	Pass	222.1	227.7 +/- 5%	Pass	5001	5041.9 +/- 25%	Pass
AV20	03/22/2007 7:00	7752	7503.6 +/- 5%	Pass	14.2	5 - 50	Pass	227.0	226.0 +/- 5%	Pass	5037	5029.9 +/- 25%	Pass
AV21	03/22/2007 7:00	7758	7550.9 +/- 5%	Pass	13.3	5 - 50	Pass	223.0	226.0 +/- 5%	Pass	5008	5029.6 +/- 25%	Pass
AV22	03/22/2007 7:00	7739	7691.4 +/- 5%	Pass	14.2	5 - 50	Pass	222.9	225.0 +/- 5%	Pass	5008	5022.4 +/- 25%	Pass
AV23	03/22/2007 7:00	7745	7665.3 +/- 5%	Pass	19.6	5 - 50	Pass	230.0	229.8 +/- 5%	Pass	5059	5057.0 +/- 25%	Pass
AV24	03/22/2007 7:00	7706	7354.0 +/- 5%	Pass	15.9	5 - 50	Pass	223.9	226.9 +/- 5%	Pass	5015	5036.4 +/- 25%	Pass
AV45	03/22/2007 7:00	7648	7593.5 +/- 5%	Pass	24.1	5 - 50	Pass	226.8	225.6 +/- 5%	Pass	5035	5026.9 +/- 25%	Pass
AV46	03/22/2007 7:00	7660	7722.7 +/- 5%	Pass	13.6	5 - 50	Pass	224.1	225.8 +/- 5%	Pass	5016	5028.0 +/- 25%	Pass
AV47	03/22/2007 7:00	7644	7532.5 +/- 5%	Pass	15.1	5 - 50	Pass	224.1	226.0 +/- 5%	Pass	5016	5029.6 +/- 25%	Pass
AV48	03/22/2007 7:00	7646	7717.5 +/- 5%	Pass	14.4	5 - 50	Pass	224.9	224.0 +/- 5%	Pass	5021	5015.2 +/- 25%	Pass
AV49	03/22/2007 7:00	7635	7703.4 +/- 5%	Pass	14.8	5 - 50	Pass	231.9	226.0 +/- 5%	Pass	5072	5029.5 +/- 25%	Pass
AV50	03/22/2007 7:00	7618	7660.9 +/- 5%	Pass	15.9	5 - 50	Pass	225.0	227.0 +/- 5%	Pass	5023	5037.2 +/- 25%	Pass
AV51	03/22/2007 7:00	7366	7070.5 +/- 5%	Pass	14.0	5 - 50	Pass	228.1	223.0 +/- 5%	Pass	5045	5007.6 +/- 25%	Pass
AV52	03/22/2007 7:00	7341	7156.4 +/- 5%	Pass	20.6	5 - 50	Pass	224.2	225.0 +/- 5%	Pass	5017	5022.4 +/- 25%	Pass
AV53	03/22/2007 7:00	7361	7144.1 +/- 5%	Pass	13.4	5 - 50	Pass	224.0	223.0 +/- 5%	Pass	5015	5007.8 +/- 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
AV54	03/22/2007 7:01	7353	7313.1	+/- 5%	Pass	14.7	5 - 50	Pass	228.1	226.0	+/- 5%	Pass	5045	5029.5	+/- 25%	Pass
AV55	03/22/2007 7:01	7349	7132.9	+/- 5%	Pass	14.4	5 - 50	Pass	225.1	226.0	+/- 5%	Pass	5023	5029.7	+/- 25%	Pass
AV56	03/22/2007 7:01	7351	7163.7	+/- 5%	Pass	14.2	5 - 50	Pass	222.1	222.0	+/- 5%	Pass	5002	5000.7	+/- 25%	Pass
AV57	03/22/2007 7:01	7352	7309.5	+/- 5%	Pass	22.3	5 - 50	Pass	226.0	222.0	+/- 5%	Pass	5030	5000.6	+/- 25%	Pass
AV58	03/22/2007 7:01	7349	7249.2	+/- 5%	Pass	14.0	5 - 50	Pass	222.1	223.0	+/- 5%	Pass	5001	5008.0	+/- 25%	Pass
AV59	03/22/2007 7:01	7318	7141.4	+/- 5%	Pass	13.1	5 - 50	Pass	288.0	284.0	+/- 5%	Pass	5480	5450.6	+/- 25%	Pass
AV60	03/22/2007 7:01	7321	7019.7	+/- 5%	Pass	53.8	5 - 50	FAIL	221.3	223.0	+/- 5%	Pass	4995	5007.5	+/- 25%	Pass
AV63	03/22/2007 7:01	7312	7120.8	+/- 5%	Pass	40.0	5 - 50	Pass	223.4	223.0	+/- 5%	Pass	5011	5007.9	+/- 25%	Pass
AV64	03/22/2007 7:01	7315	7153.7	+/- 5%	Pass	14.4	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.3	+/- 25%	Pass
AV65	03/22/2007 7:01	7310	7233.4	+/- 5%	Pass	24.9	5 - 50	Pass	219.0	224.0	+/- 5%	Pass	4979	5015.3	+/- 25%	Pass
AV66	03/22/2007 7:01	7312	7165.5	+/- 5%	Pass	13.9	5 - 50	Pass	219.9	222.0	+/- 5%	Pass	4985	5000.5	+/- 25%	Pass
AV67	03/22/2007 7:01	7449	7128.1	+/- 5%	Pass	18.8	5 - 50	Pass	225.0	224.1	+/- 5%	Pass	5023	5015.6	+/- 25%	Pass
AV68	03/22/2007 7:01	7446	7259.5	+/- 5%	Pass	14.2	5 - 50	Pass	222.0	222.0	+/- 5%	Pass	5000	5000.8	+/- 25%	Pass
AV69	03/22/2007 7:01	7414	7305.4	+/- 5%	Pass	16.4	5 - 50	Pass	221.0	222.0	+/- 5%	Pass	4993	5000.6	+/- 25%	Pass
AV70	03/22/2007 7:01	7444	7406.5	+/- 5%	Pass	14.1	5 - 50	Pass	220.0	222.6	+/- 5%	Pass	4986	5004.7	+/- 25%	Pass
AV71	03/22/2007 7:01	7441	7187.3	+/- 5%	Pass	13.2	5 - 50	Pass	219.9	225.0	+/- 5%	Pass	4986	5022.7	+/- 25%	Pass
AV72	03/22/2007 7:01	7441	7090.0	+/- 5%	Pass	12.9	5 - 50	Pass	221.0	223.9	+/- 5%	Pass	4993	5014.6	+/- 25%	Pass
AV73	03/22/2007 7:01	7439	7251.3	+/- 5%	Pass	22.4	5 - 50	Pass	221.1	225.0	+/- 5%	Pass	4994	5022.4	+/- 25%	Pass
AV75	03/22/2007 7:34	7568	7267.9	+/- 5%	Pass	12.9	5 - 50	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV76	03/22/2007 7:34	7566	7374.3	+/- 5%	Pass	13.6	5 - 50	Pass	224.1	224.0	+/- 5%	Pass	5016	5015.2	+/- 25%	Pass
AV77	03/22/2007 7:31	7561	7497.1	+/- 5%	Pass	13.2	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV77	03/22/2007 7:34	7563	7497.1	+/- 5%	Pass	13.2	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV78	03/22/2007 7:34	7291	7183.8	+/- 5%	Pass	12.6	5 - 50	Pass	223.0	223.3	+/- 5%	Pass	5008	5009.8	+/- 25%	Pass
AV79	03/22/2007 7:34	7559	7349.7	+/- 5%	Pass	13.1	5 - 50	Pass	222.1	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV80	03/22/2007 7:34	7393	7226.4	+/- 5%	Pass	12.8	5 - 50	Pass	223.0	224.1	+/- 5%	Pass	5008	5015.5	+/- 25%	Pass
AV81	03/22/2007 7:34	7554	7453.4	+/- 5%	Pass	13.1	5 - 50	Pass	222.0	223.0	+/- 5%	Pass	5001	5008.1	+/- 25%	Pass
AV82	03/22/2007 7:34	7549	7529.2	+/- 5%	Pass	13.8	5 - 50	Pass	223.9	224.0	+/- 5%	Pass	5015	5015.2	+/- 25%	Pass
AV83	03/22/2007 7:34	7559	7523.7	+/- 5%	Pass	12.9	5 - 50	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV84	03/22/2007 7:34	7433	7637.7	+/- 5%	Pass	12.6	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.7	+/- 25%	Pass
AV85	03/22/2007 7:35	7548	7549.7	+/- 5%	Pass	12.5	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.0	+/- 25%	Pass
AV86	03/22/2007 7:35	7730	7679.0	+/- 5%	Pass	17.3	5 - 50	Pass	224.0	223.9	+/- 5%	Pass	5015	5014.3	+/- 25%	Pass
AV87	03/22/2007 7:35	7436	7512.4	+/- 5%	Pass	12.7	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.7	+/- 25%	Pass
AV88	03/22/2007 7:35	7724	7716.1	+/- 5%	Pass	13.7	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV89	03/22/2007 7:35	7305	7553.8	+/- 5%	Pass	12.9	5 - 50	Pass	221.1	222.6	+/- 5%	Pass	4994	5004.7	+/- 25%	Pass
AV90	03/22/2007 7:35	7719	7474.4	+/- 5%	Pass	13.6	5 - 50	Pass	224.1	224.1	+/- 5%	Pass	5016	5015.6	+/- 25%	Pass
AV92	03/22/2007 7:35	7281	7358.9	+/- 5%	Pass	12.8	5 - 50	Pass	224.1	223.9	+/- 5%	Pass	5016	5014.6	+/- 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
AV93	03/22/2007 7:35	7660	7393.5 +/- 5%	Pass	13.0	5 - 50	Pass	223.0	223.0 +/- 5%	Pass	5008	5008.3 +/- 25%	Pass
AV94	03/22/2007 7:35	7658	7477.9 +/- 5%	Pass	13.1	5 - 50	Pass	222.0	222.0 +/- 5%	Pass	5001	5000.5 +/- 25%	Pass
AV95	03/22/2007 7:35	7260	7432.4 +/- 5%	Pass	13.0	5 - 50	Pass	221.1	222.2 +/- 5%	Pass	4994	5001.9 +/- 25%	Pass
AV96	03/22/2007 7:35	7643	7654.3 +/- 5%	Pass	14.7	5 - 50	Pass	223.1	222.6 +/- 5%	Pass	5009	5005.3 +/- 25%	Pass
AV97	03/22/2007 7:35	7647	7649.9 +/- 5%	Pass	14.6	5 - 50	Pass	222.9	223.8 +/- 5%	Pass	5023	5014.0 +/- 25%	Pass
AV98	03/22/2007 7:35	7598	7582.0 +/- 5%	Pass	13.2	5 - 50	Pass	222.9	223.0 +/- 5%	Pass	5007	5007.6 +/- 25%	Pass

SEVERN TRENT STL

Run Log

Logbook No.: 2925

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	3-22-07	7078327	F7C010119-030	13	240 min	U	GS	
2			-031	14				
3			-032	15				
4			-033	18				
5			-034	19				
6			-035	20				
7			-036	23				
8			F7C000000-327B	24				
9			-327C	17				
10	3-22-07	7079167	F7C010119-007	95	240 min	U	GS	
11			-001X	98				
12			-002	50				
13			-003	53				
14			-004	54				
15			-005	56				
16			-006	58				
17			-007	73				
18			F7C000000-167B	46				
19			-167C	47				
20	3-22-07	7079167	F7C010119-008	1				
21			-009	2				
22			-010	3				
23			-011	4				
24			-012	6				
25			-013	7				
26			-014	8				
27			-015	9				
28			-016	11				
29			-017	12				

Reviewed By: GS Date: 3-22-07

SOP References: STL-RD-0210 Rev 5 01/16/06. 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.

SEVERN TRENT STL

Daily Pulsers

Daily Pulser Check - Severn Trent Lab

Pulser Date: 3/25/2007

		Gross Counts				FWHM (keV)			Pulser Center				Energy (keV)			
Detector	Date/Time	Result	Criteria		P/F	Result	Criteria	P/F	Result	Criteria		P/F	Result	Criteria		P/F
AV1	03/25/2007 7:55	7452	7218.7	+/- 5%	Pass	14.2	5 - 50	Pass	222.0	229.0	+/- 5%	Pass	5001	5051.1	+/- 25%	Pass
AV2	03/25/2007 7:55	7450	7468.7	+/- 5%	Pass	14.0	5 - 50	Pass	228.0	222.9	+/- 5%	Pass	5044	5007.5	+/- 25%	Pass
AV3	03/25/2007 7:54	7444	7484.9	+/- 5%	Pass	13.8	5 - 50	Pass	222.0	225.9	+/- 5%	Pass	5001	5028.8	+/- 25%	Pass
AV4	03/25/2007 7:54	7436	7413.7	+/- 5%	Pass	14.6	5 - 50	Pass	227.1	224.9	+/ 5%	Pass	5037	5021.6	+/- 25%	Pass
AV6	03/25/2007 7:54	7360	7476.7	+/- 5%	Pass	11.2	5 - 50	Pass	223.0	224.0	+/- 5%	Pass	5008	5015.3	+/- 25%	Pass
AV7	03/25/2007 7:54	7438	7477.0	+/- 5%	Pass	13.0	5 - 50	Pass	227.0	224.9	+/- 5%	Pass	5037	5021.9	+/- 25%	Pass
AV8	03/25/2007 7:54	7319	7327.4	+/- 5%	Pass	17.0	5 - 50	Pass	223.8	228.0	+/- 5%	Pass	5014	5044.6	+/- 25%	Pass
AV9	03/25/2007 7:55	7729	7519.3	+/- 5%	Pass	14.1	5 - 50	Pass	224.9	227.9	+/- 5%	Pass	5022	5043.3	+/- 25%	Pass
AV11	03/25/2007 7:55	7670	7666.2	+/- 5%	Pass	16.3	5 - 50	Pass	214.9	225.0	+/- 5%	Pass	4949	5022.1	+/- 25%	Pass
AV12	03/25/2007 7:55	7723	7588.7	+/- 5%	Pass	14.1	5 - 50	Pass	224.8	230.0	+/- 5%	Pass	5021	5058.4	+/- 25%	Pass
AV13	03/25/2007 7:55	7725	7584.6	+/- 5%	Pass	13.4	5 - 50	Pass	225.9	228.0	+/- 5%	Pass	5029	5044.1	+/- 25%	Pass
AV14	03/25/2007 7:55	7721	7638.3	+/- 5%	Pass	13.7	5 - 50	Pass	221.9	227.0	+/- 5%	Pass	5000	5037.2	+/- 25%	Pass
AV15	03/25/2007 7:55	7700	7770.5	+/- 5%	Pass	14.9	5 - 50	Pass	221.9	226.9	+/- 5%	Pass	5000	5036.6	+/- 25%	Pass
AV17	03/25/2007 8:34	7680	7619.1	+/- 5%	Pass	28.7	5 - 50	Pass	227.0	229.9	+/- 5%	Pass	5037	5058.3	+/- 25%	Pass
AV18	03/25/2007 8:34	7041	7714.5	+/- 5%	FAIL	12.9	5 - 50	Pass	223.2	226.9	+/- 5%	Pass	5009	5036.4	+/- 25%	Pass
AV18	03/25/2007 9:06	7623	7714.5	+/- 5%	Pass	14.0	5 - 50	Pass	221.8	226.9	+/- 5%	Pass	5000	5036.4	+/- 25%	Pass
AV19	03/25/2007 7:55	7754	7269.8	+/- 5%	FAIL	14.0	5 - 50	Pass	219.9	227.7	+/- 5%	Pass	4986	5041.9	+/- 25%	Pass
AV19	03/25/2007 8:34	7656	7269.8	+/- 5%	FAIL	13.6	5 - 50	Pass	219.9	227.7	+/- 5%	Pass	4986	5041.9	+/- 25%	Pass
AV20	03/25/2007 7:55	7747	7503.6	+/- 5%	Pass	14.5	5 - 50	Pass	227.1	226.0	+/- 5%	Pass	5037	5029.9	+/- 25%	Pass
AV21	03/25/2007 7:55	7749	7550.9	+/- 5%	Pass	13.5	5 - 50	Pass	223.0	226.0	+/- 5%	Pass	5008	5029.6	+/- 25%	Pass
AV22	03/25/2007 7:55	7740	7691.4	+/- 5%	Pass	14.6	5 - 50	Pass	222.9	225.0	+/- 5%	Pass	5007	5022.4	+/- 25%	Pass
AV23	03/25/2007 7:55	7746	7665.3	+/- 5%	Pass	17.5	5 - 50	Pass	230.0	229.8	+/- 5%	Pass	5059	5057.0	+/- 25%	Pass
AV24	03/25/2007 7:55	7723	7354.0	+/- 5%	FAIL	15.2	5 - 50	Pass	224.1	226.9	+/- 5%	Pass	5016	5036.4	+/- 25%	Pass
AV24	03/25/2007 8:33	7637	7354.0	+/- 5%	Pass	15.2	5 - 50	Pass	224.1	226.9	+/- 5%	Pass	5016	5036.4	+/- 25%	Pass
AV45	03/25/2007 7:55	7656	7593.5	+/- 5%	Pass	28.0	5 - 50	Pass	228.1	225.6	+/- 5%	Pass	5045	5026.9	+/- 25%	Pass
AV46	03/25/2007 7:55	7465	7722.7	+/- 5%	Pass	12.9	5 - 50	Pass	224.0	225.8	+/- 5%	Pass	5015	5028.0	+/- 25%	Pass
AV47	03/25/2007 8:33	7573	7532.5	+/- 5%	Pass	14.6	5 - 50	Pass	224.0	226.0	+/- 5%	Pass	5015	5029.6	+/- 25%	Pass
AV48	03/25/2007 8:33	7570	7717.5	+/- 5%	Pass	14.3	5 - 50	Pass	224.9	224.0	+/- 5%	Pass	5021	5015.2	+/- 25%	Pass
AV49	03/25/2007 7:55	7636	7703.4	+/- 5%	Pass	14.6	5 - 50	Pass	231.8	226.0	+/- 5%	Pass	5072	5029.5	+/- 25%	Pass
AV50	03/25/2007 7:55	7623	7660.9	+/- 5%	Pass	15.1	5 - 50	Pass	226.1	227.0	+/- 5%	Pass	5031	5037.2	+/- 25%	Pass
AV51	03/25/2007 7:55	7365	7070.5	+/- 5%	Pass	13.6	5 - 50	Pass	227.0	223.0	+/- 5%	Pass	5037	5007.6	+/- 25%	Pass
AV52	03/25/2007 7:55	7364	7156.4	+/- 5%	Pass	17.7	5 - 50	Pass	224.2	225.0	+/- 5%	Pass	5016	5022.4	+/- 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
AV53	03/25/2007 7:55	7361	7144.1	+/- 5%	Pass	13.3	5 - 50	Pass	224.0	223.0	+/- 5%	Pass	5015	5007.8	+/- 25%	Pass
AV54	03/25/2007 7:55	7358	7313.1	+/- 5%	Pass	13.6	5 - 50	Pass	228.0	226.0	+/- 5%	Pass	5044	5029.5	+/- 25%	Pass
AV55	03/25/2007 7:55	7330	7132.9	+/- 5%	Pass	15.3	5 - 50	Pass	225.1	226.0	+/- 5%	Pass	5023	5029.7	+/- 25%	Pass
AV56	03/25/2007 7:55	7354	7163.7	+/- 5%	Pass	13.6	5 - 50	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.7	+/- 25%	Pass
AV57	03/25/2007 7:55	7344	7309.5	+/- 5%	Pass	24.7	5 - 50	Pass	226.1	222.0	+/- 5%	Pass	5030	5000.6	+/- 25%	Pass
AV58	03/25/2007 7:55	7349	7249.2	+/- 5%	Pass	13.6	5 - 50	Pass	222.0	223.0	+/- 5%	Pass	5001	5008.0	+/- 25%	Pass
AV59	03/25/2007 7:55	7235	7141.4	+/- 5%	Pass	13.5	5 - 50	Pass	287.0	284.0	+/- 5%	Pass	5472	5450.6	+/- 25%	Pass
AV64	03/25/2007 7:55	7229	7153.7	+/- 5%	Pass	14.0	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.3	+/- 25%	Pass
AV65	03/25/2007 7:55	7225	7233.4	+/- 5%	Pass	27.8	5 - 50	Pass	219.4	224.0	+/- 5%	Pass	4982	5015.3	+/- 25%	Pass
AV66	03/25/2007 7:55	7226	7165.5	+/- 5%	Pass	14.1	5 - 50	Pass	219.9	222.0	+/- 5%	Pass	4985	5000.5	+/- 25%	Pass
AV67	03/25/2007 8:33	7451	7128.1	+/- 5%	Pass	19.0	5 - 50	Pass	224.9	224.1	+/- 5%	Pass	5022	5015.6	+/- 25%	Pass
AV67	03/25/2007 8:33	7451	7128.1	+/- 5%	Pass	19.0	5 - 50	Pass	224.9	224.1	+/- 5%	Pass	5022	5015.6	+/- 25%	Pass
AV68	03/25/2007 8:33	7443	7259.5	+/- 5%	Pass	14.8	5 - 50	Pass	221.9	222.0	+/- 5%	Pass	5000	5000.8	+/- 25%	Pass
AV69	03/25/2007 8:33	7407	7305.4	+/- 5%	Pass	16.5	5 - 50	Pass	221.0	222.0	+/- 5%	Pass	4993	5000.6	+/- 25%	Pass
AV69	03/25/2007 8:33	7407	7305.4	+/- 5%	Pass	16.5	5 - 50	Pass	221.0	222.0	+/- 5%	Pass	4993	5000.6	+/- 25%	Pass
AV70	03/25/2007 8:33	7444	7406.5	+/- 5%	Pass	13.5	5 - 50	Pass	220.0	222.6	+/- 5%	Pass	4986	5004.7	+/- 25%	Pass
AV71	03/25/2007 9:06	7364	7187.3	+/- 5%	Pass	13.2	5 - 50	Pass	219.0	225.0	+/- 5%	Pass	4979	5022.7	+/- 25%	Pass
AV72	03/25/2007 9:06	7361	7090.0	+/- 5%	Pass	13.2	5 - 50	Pass	219.9	223.9	+/- 5%	Pass	4986	5014.6	+/- 25%	Pass
AV73	03/25/2007 8:33	7349	7251.3	+/- 5%	Pass	21.5	5 - 50	Pass	222.1	225.0	+/- 5%	Pass	5002	5022.4	+/- 25%	Pass
AV75	03/25/2007 8:15	7579	7267.9	+/- 5%	Pass	13.4	5 - 50	Pass	222.9	224.1	+/- 5%	Pass	5007	5015.5	+/- 25%	Pass
AV76	03/25/2007 8:15	7576	7374.3	+/- 5%	Pass	13.7	5 - 50	Pass	224.1	224.0	+/- 5%	Pass	5016	5015.2	+/- 25%	Pass
AV77	03/25/2007 8:15	7539	7497.1	+/- 5%	Pass	14.1	5 - 50	Pass	223.9	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV78	03/25/2007 8:15	6110	7183.8	+/- 5%	FAIL	6.7	5 - 50	Pass	221.0	223.3	+/- 5%	Pass	4993	5009.8	+/- 25%	Pass
AV78	03/25/2007 9:06	5972	7183.8	+/- 5%	FAIL	6.8	5 - 50	Pass	221.0	223.3	+/- 5%	Pass	4993	5009.8	+/- 25%	Pass
AV79	03/25/2007 8:15	7541	7349.7	+/- 5%	Pass	13.6	5 - 50	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV80	03/25/2007 8:15	7567	7226.4	+/- 5%	Pass	14.0	5 - 50	Pass	222.9	224.1	+/- 5%	Pass	5007	5015.5	+/- 25%	Pass
AV81	03/25/2007 8:15	7592	7453.4	+/- 5%	Pass	13.5	5 - 50	Pass	222.0	223.0	+/- 5%	Pass	5000	5008.1	+/- 25%	Pass
AV82	03/25/2007 8:15	7566	7529.2	+/- 5%	Pass	14.0	5 - 50	Pass	225.1	224.0	+/- 5%	Pass	5023	5015.2	+/- 25%	Pass
AV83	03/25/2007 8:16	7575	7523.7	+/- 5%	Pass	12.7	5 - 50	Pass	222.0	222.0	+/- 5%	Pass	5001	5000.4	+/- 25%	Pass
AV84	03/25/2007 8:16	7220	7637.7	+/- 5%	FAIL	13.3	5 - 50	Pass	224.2	223.0	+/- 5%	Pass	5016	5007.7	+/- 25%	Pass
AV84	03/25/2007 8:34	7153	7637.7	+/- 5%	FAIL	13.1	5 - 50	Pass	222.9	223.0	+/- 5%	Pass	5007	5007.7	+/- 25%	Pass
AV85	03/25/2007 8:16	7497	7549.7	+/- 5%	Pass	12.3	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5008.0	+/- 25%	Pass
AV86	03/25/2007 8:16	7700	7679.0	+/- 5%	Pass	17.1	5 - 50	Pass	224.1	223.9	+/- 5%	Pass	5016	5014.3	+/- 25%	Pass
AV87	03/25/2007 8:16	7436	7512.4	+/- 5%	Pass	12.5	5 - 50	Pass	223.0	223.0	+/- 5%	Pass	5008	5007.7	+/- 25%	Pass
AV88	03/25/2007 8:16	7692	7716.1	+/- 5%	Pass	16.2	5 - 50	Pass	224.0	224.0	+/- 5%	Pass	5015	5015.4	+/- 25%	Pass
AV89	03/25/2007 8:16	7717	7553.8	+/- 5%	Pass	13.6	5 - 50	Pass	221.1	222.6	+/- 5%	Pass	4994	5004.7	+/- 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
AV90	03/25/2007 8:16	7717	7474.4 +/- 5%	Pass	13.4	5 - 50	Pass	224.0	224.1 +/- 5%	Pass	5015	5015.6 +/- 25%	Pass
AV92	03/25/2007 8:16	7371	7358.9 +/- 5%	Pass	12.3	5 - 50	Pass	224.1	223.9 +/- 5%	Pass	5016	5014.6 +/- 25%	Pass
AV93	03/25/2007 8:16	7655	7393.5 +/- 5%	Pass	13.0	5 - 50	Pass	223.0	223.0 +/- 5%	Pass	5008	5008.3 +/- 25%	Pass
AV94	03/25/2007 8:16	7654	7477.9 +/- 5%	Pass	13.2	5 - 50	Pass	222.0	222.0 +/- 5%	Pass	5001	5000.5 +/- 25%	Pass
AV95	03/25/2007 8:16	7321	7432.4 +/- 5%	Pass	12.8	5 - 50	Pass	221.0	222.2 +/- 5%	Pass	4994	5001.9 +/- 25%	Pass
AV96	03/25/2007 8:16	7647	7654.3 +/- 5%	Pass	13.9	5 - 50	Pass	223.1	222.6 +/- 5%	Pass	5008	5005.3 +/- 25%	Pass
AV97	03/25/2007 8:16	7638	7649.9 +/- 5%	Pass	15.7	5 - 50	Pass	222.9	223.8 +/- 5%	Pass	5023	5014.0 +/- 25%	Pass
AV98	03/25/2007 8:16	7640	7582.0 +/- 5%	Pass	13.4	5 - 50	Pass	222.9	223.0 +/- 5%	Pass	5007	5007.6 +/- 25%	Pass

SEVERN TRENT STL

Run Log

Logbook No.: 2925

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	3-25-07	7080218	F7C210000-218C	21	240 min	Th	GS	MW
2	3-25-07	7080293	A7C150270-001	49	180 min.	Th	GS	
3			-001X	48				
4			-002	50				
5			-003	53				
6			-004	54				
7			-005	56				
8			-006	58				
9			-007	73				
10			F7C210000-293B	46				
11			-293C	47				
12	3-25-07	7082157	F7C010119-021	1	240 min.	U	GS	
13			-021X	2				
14			-022	3				
15			-023	4				
16			-024	6				
17			-025	7				
18			-026	8				
19			-027	9				
20			-028	11				
21			-029	12				
22			-030	13				
23			-031	14				
24			-032	15				
25			F7C230000157B	17				
26			-157C	18				
27	3-25-07	7082157	F7C010119-033	20				
28			-034	23				
29			-035	24				

Reviewed By: GS Date: 3-25-07

SOP References: STL-RD-0210 Rev 5 01/16/06. 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.: 2925

STL
St. Louis

Alpha Spectrometry Runlog

	Date	Batch #	Sample #	Detector	Count Time	Analyte	Setup Initials	Process Initials
1	3-25-07	7082157	F7C010119-036	45	240min.	U	GS	WW
2	3-25-07	7080210	F7C160253-008	48	180min.	U	GS	
3			-008X	50				
4			-009	53				
5			-010	54				
6			-011	56				
7			-012	58				
8			F7C210000-2106	73				
9			-2106	46				
10	3/25/07	7080325	F7C160253-004	1	180min	Np	WW	WW
11			-005	2				
12			-006	3				
13			-007	4				
14			-013	6				
15			-013X	7				
16			-014	8				
17			-015	9				
18			-016	11				
19			F7C210006-375B	12				
20			-375C	13				
21			F7C210159-007	14				
22			-008	15				
23			-009	17				
24			-010	18				
25			-011	20				
26			-012	23				
27		7080151	F7C160253-008	24				
28			-008X	45				
29			-009	48				

Reviewed By: WW Date: 3/25/07

SOP References: STL-RD-0210 Rev 5 01/16/06. 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.

3/60

SEVERN TRENT STL

Prep Report for:

Uranium, Isotopic by Alpha Spectroscopy

Batch: 7079167 **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
F7C010119-001	JP92V2AD	2.0072E+000 g	1.00	2.0072E+000 g	rad06-0047	U-232	0.10	N
		45						
F7C010119-001X	JP92V1AK	2.0026E+000 g	1.00	2.0026E+000 g	rad06-0047	U-232	0.10	N
		48						
F7C010119-002	JP9202AD	2.0196E+000 g	1.00	2.0196E+000 g	rad06-0047	U-232	0.10	N
		50						
F7C010119-003	JP9212AD	2.0033E+000 g	1.00	2.0033E+000 g	rad06-0047	U-232	0.10	N
		53						
F7C010119-004	JP9222AD	2.0059E+000 g	1.00	2.0059E+000 g	rad06-0047	U-232	0.10	N
		54						
F7C010119-005	JP9252AD	2.0201E+000 g	1.00	2.0201E+000 g	rad06-0047	U-232	0.10	N
		56						
F7C010119-006	JP9262AD	2.0072E+000 g	1.00	2.0072E+000 g	rad06-0047	U-232	0.10	N
		58						
F7C010119-007	JP9272AD	2.0019E+000 g	1.00	2.0019E+000 g	rad06-0047	U-232	0.10	N
		73						
F7C010119-008	JP9282AD	2.0034E+000 g	1.00	2.0034E+000 g	rad06-0047	U-232	0.10	N
		1						
F7C010119-009	JP93A2AD	2.0057E+000 g	1.00	2.0057E+000 g	rad06-0047	U-232	0.10	N
		2						
F7C010119-010	JP93C2AD	2.0090E+000 g	1.00	2.0090E+000 g	rad06-0047	U-232	0.10	N
		3						
F7C010119-011	JP93D2AD	2.0102E+000 g	1.00	2.0102E+000 g	rad06-0047	U-232	0.10	N
		4						
F7C010119-012	JP93E2AD	2.0111E+000 g	1.00	2.0111E+000 g	rad06-0047	U-232	0.10	N
		6						
F7C010119-013	JP93F2AD	2.0177E+000 g	1.00	2.0177E+000 g	rad06-0047	U-232	0.10	N
		7						
F7C010119-014	JP93G2AD	2.0040E+000 g	1.00	2.0040E+000 g	rad06-0047	U-232	0.10	N
		8						
F7C010119-015	JP93H2AD	2.0185E+000 g	1.00	2.0185E+000 g	rad06-0047	U-232	0.10	N
		9						
F7C010119-016	JP93L2AD	2.0035E+000 g	1.00	2.0035E+000 g	rad06-0047	U-232	0.10	N
		11						

RUSH

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F7C010119-017	JP93N2AD	2.0016E+000 g	1.00	2.0016E+000 g	rad06-0047	U-232	0.10	N
F7C010119-018	JP93P2AD	2.0113E+000 g	1.00	2.0113E+000 g	rad06-0047	U-232	0.10	N
F7C010119-019	JP93Q2AD	2.0177E+000 g	1.00	2.0177E+000 g	rad06-0047	U-232	0.10	N
F7C010119-020	JP93R2AD	2.0106E+000 g	1.00	2.0106E+000 g	rad06-0047	U-232	0.10	N
F7C200000-167B	JRDEW1AA	2.0000E+000 g	1.00	2.0000E+000 g	rad06-0047	U-232	0.10	N
F7C200000-167C	JRDEW1AC	1.3140E-001 g	1.00	1.3140E-001 g	rad06-0047	U-232	0.10	N

12
13
14
15
46
47

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7C200000-167C	TRM-3_IsoU	U-234	4.351E+001 dpm/g	0.13 g	5/29/2003 12:00:00AM	1.960E+001 pCi/g
F7C200000-167C	TRM-3_IsoU	U-238	4.351E+001 dpm/g	0.13 g	5/29/2003 12:00:00AM	1.960E+001 pCi/g

SM — Spiked By
FLP — Spike Verified By
3/20/07 — 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

Column Analyst — 3-22-7 Date — BS Coprecipitated By — 3/22/07 Precip Date

Reviewed By — 3-23-07 Review Date

BS Analyst/Relenquished By — 3/22/07 Release Date — GS Received By — 3-22-07 Receipt Date

240 min. 3/20

SEVERN TRENT **STL**

Prep Report for:

Uranium, Isotopic by Alpha Spectroscopy

Batch: 7082157 **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
F7C010119-021	JP93V3AD	2.0030E+000 g	1.00	2.0030E+000 g	rad06-0047	U-232	0.10	N
F7C010119-021X	JP93V1AL	2.0027E+000 g	1.00	2.0027E+000 g	rad06-0047	U-232	0.10	N
F7C010119-022	JP93W3AD	2.0095E+000 g	1.00	2.0095E+000 g	rad06-0047	U-232	0.10	N
F7C010119-023	JP93X3AD	2.0102E+000 g	1.00	2.0102E+000 g	rad06-0047	U-232	0.10	N
F7C010119-024	JP9303AD	2.0086E+000 g	1.00	2.0086E+000 g	rad06-0047	U-232	0.10	N
F7C010119-025	JP9323AD	2.0075E+000 g	1.00	2.0075E+000 g	rad06-0047	U-232	0.10	N
F7C010119-026	JP9343AD	2.0020E+000 g	1.00	2.0020E+000 g	rad06-0047	U-232	0.10	N
F7C010119-027	JP9373AD	2.0246E+000 g	1.00	2.0246E+000 g	rad06-0047	U-232	0.10	N
F7C010119-028	JP9393AD	2.0019E+000 g	1.00	2.0019E+000 g	rad06-0047	U-232	0.10	N
F7C010119-029	JP94C3AD	2.0048E+000 g	1.00	2.0048E+000 g	rad06-0047	U-232	0.10	N
F7C010119-030	JP94H3AD	2.0199E+000 g	1.00	2.0199E+000 g	rad06-0047	U-232	0.10	N
F7C010119-031	JP94P3AD	2.0113E+000 g	1.00	2.0113E+000 g	rad06-0047	U-232	0.10	N
F7C010119-032	JP94R3AD	2.0018E+000 g	1.00	2.0018E+000 g	rad06-0047	U-232	0.10	N
F7C010119-033	JP9403AD	2.0064E+000 g	1.00	2.0064E+000 g	rad06-0047	U-232	0.10	N
F7C010119-034	JP9443AD	2.0157E+000 g	1.00	2.0157E+000 g	rad06-0047	U-232	0.10	N
F7C010119-035	JP9483AD	2.0016E+000 g	1.00	2.0016E+000 g	rad06-0047	U-232	0.10	N
F7C010119-036	JP95C3AD	2.0024E+000 g	1.00	2.0024E+000 g	rad06-0047	U-232	0.10	N

1 2 3 4 6 7 8 9 11 12 13 14 15 20 23 24 45

SampID	WRKNO	Aliquot	Dilution	Adj Aliquot	TracerID	TracerAnalyte	TracerAliquot	Low Level
F7C230000-157B	JRLL71AA	2.0000E+000 g	1.00	2.0000E+000 g	rad06-0047	U-232	0.10	N
F7C230000-157C	JRLL71AC	1.3230E-001 g	1.00	1.3230E-001 g	rad06-0047	U-232	0.10	N

17

18

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7C230000-157C	TRM-3_IsoU	U-234	4.351E+001 dpm/g	0.13 g	5/29/2003 12:00:00AM	1.960E+001 pCi/g
F7C230000-157C	TRM-3_IsoU	U-238	4.351E+001 dpm/g	0.13 g	5/29/2003 12:00:00AM	1.960E+001 pCi/g

KW — Spiked By

SAL — Spike Verified By

3/23/07 — 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 3-27-7	1.00

Column Analyst — Date: 3-25-7

Coprecipitated By — Precip Date: 3-25-7

Reviewed By — Review Date: 3/25/07

Analyst/Relenquished By — Release Date: 3-25-7

Received By — Receipt Date: 3-25-07

SEVERN TRENT STL

Monthly Background
Alpha vision
February 2007

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:02:53AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV1
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Feb2007
Description:

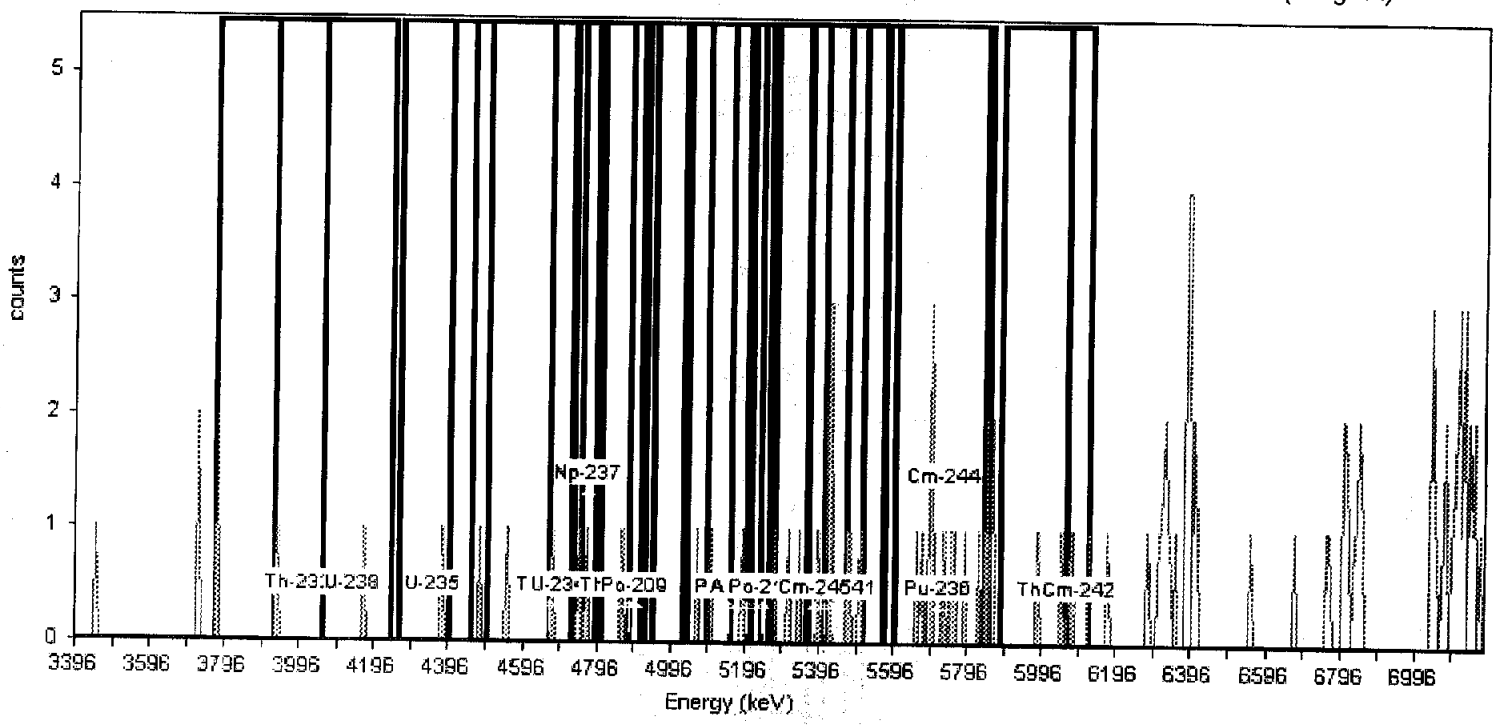
Acquisition

Detector: AV1 , SN: 41-158W6
Acquisition Start Date: 2/18/2007 2:05:37PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV1
Calibration Date: 1/26/2007 12:11:02PM

Energy Calibration Equation:

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

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



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundRoi
Nuclide Library: Background ROI Library
Total Background Counts: 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	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
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	12.00	1.250E-002	3.756E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	13.00	1.354E-002	3.898E-003
Am-241	5.45	5.27	5.57	13.00	1.354E-002	3.898E-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	12.00	1.250E-002	3.756E-003
Cm-244	5.73	5.60	5.86	14.00	1.458E-002	4.034E-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	3.00	3.125E-003	2.083E-003

ST

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:59AM 2/19/2007

Sample

Sample Name: AV2 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

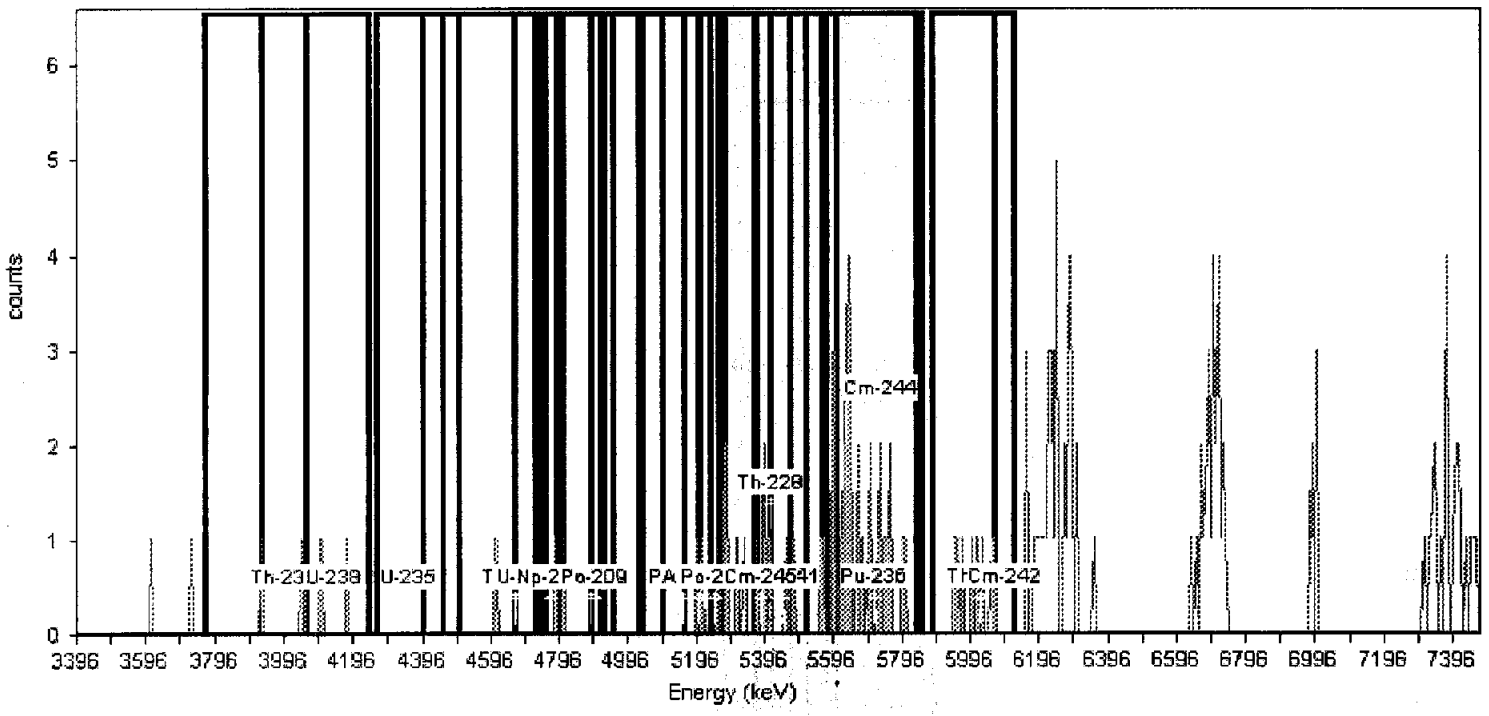
Acquisition

Detector: AV2 , SN: 41-158W7
Acquisition Start Date: 2/18/2007 2:05:39PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV2
Calibration Date: 1/26/2007 12:11:09PM

Energy Calibration Equation:

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

Efficiency: 26.25% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 150.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.37	10.00	1.042E-002	3.455E-003
Th-228	5.41	5.16	5.47	15.00	1.563E-002	4.167E-003
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	14.00	1.458E-002	4.034E-003
Am-241	5.45	5.27	5.57	15.00	1.563E-002	4.167E-003
Cm-245	5.39	5.36	5.41	5.00	5.208E-003	2.552E-003
Th-232	3.99	3.77	4.06	2.00	2.083E-003	1.804E-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
Pu-236	5.72	5.57	5.84	29.00	3.021E-002	5.705E-003
Cm-244	5.73	5.60	5.86	26.00	2.708E-002	5.413E-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	1.00	1.042E-003	1.473E-003

ST

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:03AM 2/19/2007

Sample

Sample Name: AV3 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

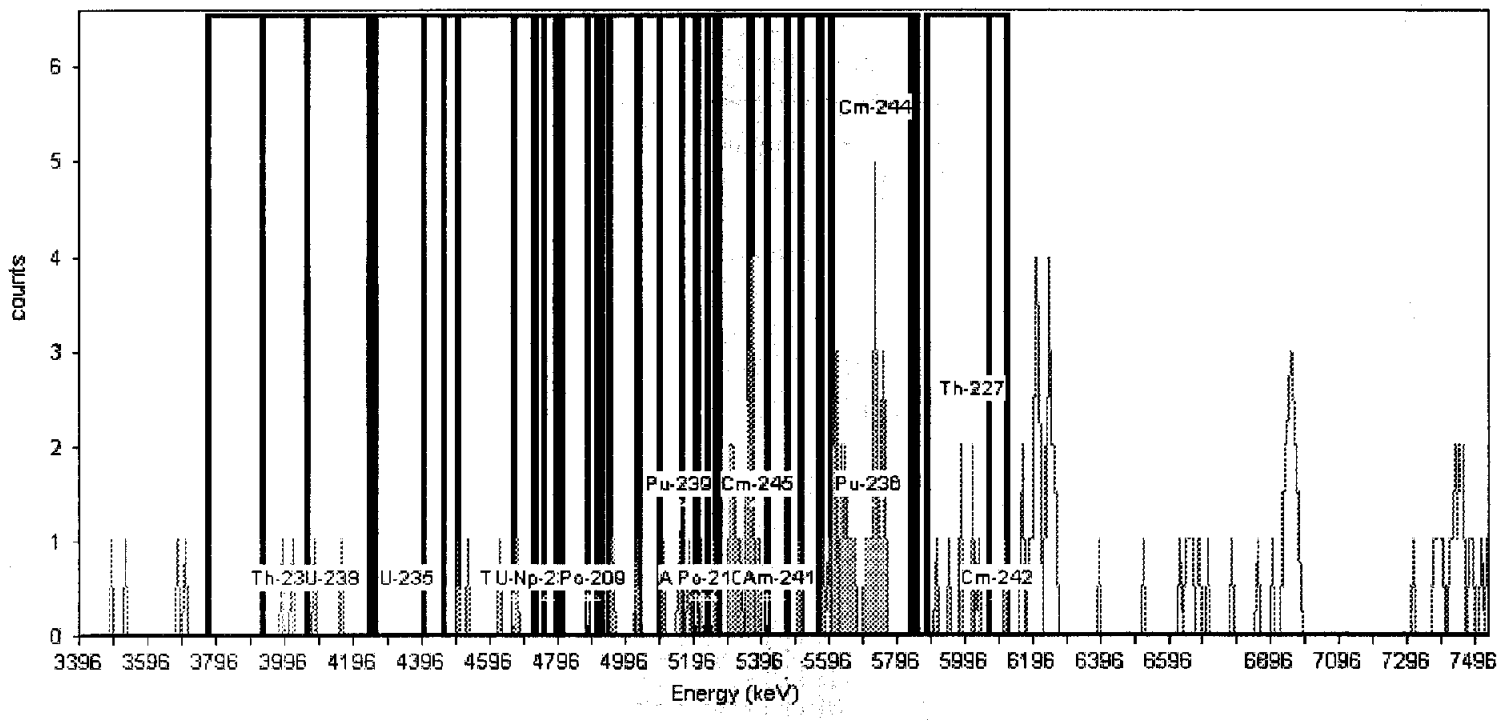
Acquisition

Detector: AV3 , SN: 41-158X5
Acquisition Start Date: 2/18/2007 2:05:40PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV3
Calibration Date: 1/26/2007 12:11:16PM

Energy Calibration Equation:

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

Efficiency: 27.10% +/- 0.29% TPU(2 sigma)



General Analysis

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

Nuclide Library: Background ROI Library

Total Background Counts: 153.00

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	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	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Am-243	5.20	5.03	5.28	6.00	6.250E-003	2.756E-003
U-232	5.23	5.04	5.37	21.00	2.187E-002	4.886E-003
Th-228	5.41	5.16	5.47	21.00	2.187E-002	4.886E-003
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	20.00	2.083E-002	4.774E-003
Am-241	5.45	5.27	5.57	19.00	1.979E-002	4.658E-003
Cm-245	5.39	5.36	5.41	8.00	8.333E-003	3.125E-003
Pu-236	5.72	5.57	5.84	32.00	3.333E-002	5.984E-003
Cm-244	5.73	5.60	5.86	30.00	3.125E-002	5.800E-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	1.00	1.042E-003	1.473E-003

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:03:12AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV4
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Feb2007
Description:

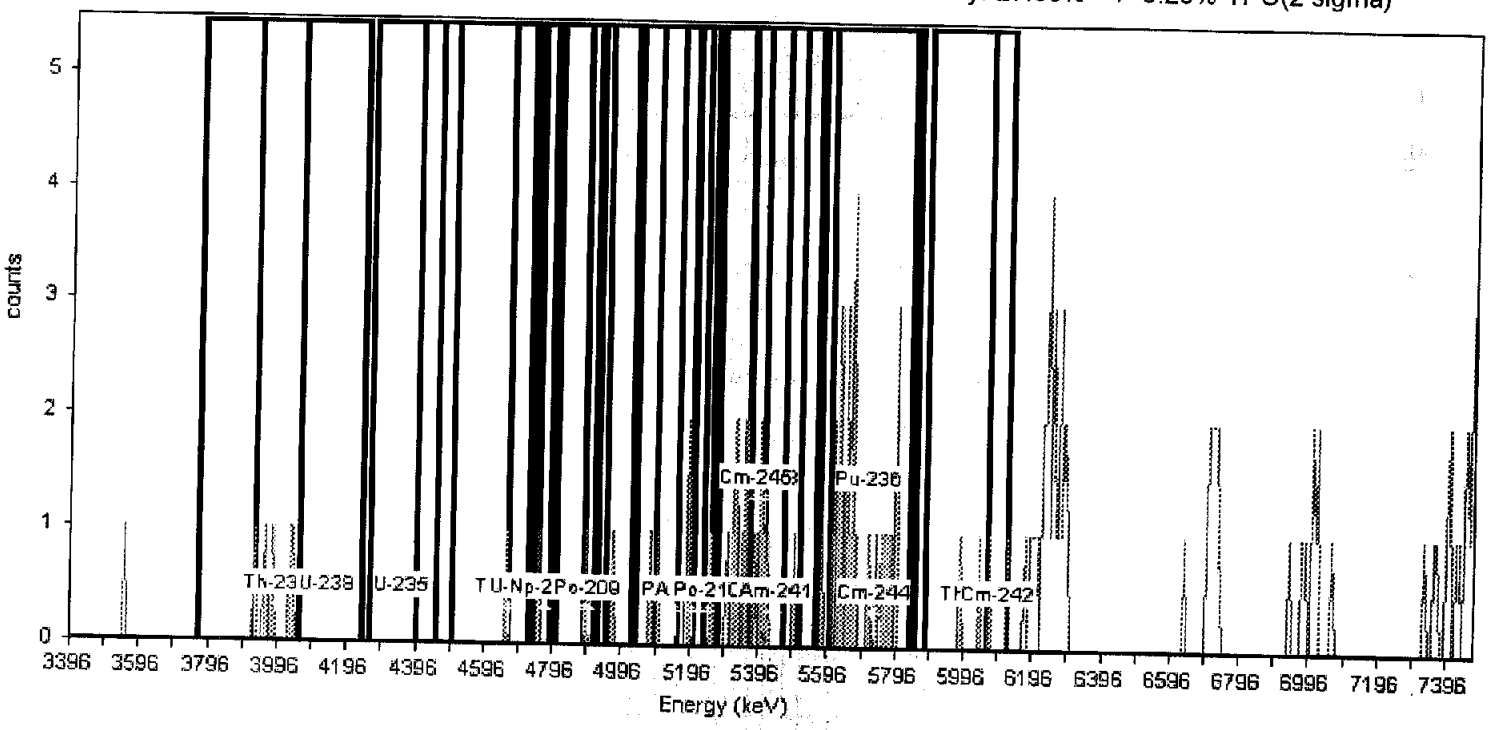
Acquisition

Detector: AV4 , SN: 41-172B5
Acquisition Start Date: 2/18/2007 2:05:42PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV4
Calibration Date: 1/26/2007 12:11:22PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 27.56% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background Nuclide Library: Background ROI Library
Total Background Counts: 123.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	6.00	6.250E-003	2.756E-003
Th-232	3.99	3.77	4.06	5.00	5.208E-003	2.552E-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
Am-243	5.20	5.03	5.28	7.00	7.292E-003	2.946E-003
U-232	5.23	5.04	5.37	14.00	1.458E-002	4.034E-003
Th-228	5.41	5.16	5.47	18.00	1.875E-002	4.541E-003
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Am-241	5.45	5.27	5.57	14.00	1.458E-002	4.034E-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	27.00	2.813E-002	5.512E-003
Cm-244	5.73	5.60	5.86	26.00	2.708E-002	5.413E-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

Analyst: 60040 7:03:22AM 2/19/2007

Sample

Sample Name: AV6 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

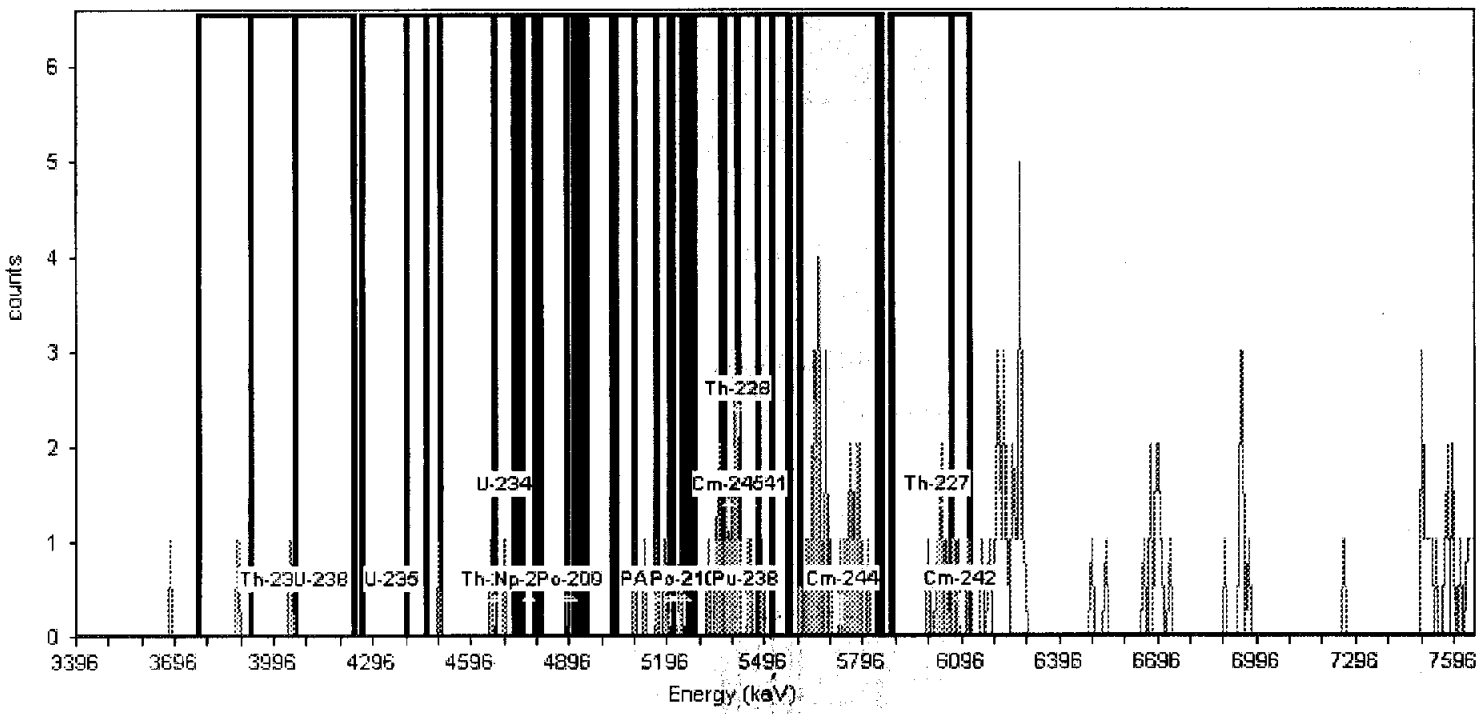
Acquisition

Detector: AV6 , SN:
Acquisition Start Date: 2/18/2007 2:05:44PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV6
Calibration Date: 1/26/2007 2:34:34PM

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

Total Background Counts: 133.00

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
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	4.00	4.167E-003	2.329E-003
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.37	9.00	9.375E-003	3.294E-003
Th-228	5.41	5.16	5.47	20.00	2.083E-002	4.774E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	18.00	1.875E-002	4.541E-003
Am-241	5.45	5.27	5.57	18.00	1.875E-002	4.541E-003
Cm-245	5.39	5.36	5.41	11.00	1.146E-002	3.608E-003
Pu-236	5.72	5.57	5.84	29.00	3.021E-002	5.705E-003
Cm-244	5.73	5.60	5.86	29.00	3.021E-002	5.705E-003
Th-227	6.02	5.89	6.13	11.00	1.146E-002	3.608E-003
Cm-242	6.10	6.07	6.13	5.00	5.208E-003	2.552E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:28AM 2/19/2007

Sample

Sample Name: AV7 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

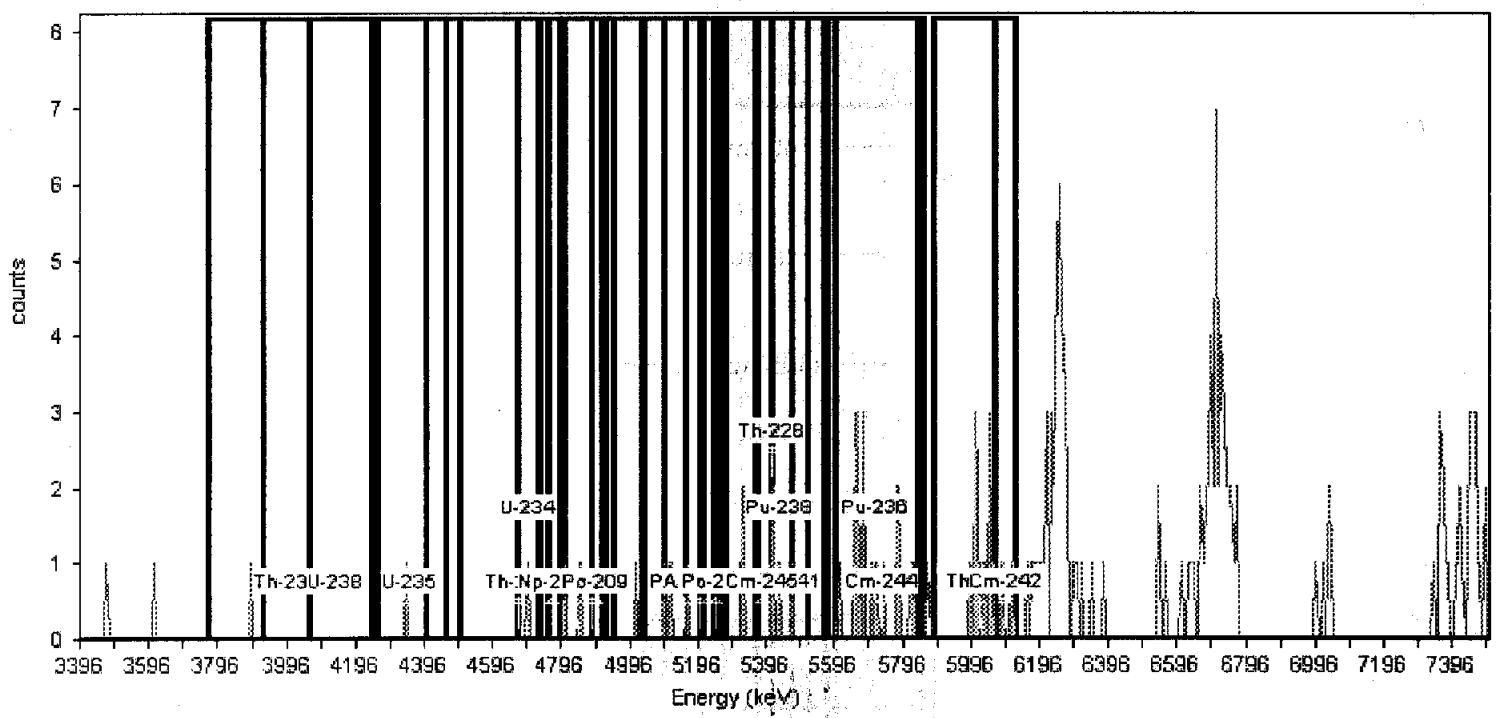
Acquisition

Detector: AV7 , SN: 41-158X6
Acquisition Start Date: 2/18/2007 2:05:46PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV7
Calibration Date: 1/26/2007 2:34:40PM

Energy Calibration Equation:

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

Efficiency: 27.60% +/- 0.30% TPU(2 sigma)



General Analysis

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

Total Background Counts: 167.00

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	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	4.00	4.167E-003	2.329E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	8.00	8.333E-003	3.125E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	7.00	7.292E-003	2.946E-003
Am-241	5.45	5.27	5.57	7.00	7.292E-003	2.946E-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	16.00	1.667E-002	4.295E-003
Cm-244	5.73	5.60	5.86	16.00	1.667E-002	4.295E-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	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 7:03:35AM 2/19/2007

Sample

Sample Name: AV8 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

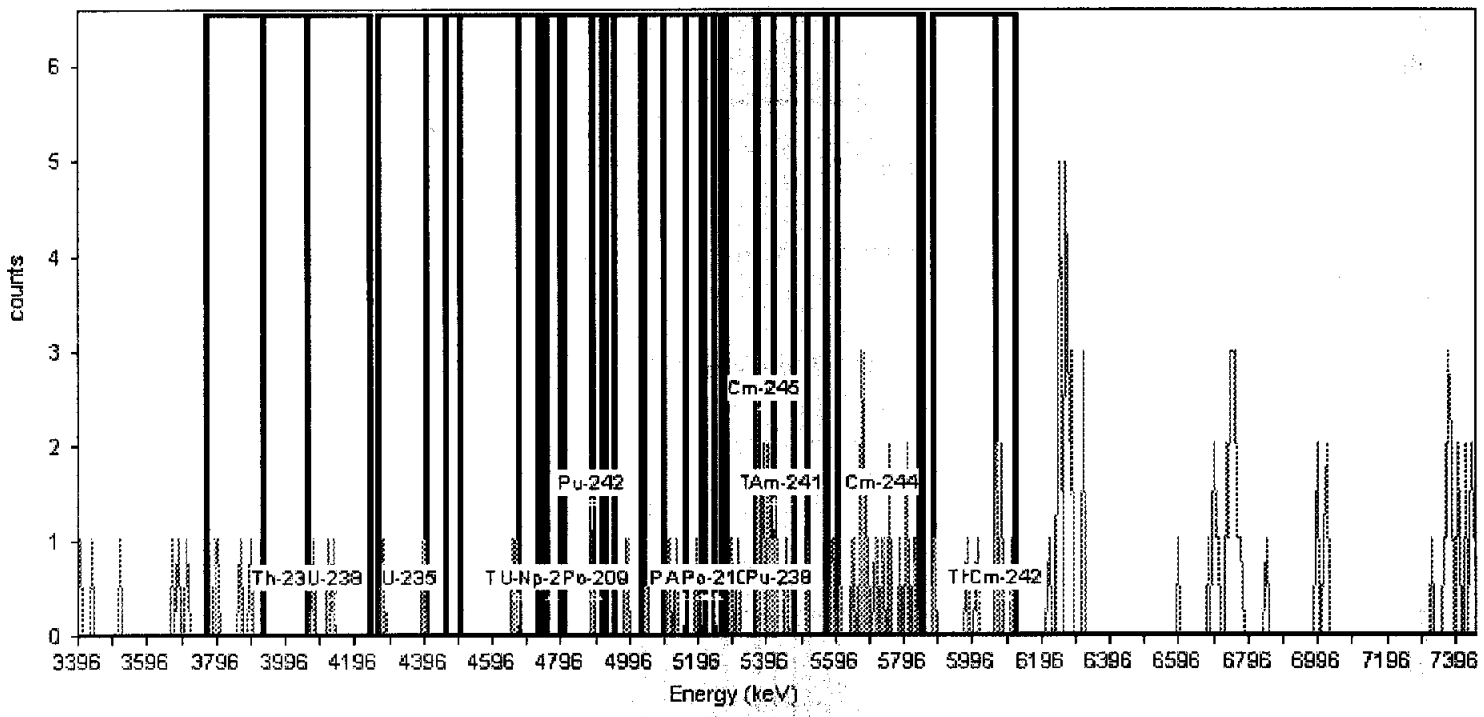
Acquisition

Detector: AV8 , SN: 41-158X1
Acquisition Start Date: 2/18/2007 2:05:48PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV8
Calibration Date: 1/26/2007 2:34:53PM

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

Total Background Counts: 125.00

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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	9.00	9.375E-003	3.294E-003
Th-228	5.41	5.16	5.47	15.00	1.563E-002	4.167E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	15.00	1.563E-002	4.167E-003
Am-241	5.45	5.27	5.57	15.00	1.563E-002	4.167E-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	18.00	1.875E-002	4.541E-003
Cm-244	5.73	5.60	5.86	17.00	1.771E-002	4.419E-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	5.00	5.208E-003	2.552E-003

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:41AM 2/19/2007

Sample

Sample Name: AV9 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

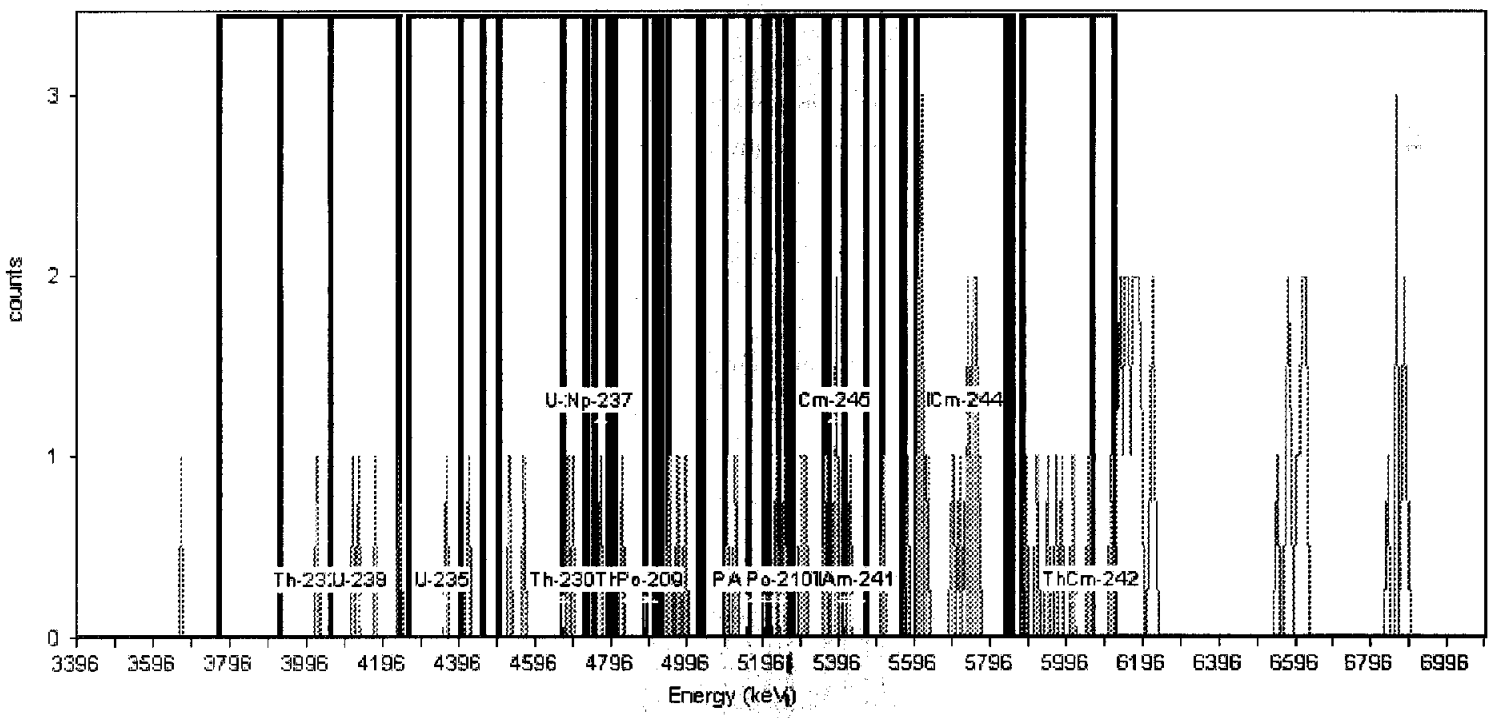
Acquisition

Detector: AV9 , SN: 41-172R1
Acquisition Start Date: 2/18/2007 2:05:49PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV9
Calibration Date: 1/26/2007 2:34:46PM

Energy Calibration Equation:

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

Efficiency: 26.45% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	5.00	5.208E-003	2.552E-003
U-234	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	8.00	8.333E-003	3.125E-003
Th-228	5.41	5.16	5.47	10.00	1.042E-002	3.455E-003
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	10.00	1.042E-002	3.455E-003
Am-241	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	19.00	1.979E-002	4.658E-003
Cm-244	5.73	5.60	5.86	18.00	1.875E-002	4.541E-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	1.00	1.042E-003	1.473E-003

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:03:51AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV11
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Feb2007
Description:

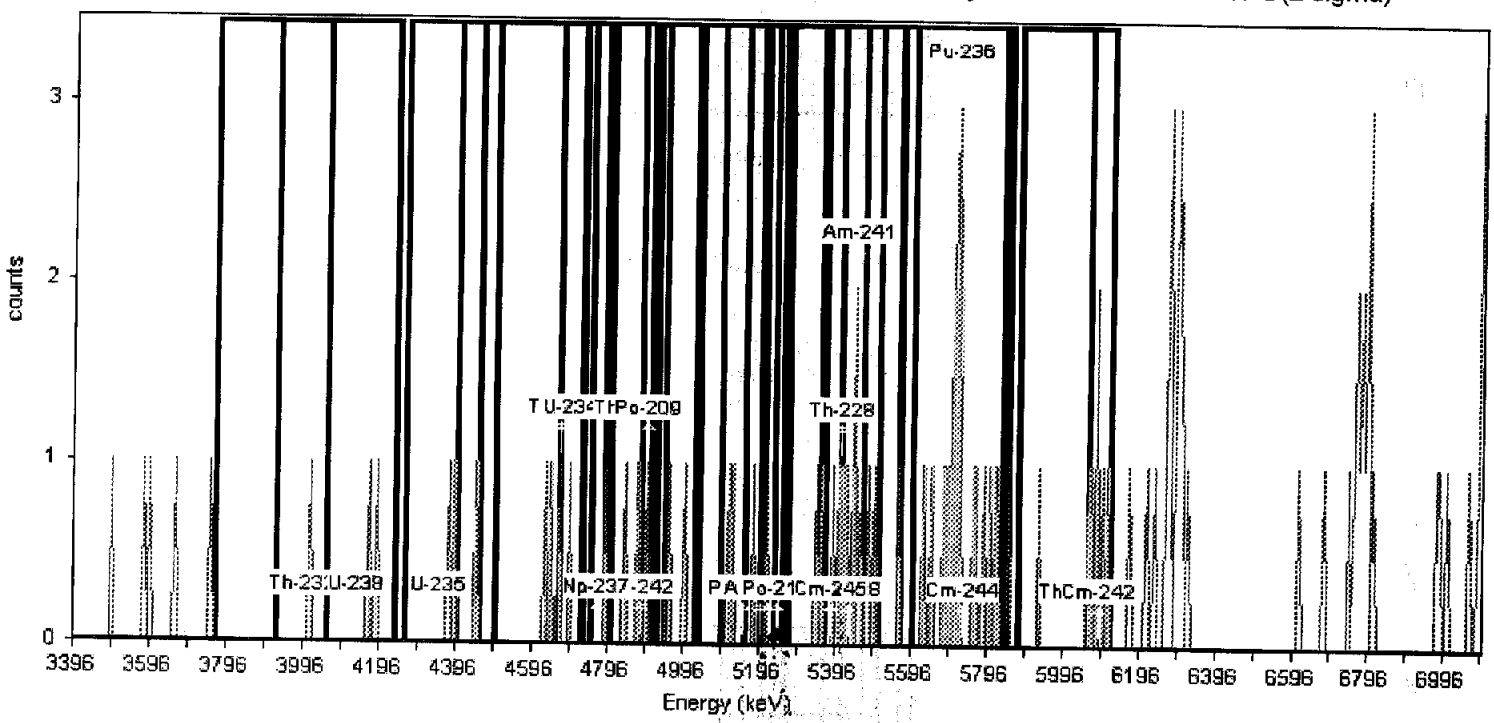
Acquisition

Detector: AV11 , SN: 41-172Q3
Acquisition Start Date: 2/18/2007 2:05:22PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV11
Calibration Date: 1/26/2007 5:45:26PM

Energy Calibration Equation:

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

Efficiency: 23.08% +/- 0.24% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 103.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	5.00	5.208E-003	2.552E-003
U-234	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Pu-242	4.88	4.67	4.93	6.00	6.250E-003	2.756E-003
Th-229	4.84	4.72	5.10	6.00	6.250E-003	2.756E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	13.00	1.354E-002	3.898E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	13.00	1.354E-002	3.898E-003
Am-241	5.45	5.27	5.57	14.00	1.458E-002	4.034E-003
Cm-245	5.39	5.36	5.41	4.00	4.167E-003	2.329E-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	3.00	3.125E-003	2.083E-003
U-235	4.35	4.26	4.46	3.00	3.125E-003	2.083E-003
Pu-236	5.72	5.57	5.84	19.00	1.979E-002	4.658E-003
Cm-244	5.73	5.60	5.86	20.00	2.083E-002	4.774E-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	6.00	6.250E-003	2.756E-003

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:54AM 2/19/2007

Sample

Sample Name: AV12 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

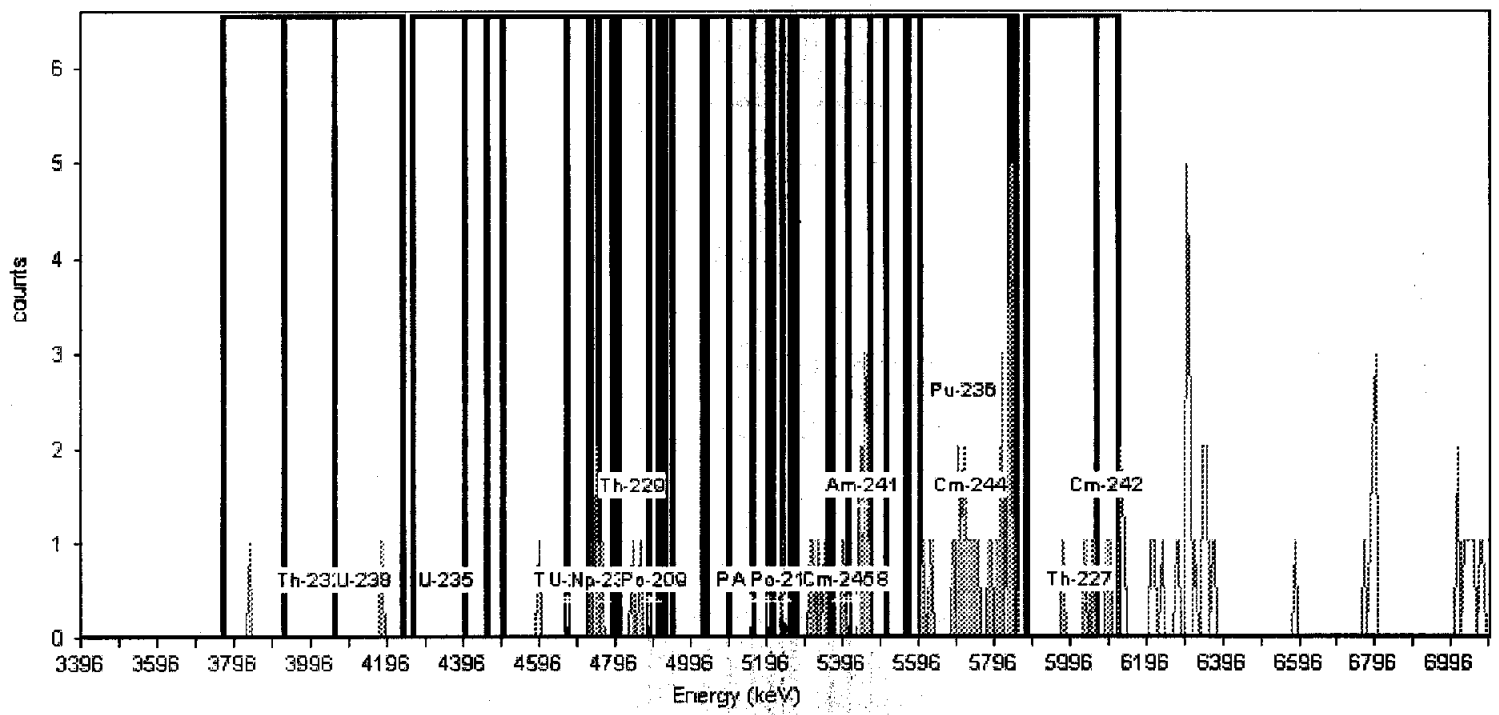
Acquisition

Detector: AV12 , SN: 41-172Q2
Acquisition Start Date: 2/18/2007 2:05:23PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV12
Calibration Date: 1/26/2007 5:45:31PM

Energy Calibration Equation:

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

Efficiency: 26.27% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 95.00

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	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Pu-242	4.88	4.67	4.93	6.00	6.250E-003	2.756E-003
Th-229	4.84	4.72	5.10	6.00	6.250E-003	2.756E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	14.00	1.458E-002	4.034E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	14.00	1.458E-002	4.034E-003
Am-241	5.45	5.27	5.57	13.00	1.354E-002	3.898E-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	27.00	2.813E-002	5.512E-003
Cm-244	5.73	5.60	5.86	28.00	2.917E-002	5.610E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:04:04AM 2/19/2007

Sample

Sample Name: AV13 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

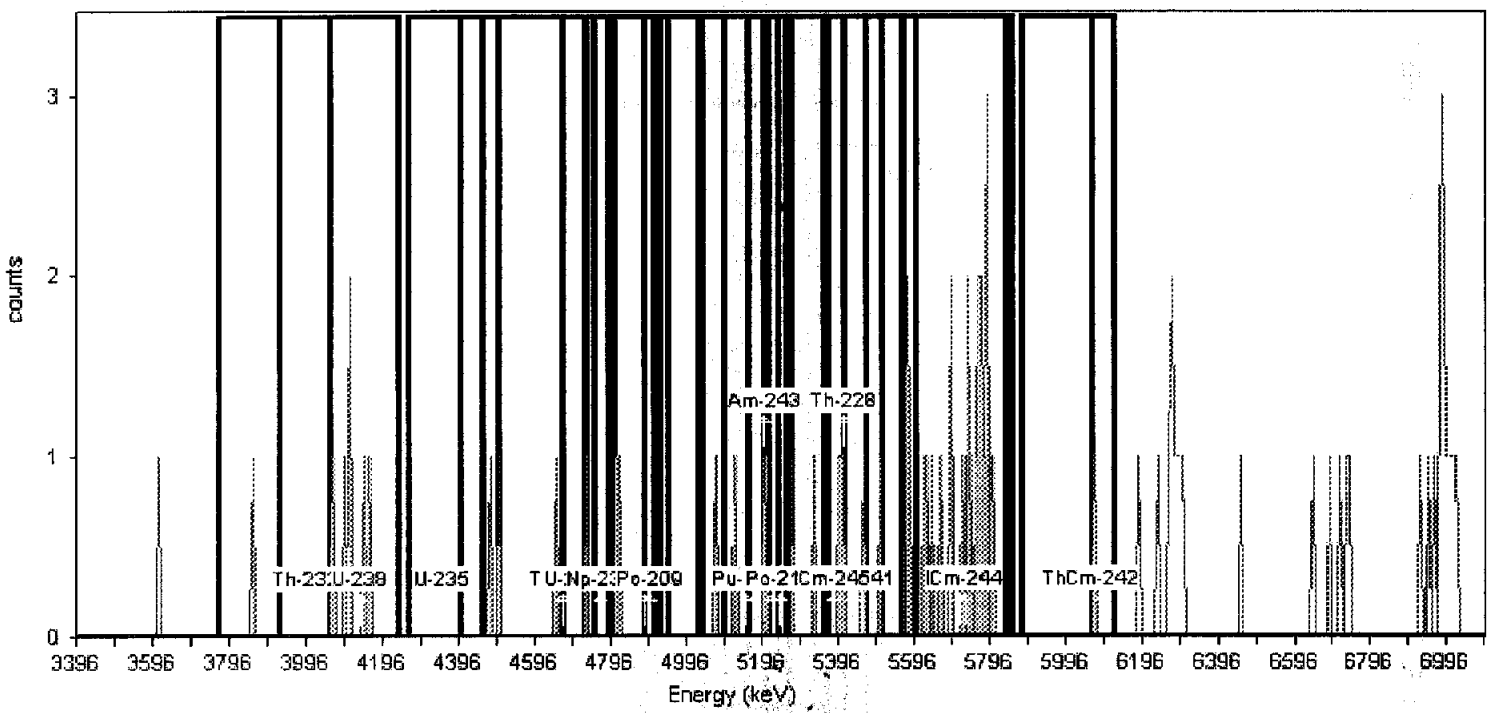
Acquisition

Detector: AV13 , SN: 41-172Q1
Acquisition Start Date: 2/18/2007 2:05:24PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV13
Calibration Date: 1/26/2007 5:45:14PM

Energy Calibration Equation:

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

Efficiency: 26.87% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 76.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-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	6.00	6.250E-003	2.756E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	7.00	7.292E-003	2.946E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	7.00	7.292E-003	2.946E-003
Am-241	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	23.00	2.396E-002	5.103E-003
Cm-244	5.73	5.60	5.86	20.00	2.083E-002	4.774E-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

Analyst: 60040 7:04:07AM 2/19/2007

Sample

Sample Name: AV14 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

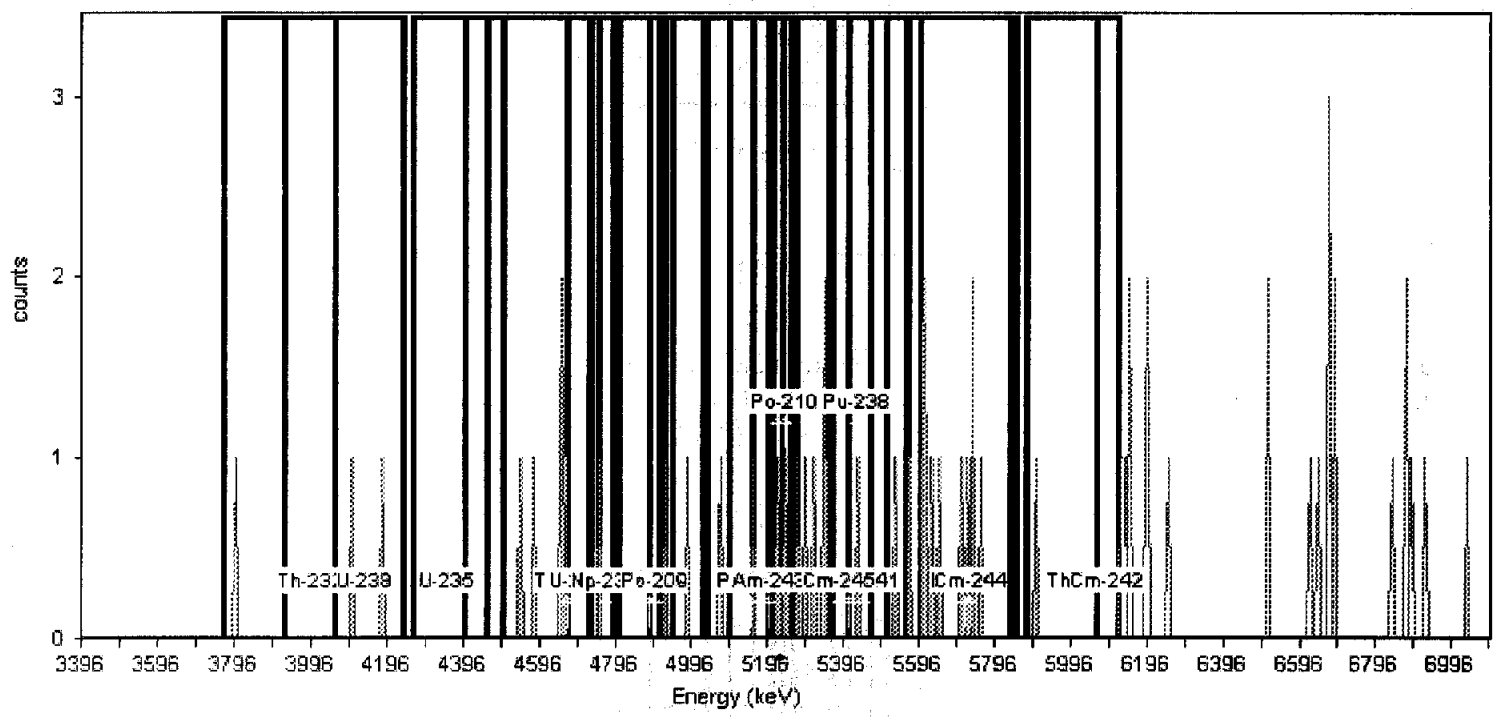
Acquisition

Detector: AV14 , SN: 41-172C4
Acquisition Start Date: 2/18/2007 2:05:26PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV14
Calibration Date: 1/26/2007 5:45:20PM

Energy Calibration Equation:

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

Efficiency: 26.58% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 57.00

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	5.00	5.208E-003	2.552E-003
U-234	4.70	4.50	4.80	6.00	6.250E-003	2.756E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.37	9.00	9.375E-003	3.294E-003
Th-228	5.41	5.16	5.47	9.00	9.375E-003	3.294E-003
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	7.00	7.292E-003	2.946E-003
Am-241	5.45	5.27	5.57	7.00	7.292E-003	2.946E-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
Cm-244	5.73	5.60	5.86	10.00	1.042E-002	3.455E-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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:04:23AM 2/19/2007

Sample

Sample Name: AV17 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

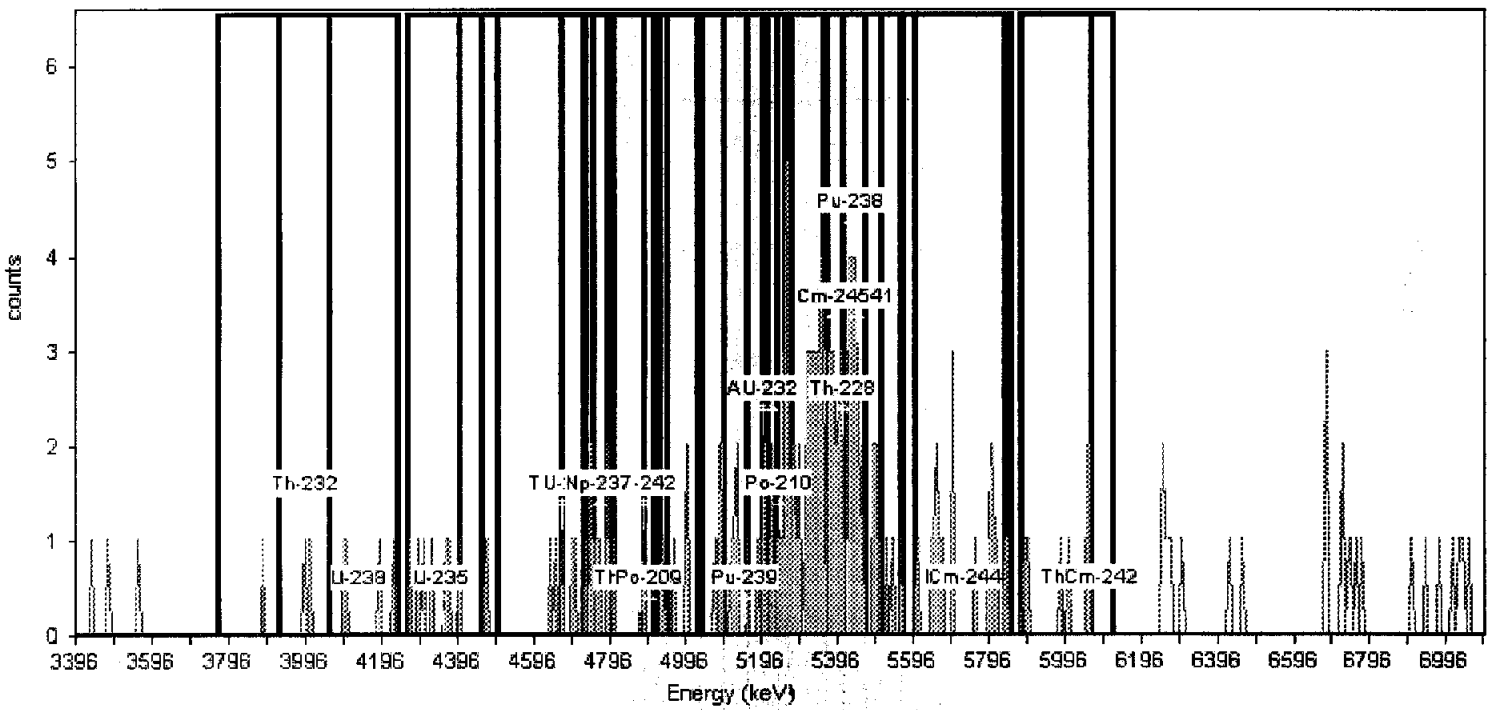
Acquisition

Detector: AV17 , SN: 41-172Q4
Acquisition Start Date: 2/18/2007 2:05:29PM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: JAN2007_AV17
Calibration Date: 1/26/2007 9:09:52PM

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

Total Background Counts: 176.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	8.00	8.333E-003	3.125E-003
U-234	4.70	4.50	4.80	13.00	1.354E-002	3.898E-003
Pu-242	4.88	4.67	4.93	12.00	1.250E-002	3.756E-003
Th-229	4.84	4.72	5.10	16.00	1.667E-002	4.295E-003
Np-237	4.77	4.75	4.79	4.00	4.167E-003	2.329E-003
Po-209	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	14.00	1.458E-002	4.034E-003
Am-243	5.20	5.03	5.28	24.00	2.500E-002	5.208E-003
U-232	5.23	5.04	5.37	52.00	5.417E-002	7.583E-003
Th-228	5.41	5.16	5.47	78.00	8.125E-002	9.259E-003
Po-210	5.25	5.20	5.26	12.00	1.250E-002	3.756E-003
Pu-238	5.44	5.24	5.52	76.00	7.917E-002	9.141E-003
Am-241	5.45	5.27	5.57	71.00	7.396E-002	8.839E-003
Cm-245	5.39	5.36	5.41	18.00	1.875E-002	4.541E-003
Pu-236	5.72	5.57	5.84	17.00	1.771E-002	4.419E-003
Cm-244	5.73	5.60	5.86	17.00	1.771E-002	4.419E-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	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	6.00	6.250E-003	2.756E-003
U-235	4.35	4.26	4.46	7.00	7.292E-003	2.946E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:01:25AM 2/19/2007

Sample

Sample Name: AV18 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

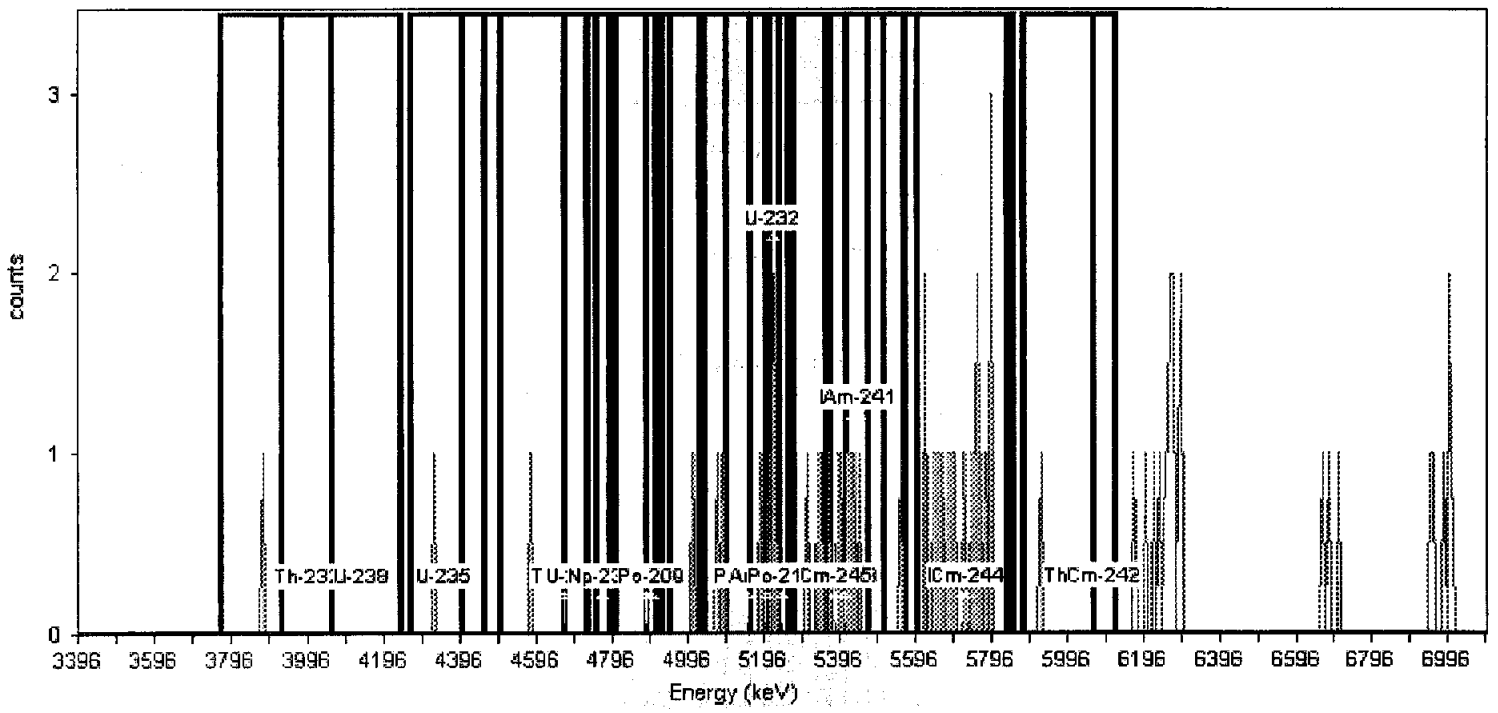
Acquisition

Detector: AV18 , SN: 41-172C6
Acquisition Start Date: 2/18/2007 2:05:30PM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: JAN2007_AV18
Calibration Date: 1/26/2007 9:09:59PM

Energy Calibration Equation:

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

Efficiency: 25.44% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 64.00

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	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	4.88	4.67	4.93	0.00	0.000E+000	1.473E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	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
Am-243	5.20	5.03	5.28	6.00	6.250E-003	2.756E-003
U-232	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
Po-210	5.25	5.20	5.26	3.00	3.125E-003	2.083E-003
Pu-238	5.44	5.24	5.52	10.00	1.042E-002	3.455E-003
Am-241	5.45	5.27	5.57	11.00	1.146E-002	3.608E-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	20.00	2.083E-002	4.774E-003
Cm-244	5.73	5.60	5.86	20.00	2.083E-002	4.774E-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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:01:31AM 2/19/2007

Sample

Sample Name: AV20 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

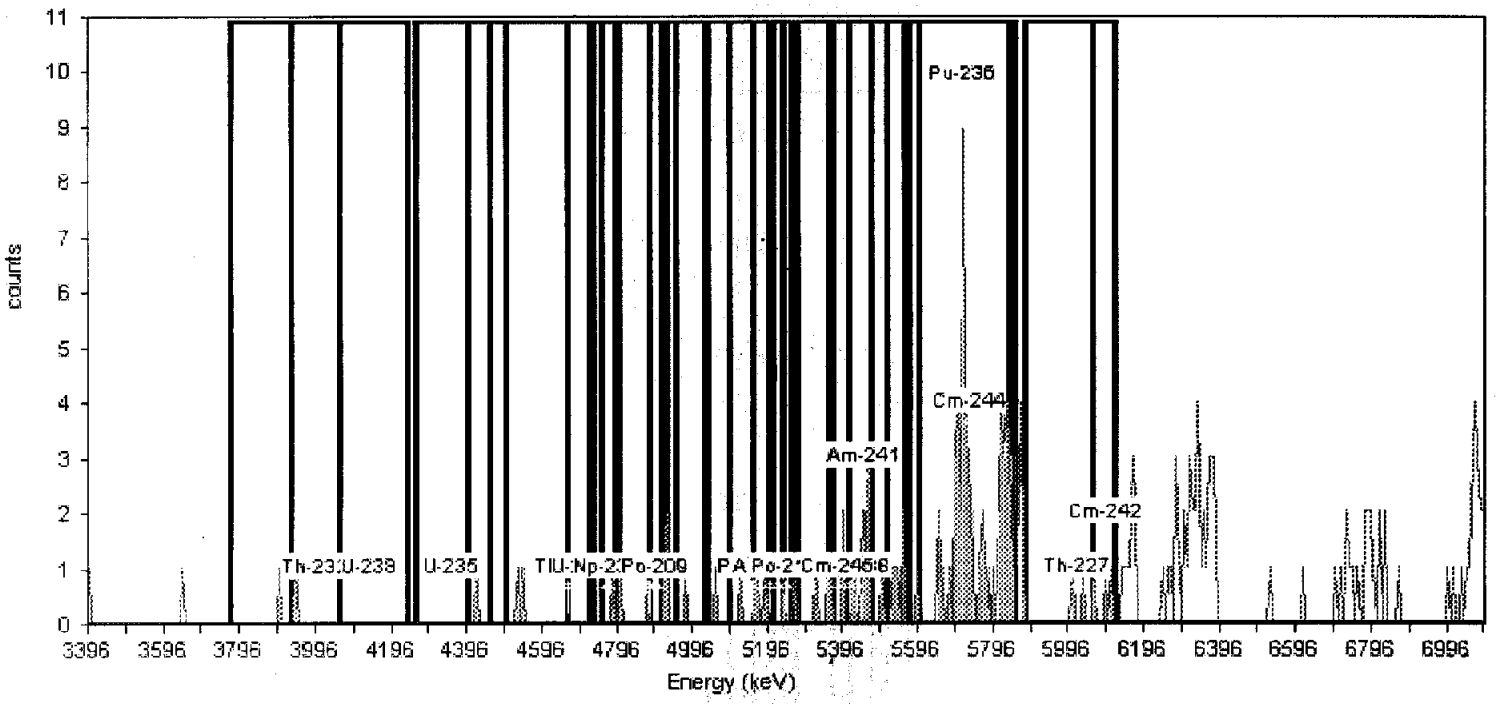
Acquisition

Detector: AV20 , SN: 41-172R2
Acquisition Start Date: 2/18/2007 2:05:32PM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: JAN2007_AV20
Calibration Date: 1/26/2007 9:10:11PM

Energy Calibration Equation:

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

Efficiency: 27.26% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 191.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	4.88	4.67	4.93	6.00	6.250E-003	2.756E-003
Th-229	4.84	4.72	5.10	8.00	8.333E-003	3.125E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	6.00	6.250E-003	2.756E-003
Am-243	5.20	5.03	5.28	7.00	7.292E-003	2.946E-003
U-232	5.23	5.04	5.37	10.00	1.042E-002	3.455E-003
Th-228	5.41	5.16	5.47	18.00	1.875E-002	4.541E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Am-241	5.45	5.27	5.57	20.00	2.083E-002	4.774E-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	54.00	5.625E-002	7.725E-003
Cm-244	5.73	5.60	5.86	57.00	5.937E-002	7.933E-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	3.00	3.125E-003	2.083E-003
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	1.00	1.042E-003	1.473E-003

ST

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:01:38AM 2/19/2007

Sample

Sample Name: AV21 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

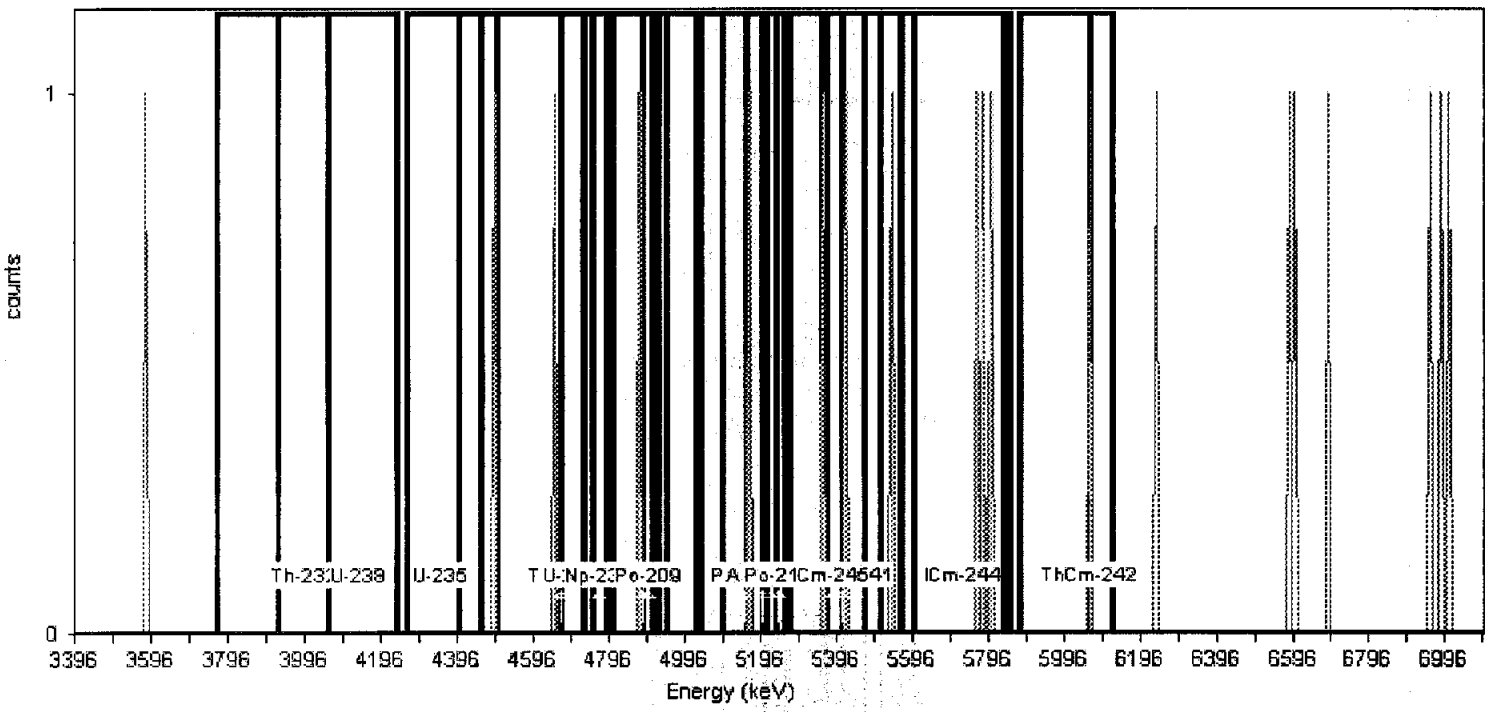
Acquisition

Detector: AV21 , SN: 41-172C7
Acquisition Start Date: 2/18/2007 2:05:33PM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Jan2007_AV21
Calibration Date: 1/29/2007 2:16:37PM

Energy Calibration Equation:

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

Efficiency: 26.61% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 19.00

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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	5.45	5.27	5.57	3.00	3.125E-003	2.083E-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	3.00	3.125E-003	2.083E-003
Cm-244	5.73	5.60	5.86	3.00	3.125E-003	2.083E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:01:44AM 2/19/2007

Sample

Sample Name: AV22 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

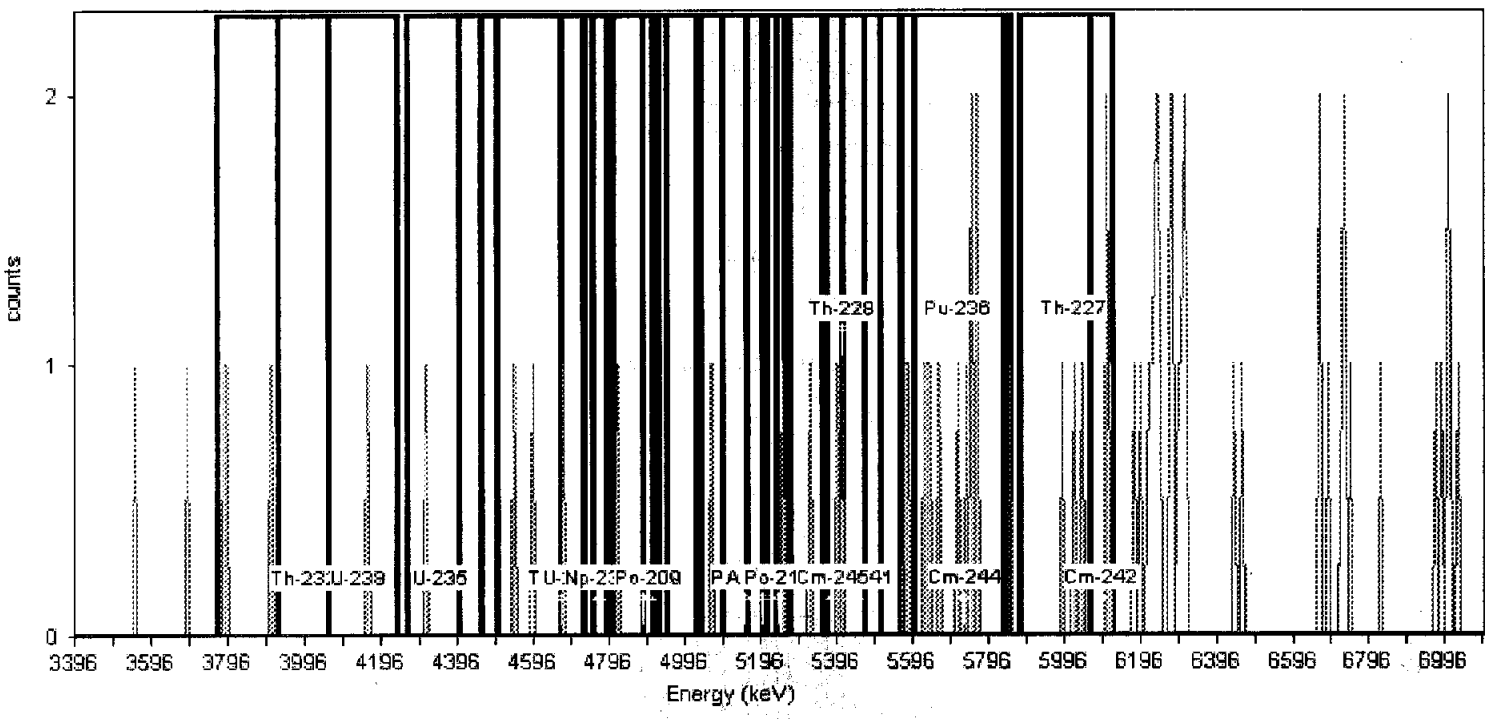
Acquisition

Detector: AV22 , SN: 41-172Q5
Acquisition Start Date: 2/18/2007 2:05:36PM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Jan2007_AV22
Calibration Date: 1/29/2007 2:16:48PM

Energy Calibration Equation:

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

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



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background 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	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
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	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	12.00	1.250E-002	3.756E-003
Cm-244	5.73	5.60	5.86	11.00	1.146E-002	3.608E-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	3.00	3.125E-003	2.083E-003

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:01:51AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV23
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Feb2007
Description:

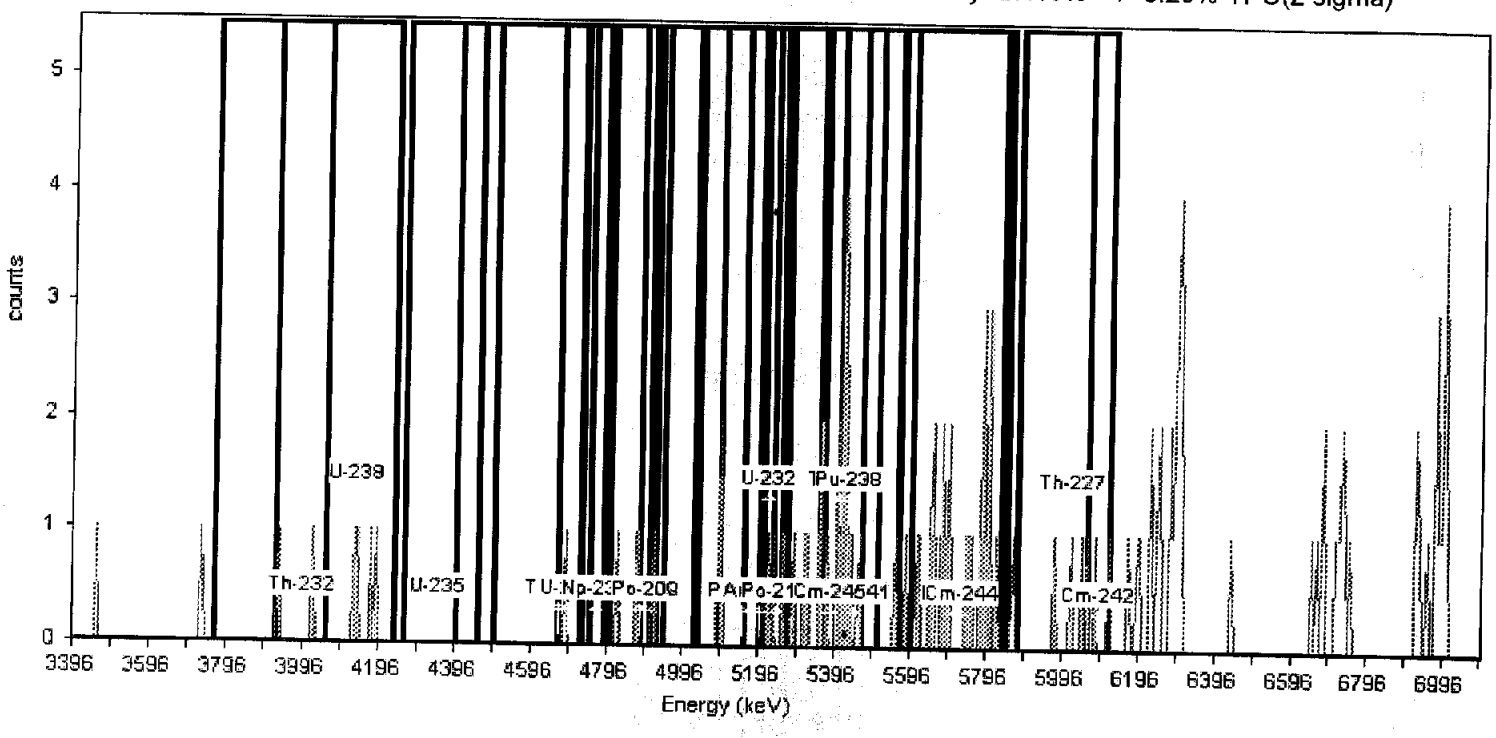
Acquisition

Detector: AV23 , SN: 41-172R4
Acquisition Start Date: 2/18/2007 2:05:37PM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Jan2007_AV23
Calibration Date: 1/29/2007 2:16:57PM

Energy Calibration Equation:

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

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



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 113.00

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	6.00	6.250E-003	2.756E-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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	6.00	6.250E-003	2.756E-003
U-232	5.23	5.04	5.37	11.00	1.146E-002	3.608E-003
Th-228	5.41	5.16	5.47	21.00	2.187E-002	4.886E-003
Po-210	5.25	5.20	5.26	3.00	3.125E-003	2.083E-003
Pu-238	5.44	5.24	5.52	20.00	2.083E-002	4.774E-003
Am-241	5.45	5.27	5.57	19.00	1.979E-002	4.658E-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	24.00	2.500E-002	5.208E-003
Cm-244	5.73	5.60	5.86	23.00	2.396E-002	5.103E-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	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 7:01:57AM 2/19/2007

Sample

Sample Name: AV24 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

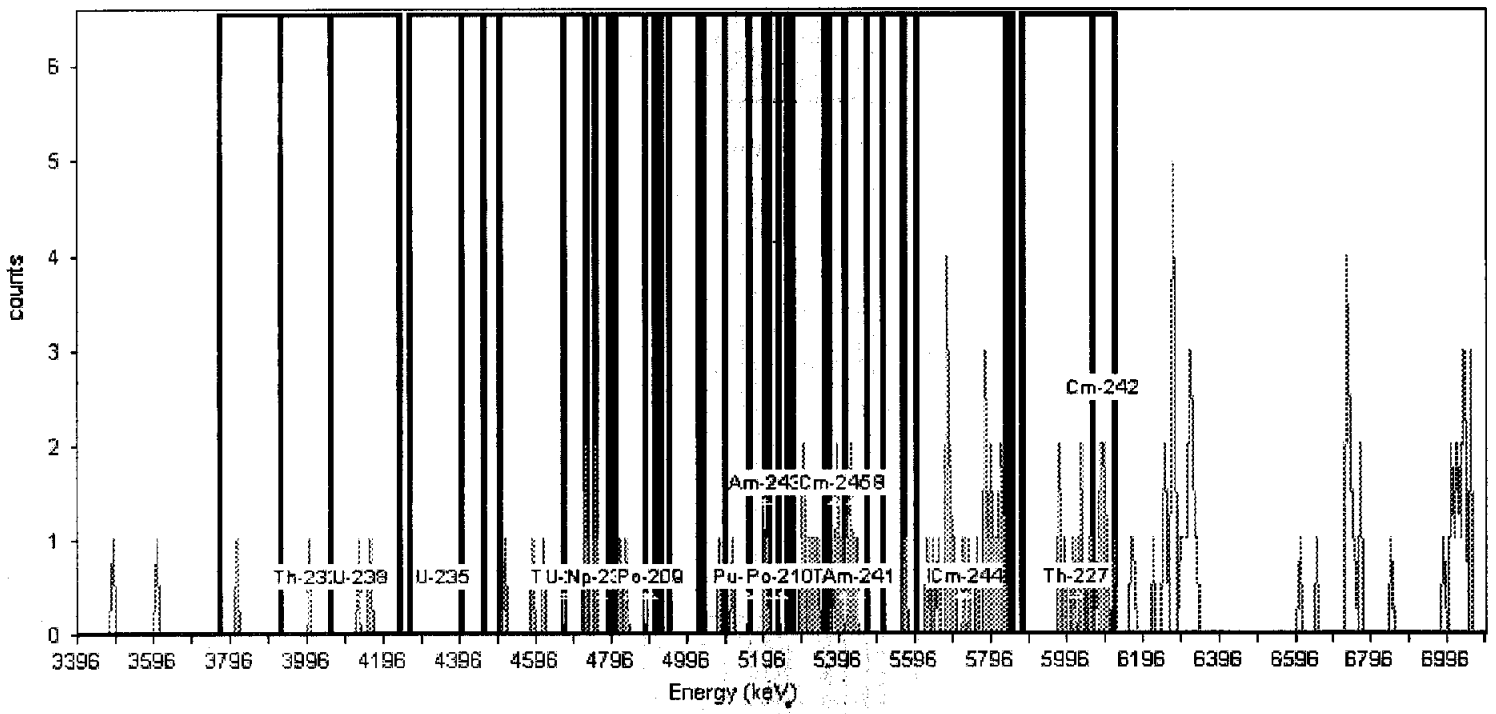
Acquisition

Detector: AV24 , SN: 41-172R5
Acquisition Start Date: 2/18/2007 2:05:38PM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Jan2007_AV24
Calibration Date: 1/29/2007 2:17:05PM

Energy Calibration Equation:

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

Efficiency: 26.34% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 130.00

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	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	5.00	5.208E-003	2.552E-003
U-234	4.70	4.50	4.80	7.00	7.292E-003	2.946E-003
Pu-242	4.88	4.67	4.93	6.00	6.250E-003	2.756E-003
Th-229	4.84	4.72	5.10	7.00	7.292E-003	2.946E-003
Np-237	4.77	4.75	4.79	2.00	2.083E-003	1.804E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	5.23	5.04	5.37	10.00	1.042E-002	3.455E-003
Th-228	5.41	5.16	5.47	18.00	1.875E-002	4.541E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	17.00	1.771E-002	4.419E-003
Am-241	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	27.00	2.813E-002	5.512E-003
Cm-244	5.73	5.60	5.86	26.00	2.708E-002	5.413E-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	7.00	7.292E-003	2.946E-003

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:01AM 2/19/2007

Sample

Sample Name: AV45 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

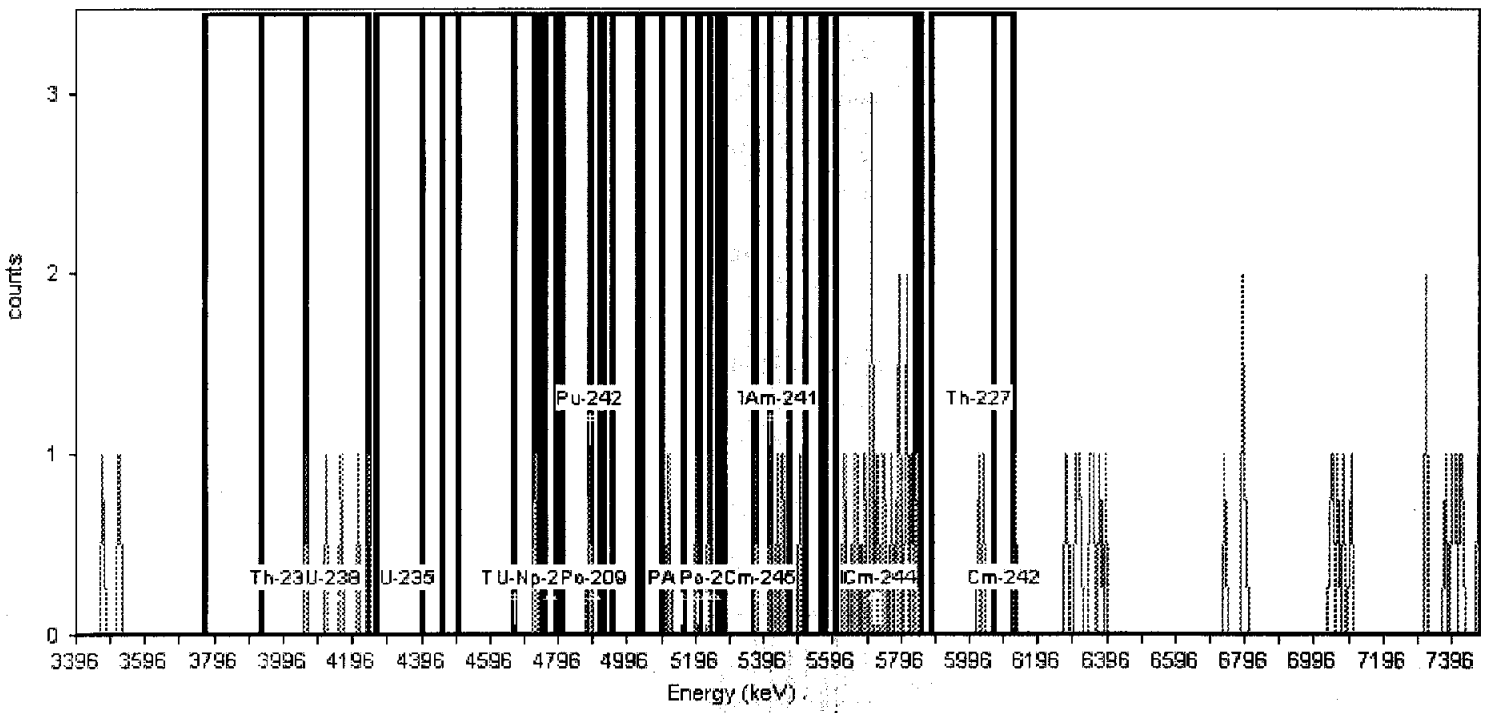
Acquisition

Detector: AV45 , SN: AV45
Acquisition Start Date: 2/18/2007 2:05:40PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV45
Calibration Date: 1/30/2007 7:52:07PM

Energy Calibration Equation:

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

Efficiency: 27.75% +/- 0.30% TPU(2 sigma)



General Analysis

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

Total Background Counts: 65.00

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	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Am-241	5.45	5.27	5.57	5.00	5.208E-003	2.552E-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	18.00	1.875E-002	4.541E-003
Cm-244	5.73	5.60	5.86	18.00	1.875E-002	4.541E-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
7:02:04AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV46
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Feb2007
Description:

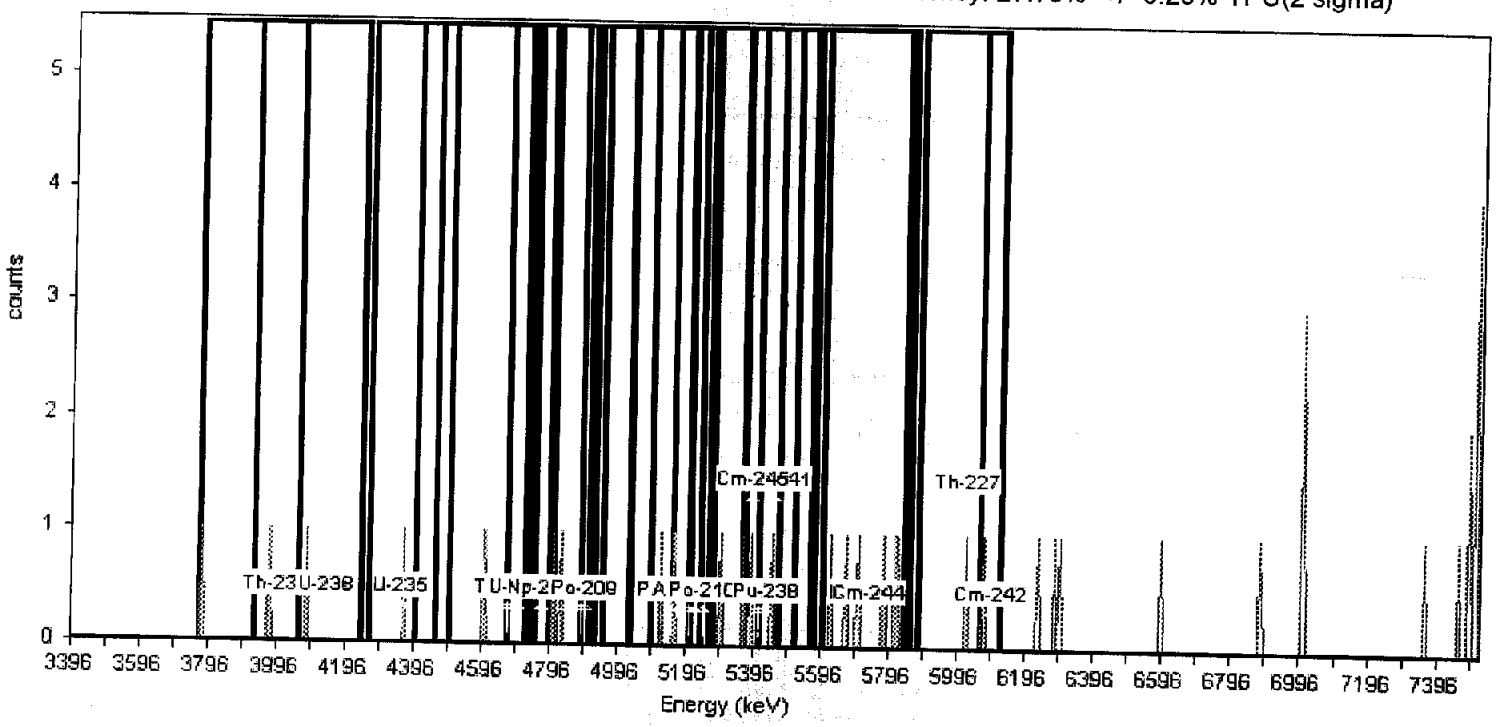
Acquisition

Detector: AV46 , SN: AV46
Acquisition Start Date: 2/18/2007 2:05:41PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV46
Calibration Date: 1/30/2007 7:52:13PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 27.78% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundRoi
Nuclide Library: Background ROI Library
Total Background Counts: 39.00

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	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	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	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	7.00	7.292E-003	2.946E-003
Cm-244	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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:11AM 2/19/2007

Sample

Sample Name: AV48 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

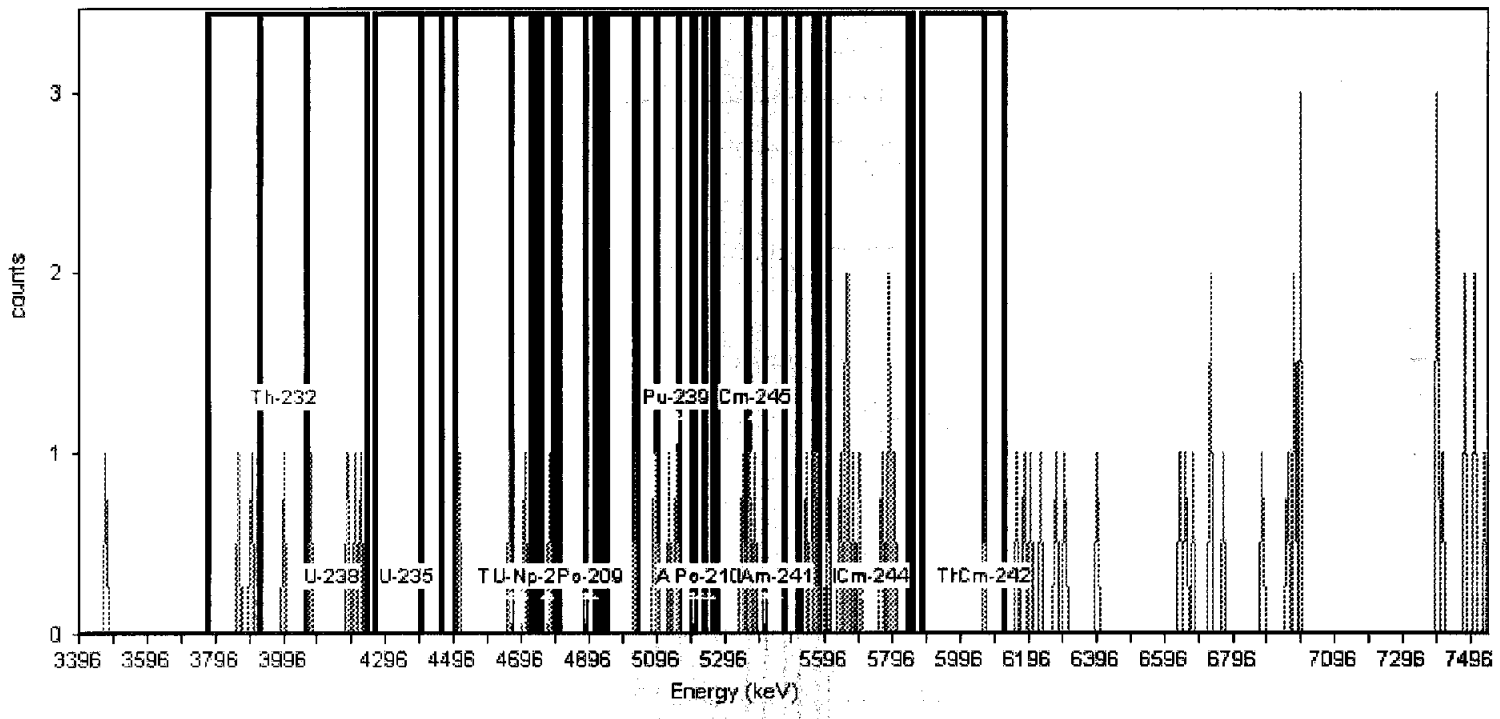
Acquisition

Detector: AV48 , SN: AV48
Acquisition Start Date: 2/18/2007 2:05:43PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: JAN2007_AV48
Calibration Date: 1/29/2007 1:51:12PM

Energy Calibration Equation:

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

Efficiency: 26.44% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 65.00

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	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	3.00	3.125E-003	2.083E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Am-241	5.45	5.27	5.57	5.00	5.208E-003	2.552E-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	12.00	1.250E-002	3.756E-003
Cm-244	5.73	5.60	5.86	12.00	1.250E-002	3.756E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:20AM 2/19/2007

Sample

Sample Name: AV49 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

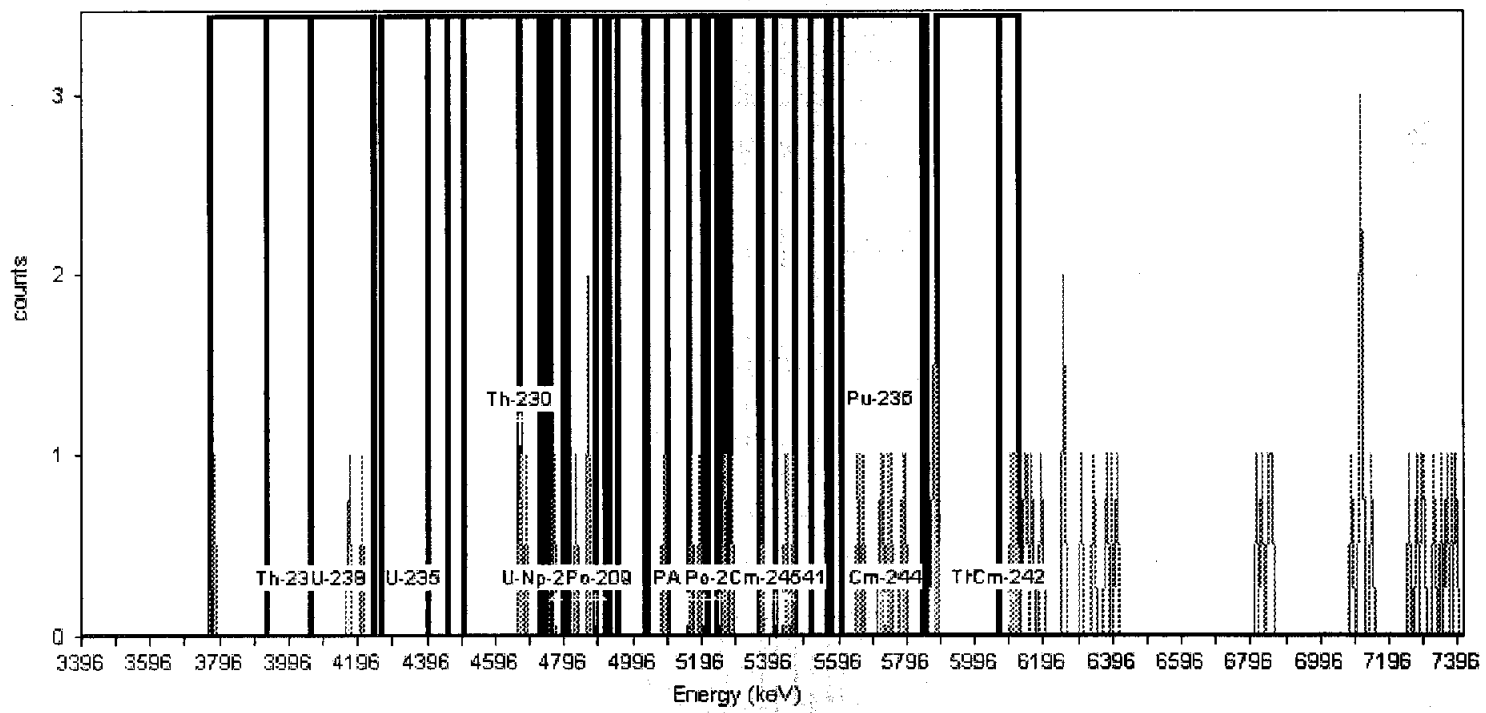
Acquisition

Detector: AV49 , SN: AV49
Acquisition Start Date: 2/18/2007 2:05:44PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: JAN2007_AV49
Calibration Date: 1/29/2007 1:50:27PM

Energy Calibration Equation:

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

Efficiency: 27.86% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background 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)
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	4.88	4.67	4.93	6.00	6.250E-003	2.756E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	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
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
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	7.00	7.292E-003	2.946E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Am-241	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	8.00	8.333E-003	3.125E-003
Cm-244	5.73	5.60	5.86	8.00	8.333E-003	3.125E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:27AM 2/19/2007

Sample

Sample Name: AV50 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

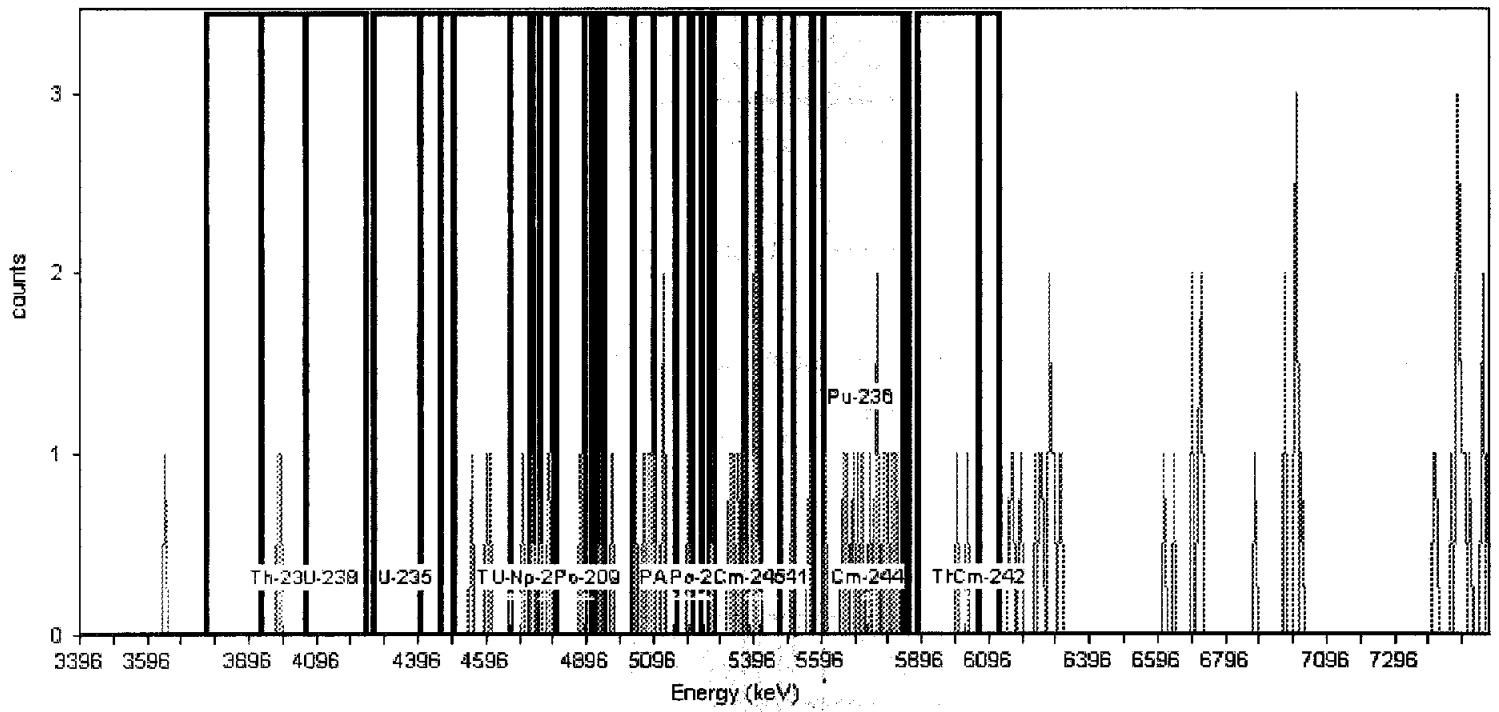
Acquisition

Detector: AV50 , SN: AV50
Acquisition Start Date: 2/18/2007 2:05:46PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV50
Calibration Date: 1/29/2007 9:33:48PM

Energy Calibration Equation:

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

Efficiency: 28.54% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 94.00

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	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	5.00	5.208E-003	2.552E-003
U-234	4.70	4.50	4.80	7.00	7.292E-003	2.946E-003
Pu-242	4.88	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.72	5.10	11.00	1.146E-002	3.608E-003
Np-237	4.77	4.75	4.79	2.00	2.083E-003	1.804E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	9.00	9.375E-003	3.294E-003
Am-243	5.20	5.03	5.28	9.00	9.375E-003	3.294E-003
U-232	5.23	5.04	5.37	14.00	1.458E-002	4.034E-003
Th-228	5.41	5.16	5.47	12.00	1.250E-002	3.756E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	12.00	1.250E-002	3.756E-003
Am-241	5.45	5.27	5.57	13.00	1.354E-002	3.898E-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	16.00	1.667E-002	4.295E-003
Cm-244	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	0.00	0.000E+000	1.473E-003

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:30AM 2/19/2007

Sample

Sample Name: AV51 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

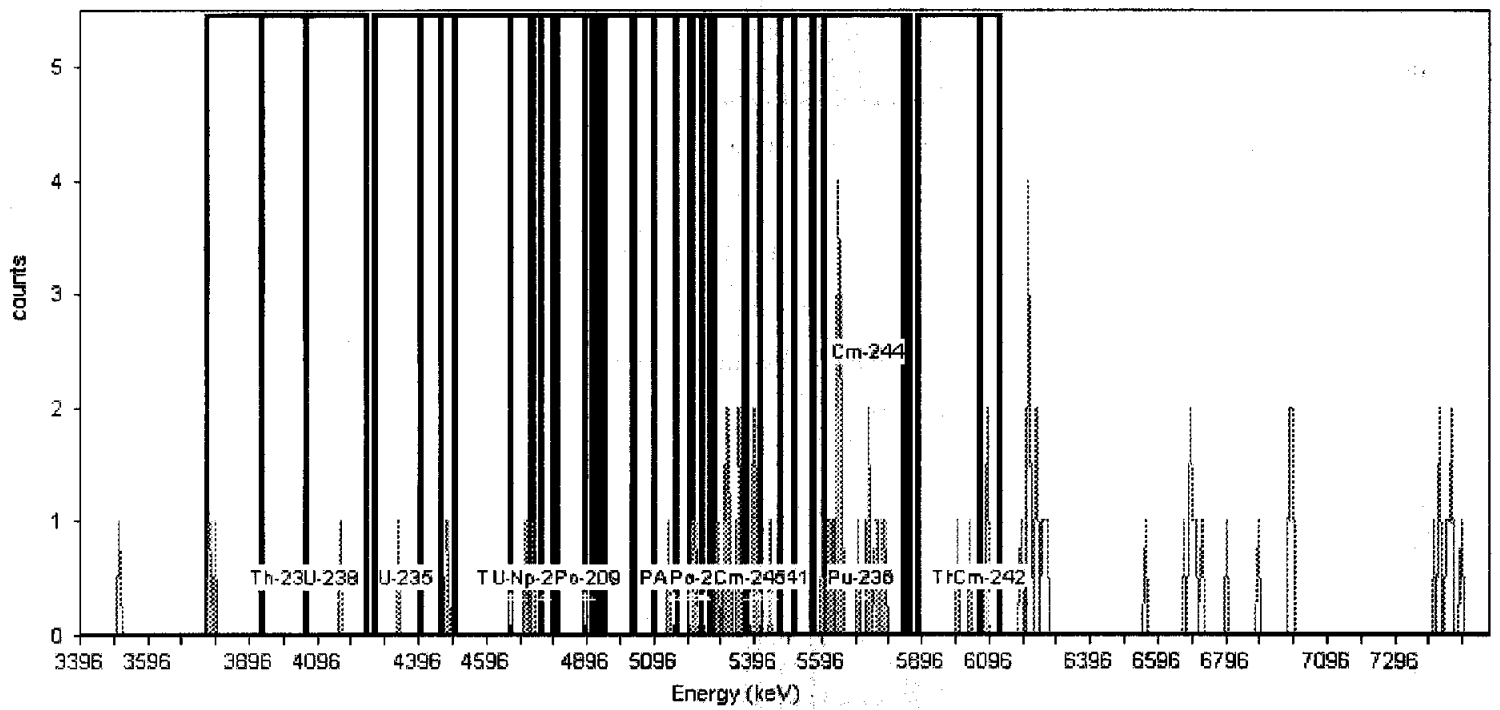
Description:

Acquisition

Detector: AV51 , SN:
Acquisition Start Date: 2/18/2007 2:05:47PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV51
Calibration Date: 1/29/2007 9:33:54PM

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

Efficiency: 26.85% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 83.00

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	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	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
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	12.00	1.250E-002	3.756E-003
Am-241	5.45	5.27	5.57	12.00	1.250E-002	3.756E-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	20.00	2.083E-002	4.774E-003
Cm-244	5.73	5.60	5.86	19.00	1.979E-002	4.658E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:40AM 2/19/2007

Sample

Sample Name: AV52 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

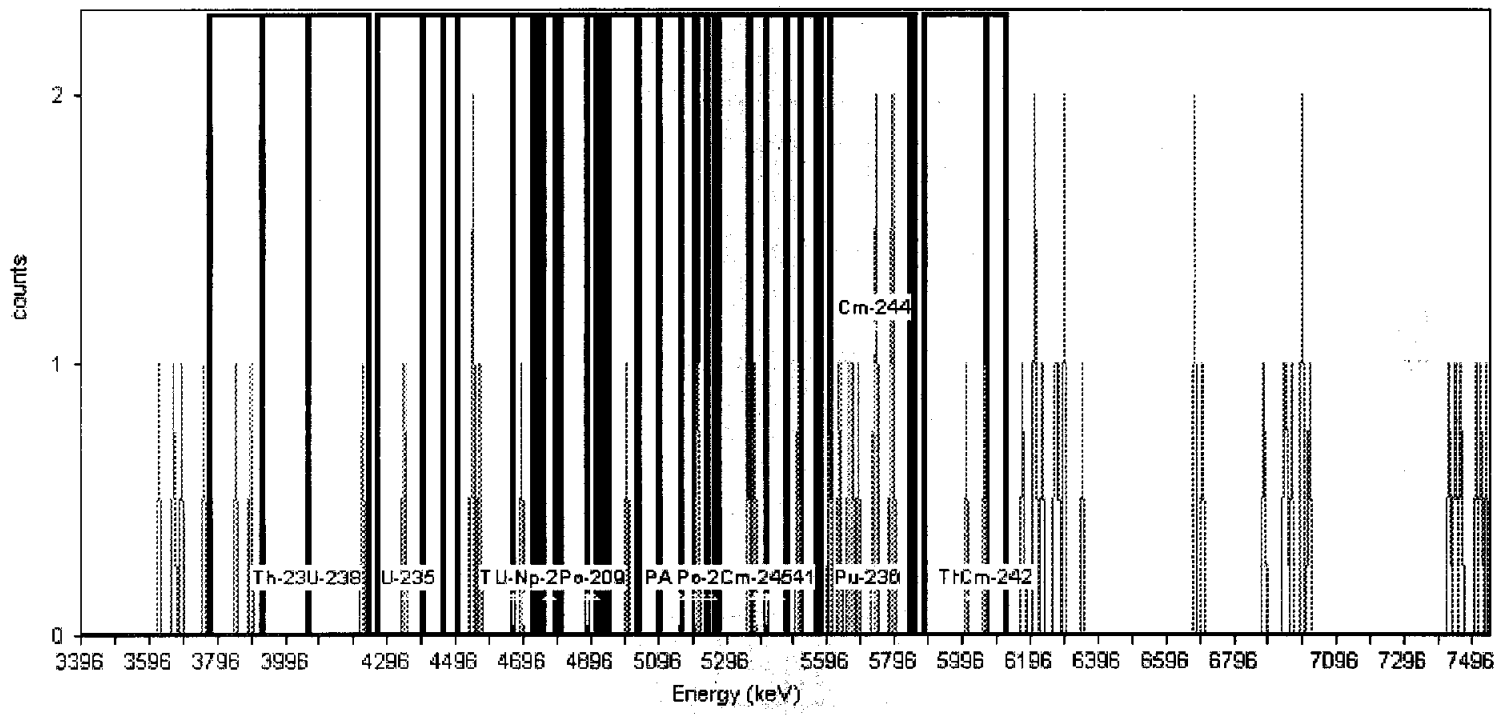
Acquisition

Detector: AV52 , SN:
Acquisition Start Date: 2/18/2007 2:05:49PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV52
Calibration Date: 1/30/2007 7:52:20PM

Energy Calibration Equation:

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

Efficiency: 26.51% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 56.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Am-241	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	11.00	1.146E-002	3.608E-003
Cm-244	5.73	5.60	5.86	11.00	1.146E-002	3.608E-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
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	1.00	1.042E-003	1.473E-003

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:02:46AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV53 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

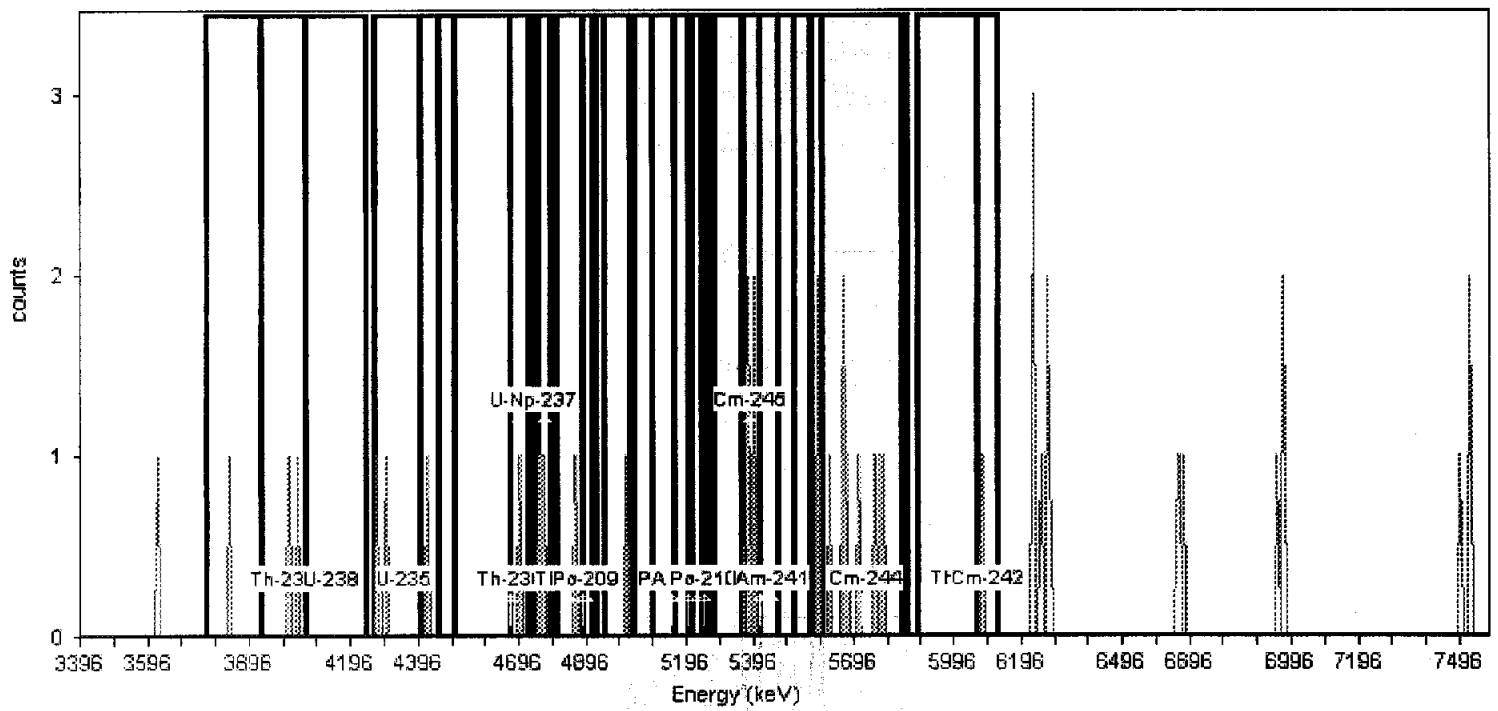
Description:

Acquisition

Detector: AV53 , SN:
Acquisition Start Date: 2/18/2007 2:05:50PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV53
Calibration Date: 1/29/2007 9:33:59PM

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

Efficiency: 27.59% +/- 0.30% TPU(2 sigma)



General Analysis

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

Total Background Counts: 50.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	4.88	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
Np-237	4.77	4.75	4.79	3.00	3.125E-003	2.083E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
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	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	5.23	5.04	5.37	0.00	0.000E+000	1.473E-003
Th-228	5.41	5.16	5.47	5.00	5.208E-003	2.552E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Am-241	5.45	5.27	5.57	5.00	5.208E-003	2.552E-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	12.00	1.250E-002	3.756E-003
Cm-244	5.73	5.60	5.86	10.00	1.042E-002	3.455E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:02:50AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV54
Comment:

Spectrum #1 Analysis #1

Batch

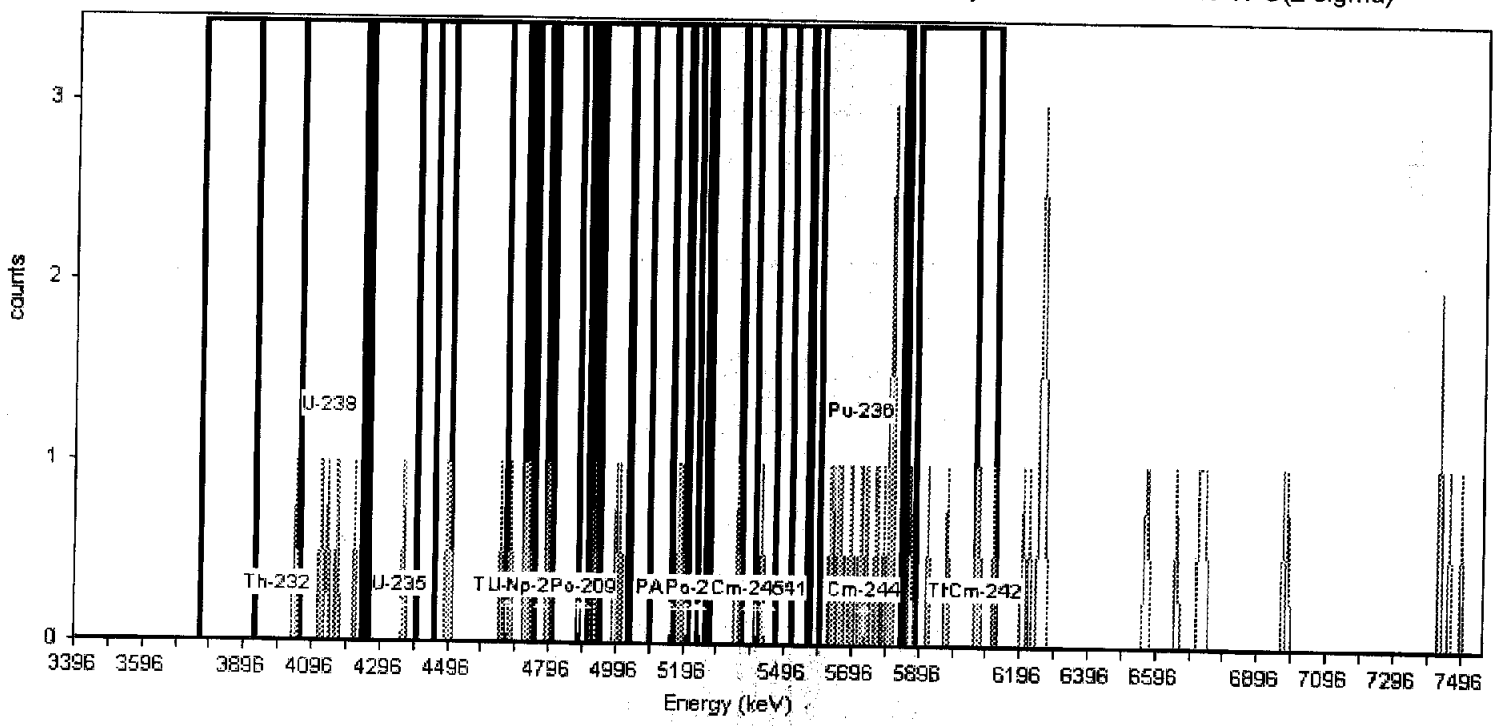
Batch Name: Feb2007
Description:

Acquisition

Detector: AV54 , SN:
Acquisition Start Date: 2/18/2007 2:05:51PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: JAN2007_AV54
Calibration Date: 1/31/2007 7:55:05AM

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

Efficiency: 27.20% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 65.00

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	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	6.00	6.250E-003	2.756E-003
U-234	4.70	4.50	4.80	6.00	6.250E-003	2.756E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	4.00	4.167E-003	2.329E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	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	16.00	1.667E-002	4.295E-003
Cm-244	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	3.00	3.125E-003	2.083E-003

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:56AM 2/19/2007

Sample

Sample Name: AV56 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

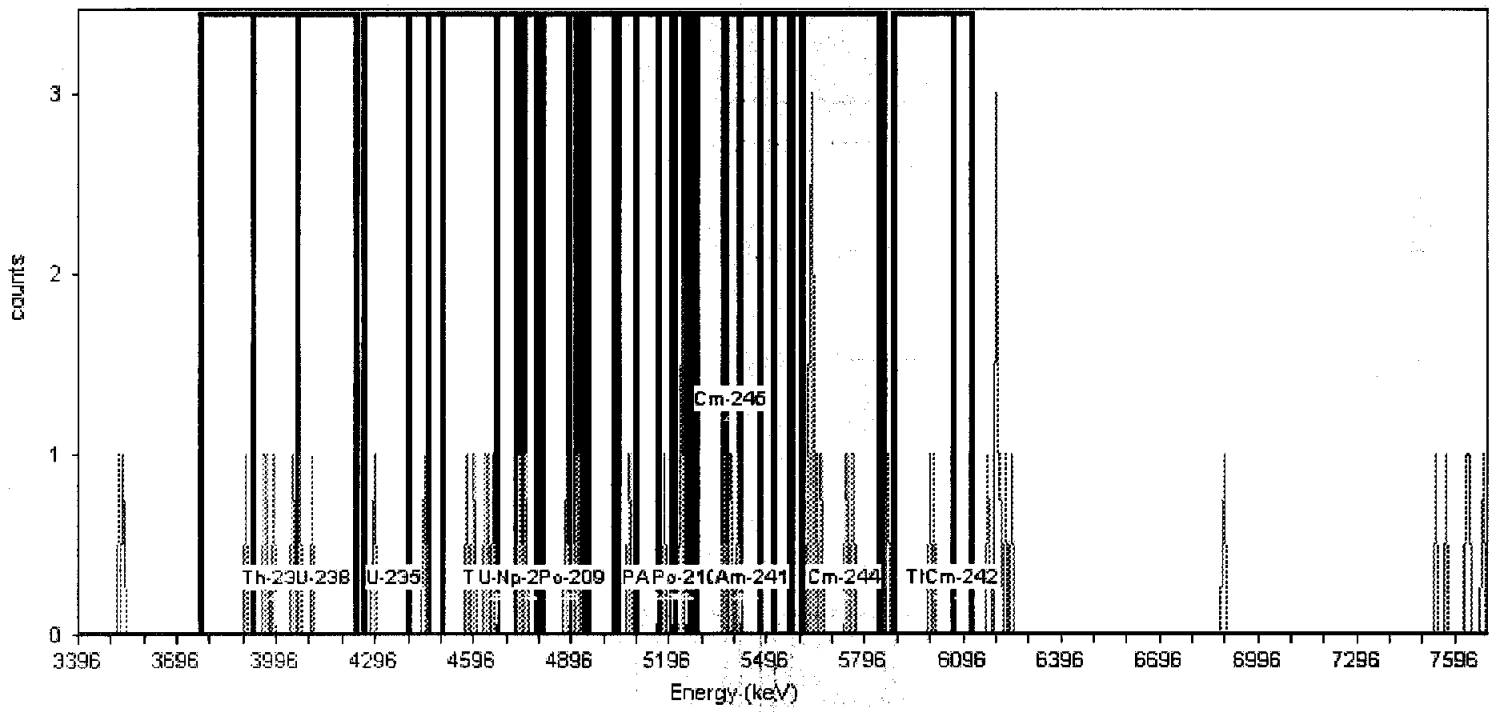
Description:

Acquisition

Detector: AV56 , SN:
Acquisition Start Date: 2/18/2007 2:05:53PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV56
Calibration Date: 1/29/2007 9:34:04PM

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

Efficiency: 25.81% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 55.00

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	6.00	6.250E-003	2.756E-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	7.00	7.292E-003	2.946E-003
U-234	4.70	4.50	4.80	8.00	8.333E-003	3.125E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	6.00	6.250E-003	2.756E-003
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Am-241	5.45	5.27	5.57	3.00	3.125E-003	2.083E-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	10.00	1.042E-002	3.455E-003
Cm-244	5.73	5.60	5.86	10.00	1.042E-002	3.455E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:09AM 2/19/2007

Sample

Sample Name: AV58 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

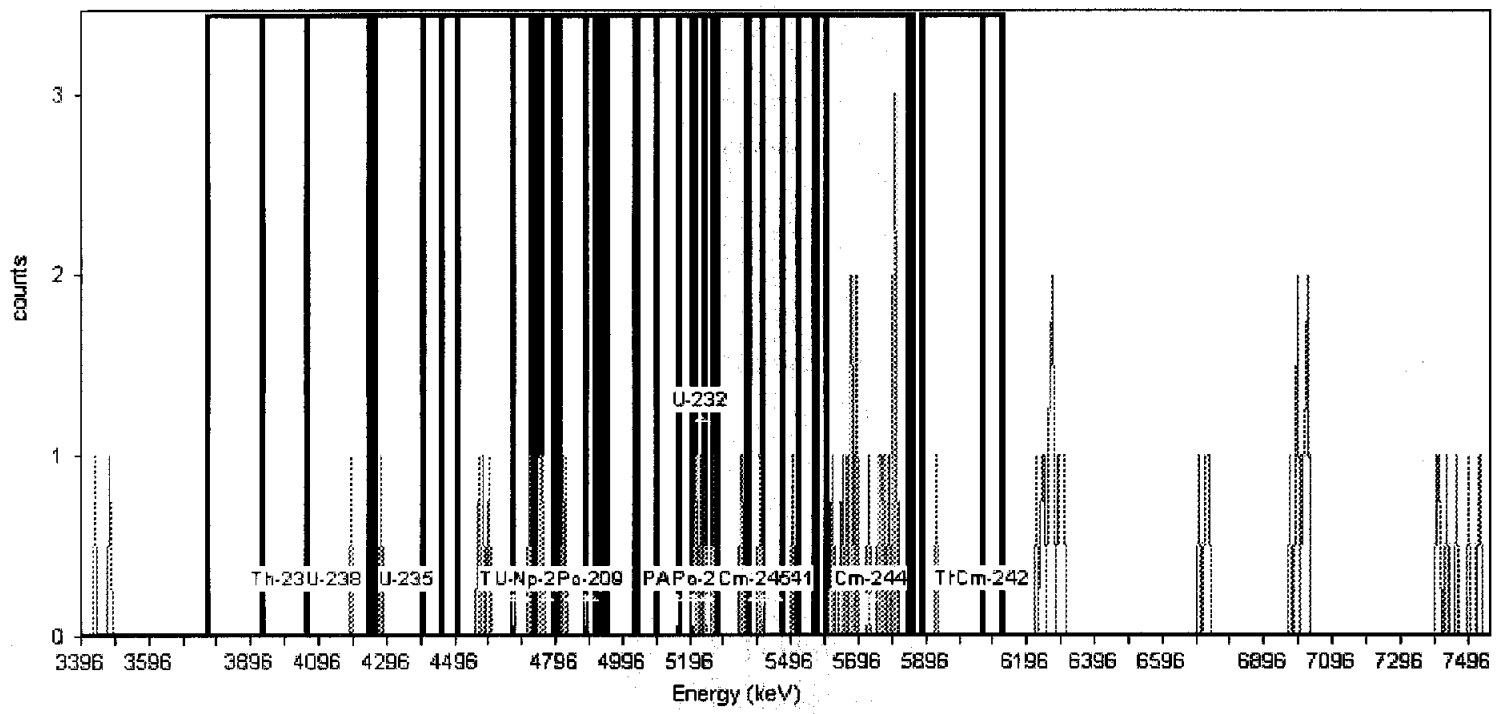
Acquisition

Detector: AV58 , SN:
Acquisition Start Date: 2/18/2007 2:05:55PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Dec2006_AV58
Calibration Date: 12/28/2006 3:40:46PM

Energy Calibration Equation:

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

Efficiency: 27.57% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 63.00

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	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	6.00	6.250E-003	2.756E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	7.00	7.292E-003	2.946E-003
Po-210	5.25	5.20	5.26	4.00	4.167E-003	2.329E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	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	16.00	1.667E-002	4.295E-003
Cm-244	5.73	5.60	5.86	16.00	1.667E-002	4.295E-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

ST

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:06AM 2/19/2007

Sample

Sample Name: AV59 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

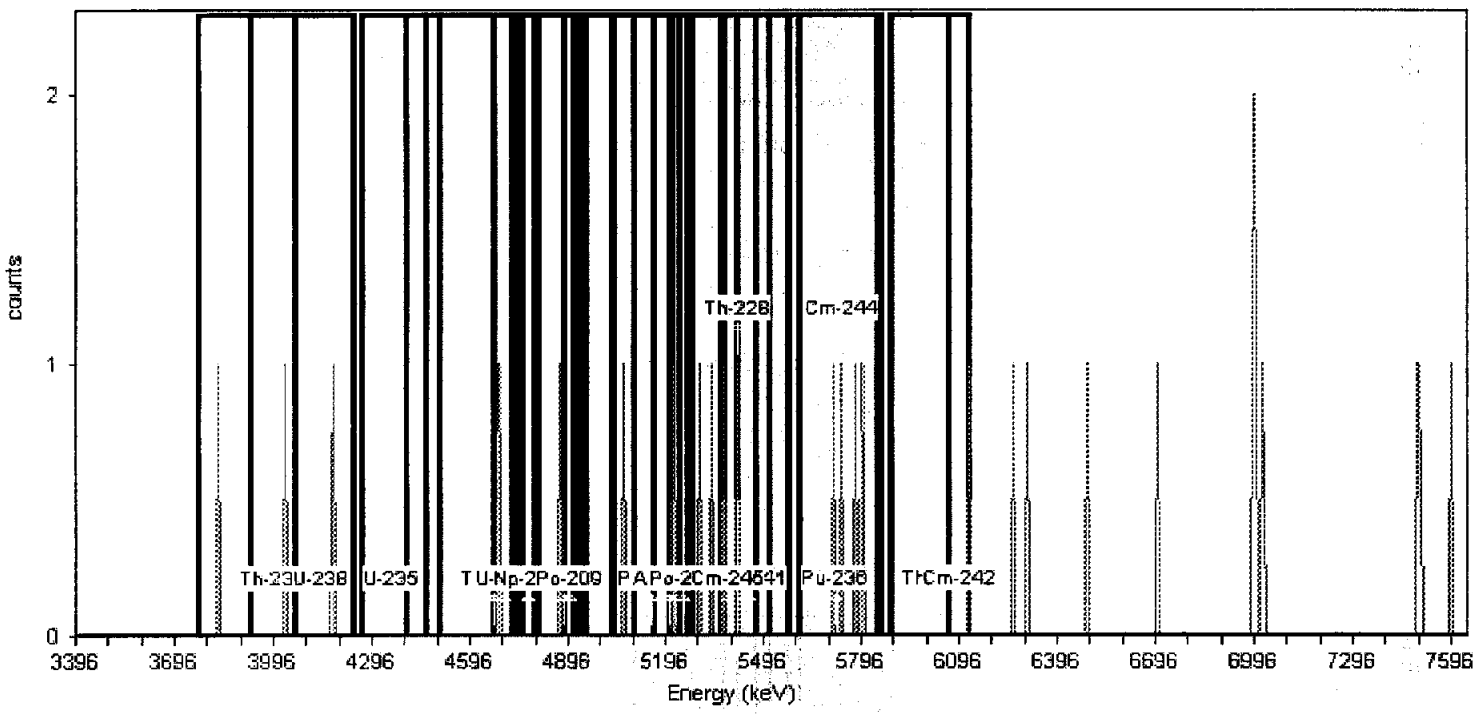
Acquisition

Detector: AV59 , SN:
Acquisition Start Date: 2/18/2007 2:05:57PM
Live Time: 960.00 min.
Real Time: 960.22 min.
Calibration Name: Jan2007_AV59
Calibration Date: 1/31/2007 2:25:24PM

Energy Calibration Equation:

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

Efficiency: 27.10% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 27.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	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	4.00	4.167E-003	2.329E-003
Cm-244	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	1.00	1.042E-003	1.473E-003
Th-232	3.99	3.77	4.06	2.00	2.083E-003	1.804E-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

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:15AM 2/19/2007

Sample

Sample Name: AV63 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

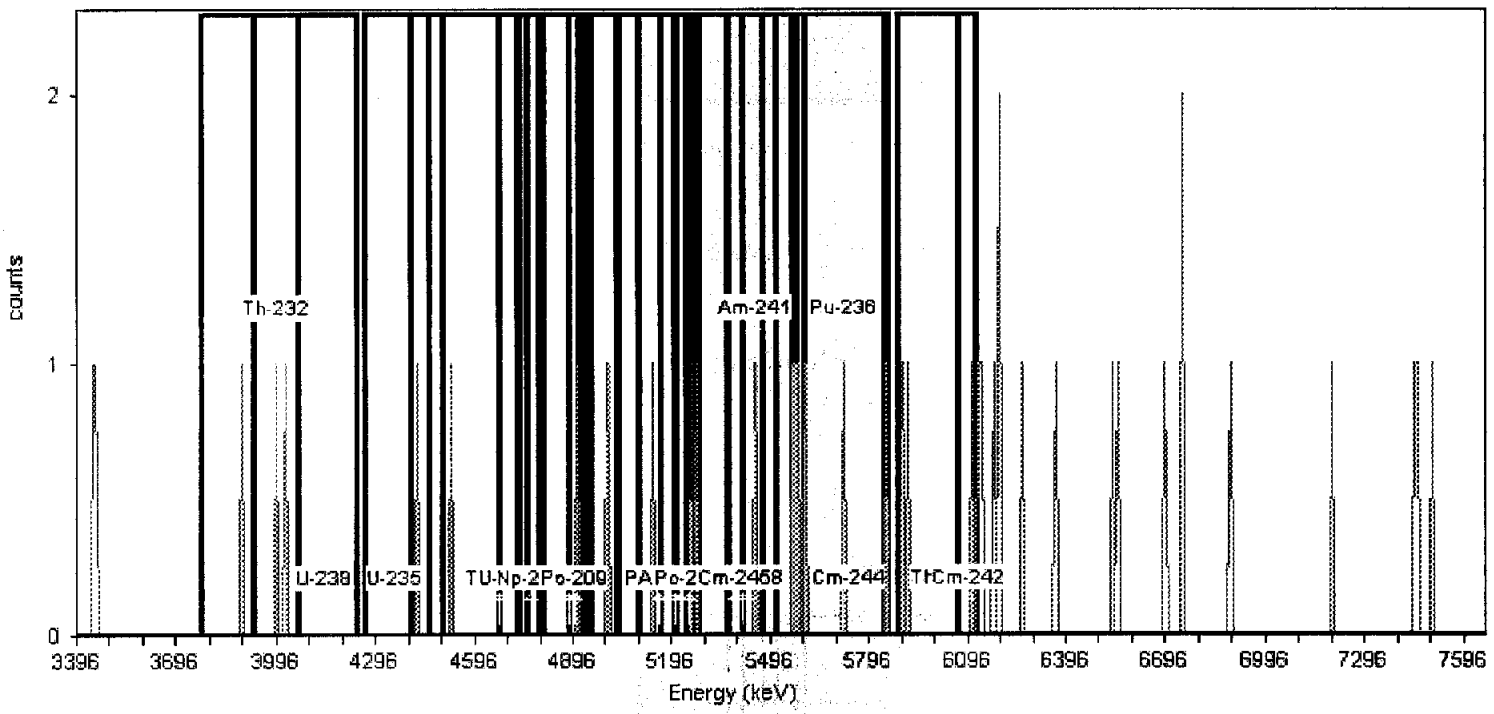
Acquisition

Detector: AV63 , SN:
Acquisition Start Date: 2/18/2007 2:05:58PM
Live Time: 960.00 min.
Real Time: 960.22 min.
Calibration Name: Jan2007_AV63
Calibration Date: 1/30/2007 12:16:31PM

Energy Calibration Equation:

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

Efficiency: 25.92% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Am-241	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	4.00	4.167E-003	2.329E-003
Cm-244	5.73	5.60	5.86	3.00	3.125E-003	2.083E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:19AM 2/19/2007

Sample

Sample Name: AV64 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

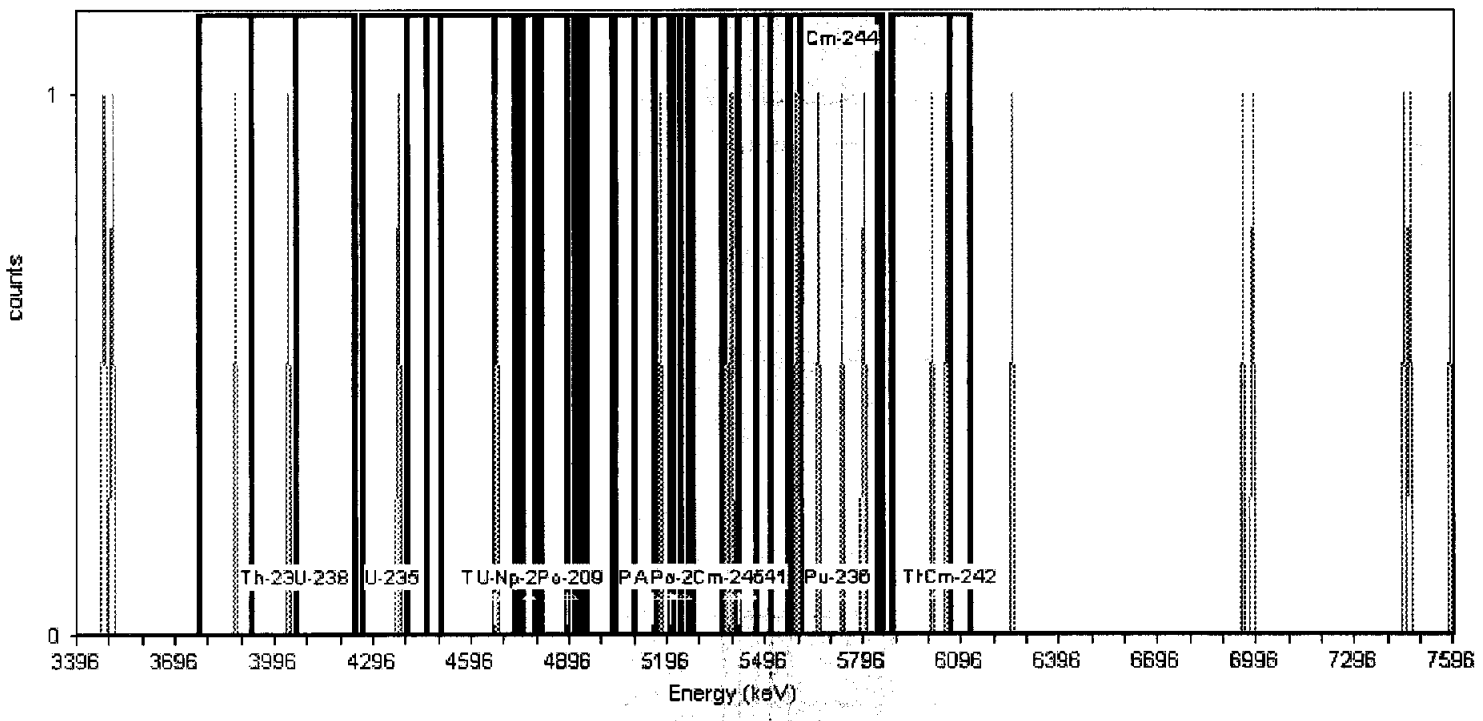
Acquisition

Detector: AV64 , SN:
Acquisition Start Date: 2/18/2007 2:05:59PM
Live Time: 960.00 min.
Real Time: 960.22 min.
Calibration Name: Jan2007_AV64
Calibration Date: 1/30/2007 12:16:40PM

Energy Calibration Equation:

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

Efficiency: 24.46% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 22.00

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	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	5.45	5.27	5.57	2.00	2.083E-003	1.804E-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	4.00	4.167E-003	2.329E-003
Cm-244	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 7:03:25AM 2/19/2007

Sample

Sample Name: AV65 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

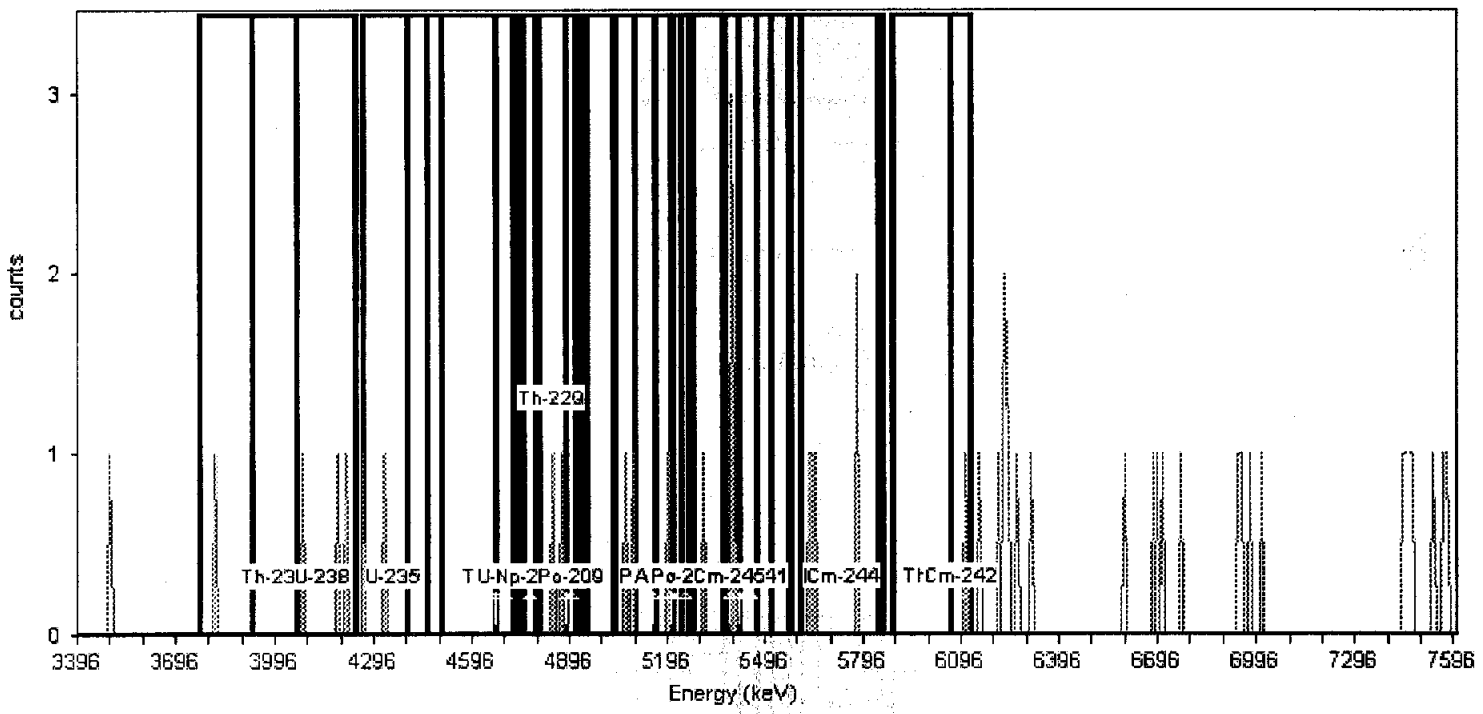
Acquisition

Detector: AV65 , SN:
Acquisition Start Date: 2/18/2007 2:06:01PM
Live Time: 960.00 min.
Real Time: 960.22 min.
Calibration Name: Jan2007_AV65
Calibration Date: 1/30/2007 12:16:48PM

Energy Calibration Equation:

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

Efficiency: 25.50% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background 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-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	6.00	6.250E-003	2.756E-003
Cm-245	5.39	5.36	5.41	5.00	5.208E-003	2.552E-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	3.00	3.125E-003	2.083E-003
U-235	4.35	4.26	4.46	2.00	2.083E-003	1.804E-003
Pu-236	5.72	5.57	5.84	5.00	5.208E-003	2.552E-003
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:32AM 2/19/2007

Sample

Sample Name: AV66 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

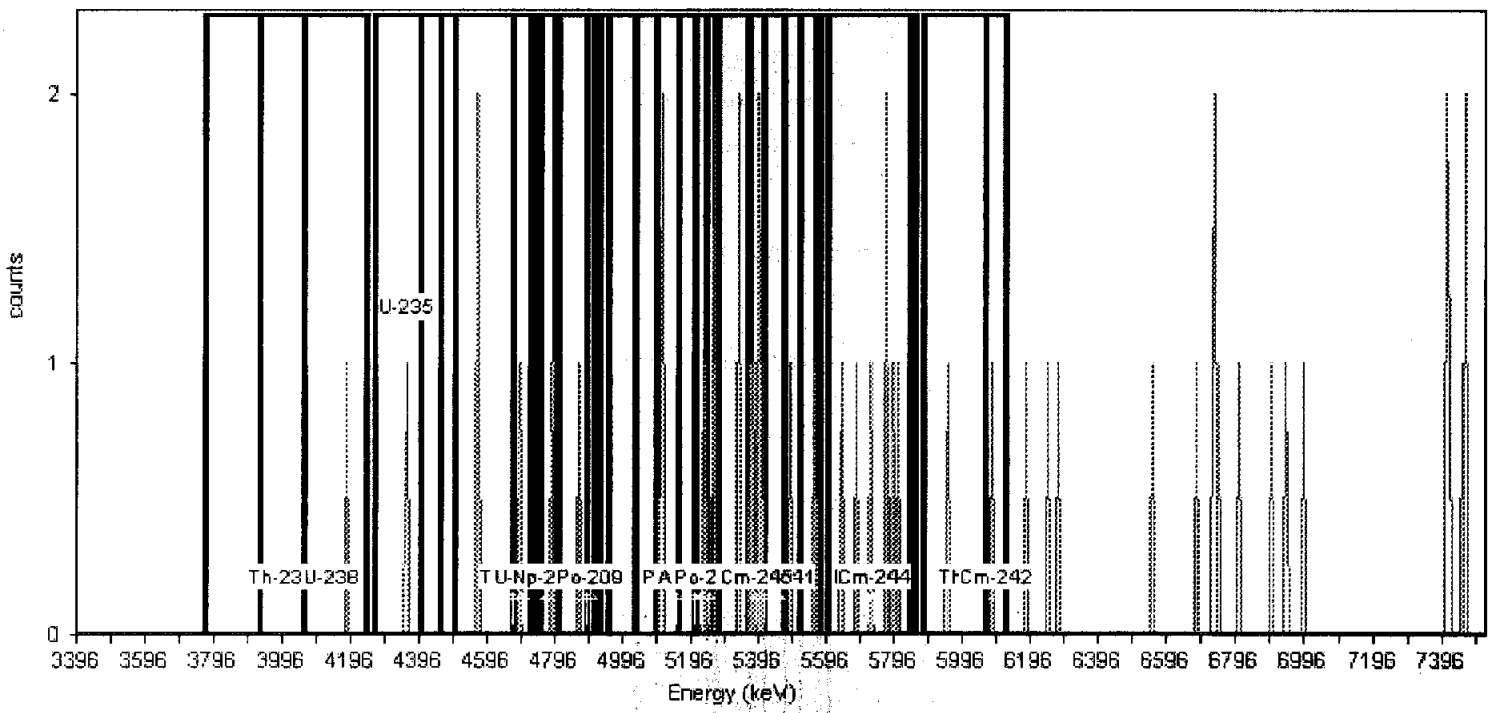
Description:

Acquisition

Detector: AV66 , SN:
Acquisition Start Date: 2/18/2007 2:06:02PM
Live Time: 960.00 min.
Real Time: 960.22 min.
Calibration Name: Jan2007_AV66
Calibration Date: 1/30/2007 12:16:59PM

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

Efficiency: 26.64% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 49.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.37	8.00	8.333E-003	3.125E-003
Th-228	5.41	5.16	5.47	11.00	1.146E-002	3.608E-003
Po-210	5.25	5.20	5.26	3.00	3.125E-003	2.083E-003
Pu-238	5.44	5.24	5.52	11.00	1.146E-002	3.608E-003
Am-241	5.45	5.27	5.57	10.00	1.042E-002	3.455E-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	7.00	7.292E-003	2.946E-003
Cm-244	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
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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:03:38AM 2/19/2007

Sample

Sample Name: AV67 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

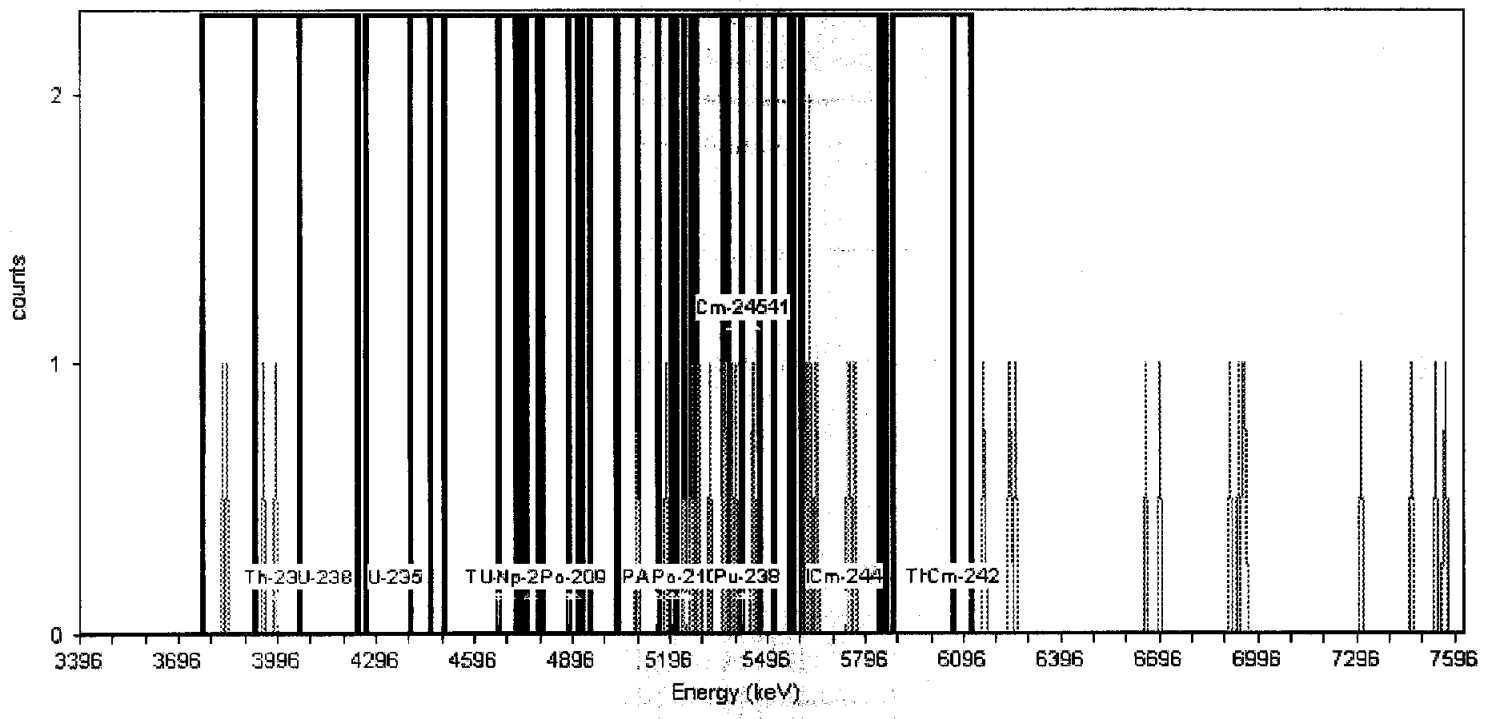
Acquisition

Detector: AV67 , SN:
Acquisition Start Date: 2/18/2007 2:06:04PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV67
Calibration Date: 1/30/2007 2:56:09PM

Energy Calibration Equation:

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

Efficiency: 27.66% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 34.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-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	2.00	2.083E-003	1.804E-003
U-235	4.35	4.26	4.46	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	7.00	7.292E-003	2.946E-003
Th-228	5.41	5.16	5.47	9.00	9.375E-003	3.294E-003
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	8.00	8.333E-003	3.125E-003
Am-241	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
Cm-244	5.73	5.60	5.86	7.00	7.292E-003	2.946E-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 7:03:45AM 2/19/2007

Sample

Sample Name: AV68 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

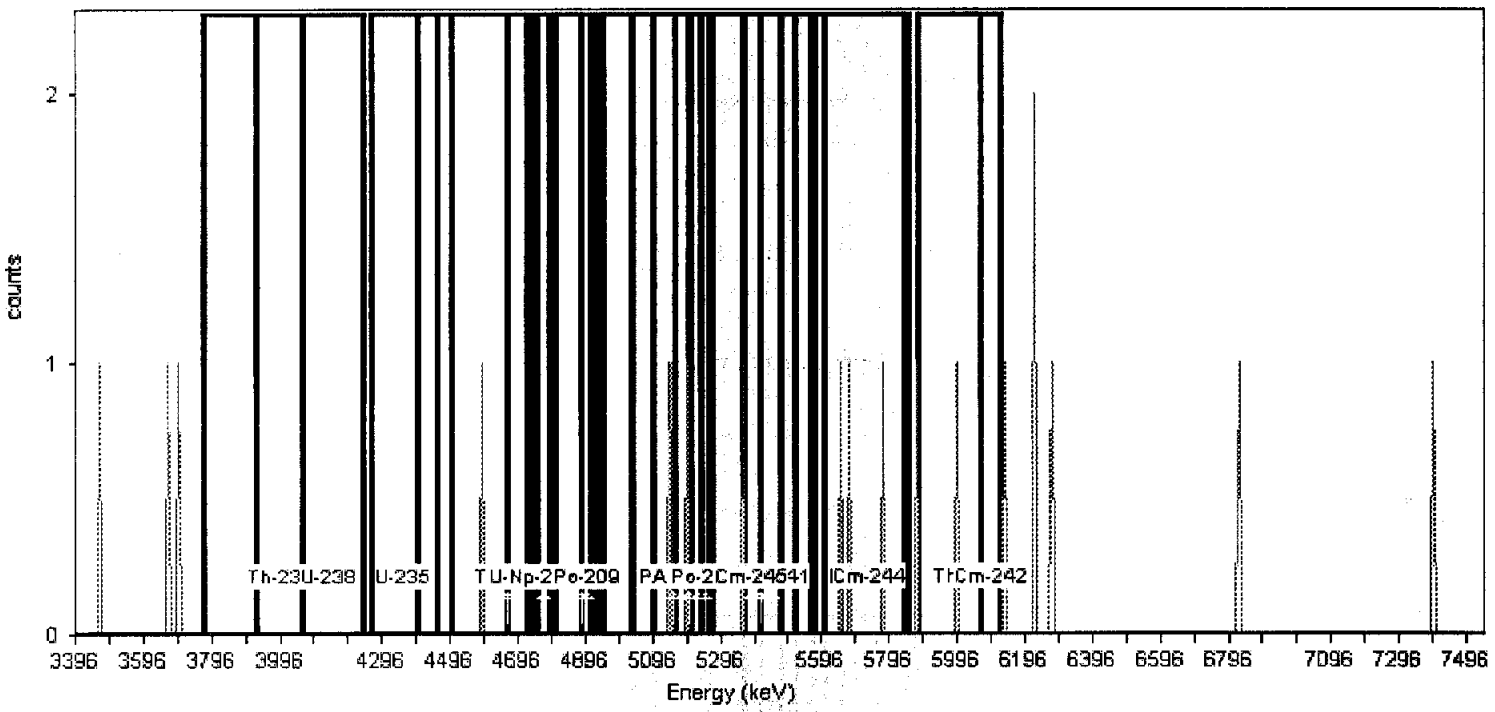
Acquisition

Detector: AV68 , SN:
Acquisition Start Date: 2/18/2007 2:06:06PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV68
Calibration Date: 1/30/2007 2:56:18PM

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

Total Background Counts: 18.00

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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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	3.00	3.125E-003	2.083E-003
Cm-244	5.73	5.60	5.86	3.00	3.125E-003	2.083E-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 7:03:48AM 2/19/2007

Sample

Sample Name: AV69 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

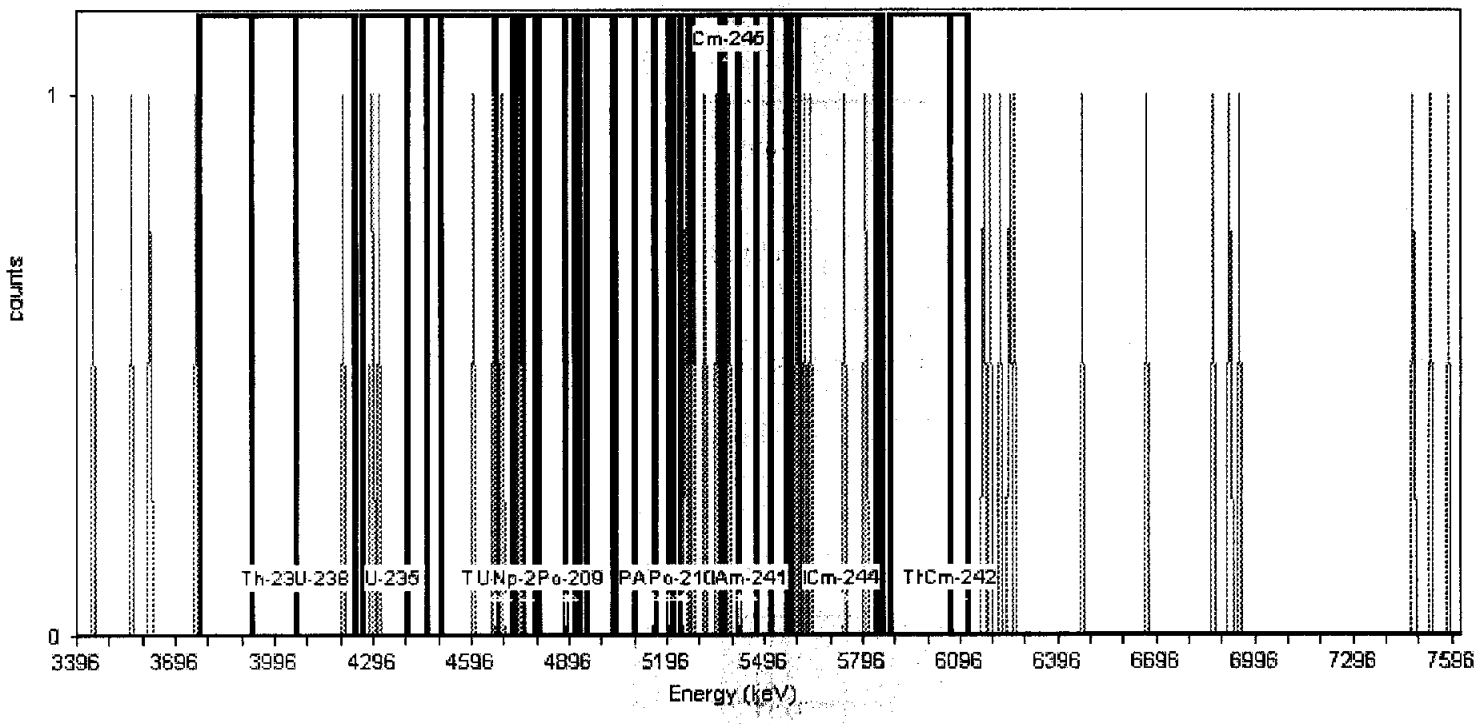
Acquisition

Detector: AV69 , SN:
Acquisition Start Date: 2/18/2007 2:06:07PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV69
Calibration Date: 1/30/2007 2:56:26PM

Energy Calibration Equation:

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

Efficiency: 27.86% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute 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	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
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Am-241	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	5.00	5.208E-003	2.552E-003
Cm-244	5.73	5.60	5.86	4.00	4.167E-003	2.329E-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
7:03:57AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV70
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Feb2007
Description:

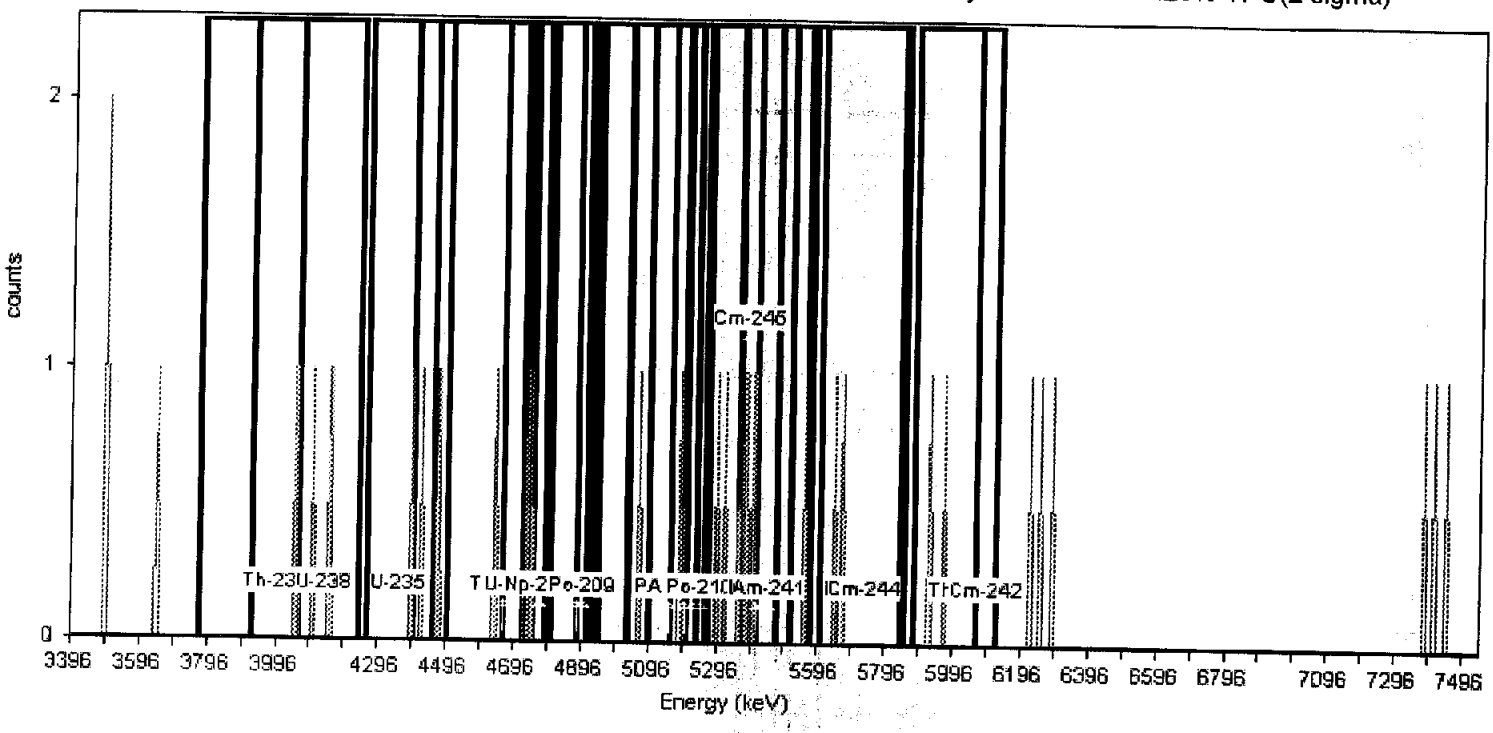
Acquisition

Detector: AV70 , SN:
Acquisition Start Date: 2/18/2007 2:06:09PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV70
Calibration Date: 1/30/2007 2:56:35PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 27.34% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 31.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	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
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	7.00	7.292E-003	2.946E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	7.00	7.292E-003	2.946E-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	2.00	2.083E-003	1.804E-003
Cm-244	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
Th-232	3.99	3.77	4.06	1.00	1.042E-003	1.473E-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

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:04:01AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV71
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Feb2007
Description:

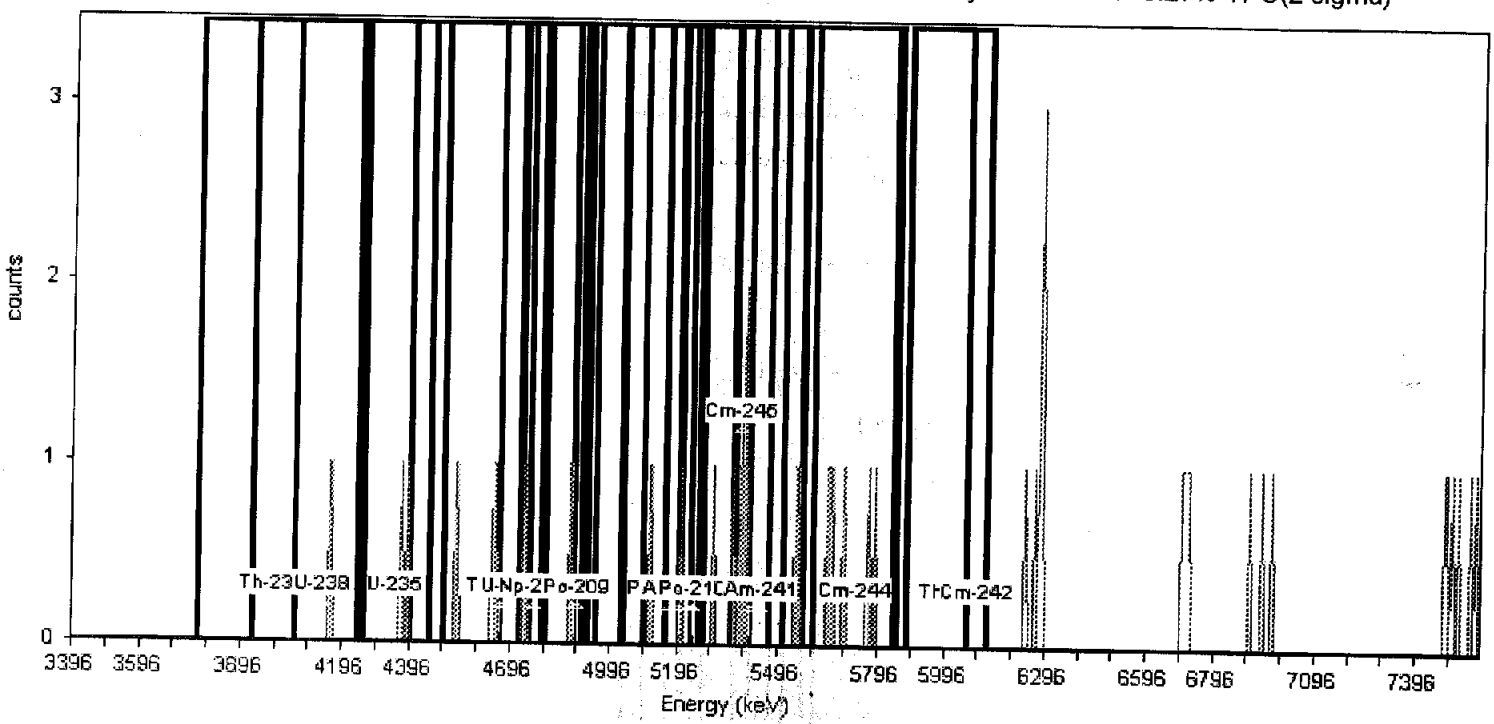
Acquisition

Detector: AV71 , SN:
Acquisition Start Date: 2/18/2007 2:06:11PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV71
Calibration Date: 1/30/2007 7:52:01PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 27.29% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 43.00

Nuclide Summary (ROI)

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	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	8.00	8.333E-003	3.125E-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	6.00	6.250E-003	2.756E-003
Cm-244	5.73	5.60	5.86	6.00	6.250E-003	2.756E-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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:04:10AM 2/19/2007

Sample

Sample Name: AV72 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

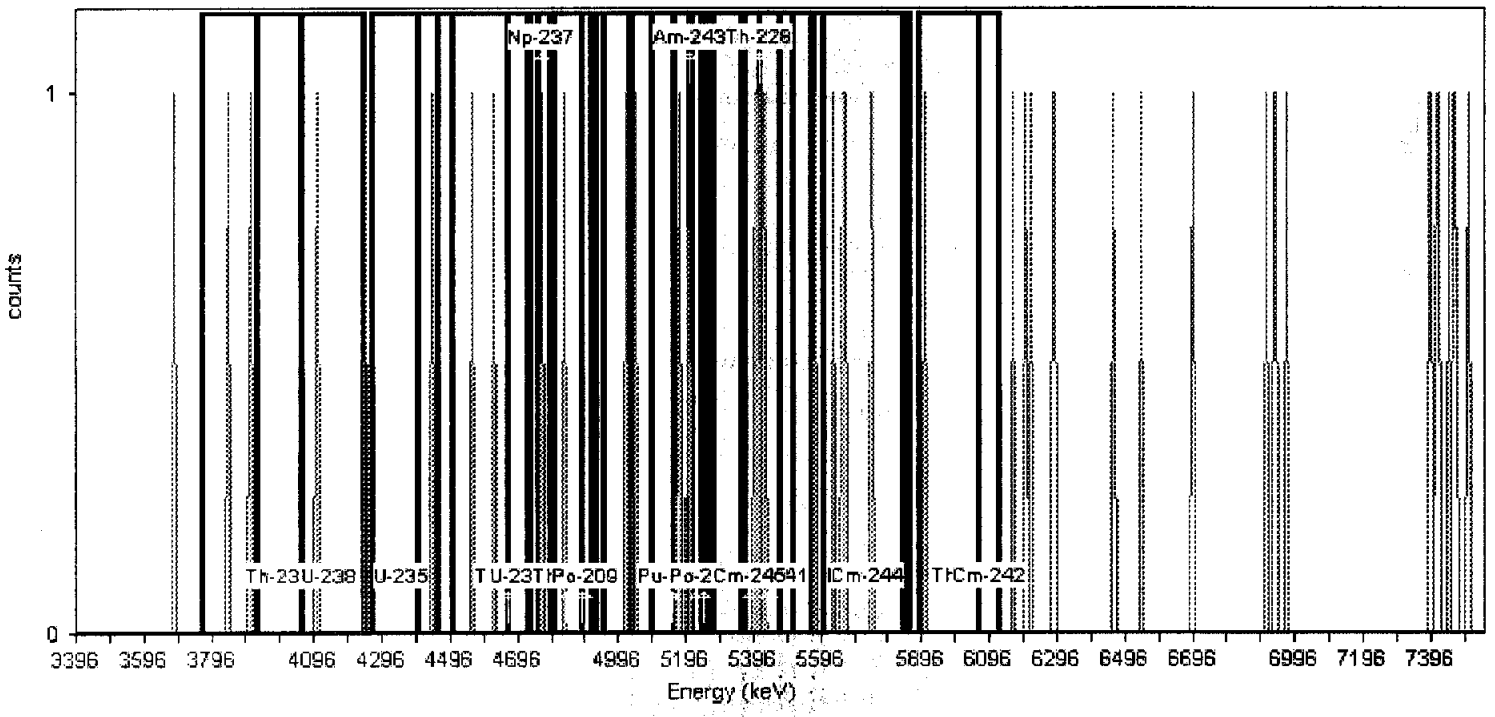
Acquisition

Detector: AV72 , SN:
Acquisition Start Date: 2/18/2007 2:06:13PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: JAN2007_AV72
Calibration Date: 2/1/2007 12:58:00PM

Energy Calibration Equation:

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

Efficiency: 26.96% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 44.00

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	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	4.00	4.167E-003	2.329E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	5.45	5.27	5.57	4.00	4.167E-003	2.329E-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
Cm-244	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 7:04:13AM 2/19/2007

Sample

Sample Name: AV73 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

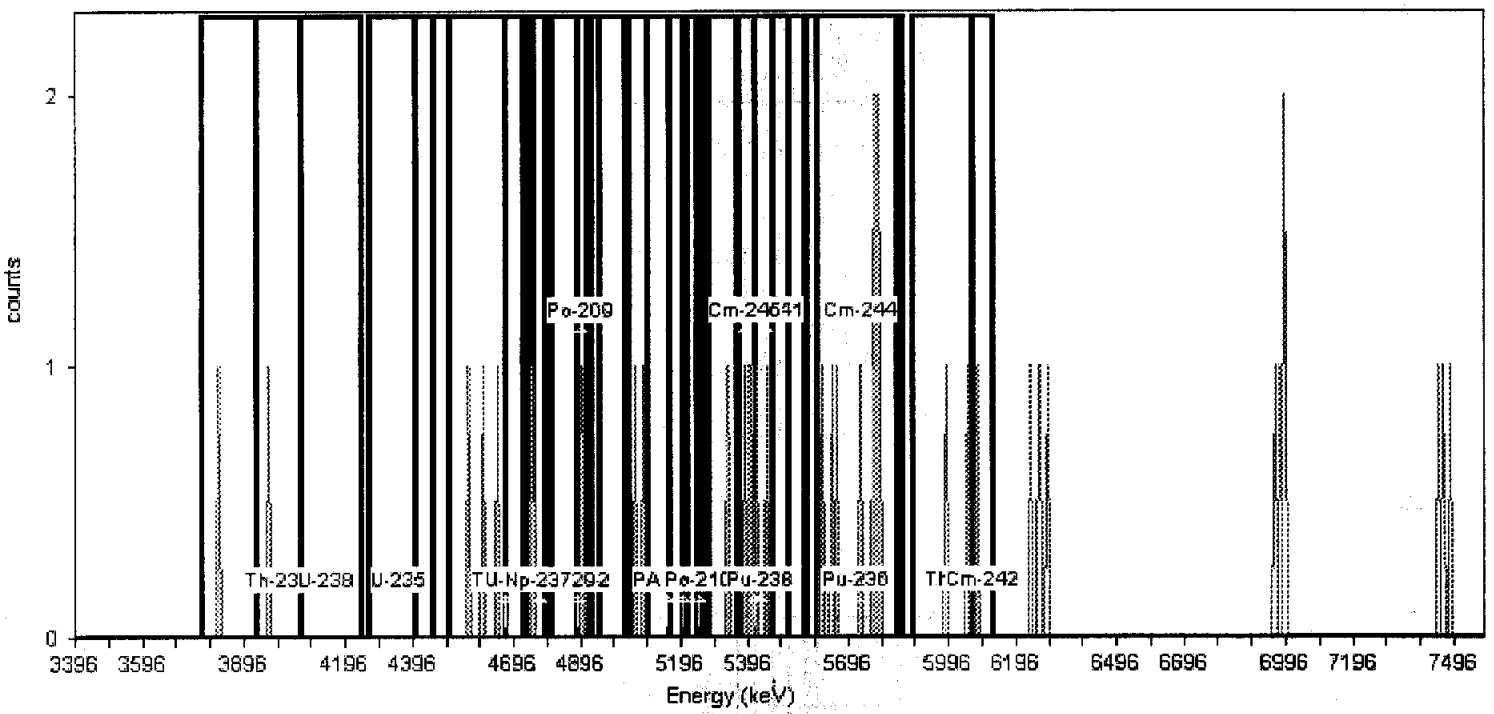
Acquisition

Detector: AV73 , SN:
Acquisition Start Date: 2/18/2007 2:06:15PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: JAN2007_AV73
Calibration Date: 2/1/2007 12:58:22PM

Energy Calibration Equation:

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

Efficiency: 27.07% +/- 0.29% TPU(2 sigma)



General Analysis

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

Total Background Counts: 40.00

Nuclide Summary (ROI)

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
U-234	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Pu-242	4.88	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	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
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	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	10.00	1.042E-002	3.455E-003
Cm-244	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	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 7:04:17AM 2/19/2007

Sample

Sample Name: AV75 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

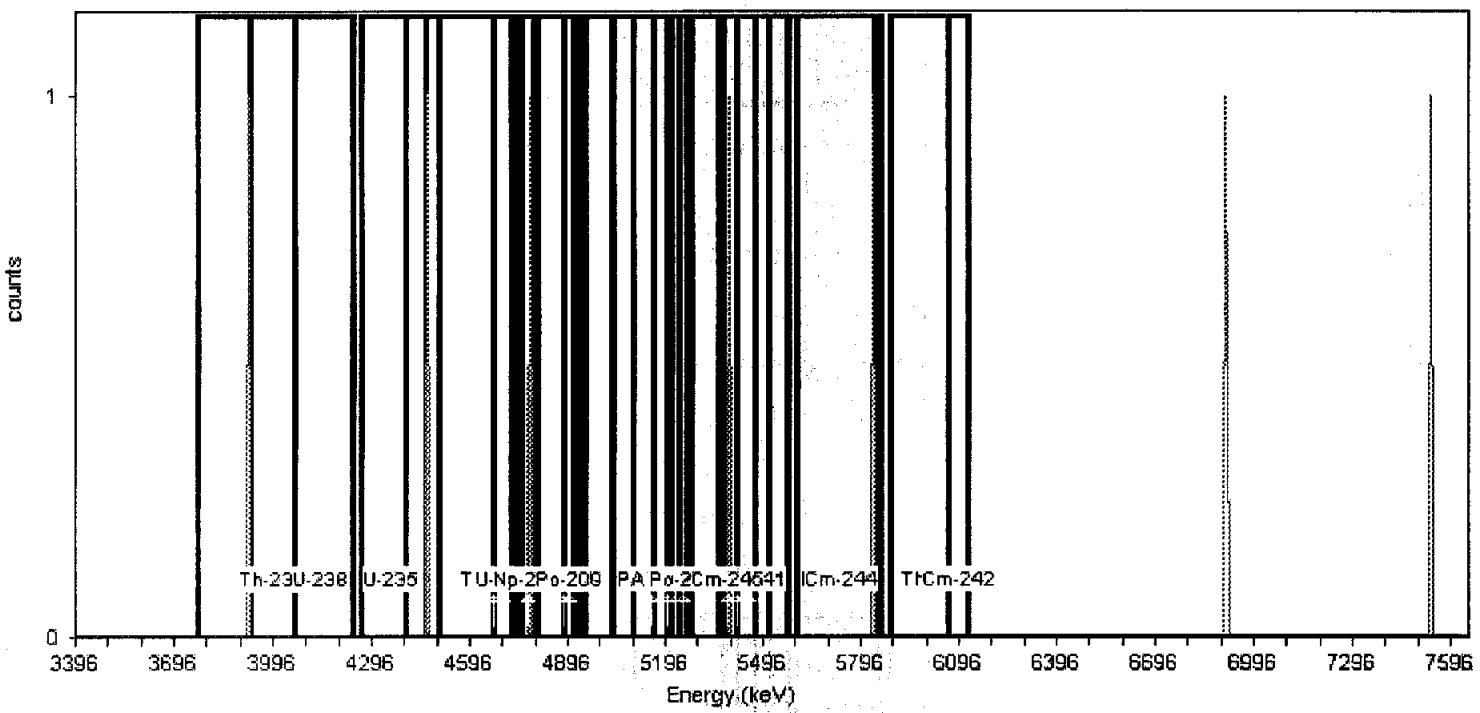
Acquisition

Detector: AV75 , SN: 46-033P6
Acquisition Start Date: 2/18/2007 2:06:16PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV75
Calibration Date: 2/1/2007 10:43:43AM

Energy Calibration Equation:

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

Efficiency: 26.45% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 7.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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
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
Pu-236	5.72	5.57	5.84	1.00	1.042E-003	1.473E-003
Cm-244	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 7:04:20AM 2/19/2007

Sample

Sample Name: AV76 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

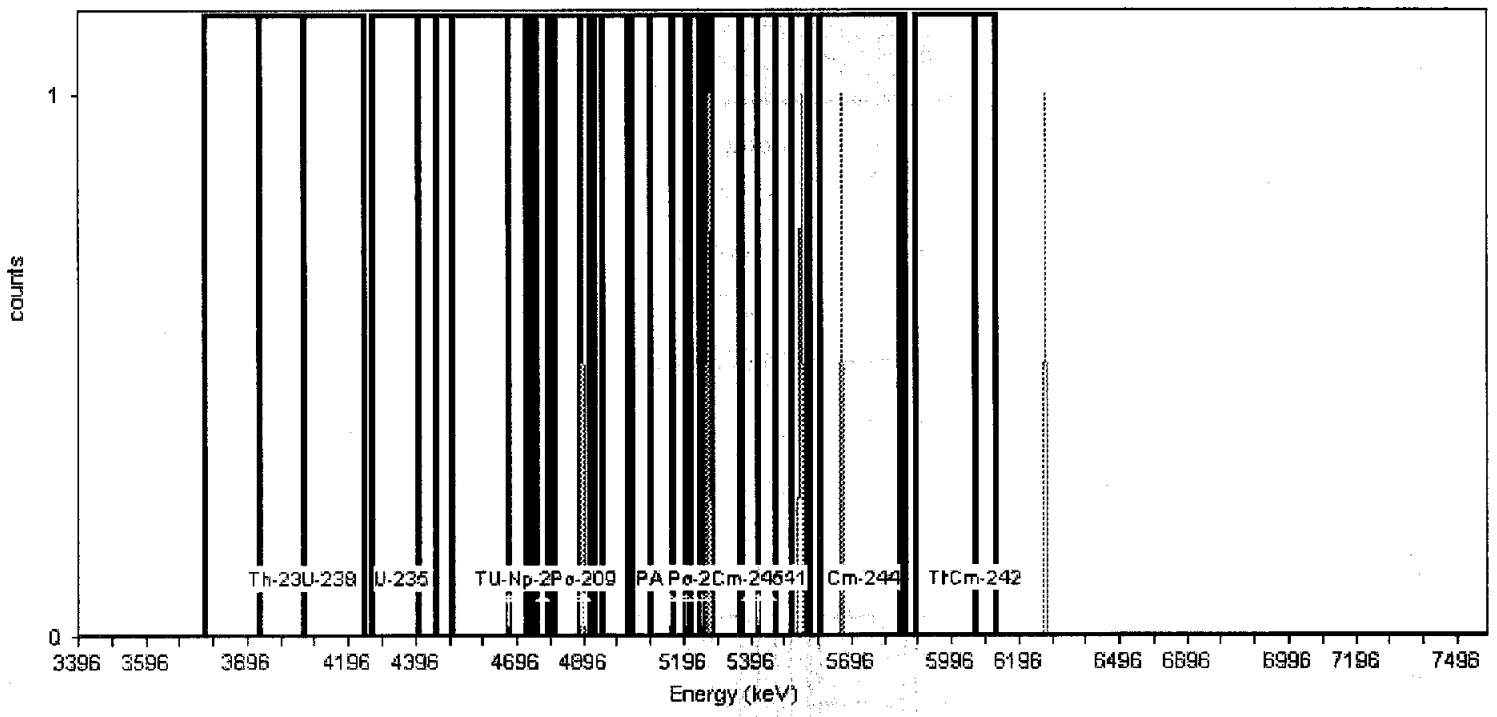
Acquisition

Detector: AV76 , SN: 46-033Q4
Acquisition Start Date: 2/18/2007 2:06:17PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV76
Calibration Date: 2/1/2007 10:43:51AM

Energy Calibration Equation:

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

Efficiency: 26.58% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 5.00

Nuclide Summary (ROI)

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
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:04:26AM 2/19/2007

Sample

Sample Name: AV77 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

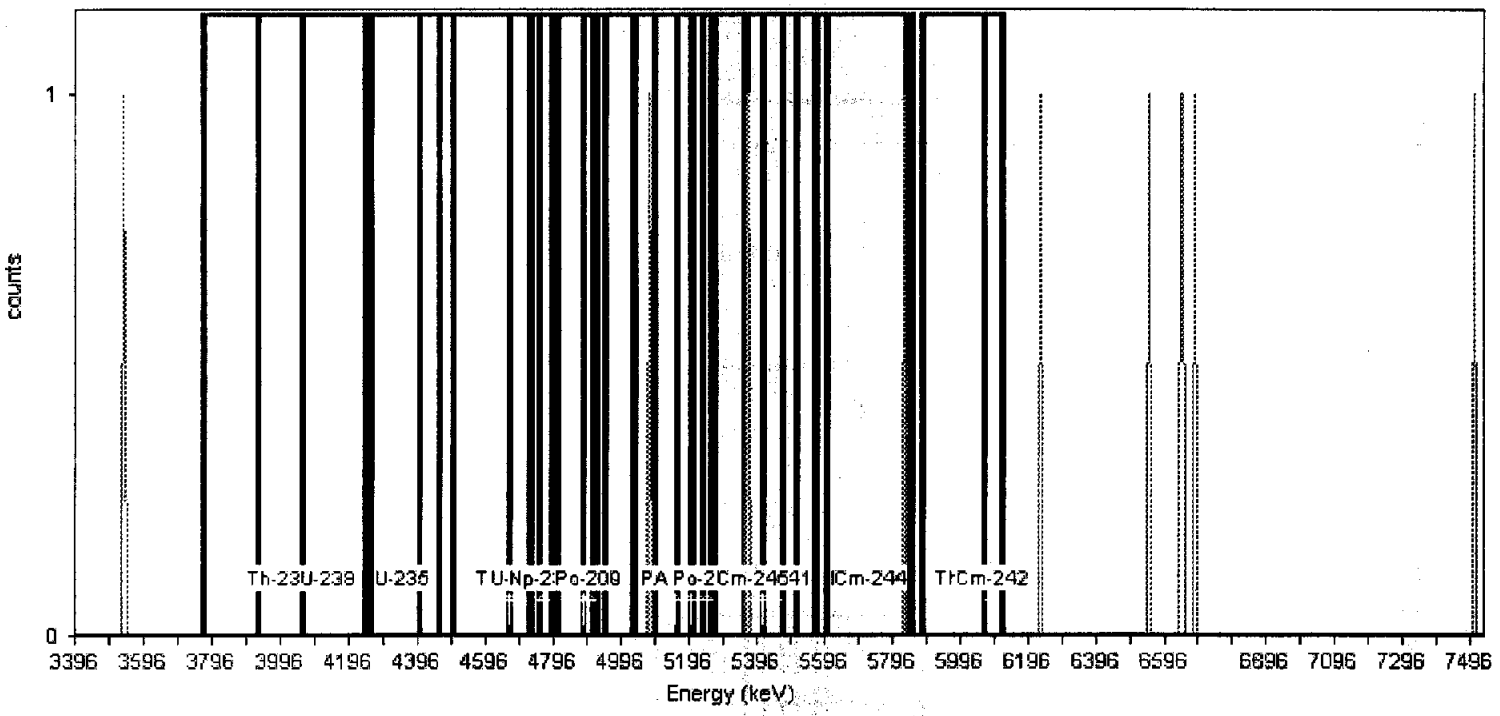
Acquisition

Detector: AV77 , SN: 46-033Q7
Acquisition Start Date: 2/18/2007 2:06:18PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV77
Calibration Date: 2/1/2007 10:44:00AM

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: Absolute 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	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	5.23	5.04	5.37	2.00	2.083E-003	1.804E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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	1.00	1.042E-003	1.473E-003
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:04:30AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV78
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Feb2007
Description:

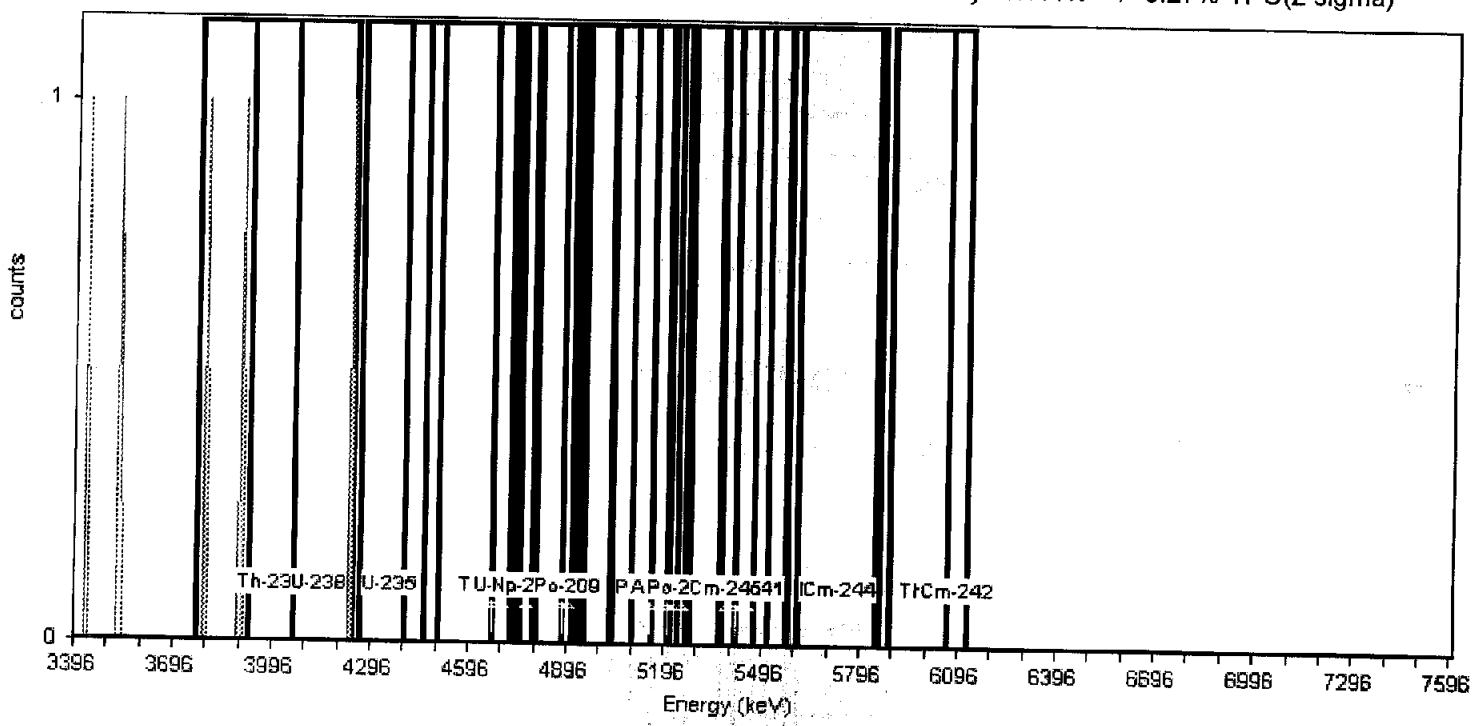
Acquisition

Detector: AV78 , SN: 46-033FF4
Acquisition Start Date: 2/18/2007 2:06:18PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV78
Calibration Date: 2/1/2007 10:44:50AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 26.44% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 5.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
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
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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 7:04:33AM 2/19/2007

Sample

Sample Name: AV79 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

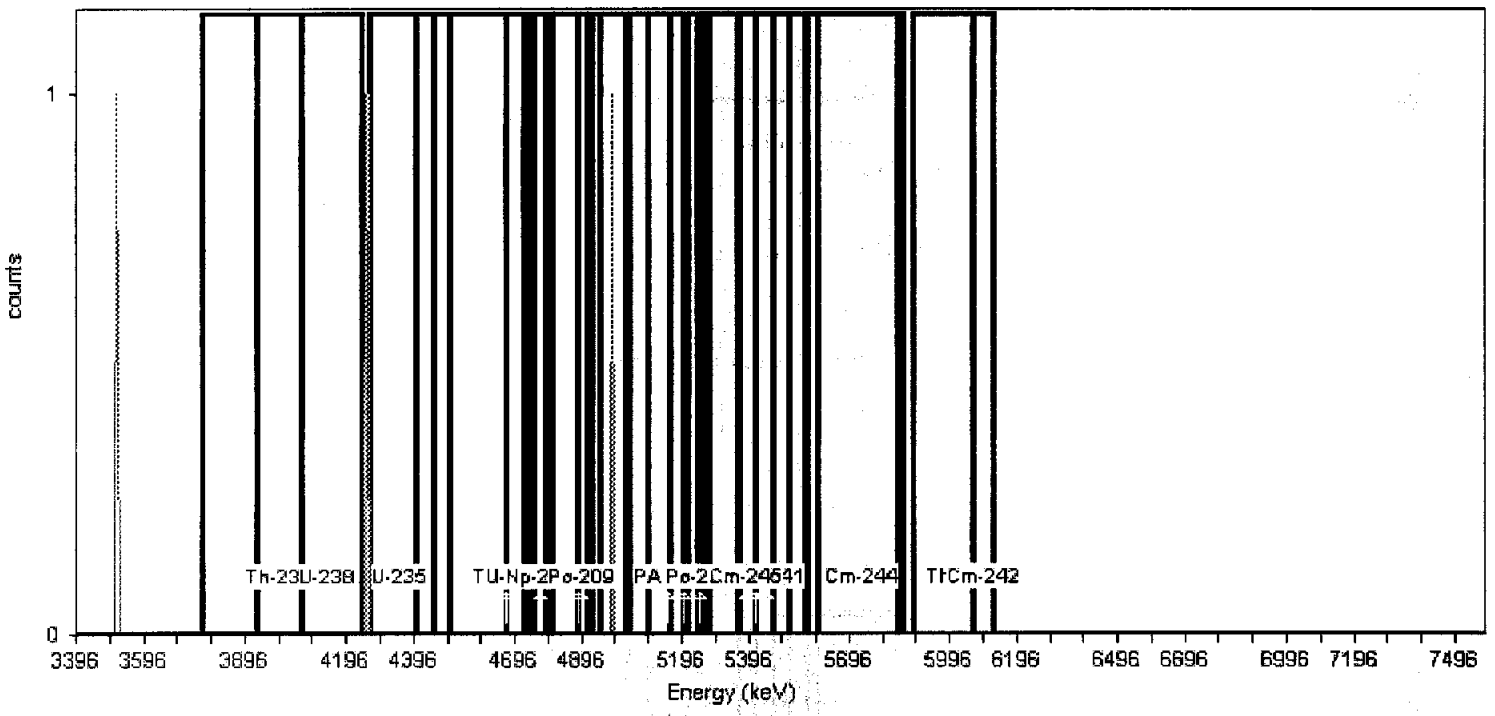
Acquisition

Detector: AV79 , SN: 46-033Q5
Acquisition Start Date: 2/18/2007 2:06:19PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV79
Calibration Date: 2/1/2007 1:26:07PM

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: Absolute ROI Analysis, Set Name = 11/05_Background 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	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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 7:04:36AM 2/19/2007

Sample

Sample Name: AV80 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

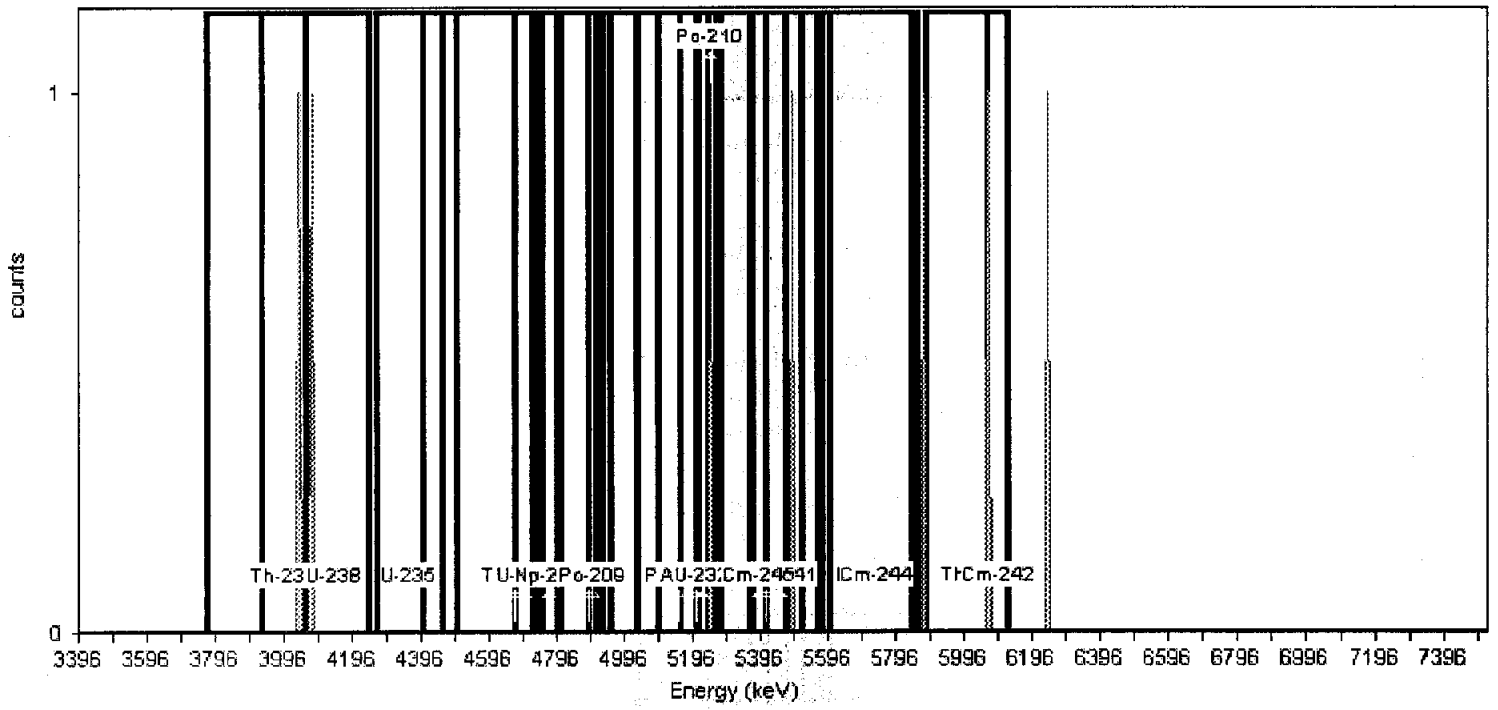
Acquisition

Detector: AV80 , SN: 46-03305
Acquisition Start Date: 2/18/2007 2:06:20PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV80
Calibration Date: 2/1/2007 1:26:14PM

Energy Calibration Equation:

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

Efficiency: 25.96% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	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
Cm-244	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	1.00	1.042E-003	1.473E-003

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:04:39AM 2/19/2007

Sample

Sample Name: AV81 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

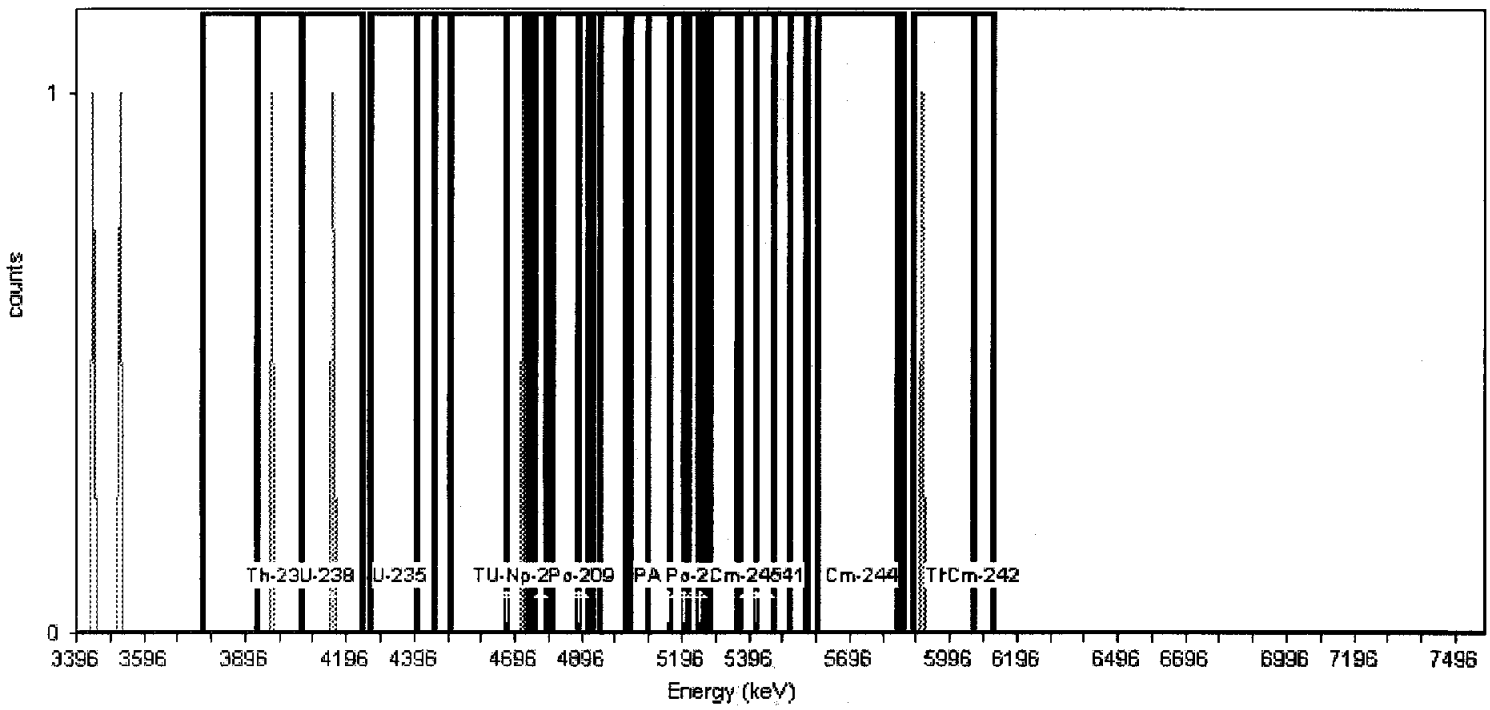
Acquisition

Detector: AV81 , SN: 46-03307
Acquisition Start Date: 2/18/2007 2:06:21PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV81
Calibration Date: 2/1/2007 1:26:22PM

Energy Calibration Equation:

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

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



General Analysis

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

Total Background Counts: 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	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	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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 7:04:43AM 2/19/2007

Sample

Sample Name: AV82 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

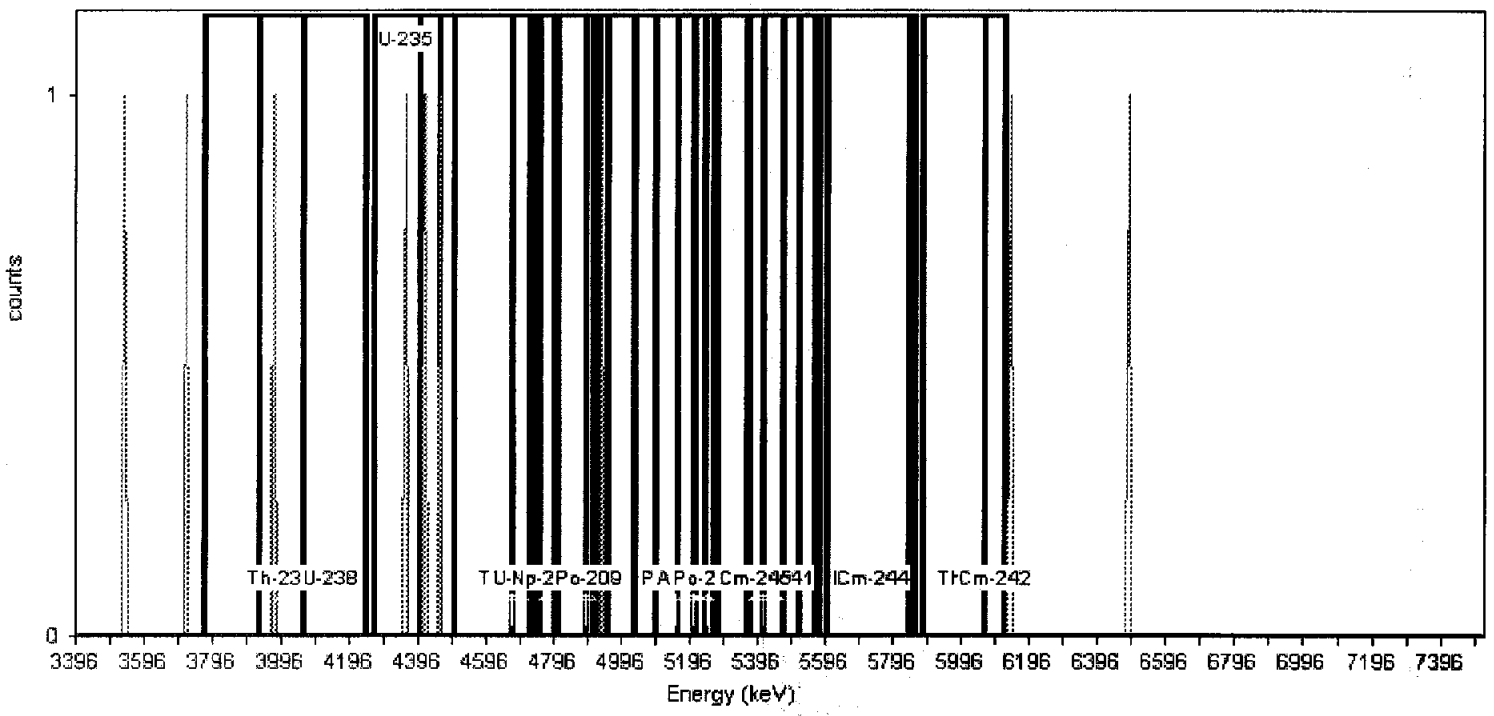
Acquisition

Detector: AV82 , SN: 46-032EE5
Acquisition Start Date: 2/18/2007 2:06:22PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV82
Calibration Date: 2/1/2007 1:26:29PM

Energy Calibration Equation:

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

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



General Analysis

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

Total Background Counts: 9.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
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	3.00	3.125E-003	2.083E-003
Pu-236	5.72	5.57	5.84	0.00	0.000E+000	1.473E-003
Cm-244	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

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:04:46AM 2/19/2007

Analyst: 60040

Sample

Sample Name: AV83
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Feb2007
Description:

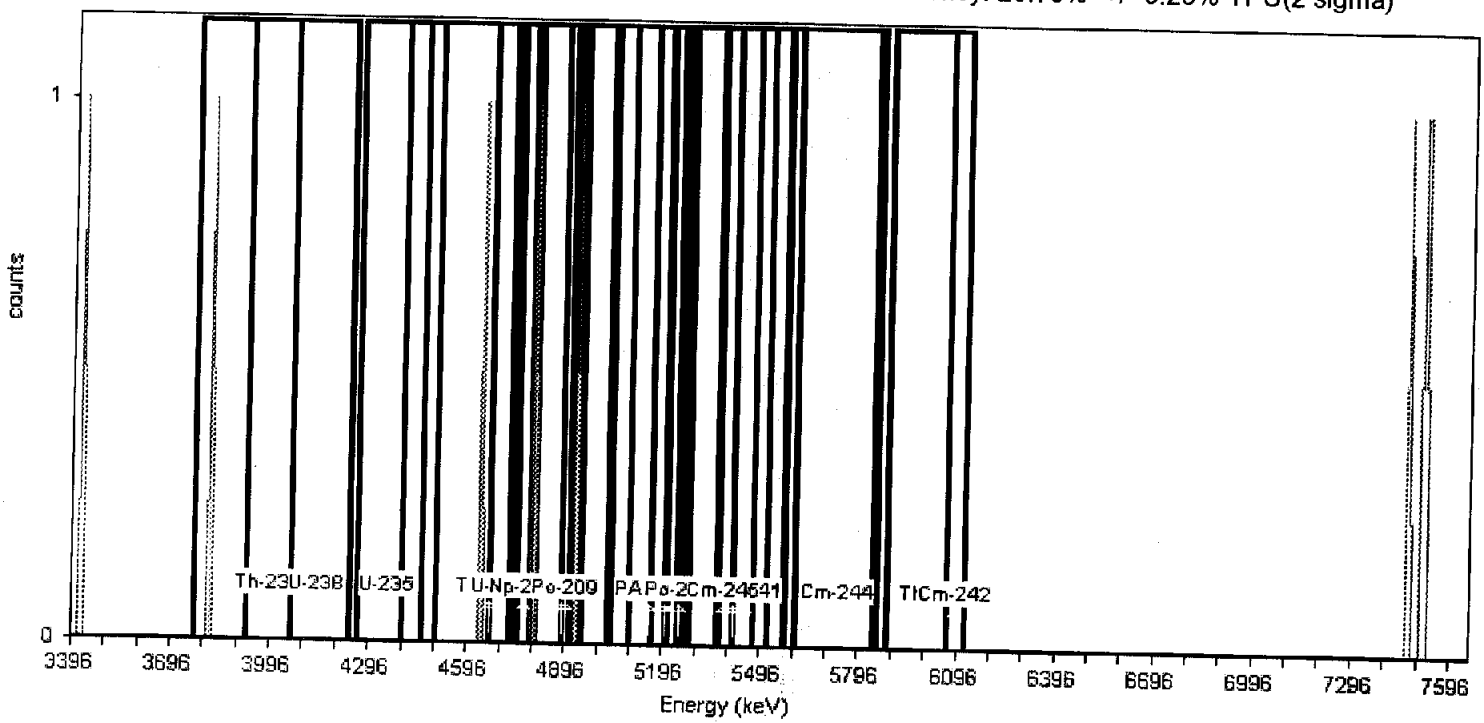
Acquisition

Detector: AV83 , SN: 46-03306
Acquisition Start Date: 2/18/2007 2:06:23PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV83
Calibration Date: 2/1/2007 3:49:00PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 26.76% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background Nuclide Library: Background ROI Library
Total Background Counts: 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	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	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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

ST

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:04:49AM 2/19/2007

Sample

Sample Name: AV84 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

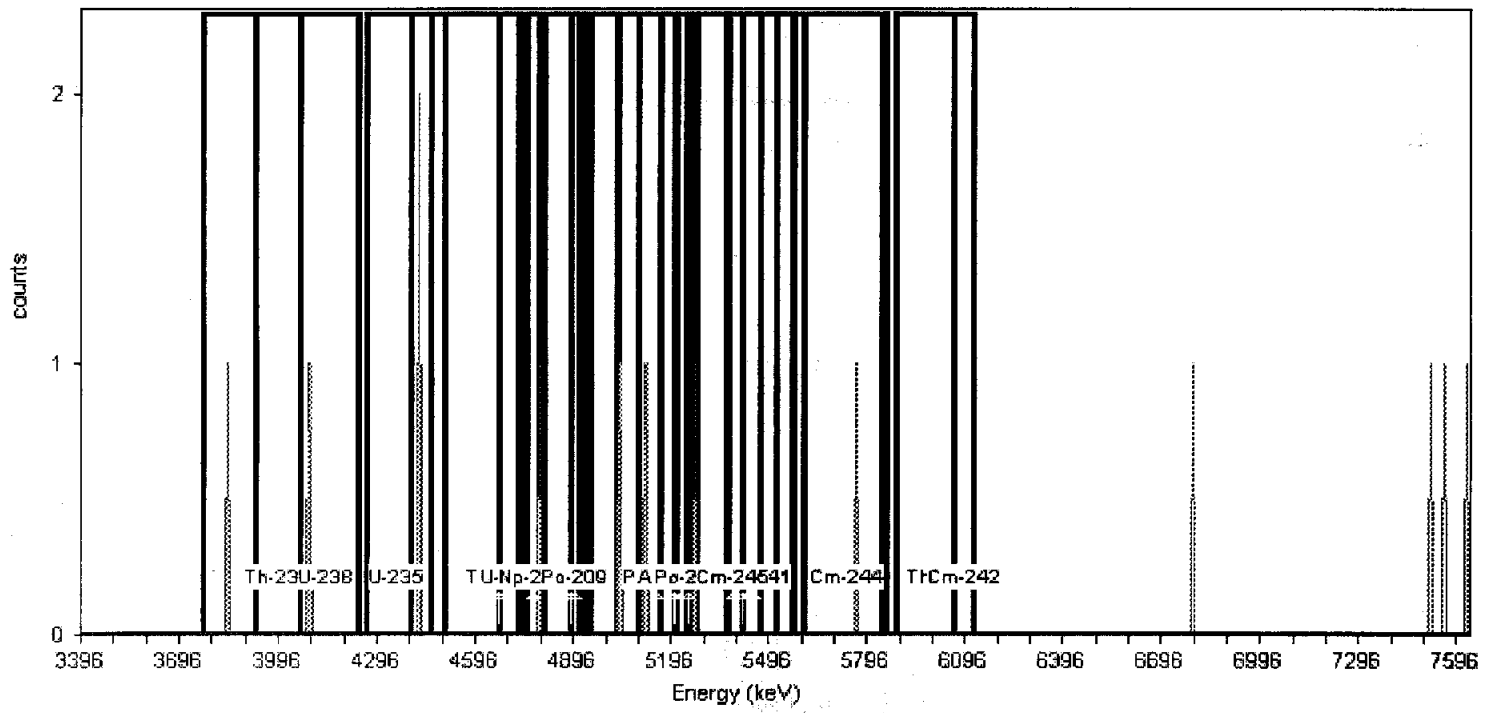
Acquisition

Detector: AV84 , SN: 46-033FF3
Acquisition Start Date: 2/18/2007 2:06:24PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV84
Calibration Date: 2/1/2007 3:49:13PM

Energy Calibration Equation:

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

Efficiency: 26.81% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 13.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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
Cm-244	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	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	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 7:04:52AM 2/19/2007

Sample

Sample Name: AV85 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

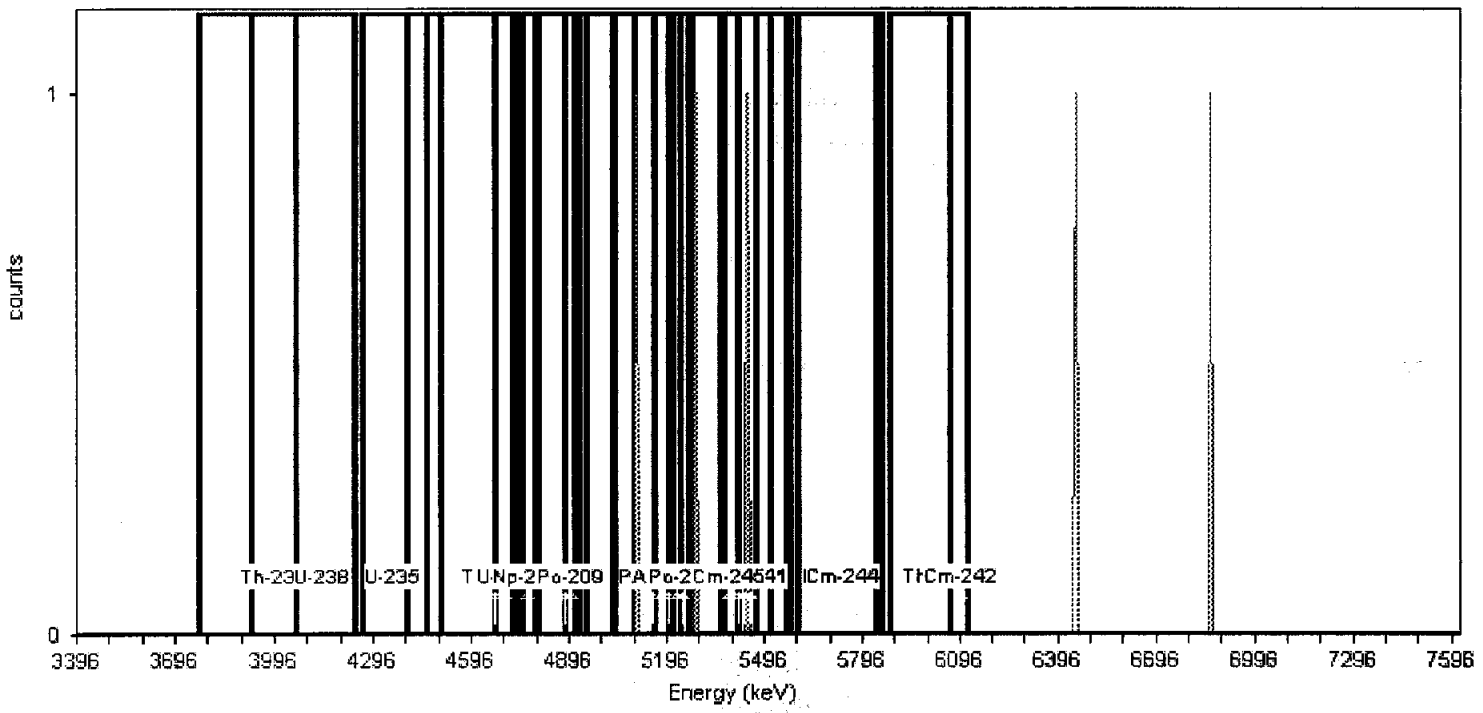
Acquisition

Detector: AV85 , SN: 46-032EE7
Acquisition Start Date: 2/18/2007 2:06:25PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: JAN2007_AV85
Calibration Date: 1/31/2007 9:28:11PM

Energy Calibration Equation:

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

Efficiency: 27.54% +/- 0.30% TPU(2 sigma)



General Analysis

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

Total Background Counts: 5.00

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
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	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
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:01:28AM 2/19/2007

Sample

Sample Name: AV86 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

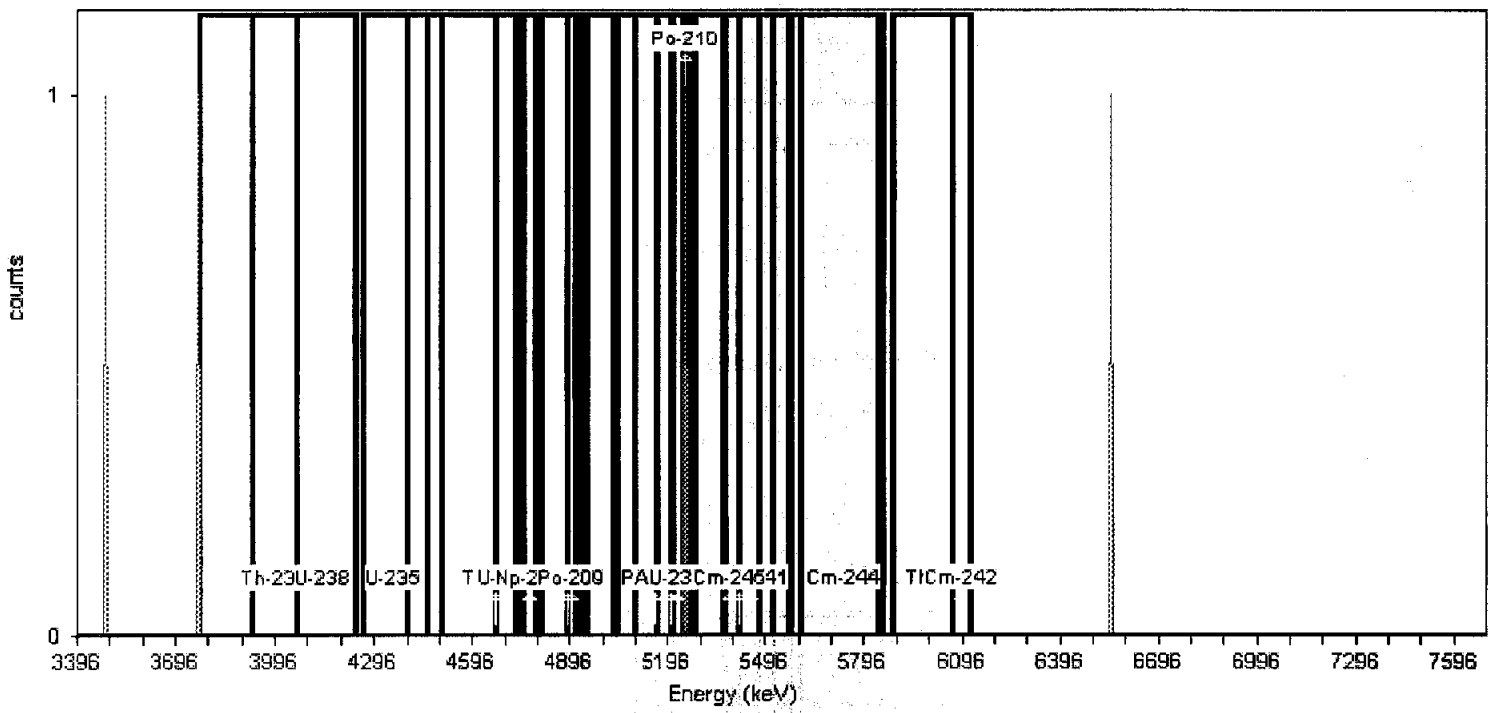
Acquisition

Detector: AV86 , SN: 46-033Q6
Acquisition Start Date: 2/18/2007 2:06:26PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: JAN2007_AV86
Calibration Date: 1/31/2007 9:28:19PM

Energy Calibration Equation:

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

Efficiency: 26.82% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 4.00

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
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	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
Cm-244	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 7:01:35AM 2/19/2007

Sample

Sample Name: AV87 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

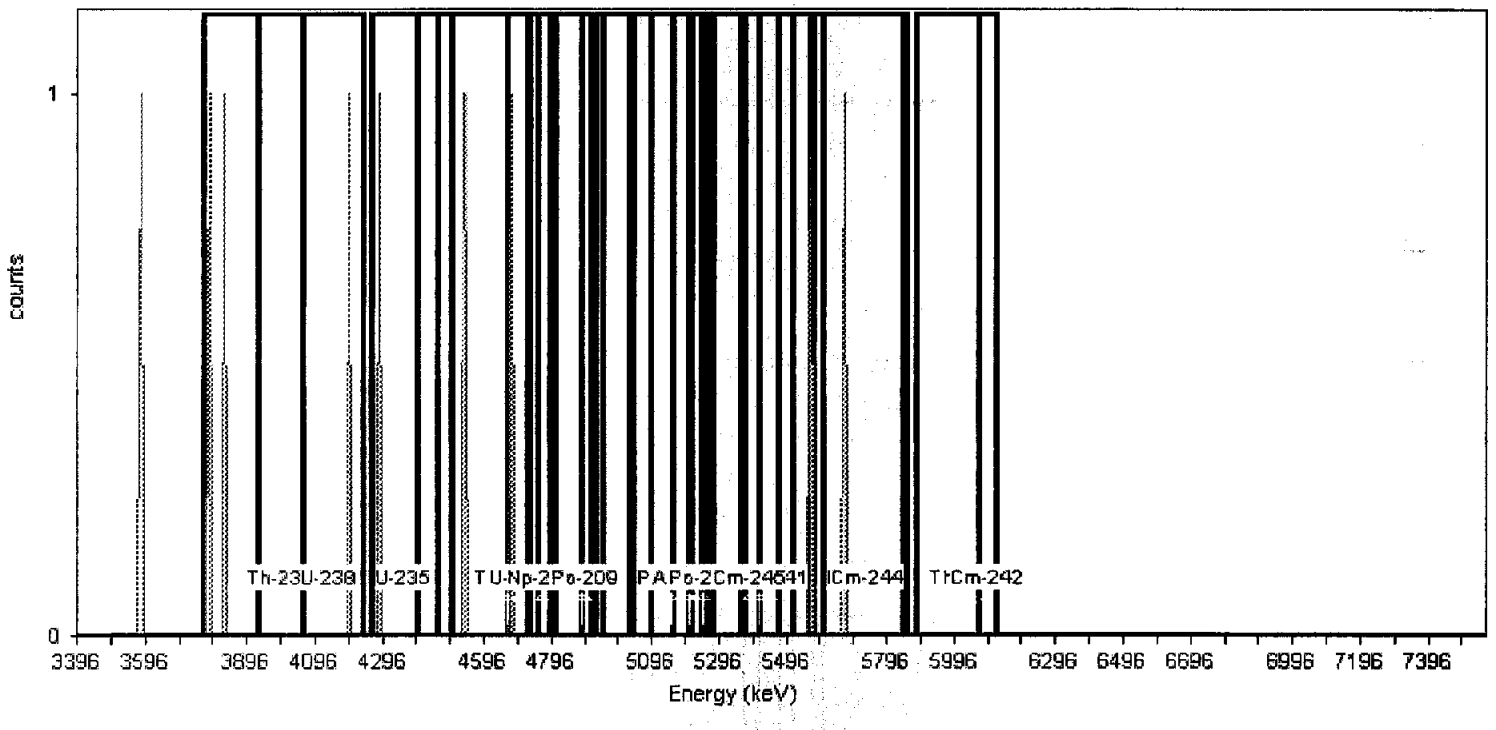
Acquisition

Detector: AV87 , SN: 46-033FF5
Acquisition Start Date: 2/18/2007 2:06:27PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV87
Calibration Date: 1/31/2007 6:46:26PM

Energy Calibration Equation:

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

Efficiency: 27.06% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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 7:01:41AM 2/19/2007

Sample

Sample Name: AV88 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

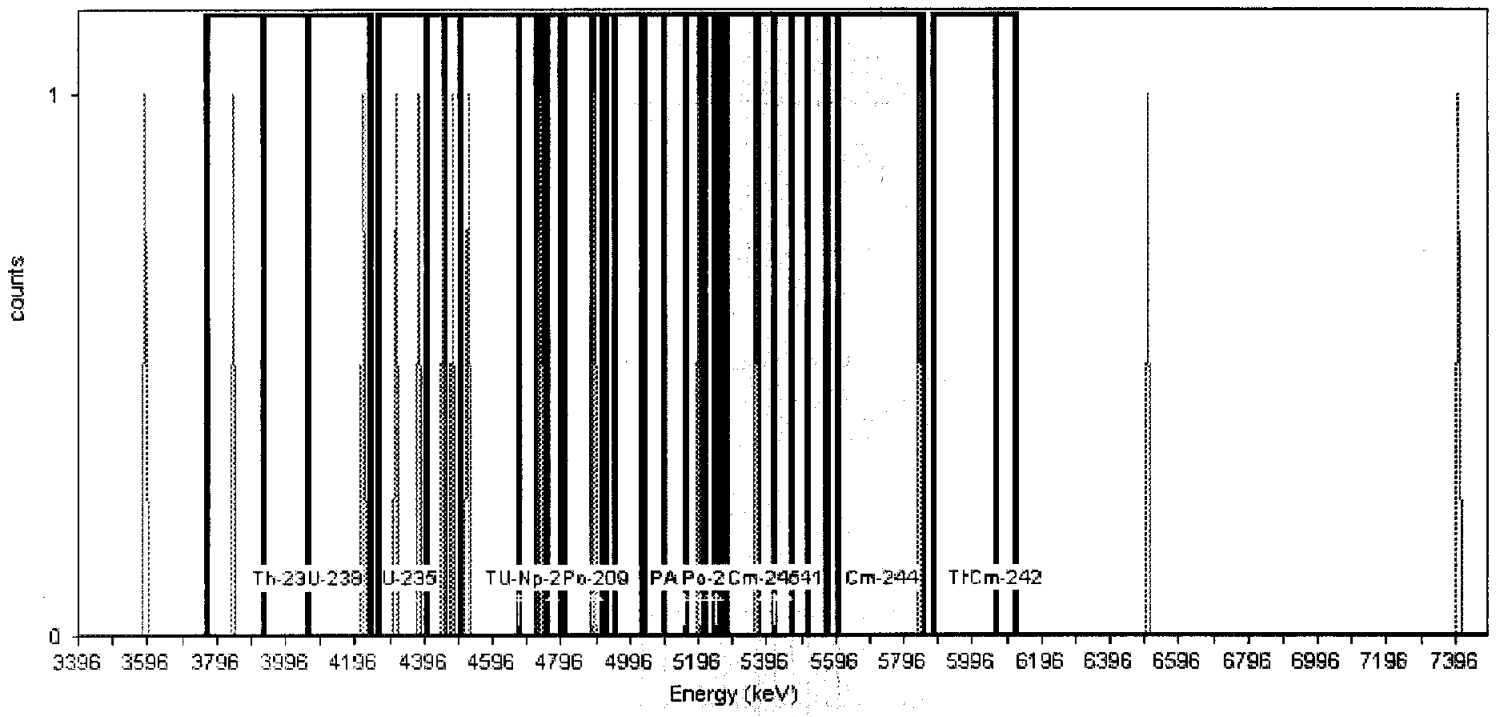
Acquisition

Detector: AV88 , SN: 76-033FF1
Acquisition Start Date: 2/18/2007 2:06:28PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV88
Calibration Date: 1/31/2007 6:46:29PM

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

Total Background Counts: 15.00

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	3.00	3.125E-003	2.083E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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	1.00	1.042E-003	1.473E-003
Cm-244	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 7:01:48AM 2/19/2007

Sample

Sample Name: AV89 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

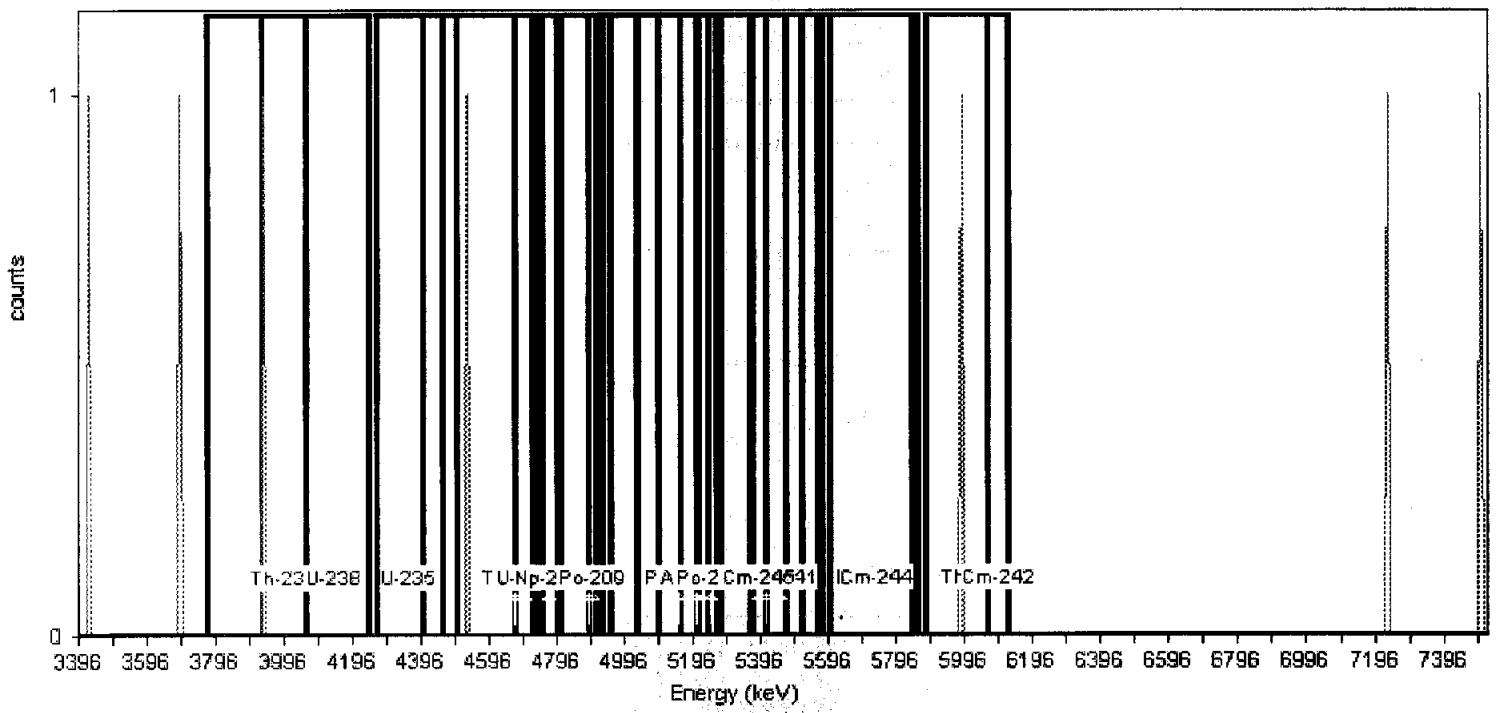
Acquisition

Detector: AV89 , SN: 46-033P5
Acquisition Start Date: 2/18/2007 2:06:28PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV89
Calibration Date: 1/31/2007 6:46:36PM

Energy Calibration Equation:

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

Efficiency: 26.88% +/- 0.29% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:01:54AM 2/19/2007

Sample

Sample Name: AV90 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

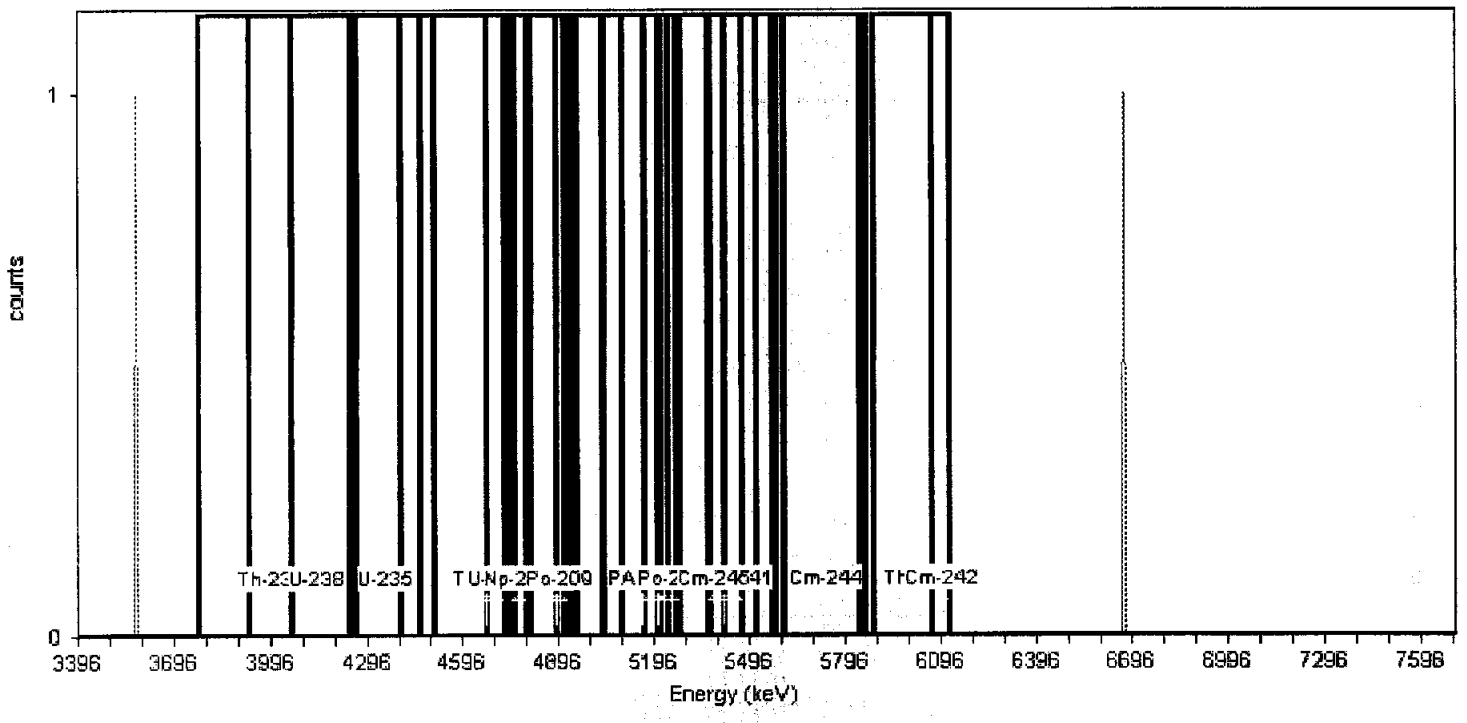
Acquisition

Detector: AV90 , SN: 46-033Q1
Acquisition Start Date: 2/18/2007 2:06:29PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Jan2007_AV90
Calibration Date: 1/31/2007 6:46:41PM

Energy Calibration Equation:

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

Efficiency: 27.54% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background 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	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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 7:02:17AM 2/19/2007

Sample

Sample Name: AV92 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

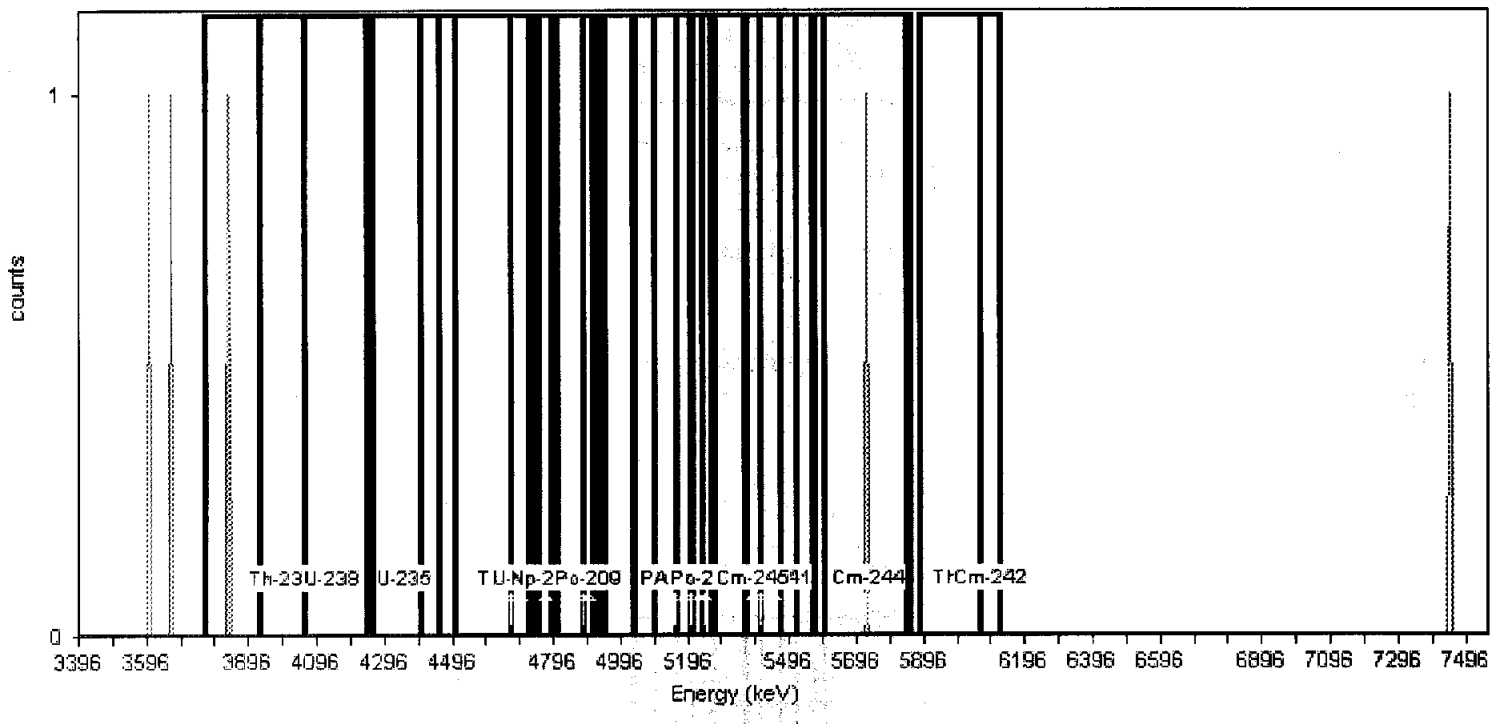
Acquisition

Detector: AV92 , SN: 46-033FF2
Acquisition Start Date: 2/18/2007 2:05:23PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV92
Calibration Date: 1/31/2007 2:21:05PM

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

Total Background Counts: 5.00

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	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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 7:02:08AM 2/19/2007

Sample

Sample Name: AV93 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

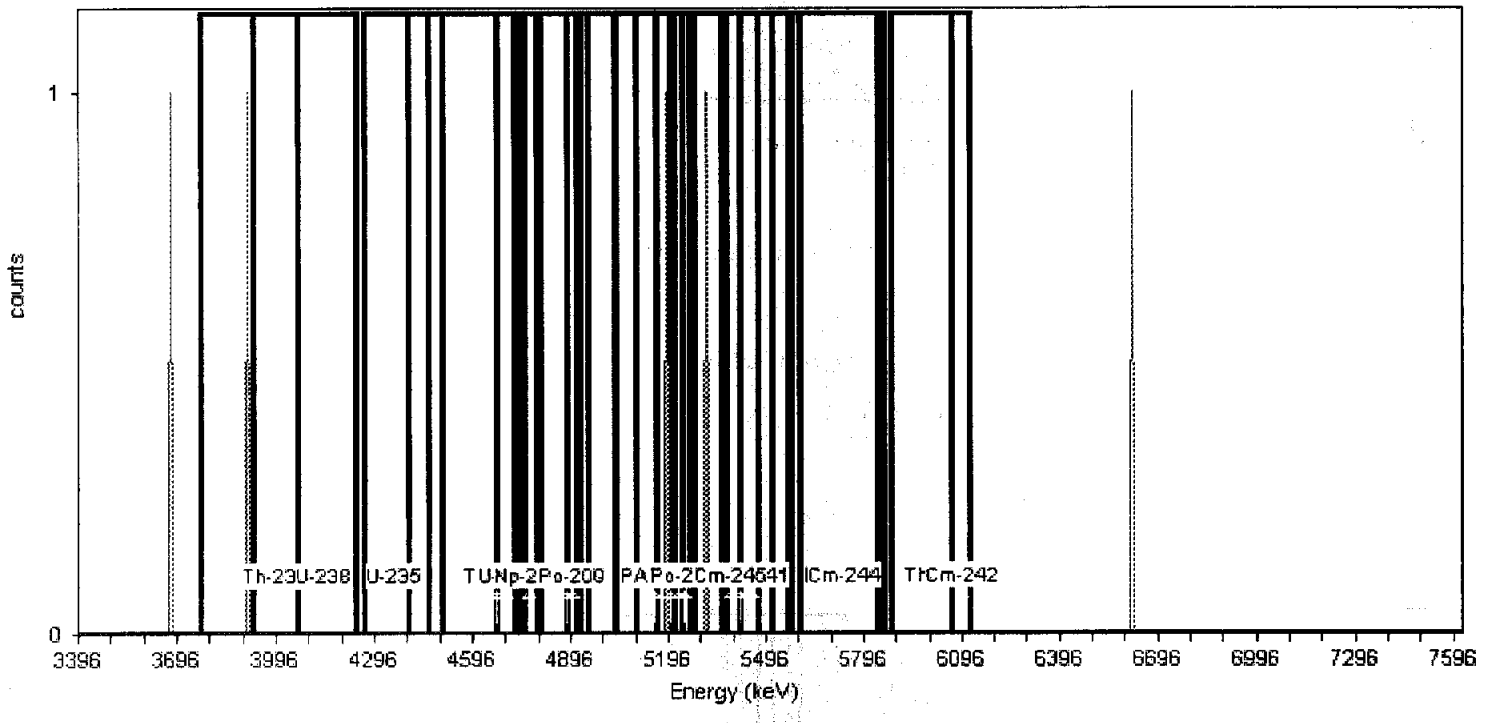
Acquisition

Detector: AV93 , SN: 46-033Q2
Acquisition Start Date: 2/18/2007 2:05:24PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV93
Calibration Date: 1/31/2007 2:21:14PM

Energy Calibration Equation:

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

Efficiency: 26.73% +/- 0.29% TPU(2 sigma)



General Analysis

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

Total Background Counts: 5.00

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	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:14AM 2/19/2007

Sample

Sample Name: AV94 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

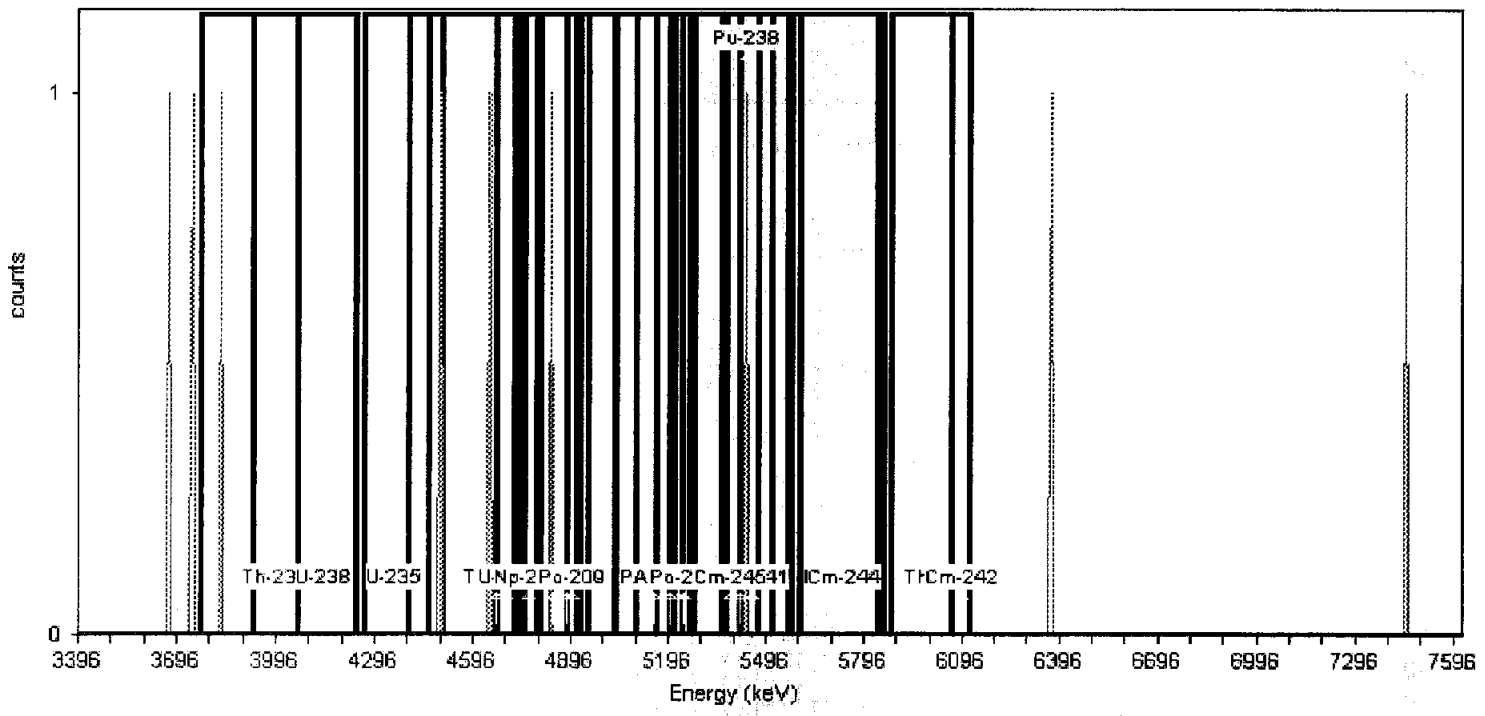
Acquisition

Detector: AV94 , SN: 46-032EE6
Acquisition Start Date: 2/18/2007 2:05:27PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV94
Calibration Date: 1/31/2007 2:21:23PM

Energy Calibration Equation:

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

Efficiency: 26.73% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background 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-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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
Cm-244	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	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

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:02:24AM 2/19/2007

Sample

Sample Name: AV95 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

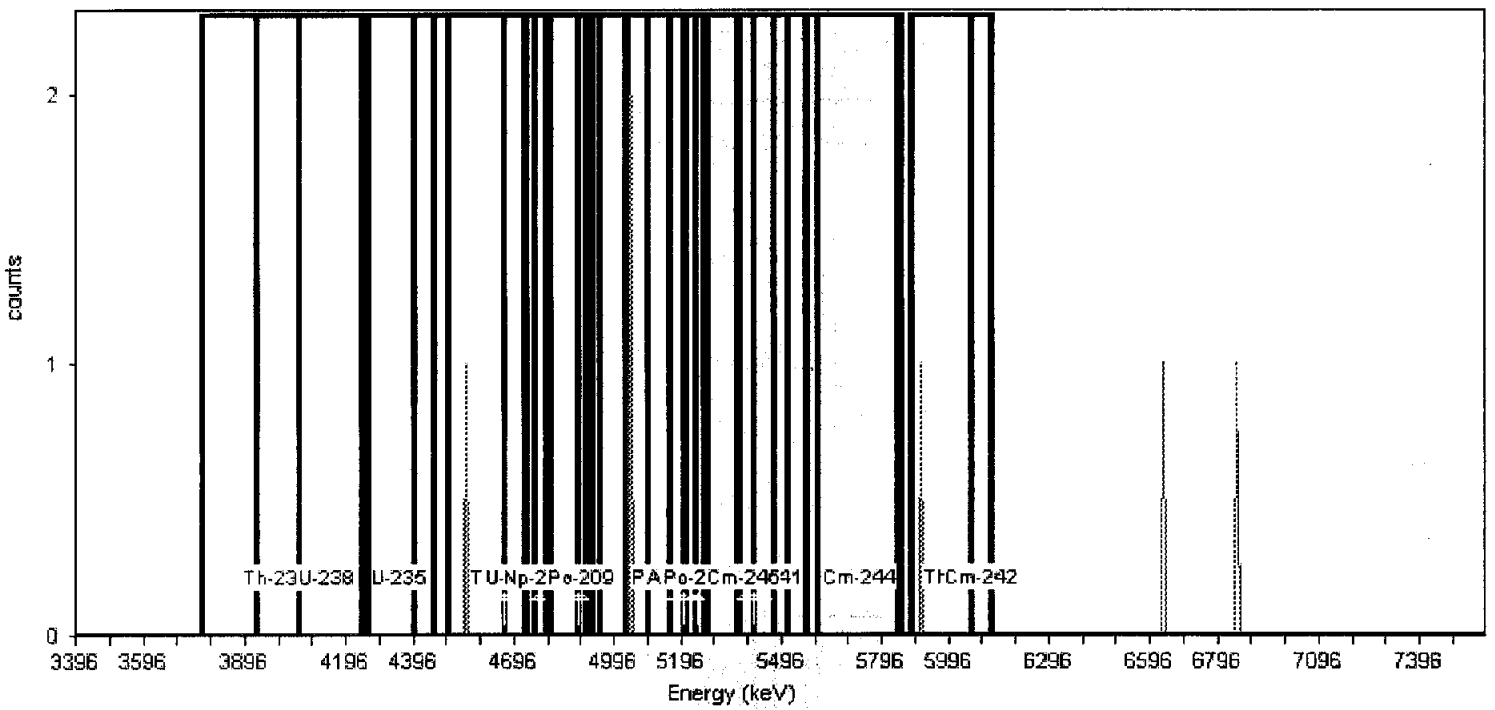
Acquisition

Detector: AV95 , SN: 46-033P4
Acquisition Start Date: 2/18/2007 2:05:29PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV95
Calibration Date: 1/31/2007 11:55:01AM

Energy Calibration Equation:

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

Efficiency: 26.73% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	2.00	2.083E-003	1.804E-003
Th-228	5.41	5.16	5.47	0.00	0.000E+000	1.473E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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 7:02:33AM 2/19/2007

Sample

Sample Name: AV96 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

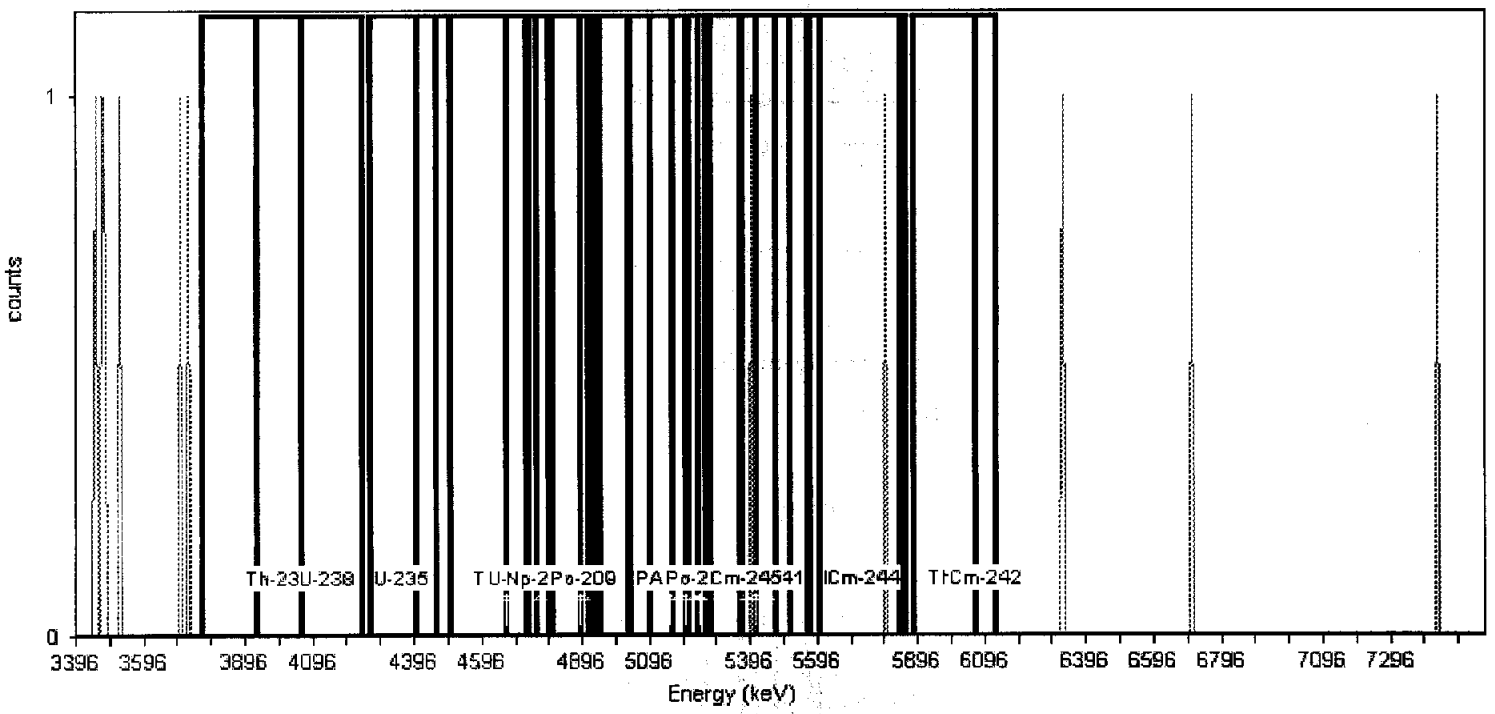
Acquisition

Detector: AV96 , SN: 46-033P1
Acquisition Start Date: 2/18/2007 2:05:30PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV96
Calibration Date: 1/31/2007 11:55:10AM

Energy Calibration Equation:

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

Efficiency: 26.53% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 11.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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
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
Pu-236	5.72	5.57	5.84	1.00	1.042E-003	1.473E-003
Cm-244	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 7:02:37AM 2/19/2007

Sample

Sample Name: AV97 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

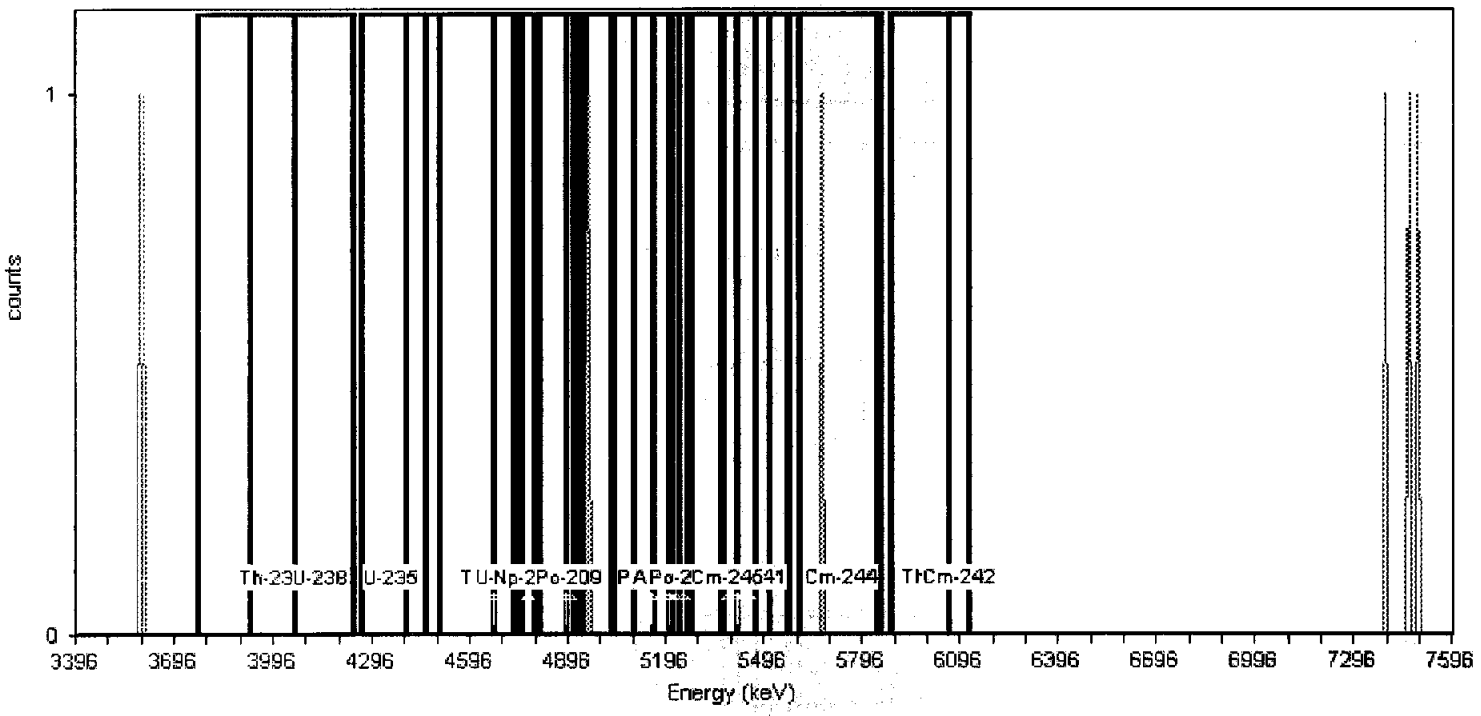
Acquisition

Detector: AV97 , SN: 76-03393
Acquisition Start Date: 2/18/2007 2:05:32PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV97
Calibration Date: 1/31/2007 11:55:28AM

Energy Calibration Equation:

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

Efficiency: 27.18% +/- 0.29% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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 7:02:43AM 2/19/2007

Sample

Sample Name: AV98 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Feb2007

Description:

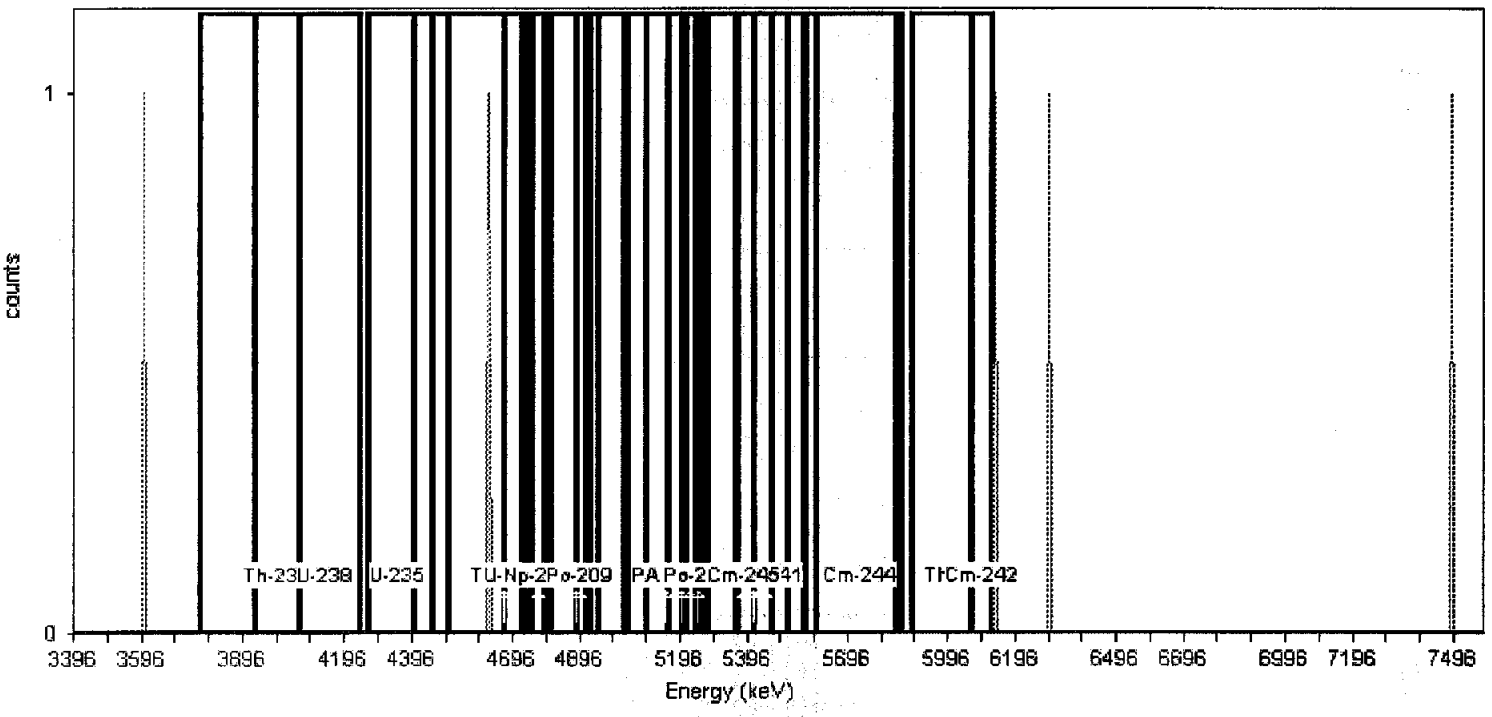
Acquisition

Detector: AV98 , SN: 46-033Q3
Acquisition Start Date: 2/18/2007 2:05:34PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Jan2007_AV98
Calibration Date: 1/31/2007 11:55:19AM

Energy Calibration Equation:

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

Efficiency: 27.60% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 5.00

Nuclide Summary (ROI)

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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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

Monthly Calibrations
Alpha vision
February 2007

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV1

2:25:43PM 2/23/2007

Calibration

Name: Feb2007_AV1
Description:

Calibration Date: 2/23/2007 2:25:38PM

Source Info

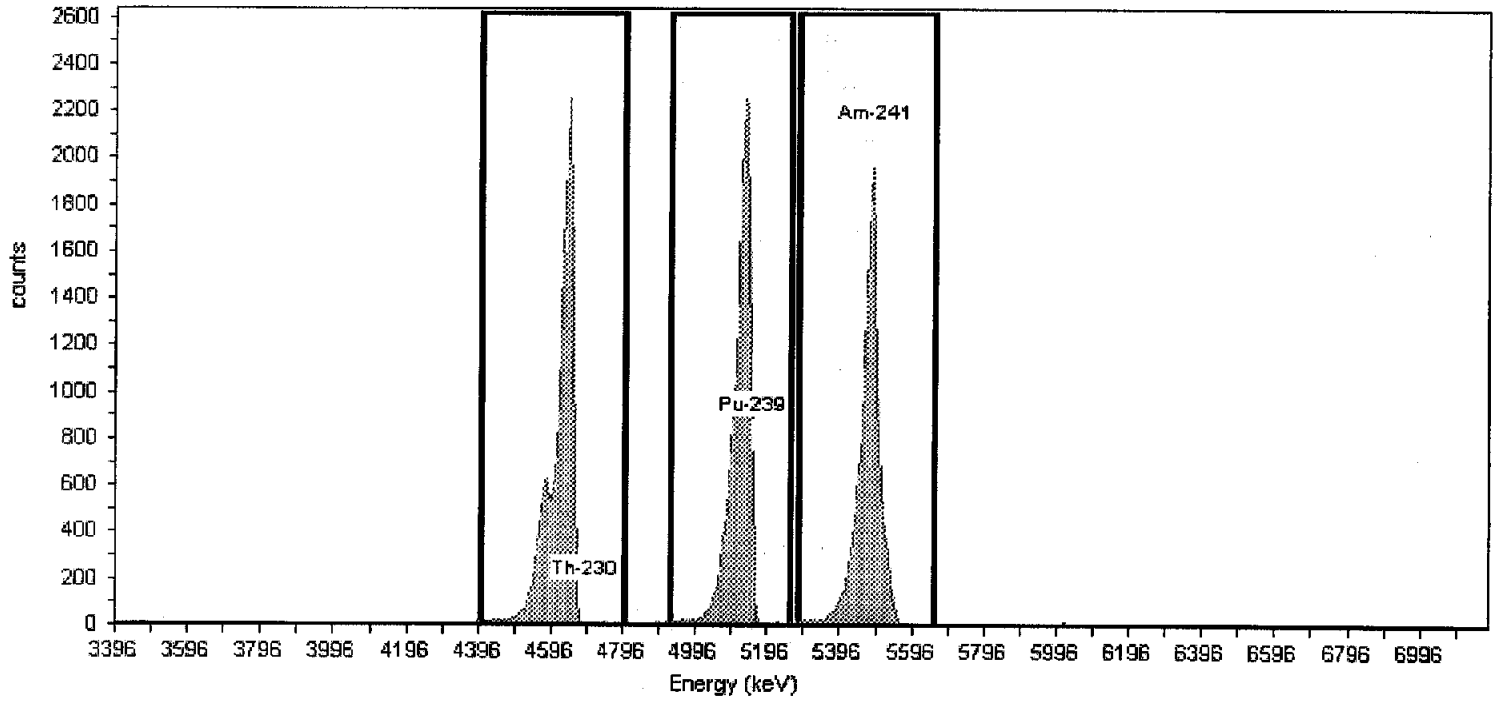
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV1 , SN: 41-158W6
Acquisition Start Date: 2/23/2007 11:22:12AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.66% +/- 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	15,998.00	114.27
Pu-239	243	5.16	212	258	15,443.00	110.31
Am-241	289	5.49	261	313	14,801.00	105.72

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:25:46AM 2/23/2007

Analyst: 60040
Detector: AV2

Calibration

Name: FEB2007_AV2
Description:

Calibration Date: 2/23/2007 6:25:41AM

Source Info

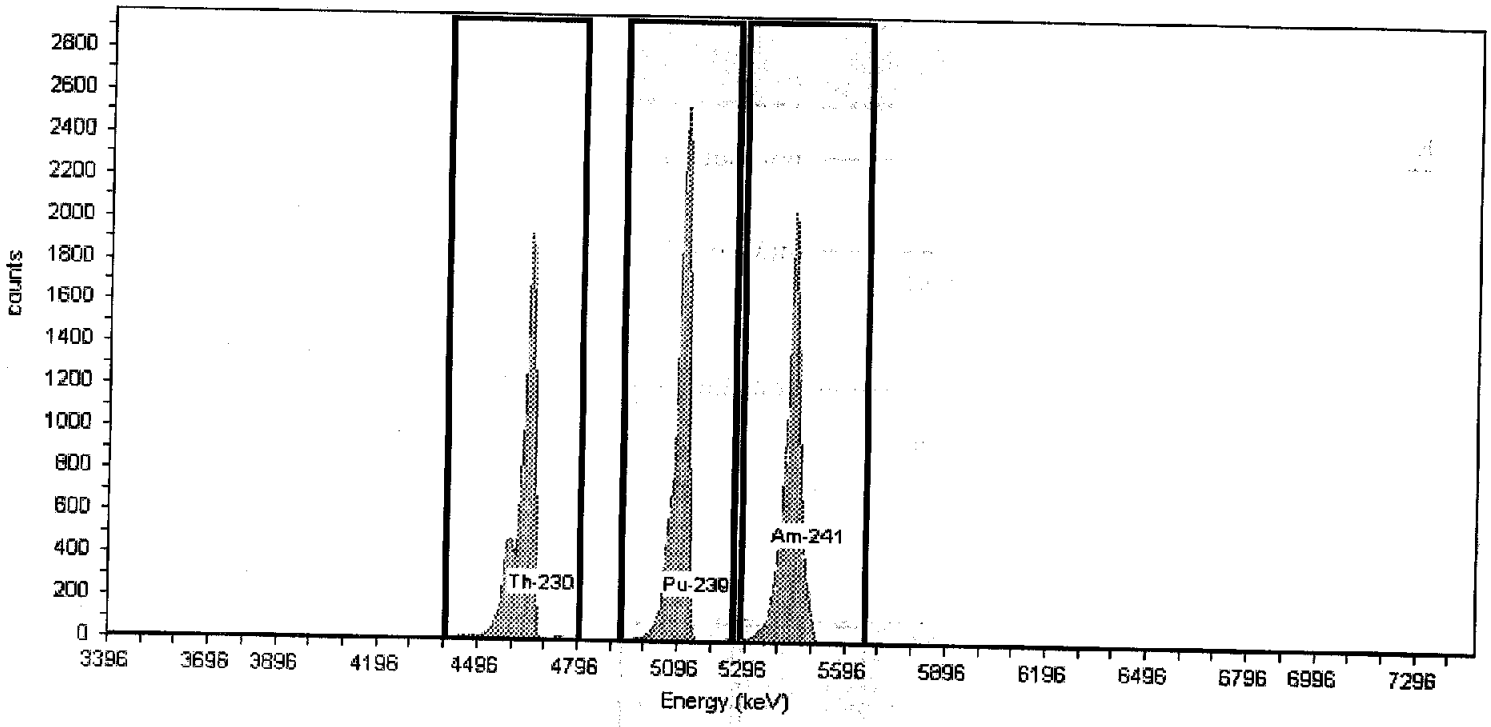
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV2 , SN: 41-158W7
Acquisition Start Date: 2/22/2007 6:34:15PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.30% +/- 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	12,228.00	87.34
Pu-239	243	5.16	212	258	14,566.00	104.04
Am-241	289	5.49	261	313	14,076.00	100.54

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV3

2:25:59PM 2/23/2007

Calibration

Name: Feb2007_AV3
Description:

Calibration Date: 2/23/2007 2:25:56PM

Source Info

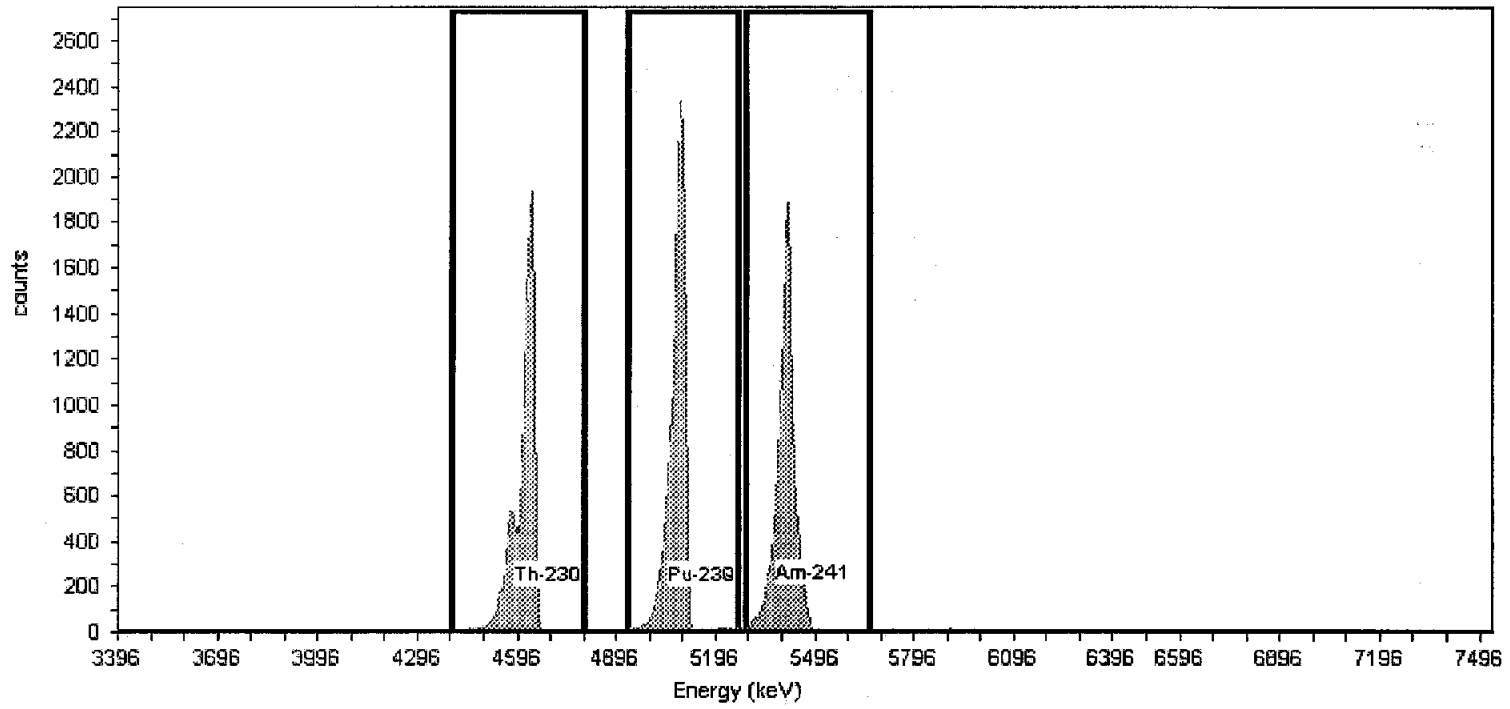
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV3 , SN: 41-158X5
Acquisition Start Date: 2/23/2007 11:22:37AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.03% +/- 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	12,504.00	89.31
Pu-239	243	5.16	212	258	14,267.00	101.91
Am-241	289	5.49	261	313	13,146.00	93.90

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV4

2:26:06PM 2/23/2007

Calibration

Name: Feb2007_AV4
Description:

Calibration Date: 2/23/2007 2:26:02PM

Source Info

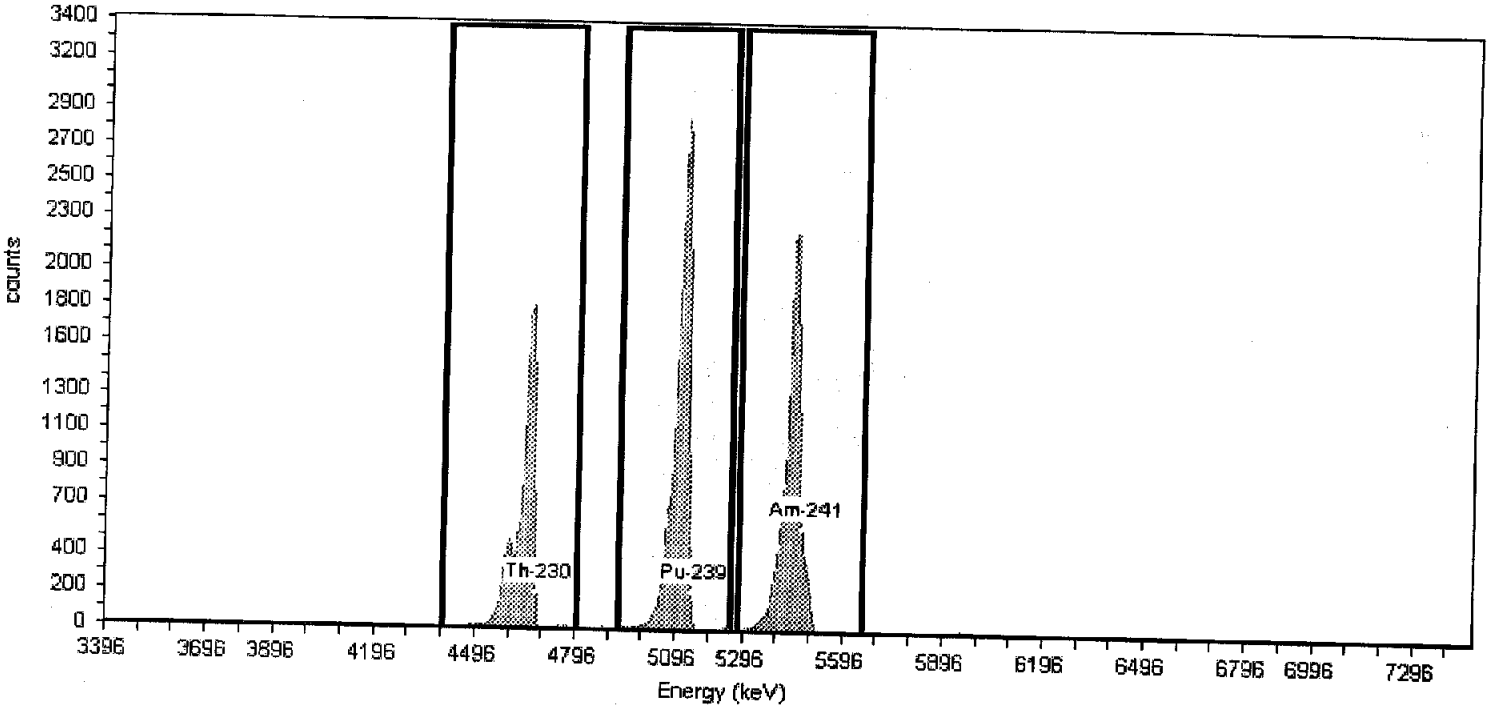
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV4 , SN: 41-172B5
Acquisition Start Date: 2/23/2007 11:22:56AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.56% +/- 0.27% 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	11,514.00	82.24
Pu-239	243	5.16	212	258	17,205.00	122.89
Am-241	289	5.49	261	313	14,935.00	106.68

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:02:55AM 2/23/2007

Analyst: 60040
Detector: AV6

Calibration

Name: Feb2007_AV6
Description:

Calibration Date: 2/23/2007 11:02:51AM

Source Info

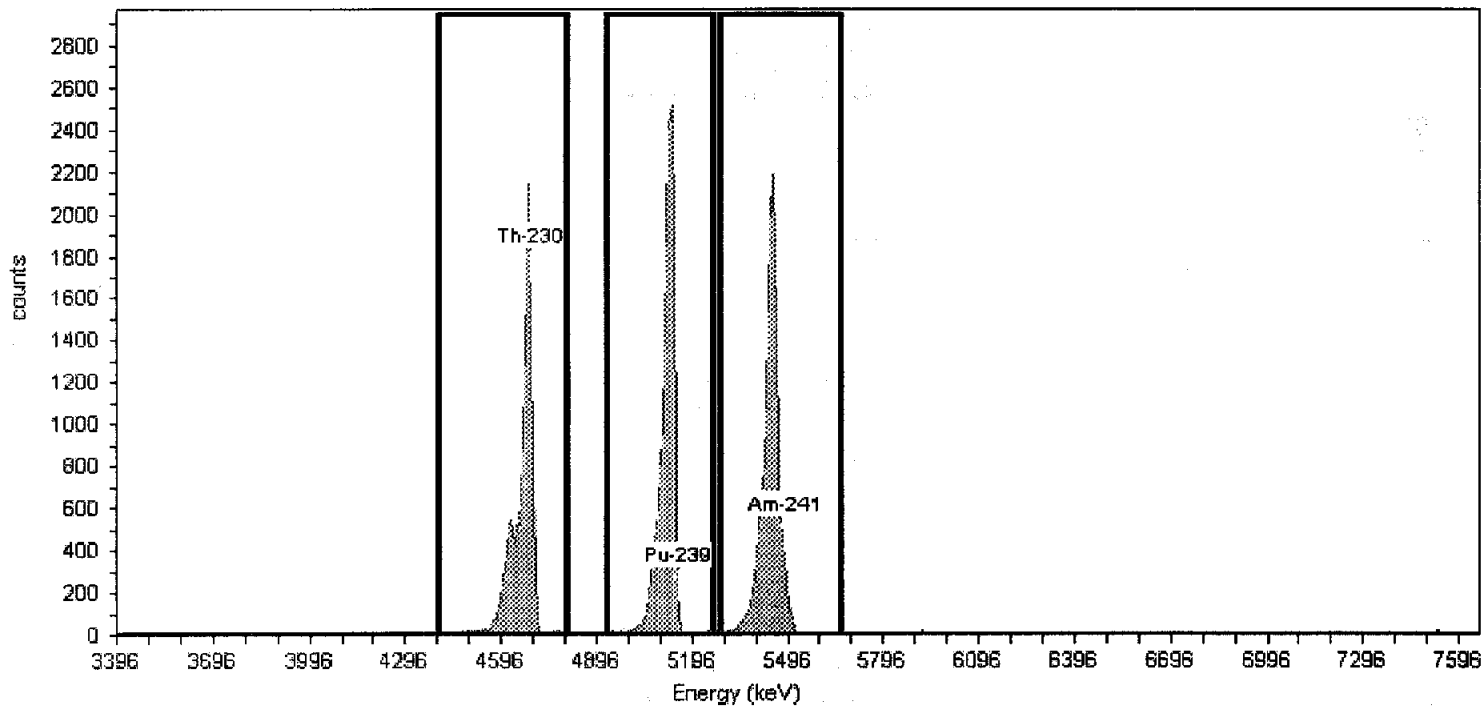
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV6 , SN:
Acquisition Start Date: 2/23/2007 8:27:48AM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.89% +/- 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	12,671.00	90.51
Pu-239	243	5.16	212	258	14,868.00	106.20
Am-241	289	5.49	261	313	14,116.00	100.83

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:51:39PM 2/23/2007

Analyst: 60040
Detector: AV7

Calibration

Name: Feb2007_AV7
Description:

Calibration Date: 2/23/2007 4:51:36PM

Source Info

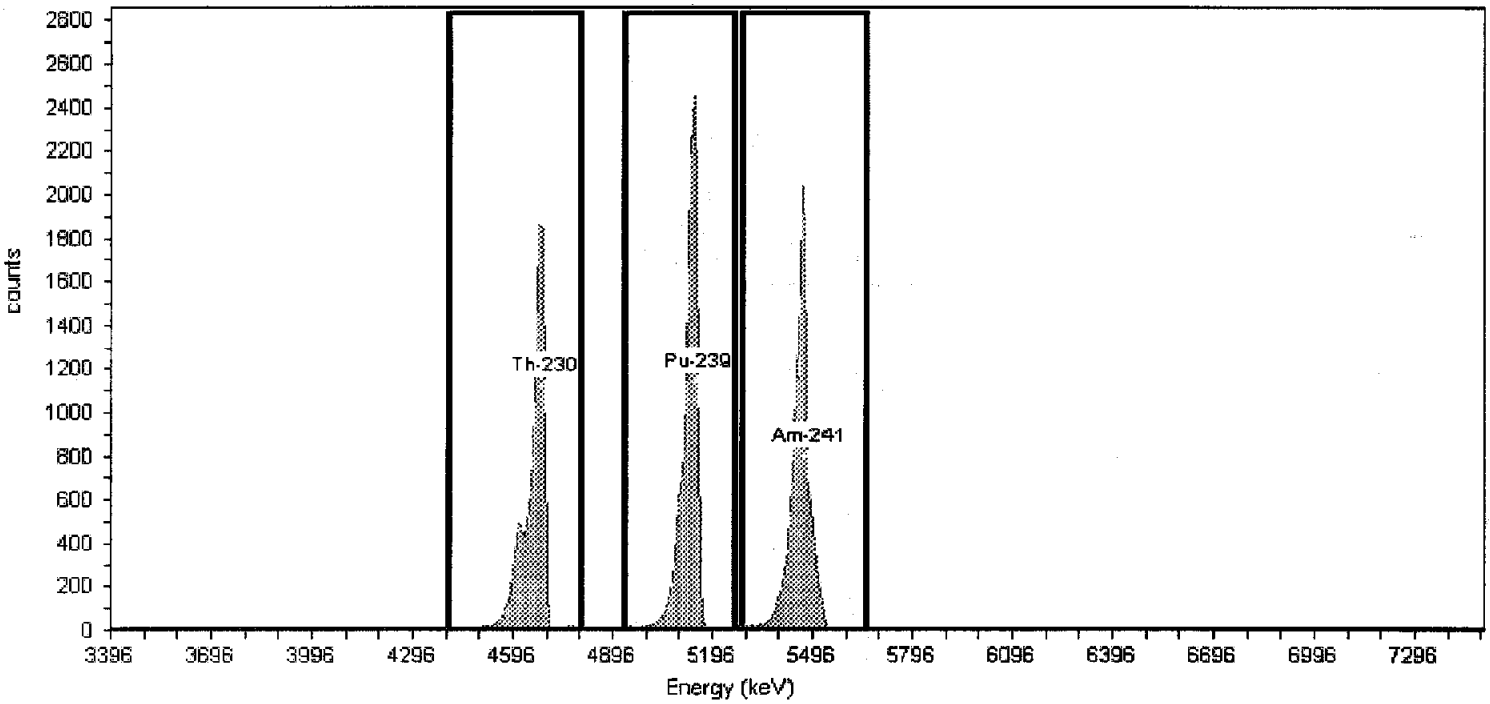
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV7 , SN: 41-158X6
Acquisition Start Date: 2/23/2007 2:31:00PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.15% +/- 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	12,358.00	88.27
Pu-239	243	5.16	212	258	14,351.00	102.51
Am-241	289	5.49	261	313	13,384.00	95.60

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:51:46PM 2/23/2007

Analyst: 60040
Detector: AV8

Calibration

Name: Feb2007_AV8
Description:

Calibration Date: 2/23/2007 4:51:43PM

Source Info

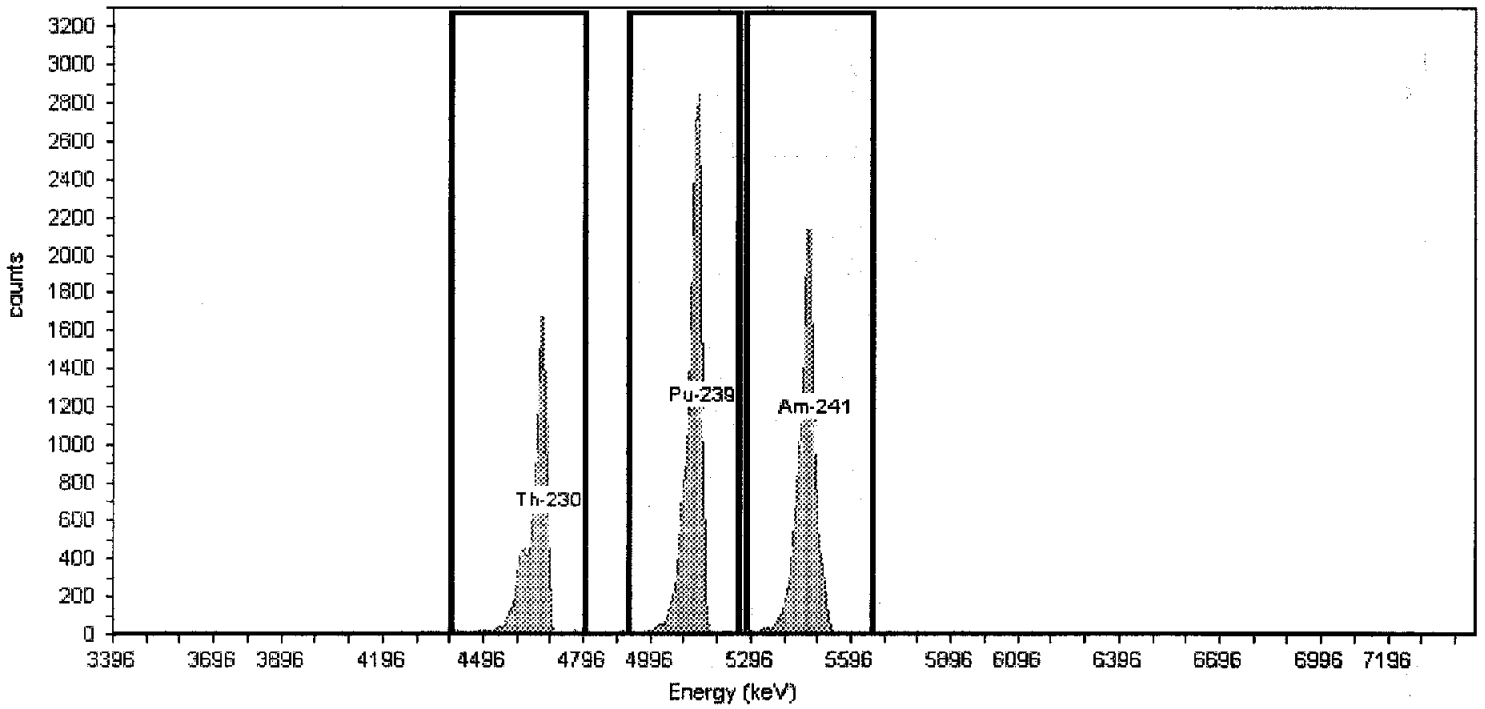
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV8 , SN: 41-158X1
Acquisition Start Date: 2/23/2007 2:31:19PM
Live Time: 140.00 min.
Real Time: 140.02 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	11,513.00	82.24
Pu-239	243	5.16	212	258	17,608.00	125.77
Am-241	289	5.49	261	313	15,304.00	109.31

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:50:30PM 2/23/2007

Analyst: 60040
Detector: AV9

Calibration

Name: Feb2007_AV9
Description:

Calibration Date: 2/23/2007 4:50:27PM

Source Info

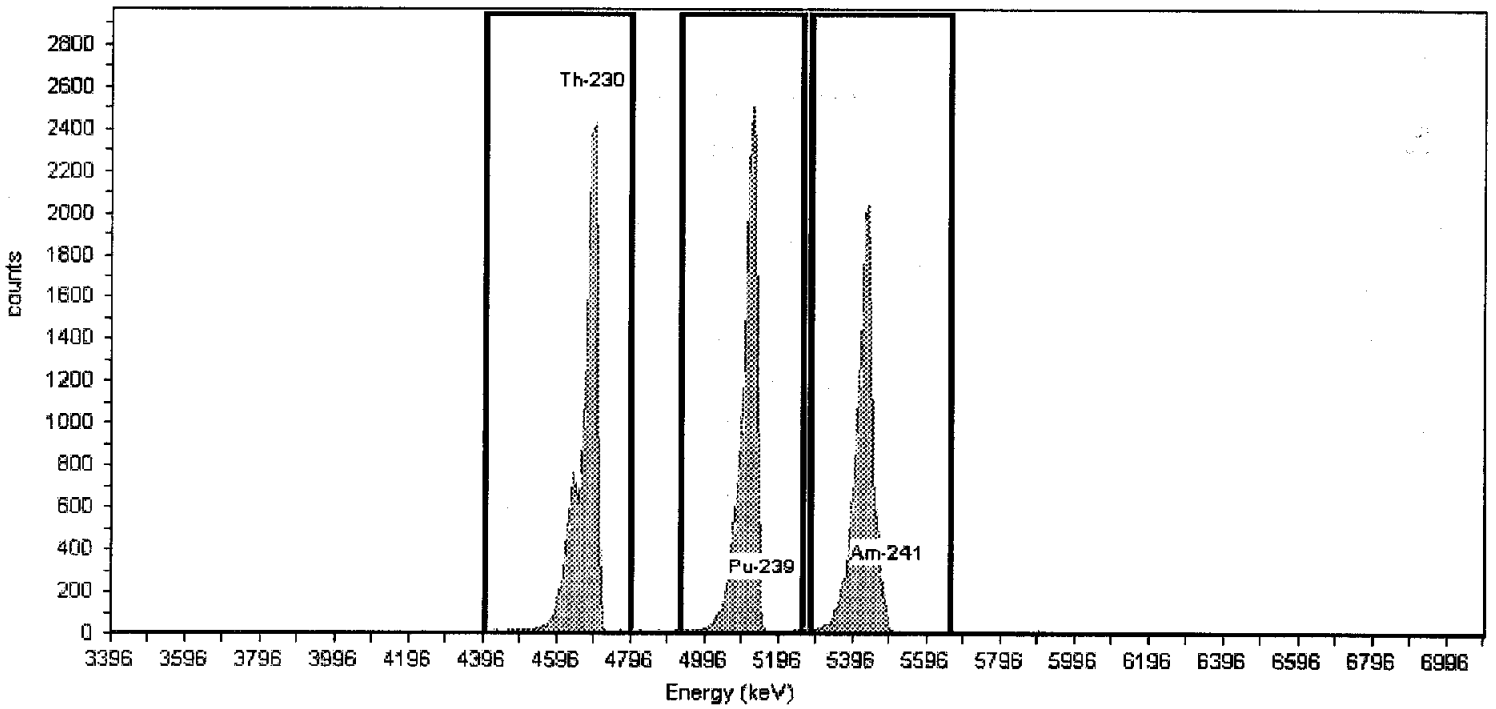
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV9 , SN: 41-172R1
Acquisition Start Date: 2/23/2007 2:30:21PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.67% +/- 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	16,206.00	115.76
Pu-239	243	5.16	212	258	15,681.00	112.01
Am-241	289	5.49	261	313	14,477.00	103.41

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:03:04AM 2/28/2007

Analyst: 60040
Detector: AV11

Calibration

Name: FEB2007_AV11
Description:

Calibration Date: 2/28/2007 7:03:01AM

Source Info

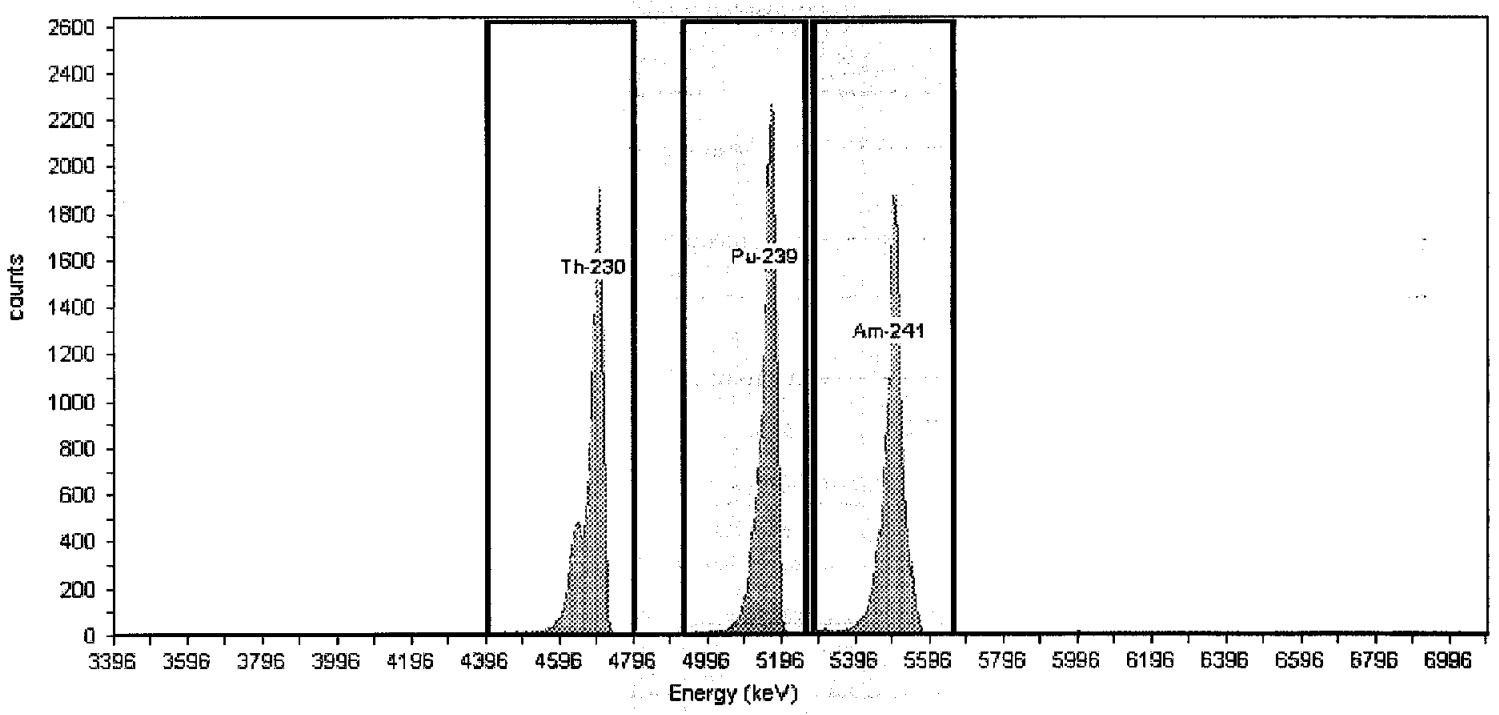
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV11 , SN: 41-172Q3
Acquisition Start Date: 2/27/2007 7:50:06PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.82% +/- 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	12,315.00	87.96
Pu-239	243	5.16	212	258	14,107.00	100.76
Am-241	289	5.49	261	313	13,178.00	94.13

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:37:51AM 2/24/2007

Analyst: 60040
Detector: AV12

Calibration

Name: Feb2007_AV12
Description:

Calibration Date: 2/24/2007 7:37:40AM

Source Info

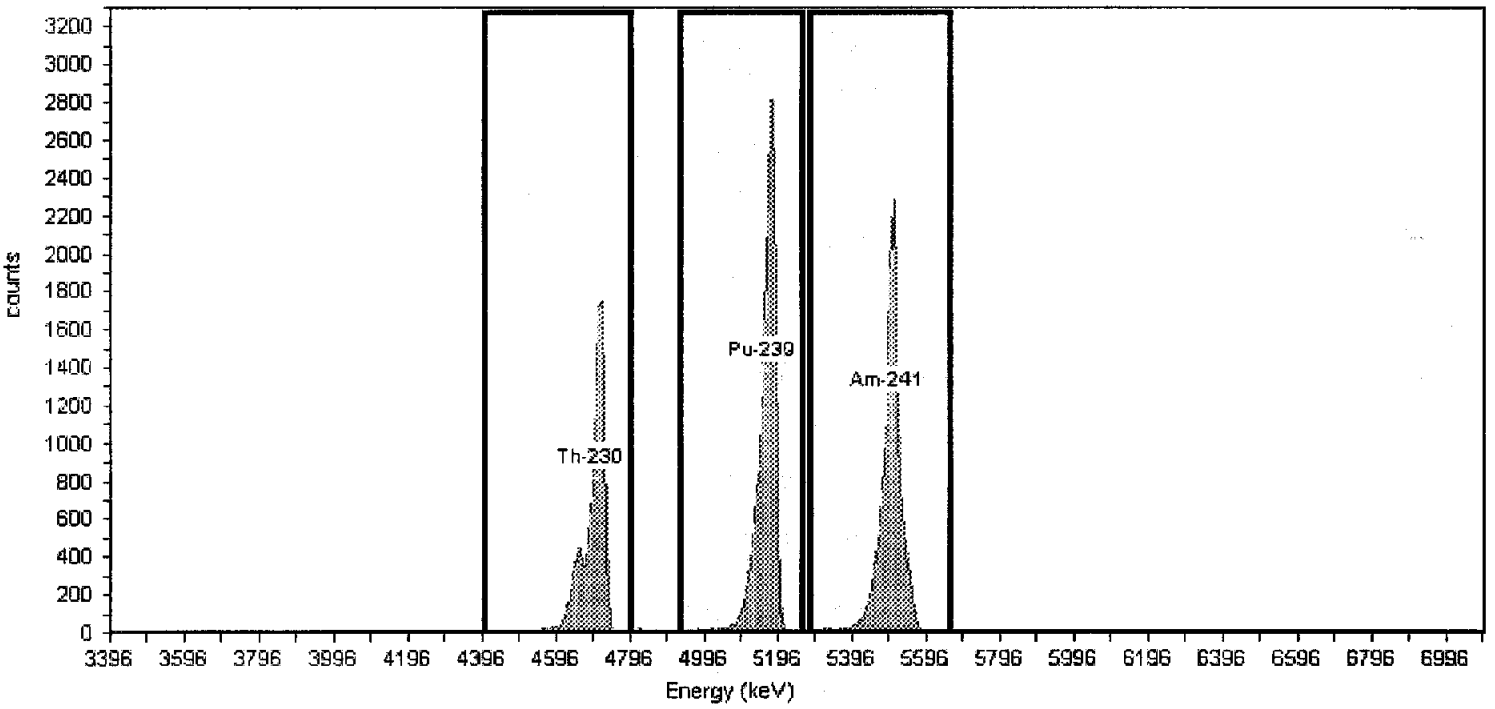
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV12 , SN: 41-172Q2
Acquisition Start Date: 2/23/2007 4:54:48PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 25.99% +/- 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	11,164.00	79.74
Pu-239	243	5.16	212	258	16,877.00	120.55
Am-241	289	5.49	261	313	14,671.00	104.79

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:02:52AM 2/28/2007

Analyst: 60040
Detector: AV13

Calibration

Name: FEB2007_AV13
Description:

Calibration Date: 2/28/2007 7:02:48AM

Source Info

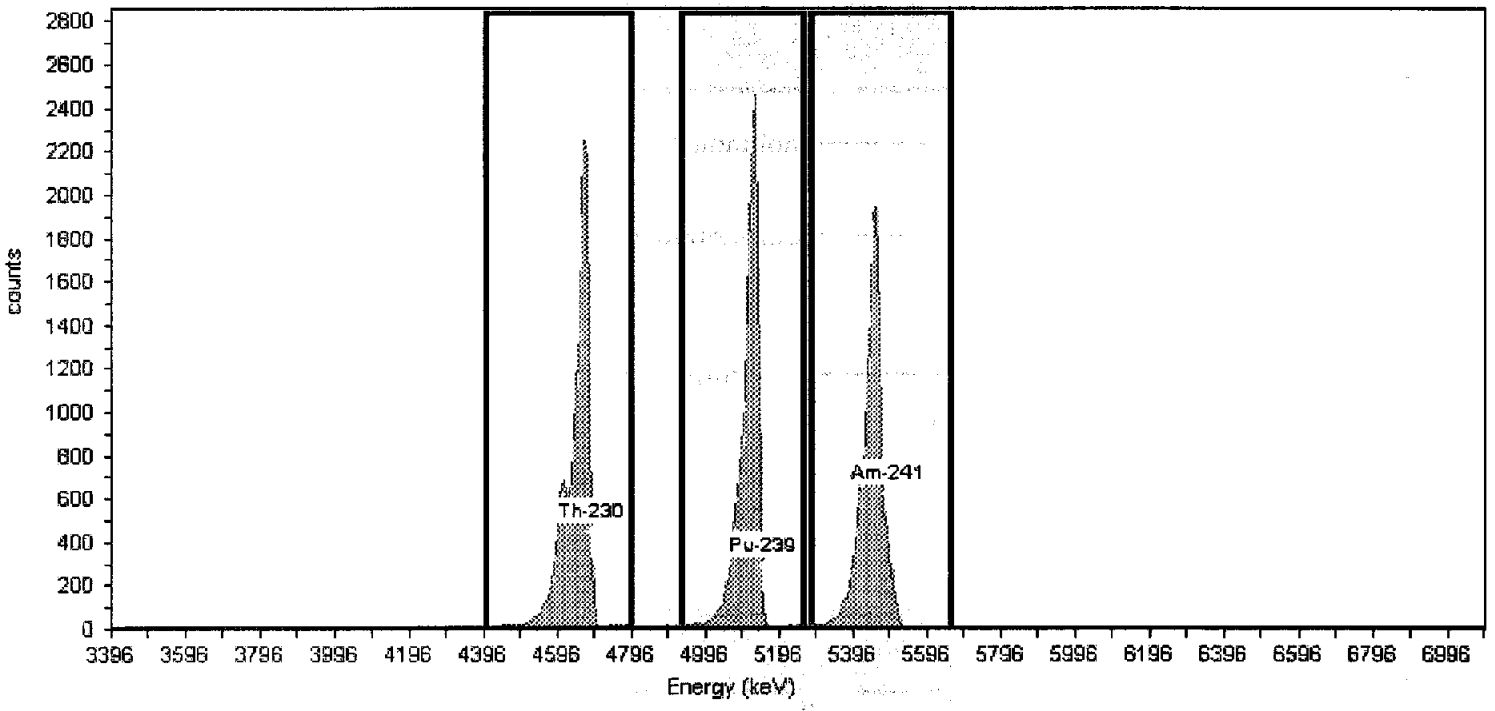
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV13 , SN: 41-172Q1
Acquisition Start Date: 2/27/2007 7:49:30PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.65% +/- 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	16,254.00	116.10
Pu-239	243	5.16	212	258	15,464.00	110.46
Am-241	289	5.49	261	313	14,610.00	104.36

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:50:58PM 2/23/2007

Analyst: 60040
Detector: AV14

Calibration

Name: Feb2007_AV14
Description:

Calibration Date: 2/23/2007 4:50:55PM

Source Info

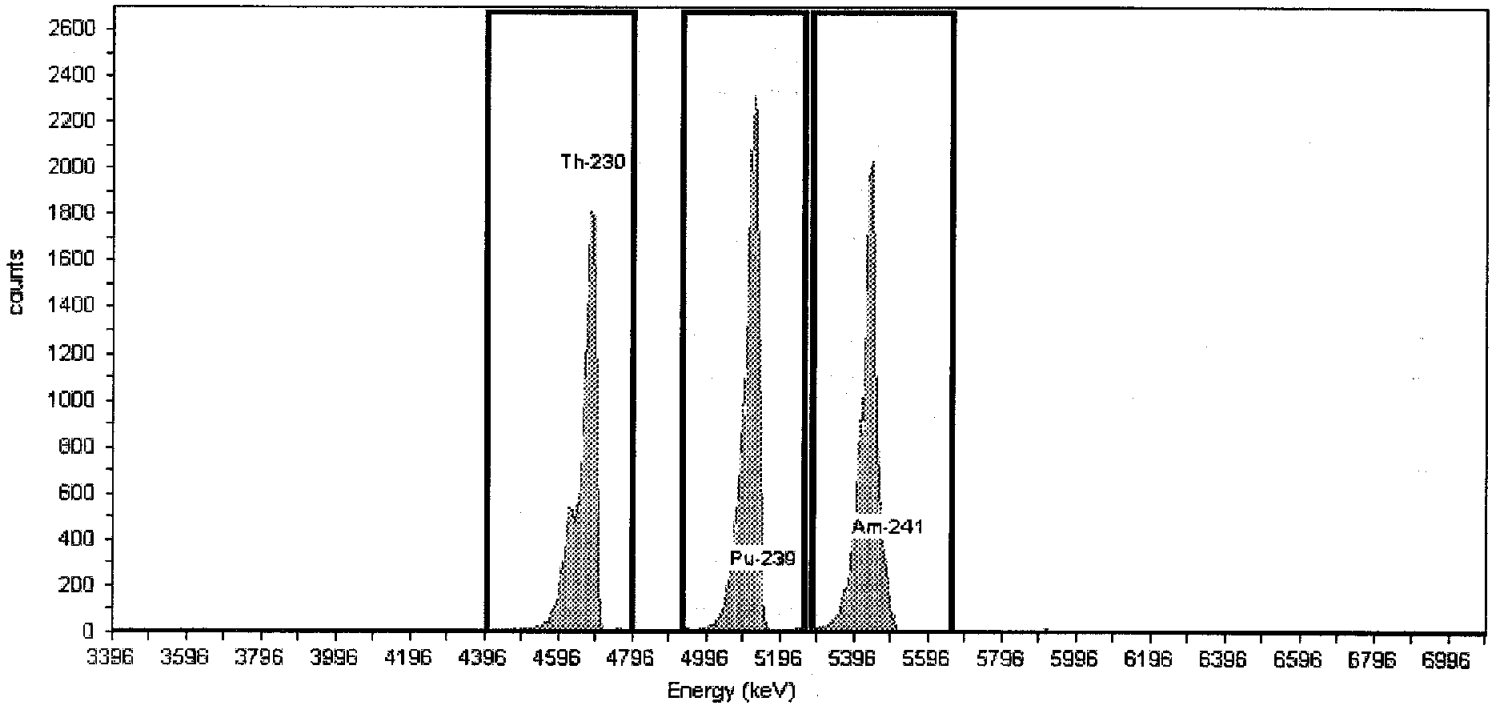
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV14 , SN: 41-172C4
Acquisition Start Date: 2/23/2007 2:30:37PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.68% +/- 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	12,581.00	89.86
Pu-239	243	5.16	212	258	14,751.00	105.36
Am-241	289	5.49	261	313	13,981.00	99.86

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:30:24PM 2/22/2007

Analyst: 60040
Detector: AV15

Calibration

Name: Feb2007_AV15
Description:

Calibration Date: 2/22/2007 6:30:21PM

Source Info

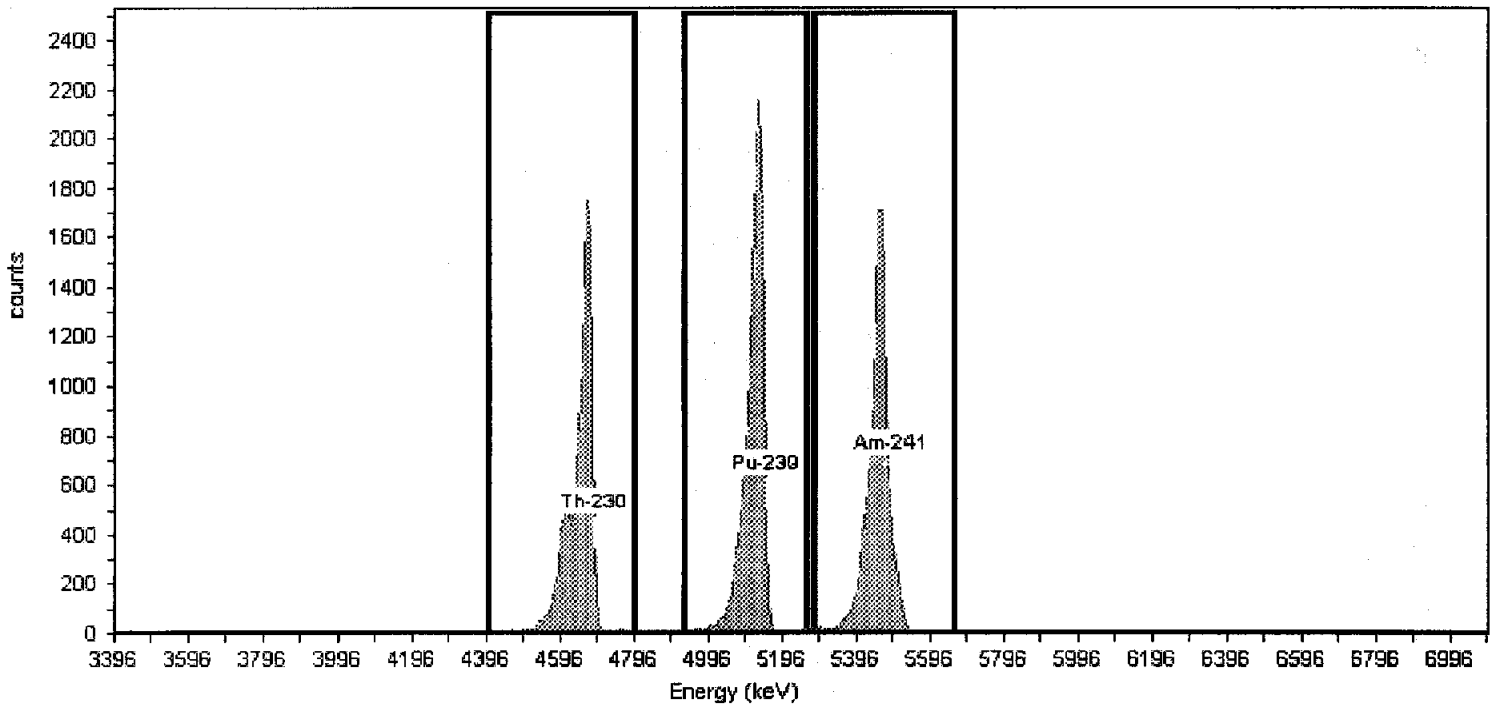
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV15 , SN: 41-172C5
Acquisition Start Date: 2/22/2007 3:57:19PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.51% +/- 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	12,257.00	87.55
Pu-239	243	5.16	212	258	14,081.00	100.58
Am-241	289	5.49	261	313	12,821.00	91.58

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:30:28PM 2/22/2007

Analyst: 60040
Detector: AV16

Calibration

Name: Feb2007_AV16
Description:

Calibration Date: 2/22/2007 6:30:25PM

Source Info

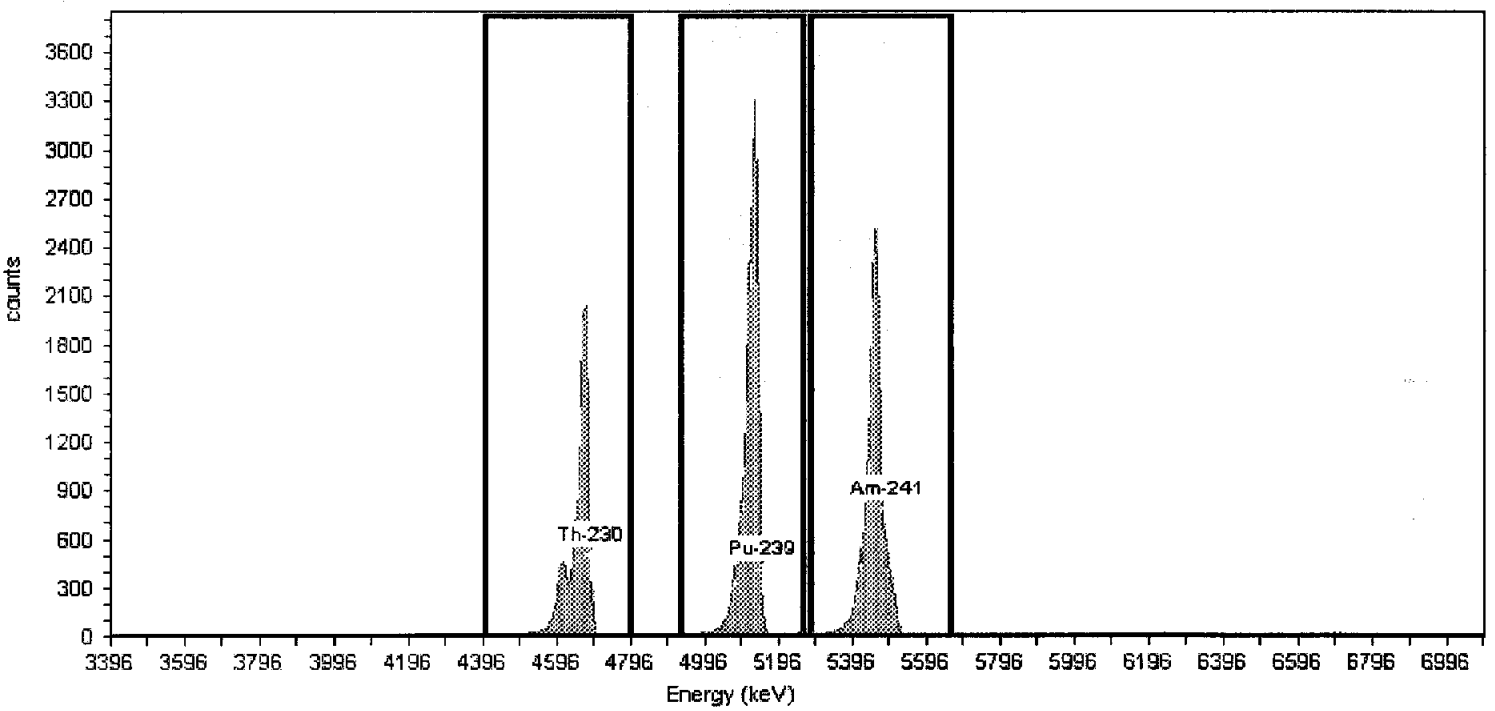
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV16 , SN: 41-172Q7
Acquisition Start Date: 2/22/2007 3:57:57PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.74% +/- 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	11,506.00	82.19
Pu-239	243	5.16	212	258	17,369.00	124.06
Am-241	289	5.49	261	313	15,078.00	107.70

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:59:50AM 2/26/2007

Analyst: 60040
Detector: AV17

Calibration

Name: Feb2007_AV17
Description:

Calibration Date: 2/26/2007 11:59:46AM

Source Info

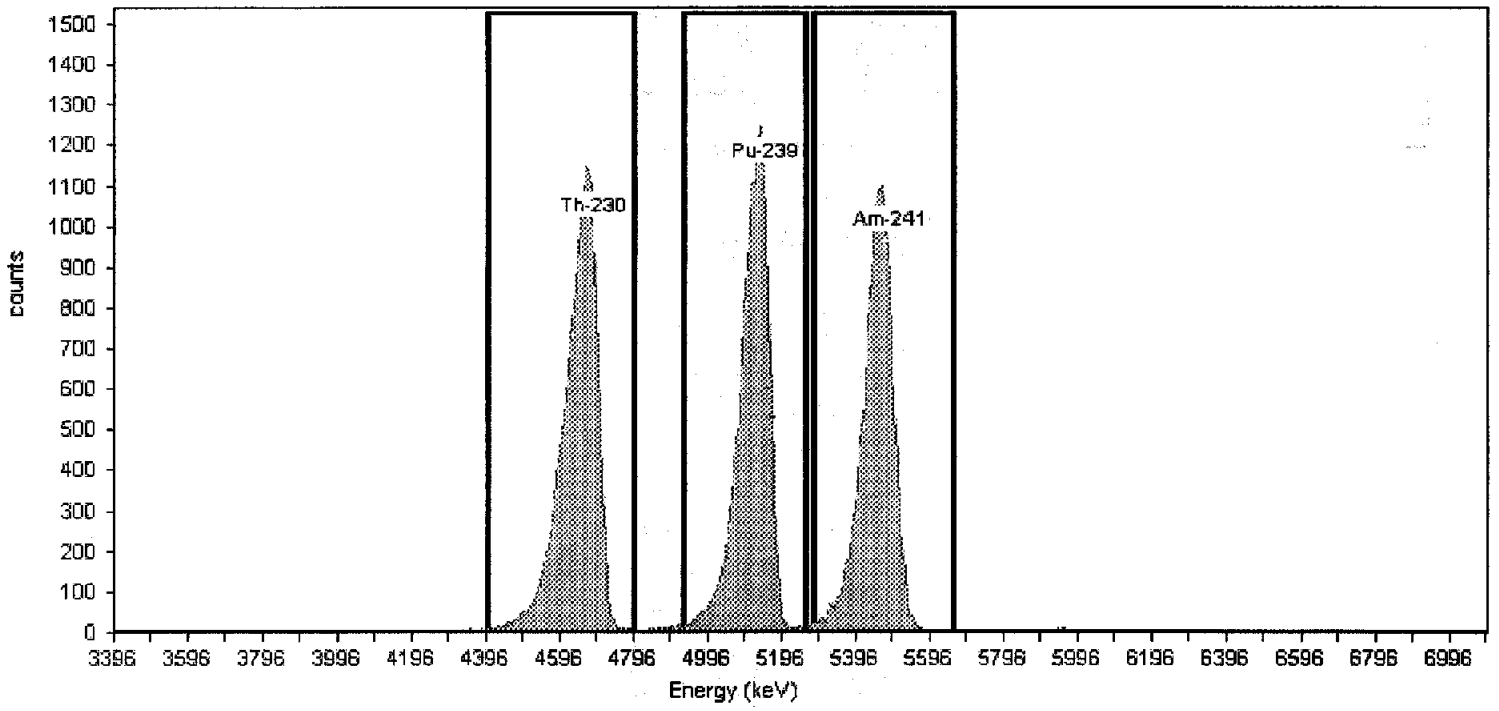
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV17 , SN: 41-172Q4
Acquisition Start Date: 2/26/2007 8:43:28AM
Live Time: 140.00 min.
Real Time: 140.10 min.
Efficiency: 26.45% +/- 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	16,151.00	115.36
Pu-239	243	5.16	212	258	15,354.00	109.67
Am-241	289	5.49	261	313	14,486.00	103.47

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:36:48AM 2/24/2007

Analyst: 60040
Detector: AV18

Calibration

Name: Feb2007_AV18
Description:

Calibration Date: 2/24/2007 7:36:44AM

Source Info

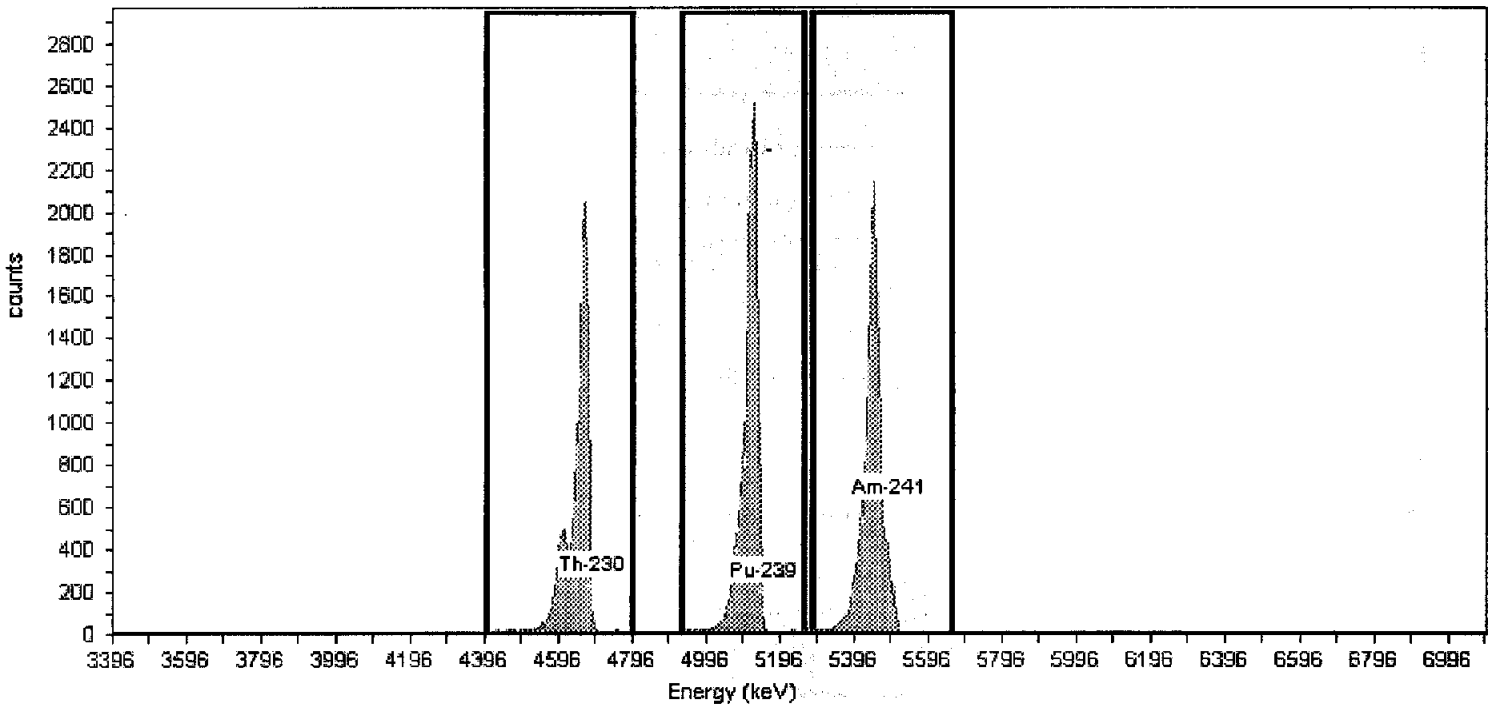
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV18 , SN: 41-172C6
Acquisition Start Date: 2/23/2007 4:54:14PM
Live Time: 140.00 min.
Real Time: 140.09 min.
Efficiency: 25.53% +/- 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	11,949.00	85.35
Pu-239	243	5.16	212	258	14,205.00	101.46
Am-241	289	5.49	261	313	13,451.00	96.08

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:25:53AM 2/23/2007

Analyst: 60040
Detector: AV19

Calibration

Name: FEB2007_AV19
Description:

Calibration Date: 2/23/2007 6:25:50AM

Source Info

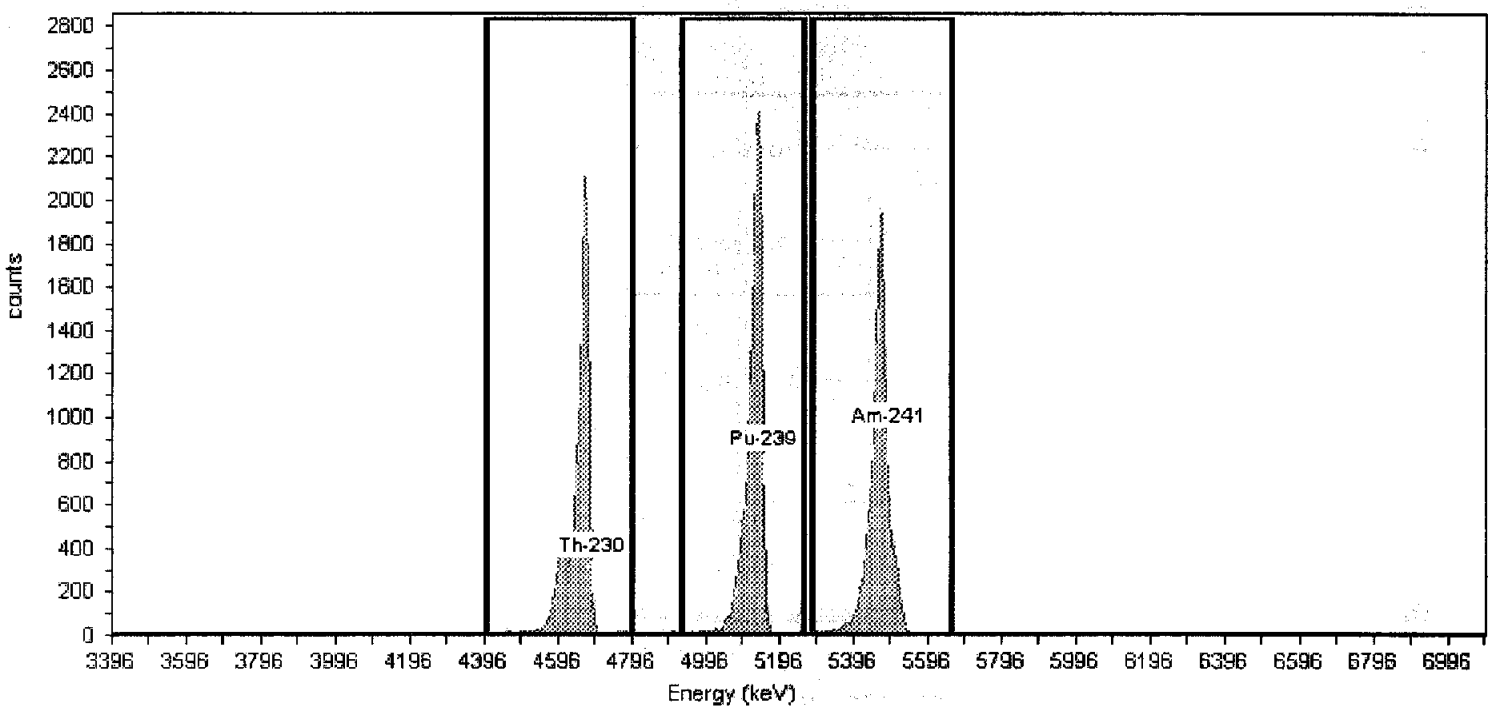
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV19 , SN: 41-172Q6
Acquisition Start Date: 2/22/2007 6:34:17PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 25.62% +/- 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	11,777.00	84.12
Pu-239	243	5.16	212	258	13,415.00	95.82
Am-241	289	5.49	261	313	12,634.00	90.24

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:00:11PM 2/26/2007

Analyst: 60040
Detector: AV20

Calibration

Name: Feb2007_AV20
Description:

Calibration Date: 2/26/2007 12:00:08PM

Source Info

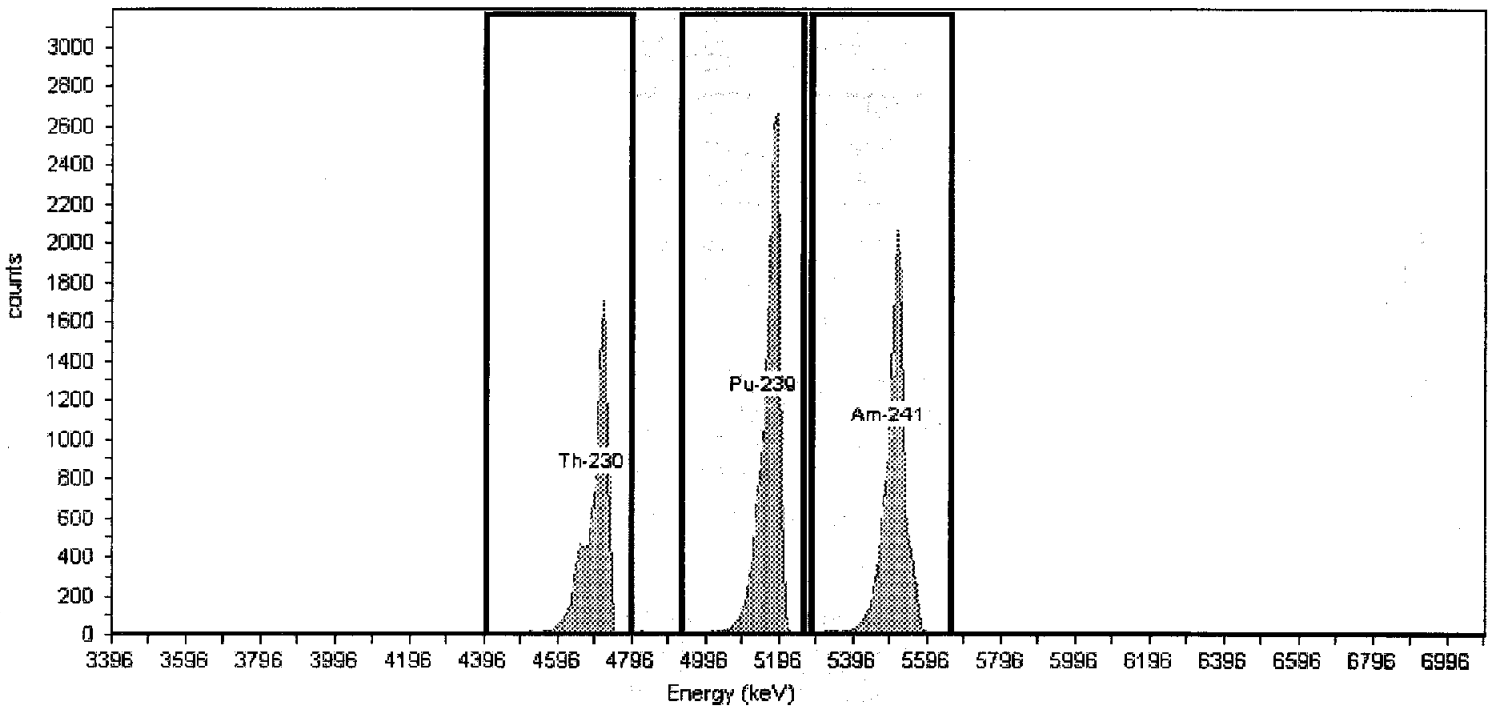
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV20 , SN: 41-172R2
Acquisition Start Date: 2/26/2007 8:44:31AM
Live Time: 140.00 min.
Real Time: 140.10 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	11,604.00	82.89
Pu-239	243	5.16	212	258	17,637.00	125.98
Am-241	289	5.49	261	313	15,135.00	108.11

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:22:40AM 2/27/2007

Analyst: 60040
Detector: AV21

Calibration

Name: Feb2007_AV21
Description:

Calibration Date: 2/27/2007 11:22:37AM

Source Info

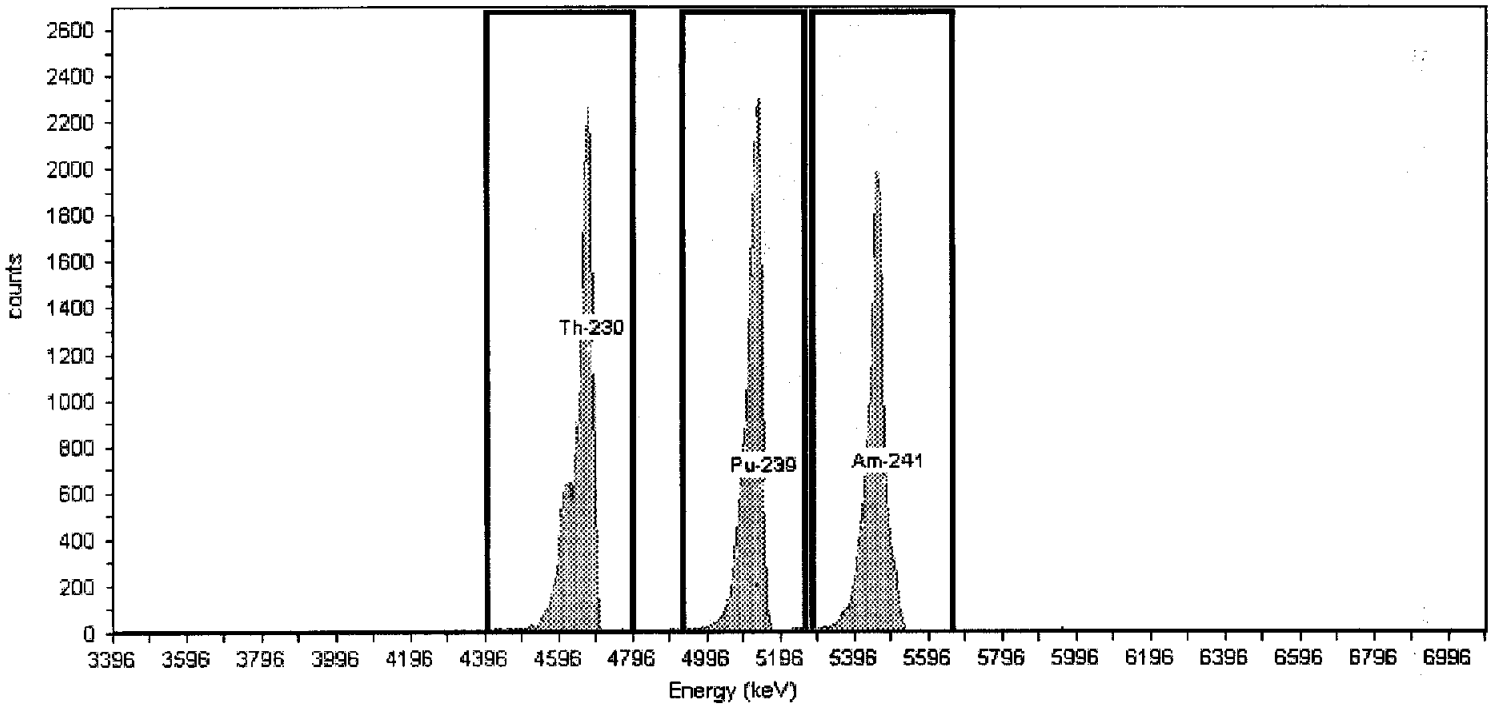
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV21 , SN: 41-172C7
Acquisition Start Date: 2/27/2007 8:52:12AM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.30% +/- 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	16,088.00	114.91
Pu-239	243	5.16	212	258	15,270.00	109.07
Am-241	289	5.49	261	313	14,383.00	102.74

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:25:50PM 2/23/2007

Analyst: 60040
Detector: AV22

Calibration

Name: Feb2007_AV22
Description:

Calibration Date: 2/23/2007 2:25:47PM

Source Info

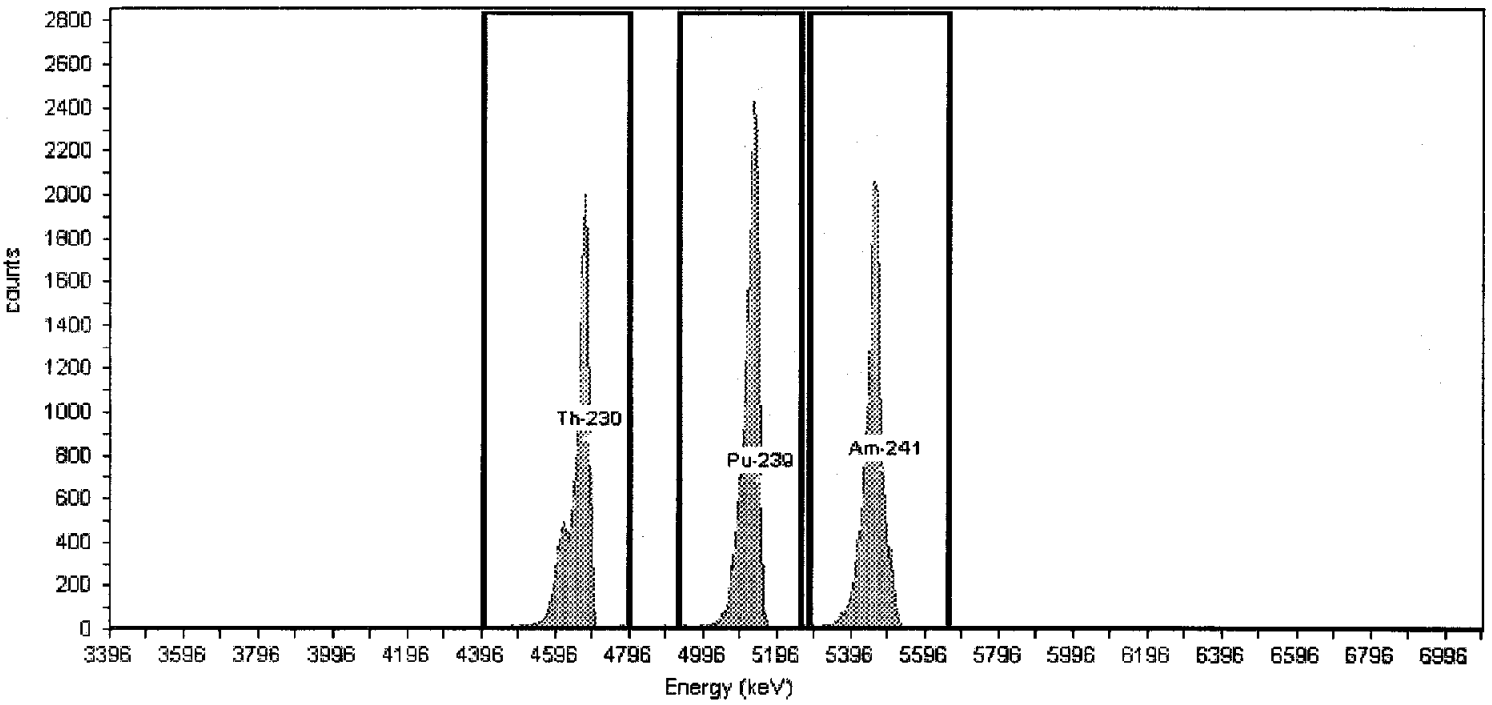
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV22 , SN: 41-172Q5
Acquisition Start Date: 2/23/2007 11:22:30AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 25.96% +/- 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	12,196.00	87.11
Pu-239	243	5.16	212	258	14,317.00	102.26
Am-241	289	5.49	261	313	13,729.00	98.06

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:00:04PM 2/26/2007

Analyst: 60040
Detector: AV23

Calibration

Name: Feb2007_AV23
Description:

Calibration Date: 2/26/2007 12:00:01PM

Source Info

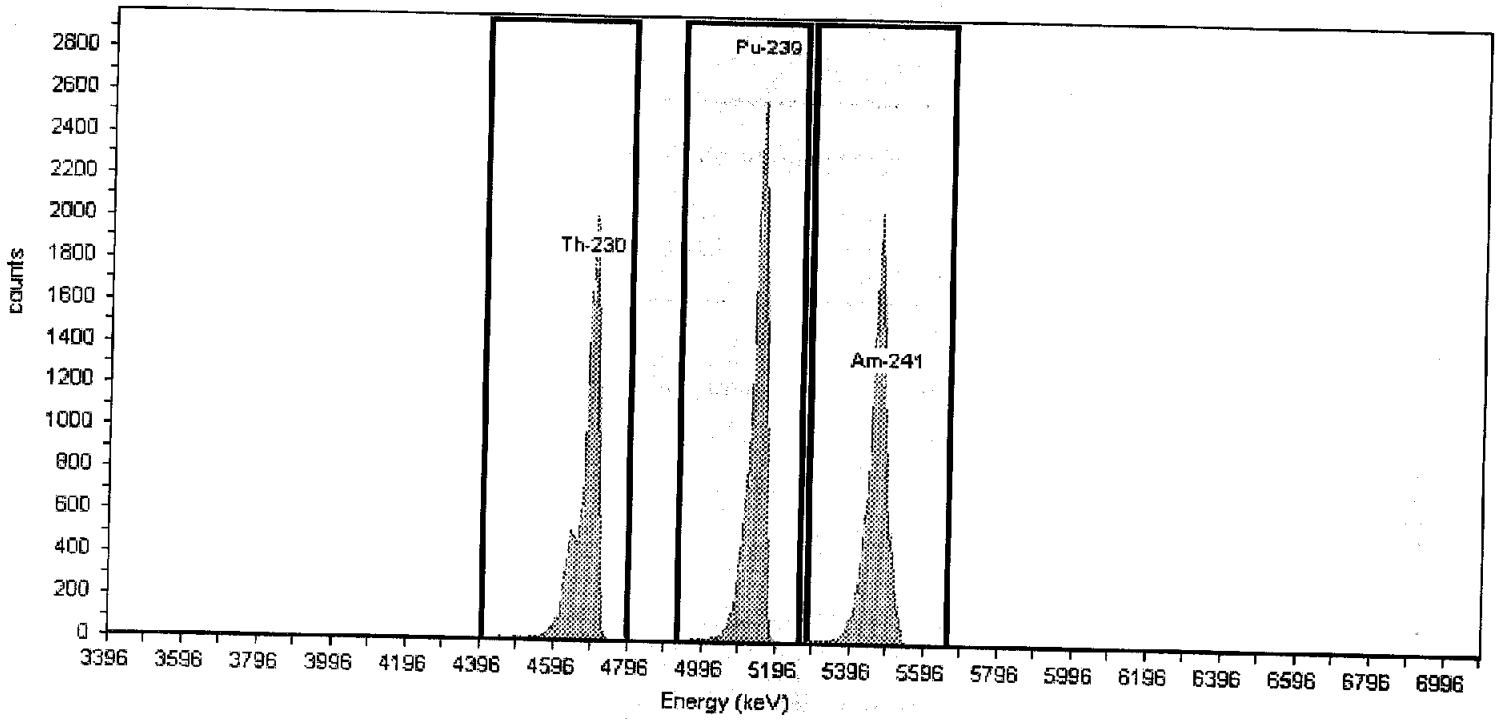
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV23 , SN: 41-172R4
Acquisition Start Date: 2/26/2007 8:44:07AM
Live Time: 140.00 min.
Real Time: 140.10 min.
Efficiency: 28.96% +/- 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	13,329.00	95.21
Pu-239	243	5.16	212	258	15,283.00	109.16
Am-241	289	5.49	261	313	14,163.00	101.16

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:48:45PM 2/27/2007

Analyst: 60040
Detector: AV24

Calibration

Name: Feb2007_AV24
Description:

Calibration Date: 2/27/2007 1:48:41PM

Source Info

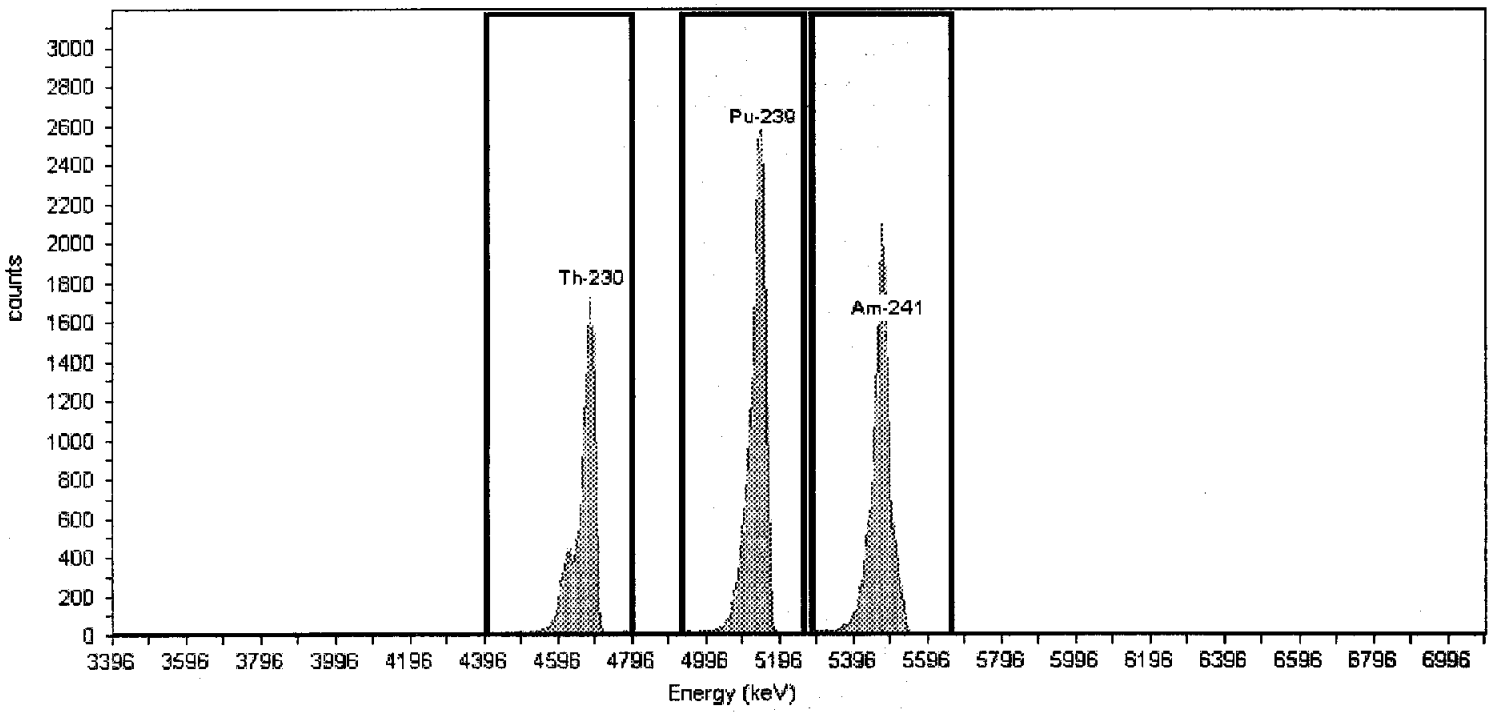
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV24 , SN: 41-172R5
Acquisition Start Date: 2/27/2007 11:25:41AM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.05% +/- 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	11,227.00	80.19
Pu-239	243	5.16	212	258	16,996.00	121.40
Am-241	289	5.49	261	313	14,591.00	104.22

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:48:37PM 2/27/2007

Analyst: 60040
Detector: AV45

Calibration

Name: Feb2007_AV45
Description:

Calibration Date: 2/27/2007 1:48:34PM

Source Info

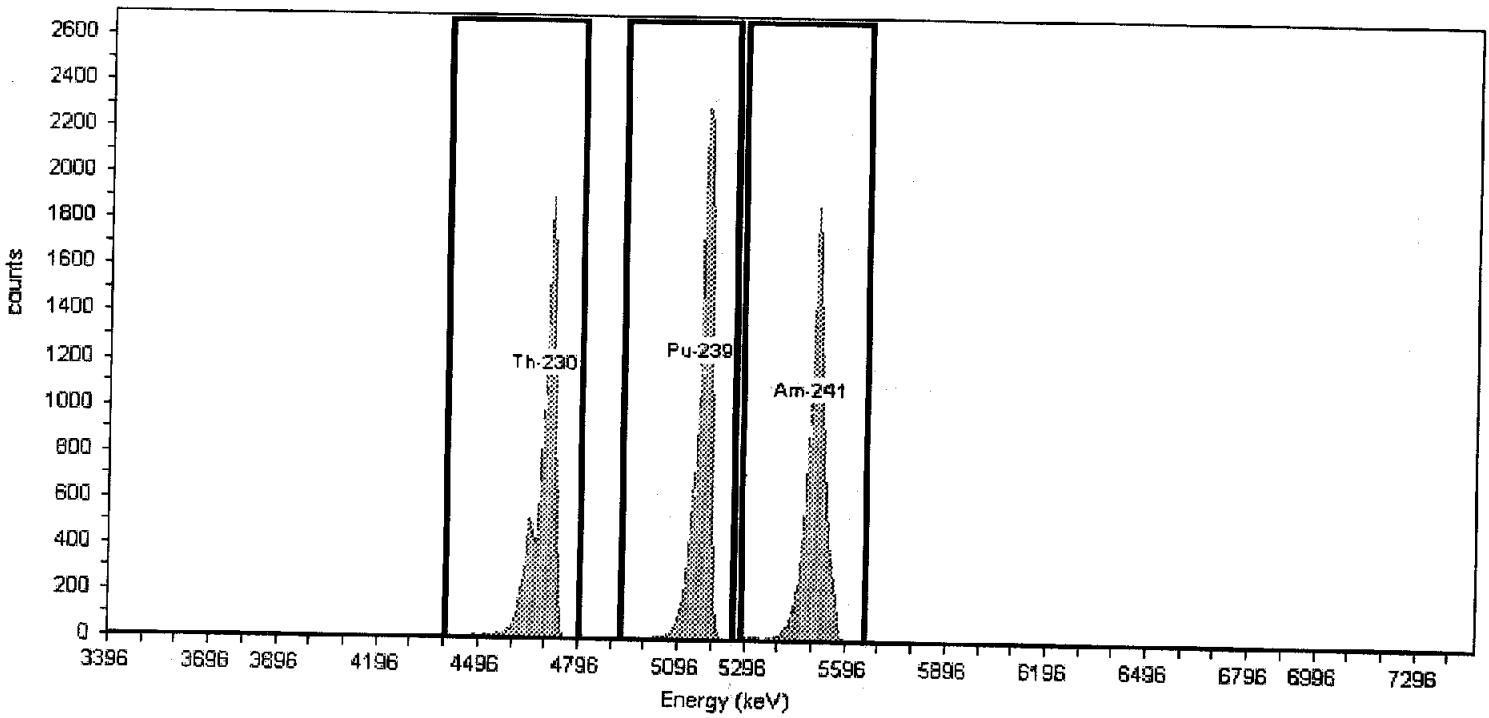
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV45 , SN: AV45
Acquisition Start Date: 2/27/2007 11:25:28AM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 27.75% +/- 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	12,803.00	91.45
Pu-239	243	5.16	212	258	14,474.00	103.39
Am-241	289	5.49	261	313	13,701.00	97.86

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:03:13AM 2/23/2007

Analyst: 60040
Detector: AV46

Calibration

Name: Feb2007_AV46
Description:

Calibration Date: 2/23/2007 11:03:08AM

Source Info

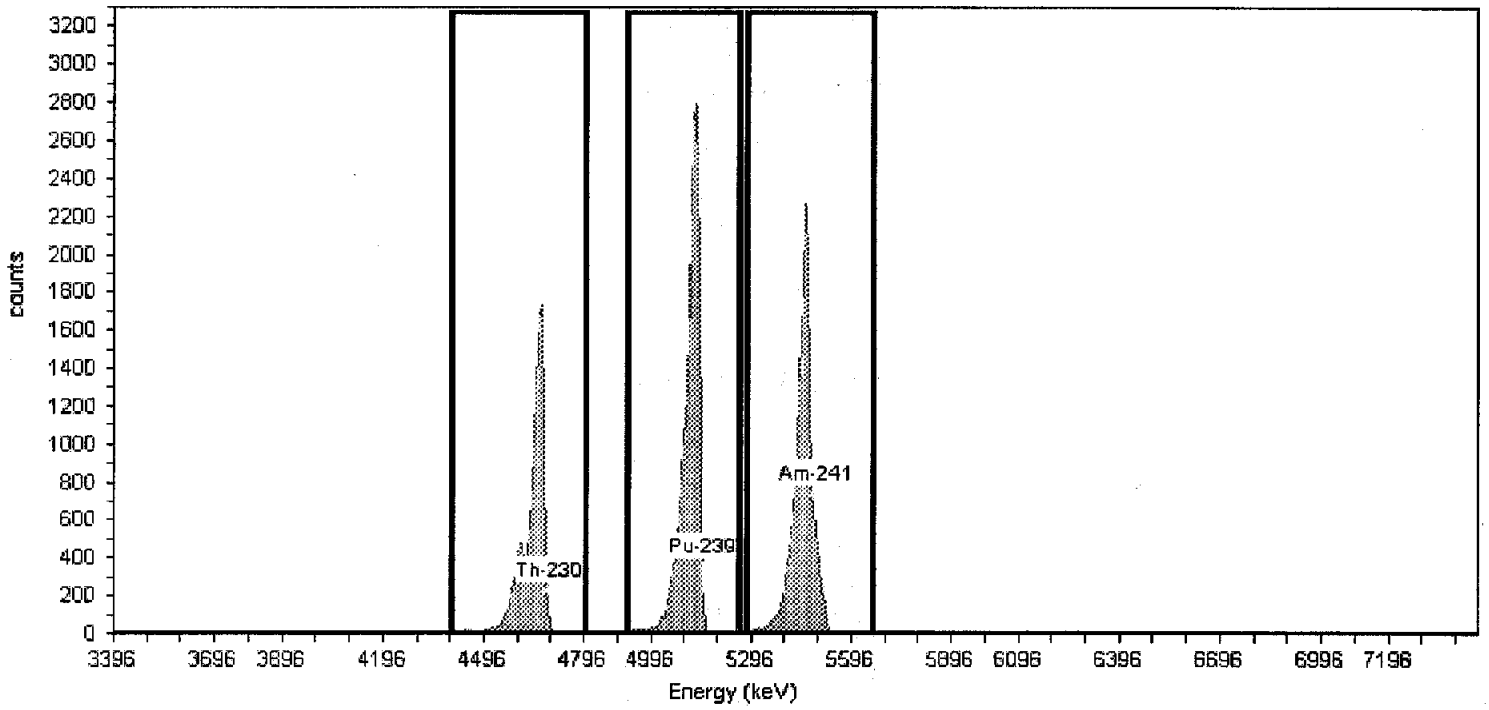
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV46 , SN: AV46
Acquisition Start Date: 2/23/2007 8:29:12AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.19% +/- 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	11,592.00	82.80
Pu-239	243	5.16	212	258	17,772.00	126.94
Am-241	289	5.49	261	313	15,329.00	109.49

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

Analyst: 60040
Detector: AV47

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:30:33PM 2/22/2007

Calibration

Name: Feb2007_AV47
Description:

Calibration Date: 2/22/2007 6:30:30PM

Source Info

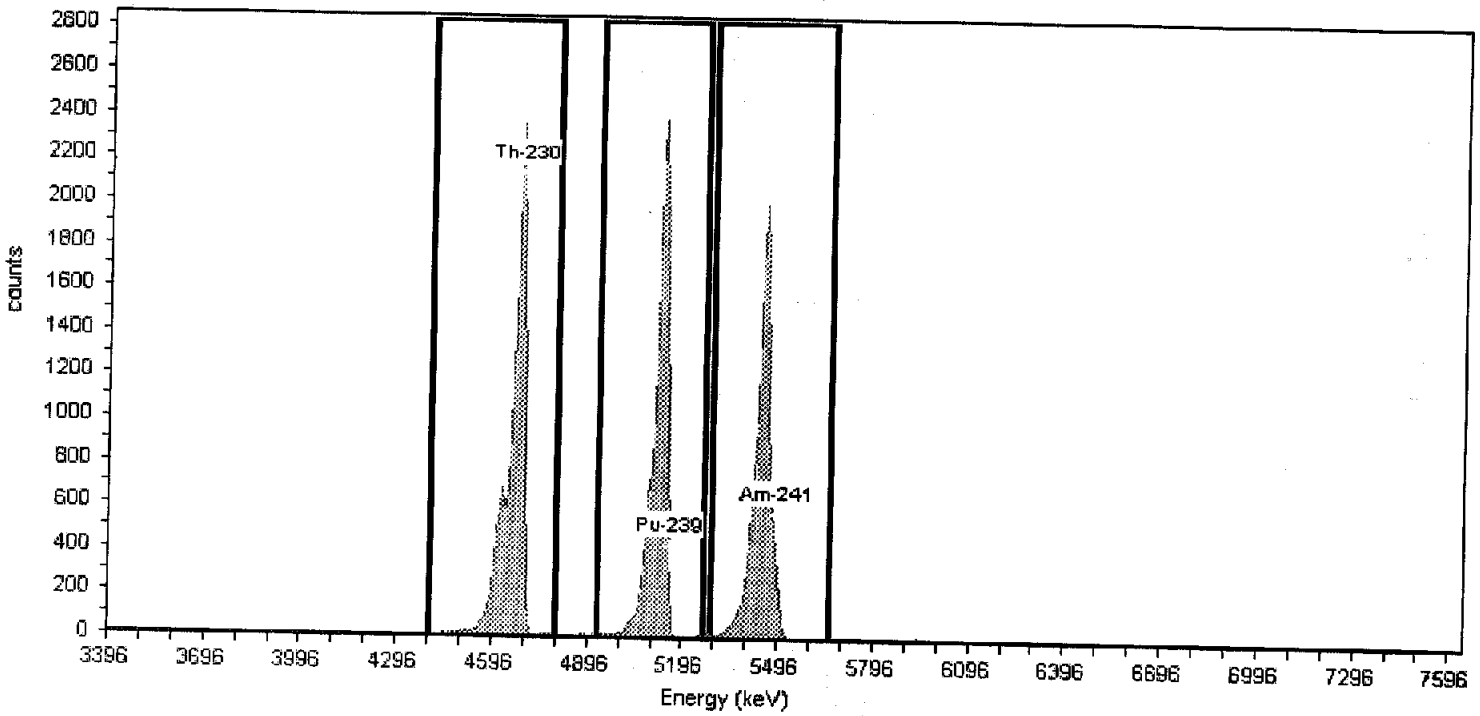
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV47 , SN: AV47
Acquisition Start Date: 2/22/2007 3:59:41PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.27% +/- 0.26% 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	16,225.00	115.89
Pu-239	243	5.16	212	258	15,235.00	108.82
Am-241	289	5.49	261	313	14,292.00	102.09

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

Analyst: 60040
Detector: AV48

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:59:57AM 2/26/2007

Calibration

Name: Feb2007_AV48
Description:

Calibration Date: 2/26/2007 11:59:54AM

Source Info

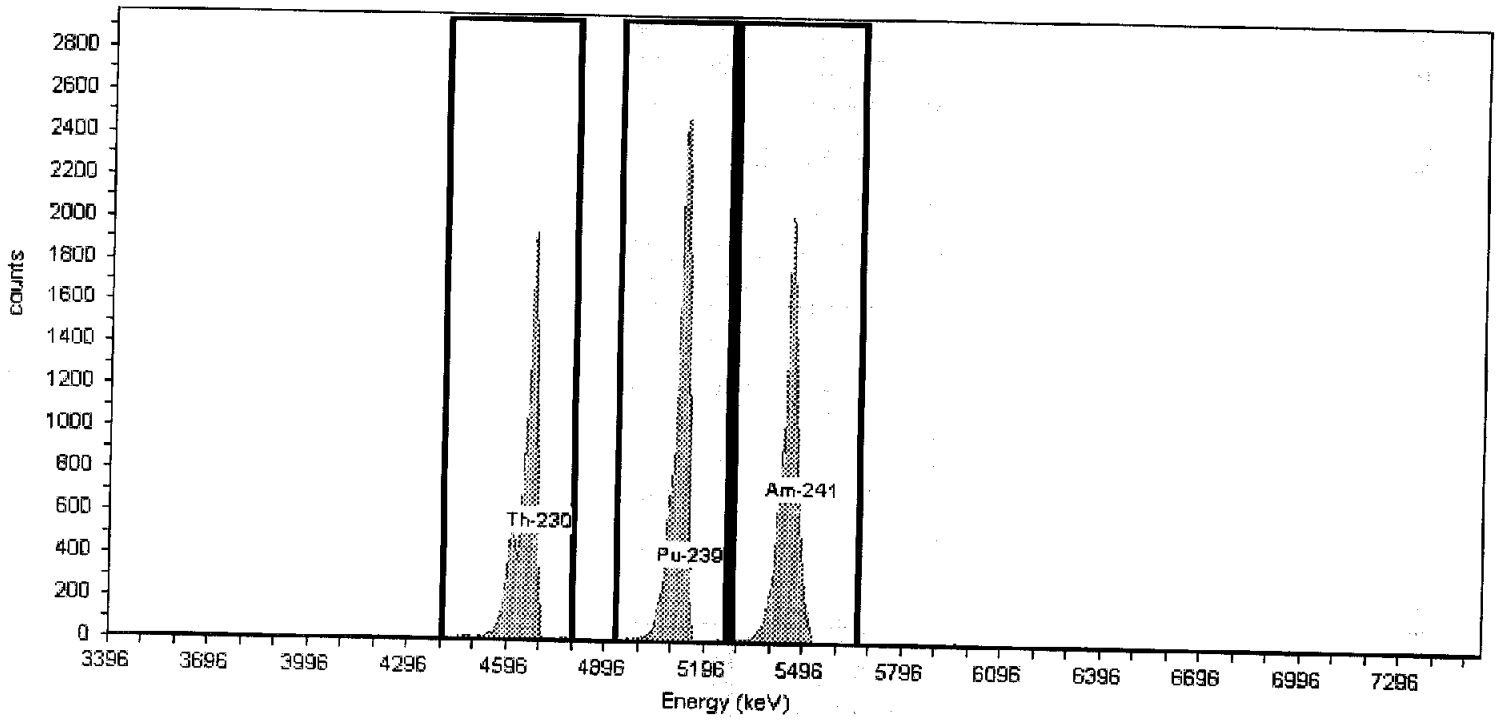
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV48 , SN: AV48
Acquisition Start Date: 2/26/2007 8:43:49AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.62% +/- 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	12,501.00	89.29
Pu-239	243	5.16	212	258	14,560.00	104.00
Am-241	289	5.49	261	313	14,216.00	101.54

STL SEVERN TRENT STL

Alpha Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:28:27PM 2/27/2007

Analyst: 60040
Detector: AV49

Calibration

Name: Feb2007_AV49
Description:

Calibration Date: 2/27/2007 4:28:23PM

Source Info

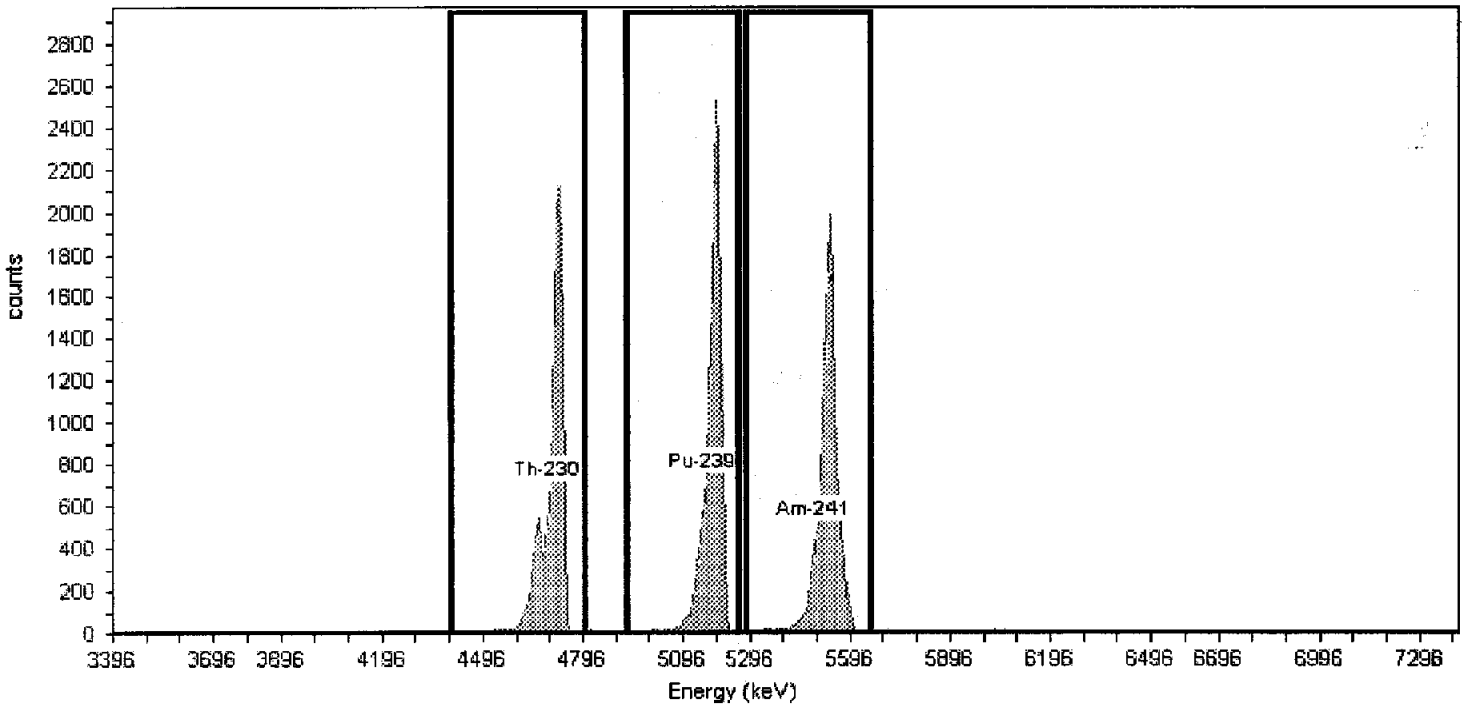
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV49 , SN: AV49
Acquisition Start Date: 2/27/2007 1:53:13PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 28.16% +/- 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	13,146.00	93.90
Pu-239	243	5.16	212	258	14,850.00	106.07
Am-241	289	5.49	261	313	13,600.00	97.14

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:28:34PM 2/27/2007

Analyst: 60040
Detector: AV50

Calibration

Name: Feb2007_AV50
Description:

Calibration Date: 2/27/2007 4:28:30PM

Source Info

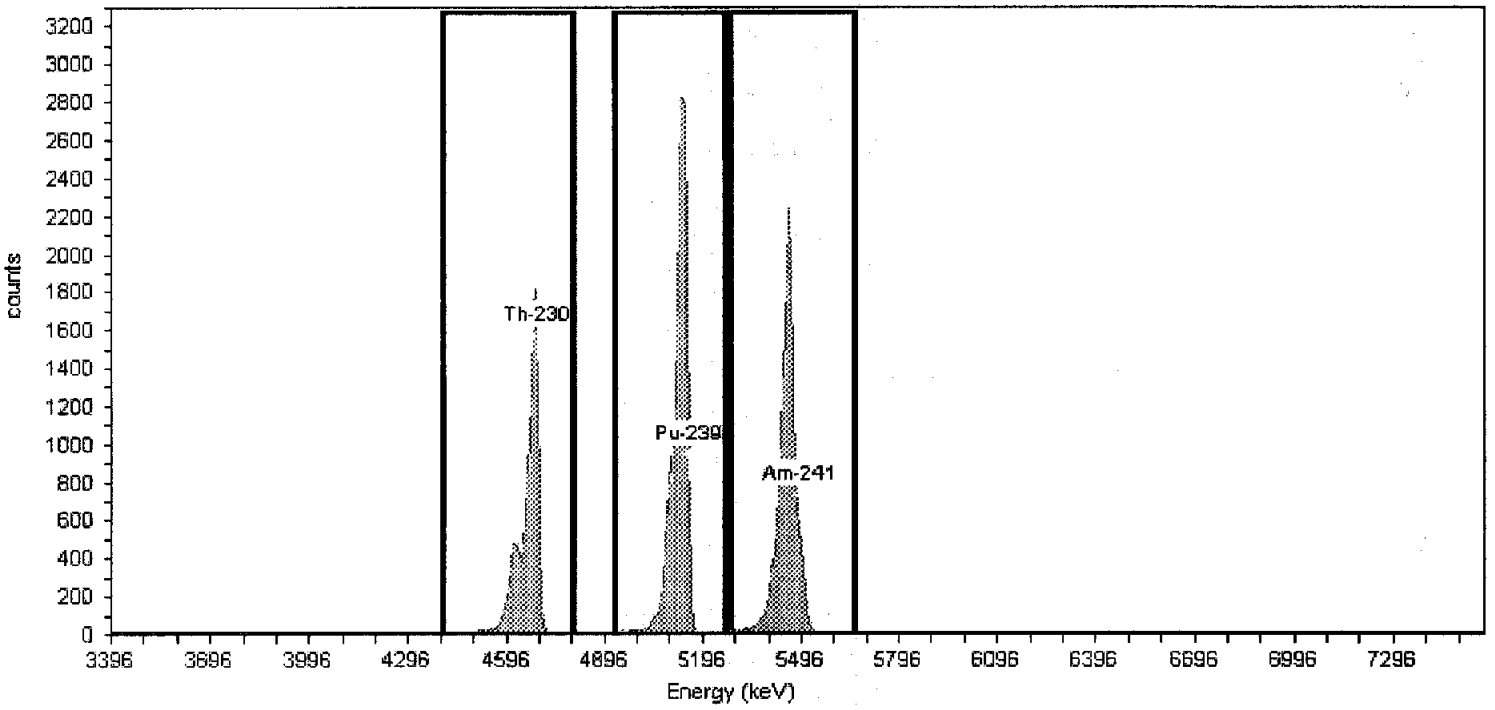
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV50 , SN: AV50
Acquisition Start Date: 2/27/2007 1:53:40PM
Live Time: 140.00 min.
Real Time: 140.03 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	11,631.00	83.08
Pu-239	243	5.16	212	258	17,532.00	125.23
Am-241	289	5.49	261	313	15,141.00	108.15

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:48:21PM 2/27/2007

Analyst: 60040
Detector: AV51

Calibration

Name: Feb2007_AV51
Description:

Calibration Date: 2/27/2007 1:48:17PM

Source Info

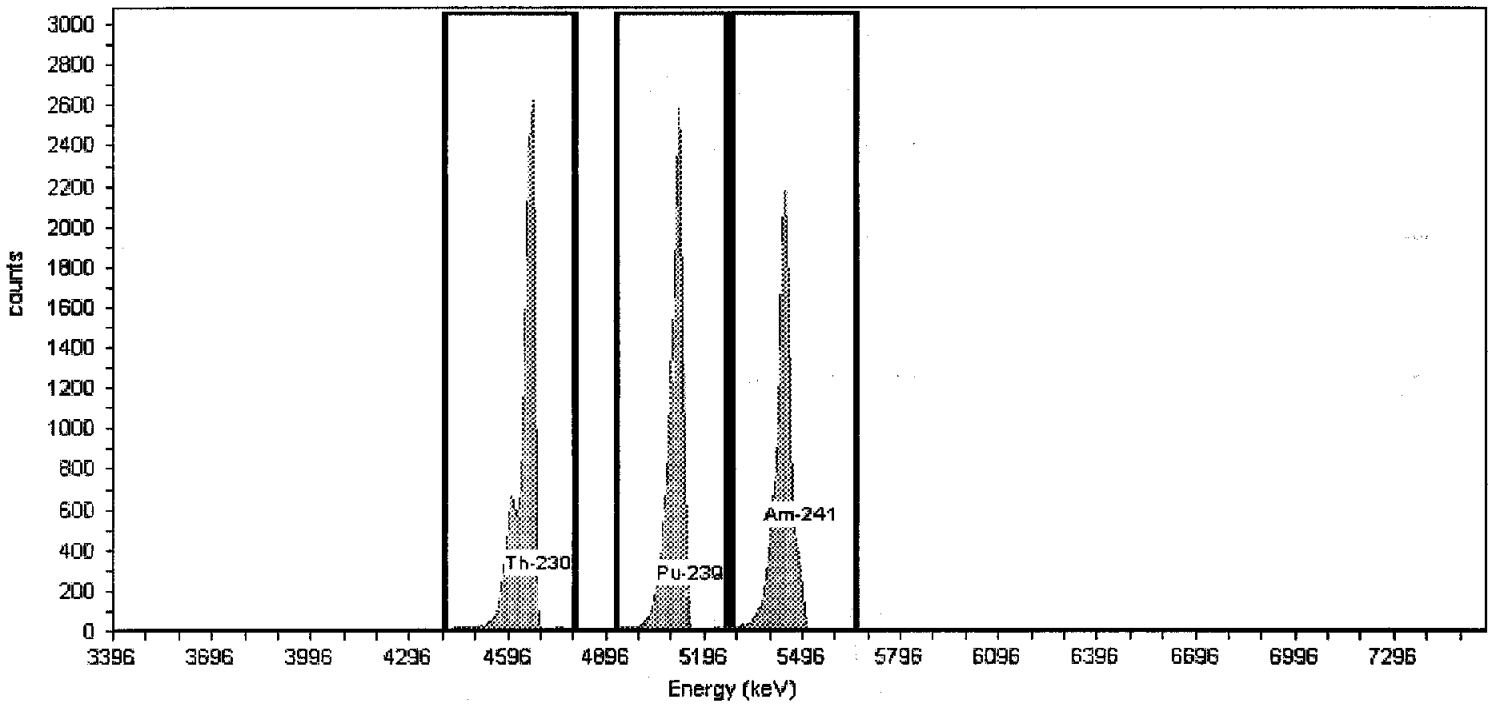
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV51 , SN:
Acquisition Start Date: 2/27/2007 11:24:53AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.64% +/- 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	16,261.00	116.15
Pu-239	243	5.16	212	258	15,554.00	111.10
Am-241	289	5.49	261	313	14,514.00	103.67

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:48:28PM 2/27/2007

Analyst: 60040
Detector: AV52

Calibration

Name: Feb2007_AV52
Description:

Calibration Date: 2/27/2007 1:48:25PM

Source Info

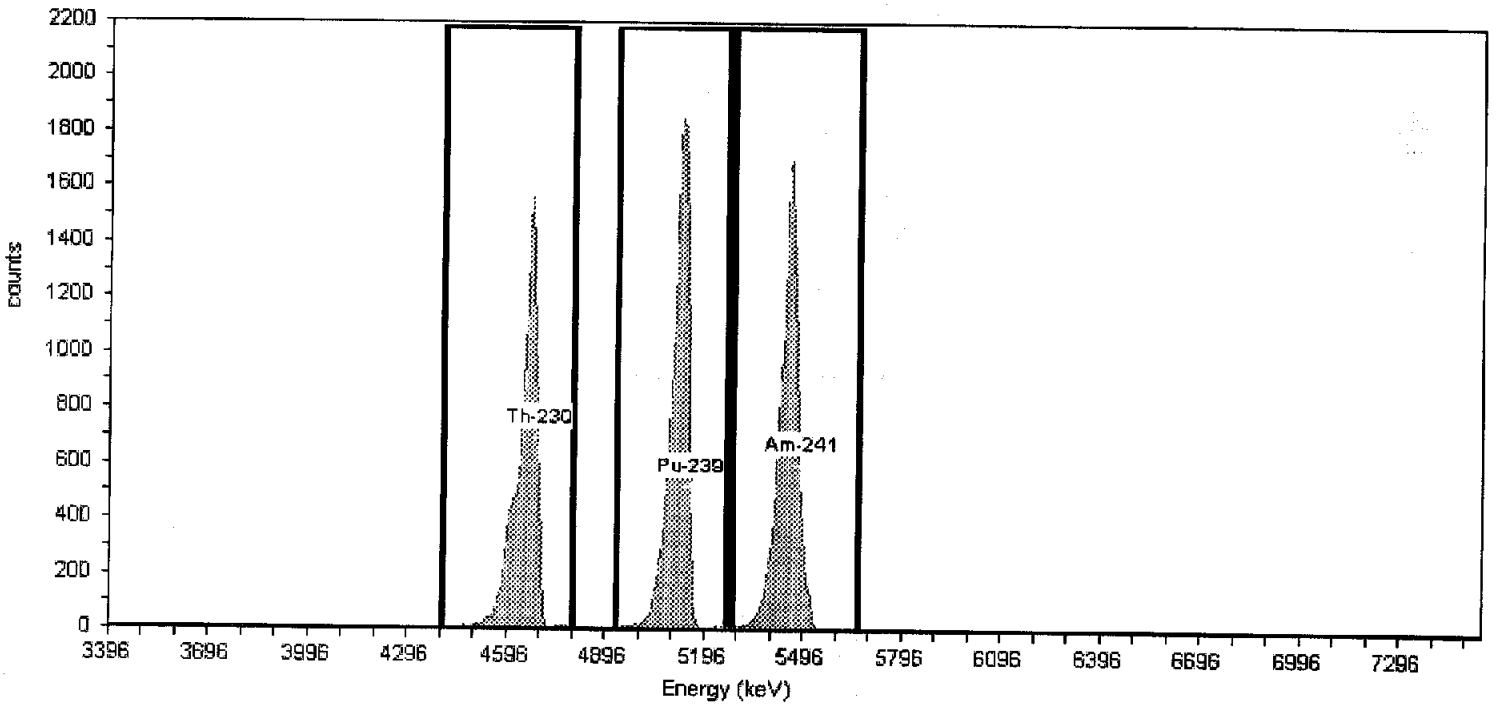
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV52 , SN:
Acquisition Start Date: 2/27/2007 11:25:09AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.52% +/- 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	12,438.00	88.84
Pu-239	243	5.16	212	258	14,468.00	103.34
Am-241	289	5.49	261	313	14,219.00	101.56

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:37:41PM 2/27/2007

Analyst: 60040
Detector: AV53

Calibration

Name: Feb2007_AV53
Description:

Calibration Date: 2/27/2007 7:37:38PM

Source Info

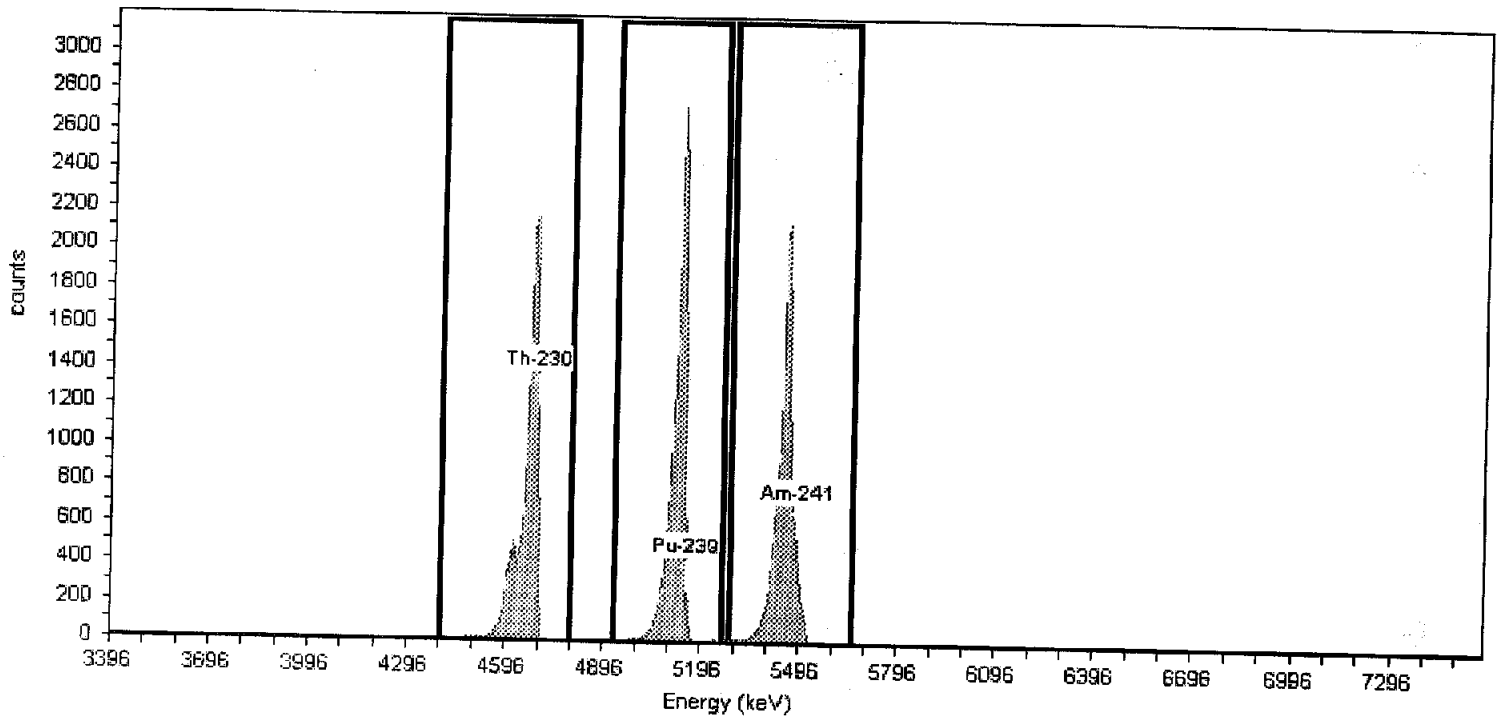
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV53 , SN:
Acquisition Start Date: 2/27/2007 4:31:41PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 27.71% +/- 0.30% 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	12,788.00	91.34
Pu-239	243	5.16	212	258	14,490.00	103.50
Am-241	289	5.49	261	313	13,643.00	97.45

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:37:47PM 2/27/2007

Analyst: 60040
Detector: AV54

Calibration

Name: Feb2007_AV54
Description:

Calibration Date: 2/27/2007 7:37:44PM

Source Info

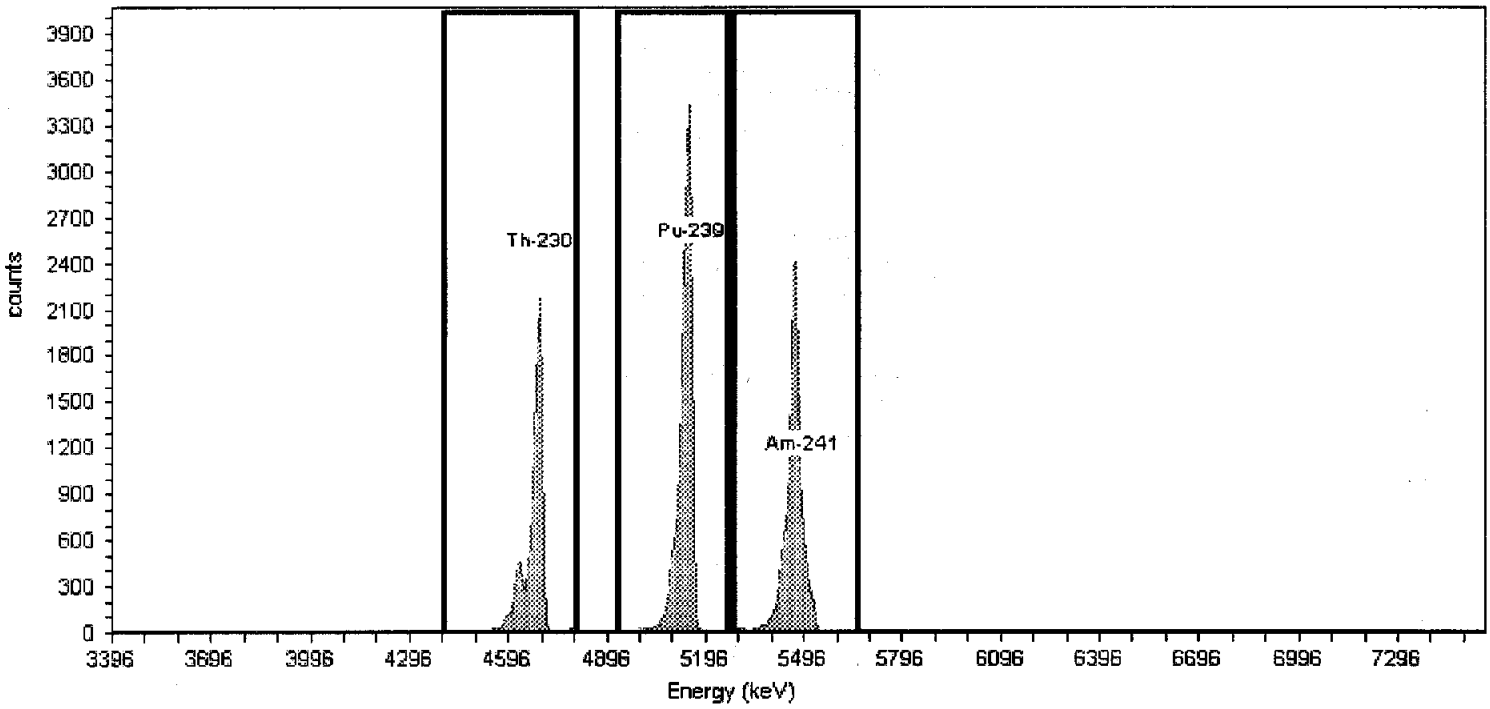
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV54 , SN:
Acquisition Start Date: 2/27/2007 4:31:43PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.93% +/- 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	11,596.00	82.83
Pu-239	243	5.16	212	258	17,626.00	125.90
Am-241	289	5.49	261	313	15,048.00	107.49

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:26:24AM 2/23/2007

Analyst: 60040
Detector: AV55

Calibration

Name: FEB2007_AV55
Description:

Calibration Date: 2/23/2007 6:26:07AM

Source Info

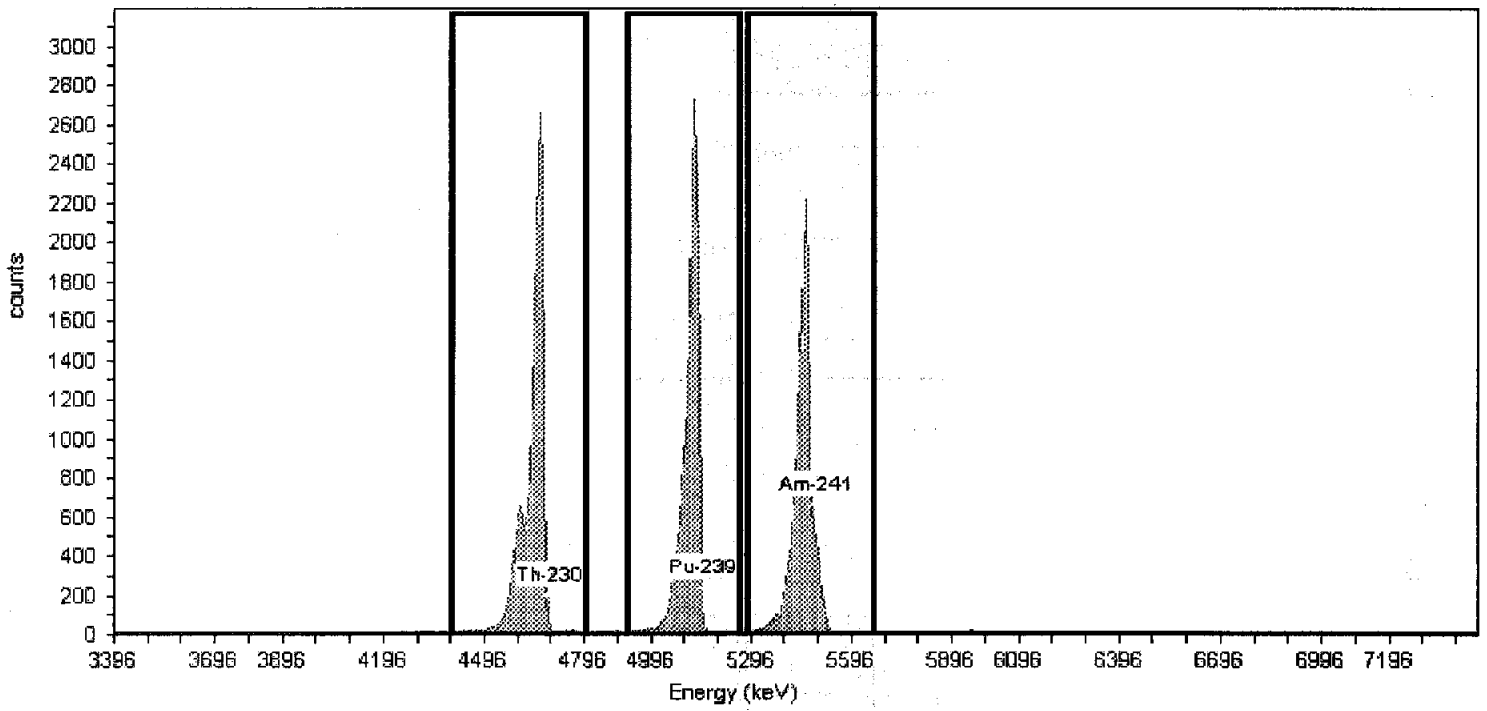
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV55 , SN:
Acquisition Start Date: 2/22/2007 6:42:20PM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.98% +/- 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	16,433.00	117.38
Pu-239	243	5.16	212	258	15,757.00	112.55
Am-241	289	5.49	261	313	14,715.00	105.11

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:28:19PM 2/27/2007

Analyst: 60040
Detector: AV56

Calibration

Name: Feb2007_AV56
Description:

Calibration Date: 2/27/2007 4:28:15PM

Source Info

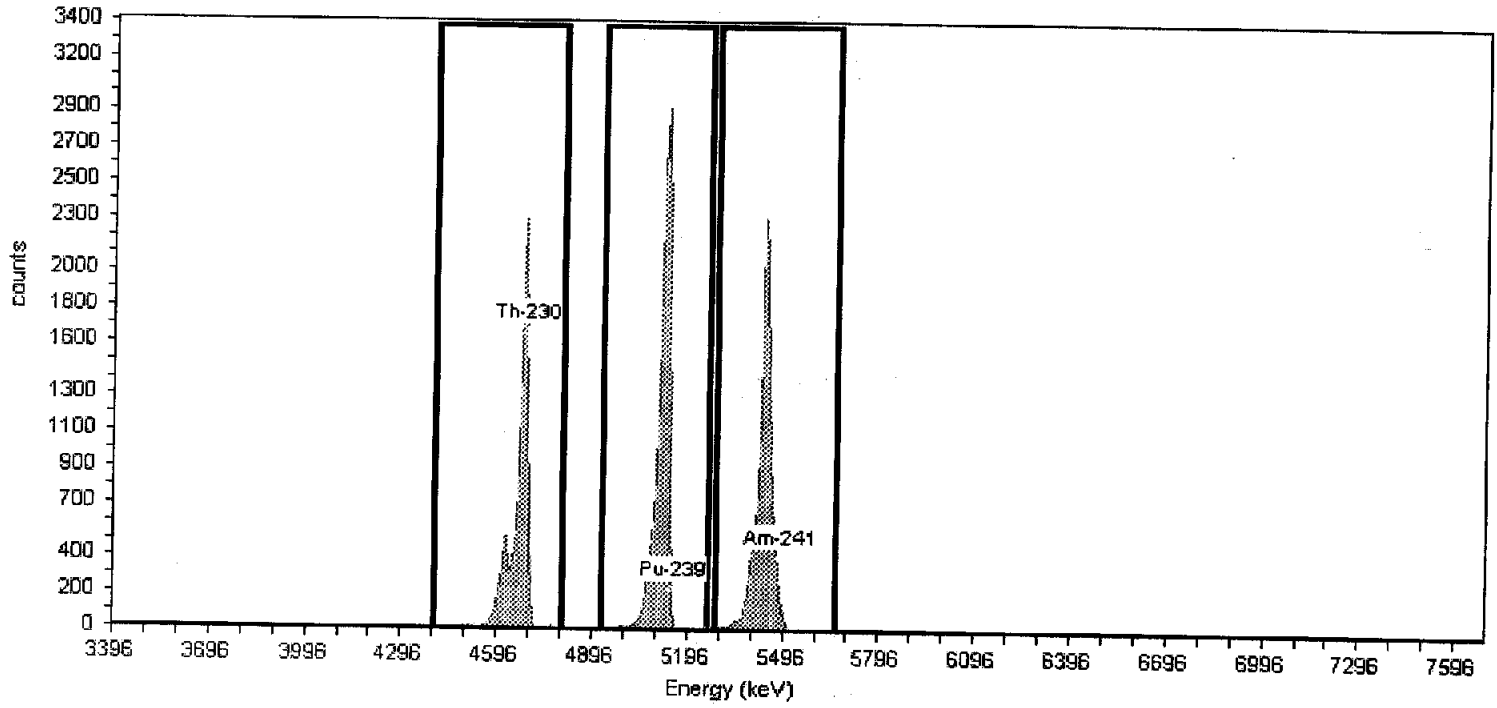
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV56 , SN:
Acquisition Start Date: 2/27/2007 1:52:57PM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 25.77% +/- 0.27% 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	11,918.00	85.13
Pu-239	243	5.16	212	258	14,470.00	103.36
Am-241	289	5.49	261	313	13,692.00	97.80

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

Analyst: 60040
Detector: AV57

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:03:04AM 2/23/2007

Calibration

Name: Feb2007_AV57
Description:

Calibration Date: 2/23/2007 11:03:00AM

Source Info

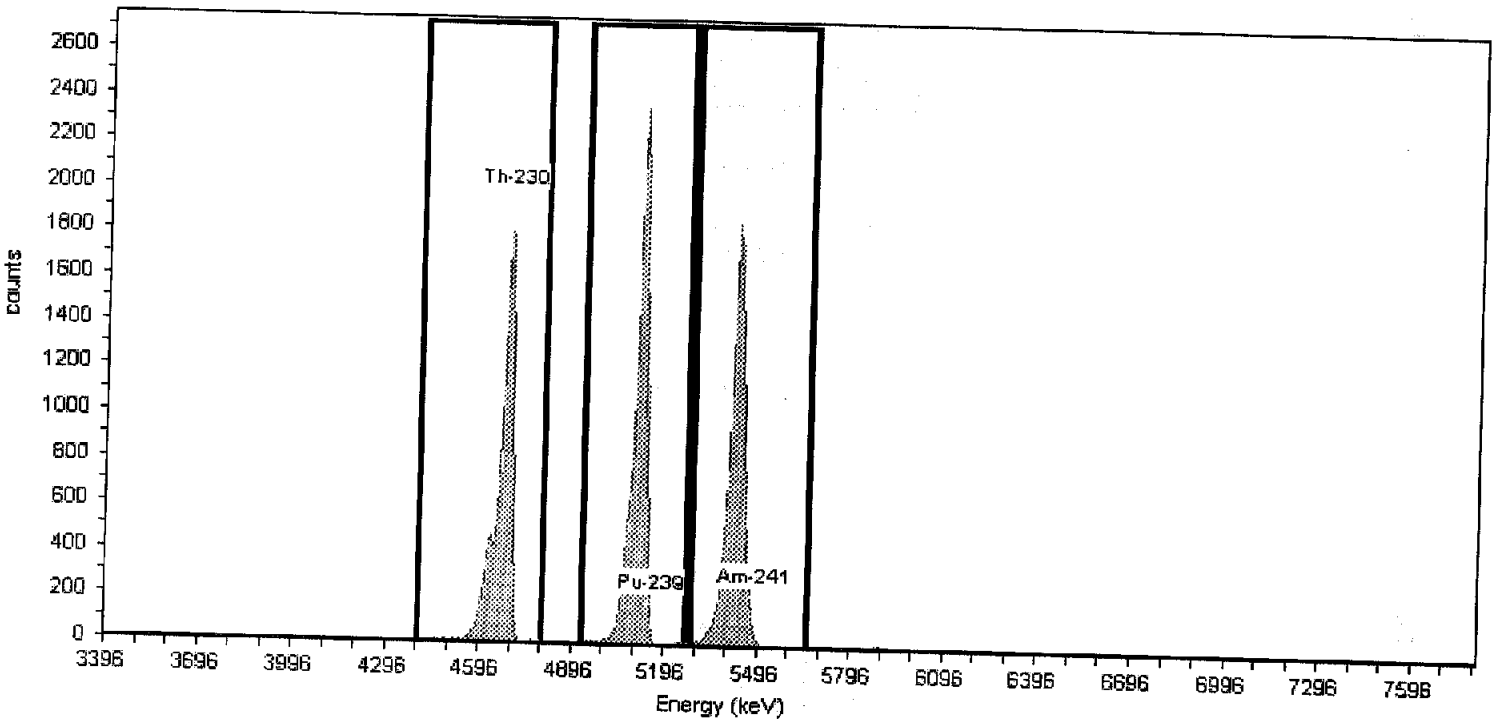
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV57 , SN:
Acquisition Start Date: 2/23/2007 8:28:40AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.03% +/- 0.29% 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	12,351.00	88.22
Pu-239	243	5.16	212	258	14,268.00	101.91
Am-241	289	5.49	261	313	13,301.00	95.01

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:03:18AM 2/28/2007

Analyst: 60040
Detector: AV58

Calibration

Name: FEB2007_AV58
Description:

Calibration Date: 2/28/2007 7:03:13AM

Source Info

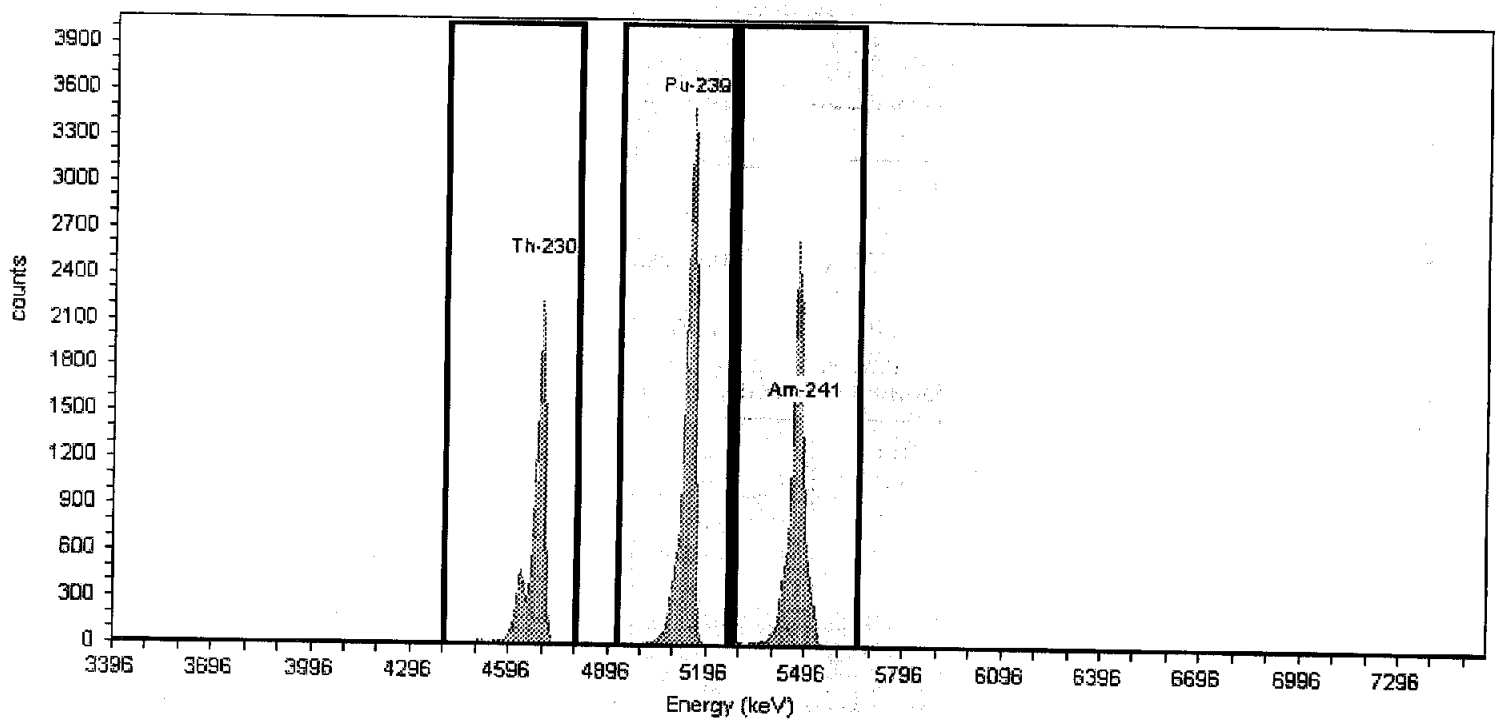
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV58 , SN:
Acquisition Start Date: 2/27/2007 7:50:18PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.46% +/- 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	11,896.00	84.97
Pu-239	243	5.16	212	258	17,857.00	127.55
Am-241	289	5.49	261	313	15,392.00	109.94

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:28:40PM 2/27/2007

Analyst: 60040
Detector: AV59

Calibration

Name: Feb2007_59
Description:

Calibration Date: 2/27/2007 4:28:37PM

Source Info

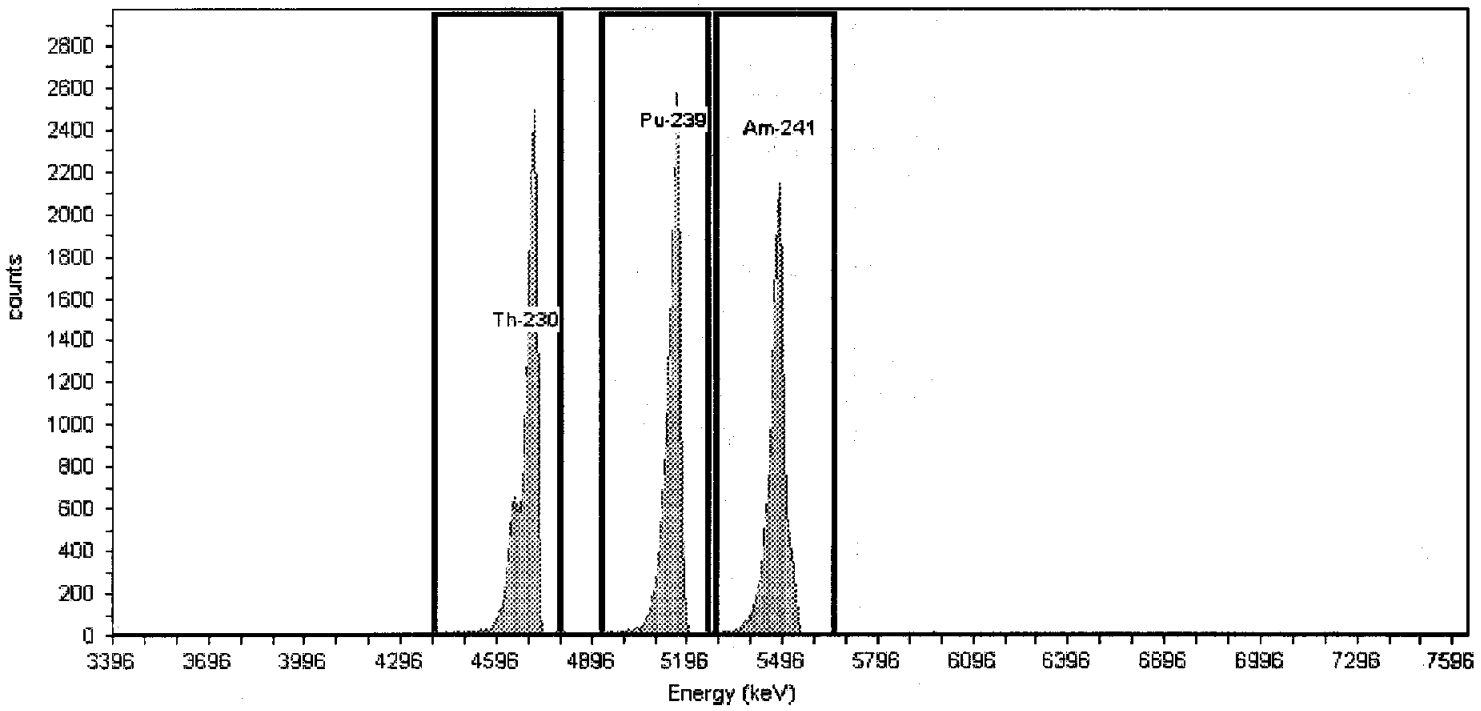
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV59 , SN:
Acquisition Start Date: 2/27/2007 1:52:42PM
Live Time: 140.00 min.
Real Time: 143.64 min.
Efficiency: 27.15% +/- 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	15,975.00	114.11
Pu-239	243	5.16	212	258	15,916.00	113.69
Am-241	289	5.49	261	313	15,094.00	107.81

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV60

6:30:37PM 2/22/2007

Calibration

Name: Feb2007_AV60
Description:

Calibration Date: 2/22/2007 6:30:34PM

Source Info

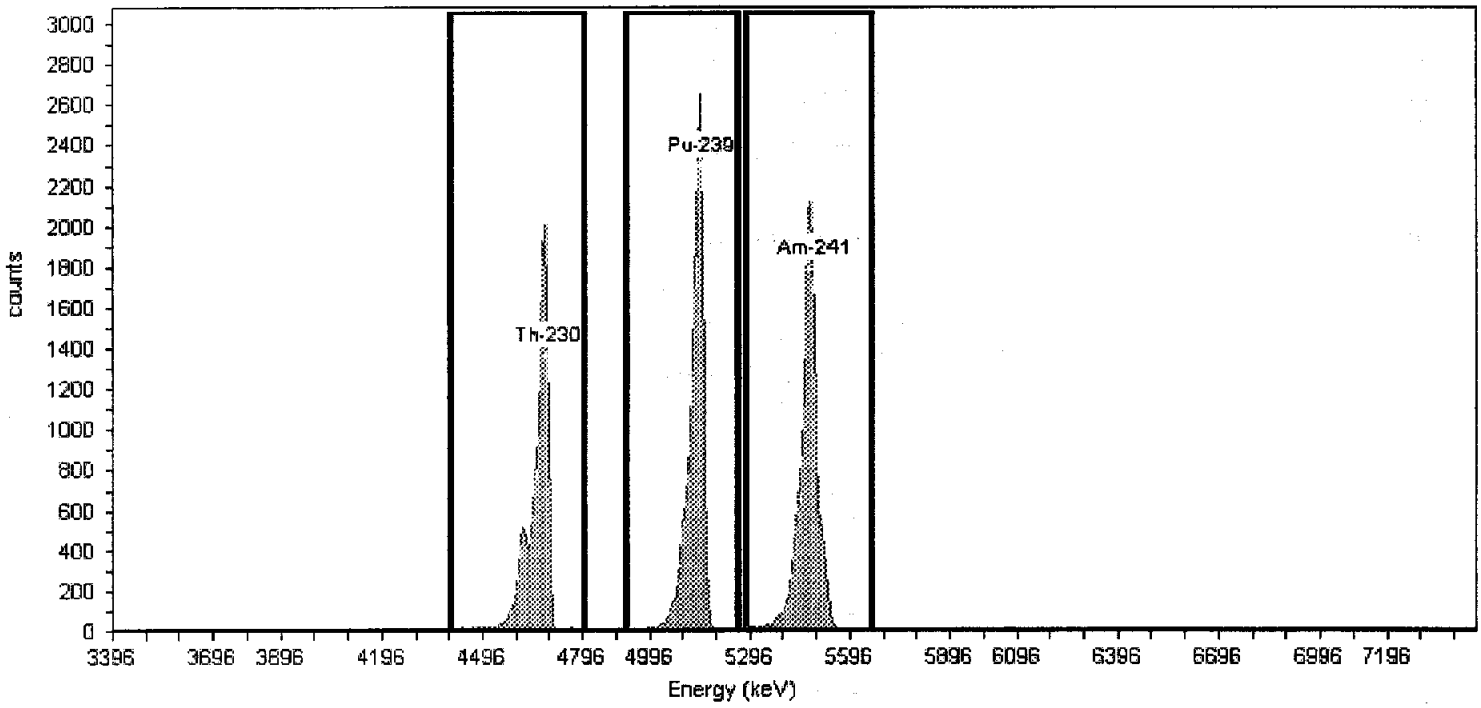
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV60 , SN:
Acquisition Start Date: 2/22/2007 3:59:58PM
Live Time: 140.00 min.
Real Time: 147.22 min.
Efficiency: 27.51% +/- 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	12,455.00	88.96
Pu-239	243	5.16	212	258	15,497.00	110.69
Am-241	289	5.49	261	313	15,095.00	107.82

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:03:20AM 2/23/2007

Analyst: 60040
Detector: AV63

Calibration

Name: Feb2007_AV63
Description:

Calibration Date: 2/23/2007 11:03:17AM

Source Info

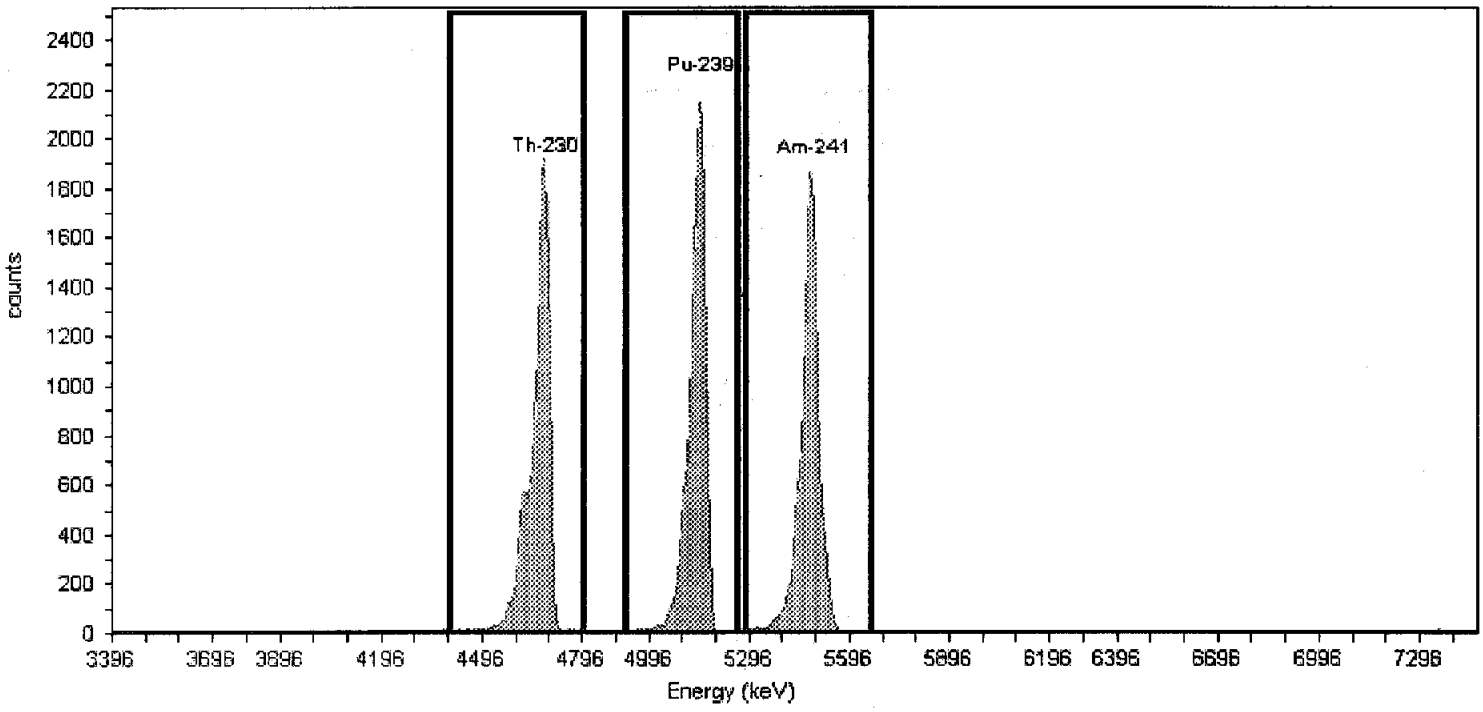
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV63 , SN:
Acquisition Start Date: 2/23/2007 8:27:29AM
Live Time: 140.00 min.
Real Time: 143.89 min.
Efficiency: 26.93% +/- 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	15,631.00	111.65
Pu-239	243	5.16	212	258	15,831.00	113.08
Am-241	289	5.49	261	313	15,066.00	107.61

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:37:52PM 2/27/2007

Analyst: 60040
Detector: AV64

Calibration

Name: Feb2007_AV64
Description:

Calibration Date: 2/27/2007 7:37:49PM

Source Info

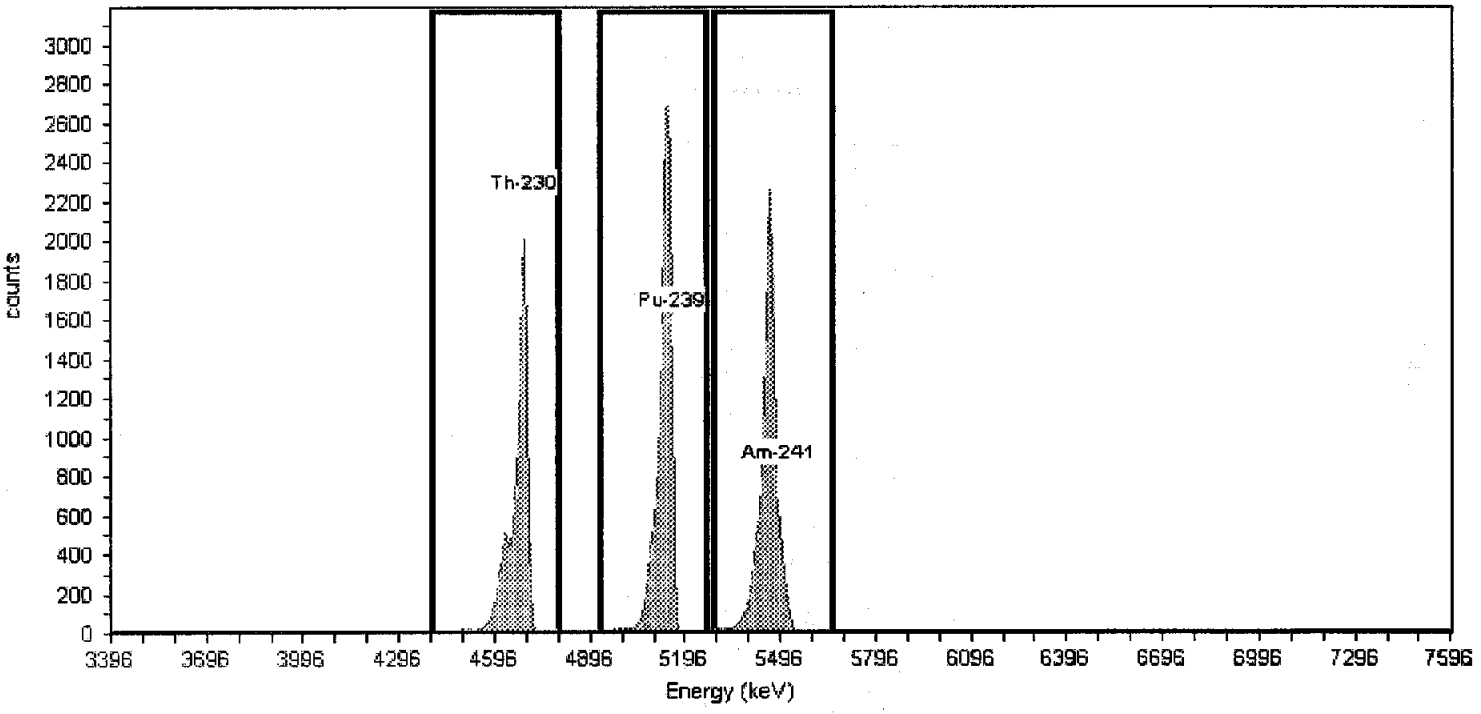
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV64 , SN:
Acquisition Start Date: 2/27/2007 4:31:10PM
Live Time: 140.00 min.
Real Time: 143.05 min.
Efficiency: 27.31% +/- 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	12,395.00	88.54
Pu-239	243	5.16	212	258	15,319.00	109.42
Am-241	289	5.49	261	313	14,989.00	107.06

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:08:42PM 2/28/2007

Analyst: 60040
Detector: AV65

Calibration

Name: Feb2007_AV65
Description:

Calibration Date: 2/28/2007 12:08:39PM

Source Info

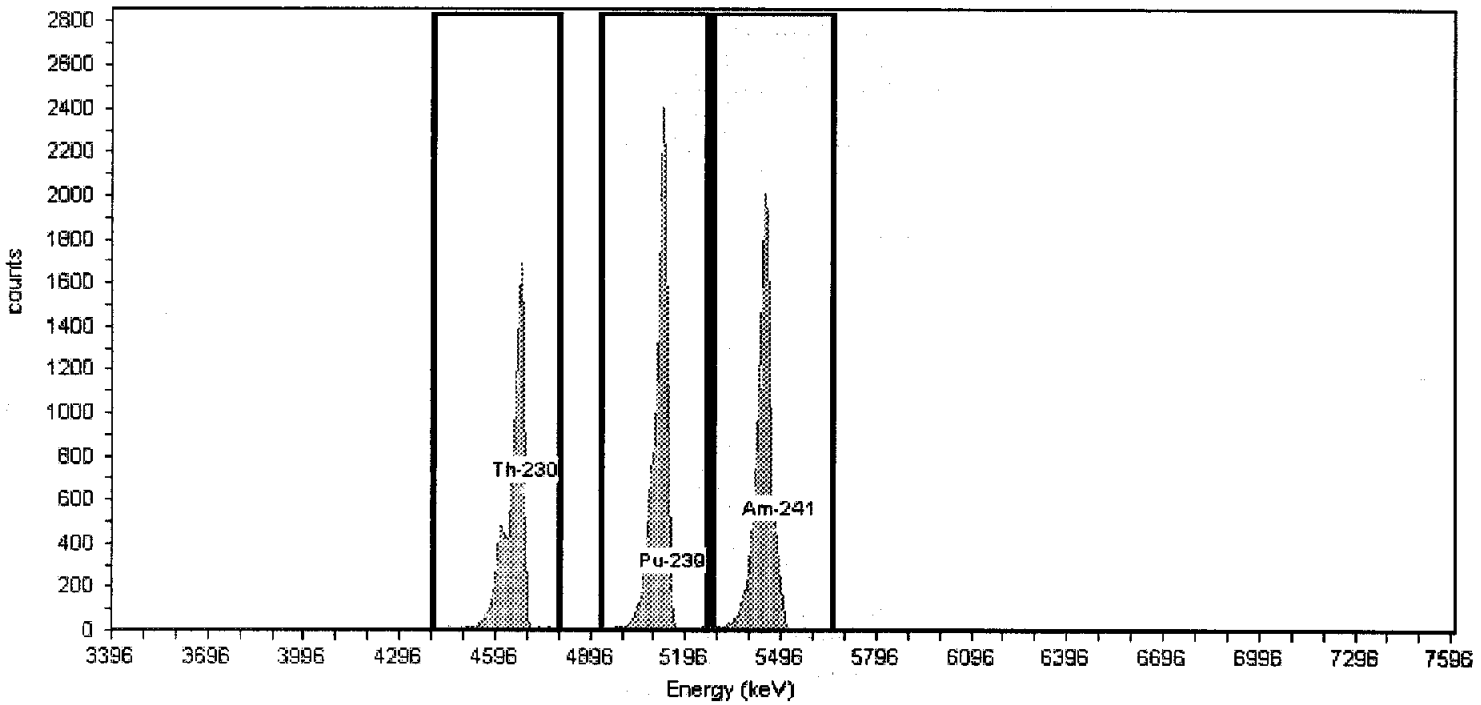
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV65 , SN:
Acquisition Start Date: 2/28/2007 9:35:26AM
Live Time: 140.00 min.
Real Time: 152.38 min.
Efficiency: 26.24% +/- 0.29% 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	11,021.00	78.72
Pu-239	243	5.16	212	258	14,257.00	101.84
Am-241	289	5.49	261	313	13,682.00	97.73

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:08:49PM 2/28/2007

Analyst: 60040
Detector: AV66

Calibration

Name: Feb2007_AV66
Description:

Calibration Date: 2/28/2007 12:08:45PM

Source Info

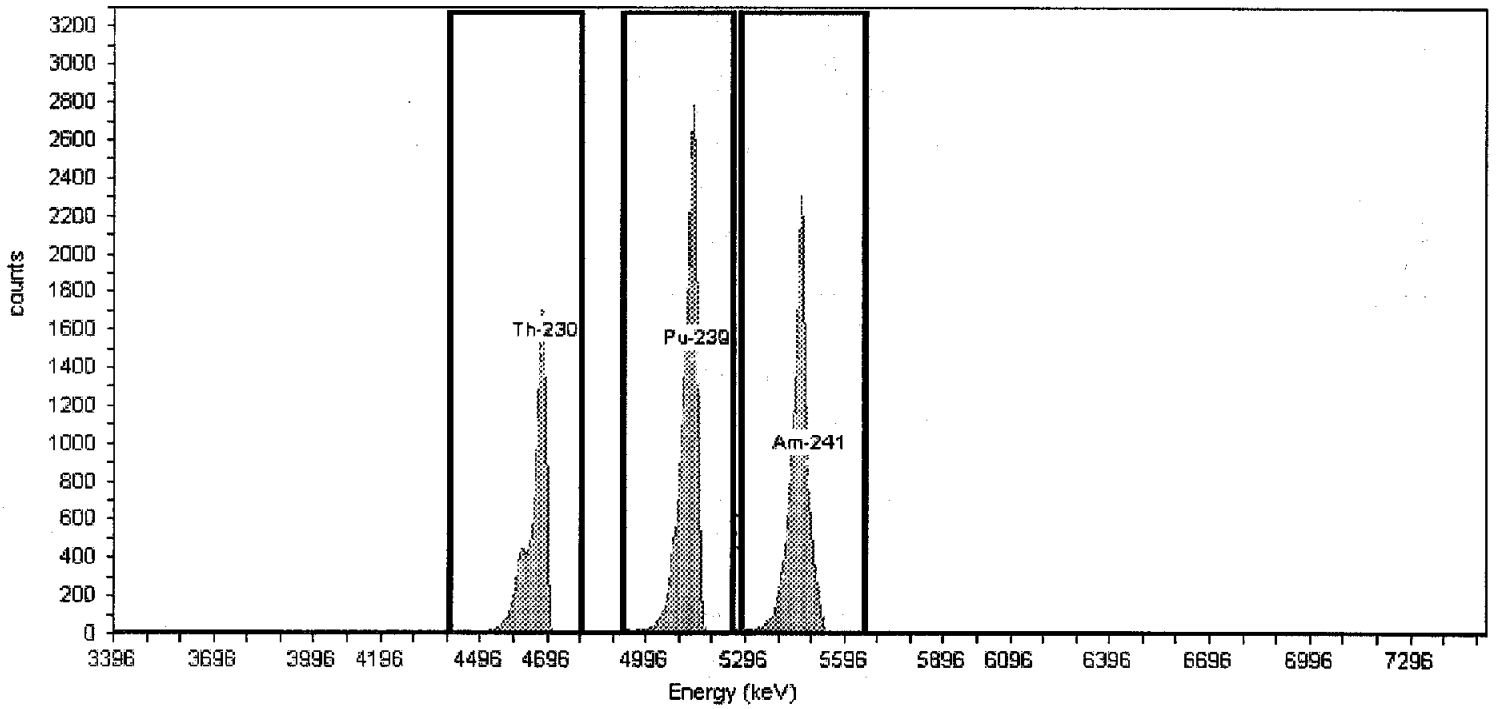
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV66 , SN:
Acquisition Start Date: 2/28/2007 9:35:44AM
Live Time: 140.00 min.
Real Time: 152.39 min.
Efficiency: 27.36% +/- 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	10,921.00	78.01
Pu-239	243	5.16	212	258	18,094.00	129.24
Am-241	289	5.49	261	313	16,047.00	114.62

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:37:34PM 2/27/2007

Analyst: 60040
Detector: AV67

Calibration

Name: Feb2007_AV67
Description:

Calibration Date: 2/27/2007 7:37:31PM

Source Info

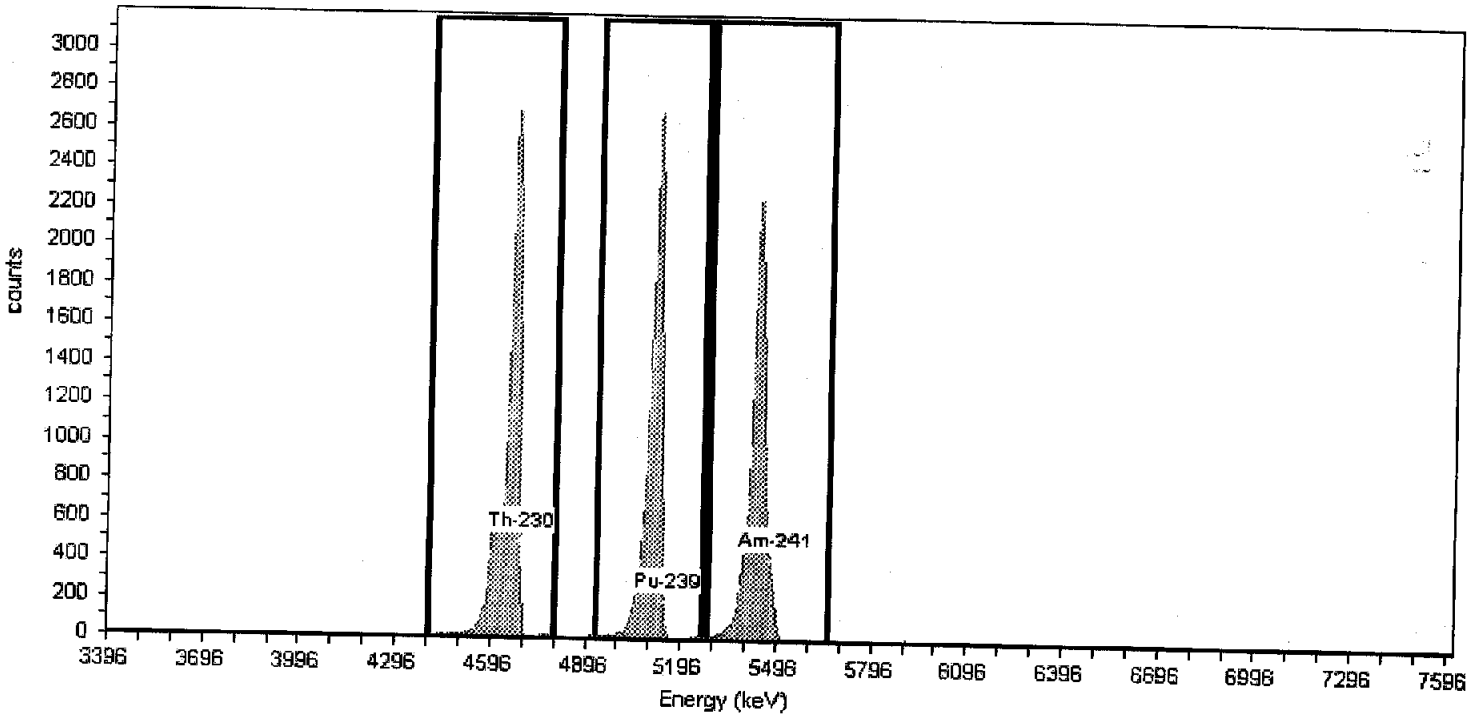
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV67 , SN:
Acquisition Start Date: 2/27/2007 4:30:47PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.71% +/- 0.27% 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	16,867.00	120.48
Pu-239	243	5.16	212	258	16,094.00	114.96
Am-241	289	5.49	261	313	15,200.00	108.57

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:02:59AM 2/28/2007

Analyst: 60040
Detector: AV68

Calibration

Name: FEB2007_AV68
Description:

Calibration Date: 2/28/2007 7:02:56AM

Source Info

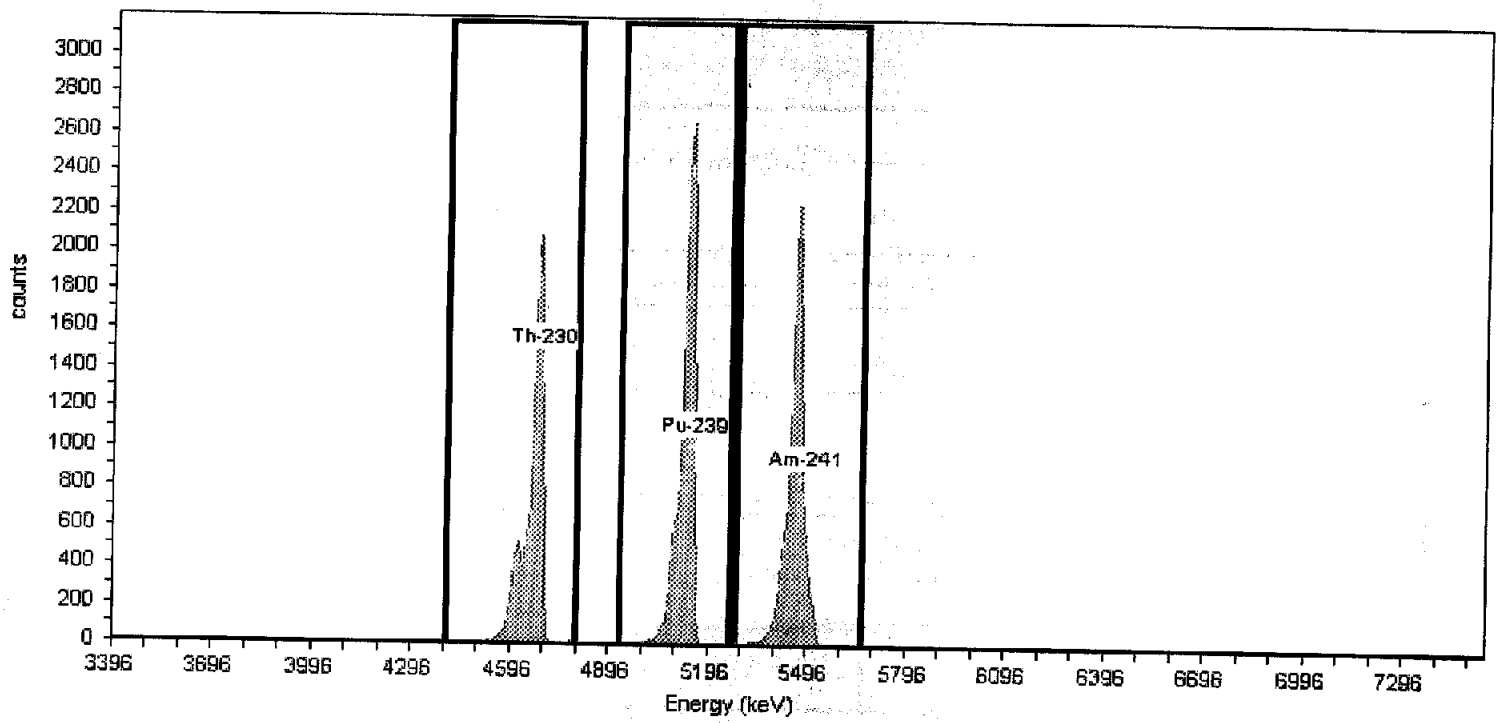
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV68 , SN:
Acquisition Start Date: 2/27/2007 7:49:51PM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.85% +/- 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	12,697.00	90.69
Pu-239	243	5.16	212	258	14,826.00	105.90
Am-241	289	5.49	261	313	14,035.00	100.25

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV69

2:41:54PM 2/28/2007

Calibration

Name: Feb2007_AV69
Description:

Calibration Date: 2/28/2007 2:41:51PM

Source Info

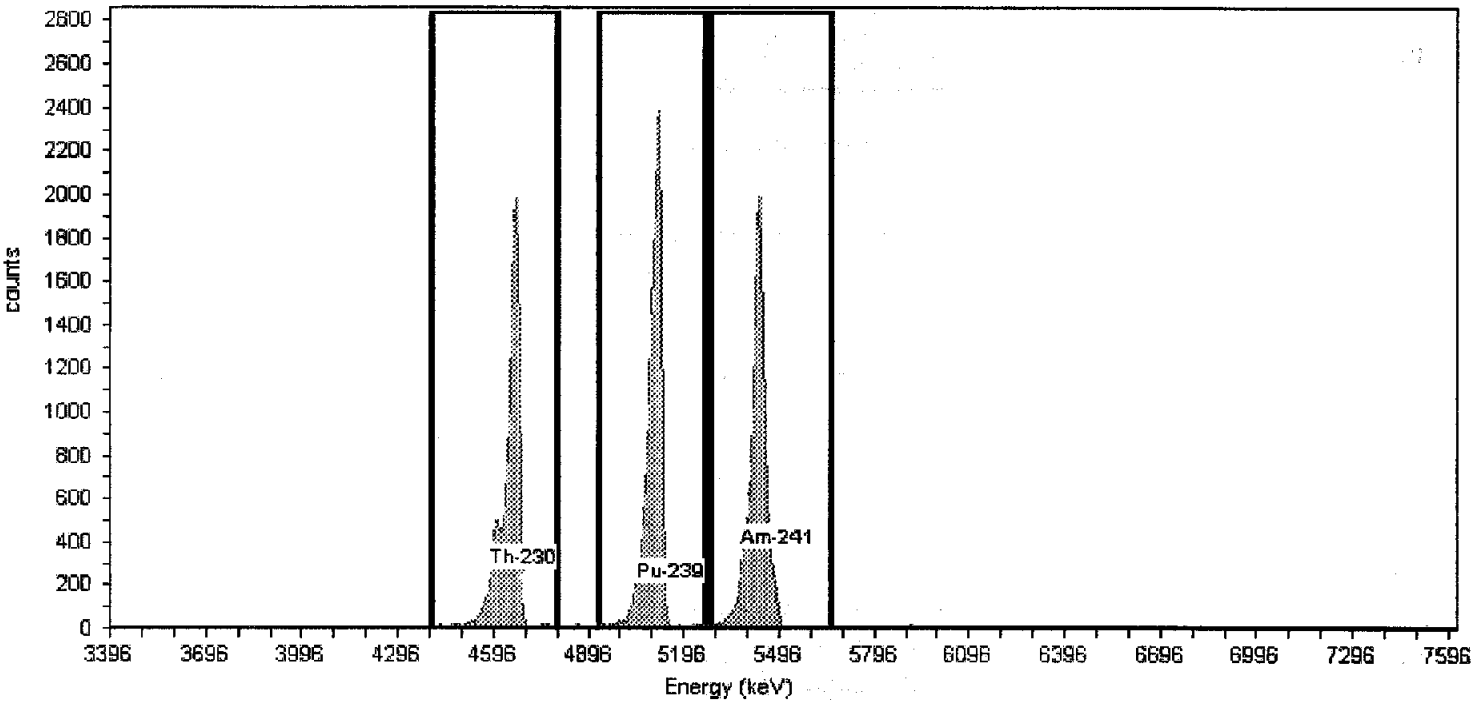
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV69 , SN:
Acquisition Start Date: 2/28/2007 12:11:31PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.90% +/- 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	12,860.00	91.86
Pu-239	243	5.16	212	258	14,843.00	106.02
Am-241	289	5.49	261	313	13,512.00	96.51

STL SEVERN TRENT **STL**

Alpha-Specroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:42:00PM 2/28/2007

Analyst: 60040
Detector: AV70

Calibration

Name: Feb2007_AV70
Description:

Calibration Date: 2/28/2007 2:41:57PM

Source Info

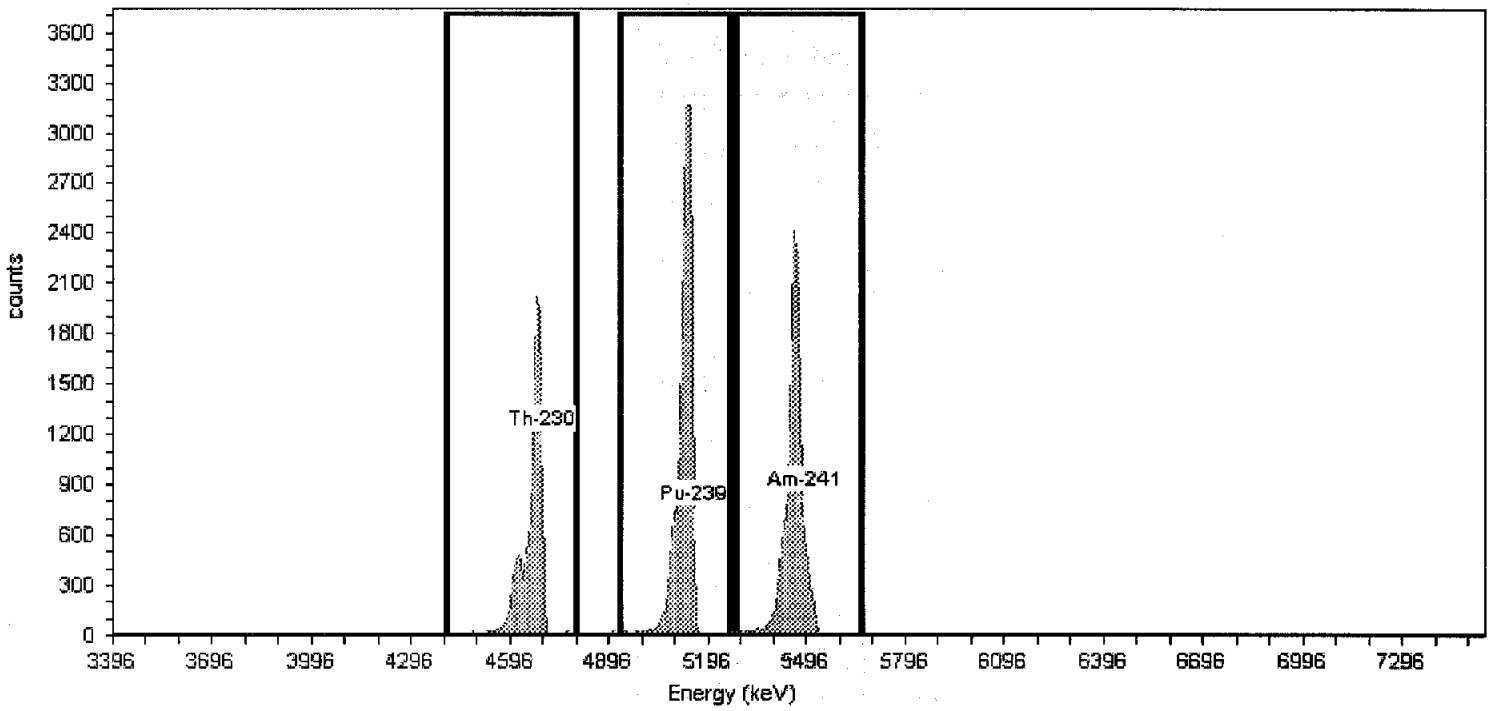
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV70 , SN:
Acquisition Start Date: 2/28/2007 12:12:04PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.16% +/- 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	11,726.00	83.76
Pu-239	243	5.16	212	258	17,636.00	125.97
Am-241	289	5.49	261	313	15,284.00	109.17

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:56:55AM 2/28/2007

Analyst: 60040
Detector: AV71

Calibration

Name: Feb2007_AV71
Description:

Calibration Date: 2/28/2007 11:56:51AM

Source Info

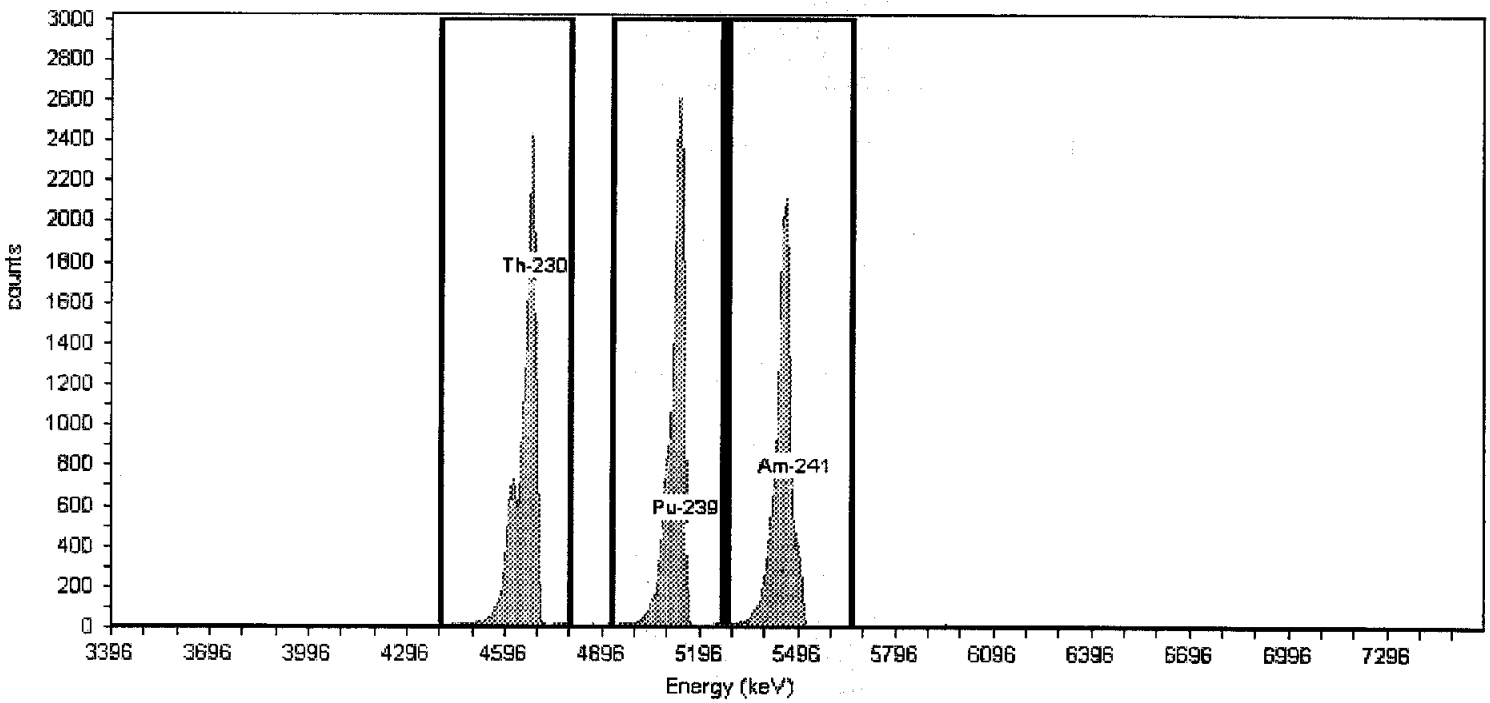
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV71 , SN:
Acquisition Start Date: 2/28/2007 9:34:55AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 27.28% +/- 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	16,626.00	118.76
Pu-239	243	5.16	212	258	15,888.00	113.49
Am-241	289	5.49	261	313	14,917.00	106.55

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:57:04AM 2/28/2007

Analyst: 60040
Detector: AV72

Calibration

Name: Feb2007_AV72
Description:

Calibration Date: 2/28/2007 11:57:00AM

Source Info

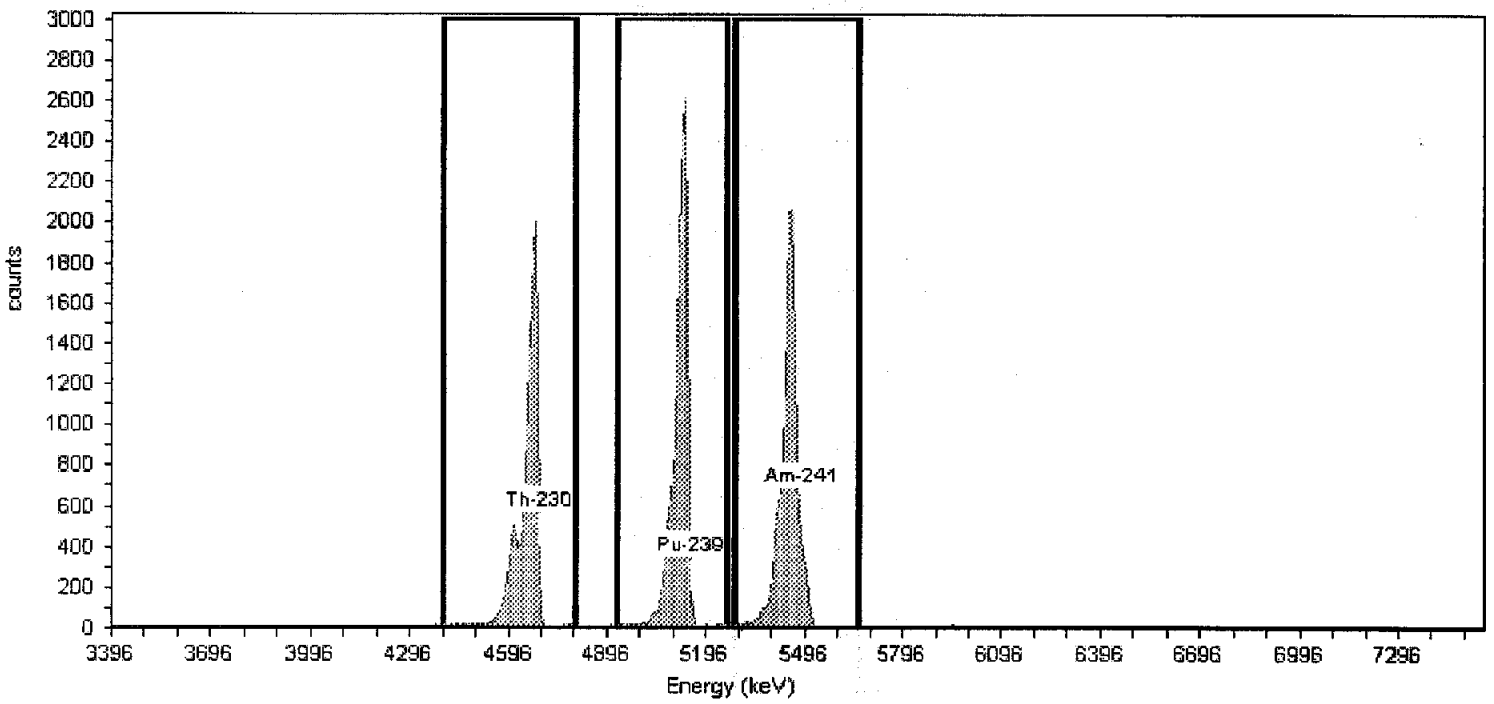
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV72 , SN:
Acquisition Start Date: 2/28/2007 9:35:10AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.71% +/- 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	12,389.00	88.49
Pu-239	243	5.16	212	258	14,867.00	106.19
Am-241	289	5.49	261	313	14,269.00	101.92

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:04:15PM 2/28/2007

Analyst: 60040
Detector: AV73

Calibration

Name: Feb2007_AV73
Description:

Calibration Date: 2/28/2007 5:04:12PM

Source Info

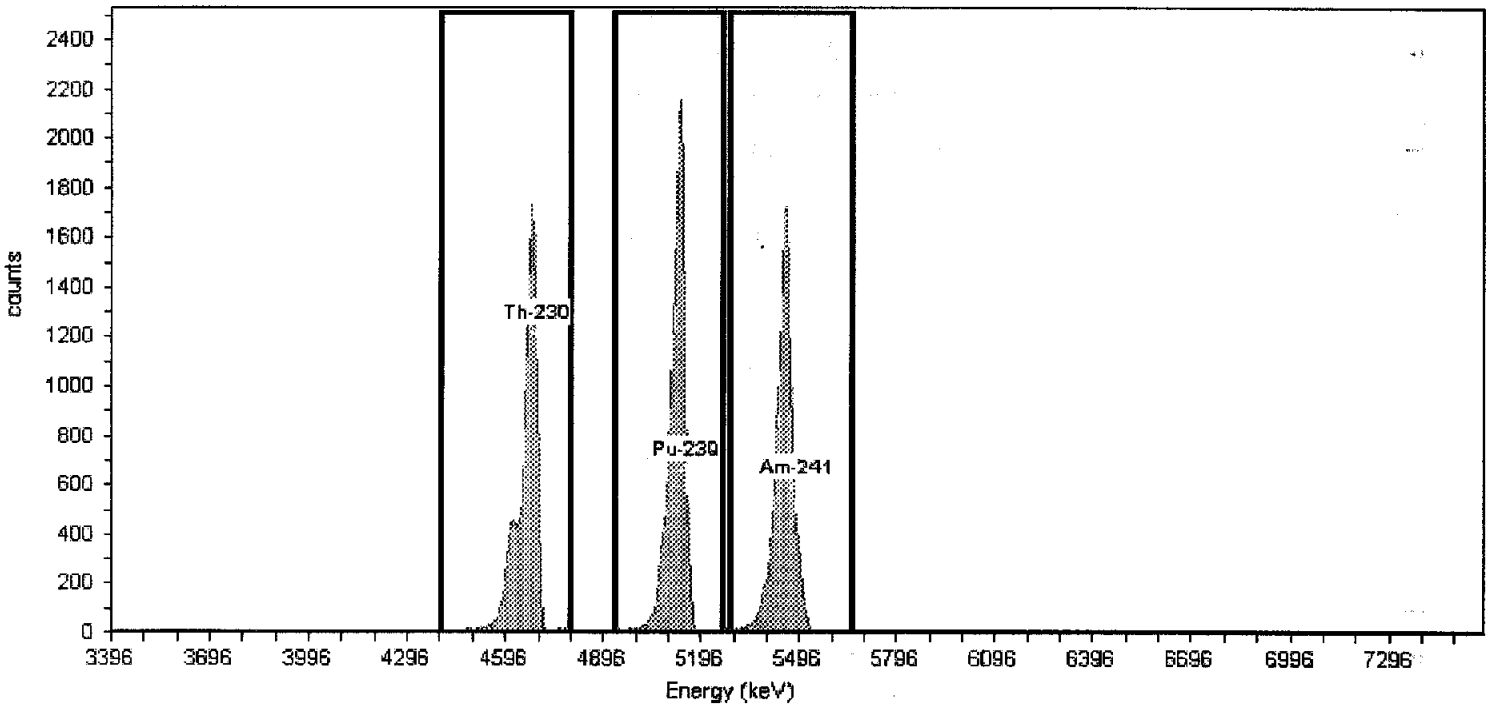
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV73 , SN:
Acquisition Start Date: 2/28/2007 2:43:11PM
Live Time: 140.00 min.
Real Time: 140.00 min.
Efficiency: 27.08% +/- 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	12,286.00	87.76
Pu-239	243	5.16	212	258	14,386.00	102.76
Am-241	289	5.49	261	313	13,333.00	95.24

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:26:05AM 2/23/2007

Analyst: 60040
Detector: AV74

Calibration

Name: FEB2007_AV74
Description:

Calibration Date: 2/23/2007 6:25:59AM

Source Info

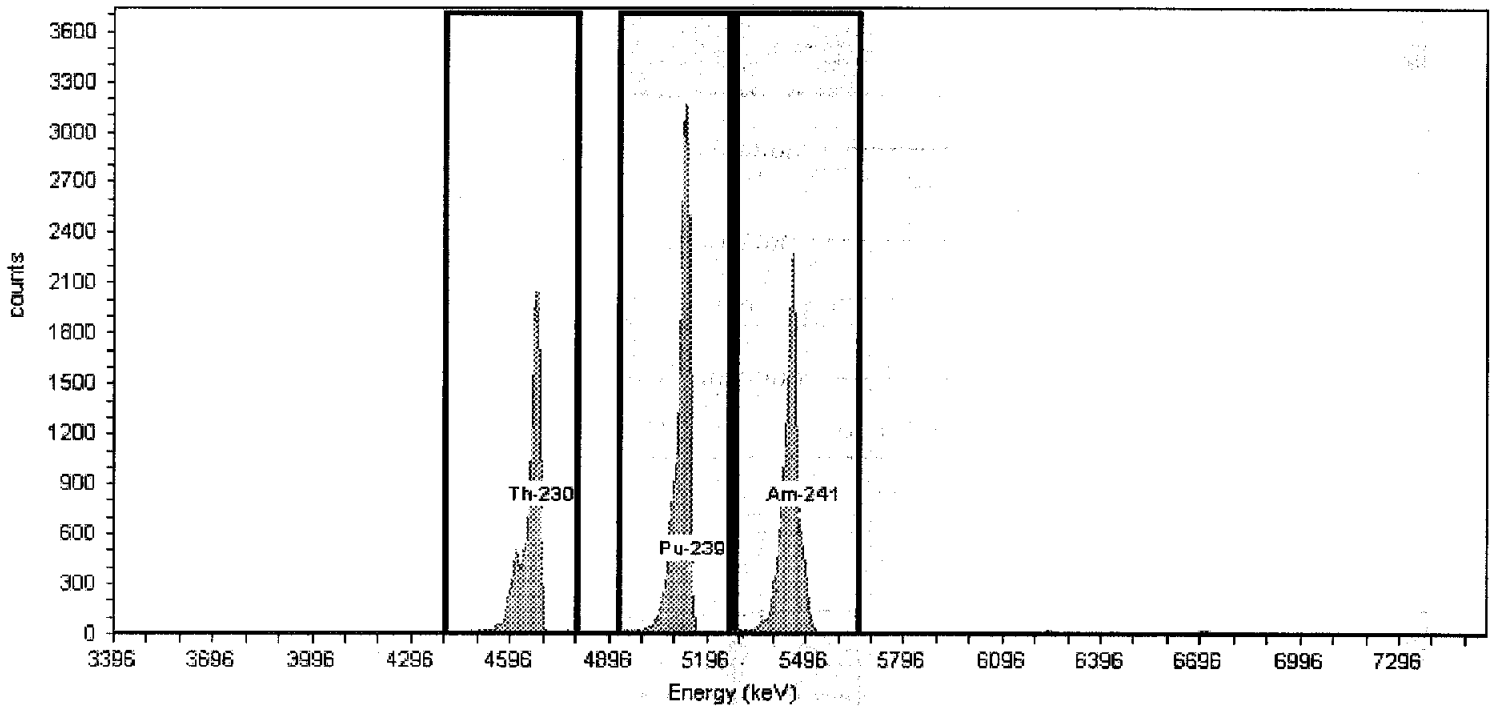
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV74 , SN:
Acquisition Start Date: 2/22/2007 6:38:01PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.38% +/- 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	12,005.00	85.75
Pu-239	243	5.16	212	258	17,831.00	127.36
Am-241	289	5.49	261	313	15,186.00	108.47

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:24:35PM 2/26/2007

Analyst: 60040
Detector: AV75

Calibration

Name: Feb2007_AV75
Description:

Calibration Date: 2/26/2007 2:24:32PM

Source Info

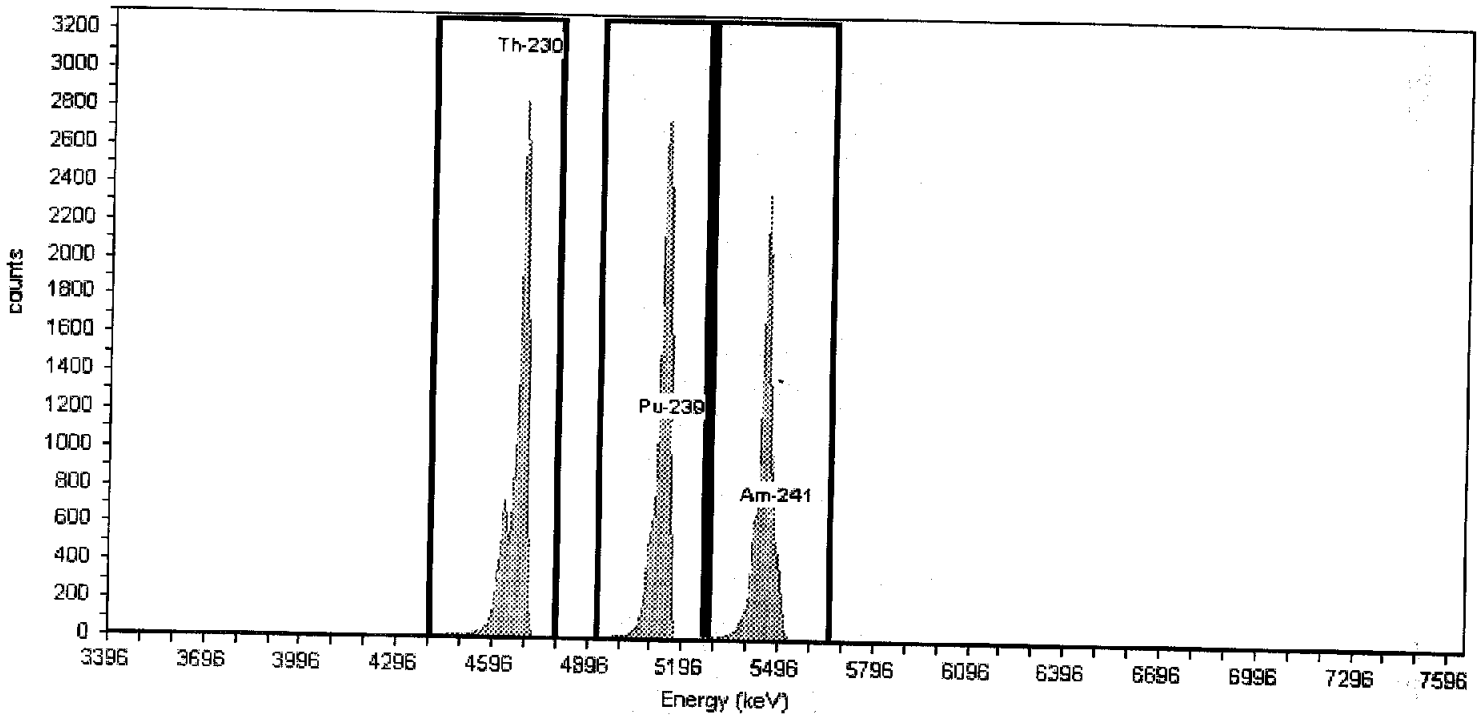
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV75 , SN: 46-033P6
Acquisition Start Date: 2/26/2007 12:03:16PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.50% +/- 0.26% 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	16,573.00	118.38
Pu-239	243	5.16	212	258	15,284.00	109.17
Am-241	289	5.49	261	313	14,386.00	102.76

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV76

2:24:42PM 2/26/2007

Calibration

Name: Feb2007_AV76
Description:

Calibration Date: 2/26/2007 2:24:39PM

Source Info

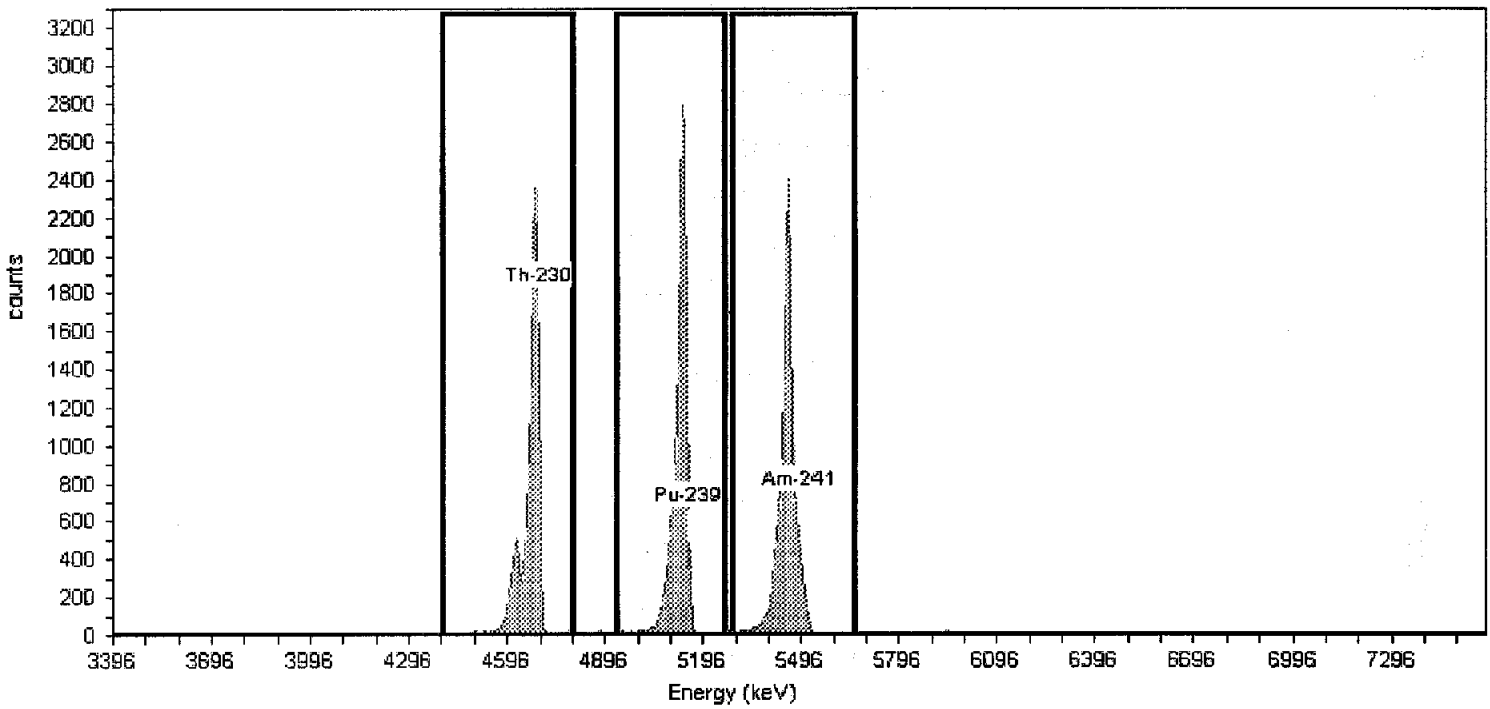
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV76 , SN: 46-033Q4
Acquisition Start Date: 2/26/2007 12:03:28PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.48% +/- 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	12,258.00	87.56
Pu-239	243	5.16	212	258	14,653.00	104.66
Am-241	289	5.49	261	313	14,279.00	101.99

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:24:50PM 2/26/2007

Analyst: 60040
Detector: AV77

Calibration

Name: Feb2007_AV77
Description:

Calibration Date: 2/26/2007 2:24:47PM

Source Info

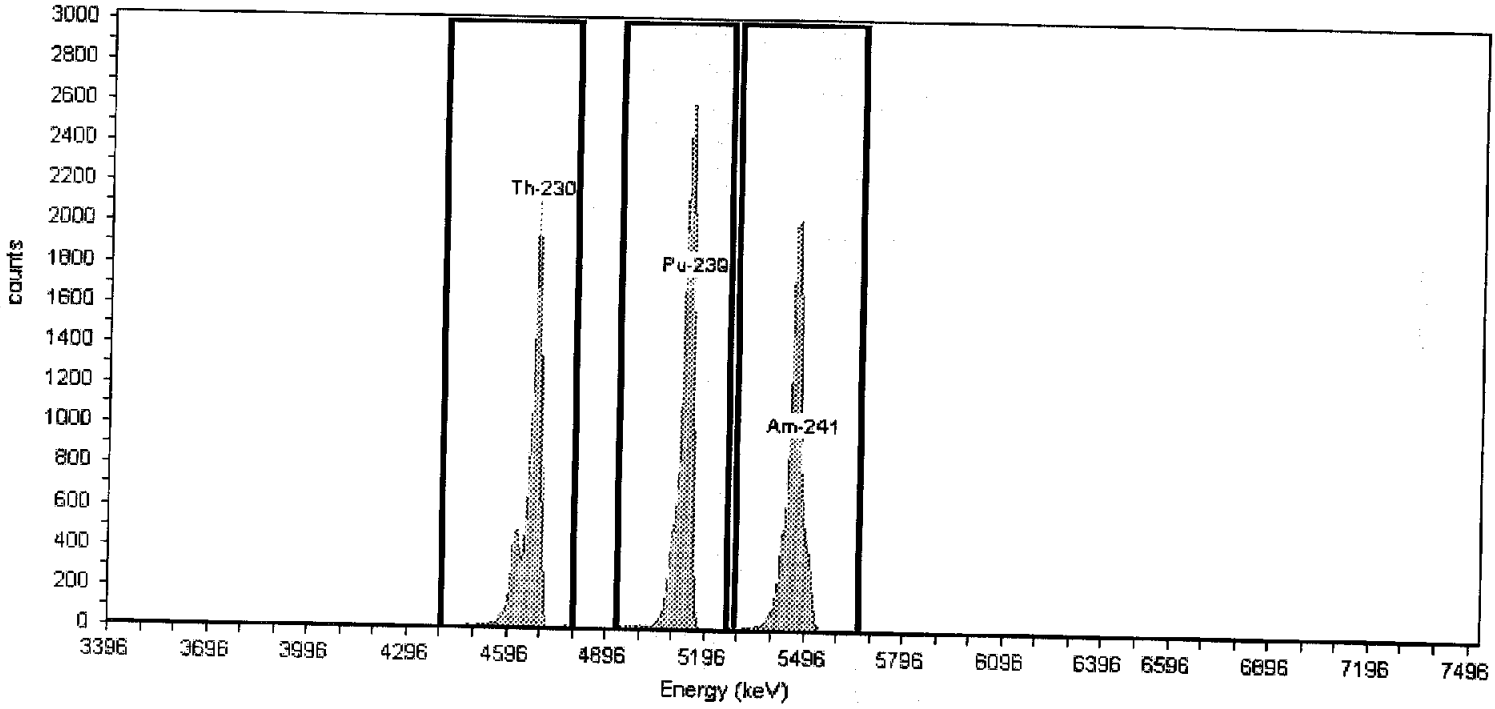
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV77 , SN: 46-033Q7
Acquisition Start Date: 2/26/2007 12:03:41PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.67% +/- 0.29% 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	12,213.00	87.24
Pu-239	243	5.16	212	258	14,094.00	100.67
Am-241	289	5.49	261	313	13,082.00	93.44

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:24:57PM 2/26/2007

Analyst: 60040
Detector: AV78

Calibration

Name: Feb2007_AV78
Description:

Calibration Date: 2/26/2007 2:24:53PM

Source Info

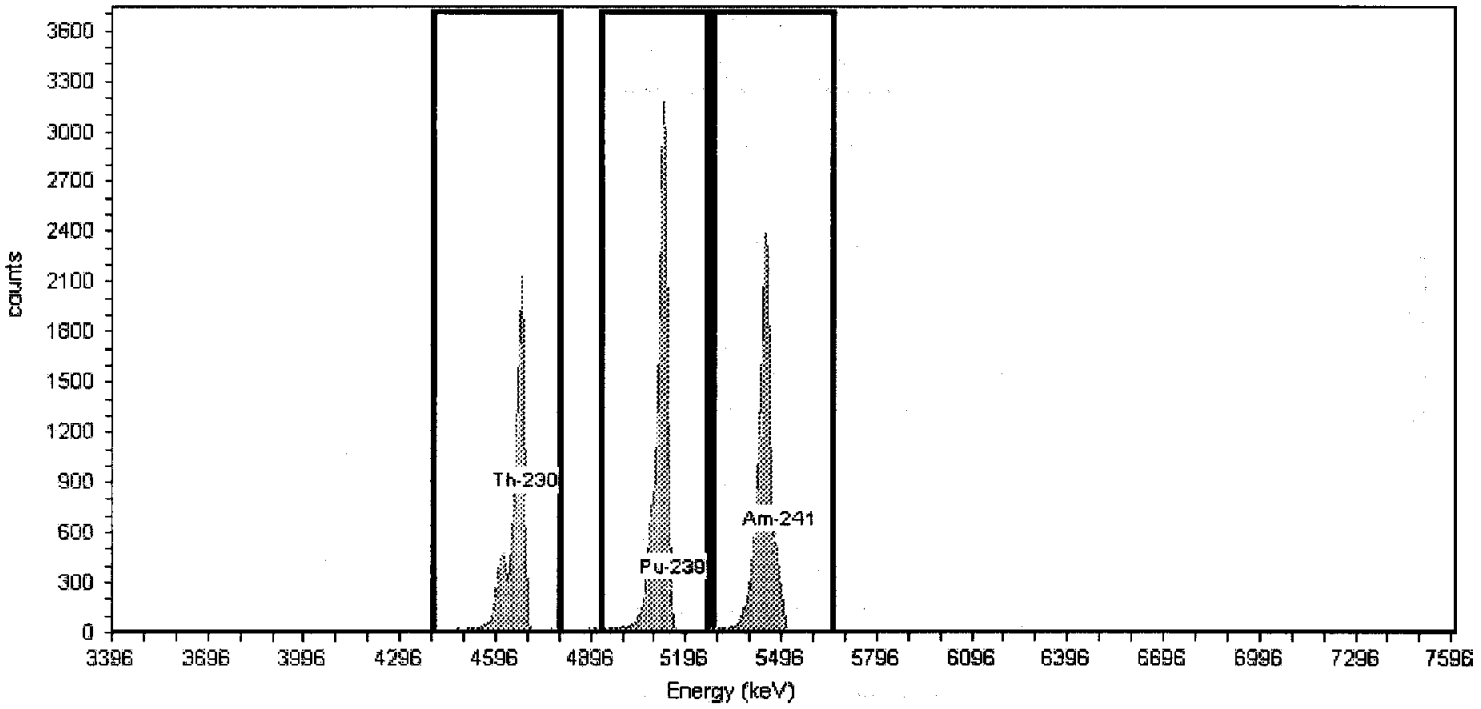
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV78 , SN: 46-033FF4
Acquisition Start Date: 2/26/2007 12:03:58PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.32% +/- 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	11,485.00	82.04
Pu-239	243	5.16	212	258	17,011.00	121.51
Am-241	289	5.49	261	313	14,771.00	105.51

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:49:00PM 2/26/2007

Analyst: 60040
Detector: AV79

Calibration

Name: Feb2007_AV79
Description:

Calibration Date: 2/26/2007 4:48:57PM

Source Info

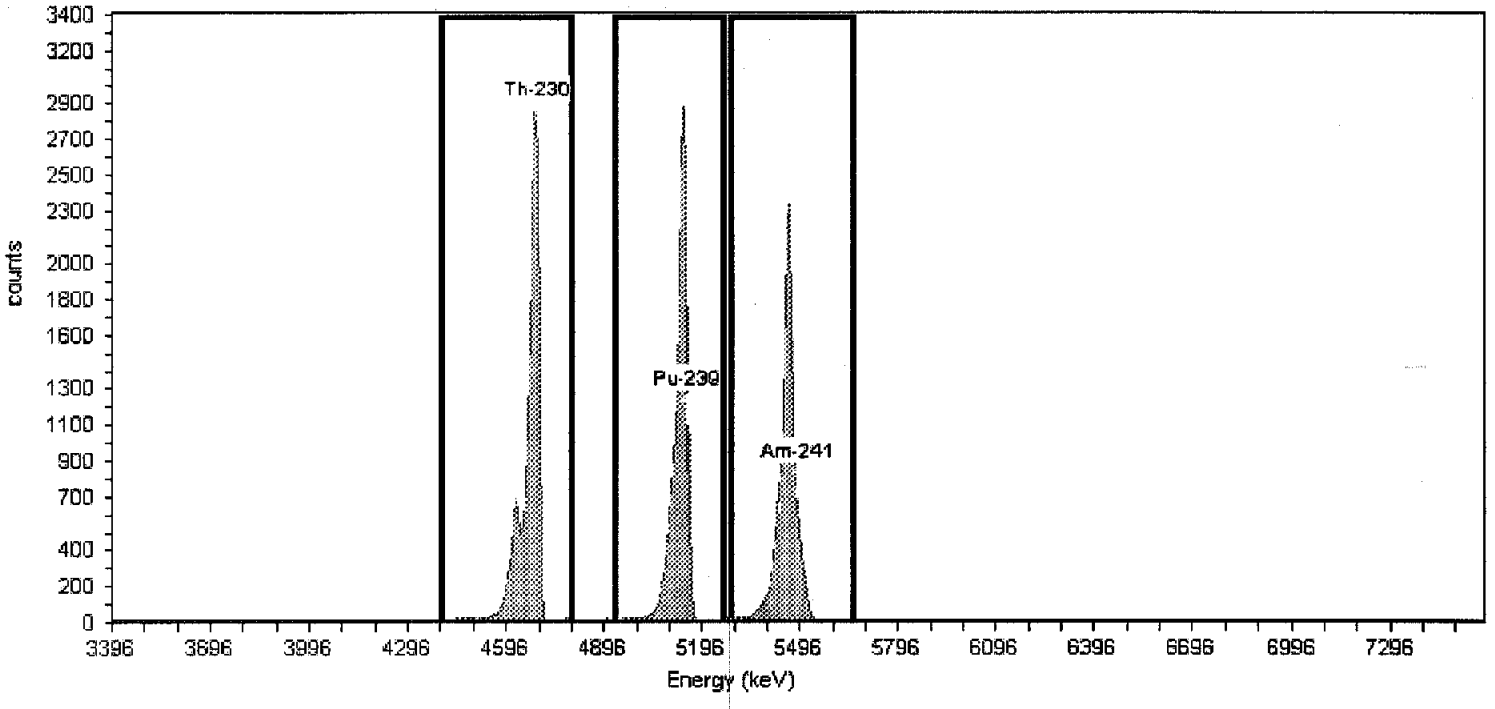
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV79 , SN: 46-033Q5
Acquisition Start Date: 2/26/2007 2:28:07PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.18% +/- 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	16,495.00	117.82
Pu-239	243	5.16	212	258	15,861.00	113.29
Am-241	289	5.49	261	313	14,871.00	106.22

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:49:07PM 2/26/2007

Analyst: 60040
Detector: AV80

Calibration

Name: Feb2007_AV80
Description:

Calibration Date: 2/26/2007 4:49:04PM

Source Info

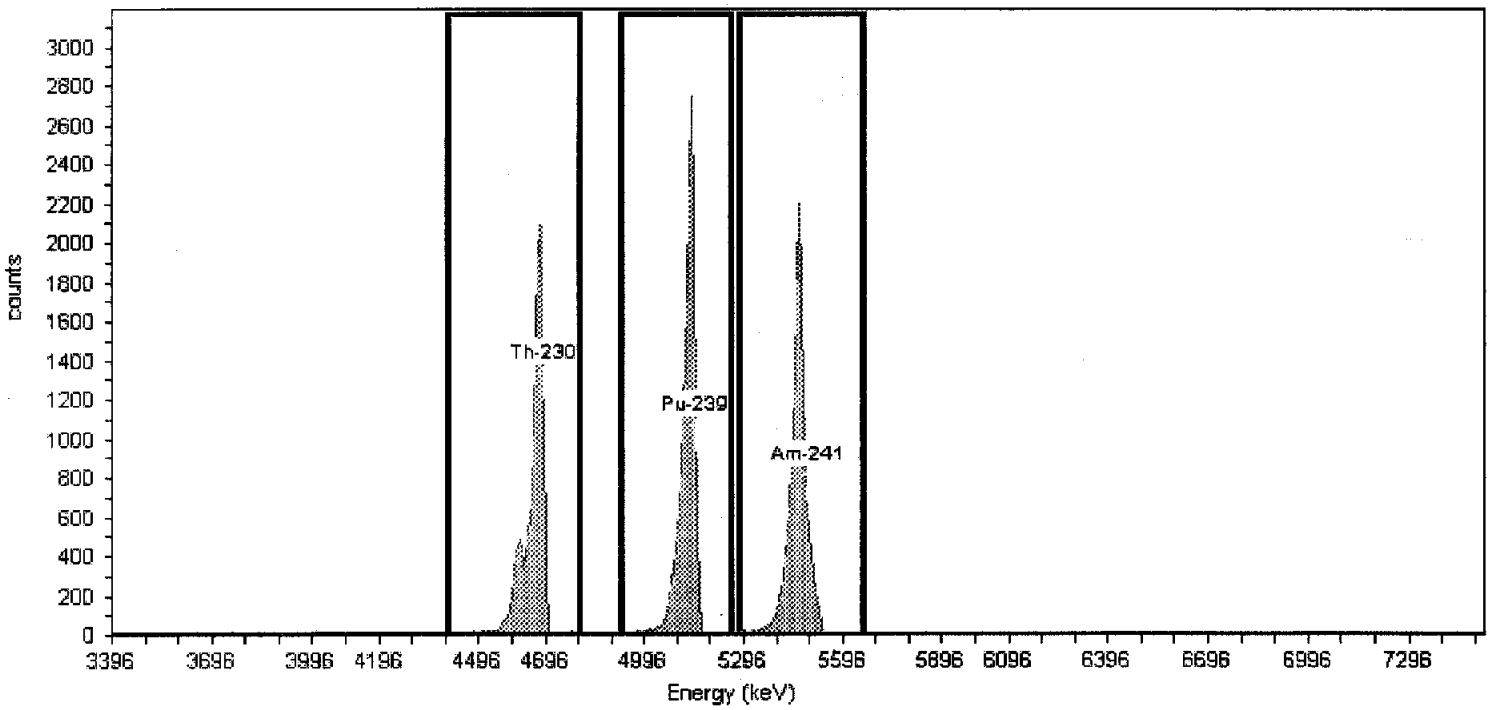
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV80 , SN: 46-03305
Acquisition Start Date: 2/26/2007 2:28:51PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.95% +/- 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	12,171.00	86.94
Pu-239	243	5.16	212	258	14,339.00	102.42
Am-241	289	5.49	261	313	13,728.00	98.06

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:49:14PM 2/26/2007

Analyst: 60040
Detector: AV81

Calibration

Name: Feb2007_AV81
Description:

Calibration Date: 2/26/2007 4:49:09PM

Source Info

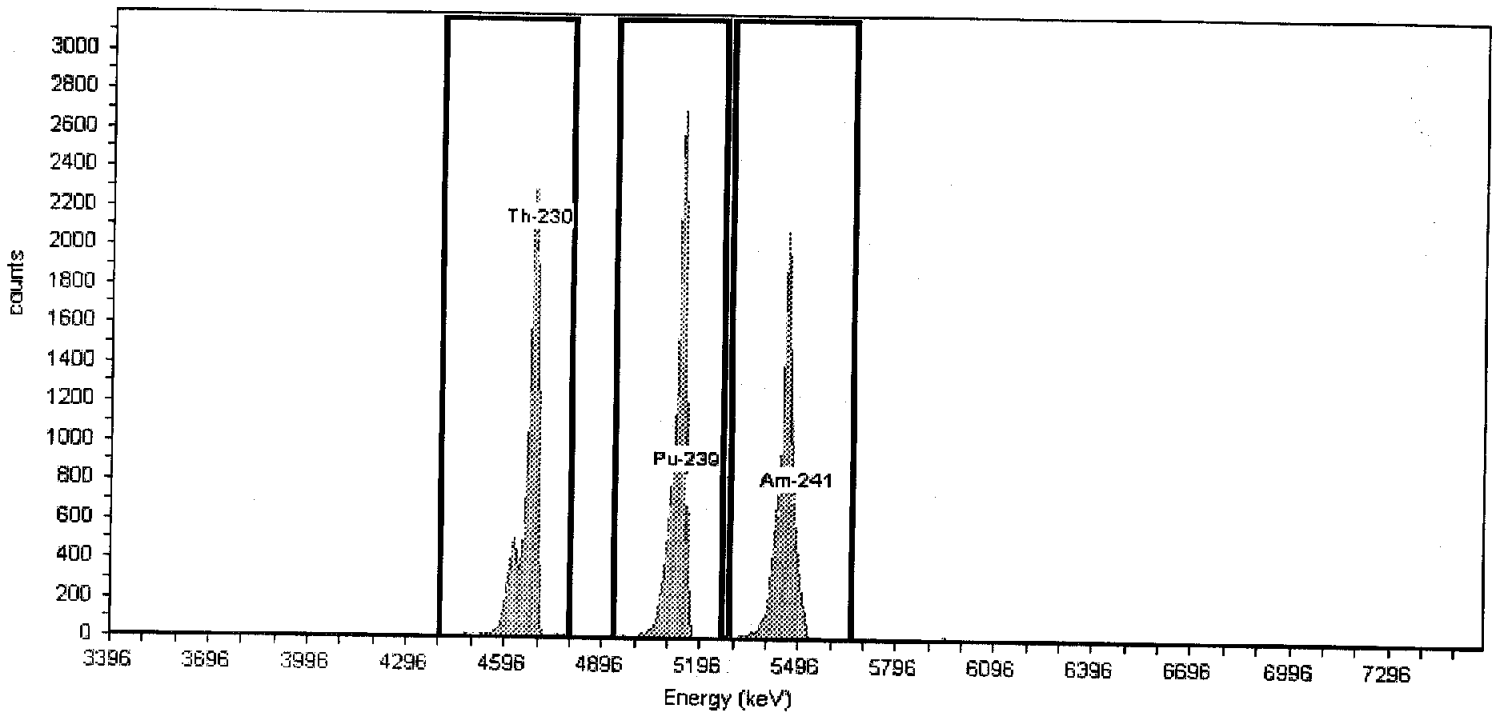
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV81 , SN: 46-03307
Acquisition Start Date: 2/26/2007 2:28:52PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.15% +/- 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	12,655.00	90.39
Pu-239	243	5.16	212	258	14,283.00	102.02
Am-241	289	5.49	261	313	13,155.00	93.96

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:49:21PM 2/26/2007

Analyst: 60040
Detector: AV82

Calibration

Name: Feb2007_AV82
Description:

Calibration Date: 2/26/2007 4:49:18PM

Source Info

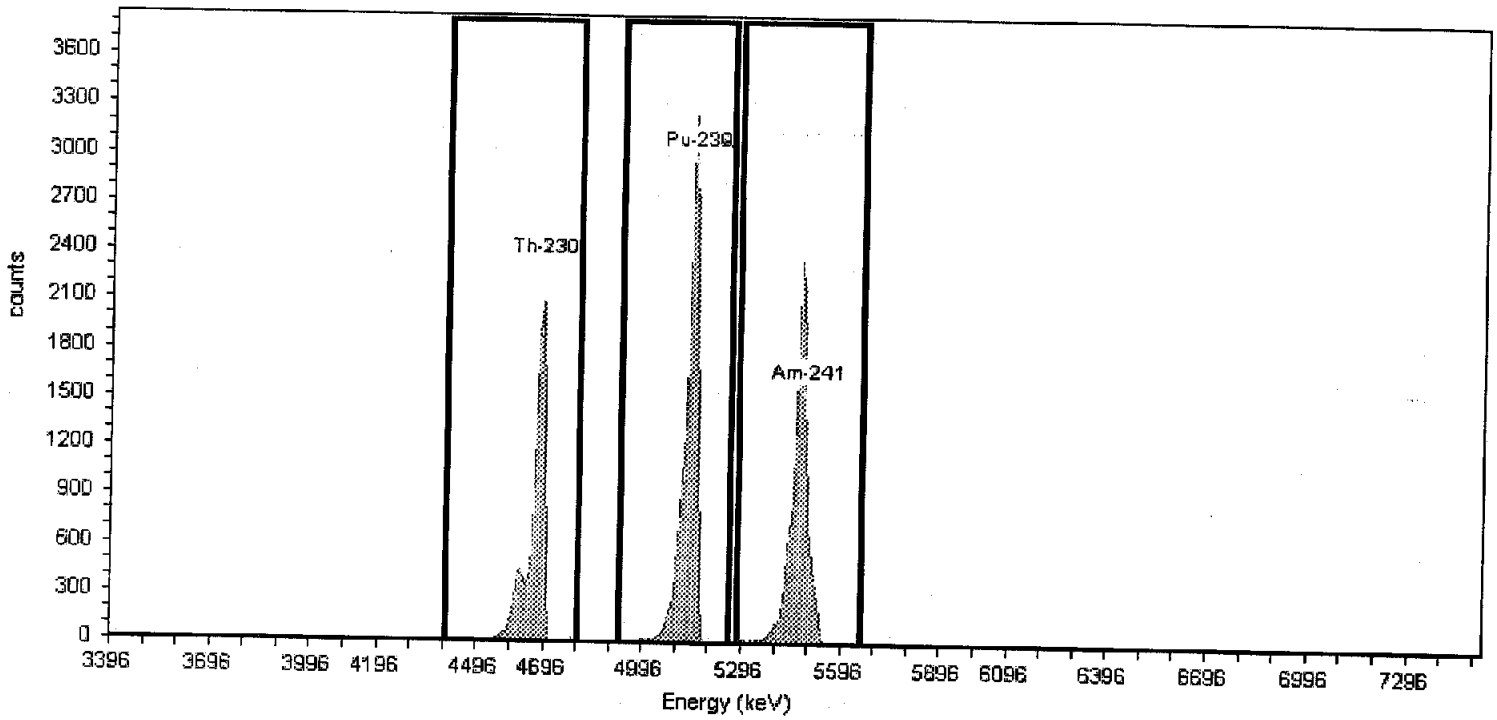
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV82 , SN: 46-032EE5
Acquisition Start Date: 2/26/2007 2:28:53PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.04% +/- 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	11,794.00	84.24
Pu-239	243	5.16	212	258	17,533.00	125.24
Am-241	289	5.49	261	313	15,127.00	108.05

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:30:46PM 2/26/2007

Analyst: 60040
Detector: AV83

Calibration

Name: Feb2007_AV83
Description:

Calibration Date: 2/26/2007 7:30:41PM

Source Info

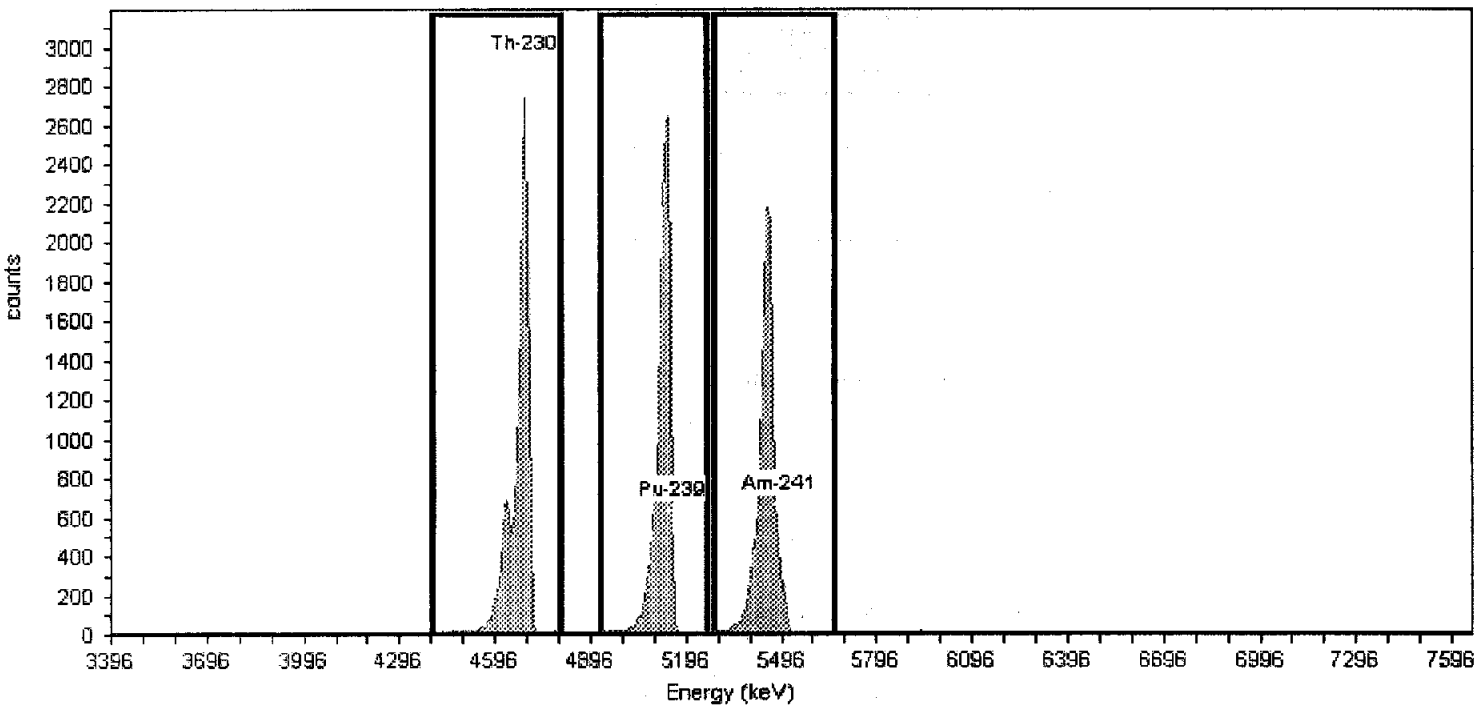
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV83 , SN: 46-03306
Acquisition Start Date: 2/26/2007 4:50:36PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.72% +/- 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	16,191.00	115.65
Pu-239	243	5.16	212	258	15,758.00	112.56
Am-241	289	5.49	261	313	14,485.00	103.46

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:30:52PM 2/26/2007

Analyst: 60040
Detector: AV84

Calibration

Name: Feb2007_AV84
Description:

Calibration Date: 2/26/2007 7:30:49PM

Source Info

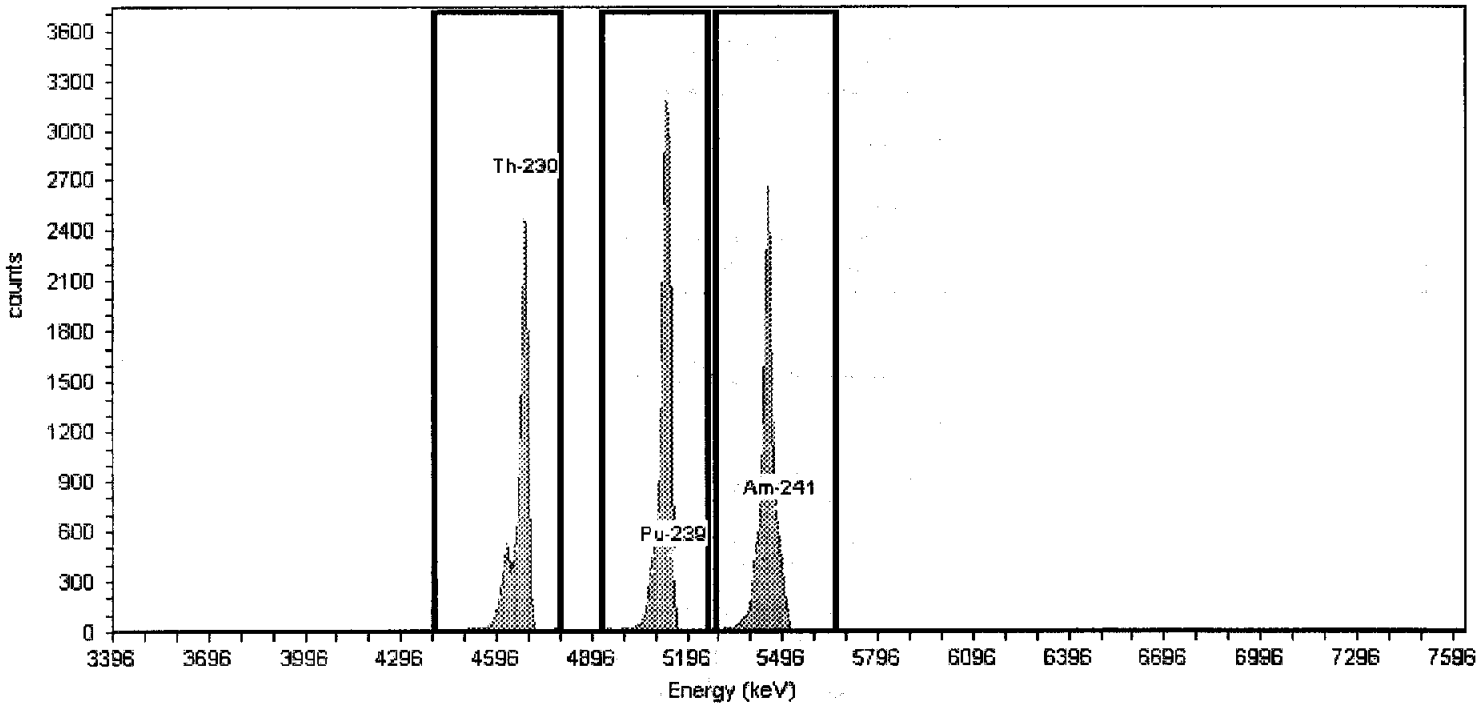
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV84 , SN: 46-033FF3
Acquisition Start Date: 2/26/2007 4:50:49PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 28.17% +/- 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	13,188.00	94.20
Pu-239	243	5.16	212	258	15,560.00	111.14
Am-241	289	5.49	261	313	14,957.00	106.84

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:30:57PM 2/26/2007

Analyst: 60040
Detector: AV85

Calibration

Name: Feb2007_AV85
Description:

Calibration Date: 2/26/2007 7:30:54PM

Source Info

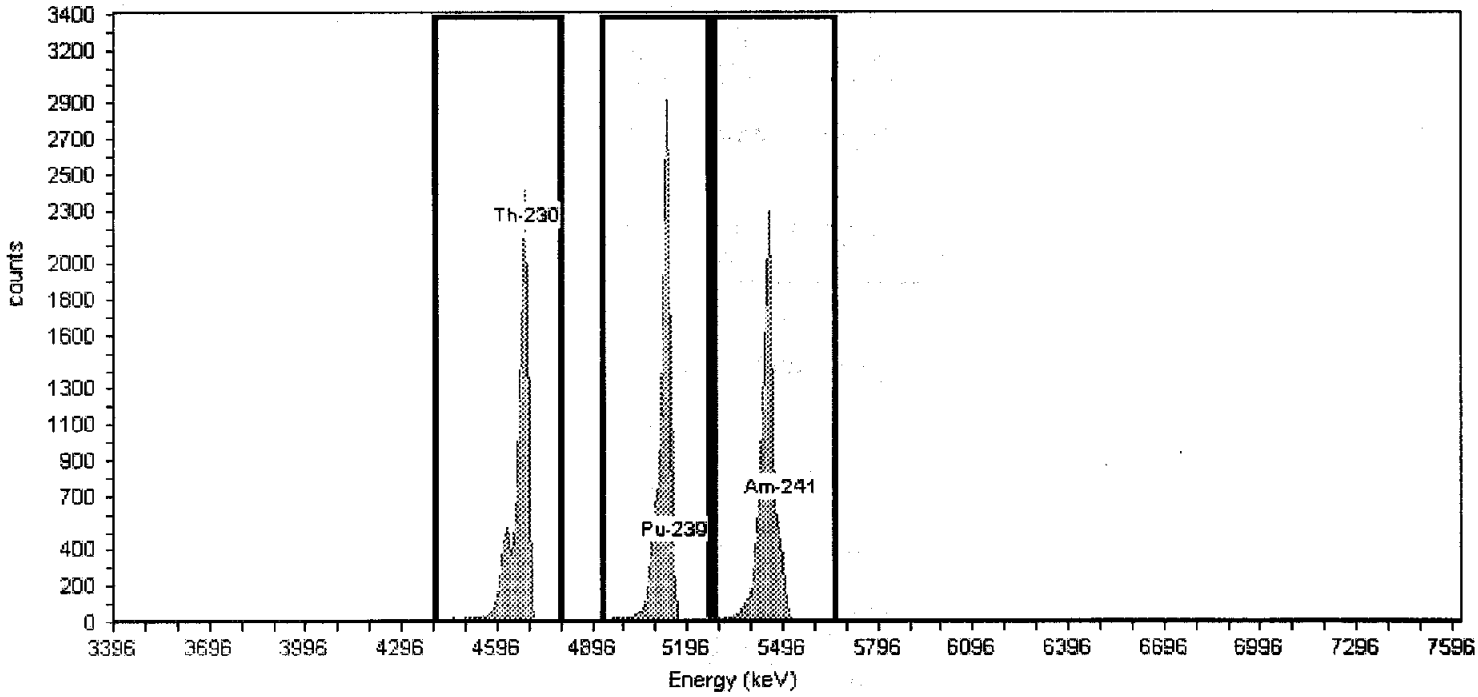
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV85 , SN: 46-032EE7
Acquisition Start Date: 2/26/2007 4:51:05PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.69% +/- 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	12,867.00	91.91
Pu-239	243	5.16	212	258	14,587.00	104.19
Am-241	289	5.49	261	313	13,436.00	95.97

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:31:02PM 2/26/2007

Analyst: 60040
Detector: AV86

Calibration

Name: Feb2007_AV86
Description:

Calibration Date: 2/26/2007 7:30:59PM

Source Info

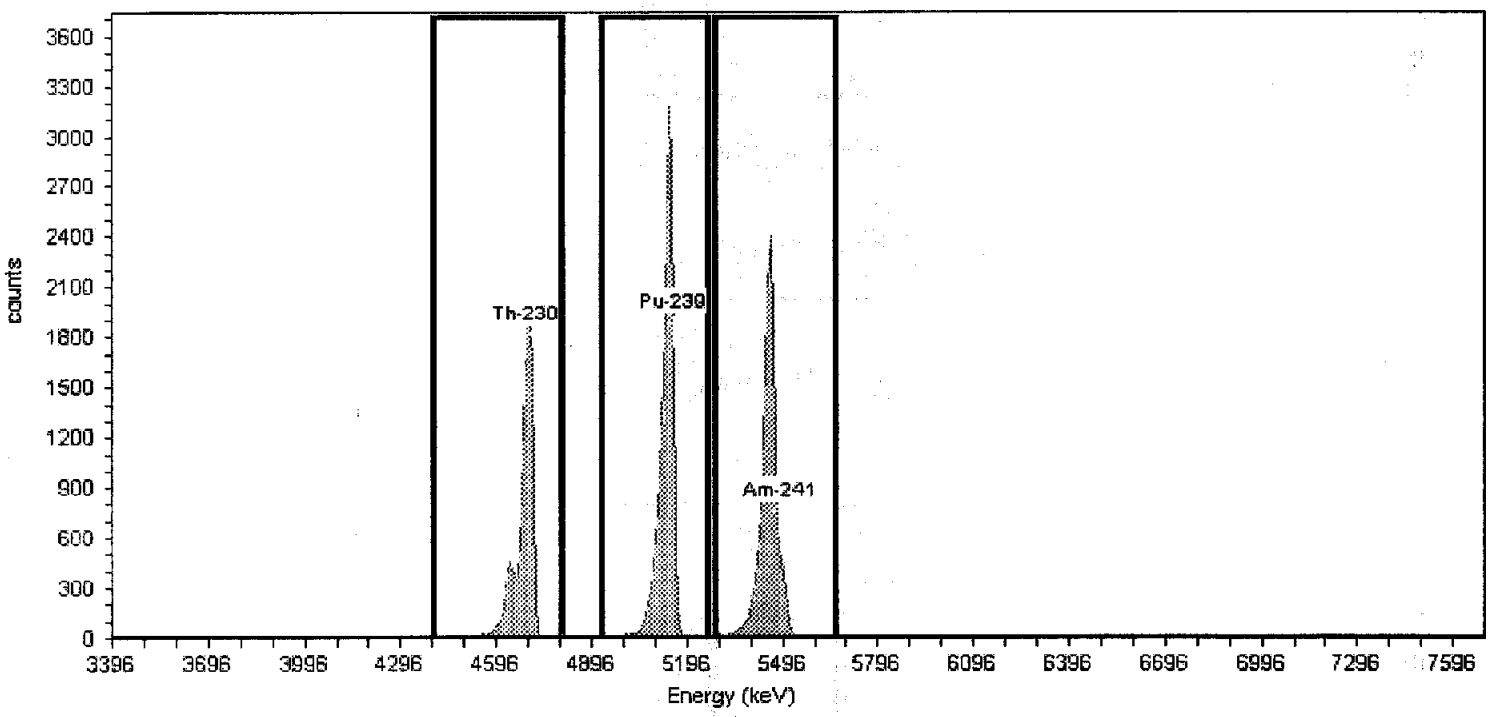
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV86 , SN: 46-033Q6
Acquisition Start Date: 2/26/2007 4:51:37PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.08% +/- 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	11,617.00	82.98
Pu-239	243	5.16	212	258	17,679.00	126.28
Am-241	289	5.49	261	313	15,221.00	108.72

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:01:46PM 2/26/2007

Analyst: 60040
Detector: AV87

Calibration

Name: FEB2007_AV87
Description:

Calibration Date: 2/26/2007 10:01:43PM

Source Info

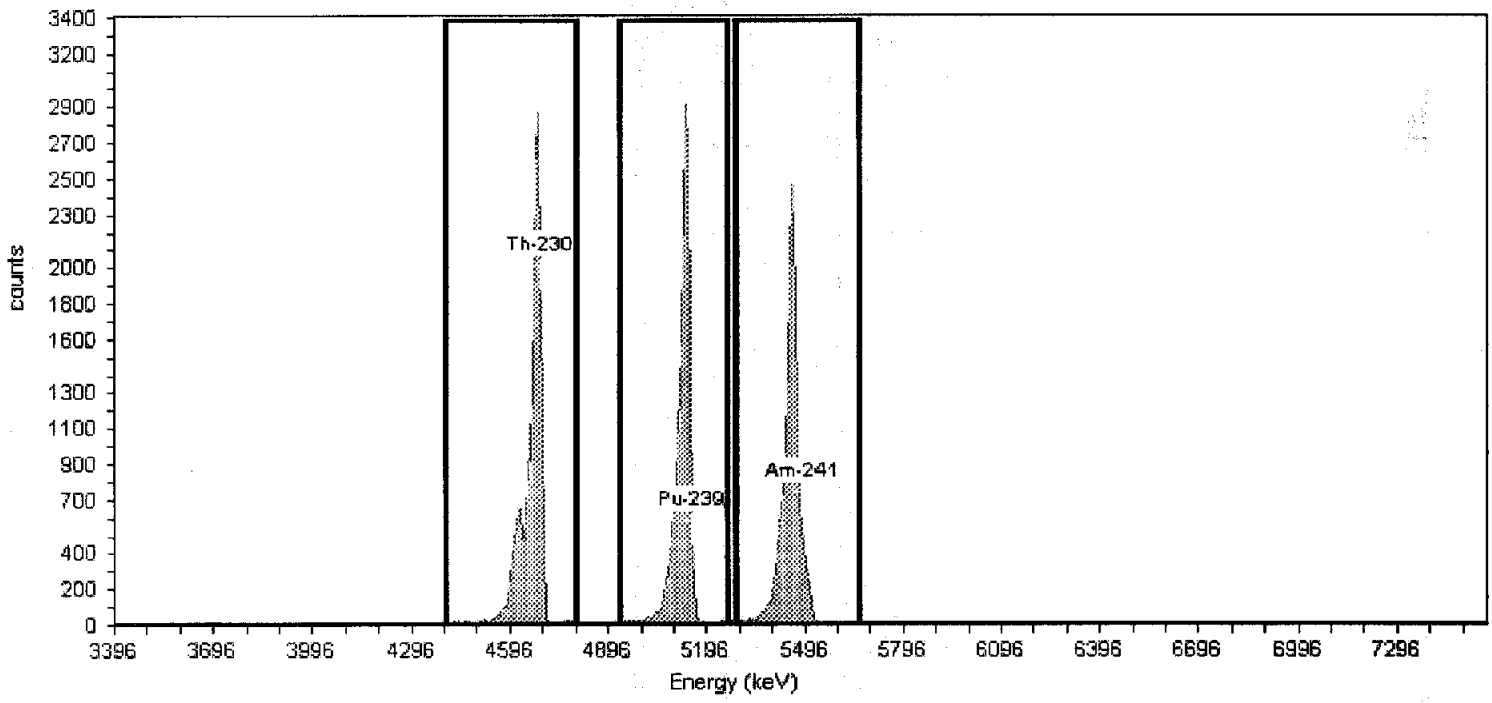
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV87 , SN: 46-033FF5
Acquisition Start Date: 2/26/2007 7:32:50PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.85% +/- 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	16,283.00	116.31
Pu-239	243	5.16	212	258	15,486.00	110.61
Am-241	289	5.49	261	313	14,866.00	106.19

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

Analyst: 60040
Detector: AV88

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:01:53PM 2/26/2007

Calibration

Name: FEB2007_AV88
Description:

Calibration Date: 2/26/2007 10:01:50PM

Source Info

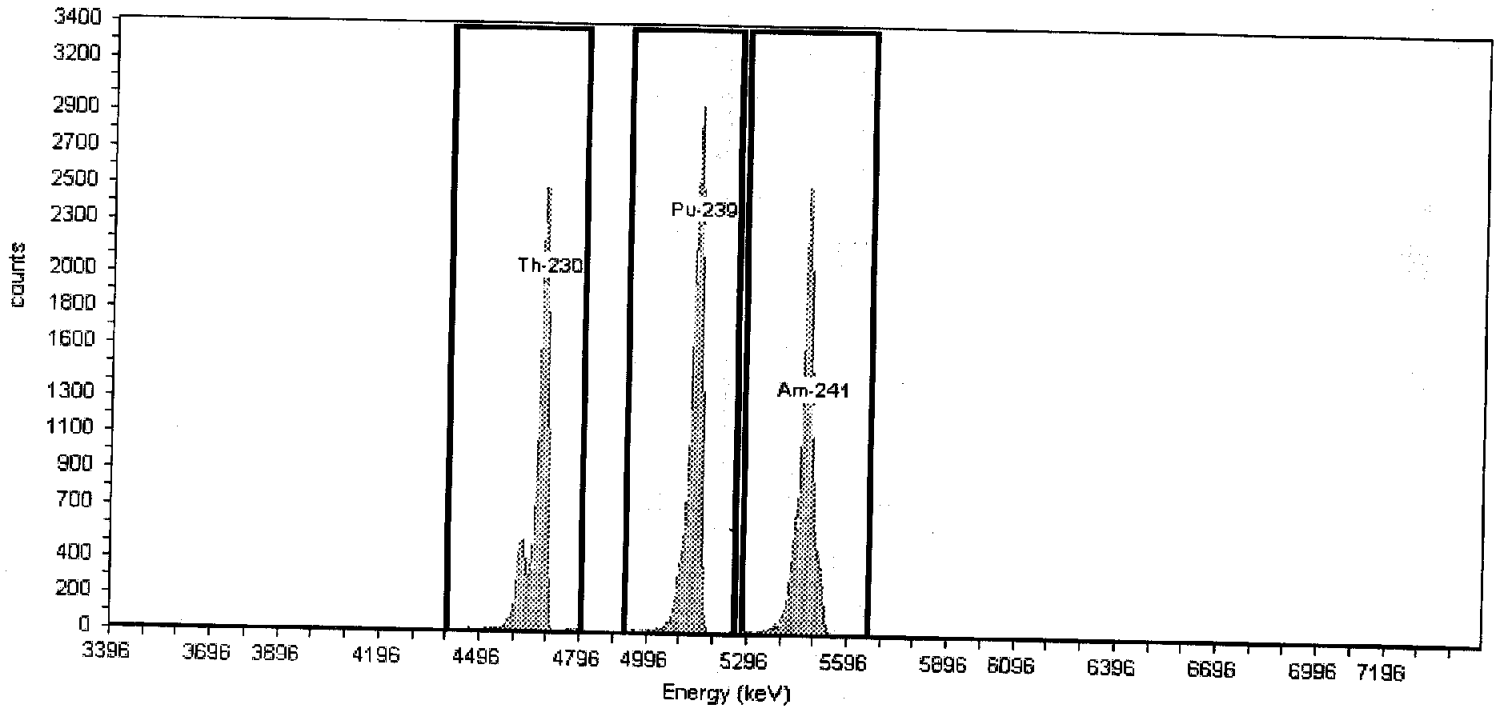
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV88 , SN: 76-033FF1
Acquisition Start Date: 2/26/2007 7:33:30PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.75% +/- 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	12,450.00	88.93
Pu-239	243	5.16	212	258	14,953.00	106.81
Am-241	289	5.49	261	313	14,145.00	101.04

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

Analyst: 60040
Detector: AV89

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:01:59PM 2/26/2007

Calibration

Name: FEB2007_AV89
Description:

Calibration Date: 2/26/2007 10:01:55PM

Source Info

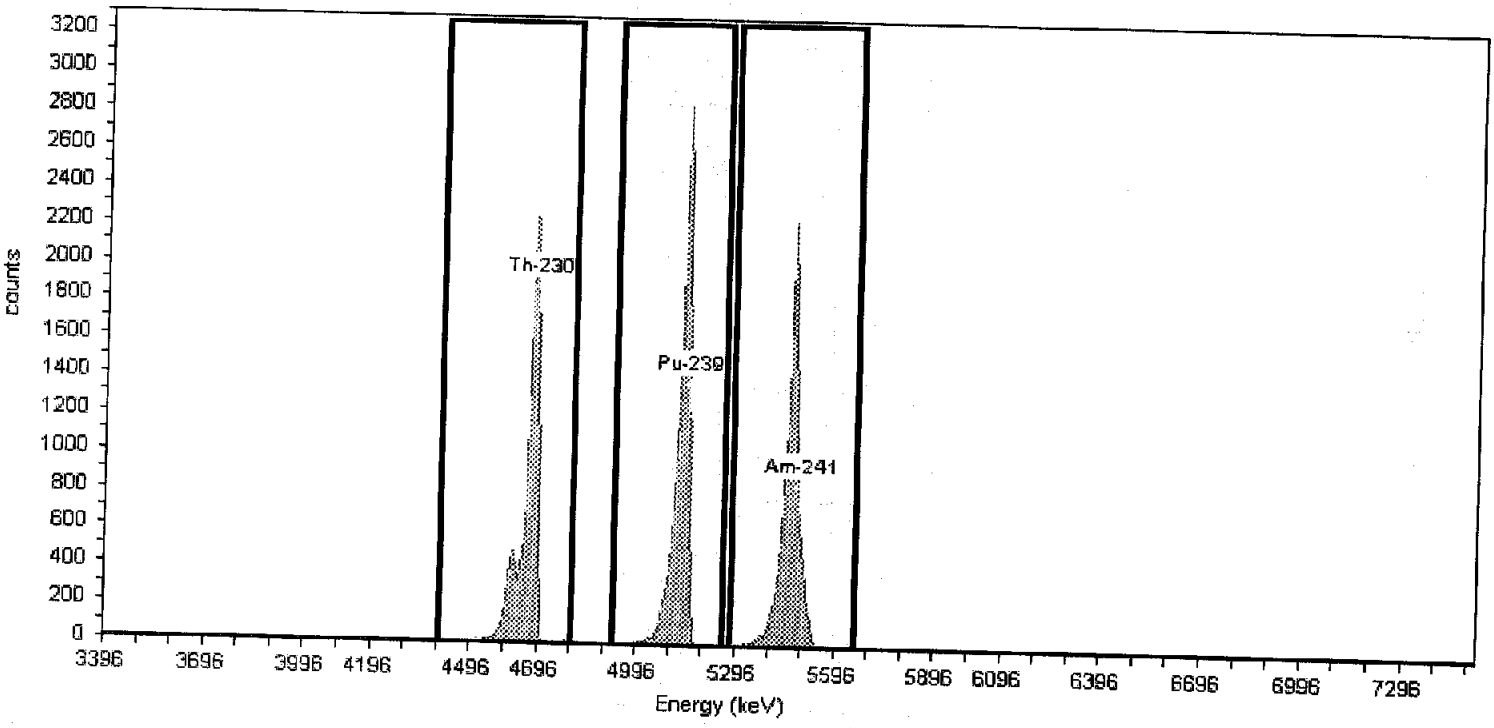
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV89 , SN: 46-033P5
Acquisition Start Date: 2/26/2007 7:33:31PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.90% +/- 0.29% 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	12,261.00	87.58
Pu-239	243	5.16	212	258	14,247.00	101.76
Am-241	289	5.49	261	313	13,226.00	94.47

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:02:03PM 2/26/2007

Analyst: 60040
Detector: AV90

Calibration

Name: FEB2007_AV90
Description:

Calibration Date: 2/26/2007 10:02:00PM

Source Info

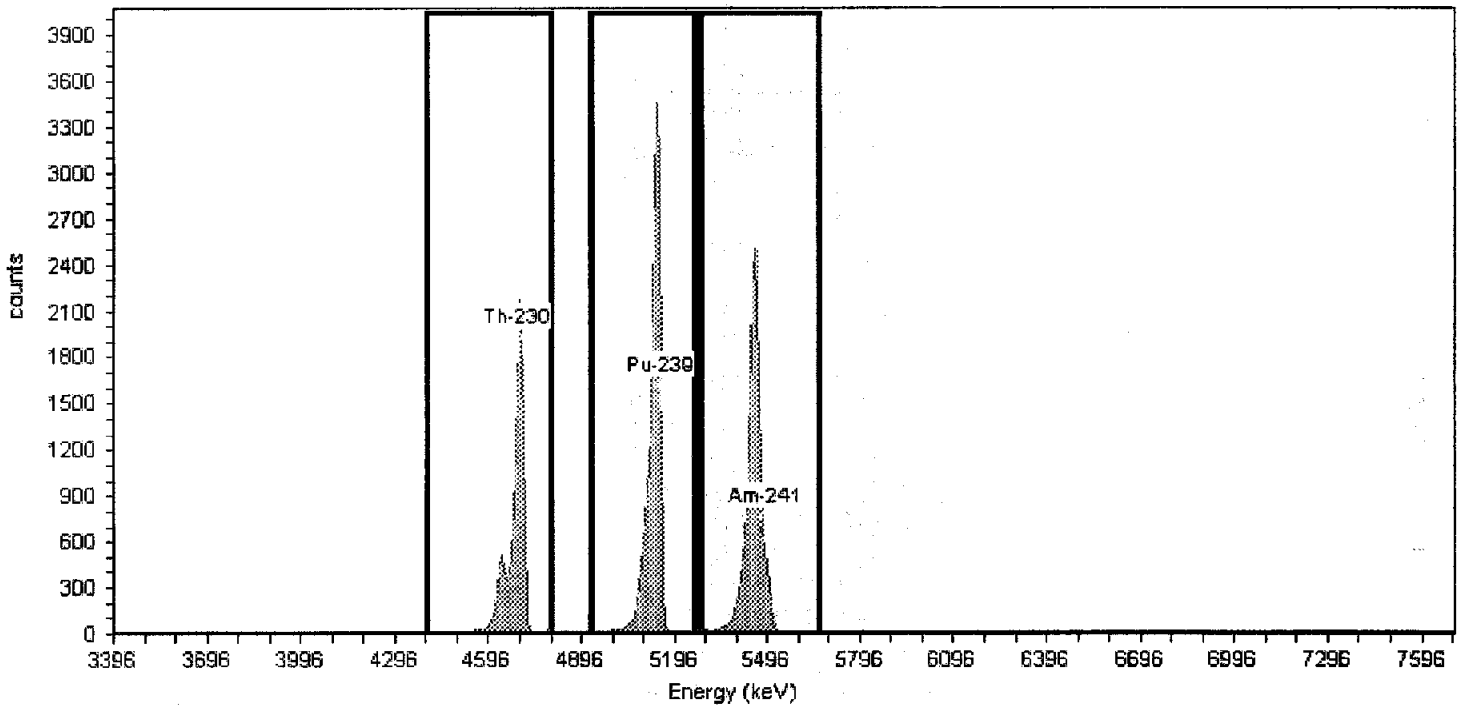
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV90 , SN: 46-033Q1
Acquisition Start Date: 2/26/2007 7:33:31PM
Live Time: 140.00 min.
Real Time: 140.06 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	11,648.00	83.20
Pu-239	243	5.16	212	258	17,854.00	127.53
Am-241	289	5.49	261	313	15,449.00	110.35

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:22:47AM 2/27/2007

Analyst: 60040
Detector: AV92

Calibration

Name: Feb2007_AV92
Description:

Calibration Date: 2/27/2007 11:22:44AM

Source Info

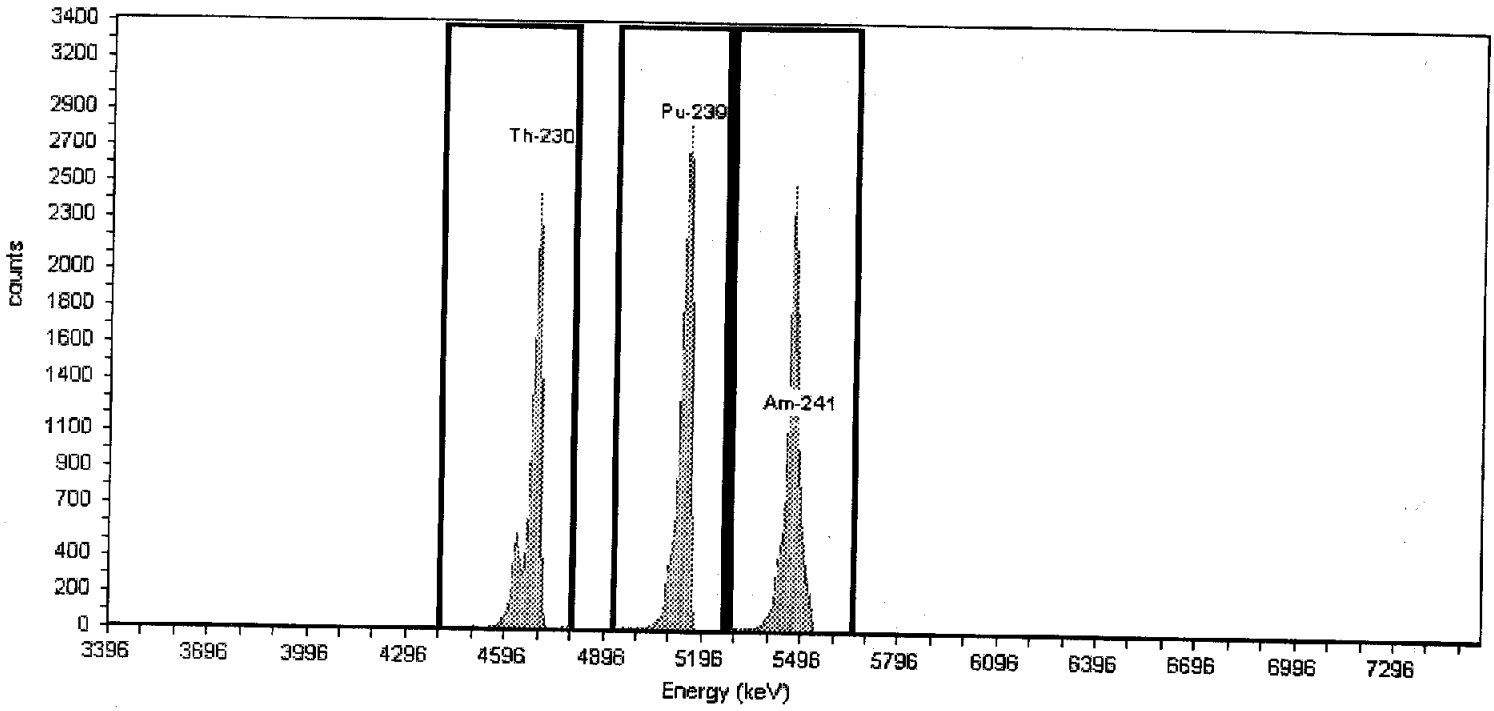
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV92 , SN: 46-033FF2
Acquisition Start Date: 2/27/2007 8:52:29AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.58% +/- 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	12,430.00	88.79
Pu-239	243	5.16	212	258	14,522.00	103.73
Am-241	289	5.49	261	313	14,297.00	102.12

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:22:55AM 2/27/2007

Analyst: 60040
Detector: AV93

Calibration

Name: Feb2007_AV93
Description:

Calibration Date: 2/27/2007 11:22:50AM

Source Info

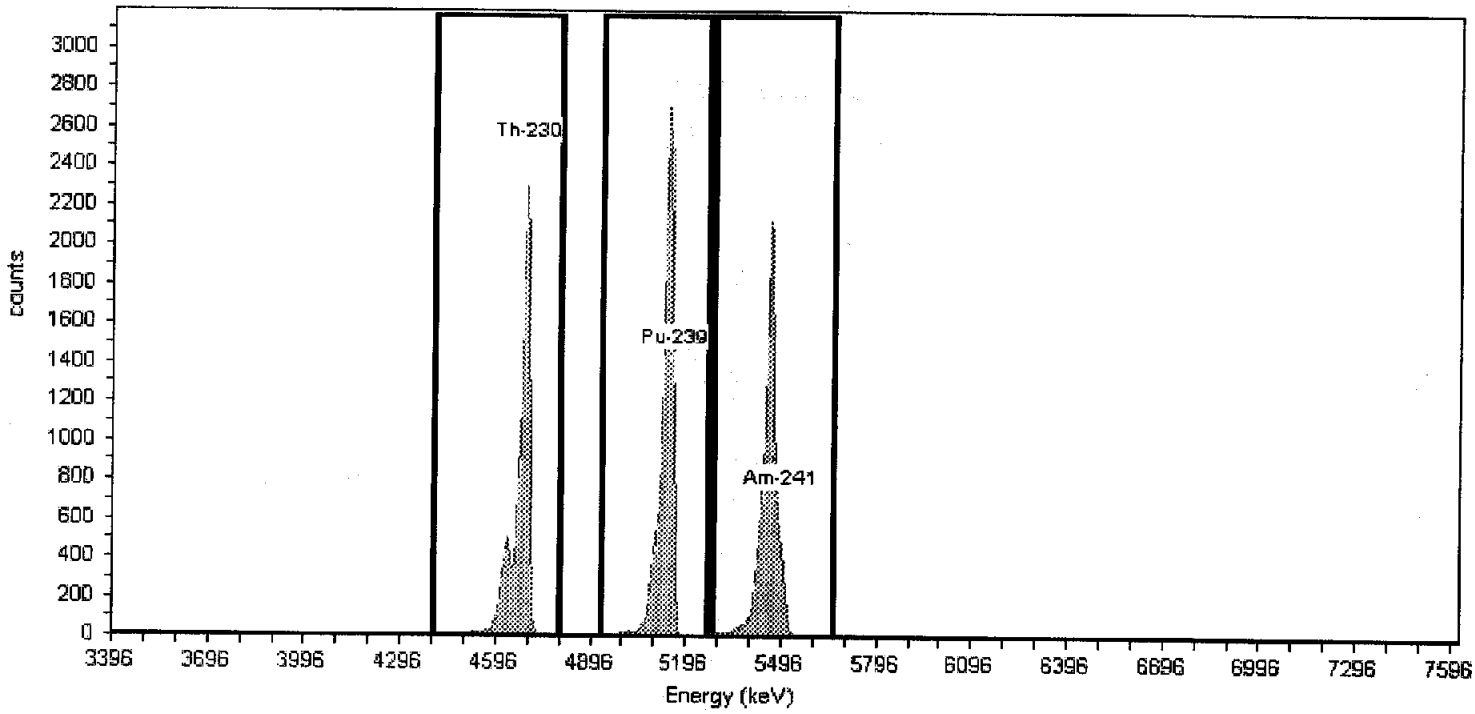
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV93 , SN: 46-033Q2
Acquisition Start Date: 2/27/2007 8:52:47AM
Live Time: 140.00 min.
Real Time: 140.04 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 / 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	12,270.00	87.64
Pu-239	243	5.16	212	258	14,016.00	100.11
Am-241	289	5.49	261	313	12,960.00	92.57

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:23:02AM 2/27/2007

Analyst: 60040
Detector: AV94

Calibration

Name: Feb2007_AV94
Description:

Calibration Date: 2/27/2007 11:22:58AM

Source Info

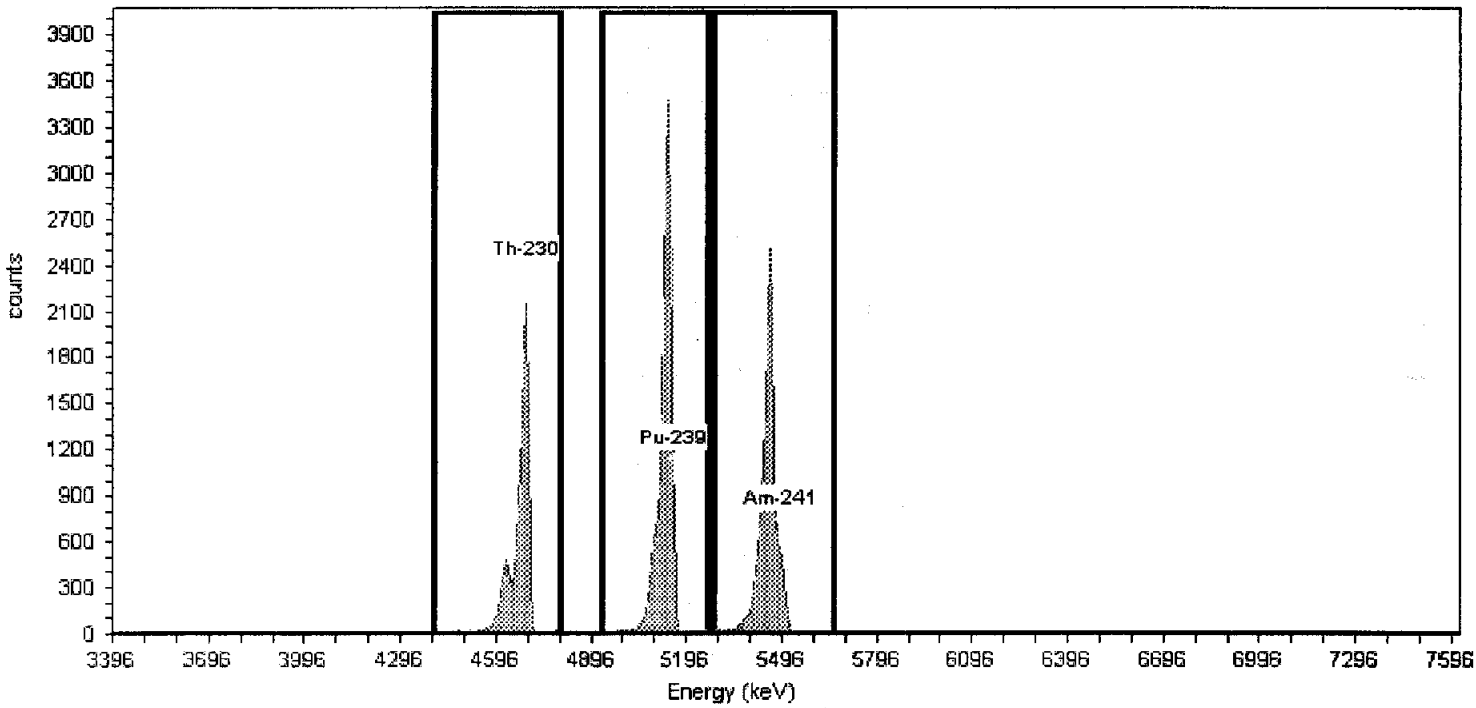
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV94 , SN: 46-032EE6
Acquisition Start Date: 2/27/2007 8:53:04AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.73% +/- 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	11,481.00	82.01
Pu-239	243	5.16	212	258	17,463.00	124.74
Am-241	289	5.49	261	313	14,984.00	107.03

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:41:22AM 2/27/2007

Analyst: 60040
Detector: AV95

Calibration

Name: FEB2007_AV95
Description:

Calibration Date: 2/27/2007 6:41:17AM

Source Info

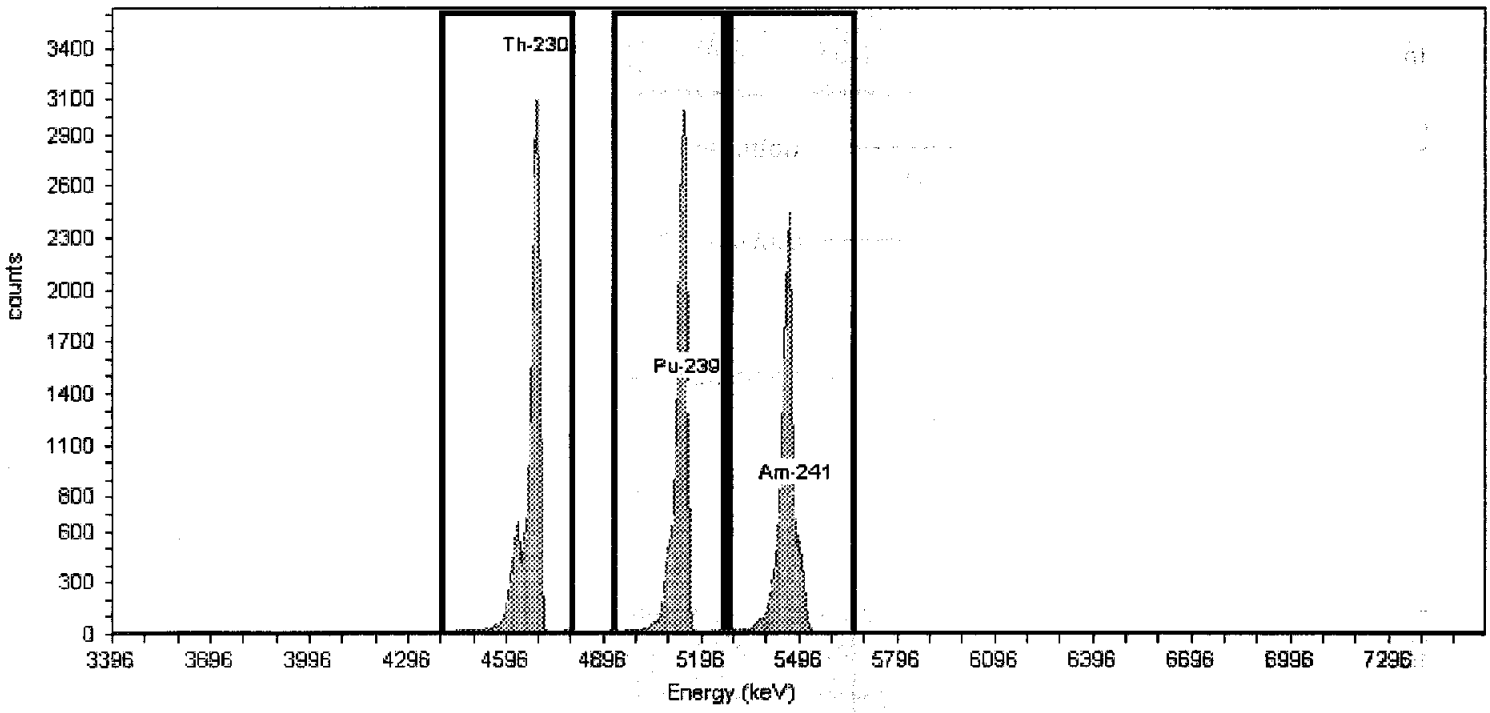
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV95 , SN: 46-033P4
Acquisition Start Date: 2/26/2007 10:10:03PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.68% +/- 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	16,169.00	115.49
Pu-239	243	5.16	212	258	15,470.00	110.50
Am-241	289	5.49	261	313	14,693.00	104.95

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:41:28AM 2/27/2007

Analyst: 60040
Detector: AV96

Calibration

Name: FEB2007_AV96
Description:

Calibration Date: 2/27/2007 6:41:24AM

Source Info

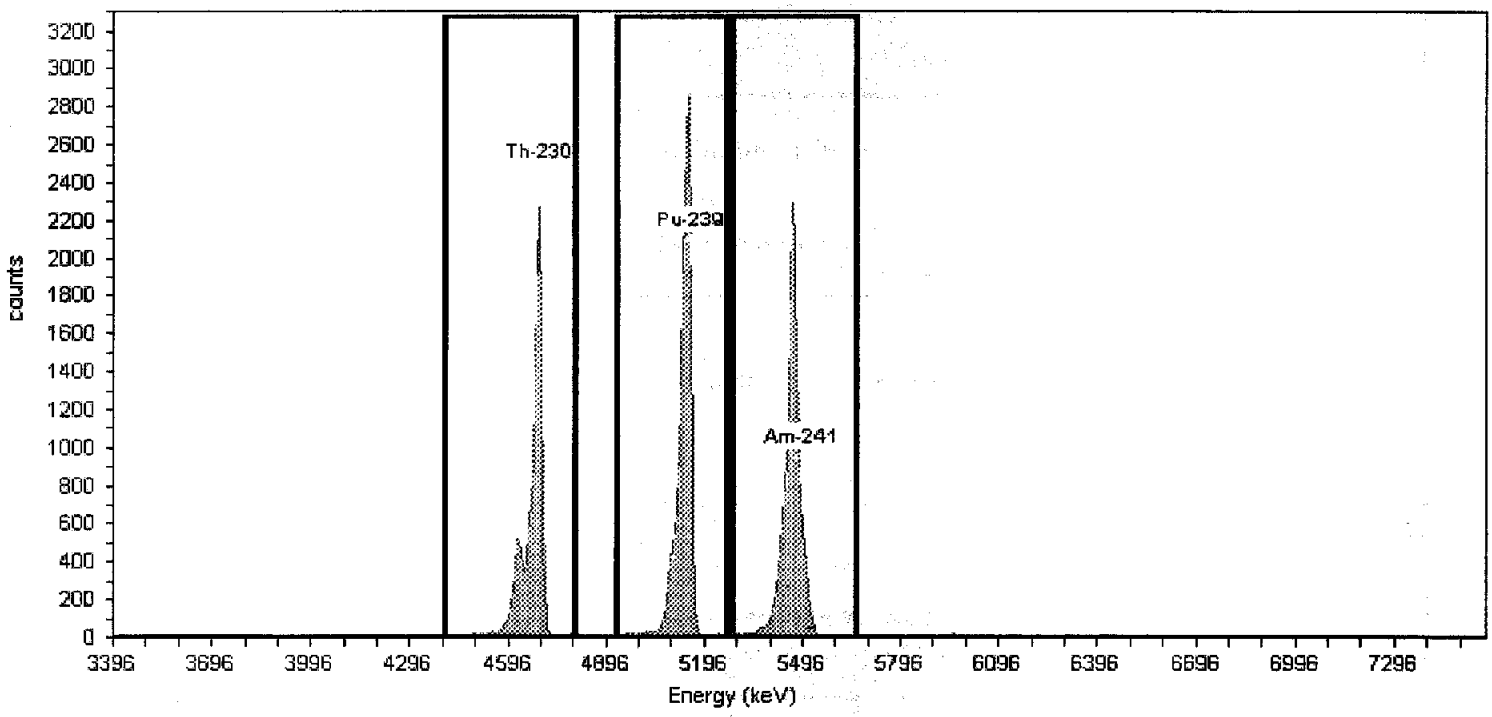
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV96 , SN: 46-033P1
Acquisition Start Date: 2/26/2007 10:10:18PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.58% +/- 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	12,332.00	88.09
Pu-239	243	5.16	212	258	14,842.00	106.01
Am-241	289	5.49	261	313	14,146.00	101.04

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:41:32AM 2/27/2007

Analyst: 60040
Detector: AV97

Calibration

Name: FEB2007_AV97
Description:

Calibration Date: 2/27/2007 6:41:29AM

Source Info

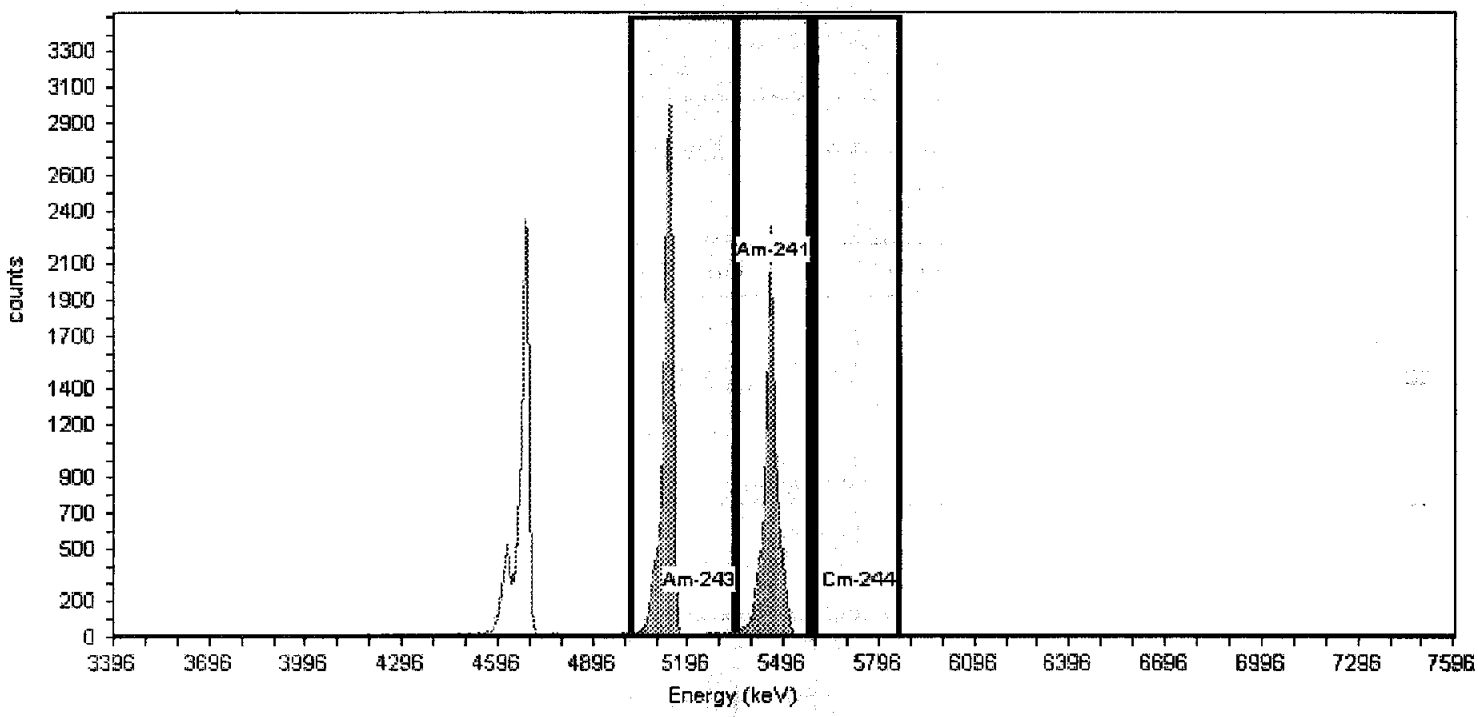
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV97 , SN: 76-03393
Acquisition Start Date: 2/26/2007 10:10:33PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.63% +/- 0.50% TPU(2 sigma)

Energy Calibration Equation:
Gain = 7.7000 keV / Ch
Offset = 3,306.99 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)
Am-243	254	5.28	224	269	14,312.00	102.23
Am-241	286	5.49	270	301	13,166.00	94.04
Cm-244	323	5.81	304	340	3.00	0.02

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:41:46AM 2/27/2007

Analyst: 60040
Detector: AV98

Calibration

Name: FEB2007_AV98
Description:

Calibration Date: 2/27/2007 6:41:34AM

Source Info

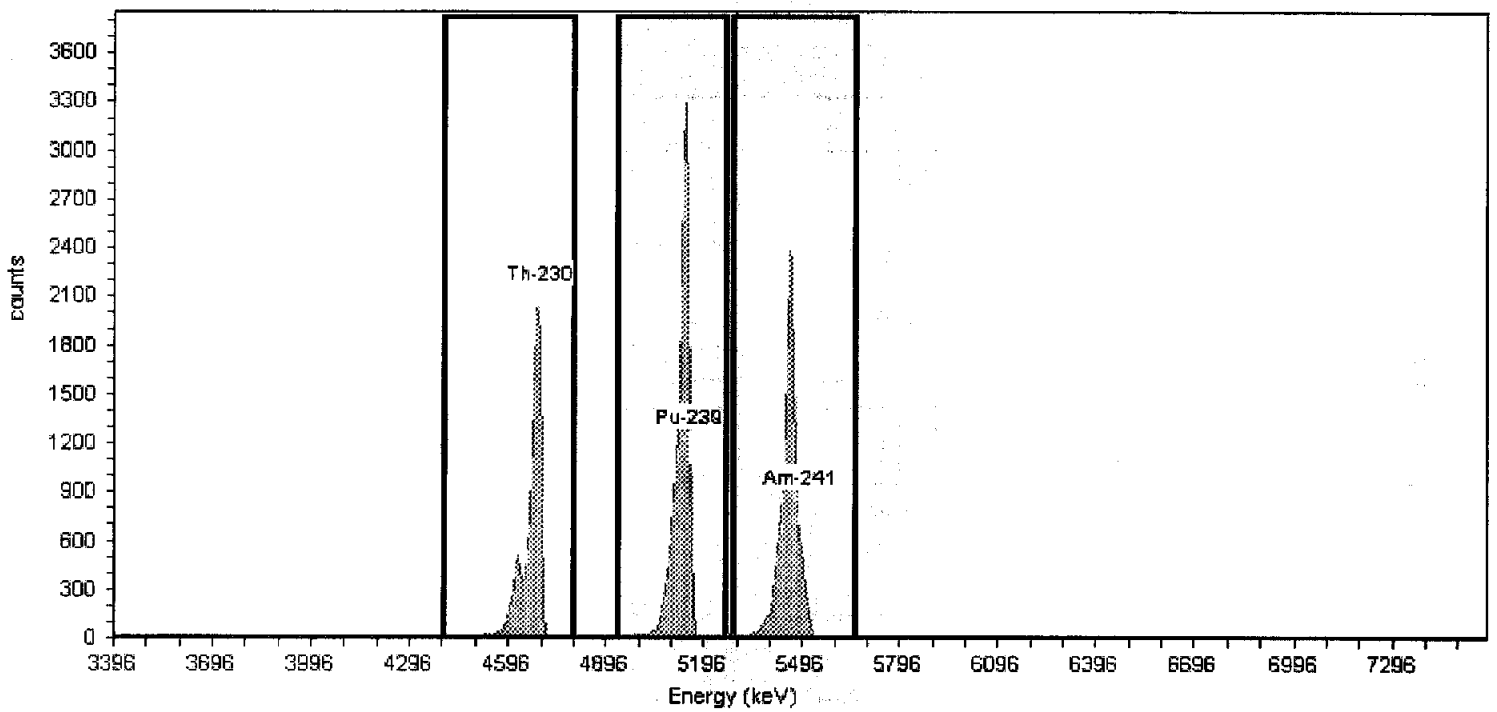
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV98 , SN: 46-033Q3
Acquisition Start Date: 2/26/2007 10:10:43PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.38% +/- 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	11,750.00	83.93
Pu-239	243	5.16	212	258	17,787.00	127.05
Am-241	289	5.49	261	313	15,463.00	110.45

SEVERN TRENT STL

Monthly Background
Alpha vision
March 2007

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:17AM 3/25/2007

Sample

Sample Name: AV1 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

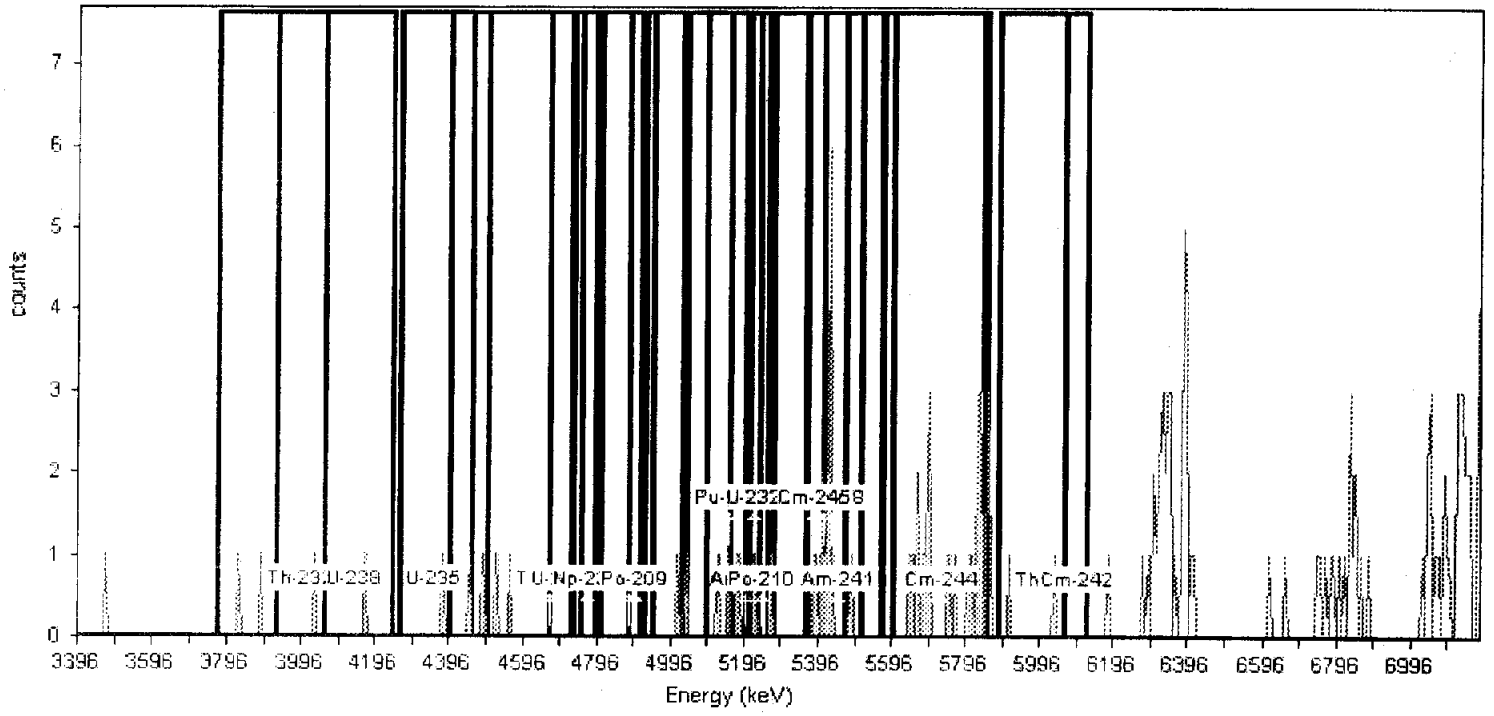
Acquisition

Detector: AV1 , SN: 41-158W6
Acquisition Start Date: 3/24/2007 9:47:45AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 141.00

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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	6.00	6.250E-003	2.756E-003
Am-243	5.20	5.03	5.28	7.00	7.292E-003	2.946E-003
U-232	5.23	5.04	5.37	7.00	7.292E-003	2.946E-003
Th-228	5.41	5.16	5.47	18.00	1.875E-002	4.541E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Am-241	5.45	5.27	5.57	16.00	1.667E-002	4.295E-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	22.00	2.292E-002	4.996E-003
Cm-244	5.73	5.60	5.86	25.00	2.604E-002	5.311E-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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:20AM 3/25/2007

Sample

Sample Name: AV2 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

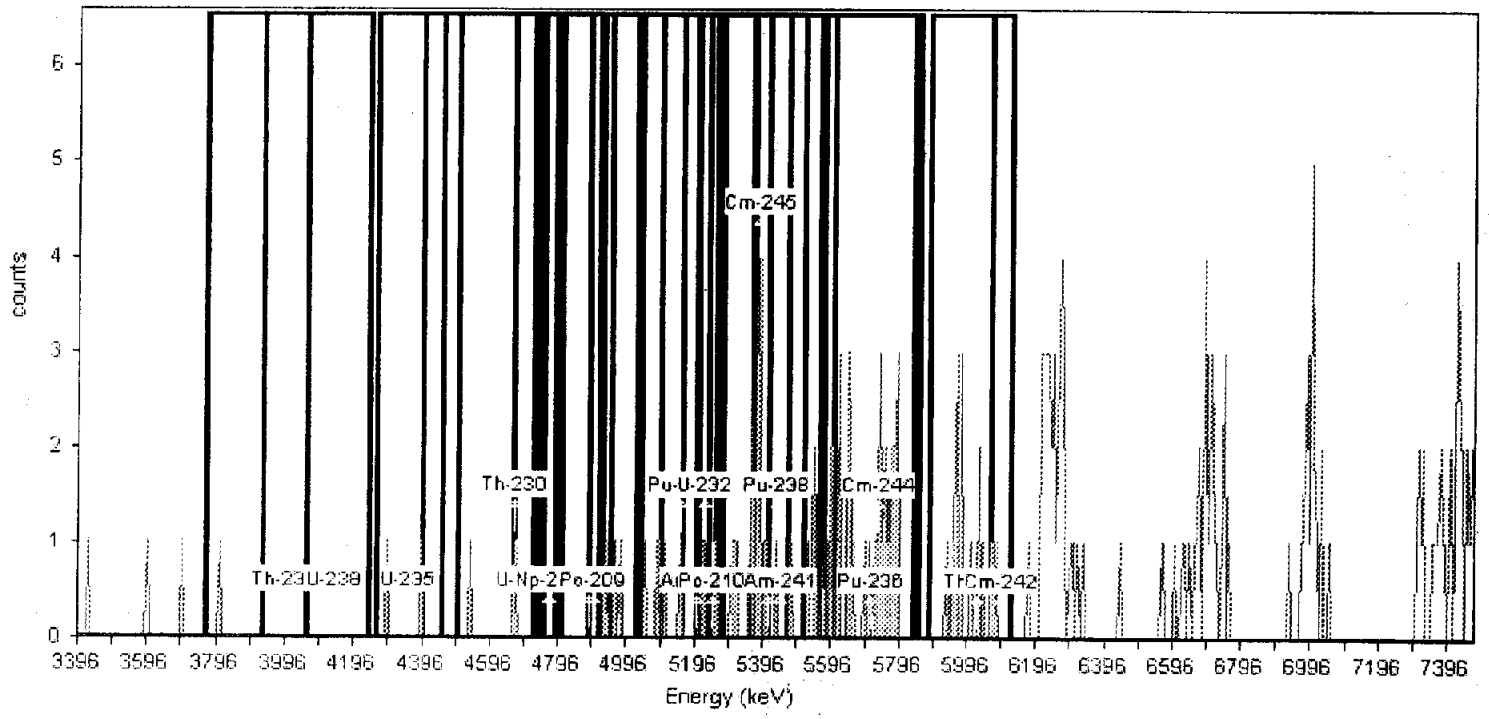
Acquisition

Detector: AV2 , SN: 41-158W7
Acquisition Start Date: 3/24/2007 9:46:56AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 193.00

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	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	4.88	4.67	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	6.00	6.250E-003	2.756E-003
Am-243	5.20	5.03	5.28	8.00	8.333E-003	3.125E-003
U-232	5.23	5.04	5.37	14.00	1.458E-002	4.034E-003
Th-228	5.41	5.16	5.47	20.00	2.083E-002	4.774E-003
Po-210	5.25	5.20	5.26	4.00	4.167E-003	2.329E-003
Pu-238	5.44	5.24	5.52	19.00	1.979E-002	4.658E-003
Am-241	5.45	5.27	5.57	21.00	2.187E-002	4.886E-003
Cm-245	5.39	5.36	5.41	12.00	1.250E-002	3.756E-003
Pu-236	5.72	5.57	5.84	32.00	3.333E-002	5.984E-003
Cm-244	5.73	5.60	5.86	29.00	3.021E-002	5.705E-003
Th-227	6.02	5.89	6.13	15.00	1.563E-002	4.167E-003
Cm-242	6.10	6.07	6.13	3.00	3.125E-003	2.083E-003

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:23AM 3/25/2007

Sample

Sample Name: AV3 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

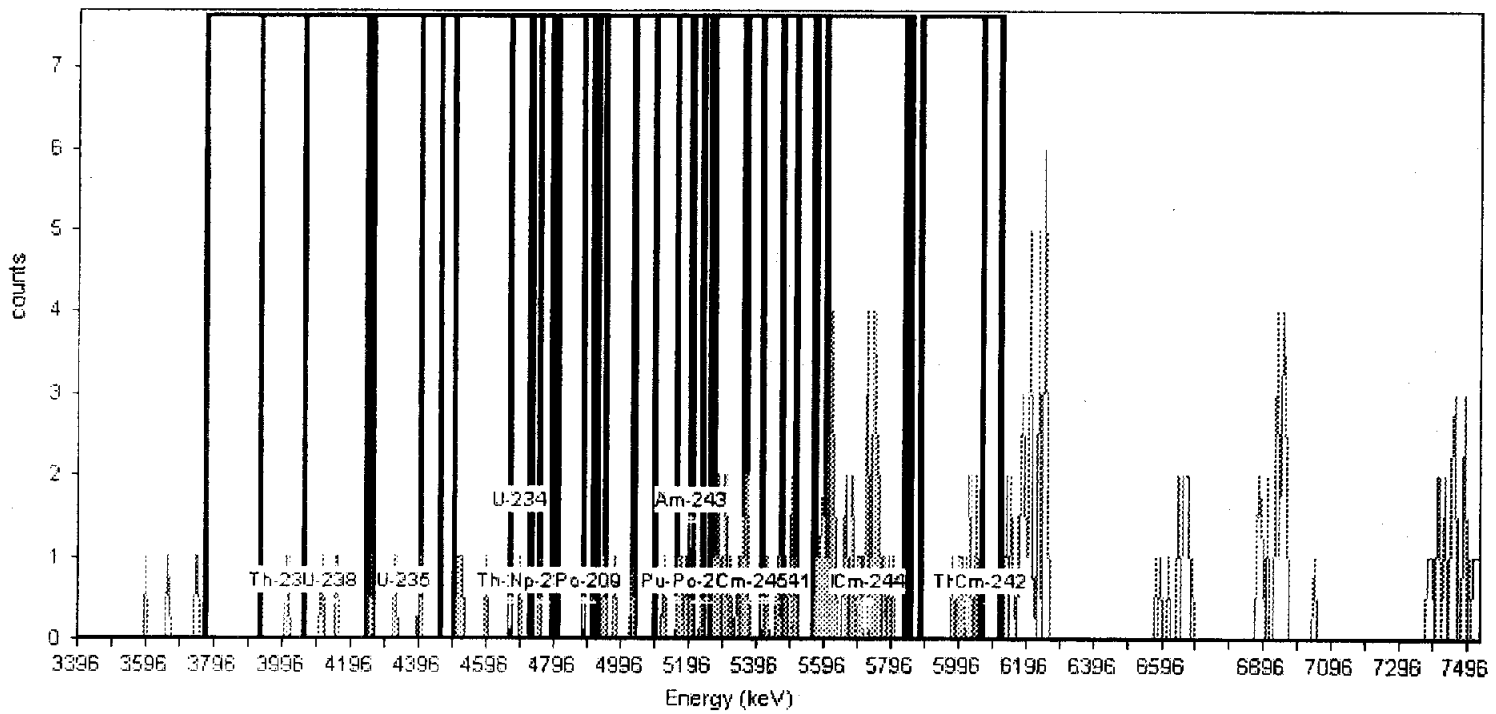
Acquisition

Detector: AV3 , SN: 41-158X5
Acquisition Start Date: 3/24/2007 9:46:58AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 176.00

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	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	5.00	5.208E-003	2.552E-003
U-234	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Pu-242	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	8.00	8.333E-003	3.125E-003
Am-243	5.20	5.03	5.28	8.00	8.333E-003	3.125E-003
U-232	5.23	5.04	5.37	18.00	1.875E-002	4.541E-003
Th-228	5.41	5.16	5.47	19.00	1.979E-002	4.658E-003
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	18.00	1.875E-002	4.541E-003
Am-241	5.45	5.27	5.57	18.00	1.875E-002	4.541E-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	37.00	3.854E-002	6.421E-003
Cm-244	5.73	5.60	5.86	32.00	3.333E-002	5.984E-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	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 7:31:26AM 3/25/2007

Sample

Sample Name: AV4 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

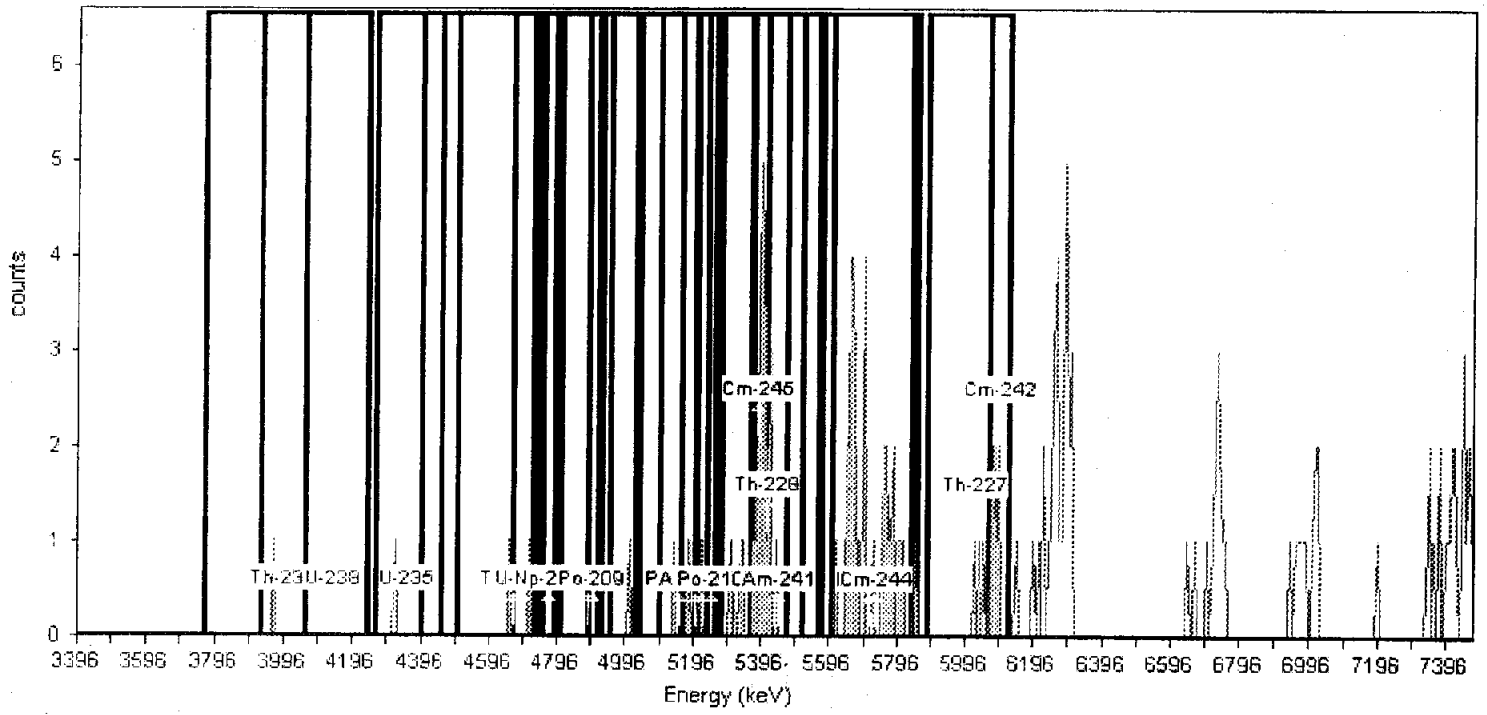
Acquisition

Detector: AV4 , SN: 41-172B5
Acquisition Start Date: 3/24/2007 9:46:59AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 146.00

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	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	5.23	5.04	5.37	7.00	7.292E-003	2.946E-003
Th-228	5.41	5.16	5.47	26.00	2.708E-002	5.413E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	24.00	2.500E-002	5.208E-003
Am-241	5.45	5.27	5.57	24.00	2.500E-002	5.208E-003
Cm-245	5.39	5.36	5.41	17.00	1.771E-002	4.419E-003
Pu-236	5.72	5.57	5.84	30.00	3.125E-002	5.800E-003
Cm-244	5.73	5.60	5.86	31.00	3.229E-002	5.893E-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	6.00	6.250E-003	2.756E-003

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:31:33AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV6
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

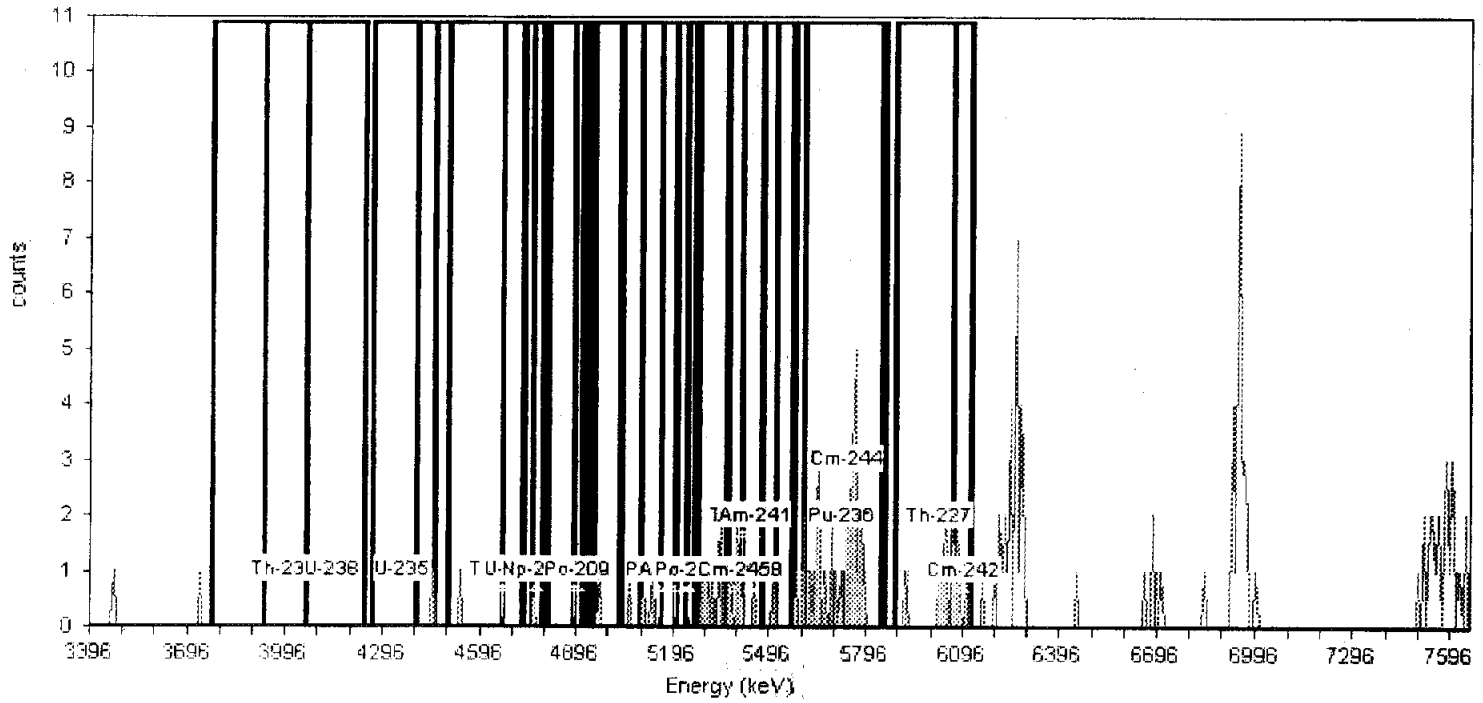
Acquisition

Detector: AV6 , SN:
Acquisition Start Date: 3/24/2007 9:47:01AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute ROI Analysis, Set Name = 11/05_Background
Nuclide Library: Background ROI Library
Total Background Counts: 167.00

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	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	4.00	4.167E-003	2.329E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	15.00	1.563E-002	4.167E-003
Am-241	5.45	5.27	5.57	15.00	1.563E-002	4.167E-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	36.00	3.750E-002	6.336E-003
Cm-244	5.73	5.60	5.86	35.00	3.646E-002	6.250E-003
Th-227	6.02	5.89	6.13	13.00	1.354E-002	3.898E-003
Cm-242	6.10	6.07	6.13	7.00	7.292E-003	2.946E-003

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:31:30AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV7
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

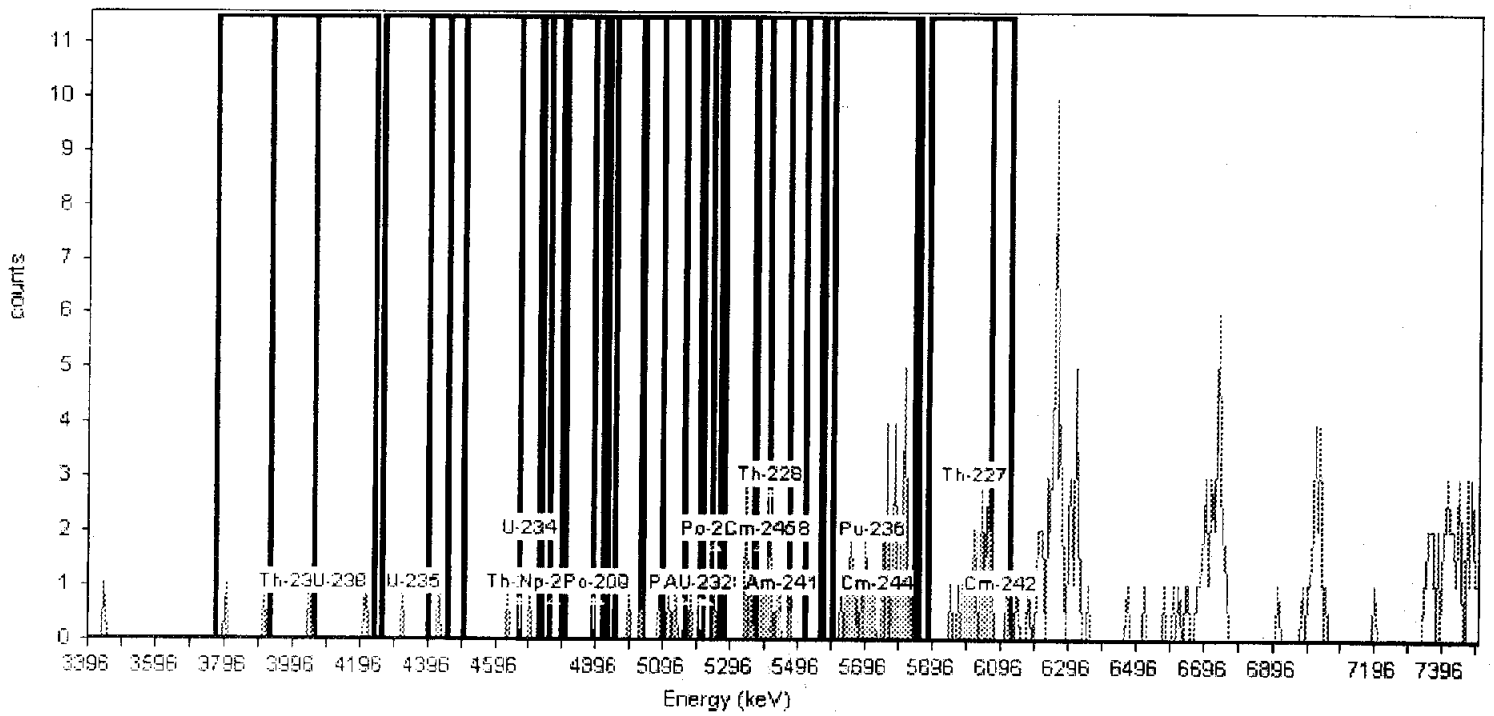
Acquisition

Detector: AV7 , SN: 41-158X6
Acquisition Start Date: 3/24/2007 9:47:03AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

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



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundRoi
Nuclide Library: Background ROI Library
Total Background Counts: 227.00

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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	6.00	6.250E-003	2.756E-003
Am-243	5.20	5.03	5.28	6.00	6.250E-003	2.756E-003
U-232	5.23	5.04	5.37	9.00	9.375E-003	3.294E-003
Th-228	5.41	5.16	5.47	15.00	1.563E-002	4.167E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	14.00	1.458E-002	4.034E-003
Am-241	5.45	5.27	5.57	13.00	1.354E-002	3.898E-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	36.00	3.750E-002	6.336E-003
Cm-244	5.73	5.60	5.86	36.00	3.750E-002	6.336E-003
Th-227	6.02	5.89	6.13	20.00	2.083E-002	4.774E-003
Cm-242	6.10	6.07	6.13	3.00	3.125E-003	2.083E-003

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:36AM 3/25/2007

Sample

Sample Name: AV8 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

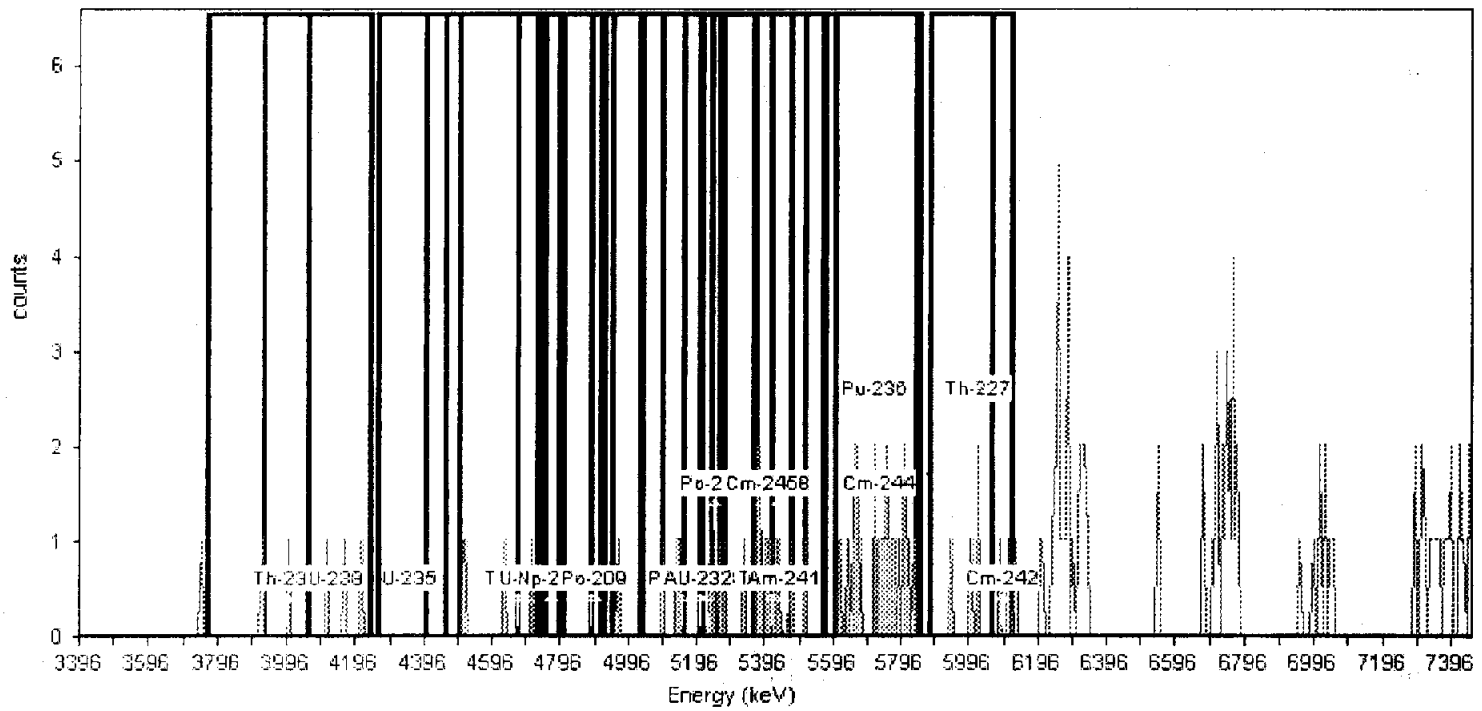
Acquisition

Detector: AV8 , SN: 41-158X1
Acquisition Start Date: 3/24/2007 9:47:05AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 137.00

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	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	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	4.00	4.167E-003	2.329E-003
Am-243	5.20	5.03	5.28	7.00	7.292E-003	2.946E-003
U-232	5.23	5.04	5.37	8.00	8.333E-003	3.125E-003
Th-228	5.41	5.16	5.47	13.00	1.354E-002	3.898E-003
Po-210	5.25	5.20	5.26	3.00	3.125E-003	2.083E-003
Pu-238	5.44	5.24	5.52	13.00	1.354E-002	3.898E-003
Am-241	5.45	5.27	5.57	11.00	1.146E-002	3.608E-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	24.00	2.500E-002	5.208E-003
Cm-244	5.73	5.60	5.86	24.00	2.500E-002	5.208E-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	2.00	2.083E-003	1.804E-003

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:39AM 3/25/2007

Sample

Sample Name: AV9 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

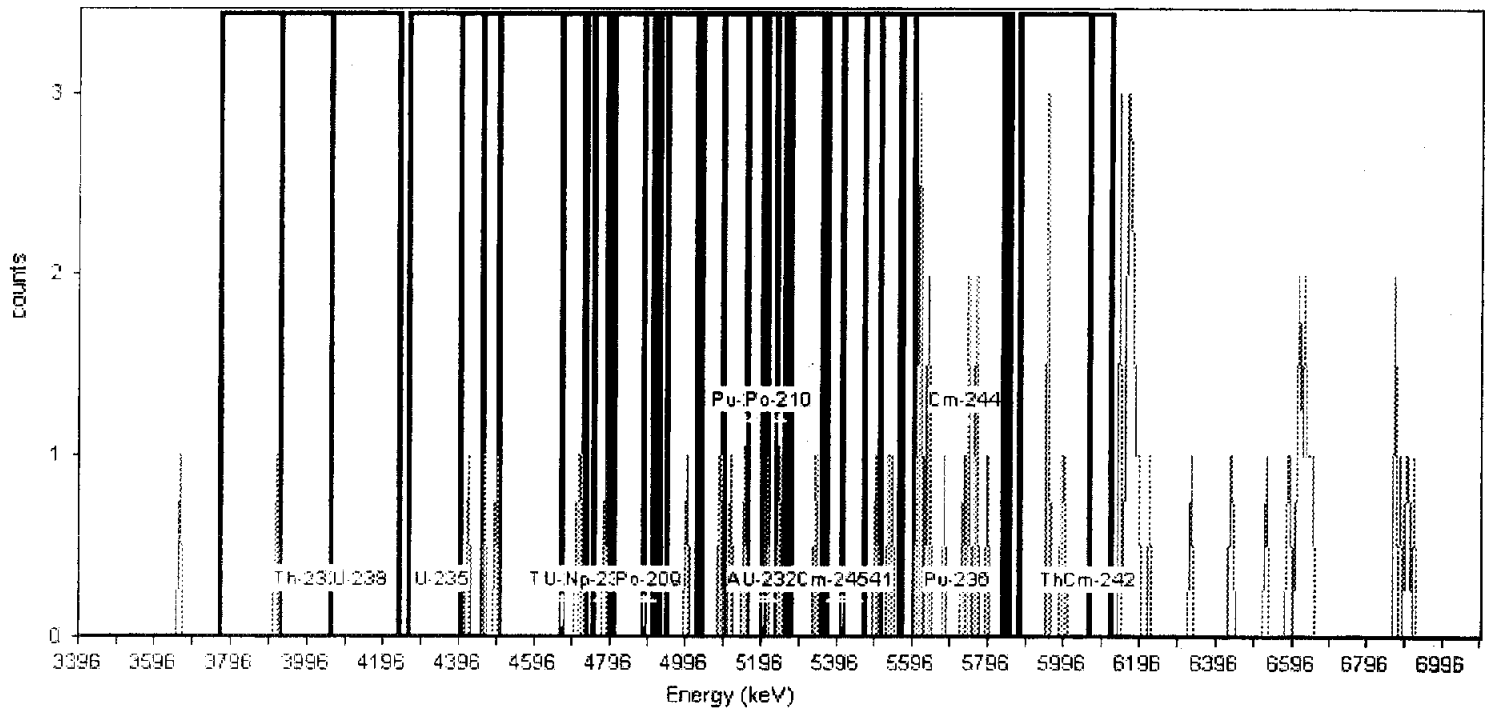
Acquisition

Detector: AV9 , SN: 41-172R1
Acquisition Start Date: 3/24/2007 9:47:07AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 76.00

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	5.00	5.208E-003	2.552E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	3.00	3.125E-003	2.083E-003
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Am-241	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	17.00	1.771E-002	4.419E-003
Cm-244	5.73	5.60	5.86	17.00	1.771E-002	4.419E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:42AM 3/25/2007

Sample

Sample Name: AV11 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

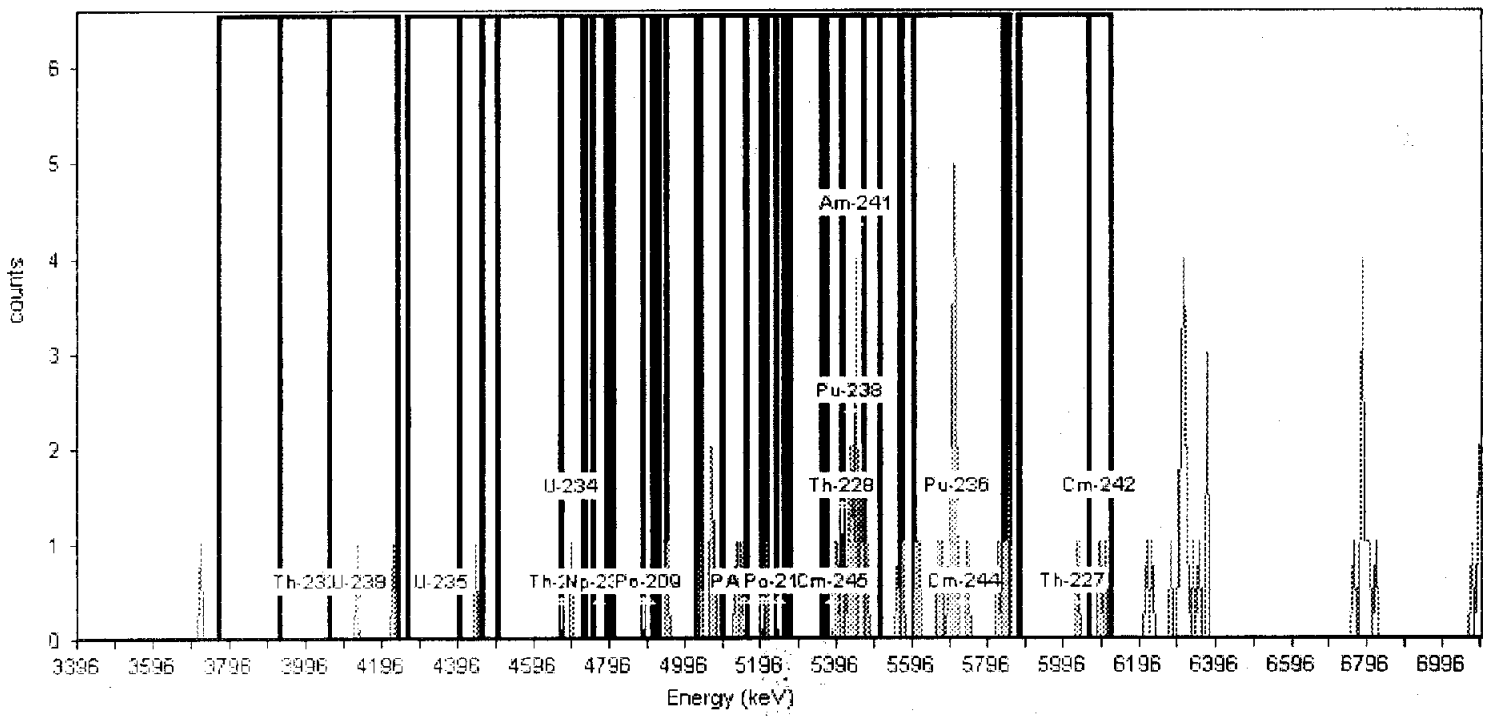
Acquisition

Detector: AV11 , SN: 41-172Q3
Acquisition Start Date: 3/24/2007 9:47:09AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 81.00

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	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	4.88	4.67	4.93	1.00	1.042E-003	1.473E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	8.00	8.333E-003	3.125E-003
Am-243	5.20	5.03	5.28	7.00	7.292E-003	2.946E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	14.00	1.458E-002	4.034E-003
Am-241	5.45	5.27	5.57	15.00	1.563E-002	4.167E-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	17.00	1.771E-002	4.419E-003
Cm-244	5.73	5.60	5.86	19.00	1.979E-002	4.658E-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

ST SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040 7:31:46AM 3/25/2007

Sample

Sample Name: AV12 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

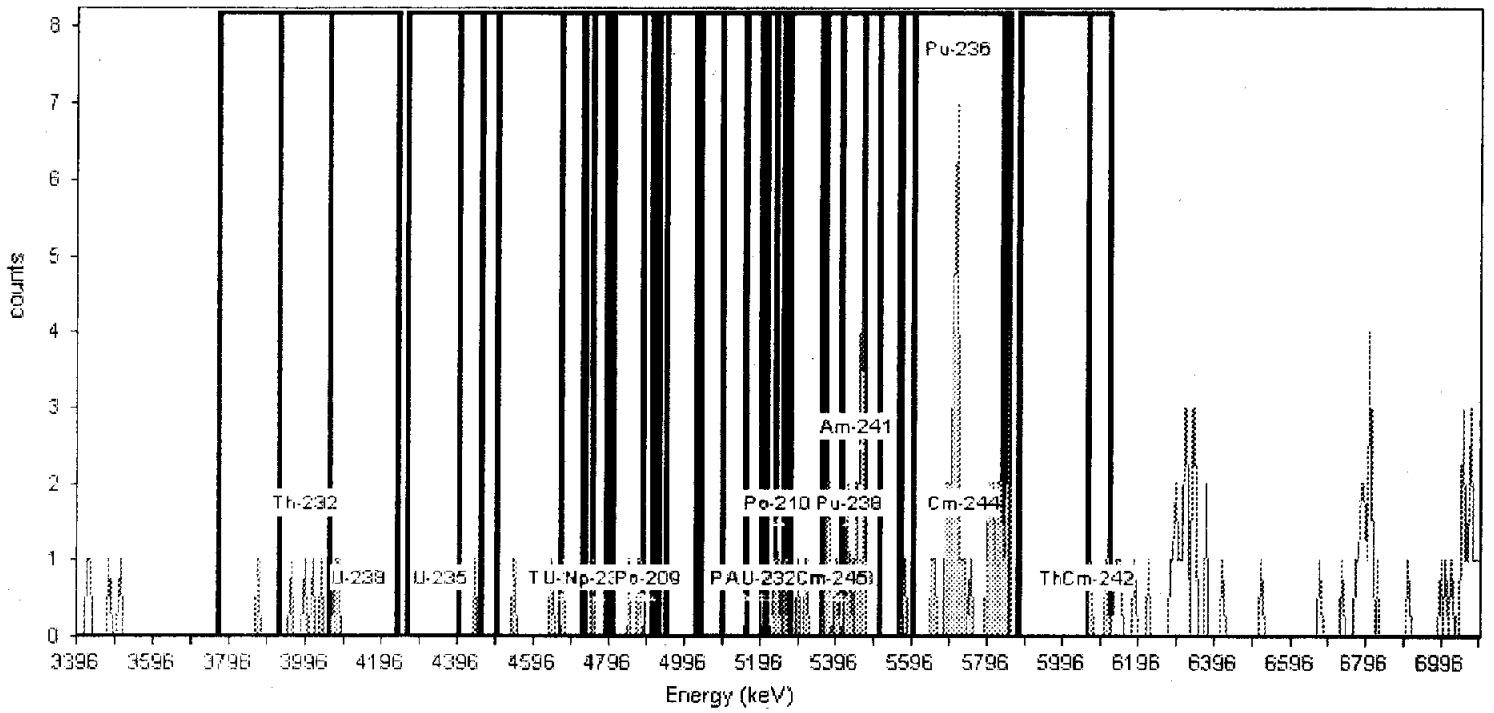
Acquisition

Detector: AV12 , SN: 41-172Q2
Acquisition Start Date: 3/24/2007 9:47:10AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 142.00

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	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	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	7.00	7.292E-003	2.946E-003
Th-228	5.41	5.16	5.47	23.00	2.396E-002	5.103E-003
Po-210	5.25	5.20	5.26	4.00	4.167E-003	2.329E-003
Pu-238	5.44	5.24	5.52	22.00	2.292E-002	4.996E-003
Am-241	5.45	5.27	5.57	19.00	1.979E-002	4.658E-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	35.00	3.646E-002	6.250E-003
Cm-244	5.73	5.60	5.86	40.00	4.167E-002	6.670E-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	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
7:31:49AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV13
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

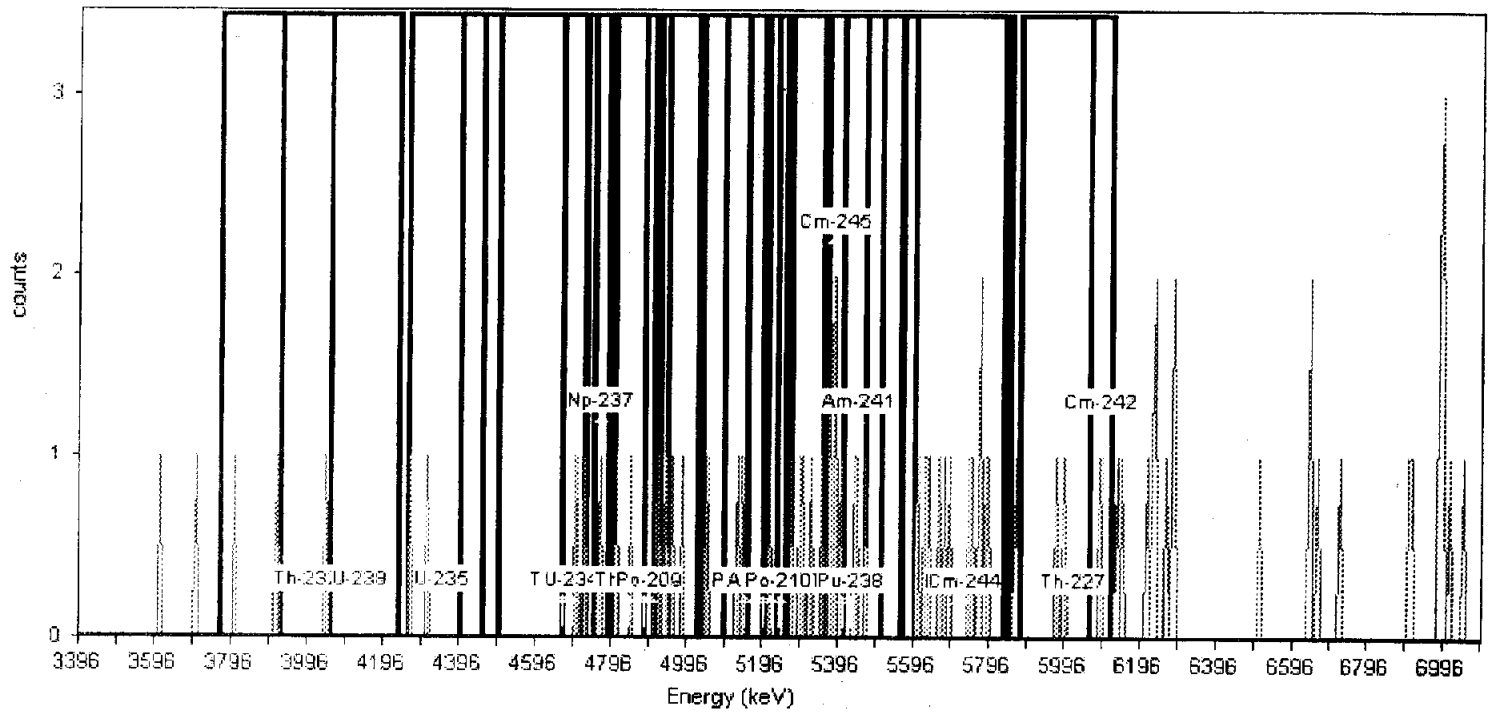
Acquisition

Detector: AV13 , SN: 41-172Q1
Acquisition Start Date: 3/24/2007 9:47:12AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 75.00

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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	4.88	4.67	4.93	6.00	6.250E-003	2.756E-003
Th-229	4.84	4.72	5.10	9.00	9.375E-003	3.294E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.37	9.00	9.375E-003	3.294E-003
Th-228	5.41	5.16	5.47	15.00	1.563E-002	4.167E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	14.00	1.458E-002	4.034E-003
Am-241	5.45	5.27	5.57	14.00	1.458E-002	4.034E-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	12.00	1.250E-002	3.756E-003
Cm-244	5.73	5.60	5.86	12.00	1.250E-002	3.756E-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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:52AM 3/25/2007

Sample

Sample Name: AV14 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

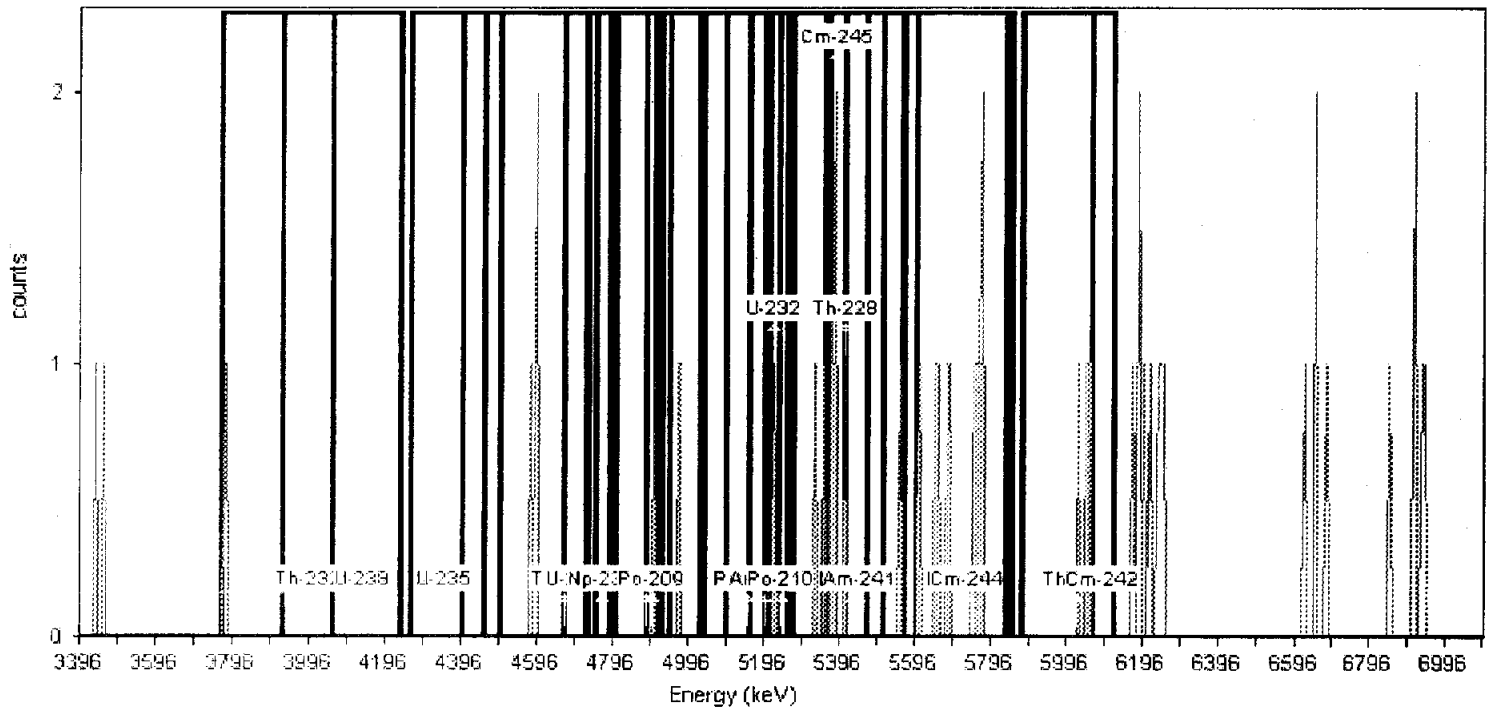
Acquisition

Detector: AV14 , SN: 41-172C4
Acquisition Start Date: 3/24/2007 9:47:13AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 46.00

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	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	7.00	7.292E-003	2.946E-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	10.00	1.042E-002	3.455E-003
Cm-244	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

ST SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040 7:31:55AM 3/25/2007

Sample

Sample Name: AV15 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

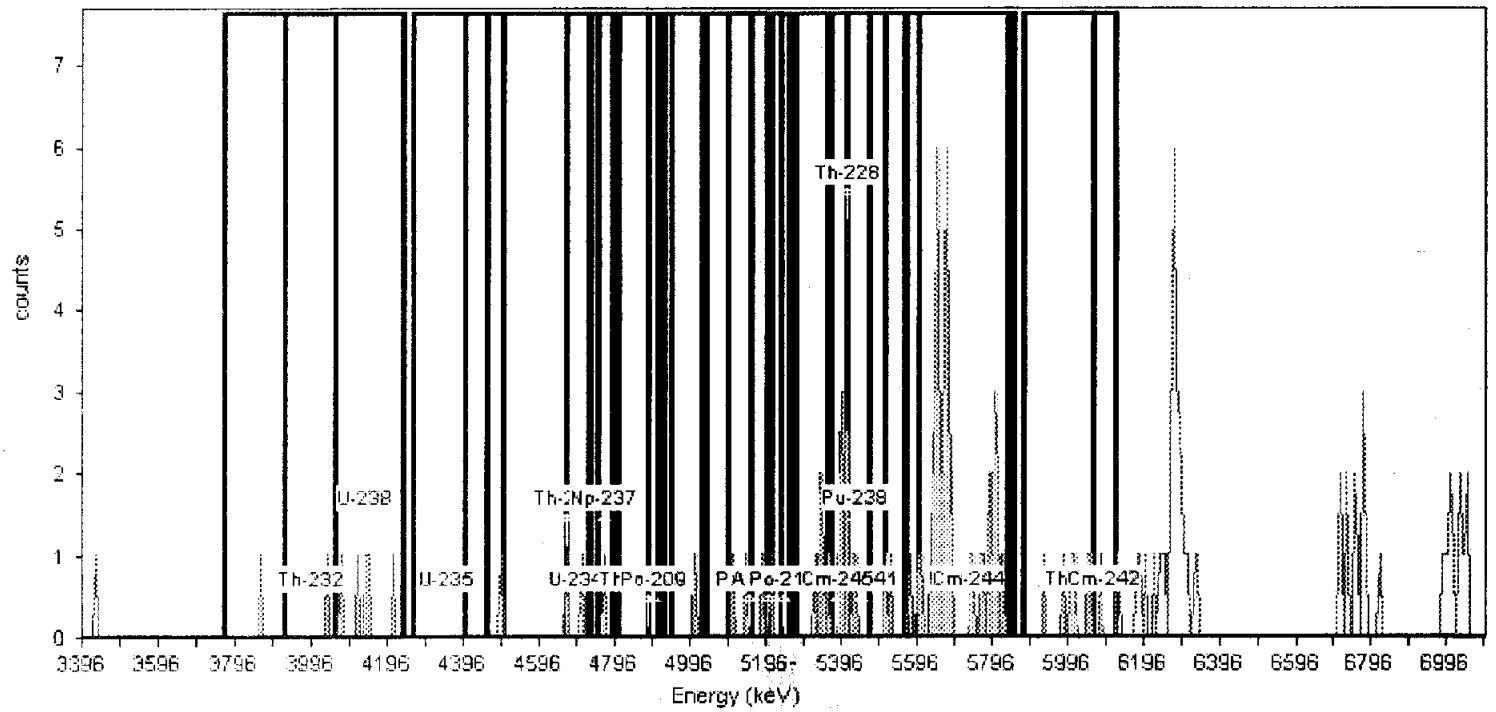
Acquisition

Detector: AV15 , SN: 41-172C5
Acquisition Start Date: 3/24/2007 9:47:15AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 138.00

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	6.00	6.250E-003	2.756E-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
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	18.00	1.875E-002	4.541E-003
Am-241	5.45	5.27	5.57	19.00	1.979E-002	4.658E-003
Cm-245	5.39	5.36	5.41	11.00	1.146E-002	3.608E-003
Pu-236	5.72	5.57	5.84	42.00	4.375E-002	6.831E-003
Cm-244	5.73	5.60	5.86	41.00	4.271E-002	6.751E-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	1.00	1.042E-003	1.473E-003

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:32:02AM 3/25/2007

Sample

Sample Name: AV17 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

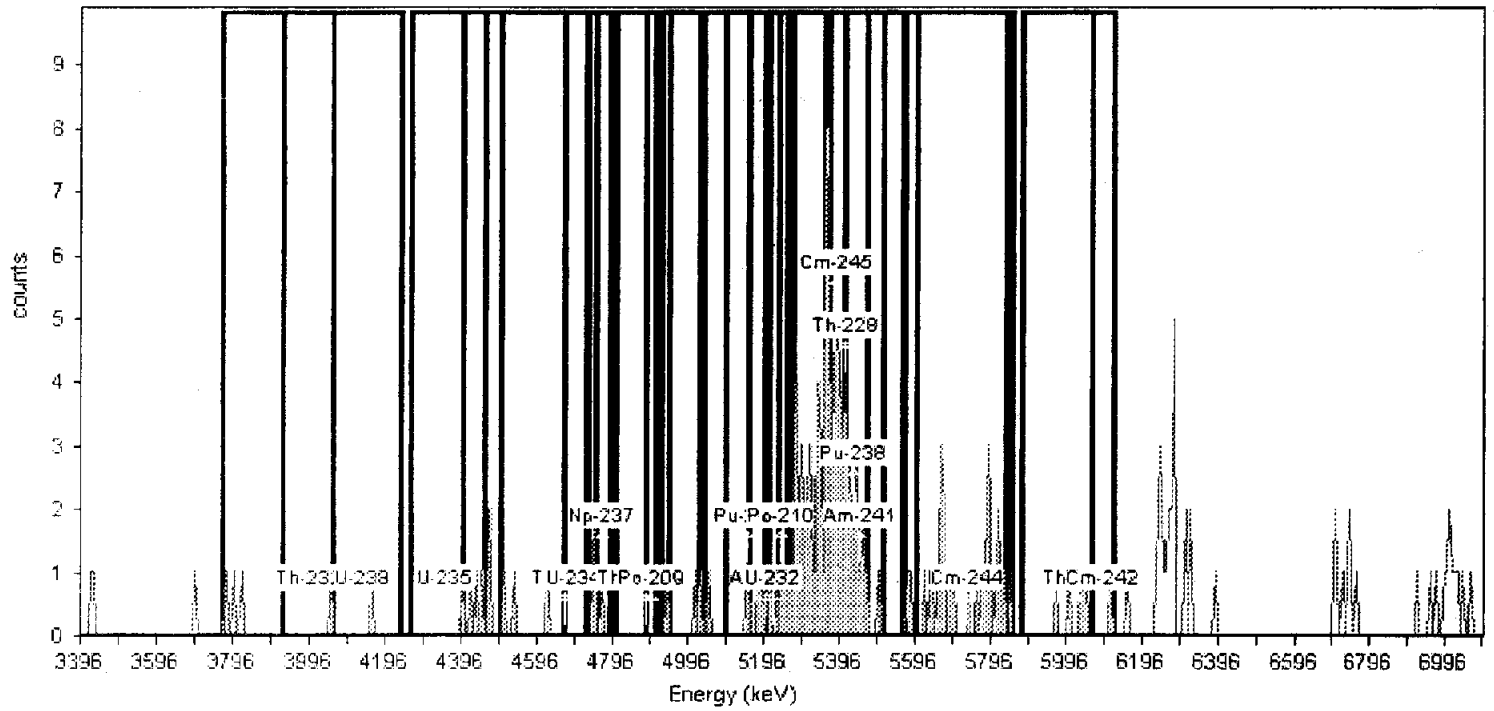
Acquisition

Detector: AV17 , SN: 41-172Q4
Acquisition Start Date: 3/24/2007 9:47:19AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 193.00

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	4.00	4.167E-003	2.329E-003
Th-230	4.67	4.40	4.73	9.00	9.375E-003	3.294E-003
U-234	4.70	4.50	4.80	6.00	6.250E-003	2.756E-003
Pu-242	4.88	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	7.00	7.292E-003	2.946E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	9.00	9.375E-003	3.294E-003
Am-243	5.20	5.03	5.28	15.00	1.563E-002	4.167E-003
U-232	5.23	5.04	5.37	53.00	5.521E-002	7.655E-003
Th-228	5.41	5.16	5.47	90.00	9.375E-002	9.937E-003
Po-210	5.25	5.20	5.26	6.00	6.250E-003	2.756E-003
Pu-238	5.44	5.24	5.52	84.00	8.750E-002	9.604E-003
Am-241	5.45	5.27	5.57	81.00	8.438E-002	9.433E-003
Cm-245	5.39	5.36	5.41	37.00	3.854E-002	6.421E-003
Pu-236	5.72	5.57	5.84	28.00	2.917E-002	5.610E-003
Cm-244	5.73	5.60	5.86	27.00	2.813E-002	5.512E-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	1.00	1.042E-003	1.473E-003

STL SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040 7:32:05AM 3/25/2007

Sample

Sample Name: AV18 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

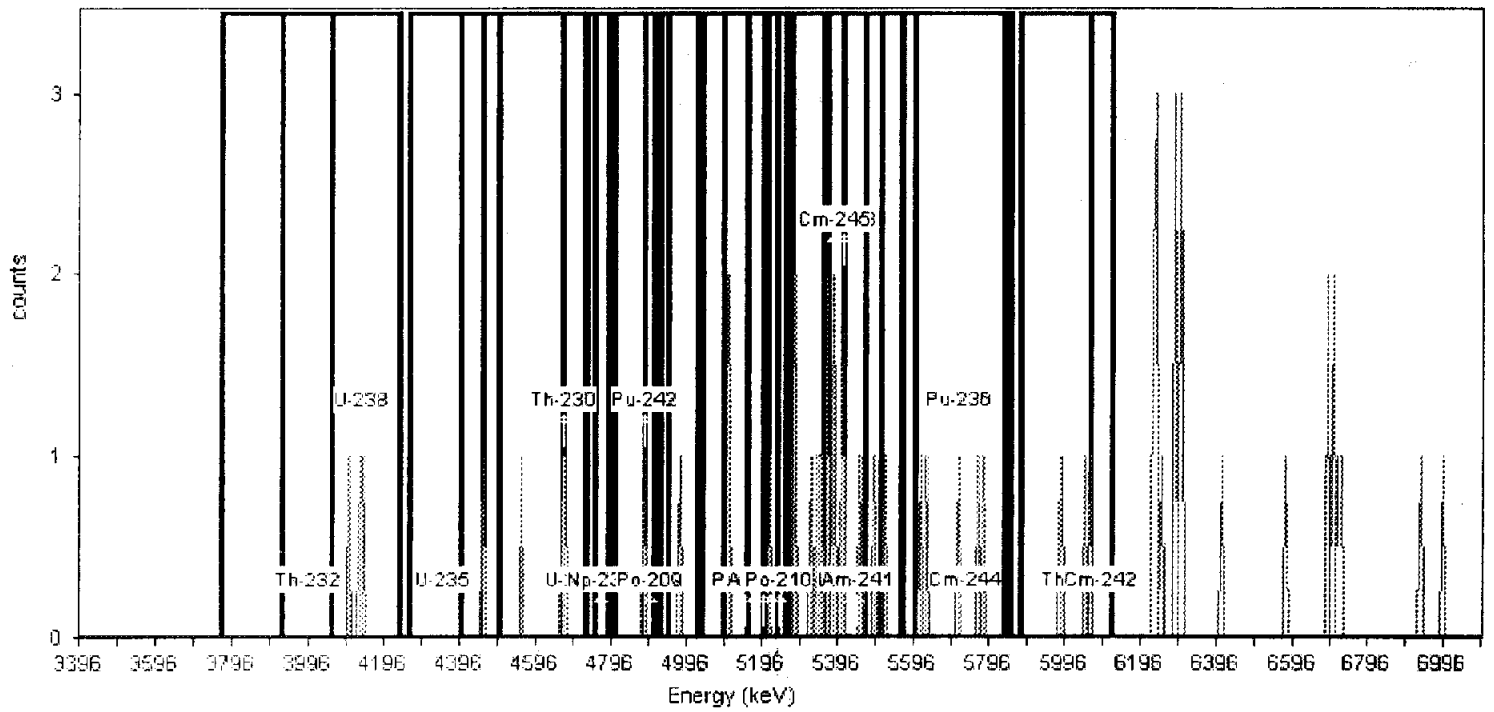
Acquisition

Detector: AV18 , SN: 41-172C6
Acquisition Start Date: 3/24/2007 9:47:20AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute 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	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	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	5.23	5.04	5.37	11.00	1.146E-002	3.608E-003
Th-228	5.41	5.16	5.47	16.00	1.667E-002	4.295E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Am-241	5.45	5.27	5.57	17.00	1.771E-002	4.419E-003
Cm-245	5.39	5.36	5.41	8.00	8.333E-003	3.125E-003
Pu-236	5.72	5.57	5.84	5.00	5.208E-003	2.552E-003
Cm-244	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	1.00	1.042E-003	1.473E-003

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:32:08AM 3/25/2007

Sample

Sample Name: AV19 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

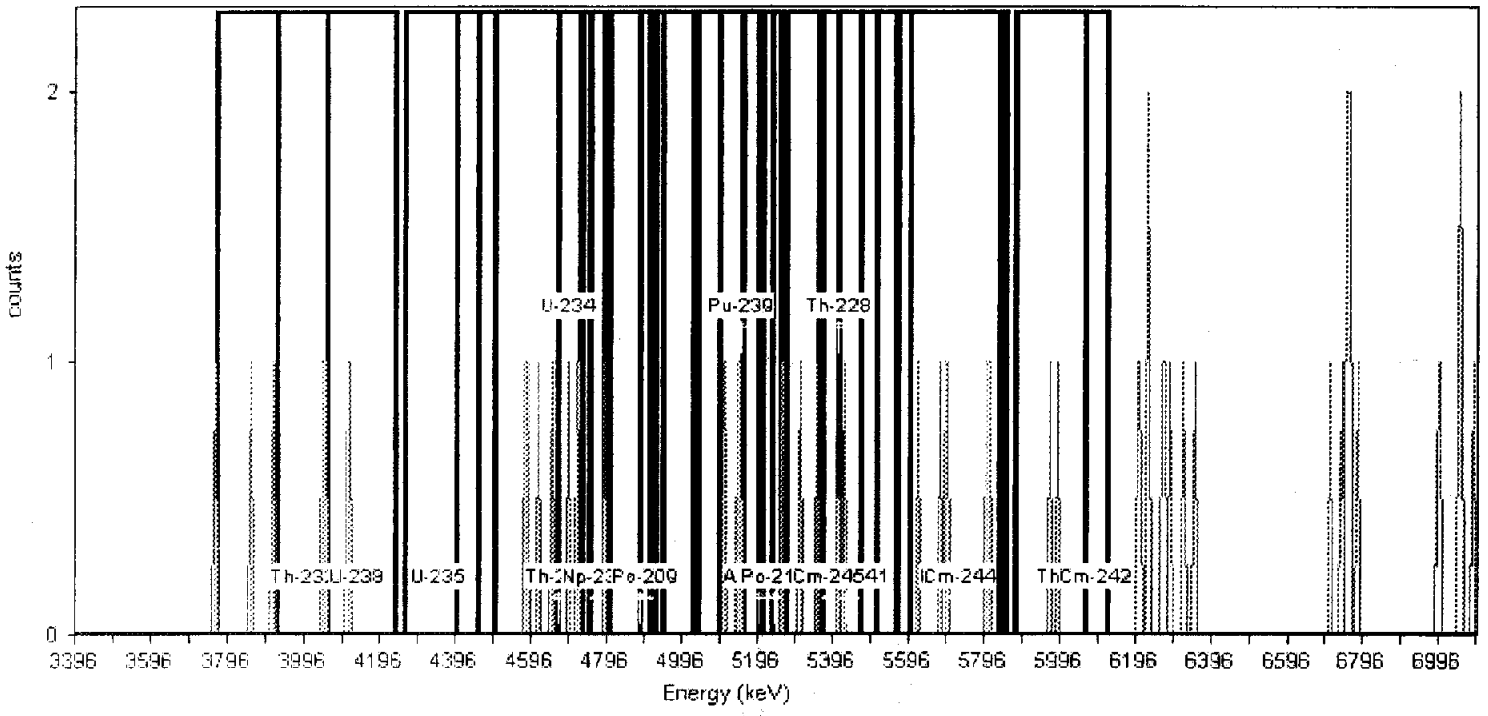
Acquisition

Detector: AV19 , SN: 41-172Q6
Acquisition Start Date: 3/24/2007 9:47:22AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute ROI Analysis, Set Name = 11/05_Background01 Nuclide Library: Background ROI Library

Total Background Counts: 52.00

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	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	6.00	6.250E-003	2.756E-003
U-234	4.70	4.50	4.80	7.00	7.292E-003	2.946E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Am-241	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	6.00	6.250E-003	2.756E-003
Cm-244	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

Analyst: 60040 7:32:11AM 3/25/2007

Sample

Sample Name: AV20 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

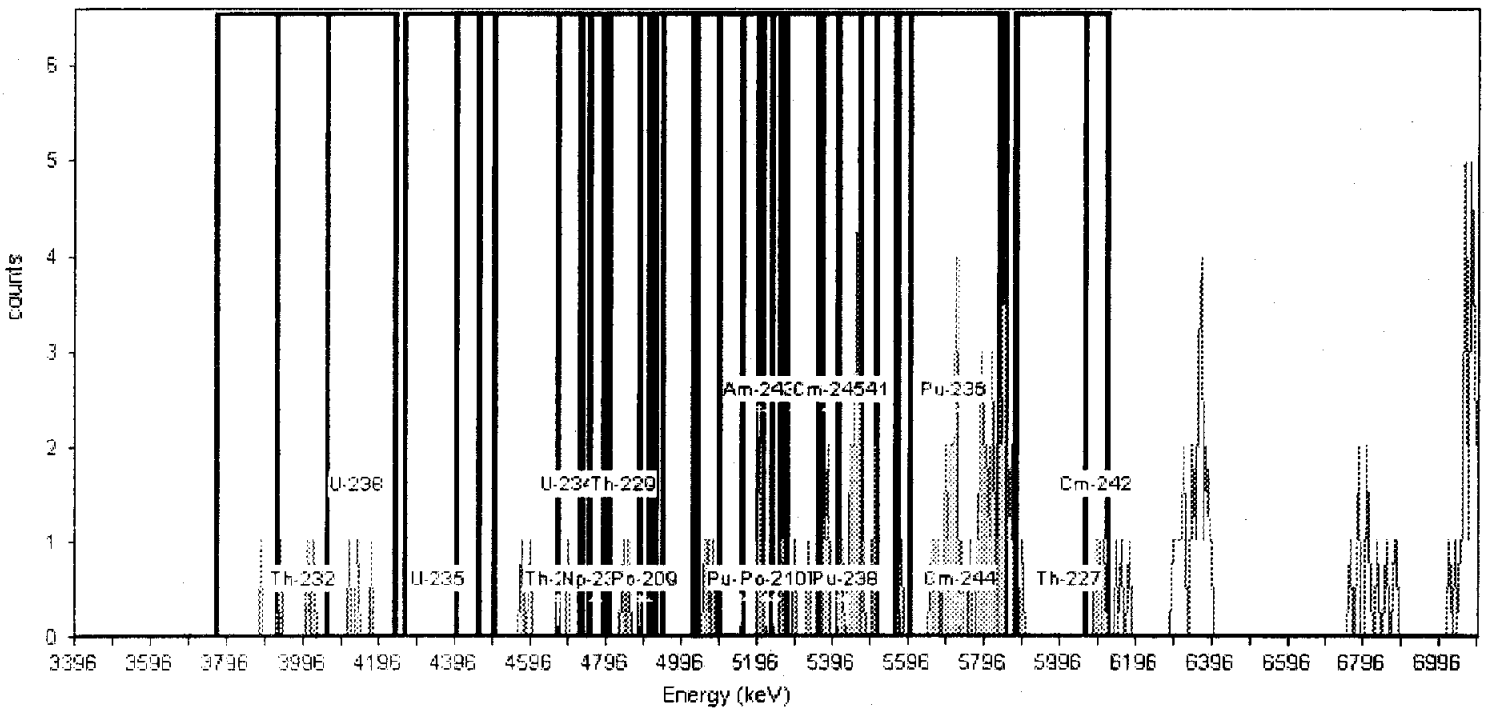
Acquisition

Detector: AV20 , SN: 41-172R2
Acquisition Start Date: 3/24/2007 9:47:23AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 140.00

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	6.00	6.250E-003	2.756E-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
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	4.88	4.67	4.93	3.00	3.125E-003	2.083E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	5.00	5.208E-003	2.552E-003
Am-243	5.20	5.03	5.28	7.00	7.292E-003	2.946E-003
U-232	5.23	5.04	5.37	9.00	9.375E-003	3.294E-003
Th-228	5.41	5.16	5.47	21.00	2.187E-002	4.886E-003
Po-210	5.25	5.20	5.26	4.00	4.167E-003	2.329E-003
Pu-238	5.44	5.24	5.52	21.00	2.187E-002	4.886E-003
Am-241	5.45	5.27	5.57	20.00	2.083E-002	4.774E-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	33.00	3.437E-002	6.074E-003
Cm-244	5.73	5.60	5.86	39.00	4.062E-002	6.588E-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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:32:15AM 3/25/2007

Sample

Sample Name: AV21 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

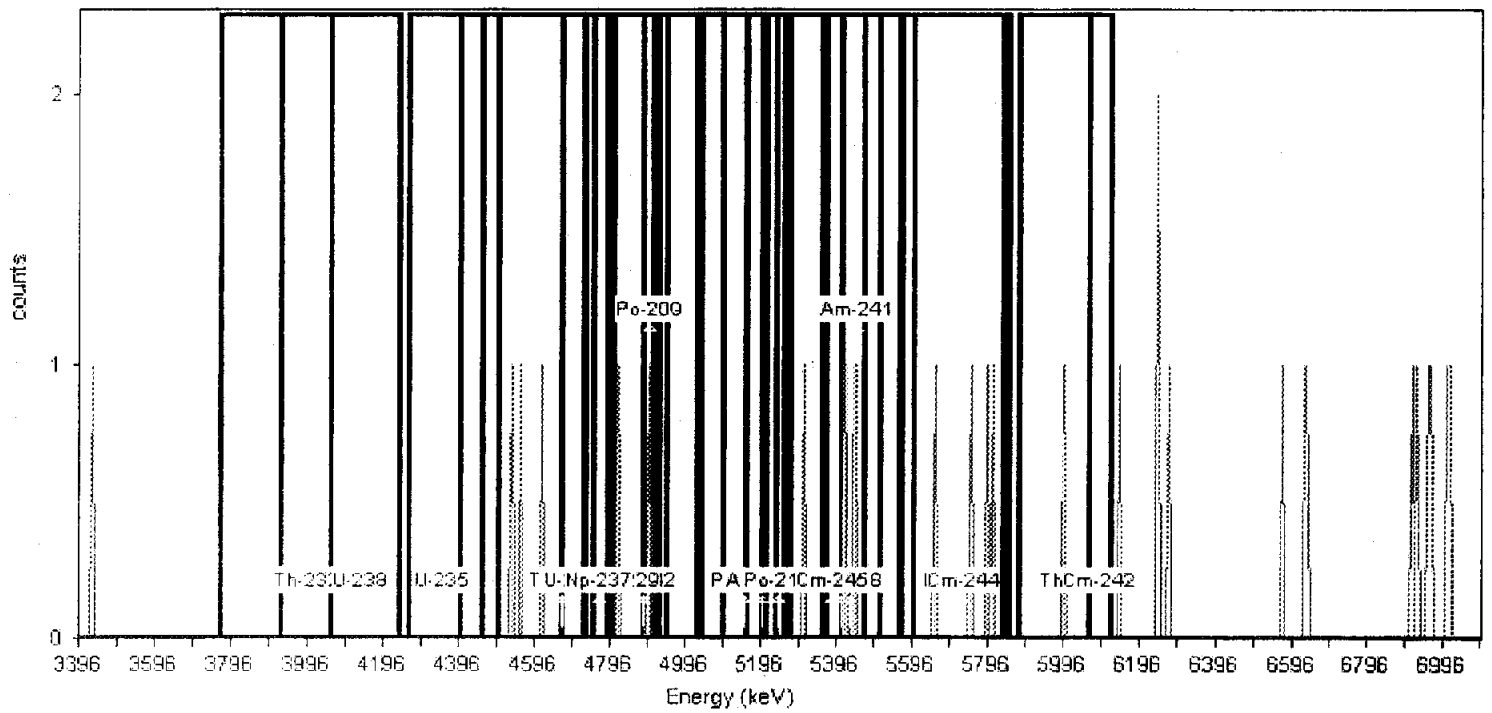
Acquisition

Detector: AV21 , SN: 41-172C7
Acquisition Start Date: 3/24/2007 9:47:25AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 28.00

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	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	5.23	5.04	5.37	1.00	1.042E-003	1.473E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	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	4.00	4.167E-003	2.329E-003
Cm-244	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

ST SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040 7:32:18AM 3/25/2007

Sample

Sample Name: AV22 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

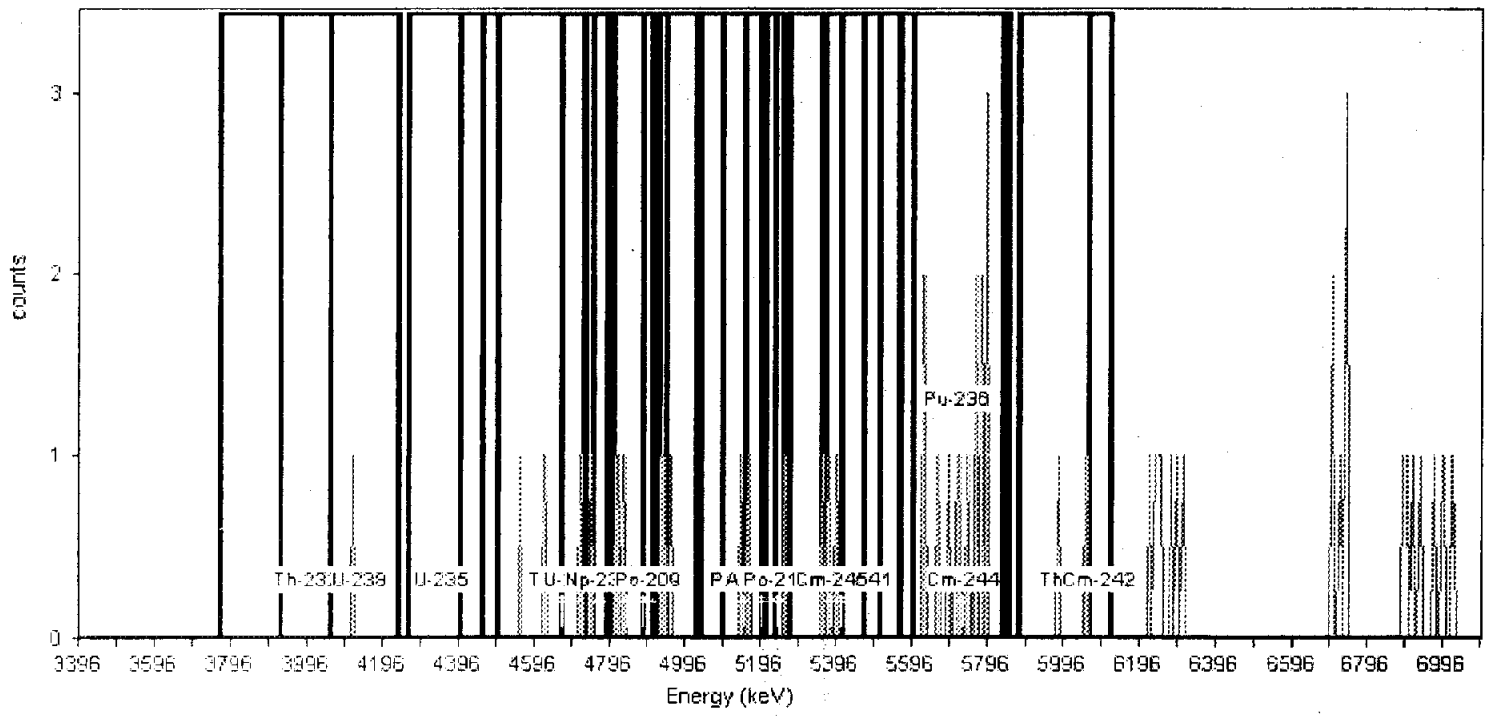
Acquisition

Detector: AV22 , SN: 41-172Q5
Acquisition Start Date: 3/24/2007 9:47:26AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 54.00

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
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	5.45	5.27	5.57	3.00	3.125E-003	2.083E-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	14.00	1.458E-002	4.034E-003
Cm-244	5.73	5.60	5.86	14.00	1.458E-002	4.034E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:32:21AM 3/25/2007

Sample

Sample Name: AV23 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

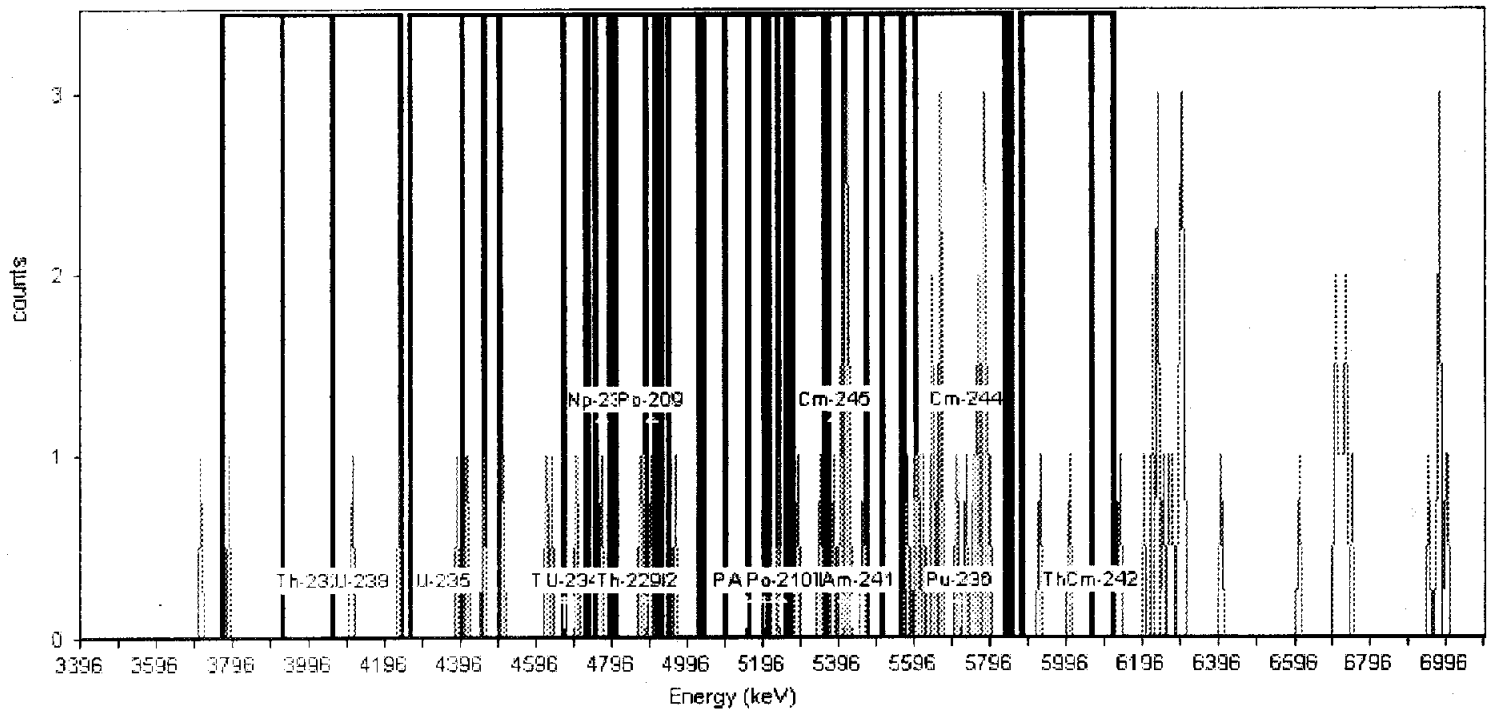
Acquisition

Detector: AV23 , SN: 41-172R4
Acquisition Start Date: 3/24/2007 9:47:28AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 82.00

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	3.00	3.125E-003	2.083E-003
Th-230	4.67	4.40	4.73	6.00	6.250E-003	2.756E-003
U-234	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Pu-242	4.88	4.67	4.93	5.00	5.208E-003	2.552E-003
Th-229	4.84	4.72	5.10	5.00	5.208E-003	2.552E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	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
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	11.00	1.146E-002	3.608E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	11.00	1.146E-002	3.608E-003
Am-241	5.45	5.27	5.57	10.00	1.042E-002	3.455E-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	21.00	2.187E-002	4.886E-003
Cm-244	5.73	5.60	5.86	20.00	2.083E-002	4.774E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:32:24AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV24
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

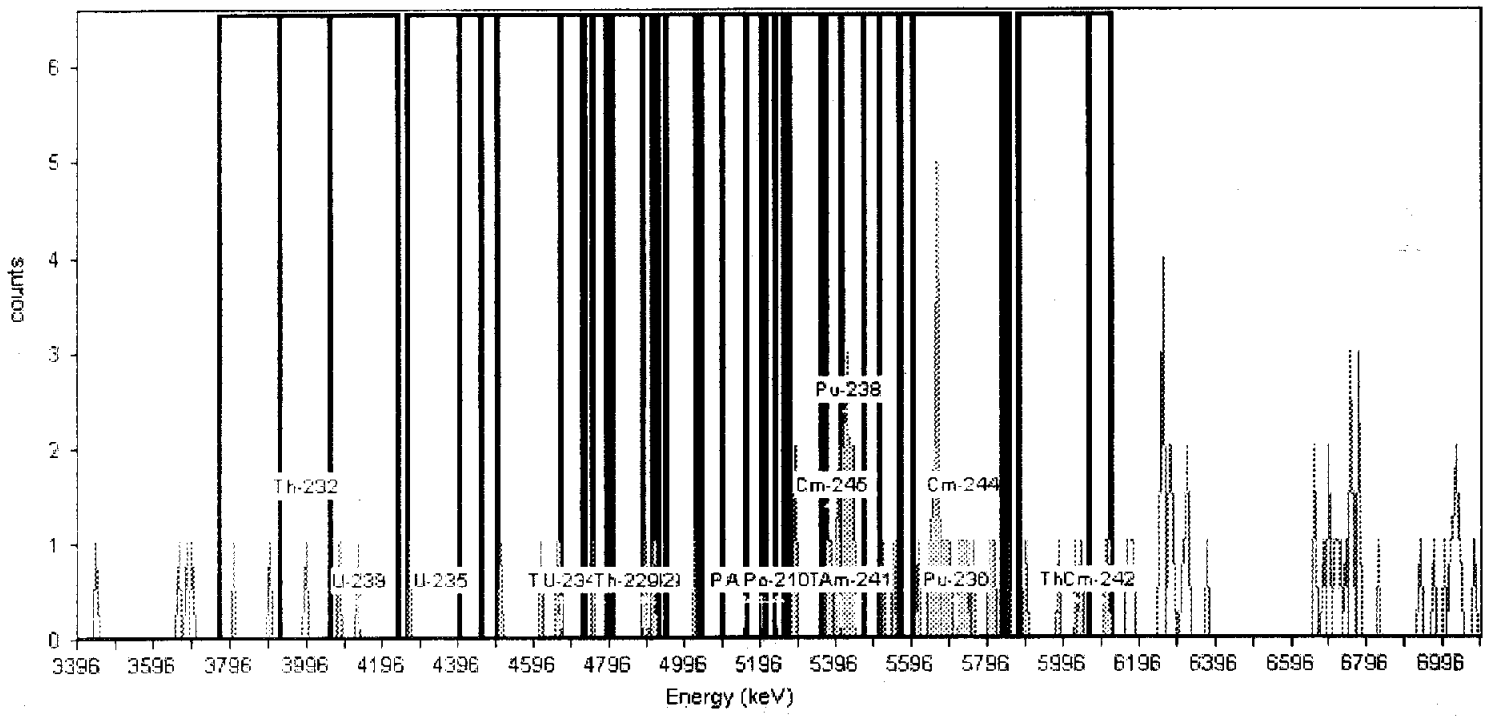
Acquisition

Detector: AV24 , SN: 41-172R5
Acquisition Start Date: 3/24/2007 9:47:30AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute 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)
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	2.00	2.083E-003	1.804E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	5.23	5.04	5.37	2.00	2.083E-003	1.804E-003
Th-228	5.41	5.16	5.47	16.00	1.667E-002	4.295E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	16.00	1.667E-002	4.295E-003
Am-241	5.45	5.27	5.57	18.00	1.875E-002	4.541E-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	22.00	2.292E-002	4.996E-003
Cm-244	5.73	5.60	5.86	23.00	2.396E-002	5.103E-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	2.00	2.083E-003	1.804E-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	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
U-234	4.70	4.50	4.80	4.00	4.167E-003	2.329E-003
Pu-242	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

STL SEVERN TRENT STL

Alpha Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:32:27AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV45
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

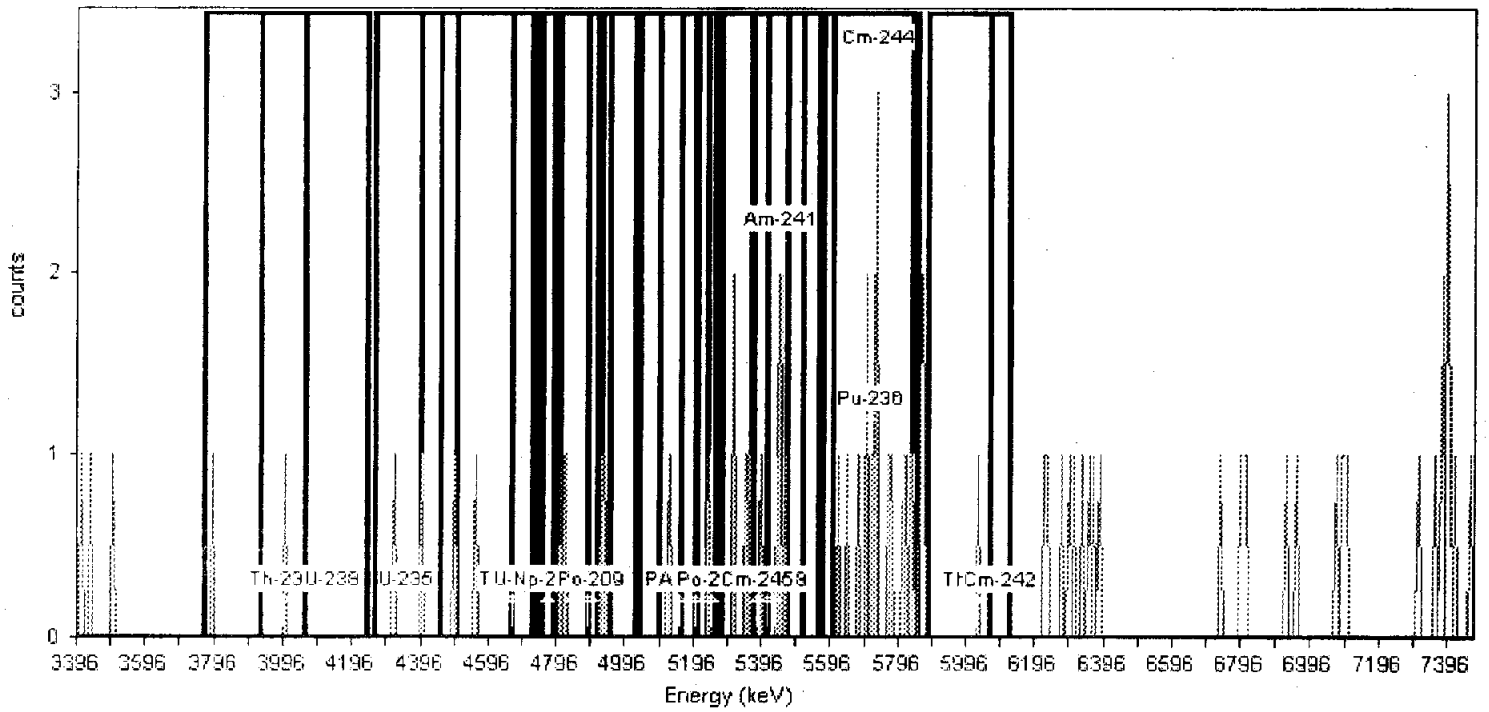
Acquisition

Detector: AV45 , SN: AV45
Acquisition Start Date: 3/24/2007 9:47:31AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute 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	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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	10.00	1.042E-002	3.455E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	10.00	1.042E-002	3.455E-003
Am-241	5.45	5.27	5.57	9.00	9.375E-003	3.294E-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	16.00	1.667E-002	4.295E-003
Cm-244	5.73	5.60	5.86	16.00	1.667E-002	4.295E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:32:31AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV46 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

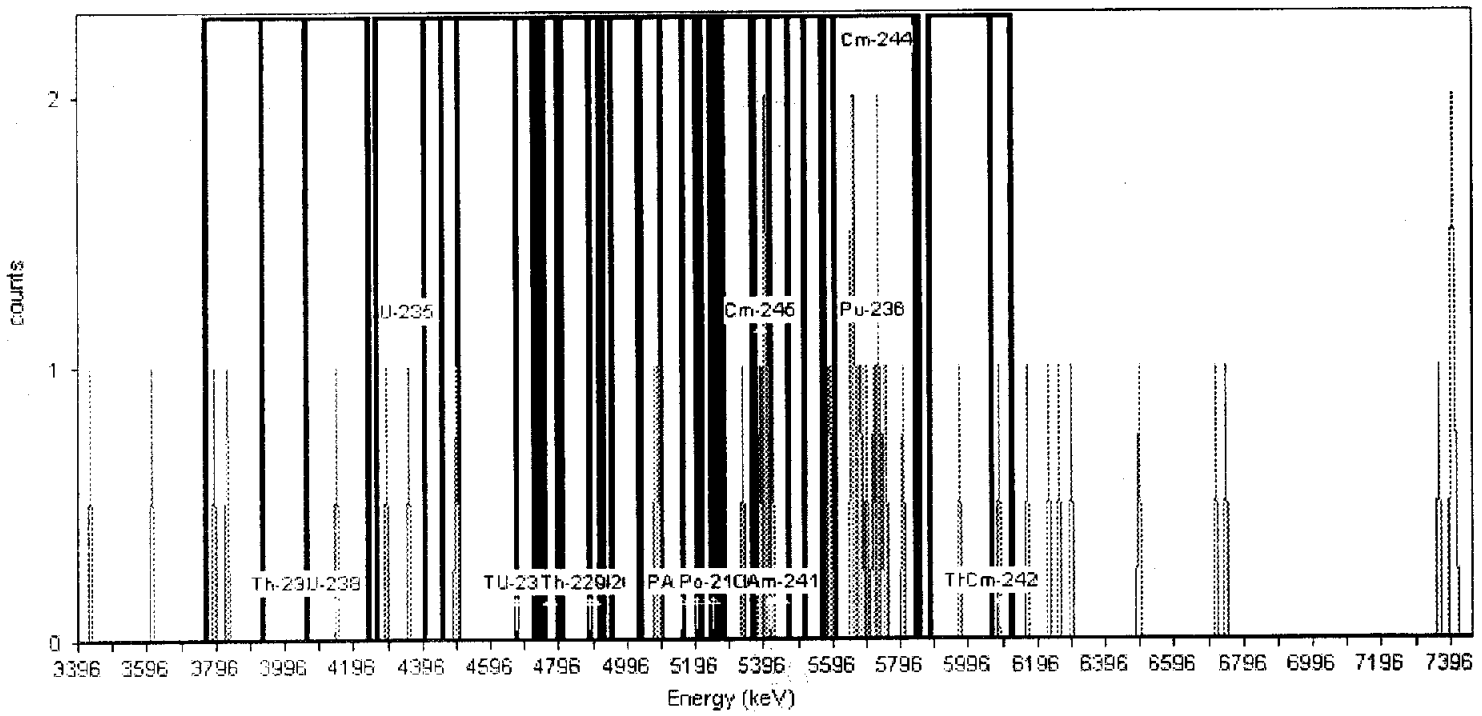
Acquisition

Detector: AV46 , SN: AV46
Acquisition Start Date: 3/24/2007 9:47:32AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 44.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	6.00	6.250E-003	2.756E-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	14.00	1.458E-002	4.034E-003
Cm-244	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
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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:32:34AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV47
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

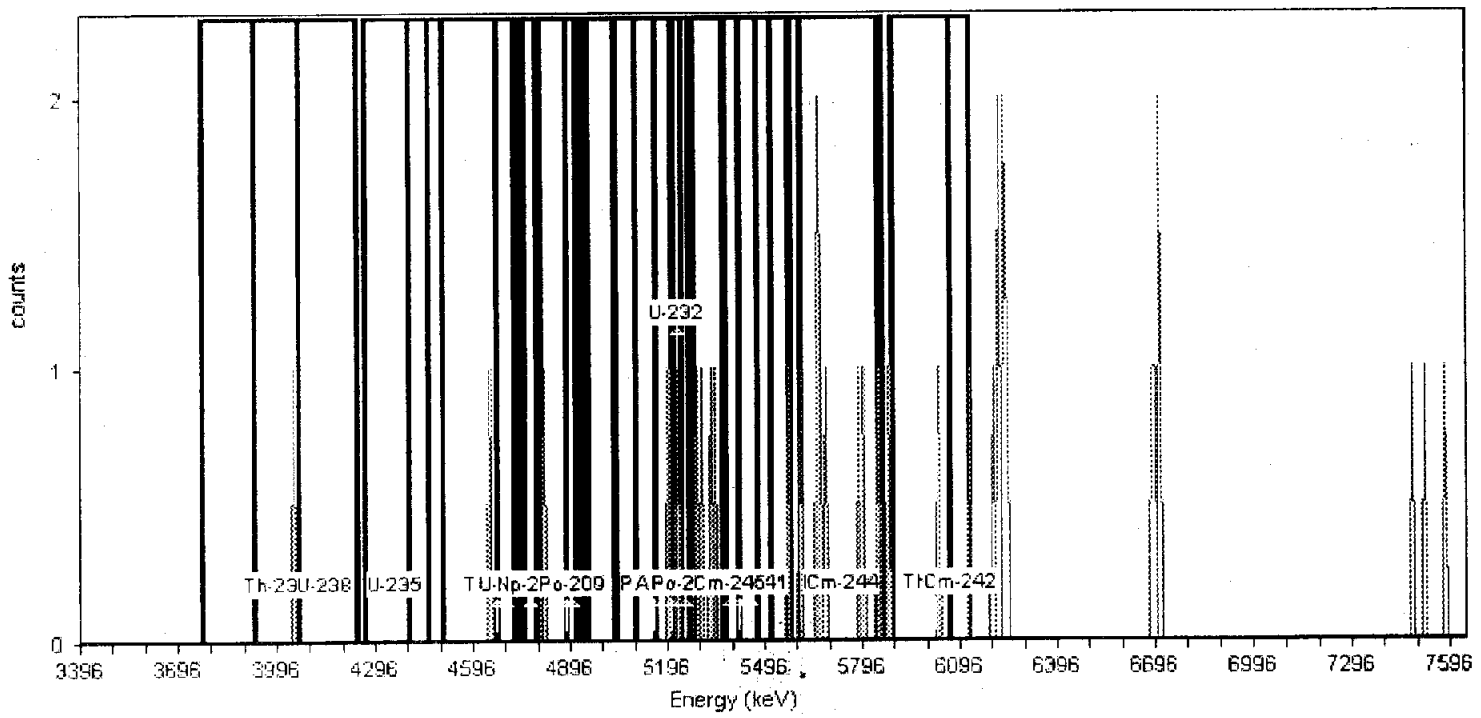
Acquisition

Detector: AV47 , SN: AV47
Acquisition Start Date: 3/24/2007 9:47:34AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute ROI Analysis, Set Name = 11/05_Background
Nuclide Library: Background ROI Library
Total Background Counts: 37.00

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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	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	9.00	9.375E-003	3.294E-003
Cm-244	5.73	5.60	5.86	9.00	9.375E-003	3.294E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:32:37AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV48
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

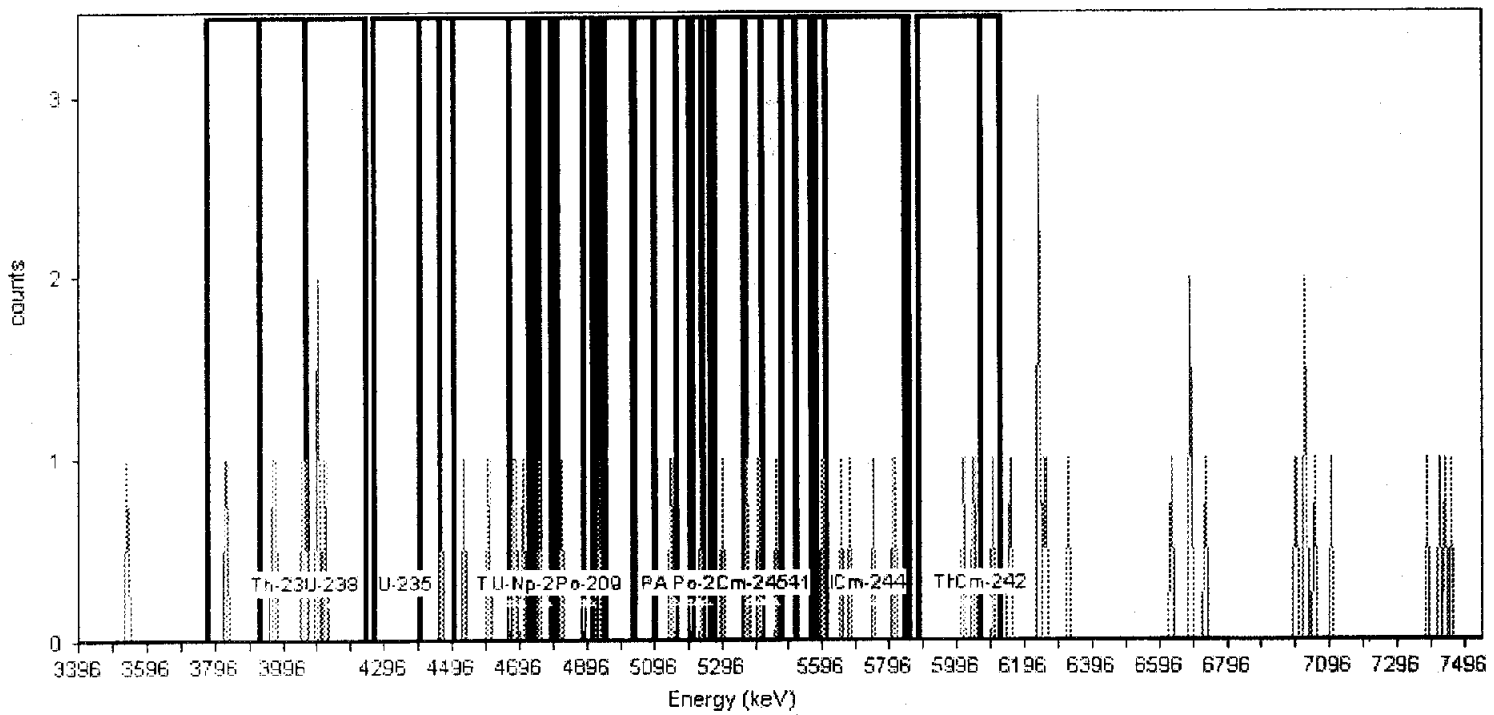
Acquisition

Detector: AV48 , SN: AV48
Acquisition Start Date: 3/24/2007 9:47:35AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 55.00

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	7.00	7.292E-003	2.946E-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	6.00	6.250E-003	2.756E-003
U-234	4.70	4.50	4.80	6.00	6.250E-003	2.756E-003
Pu-242	4.88	4.67	4.93	6.00	6.250E-003	2.756E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	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	6.00	6.250E-003	2.756E-003
Cm-244	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	1.00	1.042E-003	1.473E-003

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:32:40AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV49 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

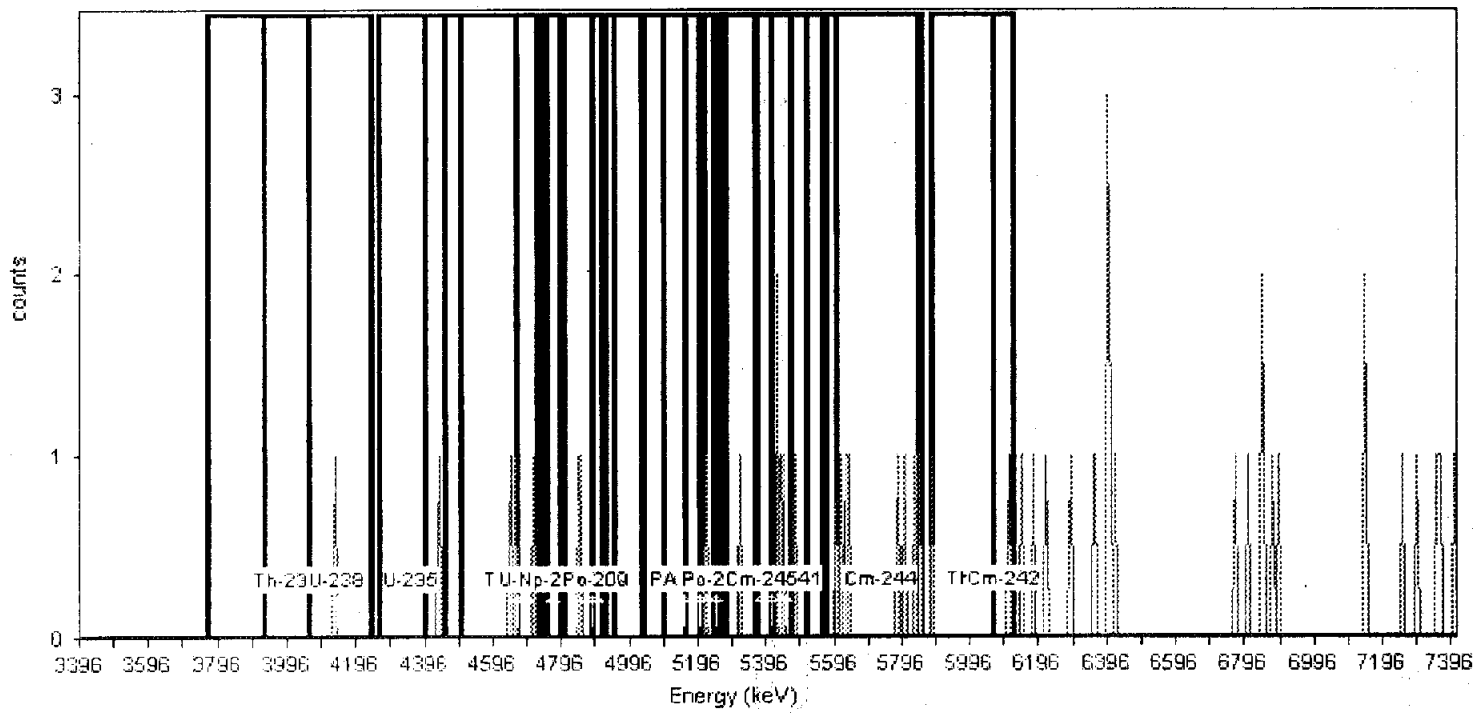
Acquisition

Detector: AV49 , SN: AV49
Acquisition Start Date: 3/24/2007 9:47:37AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

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



General Analysis

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

Total Background Counts: 46.00

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	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Am-241	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
Cm-244	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	1.00	1.042E-003	1.473E-003

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:32:43AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV50
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

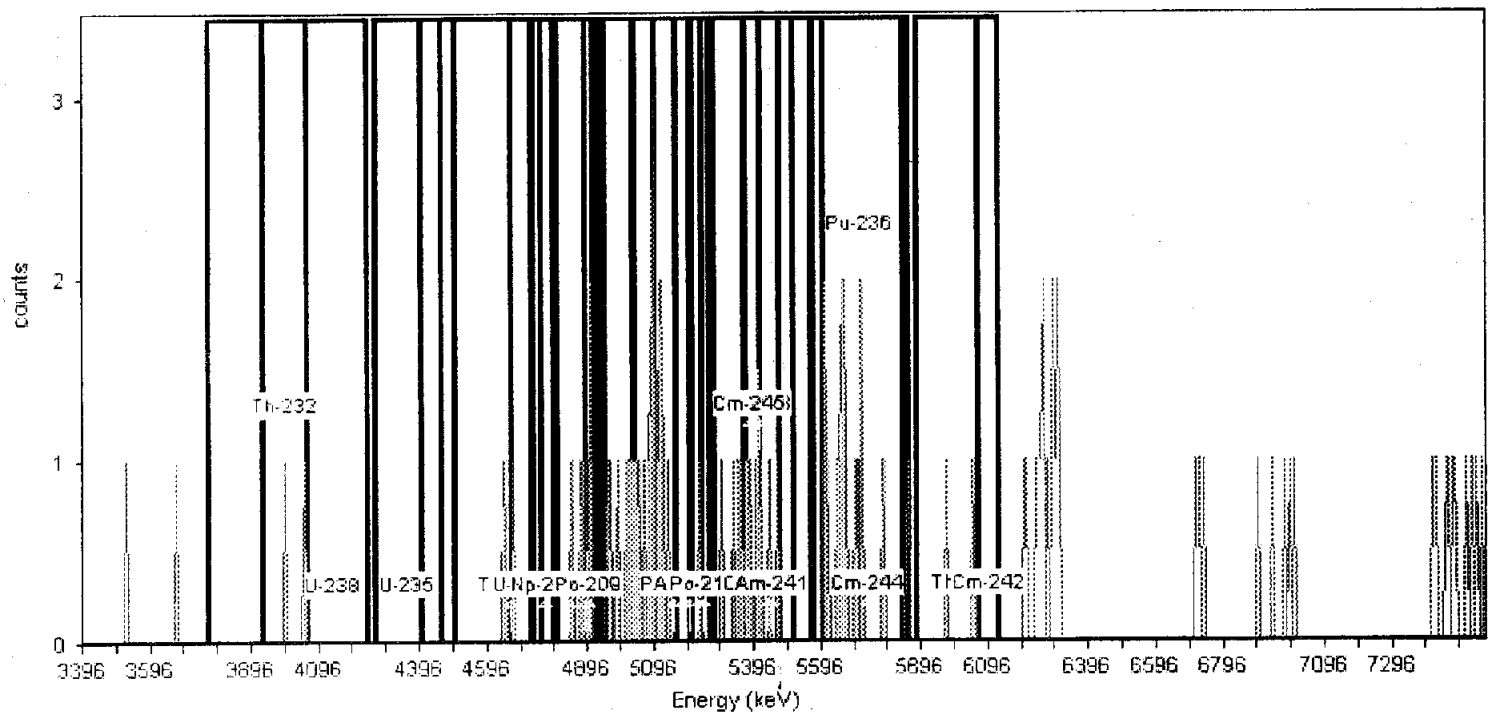
Acquisition

Detector: AV50 , SN: AV50
Acquisition Start Date: 3/24/2007 9:47:38AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 95.00

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	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
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	4.88	4.67	4.93	6.00	6.250E-003	2.756E-003
Th-229	4.84	4.72	5.10	21.00	2.187E-002	4.886E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	3.00	3.125E-003	2.083E-003
Pu-239	5.15	4.95	5.21	21.00	2.187E-002	4.886E-003
Am-243	5.20	5.03	5.28	17.00	1.771E-002	4.419E-003
U-232	5.23	5.04	5.37	21.00	2.187E-002	4.886E-003
Th-228	5.41	5.16	5.47	13.00	1.354E-002	3.898E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	12.00	1.250E-002	3.756E-003
Am-241	5.45	5.27	5.57	12.00	1.250E-002	3.756E-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	15.00	1.563E-002	4.167E-003
Cm-244	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	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 7:32:47AM 3/25/2007

Sample

Sample Name: AV51 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

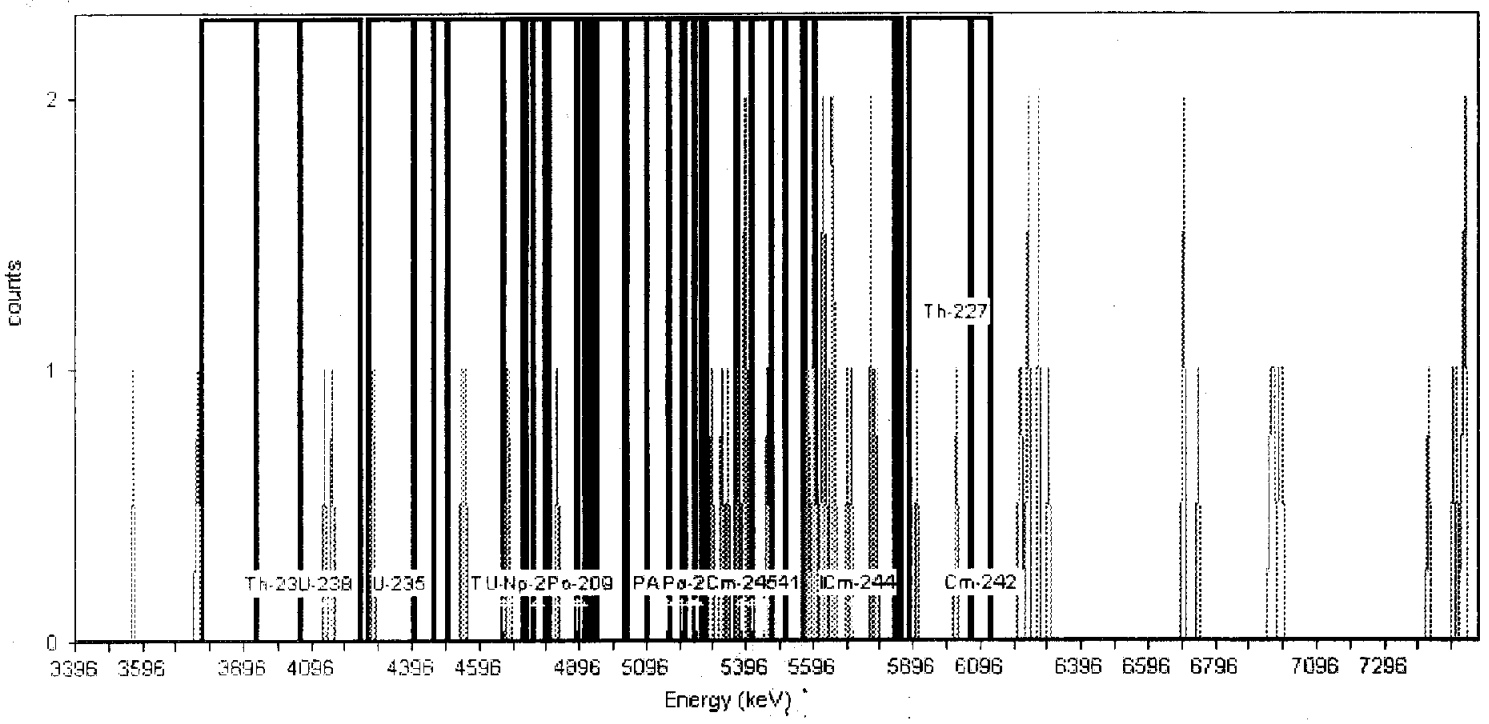
Acquisition

Detector: AV51 , SN:
Acquisition Start Date: 3/24/2007 9:47:40AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Total Background Counts: 55.00

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	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	7.00	7.292E-003	2.946E-003
Am-241	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	14.00	1.458E-002	4.034E-003
Cm-244	5.73	5.60	5.86	12.00	1.250E-002	3.756E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:32:50AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV52
Comment:

Spectrum #1 Analysis #1

Batch

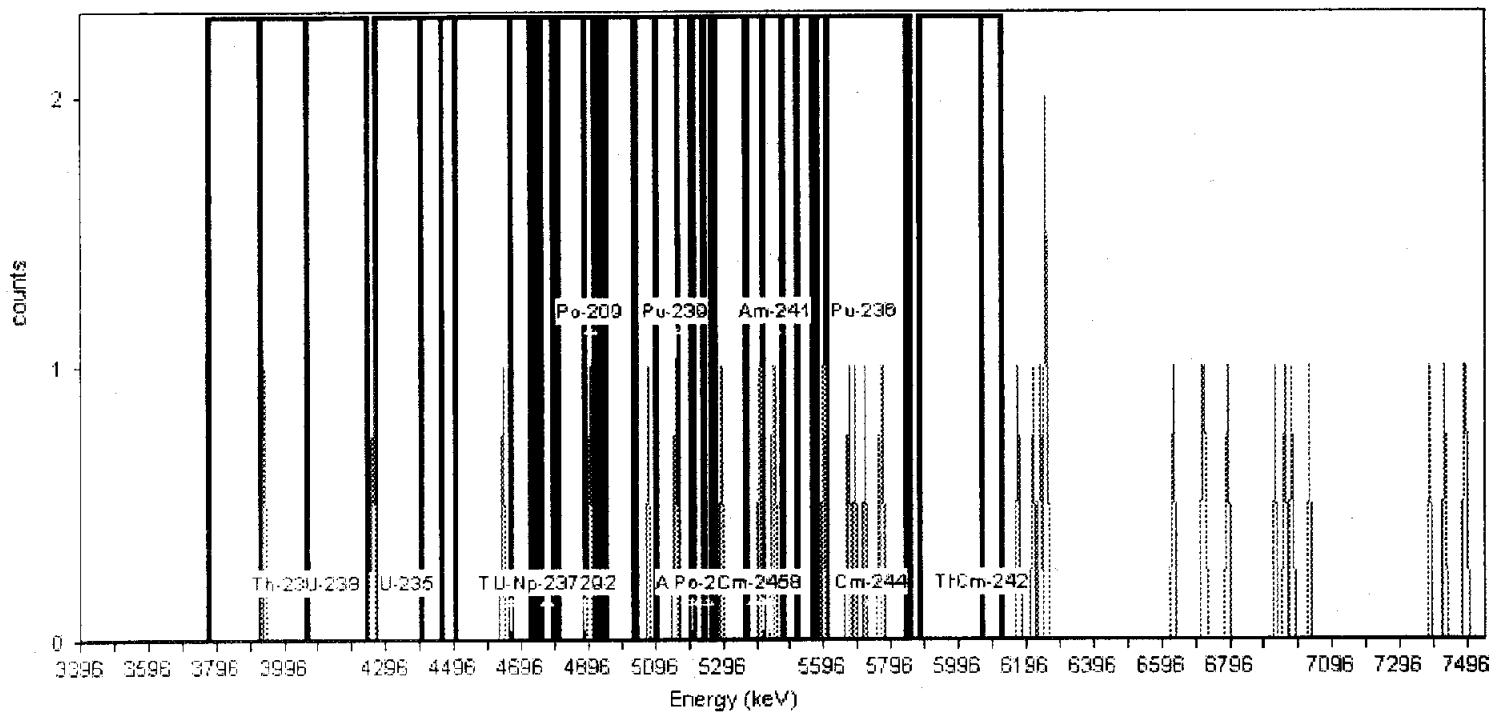
Batch Name: Mar2007
Description:

Acquisition

Detector: AV52 , SN:
Acquisition Start Date: 3/24/2007 9:47:41AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute 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	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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	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	6.00	6.250E-003	2.756E-003
Cm-244	5.73	5.60	5.86	5.00	5.208E-003	2.552E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:30:15AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV53
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

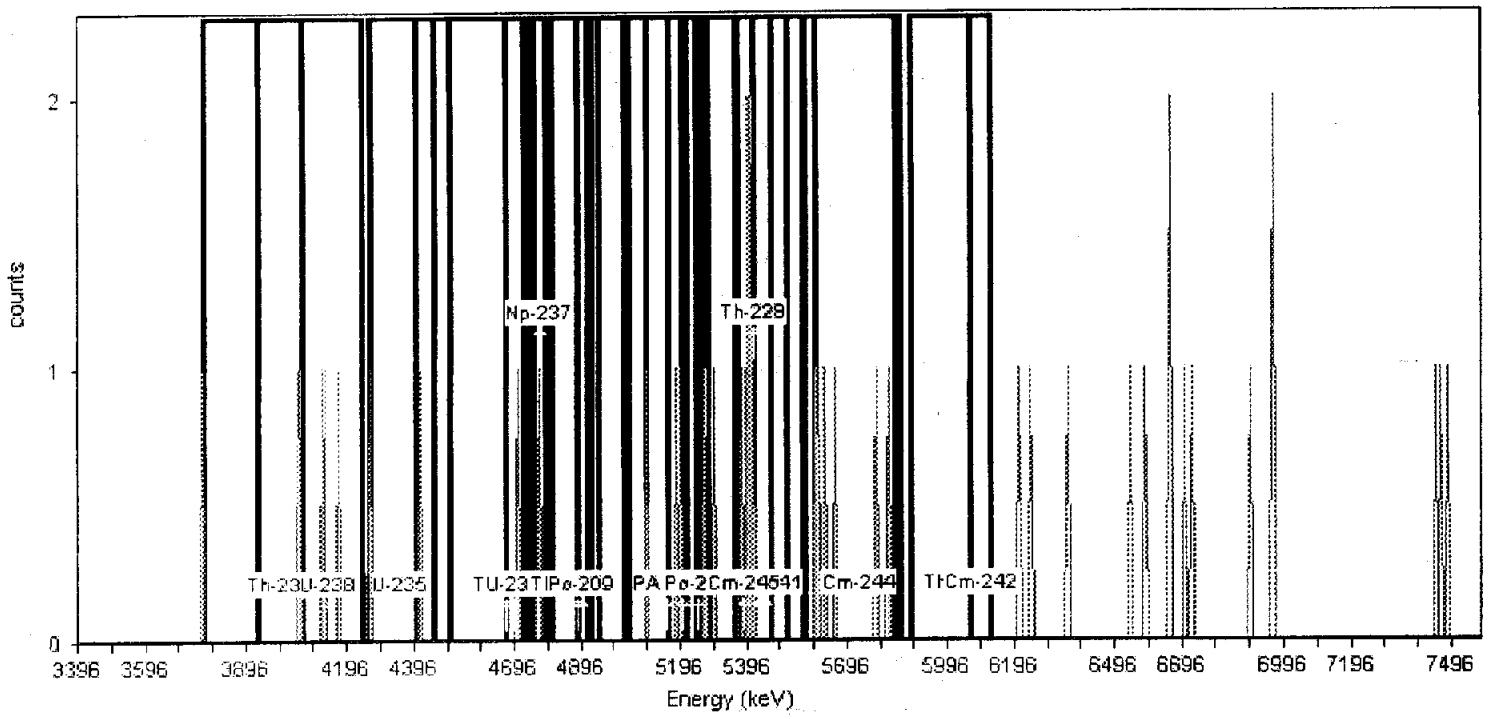
Acquisition

Detector: AV53 , SN:
Acquisition Start Date: 3/24/2007 9:47:43AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV53
Calibration Date: 2/27/2007 7:37:38PM

Energy Calibration Equation:

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

Efficiency: 27.71% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background
Nuclide Library: Background ROI Library
Total Background Counts: 41.00

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	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
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	4.00	4.167E-003	2.329E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	10.00	1.042E-002	3.455E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	8.00	8.333E-003	3.125E-003
Am-241	5.45	5.27	5.57	8.00	8.333E-003	3.125E-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	7.00	7.292E-003	2.946E-003
Cm-244	5.73	5.60	5.86	7.00	7.292E-003	2.946E-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

ST SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040 7:30:22AM 3/25/2007

Sample

Sample Name: AV54 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

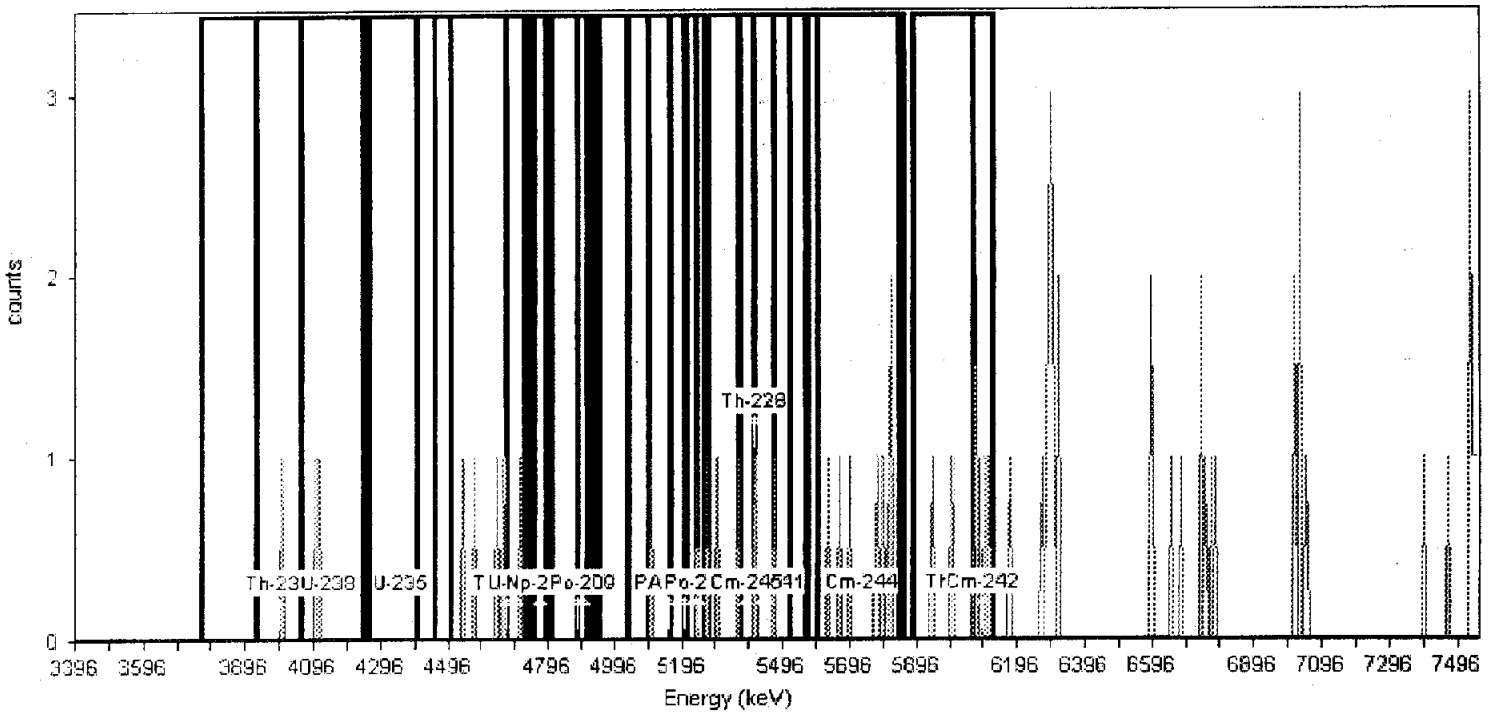
Acquisition

Detector: AV54 , SN:
Acquisition Start Date: 3/24/2007 9:47:44AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV54
Calibration Date: 2/27/2007 7:37:44PM

Energy Calibration Equation:

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

Efficiency: 26.93% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 64.00

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	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	5.00	5.208E-003	2.552E-003
U-234	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	6.00	6.250E-003	2.756E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	5.00	5.208E-003	2.552E-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	9.00	9.375E-003	3.294E-003
Cm-244	5.73	5.60	5.86	9.00	9.375E-003	3.294E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:30:25AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV55
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

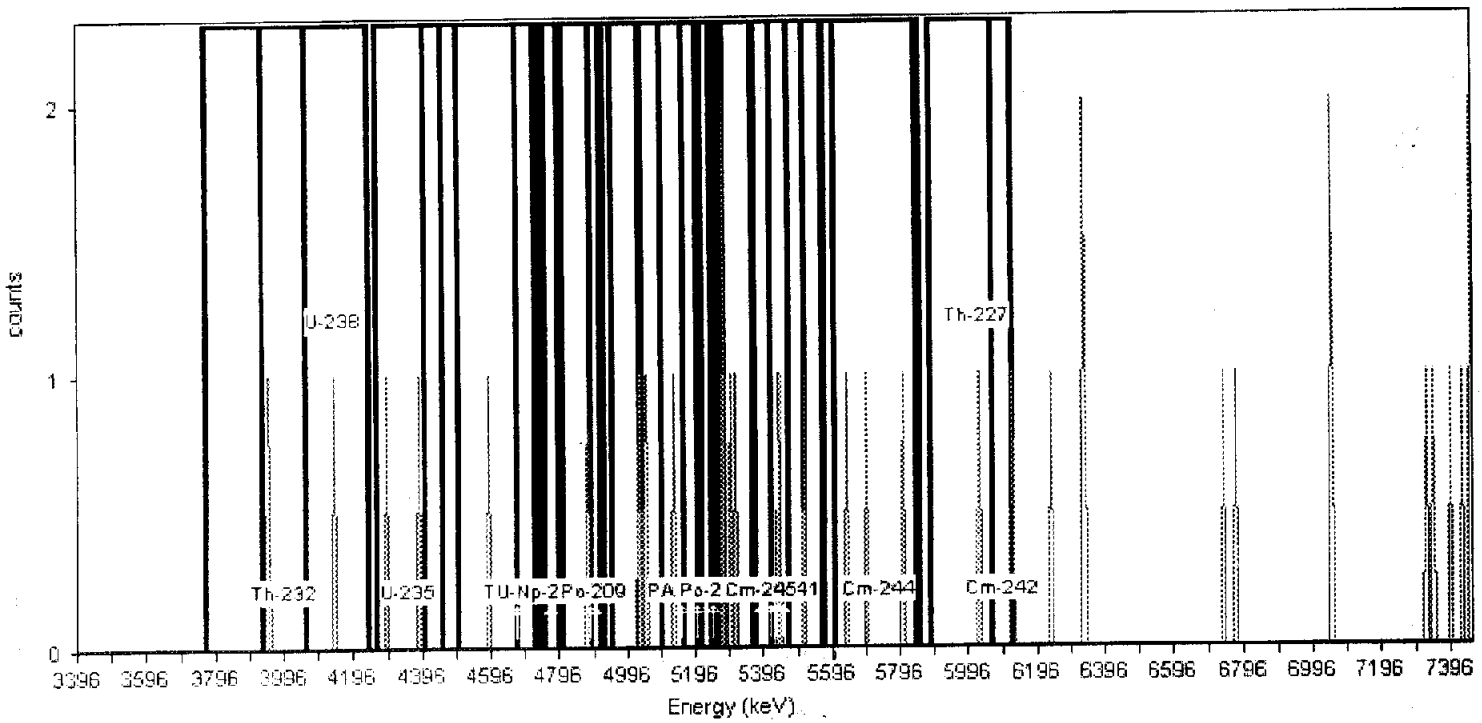
Acquisition

Detector: AV55 , SN:
Acquisition Start Date: 3/24/2007 9:47:45AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: FEB2007_AV55
Calibration Date: 2/23/2007 6:26:07AM

Energy Calibration Equation:

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

Efficiency: 26.98% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background
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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	6.00	6.250E-003	2.756E-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
Cm-244	5.73	5.60	5.86	3.00	3.125E-003	2.083E-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
7:30:28AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV56
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

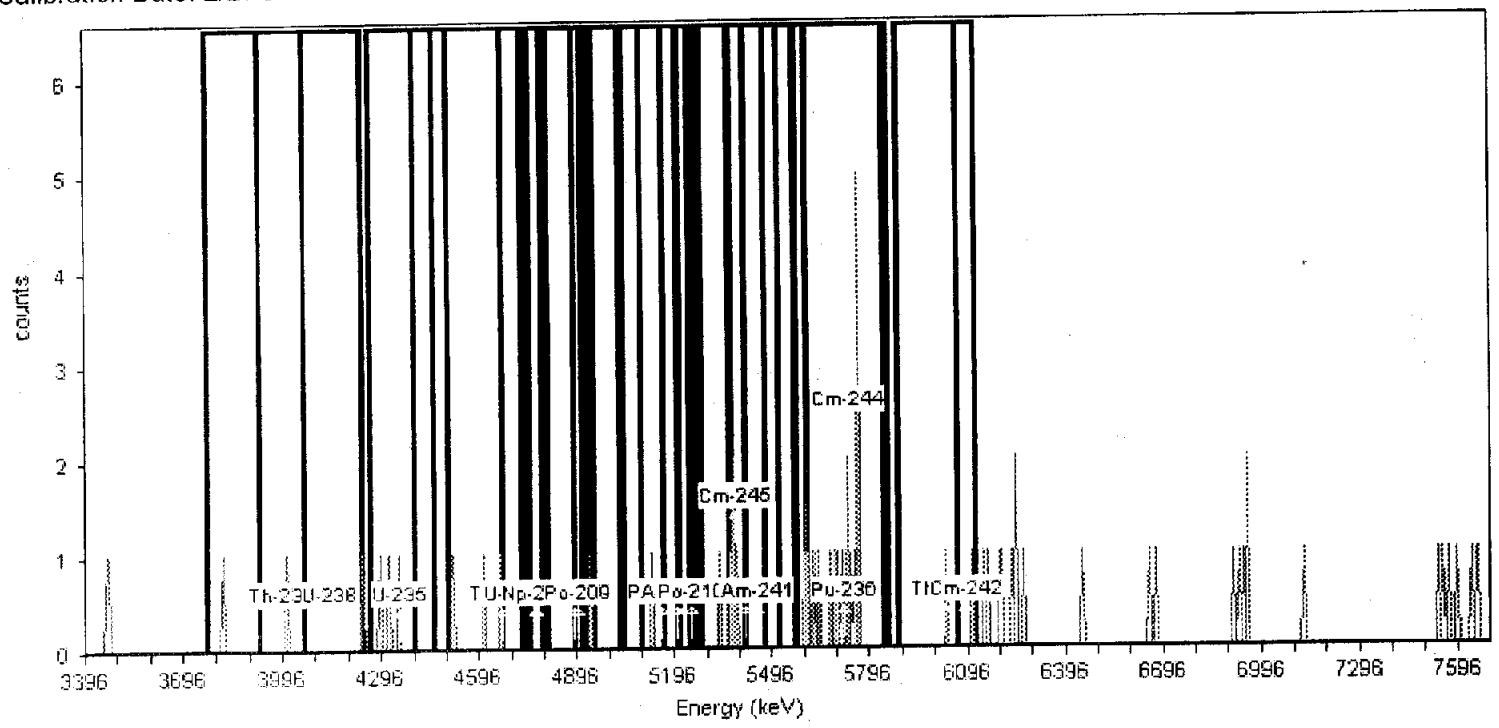
Acquisition

Detector: AV56 , SN:
Acquisition Start Date: 3/24/2007 9:47:47AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV56
Calibration Date: 2/27/2007 4:28:15PM

Energy Calibration Equation:

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

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



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 62.00

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	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	3.00	3.125E-003	2.083E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	6.00	6.250E-003	2.756E-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	17.00	1.771E-002	4.419E-003
Cm-244	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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:30:31AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV57
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

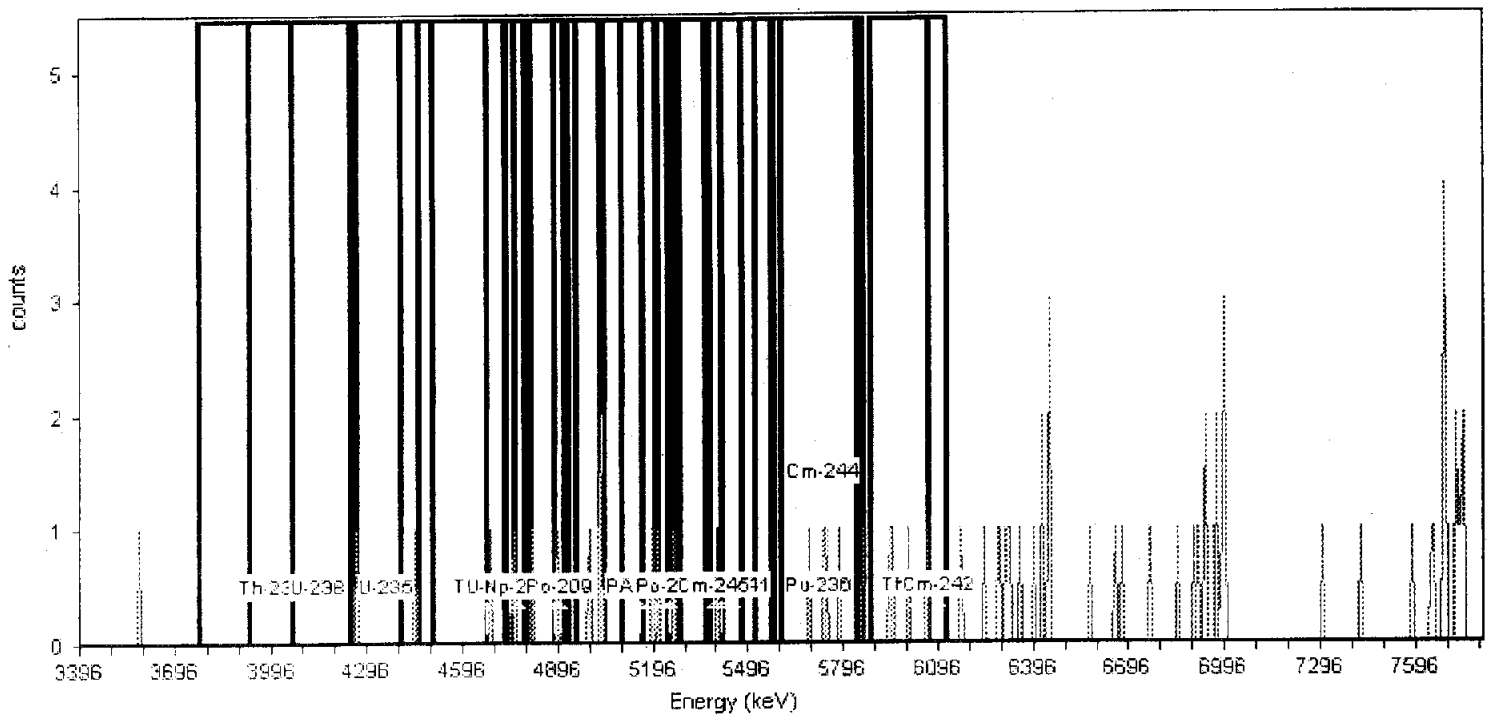
Acquisition

Detector: AV57 , SN:
Acquisition Start Date: 3/24/2007 9:47:49AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV57
Calibration Date: 2/23/2007 11:03:00AM

Energy Calibration Equation:

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

Efficiency: 27.03% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background
Nuclide Library: Background ROI Library
Total Background Counts: 70.00

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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	4.88	4.67	4.93	4.00	4.167E-003	2.329E-003
Th-229	4.84	4.72	5.10	6.00	6.250E-003	2.756E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	6.00	6.250E-003	2.756E-003
Am-243	5.20	5.03	5.28	6.00	6.250E-003	2.756E-003
U-232	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
Po-210	5.25	5.20	5.26	2.00	2.083E-003	1.804E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	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	4.00	4.167E-003	2.329E-003
Cm-244	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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:30:18AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV58
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

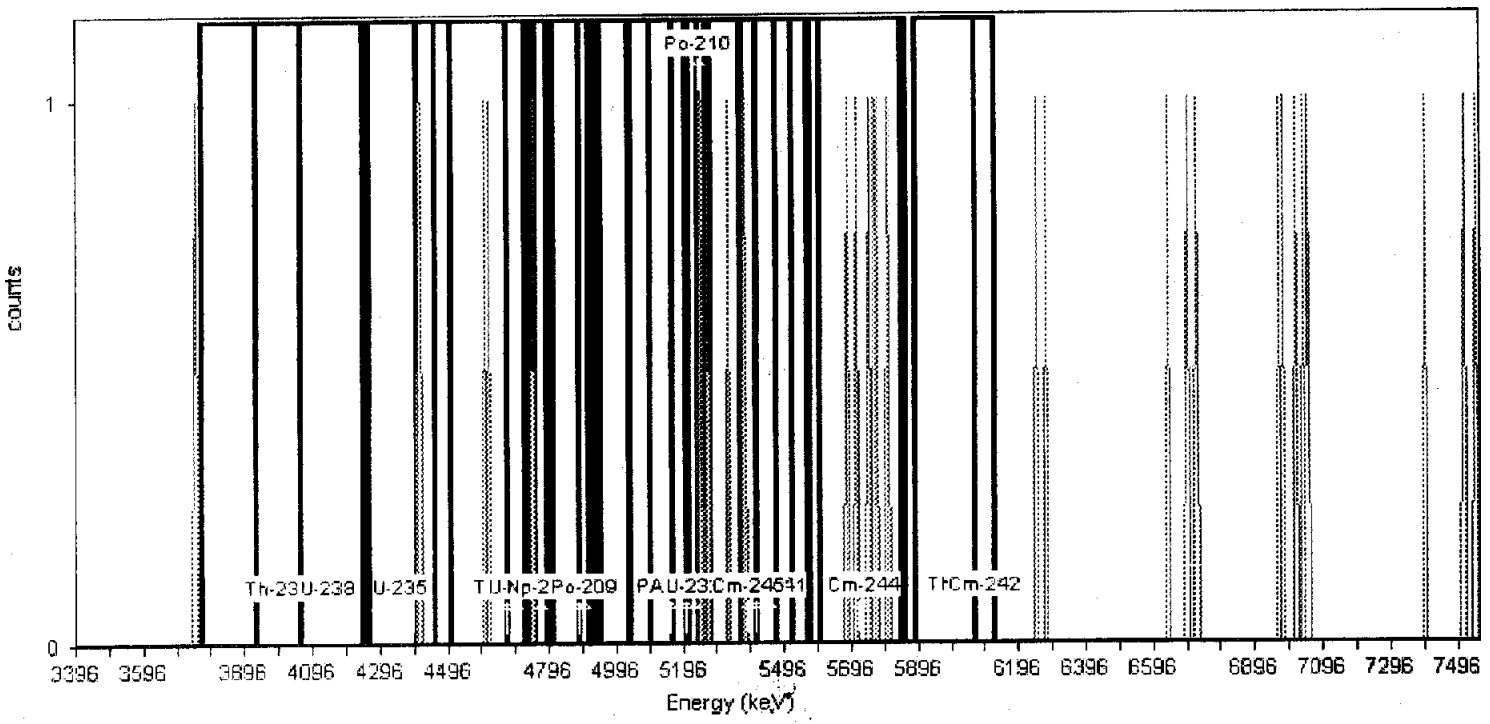
Acquisition

Detector: AV58 , SN:
Acquisition Start Date: 3/24/2007 9:47:51AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: FEB2007_AV58
Calibration Date: 2/28/2007 7:03:13AM

Energy Calibration Equation:

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

Efficiency: 27.46% +/- 0.28% TPU(2 sigma)



General Analysis

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

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	2.00	2.083E-003	1.804E-003
Th-230	4.67	4.40	4.73	4.00	4.167E-003	2.329E-003
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	5.45	5.27	5.57	3.00	3.125E-003	2.083E-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	6.00	6.250E-003	2.756E-003
Cm-244	5.73	5.60	5.86	6.00	6.250E-003	2.756E-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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:32:53AM 3/25/2007

Sample

Sample Name: AV59 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

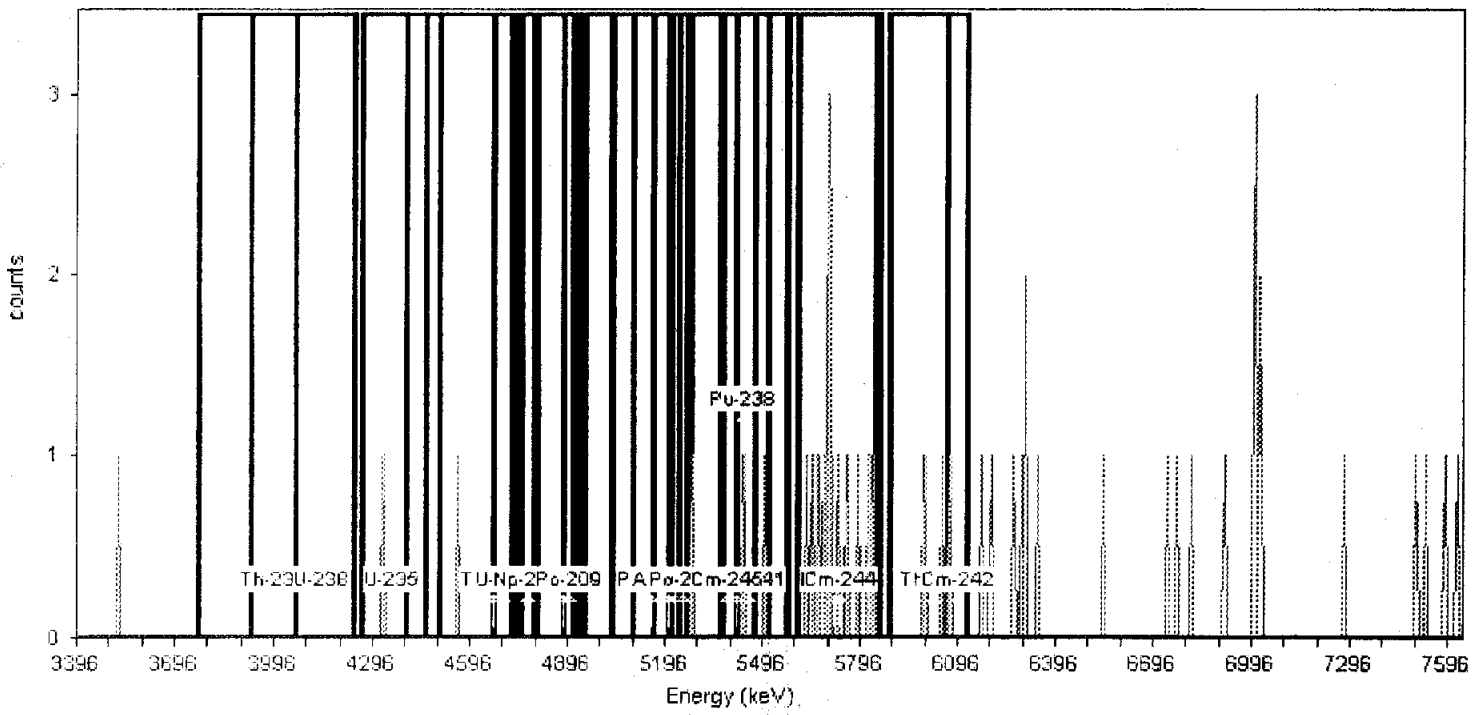
Acquisition

Detector: AV59 , SN:
Acquisition Start Date: 3/24/2007 9:47:52AM
Live Time: 960.00 min.
Real Time: 960.24 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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: Absolute 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	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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Am-241	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	17.00	1.771E-002	4.419E-003
Cm-244	5.73	5.60	5.86	17.00	1.771E-002	4.419E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:30:35AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV60
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

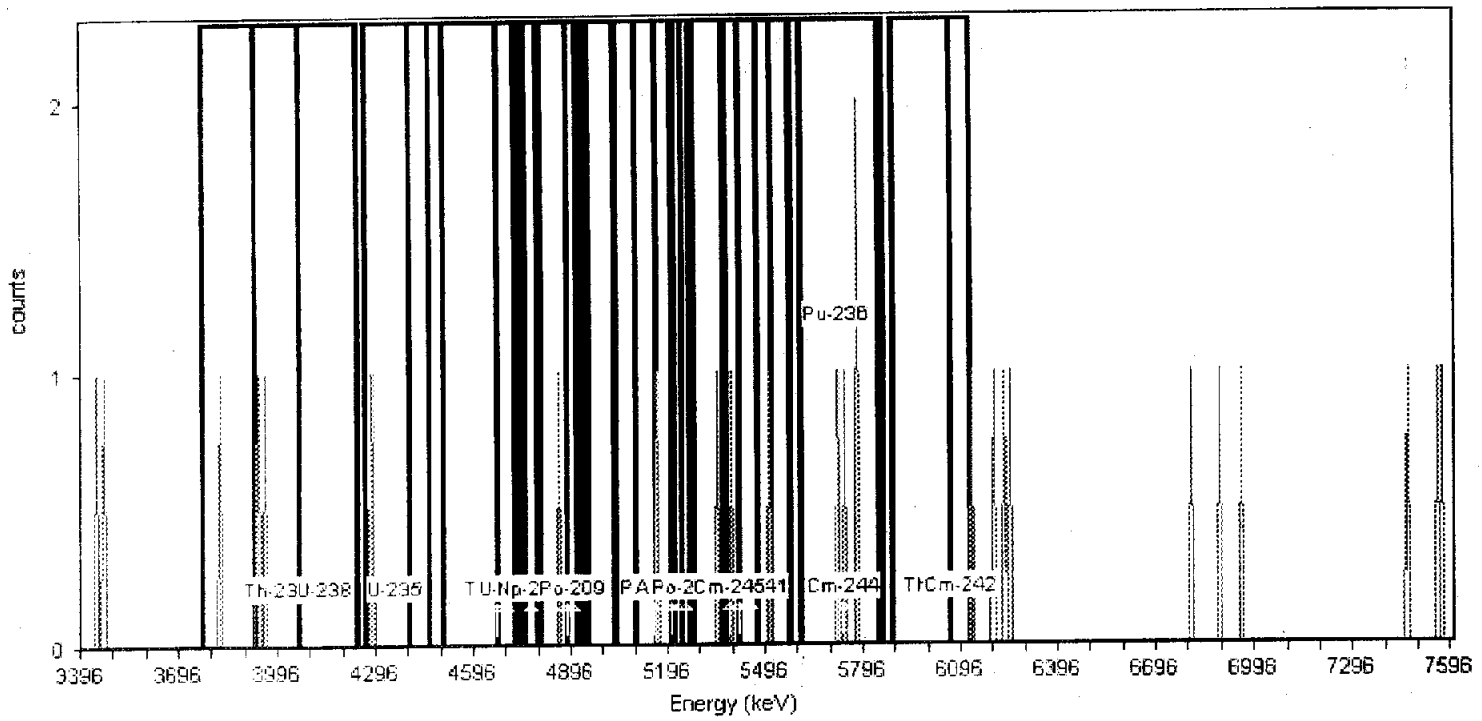
Acquisition

Detector: AV60 , SN:
Acquisition Start Date: 3/24/2007 9:47:53AM
Live Time: 960.00 min.
Real Time: 960.24 min.
Calibration Name: Feb2007_AV60
Calibration Date: 2/22/2007 6:30:34PM

Energy Calibration Equation:

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

Efficiency: 27.51% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundRoi
Nuclide Library: Background ROI Library
Total Background Counts: 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	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	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Am-241	5.45	5.27	5.57	3.00	3.125E-003	2.083E-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
Cm-244	5.73	5.60	5.86	4.00	4.167E-003	2.329E-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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:30:48AM 3/25/2007

Sample

Sample Name: AV63 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

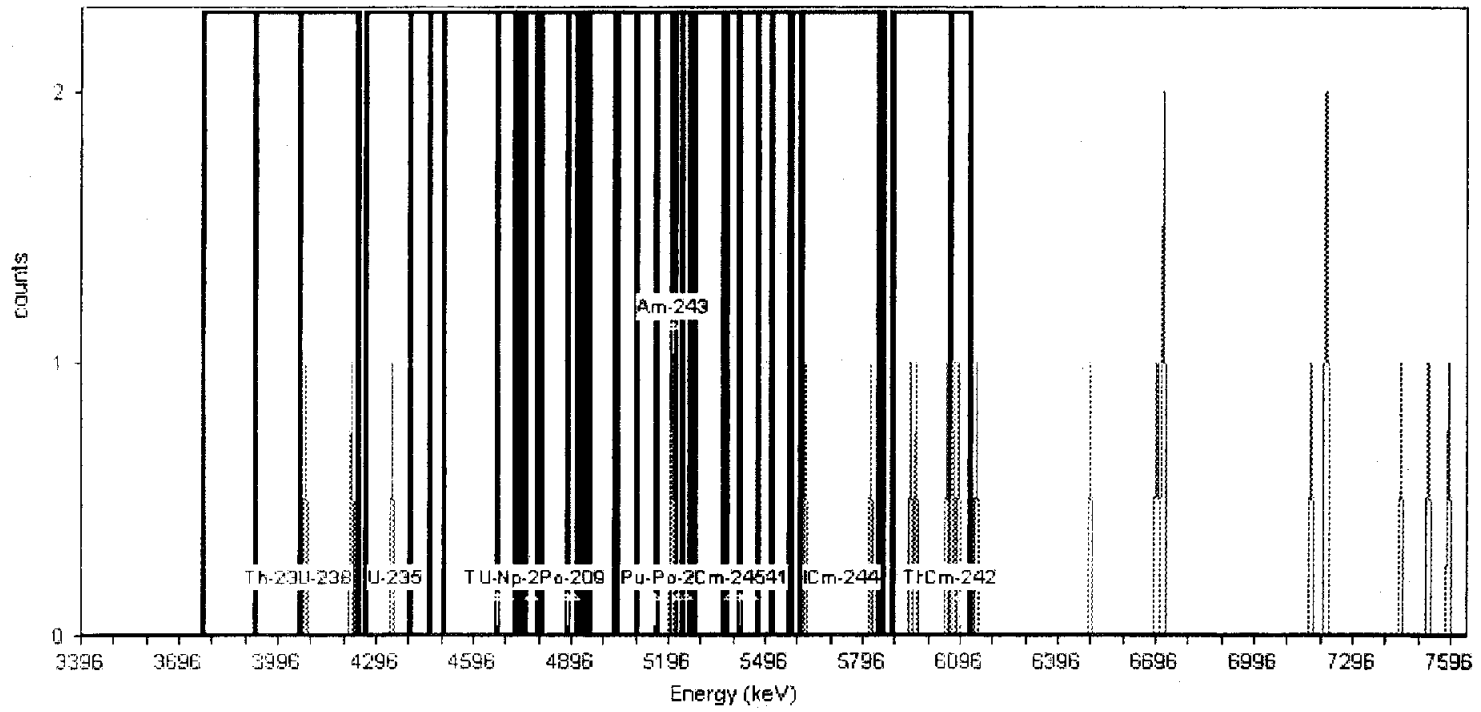
Acquisition

Detector: AV63 , SN:
Acquisition Start Date: 3/24/2007 9:47:55AM
Live Time: 960.00 min.
Real Time: 960.24 min.
Calibration Name: Feb2007_AV69
Calibration Date: 2/28/2007 2:41:51PM

Energy Calibration Equation:

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

Efficiency: 27.90% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background01 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	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	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	5.73	5.60	5.86	2.00	2.083E-003	1.804E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:30:54AM 3/25/2007

Sample

Sample Name: AV64 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

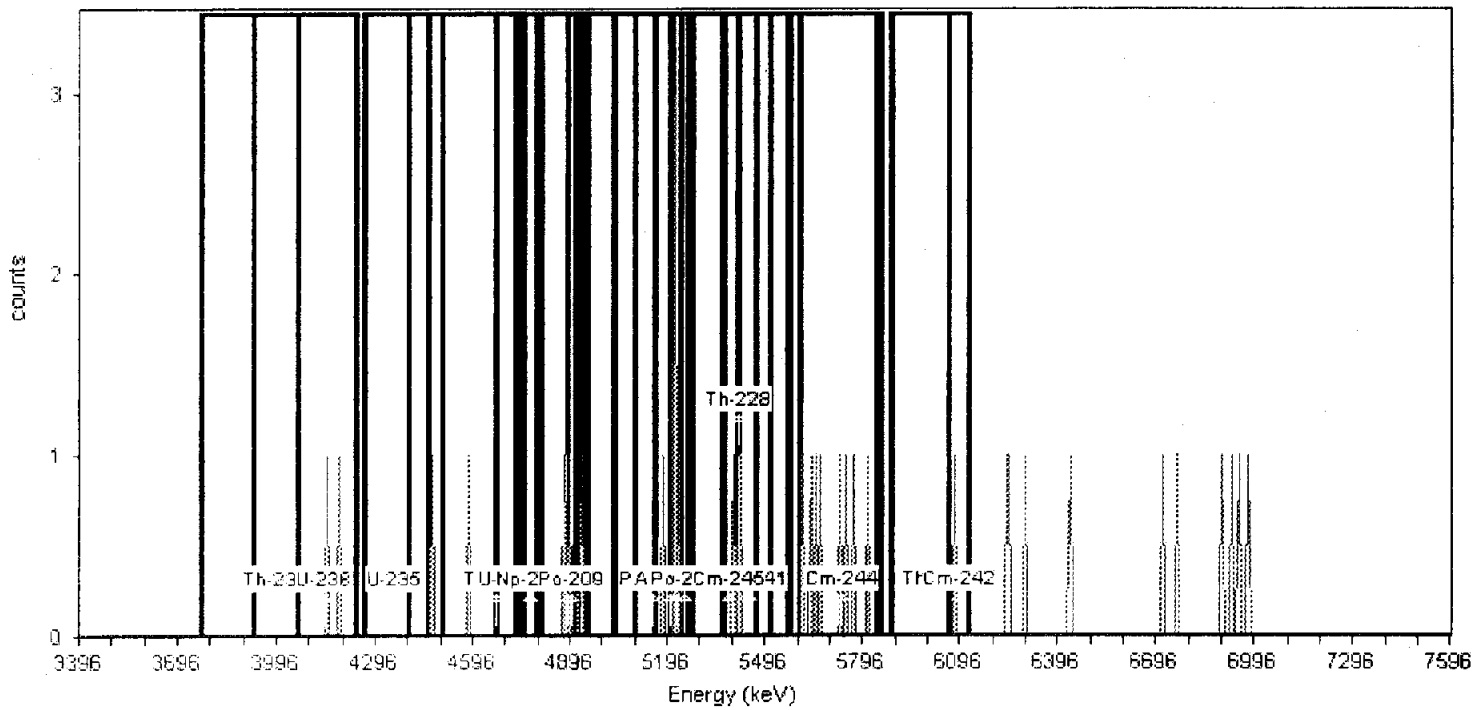
Acquisition

Detector: AV64 , SN:
Acquisition Start Date: 3/24/2007 9:47:57AM
Live Time: 960.00 min.
Real Time: 960.24 min.
Calibration Name: Feb2007_AV70
Calibration Date: 2/28/2007 2:41:57PM

Energy Calibration Equation:

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

Efficiency: 27.16% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	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
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	8.00	8.333E-003	3.125E-003
Po-210	5.25	5.20	5.26	4.00	4.167E-003	2.329E-003
Pu-238	5.44	5.24	5.52	3.00	3.125E-003	2.083E-003
Am-241	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	8.00	8.333E-003	3.125E-003
Cm-244	5.73	5.60	5.86	8.00	8.333E-003	3.125E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:01AM 3/25/2007

Sample

Sample Name: AV65 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

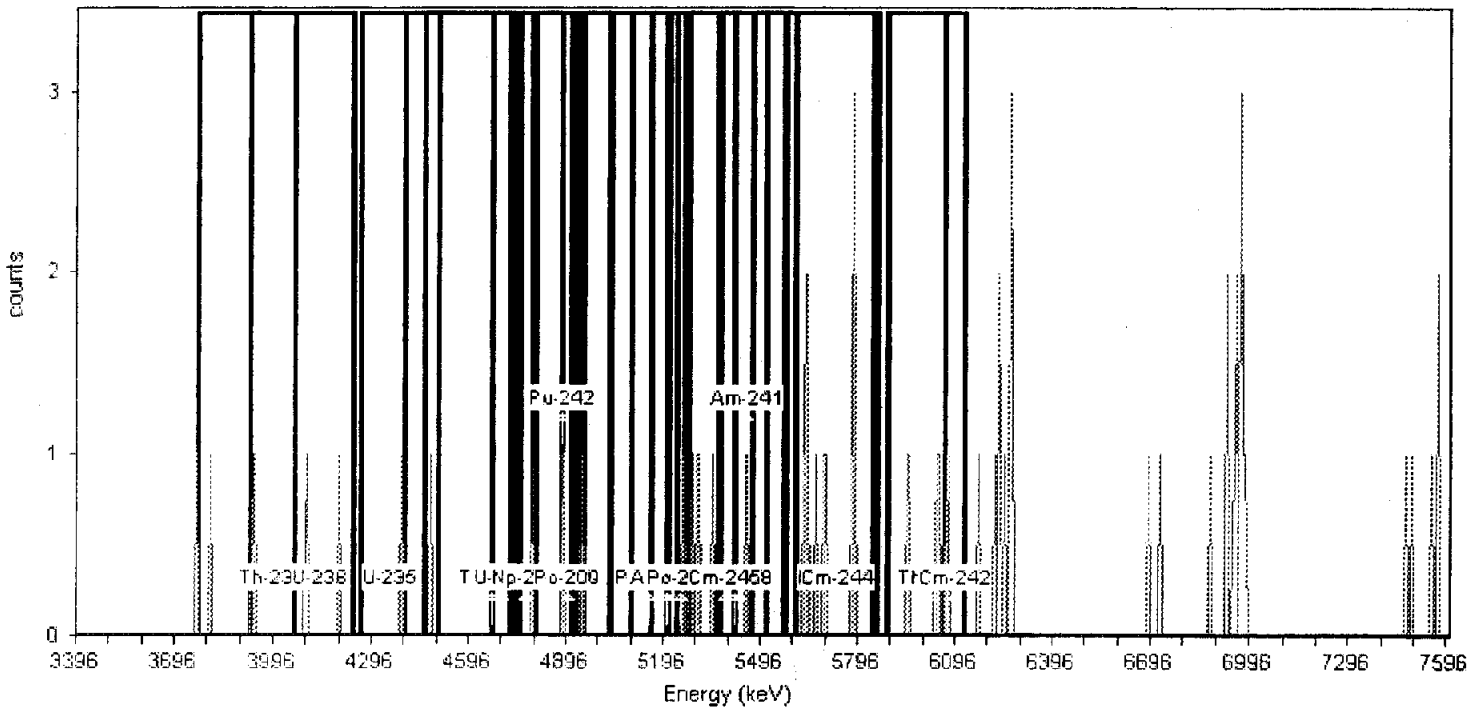
Acquisition

Detector: AV65 , SN:
Acquisition Start Date: 3/24/2007 9:47:59AM
Live Time: 960.00 min.
Real Time: 960.24 min.
Calibration Name: Feb2007_AV71
Calibration Date: 2/28/2007 11:56:51AM

Energy Calibration Equation:

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

Efficiency: 27.28% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 57.00

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	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	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	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
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	6.00	6.250E-003	2.756E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	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	11.00	1.146E-002	3.608E-003
Cm-244	5.73	5.60	5.86	11.00	1.146E-002	3.608E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:07AM 3/25/2007

Sample

Sample Name: AV66 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

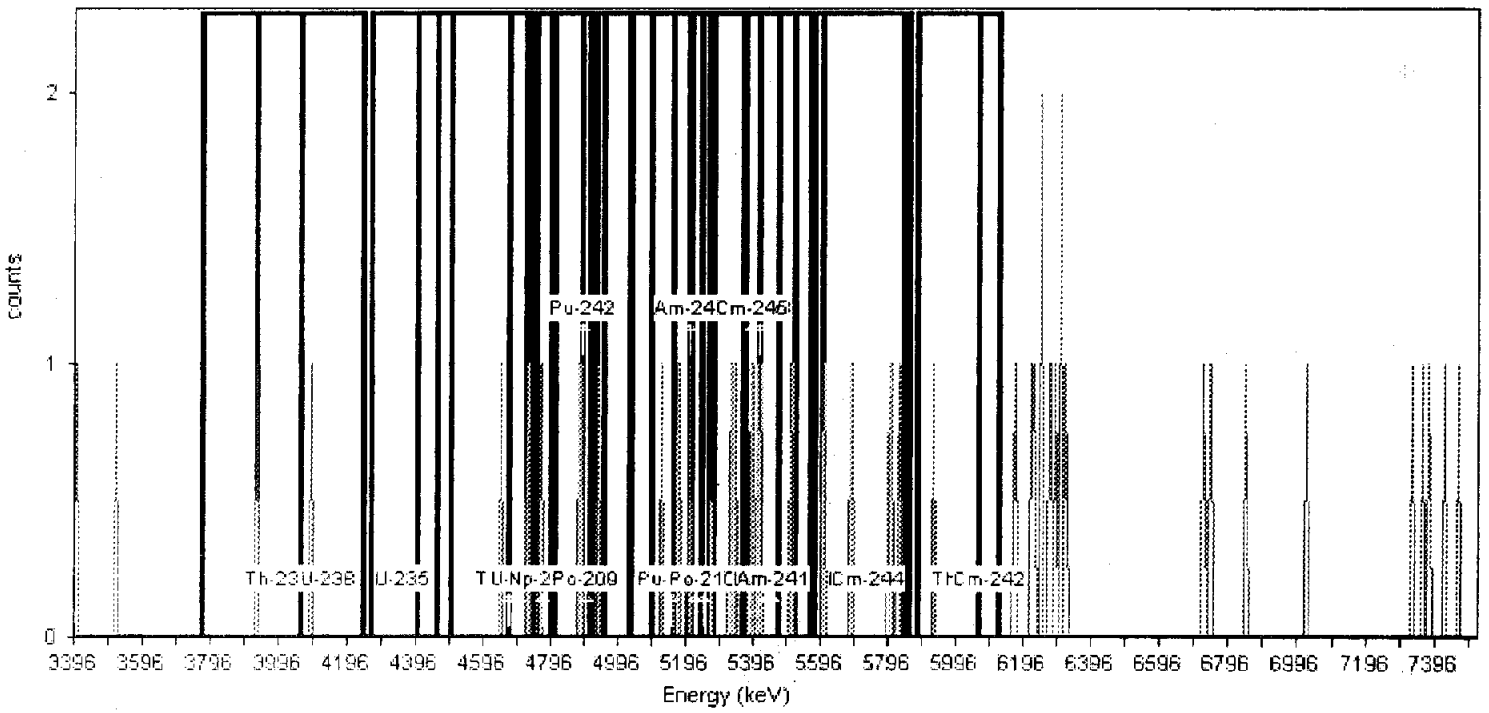
Acquisition

Detector: AV66 , SN:
Acquisition Start Date: 3/24/2007 9:48:00AM
Live Time: 960.00 min.
Real Time: 960.24 min.
Calibration Name: Feb2007_AV72
Calibration Date: 2/28/2007 11:57:00AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 26.71% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 51.00

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
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	1.00	1.042E-003	1.473E-003
Pu-239	5.15	4.95	5.21	4.00	4.167E-003	2.329E-003
Am-243	5.20	5.03	5.28	5.00	5.208E-003	2.552E-003
U-232	5.23	5.04	5.37	8.00	8.333E-003	3.125E-003
Th-228	5.41	5.16	5.47	11.00	1.146E-002	3.608E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	9.00	9.375E-003	3.294E-003
Am-241	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	6.00	6.250E-003	2.756E-003
Cm-244	5.73	5.60	5.86	6.00	6.250E-003	2.756E-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
7:30:38AM 3/25/2007

Analyst: 60040

Sample

Spectrum #1 Analysis #1

Sample Name: AV67
Comment:

Batch

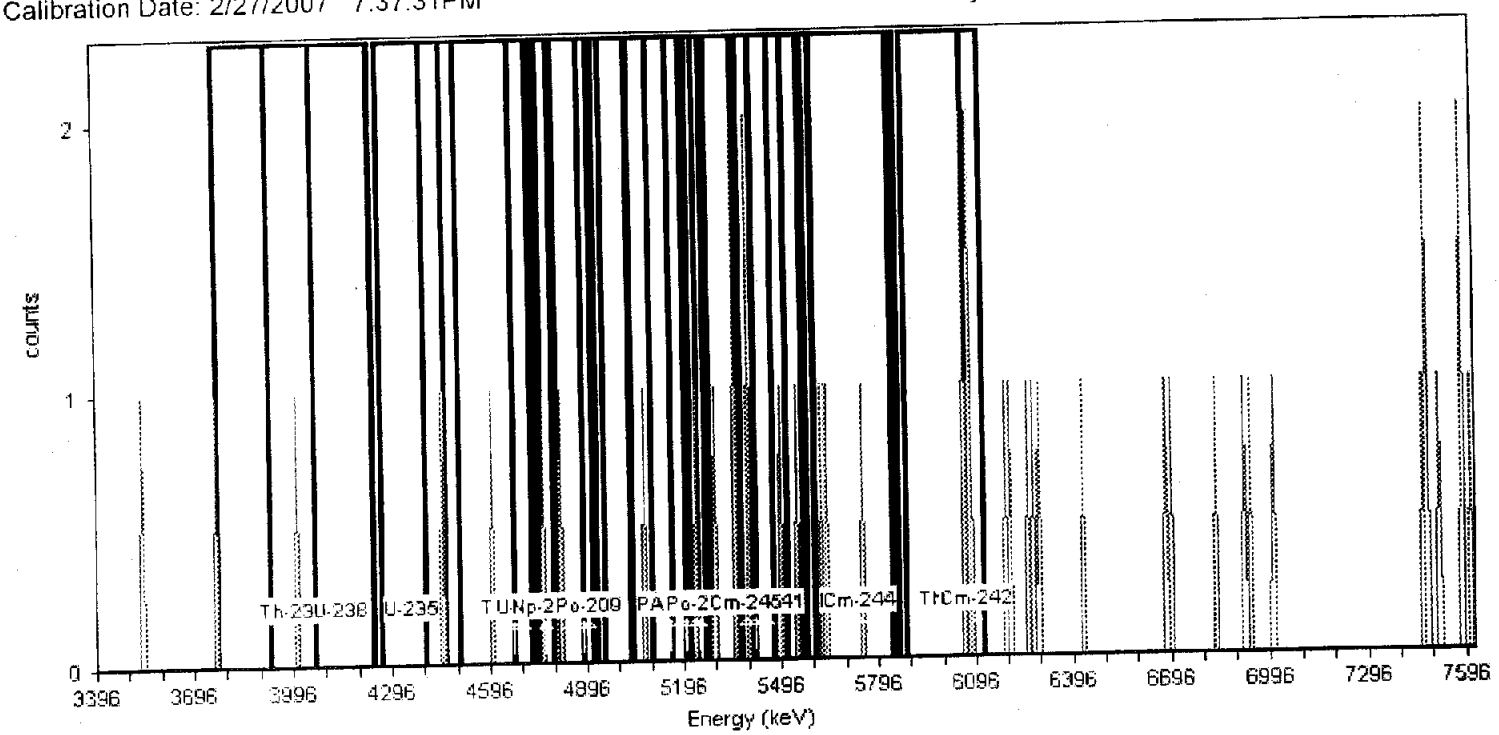
Batch Name: Mar2007
Description:

Acquisition

Detector: AV67 , SN:
Acquisition Start Date: 3/24/2007 9:48:02AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV67
Calibration Date: 2/27/2007 7:37:31PM

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

Efficiency: 27.71% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background
Nuclide Library: Background ROI Library
Total Background Counts: 44.00

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	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	5.00	5.208E-003	2.552E-003
Th-228	5.41	5.16	5.47	6.00	6.250E-003	2.756E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	7.00	7.292E-003	2.946E-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	4.00	4.167E-003	2.329E-003
Cm-244	5.73	5.60	5.86	4.00	4.167E-003	2.329E-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

ST SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:30:41AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV68 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

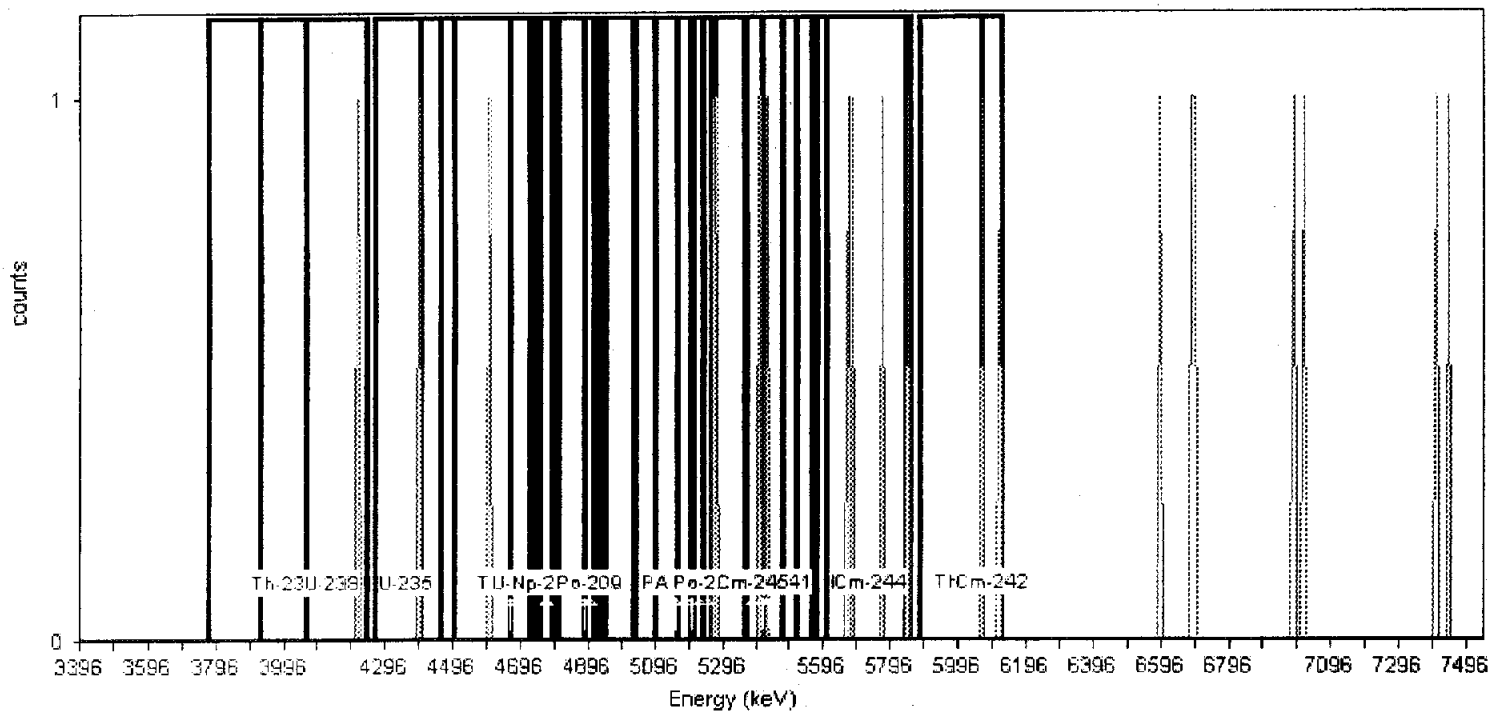
Acquisition

Detector: AV68 , SN:
Acquisition Start Date: 3/24/2007 9:48:03AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: FEB2007_AV68
Calibration Date: 2/28/2007 7:02:56AM

Energy Calibration Equation:

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

Efficiency: 26.85% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background 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	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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	2.00	2.083E-003	1.804E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	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	3.00	3.125E-003	2.083E-003
Cm-244	5.73	5.60	5.86	4.00	4.167E-003	2.329E-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	2.00	2.083E-003	1.804E-003

ST

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:30:44AM 3/25/2007

Sample

Sample Name: AV69 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

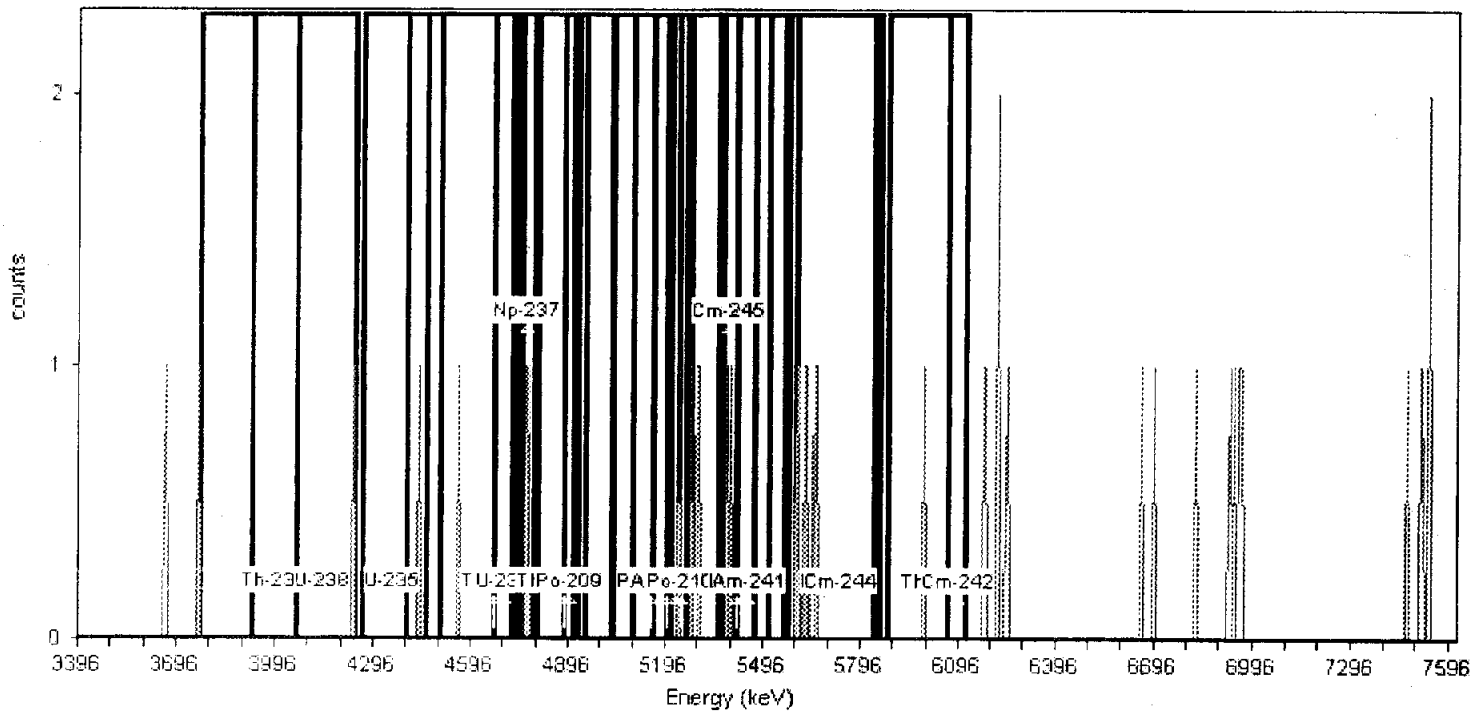
Acquisition

Detector: AV69 , SN:
Acquisition Start Date: 3/24/2007 9:48:05AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV69
Calibration Date: 2/28/2007 2:41:51PM

Energy Calibration Equation:

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

Efficiency: 27.90% +/- 0.30% TPU(2 sigma)



General Analysis

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

Total Background Counts: 34.00

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	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	6.00	6.250E-003	2.756E-003
Am-241	5.45	5.27	5.57	5.00	5.208E-003	2.552E-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
Cm-244	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

STL

SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:30:51AM 3/25/2007

Sample

Sample Name: AV70 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

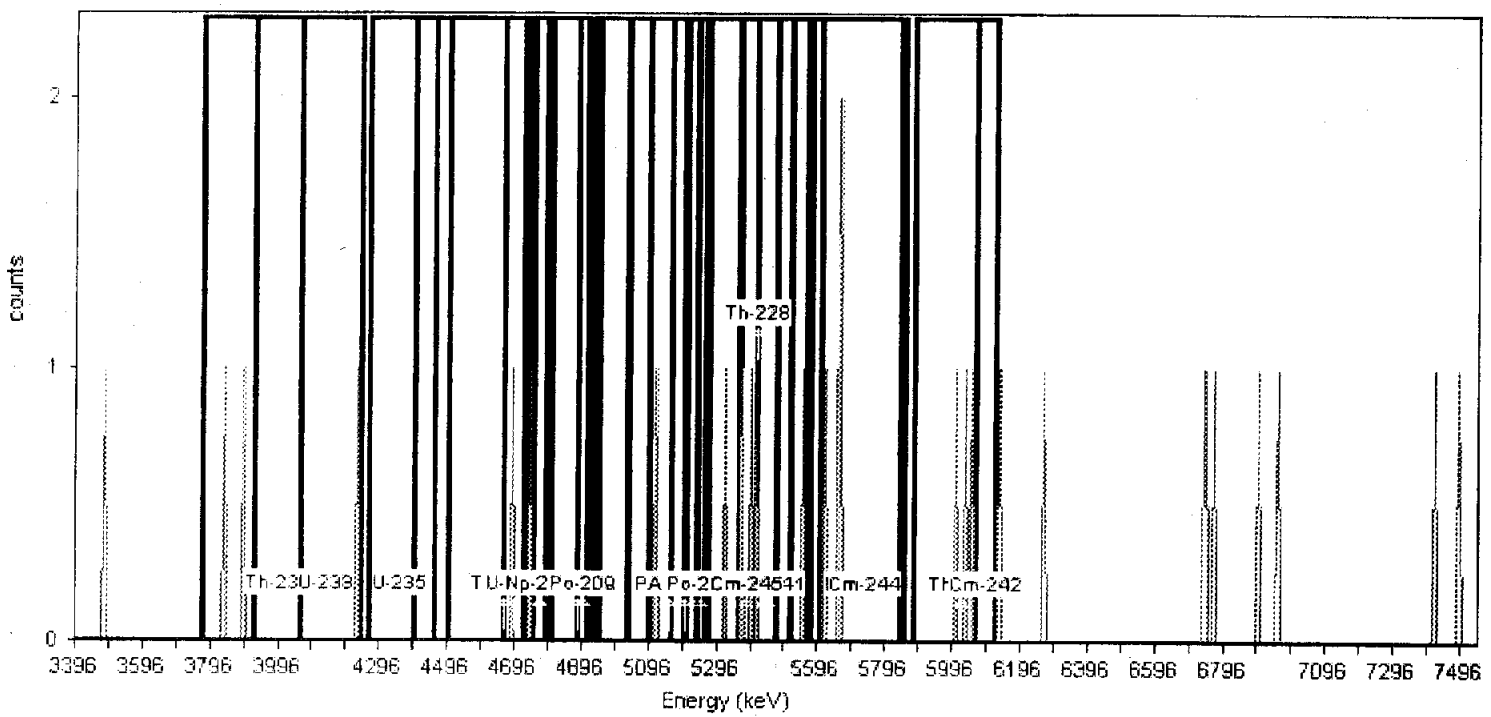
Acquisition

Detector: AV70 , SN:
Acquisition Start Date: 3/24/2007 9:48:07AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV70
Calibration Date: 2/28/2007 2:41:57PM

Energy Calibration Equation:

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

Efficiency: 27.16% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 27.00

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
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	4.00	4.167E-003	2.329E-003
Am-241	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	3.00	3.125E-003	2.083E-003
Cm-244	5.73	5.60	5.86	3.00	3.125E-003	2.083E-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 7:30:57AM 3/25/2007

Sample

Sample Name: AV71 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

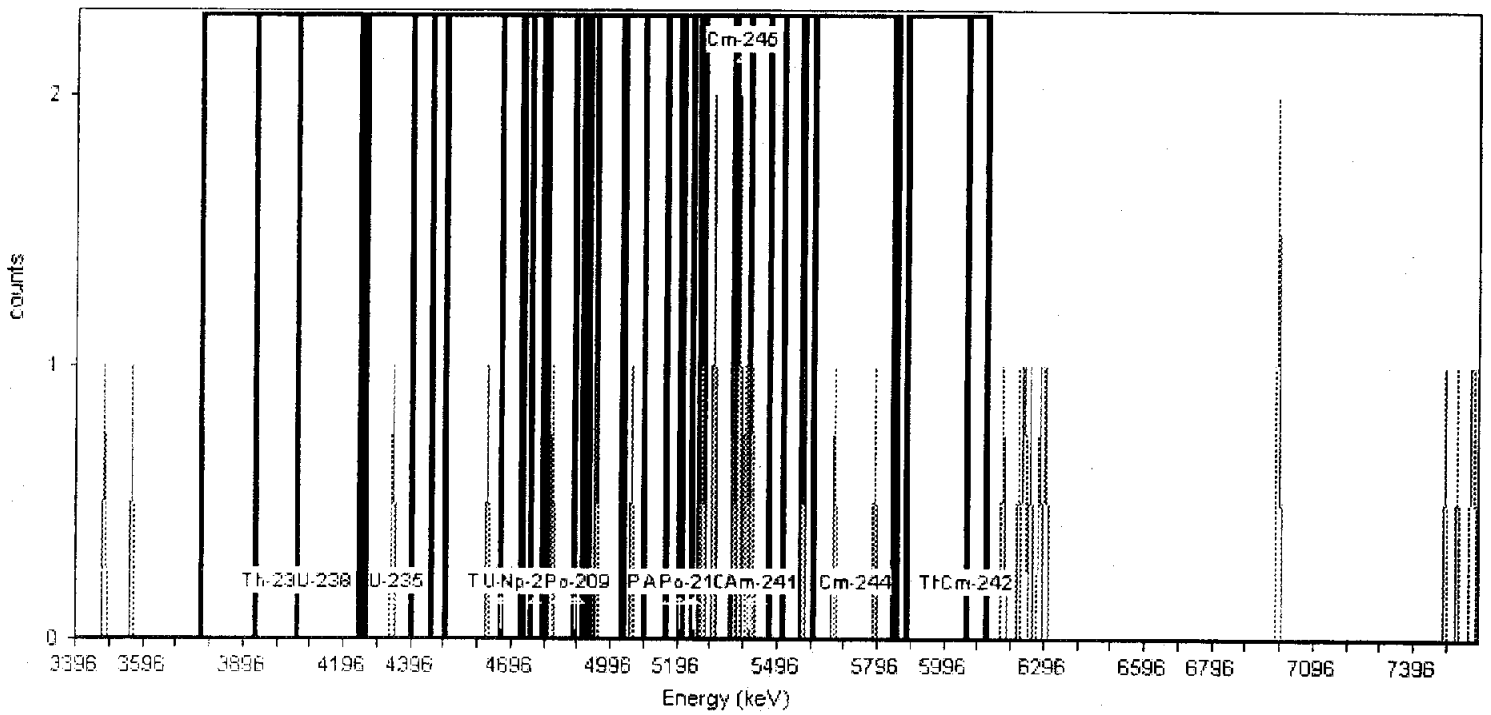
Acquisition

Detector: AV71 , SN:
Acquisition Start Date: 3/24/2007 9:46:59AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV70
Calibration Date: 2/28/2007 2:41:57PM

Energy Calibration Equation:

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

Efficiency: 27.16% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	5.23	5.04	5.37	6.00	6.250E-003	2.756E-003
Th-228	5.41	5.16	5.47	10.00	1.042E-002	3.455E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	10.00	1.042E-002	3.455E-003
Am-241	5.45	5.27	5.57	10.00	1.042E-002	3.455E-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	3.00	3.125E-003	2.083E-003
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:31:04AM 3/25/2007

Sample

Sample Name: AV72 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

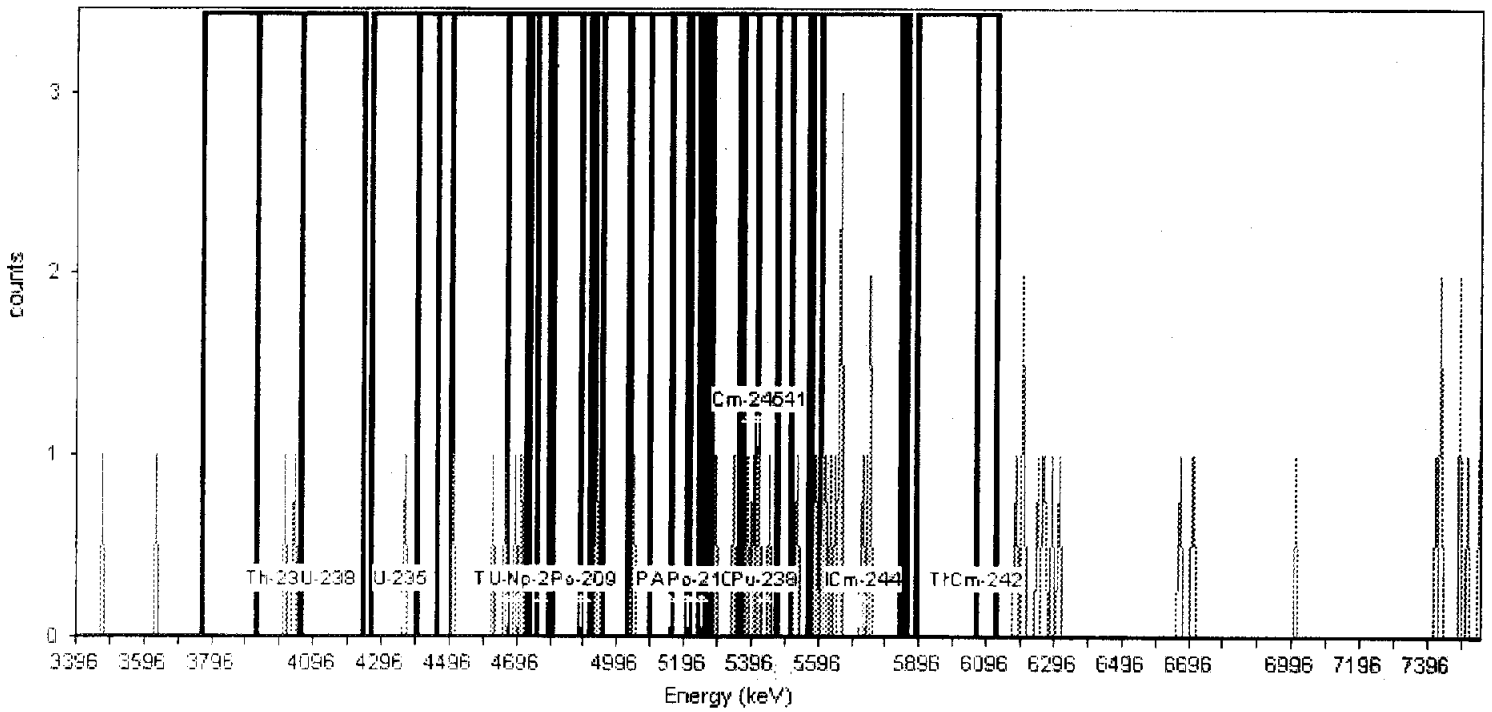
Acquisition

Detector: AV72 , SN:
Acquisition Start Date: 3/24/2007 9:47:01AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV72
Calibration Date: 2/28/2007 11:57:00AM

Energy Calibration Equation:

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

Efficiency: 26.71% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	2.00	2.083E-003	1.804E-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
U-234	4.70	4.50	4.80	5.00	5.208E-003	2.552E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	7.00	7.292E-003	2.946E-003
Am-241	5.45	5.27	5.57	8.00	8.333E-003	3.125E-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	11.00	1.146E-002	3.608E-003
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:31:10AM 3/25/2007

Analyst: 60040

Sample

Sample Name: AV73

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

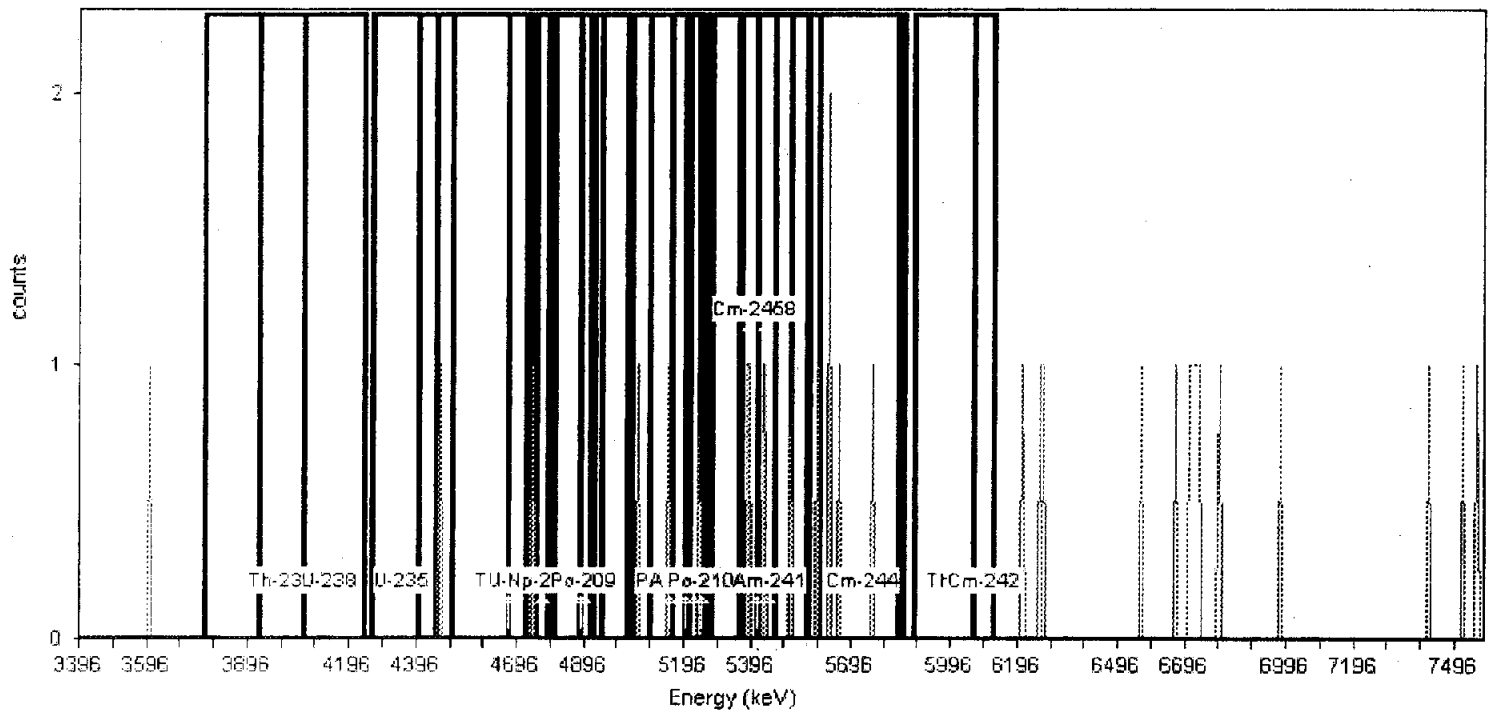
Acquisition

Detector: AV73 , SN:
Acquisition Start Date: 3/24/2007 9:47:03AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV73
Calibration Date: 2/28/2007 5:04:12PM

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

Nuclide Library: Background ROI Library

Total Background Counts: 30.00

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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	3.00	3.125E-003	2.083E-003
U-232	5.23	5.04	5.37	3.00	3.125E-003	2.083E-003
Th-228	5.41	5.16	5.47	4.00	4.167E-003	2.329E-003
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	5.00	5.208E-003	2.552E-003
Am-241	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	5.00	5.208E-003	2.552E-003
Cm-244	5.73	5.60	5.86	4.00	4.167E-003	2.329E-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

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:09:47PM 3/23/2007

Analyst: 60040

Sample

Sample Name: AV75
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

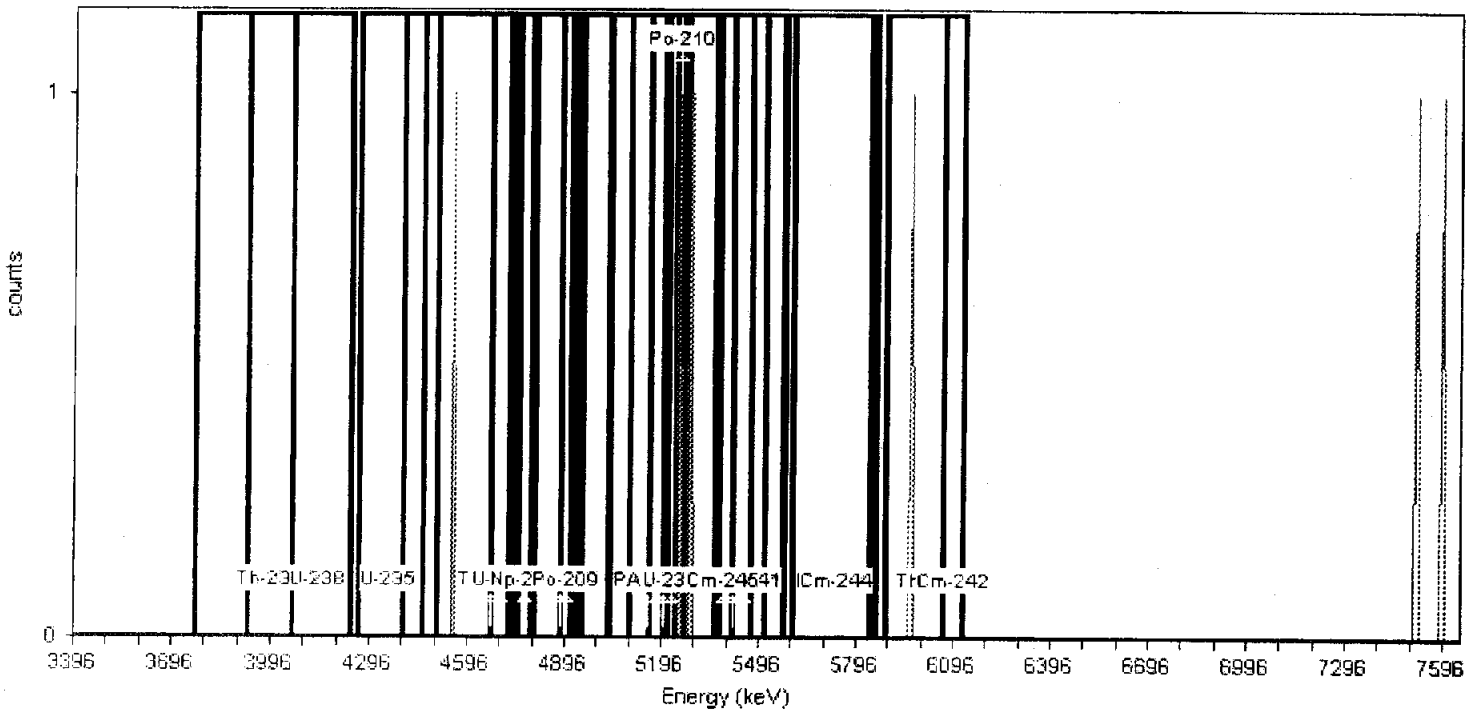
Acquisition

Detector: AV75 , SN: 46-033P6
Acquisition Start Date: 3/22/2007 2:43:25PM
Live Time: 960.00 min.
Real Time: 1,585.65 min.
Calibration Name: Feb2007_AV75
Calibration Date: 2/26/2007 2:24:32PM

Energy Calibration Equation:

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

Efficiency: 26.50% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 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	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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	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
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:09:52PM 3/23/2007

Analyst: 60040

Sample

Sample Name: AV76
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

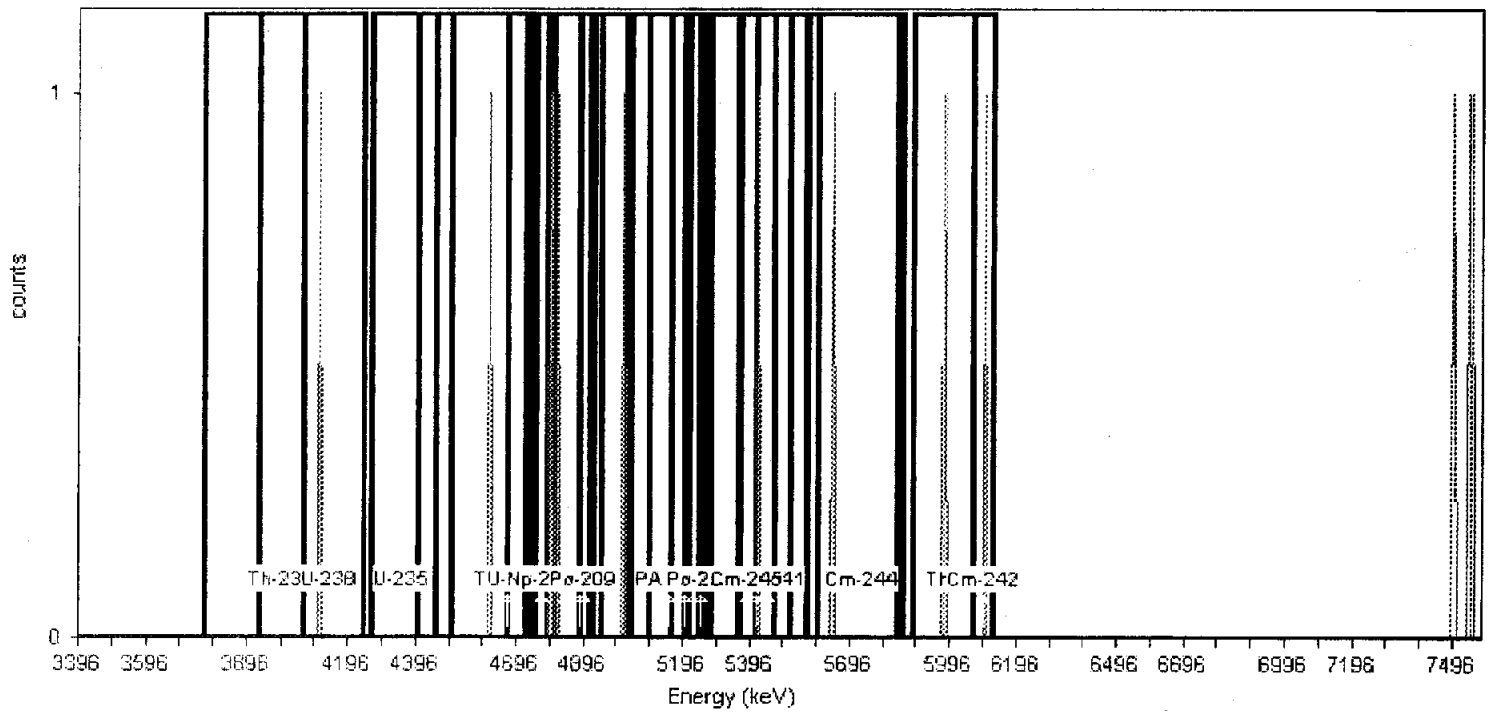
Acquisition

Detector: AV76 , SN: 46-033Q4
Acquisition Start Date: 3/22/2007 2:43:26PM
Live Time: 960.00 min.
Real Time: 1,585.65 min.
Calibration Name: Feb2007_AV76
Calibration Date: 2/26/2007 2:24:39PM

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: Absolute 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	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
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	4.88	4.67	4.93	2.00	2.083E-003	1.804E-003
Th-229	4.84	4.72	5.10	3.00	3.125E-003	2.083E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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
Cm-244	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

STL

SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040

5:09:55PM 3/23/2007

Sample

Sample Name: AV77

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

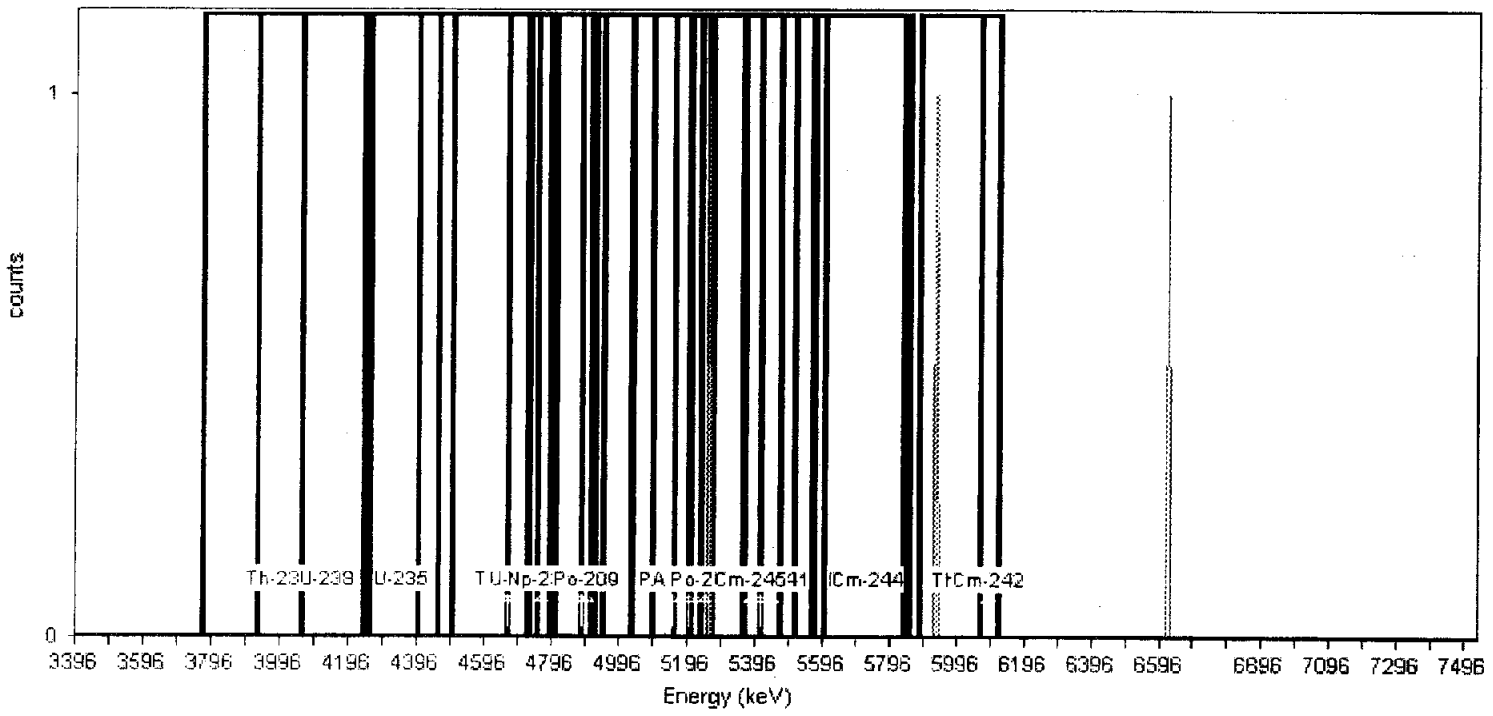
Acquisition

Detector: AV77 , SN: 46-033Q7
Acquisition Start Date: 3/22/2007 2:43:29PM
Live Time: 960.00 min.
Real Time: 1,585.65 min.
Calibration Name: Feb2007_AV77
Calibration Date: 2/26/2007 2:24:47PM

Energy Calibration Equation:

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

Efficiency: 26.67% +/- 0.29% TPU(2 sigma)



General Analysis

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

Nuclide Library: Background ROI Library

Total Background Counts: 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	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	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
Cm-244	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
8:00:47AM 3/29/2007

Analyst: 60040

Sample

Sample Name: AV78
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: March2007c
Description:

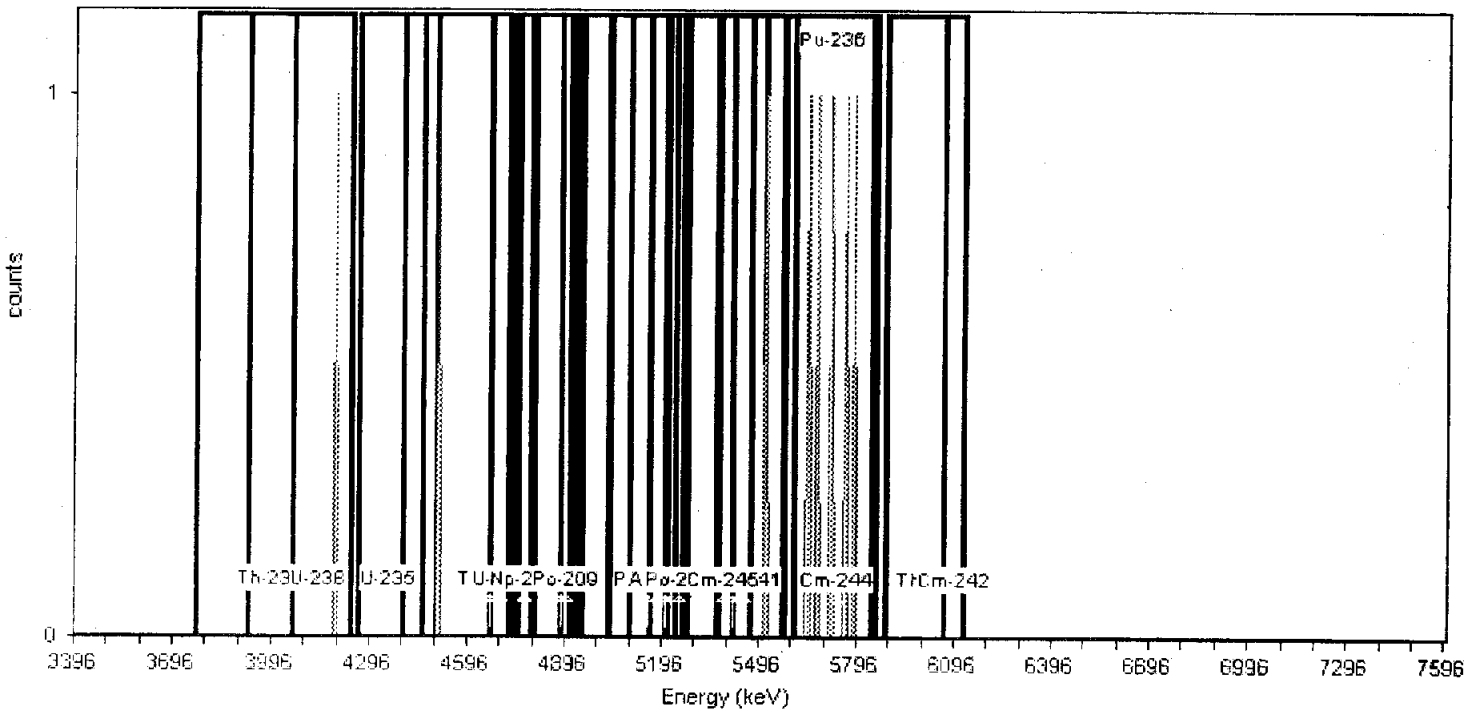
Acquisition

Detector: AV78 , SN: 46-033FF4
Acquisition Start Date: 3/28/2007 11:22:11AM
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: Absolute ROI Analysis, Set Name = 11/05_Background
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	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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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	5.00	5.208E-003	2.552E-003
Cm-244	5.73	5.60	5.86	5.00	5.208E-003	2.552E-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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:12:58AM 3/28/2007

Analyst: 60040

Sample

Sample Name: AV79
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: March2007a
Description:

Acquisition

Detector: AV79 , SN: 46-033Q5
Acquisition Start Date: 3/27/2007 12:54:48PM
Live Time: 960.00 min.
Real Time: 960.12 min.
Calibration Name: Feb2007_AV79
Calibration Date: 2/26/2007 4:48:57PM

Energy Calibration Equation:

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

Efficiency: 27.18% +/- 0.27% TPU(2 sigma)

General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 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	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	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	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
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:13:02AM 3/28/2007

Analyst: 60040

Sample

Sample Name: AV80 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2007a

Description:

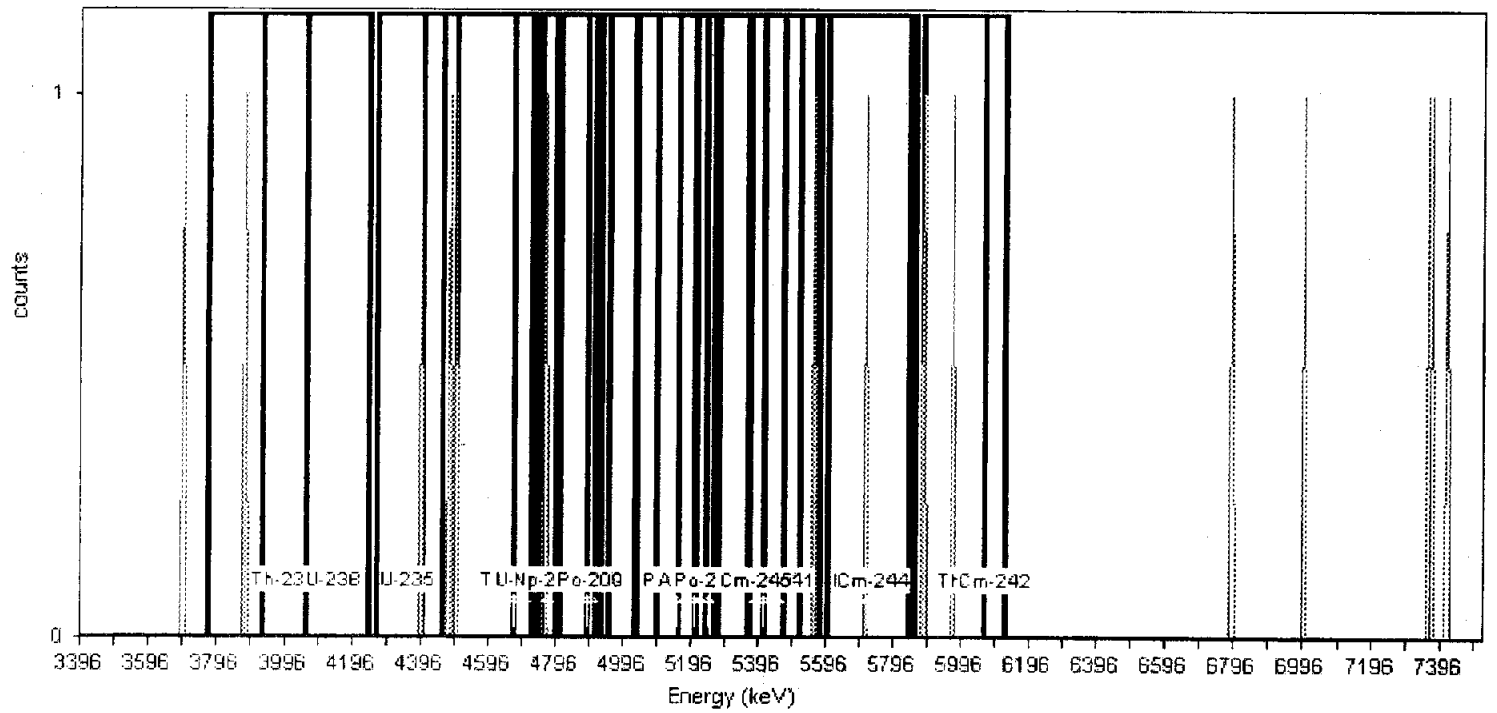
Acquisition

Detector: AV80 , SN: 46-03305
Acquisition Start Date: 3/27/2007 12:54:50PM
Live Time: 960.00 min.
Real Time: 960.12 min.
Calibration Name: Feb2007_AV80
Calibration Date: 2/26/2007 4:49:04PM

Energy Calibration Equation:

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

Efficiency: 25.95% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 15.00

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
U-234	4.70	4.50	4.80	2.00	2.083E-003	1.804E-003
Pu-242	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
Np-237	4.77	4.75	4.79	1.00	1.042E-003	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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	0.00	0.000E+000	1.473E-003

STL

SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040

7:13:05AM 3/28/2007

Sample

Sample Name: AV81

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2007a

Description:

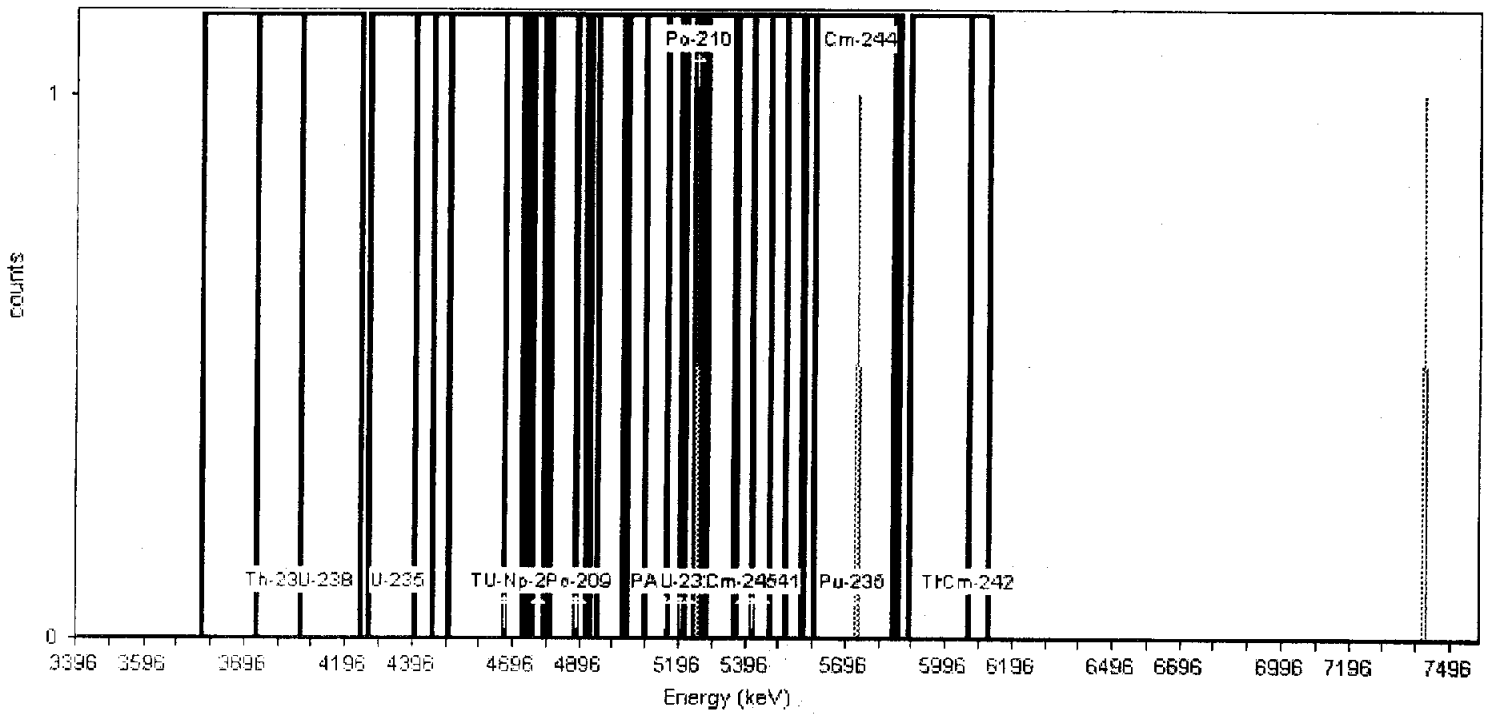
Acquisition

Detector: AV81 , SN: 46-03307
Acquisition Start Date: 3/27/2007 12:54:52PM
Live Time: 960.00 min.
Real Time: 960.12 min.
Calibration Name: Feb2007_AV81
Calibration Date: 2/26/2007 4:49:09PM

Energy Calibration Equation:

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

Efficiency: 27.15% +/- 0.29% TPU(2 sigma)



General Analysis

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

Nuclide Library: Background ROI Library

Total Background Counts: 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	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	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
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 7:13:08AM 3/28/2007

Sample

Sample Name: AV82 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: March2007a

Description:

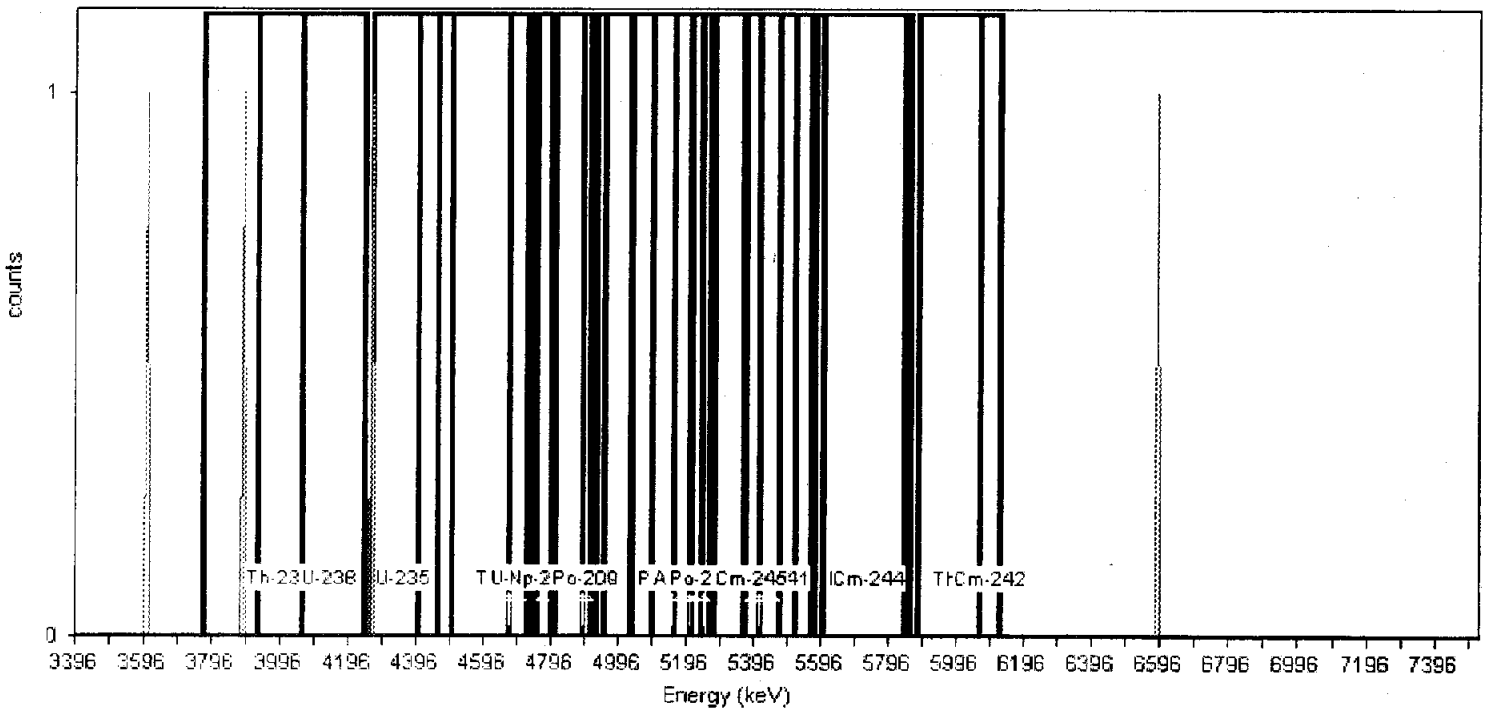
Acquisition

Detector: AV82 , SN: 46-032EE5
Acquisition Start Date: 3/27/2007 12:54:53PM
Live Time: 960.00 min.
Real Time: 960.12 min.
Calibration Name: Feb2007_AV82
Calibration Date: 2/26/2007 4:49:18PM

Energy Calibration Equation:

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

Efficiency: 27.04% +/- 0.27% TPU(2 sigma)



General Analysis

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

Total Background Counts: 4.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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	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

STL

SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040 6:44:18AM 3/23/2007

Sample

Sample Name: AV83 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

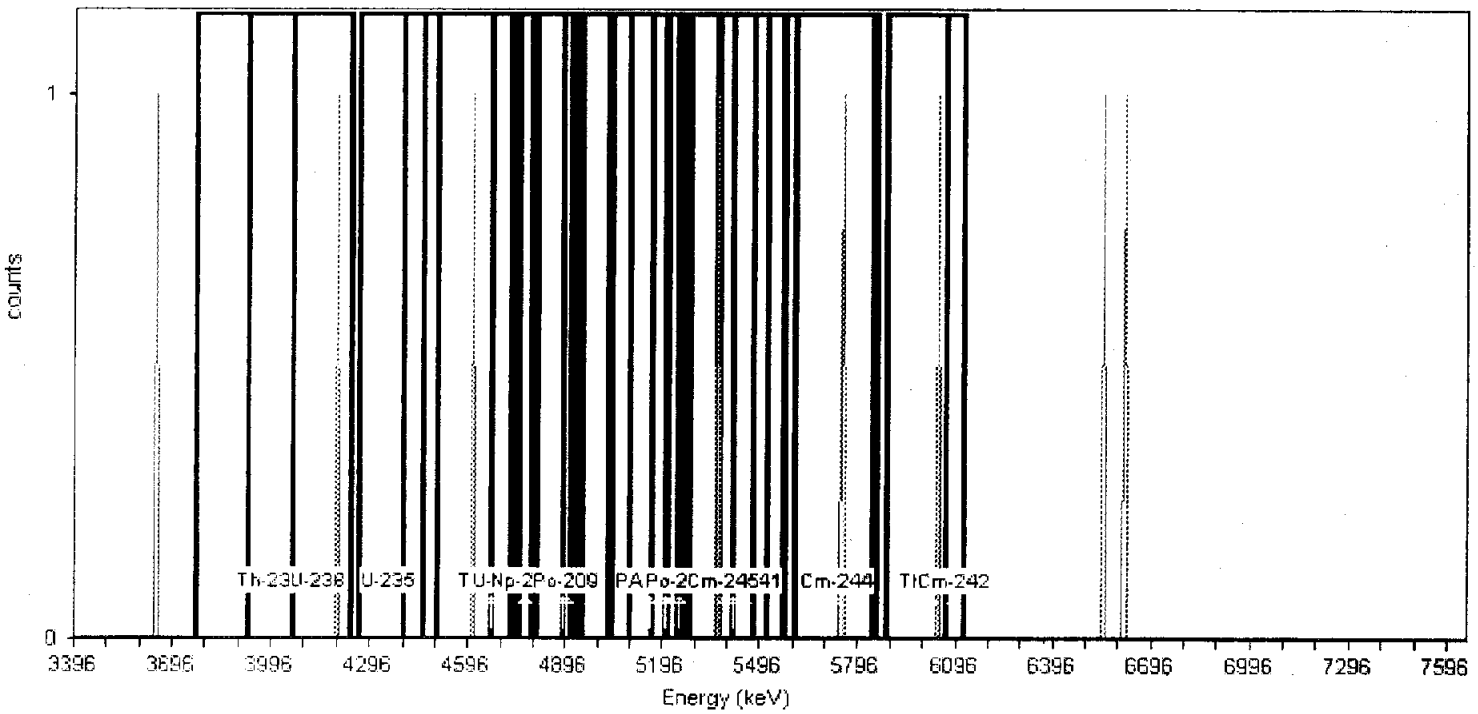
Acquisition

Detector: AV83 , SN: 46-03306
Acquisition Start Date: 3/22/2007 2:43:39PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV83
Calibration Date: 2/26/2007 7:30:41PM

Energy Calibration Equation:

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

Efficiency: 26.72% +/- 0.26% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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	1.00	1.042E-003	1.473E-003
Cm-244	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

STL

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040

6:44:22AM 3/23/2007

Sample

Sample Name: AV84

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

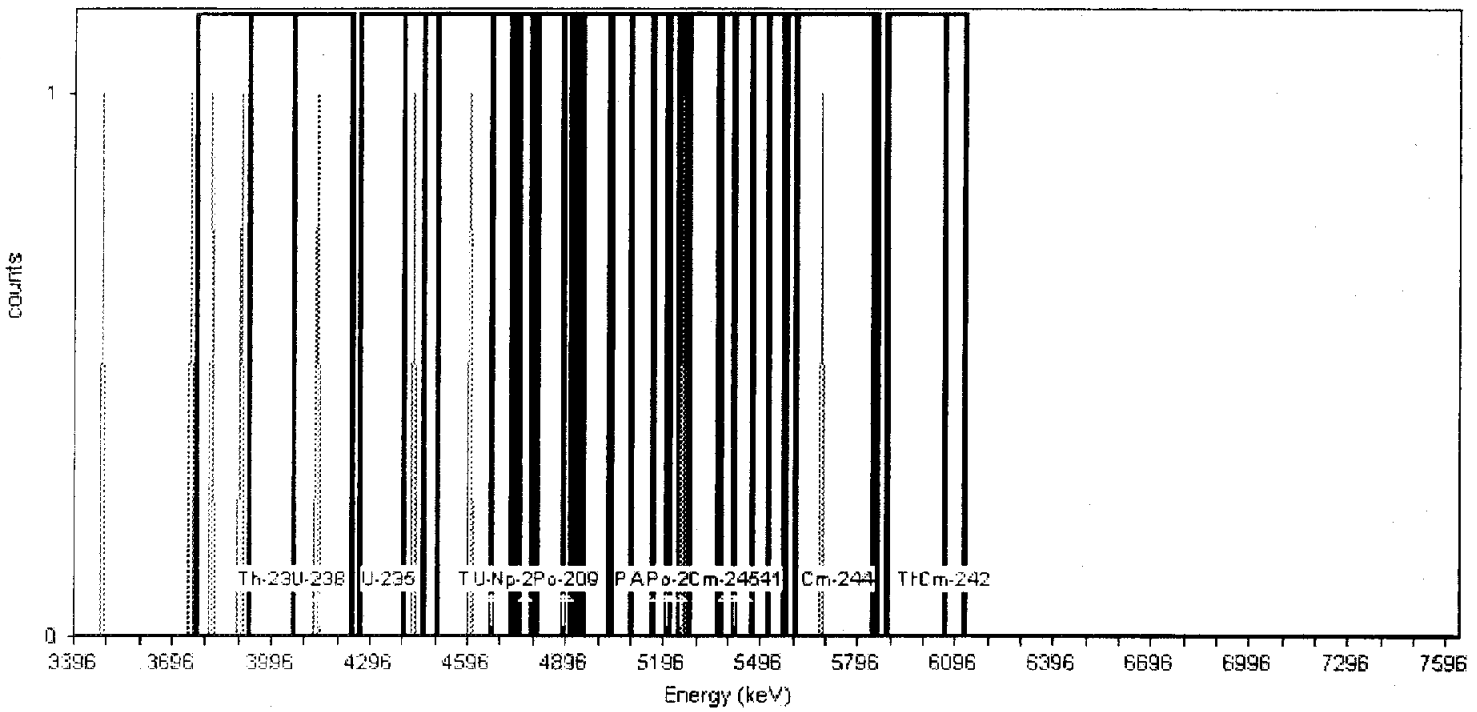
Acquisition

Detector: AV84 , SN: 46-033FF3
Acquisition Start Date: 3/22/2007 2:43:40PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV84
Calibration Date: 2/26/2007 7:30:49PM

Energy Calibration Equation:

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

Efficiency: 28.17% +/- 0.29% TPU(2 sigma)



General Analysis

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

Nuclide Library: Background ROI Library

Total Background Counts: 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	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	1.00	1.042E-003	1.473E-003
Th-230	4.67	4.40	4.73	2.00	2.083E-003	1.804E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	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
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040 6:44:25AM 3/23/2007

Sample

Sample Name: AV85 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

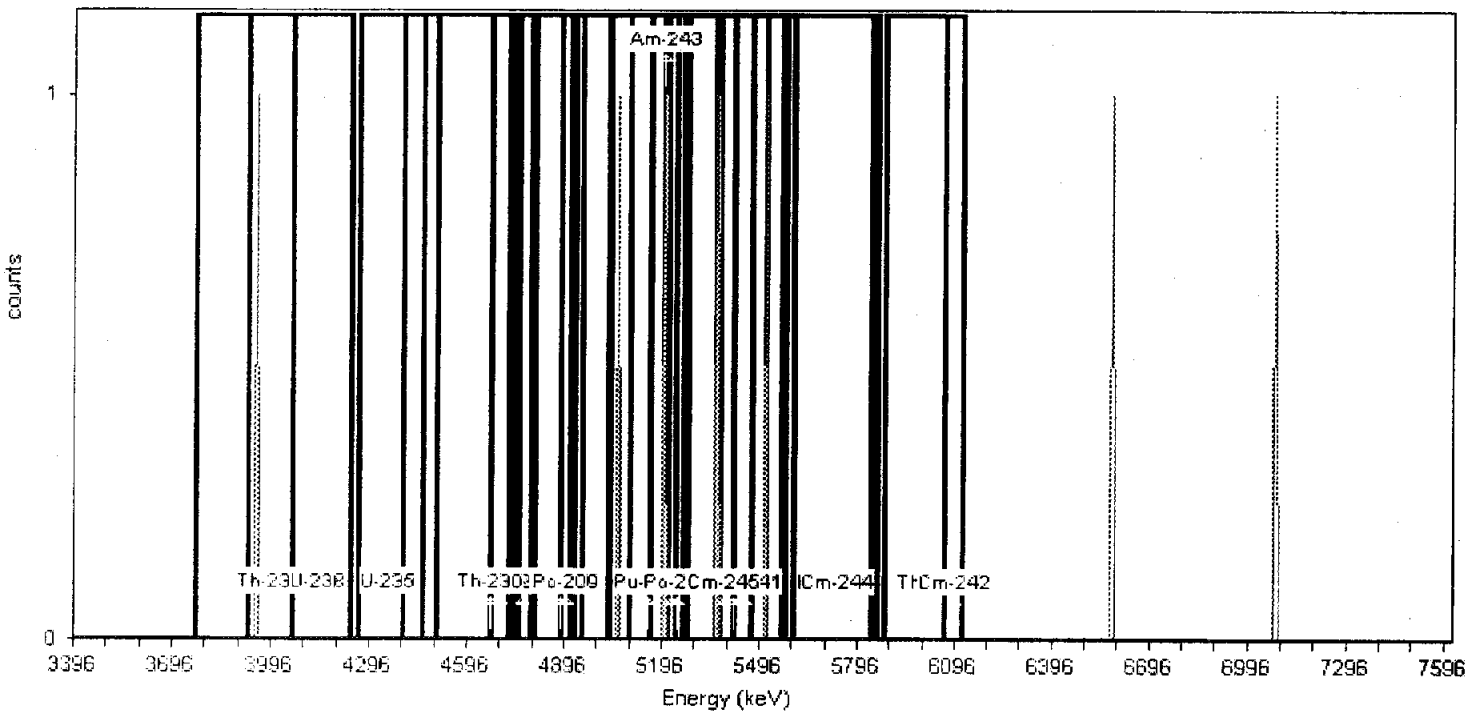
Acquisition

Detector: AV85 , SN: 46-032EE7
Acquisition Start Date: 3/22/2007 2:43:43PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV85
Calibration Date: 2/26/2007 7:30:54PM

Energy Calibration Equation:

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

Efficiency: 27.69% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute 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)
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	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
Po-210	5.25	5.20	5.26	1.00	1.042E-003	1.473E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	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
Cm-244	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	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	0.00	0.000E+000	1.473E-003

STL

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:44:29AM 3/23/2007

Analyst: 60040

Sample

Sample Name: AV86

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

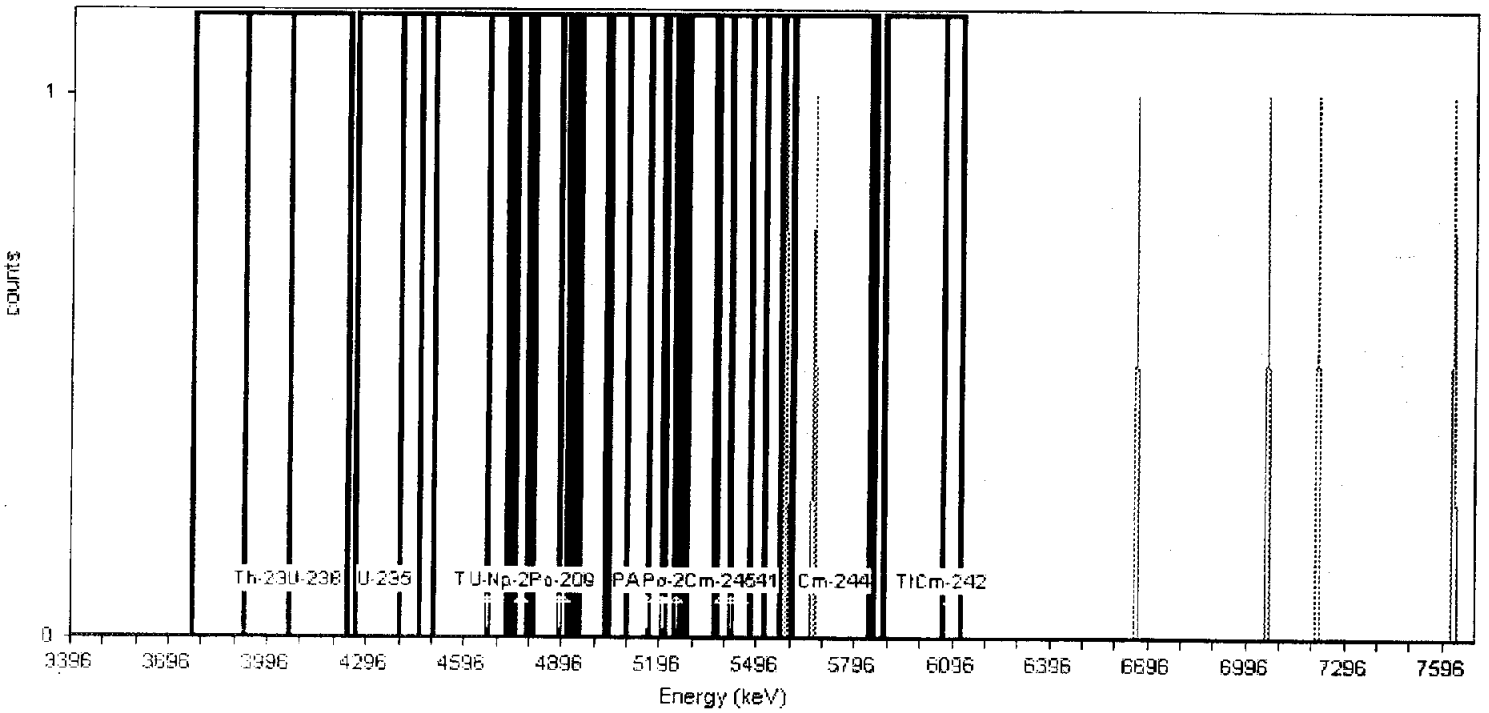
Acquisition

Detector: AV86 , SN: 46-033Q6
Acquisition Start Date: 3/22/2007 2:43:44PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: Feb2007_AV86
Calibration Date: 2/26/2007 7:30:59PM

Energy Calibration Equation:

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

Efficiency: 27.08% +/- 0.27% TPU(2 sigma)



General Analysis

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

Nuclide Library: Background ROI Library

Total Background Counts: 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	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
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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

STL SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:44:32AM 3/23/2007

Analyst: 60040

Sample

Sample Name: AV87
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

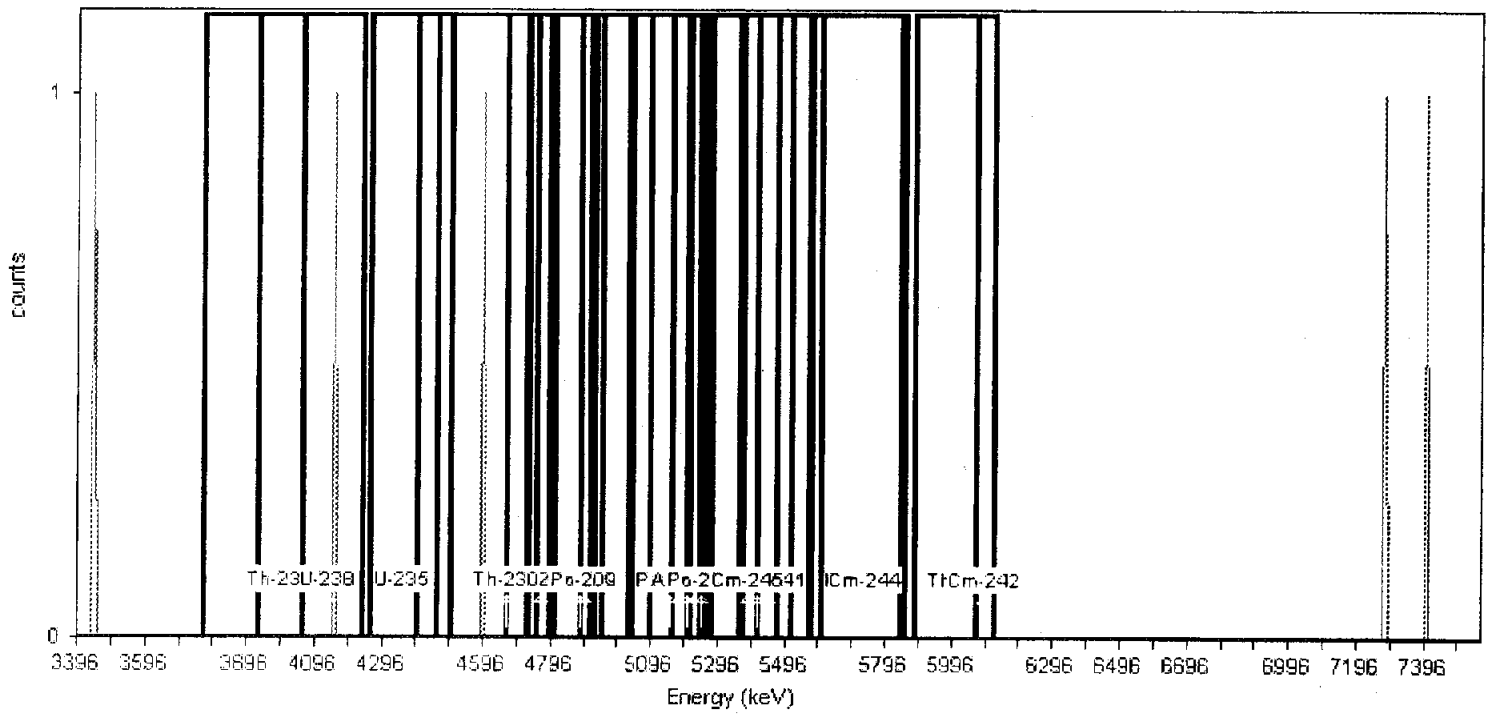
Acquisition

Detector: AV87 , SN: 46-033FF5
Acquisition Start Date: 3/22/2007 2:43:46PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: FEB2007_AV87
Calibration Date: 2/26/2007 10:01:43PM

Energy Calibration Equation:

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

Efficiency: 26.85% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 5.00

Nuclide Summary (ROI)

RegionName	Peak Energy (MeV)	Start Energy (MeV)	End Energy (MeV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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	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

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Background Report

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

Analyst: 60040 6:44:35AM 3/23/2007

Sample

Sample Name: AV88 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

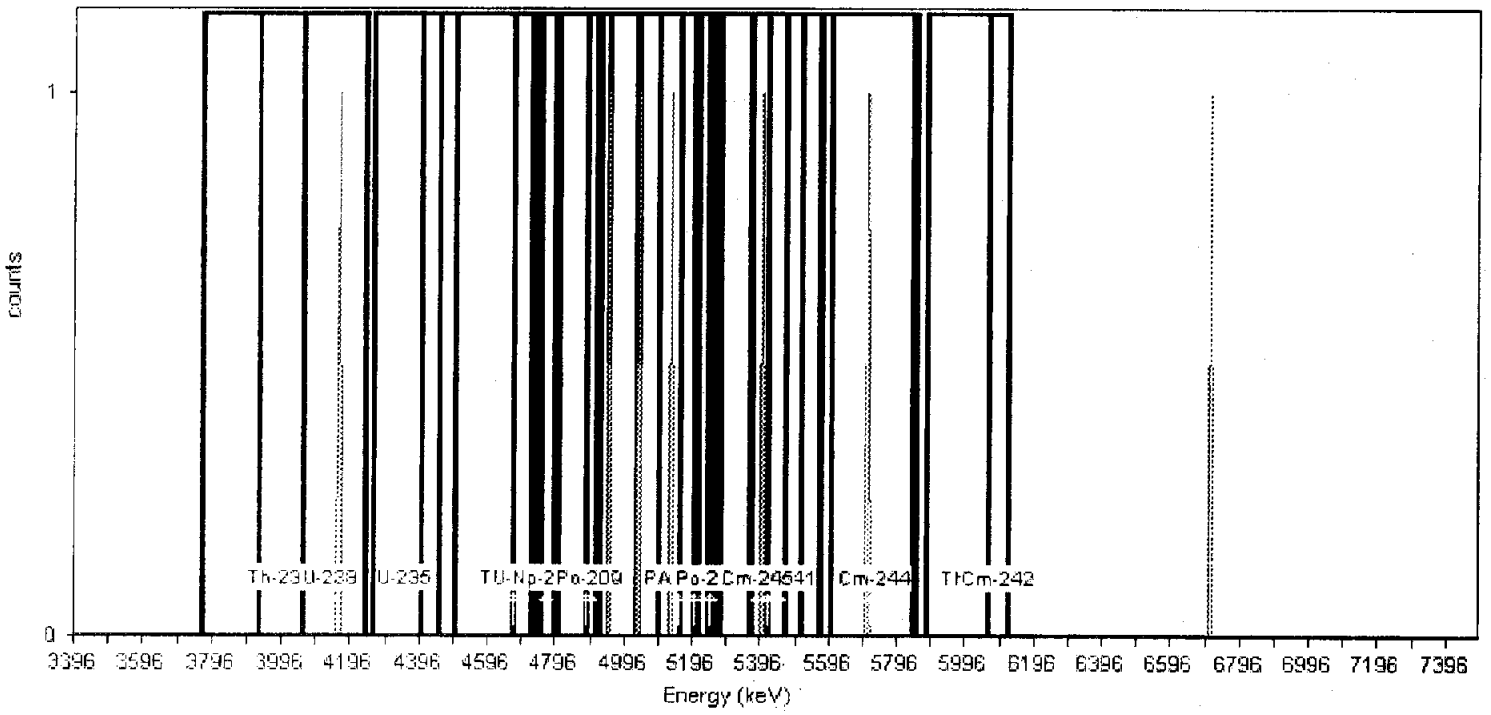
Acquisition

Detector: AV88 , SN: 76-033FF1
Acquisition Start Date: 3/22/2007 2:43:47PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: FEB2007_AV88
Calibration Date: 2/26/2007 10:01:50PM

Energy Calibration Equation:

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

Efficiency: 26.75% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	0.00	0.000E+000	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	3.00	3.125E-003	2.083E-003
Am-243	5.20	5.03	5.28	2.00	2.083E-003	1.804E-003
U-232	5.23	5.04	5.37	2.00	2.083E-003	1.804E-003
Th-228	5.41	5.16	5.47	1.00	1.042E-003	1.473E-003
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	1.00	1.042E-003	1.473E-003
Am-241	5.45	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	1.00	1.042E-003	1.473E-003
Cm-244	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

STL

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:44:38AM 3/23/2007

Analyst: 60040

Sample

Sample Name: AV89 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

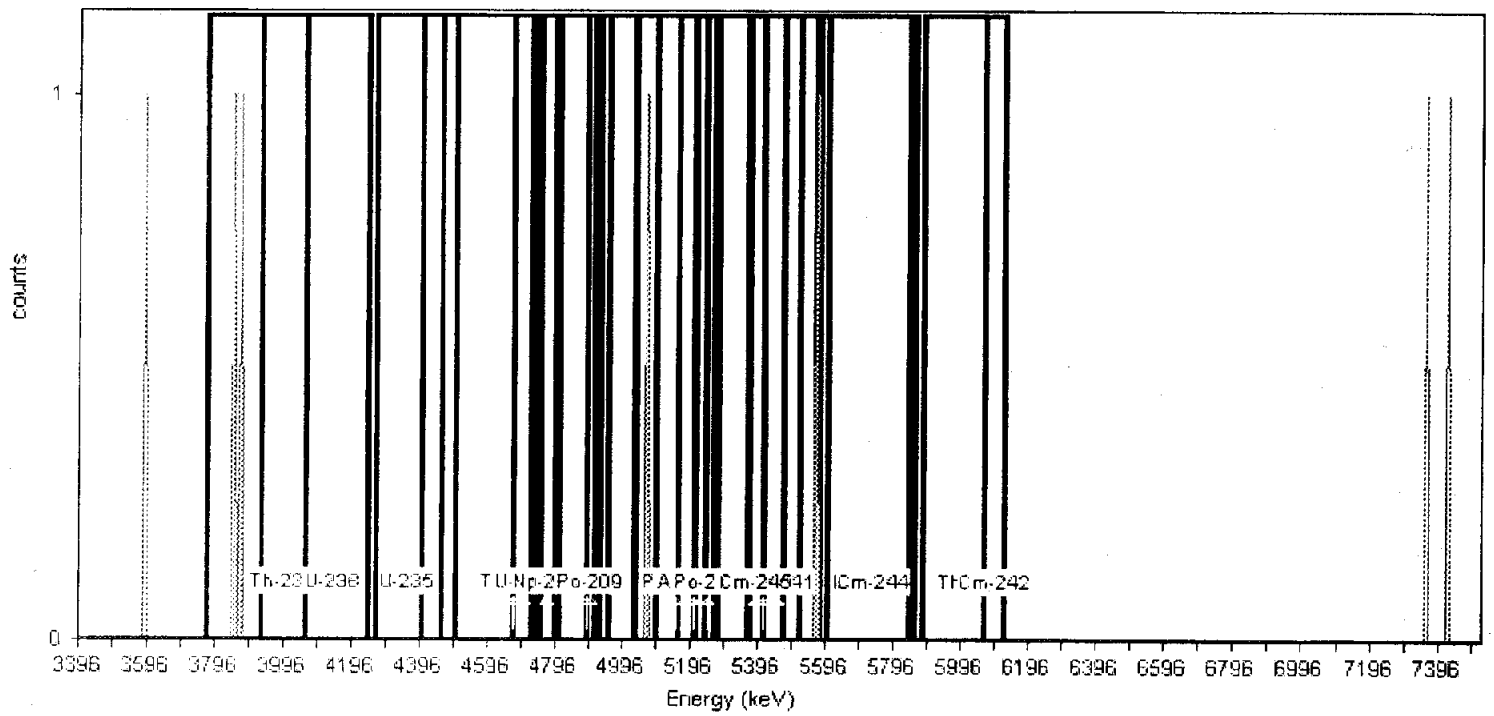
Acquisition

Detector: AV89 , SN: 46-033P5
Acquisition Start Date: 3/22/2007 2:43:50PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: FEB2007_AV89
Calibration Date: 2/26/2007 10:01:55PM

Energy Calibration Equation:

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

Efficiency: 26.90% +/- 0.29% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	1.00	1.042E-003	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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

STL SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040 6:44:42AM 3/23/2007

Sample

Sample Name: AV90 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

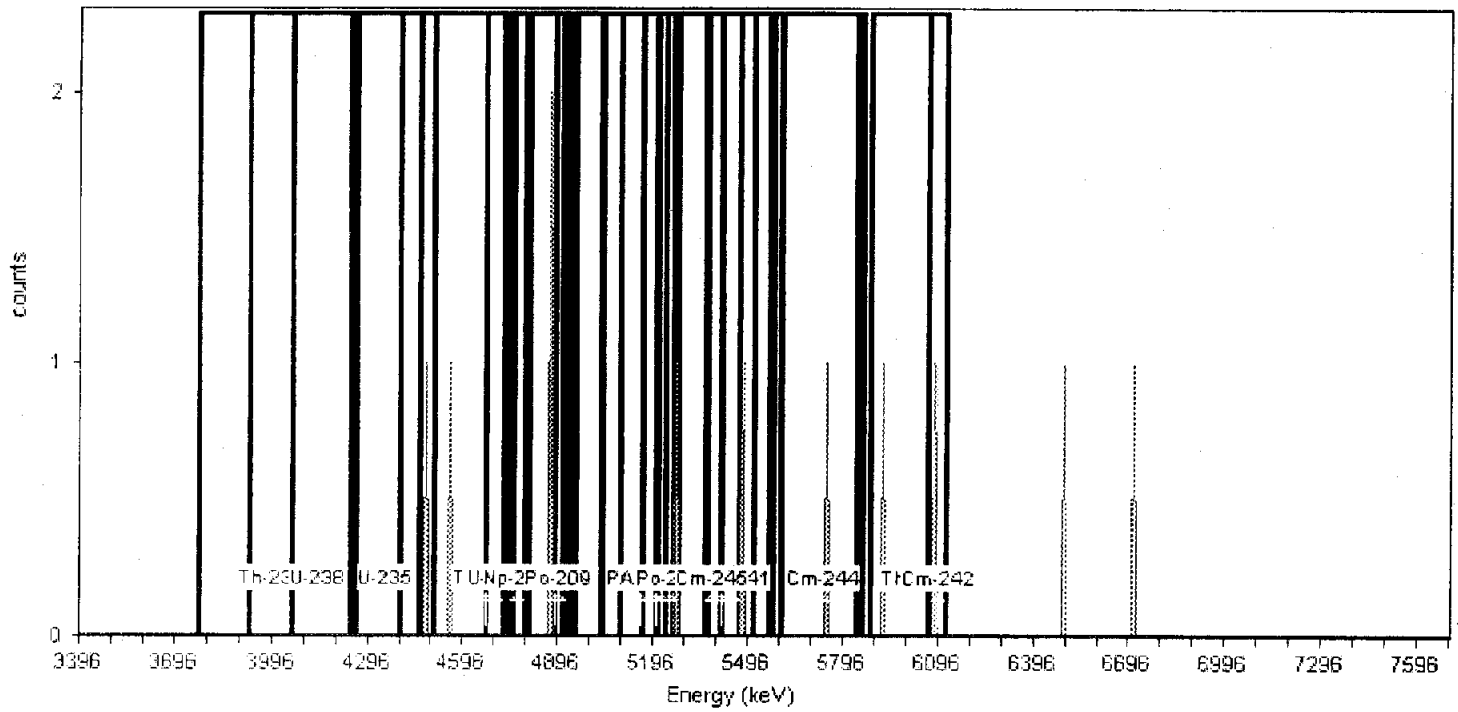
Acquisition

Detector: AV90 , SN: 46-033Q1
Acquisition Start Date: 3/22/2007 2:43:52PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: FEB2007_AV90
Calibration Date: 2/26/2007 10:02:00PM

Energy Calibration Equation:

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

Efficiency: 27.35% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 11.00

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
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	1.00	1.042E-003	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	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
Cm-244	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

STL

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:43:33AM 3/23/2007

Analyst: 60040

Sample

Sample Name: AV92
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

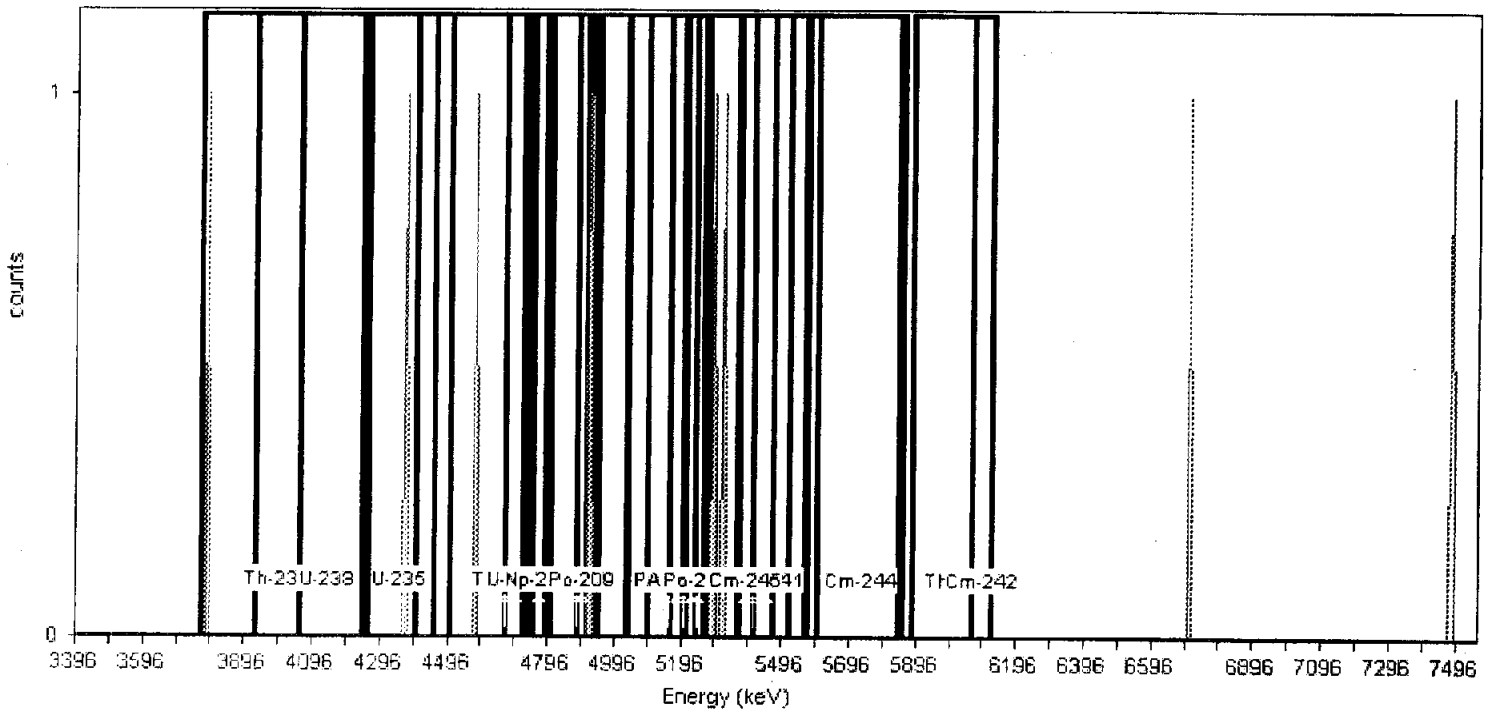
Acquisition

Detector: AV92 , SN: 46-033FF2
Acquisition Start Date: 3/22/2007 2:43:54PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV92
Calibration Date: 2/27/2007 11:22:44AM

Energy Calibration Equation:

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

Efficiency: 26.58% +/- 0.28% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 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	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	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	1.00	1.042E-003	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	2.00	2.083E-003	1.804E-003
Am-241	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
Cm-244	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

STL

SEVERN TRENT STL

Alpha Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:43:58AM 3/23/2007

Analyst: 60040

Sample

Sample Name: AV93
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

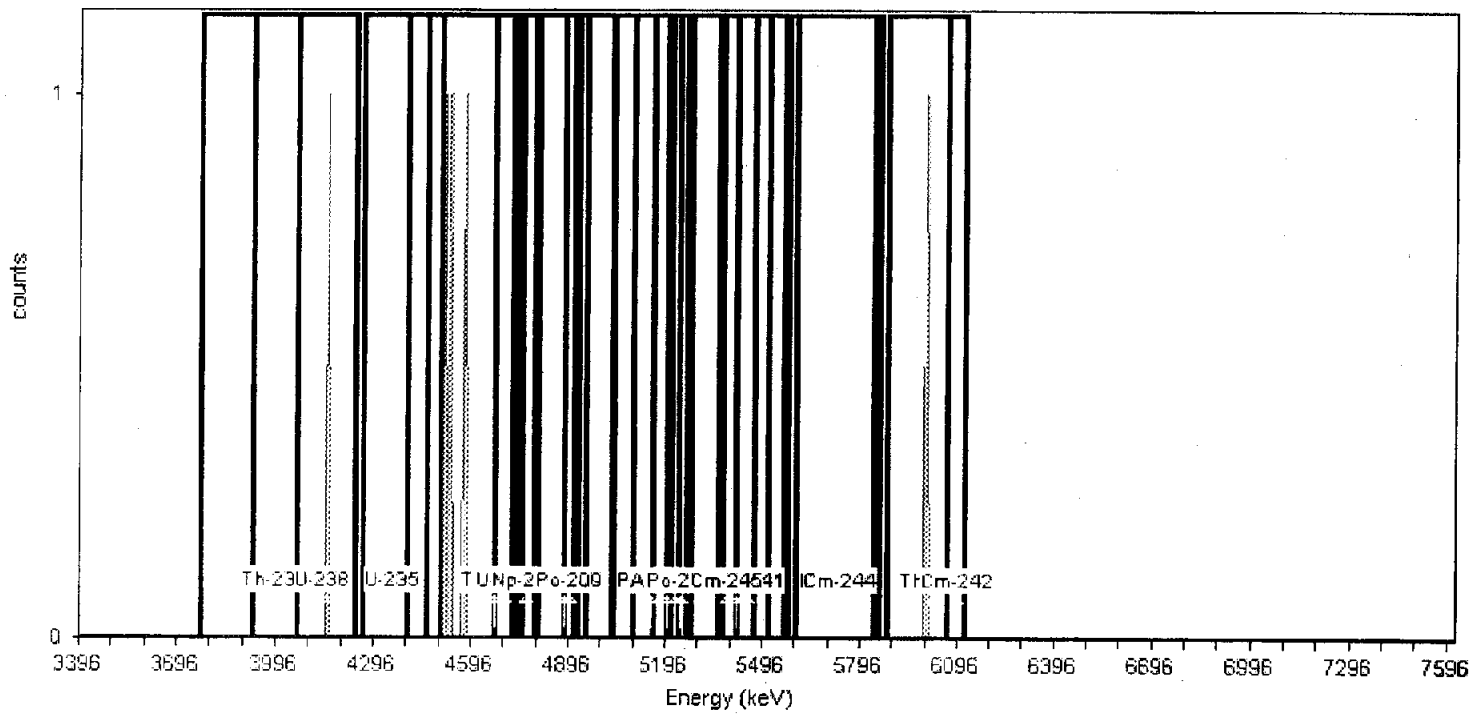
Acquisition

Detector: AV93 , SN: 46-033Q2
Acquisition Start Date: 3/22/2007 2:43:56PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV93
Calibration Date: 2/27/2007 11:22:50AM

Energy Calibration Equation:

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

Efficiency: 26.57% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background
Nuclide Library: Background ROI Library
Total Background Counts: 5.00

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
U-234	4.70	4.50	4.80	3.00	3.125E-003	2.083E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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

ST SEVERN TRENT STL

Alpha Spectroscopy Background Report

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

Analyst: 60040 6:44:01AM 3/23/2007

Sample

Sample Name: AV94 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

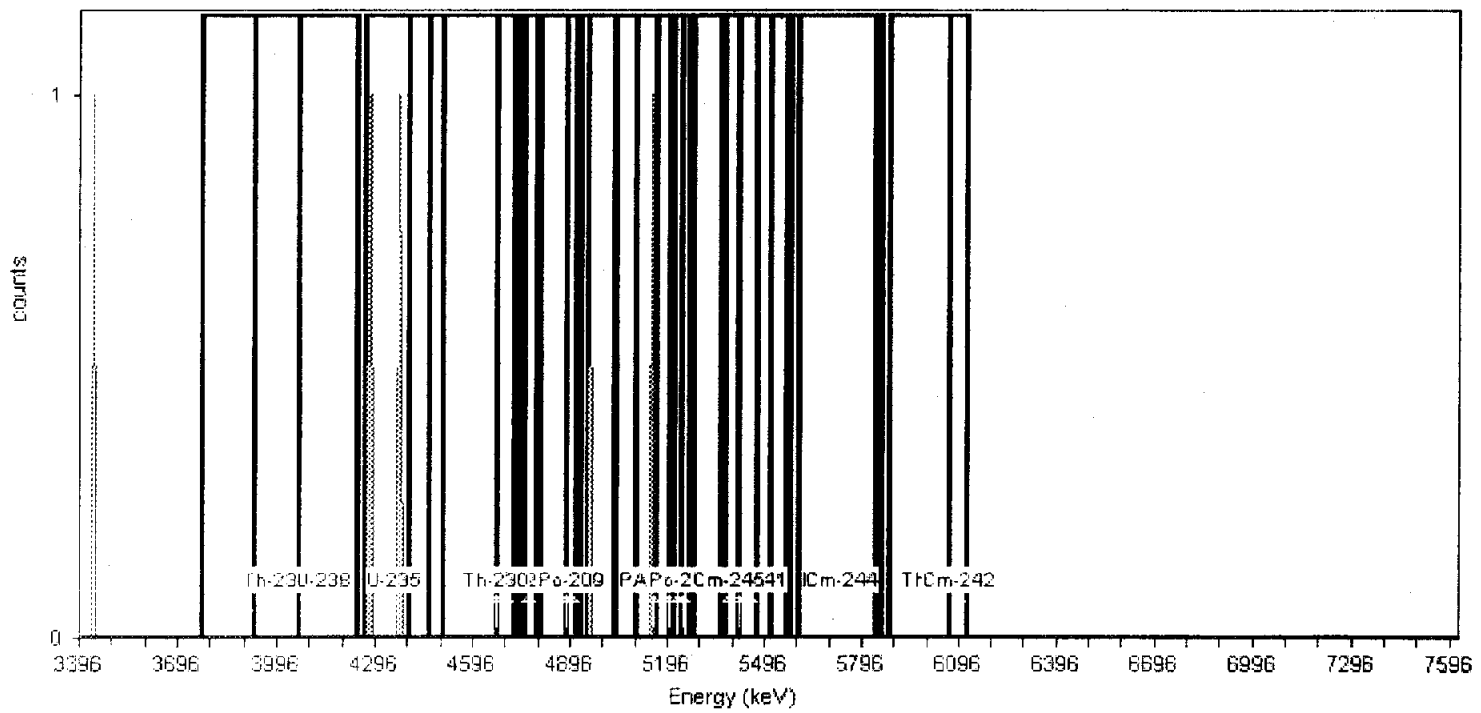
Acquisition

Detector: AV94 , SN: 46-032EE6
Acquisition Start Date: 3/22/2007 2:43:58PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: Feb2007_AV94
Calibration Date: 2/27/2007 11:22:58AM

Energy Calibration Equation:

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

Efficiency: 26.73% +/- 0.27% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_Background 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)
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	2.00	2.083E-003	1.804E-003
Am-243	5.20	5.03	5.28	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	0.00	0.000E+000	1.473E-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	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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
6:44:04AM 3/23/2007

Analyst: 60040

Sample

Sample Name: AV95
Comment:

Spectrum #1 Analysis #1

Batch

Batch Name: Mar2007
Description:

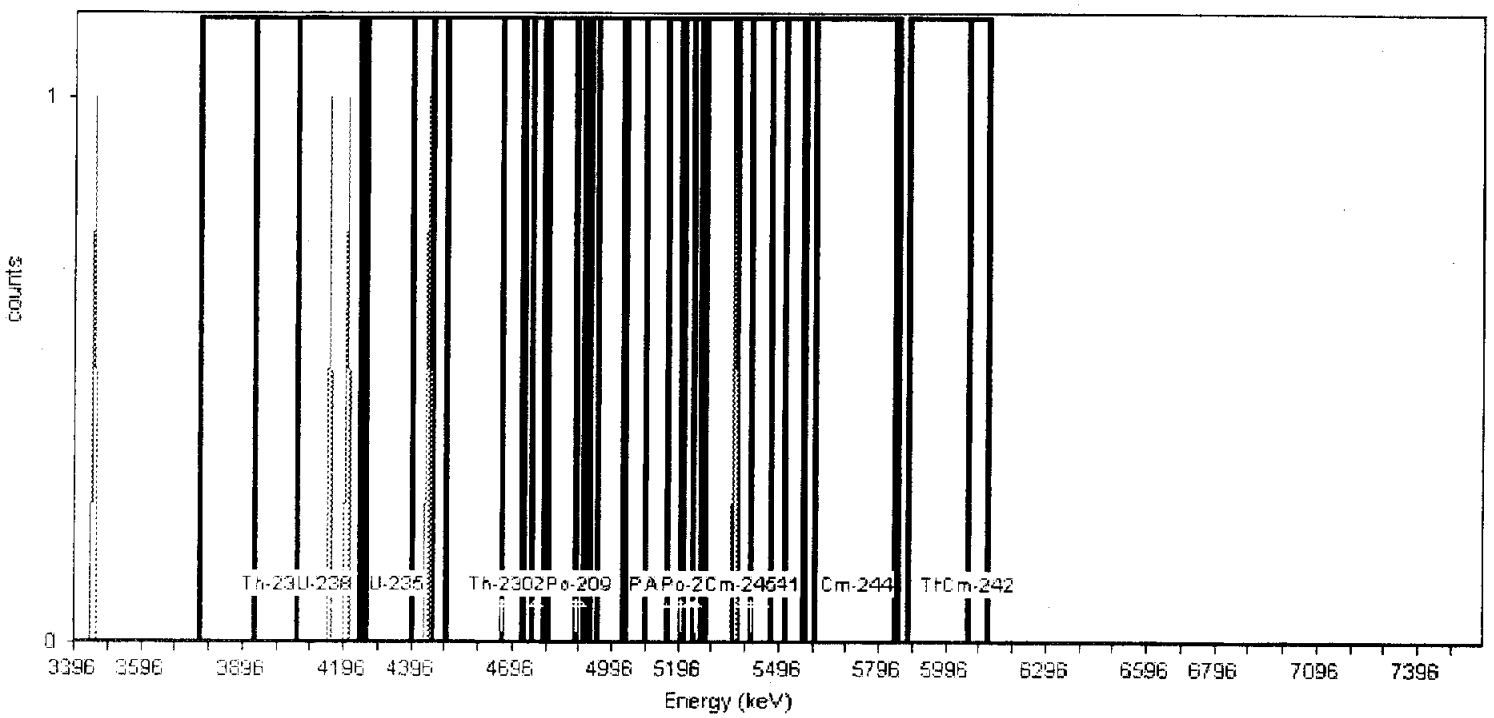
Acquisition

Detector: AV95 , SN: 46-033P4
Acquisition Start Date: 3/22/2007 2:43:59PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: FEB2007_AV95
Calibration Date: 2/27/2007 6:41:17AM

Energy Calibration Equation:

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

Efficiency: 26.68% +/- 0.26% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 5.00

STL

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

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

Analyst: 60040

6:44:08AM 3/23/2007

Sample

Sample Name: AV96

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

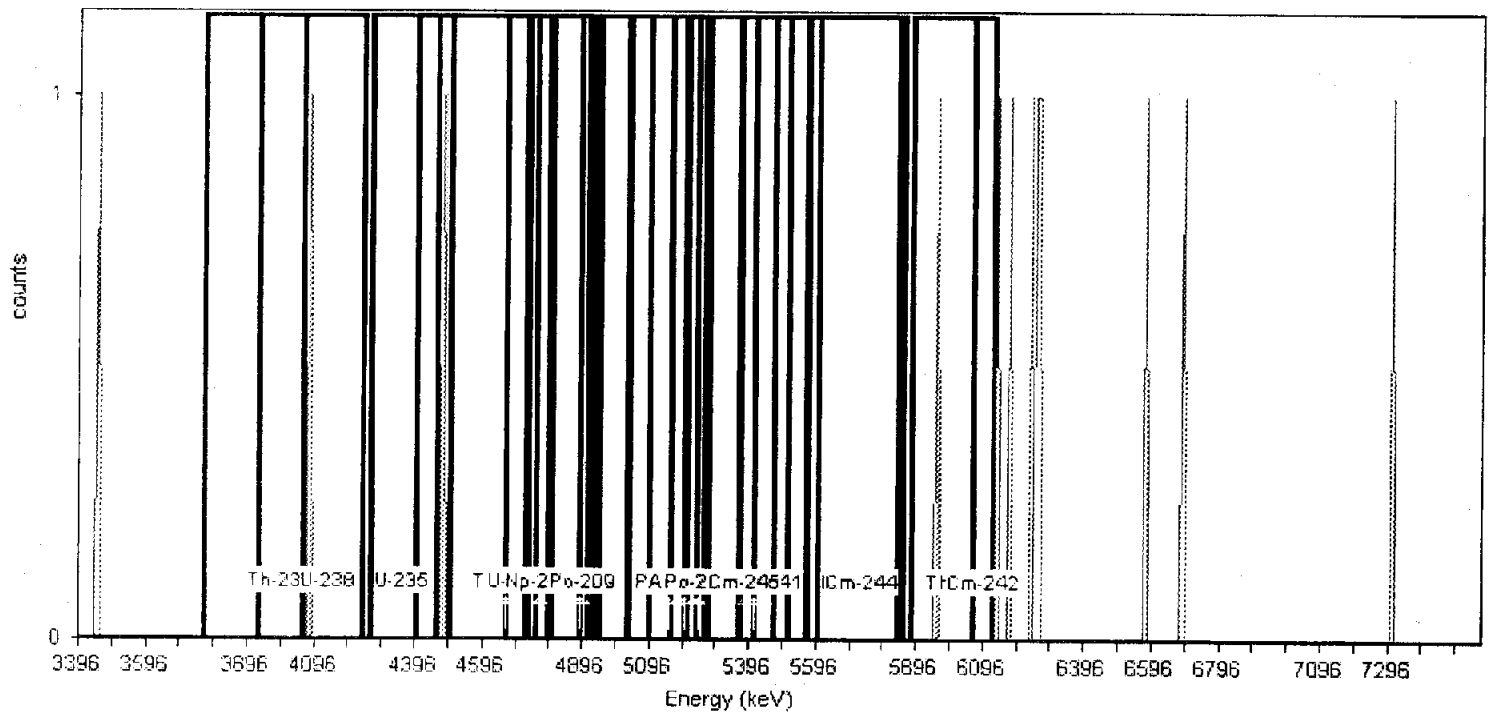
Acquisition

Detector: AV96 , SN: 46-033P1
Acquisition Start Date: 3/22/2007 2:44:02PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: FEB2007_AV96
Calibration Date: 2/27/2007 6:41:24AM

Energy Calibration Equation:

Gain = 7.2598 keV / Ch
Offset = 3,388.96 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 26.58% +/- 0.28% TPU(2 sigma)



General Analysis

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

Total Background Counts: 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	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
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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 6:44:11AM 3/23/2007

Sample

Sample Name: AV97 Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

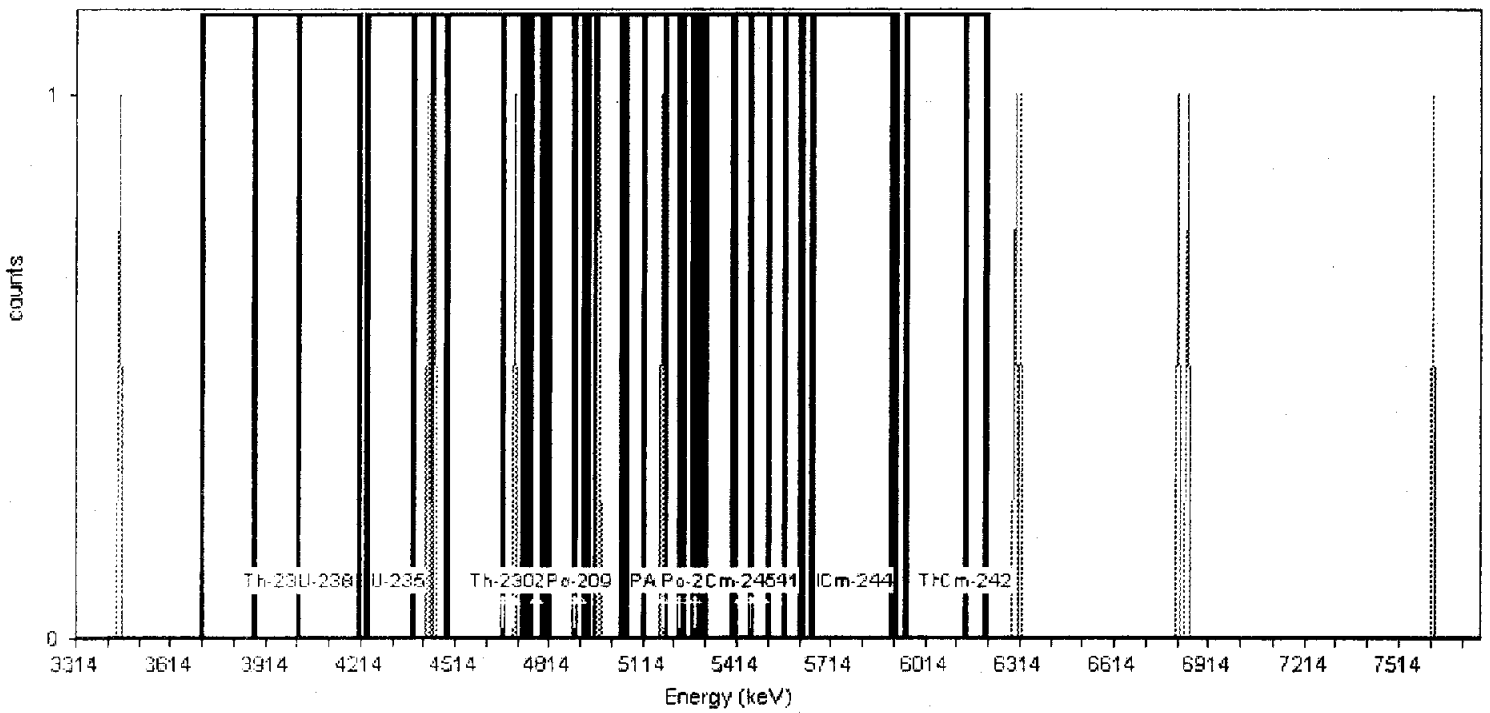
Acquisition

Detector: AV97 , SN: 76-03393
Acquisition Start Date: 3/22/2007 2:44:03PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: FEB2007_AV97
Calibration Date: 2/27/2007 6:41:29AM

Energy Calibration Equation:

Gain = 7.7000 keV / Ch
Offset = 3,306.99 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.63% +/- 0.50% TPU(2 sigma)



General Analysis

Analysis Method: Absolute 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)
U-234	4.69	4.49	4.81	1.00	1.042E-003	1.473E-003
Pu-242	4.89	4.66	4.94	1.00	1.042E-003	1.473E-003
Th-229	4.85	4.72	5.12	1.00	1.042E-003	1.473E-003
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.91	4.89	4.92	0.00	0.000E+000	1.473E-003
Pu-239	5.18	4.96	5.24	2.00	2.083E-003	1.804E-003
Am-243	5.23	5.05	5.31	1.00	1.042E-003	1.473E-003
U-232	5.26	5.05	5.41	1.00	1.042E-003	1.473E-003
Th-228	5.46	5.19	5.52	0.00	0.000E+000	1.473E-003
Po-210	5.28	5.23	5.29	0.00	0.000E+000	1.473E-003
Pu-238	5.48	5.27	5.56	0.00	0.000E+000	1.473E-003
Am-241	5.49	5.30	5.62	0.00	0.000E+000	1.473E-003
Cm-245	5.42	5.40	5.46	0.00	0.000E+000	1.473E-003
Pu-236	5.78	5.62	5.91	0.00	0.000E+000	1.473E-003
Cm-244	5.79	5.66	5.93	0.00	0.000E+000	1.473E-003
Th-227	6.10	5.96	6.21	0.00	0.000E+000	1.473E-003
Cm-242	6.18	6.15	6.21	0.00	0.000E+000	1.473E-003
Th-232	3.95	3.71	4.02	0.00	0.000E+000	1.473E-003
U-238	4.10	3.88	4.21	0.00	0.000E+000	1.473E-003
U-235	4.33	4.23	4.44	1.00	1.042E-003	1.473E-003
Th-230	4.66	4.38	4.73	3.00	3.125E-003	2.083E-003

STL

SEVERN TRENT STL

Alpha-Spectroscopy Background Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:44:14AM 3/23/2007

Analyst: 60040

Sample

Sample Name: AV98

Spectrum #1 Analysis #1

Comment:

Batch

Batch Name: Mar2007

Description:

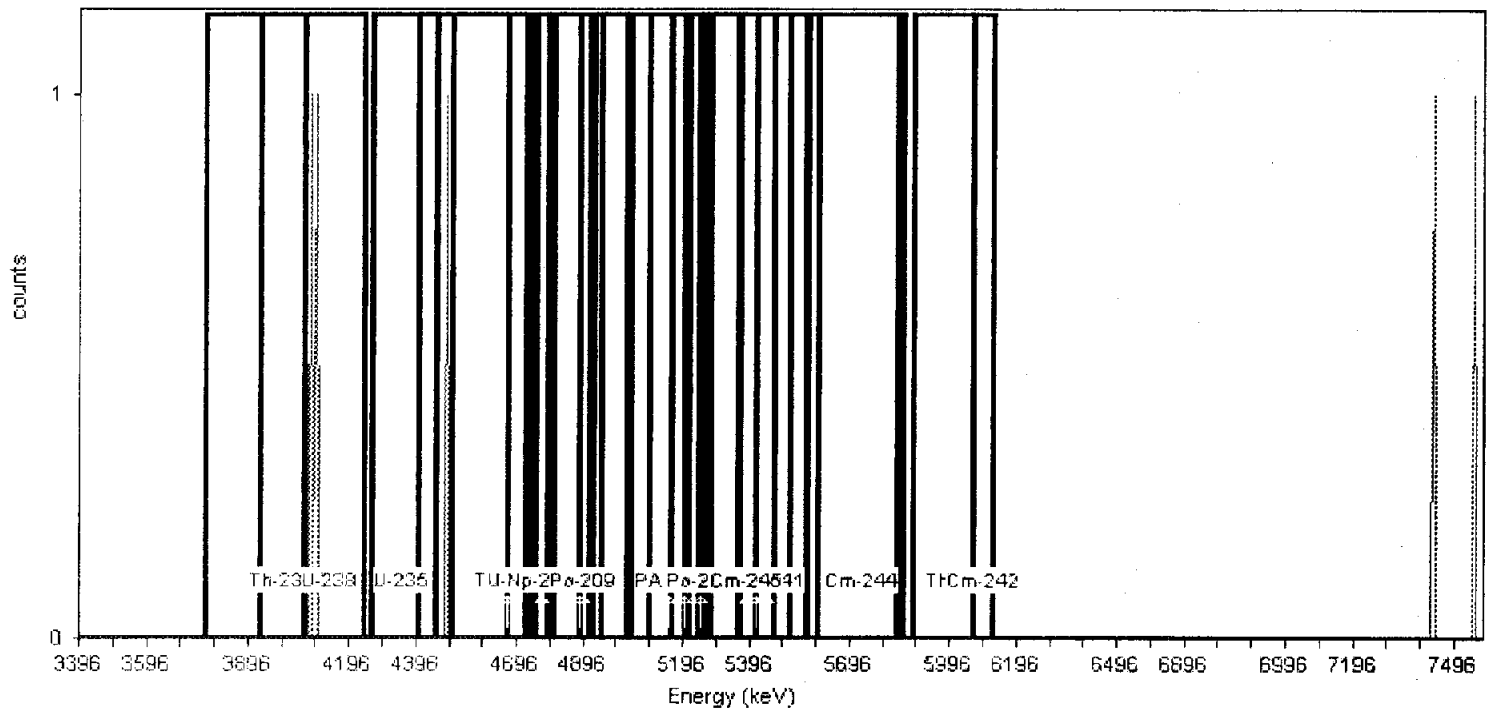
Acquisition

Detector: AV98 , SN: 46-033Q3
Acquisition Start Date: 3/22/2007 2:44:05PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: FEB2007_AV98
Calibration Date: 2/27/2007 6:41:34AM

Energy Calibration Equation:

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

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



General Analysis

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

Nuclide Library: Background ROI Library

Total Background Counts: 5.00

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	0.00	0.000E+000	1.473E-003
Th-230	4.67	4.40	4.73	1.00	1.042E-003	1.473E-003
U-234	4.70	4.50	4.80	0.00	0.000E+000	1.473E-003
Pu-242	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
Np-237	4.77	4.75	4.79	0.00	0.000E+000	1.473E-003
Po-209	4.90	4.88	4.91	0.00	0.000E+000	1.473E-003
Pu-239	5.15	4.95	5.21	0.00	0.000E+000	1.473E-003
Am-243	5.20	5.03	5.28	0.00	0.000E+000	1.473E-003
U-232	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
Po-210	5.25	5.20	5.26	0.00	0.000E+000	1.473E-003
Pu-238	5.44	5.24	5.52	0.00	0.000E+000	1.473E-003
Am-241	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
Cm-244	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

Monthly Calibrations
Alphavision
March 2007

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:53:57AM 3/26/2007

Analyst: 60040
Detector: AV1

Calibration

Name: Mar2007_AV1a
Description:

Calibration Date: 3/26/2007 11:53:54AM

Source Info

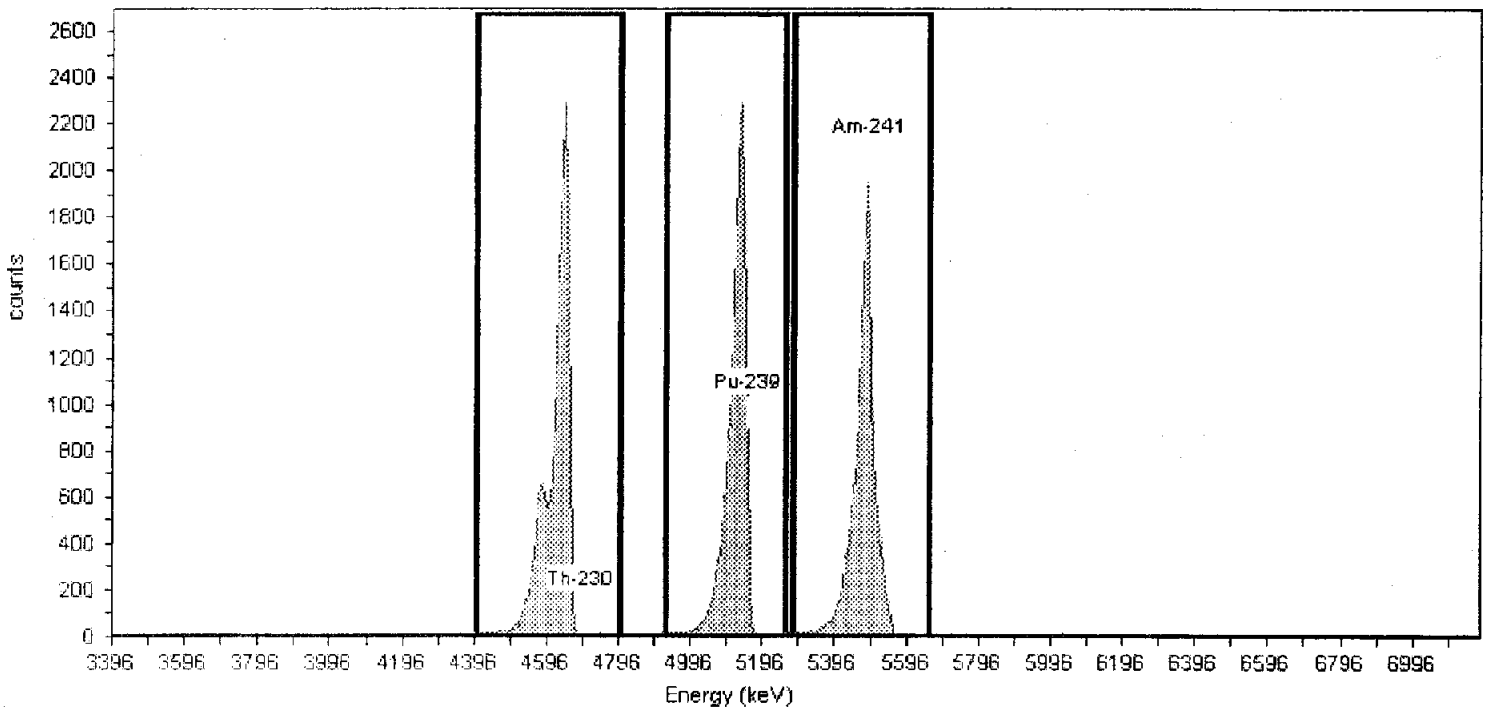
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV1 , SN: 41-158W6
Acquisition Start Date: 3/26/2007 9:29:04AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.58% +/- 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	16,144.00	115.31
Pu-239	243	5.16	212	258	15,407.00	110.05
Am-241	289	5.49	261	313	14,629.00	104.49

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:54:06AM 3/26/2007

Analyst: 60040
Detector: AV2

Calibration

Name: Mar2007_AV2a
Description:

Calibration Date: 3/26/2007 11:54:01AM

Source Info

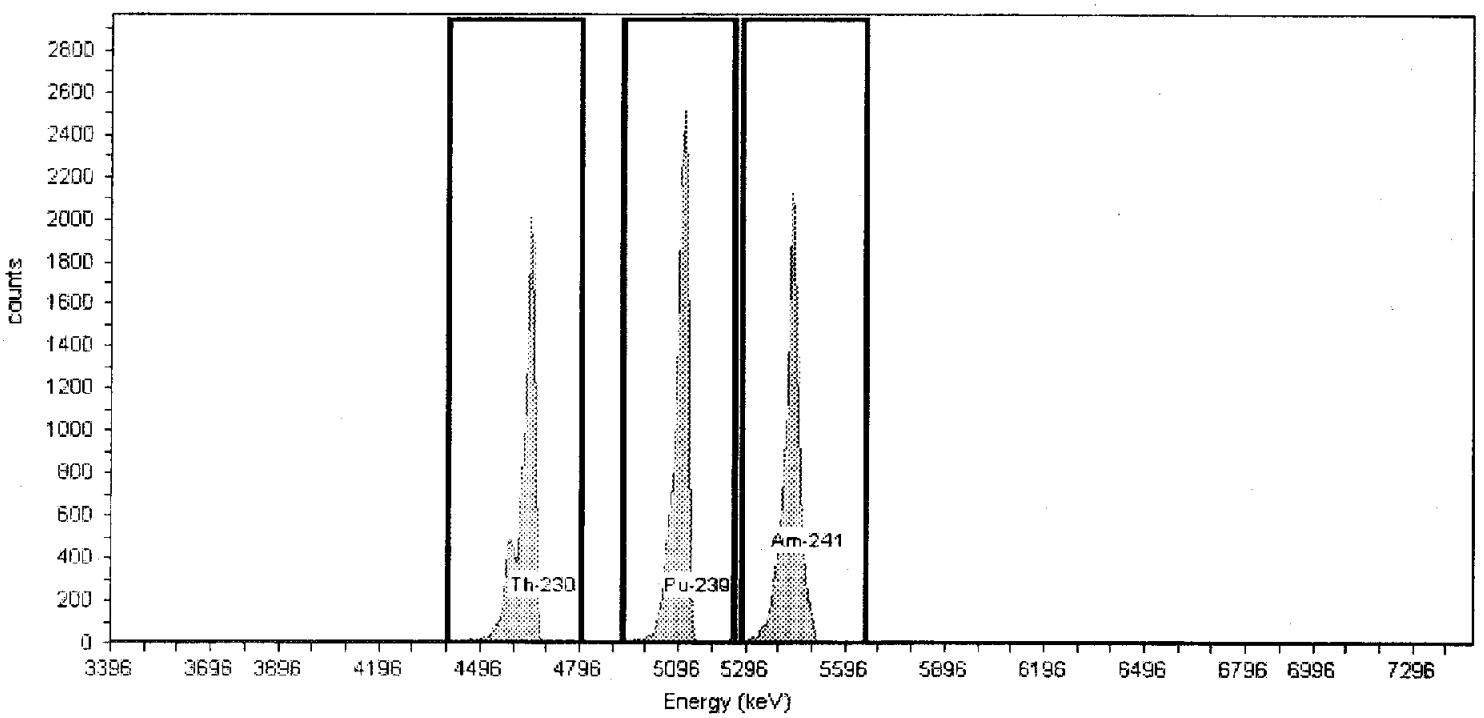
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV2 , SN: 41-158W7
Acquisition Start Date: 3/26/2007 9:29:05AM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.26% +/- 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	12,246.00	87.47
Pu-239	243	5.16	212	258	14,422.00	103.01
Am-241	289	5.49	261	313	14,098.00	100.70

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:28:46AM 3/26/2007

Analyst: 60040
Detector: AV3

Calibration

Name: Mar2007_AV3
Description:

Calibration Date: 3/26/2007 11:28:43AM

Source Info

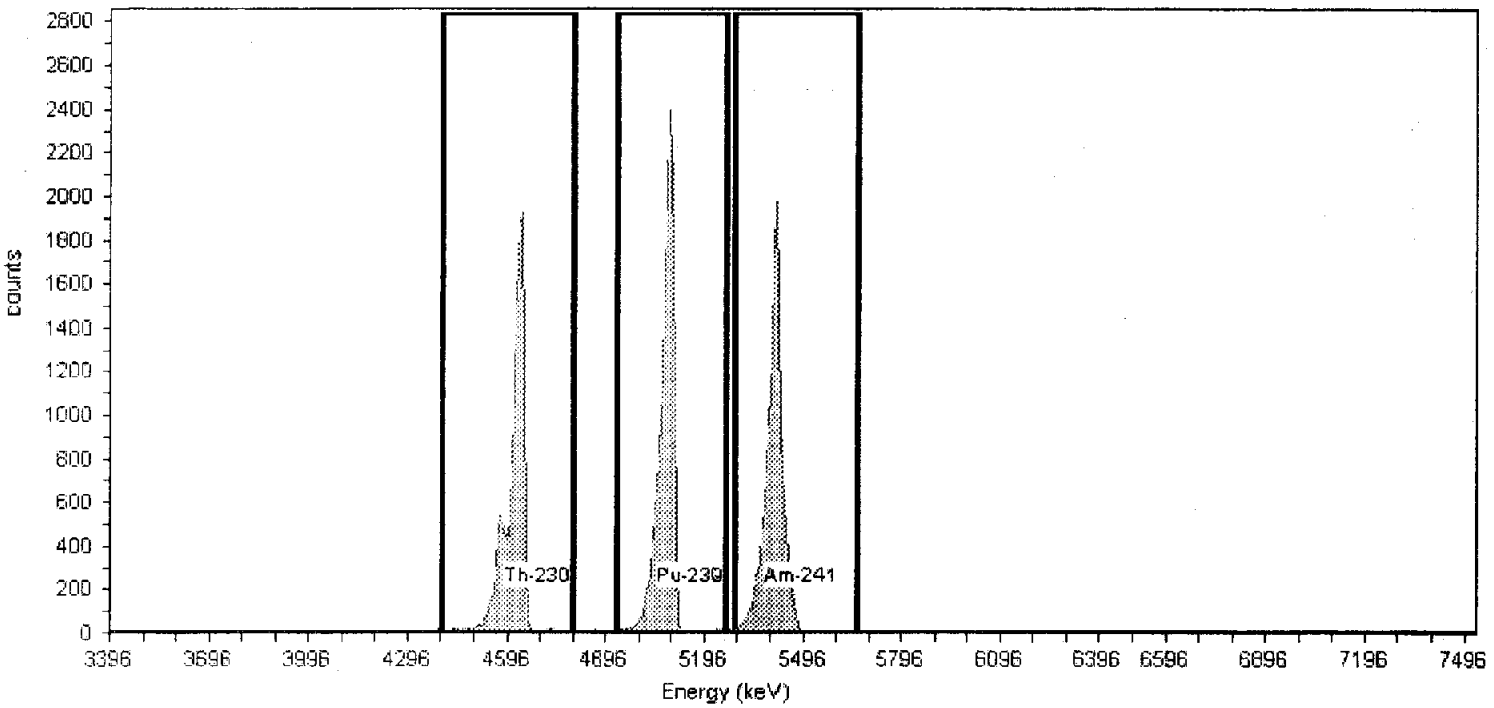
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV3 , SN: 41-158X5
Acquisition Start Date: 3/26/2007 9:05:37AM
Live Time: 140.00 min.
Real Time: 140.16 min.
Efficiency: 27.08% +/- 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	12,656.00	90.40
Pu-239	243	5.16	212	258	14,129.00	100.92
Am-241	289	5.49	261	313	13,200.00	94.29

STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:28:54AM 3/26/2007

Analyst: 60040
Detector: AV4

Calibration

Name: Mar2007_AV4
Description:

Calibration Date: 3/26/2007 11:28:51AM

Source Info

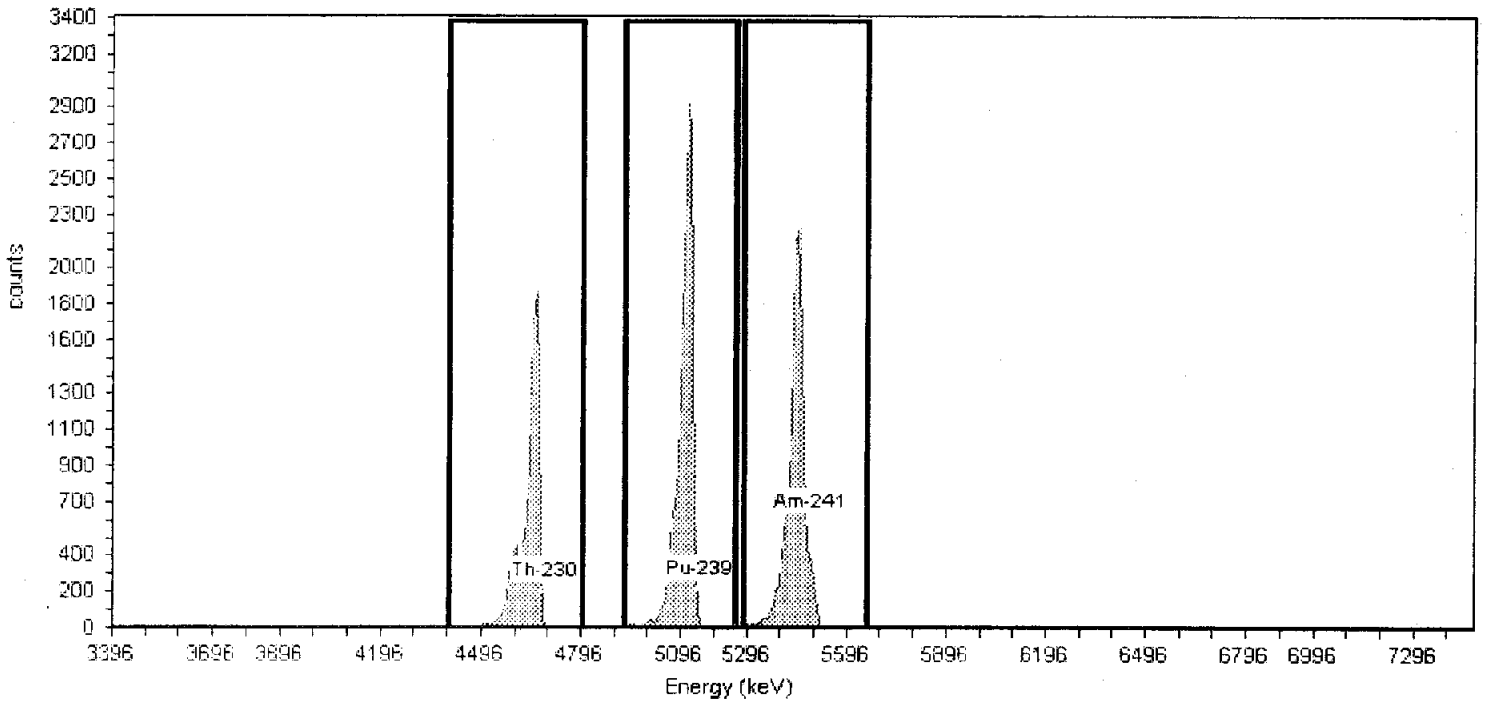
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV4 , SN: 41-172B5
Acquisition Start Date: 3/26/2007 9:05:50AM
Live Time: 140.00 min.
Real Time: 140.16 min.
Efficiency: 26.13% +/- 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	11,230.00	80.21
Pu-239	243	5.16	212	258	16,943.00	121.02
Am-241	289	5.49	261	313	14,776.00	105.54

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV6
2:20:51PM 3/26/2007

Calibration

Name: Mar2007_AV6
Description:

Calibration Date: 3/26/2007 2:20:47PM

Source Info

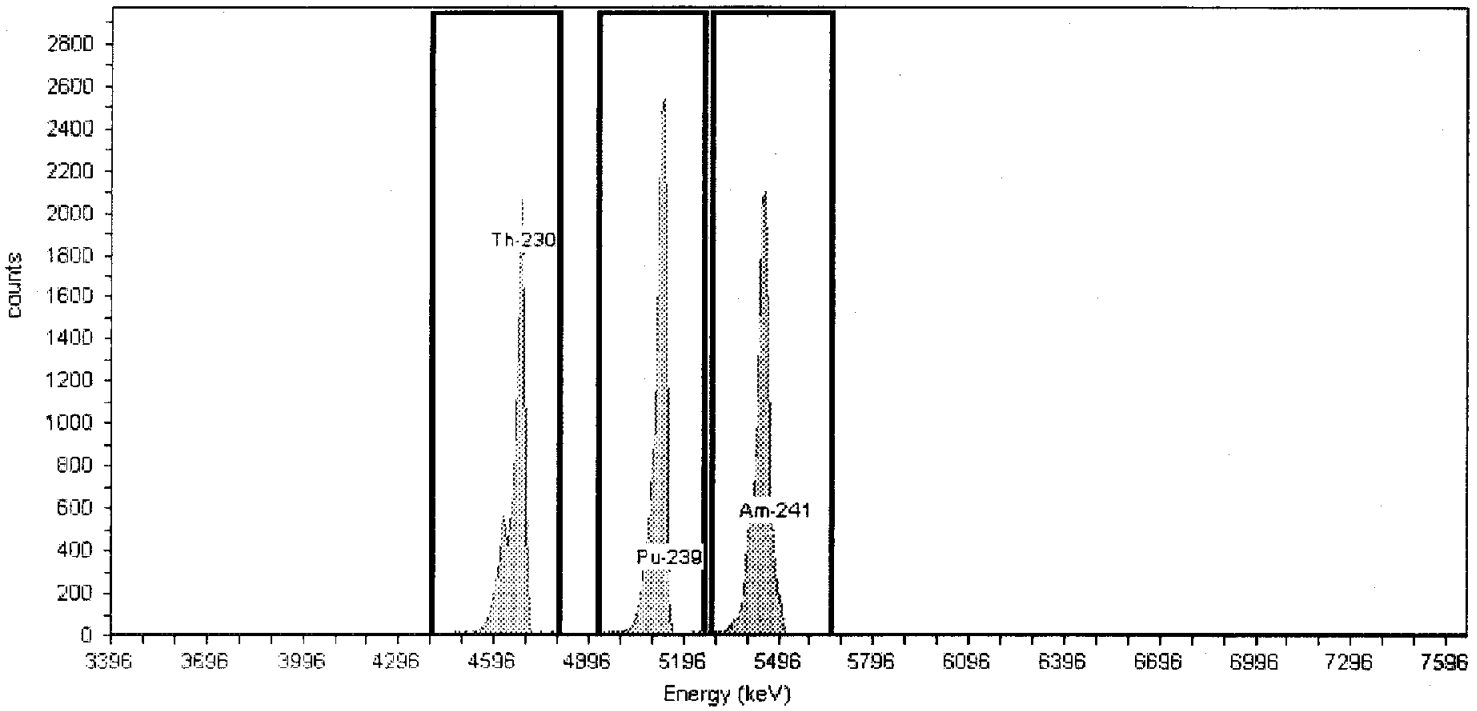
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV6 , SN:
Acquisition Start Date: 3/26/2007 11:55:46AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.79% +/- 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	12,560.00	89.71
Pu-239	243	5.16	212	258	14,791.00	105.65
Am-241	289	5.49	261	313	14,194.00	101.39

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV7

1:58:08PM 3/26/2007

Calibration

Name: Mar2007_AV7
Description:

Calibration Date: 3/26/2007 1:58:05PM

Source Info

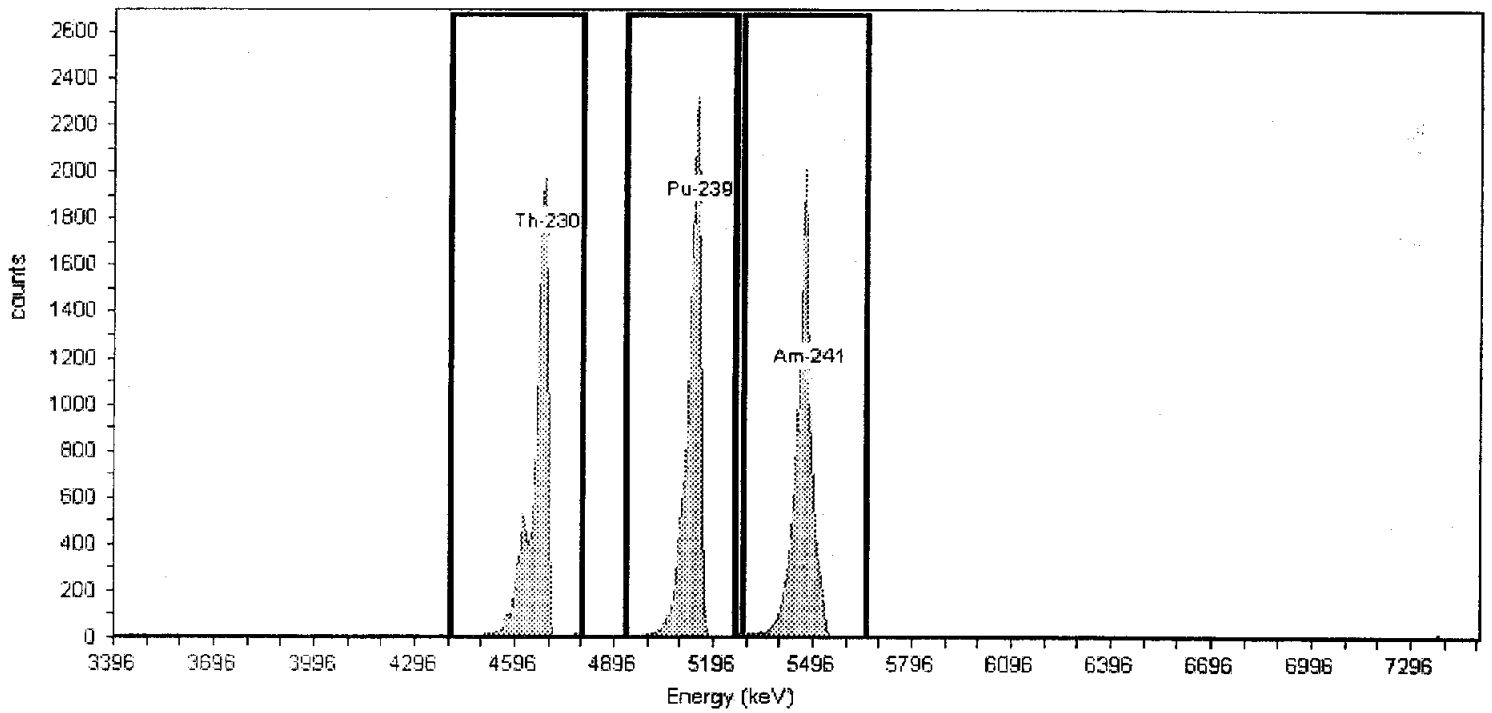
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV7 , SN: 41-158X6
Acquisition Start Date: 3/26/2007 11:33:14AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.79% +/- 0.29% 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	12,383.00	88.45
Pu-239	243	5.16	212	258	13,814.00	98.67
Am-241	289	5.49	261	313	13,350.00	95.36

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:58:15PM 3/26/2007

Analyst: 60040
Detector: AV8

Calibration

Name: Mar2007_AV8
Description:

Calibration Date: 3/26/2007 1:58:11PM

Source Info

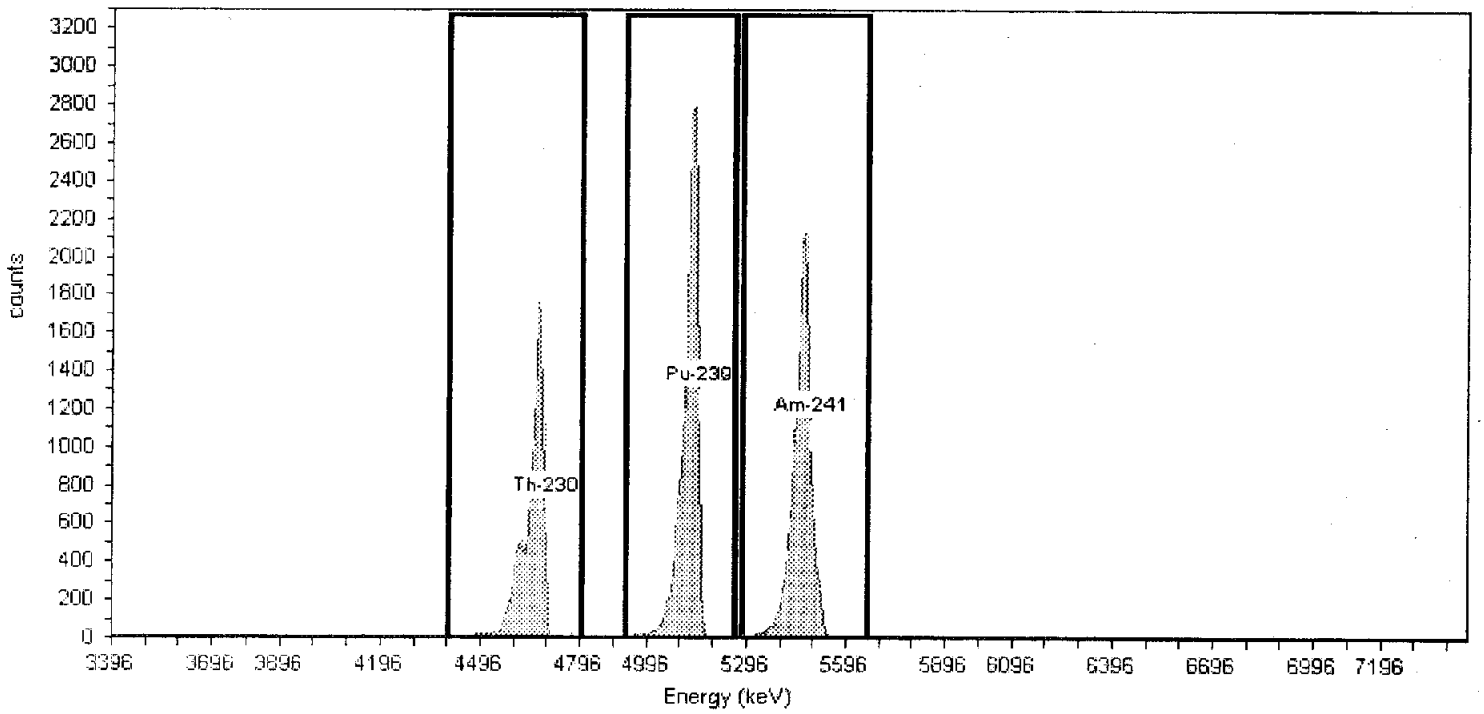
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV8 , SN: 41-158X1
Acquisition Start Date: 3/26/2007 11:33:16AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 28.43% +/- 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	12,364.00	88.31
Pu-239	243	5.16	212	258	18,455.00	131.82
Am-241	289	5.49	261	313	15,918.00	113.70

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV9

2:20:57PM 3/26/2007

Calibration

Name: Mar2007_AV9
Description:

Calibration Date: 3/26/2007 2:20:54PM

Source Info

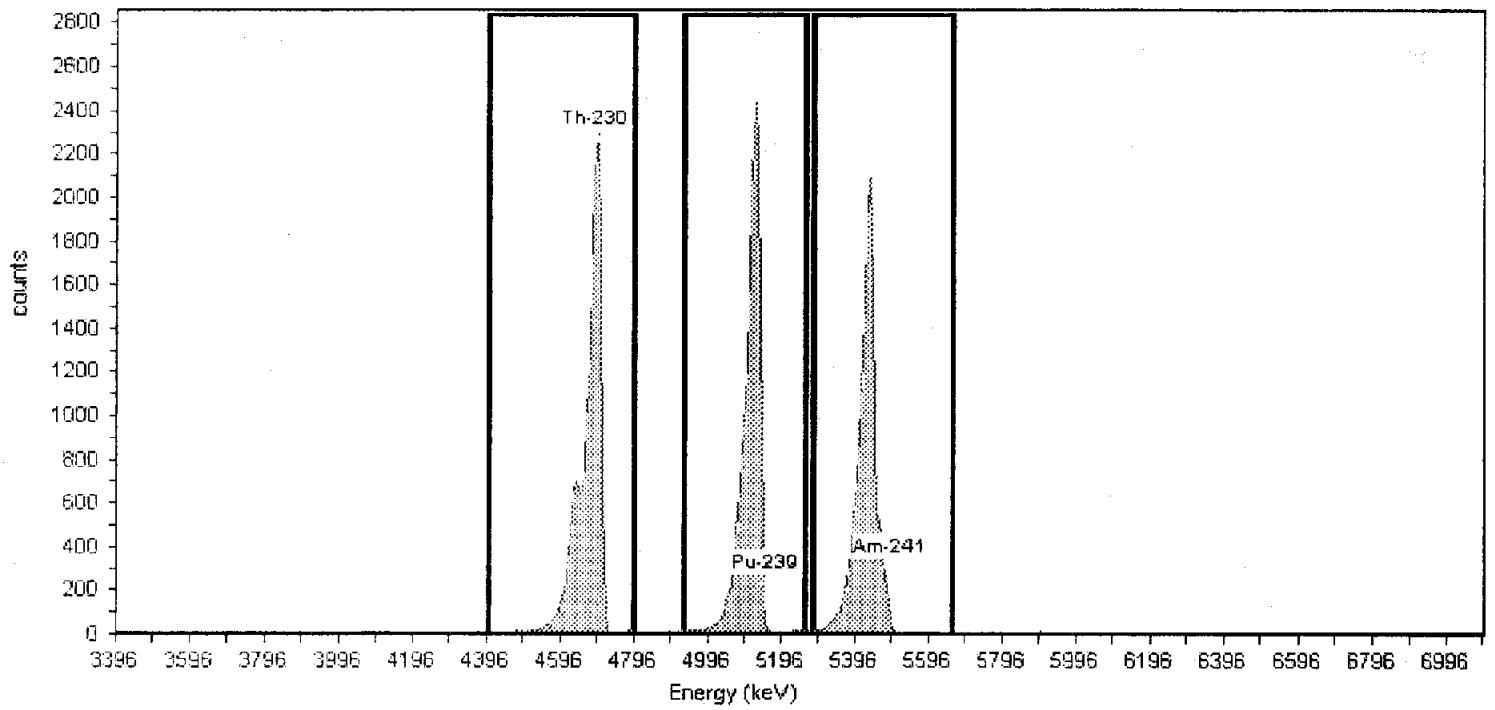
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV9 , SN: 41-172R1
Acquisition Start Date: 3/26/2007 11:55:50AM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.52% +/- 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	15,993.00	114.24
Pu-239	243	5.16	212	258	15,648.00	111.77
Am-241	289	5.49	261	313	14,415.00	102.96

STL

SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV11

4:58:25PM 3/26/2007

Calibration

Name: Mar2007_AV11
Description:

Calibration Date: 3/26/2007 4:58:21PM

Source Info

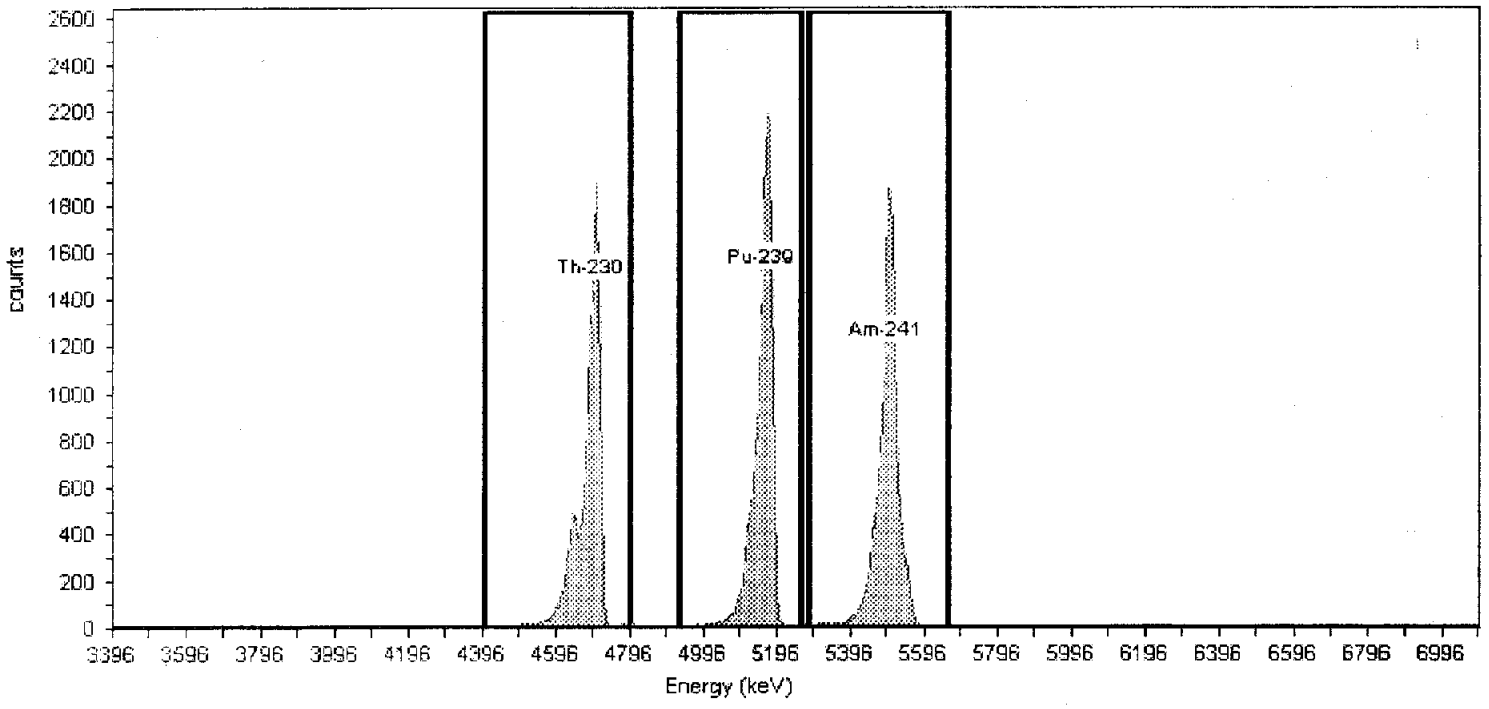
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV11 , SN: 41-172Q3
Acquisition Start Date: 3/26/2007 2:38:18PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.69% +/- 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	12,215.00	87.25
Pu-239	243	5.16	212	258	13,998.00	99.99
Am-241	289	5.49	261	313	13,202.00	94.30

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:59:01PM 3/26/2007

Analyst: 60040
Detector: AV12

Calibration

Name: Mar2007_AV12
Description:

Calibration Date: 3/26/2007 4:58:58PM

Source Info

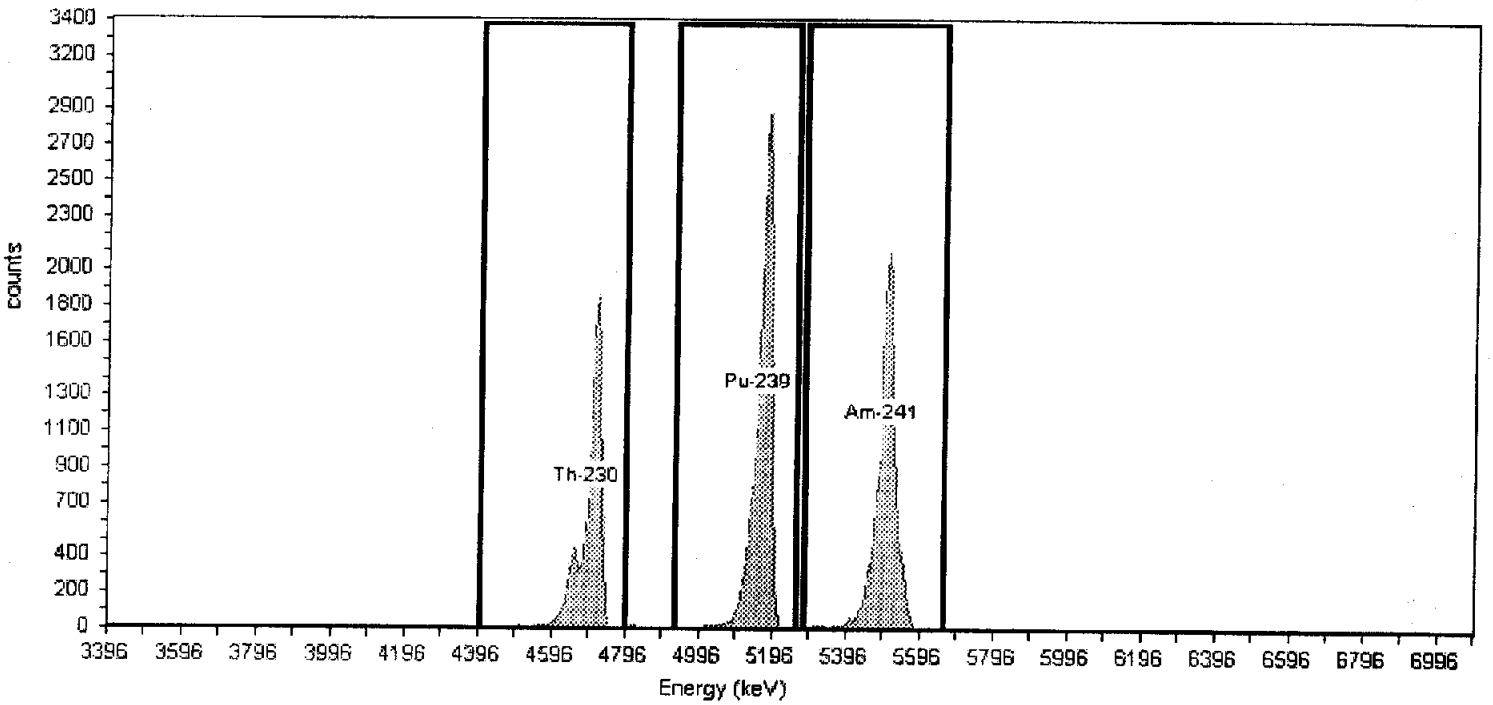
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV12 , SN: 41-172Q2
Acquisition Start Date: 3/26/2007 2:38:19PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.04% +/- 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	11,269.00	80.49
Pu-239	243	5.16	212	258	16,860.00	120.43
Am-241	289	5.49	261	313	14,680.00	104.86

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:58:04PM 3/26/2007

Analyst: 60040
Detector: AV13

Calibration

Name: Mar2007_AV13
Description:

Calibration Date: 3/26/2007 4:58:01PM

Source Info

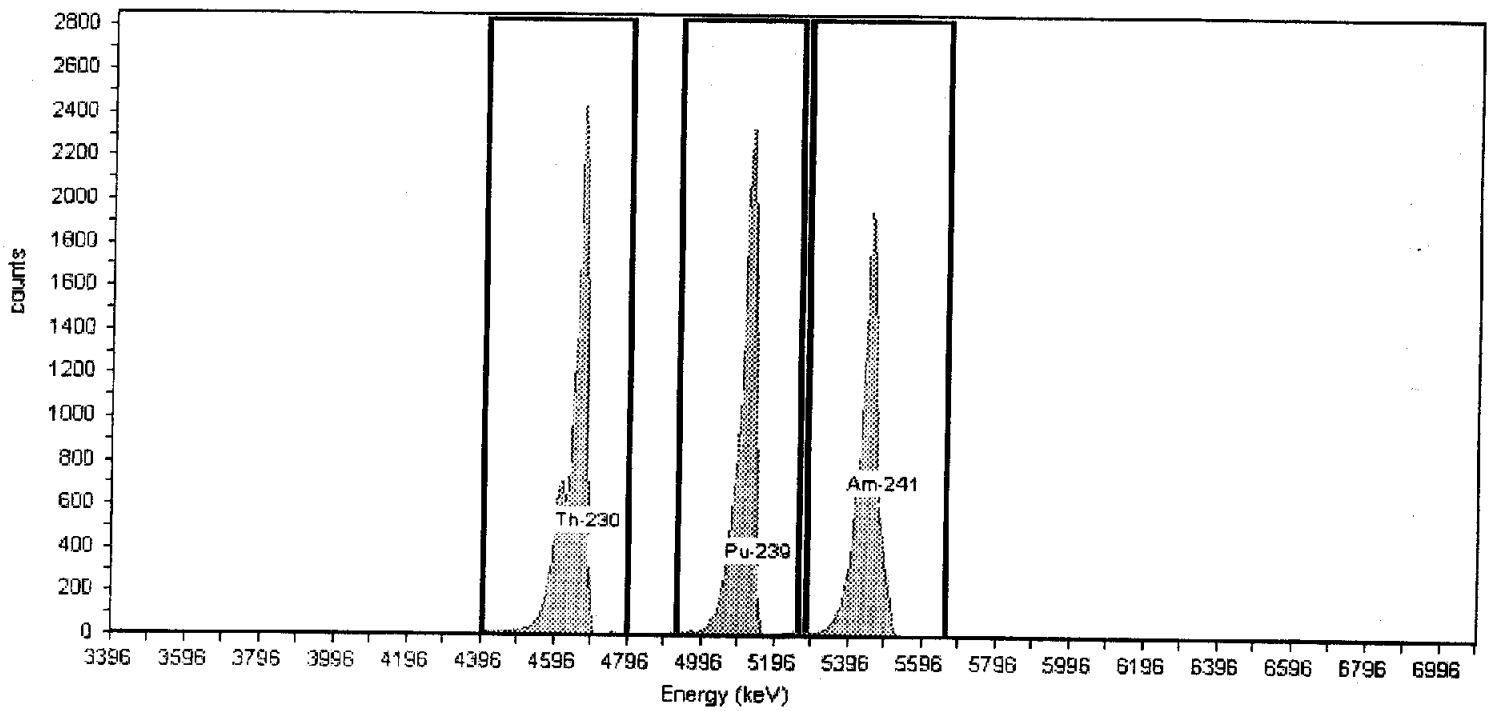
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV13 , SN: 41-172Q1
Acquisition Start Date: 3/26/2007 2:37:45PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.07% +/- 0.27% 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	16,490.00	117.79
Pu-239	243	5.16	212	258	15,841.00	113.15
Am-241	289	5.49	261	313	14,727.00	105.19

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:58:12PM 3/26/2007

Analyst: 60040
Detector: AV14

Calibration

Name: Mar2007_AV14
Description:

Calibration Date: 3/26/2007 4:58:09PM

Source Info

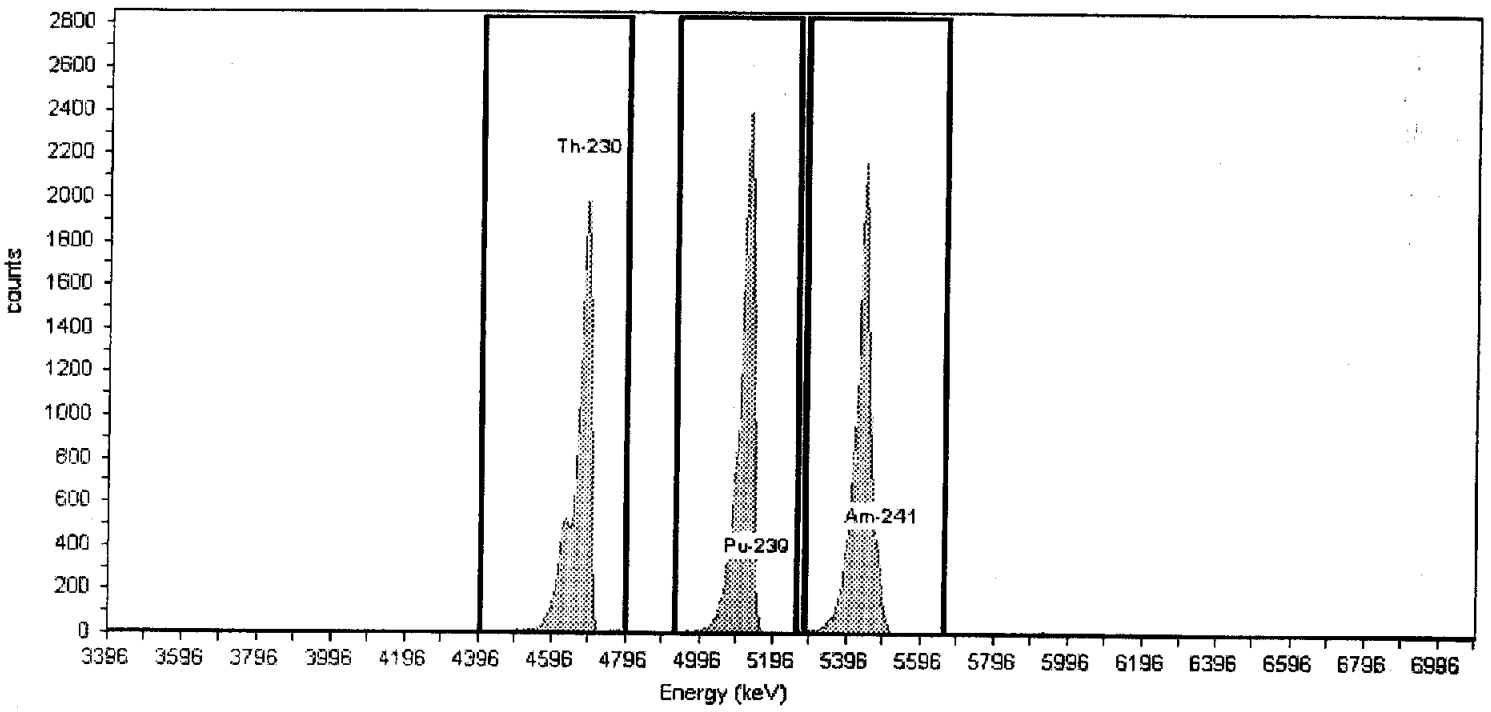
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV14 , SN: 41-172C4
Acquisition Start Date: 3/26/2007 2:37:47PM
Live Time: 140.00 min.
Real Time: 140.05 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	12,378.00	88.41
Pu-239	243	5.16	212	258	14,747.00	105.34
Am-241	289	5.49	261	313	14,110.00	100.79

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:50:52AM 3/27/2007

Analyst: 60040
Detector: AV15

Calibration

Name: Mar2007_AV15
Description:

Calibration Date: 3/27/2007 6:50:49AM

Source Info

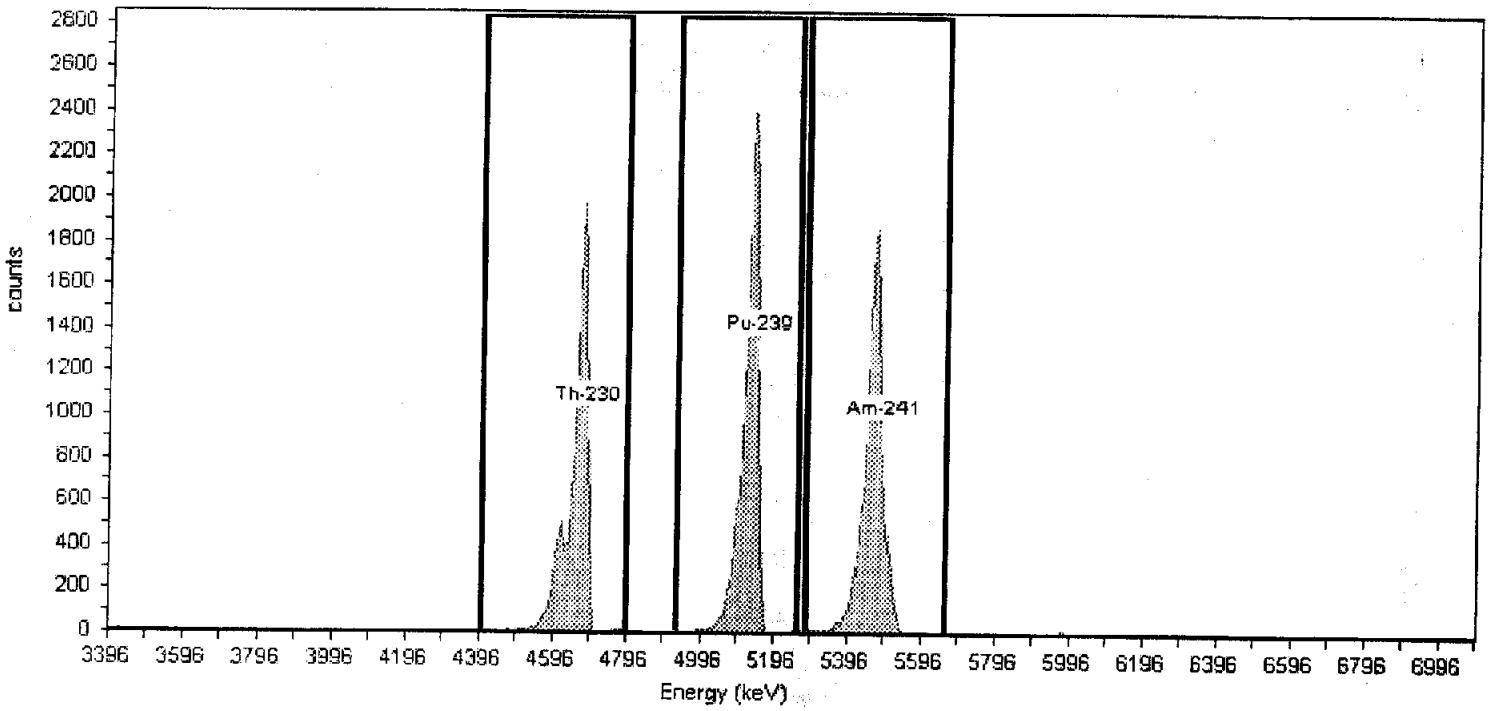
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV15 , SN: 41-172C5
Acquisition Start Date: 3/26/2007 5:01:40PM
Live Time: 140.00 min.
Real Time: 140.01 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	12,263.00	87.59
Pu-239	243	5.16	212	258	14,207.00	101.48
Am-241	289	5.49	261	313	13,183.00	94.16

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:49:27AM 3/27/2007

Analyst: 60040
Detector: AV17

Calibration

Name: Mar2007_AV17
Description:

Calibration Date: 3/27/2007 6:49:17AM

Source Info

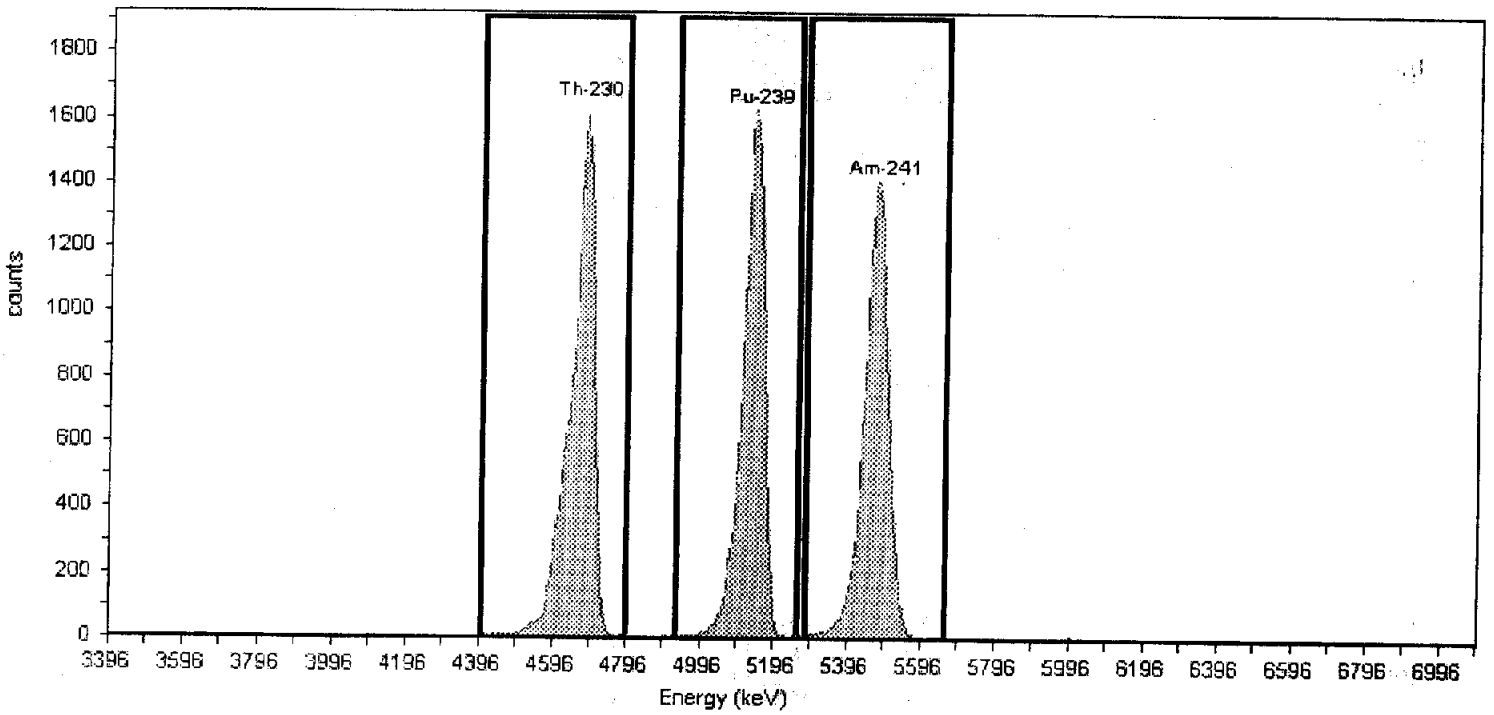
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV17 , SN: 41-172Q4
Acquisition Start Date: 3/26/2007 5:01:00PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.63% +/- 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	16,279.00	116.28
Pu-239	243	5.16	212	258	15,347.00	109.62
Am-241	289	5.49	261	313	14,680.00	104.86

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:50:46AM 3/27/2007

Analyst: 60040
Detector: AV18

Calibration

Name: Mar2007_AV18
Description:

Calibration Date: 3/27/2007 6:50:43AM

Source Info

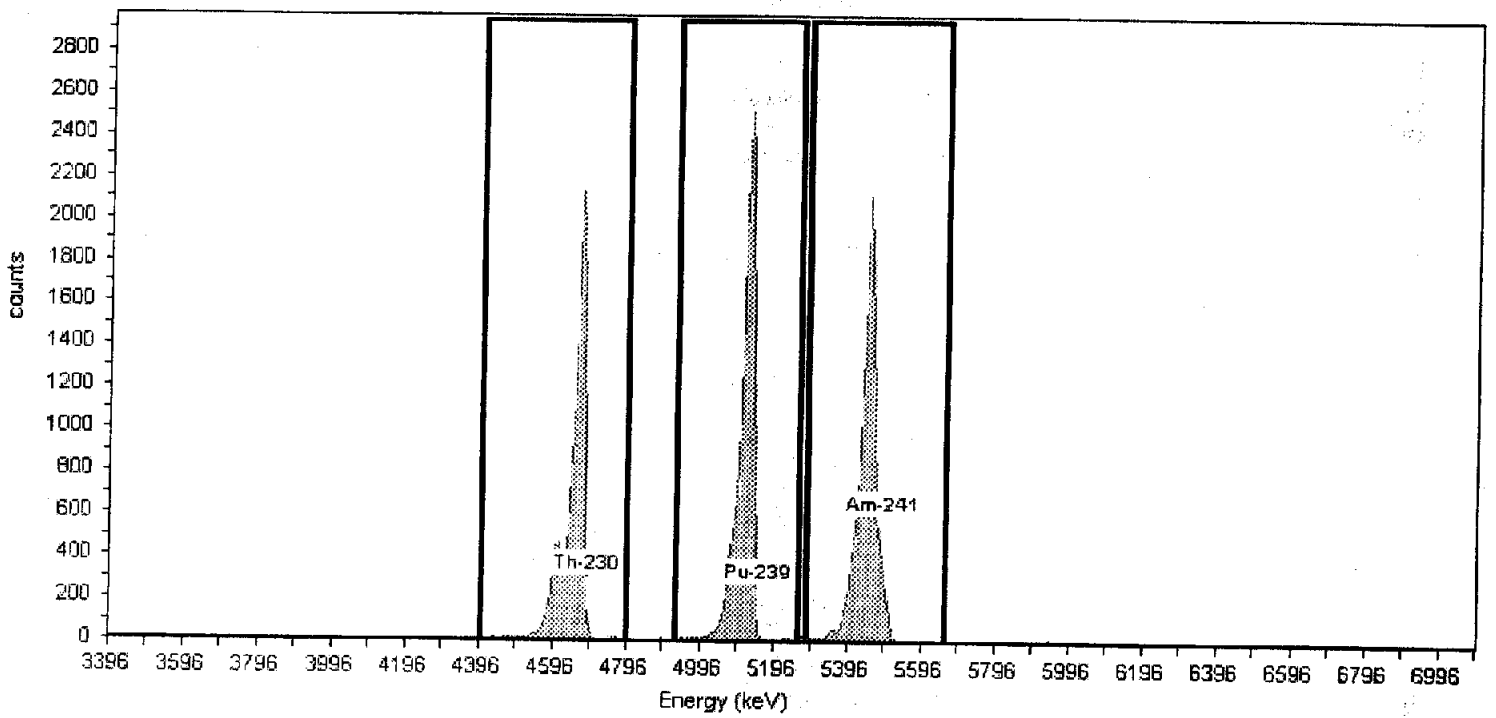
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV18 , SN: 41-172C6
Acquisition Start Date: 3/26/2007 5:01:01PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 25.21% +/- 0.27% 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	11,881.00	84.86
Pu-239	243	5.16	212	258	13,855.00	98.96
Am-241	289	5.49	261	313	13,307.00	95.05

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV19

5:23:01PM 3/27/2007

Calibration

Name: Mar2007_AV19
Description:

Calibration Date: 3/27/2007 5:22:57PM

Source Info

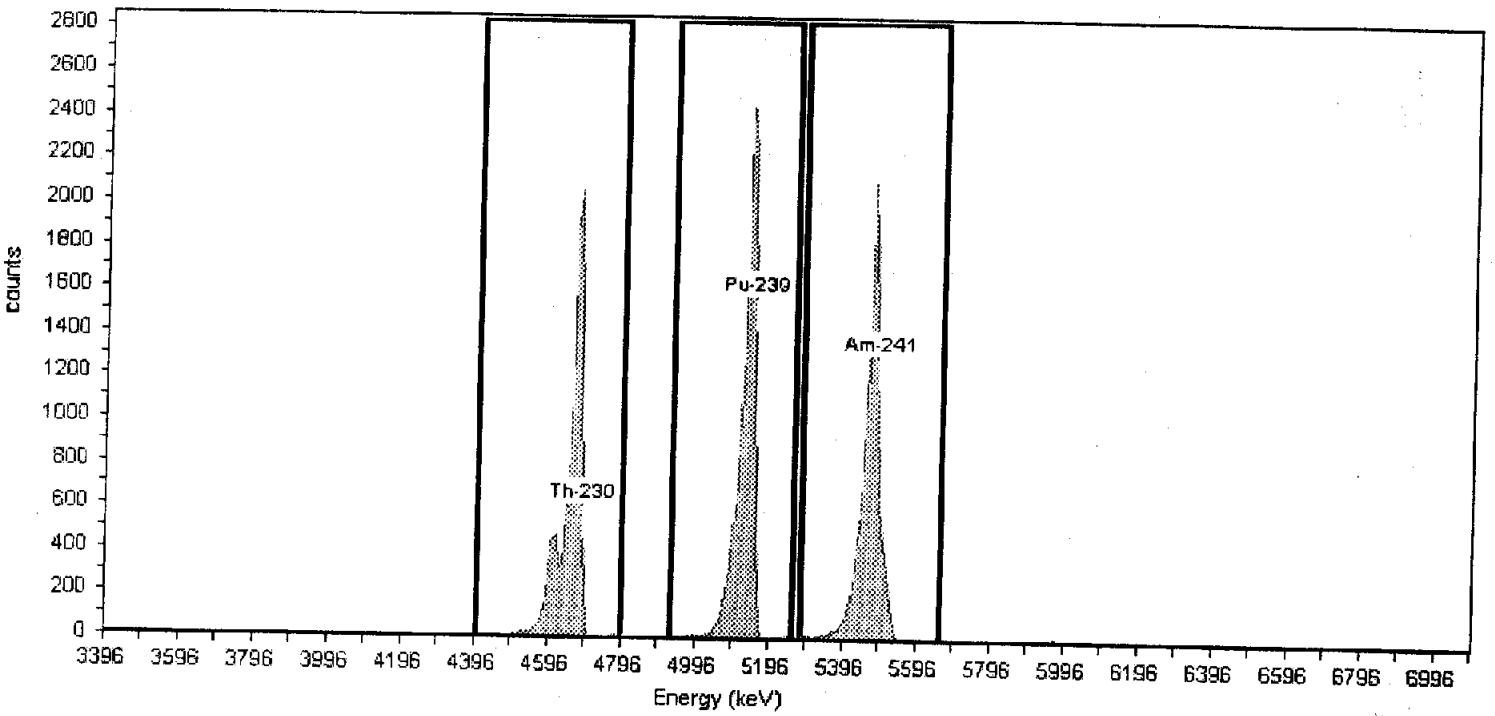
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV19 , SN: 41-172Q6
Acquisition Start Date: 3/27/2007 3:02:52PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.06% +/- 0.29% 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	11,822.00	84.44
Pu-239	243	5.16	212	258	13,752.00	98.23
Am-241	289	5.49	261	313	12,909.00	92.21

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:50:59AM 3/27/2007

Analyst: 60040
Detector: AV20

Calibration

Name: Mar2007_AV20
Description:

Calibration Date: 3/27/2007 6:50:56AM

Source Info

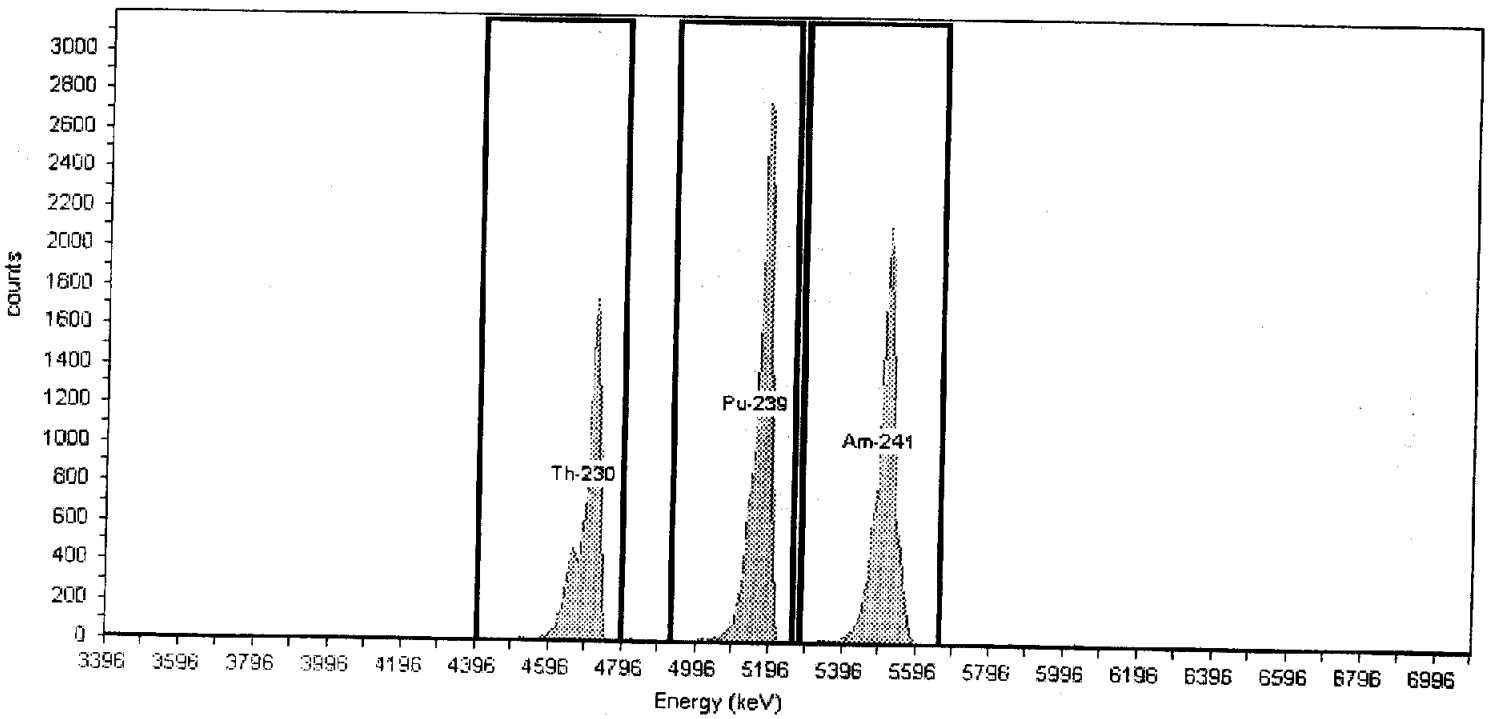
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV20 , SN: 41-172R2
Acquisition Start Date: 3/26/2007 5:01:45PM
Live Time: 140.00 min.
Real Time: 140.06 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 / 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	11,596.00	82.83
Pu-239	243	5.16	212	258	17,660.00	126.14
Am-241	289	5.49	261	313	15,168.00	108.34

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:23:08PM 3/27/2007

Analyst: 60040
Detector: AV21

Calibration

Name: Mar2007_AV21
Description:

Calibration Date: 3/27/2007 5:23:05PM

Source Info

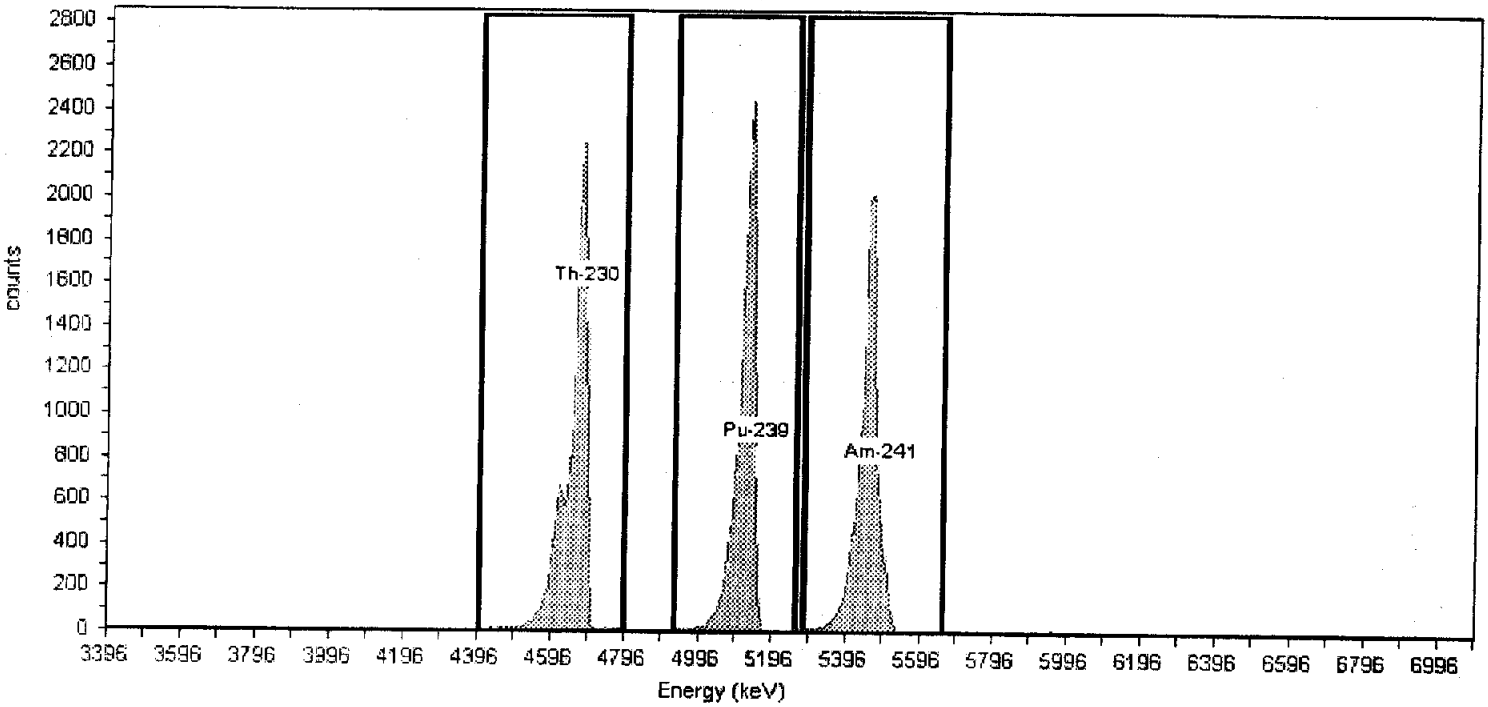
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV21 , SN: 41-172C7
Acquisition Start Date: 3/27/2007 3:02:20PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.40% +/- 0.26% 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	15,962.00	114.01
Pu-239	243	5.16	212	258	15,413.00	110.09
Am-241	289	5.49	261	313	14,460.00	103.29

STL SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:23:15PM 3/27/2007

Analyst: 60040
Detector: AV22

Calibration

Name: Mar2007_AV22
Description:

Calibration Date: 3/27/2007 5:23:12PM

Source Info

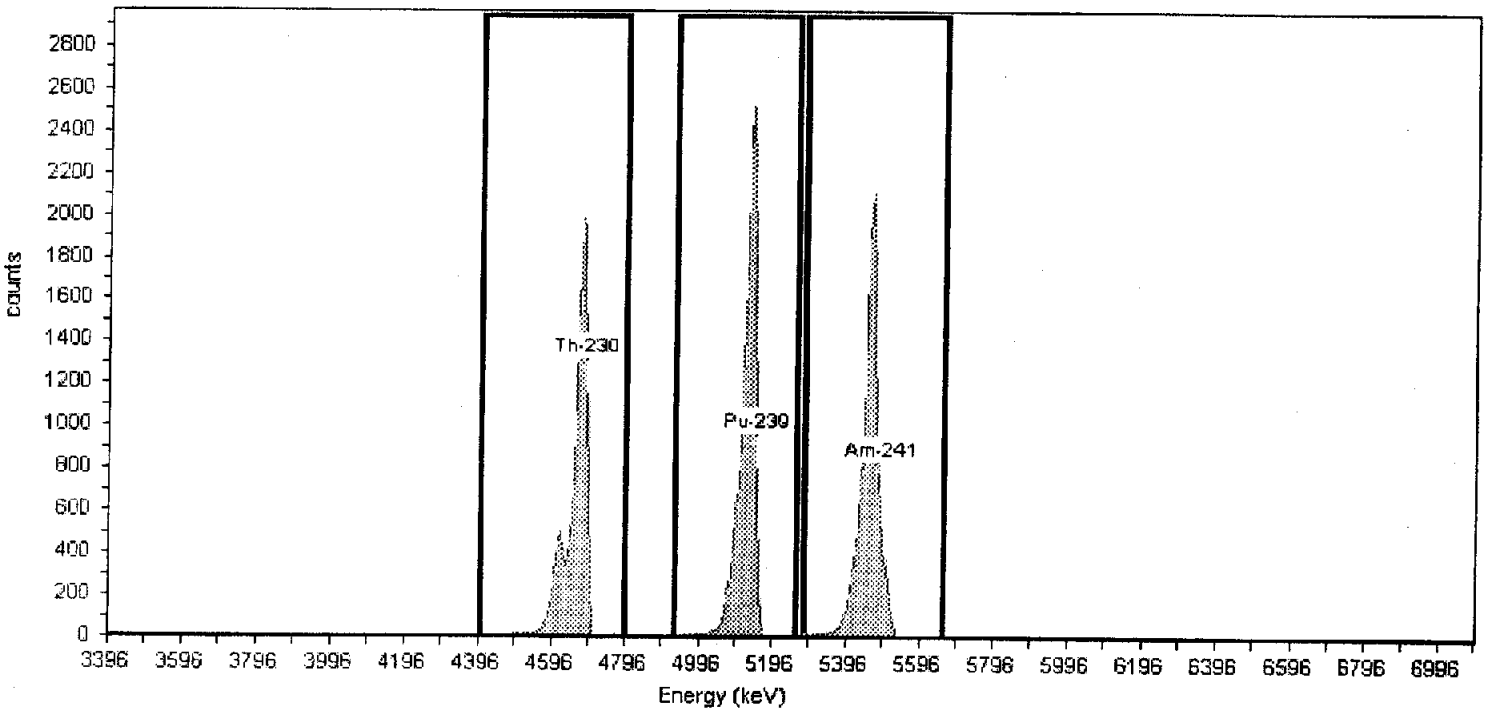
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV22 , SN: 41-172Q5
Acquisition Start Date: 3/27/2007 3:02:23PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 25.63% +/- 0.27% 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	12,086.00	86.33
Pu-239	243	5.16	212	258	14,154.00	101.10
Am-241	289	5.49	261	313	13,460.00	96.14

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:11:07AM 3/28/2007

Analyst: 60040
Detector: AV23

Calibration

Name: Mar2007_AV23
Description:

Calibration Date: 3/28/2007 7:11:04AM

Source Info

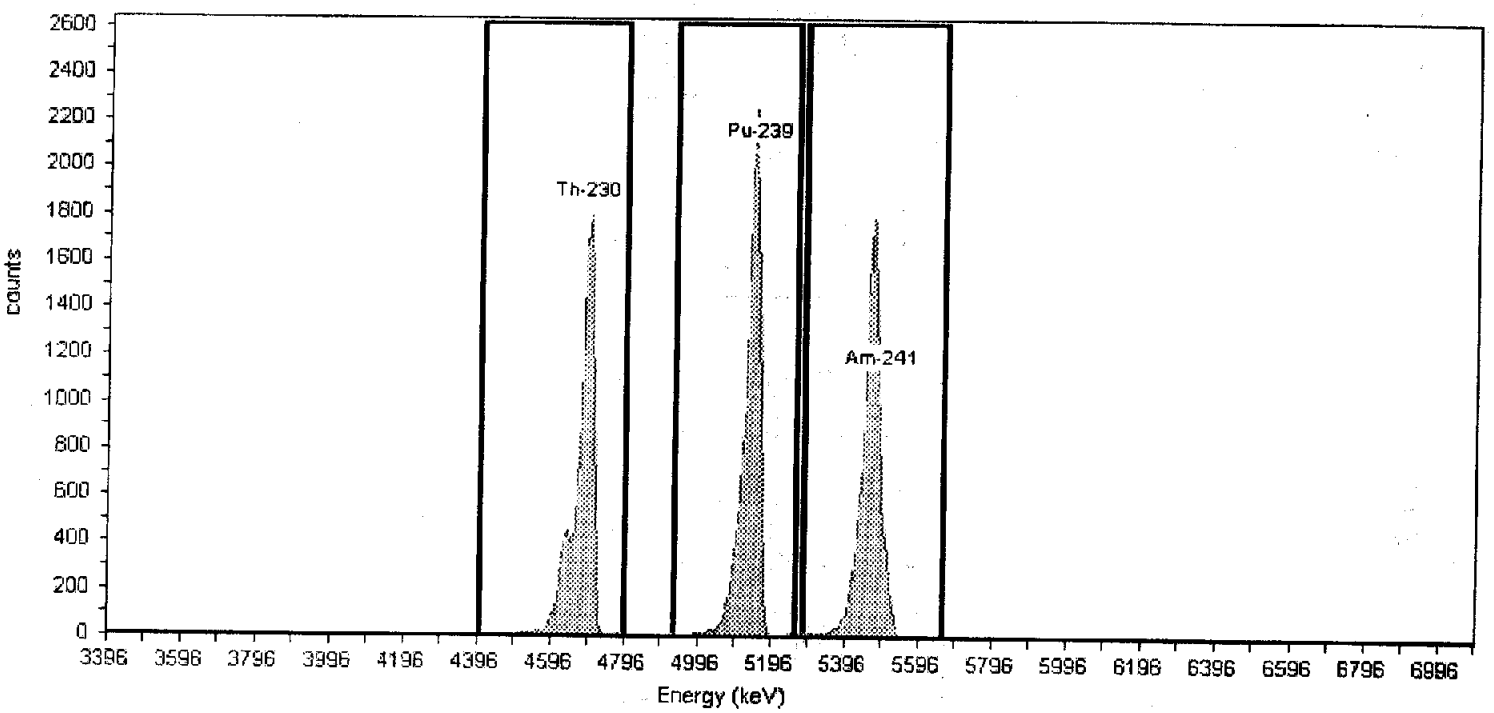
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV23 , SN: 41-172R4
Acquisition Start Date: 3/27/2007 5:34:24PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.77% +/- 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	12,313.00	87.95
Pu-239	243	5.16	212	258	14,000.00	100.00
Am-241	289	5.49	261	313	13,211.00	94.36

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:11:16AM 3/28/2007

Analyst: 60040
Detector: AV24

Calibration

Name: Mar2007_AV24
Description:

Calibration Date: 3/28/2007 7:11:08AM

Source Info

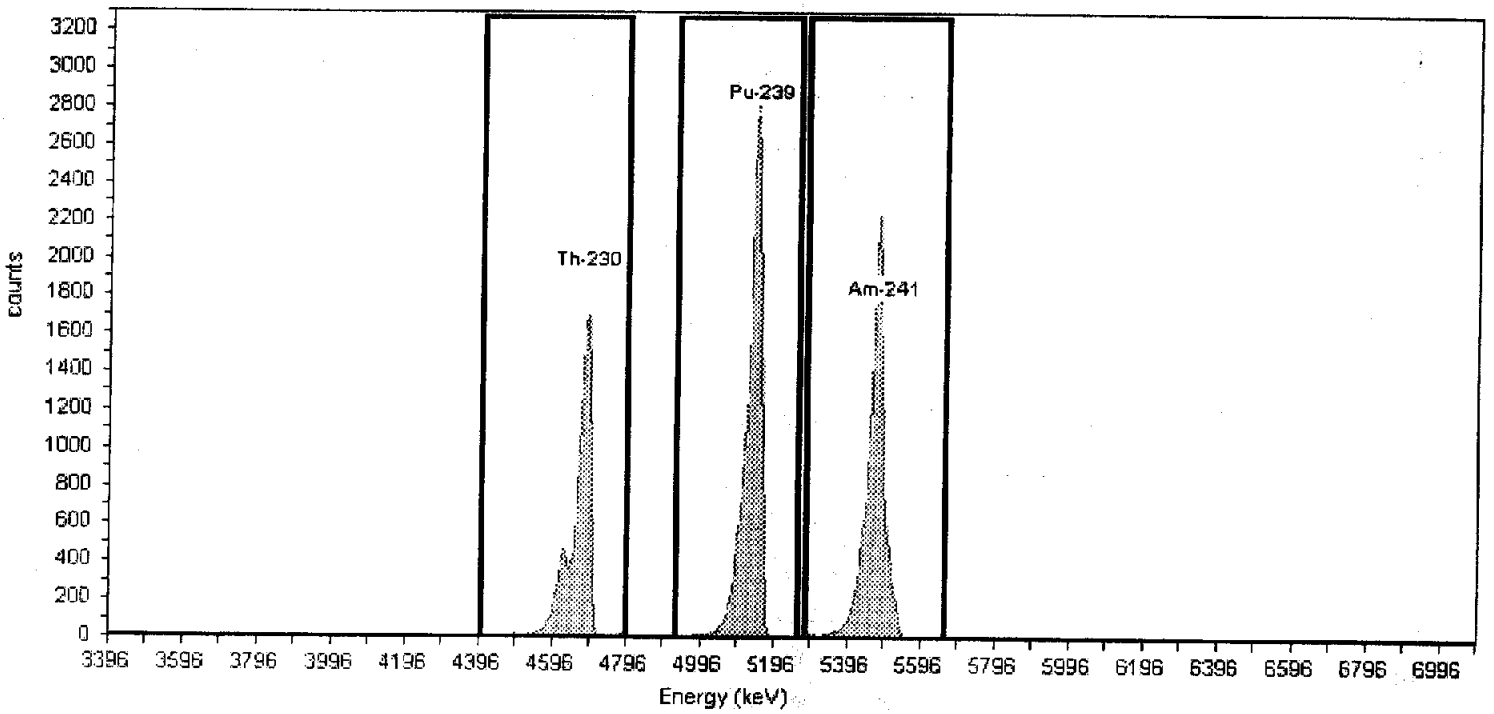
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV24 , SN: 41-172R5
Acquisition Start Date: 3/27/2007 5:34:26PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.02% +/- 0.27% 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	11,109.00	79.35
Pu-239	243	5.16	212	258	17,122.00	122.30
Am-241	289	5.49	261	313	14,539.00	103.85

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:11:57AM 3/28/2007

Analyst: 60040
Detector: AV45

Calibration

Name: Mar2007_AV45
Description:

Calibration Date: 3/28/2007 11:11:54AM

Source Info

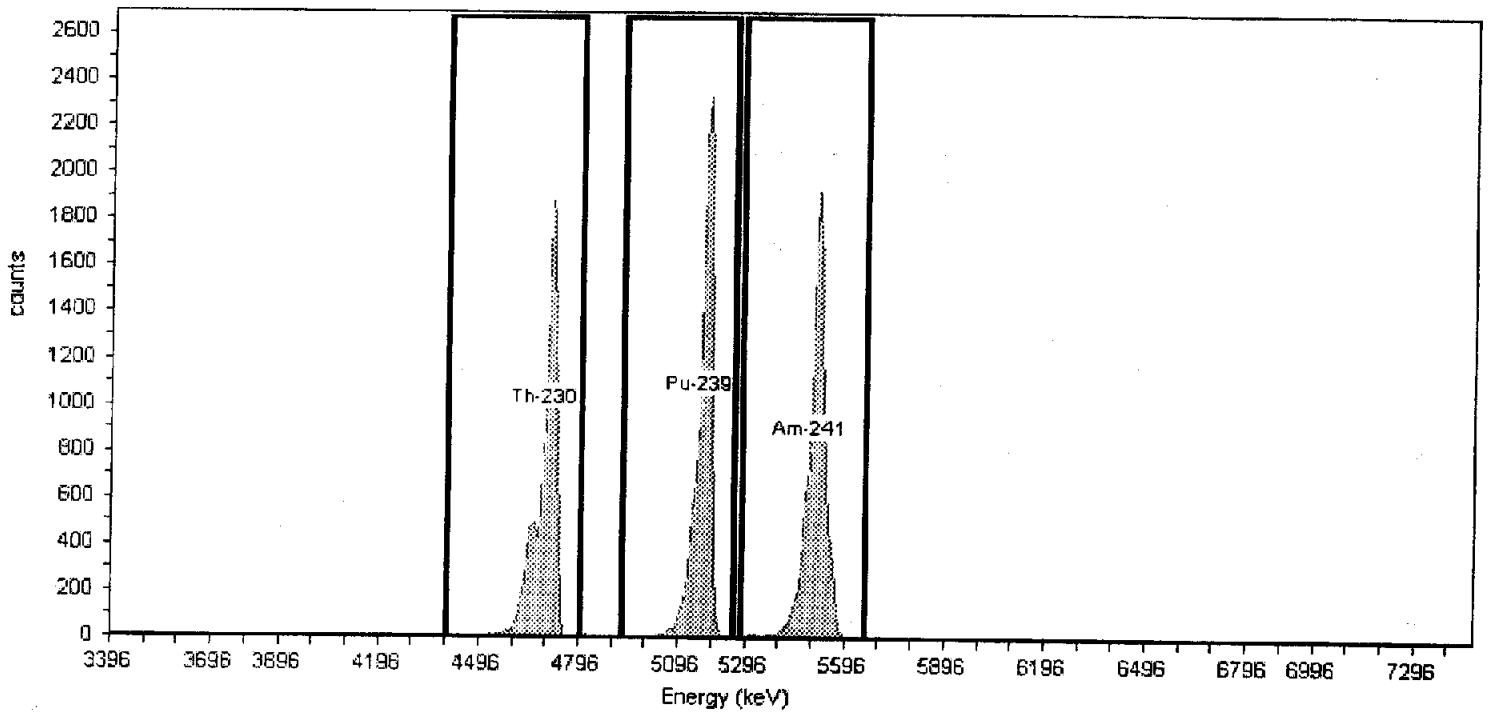
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV45 , SN: AV45
Acquisition Start Date: 3/28/2007 8:51:35AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.62% +/- 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	12,804.00	91.46
Pu-239	243	5.16	212	258	14,312.00	102.23
Am-241	289	5.49	261	313	13,665.00	97.61

SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:12:20AM 3/28/2007

Analyst: 60040
Detector: AV46

Calibration

Name: Mar2007_AV46
Description:

Calibration Date: 3/28/2007 11:12:17AM

Source Info

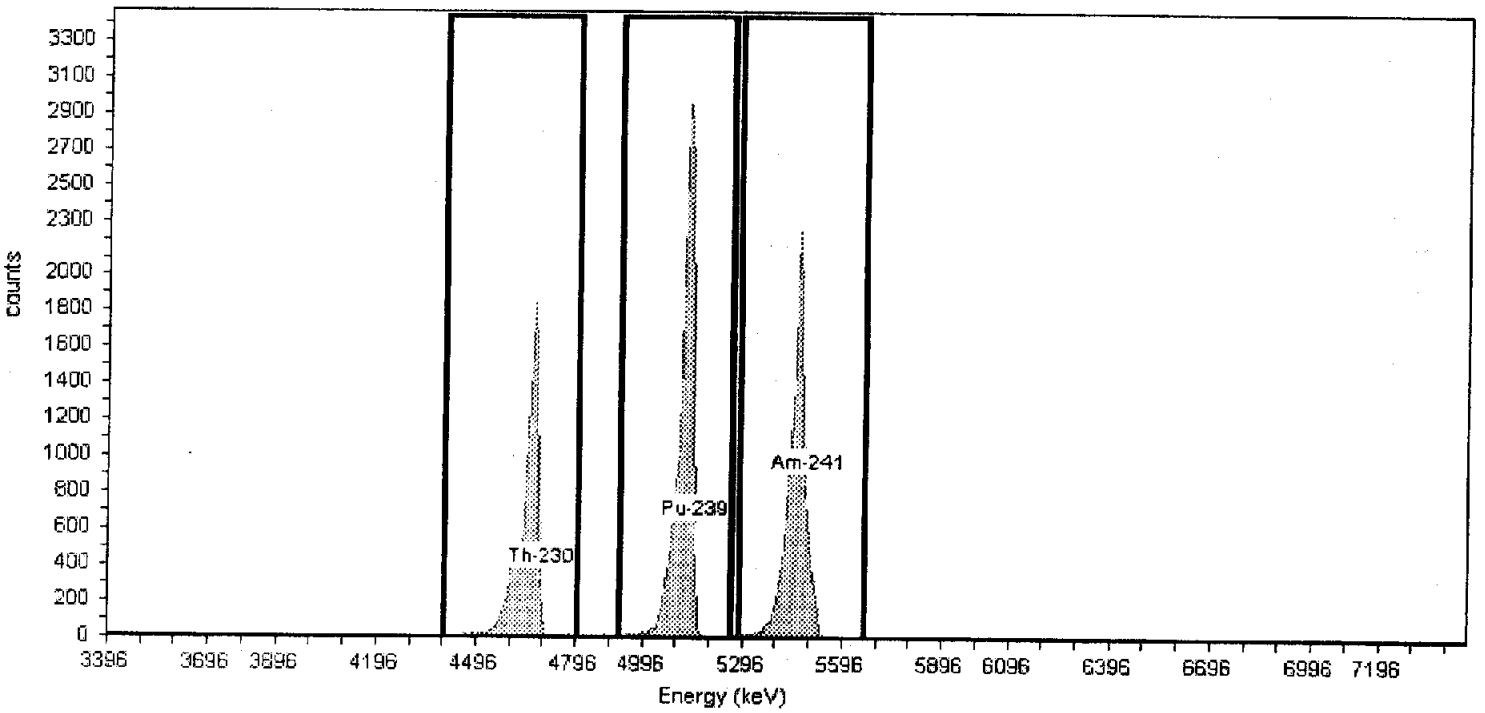
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV46 , SN: AV46
Acquisition Start Date: 3/28/2007 8:52:10AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.48% +/- 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	11,759.00	83.99
Pu-239	243	5.16	212	258	17,987.00	128.48
Am-241	289	5.49	261	313	15,425.00	110.18

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:12:06AM 3/28/2007

Analyst: 60040
Detector: AV47

Calibration

Name: Mar2007_AV47
Description:

Calibration Date: 3/28/2007 11:12:02AM

Source Info

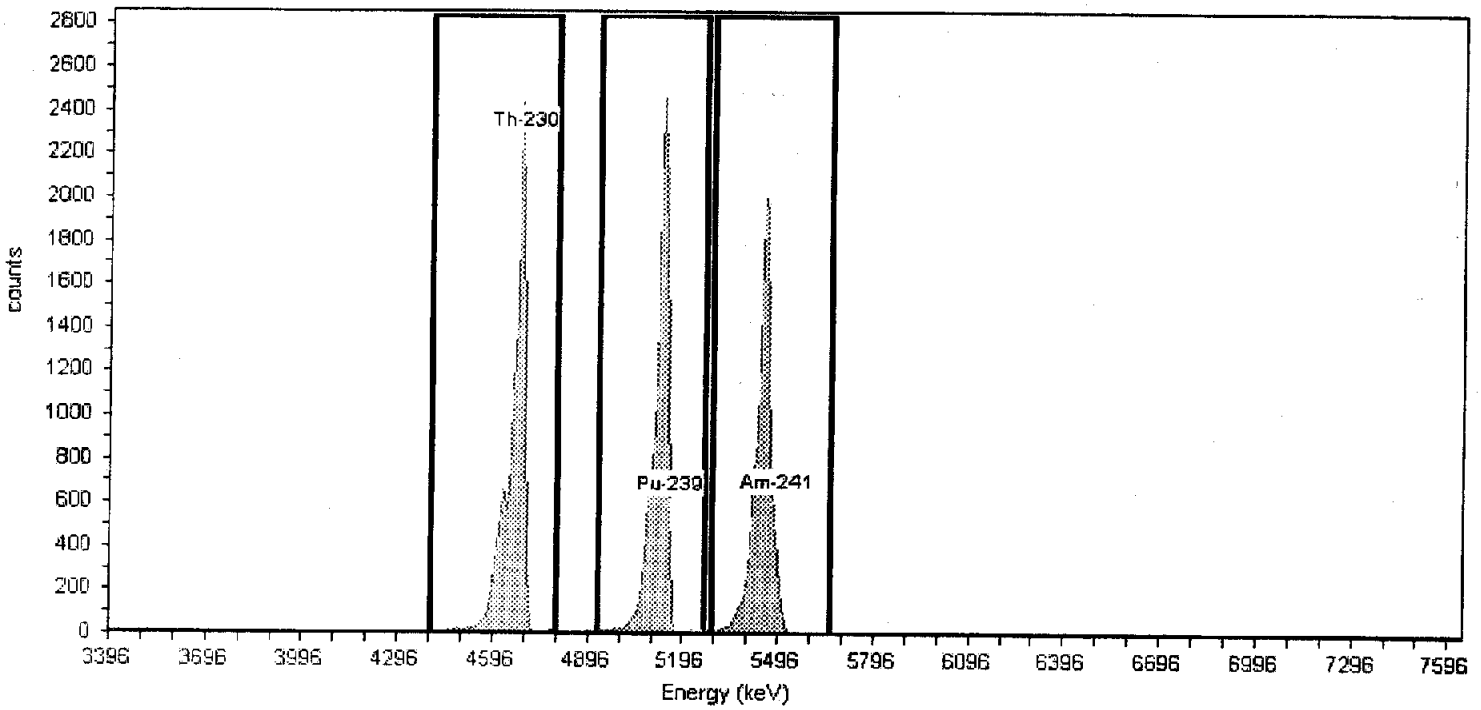
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV47 , SN: AV47
Acquisition Start Date: 3/28/2007 8:51:08AM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.21% +/- 0.26% 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	15,965.00	114.04
Pu-239	243	5.16	212	258	15,280.00	109.14
Am-241	289	5.49	261	313	14,310.00	102.21

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:08:26PM 3/28/2007

Analyst: 60040
Detector: AV48

Calibration

Name: Mar2007_AV48
Description:

Calibration Date: 3/28/2007 4:08:22PM

Source Info

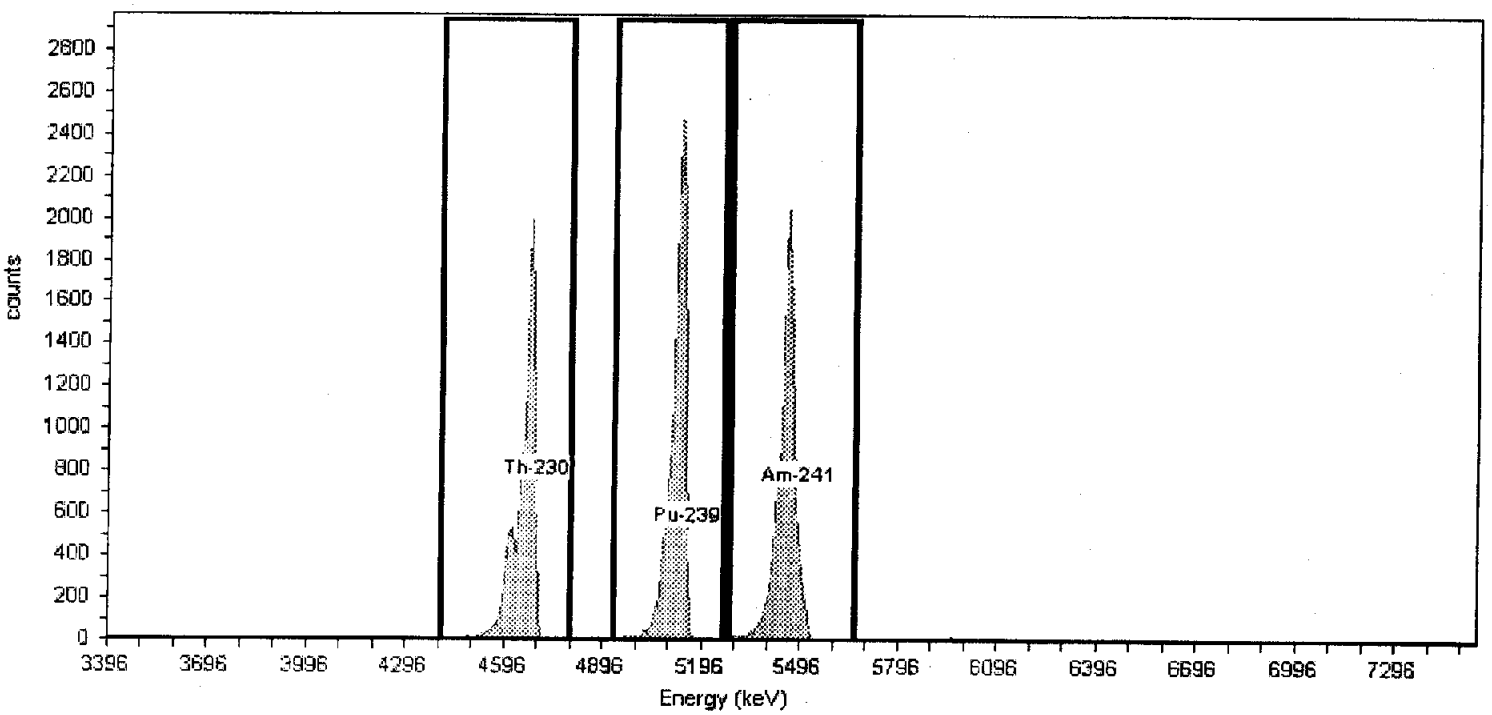
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV48 , SN: AV48
Acquisition Start Date: 3/28/2007 1:47:58PM
Live Time: 140.00 min.
Real Time: 140.05 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	12,497.00	89.26
Pu-239	243	5.16	212	258	14,655.00	104.68
Am-241	289	5.49	261	313	13,998.00	99.99

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:09:12PM 3/28/2007

Analyst: 60040
Detector: AV49

Calibration

Name: Mar2007_AV49
Description:

Calibration Date: 3/28/2007 4:09:09PM

Source Info

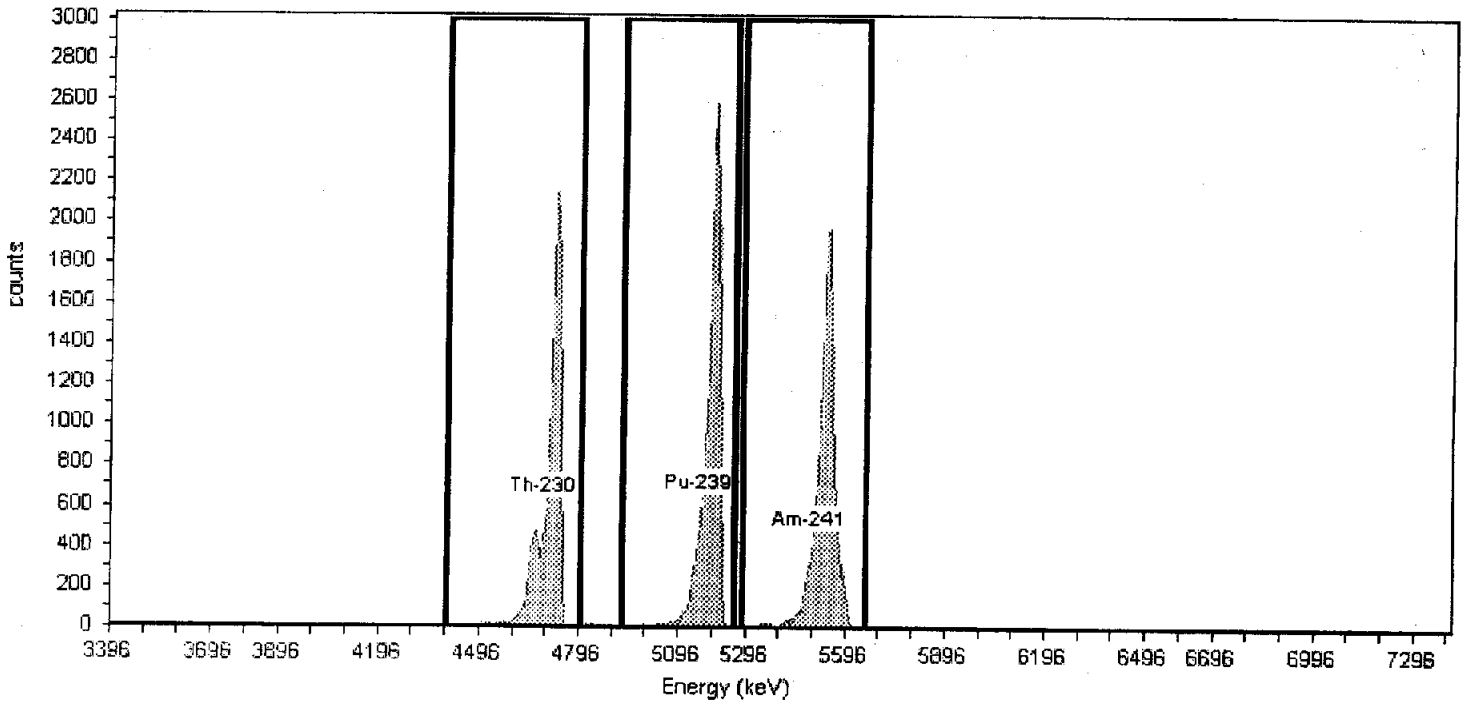
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV49 , SN: AV49
Acquisition Start Date: 3/28/2007 1:48:26PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.73% +/- 0.30% 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	12,653.00	90.38
Pu-239	243	5.16	212	258	14,619.00	104.42
Am-241	289	5.49	261	313	13,676.00	97.69

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:09:20PM 3/28/2007

Analyst: 60040
Detector: AV50

Calibration

Name: Mar2007_AV50
Description:

Calibration Date: 3/28/2007 4:09:16PM

Source Info

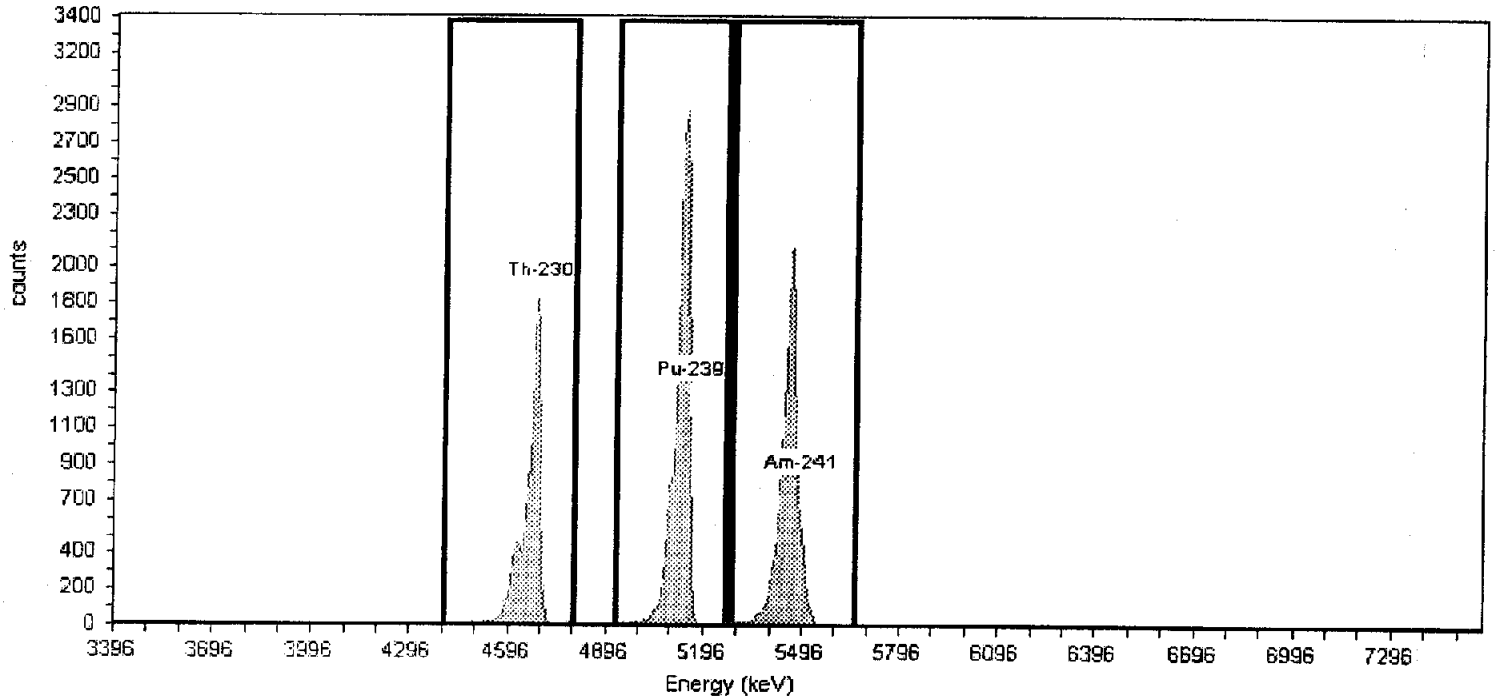
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV50 , SN: AV50
Acquisition Start Date: 3/28/2007 1:48:42PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.19% +/- 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	11,756.00	83.97
Pu-239	243	5.16	212	258	17,625.00	125.89
Am-241	289	5.49	261	313	15,314.00	109.39

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:07:58PM 3/28/2007

Analyst: 60040
Detector: AV51

Calibration

Name: Mar2007_AV51
Description:

Calibration Date: 3/28/2007 4:07:55PM

Source Info

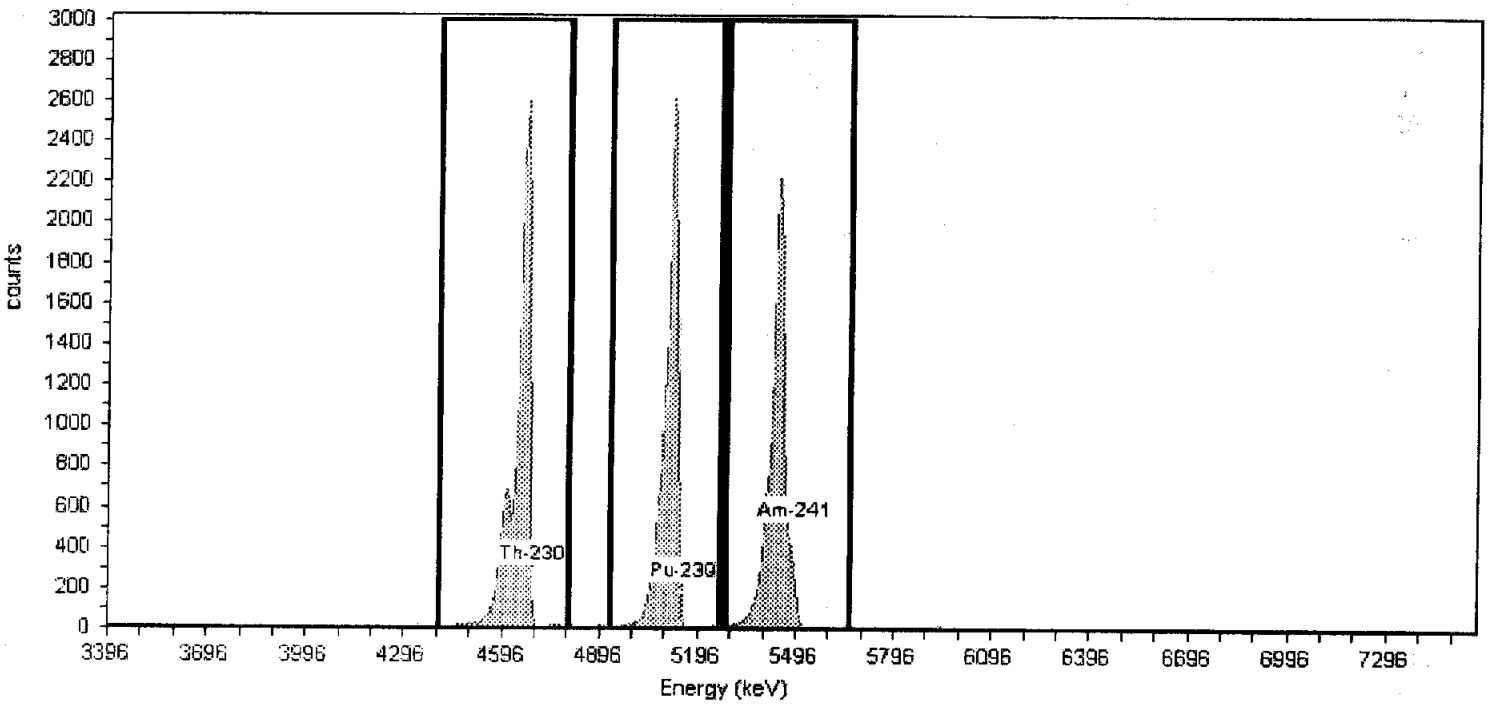
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV51 , SN:
Acquisition Start Date: 3/28/2007 1:47:46PM
Live Time: 140.00 min.
Real Time: 140.01 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	16,154.00	115.39
Pu-239	243	5.16	212	258	15,511.00	110.79
Am-241	289	5.49	261	313	14,748.00	105.34

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:39:58PM 3/28/2007

Analyst: 60040
Detector: AV52

Calibration

Name: Mar2007_AV52
Description:

Calibration Date: 3/28/2007 1:39:54PM

Source Info

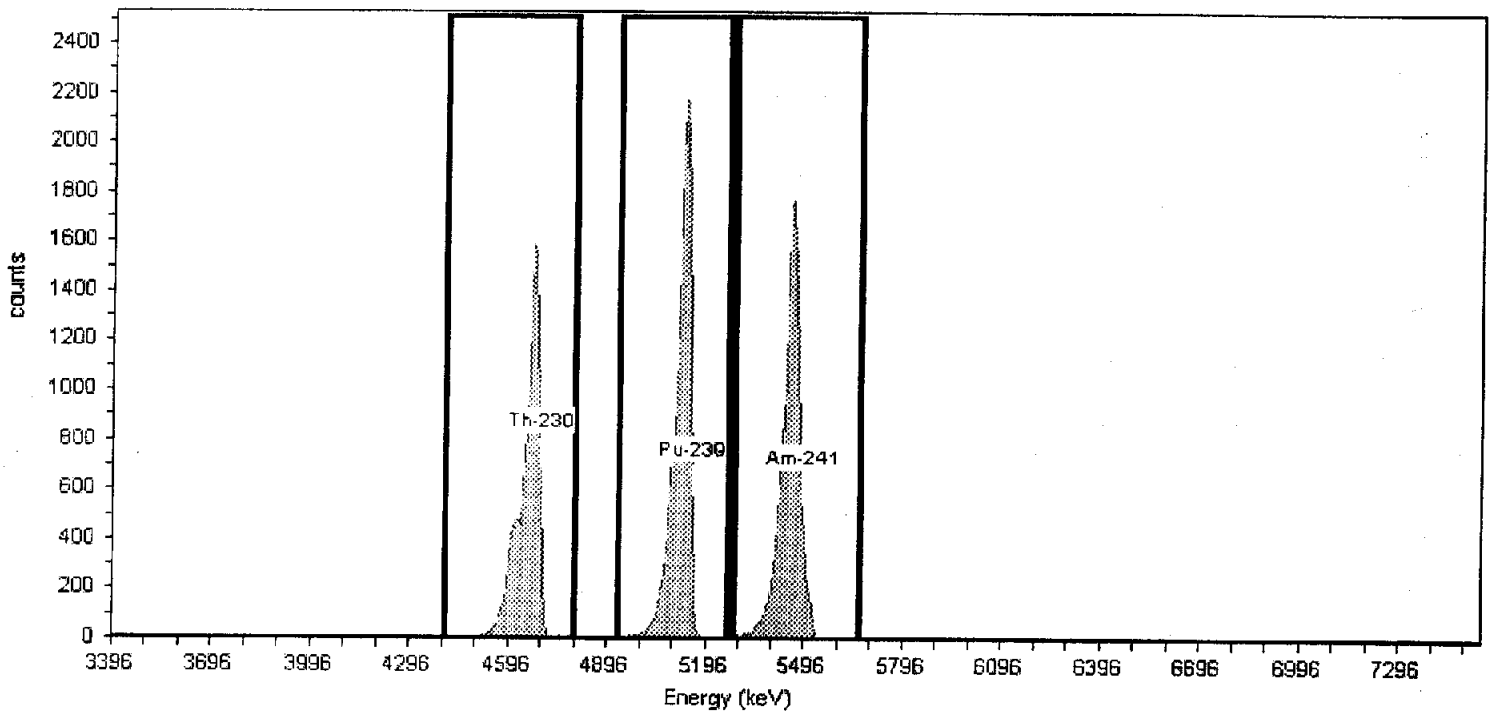
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV52 , SN:
Acquisition Start Date: 3/28/2007 11:19:46AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.48% +/- 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	12,295.00	87.82
Pu-239	243	5.16	212	258	14,702.00	105.01
Am-241	289	5.49	261	313	14,158.00	101.13

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:57:52AM 3/29/2007

Analyst: 60040
Detector: AV53

Calibration

Name: Mar2007_AV53
Description:

Calibration Date: 3/29/2007 7:57:48AM

Source Info

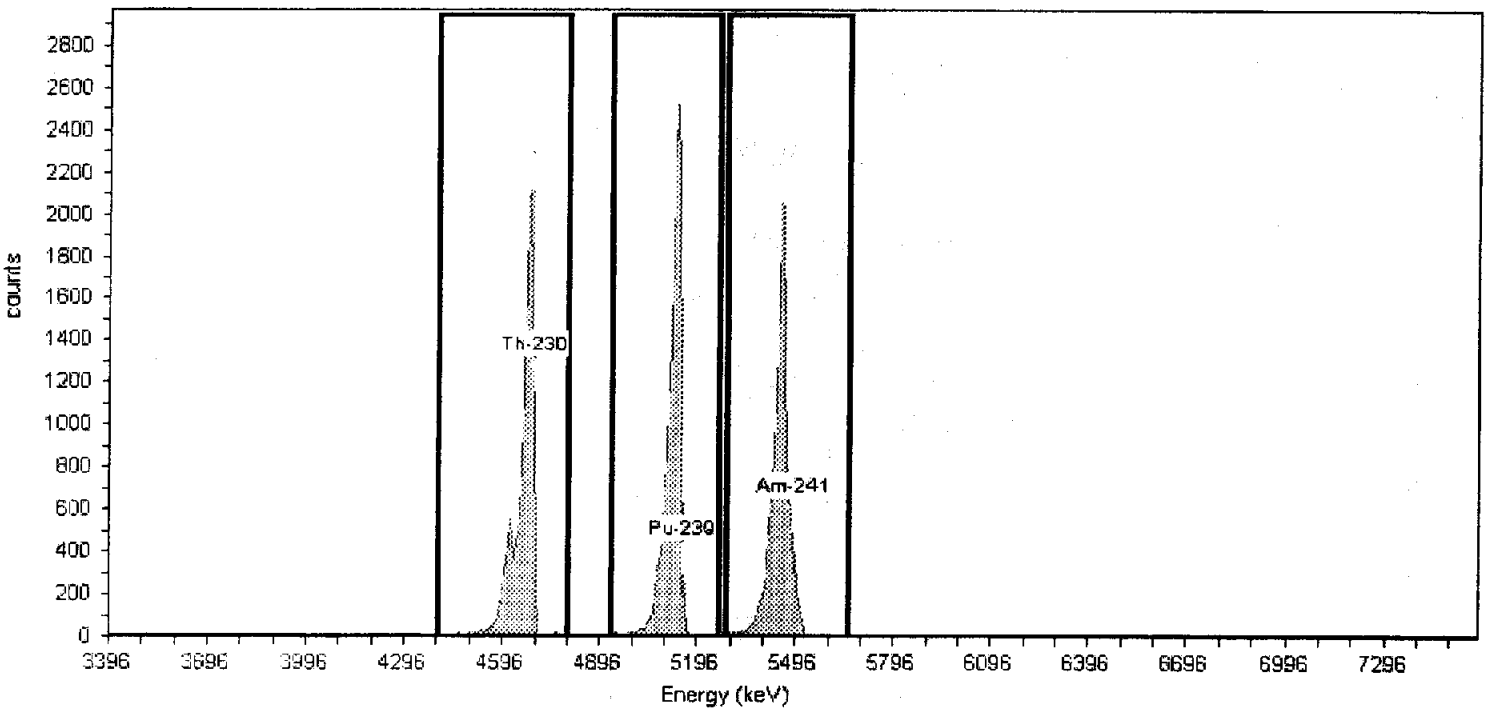
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV53 , SN:
Acquisition Start Date: 3/28/2007 4:15:43PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.62% +/- 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	12,716.00	90.83
Pu-239	243	5.16	212	258	14,515.00	103.68
Am-241	289	5.49	261	313	13,548.00	96.77

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:58:09AM 3/29/2007

Analyst: 60040
Detector: AV54

Calibration

Name: Mar2007_AV54
Description:

Calibration Date: 3/29/2007 7:57:55AM

Source Info

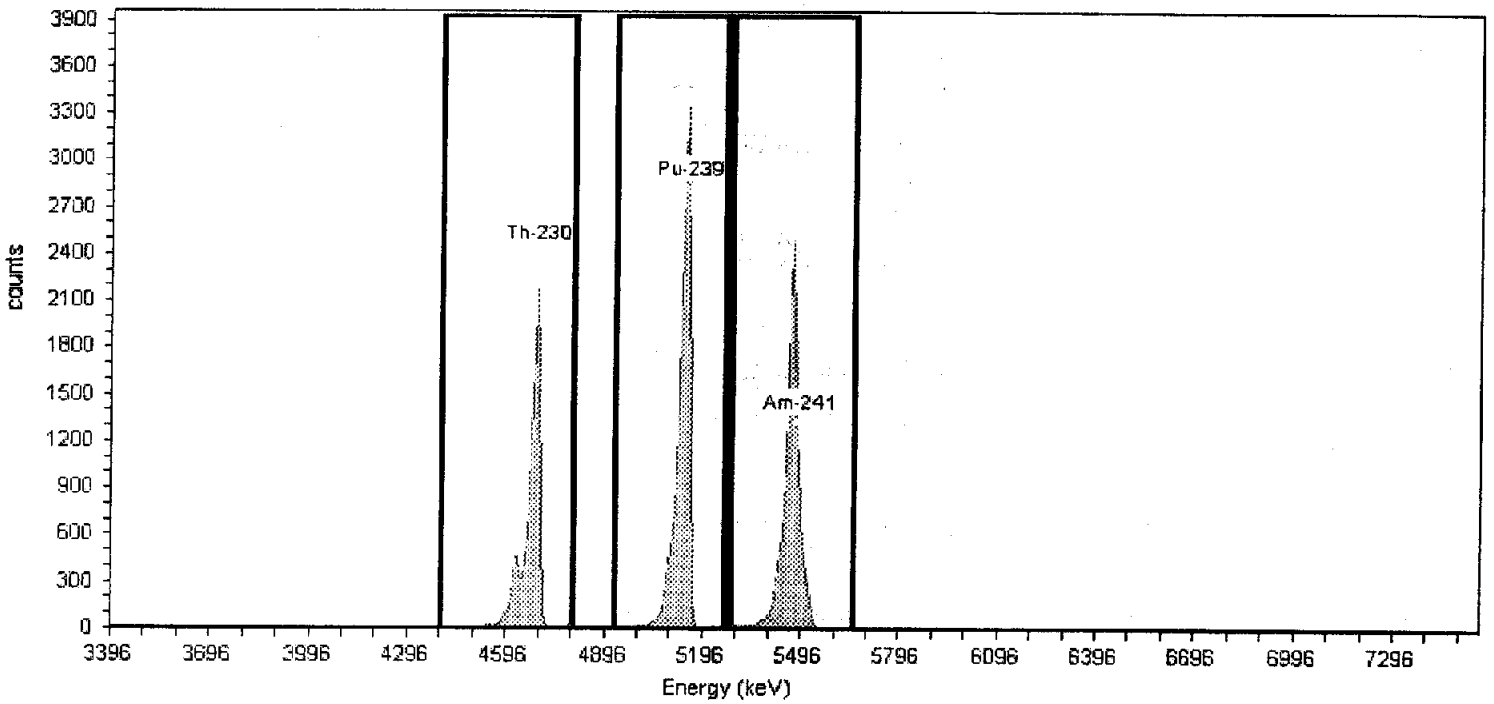
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV54 , SN:
Acquisition Start Date: 3/28/2007 4:15:44PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.90% +/- 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	11,834.00	84.53
Pu-239	243	5.16	212	258	17,374.00	124.10
Am-241	289	5.49	261	313	15,023.00	107.31

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:57:40AM 3/29/2007

Analyst: 60040
Detector: AV55

Calibration

Name: Mar2007_AV55
Description:

Calibration Date: 3/29/2007 7:57:37AM

Source Info

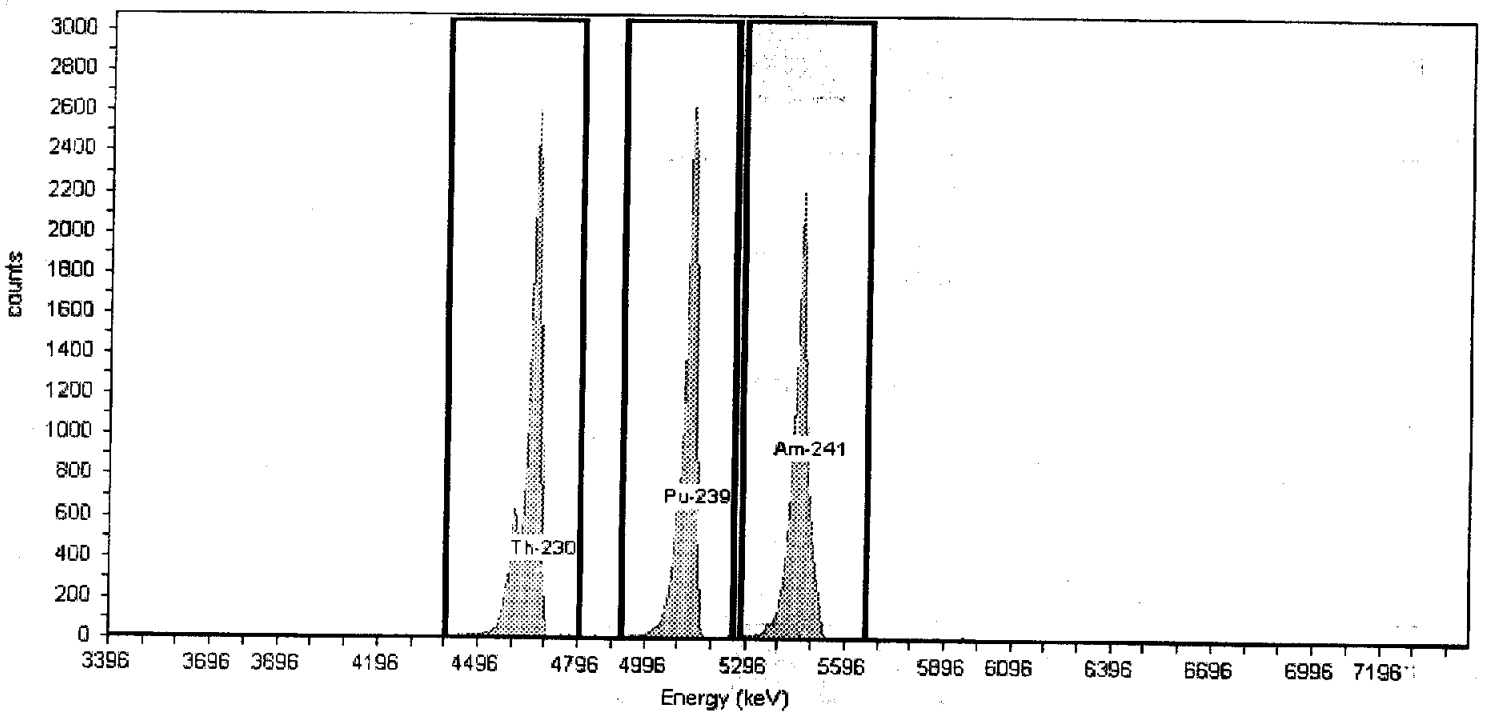
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV55 , SN:
Acquisition Start Date: 3/28/2007 4:14:58PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.62% +/- 0.26% 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	16,240.00	116.00
Pu-239	243	5.16	212	258	15,304.00	109.31
Am-241	289	5.49	261	313	14,719.00	105.14

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:57:45AM 3/29/2007

Analyst: 60040
Detector: AV56

Calibration

Name: Mar2007_AV56
Description:

Calibration Date: 3/29/2007 7:57:42AM

Source Info

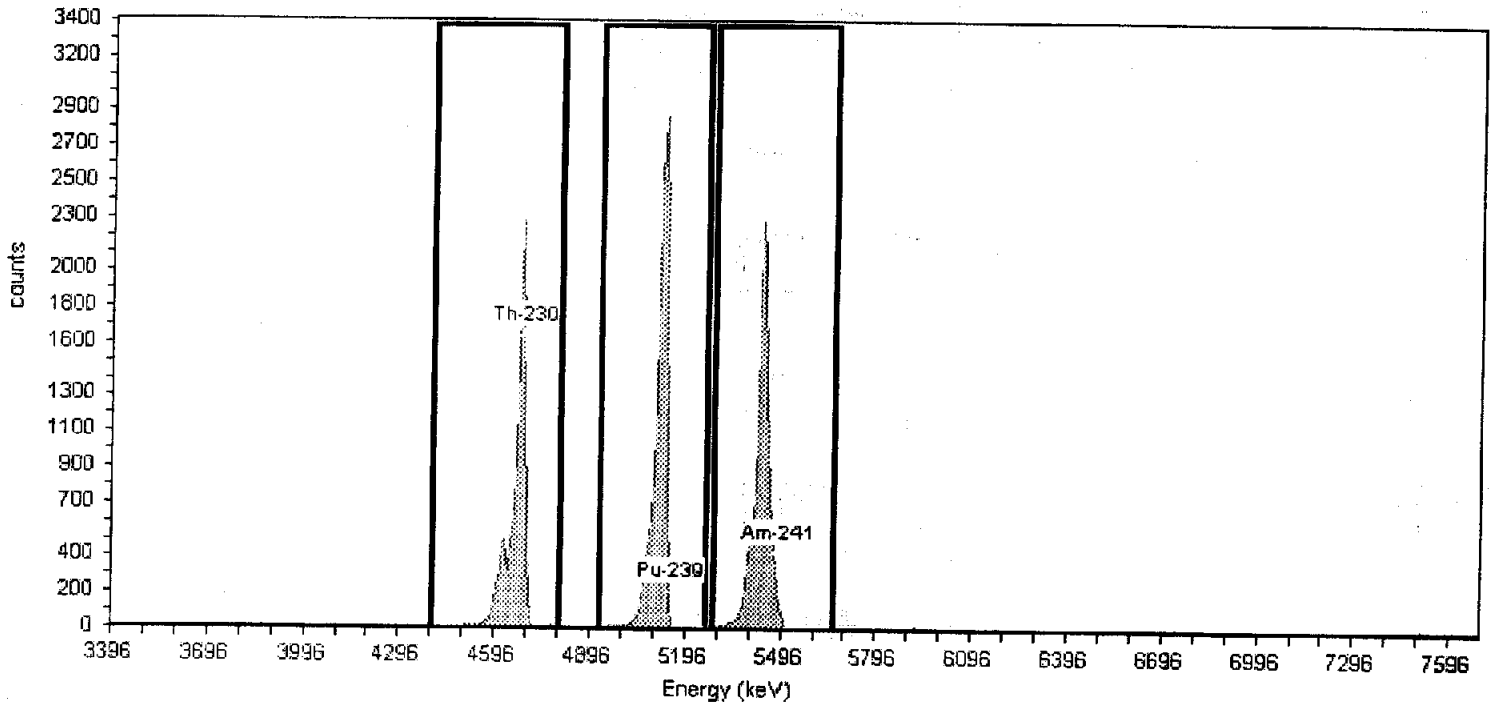
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV56 , SN:
Acquisition Start Date: 3/28/2007 4:15:08PM
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	12,140.00	86.71
Pu-239	243	5.16	212	258	14,589.00	104.21
Am-241	289	5.49	261	313	14,002.00	100.01

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:27:06AM 3/29/2007

Analyst: 60040
Detector: AV57

Calibration

Name: Mar2007_AV57
Description:

Calibration Date: 3/29/2007 11:27:02AM

Source Info

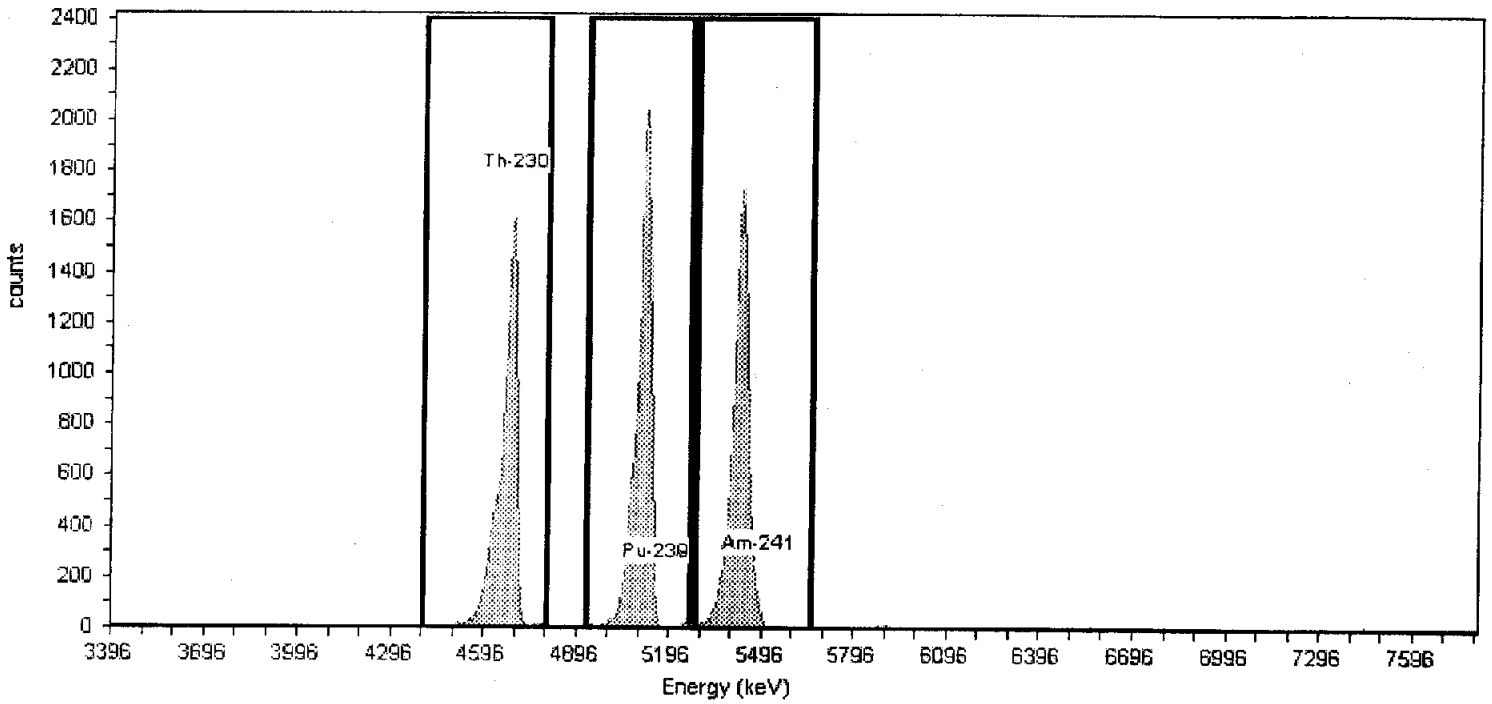
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV57 , SN:
Acquisition Start Date: 3/29/2007 9:05:10AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 27.21% +/- 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	12,529.00	89.49
Pu-239	243	5.16	212	258	14,285.00	102.04
Am-241	289	5.49	261	313	13,365.00	95.46

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:27:13AM 3/29/2007

Analyst: 60040
Detector: AV58

Calibration

Name: Mar2007_AV58
Description:

Calibration Date: 3/29/2007 11:27:10AM

Source Info

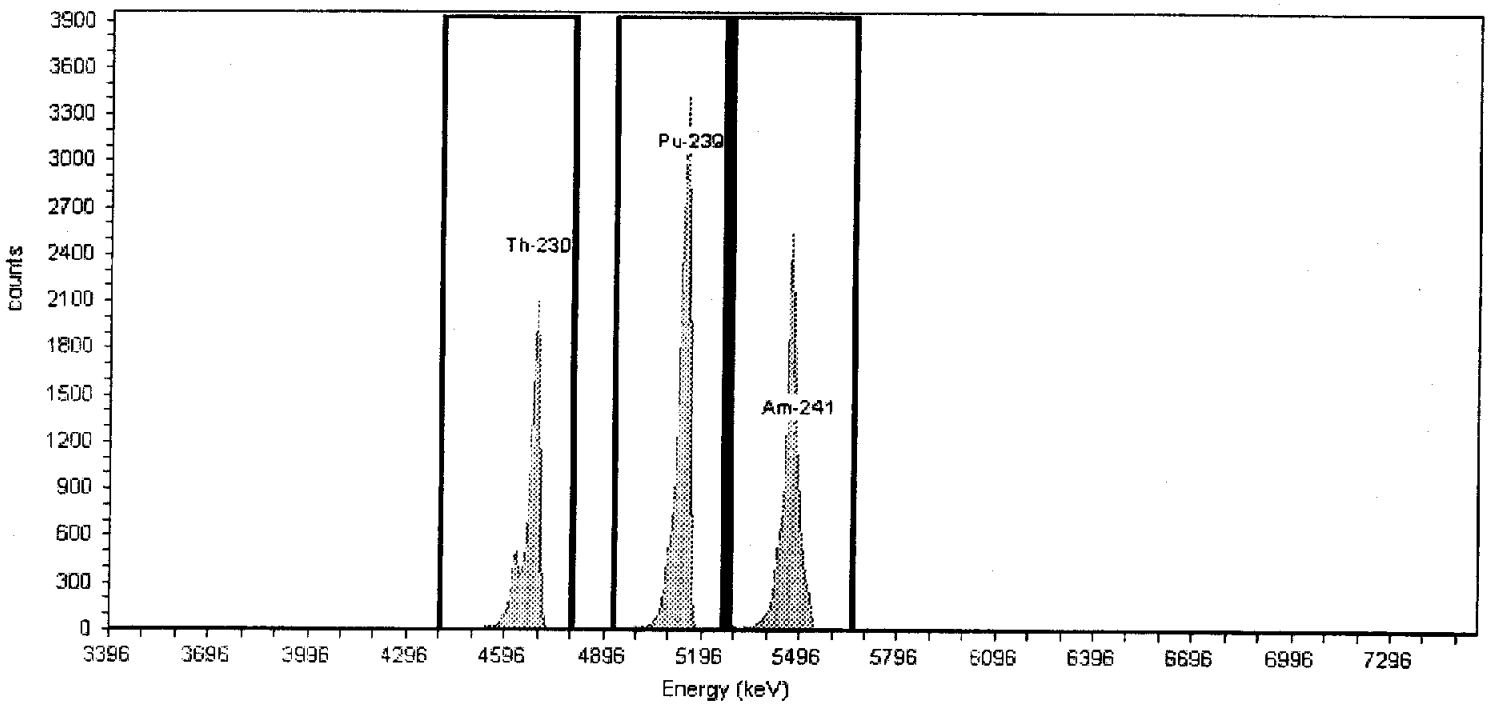
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV58 , SN:
Acquisition Start Date: 3/29/2007 9:05:28AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 27.69% +/- 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	11,832.00	84.51
Pu-239	243	5.16	212	258	18,235.00	130.25
Am-241	289	5.49	261	313	15,446.00	110.33

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:36:58AM 3/29/2007

Analyst: 60040
Detector: AV59

Calibration

Name: Mar2007_AV59
Description:

Calibration Date: 3/29/2007 11:36:54AM

Source Info

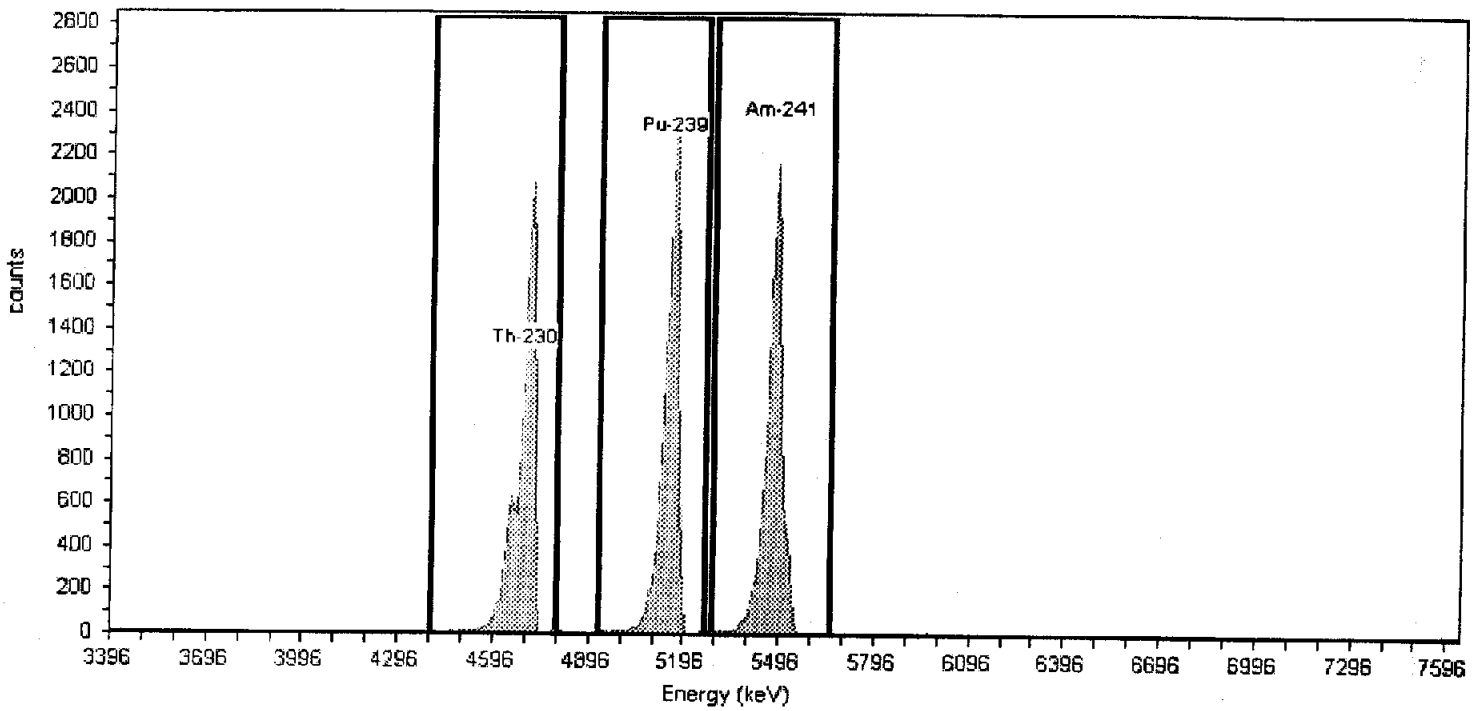
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV59 , SN:
Acquisition Start Date: 3/29/2007 9:04:40AM
Live Time: 140.00 min.
Real Time: 152.15 min.
Efficiency: 26.84% +/- 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	14,806.00	105.76
Pu-239	243	5.16	212	258	15,892.00	113.51
Am-241	289	5.49	261	313	15,489.00	110.64

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:16:20AM 3/28/2007

Analyst: 60040
Detector: AV60

Calibration

Name: Mar2007_AV60
Description:

Calibration Date: 3/28/2007 11:16:17AM

Source Info

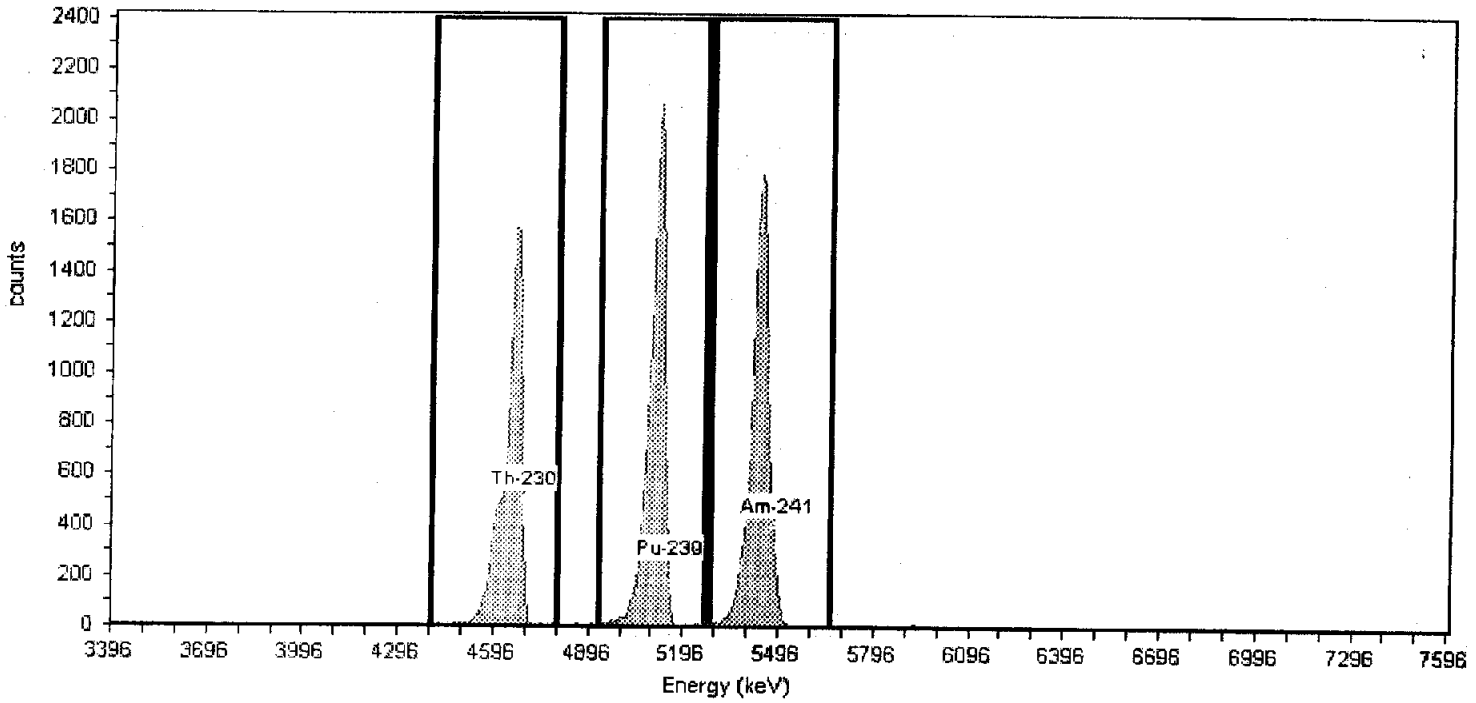
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV60 , SN:
Acquisition Start Date: 3/28/2007 8:51:43AM
Live Time: 140.00 min.
Real Time: 144.57 min.
Efficiency: 27.45% +/- 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	12,526.00	89.47
Pu-239	243	5.16	212	258	15,340.00	109.57
Am-241	289	5.49	261	313	14,990.00	107.07

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:43:51PM 3/28/2007

Analyst: 60040
Detector: AV63

Calibration

Name: Mar2007_AV63
Description:

Calibration Date: 3/28/2007 1:43:48PM

Source Info

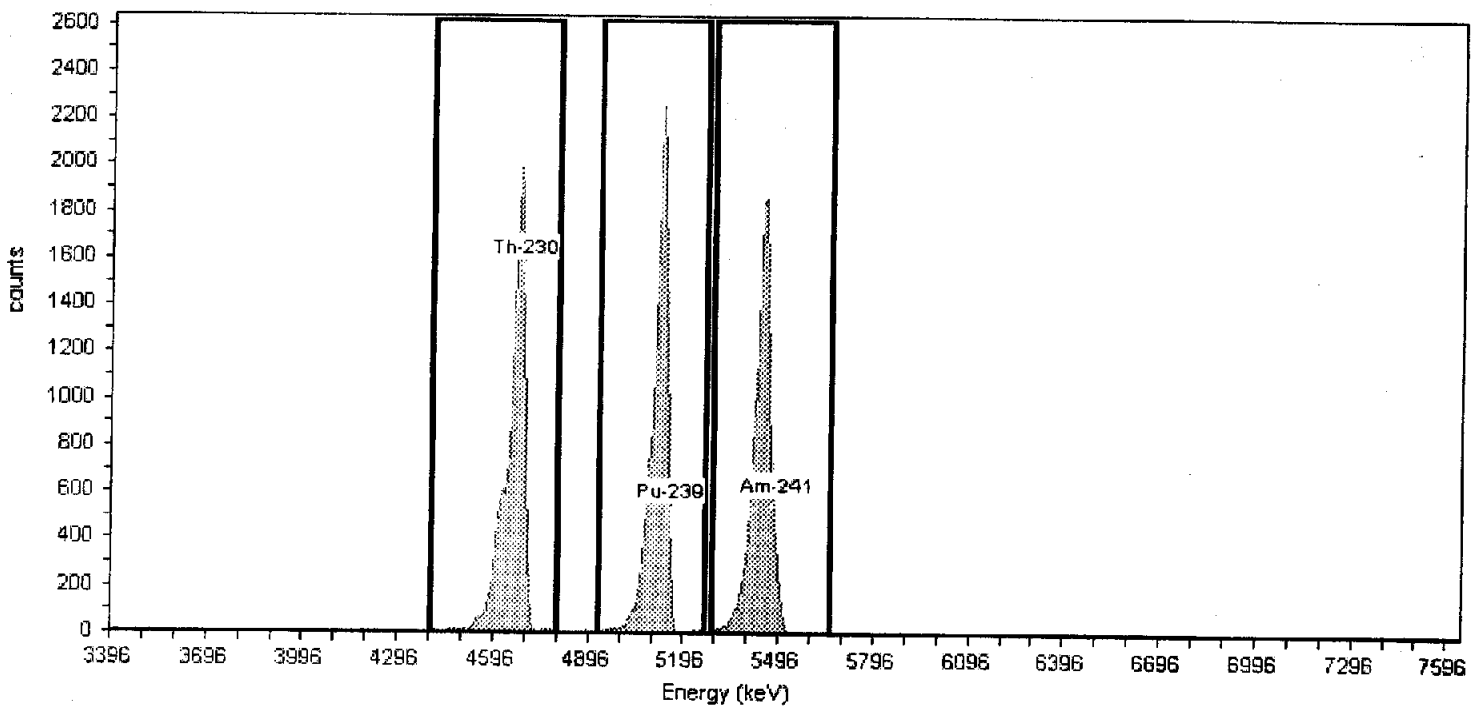
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV63 , SN:
Acquisition Start Date: 3/28/2007 11:19:23AM
Live Time: 140.00 min.
Real Time: 144.35 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 / 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	15,645.00	111.75
Pu-239	243	5.16	212	258	15,568.00	111.20
Am-241	289	5.49	261	313	15,097.00	107.84

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:37:34AM 3/29/2007

Analyst: 60040
Detector: AV64

Calibration

Name: Mar2007_AV64
Description:

Calibration Date: 3/29/2007 11:37:29AM

Source Info

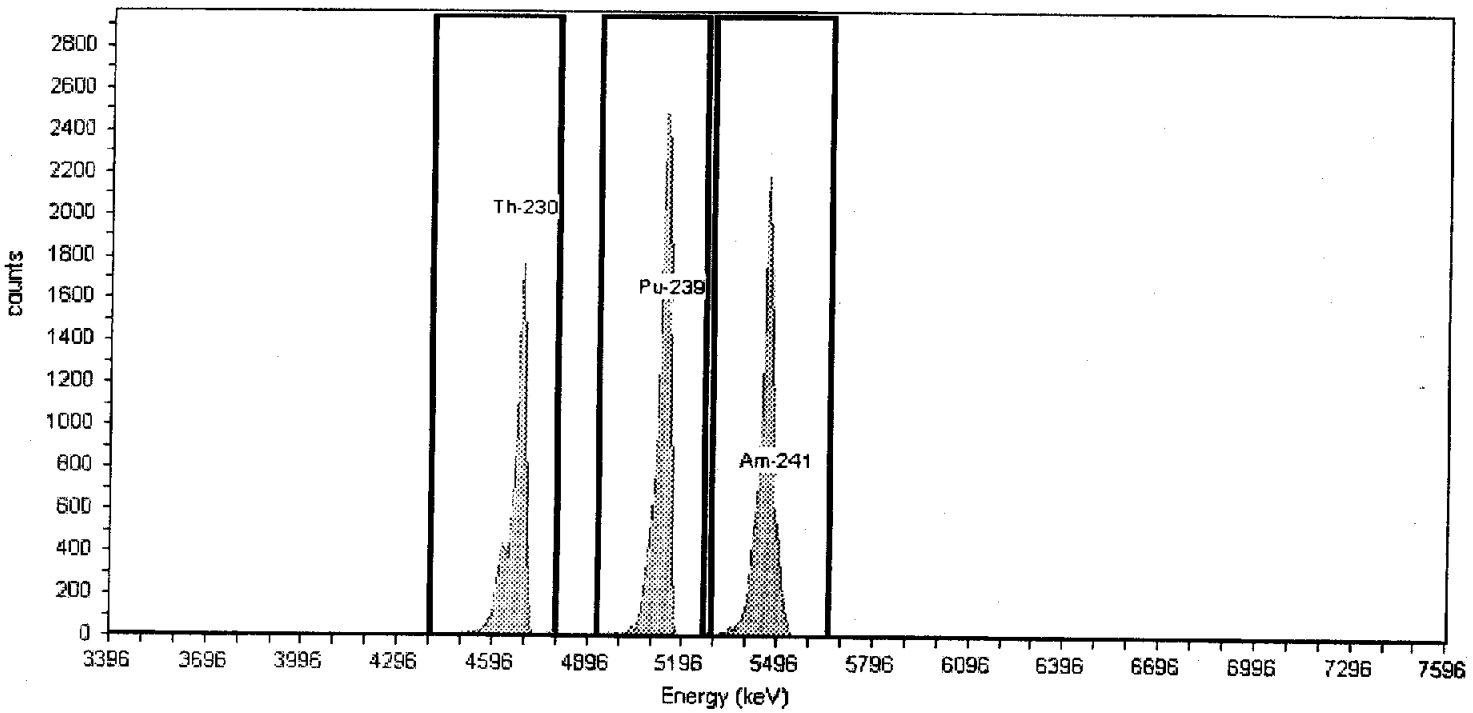
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV64 , SN:
Acquisition Start Date: 3/29/2007 9:04:56AM
Live Time: 140.00 min.
Real Time: 152.14 min.
Efficiency: 25.50% +/- 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	11,175.00	79.82
Pu-239	243	5.16	212	258	14,532.00	103.80
Am-241	289	5.49	261	313	14,616.00	104.40

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:14:40PM 3/29/2007

Analyst: 60040
Detector: AV65

Calibration

Name: Mar2007_AV65
Description:

Calibration Date: 3/29/2007 2:14:37PM

Source Info

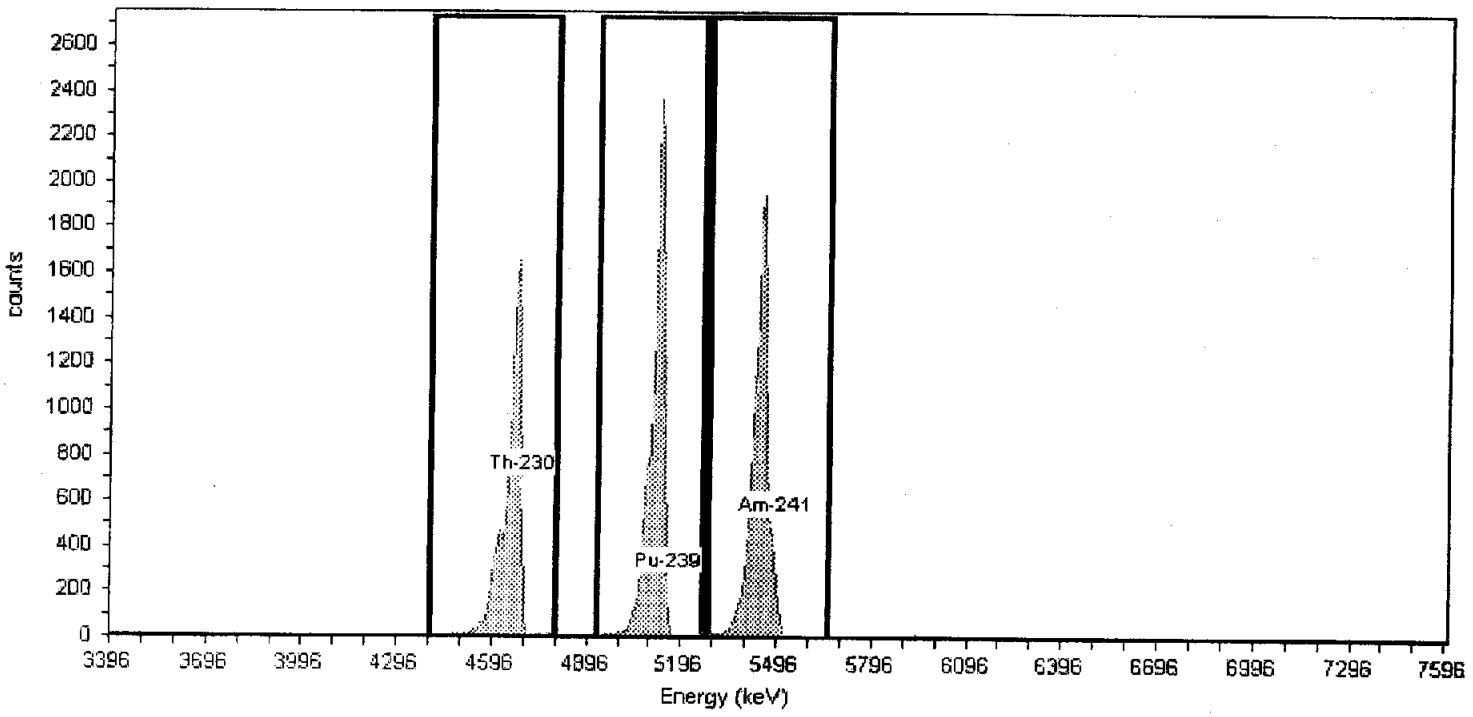
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV65 , SN:
Acquisition Start Date: 3/29/2007 11:42:44AM
Live Time: 140.00 min.
Real Time: 151.84 min.
Efficiency: 26.14% +/- 0.29% 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	11,005.00	78.61
Pu-239	243	5.16	212	258	14,275.00	101.96
Am-241	289	5.49	261	313	13,514.00	96.53

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:15:04PM 3/29/2007

Analyst: 60040
Detector: AV66

Calibration

Name: Mar2007_AV66
Description:

Calibration Date: 3/29/2007 2:15:00PM

Source Info

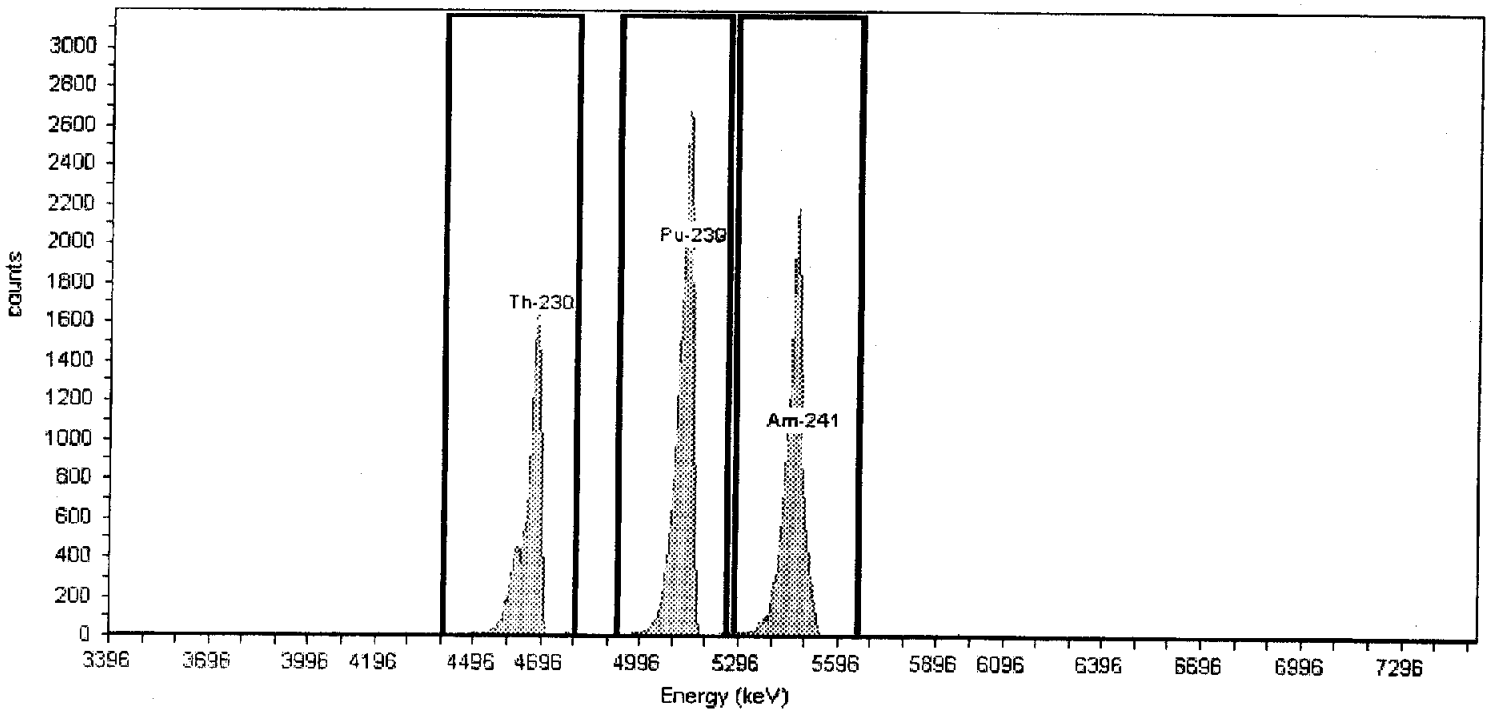
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV66 , SN:
Acquisition Start Date: 3/29/2007 11:42:46AM
Live Time: 140.00 min.
Real Time: 151.84 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	11,046.00	78.90
Pu-239	243	5.16	212	258	18,011.00	128.65
Am-241	289	5.49	261	313	15,920.00	113.71

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:04:00PM 3/29/2007

Analyst: 60040
Detector: AV67

Calibration

Name: Mar2007_AV67
Description:

Calibration Date: 3/29/2007 2:03:55PM

Source Info

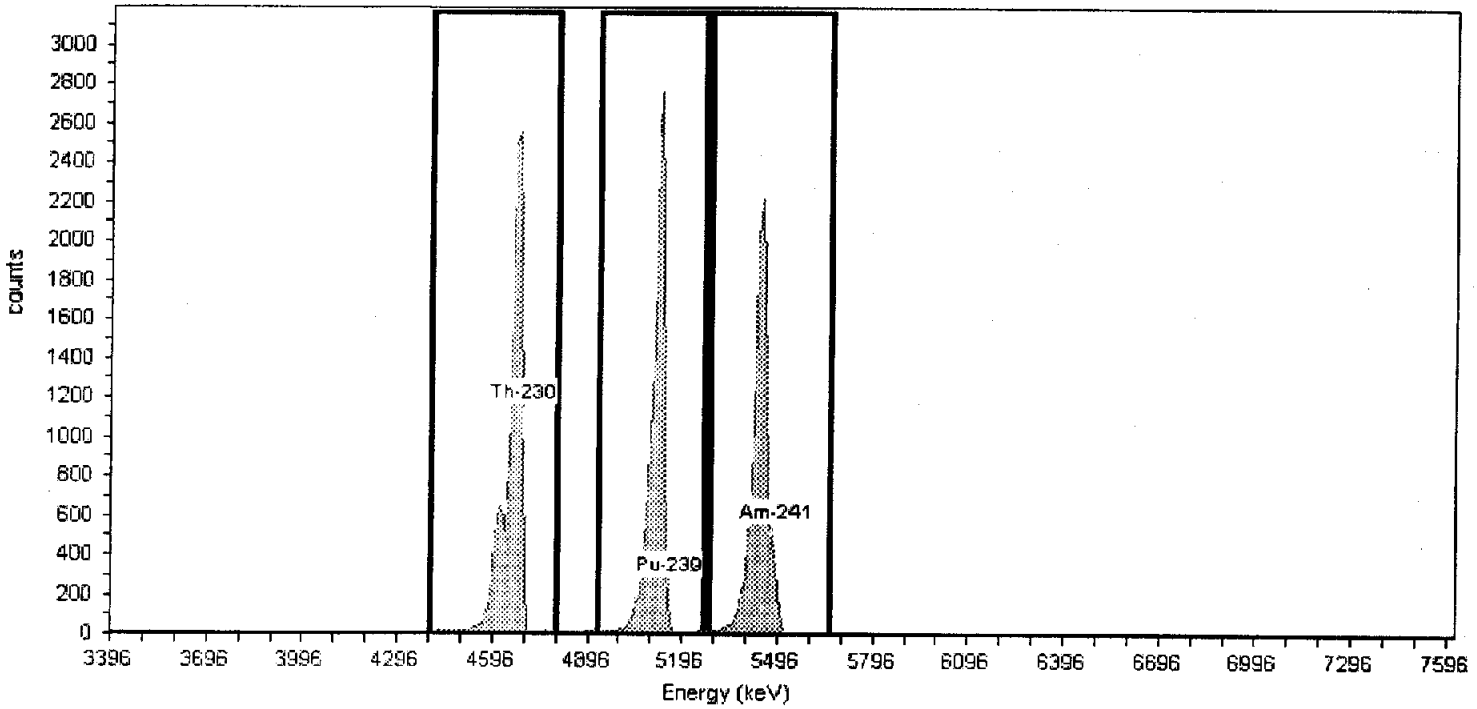
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV67 , SN:
Acquisition Start Date: 3/29/2007 11:42:06AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 27.69% +/- 0.27% 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	16,716.00	119.40
Pu-239	243	5.16	212	258	16,144.00	115.31
Am-241	289	5.49	261	313	15,205.00	108.61

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:04:07PM 3/29/2007

Analyst: 60040
Detector: AV68

Calibration

Name: Mar2007_AV68
Description:

Calibration Date: 3/29/2007 2:04:04PM

Source Info

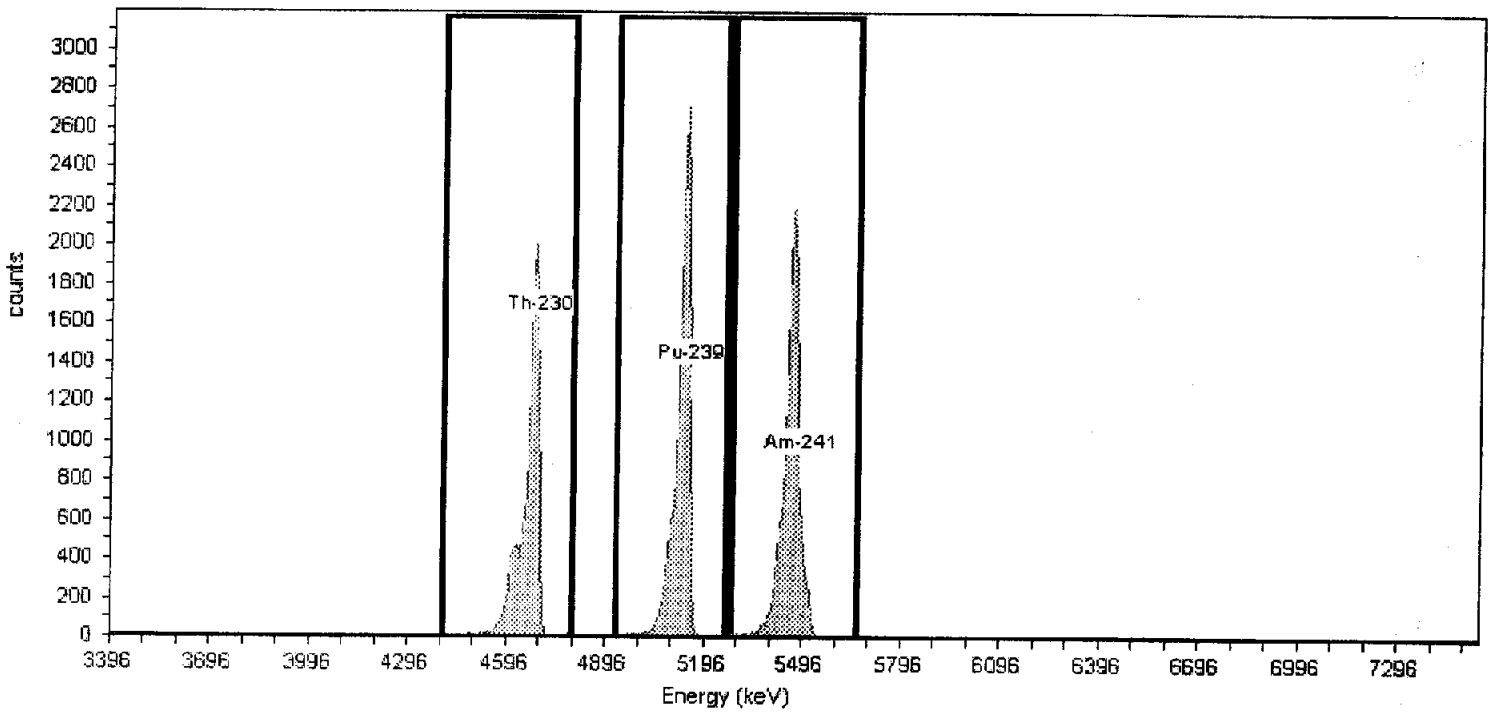
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV68 , SN:
Acquisition Start Date: 3/29/2007 11:42:24AM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.80% +/- 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	12,455.00	88.96
Pu-239	243	5.16	212	258	14,882.00	106.30
Am-241	289	5.49	261	313	14,311.00	102.22

ST SEVERN TRENT STL

Alpha Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:41:50PM 3/29/2007

Analyst: 60040
Detector: AV69

Calibration

Name: Mar2007_AV69
Description:

Calibration Date: 3/29/2007 4:41:46PM

Source Info

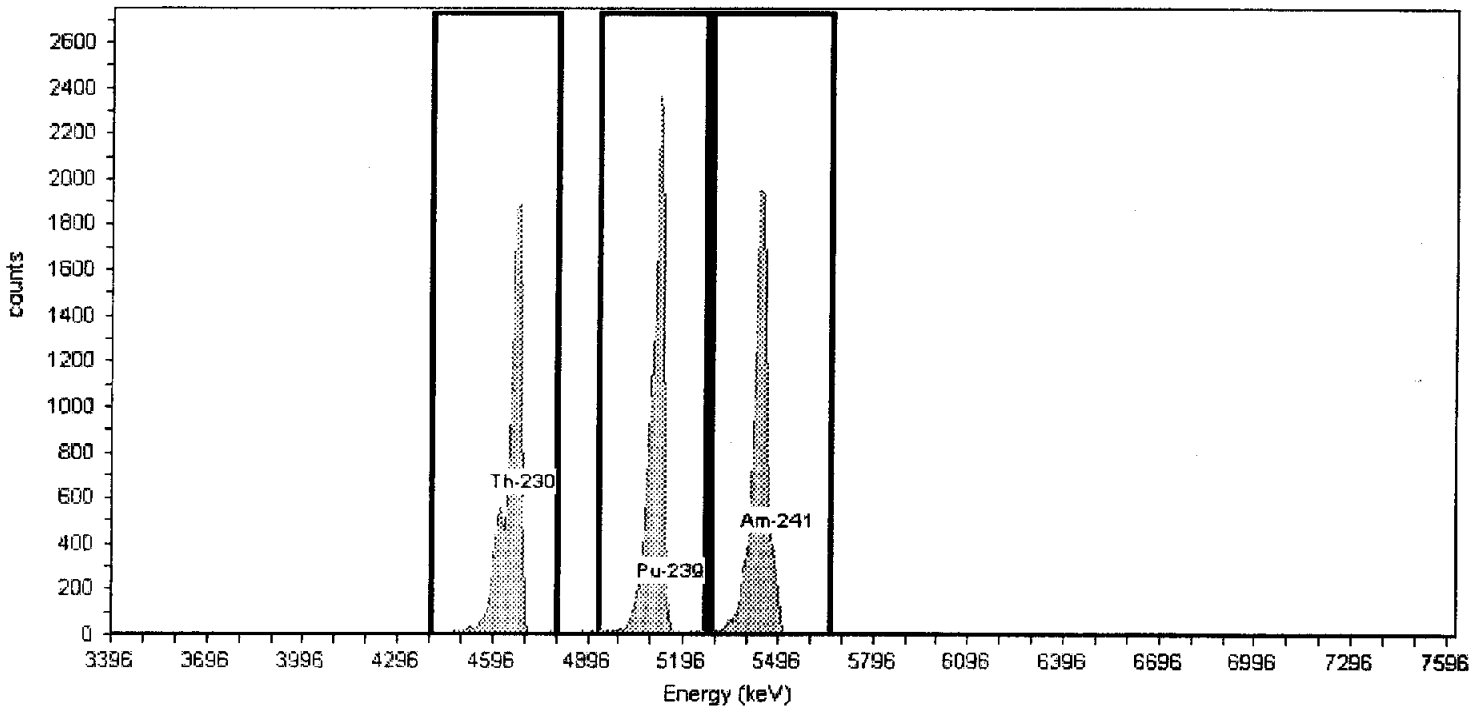
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV69 , SN:
Acquisition Start Date: 3/29/2007 2:20:43PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.79% +/- 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	12,691.00	90.65
Pu-239	243	5.16	212	258	14,560.00	104.00
Am-241	289	5.49	261	313	13,786.00	98.47

STL SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:40:21PM 3/28/2007

Analyst: 60040
Detector: AV70

Calibration

Name: Mar2007_AV70
Description:

Calibration Date: 3/28/2007 1:40:18PM

Source Info

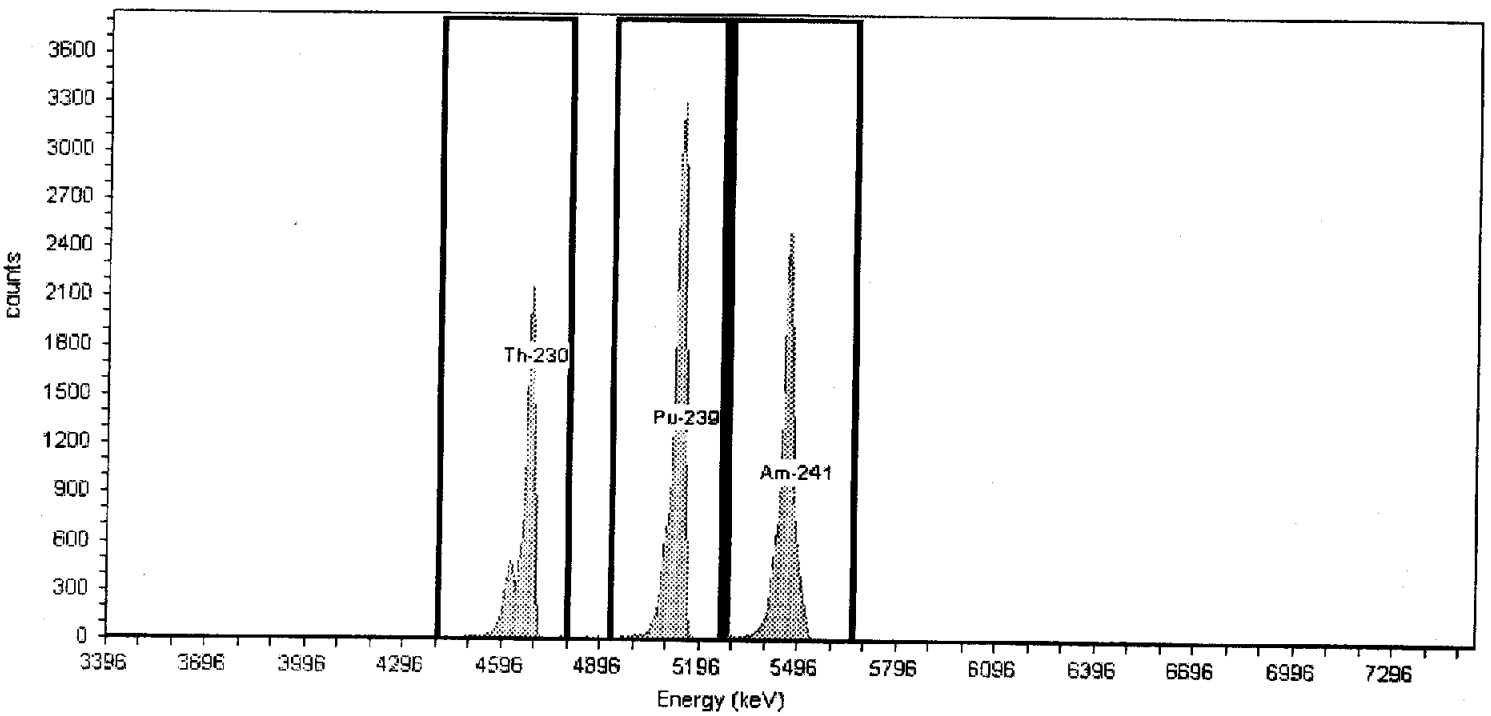
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV70 , SN:
Acquisition Start Date: 3/28/2007 11:20:24AM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.29% +/- 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	11,707.00	83.62
Pu-239	243	5.16	212	258	17,846.00	127.47
Am-241	289	5.49	261	313	15,297.00	109.26

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:40:54PM 3/29/2007

Analyst: 60040
Detector: AV71

Calibration

Name: Mar2007_AV71
Description:

Calibration Date: 3/29/2007 4:40:38PM

Source Info

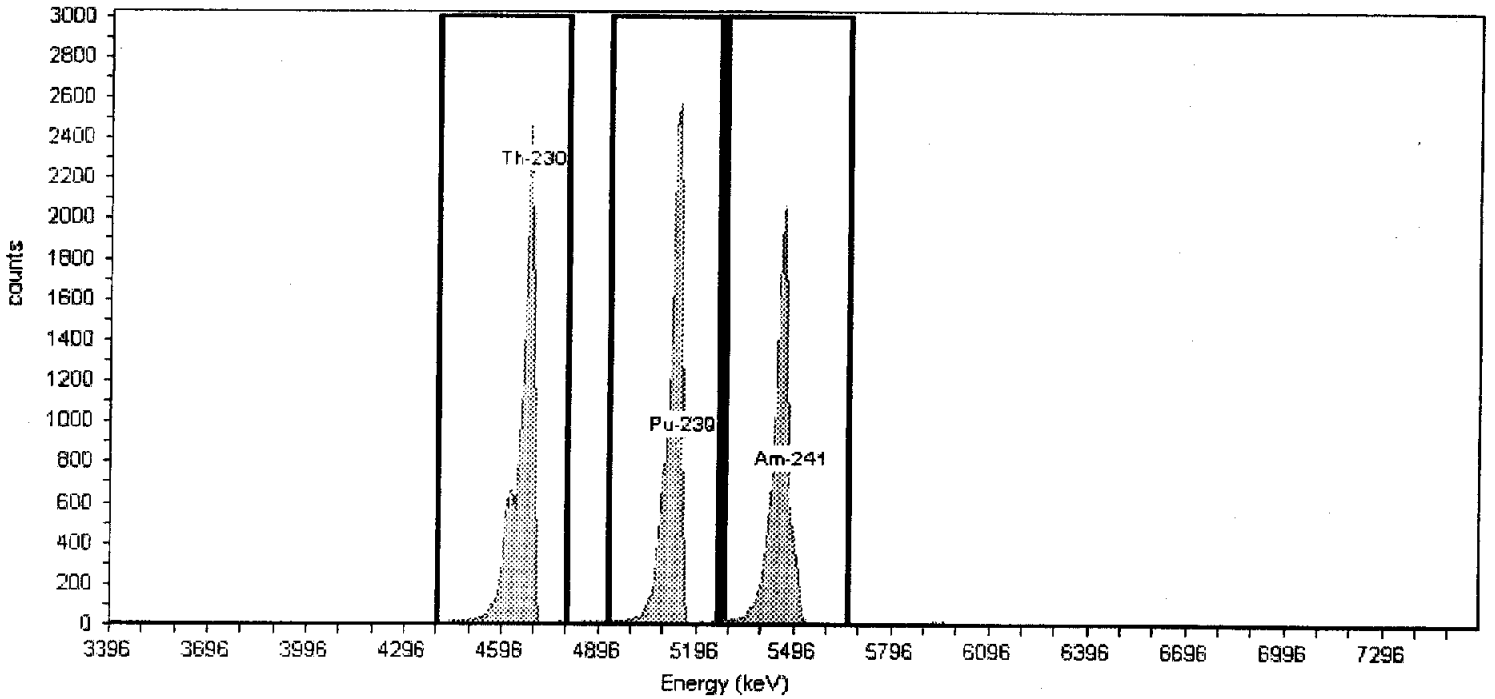
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV71 , SN:
Acquisition Start Date: 3/29/2007 2:19:59PM
Live Time: 140.00 min.
Real Time: 140.04 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	16,580.00	118.43
Pu-239	243	5.16	212	258	15,728.00	112.34
Am-241	289	5.49	261	313	14,752.00	105.37

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:42:09PM 3/29/2007

Analyst: 60040
Detector: AV72

Calibration

Name: Mar2007_AV72
Description:

Calibration Date: 3/29/2007 4:42:00PM

Source Info

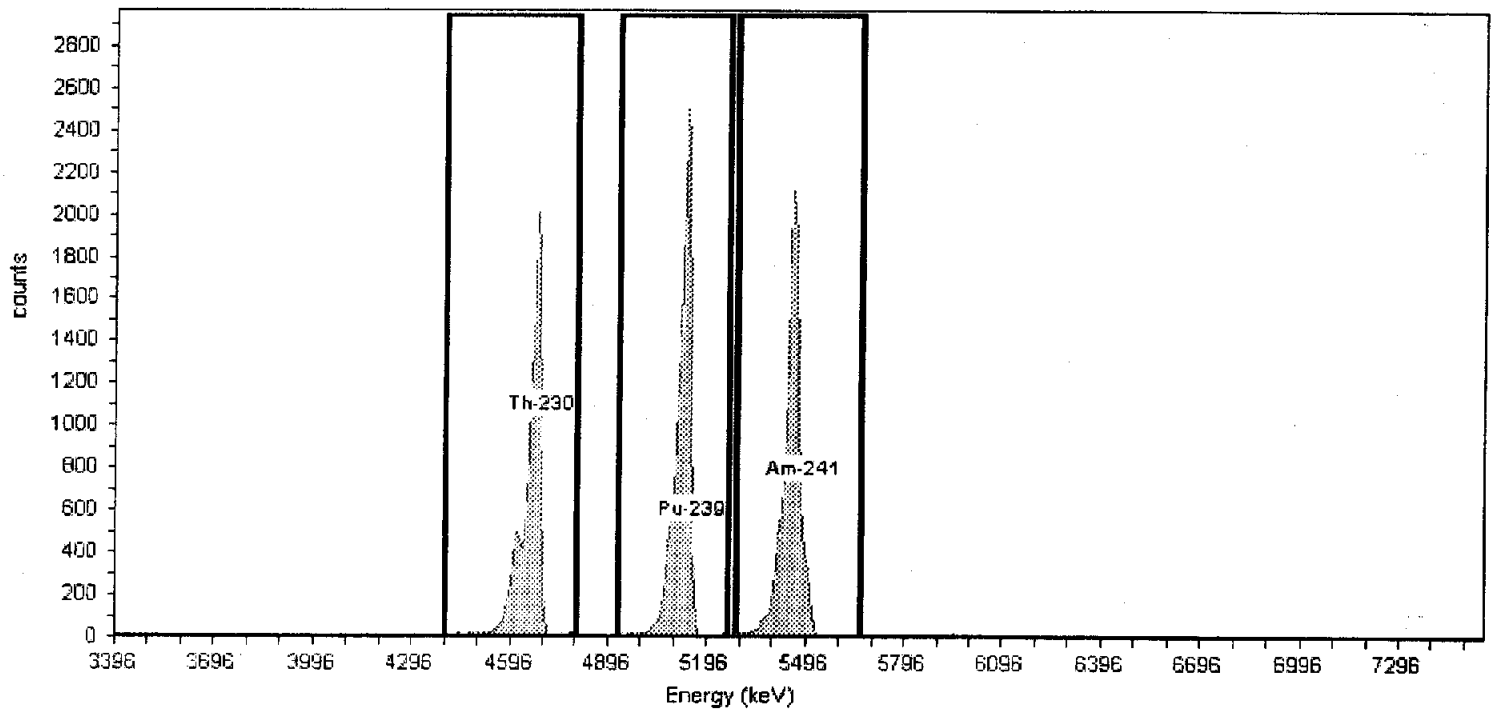
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV72 , SN:
Acquisition Start Date: 3/29/2007 2:20:47PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.71% +/- 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	12,553.00	89.66
Pu-239	243	5.16	212	258	14,592.00	104.23
Am-241	289	5.49	261	313	14,262.00	101.87

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:09:28PM 3/29/2007

Analyst: 60040
Detector: AV73

Calibration

Name: Mar2007_AV73
Description:

Calibration Date: 3/29/2007 7:09:25PM

Source Info

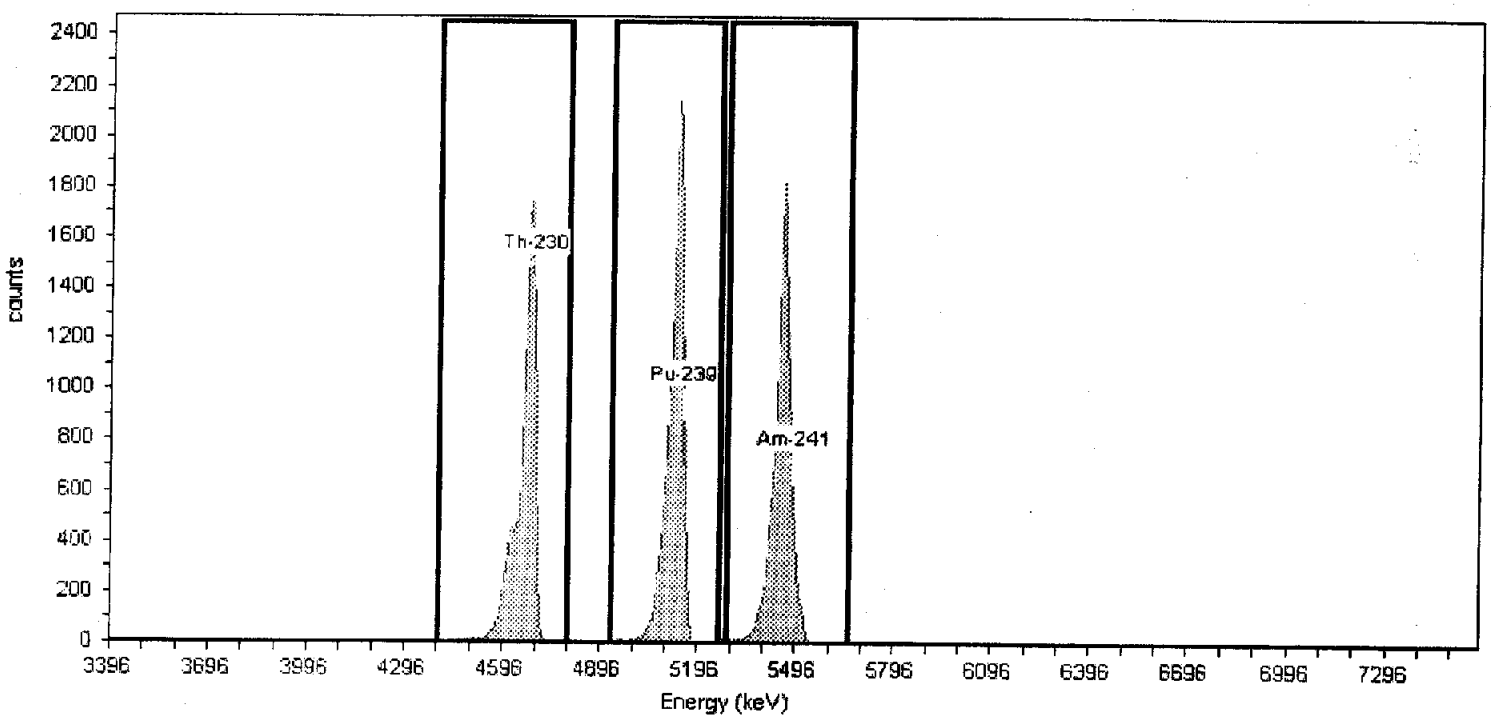
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV73 , SN:
Acquisition Start Date: 3/29/2007 4:45:50PM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 27.08% +/- 0.29% 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	12,411.00	88.65
Pu-239	243	5.16	212	258	14,141.00	101.01
Am-241	289	5.49	261	313	13,437.00	95.98

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:10:57AM 3/28/2007

Analyst: 60040
Detector: AV75

Calibration

Name: Mar2007_AV75
Description:

Calibration Date: 3/28/2007 7:10:54AM

Source Info

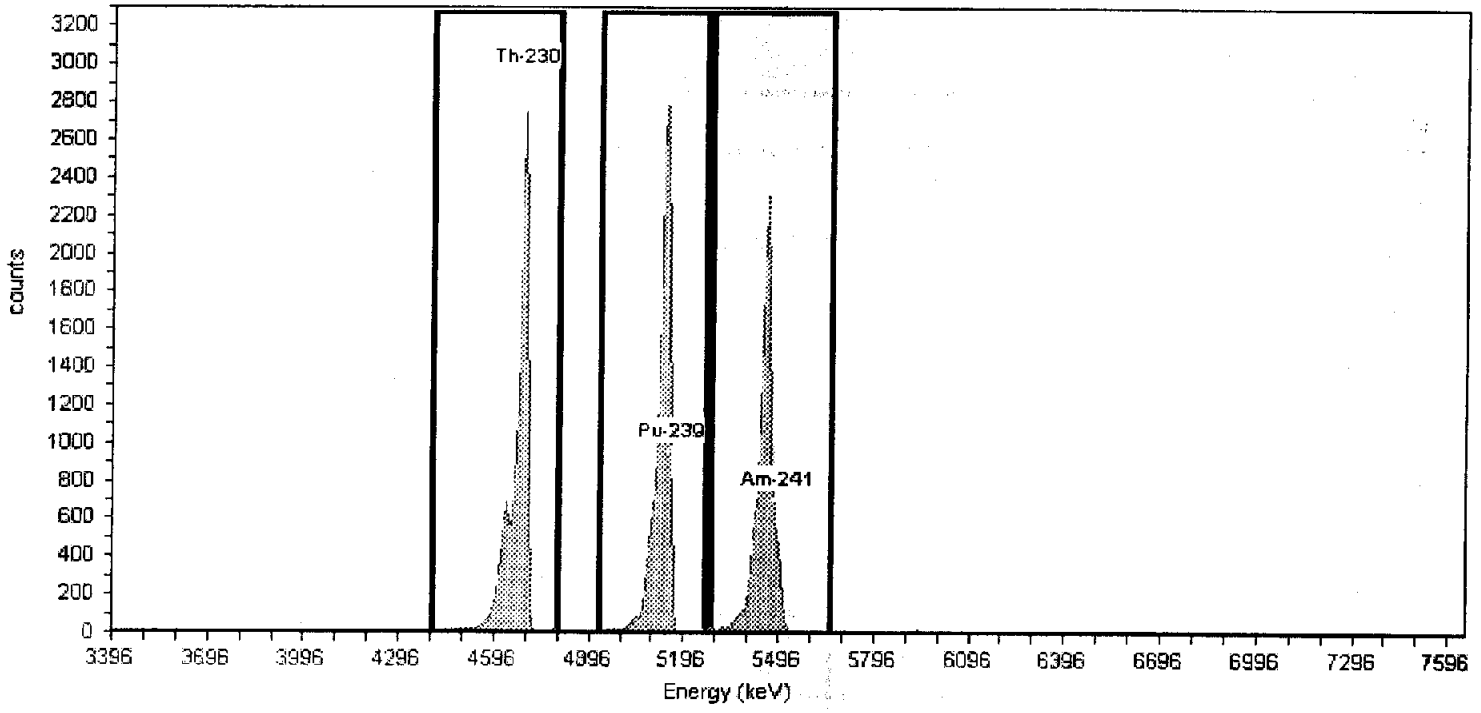
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV75 , SN: 46-033P6
Acquisition Start Date: 3/27/2007 5:33:23PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.78% +/- 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	16,124.00	115.17
Pu-239	243	5.16	212	258	15,499.00	110.71
Am-241	289	5.49	261	313	14,835.00	105.96

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:11:02AM 3/28/2007

Analyst: 60040
Detector: AV76

Calibration

Name: Mar2007_AV76
Description:

Calibration Date: 3/28/2007 7:10:59AM

Source Info

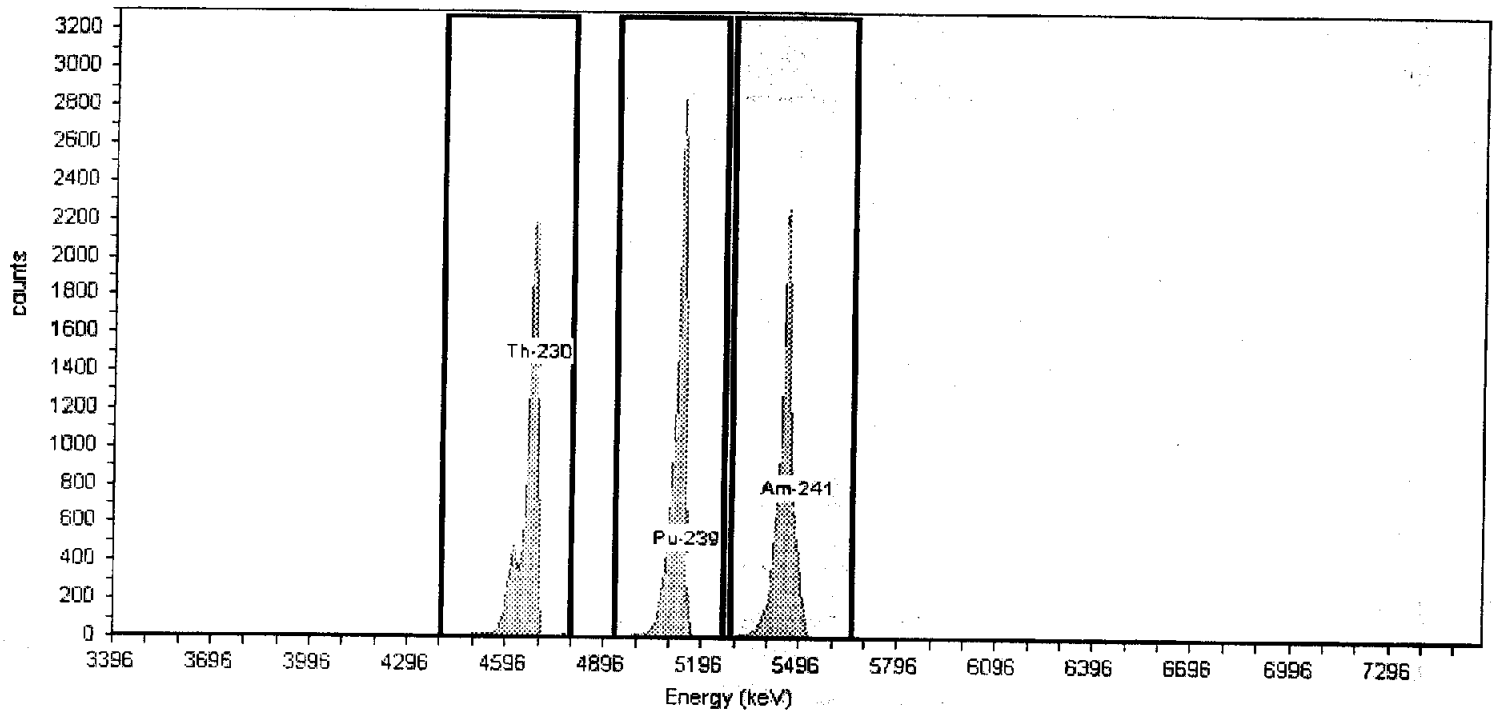
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV76 , SN: 46-033Q4
Acquisition Start Date: 3/27/2007 5:34:02PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 26.36% +/- 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	12,278.00	87.70
Pu-239	243	5.16	212	258	14,599.00	104.28
Am-241	289	5.49	261	313	14,068.00	100.49

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:40:09PM 3/28/2007

Analyst: 60040
Detector: AV77

Calibration

Name: Mar2007_AV77
Description:

Calibration Date: 3/28/2007 1:40:06PM

Source Info

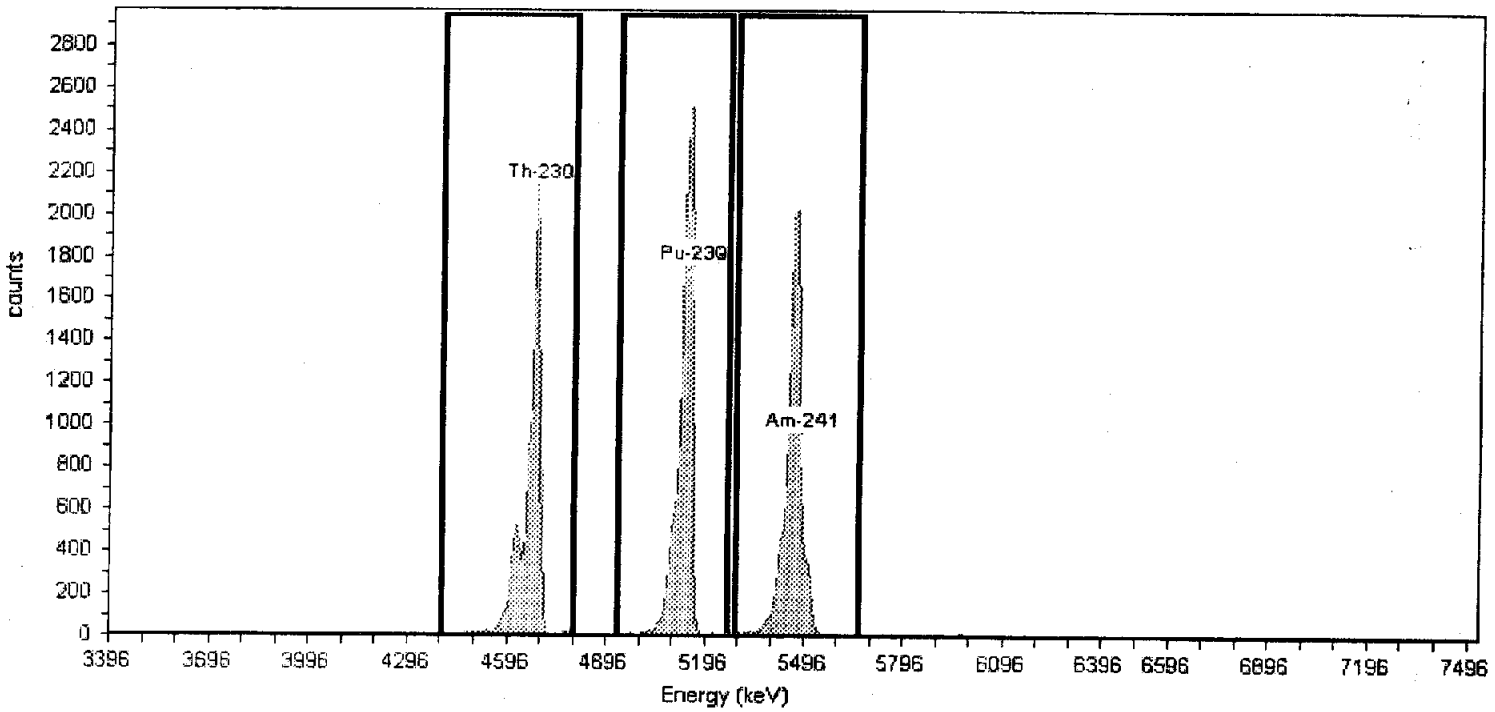
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV77 , SN: 46-033Q7
Acquisition Start Date: 3/28/2007 11:20:02AM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.77% +/- 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	12,302.00	87.87
Pu-239	243	5.16	212	258	14,179.00	101.28
Am-241	289	5.49	261	313	13,053.00	93.24

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:30:14PM 3/27/2007

Analyst: 60040
Detector: AV78

Calibration

Name: Mar2007_AV78a
Description:

Calibration Date: 3/27/2007 5:30:11PM

Source Info

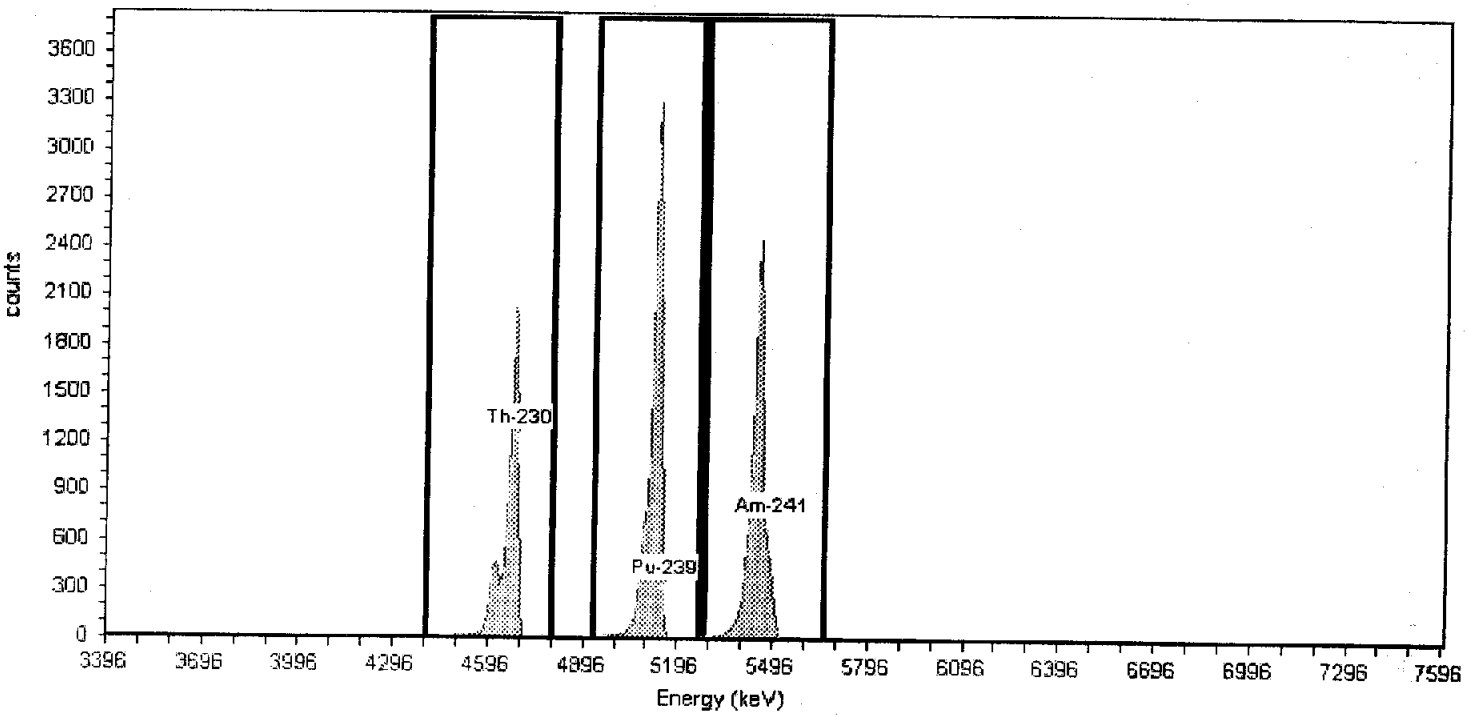
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV78 , SN: 46-033FF4
Acquisition Start Date: 3/27/2007 3:09:41PM
Live Time: 140.00 min.
Real Time: 140.02 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	11,499.00	82.14
Pu-239	243	5.16	212	258	17,555.00	125.39
Am-241	289	5.49	261	313	15,043.00	107.45

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:09:13PM 3/29/2007

Analyst: 60040
Detector: AV79

Calibration

Name: Mar2007_AV79
Description:

Calibration Date: 3/29/2007 7:09:10PM

Source Info

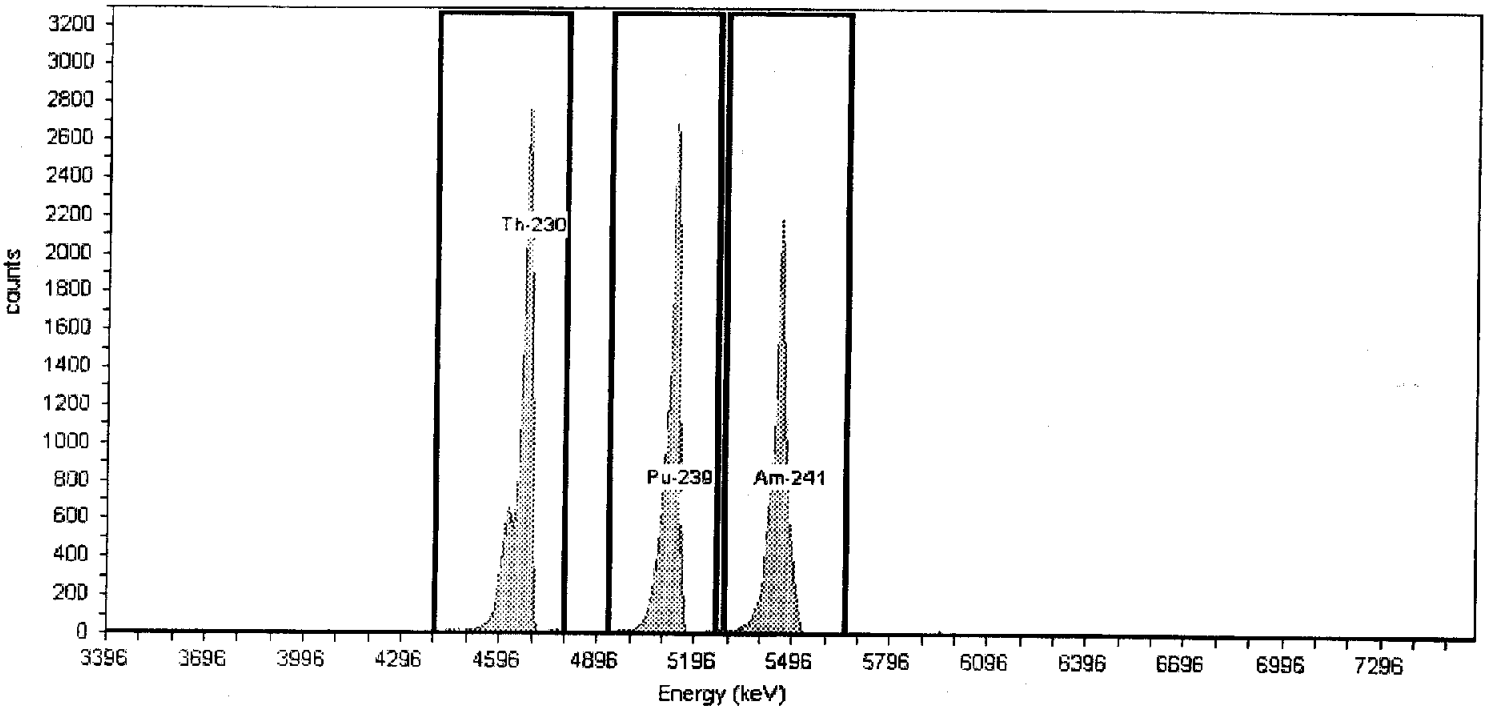
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV79 , SN: 46-033Q5
Acquisition Start Date: 3/29/2007 4:45:14PM
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 / 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	16,504.00	117.89
Pu-239	243	5.16	212	258	15,807.00	112.91
Am-241	289	5.49	261	313	14,661.00	104.72

ST TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:09:21PM 3/29/2007

Analyst: 60040
Detector: AV80

Calibration

Name: Mar2007_AV80
Description:

Calibration Date: 3/29/2007 7:09:18PM

Source Info

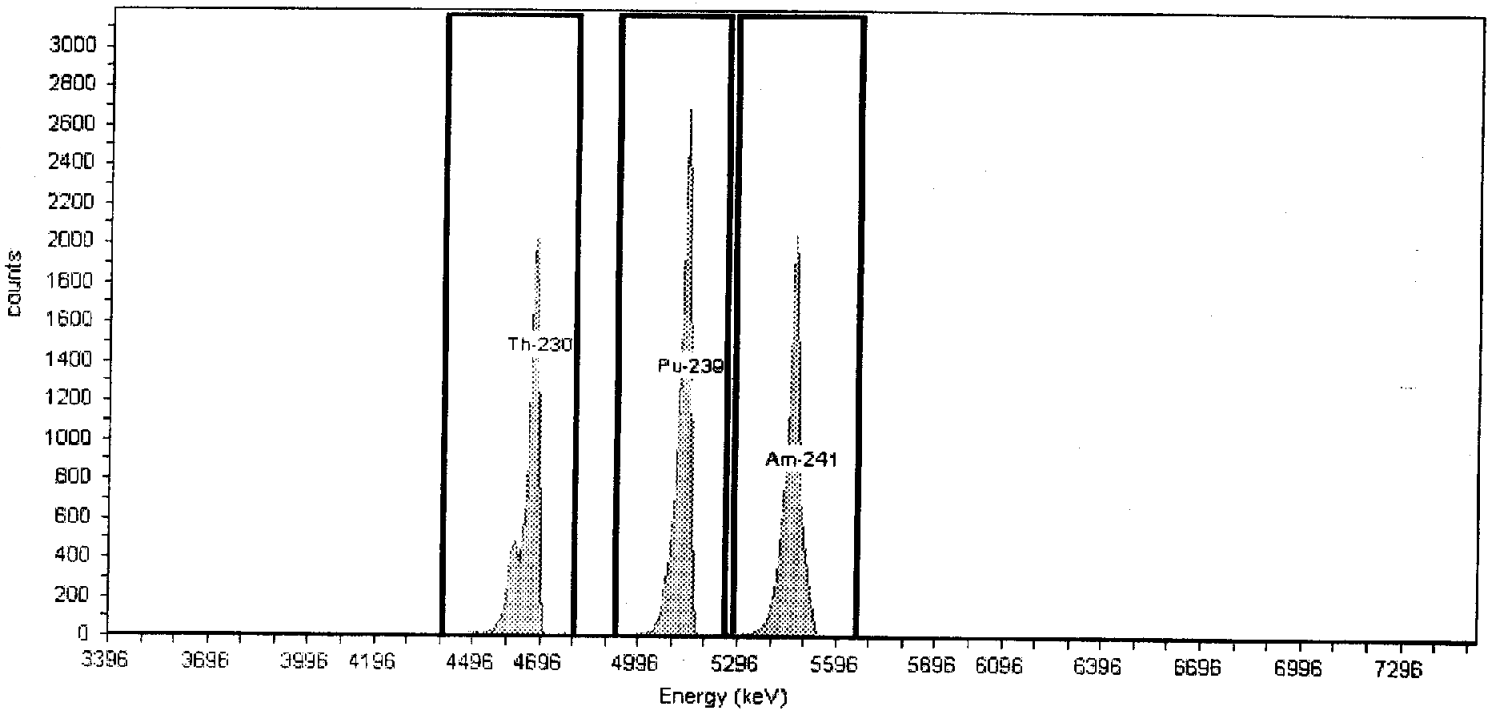
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV80 , SN: 46-03305
Acquisition Start Date: 3/29/2007 4:45:27PM
Live Time: 140.00 min.
Real Time: 140.03 min.
Efficiency: 25.89% +/- 0.27% 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	12,078.00	86.27
Pu-239	243	5.16	212	258	14,379.00	102.71
Am-241	289	5.49	261	313	13,741.00	98.15

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:32:35PM 3/29/2007

Analyst: 60040
Detector: AV81

Calibration

Name: Mar2007_AV81
Description:

Calibration Date: 3/29/2007 9:32:32PM

Source Info

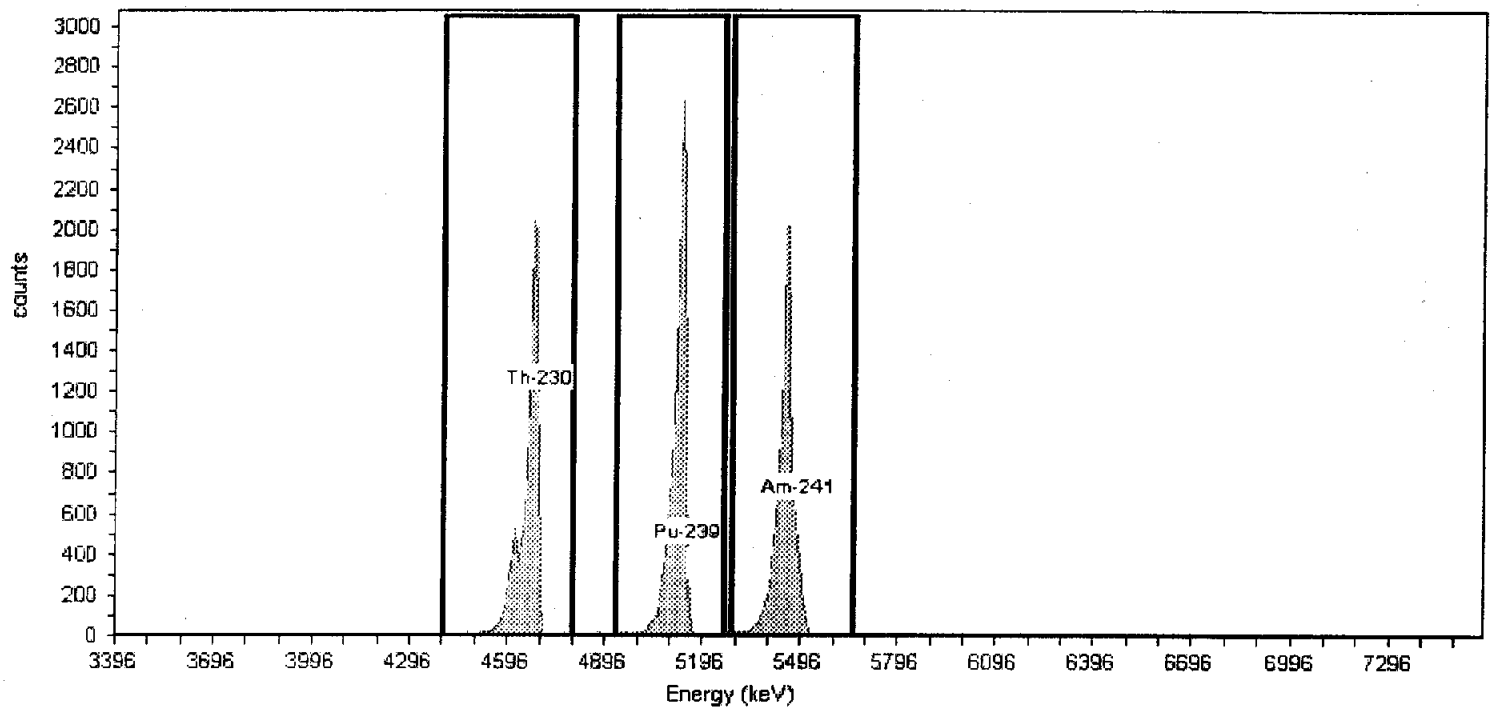
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV81 , SN: 46-03307
Acquisition Start Date: 3/29/2007 7:12:13PM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 27.00% +/- 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	12,324.00	88.03
Pu-239	243	5.16	212	258	14,234.00	101.67
Am-241	289	5.49	261	313	13,308.00	95.06

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:42:25PM 3/29/2007

Analyst: 60040
Detector: AV82

Calibration

Name: Mar2007_AV82
Description:

Calibration Date: 3/29/2007 4:42:16PM

Source Info

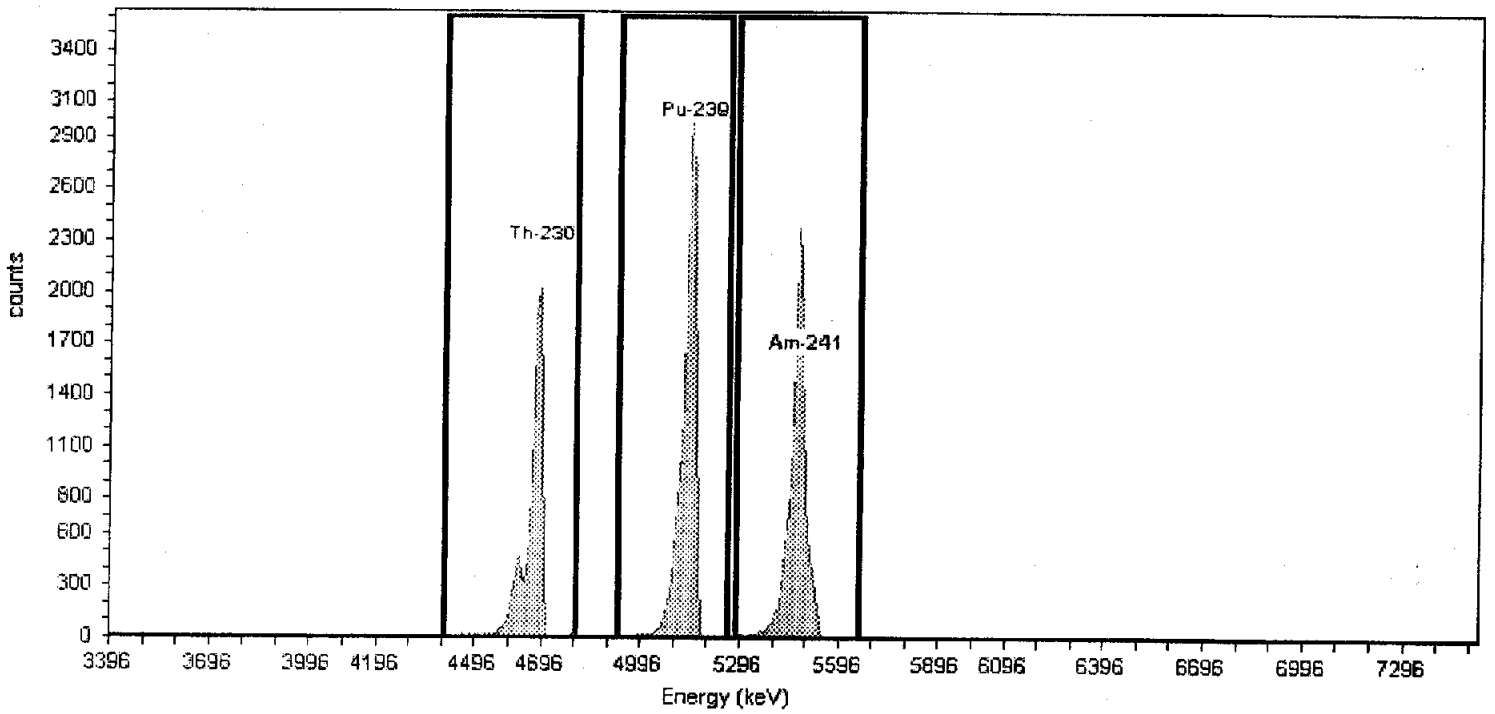
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV82 , SN: 46-032EE5
Acquisition Start Date: 3/29/2007 2:20:48PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.86% +/- 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	11,450.00	81.79
Pu-239	243	5.16	212	258	17,593.00	125.66
Am-241	289	5.49	261	313	15,105.00	107.89

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:32:07PM 3/29/2007

Analyst: 60040
Detector: AV83

Calibration

Name: Mar2007_AV83
Description:

Calibration Date: 3/29/2007 9:32:03PM

Source Info

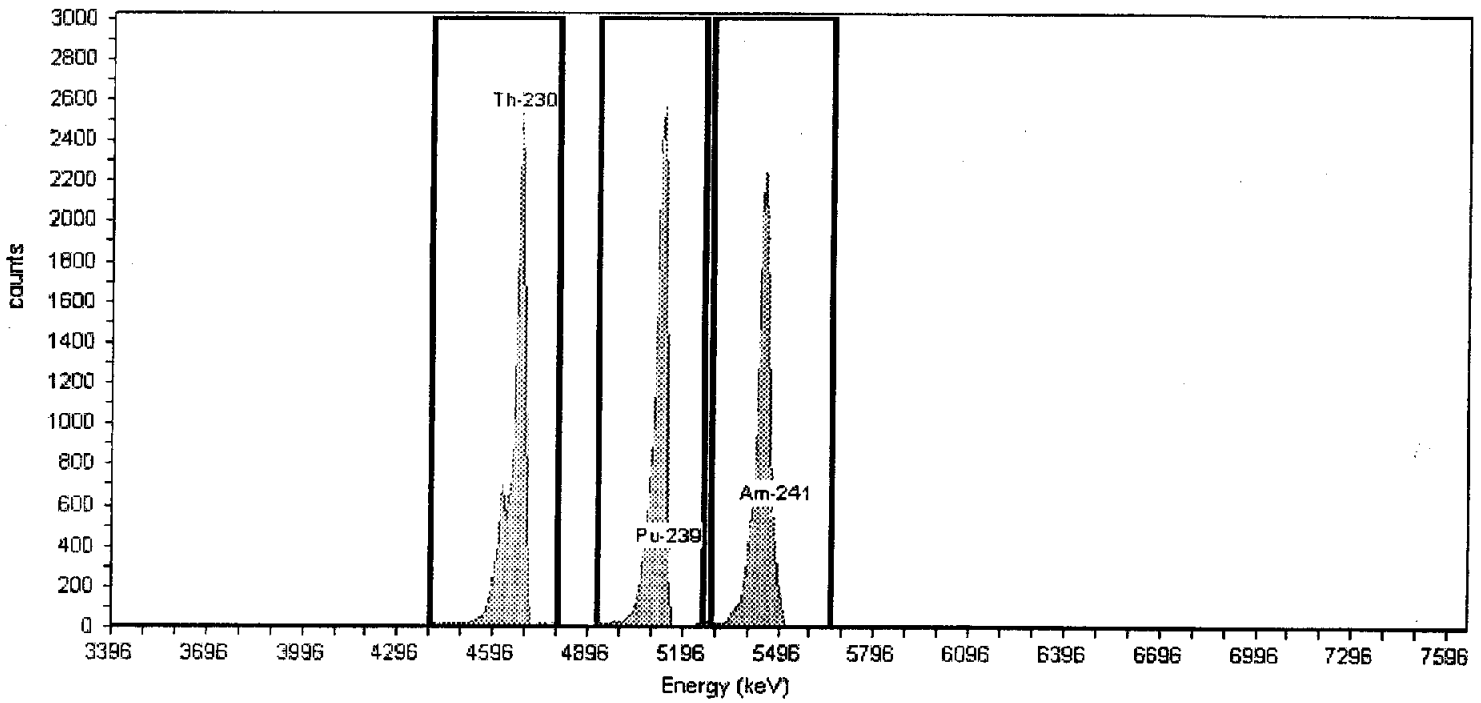
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV83 , SN: 46-03306
Acquisition Start Date: 3/29/2007 7:11:38PM
Live Time: 140.00 min.
Real Time: 140.05 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	16,060.00	114.71
Pu-239	243	5.16	212	258	15,372.00	109.80
Am-241	289	5.49	261	313	14,657.00	104.69

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:32:22PM 3/29/2007

Analyst: 60040
Detector: AV84

Calibration

Name: Mar2007_AV84
Description:

Calibration Date: 3/29/2007 9:32:20PM

Source Info

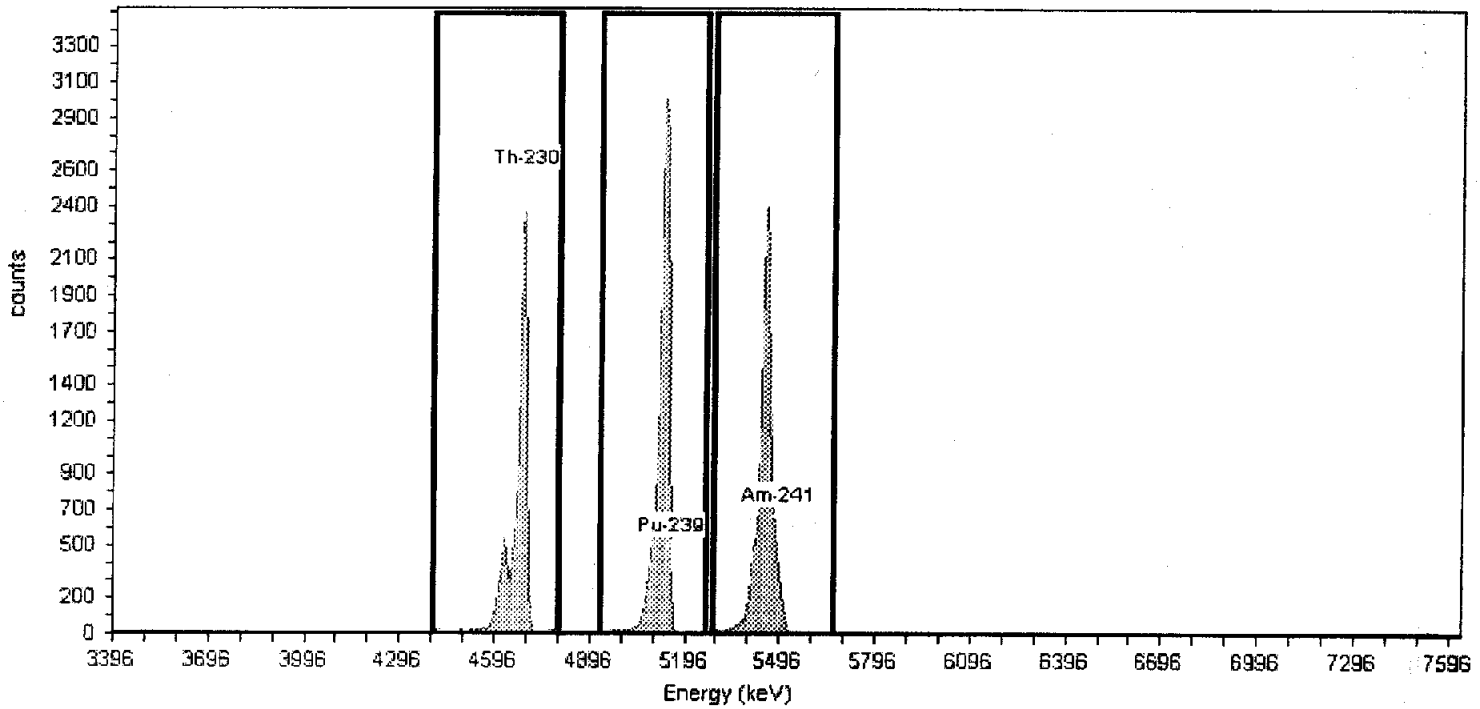
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV84 , SN: 46-033FF3
Acquisition Start Date: 3/29/2007 7:11:58PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 26.63% +/- 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	12,434.00	88.81
Pu-239	243	5.16	212	258	14,766.00	105.47
Am-241	289	5.49	261	313	14,125.00	100.89

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:55:11PM 3/29/2007

Analyst: 60040
Detector: AV85

Calibration

Name: Mar2007_AV85
Description:

Calibration Date: 3/29/2007 11:55:08PM

Source Info

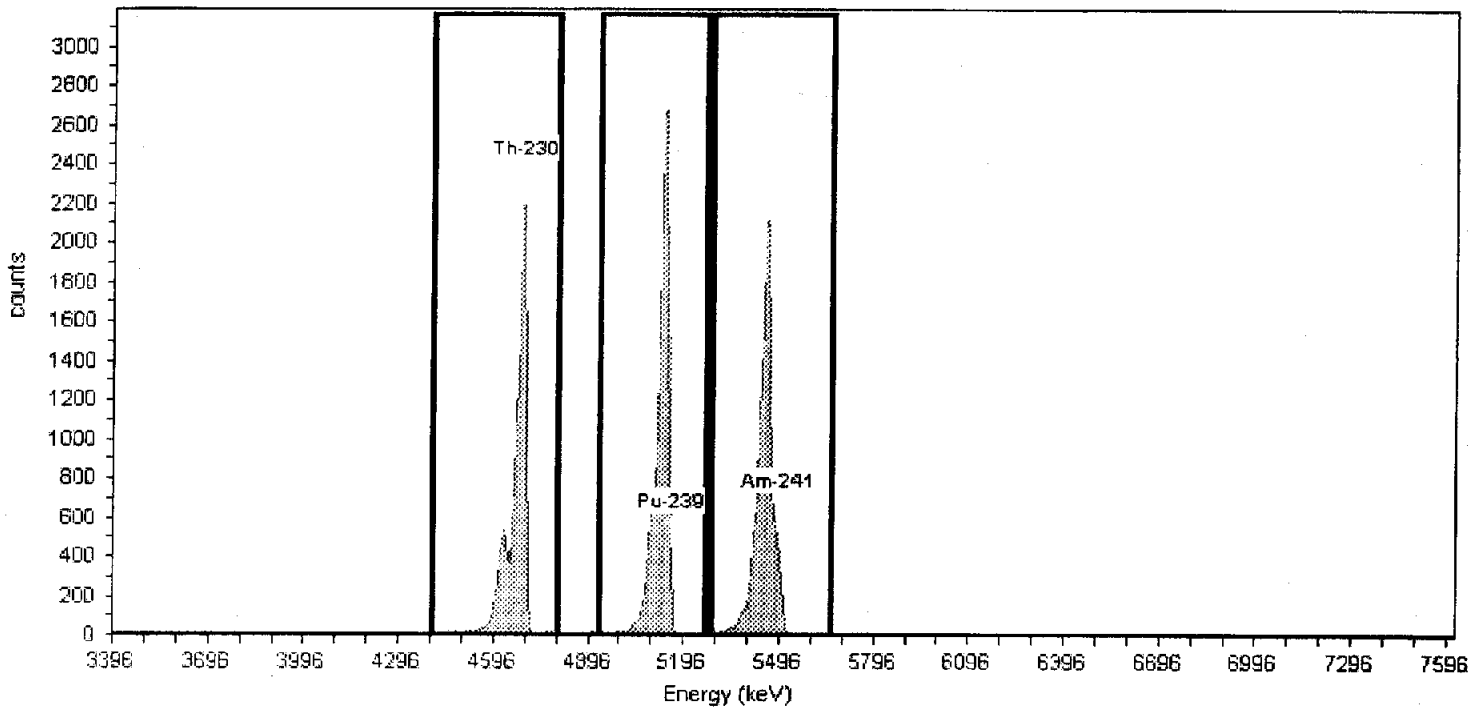
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV85 , SN: 46-032EE7
Acquisition Start Date: 3/29/2007 9:34:58PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 27.76% +/- 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	12,652.00	90.37
Pu-239	243	5.16	212	258	14,617.00	104.41
Am-241	289	5.49	261	313	13,723.00	98.02

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:09:33PM 3/29/2007

Analyst: 60040
Detector: AV86

Calibration

Name: Mar2007_AV86
Description:

Calibration Date: 3/29/2007 7:09:30PM

Source Info

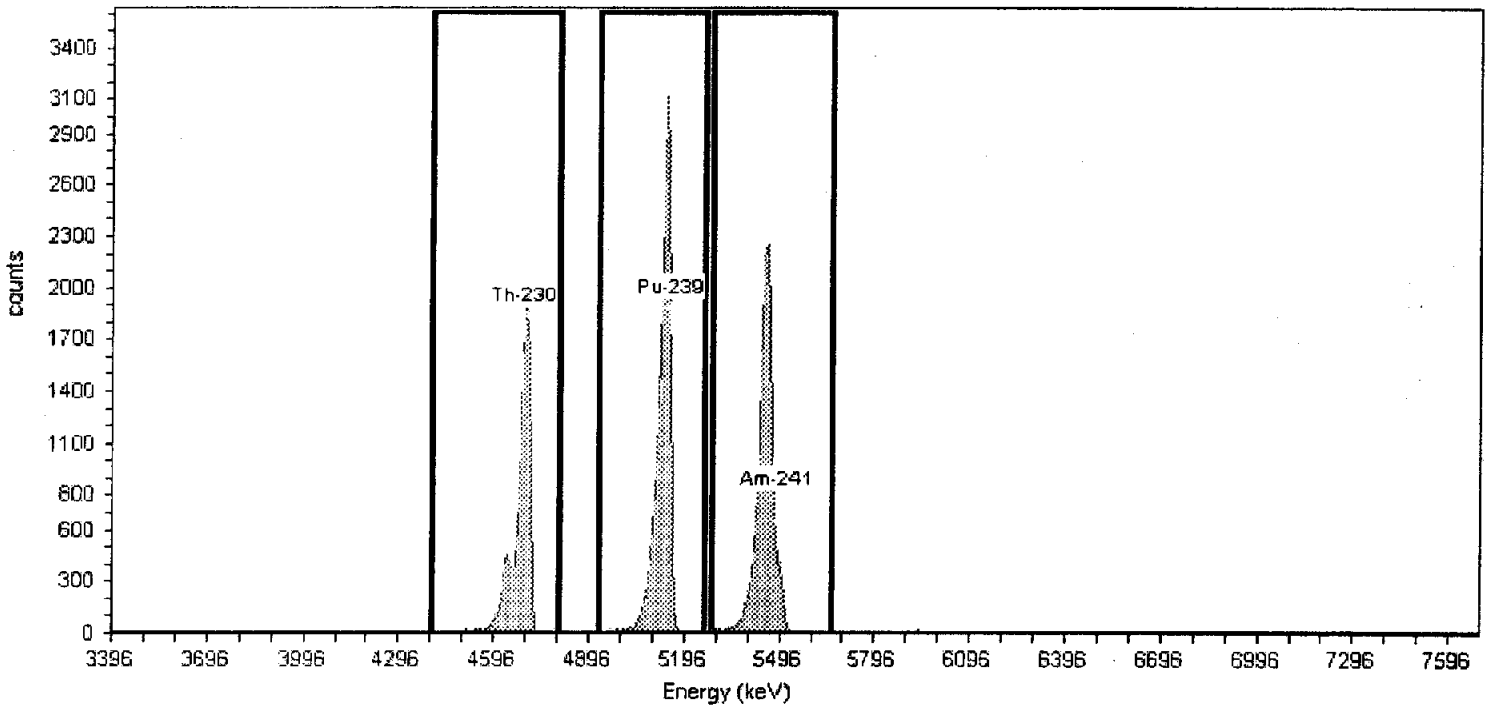
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV86 , SN: 46-033Q6
Acquisition Start Date: 3/29/2007 4:45:55PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 27.17% +/- 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	11,622.00	83.01
Pu-239	243	5.16	212	258	17,698.00	126.41
Am-241	289	5.49	261	313	15,334.00	109.53

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:54:41PM 3/29/2007

Analyst: 60040
Detector: AV87

Calibration

Name: Mar2007_AV87
Description:

Calibration Date: 3/29/2007 11:54:38PM

Source Info

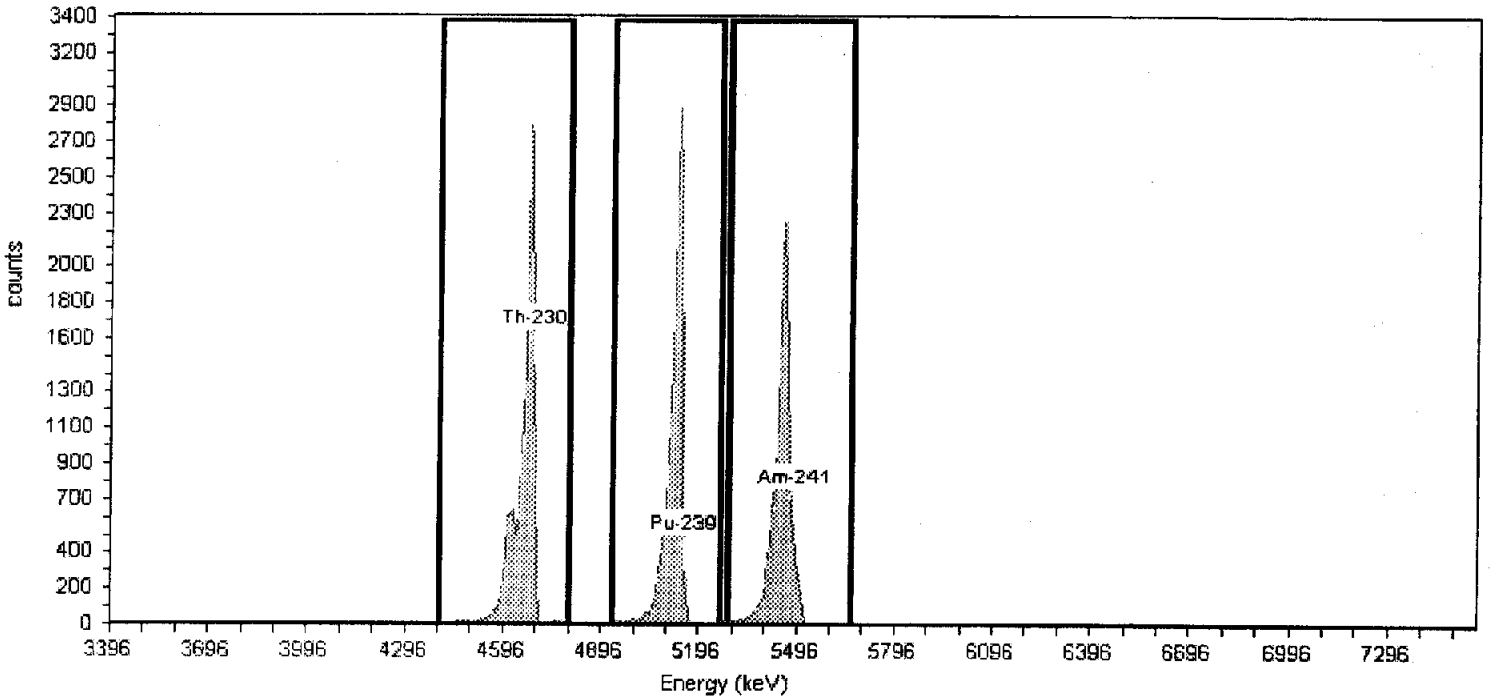
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV87 , SN: 46-033FF5
Acquisition Start Date: 3/29/2007 9:34:22PM
Live Time: 140.00 min.
Real Time: 140.04 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	16,366.00	116.90
Pu-239	243	5.16	212	258	15,585.00	111.32
Am-241	289	5.49	261	313	14,506.00	103.61

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:55:19PM 3/29/2007

Analyst: 60040
Detector: AV88

Calibration

Name: Mar2007_AV88
Description:

Calibration Date: 3/29/2007 11:55:16PM

Source Info

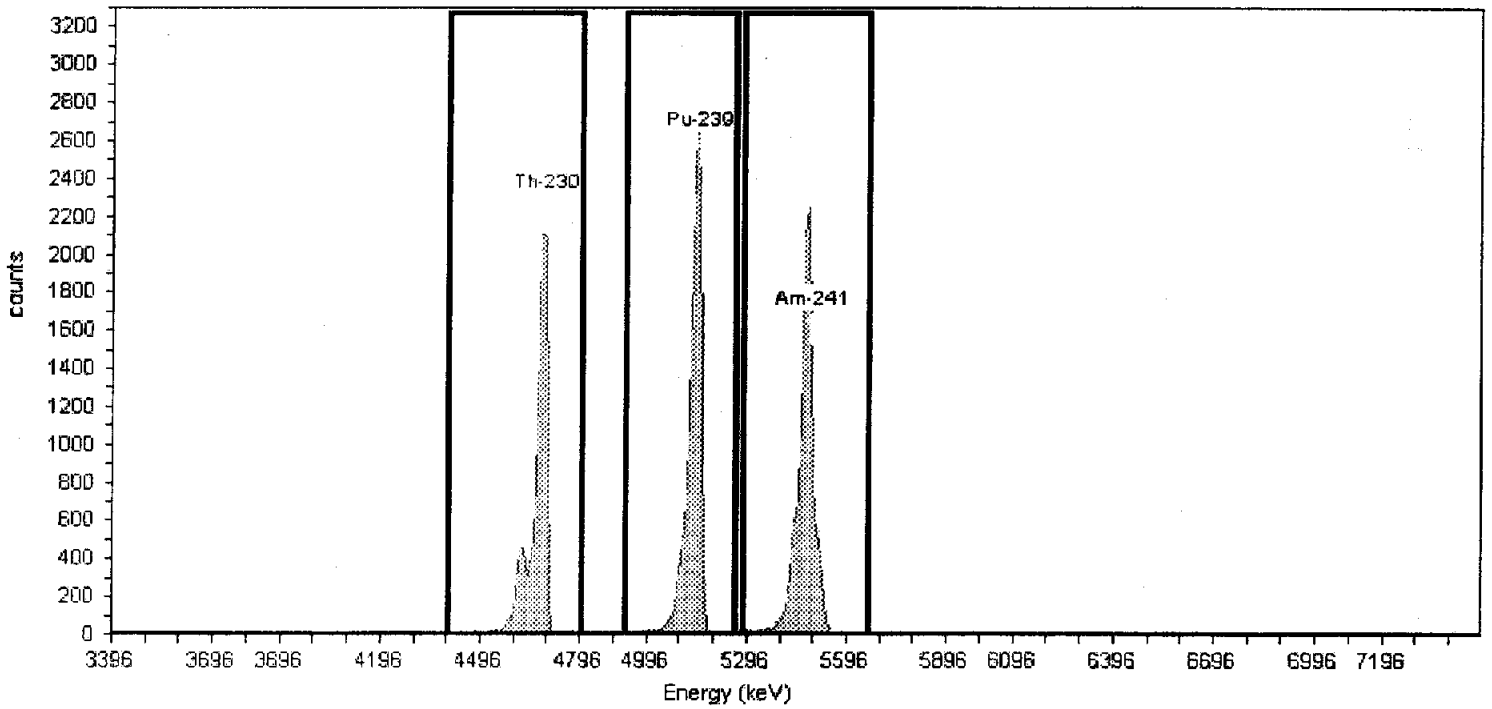
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV88 , SN: 76-033FF1
Acquisition Start Date: 3/29/2007 9:34:34PM
Live Time: 140.00 min.
Real Time: 140.04 min.
Efficiency: 26.30% +/- 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	12,278.00	87.70
Pu-239	243	5.16	212	258	14,505.00	103.61
Am-241	289	5.49	261	313	14,039.00	100.28

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

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

Analyst: 60040
Detector: AV89

2:19:58AM 3/30/2007

Calibration

Name: Mar2007_AV89
Description:

Calibration Date: 3/30/2007 2:19:55AM

Source Info

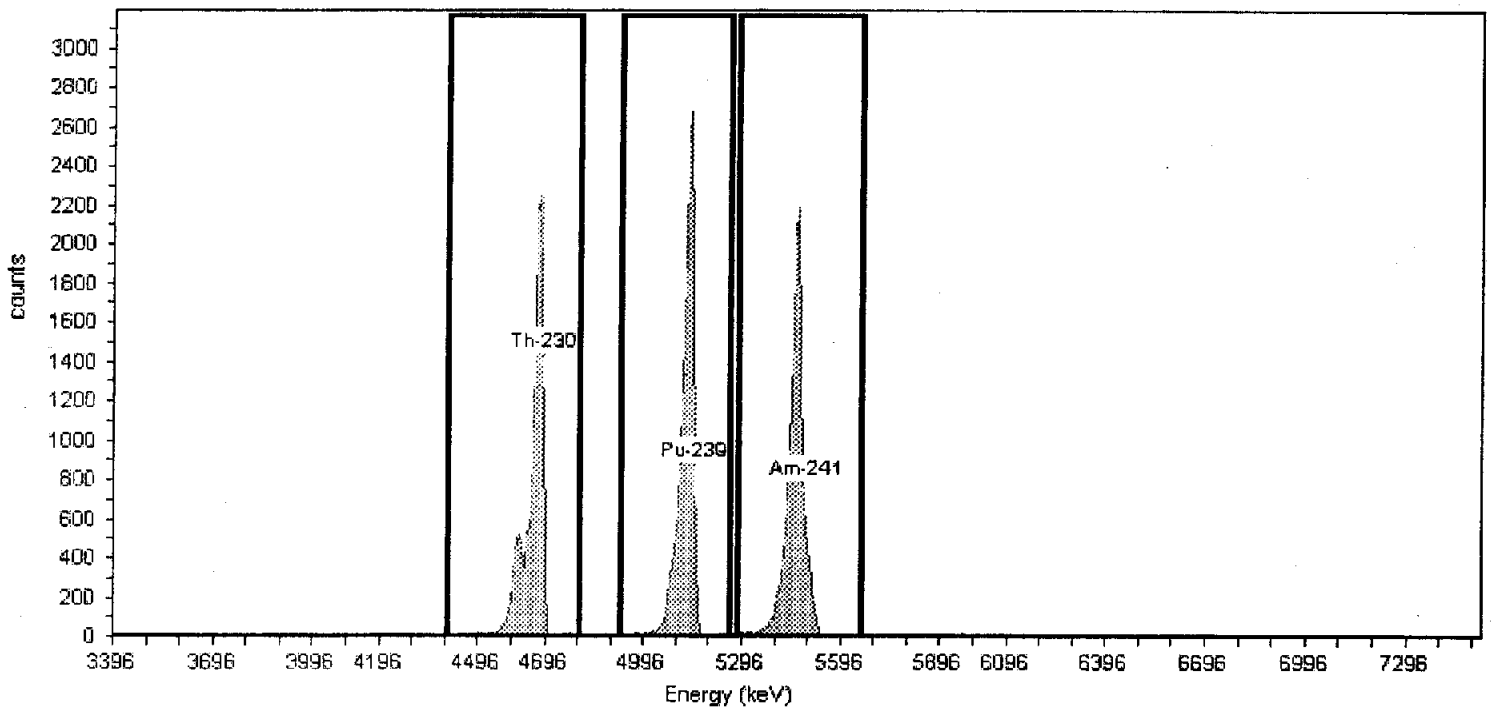
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV89 , SN: 46-033P5
Acquisition Start Date: 3/29/2007 11:58:05PM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 27.25% +/- 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	12,605.00	90.04
Pu-239	243	5.16	212	258	14,309.00	102.21
Am-241	289	5.49	261	313	13,319.00	95.14

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:32:47PM 3/29/2007

Analyst: 60040
Detector: AV90

Calibration

Name: Mar2007_AV90
Description:

Calibration Date: 3/29/2007 9:32:43PM

Source Info

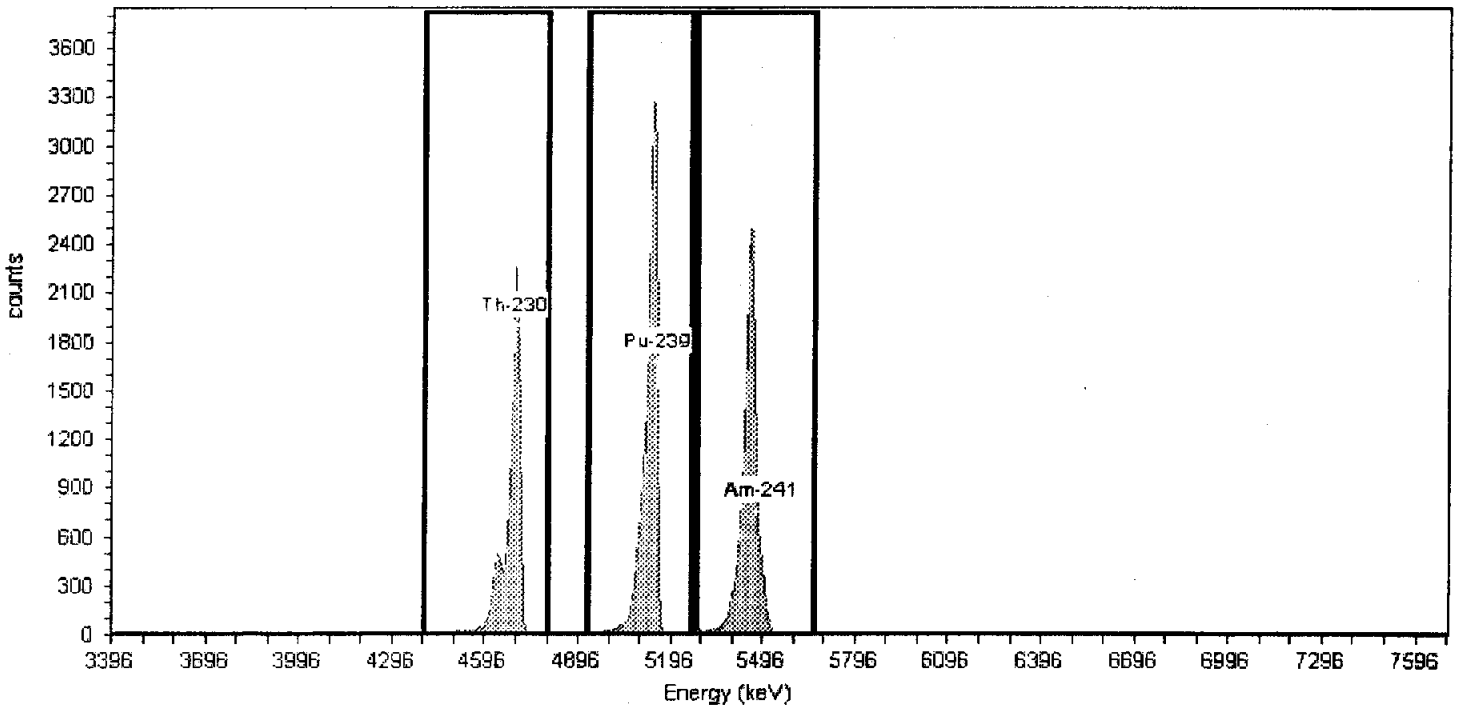
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV90 , SN: 46-033Q1
Acquisition Start Date: 3/29/2007 7:12:31PM
Live Time: 140.00 min.
Real Time: 140.05 min.
Efficiency: 27.80% +/- 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	12,175.00	86.96
Pu-239	243	5.16	212	258	17,924.00	128.03
Am-241	289	5.49	261	313	15,603.00	111.45

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:17:26AM 3/30/2007

Analyst: 60040
Detector: AV92

Calibration

Name: Mar2007_AV92
Description:

Calibration Date: 3/30/2007 2:17:23AM

Source Info

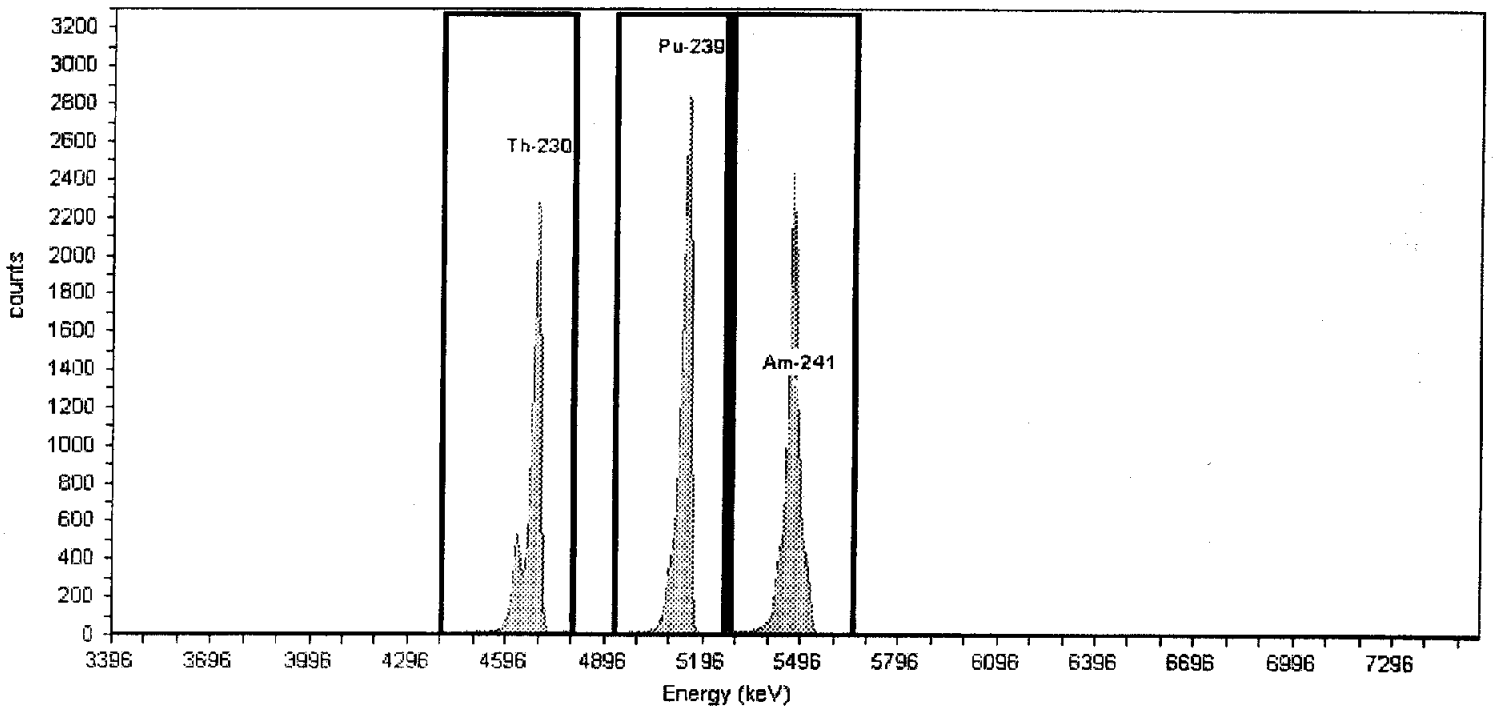
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV92 , SN: 46-033FF2
Acquisition Start Date: 3/29/2007 11:57:32PM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.39% +/- 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	12,320.00	88.00
Pu-239	243	5.16	212	258	14,575.00	104.11
Am-241	289	5.49	261	313	14,058.00	100.41

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:23:27AM 3/30/2007

Analyst: 60040
Detector: AV93

Calibration

Name: Mar2007_AV93
Description:

Calibration Date: 3/30/2007 5:23:24AM

Source Info

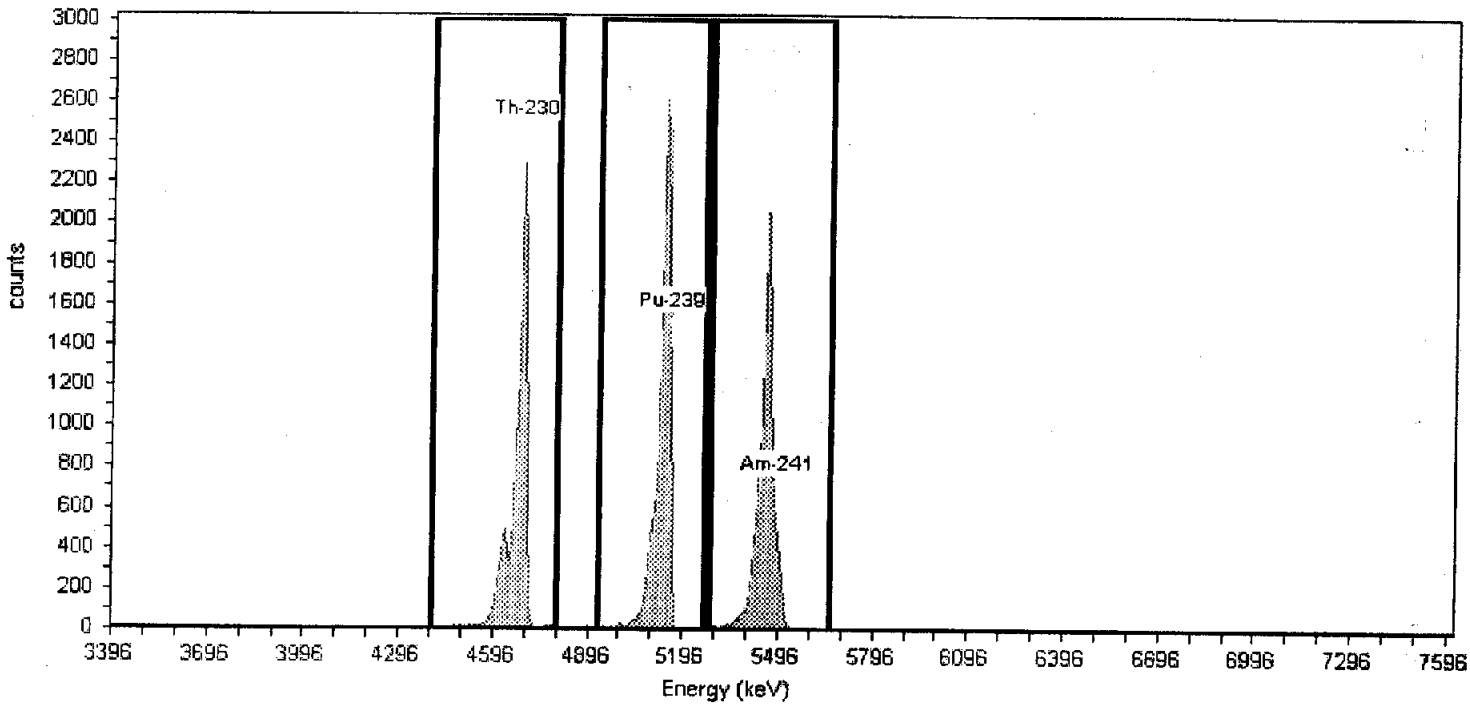
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV93 , SN: 46-033Q2
Acquisition Start Date: 3/30/2007 2:23:28AM
Live Time: 140.00 min.
Real Time: 140.01 min.
Efficiency: 26.61% +/- 0.29% 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	12,286.00	87.76
Pu-239	243	5.16	212	258	14,026.00	100.19
Am-241	289	5.49	261	313	12,991.00	92.79

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:55:26PM 3/29/2007

Analyst: 60040
Detector: AV94

Calibration

Name: Mar2007_AV94
Description:

Calibration Date: 3/29/2007 11:55:23PM

Source Info

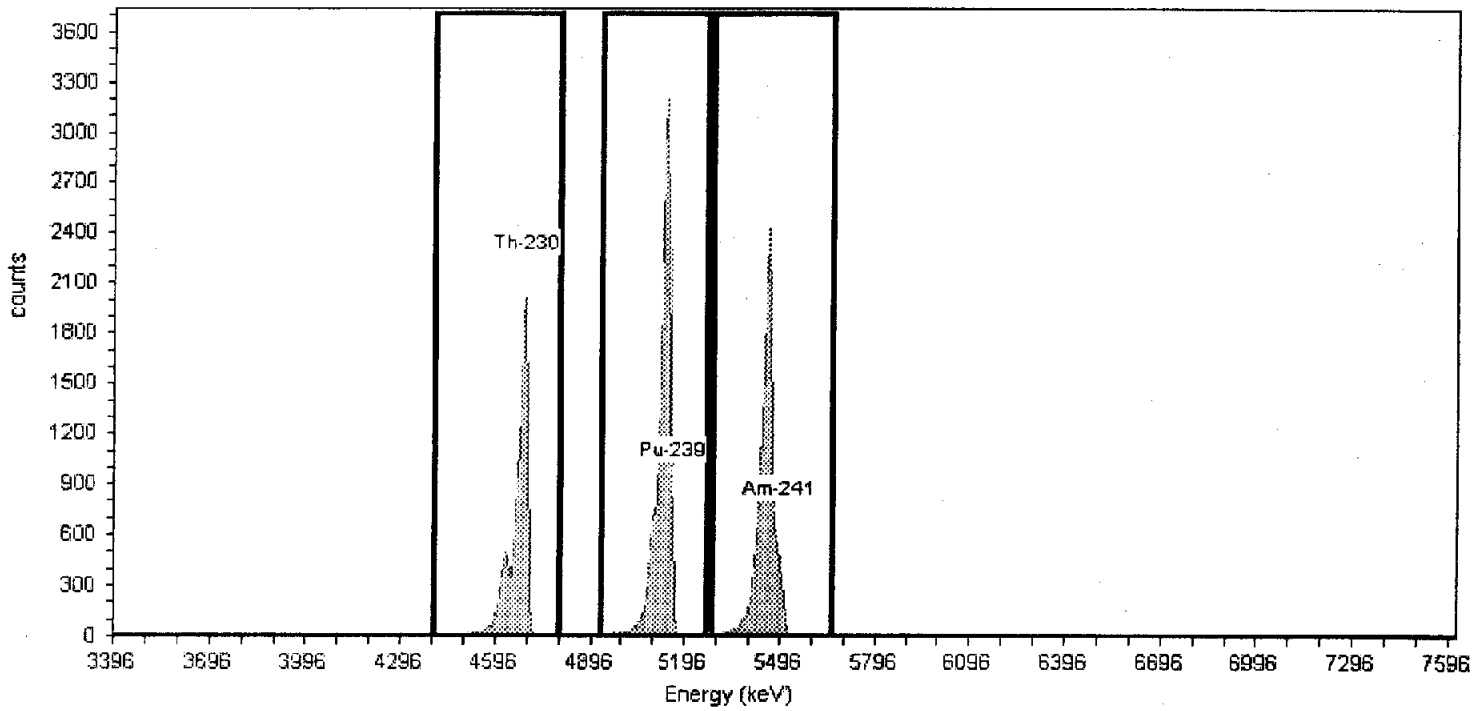
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV94 , SN: 46-032EE6
Acquisition Start Date: 3/29/2007 9:35:04PM
Live Time: 140.00 min.
Real Time: 140.02 min.
Efficiency: 26.63% +/- 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	11,527.00	82.34
Pu-239	243	5.16	212	258	17,308.00	123.63
Am-241	289	5.49	261	313	14,937.00	106.69

ST SEVERN TRENT **STL**

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:58:52PM 3/27/2007

Analyst: 60040
Detector: AV95

Calibration

Name: Mar2007_AV95
Description:

Calibration Date: 3/27/2007 2:58:48PM

Source Info

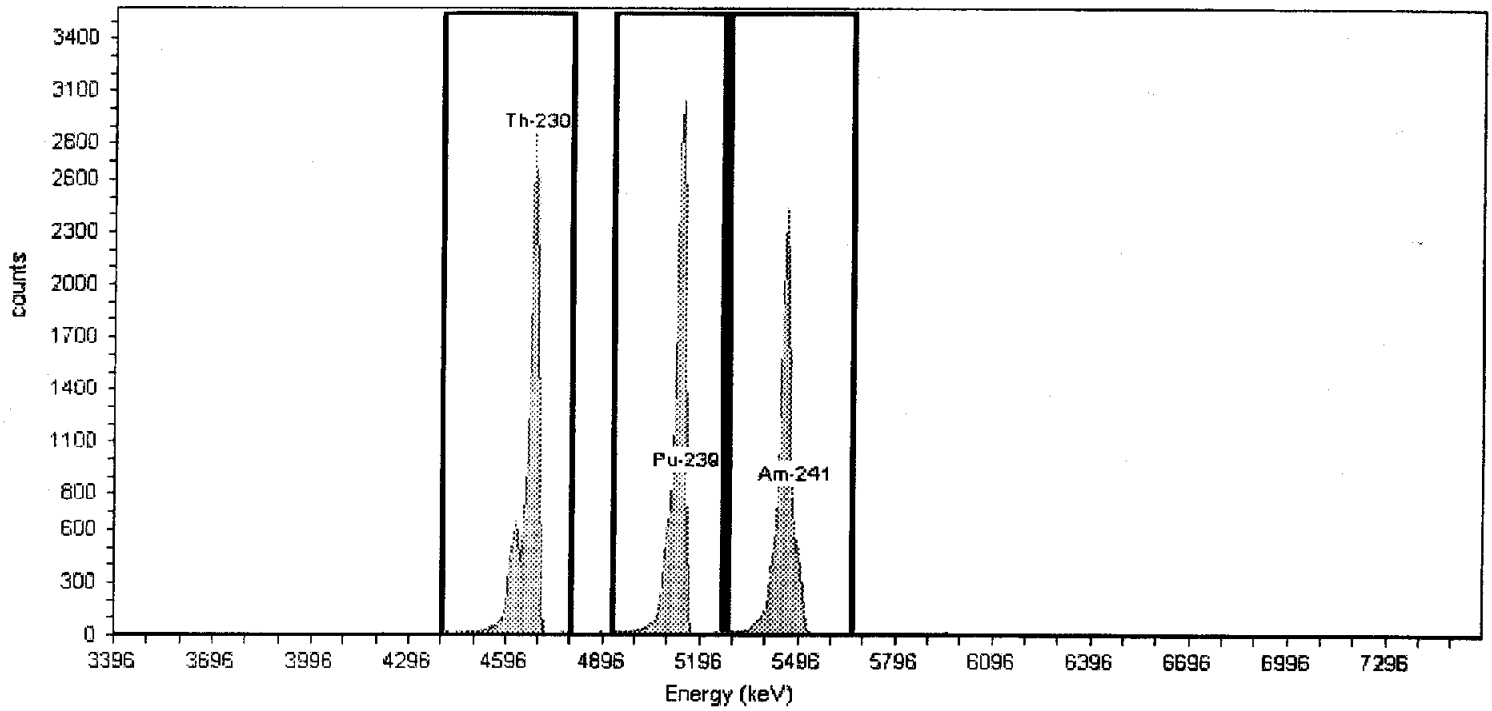
Certificate ID: 63506-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:07PM

Acquisition

Detector: AV95 , SN: 46-033P4
Acquisition Start Date: 3/27/2007 12:33:52PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.83% +/- 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	16,188.00	115.63
Pu-239	243	5.16	212	258	15,703.00	112.16
Am-241	289	5.49	261	313	14,688.00	104.91

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:59:01PM 3/27/2007

Analyst: 60040
Detector: AV96

Calibration

Name: Mar2007_AV96
Description:

Calibration Date: 3/27/2007 2:58:58PM

Source Info

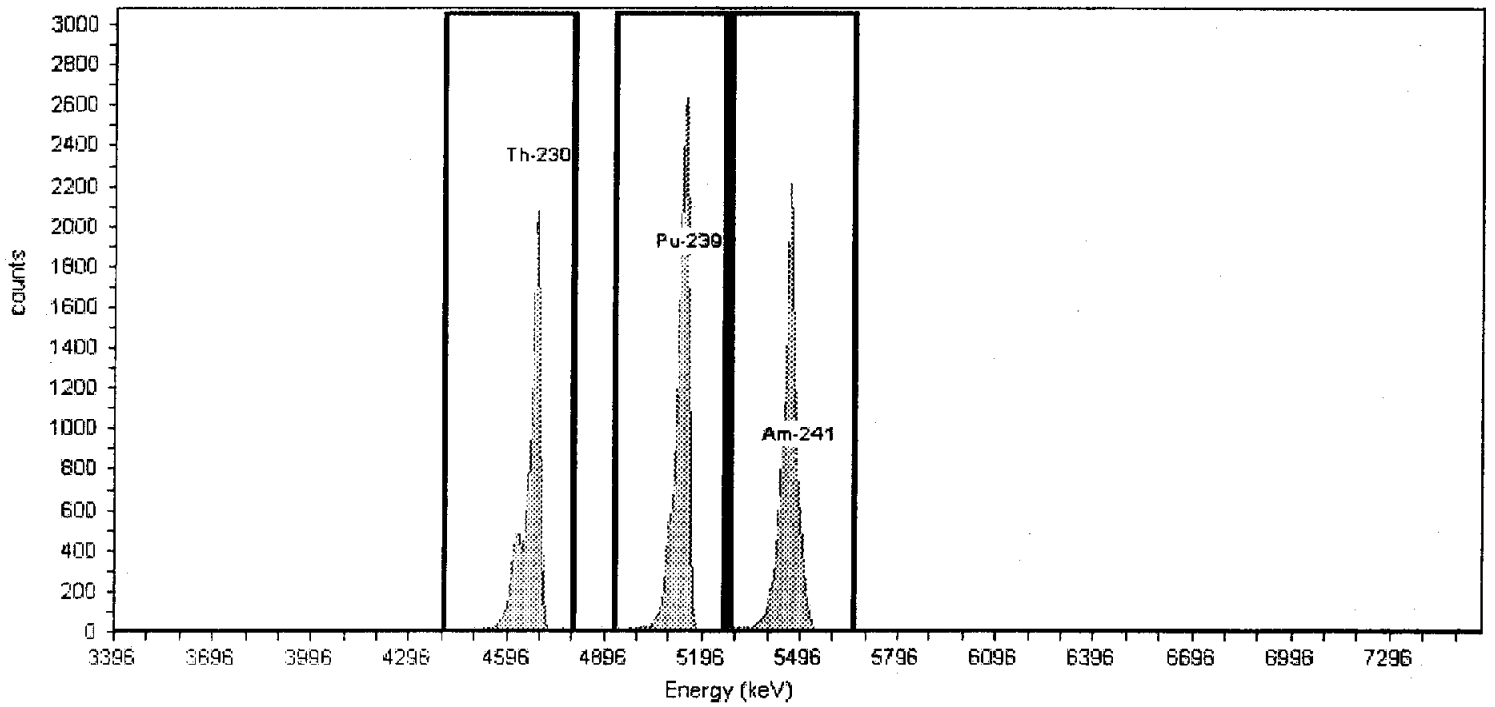
Certificate ID: 63507-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV96 , SN: 46-033P1
Acquisition Start Date: 3/27/2007 12:33:54PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 26.45% +/- 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	12,358.00	88.27
Pu-239	243	5.16	212	258	14,716.00	105.11
Am-241	289	5.49	261	313	13,968.00	99.77

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:59:11PM 3/27/2007

Analyst: 60040
Detector: AV97

Calibration

Name: Mar2007_AV97
Description:

Calibration Date: 3/27/2007 2:59:08PM

Source Info

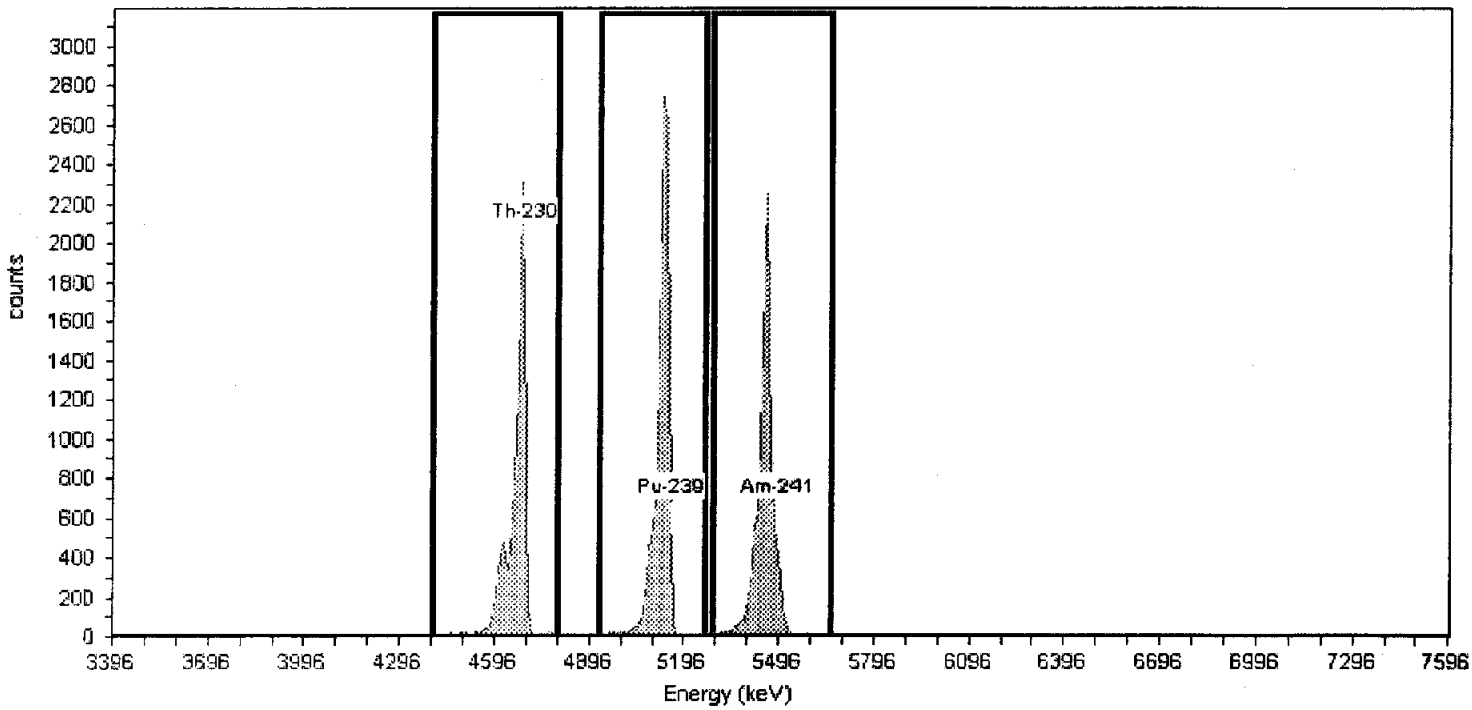
Certificate ID: 63508A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV97 , SN: 76-03393
Acquisition Start Date: 3/27/2007 12:33:54PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.14% +/- 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	12,416.00	88.69
Pu-239	243	5.16	212	258	14,360.00	102.57
Am-241	289	5.49	261	313	13,310.00	95.07

ST SEVERN TRENT STL

Alpha-Spectroscopy Calibration Report

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:59:17PM 3/27/2007

Analyst: 60040
Detector: AV98

Calibration

Name: Mar2007_AV98
Description:

Calibration Date: 3/27/2007 2:59:14PM

Source Info

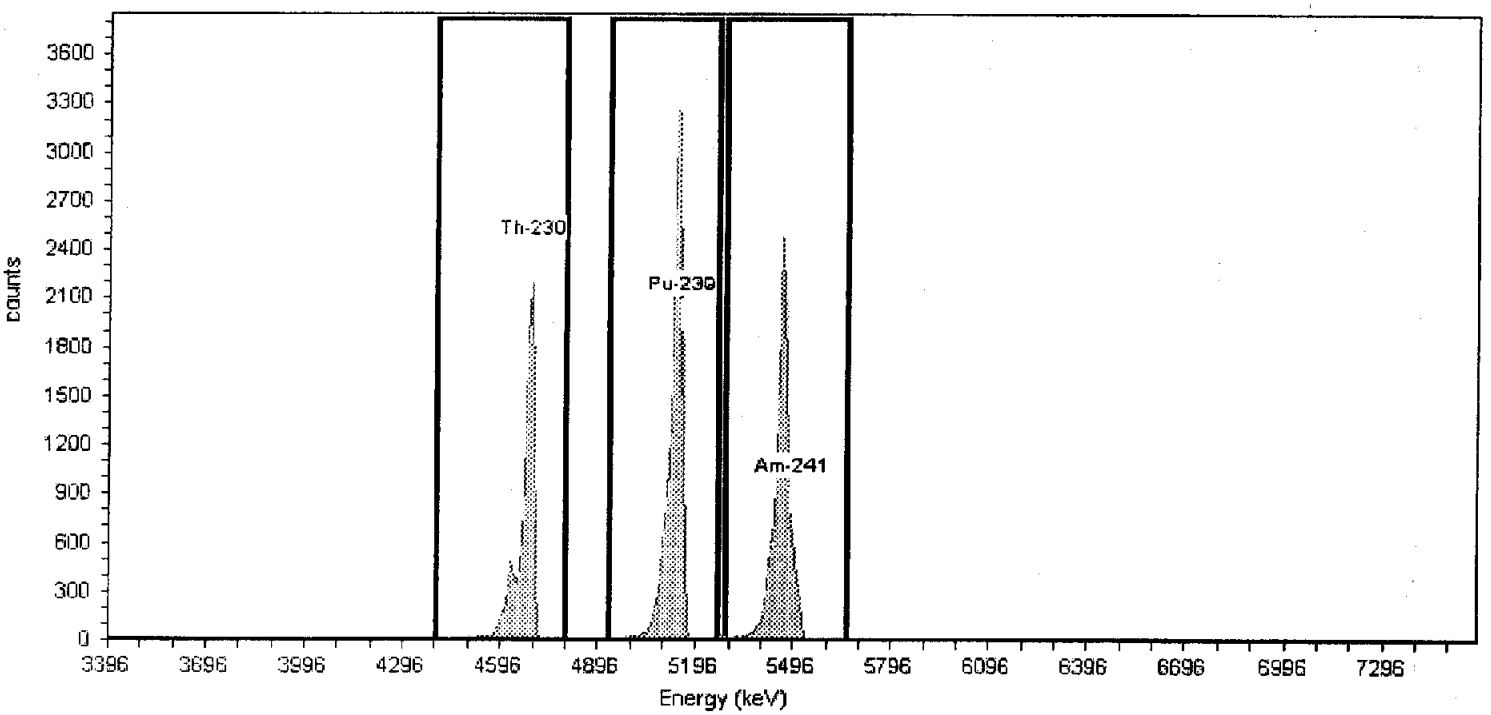
Certificate ID: 63509A-334
Prepared by: Analytics
Description:

Certification Date: 5/30/2002 12:00:00PM

Acquisition

Detector: AV98 , SN: 46-033Q3
Acquisition Start Date: 3/27/2007 12:34:48PM
Live Time: 140.00 min.
Real Time: 140.06 min.
Efficiency: 27.63% +/- 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	11,780.00	84.14
Pu-239	243	5.16	212	258	18,016.00	128.69
Am-241	289	5.49	261	313	15,615.00	111.54

GAS FLOW PROPORTIONAL COUNTING

SEVERN TRENT STL

Gas Flow Proportional Counting Radium

SEVERN TRENT STL

Analysis Report for Radium 226

Batch: 7060251 **Operator:** 402630

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
F7C010000-251B	1.0000g	False	0.0303	1.1014	3/20/07 16:53	3/20/07 14:00	200	11	**2.545E-002**	1.138E-001	2.120E-001
JQARQ1AA	2.00	1.00	89.38%	0.1798	Protean9	2	1000	45	pCi/g	1.138E-001	8.879E-002
F7C010000-251C	1.0000g	False	0.0322	1.1014	3/20/07 16:53	3/20/07 14:00	200	1086	**1.263E+001**	1.482E+000	1.990E-001
JQARQ1AC	2.00	1.00	94.99%	0.1835	Protean10	2	1000	47	pCi/g	7.764E-001	8.366E-002
F7C010119-001	1.0163g	False	0.0305	1.1014	3/20/07 16:53	3/20/07 14:00	200	81	**8.717E-001**	2.384E-001	1.794E-001
JP92V1AA	2.00	1.00	89.97%	0.1893	Protean11	2	1000	36	pCi/g	2.219E-001	7.374E-002
F7C010119-001X	1.0008g	False	0.0313	1.1015	3/20/07 16:53	3/20/07 14:00	200	77	**7.637E-001**	2.345E-001	2.211E-001
JP92V1AF	2.00	1.00	92.33%	0.1884	Protean12	2	1000	60	pCi/g	2.217E-001	9.468E-002
F7C010119-002	1.0096g	False	0.0325	1.1015	3/20/07 16:53	3/20/07 14:00	200	75	**7.807E-001**	2.313E-001	1.995E-001
JP9201AA	2.00	1.00	95.87%	0.1780	Protean13	2	1000	46	pCi/g	2.178E-001	8.372E-002
F7C010119-003	1.0099g	False	0.0247	1.1015	3/20/07 16:53	3/20/07 14:00	200	55	**6.404E-001**	2.268E-001	2.193E-001
JP9211AA	2.00	1.00	72.86%	0.2031	Protean15	2	1000	41	pCi/g	2.176E-001	9.115E-002
F7C010119-004	1.0034g	False	0.0310	1.1858	3/20/07 20:47	3/20/07 14:00	200	75	**7.338E-001**	2.095E-001	1.644E-001
JP9221AA	2.00	1.00	91.45%	0.1913	Protean0	2	1000	36	pCi/g	1.962E-001	6.756E-002
F7C010119-005	1.0061g	False	0.0311	1.1858	3/20/07 20:47	3/20/07 14:00	200	80	**8.283E-001**	2.198E-001	1.448E-001
JP9251AA	2.00	1.00	91.74%	0.1863	Protean1	2	1000	25	pCi/g	2.036E-001	5.745E-002
F7C010119-006	1.0173g	False	0.0339	1.1858	3/20/07 20:47	3/20/07 14:00	200	70	**6.099E-001**	1.910E-001	1.749E-001
JP9261AA	2.00	1.00	100.00%	0.1843	Protean2	2	1000	49	pCi/g	1.810E-001	7.378E-002
F7C010119-007	1.0001g	False	0.0318	1.1859	3/20/07 20:48	3/20/07 14:00	200	62	**5.780E-001**	1.873E-001	1.674E-001
JP9271AA	2.00	1.00	93.81%	0.1898	Protean5	2	1000	39	pCi/g	1.782E-001	6.929E-002
F7C010119-008	1.0056g	False	0.0308	1.1858	3/20/07 20:48	3/20/07 14:00	200	109	**1.038E+000**	2.512E-001	1.826E-001
JP9281AA	2.00	1.00	90.86%	0.1983	YellowA1	2	1000	50	pCi/g	2.288E-001	7.714E-002
F7C010119-009	1.0151g	False	0.0321	1.1858	3/20/07 20:48	3/20/07 14:00	200	46	**3.976E-001**	1.588E-001	1.660E-001
JP93A1AA	2.00	1.00	94.69%	0.1889	YellowA2	2	1000	40	pCi/g	1.538E-001	6.884E-002
F7C010119-010	1.0055g	False	0.0315	1.1858	3/20/07 20:48	3/20/07 14:00	200	34	**2.232E-001**	1.394E-001	1.909E-001
JP93C1AA	2.00	1.00	92.92%	0.2004	YellowA3	2	1000	60	pCi/g	1.376E-001	8.175E-002
F7C010119-011	1.0106g	False	0.0242	1.1858	3/20/07 20:48	3/20/07 14:00	200	119	**1.329E+000**	3.007E-001	1.899E-001
JP93D1AA	2.00	1.00	71.39%	0.2199	YellowA4	2	1000	40	pCi/g	2.698E-001	7.876E-002
F7C010119-012	1.0093g	False	0.0230	1.1858	3/20/07 20:48	3/20/07 14:00	200	86	**9.343E-001**	2.584E-001	2.141E-001
JP93E1AA	2.00	1.00	67.85%	0.2256	YellowB1	2	1000	50	pCi/g	2.409E-001	9.044E-002

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
F7C010119-013	1.0088g	False	0.0288	1.1858	3/20/07 20:48	3/20/07 14:00	200	125	**1.401E+000**	3.038E-001	1.660E-001
JP93F1AA	2.00	1.00	84.96%	0.1882	YellowB3	2	1000	30	pCi/g	2.695E-001	6.709E-002
F7C010119-014	1.0193g	False	0.0316	1.1858	3/20/07 20:48	3/20/07 14:00	200	38	**3.307E-001**	1.410E-001	1.457E-001
JP93G1AA	2.00	1.00	93.22%	0.1934	YellowB4	2	1000	30	pCi/g	1.371E-001	5.889E-002
F7C010119-015	1.0017g	False	0.0312	1.1858	3/20/07 20:48	3/20/07 14:00	200	20	**1.161E-001**	1.277E-001	2.022E-001
JP93H1AA	2.00	1.00	92.04%	0.1775	YellowC1	2	1000	50	pCi/g	1.272E-001	8.541E-002
F7C010119-016	1.0027g	False	0.0299	1.1858	3/20/07 20:48	3/20/07 14:00	200	46	**4.519E-001**	1.805E-001	1.886E-001
JP93L1AA	2.00	1.00	88.20%	0.1806	YellowC2	2	1000	40	pCi/g	1.748E-001	7.825E-002
F7C010119-017	1.0063g	False	0.0257	1.1858	3/20/07 20:48	3/20/07 14:00	200	78	**8.872E-001**	2.701E-001	2.530E-001
JP93N1AA	2.00	1.00	75.81%	0.1852	YellowC3	2	1000	60	pCi/g	2.551E-001	1.083E-001
F7C010119-018	1.0044g	False	0.0284	1.1858	3/20/07 20:48	3/20/07 14:00	200	90	**9.466E-001**	2.549E-001	2.061E-001
JP93P1AA	2.00	1.00	83.78%	0.1908	YellowC4	2	1000	50	pCi/g	2.367E-001	8.705E-002
F7C010119-019	1.0061g	False	0.0184	1.1858	3/20/07 20:48	3/20/07 14:00	200	63	**9.555E-001**	2.944E-001	2.364E-001
JP93Q1AA	2.00	1.00	54.28%	0.2075	YellowD1	2	1000	30	pCi/g	2.785E-001	9.553E-002
F7C010119-020	1.0078g	False	0.0311	1.1858	3/20/07 20:48	3/20/07 14:00	200	98	**1.073E+000**	2.679E-001	1.891E-001
JP93R1AA	2.00	1.00	91.74%	0.1723	YellowD2	2	1000	40	pCi/g	2.455E-001	7.845E-002

Laboratory Control Sample Information

SampID	WRKNO	Analyte	Activity	StdAdded	Recovery	LCL	UCL
F7C010000-251C	JQARQ1AC	RA-226	1.263E+001 pCi/g	1.119E+001	112.81 %	53.00	113.00

Sample Duplicate Information

SampID	SampDupID	Activity	DupActivity	RPD	RER	DER
F7C010119-001	F7C010119-001X	8.717E-001	7.637E-001	13.22%	2.286E-001	3.233E-001

Matrix Spike Information

SampID	SampMSID	WRKNO	Analyte	Activity	MSActivity	StdAdded	Recovery

SEVERN TRENT STL

Analysis Report for Radium 226

Batch: 7060252 **Operator:** 402630

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
F7C010000-252B	1.0000g	False	0.0301	1.0992	3/20/07 16:47	3/20/07 14:00	200	13	**3.454E-002**	1.105E-001	2.005E-001
JQARV1AA	2.00	1.00	88.79%	0.2005	YellowA1	2	1000	50	pCi/g	1.104E-001	8.469E-002
F7C010000-252C	1.0000g	False	0.0315	1.5772	3/21/07 16:37	3/20/07 14:00	200	1482	**1.192E+001**	1.346E+000	1.296E-001
JQARV1AC	2.00	1.00	92.92%	0.1900	Protean15	2	1000	41	pCi/g	6.245E-001	5.388E-002
F7C010119-021	1.0186g	False	0.0333	1.0992	3/20/07 16:47	3/20/07 14:00	200	91	**8.307E-001**	2.290E-001	1.979E-001
JP93V1AA	2.00	1.00	98.23%	0.1948	YellowA3	2	1000	60	pCi/g	2.134E-001	8.474E-002
F7C010119-021X	1.0046g	False	0.0317	1.0992	3/20/07 16:47	3/20/07 14:00	200	81	**8.149E-001**	2.258E-001	1.771E-001
JP93V1AF	2.00	1.00	93.51%	0.1954	YellowA4	2	1000	40	pCi/g	2.106E-001	7.345E-002
F7C010119-022	1.0072g	False	0.0346	1.0992	3/20/07 16:47	3/20/07 14:00	200	164	**1.637E+000**	3.248E-001	1.852E-001
JP93W1AA	2.00	1.00	102.06%	0.1875	YellowB1	2	1000	50	pCi/g	2.805E-001	7.822E-002
F7C010119-023	1.0031g	False	0.0318	1.0992	3/20/07 16:47	3/20/07 14:00	200	114	**1.307E+000**	2.955E-001	1.706E-001
JP93X1AA	2.00	1.00	93.81%	0.1800	YellowB3	2	1000	30	pCi/g	2.650E-001	6.894E-002
F7C010119-024	1.0156g	False	0.0319	1.0992	3/20/07 16:47	3/20/07 14:00	200	105	**1.103E+000**	2.593E-001	1.571E-001
JP9301AA	2.00	1.00	94.10%	0.1925	YellowB4	2	1000	30	pCi/g	2.347E-001	6.347E-002
F7C010119-025	1.0158g	False	0.0357	1.0992	3/20/07 16:47	3/20/07 14:00	200	124	**1.325E+000**	3.000E-001	2.025E-001
JP9321AA	2.00	1.00	105.31%	0.1648	YellowC1	2	1000	50	pCi/g	2.692E-001	8.553E-002
F7C010119-026	1.0055g	False	0.0321	1.0992	3/20/07 16:47	3/20/07 14:00	200	88	**9.885E-001**	2.615E-001	1.960E-001
JP9341AA	2.00	1.00	94.69%	0.1742	YellowC2	2	1000	40	pCi/g	2.421E-001	8.131E-002
F7C010119-027	1.0138g	False	0.0318	1.0992	3/20/07 16:47	3/20/07 14:00	200	85	**9.342E-001**	2.688E-001	2.408E-001
JP9371AA	2.00	1.00	93.81%	0.1684	YellowC3	2	1000	60	pCi/g	2.521E-001	1.031E-001
F7C010119-028	1.0112g	False	0.0292	1.0992	3/20/07 16:47	3/20/07 14:00	200	134	**1.550E+000**	3.377E-001	2.177E-001
JP9391AA	2.00	1.00	86.14%	0.1882	YellowC4	2	1000	50	pCi/g	3.000E-001	9.195E-002
F7C010119-029	1.0099g	False	0.0356	1.0992	3/20/07 16:47	3/20/07 14:00	200	106	**1.241E+000**	2.904E-001	1.749E-001
JP94C1AA	2.00	1.00	105.01%	0.1557	YellowD1	2	1000	30	pCi/g	2.626E-001	7.070E-002
F7C010119-030	1.0063g	False	0.0295	1.0992	3/20/07 16:47	3/20/07 14:00	200	93	**1.124E+000**	2.887E-001	2.098E-001
JP94H1AA	2.00	1.00	87.02%	0.1769	YellowD2	2	1000	40	pCi/g	2.659E-001	8.705E-002
F7C010119-031	1.0107g	False	0.0304	1.1010	3/20/07 16:52	3/20/07 14:00	200	103	**1.124E+000**	2.707E-001	1.782E-001
JP94P1AA	2.00	1.00	89.68%	0.1924	Protean0	2	1000	36	pCi/g	2.463E-001	7.323E-002
F7C010119-032	1.0130g	False	0.0353	1.1010	3/20/07 16:52	3/20/07 14:00	200	167	**1.758E+000**	3.346E-001	1.423E-001
JP94R1AA	2.00	1.00	104.13%	0.1787	Protean1	2	1000	25	pCi/g	2.847E-001	5.646E-002

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
F7C010119-033	1.0109g	False	0.0369	1.1010	3/20/07 16:52	3/20/07 14:00	200	125	**1.197E+000**	2.694E-001	1.795E-001
JP9401AA	2.00	1.00	108.85%	0.1789	Protean2	2	1000	49	pCi/g	2.413E-001	7.569E-002
F7C010119-034	1.0034g	False	0.0366	1.1011	3/20/07 16:52	3/20/07 14:00	200	114	**1.109E+000**	2.559E-001	1.640E-001
JP9441AA	2.00	1.00	107.96%	0.1808	Protean5	2	1000	39	pCi/g	2.306E-001	6.787E-002
F7C010119-035	1.0157g	False	0.0368	1.1011	3/20/07 16:52	3/20/07 14:00	200	155	**1.436E+000**	3.046E-001	2.156E-001
JP9481AA	2.00	1.00	108.55%	0.1803	Protean6	2	1000	77	pCi/g	2.686E-001	9.394E-002
F7C010119-036	1.0058g	False	0.0369	1.1012	3/20/07 16:52	3/20/07 14:00	200	132	**1.316E+000**	2.806E-001	1.560E-001
JP95C1AA	2.00	1.00	108.85%	0.1777	Protean7	2	1000	34	pCi/g	2.478E-001	6.379E-002

Laboratory Control Sample Information

SampID	WRKNO	Analyte	Activity	StdAdded	Recovery	LCL	UCL
F7C010000-252C	JQARV1AC	RA-226	1.192E+001 pCi/g	1.119E+001	106.49 %	53.00	113.00

Sample Duplicate Information

SampID	SampDupID	Activity	DupActivity	RPD	RER	DER
F7C010119-021	F7C010119-021X	8.307E-001	8.149E-001	1.92%	3.477E-002	4.917E-002

Matrix Spike Information

SampID	SampMSID	WRKNO	Analyte	Activity	MSActivity	StdAdded	Recovery

SEVERN TRENT STL

Analysis Report for Radium 228

Batch: 7060253 **Operator:** 402630

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
F7C010000-253B	1.0000 g	0.4421	89.38	False	3/20/07 13:31	3/6/07 13:30	200	211	1	-1.511E-001	4.326E-001	7.507E-001
JQARR1AA	0.0303 g		95.60		RedA1	3/20/07 10:15	1000	1128	2.00	pCi/g	4.324E-001	3.615E-001
F7C010000-253C	1.0000 g	0.4370	94.99	False	3/20/07 13:31	3/6/07 13:30	200	1180	1	9.226E+000	1.178E+000	7.170E-001
JQARR1AC	0.0322 g		96.70		RedA2	3/20/07 10:15	1000	1163	2.00	pCi/g	7.320E-001	3.455E-001
F7C010119-001	1.0163 g	0.4406	89.97	False	3/20/07 13:31	3/6/07 13:30	200	295	1	7.689E-001	5.161E-001	8.119E-001
JP92V1AC	0.0305 g		86.81		RedA3	3/20/07 10:15	1000	1131	2.00	pCi/g	5.103E-001	3.910E-001
F7C010119-001X	1.0008 g	0.4414	92.33	False	3/20/07 13:31	3/6/07 13:30	200	303	1	1.019E+000	4.880E-001	7.352E-001
JP92V1AG	0.0313 g		90.66		RedA4	3/20/07 10:15	1000	1033	2.00	pCi/g	4.773E-001	3.535E-001
F7C010119-002	1.0096 g	0.4419	95.87	False	3/20/07 13:31	3/6/07 13:30	200	262	1	2.869E-001	4.442E-001	7.343E-001
JP9201AC	0.0325 g		91.76		RedB1	3/20/07 10:15	1000	1166	2.00	pCi/g	4.433E-001	3.539E-001
F7C010119-003	1.0099 g	0.4424	72.86	False	3/20/07 13:31	3/6/07 13:30	200	273	1	5.918E-001	5.511E-001	8.893E-001
JP9211AC	0.0247 g		97.80		RedB2	3/20/07 10:15	1000	1124	2.00	pCi/g	5.479E-001	4.283E-001
F7C010119-004	1.0034 g	0.4376	91.45	False	3/20/07 13:31	3/6/07 13:30	200	263	1	3.361E-001	4.535E-001	7.457E-001
JP9221AC	0.0310 g		95.60		RedB3	3/20/07 10:15	1000	1150	2.00	pCi/g	4.522E-001	3.593E-001
F7C010119-005	1.0061 g	0.4480	91.74	False	3/20/07 13:31	3/6/07 13:30	200	321	1	8.308E-001	4.554E-001	7.013E-001
JP9251AC	0.0311 g		99.45		RedB4	3/20/07 10:15	1000	1168	2.00	pCi/g	4.477E-001	3.380E-001
F7C010119-006	1.0173 g	0.4367	100.00	False	3/20/07 13:31	3/6/07 13:30	200	304	1	7.028E-001	4.574E-001	7.178E-001
JP9261AC	0.0339 g		90.11		RedC1	3/20/07 10:15	1000	1160	2.00	pCi/g	4.520E-001	3.459E-001
F7C010119-007	1.0001 g	0.4431	93.81	False	3/20/07 13:31	3/6/07 13:30	200	295	1	2.439E-001	4.682E-001	7.783E-001
JP9271AC	0.0318 g		95.60		RedC2	3/20/07 10:15	1000	1351	2.00	pCi/g	4.676E-001	3.761E-001
F7C010119-008	1.0056 g	0.4317	90.86	False	3/20/07 13:31	3/6/07 13:30	200	319	1	8.894E-001	5.369E-001	8.366E-001
JP9281AC	0.0308 g		88.46		RedC3	3/20/07 10:15	1000	1198	2.00	pCi/g	5.295E-001	4.034E-001
F7C010119-009	1.0151 g	0.4451	94.69	False	3/20/07 13:31	3/6/07 13:30	200	250	1	4.871E-002	4.714E-001	8.001E-001
JP93A1AC	0.0321 g		86.26		RedC4	3/20/07 10:15	1000	1227	2.00	pCi/g	4.714E-001	3.859E-001
F7C010119-010	1.0055 g	0.4421	92.92	False	3/20/07 13:31	3/6/07 13:30	200	245	1	1.921E-001	3.748E-001	6.241E-001
JP93C1AC	0.0315 g		109.34		RedD1	3/20/07 10:15	1000	1114	2.00	pCi/g	3.743E-001	3.005E-001
F7C010119-011	1.0106 g	0.4333	71.39	False	3/20/07 13:31	3/6/07 13:30	200	289	1	9.666E-001	5.311E-001	8.158E-001
JP93D1AC	0.0242 g		106.59		RedD2	3/20/07 10:15	1000	1033	2.00	pCi/g	5.223E-001	3.922E-001
F7C010119-012	1.0093 g	0.4395	67.85	False	3/20/07 13:31	3/6/07 13:30	200	280	1	7.051E-001	5.986E-001	9.601E-001
JP93E1AC	0.0230 g		98.35		RedD3	3/20/07 10:15	1000	1133	2.00	pCi/g	5.944E-001	4.624E-001

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
F7C010119-013	1.0088 g	0.4416	84.96	False	3/20/07 13:31	3/6/07 13:30	200	314	1	8.270E-001	4.962E-001	7.723E-001
JP93F1AC	0.0288 g		98.90		RedD4	3/20/07 10:15	1000	1174	2.00	pCi/g	4.893E-001	3.722E-001
F7C010119-014	1.0193 g	0.4077	93.22	False	3/20/07 13:22	3/6/07 13:30	200	99	1	-3.193E-002	2.831E-001	4.962E-001
JP93G1AC	0.0316 g		99.45		Protean7	3/20/07 10:15	1000	511	2.00	pCi/g	2.831E-001	2.347E-001
F7C010119-015	1.0017 g	0.4038	92.04	False	3/20/07 13:22	3/6/07 13:30	200	94	1	1.646E-001	2.932E-001	4.905E-001
JP93H1AC	0.0312 g		92.86		Protean9	3/20/07 10:15	1000	396	2.00	pCi/g	2.928E-001	2.303E-001
F7C010119-016	1.0027 g	0.4021	88.20	False	3/20/07 13:22	3/6/07 13:30	200	111	1	3.080E-001	3.251E-001	5.259E-001
JP93L1AC	0.0299 g		93.41		Protean10	3/20/07 10:15	1000	422	2.00	pCi/g	3.237E-001	2.474E-001
F7C010119-017	1.0063 g	0.3976	75.81	False	3/20/07 13:22	3/6/07 13:30	200	117	1	2.677E-001	3.361E-001	5.509E-001
JP93N1AC	0.0257 g		109.89		Protean11	3/20/07 10:15	1000	469	2.00	pCi/g	3.350E-001	2.600E-001
F7C010119-018	1.0044 g	0.4089	83.78	False	3/20/07 13:22	3/6/07 13:30	200	153	1	6.415E-001	3.307E-001	4.891E-001
JP93P1AC	0.0284 g		107.69		Protean12	3/20/07 10:15	1000	456	2.00	pCi/g	3.244E-001	2.306E-001
F7C010119-019	1.0061 g	0.4103	54.28	False	3/20/07 13:23	3/6/07 13:30	200	108	1	6.437E-001	4.181E-001	6.361E-001
JP93Q1AC	0.0184 g		109.89		Protean13	3/20/07 10:15	1000	334	2.00	pCi/g	4.131E-001	2.971E-001
F7C010119-020	1.0078 g	0.4126	91.74	False	3/20/07 13:23	3/6/07 13:30	200	138	1	6.877E-001	3.306E-001	4.776E-001
JP93R1AC	0.0311 g		91.21		Protean15	3/20/07 10:15	1000	379	2.00	pCi/g	3.233E-001	2.239E-001

Laboratory Control Sample Information

SampID	WRKNO	ComponentName	Activity	StdAdded	Recovery	LCL	UCL
F7C010000-253C	JQARR1AC	RA-228	9.226E+000 pCi/g	9.140E+000 pCi/g	100.94 %	54.00	130.00

Sample Duplicate Information

SampID	SampDupID	Activity	DupActivity	RPD	RER	DER
F7C010119-001	F7C010119-001X	7.689E-001	1.019E+000	27.98%	2.491E-001	3.522E-001

Matrix Spike Information

SampID	SampMSID	Sample Activity	MS Activity	StdAdded	MSRecovery
					%

SEVERN TRENT **STL**

Analysis Report for Radium 228

Batch: 7060254 **Operator:** 402630

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
F7C010000-254B	1.0000 g	0.4292	88.79	False	3/20/07 13:19	3/6/07 13:30	200	237	1	3.039E-001	4.137E-001	6.807E-001
JQARX1AA	0.0301 g		102.20		YellowA1	3/20/07 10:15	1000	1030	2.00	pCi/g	4.126E-001	3.273E-001
F7C010000-254C	1.0000 g	0.4323	92.92	False	3/20/07 13:19	3/6/07 13:30	200	1186	1	8.405E+000	1.061E+000	6.117E-001
JQARX1AC	0.0315 g		109.89		YellowA2	3/20/07 10:15	1000	1070	2.00	pCi/g	6.471E-001	2.943E-001
F7C010119-021	1.0186 g	0.4394	98.23	False	3/20/07 13:19	3/6/07 13:30	200	339	1	1.108E+000	4.705E-001	6.967E-001
JP93V1AC	0.0333 g		90.11		YellowA3	3/20/07 10:15	1000	1120	2.00	pCi/g	4.572E-001	3.355E-001
F7C010119-021X	1.0046 g	0.4371	93.51	False	3/20/07 13:19	3/6/07 13:30	200	290	1	8.565E-001	4.740E-001	7.288E-001
JP93V1AG	0.0317 g		89.01		YellowA4	3/20/07 10:15	1000	1040	2.00	pCi/g	4.662E-001	3.504E-001
F7C010119-022	1.0072 g	0.4395	102.06	False	3/20/07 13:19	3/6/07 13:30	200	405	1	1.591E+000	4.741E-001	6.455E-001
JP93W1AC	0.0346 g		95.05		YellowB1	3/20/07 10:15	1000	1130	2.00	pCi/g	4.466E-001	3.109E-001
F7C010119-023	1.0031 g	0.4385	93.81	False	3/20/07 13:19	3/6/07 13:30	200	318	1	9.622E-001	4.756E-001	7.216E-001
JP93X1AC	0.0318 g		92.31		YellowB3	3/20/07 10:15	1000	1110	2.00	pCi/g	4.658E-001	3.474E-001
F7C010119-024	1.0156 g	0.4379	94.10	False	3/20/07 13:19	3/6/07 13:30	200	272	1	8.037E-001	4.646E-001	7.171E-001
JP9301AC	0.0319 g		86.26		YellowB4	3/20/07 10:15	1000	980	2.00	pCi/g	4.576E-001	3.444E-001
F7C010119-025	1.0158 g	0.3942	105.31	False	3/20/07 13:19	3/6/07 13:30	200	265	1	6.330E-001	4.388E-001	6.912E-001
JP9321AC	0.0357 g		90.11		YellowC1	3/20/07 10:15	1000	1010	2.00	pCi/g	4.342E-001	3.322E-001
F7C010119-026	1.0055 g	0.3981	94.69	False	3/20/07 13:19	3/6/07 13:30	200	308	1	1.427E+000	5.045E-001	7.106E-001
JP9341AC	0.0321 g		91.76		YellowC2	3/20/07 10:15	1000	890	2.00	pCi/g	4.839E-001	3.406E-001
F7C010119-027	1.0138 g	0.3957	93.81	False	3/20/07 13:19	3/6/07 13:30	200	236	1	4.201E-001	4.626E-001	7.534E-001
JP9371AC	0.0318 g		91.76		YellowC3	3/20/07 10:15	1000	990	2.00	pCi/g	4.607E-001	3.619E-001
F7C010119-028	1.0112 g	0.4075	86.14	False	3/20/07 13:19	3/6/07 13:30	200	295	1	1.172E+000	5.492E-001	8.234E-001
JP9391AC	0.0292 g		89.01		YellowC4	3/20/07 10:15	1000	990	2.00	pCi/g	5.366E-001	3.956E-001
F7C010119-029	1.0099 g	0.3792	105.01	False	3/20/07 13:19	3/6/07 13:30	200	299	1	1.300E+000	4.279E-001	5.875E-001
JP94C1AC	0.0356 g		100.00		YellowD1	3/20/07 10:15	1000	810	2.00	pCi/g	4.076E-001	2.811E-001
F7C010119-030	1.0063 g	0.3741	87.02	False	3/20/07 13:19	3/6/07 13:30	200	272	1	4.684E-001	5.884E-001	9.648E-001
JP94H1AC	0.0295 g		89.56		YellowD2	3/20/07 10:15	1000	1180	2.00	pCi/g	5.866E-001	4.650E-001
F7C010119-031	1.0107 g	0.4099	89.68	False	3/20/07 13:19	3/6/07 13:30	200	157	1	3.530E-001	3.982E-001	6.485E-001
JP94P1AC	0.0304 g		87.36		Protean0	3/20/07 10:15	1000	635	2.00	pCi/g	3.966E-001	3.085E-001
F7C010119-032	1.0130 g	0.4082	104.13	False	3/20/07 13:19	3/6/07 13:30	200	208	1	1.021E+000	3.403E-001	4.523E-001
JP94R1AC	0.0353 g		95.60		Protean1	3/20/07 10:15	1000	490	2.00	pCi/g	3.246E-001	2.137E-001

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
F7C010119-033	1.0109 g	0.4081	108.85	False	3/20/07 13:19	3/6/07 13:30	200	188	1	8.452E-001	3.418E-001	4.819E-001
JP9401AC	0.0369 g		87.36		Protean2	3/20/07 10:15	1000	506	2.00	pCi/g	3.312E-001	2.279E-001
F7C010119-034	1.0034 g	0.4133	107.96	False	3/20/07 13:19	3/6/07 13:30	200	166	1	7.895E-001	3.009E-001	4.110E-001
JP9441AC	0.0366 g		92.31		Protean4	3/20/07 10:15	1000	403	2.00	pCi/g	2.903E-001	1.931E-001
F7C010119-035	1.0157 g	0.4139	108.55	False	3/20/07 13:19	3/6/07 13:30	200	141	1	5.675E-001	2.318E-001	3.192E-001
JP9481AC	0.0368 g		107.69		Protean5	3/20/07 10:15	1000	340	2.00	pCi/g	2.248E-001	1.491E-001
F7C010119-036	1.0058 g	0.4095	108.85	False	3/20/07 13:19	3/6/07 13:30	200	189	1	9.023E-001	3.081E-001	4.089E-001
JP95C1AC	0.0369 g		96.15		Protean6	3/20/07 10:15	1000	436	2.00	pCi/g	2.946E-001	1.926E-001

Laboratory Control Sample Information

SampID	WRKNO	ComponentName	Activity	StdAdded	Recovery	LCL	UCL
F7C010000-254C	JQARX1AC	RA-228	8.405E+000 pCi/g	9.140E+000 pCi/g	91.96 %	54.00	130.00

Sample Duplicate Information

SampID	SampDupID	Activity	DupActivity	RPD	RER	DER
F7C010119-021	F7C010119-021X	1.108E+000	8.565E-001	25.61%	2.664E-001	3.767E-001

Matrix Spike Information

SampID	SampMSID	Sample Activity	MS Activity	StdAdded	MSRecovery
					%

SEVERN TRENT STL

Instrument Checks

protean
3/20/07

SEVERN TRENT STL

Gas Proportional Counter Daily Quality Control Checks

Tuesday, March 20, 2007

Instrument: *Protean*

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
0	Efficiency	12274.00	12438.95	90.72	-164.95	Pass	39249.93	39393.30	125.07	-143.37	Pass
	Background	0.033	0.054	0.056	-0.021	Pass	0.267	0.727	0.276	-0.460	Pass
1	Efficiency	10886.00	10948.58	103.93	-62.58	Pass	39935.59	40103.78	148.41	-168.19	Pass
	Background	0.033	0.085	0.057	-0.052	Pass	0.567	0.585	0.243	-0.018	Pass
10	Efficiency	11469.00	11350.29	72.87	118.71	Pass	26258.24	26788.33	617.21	-530.08	Pass
	Background	0.067	0.048	0.033	0.018	Pass	0.733	0.663	0.376	0.070	Pass
11	Efficiency	11325.00	11416.80	73.68	-91.80	Pass	34211.81	34370.70	170.34	-158.89	Pass
	Background	0.067	0.065	0.038	0.002	Pass	0.533	0.538	0.190	-0.005	Pass
12	Efficiency	11711.00	11834.33	77.65	-123.33	Pass	30353.51	31028.09	349.77	-674.57	Pass
	Background	0.067	0.082	0.071	-0.015	Pass	0.367	0.505	0.208	-0.138	Pass
13	Efficiency	11711.50	11755.73	59.18	-44.23	Pass	26324.94	26744.32	145.13	-419.38	WARNING
	Background	0.033	0.063	0.055	-0.030	Pass	0.333	0.370	0.164	-0.037	Pass
14	Efficiency	11529.50	11669.92	74.98	-140.42	Pass	33513.52	34102.93	190.40	-589.41	FAIL
	Background	0.100	0.055	0.067	0.045	Pass	0.400	0.308	0.110	0.092	Pass
15	Efficiency	12369.00	12475.03	74.63	-106.02	Pass	32577.74	32925.32	143.10	-347.58	WARNING
	Background	0.000	0.070	0.053	-0.070	Pass	0.367	0.420	0.187	-0.053	Pass
2	Efficiency	11502.00	11615.03	64.25	-113.02	Pass	27067.70	27229.97	110.97	-162.28	Pass
	Background	0.033	0.067	0.045	-0.033	Pass	0.400	0.662	0.184	-0.262	Pass
3	Efficiency	11643.00	11621.48	67.85	21.52	Pass	33667.12	34333.78	172.20	-666.65	FAIL
	Background	0.167	0.047	0.044	0.120	Pass	0.367	0.503	0.132	-0.137	Pass
4	Efficiency	11805.00	11876.42	66.44	-71.42	Pass	30615.25	30755.88	142.37	-140.63	Pass
	Background	0.033	0.025	0.026	0.008	Pass	0.467	0.422	0.172	0.045	Pass
5	Efficiency	11600.00	11742.05	100.58	-142.05	Pass	26596.78	26965.53	141.56	-368.75	WARNING
	Background	0.100	0.063	0.054	0.037	Pass	0.333	0.455	0.113	-0.122	Pass
6	Efficiency	11608.00	11597.23	93.35	10.77	Pass	33769.19	33815.97	150.95	-46.79	Pass
	Background	0.100	0.037	0.032	0.063	Pass	0.533	0.378	0.159	0.155	Pass
7	Efficiency	12346.50	12362.35	80.91	-15.85	Pass	32472.65	32648.92	156.35	-176.28	Pass
	Background	0.033	0.060	0.041	-0.027	Pass	0.433	0.490	0.209	-0.057	Pass
8	Efficiency	11615.50	11879.92	87.36	-264.42	FAIL	37887.19	37928.10	223.11	-40.91	Pass
	Background	0.033	0.047	0.042	-0.013	Pass	0.800	0.410	0.129	0.390	FAIL
	Efficiency	10822.50	10828.78	75.31	-6.27	Pass	38928.57	39110.95	193.52	-182.38	Pass
	Background	0.067	0.063	0.057	0.003	Pass	0.233	0.387	0.139	-0.153	Pass

LOT# 10198 623 of 898

SEVERN TRENT STL

Protean Long Backgrounds February 2007

SN	SAMPLE_ID	TIME	CNT_TIME	A	ACPM	B	BCPM	COMMENT	BATCH_ID
0	LB0	3/8/2007 1:03:02 PM	1000	36	0.036	635	0.635	Long Background Detector 0	Long Backgrounds
1	LB1	3/8/2007 1:03:25 PM	1000	25	0.025	490	0.490	Long Background Detector 1	Long Backgrounds
2	LB2	3/8/2007 1:03:26 PM	1000	49	0.049	506	0.506	Long Background Detector 2	Long Backgrounds
3	LB3	3/8/2007 1:03:34 PM	1000	31	0.031	433	0.433	Long Background Detector 3	Long Backgrounds
4	LB4	3/8/2007 1:03:43 PM	1000	35	0.035	403	0.403	Long Background Detector 4	Long Backgrounds
5	LB5	3/8/2007 1:03:53 PM	1000	39	0.039	340	0.340	Long Background Detector 5	Long Backgrounds
6	LB6	3/8/2007 1:04:03 PM	1000	77	0.077	436	0.436	Long Background Detector 6	Long Backgrounds
7	LB7	3/8/2007 1:04:12 PM	1000	34	0.034	511	0.511	Long Background Detector 7	Long Backgrounds
8	LB8	3/8/2007 1:04:17 PM	1000	44	0.044	461	0.461	Long Background Detector 8	Long Backgrounds
9	LB9	3/8/2007 1:04:25 PM	1000	45	0.045	396	0.396	Long Background Detector 9	Long Backgrounds
10	LB10	3/8/2007 1:04:33 PM	1000	47	0.047	422	0.422	Long Background Detector 10	Long Backgrounds
11	LB11	3/8/2007 1:04:39 PM	1000	36	0.036	469	0.469	Long Background Detector 11	Long Backgrounds
12	LB12	3/8/2007 1:04:48 PM	1000	60	0.060	456	0.456	Long Background Detector 12	Long Backgrounds
13	LB13	3/8/2007 1:04:49 PM	1000	46	0.046	334	0.334	Long Background Detector 13	Long Backgrounds
14	LB14	3/8/2007 1:04:54 PM	1000	85	0.085	438	0.438	Long Background Detector 14	Long Backgrounds
15	LB15	3/8/2007 1:05:01 PM	1000	41	0.041	379	0.379	Long Background Detector 15	Long Backgrounds

SEVERN TRENT STL

Run Log

Logbook No.: 2906

STL
St. Louis Laboratory

Gas Proportional Counter Runlog

Date	Batch #	Sample #	Detector	Count Time	Analysis	Initials
5/19	7066263	F7C070162-001	11	200 min	SR90	SC
		-001D	12			
		-002	13			
3/20/7	Daily	Bkg + Source	0-15	30+2min	QA	SC
	7075416	F7C160000-416B	12	200 min	ABT	
		F7C160858-002	15			
	70743166	F7C150131-001	0		ABT	
		-001Sa	1			
		-001Sb	2			
		-001D	3/4			
		-002	SC 4/5			
		-003	3/ 5/6			
		-004	3/4 6/7			
		-005	7/9			
		-006	9/11			
			11			SC 3/20/7
	70600254	F7C010119-031	0		Ra228	
		-032	1			
		-033	2			
		-034	4			
		-035	5			
		-036	6			
	70600253	F7C010119-014	7			
		-015	9			
		-016	10			
		-017	11			
		-018	12			

Reviewed By: SC Date: 3/20/7

SOP References: STL-RD-0403 Rev 5 01/16/06
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.: 2906

STL
St. Louis Laboratory

Gas Proportional Counter Runlog

Date	Batch #	Sample #	Detector	Count Time	Analysis	Initials
3/20/7	7060253	F7C010119-019	13	200min	Ra228	SE
	↓	↓ -020	15		↓	
	7060252	F7C010119-031	0		Ra226	
		-032	1			
		-033	2			
		-034	5			
		-035	6			
		-036	7			
	7060251	F7C010000-251B	9			
		↓ -251C	10			
		F7C010119-001	11			
		-0014	12			
		-002	13			
		-003	15			
		X SE 3/20/7 -004	0			
		-005	1			
		-006	2			
		-007	5			
	7074069	F7C140344-001	6		TAR	
		F7C150000-069B	7			
		-069C	9			
		-069L	10			
	7078075	F7C160270-001	11			
		-001S	12			
		-0014	13			
		F7C190000-075B	15			
3/21/7	Daily	Bkg + Source	0-15	30+2min	QA	SE

Reviewed By: SE Date: 3/21/7

SOP References: STL-RD-0403 Rev 5 01/16/06
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.

SEVERN TRENT STL

Instrument Checks

Yellow 3/20/07

SEVERN TRENT **STL**

Gas Proportional Counter Daily Quality Control Checks

Tuesday, March 20, 2007

Instrument: *Yellow*

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	13184.00	13200.85	194.75	-16.85	Pass	43267.03	43477.65	642.26	-210.62	Pass
	Background	0.000	0.080	0.056	-0.080	Pass	1.133	1.065	0.222	0.068	Pass
A2	Efficiency	11682.00	11708.60	176.43	-26.60	Pass	44049.33	44177.80	610.61	-128.47	Pass
	Background	0.000	0.055	0.042	-0.055	Pass	0.933	1.177	0.168	-0.243	Pass
A3	Efficiency	12670.00	12749.20	157.19	-79.20	Pass	30400.68	30405.67	489.13	-5.00	Pass
	Background	0.100	0.065	0.049	0.035	Pass	1.100	1.238	0.182	-0.138	Pass
A4	Efficiency	12426.00	12583.80	182.38	-157.80	Pass	38895.09	39475.45	754.66	-580.36	Pass
	Background	0.033	0.103	0.082	-0.070	Pass	1.067	1.153	0.191	-0.087	Pass
B1	Efficiency	12982.50	13162.92	128.27	-180.42	Pass	34027.77	34319.63	346.36	-291.86	Pass
	Background	0.033	0.083	0.063	-0.050	Pass	0.900	1.313	0.265	-0.413	Pass
B2	Efficiency	12970.50	13166.98	95.92	-196.48	WARNING	28890.74	30219.00	221.39	-1328.26	FAIL
	Background	0.100	0.050	0.038	0.050	Pass	1.200	1.245	0.286	-0.045	Pass
B3	Efficiency	12845.50	12819.03	72.09	26.48	Pass	37383.64	37636.03	370.99	-252.39	Pass
	Background	0.033	0.045	0.036	-0.012	Pass	1.267	1.323	0.199	-0.057	Pass
B4	Efficiency	13397.50	13562.15	106.71	-164.65	Pass	36308.36	36687.47	274.36	-379.11	Pass
	Background	0.033	0.063	0.078	-0.030	Pass	0.733	1.110	0.223	-0.377	Pass
C1	Efficiency	11293.00	11574.75	171.09	-281.75	Pass	37977.69	38926.35	667.24	-948.66	Pass
	Background	0.000	0.045	0.039	-0.045	Pass	0.800	1.037	0.207	-0.237	Pass
C2	Efficiency	10363.00	10567.03	124.39	-204.02	Pass	39593.39	40028.95	1137.90	-435.56	Pass
	Background	0.000	0.035	0.038	-0.035	Pass	0.900	0.880	0.209	0.020	Pass
C3	Efficiency	10649.50	10914.77	142.65	-265.27	Pass	26052.52	26432.10	324.13	-379.58	Pass
	Background	0.067	0.060	0.061	0.007	Pass	1.167	0.895	0.221	0.272	Pass
C4	Efficiency	11277.50	11531.14	143.10	-253.64	Pass	36291.66	36664.47	510.82	-372.81	Pass
	Background	0.033	0.052	0.044	-0.018	Pass	1.133	0.985	0.202	0.148	Pass
D1	Efficiency	10613.50	10804.80	97.81	-191.30	Pass	28381.18	28533.70	764.59	-152.52	Pass
	Background	0.033	0.020	0.023	0.013	Pass	0.833	0.928	0.186	-0.095	Pass
D2	Efficiency	10915.00	10937.48	366.33	-22.48	Pass	25451.88	25621.58	660.46	-169.69	Pass
	Background	0.033	0.042	0.048	-0.008	Pass	0.933	1.265	0.193	-0.332	Pass
D3	Efficiency	9893.00	10664.18	160.79	-771.18	FAIL	29773.73	31558.65	664.59	-1784.92	WARNING
	Background	0.100	0.075	0.058	0.025	Pass	1.000	1.060	0.464	-0.060	Pass
D4	Efficiency	10490.50	11248.23	154.70	-757.73	FAIL	29314.77	30711.30	757.47	-1396.53	Pass
	Background	0.000	0.053	0.048	-0.053	Pass	0.900	1.078	0.155	-0.178	Pass

SEVERN TRENT STL

Backgrounds
Yellow - February 2007

Group A	I.ID.	Time	Counts α	Counts β	BKG α	BKG β
1	BKG	1000	52	1031	0.05	1.03
2	BKG	1000	36	1065	0.04	1.07
3	BKG	1000	64	1119	0.06	1.12
4	BKG	1000	42	1039	0.04	1.04
Group B						
1	BKG	1000	48	1132	0.05	1.13
2	BKG	1000	48	1017	0.05	1.02
3	BKG	1000	33	1106	0.03	1.11
4	BKG	1000	32	975	0.03	0.98
Group C						
1	BKG	1000	52	1010	0.05	1.01
2	BKG	1000	39	892	0.04	0.89
3	BKG	1000	60	986	0.06	0.99
4	BKG	1000	51	987	0.05	0.99
Group D						
1	BKG	1000	30	810	0.03	0.81
2	BKG	1000	37	1176	0.04	1.18
3	BKG	1000	55	780	0.06	0.78
4	BKG	1000	36	1092	0.04	1.09

SEVERN TRENT STL

Run Log

Logbook No.: 2912

STL
St. Louis Laboratory

Gas Proportional Counter Runlog
(Yellow)

Date	Time	Batch #	Filename	Sample #	Det.	Count Time	Analysis	Initials
3/20/7	7:28	Daily	Day 725	Bkg	—	30min	QA	SE
	8:14		DQC 838	Source	—	2min		
	8:21		DQC 839	Source	—	2min		
	8:35		DQC 840	Source	—	2min		
	9:01	7075415	032007A	F7C160000-415B	A1	200min	ABT	
				-415Ca	A2			
				-415Cb	A3			
				F7C160132-001	A4			
				-001Sa	B1			
				-001Sb	B3			
				-001C	B4			
		7075416		F7C160000-416a	C1			
				+ -416Cb	C2			
				F7C160258-001	C3			
				-001Sa	C4			
				-001Sb	D1			
				-001C	D2			
	13:19	7060254	032007B	F7C010000-254B	A1		Ra 228	
				+ -254C	A2			
				F7C010119-021	A3			
				-021C	A4			
				-022	B1			
				-023	B3			
				-024	B4			
				-025	C1			
				-026	C2			
				-027	C3			

Reviewed By: SE Date: 3/20/7

SOP References: STL-RD-0403 Rev 5 01/16/06
Form: SL-RAD-0053, Revised 7/26/06
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.: 2912 912

STL
St. Louis Laboratory

Gas Proportional Counter Runlog
(Yellow)

Date	Time	Batch #	Filename	Sample #	Det.	Count Time	Analysis	Initials
20/7	13:19	7060254	032007B	F7C010119-028	C4	200min	Ra228	&
				-029	D1			
				-030	D2			
	16:47	7060252	032007C	F7C010000-252B	A1		Ra226	
				-252C	A2			
				F7C010119-021	A3			
				-022	A4			
				-023	B1			
				-024	~~B2~~ B3 & ~~B3~~ B4 3/20/7			
				-025	C1			
				-026	C2			
				-027	C3			
				-028	C4			
				-029	D1			
				-030	D2			
	20:48	7060251	032007D	F7C010119-008	A1			
				-009	A2			
				-010	A3			
				-011	A4			
				-012	B1			
				-013	B3			
				-014	B4			
				-015	C1			
				-016	C2			
				-017	C3			
				-018	C4			

Reviewed By: & Date: 3/20/7

QP References: STL-RD-0403 Rev 5 01/16/06
Form: SL-RAD-0053, Revised 7/26/06
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.: 2912

STL
St. Louis Laboratory

Gas Proportional Counter Runlog
(Yellow)

Date	Time	Batch #	Filename	Sample #	Det.	Count Time	Analysis	Initials
3/20/7	20:48	7060251	D320070	F7C010119-019	D1	200min	Ra226	SE
↓	↓	↓	↓	↓ -020	D2	↓	↓	↓
3/21/7	7:17	Daily	Day 726	Bkg	—	30min	QA	SE
	8:02		DQC 841	Source	—	2min		
	8:11		DQC 842	Source	—	2min		
	9:11		DAY727	Bkg	—	30min		

Reviewed By:_____ Date:_____

SOP References: STL-RD-0403 Rev 5 01/16/06
Form: SL-RAD-0053, Revised 7/26/06
QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike; D=Matrix Spike Duplicate; X=Sample Duplicate.

SEVERN TRENT STL

Instrument Checks

Yellow 3/20/07

SEVERN TRENT STL

Gas Proportional Counter Daily Quality Control Checks

Tuesday, March 20, 2007

Instrument: *Yellow*

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	13184.00	13200.85	194.75	-16.85	Pass	43267.03	43477.65	642.26	-210.62	Pass
	Background	0.000	0.080	0.056	-0.080	Pass	1.133	1.065	0.222	0.068	Pass
A2	Efficiency	11682.00	11708.60	176.43	-26.60	Pass	44049.33	44177.80	610.61	-128.47	Pass
	Background	0.000	0.055	0.042	-0.055	Pass	0.933	1.177	0.168	-0.243	Pass
A3	Efficiency	12670.00	12749.20	157.19	-79.20	Pass	30400.68	30405.67	489.13	-5.00	Pass
	Background	0.100	0.065	0.049	0.035	Pass	1.100	1.238	0.182	-0.138	Pass
A4	Efficiency	12426.00	12583.80	182.38	-157.80	Pass	38895.09	39475.45	754.66	-580.36	Pass
	Background	0.033	0.103	0.082	-0.070	Pass	1.067	1.153	0.191	-0.087	Pass
B1	Efficiency	12982.50	13162.92	128.27	-180.42	Pass	34027.77	34319.63	346.36	-291.86	Pass
	Background	0.033	0.083	0.063	-0.050	Pass	0.900	1.313	0.265	-0.413	Pass
B2	Efficiency	12970.50	13166.98	95.92	-196.48	WARNING	28890.74	30219.00	221.39	-1328.26	FAIL
	Background	0.100	0.050	0.038	0.050	Pass	1.200	1.245	0.286	-0.045	Pass
B3	Efficiency	12845.50	12819.03	72.09	26.48	Pass	37383.64	37636.03	370.99	-252.39	Pass
	Background	0.033	0.045	0.036	-0.012	Pass	1.267	1.323	0.199	-0.057	Pass
B4	Efficiency	13397.50	13562.15	106.71	-164.65	Pass	36308.36	36687.47	274.36	-379.11	Pass
	Background	0.033	0.063	0.078	-0.030	Pass	0.733	1.110	0.223	-0.377	Pass
C1	Efficiency	11293.00	11574.75	171.09	-281.75	Pass	37977.69	38926.35	667.24	-948.66	Pass
	Background	0.000	0.045	0.039	-0.045	Pass	0.800	1.037	0.207	-0.237	Pass
C2	Efficiency	10363.00	10567.03	124.39	-204.02	Pass	39593.39	40028.95	1137.90	-435.56	Pass
	Background	0.000	0.035	0.038	-0.035	Pass	0.900	0.880	0.209	0.020	Pass
C3	Efficiency	10649.50	10914.77	142.65	-265.27	Pass	26052.52	26432.10	324.13	-379.58	Pass
	Background	0.067	0.060	0.061	0.007	Pass	1.167	0.895	0.221	0.272	Pass
C4	Efficiency	11277.50	11531.14	143.10	-253.64	Pass	36291.66	36664.47	510.82	-372.81	Pass
	Background	0.033	0.052	0.044	-0.018	Pass	1.133	0.985	0.202	0.148	Pass
D1	Efficiency	10613.50	10804.80	97.81	-191.30	Pass	28381.18	28533.70	764.59	-152.52	Pass
	Background	0.033	0.020	0.023	0.013	Pass	0.833	0.928	0.186	-0.095	Pass
D2	Efficiency	10915.00	10937.48	366.33	-22.48	Pass	25451.88	25621.58	660.46	-169.69	Pass
	Background	0.033	0.042	0.048	-0.008	Pass	0.933	1.265	0.193	-0.332	Pass
D3	Efficiency	9893.00	10664.18	160.79	-771.18	FAIL	29773.73	31558.65	664.59	-1784.92	WARNING
	Background	0.100	0.075	0.058	0.025	Pass	1.000	1.060	0.464	-0.060	Pass
D4	Efficiency	10490.50	11248.23	154.70	-757.73	FAIL	29314.77	30711.30	757.47	-1396.53	Pass
	Background	0.000	0.053	0.048	-0.053	Pass	0.900	1.078	0.155	-0.178	Pass

SEVERN TRENT STL

Backgrounds
Yellow - February 2007

Group A	I.ID.	Time	Counts α	Counts β	BKG α	BKG β
1	BKG	1000	52	1031	0.05	1.03
2	BKG	1000	36	1065	0.04	1.07
3	BKG	1000	64	1119	0.06	1.12
4	BKG	1000	42	1039	0.04	1.04
Group B						
1	BKG	1000	48	1132	0.05	1.13
2	BKG	1000	48	1017	0.05	1.02
3	BKG	1000	33	1106	0.03	1.11
4	BKG	1000	32	975	0.03	0.98
Group C						
1	BKG	1000	52	1010	0.05	1.01
2	BKG	1000	39	892	0.04	0.89
3	BKG	1000	60	986	0.06	0.99
4	BKG	1000	51	987	0.05	0.99
Group D						
1	BKG	1000	30	810	0.03	0.81
2	BKG	1000	37	1176	0.04	1.18
3	BKG	1000	55	780	0.06	0.78
4	BKG	1000	36	1092	0.04	1.09

SEVERN TRENT STL

Run Log

Logbook No.: 2912

STL
St. Louis Laboratory

Gas Proportional Counter Runlog
(Yellow)

Date	Time	Batch #	Filename	Sample #	Det.	Count Time	Analysis	Initials
3/20/7	7:28	Daily	Day 725	Bkg	—	30min	QA	SE
	8:14		DQC 838	Source	—	2min		
	8:21		DQC 839	Source	—	2min		
	8:35		DQC 840	Source	—	2min		
	9:01	7075415	032007A	F7C160000-415B	A1	200min	ABT	
				-415Ca	A2			
				-415Cb	A3			
				F7C160132-001	A4			
				-001Sa	B1			
				-001Sb	B3			
				-001C	B4			
		7075416		F7C160000-416Ca	C1			
				-416Cb	C2			
				F7C160258-001	C3			
				-001Sa	C4			
				-001Sb	D1			
				-001C	D2			
	13:19	7060854	032007B	F7C010000-254B	A1		Ra 228	
				-254C	A2			
				F7C010119-021	A3			
				-021C	A4			
				-022	B1			
				-023	B3			
				-024	B4			
				-025	C1			
				-026	C2			
				-027	C3			

Reviewed By: SE Date: 3/20/7

SOP References: STL-RD-0403 Rev 5 01/16/06
Form: SL-RAD-0053, Revised 7/26/06
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.: 2912 912

STL
St. Louis Laboratory

Gas Proportional Counter Runlog
(Yellow)

Date	Time	Batch #	Filename	Sample #	Det.	Count Time	Analysis	Initials
3/20/7	13:19	7060254	032007B	F7C010119-028	C4	200min	Ra228	[illegible]
				-029	D1			
				-030	D2			
	16:47	7060252	032007C	F7C010000-252B	A1		Ra226	
				-252C	A2			
				F7C010119-021	A3			
				-022	A4			
				-022	B1			
				-023	~~B2~~ B3 [illegible]			
				-024	~~B3~~ B4 3/20/7			
				-025	C1			
				-026	C2			
				-027	C3			
				-028	C4			
				-029	D1			
				-030	D2			
	20:48	7060251	032007D	F7C010119-008	A1			
				-009	A2			
				-010	A3			
				-011	A4			
				-012	B1			
				-013	B3			
				-014	B4			
				-015	C1			
				-016	C2			
				-017	C3			
				-018	C4			

Reviewed By: [illegible] Date: 3/20/7

SOP References: STL-RD-0403 Rev 5 01/16/06
Form: SL-RAD-0053, Revised 7/26/06
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.: 2912

STL
St. Louis Laboratory

Gas Proportional Counter Runlog
(Yellow)

Date	Time	Batch #	Filename	Sample #	Det.	Count Time	Analysis	Initials
3/20/7	20:48	7060251	D320074	F7C010119-019	D1	200min	Ra226	SE
↓	↓	↓	↓	↓ -020	D2	↓	↓	↓
3/21/7	7:17	Daily	Day 726	Bkg	—	30min	QA	SE
	8:02		DQC 841	Source	—	2min		
	8:11		DQC 842	Source	—	2min		
	9:11		DAY727	Bkg	—	30min		

Reviewed By:_____ Date:_____

SOP References: STL-RD-0403 Rev 5 01/16/06
Form: SL-RAD-0053, Revised 7/26/06
QC Type Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike; D=Matrix Spike Duplicate; X=Sample Duplicate.

SEVERN TRENT STL

Instrument Checks

protean
3/20/07

SEVERN TRENT STL

Gas Proportional Counter Daily Quality Control Checks

Tuesday, March 20, 2007

Instrument: *Protean*

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
0	Efficiency	12274.00	12438.95	90.72	-164.95	Pass	39249.93	39393.30	125.07	-143.37	Pass
	Background	0.033	0.054	0.056	-0.021	Pass	0.267	0.727	0.276	-0.460	Pass
1	Efficiency	10886.00	10948.58	103.93	-62.58	Pass	39935.59	40103.78	148.41	-168.19	Pass
	Background	0.033	0.085	0.057	-0.052	Pass	0.567	0.585	0.243	-0.018	Pass
10	Efficiency	11469.00	11350.29	72.87	118.71	Pass	26258.24	26788.33	617.21	-530.08	Pass
	Background	0.067	0.048	0.033	0.018	Pass	0.733	0.663	0.376	0.070	Pass
11	Efficiency	11325.00	11416.80	73.68	-91.80	Pass	34211.81	34370.70	170.34	-158.89	Pass
	Background	0.067	0.065	0.038	0.002	Pass	0.533	0.538	0.190	-0.005	Pass
12	Efficiency	11711.00	11834.33	77.65	-123.33	Pass	30353.51	31028.09	349.77	-674.57	Pass
	Background	0.067	0.082	0.071	-0.015	Pass	0.367	0.505	0.208	-0.138	Pass
13	Efficiency	11711.50	11755.73	59.18	-44.23	Pass	26324.94	26744.32	145.13	-419.38	WARNING
	Background	0.033	0.063	0.055	-0.030	Pass	0.333	0.370	0.164	-0.037	Pass
14	Efficiency	11529.50	11669.92	74.98	-140.42	Pass	33513.52	34102.93	190.40	-589.41	FAIL
	Background	0.100	0.055	0.067	0.045	Pass	0.400	0.308	0.110	0.092	Pass
15	Efficiency	12369.00	12475.03	74.63	-106.02	Pass	32577.74	32925.32	143.10	-347.58	WARNING
	Background	0.000	0.070	0.053	-0.070	Pass	0.367	0.420	0.187	-0.053	Pass
2	Efficiency	11502.00	11615.03	64.25	-113.02	Pass	27067.70	27229.97	110.97	-162.28	Pass
	Background	0.033	0.067	0.045	-0.033	Pass	0.400	0.662	0.184	-0.262	Pass
3	Efficiency	11643.00	11621.48	67.85	21.52	Pass	33667.12	34333.78	172.20	-666.65	FAIL
	Background	0.167	0.047	0.044	0.120	Pass	0.367	0.503	0.132	-0.137	Pass
4	Efficiency	11805.00	11876.42	66.44	-71.42	Pass	30615.25	30755.88	142.37	-140.63	Pass
	Background	0.033	0.025	0.026	0.008	Pass	0.467	0.422	0.172	0.045	Pass
5	Efficiency	11600.00	11742.05	100.58	-142.05	Pass	26596.78	26965.53	141.56	-368.75	WARNING
	Background	0.100	0.063	0.054	0.037	Pass	0.333	0.455	0.113	-0.122	Pass
6	Efficiency	11608.00	11597.23	93.35	10.77	Pass	33769.19	33815.97	150.95	-46.79	Pass
	Background	0.100	0.037	0.032	0.063	Pass	0.533	0.378	0.159	0.155	Pass
7	Efficiency	12346.50	12362.35	80.91	-15.85	Pass	32472.65	32648.92	156.35	-176.28	Pass
	Background	0.033	0.060	0.041	-0.027	Pass	0.433	0.490	0.209	-0.057	Pass
8	Efficiency	11615.50	11879.92	87.36	-264.42	FAIL	37887.19	37928.10	223.11	-40.91	Pass
	Background	0.033	0.047	0.042	-0.013	Pass	0.800	0.410	0.129	0.390	FAIL
9	Efficiency	10822.50	10828.78	75.31	-6.27	Pass	38928.57	39110.95	193.52	-182.38	Pass
	Background	0.067	0.063	0.057	0.003	Pass	0.233	0.387	0.139	-0.153	Pass

SEVERN TRENT STL

Protean Long Backgrounds February 2007

SN	SAMPLE_ID	TIME	CNT_TIME	A	ACPM	B	BCPM	COMMENT	BATCH_ID
0	LB0	3/8/2007 1:03:02 PM	1000	36	0.036	635	0.635	Long Background Detector 0	Long Backgrounds
1	LB1	3/8/2007 1:03:25 PM	1000	25	0.025	490	0.490	Long Background Detector 1	Long Backgrounds
2	LB2	3/8/2007 1:03:26 PM	1000	49	0.049	506	0.506	Long Background Detector 2	Long Backgrounds
3	LB3	3/8/2007 1:03:34 PM	1000	31	0.031	433	0.433	Long Background Detector 3	Long Backgrounds
4	LB4	3/8/2007 1:03:43 PM	1000	35	0.035	403	0.403	Long Background Detector 4	Long Backgrounds
5	LB5	3/8/2007 1:03:53 PM	1000	39	0.039	340	0.340	Long Background Detector 5	Long Backgrounds
6	LB6	3/8/2007 1:04:03 PM	1000	77	0.077	436	0.436	Long Background Detector 6	Long Backgrounds
7	LB7	3/8/2007 1:04:12 PM	1000	34	0.034	511	0.511	Long Background Detector 7	Long Backgrounds
8	LB8	3/8/2007 1:04:17 PM	1000	44	0.044	461	0.461	Long Background Detector 8	Long Backgrounds
9	LB9	3/8/2007 1:04:25 PM	1000	45	0.045	396	0.396	Long Background Detector 9	Long Backgrounds
10	LB10	3/8/2007 1:04:33 PM	1000	47	0.047	422	0.422	Long Background Detector 10	Long Backgrounds
11	LB11	3/8/2007 1:04:39 PM	1000	36	0.036	469	0.469	Long Background Detector 11	Long Backgrounds
12	LB12	3/8/2007 1:04:48 PM	1000	60	0.060	456	0.456	Long Background Detector 12	Long Backgrounds
13	LB13	3/8/2007 1:04:49 PM	1000	46	0.046	334	0.334	Long Background Detector 13	Long Backgrounds
14	LB14	3/8/2007 1:04:54 PM	1000	85	0.085	438	0.438	Long Background Detector 14	Long Backgrounds
15	LB15	3/8/2007 1:05:01 PM	1000	41	0.041	379	0.379	Long Background Detector 15	Long Backgrounds

SEVERN TRENT STL

Run Log

Logbook No.: 2906

STL
St. Louis Laboratory

Gas Proportional Counter Runlog

Date	Batch #	Sample #	Detector	Count Time	Analysis	Initials
3/19	7066263	F7C070162-001	11	200 min	SR90	SE
		-001D	12			
		-002	13			
3/20/7	Daily	Bkg + Source	0-15	30+2 min	QA	SE
	7075416	F7C160000-416B	12	200 min	ABT	
		F7C160258-002	15			
	7074366	F7C150131-001	0		ABT	
		-001Sa	1			
		-001Sb	2			
		-001D	~~3~~ 4			
		-002	SE ~~4~~ 5			
		-003	3/ ~~5~~ 6			
		-004	3/20/7 ~~6~~ 7			
		-005	~~7~~ 9			
		-006	~~9~~ 11			
			11			SE 3/20/7
	7060254	F7C010119-031	0		Ra228	
		-032	1			
		-033	2			
		-034	4			
		-035	5			
		-036	6			
	7060253	F7C010119-014	7			
		-015	9			
		-016	10			
		-017	11			
		-018	12			

Reviewed By: SE Date: 3/20/7

SOP References: STL-RD-0403 Rev 5 01/16/06
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.: 2906

STL
St. Louis Laboratory

Gas Proportional Counter Runlog

Date	Batch #	Sample #	Detector	Count Time	Analysis	Initials
3/20/7	7060253	F7C010119-019	13	200min	Ra228	SE
	↓	↓ -020	15		↓	
	7060252	F7C010119-031	0		Ra226	
		-032	1			
		-033	2			
		-034	5			
		-035	6			
		-036	7			
	7060251	F7C010000-251B	9			
		↓ -251C	10			
		F7C010119-001	11			
		-001L	12			
		-002	13			
		-003	15			
		X SE 3/20/7 -004	0			
		-005	1			
		-006	2			
		-007	5			
	7074069	F7C140344-001	6		TAR	
		F7C150000-069B	7			
		-069C	9			
		-069L	10			
	7078075	F7C160270-001	11			
		-001S	12			
		-001L	13			
		F7C190000-075B	15			
3/21/7	Daily	Chg + Source	0-15	30+2min	QA	SE

Reviewed By: SE Date: 3/21/7

SOP References: STL-RD-0403 Rev 5 01/16/06
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.

3/20

SEVERN TRENT **STL**

Prep Report for Radium 226

Batch: 7060251 **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
F7C010000-251B	JQARQ1AA	1.0000g	9.0181g / 8.9878g	0.0303g / 89.38%	1.00	3/20/07 14:00 / 89.38%	Ba 36 / 0.0339
F7C010000-251C	JQARQ1AC	1.0000g	9.0005g / 8.9683g	0.0322g / 94.99%	1.00	3/20/07 14:00 / 94.99%	Ba 36 / 0.0339
F7C010119-001	JP92V1AA	1.0163g	8.9929g / 8.9624g	0.0305g / 89.97%	1.00	3/20/07 14:00 / 89.97%	Ba 36 / 0.0339
F7C010119-001X	JP92V1AF	1.0008g	9.0257g / 8.9944g	0.0313g / 92.33%	1.00	3/20/07 14:00 / 92.33%	Ba 36 / 0.0339
F7C010119-002	JP9201AA	1.0096g	8.9781g / 8.9456g	0.0325g / 95.87%	1.00	3/20/07 14:00 / 95.87%	Ba 36 / 0.0339
F7C010119-003	JP9211AA	1.0099g	9.0026g / 8.9779g	0.0247g / 72.86%	1.00	3/20/07 14:00 / 72.86%	Ba 36 / 0.0339
F7C010119-004	JP9221AA	1.0034g	9.0030g / 8.9720g	0.0310g / 91.45%	1.00	3/20/07 14:00 / 91.45%	Ba 36 / 0.0339
F7C010119-005	JP9251AA	1.0061g	8.9546g / 8.9235g	0.0311g / 91.74%	1.00	3/20/07 14:00 / 91.74%	Ba 36 / 0.0339
F7C010119-006	JP9261AA	1.0173g	9.0250g / 8.9911g	0.0339g / 100.00%	1.00	3/20/07 14:00 / 100.00%	Ba 36 / 0.0339
F7C010119-007	JP9271AA	1.0001g	8.9996g / 8.9678g	0.0318g / 93.81%	1.00	3/20/07 14:00 / 93.81%	Ba 36 / 0.0339
F7C010119-008	JP9281AA	1.0056g	9.0358g / 9.0050g	0.0308g / 90.86%	1.00	3/20/07 14:00 / 90.86%	Ba 36 / 0.0339
F7C010119-009	JP93A1AA	1.0151g	9.0285g / 8.9964g	0.0321g / 94.69%	1.00	3/20/07 14:00 / 94.69%	Ba 36 / 0.0339
F7C010119-010	JP93C1AA	1.0055g	9.0126g / 8.9811g	0.0315g / 92.92%	1.00	3/20/07 14:00 / 92.92%	Ba 36 / 0.0339
F7C010119-011	JP93D1AA	1.0106g	8.9945g / 8.9703g	0.0242g / 71.39%	1.00	3/20/07 14:00 / 71.39%	Ba 36 / 0.0339
F7C010119-012	JP93E1AA	1.0093g	9.0271g / 9.0041g	0.0230g / 67.85%	1.00	3/20/07 14:00 / 67.85%	Ba 36 / 0.0339
F7C010119-013	JP93F1AA	1.0088g	9.0060g / 8.9772g	0.0288g / 84.96%	1.00	3/20/07 14:00 / 84.96%	Ba 36 / 0.0339
F7C010119-014	JP93G1AA	1.0193g	9.0399g / 9.0083g	0.0316g / 93.22%	1.00	3/20/07 14:00 / 93.22%	Ba 36 / 0.0339

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Yellow A1
0320071D 20:48
A2
A3
A4
B1
B3
B4

SampID	WRKNO	Aliquot	Gross / Tare	Mass / Ba Yield	Dilution	Ba Precipitation Time / BaYieldAdjusted	Carrier ID / Carrier Added
F7C010119-015	JP93H1AA	1.0017g	8.9814g / 8.9502g	0.0312g / 92.04%	1.00	3/20/07 14:00 / 92.04%	Ba 36 / 0.0339
F7C010119-016	JP93L1AA	1.0027g	8.9862g / 8.9563g	0.0299g / 88.20%	1.00	3/20/07 14:00 / 88.20%	Ba 36 / 0.0339
F7C010119-017	JP93N1AA	1.0063g	9.0212g / 8.9955g	0.0257g / 75.81%	1.00	3/20/07 14:00 / 75.81%	Ba 36 / 0.0339
F7C010119-018	JP93P1AA	1.0044g	8.9889g / 8.9605g	0.0284g / 83.78%	1.00	3/20/07 14:00 / 83.78%	Ba 36 / 0.0339
F7C010119-019	JP93Q1AA	1.0061g	8.9629g / 8.9445g	0.0184g / 54.28%	1.00	3/20/07 14:00 / 54.28%	Ba 36 / 0.0339
F7C010119-020	JP93R1AA	1.0078g	8.9981g / 8.9670g	0.0311g / 91.74%	1.00	3/20/07 14:00 / 91.74%	Ba 36 / 0.0339

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7C010000-251C	rad06-0058	RA-226	2.502E+001 dpm/mL	1.00 mL	9/9/1991 12:00:00AM	1.120E+001 pCi/g

GWM — Spiked By

Flip — Spike Verified By

3-03-07 — 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

Reviewed By — Review Date 3/21/7

Analyst/Relenquished By — Release Date 03-20-07 — Received By — Receipt Date 3/20/7

3/20

SEVERN TRENT **STL**

Prep Report for Radium 226

Batch: 7060252 **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
F7C010000-252B	JQARV1AA	1.0000g	9.0342g / 9.0041g	0.0301g / 88.79%	1.00	3/20/07 14:00 / 88.79%	Ba 36 / 0.0339
F7C010000-252C	JQARV1AC	1.0000g	9.0006g / 8.9691g	0.0315g / [illegible]	1.00	3/20/07 14:00 / [illegible]	Ba 36 / 0.0339
F7C010119-021	JP93V1AA	1.0186g	9.0246g / 8.9913g	0.0333g / 98.23%	1.00	3/20/07 14:00 / 98.23%	Ba 36 / 0.0339
F7C010119-021X	JP93V1AF	1.0046g	9.0139g / 8.9822g	0.0317g / 93.51%	1.00	3/20/07 14:00 / 93.51%	Ba 36 / 0.0339
F7C010119-022	JP93W1AA	1.0072g	9.0019g / 8.9673g	0.0346g / 102.06%	1.00	3/20/07 14:00 / 100%	Ba 36 / 0.0339
F7C010119-023	JP93X1AA	1.0031g	9.0066g / 8.9748g	0.0318g / 93.81%	1.00	3/20/07 14:00 / 93.81%	Ba 36 / 0.0339
F7C010119-024	JP9301AA	1.0156g	8.9924g / 8.9605g	0.0319g / 94.10%	1.00	3/20/07 14:00 / 94.10%	Ba 36 / 0.0339
F7C010119-025	JP9321AA	1.0158g	9.0053g / 8.9696g	0.0357g / 105.31%	1.00	3/20/07 14:00 / 100%	Ba 36 / 0.0339
F7C010119-026	JP9341AA	1.0055g	8.9947g / 8.9626g	0.0321g / 94.69%	1.00	3/20/07 14:00 / 94.69%	Ba 36 / 0.0339
F7C010119-027	JP9371AA	1.0138g	9.0001g / 8.9683g	0.0318g / 93.81%	1.00	3/20/07 14:00 / 93.81%	Ba 36 / 0.0339
F7C010119-028	JP9391AA	1.0112g	8.9850g / 8.9558g	0.0292g / 86.14%	1.00	3/20/07 14:00 / 86.14%	Ba 36 / 0.0339
F7C010119-029	JP94C1AA	1.0099g	9.0076g / 8.9720g	0.0356g / 105.01%	1.00	3/20/07 14:00 / 100%	Ba 36 / 0.0339
F7C010119-030	JP94H1AA	1.0063g	9.0427g / 9.0132g	0.0295g / 87.02%	1.00	3/20/07 14:00 / 87.02%	Ba 36 / 0.0339
F7C010119-031	JP94P1AA	1.0107g	9.0038g / 8.9734g	0.0304g / 89.68%	1.00	3/20/07 14:00 / 89.68%	Ba 36 / 0.0339
F7C010119-032	JP94R1AA	1.0130g	9.0289g / 8.9936g	0.0353g / 104.13%	1.00	3/20/07 14:00 / 100%	Ba 36 / 0.0339
F7C010119-033	JP9401AA	1.0109g	9.0216g / 8.9847g	0.0369g / 108.85%	1.00	3/20/07 14:00 / 100%	Ba 36 / 0.0339
F7C010119-034	JP9441AA	1.0034g	8.9804g / 8.9438g	0.0366g / 107.96%	1.00	3/20/07 14:00 / 100%	Ba 36 / 0.0339

yellow A1 3/20/7 ~~032007B~~ 032007C 16:47

A2 PC=15 PC=[illegible] 032007A 11:56

A3

A4

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B4

C1

C2

C3

C4

D1

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SampID	WRKNO	Aliquot	Gross / Tare	Mass / Ba Yield	Dilution	Ba Precipitation Time / BaYieldAdjusted	Carrier ID / Carrier Added
F7C010119-035	JP9481AA	1.0157g	9.0267g / 8.9899g	0.0368g / 108.55%	1.00	3/20/07 14:00 / 100%	Ba 36 / 0.0339
F7C010119-036	JP95C1AA	1.0058g	9.0107g / 8.9738g	0.0369g / 108.85%	1.00	3/20/07 14:00 / 100%	Ba 36 / 0.0339

6

7

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7C010000-252C	rad06-0058	RA-226	2.502E+001 dpm/mL	1.00 mL	9/9/1991 12:00:00AM	1.120E+001 pCi/g

Spiked By	Spike Verified By	Spike Date
GWM	Flip	03-03-07

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

Reviewed By	Review Date
[illegible]	3/21/7

Analyst/Relenquished By	Release Date	Received By	Redeipt Date
STD	03-20-07	[illegible]	3/20/7

SEVERN TRENT **STL**

Prep Report for Radium 228

Batch: 7060253 **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
F7C010000-253B	JQARR1AA	1.0000g	Ba:	Ba 36	0.0339 g	9.0181 g	8.9878 g	0.0303 g	89.38%	89.38%	3/6/07 13:30
		RedA1	Y:	Y 42A	0.0182	8.9715	8.9541	0.0174	95.60%	95.60%	3/20/07 10:15
F7C010000-253C	JQARR1AC	1.0000g	Ba:	Ba 36	0.0339 g	9.0005 g	8.9683 g	0.0322 g	94.99%	94.99%	3/6/07 13:30
		A2	Y:	Y 42A	0.0182	8.9785	8.9609	0.0176	96.70%	96.70%	3/20/07 10:15
F7C010119-001	JP92V1AC	1.0163g	Ba:	Ba 36	0.0339 g	8.9929 g	8.9624 g	0.0305 g	89.97%	89.97%	3/6/07 13:30
		A3	Y:	Y 42A	0.0182	8.9927	8.9769	0.0158	86.81%	86.81%	3/20/07 10:15
F7C010119-001X	JP92V1AG	1.0008g	Ba:	Ba 36	0.0339 g	9.0257 g	8.9944 g	0.0313 g	92.33%	92.33%	3/6/07 13:30
		A4	Y:	Y 42A	0.0182	8.9817	8.9652	0.0165	90.66%	90.66%	3/20/07 10:15
F7C010119-002	JP9201AC	1.0096g	Ba:	Ba 36	0.0339 g	8.9781 g	8.9456 g	0.0325 g	95.87%	95.87%	3/6/07 13:30
		B1	Y:	Y 42A	0.0182	9.0004	8.9837	0.0167	91.76%	91.76%	3/20/07 10:15
F7C010119-003	JP9211AC	1.0099g	Ba:	Ba 36	0.0339 g	9.0026 g	8.9779 g	0.0247 g	72.86%	72.86%	3/6/07 13:30
		B2	Y:	Y 42A	0.0182	8.9865	8.9687	0.0178	97.80%	97.80%	3/20/07 10:15
F7C010119-004	JP9221AC	1.0034g	Ba:	Ba 36	0.0339 g	9.0030 g	8.9720 g	0.0310 g	91.45%	91.45%	3/6/07 13:30
		B3	Y:	Y 42A	0.0182	9.0007	8.9833	0.0174	95.60%	95.60%	3/20/07 10:15
F7C010119-005	JP9251AC	1.0061g	Ba:	Ba 36	0.0339 g	8.9546 g	8.9235 g	0.0311 g	91.74%	91.74%	3/6/07 13:30
		B4	Y:	Y 42A	0.0182	8.9787	8.9606	0.0181	99.45%	99.45%	3/20/07 10:15
F7C010119-006	JP9261AC	1.0173g	Ba:	Ba 36	0.0339 g	9.0250 g	8.9911 g	0.0339 g	100.00%	100.00%	3/6/07 13:30
		C1	Y:	Y 42A	0.0182	8.9765	8.9601	0.0164	90.11%	90.11%	3/20/07 10:15
F7C010119-007	JP9271AC	1.0001g	Ba:	Ba 36	0.0339 g	8.9996 g	8.9678 g	0.0318 g	93.81%	93.81%	3/6/07 13:30
		C2	Y:	Y 42A	0.0182	8.9827	8.9653	0.0174	95.60%	95.60%	3/20/07 10:15
F7C010119-008	JP9281AC	1.0056g	Ba:	Ba 36	0.0339 g	9.0358 g	9.0050 g	0.0308 g	90.86%	90.86%	3/6/07 13:30
		C3	Y:	Y 42A	0.0182	8.9754	8.9593	0.0161	88.46%	88.46%	3/20/07 10:15

SampID	WRKNO	Aliquot		Carrier ID	Carrier Added	Gross	Tare	Mass	Yield	Adj Yield	Precip Time
F7C010119-009	JP93A1AC	1.0151g	Ba:	Ba 36	0.0339 g	9.0285 g	8.9964 g	0.0321 g	94.69%	94.69%	3/6/07 13:30
		C4	Y:	Y 42A	0.0182	8.9798	8.9641	0.0157	86.26%	86.26%	3/20/07 10:15
F7C010119-010	JP93C1AC	1.0055g	Ba:	Ba 36	0.0339 g	9.0126 g	8.9811 g	0.0315 g	92.92%	92.92%	3/6/07 13:30
		D1	Y:	Y 42A	0.0182	9.0109	8.9910	0.0199	109.34%	100%	3/20/07 10:15
F7C010119-011	JP93D1AC	1.0106g	Ba:	Ba 36	0.0339 g	8.9945 g	8.9703 g	0.0242 g	71.39%	71.39%	3/6/07 13:30
		D2	Y:	Y 42A	0.0182	8.9788	8.9594	0.0194	106.59%	100%	3/20/07 10:15
F7C010119-012	JP93E1AC	1.0093g	Ba:	Ba 36	0.0339 g	9.0271 g	9.0041 g	0.0230 g	67.85%	67.85%	3/6/07 13:30
		D3	Y:	Y 42A	0.0182	9.0026	8.9847	0.0179	98.35%	98.35%	3/20/07 10:15
F7C010119-013	JP93F1AC	1.0088g	Ba:	Ba 36	0.0339 g	9.0060 g	8.9772 g	0.0288 g	84.96%	84.96%	3/6/07 13:30
		D4	Y:	Y 42A	0.0182	8.9858	8.9678	0.0180	98.90%	98.90%	3/20/07 10:15
F7C010119-014	JP93G1AC	1.0193g	Ba:	Ba 36	0.0339 g	9.0399 g	9.0083 g	0.0316 g	93.22%	93.22%	3/6/07 13:30
		7	Y:	Y 42A	0.0182	8.9634	8.9453	0.0181	99.45%	99.45%	3/20/07 10:15
F7C010119-015	JP93H1AC	1.0017g	Ba:	Ba 36	0.0339 g	8.9814 g	8.9502 g	0.0312 g	92.04%	92.04%	3/6/07 13:30
		9	Y:	Y 42A	0.0182	8.9867	8.9698	0.0169	92.86%	92.86%	3/20/07 10:15
F7C010119-016	JP93L1AC	1.0027g	Ba:	Ba 36	0.0339 g	8.9862 g	8.9563 g	0.0299 g	88.20%	88.20%	3/6/07 13:30
		10	Y:	Y 42A	0.0182	8.9902	8.9732	0.0170	93.41%	93.41%	3/20/07 10:15
F7C010119-017	JP93N1AC	1.0063g	Ba:	Ba 36	0.0339 g	9.0212 g	8.9955 g	0.0257 g	75.81%	75.81%	3/6/07 13:30
		11	Y:	Y 42A	0.0182	8.9850	8.9650	0.0200	109.89%	100%	3/20/07 10:15
F7C010119-018	JP93P1AC	1.0044g	Ba:	Ba 36	0.0339 g	8.9889 g	8.9605 g	0.0284 g	83.78%	83.78%	3/6/07 13:30
		3/20/07 ~~13~~ 12	Y:	Y 42A	0.0182	8.9845	8.9649	0.0196	107.69%	100%	3/20/07 10:15
F7C010119-019	JP93Q1AC	1.0061g	Ba:	Ba 36	0.0339 g	8.9629 g	8.9445 g	0.0184 g	54.28%	54.28%	3/6/07 13:30
		13	Y:	Y 42A	0.0182	9.0065	8.9865	0.0200	109.89%	100%	3/20/07 10:15
F7C010119-020	JP93R1AC	1.0078g	Ba:	Ba 36	0.0339 g	8.9981 g	8.9670 g	0.0311 g	91.74%	91.74%	3/6/07 13:30
		15	Y:	Y 42A	0.0182	8.9851	8.9685	0.0166	91.21%	91.21%	3/20/07 10:15

SampID	WRKNO	Aliquot	Carrier ID	Carrier Added	Gross	Tare	Mass	Yield	Adj Yield	Precip Time

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7C010000-253C	Rad07-0002	RA-228	2.324E+001 dpm/mL	1.00 mL	2/2/2006 12:00:00AM	9.404E+000 pCi/g

GWM — Spiked By

Flip — Spike Verified By

3-03-07 — 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

SE — Reviewed By

3/20/7 — Review Date

SD — Analyst/Relenquished By

Release Date

SE — Received By

3/20/7 — Receipt Date

Reprint per missing weight data

SE

3/20/7

SEVERN TRENT **STL**

Prep Report for Radium 228

Batch: 7060254 **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
F7C010000-254B	JQARX1AA	1.0000g	Ba:	Ba 36	0.0339 g	9.0342 g	9.0041 g	0.0301 g	88.79%	88.79%	3/6/07 13:30
	Yellow A1		Y:	Y 42A	0.0182	9.0060	8.9874	0.0186	102.20%	100%	3/20/07 10:15
					032007B	13:19					
F7C010000-254C	JQARX1AC	1.0000g	Ba:	Ba 36	0.0339 g	9.0006 g	8.9691 g	0.0315 g	92.92%	92.92%	3/6/07 13:30
	A2		Y:	Y 42A	0.0182	8.9981	8.9781	0.0200	109.89%	100%	3/20/07 10:15
F7C010119-021	JP93V1AC	1.0186g	Ba:	Ba 36	0.0339 g	9.0246 g	8.9913 g	0.0333 g	98.23%	98.23%	3/6/07 13:30
	A3		Y:	Y 42A	0.0182	9.0225	9.0061	0.0164	90.11%	90.11%	3/20/07 10:15
F7C010119-021X	JP93V1AG	1.0046g	Ba:	Ba 36	0.0339 g	9.0139 g	8.9822 g	0.0317 g	93.51%	93.51%	3/6/07 13:30
	A4		Y:	Y 42A	0.0182	9.0099	8.9937	0.0162	89.01%	89.01%	3/20/07 10:15
F7C010119-022	JP93W1AC	1.0072g	Ba:	Ba 36	0.0339 g	9.0019 g	8.9673 g	0.0346 g	102.06%	100%	3/6/07 13:30
	B1		Y:	Y 42A	0.0182	8.9571	8.9398	0.0173	95.05%	95.05%	3/20/07 10:15
F7C010119-023	JP93X1AC	1.0031g	Ba:	Ba 36	0.0339 g	9.0066 g	8.9748 g	0.0318 g	93.81%	93.81%	3/6/07 13:30
	B3		Y:	Y 42A	0.0182	9.0206	9.0038	0.0168	92.31%	92.31%	3/20/07 10:15
F7C010119-024	JP9301AC	1.0156g	Ba:	Ba 36	0.0339 g	8.9924 g	8.9605 g	0.0319 g	94.10%	94.10%	3/6/07 13:30
	B4		Y:	Y 42A	0.0182	8.9984	8.9827	0.0157	86.26%	86.26%	3/20/07 10:15
F7C010119-025	JP9321AC	1.0158g	Ba:	Ba 36	0.0339 g	9.0053 g	8.9696 g	0.0357 g	105.31%	100%	3/6/07 13:30
	C1		Y:	Y 42A	0.0182	9.0188	9.0024	0.0164	90.11%	90.11%	3/20/07 10:15
F7C010119-026	JP9341AC	1.0055g	Ba:	Ba 36	0.0339 g	8.9947 g	8.9626 g	0.0321 g	94.69%	94.69%	3/6/07 13:30
	C2		Y:	Y 42A	0.0182	8.9800	8.9633	0.0167	91.76%	91.76%	3/20/07 10:15
F7C010119-027	JP9371AC	1.0138g	Ba:	Ba 36	0.0339 g	9.0001 g	8.9683 g	0.0318 g	93.81%	93.81%	3/6/07 13:30
	C3		Y:	Y 42A	0.0182	9.0002	8.9835	0.0167	91.76%	91.76%	3/20/07 10:15
F7C010119-028	JP9391AC	1.0112g	Ba:	Ba 36	0.0339 g	8.9850 g	8.9558 g	0.0292 g	86.14%	86.14%	3/6/07 13:30
	C4		Y:	Y 42A	0.0182	8.9786	8.9624	0.0162	89.01%	89.01%	3/20/07 10:15

SampID	WRKNO	Aliquot		Carrier ID	Carrier Added	Gross	Tare	Mass	Yield	Adj Yield	Precip Time
F7C010119-029	JP94C1AC	1.0099g	Ba:	Ba 36	0.0339 g	9.0076 g	8.9720 g	0.0356 g	105.01%	100%	3/6/07 13:30
		yellow D1	Y:	Y 42A	0.0182	9.0164	8.9982	0.0182	100.00%	100%	3/20/07 10:15
F7C010119-030	JP94H1AC	1.0063g	Ba:	Ba 36	0.0339 g	9.0427 g	9.0132 g	0.0295 g	87.02%	87.02%	3/6/07 13:30
		D2	Y:	Y 42A	0.0182	8.9801	8.9638	0.0163	89.56%	89.56%	3/20/07 10:15
F7C010119-031	JP94P1AC	1.0107g	Ba:	Ba 36	0.0339 g	9.0038 g	8.9734 g	0.0304 g	89.68%	89.68%	3/6/07 13:30
		0	Y:	Y 42A	0.0182	8.9718	8.9559	0.0159	87.36%	87.36%	3/20/07 10:15
F7C010119-032	JP94R1AC	1.0130g	Ba:	Ba 36	0.0339 g	9.0289 g	8.9936 g	0.0353 g	104.13%	100%	3/6/07 13:30
		1	Y:	Y 42A	0.0182	8.9659	8.9485	0.0174	95.60%	95.60%	3/20/07 10:15
F7C010119-033	JP9401AC	1.0109g	Ba:	Ba 36	0.0339 g	9.0216 g	8.9847 g	0.0369 g	108.85%	100%	3/6/07 13:30
		2	Y:	Y 42A	0.0182	8.9953	8.9794	0.0159	87.36%	87.36%	3/20/07 10:15
F7C010119-034	JP9441AC	1.0034g	Ba:	Ba 36	0.0339 g	8.9804 g	8.9438 g	0.0366 g	107.96%	100%	3/6/07 13:30
		4	Y:	Y 42A	0.0182	8.9947	8.9779	0.0168	92.31%	92.31%	3/20/07 10:15
F7C010119-035	JP9481AC	1.0157g	Ba:	Ba 36	0.0339 g	9.0267 g	8.9899 g	0.0368 g	108.55%	100%	3/6/07 13:30
		5	Y:	Y 42A	0.0182	9.0108	8.9912	0.0196	107.69%	100%	3/20/07 10:15
F7C010119-036	JP95C1AC	1.0058g	Ba:	Ba 36	0.0339 g	9.0107 g	8.9738 g	0.0369 g	108.85%	100%	3/6/07 13:30
		6	Y:	Y 42A	0.0182	8.9731	8.9556	0.0175	96.15%	96.15%	3/20/07 10:15

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7C010000-254C	Rad07-0002	RA-228	2.324E+001 dpm/mL	1.00 mL	2/2/2006 12:00:00AM	9.401E+000 pCi/g

GWM — Spiked By

Flip — Spike Verified By

3-03-07 — 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

SampID	WRKNO	Aliquot	Carrier ID	Carrier Added	Gross	Tare	Mass	Yield	Adj Yield	Precip Time

Reviewed By: SE — Review Date: 3/20/7

Analyst/Relenquished By: [illegible] — Release Date: 03-20-07

Received By: SE — Receipt Date: 3/20/7

Reprint per missing weight data
SE
3/20/7

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 3 - B **Address: *9***

Sample ID ***F7C010000-251B*** **Repeat** ***1***

Batch ID ***7060251***

Count Routine ***Gross Alpha Beta*** **Detector Volts** ***1,515.0***

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:53 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.045	11	0.055	0.010
sd	0.000			0.007	3.317	0.017	0.018
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.396	85	0.425	0.029
sd	0.000			0.020	9.220	0.046	0.050

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 3 - C **Address:** *10*

Sample ID *F7C010000-251C* **Repeat** *1*

Batch ID *7060251*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:53 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.047	1,086	5.430	5.383
sd	0.000			0.007	32.955	0.165	0.165
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.422	1,150	5.750	5.328
sd	0.000			0.021	33.912	0.170	0.171

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 3 - D **Address:** *11*

Sample ID *F7C010119-001* **Repeat** *1*

Batch ID *7060251*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:53 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.036	81	0.405	0.369
sd	0.000			0.006	9.000	0.045	0.045
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.469	141	0.705	0.236
sd	0.000			0.022	11.874	0.059	0.063

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 4 - A

Address: *12*

Sample ID *F7C010119-001X*

Repeat *1*

Batch ID *7060251*

Count Routine *Gross Alpha Beta*

Detector Volts *1,515.0*

Sample Qty 0.000 sd 0.000

Residual Wt 0.000 *mg* sd 0.000 *mg*

Count Date 3/20/2007 16:53

Collection Date 1

Collection Date 2

Half Life 0.00 *days*

Decay Factor 1.000

Sample Count Time 200.00 *mins*

Background Count Time 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.060	77	0.385	0.325
sd	0.000			0.008	8.775	0.044	0.045
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.456	158	0.790	0.334
sd	0.000			0.021	12.570	0.063	0.066

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 4 - B **Address:** *13*

Sample ID *F7C010119-002* **Repeat** *1*

Batch ID *7060251*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:53 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.046	75	0.375	0.329
sd	0.000			0.007	8.660	0.043	0.044
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.334	115	0.575	0.241
sd	0.000			0.018	10.724	0.054	0.057

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 4 - D **Address:** *15*

Sample ID *F7C010119-003* **Repeat** *1*

Batch ID *7060251*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:53 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.041	55	0.275	0.234
sd	0.000			0.006	7.416	0.037	0.038
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.379	104	0.520	0.141
sd	0.000			0.019	10.198	0.051	0.055

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 1 - A **Address:** *0*

Sample ID *F7C010119-004* **Repeat** *1*

Batch ID *7060251*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 20:47 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.036	75	0.375	0.339
sd	0.000			0.006	8.660	0.043	0.044
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.635	204	1.020	0.385
sd	0.000			0.025	14.283	0.071	0.076

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - **Tb = Ts < 10**
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 1 - B **Address:** *1*

Sample ID *F7C010119-005* **Repeat** *1*

Batch ID *7060251*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 20:47 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.025	80	0.400	0.375
sd	0.000			0.005	8.944	0.045	0.045
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.490	187	0.935	0.445
sd	0.000			0.022	13.675	0.068	0.072

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 1 - C **Address: 2**

Sample ID *F7C010119-006* **Repeat** *1*

Batch ID *7060251*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 20:47 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.049	70	0.350	0.301
sd	0.000			0.007	8.367	0.042	0.042
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.506	183	0.915	0.409
sd	0.000			0.022	13.528	0.068	0.071

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 2 - B **Address: *5***

Sample ID ***F7C010119-007*** **Repeat** ***1***

Batch ID ***7060251***

Count Routine ***Gross Alpha Beta*** **Detector Volts** ***1,515.0***

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 ***mg*** **sd** 0.000 ***mg***

Count Date 3/20/2007 20:48 **Collection Date 1** **Half Life** 0.00 ***days***
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.039	62	0.310	0.271
sd	0.000			0.006	7.874	0.039	0.040
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.340	138	0.690	0.350
sd	0.000			0.018	11.747	0.059	0.062

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - **Tb = Ts < 10**
Error = 0.00 x sd

[TENNELEC LB4000] [PAGE 1]

7:05:04		I.D.	TIME	COUNTS α	COUNTS β	αEFF	βEFF	BKGα	BKGβ
GROUP A	1	F7C010119-008	200.00	109	354	0.00	0.00	0.05	1.03
20:48:48	2	F7C010119-009	200.00	46	292	0.00	0.00	0.04	1.07
200.00	3	F7C010119-010	200.00	34	261	0.00	0.00	0.06	1.12
	4	F7C010119-011	200.00	119	399	0.00	0.00	0.04	1.04
GROUP B	1	F7C010119-012	200.00	86	338	0.00	0.00	0.05	1.13
20:48:48	2		0.00	0	0	0.00	0.00	0.05	1.02
200.00	3	F7C010119-013	200.00	125	405	0.00	0.00	0.03	1.11
	4	F7C010119-014	200.00	38	286	0.00	0.00	0.03	0.98
GROUP C	1	F7C010119-015	200.00	20	230	0.00	0.00	0.05	1.01
20:48:48	2	F7C010119-016	200.00	46	246	0.00	0.00	0.04	0.89
200.00	3	F7C010119-017	200.00	78	284	0.00	0.00	0.06	0.99
	4	F7C010119-018	200.00	90	346	0.00	0.00	0.05	0.99
GROUP D	1	F7C010119-019	200.00	63	242	0.00	0.00	0.03	0.81
20:48:48	2	F7C010119-020	200.00	98	317	0.00	0.00	0.04	1.18
200.00	3		0.00	0	0	0.00	0.00	0.06	0.78
	4		0.00	0	0	0.00	0.00	0.04	1.09

Group C channel 4 COUNT TERMINATED

YELLOW

Filename 032007D

Date 03/20/07

Analyst SE

Nuclide Ra 226

Batch 7060251

[TENNELEC LB4000] [PAGE 1]

20:38:59		I.D.	TIME	COUNTS α	COUNTS β	αEFF	βEFF	BKGα	BKGβ
GROUP A	1	F7C010000-252B	200.00	13	216	0.00	0.00	0.05	1.03
16:47:52	~~2~~	~~F7C010000-252C~~	~~200.00~~	~~1115~~	~~1277~~	~~0.00~~	~~0.00~~	~~0.04~~	~~1.07~~ SE 3/20/7
200.00	3	F7C010119-021	200.00	91	335	0.00	0.00	0.06	1.12
	4	F7C010119-021X	200.00	81	292	0.00	0.00	0.04	1.04
GROUP B	1	F7C010119-022	200.00	164	383	0.00	0.00	0.05	1.13
16:47:52	2		0.00	0	0	0.00	0.00	0.05	1.02
200.00	3	F7C010119-023	200.00	114	361	0.00	0.00	0.03	1.11
	4	F7C010119-024	200.00	105	327	0.00	0.00	0.03	0.98
GROUP C	1	F7C010119-025	200.00	124	346	0.00	0.00	0.05	1.01
16:47:52	2	F7C010119-026	200.00	88	319	0.00	0.00	0.04	0.89
200.00	3	F7C010119-027	200.00	85	283	0.00	0.00	0.06	0.99
	4	F7C010119-028	200.00	134	299	0.00	0.00	0.05	0.99
GROUP D	1	F7C010119-029	200.00	106	312	0.00	0.00	0.03	0.81
16:47:52	2	F7C010119-030	200.00	93	300	0.00	0.00	0.04	1.18
200.00	3		0.00	0	0	0.00	0.00	0.06	0.78
	4		0.00	0	0	0.00	0.00	0.04	1.09

Group C channel 2 COUNT TERMINATED

YELLOW

Filename 032007C

Date 03/20/07

Analyst SE

Nuclide Ra226

Batch 70602752

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 4 - D **Address:** *15*

Sample ID *F7C010000-252C* **Repeat** *1*

Batch ID *7060252*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/21/2007 16:37 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.041	1,482	7.410	7.369
sd	0.000			0.006	38.497	0.192	0.193
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.379	2,603	13.015	12.636
sd	0.000			0.019	51.020	0.255	0.256

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 1 - A **Address:** *0*

Sample ID *F7C010119-031* **Repeat** *2*

Batch ID *7060252*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:52 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.036	103	0.515	0.479
sd	0.000			0.006	10.149	0.051	0.051
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.635	181	0.905	0.270
sd	0.000			0.025	13.454	0.067	0.072

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - **Tb = Ts < 10**
Error = 0.00 **x sd**

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 1 - B **Address:** *1*

Sample ID *F7C010119-032* **Repeat** *2*

Batch ID *7060252*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:52 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.025	167	0.835	0.810
sd	0.000			0.005	12.923	0.065	0.065
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.490	194	0.970	0.480
sd	0.000			0.022	13.928	0.070	0.073

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 1 - C **Address: 2**

Sample ID ***F7C010119-033*** **Repeat** ***2***

Batch ID ***7060252***

Count Routine ***Gross Alpha Beta*** **Detector Volts** ***1,515.0***

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:52 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.049	125	0.625	0.576
sd	0.000			0.007	11.180	0.056	0.056
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.506	211	1.055	0.549
sd	0.000			0.022	14.526	0.073	0.076

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 2 - B **Address: 5**

Sample ID *F7C010119-034* **Repeat** *2*

Batch ID *7060252*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:52 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.039	114	0.570	0.531
sd	0.000			0.006	10.677	0.053	0.054
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.340	188	0.940	0.600
sd	0.000			0.018	13.711	0.069	0.071

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 2 - C **Address:** *6*

Sample ID *F7C010119-035* **Repeat** *2*

Batch ID *7060252*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:52 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.077	155	0.775	0.698
sd	0.000			0.009	12.450	0.062	0.063
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.436	188	0.940	0.504
sd	0.000			0.021	13.711	0.069	0.072

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 2 - D **Address: 7**

Sample ID ***F7C010119-036*** **Repeat** ***2***

Batch ID ***7060252***

Count Routine ***Gross Alpha Beta*** **Detector Volts** ***1,515.0***

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 16:52 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.034	132	0.660	0.626
sd	0.000			0.006	11.489	0.057	0.058
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.511	195	0.975	0.464
sd	0.000			0.023	13.964	0.070	0.073

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

*** Note: Decay Corrected MDC Method - Tb = Ts < 10**
Error = 0.00 **x sd**

SEVERN TRENT SERVICES

LB4100/W General Counting Application

Unit Type: LB4100/W
Counting Unit ID: Red
Data file name: 7060253
Batch ID: RA22~~6~~8 03/20/07 SE
SE 3/20/7

Reviewed By: SE
Date: 3/20/7

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
F7C010000-253B	Red	A1	3/20/2007 13:31	200	13	211	1000	39	1128	1	0.03	-0.07
F7C010000-253C	Red	A2	3/20/2007 13:31	200	32	1180	1000	41	1163	1	0.12	4.74
F7C010119-001	Red	A3	3/20/2007 13:31	200	16	295	1000	36	1131	1	0.04	0.34
F7C010119-001X	Red	A4	3/20/2007 13:31	200	10	303	1000	46	1033	1	0.00	0.48
F7C010119-002	Red	B1	3/20/2007 13:31	200	13	262	1000	65	1166	1	0.00	0.14
F7C010119-003	Red	B2	3/20/2007 13:31	200	17	273	1000	33	1124	1	0.05	0.24
F7C010119-004	Red	B3	3/20/2007 13:31	200	8	263	1000	40	1150	1	0.00	0.17
F7C010119-005	Red	B4	3/20/2007 13:31	200	17	321	1000	62	1168	1	0.02	0.44
F7C010119-006	Red	C1	3/20/2007 13:31	200	11	304	1000	50	1160	1	0.01	0.36
F7C010119-007	Red	C2	3/20/2007 13:31	200	16	295	1000	41	1351	1	0.04	0.12
F7C010119-008	Red	C3	3/20/2007 13:31	200	16	319	1000	38	1198	1	0.04	0.40
F7C010119-009	Red	C4	3/20/2007 13:31	200	8	250	1000	44	1227	1	0.00	0.02
F7C010119-010	Red	D1	3/20/2007 13:31	200	16	245	1000	52	1114	1	0.03	0.11
F7C010119-011	Red	D2	3/20/2007 13:31	200	15	289	1000	34	1033	1	0.04	0.41
F7C010119-012	Red	D3	3/20/2007 13:31	200	12	280	1000	44	1133	1	0.02	0.27
F7C010119-013	Red	D4	3/20/2007 13:31	200	14	314	1000	30	1174	1	0.04	0.40

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 2 - D **Address: 7**

Sample ID *F7C010119-014* **Repeat** *1*

Batch ID *7060253*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 13:22 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.034	14	0.070	0.036
sd	0.000			0.006	3.742	0.019	0.020
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.511	99	0.495	-0.016
sd	0.000			0.023	9.950	0.050	0.056

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 3 - B **Address:** *9*

Sample ID *F7C010119-015* **Repeat** *1*

Batch ID *7060253*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 13:22 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.045	13	0.065	0.020
sd	0.000			0.007	3.606	0.018	0.019
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.396	94	0.470	0.074
sd	0.000			0.020	9.695	0.048	0.052

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 3 - C **Address:** *10*

Sample ID *F7C010119-016* **Repeat** *1*

Batch ID *7060253*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 13:22 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.047	14	0.070	0.023
sd	0.000			0.007	3.742	0.019	0.020
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.422	111	0.555	0.133
sd	0.000			0.021	10.536	0.053	0.057

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 3 - D **Address:** *11*

Sample ID *F7C010119-017* **Repeat** *1*

Batch ID *7060253*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 13:22 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.036	17	0.085	0.049
sd	0.000			0.006	4.123	0.021	0.021
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.469	117	0.585	0.116
sd	0.000			0.022	10.817	0.054	0.058

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 4 - A

Address: *12*

Sample ID *F7C010119-018*

Repeat *1*

Batch ID *7060253*

Count Routine *Gross Alpha Beta*

Detector Volts *1,515.0*

Sample Qty 0.000 sd 0.000

Residual Wt 0.000 *mg* sd 0.000 *mg*

Count Date 3/20/2007 13:22

Collection Date 1

Collection Date 2

Half Life 0.00 *days*

Decay Factor 1.000

Sample Count Time 200.00 *mins*

Background Count Time 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.060	40	0.200	0.140
sd	0.000			0.008	6.325	0.032	0.033
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.456	153	0.765	0.309
sd	0.000			0.021	12.369	0.062	0.065

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 4 - B **Address:** *13*

Sample ID *F7C010119-019* **Repeat** *1*

Batch ID *7060253*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 13:23 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.046	16	0.080	0.034
sd	0.000			0.007	4.000	0.020	0.021
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.334	108	0.540	0.206
sd	0.000			0.018	10.392	0.052	0.055

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 4 - D

Address: *15*

Sample ID *F7C010119-020*

Repeat *1*

Batch ID *7060253*

Count Routine *Gross Alpha Beta*

Detector Volts *1,515.0*

Sample Qty 0.000 sd 0.000

Residual Wt 0.000 *mg* sd 0.000 *mg*

Count Date 3/20/2007 13:23

Collection Date 1

Collection Date 2

Half Life 0.00 *days*

Decay Factor 1.000

Sample Count Time 200.00 *mins*

Background Count Time 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.041	24	0.120	0.079
sd	0.000			0.006	4.899	0.024	0.025
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.379	138	0.690	0.311
sd	0.000			0.019	11.747	0.059	0.062

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

[TENNELEC LB4000] [PAGE 1]

16:41:01		I.D.	TIME	COUNTS α	COUNTS β	αEFF	βEFF	BKGα	BKGβ
GROUP A	1	F7C010000-254B	200.00	12	237	0.00	0.00	0.05	1.03
13:19:47	2	F7C010000-254C	200.00	37	1186	0.00	0.00	0.04	1.07
200.00	3	F7C010119-021	200.00	23	339	0.00	0.00	0.06	1.12
	4	F7C010119-021X	200.00	22	290	0.00	0.00	0.04	1.04
GROUP B	1	F7C010119-022	200.00	37	405	0.00	0.00	0.05	1.13
13:19:47	2		0.00	0	0	0.00	0.00	0.05	1.02
200.00	3	F7C010119-023	200.00	24	318	0.00	0.00	0.03	1.11
	4	F7C010119-024	200.00	14	272	0.00	0.00	0.03	0.98
GROUP C	1	F7C010119-025	200.00	20	265	0.00	0.00	0.05	1.01
13:19:47	2	F7C010119-026	200.00	31	308	0.00	0.00	0.04	0.89
200.00	3	F7C010119-027	200.00	25	236	0.00	0.00	0.06	0.99
	4	F7C010119-028	200.00	21	295	0.00	0.00	0.05	0.99
GROUP D	1	F7C010119-029	200.00	23	299	0.00	0.00	0.03	0.81
13:19:47	2	F7C010119-030	200.00	22	272	0.00	0.00	0.04	1.18
200.00	3		0.00	0	0	0.00	0.00	0.06	0.78
	4		0.00	0	0	0.00	0.00	0.04	1.09

Group C channel 2 COUNT TERMINATED

YELLOW

Filename 0320078

Date 03/20/07

Analyst SE

Nuclide Ra 228

Batch 7060254

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 1 - A **Address:** *0*

Sample ID *F7C010119-031* **Repeat** *1*

Batch ID *7060254*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 13:19 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.036	21	0.105	0.069
sd	0.000			0.006	4.583	0.023	0.024
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.635	157	0.785	0.150
sd	0.000			0.025	12.530	0.063	0.068

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 1 - B **Address:** *1*

Sample ID *F7C010119-032* **Repeat** *1*

Batch ID *7060254*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 13:19 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.025	29	0.145	0.120
sd	0.000			0.005	5.385	0.027	0.027
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.490	208	1.040	0.550
sd	0.000			0.022	14.422	0.072	0.075

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 1 - C

Address: *2*

Sample ID *F7C010119-033* Repeat *1*

Batch ID *7060254*

Count Routine *Gross Alpha Beta* Detector Volts *1,515.0*

Sample Qty 0.000 sd 0.000

Residual Wt 0.000 *mg* sd 0.000 *mg*

Count Date 3/20/2007 13:19 Collection Date 1 Half Life 0.00 *days*
Collection Date 2 Decay Factor 1.000

Sample Count Time 200.00 *mins* Background Count Time 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.049	28	0.140	0.091
sd	0.000			0.007	5.292	0.026	0.027
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.506	188	0.940	0.434
sd	0.000			0.022	13.711	0.069	0.072

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 2 - A **Address: *4***

Sample ID ***F7C010119-034*** **Repeat** ***1***

Batch ID ***7060254***

Count Routine ***Gross Alpha Beta*** **Detector Volts** ***1,515.0***

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 ***mg*** **sd** 0.000 ***mg***

Count Date 3/20/2007 13:19 **Collection Date 1** **Half Life** 0.00 ***days***
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.035	19	0.095	0.060
sd	0.000			0.006	4.359	0.022	0.023
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.403	166	0.830	0.427
sd	0.000			0.020	12.884	0.064	0.067

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

*** Note: Decay Corrected MDC Method -** **Tb = Ts < 10**
Error = 0.00 **x sd**

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 2 - B **Address: 5**

Sample ID *F7C010119-035* **Repeat** *1*

Batch ID *7060254*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 13:19 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.039	19	0.095	0.056
sd	0.000			0.006	4.359	0.022	0.023
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.340	141	0.705	0.365
sd	0.000			0.018	11.874	0.059	0.062

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

Low Level Alpha/Beta Count Results
Sample Activity Report

Instrument 2 - C **Address:** *6*

Sample ID *F7C010119-036* **Repeat** *1*

Batch ID *7060254*

Count Routine *Gross Alpha Beta* **Detector Volts** *1,515.0*

Sample Qty 0.000 **sd** 0.000

Residual Wt 0.000 *mg* **sd** 0.000 *mg*

Count Date 3/20/2007 13:19 **Collection Date 1** **Half Life** 0.00 *days*
Collection Date 2 **Decay Factor** 1.000

Sample Count Time 200.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.077	26	0.130	0.053
sd	0.000			0.009	5.099	0.025	0.027
Alpha to Beta	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.436	189	0.945	0.509
sd	0.000			0.021	13.748	0.069	0.072

	Net Activity dpm	LLD dpm	Net Concentration *	MDC	Limits	% of Limits
Alpha	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			
Beta	0.000	0.000	0.000 ± 0.000	0.000	1.000	0.000
sd	0.000		0.000			

* Note: Decay Corrected MDC Method - Tb = Ts < 10
Error = 0.00 x sd

SEVERN TRENT STL

Protean Alpha/Beta Calibration

2006

SEVERN TRENT STL

Protean Alpha Calibration

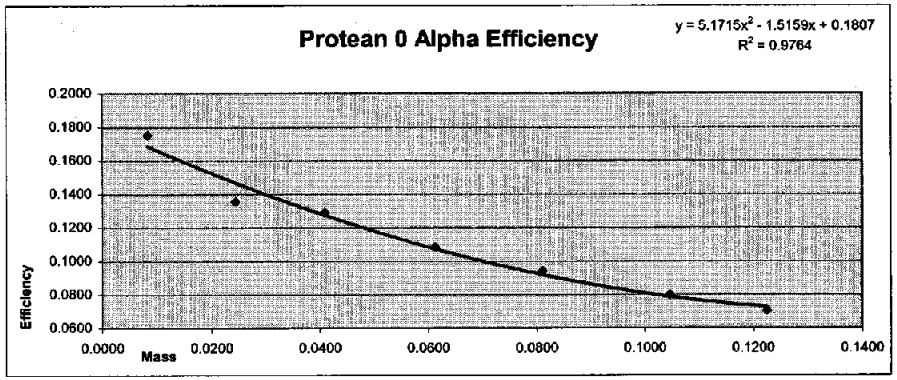
2006

SEVERN TRENT STL

Detector Efficiency Curves

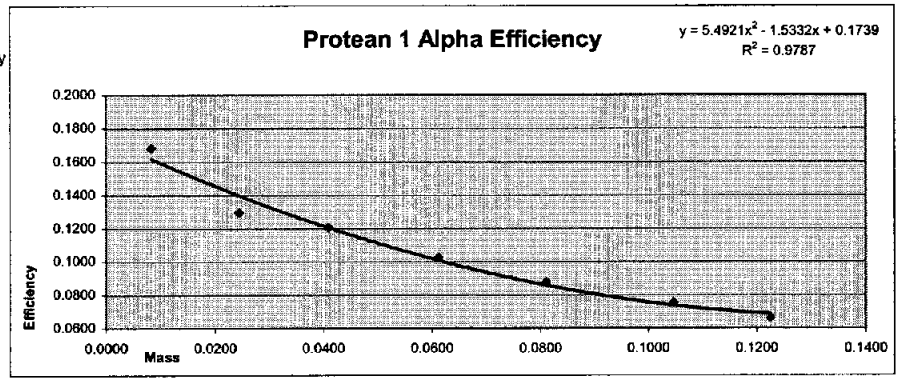
Protean 0 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1823	0.1682	0.1753
0.0249	0.0240	0.0245	0.1421	0.1289	0.1355
0.0406	0.0412	0.0409	0.1293	0.1288	0.1291
0.0611	0.0613	0.0612	0.0998	0.1170	0.1084
0.0800	0.0821	0.0811	0.0960	0.0924	0.0942
0.1037	0.1055	0.1046	0.0790	0.0812	0.0801
0.1217	0.1234	0.1226	0.0702	0.0708	0.0705



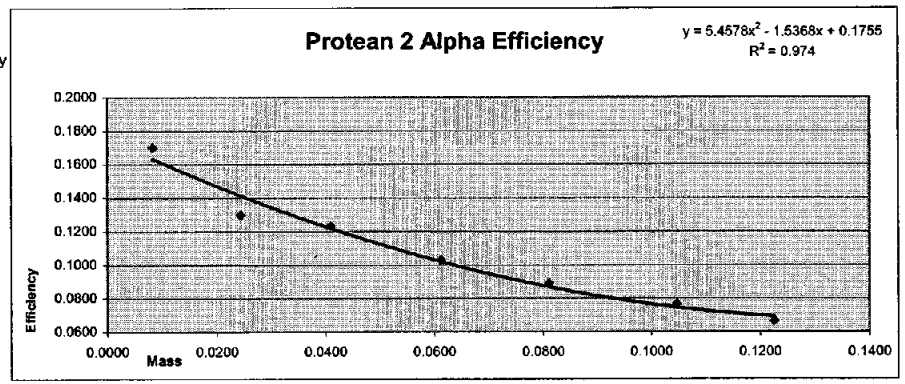
Protean 1 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1761	0.1601	0.1681
0.0249	0.0240	0.0245	0.1357	0.1237	0.1297
0.0406	0.0412	0.0409	0.1210	0.1203	0.1207
0.0611	0.0613	0.0612	0.0950	0.1100	0.1025
0.0800	0.0821	0.0811	0.0893	0.0862	0.0878
0.1037	0.1055	0.1046	0.0741	0.0771	0.0756
0.1217	0.1234	0.1226	0.0658	0.0665	0.0661



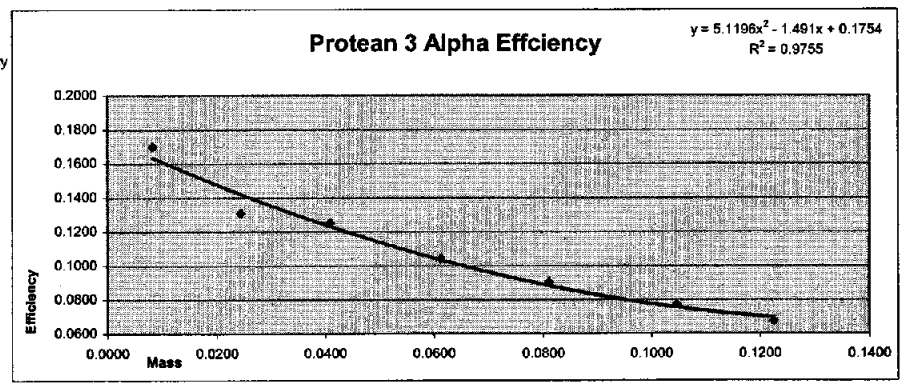
Protean 2 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1775	0.1628	0.1702
0.0249	0.0240	0.0245	0.1357	0.1238	0.1298
0.0406	0.0412	0.0409	0.1240	0.1224	0.1232
0.0611	0.0613	0.0612	0.0948	0.1113	0.1031
0.0800	0.0821	0.0811	0.0903	0.0876	0.0890
0.1037	0.1055	0.1046	0.0755	0.0778	0.0766
0.1217	0.1234	0.1226	0.0660	0.0671	0.0665



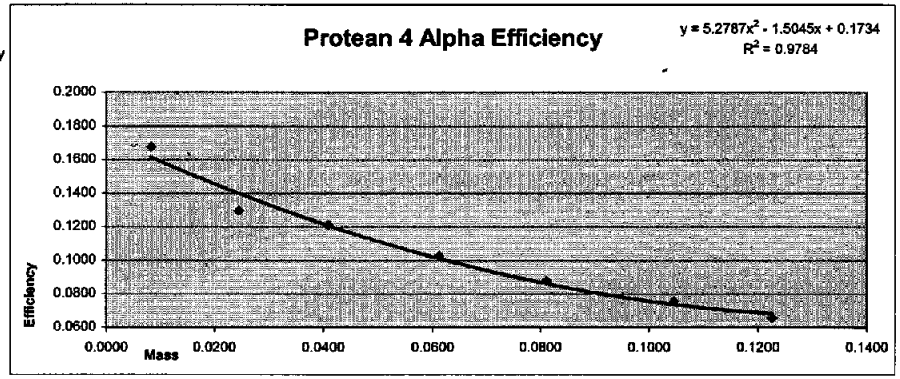
Protean 3 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1766	0.1634	0.1700
0.0249	0.0240	0.0245	0.1377	0.1239	0.1308
0.0406	0.0412	0.0409	0.1257	0.1243	0.1250
0.0611	0.0613	0.0612	0.0962	0.1121	0.1042
0.0800	0.0821	0.0811	0.0923	0.0880	0.0902
0.1037	0.1055	0.1046	0.0762	0.0784	0.0773
0.1217	0.1234	0.1226	0.0672	0.0673	0.0672



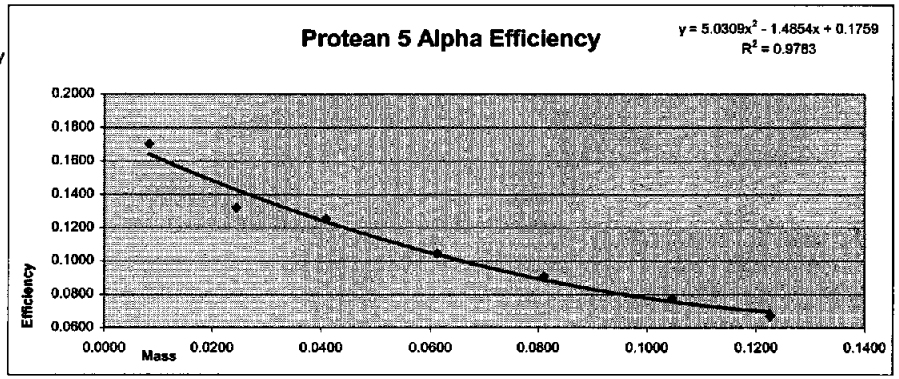
Protean 4 08/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1733	0.1622	0.1677
0.0249	0.0240	0.0245	0.1345	0.1248	0.1296
0.0406	0.0412	0.0409	0.1213	0.1210	0.1211
0.0611	0.0613	0.0612	0.0944	0.1113	0.1028
0.0800	0.0821	0.0811	0.0891	0.0867	0.0879
0.1037	0.1055	0.1046	0.0750	0.0768	0.0759
0.1217	0.1234	0.1226	0.0647	0.0669	0.0658



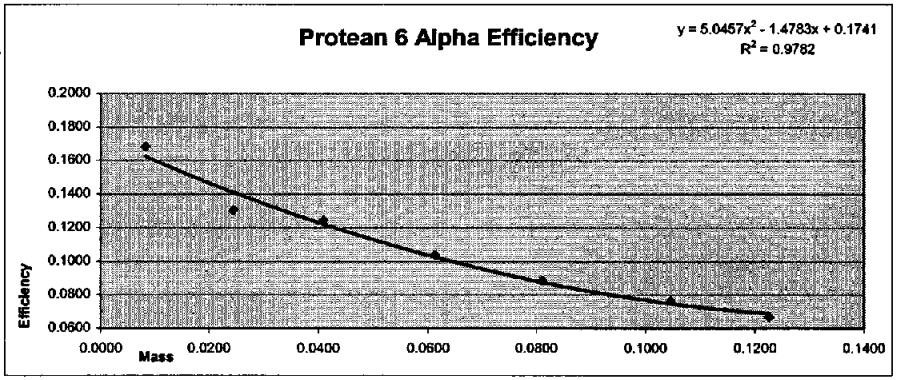
Protean 5 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1766	0.1639	0.1703
0.0249	0.0240	0.0245	0.1389	0.1254	0.1321
0.0406	0.0412	0.0409	0.1263	0.1245	0.1254
0.0611	0.0613	0.0612	0.0965	0.1125	0.1045
0.0800	0.0821	0.0811	0.0919	0.0894	0.0906
0.1037	0.1055	0.1046	0.0774	0.0776	0.0775
0.1217	0.1234	0.1226	0.0665	0.0677	0.0671



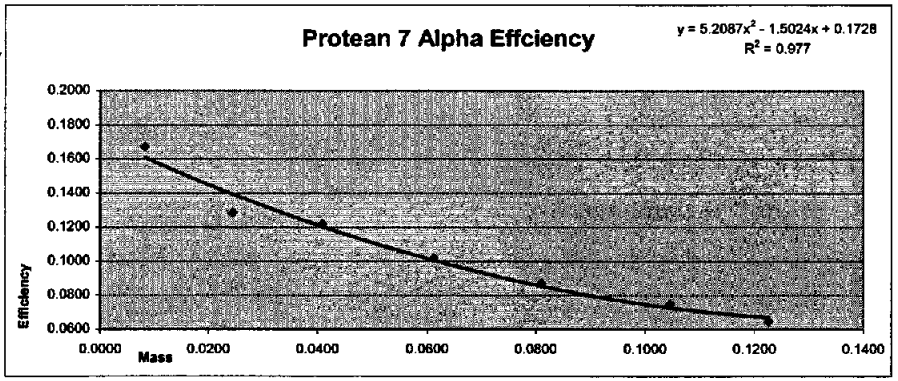
Protean 6 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1758	0.1608	0.1683
0.0249	0.0240	0.0245	0.1346	0.1262	0.1304
0.0406	0.0412	0.0409	0.1249	0.1238	0.1243
0.0611	0.0613	0.0612	0.0954	0.1120	0.1037
0.0800	0.0821	0.0811	0.0898	0.0874	0.0886
0.1037	0.1055	0.1046	0.0758	0.0771	0.0765
0.1217	0.1234	0.1226	0.0663	0.0671	0.0667



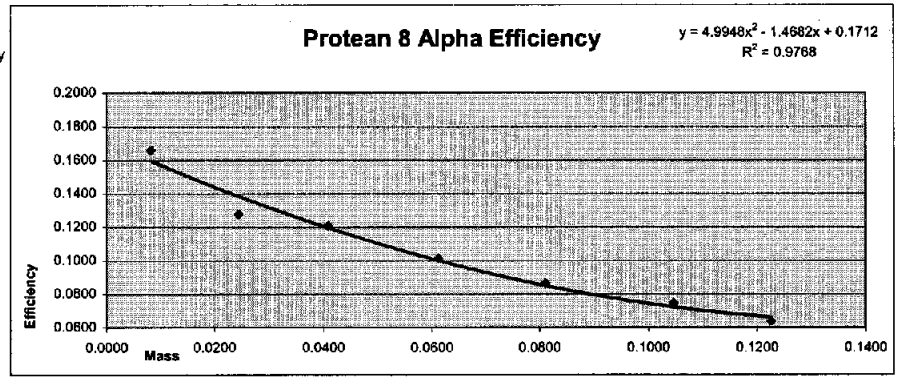
Protean 7 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1732	0.1613	0.1672
0.0249	0.0240	0.0245	0.1343	0.1226	0.1284
0.0406	0.0412	0.0409	0.1227	0.1207	0.1217
0.0611	0.0613	0.0612	0.0927	0.1108	0.1017
0.0800	0.0821	0.0811	0.0883	0.0856	0.0869
0.1037	0.1055	0.1046	0.0733	0.0761	0.0747
0.1217	0.1234	0.1226	0.0636	0.0656	0.0646



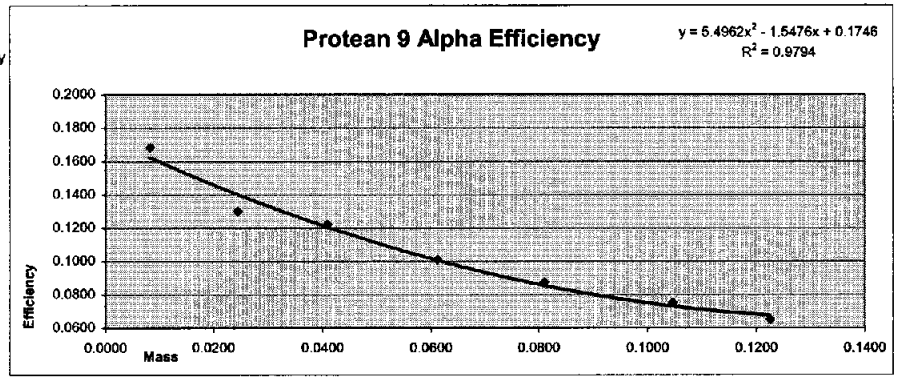
Protean 8 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1715	0.1604	0.1659
0.0249	0.0240	0.0245	0.1333	0.1221	0.1277
0.0406	0.0412	0.0409	0.1206	0.1211	0.1209
0.0611	0.0613	0.0612	0.0932	0.1099	0.1016
0.0800	0.0821	0.0811	0.0864	0.0867	0.0866
0.1037	0.1055	0.1046	0.0728	0.0765	0.0746
0.1217	0.1234	0.1226	0.0624	0.0653	0.0638



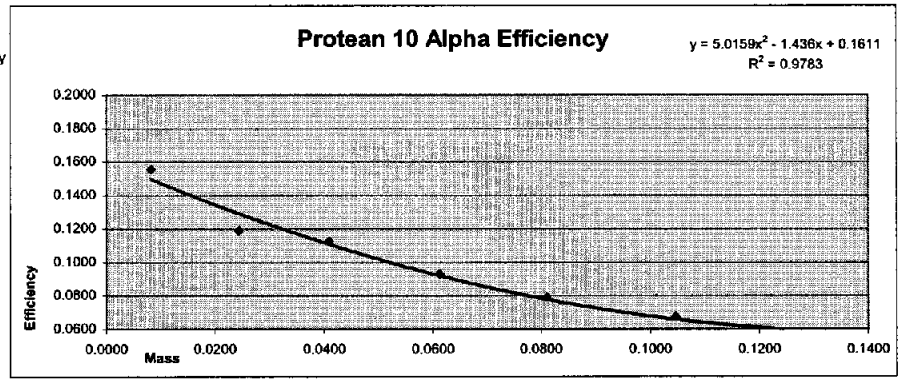
Protean 9 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1733	0.1635	0.1684
0.0249	0.0240	0.0245	0.1340	0.1258	0.1299
0.0406	0.0412	0.0409	0.1211	0.1232	0.1222
0.0611	0.0613	0.0612	0.0917	0.1102	0.1010
0.0800	0.0821	0.0811	0.0878	0.0870	0.0874
0.1037	0.1055	0.1046	0.0727	0.0776	0.0751
0.1217	0.1234	0.1226	0.0640	0.0660	0.0650



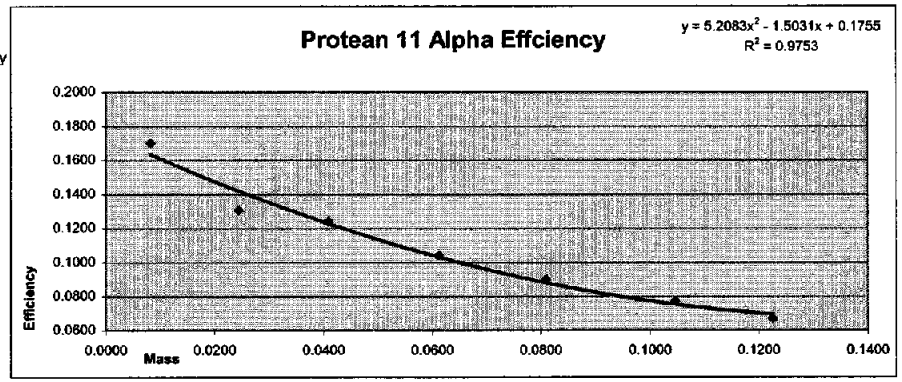
Protean 10 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1608	0.1501	0.1554
0.0249	0.0240	0.0245	0.1238	0.1141	0.1190
0.0406	0.0412	0.0409	0.1120	0.1132	0.1126
0.0611	0.0613	0.0612	0.0846	0.1016	0.0931
0.0800	0.0821	0.0811	0.0795	0.0786	0.0791
0.1037	0.1055	0.1046	0.0661	0.0689	0.0675
0.1217	0.1234	0.1226	0.0569	0.0598	0.0584



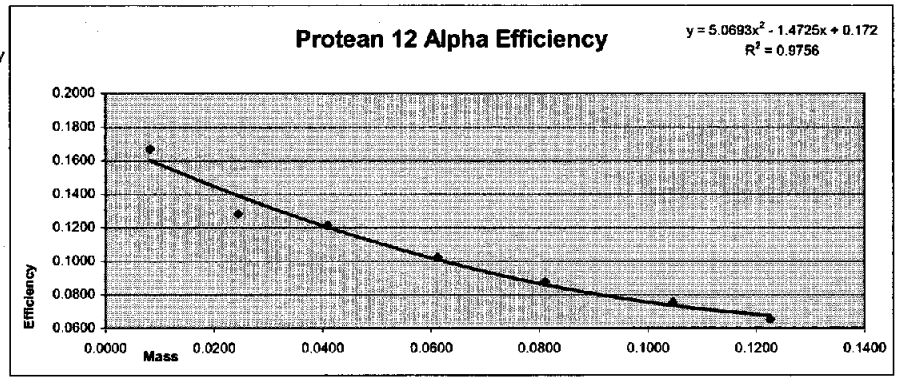
Protean 11 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1750	0.1654	0.1702
0.0249	0.0240	0.0245	0.1346	0.1268	0.1307
0.0406	0.0412	0.0409	0.1245	0.1238	0.1241
0.0611	0.0613	0.0612	0.0942	0.1140	0.1041
0.0800	0.0821	0.0811	0.0902	0.0898	0.0900
0.1037	0.1055	0.1046	0.0753	0.0793	0.0773
0.1217	0.1234	0.1226	0.0648	0.0692	0.0670



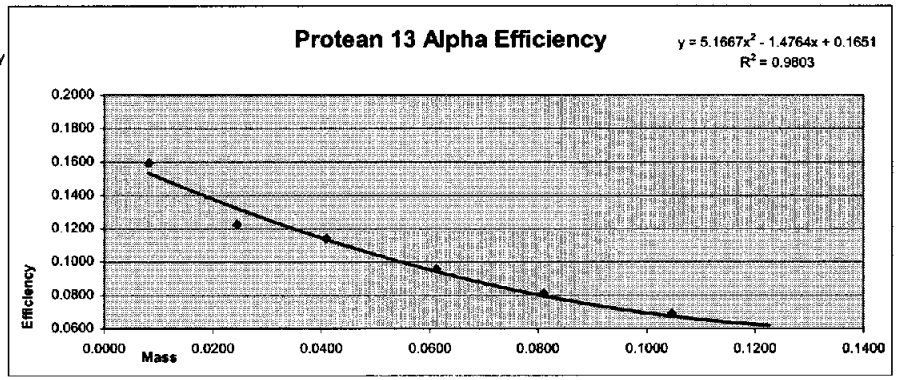
Protean 12 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1720	0.1618	0.1669
0.0249	0.0240	0.0245	0.1323	0.1241	0.1282
0.0406	0.0412	0.0409	0.1200	0.1229	0.1214
0.0611	0.0613	0.0612	0.0918	0.1130	0.1024
0.0800	0.0821	0.0811	0.0886	0.0873	0.0880
0.1037	0.1055	0.1046	0.0734	0.0776	0.0755
0.1217	0.1234	0.1226	0.0645	0.0661	0.0653



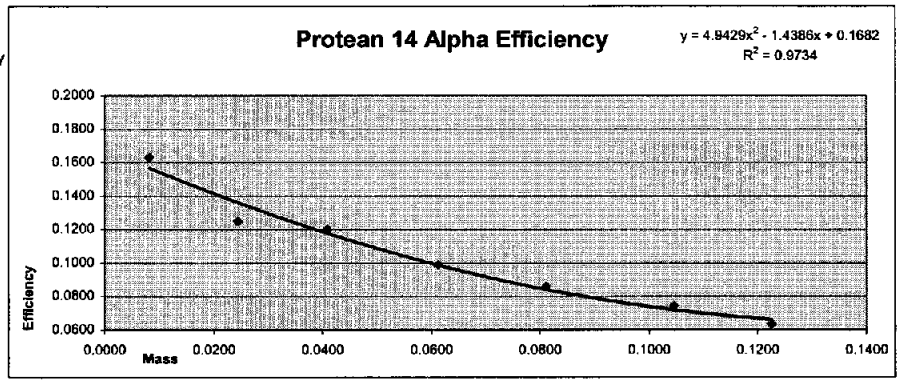
Protean 13 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1633	0.1553	0.1593
0.0249	0.0240	0.0245	0.1264	0.1186	0.1225
0.0406	0.0412	0.0409	0.1134	0.1147	0.1141
0.0611	0.0613	0.0612	0.0869	0.1045	0.0957
0.0800	0.0821	0.0811	0.0819	0.0801	0.0810
0.1037	0.1055	0.1046	0.0675	0.0706	0.0691
0.1217	0.1234	0.1226	0.0590	0.0602	0.0596



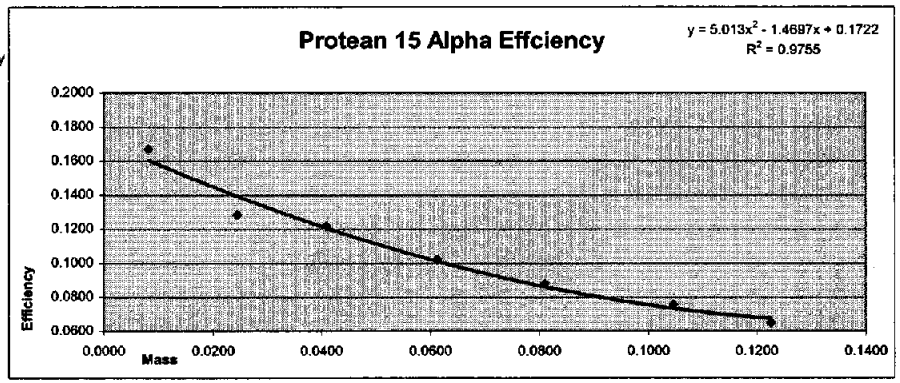
Protean 14 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1708	0.1556	0.1632
0.0249	0.0240	0.0245	0.1308	0.1190	0.1249
0.0406	0.0412	0.0409	0.1193	0.1209	0.1201
0.0611	0.0613	0.0612	0.0903	0.1075	0.0989
0.0800	0.0821	0.0811	0.0864	0.0857	0.0861
0.1037	0.1055	0.1046	0.0724	0.0762	0.0743
0.1217	0.1234	0.1226	0.0618	0.0652	0.0635



Protean 15 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1722	0.1620	0.1671
0.0249	0.0240	0.0245	0.1324	0.1242	0.1283
0.0406	0.0412	0.0409	0.1215	0.1219	0.1217
0.0611	0.0613	0.0612	0.0931	0.1115	0.1023
0.0800	0.0821	0.0811	0.0882	0.0878	0.0880
0.1037	0.1055	0.1046	0.0740	0.0770	0.0755
0.1217	0.1234	0.1226	0.0636	0.0660	0.0648



Alpha Attenuation Protean Detector 0
07_2006

Data Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
0	A11	0.0084	40.00	33311	832.775	4567.9	0.1823
0	A12	0.0160	40.00	36134	903.350	4567.9	0.1978
0	A13	0.0249	40.00	25973	649.325	4567.9	0.1421
0	A14	0.0406	40.00	23623	590.575	4567.9	0.1293
0	A15	0.0611	40.00	18241	456.025	4567.9	0.0998
0	A16	0.0800	40.00	35087	877.175	9135.8	0.0960
0	A17	0.1037	40.00	28865	721.625	9135.8	0.0790
0	A18	0.1217	40.00	25645	641.125	9135.8	0.0702

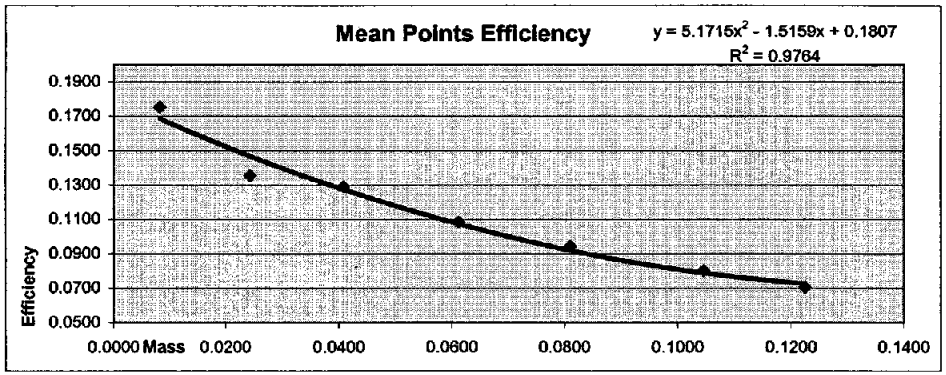
Alpha Attenuation Protean Detector 0
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
0	A21	0.0081	40.00	30735	768.375	4567.9	0.1682
0	A22	0.0161	40.00	24993	624.825	4567.9	0.1368
0	A23	0.0240	40.00	23561	589.025	4567.9	0.1289
0	A24	0.0412	40.00	23539	588.475	4567.9	0.1288
0	A25	0.0613	40.00	21384	534.600	4567.9	0.1170
0	A26	0.0821	40.00	33766	844.150	9135.8	0.0924
0	A27	0.1055	40.00	29687	742.175	9135.8	0.0812
0	A28	0.1234	40.00	25881	647.025	9135.8	0.0708

Protean 0

Protean 0 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
0.0084	0.0081	0.0083	0.1823	0.1682	0.1753	4.02%	-4.02%
0.0249	0.0240	0.0245	0.1421	0.1289	0.1355	4.87%	-4.87%
0.0406	0.0412	0.0409	0.1293	0.1288	0.1291	0.18%	-0.18%
0.0611	0.0613	0.0612	0.0998	0.1170	0.1084	-7.93%	7.93%
0.0800	0.0821	0.0811	0.0960	0.0924	0.0942	1.92%	-1.92%
0.1037	0.1055	0.1046	0.0790	0.0812	0.0801	-1.40%	1.40%
0.1217	0.1234	0.1226	0.0702	0.0708	0.0705	-0.46%	0.46%



Alpha Attenuation Protean Detector 1
07_2006

Data Set 1

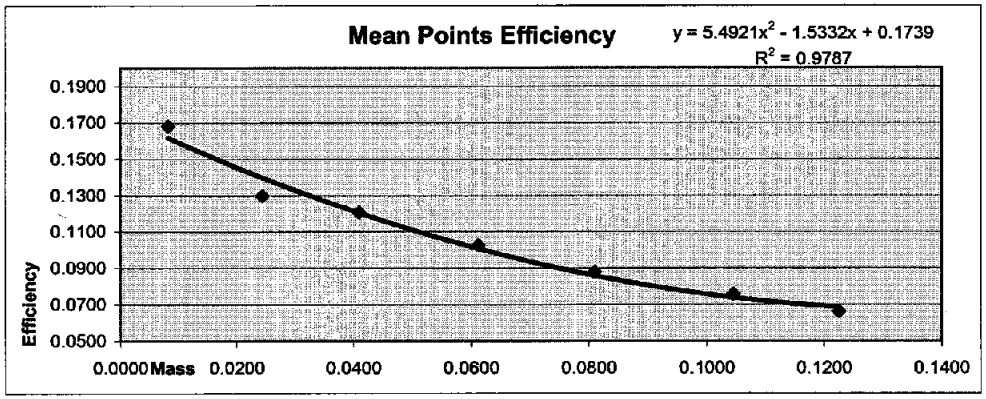
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
1	A11	0.0084	40.00	32170	804.250	4567.9	0.1761
1	A12	0.0160	40.00	34394	859.850	4567.9	0.1882
1	A13	0.0249	40.00	24799	619.975	4567.9	0.1357
1	A14	0.0406	40.00	22116	552.900	4567.9	0.1210
1	A15	0.0611	40.00	17360	434.000	4567.9	0.0950
1	A16	0.0800	40.00	32632	815.800	9135.8	0.0893
1	A17	0.1037	40.00	27075	676.875	9135.8	0.0741
1	A18	0.1217	40.00	24043	601.075	9135.8	0.0658

Alpha Attenuation Protean Detector 1
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
1	A21	0.0081	40.00	29260	731.500	4567.9	0.1601
1	A22	0.0161	40.00	24189	604.725	4567.9	0.1324
1	A23	0.0240	40.00	22598	564.950	4567.9	0.1237
1	A24	0.0412	40.00	21977	549.425	4567.9	0.1203
1	A25	0.0613	40.00	20092	502.300	4567.9	0.1100
1	A26	0.0821	40.00	31517	787.925	9135.8	0.0862
1	A27	0.1055	40.00	28167	704.175	9135.8	0.0771
1	A28	0.1234	40.00	24291	607.275	9135.8	0.0665

Protean 1 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
0.0084	0.0081	0.0083	0.1761	0.1601	0.1681	4.74%	-4.74%
0.0249	0.0240	0.0245	0.1357	0.1237	0.1297	4.64%	-4.64%
0.0406	0.0412	0.0409	0.1210	0.1203	0.1207	0.32%	-0.32%
0.0611	0.0613	0.0612	0.0950	0.1100	0.1025	-7.29%	7.29%
0.0800	0.0821	0.0811	0.0893	0.0862	0.0878	1.74%	-1.74%
0.1037	0.1055	0.1046	0.0741	0.0771	0.0756	-1.98%	1.98%
0.1217	0.1234	0.1226	0.0658	0.0665	0.0661	-0.51%	0.51%



Alpha Attenuation Protean Detector 2
07_2006

Data Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
2	A11	0.0084	40.00	32435	810.875	4567.9	0.1775
2	A12	0.0160	40.00	35060	876.500	4567.9	0.1919
2	A13	0.0249	40.00	24788	619.700	4567.9	0.1357
2	A14	0.0406	40.00	22658	566.450	4567.9	0.1240
2	A15	0.0611	40.00	17325	433.125	4567.9	0.0948
2	A16	0.0800	40.00	33005	825.125	9135.8	0.0903
2	A17	0.1037	40.00	27577	689.425	9135.8	0.0755
2	A18	0.1217	40.00	24108	602.700	9135.8	0.0660

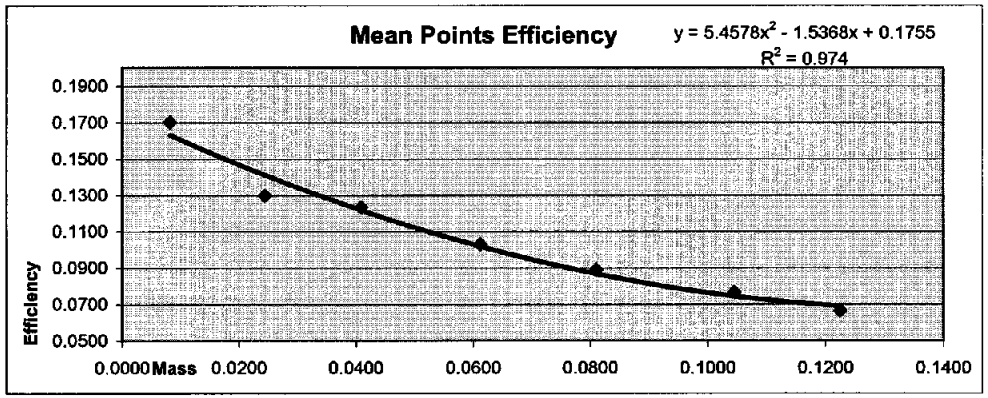
Alpha Attenuation Protean Detector 2
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
2	A21	0.0081	40.00	29747	743.675	4567.9	0.1628
2	A22	0.0161	40.00	24207	605.175	4567.9	0.1325
2	A23	0.0240	40.00	22628	565.700	4567.9	0.1238
2	A24	0.0412	40.00	22364	559.100	4567.9	0.1224
2	A25	0.0613	40.00	20334	508.350	4567.9	0.1113
2	A26	0.0821	40.00	32022	800.550	9135.8	0.0876
2	A27	0.1055	40.00	28435	710.875	9135.8	0.0778
2	A28	0.1234	40.00	24506	612.650	9135.8	0.0671

Protean 2

Protean 2 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
0.0084	0.0081	0.0083	0.1775	0.1628	0.1702	4.32%	-4.32%
0.0249	0.0240	0.0245	0.1357	0.1238	0.1298	4.56%	-4.56%
0.0406	0.0412	0.0409	0.1240	0.1224	0.1232	0.65%	-0.65%
0.0611	0.0613	0.0612	0.0948	0.1113	0.1031	-7.99%	7.99%
0.0800	0.0821	0.0811	0.0903	0.0876	0.0890	1.51%	-1.51%
0.1037	0.1055	0.1046	0.0755	0.0778	0.0766	-1.53%	1.53%
0.1217	0.1234	0.1226	0.0660	0.0671	0.0665	-0.82%	0.82%



Alpha Attenuation Protean Detector 3
07_2006

Data Set 1

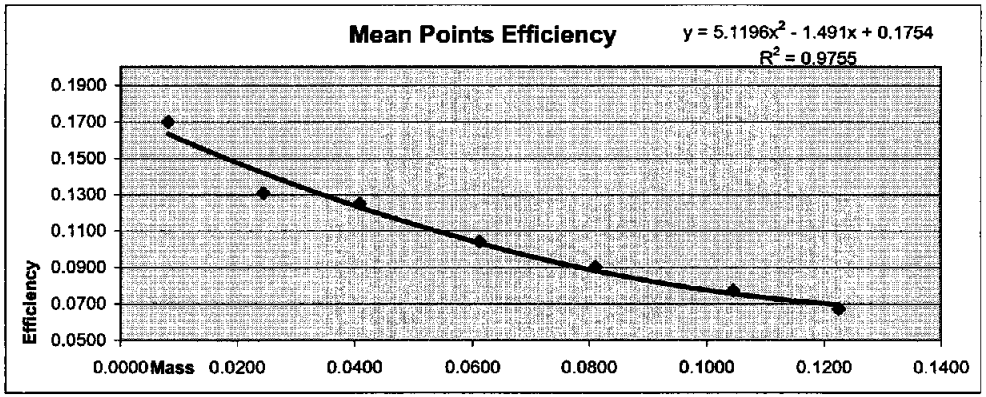
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
3	A11	0.0084	40.00	32270	806.750	4567.9	0.1766
3	A12	0.0160	40.00	34724	868.100	4567.9	0.1900
3	A13	0.0249	40.00	25164	629.100	4567.9	0.1377
3	A14	0.0406	40.00	22971	574.275	4567.9	0.1257
3	A15	0.0611	40.00	17584	439.600	4567.9	0.0962
3	A16	0.0800	40.00	33739	843.475	9135.8	0.0923
3	A17	0.1037	40.00	27844	696.100	9135.8	0.0762
3	A18	0.1217	40.00	24557	613.925	9135.8	0.0672

Alpha Attenuation Protean Detector 3
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
3	A21	0.0081	40.00	29856	746.400	4567.9	0.1634
3	A22	0.0161	40.00	24182	604.550	4567.9	0.1323
3	A23	0.0240	40.00	22644	566.100	4567.9	0.1239
3	A24	0.0412	40.00	22708	567.700	4567.9	0.1243
3	A25	0.0613	40.00	20487	512.175	4567.9	0.1121
3	A26	0.0821	40.00	32170	804.250	9135.8	0.0880
3	A27	0.1055	40.00	28646	716.150	9135.8	0.0784
3	A28	0.1234	40.00	24593	614.825	9135.8	0.0673

Protean 3 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
0.0084	0.0081	0.0083	0.1766	0.1634	0.1700	3.89%	-3.89%
0.0249	0.0240	0.0245	0.1377	0.1239	0.1308	5.27%	-5.27%
0.0406	0.0412	0.0409	0.1257	0.1243	0.1250	0.58%	-0.58%
0.0611	0.0613	0.0612	0.0962	0.1121	0.1042	-7.63%	7.63%
0.0800	0.0821	0.0811	0.0923	0.0880	0.0902	2.38%	-2.38%
0.1037	0.1055	0.1046	0.0762	0.0784	0.0773	-1.42%	1.42%
0.1217	0.1234	0.1226	0.0672	0.0673	0.0672	-0.07%	0.07%



Alpha Attenuation Protean Detector 4
08_2006

Data Set 1

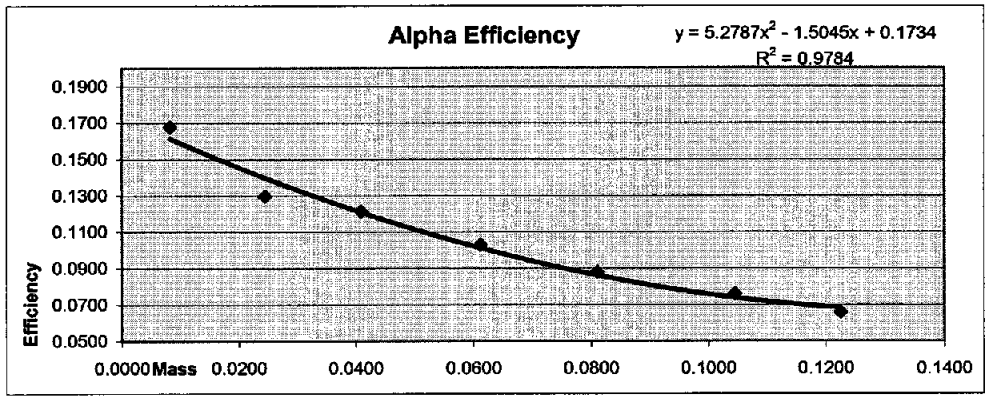
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
4	A11	0.0084	40.00	31662	791.550	4567.9	0.1733
4	A12	0.0160	40.00	34514	862.850	4567.9	0.1889
4	A13	0.0249	40.00	24568	614.200	4567.9	0.1345
4	A14	0.0406	40.00	22158	553.950	4567.9	0.1213
4	A15	0.0611	40.00	17242	431.050	4567.9	0.0944
4	A16	0.0800	40.00	32565	814.125	9135.8	0.0891
4	A17	0.1037	40.00	27408	685.200	9135.8	0.0750
4	A18	0.1217	40.00	23641	591.025	9135.8	0.0647

Alpha Attenuation Protean Detector 4
08_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
4	A21	0.0081	40.00	29638	740.950	4567.9	0.1622
4	A22	0.0161	40.00	24041	601.025	4567.9	0.1316
4	A23	0.0240	40.00	22805	570.125	4567.9	0.1248
4	A24	0.0412	40.00	22113	552.825	4567.9	0.1210
4	A25	0.0613	40.00	20338	508.450	4567.9	0.1113
4	A26	0.0821	40.00	31678	791.950	9135.8	0.0867
4	A27	0.1055	40.00	28082	702.050	9135.8	0.0768
4	A28	0.1234	40.00	24462	611.550	9135.8	0.0669

Protean 4 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
0.0084	0.0081	0.0083	0.1733	0.1622	0.1677	3.30%	-3.30%
0.0249	0.0240	0.0245	0.1345	0.1248	0.1296	3.72%	-3.72%
0.0406	0.0412	0.0409	0.1213	0.1210	0.1211	0.10%	-0.10%
0.0611	0.0613	0.0612	0.0944	0.1113	0.1028	-8.24%	8.24%
0.0800	0.0821	0.0811	0.0891	0.0867	0.0879	1.38%	-1.38%
0.1037	0.1055	0.1046	0.0750	0.0768	0.0759	-1.21%	1.21%
0.1217	0.1234	0.1226	0.0647	0.0669	0.0658	-1.71%	1.71%



Alpha Attenuation Protean Detector 5
07_2006

Data Set 1

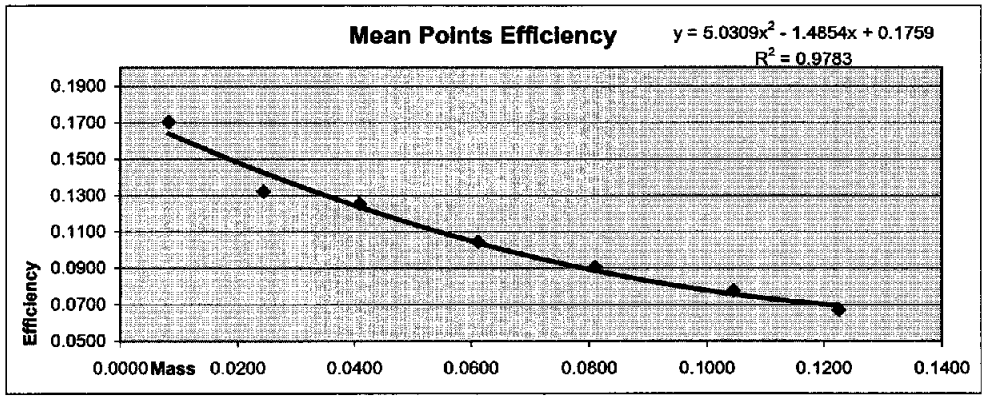
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
5	A11	0.0084	40.00	32267	806.675	4567.9	0.1766
5	A12	0.0160	40.00	35198	879.950	4567.9	0.1926
5	A13	0.0249	40.00	25371	634.275	4567.9	0.1389
5	A14	0.0406	40.00	23070	576.750	4567.9	0.1263
5	A15	0.0611	40.00	17624	440.600	4567.9	0.0965
5	A16	0.0800	40.00	33591	839.775	9135.8	0.0919
5	A17	0.1037	40.00	28297	707.425	9135.8	0.0774
5	A18	0.1217	40.00	24288	607.200	9135.8	0.0665

Alpha Attenuation Protean Detector 5
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
5	A21	0.0081	40.00	29950	748.750	4567.9	0.1639
5	A22	0.0161	40.00	24232	605.800	4567.9	0.1326
5	A23	0.0240	40.00	22908	572.700	4567.9	0.1254
5	A24	0.0412	40.00	22749	568.725	4567.9	0.1245
5	A25	0.0613	40.00	20552	513.800	4567.9	0.1125
5	A26	0.0821	40.00	32653	816.325	9135.8	0.0894
5	A27	0.1055	40.00	28367	709.175	9135.8	0.0776
5	A28	0.1234	40.00	24751	618.775	9135.8	0.0677

Protean 5 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
0.0084	0.0081	0.0083	0.1766	0.1639	0.1703	3.72%	-3.72%
0.0249	0.0240	0.0245	0.1389	0.1254	0.1321	5.10%	-5.10%
0.0406	0.0412	0.0409	0.1263	0.1245	0.1254	0.70%	-0.70%
0.0611	0.0613	0.0612	0.0965	0.1125	0.1045	-7.67%	7.67%
0.0800	0.0821	0.0811	0.0919	0.0894	0.0906	1.42%	-1.42%
0.1037	0.1055	0.1046	0.0774	0.0776	0.0775	-0.12%	0.12%
0.1217	0.1234	0.1226	0.0665	0.0677	0.0671	-0.94%	0.94%



Alpha Attenuation Protean Detector 6
07_2006

Data Set 1

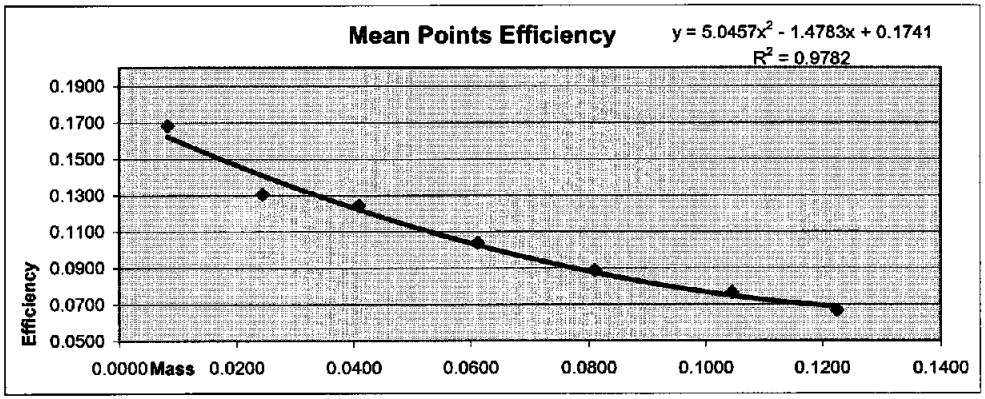
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
6	A11	0.0084	40.00	32115	802.875	4567.9	0.1758
6	A12	0.0160	40.00	34891	872.275	4567.9	0.1910
6	A13	0.0249	40.00	24596	614.900	4567.9	0.1346
6	A14	0.0406	40.00	22817	570.425	4567.9	0.1249
6	A15	0.0611	40.00	17438	435.950	4567.9	0.0954
6	A16	0.0800	40.00	32813	820.325	9135.8	0.0898
6	A17	0.1037	40.00	27715	692.875	9135.8	0.0758
6	A18	0.1217	40.00	24221	605.525	9135.8	0.0663

Alpha Attenuation Protean Detector 6
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
6	A21	0.0081	40.00	29381	734.525	4567.9	0.1608
6	A22	0.0161	40.00	23957	598.925	4567.9	0.1311
6	A23	0.0240	40.00	23058	576.450	4567.9	0.1262
6	A24	0.0412	40.00	22615	565.375	4567.9	0.1238
6	A25	0.0613	40.00	20464	511.600	4567.9	0.1120
6	A26	0.0821	40.00	31945	798.625	9135.8	0.0874
6	A27	0.1055	40.00	28184	704.600	9135.8	0.0771
6	A28	0.1234	40.00	24511	612.775	9135.8	0.0671

Protean 6 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
0.0084	0.0081	0.0083	0.1758	0.1608	0.1683	4.45%	-4.45%
0.0249	0.0240	0.0245	0.1346	0.1262	0.1304	3.23%	-3.23%
0.0406	0.0412	0.0409	0.1249	0.1238	0.1243	0.44%	-0.44%
0.0611	0.0613	0.0612	0.0954	0.1120	0.1037	-7.98%	7.98%
0.0800	0.0821	0.0811	0.0898	0.0874	0.0886	1.34%	-1.34%
0.1037	0.1055	0.1046	0.0758	0.0771	0.0765	-0.84%	0.84%
0.1217	0.1234	0.1226	0.0663	0.0671	0.0667	-0.60%	0.60%



Alpha Attenuation Protean Detector 7
07_2006

Data Set 1

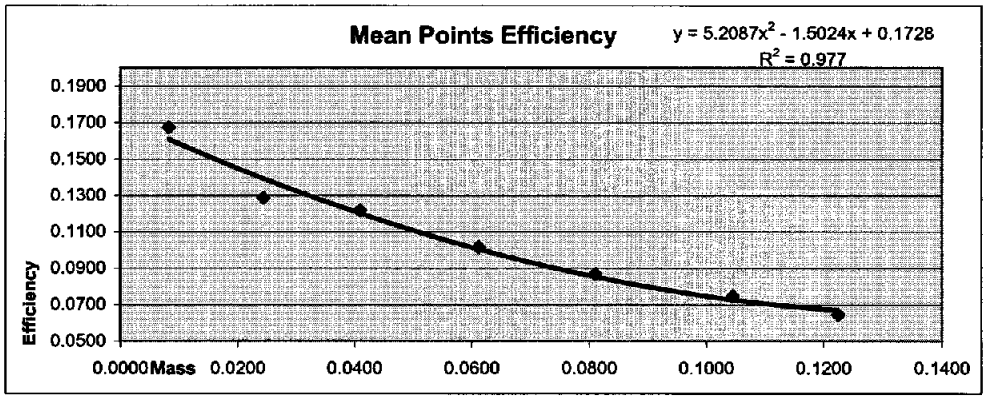
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
7	A11	0.0084	40.00	31641	791.025	4567.9	0.1732
7	A12	0.0160	40.00	34234	855.850	4567.9	0.1874
7	A13	0.0249	40.00	24532	613.300	4567.9	0.1343
7	A14	0.0406	40.00	22413	560.325	4567.9	0.1227
7	A15	0.0611	40.00	16929	423.225	4567.9	0.0927
7	A16	0.0800	40.00	32252	806.300	9135.8	0.0883
7	A17	0.1037	40.00	26797	669.925	9135.8	0.0733
7	A18	0.1217	40.00	23245	581.125	9135.8	0.0636

Alpha Attenuation Protean Detector 7
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
7	A21	0.0081	40.00	29477	736.925	4567.9	0.1613
7	A22	0.0161	40.00	23734	593.350	4567.9	0.1299
7	A23	0.0240	40.00	22406	560.150	4567.9	0.1226
7	A24	0.0412	40.00	22053	551.325	4567.9	0.1207
7	A25	0.0613	40.00	20241	506.025	4567.9	0.1108
7	A26	0.0821	40.00	31280	782.000	9135.8	0.0856
7	A27	0.1055	40.00	27817	695.425	9135.8	0.0761
7	A28	0.1234	40.00	23973	599.325	9135.8	0.0656

Protean 7 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
0.0084	0.0081	0.0083	0.1732	0.1613	0.1672	3.54%	-3.54%
0.0249	0.0240	0.0245	0.1343	0.1226	0.1284	4.53%	-4.53%
0.0406	0.0412	0.0409	0.1227	0.1207	0.1217	0.81%	-0.81%
0.0611	0.0613	0.0612	0.0927	0.1108	0.1017	-8.91%	8.91%
0.0800	0.0821	0.0811	0.0883	0.0856	0.0869	1.53%	-1.53%
0.1037	0.1055	0.1046	0.0733	0.0761	0.0747	-1.87%	1.87%
0.1217	0.1234	0.1226	0.0636	0.0656	0.0646	-1.54%	1.54%



Alpha Attenuation Protean Detector 8
07_2006

Data Set 1

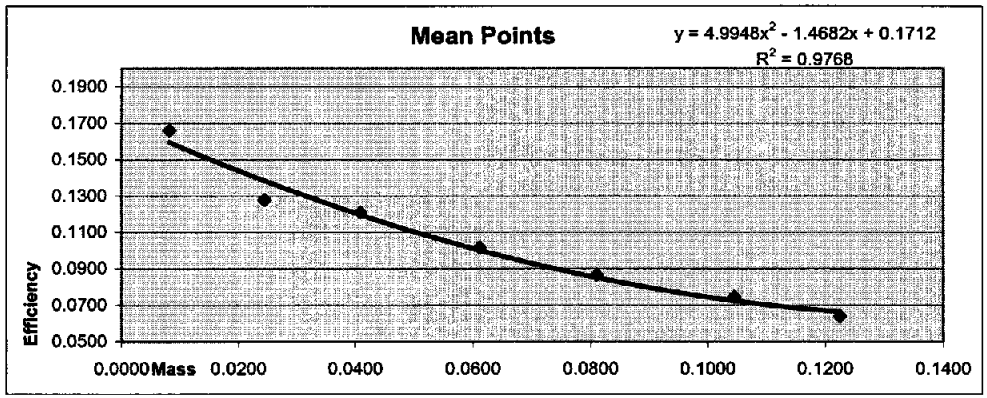
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
8	A11	0.0084	40.00	31331	783.275	4567.9	0.1715
8	A12	0.0160	40.00	34093	852.325	4567.9	0.1866
8	A13	0.0249	40.00	24356	608.900	4567.9	0.1333
8	A14	0.0406	40.00	22035	550.875	4567.9	0.1206
8	A15	0.0611	40.00	17025	425.625	4567.9	0.0932
8	A16	0.0800	40.00	31586	789.650	9135.8	0.0864
8	A17	0.1037	40.00	26613	665.325	9135.8	0.0728
8	A18	0.1217	40.00	22797	569.925	9135.8	0.0624

Alpha Attenuation Protean Detector 8
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
8	A21	0.0081	40.00	29308	732.700	4567.9	0.1604
8	A22	0.0161	40.00	23702	592.550	4567.9	0.1297
8	A23	0.0240	40.00	22303	557.575	4567.9	0.1221
8	A24	0.0412	40.00	22134	553.350	4567.9	0.1211
8	A25	0.0613	40.00	20088	502.200	4567.9	0.1099
8	A26	0.0821	40.00	31671	791.775	9135.8	0.0867
8	A27	0.1055	40.00	27940	698.500	9135.8	0.0765
8	A28	0.1234	40.00	23862	596.550	9135.8	0.0653

Protean 8 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
0.0084	0.0081	0.0083	0.1715	0.1604	0.1659	3.34%	-3.34%
0.0249	0.0240	0.0245	0.1333	0.1221	0.1277	4.40%	-4.40%
0.0406	0.0412	0.0409	0.1206	0.1211	0.1209	-0.22%	0.22%
0.0611	0.0613	0.0612	0.0932	0.1099	0.1016	-8.25%	8.25%
0.0800	0.0821	0.0811	0.0864	0.0867	0.0866	-0.13%	0.13%
0.1037	0.1055	0.1046	0.0728	0.0765	0.0746	-2.43%	2.43%
0.1217	0.1234	0.1226	0.0624	0.0653	0.0638	-2.28%	2.28%



Alpha Attenuation Protean Detector 9
07_2006

Data Set 1

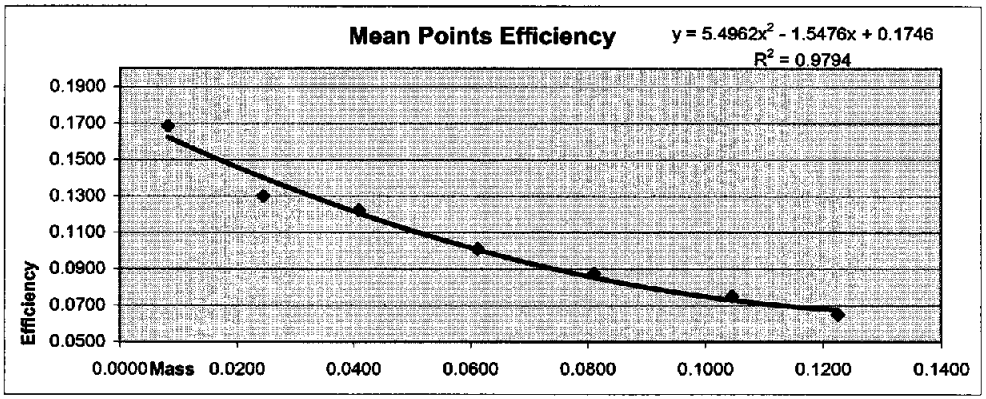
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
9	A11	0.0084	40.00	31658	791.450	4567.9	0.1733
9	A12	0.0160	40.00	34181	854.525	4567.9	0.1871
9	A13	0.0249	40.00	24491	612.275	4567.9	0.1340
9	A14	0.0406	40.00	22136	553.400	4567.9	0.1211
9	A15	0.0611	40.00	16756	418.900	4567.9	0.0917
9	A16	0.0800	40.00	32073	801.825	9135.8	0.0878
9	A17	0.1037	40.00	26567	664.175	9135.8	0.0727
9	A18	0.1217	40.00	23395	584.875	9135.8	0.0640

Alpha Attenuation Protean Detector 9
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
9	A21	0.0081	40.00	29882	747.050	4567.9	0.1635
9	A22	0.0161	40.00	24228	605.700	4567.9	0.1326
9	A23	0.0240	40.00	22993	574.825	4567.9	0.1258
9	A24	0.0412	40.00	22507	562.675	4567.9	0.1232
9	A25	0.0613	40.00	20142	503.550	4567.9	0.1102
9	A26	0.0821	40.00	31801	795.025	9135.8	0.0870
9	A27	0.1055	40.00	28351	708.775	9135.8	0.0776
9	A28	0.1234	40.00	24135	603.375	9135.8	0.0660

Protean 9 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
0.0084	0.0081	0.0083	0.1733	0.1635	0.1684	2.89%	-2.89%
0.0249	0.0240	0.0245	0.1340	0.1258	0.1299	3.15%	-3.15%
0.0406	0.0412	0.0409	0.1211	0.1232	0.1222	-0.83%	0.83%
0.0611	0.0613	0.0612	0.0917	0.1102	0.1010	-9.18%	9.18%
0.0800	0.0821	0.0811	0.0878	0.0870	0.0874	0.43%	-0.43%
0.1037	0.1055	0.1046	0.0727	0.0776	0.0751	-3.25%	3.25%
0.1217	0.1234	0.1226	0.0640	0.0660	0.0650	-1.56%	1.56%



Alpha Attenuation Protean Detector 10
07_2006

Data Set 1

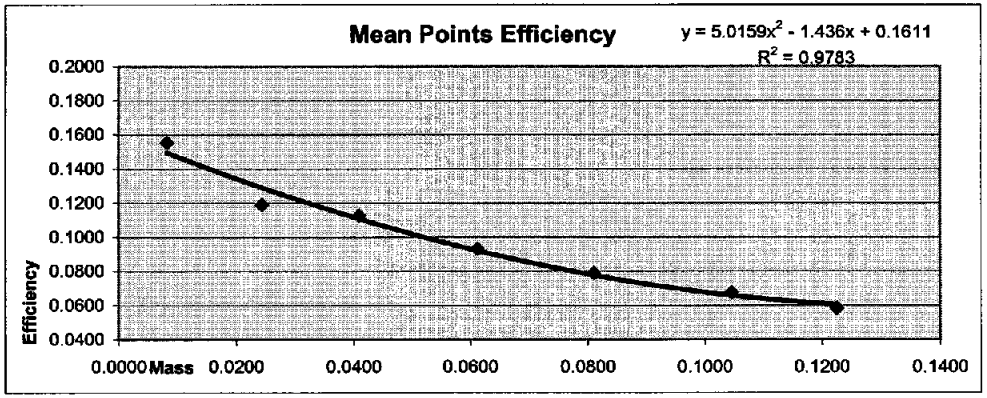
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
10	A11	0.0084	40.00	29372	734.300	4567.9	0.1608
10	A12	0.0160	40.00	31574	789.350	4567.9	0.1728
10	A13	0.0249	40.00	22624	565.600	4567.9	0.1238
10	A14	0.0406	40.00	20456	511.400	4567.9	0.1120
10	A15	0.0611	40.00	15451	386.275	4567.9	0.0846
10	A16	0.0800	40.00	29054	726.350	9135.8	0.0795
10	A17	0.1037	40.00	24158	603.950	9135.8	0.0661
10	A18	0.1217	40.00	20807	520.175	9135.8	0.0569

Alpha Attenuation Protean Detector 10
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
10	A21	0.0081	40.00	27429	685.725	4567.9	0.1501
10	A22	0.0161	40.00	22343	558.575	4567.9	0.1223
10	A23	0.0240	40.00	20849	521.225	4567.9	0.1141
10	A24	0.0412	40.00	20677	516.925	4567.9	0.1132
10	A25	0.0613	40.00	18558	463.950	4567.9	0.1016
10	A26	0.0821	40.00	28729	718.225	9135.8	0.0786
10	A27	0.1055	40.00	25193	629.825	9135.8	0.0689
10	A28	0.1234	40.00	21859	546.475	9135.8	0.0598

Protean 10 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
0.0084	0.0081	0.0083	0.1608	0.1501	0.1554	3.42%	-3.42%
0.0249	0.0240	0.0245	0.1238	0.1141	0.1190	4.08%	-4.08%
0.0406	0.0412	0.0409	0.1120	0.1132	0.1126	-0.54%	0.54%
0.0611	0.0613	0.0612	0.0846	0.1016	0.0931	-9.14%	9.14%
0.0800	0.0821	0.0811	0.0795	0.0786	0.0791	0.56%	-0.56%
0.1037	0.1055	0.1046	0.0661	0.0689	0.0675	-2.10%	2.10%
0.1217	0.1234	0.1226	0.0569	0.0598	0.0584	-2.47%	2.47%



Alpha Attenuation Protean Detector 11
07_2006

Data Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
11	A11	0.0084	40.00	31974	799.350	4567.9	0.1750
11	A12	0.0160	40.00	34833	870.825	4567.9	0.1906
11	A13	0.0249	40.00	24600	615.000	4567.9	0.1346
11	A14	0.0406	40.00	22750	568.750	4567.9	0.1245
11	A15	0.0611	40.00	17212	430.300	4567.9	0.0942
11	A16	0.0800	40.00	32970	824.250	9135.8	0.0902
11	A17	0.1037	40.00	27527	688.175	9135.8	0.0753
11	A18	0.1217	40.00	23671	591.775	9135.8	0.0648

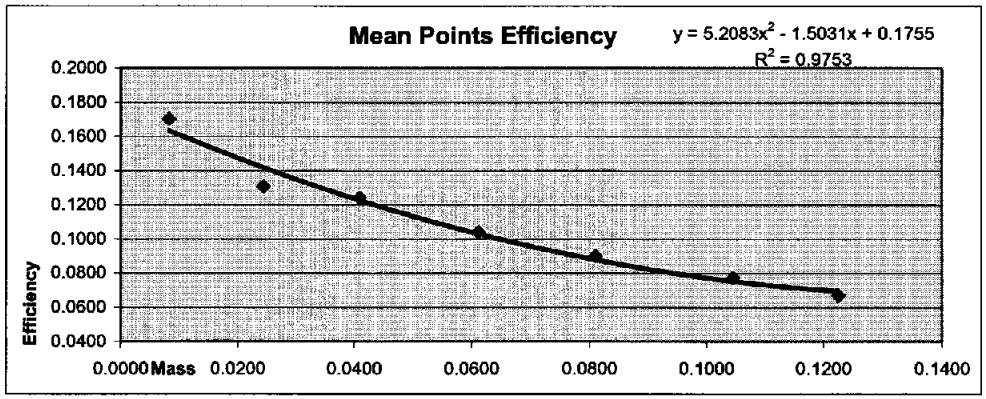
Alpha Attenuation Protean Detector 11
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
11	A21	0.0081	40.00	30221	755.525	4567.9	0.1654
11	A22	0.0161	40.00	24574	614.350	4567.9	0.1345
11	A23	0.0240	40.00	23172	579.300	4567.9	0.1268
11	A24	0.0412	40.00	22613	565.325	4567.9	0.1238
11	A25	0.0613	40.00	20835	520.875	4567.9	0.1140
11	A26	0.0821	40.00	32809	820.225	9135.8	0.0898
11	A27	0.1055	40.00	28974	724.350	9135.8	0.0793
11	A28	0.1234	40.00	25283	632.075	9135.8	0.0692

Protean 11

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
0.0084	0.0081	0.0083	0.1750	0.1654	0.1702	2.82%	-2.82%
0.0249	0.0240	0.0245	0.1346	0.1268	0.1307	2.99%	-2.99%
0.0406	0.0412	0.0409	0.1245	0.1238	0.1241	0.30%	-0.30%
0.0611	0.0613	0.0612	0.0942	0.1140	0.1041	-9.52%	9.52%
0.0800	0.0821	0.0811	0.0902	0.0898	0.0900	0.24%	-0.24%
0.1037	0.1055	0.1046	0.0753	0.0793	0.0773	-2.56%	2.56%
0.1217	0.1234	0.1226	0.0648	0.0692	0.0670	-3.29%	3.29%



Alpha Attenuation Protean Detector 12
07_2006

Data Set 1

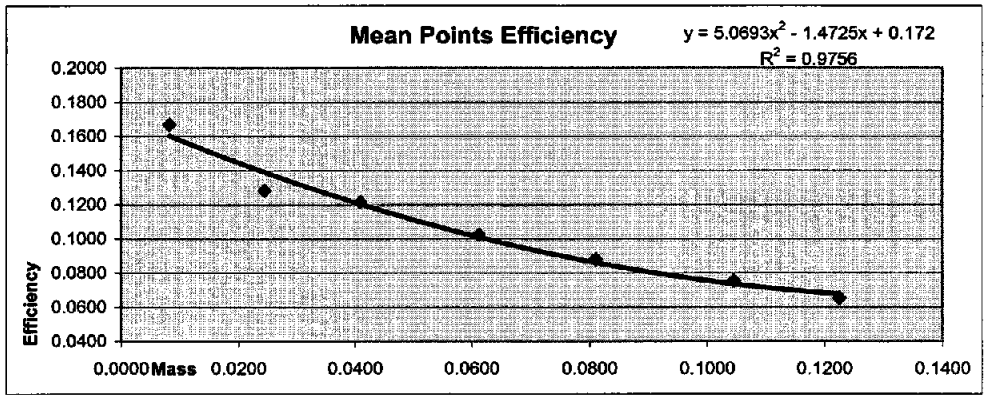
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
12	A11	0.0084	40.00	31423	785.575	4567.9	0.1720
12	A12	0.0160	40.00	34348	858.700	4567.9	0.1880
12	A13	0.0249	40.00	24181	604.525	4567.9	0.1323
12	A14	0.0406	40.00	21922	548.050	4567.9	0.1200
12	A15	0.0611	40.00	16765	419.125	4567.9	0.0918
12	A16	0.0800	40.00	32367	809.175	9135.8	0.0886
12	A17	0.1037	40.00	26813	670.325	9135.8	0.0734
12	A18	0.1217	40.00	23560	589.000	9135.8	0.0645

Alpha Attenuation Protean Detector 12
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
12	A21	0.0081	40.00	29572	739.300	4567.9	0.1618
12	A22	0.0161	40.00	24373	609.325	4567.9	0.1334
12	A23	0.0240	40.00	22668	566.700	4567.9	0.1241
12	A24	0.0412	40.00	22447	561.175	4567.9	0.1229
12	A25	0.0613	40.00	20648	516.200	4567.9	0.1130
12	A26	0.0821	40.00	31914	797.850	9135.8	0.0873
12	A27	0.1055	40.00	28360	709.000	9135.8	0.0776
12	A28	0.1234	40.00	24155	603.875	9135.8	0.0661

Protean 12 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
0.0084	0.0081	0.0083	0.1720	0.1618	0.1669	3.03%	-3.03%
0.0249	0.0240	0.0245	0.1323	0.1241	0.1282	3.23%	-3.23%
0.0406	0.0412	0.0409	0.1200	0.1229	0.1214	-1.18%	1.18%
0.0611	0.0613	0.0612	0.0918	0.1130	0.1024	-10.38%	10.38%
0.0800	0.0821	0.0811	0.0886	0.0873	0.0880	0.70%	-0.70%
0.1037	0.1055	0.1046	0.0734	0.0776	0.0755	-2.80%	2.80%
0.1217	0.1234	0.1226	0.0645	0.0661	0.0653	-1.25%	1.25%



Alpha Attenuation Protean Detector 13
07_2006

Data Set 1

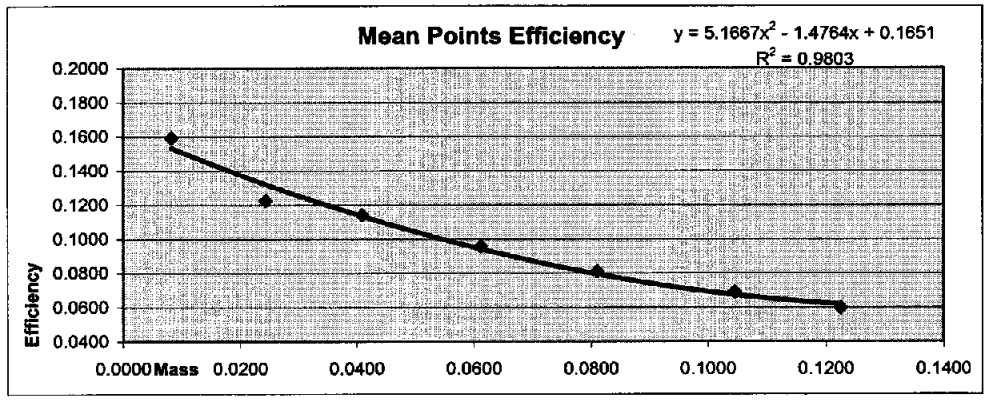
Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
13	A11	0.0084	40.00	29835	745.875	4567.9	0.1633
13	A12	0.0160	40.00	32293	807.325	4567.9	0.1767
13	A13	0.0249	40.00	23101	577.525	4567.9	0.1264
13	A14	0.0406	40.00	20721	518.025	4567.9	0.1134
13	A15	0.0611	40.00	15878	396.950	4567.9	0.0869
13	A16	0.0800	40.00	29943	748.575	9135.8	0.0819
13	A17	0.1037	40.00	24669	616.725	9135.8	0.0675
13	A18	0.1217	40.00	21550	538.750	9135.8	0.0590

Alpha Attenuation Protean Detector 13
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
13	A21	0.0081	40.00	28368	709.200	4567.9	0.1553
13	A22	0.0161	40.00	22493	562.325	4567.9	0.1231
13	A23	0.0240	40.00	21671	541.775	4567.9	0.1186
13	A24	0.0412	40.00	20963	524.075	4567.9	0.1147
13	A25	0.0613	40.00	19100	477.500	4567.9	0.1045
13	A26	0.0821	40.00	29285	732.125	9135.8	0.0801
13	A27	0.1055	40.00	25808	645.200	9135.8	0.0706
13	A28	0.1234	40.00	21999	549.975	9135.8	0.0602

Protean 13 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
0.0084	0.0081	0.0083	0.1633	0.1553	0.1593	2.52%	-2.52%
0.0249	0.0240	0.0245	0.1264	0.1186	0.1225	3.19%	-3.19%
0.0406	0.0412	0.0409	0.1134	0.1147	0.1141	-0.58%	0.58%
0.0611	0.0613	0.0612	0.0869	0.1045	0.0957	-9.21%	9.21%
0.0800	0.0821	0.0811	0.0819	0.0801	0.0810	1.11%	-1.11%
0.1037	0.1055	0.1046	0.0675	0.0706	0.0691	-2.26%	2.26%
0.1217	0.1234	0.1226	0.0590	0.0602	0.0596	-1.03%	1.03%



Alpha Attenuation Protean Detector 14
07_2006

Data Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
14	A11	0.0084	40.00	31206	780.150	4567.9	0.1708
14	A12	0.0160	40.00	33671	841.775	4567.9	0.1843
14	A13	0.0249	40.00	23901	597.525	4567.9	0.1308
14	A14	0.0406	40.00	21797	544.925	4567.9	0.1193
14	A15	0.0611	40.00	16507	412.675	4567.9	0.0903
14	A16	0.0800	40.00	31585	789.625	9135.8	0.0864
14	A17	0.1037	40.00	26457	661.425	9135.8	0.0724
14	A18	0.1217	40.00	22597	564.925	9135.8	0.0618

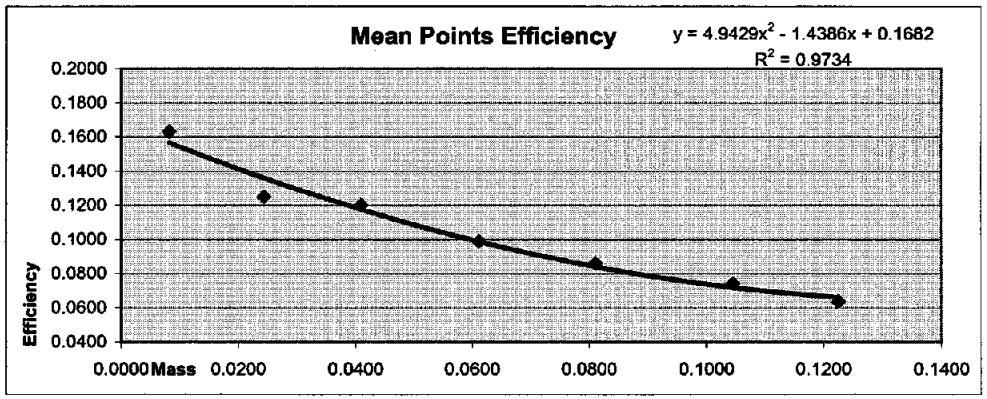
Alpha Attenuation Protean Detector 14
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
14	A21	0.0081	40.00	28425	710.625	4567.9	0.1556
14	A22	0.0161	40.00	23506	587.650	4567.9	0.1286
14	A23	0.0240	40.00	21742	543.550	4567.9	0.1190
14	A24	0.0412	40.00	22083	552.075	4567.9	0.1209
14	A25	0.0613	40.00	19638	490.950	4567.9	0.1075
14	A26	0.0821	40.00	31307	782.675	9135.8	0.0857
14	A27	0.1055	40.00	27836	695.900	9135.8	0.0762
14	A28	0.1234	40.00	23839	595.975	9135.8	0.0652

Protean 14

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
0.0084	0.0081	0.0083	0.1708	0.1556	0.1632	4.66%	-4.66%
0.0249	0.0240	0.0245	0.1308	0.1190	0.1249	4.73%	-4.73%
0.0406	0.0412	0.0409	0.1193	0.1209	0.1201	-0.65%	0.65%
0.0611	0.0613	0.0612	0.0903	0.1075	0.0989	-8.66%	8.66%
0.0800	0.0821	0.0811	0.0864	0.0857	0.0861	0.44%	-0.44%
0.1037	0.1055	0.1046	0.0724	0.0762	0.0743	-2.54%	2.54%
0.1217	0.1234	0.1226	0.0618	0.0652	0.0635	-2.67%	2.67%



Alpha Attenuation Protean Detector 15
07_2006

Data Set 1

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
15	A11	0.0084	40.00	31467	786.675	4567.9	0.1722
15	A12	0.0160	40.00	33889	847.225	4567.9	0.1855
15	A13	0.0249	40.00	24200	605.000	4567.9	0.1324
15	A14	0.0406	40.00	22209	555.225	4567.9	0.1215
15	A15	0.0611	40.00	17003	425.075	4567.9	0.0931
15	A16	0.0800	40.00	32240	806.000	9135.8	0.0882
15	A17	0.1037	40.00	27047	676.175	9135.8	0.0740
15	A18	0.1217	40.00	23248	581.200	9135.8	0.0636

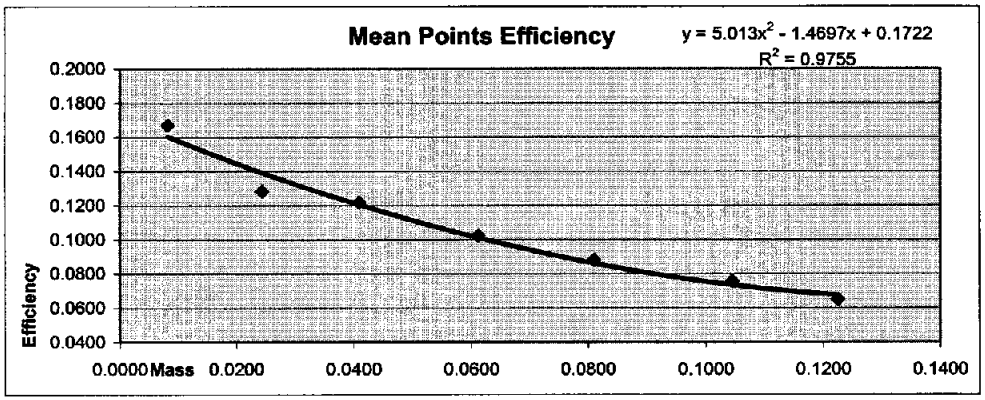
Alpha Attenuation Protean Detector 15
07_2006

Data Set 2

Detector ID	Sample ID	Mass	Count Time	Alpha Counts	CPM	DPM	Th-230 Efficiency
15	A21	0.0081	40.00	29597	739.925	4567.9	0.1620
15	A22	0.0161	40.00	23850	596.250	4567.9	0.1305
15	A23	0.0240	40.00	22697	567.425	4567.9	0.1242
15	A24	0.0412	40.00	22280	557.000	4567.9	0.1219
15	A25	0.0613	40.00	20365	509.125	4567.9	0.1115
15	A26	0.0821	40.00	32075	801.875	9135.8	0.0878
15	A27	0.1055	40.00	28137	703.425	9135.8	0.0770
15	A28	0.1234	40.00	24132	603.300	9135.8	0.0660

Protean 15

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
0.0084	0.0081	0.0083	0.1722	0.1620	0.1671	3.06%	-3.06%
0.0249	0.0240	0.0245	0.1324	0.1242	0.1283	3.20%	-3.20%
0.0406	0.0412	0.0409	0.1215	0.1219	0.1217	-0.16%	0.16%
0.0611	0.0613	0.0612	0.0931	0.1115	0.1023	-9.00%	9.00%
0.0800	0.0821	0.0811	0.0882	0.0878	0.0880	0.26%	-0.26%
0.1037	0.1055	0.1046	0.0740	0.0770	0.0755	-1.98%	1.98%
0.1217	0.1234	0.1226	0.0636	0.0660	0.0648	-1.87%	1.87%



SEVERN TRENT STL

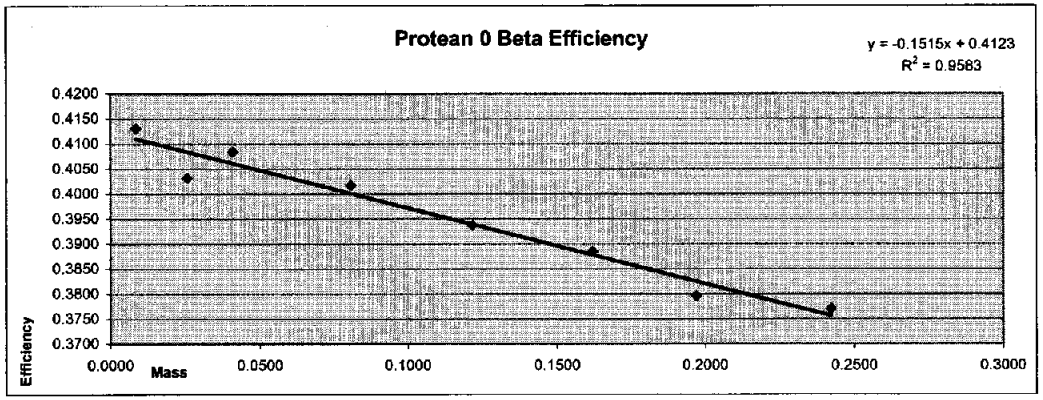
Protean Beta Calibration

2006

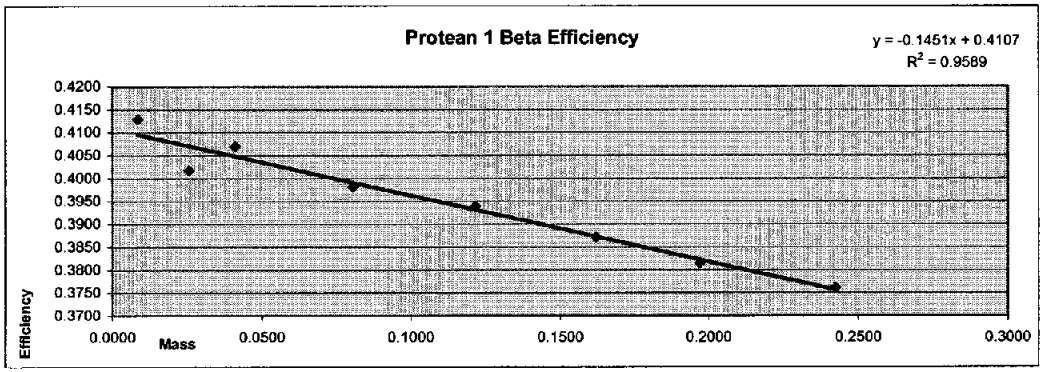
SEVERN TRENT STL

Detector Efficiency Curves

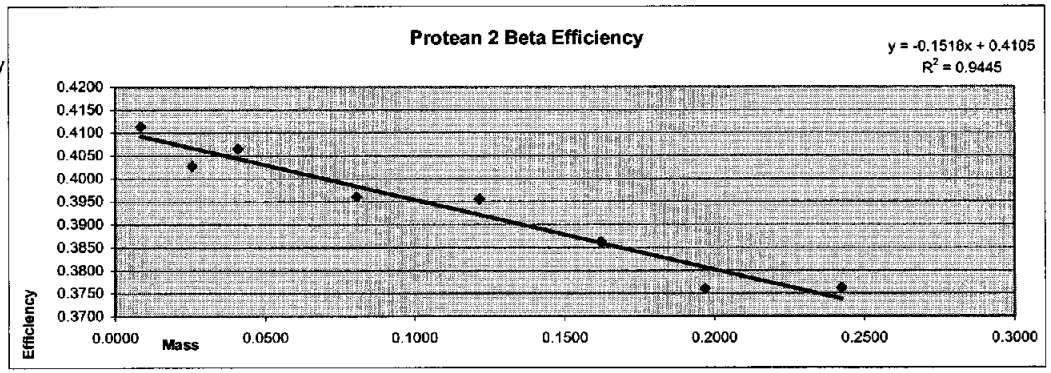
Protean 0 Mass Set 1	07/2006 Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4256	0.4006	0.4131
0.0251	0.0262	0.0257	0.4210	0.3852	0.4031
0.0412	0.0407	0.0410	0.4153	0.4015	0.4084
0.0796	0.0820	0.0808	0.4024	0.4009	0.4017
0.1212	0.1220	0.1216	0.3945	0.3930	0.3937
0.1629	0.1612	0.1621	0.3840	0.3929	0.3884
0.1996	0.1945	0.1971	0.3759	0.3832	0.3796
0.2420	0.2429	0.2425	0.3794	0.3746	0.3770



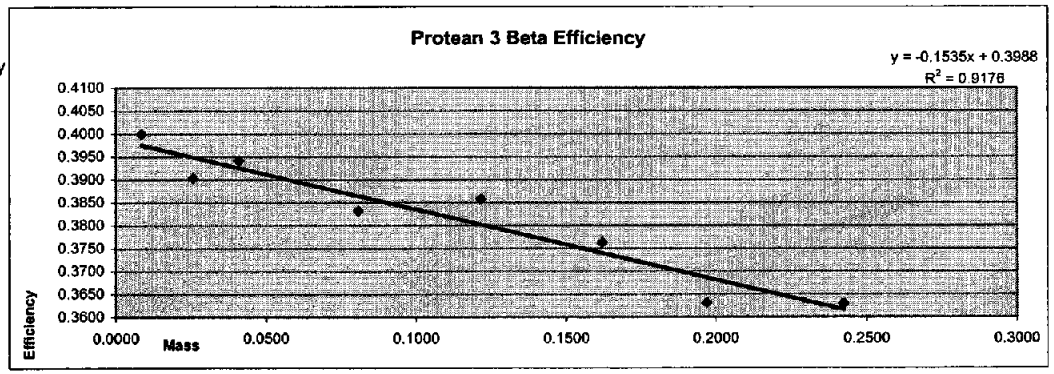
Protean 1 Mass Set 1	07/2006 Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4232	0.4025	0.4129
0.0251	0.0262	0.0257	0.4177	0.3858	0.4017
0.0412	0.0407	0.0410	0.4172	0.3967	0.4069
0.0796	0.0820	0.0808	0.4002	0.3961	0.3982
0.1212	0.1220	0.1216	0.3924	0.3954	0.3939
0.1629	0.1612	0.1621	0.3783	0.3960	0.3871
0.1996	0.1945	0.1971	0.3737	0.3894	0.3815
0.2420	0.2429	0.2425	0.3753	0.3768	0.3761



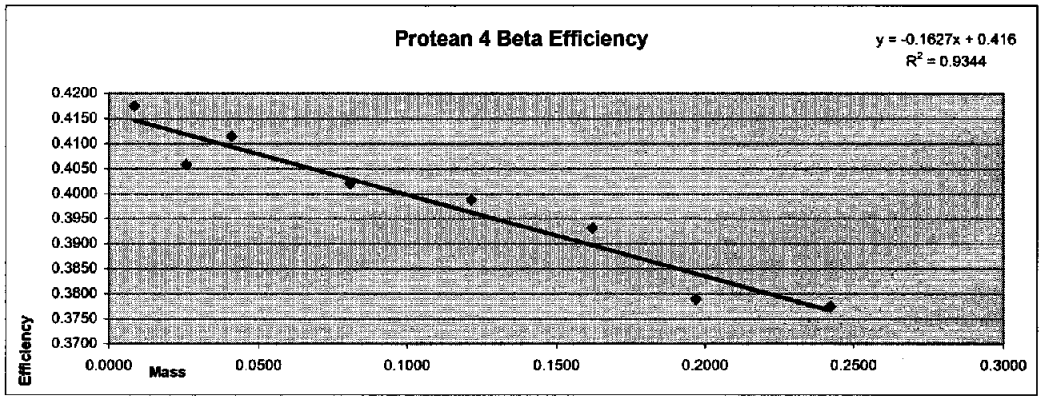
Protean 2 Mass Set 1	07/2006 Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4251	0.3976	0.4114
0.0251	0.0262	0.0257	0.4185	0.3869	0.4027
0.0412	0.0407	0.0410	0.4134	0.3995	0.4064
0.0796	0.0820	0.0808	0.3935	0.3985	0.3960
0.1212	0.1220	0.1216	0.3958	0.3952	0.3955
0.1629	0.1612	0.1621	0.3824	0.3900	0.3862
0.1996	0.1945	0.1971	0.3727	0.3792	0.3759
0.2420	0.2429	0.2425	0.3785	0.3737	0.3761



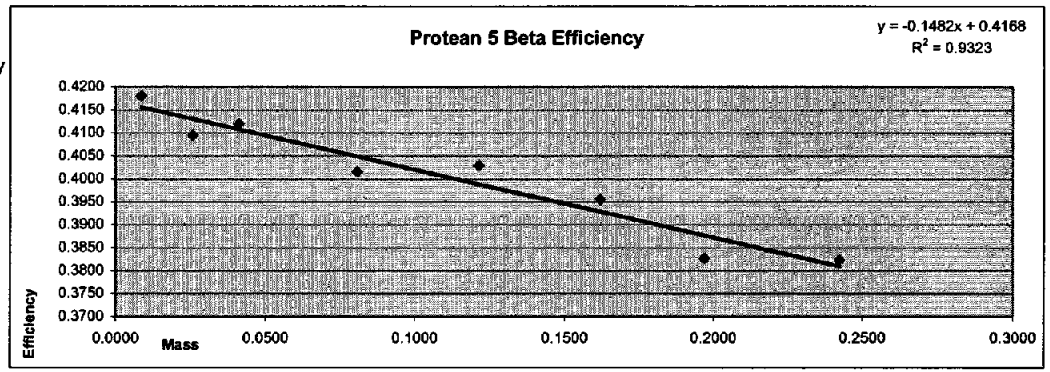
Protean 3 Mass Set 1	07/2006 Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4084	0.3914	0.3999
0.0251	0.0262	0.0257	0.4036	0.3769	0.3903
0.0412	0.0407	0.0410	0.4033	0.3850	0.3941
0.0796	0.0820	0.0808	0.3800	0.3863	0.3831
0.1212	0.1220	0.1216	0.3849	0.3865	0.3857
0.1629	0.1612	0.1621	0.3729	0.3795	0.3762
0.1996	0.1945	0.1971	0.3596	0.3666	0.3631
0.2420	0.2429	0.2425	0.3639	0.3617	0.3628



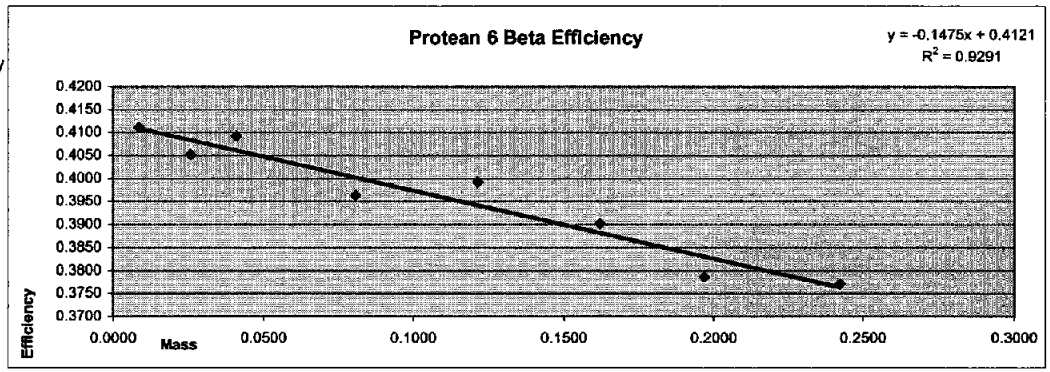
Protean 4	08/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4289	0.4061	0.4175
0.0251	0.0262	0.0257	0.4207	0.3909	0.4058
0.0412	0.0407	0.0410	0.4159	0.4071	0.4115
0.0796	0.0820	0.0808	0.4020	0.4020	0.4020
0.1212	0.1220	0.1216	0.4002	0.3974	0.3988
0.1629	0.1612	0.1621	0.3877	0.3986	0.3931
0.1996	0.1945	0.1971	0.3720	0.3859	0.3789
0.2420	0.2429	0.2425	0.3783	0.3767	0.3775



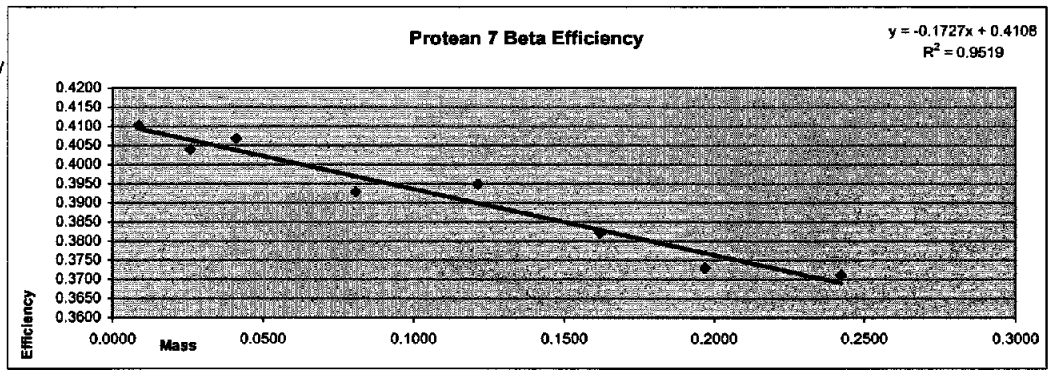
Protean 5	07/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4344	0.4016	0.4180
0.0251	0.0262	0.0257	0.4267	0.3921	0.4094
0.0412	0.0407	0.0410	0.4186	0.4053	0.4120
0.0796	0.0820	0.0808	0.4039	0.3993	0.4016
0.1212	0.1220	0.1216	0.4064	0.3993	0.4029
0.1629	0.1612	0.1621	0.3894	0.4016	0.3955
0.1996	0.1945	0.1971	0.3771	0.3882	0.3826
0.2420	0.2429	0.2425	0.3832	0.3813	0.3823



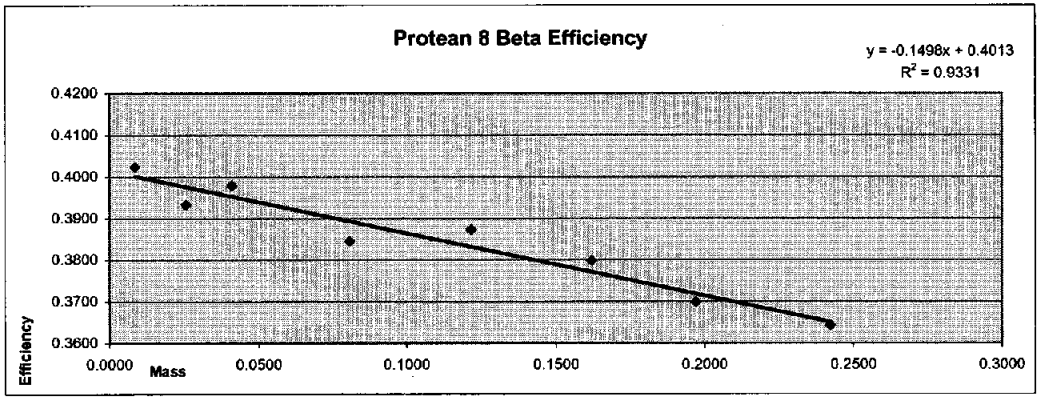
Protean 6	07/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4226	0.3996	0.4111
0.0251	0.0262	0.0257	0.4205	0.3899	0.4052
0.0412	0.0407	0.0410	0.4144	0.4040	0.4092
0.0796	0.0820	0.0808	0.3962	0.3964	0.3963
0.1212	0.1220	0.1216	0.3993	0.3992	0.3992
0.1629	0.1612	0.1621	0.3849	0.3954	0.3902
0.1996	0.1945	0.1971	0.3748	0.3824	0.3786
0.2420	0.2429	0.2425	0.3783	0.3757	0.3770



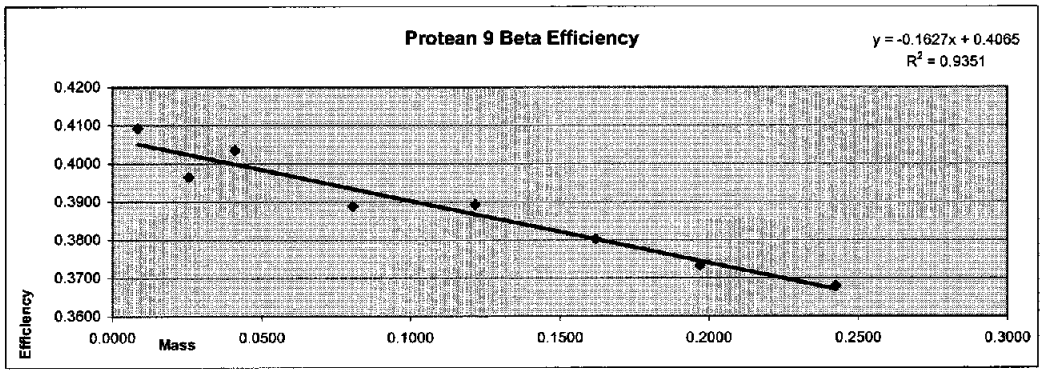
Protean 7	07/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4210	0.3994	0.4102
0.0251	0.0262	0.0257	0.4173	0.3905	0.4039
0.0412	0.0407	0.0410	0.4148	0.3988	0.4068
0.0796	0.0820	0.0808	0.3937	0.3920	0.3929
0.1212	0.1220	0.1216	0.3966	0.3930	0.3948
0.1629	0.1612	0.1621	0.3760	0.3881	0.3821
0.1996	0.1945	0.1971	0.3659	0.3801	0.3730
0.2420	0.2429	0.2425	0.3714	0.3707	0.3711



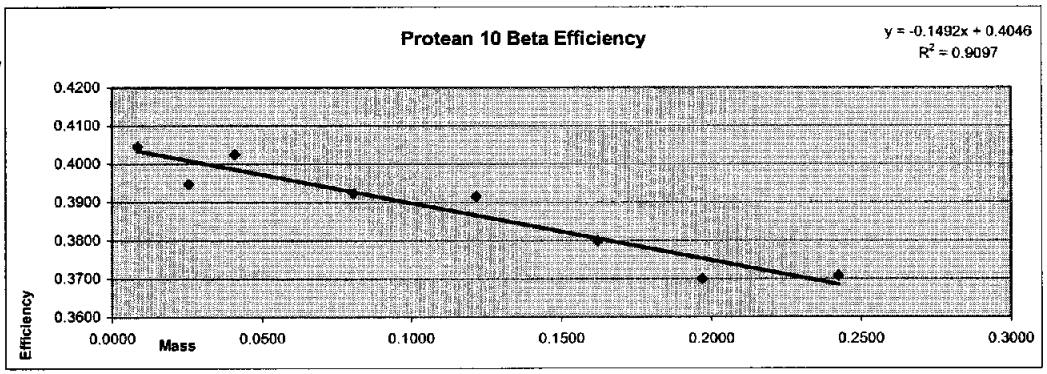
Protean 8 Mass Set 1	07/2006 Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4128	0.3919	0.4023
0.0251	0.0262	0.0257	0.4111	0.3753	0.3932
0.0412	0.0407	0.0410	0.4053	0.3904	0.3978
0.0796	0.0820	0.0808	0.3856	0.3835	0.3845
0.1212	0.1220	0.1216	0.3841	0.3904	0.3873
0.1629	0.1612	0.1621	0.3748	0.3849	0.3798
0.1996	0.1945	0.1971	0.3638	0.3759	0.3698
0.2420	0.2429	0.2425	0.3624	0.3660	0.3642



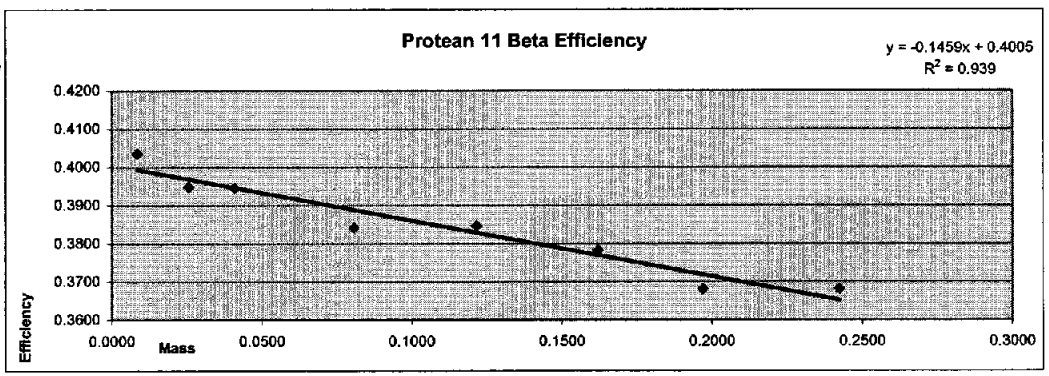
Protean 9 Mass Set 1	07/2006 Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4205	0.3981	0.4093
0.0251	0.0262	0.0257	0.4116	0.3814	0.3965
0.0412	0.0407	0.0410	0.4107	0.3963	0.4035
0.0796	0.0820	0.0808	0.3904	0.3874	0.3889
0.1212	0.1220	0.1216	0.3904	0.3881	0.3893
0.1629	0.1612	0.1621	0.3748	0.3856	0.3802
0.1996	0.1945	0.1971	0.3690	0.3777	0.3733
0.2420	0.2429	0.2425	0.3717	0.3642	0.3680



Protean 10 Mass Set 1	07/2006 Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4133	0.3957	0.4045
0.0251	0.0262	0.0257	0.4118	0.3776	0.3947
0.0412	0.0407	0.0410	0.4088	0.3962	0.4025
0.0796	0.0820	0.0808	0.3920	0.3926	0.3923
0.1212	0.1220	0.1216	0.3908	0.3921	0.3914
0.1629	0.1612	0.1621	0.3722	0.3875	0.3798
0.1996	0.1945	0.1971	0.3637	0.3761	0.3699
0.2420	0.2429	0.2425	0.3715	0.3700	0.3708

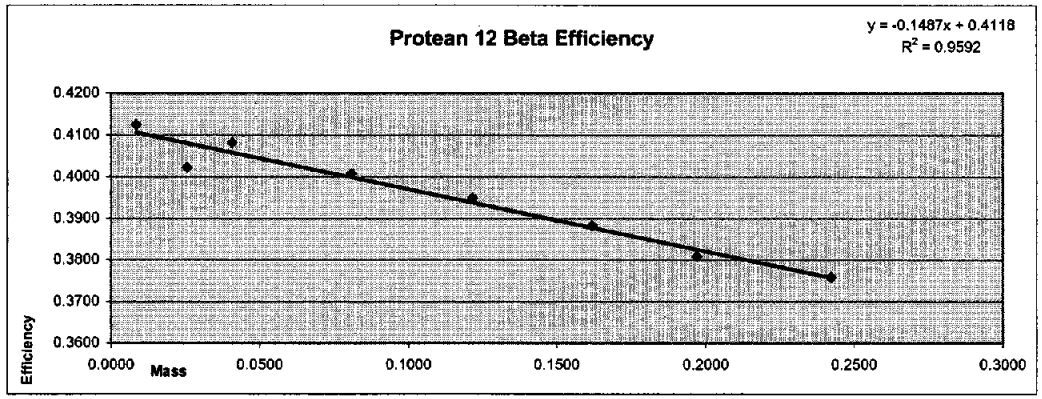


Protean 11 Mass Set 1	07/2006 Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4161	0.3910	0.4036
0.0251	0.0262	0.0257	0.4111	0.3786	0.3948
0.0412	0.0407	0.0410	0.4033	0.3857	0.3945
0.0796	0.0820	0.0808	0.3852	0.3831	0.3841
0.1212	0.1220	0.1216	0.3867	0.3824	0.3846
0.1629	0.1612	0.1621	0.3724	0.3840	0.3782
0.1996	0.1945	0.1971	0.3645	0.3715	0.3680
0.2420	0.2429	0.2425	0.3685	0.3675	0.3680



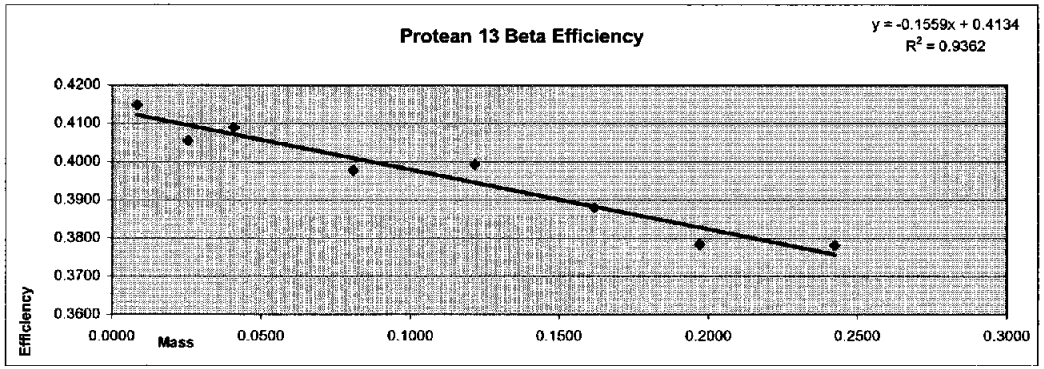
Protean 12 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4250	0.4000	0.4125
0.0251	0.0262	0.0257	0.4172	0.3872	0.4022
0.0412	0.0407	0.0410	0.4155	0.4009	0.4082
0.0796	0.0820	0.0808	0.4008	0.4008	0.4008
0.1212	0.1220	0.1216	0.3982	0.3914	0.3948
0.1629	0.1612	0.1621	0.3811	0.3953	0.3882
0.1996	0.1945	0.1971	0.3768	0.3849	0.3809
0.2420	0.2429	0.2425	0.3789	0.3729	0.3759



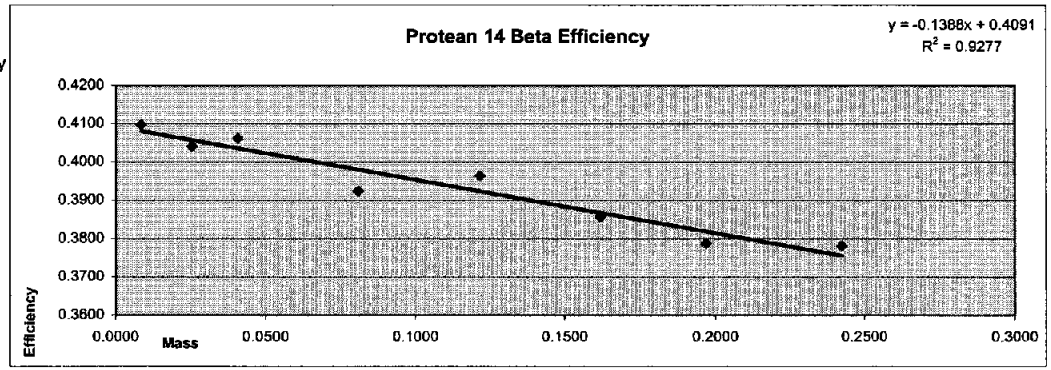
Protean 13 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4258	0.4038	0.4148
0.0251	0.0262	0.0257	0.4208	0.3901	0.4055
0.0412	0.0407	0.0410	0.4155	0.4023	0.4089
0.0796	0.0820	0.0808	0.3983	0.3972	0.3977
0.1212	0.1220	0.1216	0.3987	0.3998	0.3992
0.1629	0.1612	0.1621	0.3848	0.3911	0.3879
0.1996	0.1945	0.1971	0.3727	0.3839	0.3783
0.2420	0.2429	0.2425	0.3780	0.3781	0.3781



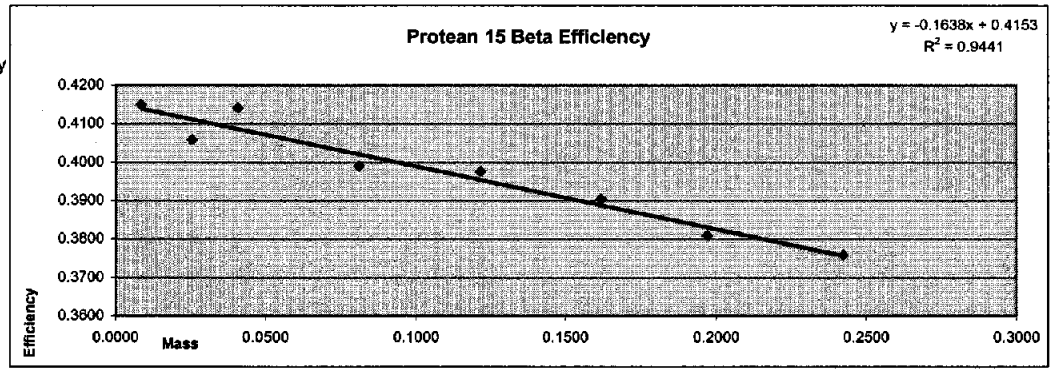
Protean 14 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4195	0.3999	0.4097
0.0251	0.0262	0.0257	0.4191	0.3890	0.4041
0.0412	0.0407	0.0410	0.4169	0.3954	0.4061
0.0796	0.0820	0.0808	0.3916	0.3933	0.3924
0.1212	0.1220	0.1216	0.3964	0.3962	0.3963
0.1629	0.1612	0.1621	0.3785	0.3926	0.3856
0.1996	0.1945	0.1971	0.3722	0.3853	0.3787
0.2420	0.2429	0.2425	0.3818	0.3744	0.3781



Protean 15 07/2006

Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4247	0.4051	0.4149
0.0251	0.0262	0.0257	0.4204	0.3912	0.4058
0.0412	0.0407	0.0410	0.4218	0.4064	0.4141
0.0796	0.0820	0.0808	0.3986	0.3994	0.3990
0.1212	0.1220	0.1216	0.3983	0.3968	0.3975
0.1629	0.1612	0.1621	0.3857	0.3950	0.3904
0.1996	0.1945	0.1971	0.3788	0.3829	0.3808
0.2420	0.2429	0.2425	0.3775	0.3740	0.3758



Beta Attenuation Protean Detector 0
Set 1 06/22,23/06

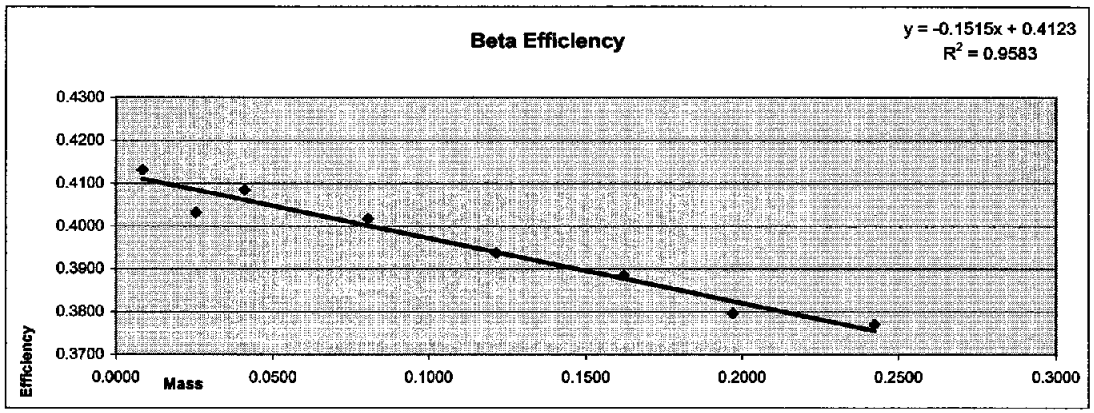
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	35028	1751.400	0.42561
B12	0.0251	20	34651	1732.550	0.42103
B13	0.0412	20	34179	1708.950	0.41530
B14	0.0796	20	33118	1655.900	0.40241
B15	0.1212	20	32464	1623.200	0.39446
B16	0.1629	20	31605	1580.250	0.38402
B17	0.1996	20	30940	1547.000	0.37594
B18	0.2420	20	31225	1561.250	0.37940

Beta Attenuation Protean Detector 0
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32968	1648.400	0.40058
B22	0.0262	20	31705	1585.250	0.38524
B23	0.0407	20	33045	1652.250	0.40152
B24	0.0820	20	32998	1649.900	0.40095
B25	0.1220	20	32342	1617.100	0.39298
B26	0.1612	20	32332	1616.600	0.39286
B27	0.1945	20	31541	1577.050	0.38324
B28	0.2429	20	30830	1541.500	0.37461

Protean 0

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
0.0089	0.0082	0.0086	0.4256	0.4006	0.4131	3.03%	-3.03%
0.0251	0.0262	0.0257	0.4210	0.3852	0.4031	4.44%	-4.44%
0.0412	0.0407	0.0410	0.4153	0.4015	0.4084	1.69%	-1.69%
0.0796	0.0820	0.0808	0.4024	0.4009	0.4017	0.18%	-0.18%
0.1212	0.1220	0.1216	0.3945	0.3930	0.3937	0.19%	-0.19%
0.1629	0.1612	0.1621	0.3840	0.3929	0.3884	-1.14%	1.14%
0.1996	0.1945	0.1971	0.3759	0.3832	0.3796	-0.96%	0.96%
0.2420	0.2429	0.2425	0.3794	0.3746	0.3770	0.64%	-0.64%



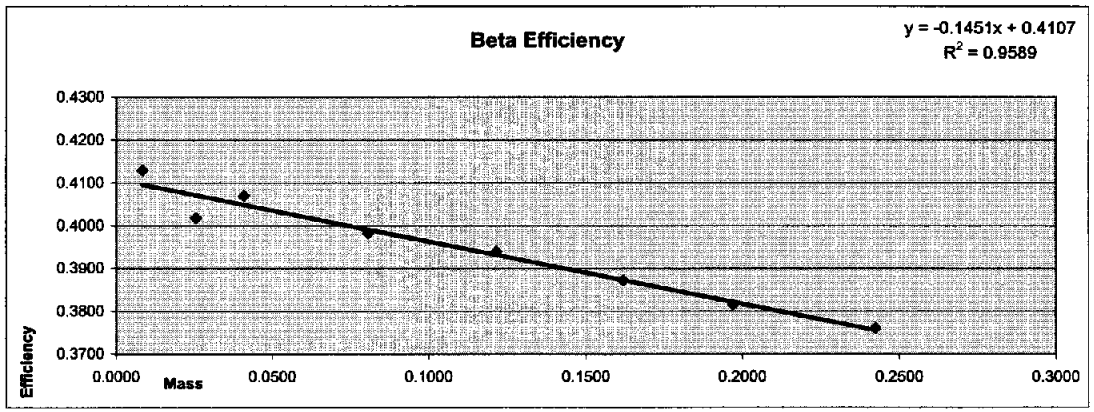
Beta Attenuation Protean Detector 1
Set 1 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34831	1741.550	0.42322
B12	0.0251	20	34375	1718.750	0.41768
B13	0.0412	20	34333	1716.650	0.41717
B14	0.0796	20	32936	1646.800	0.40019
B15	0.1212	20	32293	1614.650	0.39238
B16	0.1629	20	31130	1556.500	0.37825
B17	0.1996	20	30752	1537.600	0.37366
B18	0.2420	20	30886	1544.300	0.37529

Beta Attenuation Protean Detector 1
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	33126	1656.300	0.40250
B22	0.0262	20	31748	1587.400	0.38576
B23	0.0407	20	32648	1632.400	0.39670
B24	0.0820	20	32601	1630.050	0.39612
B25	0.1220	20	32545	1627.250	0.39544
B26	0.1612	20	32590	1629.500	0.39599
B27	0.1945	20	32044	1602.200	0.38936
B28	0.2429	20	31014	1550.700	0.37684

Protean 1 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
0.0089	0.0082	0.0086	0.4232	0.4025	0.4129	2.51%	-2.51%
0.0251	0.0262	0.0257	0.4177	0.3858	0.4017	3.97%	-3.97%
0.0412	0.0407	0.0410	0.4172	0.3967	0.4069	2.52%	-2.52%
0.0796	0.0820	0.0808	0.4002	0.3961	0.3982	0.51%	-0.51%
0.1212	0.1220	0.1216	0.3924	0.3954	0.3939	-0.39%	0.39%
0.1629	0.1612	0.1621	0.3783	0.3960	0.3871	-2.29%	2.29%
0.1996	0.1945	0.1971	0.3737	0.3894	0.3815	-2.06%	2.06%
0.2420	0.2429	0.2425	0.3753	0.3768	0.3761	-0.21%	0.21%



Beta Attenuation Protean Detector 2
Set 1 06/22,23/06

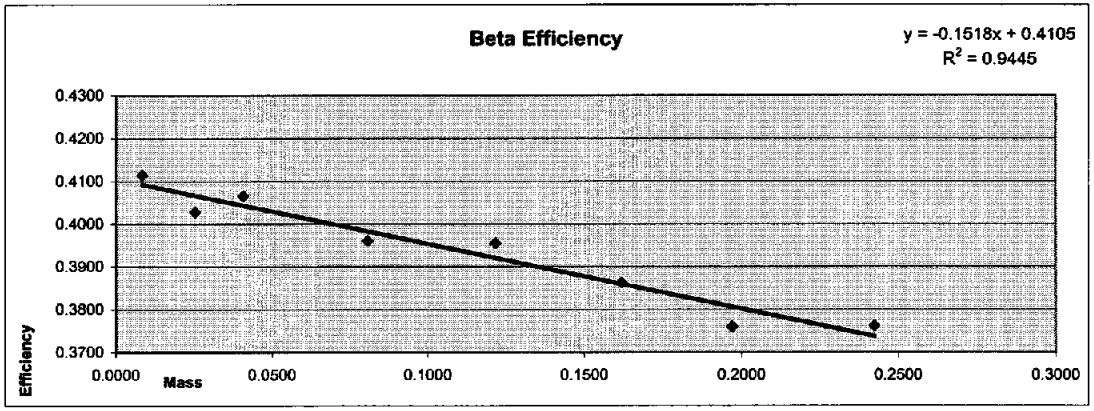
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34986	1749.300	0.42510
B12	0.0251	20	34441	1722.050	0.41848
B13	0.0412	20	34023	1701.150	0.41340
B14	0.0796	20	32388	1619.400	0.39354
B15	0.1212	20	32571	1628.550	0.39576
B16	0.1629	20	31475	1573.750	0.38244
B17	0.1996	20	30671	1533.550	0.37267
B18	0.2420	20	31153	1557.650	0.37853

Beta Attenuation Protean Detector 2
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32726	1636.300	0.39764
B22	0.0262	20	31842	1592.100	0.38690
B23	0.0407	20	32877	1643.850	0.39948
B24	0.0820	20	32799	1639.950	0.39853
B25	0.1220	20	32528	1626.400	0.39524
B26	0.1612	20	32096	1604.800	0.38999
B27	0.1945	20	31210	1560.500	0.37922
B28	0.2429	20	30757	1537.850	0.37372

Protean 2

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
0.0089	0.0082	0.0086	0.4251	0.3976	0.4114	3.34%	-3.34%
0.0251	0.0262	0.0257	0.4185	0.3869	0.4027	3.92%	-3.92%
0.0412	0.0407	0.0410	0.4134	0.3995	0.4064	1.71%	-1.71%
0.0796	0.0820	0.0808	0.3935	0.3985	0.3960	-0.63%	0.63%
0.1212	0.1220	0.1216	0.3958	0.3952	0.3955	0.07%	-0.07%
0.1629	0.1612	0.1621	0.3824	0.3900	0.3862	-0.98%	0.98%
0.1996	0.1945	0.1971	0.3727	0.3792	0.3759	-0.87%	0.87%
0.2420	0.2429	0.2425	0.3785	0.3737	0.3761	0.64%	-0.64%



Beta Attenuation Protean Detector 3
Set 1 06/22,23/06

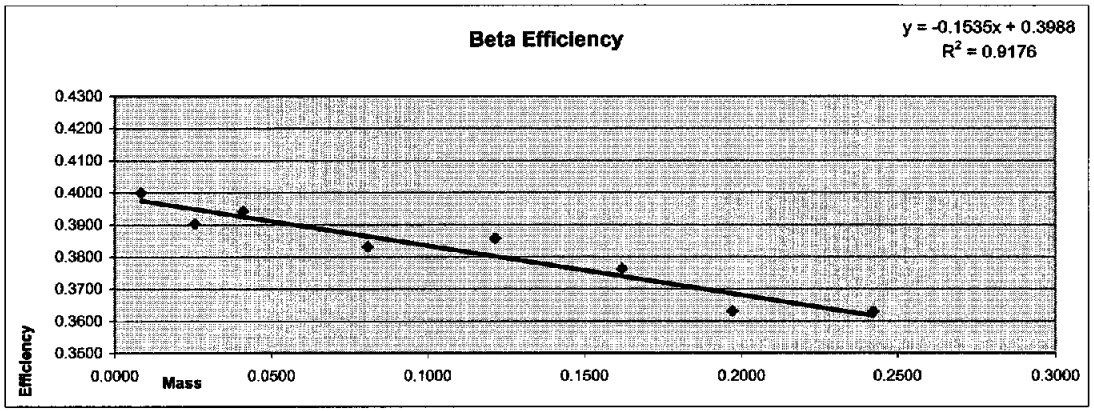
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	33611	1680.550	0.40840
B12	0.0251	20	33220	1661.000	0.40365
B13	0.0412	20	33189	1659.450	0.40327
B14	0.0796	20	31272	1563.600	0.37998
B15	0.1212	20	31675	1583.750	0.38487
B16	0.1629	20	30688	1534.400	0.37288
B17	0.1996	20	29594	1479.700	0.35959
B18	0.2420	20	29951	1497.550	0.36392

Beta Attenuation Protean Detector 3
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32213	1610.650	0.39141
B22	0.0262	20	31017	1550.850	0.37688
B23	0.0407	20	31683	1584.150	0.38497
B24	0.0820	20	31789	1589.450	0.38626
B25	0.1220	20	31812	1590.600	0.38654
B26	0.1612	20	31234	1561.700	0.37951
B27	0.1945	20	30172	1508.600	0.36661
B28	0.2429	20	29771	1488.550	0.36174

Protean 3

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
0.0089	0.0082	0.0086	0.4084	0.3914	0.3999	2.12%	-2.12%
0.0251	0.0262	0.0257	0.4036	0.3769	0.3903	3.43%	-3.43%
0.0412	0.0407	0.0410	0.4033	0.3850	0.3941	2.32%	-2.32%
0.0796	0.0820	0.0808	0.3800	0.3863	0.3831	-0.82%	0.82%
0.1212	0.1220	0.1216	0.3849	0.3865	0.3857	-0.22%	0.22%
0.1629	0.1612	0.1621	0.3729	0.3795	0.3762	-0.88%	0.88%
0.1996	0.1945	0.1971	0.3596	0.3666	0.3631	-0.97%	0.97%
0.2420	0.2429	0.2425	0.3639	0.3617	0.3628	0.30%	-0.30%



Beta Attenuation Protean Detector 4
Set 1 08_06

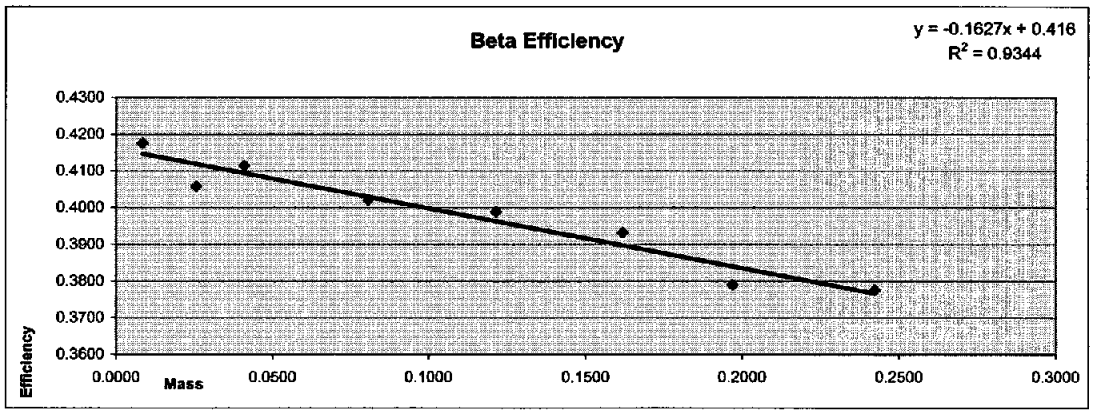
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4104.67 CPM	Sr-90 Eff
B11	0.0089	20	35206	1760.300	0.42885
B12	0.0251	20	34537	1726.850	0.42070
B13	0.0412	20	34140	1707.000	0.41587
B14	0.0796	20	33005	1650.250	0.40204
B15	0.1212	20	32857	1642.850	0.40024
B16	0.1629	20	31824	1591.200	0.38766
B17	0.1996	20	30538	1526.900	0.37199
B18	0.2420	20	31060	1553.000	0.37835

Beta Attenuation Protean Detector 4
Set 2 08_06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4104.67 CPM	Sr-90 Eff
B21	0.0082	20	33342	1667.100	0.40615
B22	0.0262	20	32089	1604.450	0.39088
B23	0.0407	20	33418	1670.900	0.40707
B24	0.0820	20	33002	1650.100	0.40201
B25	0.1220	20	32625	1631.250	0.39741
B26	0.1612	20	32719	1635.950	0.39856
B27	0.1945	20	31679	1583.950	0.38589
B28	0.2429	20	30927	1546.350	0.37673

Protean 4

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
0.0089	0.0082	0.0086	0.4289	0.4061	0.4175	2.72%	-2.72%
0.0251	0.0262	0.0257	0.4207	0.3909	0.4058	3.67%	-3.67%
0.0412	0.0407	0.0410	0.4159	0.4071	0.4115	1.07%	-1.07%
0.0796	0.0820	0.0808	0.4020	0.4020	0.4020	0.00%	0.00%
0.1212	0.1220	0.1216	0.4002	0.3974	0.3988	0.35%	-0.35%
0.1629	0.1612	0.1621	0.3877	0.3986	0.3931	-1.39%	1.39%
0.1996	0.1945	0.1971	0.3720	0.3859	0.3789	-1.83%	1.83%
0.2420	0.2429	0.2425	0.3783	0.3767	0.3775	0.21%	-0.21%



Beta Attenuation Protean Detector 5
Set 1 06/22,23/06

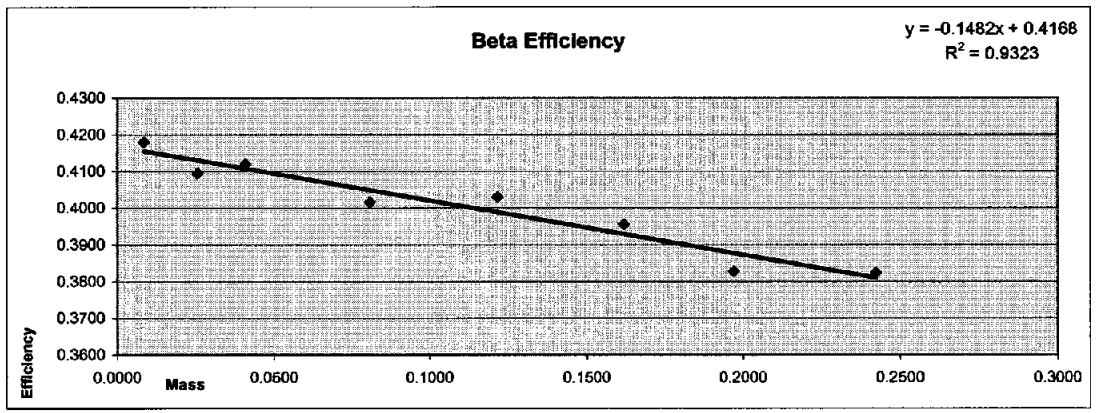
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	35753	1787.650	0.43442
B12	0.0251	20	35121	1756.050	0.42674
B13	0.0412	20	34452	1722.600	0.41861
B14	0.0796	20	33245	1662.250	0.40395
B15	0.1212	20	33450	1672.500	0.40644
B16	0.1629	20	32049	1602.450	0.38942
B17	0.1996	20	31038	1551.900	0.37713
B18	0.2420	20	31536	1576.800	0.38318

Beta Attenuation Protean Detector 5
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	33052	1652.600	0.40160
B22	0.0262	20	32273	1613.650	0.39214
B23	0.0407	20	33356	1667.800	0.40530
B24	0.0820	20	32860	1643.000	0.39927
B25	0.1220	20	32866	1643.300	0.39934
B26	0.1612	20	33050	1652.500	0.40158
B27	0.1945	20	31946	1597.300	0.38817
B28	0.2429	20	31383	1569.150	0.38132

Protean 5

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
0.0089	0.0082	0.0086	0.4344	0.4016	0.4180	3.93%	-3.93%
0.0251	0.0262	0.0257	0.4267	0.3921	0.4094	4.23%	-4.23%
0.0412	0.0407	0.0410	0.4186	0.4053	0.4120	1.62%	-1.62%
0.0796	0.0820	0.0808	0.4039	0.3993	0.4016	0.58%	-0.58%
0.1212	0.1220	0.1216	0.4064	0.3993	0.4029	0.88%	-0.88%
0.1629	0.1612	0.1621	0.3894	0.4016	0.3955	-1.54%	1.54%
0.1996	0.1945	0.1971	0.3771	0.3882	0.3826	-1.44%	1.44%
0.2420	0.2429	0.2425	0.3832	0.3813	0.3823	0.24%	-0.24%



Beta Attenuation Protean Detector 6
Set 1 06/22,23/06

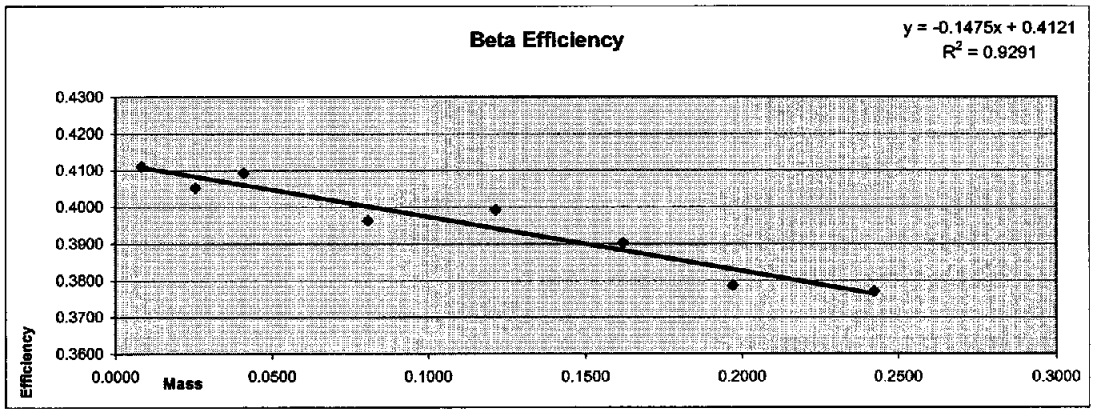
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34780	1739.000	0.42260
B12	0.0251	20	34607	1730.350	0.42050
B13	0.0412	20	34108	1705.400	0.41443
B14	0.0796	20	32606	1630.300	0.39618
B15	0.1212	20	32861	1643.050	0.39928
B16	0.1629	20	31678	1583.900	0.38491
B17	0.1996	20	30850	1542.500	0.37485
B18	0.2420	20	31135	1556.750	0.37831

Beta Attenuation Protean Detector 6
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32885	1644.250	0.39957
B22	0.0262	20	32090	1604.500	0.38991
B23	0.0407	20	33248	1662.400	0.40399
B24	0.0820	20	32622	1631.100	0.39638
B25	0.1220	20	32855	1642.750	0.39921
B26	0.1612	20	32544	1627.200	0.39543
B27	0.1945	20	31469	1573.450	0.38237
B28	0.2429	20	30922	1546.100	0.37572

Protean 6

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
0.0089	0.0082	0.0086	0.4226	0.3996	0.4111	2.80%	-2.80%
0.0251	0.0262	0.0257	0.4205	0.3899	0.4052	3.77%	-3.77%
0.0412	0.0407	0.0410	0.4144	0.4040	0.4092	1.28%	-1.28%
0.0796	0.0820	0.0808	0.3962	0.3964	0.3963	-0.02%	0.02%
0.1212	0.1220	0.1216	0.3993	0.3992	0.3992	0.01%	-0.01%
0.1629	0.1612	0.1621	0.3849	0.3954	0.3902	-1.35%	1.35%
0.1996	0.1945	0.1971	0.3748	0.3824	0.3786	-0.99%	0.99%
0.2420	0.2429	0.2425	0.3783	0.3757	0.3770	0.34%	-0.34%



Beta Attenuation Protean Detector 7
Set 1 06/22,23/06

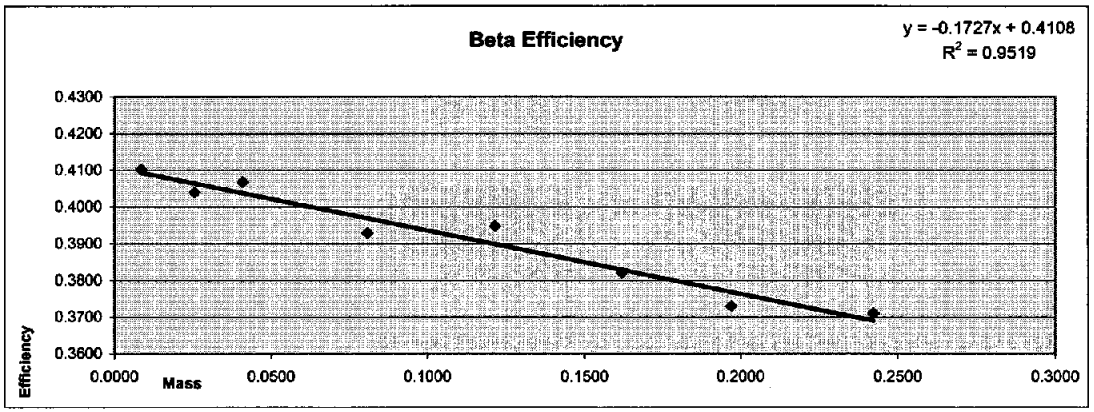
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34645	1732.250	0.42096
B12	0.0251	20	34347	1717.350	0.41734
B13	0.0412	20	34138	1706.900	0.41480
B14	0.0796	20	32404	1620.200	0.39373
B15	0.1212	20	32640	1632.000	0.39660
B16	0.1629	20	30947	1547.350	0.37603
B17	0.1996	20	30110	1505.500	0.36586
B18	0.2420	20	30567	1528.350	0.37141

Beta Attenuation Protean Detector 7
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32871	1643.550	0.39940
B22	0.0262	20	32138	1606.900	0.39050
B23	0.0407	20	32818	1640.900	0.39876
B24	0.0820	20	32260	1613.000	0.39198
B25	0.1220	20	32348	1617.400	0.39305
B26	0.1612	20	31944	1597.200	0.38814
B27	0.1945	20	31279	1563.950	0.38006
B28	0.2429	20	30512	1525.600	0.37074

Protean 7

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
0.0089	0.0082	0.0086	0.4210	0.3994	0.4102	2.63%	-2.63%
0.0251	0.0262	0.0257	0.4173	0.3905	0.4039	3.32%	-3.32%
0.0412	0.0407	0.0410	0.4148	0.3988	0.4068	1.97%	-1.97%
0.0796	0.0820	0.0808	0.3937	0.3920	0.3929	0.22%	-0.22%
0.1212	0.1220	0.1216	0.3966	0.3930	0.3948	0.45%	-0.45%
0.1629	0.1612	0.1621	0.3760	0.3881	0.3821	-1.59%	1.59%
0.1996	0.1945	0.1971	0.3659	0.3801	0.3730	-1.90%	1.90%
0.2420	0.2429	0.2425	0.3714	0.3707	0.3711	0.09%	-0.09%



Beta Attenuation Protean Detector 8
Set 1 06/22,23/06

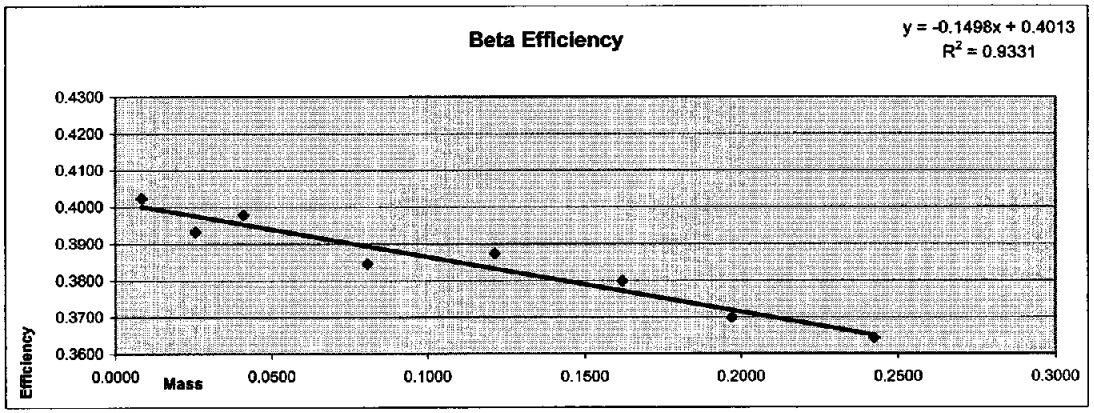
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	33974	1698.700	0.41281
B12	0.0251	20	33833	1691.650	0.41109
B13	0.0412	20	33358	1667.900	0.40532
B14	0.0796	20	31732	1586.600	0.38557
B15	0.1212	20	31615	1580.750	0.38414
B16	0.1629	20	30842	1542.100	0.37475
B17	0.1996	20	29939	1496.950	0.36378
B18	0.2420	20	29829	1491.450	0.36244

Beta Attenuation Protean Detector 8
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32250	1612.500	0.39186
B22	0.0262	20	30888	1544.400	0.37531
B23	0.0407	20	32126	1606.300	0.39035
B24	0.0820	20	31560	1578.000	0.38348
B25	0.1220	20	32128	1606.400	0.39038
B26	0.1612	20	31675	1583.750	0.38487
B27	0.1945	20	30934	1546.700	0.37587
B28	0.2429	20	30123	1506.150	0.36601

Protean 8

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
0.0089	0.0082	0.0086	0.4128	0.3919	0.4023	2.60%	-2.60%
0.0251	0.0262	0.0257	0.4111	0.3753	0.3932	4.55%	-4.55%
0.0412	0.0407	0.0410	0.4053	0.3904	0.3978	1.88%	-1.88%
0.0796	0.0820	0.0808	0.3856	0.3835	0.3845	0.27%	-0.27%
0.1212	0.1220	0.1216	0.3841	0.3904	0.3873	-0.80%	0.80%
0.1629	0.1612	0.1621	0.3748	0.3849	0.3798	-1.33%	1.33%
0.1996	0.1945	0.1971	0.3638	0.3759	0.3698	-1.63%	1.63%
0.2420	0.2429	0.2425	0.3624	0.3660	0.3642	-0.49%	0.49%



Beta Attenuation Protean Detector 9
Set 1 06/22,23/06

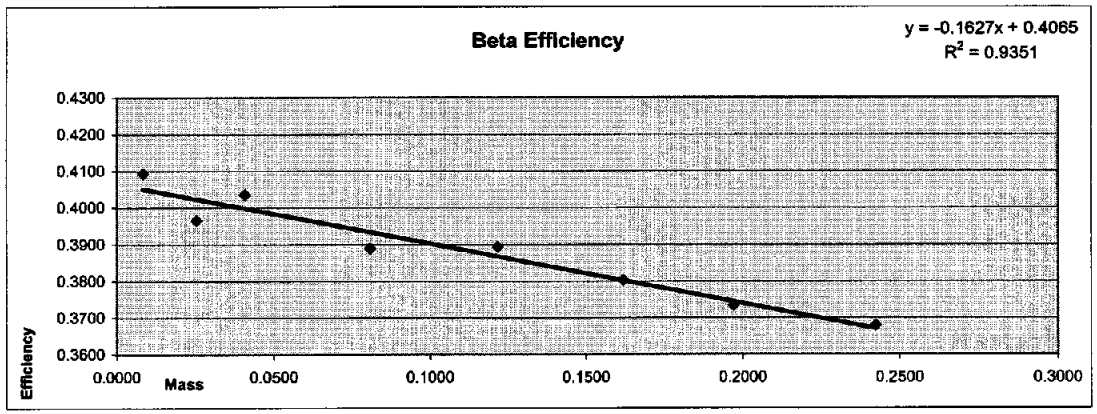
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34606	1730.300	0.42049
B12	0.0251	20	33878	1693.900	0.41164
B13	0.0412	20	33803	1690.150	0.41073
B14	0.0796	20	32126	1606.300	0.39035
B15	0.1212	20	32133	1606.650	0.39044
B16	0.1629	20	30848	1542.400	0.37482
B17	0.1996	20	30369	1518.450	0.36900
B18	0.2420	20	30593	1529.650	0.37173

Beta Attenuation Protean Detector 9
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32767	1638.350	0.39814
B22	0.0262	20	31386	1569.300	0.38136
B23	0.0407	20	32615	1630.750	0.39629
B24	0.0820	20	31883	1594.150	0.38740
B25	0.1220	20	31942	1597.100	0.38812
B26	0.1612	20	31732	1586.600	0.38557
B27	0.1945	20	31083	1554.150	0.37768
B28	0.2429	20	29972	1498.600	0.36418

Protean 9

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
0.0089	0.0082	0.0086	0.4205	0.3981	0.4093	2.73%	-2.73%
0.0251	0.0262	0.0257	0.4116	0.3814	0.3965	3.82%	-3.82%
0.0412	0.0407	0.0410	0.4107	0.3963	0.4035	1.79%	-1.79%
0.0796	0.0820	0.0808	0.3904	0.3874	0.3889	0.38%	-0.38%
0.1212	0.1220	0.1216	0.3904	0.3881	0.3893	0.30%	-0.30%
0.1629	0.1612	0.1621	0.3748	0.3856	0.3802	-1.41%	1.41%
0.1996	0.1945	0.1971	0.3690	0.3777	0.3733	-1.16%	1.16%
0.2420	0.2429	0.2425	0.3717	0.3642	0.3680	1.03%	-1.03%



Beta Attenuation Protean Detector 10
Set 1 06/22,23/06

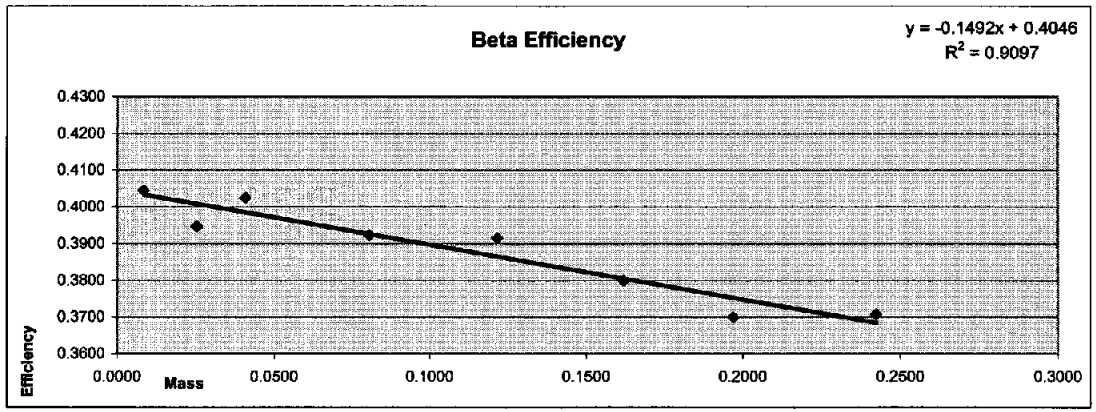
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34012	1700.600	0.41327
B12	0.0251	20	33890	1694.500	0.41179
B13	0.0412	20	33646	1682.300	0.40882
B14	0.0796	20	32258	1612.900	0.39196
B15	0.1212	20	32165	1608.250	0.39083
B16	0.1629	20	30633	1531.650	0.37221
B17	0.1996	20	29935	1496.750	0.36373
B18	0.2420	20	30576	1528.800	0.37152

Beta Attenuation Protean Detector 10
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32566	1628.300	0.39570
B22	0.0262	20	31079	1553.950	0.37763
B23	0.0407	20	32604	1630.200	0.39616
B24	0.0820	20	32314	1615.700	0.39264
B25	0.1220	20	32267	1613.350	0.39207
B26	0.1612	20	31889	1594.450	0.38747
B27	0.1945	20	30955	1547.750	0.37612
B28	0.2429	20	30450	1522.500	0.36999

Protean 10

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
0.0089	0.0082	0.0086	0.4133	0.3957	0.4045	2.17%	-2.17%
0.0251	0.0262	0.0257	0.4118	0.3776	0.3947	4.33%	-4.33%
0.0412	0.0407	0.0410	0.4088	0.3962	0.4025	1.57%	-1.57%
0.0796	0.0820	0.0808	0.3920	0.3926	0.3923	-0.09%	0.09%
0.1212	0.1220	0.1216	0.3908	0.3921	0.3914	-0.16%	0.16%
0.1629	0.1612	0.1621	0.3722	0.3875	0.3798	-2.01%	2.01%
0.1996	0.1945	0.1971	0.3637	0.3761	0.3699	-1.68%	1.68%
0.2420	0.2429	0.2425	0.3715	0.3700	0.3708	0.21%	-0.21%



Beta Attenuation Protean Detector 11
Set 1 06/22,23/06

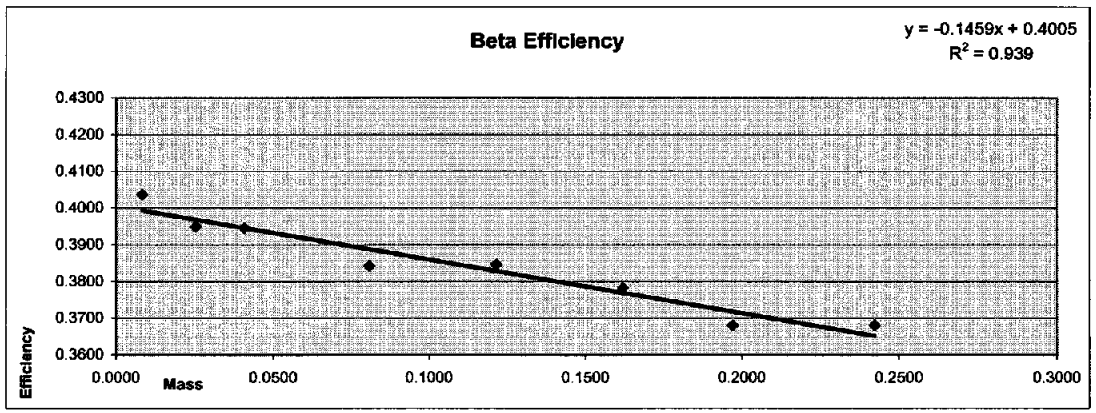
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34249	1712.450	0.41615
B12	0.0251	20	33831	1691.550	0.41107
B13	0.0412	20	33190	1659.500	0.40328
B14	0.0796	20	31698	1584.900	0.38515
B15	0.1212	20	31828	1591.400	0.38673
B16	0.1629	20	30646	1532.300	0.37237
B17	0.1996	20	29999	1499.950	0.36451
B18	0.2420	20	30324	1516.200	0.36846

Beta Attenuation Protean Detector 11
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32177	1608.850	0.39097
B22	0.0262	20	31161	1558.050	0.37863
B23	0.0407	20	31747	1587.350	0.38575
B24	0.0820	20	31527	1576.350	0.38307
B25	0.1220	20	31471	1573.550	0.38239
B26	0.1612	20	31600	1580.000	0.38396
B27	0.1945	20	30576	1528.800	0.37152
B28	0.2429	20	30247	1512.350	0.36752

Protean 11

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
0.0089	0.0082	0.0086	0.4161	0.3910	0.4036	3.12%	-3.12%
0.0251	0.0262	0.0257	0.4111	0.3786	0.3948	4.11%	-4.11%
0.0412	0.0407	0.0410	0.4033	0.3857	0.3945	2.22%	-2.22%
0.0796	0.0820	0.0808	0.3852	0.3831	0.3841	0.27%	-0.27%
0.1212	0.1220	0.1216	0.3867	0.3824	0.3846	0.56%	-0.56%
0.1629	0.1612	0.1621	0.3724	0.3840	0.3782	-1.53%	1.53%
0.1996	0.1945	0.1971	0.3645	0.3715	0.3680	-0.95%	0.95%
0.2420	0.2429	0.2425	0.3685	0.3675	0.3680	0.13%	-0.13%



Beta Attenuation Protean Detector 12
Set 1 06/22,23/06

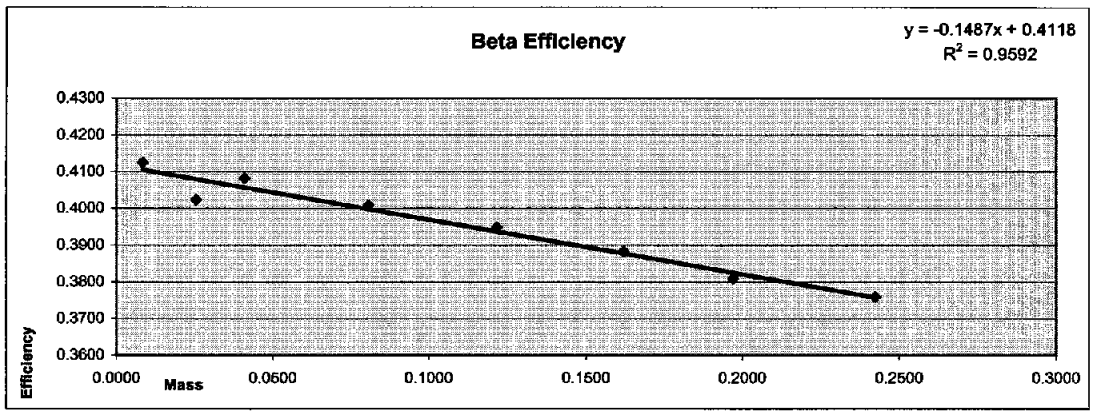
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34976	1748.800	0.42498
B12	0.0251	20	34339	1716.950	0.41724
B13	0.0412	20	34192	1709.600	0.41546
B14	0.0796	20	32982	1649.100	0.40075
B15	0.1212	20	32769	1638.450	0.39817
B16	0.1629	20	31366	1568.300	0.38112
B17	0.1996	20	31012	1550.600	0.37682
B18	0.2420	20	31183	1559.150	0.37889

Beta Attenuation Protean Detector 12
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32919	1645.950	0.39999
B22	0.0262	20	31869	1593.450	0.38723
B23	0.0407	20	32993	1649.650	0.40089
B24	0.0820	20	32984	1649.200	0.40078
B25	0.1220	20	32214	1610.700	0.39142
B26	0.1612	20	32533	1626.650	0.39530
B27	0.1945	20	31679	1583.950	0.38492
B28	0.2429	20	30686	1534.300	0.37286

Protean 12

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
0.0089	0.0082	0.0086	0.4250	0.4000	0.4125	3.03%	-3.03%
0.0251	0.0262	0.0257	0.4172	0.3872	0.4022	3.73%	-3.73%
0.0412	0.0407	0.0410	0.4155	0.4009	0.4082	1.78%	-1.78%
0.0796	0.0820	0.0808	0.4008	0.4008	0.4008	0.00%	0.00%
0.1212	0.1220	0.1216	0.3982	0.3914	0.3948	0.85%	-0.85%
0.1629	0.1612	0.1621	0.3811	0.3953	0.3882	-1.83%	1.83%
0.1996	0.1945	0.1971	0.3768	0.3849	0.3809	-1.06%	1.06%
0.2420	0.2429	0.2425	0.3789	0.3729	0.3759	0.80%	-0.80%



Beta Attenuation Protean Detector 13
Set 1 06/22,23/06

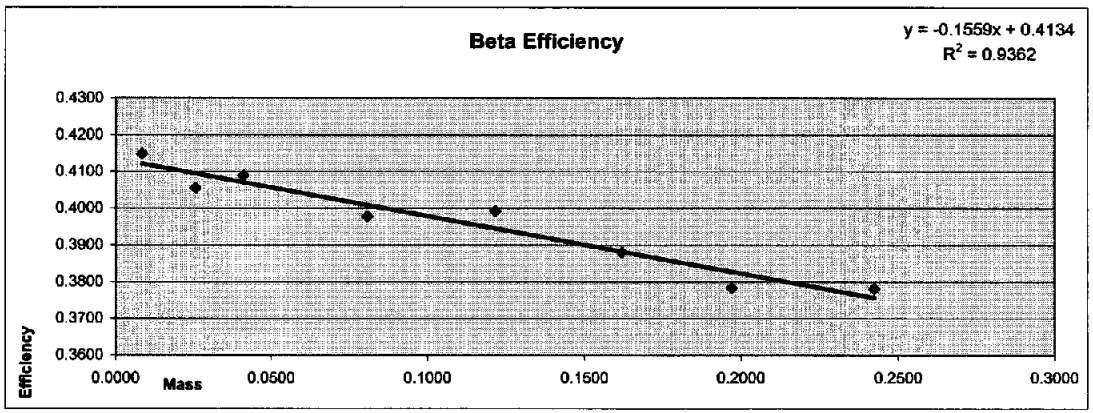
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	35047	1752.350	0.42584
B12	0.0251	20	34634	1731.700	0.42083
B13	0.0412	20	34198	1709.900	0.41553
B14	0.0796	20	32778	1638.900	0.39827
B15	0.1212	20	32809	1640.450	0.39865
B16	0.1629	20	31669	1583.450	0.38480
B17	0.1996	20	30673	1533.650	0.37270
B18	0.2420	20	31110	1555.500	0.37801

Beta Attenuation Protean Detector 13
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	33230	1661.500	0.40377
B22	0.0262	20	32107	1605.350	0.39012
B23	0.0407	20	33113	1655.650	0.40235
B24	0.0820	20	32688	1634.400	0.39718
B25	0.1220	20	32906	1645.300	0.39983
B26	0.1612	20	32187	1609.350	0.39109
B27	0.1945	20	31593	1579.650	0.38388
B28	0.2429	20	31119	1555.950	0.37812

Protean 13

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
0.0089	0.0082	0.0086	0.4258	0.4038	0.4148	2.66%	-2.66%
0.0251	0.0262	0.0257	0.4208	0.3901	0.4055	3.79%	-3.79%
0.0412	0.0407	0.0410	0.4155	0.4023	0.4089	1.61%	-1.61%
0.0796	0.0820	0.0808	0.3983	0.3972	0.3977	0.14%	-0.14%
0.1212	0.1220	0.1216	0.3987	0.3998	0.3992	-0.15%	0.15%
0.1629	0.1612	0.1621	0.3848	0.3911	0.3879	-0.81%	0.81%
0.1996	0.1945	0.1971	0.3727	0.3839	0.3783	-1.48%	1.48%
0.2420	0.2429	0.2425	0.3780	0.3781	0.3781	-0.01%	0.01%



Beta Attenuation Protean Detector 14
Set 1 06/22,23/06

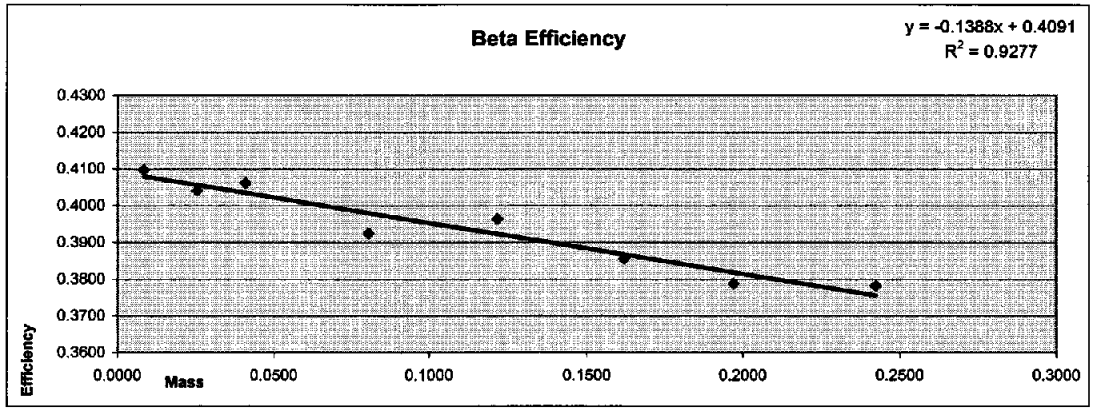
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34522	1726.100	0.41947
B12	0.0251	20	34494	1724.700	0.41913
B13	0.0412	20	34309	1715.450	0.41688
B14	0.0796	20	32225	1611.250	0.39156
B15	0.1212	20	32625	1631.250	0.39642
B16	0.1629	20	31152	1557.600	0.37852
B17	0.1996	20	30632	1531.600	0.37220
B18	0.2420	20	31425	1571.250	0.38183

Beta Attenuation Protean Detector 14
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	32915	1645.750	0.39994
B22	0.0262	20	32013	1600.650	0.38898
B23	0.0407	20	32540	1627.000	0.39538
B24	0.0820	20	32367	1618.350	0.39328
B25	0.1220	20	32609	1630.450	0.39622
B26	0.1612	20	32312	1615.600	0.39261
B27	0.1945	20	31710	1585.500	0.38530
B28	0.2429	20	30810	1540.500	0.37436

Protean 14

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
0.0089	0.0082	0.0086	0.4195	0.3999	0.4097	2.38%	-2.38%
0.0251	0.0262	0.0257	0.4191	0.3890	0.4041	3.73%	-3.73%
0.0412	0.0407	0.0410	0.4169	0.3954	0.4061	2.65%	-2.65%
0.0796	0.0820	0.0808	0.3916	0.3933	0.3924	-0.22%	0.22%
0.1212	0.1220	0.1216	0.3964	0.3962	0.3963	0.02%	-0.02%
0.1629	0.1612	0.1621	0.3785	0.3926	0.3856	-1.83%	1.83%
0.1996	0.1945	0.1971	0.3722	0.3853	0.3787	-1.73%	1.73%
0.2420	0.2429	0.2425	0.3818	0.3744	0.3781	0.99%	-0.99%



Beta Attenuation Protean Detector 15
Set 1 06/22,23/06

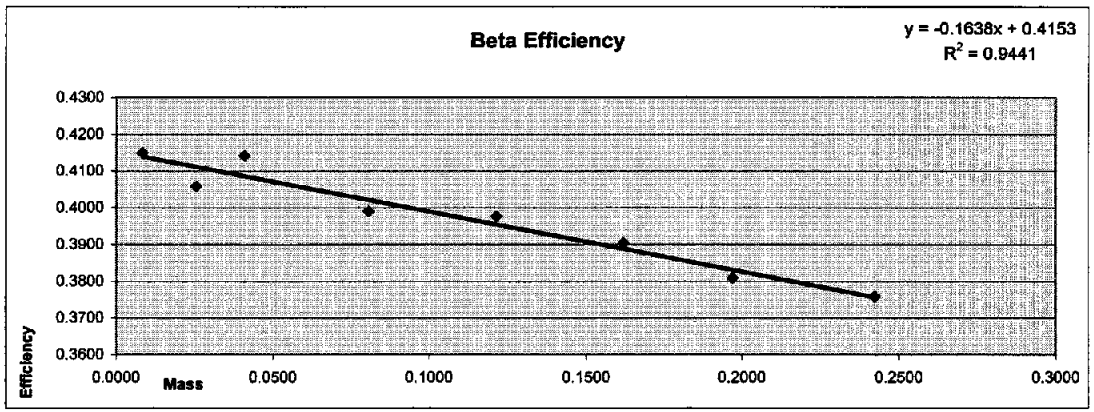
Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B11	0.0089	20	34953	1747.650	0.42470
B12	0.0251	20	34598	1729.900	0.42039
B13	0.0412	20	34718	1735.900	0.42185
B14	0.0796	20	32805	1640.250	0.39860
B15	0.1212	20	32777	1638.850	0.39826
B16	0.1629	20	31746	1587.300	0.38574
B17	0.1996	20	31172	1558.600	0.37876
B18	0.2420	20	31068	1553.400	0.37750

Beta Attenuation Protean Detector 15
Set 2 06/22,23/06

Std ID	Sample Wt	Count Time	Beta Counts	DPM 4115 CPM	Sr-90 Eff
B21	0.0082	20	33340	1667.000	0.40510
B22	0.0262	20	32195	1609.750	0.39119
B23	0.0407	20	33444	1672.200	0.40637
B24	0.0820	20	32869	1643.450	0.39938
B25	0.1220	20	32657	1632.850	0.39680
B26	0.1612	20	32506	1625.300	0.39497
B27	0.1945	20	31515	1575.750	0.38293
B28	0.2429	20	30784	1539.200	0.37405

Protean 15

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
0.0089	0.0082	0.0086	0.4247	0.4051	0.4149	2.36%	-2.36%
0.0251	0.0262	0.0257	0.4204	0.3912	0.4058	3.60%	-3.60%
0.0412	0.0407	0.0410	0.4218	0.4064	0.4141	1.87%	-1.87%
0.0796	0.0820	0.0808	0.3986	0.3994	0.3990	-0.10%	0.10%
0.1212	0.1220	0.1216	0.3983	0.3968	0.3975	0.18%	-0.18%
0.1629	0.1612	0.1621	0.3857	0.3950	0.3904	-1.18%	1.18%
0.1996	0.1945	0.1971	0.3788	0.3829	0.3808	-0.55%	0.55%
0.2420	0.2429	0.2425	0.3775	0.3740	0.3758	0.46%	-0.46%



SEVERN TRENT STL

Voltage Plateaus

and

Discriminator Settings

Unit #1

MPC 9604 FACTORY PERFORMANCE EVALUATION

Factory performed tests for Instrument Serial Number: 233126-BO

Voltage Settings

Alpha & Beta Voltage 1515

Alpha Only Voltage 705

ULD Settings

A 7 C 7

B 7 D 7

Efficiencies: DETECTOR A

Sr/y 90 56.08 %

Tc-99 36.544 %

Ni-63 16.2 %

Th-230 @ A/B Voltage 24.895 %

Th-230 @ A only Voltage 22.403 %

Efficiencies: DETECTOR B

Sr/y 90 55.438 %

Tc-99 36.418 %

Ni-63 15.62 %

Th-230 @ A/B Voltage 24.341 %

Th-230 @ A only Voltage 22.350 %

Efficiencies: DETECTOR C

Sr/y 90 56.114 %

Tc-99 36.527 %

Ni-63 15.9 %

Th-230 @ A/B Voltage 24.466 %

Th-230 @ A only Voltage 22.627 %

Efficiencies: DETECTOR D

Sr/y 90 53.276 %

Tc-99 34.957 %

Ni-63 15.78 %

Th-230 @ A/B Voltage 24.717 %

Th-230 @ A only Voltage 23.019 %

Backgrounds

Detector A:

Alpha Background 0.07
Beta Background 0.64

Detector B:

Alpha Background 0.05
Beta Background 0.52

Detector C:

Alpha Background 0.06
Beta Background 0.47

Detector D:

Alpha Background 0.05
Beta Background 0.51

Background Count Time was 1000 Minutes.

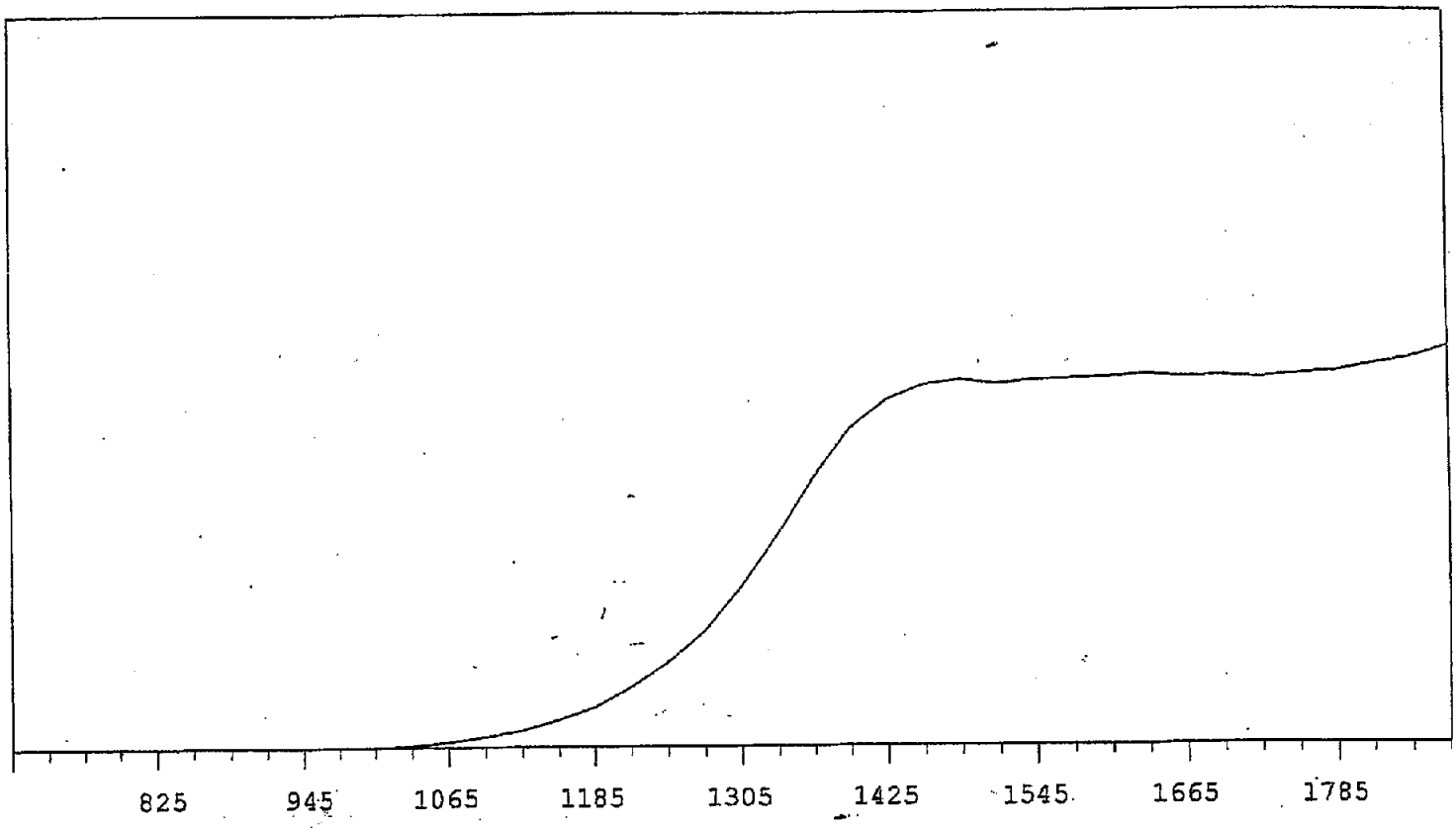
Tests performed and recorded by: Gregory D. Walker

Date: 11/26/02

*ALL EFFICIENCIES WERE OBTAINED USING A 2" DISTRIBUTED SOURCE AT OPTIMAL GEOMETRY EXCEPT Th-230, WHICH WAS AT A DEPTH OF ¼".

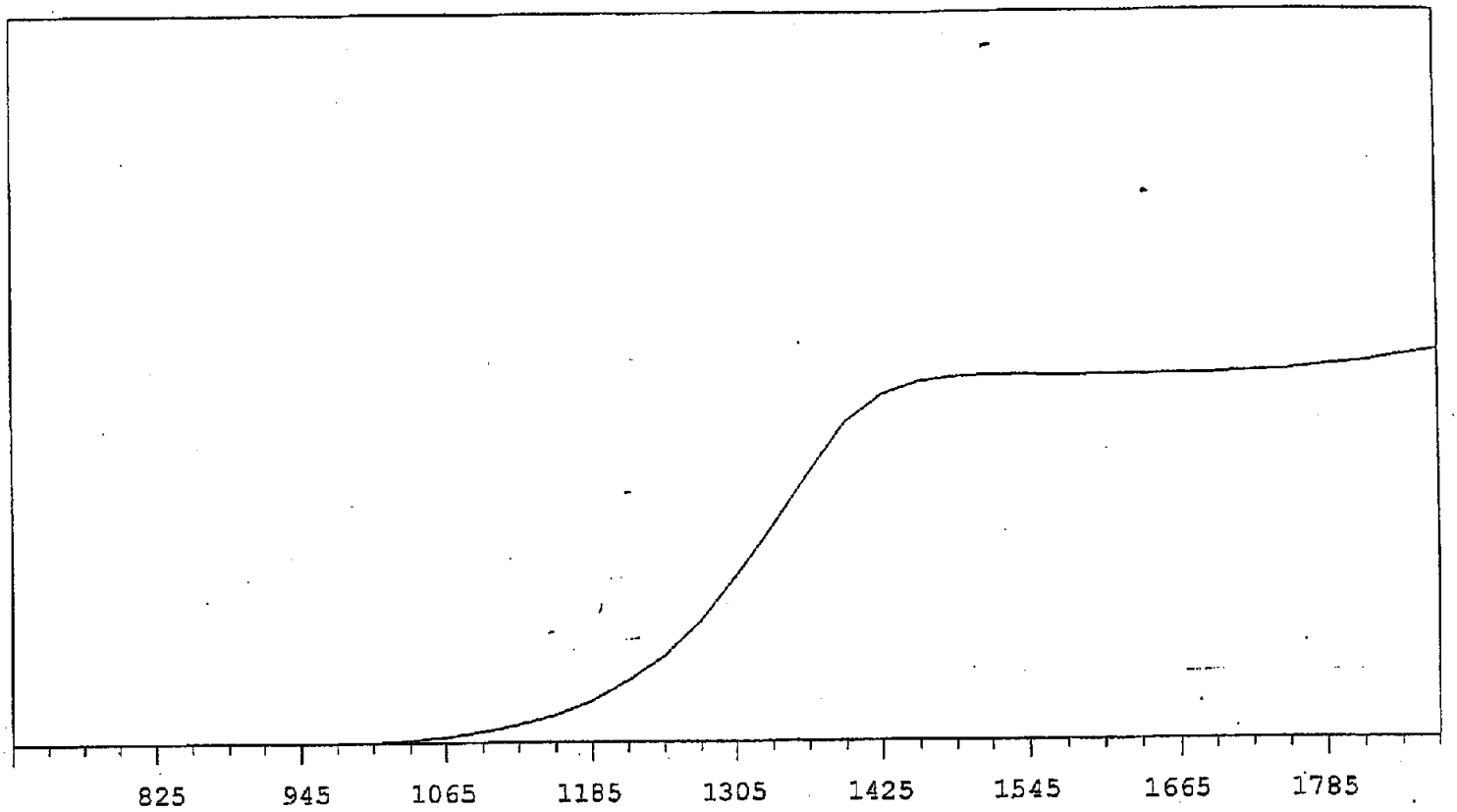
Unit #1

MPC 9604 Plateau 1 MPC 9604 Detector A 11/18/2002
Alpha Volts: 705 Beta Volts: 1515



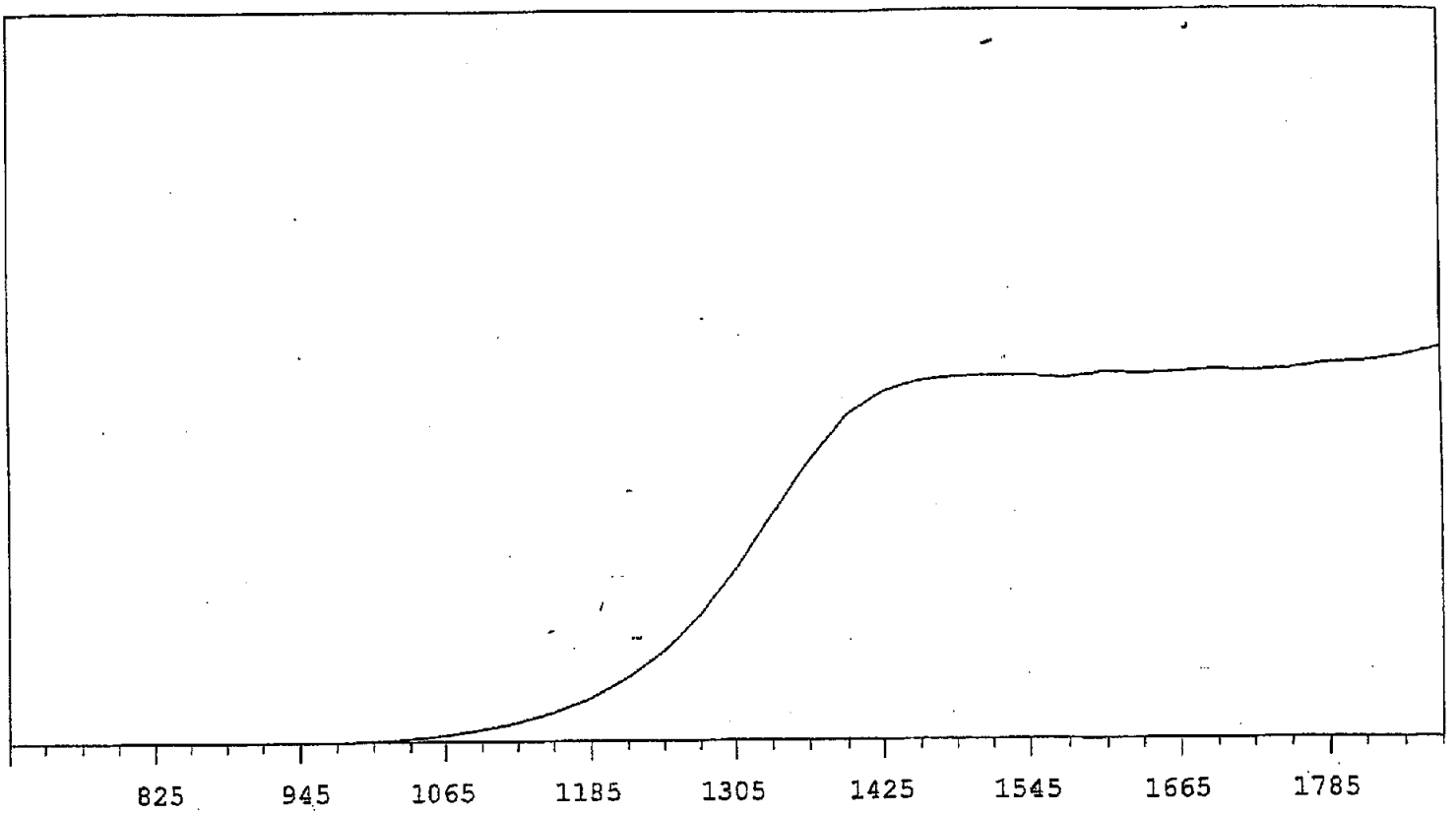
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	1		1305	16470	+92.44
735	2		1335	21902	+79.58
765	0	-33.33	1365	27818	+60.78
795	1	-33.33	1395	32763	+41.06
825	1	+0.00	1425	35569	+23.50
855	1	>100	1455	37141	+10.27
885	0	+41.67	1485	37680	+3.87
915	0	>100	1515	37264	+1.20
945	2	>100	1545	37658	+1.01
975	13	>100	1575	37826	+1.90
1005	48	>100	1605	37972	+0.72
1035	196	>100	1635	38183	+0.12
1065	548	>100	1665	37888	-0.71
1095	1042	>100	1695	37936	-0.41
1125	1730	>100	1725	37694	+0.85
1155	2776	>100	1755	38048	+2.46
1185	4064	>100	1785	38316	+4.39
1215	6147	>100	1815	39036	+6.01
1245	8704	>100	1845	39740	
1275	11959	>100	1875	40868	
1305	16470	+92.44			
1335	21902	+79.58			

MPC 9604 Plateau 1 MPC 9604 Detector B 11/18/2002
Alpha Volts: 705 Beta Volts: 1515



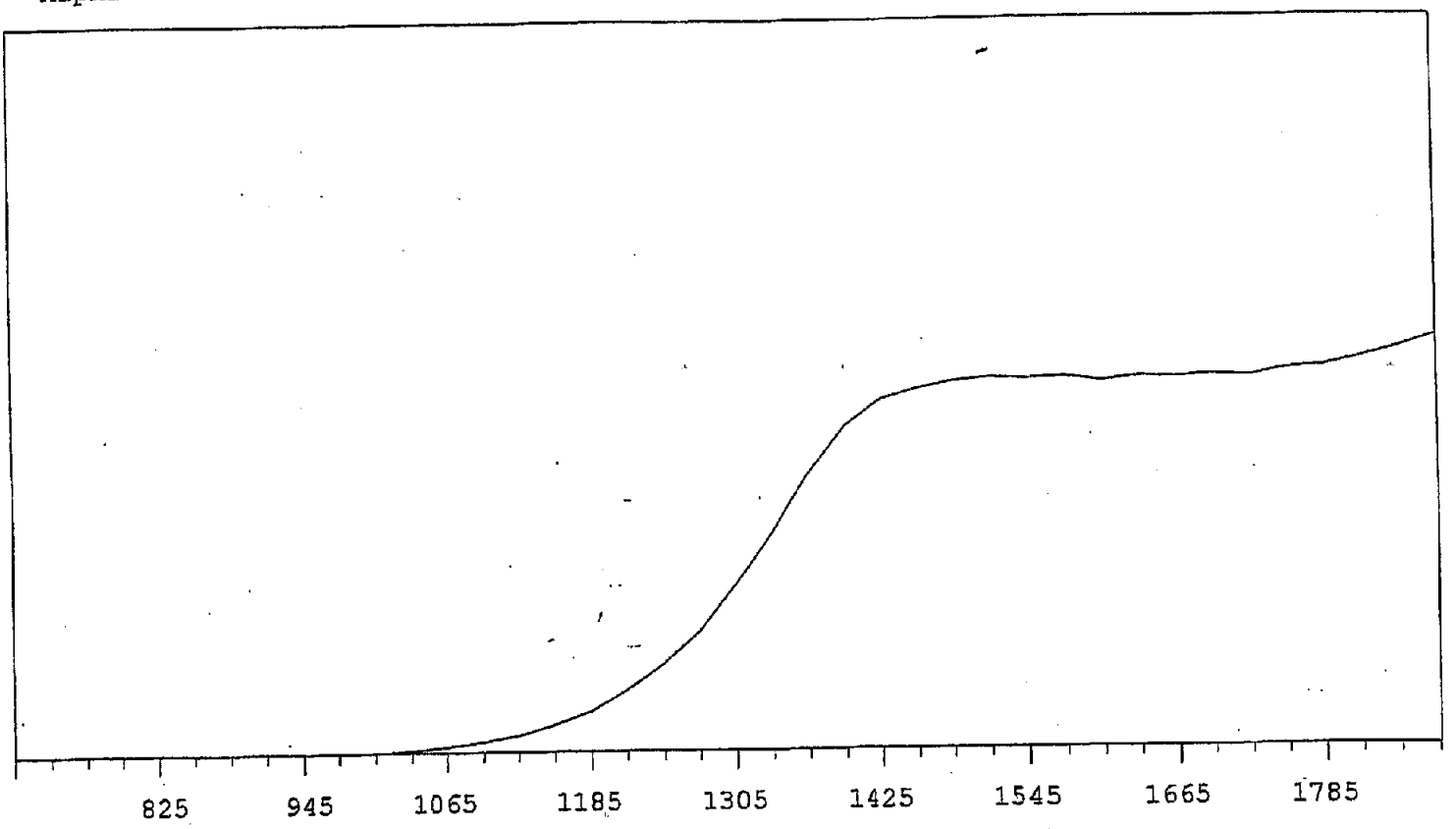
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	3		1305	37846	+89.73
735	2		1335	49400	+76.76
765	2		1365	61824	+59.37
795	0	>100	1395	73411	+40.47
825	0	>100	1425	79657	+23.20
855	0	>100	1455	82603	+10.52
885	1	>100	1485	83765	+4.29
915	0	>100	1515	84094	+1.27
945	1	>100	1545	84247	+0.38
975	20	>100	1575	83954	+0.14
1005	136	>100	1605	84310	+0.17
1035	480	>100	1635	84238	+0.30
1065	1292	>100	1665	84323	+0.33
1095	2449	>100	1695	84330	+0.75
1125	4069	>100	1725	84682	+1.66
1155	6233	>100	1755	85015	+2.61
1185	9445	>100	1785	86099	+3.67
1215	14086	>100	1815	86967	+4.57
1245	19724	>100	1845	88449	
1275	27772	+99.39	1875	89824	
1305	37846	+89.73			
1335	49400	+76.76			

MPC 9604 Plateau 1 MPC 9604 Detector C 11/19/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	2		1305	39510	+89.34
735	1		1335	52183	+75.00
765	2		1365	64681	+56.02
795	0	-83.33	1395	75266	+36.30
825	0	>100	1425	80414	+19.94
855	1	>100	1455	83043	+8.78
885	0	>100	1485	83971	+3.46
915	1	>100	1515	84202	+0.54
945	5	>100	1545	84151	+0.51
975	40	>100	1575	83636	+0.50
1005	178	>100	1605	84901	+0.90
1035	611	>100	1635	84465	+1.26
1065	1455	>100	1665	84881	+0.31
1095	2686	>100	1695	85245	+0.76
1125	4338	>100	1725	84904	+1.52
1155	6682	>100	1755	85423	+2.21
1185	9895	>100	1785	86741	+3.54
1215	14706	>100	1815	87179	+4.71
1245	20868	>100	1845	88620	
1275	29167	+99.72	1875	90675	
1305	39510	+89.34			
1335	52183	+75.00			

MPC 9604 Plateau 1 MPC 9604 Detector D 11/19/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts
705	1	
735	0	
765	3	+0.00
795	2	>100
825	0	-95.24
855	0	-83.33
885	2	+0.00
915	0	>100
945	0	>100
975	8	>100
1005	61	>100
1035	224	>100
1065	577	>100
1095	1071	>100
1125	1681	>100
1155	2740	>100
1185	4109	>100
1215	6232	>100
1245	8882	>100
1275	12116	>100
1305	16823	+91.81
1335	22142	+78.78

VOLTS	COUNTS	%/100 Volts
1305	16823	+91.81
1335	22142	+78.78
1365	28133	+59.68
1395	32974	+39.42
1425	35720	+22.04
1455	36766	+10.79
1485	37553	+4.71
1515	37914	+2.42
1545	37768	+0.04
1575	38025	-0.08
1605	37519	+0.04
1635	37994	+0.32
1665	37808	+0.54
1695	38062	+1.00
1725	37790	+2.13
1755	38573	+3.55
1785	38772	+5.80
1815	39626	+7.23
1845	40662	
1875	41958	

#2

MPC 9604 FACTORY PERFORMANCE EVALUATION

Factory performed tests for Instrument Serial Number: 236534

Voltage Settings | **ULD Settings**

Alpha & Beta Voltage 1515 | A 7.0 C 7.0

Alpha Only Voltage 705 | B 7.0 D 7.0

Efficiencies: DETECTOR A

Sr/y 90 55.844 % | Tc-99 36.440 %

Ni-63 16.731 % | Th-230 @ A/B Voltage 25.353 %

Th-230 @ A only Voltage 22.314 %

Efficiencies: DETECTOR B

Sr/y 90 55.898 % | Tc-99 36.482 %

Ni-63 16.199 % | Th-230 @ A/B Voltage 24.934 %

Th-230 @ A only Voltage 22.030 %

Efficiencies: DETECTOR C

Sr/y 90 55.644 % | Tc-99 37.968 %

Ni-63 15.840 % | Th-230 @ A/B Voltage 24.941 %

Th-230 @ A only Voltage 22.747 %

Efficiencies: DETECTOR D

Sr/y 90 54.607 % | Tc-99 37.028 %

Ni-63 16.089 % | Th-230 @ A/B Voltage 24.430 %

Th-230 @ A only Voltage 21.638 %

Backgrounds

Detector A:

Alpha Background 0.06
Beta Background 0.452

Detector B:

Alpha Background 0.07
Beta Background 0.475

Detector C:

Alpha Background 0.08
Beta Background 0.470

Detector D:

Alpha Background 0.083
Beta Background 0.481

Background Count Time was 500 Minutes.

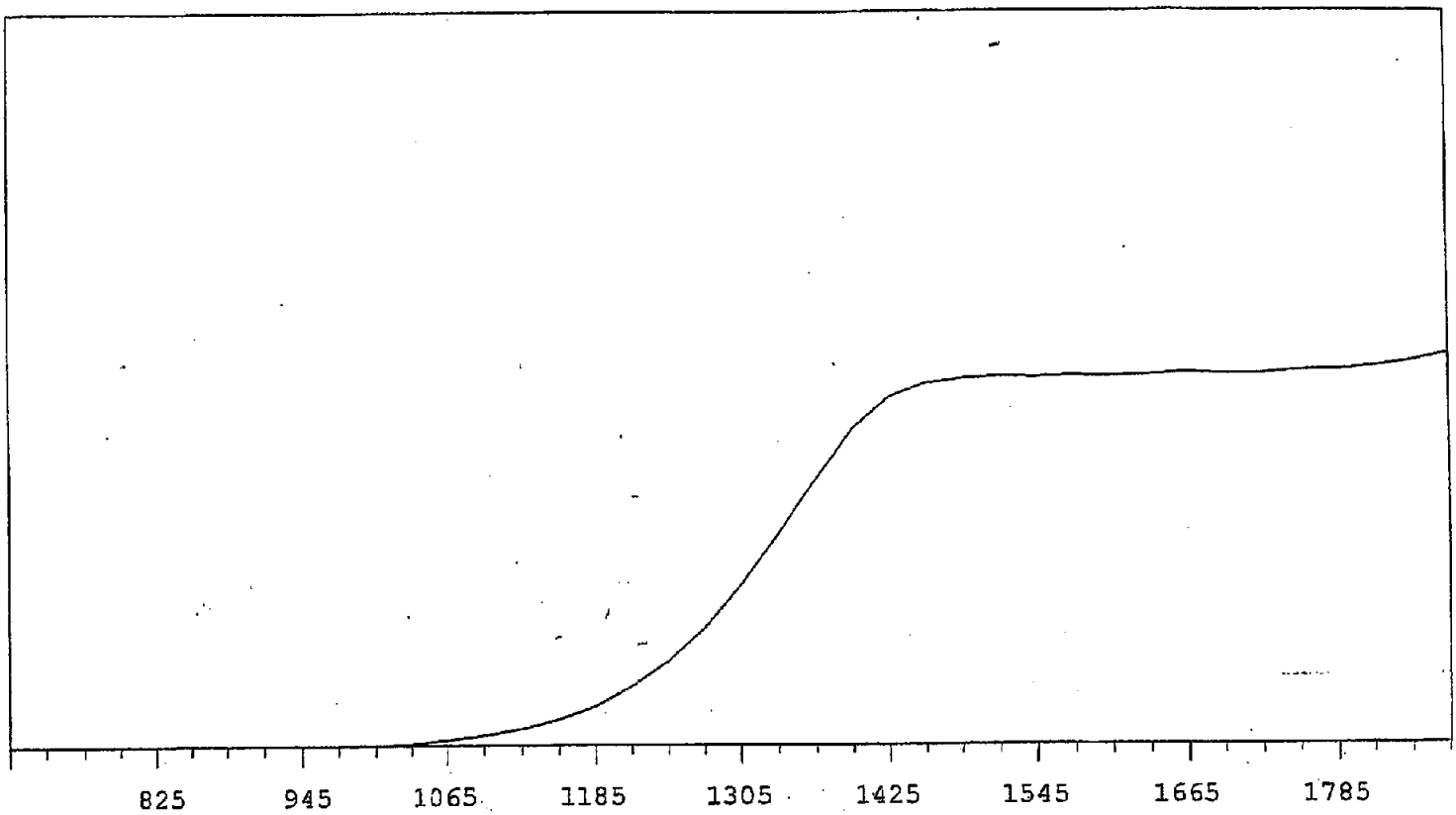
Tests performed and recorded by: [signature]

Date: 12/31/02

*ALL EFFICIENCIES WERE OBTAINED USING A 2" DISTRIBUTED SOURCE AT OPTIMAL GEOMETRY EXCEPT Th-230, WHICH WAS AT A DEPTH OF ¼".

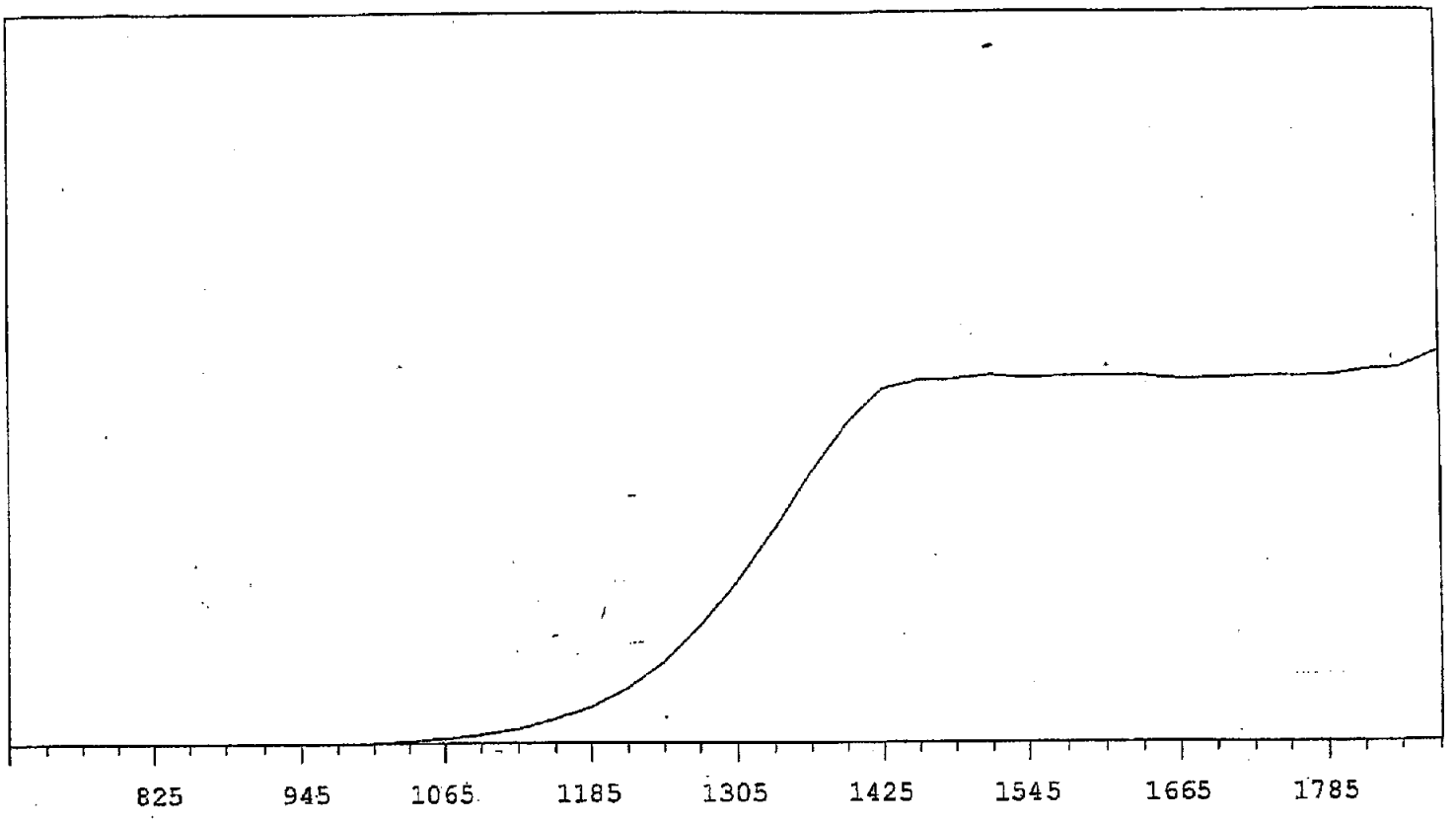
Unit #B2 JK 1-26-04

MPC 9604 Plateau 1 MPC 9604 Detector A 12/16/2002
Alpha Volts: 705 Beta Volts: 1335



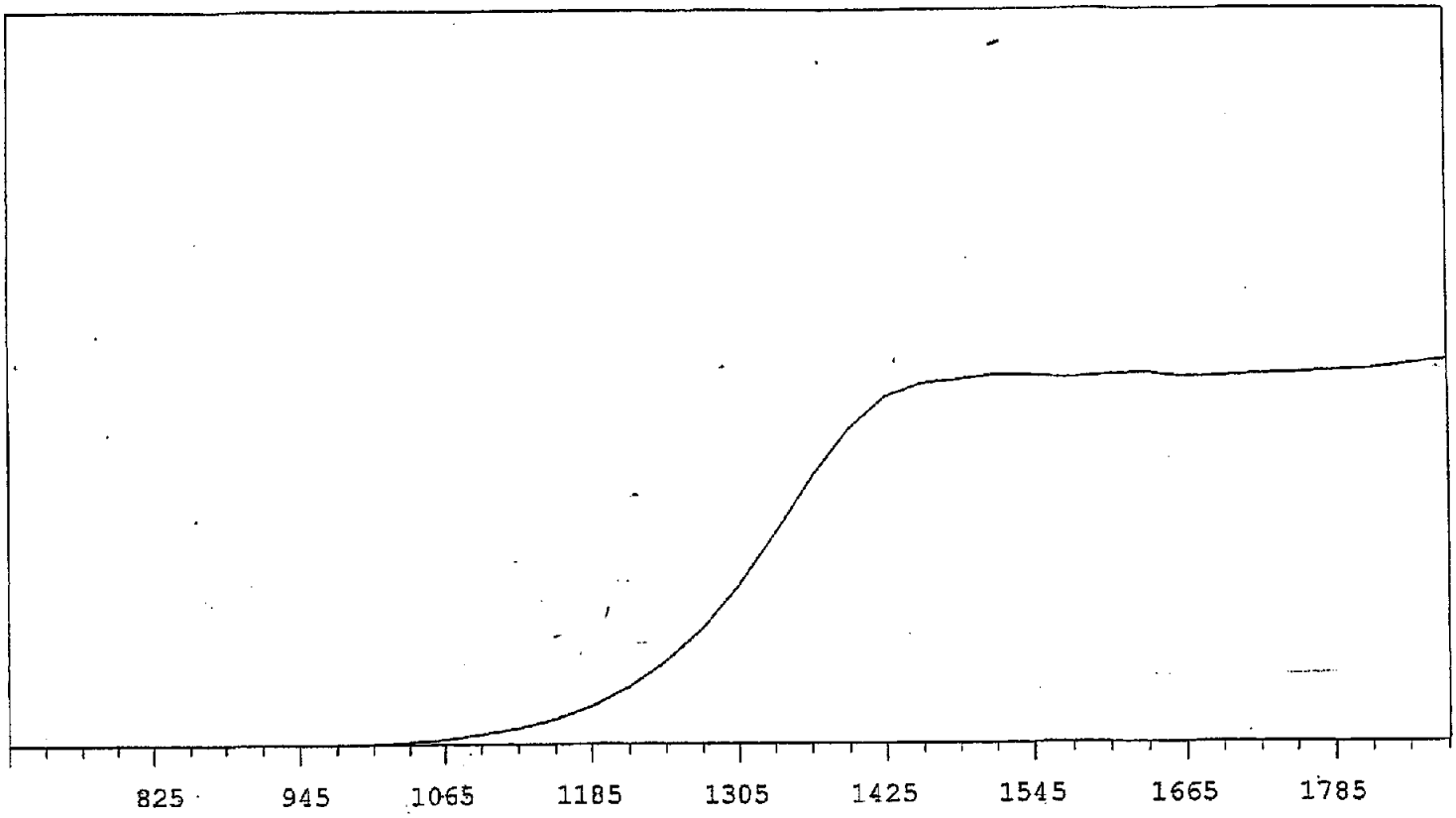
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	1		1305	36094	+91.50
735	1		1335	47847	+79.16
765	0		1365	60405	+61.85
795	1	>100	1395	71873	+42.39
825	0	+83.33	1425	78827	+24.53
855	0	+55.56	1455	81991	+11.59
885	1	>100	1485	83024	+4.37
915	1	>100	1515	83664	+1.56
945	1	>100	1545	83373	+0.42
975	19	>100	1575	83766	+0.14
1005	129	>100	1605	83496	+0.77
1035	425	>100	1635	83774	+0.43
1065	1183	>100	1665	84339	+0.47
1095	2313	>100	1695	83891	+0.57
1125	3764	>100	1725	84026	+0.69
1155	5857	>100	1755	84655	+1.58
1185	8765	>100	1785	84828	+2.39
1215	13328	>100	1815	85494	+3.58
1245	19028	>100	1845	86654	
1275	26407	>100	1875	88364	
1305	36094	+91.50			
1335	47847	+79.16			

MPC 9604 Plateau 1 MPC 9604 Detector B 12/17/2002
Alpha Volts: 705 Beta Volts: 1335



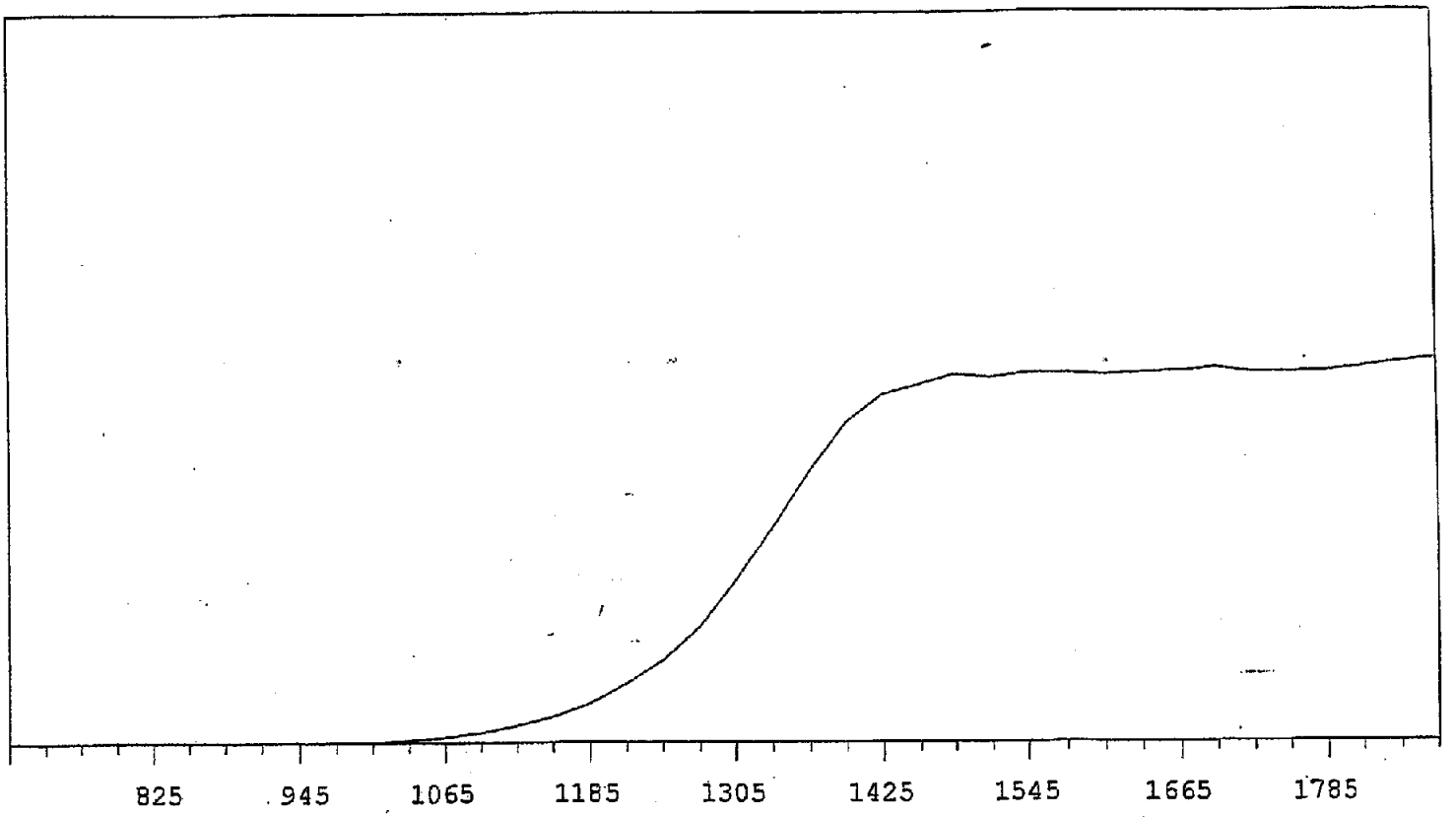
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	18047	+94.23
735	2		1335	23993	+79.11
765	0		1365	30302	+61.92
795	0	>100	1395	35719	+41.62
825	0	>100	1425	39617	+22.93
855	0	>100	1455	40588	+10.10
885	1	>100	1485	40726	+2.37
915	0	>100	1515	41160	+0.87
945	3	>100	1545	40771	+0.55
975	10	>100	1575	41098	+0.19
1005	58	>100	1605	41093	-0.14
1035	228	>100	1635	41116	-0.87
1065	543	>100	1665	40678	-0.49
1095	1009	>100	1695	40773	+0.05
1125	1647	>100	1725	40966	+0.68
1155	2812	>100	1755	41000	+1.27
1185	4080	>100	1785	40979	+1.90
1215	6168	>100	1815	41547	+4.96
1245	9044	>100	1845	41867	
1275	13094	>100	1875	43664	
1305	18047	+94.23			
1335	23993	+79.11			

MPC 9604 Plateau 1 MPC 9604 Detector C 12/16/2002
Alpha Volts: 705 Beta Volts: 1335



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	35990	+92.57
735	1		1335	47931	+79.59
765	0	+83.33	1365	60935	+62.26
795	0	>100	1395	71927	+42.50
825	1	>100	1425	79292	+24.26
855	2	-55.56	1455	82417	+11.85
885	0	>100	1485	83187	+4.61
915	0	>100	1515	84234	+1.35
945	0	>100	1545	84096	+0.71
975	14	>100	1575	83650	+0.45
1005	106	>100	1605	84371	+0.14
1035	468	>100	1635	84668	+0.04
1065	1134	>100	1665	83768	-0.23
1095	2223	>100	1695	83996	+0.27
1125	3673	>100	1725	84414	+1.38
1155	5797	>100	1755	84690	+1.53
1185	8786	>100	1785	85170	+2.05
1215	13052	>100	1815	85563	+2.91
1245	18927	>100	1845	86605	
1275	26347	>100	1875	87723	
1305	35990	+92.57			
1335	47931	+79.59			

MPC 9604 Plateau 1 MPC 9604 Detector D 12/16/2002
Alpha Volts: 705 Beta Volts: 1335



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	16474	+93.61
735	1		1335	21880	+79.65
765	0	+0.00	1365	27760	+60.71
795	1	>100	1395	32659	+40.09
825	0	>100	1425	35549	+23.08
855	0	+83.33	1455	36556	+10.47
885	2	>100	1485	37588	+4.60
915	1	>100	1515	37281	+2.31
945	1	>100	1545	37736	+0.31
975	6	>100	1575	37775	+0.67
1005	51	>100	1605	37518	+0.27
1035	240	>100	1635	37766	+1.07
1065	524	>100	1665	37896	+0.77
1095	1011	>100	1695	38192	-0.15
1125	1744	>100	1725	37742	-0.45
1155	2674	>100	1755	37757	+0.29
1185	4004	>100	1785	37860	+2.27
1215	6095	>100	1815	38301	+3.24
1245	8485	>100	1845	38765	
1275	11865	>100	1875	39170	
1305	16474	+93.61			
1335	21880	+79.65			

#3

MPC 9604 FACTORY PERFORMANCE EVALUATION

Factory performed tests for Instrument Serial Number: 236532

Voltage Settings | **ULD Settings**

Alpha & Beta Voltage 1515 | A 7.0 C 7.0

Alpha Only Voltage 705 | B 7.0 D 7.0

Efficiencies: DETECTOR A

Sr/y 90 54.530 % | Tc-99 35.69 %

Ni-63 14.385 % | Th-230 @ A/B Voltage 24.440 %

Th-230 @ A only Voltage 22.047 %

Efficiencies: DETECTOR B

Sr/y 90 54.993 % | Tc-99 36.209 %

Ni-63 15.309 % | Th-230 @ A/B Voltage 24.041 %

Th-230 @ A only Voltage 21.872 %

Efficiencies: DETECTOR C

Sr/y 90 54.541 % | Tc-99 35.67 %

Ni-63 15.117 % | Th-230 @ A/B Voltage 24.212 %

Th-230 @ A only Voltage 21.800 %

Efficiencies: DETECTOR D

Sr/y 90 54.296 % | Tc-99 35.380 %

Ni-63 13.326 % | Th-230 @ A/B Voltage 24.802 %

Th-230 @ A only Voltage 22.584 %

Backgrounds

Detector A:

Alpha Background 0.05
Beta Background 0.619

Detector B:

Alpha Background 0.06
Beta Background 0.497

Detector C:

Alpha Background 0.04
Beta Background 0.516

Detector D:

Alpha Background 0.05
Beta Background 0.716

Background Count Time was 500 Minutes.

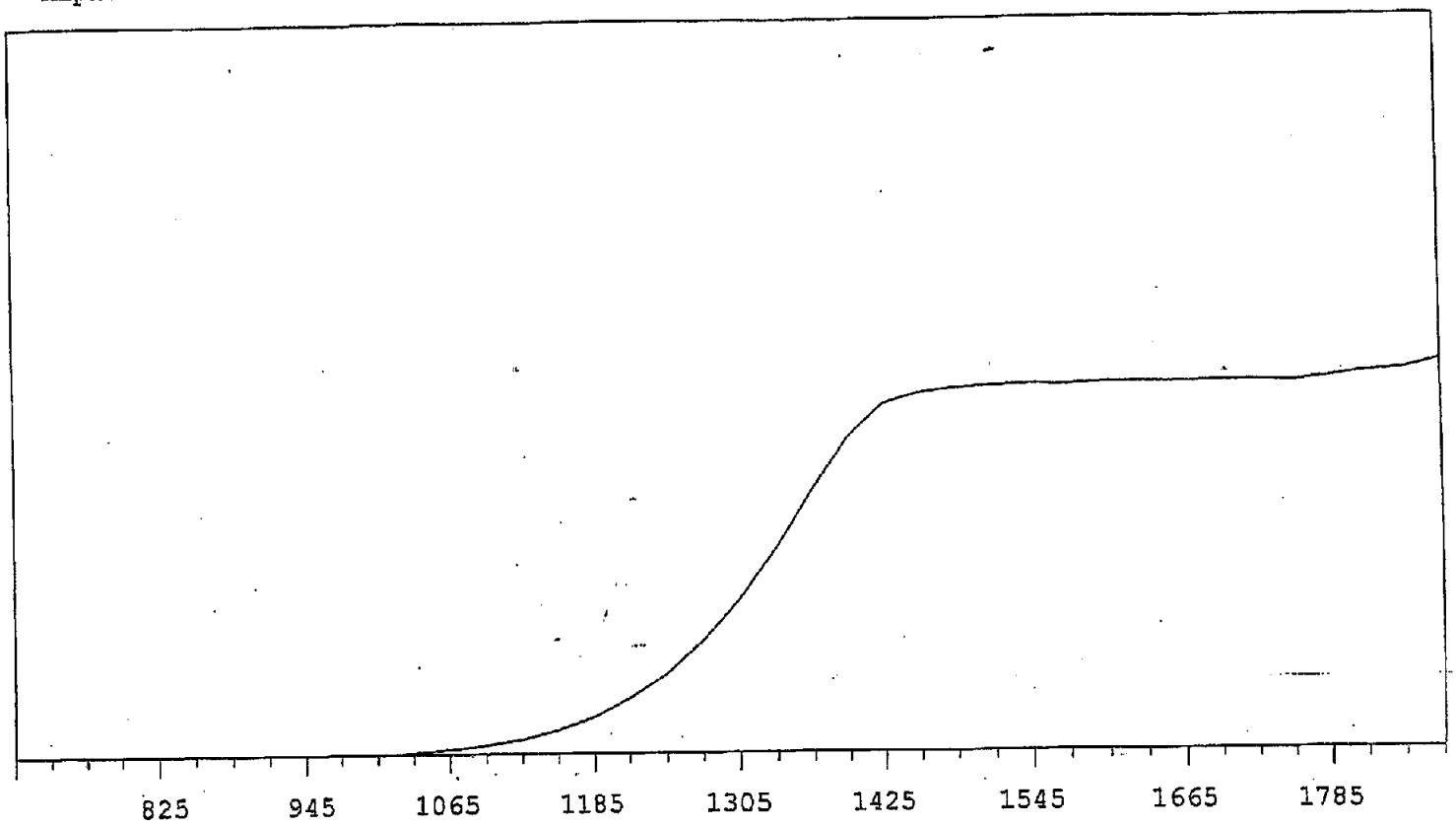
Tests performed and recorded by: [signature]

Date: 12/31/02

*ALL EFFICIENCIES WERE OBTAINED USING A 2" DISTRIBUTED SOURCE AT OPTIMAL GEOMETRY EXCEPT Th-230, WHICH WAS AT A DEPTH OF ¼".

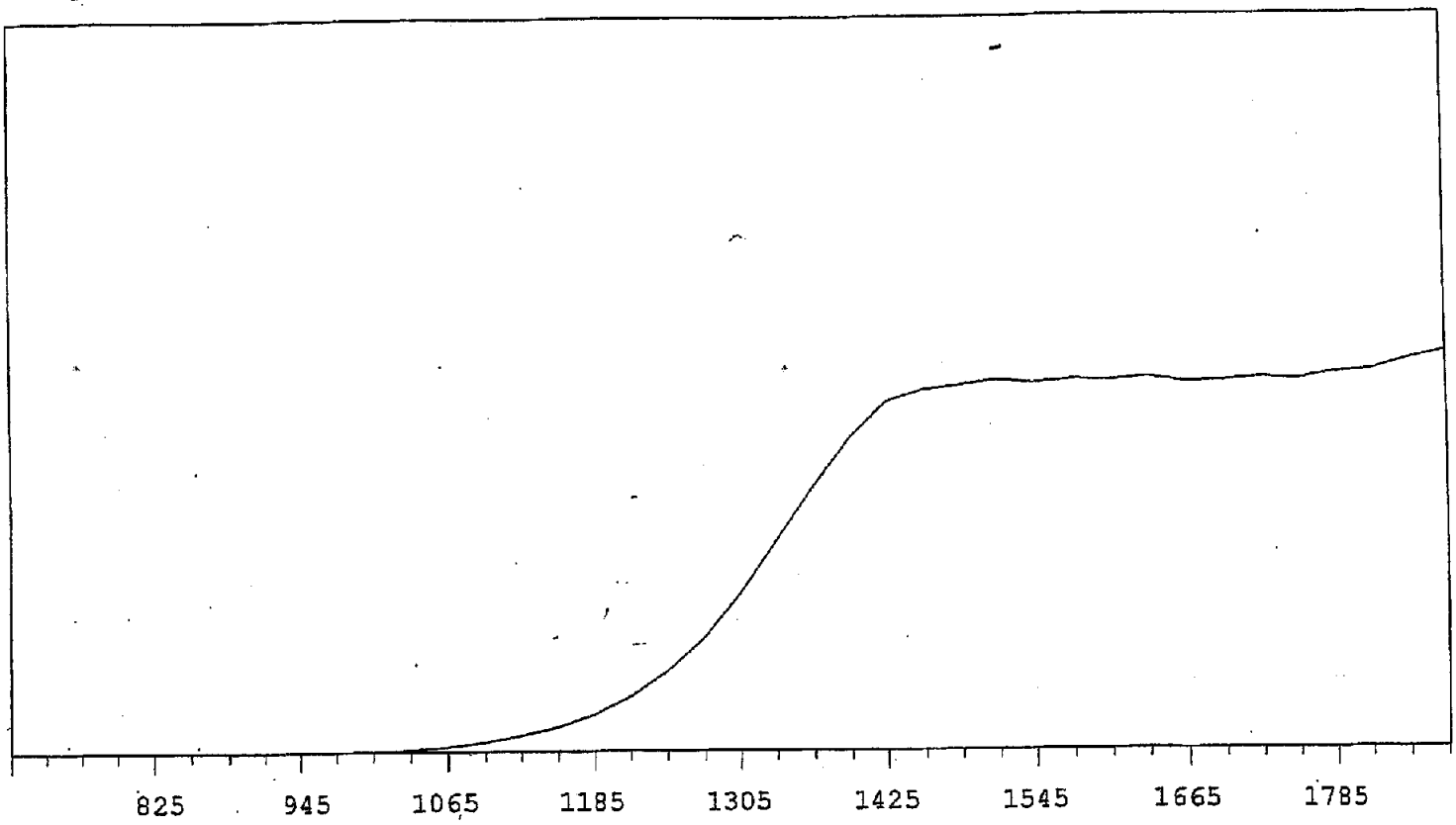
Unit #3

MPC 9604 Plateau 3 MPC 9604 Detector A 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



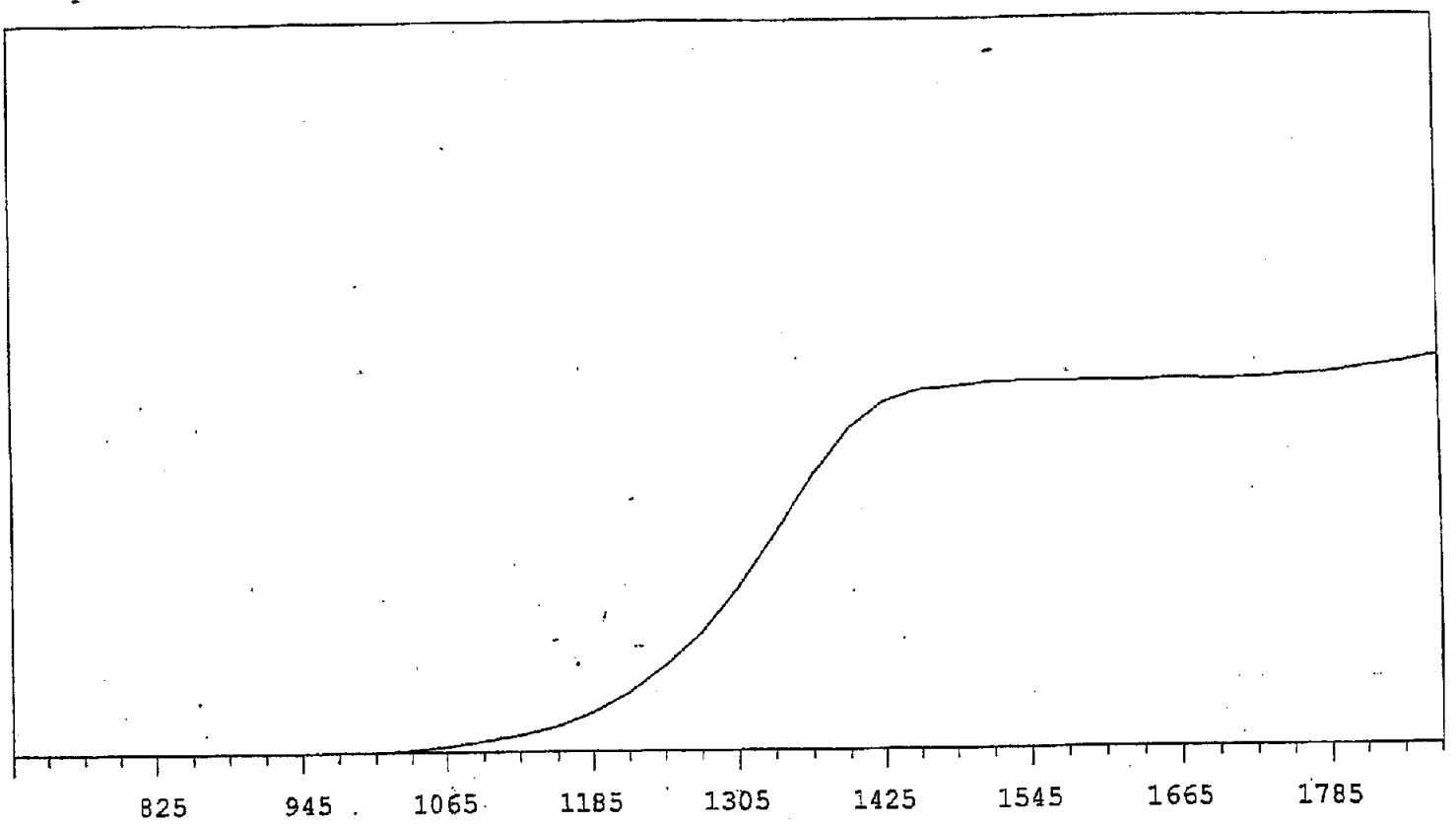
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	1		1305	35294	+94.49
735	1		1335	47171	+81.80
765	1	-41.67	1365	60476	+64.73
795	0	+0.00	1395	72428	+43.87
825	1	-55.56	1425	80027	+24.74
855	1	-83.33	1455	82481	+11.18
885	0	>100	1485	83577	+4.19
915	0	>100	1515	84156	+1.60
945	4	>100	1545	84396	+0.77
975	3	>100	1575	84086	+0.47
1005	70	>100	1605	84586	+0.33
1035	340	>100	1635	84651	+0.59
1065	1026	>100	1665	84530	+0.30
1095	2029	>100	1695	84858	+0.13
1125	3406	>100	1725	84861	+0.66
1155	5535	>100	1755	84646	+1.63
1185	8369	>100	1785	85477	+2.55
1215	12673	>100	1815	86640	+4.05
1245	18158	>100	1845	87146	
1275	25828	>100	1875	89075	
1305	35294	+94.49			
1335	47171	+81.80			

MPC 9604 Plateau 3 MPC 9604 Detector B 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	2		1305	16243	+93.24
735	1		1335	21731	+79.13
765	0		1365	27200	+62.01
795	0	>100	1395	32178	+42.43
825	1	>100	1425	35788	+25.03
855	4	-33.33	1455	37031	+12.41
885	0	>100	1485	37518	+4.25
915	0	-20.83	1515	38036	+1.82
945	1	>100	1545	37656	+0.52
975	3	>100	1575	37987	+0.42
1005	51	>100	1605	37837	+0.14
1035	181	>100	1635	38182	-0.55
1065	497	>100	1665	37639	+0.15
1095	964	>100	1695	37774	-0.05
1125	1656	>100	1725	38127	+1.81
1155	2551	>100	1755	37910	+2.19
1185	3834	>100	1785	38605	+3.76
1215	5718	>100	1815	38791	+5.71
1245	8336	>100	1845	39868	
1275	11756	>100	1875	40630	
1305	16243	+93.24			
1335	21731	+79.13			

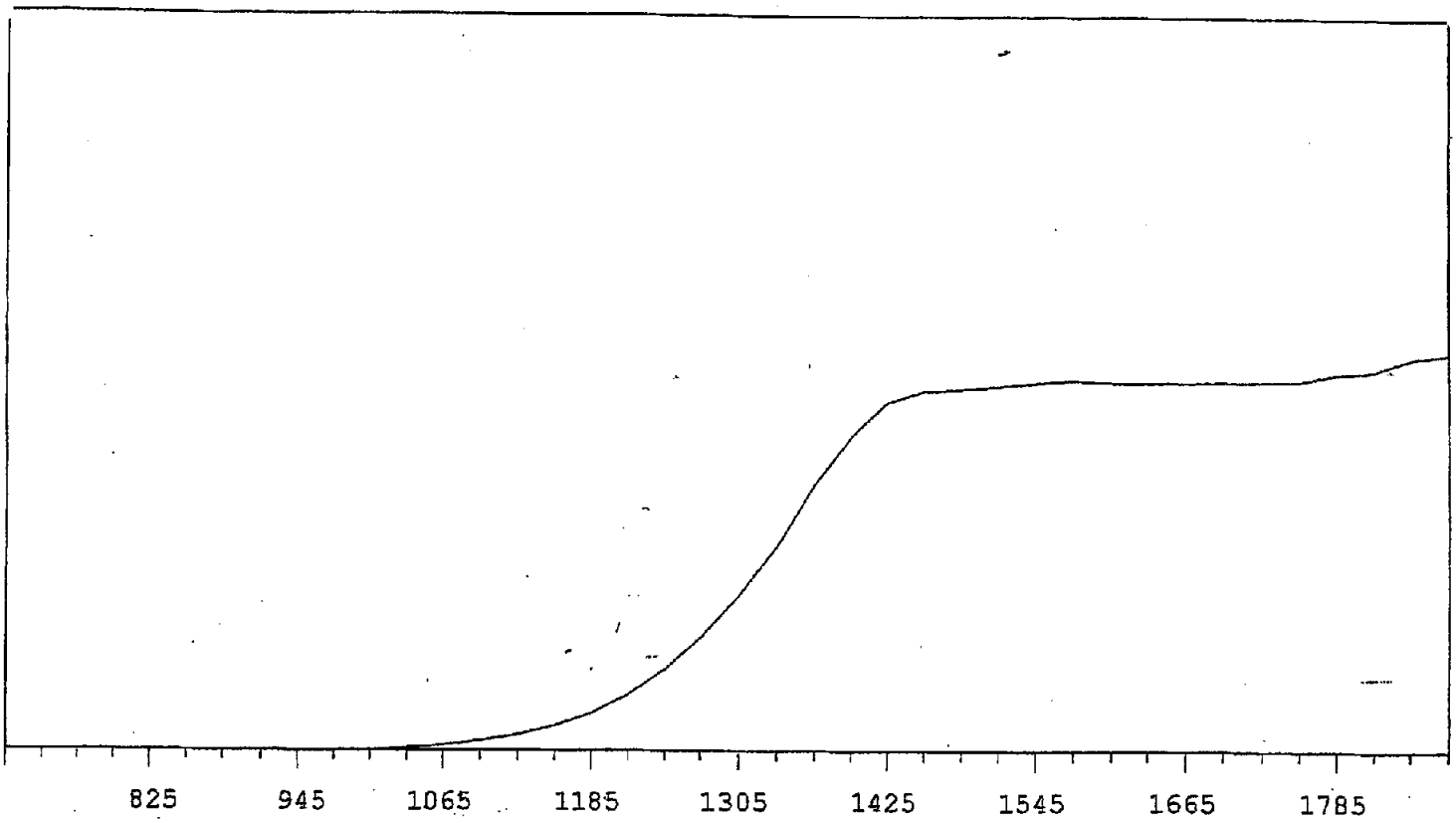
MPC 9604 Plateau 3 MPC 9604 Detector C 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts
705	1	
735	1	
765	0	-55.56
795	0	-83.33
825	1	+0.00
855	0	>100
885	0	>100
915	0	>100
945	3	>100
975	22	>100
1005	101	>100
1035	486	>100
1065	1178	>100
1095	2481	>100
1125	3840	>100
1155	5896	>100
1185	9085	>100
1215	13626	>100
1245	19695	>100
1275	27244	>100
1305	37587	+92.10
1335	49689	+78.64

VOLTS	COUNTS	%/100 Volts
1305	37587	+92.10
1335	49689	+78.64
1365	62948	+59.67
1395	73852	+39.59
1425	79926	+21.65
1455	82659	+10.02
1485	83402	+4.31
1515	84267	+1.73
1545	84482	+0.88
1575	84291	+0.00
1605	84505	+0.24
1635	84261	+0.22
1665	84807	+0.24
1695	84420	+0.83
1725	84730	+1.15
1755	85357	+2.52
1785	85810	+3.26
1815	87107	+4.16
1845	88075	
1875	89672	

MPC 9604 Plateau 3 MPC 9604 Detector D 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	15935	+93.94
735	0		1335	21039	+81.17
765	0		1365	27326	+63.87
795	0	>100	1395	32222	+43.56
825	0	>100	1425	35674	+23.86
855	0	>100	1455	36879	+11.05
885	0	>100	1485	37110	+4.30
915	0	>100	1515	37448	+2.64
945	1	>100	1545	37776	+1.77
975	9	>100	1575	38028	+0.73
1005	46	>100	1605	37822	-0.15
1035	205	>100	1635	37836	-0.25
1065	519	>100	1665	37786	+0.15
1095	975	>100	1695	37906	+0.36
1125	1608	>100	1725	37873	+1.75
1155	2563	>100	1755	37997	+2.80
1185	3812	>100	1785	38738	+5.15
1215	5780	>100	1815	39085	+6.13
1245	8319	>100	1845	40328	
1275	11591	>100	1875	40827	
1305	15935	+93.94			
1335	21039	+81.17			

#4

MPC 9604 FACTORY PERFORMANCE EVALUATION

Factory performed tests for Instrument Serial Number: 236533

Voltage Settings **ULD Settings**

Alpha & Beta Voltage 1515 A 7.0 C 7.0

Alpha Only Voltage 705 B 7.0 D 7.0

Efficiencies: DETECTOR A

Sr/y 90 55.116 % Tc-99 36.67 %

Ni-63 16.083 % Th-230 @ A/B Voltage 24.835 %

Th-230 @ A only Voltage 21.648 %

Efficiencies: DETECTOR B

Sr/y 90 54.972 % Tc-99 36.409 %

Ni-63 15.648 % Th-230 @ A/B Voltage 24.479 %

Th-230 @ A only Voltage 22.123 %

Efficiencies: DETECTOR C

Sr/y 90 55.152 % Tc-99 36.257 %

Ni-63 15.587 % Th-230 @ A/B Voltage 23.546 %

Th-230 @ A only Voltage 21.714 %

Efficiencies: DETECTOR D

Sr/y 90 54.815 % Tc-99 36.269 %

Ni-63 15.94 % Th-230 @ A/B Voltage 24.314 %

Th-230 @ A only Voltage 22.574 %

Backgrounds

Detector A:

Alpha Background 0.05
Beta Background 0.609

Detector B:

Alpha Background 0.04
Beta Background 0.718

Detector C:

Alpha Background 0.06
Beta Background 0.462

Detector D:

Alpha Background 0.05
Beta Background 0.521

Background Count Time was 500 Minutes.

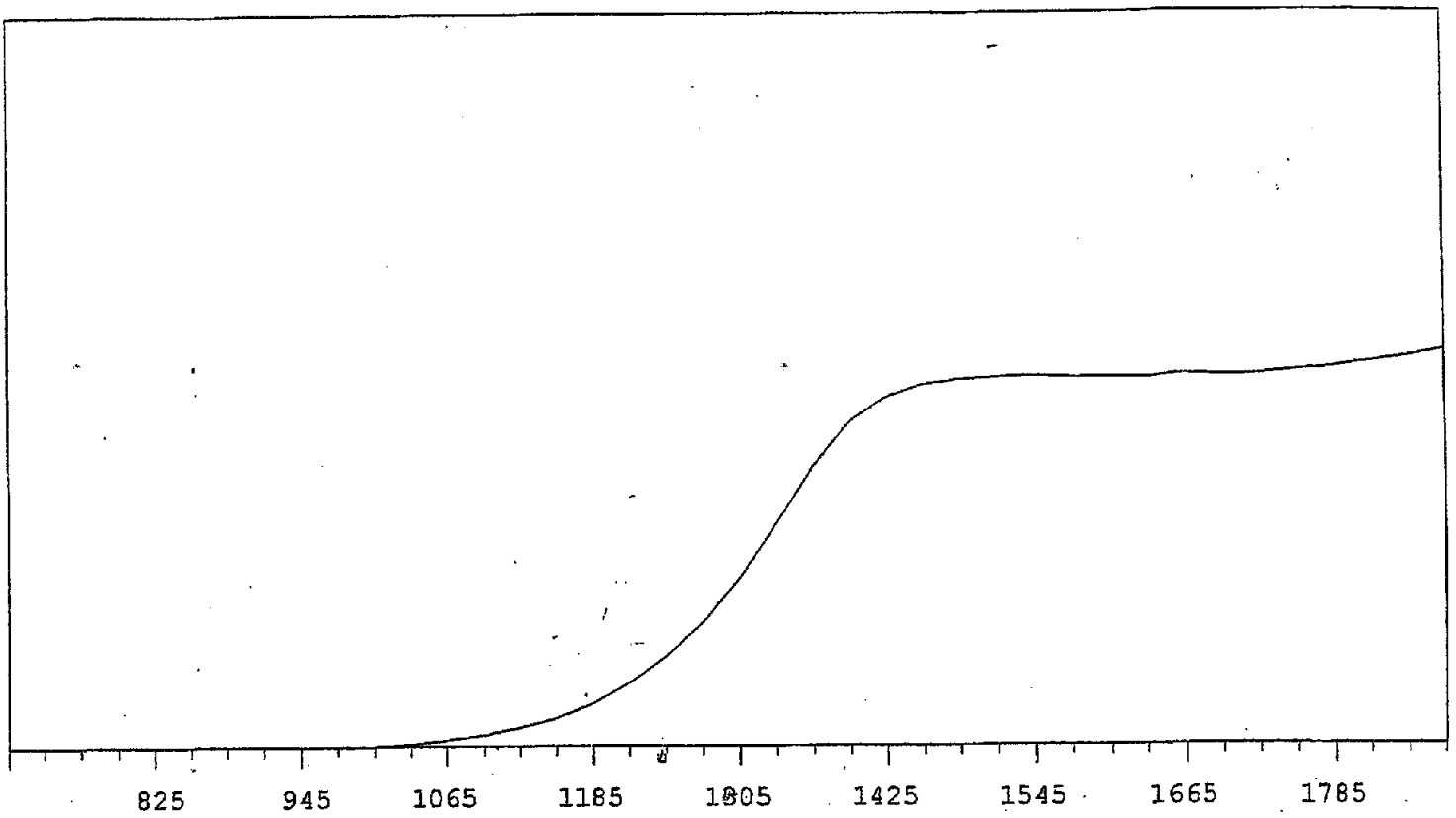
Tests performed and recorded by: [signature]

Date: 12/31/02

*ALL EFFICIENCIES WERE OBTAINED USING A 2" DISTRIBUTED SOURCE AT OPTIMAL GEOMETRY EXCEPT Th-230, WHICH WAS AT A DEPTH OF ¼".

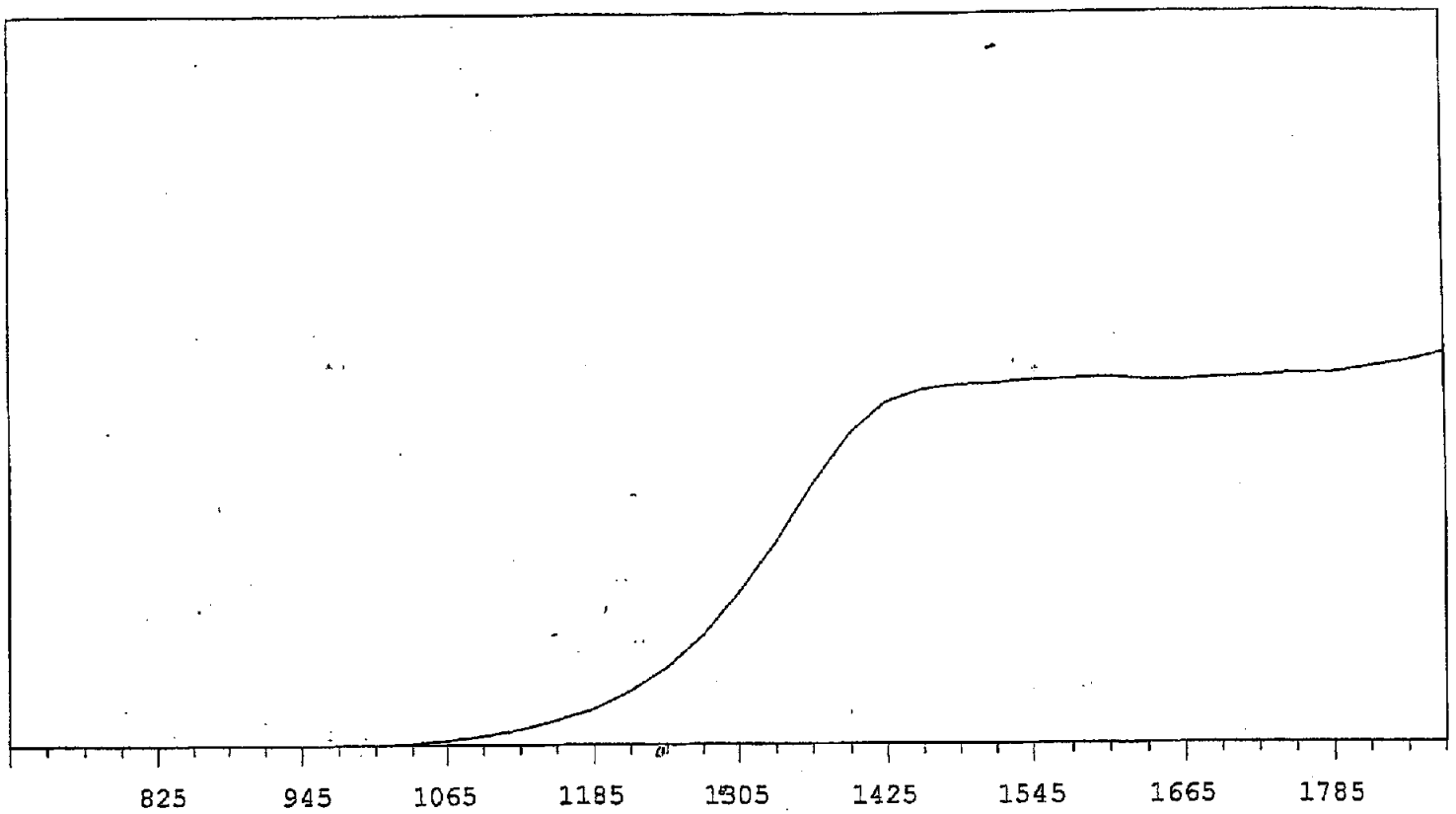
Unit #4

MPC 9604 Plateau PIC MPC 9604 MPC 9604 Detector A 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



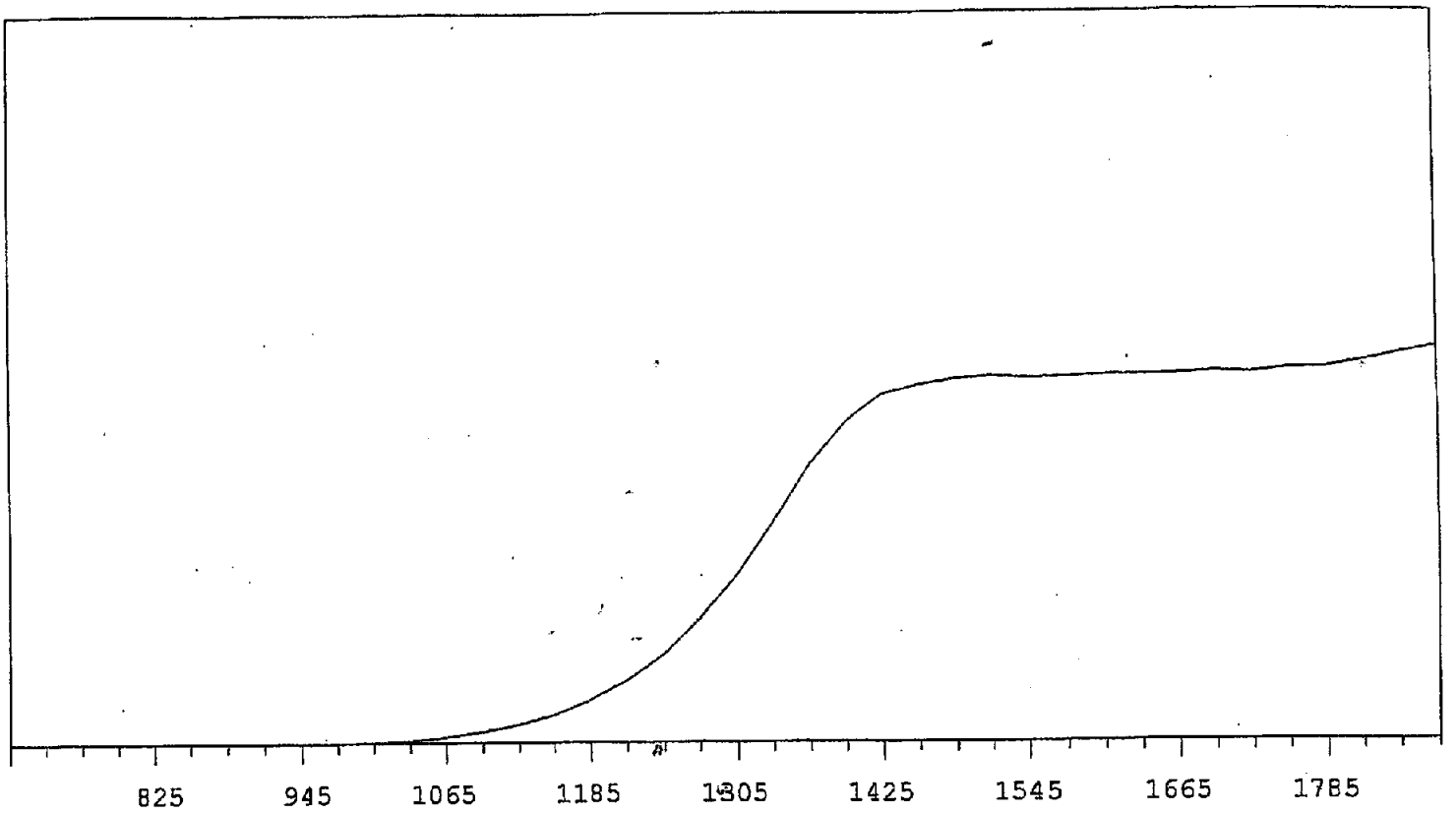
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	38210	+90.30
735	0		1335	50662	+76.50
765	0		1365	63624	+57.39
795	0	>100	1395	73884	+37.39
825	1	+83.33	1425	79213	+20.55
855	1	-83.33	1455	82067	+9.64
885	0	-55.56	1485	83080	+4.47
915	0	>100	1515	83570	+1.53
945	1	>100	1545	83988	+0.34
975	23	>100	1575	83523	-0.31
1005	147	>100	1605	83529	+0.24
1035	549	>100	1635	83417	+0.69
1065	1389	>100	1665	84345	+0.71
1095	2484	>100	1695	83979	+1.14
1125	4165	>100	1725	84139	+1.49
1155	6311	>100	1755	84965	+2.96
1185	9672	>100	1785	85741	+3.84
1215	14399	>100	1815	86960	+4.42
1245	20400	>100	1845	88088	
1275	28174	+99.15	1875	89563	
1305	38210	+90.30			
1335	50662	+76.50			

MPC 9604 Plateau PIC MPC 9604 MPC 9604 Detector B 12/20/2002
Alpha Volts: 705 Beta Volts: 1515



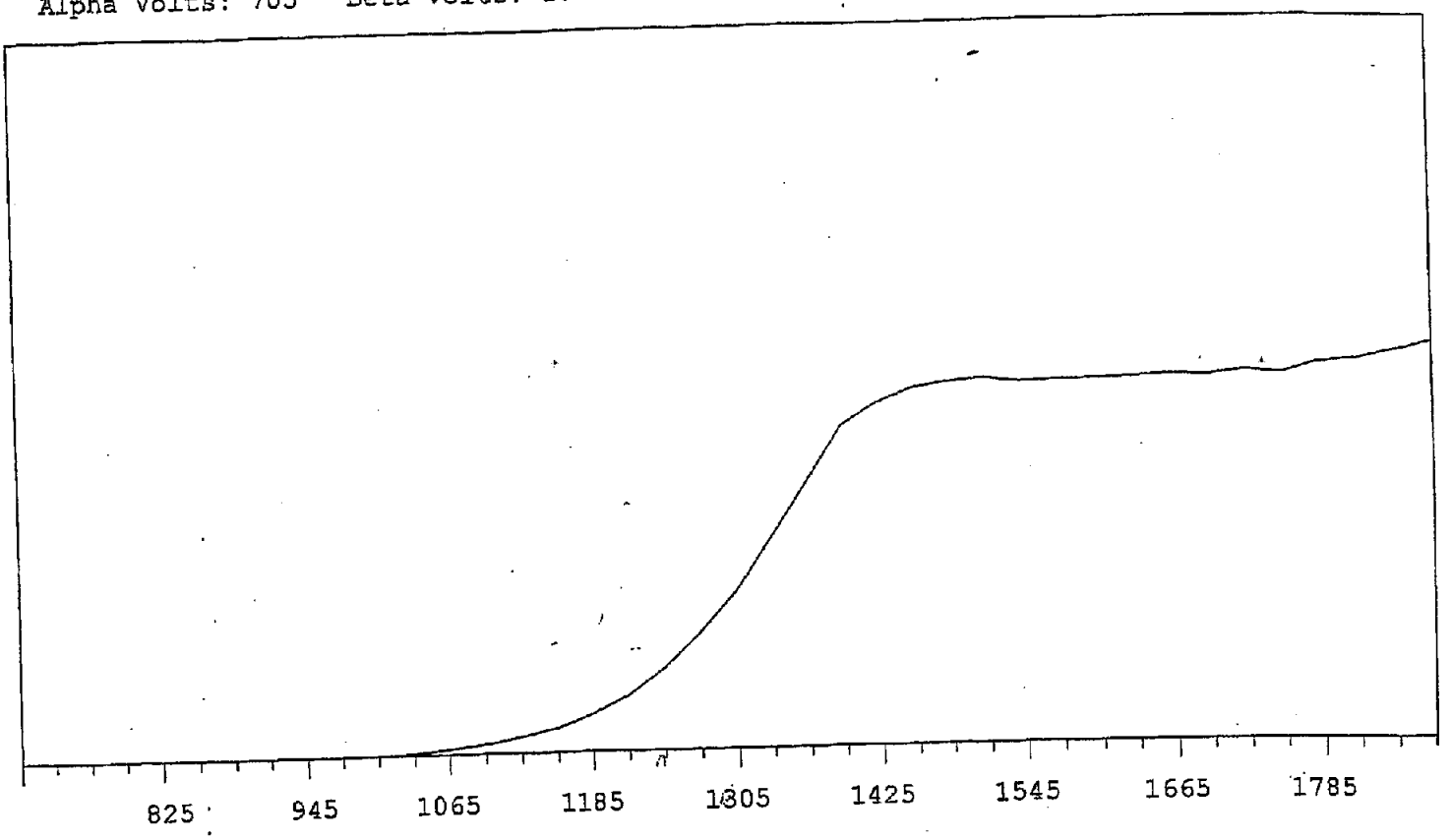
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	28036	+95.44
735	0		1335	37302	+82.32
765	1	+0.00	1365	47958	+64.46
795	0	>100	1395	57350	+44.02
825	0	>100	1425	63237	+24.93
855	0	>100	1455	65497	+11.29
885	0	>100	1485	66351	+4.62
915	1	>100	1515	66601	+2.36
945	1	>100	1545	67246	+1.77
975	8	>100	1575	67408	+0.73
1005	50	>100	1605	67730	-0.41
1035	303	>100	1635	67091	-0.29
1065	774	>100	1665	66992	+0.10
1095	1655	>100	1695	67480	+1.42
1125	2759	>100	1725	67633	+1.52
1155	4503	>100	1755	68211	+1.98
1185	6596	>100	1785	68168	+3.14
1215	9932	>100	1815	69236	+4.56
1245	14227	>100	1845	70353	
1275	20184	>100	1875	71882	
1305	28036	+95.44			
1335	37302	+82.32			

MPC 9604 Plateau PIC MPC 9604 MPC 9604 Detector C 12/19/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	1		1305	38804	+90.25
735	1		1335	50930	+75.33
765	0		1365	64318	+57.13
795	0	+0.00	1395	73878	+37.15
825	0	>100	1425	80131	+20.35
855	1	+83.33	1455	82188	+9.94
885	1	+55.56	1485	83615	+3.79
915	0	>100	1515	84189	+1.56
945	1	>100	1545	83835	+0.57
975	16	>100	1575	84039	+0.31
1005	161	>100	1605	84413	+0.74
1035	557	>100	1635	84290	+0.90
1065	1352	>100	1665	84650	+0.53
1095	2565	>100	1695	85061	+1.02
1125	4126	>100	1725	84700	+0.98
1155	6348	>100	1755	85564	+2.08
1185	9862	>100	1785	85649	+3.84
1215	14356	>100	1815	87256	+5.01
1245	20454	>100	1845	88828	
1275	28653	+99.54	1875	90557	
1305	38804	+90.25			
1335	50930	+75.33			

MPC 9604 Plateau PIC MPC 9604 MPC 9604 Detector D 12/19/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts
705	0	
735	0	
765	0	
795	0	>100
825	1	>100
855	1	+41.67
885	2	-33.33
915	0	>100
945	1	>100
975	4	>100
1005	34	>100
1035	189	>100
1065	520	>100
1095	1010	>100
1125	1686	>100
1155	2549	>100
1185	3953	>100
1215	5794	>100
1245	8550	>100
1275	12147	>100
1305	16347	+92.19
1335	21926	+79.96

VOLTS	COUNTS	%/100 Volts
1305	16347	+92.19
1335	21926	+79.96
1365	27606	+61.43
1395	33199	+40.79
1425	35516	+23.07
1455	36964	+10.43
1485	37545	+4.16
1515	37853	+0.87
1545	37385	-0.13
1575	37533	-0.03
1605	37633	+1.20
1635	37712	+0.83
1665	37973	+1.27
1695	37835	+0.66
1725	38293	+1.93
1755	37926	+3.14
1785	39032	+4.51
1815	39280	+6.41
1845	40250	
1875	41116	

SEVERN TRENT STL

Standard and Calibration 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	net mass	projected mass, mg	reweigh 1/9/6	mass 1-9-6
1	1	0.1000	8.8980	8.8888	0.0092	0.0081	8.8977	0.0089
2	1	0.3000	8.9490	8.9230	0.0260	0.0243	8.9481	0.0251
3	1	0.5000	9.0149	8.9703	0.0446	0.0405	9.0115	0.0412
4	1	1.0000	9.0419	8.9602	0.0817	0.0809	9.0398	0.0796
5	1	1.5000	9.0033	8.8764	0.1269	0.1214	8.9976	0.1212
6	1	2.0000	9.0833	8.9072	0.1761	0.1619	9.0701	0.1629
7	1	2.5000	9.1219	8.9194	0.2025	0.2023	9.1190	0.1996
8	1	3.0000	9.1769	8.9241	0.2528	0.2428	9.1661	0.2420

Alpha calibration standards salt solution SLRB-B

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	net mass	projected mass	reweigh 1/9/6	mass 1-9-6
1	1	0.1000	8.9369	8.9273	0.0096	0.0081	8.9357	0.0084
2	1	0.2000	8.9958	8.9783	0.0175	0.0162	8.9943	0.0160
3	1	0.3000	8.9737	8.9470	0.0267	0.0243	8.9719	0.0249
4	1	0.5000	8.9206	8.8766	0.0440	0.0405	8.9172	0.0406
5	1	0.7500	8.9565	8.8888	0.0677	0.0607	8.9499	0.0611
6	2	1.0000	9.0043	8.9170	0.0873	0.0809	8.9970	0.0800
7	2	1.3000	9.0092	8.8992	0.1100	0.1052	9.0029	0.1037
8	2	1.5000	9.0413	8.9088	0.1325	0.1214	9.0305	0.1217

spiked by: Joel Kempema verified by: Sarah Hurst

Beta calibration stds. 9/9/2005 salt solution SLRB-B SET 2

Beta standard, RAD04-0095, 1043.5 dpm/mL Sr/Y90 on 08/07/2001.

Std #	mLs RAD04-0095	mLs salt solution	gross mass	tare mass	net mass	projected mass, mg	reweigh 1/9/6	mass 1/9/6	
1 no 2	1	0.1	8.9140	8.9056	0.0084	0.0081	8.9138	0.0082	
1	1	0.1000	8.9006	8.8876	0.0130	0.0081	8.8979	0.0103	<--unused
2	1	0.3000	8.9226	8.8939	0.0287	0.0243	8.9201	0.0262	
3	1	0.5000	8.8978	8.8559	0.0419	0.0405	8.8966	0.0407	
4	1	1.0000	8.9580	8.8715	0.0865	0.0809	8.9535	0.0820	
5	1	1.5000	9.0437	8.9139	0.1298	0.1214	9.0359	0.1220	
6	1	2.0000	9.0249	8.8592	0.1657	0.1619	9.0204	0.1612	
7	1	2.5000	9.1269	8.9239	0.2030	0.2023	9.1184	0.1945	
8	1	3.0000	9.1390	8.8872	0.2518	0.2428	9.1301	0.2429	

Alpha calibration standards salt solution SLRB-B

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	net mass	projected mass	reweigh 1/9/6	mass 1/9/6
1	1	0.1000	8.9143	8.9061	0.0082	0.0081	8.9142	0.0081
2	1	0.2000	8.9348	8.9182	0.0166	0.0162	8.9343	0.0161
3	1	0.3000	8.9231	8.8980	0.0251	0.0243	8.9220	0.0240
4	1	0.5000	8.9518	8.9082	0.0436	0.0405	8.9494	0.0412
5	1	0.7500	8.9683	8.9026	0.0657	0.0607	8.9639	0.0613
6	2	1.0000	9.0179	8.9303	0.0876	0.0809	9.0124	0.0821
7	2	1.3000	8.9901	8.8763	0.1138	0.1052	8.9818	0.1055
8	2	1.5000	9.0533	8.9206	0.1327	0.1214	9.0449	0.1243

spiked by: Joel Kempema verified by: Ivan Vania

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: _____

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 MM

Date 12/19/02 12:00 EST Exp. ----------

PO # 1614557-000 OP, Item 3

5.17738 grams 0.5M HNO3 solution

CAUTION RADIOACTIVE MATERIAL

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	T ½	Final Activity	Solvent/ Lot #	Prep'd Initials	Cal. Ver. Initials	Comments
11-12-03	11-12-04	03082	P32	IPL 7032	1.103 µCi/g ~~11,991.266.6 dpm~~	15 NOV 03	4.8989 g	100 ml		14.29 d	119,957 dpm/ml ~~119,912.8~~	MCA-4-01	SDB	MFM	From Pg 10 STEVES
11-12-03	11-12-04	03-083	P32	03052	119,957 dpm/ml ~~119,912.8~~	15 NOV 03	1 ml	50 ml		14.29 d	~~2,398.2~~ dpm/ml 2399.15	MCA-4-01	SDB	MFM	LaB Book
9-11-03	9-11-04	03-069	Pu238	02-032	68.235 ~~736.194~~	11-15-99	95 ml	190 ml	1396 days	87.7 y	decay corr ~~33.5069~~ 33.6022	~~1.21~~ 1.091 1M HNO3	11/03 MFM	MC	from page 28
9-11-03	9-11-04	03-069	Pu239	02-031 ~~02-033~~	64.025 ~~128.05~~ dpm/ml	11-15-99	95 ml	190 ml	1396 days	24110 y	32.0125 ~~32.0254~~	1M HNO3	MFM	MC	from page 28
11-21-03	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 Capture ID 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 HNO3	BH	~~BH~~	
12-9-03	12-9-04	03-085	Th230	03-071	4,567.9 dpm/mL	12/19/02	1 mL	200 mL		7.538 E4	22.84 dpm/mL	0.5M HNO3	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 HNO3	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 HNO3	BH		
1-5-04	1-5-05	RN04-001	UNAT	01-018	235.76 dpm/mL	3-201	20 mL	80 mL	N/A	4.5 E9 yrs	58.94 dpm/mL	0.5M HNO3	MFM		
1/12/04	1/12/05	Rad04-0007	Ra228	01012	1,018 dpm/mL	2/16/01	2 mL	100 mL		5.75 y	20.36 dpm/mL	0.5M HNO3	BH	DBF	
2/12/04	2/12/04	RAD-0015	Sr90	03-038	2,316.57 dpm/mL	9/19/01	5 mL	500 mL		28.5 y	23.16 dpm/mL	0.5M HNO3	BH	BBF	

Additional Comments:

Decay Correction

Strontium 90						
Initial Activity:	2316.6	dpm				
Reference Date:	8/7/2001					
Current Date:	6/22/2006		(or date at which you wish to determine activity)			
Elapsed Time:	1780.000	days				
Half Life:	10409.625	days				
Exponential Term:	0.888229509					
Corrected Activity:	2057.672481	dpm	926.8794958	pCi	34.29454	Bq
Activity (Sr/Y-90)	4115.344962	dpm	1853.758992	pCi	68.58908	Bq

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: _____

Page 1 of 1

SR-90 Parent Ampoule for 2nd source CPC cal.

9/19/01
BMW

#62204-334

ampoule activity: ~~38,970 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

$\left(\frac{38970 \text{ dps}}{1 \text{ sec}}\right)\left(\frac{60 \text{ sec}}{1 \text{ min}}\right) = 2,338,200$ dpm in ampoule.

$\left(\frac{2338200}{2.22}\right) = 1053243.2$ pCi/m in ampoule - Actual, 1043563.363 pCi/m
÷100 = 10435.8 pCi/ml

Actual Amount Transferred.... 4.9531 g

093 4.9531 g / 4.99897 actual = 0.9908 0.9908 x 2.3382×10^6 = 2,316,688.56 dpm

-094 $\left(\frac{2,316,688}{100 \text{ ml}}\right)$ = 23,166 dpm/ml or 104.3 pCi/ml

231.66 dpm/ml
JK 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 MN
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	9/19/06	01-093	SR-90	ampule C2204-374	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	
9/26/01	9/26/02	Ba-28	STD. Barium Carrier	Mo38-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 Ind capture weight sheet.
10/4/01	~~10/4/02~~ ~~10/4/06~~ 10/4/02	01-095	U-232	97-105	10,994 dpm/mL	9-6-97	1 mL	500 mL	—	70 yr	21.99 dpm	1M HNO3	CMA	JTK	
10/12/01	10/12/02	01-096	Ra226	98-006	1316 dpm/mL	2/12/98	1.0 mL	100.0 mL	—	1600 yr	13.16 dpm/mL	1M HNO3	AM	JTK	
10/18/01	~~10/18/02~~ ~~10/18/06~~ 10/18/02	01-097	(ABT) SR90/Y90	01032	1765.4 dpm/mL	3/28/03	2.0 mL	100.0 mL	N/A	28.5 yr	(35.31) total ~~23.99~~ dpm/mL	~~1M HNO3~~	BMW	AW	Decay Correct = 1699.65 dpm/mL

decay corrected 34.83 JTK 10-29-01

Additional Comments:

SL-RAD-044, revised 3/2/01
Qstlmo05\qa\FORMS\ST-LOUIS\RAD\RAD044.doc

SEVERN TRENT STL

Calibration for Protean

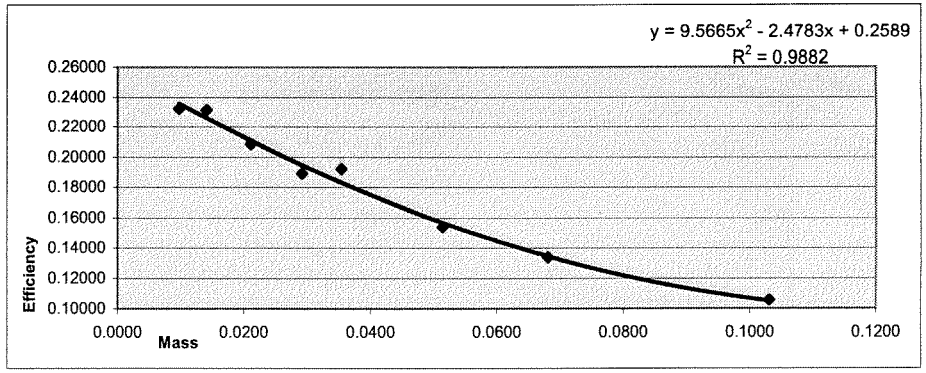
Alpha Th-230 BaSO4 for Ra-226

SEVERN TRENT STL

Detector Efficiency Curves

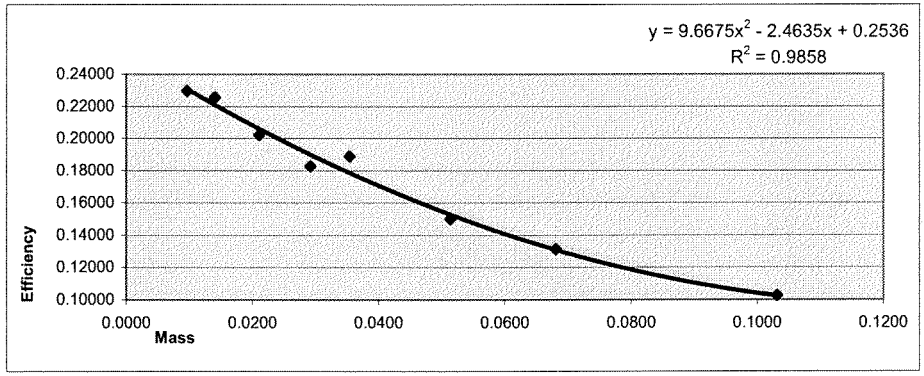
Alpha BaSO4 Th-230 Attenuation Protean 0
4/23/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
0	0.0097	40	40794	1019.850	0.23213
0	0.0141	40	40686	1017.150	0.23152
0	0.0211	40	36676	916.900	0.20870
0	0.0292	40	33213	830.325	0.18899
0	0.0354	40	33783	844.575	0.19224
0	0.0514	40	27051	676.275	0.15393
0	0.0681	40	23509	587.725	0.13377
0	0.1031	40	18547	463.675	0.10554



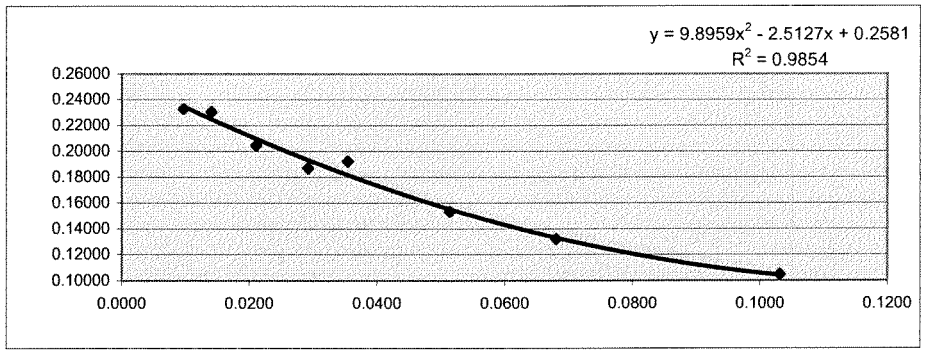
Alpha BaSO4 Th-230 Attenuation Protean 1
4/23/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
1	0.0097	40	40335	1008.375	0.22952
1	0.0141	40	39614	990.350	0.22542
1	0.0211	40	35521	888.025	0.20213
1	0.0292	40	32086	802.150	0.18258
1	0.0354	40	33159	828.975	0.18869
1	0.0514	40	26308	657.700	0.14970
1	0.0681	40	23046	576.150	0.13114
1	0.1031	40	17997	449.925	0.10241



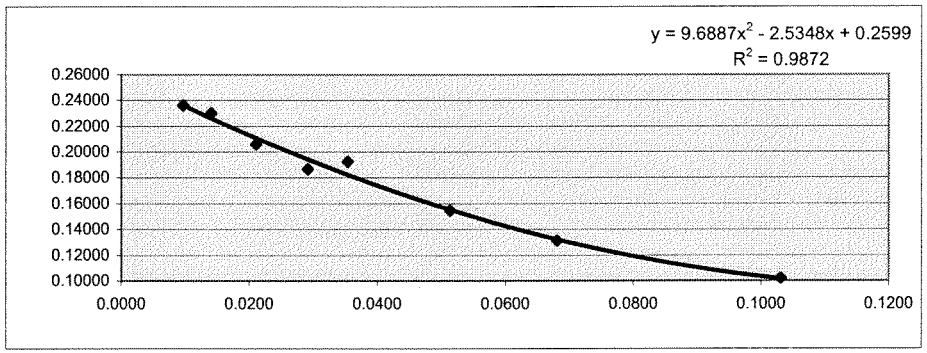
Alpha BaSO4 Th-230 Attenuation Protean 2
4/23/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
2	0.0097	40	40891	1022.275	0.23268
2	0.0141	40	40499	1012.475	0.23045
2	0.0211	40	35923	898.075	0.20441
2	0.0292	40	32801	820.025	0.18665
2	0.0354	40	33712	842.800	0.19183
2	0.0514	40	26936	673.400	0.15328
2	0.0681	40	23173	579.325	0.13186
2	0.1031	40	18376	459.400	0.10457



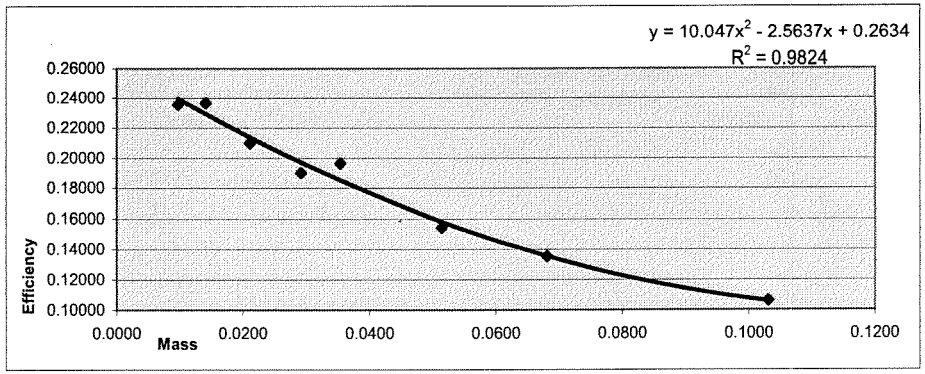
Alpha BaSO4 Th-230 Attenuation Protean 3
4/23/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
3	0.0097	40	41477	1036.925	0.23602
3	0.0141	40	40456	1011.400	0.23021
3	0.0211	40	36148	903.700	0.20569
3	0.0292	40	32806	820.150	0.18668
3	0.0354	40	33802	845.050	0.19235
3	0.0514	40	27165	679.125	0.15458
3	0.0681	40	23023	575.575	0.13101
3	0.1031	40	17879	446.975	0.10174



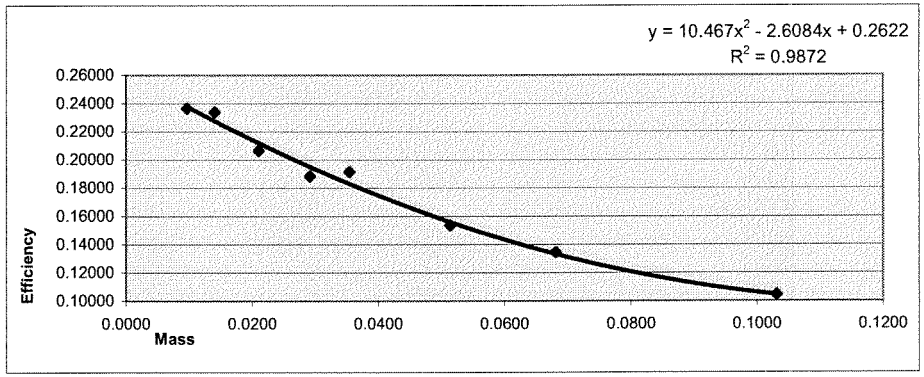
Alpha BaSO4 Th-230 Attenuation Protean 4
4/23/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
4	0.0097	40	41394	1034.850	0.23555
4	0.0141	40	41566	1039.150	0.23653
4	0.0211	40	36901	922.525	0.20998
4	0.0292	40	33382	834.550	0.18996
4	0.0354	40	34528	863.200	0.19648
4	0.0514	40	27135	678.375	0.15441
4	0.0681	40	23757	593.925	0.13519
4	0.1031	40	18666	466.650	0.10622



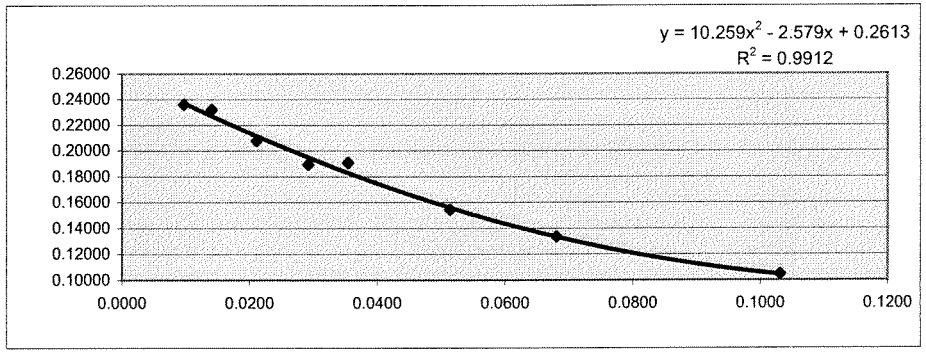
Alpha BaSO4 Th-230 Attenuation Protean 5
4/23/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
5	0.0097	40	41544	1038.600	0.23640
5	0.0141	40	41117	1027.925	0.23397
5	0.0211	40	36265	906.625	0.20636
5	0.0292	40	33082	827.050	0.18825
5	0.0354	40	33650	841.250	0.19148
5	0.0514	40	26950	673.750	0.15336
5	0.0681	40	23600	590.000	0.13429
5	0.1031	40	18315	457.875	0.10422



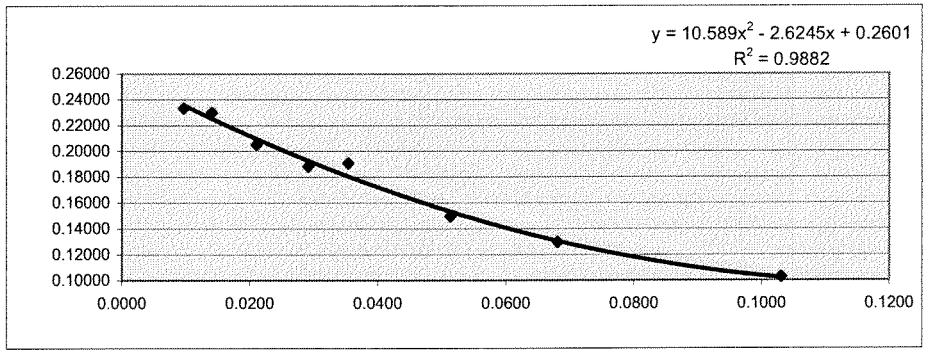
Alpha BaSO4 Th-230 Attenuation Protean 6
4/23/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
6	0.0097	40	41453	1036.325	0.23588
6	0.0141	40	40746	1018.650	0.23186
6	0.0211	40	36462	911.550	0.20748
6	0.0292	40	33258	831.450	0.18925
6	0.0354	40	33508	837.700	0.19067
6	0.0514	40	27106	677.650	0.15424
6	0.0681	40	23411	585.275	0.13322
6	0.1031	40	18374	459.350	0.10455



Alpha BaSO4 Th-230 Attenuation Protean 7
4/23/2004

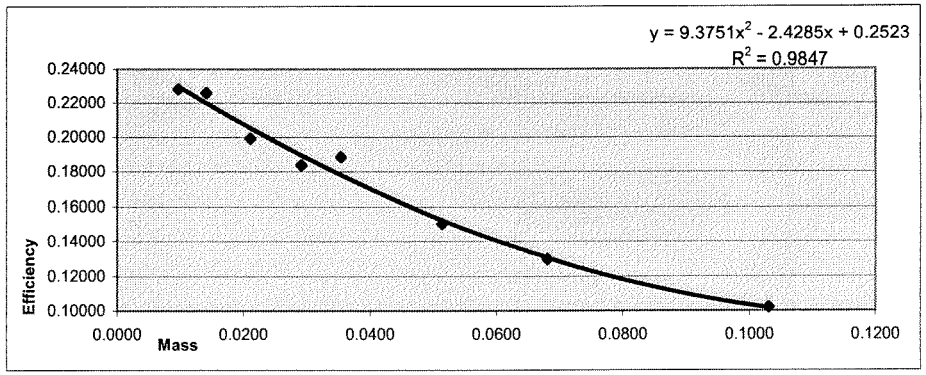
Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
7	0.0097	40	40973	1024.325	0.23315
7	0.0141	40	40422	1010.550	0.23002
7	0.0211	40	36048	901.200	0.20513
7	0.0292	40	33071	826.775	0.18819
7	0.0354	40	33499	837.475	0.19062
7	0.0514	40	26293	657.325	0.14962
7	0.0681	40	22789	569.725	0.12968
7	0.1031	40	18026	450.650	0.10257



Alpha BaSO4 Th-230 Attenuation Protean 8

4/21/2004

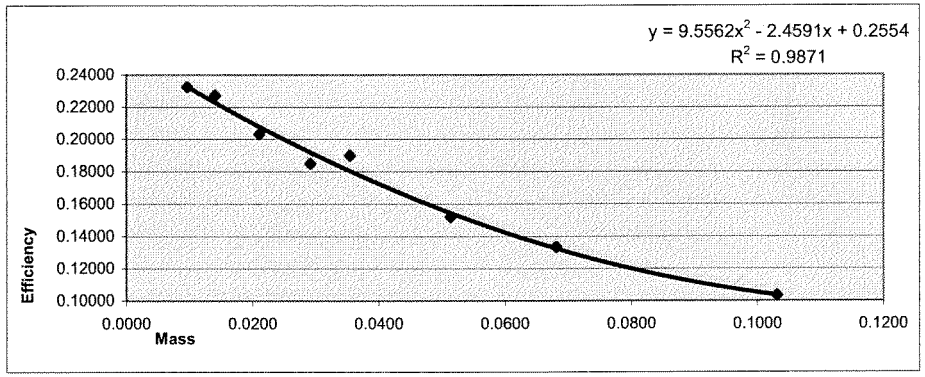
Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
8	0.0097	40	40072	1001.800	0.22802
8	0.0141	40	39669	991.725	0.22573
8	0.0211	40	35008	875.200	0.19921
8	0.0292	40	32272	806.800	0.18364
8	0.0354	40	33119	827.975	0.18846
8	0.0514	40	26378	659.450	0.15010
8	0.0681	40	22782	569.550	0.12964
8	0.1031	40	17906	447.650	0.10189



Alpha BaSO4 Th-230 Attenuation Protean 9

4/21/2004

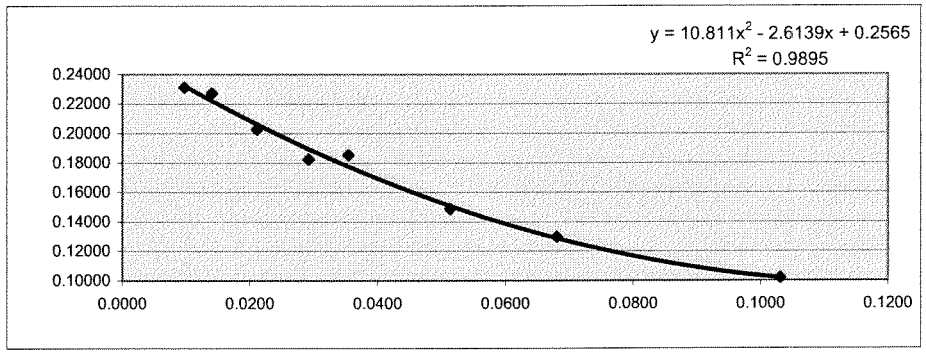
Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
9	0.0097	40	40808	1020.200	0.23221
9	0.0141	40	39904	997.600	0.22707
9	0.0211	40	35690	892.250	0.20309
9	0.0292	40	32466	811.650	0.18474
9	0.0354	40	33340	833.500	0.18972
9	0.0514	40	26681	667.025	0.15182
9	0.0681	40	23402	585.050	0.13317
9	0.1031	40	18149	453.725	0.10327



Alpha BaSO4 Th-230 Attenuation Protean 10

4/21/2004

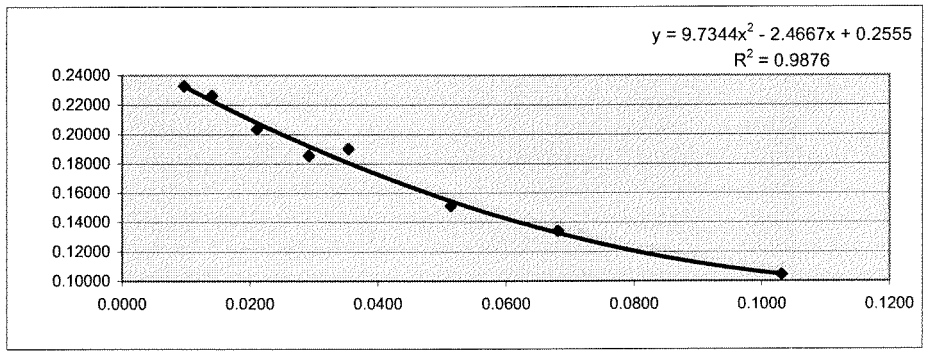
Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
10	0.0097	40	40565	1014.125	0.23083
10	0.0141	40	39891	997.275	0.22699
10	0.0211	40	35621	890.525	0.20270
10	0.0292	40	32048	801.200	0.18236
10	0.0354	40	32563	814.075	0.18529
10	0.0514	40	26129	653.225	0.14868
10	0.0681	40	22777	569.425	0.12961
10	0.1031	40	17867	446.675	0.10167



Alpha BaSO4 Th-230 Attenuation Protean 11

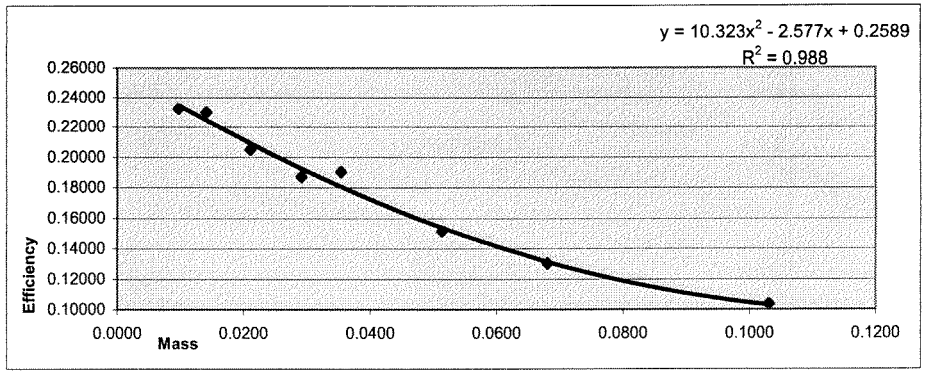
4/21/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
11	0.0097	40	40868	1021.700	0.23255
11	0.0141	40	39736	993.400	0.22611
11	0.0211	40	35749	893.725	0.20342
11	0.0292	40	32565	814.125	0.18531
11	0.0354	40	33378	834.450	0.18993
11	0.0514	40	26552	663.800	0.15109
11	0.0681	40	23532	588.300	0.13391
11	0.1031	40	18353	458.825	0.10444



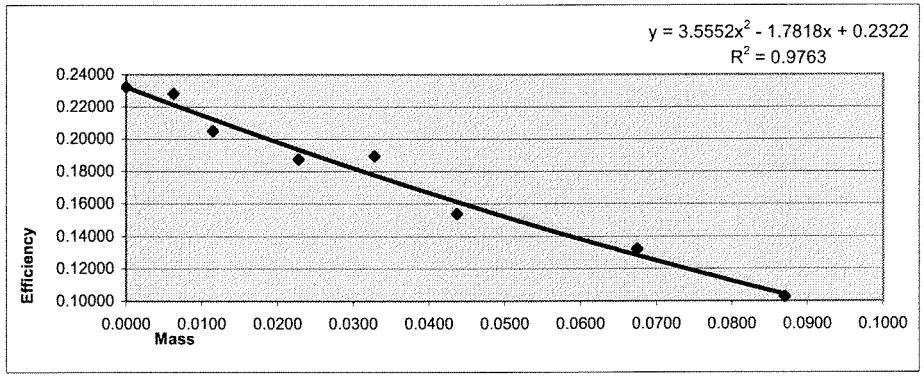
Alpha BaSO4 Th-230 Attenuation Protean 12
4/21/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
12	0.0097	40	40834	1020.850	0.23236
12	0.0141	40	40412	1010.300	0.22996
12	0.0211	40	36036	900.900	0.20506
12	0.0292	40	32876	821.900	0.18708
12	0.0354	40	33445	836.125	0.19031
12	0.0514	40	26597	664.925	0.15135
12	0.0681	40	22881	572.025	0.13020
12	0.1031	40	18172	454.300	0.10341



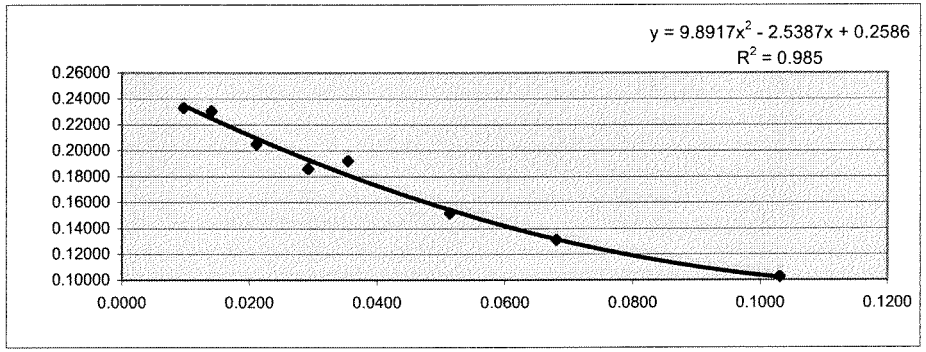
Alpha BaSO4 Th-230 Attenuation Protean 13
4/21/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
13	0.0000	40	40801	1020.025	0.23217
13	0.0063	40	40071	1001.775	0.22802
13	0.0115	40	35986	899.650	0.20477
13	0.0228	40	32929	823.225	0.18738
13	0.0328	40	33274	831.850	0.18934
13	0.0437	40	26995	674.875	0.15361
13	0.0675	40	23178	579.450	0.13189
13	0.0870	40	18018	450.450	0.10253



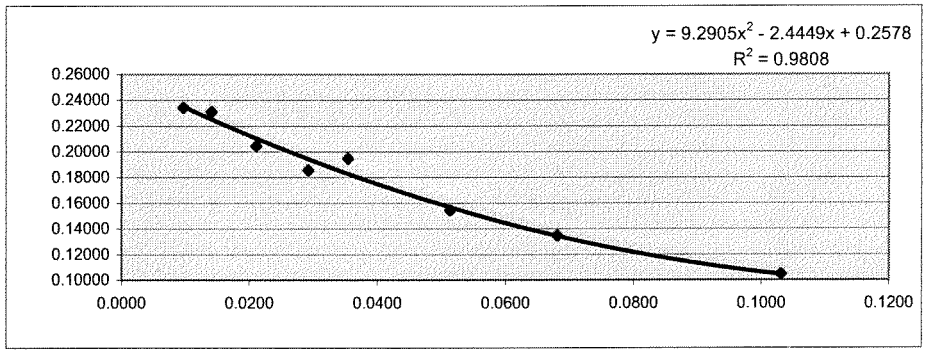
Alpha BaSO4 Th-230 Attenuation Protean 14
4/21/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
14	0.0097	40	40924	1023.100	0.23287
14	0.0141	40	40490	1012.250	0.23040
14	0.0211	40	36020	900.500	0.20497
14	0.0292	40	32662	816.550	0.18586
14	0.0354	40	33744	843.600	0.19202
14	0.0514	40	26665	666.625	0.15173
14	0.0681	40	23020	575.500	0.13099
14	0.1031	40	17980	449.500	0.10231



Alpha BaSO4 Th-230 Attenuation Protean 15
4/21/2004

Detector ID	Sample Wt	Count Time	Alpha	DPM 4393.4 CPM	Th230 Eff
15	0.0097	40	41162	1029.050	0.23423
15	0.0141	40	40588	1014.700	0.23096
15	0.0211	40	35908	897.700	0.20433
15	0.0292	40	32636	815.900	0.18571
15	0.0354	40	34175	854.375	0.19447
15	0.0514	40	27122	678.050	0.15433
15	0.0681	40	23656	591.400	0.13461
15	0.1031	40	18346	458.650	0.10440



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

SEVERN TRENT STL

Voltage Plateaus and Discriminator Settings

Unit #1

MPC 9604 FACTORY PERFORMANCE EVALUATION

Factory performed tests for Instrument Serial Number: 233126-BO

Voltage Settings | **ULD Settings**

Alpha & Beta Voltage 1515 | A 7 C 7

Alpha Only Voltage 705 | B 7 D 7

Efficiencies: DETECTOR A

Sr/y 90 56.08 % | Tc-99 36.544 %

Ni-63 16.2 % | Th-230 @ A/B Voltage 24.895 %

Th-230 @ A only Voltage 22.403 %

Efficiencies: DETECTOR B

Sr/y 90 55.438 % | Tc-99 36.418 %

Ni-63 15.62 % | Th-230 @ A/B Voltage 24.341 %

Th-230 @ A only Voltage 22.350 %

Efficiencies: DETECTOR C

Sr/y 90 56.114 % | Tc-99 36.527 %

Ni-63 15.9 % | Th-230 @ A/B Voltage 24.466 %

Th-230 @ A only Voltage 22.627 %

Efficiencies: DETECTOR D

Sr/y 90 53.276 % | Tc-99 34.957 %

Ni-63 15.78 % | Th-230 @ A/B Voltage 24.717 %

Th-230 @ A only Voltage 23.019 %

Backgrounds

Detector A:

Alpha Background 0.07
Beta Background 0.64

Detector B:

Alpha Background 0.05
Beta Background 0.52

Detector C:

Alpha Background 0.06
Beta Background 0.47

Detector D:

Alpha Background 0.05
Beta Background 0.51

Background Count Time was 1000 Minutes.

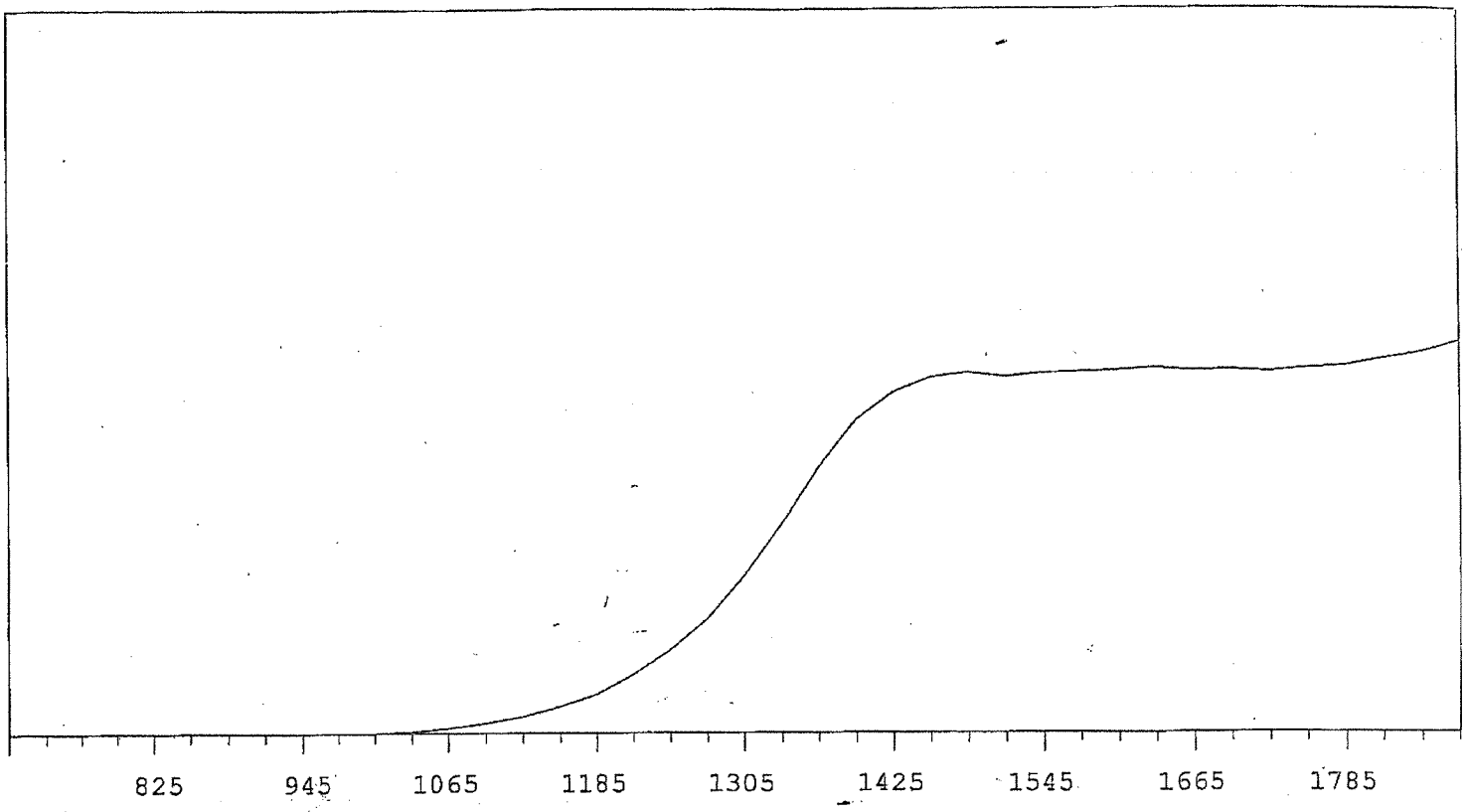
Tests performed and recorded by: Gregory D. Walker

Date: 11/26/02

*ALL EFFICIENCIES WERE OBTAINED USING A 2" DISTRIBUTED SOURCE AT OPTIMAL GEOMETRY EXCEPT Th-230, WHICH WAS AT A DEPTH OF ¼".

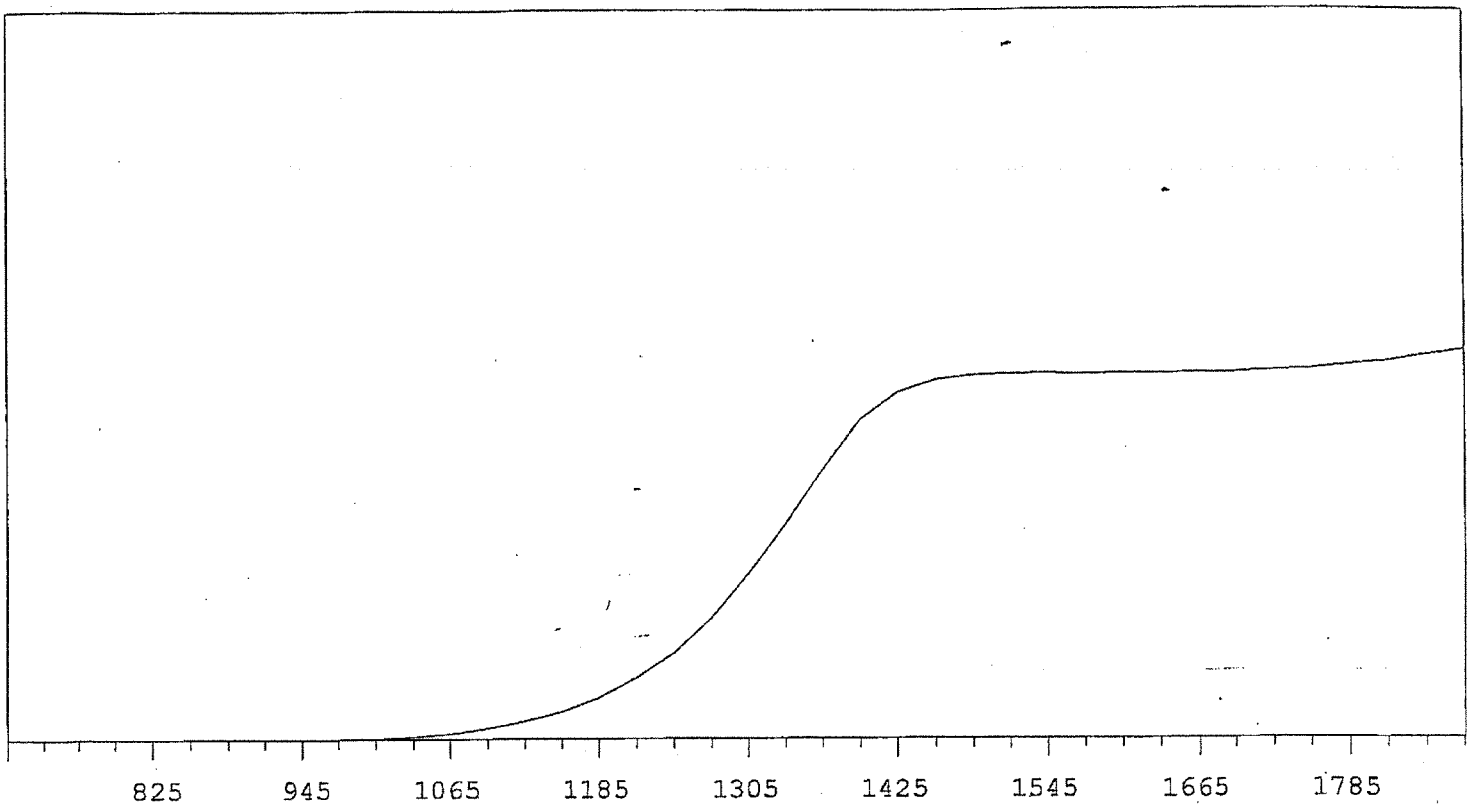
Unit #1

MPC 9604 Plateau 1 MPC 9604 Detector A 11/18/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	1		1305	16470	+92.44
735	2		1335	21902	+79.58
765	0	-33.33	1365	27818	+60.78
795	1	-33.33	1395	32763	+41.06
825	1	+0.00	1425	35569	+23.50
855	1	>100	1455	37141	+10.27
885	0	+41.67	1485	37680	+3.87
915	0	>100	1515	37264	+1.20
945	2	>100	1545	37658	+1.01
975	13	>100	1575	37826	+1.90
1005	48	>100	1605	37972	+0.72
1035	196	>100	1635	38183	+0.12
1065	548	>100	1665	37888	-0.71
1095	1042	>100	1695	37936	-0.41
1125	1730	>100	1725	37694	+0.85
1155	2776	>100	1755	38048	+2.46
1185	4064	>100	1785	38316	+4.39
1215	6147	>100	1815	39036	+6.01
1245	8704	>100	1845	39740	
1275	11959	>100	1875	40868	
1305	16470	+92.44			
1335	21902	+79.58			

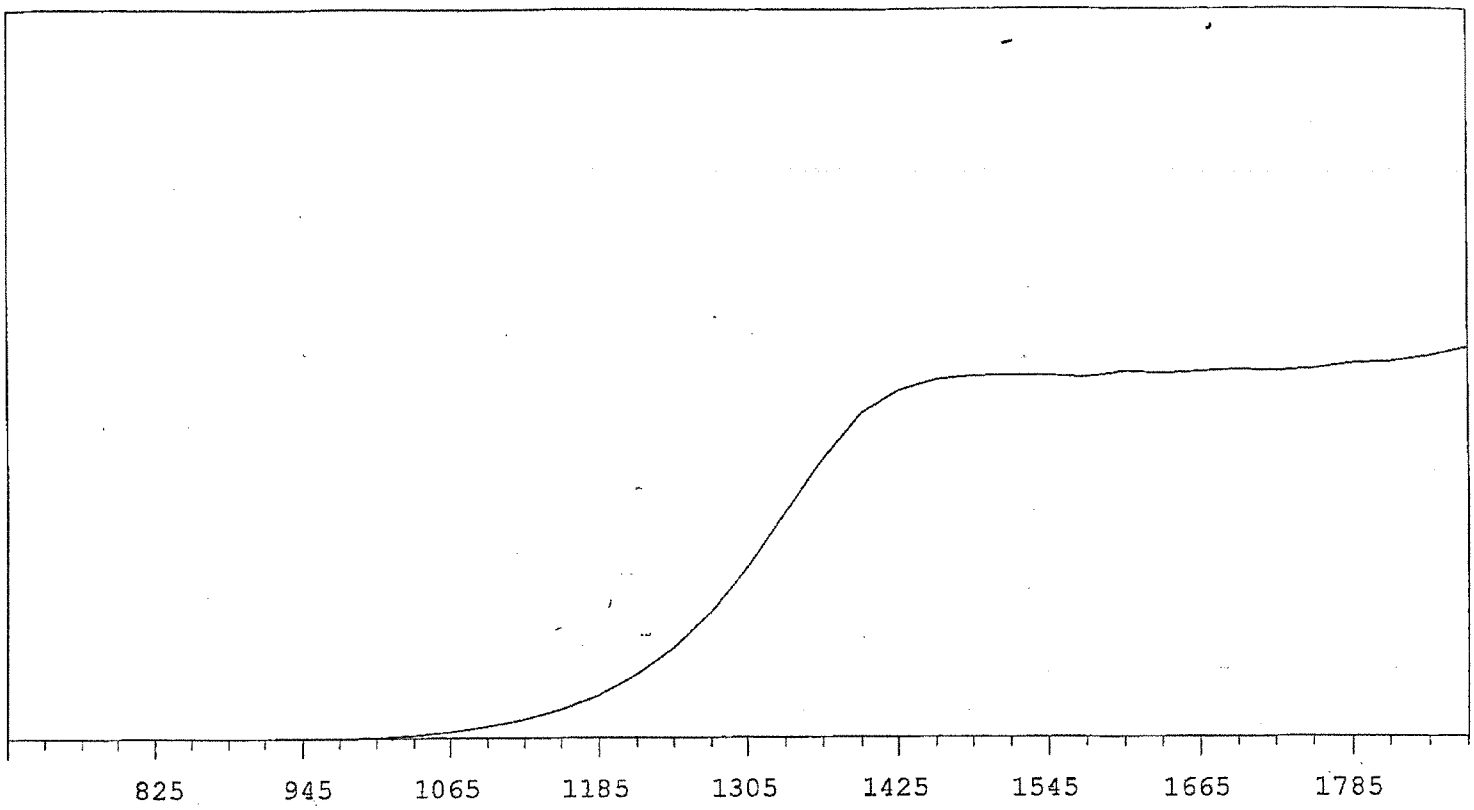
MPC 9604 Plateau 1 MPC 9604 Detector B 11/18/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts
705	3	
735	2	
765	2	
795	0	>100
825	0	>100
855	0	>100
885	1	>100
915	0	>100
945	1	>100
975	20	>100
1005	136	>100
1035	480	>100
1065	1292	>100
1095	2449	>100
1125	4069	>100
1155	6233	>100
1185	9445	>100
1215	14086	>100
1245	19724	>100
1275	27772	+99.39
1305	37846	+89.73
1335	49400	+76.76

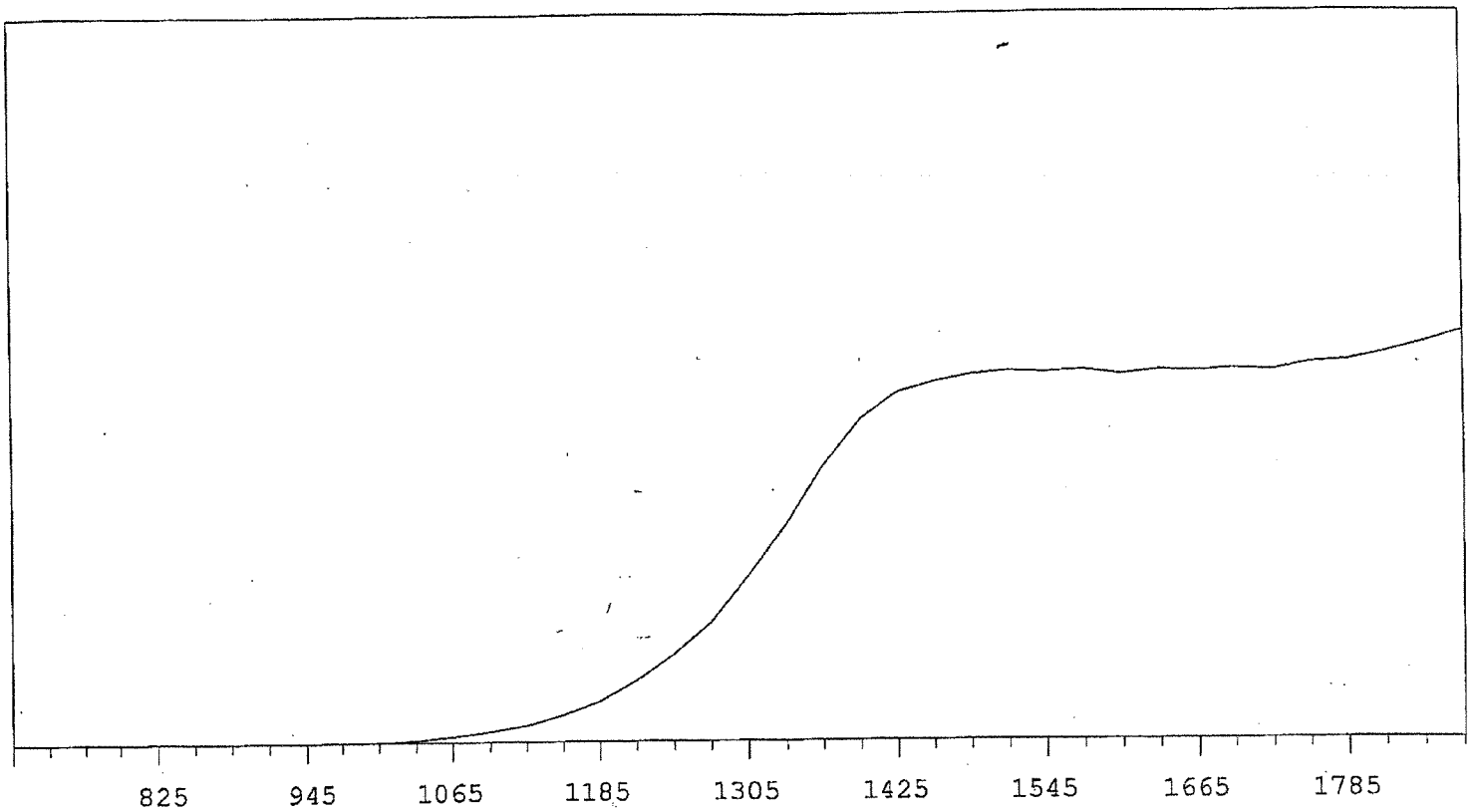
VOLTS	COUNTS	%/100 Volts
1305	37846	+89.73
1335	49400	+76.76
1365	61824	+59.37
1395	73411	+40.47
1425	79657	+23.20
1455	82603	+10.52
1485	83765	+4.29
1515	84094	+1.27
1545	84247	+0.38
1575	83954	+0.14
1605	84310	+0.17
1635	84238	+0.30
1665	84323	+0.33
1695	84330	+0.75
1725	84682	+1.66
1755	85015	+2.61
1785	86099	+3.67
1815	86967	+4.57
1845	88449	
1875	89824	

MPC 9604 Plateau 1 MPC 9604 Detector C 11/19/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	2		1305	39510	+89.34
735	1		1335	52183	+75.00
765	2		1365	64681	+56.02
795	0	-83.33	1395	75266	+36.30
825	0	>100	1425	80414	+19.94
855	1	>100	1455	83043	+8.78
885	0	>100	1485	83971	+3.46
915	1	>100	1515	84202	+0.54
945	5	>100	1545	84151	+0.51
975	40	>100	1575	83636	+0.50
1005	178	>100	1605	84901	+0.90
1035	611	>100	1635	84465	+1.26
1065	1455	>100	1665	84881	+0.31
1095	2686	>100	1695	85245	+0.76
1125	4338	>100	1725	84904	+1.52
1155	6682	>100	1755	85423	+2.21
1185	9895	>100	1785	86741	+3.54
1215	14706	>100	1815	87179	+4.71
1245	20868	>100	1845	88620	
1275	29167	+99.72	1875	90675	
1305	39510	+89.34			
1335	52183	+75.00			

MPC 9604 Plateau 1 MPC 9604 Detector D 11/19/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts
705	1	
735	0	
765	3	+0.00
795	2	>100
825	0	-95.24
855	0	-83.33
885	2	+0.00
915	0	>100
945	0	>100
975	8	>100
1005	61	>100
1035	224	>100
1065	577	>100
1095	1071	>100
1125	1681	>100
1155	2740	>100
1185	4109	>100
1215	6232	>100
1245	8882	>100
1275	12116	>100
1305	16823	+91.81
1335	22142	+78.78

VOLTS	COUNTS	%/100 Volts
1305	16823	+91.81
1335	22142	+78.78
1365	28133	+59.68
1395	32974	+39.42
1425	35720	+22.04
1455	36766	+10.79
1485	37553	+4.71
1515	37914	+2.42
1545	37768	+0.04
1575	38025	-0.08
1605	37519	+0.04
1635	37994	+0.32
1665	37808	+0.54
1695	38062	+1.00
1725	37790	+2.13
1755	38573	+3.55
1785	38772	+5.80
1815	39626	+7.23
1845	40662	
1875	41958	

#2

MPC 9604 FACTORY PERFORMANCE EVALUATION

Factory performed tests for Instrument Serial Number: 236534

Voltage Settings | **ULD Settings**

Alpha & Beta Voltage 1515 | A 7.0 C 7.0

Alpha Only Voltage 705 | B 7.0 D 7.0

Efficiencies: DETECTOR A

Sr/y 90 55.844 % | Tc-99 36.440 %

Ni-63 16.731 % | Th-230 @ A/B Voltage 25.353 %

Th-230 @ A only Voltage 22.314 %

Efficiencies: DETECTOR B

Sr/y 90 55.898 % | Tc-99 36.482 %

Ni-63 16.599 % | Th-230 @ A/B Voltage 24.934 %

Th-230 @ A only Voltage 22.030 %

Efficiencies: DETECTOR C

Sr/y 90 55.644 % | Tc-99 37.968 %

Ni-63 15.840 % | Th-230 @ A/B Voltage 24.941 %

Th-230 @ A only Voltage 22.747 %

Efficiencies: DETECTOR D

Sr/y 90 54.607 % | Tc-99 37.028 %

Ni-63 16.089 % | Th-230 @ A/B Voltage 24.430 %

Th-230 @ A only Voltage 21.638 %

Backgrounds

Detector A:

Alpha Background 0.06
Beta Background 0.452

Detector B:

Alpha Background 0.07
Beta Background 0.475

Detector C:

Alpha Background 0.08
Beta Background 0.470

Detector D:

Alpha Background 0.083
Beta Background 0.481

Background Count Time was 500 Minutes.

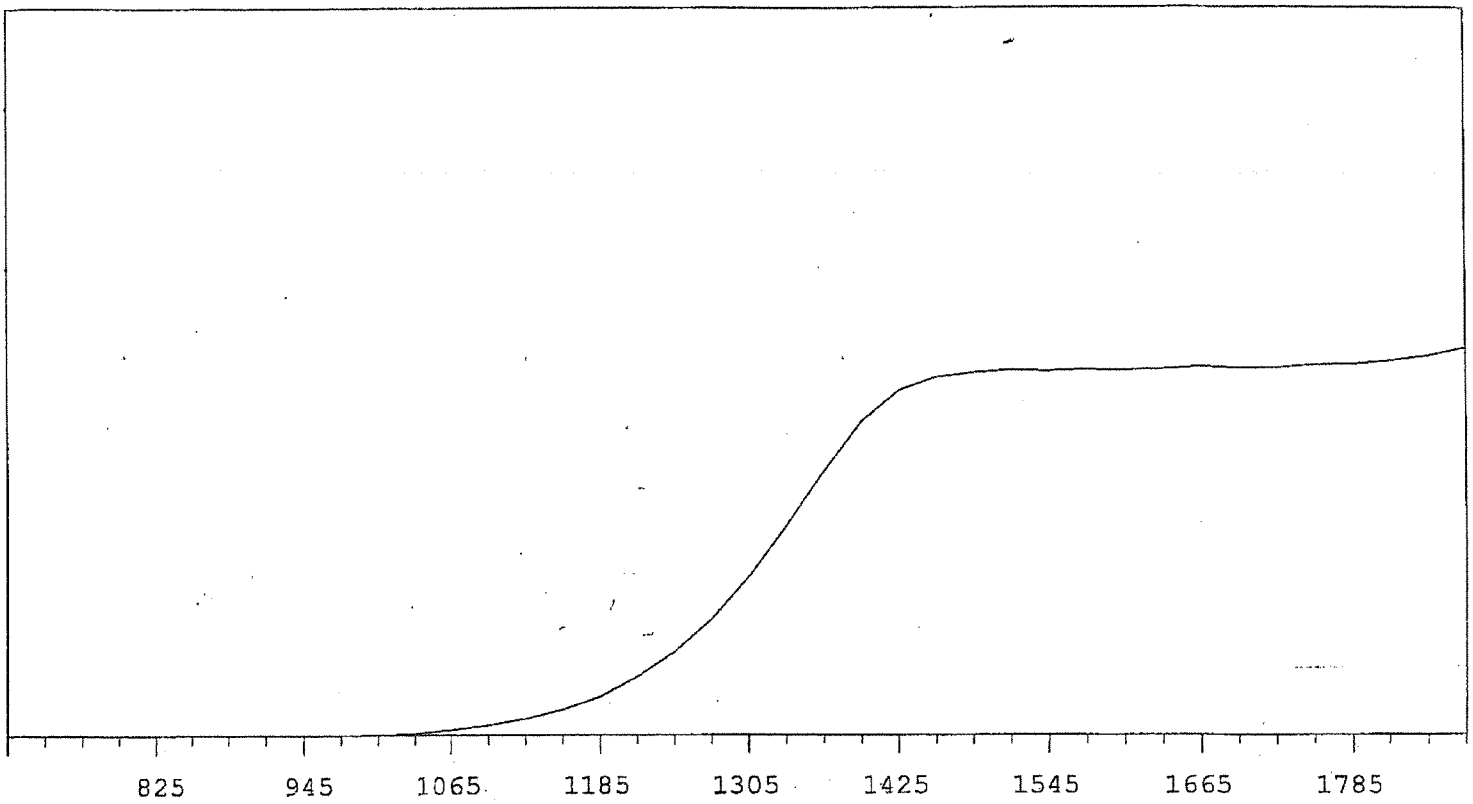
Tests performed and recorded by: [signature]

Date: 12/31/02

*ALL EFFICIENCIES WERE OBTAINED USING A 2" DISTRIBUTED SOURCE AT OPTIMAL GEOMETRY EXCEPT Th-230, WHICH WAS AT A DEPTH OF ¼".

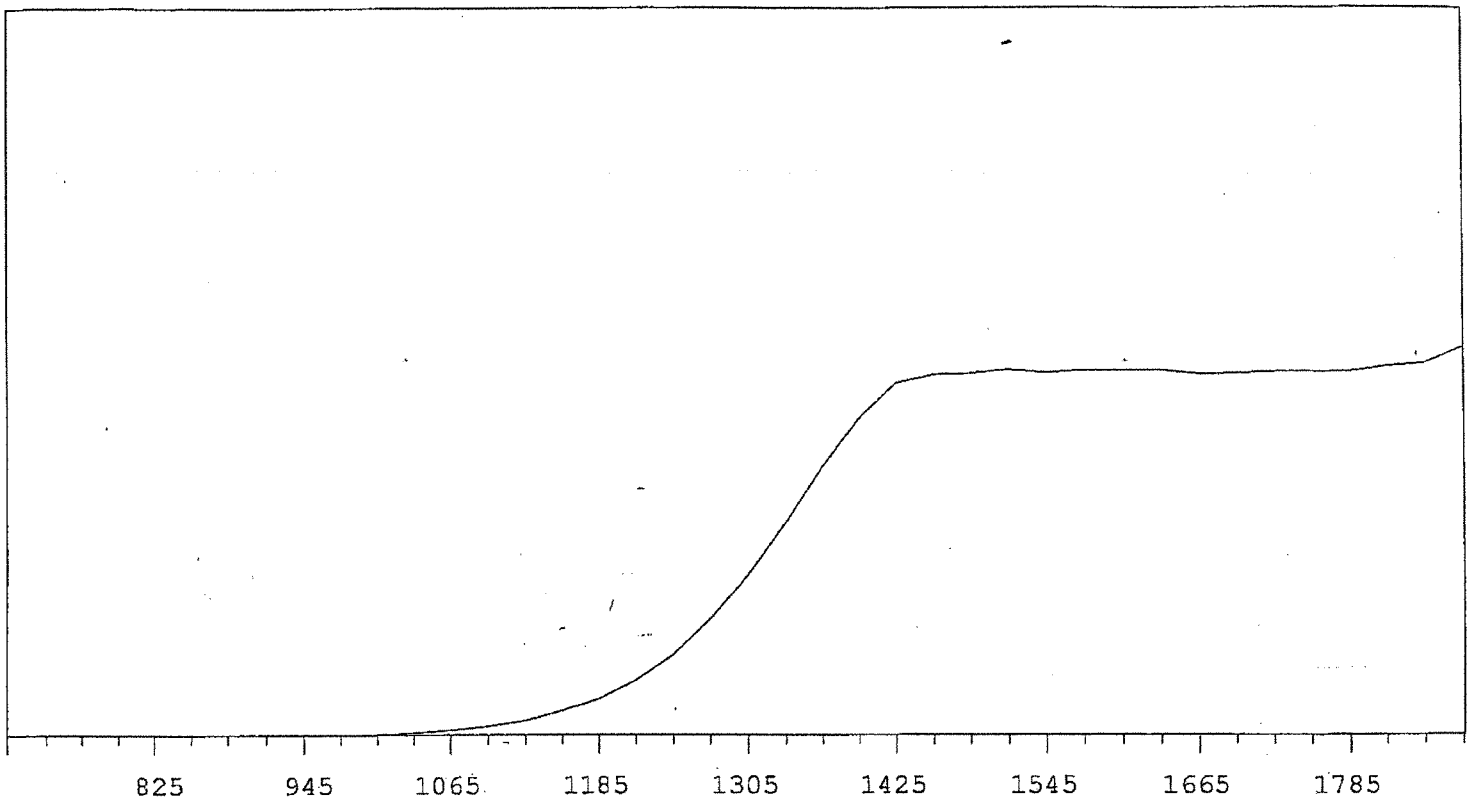
Unit #82
TJK 1-26-04

MPC 9604 Plateau 1 MPC 9604 Detector A 12/16/2002
Alpha Volts: 705 Beta Volts: 1335



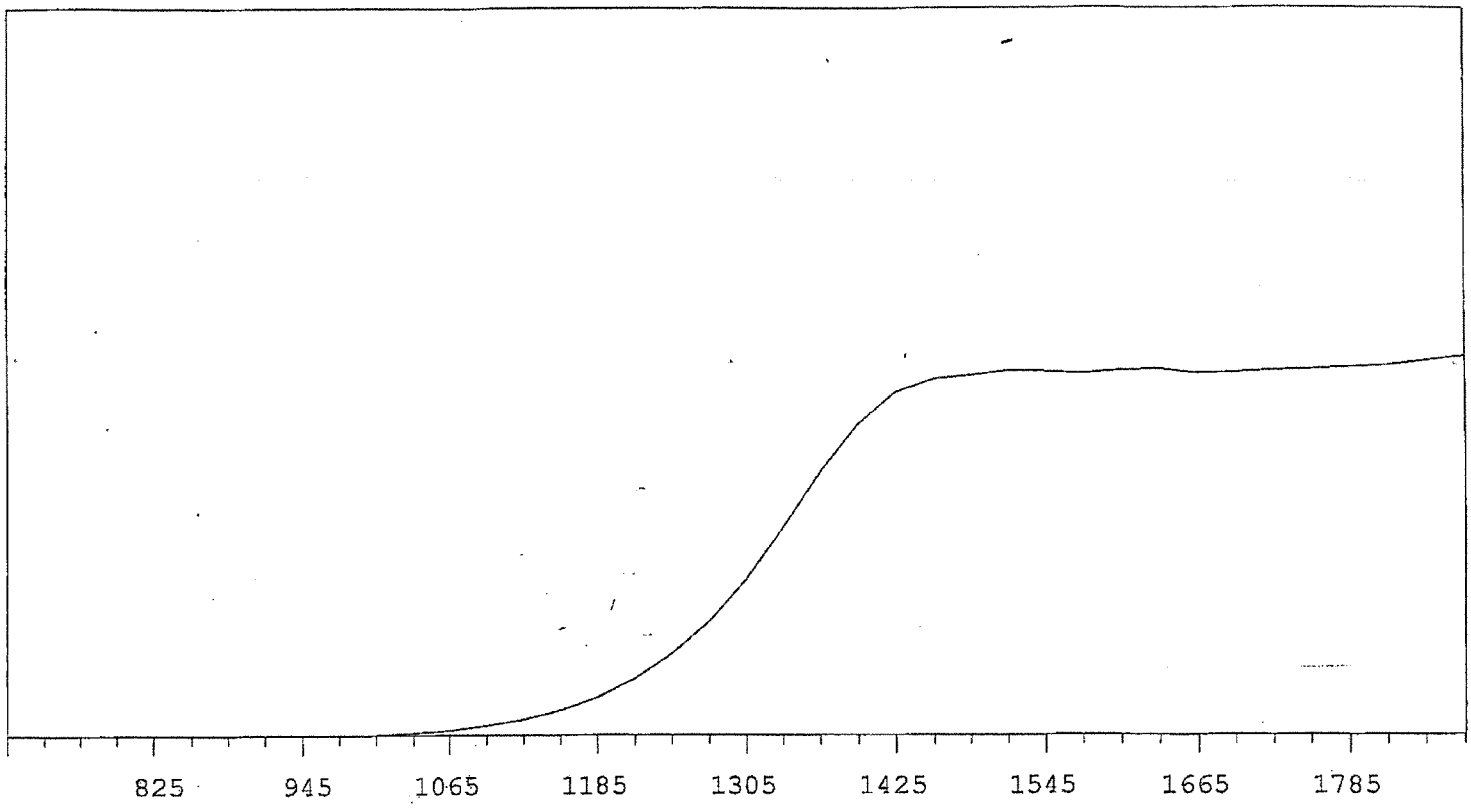
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	1		1305	36094	+91.50
735	1		1335	47847	+79.16
765	0		1365	60405	+61.85
795	1	>100	1395	71873	+42.39
825	0	+83.33	1425	78827	+24.53
855	0	+55.56	1455	81991	+11.59
885	1	>100	1485	83024	+4.37
915	1	>100	1515	83664	+1.56
945	1	>100	1545	83373	+0.42
975	19	>100	1575	83766	+0.14
1005	129	>100	1605	83496	+0.77
1035	425	>100	1635	83774	+0.43
1065	1183	>100	1665	84339	+0.47
1095	2313	>100	1695	83891	+0.57
1125	3764	>100	1725	84026	+0.69
1155	5857	>100	1755	84655	+1.58
1185	8765	>100	1785	84828	+2.39
1215	13328	>100	1815	85494	+3.58
1245	19028	>100	1845	86654	
1275	26407	>100	1875	88364	
1305	36094	+91.50			
1335	47847	+79.16			

MPC 9604 Plateau 1 MPC 9604 Detector B 12/17/2002
Alpha Volts: 705 Beta Volts: 1335



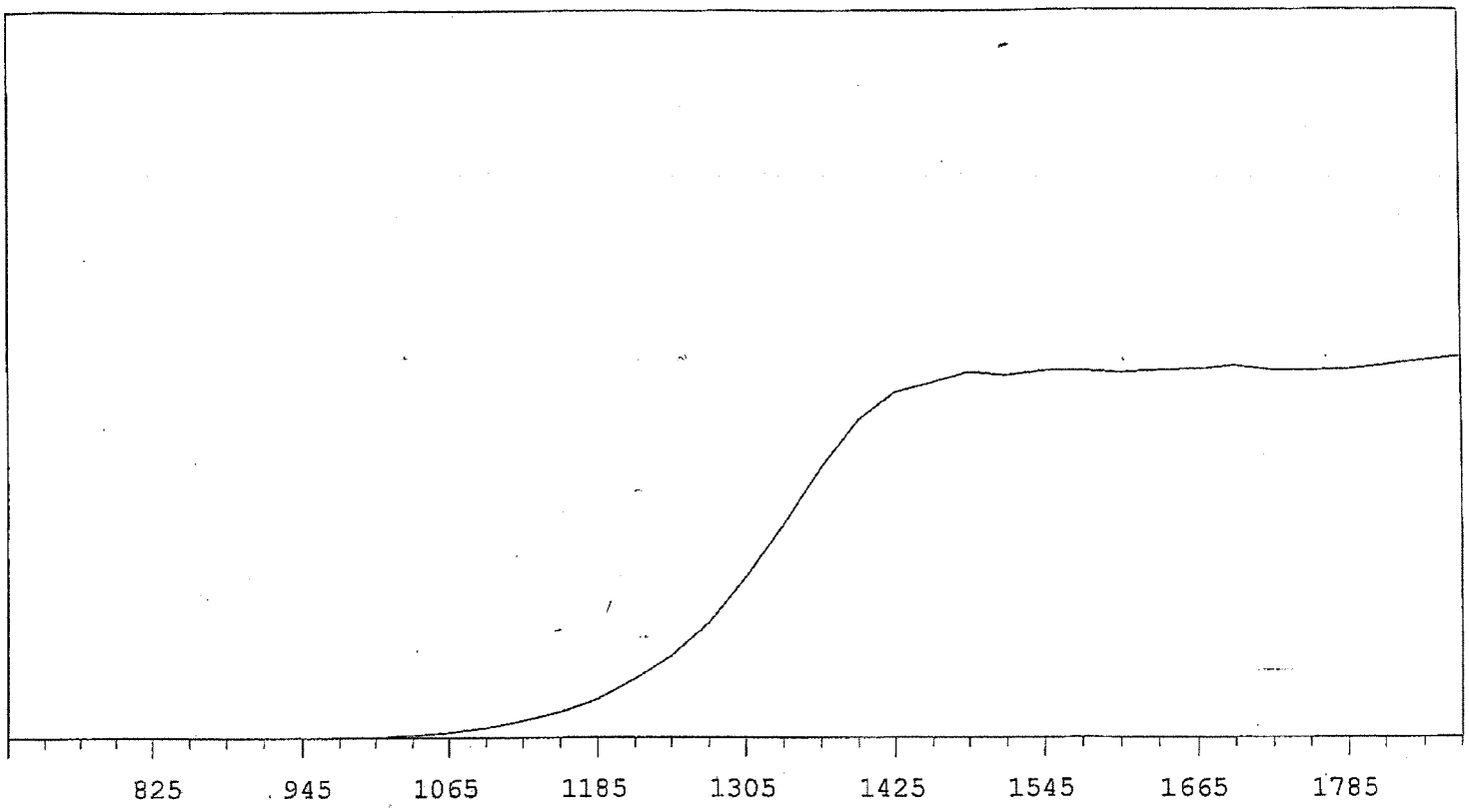
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	18047	+94.23
735	2		1335	23993	+79.11
765	0		1365	30302	+61.92
795	0	>100	1395	35719	+41.62
825	0	>100	1425	39617	+22.93
855	0	>100	1455	40588	+10.10
885	1	>100	1485	40726	+2.37
915	0	>100	1515	41160	+0.87
945	3	>100	1545	40771	+0.55
975	10	>100	1575	41098	+0.19
1005	58	>100	1605	41093	-0.14
1035	228	>100	1635	41116	-0.87
1065	543	>100	1665	40678	-0.49
1095	1009	>100	1695	40773	+0.05
1125	1647	>100	1725	40966	+0.68
1155	2812	>100	1755	41000	+1.27
1185	4080	>100	1785	40979	+1.90
1215	6168	>100	1815	41547	+4.96
1245	9044	>100	1845	41867	
1275	13094	>100	1875	43664	
1305	18047	+94.23			
1335	23993	+79.11			

MPC 9604 Plateau 1 MPC 9604 Detector C 12/16/2002
Alpha Volts: 705 Beta Volts: 1335



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	35990	+92.57
735	1		1335	47931	+79.59
765	0	+83.33	1365	60935	+62.26
795	0	>100	1395	71927	+42.50
825	1	>100	1425	79292	+24.26
855	2	-55.56	1455	82417	+11.85
885	0	>100	1485	83187	+4.61
915	0	>100	1515	84234	+1.35
945	0	>100	1545	84096	+0.71
975	14	>100	1575	83650	+0.45
1005	106	>100	1605	84371	+0.14
1035	468	>100	1635	84668	+0.04
1065	1134	>100	1665	83768	-0.23
1095	2223	>100	1695	83996	+0.27
1125	3673	>100	1725	84414	+1.38
1155	5797	>100	1755	84690	+1.53
1185	8786	>100	1785	85170	+2.05
1215	13052	>100	1815	85563	+2.91
1245	18927	>100	1845	86605	
1275	26347	>100	1875	87723	
1305	35990	+92.57			
1335	47931	+79.59			

MPC 9604 Plateau 1 MPC 9604 Detector D 12/16/2002
Alpha Volts: 705 Beta Volts: 1335



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	16474	+93.61
735	1		1335	21880	+79.65
765	0	+0.00	1365	27760	+60.71
795	1	>100	1395	32659	+40.09
825	0	>100	1425	35549	+23.08
855	0	+83.33	1455	36556	+10.47
885	2	>100	1485	37588	+4.60
915	1	>100	1515	37281	+2.31
945	1	>100	1545	37736	+0.31
975	6	>100	1575	37775	+0.67
1005	51	>100	1605	37518	+0.27
1035	240	>100	1635	37766	+1.07
1065	524	>100	1665	37896	+0.77
1095	1011	>100	1695	38192	-0.15
1125	1744	>100	1725	37742	-0.45
1155	2674	>100	1755	37757	+0.29
1185	4004	>100	1785	37860	+2.27
1215	6095	>100	1815	38301	+3.24
1245	8485	>100	1845	38765	
1275	11865	>100	1875	39170	
1305	16474	+93.61			
1335	21880	+79.65			

#3

MPC 9604 FACTORY PERFORMANCE EVALUATION

Factory performed tests for Instrument Serial Number: 236532

Voltage Settings | **ULD Settings**

Alpha & Beta Voltage 1515 | A 7.0 C 7.0

Alpha Only Voltage 705 | B 7.0 D 7.0

Efficiencies: DETECTOR A

Sr/y 90 54.530 % Tc-99 35.69 %

Ni-63 14.385 % Th-230 @ A/B Voltage 24.440 %

Th-230 @ A only Voltage 22.047 %

Efficiencies: DETECTOR B

Sr/y 90 54.993 % Tc-99 36.209 %

Ni-63 15.309 % Th-230 @ A/B Voltage 24.041 %

Th-230 @ A only Voltage 21.872 %

Efficiencies: DETECTOR C

Sr/y 90 54.541 % Tc-99 35.67 %

Ni-63 15.117 % Th-230 @ A/B Voltage 24.212 %

Th-230 @ A only Voltage 21.800 %

Efficiencies: DETECTOR D

Sr/y 90 54.296 % Tc-99 35.380 %

Ni-63 13.326 % Th-230 @ A/B Voltage 24.802 %

Th-230 @ A only Voltage 22.584 %

Backgrounds

Detector A:		Detector B:	
Alpha Background	0.05	Alpha Background	0.06
Beta Background	0.619	Beta Background	0.497

Detector C:		Detector D:	
Alpha Background	0.04	Alpha Background	0.05
Beta Background	0.516	Beta Background	0.716

Background Count Time was 500 Minutes.

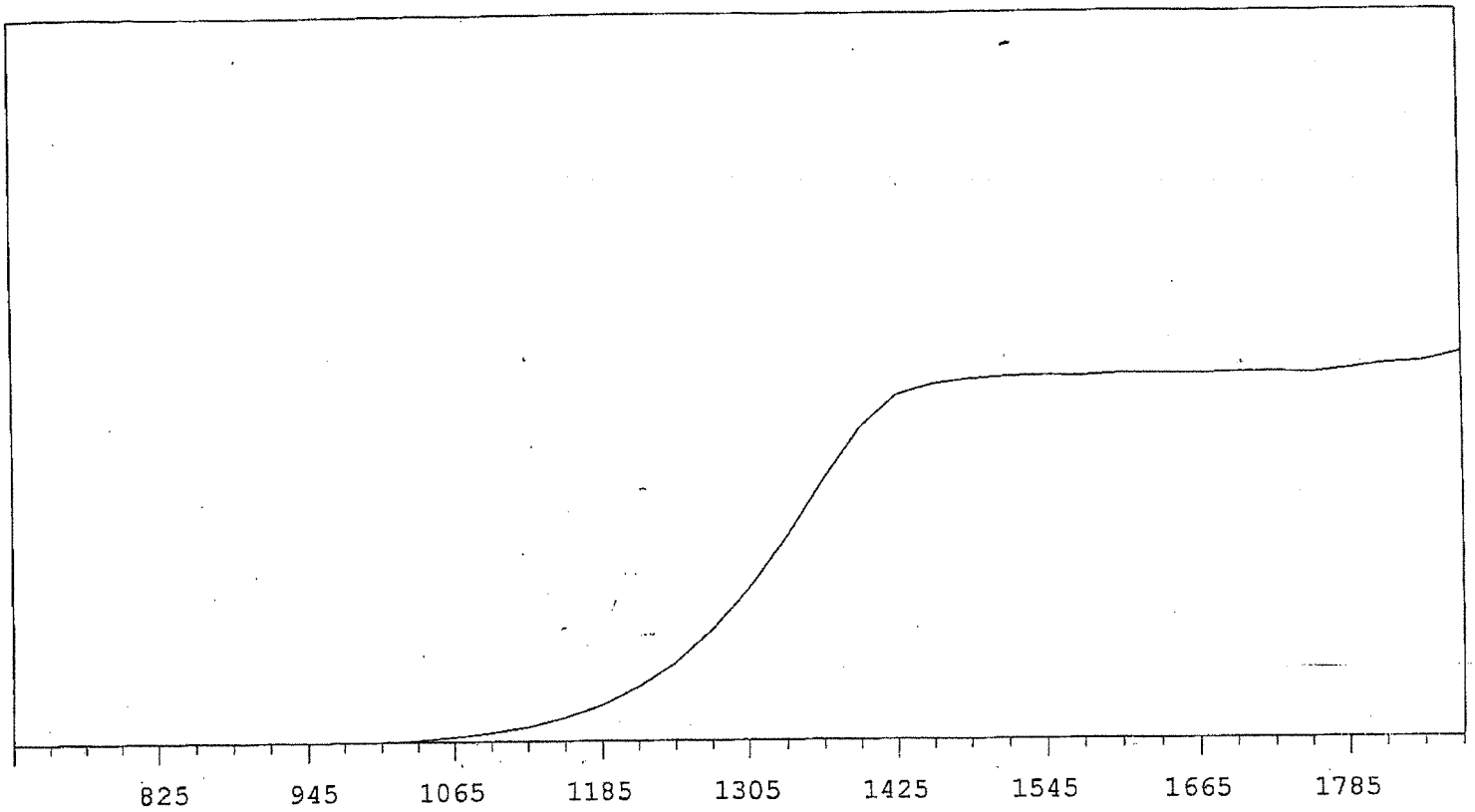
Tests performed and recorded by: [signature]

Date: 12/31/02

*ALL EFFICIENCIES WERE OBTAINED USING A 2" DISTRIBUTED SOURCE AT OPTIMAL GEOMETRY EXCEPT Th-230, WHICH WAS AT A DEPTH OF ¼".

Unit #3

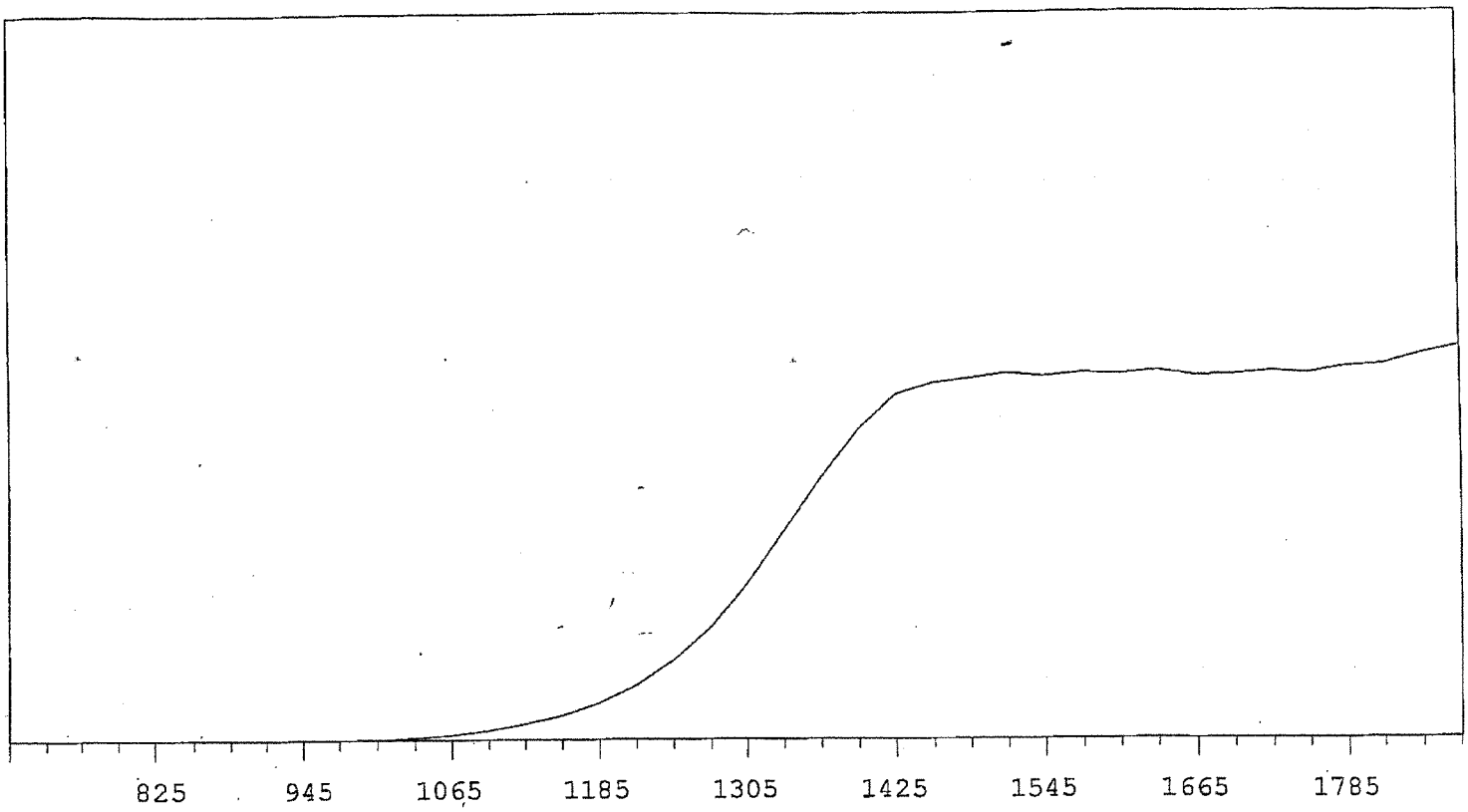
MPC 9604 Plateau 3 MPC 9604 Detector A 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts
705	1	
735	1	
765	1	-41.67
795	0	+0.00
825	1	-55.56
855	1	-83.33
885	0	>100
915	0	>100
945	4	>100
975	3	>100
1005	70	>100
1035	340	>100
1065	1026	>100
1095	2029	>100
1125	3406	>100
1155	5535	>100
1185	8369	>100
1215	12673	>100
1245	18158	>100
1275	25828	>100
1305	35294	+94.49
1335	47171	+81.80

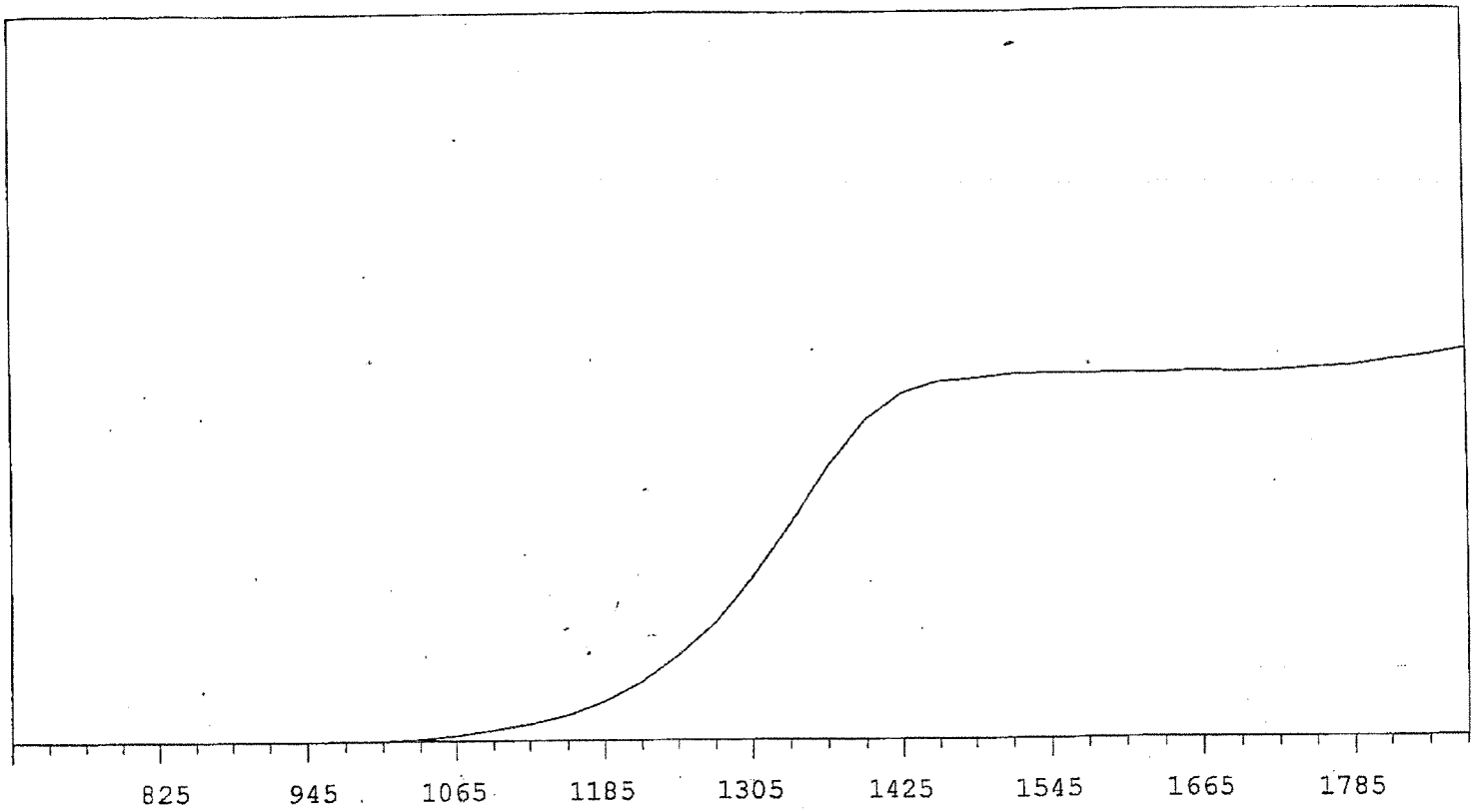
VOLTS	COUNTS	%/100 Volts
1305	35294	+94.49
1335	47171	+81.80
1365	60476	+64.73
1395	72428	+43.87
1425	80027	+24.74
1455	82481	+11.18
1485	83577	+4.19
1515	84156	+1.60
1545	84396	+0.77
1575	84086	+0.47
1605	84586	+0.33
1635	84651	+0.59
1665	84530	+0.30
1695	84858	+0.13
1725	84861	+0.66
1755	84646	+1.63
1785	85477	+2.55
1815	86640	+4.05
1845	87146	
1875	89075	

MPC 9604 Plateau 3 MPC 9604 Detector B 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	2		1305	16243	+93.24
735	1		1335	21731	+79.13
765	0		1365	27200	+62.01
795	0	>100	1395	32178	+42.43
825	1	>100	1425	35788	+25.03
855	4	-33.33	1455	37031	+12.41
885	0	>100	1485	37518	+4.25
915	0	-20.83	1515	38036	+1.82
945	1	>100	1545	37656	+0.52
975	3	>100	1575	37987	+0.42
1005	51	>100	1605	37837	+0.14
1035	181	>100	1635	38182	-0.55
1065	497	>100	1665	37639	+0.15
1095	964	>100	1695	37774	-0.05
1125	1656	>100	1725	38127	+1.81
1155	2551	>100	1755	37910	+2.19
1185	3834	>100	1785	38605	+3.76
1215	5718	>100	1815	38791	+5.71
1245	8336	>100	1845	39868	
1275	11756	>100	1875	40630	
1305	16243	+93.24			
1335	21731	+79.13			

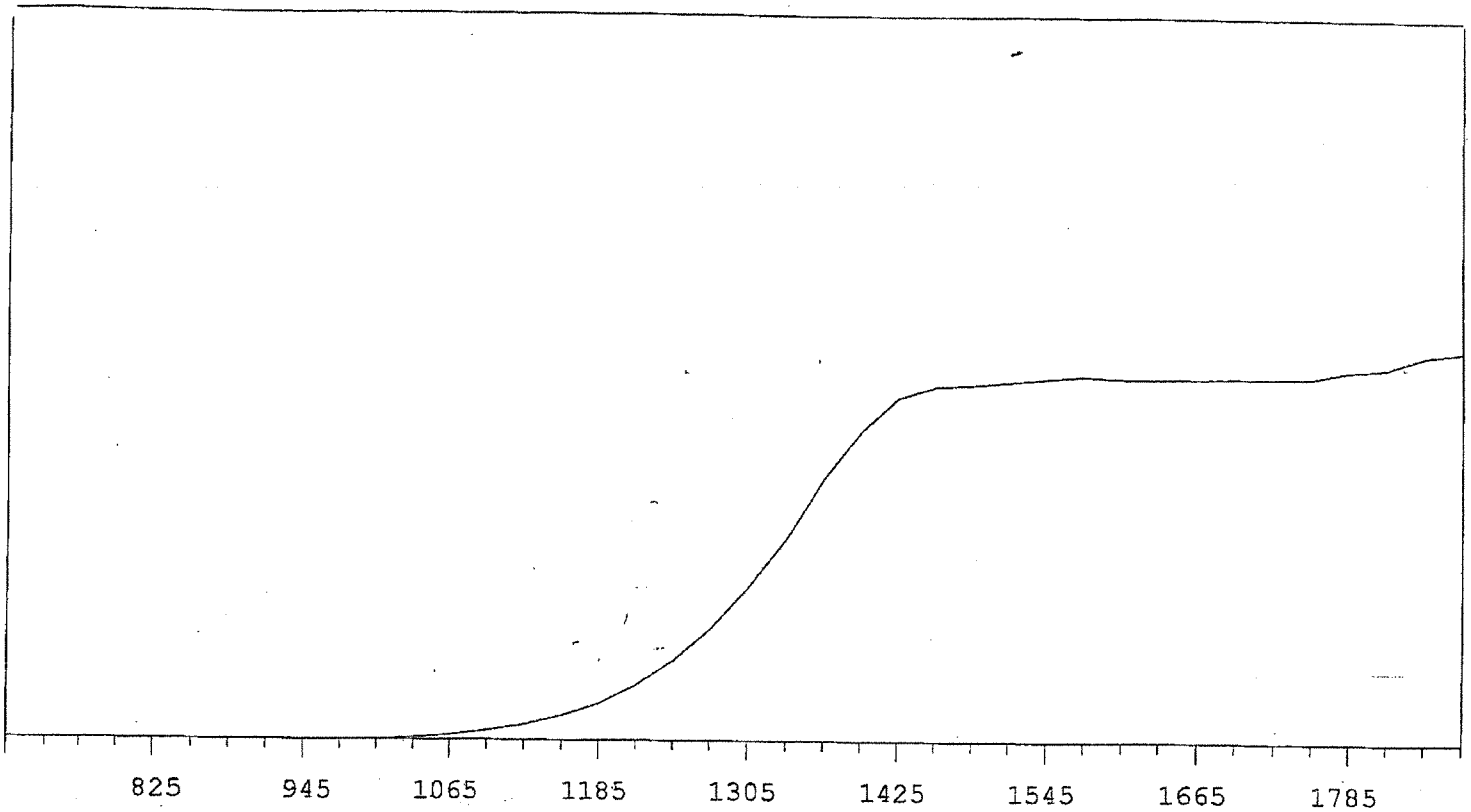
MPC 9604 Plateau 3 MPC 9604 Detector C 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts
705	1	
735	1	
765	0	-55.56
795	0	-83.33
825	1	+0.00
855	0	>100
885	0	>100
915	0	>100
945	3	>100
975	22	>100
1005	101	>100
1035	486	>100
1065	1178	>100
1095	2481	>100
1125	3840	>100
1155	5896	>100
1185	9085	>100
1215	13626	>100
1245	19695	>100
1275	27244	>100
1305	37587	+92.10
1335	49689	+78.64

VOLTS	COUNTS	%/100 Volts
1305	37587	+92.10
1335	49689	+78.64
1365	62948	+59.67
1395	73852	+39.59
1425	79926	+21.65
1455	82659	+10.02
1485	83402	+4.31
1515	84267	+1.73
1545	84482	+0.88
1575	84291	+0.00
1605	84505	+0.24
1635	84261	+0.22
1665	84807	+0.24
1695	84420	+0.83
1725	84730	+1.15
1755	85357	+2.52
1785	85810	+3.26
1815	87107	+4.16
1845	88075	
1875	89672	

MPC 9604 Plateau 3 MPC 9604 Detector D 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts
705	0	
735	0	
765	0	
795	0	>100
825	0	>100
855	0	>100
885	0	>100
915	0	>100
945	1	>100
975	9	>100
1005	46	>100
1035	205	>100
1065	519	>100
1095	975	>100
1125	1608	>100
1155	2563	>100
1185	3812	>100
1215	5780	>100
1245	8319	>100
1275	11591	>100
1305	15935	+93.94
1335	21039	+81.17

VOLTS	COUNTS	%/100 Volts
1305	15935	+93.94
1335	21039	+81.17
1365	27326	+63.87
1395	32222	+43.56
1425	35674	+23.86
1455	36879	+11.05
1485	37110	+4.30
1515	37448	+2.64
1545	37776	+1.77
1575	38028	+0.73
1605	37822	-0.15
1635	37836	-0.25
1665	37786	+0.15
1695	37906	+0.36
1725	37873	+1.75
1755	37997	+2.80
1785	38738	+5.15
1815	39085	+6.13
1845	40328	
1875	40827	

#4

MPC 9604 FACTORY PERFORMANCE EVALUATION

Factory performed tests for Instrument Serial Number: 236533

Voltage Settings **ULD Settings**

Alpha & Beta Voltage 1515 A 7.0 C 7.0

Alpha Only Voltage 705 B 7.0 D 7.0

Efficiencies: DETECTOR A

Sr/y 90 55.116 % Tc-99 36.67 %

Ni-63 16.083 % Th-230 @ A/B Voltage 24.835 %

Th-230 @ A only Voltage 21.648 %

Efficiencies: DETECTOR B

Sr/y 90 54.972 % Tc-99 36.409 %

Ni-63 15.648 % Th-230 @ A/B Voltage 24.479 %

Th-230 @ A only Voltage 22.123 %

Efficiencies: DETECTOR C

Sr/y 90 55.152 % Tc-99 36.257 %

Ni-63 15.587 % Th-230 @ A/B Voltage 23.546 %

Th-230 @ A only Voltage 21.714 %

Efficiencies: DETECTOR D

Sr/y 90 54.815 % Tc-99 36.269 %

Ni-63 15.94 % Th-230 @ A/B Voltage 24.314 %

Th-230 @ A only Voltage 22.574 %

Backgrounds

Detector A:

Alpha Background 0.05
Beta Background 0.609

Detector B:

Alpha Background 0.04
Beta Background 0.718

Detector C:

Alpha Background 0.06
Beta Background 0.462

Detector D:

Alpha Background 0.05
Beta Background 0.521

Background Count Time was 500 Minutes.

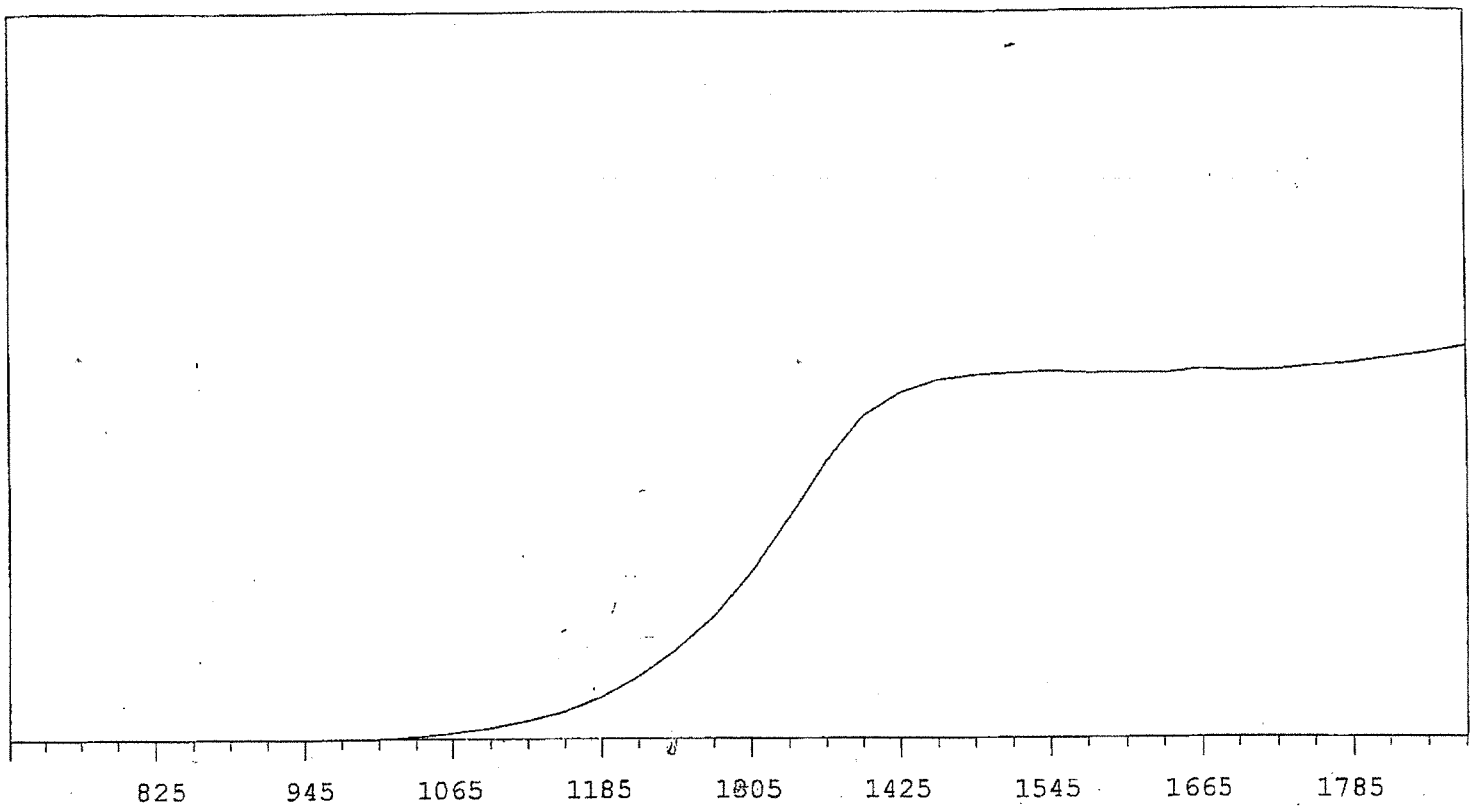
Tests performed and recorded by: [signature]

Date: 12/31/02

*ALL EFFICIENCIES WERE OBTAINED USING A 2" DISTRIBUTED SOURCE AT OPTIMAL GEOMETRY EXCEPT Th-230, WHICH WAS AT A DEPTH OF ¼".

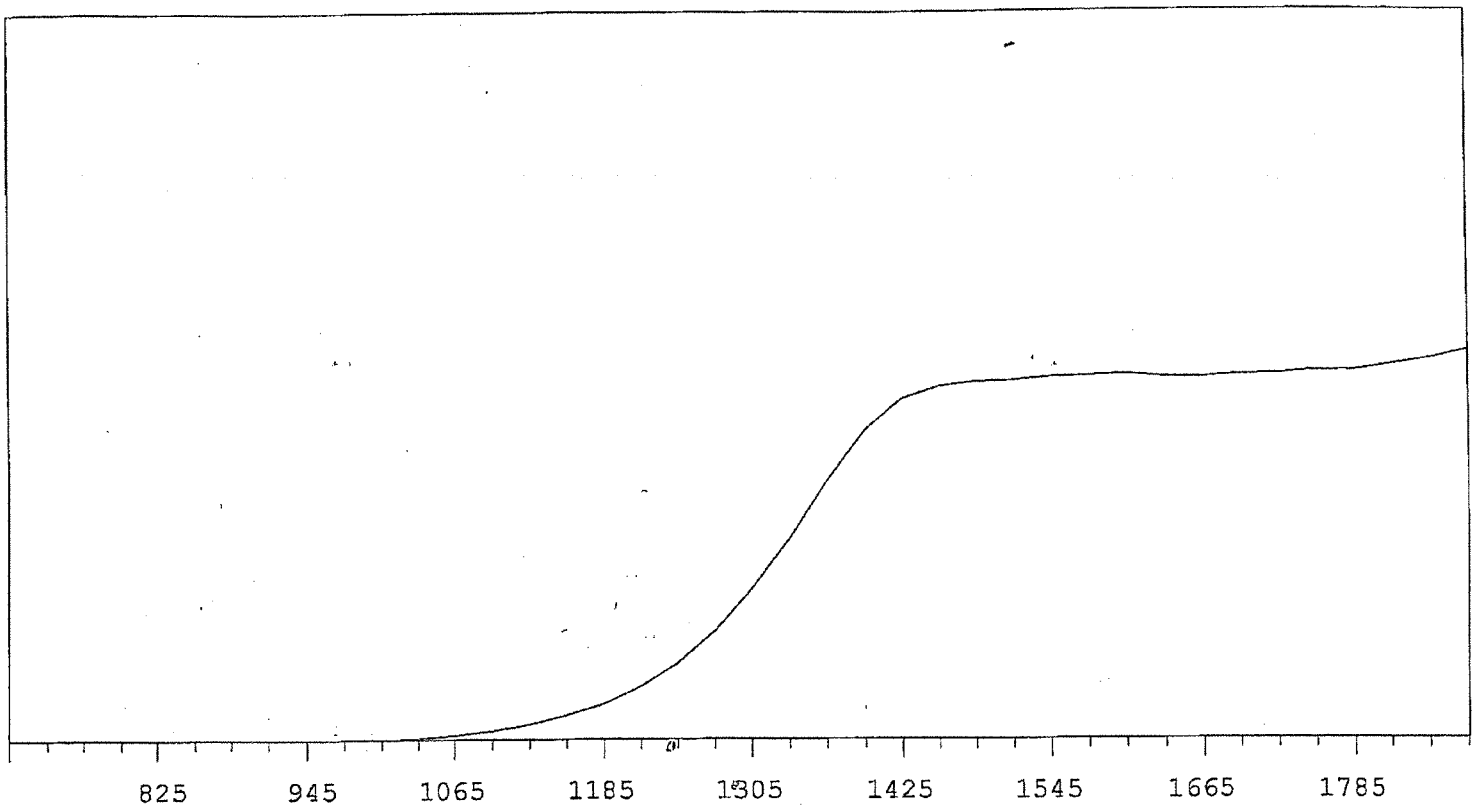
Unit #4

MPC 9604 Plateau PIC MPC 9604 MPC 9604 Detector A 12/18/2002
Alpha Volts: 705 Beta Volts: 1515



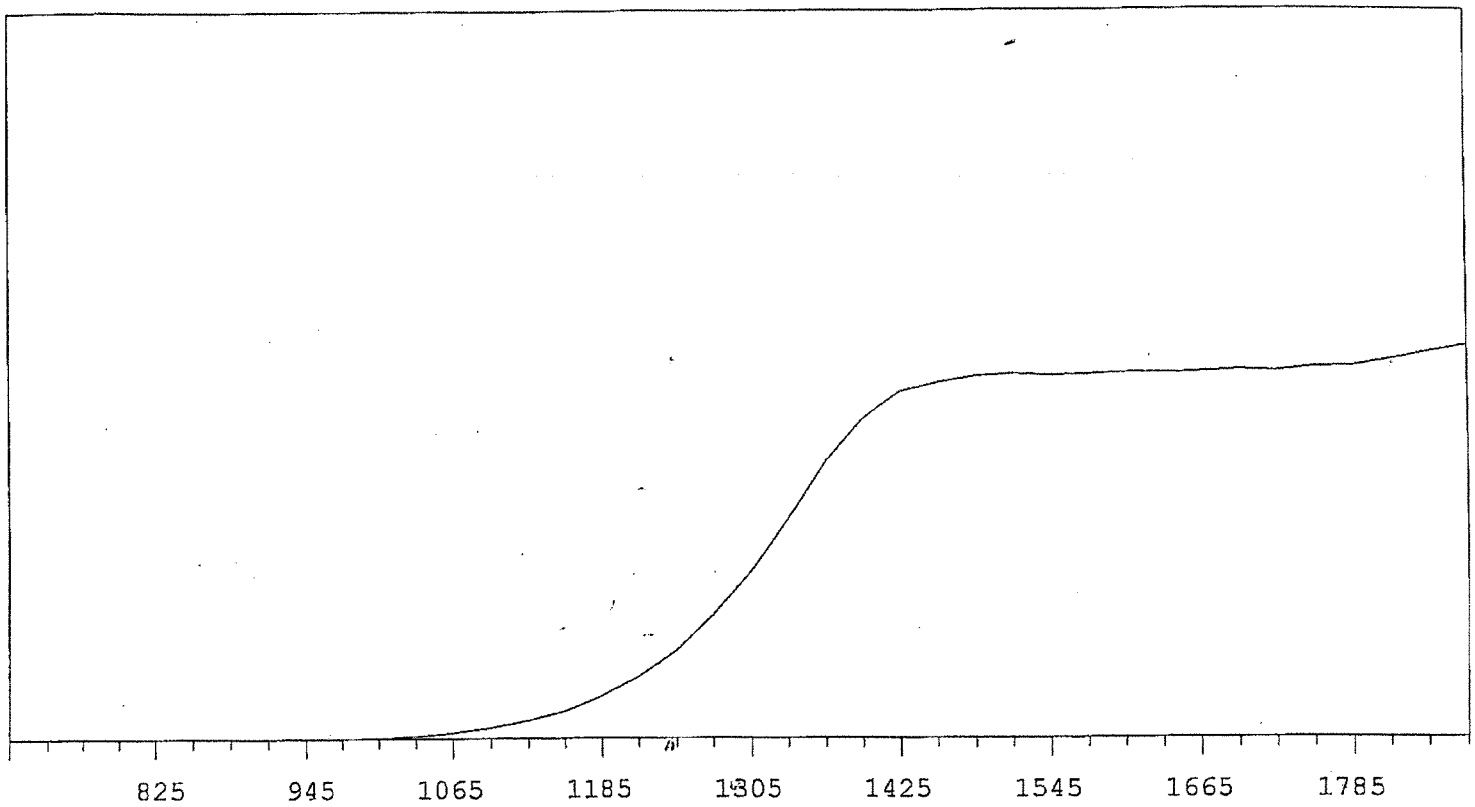
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	38210	+90.30
735	0		1335	50662	+76.50
765	0		1365	63624	+57.39
795	0	>100	1395	73884	+37.39
825	1	+83.33	1425	79213	+20.55
855	1	-83.33	1455	82067	+9.64
885	0	-55.56	1485	83080	+4.47
915	0	>100	1515	83570	+1.53
945	1	>100	1545	83988	+0.34
975	23	>100	1575	83523	-0.31
1005	147	>100	1605	83529	+0.24
1035	549	>100	1635	83417	+0.69
1065	1389	>100	1665	84345	+0.71
1095	2484	>100	1695	83979	+1.14
1125	4165	>100	1725	84139	+1.49
1155	6311	>100	1755	84965	+2.96
1185	9672	>100	1785	85741	+3.84
1215	14399	>100	1815	86960	+4.42
1245	20400	>100	1845	88088	
1275	28174	+99.15	1875	89563	
1305	38210	+90.30			
1335	50662	+76.50			

MPC 9604 Plateau PIC MPC 9604 MPC 9604 Detector B 12/20/2002
Alpha Volts: 705 Beta Volts: 1515



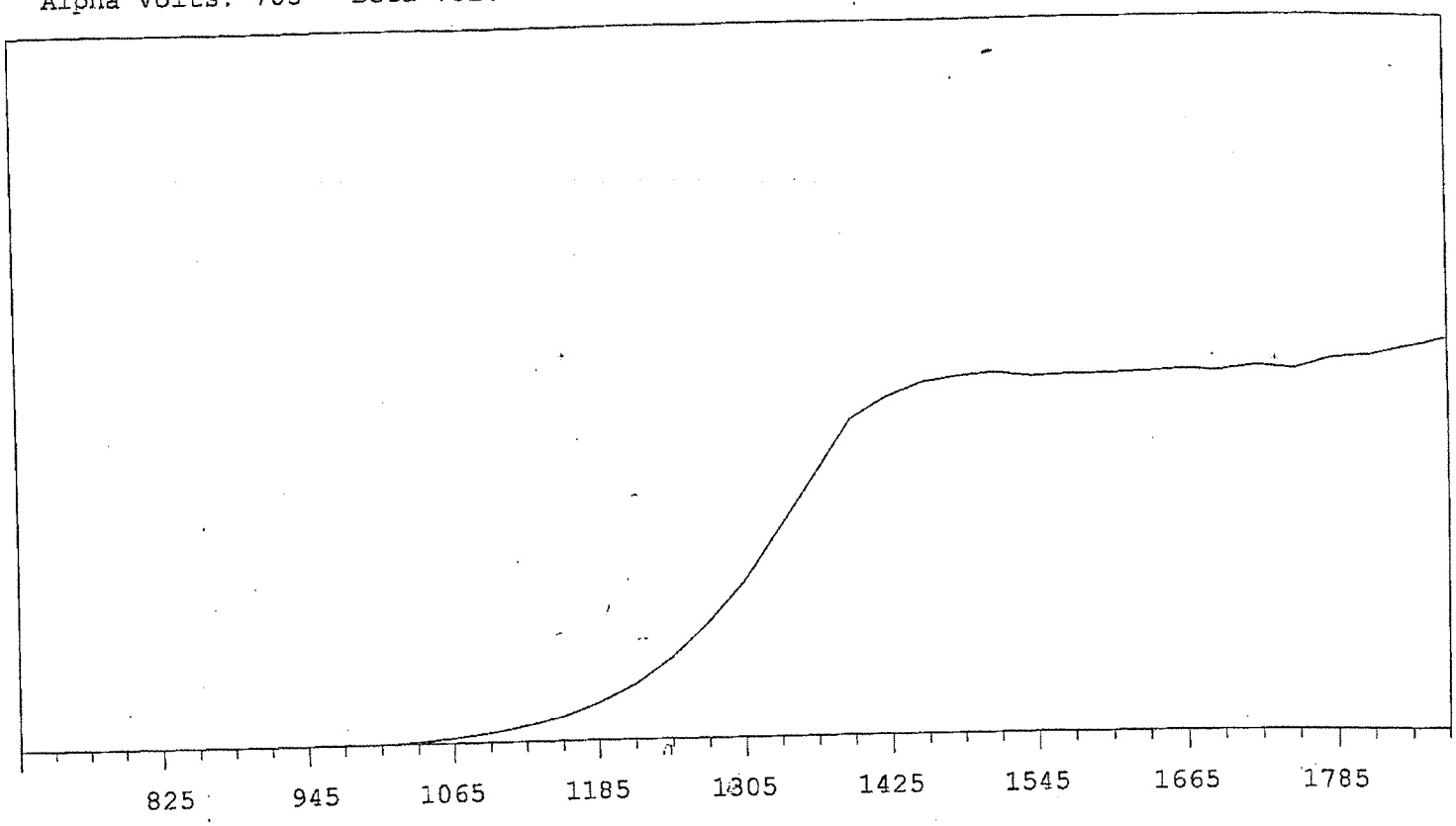
VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	0		1305	28036	+95.44
735	0		1335	37302	+82.32
765	1	+0.00	1365	47958	+64.46
795	0	>100	1395	57350	+44.02
825	0	>100	1425	63237	+24.93
855	0	>100	1455	65497	+11.29
885	0	>100	1485	66351	+4.62
915	1	>100	1515	66601	+2.36
945	1	>100	1545	67246	+1.77
975	8	>100	1575	67408	+0.73
1005	50	>100	1605	67730	-0.41
1035	303	>100	1635	67091	-0.29
1065	774	>100	1665	66992	+0.10
1095	1655	>100	1695	67480	+1.42
1125	2759	>100	1725	67633	+1.52
1155	4503	>100	1755	68211	+1.98
1185	6596	>100	1785	68168	+3.14
1215	9932	>100	1815	69236	+4.56
1245	14227	>100	1845	70353	
1275	20184	>100	1875	71882	
1305	28036	+95.44			
1335	37302	+82.32			

MPC 9604 Plateau PIC MPC 9604 MPC 9604 Detector C 12/19/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts	VOLTS	COUNTS	%/100 Volts
705	1		1305	38804	+90.25
735	1		1335	50930	+75.33
765	0		1365	64318	+57.13
795	0	+0.00	1395	73878	+37.15
825	0	>100	1425	80131	+20.35
855	1	+83.33	1455	82188	+9.94
885	1	+55.56	1485	83615	+3.79
915	0	>100	1515	84189	+1.56
945	1	>100	1545	83835	+0.57
975	16	>100	1575	84039	+0.31
1005	161	>100	1605	84413	+0.74
1035	557	>100	1635	84290	+0.90
1065	1352	>100	1665	84650	+0.53
1095	2565	>100	1695	85061	+1.02
1125	4126	>100	1725	84700	+0.98
1155	6348	>100	1755	85564	+2.08
1185	9862	>100	1785	85649	+3.84
1215	14356	>100	1815	87256	+5.01
1245	20454	>100	1845	88828	
1275	28653	+99.54	1875	90557	
1305	38804	+90.25			
1335	50930	+75.33			

MPC 9604 Plateau PIC MPC 9604 MPC 9604 Detector D 12/19/2002
Alpha Volts: 705 Beta Volts: 1515



VOLTS	COUNTS	%/100 Volts
705	0	
735	0	
765	0	
795	0	>100
825	1	>100
855	1	+41.67
885	2	-33.33
915	0	>100
945	1	>100
975	4	>100
1005	34	>100
1035	189	>100
1065	520	>100
1095	1010	>100
1125	1686	>100
1155	2549	>100
1185	3953	>100
1215	5794	>100
1245	8550	>100
1275	12147	>100
1305	16347	+92.19
1335	21926	+79.96

VOLTS	COUNTS	%/100 Volts
1305	16347	+92.19
1335	21926	+79.96
1365	27606	+61.43
1395	33199	+40.79
1425	35516	+23.07
1455	36964	+10.43
1485	37545	+4.16
1515	37853	+0.87
1545	37385	-0.13
1575	37533	-0.03
1605	37633	+1.20
1635	37712	+0.83
1665	37973	+1.27
1695	37835	+0.66
1725	38293	+1.93
1755	37926	+3.14
1785	39032	+4.51
1815	39280	+6.41
1845	40250	
1875	41116	

SEVERN TRENT STL

Standard and Calibration 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. 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	T ½	Final Activity	Solvent/ Lot #	Prep'd Initials	Cal. Ver. Initials	Comments
~~9-11-03~~	~~9-11-08~~	~~03-069~~ ~~03-0269~~ MC 9-22 03	~~Pu 238~~	02-026	132.98	2-23-02	0.5mL	↓	1356 days	32022.4 d, 75	~~33.10 dpm/g~~ ~~66.41 dpm/mL~~	MFM		re-certification of 03-031, 02-03-2 b/and 66.20 dpm/mL
~~↓~~	~~↓~~	~~↓~~	~~Pu 239~~	~~02-023~~	~~128.05~~	~~2-23-02~~	~~0.5mL~~	~~1.50mL~~	11-16-03 MC	24110 yr	~~32.05 dpm/g~~ ~~64.025 dpm/mL~~ 9-15-03	MFM		↓ 62.025 dpm/mL
9-11-03	9-11-08	~~03-070~~ ~~03-0270~~ MC 9-22-03	Am243	98-011	1161 dpm/g	2-28-98	~~16 gm~~ 15 g	200mL		7.37 E+3	87.075 ~~9.22 dpm/mL~~	MFM		
10-6-03	10-6-08	03-071	Th230	65090-334	7,654 dps	10-19-02	5.1498g	100mL	N/A	7.538E4	4,567.9 dpm/mL	0.5M HNO3	BH	BBF	
10-6-03	10-6-08	03-072	Th230	03-071	4,567.9 dpm/mL	12-19-02	1mL	200mL	N/A	7.538E4	22.84 dpm/mL	0.5M HNO3	BH	BBF	
10-11-03	10-11-0	03-073	Clean U-232	047-105	10994 dpm/mL	9-16-97	10mL	1000L		70 yr	103.85 dpm/mL	DI H2O 2M H2SO4 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	1.059uCi	1-1-2000	1mL	100mL	N/A	1.57E+07	10.54 nCi/mL	0.1M NaOH	BH	BBF	
10/31/03	10/31/04	03-075	I-129	03-074	10.54 nCi/mL	1-1-2000	1mL	100mL	N/A	1.57E7	105.4 pCi/mL	0.1M NaOH	BH	BBF	
10/31/03	10/31/04	03-076	Ra 228	01012	1,018 dpm/mL	2/16/01	2mL	100mL	NA	5.75y	20.36 dpm/mL	0.5M HNO3	BH	BBF	
10/31/03	10/31/04	03-077	Pu-242	92-242-5-1	129.63 Bq/g	12/18/89	5.0723	100mL	NA	3.73 X 10^5 y	78.9027	.5M HNO3	MFM	MO	
11/3/03	11/3/04	SR19	Std SR counter	Sr(NO3)2	N/A	N/A	120.77g	1 Liter	N/A	N/A		dilH2O	[illegible]	BBF	Reported in Rad capture
11-5-03	11-5-04	RAP03-0032	Th-229	02-005	2134.75 dpm/mL	1-28-02	17.5mL	500mL	N/A	7.3E+3	74.716 dpm/mL	.5M HNO3	MFM	JMW	

Additional Comments:

SEVERN TRENT STL

Calibration for 4110

Red

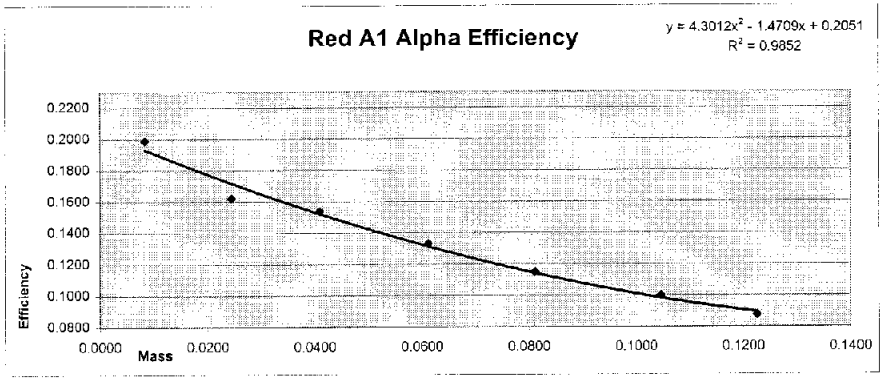
Alpha and Beta

2006

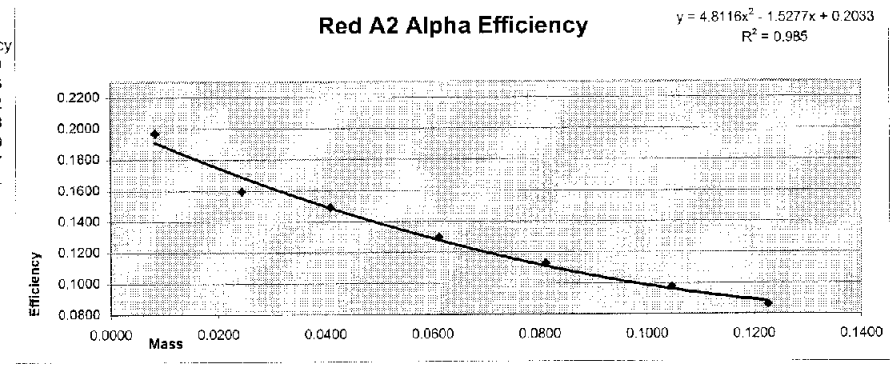
SEVERN TRENT STL

Detector Efficiency Curves

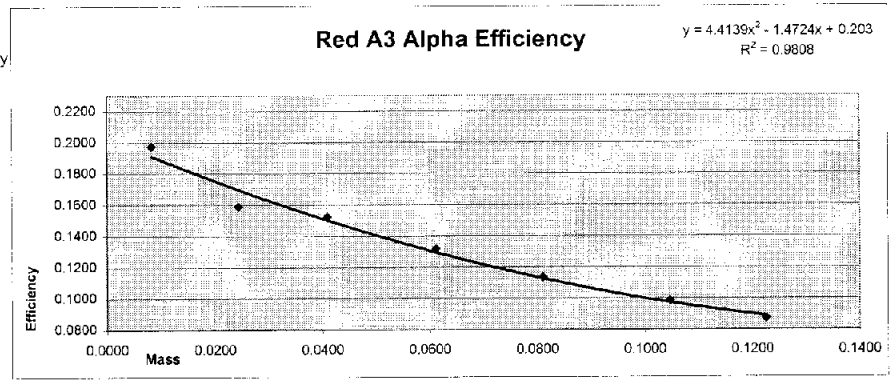
Red A1	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2071	0.1906	0.1989
0.0249	0.0240	0.0245	0.1678	0.1567	0.1623
0.0406	0.0412	0.0409	0.1560	0.1514	0.1537
0.0611	0.0613	0.0612	0.1222	0.1434	0.1328
0.0800	0.0821	0.0811	0.1163	0.1138	0.1151
0.1037	0.1055	0.1046	0.0980	0.1021	0.1001
0.1217	0.1234	0.1226	0.0858	0.0894	0.0876



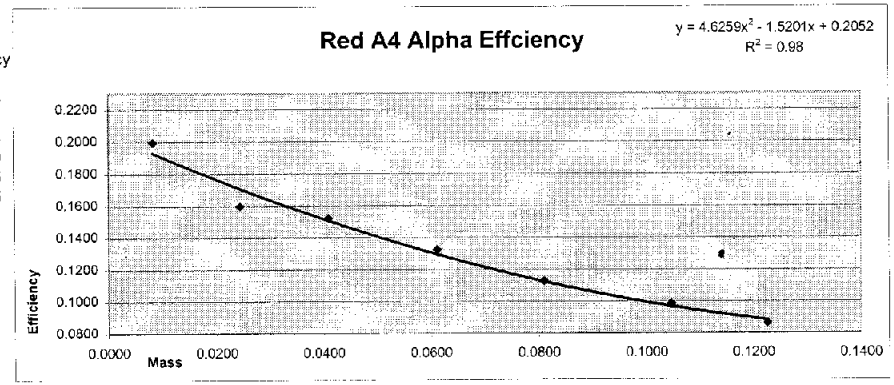
Red A2	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2046	0.1893	0.1970
0.0249	0.0240	0.0245	0.1636	0.1556	0.1596
0.0406	0.0412	0.0409	0.1479	0.1504	0.1492
0.0611	0.0613	0.0612	0.1183	0.1413	0.1298
0.0800	0.0821	0.0811	0.1119	0.1139	0.1129
0.1037	0.1055	0.1046	0.0932	0.1021	0.0977
0.1217	0.1234	0.1226	0.0843	0.0885	0.0864



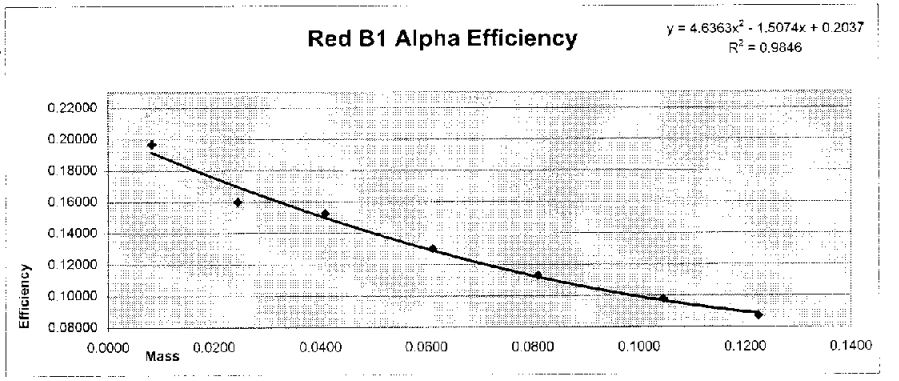
Red A3	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2050	0.1897	0.1974
0.0249	0.0240	0.0245	0.1644	0.1532	0.1588
0.0406	0.0412	0.0409	0.1528	0.1515	0.1522
0.0611	0.0613	0.0612	0.1203	0.1428	0.1315
0.0800	0.0821	0.0811	0.1149	0.1123	0.1136
0.1037	0.1055	0.1046	0.0967	0.1003	0.0985
0.1217	0.1234	0.1226	0.0851	0.0893	0.0872



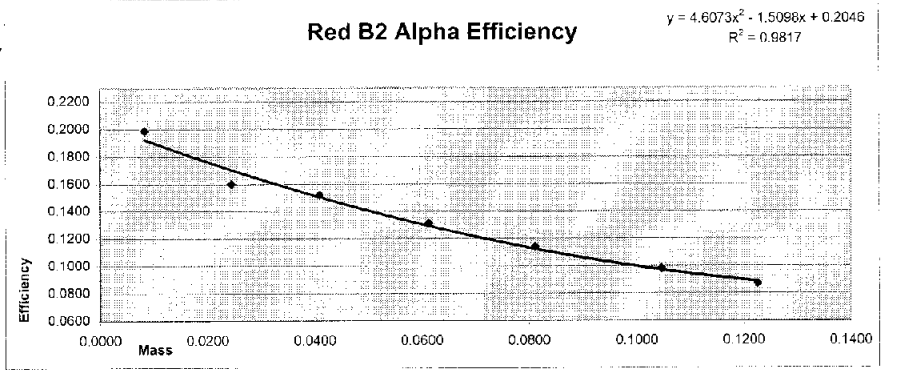
Red A4	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2073	0.1918	0.1995
0.0249	0.0240	0.0245	0.1664	0.1529	0.1596
0.0406	0.0412	0.0409	0.1535	0.1509	0.1522
0.0611	0.0613	0.0612	0.1205	0.1442	0.1324
0.0800	0.0821	0.0811	0.1145	0.1113	0.1129
0.1037	0.1055	0.1046	0.0958	0.1013	0.0985
0.1217	0.1234	0.1226	0.0839	0.0890	0.0865



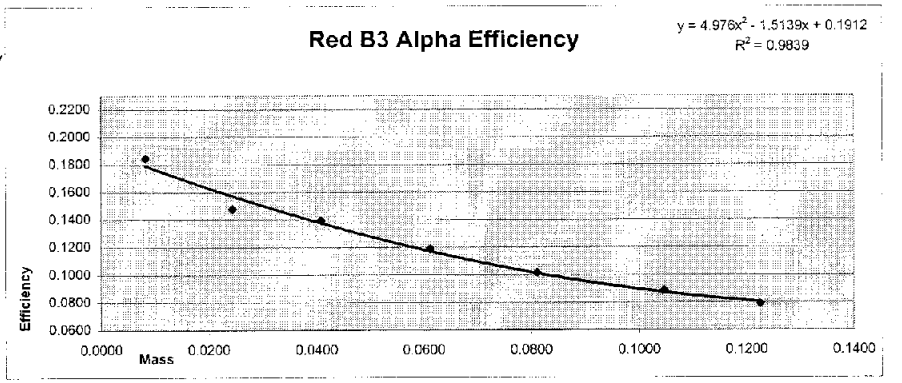
Red B1	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.20619	0.18784	0.19702
0.0249	0.0240	0.0245	0.16542	0.15433	0.15988
0.0406	0.0412	0.0409	0.15355	0.15147	0.15251
0.0611	0.0613	0.0612	0.11999	0.13991	0.12995
0.0800	0.0821	0.0811	0.11407	0.11176	0.11292
0.1037	0.1055	0.1046	0.09525	0.10096	0.09810
0.1217	0.1234	0.1226	0.08494	0.08928	0.08711



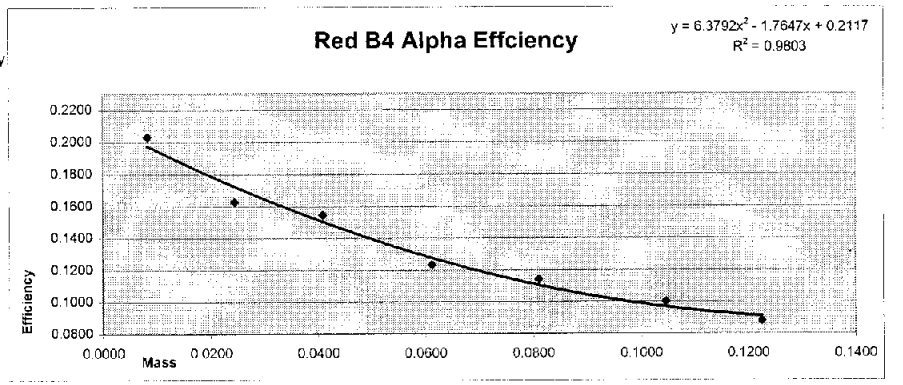
Red B2	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2071	0.1905	0.1988
0.0249	0.0240	0.0245	0.1653	0.1543	0.1598
0.0406	0.0412	0.0409	0.1528	0.1511	0.1519
0.0611	0.0613	0.0612	0.1200	0.1429	0.1314
0.0800	0.0821	0.0811	0.1154	0.1127	0.1140
0.1037	0.1055	0.1046	0.0959	0.1006	0.0982
0.1217	0.1234	0.1226	0.0848	0.0891	0.0870



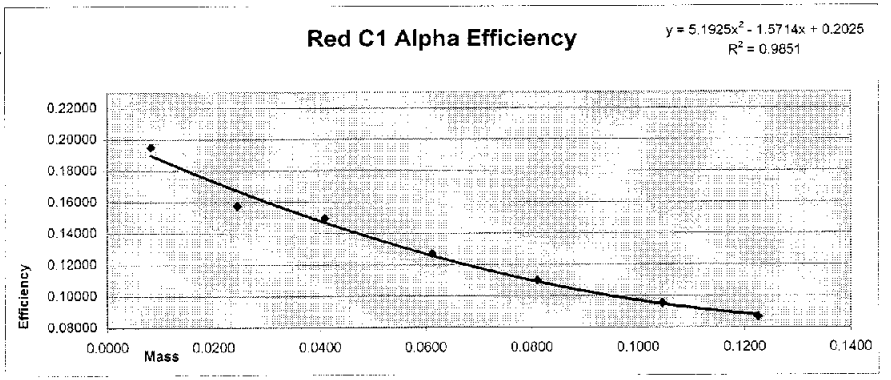
Red B3	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1925	0.1764	0.1845
0.0249	0.0240	0.0245	0.1531	0.1421	0.1476
0.0406	0.0412	0.0409	0.1410	0.1380	0.1395
0.0611	0.0613	0.0612	0.1090	0.1288	0.1189
0.0800	0.0821	0.0811	0.1026	0.1009	0.1017
0.1037	0.1055	0.1046	0.0862	0.0915	0.0888
0.1217	0.1234	0.1226	0.0773	0.0801	0.0787



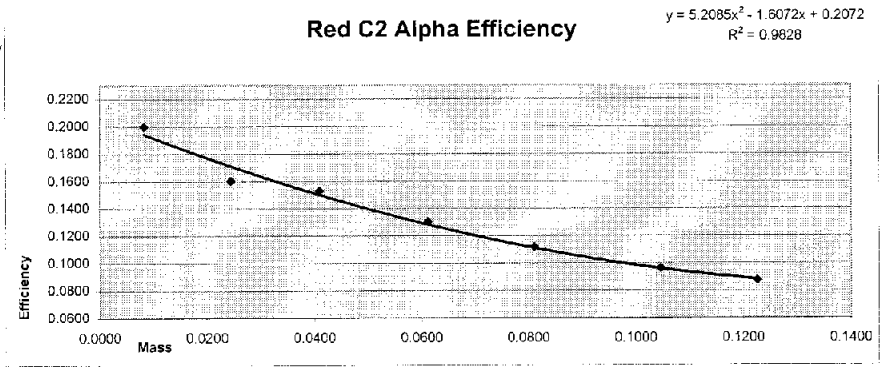
Red B4	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2125	0.1935	0.2030
0.0249	0.0240	0.0245	0.1671	0.1585	0.1628
0.0406	0.0412	0.0409	0.1544	0.1546	0.1545
0.0611	0.0613	0.0612	0.1234	0.1234	0.1234
0.0800	0.0821	0.0811	0.1160	0.1127	0.1144
0.1037	0.1055	0.1046	0.0980	0.1024	0.1002
0.1217	0.1234	0.1226	0.0862	0.0900	0.0881



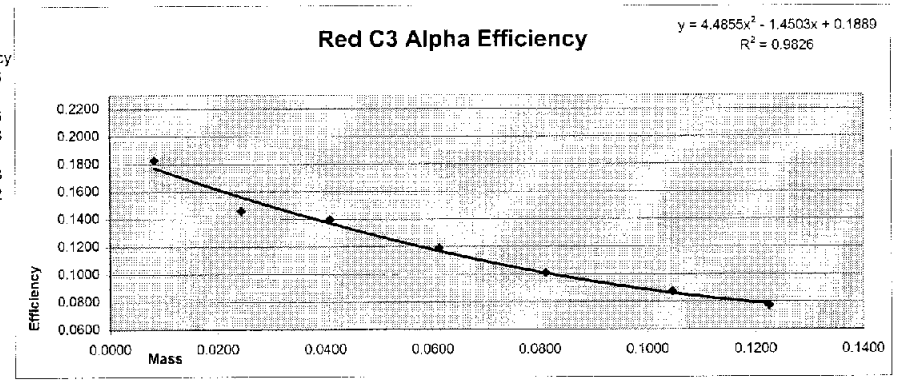
Red C1	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.20416	0.18596	0.19506
0.0249	0.0240	0.0245	0.16491	0.15014	0.15753
0.0406	0.0412	0.0409	0.14871	0.15057	0.14964
0.0611	0.0613	0.0612	0.11480	0.13896	0.12688
0.0800	0.0821	0.0811	0.10909	0.11135	0.11022
0.1037	0.1055	0.1046	0.09156	0.09968	0.09562
0.1217	0.1234	0.1226	0.08554	0.08784	0.08669



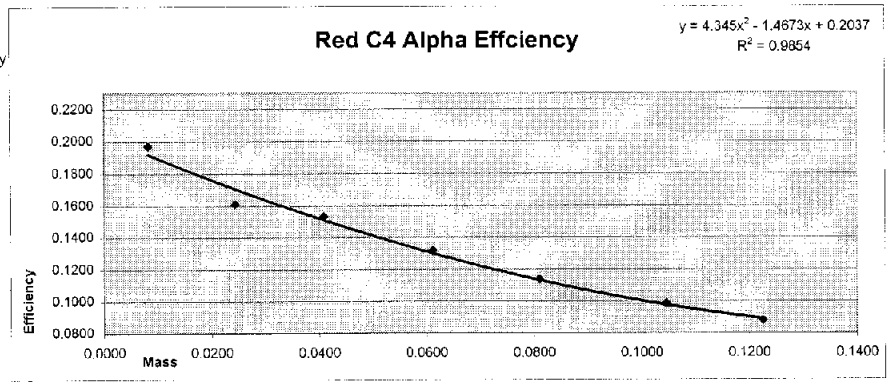
Red C2	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2095	0.1906	0.2001
0.0249	0.0240	0.0245	0.1648	0.1557	0.1603
0.0406	0.0412	0.0409	0.1559	0.1502	0.1531
0.0611	0.0613	0.0612	0.1186	0.1420	0.1304
0.0800	0.0821	0.0811	0.1112	0.1125	0.1119
0.1037	0.1055	0.1046	0.0924	0.1006	0.0965
0.1217	0.1234	0.1226	0.0845	0.0903	0.0874



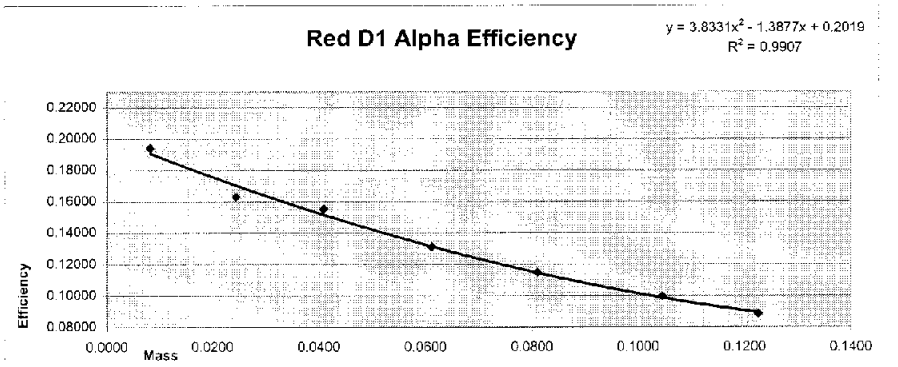
Red C3	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1884	0.1768	0.1826
0.0249	0.0240	0.0245	0.1517	0.1404	0.1461
0.0406	0.0412	0.0409	0.1398	0.1394	0.1396
0.0611	0.0613	0.0612	0.1105	0.1271	0.1188
0.0800	0.0821	0.0811	0.1021	0.1000	0.1011
0.1037	0.1055	0.1046	0.0840	0.0905	0.0873
0.1217	0.1234	0.1226	0.0737	0.0806	0.0772



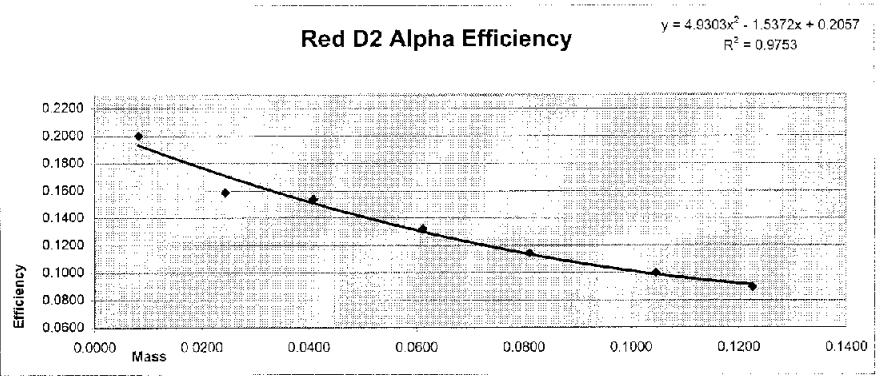
Red C4	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2022	0.1920	0.1971
0.0249	0.0240	0.0245	0.1661	0.1557	0.1609
0.0406	0.0412	0.0409	0.1548	0.1518	0.1533
0.0611	0.0613	0.0612	0.1211	0.1429	0.1320
0.0800	0.0821	0.0811	0.1161	0.1117	0.1139
0.1037	0.1055	0.1046	0.0957	0.1016	0.0986
0.1217	0.1234	0.1226	0.0855	0.0903	0.0879



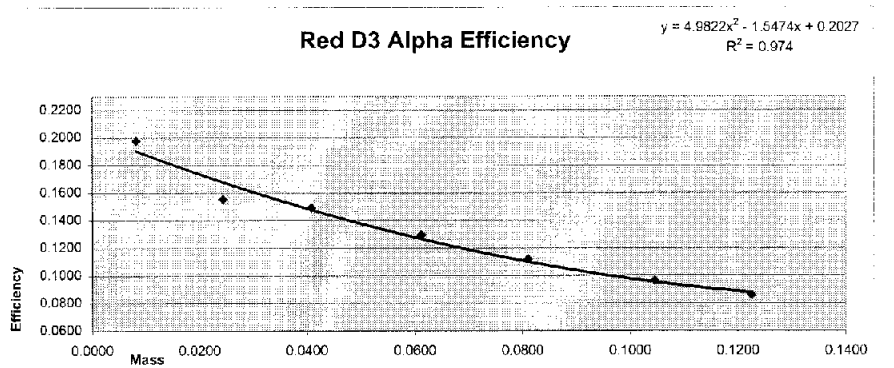
Red D1	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.19789	0.19044	0.19416
0.0249	0.0240	0.0245	0.16763	0.15850	0.16307
0.0406	0.0412	0.0409	0.15593	0.15452	0.15523
0.0611	0.0613	0.0612	0.11953	0.14266	0.13109
0.0800	0.0821	0.0811	0.11707	0.11267	0.11487
0.1037	0.1055	0.1046	0.09706	0.10228	0.09967
0.1217	0.1234	0.1226	0.08664	0.09038	0.08851



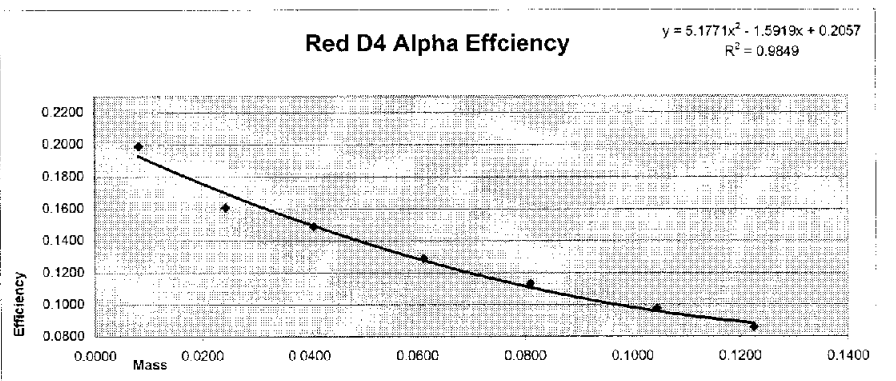
Red D2	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2087	0.1917	0.2002
0.0249	0.0240	0.0245	0.1615	0.1558	0.1586
0.0406	0.0412	0.0409	0.1547	0.1532	0.1540
0.0611	0.0613	0.0612	0.1208	0.1436	0.1322
0.0800	0.0821	0.0811	0.1152	0.1136	0.1144
0.1037	0.1055	0.1046	0.0977	0.1024	0.1001
0.1217	0.1234	0.1226	0.0877	0.0916	0.0896



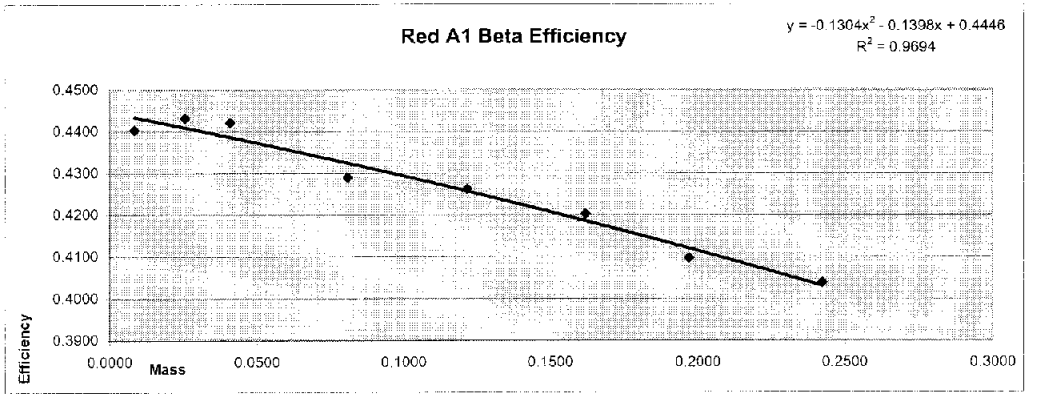
Red D3	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.2067	0.1888	0.1978
0.0249	0.0240	0.0245	0.1581	0.1523	0.1552
0.0406	0.0412	0.0409	0.1471	0.1510	0.1490
0.0611	0.0613	0.0612	0.1185	0.1403	0.1294
0.0800	0.0821	0.0811	0.1136	0.1102	0.1119
0.1037	0.1055	0.1046	0.0938	0.0988	0.0963
0.1217	0.1234	0.1226	0.0835	0.0884	0.0859



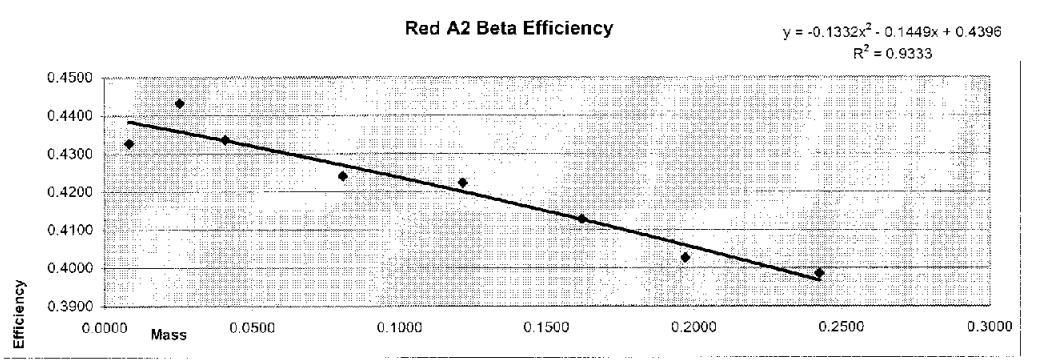
Red D4	1/12/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0084	0.0081	0.0083	0.1901	0.2080	0.1991
0.0249	0.0240	0.0245	0.1658	0.1556	0.1607
0.0406	0.0412	0.0409	0.1454	0.1525	0.1489
0.0611	0.0613	0.0612	0.1168	0.1411	0.1289
0.0800	0.0821	0.0811	0.1152	0.1116	0.1134
0.1037	0.1055	0.1046	0.0950	0.1002	0.0976
0.1217	0.1234	0.1226	0.0842	0.0877	0.0859



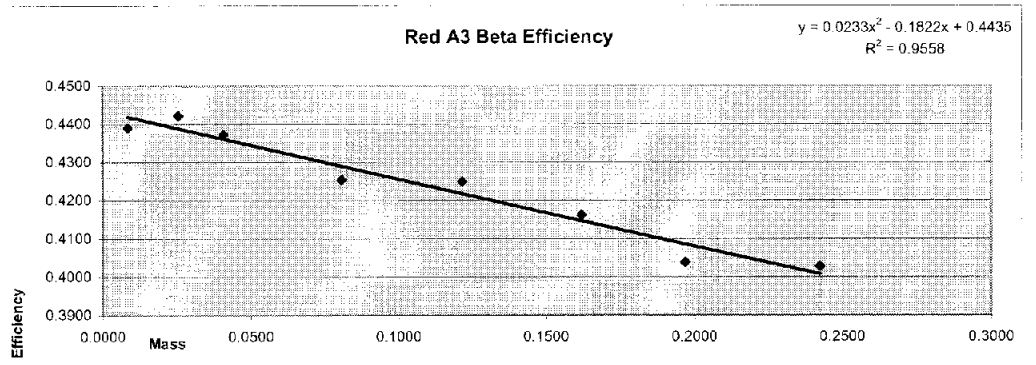
Red A1	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4597	0.4209	0.4403
0.0251	0.0262	0.0257	0.4513	0.4349	0.4431
0.0412	0.0407	0.0410	0.4510	0.4333	0.4422
0.0796	0.0820	0.0808	0.4322	0.4259	0.4290
0.1212	0.1220	0.1216	0.4241	0.4283	0.4262
0.1629	0.1612	0.1621	0.4190	0.4215	0.4203
0.1996	0.1945	0.1971	0.4056	0.4140	0.4098
0.2420	0.2429	0.2425	0.4063	0.4015	0.4039



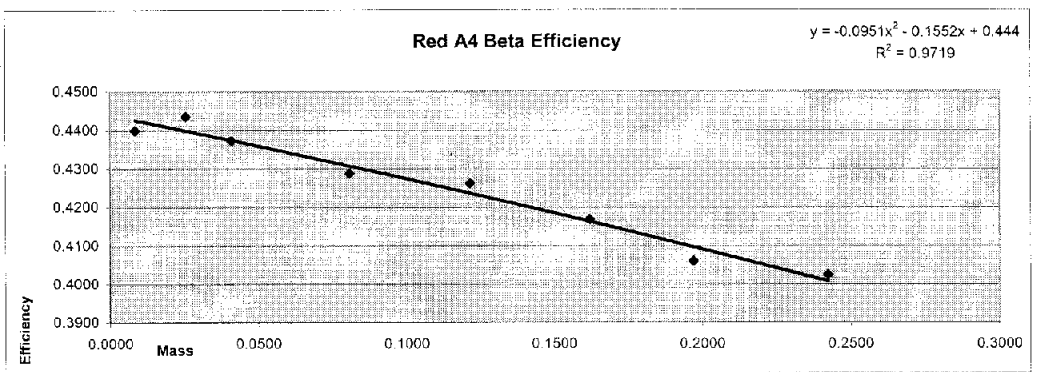
Red A2	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4499	0.4156	0.4327
0.0251	0.0262	0.0257	0.4483	0.4382	0.4432
0.0412	0.0407	0.0410	0.4425	0.4249	0.4337
0.0796	0.0820	0.0808	0.4231	0.4254	0.4242
0.1212	0.1220	0.1216	0.4243	0.4205	0.4224
0.1629	0.1612	0.1621	0.4061	0.4194	0.4127
0.1996	0.1945	0.1971	0.3997	0.4055	0.4026
0.2420	0.2429	0.2425	0.3969	0.4001	0.3985



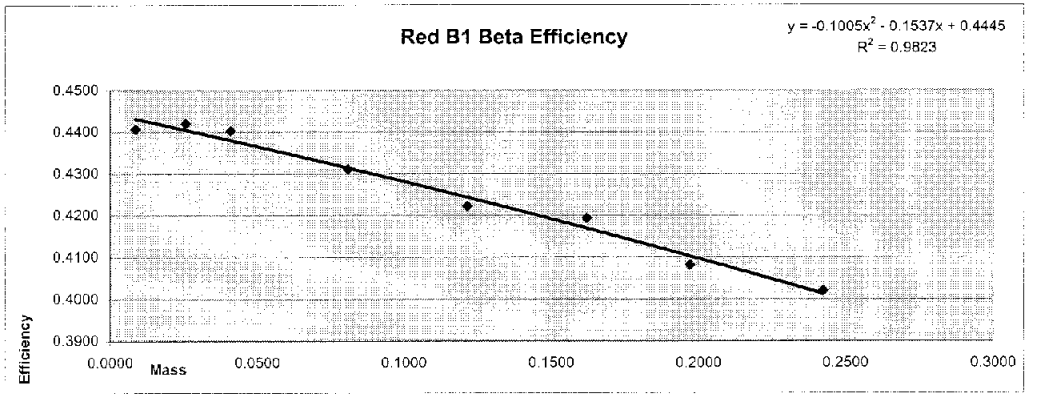
Red A3	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4555	0.4226	0.4390
0.0251	0.0262	0.0257	0.4515	0.4330	0.4422
0.0412	0.0407	0.0410	0.4476	0.4270	0.4373
0.0796	0.0820	0.0808	0.4250	0.4257	0.4254
0.1212	0.1220	0.1216	0.4267	0.4231	0.4249
0.1629	0.1612	0.1621	0.4135	0.4188	0.4162
0.1996	0.1945	0.1971	0.3981	0.4095	0.4038
0.2420	0.2429	0.2425	0.4056	0.3998	0.4027



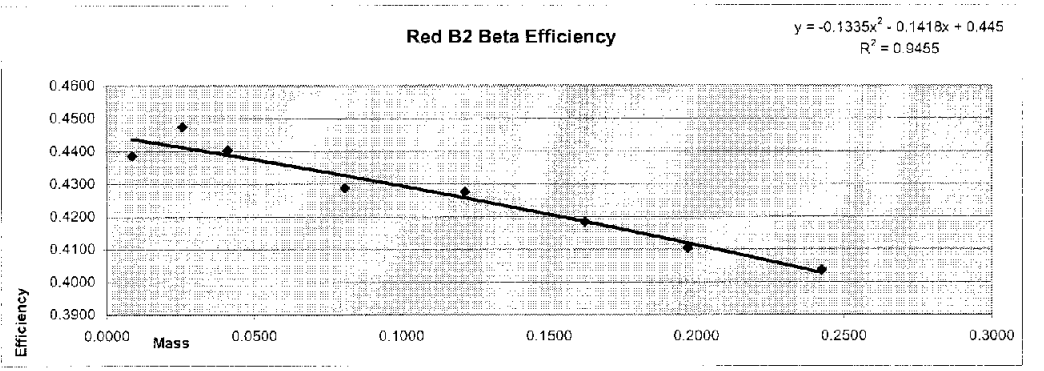
Red A4	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4548	0.4251	0.4400
0.0251	0.0262	0.0257	0.4494	0.4378	0.4436
0.0412	0.0407	0.0410	0.4455	0.4291	0.4373
0.0796	0.0820	0.0808	0.4255	0.4322	0.4288
0.1212	0.1220	0.1216	0.4252	0.4273	0.4262
0.1629	0.1612	0.1621	0.4140	0.4197	0.4169
0.1996	0.1945	0.1971	0.4016	0.4106	0.4061
0.2420	0.2429	0.2425	0.4022	0.4027	0.4024



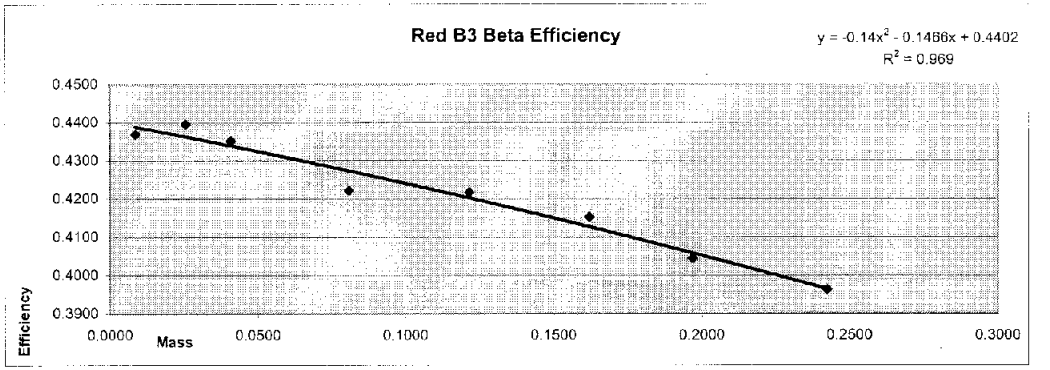
Red B1	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4547	0.4267	0.4407
0.0251	0.0262	0.0257	0.4470	0.4371	0.4421
0.0412	0.0407	0.0410	0.4516	0.4289	0.4403
0.0796	0.0820	0.0808	0.4301	0.4320	0.4311
0.1212	0.1220	0.1216	0.4249	0.4196	0.4222
0.1629	0.1612	0.1621	0.4138	0.4250	0.4194
0.1996	0.1945	0.1971	0.4033	0.4131	0.4082
0.2420	0.2429	0.2425	0.4040	0.4003	0.4021



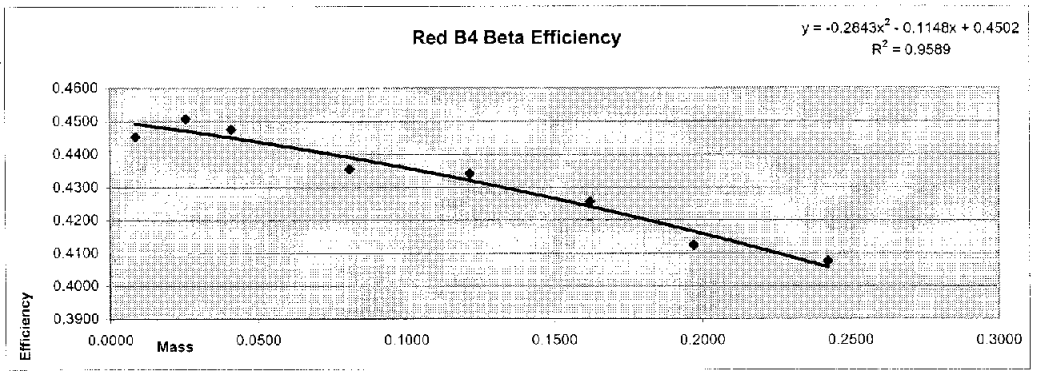
Red B2	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4601	0.4172	0.4386
0.0251	0.0262	0.0257	0.4547	0.4404	0.4475
0.0412	0.0407	0.0410	0.4499	0.4309	0.4404
0.0796	0.0820	0.0808	0.4295	0.4281	0.4288
0.1212	0.1220	0.1216	0.4276	0.4277	0.4277
0.1629	0.1612	0.1621	0.4132	0.4236	0.4184
0.1996	0.1945	0.1971	0.4046	0.4160	0.4103
0.2420	0.2429	0.2425	0.4038	0.4035	0.4036



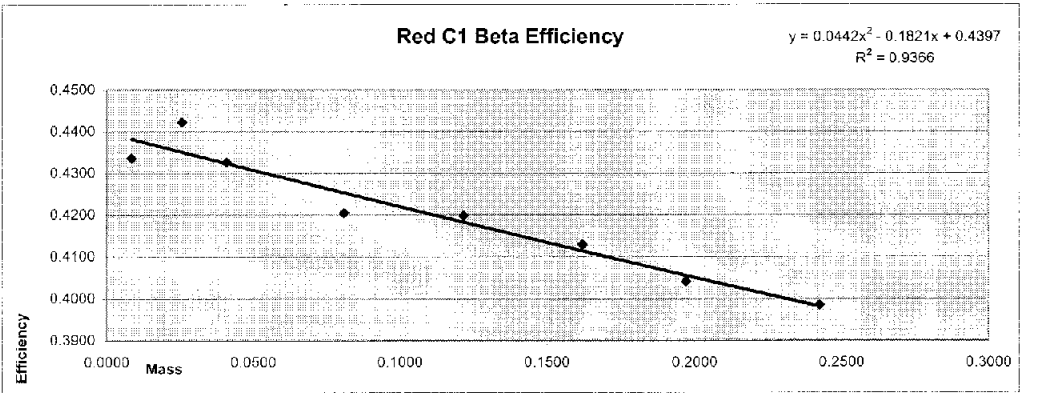
Red B3	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4501	0.4238	0.4370
0.0251	0.0262	0.0257	0.4466	0.4325	0.4396
0.0412	0.0407	0.0410	0.4448	0.4256	0.4352
0.0796	0.0820	0.0808	0.4239	0.4205	0.4222
0.1212	0.1220	0.1216	0.4231	0.4203	0.4217
0.1629	0.1612	0.1621	0.4106	0.4200	0.4153
0.1996	0.1945	0.1971	0.4002	0.4088	0.4045
0.2420	0.2429	0.2425	0.3977	0.3948	0.3963



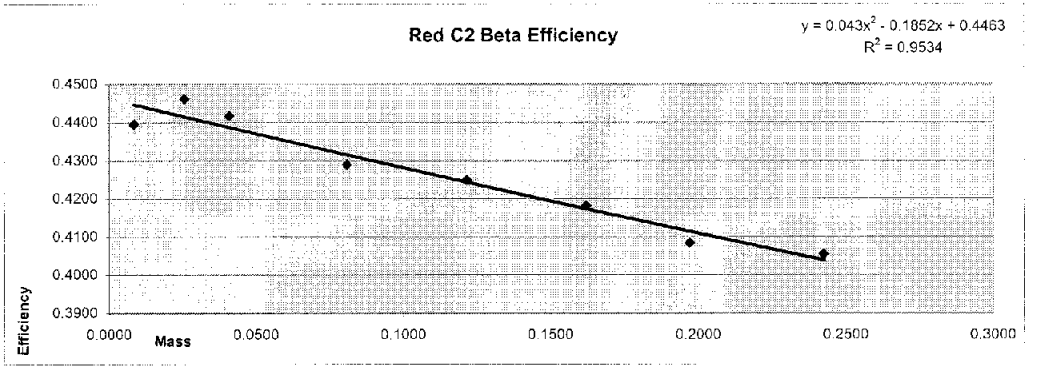
Read B4	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4637	0.4270	0.4453
0.0251	0.0262	0.0257	0.4576	0.4440	0.4508
0.0412	0.0407	0.0410	0.4540	0.4410	0.4475
0.0796	0.0820	0.0808	0.4350	0.4362	0.4356
0.1212	0.1220	0.1216	0.4347	0.4335	0.4341
0.1629	0.1612	0.1621	0.4212	0.4302	0.4257
0.1996	0.1945	0.1971	0.4066	0.4182	0.4124
0.2420	0.2429	0.2425	0.4094	0.4057	0.4075



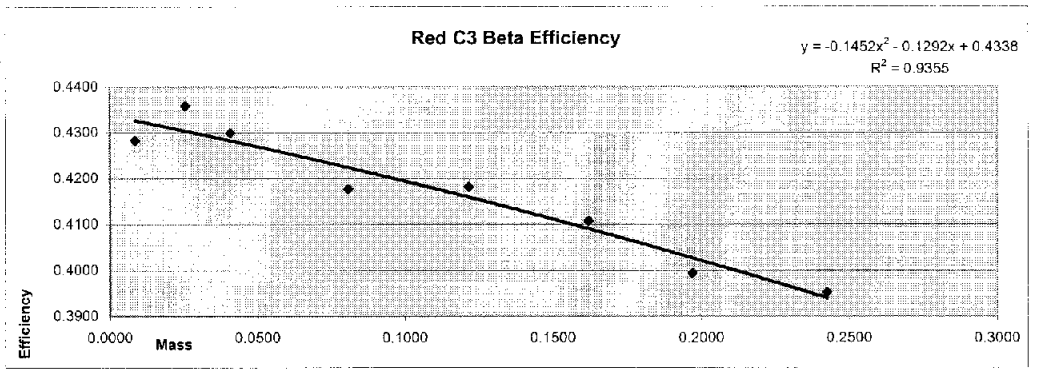
Red C1	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Σετ 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4491	0.4182	0.4337
0.0251	0.0262	0.0257	0.4478	0.4366	0.4422
0.0412	0.0407	0.0410	0.4413	0.4240	0.4326
0.0796	0.0820	0.0808	0.4255	0.4154	0.4205
0.1212	0.1220	0.1216	0.4203	0.4194	0.4198
0.1629	0.1612	0.1621	0.4093	0.4166	0.4129
0.1996	0.1945	0.1971	0.3987	0.4096	0.4041
0.2420	0.2429	0.2425	0.4012	0.3958	0.3985



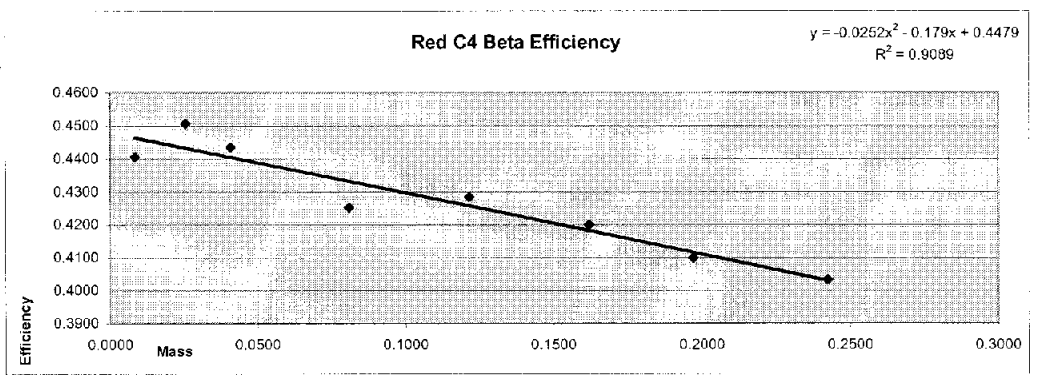
Red C2	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4577	0.4214	0.4395
0.0251	0.0262	0.0257	0.4500	0.4425	0.4462
0.0412	0.0407	0.0410	0.4460	0.4376	0.4418
0.0796	0.0820	0.0808	0.4307	0.4274	0.4290
0.1212	0.1220	0.1216	0.4258	0.4241	0.4250
0.1629	0.1612	0.1621	0.4130	0.4234	0.4182
0.1996	0.1945	0.1971	0.4009	0.4161	0.4085
0.2420	0.2429	0.2425	0.4048	0.4061	0.4055



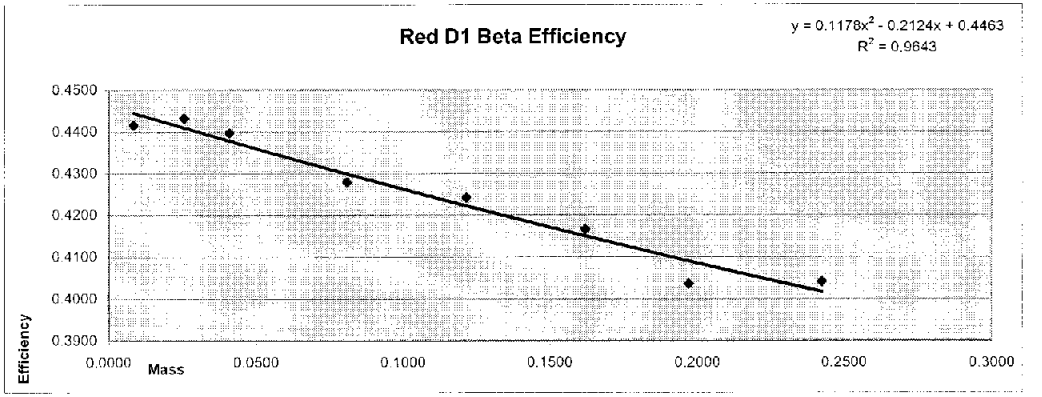
Red C3	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4431	0.4134	0.4283
0.0251	0.0262	0.0257	0.4436	0.4281	0.4359
0.0412	0.0407	0.0410	0.4380	0.4219	0.4300
0.0796	0.0820	0.0808	0.4187	0.4169	0.4178
0.1212	0.1220	0.1216	0.4185	0.4178	0.4182
0.1629	0.1612	0.1621	0.4046	0.4170	0.4108
0.1996	0.1945	0.1971	0.3938	0.4048	0.3993
0.2420	0.2429	0.2425	0.3943	0.3962	0.3952



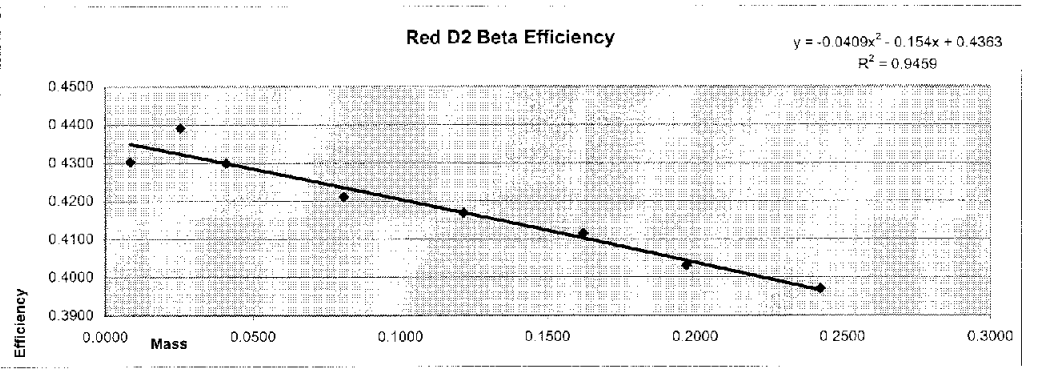
Red C4	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4572	0.4242	0.4407
0.0251	0.0262	0.0257	0.4544	0.4472	0.4508
0.0412	0.0407	0.0410	0.4529	0.4341	0.4435
0.0796	0.0820	0.0808	0.4230	0.4276	0.4253
0.1212	0.1220	0.1216	0.4287	0.4284	0.4285
0.1629	0.1612	0.1621	0.4142	0.4259	0.4201
0.1996	0.1945	0.1971	0.4054	0.4146	0.4100
0.2420	0.2429	0.2425	0.4076	0.3990	0.4033



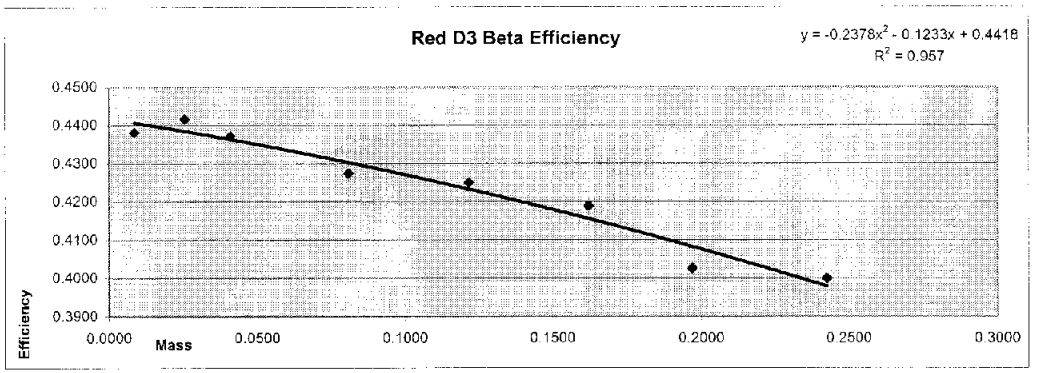
Red D1	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4611	0.4219	0.4415
0.0251	0.0262	0.0257	0.4491	0.4374	0.4432
0.0412	0.0407	0.0410	0.4465	0.4329	0.4397
0.0796	0.0820	0.0808	0.4293	0.4265	0.4279
0.1212	0.1220	0.1216	0.4268	0.4217	0.4243
0.1629	0.1612	0.1621	0.4083	0.4250	0.4166
0.1996	0.1945	0.1971	0.3961	0.4112	0.4036
0.2420	0.2429	0.2425	0.4057	0.4027	0.4042



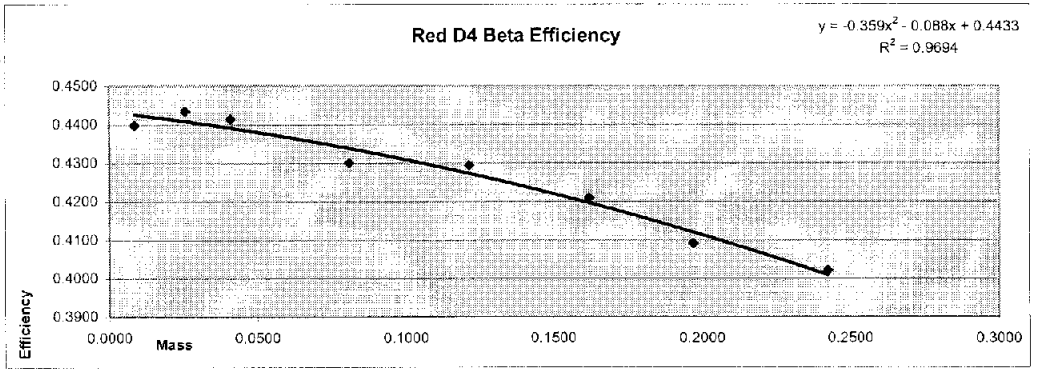
Red D2	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4463	0.4141	0.4302
0.0251	0.0262	0.0257	0.4430	0.4353	0.4391
0.0412	0.0407	0.0410	0.4394	0.4204	0.4299
0.0796	0.0820	0.0808	0.4231	0.4192	0.4211
0.1212	0.1220	0.1216	0.4156	0.4182	0.4169
0.1629	0.1612	0.1621	0.4071	0.4158	0.4114
0.1996	0.1945	0.1971	0.4002	0.4061	0.4031
0.2420	0.2429	0.2425	0.3984	0.3957	0.3970



Red D3	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4587	0.4175	0.4381
0.0251	0.0262	0.0257	0.4435	0.4397	0.4416
0.0412	0.0407	0.0410	0.4449	0.4296	0.4372
0.0796	0.0820	0.0808	0.4293	0.4255	0.4274
0.1212	0.1220	0.1216	0.4245	0.4255	0.4250
0.1629	0.1612	0.1621	0.4127	0.4250	0.4189
0.1996	0.1945	0.1971	0.3964	0.4089	0.4026
0.2420	0.2429	0.2425	0.4034	0.3966	0.4000



Red D4	1/10/2006				
Mass Set 1	Mass Set 2	Mean Mass	Efficiency Set 1	Efficiency Set 2	Mean Efficiency
0.0089	0.0082	0.0086	0.4560	0.4237	0.4398
0.0251	0.0262	0.0257	0.4483	0.4385	0.4434
0.0412	0.0407	0.0410	0.4500	0.4329	0.4415
0.0796	0.0820	0.0808	0.4336	0.4266	0.4301
0.1212	0.1220	0.1216	0.4312	0.4277	0.4295
0.1629	0.1612	0.1621	0.4159	0.4259	0.4209
0.1996	0.1945	0.1971	0.4028	0.4155	0.4091
0.2420	0.2429	0.2425	0.4026	0.4016	0.4021

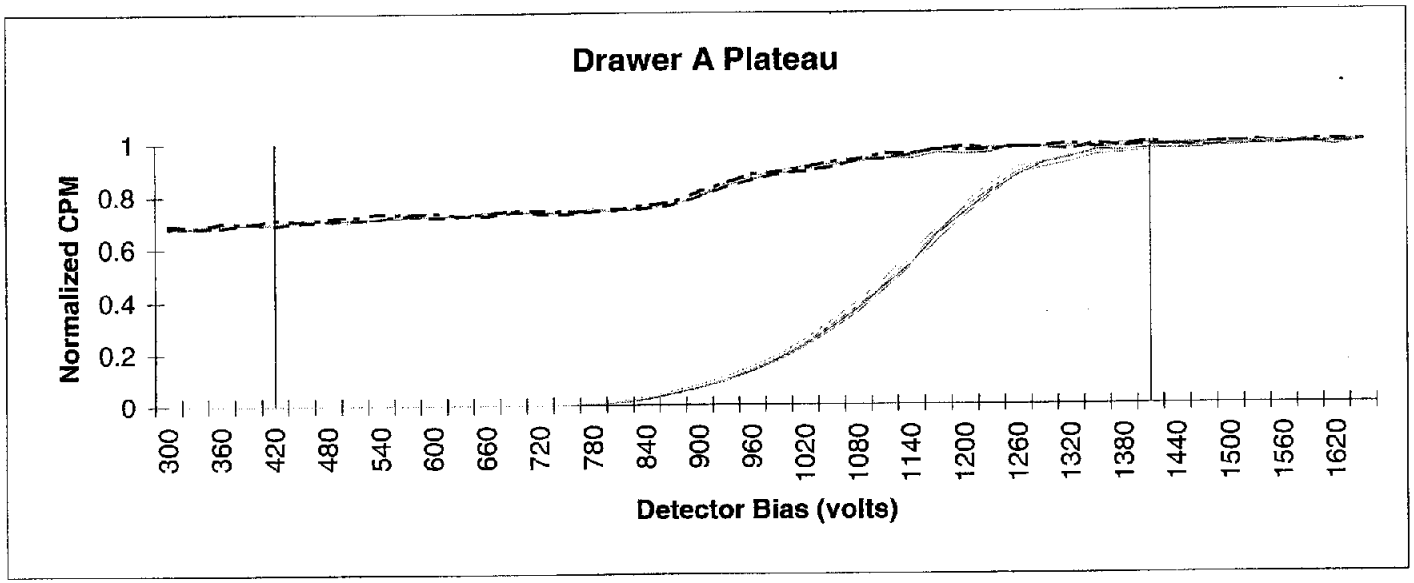


SEVERN TRENT STL

Voltage Plateaus

Unit Type: LB4100/W
Date Performed: 1/8/06 17:34
FileName: PLAT000
Batch ID: 2006 PLATEAUS RED 1/8/6 IV

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1410

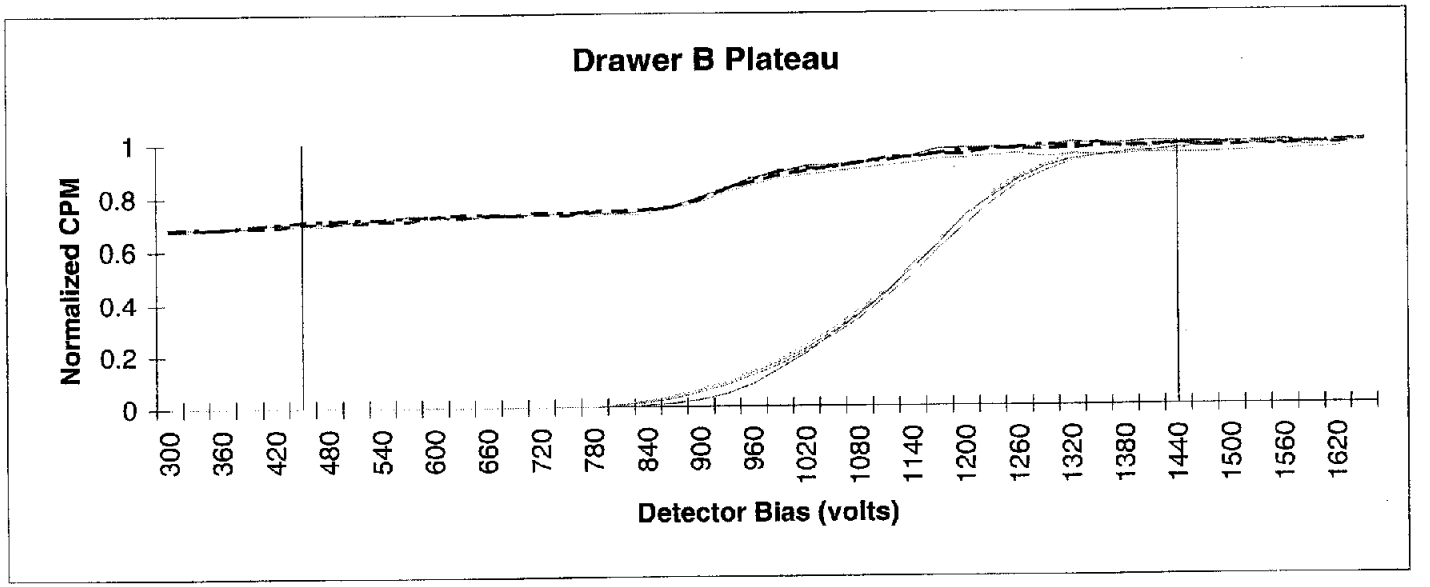
Optimum alpha only operating voltage: 420

	A1	A2	A3	A4
Beta slope at beta voltage	0.50%	2.75%	2.81%	2.35%
Alpha slope at beta voltage	0.89%	-0.68%	0.81%	0.71%
Alpha slope at alpha voltage	2.10%	2.34%	1.57%	1.90%

Printed 1/9/2006 9:25 AM

Unit Type: LB4100/W
Date Performed: 1/8/06 17:34
FileName: PLAT000
Batch ID: 2006 PLATEAUS RED 1/8/6 IV

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1440

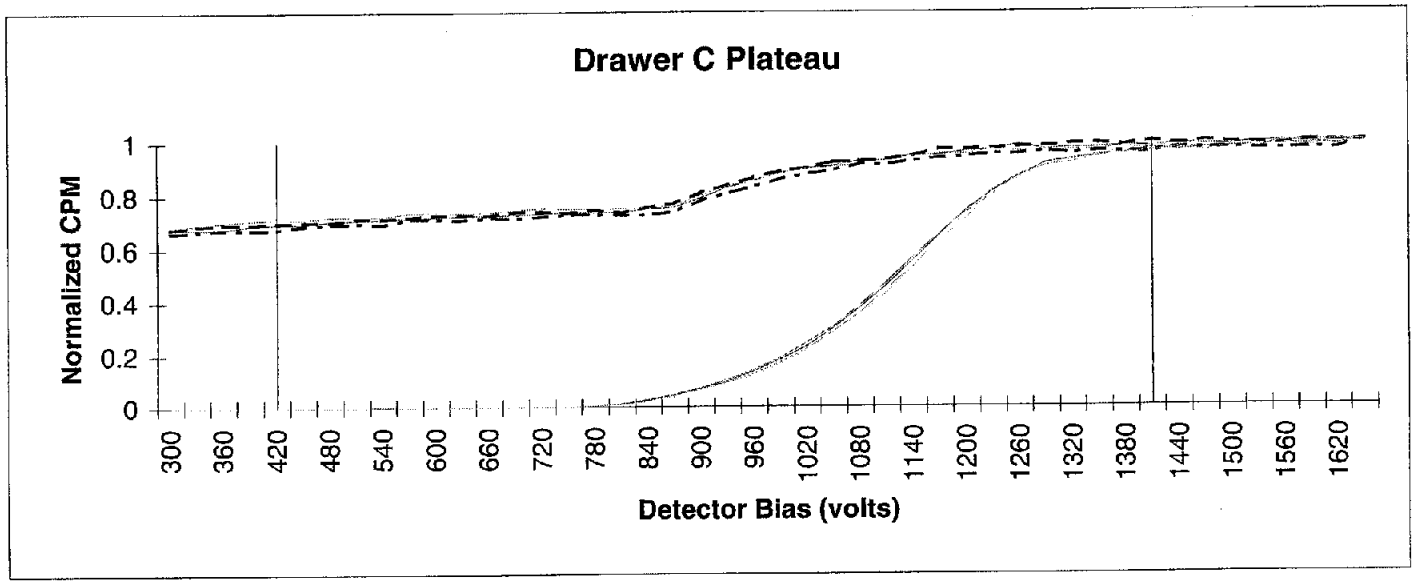
Optimum alpha only operating voltage: 450

	B1	B2	B3	B4
Beta slope at beta voltage	2.43%	3.46%	2.45%	2.02%
Alpha slope at beta voltage	-0.16%	-0.19%	0.34%	1.20%
Alpha slope at alpha voltage	2.43%	2.58%	1.40%	2.84%

Printed 1/9/2006 9:25 AM

Unit Type: LB4100/W
Date Performed: 1/8/06 17:34
FileName: PLAT000
Batch ID: 2006 PLATEAUS RED 1/8/6 IV

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1410

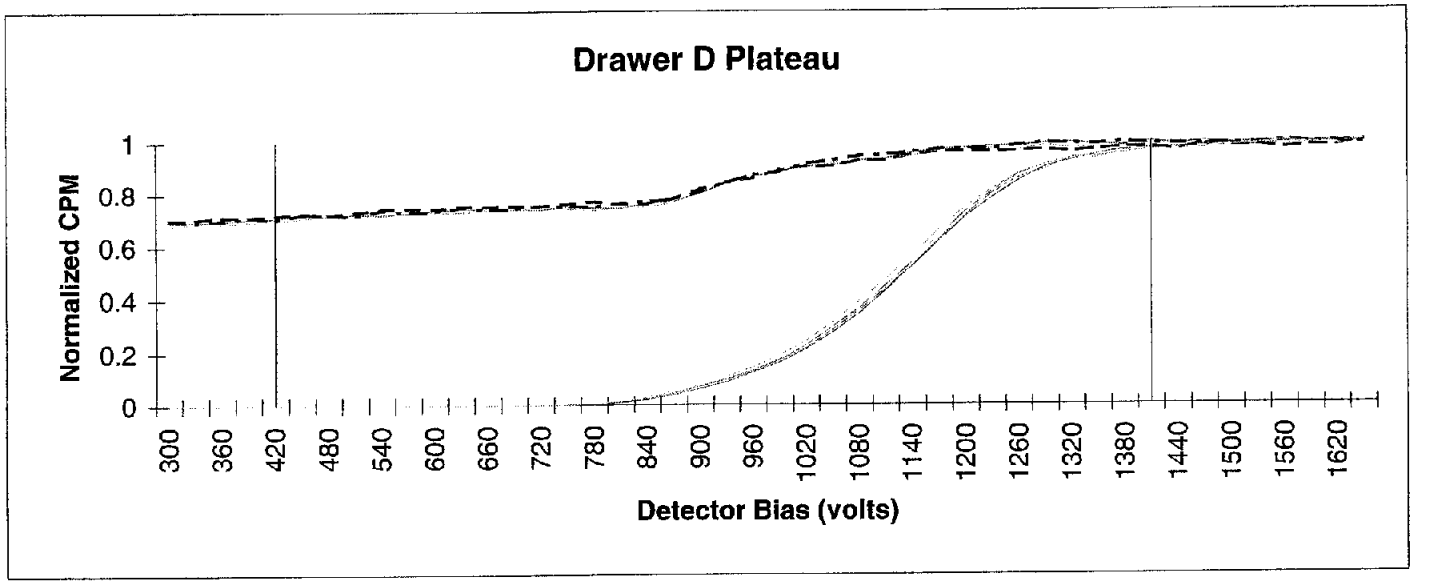
Optimum alpha only operating voltage: 420

	C1	C2	C3	C4
Beta slope at beta voltage	2.15%	1.38%	2.60%	3.11%
Alpha slope at beta voltage	0.92%	0.56%	0.06%	0.89%
Alpha slope at alpha voltage	3.03%	0.89%	1.83%	2.64%

Printed 1/9/2006 9:25 AM

Unit Type: LB4100/W
Date Performed: 1/8/06 17:34
FileName: PLAT000
Batch ID: 2006 PLATEAUS RED 1/8/6 IV

Unit Id: Red
Application Revision: 2
Application Version: Standard



Optimum alpha beta simultaneous operating voltage: 1410

Optimum alpha only operating voltage: 420

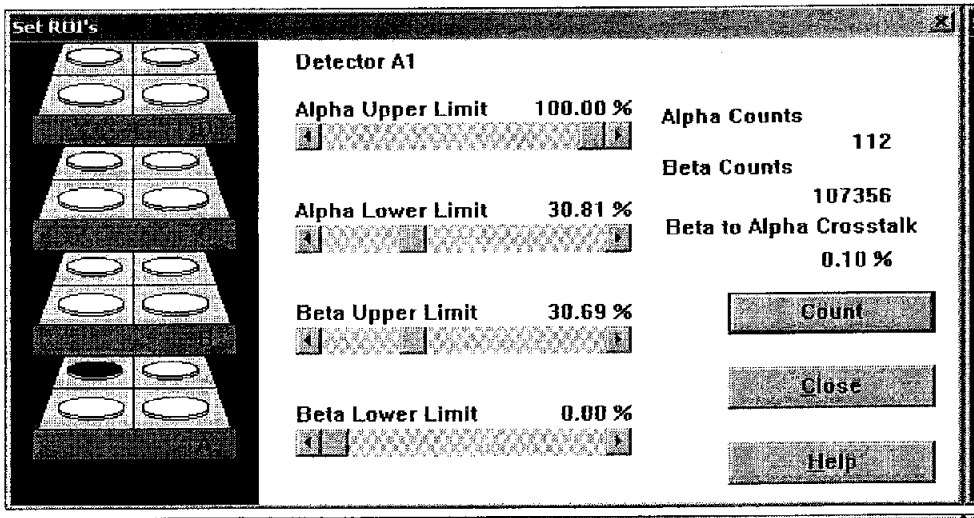
	D1	D2	D3	D4
Beta slope at beta voltage	2.44%	2.68%	2.88%	2.03%
Alpha slope at beta voltage	0.75%	0.64%	0.90%	-0.42%
Alpha slope at alpha voltage	2.03%	1.29%	3.26%	2.50%

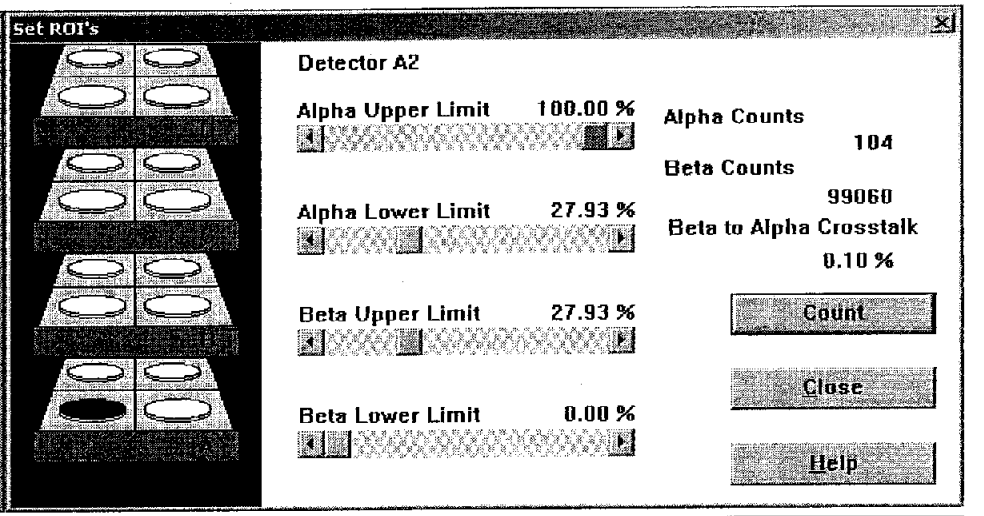
Printed 1/9/2006 9:25 AM

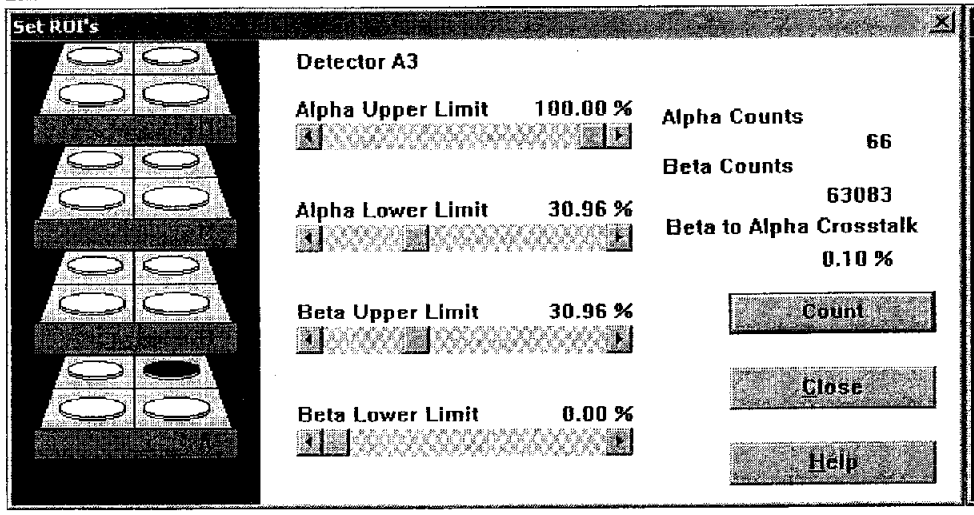
SEVERN TRENT STL

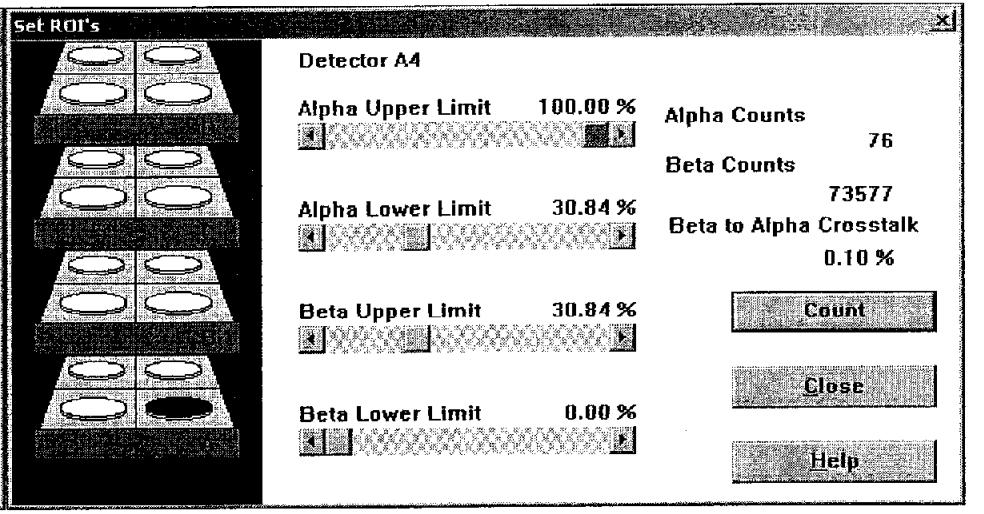
Discriminator Settings

RED A drawer ROI's

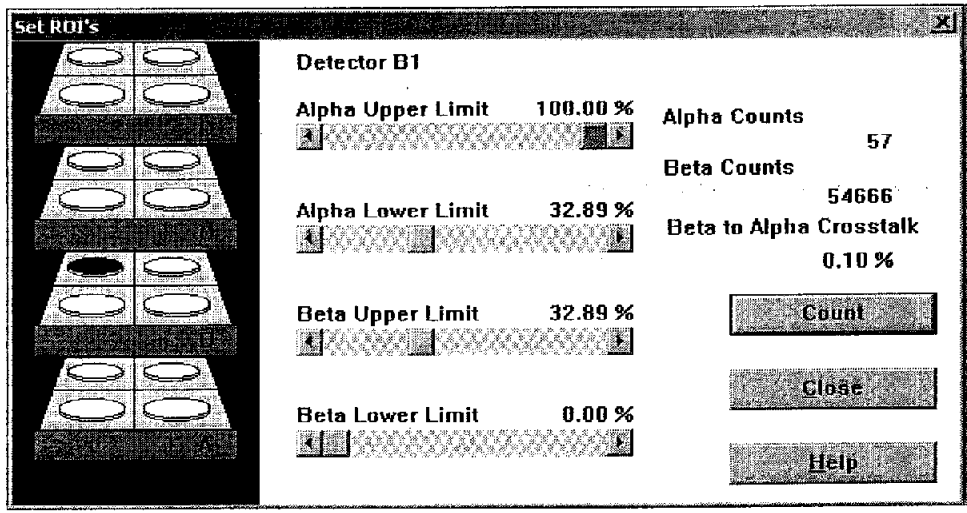


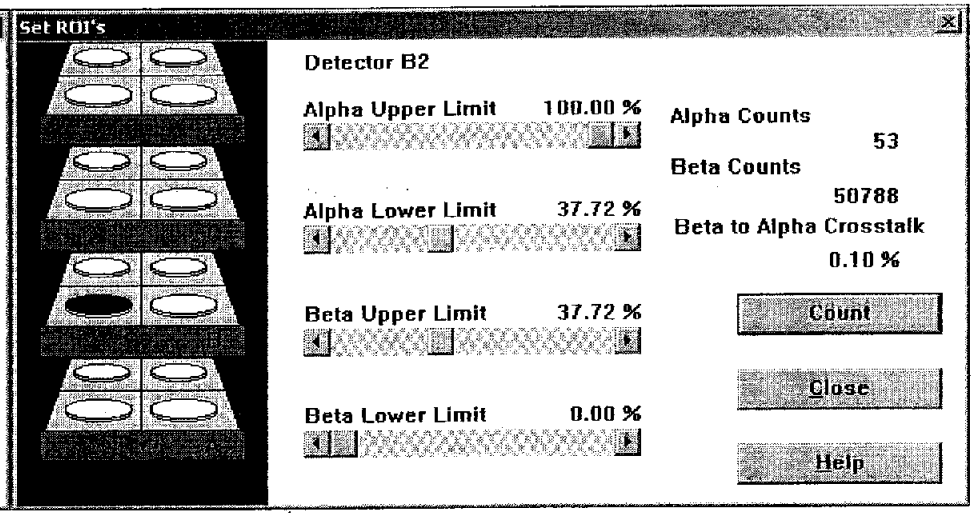


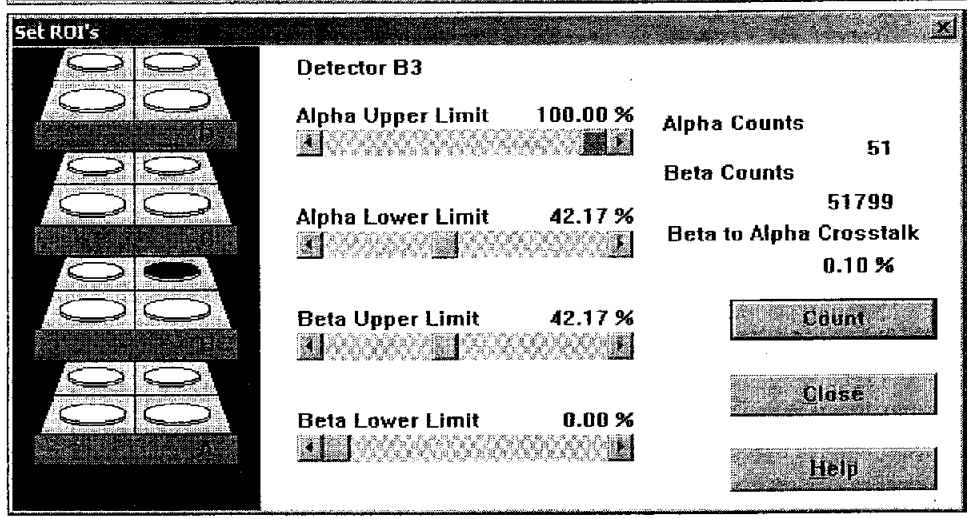


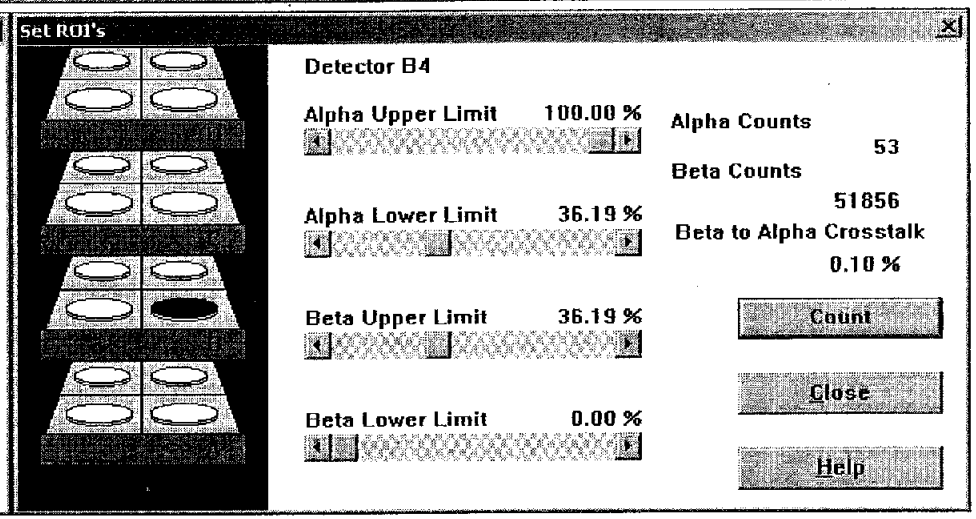


RED B drawer ROI's

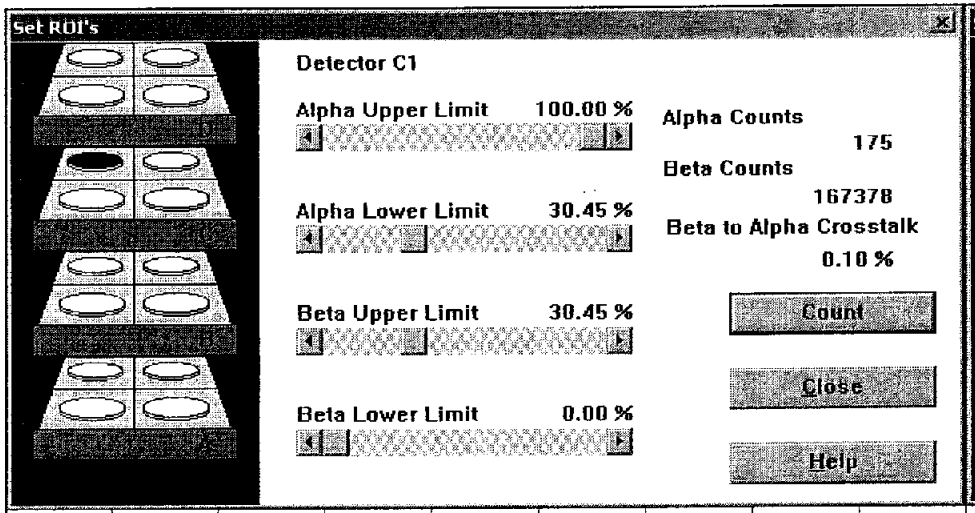


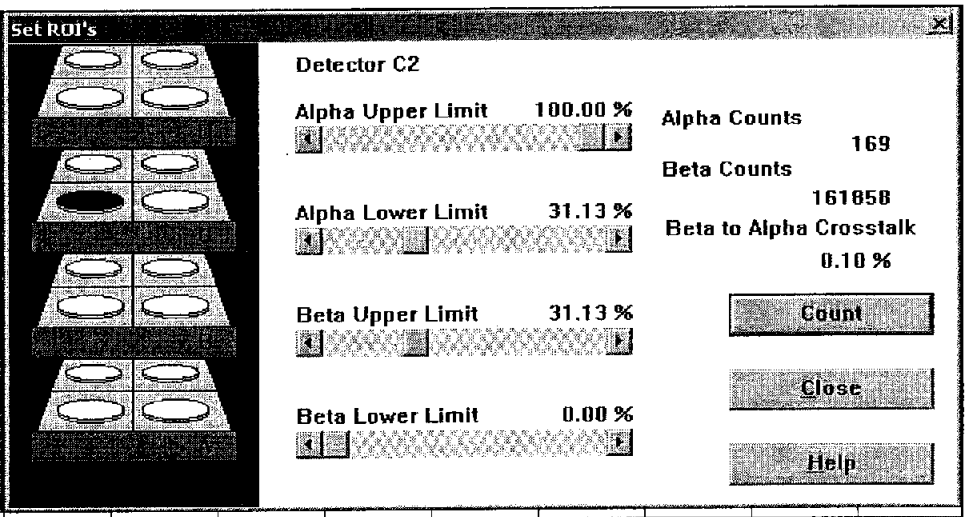


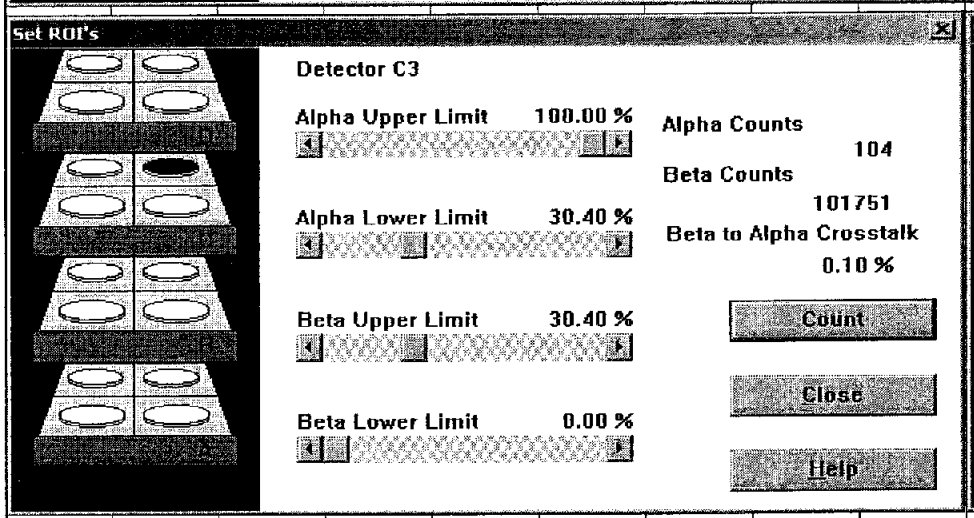


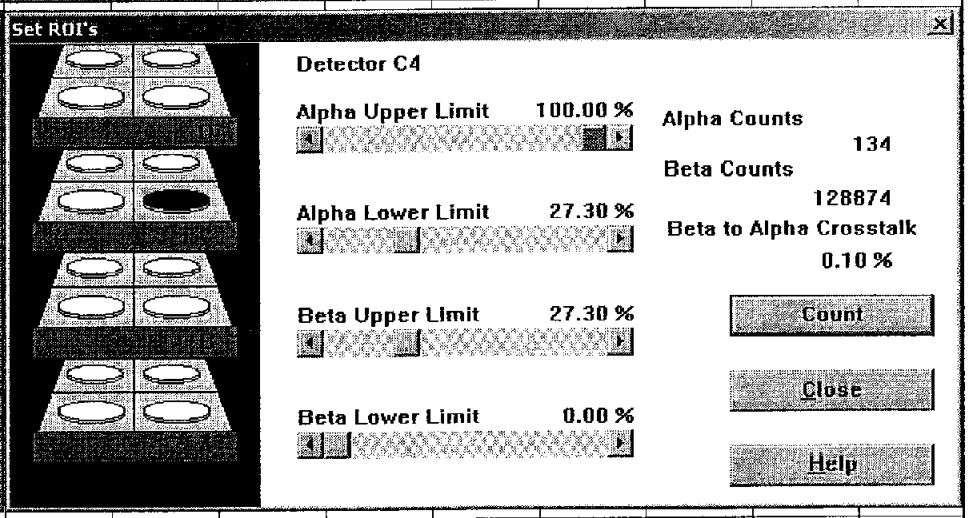


RED C drawer ROI's

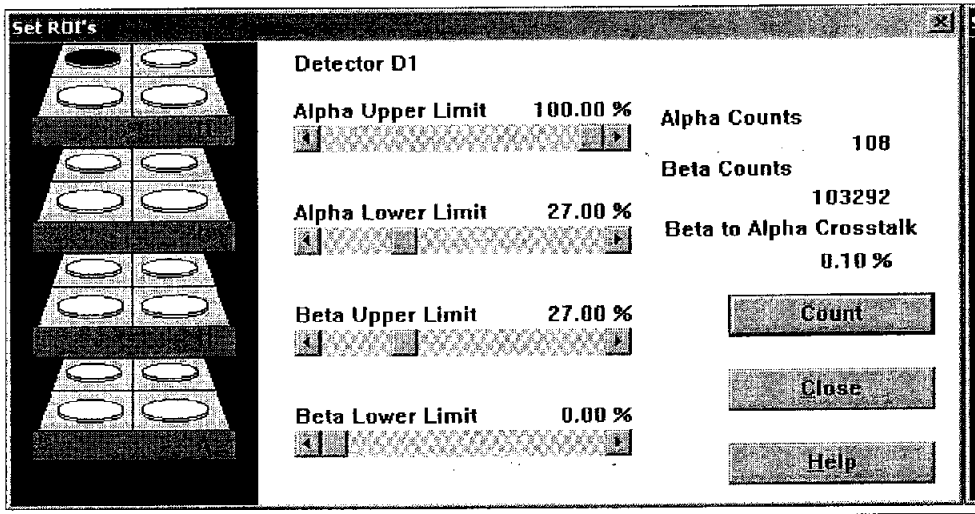


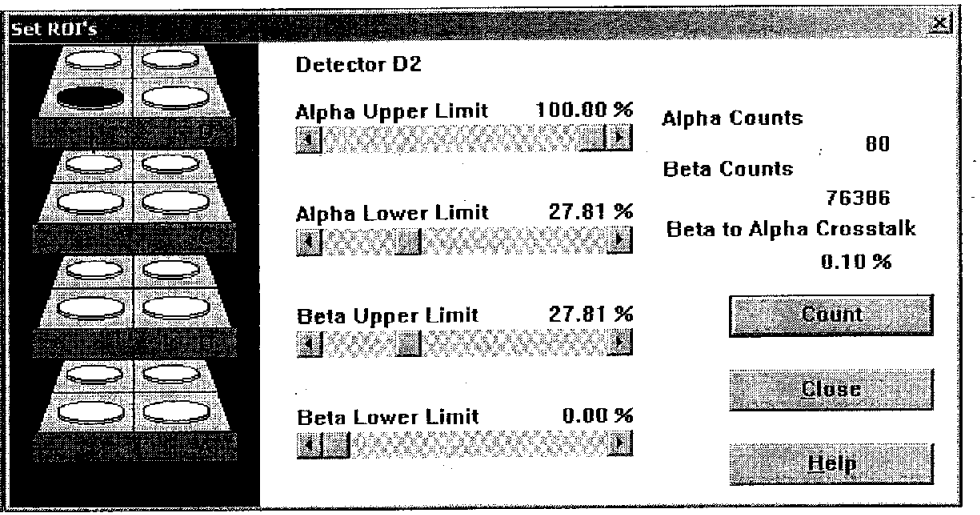


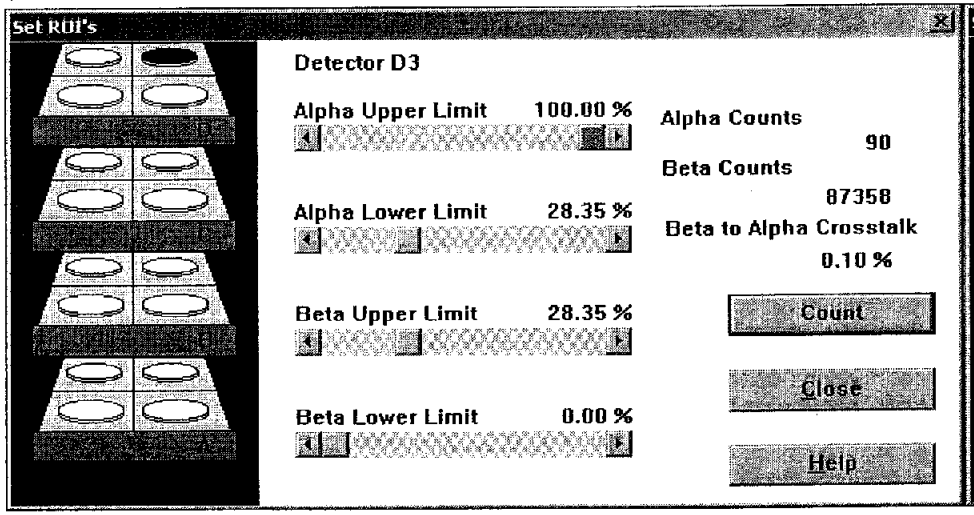


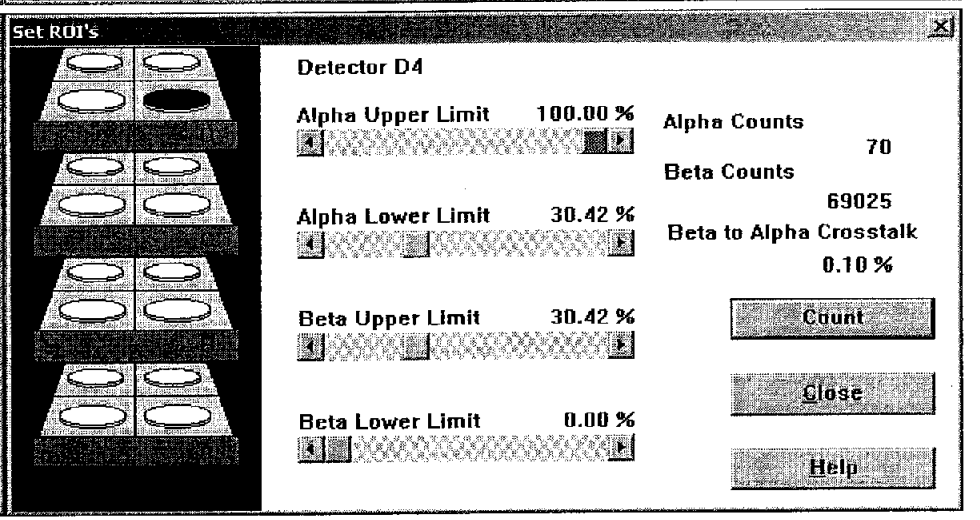


RED D drawer ROI's









SEVERN TRENT STL

Calibration Standards and Certificates

Red

Alpha and Beta

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	net mass	projected mass, mg	reweigh 1/9/6	mass 1-9-6
1	1	0.1000	8.8980	8.8888	0.0092	0.0081	8.8977	0.0089
2	1	0.3000	8.9490	8.9230	0.0260	0.0243	8.9481	0.0251
3	1	0.5000	9.0149	8.9703	0.0446	0.0405	9.0115	0.0412
4	1	1.0000	9.0419	8.9602	0.0817	0.0809	9.0398	0.0796
5	1	1.5000	9.0033	8.8764	0.1269	0.1214	8.9976	0.1212
6	1	2.0000	9.0833	8.9072	0.1761	0.1619	9.0701	0.1629
7	1	2.5000	9.1219	8.9194	0.2025	0.2023	9.1190	0.1996
8	1	3.0000	9.1769	8.9241	0.2528	0.2428	9.1661	0.2420

Alpha calibration standards salt solution SLRB-B

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	net mass	projected mass	reweigh 1/9/6	mass 1-9-6
1	1	0.1000	8.9369	8.9273	0.0096	0.0081	8.9357	0.0084
2	1	0.2000	8.9958	8.9783	0.0175	0.0162	8.9943	0.0160
3	1	0.3000	8.9737	8.9470	0.0267	0.0243	8.9719	0.0249
4	1	0.5000	8.9206	8.8766	0.0440	0.0405	8.9172	0.0406
5	1	0.7500	8.9565	8.8888	0.0677	0.0607	8.9499	0.0611
6	2	1.0000	9.0043	8.9170	0.0873	0.0809	8.9970	0.0800
7	2	1.3000	9.0092	8.8992	0.1100	0.1052	9.0029	0.1037
8	2	1.5000	9.0413	8.9088	0.1325	0.1214	9.0305	0.1217

spiked by: Joel Kempema verified by: Sarah Hurst

Beta calibration stds. 9/9/2005 salt solution SLRB-B SET 2

Beta standard, RAD04-0095, 1043.5 dpm/mL Sr/Y90 on 08/07/2001.

Std #	mLs RAD04-0095	mLs salt solution	gross mass	tare mass	net mass	projected mass, mg	reweigh 1/9/6	mass 1/9/6	
1 no 2	1	0.1	8.9140	8.9056	0.0084	0.0081	8.9138	0.0082	
1	1	0.1000	8.9006	8.8876	0.0130	0.0081	8.8979	0.0103	<--unused
2	1	0.3000	8.9226	8.8939	0.0287	0.0243	8.9201	0.0262	
3	1	0.5000	8.8978	8.8559	0.0419	0.0405	8.8966	0.0407	
4	1	1.0000	8.9580	8.8715	0.0865	0.0809	8.9535	0.0820	
5	1	1.5000	9.0437	8.9139	0.1298	0.1214	9.0359	0.1220	
6	1	2.0000	9.0249	8.8592	0.1657	0.1619	9.0204	0.1612	
7	1	2.5000	9.1269	8.9239	0.2030	0.2023	9.1184	0.1945	
8	1	3.0000	9.1390	8.8872	0.2518	0.2428	9.1301	0.2429	

Alpha calibration standards salt solution SLRB-B

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	net mass	projected mass	reweigh 1/9/6	mass 1/9/6
1	1	0.1000	8.9143	8.9061	0.0082	0.0081	8.9142	0.0081
2	1	0.2000	8.9348	8.9182	0.0166	0.0162	8.9343	0.0161
3	1	0.3000	8.9231	8.8980	0.0251	0.0243	8.9220	0.0240
4	1	0.5000	8.9518	8.9082	0.0436	0.0405	8.9494	0.0412
5	1	0.7500	8.9683	8.9026	0.0657	0.0607	8.9639	0.0613
6	2	1.0000	9.0179	8.9303	0.0876	0.0809	9.0124	0.0821
7	2	1.3000	8.9901	8.8763	0.1138	0.1052	8.9818	0.1055
8	2	1.5000	9.0533	8.9206	0.1327	0.1214	9.0449	0.1243

spiked by: Joel Kempema verified by: Ivan Vania

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. 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

$$\frac{5.1498\,g}{5.17735\,g} \times 7{,}654\ dps \times \frac{60\ dpm}{1\ dps} \div 100\,mL = \boxed{4{,}567.9\ \frac{dpm}{mL}}$$

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 HNO3 solution

CAUTION RADIOACTIVE MATERIAL

Logbook: 2060

SEVERN 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
					1.103 µCi/g ~~4,991,466.6 dpm/g~~						119,957 dpm/ml ~~119,912.8~~				
11-12-03	11-12-04	03092	P32	IPL 7032	~~4,991,466.6~~	15 NOV 03	4.5989 g	100 ml		14.29 d	~~119,912.8~~	MRS-4-01	SDB	MFM	From Pg 10 STEVES
11-12-03	11-12-04	03-083	P32	03052	119,957 dpm/ml ~~119,912.8~~	15 NOV 03	1 ml	50 ml		14.29 d	~~2,398.2~~ dpm/ml	MRS-9-01	SDB	MFM	Lab Book
9-11-03	9-11-04	03-069	Pu238	02-032	68.235 IPL 11-19-03 ~~1.76 (17)~~	11-15-99 dpm/ml	95 ml	190 ml	1396 days	87.7 y	decay corr. ~~1.21~~ 1.091 ~~33.506~~ 16.22	1M HNO_3	MFM	MC	from page 28
9-11-03	9-11-04	03-069	Pu239	02-031 ~~02-033~~	64.025 11-19-03 ~~1.28 (15)~~	11-15-99 dpm/ml	95 ml	190 ml	1396 days	24110 y	32.025 ~~32.025~~	1M HNO_3	MFM	MC	
11-21-03	11-21-04	Rad03-0083 ~~03-078~~	Tc-99	02-028	95,341.2 dpm/ml	10-96	1 ml	200 ml		2.1E5	476.7 dpm/ml	KOH	SDB		Rad Capture ID 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	~~BAD~~	
12-9-03	12-9-04	03-085	Th230	03-071	4,567.9 dpm/mL	12/19/02	1 mL	200 mL		7.538 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	4.997 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	Rad04-0007	Ra 228	01012	1,018 dpm/mL	2/16/01	2 mL	100 mL		5.75 y	20.36 dpm/mL	0.5M HNO_3	BH	DBF	
2/12/04	2/12/04	RAD-0015	Sr90	03-038	2,316.57 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/m
÷100 = 10435.8 pCi/ml

Actual Amount Transferred.... 4.9531 g

093
FQ
-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
JRK 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 MN
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	JTC	nanogram/mL
		01-088					1.0 mL				100 ng/mL			JTC	
		01-089					0.5 mL				50 ng/mL			JTC	
		01-090		01088	100 ng/mL		10 mL	100 mL			10 ng/mL			JTC	
		01-091		01-089	50 ng/mL		10 mL	100.0 mL			5 ng/mL			JTC	
		01-092		01-088	100 ng/mL		1.0 mL	100.0 mL			1 ng/mL			JTC	
9/19/01	9/19/02	01-093	SR-90	ampule 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	JTC	
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	JTC	
9/26/01	9/26/02	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 H2O	BMW	JTC	See Paul capture weight sheet.
10/4/01	10/4/02 ~~10/4/01~~	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	JTC	
10/12/01	10/12/02	01-096	Ra226	98-006	1316 dpm/mL	2/13/98	1.0 mL	100.0 mL	—	1600 yr	13.16 dpm/mL	1M HNO3	AM	JTC	
10/18/01	10/18/02 ~~10/18/01~~	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 ~~33.99~~ dpm/mL decay corrected 34.87	1M HNO3	BMW	AW	Decay Correct = 1699.65 dpm/mL

JTC 10-29-01

Additional Comments:

SL-RAD-044, revised 3/2/01
Qstlmo05\qa\FORMS\ST-LOUIS\RAD\RAD044.doc

SEVERN TRENT STL

Yellow Calibration for Th-230 Alpha

With $BaSO_4$ Carrier for Ra-226 Analysis

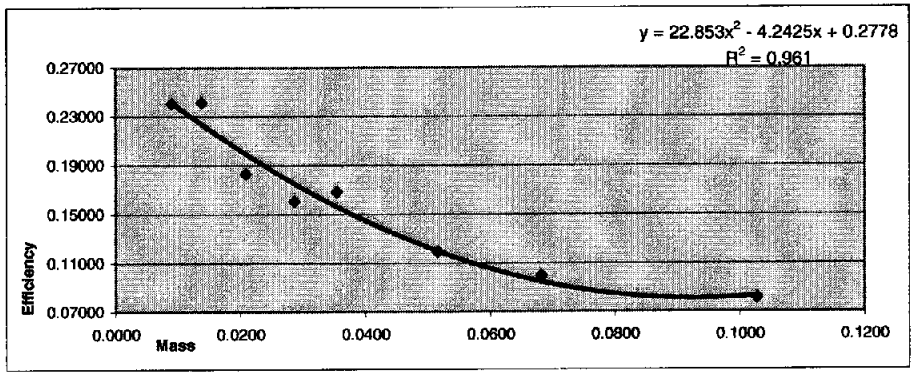
2006

SEVERN TRENT STL

Detector Efficiency Curves

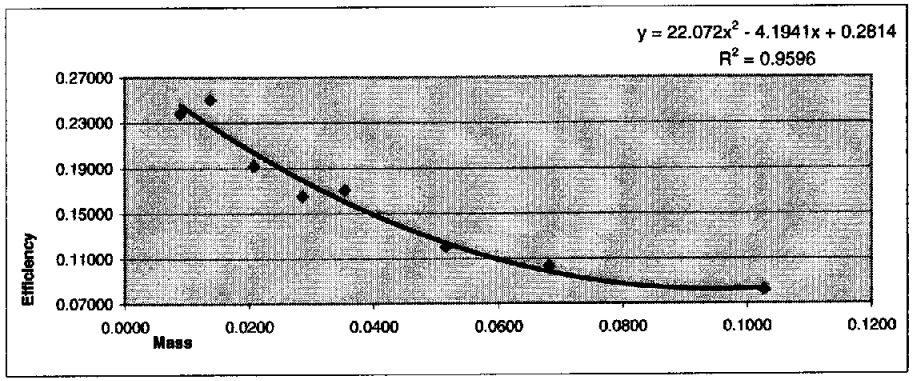
Alpha Th-230 Attenuation Yellow D1 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
D1	0.0090	33.60	36924	1098.929	0.24058
D1	0.0138	34.22	37740	1102.864	0.24144
D1	0.0208	38.24	31960	835.774	0.18297
D1	0.0286	41.20	30174	732.379	0.16033
D1	0.0354	40.22	30906	768.424	0.16822
D1	0.0515	45.00	24485	544.111	0.11912
D1	0.0682	45.00	20499	455.533	0.09972
D1	0.1027	45.00	16690	370.889	0.08119



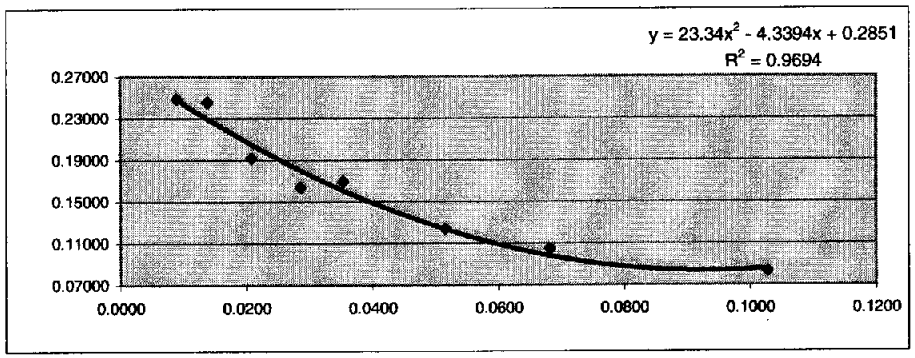
Alpha Th-230 Attenuation Yellow D2 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
D2	0.0090	34.84	37867	1086.883	0.23794
D2	0.0138	34.17	39063	1143.196	0.25027
D2	0.0208	37.94	33263	876.726	0.19193
D2	0.0286	40.80	30820	755.392	0.16537
D2	0.0354	39.69	30971	780.322	0.17083
D2	0.0515	45.00	24818	551.511	0.12074
D2	0.0682	45.00	21267	472.600	0.10346
D2	0.1027	45.00	16833	374.067	0.08189



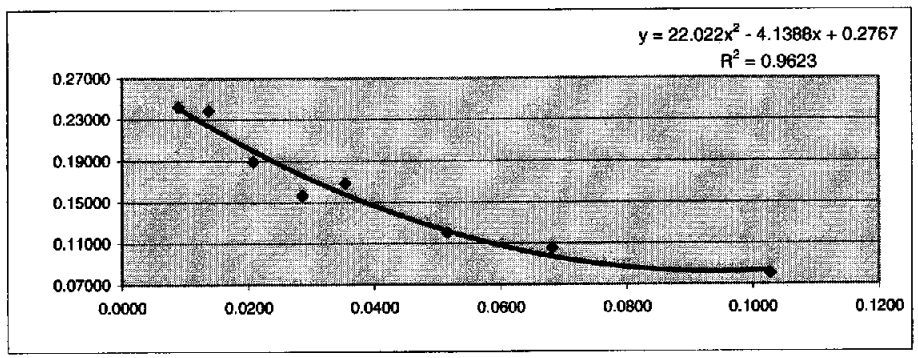
Alpha Th-230 Attenuation Yellow D3 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
D3	0.0090	34.07	38673	1135.104	0.24850
D3	0.0138	34.82	39027	1120.821	0.24537
D3	0.0208	38.60	33831	876.451	0.19187
D3	0.0286	41.84	31334	748.901	0.16395
D3	0.0354	40.90	31647	773.765	0.16939
D3	0.0515	45.00	25446	565.467	0.12379
D3	0.0682	45.00	21449	476.644	0.10435
D3	0.1027	45.00	17088	379.733	0.08313



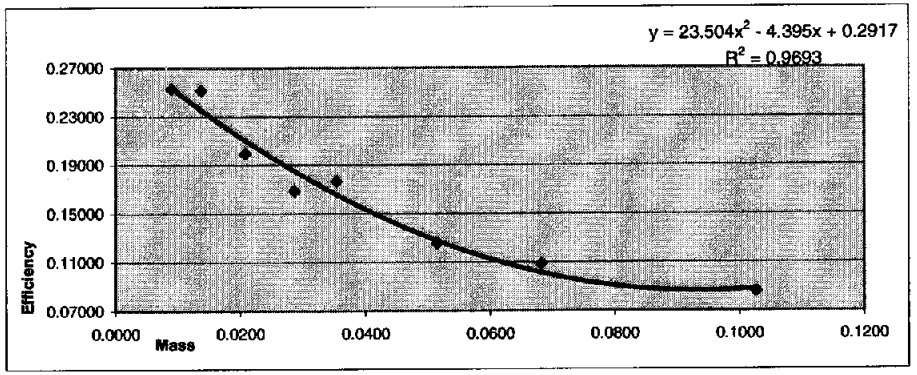
Alpha Th-230 Attenuation Yellow D4 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
D4	0.0090	34.14	37784	1106.737	0.24229
D4	0.0138	34.63	37725	1089.373	0.23848
D4	0.0208	38.80	33600	865.979	0.18958
D4	0.0286	42.49	30332	713.862	0.15628
D4	0.0354	40.89	31453	769.210	0.16839
D4	0.0515	45.00	24719	549.311	0.12025
D4	0.0682	45.00	21674	481.644	0.10544
D4	0.1027	45.00	16636	369.689	0.08093



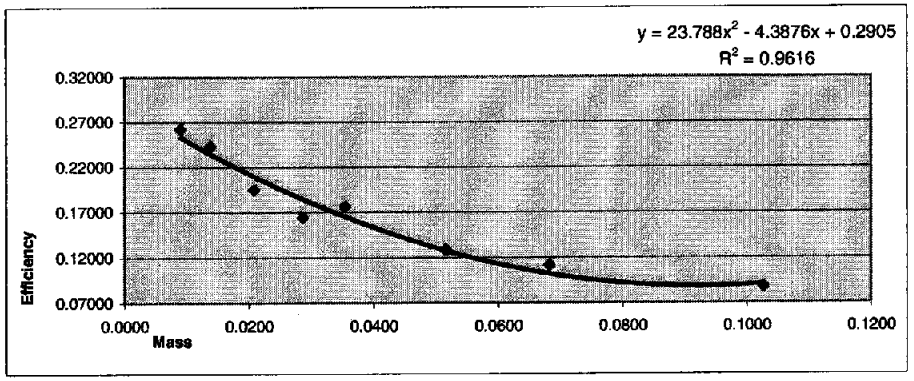
Alpha Th-230 Attenuation Yellow C1 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
C1	0.0090	33.96	39237	1155.389	0.25294
C1	0.0138	34.37	39445	1147.658	0.25124
C1	0.0208	38.21	34808	910.966	0.19943
C1	0.0286	41.41	31840	768.896	0.16833
C1	0.0354	40.66	32761	805.730	0.17639
C1	0.0515	45.00	25710	571.333	0.12508
C1	0.0682	45.00	22287	495.267	0.10842
C1	0.1027	45.00	17650	392.222	0.08586



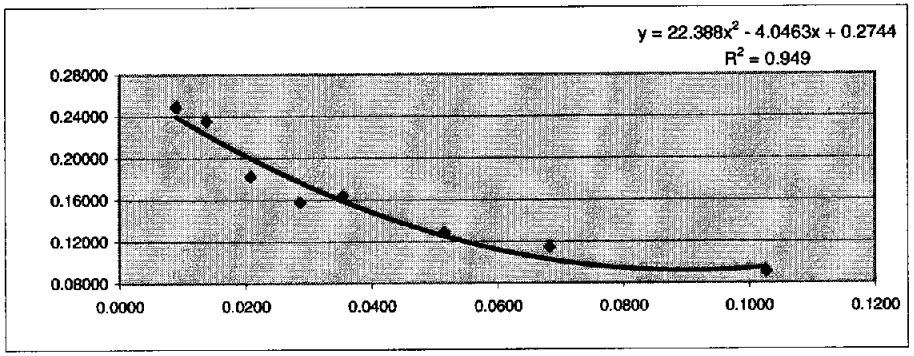
Alpha Th-230 Attenuation Yellow C2 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
C2	0.0090	34.43	41214	1197.037	0.26205
C2	0.0138	35.33	39220	1110.105	0.24302
C2	0.0208	39.46	35137	890.446	0.19494
C2	0.0286	42.82	32063	748.786	0.16392
C2	0.0354	41.53	33463	805.755	0.17640
C2	0.0515	45.00	26360	585.778	0.12824
C2	0.0682	45.00	22858	507.956	0.11120
C2	0.1027	45.00	17926	398.356	0.08721



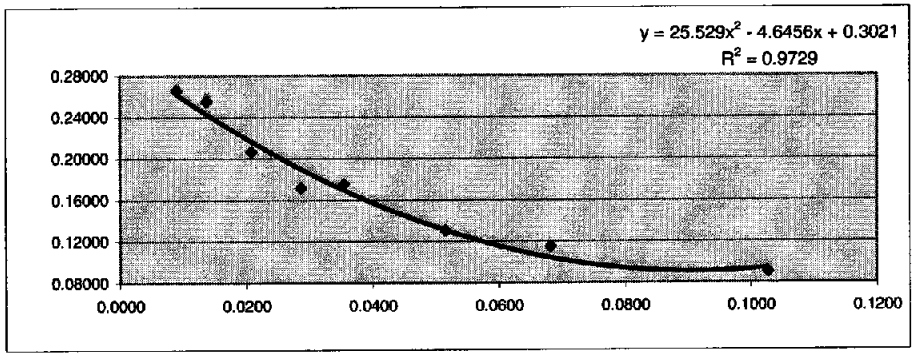
Alpha Th-230 Attenuation Yellow C3 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
C3	0.0090	36.23	41197	1137.096	0.24893
C3	0.0138	37.09	39888	1075.438	0.23543
C3	0.0208	41.31	34382	832.292	0.18220
C3	0.0286	45.00	32451	721.133	0.15787
C3	0.0354	44.55	33291	747.273	0.16359
C3	0.0515	45.00	26488	588.622	0.12886
C3	0.0682	45.00	23494	522.089	0.11430
C3	0.1027	45.00	18557	412.378	0.09028



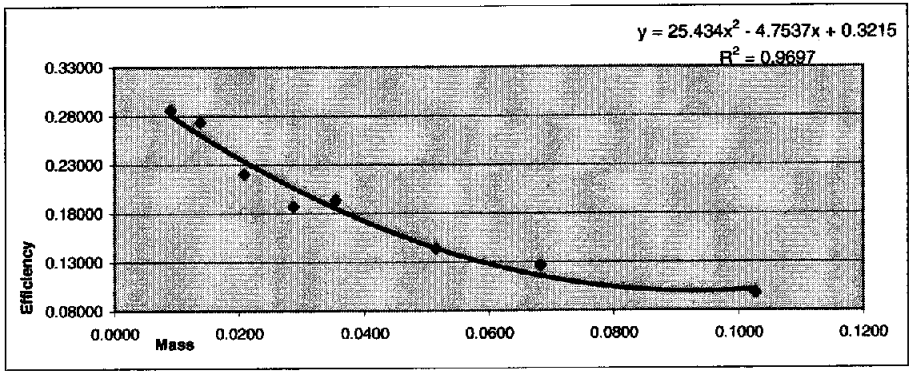
Alpha Th-230 Attenuation Yellow C4 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
C4	0.0090	34.38	41741	1214.107	0.26579
C4	0.0138	34.51	40288	1167.430	0.25557
C4	0.0208	38.57	36395	943.609	0.20657
C4	0.0286	41.95	32905	784.386	0.17172
C4	0.0354	41.22	32991	800.364	0.17521
C4	0.0515	45.00	26743	594.289	0.13010
C4	0.0682	45.00	23590	524.222	0.11476
C4	0.1027	45.00	18612	413.600	0.09054



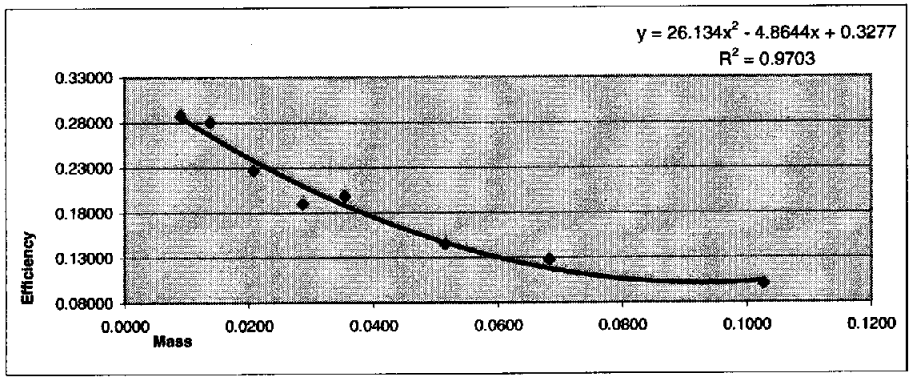
Alpha Th-230 Attenuation Yellow B1 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
B1	0.0090	34.14	44575	1305.653	0.28583
B1	0.0138	35.10	43920	1251.282	0.27393
B1	0.0208	38.98	39222	1006.208	0.22028
B1	0.0286	42.10	35902	852.779	0.18669
B1	0.0354	40.88	36116	883.464	0.19341
B1	0.0515	45.00	29540	656.444	0.14371
B1	0.0682	45.00	25988	577.511	0.12643
B1	0.1027	45.00	20087	446.378	0.09772



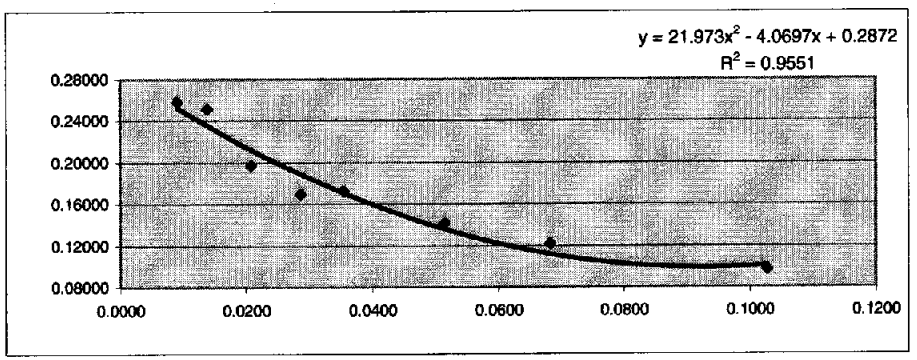
Alpha Th-230 Attenuation Yellow B2 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
B2	0.0090	34.23	45012	1314.987	0.28788
B2	0.0138	34.57	44310	1281.747	0.28060
B2	0.0208	38.23	39546	1034.423	0.22645
B2	0.0286	41.70	36154	867.002	0.18980
B2	0.0354	40.39	36624	906.759	0.19851
B2	0.0515	45.00	29734	660.756	0.14465
B2	0.0682	45.00	26162	581.378	0.12727
B2	0.1027	45.00	20662	459.156	0.10052



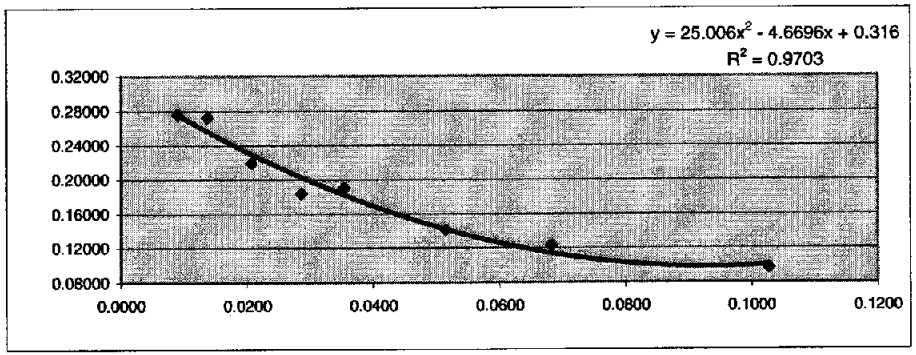
Alpha Th-230 Attenuation Yellow B3 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
B3	0.0090	37.01	43583	1177.601	0.25780
B3	0.0138	37.73	43284	1147.204	0.25114
B3	0.0208	42.59	38351	900.470	0.19713
B3	0.0286	45.00	34799	773.311	0.16929
B3	0.0354	45.00	35452	787.822	0.17247
B3	0.0515	45.00	29090	646.444	0.14152
B3	0.0682	45.00	25090	557.556	0.12206
B3	0.1027	45.00	19885	441.889	0.09674



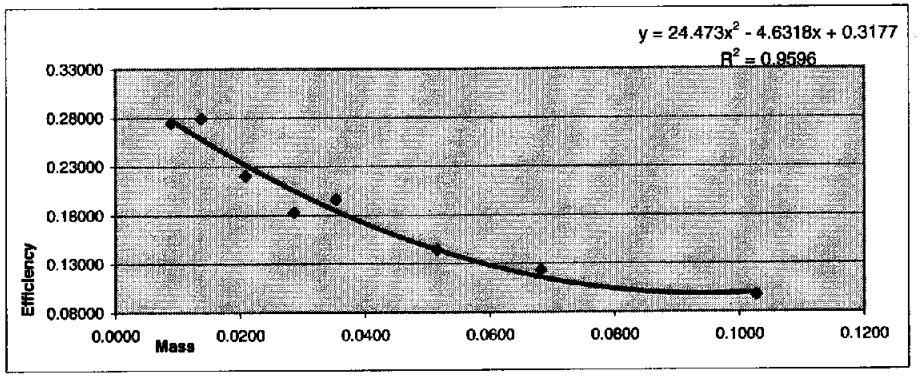
Alpha Th-230 Attenuation Yellow B4 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
B4	0.0090	34.78	43873	1261.443	0.27615
B4	0.0138	34.81	43361	1245.648	0.27270
B4	0.0208	39.04	39103	1001.614	0.21927
B4	0.0286	42.08	35273	838.237	0.18351
B4	0.0354	41.36	35974	869.778	0.19041
B4	0.0515	45.00	29020	644.889	0.14118
B4	0.0682	45.00	25219	560.422	0.12269
B4	0.1027	45.00	19967	443.711	0.09714



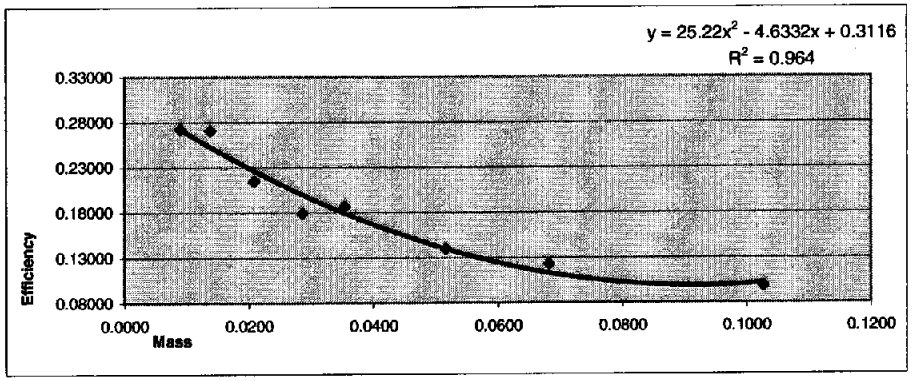
Alpha Th-230 Attenuation Yellow A1 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A1	0.0090	34.58	43427	1255.842	0.27493
A1	0.0138	34.33	43810	1276.143	0.27937
A1	0.0208	38.72	38986	1006.870	0.22042
A1	0.0286	42.22	35290	835.860	0.18299
A1	0.0354	40.71	36467	895.775	0.19610
A1	0.0515	45.00	29522	656.044	0.14362
A1	0.0682	45.00	25234	560.756	0.12276
A1	0.1027	45.00	20046	445.467	0.09752



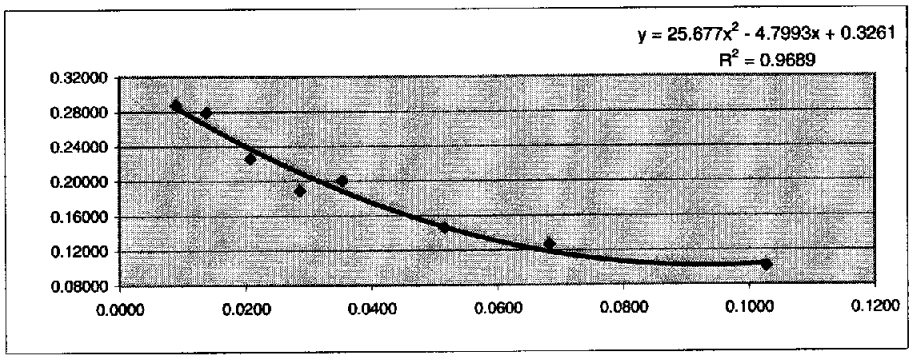
Alpha Th-230 Attenuation Yellow A2 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A2	0.0090	34.42	42800	1243.463	0.27222
A2	0.0138	34.96	43193	1235.498	0.27047
A2	0.0208	38.85	38111	980.978	0.21475
A2	0.0286	42.80	34987	817.453	0.17896
A2	0.0354	41.41	35319	852.910	0.18672
A2	0.0515	45.00	28745	638.778	0.13984
A2	0.0682	45.00	25246	561.022	0.12282
A2	0.1027	45.00	20202	448.933	0.09828



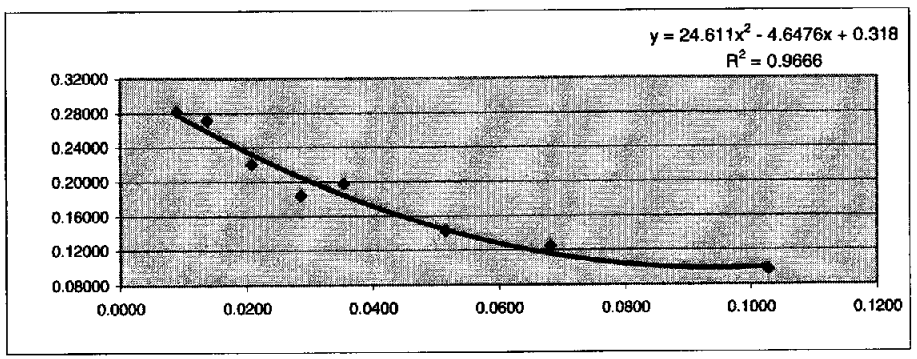
Alpha Th-230 Attenuation Yellow A3 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A3	0.0090	33.89	44522	1313.721	0.28760
A3	0.0138	34.65	44132	1273.651	0.27883
A3	0.0208	38.63	39833	1031.142	0.22574
A3	0.0286	42.14	36300	861.414	0.18858
A3	0.0354	40.58	37051	913.036	0.19988
A3	0.0515	45.00	30013	666.956	0.14601
A3	0.0682	45.00	26079	579.533	0.12687
A3	0.1027	45.00	20740	460.889	0.10090



Alpha Th-230 Attenuation Yellow A4 — 3/16/2006

Detector ID	Sample Wt	Count Time	Alpha	DPM 4567.9 CPM	Th230 Eff
A4	0.0090	34.30	44152	1287.230	0.28180
A4	0.0138	34.88	43249	1239.937	0.27145
A4	0.0208	38.26	38465	1005.358	0.22009
A4	0.0286	41.90	35152	838.950	0.18366
A4	0.0354	40.54	36557	901.751	0.19741
A4	0.0515	45.00	29242	649.822	0.14226
A4	0.0682	45.00	25546	567.689	0.12428
A4	0.1027	45.00	19985	444.111	0.09722

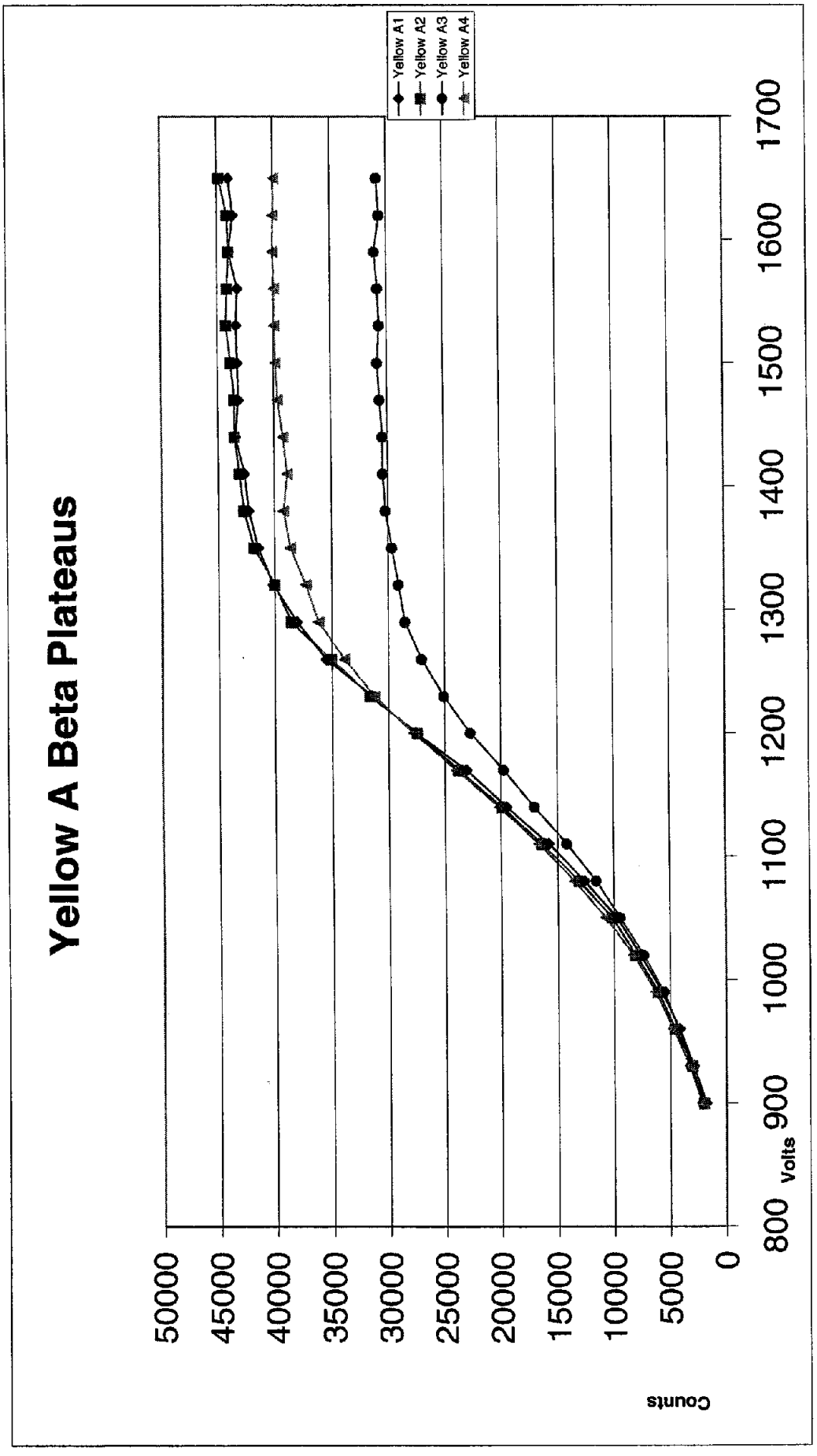


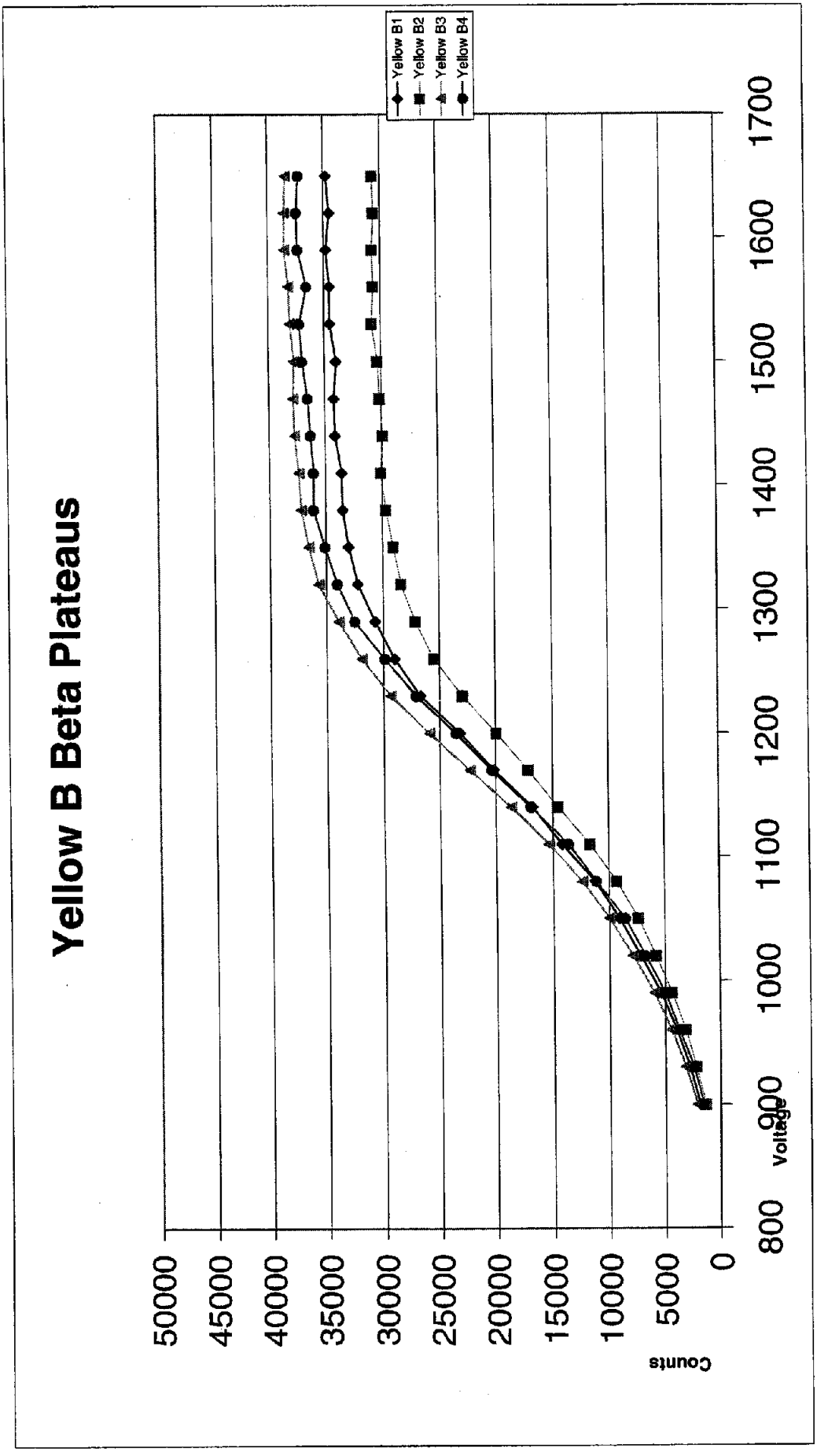
SEVERN TRENT STL

Voltage Plateaus

Plateau BET2_1_6
Counting time: 1.00

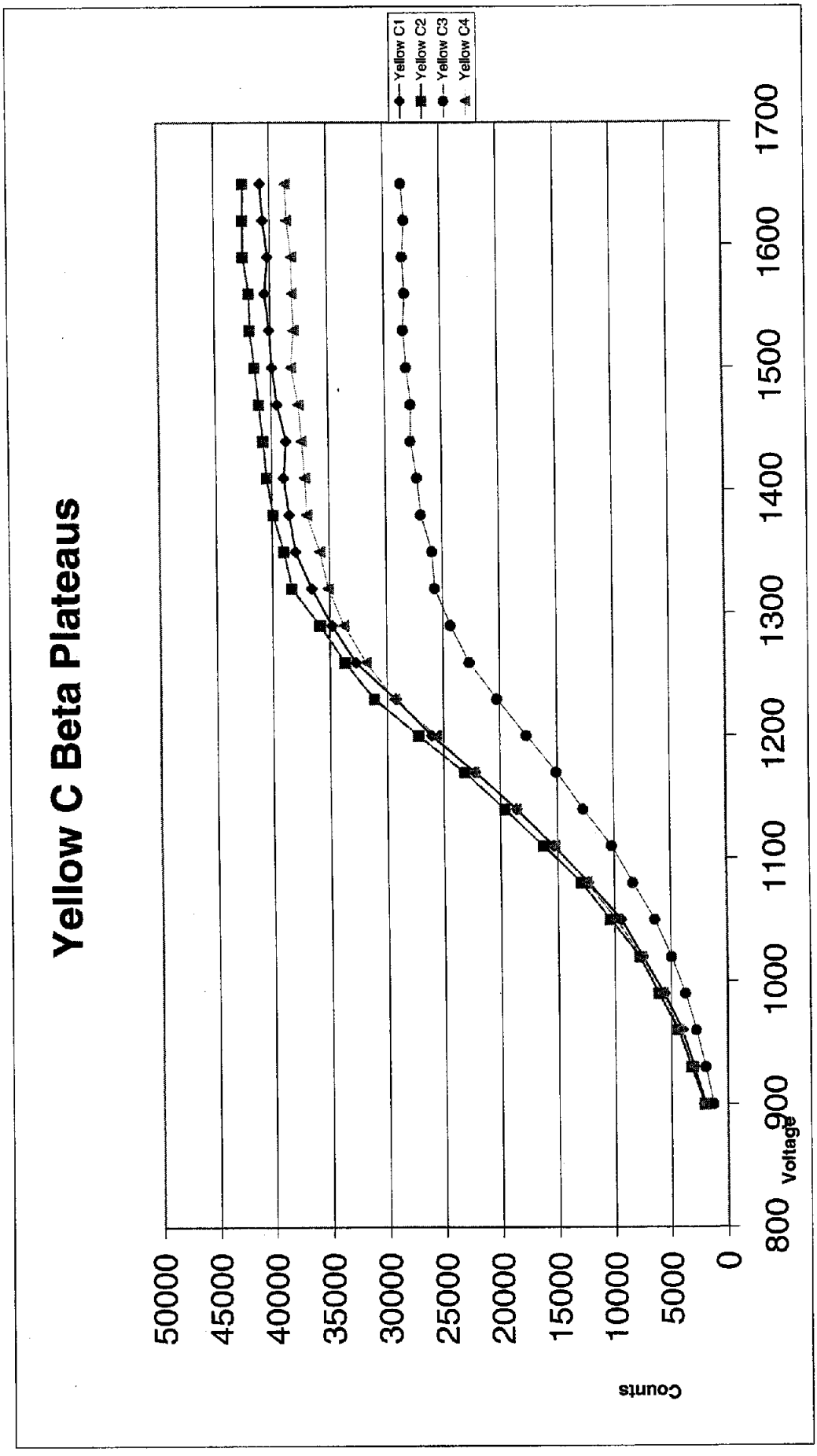
Voltage	2/24/2006 Guard 1	2/24/2006 Guard 2	2/24/2006 Chan 1 Yellow A1	2/24/2006 Chan 2 Yellow A2	2/24/2006 Chan 3 Yellow A3	2/24/2006 Chan 4 Yellow A4	2/24/2006 Chan 5 Yellow B1	2/24/2006 Chan 6 Yellow B2	2/24/2006 Chan 7 Yellow B3	2/24/2006 Chan 8 Yellow B4
900	55	66	1838	2030	2124	2198	1881	1348	2123	1528
930	81	97	2969	3057	3182	3305	2807	2222	3164	2439
960	84	104	4171	4568	4251	4727	3965	3162	4443	3755
990	110	143	5729	6053	5554	6288	5353	4370	5968	4979
1020	167	190	7636	8047	7358	8251	7173	5819	7878	6743
1050	202	252	9741	10152	9447	10723	9077	7389	9962	8565
1080	276	320	12631	13116	11572	13531	11243	9320	12412	11153
1110	395	426	15746	16383	14176	16602	14206	11698	15341	13597
1140	417	466	19471	19892	17002	20111	16779	14526	18625	16947
1170	513	483	23031	23748	19735	23941	20152	17166	22267	20328
1200	469	499	27575	27437	22686	27739	23158	19913	25911	23538
1230	485	482	31449	31630	25066	31223	26660	22925	29338	27064
1260	501	518	35462	35067	27027	33894	28983	25471	31904	29883
1290	490	480	38024	38539	28501	36164	30717	27127	33923	32519
1320	489	513	40122	39975	29073	37230	32224	28386	35658	34018
1350	528	517	41422	41787	29638	38587	33019	29048	36516	35090
1380	531	513	42243	42678	30197	39167	33515	29672	37174	36074
1410	528	508	42617	43093	30410	38846	33577	30111	37365	36041
1440	536	532	43421	43500	30426	39183	34109	29898	37706	36279
1470	527	531	43128	43495	30638	39658	34186	30146	37821	36512
1500	507	525	43198	43800	30827	39819	33952	30299	37703	36975
1530	543	559	43297	44185	30637	39912	34485	30790	38042	37187
1560	538	571	43160	44101	30782	39879	34498	30637	38162	36529
1590	547	524	43951	43945	31045	40020	34766	30730	38518	37296
1620	559	527	43539	44089	30608	39966	34488	30602	38496	37390
1650	599	577	43936	44802	30838	39897	34746	30691	38398	37213


Yellow A Beta Plateaus
Yellow A1
Yellow A2
Yellow A3
Yellow A4
Counts
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
800
900
1000
1100
1200
1300
1400
1500
1600
1700
Volts


Yellow B Beta Plateaus
Yellow B1
Yellow B2
Yellow B3
Yellow B4
Counts
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
800
900
1000
1100
1200
1300
1400
1500
1600
1700
Voltage

Counting time: 1.00

Voltage	2/24/2006 Guard 3	2/24/2006 Guard 4	2/24/2006 Yellow C1 Chan 9	2/24/2006 Yellow C2 Chan 10	2/24/2006 Yellow C3 Chan 11	2/24/2006 Yellow C4 Chan 12	2/24/2006 Yellow D1 Chan 13	2/24/2006 Yellow D2 Chan 14	2/24/2006 Yellow D3 Chan 15	2/24/2006 Yellow D4 Chan 16
900	67	76	1934	2012	1231	2091	1667	1604	1409	1747
930	76	98	2981	3216	1933	3036	2485	2255	2348	2690
960	84	141	4016	4375	2752	4314	3376	3116	3133	3604
990	126	164	5605	6104	3734	5712	4585	4181	4316	4871
1020	201	257	7491	7765	4929	7620	6051	5415	5801	6400
1050	254	300	9415	10359	6419	9863	7695	6781	7582	8295
1080	351	350	12263	12896	8360	12407	9700	8858	9804	10201
1110	407	422	15343	16221	10209	15262	12040	10879	12207	13078
1140	488	459	18561	19579	12689	18606	14477	13168	15007	15839
1170	519	504	22193	23117	15056	22318	17189	15520	18021	18631
1200	503	541	26025	27201	17651	25625	20138	17866	21092	21605
1230	543	533	29215	31071	20247	29324	22382	20168	24462	24465
1260	518	510	32711	33653	22662	31802	24671	22379	26928	26771
1290	575	557	34802	35820	24301	33746	26014	23578	28802	28692
1320	572	562	36513	38245	25677	35087	27498	24415	30516	29782
1350	546	577	37900	38950	25892	35798	28228	25073	31491	30289
1380	556	549	38460	39895	26876	36902	28424	25638	32023	31084
1410	531	526	38939	40471	27212	37067	28669	25579	32828	31450
1440	608	568	38690	40754	27745	37314	29153	25918	32979	31853
1470	589	598	39435	41078	27711	37551	29284	26438	32992	31875
1500	564	536	39864	41450	28054	38162	29802	26562	33541	32556
1530	585	564	40095	41830	28304	37913	29568	26778	33675	32575
1560	611	555	40490	41877	28176	38047	29682	26568	33711	32063
1590	606	591	40187	42402	28356	38059	29713	26617	34084	32653
1620	608	566	40591	42412	28177	38454	29738	27043	34134	32665
1650	597	568	40825	42383	28420	38564	30329	27226	33960	33210


Yellow C Beta Plateaus
Yellow C1
Yellow C2
Yellow C3
Yellow C4
Counts
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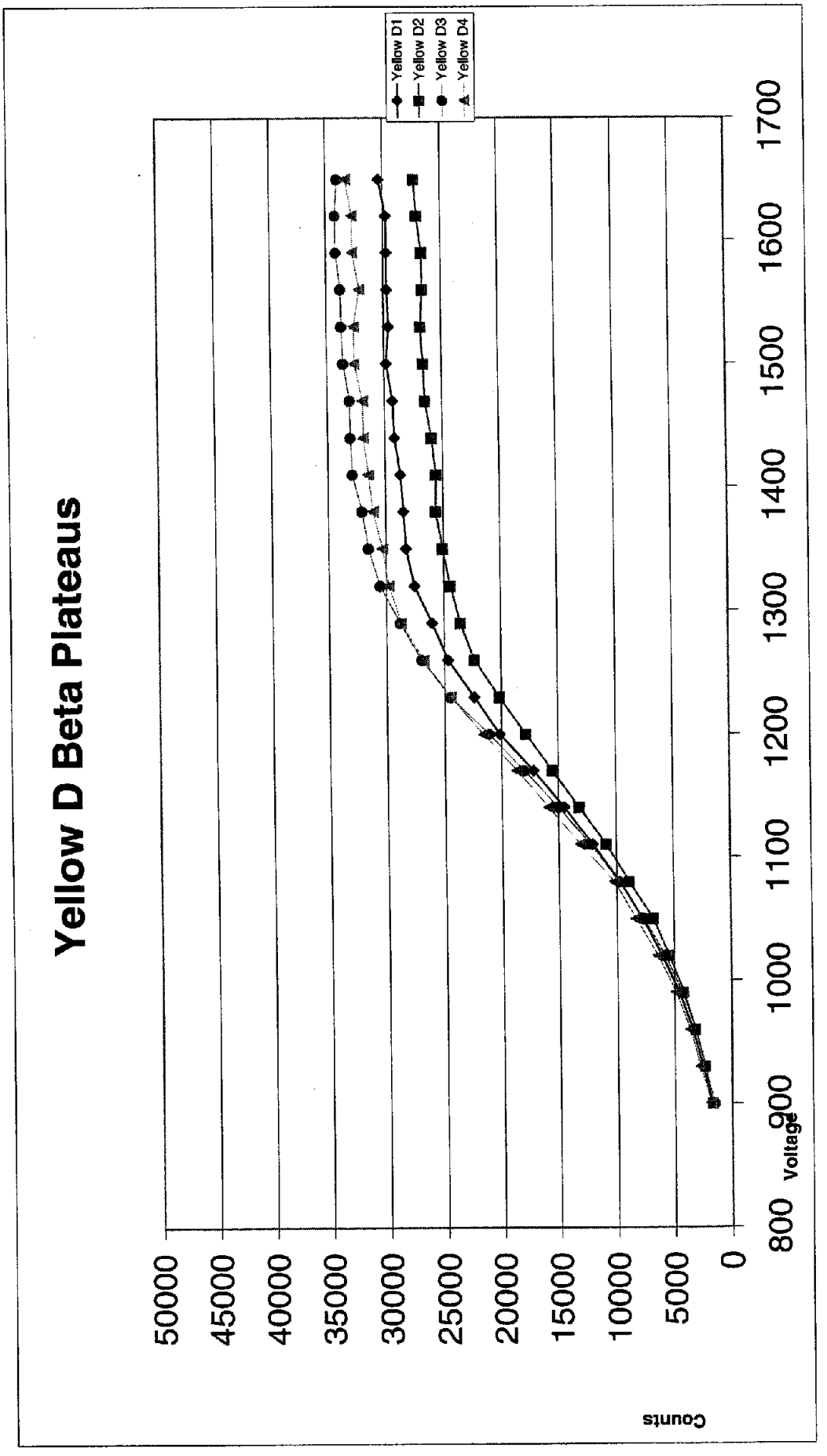
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
800
900
1000
1100
1200
1300
1400
1500
1600
1700
Voltage


Yellow D Beta Plateaus
Yellow D1
Yellow D2
Yellow D3
Yellow D4
Counts
50000
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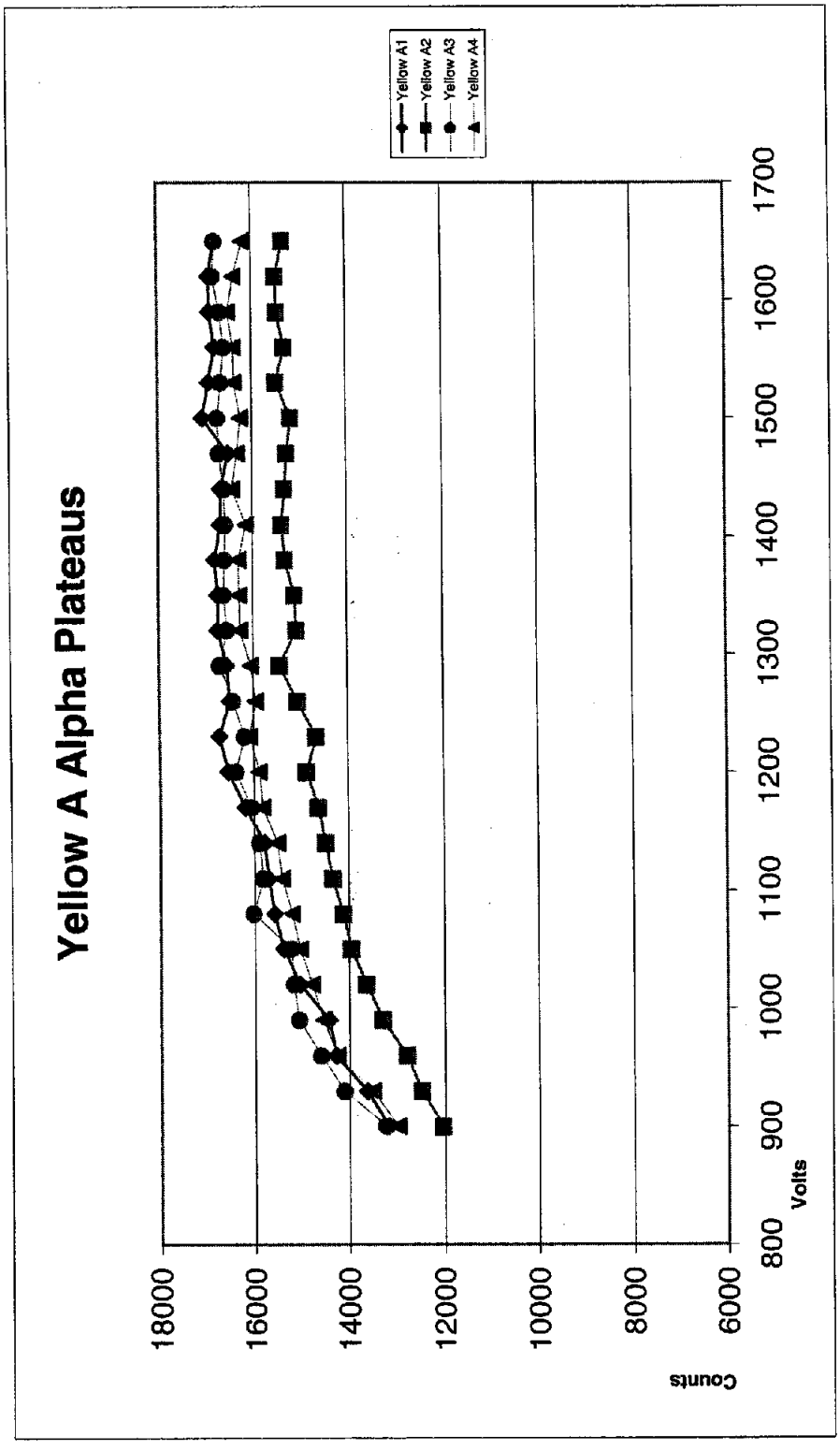
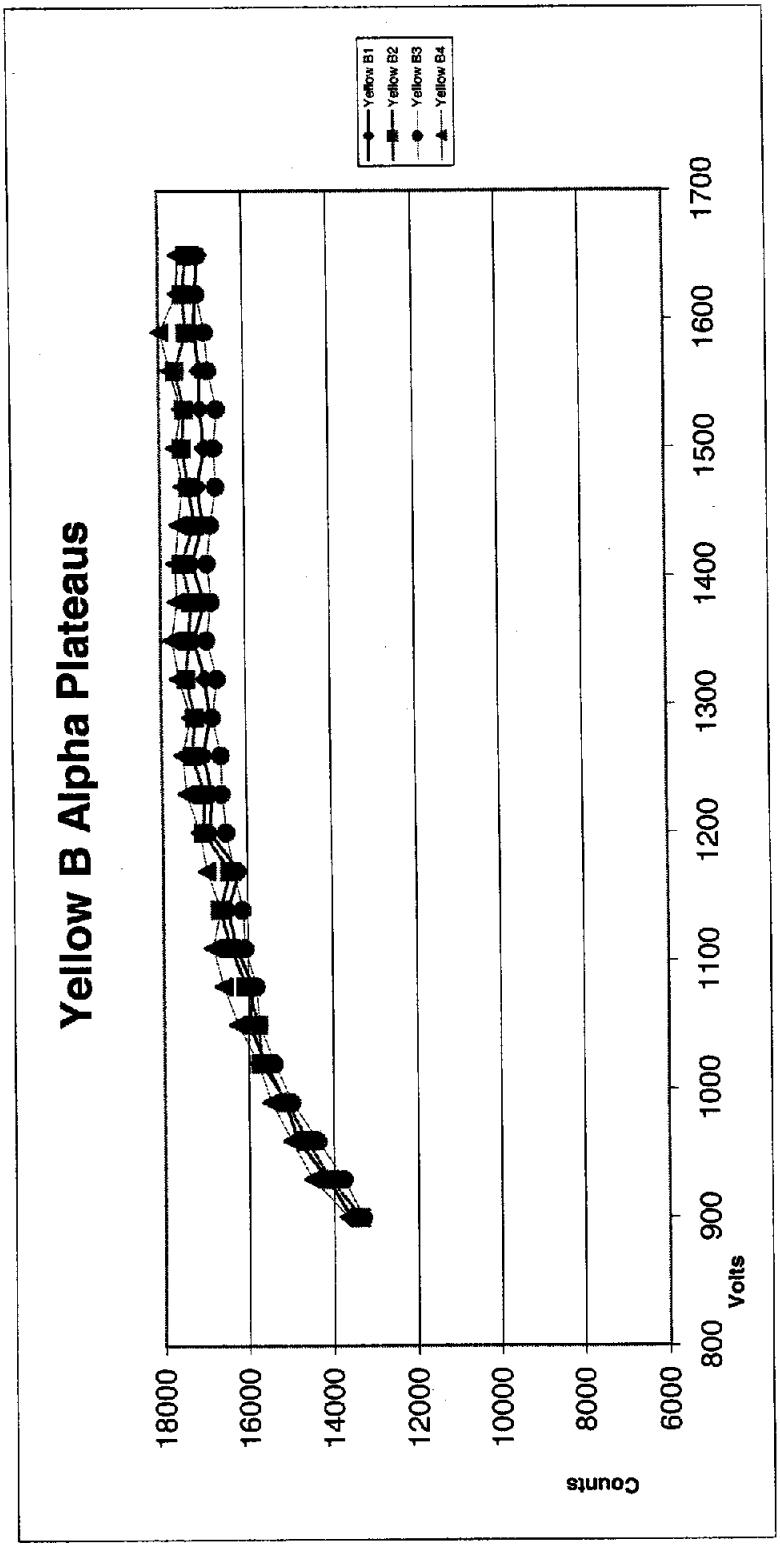
40000
35000
30000
25000
20000
15000
10000
5000
0
800
900
1000
1100
1200
1300
1400
1500
1600
1700
Voltage

Plateau AL1_2_6
Counting time: 1.00

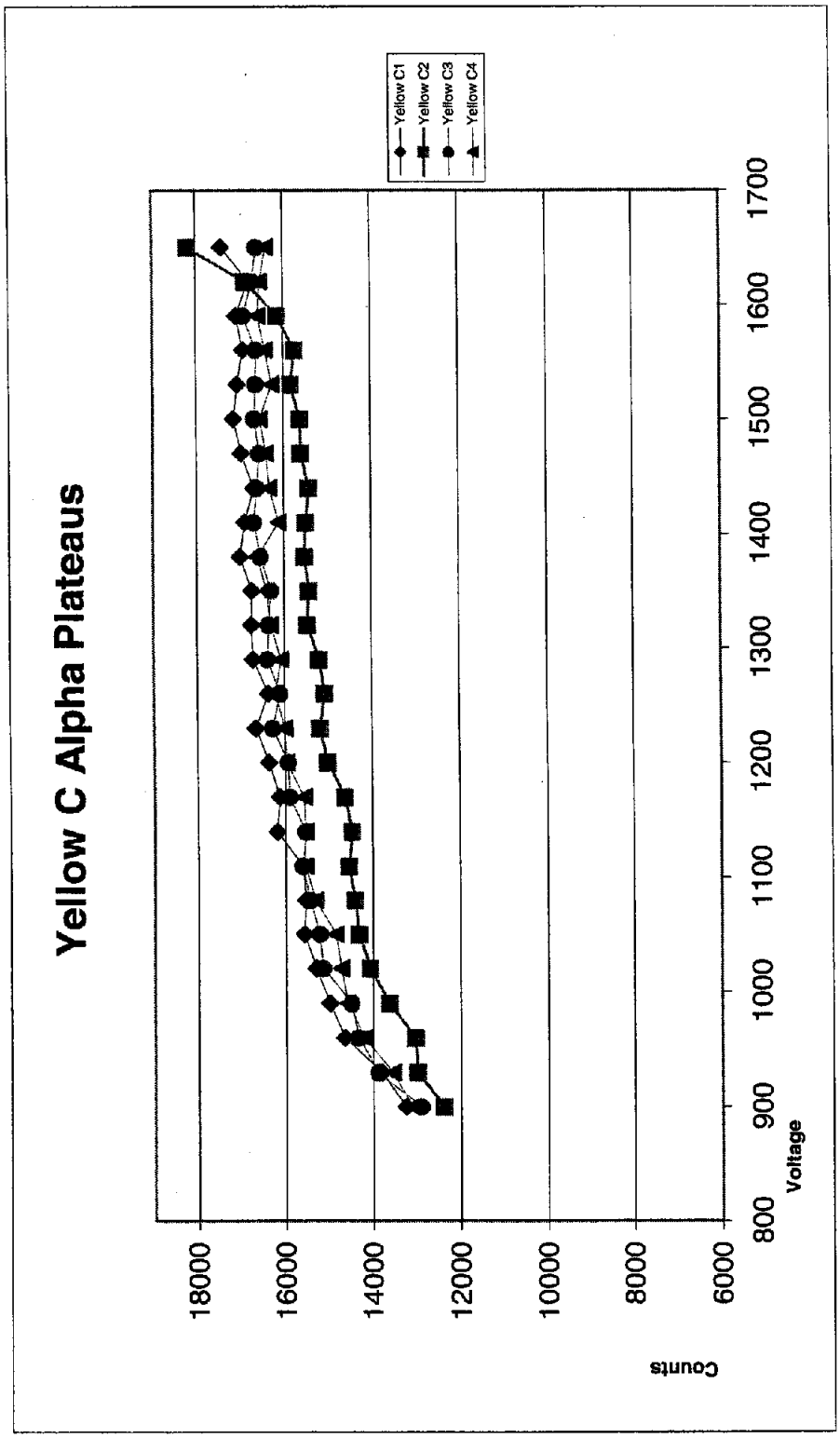
Voltage	2/24/2006 Guard 1	2/24/2006 Guard 2	2/24/2006 Chan 1 Yellow A1	2/24/2006 Chan 2 Yellow A2	2/24/2006 Chan 3 Yellow A3	2/24/2006 Chan 4 Yellow A4	2/24/2006 Chan 5 Yellow B1	2/24/2006 Chan 6 Yellow B2	2/24/2006 Chan 7 Yellow B3	2/24/2006 Chan 8 Yellow B4
900	54	53	13189	12044	13242	12991	13593	13349	13311	13655
930	73	67	13635	12497	14100	13526	14143	14087	13761	14488
960	69	92	14275	12804	14586	14261	14831	14613	14369	14987
990	111	129	14419	13303	15048	14531	15136	15098	14970	15469
1020	142	185	15027	13635	15162	14777	15609	15706	15384	15773
1050	195	250	15379	13951	15211	15026	15976	15753	15743	16247
1080	299	328	15574	14115	16026	15194	15894	16052	15812	16583
1110	354	354	15693	14335	15819	15407	16275	16403	16071	16827
1140	445	453	15783	14477	15895	15506	16467	16657	16117	16644
1170	475	465	16192	14618	16062	15819	16192	16409	16321	16960
1200	503	537	16551	14866	16388	15883	16880	17035	16485	17127
1230	510	540	16724	14657	16198	16080	16828	17011	16583	17421
1260	536	532	16506	15051	16435	15958	17000	17282	16597	17508
1290	543	547	16560	15427	16707	16049	16870	17212	16789	17316
1320	508	526	16753	15059	16558	16280	16963	17407	16669	17581
1350	535	524	16747	15098	16618	16290	17219	17337	16912	17745
1380	519	516	16810	15301	16598	16303	16967	17281	16797	17621
1410	560	537	16684	15368	16582	16137	17253	17504	16894	17654
1440	552	521	16678	15303	16613	16429	16990	17192	16805	17574
1470	520	493	16509	15250	16709	16325	17115	17325	16660	17462
1500	577	560	17052	15164	16734	16248	16948	17466	16709	17638
1530	555	552	16914	15478	16662	16378	17038	17412	16633	17481
1560	521	583	16790	15294	16593	16394	17042	17620	16841	17749
1590	564	571	16894	15460	16685	16503	17157	17354	16907	17968
1620	577	588	16906	15478	16827	16385	17144	17433	17093	17568
1650	634	669	16790	15321	16776	16193	17050	17334	17064	17546

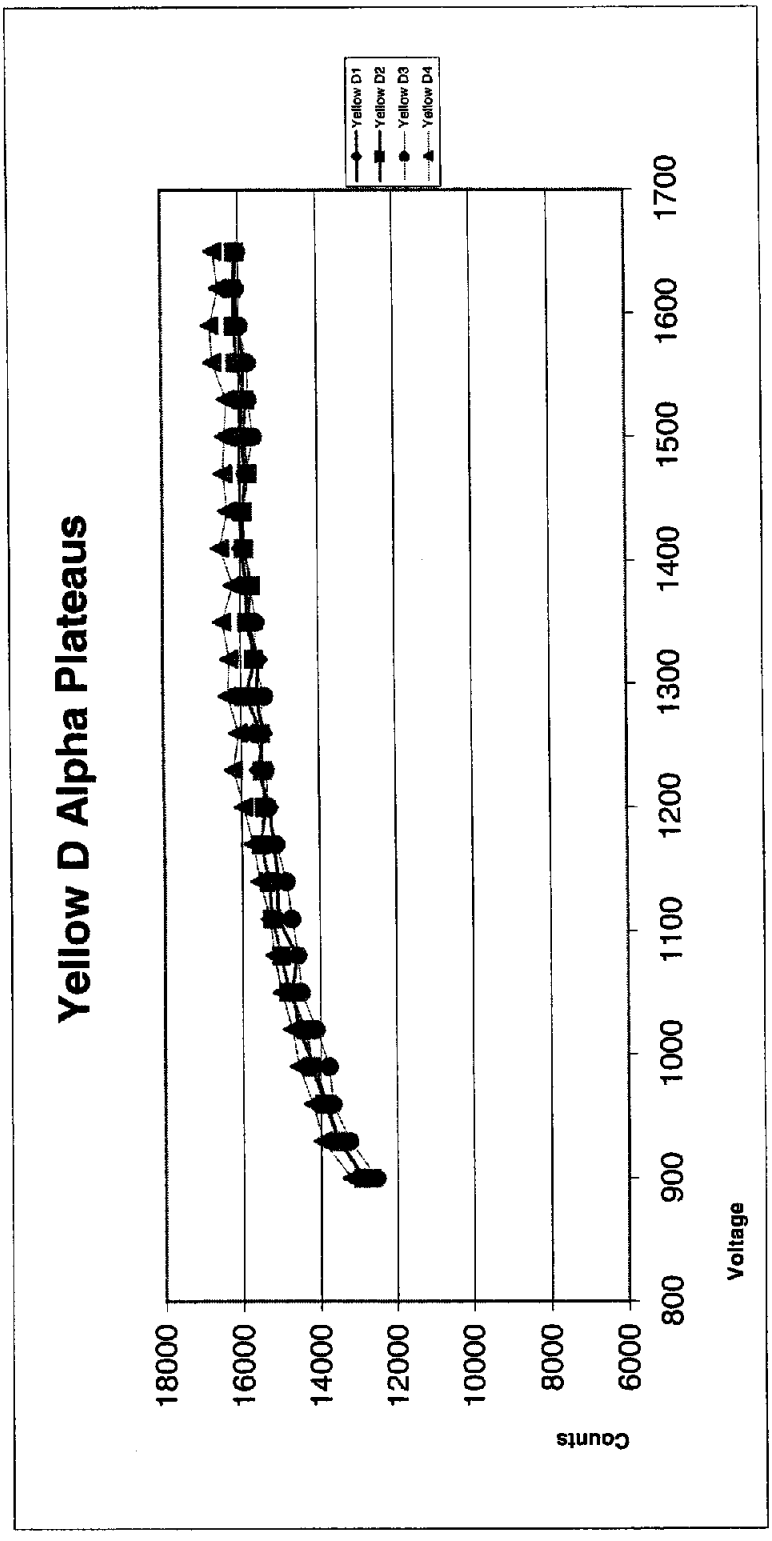

Yellow A Alpha Plateaus
Yellow A1
Yellow A2
Yellow A3
Yellow A4
Counts
18000
16000
14000
12000
10000
8000
6000
800
900
1000
1100
1200
1300
1400
1500
1600
1700
Volts


Yellow B Alpha Plateaus
Yellow B1
Yellow B2
Yellow B3
Yellow B4
Counts
18000
16000
14000
12000
10000
8000
6000
800
900
1000
1100
1200
1300
1400
1500
1600
1700
Volts

Plateau AL2_2_6
Counting time: 1.00

Voltage	2/24/2006 Guard 3	2/24/2006 Guard 4	2/24/2006 Chan 9 Yellow C1	2/24/2006 Chan 10 Yellow C2	2/24/2006 Chan 11 Yellow C3	2/24/2006 Chan 12 Yellow C4	2/24/2006 Chan 13 Yellow D1	2/24/2006 Chan 14 Yellow D2	2/24/2006 Chan 15 Yellow D3	2/24/2006 Chan 16 Yellow D4
900	67	79	13244	12383	12901	13106	12880	12902	12532	13212
930	71	91	13800	12986	13880	13545	13537	13545	13258	13947
960	118	147	14663	13031	14339	14194	13860	13889	13684	14202
990	133	152	14998	13610	14494	14587	14163	14234	13773	14558
1020	224	237	15304	14055	15148	14733	14554	14370	14107	14729
1050	232	253	15570	14318	15222	14855	14718	14822	14485	14998
1080	343	394	15537	14407	15448	15319	14610	15014	14571	15190
1110	369	409	15587	14543	15599	15546	15091	15241	14729	15299
1140	492	478	16192	14471	15526	15543	15089	15328	14860	15548
1170	538	517	16129	14628	15887	15561	15183	15504	15129	15716
1200	508	530	16373	15018	15923	15955	15309	15415	15317	15948
1230	545	577	16669	15190	16280	16002	15560	15467	15387	16195
1260	519	502	16379	15075	16109	16211	15436	15489	15628	16062
1290	498	500	16724	15199	16394	16080	15610	15874	15398	16326
1320	551	563	16760	15461	16360	16312	15541	15638	15659	16278
1350	573	534	16744	15425	16305	16411	15811	15820	15609	16453
1380	548	545	17008	15512	16544	16620	15848	15718	15747	16178
1410	575	559	16900	15497	16691	16124	15956	15899	15912	16497
1440	562	543	16691	15417	16624	16333	15917	15909	15911	16310
1470	555	576	16976	15590	16566	16408	15841	15798	15832	16406
1500	539	541	17150	15613	16679	16543	15961	15889	15647	16374
1530	565	567	17058	15821	16632	16274	15934	15835	15783	16321
1560	599	566	16927	15731	16626	16425	15862	16058	15781	16671
1590	558	512	17089	16138	16917	16595	16017	16107	15979	16728
1620	622	536	16797	16871	16715	16537	16124	16136	16071	16516
1650	749	577	17414	18202	16615	16406	16054	16080	16030	16644


Yellow C Alpha Plateaus
Yellow C1
Yellow C2
Yellow C3
Yellow C4
Counts
18000
16000
14000
12000
10000
8000
6000
800
900
1000
1100
1200
1300
1400
1500
1600
1700
Voltage


Yellow D Alpha Plateaus
Yellow D1
Yellow D2
Yellow D3
Yellow D4
Counts
18000
16000
14000
12000
10000
8000
6000
800
900
1000
1100
1200
1300
1400
1500
1600
1700
Voltage

SEVERN TRENT STL

Discriminator Settings

TENNELEC LB4000 PAGE 3

#1 Channel	GROUP >	A	B	C	D
Discriminator Settings	Beta LL	0	0	0	0
	Beta UL	1550	1690	1890	2300
	Alpha LL	1554	1694	1894	2304
	Alpha UL	4095	4095	4095	4095
	Threshold	25	25	25	25
Automatic Sequence	Print Enable	YES	YES	YES	YES
	Save Enable	NO	NO	NO	NO
	Print	QUANTERA	QUANTERA	QUANTERA	QUANTERA
	Save	leebkg.dat	leebkg.dat	leebkg.dat	leebkg.dat
	Repeat	0	0	0	0
Detector Bias	Alpha	802.5			
	Beta	1470.0			

Count Mode Simultaneous

(ALT T to select Count Mode, CTL PgUp and CTL PgDn for other channels)
(ALT X to configure the Print & Save commands and the Autoexecute Batch Name)

TENNELEC LB4000 PAGE 3

#2 Channel	GROUP >	A	B	C	D
Discriminator Settings	Beta LL	0	0	0	0
	Beta UL	1520	1630	1740	2250
	Alpha LL	1524	1364	1744	2254
	Alpha UL	4095	4095	4095	4095
	Threshold	25	25	25	25
Automatic Sequence	Print Enable	YES	YES	YES	YES
	Save Enable	NO	NO	NO	NO
	Print	QUANTERA	QUANTERA	QUANTERA	QUANTERA
	Save	leebkg.dat	leebkg.dat	leebkg.dat	leebkg.dat
	Repeat	0	0	0	0
Detector Bias	Alpha	802.5			
	Beta	1470.0			

Count Mode Simultaneous

(ALT T to select Count Mode, CTL PgUp and CTL PgDn for other channels)
(ALT X to configure the Print & Save commands and the Autoexecute Batch Name)

TENNELEC LB4000 PAGE 3

#3 Channel	GROUP >	A	B	C	D
Discriminator Settings	Beta LL	0	0	0	0
	Beta UL	1900	1720	1900	1910
	Alpha LL	1904	1724	1904	1914
	Alpha UL	4095	4095	4095	4095
	Threshold	25	25	25	25
Automatic Sequence	Print Enable	YES	YES	YES	YES
	Save Enable	NO	NO	NO	NO
	Print	QUANTERA	QUANTERA	QUANTERA	QUANTERA
	Save	leebkg.dat	leebkg.dat	leebkg.dat	leebkg.dat
	Repeat	0	0	0	0
Detector Bias	Alpha	802.5			
	Beta	1470.0			

Count Mode Simultaneous
(ALT T to select Count Mode, CTL PgUp and CTL PgDn for other channels)
(ALT X to configure the Print & Save commands and the Autoexecute Batch Name)

TENNELEC LB4000 PAGE 3

#4 Channel	GROUP >	A	B	C	D
Discriminator Settings	Beta LL	0	0	0	0
	Beta UL	1720	1280	2100	2050
	Alpha LL	1724	1284	2104	2054
	Alpha UL	4095	4095	4095	4095
	Threshold	25	25	25	25
Automatic Sequence	Print Enable	YES	YES	YES	YES
	Save Enable	NO	NO	NO	NO
	Print	QUANTERA	QUANTERA	QUANTERA	QUANTERA
	Save	leebkg.dat	leebkg.dat	leebkg.dat	leebkg.dat
	Repeat	0	0	0	0
Detector Bias	Alpha	802.5			
	Beta	1470.0			

Count Mode Simultaneous
(ALT T to select Count Mode, CTL PgUp and CTL PgDn for other channels)
(ALT X to configure the Print & Save commands and the Autoexecute Batch Name)

SEVERN TRENT STL

Calibration Standards and Certificates

Yellow

Th-230

Th-230 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	Reweigh 1/17/6
1	0.25	8.4779	8.4682	0.0097	8.4772
2	0.4	8.3925	8.3784	0.0141	8.3922
3	0.6	8.4768	8.4557	0.0211	8.4765
4	0.8	8.4605	8.4313	0.0292	8.4599
5	1	8.4726	8.4372	0.0354	8.4726
6	1.5	8.4687	8.4173	0.0514	8.4688
7	2	8.5100	8.4419	0.0681	8.5101
8	3	8.5684	8.4653	0.1031	8.5680

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. Taskaeva
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
~~9-11-03~~	~~9-11-04~~	03-069 ~~03-0169~~ ~~MC 9-22~~	~~Pu 238~~ 03	02-026	132.98	2-13-02	95mL	↓	1326 d/yr	32022.4 d, 75	3360 dpm/g/L ~~66.49~~ dpm/g/L	MFM		re-certification of 03-031, 03-03. 6/and 66.26	
~~↓~~	~~↓~~	~~–~~	~~Pu 239~~	~~02-025~~	~~128.05~~	~~2-13-02~~	~~95mL~~	~~150mL~~	11-16-03 MC	~~24110 y~~	~~32.15 dpm/g/L~~ ~~64.015 dpm/g/L~~	MFM		↓	62.0250 dpm/g/L
9-11-03	9-11-08	03-070 ~~03-0070~~ ~~MC 9-22-03~~	Am 243	98-011	1161 dpm/g	2-28-98	15 ~~16 gm~~	200mL		7.37 E+3 y	87.075 ~~9.22~~ dpm/g/L	MFM			
10-6-03	10-6-08	03-071	Th 230	65090-334	7,654 dps	12-19-02	5.1498 g	100mL	N/A	7.538 E4	4,567.9 dpm/mL	0.5M HNO3	BH	BBF	
10-6-03	10-6-08	03-072	Th 230	03-071	4,567.9 dpm/mL	12-19-02	1mL	200mL	N/A	7.538 E4	22.84 dpm/mL	0.5M HNO3	BH	BBF	
10-11-03	10-11-0	03-073	clean U-232	047-105	10994 dpm/ml	9-16-97	10mL	1000L		70 yr	103.85 dpm/mL	DI H2O 2M H2SO4 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	1mL	100mL	N/A	1.57E+07	10.54 nCi/mL	0.1M NaOH	BH	BBF	
10/31/03	10/31/04	03-075	I-129	03-074	10.54 nCi/mL	1-1-2000	1mL	100mL	N/A	1.57E7	105.4 pCi/mL	0.1M NaOH	BH	BBF	
10/31/03	10/31/04	03-076	Ra 228	01012	1,018 dpm/mL	2/16/01	1mL	100mL	NA	5.75 y	20.36 dpm/mL	0.5M HNO3	BH	BBF	
10/31/03	10/31/04	03-081	Pu-242	92-242-5-1	129.63 Bq/g	12/18/89	5.0723	500mL	N/A	3.73 X 10^5 y	78.9027	.5M HNO3	MFM	MO	
11/3/03	11/3/04	SR19	std SR carrier	$Sr(NO_3)_2$	N/A	N/A	120.77g	1 Liter	N/A	N/A		dilt H2O	[illegible]	BBF	Reported in Rad capture
11-5-03	11-5-04	RAD03-0032	Th-229	02-005	2134.75 dpm/mL	1-23-02	17.5mL	500mL	N/A	7.3e+3	74.716 dpm/mL	.5M HNO3	MFM	JMW	

Additional Comments: