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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

PROJECT NO. 03-3040.30/TA

Great Lakes NS Remediation

Lot #: F7L200260

John Eberline
Cabrera Services Inc
633 Stablestone Dr
Chesterfield, MO 63017

TESTAMERICA LABORATORIES, INC.

Ivan Vania
Project Manager

December 27, 2007

13715 Rider Trail North Earth City, MO 63045 **tel** 314.298.8566 **fax** 314.298.8757 **www.testamericainc.com**

Case Narrative
LOT NUMBER: F7L200260

This report contains the analytical results for the 17 samples received under chain of custody by TestAmerica St. Louis on December 20, 2007. These samples are associated with your Great Lakes NS Remediation 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 TestAmerica 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.

Gamma Spectroscopy - Cesium-137 & Hits (EML GA-01-R MOD)
The reporting limit for Actinium-228 was not met. There is activity in the samples above the MDA.
Affected Samples:
F7L200260 (1): SU9-184-1
F7L200260 (3): SU10-212-1
F7L200260 (4): SU10-214PR
F7L200260 (5): SU10-214PR FD
F7L200260 (8): SU11-216-2
F7L200260 (9): SU11-220-1
F7L200260 (10): SU11-224-2
F7L200260 (11): SU11-228-1
F7L200260 (12): SU12-303-3
F7L200260 (13): SU12-307-1
F7L200260 (14): SU12-307-2
F7L200260 (15): SU13-329-1
F7L200260 (16): SU13-B18-1
F7L200260 (17): SU13-B19-1

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

F7L200260 CLIENT ANALYSIS SUMMARY

Storage Loc: RAD

Project Manager: IV
Quote #: 77996
SDG:
Date Received: 2007-12-20

Project: 03-3040.30/TA
Great Lakes NS Remediation
Analytical Due Date: 2008-01-04

PO#:
Report to:
Report Due Date: 2008-01-07

Client: 1352406 Cabrera Services, Inc.
#SMPS in LOT: 17
Report Type: W
EDD Code: 00

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
1	SU9-184-1			2007-07-25 / 1620	KEKC3	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
2	SU10-198-1			2007-07-13 / 1350	KEKC7	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
3	SU10-212-1			2007-07-13 / 1410	KEKDC	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
4	SU10-214PR			2007-11-07 / 1010	KEKDE	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
5	SU10-214PR FD			2007-11-07 / 1010	KEKDK	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
6	SU10B-038			2007-11-07 / 1300	KEKDR	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
7	SU10B-041PR			2007-11-12 / 820	KEKDX	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

F7L200260 CLIENT ANALYSIS SUMMARY

Storage Loc: RAD

Project Manager: IV
Quote #: 77996
SDG:
Date Received: 2007-12-20

Project: 03-3040.30/TA
Great Lakes NS Remediation
Analytical Due Date: 2008-01-04

PO#:
Report to:
Report Due Date: 2008-01-07

Client: 1352406 Cabrera Services, Inc.
#SMPS in LOT: 17
Report Type: W
EDD Code: 00

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
8	SU11-216-2			2007-07-24 / 1410	KEKD4	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
9	SU11-220-1			2007-08-02 / 1355	KEKD8	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
10	SU11-224-2			2007-07-24 / 1400	KEKEC	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
11	SU11-228-1			2007-08-02 / 1505	KEKEG	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
12	SU12-303-3			2007-07-24 / 1026	KEKEM	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
13	SU12-307-1			2007-07-24 / 1030	KEKEW	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
14	SU12-307-2			2007-07-24 / 1030	KEKE1	SOLID

SAMPLE COMMENTS:

XX ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX 0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A

F7L200260 CLIENT ANALYSIS SUMMARY

Storage Loc: RAD

Project Manager: IV
Quote #: 77996 SDG:
Project: 03-3040.30/TA Great Lakes NS Remediation
PO#: Report to:
Client: 1352406 Cabrera Services, Inc.

Date Received: 2007-12-20
Analytical Due Date: 2008-01-04
Report Due Date: 2008-01-07
Report Type: W
EDD Code: 00
#SMPS in LOT: 17

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
15	SU13-329-1			2007-07-24 / 1526	KEKE2	SOLID

SAMPLE COMMENTS:

XX	ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX	0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
16	SU13-B18-1			2007-08-22 / 900	KEKE4	SOLID

SAMPLE COMMENTS:

XX	ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX	0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
17	SU13-B19-1			2007-08-22 / 1000	KEKE5	SOLID

SAMPLE COMMENTS:

XX	ZV		RAD SCREEN	RAD SCREEN	RA	IN-HOUSE RAD SCREEN	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
XX	0A	EML	GA-01-R MOD	Gamma Cs-137 & Hits by DOE GA-01-R MOD.	G6	Dry, Grind, and Fill Geometry	01	STANDARD TEST SET	PROT: B	WRK LOC	06	

LOT# F7L200260

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: John Eberlin	Site Contact: Wade Fillingame	Date: 12/13/07	COC No: 3
Cabrera Services Inc	Tel/Fax:	Lab Contact:	Carrier: Courier	pg 1 of 2 COCs
633 Stablestone Dr	Analysis Turnaround Time			Job No. 03-3040.30/260
Chesterfield, MO 63017	Calendar (C) or Work Days (W) ___W___			
(314) 703-6784 Phone	TAT if different from Below __15days_____			SDG No.
(xxx) xxx-xxxx FAX	☐ 2 weeks			
Project Name: Great Lakes Naval Station	☐ 1 week			
Site: Training Center	☐ 2 days			
P O # 08-3111	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Gamma Spec (Ac-228)	Sample Specific Notes:
SU9-184-1	7/25/07	1620	Grab	Soil	1		X	
SU10-198-1	7/13/07	1350	Grab	Soil	1		X	
SU10-212-1	7/13/07	1410	Grab	Soil	1		X	
SU10-214PR	11/7/07	1010	Grab	Soil	1		X	
SU10-214PR FD	11/7/07	1010	Grab	Soil	1		X	
SU10B-038	11/7/07	1300	Grab	Soil	1		X	
SU10B-041PR	11/12/07	0820	Grab	Soil	1		X	
SU11-216-2	7/24/07	1410	Grab	Soil	1		X	
SU11-220-1	8/2/07	1355	Grab	Soil	1		X	
SU11-224-2	7/24/07	1400	Grab	Soil	1		X	
SU11-228-1	8/2/07	1505	Grab	Soil	1		X	
SU12-303-3	7/24/07	1026	Grab	Soil	1		X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	CABRERA	12/13/07, 1230		TA	12-20-07 0830
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

LOT# F7L200260

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: John Eberlin	Site Contact: Wade Fillingame	Date: 12/13/07	COC No: 3
Cabrera Services Inc	Tel/Fax:	Lab Contact:	Carrier: Courier	pg 2 of 2 COCs
633 Stablestone Dr	**Analysis Turnaround Time**			Job No. 03-3040.30/260
Chesterfield, MO 63017	Calendar (C) or Work Days (W) ___W___			SDG No.
(314) 703-6784 Phone	TAT if different from Below ___15days___			
(xxx) xxx-xxxx FAX	☐ 2 weeks			
Project Name: Great Lakes Naval Station	☐ 1 week			
Site: Training Center	☐ 2 days			
P O # 08-3111	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Gamma Spec (Ac-228)	Sample Specific Notes:
SU12-307-1	7/24/07	1030	Grab	Soil	1		X	
SU12-307-2	7/24/07	1030	Grab	Soil	1		X	
SU13-329-1	7/24/07	1526	Grab	Soil	1		X	
SU13-B18-1	8/22/07	0900	Grab	Soil	1		X	
SU13-B19-1	8/22/07	1000	Grab	Soil	1		X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	CABRERA	12/13/07, 1230		TA	12-20-07 0830
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

- 1412 -

Lot #(s): F7L200251 (260) 261 271

Condition Upon Receipt Form

Client: Cabrera COC/RFA No: 2,3,4,1 Date: 12-20-07
Quote No: 77996 Initiated By: [illegible] Time: 0830

Shipping Information

Shipper Name: Client
Multiple Packages (Y) N

Shipping # (s):*
1. N/A 2. 3. 4. 5. 6. 7. 8. 9. 10.

Sample Temperature (s):**
1. Ambient 2. 3. 4. 5. 6. 7. 8. 9. 10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

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

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

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

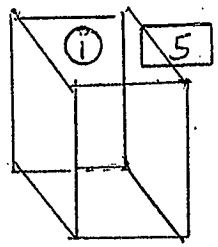
Corrective Action:
☐ Client Contact Name: Informed by:
☐ Sample(s) processed "as is"
☐ Sample(s) on hold until: If released, notify:
Project Management Review: Sheryl A Adam Date: 12-21-07 1412

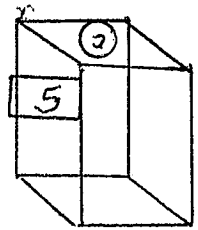
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

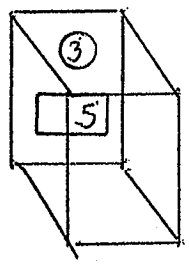
Location: Sample Containers	RWP#	Survey #	Survey Type:	pg. 1 of 1
Site: GLNTC PPV Lanterns	003	03-3040, 30-272		

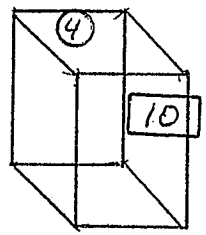
Smear (CPM/100 cm²) / Direct Count (CPM/Direct Frisk) — circle one

No.	α	β	No.	α	β
1	0	62	26		
2	0	65	27		
3	1	49	28		
4	1	53	29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35	N	
11			36		
12	N		37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19		A	44		
20			45		
21			46		
22			47		A
23			48		
24			49		
25			50		









Comments

Surveyed By:	Date:	Instrument	Serial #	α Eff.	β Eff.	α Bkg.	β Bkg	γ Bkg	Cal. Due
K. Gowdy	12/13/07	Bicron	C8541F	N/A	N/A	N/A	N/A	5	6/17/08
		2929	163827	.3649	.2385	.15	44.2	N/A	9/7/08

Reviewed By: Date: 12/13/07

Key

- ■ A/S Location
- *-* Boundary
- ○ Smear
- □ Dose Rate ___ /hr
- * Direct Reading CPM/direct frisk
- △ Grab Sample

METHODS SUMMARY

F7L200260

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Gamma Spectroscopy - Cesium-137 & Hits	EML GA-01-R MOD	

References:

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

SAMPLE SUMMARY

F7L200260

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
KEKC3	001	SU9-184-1	07/25/07	16:20
KEKC7	002	SU10-198-1	07/13/07	13:50
KEKDC	003	SU10-212-1	07/13/07	14:10
KEKDE	004	SU10-214PR	11/07/07	10:10
KEKDK	005	SU10-214PR FD	11/07/07	10:10
KEKDR	006	SU10B-038	11/07/07	13:00
KEKDX	007	SU10B-041PR	11/12/07	08:20
KEKD4	008	SU11-216-2	07/24/07	14:10
KEKD8	009	SU11-220-1	08/02/07	13:55
KEKEC	010	SU11-224-2	07/24/07	14:00
KEKEG	011	SU11-228-1	08/02/07	15:05
KEKEM	012	SU12-303-3	07/24/07	10:26
KEKEW	013	SU12-307-1	07/24/07	10:30
KEKE1	014	SU12-307-2	07/24/07	10:30
KEKE2	015	SU13-329-1	07/24/07	15:26
KEKE4	016	SU13-B18-1	08/22/07	09:00
KEKE5	017	SU13-B19-1	08/22/07	10:00

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.

Cabrera Services, Inc.

Client Sample ID: SU9-184-1

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-001
Work Order: KEKC3
Matrix: SOLID

Date Collected: 07/25/07 1620
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.				**pCi/g**		**Batch # 7360292**	**Yld %**
Actinium 228	**1.60**		**0.28**	0.25	**0.24**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU9-184-1 DUP

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-001X
Work Order: KEKC3
Matrix: SOLID

Date Collected: 07/25/07 1620
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**			**Batch # 7360292**	**Yld %**
Actinium 228	**1.17**		**0.32**	0.25	**0.48**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU10-198-1

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-002
Work Order: KEKC7
Matrix: SOLID

Date Collected: 07/13/07 1350
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.				**pCi/g**		**Batch # 7360292**	**Yld %**
Actinium 228	**1.63**		**0.34**	0.25	**0.13**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU10-212-1

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-003
Work Order: KEKDC
Matrix: SOLID

Date Collected: 07/13/07 1410
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**			**Batch # 7360292**	**Yld %**
Actinium 228	**1.53**		**0.41**	0.25	**0.42**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU10-214PR

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-004
Work Order: KEKDE
Matrix: SOLID

Date Collected: 11/07/07 1010
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**		**Batch # 7360292**		**Yld %**
Actinium 228	**1.14**		**0.26**	0.25	**0.29**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU10-214PR FD

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-005
Work Order: KEKDK
Matrix: SOLID

Date Collected: 11/07/07 1010
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**			**Batch # 7360292**	**Yld %**
Actinium 228	**1.71**		**0.29**	0.25	**0.33**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU10B-038

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-006
Work Order: KEKDR
Matrix: SOLID

Date Collected: 11/07/07 1300
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.				**pCi/g**		**Batch # 7360292**	**Yld %**
Actinium 228	**3.89**		**0.54**	0.25	**0.23**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU10B-041PR

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-007
Work Order: KEKDX
Matrix: SOLID

Date Collected: 11/12/07 0820
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**			**Batch # 7360292**	**Yld %**
Actinium 228	**2.05**		**0.36**	0.25	**0.1**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU11-216-2

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-008
Work Order: KEKD4
Matrix: SOLID

Date Collected: 07/24/07 1410
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**			**Batch # 7360292**	**Yld %**
Actinium 228	**0.96**		**0.24**	0.25	**0.34**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU11-220-1

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-009
Work Order: KEKD8
Matrix: SOLID

Date Collected: 08/02/07 1355
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**			**Batch # 7360292**	**Yld %**
Actinium 228	**2.38**		**0.35**	0.25	**0.40**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU11-224-2

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-010
Work Order: KEKEC
Matrix: SOLID

Date Collected: 07/24/07 1400
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**		**Batch # 7360292**		**Yld %**
Actinium 228	**1.28**		**0.30**	0.25	**0.34**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU11-228-1

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-011
Work Order: KEKEG
Matrix: SOLID

Date Collected: 08/02/07 1505
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**			**Batch # 7360292**	**Yld %**
Actinium 228	**1.01**		**0.31**	0.25	**0.46**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU12-303-3

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-012
Work Order: KEKEM
Matrix: SOLID

Date Collected: 07/24/07 1026
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**			**Batch # 7360292**	**Yld %**
Actinium 228	**1.10**		**0.27**	0.25	**0.37**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU12-307-1

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-013
Work Order: KEKEW
Matrix: SOLID

Date Collected: 07/24/07 1030
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.				**pCi/g**		**Batch # 7360292**	**Yld %**
Actinium 228	**4.00**		**0.42**	0.25	**0.29**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU12-307-2

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-014
Work Order: KEKE1
Matrix: SOLID

Date Collected: 07/24/07 1030
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**			**Batch # 7360292**	**Yld %**
Actinium 228	**4.40**		**0.57**	0.25	**0.27**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU13-329-1

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-015
Work Order: KEKE2
Matrix: SOLID

Date Collected: 07/24/07 1526
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**		**Batch # 7360292**		**Yld %**
Actinium 228	**0.76**		**0.25**	0.25	**0.38**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU13-B18-1

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-016
Work Order: KEKE4
Matrix: SOLID

Date Collected: 08/22/07 0900
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**		**Batch # 7360292**		**Yld %**
Actinium 228	**2.41**		**0.39**	0.25	**0.51**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

Cabrera Services, Inc.

Client Sample ID: SU13-B19-1

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7L200260-017
Work Order: KEKE5
Matrix: SOLID

Date Collected: 08/22/07 1000
Date Received: 12/20/07 0830

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.				**pCi/g**		**Batch # 7360292**	**Yld %**
Actinium 228	**1.51**		**0.45**	0.25	**0.36**	**12/26/07**	**12/26/07**

NOTE(S)

Data are incomplete without the case narrative.

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

METHOD BLANK REPORT

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7L200260
Matrix: SOLID

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Lab Sample ID / Analysis Date
Gamma Cs-137 & Hits by DOE GA-01-R MOD.			**pCi/g**	**Batch #**	**7360292**	**Yld %**		**F7L260000-292B**
Actinium 228	-0.06	U	4.5	0.2	0.2		12/26/07	12/26/07

NOTE(S)

Data are incomplete without the case narrative.

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

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7L200260
Matrix: SOLID

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID QC Control Limits
Gamma Cs-137 & Hits by DOE GA-01-R MOD.		**pCi/g**		**GA-01-R MOD**			**F7L260000-292C**
Americium 241	103	107	8.5	1.4		104	(85 - 118)
Cesium 137	40.0	43.3	2.7	0.4		108	(91 - 120)
Cobalt 60	62.7	65.6	3.9	0.4		105	(91 - 112)
	Batch #:	7360292		**Analysis Date:**	12/26/07		

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: F7L200260 Date Sampled: 07/25/07
Matrix: SOLID Date Received: 12/20/07

Parameter	SAMPLE Result	Total Uncert. (2σ +/-)	% Yld	DUPLICATE Result	Total Uncert. (2 σ +/-)	% Yld	QC Sample ID Precision	
Gamma Cs-137 & Hits by DOE GA-01-R MOD.	**pCi/g**			**GA-01-R MOD**			**F7L200260-001**	
Actinium 228	**1.60**	**0.28**		**1.17**	**0.32**		31	%RPD
Batch #:	7360292 (Sample)			7360292 (Duplicate)				

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

GAMMA SPECTROSCOPY

Gamma Spectroscopy

Cesium-137

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gamma Spectroscopy

Batch: 7360292 **Operator:** 60040

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-001	KEKC31AC	294.80g	2.00	GammaVision	GV01	12 / 26 / 07 14:08	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.595E+000 pCi/g	2.766E-001	2.609E-001	2.439E-001	1.020E-001	6.54

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-001X	KEKC31AD	294.80g	2.00	GammaVision	GV04	12 / 26 / 07 14:47	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.166E+000 pCi/g	3.226E-001	3.156E-001	4.842E-001	2.103E-001	2.41

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-002	KEKC71AC	383.50g	2.00	GammaVision	GV04	12 / 26 / 07 14:08	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.633E+000 pCi/g	3.393E-001	3.260E-001	1.329E-001	4.201E-002	12.29

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-003	KEKDC1AC	325.50g	2.00	GammaVision	GV05	12 / 26 / 07 14:09	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.534E+000 pCi/g	4.108E-001	4.012E-001	4.208E-001	0.000E+000	3.64

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-004	KEKDE1AC	378.60g	2.00	GammaVision	GV07	12 / 26 / 07 14:10	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.137E+000 pCi/g	2.561E-001	2.476E-001	2.904E-001	0.000E+000	3.92

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-005	KEKDK1AC	381.00g	2.00	GammaVision	GV01	12 / 26 / 07 14:46	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.713E+000 pCi/g	2.933E-001	2.762E-001	3.308E-001	1.500E-001	5.18

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-006	KEKDR1AC	377.40g	2.00	GammaVision	GV05	12 / 26 / 07 14:46	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	3.894E+000 pCi/g	5.378E-001	4.889E-001	2.300E-001	0.000E+000	16.93

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-007	KEKDX1AC	363.80g	2.00	GammaVision	GV07	12 / 26 / 07 14:47	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	2.046E+000 pCi/g	3.596E-001	3.398E-001	9.999E-002	0.000E+000	20.46

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-008	KEKD41AC	372.40g	2.00	GammaVision	GV01	12 / 26 / 07 15:38	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	9.605E-001 pCi/g	2.371E-001	2.306E-001	3.406E-001	1.545E-001	2.82

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-009	KEKD81AC	334.80g	2.00	GammaVision	GV03	12 / 26 / 07 15:38	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	2.381E+000 pCi/g	3.507E-001	3.229E-001	3.976E-001	1.815E-001	5.99

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-010	KEKEC1AC	356.50g	2.00	GammaVision	GV04	12 / 26 / 07 15:39	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.284E+000 pCi/g	3.004E-001	2.911E-001	3.401E-001	1.437E-001	3.78

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-011	KEKEG1AC	342.50g	2.00	GammaVision	GV05	12 / 26 / 07 15:39	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.014E+000 pCi/g	3.109E-001	3.054E-001	4.585E-001	0.000E+000	2.21

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-012	KEKEM1AC	319.20g	2.00	GammaVision	GV07	12 / 26 / 07 15:40	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.104E+000 pCi/g	2.747E-001	2.673E-001	3.651E-001	0.000E+000	3.02

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-013	KEKEW1AC	363.00g	2.00	GammaVision	GV01	12 / 26 / 07 16:17	30

Analyte	Cmpnd#	Activity		TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	4.004E+000	pCi/g	4.174E-001	3.481E-001	2.870E-001	1.273E-001	13.95

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-014	KEKE11AC	378.40g	2.00	GammaVision	GV03	12 / 26 / 07 16:18	30

Analyte	Cmpnd#	Activity		TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	4.402E+000	pCi/g	5.716E-001	5.125E-001	2.703E-001	1.199E-001	16.29

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-015	KEKE21AC	354.40g	2.00	GammaVision	GV04	12 / 26 / 07 16:19	30

Analyte	Cmpnd#	Activity		TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	7.591E-001	pCi/g	2.453E-001	2.414E-001	3.765E-001	1.618E-001	2.02

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-016	KEKE41AC	313.70g	2.00	GammaVision	GV05	12 / 26 / 07 16:18	30

Analyte	Cmpnd#	Activity		TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	2.406E+000	pCi/g	3.917E-001	3.664E-001	5.076E-001	0.000E+000	4.74

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L200260-017	KEKE51AC	348.80g	2.00	GammaVision	GV07	12 / 26 / 07 16:18	30

Analyte	Cmpnd#	Activity		TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	1.512E+000	pCi/g	4.539E-001	4.455E-001	3.625E-001	0.000E+000	4.17

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L260000-292B	KER4G1AA	372.80g	2.00	GammaVision	GV01	12 / 26 / 07 17:00	30

Analyte	Cmpnd#	Activity		TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	1501	-5.848E-002	pCi/g	4.455E+000	4.455E+000	2.275E-001	9.793E-002	-0.26

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
F7L260000-292C	KER4G1AC	351.20g	2.00	GammaVision	GV03	12 / 26 / 07 17:00	30

Analyte	Cmpnd#	Activity		TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AM-241	1493	1.070E+002	pCi/g	8.476E+000	1.837E+000	1.383E+000	6.866E-001	77.38
CO-60	1515	6.561E+001	pCi/g	3.885E+000	1.080E+000	3.637E-001	1.714E-001	180.40
CS-137	1518	4.333E+001	pCi/g	2.679E+000	9.254E-001	4.123E-001	2.013E-001	105.11

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity		StdAdded	Recovery
F7L260000-292C	KER4G1AC	CS-137	4.333E+001	pCi/g	4.002E+001	108.28%
		CO-60	6.561E+001	pCi/g	6.272E+001	104.61%
		AM-241	1.070E+002	pCi/g	1.031E+002	103.74%

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Samp Activity		Dup Activity	RPD	RER	DER	Flag
F7L200260-001	F7L200260-001X	AC-228	1.595E+000	pCi/g	1.166E+000	31.09%	7.164E-001	2.020E+000	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Instrument Checks

TestAmerica **STL**

Gamma Spectroscopy Daily Check Summary

Detector: 1

Measurement Date/Time: 12/26/2007 7:43:38

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	3.250	3.500	3.693	4.250	4.500	ok
Total Activity (Bq)	1841.0	1880.0	1936.5	1996.0	2035.0	ok
Peak Shift (keV)	-0.3000	-0.2000	-0.1193	0.2000	0.2500	ok
Avg FWHM Ratio	0.9000	0.9500	0.9944	1.0500	1.1000	ok
Avg FWTM Ratio	0.9000	0.9500	1.0036	1.1000	1.1500	ok

Detector: 3

Measurement Date/Time: 12/26/2007 7:44:32

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	2.500	2.750	3.095	3.250	3.500	ok
Total Activity (Bq)	1835.0	1874.0	1947.2	1990.0	2029.0	ok
Peak Shift (keV)	-0.3000	-0.2500	-0.1686	0.2500	0.3000	ok
Avg FWHM Ratio	0.8500	0.9000	1.0571	1.1500	1.2500	ok
Avg FWTM Ratio	0.9000	0.9500	1.1792	1.1500	1.2500	High

Detector: 4

Measurement Date/Time: 12/26/2007 7:44:20

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	1.150	1.200	1.430	1.450	1.500	ok
Total Activity (Bq)	1833.7	1872.3	1939.6	1988.2	2026.8	ok
Peak Shift (keV)	-0.5000	-0.2500	-0.1839	0.2500	0.5000	ok
Avg FWHM Ratio	0.7000	0.8000	0.9414	1.1000	1.2500	ok
Avg FWTM Ratio	0.7000	0.8000	0.9679	1.1000	1.2500	ok

Detector: 5

Measurement Date/Time: 12/26/2007 7:46:49

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	1.250	1.500	1.865	2.000	2.250	ok
Total Activity (Bq)	1837.9	1876.6	1929.5	1992.7	2031.4	ok
Peak Shift (keV)	-0.2500	-0.1750	0.0844	0.1750	0.2500	ok
Avg FWHM Ratio	0.8500	0.9000	0.9794	1.1000	1.1500	ok
Avg FWTM Ratio	0.9000	0.9500	1.0020	1.1500	1.2000	ok

Gamma Spectroscopy Daily Check Summary

Detector: 6

Measurement Date/Time: 12/26/2007 7:45:40

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	2.350	2.600	2.724	3.150	3.400	ok
Total Activity (Bq)	1829.3	1867.8	1888.0	1983.3	2021.8	ok
Peak Shift (keV)	-0.5000	-0.2500	-0.1428	0.2500	0.5000	ok
Avg FWHM Ratio	0.7500	0.9000	0.9913	1.1500	1.3000	ok
Avg FWTM Ratio	0.7500	0.9000	1.0441	1.1500	1.3000	ok

Detector: 7

Measurement Date/Time: 12/26/2007 7:46:09

	Minimum	Low	Current	High	Maximum	Result
Bkg Count Rate (CPS)	0.750	1.000	1.292	1.750	2.000	ok
Total Activity (Bq)	1850.0	1875.0	1913.1	1975.0	2000.0	ok
Peak Shift (keV)	-0.5000	-0.2500	-0.0172	0.2500	0.5000	ok
Avg FWHM Ratio	0.8000	0.8500	1.0381	1.1500	1.2000	ok
Avg FWTM Ratio	0.8000	0.8500	1.0748	1.2000	1.2500	ok

Notes: Low and High are 2 sigma warning limits. Minimum (<MIN) and Maximum (>MAX) are 3 sigma control limits (Fail).

Analyst SE

Date 12/26/7

GammaVision V6.01 QA Background Report 12/26/2007 6:35:19 AM

Detector: 1 Ge 1 SN/242
Measurement Number: 1281
Data Acquired On: 12/26/2007 6:15:11 AM
Real Time: 1206.34 Sec.
Live Time: 1200.00 Sec.
Status: OK

	Minimum	Low	Actual	High	Maximum
Background (CPS):	3.25	3.50	3.69	4.25	4.50

GammaVision V6.01 QA Background Report 12/26/2007 6:35:31 AM

Detector: 3 Ge 3 SN/155
Measurement Number: 1210
Data Acquired On: 12/26/2007 6:15:19 AM
Real Time: 1208.62 Sec.
Live Time: 1200.00 Sec.
Status: OK

	Minimum	Low	Actual	High	Maximum
Background (CPS):	2.50	2.75	3.10	3.25	3.50

GammaVision V6.01 QA Background Report 12/26/2007 6:35:33 AM

Detector: 4 Ge 4 SN/181
Measurement Number: 102
Data Acquired On: 12/26/2007 6:15:29 AM
Real Time: 1202.16 Sec.
Live Time: 1200.00 Sec.
Status: OK

	Minimum	Low	Actual	High	Maximum
Background (CPS):	1.15	1.20	1.43	1.45	1.50

GammaVision V6.01 QA Background Report 12/26/2007 6:35:45 AM

Detector:	5 Ge 5 SN/157
Measurement Number:	248
Data Acquired On:	12/26/2007 6:15:41 AM
Real Time:	1200.00 Sec.
Live Time:	1143.82 Sec.
Status:	OK

	Minimum	Low	Actual	High	Maximum
Background (CPS):	1.25	1.50	1.86	2.00	2.25

GammaVision V6.01 QA Background Report 12/26/2007 6:35:55 AM

Detector:	6 Ge 6 SN/164
Measurement Number:	176
Data Acquired On:	12/26/2007 6:15:50 AM
Real Time:	1203.80 Sec.
Live Time:	1200.00 Sec.
Status:	OK

	Minimum	Low	Actual	High	Maximum
Background (CPS):	2.35	2.60	2.72	3.15	3.40

GammaVision V6.01 QA Background Report 12/26/2007 6:36:17 AM

Detector:	7 Ge 7 SN/154
Measurement Number:	342
Data Acquired On:	12/26/2007 6:16:00 AM
Real Time:	1213.76 Sec.
Live Time:	1200.00 Sec.
Status:	OK

	Minimum	Low	Actual	High	Maximum
Background (CPS):	0.75	1.00	1.29	1.75	2.00

GammaVision V6.01 QA Background Report 12/26/2007 7:36:06 AM

Detector: 8 Ge 8 SN/174
Measurement Number: 1229
Data Acquired On: 12/26/2007 7:15:19 AM
Real Time: 1245.20 Sec.
Live Time: 1200.00 Sec.
Status: Warning (Below Low Limit)

	Minimum	Low	Actual	High	Maximum
Background (CPS):	1.25	1.50	1.44	2.00	2.25

GammaVision Report Writer Version 2.04.0 G53W4.21 26-Dec-2007 7:43:36AM Page 1

DB Analysis ID: 32,997

Sample Description: 03-0366

Spectrum Filename: QA101260.Spc

Acquisition Information

Start Time:	26-Dec-2007 7:12:57AM		
Live Time:	1800.00	Real Time:	1821.34
Dead Time:	1.17 %		
Detector ID:	1		

Detector System: Ge 1 SN/242

Calibration

Description:	Ge1 air filter 74140-334 1_05_07		
Filename:	C:\User\Calibrations\Ge1 calibrations\GE1 AF interp_165_quad 01_05_07.Clb		
Energy Created:	05-Jan-2007 1:55:09PM	Efficiency Created:	05-Jan-2007 1:58:17PM
Zero Offset:	0.112 keV	Gain:	0.250 keV/Channel

Library 1 File: STL QC.Lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	100 for an energy of 25.11 keV
Stop Channel:	8,000 for an energy of 1999.43 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	01-Apr-2003 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differences: 0.1856

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity Bq/SA	Time Corrected Activity Bq/SA	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CO-60	3.343E+002	6.233E+002	1.73	5.96	1.245E+000
CS-137	3.505E+002	3.908E+002	2.07	6.41	2.868E+000
AM-241	9.154E+002	9.224E+002	1.01	9.33	4.521E+000

= All peaks for activity calculation had bad shape

Total Activity (25.11 to 1,999.43 keV) 1,600.31 Bq/SA

Analyzed by: _____

403605

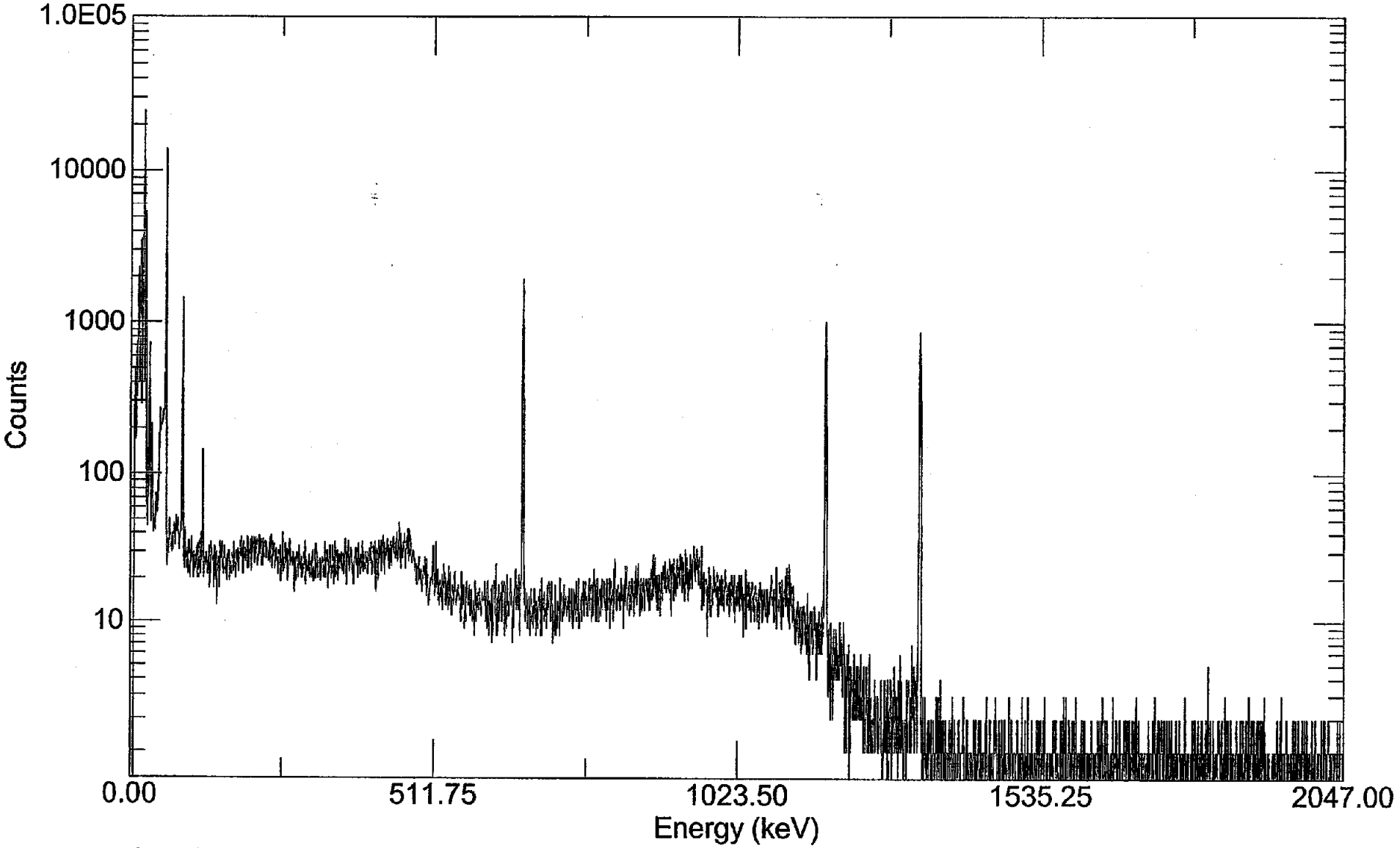
Reviewed by: _____

Supervisor

Laboratory: Test America

QA101260

03-0366



Acquired: 26-Dec-2007 7:12:57 AM
File: C:\User\spectra\QA101260.spc
Detector: #0 Ge 1 SN/242

Real Time: 1821.34 s. Live Time: 1800.00 s.
Channels: 8192

GammaVision Report Writer Version 2.04.0 G53W4.21 26-Dec-2007 7:44:29AM Page 1

DB Analysis ID: 32,999

Sample Description: 03-0368

Spectrum Filename: QA301295.Spc

Acquisition Information

Start Time:	26-Dec-2007 7:13:13AM		
Live Time:	1800.00	Real Time:	1827.76
Dead Time:	1.52 %		
Detector ID:	3		

Detector System: Ge 3 SN/155

Calibration

Description:	Ge3 Air filter 74140_334 interp_122_quad 01_09_07		
Filename:	C:\User\Calibrations\Ge3 cal post 5_8_06\Ge3 Air filter interp_122_quad 01_09_07.Clb		
Energy Created:	09-Jan-2007 10:31:35AM	Efficiency Created:	09-Jan-2007 10:36:46AM
Zero Offset:	0.372 keV	Gain:	0.250 keV/Channel

Library 1 File:	STL QC.Lib	Library based peak stripping used.
Library 2 File:	Null.Lib	
Library 3 File:	Null.Lib	

Analysis Parameters

Start Channel:	100 for an energy of 25.35 keV
Stop Channel:	8,000 for an energy of 2000.41 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	01-Apr-2003 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.2201

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/SA	Time Corrected Activity Bq/SA	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CO-60		3.378E+002	6.298E+002	1.75	5.96	2.007E+000
CS-137		3.582E+002	3.993E+002	2.04	6.21	2.940E+000
AM-241	#	9.112E+002	9.181E+002	1.00	9.33	4.742E+000

= All peaks for activity calculation had bad shape

Total Activity (25.35 to 2,000.41 keV) 1,607.20 Bq/SA

Analyzed by: _____

403605

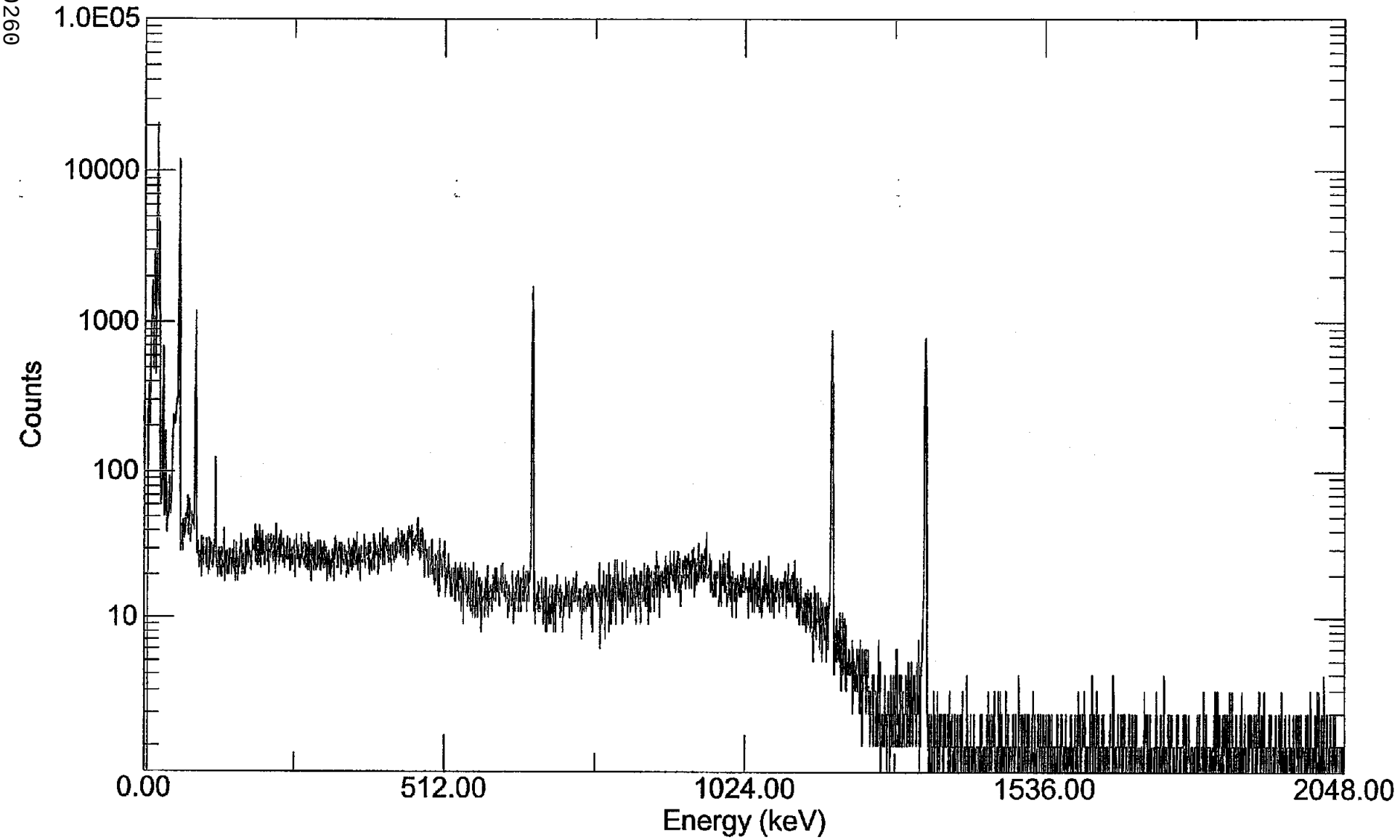
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

QA301295

03-0368



Acquired: 26-Dec-2007 7:13:13 AM
File: C:\User\spectra\QA301295.spc
Detector: #0 Ge 3 SN/155

Real Time: 1827.76 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 32,998

Sample Description: 03-0371

Spectrum Filename: QA400105.Spc

Acquisition Information

Start Time:	26-Dec-2007 7:13:29AM		
Live Time:	1800.00	Real Time:	1810.98
Dead Time:	0.61 %		
Detector ID:	4		

Detector System: Ge 4 SN/181

Calibration

Description:	Ge4 AirFilterCal_74140_334_05_08_07(EE)		
Filename:	C:\User\Calibrations\Ge4 Post 09_07_07(Ge6)\Ge4 AirFilterCal_74140_334_05_08_07		
Energy Created:	08-May-2007 1:28:13PM	Efficiency Created:	08-May-2007 1:39:26PM
Zero Offset:	0.017 keV	Gain:	0.250 keV/Channel

Library 1 File: STL QC.Lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	100 for an energy of 25.03 keV
Stop Channel:	8,000 for an energy of 1998.47 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	01-Apr-2003 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1839

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity Bq/SA	Time Corrected Activity Bq/SA	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CS-137	3.503E+002	3.906E+002	2.58	6.48	3.718E+000
AM-241	9.212E+002	9.282E+002	1.11	9.27	4.778E+000
CO-60	3.330E+002	6.208E+002	2.18	6.09	1.080E+000

= All peaks for activity calculation had bad shape

Total Activity (25.03 to 1,998.47 keV) 1,604.52 Bq/SA

Analyzed by: _____

403605

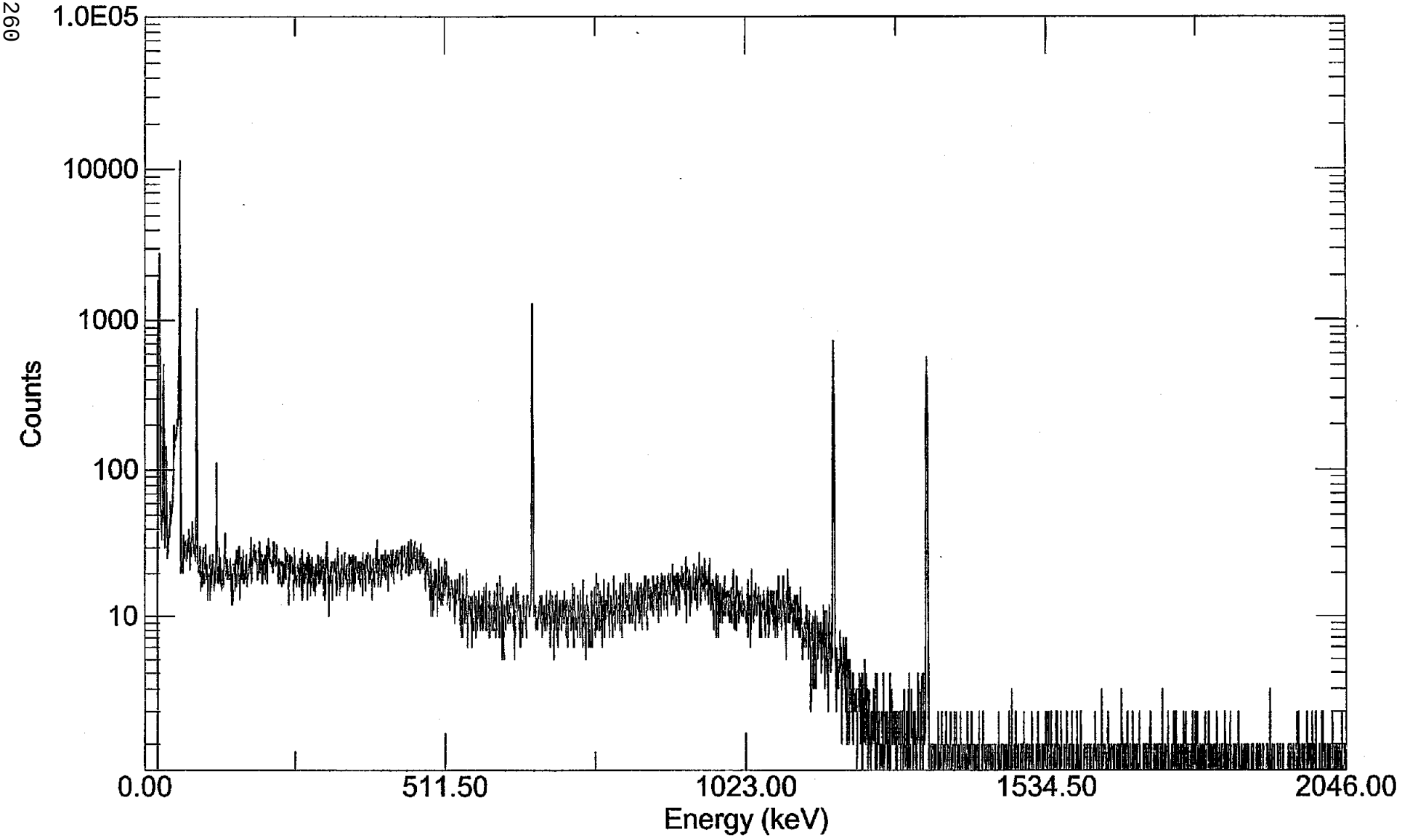
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

QA400105

03-0371



Acquired: 26-Dec-2007 7:13:29 AM
File: C:\User\spectra\QA400105.spc
Detector: #0 Ge 4 SN/181

Real Time: 1810.98 s. Live Time: 1800.00 s.
Channels: 8192

GammaVision Report Writer Version 2.04.0 G53W4.21 26-Dec-2007 7:46:47AM Page 1

DB Analysis ID: 33,002

Sample Description: 03-0370

Spectrum Filename: QA500095.Spc

Acquisition Information

Start Time:	26-Dec-2007 7:14:40AM		
Live Time:	1800.00	Real Time:	1901.16
Dead Time:	5.32 %		
Detector ID:	5		

Detector System: Ge 5 SN/157

Calibration

Description:	Ge5 airfilter 74140-334_032707 interp_165_quad		
Filename:	C:\User\Calibrations\Ge5 calibrations\Ge5 airfilter_032707_interp165quad.Clb		
Energy Created:	28-Mar-2007 6:08:23PM	Efficiency Created:	28-Mar-2007 6:10:41PM
Zero Offset:	0.272 keV	Gain:	0.250 keV/Channel

Library 1 File: STL QC.Lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	100 for an energy of 25.25 keV
Stop Channel:	8,000 for an energy of 2000.57 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	01-Apr-2003 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1296

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity Bq/SA	Time Corrected Activity Bq/SA	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CO-60	3.303E+002	6.158E+002	2.12	6.08	1.326E+000
CS-137	3.465E+002	3.864E+002	2.42	6.53	3.127E+000
AM-241	9.203E+002	9.273E+002	1.06	9.34	4.708E+000

= All peaks for activity calculation had bad shape

Total Activity (25.25 to 2,000.57 keV) 1,597.21 Bq/SA

Analyzed by: _____

403605

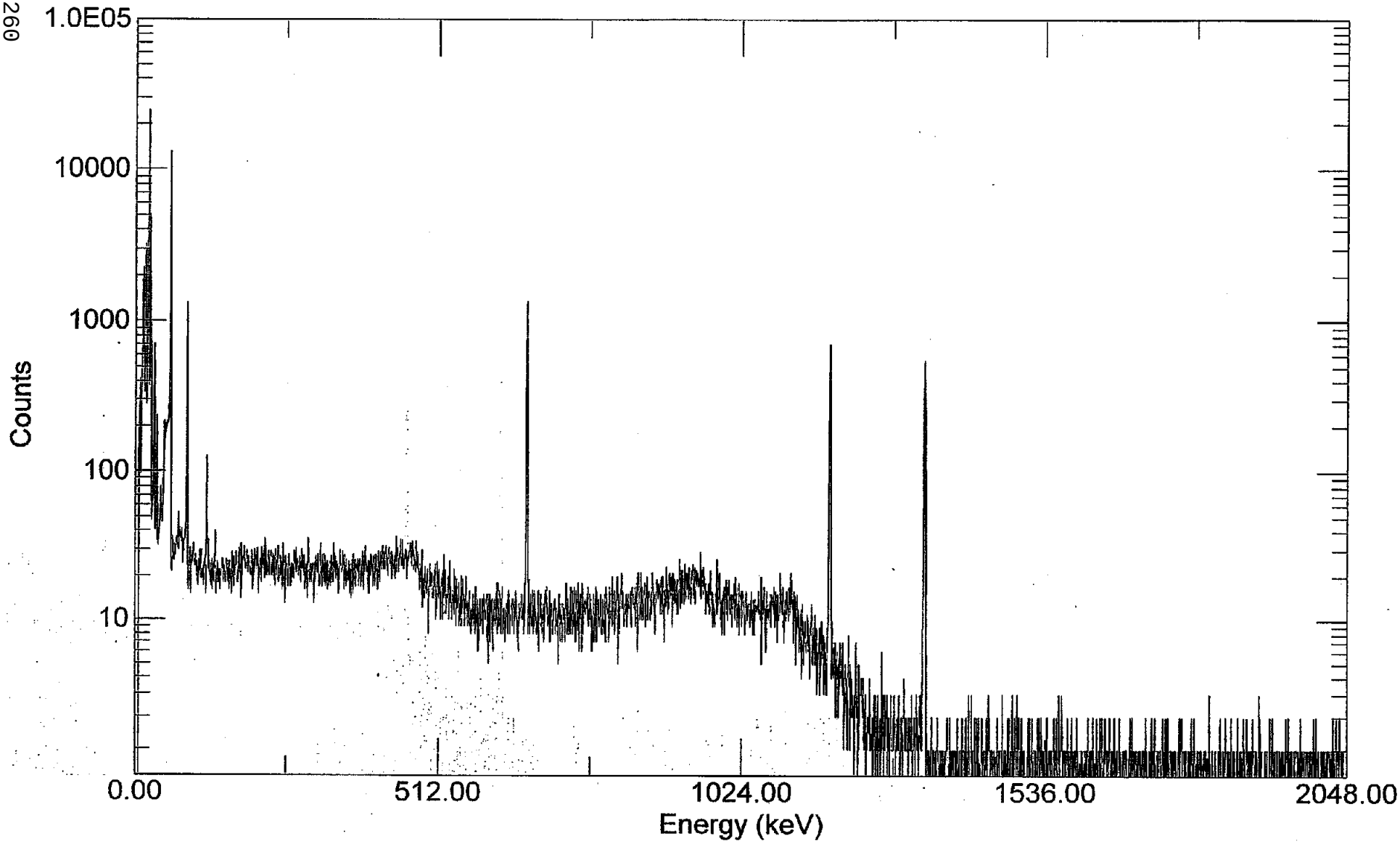
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

QA500095

03-0370



Acquired: 26-Dec-2007 7:14:40 AM
File: C:\User\spectra\QA500095.spc
Detector: #0 Ge 5 SN/157

Real Time: 1901.16 s. Live Time: 1800.00 s.
Channels: 8192

GammaVision Report Writer Version 2.04.0 G53W4.21 26-Dec-2007 7:45:37AM Page 1

DB Analysis ID: 33,000

Sample Description: 03-0369

Spectrum Filename: QA600038.Spc

Acquisition Information

Start Time:	26-Dec-2007 7:14:51AM		
Live Time:	1800.00	Real Time:	1812.32
Dead Time:	0.68 %		
Detector ID:	6		

Detector System: Ge 6 SN/164

Calibration

Description:	Ge6 airfilter 741470-336_12_13_07		
Filename:	C:\User\Calibrations\Ge 6 post 09_07_07\Ge6 _airfilter_12_13_07.Clb		
Energy Created:	13-Dec-2007 10:15:45AM	Efficiency Created:	13-Dec-2007 10:32:26AM
Zero Offset:	0.226 keV	Gain:	0.250 keV/Channel

Library 1 File: STL QC.Lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	100 for an energy of 25.22 keV
Stop Channel:	8,000 for an energy of 1999.85 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	01-Apr-2003 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1428

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity Bq/SA	Time Corrected Activity Bq/SA	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CO-60	3.219E+002	6.000E+002	1.51	5.89	1.332E+000
CS-137	3.628E+002	4.045E+002	1.74	6.22	2.206E+000
AM-241	8.768E+002	8.835E+002	2.00	9.44	1.213E+001

= All peaks for activity calculation had bad shape

Total Activity (25.22 to 1,999.85 keV) 1,561.50 Bq/SA

Analyzed by: _____

403605

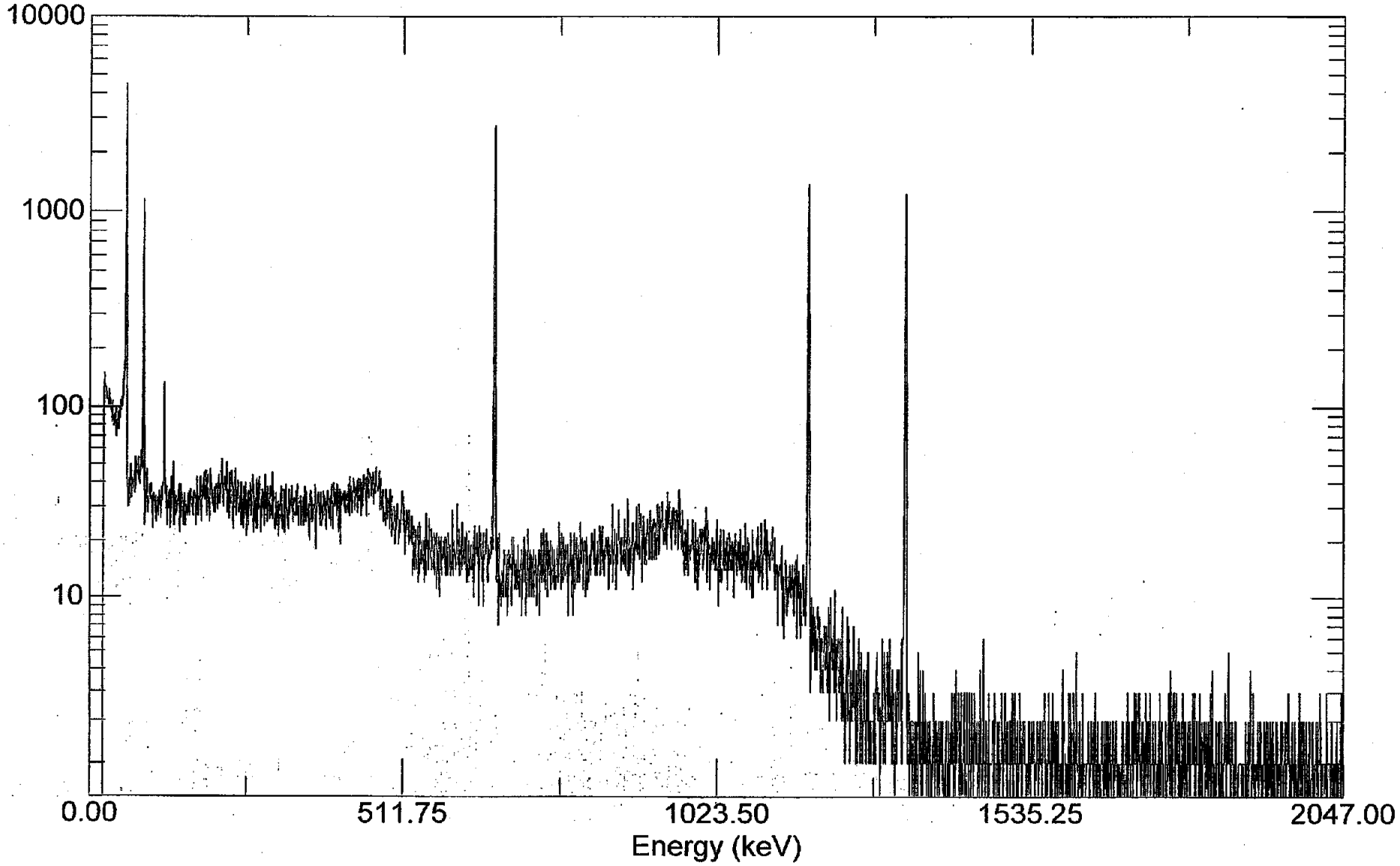
Reviewed by: _____

Supervisor

Laboratory: Test America

QA600038

03-0369



Acquired: 26-Dec-2007 7:14:51 AM
File: C:\User\spectra\QA600038.spc
Detector: #0 Ge 6 SN/164

Real Time: 1812.32 s. Live Time: 1800.00 s.
Channels: 8192

GammaVision Report Writer Version 2.04.0 G53W4.21 26-Dec-2007 7:46:07AM Page 1

DB Analysis ID: 33,001

Sample Description: 03-0372

Spectrum Filename: QA700212.Spc

Acquisition Information

Start Time:	26-Dec-2007 7:15:04AM		
Live Time:	1800.00	Real Time:	1831.58
Dead Time:	1.72 %		
Detector ID:	7		

Detector System: Ge 7 SN/154

Calibration

Description:	Ge7 air filter 74140-334 01_04_07		
Filename:	C:\User\Calibrations\Ge7 calibrations\Ge7 air filter 01_04_07.Clb		
Energy Created:	04-Jan-2007 9:44:57AM	Efficiency Created:	04-Jan-2007 9:55:23AM
Zero Offset:	0.082 keV	Gain:	0.250 keV/Channel

Library 1 File: STL QC.Lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	100 for an energy of 25.08 keV
Stop Channel:	8,000 for an energy of 2000.16 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	01-Apr-2003 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.0421

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity Bq/SA	Time Corrected Activity Bq/SA	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CO-60	3.270E+002	6.096E+002	1.93	6.02	1.346E+000
CS-137	3.415E+002	3.808E+002	2.19	6.26	3.055E+000
AM-241	9.158E+002	9.228E+002	0.94	8.44	4.242E+000

= All peaks for activity calculation had bad shape

Total Activity (25.08 to 2,000.16 keV) 1,584.31 Bq/SA

Analyzed by: _____

403605

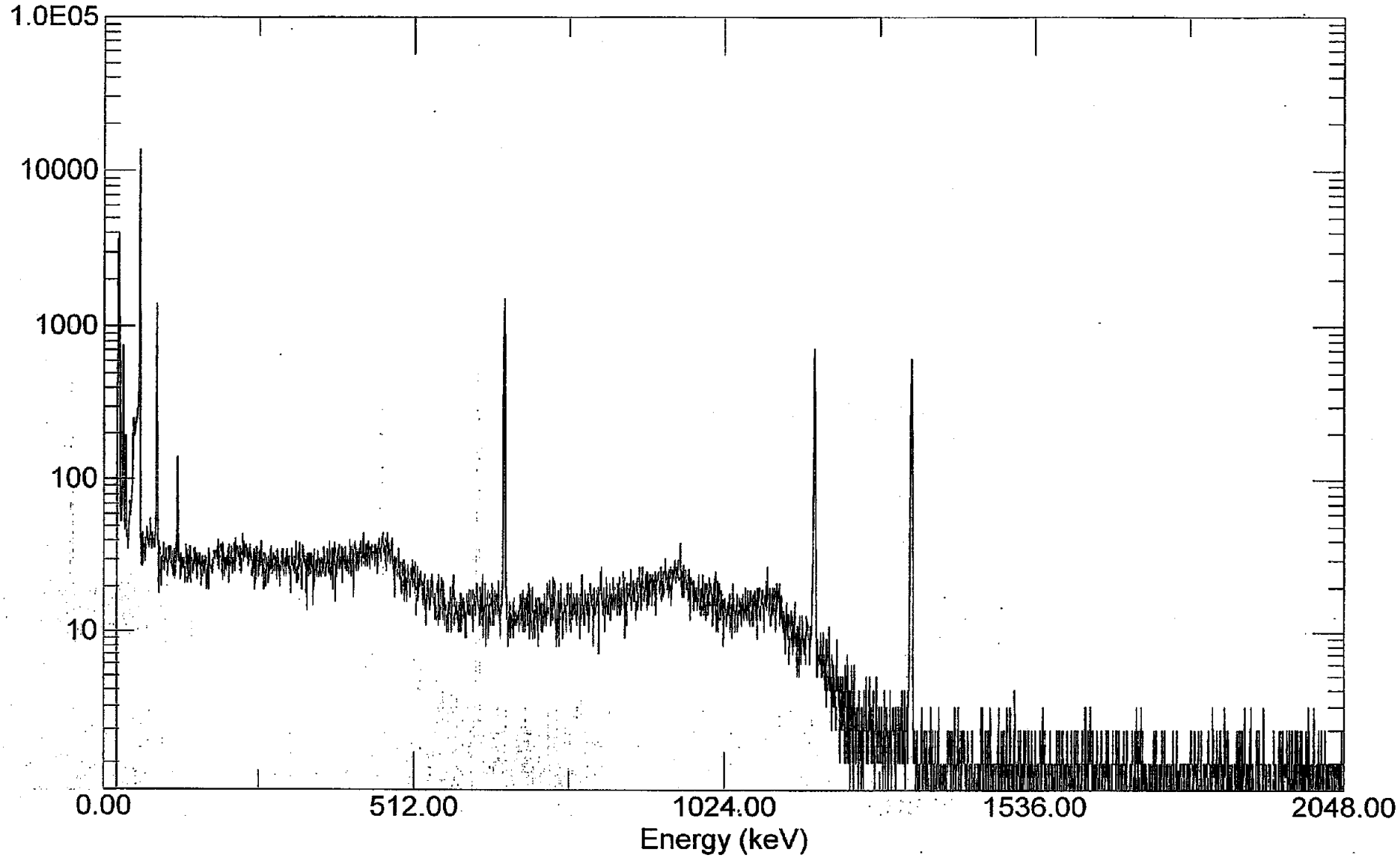
Reviewed by: _____

Supervisor

Laboratory: Test America

QA700212

03-0372



Acquired: 26-Dec-2007 7:15:04 AM
File: C:\User\spectra\QA700212.spc
Detector: #0 Ge 7 SN/154

Real Time: 1831.58 s. Live Time: 1800.00 s.
Channels: 8192

TestAmerica STL

Gamma Vision Long Backgrounds

November 2007

Ge1 background 11_21_07.Rpt

```
 ORTEC     g v - i (3135) Env32  G53W4.21  22-NOV-2007 08:17:48 Page    1
STL- St Louis                  Spectrum name: Ge1 background 11_21_07.An1

Sample description
     Ge1 background 11_21_07


Spectrum Filename: C:\User\spectra\Ge1 bkgd\Ge1 background 11_21_07.A

Acquisition information
       Start time:                21-Nov-2007 20:12:47
       Live time:              43200
       Real time:              43454
       Dead time:                 0.59 %
       Detector ID:                  1

Detector system
     Ge 1 SN/242


Calibration
       Filename:                  GE1 AF interp_165_quad 01_05_07.Clb
     Ge1 air filter 74140-334 1_05_07


       Energy Calibration
            Created:              05-Jan-2007 13:55:09
            Zero offset:          0.112 keV
            Gain:                 0.250 keV/channel
            Quadratic:           -8.471E-09 keV/channel^2

       Efficiency Calibration
            Created:              05-Jan-2007 13:58:17
            Knee Energy:        165.85 keV
            Above the Knee:       Quadratic       Uncertainty =   1.63 %
            Log(Eff):            -5.325680E-02 + (-3.688631E-01*Log(E) ) +
                                  ( -3.389960E-02*Log(E)^2 )
            Below the Knee:       Interpolative   Uncertainty =   0.00 %

Library Files
       Main analysis library:     long bkgd_pbc.lib
       Library Match Width:       0.750
       Peak stripping:            Library based

Analysis parameters
       Analysis engine:           Env32   G53W4.21
       Start channel:            90 (    22.61keV )
       Stop channel:           8000 (  1999.43keV )
       Peak rejection level:     40.000%
       Peak search sensitivity:  3
       Sample Size:              1.0000E+00
       Activity scaling factor:  1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                 1.0000E+00
       Detection limit method:   Reg. Guide 4.16 Method

       Random error:             0.0000000E+00
       Systematic error:         0.0000000E+00
```

Ge1 background 11_21_07.Rpt

Fraction Limit: 0.000%
Background width: average of three points.

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 26 cutoff 20.00000 %
Energy Calibration
Normalized diff: 0.1584

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/sampl	Nuc
29.48	1145.	8.01	0.82	7.917E-02	29.46	20.350	1.645E+00	I129
					29.78	37.840	8.846E-01	I129
33.55	364.	19.14	1.08	7.930E-02	33.61	10.230	1.039E+00	I129
39.64	367.	17.70	0.72	7.948E-02	39.57	7.500	1.425E+00	I129
43.95	83.	36.93	0.77	7.961E-02				
46.49	615.	6.96	0.78	7.969E-02	46.54	4.250	4.202E+00	PB210
63.22	886.	6.96	0.78	7.996E-02	63.29	4.820	5.319E+00	TH234
74.91	250.	16.22	0.81	7.953E-02				
77.12	227.	16.57	0.81	7.945E-02				
84.26	190.	20.36	0.82	7.919E-02	83.79	25.180	2.206E-01	RA223
92.53	1212.	5.11	1.09	7.822E-02	92.59	5.570	6.442E+00	TH234
143.45	191.	27.71	1.47	6.596E-02	143.76	10.960	6.125E-01	U235
185.73	526.	9.46	0.72	5.472E-02	185.71	57.200	3.892E-01	U235
205.37	116.	29.90	0.76	5.087E-02	205.31	5.010	1.050E+00	U235
216.58	124.	37.90	0.67	4.893E-02				
238.22	550.	10.88	0.92	4.561E-02	238.63	43.300	6.455E-01	PB212
241.65	168.	26.87	0.76	4.508E-02	242.00	7.430	1.164E+00	PB214
294.87	221.	20.40	1.06	3.889E-02	295.22	19.300	6.822E-01	PB214
321.82	106.	28.71	0.51	3.640E-02				
338.11	118.	0.12	1.08	3.504E-02	338.28	2.790	1.406E+00	RA223
351.65	288.	15.45	1.27	3.402E-02	351.93	37.600	5.210E-01	PB214
510.67	1595.	4.49	2.58	2.544E-02				
558.30	154.	21.25	1.00	2.370E-02				
582.63	214.	22.14	1.61	2.290E-02	583.19	84.500	2.562E-01	TL208
609.26	279.	18.64	1.59	2.209E-02	609.31	46.090	6.342E-01	BI214
678.61	106.	27.09	0.86	2.025E-02				
910.54	225.	19.20	0.94	1.591E-02				
968.65	78.	33.31	1.64	1.511E-02	968.97	15.800	PBC<MDA	AC228
1119.75	138.	28.36	0.92	1.337E-02	1120.29	15.100	1.582E+00	BI214
1460.80	301.	11.17	1.75	1.066E-02	1460.83	10.670	6.124E+00	K40
1764.41	115.	18.86	0.40	9.048E-03	1764.49	15.400	1.916E+00	BI214

Ge1 background 11_21_07.Rpt

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
175.36	43.91	424.	83.	0.002	73.85	0.772	EU-155	lD
299.08	74.87	807.	207.	0.005	48.16	0.699	PB-214	
307.91	77.08	673.	174.	0.004	52.38	0.864	PB-214	
573.39	143.45	712.	191.	0.004	55.42	1.469	TC-99M	l
742.53	185.73	586.	526.	0.012	18.92	0.716	U-235	l
821.10	205.37	381.	116.	0.003	59.80	0.757	U-235	l
865.96	216.58	565.	124.	0.003	75.80	0.669	TB-160	s
2042.53	510.67	504.	1595.	0.037	8.97	2.583	TL-208	s
2233.07	558.30	218.	154.	0.004	42.50	0.999	Y-91M	s
2714.42	678.61	154.	106.	0.002	54.18	0.859	AG-110M	sM
3642.42	910.54	329.	109.	0.003	50.65	0.937	AC-228	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: long bkgd_pbc.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
I-129	118.69	29.78	1412.	1845.	0.043	0.03	0.757D
I-129	133.99	33.61	705.	256.	0.006	31.86	0.761D
I-129	158.11	39.64	963.	367.	0.008	35.40	0.717s
PB-210	184.97	46.35	1060.	707.	0.016	20.60	0.662s
TH-234	252.44	63.22	832.	886.	0.020	13.92	0.776
RA-223	336.52	84.24	1308.	175.	0.004	60.22	0.815s
TH-234	369.70	92.53	789.	1212.	0.028	10.22	1.090s
RA-223	576.53	144.23	937.	32.	0.001	0.79	0.880D
Ra-226	744.47	186.21	938.	426.	0.010	22.51	0.924D
PB-212	952.51	238.22	700.	550.	0.013	21.77	0.919s
RA-224	959.36	239.93	1373.	-223.	-0.005	48.86	0.980
PB-214	966.24	241.65	538.	168.	0.004	53.74	0.758s
PB-214	1179.17	294.87	453.	221.	0.005	40.80	1.059
AC-228	1352.99	338.32	729.	118.	0.003	0.23	1.078D
PB-214	1406.31	351.65	405.	288.	0.007	30.91	1.275
TL-208	2330.44	582.63	348.	214.	0.005	44.27	1.612s
BI-214	2436.97	609.26	441.	279.	0.006	37.28	1.586s
AC-228	3644.09	910.96	250.	115.	0.003	43.01	1.596s

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:17:48 Page 4
STL- St Louis Spectrum name: Ge1 background 11_21_07.An1

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AC-228	3874.95	968.65	299.	78.	0.002	66.62	1.642s
BI-214	4479.56	1119.75	190.	138.	0.003	56.71	0.922s
K-40	5844.32	1460.80	94.	301.	0.007	22.35	1.747
BI-214	7059.40	1764.41	47.	115.	0.003	37.72	0.398s

s - Peak fails shape tests.

D - Peak area deconvoluted.
A Derived peak area.

***** SUMMARY OF LIBRARY PEAK USAGE *****

- Nuclide - Name	Code	Average Activity Bq/sample	Peak Energy keV	Peak Activity Bq/sample	Peak Code	Peak MDA Value Bq/sample	Peak	COMMENTS
Be-7	C	-2.5924E-02						
			477.61	-2.592E-02	%(	8.962E-01	1.02E+03	G
			1 of 1 peaks found					
K-40	N	6.1244E+00						
			1460.83	6.124E+00	(	9.744E-01	1.12E+01	G
			1 of 1 peaks found					
CO-60	F	8.3359E-03						
			1332.50	8.336E-03	&(	1.027E-01	3.57E+02	G
			1173.24	7.132E-02	%	1.179E-01	5.06E+01	G
			2 of 2 peaks found					
I-129	I	1.4251E+00						
			29.78	1.425E+00	}	1.374E-01	1.37E-02	X
			33.61	7.311E-01	-	3.607E-01	1.59E+01	X
			39.57	1.425E+00	*(	5.721E-01	1.77E+01	G
			34.61	-4.163E-01	%	1.957E+00	1.41E+02	X
			4 of 5 peaks found					
CS-137	I	-6.5179E-03						
			661.66	-6.518E-03	&(	1.302E-01	5.91E+02	G
			1 of 1 peaks found					
TL-208	N	2.5616E-01						
			583.19	2.562E-01	@(	1.073E-01	2.21E+01	G
			860.56	4.219E-01	%	9.305E-01	6.68E+01	G
			2 of 2 peaks found					
PB-210	N	4.8319E+00						
			46.54	4.832E+00	*(	1.055E+00	1.03E+01	G
			1 of 1 peaks found					
PB-212	N	6.4547E-01						
			238.63	6.455E-01	@(	1.479E-01	1.09E+01	G
			300.10	1.825E-01	%	2.408E+00	3.93E+02	G
			2 of 2 peaks found					
PB-214	N	5.7564E-01						
			351.93	5.210E-01	(	1.748E-01	1.55E+01	G
			295.22	6.822E-01	(	3.145E-01	2.04E+01	G
			242.00	1.164E+00	+	7.653E-01	2.69E+01	G
			3 of 3 peaks found					

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
BI-214	N 6.3420E-01					
		609.31	6.342E-01	*(	2.286E-01	1.86E+01 G
		1764.49	1.916E+00	+	5.739E-01	1.89E+01 G

Ge1 background 11_21_07.Rpt

			1120.29	1.582E+00	+	7.673E-01	2.84E+01 G
			768.36	5.845E-01	%	2.258E+00	1.16E+02 G
			4 of 4 peaks found				
RA-223	N	3.4520E-01					
			83.79	2.037E-01	*	1.987E-01	3.01E+01 X
			269.46	1.066E-01	&(	5.409E-01	1.52E+02 G
			154.21	4.946E-01	%	9.325E-01	5.73E+01 G
			144.23	3.452E-01	}	1.590E+00	3.93E-01 G
			323.87	-5.721E-01	%	2.109E+00	1.11E+02 G
			5 of 6 peaks found				
RA-224	N	-2.7848E+00					
			240.99	-2.785E+00	(	2.190E+00	2.44E+01 G
			1 of 1 peaks found				
AC-228	N	6.9099E-01					
			911.20	6.508E-01	(	4.310E-01	2.15E+01 G
			968.97	7.567E-01	*(	8.074E-01	3.33E+01 G
			338.32	6.910E-01	}	7.535E-01	1.16E-01 G
			3 of 3 peaks found				
TH-234	N	5.3187E+00					
			63.29	5.319E+00	(	8.239E-01	6.96E+00 G
			92.59	6.442E+00	+	7.098E-01	5.11E+00 G
			2 of 2 peaks found				
U-235	N	1.3269E-01					
			185.71	3.695E-02	}(	1.143E-01	9.33E+01 G
			143.76	2.880E-01	}(	4.162E-01	4.42E+01 G
			163.36	5.461E-01	}(	1.152E+00	6.40E+01 G
			205.31	4.668E-01	}(	1.258E+00	8.14E+01 G
			4 of 4 peaks found				
Ra-226	N	5.0340E+00					
			186.21	5.034E+00	}(	1.717E+00	1.13E+01 G
			1 of 1 peaks found				
AM-241	T	1.7879E-02					
			59.54	1.788E-02	%(	1.230E-01	2.06E+02 G
			1 of 1 peaks found				

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:17:48 Page 6
STL- St Louis Spectrum name: Ge1 background 11_21_07.An1

+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity

to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	Activity
RA-223	84.24	1308.	175.	0.004	60.22	2.037E-01
RA-223	144.23	937.	32.	0.001	0.79	3.452E-01
RA-224	239.93	1373.	-223.	-0.005	48.86	-2.785E+00
AC-228	910.96	250.	115.	0.003	43.01	6.508E-01
AC-228	968.65	299.	78.	0.002	66.62	7.567E-01

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity Bq/sample	Uncertainty 2 Sigma Counting	MDA Bq/sample
Be-7	#A	-2.5924E-02	2.0493E+03%	8.962E-01
K-40		6.1244E+00	2.2349E+01%	9.744E-01
CO-60	#A	8.3359E-03	7.1489E+02%	1.027E-01
I-129		1.4251E+00	3.5397E+01%	5.721E-01
CS-137	#A	-6.5179E-03	1.1826E+03%	1.302E-01
TL-208	#	2.5616E-01	4.4272E+01%	1.073E-01
PB-210	#	4.8319E+00	2.0595E+01%	1.055E+00
PB-212	#	6.4547E-01	2.1768E+01%	1.479E-01
PB-214		5.7564E-01	2.5595E+01%	1.748E-01
BI-214		6.3420E-01	3.7279E+01%	2.286E-01
RA-223	#A	3.4520E-01	7.1896E+01%	5.409E-01
RA-224	#A	-2.7848E+00	4.8862E+01%	2.190E+00
AC-228	#	6.9099E-01	3.9651E+01%	4.310E-01
TH-234		5.3187E+00	1.3922E+01%	8.239E-01

U-235	A	1.3269E-01	8.8419E+01%	1.258E+00
Ra-226		5.0340E+00	2.5148E+01%	1.717E+00
AM-241	#A	1.7879E-02	4.1232E+02%	1.230E-01

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.

Ge1 background 11_21_07.Rpt

F - Failed fraction or key line test.
H - Halflife limit exceeded

S U M M A R Y

Total Activity (39.4 to 1999.4 keV) 1.981E+01 Bq/sample

Analyzed by: _____
403605

Reviewed by: _____
Supervisor

Laboratory: STL- St Louis

Ge2 background 11_21_07.Rpt

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 07:42:59 Page 1
STL- St Louis Spectrum name: Ge2 background 11_21_07.An1

Sample description
Ge2 background 11_21_07

Spectrum Filename: C:\User\spectra\Ge2 bkgd\Ge2 background 11_21_07.A

Acquisition information
Start time: 21-Nov-2007 19:39:03
Live time: 43200
Real time: 43328
Dead time: 0.30 %
Detector ID: 2

Detector system
Ge 2 SN/182

Calibration
Filename: Ge2 AF w_spacer 72002 poly. 121206 no Hg .Clb
Ge2 72002-334 Air Filter Poly no Hg 121206

Energy Calibration
Created: 13-Dec-2006 07:56:27
Zero offset: 0.102 keV
Gain: 0.250 keV/channel
Quadratic: 6.874E-09 keV/channel^2

Efficiency Calibration
Created: 13-Dec-2006 07:58:09
Type: Polynomial
Uncertainty: 1.400 %
Coefficients: -0.388770 -4.607021 0.563706
-0.059383 0.002602 -0.000047

Library Files
Main analysis library: long bkgd_pbc.lib
Library Match Width: 0.750
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G53W4.21
Start channel: 90 (22.60keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 40.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00
Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

Random error: 0.0000000E+00
Systematic error: 0.0000000E+00
Fraction Limit: 0.000%
Background width: average of three points.

Half lives decay limit: 12.000

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 07:42:59 Page 2
STL- St Louis Spectrum name: Ge2 background 11_21_07.An1

Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 3 cutoff 20.00000 %
Energy Calibration
Normalized diff: 1.0000

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/sampl	Nuc
36.01	548.	9.94	2.31	1.554E-04	34.61	2.419	0.000E+00	I129
54.77	448.	20.63	0.48	2.979E-02				
70.79	795.	10.76	0.57	4.706E-02				
82.34	140.	38.03	1.07	5.505E-02				
104.48	141.	28.68	0.56	6.052E-02				
142.56	15.	0.90	1.13	5.781E-02	144.23	3.220	PBC<MDA	RA223
151.40	922.	7.90	0.80	5.654E-02				
172.73	246.	28.01	0.59	5.240E-02				
180.30	97.	34.82	0.46	5.091E-02				
270.17	94.	30.57	0.82	3.630E-02	269.46	13.700	4.365E-01	RA223
432.95	145.	13.12	1.10	2.330E-02				
774.09	107.	14.98	1.25	1.393E-02				

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
143.68	36.01	765.	548.	0.013	16.63	2.308	CS-137	sM
218.74	54.77	1948.	448.	0.010	41.27	0.482	LU-177	sM
282.83	70.79	1564.	795.	0.018	21.52	0.570	AU-198	sM
417.63	104.48	526.	141.	0.003	57.36	0.563	U-235	sM
605.36	151.40	549.	1148.	0.027	8.26	0.797	KR-85M	sM
690.68	172.73	768.	246.	0.006	56.02	0.592	-	sM
1080.54	270.17	183.	94.	0.002	61.15	0.819	AC-228	l
1731.80	432.95	50.	145.	0.003	26.23	1.105	J-134	sM
3096.58	774.09	25.	107.	0.002	23.42	1.245	W-187	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

Ge2 background 11_21_07.Rpt
This section based on library: long bkgd_pbc.lib

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 07:42:59 Page 3
STL- St Louis Spectrum name: Ge2 background 11_21_07.An1

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
RA-223	329.04	82.34	1346.	140.	0.003	76.05	1.072s
RA-223	576.67	144.23	742.	15.	0.000	1.79	1.128D
RA-223	610.25	152.62	1317.	-226.	-0.005	47.36	1.137s
AC-228	1353.21	338.32	271.	-3.	0.000	-12.93	1.306D

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq/sample	Peak Energy keV	Peak Activity Bq/sample	Code	MDA Value Bq/sample	COMMENTS
Be-7	C	-4.6117E-02					
			477.61	-4.612E-02	%(	5.044E-01	3.17E+02 G
			1 of 1 peaks found				
K-40	N	-1.7222E-01					
			1460.83	-1.722E-01	%(	8.611E-01	1.44E+02 G
			1 of 1 peaks found				
CO-60	F	-8.3377E-03					
			1332.50	-8.338E-03	%(	7.747E-02	2.62E+02 G
			1173.24	6.175E-04	%	7.327E-02	3.29E+03 G
			2 of 2 peaks found				
I-129	I	-1.9497E-01					
			39.57	-1.950E-01	%(	1.419E+01	2.19E+03 G
			1 of 5 peaks found				
CS-137	I	-9.4394E-04					
			661.66	-9.439E-04	&(	6.847E-02	2.06E+03 G
			1 of 1 peaks found				
TL-208	N	-4.4122E-03					
			583.19	-4.412E-03	&(	6.480E-02	4.21E+02 G
			860.56	7.613E-04	&	4.117E-01	1.48E+04 G
			2 of 2 peaks found				
PB-210	N	-4.5169E-01					
			46.54	-4.517E-01	&(	8.363E+00	5.56E+02 G
			1 of 1 peaks found				
PB-212	N	-1.7207E-02					
			238.63	-1.721E-02	&(	1.488E-01	2.58E+02 G
			300.10	-4.113E-01	&	2.107E+00	1.53E+02 G
			2 of 2 peaks found				

```
PB-214    N    7.0784E-02
                           351.93 7.078E-02 %(  1.628E-01 6.95E+01 G
                           295.22-7.852E-02 &   3.395E-01 1.29E+02 G
```



```
 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments
                           242.00 1.721E-01 &   7.907E-01 1.37E+02 G
                              3 of   3 peaks found

BI-214    N   -3.4801E-03
                           609.31-3.480E-03 &(  1.312E-01 1.08E+03 G
                          1764.49-1.363E-02 %   5.148E-01 1.02E+03 G
                          1120.29-1.887E-02 %   4.717E-01 6.99E+02 G
                           768.36 1.538E-01 &   1.164E+00 2.17E+02 G
                              4 of   4 peaks found

RA-223    N    1.8540E-01
                            83.79 2.337E-01 *   2.900E-01 3.80E+01 X
                           269.46 1.854E-01 %(  4.423E-01 7.21E+01 G
                           154.21-1.660E+00 +   1.263E+00 2.37E+01 G
                           144.23 1.854E-01 }   1.612E+00 8.96E-01 G
                           323.87-2.960E-01 &   1.561E+00 1.57E+02 G
                           338.28 2.760E-01 }   2.283E+00 1.90E+02 G
                              6 of   6 peaks found

RA-224    N    2.7670E-01
                           240.99 2.767E-01 &(  1.525E+00 1.65E+02 G
                              1 of   1 peaks found

AC-228    N   -2.2436E-02
                           911.20-2.244E-02 %(  2.287E-01 2.88E+02 G
                           338.32-2.244E-02 }   5.553E-01 ******** G
                              2 of   3 peaks found

TH-234    N    2.5408E-01
                            63.29 2.541E-01 %(  2.384E+00 2.82E+02 G
                            92.59-6.697E-02 %   1.236E+00 5.52E+02 G
                              2 of   2 peaks found

U-235     N    6.1680E-02
                           185.71 2.368E-03 }(  1.010E-01 1.27E+03 G
                           143.76 1.920E-02 }(  5.448E-01 8.46E+02 G
                           163.36 5.295E-01 }(  1.179E+00 6.74E+01 G
                           205.31 3.574E-01 }(  1.228E+00 1.03E+02 G
                              4 of   4 peaks found

Ra-226    N    0.0000E+00
                              0 of   1 peaks found

AM-241    T    0.0000E+00
                              0 of   1 peaks found
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
```

failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.

- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	Activity
RA-223	82.34	1346.	140.	0.003	76.05	2.337E-01
RA-223	152.62	1317.	-226.	-0.005	47.36	-1.660E+00

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Activity Bq/sample	Time of Count Uncertainty 2 Sigma Counting	MDA Bq/sample
Be-7	#A	-4.6117E-02	6.3413E+02%	5.044E-01
K-40	#A	-1.7222E-01	2.8889E+02%	8.611E-01
CO-60	#A	-8.3377E-03	5.2415E+02%	7.747E-02
I-129	#A	-1.9497E-01	4.3718E+03%	1.419E+01
CS-137	#A	-9.4394E-04	4.1142E+03%	6.847E-02
TL-208	#A	-4.4122E-03	8.4236E+02%	6.480E-02
PB-210	#A	-4.5169E-01	1.1128E+03%	8.363E+00
PB-212	#A	-1.7207E-02	5.1525E+02%	1.488E-01
PB-214	#A	7.0784E-02	1.3902E+02%	1.628E-01
BI-214	#A	-3.4801E-03	2.1577E+03%	1.312E-01
RA-223	#A	1.8540E-01	1.4419E+02%	4.423E-01
RA-224	#A	2.7670E-01	3.2921E+02%	1.525E+00
AC-228	#A	-2.2436E-02	5.7610E+02%	2.287E-01
TH-234	#A	2.5408E-01	5.6341E+02%	2.384E+00
U-235	#A	6.1680E-02	1.3487E+02%	1.228E+00
Ra-226	#A	0.0000E+00	7.4987E+03%	1.636E+00
AM-241	#A	0.0000E+00	1.4307E+04%	4.288E-01

Ge2 background 11_21_07.Rpt
STL- St Louis Spectrum name: Ge2 background 11_21_07.An1

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

S U M M A R Y

Total Activity (22.6 to 2000.0 keV) 0.000E+00 Bq/sample

Analyzed by: _____
402630

Reviewed by: _____
Supervisor

Laboratory: STL- St Louis

Ge3 background 11_21_07.Rpt

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 ORTEC     g v - i (3135) Env32  G53W4.21  22-NOV-2007 08:29:30 Page    1
STL- St Louis                  Spectrum name: Ge3 background 11_21_07.An1

Sample description
     Ge3 background 11_21_07


Spectrum Filename: C:\User\spectra\Ge3 Bkd post 5_8_06\Ge3 background
                   11_21_07.An1

Acquisition information
       Start time:                 21-Nov-2007 20:14:21
       Live time:              43200
       Real time:              44044
       Dead time:                  1.92 %
       Detector ID:                   3

Detector system
     Ge 3 SN/155


Calibration
       Filename:                   Ge3 Air filter interp_122_quad 01_09_07.
                                   Clb
     Ge3 Air filter 74140_334 interp_122_quad 01_09_07


       Energy Calibration
            Created:               09-Jan-2007 10:31:35
            Zero offset:           0.372 keV
            Gain:                  0.250 keV/channel
            Quadratic:             3.457E-08 keV/channel^2

       Efficiency Calibration
            Created:               09-Jan-2007 10:36:46
            Knee Energy:          122.07 keV
            Above the Knee:        Quadratic        Uncertainty =   1.42 %
            Log(Eff):             -2.114144E-01 + (-2.846233E-01*Log(E) ) +
                                   ( -4.247676E-02*Log(E)^2 )
            Below the Knee:        Interpolative    Uncertainty =   0.00 %

Library Files
       Main analysis library:      long bkgd_pbc.lib
       Library Match Width:        0.750
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.21
       Start channel:               90 (    22.85keV )
       Stop channel:              8000 (  2000.41keV )
       Peak rejection level:       40.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method

       Random error:               0.0000000E+00

 ORTEC     g v - i (3135) Env32  G53W4.21  22-NOV-2007 08:29:30 Page    2
                                  Page 1
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Ge3 background 11_21_07.Rpt
STL- St Louis Spectrum name: Ge3 background 11_21_07.An1

Systematic error: 0.0000000E+00
Fraction Limit: 0.000%
Background width: average of three points.

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 13 cutoff 20.00000 %
Energy Calibration
Normalized diff: 0.0700

***** SUMMARY OF PEAKS IN RANGE *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/sampl	Nuc
46.63	517.	11.73	0.85	8.618E-02	46.54	4.250	3.266E+00	PB210
63.31	592.	12.93	0.85	8.723E-02	63.29	4.820	3.262E+00	TH234
72.12	210.	21.86	0.87	8.589E-02				
74.95	648.	7.63	0.87	8.546E-02				
84.56	371.	11.37	0.88	8.406E-02	83.79	25.180	4.057E-01	RA223
87.41	211.	18.65	0.88	8.364E-02				
92.67	628.	10.80	1.19	8.268E-02	92.59	5.570	3.156E+00	TH234
143.71	8.	1.77	0.94	6.882E-02	143.76	10.960	PBC<MDA	U235
185.84	362.	17.45	1.25	5.738E-02	185.71	57.200	2.556E-01	U235
					186.21	3.590	4.080E+00	Ra226
238.33	498.	13.20	1.16	4.774E-02	238.63	43.300	5.582E-01	PB212
294.85	179.	32.86	0.88	4.062E-02				
338.11	52.	0.25	1.13	3.652E-02	338.28	2.790	1.113E+00	RA223
351.95	221.	17.02	1.15	3.541E-02	351.93	37.600	3.840E-01	PB214
569.39	140.	24.12	0.46	2.406E-02				
583.08	191.	16.67	0.43	2.359E-02	583.19	84.500	2.218E-01	TL208
609.47	167.	20.68	1.40	2.275E-02	609.31	46.090	3.679E-01	BI214
675.97	198.	19.41	0.25	2.087E-02				
1460.77	269.	12.60	0.77	1.067E-02	1460.83	10.670	5.472E+00	K40
1763.99	57.	24.52	2.37	8.978E-03	1764.49	15.400	9.488E-01	BI214

********** UNIDENTIFIED PEAK SUMMARY **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
287.30	72.26	948.	210.	0.005	43.72	0.865	W-187	ID
299.20	75.10	1479.	687.	0.016	24.09	0.945	PB-214	
347.97	87.28	676.	184.	0.004	51.12	0.891	PB-214	
1178.99	294.85	656.	179.	0.004	65.71	0.885	PB-214	1

Ge3 background 11_21_07.Rpt
STL- St Louis Spectrum name: Ge3 background 11_21_07.An1

Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	Suspected	
2277.83	569.39	207.	140.	0.003	48.24	0.461	PA-234	s
2704.31	675.97	179.	198.	0.005	38.82	0.248	AU-198	sM

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: long bkgd_pbc.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
I-129	116.48	29.46	1393.	-40.	-0.001	-33.03	0.821D
I-129	117.77	29.78	1360.	-75.	-0.002	-33.03	0.821D
PB-210	185.24	46.63	861.	517.	0.012	23.47	0.850
TH-234	252.02	63.31	1092.	592.	0.014	25.87	0.855s
RA-223	337.47	84.65	1341.	292.	0.007	37.32	0.877s
TH-234	369.57	92.67	882.	628.	0.015	21.59	1.192s
RA-223	576.02	144.23	823.	8.	0.000	3.54	0.939D
Ra-226	744.09	186.21	808.	362.	0.008	24.55	1.253D
PB-212	952.74	238.33	764.	498.	0.012	26.39	1.163s
RA-224	959.55	240.03	1211.	-150.	-0.003	67.51	1.037s
AC-228	1353.01	338.32	649.	52.	0.001	0.49	1.134D
PB-214	1407.56	351.95	596.	221.	0.005	34.04	1.148s
TL-208	2332.62	583.08	190.	191.	0.004	33.35	0.427s
BI-214	2438.23	609.47	511.	167.	0.004	41.37	1.396s
K-40	5843.24	1460.77	80.	269.	0.006	25.20	0.766s
BI-214	7055.28	1763.99	68.	57.	0.001	49.04	2.372s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq/sample	Peak Energy keV	Peak Activity Bq/sample	Peak Code	Peak MDA Value Bq/sample	COMMENTS
Be-7	C	-1.0312E-01					
			477.61	-1.031E-01 &(7.955E-01	2.29E+02	G	
			1 of 1 peaks found				
K-40	N	5.4719E+00					
			1460.83	5.472E+00 (9.030E-01	1.26E+01	G	
			1 of 1 peaks found				

D

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:29:30 Page 4
STL- St Louis Spectrum name: Ge3 background 11_21_07.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
CO-60	F 1.3070E-02					

Ge3 background 11_21_07.Rpt

			1332.50	1.307E-02	&(	1.156E-01	2.59E+02	G
			1173.24	4.078E-02	%	1.050E-01	7.74E+01	G
			2 of 2 peaks found					
I-129	I	-5.4321E-02						
			29.78	-5.432E-02	}	1.270E-01	********	X
			29.46	-5.432E-02	}	2.391E-01	********	X
			33.61	-2.491E-03	%	3.687E-01	4.40E+03	X
			39.57	-5.432E-02	%(	5.521E-01	3.04E+02	G
			34.61	-2.405E-01	&	1.844E+00	2.30E+02	X
			5 of 5 peaks found					
CS-137	I	2.9708E-02						
			661.66	2.971E-02	&(	9.574E-02	9.65E+01	G
			1 of 1 peaks found					
TL-208	N	2.2178E-01						
			583.19	2.218E-01	*(	7.773E-02	1.67E+01	G
			860.56	3.902E-01	%	8.439E-01	6.55E+01	G
			2 of 2 peaks found					
PB-210	N	3.2658E+00						
			46.54	3.266E+00	(	8.816E-01	1.17E+01	G
			1 of 1 peaks found					
PB-212	N	5.5819E-01						
			238.63	5.582E-01	*(	1.474E-01	1.32E+01	G
			300.10	-8.649E-02	%	2.144E+00	7.37E+02	G
			2 of 2 peaks found					
PB-214	N	3.8402E-01						
			351.93	3.840E-01	*(	2.025E-01	1.70E+01	G
			295.22	2.825E-01	%	3.796E-01	4.12E+01	G
			242.00	-1.394E-01	%	8.727E-01	1.87E+02	G
			3 of 3 peaks found					
BI-214	N	3.6794E-01						
			609.31	3.679E-01	*(	2.385E-01	2.07E+01	G
			1764.49	9.488E-01	+	6.898E-01	2.45E+01	G
			1120.29	5.281E-01	%	7.381E-01	4.32E+01	G
			768.36	5.301E-01	%	1.791E+00	1.01E+02	G
			4 of 4 peaks found					
RA-223	N	8.8424E-02						
			83.79	3.193E-01	*	1.894E-01	1.87E+01	X
			269.46	8.842E-02	%(	5.004E-01	1.69E+02	G
			154.21	1.288E-01	%	8.834E-01	2.05E+02	G
			144.23	8.842E-02	}	1.424E+00	1.77E+00	G
			323.87	-1.253E-01	%	1.965E+00	4.67E+02	G
			5 of 6 peaks found					
RA-224	N	-1.7921E+00						
			240.99	-1.792E+00	&(	1.966E+00	3.38E+01	G
			1 of 1 peaks found					

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:29:30 Page 5
STL- St Louis Spectrum name: Ge3 background 11_21_07.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
AC-228	N 2.8991E-01					
		911.20	2.899E-01	%(	4.109E-01	4.37E+01 G

```
                                Ge3 background 11_21_07.Rpt
                              968.97 2.921E-01 %   6.997E-01 7.23E+01 G
                              338.32 2.899E-01 }   6.828E-01 2.46E-01 G
                                 3 of   3 peaks found

TH-234    N   3.2051E+00
                               63.29 3.262E+00 *(  8.629E-01 1.29E+01 G
                               92.59 3.156E+00 *(  7.091E-01 1.08E+01 G
                                 2 of   2 peaks found

U-235     N   0.0000E+00
                              143.76 1.575E-01 }   4.364E-01 8.36E+01 G
                              163.36 1.070E-02 }   1.003E+00 2.79E+03 G
                              205.31 3.099E-01 }   1.189E+00 1.15E+02 G
                                 3 of   4 peaks found

Ra-226    N   4.0797E+00
                              186.21 4.080E+00 }(  1.522E+00 1.23E+01 G
                                 1 of   1 peaks found

AM-241    T   3.0063E-02
                               59.54 3.006E-02 %(  1.121E-01 1.12E+02 G
                                 1 of   1 peaks found
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
       failed one or more qualification tests.
   + - Peak activity higher than counting uncertainty range.
   - - Peak activity lower than counting uncertainty range.
   = - Peak outside analysis energy range.
   & - Calculated peak centroid is not close enough to the
       library energy centroid for positive identification.
   P - Peakbackground subtraction
   } - Peak is too close to another for the activity
       to be found directly.

   Nuclide Codes:                      Peak Codes:
   T - Thermal Neutron Activation      G - Gamma Ray
   F - Fast Neutron Activation         X - X-Ray
   I - Fission Product                 P - Positron Decay
   N - Naturally Occurring Isotope     S - Single-Escape
   P - Photon Reaction                 D - Double-Escape
   C - Charged Particle Reaction       K - Key Line
   M - No MDA Calculation              A - Not in Average
```



```
   R - Coincidence Corrected           C - Coincidence Peak
   H - Halflife limit exceeded

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 ********** D I S C A R D E D  I S O T O P E  P E A K S **********
 Nuclide Centroid  Background  Net Area   Intensity   Uncert   Activity
           Energy    Counts     Counts     Cts/Sec  2 Sigma %
```

RA-223	84.65	1341.	292.	0.007	37.32	3.193E-01
RA-224	240.03	1211.	-150.	-0.003	67.51	-1.792E+00
PB-214	351.95	596.	221.	0.005	34.04	3.840E-01
BI-214	609.47	511.	167.	0.004	41.37	3.679E-01
BI-214	1763.99	68.	57.	0.001	49.04	9.488E-01

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity Bq/sample	Uncertainty 2 Sigma Counting	MDA Bq/sample
Be-7	#A	-1.0312E-01	4.5896E+02%	7.955E-01
K-40		5.4719E+00	2.5202E+01%	9.030E-01
CO-60	#A	1.3070E-02	5.1750E+02%	1.156E-01
I-129	#A	-5.4321E-02	6.0811E+02%	5.521E-01
CS-137	#A	2.9708E-02	1.9304E+02%	9.574E-02
TL-208	#	2.2178E-01	3.3349E+01%	7.773E-02
PB-210		3.2658E+00	2.3466E+01%	8.816E-01
PB-212	#	5.5819E-01	2.6390E+01%	1.474E-01
PB-214	#	3.8402E-01	3.4038E+01%	2.025E-01
BI-214	#	3.6794E-01	4.1367E+01%	2.385E-01
RA-223	#A	8.8424E-02	3.3888E+02%	5.004E-01
RA-224	#A	-1.7921E+00	6.7509E+01%	1.966E+00
AC-228	#A	2.8991E-01	8.7364E+01%	4.109E-01
TH-234	#	3.2051E+00	1.6848E+01%	8.629E-01
U-235	#A	0.0000E+00	2.3063E+02%	1.189E+00
Ra-226	#	4.0797E+00	2.4547E+01%	1.522E+00
AM-241	#A	3.0063E-02	2.2457E+02%	1.121E-01

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (22.8 to 2000.4 keV) 1.680E+01 Bq/sample

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:29:30 Page 7
STL- St Louis Spectrum name: Ge3 background 11_21_07.An1

Analyzed by: _____
403605

Reviewed by: _____
Supervisor

Laboratory: STL- St Louis

Ge4 background 11_21_07.Rpt

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 09:23:11 Page 1
STL- St Louis Spectrum name: Ge4 background 11_21_07.An1

Sample description
Ge4 background 11_21_07

Spectrum Filename: C:\User\spectra\Ge4 Bkd post 09_07\Ge4 background 11_21_07.An1

Acquisition information

Start time:	21-Nov-2007 21:20:23
Live time:	43200
Real time:	43294
Dead time:	0.22 %
Detector ID:	4

Detector system
Ge 4 SN/181

Calibration
Filename: Ge4 AirFilterCal_74140_334_05_08_07(EE).Clb
Ge4 AirFilterCal_74140_334_05_08_07(EE)

Energy Calibration

Created:	08-May-2007 13:28:13
Zero offset:	0.017 keV
Gain:	0.250 keV/channel
Quadratic:	-3.910E-08 keV/channel^2

Efficiency Calibration

Created:	08-May-2007 13:39:26
Type:	Polynomial
Uncertainty:	0.775 %
Coefficients:	-0.437839 -4.768164 0.564688
	-0.057886 0.002608 -0.000044

Library Files

Main analysis library:	long bkgd_pbc.lib
Library Match Width:	0.750
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G53W4.21
Start channel:	90 (22.53keV)
Stop channel:	8000 (1998.47keV)
Peak rejection level:	40.000%
Peak search sensitivity:	3
Sample Size:	1.0000E+00
Activity scaling factor:	1.0000E+00/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method:	Reg. Guide 4.16 Method
Random error:	0.0000000E+00
Systematic error:	0.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.

Ge4 background 11_21_07.Rpt

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 09:23:11 Page 2
STL- St Louis Spectrum name: Ge4 background 11_21_07.An1

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 13 cutoff 20.00000 %
Energy Calibration
Normalized diff: 0.1398

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/sampl	Nuc
29.44	117.	0.15	0.80	5.859E-02	29.46	20.350	PBC<MDA	I129
46.39	500.	10.13	0.83	6.160E-02	46.54	4.250	4.417E+00	PB210
63.30	385.	12.06	0.82	6.390E-02	63.29	4.820	2.891E+00	TH234
74.86	126.	20.28	0.84	6.352E-02				
77.23	163.	16.49	0.85	6.347E-02				
92.41	578.	13.01	1.06	6.276E-02	92.59	5.570	3.825E+00	TH234
144.26	17.	0.88	0.90	5.339E-02	143.76	10.960	PBC<MDA	U235
185.83	266.	18.20	1.03	4.428E-02	185.71	57.200	2.430E-01	U235
					186.21	3.590	3.880E+00	Ra226
238.37	223.	16.36	1.06	3.532E-02	238.63	43.300	3.379E-01	PB212
294.99	85.	32.83	1.03	2.863E-02	295.22	19.300	PBC<MDA	PB214
338.12	34.	0.42	1.07	2.500E-02	338.28	2.790	1.109E+00	RA223
351.60	126.	21.13	1.08	2.404E-02	351.93	37.600	3.223E-01	PB214
510.71	983.	5.17	2.12	1.675E-02				
582.75	103.	27.40	0.89	1.482E-02	583.19	84.500	1.899E-01	TL208
608.54	126.	15.99	1.63	1.422E-02	609.31	46.090	4.449E-01	BI214
1024.06	31.	31.88	0.48	8.934E-03				
1119.29	112.	21.18	1.36	8.239E-03	1120.29	15.100	2.075E+00	BI214
1460.75	68.	19.15	1.89	6.425E-03	1460.83	10.670	2.293E+00	K40

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
299.14	74.83	277.	115.	0.003	50.65	0.818	PB-214	
308.62	77.21	295.	148.	0.003	42.44	0.888	PB-214	
2042.44	510.71	228.	983.	0.023	10.33	2.116	TL-208	s
4096.82	1024.06	19.	31.	0.001	63.76	0.479	SR-91	s

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 09:23:11 Page 3
STL- St Louis Spectrum name: Ge4 background 11_21_07.An1

Ge4 background 11_21_07.Rpt

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: long bkgd_pbc.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
I-129	119.01	29.78	664.	117.	0.003	0.29	0.804D
PB-210	185.42	46.39	458.	500.	0.012	20.27	0.834s
TH-234	253.01	63.30	424.	385.	0.009	24.12	0.816
TH-234	369.42	92.41	822.	578.	0.013	26.02	1.057s
RA-223	576.64	144.23	522.	17.	0.000	1.75	0.905D
Ra-226	744.51	186.21	462.	266.	0.006	25.94	1.035D
PB-212	953.09	238.37	289.	223.	0.005	32.72	1.055
PB-214	1179.54	294.99	347.	85.	0.002	65.66	1.034s
AC-228	1352.85	338.32	320.	34.	0.001	0.85	1.071D
PB-214	1405.98	351.60	291.	126.	0.003	42.26	1.082s
TL-208	2331.16	582.87	184.	52.	0.001	78.17	1.269s
BI-214	2433.85	608.54	80.	126.	0.003	31.98	1.627s
BI-214	4478.11	1119.29	52.	112.	0.003	42.36	1.355s
K-40	5845.49	1460.75	51.	68.	0.002	38.29	1.887

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq/sample	Peak Energy keV	Peak Activity Bq/sample	Peak Code	Peak MDA Value Bq/sample	COMMENTS
Be-7	C	2.5364E-01					
			477.61	2.536E-01	&(	7.571E-01 8.94E+01	G
			1 of 1 peaks found				
K-40	N	2.2933E+00					
			1460.83	2.293E+00	(	1.211E+00 1.91E+01	G
			1 of 1 peaks found				
CO-60	F	3.0919E-02					
			1332.50	3.092E-02	%(	1.270E-01 1.20E+02	G
			1173.24	-1.824E-03	%	1.272E-01 1.99E+03	G
			2 of 2 peaks found				

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 09:23:11 Page 4
STL- St Louis Spectrum name: Ge4 background 11_21_07.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
I-129	I 1.2169E-01					
		29.78	1.217E-01	}	1.282E-01 1.45E-01	X
		33.61	9.651E-03	%	3.713E-01 1.14E+03	X
		39.57	1.217E-01	%(	5.647E-01 1.39E+02	G

Ge4 background 11_21_07.Rpt
34.61 5.812E-01 % 1.700E+00 8.81E+01 X
4 of 5 peaks found

CS-137	I	6.1529E-02							
			661.66	6.153E-02	&(	1.199E-01	5.93E+01	G	
			1 of 1 peaks found						
TL-208	N	9.7012E-02							
			583.19	9.701E-02	?(	1.219E-01	3.91E+01	G	
			860.56	5.068E-02	%	8.374E-01	4.76E+02	G	
			2 of 2 peaks found						
PB-210	N	4.4166E+00							
			46.54	4.417E+00	@(	9.062E-01	1.01E+01	G	
			1 of 1 peaks found						
PB-212	N	3.3787E-01							
			238.63	3.379E-01	(	1.241E-01	1.64E+01	G	
			300.10	4.578E-01	%	2.233E+00	1.45E+02	G	
			2 of 2 peaks found						
PB-214	N	3.3387E-01							
			351.93	3.223E-01	(	2.104E-01	2.11E+01	G	
			295.22	3.563E-01	*(	3.752E-01	3.28E+01	G	
			242.00	-8.994E-02	%	9.155E-01	3.02E+02	G	
			3 of 3 peaks found						
BI-214	N	4.4492E-01							
			609.31	4.449E-01	(	1.567E-01	1.60E+01	G	
			1764.49	3.905E-01	%	9.161E-01	7.06E+01	G	
			1120.29	2.075E+00	+	6.787E-01	2.12E+01	G	
			768.36	3.163E-02	%	2.265E+00	2.07E+03	G	
			4 of 4 peaks found						
RA-223	N	2.3215E-01							
			83.79	-2.020E-04	%	1.551E-01	2.27E+04	X	
			269.46	2.321E-01	&(	4.980E-01	6.50E+01	G	
			154.21	-5.419E-02	%	8.607E-01	4.71E+02	G	
			144.23	2.321E-01	}	1.470E+00	8.75E-01	G	
			323.87	1.302E-01	&	2.085E+00	4.74E+02	G	
			5 of 6 peaks found						
RA-224	N	-3.8759E-01							
			240.99	-3.876E-01	%(	1.566E+00	1.21E+02	G	
			1 of 1 peaks found						
AC-228	N	2.7907E-01							
			911.20	2.791E-01	&(	4.692E-01	5.16E+01	G	
			968.97	2.956E-01	%	7.776E-01	7.89E+01	G	
			338.32	2.791E-01	}	7.075E-01	4.24E-01	G	
			3 of 3 peaks found						

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 09:23:11 Page 5
STL- St Louis Spectrum name: Ge4 background 11_21_07.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-234	N 3.3918E+00						
		63.29	2.891E+00	(	7.418E-01	1.21E+01	G
		92.59	3.825E+00	(	9.027E-01	1.30E+01	G
		2 of 2 peaks found					

```
U-235     N    0.0000E+00
                          143.76 1.399E-01 }   4.508E-01 9.69E+01 G
                          163.36 3.179E-01 }   9.891E-01 9.36E+01 G
                          205.31 9.367E-02 }   9.329E-01 2.94E+02 G
                             3 of   4 peaks found

Ra-226    N    3.8798E+00
                          186.21 3.880E+00 }(  1.500E+00 1.30E+01 G
                             1 of   1 peaks found

AM-241    T    1.6676E-02
                           59.54 1.668E-02 %(  1.068E-01 1.91E+02 G
                             1 of   1 peaks found
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
       failed one or more qualification tests.
   + - Peak activity higher than counting uncertainty range.
   - - Peak activity lower than counting uncertainty range.
   = - Peak outside analysis energy range.
   & - Calculated peak centroid is not close enough to the
       library energy centroid for positive identification.
   P - Peakbackground subtraction
   } - Peak is too close to another for the activity
       to be found directly.

   Nuclide Codes:                      Peak Codes:
   T - Thermal Neutron Activation      G - Gamma Ray
   F - Fast Neutron Activation         X - X-Ray
   I - Fission Product                 P - Positron Decay
   N - Naturally Occurring Isotope     S - Single-Escape
   P - Photon Reaction                 D - Double-Escape
   C - Charged Particle Reaction       K - Key Line
   M - No MDA Calculation              A - Not in Average
   R - Coincidence Corrected           C - Coincidence Peak
   H - Halflife limit exceeded

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
D
```


********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	Activity
PB-214	294.99	347.	85.	0.002	65.66	3.563E-01
PB-214	351.60	291.	126.	0.003	42.26	3.223E-01
K-40	1460.75	51.	68.	0.002	38.29	2.293E+00

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity	Uncertainty 2 Sigma Counting	MDA

Ge4 background 11_21_07.Rpt

		Bq/sample		Bq/sample
Be-7	#A	2.5364E-01	1.7871E+02%	7.571E-01
K-40	#	2.2933E+00	3.8293E+01%	1.211E+00
CO-60	#A	3.0919E-02	2.4072E+02%	1.270E-01
I-129	#A	1.2169E-01	2.7780E+02%	5.647E-01
CS-137	#A	6.1529E-02	1.1860E+02%	1.199E-01
TL-208	#A	9.7012E-02	7.8165E+01%	1.219E-01
PB-210	#	4.4166E+00	2.0270E+01%	9.062E-01
PB-212		3.3787E-01	3.2718E+01%	1.241E-01
PB-214	#	3.3387E-01	3.9044E+01%	2.104E-01
BI-214	#	4.4492E-01	3.1983E+01%	1.567E-01
RA-223	#A	2.3215E-01	1.3001E+02%	4.980E-01
RA-224	#A	-3.8759E-01	2.4185E+02%	1.566E+00
AC-228	#A	2.7907E-01	1.0319E+02%	4.692E-01
TH-234		3.3918E+00	1.7740E+01%	7.418E-01
U-235	#A	0.0000E+00	5.8869E+02%	9.329E-01
Ra-226	#	3.8798E+00	2.5937E+01%	1.500E+00
AM-241	#A	1.6676E-02	3.8177E+02%	1.068E-01

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (22.5 to 1998.5 keV) 1.257E+01 Bq/sample

Analyzed by: _____
403293

Reviewed by: _____
Supervisor

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 09:23:11 Page 7
STL- St Louis Spectrum name: Ge4 background 11_21_07.An1

Laboratory: STL- St Louis

Ge5 background 11_21_07.Rpt

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 07:48:45 Page 1
STL- St Louis Spectrum name: Ge5 background 11_21_07.An1

Sample description
Ge5 background 11_21_07

Spectrum Filename: C:\User\spectra\Ge5 bkgd\Ge5 background 11_21_07.A

Acquisition information
Start time: 21-Nov-2007 19:23:41
Live time: 43200
Real time: 44675
Dead time: 3.30 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: Ge5 airfilter_032707_interp165quad.Clb
Ge5 airfilter 74140-334_032707 interp_165_quad

Energy Calibration
Created: 28-Mar-2007 18:08:23
Zero offset: 0.272 keV
Gain: 0.250 keV/channel
Quadratic: 3.070E-08 keV/channel^2

Efficiency Calibration
Created: 28-Mar-2007 18:10:41
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.34 %
Log(Eff): 1.077627E+00 + (-7.017228E-01*Log(E)) +
(-1.776439E-02*Log(E)^2)
Below the Knee: Interpolative Uncertainty = 0.00 %

Library Files
Main analysis library: long bkgd_pbc.lib
Library Match Width: 0.750
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G53W4.21
Start channel: 90 (22.75keV)
Stop channel: 8000 (2000.57keV)
Peak rejection level: 40.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00
Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) =
1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

Random error: 0.0000000E+00
Systematic error: 0.0000000E+00

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 07:48:45 Page 2
STL- St Louis Spectrum name: Ge5 background 11_21_07.An1
Page 1

Ge5 background 11_21_07.Rpt

Fraction Limit: 0.000%
Background width: average of three points.

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 15 cutoff 20.00000 %
Energy Calibration
Normalized diff: 0.1877

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/sampl	Nuc
29.93	102.	0.14	0.75	7.146E-02	29.46	20.350	PBC<MDA	I129
46.66	414.	12.87	0.65	7.098E-02	46.54	4.250	3.179E+00	PB210
59.65	80.	33.94	0.71	7.060E-02	59.54	35.700	7.300E-02	AM241
63.18	340.	14.64	0.84	7.034E-02	63.29	4.820	2.322E+00	TH234
74.83	114.	25.18	0.78	6.946E-02				
77.10	91.	30.11	0.78	6.929E-02				
84.34	74.	32.20	0.44	6.875E-02				
92.62	549.	10.31	1.09	6.772E-02	92.59	5.570	3.367E+00	TH234
185.73	327.	15.49	0.92	4.627E-02	185.71	57.200	2.861E-01	U235
					186.21	3.590	4.570E+00	Ra226
238.72	164.	27.40	0.69	3.699E-02	238.63	43.300	2.362E-01	PB212
338.06	31.	0.43	1.04	2.700E-02	338.28	2.790	PBC<MDA	RA223
351.81	195.	22.22	0.90	2.606E-02				
511.11	1014.	5.24	2.08	1.851E-02				
583.25	90.	23.25	0.78	1.638E-02	583.19	84.500	1.505E-01	TL208
609.47	162.	20.78	1.01	1.572E-02	609.31	46.090	5.158E-01	BI214
662.05	150.	19.17	1.43	1.456E-02	661.66	85.210	2.798E-01	CS137
1173.48	41.	36.79	1.77	8.488E-03	1173.24	99.900	PBC<MDA	CO60
1332.05	125.	20.63	1.02	7.518E-03				
1461.10	43.	27.61	1.99	6.882E-03	1460.83	10.670	1.351E+00	K40
1764.57	44.	23.86	0.33	5.736E-03	1764.49	15.400	1.162E+00	BI214

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
298.47	74.83	392.	106.	0.002	67.56	0.809	PB-214	s
307.56	77.10	307.	79.	0.002	75.51	0.760	PB-214	
1407.10	351.81	306.	195.	0.005	44.45	0.904	PB-214	l
2044.52	511.11	240.	1014.	0.023	10.47	2.077	TL-208	s

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 07:48:45 Page 3
STL- St Louis Spectrum name: Ge5 background 11_21_07.An1
Page 2

Ge5 background 11_21_07.Rpt

Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	Suspected
5328.04	1332.05	79.	100.	0.002	32.20	1.021	CO-60 s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: long bkgd_pbc.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
I-129	118.14	29.78	830.	102.	0.002	0.28	0.749D
PB-210	185.71	46.66	583.	414.	0.010	25.73	0.654s
AM-241	237.70	59.65	260.	80.	0.002	67.89	0.710
TH-234	251.85	63.18	534.	340.	0.008	29.27	0.841s
TH-234	369.69	92.62	568.	549.	0.013	20.62	1.088s
RA-223	576.28	144.23	424.	-4.	0.000	-30.17	0.847D
Ra-226	744.31	186.21	464.	327.	0.008	21.65	0.916D
PB-212	954.48	238.72	410.	164.	0.004	54.79	0.693s
RA-223	1352.94	338.28	354.	-2.	0.000	-30.17	1.040D
AC-228	1353.09	338.32	340.	31.	0.001	0.85	1.040D
PB-214	1407.50	351.92	329.	125.	0.003	44.77	1.053s
TL-208	2333.17	583.25	87.	90.	0.002	46.51	0.781s
BI-214	2438.11	609.47	176.	162.	0.004	41.57	1.012
CS-137	2648.46	662.05	116.	150.	0.003	38.34	1.432s
CO-60	4694.02	1173.48	96.	41.	0.001	73.58	1.772s
K-40	5843.97	1461.10	49.	43.	0.001	55.23	1.988
BI-214	7056.93	1764.57	11.	44.	0.001	47.72	0.329s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq/sample	Peak Energy keV	Peak Activity Bq/sample	Peak Code	Peak MDA Value Bq/sample	COMMENTS
Be-7	C	2.9643E-03					
			477.61	2.964E-03 %(		9.373E-01 9.29E+03	G
			1 of 1 peaks found				
K-40	N	1.3513E+00					
			1460.83	1.351E+00 ?(		1.110E+00 2.76E+01	G
			1 of 1 peaks found				

D

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STL- St Louis Spectrum name: Ge5 background 11_21_07.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
CO-60	F 9.5390E-02					
		1332.50	7.761E-02 %(		1.333E-01 5.28E+01	G
		1173.24	1.132E-01 (		1.318E-01 3.68E+01	G

Ge5 background 11_21_07.Rpt
2 of 2 peaks found

I-129	I	8.6894E-02						
			29.78	8.689E-02	}	1.172E-01	1.40E-01	X
			33.61	-3.808E-02	&	3.942E-01	3.09E+02	X
			39.57	8.689E-02	%(	4.761E-01	1.64E+02	G
			34.61	-1.386E-01	%	1.664E+00	3.58E+02	X
			4 of 5 peaks found					
CS-137	I	2.7980E-01						
			661.66	2.798E-01	@(	9.868E-02	1.92E+01	G
			1 of 1 peaks found					
TL-208	N	1.5053E-01						
			583.19	1.505E-01	*(	7.723E-02	2.33E+01	G
			860.56	1.989E-01	%	9.708E-01	1.44E+02	G
			2 of 2 peaks found					
PB-210	N	3.1792E+00						
			46.54	3.179E+00	(	8.839E-01	1.29E+01	G
			1 of 1 peaks found					
PB-212	N	2.3621E-01						
			238.63	2.362E-01	(	1.402E-01	2.74E+01	G
			300.10	3.484E-01	%	2.091E+00	1.79E+02	G
			2 of 2 peaks found					
PB-214	N	2.9533E-01						
			351.93	2.953E-01	(	2.061E-01	2.24E+01	G
			295.22	2.432E-01	%	3.647E-01	4.60E+01	G
			242.00	1.720E-01	&	8.469E-01	1.47E+02	G
			3 of 3 peaks found					
BI-214	N	5.1580E-01						
			609.31	5.158E-01	(	2.058E-01	2.08E+01	G
			1764.49	1.162E+00	+	4.698E-01	2.39E+01	G
			1120.29	2.913E-01	&	7.470E-01	7.69E+01	G
			768.36	7.370E-01	%	2.029E+00	8.25E+01	G
			4 of 4 peaks found					
RA-223	N	-5.2038E-02						
			83.79	-4.616E-02	%	1.480E-01	9.64E+01	X
			269.46	-5.204E-02	&(	5.080E-01	2.90E+02	G
			154.21	-7.645E-02	%	7.471E-01	2.90E+02	G
			144.23	-5.204E-02	}	1.255E+00	********	G
			323.87	-8.898E-02	%	1.870E+00	6.20E+02	G
			338.28	-5.204E-02	}	2.778E+00	********	G
			6 of 6 peaks found					
RA-224	N	-7.1857E-01						
			240.99	-7.186E-01	%(	1.725E+00	7.26E+01	G
			1 of 1 peaks found					

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 07:48:45 Page 5
STL- St Louis Spectrum name: Ge5 background 11_21_07.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AC-228	N 2.3763E-01						
		911.20	2.376E-01	%(	4.360E-01	5.60E+01	G
		968.97	2.100E-01	%	7.716E-01	1.09E+02	G
		338.32	2.376E-01	}	6.746E-01	4.26E-01	G

Ge5 background 11_21_07.Rpt
3 of 3 peaks found

TH-234 N 2.3217E+00

63.29	2.322E+00	@(	7.538E-01	1.46E+01	G
92.59	3.367E+00	+	6.983E-01	1.03E+01	G

2 of 2 peaks found

U-235 N 0.0000E+00

143.76	2.214E-01	}	3.882E-01	5.34E+01	G
163.36	4.277E-01	}	8.636E-01	6.13E+01	G
205.31	3.536E-01	}	1.095E+00	9.31E+01	G

3 of 4 peaks found

Ra-226 N 4.5696E+00

186.21	4.570E+00	}(	1.440E+00	1.08E+01	G

1 of 1 peaks found

AM-241 T 7.3002E-02

59.54	7.300E-02	(	7.142E-02	3.39E+01	G

1 of 1 peaks found

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 07:48:45 Page 6
STL- St Louis Spectrum name: Ge5 background 11_21_07.An1

R - Coincidence Corrected
H - Halflife limit exceeded
C - Coincidence Peak

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	Activity
PB-214	351.92	329.	125.	0.003	44.77	2.953E-01

Ge5 background 11_21_07.Rpt

CO-60 1173.48 96. 41. 0.001 73.58 1.132E-01
P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity Bq/sample	Uncertainty 2 Sigma Counting	MDA Bq/sample
Be-7	#A	2.9643E-03	1.8576E+04%	9.373E-01
K-40	#	1.3513E+00	5.5227E+01%	1.110E+00
CO-60	#A	9.5390E-02	6.4328E+01%	1.333E-01
I-129	#A	8.6894E-02	3.2744E+02%	4.761E-01
CS-137	#	2.7980E-01	3.8336E+01%	9.868E-02
TL-208	#	1.5053E-01	4.6508E+01%	7.723E-02
PB-210	#	3.1792E+00	2.5734E+01%	8.839E-01
PB-212		2.3621E-01	5.4790E+01%	1.402E-01
PB-214	#	2.9533E-01	4.4766E+01%	2.061E-01
BI-214		5.1580E-01	4.1569E+01%	2.058E-01
RA-223	#A	-5.2038E-02	5.7978E+02%	5.080E-01
RA-224	#A	-7.1857E-01	1.4516E+02%	1.725E+00
AC-228	#A	2.3763E-01	1.1204E+02%	4.360E-01
TH-234	#	2.3217E+00	2.9270E+01%	7.538E-01
U-235	#A	0.0000E+00	1.8625E+02%	1.095E+00
Ra-226		4.5696E+00	2.1655E+01%	1.440E+00
AM-241		7.3002E-02	6.7890E+01%	7.142E-02

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

S U M M A R Y

Total Activity (22.8 to 2000.6 keV) 1.268E+01 Bq/sample

Analyzed by: _____
403293

Reviewed by: _____
Supervisor

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 07:48:45 Page 7
STL- St Louis Spectrum name: Ge5 background 11_21_07.An1

Laboratory: STL- St Louis

Ge7 background 11_21_07.Rpt

```
 ORTEC     g v - i (3135) Env32  G53W4.21  22-NOV-2007 08:07:45 Page    1
STL- St Louis                  Spectrum name: Ge7 background 11_21_07.An1

Sample description
     Ge7 background 11_21_07


Spectrum Filename: C:\User\spectra\Ge7 bkgd\Ge7 background 11_21_07.A

Acquisition information
       Start time:                21-Nov-2007 19:50:18
       Live time:              43200
       Real time:              44220
       Dead time:                 2.31 %
       Detector ID:                  7

Detector system
     Ge 7 SN/154


Calibration
       Filename:                  Ge7 air filter 01_04_07.Clb
     Ge7 air filter 74140-334 01_04_07


       Energy Calibration
            Created:              04-Jan-2007 09:44:57
            Zero offset:          0.082 keV
            Gain:                 0.250 keV/channel
            Quadratic:            5.157E-09 keV/channel^2

       Efficiency Calibration
            Created:              04-Jan-2007 09:55:23
            Knee Energy:        122.07 keV
            Above the Knee:       Quadratic        Uncertainty =   1.37 %
            Log(Eff):             6.564924E-01 + (-4.575726E-01*Log(E) ) +
                                  ( -3.880790E-02*Log(E)^2 )
            Below the Knee:       Quadratic        Uncertainty =   0.19 %
            Log(Eff):            -6.453588E+00 + ( 1.933612E+00*Log(E) ) +
                                  ( -2.285762E-01*Log(E)^2 )

Library Files
       Main analysis library:     long bkgd_pbc.lib
       Library Match Width:       0.750
       Peak stripping:            Library based

Analysis parameters
       Analysis engine:           Env32   G53W4.21
       Start channel:            90 (    22.58keV )
       Stop channel:           8000 (  2000.15keV )
       Peak rejection level:     40.000%
       Peak search sensitivity:  3
       Sample Size:              1.0000E+00
       Activity scaling factor:  1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                 1.0000E+00
       Detection limit method:   Reg. Guide 4.16 Method

D

 ORTEC     g v - i (3135) Env32  G53W4.21  22-NOV-2007 08:07:45 Page    2
STL- St Louis                  Spectrum name: Ge7 background 11_21_07.An1
                                     Page 1
```

Ge7 background 11_21_07.Rpt

Random error:	0.0000000E+00
Systematic error:	0.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 10 cutoff 20.00000 %

Energy Calibration
Normalized diff: 0.2579

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/sampl	Nuc
23.39	188.	17.26	0.62	7.211E-02				
29.55	453.	11.10	0.94	7.991E-02	29.46	20.350	6.457E-01	I129
33.20	135.	27.90	0.47	8.331E-02				
40.27	166.	27.61	0.76	8.808E-02				
46.28	578.	11.03	0.77	9.072E-02	46.54	4.250	3.470E+00	PB210
63.10	498.	9.75	0.76	9.386E-02	63.29	4.820	2.548E+00	TH234
74.41	97.	24.75	0.88	9.388E-02				
77.06	125.	20.92	0.88	9.373E-02				
92.57	671.	8.34	0.99	9.212E-02	92.59	5.570	3.027E+00	TH234
143.96	102.	30.64	0.61	7.609E-02	143.76	10.960	2.842E-01	U235
145.13	1.	10.64	0.95	7.597E-02	144.23	3.220	PBC<MDA	RA223
185.59	330.	10.26	1.07	6.127E-02	185.71	57.200	2.178E-01	U235
197.70	154.	31.14	0.41	5.800E-02				
239.12	229.	23.87	1.02	4.911E-02	238.63	43.300	2.488E-01	PB212
337.98	32.	0.33	1.16	3.598E-02	338.28	2.790	PBC<MDA	RA223
346.03	83.	27.40	0.53	3.525E-02				
351.88	69.	36.45	1.18	3.471E-02	351.93	37.600	PBC<MDA	PB214
583.49	58.	39.50	1.42	2.168E-02	583.19	84.500	PBC<MDA	TL208

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
93.24	23.39	273.	188.	0.004	34.51	0.619	SN-113	s
117.91	29.55	519.	453.	0.010	22.20	0.936	TE-132	]
132.50	33.20	385.	135.	0.003	55.79	0.465	BA-139	]
160.78	40.27	527.	101.	0.002	67.63	0.756	EU-152	s
297.58	74.47	297.	91.	0.002	67.11	0.693	PB-214	
308.21	77.12	258.	104.	0.002	55.87	0.612	PB-214	s

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:07:45 Page 3
Page 2

Ge7 background 11_21_07.Rpt
STL- St Louis Spectrum name: Ge7 background 11_21_07.An1

Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	Suspected	
575.58	143.96	252.	102.	0.002	61.28	0.606	U-235	]
742.11	185.59	232.	330.	0.008	20.52	1.073	U-235	]
790.56	197.70	412.	154.	0.004	62.28	0.414	KR-89	sM
1383.93	346.03	117.	83.	0.002	54.79	0.534	HF-181	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: long bkgd_pbc.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
I-129	118.81	29.78	642.	281.	0.007	24.80	0.827D
I-129	133.40	33.43	566.	89.	0.002	78.15	0.831s
PB-210	184.80	46.28	634.	578.	0.013	22.05	0.767
TH-234	252.09	63.10	413.	498.	0.012	19.50	0.762s
TH-234	370.01	92.57	492.	671.	0.016	16.68	0.985s
RA-223	576.67	144.23	412.	1.	0.000	21.28	0.954D
Ra-226	744.60	186.21	407.	266.	0.006	24.76	1.000D
PB-212	956.25	239.12	460.	229.	0.005	47.75	1.021s
AC-228	1353.09	338.32	350.	32.	0.001	0.67	1.164D
PB-214	1407.31	351.88	284.	69.	0.002	72.91	1.179s
TL-208	2333.81	583.49	232.	58.	0.001	79.01	1.417s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

Name	Code	Average Activity Bq/sample	Peak Energy keV	Peak Activity Bq/sample	Peak Code	Peak MDA Value Bq/sample	COMMENTS
Be-7	C	-2.6217E-01					
			477.61	-2.622E-01 %(	6.113E-01	7.04E+01	G
			1 of 1 peaks found				
K-40	N	-7.6775E-02					
			1460.83	-7.677E-02 %(	1.012E+00	3.78E+02	G
			1 of 1 peaks found				
CO-60	F	1.6295E-03					
			1332.50	1.630E-03 %(	9.943E-02	1.73E+03	G
			1173.24	3.709E-02 %	9.526E-02	7.70E+01	G
			2 of 2 peaks found				

STL- St Louis Spectrum name: Ge7 background 11_21_07.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments

Ge7 background 11_21_07.Rpt

I-129	I	2.2928E-01					
			29.78	2.147E-01	}	9.218E-02	1.24E+01 X
			29.46	7.217E-02	}	1.816E-01	7.51E+01 X
			33.61	2.419E-01		3.072E-01	3.91E+01 X
			39.57	2.293E-01	%(	4.135E-01	5.49E+01 G
			34.61	-2.853E-01	&	1.439E+00	1.51E+02 X
			5 of 5 peaks found				
CS-137	I	2.5282E-02					
			661.66	2.528E-02	%(	9.732E-02	1.15E+02 G
			1 of 1 peaks found				
TL-208	N	7.3008E-02					
			583.19	7.301E-02	*(	9.303E-02	3.95E+01 G
			860.56	4.559E-01	%	6.885E-01	4.66E+01 G
			2 of 2 peaks found				
PB-210	N	3.4696E+00					
			46.54	3.470E+00	(	7.203E-01	1.10E+01 G
			1 of 1 peaks found				
PB-212	N	2.4885E-01					
			238.63	2.488E-01	*(	1.116E-01	2.39E+01 G
			300.10	4.881E-01	%	1.607E+00	9.88E+01 G
			2 of 2 peaks found				
PB-214	N	1.2280E-01					
			351.93	1.228E-01	@(	1.441E-01	3.65E+01 G
			295.22	1.042E-01	&	2.667E-01	7.72E+01 G
			242.00	-7.215E-02	%	6.071E-01	2.50E+02 G
			3 of 3 peaks found				
BI-214	N	1.2372E-01					
			609.31	1.237E-01	%(	1.679E-01	4.20E+01 G
			1764.49	3.233E-01	&	7.856E-01	7.30E+01 G
			1120.29	1.921E-03	&	6.110E-01	9.08E+03 G
			768.36	-1.636E-02	&	1.410E+00	2.48E+03 G
			4 of 4 peaks found				
RA-223	N	5.2717E-03					
			83.79	6.497E-02	%	1.154E-01	5.41E+01 X
			269.46	5.272E-03	&(	3.606E-01	2.02E+03 G
			154.21	6.698E-02	&	5.727E-01	2.54E+02 G
			144.23	5.272E-03	}	9.207E-01	1.06E+01 G
			323.87	3.705E-01	&	1.454E+00	1.17E+02 G
			5 of 6 peaks found				
RA-224	N	-1.4485E-01					
			240.99	-1.448E-01	%(	1.279E+00	2.63E+02 G
			1 of 1 peaks found				
AC-228	N	1.8327E-01					
			911.20	1.833E-01	%(	3.531E-01	5.87E+01 G
			968.97	2.459E-01	%	5.187E-01	6.39E+01 G
			338.32	1.833E-01	}	5.128E-01	3.35E-01 G
			3 of 3 peaks found				

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:07:45 Page 5
STL- St Louis Spectrum name: Ge7 background 11_21_07.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments

Ge7 background 11_21_07.Rpt

```
TH-234    N    2.8048E+00
                          63.29 2.548E+00 @(  4.984E-01 9.75E+00 G
                          92.59 3.027E+00 @(  4.785E-01 8.34E+00 G
                            2 of   2 peaks found

U-235     N    3.7275E-02
                         185.71 2.114E-02 }(  7.270E-02 1.03E+02 G
                         163.36 2.303E-01 }(  6.865E-01 8.97E+01 G
                         205.31 2.573E-02 }(  8.217E-01 9.44E+02 G
                            3 of   4 peaks found

Ra-226    N    2.8025E+00
                         186.21 2.803E+00 }(  1.021E+00 1.24E+01 G
                            1 of   1 peaks found

AM-241    T    1.4071E-02
                          59.54 1.407E-02 %(  6.420E-02 1.36E+02 G
                            1 of   1 peaks found
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
       failed one or more qualification tests.
   + - Peak activity higher than counting uncertainty range.
   - - Peak activity lower than counting uncertainty range.
   = - Peak outside analysis energy range.
   & - Calculated peak centroid is not close enough to the
       library energy centroid for positive identification.
   P - Peakbackground subtraction
   } - Peak is too close to another for the activity
       to be found directly.

   Nuclide Codes:                    Peak Codes:
   T - Thermal Neutron Activation    G - Gamma Ray
   F - Fast Neutron Activation       X - X-Ray
   I - Fission Product               P - Positron Decay
   N - Naturally Occurring Isotope   S - Single-Escape
   P - Photon Reaction               D - Double-Escape
   C - Charged Particle Reaction     K - Key Line
   M - No MDA Calculation            A - Not in Average
   R - Coincidence Corrected         C - Coincidence Peak
   H - Halflife limit exceeded

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:07:45 Page 6
STL- St Louis Spectrum name: Ge7 background 11_21_07.An1

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	Activity
I-129	29.78	642.	281.	0.007	24.80	2.147E-01
I-129	33.43	566.	89.	0.002	78.15	2.419E-01

PB-214	351.88	284.	69.	0.002	72.91	1.228E-01
TL-208	583.49	232.	58.	0.001	79.01	7.301E-02

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity Bq/sample	Uncertainty 2 Sigma Counting	MDA Bq/sample
Be-7	#A	-2.6217E-01	1.4087E+02%	6.113E-01
K-40	#A	-7.6775E-02	7.5553E+02%	1.012E+00
CO-60	#A	1.6295E-03	3.4689E+03%	9.943E-02
I-129	#A	2.2928E-01	1.0977E+02%	4.135E-01
CS-137	#A	2.5282E-02	2.2936E+02%	9.732E-02
TL-208	#A	7.3008E-02	7.9007E+01%	9.303E-02
PB-210		3.4696E+00	2.2051E+01%	7.203E-01
PB-212	#	2.4885E-01	4.7748E+01%	1.116E-01
PB-214	#A	1.2280E-01	7.2905E+01%	1.441E-01
BI-214	#A	1.2372E-01	8.3934E+01%	1.679E-01
RA-223	#A	5.2717E-03	4.0366E+03%	3.606E-01
RA-224	#A	-1.4485E-01	5.2575E+02%	1.279E+00
AC-228	#A	1.8327E-01	1.1731E+02%	3.531E-01
TH-234	#	2.8048E+00	1.2828E+01%	4.984E-01
U-235	A	3.7275E-02	1.7944E+02%	8.217E-01
Ra-226		2.8025E+00	2.7743E+01%	1.021E+00
AM-241	#A	1.4071E-02	2.7247E+02%	6.420E-02

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

S U M M A R Y

Total Activity (22.6 to 2000.2 keV) 9.363E+00 Bq/sample

Analyzed by: _____
403605

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:07:45 Page 7
STL- St Louis Spectrum name: Ge7 background 11_21_07.An1

Reviewed by: _____
Supervisor

Laboratory: STL- St Louis

Ge8 background 11_21_07.Rpt

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:20:03 Page 1
STL- St Louis Spectrum name: Ge8 background 11_21_07.An1

Sample description
Ge8 background 11_21_07

Spectrum Filename: C:\User\spectra\Ge8 bkgd\Ge8 background 11_21_07.A

Acquisition information
Start time: 21-Nov-2007 19:52:01
Live time: 43200
Real time: 44857
Dead time: 3.69 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: Ge8 air filter interp_122_quad.Clb
Ge8 air filter_interp>122<quad

Energy Calibration
Created: 06-Nov-2006 15:12:36
Zero offset: 0.014 keV
Gain: 0.250 keV/channel
Quadratic: -3.050E-09 keV/channel^2

Efficiency Calibration
Created: 06-Nov-2006 15:14:26
Knee Energy: 122.07 keV
Above the Knee: Quadratic Uncertainty = 1.61 %
Log(Eff): 5.381757E-01 + (-5.615420E-01*Log(E)) +
(-2.515438E-02*Log(E)^2)
Below the Knee: Interpolative Uncertainty = 0.00 %

Library Files
Main analysis library: long bkgd_pbc.lib
Library Match Width: 0.750
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G53W4.21
Start channel: 90 (22.52keV)
Stop channel: 8000 (2000.35keV)
Peak rejection level: 40.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00
Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) =
1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

Random error: 0.0000000E+00
Systematic error: 0.0000000E+00

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:20:03 Page 2
STL- St Louis Spectrum name: Ge8 background 11_21_07.An1
Page 1

Ge8 background 11_21_07.Rpt

Fraction Limit: 0.000%
Background width: average of three points.

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff 20.00000 %
Energy Calibration
Normalized diff: 0.1437

***** SUMMARY OF PEAKS IN RANGE *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/sampl	Nuc
25.85	439.	17.91	0.98	7.362E-02				
29.52	518.	9.97	1.11	7.364E-02	29.46	20.350	7.999E-01	I129
63.12	715.	5.42	0.88	7.330E-02	63.29	4.820	4.686E+00	TH234
84.28	175.	21.65	0.90	7.044E-02	83.79	25.180	2.282E-01	RA223
92.47	1398.	5.34	1.10	6.915E-02	92.59	5.570	8.402E+00	TH234
143.63	200.	22.54	1.08	5.660E-02	143.76	10.960	7.488E-01	U235
185.64	683.	7.50	1.00	4.588E-02	185.71	57.200	6.026E-01	U235
238.54	182.	14.96	1.31	3.726E-02	238.63	43.300	2.605E-01	PB212
295.25	68.	38.42	1.04	3.113E-02	295.22	19.300	PBC<MDA	PB214
338.25	38.	0.33	1.07	2.772E-02	338.28	2.790	1.569E+00	RA223
511.02	945.	5.33	2.38	1.941E-02				
598.49	154.	25.28	0.27	1.689E-02				
609.45	64.	35.63	1.28	1.662E-02	609.31	46.090	PBC<MDA	BI214
898.43	68.	24.98	0.28	1.175E-02				
1461.18	53.	25.04	1.84	7.527E-03	1460.83	10.670	1.526E+00	K40

********** UNIDENTIFIED PEAK SUMMARY **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
103.30	25.85	1327.	439.	0.010	25.33	0.977	CD-109	s
117.99	29.52	678.	518.	0.012	19.94	1.107	TE-132	l
742.34	185.64	388.	683.	0.016	15.00	0.995	U-235	l
2043.55	511.02	222.	945.	0.022	10.66	2.376	TL-208	s
2393.36	598.49	198.	154.	0.004	50.56	0.267	-	sM
3592.89	898.43	49.	68.	0.002	49.96	0.284	PA-234	s

D

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:20:03 Page 3
STL- St Louis Spectrum name: Ge8 background 11_21_07.An1

s - Peak fails shape tests.
D - Peak area deconvoluted.

Ge8 background 11_21_07.Rpt

L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: long bkgd_pbc.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
I-129	119.04	29.78	1112.	348.	0.008	0.09	0.812D
TH-234	252.37	63.12	262.	715.	0.017	10.84	0.876
RA-223	337.73	84.47	568.	111.	0.003	63.59	0.858s
TH-234	369.72	92.47	715.	1398.	0.032	10.68	1.100s
U-235	574.85	143.76	431.	140.	0.003	45.31	1.085D
RA-223	576.73	144.23	414.	22.	0.001	0.55	0.910D
Ra-226	744.60	186.21	403.	563.	0.013	13.14	0.946D
PB-212	953.86	238.54	176.	182.	0.004	29.92	1.309s
PB-214	1180.65	295.25	305.	68.	0.002	76.83	1.036s
AC-228	1352.89	338.32	315.	38.	0.001	0.67	1.071D
BI-214	2437.17	609.45	229.	64.	0.001	71.27	1.282s
K-40	5843.55	1461.18	61.	53.	0.001	50.07	1.843s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

Nuclide Name	Code	Average Activity Bq/sample	Peak Energy keV	Peak Activity Bq/sample	Code	MDA Value Bq/sample	COMMENTS
Be-7	C	-2.4489E-01					
			477.61	-2.449E-01 %(		7.495E-01	9.17E+01 G
			1 of 1 peaks found				
K-40	N	1.5256E+00					
			1460.83	1.526E+00 @(		1.130E+00	2.50E+01 G
			1 of 1 peaks found				
CO-60	F	-1.7283E-03					
			1332.50	-1.728E-03 &(		1.225E-01	2.02E+03 G
			1173.24	-2.257E-02 %		1.247E-01	1.62E+02 G
			2 of 2 peaks found				
I-129	I	2.8897E-01					
			29.78	2.890E-01 }		1.314E-01	4.30E-02 X
			33.61	1.305E-01 %		4.324E-01	9.98E+01 X

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:20:03 Page 4
STL- St Louis Spectrum name: Ge8 background 11_21_07.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
		39.57	2.890E-01 %(		4.905E-01	5.17E+01 G	
		34.61	6.433E-01 &		1.630E+00	7.66E+01 X	
		4 of 5 peaks found					
CS-137	I	3.6626E-02					

Ge8 background 11_21_07.Rpt
661.66 3.663E-02 &(1.022E-01 8.37E+01 G
1 of 1 peaks found

TL-208 N 4.6043E-02
583.19 4.604E-02 &(1.122E-01 7.35E+01 G
860.56 1.757E-01 % 7.705E-01 1.29E+02 G
2 of 2 peaks found

PB-210 N 4.2338E-01
46.54 4.234E-01 %(8.404E-01 6.03E+01 G
1 of 1 peaks found

PB-212 N 2.6051E-01
238.63 2.605E-01 (9.250E-02 1.50E+01 G
300.10 5.416E-01 % 1.886E+00 1.04E+02 G
2 of 2 peaks found

PB-214 N 1.5095E-01
351.93 9.453E-02 %(1.895E-01 6.09E+01 G
295.22 2.609E-01 *(3.237E-01 3.84E+01 G
242.00 2.345E-01 % 7.541E-01 9.65E+01 G
3 of 3 peaks found

BI-214 N 1.9362E-01
609.31 1.936E-01 *(2.211E-01 3.56E+01 G
1764.49 4.167E-01 % 7.719E-01 5.68E+01 G
1120.29 1.241E-01 % 7.957E-01 1.88E+02 G
768.36-3.096E-01 & 1.899E+00 1.80E+02 G
4 of 4 peaks found

RA-223 N 2.7553E-01
83.79 1.448E-01 * 1.483E-01 3.18E+01 X
269.46-8.982E-02 &(4.789E-01 1.59E+02 G
154.21 2.897E-02 & 7.497E-01 7.65E+02 G
144.23 2.755E-01 } 1.244E+00 2.77E-01 G
323.87 1.690E-02 % 1.742E+00 3.03E+03 G
5 of 6 peaks found

RA-224 N -7.0362E-02
240.99-7.036E-02 &(1.628E+00 6.86E+02 G
1 of 1 peaks found

AC-228 N 2.7845E-01
911.20 2.784E-01 %(4.056E-01 4.51E+01 G
968.97 3.615E-01 % 6.834E-01 5.76E+01 G
338.32 2.784E-01 } 6.330E-01 3.34E-01 G
3 of 3 peaks found

TH-234 N 4.6861E+00
63.29 4.686E+00 (5.121E-01 5.42E+00 G
92.59 8.402E+00 + 7.655E-01 5.34E+00 G
2 of 2 peaks found

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:20:03 Page 5
STL- St Louis Spectrum name: Ge8 background 11_21_07.An1

Nuclide Ave activity Energy Activity Code Peak MDA Comments

U-235 N 1.2819E-01
185.71 5.276E-02 }(1.331E-01 7.63E+01 G
143.76 5.218E-01 }(3.715E-01 2.27E+01 G
2 of 4 peaks found

Ra-226 N 7.9373E+00
186.21 7.937E+00 }(1.356E+00 6.57E+00 G
1 of 1 peaks found

AM-241 T -7.7932E-03
59.54-7.793E-03 &(9.695E-02 3.70E+02 G
1 of 1 peaks found

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	Activity
I-129	29.78	1112.	348.	0.008	0.09	2.890E-01
RA-223	84.47	568.	111.	0.003	63.59	1.448E-01
RA-223	144.23	414.	22.	0.001	0.55	2.755E-01
PB-214	295.25	305.	68.	0.002	76.83	2.609E-01
BI-214	609.45	229.	64.	0.001	71.27	1.936E-01

ORTEC g v - i (3135) Env32 G53W4.21 22-NOV-2007 08:20:03 Page 6
STL- St Louis Spectrum name: Ge8 background 11_21_07.An1

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
K-40		1461.18	61.	53.	0.001	50.07	1.526E+00

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq/sample	Uncertainty 2 Sigma Counting	MDA Bq/sample

Be-7	#A	-2.4489E-01	1.8340E+02%	7.495E-01
K-40	#	1.5256E+00	5.0072E+01%	1.130E+00
CO-60	#A	-1.7283E-03	4.0408E+03%	1.225E-01
I-129	#A	2.8897E-01	1.0349E+02%	4.905E-01
CS-137	#A	3.6626E-02	1.6736E+02%	1.022E-01
TL-208	#A	4.6043E-02	1.4698E+02%	1.122E-01
PB-210	#A	4.2338E-01	1.2054E+02%	8.404E-01
PB-212		2.6051E-01	2.9920E+01%	9.250E-02
PB-214	#A	1.5095E-01	7.1988E+01%	1.895E-01
BI-214	#A	1.9362E-01	7.1268E+01%	2.211E-01
RA-223	#A	2.7553E-01	4.3437E+01%	4.789E-01
RA-224	#A	-7.0362E-02	1.3722E+03%	1.628E+00
AC-228	#A	2.7845E-01	9.0216E+01%	4.056E-01
TH-234		4.6861E+00	1.0837E+01%	5.121E-01
U-235	#A	1.2819E-01	4.5306E+01%	1.021E+00
Ra-226		7.9373E+00	1.4531E+01%	1.356E+00
AM-241	#A	-7.7932E-03	7.3956E+02%	9.695E-02

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (22.5 to 2000.3 keV) 1.301E+01 Bq/sample

Analyzed by: _____
403605

Reviewed by: _____
Supervisor

Laboratory: STL- St Louis

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Run Log

Logbook No.: 3021

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
12/23/7	7356122	KSIKISIMD	1	30min	tumbler	O
		KSIKFPIMC	3			
		KSKIFTIMC	4			
		KSIOVIMC	5			
		KSIKFOIMC	7			
		KSIKFIIMC	1			
		KSIKF5IMC	3			
		KSKF7IMC	4			
		KSKF8IMC	5			
		KSIKF9IMC	7			
		KSIKGOIMC	1			
		KSIKGFIMC	3			
		KSKGGIMC	4			
		KSOKCIAA	5			
		KSOKCIMC	7			
12/26/7	Daily	PSha + Soil	1,3-8	20+30min	QA	SE
	7357395	KC6QE1AD	1	30min	tumbler	
		KC6QL1AD	3			
		KDCLL1AA	4			
		KDCLL1AC	5			
	M070859	1L0307-1	7			
		-2	1			
		-3	3			
		-4	4			
		-5	5			
	7337395	KC6QE1AE	7			
	M070858	2L1107-6	7			

Reviewed By: SE Date: 12/26/7

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.: 3021

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
12/26/17	7353500	KEFØW1AG	5	1.5 hrs	1L Mann	SS
	MO70859	1L7307-6	1	30 min	tuna can	
		-7	3			
		-8	4			
12/26/17	7355392	KEGTX1AA	7	2hrs	Solid 25mL	LW
	7346346	KDWLR1AH	1	30min	Tuna can	
		KDWL81AH	3			
		KDWL91AH	4			
		KDOWQ1AA	1			
		KDWLR1CK	3			
		DOOWQ1AC	4			
	7353500	KEGTE1AA	5	1.5hrs	1L mem	
	MO70858	2L1707-3	1	30min	Tuna can	
		-4	3			
		-7	4			
		-8	1			
		2L1807-5	4			
		-6	5			
		-9	7			
	7355392	KENWG1AA	3	2hrs	25mL Solid	
	7360292	1KEVC31AC	1	30min	tuna can	C
		1KEVC71AC	4			
		1KEVCD1AC	5			
		1KEVCE1AC	7			
		1KEVC31AD	4			
		1KEVD1V1AC	1			
		1KEVCD21AC	5			

Reviewed By: _____ Date: 12/26/17

Logbook No.: 3021

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
12/26/7	7360242	KEKDxIAC	7	30 min	Tum in	e
		KEKD4IAC	1			LW
		KEKD6IAC	3			
		KEKECIAC	4			
		KEKEBIAC	5			
		KEKEMIAC	7			
		KEKEWIAC	1			e
		KEKE1IAC	3			
		KEKE2IAC	4			
		KEKE4IAC	5			
		KEKE5IAC	7			
		KEKG1IAA	1			
	—	KEKG4IAC	3			
	7337325	KDLL1AC-AC	4			
	7360274	KEKG2IAC	5			
		KEKH+M1AC	7			
		KEKH+Q1AC	1			
		KEKH+R1AC	3			
		KEKHV1AC	4			
		KEKHX1AC	5			
		KEKG21AD	7			
		KEKH11AC	1			
		KEKH31AC	3			
		KEKH41AC	4			
		KEKH51AC	5			
		KEKH61AC	7			
		KEKH91AC	1			

Reviewed By: _____ Date: 12/26/7

Logbook No.: 3021

TESTAMERICA
St. Louis

Gamma Counting Runlog

Date	Batch #	Sample #	Detector	Count Time	Geometry	Initials
12/26/7	7360294	KE1CJC1AC	3	30 min	tube cm	E
		KE1CJE1AC	4			
		KE1CJG1AC	5			
		KE1CJT1AC	7			
		KE1CLC1AC	1			
		KERHL1AA	3			
		KERHL1AC	4			
	7357015	KEKAJ1AG	7	2hrs	1L Mann	
	↓	KEQK01AC	5	1	↓	
1/8/7	Daily	Bkg + Source	1,3-8	20+30min	CJA	EE
	7340388	KDHPX1AC	1	30min	Tunacan	
		KDHP31AC	3			
		KDHP41AC	4			
		KDHP61AC	5			
		KDHP71AC	7			
		KDHPX4AE	4			
		KALDN1AA	5			
		KDLDN1AC	7			
	7340390	KDAØ41AE	1			
		KDAØ81AE	3			
		KDG5C1AE	1			
		KDAØ41AF	3			
		KDLAØ1AA	4			
	7357015	KEKAJ1AF	5	3hrs	1L Mann	
	↓	KEQKØ1AA	7	2hrs	↓	
	7340390	KDLDØ1AC	1	30min	Tuna Can	

Reviewed By:_____ Date:_____

Sample Suffixes: B=Blank; C=Laboratory Control Sample; L=Laboratory Control Sample Duplicate; S=Matrix Spike; D=Matrix Spike Duplicate; X=Sample Duplicate.

C8137 1/4/08

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Prep Report for Gamma Spectroscopy

Batch: 7360292 **Prep Analyst:** 403135

SampID	WRKNO	Aliquot	Dilution	Adjusted Aliquot	GeometryDesc
F7L200260-001	KEKC31AC	2.9480E+002 g	1.00	2.9480E+002 g	Tuna Can
F7L200260-001X	KEKC31AD	2.9480E+002 g	1.00	2.9480E+002 g	Tuna Can
F7L200260-002	KEKC71AC	3.8350E+002 g	1.00	3.8350E+002 g	Tuna Can
F7L200260-003	KEKDC1AC	3.2550E+002 g	1.00	3.2550E+002 g	Tuna Can
F7L200260-004	KEKDE1AC	3.7860E+002 g	1.00	3.7860E+002 g	Tuna Can
F7L200260-005	KEKDK1AC	3.8100E+002 g	1.00	3.8100E+002 g	Tuna Can
F7L200260-006	KEKDR1AC	3.7740E+002 g	1.00	3.7740E+002 g	Tuna Can
F7L200260-007	KEKDX1AC	3.6380E+002 g	1.00	3.6380E+002 g	Tuna Can
F7L200260-008	KEKD41AC	3.7240E+002 g	1.00	3.7240E+002 g	Tuna Can
F7L200260-009	KEKD81AC	3.3480E+002 g	1.00	3.3480E+002 g	Tuna Can
F7L200260-010	KEKEC1AC	3.5650E+002 g	1.00	3.5650E+002 g	Tuna Can
F7L200260-011	KEKEG1AC	3.4250E+002 g	1.00	3.4250E+002 g	Tuna Can
F7L200260-012	KEKEM1AC	3.1920E+002 g	1.00	3.1920E+002 g	Tuna Can
F7L200260-013	KEKEW1AC	3.6300E+002 g	1.00	3.6300E+002 g	Tuna Can
F7L200260-014	KEKE11AC	3.7840E+002 g	1.00	3.7840E+002 g	Tuna Can
F7L200260-015	KEKE21AC	3.5440E+002 g	1.00	3.5440E+002 g	Tuna Can
F7L200260-016	KEKE41AC	3.1370E+002 g	1.00	3.1370E+002 g	Tuna Can

SampID	WRKNO	Aliquot	Dilution	Adjusted_Aliquot	GeometryDesc
F7L200260-017	KEKE51AC	3.4880E+002 g	1.00	3.4880E+002 g	Tuna Can
F7L260000-292B	KER4G1AA	3.7280E+002 g	1.00	3.7280E+002 g	Tuna Can
F7L260000-292C	KER4G1AC	3.5120E+002 g	1.00	3.5120E+002 g	Tuna Can

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
F7L260000-292C	GV Tuna Can	AM-241	2.289E+002 dpm/g	351.20 g	4/1/2004 12:00:00AM	1.031E+002 pCi/g
F7L260000-292C	GV Tuna Can	CO-60	1.392E+002 dpm/g	351.20 g	4/1/2004 12:00:00AM	6.272E+001 pCi/g
F7L260000-292C	GV Tuna Can	CS-137	8.884E+001 dpm/g	351.20 g	4/1/2004 12:00:00AM	4.002E+001 pCi/g

Spiked By | Spike Verified By | Spike Date

Standard Operating Procedures

SOPNumber	Title	Revision
☐ STL-RC-0025	Preparation Of Samples For Gamma Spectroscopy	4.00
☐ STL-RD-0101	Daily Operations Of A Germanium Spectroscopy System	6.00
☐ STL-RD-0103	Maintenance Of The Germanium Spectroscopy System	0.00

Reviewed By: VR — Review Date: 12-27-07

Analyst/Relenquished By: [signature] — Release Date: 12/26/07

Received By: [signature] — Receipt Date: 12/26/07

DB Analysis ID: 33,035

Sample Description: 7360292_KEKC31AC_F7L200260-001

Spectrum Filename: KEKC31AC.An1

Acquisition Information

Start Time:	26-Dec-2007 2:08:00PM		
Live Time:	1800.00	Real Time:	1810.38
Dead Time:	0.57 %		
Detector ID:	1		

Detector System: Ge 1 SN/242

Calibration

Description:	Ge1 Tunacan 74139-334 1_15_07		
Filename:	C:\User\Calibrations\Ge1 calibrations\Ge1 Tunacan polynomial 01_15_07.Clb		
Energy Created:	15-Jan-2007 5:43:37PM	Efficiency Created:	15-Jan-2007 5:44:16PM
Zero Offset:	0.212 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.71 keV
Stop Channel:	8,000 for an energy of 1999.84 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge1 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.1158

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
358.49	89.84	105.00	70.00	0.039	26.73	0.850	PB-214	M
743.21	186.02	110.00	188.00	0.104	14.09	0.840	PA-234	s
268.25	67.28	272.17	95.83	0.053	39.20	0.331	TA-182	s
297.75	74.65	304.00	199.00	0.111	19.24	0.770	PB-214	
307.63	77.12	166.83	321.17	0.178	8.77	0.850	PB-214	
348.26	87.28	99.84	165.16	0.092	11.57	0.836	PB-214	

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.73	46.65	143.46	70.54	0.039	23.58	0.641	
AM-241	1	238.49	59.84	204.98	11.98	0.007	171.50	0.824	s
TH-234	1	252.41	63.32	157.90	85.10	0.047	17.67	0.987	
EU-155	1	343.17	86.01	402.18	-67.72	-0.038	43.61	0.849	s
TH-234	1	369.50	92.59	204.61	70.39	0.039	17.13	0.855	D
U-235	1	372.54	93.35	176.97	12.32	0.007	18.40	0.855	s D
AC-228	1	372.54	93.35	227.93	72.38	0.040	1.97	0.855	D
EU-155	1	420.25	105.28	108.86	19.08	0.011	80.66	0.866	s
EU-152	1	482.37	120.81	160.22	-1.74	-0.001	1033.21	0.881	s
EU-154	1	491.64	123.13	175.41	12.24	0.007	155.71	0.882	s
Pa-234	1	529.03	132.47	172.82	-3.73	-0.002	501.28	0.890	
U-235	1	572.32	143.30	155.94	22.75	0.013	68.66	0.901	s
U-235	1	652.80	163.42	151.58	11.53	0.006	121.67	0.919	s
U-235	1	809.88	202.69	70.56	1.61	0.001	316.45	0.957	
PB-212	1	953.26	238.53	113.92	333.08	0.185	7.77	1.046	
RA-224	1	961.70	240.64	400.16	-0.28	0.000	10098.99	0.989	
PB-214	1	966.26	241.78	73.69	185.31	0.103	10.87	0.950	s
TL-208	1	1108.76	277.41	26.00	32.00	0.018	32.78	0.386	s
I-131	1	1134.04	283.73	86.08	4.95	0.003	268.61	1.028	s
PB-214	1	1179.65	295.13	67.88	265.13	0.147	8.53	0.960	
PB-212	1	1201.42	300.57	45.50	43.50	0.024	36.22	0.438	s
AC-228	1	1353.09	338.49	49.91	111.09	0.062	16.44	0.591	s
EU-152	1	1371.14	343.00	45.20	-0.49	0.000	1946.37	1.081	s
PB-214	1	1406.06	351.73	56.99	426.01	0.237	5.98	0.986	
I-131	1	1465.07	366.48	38.04	1.05	0.001	833.35	1.099	s
BE-7	1	1910.42	477.81	40.54	-0.85	0.000	1069.65	1.198	s
CS-134	1	2252.13	563.24	23.01	0.00	0.000	678.37	1.273	s
CS-134	1	2276.47	569.32	33.68	-1.89	-0.001	-41.71	1.278	s D
Pa-234	1	2277.07	569.47	22.68	-0.67	0.000	-138.36	1.278	s D
TL-208	1	2330.44	582.81	38.92	114.08	0.063	14.15	1.083	
CS-134	1	2427.45	607.06	61.81	-11.47	-0.006	101.35	1.309	s
BI-214	1	2435.63	609.11	38.29	346.71	0.193	6.62	1.287	
I-131	1	2541.90	635.67	26.36	8.01	0.004	97.34	1.337	s
CS-137	1	2645.51	661.57	32.31	74.52	0.041	15.83	1.358	
EU-154	1	2888.46	722.30	30.66	4.35	0.002	186.34	1.411	s
BI-212	1	2908.08	727.21	28.64	14.93	0.008	56.92	1.414	s
PA-234M	1	3066.58	766.83	34.36	0.32	0.000	2588.50	1.447	s
EU-152	1	3119.14	779.97	19.27	0.34	0.000	1808.10	1.458	s
BI-212	1	3141.52	785.56	26.60	6.49	0.004	119.12	1.463	s
CS-134	1	3182.76	795.87	44.31	0.00	0.000	941.38	1.472	s
CS-134	1	3201.34	800.51	31.95	-0.21	0.000	3843.13	1.477	s
TL-208	1	3442.03	860.68	7.67	30.33	0.017	27.06	0.382	s
EU-154	1	3492.78	873.36	40.00	-3.39	-0.002	269.07	1.537	s
Pa-234	1	3522.26	880.73	33.12	0.13	0.000	6307.49	1.543	s
Pa-234	1	3537.28	884.49	26.60	-1.09	-0.001	674.13	1.546	s

AC-228	1	3643.90	911.14	8.81	105.19	0.058	10.37	0.743	s
Pa-234	1	3783.46	946.02	61.09	0.00	0.000	1105.37	1.598	s
EU-152	1	3855.52	964.03	33.95	7.04	0.004	123.03	1.613	s
AC-228	1	3876.02	969.16	3.25	55.75	0.031	13.02	0.781	s
EU-154	1	3994.98	998.89	24.01	0.27	0.000	2599.63	1.640	s
PA-234M	1	4002.16	1000.69	28.59	1.12	0.001	679.71	1.643	s
EU-154	1	4021.57	1005.54	27.81	0.01	0.000	84616.11	1.647	s
EU-152	1	4447.80	1112.07	81.78	0.00	0.000	1278.90	1.735	s
BI-214	1	4480.61	1120.27	34.86	45.91	0.026	20.29	1.741	s
CO-60	1	4692.51	1173.24	43.08	0.00	0.000	928.17	1.784	s
EU-154	1	5100.14	1275.12	31.55	-0.96	-0.001	830.75	1.866	s
CO-60	1	5330.63	1332.73	29.07	-4.64	-0.003	170.83	1.912	s
EU-152	1	5630.13	1407.58	11.45	10.83	0.006	53.63	1.972	s
K-40	1	5842.27	1460.60	12.54	362.46	0.201	5.16	1.837	
BI-214	1	7056.01	1763.94	18.20	35.00	0.019	20.50	2.246	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels		Analysis Code	MDA Value Becquerels	Code	Comments	
PA-234	N	1	6.688E+000	1001.00	6.688E+000	%	(	1.645E+002G		1.6E+012	.84
			6.688E+000	766.41	4.515E+000	%		4.223E+002G		1.6E+012	.29
AM-241	T	1	5.790E-001	59.54	5.790E-001	*	(	3.356E+000G		1.6E+005	35.90
BI-212	N	1	5.036E+000	727.33	5.036E+000	%	(	9.326E+000G		7.0E+002	11.82
			5.036E+000	785.51	2.480E+001	%		1.023E+002G		7.0E+002	1.10
TL-208	F N	1	4.609E+000	583.02	4.609E+000		(P	1.284E+000G		7.0E+002	84.50
			4.609E+000	277.28	1.007E+001	+		8.334E+000G		7.0E+002	6.31
			4.609E+000	860.56	1.095E+001	+		5.635E+000G		7.0E+002	12.42
PB-210	N	1	4.456E+001	46.54	4.456E+001		(P	3.697E+001G		8.1E+003	4.25
			-4.301E-002	121.78	-7.997E-002	&		2.840E+000G		4.9E+003	28.58
			-4.301E-002	778.92	1.115E-001	&		7.487E+000G		4.9E+003	12.94
			-4.301E-002	964.11	2.338E+000	%		9.923E+000G		4.9E+003	14.61
			-4.301E-002	1112.07	0.000E+000	%		1.766E+001G		4.9E+003	13.64
			-4.301E-002	1408.00	3.300E+000	%		5.631E+000G		4.9E+003	21.00
EU-152	T F	1	-4.301E-002	344.29	-4.301E-002	%	(	2.989E+000G		4.9E+003	26.50
CS-134	T F I	1	-4.115E-001	604.71	-4.115E-001	&	(	1.412E+000G		7.5E+002	97.62
			-4.115E-001	795.87	0.000E+000	&		1.674E+000G		7.5E+002	85.53
			-4.115E-001	569.32	-4.115E-001	%		6.493E+000G		7.5E+002	15.38
			-4.115E-001	801.95	-1.023E-001	%		1.427E+001G		7.5E+002	8.69
			-4.115E-001	563.24	0.000E+000	&		9.998E+000G		7.5E+002	8.35
CS-137	T F I	1	3.264E+000	661.66	3.264E+000		(	1.279E+000G		1.1E+004	85.21
I-131	T F I	1	3.131E-002	364.48	3.131E-002	%	(	9.344E-001G		8.0E+000	81.70
			3.131E-002	284.30	1.632E+000	%		1.514E+001G		8.0E+000	6.14
			3.131E-002	636.97	4.057E+000	%		1.350E+001G		8.0E+000	7.17
TH-234	N	1	2.894E+001	63.29	2.894E+001		(P	2.083E+001G		1.6E+012	4.82
			2.894E+001	92.59	1.689E+001	-	P	1.664E+001G		1.6E+012	5.58
CO-60	T F	1	-2.846E-001	1332.50	-2.846E-001	%	(	1.708E+000G		1.9E+003	99.98
			-2.846E-001	1173.24	0.000E+000	%		1.861E+000G		1.9E+003	99.90
U-235	N	1	2.834E+000	143.79	2.834E+000	*	(P	7.587E+000G		2.6E+011	10.96
			2.834E+000	205.33	5.197E-001	%	P	1.355E+001G		2.6E+011	5.01
			2.834E+000	163.38	3.256E+000	%	P	1.697E+001G		2.6E+011	5.08
			2.834E+000	93.35	2.834E+000	!	E	1.489E+001X		2.6E+011	5.81
			-2.760E-001	883.24	-5.197E-001	%		1.272E+001G		1.6E+012	9.60
			-2.760E-001	880.53	9.805E-002	&		2.242E+001G		1.6E+012	6.00
Pa-234	N	1	-2.760E-001	131.29	-2.760E-001	%	(	4.735E+000G		1.6E+012	18.00
			-2.760E-001	569.47	-2.760E-001	%		1.019E+001G		1.6E+012	8.20
			-2.760E-001	946.02	0.000E+000	&		1.399E+001G		1.6E+012	13.40
			2.739E+001	295.09	2.855E+001		(P	4.425E+000G		5.8E+005	19.30
			2.739E+001	242.00	4.503E+001	*	P	1.038E+001G		5.8E+005	7.43
PB-214	N	1	2.739E+001	351.93	2.680E+001		(P	2.383E+000G		5.8E+005	37.60
BI-214	N	1	2.649E+001	609.31	2.649E+001		(P	2.410E+000G		5.8E+005	46.09
			2.649E+001	1120.29	1.642E+001	-	P	1.081E+001G		5.8E+005	15.10
			2.649E+001	1764.49	1.745E+001	-	P	1.127E+001G		5.8E+005	15.40
BE-7	N P C	1	-2.380E-001	477.60	-2.380E-001	&	(	9.107E+000G		5.3E+001	10.52

K-40	N	1	2.237E+002	1460.83	2.237E+002		(P	1.186E+001G		4.7E+011	10.67
AC-228	N	1	1.740E+001	911.07	1.692E+001	*	(P	2.660E+000G		2.1E+003	29.00
			1.740E+001	968.97	1.555E+001		(P	3.100E+000G		2.1E+003	17.46
			1.740E+001	338.32	2.125E+001	*	(P	6.816E+000G		2.1E+003	12.01
			1.740E+001	93.35	1.740E+001		E	1.756E+001X	A	2.1E+003	5.56
PB-212	N	1	1.376E+001	238.63	1.376E+001		(P	2.166E+000G		7.0E+002	43.30
			1.376E+001	300.03	2.789E+001	*		2.189E+001G		7.0E+002	3.28
EU-154 T F I		1	-1.253E+000	873.23	-1.253E+000	%	(	1.188E+001G		3.1E+003	12.27
			-1.253E+000	123.10	3.952E-001	%		2.081E+000G		3.1E+003	40.79
			-1.253E+000	1274.54	-1.625E-001	%		4.871E+000G		3.1E+003	35.19
			-1.253E+000	723.36	8.543E-001	%		5.601E+000G		3.1E+003	20.22
			-1.253E+000	1004.77	2.445E-003	%		7.569E+000G		3.1E+003	18.01
			-1.253E+000	996.33	1.253E-001	%		1.197E+001G		3.1E+003	10.60
RA-224	N	1	-1.230E-001	240.99	-1.230E-001	%	(	4.212E+001G		7.0E+002	4.10
EU-155 T F I		1	1.180E+000	105.31	1.180E+000	%	(	3.174E+000G		1.8E+003	21.20
			1.180E+000	86.54	-3.016E+000	%		4.283E+000G		1.8E+003	30.70

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	<	-2.380E-001	-2.383E-001	1,069.65	1,069.65	9.107E+000
K-40		2.237E+002	2.237E+002	5.34	6.09	1.186E+001
CO-60	<	-2.846E-001	-2.846E-001	170.83	170.86	1.708E+000
I-131	<	3.131E-002	3.155E-002	833.35	833.35	9.344E-001
EU-154	<	-1.253E+000	-1.253E+000	269.07	269.09	1.188E+001
CS-134	<	-4.115E-001	-4.115E-001	101.35	101.39	1.412E+000
CS-137	<	3.264E+000	3.264E+000	15.83	16.09	1.279E+000
EU-152	<	-4.301E-002	-4.301E-002	1,946.37	1,946.37	2.989E+000
EU-155	<	1.180E+000	1.180E+000	80.66	80.73	3.174E+000
TL-208		4.609E+000	4.609E+000	15.26	15.53	1.284E+000
BI-212	<	5.036E+000	5.036E+000	56.92	56.99	9.326E+000
BI-214		2.649E+001	2.649E+001	6.84	7.43	2.410E+000
TH-234		2.894E+001	2.894E+001	25.33	25.60	2.083E+001
PA-234M	<	6.688E+000	6.688E+000	679.71	679.72	1.645E+002
U-235	<	2.834E+000	2.834E+000	79.95	80.01	7.587E+000
RA-224	<	-1.230E-001	-1.230E-001	10,098.99	10,098.99	4.212E+001
PB-210		4.456E+001	4.456E+001	33.43	33.65	3.697E+001
PB-212		1.376E+001	1.376E+001	8.31	8.83	2.166E+000
PB-214		2.739E+001	2.739E+001	5.38	6.10	2.383E+000
AC-228		1.740E+001	1.740E+001	8.18	8.67	2.660E+000
Pa-234	<	-2.760E-001	-2.760E-001	501.28	501.29	4.735E+000
AM-241	<	5.790E-001	5.790E-001	171.50	171.54	3.356E+000

= All peaks for activity calculation had bad shape

Total Activity (37.71 to 1,999.84 keV) 386.83 Bq/sample

Analyzed by: _____

403605

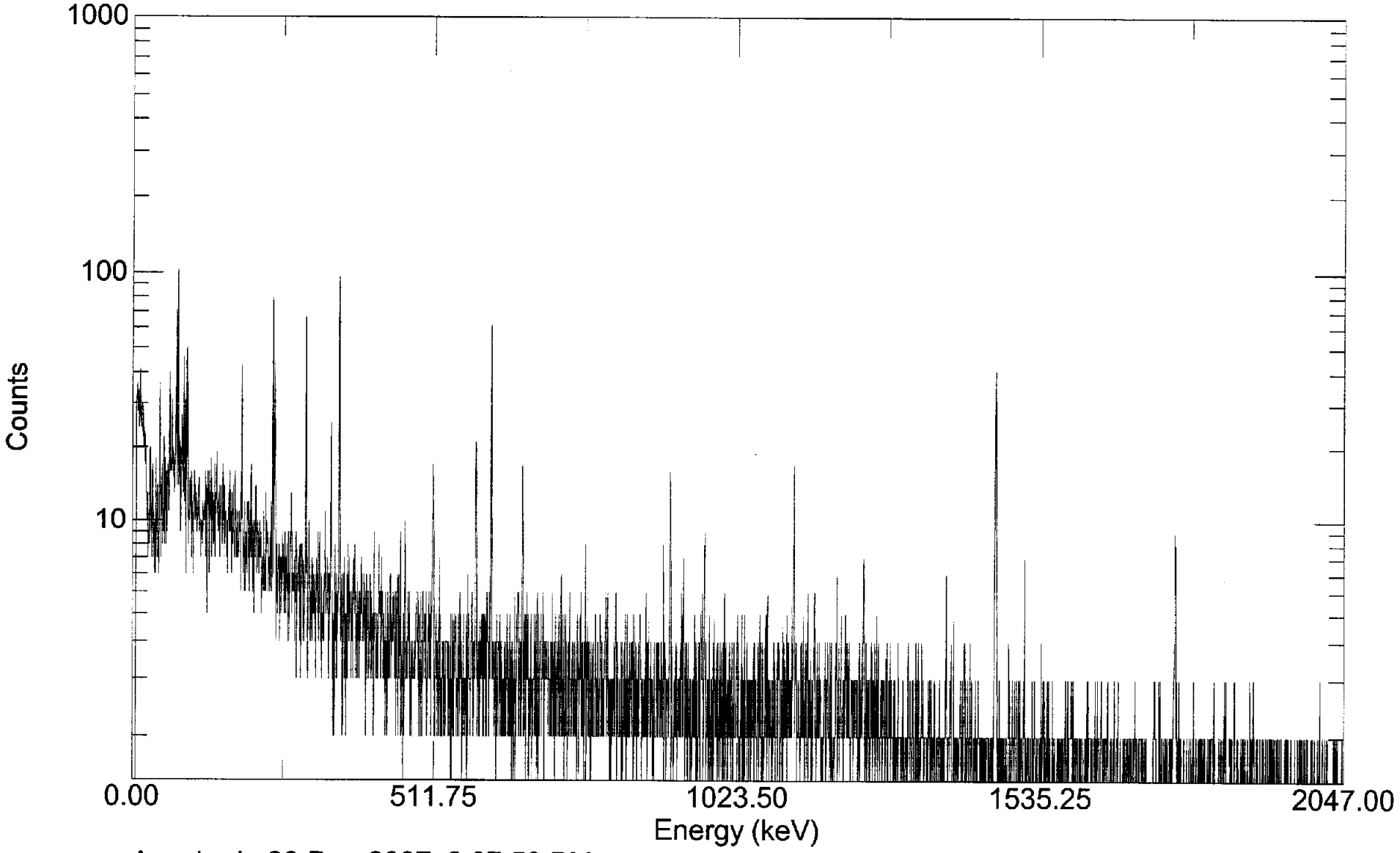
Reviewed by: _____

Supervisor

Laboratory: Test America

KEKC31AC

7360292_KEKC31AC_F7L200260-001



Acquired: 26-Dec-2007 2:07:59 PM
File: C:\User\spectra\KEKC31AC.spc
Detector: #0 Ge 1 SN/242

Real Time: 1810.38 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,040

Sample Description: 7360292_KEKC31AD_F7L200260-001X

Spectrum Filename: KEKC31AD.An1

Acquisition Information

Start Time:	26-Dec-2007 2:47:13PM		
Live Time:	1800.00	Real Time:	1804.44
Dead Time:	0.25 %		
Detector ID:	4		

Detector System: Ge 4 SN/181

Calibration

Description:	Ge4_TunaCanCal_74139_334_05_15_07		
Filename:	C:\User\Calibrations\Ge4 Post 09_07_07(Ge6)\Ge4_TunaCanCal_74139_334_05_15_(		
Energy Created:	08-May-2007 1:28:13PM	Efficiency Created:	15-May-2007 10:05:02AM
Zero Offset:	0.017 keV	Gain:	0.250 keV/Channel

Library 1 File:	mmr06 short.lib	Library based peak stripping used.
Library 2 File:	Null.Lib	
Library 3 File:	Null.Lib	

Analysis Parameters

Start Channel:	150 for an energy of 37.53 keV
Stop Channel:	8,000 for an energy of 1998.47 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge4 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.2654

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
212.26	53.10	67.17	53.83	0.030	30.33	0.741	LU-177	
253.08	63.32	160.01	16.99	0.009	108.08	0.521		s
298.88	74.77	237.00	170.00	0.094	19.67	1.137	BI-207	s
308.46	77.17	128.33	265.67	0.148	9.44	0.910	PB-214	
348.11	87.08	122.87	99.13	0.055	18.73	0.734	PB-214	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.51	46.42	113.81	69.19	0.038	23.88	0.412	s
AM-241	1	237.03	59.30	167.57	-6.57	-0.004	281.36	0.830	s
TH-234	1	252.69	63.22	207.85	41.99	0.023	36.22	0.834	s
EU-155	1	355.97	89.05	81.11	42.24	0.023	33.85	0.854	s
TH-234	1	370.84	92.77	244.14	43.62	0.024	33.30	0.859	s
U-235	1	373.18	93.35	201.01	11.03	0.006	24.33	0.860	s D
AC-228	1	373.18	93.35	288.24	0.00	0.000	2049.39	0.860	s D
EU-155	1	421.74	105.50	105.03	13.25	0.007	112.80	0.871	s
EU-152	1	488.85	122.28	119.15	-1.39	-0.001	1112.19	0.885	s
EU-154	1	493.15	123.35	133.78	-0.09	0.000	17332.70	0.886	s
Pa-234	1	524.56	131.21	124.70	16.68	0.009	97.79	0.894	s
U-235	1	575.20	143.87	145.13	20.83	0.012	84.68	0.904	s
U-235	1	651.59	162.97	72.80	2.84	0.002	428.62	0.922	s
U-235	1	816.64	204.25	76.68	-0.85	0.000	1467.83	0.958	s
PB-212	1	953.63	238.50	51.29	231.71	0.129	8.10	0.963	
RA-224	1	959.34	239.93	351.46	-90.07	-0.050	31.27	0.988	
PB-214	1	966.69	241.77	69.00	110.00	0.061	19.14	0.956	s
TL-208	1	1109.36	277.44	49.27	10.35	0.006	100.85	1.019	s
I-131	1	1137.04	284.36	63.08	-5.18	-0.003	221.27	1.025	s
PB-214	1	1179.10	294.88	41.04	219.96	0.122	9.14	0.995	
PB-212	1	1198.37	299.70	18.67	35.33	0.020	28.83	0.618	s
AC-228	1	1351.76	338.05	31.61	53.16	0.030	20.29	1.071	
EU-152	1	1368.11	342.13	38.65	1.36	0.001	649.87	1.076	s
PB-214	1	1406.08	351.63	20.24	313.76	0.174	6.10	0.909	s
I-131	1	1456.39	364.21	26.70	5.71	0.003	134.74	1.092	s
BE-7	1	1910.13	477.63	27.87	-1.60	-0.001	473.09	1.185	s
CS-134	1	2265.75	566.52	16.27	0.41	0.000	1411.59	1.254	s
CS-134	1	2276.94	569.32	30.46	-0.36	0.000	-37.70	1.259	s D
Pa-234	1	2277.54	569.47	27.70	2.48	0.001	59.40	1.259	s D
TL-208	1	2330.40	582.68	14.68	88.32	0.049	13.76	1.166	
CS-134	1	2427.35	606.91	23.49	-2.19	-0.001	320.06	1.286	s
BI-214	1	2435.37	608.92	9.25	227.75	0.127	6.83	1.241	
I-131	1	2550.42	637.67	23.56	-3.63	-0.002	196.30	1.312	s
CS-137	1	2644.81	661.26	3.83	86.17	0.048	11.87	1.402	s
EU-154	1	2892.04	723.05	29.89	-2.29	-0.001	344.61	1.378	s
BI-212	1	2907.52	726.91	16.48	12.77	0.007	52.96	1.381	s
PA-234M	1	3072.30	768.09	20.34	9.92	0.006	71.70	1.411	s
EU-152	1	3115.60	778.91	18.55	2.04	0.001	306.51	1.420	s
BI-212	1	3142.53	785.64	19.98	3.31	0.002	198.98	1.425	s
CS-134	1	3183.47	795.87	43.43	0.00	0.000	932.02	1.433	s
CS-134	1	3203.51	800.87	20.35	1.42	0.001	458.58	1.437	s
TL-208	1	3441.52	860.34	17.65	6.78	0.004	95.67	1.481	s
EU-154	1	3493.09	873.23	10.48	0.00	0.000	457.91	1.490	s
Pa-234	1	3523.45	880.81	19.09	-0.80	0.000	780.39	1.495	s
Pa-234	1	3544.65	886.11	11.92	-0.21	0.000	2346.66	1.497	s

AC-228	1	3643.28	910.75	14.81	48.00	0.027	18.35	1.518	s
Pa-234	1	3783.84	945.87	22.86	-1.92	-0.001	358.61	1.543	s
EU-152	1	3850.64	962.56	25.22	0.15	0.000	4722.86	1.556	s
AC-228	1	3874.74	968.58	22.18	28.45	0.016	29.99	1.559	s
EU-154	1	3986.91	996.60	23.89	-1.18	-0.001	594.69	1.579	s
PA-234M	1	4003.49	1000.74	17.50	5.46	0.003	116.49	1.582	s
EU-154	1	4019.80	1004.82	18.47	3.29	0.002	192.82	1.585	s
EU-152	1	4445.62	1111.18	15.50	1.74	0.001	328.22	1.659	s
BI-214	1	4480.00	1119.77	4.65	69.35	0.039	11.62	1.467	
CO-60	1	4698.41	1174.32	22.45	-0.31	0.000	2190.37	1.701	s
EU-154	1	5099.74	1274.54	62.88	0.00	0.000	1121.43	1.768	s
CO-60	1	5332.56	1332.68	11.30	3.03	0.002	167.25	1.806	s
EU-152	1	5629.13	1406.73	13.93	-0.35	0.000	1497.19	1.854	s
K-40	1	5843.55	1460.27	2.83	207.17	0.115	6.90	1.495	
BI-214	1	7059.06	1763.68	0.00	35.00	0.019	16.90	0.998	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels		Peak Analysis Code		Peak MDA Value Becquerels	MDA Code	Comments	
BI-212	N	1	6.639E+000	727.33	6.639E+000	%	(		1.124E+001G		7.0E+002	11.82
			6.639E+000	785.51	1.971E+001	&			1.403E+002G		7.0E+002	1.10
BE-7	N P C	1	-6.483E-001	477.60	-6.483E-001	%	(		1.106E+001G		5.3E+001	10.52
CS-137 T F I		1	5.735E+000	661.66	5.735E+000	@	(		7.876E-001G		1.1E+004	85.21
PB-210	N	1	5.733E+001	46.54	5.733E+001		(	P	4.344E+001G		8.1E+003	4.25
TL-208 F	N	1	5.314E+000	583.02	5.314E+000		(	P	1.237E+000G		7.0E+002	84.50
			5.314E+000	277.28	4.260E+000	&			1.458E+001G		7.0E+002	6.31
			5.314E+000	860.56	3.862E+000	%			1.270E+001G		7.0E+002	12.42
PA-234	N	1	5.233E+001	1001.00	5.233E+001	&	(		2.128E+002G		1.6E+012	.84
			5.233E+001	766.41	2.167E+002	&			5.183E+002G		1.6E+012	.29
RA-224	N	1	-5.058E+001	240.99	-5.058E+001		(		5.059E+001G		7.0E+002	4.10
AM-241 T		1	-4.034E-001	59.54	-4.034E-001	&	(		3.870E+000G		1.6E+005	35.90
U-235	N	1	3.170E+000	143.79	3.170E+000	%	(		8.956E+000G		2.6E+011	10.96
			3.170E+000	205.33	-3.429E-001	&			1.764E+001G		2.6E+011	5.01
			3.170E+000	163.38	9.849E-001	%			1.472E+001G		2.6E+011	5.08
			3.170E+000	93.35	3.170E+000	!		E	1.976E+001X		2.6E+011	5.81
CO-60 T F		1	3.089E-001	1332.50	3.089E-001	%	(		1.875E+000G		1.9E+003	99.98
			3.089E-001	1173.24	-2.814E-002	%			2.273E+000G		1.9E+003	99.90
			2.840E+001	242.00	3.421E+001	+			1.288E+001G		5.8E+005	7.43
PB-214	N	1	2.840E+001	351.93	2.691E+001	@	(	P	2.031E+000G		5.8E+005	37.60
			2.840E+001	295.09	3.130E+001		(	P	4.634E+000G		5.8E+005	19.30
BI-214	N	1	2.704E+001	609.31	2.610E+001		(	P	1.935E+000G		5.8E+005	46.09
			2.704E+001	1120.29	4.046E+001	+		P	7.441E+000G		5.8E+005	15.10
			2.704E+001	1764.49	2.983E+001		(		6.282E+000G		5.8E+005	15.40
I-131 T F I		1	2.326E-001	364.48	2.326E-001	&	(		1.092E+000G		8.0E+000	81.70
			2.326E-001	284.30	-2.241E+000	%			1.718E+001G		8.0E+000	6.14
			2.326E-001	636.97	-2.779E+000	%			1.939E+001G		8.0E+000	7.17
K-40	N	1	2.146E+002	1460.83	2.146E+002		(	P	1.093E+001G		4.7E+011	10.67
TH-234	N	1	1.817E+001	63.29	1.817E+001	%	(	P	3.023E+001G		1.6E+012	4.82
			1.817E+001	92.59	1.308E+001	%		P	2.264E+001G		1.6E+012	5.58
EU-155 T F I		1	1.813E+000	105.31	1.013E+000	*	(		3.858E+000G		1.8E+003	21.20
			1.813E+000	86.54	2.366E+000	*	(		2.502E+000G		1.8E+003	30.70
EU-152 T F		1	1.628E-001	344.29	1.628E-001	%	(		3.778E+000G		4.9E+003	26.50
			1.628E-001	121.78	-7.848E-002	&			3.021E+000G		4.9E+003	28.58
			1.628E-001	778.92	1.027E+000	%			1.146E+001G		4.9E+003	12.94
			1.628E-001	964.11	8.018E-002	%			1.390E+001G		4.9E+003	14.61
			1.628E-001	1112.07	1.119E+000	%			1.351E+001G		4.9E+003	13.64
			1.628E-001	1408.00	-1.808E-001	%			1.024E+001G		4.9E+003	21.00
			1.509E+000	880.53	-9.617E-001	%			2.773E+001G		1.6E+012	6.00
Pa-234	N	1	1.509E+000	131.29	1.509E+000	%	(		4.952E+000G		1.6E+012	18.00
			1.509E+000	569.47	1.509E+000	%			1.654E+001G		1.6E+012	8.20
			1.509E+000	946.02	-1.099E+000	%			1.427E+001G		1.6E+012	13.40
			1.509E+000	883.24	-1.574E-001	%			1.416E+001G		1.6E+012	9.60
AC-228	N	1	1.272E+001	911.07	1.228E+001	@	(		5.281E+000G		2.1E+003	29.00

			1.272E+001	968.97	1.272E+001	*	(	1.103E+001G	2.1E+003	17.46
			1.272E+001	338.32	1.377E+001		(	7.487E+000G	2.1E+003	12.01
			1.272E+001	93.35	0.000E+000	%	} E	2.065E+001X	A 2.1E+003	5.56
PB-212	N	1	1.222E+001	238.63	1.222E+001		(P	1.903E+000G	7.0E+002	43.30
			1.222E+001	300.03	3.003E+001	+		1.942E+001G	7.0E+002	3.28
CS-134	T F I	1	-1.178E-001	604.71	-1.178E-001	%	(	1.360E+000G	7.5E+002	97.62
			-1.178E-001	795.87	0.000E+000	%		2.590E+000G	7.5E+002	85.53
			-1.178E-001	569.32	-1.178E-001	%		9.204E+000G	7.5E+002	15.38
			-1.178E-001	801.95	1.086E+000	&		1.822E+001G	7.5E+002	8.69
			-1.178E-001	563.24	2.402E-001	%		1.271E+001G	7.5E+002	8.35
			0.000E+000	723.36	-6.917E-001	%		8.528E+000G	3.1E+003	20.22
			0.000E+000	1004.77	1.470E+000	&		1.016E+001G	3.1E+003	18.01
			0.000E+000	996.33	-8.869E-001	%		1.921E+001G	3.1E+003	10.60
EU-154	T F I	1	0.000E+000	873.23	0.000E+000	%	(	1.039E+001G	3.1E+003	12.27
			0.000E+000	123.10	-3.732E-003	&		2.238E+000G	3.1E+003	40.79
			0.000E+000	1274.54	0.000E+000	%		1.107E+001G	3.1E+003	35.19

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	<	-6.483E-001	-6.492E-001	473.09	473.10	1.106E+001
K-40		2.146E+002	2.146E+002	6.99	7.58	1.093E+001
CO-60	<	3.089E-001	3.089E-001	167.25	167.27	1.875E+000
I-131	<	2.326E-001	2.349E-001	134.74	134.77	1.092E+000
CS-134	<	-1.178E-001	-1.178E-001	320.06	320.08	1.360E+000
CS-137	#	5.735E+000	5.735E+000	11.87	12.22	7.876E-001
EU-152	<	1.628E-001	1.628E-001	649.87	649.88	3.778E+000
EU-155	<	1.813E+000	1.813E+000	33.85	34.02	3.858E+000
TL-208		5.314E+000	5.314E+000	14.10	14.39	1.237E+000
BI-212	<	6.639E+000	6.639E+000	52.96	53.04	1.124E+001
BI-214		2.704E+001	2.704E+001	6.98	7.56	1.935E+000
AC-228	<	1.272E+001	1.272E+001	13.53	13.83	5.281E+000
TH-234	<	1.817E+001	1.817E+001	50.05	50.18	3.023E+001
PA-234M	<	5.233E+001	5.233E+001	116.49	116.53	2.128E+002
U-235	<	3.170E+000	3.170E+000	84.68	84.73	8.956E+000
EU-154	<			457.91	457.92	1.039E+001
RA-224	<	-5.058E+001	-5.059E+001	31.27	31.41	5.059E+001
PB-210		5.733E+001	5.733E+001	31.07	31.31	4.344E+001
PB-212		1.222E+001	1.222E+001	8.42	8.94	1.903E+000
PB-214		2.840E+001	2.840E+001	5.58	6.28	2.031E+000
Pa-234	<	1.509E+000	1.509E+000	97.79	97.84	4.952E+000
AM-241	<	-4.034E-001	-4.034E-001	281.36	281.39	3.870E+000

= All peaks for activity calculation had bad shape

Total Activity (37.53 to 1,998.47 keV) 350.67 Bq/sample

Analyzed by: _____

403605

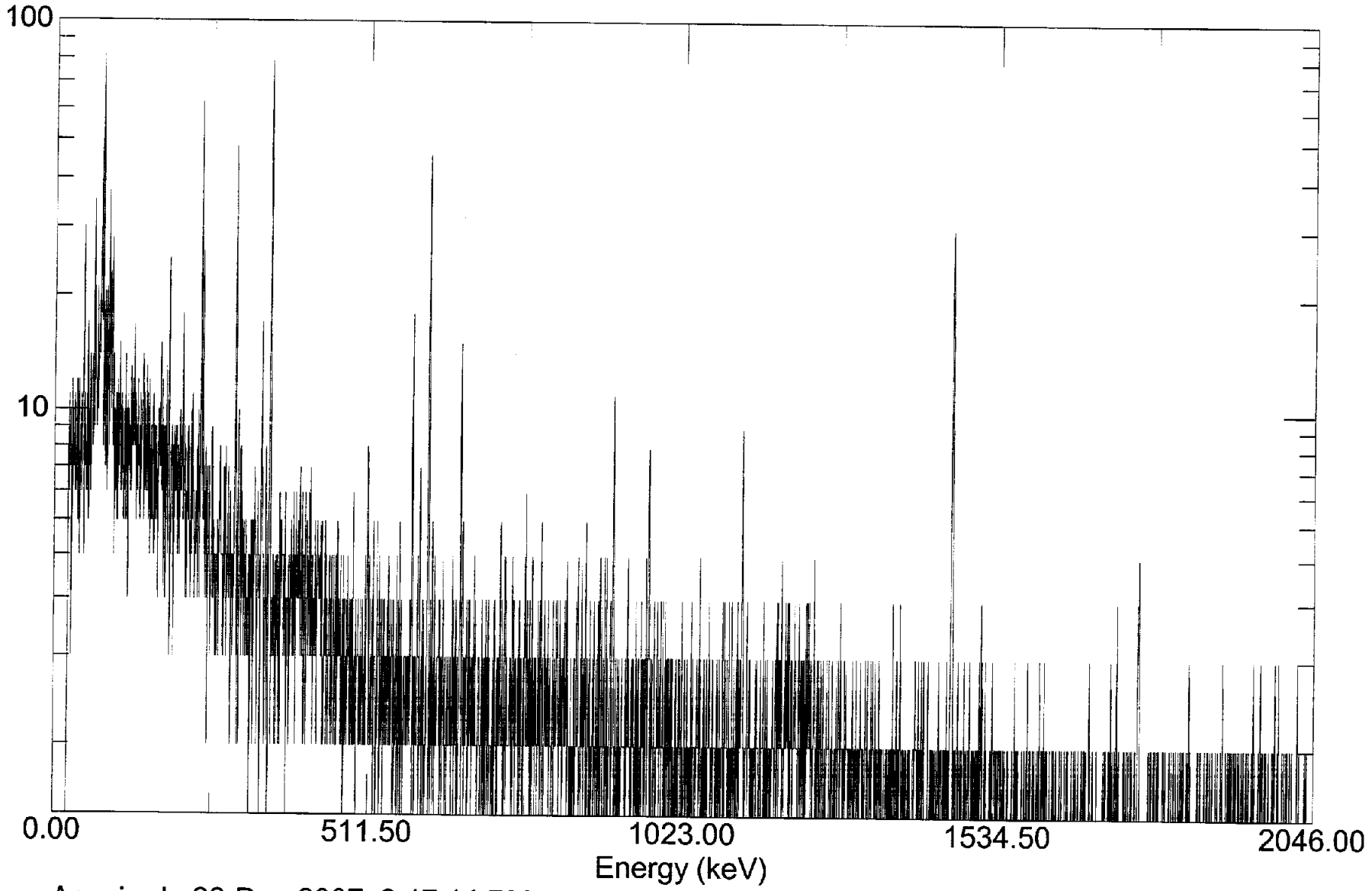
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

KEKC31AD

7360292_KEKC31AD_F7L200260-001X



Acquired: 26-Dec-2007 2:47:14 PM
File: C:\User\spectra\KEKC31AD.spc
Detector: #0 Ge 4 SN/181

Real Time: 1804.44 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,036

Sample Description: 7360292_KEKC71AC_F7L200260-002

Spectrum Filename: KEKC71AC.An1

Acquisition Information

Start Time:	26-Dec-2007 2:08:56PM		
Live Time:	1800.00	Real Time:	1804.18
Dead Time:	0.23 %		
Detector ID:	4		

Detector System: Ge 4 SN/181

Calibration

Description:	Ge4_TunaCanCal_74139_334_05_15_07		
Filename:	C:\User\Calibrations\Ge4 Post 09_07_07(Ge6)\Ge4_TunaCanCal_74139_334_05_15_(		
Energy Created:	08-May-2007 1:28:13PM	Efficiency Created:	15-May-2007 10:05:02AM
Zero Offset:	0.017 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.53 keV
Stop Channel:	8,000 for an energy of 1998.47 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge4 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.2175

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
299.24	74.86	224.83	156.17	0.087	21.17	0.731	PB-214	
308.44	77.16	162.50	243.50	0.135	11.70	0.738	PB-214	
348.76	87.24	154.12	130.88	0.073	16.01	0.646	PB-214	
742.20	185.63	68.00	75.00	0.042	24.43	0.952	U-235	
1180.39	295.20	126.58	18.42	0.010	89.46	1.250		s
1405.85	351.57	195.86	19.14	0.011	105.88	0.991		

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	186.05	46.55	122.05	17.50	0.010	40.50	0.819	
AM-241	1	237.69	59.46	142.06	17.67	0.010	98.32	0.830	s
TH-234	1	253.45	63.41	212.88	25.95	0.014	49.72	0.834	s
EU-155	1	347.02	86.81	232.64	-5.88	-0.003	368.90	0.854	s
TH-234	1	371.53	92.94	234.13	36.85	0.020	36.01	0.859	s
AC-228	1	373.18	93.35	233.70	3.47	0.002	574.13	1.438	s D
U-235	1	373.18	93.35	172.32	0.08	0.000	229.00	0.860	s D
EU-155	1	421.54	105.44	141.36	23.04	0.013	75.89	0.871	s
EU-152	1	481.09	120.34	90.61	-3.88	-0.002	350.74	0.885	s
EU-154	1	491.96	123.05	122.95	6.41	0.004	247.90	0.886	s
Pa-234	1	516.87	129.29	100.64	18.91	0.011	78.47	0.894	s
U-235	1	571.90	143.05	113.12	0.16	0.000	9375.96	0.904	s
U-235	1	654.09	163.60	109.20	8.62	0.005	174.80	0.922	s
U-235	1	820.49	205.21	114.73	-18.33	-0.010	85.87	0.958	s
PB-212	1	953.39	238.44	149.29	445.71	0.248	8.26	0.852	
RA-224	1	959.40	239.95	398.78	-97.08	-0.054	30.81	0.988	s
PB-214	1	969.66	242.51	162.82	2.76	0.002	655.43	0.989	s
TL-208	1	1108.35	277.19	62.64	6.11	0.003	187.58	1.019	s
I-131	1	1138.11	284.63	85.39	-17.01	-0.009	80.57	1.025	s
PB-214	1	1180.13	295.14	41.86	99.10	0.055	13.04	1.034	s
PB-212	1	1200.20	300.15	20.00	51.00	0.028	23.01	0.595	s
AC-228	1	1351.67	338.02	54.00	119.00	0.066	18.73	0.982	
EU-152	1	1375.05	343.87	59.45	-9.28	-0.005	122.01	1.076	s
PB-214	1	1406.19	351.65	42.11	167.32	0.093	9.09	1.082	
I-131	1	1445.21	361.41	22.92	3.79	0.002	185.77	1.092	
BE-7	1	1912.14	478.14	23.67	4.23	0.002	169.64	1.185	s
CS-134	1	2256.71	564.27	46.78	-5.95	-0.003	167.72	1.254	s
CS-134	1	2276.94	569.32	29.47	12.22	0.007	62.21	1.259	s D
Pa-234	1	2277.54	569.47	40.35	2.82	0.002	47.66	1.259	s D
TL-208	1	2330.95	582.82	8.02	162.98	0.091	8.67	1.016	
CS-134	1	2431.30	607.90	59.32	1.95	0.001	562.60	1.286	s
BI-214	1	2435.58	608.97	9.42	116.58	0.065	9.83	1.001	
I-131	1	2547.52	636.95	15.85	4.68	0.003	128.78	1.312	s
CS-137	1	2644.17	661.10	10.50	78.50	0.044	14.29	1.085	
EU-154	1	2894.88	723.75	52.93	-8.08	-0.004	132.13	1.378	s
BI-212	1	2907.20	726.83	20.67	29.82	0.017	28.29	1.381	s
PA-234M	1	3073.43	768.37	12.48	15.70	0.009	40.62	1.411	s
EU-152	1	3110.57	777.65	13.32	3.80	0.002	145.29	1.420	s
BI-212	1	3139.32	784.84	18.69	3.30	0.002	193.16	1.425	s
CS-134	1	3183.83	795.96	33.18	-1.31	-0.001	629.24	1.433	s
CS-134	1	3217.45	804.36	22.57	-0.30	0.000	2229.21	1.437	s
TL-208	1	3439.58	859.86	15.79	12.65	0.007	52.56	1.481	s
EU-154	1	3492.13	872.99	21.02	2.15	0.001	309.31	1.490	s
Pa-234	1	3521.98	880.45	21.63	-3.16	-0.002	215.69	1.495	s
Pa-234	1	3529.10	882.23	18.60	-3.10	-0.002	204.48	1.497	s

AC-228	1	3643.93	910.92	0.00	90.00	0.050	10.54	1.062	s
Pa-234	1	3786.03	946.42	21.13	-2.14	-0.001	311.87	1.543	s
EU-152	1	3857.97	964.39	27.00	10.44	0.006	76.91	1.556	s
AC-228	1	3875.00	968.64	4.67	52.33	0.029	16.96	0.566	s
EU-154	1	3984.82	996.08	18.14	-1.64	-0.001	376.50	1.579	s
PA-234M	1	4003.98	1000.86	17.26	1.96	0.001	307.56	1.582	s
EU-154	1	4019.42	1004.72	20.24	-1.83	-0.001	355.09	1.585	s
EU-152	1	4449.20	1112.07	41.37	0.00	0.000	909.58	1.659	s
BI-214	1	4482.08	1120.29	44.65	-4.65	-0.003	894.43	1.665	s
CO-60	1	4696.43	1173.82	15.87	-0.06	0.000	10049.94	1.701	s
EU-154	1	5098.80	1274.31	17.18	2.85	0.002	214.27	1.768	s
CO-60	1	5331.84	1332.50	16.87	0.00	0.000	580.85	1.806	s
EU-152	1	5634.21	1408.00	0.00	0.00	0.000	100.00	1.854	s
K-40	1	5843.71	1460.31	10.73	209.15	0.116	7.12	1.887	
BI-214	1	7059.46	1763.78	8.95	4.91	0.003	97.27	2.066	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels		Analysis Code	MDA Value Becquerels	Code	Comments	
TL-208	F N	1	9.806E+000	583.02	9.806E+000		(P	9.570E-001G		7.0E+002	84.50
			9.806E+000	277.28	2.516E+000	%		1.630E+001G		7.0E+002	6.31
			9.806E+000	860.56	7.209E+000	%		1.209E+001G		7.0E+002	12.42
RA-224	N	1	-5.452E+001	240.99	-5.452E+001		(	5.378E+001G		7.0E+002	4.10
CS-137	T F I	1	5.224E+000	661.66	5.224E+000		(	1.185E+000G		1.1E+004	85.21
U-235	N	1	2.443E-002	143.79	2.443E-002	&	(	7.956E+000G		2.6E+011	10.96
			2.443E-002	205.33	-7.431E+000	&		2.133E+001G		2.6E+011	5.01
			2.443E-002	163.38	2.986E+000	&		1.781E+001G		2.6E+011	5.08
			2.443E-002	93.35	2.443E-002	%	E	1.836E+001X		2.6E+011	5.81
PB-212	N	1	2.351E+001	238.63	2.351E+001		(P	3.146E+000G		7.0E+002	43.30
			2.351E+001	300.03	4.335E+001	+		2.002E+001G		7.0E+002	3.28
AC-228	N	1	2.317E+001	911.07	2.302E+001		(	1.885E+000G		2.1E+003	29.00
			2.317E+001	968.97	2.340E+001		(	5.714E+000G		2.1E+003	17.46
			2.317E+001	338.32	3.082E+001	+		9.569E+000G		2.1E+003	12.01
			2.317E+001	93.35	1.041E+000	+	} E	1.851E+001X	A	2.1E+003	5.56
K-40	N	1	2.167E+002	1460.83	2.167E+002		(P	1.862E+001G		4.7E+011	10.67
PA-234	N	1	1.882E+001	1001.00	1.882E+001	%	(	2.115E+002G		1.6E+012	.84
			1.882E+001	766.41	3.430E+002	&		4.189E+002G		1.6E+012	.29
EU-155	T F I	1	1.761E+000	105.31	1.761E+000	*	(	4.442E+000G		1.8E+003	21.20
			1.761E+000	86.54	-3.295E-001	&		4.132E+000G		1.8E+003	30.70
BE-7	N P C	1	1.715E+000	477.60	1.715E+000	&	(	1.028E+001G		5.3E+001	10.52
Pa-234	N	1	1.711E+000	131.29	1.711E+000	%	(	4.474E+000G		1.6E+012	18.00
			1.711E+000	569.47	1.711E+000	&		1.963E+001G		1.6E+012	8.20
			1.711E+000	946.02	-1.220E+000	%		1.378E+001G		1.6E+012	13.40
			1.711E+000	883.24	-2.338E+000	%		1.718E+001G		1.6E+012	9.60
			1.711E+000	880.53	-3.797E+000	%		2.931E+001G		1.6E+012	6.00
BI-212	N	1	1.551E+001	727.33	1.551E+001		(	1.243E+001G		7.0E+002	11.82
			1.551E+001	785.51	1.968E+001	&		1.362E+002G		7.0E+002	1.10
I-131	T F I	1	1.546E-001	364.48	1.546E-001	%	(	1.020E+000G		8.0E+000	81.70
			1.546E-001	284.30	-7.358E+000	%		1.980E+001G		8.0E+000	6.14
			1.546E-001	636.97	3.586E+000	%		1.628E+001G		8.0E+000	7.17
PB-210	N	1	1.450E+001	46.54	1.450E+001	%	(P	4.491E+001G		8.1E+003	4.25
PB-214	N	1	1.427E+001	351.93	1.435E+001		(P	2.826E+000G		5.8E+005	37.60
			1.427E+001	295.09	1.410E+001		(P	4.676E+000G		5.8E+005	19.30
			1.427E+001	242.00	8.599E-001	%		1.933E+001G		5.8E+005	7.43
BI-214	N	1	1.336E+001	609.31	1.336E+001		(P	1.950E+000G		5.8E+005	46.09
			1.336E+001	1120.29	-2.711E+000	%	P	1.975E+001G		5.8E+005	15.10
			1.336E+001	1764.49	4.186E+000	%		1.419E+001G		5.8E+005	15.40
EU-154	T F I	1	1.254E+000	873.23	1.254E+000	%	(	1.405E+001G		3.1E+003	12.27
			1.254E+000	123.10	2.534E-001	&		2.150E+000G		3.1E+003	40.79
			1.254E+000	1274.54	7.945E-001	&		6.147E+000G		3.1E+003	35.19
			1.254E+000	723.36	-2.444E+000	%		1.108E+001G		3.1E+003	20.22
			1.254E+000	1004.77	-8.185E-001	%		1.058E+001G		3.1E+003	18.01
			1.254E+000	996.33	-1.233E+000	%		1.701E+001G		3.1E+003	10.60

			1.123E+001	92.59	1.105E+001	%	P	2.219E+001G	1.6E+012	5.58
TH-234	N	1	1.123E+001	63.29	1.123E+001	% (	P	3.058E+001G	1.6E+012	4.82
			-1.107E+000	1112.07	0.000E+000	%		2.097E+001G	4.9E+003	13.64
			-1.107E+000	1408.00	0.000E+000	%		3.755E+000G	4.9E+003	21.00
EU-152	T F	1	-1.107E+000	344.29	-1.107E+000	% (		4.608E+000G	4.9E+003	26.50
			-1.107E+000	121.78	-2.187E-001	&		2.654E+000G	4.9E+003	28.58
			-1.107E+000	778.92	1.910E+000	&		9.920E+000G	4.9E+003	12.94
			-1.107E+000	964.11	5.557E+000	%		1.433E+001G	4.9E+003	14.61
AM-241	T	1	1.085E+000	59.54	1.085E+000	& (		3.576E+000G	1.6E+005	35.90
CS-134	T F I	1	1.049E-001	604.71	1.049E-001	& (		2.075E+000G	7.5E+002	97.62
			1.049E-001	795.87	-1.013E-001	&		2.291E+000G	7.5E+002	85.53
			1.049E-001	569.32	3.956E+000	&	}	1.058E+001G	7.5E+002	15.38
			1.049E-001	801.95	-2.321E-001	%		1.907E+001G	7.5E+002	8.69
			1.049E-001	563.24	-3.514E+000	%		2.043E+001G	7.5E+002	8.35
			0.000E+000	1173.24	-5.144E-003	%		1.950E+000G	1.9E+003	99.90
CO-60	T F	1	0.000E+000	1332.50	0.000E+000	% (		2.230E+000G	1.9E+003	99.98

Analysis Codes:

% = Peak fails sensitivity test

\- = Peak activity lower than counting uncertainty range

(= This peak is used in the nuclide activity average

* = Peak is too wide, but only one peak in library

A = Derived Average Activity

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

? = Peak is too narrow

= = Peak outside analysis energy range

P = Peakbackround subtraction

@ = Peak is too wide at FW25M, but OK at FWHM

E = Energy Duplication

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
I-131	<	1.546E-001	1.558E-001	185.77	185.79	1.020E+000
CS-134	<	1.049E-001	1.049E-001	562.60	562.61	2.075E+000
EU-154	<	1.254E+000	1.254E+000	309.31	309.33	1.405E+001
PB-210	<	1.450E+001	1.450E+001	88.68	88.77	4.491E+001
PB-212		2.351E+001	2.351E+001	8.43	8.94	3.146E+000
PB-214	<	1.427E+001	1.427E+001	8.22	8.71	2.826E+000
BI-212	<	1.551E+001	1.551E+001	28.29	28.44	1.243E+001
BE-7	<	1.715E+000	1.717E+000	169.64	169.66	1.028E+001
K-40	<	2.167E+002	2.167E+002	7.22	7.79	1.862E+001
CO-60	<			580.85	580.85	2.230E+000
CS-137		5.224E+000	5.224E+000	14.29	14.58	1.185E+000
EU-152	<	-1.107E+000	-1.107E+000	122.01	122.05	4.608E+000
EU-155	<	1.761E+000	1.761E+000	75.89	75.96	4.442E+000
TL-208		9.806E+000	9.807E+000	8.79	9.25	9.570E-001
RA-224	<	-5.452E+001	-5.453E+001	30.81	30.95	5.378E+001
BI-214		1.336E+001	1.336E+001	10.27	10.67	1.950E+000
AC-228		2.317E+001	2.317E+001	9.98	10.39	1.885E+000
PA-234M	<	1.882E+001	1.882E+001	307.56	307.57	2.115E+002
U-235	<	2.443E-002	2.443E-002	9,375.96	9,375.96	7.956E+000
AM-241	<	1.085E+000	1.085E+000	98.32	98.40	3.576E+000
Pa-234	<	1.711E+000	1.711E+000	78.47	78.53	4.474E+000
TH-234	<	1.123E+001	1.123E+001	80.43	80.51	3.058E+001

= All peaks for activity calculation had bad shape

Total Activity (37.53 to 1,998.47 keV) 75.07 Bq/sample

Analyzed by: _____

403605

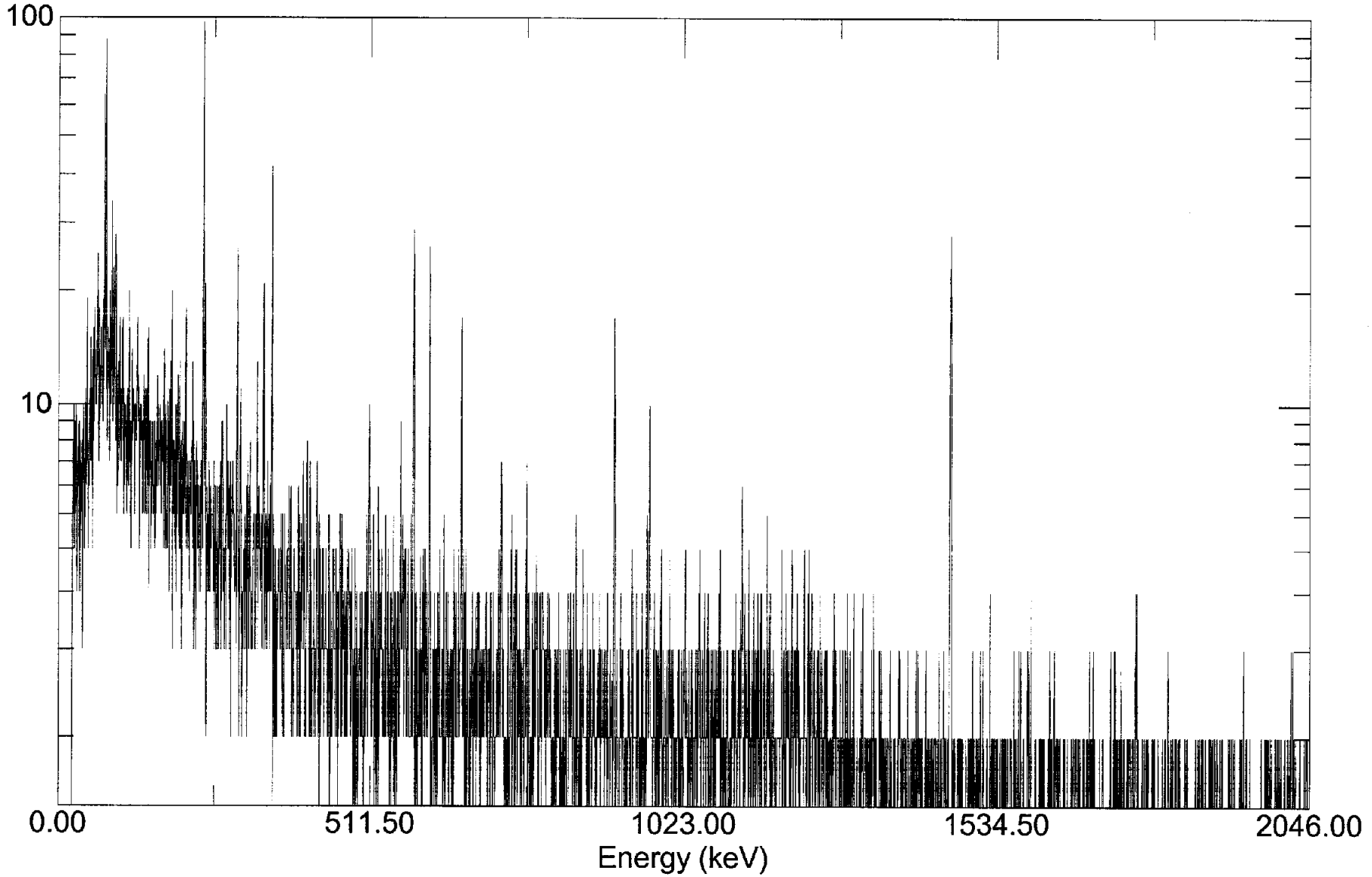
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

KEKC71AC

7360292_KEKC71AC_F7L200260-002



Acquired: 26-Dec-2007 2:08:56 PM
File: C:\User\spectra\KEKC71AC.spc
Detector: #0 Ge 4 SN/181

Real Time: 1804.18 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,038

Sample Description: 7360292_KEKDC1AC_F7L200260-003

Spectrum Filename: KEKDC1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 2:09:34PM		
Live Time:	1800.00	Real Time:	1849.58
Dead Time:	2.68 %		
Detector ID:	5		

Detector System: Ge 5 SN/157

Calibration

Description:	Ge5 TunaCanCal_74139-334_05_08_07		
Filename:	C:\User\Calibrations\Ge5 calibrations\Ge5 TunaCanCal_74139-334_05_08_07.Clb		
Energy Created:	28-Mar-2007 6:08:23PM	Efficiency Created:	08-May-2007 3:55:34PM
Zero Offset:	0.272 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.74 keV
Stop Channel:	8,000 for an energy of 2000.57 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge5 PBC table 11 26 07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1897

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
298.21	74.77	245.00	149.00	0.083	21.29	0.794	PB-214	
307.24	77.02	168.67	253.33	0.141	10.67	0.882	PB-214	
347.42	87.06	265.64	41.36	0.023	57.86	0.832		s
370.76	92.89	299.00	0.00	0.000	2445.40	1.040		s
2044.14	511.01	22.00	99.00	0.055	15.71	0.678	TL-208	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	184.34	46.32	130.55	8.62	0.005	61.39	0.749	s
AM-241	1	236.74	59.41	146.31	15.28	0.008	93.89	0.761	s
TH-234	1	252.25	63.28	242.75	13.20	0.007	80.42	0.764	s
EU-155	1	348.00	87.20	215.82	100.64	0.056	22.92	0.788	s
TH-234	1	369.56	92.59	209.25	81.78	0.045	20.88	0.795	s
U-235	1	372.61	93.35	147.00	-1.29	-0.001	-35208.41	0.795	s D
AC-228	1	372.61	93.35	147.00	63.53	0.035	3.80	0.795	s D
EU-155	1	420.05	105.20	123.10	11.34	0.006	141.55	0.808	s
EU-154	1	489.99	122.67	101.57	-3.89	-0.002	369.57	0.826	s
EU-152	1	494.44	123.79	74.82	-1.94	-0.001	634.19	0.824	s
Pa-234	1	526.55	131.81	115.22	-0.28	0.000	5398.67	0.834	s
U-235	1	566.38	141.76	98.45	-2.45	-0.001	48601.42	0.847	s
U-235	1	655.49	164.02	112.11	18.20	0.010	76.78	0.867	s
U-235	1	820.80	205.32	83.23	5.49	0.003	238.78	0.909	s
PB-212	1	954.46	238.72	114.15	412.85	0.229	7.30	0.771	
RA-224	1	960.37	240.19	465.73	-117.27	-0.065	27.62	0.944	
PB-214	1	967.01	241.85	91.67	92.33	0.051	24.70	0.609	s
TL-208	1	1108.07	277.10	39.00	44.00	0.024	32.14	0.546	s
I-131	1	1130.14	282.61	48.57	7.81	0.004	131.12	0.987	s
PB-214	1	1181.19	295.37	23.91	191.09	0.106	8.51	0.884	s
PB-212	1	1200.52	300.20	49.44	29.18	0.016	38.78	1.002	
AC-228	1	1353.50	338.42	75.64	63.10	0.035	23.20	1.040	s
EU-152	1	1376.20	344.10	50.88	-5.95	-0.003	174.56	1.045	s
PB-214	1	1407.55	351.93	47.21	279.79	0.155	7.64	0.999	
I-131	1	1463.62	365.94	36.79	1.02	0.001	845.47	1.065	s
BE-7	1	1906.26	476.55	42.49	-7.57	-0.004	127.16	1.173	s
CS-134	1	2251.95	562.95	32.74	-2.41	-0.001	341.98	1.252	s
CS-134	1	2277.45	569.32	26.65	-0.76	0.000	-44.30	1.258	s D
Pa-234	1	2278.05	569.47	32.90	-0.04	0.000	-133.03	1.258	s D
TL-208	1	2333.75	583.39	17.25	125.75	0.070	11.02	1.075	
CS-134	1	2418.20	604.50	34.53	-4.59	-0.003	186.93	1.290	s
BI-214	1	2438.16	609.49	18.73	212.27	0.118	7.95	1.287	s
I-131	1	2547.78	636.89	27.14	-0.24	0.000	3112.21	1.319	s
CS-137	1	2646.74	661.62	31.43	14.61	0.008	40.46	1.342	s
EU-154	1	2878.74	719.61	10.13	4.34	0.002	114.35	1.397	s
BI-212	1	2910.81	727.63	18.84	10.92	0.006	63.82	1.400	s
PA-234M	1	3081.04	770.18	27.70	-3.66	-0.002	210.08	1.434	s
EU-152	1	3118.03	779.43	16.74	-1.62	-0.001	365.84	1.445	s
BI-212	1	3142.35	785.51	21.29	0.00	0.000	652.59	1.451	s
CS-134	1	3180.81	795.12	16.17	10.75	0.006	61.04	1.460	s
CS-134	1	3208.61	802.07	17.78	3.82	0.002	164.10	1.465	s
TL-208	1	3444.59	861.07	2.17	19.83	0.011	26.05	0.597	s
EU-154	1	3493.24	873.23	0.00	0.00	0.000	100.00	1.527	s
Pa-234	1	3520.50	880.05	16.48	4.39	0.002	139.31	1.533	s
Pa-234	1	3529.09	882.19	25.42	-2.87	-0.002	255.64	1.535	s
AC-228	1	3645.91	911.40	14.94	80.20	0.045	13.08	1.559	

Pa-234	1	3785.82	946.38	19.50	-0.89	0.000	708.36	1.588	s
EU-152	1	3856.77	964.12	39.12	1.90	0.001	471.17	1.603	s
AC-228	1	3877.26	969.24	23.00	23.81	0.013	35.08	1.607	s
EU-154	1	3992.53	998.07	19.12	-2.93	-0.002	218.80	1.630	s
PA-234M	1	4005.78	1001.38	22.37	3.21	0.002	215.74	1.633	s
EU-154	1	4018.02	1004.44	26.51	0.31	0.000	2347.98	1.637	s
EU-152	1	4432.61	1108.11	12.82	-0.24	0.000	2152.64	1.723	s
BI-214	1	4482.90	1120.68	0.00	89.00	0.049	10.60	0.464	s
CO-60	1	4686.86	1171.69	23.73	0.32	0.000	2172.79	1.772	s
EU-154	1	5099.41	1274.86	18.51	3.24	0.002	195.57	1.850	s
CO-60	1	5316.99	1329.28	8.61	-0.49	0.000	856.95	1.894	s
EU-152	1	5654.29	1413.65	3.24	0.10	0.000	2490.08	1.950	s
K-40	1	5844.73	1461.29	0.00	225.00	0.125	6.67	1.778	
BI-214	1	7059.05	1765.10	7.95	26.35	0.015	22.54	2.196	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels		Analysis Code	MDA Value Becquerels	Code	Comments	
CS-137	T F I	1	9.329E-001	661.66	9.329E-001	%	(P	1.842E+000G		1.1E+004	85.21
AM-241	T	1	8.691E-001	59.54	8.691E-001	%	(P	3.361E+000G		1.6E+005	35.90
EU-155	T F I	1	8.404E-001	105.31	8.404E-001	%	(	4.034E+000G		1.8E+003	21.20
			8.404E-001	86.54	5.444E+000	*		3.849E+000G	A	1.8E+003	30.70
TL-208	F N	1	7.266E+000	583.02	7.266E+000		(P	1.275E+000G		7.0E+002	84.50
			7.266E+000	277.28	1.741E+001	*		1.259E+001G		7.0E+002	6.31
			7.266E+000	860.56	1.081E+001	+		5.216E+000G		7.0E+002	12.42
			-6.813E-001	964.11	9.660E-001	%		1.620E+001G		4.9E+003	14.61
			-6.813E-001	1112.07	-1.444E-001	%		1.185E+001G		4.9E+003	13.64
			-6.813E-001	1408.00	4.958E-002	%		5.341E+000G		4.9E+003	21.00
EU-152	T F	1	-6.813E-001	344.29	-6.813E-001	%	(	4.119E+000G		4.9E+003	26.50
			-6.813E-001	121.78	-1.061E-001	%		2.351E+000G		4.9E+003	28.58
			-6.813E-001	778.92	-7.806E-001	&		1.050E+001G		4.9E+003	12.94
RA-224	N	1	-6.332E+001	240.99	-6.332E+001		(	5.576E+001G		7.0E+002	4.10
PB-210	N	1	6.327E+000	46.54	6.327E+000	%	(P	4.109E+001G		8.1E+003	4.25
			5.446E+000	785.51	0.000E+000	%		1.383E+002G		7.0E+002	1.10
BI-212	N	1	5.446E+000	727.33	5.446E+000	%	(	1.144E+001G		7.0E+002	11.82
CO-60	T F	1	-4.745E-002	1332.50	-4.745E-002	%	(	1.583E+000G		1.9E+003	99.98
			-4.745E-002	1173.24	2.772E-002	%		2.214E+000G		1.9E+003	99.90
I-131	T F I	1	4.001E-002	364.48	4.001E-002	&	(	1.213E+000G		8.0E+000	81.70
			4.001E-002	284.30	3.248E+000	%		1.463E+001G		8.0E+000	6.14
			4.001E-002	636.97	-1.743E-001	%		1.983E+001G		8.0E+000	7.17
U-235	N	1	-3.601E-001	143.79	-3.601E-001	&	(P	7.203E+000G		2.6E+011	10.96
			-3.601E-001	205.33	2.142E+000	%		1.764E+001G		2.6E+011	5.01
			-3.601E-001	163.38	6.084E+000	%	P	1.740E+001G		2.6E+011	5.08
			-3.601E-001	93.35	-3.601E-001	!	E	1.647E+001X		2.6E+011	5.81
BE-7	N P C	1	-2.944E+000	477.60	-2.944E+000	%	(	1.287E+001G		5.3E+001	10.52
PA-234M	N	1	2.935E+001	1001.00	2.935E+001	%	(	2.263E+002G		1.6E+012	.84
			2.935E+001	766.41	-7.658E+001	&		5.701E+002G		1.6E+012	.29
Pa-234	N	1	-2.464E-002	131.29	-2.464E-002	%	(	4.618E+000G		1.6E+012	18.00
			-2.464E-002	569.47	-2.464E-002	%		1.717E+001G		1.6E+012	8.20
			-2.464E-002	946.02	-4.865E-001	%		1.271E+001G		1.6E+012	13.40

			-2.464E-002	883.24	-2.065E+000	%			1.888E+001G		1.6E+012	9.60
			-2.464E-002	880.53	5.043E+000	%			2.486E+001G		1.6E+012	6.00
PB-214	N	1	2.450E+001	351.93	2.306E+001		(	P	2.862E+000G		5.8E+005	37.60
			2.450E+001	295.09	2.613E+001	@	(	P	3.486E+000G		5.8E+005	19.30
			2.450E+001	242.00	2.761E+001		(		1.415E+001G		5.8E+005	7.43
CS-134 T F I		1	-2.370E-001	604.71	-2.370E-001	%	(		1.553E+000G		7.5E+002	97.62
			-2.370E-001	795.87	7.983E-001	%			1.592E+000G		7.5E+002	85.53
			-2.370E-001	569.32	-2.370E-001	%			8.322E+000G		7.5E+002	15.38
			-2.370E-001	801.95	2.812E+000	%			1.644E+001G		7.5E+002	8.69
			-2.370E-001	563.24	-1.367E+000	%			1.667E+001G		7.5E+002	8.35
BI-214	N	1	2.277E+001	609.31	2.336E+001	@	(	P	2.518E+000G		5.8E+005	46.09
			2.277E+001	1120.29	4.942E+001	+			4.092E+000G		5.8E+005	15.10
			2.277E+001	1764.49	2.101E+001	?	(	P	1.263E+001G		5.8E+005	15.40
K-40	N	1	2.199E+002	1460.83	2.199E+002		(		7.204E+000G		4.7E+011	10.67
PB-212	N	1	2.114E+001	238.63	2.094E+001		(	P	2.662E+000G		7.0E+002	43.30
			2.114E+001	300.03	2.383E+001	?	(		2.897E+001G		7.0E+002	3.28
AC-228	N	1	1.847E+001	911.16	1.961E+001		(		5.067E+000G		2.1E+003	29.00
			1.847E+001	968.97	1.017E+001	-			1.070E+001G		2.1E+003	17.46
			1.847E+001	338.32	1.570E+001	*	(		1.076E+001G		2.1E+003	12.01
			1.847E+001	93.35	1.847E+001	+		E	1.721E+001G	A	2.1E+003	5.56
TH-234	N	1	1.522E+001	63.29	5.349E+000	*	(	P	3.051E+001G		1.6E+012	4.82
			1.522E+001	92.59	2.374E+001	*	(	P	2.035E+001G		1.6E+012	5.58
EU-154 T F I		1	0.000E+000	873.23	0.000E+000	&	(		4.115E+000G		3.1E+003	12.27
			0.000E+000	123.10	-1.492E-001	%			1.903E+000G		3.1E+003	40.79
			0.000E+000	1274.54	8.587E-001	&			6.024E+000G		3.1E+003	35.19
			0.000E+000	723.36	1.258E+000	%			5.088E+000G		3.1E+003	20.22
			0.000E+000	1004.77	1.326E-001	%			1.138E+001G		3.1E+003	18.01
			0.000E+000	996.33	-2.110E+000	%			1.661E+001G		3.1E+003	10.60

Analysis Codes:

% = Peak fails sensitivity test

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- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

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\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	#	-2.944E+000	-2.947E+000	127.16	127.19	1.287E+001
K-40		2.199E+002	2.199E+002	6.67	7.28	7.204E+000
CO-60	#	-4.745E-002	-4.745E-002	856.95	856.95	1.583E+000
I-131	#	4.001E-002	4.032E-002	845.47	845.47	1.213E+000
CS-134	#	-2.370E-001	-2.370E-001	186.93	186.95	1.553E+000
EU-154	#			100.00	100.04	4.115E+000
CS-137	#	9.329E-001	9.329E-001	57.77	57.84	1.842E+000
EU-152	#	-6.813E-001	-6.813E-001	174.56	174.58	4.119E+000
EU-155	#	8.404E-001	8.404E-001	141.55	141.59	4.034E+000
TL-208		7.266E+000	7.266E+000	11.35	11.71	1.275E+000
BI-214		2.277E+001	2.277E+001	8.20	8.69	2.518E+000
RA-224	#	-6.332E+001	-6.332E+001	27.62	27.78	5.576E+001
AC-228	#	1.847E+001	1.847E+001	13.08	13.39	5.067E+000
TH-234	#	1.522E+001	1.522E+001	26.72	26.97	3.051E+001
PA-234M	#	2.935E+001	2.935E+001	215.74	215.75	2.263E+002
U-235	#	-3.601E-001	-3.601E-001	97.769.03	97.769.03	7.203E+000
PB-210	#	6.327E+000	6.327E+000	184.39	184.43	4.109E+001
PB-212		2.114E+001	2.114E+001	7.42	8.00	2.662E+000
PB-214		2.450E+001	2.450E+001	7.78	8.29	2.862E+000
BI-212	#	5.446E+000	5.447E+000	63.82	63.89	1.144E+001
Pa-234	#	-2.464E-002	-2.464E-002	5.398.67	5.398.67	4.618E+000
AM-241	#	8.691E-001	8.691E-001	114.24	114.31	3.361E+000

= All peaks for activity calculation had bad shape

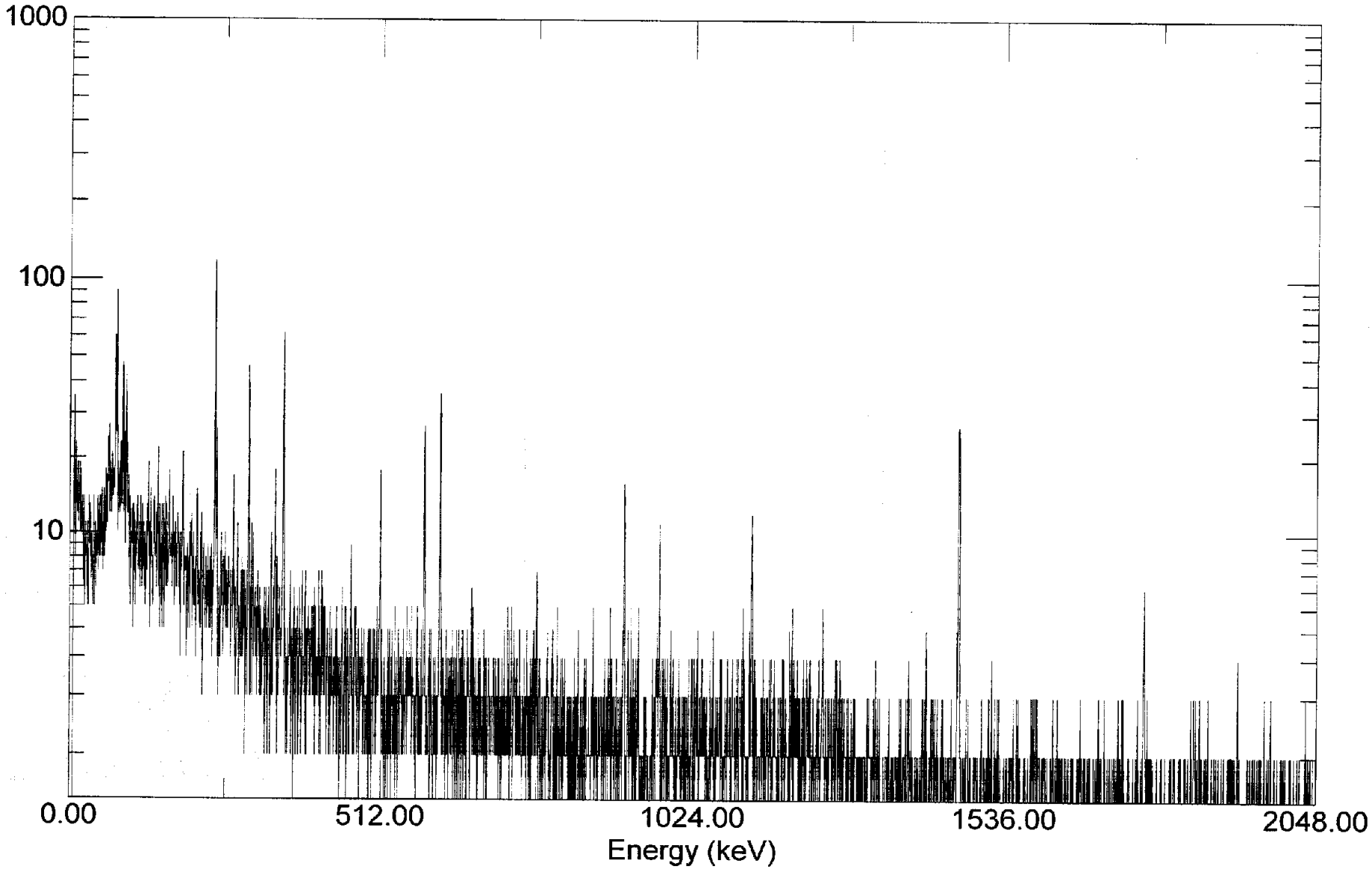
Total Activity (37.74 to 2,000.57 keV) 295.61 Bq/sample

Analyzed by: 403605

Laboratory: STL- St Louis

KEKDC1AC

7360292_KEKDC1AC_F7L200260-003



Acquired: 26-Dec-2007 2:09:34 PM
File: C:\User\spectra\KEKDC1AC.spc
Detector: #0 Ge 5 SN/157

Real Time: 1849.58 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,037

Sample Description: 7360292_KEKDE1AC_F7L200260-004

Spectrum Filename: KEKDE1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 2:10:01PM		
Live Time:	1800.00	Real Time:	1820.80
Dead Time:	1.14 %		
Detector ID:	7		

Detector System: Ge 7 SN/154

Calibration

Description:	Ge7 Tunacan 74139_334 01_16_07		
Filename:	C:\User\Calibrations\Ge7 calibrations\Ge7 Tunacan 01_16_07.Clb		
Energy Created:	16-Jan-2007 4:24:37PM	Efficiency Created:	16-Jan-2007 4:27:00PM
Zero Offset:	0.231 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.72 keV
Stop Channel:	8,000 for an energy of 2000.15 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge7 PBC table 11 26 07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.0728

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
298.11	74.74	268.33	202.67	0.113	16.34	0.762	PB-214	
307.29	77.04	291.83	291.17	0.162	12.90	0.709	PB-214	
347.84	87.17	136.83	147.17	0.082	13.94	1.321	BI-207	s
358.54	89.85	156.00	79.00	0.044	25.03	0.812	PB-214	
835.52	209.07	99.69	56.31	0.031	28.40	0.923	AC-228	s
1179.92	295.15	176.80	29.20	0.016	67.01	1.198		s
1406.83	351.87	271.42	51.58	0.029	47.27	1.433		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.59	46.62	176.96	12.57	0.007	50.45	0.832	
AM-241	1	239.34	60.05	264.24	7.05	0.004	328.31	0.846	s
TH-234	1	251.69	63.14	293.52	28.85	0.016	49.19	0.850	s
EU-155	1	345.32	86.54	355.76	4.97	0.003	539.11	0.874	s
TH-234	1	370.77	92.90	332.61	49.25	0.027	33.94	0.881	s
AC-228	1	372.56	93.35	245.97	75.98	0.042	2.28	0.882	s D
U-235	1	372.56	93.35	245.97	4.72	0.003	45.63	0.882	s D
EU-155	1	420.22	105.26	185.98	22.00	0.012	90.22	0.894	s
EU-152	1	487.23	122.01	194.27	-0.71	0.000	2779.00	0.912	
EU-154	1	488.91	122.43	184.26	-16.01	-0.009	122.45	0.913	
Pa-234	1	518.84	129.91	199.84	-24.29	-0.013	84.77	0.922	s
U-235	1	574.85	143.91	199.45	8.88	0.005	227.41	0.935	s
U-235	1	652.60	163.35	137.57	17.24	0.010	99.21	0.955	s
U-235	1	823.82	206.14	127.56	12.53	0.007	130.60	0.999	s
PB-212	1	954.39	238.78	158.88	671.13	0.373	5.93	1.131	
RA-224	1	959.98	240.18	686.33	-154.31	-0.086	25.32	1.036	s
PB-214	1	966.53	241.82	375.46	-0.53	0.000	5153.90	1.037	s
TL-208	1	1109.10	277.45	90.93	25.09	0.014	57.35	1.074	s
I-131	1	1136.69	284.35	101.89	-10.87	-0.006	134.83	1.081	s
PB-214	1	1180.21	295.23	53.47	148.30	0.082	10.77	1.092	s
PB-212	1	1198.21	299.72	31.17	73.83	0.041	18.83	1.027	s
AC-228	1	1352.53	338.30	64.49	100.77	0.056	15.04	1.136	s
EU-152	1	1375.58	344.06	54.03	-0.99	-0.001	1058.61	1.142	s
PB-214	1	1407.24	351.97	72.22	229.87	0.128	8.28	1.150	s
I-131	1	1457.07	364.43	58.39	-4.83	-0.003	228.43	1.163	s
BE-7	1	1913.27	478.46	32.97	14.19	0.008	63.10	1.277	
CS-134	1	2251.25	562.94	35.26	-0.44	0.000	1919.10	1.363	s
CS-134	1	2276.76	569.32	38.12	-0.04	0.000	-35.42	1.369	s D
Pa-234	1	2277.35	569.47	38.12	-3.58	-0.002	-130.43	1.369	s D
TL-208	1	2332.49	583.25	16.91	206.09	0.114	8.21	1.500	s
CS-134	1	2411.04	602.89	43.14	-0.26	0.000	3552.56	1.403	s
BI-214	1	2436.70	609.30	32.13	217.87	0.121	9.43	1.506	
I-131	1	2540.91	635.35	37.91	-5.36	-0.003	167.96	1.435	s
CS-137	1	2646.48	661.74	41.24	29.72	0.017	34.65	1.459	s
EU-154	1	2892.87	723.33	48.36	-3.38	-0.002	295.75	1.519	s
BI-212	1	2909.13	727.40	34.43	20.24	0.011	46.64	1.523	s
PA-234M	1	3066.74	766.80	44.98	-5.30	-0.003	184.20	1.561	s
EU-152	1	3112.95	778.35	36.29	-1.65	-0.001	522.47	1.573	s
BI-212	1	3141.11	785.39	28.94	8.85	0.005	92.29	1.579	s
CS-134	1	3180.47	795.23	25.70	5.00	0.003	150.28	1.589	s
CS-134	1	3213.24	803.42	26.06	-1.92	-0.001	382.86	1.595	s
TL-208	1	3443.43	860.96	22.99	11.97	0.007	63.59	1.650	s
EU-154	1	3492.18	873.15	18.55	5.47	0.003	119.33	1.662	s
Pa-234	1	3526.90	881.83	23.30	0.11	0.000	6152.98	1.669	s
Pa-234	1	3532.30	883.18	24.08	2.83	0.002	252.18	1.672	s
AC-228	1	3644.66	911.27	17.62	86.44	0.048	12.76	1.698	s

Pa-234	1	3783.68	946.02	35.18	0.00	0.000	838.77	1.731	s
EU-152	1	3857.82	964.55	50.46	20.71	0.012	53.25	1.748	s
AC-228	1	3876.96	969.34	46.86	45.29	0.025	26.03	1.752	s
EU-154	1	3975.64	994.01	16.66	0.08	0.000	6833.83	1.778	s
PA-234M	1	4005.70	1001.52	24.80	2.45	0.001	294.40	1.782	s
EU-154	1	4021.91	1005.57	28.51	-4.27	-0.002	183.28	1.785	s
EU-152	1	4466.76	1116.78	17.92	-0.35	0.000	1716.06	1.884	s
BI-214	1	4481.68	1120.51	0.00	86.00	0.048	10.78	0.617	s
CO-60	1	4692.13	1173.13	24.19	6.64	0.004	111.67	1.939	s
EU-154	1	5104.95	1276.33	21.79	1.26	0.001	530.45	2.030	s
CO-60	1	5329.63	1332.50	17.83	0.00	0.000	597.22	2.081	s
EU-152	1	5628.44	1407.21	16.32	5.50	0.003	112.36	2.147	s
K-40	1	5843.14	1460.88	0.00	325.00	0.181	5.55	2.016	
BI-214	1	7055.66	1764.04	4.76	16.98	0.009	30.32	2.447	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Peak Analysis Code	Peak MDA Value Becquerels	Peak MDA Code	Peak Comments	
CS-134	T F I	1	-9.971E-003	604.71	-9.971E-003 %	(	1.269E+000	G	7.5E+002	97.62
			-9.971E-003	795.87	2.756E-001 %		1.452E+000	G	7.5E+002	85.53
			-9.971E-003	569.32	-9.971E-003 &		7.213E+000	G	7.5E+002	15.38
			-9.971E-003	801.95	-1.049E+000 &		1.448E+001	G	7.5E+002	8.69
			-9.971E-003	563.24	-1.835E-001 &		1.270E+001	G	7.5E+002	8.35
U-235	N	1	9.472E-001	143.79	9.472E-001 %	(	7.309E+000	G	2.6E+011	10.96
			9.472E-001	205.33	3.568E+000 %		1.576E+001	G	2.6E+011	5.01
			9.472E-001	163.38	4.190E+000 %		1.395E+001	G	2.6E+011	5.08
			9.472E-001	93.35	9.472E-001 %	E	1.521E+001	X	2.6E+011	5.81
TL-208	F N	1	8.778E+000	583.02	8.778E+000 @	(P	9.315E-001	G	7.0E+002	84.50
			8.778E+000	277.28	7.268E+000 %		1.366E+001	G	7.0E+002	6.31
			8.778E+000	860.56	4.862E+000 &		1.017E+001	G	7.0E+002	12.42
TH-234	N	1	8.755E+000	63.29	8.755E+000 %	(P	2.505E+001	G	1.6E+012	4.82
			8.755E+000	92.59	1.031E+001 %	P	1.836E+001	G	1.6E+012	5.58
EU-152	T F	1	-8.288E-002	344.29	-8.288E-002 &	(	3.106E+000	G	4.9E+003	26.50
			-8.288E-002	121.78	-2.801E-002 %		2.670E+000	G	4.9E+003	28.58
			-8.288E-002	778.92	-5.901E-001 %		1.102E+001	G	4.9E+003	12.94
			-8.288E-002	964.11	7.881E+000 %		1.363E+001	G	4.9E+003	14.61
			-8.288E-002	1112.07	-1.615E-001 %		1.034E+001	G	4.9E+003	13.64
			-8.288E-002	1408.00	2.027E+000 %		7.944E+000	G	4.9E+003	21.00
PB-210	N	1	7.506E+000	46.54	7.506E+000 %	(P	3.863E+001	G	8.1E+003	4.25
BI-212	N	1	7.475E+000	727.33	7.475E+000 %	(	1.110E+001	G	7.0E+002	11.82
			7.475E+000	785.51	3.753E+001 %		1.178E+002	G	7.0E+002	1.10
RA-224	N	1	-6.094E+001	240.99	-6.094E+001 &	(	4.929E+001	G	7.0E+002	4.10
BE-7	N P C	1	4.058E+000	477.60	4.058E+000 %	(	8.430E+000	G	5.3E+001	10.52
AM-241	T	1	3.045E-001	59.54	3.045E-001 &	(	3.390E+000	G	1.6E+005	35.90
PB-212	N	1	2.489E+001	238.63	2.489E+001	(P	2.279E+000	G	7.0E+002	43.30
			2.489E+001	300.03	4.418E+001 *		1.719E+001	G	7.0E+002	3.28
K-40	N	1	2.441E+002	1460.83	2.441E+002	(	5.536E+000	G	4.7E+011	10.67
			2.276E+000	123.10	-4.431E-001 &		1.825E+000	G	3.1E+003	40.79
			2.276E+000	1274.54	2.541E-001 &		4.923E+000	G	3.1E+003	35.19
			2.276E+000	723.36	-7.269E-001 &		7.546E+000	G	3.1E+003	20.22

				2.276E+000	1004.77	-1.366E+000	%		8.821E+000G		3.1E+003	18.01
				2.276E+000	996.33	4.561E-002	%		1.172E+001G		3.1E+003	10.60
EU-154	T F I		1	2.276E+000	873.23	2.276E+000	%	(	9.482E+000G		3.1E+003	12.27
BI-214		N	1	1.769E+001	609.31	1.769E+001		(P	2.365E+000G		5.8E+005	46.09
				1.769E+001	1120.29	3.602E+001	+		3.087E+000G		5.8E+005	15.10
				1.769E+001	1764.49	1.059E+001	-		8.031E+000G		5.8E+005	15.40
PA-234M		N	1	1.680E+001	1001.00	1.680E+001	%	(	1.777E+002G		1.6E+012	.84
				1.680E+001	766.41	-8.231E+001	%		5.276E+002G		1.6E+012	.29
AC-228		N	1	1.593E+001	911.16	1.579E+001		(	4.067E+000G		2.1E+003	29.00
				1.593E+001	968.97	1.448E+001		(	1.106E+001G		2.1E+003	17.46
				1.593E+001	338.32	1.838E+001	@	(	7.321E+000G		2.1E+003	12.01
				1.593E+001	93.35	1.593E+001	!	E	1.589E+001G	A	2.1E+003	5.56
Pa-234		N	1	-1.539E+000	131.29	-1.539E+000	&	(	4.345E+000G		1.6E+012	18.00
				-1.539E+000	569.47	-1.539E+000	&		1.353E+001G		1.6E+012	8.20
				-1.539E+000	946.02	0.000E+000	%		1.238E+001G		1.6E+012	13.40
				-1.539E+000	883.24	1.521E+000	%		1.374E+001G		1.6E+012	9.60
				-1.539E+000	880.53	9.522E-002	%		2.161E+001G		1.6E+012	6.00
PB-214		N	1	1.422E+001	351.93	1.389E+001	*	(P	2.557E+000G		5.8E+005	37.60
				1.422E+001	295.09	1.486E+001	*	(	3.685E+000G		5.8E+005	19.30
				1.422E+001	242.00	-1.163E-001	%		2.034E+001G		5.8E+005	7.43
CS-137	T F I		1	1.403E+000	661.66	1.403E+000	*	(P	1.540E+000G		1.1E+004	85.21
I-131	T F I		1	-1.387E-001	364.48	-1.387E-001	%	(	1.101E+000G		8.0E+000	81.70
				-1.387E-001	284.30	-3.309E+000	%		1.515E+001G		8.0E+000	6.14
				-1.387E-001	636.97	-2.911E+000	&		1.704E+001G		8.0E+000	7.17
EU-155	T F I		1	1.175E+000	105.31	1.175E+000	*	(	3.540E+000G		1.8E+003	21.20
				1.175E+000	86.54	1.941E-001	%		3.542E+000G	A	1.8E+003	30.70
CO-60	T F		1	0.000E+000	1332.50	0.000E+000	%	(	1.650E+000G		1.9E+003	99.98
				0.000E+000	1173.24	4.378E-001	%		1.689E+000G		1.9E+003	99.90

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	#	4.058E+000	4.063E+000	63.10	63.17	8.430E+000
K-40		2.441E+002	2.441E+002	5.55	6.27	5.536E+000
CO-60	#			597.22	597.23	1.650E+000
I-131	#	-1.387E-001	-1.398E-001	228.43	228.45	1.101E+000
CS-134	#	-9.971E-003	-9.972E-003	3,552.56	3,552.56	1.269E+000
CS-137	#	1.403E+000	1.403E+000	35.52	35.64	1.540E+000
EU-155	#	1.175E+000	1.175E+000	90.22	90.28	3.540E+000
TL-208	#	8.778E+000	8.779E+000	8.31	8.79	9.315E-001
PB-210	#	7.506E+000	7.506E+000	147.18	147.24	3.863E+001
PB-212		2.489E+001	2.490E+001	6.01	6.71	2.279E+000
PB-214	#	1.422E+001	1.422E+001	6.83	7.40	2.557E+000
RA-224	#	-6.094E+001	-6.095E+001	25.32	25.50	4.929E+001
AC-228	#	1.593E+001	1.593E+001	10.89	11.26	4.067E+000
Pa-234	#	-1.539E+000	-1.539E+000	84.77	84.82	4.345E+000
U-235	#	9.472E-001	9.472E-001	227.41	227.43	7.309E+000
AM-241	#	3.045E-001	3.045E-001	328.31	328.33	3.390E+000
EU-152	#	-8.288E-002	-8.288E-002	1,058.61	1,058.61	3.106E+000
EU-154	#	2.276E+000	2.276E+000	119.33	119.36	9.482E+000
BI-212	#	7.475E+000	7.475E+000	46.64	46.73	1.110E+001
BI-214		1.769E+001	1.769E+001	9.52	9.95	2.365E+000
TH-234	#	8.755E+000	8.755E+000	84.57	84.65	2.505E+001
PA-234M	#	1.680E+001	1.680E+001	294.40	294.42	1.777E+002

= All peaks for activity calculation had bad shape

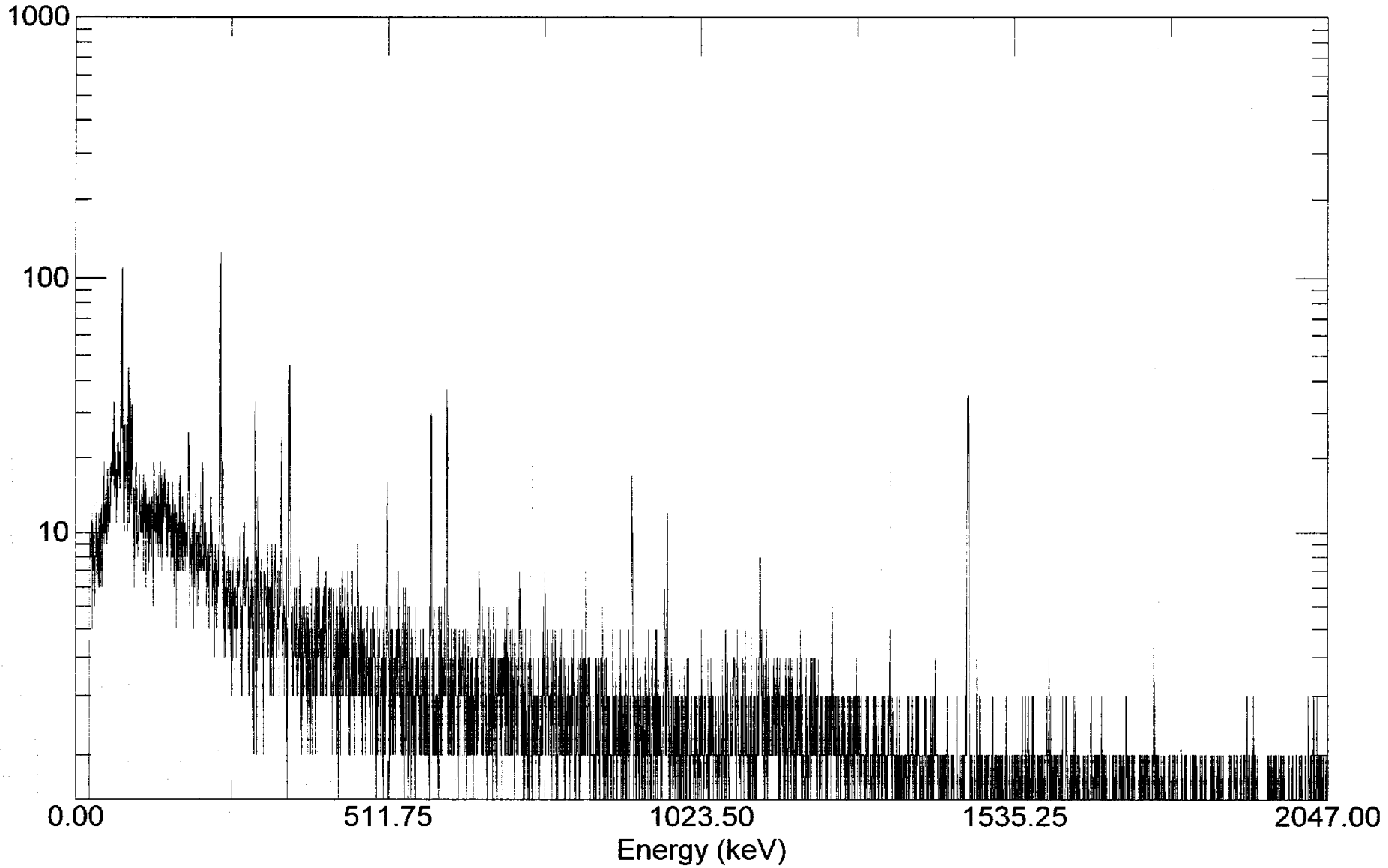
Total Activity (37.72 to 2,000.15 keV) 295.47 Bq/sample

Analyzed by: 403605

Laboratory: Test America

KEKDE1AC

7360292_KEKDE1AC_F7L200260-004



Acquired: 26-Dec-2007 2:10:01 PM
File: C:\User\spectra\KEKDE1AC.spc
Detector: #0 Ge 7 SN/154

Real Time: 1820.80 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,039

Sample Description: 7360292_KEKDK1AC_F7L200260-005

Spectrum Filename: KEKDK1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 2:46:25PM		
Live Time:	1800.00	Real Time:	1810.80
Dead Time:	0.60 %		
Detector ID:	1		

Detector System: Ge 1 SN/242

Calibration

Description:	Ge1 Tunacan 74139-334 1_15_07		
Filename:	C:\User\Calibrations\Ge1 calibrations\Ge1 Tunacan polynomial 01_15_07.Clb		
Energy Created:	15-Jan-2007 5:43:37PM	Efficiency Created:	15-Jan-2007 5:44:16PM
Zero Offset:	0.212 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.71 keV
Stop Channel:	8,000 for an energy of 1999.84 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge1 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.1020

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
298.71	74.89	426.00	242.00	0.134	18.23	0.944	PB-214	
307.64	77.13	376.83	368.17	0.205	11.96	0.794	PB-214	
347.85	87.18	199.33	159.67	0.089	14.80	0.971	PB-214	s
359.21	90.02	133.83	125.17	0.070	17.94	0.888	PB-214	sM
741.92	185.70	126.67	127.33	0.071	20.10	0.750	U-235	s
1179.56	295.11	228.87	6.13	0.003	351.24	1.026		
1309.72	327.65	50.67	49.33	0.027	32.71	0.736	AC-228	s
1352.76	338.41	219.72	48.28	0.027	45.74	1.061		s
1406.24	351.78	329.94	10.06	0.006	257.20	1.006		
1850.17	462.75	17.00	58.00	0.032	19.13	0.539	CS-138	s
2041.49	510.58	24.67	184.33	0.102	10.31	0.937	TL-208	s
3643.95	911.15	150.29	23.71	0.013	75.95	1.175		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	184.80	46.41	162.79	77.21	0.043	24.53	0.738	s
AM-241	1	237.26	59.53	272.70	10.34	0.006	227.98	0.824	s
TH-234	1	252.78	63.41	231.90	74.10	0.041	25.38	0.754	s
EU-155	1	345.31	86.54	395.76	-6.03	-0.003	468.71	0.849	s
TH-234	1	371.46	93.08	269.01	132.99	0.074	18.02	0.896	s
AC-228	1	372.54	93.35	243.56	100.45	0.056	1.94	0.855	s D
U-235	1	372.54	93.35	243.56	-6.55	-0.004	-531.42	0.855	s D
EU-155	1	420.06	105.23	214.85	31.51	0.018	68.16	0.866	s
EU-154	1	483.49	121.09	110.72	1.49	0.001	1003.52	0.882	s
EU-152	1	487.71	122.14	244.69	-33.40	-0.019	68.46	0.881	s
Pa-234	1	523.66	131.13	346.76	-24.28	-0.013	110.33	0.890	s
U-235	1	574.19	143.76	252.76	-12.10	-0.007	269.22	0.901	s
U-235	1	652.51	163.34	158.82	14.97	0.008	101.15	0.919	s
U-235	1	819.68	205.14	186.65	4.15	0.002	308.10	0.957	s
PB-212	1	952.98	238.46	162.25	671.75	0.373	5.14	1.075	
RA-224	1	958.66	239.88	837.44	-211.17	-0.117	20.57	0.989	s
PB-214	1	965.82	241.67	203.25	63.03	0.035	30.70	0.990	s
TL-208	1	1107.38	277.06	75.25	36.01	0.020	37.93	1.021	s
I-131	1	1137.16	284.51	92.24	-5.02	-0.003	274.15	1.028	s
PB-214	1	1179.56	295.11	103.96	164.67	0.091	10.96	1.037	
PB-212	1	1198.99	299.96	76.67	74.33	0.041	28.38	0.810	s
AC-228	1	1352.07	338.23	94.22	142.52	0.079	12.25	1.076	s
EU-152	1	1375.34	344.05	73.87	-10.07	-0.006	124.76	1.081	s
PB-214	1	1406.26	351.78	70.01	278.29	0.155	6.94	1.088	
I-131	1	1455.41	364.07	72.79	-6.69	-0.004	184.35	1.099	s
BE-7	1	1914.12	478.74	34.70	6.32	0.004	137.68	1.198	s
CS-134	1	2251.53	563.09	48.28	-2.21	-0.001	449.01	1.273	s
CS-134	1	2276.47	569.32	34.28	-2.55	-0.001	-45.39	1.278	s D
Pa-234	1	2277.07	569.47	34.55	-4.39	-0.002	-198.32	1.278	s D
TL-208	1	2331.25	583.02	29.58	262.42	0.146	7.36	1.229	
CS-134	1	2426.28	606.77	72.24	-15.53	-0.009	81.45	1.309	s
BI-214	1	2436.03	609.21	21.63	220.38	0.122	7.15	1.215	s
I-131	1	2543.26	636.01	32.56	-1.05	-0.001	776.70	1.337	s
CS-137	1	2644.92	661.42	37.62	18.82	0.010	51.54	1.358	s
EU-154	1	2891.93	723.17	64.97	-7.80	-0.004	150.48	1.411	s
BI-212	1	2908.02	727.19	48.83	38.85	0.022	30.08	1.414	s
PA-234M	1	3063.98	766.18	51.66	-0.24	0.000	4171.95	1.447	s
EU-152	1	3113.51	778.56	36.64	-4.75	-0.003	186.11	1.458	s
BI-212	1	3141.32	785.51	62.34	0.00	0.000	1116.60	1.463	s
CS-134	1	3179.12	794.96	30.65	14.84	0.008	58.79	1.472	s
CS-134	1	3201.76	800.62	32.47	-3.33	-0.002	248.19	1.477	s
TL-208	1	3440.69	860.34	5.83	73.17	0.041	14.53	0.720	s
EU-154	1	3496.03	874.17	28.63	-3.36	-0.002	231.61	1.537	s
Pa-234	1	3523.06	880.93	37.68	3.19	0.002	277.54	1.543	s
Pa-234	1	3532.34	883.25	33.95	2.62	0.001	320.56	1.546	s

AC-228	1	3643.75	911.10	31.82	142.12	0.079	9.65	1.569	s
Pa-234	1	3783.14	945.94	35.19	-3.66	-0.002	235.38	1.598	s
EU-152	1	3874.27	968.72	67.20	6.43	0.004	184.57	1.613	s
AC-228	1	3874.60	968.80	52.20	65.18	0.036	18.85	1.617	s
EU-154	1	3981.83	995.60	26.66	-0.20	0.000	3710.81	1.640	s
PA-234M	1	3997.35	999.48	32.17	-0.88	0.000	920.16	1.643	s
EU-154	1	4018.52	1004.77	26.97	0.00	0.000	734.50	1.647	s
EU-152	1	4449.06	1112.39	32.90	0.18	0.000	4431.23	1.735	s
BI-214	1	4479.44	1119.98	34.69	27.20	0.015	28.92	1.741	s
CO-60	1	4690.10	1172.64	42.08	-4.63	-0.003	203.62	1.784	s
EU-154	1	5091.05	1272.85	33.90	-1.57	-0.001	529.11	1.866	s
CO-60	1	5326.93	1331.80	17.45	-2.77	-0.002	221.56	1.912	s
EU-152	1	5631.55	1407.94	17.02	4.20	0.002	147.22	1.972	s
K-40	1	5842.48	1460.66	12.54	400.46	0.222	4.92	1.707	
BI-214	1	7055.43	1763.79	15.22	15.67	0.009	31.39	2.246	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels		Analysis Code		MDA Value Becquerels	Code	Comments	
RA-224	N	1	-9.273E+001	240.99	-9.273E+001	*	(		6.041E+001G		7.0E+002	4.10
EU-152	T F	1	-8.842E-001	344.29	-8.842E-001	%	(		3.755E+000G		4.9E+003	26.50
			-8.842E-001	121.78	-1.537E+000	&			3.480E+000G		4.9E+003	28.58
			-8.842E-001	778.92	-1.534E+000	%			9.991E+000G		4.9E+003	12.94
			-8.842E-001	964.11	2.137E+000	%			1.359E+001G		4.9E+003	14.61
			-8.842E-001	1112.07	7.217E-002	%			1.159E+001G		4.9E+003	13.64
			-8.842E-001	1408.00	1.280E+000	%			6.683E+000G		4.9E+003	21.00
CS-137	T F I	1	8.241E-001	661.66	8.241E-001	%	(		1.371E+000G		1.1E+004	85.21
CS-134	T F I	1	-5.573E-001	604.71	-5.573E-001	&	(		1.518E+000G		7.5E+002	97.62
			-5.573E-001	795.87	7.367E-001	%			1.415E+000G		7.5E+002	85.53
			-5.573E-001	569.32	-5.573E-001	%			6.545E+000G		7.5E+002	15.38
			-5.573E-001	801.95	-1.635E+000	%			1.437E+001G		7.5E+002	8.69
			-5.573E-001	563.24	-8.829E-001	%			1.400E+001G		7.5E+002	8.35
			-5.226E+000	766.41	-3.431E+000	%			5.092E+002G		1.6E+012	.29
PA-234	N	1	-5.226E+000	1001.00	-5.226E+000	%	(		1.735E+002G		1.6E+012	.84
AM-241	T	1	4.999E-001	59.54	4.999E-001	&	(		3.851E+000G		1.6E+005	35.90
PB-210	N	1	4.877E+001	46.54	4.877E+001	*	(	P	3.927E+001G		8.1E+003	4.25
TH-234	N	1	2.880E+001	63.29	2.520E+001	*	(	P	2.505E+001G		1.6E+012	4.82
			2.880E+001	92.59	3.190E+001	*	(	P	1.899E+001G		1.6E+012	5.58
PB-212	N	1	2.774E+001	238.63	2.774E+001		(	P	2.564E+000G		7.0E+002	43.30
			2.774E+001	300.03	4.767E+001	+			2.790E+001G		7.0E+002	3.28
K-40	N	1	2.471E+002	1460.83	2.471E+002		(	P	1.186E+001G		4.7E+011	10.67
AC-228	N	1	2.415E+001	911.07	2.286E+001		(	P	4.664E+000G		2.1E+003	29.00
			2.415E+001	968.97	1.818E+001	-		P	1.015E+001G		2.1E+003	17.46
			2.415E+001	338.32	2.726E+001	@	(	P	9.170E+000G		2.1E+003	12.01
			2.415E+001	93.35	2.415E+001	!		E	1.813E+001X	A	2.1E+003	5.56
			-1.989E-001	284.30	-1.654E+000	%			1.564E+001G		8.0E+000	6.14
			-1.989E-001	636.97	-5.307E-001	&			1.485E+001G		8.0E+000	7.17
I-131	T F I	1	-1.989E-001	364.48	-1.989E-001	%	(		1.262E+000G		8.0E+000	81.70
			1.949E+000	86.54	-2.684E-001	%			4.250E+000G		1.8E+003	30.70
EU-155	T F I	1	1.949E+000	105.31	1.949E+000	*	(		4.392E+000G		1.8E+003	21.20
Pa-234	N	1	-1.798E+000	131.29	-1.798E+000	&	(		6.624E+000G		1.6E+012	18.00
			-1.798E+000	569.47	-1.798E+000	%			1.232E+001G		1.6E+012	8.20
			-1.798E+000	946.02	-1.306E+000	%			1.085E+001G		1.6E+012	13.40
			-1.798E+000	883.24	1.246E+000	%			1.420E+001G		1.6E+012	9.60
			-1.798E+000	880.53	2.424E+000	%			2.377E+001G		1.6E+012	6.00
BE-7	N P C	1	1.778E+000	477.60	1.778E+000	%	(		8.483E+000G		5.3E+001	10.52
PB-214	N	1	1.732E+001	351.93	1.750E+001		(	P	2.623E+000G		5.8E+005	37.60
			1.732E+001	295.09	1.773E+001		(	P	5.408E+000G		5.8E+005	19.30
			1.732E+001	242.00	1.532E+001	*	(	P	1.680E+001G		5.8E+005	7.43
CO-60	T F	1	-1.700E-001	1332.50	-1.700E-001	%	(		1.361E+000G		1.9E+003	99.98
			-1.700E-001	1173.24	-2.587E-001	%			1.841E+000G		1.9E+003	99.90
			1.684E+001	1120.29	9.728E+000	-		P	1.078E+001G		5.8E+005	15.10
			1.684E+001	1764.49	7.815E+000	%		P	1.042E+001G		5.8E+005	15.40

BI-214		N	1	1.684E+001	609.31	1.684E+001	*	(	P	1.863E+000G	5.8E+005	46.09
U-235		N	1	-1.508E+000	143.79	-1.508E+000	%	(	P	9.568E+000G	2.6E+011	10.96
				-1.508E+000	205.33	1.343E+000	%		P	2.149E+001G	2.6E+011	5.01
				-1.508E+000	163.38	4.228E+000	%		P	1.735E+001G	2.6E+011	5.08
				-1.508E+000	93.35	-1.508E+000	!		E	1.736E+001X	2.6E+011	5.81
BI-212		N	1	1.310E+001	727.33	1.310E+001		(		1.190E+001G	7.0E+002	11.82
				1.310E+001	785.51	0.000E+000	&			1.511E+002G	7.0E+002	1.10
EU-154	T F I		1	-1.241E+000	873.23	-1.241E+000	&	(		1.020E+001G	3.1E+003	12.27
				-1.241E+000	123.10	4.805E-002	%			1.671E+000G	3.1E+003	40.79
				-1.241E+000	1274.54	-2.655E-001	%			5.033E+000G	3.1E+003	35.19
				-1.241E+000	723.36	-1.532E+000	%			7.910E+000G	3.1E+003	20.22
				-1.241E+000	1004.77	0.000E+000	&			7.467E+000G	3.1E+003	18.01
				-1.241E+000	996.33	-9.238E-002	&			1.255E+001G	3.1E+003	10.60
TL-208	F	N	1	1.065E+001	583.02	1.060E+001		(	P	1.133E+000G	7.0E+002	84.50
				1.065E+001	277.28	1.134E+001	?	(		1.358E+001G	7.0E+002	6.31
				1.065E+001	860.56	2.641E+001	+			5.040E+000G	7.0E+002	12.42

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
CS-134	<	-5.573E-001	-5.573E-001	81.45	81.50	1.518E+000
BE-7	<	1.778E+000	1.780E+000	137.68	137.71	8.483E+000
K-40		2.471E+002	2.471E+002	5.07	5.86	1.186E+001
CO-60	<	-1.700E-001	-1.700E-001	221.56	221.58	1.361E+000
I-131	<	-1.989E-001	-2.008E-001	184.35	184.37	1.262E+000
CS-137	<	8.241E-001	8.241E-001	51.54	51.62	1.371E+000
EU-152	<	-8.842E-001	-8.842E-001	124.76	124.79	3.755E+000
TL-208		1.065E+001	1.065E+001	7.61	8.14	1.133E+000
RA-224	<	-9.273E+001	-9.274E+001	20.57	20.78	6.041E+001
PB-210	#	4.877E+001	4.877E+001	33.88	34.11	3.927E+001
PB-212		2.774E+001	2.775E+001	5.32	6.10	2.564E+000
AC-228	<	2.415E+001	2.415E+001	8.06	8.56	4.664E+000
Pa-234	<	-1.798E+000	-1.798E+000	110.33	110.37	6.624E+000
U-235	<	-1.508E+000	-1.508E+000	352.48	352.49	9.568E+000
AM-241	<	4.999E-001	4.999E-001	227.98	228.02	3.851E+000
EU-154	<	-1.241E+000	-1.241E+000	231.61	231.63	1.020E+001
EU-155	<	1.949E+000	1.949E+000	68.16	68.24	4.392E+000
PB-214	<	1.732E+001	1.732E+001	7.24	7.79	2.623E+000
BI-212	<	1.310E+001	1.310E+001	30.08	30.22	1.190E+001
BI-214	#	1.684E+001	1.684E+001	7.53	8.07	1.863E+000
TH-234	#	2.880E+001	2.880E+001	22.71	23.01	2.505E+001
PA-234M	<	-5.226E+000	-5.226E+000	920.16	920.16	1.735E+002

= All peaks for activity calculation had bad shape

Total Activity (37.71 to 1,999.84 keV) 379.94 Bq/sample

Analyzed by: _____

403605

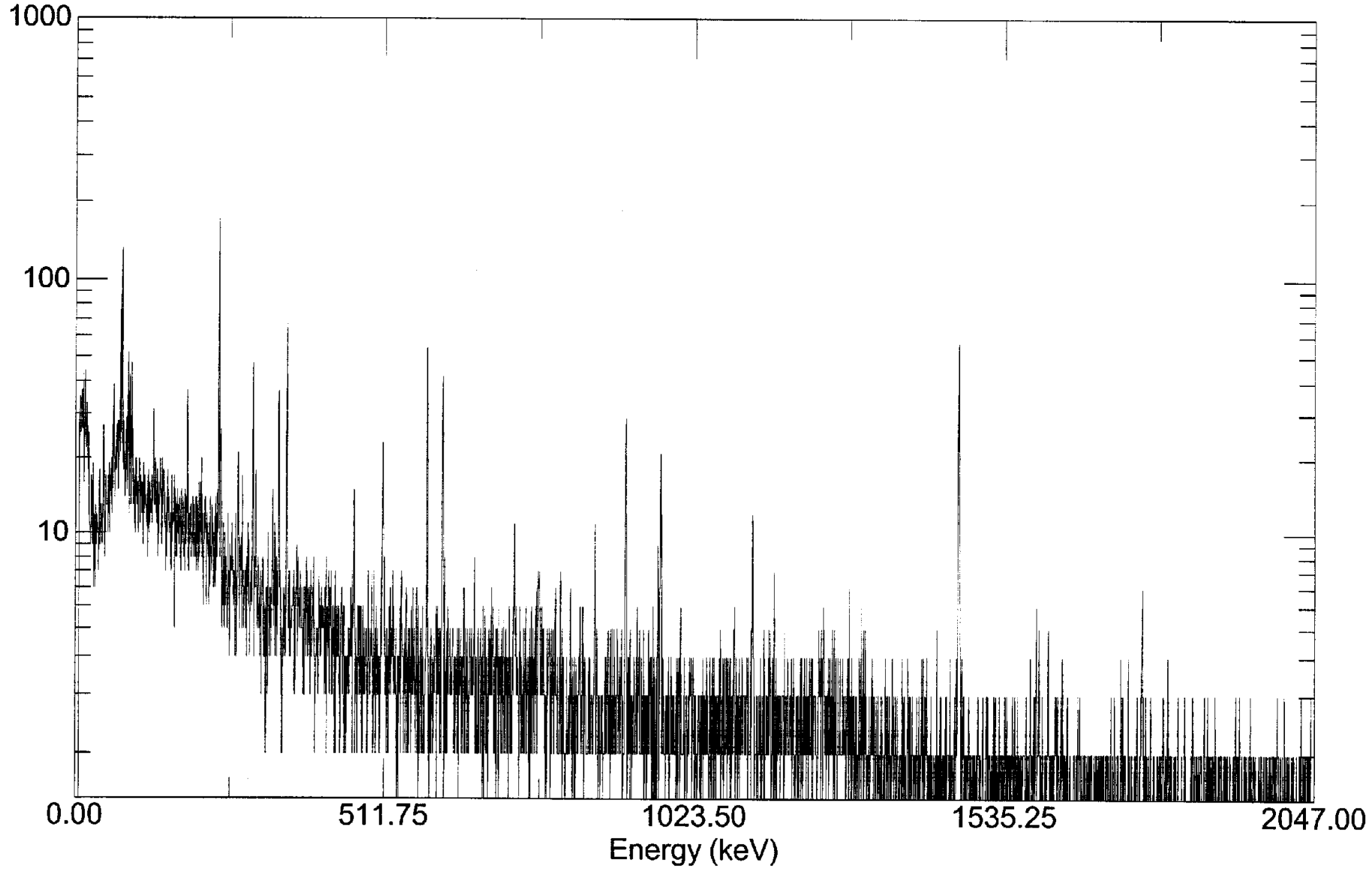
Reviewed by: _____

Supervisor

Laboratory: Test America

KEKDK1AC

7360292_KEKDK1AC_F7L200260-005



Acquired: 26-Dec-2007 2:46:25 PM
File: C:\User\spectra\KEKDK1AC.spc
Detector: #0 Ge 1 SN/242

Real Time: 1810.80 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,044

Sample Description: 7360292_KEKDR1AC_F7L200260-006

Spectrum Filename: KEKDR1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 2:46:45PM		
Live Time:	1800.00	Real Time:	1853.42
Dead Time:	2.88 %		
Detector ID:	5		

Detector System: Ge 5 SN/157

Calibration

Description:	Ge5 TunaCanCal_74139-334_05_08_07		
Filename:	C:\User\Calibrations\Ge5 calibrations\Ge5 TunaCanCal_74139-334_05_08_07.Clb		
Energy Created:	28-Mar-2007 6:08:23PM	Efficiency Created:	08-May-2007 3:55:34PM
Zero Offset:	0.272 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.74 keV
Stop Channel:	8,000 for an energy of 2000.57 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge5 PBC table 11 26 07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1526

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
347.25	87.01	401.00	0.00	0.000	2831.96	0.740		
358.52	89.83	210.17	119.83	0.067	19.39	0.682	PB-214	s
515.30	129.00	164.27	104.73	0.058	19.88	0.986	AC-228	
744.35	186.22	170.83	110.17	0.061	28.60	0.523	PA-234	s
836.54	209.25	161.45	113.55	0.063	18.40	0.694	AC-228	s
2044.36	511.06	17.50	124.50	0.069	10.95	0.508	TL-208	s
174.46	43.85	75.17	40.83	0.023	39.02	0.776	EU-155	sM
297.87	74.68	438.00	349.00	0.194	13.13	0.688	PB-214	
307.26	77.03	320.00	452.00	0.251	8.77	0.862	PB-214	

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.81	46.69	115.26	54.74	0.030	26.57	0.886	s
AM-241	1	236.08	59.25	301.59	-2.16	-0.001	2113.68	0.761	s
TH-234	1	252.01	63.22	355.30	14.39	0.008	93.38	0.764	s
EU-155	1	347.61	87.11	296.53	198.23	0.110	14.19	0.788	
TH-234	1	371.46	93.06	366.19	118.63	0.066	20.34	0.795	s
AC-228	1	372.61	93.35	250.00	187.06	0.104	1.82	1.176	s D
U-235	1	372.61	93.35	282.96	-4.15	-0.002	-648.25	0.795	s D
EU-155	1	421.75	105.63	237.78	31.55	0.018	71.37	0.808	s
EU-152	1	485.91	121.66	240.15	-8.67	-0.005	254.99	0.824	s
EU-154	1	491.36	123.02	203.79	12.01	0.007	170.60	0.826	s
Pa-234	1	520.05	130.18	247.74	-15.83	-0.009	142.81	0.834	s
U-235	1	574.00	143.66	262.46	-7.85	-0.004	426.77	0.847	s
U-235	1	653.60	163.55	225.65	-10.78	-0.006	243.22	0.867	s
U-235	1	819.58	205.02	169.10	22.92	0.013	82.90	0.909	s
PB-212	1	954.20	238.65	164.48	955.52	0.531	4.28	0.899	
RA-224	1	963.54	240.99	123.72	93.28	0.052	19.79	0.944	D
PB-214	1	967.59	242.00	173.64	71.36	0.040	28.67	0.945	D
TL-208	1	1109.02	277.33	65.00	109.00	0.061	19.58	0.921	s
I-131	1	1134.39	283.67	72.68	-0.29	0.000	4178.49	0.987	s
PB-214	1	1180.02	295.07	81.75	139.25	0.077	15.31	1.052	
PB-212	1	1200.65	300.23	36.67	63.33	0.035	20.42	1.434	s
AC-228	1	1353.70	338.47	65.00	236.00	0.131	10.23	1.160	
EU-152	1	1388.95	347.28	44.12	15.10	0.008	67.33	1.045	s
PB-214	1	1407.87	352.01	70.21	222.79	0.124	10.90	1.132	s
I-131	1	1457.36	364.37	56.31	9.32	0.005	118.51	1.065	s
BE-7	1	1918.97	479.73	43.43	-1.46	-0.001	645.65	1.173	s
CS-134	1	2252.72	563.14	51.75	3.32	0.002	311.73	1.252	s
CS-134	1	2277.45	569.32	39.25	-0.92	-0.001	-50.76	1.258	s D
Pa-234	1	2278.05	569.47	51.81	-2.38	-0.001	-198.04	1.258	s D
TL-208	1	2333.72	583.38	22.42	304.58	0.169	6.60	1.303	
CS-134	1	2420.54	605.09	45.56	-5.56	-0.003	176.90	1.290	s
BI-214	1	2438.26	609.51	21.90	123.10	0.068	10.27	1.425	
I-131	1	2546.53	636.58	39.32	7.74	0.004	120.06	1.319	
CS-137	1	2648.60	662.09	22.25	34.75	0.019	24.35	0.402	s
EU-154	1	2901.67	725.34	62.05	-14.05	-0.008	83.66	1.397	s
BI-212	1	2910.57	727.57	4.67	84.33	0.047	12.48	0.678	s
PA-234M	1	3066.18	766.47	46.88	-6.00	-0.003	166.55	1.434	s
EU-152	1	3116.98	779.17	40.39	-3.99	-0.002	230.55	1.445	s
BI-212	1	3131.86	782.89	24.74	4.60	0.003	160.00	1.451	
CS-134	1	3192.12	797.95	44.22	-6.55	-0.004	148.73	1.460	s
CS-134	1	3211.59	802.82	44.00	-8.12	-0.005	120.71	1.465	s
TL-208	1	3443.50	860.80	0.00	32.00	0.018	17.68	0.519	s
EU-154	1	3495.46	873.79	29.64	-2.09	-0.001	374.78	1.527	s
Pa-234	1	3523.44	880.78	35.58	-2.19	-0.001	391.43	1.533	s
Pa-234	1	3532.09	882.94	26.12	2.05	0.001	360.06	1.535	s
AC-228	1	3646.15	911.46	5.00	215.00	0.119	7.28	1.671	s

Pa-234	1	3779.03	944.68	24.73	0.10	0.000	7033.34	1.588	s
EU-152	1	3844.61	961.08	30.39	-0.32	0.000	2442.22	1.603	s
AC-228	1	3876.49	969.05	30.00	166.00	0.092	12.36	1.519	
EU-154	1	3988.40	997.03	22.56	3.96	0.002	177.05	1.630	s
PA-234M	1	4008.00	1001.93	27.87	0.43	0.000	1758.79	1.633	s
EU-154	1	4019.37	1004.77	77.53	0.00	0.000	1245.26	1.637	s
EU-152	1	4448.34	1112.04	23.04	1.30	0.001	529.81	1.723	s
BI-214	1	4482.16	1120.50	0.00	75.00	0.042	11.55	1.396	
CO-60	1	4691.23	1172.78	30.03	-2.04	-0.001	386.27	1.772	s
EU-154	1	5098.13	1274.54	82.93	0.00	0.000	1287.85	1.850	s
CO-60	1	5332.21	1333.09	19.65	0.60	0.000	1047.56	1.894	s
EU-152	1	5633.55	1408.46	10.73	5.87	0.003	89.02	1.950	s
K-40	1	5844.46	1461.22	0.00	252.00	0.140	6.30	1.677	
BI-214	1	7058.21	1764.89	10.03	9.41	0.005	46.69	2.196	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Peak Analysis Code	Peak MDA Value Becquerels	Peak MDA Value Code	Peak Comments	
CO-60	T F	1	5.827E-002	1332.50	5.827E-002 %	(	2.258E+000G		1.9E+003	99.98
			5.827E-002	1173.24	-1.778E-001 %		2.461E+000G		1.9E+003	99.90
BE-7	N P C	1	-5.664E-001	477.60	-5.664E-001 %	(	1.301E+001G		5.3E+001	10.52
AC-228	N	1	5.438E+001	911.16	5.258E+001 @	(	3.211E+000G		2.1E+003	29.00
			5.438E+001	968.97	7.088E+001 +		1.206E+001G		2.1E+003	17.46
			5.438E+001	338.32	5.872E+001	(	1.002E+001G		2.1E+003	12.01
			5.438E+001	93.35	5.438E+001 +	E	2.221E+001G	A	2.1E+003	5.56
RA-224	N	1	5.037E+001	240.99	5.037E+001	(	2.945E+001G		7.0E+002	4.10
PB-212	N	1	4.869E+001	238.63	4.846E+001	(P	3.168E+000G		7.0E+002	43.30
			4.869E+001	300.03	5.172E+001	(	2.526E+001G		7.0E+002	3.28
BI-212	N	1	4.204E+001	727.33	4.204E+001	(	6.370E+000G		7.0E+002	11.82
			4.204E+001	785.51	2.624E+001 %		1.478E+002G		7.0E+002	1.10
PB-210	N	1	4.019E+001	46.54	4.019E+001 *	(P	3.873E+001G		8.1E+003	4.25
PA-234M	N	1	3.897E+000	1001.00	3.897E+000 %	(	2.497E+002G		1.6E+012	.84
			3.897E+000	766.41	-1.255E+002 %		7.247E+002G		1.6E+012	.29
			3.649E-001	636.97	5.688E+000 %		2.346E+001G		8.0E+000	7.17
I-131	T F I	1	3.649E-001	364.48	3.649E-001 %	(	1.476E+000G		8.0E+000	81.70
			3.649E-001	284.30	-1.201E-001 &		1.764E+001G		8.0E+000	6.14
CS-134	T F I	1	-2.869E-001	604.71	-2.869E-001 &	(	1.764E+000G		7.5E+002	97.62
			-2.869E-001	795.87	-4.865E-001 %		2.502E+000G		7.5E+002	85.53
			-2.869E-001	569.32	-2.869E-001 %		9.920E+000G		7.5E+002	15.38
			-2.869E-001	801.95	-5.972E+000 %		2.472E+001G		7.5E+002	8.69
			-2.869E-001	563.24	1.881E+000 &		2.056E+001G		7.5E+002	8.35
K-40	N	1	2.463E+002	1460.83	2.463E+002	(	7.204E+000G		4.7E+011	10.67
EU-155	T F I	1	2.339E+000	105.31	2.339E+000 *	(	5.528E+000G		1.8E+003	21.20
			2.339E+000	86.54	1.072E+001		4.487E+000G	A	1.8E+003	30.70
CS-137	T F I	1	2.219E+000	661.66	2.219E+000	(P	1.577E+000G		1.1E+004	85.21
TH-234	N	1	2.118E+001	63.29	5.828E+000 %	(P	3.668E+001G		1.6E+012	4.82
			2.118E+001	92.59	3.443E+001 *	(P	2.667E+001G		1.6E+012	5.58
			1.891E+001	295.09	1.904E+001	(P	6.131E+000G		5.8E+005	19.30
			1.891E+001	242.00	2.133E+001	(	1.917E+001G		5.8E+005	7.43
PB-214	N	1	1.891E+001	351.93	1.836E+001 @	(P	3.441E+000G		5.8E+005	37.60

TL-208	F	N	1	1.758E+001	583.02	1.760E+001		(	P	1.431E+000G	7.0E+002	84.50
				1.758E+001	277.28	4.313E+001	*			1.594E+001G	7.0E+002	6.31
				1.758E+001	860.56	1.744E+001		(		4.017E+000G	7.0E+002	12.42
EU-152	T F		1	1.730E+000	344.29	1.730E+000	%	(		3.857E+000G	4.9E+003	26.50
				1.730E+000	121.78	-4.738E-001	%			4.094E+000G	4.9E+003	28.58
				1.730E+000	778.92	-1.925E+000	%			1.558E+001G	4.9E+003	12.94
				1.730E+000	964.11	-1.627E-001	%			1.444E+001G	4.9E+003	14.61
				1.730E+000	1112.07	7.936E-001	%			1.532E+001G	4.9E+003	13.64
				1.730E+000	1408.00	2.827E+000	%			8.654E+000G	4.9E+003	21.00
Pa-234		N	1	-1.387E+000	131.29	-1.387E+000	%	(		6.661E+000G	1.6E+012	18.00
				-1.387E+000	569.47	-1.387E+000	%			2.115E+001G	1.6E+012	8.20
				-1.387E+000	946.02	5.462E-002	%			1.412E+001G	1.6E+012	13.40
				-1.387E+000	883.24	1.474E+000	&			1.911E+001G	1.6E+012	9.60
				-1.387E+000	880.53	-2.515E+000	%			3.507E+001G	1.6E+012	6.00
Bl-214		N	1	1.355E+001	609.31	1.355E+001		(	P	2.698E+000G	5.8E+005	46.09
				1.355E+001	1120.29	4.164E+001	+			4.092E+000G	5.8E+005	15.10
				1.355E+001	1764.49	7.503E+000	%		P	1.393E+001G	5.8E+005	15.40
AM-241	T		1	-1.227E-001	59.54	-1.227E-001	%	(	P	4.758E+000G	1.6E+005	35.90
				-1.167E+000	123.10	4.600E-001	%			2.653E+000G	3.1E+003	40.79
				-1.167E+000	1274.54	0.000E+000	%			1.195E+001G	3.1E+003	35.19
				-1.167E+000	723.36	-4.076E+000	%			1.143E+001G	3.1E+003	20.22
				-1.167E+000	1004.77	0.000E+000	%			1.865E+001G	3.1E+003	18.01
				-1.167E+000	996.33	2.846E+000	&			1.787E+001G	3.1E+003	10.60
EU-154	T F I		1	-1.167E+000	873.23	-1.167E+000	%	(		1.568E+001G	3.1E+003	12.27
U-235		N	1	-1.155E+000	143.79	-1.155E+000	&	(	P	1.151E+001G	2.6E+011	10.96
				-1.155E+000	205.33	8.942E+000	%			2.470E+001G	2.6E+011	5.01
				-1.155E+000	163.38	-3.604E+000	%		P	2.431E+001G	2.6E+011	5.08
				-1.155E+000	93.35	-1.155E+000	!		E	2.256E+001X	2.6E+011	5.81

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
CS-134	#	-2.869E-001	-2.870E-001	176.90	176.92	1.764E+000
CS-137		2.219E+000	2.219E+000	28.73	28.88	1.577E+000
EU-155	#	2.339E+000	2.339E+000	71.37	71.45	5.528E+000
BI-212		4.204E+001	4.205E+001	12.48	12.81	6.370E+000
BI-214		1.355E+001	1.355E+001	10.83	11.21	2.698E+000
BE-7	#	-5.664E-001	-5.673E-001	645.65	645.65	1.301E+001
K-40		2.463E+002	2.463E+002	6.30	6.95	7.204E+000
CO-60	#	5.827E-002	5.827E-002	1,047.56	1,047.56	2.258E+000
I-131	#	3.649E-001	3.686E-001	118.51	118.55	1.476E+000
EU-152	#	1.730E+000	1.730E+000	67.33	67.39	3.857E+000
EU-154	#	-1.167E+000	-1.167E+000	374.78	374.79	1.568E+001
TL-208		1.758E+001	1.758E+001	6.68	7.28	1.431E+000
PB-210	#	4.019E+001	4.019E+001	34.95	35.17	3.873E+001
PB-212		4.869E+001	4.869E+001	4.31	5.25	3.168E+000
PB-214		1.891E+001	1.891E+001	11.16	11.52	3.441E+000
RA-224		5.037E+001	5.037E+001	19.79	20.01	2.945E+001
AC-228		5.438E+001	5.438E+001	6.28	6.91	3.211E+000
Pa-234	#	-1.387E+000	-1.387E+000	142.81	142.85	6.661E+000
U-235	#	-1.155E+000	-1.155E+000	561.43	561.43	1.151E+001
AM-241	#	-1.227E-001	-1.227E-001	5,361.39	5,361.39	4.758E+000
TH-234	#	2.118E+001	2.118E+001	24.26	24.54	3.668E+001
PA-234M	#	3.897E+000	3.897E+000	1,758.79	1,758.79	2.497E+002

= All peaks for activity calculation had bad shape

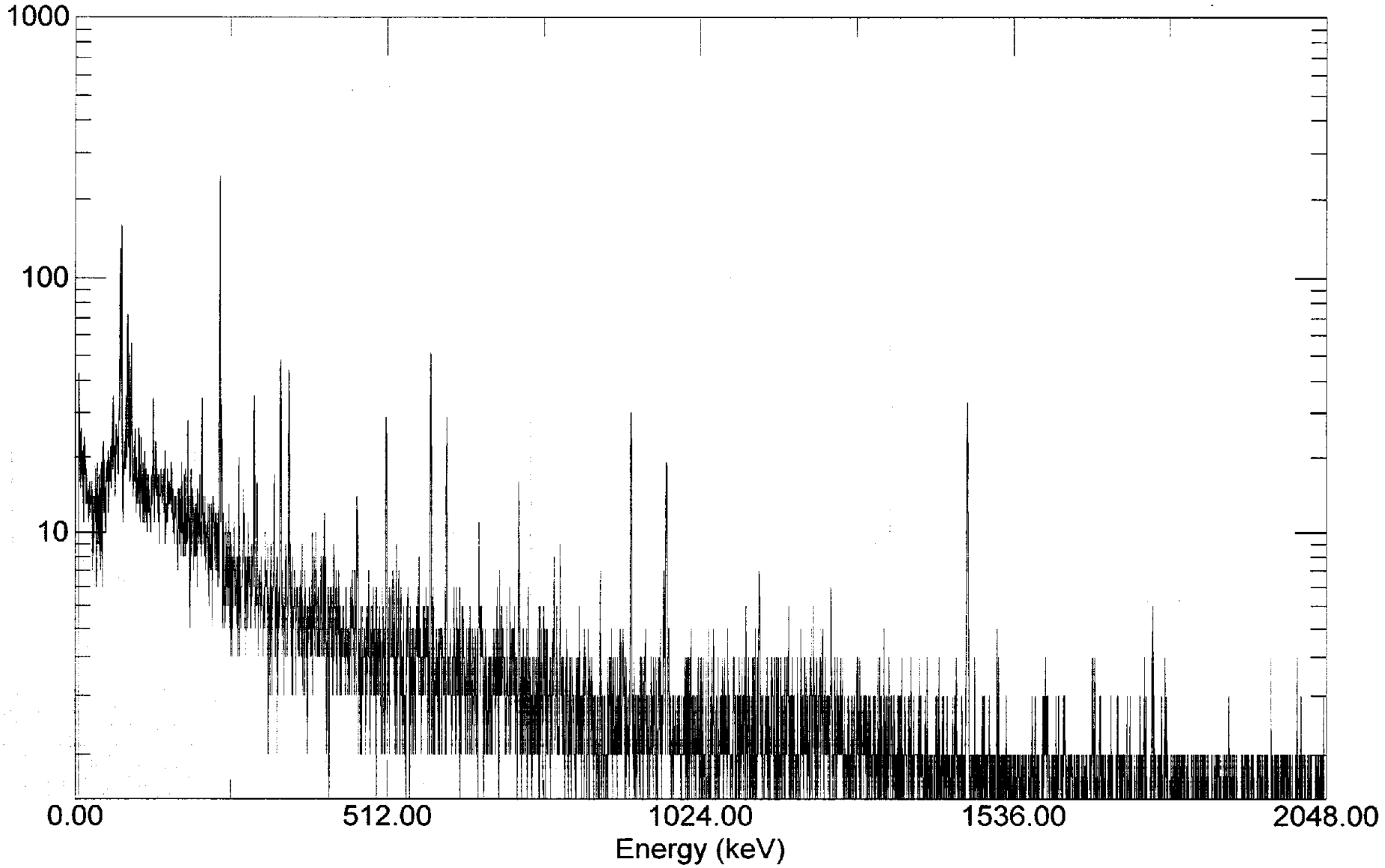
Total Activity (37.74 to 2,000.57 keV) 534.24 Bq/sample

Analyzed by: 403605

Laboratory: STL- St Louis

KEKDR1AC

7360292_KEKDR1AC_F7L200260-006



Acquired: 26-Dec-2007 2:46:45 PM
File: C:\User\spectra\KEKDR1AC.spc
Detector: #0 Ge 5 SN/157

Real Time: 1853.42 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,043

Sample Description: 7360292_KEKDX1AC_F7L200260-007

Spectrum Filename: KEKDX1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 2:47:37PM		
Live Time:	1800.00	Real Time:	1820.58
Dead Time:	1.13 %		
Detector ID:	7		

Detector System: Ge 7 SN/154

Calibration

Description:	Ge7 Tunacan 74139_334 01_16_07		
Filename:	C:\User\Calibrations\Ge7 calibrations\Ge7 Tunacan 01_16_07.Clb		
Energy Created:	16-Jan-2007 4:24:37PM	Efficiency Created:	16-Jan-2007 4:27:00PM
Zero Offset:	0.231 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.72 keV
Stop Channel:	8,000 for an energy of 2000.15 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge7 PBC table 11 26 07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1043

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
298.73	74.90	383.17	204.83	0.114	20.72	0.815	PB-214	
307.81	77.17	332.50	383.50	0.213	10.97	1.078	PB-214	s
359.22	90.02	169.00	105.00	0.058	20.04	0.949	PB-214	sM
1180.50	295.30	218.16	31.84	0.018	67.95	1.291		
1407.08	351.93	310.92	26.08	0.014	97.62	1.352		sD

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.28	46.54	188.87	21.37	0.012	42.58	0.832	s
AM-241	1	235.81	59.17	222.45	0.66	0.000	3215.28	0.846	s
TH-234	1	251.81	63.17	301.09	29.58	0.016	49.11	0.850	s
EU-155	1	345.32	86.54	386.91	-1.24	-0.001	2242.83	0.874	s
TH-234	1	369.52	92.59	451.80	-29.21	-0.016	2330.22	0.881	s
U-235	1	372.56	93.35	250.65	7.98	0.004	27.13	0.882	s D
AC-228	1	372.56	93.35	142.33	131.36	0.073	1.74	0.978	s D
EU-155	1	420.43	105.32	210.42	14.56	0.008	143.29	0.894	s
EU-152	1	479.69	120.13	145.56	-9.40	-0.005	184.44	0.912	s
EU-154	1	491.53	123.09	224.55	-9.48	-0.005	225.78	0.913	s
Pa-234	1	524.64	131.36	259.75	-9.03	-0.005	254.66	0.922	s
U-235	1	573.81	143.65	198.59	15.02	0.008	135.21	0.935	
U-235	1	647.53	162.08	143.95	-0.44	0.000	3888.34	0.955	s
U-235	1	824.26	206.25	135.40	0.94	0.001	1759.66	0.999	
PB-212	1	954.27	238.75	178.71	874.29	0.486	5.11	1.216	s
RA-224	1	960.07	240.20	842.89	-188.01	-0.104	23.02	1.036	s
PB-214	1	968.07	242.20	270.77	21.76	0.012	109.05	1.037	s
TL-208	1	1107.96	277.17	77.50	78.50	0.044	30.05	0.896	
I-131	1	1131.07	282.94	49.96	5.31	0.003	193.16	1.081	s
PB-214	1	1180.49	295.29	91.54	145.32	0.081	12.47	1.092	
PB-212	1	1200.28	300.24	39.00	56.00	0.031	23.92	0.580	s
AC-228	1	1352.88	338.38	64.00	165.00	0.092	14.47	1.137	
EU-152	1	1376.97	344.41	80.30	-8.41	-0.005	154.65	1.142	s
PB-214	1	1407.08	351.93	64.91	266.90	0.148	7.36	1.150	s D
I-131	1	1456.39	364.26	57.94	10.17	0.006	110.35	1.163	s
BE-7	1	1908.48	477.26	33.26	4.24	0.002	198.31	1.277	s
CS-134	1	2252.42	563.24	59.42	0.00	0.000	1090.18	1.363	s
CS-134	1	2276.76	569.32	31.94	3.07	0.002	222.89	1.369	s D
Pa-234	1	2277.35	569.47	52.33	-1.33	-0.001	-145.62	1.369	s D
TL-208	1	2332.32	583.21	29.91	224.09	0.124	8.89	1.229	
CS-134	1	2403.91	601.11	1.21	18.49	0.010	24.72	1.403	s
BI-214	1	2435.64	609.04	24.13	193.87	0.108	9.39	1.317	s
I-131	1	2543.91	636.10	39.10	-6.42	-0.004	143.21	1.435	s
CS-137	1	2646.88	661.84	51.38	-0.86	0.000	9127.77	1.459	
EU-154	1	2896.58	724.26	51.25	-7.62	-0.004	137.79	1.519	s
BI-212	1	2912.40	728.21	13.00	73.00	0.041	17.89	0.744	s
PA-234M	1	3063.42	765.97	49.24	-1.06	-0.001	940.11	1.561	s
EU-152	1	3115.91	779.09	24.38	3.55	0.002	203.48	1.573	s
BI-212	1	3140.30	785.18	26.22	7.32	0.004	105.62	1.579	s
CS-134	1	3179.81	795.06	21.47	30.76	0.017	27.91	1.589	s
CS-134	1	3207.63	802.02	31.96	-2.68	-0.001	304.52	1.595	s
TL-208	1	3437.50	859.48	0.00	60.00	0.033	12.91	1.000	s
EU-154	1	3492.30	873.18	31.64	0.04	0.000	21012.65	1.662	s
Pa-234	1	3511.24	877.91	22.59	-0.02	0.000	33830.14	1.669	s
Pa-234	1	3536.23	884.16	22.89	7.97	0.004	91.95	1.672	s
AC-228	1	3644.60	911.25	0.00	145.00	0.081	8.30	0.643	s

Pa-234	1	3787.84	947.06	33.45	-2.63	-0.001	317.36	1.731	s
EU-152	1	3866.94	966.83	111.93	-20.92	-0.012	74.80	1.748	s
AC-228	1	3872.11	968.13	7.33	133.67	0.074	10.44	0.736	s
EU-154	1	3978.99	994.85	21.21	0.42	0.000	1571.08	1.778	s
PA-234M	1	4003.83	1001.05	22.66	3.25	0.002	214.34	1.782	s
EU-154	1	4018.15	1004.63	32.64	-2.05	-0.001	400.87	1.785	s
EU-152	1	4448.98	1112.34	28.95	0.35	0.000	2167.77	1.884	s
BI-214	1	4480.70	1120.27	31.28	27.31	0.015	34.71	1.891	s
CO-60	1	4690.58	1172.74	26.62	4.90	0.003	155.63	1.939	s
EU-154	1	5102.03	1275.60	25.43	-3.29	-0.002	223.62	2.030	s
CO-60	1	5328.64	1332.26	22.57	1.30	0.001	523.90	2.081	s
EU-152	1	5632.26	1408.16	15.44	4.15	0.002	142.59	2.147	s
K-40	1	5843.60	1461.00	0.00	318.00	0.177	5.61	1.670	s
BI-214	1	7058.93	1764.86	7.31	22.41	0.012	27.15	2.447	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Peak Analysis Code	Peak MDA Value Becquerels	MDA Code	Comments	
			9.588E-002	1173.24	3.229E-001 %		1.763E+000G		1.9E+003	99.90
CO-60	T F	1	9.588E-002	1332.50	9.588E-002 %	(	1.832E+000G		1.9E+003	99.98
TL-208	F N	1	9.545E+000	583.02	9.545E+000	(P	1.201E+000G		7.0E+002	84.50
			9.545E+000	277.28	2.274E+001 +		1.267E+001G		7.0E+002	6.31
			9.545E+000	860.56	2.436E+001 *		2.993E+000G		7.0E+002	12.42
			8.978E+000	92.59	-6.115E+000 %	P	2.130E+001G		1.6E+012	5.58
TH-234	N	1	8.978E+000	63.29	8.978E+000 *	(P	2.536E+001G		1.6E+012	4.82
EU-155	T F I	1	7.779E-001	105.31	7.779E-001 %	(	3.756E+000G		1.8E+003	21.20
			7.779E-001	86.54	-4.853E-002 %		3.689E+000G	A	1.8E+003	30.70
RA-224	N	1	-7.425E+001	240.99	-7.425E+001 *	(	5.450E+001G		7.0E+002	4.10
			-7.063E-001	1112.07	1.622E-001 %		1.280E+001G		4.9E+003	13.64
			-7.063E-001	1408.00	1.531E+000 %		7.754E+000G		4.9E+003	21.00
EU-152	T F	1	-7.063E-001	344.29	-7.063E-001 %	(	3.736E+000G		4.9E+003	26.50
			-7.063E-001	121.78	-3.708E-001 &		2.325E+000G		4.9E+003	28.58
			-7.063E-001	778.92	1.272E+000 %		9.205E+000G		4.9E+003	12.94
			-7.063E-001	964.11	-7.959E+000 %		1.979E+001G		4.9E+003	14.61
CS-134	T F I	1	7.042E-001	604.71	7.042E-001 ?	(	2.982E-001G		7.5E+002	97.62
			7.042E-001	795.87	1.697E+000 +		1.340E+000G		7.5E+002	85.53
			7.042E-001	569.32	7.042E-001 &		6.655E+000G		7.5E+002	15.38
			7.042E-001	801.95	-1.464E+000 %		1.587E+001G		7.5E+002	8.69
			7.042E-001	563.24	0.000E+000 &		1.615E+001G		7.5E+002	8.35
Pa-234	N	1	-5.718E-001	131.29	-5.718E-001 %	(	4.929E+000G		1.6E+012	18.00
			-5.718E-001	569.47	-5.718E-001 &		1.566E+001G		1.6E+012	8.20
			-5.718E-001	946.02	-1.072E+000 &		1.210E+001G		1.6E+012	13.40
			-5.718E-001	883.24	4.283E+000 &		1.343E+001G		1.6E+012	9.60
			-5.718E-001	880.53	-1.703E-002 %		2.131E+001G		1.6E+012	6.00
CS-137	T F I	1	-4.037E-002	661.66	-4.037E-002 %	(P	1.705E+000G		1.1E+004	85.21
PB-212	N	1	3.251E+001	238.63	3.243E+001 @	(P	2.411E+000G		7.0E+002	43.30
			3.251E+001	300.03	3.351E+001	(	1.903E+001G		7.0E+002	3.28
I-131	T F I	1	2.923E-001	364.48	2.923E-001 &	(	1.097E+000G		8.0E+000	81.70
			2.923E-001	284.30	1.617E+000 %		1.085E+001G		8.0E+000	6.14
			2.923E-001	636.97	-3.485E+000 %		1.728E+001G		8.0E+000	7.17

AM-241	T		1	2.836E-002	59.54	2.836E-002	&	(		3.120E+000G	1.6E+005	35.90
AC-228		N	1	2.754E+001	911.16	2.648E+001		(		1.346E+000G	2.1E+003	29.00
				2.754E+001	968.97	4.273E+001	+			4.901E+000G	2.1E+003	17.46
				2.754E+001	338.32	3.010E+001		(		7.295E+000G	2.1E+003	12.01
				2.754E+001	93.35	2.754E+001	+		E	1.222E+001G	A 2.1E+003	5.56
BI-212		N	1	2.696E+001	727.33	2.696E+001	@	(		7.207E+000G	7.0E+002	11.82
				2.696E+001	785.51	3.104E+001	%			1.127E+002G	7.0E+002	1.10
K-40		N	1	2.388E+002	1460.83	2.388E+002		(		5.536E+000G	4.7E+011	10.67
PA-234M		N	1	2.230E+001	1001.00	2.230E+001	%	(		1.707E+002G	1.6E+012	.84
				2.230E+001	766.41	-1.649E+001	&			5.501E+002G	1.6E+012	.29
U-235		N	1	1.602E+000	143.79	1.602E+000	%	(		7.294E+000G	2.6E+011	10.96
				1.602E+000	205.33	2.668E-001	%			1.621E+001G	2.6E+011	5.01
				1.602E+000	163.38	-1.062E-001	&			1.425E+001G	2.6E+011	5.08
				1.602E+000	93.35	1.602E+000	!		E	1.535E+001X	2.6E+011	5.81
EU-154	T F I		1	1.576E-002	873.23	1.576E-002	%	(		1.204E+001G	3.1E+003	12.27
				1.576E-002	123.10	-2.625E-001	&			2.007E+000G	3.1E+003	40.79
				1.576E-002	1274.54	-6.624E-001	%			5.276E+000G	3.1E+003	35.19
				1.576E-002	723.36	-1.637E+000	%			7.751E+000G	3.1E+003	20.22
				1.576E-002	1004.77	-6.545E-001	%			9.379E+000G	3.1E+003	18.01
				1.576E-002	996.33	2.247E-001	%			1.304E+001G	3.1E+003	10.60
PB-214		N	1	1.560E+001	351.93	1.613E+001		(	P E	2.433E+000G	5.8E+005	37.60
				1.560E+001	295.09	1.456E+001		(		4.738E+000G	5.8E+005	19.30
				1.560E+001	242.00	4.760E+000	%			1.736E+001G	5.8E+005	7.43
BI-214		N	1	1.530E+001	609.31	1.574E+001	@	(	P	2.079E+000G	5.8E+005	46.09
				1.530E+001	1120.29	1.144E+001	-			1.205E+001G	5.8E+005	15.10
				1.530E+001	1764.49	1.398E+001	?	(		9.547E+000G	5.8E+005	15.40
PB-210		N	1	1.276E+001	46.54	1.276E+001	%	(	P	3.986E+001G	8.1E+003	4.25
BE-7		N P C	1	1.213E+000	477.60	1.213E+000	&	(		8.462E+000G	5.3E+001	10.52

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
I-131	#	2.923E-001	2.952E-001	110.35	110.39	1.097E+000
CS-134	#	7.042E-001	7.043E-001	24.72	24.89	2.982E-001
EU-154	#	1.576E-002	1.576E-002	21.012.65	21.012.65	1.204E+001
PB-212		3.251E+001	3.251E+001	5.17	5.97	2.411E+000
PB-214	#	1.560E+001	1.560E+001	7.26	7.81	2.433E+000
BI-212	#	2.696E+001	2.697E+001	17.89	18.12	7.207E+000
CS-137	#	-4.037E-002	-4.037E-002	17.078.19	17.078.19	1.705E+000
EU-152	#	-7.063E-001	-7.063E-001	154.65	154.68	3.736E+000
EU-155	#	7.779E-001	7.779E-001	143.29	143.33	3.756E+000
TL-208		9.545E+000	9.546E+000	8.98	9.43	1.201E+000
PB-210	#	1.276E+001	1.276E+001	90.60	90.68	3.986E+001
BI-214	#	1.530E+001	1.530E+001	9.50	9.93	2.079E+000
RA-224	#	-7.425E+001	-7.426E+001	23.02	23.22	5.450E+001
AC-228		2.754E+001	2.754E+001	8.30	8.79	1.346E+000
PA-234M	#	2.230E+001	2.230E+001	214.34	214.36	1.707E+002
U-235	#	1.602E+000	1.602E+000	135.21	135.24	7.294E+000
Pa-234	#	-5.718E-001	-5.718E-001	254.66	254.68	4.929E+000
TH-234	#	8.978E+000	8.978E+000	83.57	83.65	2.536E+001
AM-241	#	2.836E-002	2.836E-002	3.215.28	3.215.28	3.120E+000
BE-7	#	1.213E+000	1.215E+000	198.31	198.33	8.462E+000
K-40		2.388E+002	2.388E+002	5.61	6.33	5.536E+000
CO-60	#	9.588E-002	9.589E-002	523.90	523.91	1.832E+000

= All peaks for activity calculation had bad shape

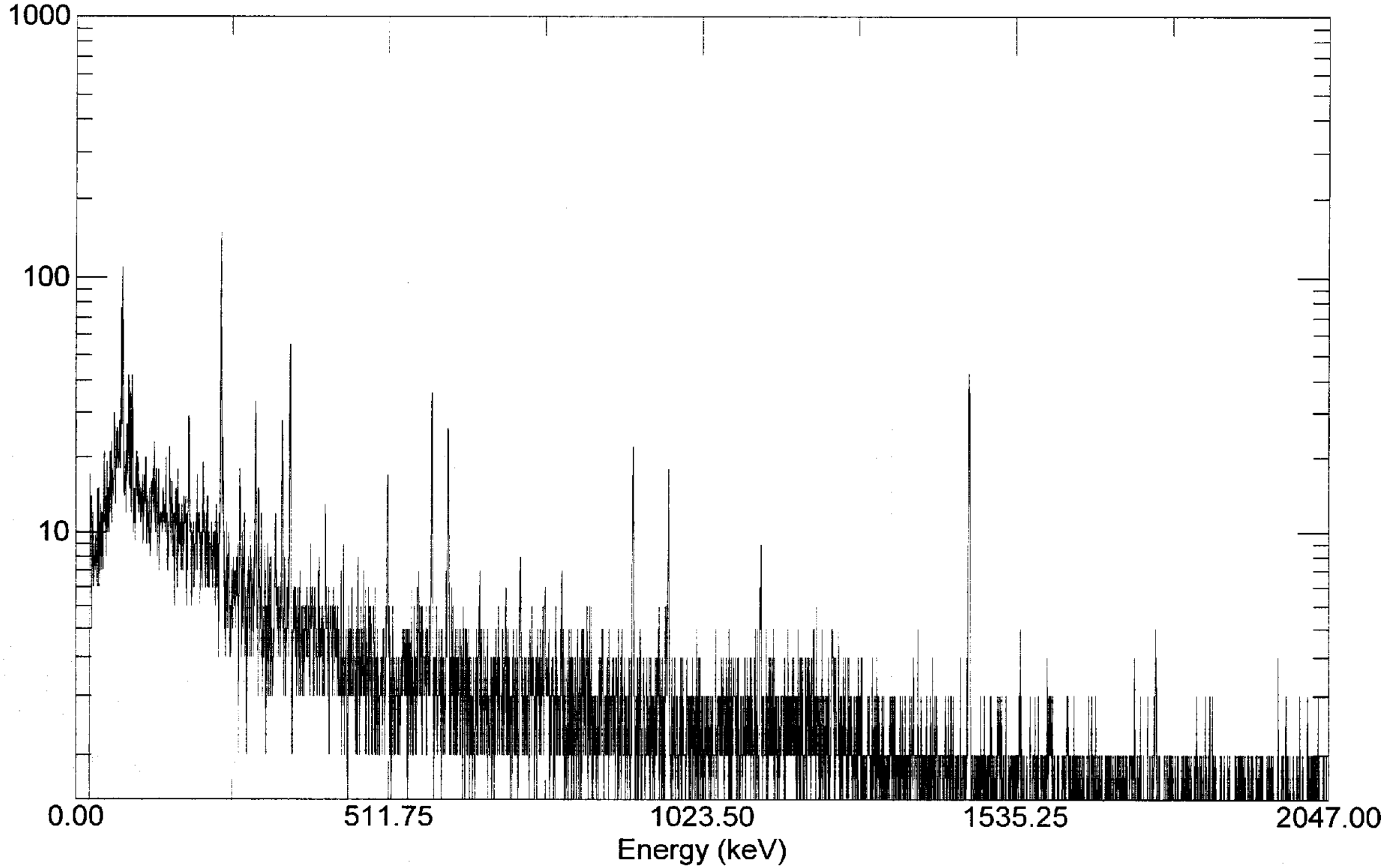
Total Activity (37.72 to 2,000.15 keV) 350.70 Bq/sample

Analyzed by: 403605

Laboratory: Test America

KEKDX1AC

7360292_KEKDX1AC_F7L200260-007



Acquired: 26-Dec-2007 2:47:37 PM
File: C:\User\spectra\KEKDX1AC.spc
Detector: #0 Ge 7 SN/154

Real Time: 1820.58 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,046

Sample Description: 7360292_KEKD41AC_F7L200260-008

Spectrum Filename: KEKD41AC.An1

Acquisition Information

Start Time:	26-Dec-2007 3:38:00PM		
Live Time:	1800.00	Real Time:	1811.06
Dead Time:	0.61 %		
Detector ID:	1		

Detector System: Ge 1 SN/242

Calibration

Description:	Ge1 Tunacan 74139-334 1_15_07		
Filename:	C:\User\Calibrations\Ge1 calibrations\Ge1 Tunacan polynomial 01_15_07.Clb		
Energy Created:	15-Jan-2007 5:43:37PM	Efficiency Created:	15-Jan-2007 5:44:16PM
Zero Offset:	0.212 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.71 keV
Stop Channel:	8,000 for an energy of 1999.84 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge1 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.1424

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
297.62	74.62	253.33	217.67	0.121	16.39	0.978	BI-207	
307.71	77.14	266.67	306.33	0.170	12.48	0.849	PB-214	
348.27	87.28	249.89	28.11	0.016	81.74	0.917		s
358.94	89.95	103.50	62.50	0.035	28.68	0.986	PB-214	M
634.07	158.74	33.83	33.17	0.018	31.11	0.704		
742.15	185.76	106.33	145.67	0.081	17.39	1.228	U-235	s
1351.44	338.07	127.80	56.20	0.031	31.42	0.738	AC-228	s
2436.04	609.21	224.68	34.32	0.019	64.07	1.073		

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	184.56	46.35	196.63	-1.03	-0.001	67.00	0.813	s
AM-241	1	236.55	59.35	227.11	-1.33	-0.001	1606.51	0.824	s
TH-234	1	251.80	63.16	240.90	50.10	0.028	34.54	0.952	
EU-155	1	348.40	87.32	260.79	89.56	0.050	27.60	0.849	s
TH-234	1	371.38	93.06	242.51	169.49	0.094	15.61	0.963	s
AC-228	1	372.54	93.35	192.93	55.05	0.031	2.89	0.855	s D
U-235	1	372.54	93.35	192.93	4.34	0.002	53.88	0.855	s D
EU-155	1	421.26	105.53	181.80	26.44	0.015	74.70	0.866	s
EU-152	1	485.95	121.70	157.74	15.93	0.009	114.31	0.881	s
EU-154	1	494.73	123.90	182.15	-9.01	-0.005	214.40	0.882	s
Pa-234	1	523.36	131.06	207.51	-11.76	-0.007	175.62	0.890	s
U-235	1	573.96	143.71	174.17	8.02	0.004	159.66	0.901	s
U-235	1	651.72	163.15	131.88	-6.67	-0.004	438.33	0.919	s
U-235	1	820.33	205.30	152.87	-13.42	-0.007	156.80	0.957	s
PB-212	1	953.66	238.63	81.21	436.51	0.243	5.22	0.987	D
RA-224	1	963.07	240.99	107.75	48.25	0.027	33.66	0.989	D
PB-214	1	967.12	242.00	104.46	37.54	0.021	34.72	0.990	D
TL-208	1	1108.04	277.23	25.67	45.33	0.025	25.24	0.858	s
I-131	1	1147.12	287.00	43.49	3.00	0.002	316.26	1.028	s
PB-214	1	1180.09	295.24	75.71	128.29	0.071	14.81	0.922	
PB-212	1	1198.87	299.93	61.81	34.22	0.019	36.71	1.042	
AC-228	1	1351.64	338.13	67.59	76.39	0.042	17.68	1.076	s
EU-152	1	1375.89	344.19	56.35	3.47	0.002	310.72	1.081	s
PB-214	1	1405.75	351.65	37.65	259.35	0.144	7.29	1.112	s
I-131	1	1457.55	364.60	48.63	-1.01	-0.001	977.78	1.099	s
BE-7	1	1922.12	480.74	22.56	3.03	0.002	228.88	1.198	s
CS-134	1	2249.28	562.52	37.04	-0.22	0.000	3910.38	1.273	s
CS-134	1	2276.47	569.32	28.74	1.02	0.001	699.29	1.278	s D
Pa-234	1	2277.07	569.47	38.91	-2.13	-0.001	-152.92	1.278	s D
TL-208	1	2332.35	583.29	8.92	180.08	0.100	7.27	1.059	s
CS-134	1	2413.88	603.67	45.43	6.21	0.003	158.66	1.309	s
BI-214	1	2436.06	609.21	59.66	184.05	0.102	8.73	1.313	
I-131	1	2547.82	637.15	35.39	-1.00	-0.001	846.44	1.337	s
CS-137	1	2645.63	661.60	31.99	22.72	0.013	40.98	1.358	s
EU-154	1	2898.60	724.84	52.17	-10.60	-0.006	101.10	1.411	s
BI-212	1	2907.47	727.06	23.52	28.35	0.016	30.63	1.414	s
PA-234M	1	3055.04	763.94	32.74	0.41	0.000	1978.77	1.447	s
EU-152	1	3119.99	780.18	38.15	-0.47	0.000	1870.69	1.458	s
BI-212	1	3138.98	784.92	34.05	6.62	0.004	130.62	1.463	s
CS-134	1	3177.93	794.66	32.23	9.43	0.005	91.13	1.472	s
CS-134	1	3207.77	802.12	36.84	-5.57	-0.003	159.88	1.477	s
TL-208	1	3441.22	860.47	21.72	9.96	0.006	73.37	1.527	s
EU-154	1	3479.96	870.16	11.28	2.72	0.002	184.94	1.537	s
Pa-234	1	3521.18	880.46	30.64	1.27	0.001	622.67	1.543	s
Pa-234	1	3532.22	883.22	30.04	2.00	0.001	394.41	1.546	s

AC-228	1	3643.63	911.07	32.27	82.32	0.046	13.68	1.569	s
Pa-234	1	3786.40	946.75	31.29	-0.90	-0.001	880.80	1.598	s
EU-152	1	3857.51	964.53	53.20	15.78	0.009	70.03	1.613	s
AC-228	1	3875.23	968.96	50.61	44.01	0.024	25.21	1.617	s
EU-154	1	3983.01	995.90	29.95	-2.17	-0.001	363.52	1.640	s
PA-234M	1	4009.37	1002.49	23.52	0.41	0.000	1661.78	1.643	s
EU-154	1	4018.97	1004.89	25.34	-1.81	-0.001	400.72	1.647	s
EU-152	1	4447.61	1112.03	33.81	4.37	0.002	194.09	1.735	s
BI-214	1	4479.00	1119.87	34.86	28.23	0.016	28.26	1.741	s
CO-60	1	4692.56	1173.25	29.76	4.61	0.003	173.62	1.784	s
EU-154	1	5094.37	1273.68	25.92	5.64	0.003	134.42	1.866	s
CO-60	1	5331.60	1332.97	21.01	1.80	0.001	368.25	1.912	s
EU-152	1	5631.80	1408.00	13.60	3.98	0.002	140.25	1.972	s
K-40	1	5842.09	1460.56	12.54	430.46	0.239	4.75	1.579	
BI-214	1	7056.96	1764.18	15.27	15.44	0.009	31.69	2.246	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Analysis Code	MDA Value Becquerels	Code	Comments
U-235	N	1	9.990E-001	143.79	9.990E-001 %	(P	8.000E+000G		2.6E+011 10.96
			9.990E-001	205.33	-4.346E+000 %	P	1.953E+001G		2.6E+011 5.01
			9.990E-001	163.38	-1.883E+000 %	P	1.588E+001G		2.6E+011 5.08
			9.990E-001	93.35	9.990E-001 %	E	1.552E+001X		2.6E+011 5.81
CS-137	T F I	1	9.949E-001	661.66	9.949E-001 %	(	1.273E+000G		1.1E+004 85.21
BI-212	N	1	9.563E+000	727.33	9.563E+000 ?	(	8.537E+000G		7.0E+002 11.82
			9.563E+000	785.51	2.531E+001 &		1.143E+002G		7.0E+002 1.10
			-8.707E-001	569.47	-8.707E-001 &		1.301E+001G		1.6E+012 8.20
			-8.707E-001	946.02	-3.233E-001 %		1.028E+001G		1.6E+012 13.40
			-8.707E-001	883.24	9.498E-001 &		1.343E+001G		1.6E+012 9.60
			-8.707E-001	880.53	9.642E-001 %		2.164E+001G		1.6E+012 6.00
Pa-234	N	1	-8.707E-001	131.29	-8.707E-001 &	(	5.170E+000G		1.6E+012 18.00
BE-7	N P C	1	8.528E-001	477.60	8.528E-001 %	(	6.988E+000G		5.3E+001 10.52
TL-208	F N	1	7.275E+000	583.02	7.275E+000 @	(P	6.716E-001G		7.0E+002 84.50
			7.275E+000	277.28	1.427E+001 +		8.286E+000G		7.0E+002 6.31
			7.275E+000	860.56	3.595E+000 %		8.816E+000G		7.0E+002 12.42
PB-210	N	1	-6.505E-001	46.54	-6.505E-001 *	(P	4.298E+001G		8.1E+003 4.25
AM-241	T	1	-6.422E-002	59.54	-6.422E-002 &	(	3.526E+000G		1.6E+005 35.90
EU-152	T F	1	3.046E-001	344.29	3.046E-001 &	(	3.310E+000G		4.9E+003 26.50
			3.046E-001	121.78	7.330E-001 %		2.819E+000G		4.9E+003 28.58
			3.046E-001	778.92	-1.514E-001 &		1.018E+001G		4.9E+003 12.94
			3.046E-001	964.11	5.245E+000 %		1.219E+001G		4.9E+003 14.61
			3.046E-001	1112.07	1.721E+000 %		1.173E+001G		4.9E+003 13.64
			3.046E-001	1408.00	1.213E+000 %		6.061E+000G		4.9E+003 21.00
EU-155	T F I	1	3.028E+000	105.31	1.635E+000 *	(	4.053E+000G		1.8E+003 21.20
			3.028E+000	86.54	3.989E+000 @	(	3.473E+000G		1.8E+003 30.70
			-3.012E-002	284.30	9.881E-001 &		1.102E+001G		8.0E+000 6.14
			-3.012E-002	636.97	-5.073E-001 %		1.542E+001G		8.0E+000 7.17
I-131	T F I	1	-3.012E-002	364.48	-3.012E-002 &	(	1.046E+000G		8.0E+000 81.70
TH-234	N	1	2.971E+001	63.29	1.704E+001 %	(P	2.552E+001G		1.6E+012 4.82
			2.971E+001	92.59	4.066E+001 *	(P	1.806E+001G		1.6E+012 5.58
K-40	N	1	2.657E+002	1460.83	2.657E+002	(P	1.186E+001G		4.7E+011 10.67
PA-234	N	1	2.468E+000	1001.00	2.468E+000 &	(	1.507E+002G		1.6E+012 .84
			2.468E+000	766.41	5.770E+000 %		4.131E+002G		1.6E+012 .29
CS-134	T F I	1	2.228E-001	604.71	2.228E-001 %	(	1.224E+000G		7.5E+002 97.62
			2.228E-001	795.87	4.681E-001 %		1.447E+000G		7.5E+002 85.53
			2.228E-001	569.32	2.228E-001 &		6.043E+000G		7.5E+002 15.38
			2.228E-001	801.95	-2.734E+000 %		1.522E+001G		7.5E+002 8.69
			2.228E-001	563.24	-8.793E-002 %		1.239E+001G		7.5E+002 8.35
RA-224	N	1	2.119E+001	240.99	2.119E+001	(	2.243E+001G		7.0E+002 4.10
			1.803E+001	300.03	2.194E+001 +		2.523E+001G		7.0E+002 3.28
PB-212	N	1	1.803E+001	238.63	1.803E+001	(P	1.846E+000G		7.0E+002 43.30
PB-214	N	1	1.631E+001	351.93	1.631E+001	(P	1.969E+000G		5.8E+005 37.60
			1.631E+001	295.09	1.381E+001 -	P	4.658E+000G		5.8E+005 19.30

			1.631E+001	242.00	9.123E+000	%	P	1.223E+001G		5.8E+005		7.43
BI-214	N	1	1.406E+001	609.31	1.406E+001	(	P	2.957E+000G		5.8E+005		46.09
			1.406E+001	1120.29	1.009E+001	*	P	1.081E+001G		5.8E+005		15.10
			1.406E+001	1764.49	7.699E+000	%	P	1.043E+001G		5.8E+005		15.40
AC-228	N	1	1.323E+001	911.07	1.324E+001	@ (	P	4.693E+000G		2.1E+003		29.00
			1.323E+001	968.97	1.228E+001	(	P	1.000E+001G		2.1E+003		17.46
			1.323E+001	338.32	1.461E+001	* (	P	7.846E+000G		2.1E+003		12.01
			1.323E+001	93.35	1.323E+001	+	E	1.621E+001X	A	2.1E+003		5.56
CO-60	T F	1	1.103E-001	1332.50	1.103E-001	% (		1.477E+000G		1.9E+003		99.98
			1.103E-001	1173.24	2.578E-001	%		1.572E+000G		1.9E+003		99.90
EU-154	T F I	1	1.003E+000	873.23	1.003E+000	& (		6.775E+000G		3.1E+003		12.27
			1.003E+000	123.10	-2.910E-001	%		2.119E+000G		3.1E+003		40.79
			1.003E+000	1274.54	9.512E-001	%		4.458E+000G		3.1E+003		35.19
			1.003E+000	723.36	-2.083E+000	%		7.144E+000G		3.1E+003		20.22
			1.003E+000	1004.77	-5.016E-001	%		7.260E+000G		3.1E+003		18.01
			1.003E+000	996.33	-1.015E+000	&		1.322E+001G		3.1E+003		10.60

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
CS-134	<	2.228E-001	2.229E-001	158.66	158.68	1.224E+000
EU-154	<	1.003E+000	1.003E+000	184.94	184.97	6.775E+000
EU-155	<	3.028E+000	3.028E+000	27.60	27.81	4.053E+000
PB-214		1.631E+001	1.631E+001	7.63	8.15	1.969E+000
BI-212	<	9.563E+000	9.564E+000	30.63	30.76	8.537E+000
BI-214	<	1.406E+001	1.406E+001	9.28	9.72	2.957E+000
TH-234		2.971E+001	2.971E+001	20.27	20.60	2.552E+001
PA-234M	<	2.468E+000	2.468E+000	1,661.78	1,661.79	1.507E+002
CS-137	<	9.949E-001	9.949E-001	40.98	41.09	1.273E+000
EU-152	<	3.046E-001	3.046E-001	310.72	310.73	3.310E+000
TL-208	#	7.275E+000	7.276E+000	7.63	8.16	6.716E-001
RA-224		2.119E+001	2.119E+001	33.66	33.79	2.243E+001
PB-210	<	-6.505E-001	-6.505E-001	1,983.51	1,983.51	4.298E+001
PB-212		1.803E+001	1.803E+001	5.50	6.26	1.846E+000
AC-228	<	1.323E+001	1.324E+001	12.00	12.34	4.693E+000
Pa-234	<	-8.707E-001	-8.707E-001	175.62	175.65	5.170E+000
U-235	<	9.990E-001	9.990E-001	234.19	234.21	8.000E+000
AM-241	<	-6.422E-002	-6.422E-002	1,606.51	1,606.52	3.526E+000
BE-7	<	8.528E-001	8.545E-001	228.88	228.90	6.988E+000
K-40		2.657E+002	2.657E+002	4.89	5.70	1.186E+001
CO-60	<	1.103E-001	1.103E-001	368.25	368.26	1.477E+000
I-131	<	-3.012E-002	-3.051E-002	977.78	977.79	1.046E+000

= All peaks for activity calculation had bad shape

Total Activity (37.71 to 1,999.84 keV) 358.17 Bq/sample

Analyzed by: _____

403293

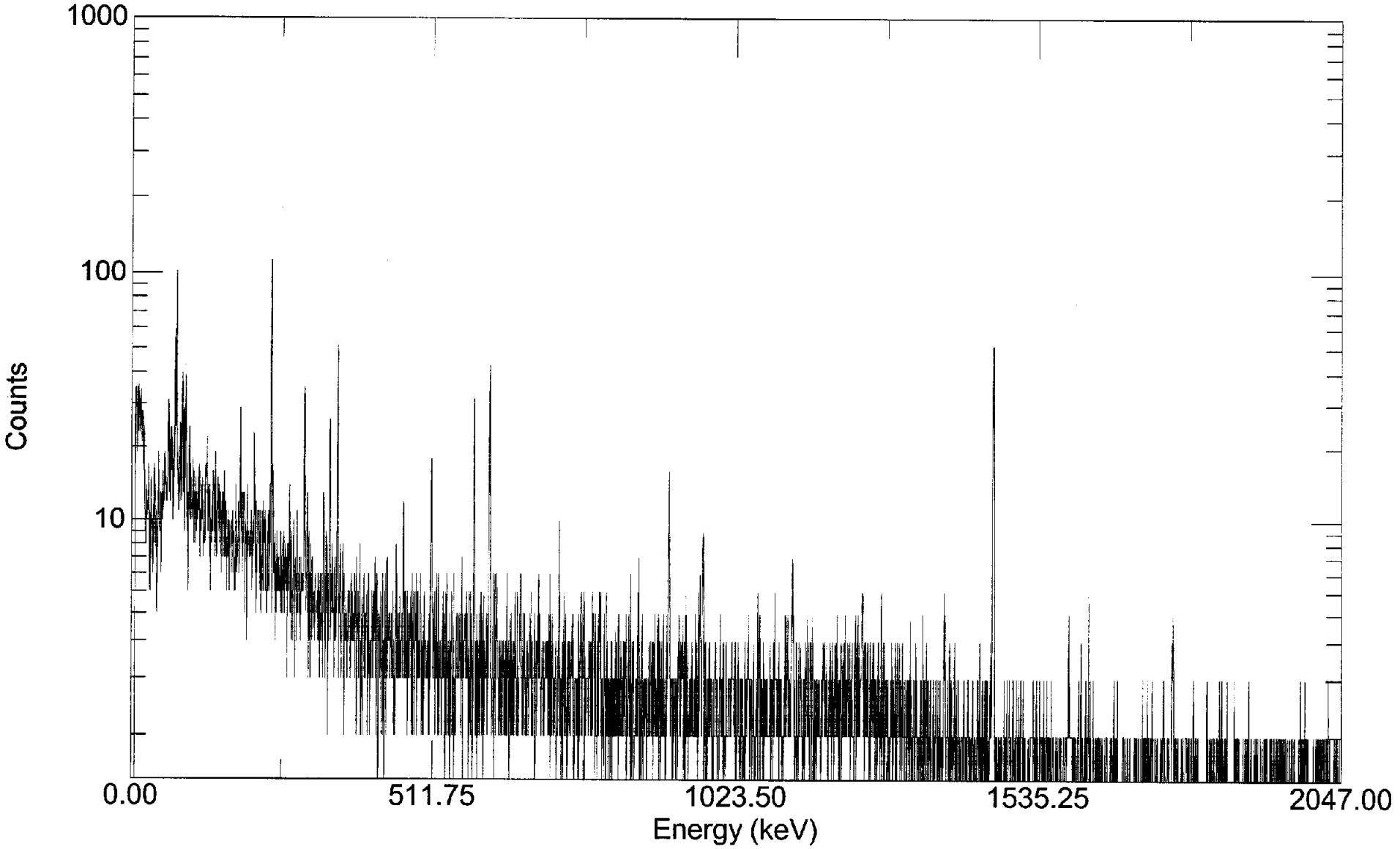
Reviewed by: _____

Supervisor

Laboratory: Test America

KEKD41AC

7360292_KEKD41AC_F7L200260-008



Acquired: 26-Dec-2007 3:38:00 PM
File: C:\User\spectra\KEKD41AC.spc
Detector: #0 Ge 1 SN/242

Real Time: 1811.06 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,047

Sample Description: 7360292_KEKD81AC_F7L200260-009

Spectrum Filename: KEKD81AC.An1

Acquisition Information

Start Time:	26-Dec-2007 3:38:32PM		
Live Time:	1800.00	Real Time:	1814.98
Dead Time:	0.83 %		
Detector ID:	3		

Detector System: Ge 3 SN/155

Calibration

Description:	Ge3 74139_334 Tunacan cal 01_11_07		
Filename:	C:\User\Calibrations\Ge3 cal post 5_8_06\Ge3 Tunacan 74139_334 01_11_07.Clb		
Energy Created:	10-Jan-2007 5:13:35PM	Efficiency Created:	11-Jan-2007 1:43:34PM
Zero Offset:	0.416 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.87 keV
Stop Channel:	8,000 for an energy of 2000.50 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge3 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.3177

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
370.99	93.06	514.00	0.00	0.000	3206.24	0.584		s
743.58	186.12	195.50	122.50	0.068	26.67	0.968	PA-234	s
836.45	209.31	161.47	151.53	0.084	14.37	0.873	AC-228	s
1079.98	270.15	108.33	113.67	0.063	22.83	0.715	AC-228	s
1352.21	338.15	252.56	7.44	0.004	304.14	1.201		
3644.28	910.94	189.17	41.83	0.023	49.01	1.968		
297.46	74.70	608.00	291.00	0.162	18.26	0.730	PB-214	
307.02	77.09	516.00	402.00	0.223	12.35	0.905	PB-214	
347.30	87.11	293.43	141.57	0.079	19.07	0.906	PB-214	D
358.12	89.85	216.67	76.33	0.042	29.58	0.855	PB-214	M

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.24	46.68	243.38	9.42	0.005	70.39	0.864	s
AM-241	1	236.69	59.52	384.73	-21.31	-0.012	131.94	0.878	s
TH-234	1	252.38	63.44	407.55	51.13	0.028	38.26	0.882	s
EU-155	1	344.88	86.54	501.71	158.13	0.088	21.55	0.906	D
TH-234	1	371.53	93.20	495.85	64.44	0.036	35.42	0.912	s
AC-228	1	372.14	93.35	426.23	132.80	0.074	1.51	0.913	s D
U-235	1	372.14	93.35	555.10	0.00	0.000	2734.96	0.913	s D
EU-155	1	421.39	105.65	280.37	47.56	0.026	51.86	0.925	
EU-152	1	484.80	121.49	239.10	-17.39	-0.010	128.02	0.942	s
EU-154	1	491.26	123.10	302.30	1.34	0.001	1837.01	0.943	s
Pa-234	1	520.09	130.30	289.10	-31.55	-0.018	78.27	0.952	s
U-235	1	573.35	143.60	230.25	20.74	0.012	95.64	0.964	s
U-235	1	651.58	163.14	234.39	9.35	0.005	233.82	0.984	s
U-235	1	822.09	205.73	223.50	25.44	0.014	85.43	1.027	
PB-212	1	953.82	238.63	188.82	828.18	0.460	4.06	1.060	D
RA-224	1	963.24	240.99	327.72	119.28	0.066	23.33	1.062	D
PB-214	1	967.29	242.00	202.20	77.80	0.043	28.23	1.063	D
TL-208	1	1108.81	277.35	106.33	96.67	0.054	27.70	0.602	s
I-131	1	1136.44	284.25	114.26	13.00	0.007	119.54	1.105	s
PB-214	1	1179.77	295.07	124.82	201.18	0.112	14.70	1.026	s
PB-212	1	1200.31	300.20	95.83	74.17	0.041	31.26	1.176	s
AC-228	1	1352.70	338.27	88.24	188.36	0.105	10.00	1.158	
EU-152	1	1377.57	344.49	105.61	-2.78	-0.002	526.15	1.164	s
PB-214	1	1407.16	351.88	91.37	310.63	0.173	8.84	0.945	s
I-131	1	1458.51	364.71	102.58	-10.50	-0.006	139.83	1.184	s
BE-7	1	1917.01	479.26	42.70	2.47	0.001	378.87	1.292	s
CS-134	1	2253.10	563.24	53.95	0.00	0.000	1038.75	1.372	s
CS-134	1	2277.45	569.32	87.30	-1.06	-0.001	-47.24	1.378	s D
Pa-234	1	2278.04	569.47	89.91	-5.49	-0.003	-169.75	1.378	s D
TL-208	1	2332.93	583.18	31.96	398.04	0.221	5.90	1.819	s
CS-134	1	2424.01	605.95	89.50	-6.41	-0.004	212.54	1.410	s
BI-214	1	2436.48	609.06	22.95	243.05	0.135	7.27	1.483	
I-131	1	2540.47	635.05	46.38	-7.67	-0.004	130.60	1.440	s
CS-137	1	2645.95	661.41	60.57	29.61	0.016	41.47	1.462	s
EU-154	1	2898.42	724.51	125.98	-20.12	-0.011	81.97	1.518	s
BI-212	1	2908.15	726.94	20.00	105.00	0.058	14.29	2.031	s
PA-234M	1	3069.09	767.16	38.91	13.57	0.008	70.47	1.556	s
EU-152	1	3114.78	778.58	43.77	-4.55	-0.003	210.68	1.567	s
BI-212	1	3142.71	785.56	41.12	12.52	0.007	77.78	1.572	
CS-134	1	3189.99	797.38	45.76	-5.83	-0.003	169.17	1.582	s
CS-134	1	3207.62	801.79	42.69	0.29	0.000	3227.71	1.587	s
TL-208	1	3441.12	860.15	6.17	74.83	0.042	14.58	0.890	s
EU-154	1	3495.63	873.78	28.59	0.67	0.000	1138.10	1.649	s
Pa-234	1	3516.30	878.95	21.47	4.70	0.003	146.85	1.655	s
Pa-234	1	3532.14	882.91	39.08	-4.59	-0.003	198.26	1.657	s

AC-228	1	3644.05	910.88	37.43	176.66	0.098	8.83	1.681	
Pa-234	1	3786.74	946.55	44.09	-4.93	-0.003	195.89	1.710	s
EU-152	1	3857.84	964.33	99.92	33.17	0.018	46.02	1.726	s
AC-228	1	3875.36	968.71	76.18	105.52	0.059	15.22	1.730	s
EU-154	1	3986.01	996.37	34.74	0.04	0.000	22343.67	1.753	s
PA-234M	1	4005.32	1001.20	36.53	0.36	0.000	2350.44	1.756	s
EU-154	1	4027.04	1006.63	31.52	-1.89	-0.001	426.80	1.760	s
EU-152	1	4443.70	1110.81	23.32	3.04	0.002	231.57	1.847	s
BI-214	1	4479.82	1119.84	7.94	64.06	0.036	15.75	0.446	s
CO-60	1	4691.41	1172.74	41.40	-5.09	-0.003	184.21	1.896	s
EU-154	1	5093.82	1273.38	21.71	5.01	0.003	138.91	1.975	s
CO-60	1	5330.21	1332.50	36.11	0.00	0.000	849.88	2.019	s
EU-152	1	5628.03	1406.99	17.50	4.90	0.003	129.03	2.076	s
K-40	1	5840.52	1460.14	11.21	456.79	0.254	4.62	1.805	s
BI-214	1	7053.44	1763.61	13.37	32.67	0.018	21.56	2.326	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Analysis Code	MDA Value Becquerels	Code	Comments	
AM-241	T	1	-9.421E-001	59.54	-9.421E-001 %	(	4.160E+000G		1.6E+005	35.90
BE-7	N P C	1	6.677E-001	477.60	6.677E-001 &	(	8.949E+000G		5.3E+001	10.52
PB-210	N	1	5.459E+000	46.54	5.459E+000 %	(P	4.369E+001G		8.1E+003	4.25
EU-155	T F I	1	4.956E+000	105.31	2.722E+000 %	(	4.622E+000G		1.8E+003	21.20
			4.956E+000	86.54	6.498E+000	(	4.400E+000G		1.8E+003	30.70
RA-224	N	1	4.928E+001	240.99	4.928E+001	(	3.597E+001G		7.0E+002	4.10
BI-212	N	1	3.446E+001	727.33	3.446E+001	(	7.728E+000G		7.0E+002	11.82
			3.446E+001	785.51	4.669E+001 %		1.216E+002G		7.0E+002	1.10
PB-212	N	1	3.217E+001	238.63	3.217E+001	(P	2.593E+000G		7.0E+002	43.30
			3.217E+001	300.03	4.501E+001 +		2.933E+001G		7.0E+002	3.28
I-131	T F I	1	-2.969E-001	364.48	-2.969E-001 %	(	1.411E+000G		8.0E+000	81.70
			-2.969E-001	284.30	4.047E+000 %		1.635E+001G		8.0E+000	6.14
			-2.969E-001	636.97	-3.766E+000 %		1.691E+001G		8.0E+000	7.17
			2.949E+001	968.97	2.894E+001	(	1.190E+001G		2.1E+003	17.46
			2.949E+001	338.32	3.421E+001	(P	8.443E+000G		2.1E+003	12.01
			2.949E+001	93.35	2.949E+001 -	E	2.197E+001X	A	2.1E+003	5.56
AC-228	N	1	2.949E+001	911.07	2.787E+001	(P	4.925E+000G		2.1E+003	29.00
K-40	N	1	2.822E+002	1460.83	2.822E+002 @	(P	1.131E+001G		4.7E+011	10.67
			2.415E-001	723.36	-3.845E+000 &		1.051E+001G		3.1E+003	20.22
			2.415E-001	1004.77	-5.157E-001 %		7.887E+000G		3.1E+003	18.01
			2.415E-001	996.33	1.721E-002 &		1.392E+001G		3.1E+003	10.60
EU-154	T F I	1	2.415E-001	873.23	2.415E-001 %	(	9.984E+000G		3.1E+003	12.27
			2.415E-001	123.10	4.015E-002 &		2.509E+000G		3.1E+003	40.79
			2.415E-001	1274.54	8.402E-001 &		4.096E+000G		3.1E+003	35.19
U-235	N	1	2.404E+000	143.79	2.404E+000 %	(P	8.508E+000G		2.6E+011	10.96
			2.404E+000	205.33	7.720E+000 %		2.196E+001G		2.6E+011	5.01
			2.404E+000	163.38	2.463E+000 &		1.950E+001G		2.6E+011	5.08
			2.404E+000	93.35	0.000E+000 %	} E	2.103E+001X		2.6E+011	5.81
EU-152	T F	1	-2.320E-001	344.29	-2.320E-001 %	(	4.222E+000G		4.9E+003	26.50
			-2.320E-001	121.78	-7.425E-001 %		3.192E+000G		4.9E+003	28.58
			-2.320E-001	778.92	-1.435E+000 %		1.057E+001G		4.9E+003	12.94
			-2.320E-001	964.11	1.084E+001 %		1.610E+001G		4.9E+003	14.61
			-2.320E-001	1112.07	1.185E+000 %		9.813E+000G		4.9E+003	13.64
			-2.320E-001	1408.00	1.490E+000 %		6.760E+000G		4.9E+003	21.00
CS-134	T F I	1	-2.223E-001	604.71	-2.223E-001 %	(	1.623E+000G		7.5E+002	97.62
			-2.223E-001	795.87	-2.825E-001 %		1.658E+000G		7.5E+002	85.53
			-2.223E-001	569.32	-2.223E-001 &		9.739E+000G		7.5E+002	15.38
			-2.223E-001	801.95	1.375E-001 &		1.590E+001G		7.5E+002	8.69
			-2.223E-001	563.24	0.000E+000 %		1.421E+001G		7.5E+002	8.35
Pa-234	N	1	-2.169E+000	131.29	-2.169E+000 %	(	5.633E+000G		1.6E+012	18.00
			-2.169E+000	569.47	-2.169E+000 %		1.853E+001G		1.6E+012	8.20
			-2.169E+000	946.02	-1.729E+000 %		1.181E+001G		1.6E+012	13.40
			-2.169E+000	883.24	-2.137E+000 %		1.483E+001G		1.6E+012	9.60
			-2.169E+000	880.53	3.495E+000 &		1.807E+001G		1.6E+012	6.00

PA-234		N	1	2.137E+000	1001.00	2.137E+000	& (		1.810E+002G	1.6E+012	.84
				2.137E+000	766.41	1.860E+002	%		4.356E+002G	1.6E+012	.29
PB-214		N	1	1.906E+001	351.93	1.858E+001	* (	P	2.826E+000G	5.8E+005	37.60
				1.906E+001	295.09	2.049E+001	@ (	P	5.578E+000G	5.8E+005	19.30
				1.906E+001	242.00	1.779E+001	(		1.577E+001G	5.8E+005	7.43
BI-214		N	1	1.759E+001	609.31	1.796E+001	(	P	1.850E+000G	5.8E+005	46.09
				1.759E+001	1120.29	2.266E+001	+	P	5.602E+000G	5.8E+005	15.10
				1.759E+001	1764.49	1.647E+001	? (	P	9.961E+000G	5.8E+005	15.40
TH-234		N	1	1.592E+001	63.29	1.592E+001	% (	P	3.014E+001G	1.6E+012	4.82
				1.592E+001	92.59	1.428E+001	%	P	2.359E+001G	1.6E+012	5.58
TL-208	F	N	1	1.553E+001	583.02	1.553E+001	(	P	1.133E+000G	7.0E+002	84.50
				1.553E+001	277.28	2.874E+001	+		1.509E+001G	7.0E+002	6.31
				1.553E+001	860.56	2.643E+001	*		5.045E+000G	7.0E+002	12.42
CS-137	T F I		1	1.257E+000	661.66	1.257E+000	% (		1.655E+000G	1.1E+004	85.21
CO-60	T F		1	0.000E+000	1332.50	0.000E+000	% (		1.879E+000G	1.9E+003	99.98
				0.000E+000	1173.24	-2.818E-001	%		1.811E+000G	1.9E+003	99.90

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
K-40	#	2.822E+002	2.822E+002	4.74	5.57	1.131E+001
CO-60	<			849.88	849.88	1.879E+000
I-131	<	-2.969E-001	-3.008E-001	139.83	139.86	1.411E+000
CS-134	<	-2.223E-001	-2.223E-001	212.54	212.56	1.623E+000
BE-7	<	6.677E-001	6.691E-001	378.87	378.88	8.949E+000
CS-137	<	1.257E+000	1.257E+000	41.47	41.57	1.655E+000
EU-152	<	-2.320E-001	-2.320E-001	526.15	526.16	4.222E+000
EU-155		4.956E+000	4.956E+000	21.55	21.81	4.622E+000
TL-208		1.553E+001	1.553E+001	6.02	6.67	1.133E+000
EU-154	<	2.415E-001	2.415E-001	1.138.10	1.138.10	9.984E+000
RA-224		4.928E+001	4.928E+001	23.33	23.52	3.597E+001
PB-210	<	5.459E+000	5.459E+000	231.22	231.25	4.369E+001
PB-212		3.217E+001	3.218E+001	4.16	5.12	2.593E+000
PB-214		1.906E+001	1.906E+001	9.10	9.54	2.826E+000
Pa-234	<	-2.169E+000	-2.169E+000	78.27	78.32	5.633E+000
TH-234	<	1.592E+001	1.592E+001	56.74	56.86	3.014E+001
PA-234M	<	2.137E+000	2.137E+000	2.350.44	2.350.44	1.810E+002
U-235	<	2.404E+000	2.404E+000	105.53	105.57	8.508E+000
BI-212		3.446E+001	3.446E+001	14.29	14.58	7.728E+000
BI-214		1.759E+001	1.759E+001	7.47	8.01	1.850E+000
AC-228	<	2.949E+001	2.949E+001	6.78	7.37	4.925E+000
AM-241	<	-9.421E-001	-9.421E-001	131.94	131.99	4.160E+000

= All peaks for activity calculation had bad shape

Total Activity (37.87 to 2,000.50 keV) 455.23 Bq/sample

Analyzed by: _____

403293

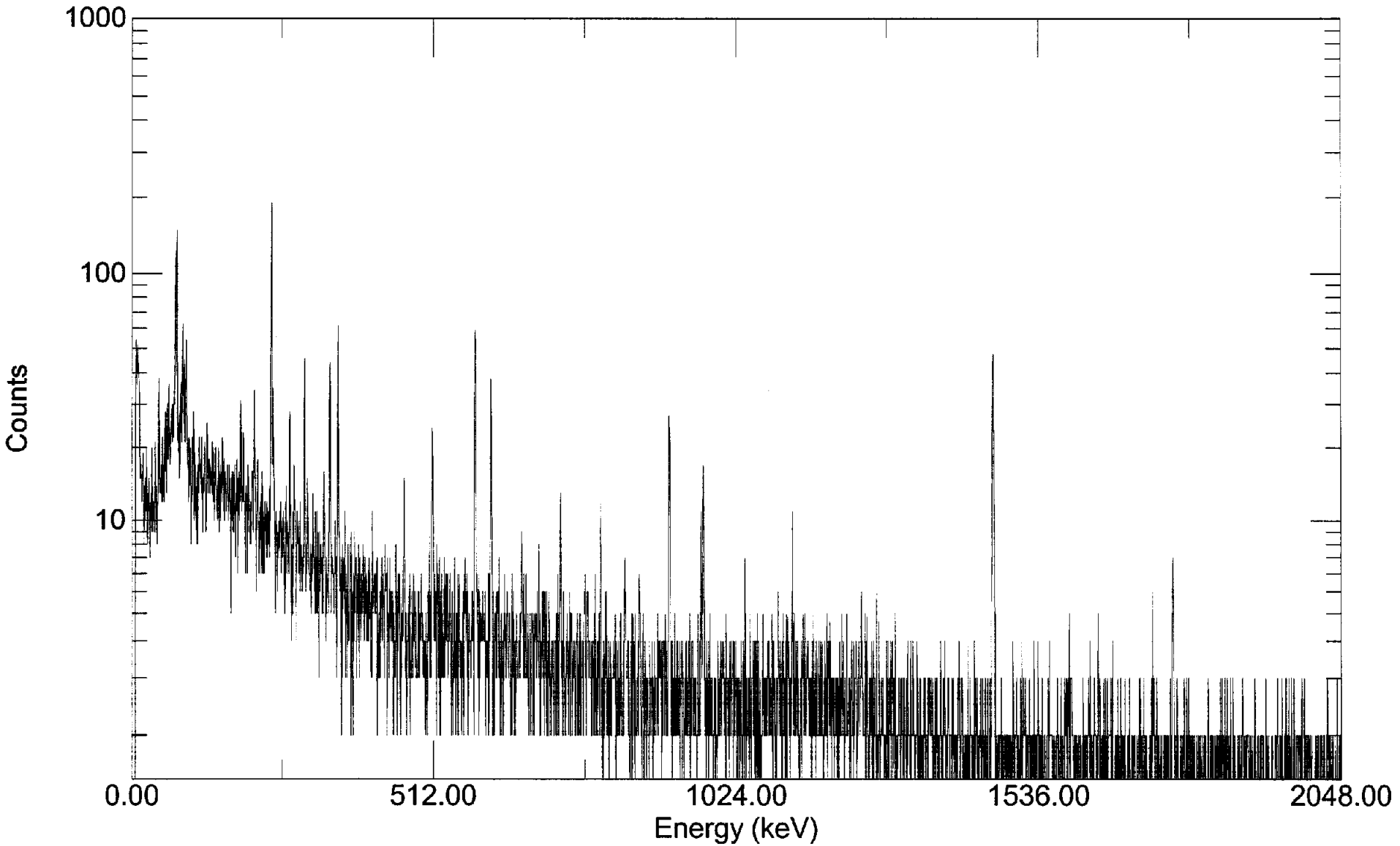
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

KEKD81AC

7360292_KEKD81AC_F7L200260-009



Acquired: 26-Dec-2007 3:38:32 PM
File: C:\User\spectra\KEKD81AC.spc
Detector: #0 Ge 3 SN/155

Real Time: 1814.98 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,048

Sample Description: 7360292_KEKEC1AC_F7L200260-010

Spectrum Filename: KEKEC1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 3:39:06PM		
Live Time:	1800.00	Real Time:	1804.46
Dead Time:	0.25 %		
Detector ID:	4		

Detector System: Ge 4 SN/181

Calibration

Description:	Ge4_TunaCanCal_74139_334_05_15_07		
Filename:	C:\User\Calibrations\Ge4 Post 09_07_07(Ge6)\Ge4_TunaCanCal_74139_334_05_15_(		
Energy Created:	08-May-2007 1:28:13PM	Efficiency Created:	15-May-2007 10:05:02AM
Zero Offset:	0.017 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.53 keV
Stop Channel:	8,000 for an energy of 1998.47 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge4 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.2408

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
299.00	74.80	126.67	115.33	0.064	18.46	0.788	PB-214	
308.25	77.11	230.00	241.00	0.134	14.60	0.789	PB-214	
348.42	87.16	206.25	10.75	0.006	191.46	0.802		s
836.63	209.25	105.01	90.99	0.051	19.07	0.570	AC-228	s
1179.10	294.88	110.11	37.89	0.021	42.40	0.956		
1353.49	338.48	92.52	36.48	0.020	40.80	1.065		s
1406.19	351.66	186.88	8.12	0.005	240.65	0.939		

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.40	46.39	80.81	27.19	0.015	33.46	0.453	s
AM-241	1	235.98	59.04	137.97	0.27	0.000	6158.82	0.830	s
TH-234	1	252.10	63.07	208.76	24.10	0.013	51.42	0.834	s
EU-155	1	348.88	87.27	118.70	131.09	0.073	14.64	0.854	s
U-235	1	373.18	93.35	139.78	8.48	0.005	27.23	0.860	s D
AC-228	1	373.18	93.35	39.94	156.27	0.087	9.31	0.860	s D
TH-234	1	379.03	94.81	178.11	-49.92	-0.028	70.68	0.859	s
EU-155	1	421.49	105.43	112.69	10.67	0.006	144.01	0.871	
EU-152	1	485.63	121.47	123.31	-11.17	-0.006	143.72	0.885	
EU-154	1	493.53	123.45	126.39	-2.30	-0.001	695.13	0.886	
Pa-234	1	523.33	130.90	158.76	-18.43	-0.010	99.45	0.894	s
U-235	1	570.37	142.66	107.15	16.01	0.009	94.77	0.904	s
U-235	1	654.28	163.65	109.46	14.53	0.008	105.15	0.922	s
U-235	1	820.74	205.27	75.01	-6.39	-0.004	195.59	0.958	s
PB-212	1	953.37	238.44	69.46	331.54	0.184	7.14	1.012	
RA-224	1	958.97	239.84	436.48	-121.71	-0.068	25.91	0.988	s
PB-214	1	965.44	241.46	109.63	46.32	0.026	35.18	0.989	s
TL-208	1	1109.25	277.41	28.33	31.67	0.018	37.40	0.464	s
I-131	1	1140.17	285.14	60.19	-9.05	-0.005	125.69	1.025	s
PB-214	1	1179.76	295.04	37.17	77.23	0.043	15.06	1.034	
PB-212	1	1198.51	299.73	16.00	42.00	0.023	23.89	1.178	
AC-228	1	1351.69	338.03	31.31	68.36	0.038	16.74	1.071	s
EU-152	1	1376.72	344.29	75.00	0.00	0.000	1224.74	1.076	s
PB-214	1	1406.18	351.65	36.16	161.80	0.090	9.06	1.082	
I-131	1	1457.16	364.40	42.60	-3.47	-0.002	271.34	1.092	s
BE-7	1	1915.37	478.94	38.31	-7.63	-0.004	120.26	1.185	s
CS-134	1	2262.70	565.76	16.77	0.24	0.000	2439.03	1.254	s
CS-134	1	2276.94	569.32	23.79	-2.36	-0.001	-62.06	1.259	s D
Pa-234	1	2277.54	569.47	31.75	-2.74	-0.002	-165.80	1.259	s D
TL-208	1	2330.14	582.62	9.18	124.82	0.069	10.65	1.205	
CS-134	1	2424.95	606.31	59.52	-14.20	-0.008	81.31	1.286	s
BI-214	1	2434.87	608.79	5.25	174.75	0.097	7.45	0.947	s
I-131	1	2550.45	637.68	15.36	5.76	0.003	104.94	1.312	s
CS-137	1	2645.75	661.50	28.83	17.69	0.010	49.07	1.331	s
EU-154	1	2898.34	724.62	55.73	-11.73	-0.007	94.65	1.378	s
BI-212	1	2906.43	726.64	16.90	22.01	0.012	33.95	1.381	s
PA-234M	1	3065.59	766.41	33.00	0.00	0.000	812.40	1.411	s
EU-152	1	3116.28	779.08	29.40	-5.61	-0.003	143.13	1.420	s
BI-212	1	3142.02	785.51	34.00	0.00	0.000	824.62	1.425	s
CS-134	1	3179.22	794.81	18.52	6.70	0.004	98.69	1.433	s
CS-134	1	3208.80	802.20	15.15	-1.04	-0.001	535.83	1.437	s
TL-208	1	3442.89	860.69	17.05	9.62	0.005	68.75	1.481	s
EU-154	1	3490.95	872.70	20.84	-0.01	0.000	14636.32	1.490	s
Pa-234	1	3524.17	880.99	12.14	-0.37	0.000	1349.18	1.495	s
Pa-234	1	3532.91	883.18	13.40	2.50	0.001	216.24	1.497	s

AC-228	1	3643.26	910.75	10.12	66.08	0.037	14.06	1.518	
Pa-234	1	3784.51	946.04	19.75	-2.02	-0.001	318.46	1.543	s
EU-152	1	3856.86	964.11	194.69	0.00	0.000	1973.25	1.556	s
AC-228	1	3875.44	968.75	27.60	36.85	0.020	26.04	1.559	s
EU-154	1	3985.80	996.32	15.27	-2.09	-0.001	273.61	1.579	s
PA-234M	1	4004.52	1001.00	23.32	0.00	0.000	682.99	1.582	s
EU-154	1	4020.65	1005.03	22.94	-0.79	0.000	867.45	1.585	s
EU-152	1	4454.25	1113.34	14.69	1.49	0.001	371.97	1.659	s
BI-214	1	4479.31	1119.59	21.23	12.63	0.007	41.12	1.665	s
CO-60	1	4699.47	1174.58	14.82	-1.84	-0.001	304.69	1.701	s
EU-154	1	5099.74	1274.54	47.16	0.00	0.000	971.19	1.768	s
CO-60	1	5333.86	1333.01	7.45	2.61	0.001	160.34	1.806	s
EU-152	1	5634.45	1408.06	8.06	2.91	0.002	149.96	1.854	s
K-40	1	5843.76	1460.32	2.83	214.17	0.119	6.79	1.601	
BI-214	1	7057.86	1763.38	1.16	13.68	0.008	29.24	2.066	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Peak Analysis Code	Peak MDA Value Becquerels	Peak MDA Code	Peak Comments	
CS-134	T F I	1	-7.632E-001	604.71	-7.632E-001	% (	2.079E+000G		7.5E+002	97.62
			-7.632E-001	795.87	5.194E-001	&	1.764E+000G		7.5E+002	85.53
			-7.632E-001	569.32	-7.632E-001	&	8.237E+000G		7.5E+002	15.38
			-7.632E-001	801.95	-8.022E-001	%	1.601E+001G		7.5E+002	8.69
			-7.632E-001	563.24	1.408E-001	%	1.287E+001G		7.5E+002	8.35
TL-208	F N	1	7.510E+000	583.02	7.510E+000	(P	1.013E+000G		7.0E+002	84.50
			7.510E+000	277.28	1.304E+001	+	1.133E+001G		7.0E+002	6.31
			7.510E+000	860.56	5.479E+000	%	1.251E+001G		7.0E+002	12.42
RA-224	N	1	-6.836E+001	240.99	-6.836E+001	* (	5.620E+001G		7.0E+002	4.10
EU-155	T F I	1	4.675E+000	105.31	8.155E-001	% (	3.988E+000G		1.8E+003	21.20
			4.675E+000	86.54	7.341E+000	* (	2.995E+000G		1.8E+003	30.70
EU-154	T F I	1	-3.287E-003	873.23	-3.287E-003	& (	1.400E+001G		3.1E+003	12.27
			-3.287E-003	123.10	-9.085E-002	&	2.179E+000G		3.1E+003	40.79
			-3.287E-003	1274.54	0.000E+000	%	9.690E+000G		3.1E+003	35.19
			-3.287E-003	723.36	-3.548E+000	%	1.134E+001G		3.1E+003	20.22
			-3.287E-003	1004.77	-3.519E-001	%	1.118E+001G		3.1E+003	18.01
			-3.287E-003	996.33	-1.573E+000	%	1.577E+001G		3.1E+003	10.60
BE-7	N P C	1	-3.091E+000	477.60	-3.091E+000	% (	1.278E+001G		5.3E+001	10.52
CO-60	T F	1	2.664E-001	1332.50	2.664E-001	% (	1.575E+000G		1.9E+003	99.98
			2.664E-001	1173.24	-1.688E-001	%	1.893E+000G		1.9E+003	99.90
U-235	N	1	2.437E+000	143.79	2.437E+000	& (	7.754E+000G		2.6E+011	10.96
			2.437E+000	205.33	-2.592E+000	%	1.746E+001G		2.6E+011	5.01
			2.437E+000	163.38	5.035E+000	%	1.783E+001G		2.6E+011	5.08
			2.437E+000	93.35	2.437E+000	! E	1.661E+001X		2.6E+011	5.81
PB-210	N	1	2.253E+001	46.54	2.253E+001	% (P	3.696E+001G		8.1E+003	4.25
K-40	N	1	2.219E+002	1460.83	2.219E+002	(P	1.093E+001G		4.7E+011	10.67
BI-214	N	1	2.003E+001	609.31	2.003E+001	(P	1.534E+000G		5.8E+005	46.09
			2.003E+001	1120.29	7.368E+000	% P	1.411E+001G		5.8E+005	15.10
			2.003E+001	1764.49	1.166E+001	-	6.581E+000G		5.8E+005	15.40
PB-212	N	1	1.749E+001	238.63	1.749E+001	(P	2.192E+000G		7.0E+002	43.30
			1.749E+001	300.03	3.570E+001	+	1.815E+001G		7.0E+002	3.28
AC-228	N	1	1.694E+001	911.07	1.690E+001	(	4.485E+000G		2.1E+003	29.00
			1.694E+001	968.97	1.648E+001	(	1.216E+001G		2.1E+003	17.46
			1.694E+001	338.32	1.770E+001	@ (	7.454E+000G		2.1E+003	12.01
			1.694E+001	93.35	4.692E+001	+ } E	1.735E+001X	A	2.1E+003	5.56
Pa-234	N	1	-1.667E+000	131.29	-1.667E+000	% (	5.556E+000G		1.6E+012	18.00
			-1.667E+000	569.47	-1.667E+000	%	1.760E+001G		1.6E+012	8.20
			-1.667E+000	946.02	-1.156E+000	%	1.338E+001G		1.6E+012	13.40
			-1.667E+000	883.24	1.885E+000	%	1.489E+001G		1.6E+012	9.60
			-1.667E+000	880.53	-4.422E-001	%	2.277E+001G		1.6E+012	6.00
AM-241	T	1	1.657E-002	59.54	1.657E-002	% (	3.527E+000G		1.6E+005	35.90
I-131	T F I	1	-1.415E-001	364.48	-1.415E-001	& (	1.350E+000G		8.0E+000	81.70
			-1.415E-001	284.30	-3.916E+000	%	1.681E+001G		8.0E+000	6.14
			-1.415E-001	636.97	4.407E+000	%	1.606E+001G		8.0E+000	7.17

PB-214	N	1	1.396E+001	351.93	1.388E+001	(	P	2.635E+000G	5.8E+005	37.60
			1.396E+001	295.09	1.099E+001	-	P	4.428E+000G	5.8E+005	19.30
			1.396E+001	242.00	1.441E+001	* (		1.602E+001G	5.8E+005	7.43
CS-137 T F I		1	1.177E+000	661.66	1.177E+000	% (		1.846E+000G	1.1E+004	85.21
BI-212	N	1	1.144E+001	727.33	1.144E+001	(		1.137E+001G	7.0E+002	11.82
			1.144E+001	785.51	0.000E+000	%		1.781E+002G	7.0E+002	1.10
TH-234	N	1	1.042E+001	63.29	1.042E+001	* (	P	3.030E+001G	1.6E+012	4.82
			1.042E+001	92.59	-1.497E+001	%	P	1.946E+001G	1.6E+012	5.58
EU-152 T F		1	0.000E+000	344.29	0.000E+000	% (		5.136E+000G	4.9E+003	26.50
			0.000E+000	121.78	-6.299E-001	%		3.070E+000G	4.9E+003	28.58
			0.000E+000	778.92	-2.821E+000	%		1.408E+001G	4.9E+003	12.94
			0.000E+000	964.11	0.000E+000	&		3.606E+001G	4.9E+003	14.61
			0.000E+000	1112.07	9.587E-001	%		1.320E+001G	4.9E+003	13.64
			0.000E+000	1408.00	1.483E+000	&		8.124E+000G	4.9E+003	21.00
PA-234	N	1	0.000E+000	1001.00	0.000E+000	% (		2.417E+002G	1.6E+012	.84
			0.000E+000	766.41	0.000E+000	%		6.440E+002G	1.6E+012	.29

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
I-131	<	-1.415E-001	-1.433E-001	271.34	271.36	1.350E+000
CS-134	<	-7.632E-001	-7.633E-001	81.31	81.36	2.079E+000
CS-137	<	1.177E+000	1.177E+000	49.07	49.15	1.846E+000
EU-152	<			1.224.74	1.224.75	5.136E+000
BE-7	<	-3.091E+000	-3.097E+000	120.26	120.29	1.278E+001
K-40		2.219E+002	2.219E+002	6.88	7.48	1.093E+001
CO-60	<	2.664E-001	2.664E-001	160.34	160.37	1.575E+000
EU-154	<	-3.287E-003	-3.287E-003	114,636.32	114,636.32	1.400E+001
PB-212		1.749E+001	1.749E+001	7.34	7.92	2.192E+000
PB-214	<	1.396E+001	1.396E+001	9.35	9.78	2.635E+000
BI-212	<	1.144E+001	1.144E+001	33.95	34.07	1.137E+001
Pa-234	<	-1.667E+000	-1.667E+000	99.45	99.49	5.556E+000
TH-234	<	1.042E+001	1.042E+001	85.62	85.70	3.030E+001
EU-155	<	4.675E+000	4.676E+000	14.64	15.02	3.988E+000
TL-208		7.510E+000	7.511E+000	10.84	11.22	1.013E+000
RA-224	<	-6.836E+001	-6.837E+001	25.91	26.08	5.620E+001
PB-210	#	2.253E+001	2.253E+001	59.08	59.21	3.696E+001
BI-214	#	2.003E+001	2.003E+001	7.68	8.20	1.534E+000
AC-228	<	1.694E+001	1.694E+001	11.33	11.69	4.485E+000
PA-234M	<			682.99	683.00	2.417E+002
U-235	<	2.437E+000	2.437E+000	94.77	94.81	7.754E+000
AM-241	<	1.657E-002	1.657E-002	6,158.82	6,158.82	3.527E+000

= All peaks for activity calculation had bad shape

Total Activity (37.53 to 1,998.47 keV) 266.91 Bq/sample

Analyzed by: _____

403293

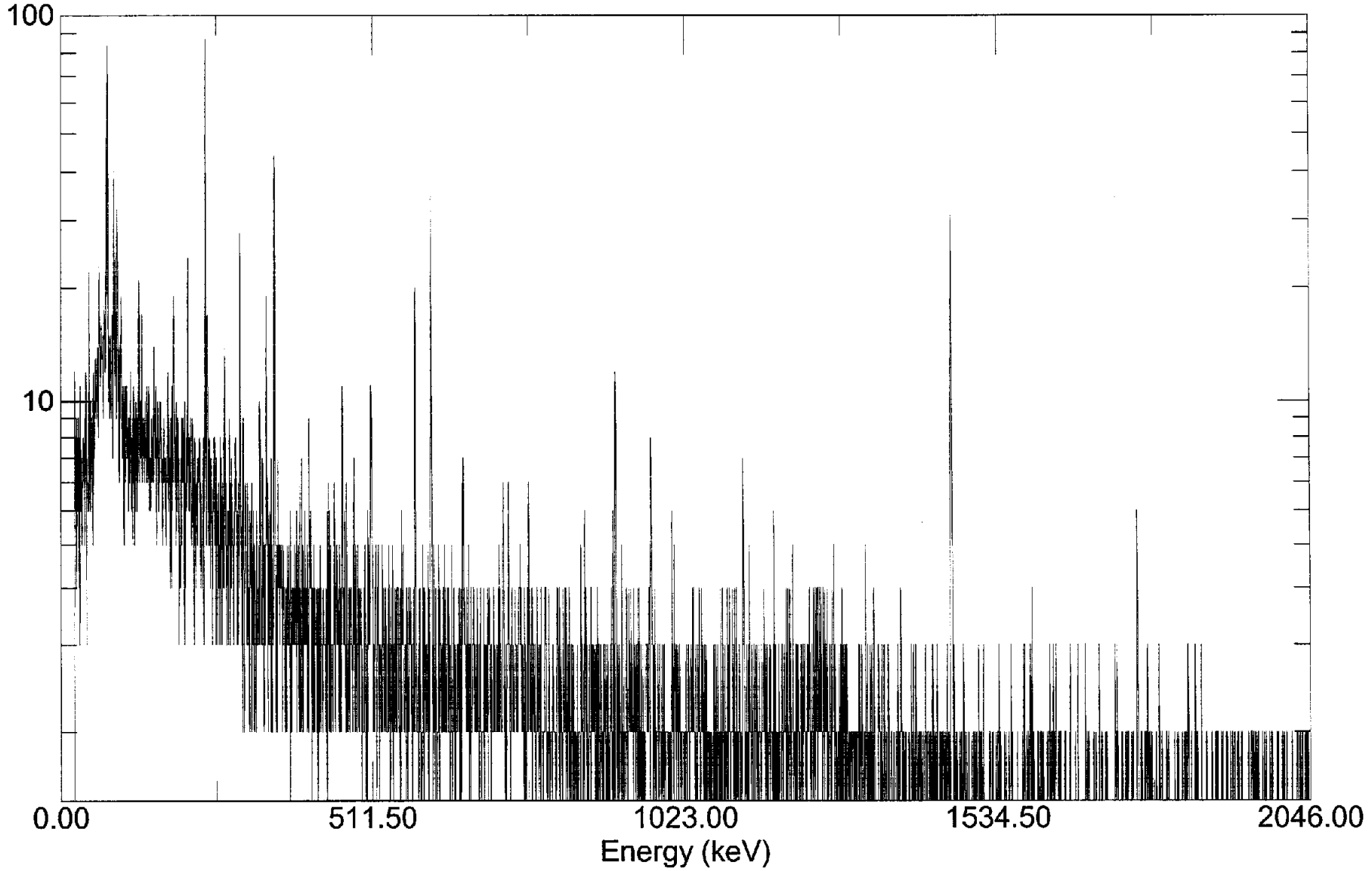
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

KEKEC1AC

7360292_KEKEC1AC_F7L200260-010



Acquired: 26-Dec-2007 3:39:06 PM
File: C:\User\spectra\KEKEC1AC.spc
Detector: #0 Ge 4 SN/181

Real Time: 1804.46 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,050

Sample Description: 7360292_KEKEG1AC_F7L200260-011

Spectrum Filename: KEKEG1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 3:39:40PM		
Live Time:	1800.00	Real Time:	1850.06
Dead Time:	2.71 %		
Detector ID:	5		

Detector System: Ge 5 SN/157

Calibration

Description:	Ge5 TunaCanCal_74139-334_05_08_07		
Filename:	C:\User\Calibrations\Ge5 calibrations\Ge5 TunaCanCal_74139-334_05_08_07.Clb		
Energy Created:	28-Mar-2007 6:08:23PM	Efficiency Created:	08-May-2007 3:55:34PM
Zero Offset:	0.272 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.74 keV
Stop Channel:	8,000 for an energy of 2000.57 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge5 PBC table 11 26 07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.2198

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
252.40	63.32	157.09	60.91	0.034	31.80	0.560	PA-234	s
297.11	74.49	168.00	154.00	0.086	18.02	0.758	PB-214	s
307.20	77.01	106.00	239.00	0.133	9.87	0.801	PB-214	
316.71	79.39	44.00	31.00	0.017	37.29	0.620	TH-227	
744.31	186.21	65.33	110.67	0.061	19.82	0.741	PA-234	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.08	46.50	115.26	42.74	0.024	37.31	0.469	s
AM-241	1	237.21	59.53	133.83	0.33	0.000	446.98	0.761	s
TH-234	1	251.95	63.21	146.44	28.93	0.016	40.70	0.764	s
EU-155	1	347.47	87.07	185.47	54.37	0.030	37.93	0.788	s
TH-234	1	370.29	92.77	204.14	33.62	0.019	36.24	0.795	s
U-235	1	372.61	93.35	130.60	7.42	0.004	28.49	0.795	s D
AC-228	1	372.61	93.35	197.84	0.00	0.000	1843.91	0.795	s D
EU-155	1	419.99	105.19	82.03	12.92	0.007	102.98	0.808	s
EU-152	1	488.98	122.42	71.75	14.74	0.008	85.33	0.824	s
EU-154	1	493.40	123.53	119.38	-15.03	-0.008	105.97	0.826	s
Pa-234	1	524.23	131.23	111.96	4.16	0.002	363.36	0.834	s
U-235	1	574.18	143.71	97.51	14.04	0.008	87.04	0.847	s
U-235	1	652.56	163.29	82.12	4.85	0.003	188.88	0.867	s
U-235	1	818.25	204.69	58.73	19.86	0.011	59.01	0.909	s
PB-212	1	954.40	238.70	68.15	242.85	0.135	8.73	0.761	
RA-224	1	959.72	240.03	366.10	-101.88	-0.057	28.35	0.944	
PB-214	1	966.75	241.79	48.00	94.00	0.052	17.48	1.016	s
TL-208	1	1108.24	277.14	38.03	6.09	0.003	148.83	0.980	s
I-131	1	1137.19	284.37	46.97	3.36	0.002	293.46	0.987	s
PB-214	1	1181.28	295.39	34.08	137.92	0.077	12.61	0.899	
PB-212	1	1201.98	300.56	29.33	49.67	0.028	27.50	0.411	s
AC-228	1	1352.61	338.20	42.96	41.12	0.023	27.41	1.040	s
EU-152	1	1389.65	347.46	29.82	1.88	0.001	417.94	1.045	s
PB-214	1	1407.55	351.93	25.21	187.79	0.104	8.87	1.211	s
I-131	1	1452.04	363.04	35.60	-0.32	0.000	2679.66	1.065	s
BE-7	1	1910.09	477.51	28.68	-0.06	0.000	13385.39	1.173	s
CS-134	1	2253.11	563.24	57.97	0.00	0.000	1076.75	1.252	s
CS-134	1	2277.45	569.32	16.65	-0.01	0.000	-38.80	1.258	s D
Pa-234	1	2278.05	569.47	29.10	0.62	0.000	132.27	1.258	s D
TL-208	1	2332.78	583.15	11.42	89.58	0.050	12.23	1.455	s
CS-134	1	2416.89	604.17	28.21	-0.08	0.000	9465.46	1.290	s
BI-214	1	2438.55	609.58	14.40	118.60	0.066	10.17	0.869	s
I-131	1	2548.55	637.08	20.37	1.88	0.001	348.17	1.319	s
CS-137	1	2647.23	661.74	39.96	20.20	0.011	36.63	1.342	s
EU-154	1	2892.45	723.04	26.30	-0.13	0.000	5717.96	1.397	s
BI-212	1	2910.72	727.61	22.95	16.82	0.009	47.10	1.400	s
PA-234M	1	3065.96	766.41	50.46	0.00	0.000	1004.62	1.434	s
EU-152	1	3124.18	780.97	19.45	-4.68	-0.003	141.07	1.445	s
BI-212	1	3141.44	785.28	22.19	-0.19	0.000	3464.62	1.451	s
CS-134	1	3179.88	794.89	17.30	12.33	0.007	55.56	1.460	s
CS-134	1	3211.72	802.85	17.51	-2.24	-0.001	272.48	1.465	s
TL-208	1	3445.30	861.25	14.50	13.35	0.007	48.73	1.516	s
EU-154	1	3493.75	873.36	18.89	-1.44	-0.001	435.90	1.527	s
Pa-234	1	3521.35	880.26	15.30	-0.07	0.000	8502.20	1.533	s
Pa-234	1	3532.11	882.95	18.27	-2.93	-0.002	214.24	1.535	s
AC-228	1	3646.22	911.48	20.40	58.73	0.033	16.99	1.559	

Pa-234	1	3790.80	947.63	17.01	0.32	0.000	1856.89	1.588	s
EU-152	1	3860.92	965.16	41.72	-0.77	0.000	1196.76	1.603	s
AC-228	1	3877.03	969.18	26.24	28.44	0.016	31.63	1.607	s
EU-154	1	3983.94	995.92	18.11	-2.93	-0.002	213.35	1.630	s
PA-234M	1	4004.50	1001.06	20.30	0.06	0.000	10779.21	1.633	s
EU-154	1	4011.46	1002.80	12.02	4.33	0.002	123.04	1.637	s
EU-152	1	4447.14	1111.74	16.54	8.20	0.005	78.32	1.723	s
BI-214	1	4482.94	1120.69	0.00	46.00	0.026	14.74	1.625	
CO-60	1	4693.06	1173.24	44.66	0.00	0.000	945.05	1.772	s
EU-154	1	5104.99	1276.26	26.87	-7.07	-0.004	110.30	1.850	s
CO-60	1	5307.75	1326.97	7.66	0.51	0.000	781.16	1.894	s
EU-152	1	5623.51	1405.95	17.06	-4.07	-0.002	151.80	1.950	s
K-40	1	5843.96	1461.10	0.00	292.00	0.162	5.85	1.735	
BI-214	1	7057.30	1764.66	10.11	7.89	0.004	52.63	2.196	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Analysis Code	Peak MDA Value Becquerels	Code	Comments	
EU-155	T F I	1	9.576E-001	105.31	9.576E-001	& (	3.329E+000G		1.8E+003	21.20
			9.576E-001	86.54	2.941E+000		3.579E+000G	A	1.8E+003	30.70
BI-212	N	1	8.384E+000	727.33	8.384E+000	% (	1.248E+001G		7.0E+002	11.82
			8.384E+000	785.51	-1.100E+000	%	1.408E+002G		7.0E+002	1.10
EU-154	T F I	1	-8.021E-001	873.23	-8.021E-001	% (	1.282E+001G		3.1E+003	12.27
			-8.021E-001	123.10	-5.760E-001	%	2.055E+000G		3.1E+003	40.79
			-8.021E-001	1274.54	-1.871E+000	%	7.111E+000G		3.1E+003	35.19
			-8.021E-001	723.36	-3.684E-002	%	7.719E+000G		3.1E+003	20.22
			-8.021E-001	1004.77	1.845E+000	%	8.042E+000G		3.1E+003	18.01
			-8.021E-001	996.33	-2.110E+000	%	1.622E+001G		3.1E+003	10.60
RA-224	N	1	-5.501E+001	240.99	-5.501E+001	(	4.961E+001G		7.0E+002	4.10
PA-234M	N	1	5.409E-001	1001.00	5.409E-001	& (	2.168E+002G		1.6E+012	.84
			5.409E-001	766.41	0.000E+000	&	7.497E+002G		1.6E+012	.29
TL-208	F N	1	5.176E+000	583.02	5.176E+000	* (P	1.066E+000G		7.0E+002	84.50
			5.176E+000	277.28	2.409E+000	%	1.244E+001G		7.0E+002	6.31
			5.176E+000	860.56	7.278E+000	%	1.115E+001G		7.0E+002	12.42
CO-60	T F	1	4.921E-002	1332.50	4.921E-002	% (	1.508E+000G		1.9E+003	99.98
			4.921E-002	1173.24	0.000E+000	%	2.949E+000G		1.9E+003	99.90
CS-134	T F I	1	-4.099E-003	604.71	-4.099E-003	& (	1.417E+000G		7.5E+002	97.62
			-4.099E-003	795.87	9.154E-001	&	1.640E+000G		7.5E+002	85.53
			-4.099E-003	569.32	-4.099E-003	%	6.755E+000G		7.5E+002	15.38
			-4.099E-003	801.95	-1.647E+000	%	1.633E+001G		7.5E+002	8.69
			-4.099E-003	563.24	0.000E+000	%	2.167E+001G		7.5E+002	8.35
Pa-234	N	1	3.640E-001	131.29	3.640E-001	& (	4.556E+000G		1.6E+012	18.00
			3.640E-001	569.47	3.640E-001	%	1.624E+001G		1.6E+012	8.20
			3.640E-001	946.02	1.722E-001	%	1.197E+001G		1.6E+012	13.40
			3.640E-001	883.24	-2.112E+000	%	1.630E+001G		1.6E+012	9.60
			3.640E-001	880.53	-7.487E-002	%	2.407E+001G		1.6E+012	6.00
PB-210	N	1	3.138E+001	46.54	3.138E+001	* (P	3.873E+001G		8.1E+003	4.25
K-40	N	1	2.854E+002	1460.83	2.854E+002	(	7.204E+000G		4.7E+011	10.67
BE-7	N P C	1	-2.203E-002	477.60	-2.203E-002	% (	1.077E+001G		5.3E+001	10.52
			2.150E-001	1112.07	5.011E+000	%	1.323E+001G		4.9E+003	13.64

			2.150E-001	1408.00	-1.960E+000	%			1.057E+001G		4.9E+003		21.00
EU-152	T F	1	2.150E-001	344.29	2.150E-001	&	(		3.226E+000G		4.9E+003		26.50
			2.150E-001	121.78	8.055E-001	%			2.305E+000G		4.9E+003		28.58
			2.150E-001	778.92	-2.256E+000	%			1.121E+001G		4.9E+003		12.94
			2.150E-001	964.11	-3.898E-001	%			1.668E+001G		4.9E+003		14.61
U-235	N	1	2.066E+000	143.79	2.066E+000	*	(	P	7.170E+000G		2.6E+011		10.96
			2.066E+000	205.33	7.747E+000	&			1.499E+001G		2.6E+011		5.01
			2.066E+000	163.38	1.621E+000	%		P	1.503E+001G		2.6E+011		5.08
			2.066E+000	93.35	2.066E+000	!		E	1.557E+001X		2.6E+011		5.81
AM-241	T	1	1.861E-002	59.54	1.861E-002	%	(	P	3.221E+000G		1.6E+005		35.90
PB-214	N	1	1.662E+001	351.93	1.547E+001		(	P	2.151E+000G		5.8E+005		37.60
			1.662E+001	295.09	1.886E+001		(	P	4.090E+000G		5.8E+005		19.30
			1.662E+001	242.00	2.810E+001	*			1.046E+001G		5.8E+005		7.43
BI-214	N	1	1.305E+001	609.31	1.305E+001		(	P	2.244E+000G		5.8E+005		46.09
			1.305E+001	1120.29	2.554E+001	+			4.092E+000G		5.8E+005		15.10
			1.305E+001	1764.49	6.293E+000	%		P	1.398E+001G		5.8E+005		15.40
CS-137	T F I	1	1.290E+000	661.66	1.290E+000	%	(	P	2.054E+000G		1.1E+004		85.21
AC-228	N	1	1.285E+001	911.16	1.436E+001		(		5.810E+000G		2.1E+003		29.00
			1.285E+001	968.97	1.214E+001	*	(		1.135E+001G		2.1E+003		17.46
			1.285E+001	338.32	1.023E+001	*	(		8.274E+000G		2.1E+003		12.01
			1.285E+001	93.35	0.000E+000	%		} E	1.627E+001G	A	2.1E+003		5.56
I-131	T F I	1	-1.236E-002	364.48	-1.236E-002	%	(		1.195E+000G		8.0E+000		81.70
			-1.236E-002	284.30	1.397E+000	%			1.440E+001G		8.0E+000		6.14
			-1.236E-002	636.97	1.378E+000	%			1.745E+001G		8.0E+000		7.17
PB-212	N	1	1.232E+001	238.63	1.232E+001		(	P	2.088E+000G		7.0E+002		43.30
			1.232E+001	300.03	4.056E+001	+			2.282E+001G		7.0E+002		3.28
			1.172E+001	92.59	9.759E+000	%		P	2.011E+001G		1.6E+012		5.58
TH-234	N	1	1.172E+001	63.29	1.172E+001	*	(	P	2.394E+001G		1.6E+012		4.82

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	#	-2.203E-002	-2.207E-002	13,385.39	13,385.39	1.077E+001
K-40		2.854E+002	2.854E+002	5.85	6.54	7.204E+000
CO-60	#	4.921E-002	4.921E-002	781.16	781.16	1.508E+000
I-131	#	-1.236E-002	-1.252E-002	2,679.66	2,679.66	1.195E+000
CS-134	#	-4.099E-003	-4.100E-003	9,465.46	9,465.46	1.417E+000
EU-154	#	-8.021E-001	-8.021E-001	435.90	435.91	1.282E+001
PB-212		1.232E+001	1.232E+001	8.97	9.45	2.088E+000
PB-214		1.662E+001	1.662E+001	7.87	8.38	2.151E+000
BI-212	#	8.384E+000	8.385E+000	47.10	47.19	1.248E+001
CS-137	#	1.290E+000	1.290E+000	47.96	48.05	2.054E+000
EU-152	#	2.150E-001	2.150E-001	417.94	417.95	3.226E+000
EU-155	#	9.576E-001	9.576E-001	102.98	103.03	3.329E+000
TL-208	#	5.176E+000	5.177E+000	12.75	13.07	1.066E+000
PB-210	#	3.138E+001	3.138E+001	52.38	52.52	3.873E+001
BI-214		1.305E+001	1.305E+001	10.74	11.13	2.244E+000
RA-224	#	-5.501E+001	-5.502E+001	28.35	28.51	4.961E+001
AC-228	#	1.285E+001	1.285E+001	15.06	15.33	5.810E+000
PA-234M	#	5.409E-001	5.409E-001	10,779.21	10,779.21	2.168E+002
U-235	#	2.066E+000	2.066E+000	102.39	102.44	7.170E+000
AM-241	#	1.861E-002	1.861E-002	4,972.96	4,972.96	3.221E+000
Pa-234	#	3.640E-001	3.640E-001	363.36	363.37	4.556E+000
TH-234	#	1.172E+001	1.172E+001	60.64	60.75	2.394E+001

= All peaks for activity calculation had bad shape

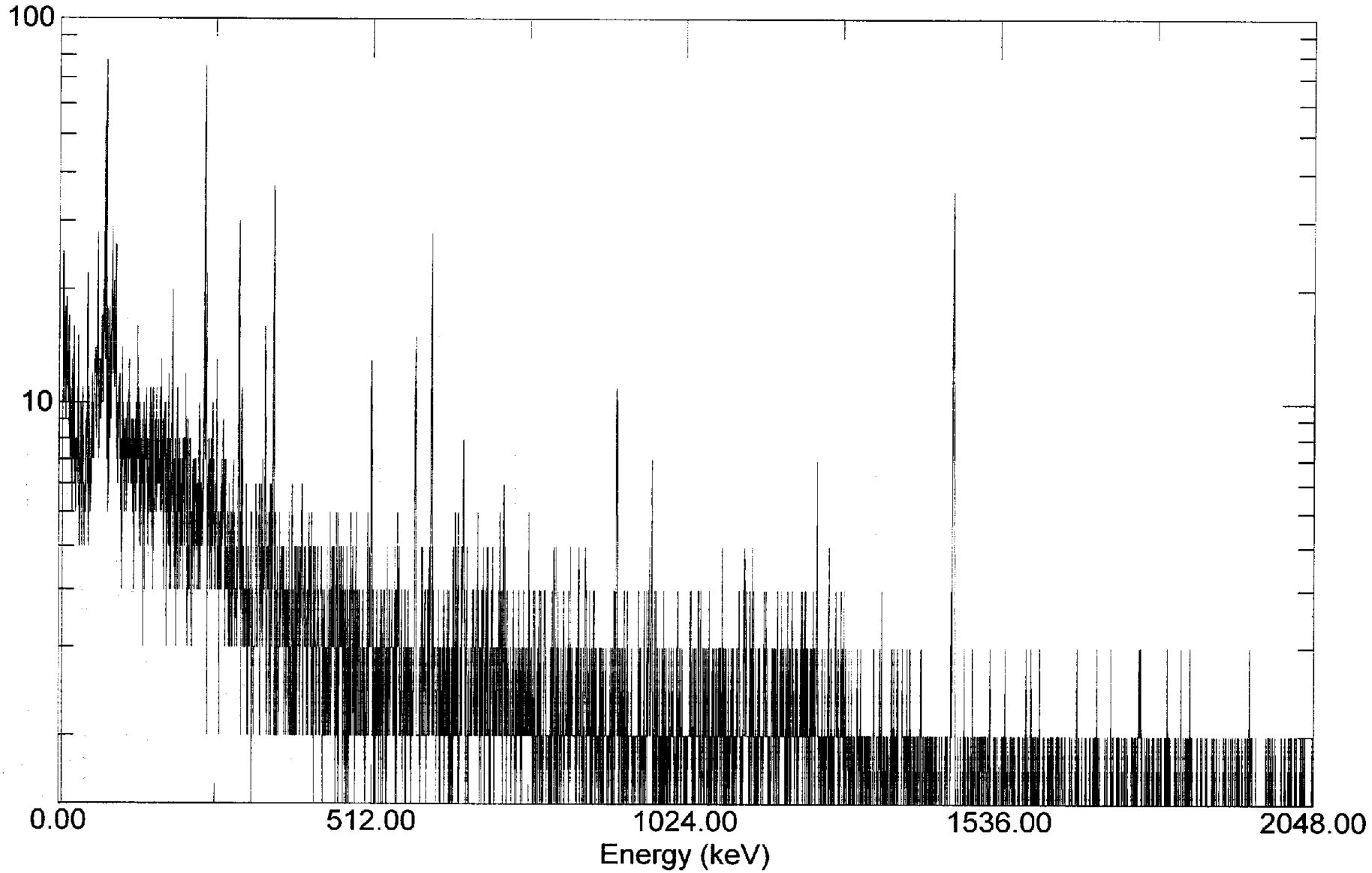
Total Activity (37.74 to 2,000.57 keV) 332.59 Bq/sample

Analyzed by: 403293

Laboratory: STL- St Louis

KEKEG1AC

7360292_KEKEG1AC_F7L200260-011



Acquired: 26-Dec-2007 3:39:40 PM
File: C:\User\spectra\KEKEG1AC.spc
Detector: #0 Ge 5 SN/157

Real Time: 1850.06 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,049

Sample Description: 7360292_KEKEM1AC_F7L200260-012

Spectrum Filename: KEKEM1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 3:40:09PM		
Live Time:	1800.00	Real Time:	1820.50
Dead Time:	1.13 %		
Detector ID:	7		

Detector System: Ge 7 SN/154

Calibration

Description:	Ge7 Tunacan 74139_334 01_16_07		
Filename:	C:\User\Calibrations\Ge7 calibrations\Ge7 Tunacan 01_16_07.Clb		
Energy Created:	16-Jan-2007 4:24:37PM	Efficiency Created:	16-Jan-2007 4:27:00PM
Zero Offset:	0.231 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.72 keV
Stop Channel:	8,000 for an energy of 2000.15 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge7 PBC table 11 26 07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1892

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
298.62	74.87	247.33	174.67	0.097	18.10	0.981	PB-214	
308.02	77.22	255.00	237.00	0.132	14.70	0.708	PB-214	
370.14	92.75	315.00	0.00	0.000	2509.98	0.519		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.90	46.69	163.21	16.03	0.009	44.45	0.832	
AM-241	1	237.81	59.67	219.42	-0.08	0.000	26965.29	0.846	s
TH-234	1	252.21	63.27	241.38	20.46	0.011	53.30	0.850	
EU-155	1	347.44	87.07	214.80	69.08	0.038	32.33	0.874	s
TH-234	1	369.92	92.69	246.12	64.83	0.036	24.79	0.881	s
U-235	1	372.56	93.35	175.07	9.65	0.005	17.69	0.882	s D
AC-228	1	372.56	93.35	304.74	0.00	0.000	2144.76	0.882	s D
EU-155	1	418.71	104.89	126.00	22.06	0.012	75.05	0.894	s
EU-152	1	486.96	121.94	124.19	2.01	0.001	787.85	0.912	
EU-154	1	500.73	125.39	88.38	-0.78	0.000	1703.79	0.913	s
Pa-234	1	520.60	130.35	144.74	4.47	0.002	383.48	0.922	s
U-235	1	573.49	143.57	118.94	18.15	0.010	88.16	0.935	s
U-235	1	652.73	163.38	140.60	0.00	0.000	1676.88	0.955	s
U-235	1	820.37	205.28	124.60	-0.83	0.000	1908.93	0.999	s
PB-212	1	954.06	238.70	162.54	469.46	0.261	7.59	1.069	
RA-224	1	959.75	240.12	547.40	-119.71	-0.067	29.11	1.036	
PB-214	1	965.93	241.66	130.33	74.67	0.041	35.55	0.555	s
TL-208	1	1106.45	276.79	28.50	56.50	0.031	23.43	0.404	s
I-131	1	1138.95	284.91	61.99	9.59	0.005	120.55	1.081	s
PB-214	1	1179.03	294.93	35.00	174.00	0.097	10.46	1.251	s
PB-212	1	1199.83	300.13	33.33	49.67	0.028	28.05	1.426	s
AC-228	1	1352.62	338.32	66.37	77.58	0.043	18.69	1.136	s
EU-152	1	1373.13	343.45	46.14	-4.96	-0.003	198.61	1.142	s
PB-214	1	1406.90	351.89	59.55	271.45	0.151	9.31	1.130	s
I-131	1	1457.46	364.52	46.41	9.59	0.005	105.56	1.163	s
BE-7	1	1907.60	477.04	35.60	-1.08	-0.001	784.90	1.277	s
CS-134	1	2251.38	562.98	29.65	1.61	0.001	486.20	1.363	s
CS-134	1	2276.76	569.32	28.91	0.00	0.000	632.46	1.369	s D
Pa-234	1	2277.35	569.47	23.29	0.66	0.000	108.60	1.369	s D
TL-208	1	2332.01	583.13	2.41	183.59	0.102	7.33	1.108	s
CS-134	1	2403.23	600.93	20.21	0.96	0.001	672.19	1.403	s
BI-214	1	2436.85	609.34	18.80	151.20	0.084	9.79	1.630	
I-131	1	2552.00	638.12	19.14	3.66	0.002	177.01	1.435	s
CS-137	1	2633.84	658.58	27.46	-2.08	-0.001	556.02	1.459	s
EU-154	1	2900.94	725.35	56.47	-8.11	-0.005	135.59	1.519	s
BI-212	1	2908.10	727.14	27.89	20.30	0.011	42.97	1.523	s
PA-234M	1	3065.20	766.41	38.00	0.00	0.000	871.78	1.561	s
EU-152	1	3115.24	778.92	9.92	0.00	0.000	445.52	1.573	s
BI-212	1	3141.60	785.51	27.45	0.00	0.000	740.96	1.579	
CS-134	1	3179.98	795.10	23.08	12.13	0.007	62.96	1.589	s
CS-134	1	3190.05	797.62	16.62	-0.76	0.000	771.43	1.595	s
TL-208	1	3445.70	861.53	5.67	25.33	0.014	27.08	1.333	
EU-154	1	3490.59	872.75	21.98	2.03	0.001	333.70	1.662	s
Pa-234	1	3515.24	878.91	16.99	0.21	0.000	2797.77	1.669	s
Pa-234	1	3532.82	883.31	23.14	-3.07	-0.002	228.90	1.672	s
AC-228	1	3643.78	911.05	20.12	72.36	0.040	14.66	1.698	s

Pa-234	1	3786.31	946.68	30.75	-0.06	0.000	12396.84	1.731	s
EU-152	1	3852.08	963.12	45.12	-4.29	-0.002	226.61	1.748	s
AC-228	1	3876.39	969.19	34.15	37.42	0.021	27.48	1.752	
EU-154	1	3984.72	996.28	25.24	-2.37	-0.001	306.66	1.778	s
PA-234M	1	4003.11	1000.87	18.41	4.26	0.002	150.47	1.782	s
EU-154	1	4019.37	1004.94	24.28	1.83	0.001	387.13	1.785	s
EU-152	1	4447.41	1111.95	35.08	-4.63	-0.003	186.81	1.884	s
BI-214	1	4481.53	1120.48	0.00	74.00	0.041	11.62	0.500	s
CO-60	1	4693.96	1173.58	28.37	10.37	0.006	78.99	1.939	s
EU-154	1	5102.51	1275.72	21.14	2.25	0.001	296.03	2.030	s
CO-60	1	5329.63	1332.50	17.83	0.00	0.000	597.22	2.081	s
EU-152	1	5628.48	1407.22	16.16	0.71	0.000	805.07	2.147	s
K-40	1	5844.08	1461.12	17.31	303.29	0.168	6.06	2.192	
BI-214	1	7057.33	1764.45	9.91	12.14	0.007	46.58	2.447	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Analysis Code	MDA Value Becquerels	Code	Comments	
CS-137	T F I	1	-9.798E-002	661.66	-9.798E-002 %	(P	1.281E+000G		1.1E+004	85.21
PB-210	N	1	9.574E+000	46.54	9.574E+000 %	(P	3.716E+001G		8.1E+003	4.25
			8.458E-001	1274.54	4.538E-001 %		4.859E+000G		3.1E+003	35.19
			8.458E-001	723.36	-1.744E+000 %		8.107E+000G		3.1E+003	20.22
			8.458E-001	1004.77	5.863E-001 %		8.207E+000G		3.1E+003	18.01
			8.458E-001	996.33	-1.279E+000 %		1.409E+001G		3.1E+003	10.60
EU-154	T F I	1	8.458E-001	873.23	8.458E-001 %	(	1.022E+001G		3.1E+003	12.27
			8.458E-001	123.10	-2.164E-002 %		1.287E+000G		3.1E+003	40.79
TL-208	F N	1	7.820E+000	583.02	7.820E+000 *	(P	4.234E-001G		7.0E+002	84.50
			7.820E+000	277.28	1.637E+001 *		7.993E+000G		7.0E+002	6.31
			7.820E+000	860.56	1.029E+001 +		5.605E+000G		7.0E+002	12.42
BI-212	N	1	7.496E+000	727.33	7.496E+000 %	(	1.009E+001G		7.0E+002	11.82
			7.496E+000	785.51	0.000E+000 %		1.150E+002G		7.0E+002	1.10
RA-224	N	1	-4.728E+001	240.99	-4.728E+001	(	4.413E+001G		7.0E+002	4.10
EU-152	T F	1	-4.172E-001	344.29	-4.172E-001 %	(	2.887E+000G		4.9E+003	26.50
			-4.172E-001	121.78	7.924E-002 %		2.156E+000G		4.9E+003	28.58
			-4.172E-001	778.92	0.000E+000 %		6.223E+000G		4.9E+003	12.94
			-4.172E-001	964.11	-1.633E+000 &		1.294E+001G		4.9E+003	14.61
			-4.172E-001	1112.07	-2.132E+000 %		1.396E+001G		4.9E+003	13.64
			-4.172E-001	1408.00	2.634E-001 %		7.910E+000G		4.9E+003	21.00
CS-134	T F I	1	3.644E-002	604.71	3.644E-002 %	(	9.009E-001G		7.5E+002	97.62
			3.644E-002	795.87	6.688E-001 %		1.384E+000G		7.5E+002	85.53
			3.644E-002	569.32	0.000E+000 %		6.362E+000G		7.5E+002	15.38
			3.644E-002	801.95	-4.129E-001 %		1.186E+001G		7.5E+002	8.69
			3.644E-002	563.24	6.710E-001 &		1.174E+001G		7.5E+002	8.35
AM-241	T	1	-3.357E-003	59.54	-3.357E-003 %	(	3.099E+000G		1.6E+005	35.90
BE-7	N P C	1	-3.098E-001	477.60	-3.098E-001 %	(	8.729E+000G		5.3E+001	10.52
PA-234M	N	1	2.921E+001	1001.00	2.921E+001 &	(	1.557E+002G		1.6E+012	.84
			2.921E+001	766.41	0.000E+000 &		4.883E+002G		1.6E+012	.29
Pa-234	N	1	2.832E-001	131.29	2.832E-001 %	(	3.723E+000G		1.6E+012	18.00
			2.832E-001	569.47	2.832E-001 %		1.083E+001G		1.6E+012	8.20
			2.832E-001	946.02	-2.583E-002 %		1.165E+001G		1.6E+012	13.40

			2.832E-001	883.24	-1.649E+000	%			1.350E+001G		1.6E+012	9.60
			2.832E-001	880.53	1.791E-001	%			1.879E+001G		1.6E+012	6.00
I-131	T F I	1	2.754E-001	364.48	2.754E-001	&	(		9.898E-001G		8.0E+000	81.70
			2.754E-001	284.30	2.919E+000	%			1.200E+001G		8.0E+000	6.14
			2.754E-001	636.97	1.985E+000	&			1.253E+001G		8.0E+000	7.17
K-40	N	1	2.278E+002	1460.83	2.278E+002		(		1.660E+001G		4.7E+011	10.67
			1.936E+000	205.33	-2.359E-001	%			1.559E+001G		2.6E+011	5.01
			1.936E+000	163.38	0.000E+000	&			1.409E+001G		2.6E+011	5.08
			1.936E+000	93.35	1.936E+000	!		E	1.292E+001X		2.6E+011	5.81
U-235	N	1	1.936E+000	143.79	1.936E+000	%	(		5.710E+000G		2.6E+011	10.96
PB-212	N	1	1.741E+001	238.63	1.741E+001		(	P	2.304E+000G		7.0E+002	43.30
			1.741E+001	300.03	2.972E+001	+			1.772E+001G		7.0E+002	3.28
PB-214	N	1	1.670E+001	351.93	1.640E+001	*	(	P	2.337E+000G		5.8E+005	37.60
			1.670E+001	295.09	1.743E+001	@	(		3.033E+000G		5.8E+005	19.30
			1.670E+001	242.00	1.633E+001	*	(		1.223E+001G		5.8E+005	7.43
AC-228	N	1	1.303E+001	911.16	1.321E+001		(		4.312E+000G		2.1E+003	29.00
			1.303E+001	968.97	1.196E+001		(		9.572E+000G		2.1E+003	17.46
			1.303E+001	338.32	1.415E+001	*	(		7.420E+000G		2.1E+003	12.01
			1.303E+001	93.35	0.000E+000	%	}	E	1.349E+001G	A	2.1E+003	5.56
BI-214	N	1	1.228E+001	609.31	1.228E+001		(	P	1.860E+000G		5.8E+005	46.09
			1.228E+001	1120.29	3.100E+001	+			3.087E+000G		5.8E+005	15.10
			1.228E+001	1764.49	7.568E+000	%			1.084E+001G		5.8E+005	15.40
EU-155	T F I	1	1.178E+000	105.31	1.178E+000	%	(		2.939E+000G		1.8E+003	21.20
			1.178E+000	86.54	2.701E+000	*			2.776E+000G	A	1.8E+003	30.70
TH-234	N	1	1.016E+001	63.29	6.211E+000	%	(	P	2.280E+001G		1.6E+012	4.82
			1.016E+001	92.59	1.357E+001		(	P	1.587E+001G		1.6E+012	5.58
CO-60	T F	1	0.000E+000	1332.50	0.000E+000	%	(		1.650E+000G		1.9E+003	99.98
			0.000E+000	1173.24	6.835E-001	&			1.814E+000G		1.9E+003	99.90

Analysis Codes:

% = Peak fails sensitivity test

\- = Peak activity lower than counting uncertainty range

(= This peak is used in the nuclide activity average

* = Peak is too wide, but only one peak in library

A = Derived Average Activity

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

? = Peak is too narrow

= = Peak outside analysis energy range

P = Peakbackround subtraction

@ = Peak is too wide at FW25M, but OK at FWHM

E = Energy Duplication

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	#	-3.098E-001	-3.105E-001	784.90	784.91	8.729E+000
K-40	#	2.278E+002	2.278E+002	6.06	6.73	1.660E+001
CO-60	#			597.22	597.23	1.650E+000
I-131	#	2.754E-001	2.791E-001	105.56	105.60	9.898E-001
CS-134	#	3.644E-002	3.644E-002	672.19	672.19	9.009E-001
CS-137	#	-9.798E-002	-9.798E-002	755.54	755.55	1.281E+000
EU-152	#	-4.172E-001	-4.172E-001	198.61	198.63	2.887E+000
EU-155	#	1.178E+000	1.178E+000	75.05	75.12	2.939E+000
TL-208		7.820E+000	7.821E+000	7.43	7.97	4.234E-001
EU-154	#	8.458E-001	8.459E-001	333.70	333.71	1.022E+001
PB-210	#	9.574E+000	9.574E+000	111.28	111.34	3.716E+001
PB-212		1.741E+001	1.742E+001	7.74	8.30	2.304E+000
PB-214	#	1.670E+001	1.670E+001	9.41	9.84	2.337E+000
AC-228	#	1.303E+001	1.303E+001	12.11	12.45	4.312E+000
Pa-234	#	2.832E-001	2.832E-001	383.48	383.49	3.723E+000
AM-241	#	-3.357E-003	-3.357E-003	26,965.29	26,965.29	3.099E+000
BI-212	#	7.496E+000	7.497E+000	42.97	43.07	1.009E+001
BI-214		1.228E+001	1.228E+001	9.93	10.35	1.860E+000
RA-224	#	-4.728E+001	-4.729E+001	29.11	29.27	4.413E+001
TH-234	#	1.016E+001	1.016E+001	35.48	35.67	2.280E+001
PA-234M	#	2.921E+001	2.921E+001	150.47	150.50	1.557E+002
U-235	#	1.936E+000	1.936E+000	88.16	88.21	5.710E+000

= All peaks for activity calculation had bad shape

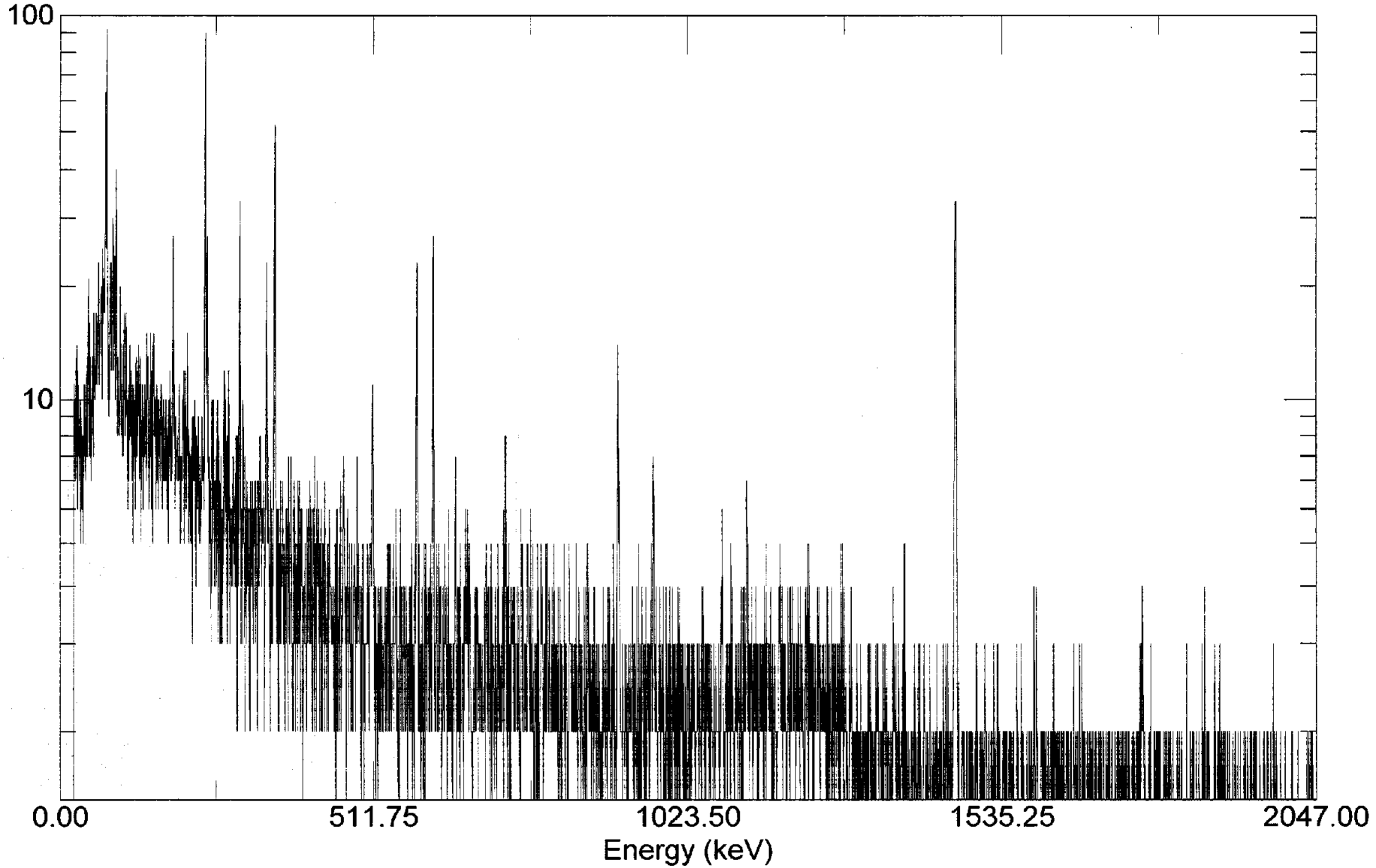
Total Activity (37.72 to 2,000.15 keV) 54.21 Bq/sample

Analyzed by: 403293

Laboratory: Test America

KEKEM1AC

7360292_KEKEM1AC_F7L200260-012



Acquired: 26-Dec-2007 3:40:09 PM
File: C:\User\spectra\KEKEM1AC.spc
Detector: #0 Ge 7 SN/154

Real Time: 1820.50 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,051

Sample Description: 7360292_KEKEW1AC_F7L200260-013

Spectrum Filename: KEKEW1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 4:17:41PM		
Live Time:	1800.00	Real Time:	1811.78
Dead Time:	0.65 %		
Detector ID:	1		

Detector System: Ge 1 SN/242

Calibration

Description:	Ge1 Tunacan 74139-334 1_15_07		
Filename:	C:\User\Calibrations\Ge1 calibrations\Ge1 Tunacan polynomial 01_15_07.Clb		
Energy Created:	15-Jan-2007 5:43:37PM	Efficiency Created:	15-Jan-2007 5:44:16PM
Zero Offset:	0.212 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.71 keV
Stop Channel:	8,000 for an energy of 1999.84 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge1 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.1766

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
297.42	74.57	592.17	449.83	0.250	12.01	0.762	PB-214	s
307.65	77.13	313.50	612.50	0.340	6.32	0.754	PB-214	
348.05	87.23	272.53	263.47	0.146	10.79	0.801	PB-214	
358.60	89.86	225.50	179.50	0.100	15.94	1.382	PB-212	sM
741.76	185.66	234.50	113.50	0.063	30.12	1.002	U-235	
837.43	209.58	183.67	152.33	0.085	14.96	0.603	NP-239	s
2231.54	558.09	10.83	32.17	0.018	25.35	0.288	Y-91M	s
2435.99	609.20	289.81	23.19	0.013	105.88	1.166		

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	184.41	46.32	172.46	38.54	0.021	33.56	0.607	
AM-241	1	235.58	59.11	385.74	12.91	0.007	216.97	0.824	s
TH-234	1	250.23	62.77	379.73	100.27	0.056	27.77	0.436	s
EU-155	1	345.31	86.54	537.03	-4.82	-0.003	681.44	0.849	
TH-234	1	369.50	92.59	404.54	31.46	0.017	34.29	0.855	D
AC-228	1	372.54	93.35	291.07	223.68	0.124	1.05	0.855	D
U-235	1	372.54	93.35	389.68	-1.35	-0.001	-1485.66	0.855	s D
EU-155	1	419.91	105.19	291.30	59.96	0.033	42.28	0.866	s
EU-152	1	486.29	121.79	382.42	-12.84	-0.007	217.12	0.881	s
EU-154	1	491.31	123.04	332.50	10.23	0.006	254.09	0.882	s
Pa-234	1	523.78	131.16	434.84	-2.68	-0.001	1101.48	0.890	s
U-235	1	580.67	145.39	287.54	-2.50	-0.001	1911.73	0.901	s
U-235	1	649.97	162.71	282.32	7.73	0.004	222.76	0.919	s
U-235	1	821.59	205.61	253.79	17.86	0.010	114.38	0.957	s
PB-212	1	953.66	238.63	117.71	1422.90	0.790	2.80	0.987	D
RA-224	1	963.07	240.99	207.47	152.53	0.085	15.62	0.989	D
PB-214	1	967.12	242.00	218.56	87.44	0.049	24.08	0.990	D
TL-208	1	1108.70	277.39	100.00	94.00	0.052	24.43	0.672	s
I-131	1	1137.90	284.69	137.01	0.55	0.000	2986.88	1.028	s
PB-214	1	1179.17	295.01	99.21	208.79	0.116	11.31	1.107	s
PB-212	1	1199.14	300.00	65.00	111.00	0.062	16.58	1.260	s
AC-228	1	1351.95	338.20	56.24	252.76	0.140	8.04	1.235	
EU-152	1	1379.50	345.09	103.53	-0.28	0.000	5201.27	1.081	s
PB-214	1	1406.31	351.79	130.99	323.01	0.179	10.03	1.146	
I-131	1	1452.47	363.33	78.17	-7.28	-0.004	175.81	1.099	s
BE-7	1	1910.62	477.86	72.48	-3.73	-0.002	326.51	1.198	s
CS-134	1	2246.52	561.83	37.28	3.61	0.002	244.91	1.273	s
CS-134	1	2276.47	569.32	62.09	5.49	0.003	182.74	1.278	s D
Pa-234	1	2277.07	569.47	36.93	-0.48	0.000	-218.63	1.278	s D
TL-208	1	2331.36	583.04	55.58	492.42	0.274	5.52	1.325	
CS-134	1	2414.85	603.91	46.31	9.82	0.005	103.04	1.309	s
BI-214	1	2436.09	609.22	63.17	236.51	0.131	7.55	1.313	
I-131	1	2544.70	636.37	63.00	-3.54	-0.002	321.59	1.337	s
CS-137	1	2644.46	661.31	47.00	107.00	0.059	21.36	0.367	s
EU-154	1	2897.38	724.53	122.84	-24.93	-0.014	65.98	1.411	s
BI-212	1	2906.71	726.87	40.98	89.11	0.050	14.68	1.414	
PA-234M	1	3065.45	766.55	66.62	-2.04	-0.001	570.87	1.447	s
EU-152	1	3113.02	778.44	41.03	-0.55	0.000	1666.27	1.458	s
BI-212	1	3137.52	784.56	44.18	11.25	0.006	88.72	1.463	s
CS-134	1	3179.03	794.94	40.02	54.26	0.030	21.36	1.472	s
CS-134	1	3207.09	801.95	81.81	0.00	0.000	1279.12	1.477	s
TL-208	1	3440.94	860.40	9.50	68.50	0.038	15.18	0.347	s
EU-154	1	3490.11	872.69	31.26	4.63	0.003	176.81	1.537	s
Pa-234	1	3518.18	879.71	41.38	-1.28	-0.001	717.53	1.543	s
Pa-234	1	3520.97	880.41	29.38	1.94	0.001	401.74	1.546	s

AC-228	1	3643.53	911.04	20.81	322.19	0.179	6.33	1.503	
Pa-234	1	3781.73	945.59	29.41	1.47	0.001	527.18	1.598	s
EU-152	1	3857.73	964.58	66.75	46.47	0.026	28.87	1.613	s
AC-228	1	3875.20	968.95	14.25	217.75	0.121	7.74	1.466	
EU-154	1	3991.44	998.01	41.31	0.05	0.000	19172.00	1.640	s
PA-234M	1	4000.99	1000.39	41.53	3.40	0.002	273.77	1.643	s
EU-154	1	4011.25	1002.96	37.94	-3.59	-0.002	248.18	1.647	s
EU-152	1	4447.96	1112.11	26.78	2.30	0.001	324.59	1.735	s
BI-214	1	4480.87	1120.34	47.52	46.58	0.026	22.27	1.741	s
CO-60	1	4693.96	1173.60	43.97	-7.80	-0.004	125.51	1.784	s
EU-154	1	5104.27	1276.15	23.57	0.04	0.000	15590.02	1.866	s
CO-60	1	5331.99	1333.07	29.26	4.63	0.003	171.54	1.912	s
EU-152	1	5631.28	1407.87	24.88	10.21	0.006	75.84	1.972	s
K-40	1	5842.23	1460.59	12.54	416.46	0.231	4.83	1.621	
BI-214	1	7057.69	1764.36	15.01	20.10	0.011	27.02	2.246	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Analysis Code	MDA Value Becquerels	Code	Comments	
RA-224	N	1	6.698E+001	240.99	6.698E+001	(	3.066E+001G		7.0E+002	4.10
AM-241	T	1	6.240E-001	59.54	6.240E-001	& (	4.555E+000G		1.6E+005	35.90
PB-212	N	1	5.877E+001	238.63	5.877E+001	(P	2.200E+000G		7.0E+002	43.30
			5.877E+001	300.03	7.118E+001	+	2.583E+001G		7.0E+002	3.28
EU-152	T F	1	5.471E+000	344.29	-2.431E-002	% (	4.402E+000G		4.9E+003	26.50
			5.471E+000	121.78	-5.912E-001	&	4.319E+000G		4.9E+003	28.58
			5.471E+000	778.92	-1.763E-001	%	1.052E+001G		4.9E+003	12.94
			5.471E+000	964.11	1.544E+001	(	1.355E+001G		4.9E+003	14.61
			5.471E+000	1112.07	9.066E-001	%	1.056E+001G		4.9E+003	13.64
			5.471E+000	1408.00	3.111E+000	%	7.907E+000G		4.9E+003	21.00
AC-228	N	1	5.377E+001	911.07	5.182E+001	(P	3.855E+000G		2.1E+003	29.00
			5.377E+001	968.97	6.074E+001	(P	5.663E+000G		2.1E+003	17.46
			5.377E+001	338.32	4.835E+001	(P	7.203E+000G		2.1E+003	12.01
			5.377E+001	93.35	5.377E+001	- E	1.976E+001X	A	2.1E+003	5.56
CS-137	T F I	1	4.686E+000	661.66	4.686E+000	(	1.518E+000G		1.1E+004	85.21
EU-155	T F I	1	3.708E+000	105.31	3.708E+000	* (	5.086E+000G		1.8E+003	21.20
			3.708E+000	86.54	-2.147E-001	%	4.931E+000G		1.8E+003	30.70
TH-234	N	1	3.410E+001	63.29	3.410E+001	* (P	3.180E+001G		1.6E+012	4.82
			3.410E+001	92.59	7.548E+000	% P	2.313E+001G		1.6E+012	5.58
U-235	N	1	-3.109E-001	143.79	-3.109E-001	% (P	1.018E+001G		2.6E+011	10.96
			-3.109E-001	205.33	5.783E+000	% P	2.492E+001G		2.6E+011	5.01
			-3.109E-001	163.38	2.184E+000	% P	2.288E+001G		2.6E+011	5.08
			-3.109E-001	93.35	-3.109E-001	! E	2.179E+001X		2.6E+011	5.81
BI-212	N	1	3.006E+001	727.33	3.006E+001	(	1.098E+001G		7.0E+002	11.82
			3.006E+001	785.51	4.301E+001	%	1.288E+002G		7.0E+002	1.10
CO-60	T F	1	2.843E-001	1332.50	2.843E-001	& (	1.713E+000G		1.9E+003	99.98
			2.843E-001	1173.24	-4.357E-001	%	1.879E+000G		1.9E+003	99.90
K-40	N	1	2.570E+002	1460.83	2.570E+002	(P	1.186E+001G		4.7E+011	10.67
PB-210	N	1	2.434E+001	46.54	2.434E+001	% (P	4.037E+001G		8.1E+003	4.25
I-131	T F I	1	-2.161E-001	364.48	-2.161E-001	% (	1.304E+000G		8.0E+000	81.70
			-2.161E-001	284.30	1.828E-001	%	1.886E+001G		8.0E+000	6.14
			-2.161E-001	636.97	-1.793E+000	%	2.012E+001G		8.0E+000	7.17
PB-214	N	1	2.107E+001	351.93	2.032E+001	(P	3.525E+000G		5.8E+005	37.60
			2.107E+001	295.09	2.248E+001	* (P	5.289E+000G		5.8E+005	19.30
			2.107E+001	242.00	2.125E+001	(P	1.740E+001G		5.8E+005	7.43
PA-234	N	1	2.022E+001	1001.00	2.022E+001	& (	1.949E+002G		1.6E+012	.84
			2.022E+001	766.41	-2.866E+001	%	5.731E+002G		1.6E+012	.29
TL-208	F N	1	1.989E+001	583.02	1.989E+001	(P	1.513E+000G		7.0E+002	84.50
			1.989E+001	277.28	2.959E+001	+	1.552E+001G		7.0E+002	6.31
			1.989E+001	860.56	2.472E+001	+	6.162E+000G		7.0E+002	12.42
			-1.985E-001	946.02	5.264E-001	&	1.000E+001G		1.6E+012	13.40
			-1.985E-001	883.24	9.220E-001	%	1.330E+001G		1.6E+012	9.60
			-1.985E-001	880.53	-9.699E-001	%	2.481E+001G		1.6E+012	6.00
Pa-234	N	1	-1.985E-001	131.29	-1.985E-001	% (	7.394E+000G		1.6E+012	18.00

			-1.985E-001	569.47	-1.985E-001	&		1.270E+001G	1.6E+012	8.20
BI-214	N	1	1.772E+001	609.31	1.807E+001		(P	3.037E+000G	5.8E+005	46.09
			1.772E+001	1120.29	1.666E+001	*	(P	1.246E+001G	5.8E+005	15.10
			1.772E+001	1764.49	1.003E+001	-	P	1.035E+001G	5.8E+005	15.40
			1.710E+000	123.10	3.303E-001	%		2.832E+000G	3.1E+003	40.79
			1.710E+000	1274.54	7.430E-003	%		4.272E+000G	3.1E+003	35.19
			1.710E+000	723.36	-4.898E+000	%		1.068E+001G	3.1E+003	20.22
			1.710E+000	1004.77	-9.965E-001	%		8.715E+000G	3.1E+003	18.01
			1.710E+000	996.33	2.222E-002	%		1.530E+001G	3.1E+003	10.60
EU-154	T F I	1	1.710E+000	873.23	1.710E+000	%	(	1.062E+001G	3.1E+003	12.27
CS-134	T F I	1	1.445E+000	604.71	3.525E-001	&	(	1.235E+000G	7.5E+002	97.62
			1.445E+000	795.87	2.693E+000	?	(	1.598E+000G	7.5E+002	85.53
			1.445E+000	569.32	1.197E+000	&		8.604E+000G	7.5E+002	15.38
			1.445E+000	801.95	0.000E+000	%		2.203E+001G	7.5E+002	8.69
			1.445E+000	563.24	1.440E+000	%		1.243E+001G	7.5E+002	8.35
BE-7	N P C	1	-1.050E+000	477.60	-1.050E+000	%	(	1.192E+001G	5.3E+001	10.52

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	<	-1.050E+000	-1.053E+000	326.51	326.52	1.192E+001
K-40		2.570E+002	2.570E+002	4.97	5.77	1.186E+001
CO-60	<	2.843E-001	2.843E-001	171.54	171.56	1.713E+000
I-131	<	-2.161E-001	-2.195E-001	175.81	175.83	1.304E+000
CS-134	<	1.445E+000	1.446E+000	21.36	21.55	1.235E+000
CS-137		4.686E+000	4.686E+000	21.36	21.55	1.518E+000
EU-155	<	3.708E+000	3.708E+000	42.28	42.41	5.086E+000
PB-214		2.107E+001	2.107E+001	10.14	10.53	3.525E+000
BI-212	<	3.006E+001	3.006E+001	14.68	14.96	1.098E+001
BI-214	<	1.772E+001	1.772E+001	7.92	8.43	3.037E+000
TH-234	#	3.410E+001	3.410E+001	37.99	38.17	3.180E+001
PA-234M	<	2.022E+001	2.022E+001	273.77	273.78	1.949E+002
EU-152	<	5.471E+000	5.472E+000	28.87	29.01	4.402E+000
EU-154	<	1.710E+000	1.711E+000	176.81	176.83	1.062E+001
TL-208		1.989E+001	1.990E+001	5.62	6.32	1.513E+000
RA-224		6.698E+001	6.699E+001	15.62	15.90	3.066E+001
PB-210		2.434E+001	2.434E+001	59.21	59.34	4.037E+001
PB-212		5.877E+001	5.878E+001	2.84	4.12	2.200E+000
AC-228		5.377E+001	5.377E+001	4.35	5.21	3.855E+000
Pa-234	<	-1.985E-001	-1.985E-001	1,101.48	1,101.49	7.394E+000
U-235	<	-3.109E-001	-3.109E-001	4,779.33	4,779.33	1.018E+001
AM-241	<	6.240E-001	6.240E-001	216.97	217.01	4.555E+000

= All peaks for activity calculation had bad shape

Total Activity (37.71 to 1,999.84 keV) 516.28 Bq/sample

Analyzed by: _____

403605

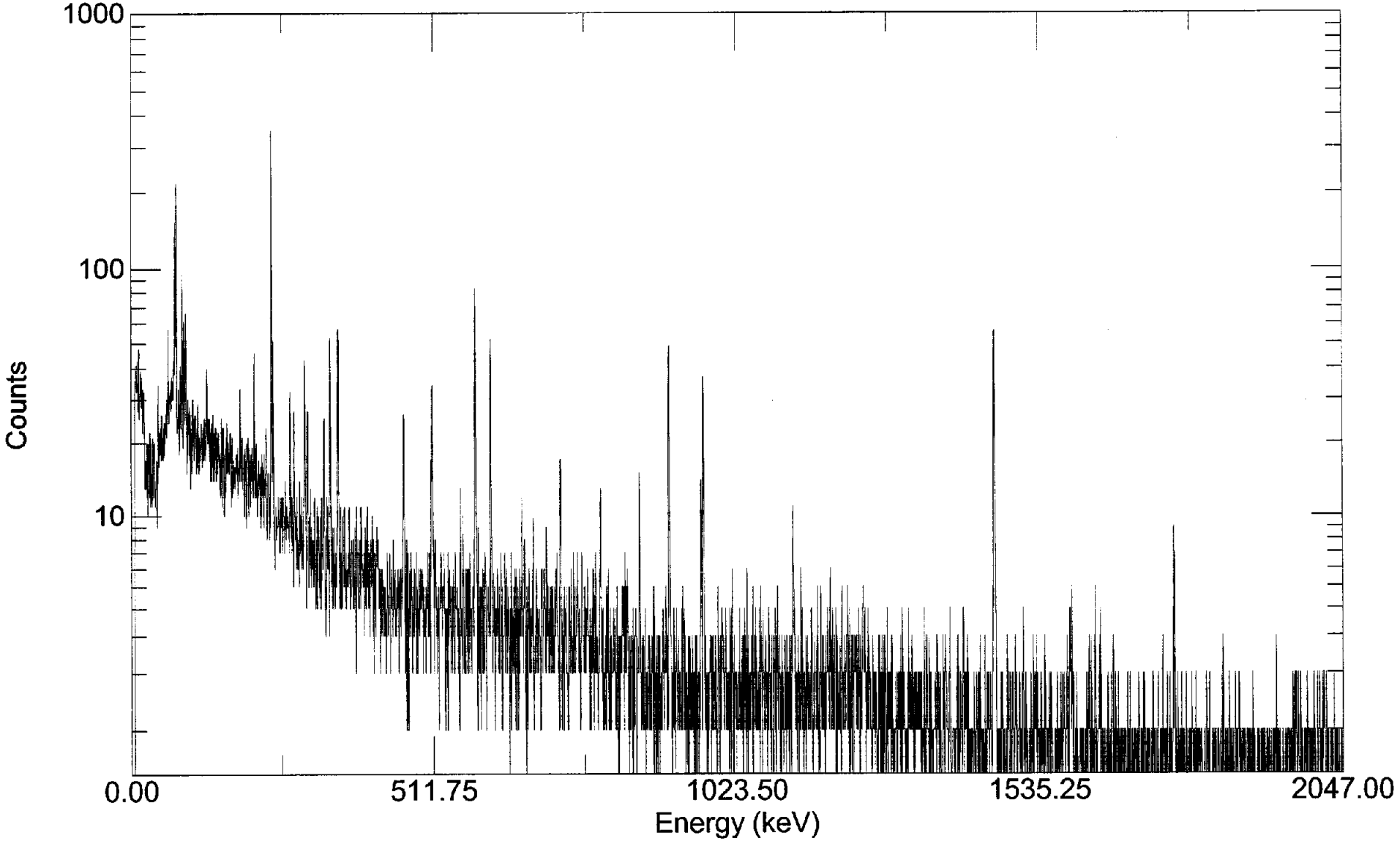
Reviewed by: _____

Supervisor

Laboratory: Test America

KEKEW1AC

7360292_KEKEW1AC_F7L200260-013



Acquired: 26-Dec-2007 4:17:41 PM
File: C:\User\spectra\KEKEW1AC.spc
Detector: #0 Ge 1 SN/242

Real Time: 1811.78 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,052

Sample Description: 7360292_KEKE11AC_F7L200260-014

Spectrum Filename: KEKE11AC.An1

Acquisition Information

Start Time:	26-Dec-2007 4:18:27PM		
Live Time:	1800.00	Real Time:	1815.88
Dead Time:	0.87 %		
Detector ID:	3		

Detector System: Ge 3 SN/155

Calibration

Description:	Ge3 74139_334 Tunacan cal 01_11_07		
Filename:	C:\User\Calibrations\Ge3 cal post 5_8_06\Ge3 Tunacan 74139_334 01_11_07.Clb		
Energy Created:	10-Jan-2007 5:13:35PM	Efficiency Created:	11-Jan-2007 1:43:34PM
Zero Offset:	0.416 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.87 keV
Stop Channel:	8,000 for an energy of 2000.50 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge3 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.2000

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
297.87	74.75	525.03	451.50	0.251	8.58	0.894	PB-214	D
307.03	77.09	657.00	692.00	0.384	8.33	0.934	PB-214	
346.77	87.01	604.31	61.69	0.034	57.77	0.627		s
358.28	89.89	259.50	121.50	0.068	22.84	0.779	PB-214	M
513.98	128.77	329.36	212.64	0.118	13.88	0.824	AC-228	s
1080.37	270.24	222.00	192.00	0.107	21.76	0.595	AC-228	s
2040.96	510.23	62.33	267.67	0.149	9.77	1.396	J-133	s
2436.49	609.06	253.99	34.01	0.019	68.45	1.400		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.20	46.67	309.57	23.90	0.013	54.87	0.864	s
AM-241	1	236.16	59.39	555.00	-1.90	-0.001	1751.11	0.878	s
TH-234	1	251.76	63.29	336.35	81.65	0.045	25.40	0.882	D
EU-155	1	347.43	87.18	748.93	156.31	0.087	26.02	0.906	s
TH-234	1	369.10	92.59	467.07	93.93	0.052	26.36	0.912	D
AC-228	1	372.14	93.35	559.27	89.64	0.050	35.74	0.913	D
U-235	1	372.14	93.35	540.10	18.38	0.010	17.85	0.913	s D
EU-155	1	420.05	105.32	326.09	84.43	0.047	32.15	0.925	s
EU-154	1	489.32	122.62	392.27	-12.74	-0.007	221.67	0.943	s
EU-152	1	489.67	122.70	403.50	-19.20	-0.011	149.71	0.942	s
Pa-234	1	520.64	130.44	433.76	-26.34	-0.015	113.51	0.952	s
U-235	1	574.92	143.99	384.82	33.71	0.019	78.95	0.964	
U-235	1	653.11	163.52	363.08	-20.01	-0.011	136.54	0.984	s
U-235	1	825.05	206.47	292.63	-21.42	-0.012	115.01	1.027	s
PB-212	1	953.82	238.63	253.74	1521.26	0.845	2.91	1.060	D
RA-224	1	963.24	240.99	417.62	153.38	0.085	20.50	1.062	D
PB-214	1	967.29	242.00	20.53	19.26	0.011	40.33	1.063	D
TL-208	1	1109.57	277.54	151.67	127.33	0.071	24.03	1.395	s
I-131	1	1134.61	283.79	151.57	4.06	0.002	432.22	1.105	s
PB-214	1	1179.23	294.94	157.98	219.02	0.122	14.84	1.277	
PB-212	1	1201.85	300.59	108.50	202.50	0.113	14.58	1.283	s
AC-228	1	1352.35	338.19	172.65	363.35	0.202	10.30	1.410	s
EU-152	1	1374.11	343.62	174.81	-18.83	-0.010	101.92	1.164	s
PB-214	1	1407.08	351.86	108.20	334.80	0.186	8.67	1.284	s
I-131	1	1461.07	365.35	117.33	-7.43	-0.004	209.42	1.184	s
BE-7	1	1910.30	477.58	65.85	11.18	0.006	106.94	1.292	s
CS-134	1	2263.69	565.88	72.74	-5.17	-0.003	237.39	1.372	s
CS-134	1	2277.45	569.32	66.72	5.85	0.003	184.23	1.378	s D
Pa-234	1	2278.04	569.47	88.17	-4.58	-0.003	-205.53	1.378	s D
TL-208	1	2332.33	583.04	83.96	575.04	0.319	5.79	1.221	s
CS-134	1	2419.07	604.71	783.95	4.00	0.002	989.97	1.410	s
BI-214	1	2437.02	609.20	64.08	214.47	0.119	8.27	1.415	s
I-131	1	2546.27	636.50	58.60	1.29	0.001	844.16	1.440	s
CS-137	1	2645.44	661.28	61.36	37.87	0.021	33.46	1.462	s
EU-154	1	2896.33	723.98	181.74	-32.90	-0.018	60.51	1.518	s
BI-212	1	2908.92	727.13	52.82	124.43	0.069	12.19	1.521	s
PA-234M	1	3066.04	766.40	61.86	-4.69	-0.003	241.38	1.556	s
EU-152	1	3118.20	779.44	60.91	-8.96	-0.005	127.64	1.567	s
BI-212	1	3150.29	787.46	48.95	-4.85	-0.003	209.10	1.572	s
CS-134	1	3179.48	794.75	48.80	51.19	0.028	23.83	1.582	s
CS-134	1	3221.29	805.21	32.37	0.73	0.000	1114.58	1.587	s
TL-208	1	3440.00	859.87	4.50	110.50	0.061	10.52	0.583	s
EU-154	1	3489.91	872.35	41.00	-5.80	-0.003	161.69	1.649	s
Pa-234	1	3520.91	880.10	38.37	4.27	0.002	210.54	1.655	s
Pa-234	1	3534.17	883.41	40.22	-3.39	-0.002	269.77	1.657	s

AC-228	1	3643.88	910.84	20.85	379.15	0.211	5.79	1.621	s
Pa-234	1	3785.36	946.21	39.20	-2.15	-0.001	417.76	1.710	s
EU-152	1	3859.09	964.64	146.98	32.84	0.018	55.04	1.726	s
AC-228	1	3874.03	968.37	36.67	313.33	0.174	7.94	1.267	s
EU-154	1	3988.01	996.87	35.08	3.54	0.002	242.71	1.753	s
PA-234M	1	4004.49	1000.99	41.34	-0.34	0.000	2665.94	1.756	s
EU-154	1	4021.47	1005.24	42.22	-4.54	-0.003	207.78	1.760	s
EU-152	1	4445.49	1111.25	48.44	-1.39	-0.001	714.57	1.847	s
BI-214	1	4480.54	1120.02	42.44	36.22	0.020	28.61	1.854	s
CO-60	1	4697.74	1174.33	31.44	-4.26	-0.002	192.20	1.896	s
EU-154	1	5098.54	1274.56	48.70	-3.10	-0.002	323.08	1.975	s
CO-60	1	5322.95	1330.68	21.68	-3.18	-0.002	214.47	2.019	s
EU-152	1	5627.18	1406.78	16.24	6.55	0.004	95.39	2.076	s
K-40	1	5840.71	1460.19	11.21	391.79	0.218	4.98	2.556	s
BI-214	1	7083.36	1771.09	23.90	-9.93	-0.006	94.04	2.326	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels		Peak Analysis Code		MDA Value Becquerels	Code	Comments
AM-241	T	1	-8.417E-002	59.54	-8.417E-002	%	(		4.972E+000G		1.6E+005 35.90
RA-224	N	1	6.336E+001	240.99	6.336E+001		(		4.046E+001G		7.0E+002 4.10
AC-228	N	1	6.163E+001	911.07	5.981E+001	@	(	P	3.784E+000G		2.1E+003 29.00
			6.163E+001	968.97	8.593E+001	+			8.482E+000G		2.1E+003 17.46
			6.163E+001	338.32	6.600E+001		(	P	1.161E+001G		2.1E+003 12.01
			6.163E+001	93.35	1.991E+001	-		} E	2.055E+001X	A	2.1E+003 5.56
PB-212	N	1	5.909E+001	238.63	5.909E+001		(	P	2.989E+000G		7.0E+002 43.30
			5.909E+001	300.03	1.229E+002	*			3.110E+001G		7.0E+002 3.28
EU-155	T F I	1	5.773E+000	105.31	4.833E+000	*	(		4.972E+000G		1.8E+003 21.20
			5.773E+000	86.54	6.423E+000	*	(		5.352E+000G		1.8E+003 30.70
BI-212	N	1	4.083E+001	727.33	4.083E+001	*	(		1.200E+001G		7.0E+002 11.82
			4.083E+001	785.51	-1.808E+001	&			1.317E+002G		7.0E+002 1.10
U-235	N	1	3.906E+000	143.79	3.906E+000	%	(	P	1.091E+001G		2.6E+011 10.96
			3.906E+000	205.33	-6.498E+000	%			2.501E+001G		2.6E+011 5.01
			3.906E+000	163.38	-5.268E+000	%			2.410E+001G		2.6E+011 5.08
			3.906E+000	93.35	3.906E+000	!		E	2.360E+001X		2.6E+011 5.81
BE-7	N P C	1	3.017E+000	477.60	3.017E+000	%	(		1.094E+001G		5.3E+001 10.52
K-40	N	1	2.420E+002	1460.83	2.420E+002	@	(	P	1.131E+001G		4.7E+011 10.67
TH-234	N	1	2.295E+001	63.29	2.542E+001		(	P	2.746E+001G		1.6E+012 4.82
			2.295E+001	92.59	2.081E+001		(	P	2.292E+001G		1.6E+012 5.58
TL-208	F N	1	2.243E+001	583.02	2.243E+001	@	(	P	1.771E+000G		7.0E+002 84.50
			2.243E+001	277.28	3.786E+001	*			1.787E+001G		7.0E+002 6.31
			2.243E+001	860.56	3.903E+001	*			4.449E+000G		7.0E+002 12.42
I-131	T F I	1	-2.101E-001	364.48	-2.101E-001	%	(		1.504E+000G		8.0E+000 81.70
			-2.101E-001	284.30	1.262E+000	%			1.870E+001G		8.0E+000 6.14
			-2.101E-001	636.97	6.329E-001	%			1.884E+001G		8.0E+000 7.17
EU-154	T F I	1	-2.094E+000	873.23	-2.094E+000	%	(		1.176E+001G		3.1E+003 12.27
			-2.094E+000	123.10	-3.817E-001	&			2.847E+000G		3.1E+003 40.79
			-2.094E+000	1274.54	-5.204E-001	%			5.909E+000G		3.1E+003 35.19
			-2.094E+000	723.36	-6.286E+000	%			1.252E+001G		3.1E+003 20.22
			-2.094E+000	1004.77	-1.240E+000	%			9.011E+000G		3.1E+003 18.01
			-2.094E+000	996.33	1.631E+000	%			1.398E+001G		3.1E+003 10.60
PB-214	N	1	2.080E+001	351.93	2.002E+001	*	(	P	3.061E+000G		5.8E+005 37.60
			2.080E+001	295.09	2.231E+001		(	P	6.242E+000G		5.8E+005 19.30
			2.080E+001	242.00	4.403E+000	%			5.447E+000G		5.8E+005 7.43
PA-234	N	1	-2.003E+000	1001.00	-2.003E+000	%	(		1.915E+002G		1.6E+012 .84
			-2.003E+000	766.41	-6.435E+001	%			5.396E+002G		1.6E+012 .29
CO-60	T F	1	-1.945E-001	1332.50	-1.945E-001	%	(		1.493E+000G		1.9E+003 99.98
			-1.945E-001	1173.24	-2.361E-001	%			1.597E+000G		1.9E+003 99.90
Pa-234	N	1	-1.811E+000	131.29	-1.811E+000	&	(		6.858E+000G		1.6E+012 18.00
			-1.811E+000	569.47	-1.811E+000	%			1.836E+001G		1.6E+012 8.20
			-1.811E+000	946.02	-7.542E-001	%			1.119E+001G		1.6E+012 13.40
			-1.811E+000	883.24	-1.581E+000	%			1.503E+001G		1.6E+012 9.60
			-1.811E+000	880.53	3.179E+000	&			2.348E+001G		1.6E+012 6.00

CS-137	T F I	1	1.609E+000	661.66	1.609E+000		(	1.665E+000G	1.1E+004	85.21
Bi-214	N	1	1.585E+001	609.31	1.585E+001	@	(P	2.957E+000G	5.8E+005	46.09
			1.585E+001	1120.29	1.281E+001	-	P	1.170E+001G	5.8E+005	15.10
			1.585E+001	1764.49	-5.007E+000	%	P	1.285E+001G	5.8E+005	15.40
			-1.571E+000	964.11	1.073E+001	%		1.934E+001G	4.9E+003	14.61
			-1.571E+000	1112.07	-5.399E-001	%		1.368E+001G	4.9E+003	13.64
			-1.571E+000	1408.00	1.994E+000	&		6.541E+000G	4.9E+003	21.00
EU-152	T F	1	-1.571E+000	344.29	-1.571E+000	*	(	5.367E+000G	4.9E+003	26.50
			-1.571E+000	121.78	-8.198E-001	%		4.113E+000G	4.9E+003	28.58
			-1.571E+000	778.92	-2.824E+000	%		1.232E+001G	4.9E+003	12.94
PB-210	N	1	1.385E+001	46.54	1.385E+001	*	(P	4.907E+001G	8.1E+003	4.25
CS-134	T F I	1	1.232E+000	604.71	1.389E-001	%	(	4.621E+000G	7.5E+002	97.62
			1.232E+000	795.87	2.479E+000	&	(	1.708E+000G	7.5E+002	85.53
			1.232E+000	569.32	1.232E+000	%		8.586E+000G	7.5E+002	15.38
			1.232E+000	801.95	3.480E-001	&		1.401E+001G	7.5E+002	8.69
			1.232E+000	563.24	-1.990E+000	%		1.634E+001G	7.5E+002	8.35

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
CO-60	<	-1.945E-001	-1.946E-001	214.47	214.49	1.493E+000
I-131	<	-2.101E-001	-2.133E-001	209.42	209.44	1.504E+000
CS-134	<	1.232E+000	1.232E+000	23.83	24.01	4.621E+000
EU-154	<	-2.094E+000	-2.094E+000	161.69	161.71	1.176E+001
RA-224		6.336E+001	6.337E+001	20.50	20.72	4.046E+001
PB-210	<	1.385E+001	1.385E+001	104.29	104.37	4.907E+001
PB-212		5.909E+001	5.911E+001	2.95	4.20	2.989E+000
PB-214		2.080E+001	2.080E+001	8.77	9.23	3.061E+000
BE-7	<	3.017E+000	3.024E+000	106.94	106.98	1.094E+001
K-40	#	2.420E+002	2.420E+002	5.12	5.90	1.131E+001
CS-137	<	1.609E+000	1.609E+000	33.46	33.58	1.665E+000
EU-152	<	-1.571E+000	-1.571E+000	101.92	101.96	5.367E+000
EU-155	<	5.773E+000	5.774E+000	20.68	20.95	4.972E+000
TL-208	#	2.243E+001	2.244E+001	5.87	6.54	1.771E+000
BI-212	<	4.083E+001	4.084E+001	12.19	12.53	1.200E+001
BI-214	<	1.585E+001	1.585E+001	8.54	9.02	2.957E+000
AC-228		6.163E+001	6.163E+001	5.82	6.49	3.784E+000
TH-234		2.295E+001	2.295E+001	23.61	23.90	2.746E+001
PA-234M	<	-2.003E+000	-2.003E+000	2,665.94	2,665.94	1.915E+002
U-235	<	3.906E+000	3.906E+000	83.97	84.02	1.091E+001
Pa-234	<	-1.811E+000	-1.811E+000	113.51	113.55	6.858E+000
AM-241	<	-8.417E-002	-8.417E-002	1.751.11	1.751.11	4.972E+000

= All peaks for activity calculation had bad shape

Total Activity (37.87 to 2,000.50 keV) 492.30 Bq/sample

Analyzed by: _____

403605

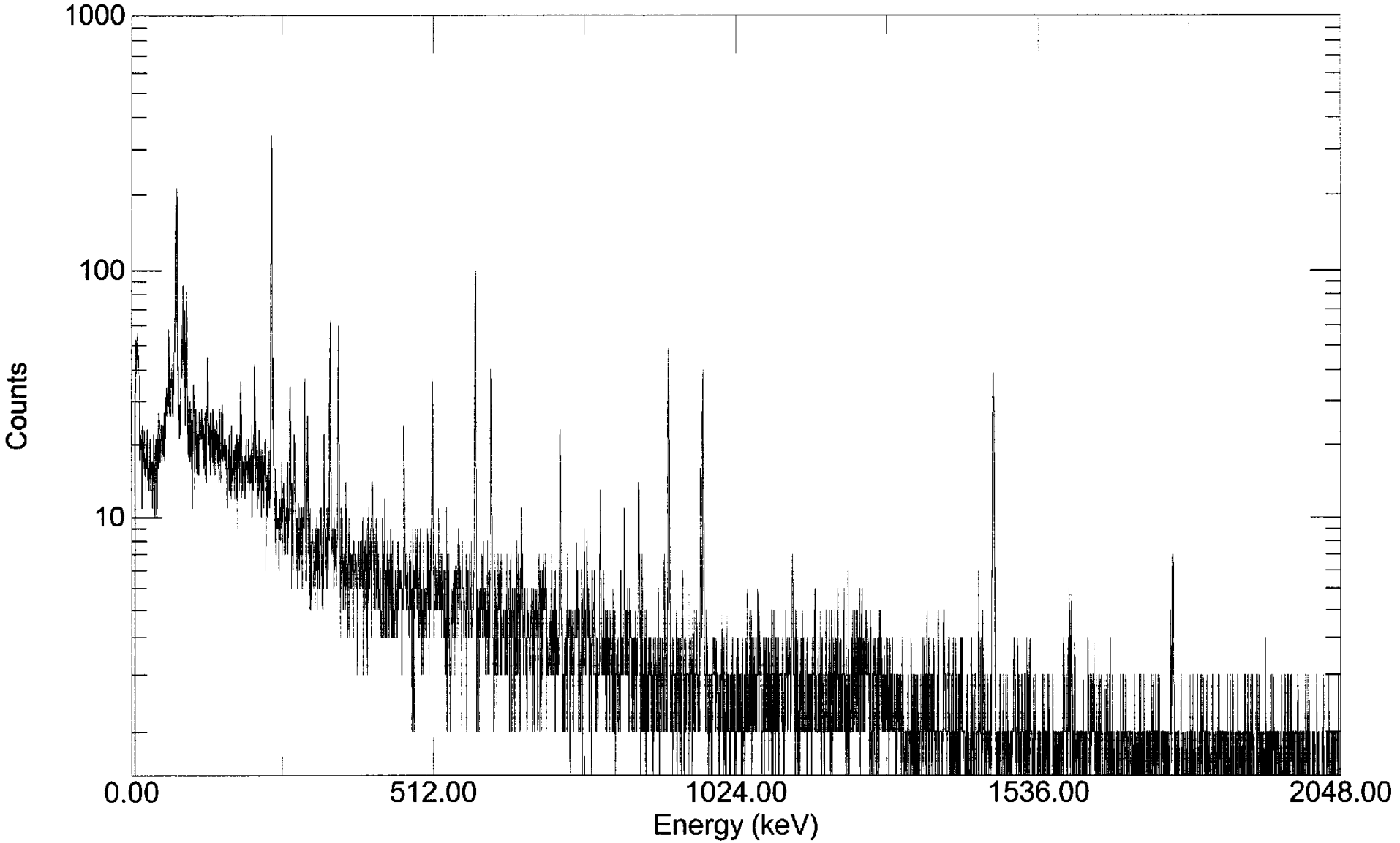
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

KEKE11AC

7360292_KEKE11AC_F7L200260-014



Acquired: 26-Dec-2007 4:18:28 PM
File: C:\User\spectra\KEKE11AC.spc
Detector: #0 Ge 3 SN/155

Real Time: 1815.88 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,057

Sample Description: 7360292_KEKE21AC_F7L200260-015

Spectrum Filename: KEKE21AC.An1

Acquisition Information

Start Time:	26-Dec-2007 4:19:17PM		
Live Time:	1800.00	Real Time:	1804.22
Dead Time:	0.23 %		
Detector ID:	4		

Detector System: Ge 4 SN/181

Calibration

Description:	Ge4_TunaCanCal_74139_334_05_15_07		
Filename:	C:\User\Calibrations\Ge4 Post 09_07_07(Ge6)\Ge4_TunaCanCal_74139_334_05_15_I		
Energy Created:	08-May-2007 1:28:13PM	Efficiency Created:	15-May-2007 10:05:02AM
Zero Offset:	0.017 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.53 keV
Stop Channel:	8,000 for an energy of 1998.47 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge4 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.1977

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
298.81	74.75	234.00	165.00	0.092	20.11	0.679	PB-214	
308.34	77.13	141.17	259.83	0.144	9.89	0.814	PB-214	
348.15	87.09	126.44	126.56	0.070	15.39	1.016	PB-214	s
742.82	185.79	125.67	157.33	0.087	18.97	1.378	U-235	s
1351.64	338.02	77.59	11.41	0.006	113.09	0.936		
3643.41	910.79	36.06	22.94	0.013	42.51	0.667		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	186.82	46.74	84.98	26.02	0.014	32.29	0.998	s
AM-241	1	240.83	60.25	182.35	0.84	0.000	2266.77	0.830	s
TH-234	1	252.65	63.21	143.86	51.14	0.028	32.34	0.795	
EU-155	1	345.96	86.54	230.28	-6.06	-0.003	356.51	0.854	s
TH-234	1	372.71	93.23	122.23	153.77	0.085	13.62	1.053	s
AC-228	1	373.18	93.35	483.50	0.00	0.000	2024.85	0.860	s D
U-235	1	373.18	93.35	175.95	8.89	0.005	30.40	0.860	s D
EU-155	1	421.73	105.49	125.67	13.82	0.008	117.81	0.871	s
EU-152	1	483.49	120.94	130.07	-0.69	0.000	2336.33	0.885	s
EU-154	1	489.38	122.41	130.04	10.82	0.006	152.09	0.886	s
Pa-234	1	522.42	130.67	139.08	0.76	0.000	2210.59	0.894	s
U-235	1	575.66	143.99	149.35	16.79	0.009	105.78	0.904	s
U-235	1	663.35	165.92	64.96	-5.71	-0.003	203.81	0.922	s
U-235	1	825.40	206.44	99.82	-7.79	-0.004	184.98	0.958	s
PB-212	1	953.16	238.38	109.29	243.71	0.135	10.85	1.019	
RA-224	1	959.51	239.97	352.31	-78.51	-0.044	35.64	0.988	
PB-214	1	966.78	241.79	112.00	103.00	0.057	25.00	1.143	
TL-208	1	1111.78	278.05	49.30	10.08	0.006	103.43	1.019	
I-131	1	1138.68	284.77	59.69	-0.25	0.000	4409.36	1.025	s
PB-214	1	1179.45	294.97	30.54	244.46	0.136	8.03	0.853	
PB-212	1	1198.46	299.72	42.65	12.76	0.007	77.62	1.039	s
AC-228	1	1351.54	337.99	38.33	49.25	0.027	22.78	1.071	
EU-152	1	1376.80	344.31	38.27	8.70	0.005	106.18	1.076	s
PB-214	1	1405.96	351.60	30.74	314.26	0.175	6.39	0.993	
I-131	1	1461.29	365.43	41.90	-5.20	-0.003	181.35	1.092	s
BE-7	1	1909.97	477.60	44.29	0.00	0.000	941.15	1.185	s
CS-134	1	2252.60	563.24	25.86	8.09	0.004	95.61	1.254	s
CS-134	1	2276.94	569.32	13.58	-1.73	-0.001	-57.85	1.259	s D
Pa-234	1	2277.54	569.47	17.03	0.11	0.000	151.07	1.259	s D
TL-208	1	2331.61	582.98	14.18	84.82	0.047	13.94	0.881	s
CS-134	1	2425.16	606.37	52.67	-10.44	-0.006	103.10	1.286	s
BI-214	1	2435.17	608.87	13.92	258.08	0.143	6.68	1.321	
I-131	1	2546.38	636.66	32.97	0.22	0.000	3737.86	1.312	s
CS-137	1	2644.45	661.17	23.53	47.79	0.027	20.38	1.331	
EU-154	1	2892.81	723.24	37.59	-4.09	-0.002	217.87	1.378	s
BI-212	1	2908.78	727.23	20.17	12.83	0.007	56.85	1.381	s
PA-234M	1	3061.00	765.27	28.84	0.01	0.000	84485.78	1.411	s
EU-152	1	3119.54	779.89	19.64	-1.98	-0.001	323.91	1.420	s
BI-212	1	3142.02	785.51	15.32	0.00	0.000	553.49	1.425	s
CS-134	1	3182.03	795.51	25.15	2.92	0.002	249.70	1.433	s
CS-134	1	3213.73	803.43	20.93	-5.08	-0.003	134.79	1.437	s
TL-208	1	3442.38	860.56	16.61	7.37	0.004	86.49	1.481	s
EU-154	1	3491.53	872.84	19.39	-0.89	0.000	708.94	1.490	s
Pa-234	1	3522.71	880.63	28.51	-3.65	-0.002	213.13	1.495	s
Pa-234	1	3537.10	884.23	20.44	1.83	0.001	357.99	1.497	s

AC-228	1	3642.93	910.67	12.67	31.56	0.018	23.90	1.518	s
Pa-234	1	3783.73	945.84	19.63	1.33	0.001	478.59	1.543	s
EU-152	1	3851.82	962.85	31.64	-5.74	-0.003	144.85	1.556	s
AC-228	1	3874.70	968.57	24.37	24.93	0.014	34.43	1.559	s
EU-154	1	3991.37	997.71	24.68	-1.43	-0.001	499.08	1.579	s
PA-234M	1	4003.00	1000.62	22.34	1.99	0.001	343.61	1.582	s
EU-154	1	4018.70	1004.54	22.27	-1.41	-0.001	481.94	1.585	s
EU-152	1	4444.38	1110.87	15.91	4.08	0.002	146.95	1.659	s
BI-214	1	4481.11	1120.05	4.65	66.35	0.037	11.87	1.099	s
CO-60	1	4692.36	1172.81	23.67	-3.89	-0.002	183.82	1.701	s
EU-154	1	5098.99	1274.36	14.58	1.68	0.001	330.11	1.768	s
CO-60	1	5334.66	1333.21	11.42	2.37	0.001	211.92	1.806	s
EU-152	1	5634.11	1407.98	7.53	8.56	0.005	56.76	1.854	s
K-40	1	5843.71	1460.31	2.83	199.17	0.111	7.04	0.993	s
BI-214	1	7060.17	1763.95	1.71	33.44	0.019	18.16	2.066	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Analysis Code	MDA Value Becquerels	Code	Comments
AC-228	N	1	9.953E+000	911.07	8.074E+000	(	4.936E+000G		2.1E+003 29.00
			9.953E+000	968.97	1.115E+001	(	1.150E+001G		2.1E+003 17.46
			9.953E+000	338.32	1.275E+001	(	8.172E+000G		2.1E+003 12.01
			9.953E+000	93.35	0.000E+000	+ } E	1.937E+001X	A	2.1E+003 5.56
Pa-234	N	1	6.834E-002	131.29	6.834E-002	& (	5.216E+000G		1.6E+012 18.00
			6.834E-002	569.47	6.834E-002	%	1.333E+001G		1.6E+012 8.20
			6.834E-002	946.02	7.605E-001	%	1.334E+001G		1.6E+012 13.40
			6.834E-002	883.24	1.375E+000	%	1.791E+001G		1.6E+012 9.60
			6.834E-002	880.53	-4.393E+000	%	3.316E+001G		1.6E+012 6.00
BI-212	N	1	6.668E+000	727.33	6.668E+000	% (	1.229E+001G		7.0E+002 11.82
			6.668E+000	785.51	0.000E+000	%	1.249E+002G		7.0E+002 1.10
CS-134	T F I	1	-5.611E-001	604.71	-5.611E-001	% (	1.964E+000G		7.5E+002 97.62
			-5.611E-001	795.87	2.264E-001	%	2.021E+000G		7.5E+002 85.53
			-5.611E-001	569.32	-5.611E-001	%	6.437E+000G		7.5E+002 15.38
			-5.611E-001	801.95	-3.902E+000	%	1.845E+001G		7.5E+002 8.69
			-5.611E-001	563.24	4.779E+000	&	1.560E+001G		7.5E+002 8.35
EU-154	T F I	1	-5.185E-001	873.23	-5.185E-001	& (	1.356E+001G		3.1E+003 12.27
			-5.185E-001	123.10	4.279E-001	&	2.208E+000G		3.1E+003 40.79
			-5.185E-001	1274.54	4.695E-001	&	5.723E+000G		3.1E+003 35.19
			-5.185E-001	723.36	-1.236E+000	%	9.464E+000G		3.1E+003 20.22
			-5.185E-001	1004.77	-6.284E-001	&	1.104E+001G		3.1E+003 18.01
			-5.185E-001	996.33	-1.077E+000	%	1.950E+001G		3.1E+003 10.60
AM-241	T	1	5.178E-002	59.54	5.178E-002	% (	4.030E+000G		1.6E+005 35.90
TL-208	F N	1	5.103E+000	583.02	5.103E+000	(P	1.219E+000G		7.0E+002 84.50
			5.103E+000	277.28	4.150E+000	%	1.459E+001G		7.0E+002 6.31
			5.103E+000	860.56	4.196E+000	%	1.236E+001G		7.0E+002 12.42
RA-224	N	1	-4.409E+001	240.99	-4.409E+001	(	5.065E+001G		7.0E+002 4.10
			3.499E+001	92.59	4.610E+001	* (P	1.626E+001G		1.6E+012 5.58
TH-234	N	1	3.499E+001	63.29	2.212E+001	% (P	2.535E+001G		1.6E+012 4.82
CS-137	T F I	1	3.181E+000	661.66	3.181E+000	(	1.685E+000G		1.1E+004 85.21
BI-214	N	1	2.931E+001	609.31	2.958E+001	(P	2.303E+000G		5.8E+005 46.09
			2.931E+001	1120.29	3.871E+001	+ P	7.441E+000G		5.8E+005 15.10
			2.931E+001	1764.49	2.850E+001	? (	7.505E+000G		5.8E+005 15.40
PB-214	N	1	2.779E+001	351.93	2.695E+001	(P	2.448E+000G		5.8E+005 37.60
			2.779E+001	295.09	3.479E+001	+ P	4.050E+000G		5.8E+005 19.30
			2.779E+001	242.00	3.203E+001	(	1.618E+001G		5.8E+005 7.43
U-235	N	1	2.556E+000	143.79	2.556E+000	& (	9.080E+000G		2.6E+011 10.96
			2.556E+000	205.33	-3.156E+000	&	1.997E+001G		2.6E+011 5.01
			2.556E+000	163.38	-1.980E+000	&	1.395E+001G		2.6E+011 5.08
			2.556E+000	93.35	2.556E+000	! E	1.854E+001X		2.6E+011 5.81
CO-60	T F	1	2.418E-001	1332.50	2.418E-001	% (	1.884E+000G		1.9E+003 99.98
			2.418E-001	1173.24	-3.570E-001	%	2.327E+000G		1.9E+003 99.90
PB-210	N	1	2.156E+001	46.54	2.156E+001	* (P	3.784E+001G		8.1E+003 4.25
I-131	T F I	1	-2.120E-001	364.48	-2.120E-001	& (	1.340E+000G		8.0E+000 81.70

			-2.120E-001	284.30	-1.073E-001	%		1.675E+001G	8.0E+000	6.14
			-2.120E-001	636.97	1.666E-001	&		2.256E+001G	8.0E+000	7.17
K-40	N	1	2.063E+002	1460.83	2.063E+002	(	P	1.093E+001G	4.7E+011	10.67
PA-234	N	1	1.905E+001	1001.00	1.905E+001	%	(	2.371E+002G	1.6E+012	.84
			1.905E+001	766.41	1.964E-001	%		6.059E+002G	1.6E+012	.29
PB-212	N	1	1.286E+001	238.63	1.286E+001	(	P	2.713E+000G	7.0E+002	43.30
			1.286E+001	300.03	1.084E+001	%		2.817E+001G	7.0E+002	3.28
EU-155	T F I	1	1.057E+000	105.31	1.057E+000	%	(	4.200E+000G	1.8E+003	21.20
			1.057E+000	86.54	-3.393E-001	%		4.112E+000G	1.8E+003	30.70
			1.037E+000	1112.07	2.616E+000	&		1.367E+001G	4.9E+003	13.64
			1.037E+000	1408.00	4.363E+000	%		7.897E+000G	4.9E+003	21.00
EU-152	T F	1	1.037E+000	344.29	1.037E+000	&	(	3.761E+000G	4.9E+003	26.50
			1.037E+000	121.78	-3.897E-002	&		3.149E+000G	4.9E+003	28.58
			1.037E+000	778.92	-9.978E-001	%		1.175E+001G	4.9E+003	12.94
			1.037E+000	964.11	-3.053E+000	%		1.540E+001G	4.9E+003	14.61
BE-7	N P C	1	0.000E+000	477.60	0.000E+000	%	(	1.366E+001G	5.3E+001	10.52

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	<			941.15	941.16	1.366E+001
K-40		2.063E+002	2.063E+002	7.14	7.71	1.093E+001
CO-60	<	2.418E-001	2.418E-001	211.92	211.94	1.884E+000
I-131	<	-2.120E-001	-2.154E-001	181.35	181.37	1.340E+000
CS-134	<	-5.611E-001	-5.612E-001	103.10	103.14	1.964E+000
EU-154	<	-5.185E-001	-5.185E-001	708.94	708.94	1.356E+001
PB-210	#	2.156E+001	2.156E+001	58.11	58.24	3.784E+001
PB-212		1.286E+001	1.286E+001	11.26	11.65	2.713E+000
PB-214		2.779E+001	2.779E+001	6.50	7.11	2.448E+000
BI-212	<	6.668E+000	6.670E+000	56.85	56.93	1.229E+001
CS-137	<	3.181E+000	3.181E+000	20.38	20.58	1.685E+000
EU-152	<	1.037E+000	1.037E+000	106.18	106.22	3.761E+000
EU-155	<	1.057E+000	1.057E+000	117.81	117.86	4.200E+000
TL-208		5.103E+000	5.104E+000	14.30	14.58	1.219E+000
RA-224	<	-4.409E+001	-4.410E+001	35.64	35.77	5.065E+001
BI-214		2.931E+001	2.931E+001	6.82	7.40	2.303E+000
AC-228	<	9.953E+000	9.954E+000	15.90	16.16	4.936E+000
PA-234M	<	1.905E+001	1.905E+001	343.61	343.62	2.371E+002
U-235	<	2.556E+000	2.556E+000	105.78	105.82	9.080E+000
AM-241	<	5.178E-002	5.179E-002	2.266.77	2.266.78	4.030E+000
Pa-234	<	6.834E-002	6.834E-002	2.210.59	2.210.59	5.216E+000
TH-234		3.499E+001	3.499E+001	15.75	16.18	2.535E+001

= All peaks for activity calculation had bad shape

Total Activity (37.53 to 1,998.47 keV) 316.39 Bq/sample

Analyzed by: _____

403605

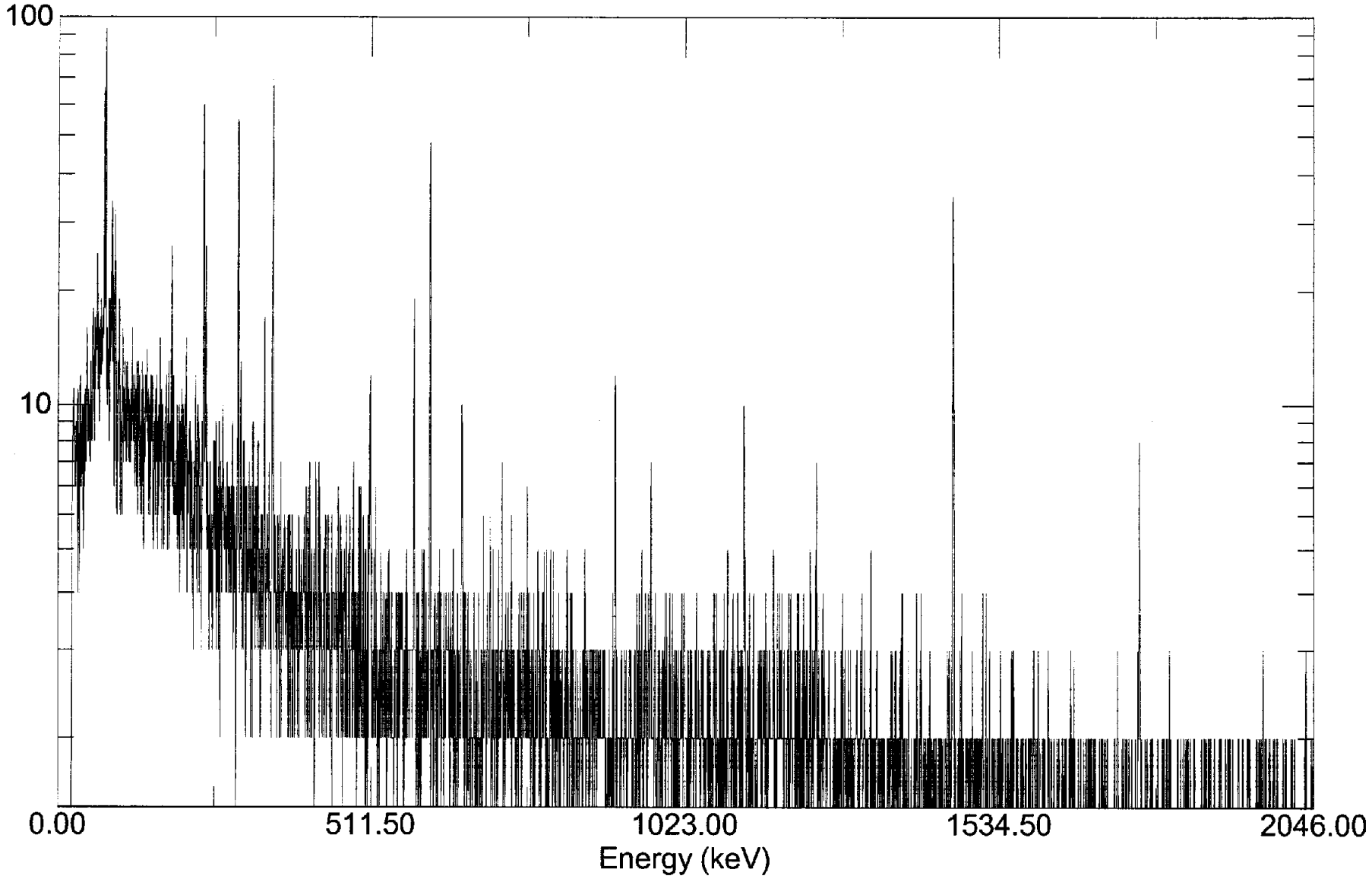
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

KEKE21AC

7360292_KEKE21AC_F7L200260-015



Acquired: 26-Dec-2007 4:19:17 PM
File: C:\User\spectra\KEKE21AC.spc
Detector: #0 Ge 4 SN/181

Real Time: 1804.22 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,053

Sample Description: 7360292_KEKE41AC_F7L200260-016

Spectrum Filename: KEKE41AC.An1

Acquisition Information

Start Time:	26-Dec-2007 4:18:03PM		
Live Time:	1800.00	Real Time:	1851.76
Dead Time:	2.80 %		
Detector ID:	5		

Detector System: Ge 5 SN/157

Calibration

Description:	Ge5 TunaCanCal_74139-334_05_08_07		
Filename:	C:\User\Calibrations\Ge5 calibrations\Ge5 TunaCanCal_74139-334_05_08_07.Clb		
Energy Created:	28-Mar-2007 6:08:23PM	Efficiency Created:	08-May-2007 3:55:34PM
Zero Offset:	0.272 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.74 keV
Stop Channel:	8,000 for an energy of 2000.57 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge5 PBC table 11 26 07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1334

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
298.20	74.76	190.67	254.33	0.141	11.08	0.825	PB-214	
307.24	77.02	161.67	376.33	0.209	7.55	0.781	PB-214	
347.37	87.05	318.31	16.69	0.009	153.16	0.711		s
358.68	89.87	124.00	90.00	0.050	20.43	0.364	PB-214	sM
837.44	209.48	82.17	72.83	0.040	27.04	0.753	AC-228	
1352.80	338.25	168.08	36.92	0.021	52.32	0.860		

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	186.06	46.75	124.60	66.40	0.037	25.11	0.805	s
AM-241	1	236.86	59.44	204.94	-7.53	-0.004	478.95	0.761	s
TH-234	1	253.02	63.48	172.83	78.17	0.043	26.99	0.800	s
EU-155	1	347.58	87.10	240.38	138.65	0.077	17.95	0.788	s
TH-234	1	369.56	92.59	319.47	-20.60	-0.011	1081.15	0.795	s
U-235	1	372.61	93.35	199.47	7.74	0.004	26.37	0.795	s D
AC-228	1	372.61	93.35	199.47	96.06	0.053	2.21	0.795	s D
EU-155	1	419.19	104.99	174.56	23.73	0.013	81.37	0.808	s
EU-154	1	487.15	121.97	146.24	-22.44	-0.012	79.09	0.826	s
EU-152	1	487.23	121.99	169.33	-15.94	-0.009	118.10	0.824	s
Pa-234	1	523.16	130.96	188.01	-17.87	-0.010	111.04	0.834	s
U-235	1	567.79	142.11	90.17	14.64	0.008	81.05	0.847	s
U-235	1	656.05	164.16	148.09	-18.92	-0.011	103.89	0.867	s
U-235	1	818.19	204.67	99.16	-0.62	0.000	2260.59	0.909	s
PB-212	1	954.06	238.62	108.15	606.85	0.337	5.24	1.019	
RA-224	1	963.54	240.99	89.93	66.07	0.037	23.74	0.944	D
PB-214	1	967.59	242.00	131.93	49.07	0.027	36.05	0.945	D
TL-208	1	1109.02	277.33	40.33	64.67	0.036	24.59	0.707	s
I-131	1	1142.68	285.74	60.69	3.00	0.002	371.19	0.987	s
PB-214	1	1179.71	295.00	46.58	157.42	0.087	12.18	0.991	s
PB-212	1	1200.77	300.26	53.33	88.67	0.049	23.29	1.199	
AC-228	1	1353.36	338.39	50.01	129.58	0.072	11.69	1.040	
EU-152	1	1377.86	344.51	59.51	5.22	0.003	213.59	1.045	s
PB-214	1	1407.75	351.98	37.21	153.79	0.085	10.04	0.942	
I-131	1	1458.46	364.65	42.68	2.16	0.001	432.90	1.065	s
BE-7	1	1911.09	477.76	34.99	2.20	0.001	385.42	1.173	s
CS-134	1	2252.34	563.04	29.52	9.22	0.005	89.61	1.252	
CS-134	1	2277.45	569.32	23.34	-0.84	0.000	-51.49	1.258	s D
Pa-234	1	2278.05	569.47	22.00	-2.68	-0.001	-173.82	1.258	s D
TL-208	1	2333.42	583.31	13.08	210.92	0.117	7.62	1.150	
CS-134	1	2418.20	604.50	47.22	-5.07	-0.003	196.85	1.290	s
BI-214	1	2437.17	609.24	16.73	163.27	0.091	8.92	1.112	s
I-131	1	2547.08	636.71	29.90	0.42	0.000	1844.42	1.319	s
CS-137	1	2648.19	661.98	38.58	13.96	0.008	45.58	1.342	s
EU-154	1	2878.75	719.61	0.56	-8.73	-0.005	35.95	1.397	s
BI-212	1	2910.19	727.47	20.36	40.75	0.023	22.15	1.400	s
PA-234M	1	3074.75	768.61	25.19	5.75	0.003	130.25	1.434	s
EU-152	1	3116.92	779.15	30.05	2.19	0.001	359.68	1.445	s
BI-212	1	3142.35	785.51	30.63	0.00	0.000	782.75	1.451	s
CS-134	1	3183.78	795.87	35.00	0.00	0.000	836.66	1.460	s
CS-134	1	3210.14	802.46	33.44	-0.35	0.000	2361.54	1.465	s
TL-208	1	3442.03	860.43	0.00	43.00	0.024	15.25	0.615	s
EU-154	1	3493.71	873.35	18.07	2.46	0.001	252.41	1.527	s
Pa-234	1	3522.44	880.53	42.22	0.00	0.000	918.95	1.533	s
Pa-234	1	3529.98	882.42	25.20	0.24	0.000	2920.95	1.535	s
AC-228	1	3645.92	911.40	21.05	103.25	0.057	11.68	1.559	

Pa-234	1	3786.66	946.59	23.86	2.66	0.001	266.61	1.588	s
EU-152	1	3861.89	965.40	54.38	0.50	0.000	2086.22	1.603	s
AC-228	1	3876.73	969.11	24.55	68.86	0.038	15.77	1.607	s
EU-154	1	3991.30	997.76	24.90	0.35	0.000	1995.19	1.630	s
PA-234M	1	4004.26	1001.00	15.06	0.00	0.000	548.86	1.633	s
EU-154	1	4019.37	1004.77	12.51	0.00	0.000	500.22	1.637	s
EU-152	1	4450.04	1112.46	18.90	-2.24	-0.001	282.33	1.723	s
BI-214	1	4483.52	1120.84	0.00	44.00	0.024	15.08	2.063	s
CO-60	1	4691.44	1172.83	18.42	2.20	0.001	283.67	1.772	s
EU-154	1	5097.56	1274.40	22.89	-1.49	-0.001	462.80	1.850	s
CO-60	1	5331.35	1332.87	26.30	2.43	0.001	305.66	1.894	s
EU-152	1	5633.33	1408.41	9.81	8.74	0.005	60.93	1.950	s
K-40	1	5844.44	1461.22	0.00	283.00	0.157	5.94	1.951	
BI-214	1	7059.35	1765.17	9.48	16.00	0.009	32.24	2.196	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels	Peak Analysis Code	Peak MDA Value Becquerels	Peak MDA Code	Peak Comments	
CS-137	T F I	1	8.917E-001	661.66	8.917E-001	* (P	2.022E+000G		1.1E+004	85.21
BE-7	N P C	1	8.578E-001	477.60	8.578E-001	& (	1.178E+001G		5.3E+001	10.52
I-131	T F I	1	8.464E-002	364.48	8.464E-002	% (	1.299E+000G		8.0E+000	81.70
			8.464E-002	284.30	1.249E+000	&	1.622E+001G		8.0E+000	6.14
			8.464E-002	636.97	3.092E-001	&	2.072E+001G		8.0E+000	7.17
EU-152	T F	1	5.979E-001	344.29	5.979E-001	* (	4.430E+000G		4.9E+003	26.50
			5.979E-001	121.78	-8.712E-001	%	3.461E+000G		4.9E+003	28.58
			5.979E-001	778.92	1.058E+000	&	1.362E+001G		4.9E+003	12.94
			5.979E-001	964.11	2.547E-001	%	1.885E+001G		4.9E+003	14.61
			5.979E-001	1112.07	-1.369E+000	%	1.403E+001G		4.9E+003	13.64
			5.979E-001	1408.00	4.207E+000	%	8.331E+000G		4.9E+003	21.00
PB-210	N	1	4.876E+001	46.54	4.876E+001	* (P	4.018E+001G		8.1E+003	4.25
AM-241	T	1	-4.282E-001	59.54	-4.282E-001	& (P	3.950E+000G		1.6E+005	35.90
RA-224	N	1	3.567E+001	240.99	3.567E+001	(	2.532E+001G		7.0E+002	4.10
TH-234	N	1	3.167E+001	63.29	3.167E+001	* (P	2.592E+001G		1.6E+012	4.82
			3.167E+001	92.59	-5.980E+000	& P	2.496E+001G		1.6E+012	5.58
PB-212	N	1	3.078E+001	238.63	3.078E+001	(P	2.595E+000G		7.0E+002	43.30
			3.078E+001	300.03	7.241E+001	+	3.001E+001G		7.0E+002	3.28
AC-228	N	1	2.793E+001	911.16	2.525E+001	(	5.891E+000G		2.1E+003	29.00
			2.793E+001	968.97	2.940E+001	(	1.102E+001G		2.1E+003	17.46
			2.793E+001	338.32	3.224E+001	(	8.874E+000G		2.1E+003	12.01
			2.793E+001	93.35	2.793E+001	! E	1.992E+001G	A	2.1E+003	5.56
K-40	N	1	2.766E+002	1460.83	2.766E+002	(	7.204E+000G		4.7E+011	10.67
CS-134	T F I	1	-2.616E-001	604.71	-2.616E-001	% (	1.793E+000G		7.5E+002	97.62
			-2.616E-001	795.87	0.000E+000	%	2.248E+000G		7.5E+002	85.53
			-2.616E-001	569.32	-2.616E-001	%	7.843E+000G		7.5E+002	15.38
			-2.616E-001	801.95	-2.553E-001	&	2.181E+001G		7.5E+002	8.69
			-2.616E-001	563.24	5.232E+000	%	1.590E+001G		7.5E+002	8.35
CO-60	T F	1	2.345E-001	1332.50	2.345E-001	% (	2.571E+000G		1.9E+003	99.98
			2.345E-001	1173.24	1.919E-001	%	1.979E+000G		1.9E+003	99.90
U-235	N	1	2.155E+000	143.79	2.155E+000	% (P	6.911E+000G		2.6E+011	10.96
			2.155E+000	205.33	-2.434E-001	&	1.916E+001G		2.6E+011	5.01

				2.155E+000	163.38	-6.327E+000	%	P	1.987E+001G		2.6E+011	5.08
				2.155E+000	93.35	2.155E+000	!	E	1.907E+001X		2.6E+011	5.81
Bi-212		N	1	2.031E+001	727.33	2.031E+001	? (		1.183E+001G		7.0E+002	11.82
				2.031E+001	785.51	0.000E+000	&		1.628E+002G		7.0E+002	1.10
Bi-214		N	1	1.797E+001	609.31	1.797E+001	@ (	P	2.396E+000G		5.8E+005	46.09
				1.797E+001	1120.29	2.443E+001	+		4.092E+000G		5.8E+005	15.10
				1.797E+001	1764.49	1.276E+001	-	P	1.360E+001G		5.8E+005	15.40
Eu-155	T F I		1	1.759E+000	105.31	1.759E+000	% (		4.765E+000G		1.8E+003	21.20
				1.759E+000	86.54	7.499E+000	*		4.054E+000G	A	1.8E+003	30.70
				-1.565E+000	569.47	-1.565E+000	%		1.433E+001G		1.6E+012	8.20
				-1.565E+000	946.02	1.453E+000	%		1.390E+001G		1.6E+012	13.40
				-1.565E+000	883.24	1.755E-001	%		1.880E+001G		1.6E+012	9.60
				-1.565E+000	880.53	0.000E+000	%		3.793E+001G		1.6E+012	6.00
Pa-234		N	1	-1.565E+000	131.29	-1.565E+000	% (		5.833E+000G		1.6E+012	18.00
Eu-154	T F I		1	1.374E+000	873.23	1.374E+000	% (		1.257E+001G		3.1E+003	12.27
				1.374E+000	123.10	-8.597E-001	&		2.263E+000G		3.1E+003	40.79
				1.374E+000	1274.54	-3.931E-001	%		6.618E+000G		3.1E+003	35.19
				1.374E+000	723.36	-2.534E+000	&		2.138E+000G		3.1E+003	20.22
				1.374E+000	1004.77	0.000E+000	%		8.182E+000G		3.1E+003	18.01
				1.374E+000	996.33	2.553E-001	%		1.868E+001G		3.1E+003	10.60
Pb-214		N	1	1.300E+001	351.93	1.267E+001	(	P	2.566E+000G		5.8E+005	37.60
				1.300E+001	295.09	2.152E+001	*	P	4.719E+000G		5.8E+005	19.30
				1.300E+001	242.00	1.467E+001	(		1.681E+001G		5.8E+005	7.43
Tl-208	F	N	1	1.219E+001	583.02	1.219E+001	(	P	1.130E+000G		7.0E+002	84.50
				1.219E+001	277.28	2.559E+001	+		1.278E+001G		7.0E+002	6.31
				1.219E+001	860.56	2.344E+001	+		4.017E+000G		7.0E+002	12.42
Pa-234M		N	1	0.000E+000	1001.00	0.000E+000	% (		1.902E+002G		1.6E+012	.84
				0.000E+000	766.41	1.204E+002	&		5.464E+002G		1.6E+012	.29

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	#	8.578E-001	8.598E-001	385.42	385.43	1.178E+001
K-40		2.766E+002	2.766E+002	5.94	6.63	7.204E+000
CO-60	#	2.345E-001	2.345E-001	305.66	305.68	2.571E+000
I-131	#	8.464E-002	8.596E-002	432.90	432.91	1.299E+000
CS-134	#	-2.616E-001	-2.616E-001	196.85	196.87	1.793E+000
EU-154	#	1.374E+000	1.374E+000	252.41	252.43	1.257E+001
EU-155	#	1.759E+000	1.759E+000	81.37	81.44	4.765E+000
PB-214		1.300E+001	1.300E+001	10.38	10.77	2.566E+000
BI-212	#	2.031E+001	2.032E+001	22.15	22.34	1.183E+001
BI-214	#	1.797E+001	1.797E+001	9.29	9.73	2.396E+000
TH-234	#	3.167E+001	3.167E+001	31.89	32.10	2.592E+001
PA-234M	#			548.86	548.87	1.902E+002
CS-137	#	8.917E-001	8.917E-001	65.98	66.04	2.022E+000
EU-152	#	5.979E-001	5.980E-001	213.59	213.61	4.430E+000
TL-208		1.219E+001	1.219E+001	7.76	8.27	1.130E+000
PB-210	#	4.876E+001	4.876E+001	31.64	31.88	4.018E+001
PB-212		3.078E+001	3.078E+001	5.30	6.09	2.595E+000
RA-224		3.567E+001	3.568E+001	23.74	23.92	2.532E+001
AC-228	#	2.793E+001	2.793E+001	7.61	8.14	5.891E+000
Pa-234	#	-1.565E+000	-1.565E+000	111.04	111.08	5.833E+000
U-235	#	2.155E+000	2.155E+000	94.76	94.80	6.911E+000
AM-241	#	-4.282E-001	-4.282E-001	689.72	689.73	3.950E+000

= All peaks for activity calculation had bad shape

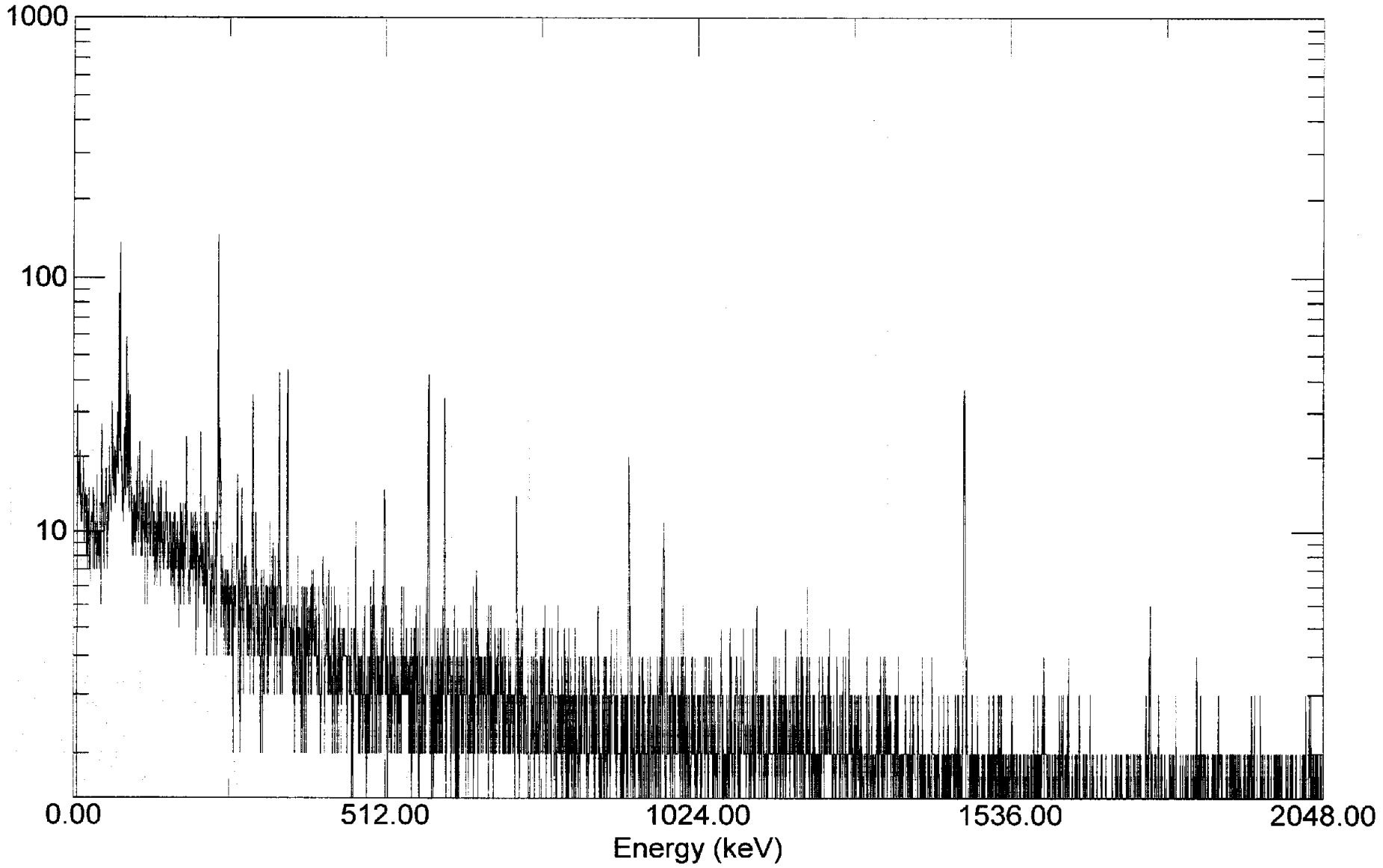
Total Activity (37.74 to 2,000.57 keV) 486.97 Bq/sample

Analyzed by: 403605

Laboratory: STL- St Louis

KEKE41AC

7360292_KEKE41AC_F7L200260-016



Acquired: 26-Dec-2007 4:18:04 PM
File: C:\User\spectra\KEKE41AC.spc
Detector: #0 Ge 5 SN/157

Real Time: 1851.76 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,056

Sample Description: 7360292_KEKE51AC_F7L200260-017

Spectrum Filename: KEKE51AC.An1

Acquisition Information

Start Time:	26-Dec-2007 4:18:55PM		
Live Time:	1800.00	Real Time:	1820.66
Dead Time:	1.13 %		
Detector ID:	7		

Detector System: Ge 7 SN/154

Calibration

Description:	Ge7 Tunacan 74139_334 01_16_07		
Filename:	C:\User\Calibrations\Ge7 calibrations\Ge7 Tunacan 01_16_07.Clb		
Energy Created:	16-Jan-2007 4:24:37PM	Efficiency Created:	16-Jan-2007 4:27:00PM
Zero Offset:	0.231 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.72 keV
Stop Channel:	8,000 for an energy of 2000.15 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge7 PBC table 11 26 07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1073

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
298.21	74.77	642.83	436.17	0.242	12.80	0.765	PB-214	
307.63	77.12	394.17	688.83	0.383	6.17	1.067	PB-214	s
334.45	83.83	338.27	138.73	0.077	20.58	0.919	TA-182	s
348.03	87.22	333.36	268.64	0.149	11.38	0.834	PB-214	s
742.15	185.73	320.83	402.17	0.223	11.29	1.381	U-235	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	186.23	46.78	211.10	158.90	0.088	16.39	1.468	s
AM-241	1	235.23	59.03	429.45	-17.30	-0.010	171.09	0.846	s
TH-234	1	252.76	63.41	382.42	185.58	0.103	18.21	0.853	s
EU-155	1	345.32	86.54	628.64	-2.48	-0.001	1429.69	0.874	s
TH-234	1	369.52	92.59	353.91	233.09	0.129	11.57	0.881	D
AC-228	1	372.56	93.35	508.59	93.06	0.052	3.09	0.882	D
U-235	1	372.56	93.35	464.97	19.02	0.011	15.62	0.882	s D
EU-155	1	418.97	104.95	333.60	15.89	0.009	164.45	0.894	s
EU-152	1	486.11	121.73	393.89	-8.98	-0.005	314.43	0.912	s
EU-154	1	491.42	123.06	346.11	17.05	0.009	156.19	0.913	s
Pa-234	1	522.47	130.82	383.08	-17.25	-0.010	162.24	0.922	s
U-235	1	575.46	144.06	369.98	35.77	0.020	77.86	0.935	s
U-235	1	653.93	163.68	296.98	35.22	0.020	71.22	0.955	s
U-235	1	822.41	205.79	326.50	-4.46	-0.002	574.95	0.999	s
PB-212	1	953.90	238.66	156.54	418.46	0.232	7.08	0.970	
RA-224	1	963.98	241.18	700.18	-4.03	-0.002	929.86	1.036	
PB-214	1	966.96	241.92	126.00	369.00	0.205	7.61	1.222	s
TL-208	1	1107.93	277.16	234.89	-9.84	-0.005	222.52	1.074	
I-131	1	1135.94	284.16	191.86	21.45	0.012	93.86	1.081	s
PB-214	1	1180.50	295.30	135.33	795.67	0.442	4.97	1.290	s
PB-212	1	1199.53	300.05	183.00	29.64	0.016	67.12	1.097	
AC-228	1	1351.22	337.97	110.00	160.00	0.089	17.90	0.687	s
EU-152	1	1377.17	344.46	136.49	6.08	0.003	274.64	1.142	s
PB-214	1	1407.25	351.97	126.22	1272.78	0.707	3.64	1.191	
I-131	1	1460.41	365.26	109.77	-6.21	-0.003	241.85	1.163	s
BE-7	1	1911.26	477.96	97.33	-0.31	0.000	4468.37	1.277	s
CS-134	1	2254.53	563.76	70.63	-6.47	-0.004	187.82	1.363	s
CS-134	1	2276.76	569.32	65.06	13.60	0.008	68.32	1.369	s D
Pa-234	1	2277.35	569.47	77.05	-2.54	-0.001	-177.30	1.369	s D
TL-208	1	2332.38	583.23	40.41	192.59	0.107	11.16	1.503	s
CS-134	1	2418.33	604.71	1543.67	3.98	0.002	1395.48	1.403	s
BI-214	1	2436.81	609.33	40.63	821.37	0.456	3.98	1.333	
I-131	1	2537.60	634.52	39.53	0.93	0.001	958.83	1.435	s
CS-137	1	2645.04	661.38	18.08	103.92	0.058	13.41	1.479	
EU-154	1	2899.41	724.97	88.62	-15.91	-0.009	87.35	1.519	s
BI-212	1	2908.42	727.22	45.52	42.81	0.024	27.03	1.523	s
PA-234M	1	3065.48	766.48	74.25	4.57	0.003	271.00	1.561	s
EU-152	1	3120.98	780.36	53.76	-6.19	-0.003	172.18	1.573	s
BI-212	1	3143.51	785.99	46.97	23.86	0.013	45.49	1.579	s
CS-134	1	3177.70	794.53	28.27	10.90	0.006	75.37	1.589	s
CS-134	1	3213.81	803.56	39.75	-4.17	-0.002	219.54	1.595	s
TL-208	1	3440.79	860.30	7.50	27.50	0.015	26.66	0.844	s
EU-154	1	3492.26	873.17	45.76	0.24	0.000	3958.58	1.662	s
Pa-234	1	3521.73	880.54	43.76	3.36	0.002	284.13	1.669	s
Pa-234	1	3535.21	883.90	39.89	0.56	0.000	1613.81	1.672	s
AC-228	1	3644.16	911.14	24.17	106.83	0.059	14.74	1.333	

Pa-234	1	3780.35	945.19	39.87	-0.98	-0.001	913.38	1.731	s
EU-152	1	3839.57	959.99	33.06	0.75	0.000	1083.32	1.748	s
AC-228	1	3872.84	968.31	28.67	107.33	0.060	17.22	1.084	s
EU-154	1	3982.85	995.81	35.75	-0.16	0.000	5396.61	1.778	s
PA-234M	1	4007.22	1001.90	25.69	7.45	0.004	102.91	1.782	s
EU-154	1	4018.71	1004.77	53.35	0.00	0.000	1032.98	1.785	s
EU-152	1	4447.92	1112.07	30.76	0.00	0.000	784.29	1.884	s
BI-214	1	4481.68	1120.51	15.00	175.00	0.097	9.94	1.002	s
CO-60	1	4696.42	1174.20	36.06	6.39	0.004	138.56	1.939	s
EU-154	1	5097.80	1274.54	127.37	0.00	0.000	1596.06	2.030	s
CO-60	1	5334.25	1333.66	35.56	-7.70	-0.004	115.30	2.081	s
EU-152	1	5642.39	1410.69	23.47	1.21	0.001	575.49	2.147	s
K-40	1	5843.25	1460.91	0.00	291.00	0.162	5.86	1.739	
BI-214	1	7059.25	1764.94	14.87	104.46	0.058	11.09	2.447	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels		Analysis Code	MDA Value Becquerels	Code	Comments	
PB-210	N	1	9.487E+001	46.54	9.487E+001	*	(P	4.204E+001G		8.1E+003	4.25
BE-7	N P C	1	-8.939E-002	477.60	-8.939E-002	&	(	1.393E+001G		5.3E+001	10.52
EU-155	T F I	1	8.490E-001	105.31	8.490E-001	*	(	4.692E+000G		1.8E+003	21.20
			8.490E-001	86.54	-9.706E-002	&		4.674E+000G	A	1.8E+003	30.70
TL-208	F N	1	8.203E+000	583.02	8.203E+000	*	(P	1.377E+000G		7.0E+002	84.50
			8.203E+000	277.28	-2.852E+000	%		2.148E+001G		7.0E+002	6.31
			8.203E+000	860.56	1.117E+001	+		6.283E+000G		7.0E+002	12.42
			7.819E+001	242.00	8.070E+001	*	(	1.203E+001G		5.8E+005	7.43
PB-214	N	1	7.819E+001	351.93	7.692E+001		(P	3.328E+000G		5.8E+005	37.60
			7.819E+001	295.09	7.970E+001	*	(	5.702E+000G		5.8E+005	19.30
AM-241	T	1	-7.474E-001	59.54	-7.474E-001	&	(	4.289E+000G		1.6E+005	35.90
BI-214	N	1	6.768E+001	609.31	6.668E+001		(P	2.632E+000G		5.8E+005	46.09
			6.768E+001	1120.29	7.330E+001		(	8.695E+000G		5.8E+005	15.10
			6.768E+001	1764.49	6.514E+001	?	(	1.289E+001G		5.8E+005	15.40
CO-60	T F	1	-5.677E-001	1332.50	-5.677E-001	%	(	2.248E+000G		1.9E+003	99.98
			-5.677E-001	1173.24	4.215E-001	%		2.023E+000G		1.9E+003	99.90
TH-234	N	1	5.229E+001	63.29	5.633E+001		(P	2.848E+001G		1.6E+012	4.82
			5.229E+001	92.59	4.880E+001		(P	1.892E+001G		1.6E+012	5.58
EU-152	T F	1	5.111E-001	344.29	5.111E-001	&	(	4.802E+000G		4.9E+003	26.50
			5.111E-001	121.78	-3.542E-001	&		3.756E+000G		4.9E+003	28.58
			5.111E-001	778.92	-2.216E+000	%		1.320E+001G		4.9E+003	12.94
			5.111E-001	964.11	2.873E-001	%		1.123E+001G		4.9E+003	14.61
			5.111E-001	1112.07	0.000E+000	&		1.315E+001G		4.9E+003	13.64
			5.111E-001	1408.00	4.447E-001	%		9.326E+000G		4.9E+003	21.00
PA-234M	N	1	5.111E+001	1001.00	5.111E+001	&	(	1.806E+002G		1.6E+012	.84
			5.111E+001	766.41	7.091E+001	%		6.658E+002G		1.6E+012	.29
CS-137	T F I	1	4.905E+000	661.66	4.905E+000		(P	1.063E+000G		1.1E+004	85.21
			3.816E+000	205.33	-1.270E+000	&		2.475E+001G		2.6E+011	5.01
			3.816E+000	163.38	8.562E+000	%		2.018E+001G		2.6E+011	5.08
			3.816E+000	93.35	3.816E+000	!	E	2.071E+001X		2.6E+011	5.81
U-235	N	1	3.816E+000	143.79	3.816E+000	*	(	9.850E+000G		2.6E+011	10.96
K-40	N	1	2.186E+002	1460.83	2.186E+002		(	5.536E+000G		4.7E+011	10.67

AC-228		N	1	1.951E+001	911.16	1.951E+001		(		4.678E+000G	2.1E+003	29.00
				1.951E+001	968.97	3.431E+001	+			8.843E+000G	2.1E+003	17.46
				1.951E+001	338.32	2.919E+001	+			9.410E+000G	2.1E+003	12.01
				1.951E+001	93.35	1.951E+001			E	2.260E+001G	A 2.1E+003	5.56
I-131	T F I		1	-1.785E-001	364.48	-1.785E-001	%	(		1.480E+000G	8.0E+000	81.70
				-1.785E-001	284.30	6.530E+000	%			2.048E+001G	8.0E+000	6.14
				-1.785E-001	636.97	5.062E-001	%			1.737E+001G	8.0E+000	7.17
RA-224		N	1	-1.592E+000	240.99	-1.592E+000	%	(		4.977E+001G	7.0E+002	4.10
BI-212		N	1	1.581E+001	727.33	1.581E+001		(		1.261E+001G	7.0E+002	11.82
				1.581E+001	785.51	1.012E+002	%			1.469E+002G	7.0E+002	1.10
PB-212		N	1	1.552E+001	238.63	1.552E+001		(	P	2.263E+000G	7.0E+002	43.30
				1.552E+001	300.03	1.773E+001	%			3.934E+001G	7.0E+002	3.28
CS-134	T F I		1	1.517E-001	604.71	1.517E-001	%	(		7.075E+000G	7.5E+002	97.62
				1.517E-001	795.87	6.009E-001	%			1.516E+000G	7.5E+002	85.53
				1.517E-001	569.32	3.117E+000	%	}		1.005E+001G	7.5E+002	15.38
				1.517E-001	801.95	-2.276E+000	%			1.753E+001G	7.5E+002	8.69
				1.517E-001	563.24	-2.705E+000	%			1.750E+001G	7.5E+002	8.35
Pa-234		N	1	-1.093E+000	131.29	-1.093E+000	&	(		5.949E+000G	1.6E+012	18.00
				-1.093E+000	569.47	-1.093E+000	%			1.875E+001G	1.6E+012	8.20
				-1.093E+000	946.02	-4.014E-001	%			1.311E+001G	1.6E+012	13.40
				-1.093E+000	883.24	2.983E-001	%			1.727E+001G	1.6E+012	9.60
				-1.093E+000	880.53	2.876E+000	&			2.875E+001G	1.6E+012	6.00
				1.007E-001	1274.54	0.000E+000	%			1.113E+001G	3.1E+003	35.19
				1.007E-001	723.36	-3.419E+000	%			1.001E+001G	3.1E+003	20.22
				1.007E-001	1004.77	0.000E+000	%			1.175E+001G	3.1E+003	18.01
				1.007E-001	996.33	-8.460E-002	%			1.649E+001G	3.1E+003	10.60
EU-154	T F I		1	1.007E-001	873.23	1.007E-001	%	(		1.425E+001G	3.1E+003	12.27
				1.007E-001	123.10	4.719E-001	&			2.474E+000G	3.1E+003	40.79

Analysis Codes:

% = Peak fails sensitivity test

\- = Peak activity lower than counting uncertainty range

(= This peak is used in the nuclide activity average

* = Peak is too wide, but only one peak in library

A = Derived Average Activity

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

? = Peak is too narrow

= = Peak outside analysis energy range

P = Peakbackround subtraction

@ = Peak is too wide at FW25M, but OK at FWHM

E = Energy Duplication

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation	F = Fast Neutron Activation	I = Fission Product
P = Photon Reaction	N = Naturally Occurring Isotope	C = Charged Particle Reaction
M = No MDA Calculation		

Peak Codes:

G = Gamma Ray	X = X-Ray	P = Positron Decay
S = Single - Escape	D = Double - Escape	K = Key Line
A = Not in Average		

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	#	-8.939E-002	-8.960E-002	4,468.37	4,468.37	1.393E+001
K-40		2.186E+002	2.186E+002	5.86	6.55	5.536E+000
CO-60	#	-5.677E-001	-5.677E-001	115.30	115.33	2.248E+000
I-131	#	-1.785E-001	-1.813E-001	241.85	241.86	1.480E+000
CS-134	#	1.517E-001	1.517E-001	1,395.48	1,395.49	7.075E+000
CS-137		4.905E+000	4.905E+000	13.51	13.82	1.063E+000
EU-152	#	5.111E-001	5.111E-001	274.64	274.66	4.802E+000
EU-155	#	8.490E-001	8.491E-001	164.45	164.48	4.692E+000
TL-208		8.203E+000	8.204E+000	11.30	11.66	1.377E+000
BI-212	#	1.581E+001	1.581E+001	27.03	27.18	1.261E+001
BI-214		6.768E+001	6.768E+001	3.99	4.93	2.632E+000
RA-224	#	-1.592E+000	-1.592E+000	929.86	929.86	4.977E+001
EU-154	#	1.007E-001	1.007E-001	3,958.58	3,958.58	1.425E+001
PB-210	#	9.487E+001	9.487E+001	18.88	19.28	4.204E+001
PB-212		1.552E+001	1.552E+001	7.24	7.83	2.263E+000
PB-214		7.819E+001	7.819E+001	3.27	4.35	3.328E+000
AC-228		1.951E+001	1.951E+001	14.74	15.01	4.678E+000
Pa-234	#	-1.093E+000	-1.093E+000	162.24	162.27	5.949E+000
AM-241	#	-7.474E-001	-7.474E-001	171.09	171.14	4.289E+000
TH-234		5.229E+001	5.229E+001	12.02	12.57	2.848E+001
PA-234M	#	5.111E+001	5.111E+001	102.91	102.95	1.806E+002
U-235	#	3.816E+000	3.816E+000	77.86	77.92	9.850E+000

= All peaks for activity calculation had bad shape

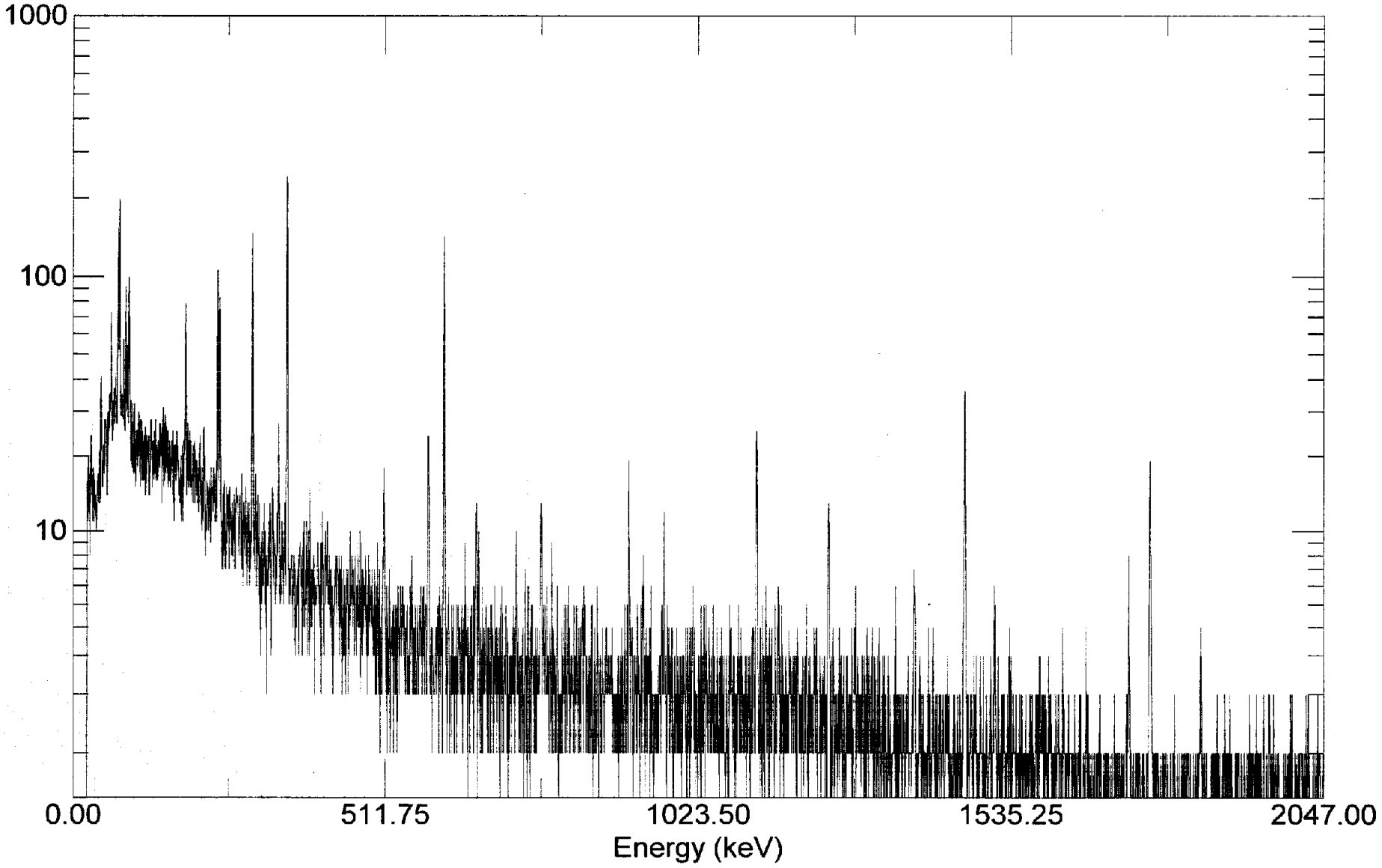
Total Activity (37.72 to 2,000.15 keV) 559.73 Bq/sample

Analyzed by: 403605

Laboratory: Test America

KEKE51AC

7360292_KEKE51AC_F7L200260-017



Acquired: 26-Dec-2007 4:18:55 PM
File: C:\User\spectra\KEKE51AC.spc
Detector: #0 Ge 7 SN/154

Real Time: 1820.66 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,058

Sample Description: 7360292_KER4G1AA_F7L260000-292B

Spectrum Filename: KER4G1AA.An1

Acquisition Information

Start Time:	26-Dec-2007 5:00:15PM		
Live Time:	1800.00	Real Time:	1810.06
Dead Time:	0.56 %		
Detector ID:	1		

Detector System: Ge 1 SN/242

Calibration

Description:	Ge1 Tunacan 74139-334 1_15_07		
Filename:	C:\User\Calibrations\Ge1 calibrations\Ge1 Tunacan polynomial 01_15_07.Clb		
Energy Created:	15-Jan-2007 5:43:37PM	Efficiency Created:	15-Jan-2007 5:44:16PM
Zero Offset:	0.212 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.71 keV
Stop Channel:	8,000 for an energy of 1999.84 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	26-Dec-2007 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge1 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.0990

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty Sigma%	FWHM keV	Suspected Nuclide	Code

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	185.15	46.50	55.62	-10.56	-0.006	44.66	0.813	
AM-241	1	237.29	59.54	46.67	-1.17	-0.001	830.86	0.824	s
TH-234	1	252.10	63.24	63.90	6.10	0.003	28.58	0.372	s
EU-155	1	345.31	86.54	58.62	0.00	0.000	1082.81	0.849	s
TH-234	1	370.16	92.75	98.91	-5.51	-0.003	26.46	0.855	s
AC-228	1	372.54	93.35	31.35	-3.36	-0.002	-3072.06	0.855	s D
U-235	1	372.54	93.35	31.35	3.90	0.002	26.29	0.855	s D
EU-155	1	419.28	105.04	22.00	6.33	0.004	111.99	0.866	s
EU-152	1	487.59	122.11	50.64	-3.96	-0.002	259.11	0.881	s
EU-154	1	491.68	123.14	34.05	0.04	0.000	19014.54	0.882	s
Pa-234	1	522.29	130.79	28.72	5.69	0.003	139.66	0.890	s
U-235	1	575.95	144.20	32.19	7.21	0.004	75.21	0.901	s
U-235	1	652.32	163.30	40.08	-6.92	-0.004	224.57	0.919	s
U-235	1	814.77	203.91	26.51	-2.63	-0.001	1447.11	0.957	s
PB-212	1	954.21	238.77	35.58	16.42	0.009	24.40	0.529	s
PB-214	1	968.35	242.31	42.74	-12.03	-0.007	174.56	0.990	s
RA-224	1	972.41	243.32	13.83	2.65	0.001	207.50	0.989	s
TL-208	1	1109.27	277.53	19.13	-0.03	0.000	18225.48	1.021	s
I-131	1	1132.06	283.23	20.18	0.16	0.000	3996.74	1.028	s
PB-214	1	1177.51	294.59	35.36	1.97	0.001	71.30	1.037	s
PB-212	1	1198.03	299.72	31.08	-3.62	-0.002	224.35	1.042	
AC-228	1	1352.87	338.43	24.00	-6.25	-0.003	470.97	1.076	s
EU-152	1	1375.51	344.09	21.48	-0.10	0.000	6791.34	1.081	s
PB-214	1	1404.26	351.28	32.15	-6.53	-0.004	124.10	1.088	s
I-131	1	1458.10	364.74	22.23	2.76	0.002	248.77	1.099	s
BE-7	1	1909.54	477.60	15.47	0.00	0.000	556.32	1.198	s
CS-134	1	2248.60	562.35	16.77	-0.86	0.000	685.86	1.273	s
CS-134	1	2276.47	569.32	11.40	-0.09	0.000	-22.65	1.278	s D
Pa-234	1	2277.07	569.47	11.72	1.03	0.001	57.18	1.278	s D
TL-208	1	2330.09	582.72	26.21	-3.39	-0.002	114.59	1.290	s
CS-134	1	2414.73	603.88	19.67	-0.52	0.000	1213.24	1.309	s
BI-214	1	2436.32	609.28	36.51	-5.26	-0.003	117.80	1.313	s
I-131	1	2547.11	636.97	24.18	0.00	0.000	695.43	1.337	s
CS-137	1	2641.86	660.66	15.10	-3.36	-0.002	172.54	1.358	s
EU-154	1	2884.58	721.33	13.68	1.23	0.001	436.00	1.411	s
BI-212	1	2912.87	728.41	17.84	6.01	0.003	107.39	1.414	s
PA-234M	1	3064.92	766.41	0.00	0.00	0.000	100.00	1.447	s
EU-152	1	3129.43	782.54	1.57	0.77	0.000	257.91	1.458	s
BI-212	1	3141.32	785.51	0.00	0.00	0.000	100.00	1.463	s
CS-134	1	3180.16	795.22	14.22	-2.24	-0.001	247.17	1.472	s
CS-134	1	3209.95	802.66	18.67	4.33	0.002	149.01	1.477	s
TL-208	1	3438.21	859.72	17.99	-1.46	-0.001	417.75	1.527	s
EU-154	1	3492.25	873.23	0.00	0.00	0.000	100.00	1.537	s
Pa-234	1	3521.46	880.53	10.87	0.00	0.000	466.32	1.543	s
Pa-234	1	3531.58	883.06	9.26	2.68	0.001	171.60	1.546	s

AC-228	1	3649.61	912.56	12.99	-5.02	-0.003	1944.78	1.569	s
Pa-234	1	3782.51	945.78	16.80	-2.62	-0.001	229.54	1.598	s
EU-152	1	3858.13	964.69	6.81	4.00	0.002	104.89	1.613	s
AC-228	1	3873.86	968.62	21.87	-5.16	-0.003	328.55	1.617	s
EU-154	1	3978.06	994.66	15.81	-2.81	-0.002	208.94	1.640	s
PA-234M	1	4003.65	1001.06	11.30	4.59	0.003	113.59	1.643	s
EU-154	1	4026.58	1006.79	15.44	-3.91	-0.002	150.94	1.647	s
EU-152	1	4447.80	1112.07	40.78	0.00	0.000	903.10	1.735	s
BI-214	1	4487.21	1121.92	12.23	-1.31	-0.001	93.98	1.741	s
CO-60	1	4692.88	1173.33	14.04	-1.55	-0.001	351.48	1.784	s
EU-154	1	5103.50	1275.96	11.15	-2.18	-0.001	226.91	1.866	s
CO-60	1	5329.72	1332.50	17.18	0.00	0.000	586.26	1.912	s
EU-152	1	5630.04	1407.56	4.73	0.14	0.000	2257.29	1.972	s
K-40	1	5843.18	1460.83	32.59	-12.54	-0.007	633.26	2.013	s
BI-214	1	7058.22	1764.49	4.81	-4.81	-0.003	100.00	2.246	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels		Analysis Code	MDA Value Becquerels	Code	Comments	
U-235	N	1	8.981E-001	143.79	8.981E-001	% (	P	3.631E+000G		2.6E+011	10.96
			8.981E-001	205.33	-8.505E-001	%	P	8.647E+000G		2.6E+011	5.01
			8.981E-001	163.38	-1.953E+000	%	P	9.098E+000G		2.6E+011	5.08
			8.981E-001	93.35	8.981E-001	!	E	6.627E+000X		2.6E+011	5.81
EU-152	T F	1	-8.485E-003	344.29	-8.485E-003	& (		2.135E+000G		4.9E+003	26.50
			-8.485E-003	121.78	-1.822E-001	%		1.651E+000G		4.9E+003	28.58
			-8.485E-003	778.92	2.476E-001	%		2.762E+000G		4.9E+003	12.94
			-8.485E-003	964.11	1.330E+000	%		4.942E+000G		4.9E+003	14.61
			-8.485E-003	1112.07	0.000E+000	%		1.278E+001G		4.9E+003	13.64
			-8.485E-003	1408.00	4.180E-002	%		3.912E+000G		4.9E+003	21.00
I-131	T F I	1	8.205E-002	364.48	8.205E-002	% (		7.332E-001G		8.0E+000	81.70
			8.205E-002	284.30	5.246E-002	%		7.788E+000G		8.0E+000	6.14
			8.205E-002	636.97	0.000E+000	%		1.299E+001G		8.0E+000	7.17
AC-228	N	1	-8.067E-001	911.07	-8.067E-001	% (	P	3.137E+000G		2.1E+003	29.00
			-8.067E-001	968.97	-1.438E+000	%	P	6.834E+000G		2.1E+003	17.46
			-8.067E-001	338.32	-1.195E+000	%	P	4.885E+000G		2.1E+003	12.01
			-8.067E-001	93.35	-8.067E-001	!	E	6.924E+000X	A	2.1E+003	5.56
K-40	N	1	-7.740E+000	1460.83	-7.740E+000	% (	P	1.809E+001G		4.7E+011	10.67
PB-212	N	1	6.780E-001	238.63	6.780E-001	% (	P	1.260E+000G		7.0E+002	43.30
			6.780E-001	300.03	-2.318E+000	%		1.840E+001G		7.0E+002	3.28
PB-210	N	1	-6.670E+000	46.54	-6.670E+000	% (	P	2.366E+001G		8.1E+003	4.25
AM-241	T	1	-5.656E-002	59.54	-5.656E-002	& (		1.670E+000G		1.6E+005	35.90
Pa-234	N	1	4.211E-001	131.29	4.211E-001	& (		2.049E+000G		1.6E+012	18.00
			4.211E-001	569.47	4.211E-001	%		7.641E+000G		1.6E+012	8.20
			4.211E-001	946.02	-9.369E-001	%		7.794E+000G		1.6E+012	13.40
			4.211E-001	883.24	1.276E+000	%		8.030E+000G		1.6E+012	9.60
			4.211E-001	880.53	0.000E+000	%		1.372E+001G		1.6E+012	6.00
PB-214	N	1	-4.110E-001	351.93	-4.110E-001	% (	P	1.832E+000G		5.8E+005	37.60
			-4.110E-001	295.09	2.118E-001	%	P	3.275E+000G		5.8E+005	19.30
			-4.110E-001	242.00	-2.923E+000	%	P	8.062E+000G		5.8E+005	7.43
			-4.023E-001	1764.49	-2.397E+000	%	P	6.446E+000G		5.8E+005	15.40
BI-214	N	1	-4.023E-001	609.31	-4.023E-001	% (	P	2.359E+000G		5.8E+005	46.09
			-4.023E-001	1120.29	-4.687E-001	%	P	6.798E+000G		5.8E+005	15.10
EU-155	T F I	1	3.917E-001	105.31	3.917E-001	& (		1.519E+000G		1.8E+003	21.20
			3.917E-001	86.54	0.000E+000	%		1.710E+000G		1.8E+003	30.70
PA-234	N	1	2.733E+001	1001.00	2.733E+001	% (		1.094E+002G		1.6E+012	.84
			2.733E+001	766.41	0.000E+000	%		1.037E+002G		1.6E+012	.29
TH-234	N	1	2.076E+000	63.29	2.076E+000	% (	P	1.359E+001G		1.6E+012	4.82
			2.076E+000	92.59	-1.322E+000	&	P	1.177E+001G		1.6E+012	5.58
BI-212	N	1	2.028E+000	727.33	2.028E+000	% (		7.553E+000G		7.0E+002	11.82
			2.028E+000	785.51	0.000E+000	%		2.818E+001G		7.0E+002	1.10
CS-134	T F I	1	-1.867E-002	604.71	-1.867E-002	& (		8.389E-001G		7.5E+002	97.62
			-1.867E-002	795.87	-1.112E-001	%		1.007E+000G		7.5E+002	85.53
			-1.867E-002	569.32	-1.867E-002	%		4.025E+000G		7.5E+002	15.38

				-1.867E-002	801.95	2.127E+000	%		1.122E+001G	7.5E+002	8.69
				-1.867E-002	563.24	-3.411E-001	%		8.694E+000G	7.5E+002	8.35
CS-137	T F I		1	-1.470E-001	661.66	-1.470E-001	%	(	9.118E-001G	1.1E+004	85.21
TL-208	F	N	1	-1.369E-001	583.02	-1.369E-001	%	(P	1.073E+000G	7.0E+002	84.50
				-1.369E-001	277.28	-1.069E-002	%		7.270E+000G	7.0E+002	6.31
				-1.369E-001	860.56	-5.287E-001	%		8.112E+000G	7.0E+002	12.42
RA-224		N	1	1.165E+000	240.99	1.165E+000	%	(	8.801E+000G	7.0E+002	4.10
BE-7		N P C	1	0.000E+000	477.60	0.000E+000	&	(	5.918E+000G	5.3E+001	10.52
CO-60	T F		1	0.000E+000	1332.50	0.000E+000	%	(	1.352E+000G	1.9E+003	99.98
				0.000E+000	1173.24	-8.654E-002	%		1.127E+000G	1.9E+003	99.90
EU-154	T F I		1	0.000E+000	873.23	0.000E+000	%	(	2.720E+000G	3.1E+003	12.27
				0.000E+000	123.10	1.402E-003	%		9.658E-001G	3.1E+003	40.79
				0.000E+000	1274.54	-3.677E-001	%		3.081E+000G	3.1E+003	35.19
				0.000E+000	723.36	2.409E-001	&		3.918E+000G	3.1E+003	20.22
				0.000E+000	1004.77	-1.084E+000	%		5.832E+000G	3.1E+003	18.01
				0.000E+000	996.33	-1.316E+000	%		9.953E+000G	3.1E+003	10.60

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

\- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

\+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	<			556.32	556.32	5.918E+000
K-40	<	-7.740E+000	-7.740E+000	1,266.52	1,266.53	1.809E+001
CO-60	<			586.26	586.26	1.352E+000
I-131	<	8.205E-002	8.355E-002	248.77	248.79	7.332E-001
CS-134	<	-1.867E-002	-1.868E-002	1,213.24	1,213.24	8.389E-001
CS-137	<	-1.470E-001	-1.470E-001	172.54	172.57	9.118E-001
EU-152	<	-8.485E-003	-8.485E-003	6,791.34	6,791.34	2.135E+000
EU-154	<			100.00	100.04	2.720E+000
TL-208	<	-1.369E-001	-1.369E-001	416.04	416.05	1.073E+000
RA-224	<	1.165E+000	1.165E+000	207.50	207.52	8.801E+000
PB-210	<	-6.670E+000	-6.671E+000	169.24	169.28	2.366E+001
PB-212		6.780E-001	6.782E-001	58.46	58.54	1.260E+000
AC-228	<	-8.067E-001	-8.067E-001	3,808.37	3,808.37	3.137E+000
Pa-234	<	4.211E-001	4.211E-001	139.66	139.70	2.049E+000
U-235	<	8.981E-001	8.981E-001	114.25	114.29	3.631E+000
AM-241	<	-5.656E-002	-5.656E-002	830.86	830.87	1.670E+000
EU-155	<	3.917E-001	3.918E-001	111.99	112.05	1.519E+000
PB-214	<	-4.110E-001	-4.110E-001	351.74	351.75	1.832E+000
BI-212	<	2.028E+000	2.028E+000	107.39	107.42	7.553E+000
BI-214	<	-4.023E-001	-4.023E-001	377.91	377.93	2.359E+000
TH-234	<	2.076E+000	2.076E+000	201.31	201.34	1.359E+001
PA-234M	<	2.733E+001	2.733E+001	113.59	113.63	1.094E+002

= All peaks for activity calculation had bad shape

Total Activity (37.71 to 1,999.84 keV) 0.00 Bq/sample

Analyzed by: _____

403605

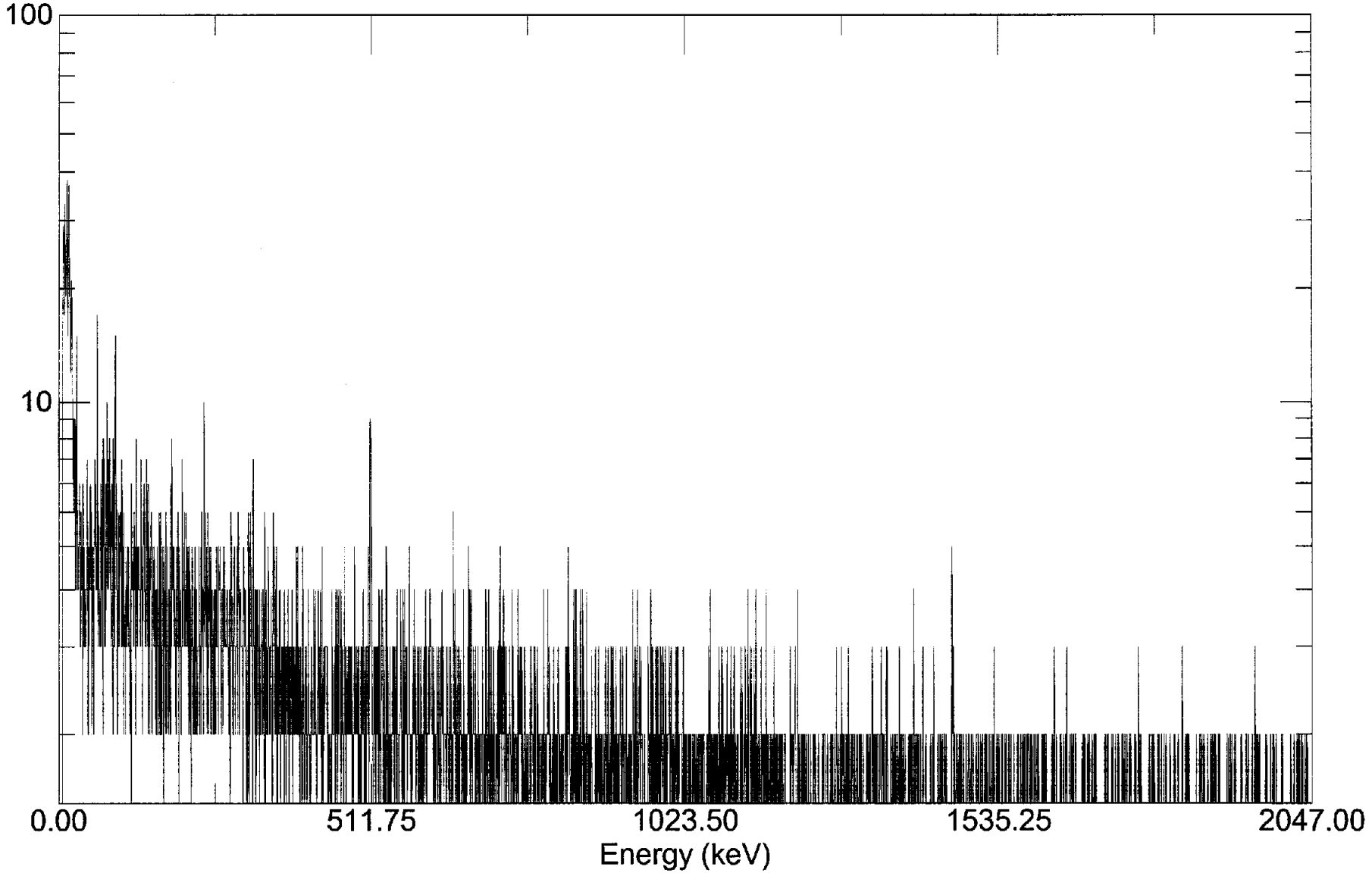
Reviewed by: _____

Supervisor

Laboratory: Test America

KER4G1AA

7360292_KER4G1AA_F7L260000-292B



Acquired: 26-Dec-2007 5:00:15 PM
File: C:\User\spectra\KER4G1AA.spc
Detector: #0 Ge 1 SN/242

Real Time: 1810.06 s. Live Time: 1800.00 s.
Channels: 8192

DB Analysis ID: 33,059

Sample Description: 7360292_KER4G1AC_F7L260000-292C

Spectrum Filename: KER4G1AC.An1

Acquisition Information

Start Time:	26-Dec-2007 5:00:58PM		
Live Time:	1800.00	Real Time:	1826.94
Dead Time:	1.47 %		
Detector ID:	3		

Detector System: Ge 3 SN/155

Calibration

Description:	Ge3 74139_334 Tunacan cal 01_11_07		
Filename:	C:\User\Calibrations\Ge3 cal post 5_8_06\Ge3 Tunacan 74139_334 01_11_07.Clb		
Energy Created:	10-Jan-2007 5:13:35PM	Efficiency Created:	11-Jan-2007 1:43:34PM
Zero Offset:	0.416 keV	Gain:	0.250 keV/Channel

Library 1 File: mmr06 short.lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	150 for an energy of 37.87 keV
Stop Channel:	8,000 for an energy of 2000.50 keV
Peak rejection level:	40.000 %
Activity Scaling Factor:	1.0000 / 1.0000 = 1.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections	Status	Comments
Decay Correct to Date:	YES	01-Apr-2004 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	YES	Ge3 PBC table 11_26_07.Pbc
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Differe 0.2320

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Suspected Nuclide	Code
145.06	36.64	1792.00	344.00	0.191	23.11	1.104	CE-144	s
350.43	87.93	2735.22	7273.78	4.041	1.55	0.979	PB-214	s
486.39	121.88	2306.45	206.55	0.115	33.61	1.122	EU-152	s
1344.65	336.26	826.45	146.55	0.081	28.95	0.348		s
1406.51	351.72	461.39	53.61	0.030	58.29	0.799		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 1 Sigma%	FWHM keV	Code
PB-210	1	184.60	46.51	9741.53	26758.47	14.866	1.03	0.968	s
AM-241	1	236.52	59.48	7416.00	31261.00	17.367	0.86	0.900	s
TH-234	1	245.14	61.63	2914.26	-626.39	-0.348	13.28	0.882	s
EU-155	1	352.24	88.38	4261.18	-90.00	-0.050	103.11	0.906	s
TH-234	1	371.20	93.12	1902.38	6.56	0.004	187.98	0.912	s
U-235	1	372.14	93.35	1975.92	5.03	0.003	129.12	0.913	s D
AC-228	1	372.14	93.35	1989.05	13.59	0.008	324.88	0.913	s D
EU-155	1	421.10	105.58	1765.14	-11.36	-0.006	523.85	0.925	s
EU-152	1	486.53	121.92	1686.96	846.45	0.470	7.67	0.942	s
EU-154	1	491.26	123.10	1796.80	4.02	0.002	1492.05	0.943	s
Pa-234	1	524.32	131.36	1511.51	7.05	0.004	781.18	0.952	s
U-235	1	575.51	144.14	1569.98	9.23	0.005	493.02	0.964	s
U-235	1	650.45	162.86	1249.51	-0.97	-0.001	5146.77	0.984	s
U-235	1	821.41	205.56	1496.18	-56.25	-0.031	98.16	1.027	s
PB-212	1	954.21	238.73	1488.81	99.97	0.056	45.80	1.060	s
RA-224	1	963.14	240.96	1559.18	-9.30	-0.005	601.63	1.062	s
PB-214	1	969.07	242.44	1446.99	-22.37	-0.012	241.46	1.063	s
TL-208	1	1102.17	275.69	906.23	10.26	0.006	416.15	1.098	s
I-131	1	1138.77	284.83	1147.20	-12.72	-0.007	377.50	1.105	s
PB-214	1	1177.57	294.52	986.04	30.99	0.017	127.83	1.116	s
PB-212	1	1195.78	299.07	901.83	-13.98	-0.008	304.93	1.121	
AC-228	1	1351.96	338.09	1001.50	61.61	0.034	71.23	1.158	s
EU-152	1	1373.03	343.35	891.32	-33.67	-0.019	126.58	1.164	s
PB-214	1	1406.54	351.72	1029.26	40.82	0.023	91.39	1.171	s
I-131	1	1458.13	364.61	1069.99	-24.30	-0.014	191.43	1.184	s
BE-7	1	1912.73	478.19	1141.52	-54.11	-0.030	89.34	1.292	s
CS-134	1	2253.09	563.23	608.41	34.58	0.019	102.29	1.372	s
CS-134	1	2277.45	569.32	684.65	0.00	0.000	2657.07	1.378	s D
Pa-234	1	2278.04	569.47	629.20	1.23	0.001	308.60	1.378	s D
TL-208	1	2332.91	583.18	643.49	56.90	0.032	56.35	1.390	s
CS-134	1	2419.07	604.71	838.67	2.00	0.001	2046.48	1.410	s
BI-214	1	2435.04	608.70	618.79	37.96	0.021	79.31	1.415	s
I-131	1	2553.61	638.33	539.72	22.24	0.012	149.23	1.440	s
CS-137	1	2646.12	661.45	588.00	12162.00	6.757	1.07	1.555	
EU-154	1	2903.76	725.84	440.20	0.09	0.000	34320.55	1.518	s
BI-212	1	2923.40	730.75	381.74	3.12	0.002	888.24	1.521	s
PA-234M	1	3067.58	766.78	595.58	8.14	0.005	425.52	1.556	s
EU-152	1	3114.89	778.61	563.19	31.64	0.018	107.56	1.567	s
BI-212	1	3142.06	785.40	644.37	-19.90	-0.011	181.80	1.572	s
CS-134	1	3187.51	796.76	589.01	-32.13	-0.018	108.27	1.582	s
CS-134	1	3200.48	800.00	495.43	8.42	0.005	375.51	1.587	s
TL-208	1	3436.91	859.10	679.45	-10.19	-0.006	362.98	1.638	s
EU-154	1	3494.72	873.55	793.65	-24.15	-0.013	166.21	1.649	s
Pa-234	1	3533.85	883.33	808.77	25.07	0.014	161.70	1.657	s
Pa-234	1	3540.79	885.07	558.48	-4.28	-0.002	782.67	1.655	s

AC-228	1	3644.93	911.10	893.18	37.60	0.021	107.30	1.681	s
Pa-234	1	3785.95	946.36	1037.73	16.18	0.009	282.65	1.710	s
EU-152	1	3855.02	963.62	923.34	22.74	0.013	190.16	1.726	s
AC-228	1	3873.68	968.29	846.44	-10.89	-0.006	379.10	1.730	s
EU-154	1	3995.81	998.82	613.19	-1.64	-0.001	2141.18	1.753	s
PA-234M	1	4014.60	1003.52	551.53	55.46	0.031	61.37	1.756	s
EU-154	1	4019.63	1004.77	766.65	0.00	0.000	3915.72	1.760	s
EU-152	1	4447.58	1111.78	680.59	18.68	0.010	198.89	1.847	s
BI-214	1	4481.62	1120.29	591.16	-4.57	-0.003	1306.40	1.854	s
CO-60	1	4691.35	1172.73	328.00	9318.00	5.177	1.19	1.856	
EU-154	1	5096.56	1274.06	85.60	4.28	0.002	309.30	1.975	s
CO-60	1	5327.90	1331.92	91.50	8622.50	4.790	1.14	2.113	
EU-152	1	5622.44	1405.59	32.89	1.64	0.001	500.75	2.076	s
K-40	1	5841.86	1460.48	53.83	8.32	0.005	52.41	2.115	s
BI-214	1	7054.18	1763.79	32.59	6.20	0.003	97.05	2.326	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Code	Library Used	Average Activity Becquerels	Peak Energy keV	Peak Activity Becquerels		Analysis Code		MDA Value Becquerels	Code	Comments	
EU-154	T F I	1	-8.729E+000	873.23	-8.729E+000	%	(		4.842E+001G		3.1E+003	12.27
			-8.729E+000	123.10	1.205E-001	%			6.000E+000G		3.1E+003	40.79
			-8.729E+000	1274.54	7.183E-001	&			7.686E+000G		3.1E+003	35.19
			-8.729E+000	723.36	1.652E-002	&			1.920E+001G		3.1E+003	20.22
			-8.729E+000	1004.77	0.000E+000	%			3.598E+001G		3.1E+003	18.01
			-8.729E+000	996.33	-7.548E-001	&			5.447E+001G		3.1E+003	10.60
CS-134	T F I	1	6.947E-002	604.71	6.947E-002	%	(		4.776E+000G		7.5E+002	97.62
			6.947E-002	795.87	-1.556E+000	&			5.609E+000G		7.5E+002	85.53
			6.947E-002	569.32	0.000E+000	&		}	2.492E+001G		7.5E+002	15.38
			6.947E-002	801.95	4.036E+000	&			5.102E+001G		7.5E+002	8.69
			6.947E-002	563.24	1.331E+001	%			4.527E+001G		7.5E+002	8.35
I-131	T F I	1	-6.871E-001	364.48	-6.871E-001	&	(		4.386E+000G		8.0E+000	81.70
			-6.871E-001	284.30	-3.961E+000	%			4.998E+001G		8.0E+000	6.14
			-6.871E-001	636.97	1.092E+001	%			5.447E+001G		8.0E+000	7.17
EU-155	T F I	1	-6.503E-001	105.31	-6.503E-001	&	(		1.136E+001G		1.8E+003	21.20
			-6.503E-001	86.54	-3.698E+000	%			1.261E+001G		1.8E+003	30.70
			5.932E+000	338.32	1.119E+001	%		P	2.728E+001G		2.1E+003	12.01
			5.932E+000	93.35	3.017E+000	%		}	E 4.660E+001X	A	2.1E+003	5.56
AC-228	N	1	5.932E+000	911.07	5.932E+000	%	(	P	2.240E+001G		2.1E+003	29.00
			5.932E+000	968.97	-2.986E+000	&			3.793E+001G		2.1E+003	17.46
CO-60	T F	1	5.217E+002	1332.50	5.274E+002		(		2.892E+000G		1.9E+003	99.98
			5.217E+002	1173.24	5.161E+002		(		4.824E+000G		1.9E+003	99.90
CS-137	T F I	1	5.165E+002	661.66	5.165E+002		(		4.914E+000G		1.1E+004	85.21
K-40	N	1	5.141E+000	1460.83	5.141E+000	*	(	P	2.279E+001G		4.7E+011	10.67
Pa-234	N	1	4.844E-001	131.29	4.844E-001	%	(		1.264E+001G		1.6E+012	18.00
			4.844E-001	569.47	4.844E-001	&			4.725E+001G		1.6E+012	8.20
			4.844E-001	946.02	5.680E+000	&			5.365E+001G		1.6E+012	13.40
			4.844E-001	883.24	1.168E+001	%			6.299E+001G		1.6E+012	9.60
			4.844E-001	880.53	-3.181E+000	&			8.390E+001G		1.6E+012	6.00
PB-212	N	1	3.884E+000	238.63	3.884E+000	*	(	P	7.090E+000G		7.0E+002	43.30
			3.884E+000	300.03	-8.485E+000	%			8.657E+001G		7.0E+002	3.28
RA-224	N	1	-3.840E+000	240.99	-3.840E+000	*	(		7.713E+001G		7.0E+002	4.10
PA-234	N	1	3.250E+002	1001.00	3.250E+002	&	(		6.573E+002G		1.6E+012	.84
			3.250E+002	766.41	1.116E+002	&			1.596E+003G		1.6E+012	.29
BI-214	N	1	2.805E+000	609.31	2.805E+000	%	(	P	8.766E+000G		5.8E+005	46.09
			2.805E+000	1120.29	-1.617E+000	%		P	4.103E+001G		5.8E+005	15.10
			2.805E+000	1764.49	3.126E+000	&		P	1.478E+001G		5.8E+005	15.40
PB-214	N	1	2.441E+000	351.93	2.441E+000	%	(	P	9.103E+000G		5.8E+005	37.60
			2.441E+000	295.09	3.157E+000	%		P	1.518E+001G		5.8E+005	19.30
			2.441E+000	242.00	-5.114E+000	%			4.115E+001G		5.8E+005	7.43
TL-208	F N	1	2.220E+000	583.02	2.220E+000	*	(	P	4.717E+000G		7.0E+002	84.50
			2.220E+000	277.28	3.050E+000	%			4.251E+001G		7.0E+002	6.31
			2.220E+000	860.56	-3.601E+000	%			4.386E+001G		7.0E+002	12.42
TH-234	N	1	-1.950E+002	63.29	-1.950E+002	?	(	P	7.918E+001G		1.6E+012	4.82

				-1.950E+002	92.59	1.454E+000	%	P	4.564E+001G	1.6E+012	5.58
EU-152	T F		1	1.740E+001	344.29	-2.809E+000	%	(	1.183E+001G	4.9E+003	26.50
				1.740E+001	121.78	3.614E+001	*	(	8.288E+000G	4.9E+003	28.58
				1.740E+001	778.92	9.971E+000	%		3.571E+001G	4.9E+003	12.94
				1.740E+001	964.11	7.427E+000	&		4.714E+001G	4.9E+003	14.61
				1.740E+001	1112.07	7.269E+000	%		4.837E+001G	4.9E+003	13.64
				1.740E+001	1408.00	4.991E-001	&		8.960E+000G	4.9E+003	21.00
PB-210		N	1	1.550E+004	46.54	1.550E+004	*	(P	2.680E+002G	8.1E+003	4.25
BE-7		N P C	1	-1.460E+001	477.60	-1.460E+001	%	(	4.322E+001G	5.3E+001	10.52
AM-241	T		1	1.382E+003	59.54	1.382E+003	*	(	1.786E+001G	1.6E+005	35.90
				1.070E+000	93.35	1.070E+000	%	E	4.461E+001X	2.6E+011	5.81
U-235		N	1	1.070E+000	143.79	1.070E+000	&	(P	2.171E+001G	2.6E+011	10.96
				1.070E+000	205.33	-1.707E+001	%		5.551E+001G	2.6E+011	5.01
				1.070E+000	163.38	-2.558E-001	&		4.409E+001G	2.6E+011	5.08
BI-212		N	1	1.023E+000	727.33	1.023E+000	&	(	3.077E+001G	7.0E+002	11.82
				1.023E+000	785.51	-7.423E+001	%		4.514E+002G	7.0E+002	1.10

Analysis Codes:

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\- = Peak activity lower than counting uncertainty range

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Nuclide Codes:

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P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

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G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity Bq/sample	Time Corrected Activity Bq/sample	Uncertainty Counts 1 Sigma %	Uncertainty Total 1 Sigma %	Minimum Detectable Activity
BE-7	<	-1.460E+001		89.34	89.38	4.322E+001
K-40	<	5.141E+000	5.141E+000	122.99	123.03	2.279E+001
CO-60		5.217E+002	8.526E+002	0.82	2.96	2.892E+000
I-131	<	-6.871E-001		191.43	191.45	4.386E+000
CS-134	<	6.947E-002	2.434E-001	2,046.48	2,046.48	4.776E+000
CS-137		5.165E+002	5.631E+002	1.07	3.09	4.914E+000
EU-152	<	1.740E+001	2.107E+001	7.67	8.20	1.183E+001
EU-154	<	-8.729E+000	-1.180E+001	166.21	166.23	4.842E+001
RA-224	<	-3.840E+000	-1.489E+001	601.63	601.64	7.713E+001
PB-210	#	1.550E+004	1.741E+004	1.03	4.03	2.680E+002
PB-212	#	3.884E+000	1.506E+001	55.30	55.38	7.090E+000
PB-214	<	2.441E+000	2.445E+000	112.00	112.03	9.103E+000
Pa-234	<	4.844E-001	4.844E-001	781.18	781.19	1.264E+001
AM-241	#	1.382E+003	1.390E+003	0.86	3.96	1.786E+001
EU-155	<	-6.503E-001	-1.096E+000	523.85	523.86	1.136E+001
TL-208	<	2.220E+000	8.610E+000	64.23	64.30	4.717E+000
BI-212	<	1.023E+000	3.967E+000	888.24	888.25	3.077E+001
BI-214	<	2.805E+000	2.810E+000	93.82	93.86	8.766E+000
AC-228	<	5.932E+000	9.305E+000	113.51	113.55	2.240E+001
TH-234	<	-1.950E+002	-1.950E+002	13.80	14.28	7.918E+001
PA-234M	<	3.250E+002	3.250E+002	61.37	61.44	6.573E+002
U-235	<	1.070E+000	1.070E+000	607.48	607.49	2.171E+001

= All peaks for activity calculation had bad shape

Total Activity (37.87 to 2,000.50 keV) 17,922.50 Bq/sample

Analyzed by: _____

403605

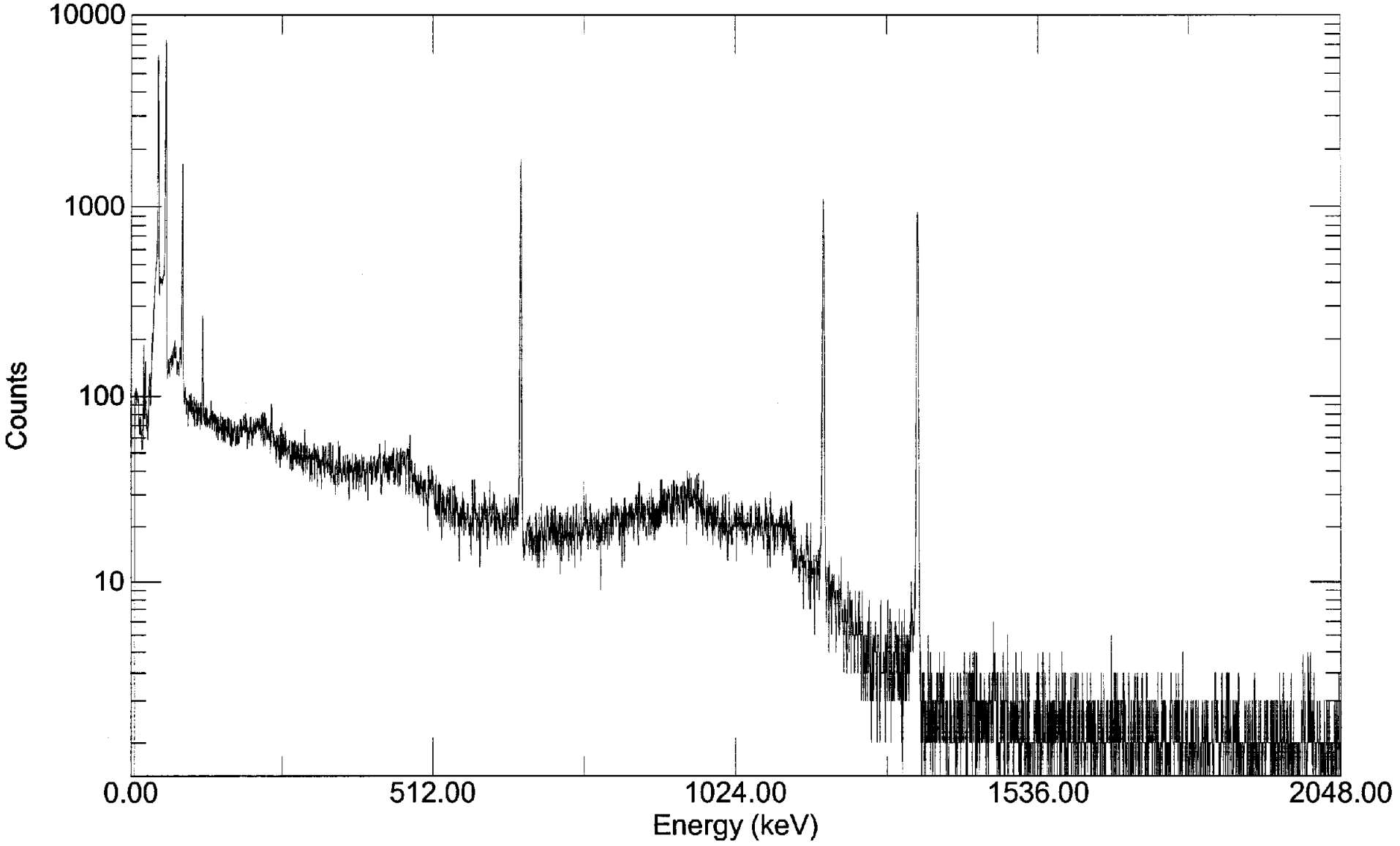
Reviewed by: _____

Supervisor

Laboratory: STL- St Louis

KER4G1AC

7360292_KER4G1AC_F7L260000-292C



Acquired: 26-Dec-2007 5:00:58 PM
File: C:\User\spectra\KER4G1AC.spc
Detector: #0 Ge 3 SN/155

Real Time: 1826.94 s. Live Time: 1800.00 s.
Channels: 8192