

# TRANSMITTAL

# AAI

Ardaman & Associates, Inc.

**To:** Michael Pisani and Associates  
1100 Poydrast Ste 1430  
New Orleans, LA 70163

**Date:** June 21, 2010

**Job No.:** 10-83-3896

**Project:** East White Lake

**Fax:**

**Attention:** Randy Graves

**From:** Robb Jewell, E.I.

COPIES	DESCRIPTION
1	Laboratory Test Result
1	Chain of Custody

**THESE ARE TRANSMITTED:**

FOR YOUR USE     FOR REVIEW & COMMENT     AS REQUESTED

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

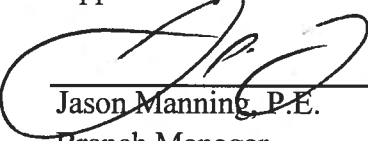
\_\_\_\_\_

\_\_\_\_\_

Reviewed By:

  
Robb Jewell, E.I.

Approved By:

  
Jason Manning, P.E.  
Branch Manager

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AASHTO Accredited Laboratory  
LELAP Certificate No. 02052

316 HIGHLANDIA DRIVE  
BATON ROUGE, LA 70810  
PHONE: (225) 752-4790  
FAX: (225) 752-4878

## LABORATORY TEST RESULTS TABLE 1

Date Tested	Sample ID	Depth (ft.)	Moisture Content (%)	Dry Density (lbs./cu.ft.)	Total Porosity (decimal)	Specific Gravity	Permeability (cm/sec)	Soil pH	Organic Content (%)	ASTM DA318			Material finer than No. 200 Sieve	Classification
										LL	PL	PI		
6/15/2010	SB 1B	14-15	30.92	91.2			6.31x10 <sup>-9</sup>							Light brown and gray clay

Note:



Project: East White Lake  
Client: Michael Pisani & Associates

File No.: 10-83-3896  
Date: 6/21/2010





June 4, 2010

Analytical Report for Service Request No: K1005311

David Lingle  
URS Corporation  
9801 Westheimer, Suite 500  
Houston, TX 77042

**RE: East White Lake UPSB/07-47**

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 24, 2010. For your reference, these analyses have been assigned our service request number K1005311.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at [www.caslab.com](http://www.caslab.com). All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at [PDivvela@caslab.com](mailto:PDivvela@caslab.com).

Respectfully submitted,

**Columbia Analytical Services, Inc.**

Pradeep Divvela  
Project Chemist

PD/kd

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### Inorganic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
  - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

### Organic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- p The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**Columbia Analytical Services, Inc.**  
**Kelso, WA**  
**State Certifications, Accreditations, and Licenses**

<b>Program</b>	<b>Number</b>
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-



## **Case Narrative**

COLUMBIA ANALYTICAL SERVICES, INC.

**Client:** URS Corporation  
**Project:** East White Lake UPSB  
**Sample Matrix:** Soil

**Service Request No.:** K1005311  
**Date Received:** 05/24/10

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two soil samples were received for analysis at Columbia Analytical Services on 05/24/10. The samples were received in good condition and consistent with the accompanying chain of custody form except as noted. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Simultaneously Extractable Metals

No anomalies associated with the analysis of these samples were observed.

Approved by \_\_\_\_\_ Date 06/04/10

## **Chain of Custody**





**Columbia Analytical Services, Inc.  
Cooler Receipt and Preservation Form**

PC PD

Client / Project: Michael Pisanit Assoc. Service Request K10 5311

Received: 5/24/2010 Opened: 5/24/2010 By: JF

1. Samples were received via? Mail  Fed Ex  UPS  DHL  PDX  Courier  Hand Delivered
2. Samples were received in: (circle) Cooler  Box  Envelope  Other \_\_\_\_\_ NA
3. Were custody seals on coolers? NA  Y  N If yes, how many and where? \_\_\_\_\_  
If present, were custody seals intact? Y  N  If present, were they signed and dated? Y  N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
12.6	NA	259	NA	8722 9044 5090		

7. Packing material used. Inserts Buggies  Bubble Wrap  Gel Packs  Wet Ice  Sleeves  Other \_\_\_\_\_
8. Were custody papers properly filled out (ink, signed, etc.)? NA  Y  N
9. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA  Y  N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA  Y  N
11. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA  Y  N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA  Y  N
13. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below  NA  Y  N
14. Were VOA vials received without headspace? Indicate in the table below  NA  Y  N
15. Was C12/Res negative?  NA  Y  N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
All	2		X								

Notes, Discrepancies, & Resolutions: OK to proceed for temp violation per David's email on 05/25/10

## **Total Solids**

Analytical Results

Client: URS Corporation  
 Project: East White Lake UPSB/07-47  
 Sample Matrix: Soil

Service Request: K1005311

Total Solids

Prep Method: NONE  
 Analysis Method: 160.3M  
 Test Notes:

Units: PERCENT  
 Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
Sed-Bk-11	K1005311-001	05/19/2010	05/24/2010	05/27/2010	24.8	
Sed-Bk-10	K1005311-002	05/19/2010	05/24/2010	05/27/2010	22.2	

Client: URS Corporation  
 Project: East White Lake UPSB/07-47  
 Sample Matrix: Soil

Service Request: K1005311  
 Date Collected: 05/19/2010  
 Date Received: 05/24/2010  
 Date Analyzed: 05/27/2010

Duplicate Sample Summary  
 Total Solids

Prep Method: NONE  
 Analysis Method: 160.3M  
 Test Notes:

Units: PERCENT  
 Basis: Wet

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Sed-Bk-11	K1005311-001	24.8	24.8	24.8	<1	

**COLUMBIA ANALYTICAL SERVICES, INC.**

**EPA Method 160.3 - Total Solids**

Group ID:	KWG1004934		
Analyst:	SARWOOD	Reviewed By:	<u>B. Utter</u>
Date Acquired:	05/27/2010 08:27	Oven TempStart:	105 DEG C
Date Completed:	05/28/2010 06:15	Oven TempEnd:	105 DEG C
		Date Reviewed:	<u>5/18/10</u>

202379

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
1	K1005052-001	Truck Wash	SOIL	1.30g	27.77g	23.20g	82.7		
2	K1005125-001	6F-ACE-2-051910	SOIL	1.31g	9.01g	5.94g	60.1		
3	K1005125-002	5F-ASH-3-051910	SOIL	1.30g	8.90g	5.47g	54.9		
4	K1005125-003	6F-HgCl-5-051910	SOIL	1.32g	11.80g	7.35g	57.5		
5	K1005125-004	6F-Non-9-051910	SOIL	1.31g	10.03g	6.52g	59.7		
6	K1005125-005	5F-Non-21-051910	SOIL	1.31g	12.52g	7.95g	59.2		
7	K1005125-006	7F-Non-22-051910	SOIL	1.32g	11.75g	8.11g	65.1		
8	K1005125-007	7F-FL-23-051910	SOIL	1.32g	25.99g	14.78g	54.6		
9	K1005125-008	7F-ASH-24-051910	SOIL	1.31g	12.34g	7.99g	60.6		
10	K1005184-001	F0105460	SOIL	1.34g	15.36g	11.71g	74.0		
11	K1005184-002	F0105461	SOIL	1.33g	11.62g	9.22g	76.7		
12	K1005184-003	F0105462	SOIL	1.33g	11.09g	6.20g	49.9		
13	K1005184-004	F0105463	SOIL	1.32g	19.48g	15.83g	79.9		
14	K1005270-002	SO-56394-052110-DR-1128	SOIL	1.31g	13.39g	11.93g	87.9		
15	K1005270-003	SO-56394-052110-DR-1129	SOIL	1.32g	16.99g	15.20g	88.6		
16	K1005270-004	SO-56394-052110-DR-1130	SOIL	1.31g	10.60g	9.51g	88.3		
17	K1005270-005	SO-56394-052110-CB-245	SOIL	1.30g	11.98g	11.37g	94.3		
18	K1005270-006	SO-56394-052110-CB-246	SOIL	1.31g	9.50g	9.03g	94.3		
19	K1005270-007	SO-56394-052110-CB-247	SOIL	1.31g	11.50g	11.04g	95.5		
20	K1005270-008	SO-56394-052110-CB-248	SOIL	1.32g	13.90g	11.78g	83.1		
21	K1005270-009	SO-56394-052110-CB-249	SOIL	1.31g	17.55g	16.60g	94.2		
22	K1005270-010	SO-56394-052110-CB-250	SOIL	1.31g	14.96g	14.57g	97.1		
23	K1005270-011	SO-56394-052110-CB-251	SOIL	1.30g	11.96g	11.32g	94.0		
24	K1005270-012	SO-56394-052110-CB-252	SOIL	1.31g	22.39g	20.92g	93.0		
25	K1005270-013	SO-56394-052110-CB-253	SOIL	1.31g	17.40g	16.44g	94.0		
26	K1005270-014	SO-56394-052110-CB-254	SOIL	1.31g	20.32g	18.75g	91.7		

Group ID: KWG1004934

Analyst: SARwood

Date Acquired: 05/27/2010 08:27

Date Completed: 05/28/2010 06:15

Oven TempStart: 105 DEG C

Oven TempEnd: 105 DEG C

Reviewed By: B. Waters

Date Reviewed: 5/28/10

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
27	K1005270-015	SO-56394-052110-CB-255	SOIL	1.30g	15.58g	13.32g	84.2		
28	K1005270-016	SO-56394-052110-CB-256	SOIL	1.31g	14.69g	12.82g	86.0		
29	K1005270-017	SO-56394-052110-CB-257	SOIL	1.32g	19.10g	17.23g	89.5		
30	K1005270-018	SO-56394-052110-CB-258	SOIL	1.31g	22.66g	21.18g	93.1		
31	K1005270-019	SO-56394-052110-CB-259	SOIL	1.31g	31.04g	27.87g	89.3		
32	K1005282-001	SJNE 050-CR1C	SEDIMENT	1.34g	11.93g	5.28g	37.2		
33	K1005282-002	SJNE 050-CR1D	SEDIMENT	1.32g	12.95g	7.04g	49.2		
34	K1005282-003	SJNE 050-CR1E	SEDIMENT	1.31g	12.76g	6.25g	43.1		
35	K1005282-004	SJNE 050-CR1F	SEDIMENT	1.30g	9.98g	5.41g	47.4		
36	K1005282-005	SJNE 050-CR1G	SEDIMENT	1.31g	12.20g	8.96g	70.2		
37	K1005282-006	SJNE 043-CR1A	SEDIMENT	1.31g	19.16g	15.97g	82.1		
38	K1005282-007	SJNE 043-CR1B	SEDIMENT	1.33g	19.93g	15.77g	77.6		
39	K1005282-008	SJNE 043-CR1C	SEDIMENT	1.32g	10.73g	8.73g	78.7		
40	K1005282-009	SJNE 043-CR1D	SEDIMENT	1.33g	15.57g	12.36g	77.5		
41	K1005282-010	SJNE 043-CR1E	SEDIMENT	1.31g	12.26g	10.08g	80.1		
42	K1005282-011	SJNE 030-CR1A	SEDIMENT	1.31g	14.27g	10.00g	67.1		
43	K1005282-012	SJNE 030-CR1B	SEDIMENT	1.32g	15.32g	12.38g	79.0		
44	K1005282-013	SJNE 030-CR1C	SEDIMENT	1.32g	13.70g	10.33g	72.8		
45	K1005282-014	SJNE 030-CR1D	SEDIMENT	1.33g	14.64g	11.39g	75.6		
46	K1005282-015	SJNE 030-CR1E	SEDIMENT	1.32g	24.93g	21.32g	84.7		
47	K1005311-001	Sed-Bk-11	SOIL	1.33g	9.07g	3.25g	24.8		
48	K1005311-002	Sed-Bk-10	SOIL	1.32g	9.21g	3.07g	22.2		
49	K1005333-001	10E0632-01	MISC.	1.33g	10.98g	10.55g	95.5		
			SOLID						
50	K1005338-001	SO-56394-052410-DR-1131	SOIL	1.33g	36.68g	34.46g	93.7		
51	K1005338-002	SO-56394-052410-DR-1132	SOIL	1.32g	12.00g	9.96g	80.9		
52	K1005338-003	SO-56394-052410-DR-1133	SOIL	1.32g	17.24g	15.99g	92.1		
53	K1005338-004	SO-56394-052410-DR-1134	SOIL	1.32g	27.82g	25.51g	91.3		
54	K1005338-005	SO-56394-052410-DR-1135	SOIL	1.32g	32.95g	31.81g	96.4		
55	K1005338-006	SO-56394-052410-DR-1136	SOIL	1.33g	21.86g	20.49g	93.3		
56	K1005338-007	SO-56394-052410-DR-1137	SOIL	1.32g	17.43g	16.81g	96.2		

Group ID: KWG1004934

Analyst: SARwood

Date Acquired: 05/27/2010 08:27

Date Completed: 05/28/2010 06:15

Oven TempStart: 105 DEG C

Oven TempEnd: 105 DEG C

Reviewed By: *B. Winters*

Date Reviewed: 5/28/10

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
57	K1005338-008	SO-56394-052410-DR-1138	SOIL	1.33g	16.72g	16.07g	95.8		
58	K1005338-009	SO-56394-052410-DR-1139	SOIL	1.33g	15.99g	15.48g	96.5		
59	K1005338-010	SO-56394-052410-DR-1140	SOIL	1.32g	17.83g	17.16g	95.9		
60	K1005338-011	SO-56394-052410-CB-260	SOIL	1.31g	12.80g	12.12g	94.1		
61	K1005338-012	SO-56394-052410-CB-261	SOIL	1.32g	12.77g	12.43g	97.0		
62	K1005338-013	SO-56394-052410-CB-262	SOIL	1.33g	12.81g	12.05g	93.4		
63	K1005338-014	SO-56394-052410-CB-263	SOIL	1.32g	13.31g	12.93g	96.8		
64	K1005338-015	SO-56394-052410-CB-264	SOIL	1.33g	17.17g	16.22g	94.0		
65	K1005338-016	SO-56394-052410-CB-265	SOIL	1.33g	15.66g	15.18g	96.7		
66	K1005338-017	SO-56394-052410-CB-266	SOIL	1.33g	13.25g	12.51g	93.8		
67	K1005338-021	SO-56394-052410-CB-270	SOIL	1.33g	14.97g	14.51g	96.6		
68	K1005338-022	SO-56394-052410-CB-271	SOIL	1.32g	12.77g	12.39g	96.7		
69	K1005338-023	SO-56394-052410-CB-272	SOIL	1.32g	10.77g	10.26g	94.6		
70	K1005338-024	SO-56394-052410-CB-273	SOIL	1.33g	13.22g	12.73g	95.9		
71	K1005338-025	SO-56394-052410-CB-274	SOIL	1.33g	13.25g	12.54g	94.0		
72	K1005338-026	SO-56394-052410-CB-275	SOIL	1.33g	12.87g	12.51g	96.9		
73	K1005338-027	SO-56394-052410-CB-276	SOIL	1.34g	13.24g	11.18g	82.7		
74	K1005338-028	SO-56394-052410-CB-278	SOIL	1.34g	16.16g	15.52g	95.7		
75	K1005338-029	SO-56394-052410-CB-279	SOIL	1.32g	11.80g	11.17g	94.0		
76	K1005338-030	SO-56394-052410-CB-280	SOIL	1.33g	16.52g	15.11g	90.7		
77	K1005338-031	SO-56394-052410-CB-277	SOIL	1.32g	16.45g	14.08g	84.3		
78	K1005338-032	SO-56394-052410-CB-281	SOIL	1.31g	16.80g	15.86g	93.9		
79	K1005351-001	SINE 001-GR1	SEDIMENT	1.32g	15.55g	7.39g	42.7		
80	K1005351-002	SINE 004-GR1	SEDIMENT	1.33g	14.06g	8.19g	53.9		
81	K1005351-003	SINE 005-GR1	SEDIMENT	1.31g	20.80g	14.28g	66.5		
82	K1005351-004	SISH 056-GR1	SEDIMENT	1.32g	11.51g	7.66g	62.2		
83	K1005351-005	SISH 057-GR1	SEDIMENT	1.30g	17.61g	10.52g	56.5		
84	K1005351-006	SISH 058-GR1	SEDIMENT	1.31g	15.20g	8.72g	53.3		
85	K1005351-007	SIGB 008-GR1	SEDIMENT	1.31g	15.08g	10.49g	66.7		
86	K1005351-008	SIGB 005-GR1	SEDIMENT	1.32g	18.65g	10.56g	53.3		
87	K1005351-009	SIGB 007-GR1	SEDIMENT	1.31g	14.08g	6.75g	42.6		



Group ID: KWG1004934

Analyst: SARWOOD

Date Acquired: 05/27/2010 08:27

Date Completed: 05/28/2010 06:15

Oven TempStart: 105 DEG C

Oven TempEnd: 105 DEG C

Reviewed By: *B. Watts*

Date Reviewed: 5/28/10

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
88	K1005351-010	SJNE 050-GR1	SEDIMENT	1.32g	18.92g	14.93g	77.3		
89	K1005351-011	SJSH 064-GR1-1	SEDIMENT	1.31g	12.14g	9.37g	74.4		
90	K1005351-012	SJSH 064-GR1-2	SEDIMENT	1.32g	10.99g	8.58g	75.1		
91	K1005351-013	SJSH 063-GR1	SEDIMENT	1.31g	16.41g	13.35g	79.7		
92	K1005351-014	SJSH 062-GR1	SEDIMENT	1.30g	19.76g	14.84g	73.3		
93	K1005351-015	SJNE 067-GR1	SEDIMENT	1.31g	13.51g	10.54g	75.7		
94	K1005351-016	SJNE 069-GR1	SEDIMENT	1.32g	16.20g	13.86g	84.3		
95	K1005351-017	SJNE 070-GR1	SEDIMENT	1.32g	24.44g	19.62g	79.2		
96	K1005351-018	SJWRP-001	SEDIMENT	1.31g	7.38g	7.31g	98.8		
97	K1005351-021	SJNE 066-GR1	SEDIMENT	1.32g	25.11g	18.90g	73.9		
98	K1005352-001	SJNE 050-GR1	SEDIMENT	1.31g	15.65g	11.86g	73.6		
99	K1005352-002	SJNE 067-GR1	SEDIMENT	1.30g	14.24g	10.93g	74.4		
100	K1005352-003	SJNE 069-GR1	SEDIMENT	1.29g	13.28g	11.02g	81.2		
101	K1005352-004	SJNE 070-GR1	SEDIMENT	1.30g	13.85g	10.17g	70.7		
102	K1005352-005	SJNE 066-GR1	SEDIMENT	1.30g	14.66g	11.01g	72.7		
103	K1005353-004	SJGB 013 S4	SEDIMENT	1.29g	15.17g	11.04g	70.2		
104	K1005353-006	SJGB 014 S1	SEDIMENT	1.31g	10.87g	5.95g	48.5		
105	K1005353-010	SJGB 014 S5	SEDIMENT	1.33g	11.07g	7.70g	65.4		
106	K1005353-015	SJGB 015 S5	SEDIMENT	1.32g	20.67g	14.63g	68.8		
107	K1005353-018	SJGB 016 S3	SEDIMENT	1.31g	11.12g	8.42g	72.5		
108	K1005353-024	SJGB 017 S5	SEDIMENT	1.30g	12.13g	9.19g	72.9		
109	K1005355-005	DHSD-02	SEDIMENT	1.31g	21.03g	16.82g	78.7		
110	K1005355-007	DHSD-03	SEDIMENT	1.30g	19.27g	14.61g	74.1		
111	K1005355-010	DHSD-05	SEDIMENT	1.30g	12.64g	10.44g	80.6		
112	K1005355-011	DHSD-04	SEDIMENT	1.31g	19.28g	14.28g	72.2		
113	K1005356-001	NP-1	SLUDGE	1.32g	15.48g	2.44g	7.91		
114	K1005356-002	NP-2	SLUDGE	1.32g	16.82g	2.66g	8.65		
115	K1005356-003	NP-3	SLUDGE	1.31g	19.20g	2.77g	8.16		
116	K1005356-004	NP-4	SLUDGE	1.32g	19.89g	2.84g	8.19		
117	K1005356-005	NP-5	SLUDGE	1.31g	21.22g	2.94g	8.19		
118	K1005356-006	NP-6	SLUDGE	1.31g	16.65g	2.60g	8.41		

Group ID: KWG1004934

Analyst: SARWOOD

Date Acquired: 05/27/2010 08:27

Date Completed: 05/28/2010 06:15

Oven TempStart: 105 DEG C

Oven TempEnd: 105 DEG C

Reviewed By: B. Hatcher

Date Reviewed: 5/28/10

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
119	K1005356-007	NP-7	SLUDGE	1.31g	22.84g	3.09g	8.27		
120	K1005356-008	NP-8	SLUDGE	1.31g	21.20g	2.95g	8.25		
121	K1005357-001	SJNE 029-CR1A	SEDIMENT	1.32g	10.10g	5.57g	48.4		
122	K1005357-002	SJNE 029-CR1B	SEDIMENT	1.32g	11.58g	5.40g	39.8		
123	K1005357-003	SJNE 029-CR1C	SEDIMENT	1.32g	12.71g	7.25g	52.1		
124	K1005357-004	SJNE 029-CR1D	SEDIMENT	1.31g	13.41g	10.19g	73.4		
125	K1005357-005	SJNE 029-CR1E	SEDIMENT	1.31g	10.11g	7.65g	72.0		
126	K1005357-006	SJNE 029-CR1F	SEDIMENT	1.31g	11.23g	8.27g	70.2		
127	K1005357-007	SJNE 029-CR1G	SEDIMENT	1.32g	14.53g	11.07g	73.8		
128	K1005357-008	SJNE 029-CR1H	SEDIMENT	1.32g	10.48g	7.76g	70.3		
129	K1005357-009	SJNE 029-CR1I	SEDIMENT	1.32g	14.89g	11.41g	74.4		
130	K1005357-010	SJNE 028-CR1A	SEDIMENT	1.31g	12.62g	8.91g	67.2		
131	K1005357-011	SJNE 028-CR1B	SEDIMENT	1.32g	15.78g	11.24g	68.6		
132	K1005357-012	SJNE 028-CR1C	SEDIMENT	1.30g	11.44g	8.33g	69.3		
133	K1005357-013	SJNE 028-CR1D	SEDIMENT	1.31g	9.89g	7.72g	74.7		
134	K1005357-014	SJNE 028-CR1E	SEDIMENT	1.30g	11.25g	8.73g	74.7		
135	K1005357-015	SJNE 028-CR1F	SEDIMENT	1.31g	11.21g	7.34g	60.9		
136	K1005357-016	SJNE 028-CR1G	SEDIMENT	1.32g	11.39g	8.34g	69.7		
137	K1005357-017	SJNE 028-CR1H	SEDIMENT	1.31g	11.70g	8.50g	69.2		
138	K1005357-018	SJNE 032-CR1A	SEDIMENT	1.30g	11.57g	7.08g	56.3		
139	K1005357-019	SJNE 032-CR1B	SEDIMENT	1.30g	10.53g	6.26g	53.7		
140	K1005357-020	SJNE 032-CR1C	SEDIMENT	1.30g	14.35g	8.39g	54.3		
141	K1005359-001	SJNE 032-CR1D	SEDIMENT	1.32g	10.63g	6.63g	57.0		
142	K1005359-002	SJNE 032-CR1E	SEDIMENT	1.31g	13.43g	8.95g	63.0		
143	K1005359-003	SJNE 032-CR1F	SEDIMENT	1.31g	13.26g	9.02g	64.5		
144	K1005359-004	SJNE 032-CR1G	SEDIMENT	1.29g	11.11g	7.17g	59.9		
145	K1005359-005	SJNE 032-CR1H	SEDIMENT	1.31g	12.02g	6.83g	51.5		
146	K1005359-006	SJNE 032-CR1I	SEDIMENT	1.31g	10.11g	5.78g	50.8		
147	K1005359-007	SJNE 035-CR1A	SEDIMENT	1.32g	11.80g	7.27g	56.8		
148	K1005359-008	SJNE 035-CR1B	SEDIMENT	1.33g	12.65g	9.67g	73.7		
149	K1005359-009	SJNE 035-CR1C	SEDIMENT	1.31g	12.45g	9.31g	71.8		

Group ID: KWG1004934

Analyst: SARWOOD

Date Acquired: 05/27/2010 08:27

Date Completed: 05/28/2010 06:15

Oven TempStart: 105 DEG C

Oven TempEnd: 105 DEG C

Reviewed By: B. W. Adams

Date Reviewed: 5/28/10

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
150	K1005359-010	SJNE 035-CR1D	SEDIMENT	1.31g	13.93g	10.17g	70.2		
151	K1005359-011	SJNE 035-CR1E	SEDIMENT	1.33g	10.64g	8.49g	76.9		
152	K1005359-012	SJNE 035-CR1F	SEDIMENT	1.33g	13.66g	10.68g	75.8		
153	K1005359-013	SJNE 035-CR1G	SEDIMENT	1.33g	10.73g	7.92g	70.1		
154	K1005359-014	SJNE 035-CR1H	SEDIMENT	1.32g	13.52g	9.50g	67.0		
155	K1005359-015	SJNE 035-CR1I	SEDIMENT	1.33g	10.61g	7.82g	69.9		
156	K1005359-018	SJNE 032-CR1J	SEDIMENT	1.34g	12.80g	8.25g	60.3		
157	KWG1004934-1	Duplicate Client Sample	SOIL	1.31g	10.34g	6.73g	60.0	K1005125-001	
158	KWG1004934-11	Duplicate Client Sample	SEDIMENT	1.31g	11.95g	5.80g	42.2	K1005351-001	
159	KWG1004934-12	Duplicate Client Sample	SEDIMENT	1.30g	13.90g	10.85g	75.8	K1005351-011	
160	KWG1004934-13	Duplicate Client Sample	SEDIMENT	1.30g	16.62g	12.49g	73.0	K1005352-001	
161	KWG1004934-14	Duplicate Client Sample	SEDIMENT	1.31g	11.44g	8.41g	70.1	K1005353-004	
162	KWG1004934-15	Duplicate Client Sample	SEDIMENT	1.31g	17.72g	13.52g	74.4	K1005355-007	
163	KWG1004934-16	Duplicate Client Sample	SLUDGE	1.31g	18.24g	2.69g	8.15	K1005356-001	
164	KWG1004934-17	Duplicate Client Sample	SEDIMENT	1.31g	19.07g	9.57g	46.5	K1005357-001	
165	KWG1004934-18	Duplicate Client Sample	SEDIMENT	1.30g	11.54g	8.53g	70.6	K1005357-011	
166	KWG1004934-19	Duplicate Client Sample	SEDIMENT	1.32g	10.55g	6.63g	57.5	K1005359-001	
167	KWG1004934-2	Duplicate Client Sample	SOIL	1.33g	11.07g	6.36g	51.6	K1005184-003	
168	KWG1004934-20	Duplicate Client Sample	SEDIMENT	1.32g	12.05g	9.66g	77.7	K1005359-011	
169	KWG1004934-21	Duplicate Client Sample	SEDIMENT	1.33g	12.01g	5.36g	37.7	K1005282-001	
170	KWG1004934-22	Duplicate Client Sample	SEDIMENT	1.34g	14.81g	10.39g	67.2	K1005282-011	
171	KWG1004934-3	Duplicate Client Sample	SOIL	1.32g	10.97g	9.96g	89.5	K1005270-002	
172	KWG1004934-4	Duplicate Client Sample	SOIL	1.30g	22.76g	21.22g	92.8	K1005270-012	
173	KWG1004934-5	Duplicate Client Sample	SOIL	1.33g	7.94g	2.97g	24.8	K1005311-001	
174	KWG1004934-6	Duplicate Client Sample	MISC. SOLID	1.31g	17.24g	16.37g	94.5	K1005333-001	
175	KWG1004934-7	Duplicate Client Sample	SOIL	1.32g	25.99g	24.39g	93.5	K1005338-006	
176	KWG1004934-8	Duplicate Client Sample	SOIL	1.31g	11.28g	10.95g	96.7	K1005338-014	
177	KWG1004934-9	Duplicate Client Sample	SOIL	1.32g	12.55g	12.18g	96.7	K1005338-024	

## **General Chemistry Parameters**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : URS Corporation  
Project Name : East White Lake UPSB  
Project Number : 07-47  
Sample Matrix : SOIL

Service Request : K1005311  
Date Collected : 05/19/10  
Date Received : 05/24/10

Sulfide, Acid-Volatile

Prep Method : METHOD  
Analysis Method : 821/R-91-100  
Test Notes :

Units : uMole/g  
Basis : Dry

Sample Name	Lab Code	MRL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
Sed-Bk-11	K1005311-001	0.13	2	5/27/2010	05/27/10	1.12	
Sed-Bk-10	K1005311-002	0.07	1	5/27/2010	05/27/10	0.11	
Method Blank	K1005311-MB	0.070	1	5/27/2010	05/27/10	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** URS Corporation  
**Project Name :** East White Lake UPSB  
**Project Number :** 07-47  
**Sample Matrix :** SOIL

**Service Request :** K1005311  
**Date Collected :** 5/19/2010  
**Date Received :** 5/24/2010  
**Date Prepared :** 05/27/10  
**Date Analyzed :** 05/27/10

Duplicate Summary  
Inorganic Parameters

**Sample Name :** Sed-Bk-11  
**Lab Code :** K1005311-001DUP  
**Test Notes :**

**Units :** uMole/g  
**Basis :** Dry

<b>Analyte</b>	<b>Prep Method</b>	<b>Analysis Method</b>	<b>MRL</b>	<b>Sample Result</b>	<b>Duplicate Sample Result</b>	<b>Average</b>	<b>Relative Percent Difference</b>	<b>Result Notes</b>
Sulfide, Acid-Volatile	METHOD	821/R-91-100	0.13	1.12	1.10	1.11	2	

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client :** URS Corporation  
**Project Name :** East White Lake UPSB  
**Project Number :** 07-47  
**Sample Matrix :** SOIL

**Service Request :** K1005311  
**Date Collected :** 5/19/2010  
**Date Received :** 5/24/2010  
**Date Prepared :** 05/27/10  
**Date Analyzed :** 05/27/10

Matrix Spike Summary  
 Inorganic Parameters

**Sample Name :** Sed-Bk-11  
**Lab Code :** K1005311-001MS  
**Test Notes :**

**Units :** uMole/g  
**Basis :** Dry

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS	Result Notes
								Percent Recovery Acceptance Limits	
Sulfide, Acid-Volatile	METHOD	821/R-91-100	6.3	71.4	1.12	66.1	91	53-143	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : URS Corporation  
Project Name : East White Lake UPSB  
Project Number : 07-47  
Sample Matrix : SOIL

Service Request : K1005311  
Date Collected : NA  
Date Received : NA  
Date Prepared : 05/27/10  
Date Analyzed : 05/27/10

Laboratory Control Sample Summary  
Inorganic Parameters

Sample Name : Laboratory Control Sample  
Lab Code : K1005311-LCS  
Test Notes :

Units : mg/Kg  
Basis : Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Sulfide, Acid-Volatile	METHOD	821/R-91-100	6.88	6.61	96	71-112	



# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** URS Corporation  
**Project :** East White Lake UPSB

**Service Request :** K1005311  
**Date Collected :** NA  
**Date Received :** NA

Sulfide, Acid-Volatile  
821/R-91-100  
Units: mg/L

## CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CCV1 Result	5/27/2010	1.72	1.63	95
CCV2 Result	5/27/2010	1.72	1.63	95
CCV3 Result	5/27/2010	1.72	1.64	95

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** URS Corporation  
**Project :** East White Lake UPSB

**Service Request :** K1005311  
**Date Collected :** NA  
**Date Received :** NA

Sulfide, Acid-Volatile  
821/R-91-100  
Units: mg/L

## CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CCB1 Result	5/27/2010	0.050	ND
CCB2 Result	5/27/2010	0.050	ND
CCB3 Result	5/27/2010	0.050	ND

Work Request # <sup>Original</sup> (K5311) K5430

Tier: III III

Date Analyzed: 5/27/10

Analyst: B. Hethland

Analysis: AYS/SEM 821/R-91-100 sulfide

Run# 202497

### DATA QUALITY REPORT INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1. Is the method name and number correct and appropriate? yes/no/NA
2. Holding times met for all analyses and for all samples? yes/no/NA
3. Are calculations correct? yes/no/NA
4. Is the reporting basis correct? (Dry Weight) yes/no/NA
5. All quality control criteria met? yes/no/NA
  - a. Is the calibration curve correlation coefficient  $\geq 0.995$ ? yes/no/NA
  - b. MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency? yes/no/NA
  - c. Are ICVs, CCVs, and CCBs all within acceptance limits? yes/no/NA
  - d. Are results for methods blanks all ND? yes/no/NA
  - e. Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.) yes/no/NA
  - f. Are all exceptions explained? yes/no/NA
6. Are all service requests that apply attached? yes/no/NA
7. Are all samples labelled correctly? yes/no/NA
8. Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample) yes/no/NA
9. Are detection limits and units reported correctly? yes/no/NA
10. Are proper Analysis/Extraction stickers included on report? yes/no/NA
11. Is the unused space on the benchsheet crossed out? yes/no/NA
12. Was analysis turned in by the due date? (n-2) (If not record SR#) yes/no/NA

**COMMENTS:**

2.) K5430-001 Received analyzed past hold time.  
12.) K5311 Rush due 6/3/10

Final Approved by: [Signature] Date: 6/1/10

DQREPORT

COLUMBIA ANALYTICAL SERVICES, INC.

*Run# 202497*

Work Order #: K5311 K5430  
 Analysis: Acid Volatile Sulfides

Method: 821/R-91-100

	STD1	STD 2	STD 3	STD 4	STD 5	STD 6	STD 7	(R) = 0.9995
Conc. (mg/L)	0.000	0.043	0.430	0.860	1.290	1.720	2.150	Slope = 0.6586
Absorbance	0.0000	0.0321	0.3105	0.6012	0.8790	1.1572	1.4072	Y Int. = 0.0159

Date Prep'd	Sample #	Dil. Factor	Absorb. @ 670 nm	Conc. from Curve (mg/L)	Actual Conc. (mg/L)	Initial Wt./Vol. (g) / (ml)	Final Vol. (ml)	A Tower mg/L (solution)	B Tower mg/L (solution)	A & B mg/L - mg/kg as rec'd	% Solid	mg/kg dry	umole/g reported	mri	mdl
5/27/2010	ICV	1	1.206	1.8063	1.8063	40	40	1.81		1.81				#####	#VALUE!
5/27/2010	ICB	1	0.000	-0.0241	<0.05	40	40	<0.05		<0.05				#####	#VALUE!
5/27/2010	CCB1	1	0.000	-0.0241	<0.05	40	40	<0.05		<0.05				#####	#VALUE!
5/27/2010	CCV1	1	1.090	1.6314	1.6314	40	40	1.63		1.63				#####	#VALUE!
5/27/2010	MB	1	0.002	-0.0218	<0.05	50	40	<0.05	-0.01	<0.05				#####	#VALUE!
5/27/2010	LCS	1	1.105	1.6534	1.6534	10	40	6.61	-0.06	6.61				#####	#VALUE!
5/27/2010	5311-1	2	0.487	0.7160	1.4320	6	40	8.87	-0.11	8.87	24.8	35.78	1.12	0.126	0.025
5/27/2010	5311-1d	2	0.480	0.7043	1.4086	6	40	8.73	-0.10	8.73	24.8	35.19	1.10	0.126	0.025
5/27/2010	5311-1ms	100	0.540	0.7953	79.5255	6	40	525.18	-0.09	525.18	24.8	2117.66	66.1	6.289	1.258
5/27/2010	5311-1msd	100	0.546	0.8050	80.4973	6	40	529.85	-0.06	529.85	24.8	2136.49	66.6	6.289	1.258
5/27/2010	5311-2	1	0.098	0.1250	0.1250	6.445	40	0.78	-0.11	0.78	22.2	3.50	0.11	0.070	0.014
5/27/2010	5430-1	1	0.273	0.3911	0.3911	10.059	40	1.56	-0.07	1.56	85.7	1.81	0.06	0.018	0.004
5/27/2010	5430-2	1	0.006	-0.0148	<0.05	10.058	40	<0.05	-0.06	<0.05	86.2	06806139	<0.005	0.018	0.004
5/27/2010	D LCS	1	1.019	1.5224	1.5224	10.001	40	6.09	-0.09	6.09				#####	#VALUE!
5/27/2010	CCV2	1	1.091	1.6317	1.6317	40	40	1.63		1.63				#####	#VALUE!
5/27/2010	CCB2	1	0.000	-0.0239	<0.05	40	40	<0.05		<0.05				#####	#VALUE!
5/27/2010	CCV3	1	1.093	1.6352	1.6352	40.000	40	1.64		1.64				#####	#VALUE!
5/27/2010	CCB3	1	0.000	-0.0241	<0.05	40.000	40	<0.05		<0.05				#####	#VALUE!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!

CCV = 2ml\*34.4mg/140ml = 1.72mg/L %REC = 95 95 95  
 LCS = 2ml\*34.4mg/ 10.001g = 6.88mg/kg %REC = 96 89  
 ICV = 2.25ml\*34.4mg/L/40ml = 1.94mg/l %REC = 93  
 MS = (1ml\*3440mg/L/6.057g\*(24.8%))/32.06 = 71.4umole/g %REC = 91 X=1.11 RPD=2%  
 MSD = (1ml\*3440mg/L/ 6.077g\*(24.8%))/32.06 = 71.2umole %REC = 92  
 STD ID# s2/2-2-1 CONC. = 3440mg/L

Distilled by: <i>B. Nelson</i>	Date Distilled: <i>5/27/10 1000</i>
Analyzed By: <i>B. Nelson</i>	Date Analyzed: <i>5/27/10</i>
Reviewed By: <i>[Signature]</i>	Date Reviewed: <i>6/1/10</i>



CALIBRATION

Date: 5/27/2010 Time: 3:53:20 PM  
Instrument: PerkinElmer Lambda 25 Serial No: 501S08110503  
Method: 5-27-10  
Ordinate mode: Single Wavelength  
Baseline: No correction ( 0.00 0.00 )  
Analyst: cfs

*BA 5/27/10*

Wavelength(s)	Sample ID	Concentration	Ord. value	Comment
670.0	0.0	5-27-10.A01 0.0000 mg/l	-0.000	
670.0	0.0	5-27-10.A02 0.0430 mg/l	0.0321	
670.0	0.0	5-27-10.A03 0.4300 mg/l	0.3105	
670.0	0.0	5-27-10.A04 0.8600 mg/l	0.6012	
670.0	0.0	5-27-10.A05 1.2900 mg/l	0.8790	
670.0	0.0	5-27-10.A06 1.7200 mg/l	1.1572	
670.0	0.0	5-27-10.A07 2.1500 mg/l	1.4072	

Equation:  $y = 1.583540e-02 + 6.586065e-01 * x$

Residual error: 0.018704  
Correlation coefficient: 0.999514

*300  
6/1/10*

Concentration Results

Date: 5/27/2010 Time: 3:54:23 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08110503  
 Method: 5-27-10  
 Ordinate mode: Single Wavelength  
 Slit: UV/VIS: 1.00 nm  
 Baseline: No correction ( 0.00 0.00 )  
 Result Filename: TEMP.RCO  
 Autozero performed: 5/27/2010 3:53:20 PM  
 Analyst: cfs

BH5127/10

Wavelength(s)	Sample ID	Ordinate	Factor	Concentration	Sample Info
670.0	0.0	ICV	1.2055	1.0000	1.8064 mg/l
670.0	0.0	ICB	0.0000	1.0000	-0.024 mg/l
670.0	0.0	CCB1	-0.000	1.0000	-0.024* mg/l
670.0	0.0	CCV1	1.0903	1.0000	1.6314 mg/l
670.0	0.0	MB	0.0015	1.0000	-0.021 mg/l
670.0	0.0	LCS	1.1048	1.0000	1.6535 mg/l
670.0	0.0	5311-1 <sup>10/20</sup>	0.4874	1.0000	0.7160 mg/l
670.0	0.0	5311-1d <sup>10/20</sup>	0.4797	1.0000	0.7043 mg/l
670.0	0.0	5311-1s <sup>0.2/20</sup>	0.5396	1.0000	0.7952 mg/l
670.0	0.0	5311-1sd <sup>0.2/20</sup>	0.5460	1.0000	0.8049 mg/l
670.0	0.0	5311-2	0.0982	1.0000	0.1250 mg/l
670.0	0.0	5430-1	0.2734	1.0000	0.3911 mg/l
670.0	0.0	5430-2	0.0061	1.0000	-0.014 mg/l
670.0	0.0	DLCS	1.0185	1.0000	1.5224 mg/l
670.0	0.0	CCV2	1.0905	1.0000	1.6317 mg/l
670.0	0.0	CCB2	0.0001	1.0000	-0.024 mg/l
670.0	0.0	MBb	0.0040	1.0000	-0.017 mg/l
670.0	0.0	LCSb	0.0067	1.0000	-0.013 mg/l
670.0	0.0	5311-1b	0.0046	1.0000	-0.017 mg/l
670.0	0.0	5311-1db	0.0047	1.0000	-0.016 mg/l
670.0	0.0	5311-1sb	0.0071	1.0000	-0.013 mg/l
670.0	0.0	5311-1sdb	0.0095	1.0000	-0.009 mg/l
670.0	0.0	5311-2b	0.0045	1.0000	-0.017 mg/l
670.0	0.0	5430-1b	0.0044	1.0000	-0.017 mg/l
670.0	0.0	5430-2b	0.0053	1.0000	-0.016 mg/l
670.0	0.0	DLCSb	0.0003	1.0000	-0.023 mg/l
670.0	0.0	CCV3	1.0928	1.0000	1.6352 mg/l
670.0	0.0	CCB3	-0.000	1.0000	-0.024* mg/l
670.0	0.0		0.0008	1.0000	-0.022 mg/l
670.0	0.0		0.0052	1.0000	-0.016 mg/l

Empty

5/27/10  
01/1/10

COLUMBIA ANALYTICAL SERVICES, INC.

Work Order #: K5311

Method: 821/R-91-100

Analysis: AVS/SEM

Date Prepared	Sample Name Lab Code	Initial Wt./Vol. (g) or (ml)	AVS - Final Volume (mL)	mLs 50% HCl added	SEM - Final Volume (mL)	Sample description:
5/27/10	MH	50.0	40.0	10.0	100.0	
	LCS	10.001				
	K5311-1	6.455				Dark Brown mud w/ plant material
	-1d	6.457				
	-1ms	6.057				
	-1msd	6.077				
	-2	6.445				
	GE 5430-1	10.059				sand & rocks
	LALL 5730-2	10.058				
	DLCS	10.001				

LCS 1 = \_\_\_\_\_ % REC = \_\_\_\_\_  
 LCS 2 = \_\_\_\_\_ % REC = \_\_\_\_\_  
 Spike = \_\_\_\_\_ % REC = \_\_\_\_\_  
 Spike Dup. = \_\_\_\_\_ % REC = \_\_\_\_\_

K5311 - 1, 2 Heterogeneous  
 x = \_\_\_\_\_  
 STD ID# = \_\_\_\_\_ RPD = \_\_\_\_\_

Prepared By: <u>B. Kijim</u>	Date Prepared: <u>5/27/10</u>	<u>1000</u>
Analyzes By: <u>B. Kijim</u>	Date Analyzed: <u>5/27/10</u>	
Reviewed By: <u>[Signature]</u>	Date Reviewed: <u>6/1/10</u>	



## **Metals**

Columbia Analytical Services

- Cover Page -  
INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation  
Project Name: East White Lake UPSB  
Project No.: 07-47

Service Request: K1005311

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<u>Sample Name:</u>	<u>Lab Code:</u>
Sed-Bk-11	K1005311-001
Sed-Bk-11D	K1005311-001D
Sed-Bk-10	K1005311-002
Sed-Bk-10S	K1005311-002S
Method Blank	K1005311-MB

Comments:

Approved By: \_\_\_\_\_



Date: \_\_\_\_\_

6/3/10

Simultaneously Extracable Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation Service Request: K1005311  
Project No.: 07-47 Date Collected: 5/19/2010  
Project Name: East White Lake UPSB Date Received: 5/24/2010  
Matrix: SOIL Units: umol/g  
Basis: DRY

Sample Name: Sed-Bk-11 Lab Code: K1005311-001

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cadmium	6010B	0.0027	1.0	05/27/10	06/03/10	0.0027	U	
Copper	6010B	0.010	1.0	05/27/10	06/03/10	0.010	U	
Lead	6010B	0.015	1.0	05/27/10	06/03/10	0.044		
Nickel	6010B	0.021	1.0	05/27/10	06/03/10	0.029		
Zinc	6010B	0.009	1.0	05/27/10	06/03/10	0.745		

% Solids: 24.8

Comments:



**Simultaneously Extracable Metals**

- 1 -

**INORGANIC ANALYSIS DATA PACKAGE**

Client: URS Corporation Service Request: K1005311  
 Project No.: 07-47 Date Collected:  
 Project Name: East White Lake UPSB Date Received:  
 Matrix: SOIL Units: umol/g  
 Basis: DRY

Sample Name: Method Blank Lab Code: K1005311-MB

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cadmium	6010B	0.0004	1.0	05/27/10	06/03/10	0.0004	U	
Copper	6010B	0.002	1.0	05/27/10	06/03/10	0.002	U	
Lead	6010B	0.002	1.0	05/27/10	06/03/10	0.002	U	
Nickel	6010B	0.003	1.0	05/27/10	06/03/10	0.003	U	
Zinc	6010B	0.002	1.0	05/27/10	06/03/10	0.002	U	

% Solids: 100.0

Comments:

**Simultaneously Extracable Metals**

- 2a -

**INITIAL AND CONTINUING CALIBRATION VERIFICATION**

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed

Concentration Units: umol/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Cadmium	11.10	11.17	101	2.22	2.23	100	2.24	101	6010B
Copper	9.83	9.80	100	3.93	3.95	101	3.93	100	6010B
Lead	12.10	12.05	100	1.21	1.21	100	1.21	100	6010B
Nickel	21.30	21.18	99	4.26	4.27	100	4.30	101	6010B
Zinc	19.10	19.09	100	3.82	3.85	101	3.85	101	6010B

**Simultaneously Extracable Metals**

- 2a -

**INITIAL AND CONTINUING CALIBRATION VERIFICATION**

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed

Concentration Units: umol/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Cadmium				2.22	2.24	101			6010B
Copper				3.93	3.97	101			6010B
Lead				1.21	1.22	101			6010B
Nickel				4.26	4.32	101			6010B
Zinc				3.82	3.86	101			6010B

Simultaneously Extracable Metals

- 2b -

CRDL STANDARD FOR AA AND ICP

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

Concentration Units: umol/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial			Final	
				True	Found	%R	Found	%R
Cadmium				0.0440	0.0466	106		
Copper				0.1600	0.145	91		
Lead				0.2400	0.235	98		
Nickel				0.3400	0.3413	100		
Zinc				0.1500	0.152	101		



**Simultaneously Extracable Metals**

- 3 -

**BLANKS**

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

Concentration Units: umol/L

Analyte	Initial Calib. Blank		Continuing Calibration Blank						Method
		C	1	C	2	C	3	C	
Cadmium	0.0440	U	0.0440	U	0.0440	U	0.0440	U	6010B
Copper	0.157	U	0.157	U	0.157	U	0.157	U	6010B
Lead	0.240	U	0.240	U	0.240	U	0.240	U	6010B
Nickel	0.340	U	0.340	U	0.340	U	0.340	U	6010B
Zinc	0.150	U	0.150	U	0.150	U	0.150	U	6010B

**Simultaneously Extracable Metals**

- 4 -

**ICP INTERFERENCE CHECK SAMPLE**

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

ICP ID Number: K-ICP-AES-03

ICS Source: Inorganic Ventures

Concentration Units: umol/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Cadmium		9	0	8	89			
Copper		8	0	7	91			
Lead		5	0	4	84			
Nickel		17	0	15	90			
Zinc		15	0	14	92			

80-120% control criteria is not applicable to interfering elements (Al, Ca, Fe, Mg).

Simultaneously Extracable Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Units: UMOL/G

Project Name: East White Lake UPSB

Basis: DRY

Matrix: SOIL

% Solids: 22.2

Sample Name: Sed-Bk-10S

Lab Code: K1005311-002S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Cadmium	75 - 125	0.0659		0.0031	U	0.062	106		6010B
Copper	75 - 125	0.233		0.016		0.219	99		6010B
Lead	75 - 125	0.444		0.062		0.337	113		6010B
Nickel	75 - 125	0.579		0.098		0.477	101		6010B
Zinc	75 - 125	0.521		0.308		0.214	100		6010B

An empty field in the Control Limit column indicates the control limit is not applicable

Simultaneously Extracable Metals

- 6 -

DUPLICATES

Client: URS Corporation Service Request: K1005311  
 Project No.: 07-47 Units: UMOL/G  
 Project Name: East White Lake UPSB Basis: DRY  
 Matrix: SOIL % Solids: 24.8

Sample Name: Sed-Bk-11D

Lab Code: K1005311-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Cadmium		0.0027	U	0.0030		200.0		6010B
Copper		0.010	U	0.010	U			6010B
Lead		0.044		0.061		32.4		6010B
Nickel		0.029		0.038		26.9		6010B
Zinc	30	0.7452		0.9948		28.7		6010B

An empty field in the Control Limit column indicates the control limit is not applicable.

**Simultaneously Extracable Metals**

- 7 -

**LABORATORY CONTROL SAMPLE**

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

Aqueous LCS Source: Inorganic Ventures

Solid LCS Source:

Analyte	Aqueous: umol/L			Solid: mg/kg				
	True	Found	%R	True	Found	C	Limits	%R
Cadmium	0.445	0.476	107					
Copper	1.570	1.609	102					
Lead	2.410	2.712	113					
Nickel	3.410	3.554	104					
Zinc	1.530	1.610	105					

Simultaneously Extracable Metals

- 9 -

ICP SERIAL DILUTIONS

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Units: UMOL/L

Project Name: East White Lake UPSB

Sample Name: Sed-Bk-10L

Lab Code: K1005311-002L

Analyte	Initial Sample Result (I)		Serial Dilution Result (S)		% Difference	Q	M
		C		C			
Cadmium	0.0440	U	0.2200	U			P
Copper	0.234		0.785	U	100.0		P
Lead	0.883		1.200	U	100.0		P
Nickel	1.396		1.700	U	100.0		P
Zinc	4.402		4.472		1.6		P

Simultaneously Extracable Metals

- 10 -

DETECTION LIMITS

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

ICP/ICP-MS ID #:

GFAA ID #:

AA ID #:

Analyte	Wave-length (nm)	Back-ground	MRL umol/L	MDL umol/L	M
Cadmium	226.5		0.0440	0.0440	P
Copper	327.3		0.157	0.157	P
Lead	220.3		0.240	0.240	P
Nickel	221.6		0.34	0.34	P
Zinc	206.2		0.150	0.150	P

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Simultaneously Extractable Metals

- 11A -

## ICP INTERELEMENT CORRECTION FACTORS

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

ICP ID Number: K-ICP-AES-03

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Al	Ca	Fe	Mg	Co
Aluminum	394.401	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	-0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000430	0.0000000	0.0000000	0.0000000	0.0000000
Barium	455.403	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000080	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0001930	0.0000000	0.0019780
Cadmium	226.502	0.0000000	0.0000000	0.0000910	0.0000000	-0.0001330
Calcium	393.366	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000070	0.0000000
Cobalt	230.786	0.0000000	0.0000000	0.0000140	0.0000000	0.0000000
Copper	327.396	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	259.94	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000370	0.0000000	0.0000000	0.0000000	0.0000000
Lithium	670.784	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	221.647	0.0000060	0.0000000	0.0000130	0.0000000	0.0000000
Phosphorus	214.914	-0.0008250	0.0000000	0.0009490	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	251.611	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	407.771	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0016260
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	336.121	0.0000000	0.0000000	0.0000000	0.0000000	0.0000280
Vanadium	292.402	0.0000000	0.0000000	0.0000220	0.0000000	0.0000000
Zinc	206.2	0.0000000	0.0000000	-0.0000570	0.0000000	0.0000000

Comments:



## Simultaneously Extracable Metals

- 11B -

## ICP INTERELEMENT CORRECTION FACTORS

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

ICP ID Number: K-ICP-AES-03

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Cr	Mn	Mo	Ni	Si
Aluminum	394.401	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0126720	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0005400	0.0000000	0.0004600	0.0000000	0.0000000
Barium	455.403	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	-0.0000220	-0.0001550	-0.0000290	0.0000000
Boron	249.678	0.0002310	0.0000000	-0.0008330	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000360	0.0000000	0.0000000
Calcium	393.366	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000920	0.0000000	0.0000000	0.0000000
Cobalt	230.786	-0.0000550	0.0000310	-0.0082200	0.0004230	0.0000000
Copper	327.396	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	259.94	0.0000000	0.0000000	-0.0002380	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0000000	-0.0064070	0.0000000	0.0001690
Lithium	670.784	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.03	0.0000490	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	221.647	-0.0002770	0.0000000	0.0000000	0.0000000	0.0002490
Phosphorus	214.914	0.0000000	-0.0011200	0.0084760	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0010370	0.0000000	0.0000000	0.0000000
Silicon	251.611	0.0000000	0.0000000	0.0078910	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	407.771	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0002230	0.0007110	0.0000000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	336.121	0.0000000	0.0000000	0.0000380	0.0001210	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0078980	0.0000000	0.0000000
Zinc	206.2	-0.0001370	0.0000000	0.0005030	0.0000000	0.0000000

Comments:

## Simultaneously Extractable Metals

- 11B -

## ICP INTERELEMENT CORRECTION FACTORS

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

ICP ID Number: K-ICP-AES-03

Analyte	Wave-length (nm)	Interelement Correction Factors for:			
		Ti	V		
Aluminum	394.401	0.0000000	0.0006800		
Antimony	206.833	0.0002810	0.0000000		
Arsenic	189.042	0.0000000	0.0000000		
Barium	455.403	0.0000000	0.0000000		
Beryllium	234.861	0.0000000	0.0000000		
Boron	249.678	0.0000000	0.0000000		
Cadmium	226.502	0.0000300	0.0000000		
Calcium	393.366	0.0000000	0.0000000		
Chromium	267.716	0.0000000	-0.0000780		
Cobalt	230.786	0.0000000	0.0000000		
Copper	327.396	0.0000840	-0.0000420		
Iron	259.94	0.0000000	0.0000000		
Lead	220.353	-0.0005950	0.0000000		
Lithium	670.784	0.0000000	0.0000000		
Magnesium	285.213	0.0000000	0.0000000		
Manganese	257.61	0.0000000	0.0000000		
Molybdenum	202.03	0.0000000	0.0000000		
Nickel	221.647	-0.0006910	0.0000000		
Phosphorus	214.914	0.0000000	-0.0043120		
Potassium	766.491	0.0000000	0.0000000		
Selenium	196.0	0.0000000	0.0000000		
Silicon	251.611	0.0000000	0.0000000		
Silver	328.068	-0.0001050	0.0000730		
Sodium	589.592	0.0000000	0.0000000		
Strontium	407.771	0.0000000	0.0000000		
Thallium	190.856	-0.0008150	-0.0087710		
Tin	189.989	-0.0012350	0.0000000		
Titanium	336.121	0.0000000	0.0000000		
Vanadium	292.402	0.0003520	0.0000000		
Zinc	206.2	0.0000000	0.0000000		

Comments:

Simultaneously Extractable Metals

-12-

ICP LINEAR RANGES (QUARTERLY)

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

ICP ID Number: K-ICP-AES-03

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Cadmium	15.000	22500	6010B
Copper	15.000	90000	6010B
Lead	15.000	90000	6010B
Nickel	15.000	45000	6010B
Zinc	15.000	18000	6010B

Comments:

Simultaneously Extracable Metals

-13-

PREPARATION LOG

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

Method: P

Sample ID	Preparation Date	Initial Weight (g)	Final Volume (mL)
K1005311-001	5/27/2010	6.45	0.0 100 ml
K1005311-001D	5/27/2010	6.46	0.0
K1005311-002	5/27/2010	6.45	0.0
K1005311-002S	5/27/2010	6.45	0.0
K1005311-MB	5/27/2010	10.00	0.0
LCSW	5/27/2010	50.0	50.0

EMM 6/3/10

Simultaneously Extracable Metals

- 14 -

ANALYSIS RUN LOG

Client: URS Corporation

Service Request: K1005311

Project No.: 07-47

Project Name: East White Lake UPSB

Instrument ID Number: K-ICP-AES-03

Method: P

Start Date: 6/3/2010

End Date: 6/3/2010

Sample No.	D/F	Time	% R	Analytes																											
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K	S E	A G	N A	T L	V	Z N	C N				
BLK	1	10:40						X				X	X				X										X				
STD A	1	10:43						X				X	X				X										X				
STD B	1	10:46																													
ICV1	1	10:50						X				X	X				X										X				
ZZZZZ	1	10:54																													
ICB1	1	10:57						X				X	X				X										X				
CCVA1	1	10:59						X				X	X				X										X				
ZZZZZ	1	11:02																													
CCB1	1	11:06						X				X	X				X										X				
CRDL1	1	11:08						X				X	X				X										X				
ZZZZZ	1	11:11																													
ICSA	1	11:13						X				X	X				X										X				
ICSAB	1	11:17						X				X	X				X										X				
ZZZZZ	1	11:23																													
K1005311-MB	1	11:26						X				X	X				X										X				
LCSW	1	11:29						X				X	X				X										X				
K1005311-001	1	11:31						X				X	X				X										X				
K1005311-001D	1	11:35						X				X	X				X										X				
K1005311-002	1	11:39						X				X	X				X										X				
CCVA2	1	11:43						X				X	X				X										X				
ZZZZZ	1	11:46																													
CCB2	1	11:49						X				X	X				X										X				
K1005311-002L	5	11:52						X				X	X				X										X				
ZZZZZ	1	11:55																													
ZZZZZ	1	11:58																													
ZZZZZ	1	12:02																													
K1005311-002S	1	12:06						X				X	X				X										X				
ZZZZZ	1	12:09																													
CCVA3	1	12:12						X				X	X				X										X				
ZZZZZ	1	12:15																													
CCB3	1	12:19						X				X	X				X										X				

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

COLUMBIA ANALYTICAL SERVICES, INC.

Work Order #: K5311

Method: 821/R-91-100

Analysis: AVS/SEM

Date Prepared	Sample Name Lab Code	Initial Wt./Vol. (g) or (ml)	AVS - Final Volume (mL)	mLs 50% HCl added	SEM - Final Volume (mL)	Sample description:
5/29/10	M7	50.0	40.0	10.0	100.0	
	LCS	10.001	T	T	T	
	K5311-1	6.455	T	T	T	Dark Brown mud w/ plant material
	-1d	6.457	T	T	T	
	-1ms	6.057	T	T	T	
	-1msd	6.077	T	T	T	
	-2	6.445	T	T	T	
	GE 5430-1	10.054	T	T	T	Sand & Rock
	LALL 5730-2	10.058	T	T	T	
	DLLS	10.001	T	T	T	

LCS 1 = \_\_\_\_\_ % REC = \_\_\_\_\_  
 LCS 2 = \_\_\_\_\_ % REC = \_\_\_\_\_  
 Spike = \_\_\_\_\_ % REC = \_\_\_\_\_  
 Spike Dup. = \_\_\_\_\_ % REC = \_\_\_\_\_

K5311-1, 2 Heterogeneous x = \_\_\_\_\_  
 STD ID# = \_\_\_\_\_ RPD = \_\_\_\_\_

Prepared By: <u>B. Hinton</u>	Date Prepared: <u>5/29/10</u>	<u>1000</u>
Analyzes By:	Date Analyzed:	
Reviewed By:	Date Reviewed:	

Service Request # K1005311 SEM  
Instrument ID# K-ICP-AES-03

## ICP-OES Data Review Form

	Yes	No
1. Standardization completed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. ICV within 10 % of true value	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. ICB below MRL	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. CRI standard analyzed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. ICS standards within 20% of true value	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. All preceding CCVs within 10 % of true value	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Following CCV within 10 % of true value	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Bracketing CCBs below MRL	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Method Blank below MRL	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. MS-MSD or Dup-MS and LCS within CAS control limits	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. All analytes within instrument linear range	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Adequate rinse out time allowed between samples to eliminate memory effect	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comments:

StarLIMS Run # 203382      Saved under 060310BICP03  
SEM Calibration  
Report Cd2265, Cu3273, Zn2062.

Primary Review by CMUR      Date 6/3/10

Secondary Review by 3C      Date 6/3/10

**ICP SPIKE FORM**

Service Request # K1005311

Q.C. Sample # #2

Initials / Date: mmmm / 6/3/10

Circle type of sample: Water Aqueous **SEM** Soil Other: \_\_\_\_\_

Solution Name	Element	mLs of 1000ppm Solution	Final Volume	Solution Conc. mg/L	Enter mls Added
<b>SPIKE SOLN ICP7-47-B</b>	Al*	0.05	10	50	0.2
	Sb	0.50	10	50	
	As	1.00	10	100	
	Ba	0.05	10	5	
	Be	0.05	10	5	
	B	0.50	10	50	
	Cd	0.05	10	5	
	Ca*	0.05	10	50	
	Cr	0.05	10	5	
	Co	0.10	10	10	
	Cu	0.10	10	10	
	Fe	0.20	10	20	
	Pb	0.50	10	50	
	Mg	0.20	10	20	
	Mn	0.05	10	5	
	Mo	0.10	10	10	
	Ni	0.20	10	20	
	K*	0.30	10	300	
	Se	1.00	10	100	
	Na*	0.20	10	200	
	Sn	0.50	10	50	
	V	0.10	10	10	
	Zn	0.10	10	10	
P*	0.20	10	200		
Si*	0.40	10	400		
Tl*	0.20	10	200		
Ti	0.10	10	10		
Li	0.10	10	10		
Sr	0.10	10	10		

**Expires:  
8/23/2010**

\* Denotes 10000ppm stock standard.

**Additional Spikes**

Individual Stock Standards	mLs of standard	ppm	Logbook #	Exp. Date



Sample Name: BLK      Acquired: 6/3/2010 10:40:47      Type: Cal  
 Method: 2010bSEM(v2)      Mode: IR      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

*originally ran as 2010aSEM(v9)  
 changed updated IECs + added Sb  
 mmk 6/3/10 to report + resaved  
 as*

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	-77.30	3.275	4.376	-0.013	2.918	.0016	.0000	.0004	
Stddev	1.48	1.064	.782	.0013	.284	.0003	.0000	.0057	
%RSD	1.912	32.50	17.87	97.16	9.727	18.35	26.72	1559.	

*2010b  
 mmk  
 6/3/10*

#1	-76.25	2.522	4.929	-0.023	2.717	.0019	.0000	-0.0037
#2	-78.34	4.027	3.823	-0.0004	3.119	.0014	.0000	.0044

Elem	Cu3273	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	84.13	.0000	.0010	-0.0001	7.503	.0001	.0000	.0059
Stddev	20.26	.000	.0010	.0001	6.800	.0000	.0000	.0000
%RSD	24.08	1270.	101.3	63.75	90.63	20.85	110.8	.4127

#1	98.45	-0.0002	.0018	-0.0001	2.695	.0001	.0000	.0059
#2	69.80	.0002	.0003	-0.0001	12.31	.0001	.0000	.0059

Elem	Ni2216	Ag3280	V_2924	Zn2062	Zn2138	Si2516	Ti3361
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.0054	-38.03	.0002	-0.0006	2.487	3.817	.0020
Stddev	.0002	14.10	.0000	.0028	.520	.279	.0000
%RSD	2.825	37.07	11.35	475.7	20.90	7.306	1.625

#1	.0053	-48.00	.0002	.0014	2.854	3.620	.0020
#2	.0055	-28.06	.0002	-0.0025	2.119	4.014	.0020

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	291860.	12627.	457.93
Stddev	435.	37.	.72
%RSD	.14901	.29673	.15633

*mmk  
 6/3/10  
 30  
 6/3/10*

#1	291550.	12601.	458.44
#2	292170.	12654.	457.43

Sample Name: STD A      Acquired: 6/3/2010 10:43:48      Type: Cal  
 Method: 2010bSEM(v2)      Mode: IR      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B ICP7-44-B

Elem	Sb2068	Cd2265	Cd2288	Cr2677	Co2307	Cu3273	Pb2203	Mn2576
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	481.6	33.12	6867.	.0492	10.58	13470.	2.413	.2602
Stddev	1.8	.03	19.	.0000	.00	2.	.000	.0002
%RSD	.3722	.0894	.2798	.0453	.0397	.0137	.0077	.0840

#1	480.3	33.10	6853.	.0492	10.58	13480.	2.413	.2600
#2	482.8	33.14	6880.	.0492	10.58	13470.	2.413	.2603

Elem	Mn2605	Mo2020	Ni2216	Ag3280	V_2924	Zn2062	Zn2138	Ti3361
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.0023	7.645	11.71	14220.	.0542	11.26	10980.	.2027
Stddev	.0000	.022	.01	46.	.0000	.03	24.	.0002
%RSD	.6568	.2848	.0479	.3234	.0280	.2312	.2207	.0953

#1	.0023	7.630	11.71	14180.	.0542	11.28	10970.	.2028
#2	.0023	7.661	11.71	14250.	.0542	11.25	11000.	.2026

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	291600.	12620.	466.14
Stddev	517.	67.	.39
%RSD	.17713	.52705	.08282

#1	291230.	12667.	465.86
#2	291960.	12573.	466.41

Sample Name: STD B      Acquired: 6/3/2010 10:46:35      Type: Cal  
 Method: 2010bSEM(v2)      Mode: IR      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B ICP7-45-C

Elem	Al3944	As1890	Ca3158	Fe2599	Mg2790	Mg2852	Si2516
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	126600.	1396.	1.345	1.158	.1982	34670.	3423.
Stddev	546.	.	.002	.002	.0016	59.	.
%RSD	.4316	.0063	.1619	.1749	.8158	.1694	.0090
#1	126200.	1396.	1.344	1.157	.1970	34710.	3423.
#2	127000.	1396.	1.347	1.160	.1993	34630.	3423.
Int. Std.	Y_3600-2	In2306					
Units	Cts/S	Cts/S					
Avg	12661.	451.28					
Stddev	55.	2.30					
%RSD	.43653	.51041					
#1	12700.	452.91					
#2	12622.	449.65					

Sample Name: ICV1      Acquired: 6/3/2010 10:50:37      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B ICP7-37-C

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	181.6	20.43	33.77	11.17	11.07	311.6	9.706	21.30	9.799
Stddev	.4	.08	.01	.01	.01	.9	.029	.00	.004
%RSD	.2063	.3998	.0373	.0755	.1025	.2787	.3010	.0004	.0392
#1	181.9	20.49	33.76	11.18	11.06	311.0	9.727	21.30	9.796
#2	181.4	20.37	33.78	11.16	11.08	312.2	9.685	21.30	9.802

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 Value  
 Range

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	44.97	12.05	509.2	511.3	22.74	22.85	21.30	21.18	5.778
Stddev	.05	.01	1.8	2.6	.03	.19	.01	.01	.031
%RSD	.1032	.0918	.3527	.5101	.1201	.8411	.0700	.0299	.5377
#1	44.94	12.05	510.4	509.5	22.76	22.72	21.31	21.19	5.756
#2	45.00	12.04	507.9	513.2	22.72	22.99	21.29	21.18	5.800

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 Value  
 Range

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	25.00	19.09	18.71	-.2833	42.54	*****
Stddev	.03	.00	.02	.1743	.06	----
%RSD	.1143	.0199	.1284	61.54	.1513	----
#1	25.02	19.10	18.69	-.1600	42.59	13340.
#2	24.98	19.09	18.72	-.4066	42.50	13340.

Check ?    Chk Pass   Chk Pass   Chk Pass        None   Chk Pass        None  
 Value  
 Range

Sample Name: ICV1      Acquired: 6/3/2010 10:50:37      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B ICP7-37-C

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	287850.	12641.	457.42
Stddev	752.	18.	.70
%RSD	.26108	.13999	.15248
#1	287310.	12628.	456.92
#2	288380.	12653.	457.91

Sample Name: ICVB1      Acquired: 6/3/2010 10:54:21      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B ICP7-43-D

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	36.34	.0293	.0212	.0003	.0015	128.5	-.0006	.0085	-.1010
Stddev	.02	.0135	.0112	.0001	.0009	.2	.0020	.0027	.0127
%RSD	.0596	46.28	52.72	26.87	61.65	.1270	360.2	31.91	12.58

#1	36.35	.0197	.0292	.0004	.0008	128.4	-.0020	.0066	-.1099
#2	36.32	.0388	.0133	.0003	.0021	128.6	.0009	.0104	-.0920

Check ?	None	None	None	None	None	None	None	None	None
Value									
Range									

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	179.0	.0068	206.7	207.7	172.0	180.8	.0087	.0026	.0034
Stddev	.4	.0009	.6	.5	.3	.0	.0010	.0015	.0005
%RSD	.2240	13.87	.3066	.2635	.1522	.0007	12.03	57.16	13.98

#1	179.3	.0061	206.3	207.4	171.8	180.8	.0094	.0015	.0038
#2	178.8	.0074	207.2	208.1	172.2	180.8	.0079	.0036	.0031

Check ?	None	None	None	None	None	None	None	None	None
Value									
Range									

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.2861	.0055	.0044	180.3	.0037	*****
Stddev	.0090	.0012	.0015	.0	.0006	----
%RSD	3.152	21.44	33.34	.0024	15.08	----

#1	-.2797	.0063	.0034	180.3	.0033	13430.
#2	-.2925	.0047	.0055	180.3	.0041	13420.

Check ?	None	None	None	Chk Pass	None	None
Value						
Range						

Sample Name: ICVB1      Acquired: 6/3/2010 10:54:21      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B ICP7-43-D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	291440.	12572.	466.45
Stddev	97.	21.	.86
%RSD	.03315	.16570	.18524
#1	291510.	12587.	467.06
#2	291370.	12557.	465.84

Sample Name: ICB      Acquired: 6/3/2010 10:57:26      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0351	.0108	.0119	.0004	-.0002	-.1101	.0054	.0042	-.0083
Stddev	.0372	.0060	.0115	.0002	.0005	.0228	.0022	.0015	.0002
%RSD	106.1	54.98	96.58	57.49	265.6	20.73	41.31	36.35	2.338
#1	.0088	.0066	.0201	.0002	-.0005	-.0940	.0038	.0031	-.0082
#2	.0614	.0150	.0038	.0005	.0002	-.1263	.0069	.0053	-.0085

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	-.0490	-.0019	.7659	-.0061	.0059	-.0034	-.0004	-.0017	.0038
Stddev	.0224	.0009	1.201	.0270	.0002	.0072	.0019	.0008	.0024
%RSD	45.67	50.59	156.8	444.1	3.390	213.1	538.5	47.21	63.62
#1	-.0332	-.0025	1.615	.0130	.0061	-.0085	-.0017	-.0023	.0055
#2	-.0648	-.0012	-.0831	-.0251	.0058	.0017	.0010	-.0012	.0021

Check ?    Chk Pass   Chk Pass     None   Chk Pass   Chk Pass     None   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0086	-.0004	.0004	.1691	-.0024	*****
Stddev	.0021	.0025	.0002	.0705	.0047	-----
%RSD	25.07	673.2	56.37	41.68	198.2	-----
#1	-.0070	-.0021	.0003	.2189	.0009	13340.
#2	-.0101	.0014	.0006	.1193	-.0056	13340.

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass     None  
 High Limit  
 Low Limit



Sample Name: ICB      Acquired: 6/3/2010 10:57:26      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	292020.	12577.	460.23
Stddev	473.	39.	.79
%RSD	.16194	.30738	.17148
#1	291690.	12549.	460.79
#2	292360.	12604.	459.67

Sample Name: CCVA1      Acquired: 6/3/2010 10:59:48      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	8.817	2.057	3.332	2.228	2.216	5.960	4.771	4.287	3.950
Stddev	.033	.006	.017	.010	.002	.120	.004	.011	.007
%RSD	.3782	.2968	.5123	.4400	.0854	2.010	.0801	.2611	.1768
#1	8.793	2.061	3.344	2.221	2.217	5.875	4.768	4.279	3.945
#2	8.840	2.053	3.319	2.235	2.214	6.045	4.774	4.295	3.955

Check ?      None Chk Pass      None Chk Pass Chk Pass      None Chk Pass Chk Pass Chk Pass  
 Value  
 Range

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	4.465	1.209	10.17	10.28	4.526	4.477	2.631	4.271	2.321
Stddev	.096	.005	.24	.21	.012	.018	.006	.006	.007
%RSD	2.141	.3874	2.364	2.011	.2721	.4107	.2358	.1524	.2856
#1	4.533	1.205	9.999	10.14	4.535	4.464	2.627	4.267	2.316
#2	4.398	1.212	10.34	10.43	4.518	4.490	2.635	4.276	2.326

Check ?      None Chk Pass      None      None Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass  
 Value  
 Range

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	4.885	3.848	3.798	4.408	5.210	*****
Stddev	.002	.009	.003	.509	.008	-----
%RSD	.0395	.2449	.0682	11.56	.1563	-----
#1	4.883	3.841	3.796	4.048	5.216	13420.
#2	4.886	3.855	3.800	4.769	5.204	13400.

Check ?      Chk Pass Chk Pass Chk Pass      None Chk Pass      None  
 Value  
 Range

Sample Name: CCVA1      Acquired: 6/3/2010 10:59:48      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	293600.	12584.	464.04
Stddev	63.	19.	.82
%RSD	.02147	.14902	.17635
#1	293550.	12571.	464.61
#2	293640.	12597.	463.46

Sample Name: CCVB1      Acquired: 6/3/2010 11:02:39      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	364.9	.0334	13.40	.0004	.0323	250.4	.0003	.0129	-.0092
Stddev	.3	.0052	.06	.0000	.0007	.5	.0021	.0012	.0022
%RSD	.0909	15.46	.4780	12.68	2.117	.2030	705.2	8.934	24.08

#1	365.1	.0371	13.44	.0004	.0319	250.1	.0018	.0138	-.0076
#2	364.6	.0298	13.35	.0003	.0328	250.8	-.0012	.0121	-.0107

Check ?	Chk Pass	None	Chk Pass	None	None	Chk Pass	None	None	None
Value Range									

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	179.7	.0018	411.6	408.4	.0079	-.0136	.0022	-.0021	.0042
Stddev	.9	.0002	.5	1.5	.0012	.0152	.0001	.0035	.0039
%RSD	.4978	13.53	.1317	.3706	15.18	111.6	5.375	163.4	93.53

#1	179.0	.0017	411.2	409.5	.0088	-.0029	.0023	-.0046	.0014
#2	180.3	.0020	412.0	407.3	.0071	-.0244	.0021	.0003	.0070

Check ?	Chk Pass	None	Chk Pass	Chk Pass	None	None	None	None	None
Value Range									

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0031	.0014	-.0018	352.9	.0159	*****
Stddev	.0017	.0024	.0006	1.1	.0012	----
%RSD	53.78	179.0	34.64	.3217	7.573	----

#1	.0019	.0031	-.0013	353.7	.0168	13290.
#2	.0043	-.0004	-.0022	352.1	.0151	13270.

Check ?	None	None	None	Chk Pass	None	None
Value Range						

Sample Name: CCVB1      Acquired: 6/3/2010 11:02:39      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	286730.	12511.	451.70
Stddev	683.	66.	2.75
%RSD	.23804	.52772	.60792
#1	286250.	12558.	453.64
#2	287210.	12464.	449.75

Sample Name: CCB1      Acquired: 6/3/2010 11:06:00      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0774	.0102	-.0068	.0005	-.0005	-.0738	.0013	.0092	-.0099
Stddev	.0086	.0068	.0009	.0001	.0006	.2156	.0044	.0006	.0126
%RSD	11.14	66.59	12.63	23.98	108.4	292.0	349.9	6.758	128.2
#1	.0835	.0150	-.0074	.0006	-.0009	.0786	-.0019	.0088	-.0009
#2	.0713	.0054	-.0062	.0004	-.0001	-.2262	.0044	.0096	-.0188

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0112	.0034	-.6403	-.0645	.0059	.0191	-.0008	.0027	-.0021
Stddev	.0052	.0024	.3381	.1556	.0015	.0053	.0016	.0053	.0017
%RSD	46.56	72.68	52.80	241.2	25.34	27.57	206.0	192.7	82.34
#1	.0075	.0016	-.8793	-.1745	.0070	.0154	-.0019	.0064	-.0033
#2	.0148	.0051	-.4012	.0455	.0049	.0229	.0004	-.0010	-.0009

Check ?    Chk Pass   Chk Pass            None   Chk Pass   Chk Pass            None   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0043	-.0002	.0007	-.3337	-.0016	*****
Stddev	.0009	.0012	.0001	.1003	.0021	----
%RSD	20.97	540.6	10.47	30.06	132.8	----
#1	-.0049	.0006	.0006	-.4046	-.0030	13360.
#2	-.0036	-.0011	.0008	-.2628	-.0001	13350.

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass            None  
 High Limit  
 Low Limit

Sample Name: CCB1      Acquired: 6/3/2010 11:06:00      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	291190.	12568.	459.18
Stddev	4.	10.	.80
%RSD	.00147	.08276	.17344
#1	291190.	12561.	458.62
#2	291190.	12576.	459.74

Sample Name: CRI      Acquired: 6/3/2010 11:08:22      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B ICP7-41-A

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1.801	.4198	1.314	.0466	.0481	1.197	.1039	.1834	.1445
Stddev	.077	.0056	.020	.0008	.0010	.113	.0003	.0025	.0032
%RSD	4.259	1.342	1.496	1.684	1.988	9.412	.2919	1.377	2.244
#1	1.855	.4238	1.327	.0471	.0487	1.277	.1041	.1817	.1422
#2	1.747	.4158	1.300	.0460	.0474	1.117	.1037	.1852	.1468

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 Value  
 Range

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.4249	.2354	1.809	.7449	.0905	.1257	.0960	.3413	.0917
Stddev	.0515	.0022	1.035	.1358	.0007	.0158	.0008	.0035	.0027
%RSD	12.12	.9305	57.21	18.24	.7605	12.57	.8261	1.015	2.912
#1	.4613	.2369	2.540	.8409	.0910	.1145	.0955	.3388	.0936
#2	.3885	.2338	1.077	.6488	.0900	.1369	.0966	.3437	.0898

Check ?    Chk Pass   Chk Pass        None   Chk Pass   Chk Pass        None   Chk Pass   Chk Pass   Chk Pass  
 Value  
 Range

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.1861	.1516	.1506	13.19	.2066	*****
Stddev	.0021	.0015	.0010	.80	.0013	-----
%RSD	1.149	.9890	.6542	6.082	.6504	-----
#1	.1846	.1506	.1499	12.62	.2056	13280.
#2	.1876	.1527	.1513	13.75	.2075	13260.

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass        None  
 Value  
 Range



Sample Name: CRI      Acquired: 6/3/2010 11:08:22      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B ICP7-41-A

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	289200.	12420.	459.46
Stddev	244.	79.	.33
%RSD	.08441	.63445	.07092
#1	289370.	12476.	459.23
#2	289030.	12365.	459.69

Sample Name: CRI      Acquired: 6/3/2010 11:11:20      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B ICAP ICP7-39-B 0.1/10

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.1767	.0853	.1281	.0048	.0048	-.1371	.0390	.0209	.0273
Stddev	.1868	.0079	.0054	.0007	.0005	.0572	.0046	.0022	.0118
%RSD	105.7	9.228	4.197	14.59	9.458	41.70	11.68	10.43	43.39
#1	.3088	.0797	.1243	.0053	.0051	-.0967	.0423	.0194	.0189
#2	.0446	.0908	.1319	.0043	.0045	-.1775	.0358	.0224	.0356

Check ?      None Chk Pass Chk Pass Chk Pass Chk Pass      None Chk Pass Chk Pass Chk Pass  
 Value  
 Range

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.1750	.0479	1.463	.1469	.0119	.0226	.0193	.0320	.0155
Stddev	.0389	.0015	.291	.0426	.0005	.0009	.0006	.0048	.0080
%RSD	22.22	3.076	19.92	29.03	4.366	4.000	2.997	15.04	51.38
#1	.1475	.0490	1.669	.1771	.0115	.0232	.0189	.0286	.0212
#2	.2025	.0469	1.257	.1167	.0123	.0219	.0197	.0354	.0099

Check ?      Chk Pass Chk Pass      None      None Chk Pass      None Chk Pass Chk Pass Chk Pass  
 Value  
 Range

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0320	.0295	.0310	1.767	.0240	*****
Stddev	.0054	.0000	.0021	.030	.0016	-----
%RSD	16.93	.0502	6.652	1.719	6.754	-----
#1	.0358	.0295	.0325	1.789	.0251	13240.
#2	.0282	.0295	.0296	1.746	.0228	13230.

Check ?      Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass      None  
 Value  
 Range

Sample Name: CRI      Acquired: 6/3/2010 11:11:20      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B ICAP ICP7-39-B 0.1/10

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	288300.	12424.	458.83
Stddev	549.	19.	1.80
%RSD	.19038	.15504	.39135
#1	288690.	12438.	460.10
#2	287910.	12410.	457.56

Sample Name: ICSA      Acquired: 6/3/2010 11:13:41      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B ICP7-43-B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	16740.	.1153	-.1373	.0059	-.0029	11830.	.0133	-.0091	-.0047
Stddev	102.	.0211	.0184	.0019	.0018	58.	.0044	.0063	.0020
%RSD	.6095	18.28	13.43	32.53	61.58	.4876	32.69	69.61	42.72

#1	16670.	.1302	-.1242	.0046	-.0016	11870.	.0102	-.0046	-.0033
#2	16820.	.1004	-.1503	.0073	-.0041	11780.	.0164	-.0135	-.0061

Check ?	Chk Pass	None	None	None	None	Chk Pass	None	None	None
Value Range									

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	3294.	.0339	20970.	17750.	.3260	.0023	-.0019	.0548	-.0065
Stddev	1.	.0056	19.	62.	.0018	.0056	.0013	.0037	.0059
%RSD	.0312	16.41	.0883	.3500	.5609	243.2	65.31	6.775	90.44

#1	3293.	.0300	20990.	17800.	.3272	-.0016	-.0010	.0574	-.0024
#2	3295.	.0379	20960.	17710.	.3247	.0062	-.0028	.0521	-.0107

Check ?	Chk Pass	None	Chk Pass	None	None	None	None	None	None
Value Range									

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0478	.0323	-.0690	.4706	.0867	*****
Stddev	.0061	.0026	.0018	.5262	.0047	----
%RSD	12.83	8.076	2.601	111.8	5.436	----

#1	-.0521	.0305	-.0703	.0985	.0833	12330.
#2	-.0434	.0342	-.0678	.8427	.0900	12320.

Check ?	None	None	None	None	None	None
Value Range						

Sample Name: ICSA      Acquired: 6/3/2010 11:13:41      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B ICP7-43-B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	254070.	12002.	416.90
Stddev	368.	31.	2.01
%RSD	.14494	.25507	.48313
#1	254330.	11980.	418.32
#2	253810.	12024.	415.47

Sample Name: ICSAB      Acquired: 6/3/2010 11:17:49      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060210B ICP7-38-C

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	16930.	7.875	-.0651	8.172	8.142	11870.	9.536	7.889	7.335
Stddev	140.	.028	.0073	.058	.007	76.	.016	.053	.039
%RSD	.8253	.3501	11.25	.7069	.0851	.6436	.1650	.6714	.5321
#1	17030.	7.856	-.0599	8.131	8.137	11920.	9.547	7.852	7.307
#2	16830.	7.895	-.0702	8.213	8.146	11810.	9.525	7.927	7.363

Check ?    Chk Pass   Chk Pass        None   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 Value  
 Range

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	3306.	4.448	20880.	17550.	9.135	9.229	.0006	15.46	8.919
Stddev	8.	.014	55.	180.	.006	.167	.0009	.11	.016
%RSD	.2306	.3039	.2644	1.028	.0669	1.806	158.7	.6941	.1756
#1	3312.	4.438	20840.	17680.	9.140	9.111	.0013	15.38	8.930
#2	3301.	4.458	20920.	17430.	9.131	9.347	-.0001	15.54	8.908

Check ?    Chk Pass   Chk Pass   Chk Pass        None   Chk Pass   Chk Pass        None   Chk Pass   Chk Pass  
 Value  
 Range

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	9.815	13.88	13.55	1.055	.0838	*****
Stddev	.019	.11	.01	.252	.0022	----
%RSD	.1908	.7865	.1034	23.91	2.608	----
#1	9.828	13.81	13.54	.8765	.0823	12370.
#2	9.802	13.96	13.56	1.233	.0854	12370.

Check ?    Chk Pass   Chk Pass   Chk Pass        None        None        None  
 Value  
 Range

Sample Name: ICSAB      Acquired: 6/3/2010 11:17:49      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060210B ICP7-38-C

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	255070.	12028.	416.44
Stddev	1205.	73.	2.18
%RSD	.47237	.60509	.52273
#1	254220.	11977.	417.98
#2	255930.	12080.	414.90

Sample Name: RB      Acquired: 6/3/2010 11:23:10      Type: Unk  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	2.054	.0115	-.0044	.0015	.0009	1.451	.0043	.0071	-.0037

#1	2.028	.0135	.0059	.0020	-.0005	1.502	.0010	.0074	.0002
#2	2.080	.0096	-.0148	.0010	.0024	1.399	.0075	.0068	-.0076

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.4636	.0031	2.292	.0040	-.0019	.0008	.0038	.0004	.0054

#1	.4668	.0034	2.427	.0042	-.0027	-.0010	-.0008	.0005	.0049
#2	.4604	.0027	2.158	.0038	-.0010	.0026	.0083	.0004	.0059

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	Cts/S
Avg	.0051	.1086	.0023	*****

#1	.0047	.2848	.0019	13340.
#2	.0055	-.0675	.0027	13360.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	290830.	12480.	459.99

#1	290340.	12546.	458.98
#2	291310.	12415.	461.01



Sample Name: K1005311-MB      Acquired: 6/3/2010 11:26:09      Type: Unk  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.1207	.0147	-.0114	-.0002	-.0005	.3460	-.0015	.0045
#1	.1726	.0188	-.0100	.0003	-.0008	.1833	-.0051	.0029
#2	.0689	.0106	-.0127	-.0007	-.0001	.5086	.0020	.0062

Elem	Cu3273	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0129	F .5660	.0024	.2604	.0029	-.0040	-.0015	.0015
#1	.0117	.6028	.0026	.3840	.0037	-.0033	-.0012	-.0032
#2	.0140	.5292	.0023	.1368	.0021	-.0046	-.0018	.0062

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0010	.0084	.0097	.0828	.0030	*****
#1	.0029	.0086	.0092	-.2001	.0003	13330.
#2	-.0049	.0083	.0102	.3656	.0056	13290.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	289540.	12443.	456.94
#1	288770.	12506.	456.39
#2	290310.	12381.	457.49

Sample Name: LCSW      Acquired: 6/3/2010 11:29:09      Type: Unk  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B LCSW=0.1ml ICP7-47-B to 10ml

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	18.50	4.372	13.72	.4755	.5079	12.84	.9974	1.818	1.609
#1	18.44	4.358	13.71	.4748	.5063	12.92	.9960	1.818	1.615
#2	18.56	4.385	13.73	.4761	.5096	12.76	.9988	1.819	1.604

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	4.137	2.712	8.278	.9517	1.032	3.554	.0025	2.103	1.610
#1	4.158	2.709	8.264	.9506	1.034	3.548	.0054	2.104	1.610
#2	4.115	2.714	8.292	.9529	1.030	3.561	-.0003	2.102	1.610

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	Cts/S
Avg	1.597	139.5	2.128	*****
#1	1.594	140.0	2.125	13270.
#2	1.600	139.1	2.131	13270.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	289310.	12477.	462.00
#1	289380.	12463.	461.46
#2	289240.	12490.	462.53

Sample Name: K1005311-001      Acquired: 6/3/2010 11:31:57      Type: Unk

Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000

User: admin      :      :      :

Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1053.	.0008	.3145	.0344	.0297	1678.	.1321	.1030	.0369

#1	1053.	-.0104	.3132	.0341	.0307	1681.	.1303	.1059	.0518
#2	1052.	.0121	.3158	.0347	.0288	1676.	.1338	.1000	.0220

Elem	Fe2599	Pb2203	Mg2790	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	781.8	.7013	1919.	72.03	.0022	.4686	-.0096	2.405	11.93

#1	783.0	.7019	1917.	72.10	.0038	.4678	-.0170	2.417	11.92
#2	780.6	.7007	1920.	71.96	.0005	.4693	-.0022	2.393	11.93

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	Cts/S
Avg	11.54	482.4	4.584	*****

#1	11.52	480.9	4.586	13780.
#2	11.56	484.0	4.582	13780.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	297020.	13107.	437.32

#1	297240.	13044.	436.90
#2	296800.	13170.	437.74

Sample Name: K1005311-001D      Acquired: 6/3/2010 11:35:47      Type: Unk

Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000

User: admin      :      :      :

Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1321.	-.0083	.4266	.0480	.0425	1881.	.1679	.1439	.0611

#1	1315.	-.0026	.4359	.0477	.0426	1884.	.1615	.1418	.0692
#2	1328.	-.0141	.4173	.0483	.0425	1877.	.1743	.1459	.0531

Elem	Fe2599	Pb2203	Mg2790	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	974.8	.9701	2221.	87.97	.0011	.6096	-.0135	3.131	15.93

#1	973.9	.9667	2224.	87.68	.0018	.6044	-.0124	3.111	15.87
#2	975.7	.9735	2217.	88.27	.0004	.6147	-.0146	3.151	15.99

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	Cts/S
Avg	15.34	612.8	5.075	*****

#1	15.32	610.7	5.045	14000.
#2	15.35	615.0	5.104	13980.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	298630.	13271.	435.58

#1	299630.	13287.	436.40
#2	297620.	13256.	434.75

Sample Name: K1005311-002      Acquired: 6/3/2010 11:39:40      Type: Unk  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1213.	.0007	.4219	.0133	.0088	2049.	.1690	.2843	.2335
#1	1207.	.0038	.4040	.0132	.0074	2049.	.1705	.2822	.2272
#2	1219.	-.0024	.4398	.0133	.0103	2049.	.1674	.2865	.2398

Elem	Fe2599	Pb2203	Mg2790	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	794.6	.8829	2354.	26.41	.0012	1.396	-.0119	4.029	4.402
#1	793.9	.8845	2357.	26.35	.0018	1.400	-.0084	4.018	4.416
#2	795.3	.8814	2350.	26.47	.0006	1.392	-.0155	4.041	4.388

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	Cts/S
Avg	4.167	602.5	6.583	*****
#1	4.160	599.8	6.565	13950.
#2	4.174	605.2	6.601	13960.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	297420.	13299.	429.36
#1	297240.	13245.	427.28
#2	297610.	13354.	431.44

Sample Name: CCVA2      Acquired: 6/3/2010 11:43:27      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	8.875	2.053	3.363	2.235	2.227	5.873	4.833	4.299	3.933
Stddev	.013	.003	.045	.006	.003	.227	.025	.009	.002
%RSD	.1464	.1534	1.329	.2804	.1157	3.860	.5261	.2074	.0405
#1	8.884	2.055	3.394	2.240	2.225	5.713	4.815	4.305	3.934
#2	8.866	2.051	3.331	2.231	2.228	6.034	4.851	4.293	3.932

Check ?      None Chk Pass      None Chk Pass Chk Pass      None Chk Pass Chk Pass Chk Pass  
 Value  
 Range

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	4.416	1.211	10.52	9.983	4.593	4.414	2.645	4.296	2.308
Stddev	.017	.006	.50	.136	.024	.024	.008	.015	.002
%RSD	.3870	.5260	4.773	1.364	.5117	.5439	.3100	.3420	.0695
#1	4.404	1.215	10.88	10.08	4.576	4.397	2.651	4.306	2.309
#2	4.428	1.206	10.17	9.887	4.610	4.431	2.639	4.285	2.307

Check ?      None Chk Pass      None      None Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass  
 Value  
 Range

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	4.941	3.850	3.830	4.256	5.264	*****
Stddev	.007	.007	.003	.227	.015	----
%RSD	.1524	.1867	.0724	5.338	.2928	----
#1	4.936	3.855	3.828	4.417	5.254	13320.
#2	4.946	3.845	3.832	4.096	5.275	13320.

Check ?      Chk Pass Chk Pass Chk Pass      None Chk Pass      None  
 Value  
 Range

Sample Name: CCVA2      Acquired: 6/3/2010 11:43:27      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	290600.	12520.	464.09
Stddev	1213.	121.	1.93
%RSD	.41739	.96990	.41585
#1	291460.	12606.	462.73
#2	289740.	12434.	465.46

Sample Name: CCVB2      Acquired: 6/3/2010 11:46:18      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	365.5	.0217	13.37	.0000	.0344	246.7	-.0007	.0094	-.0010
Stddev	.3	.0013	.00	.0006	.0002	.1	.0018	.0009	.0055
%RSD	.0725	5.861	.0041	2623.	.5253	.0413	244.4	9.381	551.9

#1	365.7	.0208	13.37	-.0004	.0342	246.8	-.0020	.0100	.0029
#2	365.3	.0226	13.37	.0004	.0345	246.6	.0005	.0087	-.0049

Check ?	Chk Pass	None	Chk Pass	None	None	Chk Pass	None	None	None
Value Range									

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	176.3	.0014	403.8	400.5	.0075	.0446	.0032	.0005	.0038
Stddev	.2	.0038	.4	1.4	.0001	.0132	.0039	.0024	.0009
%RSD	.1382	275.6	.1049	.3576	1.012	29.56	120.4	473.8	23.10

#1	176.5	.0040	404.1	399.5	.0075	.0353	.0059	.0022	.0032
#2	176.2	-.0013	403.5	401.6	.0076	.0540	.0005	-.0012	.0044

Check ?	Chk Pass	None	Chk Pass	Chk Pass	None	None	None	None	None
Value Range									

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0034	.0030	-.0007	345.8	.0134	*****
Stddev	.0091	.0007	.0003	.5	.0066	----
%RSD	271.4	25.16	40.48	.1350	49.32	----

#1	.0031	.0035	-.0005	345.4	.0087	13390.
#2	-.0098	.0024	-.0008	346.1	.0181	13370.

Check ?	None	None	None	Chk Pass	None	None
Value Range						



Sample Name: CCVB2      Acquired: 6/3/2010 11:46:18      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	290250.	12557.	451.85
Stddev	1090.	62.	.96
%RSD	.37546	.49595	.21323
#1	291020.	12601.	452.54
#2	289480.	12513.	451.17

Sample Name: CCB2      Acquired: 6/3/2010 11:49:40      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	-.0101	.0063	.0153	.0002	-.0008	-.2563	.0074	-.0011	-.0066
Stddev	.0528	.0056	.0005	.0000	.0004	.1339	.0056	.0001	.0070
%RSD	524.3	88.76	3.334	6.448	58.21	52.26	76.20	10.72	106.2
#1	-.0474	.0023	.0149	.0002	-.0004	-.1616	.0034	-.0010	-.0016
#2	.0272	.0103	.0156	.0002	-.0011	-.3510	.0114	-.0011	-.0115

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0325	.0022	.4487	.0931	.0046	.0326	-.0043	-.0011	.0007
Stddev	.0318	.0026	.3943	.1458	.0010	.0109	.0004	.0014	.0009
%RSD	97.89	118.4	87.89	156.7	21.64	33.58	9.241	127.6	129.0
#1	.0100	.0040	.7275	.1962	.0039	.0248	-.0045	-.0021	.0001
#2	.0549	.0004	.1699	-.0101	.0053	.0403	-.0040	-.0001	.0014

Check ?    Chk Pass   Chk Pass          None   Chk Pass   Chk Pass          None   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0030	.0003	.0005	.4064	-.0012	*****
Stddev	.0005	.0016	.0010	.6191	.0001	----
%RSD	16.80	548.2	176.2	152.3	9.013	----
#1	-.0033	.0015	-.0001	-.0314	-.0011	13400.
#2	-.0026	-.0009	.0012	.8442	-.0013	13340.

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass          None  
 High Limit  
 Low Limit

Sample Name: CCB2      Acquired: 6/3/2010 11:49:40      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	292540.	12367.	457.55
Stddev	444.	30.	2.40
%RSD	.15166	.24249	.52378
#1	292230.	12388.	455.85
#2	292850.	12345.	459.24

Sample Name: K1005311-002L      Acquired: 6/3/2010 11:52:01      Type: Unk  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	235.9	.0076	.1129	.0027	.0004	428.6	.0347	.0615	.0349

#1	234.3	.0112	.0979	.0018	.0003	424.7	.0364	.0607	.0317
#2	237.5	.0040	.1279	.0036	.0005	432.6	.0330	.0623	.0382

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	167.0	.1821	489.5	5.594	-.0019	.2860	-.0024	.8369	.8943

#1	165.5	.1832	487.2	5.588	-.0032	.2815	-.0034	.8305	.8904
#2	168.4	.1809	491.8	5.600	-.0007	.2906	-.0013	.8432	.8981

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	Cts/S
Avg	.8600	117.1	1.382	*****

#1	.8552	116.6	1.378	13460.
#2	.8648	117.6	1.386	13460.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	291780.	12605.	448.47

#1	291340.	12652.	449.29
#2	292220.	12558.	447.65

Sample Name: K1005311-002S      Acquired: 6/3/2010 11:55:54      Type: Unk  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B S=0.1ml ICP7-47-B to 5ml

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1231.	3.188	10.35	.2223	.3657	2053.	1.940	.9877	3.184
#1	1235.	6.288	20.67	.4700	.7289	2050.	1.940	1.981	3.198
#2	1227.	.0874	.0423	-.0254	.0025	2057.	1.941	-.0059	3.170

Elem	Fe2599	Pb2203	Mg2790	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	788.8	1.610	2332.	27.84	.5424	2.079	-.0110	7.732	1.950
#1	787.8	3.225	2329.	27.87	1.082	4.235	-.0094	7.780	3.887
#2	789.7	-.0063	2335.	27.80	.0025	-.0776	-.0126	7.683	.0134

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	ppm
Avg	2.683	854.2	10.39	*****
#1	5.418	855.7	10.42	----
#2	-.0515	852.8	10.36	43510.

*Dilute  
 sample  
 6/3/10*

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	294430.	13204.	1081.9
#1	294140.	13212.	641.98
#2	294720.	13197.	1521.9

Sample Name: K1005430-001      Acquired: 6/3/2010 11:58:54      Type: Unk

Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000

User: admin      :      :      :

Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	439.1	.0116	.1693	.0370	.0337	908.5	.3170	.3060	.8772

#1	439.0	.0207	.1667	.0363	.0348	915.3	.3199	.3073	.8880
#2	439.2	.0024	.1720	.0377	.0326	901.7	.3140	.3047	.8665

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	575.6	1.052	198.7	14.85	.0012	.6354	-.0023	.7730	7.654

#1	580.6	1.051	198.1	14.84	.0013	.6333	-.0034	.7756	7.639
#2	570.6	1.054	199.4	14.86	.0011	.6374	-.0013	.7704	7.668

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	Cts/S
Avg	7.554	289.2	10.91	*****

#1	7.546	288.2	10.89	13590.
#2	7.562	290.2	10.92	13560.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	292190.	12696.	451.90

#1	292530.	12604.	452.90
#2	291850.	12788.	450.89

Sample Name: K1005430-002      Acquired: 6/3/2010 12:02:36      Type: Unk

Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000

User: admin      :      :      :

Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	535.7	.0336	.3624	.0630	.0581	1344.	.4797	.1563	.6400

#1	533.8	.0416	.3674	.0626	.0577	1344.	.4810	.1577	.6383
#2	537.6	.0256	.3575	.0634	.0586	1344.	.4785	.1548	.6416

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	424.2	1.866	134.9	9.334	.0048	.2972	-.0062	1.025	4.460

#1	424.4	1.852	134.7	9.383	.0017	.2940	-.0089	1.031	4.419
#2	424.0	1.880	135.1	9.284	.0079	.3005	-.0035	1.019	4.501

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	Cts/S
Avg	4.363	196.1	8.252	*****

#1	4.358	195.1	8.292	13790.
#2	4.368	197.2	8.213	13760.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	295590.	12937.	447.83

#1	293950.	12883.	451.58
#2	297230.	12991.	444.09

Sample Name: K1005311-002S      Acquired: 6/3/2010 12:06:14      Type: Unk

Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000

User: admin      :      :      :

Comment: S=0.2ml ICP7-47-B to 10ml

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1223.	8.290	27.46	.9428	.9654	2053.	2.036	3.863	3.329

#1	1220.	8.320	27.61	.9420	.9695	2052.	2.047	3.858	3.335
#2	1227.	8.260	27.31	.9435	.9614	2054.	2.025	3.867	3.324

Elem	Fe2599	Pb2203	Mg2790	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	793.2	6.354	2324.	27.90	2.121	8.284	-.0166	7.942	7.449

#1	790.6	6.353	2324.	27.89	2.120	8.277	-.0132	7.963	7.425
#2	795.9	6.355	2324.	27.92	2.122	8.291	-.0199	7.922	7.473

Elem	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	Cts/S
Avg	7.086	874.9	10.57	*****

#1	7.089	876.1	10.57	13890.
#2	7.082	873.6	10.57	13890.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	294430.	13137.	429.68

#1	294560.	13155.	431.83
#2	294300.	13119.	427.52



Sample Name: CCVA3      Acquired: 6/3/2010 12:09:53      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	4.563	F .0235	-.0107	F .0001	F -.0001	6.673	F 2.324	F .0004
Stddev	6.072	.0354	.0003	.0003	.0006	.398	3.156	.0003
%RSD	133.1	150.9	2.617	237.3	419.6	5.969	135.8	69.11
#1	8.857	-.0016	-.0105	.0003	.0003	6.391	4.555	.0007
#2	.2697	.0485	-.0109	-.0001	-.0005	6.954	.0920	.0002
Check ?	None	Chk Fail	None	Chk Fail	Chk Fail	None	Chk Fail	Chk Fail
Value		2.053		2.224	2.224		4.808	4.242
Range		-10.00%		-10.00%	-10.00%		-10.00%	-10.00%
Elem	Cu3273	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 2.088	4.504	F -.0005	10.33	9.744	F 2.216	F 3.047	F -.0010
Stddev	2.586	.020	.0004	.14	.138	3.016	1.419	.0010
%RSD	123.8	.4327	93.28	1.329	1.421	136.1	46.56	97.20
#1	3.917	4.490	-.0002	10.23	9.842	4.348	4.050	-.0003
#2	.2595	4.518	-.0008	10.43	9.646	.0832	2.044	-.0017
Check ?	Chk Fail	None	Chk Fail	None	None	Chk Fail	Chk Fail	Chk Fail
Value	3.934		1.207			4.550	4.550	2.606
Range	-10.00%		-10.00%			-10.00%	-10.00%	-10.00%
Elem	Ni2216	Ag3280	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	F -.0020	F 1.187	F 2.349	F .0006	F .0049	4.387	F 2.603	*****
Stddev	.0009	1.542	3.219	.0000	.0027	.410	3.365	-----
%RSD	43.73	129.9	137.0	4.732	55.30	9.358	129.3	-----
#1	-.0014	2.277	4.625	.0006	.0068	4.677	4.982	43390.
#2	-.0026	.0969	.0731	.0007	.0030	4.096	.2234	43530.
Check ?	Chk Fail	Chk Fail	Chk Fail	Chk Fail	Chk Fail	None	Chk Fail	None
Value	4.260	2.317	4.908	3.823	3.823		5.223	
Range	-10.00%	-10.00%	-10.00%	-10.00%	-10.00%		-10.00%	

*Comment  
6/3/10*

Sample Name: CCVA3      Acquired: 6/3/2010 12:09:53      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	455660.	12234.	1515.0
Stddev	212590.	70.	5.7
%RSD	46.655	.57410	.37785
#1	305340.	12284.	1510.9
#2	605980.	12184.	1519.0

*Checked  
6/3/10*

Sample Name: CCVA3      Acquired: 6/3/2010 12:12:53      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B RERUN

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	<b>8.858</b>	<b>2.078</b>	<b>3.362</b>	<b>2.244</b>	<b>2.231</b>	<b>6.083</b>	<b>4.849</b>	<b>4.320</b>	<b>3.968</b>
Stddev	.056	.024	.021	.002	.006	.008	.005	.004	.005
%RSD	.6357	1.176	.6126	.0849	.2857	.1314	.1065	.0822	.1216
#1	8.898	2.061	3.377	2.242	2.226	6.077	4.853	4.322	3.971
#2	8.818	2.095	3.348	2.245	2.235	6.089	4.845	4.317	3.965
Check ?	None	Chk Pass	None	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	<b>4.505</b>	<b>1.219</b>	<b>10.32</b>	<b>9.826</b>	<b>4.646</b>	<b>4.304</b>	<b>2.637</b>	<b>4.315</b>	<b>2.299</b>
Stddev	.132	.000	1.02	.004	.008	.061	.012	.009	.000
%RSD	2.931	.0232	9.877	.0407	.1724	1.426	.4427	.2142	.0078
#1	4.412	1.219	9.599	9.823	4.640	4.347	2.629	4.308	2.299
#2	4.598	1.219	11.04	9.829	4.652	4.260	2.646	4.321	2.299
Check ?	None	Chk Pass	None	None	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	<b>4.982</b>	<b>3.856</b>	<b>3.854</b>	<b>4.010</b>	<b>5.292</b>	<b>*****</b>
Stddev	.006	.003	.009	.897	.001	-----
%RSD	.1271	.0715	.2465	22.36	.0098	-----
#1	4.977	3.854	3.848	4.644	5.292	13310.
#2	4.986	3.858	3.861	3.376	5.292	13300.
Check ?	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	None
Value						
Range						

Sample Name: CCVA3      Acquired: 6/3/2010 12:12:53      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B RERUN

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	290740.	12302.	464.41
Stddev	205.	23.	.47
%RSD	.07059	.18981	.10133
#1	290880.	12285.	464.08
#2	290590.	12318.	464.74

Sample Name: CCVB3      Acquired: 6/3/2010 12:15:44      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	364.6	.0097	13.52	.0003	.0333	250.5	.0059	.0042	.0013
Stddev	.7	.0089	.05	.0003	.0006	1.3	.0076	.0056	.0049
%RSD	.1979	92.41	.3617	115.5	1.944	.5040	128.0	133.8	393.1

#1	365.1	.0160	13.49	.0005	.0338	251.4	.0113	.0002	-.0022
#2	364.1	.0034	13.56	.0001	.0329	249.6	.0006	.0081	.0047

Check ?	Chk Pass	None	Chk Pass	None	None	Chk Pass	None	None	None
Value Range									

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	178.3	.0023	404.5	393.7	.0075	-.0112	.0015	.0010	.0032
Stddev	.3	.0003	3.7	.3	.0010	.0383	.0030	.0021	.0011
%RSD	.1490	14.97	.9232	.0782	13.54	340.7	199.4	221.6	35.31

#1	178.5	.0025	407.1	393.5	.0082	-.0383	-.0006	-.0005	.0040
#2	178.1	.0020	401.8	393.9	.0068	.0158	.0036	.0025	.0024

Check ?	Chk Pass	None	Chk Pass	Chk Pass	None	None	None	None	None
Value Range									

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0096	.0022	-.0016	344.4	.0122	*****
Stddev	.0043	.0018	.0008	1.9	.0005	----
%RSD	44.18	82.65	48.90	.5533	3.813	----

#1	-.0066	.0009	-.0010	343.1	.0125	13310.
#2	-.0126	.0035	-.0021	345.8	.0119	13250.

Check ?	None	None	None	Chk Pass	None	None
Value Range						

Sample Name: CCVB3      Acquired: 6/3/2010 12:15:44      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	286510.	12278.	446.87
Stddev	184.	79.	1.93
%RSD	.06408	.63984	.43121
#1	286380.	12222.	448.24
#2	286640.	12334.	445.51

Sample Name: CCB3      Acquired: 6/3/2010 12:19:07      Type: QC  
 Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 060310B

Elem	Al3944	Sb2068	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0319	-.0134	-.0019	.0000	-.0012	-.1463	-.0031	.0040	-.0072
Stddev	.0623	.0122	.0160	.000	.0013	.2068	.0053	.0030	.0003
%RSD	195.5	91.28	823.5	1123.	103.1	141.3	170.6	76.19	3.641
#1	.0759	-.0220	.0094	.0002	-.0003	-.2925	-.0068	.0061	-.0070
#2	-.0122	-.0047	-.0133	-.0003	-.0021	-.0001	.0006	.0018	-.0074

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0447	-.0022	.3859	-.0737	.0026	-.0050	-.0026	.0006	.0033
Stddev	.0258	.0068	.9576	.0268	.0009	.0194	.0025	.0001	.0036
%RSD	57.63	305.9	248.2	36.30	32.70	387.6	97.13	9.960	108.3
#1	.0265	-.0070	1.063	-.0926	.0033	.0087	-.0008	.0006	.0008
#2	.0630	.0026	-.2912	-.0548	.0020	-.0187	-.0044	.0005	.0059

Check ?    Chk Pass   Chk Pass          None   Chk Pass   Chk Pass          None   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0043	.0002	.0015	-.4942	.0038	*****
Stddev	.0012	.0023	.0018	.3754	.0029	----
%RSD	28.25	1150.	121.1	75.95	77.35	----
#1	-.0052	-.0014	.0002	-.2288	.0017	13260.
#2	-.0035	.0018	.0028	-.7597	.0058	13270.

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass          None  
 High Limit  
 Low Limit

Sample Name: CCB3      Acquired: 6/3/2010 12:19:07      Type: QC  
Method: 2010bSEM(v2)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 060310B

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	289910.	12230.	455.43
Stddev	87.	26.	2.86
%RSD	.02995	.21597	.62805
#1	289850.	12211.	453.40
#2	289970.	12248.	457.45



May 28, 2010

Analytical Report for Service Request No: K1004833

David Lingle  
URS Corporation  
9801 Westheimer, Suite 500  
Houston, TX 77042

**RE: East White Lake/07-47**

Dear David:

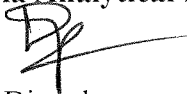
Enclosed are the results of the rush samples submitted to our laboratory on May 12, 2010. For your reference, these analyses have been assigned our service request number K1004833.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at [www.caslab.com](http://www.caslab.com). All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at [PDivvela@caslab.com](mailto:PDivvela@caslab.com).

Respectfully submitted,

**Columbia Analytical Services, Inc.**



Pradeep Divvela  
Project Chemist

PD/rh

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### Inorganic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

### Organic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**Columbia Analytical Services, Inc.**  
**Kelso, WA**  
**State Certifications, Accreditations, and Licenses**

<b>Program</b>	<b>Number</b>
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-



## **Case Narrative**

COLUMBIA ANALYTICAL SERVICES, INC.

**Client:** URS Corporation  
**Project:** East White Lake  
**Sample Matrix:** Sediment

**Service Request No.:** K1004833  
**Date Received:** 05/12-14/10

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Nineteen sediment samples were received for analysis at Columbia Analytical Services on 05/12-14/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Metals

No anomalies associated with the analysis of these samples were observed.

Approved by \_\_\_\_\_ Date 05/28/10

# **Chain of Custody Documentation**



# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1066

SR#: K1664833

PAGE 1 OF 2 COC # \_\_\_\_\_

PROJECT NAME: East white lake  
 PROJECT NUMBER: 07-47  
 PROJECT MANAGER: Jonathan Miller  
 COMPANY/ADDRESS: MP&A (Michael Pisanil Assoc.)  
 CITY/STATE/ZIP: 1100 Poydras, Ste 1430 New Orleans, LA 70163  
 E-MAIL ADDRESS: igmiller@ix.netcom.com  
 PHONE #: 504-582-2468 FAX# \_\_\_\_\_  
 SAMPLER'S SIGNATURE: [Signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS		REMARKS
Sed 9	5-5-10	1050		S	1		AAS / SEM
Sed 11	5-6-10	1135		S	1		XXXXXX
Sed 13	5-6-10	1330		S	1		XXXXXX
Sed 15	5-6-10	1710		S	1		XXXXXX
Sed 19	5-6-10	1600		S	1		XXXXXX
Sed 24	5-5-10	1350		S	1		XXXXXX
Sed 26	5-5-10	1570		S	1		XXXXXX
Sed 31	5-5-10	1345		S	1		XXXXXX
Sed 115	5-6-10	1710		S	1		XXXXXX
Sed 120	5-7-10	1215		S	1		XXXXXX

Circle which metals are to be analyzed:  
 Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:  
Lynda Huckestein - contact re: analysis  
Please provide email w/ results jgmiller@ix.netcom.com  
and pmritchie@ix.netcom.com

REPORT REQUIREMENTS  
 I. Routine Report: Method Blank, Surrogate, as required  
 II. Report Dup., MS, MSD as required  
 III. Data Validation Report (includes all raw data)  
 IV. CLP Deliverable Report  
 V. EDD

INVOICE INFORMATION  
 P.O. # 07-47  
 Bill To: same

TURNAROUND REQUIREMENTS  
 24 hr. \_\_\_\_\_ 48 hr. \_\_\_\_\_  
 5 Day \_\_\_\_\_  
 Standard (10-15 working days)  
 Provide FAX Results \_\_\_\_\_  
 Requested Report Date \_\_\_\_\_

RELINQUISHED BY: [Signature] Date/Time 5/10/10 Firm MP&A  
 Signature PATRICIA RITCHIE Printed Name MP&A

RECEIVED BY: [Signature] Date/Time 5/10/10 Firm \_\_\_\_\_  
 Signature [Signature] Printed Name \_\_\_\_\_

RELINQUISHED BY: [Signature] Date/Time 5/12/10 Firm WALTON  
 Signature [Signature] Printed Name WALTON

RECEIVED BY: [Signature] Date/Time 5-12-10 Firm \_\_\_\_\_  
 Signature [Signature] Printed Name \_\_\_\_\_





**Columbia Analytical Services, Inc.  
Cooler Receipt and Preservation Form**

PC AD

Client / Project: Michael Psarian Associates Service Request K10 04833

Received: 5-11-10 Opened: 5-11-10 By: Brad

1. Samples were received via? *Mail*  *Fed Ex*  *UPS*  *DHL*  *PDX*  *Courier*  *Hand Delivered*
2. Samples were received in: (circle)  *Cooler*  *Box*  *Envelope*  *Other* \_\_\_\_\_ *NA*
3. Were custody seals on coolers?  *NA*  *Y*  *N* If yes, how many and where? \_\_\_\_\_
- If present, were custody seals intact?  *Y*  *N* If present, were they signed and dated?  *Y*  *N*

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
-0.1	N/A	273	(NA)			X

7. Packing material used. *Inserts*  *Baggies*  *Bubble Wrap*  *Gel Packs*  *Wet Ice Sleeves*  *Other* \_\_\_\_\_
8. Were custody papers properly filled out (ink, signed, etc.)? NA  Y  N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA  Y  N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA  Y  N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA  Y  N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA  Y  N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below*  *NA*  *Y*  *N*
14. Were VOA vials received without headspace? *Indicate in the table below.*  *NA*  *Y*  *N*
15. Was C12/Res negative?  *NA*  *Y*  *N*

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Columbia Analytical Services, Inc.  
Cooler Receipt and Preservation Form**

PC PD

Client / Project: Michael Pisani and Assoc Service Request K10 04833

Received: 5-14-10 Opened: 5-14-10 By: BW

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 Front
- If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	NA	Tracking Number	NA	Filed
<u>0.2</u>	<u>1.1</u>	<u>257</u>			<u>enclosed</u>		

7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below. NA Y N
14. Were VOA vials received without headspace? Indicate in the table below. NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Sample I.D written on lids

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## **Total Solids**

Analytical Results

Client: URS Corporation  
 Project: East White Lake/07-47  
 Sample Matrix: Sediment

Service Request: K1004833

**Total Solids**

Prep Method: NONE  
 Analysis Method: 160.3M  
 Test Notes:

Units: PERCENT  
 Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
Sed 9	K1004833-001	05/05/2010	05/12/2010	05/17/2010	25.5	
Sed 11	K1004833-002	05/06/2010	05/12/2010	05/17/2010	31.2	
Sed 13	K1004833-003	05/06/2010	05/12/2010	05/17/2010	27.1	
Sed 15	K1004833-004	05/06/2010	05/12/2010	05/17/2010	25.7	
Sed 19	K1004833-005	05/06/2010	05/12/2010	05/17/2010	23.2	
Sed 24	K1004833-006	05/05/2010	05/12/2010	05/17/2010	32.6	
Sed 26	K1004833-007	05/05/2010	05/12/2010	05/17/2010	23.0	
Sed 31	K1004833-008	05/05/2010	05/12/2010	05/17/2010	32.7	
Sed 115	K1004833-009	05/06/2010	05/12/2010	05/17/2010	29.1	
Sed 120	K1004833-010	05/07/2010	05/12/2010	05/17/2010	22.8	
Sed Bk-06	K1004833-011	05/10/2010	05/14/2010	05/17/2010	32.8	
Sed Bk-01	K1004833-012	05/10/2010	05/14/2010	05/17/2010	29.9	
Sed Bk-02	K1004833-013	05/10/2010	05/14/2010	05/17/2010	27.1	
Sed Bk-03	K1004833-014	05/10/2010	05/14/2010	05/17/2010	29.2	
Sed Bk-04	K1004833-015	05/10/2010	05/14/2010	05/17/2010	36.4	
Sed Bk-05	K1004833-016	05/11/2010	05/14/2010	05/17/2010	21.7	
Sed Bk-09	K1004833-017	05/11/2010	05/14/2010	05/17/2010	27.0	
Sed Bk-07	K1004833-018	05/11/2010	05/14/2010	05/17/2010	23.6	
Sed Bk-08	K1004833-019	05/11/2010	05/14/2010	05/17/2010	29.3	

QA/QC Report

Client: URS Corporation  
 Project: East White Lake/07-47  
 Sample Matrix: Sediment

Service Request: K1004833  
 Date Collected: 05/05/2010  
 Date Received: 05/12/2010  
 Date Analyzed: 05/17/2010

Duplicate Sample Summary  
 Total Solids

Prep Method: NONE  
 Analysis Method: 160.3M  
 Test Notes:

Units: PERCENT  
 Basis: Wet

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Sed 9	K1004833-001	25.5	27.7	26.6	8	

QA/QC Report

Client: URS Corporation  
 Project: East White Lake/07-47  
 Sample Matrix: Sediment

Service Request: K1004833  
 Date Collected: 05/10/2010  
 Date Received: 05/14/2010  
 Date Analyzed: 05/17/2010

Duplicate Sample Summary  
 Total Solids

Prep Method: NONE  
 Analysis Method: 160.3M  
 Test Notes:

Units: PERCENT  
 Basis: Wet

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Sed Bk-06	K1004833-011	32.8	31.7	32.3	3	

COLUMBIA ANALYTICAL SERVICES, INC.

EPA Method 160.3 - Total Solids

200911

Group ID: KWG1004485

Analyst: SARwood

Date Acquired: 05/17/2010 10:56

Date Completed: 05/17/2010 16:11

Oven TempStart: 105 DEG C

Oven TempEnd: 105 DEG C

Reviewed By: *SA*

Date Reviewed: 5/18/10

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
1	K1004777-001	Wheelabrator	SOIL	1.33g	15.44g	15.41g	99.8		
2	K1004785-001	SJGB014-S2	SEDIMENT	1.32g	18.23g	12.01g	63.2		
3	K1004785-002	SJGB014-S3	SEDIMENT	1.32g	25.65g	19.15g	73.3		
4	K1004785-003	SJGB014-S4	SEDIMENT	1.31g	20.51g	16.44g	78.8		
5	K1004785-004	SJGB014-S6	SEDIMENT	1.33g	19.25g	15.00g	76.3		
6	K1004785-005	SJGB016-S1	SEDIMENT	1.31g	16.66g	9.94g	56.2		
7	K1004785-006	SJGB016-S2	SEDIMENT	1.31g	26.88g	17.39g	62.9		
8	K1004785-007	SJGB016-S4	SEDIMENT	1.32g	18.81g	13.09g	67.3		
9	K1004785-008	SJGB016-S5	SEDIMENT	1.31g	22.21g	15.71g	68.9		
10	K1004785-009	SJGB015-S1	SEDIMENT	1.30g	21.96g	15.32g	67.9		
11	K1004785-010	SJGB015-S2	SEDIMENT	1.30g	21.43g	15.64g	71.2		
12	K1004785-011	SJGB015-S3	SEDIMENT	1.30g	15.05g	9.92g	62.7		
13	K1004785-012	SJGB015-S4	SEDIMENT	1.32g	15.60g	10.33g	63.1		
14	K1004825-001	SJNE008-GR1	SEDIMENT	1.31g	27.96g	18.70g	65.3		
15	K1004825-002	SJNE009-GR1	SEDIMENT	1.30g	27.12g	21.63g	78.7		
16	K1004825-003	SJNE010-GR1	SEDIMENT	1.30g	17.46g	6.22g	30.4		
17	K1004825-004	SJNE011-GR1	SEDIMENT	1.30g	18.91g	7.69g	36.3		
18	K1004825-005	SJNE012-GR1	SEDIMENT	1.31g	22.08g	17.05g	75.8		
19	K1004825-006	SJNE014-GR1	SEDIMENT	1.31g	17.92g	6.62g	32.0		
20	K1004825-007	SJNE017-GR1	SEDIMENT	1.30g	18.33g	6.25g	29.1		
21	K1004825-008	SJNE020-GR1-1	SEDIMENT	1.30g	17.91g	7.67g	38.4		
22	K1004825-009	SJNE020-GR1-2	SEDIMENT	1.30g	27.81g	12.67g	42.9		
23	K1004825-010	SJNE021-GR1	SEDIMENT	1.30g	20.49g	8.92g	39.7		
24	K1004825-011	SJNE015-GR1	SEDIMENT	1.31g	20.82g	13.70g	63.5		
25	K1004830-001	SJGB017-S1	SEDIMENT	1.32g	16.39g	10.99g	64.2		
26	K1004830-002	SJGB017-S2	SEDIMENT	1.31g	17.07g	10.13g	56.0		



Group ID: KWG1004485

Analyst: SARwood

Date Acquired: 05/17/2010 10:56

Date Completed: 05/17/2010 16:11

Oven TempStart: 105 DEG C

Oven TempEnd: 105 DEG C

Reviewed By: *JK*

Date Reviewed: 5/18/10

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
27	K1004830-003	SJGB017-S3	SEDIMENT	1.30g	18.93g	13.82g	71.0		
28	K1004830-004	SJGB017-S4	SEDIMENT	1.31g	17.52g	12.18g	67.1		
29	K1004830-005	SJGB013-S1	SEDIMENT	1.32g	19.65g	13.77g	67.9		
30	K1004830-006	SJGB013-S2	SEDIMENT	1.31g	18.99g	13.68g	70.0		
31	K1004830-007	SJGB013-S3	SEDIMENT	1.31g	21.12g	16.04g	74.4		
32	K1004830-008	SJGB013-S5	SEDIMENT	1.31g	18.57g	15.24g	80.7		
33	K1004833-001	Sed 9	SEDIMENT	1.31g	15.04g	4.81g	25.5		
34	K1004833-002	Sed 11	SEDIMENT	1.31g	12.89g	4.92g	31.2		
35	K1004833-003	Sed 13	SEDIMENT	1.30g	12.06g	4.22g	27.1		
36	K1004833-004	Sed 15	SEDIMENT	1.30g	13.62g	4.47g	25.7		
37	K1004833-005	Sed 19	SEDIMENT	1.31g	14.65g	4.40g	23.2		
38	K1004833-006	Sed 24	SEDIMENT	1.31g	13.47g	5.27g	32.6		
39	K1004833-007	Sed 26	SEDIMENT	1.31g	21.67g	6.00g	23.0		
40	K1004833-008	Sed 31	SEDIMENT	1.31g	15.12g	5.82g	32.7		
41	K1004833-009	Sed 115	SEDIMENT	1.31g	13.09g	4.74g	29.1		
42	K1004833-010	Sed 120	SEDIMENT	1.31g	11.74g	3.69g	22.8		
43	K1004833-011	Sed Bk-06	SEDIMENT	1.31g	13.33g	5.25g	32.8		
44	K1004833-012	Sed Bk-01	SEDIMENT	1.32g	11.05g	4.23g	29.9		
45	K1004833-013	Sed Bk-02	SEDIMENT	1.31g	10.14g	3.70g	27.1		
46	K1004833-014	Sed Bk-03	SEDIMENT	1.31g	11.54g	4.30g	29.2		
47	K1004833-015	Sed Bk-04	SEDIMENT	1.31g	12.77g	5.48g	36.4		
48	K1004833-016	Sed Bk-05	SEDIMENT	1.30g	12.28g	3.68g	21.7		
49	K1004833-017	Sed Bk-09	SEDIMENT	1.31g	14.04g	4.75g	27.0		
50	K1004833-018	Sed Bk-07	SEDIMENT	1.30g	14.40g	4.39g	23.6		
51	K1004833-019	Sed Bk-08	SEDIMENT	1.29g	13.75g	4.94g	29.3		
52	K1004836-001	SJNE 008-GR1	SEDIMENT	1.31g	13.01g	8.03g	57.4		
53	K1004836-002	SJNE 012-GR1	SEDIMENT	1.31g	14.62g	11.33g	75.3		
54	K1004853-001	Solid Fuel-5/10/2010	SOLID FUEL	1.33g	8.92g	4.68g	44.1		As Received
55	K1004932-001	10FWA-DRMO-SO3.5-C18	SOIL	1.31g	14.34g	11.83g	80.7		
56	K1004932-002	10FWA-DRMO-SO02-C19	SOIL	1.32g	15.31g	12.87g	82.6		

Group ID: KWG1004485

Analyst: SARWOOD

Date Acquired: 05/17/2010 10:56

Date Completed: 05/17/2010 16:11

Oven TempStart: 105 DEG C

Oven TempEnd: 105 DEG C

Reviewed By:

Date Reviewed:

*SA*

5/18/10

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
57	K1004932-003	10FWA-DRMO-SO04-C22	SOIL	1.31g	15.50g	12.42g	78.3		
58	K1004932-004	10FWA-DRMO-SO4.5-C23	SOIL	1.31g	10.86g	10.52g	96.4		
59	K1004932-005	10FWA-DRMO-SO04-C24	SOIL	1.31g	14.71g	12.04g	80.1		
60	K1004932-006	10FWA-DRMO-SO01-C25	SOIL	1.32g	15.84g	15.49g	97.6		
61	K1004932-007	10FWA-DRMO-SO0.5-C26	SOIL	1.30g	15.78g	15.50g	98.1		
62	K1004932-008	10FWA-DRMO-SO0.5-C27	SOIL	1.31g	14.32g	14.00g	97.5		
63	K1004932-009	10FWA-DRMO-SO01-C28	SOIL	1.32g	14.01g	13.81g	98.4		
64	K1004932-010	10FWA-DRMO-SO0.5-C29	SOIL	1.31g	14.20g	13.85g	97.3		
65	K1004932-011	10FWA-DRMO-SO3.5-C30	SOIL	1.30g	12.68g	12.18g	95.6		
66	K1004932-012	10FWA-DRMO-SO02-C31	SOIL	1.29g	15.49g	15.15g	97.6		
67	K1004932-013	10FWA-DRMO-SO03-C32	SOIL	1.32g	15.64g	15.12g	96.4		
68	K1004932-014	10FWA-DRMO-SO2.5-C33	SOIL	1.32g	10.82g	10.51g	96.7		
69	K1004932-015	10FWA-DRMO-SO3.5-C34	SOIL	1.32g	13.52g	13.16g	97.0		
70	K1004932-016	10FWA-DRMO-SO02-C35	SOIL	1.31g	14.20g	13.83g	97.1		
71	K1004932-017	10FWA-DRMO-SO1.5-C36	SOIL	1.31g	15.62g	15.34g	98.0		
72	K1004932-018	10FWA-DRMO-SO04-C38	SOIL	1.31g	13.57g	13.28g	97.6		
73	K1004932-019	10FWA-DRMO-SO04-C39	SOIL	1.31g	13.45g	13.23g	98.2		
74	K1004933-001	10FWA-DRMO-SO02-C01	SOIL	1.31g	14.61g	14.36g	98.1		
75	K1004933-002	10FWA-DRMO-SO1.5-C02	SOIL	1.30g	12.85g	11.96g	92.3		
76	K1004933-003	10FWA-DRMO-SO1.5-C03	SOIL	1.30g	13.44g	13.21g	98.1		
77	K1004933-004	10FWA-DRMO-SO02-C04	SOIL	1.31g	16.91g	16.52g	97.5		
78	K1004933-005	10FWA-DRMO-SO03-C05	SOIL	1.30g	15.56g	14.49g	92.5		
79	K1004933-006	10FWA-DRMO-SO1.5-C06	SOIL	1.31g	14.79g	14.46g	97.6		
80	K1004933-007	10FWA-DRMO-SO4.5-C07	SOIL	1.31g	13.12g	10.74g	79.8		
81	K1004933-008	10FWA-DRMO-SO4.5-C08	SOIL	1.32g	12.62g	10.08g	77.5		
82	K1004933-009	10FWA-DRMO-SO4.5-C09	SOIL	1.31g	11.95g	10.36g	85.1		
83	K1004933-010	10FWA-DRMO-SO3.5-C10	SOIL	1.31g	11.23g	9.41g	81.7		
84	K1004933-011	10FWA-DRMO-SO3.5-C11	SOIL	1.30g	11.29g	9.47g	81.8		
85	K1004933-012	10FWA-DRMO-SO02-C12	SOIL	1.30g	13.02g	12.71g	97.4		
86	K1004933-013	10FWA-DRMO-SO03-C13	SOIL	1.30g	12.61g	10.73g	83.4		
87	K1004933-014	10FWA-DRMO-SO2.5-C14	SOIL	1.32g	11.68g	10.69g	90.4		

Group ID: KWG1004485


Analyst: Sarwood

Date Acquired: 05/17/2010 10:56

Date Completed: 05/17/2010 16:11

Oven TempStart: 105 DEG C

Oven TempEnd: 105 DEG C

Reviewed By: 

Date Reviewed: 5/18/10

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
88	K1004933-015	10FWA-DRMO-SO3.5-C15	SOIL	1.33g	15.68g	14.21g	89.8		
89	K1004933-016	10FWA-DRMO-SO02-C16	SOIL	1.34g	14.79g	14.58g	98.4		
90	K1004933-017	10FWA-DRMO-SO1.5-C17	SOIL	1.34g	15.52g	15.17g	97.5		
91	K1004933-018	10FWA-DRMO-SO04-C20	SOIL	1.34g	13.56g	12.34g	90.0		
92	K1004933-019	10FWA-DRMO-SO04-C21	SOIL	1.33g	16.22g	14.59g	89.1		
93	KWG1004485-10	Duplicate Client Sample	SOIL	1.33g	13.81g	11.39g	80.6	K1004932-001	
94	KWG1004485-11	Duplicate Client Sample	SOIL	1.31g	13.60g	13.18g	96.6	K1004932-011	
95	KWG1004485-12	Duplicate Client Sample	SOIL	1.33g	12.45g	12.24g	98.1	K1004933-001	
96	KWG1004485-13	Duplicate Client Sample	SOIL	1.31g	12.88g	10.86g	82.5	K1004933-010	
97	KWG1004485-2	Duplicate Client Sample	SEDIMENT	1.32g	19.71g	13.44g	65.9	K1004785-001	
98	KWG1004485-3	Duplicate Client Sample	SEDIMENT	1.33g	15.55g	10.28g	62.9	K1004785-011	
99	KWG1004485-4	Duplicate Client Sample	SEDIMENT	1.32g	29.55g	19.25g	63.5	K1004825-001	
100	KWG1004485-5	Duplicate Client Sample	SEDIMENT	1.32g	23.45g	15.11g	62.3	K1004825-011	
101	KWG1004485-6	Duplicate Client Sample	SEDIMENT	1.32g	16.12g	10.73g	63.6	K1004830-001	
102	KWG1004485-7	Duplicate Client Sample	SEDIMENT	1.33g	13.83g	4.79g	27.7	K1004833-001	
103	KWG1004485-8	Duplicate Client Sample	SEDIMENT	1.33g	12.04g	4.72g	31.7	K1004833-011	
104	KWG1004485-9	Duplicate Client Sample	SEDIMENT	1.32g	14.52g	8.94g	57.7	K1004836-001	

## **General Chemistry Parameters**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client :** URS Corporation  
**Project Name :** East White Lake  
**Project Number :** 07-47  
**Sample Matrix :** SEDIMENT

**Service Request :** K1004833  
**Date Collected :** 05/05-11/10  
**Date Received :** 05/12-14/10

Sulfide, Acid-Volatile

**Prep Method :** Method  
**Analysis Method :** 821/R-91-100  
**Test Notes :**

**Units :** uMole/g  
**Basis :** Dry

Sample Name	Lab Code	MRL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
Sed 9	K1004833-001	1.2	20	5/18/2010	05/18/10	9.5	
Sed 11	K1004833-002	2.0	40	5/18/2010	05/18/10	20.1	
Sed 13	K1004833-003	4.6	80	5/18/2010	05/18/10	56.5	
Sed 15	K1004833-004	2.5	40	5/18/2010	05/18/10	33.6	
Sed 19	K1004833-005	5.4	80	5/18/2010	05/18/10	60.9	
Sed 24	K1004833-006	1.9	40	5/18/2010	05/18/10	13.8	
Sed 26	K1004833-007	5.4	80	5/18/2010	05/18/10	16.9	
Sed 31	K1004833-008	1.0	20	5/18/2010	05/18/10	4.7	
Sed 115	K1004833-009	2.1	40	5/18/2010	05/18/10	15.1	
Sed 120	K1004833-010	0.27	4	5/18/2010	05/18/10	1.66	
Sed Bk-06	K1004833-011	1.0	20	5/18/2010	05/18/10	4.8	
Sed Bk-01	K1004833-012	0.052	1	5/18/2010	05/18/10	ND	
Sed Bk-02	K1004833-013	2.3	40	5/18/2010	05/18/10	20.4	
Sed Bk-03	K1004833-014	2.1	40	5/18/2010	05/18/10	20.3	
Sed Bk-04	K1004833-015	1.7	40	5/18/2010	05/18/10	8.9	
Sed Bk-05	K1004833-016	0.072	1	5/18/2010	05/19/10	0.617	
Sed Bk-09	K1004833-017	0.058	1	5/18/2010	05/19/10	ND	
Sed Bk-07	K1004833-018	1.3	20	5/18/2010	05/19/10	14.5	
Sed Bk-08	K1004833-019	1.1	20	5/18/2010	05/19/10	15.4	
Method Blank	K1004833-MB	0.052	1	5/18/2010	05/18/10	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : URS Corporation  
Project Name : East White Lake  
Project Number : 07-47  
Sample Matrix : SEDIMENT

Service Request : K1004833  
Date Collected : 5/5/2010  
Date Received : 5/12/2010  
Date Prepared : 05/18/10  
Date Analyzed : 05/18/10

Duplicate Summary  
Inorganic Parameters

Sample Name : Sed 9  
Lab Code : K1004833-001DUP  
Test Notes :

Units : uMole/g  
Basis : Dry

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Sulfide, Acid-Volatile	Method	821/R-91-100	1.2	9.5	9.4	9.5	1	

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

Client : URS Corporation  
 Project Name : East White Lake  
 Project Number : 07-47  
 Sample Matrix : SEDIMENT

Service Request : K1004833  
 Date Collected : 5/5/2010  
 Date Received : 5/12/2010  
 Date Prepared : 05/18/10  
 Date Analyzed : 05/18/10

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : Sed 9  
 Lab Code : K1004833-001MS  
 Test Notes :

Units : uMole/g  
 Basis : Dry

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Sulfide, Acid-Volatile	Method	821/R-91-100	6.1	63.4	9.5	75.8	105	53-143	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : URS Corporation  
Project Name : East White Lake  
Project Number : 07-47  
Sample Matrix : SEDIMENT

Service Request : K1004833  
Date Collected : NA  
Date Received : NA  
Date Prepared : 05/18/10  
Date Analyzed : 05/18/10

Laboratory Control Sample Summary  
Inorganic Parameters

Sample Name : Laboratory Control Sample  
Lab Code : K1004833-LCS  
Test Notes :

Units : mg/Kg  
Basis : Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS	Result Notes
						Percent Recovery Acceptance Limits	
Sulfide, Acid-Volatile	Method	821/R-91-100	7.06	5.23	74	71-112	



# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : URS Corporation  
Project : East White Lake

Service Request : K1004833  
Date Collected : NA  
Date Received : NA

Sulfide  
821/R-91-100  
Units: mg/L

## CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CCV1 Result	5/18/2010	1.77	1.78	101
CCV2 Result	5/18/2010	1.77	1.78	101
CCV3 Result	5/18/2010	1.77	1.77	100
CCV4 Result	5/18/2010	1.77	1.77	100
CCV5 Result	5/18/2010	1.77	1.77	100
CCV6 Result	5/19/2010	1.77	1.82	103
CCV7 Result	5/19/2010	1.77	1.81	102

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : URS Corporation  
Project : East White Lake

Service Request : K1004833  
Date Collected : NA  
Date Received : NA

Sulfide  
821/R-91-100  
Units: mg/L

## CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CCB1 Result	5/18/2010	0.050	ND
CCB2 Result	5/18/2010	0.050	ND
CCB3 Result	5/18/2010	0.050	ND
CCB4 Result	5/18/2010	0.050	ND
CCB5 Result	5/18/2010	0.050	ND
CCB6 Result	5/19/2010	0.050	ND
CCB7 Result	5/19/2010	0.050	ND

Work Request # (Original K4833)

Tier: III

Date Analyzed: 5/18/10

Analyst: B. Hettler

Analysis: 821/R-91-100/AVS SEM

Run# 201330

### DATA QUALITY REPORT INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

- 1. Is the method name and number correct and appropriate? yes/no/NA
- 2. Holding times met for all analyses and for all samples? yes/no/NA
- 3. Are calculations correct? yes/no/NA
- 4. Is the reporting basis correct? (Dry Weight) yes/no/NA
- 5. All quality control criteria met? yes/no/NA
  - a. Is the calibration curve correlation coefficient  $\geq 0.995$ ? yes/no/NA
  - b. MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency? yes/no/NA
  - c. Are ICVs, CCVs, and CCBs all within acceptance limits? yes/no/NA
  - d. Are results for methods blanks all ND? yes/no/NA
  - e. Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.) yes/no/NA
  - f. Are all exceptions explained? yes/no/NA
- 6. Are all service requests that apply attached? yes/no/NA
- 7. Are all samples labelled correctly? yes/no/NA
- 8. Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample) yes/no/NA
- 9. Are detection limits and units reported correctly? yes/no/NA
- 10. Are proper Analysis/Extraction stickers included on report? yes/no/NA
- 11. Is the unused space on the benchsheet crossed out? yes/no/NA
- 12. Was analysis turned in by the due date? (n-2) (If not record SR#) yes/no/NA

**COMMENTS:**

K4833 #'s 16-19 added to analysis batch within 24 hours of start time.

Final Approved by: [Signature] Date: 5/19/10

DQREPORT

Run# 201330

Work Order #: K4833  
 Analysis: Acid Volatile Sulfides

Method: 821/R-91-100

	STD1	STD 2	STD 3	STD 4	STD 5	STD 6	STD 7	(R) = 0.9992
Conc. (mg/L)	0.000	0.044	0.441	0.883	1.324	1.765	2.206	Slope = 0.6376
Absorbance	0.0000	0.0326	0.3123	0.6084	0.8847	1.1519	1.3958	Y Int. = 0.0196

Date Prep'd	Sample #	Dil. Factor	Absorb. @ 670 nm	Conc. from Curve (mg/L)	Actual Conc. (mg/L)	Initial Wt./Vol. (g) / (ml)	Final Vol. (ml)	A Tower mg/L (solution)	B Tower mg/L (solution)	A & B mg/L - mg/kg as rec'd	% Solid	mg/kg dry	umole/g reported	mrl	mdl
5/18/2010	ICV	1	1.269	1.9598	1.9598	40	40	1.96		1.96				#####	#VALUE!
5/18/2010	JCB	1	0.000	-0.0308	<0.05	40	40	<0.05		<0.05				#####	#VALUE!
5/18/2010	CCB1	1	0.000	-0.0308	<0.05	40	40	<0.05		<0.05				#####	#VALUE!
5/18/2010	CCV1	1	1.152	1.7758	1.7758	40	40	1.78		1.78				#####	#VALUE!
5/18/2010	MB	1	0.002	-0.0272	<0.05	50	40	<0.05	-0.02	<0.05				#####	#VALUE!
5/18/2010	LCS	1	0.853	1.3066	1.3066	10.001	40	5.23	-0.10	5.23				#####	#VALUE!
5/18/2010	4833-1	20	0.461	0.6929	13.8575	7.168	40	77.33	-0.15	77.33	25.5	303.25	9.46	1.223	0.245
5/18/2010	4833-1d	20	0.464	0.6962	13.9234	7.278	40	76.52	-0.14	76.52	25.5	300.09	9.36	1.223	0.245
5/18/2010	4833-1ms	100	0.693	1.0560	105.5952	6.812	40	620.05	-0.15	620.05	25.5	2431.58	75.8	6.116	1.223
5/18/2010	4833-1msd	100	0.709	1.0804	108.0418	7.005	40	616.94	-0.15	616.94	25.5	2419.38	75.5	6.116	1.223
5/18/2010	4833-2	40	0.607	0.9209	36.8366	7.311	40	201.54	-0.15	201.54	31.2	645.96	20.1	1.999	0.400
5/18/2010	4833-3	80	0.717	1.0936	87.4874	7.126	40	491.09	-0.12	491.09	27.1	1812.13	56.5	4.604	0.921
5/18/2010	4833-4	40	0.836	1.2809	51.2342	7.398	40	277.02	-0.15	277.02	25.7	1077.89	33.6	2.427	0.485
5/18/2010	4833-5	80	0.675	1.0271	82.1675	7.259	40	452.78	-0.12	452.78	23.2	1951.62	60.9	5.378	1.076
5/18/2010	CCV2	1	1.152	1.7752	1.7752	40	40	1.78		1.78				#####	#VALUE!
5/18/2010	CCB2	1	0.000	-0.0308	<0.05	40	40	<0.05		<0.05				#####	#VALUE!
5/18/2010	4833-6	40	0.423	0.6323	25.2935	7.008	40	144.37	-0.14	144.37	32.6	442.85	13.8	1.914	0.383
5/18/2010	4833-7	80	0.203	0.2881	23.0464	7.412	40	124.37	-0.13	124.37	23.0	540.75	16.9	5.425	1.085
5/18/2010	4833-8	20	0.294	0.4306	8.6129	6.947	40	49.59	-0.13	49.59	32.7	151.66	4.73	0.954	0.191
5/18/2010	4833-9	40	0.428	0.6408	25.6322	7.280	40	140.84	-0.13	140.84	29.1	483.97	15.1	2.144	0.429
5/18/2010	4833-10	4	0.322	0.4749	1.8995	6.254	40	12.15	-0.16	12.15	22.8	53.28	1.66	0.274	0.055
5/18/2010	4833-11	20	0.305	0.4473	8.9454	7.064	40	50.65	-0.15	50.65	32.8	154.43	4.82	0.951	0.190
5/18/2010	4833-12	1	0.046	0.0417	<0.05	7.160	40	<0.05	-0.12	<0.05	29.9	42127389	0.02 J	0.052	0.010
5/18/2010	4833-13	40	0.536	0.8097	32.3887	7.312	40	177.18	-0.12	177.18	27.1	653.81	20.4	2.302	0.460
5/18/2010	4833-14	40	0.572	0.8665	34.6597	7.295	40	190.05	-0.11	190.05	29.2	650.84	20.3	2.136	0.427

CCV = 2ml\*35.3mg/l/40ml = 1.77mg/L %Rec = 101 101 100 100 100 103 102  
 LCS = 2ml\*35.3mg/l/ 10.001g = 7.06mg/kg %REC = 74  
 ICV = 2.25ml\*35.3mg/L/40ml = 1.99mg/L %REC = 98\*104  
 MS = (1ml\*3530mg/L/6.812g\*(25.5%))/32.06 = 63.4umole %REC = 105 X=9.41 RPD=1%  
 MSD = (1ml\*3530mg/L/ 7.005g\*(25.5%))/32.06 = 61.6umc %REC = 107  
 STD ID# s2/2-2-I CONC. = 3530mg/L K4833 #'s 16-19 added to analysis batch within 24 hours of start time.

Distilled By: <u>B. Holland</u>	Date Distilled: <u>5/18/10 1136</u>
Analyzed By: <u>B. Holland</u>	Date Analyzed: <u>5/18/10 - 5/19/10</u>
Reviewed By: <u>[Signature]</u>	Date Reviewed: <u>5/19/10</u>





Concentration Results

Date: 5/18/2010 Time: 3:35:05 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08110503  
 Method: 5-18-10  
 Ordinate mode: Single wavelength  
 Slit: UV/VIS: 1.00 nm  
 Baseline: No correction ( 0.00 0.00 )  
 Result Filename: TEMP.RCO  
 Autozero performed: 5/18/2010 3:30:42 PM  
 Analyst: cfs

5/18/10

Wavelength(s)	Sample ID	Ordinate	Factor	Concentration	Sample Info
670.0	0.0	ICV	1.2692	1.0000	1.9598 mg/l
670.0	0.0	ICB	-0.000	1.0000	-0.031* mg/l
670.0	0.0	CCB1	-0.000	1.0000	-0.031* mg/l
670.0	0.0	CCV1	1.1519	1.0000	1.7758 mg/l
670.0	0.0	MB	0.0023	1.0000	-0.027 mg/l
670.0	0.0	LCS	0.8527	1.0000	1.3067 mg/l
670.0	0.0	4833-1 <sup>1/20</sup>	0.4614	1.0000	0.6928 mg/l
670.0	0.0	4833-1d <sup>1/20</sup>	0.4635	1.0000	0.6962 mg/l
670.0	0.0	4833-1s <sup>2/20</sup>	0.6929	1.0000	1.0560 mg/l
670.0	0.0	4833-1sd <sup>2/20</sup>	0.7085	1.0000	1.0805 mg/l
670.0	0.0	4833-2 <sup>2.5/20</sup>	0.6068	1.0000	0.9208 mg/l
670.0	0.0	4833-3 <sup>3.5/20</sup>	0.7169	1.0000	1.0936 mg/l
670.0	0.0	4833-4 <sup>4.5/20</sup>	0.8363	1.0000	1.2808 mg/l
670.0	0.0	4833-5 <sup>5.5/20</sup>	0.6745	1.0000	1.0271 mg/l
670.0	0.0	CCV2	1.1515	1.0000	1.7753 mg/l
670.0	0.0	CCB2	0.0000	1.0000	-0.030 mg/l
670.0	0.0	4833-6 <sup>6.5/20</sup>	0.4228	1.0000	0.6323 mg/l
670.0	0.0	4833-7 <sup>7.5/20</sup>	0.2033	1.0000	0.2881 mg/l
670.0	0.0	4833-8 <sup>1/20</sup>	0.2942	1.0000	0.4306 mg/l
670.0	0.0	4833-9 <sup>2.5/20</sup>	0.4282	1.0000	0.6408 mg/l
670.0	0.0	4833-10 <sup>3.5/20</sup>	0.3224	1.0000	0.4748 mg/l
670.0	0.0	4833-11 <sup>4.5/20</sup>	0.3048	1.0000	0.4472 mg/l
670.0	0.0	4833-12 <sup>5.5/20</sup>	0.0462	1.0000	0.0417 mg/l
670.0	0.0	4833-13 <sup>6.5/20</sup>	0.5359	1.0000	0.8098 mg/l
670.0	0.0	4833-14 <sup>7.5/20</sup>	0.5721	1.0000	0.8665 mg/l
670.0	0.0	4833-15 <sup>8.5/20</sup>	0.2971	1.0000	0.4352 mg/l
670.0	0.0	CCV3	1.1502	1.0000	1.7731 mg/l
670.0	0.0	CCB3	0.0001	1.0000	-0.030 mg/l
670.0	0.0	MBb	0.0015	1.0000	-0.028 mg/l
670.0	0.0	LCSb	0.0034	1.0000	-0.025 mg/l
670.0	0.0	4833-1b	0.0030	1.0000	-0.026 mg/l
670.0	0.0	4833-1db	0.0029	1.0000	-0.026 mg/l
670.0	0.0	4833-1sb	0.0033	1.0000	-0.025 mg/l
670.0	0.0	4833-1sdb	0.0031	1.0000	-0.025 mg/l
670.0	0.0	4833-2b	0.0026	1.0000	-0.026 mg/l
670.0	0.0	4833-3b	0.0059	1.0000	-0.021 mg/l
670.0	0.0	4833-4b	0.0018	1.0000	-0.028 mg/l
670.0	0.0	4833-5b	0.0056	1.0000	-0.021 mg/l
670.0	0.0	CCV4	1.1493	1.0000	1.7718 mg/l
670.0	0.0	CCB4	0.0001	1.0000	-0.030 mg/l
670.0	0.0	4833-6b	0.0043	1.0000	-0.024 mg/l
670.0	0.0	4833-7b	0.0048	1.0000	-0.023 mg/l
670.0	0.0	4833-8b	0.0047	1.0000	-0.023 mg/l
670.0	0.0	4833-9b	0.0040	1.0000	-0.024 mg/l
670.0	0.0	4833-10b	0.0032	1.0000	-0.025 mg/l
670.0	0.0	4833-11b	0.0027	1.0000	-0.026 mg/l
670.0	0.0	4833-12b	0.0056	1.0000	-0.022 mg/l

5/18/10 modification

5/18/10  
5/19/10

075118/10

Date : 5/18/2010 Time : 15:58:27

670.0	0.0	4833-13b	0.0059	1.0000	-0.021	mg/l	
670.0	0.0	4833-14b	0.0069	1.0000	-0.019	mg/l	
670.0	0.0	4833-15b	0.0048	1.0000	-0.023	mg/l	
670.0	0.0	CCV5	1.1450	1.0000	1.7650	mg/l	
670.0	0.0	CCB5	0.0000	1.0000	-0.030	mg/l	
<del>670.0</del>	<del>0.0</del>	<del>sam53</del>	<del>-0.000</del>	<del>1.0000</del>	<del>-0.030*</del>	<del>mg/l</del>	<i>ENRA spots</i>
<del>670.0</del>	<del>0.0</del>	<del>sam54</del>	<del>-0.000</del>	<del>1.0000</del>	<del>-0.030*</del>	<del>mg/l</del>	

---

*SM*  
*5/19/10*



Concentration Results

Date: 5/19/2010 Time: 1:26:21 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501908110503  
 Method: 5-18-10  
 Ordinate mode: Single Wavelength  
 Slit: UV/VIS: 1.00 nm  
 Baseline: No correction ( 0.00 0.00 )  
 Result Filename: TEMP.RCO  
 Autozero performed: 5/19/2010 1:25:11 PM  
 Analyst: cfs

6/5/19/10

Wavelength(s)	Sample ID	Ordinate	Factor	Concentration	Sample Info
670.0	0.0	ICV	1.3027	1.0000	2.0124 mg/l
670.0	0.0	ICB	-0.002	1.0000	-0.034* mg/l
670.0	0.0	CCB16 <sup>Ⓟ</sup>	-0.002	1.0000	-0.034* mg/l
670.0	0.0	CCV16 <sup>Ⓟ</sup>	1.1791	1.0000	1.8185 mg/l
670.0	0.0	4833-16	0.5264	1.0000	0.7948 mg/l
670.0	0.0	4833-17	0.0121	1.0000	-0.011 mg/l
670.0	0.0	4833-18/120	0.6877	1.0000	1.0479 mg/l
670.0	0.0	4833-19/120	0.8681	1.0000	1.3308 mg/l
670.0	0.0	4833-16b	0.0015	1.0000	-0.028 mg/l
670.0	0.0	4833-17b	0.0027	1.0000	-0.026 mg/l
670.0	0.0	4833-18b	0.0065	1.0000	-0.020 mg/l
670.0	0.0	4833-19b	0.0062	1.0000	-0.021 mg/l
670.0	0.0	CCV27 <sup>Ⓟ</sup>	1.1727	1.0000	1.8085 mg/l
670.0	0.0	CCB27 <sup>Ⓟ</sup>	-0.002	1.0000	-0.034* mg/l

Ⓟ mis labeled 6/5/19/10

5/19/10

CALIBRATION

Date: 5/18/2010 Time: 3:30:42 PM  
Instrument: PerkinElmer Lambda 25 Serial No: 501S08110503  
Method: 5-18-10  
Ordinate mode: Single wavelength  
Baseline: No correction ( 0.00 0.00 )  
Analyst: cfs

SA 5/18/10

Wavelength(s)	Sample ID	Concentration	Ord. value	Comment
670.0	0.0 5-18-10.A01	0.0000 mg/l	-0.000	
670.0	0.0 5-18-10.A02	0.0440 mg/l	0.0326	
670.0	0.0 5-18-10.A03	0.4410 mg/l	0.3123	
670.0	0.0 5-18-10.A04	0.8830 mg/l	0.6084	
670.0	0.0 5-18-10.A05	1.3240 mg/l	0.8847	
670.0	0.0 5-18-10.A06	1.7650 mg/l	1.1519	
670.0	0.0 5-18-10.A07	2.2060 mg/l	1.3958	

Equation:  $y = 1.961893e-02 + 6.375998e-01 * x$

Residual error: 0.023708

Correlation coefficient: 0.999210

*SA 5/19/10*

CALIBRATION

Date: 5/19/2010 Time: 1:25:11 PM  
Instrument: PerkinElmer Lambda 25 Serial No: 501S08110503  
Method: 5-18-10  
Ordinate mode: Single Wavelength  
Baseline: No correction ( 0.00 0.00 )  
Analyst: cfs

5/15/10

Wavelength(s)	Sample ID	Concentration	Ord. value	Comment
670.0	0.0	5-18-10.A01	0.0000 mg/l	-0.000
670.0	0.0	5-18-10.A02	0.0440 mg/l	0.0326
670.0	0.0	5-18-10.A03	0.4410 mg/l	0.3123
670.0	0.0	5-18-10.A04	0.8830 mg/l	0.6084
670.0	0.0	5-18-10.A05	1.3240 mg/l	0.8847
670.0	0.0	5-18-10.A06	1.7650 mg/l	1.1519
670.0	0.0	5-18-10.A07	2.2060 mg/l	1.3958

Equation:  $y = 1.961893e-02 + 6.375998e-01 * x$

Residual error: 0.023708

Correlation coefficient: 0.999210

5/19/10

Run# 201330

COLUMBIA ANALYTICAL SERVICES, INC.

Work Order #: K4833

Method: 821/R-91-100

Analysis: AVS/SEM

Date Prepared	Sample Name Lab Code	Initial Wt./Vol. (g) or (ml)	AVS - Final Volume (mL)	mLs 50% HCl added	SEM - Final Volume (mL)	Sample description:
5/18/10	MS	50.0	40.6	10.0	100.0	
	LCS	10.001				
	4833-1	7.168				Dark Brown mud
	-1d	7.278				
	-1ms	6.812				
	-1msd	7.005				
	-2	7.311				Dark brown mud w/ city streets
	-3	7.126				Dark brown mud
	-4	7.398				
	-5	7.259				
	-6	7.008				
	-7	7.412				Brown mud w/ city streets
	-8	6.977				Brown mud
	-9	7.280				
	-10	6.257				oil mud w/ organic material
	-11	7.064				Brown mud
	-12	7.160				Dark brown mud w/ organic material
	-13	7.312				Brown mud
	-14	7.295				
	-15	6.680				
	-16	7.407				Dark brown mud w/ organic material
	-17	7.296				Brown mud
	-18	7.627				
	-19	7.342				

LCS 1 = % REC =  
 LCS 2 = % REC =  
 Spike = % REC =  
 Spike Dup. = % REC =

K4833 #15 16-19 added to distillation within 24 hours of start time x =  
 STD ID# = 52/2-2-F 3530 y/lc RPD =

Prepared By: <u>B. Nettles</u>	Date Prepared: <u>5/18/10 11:30</u>
Analyzes By: <u>B. Nettles</u>	Date Analyzed: <u>5/18/10 7 5/19/10</u>
Reviewed By: <u>[Signature]</u>	Date Reviewed: <u>5/19/10</u>

## **Metals**

# Columbia Analytical Services


## - Cover Page - INORGANIC ANALYSIS DATA PACKAGE

Client: US Geological Survey  
Project Name: East White Lake  
Project No.: 07-47

Service Request: K1004833

<u>Sample Name:</u>	<u>Lab Code:</u>
Sed 9	K1004833-001
Sed 9D	K1004833-001D
Sed 9S	K1004833-001S
Sed 11	K1004833-002
Sed 13	K1004833-003
Sed 15	K1004833-004
Sed 19	K1004833-005
Sed 24	K1004833-006
Sed 26	K1004833-007
Sed 31	K1004833-008
Sed 115	K1004833-009
Sed 120	K1004833-010
Sed Bk-06	K1004833-011
Sed Bk-01	K1004833-012
Sed Bk-02	K1004833-013
Sed Bk-03	K1004833-014
Sed Bk-04	K1004833-015
Sed Bk-05	K1004833-016
Sed Bk-09	K1004833-017
Sed Bk-07	K1004833-018
Sed Bk-08	K1004833-019
Method Blank	K1004833-MB

Comments:

Approved By: 

Date: 







Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: US Geological Survey Service Request: K1004833  
 Project No.: 07-47 Date Collected: 05/06/10  
 Project Name: East White Lake Date Received: 05/12/10  
 Matrix: SEDIMENT Units: umol/g  
 Basis: DRY

Sample Name: Sed 13 Lab Code: K1004833-003

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cadmium	6010B	0.0023	1.0	05/21/10	05/24/10	0.0031		
Copper	6010B	0.008	1.0	05/21/10	05/24/10	0.008	U	
Lead	6010B	0.012	1.0	05/21/10	05/24/10	0.078		
Nickel	6010B	0.018	1.0	05/21/10	05/24/10	0.049		
Zinc	6010B	0.008	1.0	05/21/10	05/24/10	0.557		

% Solids: 27.1

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: US Geological Survey Service Request: K1004833  
 Project No.: 07-47 Date Collected: 05/06/10  
 Project Name: East White Lake Date Received: 05/12/10  
 Matrix: SEDIMENT Units: umol/g  
 Basis: DRY

Sample Name: Sed 15 Lab Code: K1004833-004

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cadmium	6010B	0.0023	1.0	05/21/10	05/24/10	0.0023	U	
Copper	6010B	0.008	1.0	05/21/10	05/24/10	0.008	U	
Lead	6010B	0.013	1.0	05/21/10	05/24/10	0.037		
Nickel	6010B	0.018	1.0	05/21/10	05/24/10	0.032		
Zinc	6010B	0.008	1.0	05/21/10	05/24/10	0.280		

% Solids: 25.7

Comments:



Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: US Geological Survey Service Request: K1004833  
 Project No.: 07-47 Date Collected: 05/05/10  
 Project Name: East White Lake Date Received: 05/12/10  
 Matrix: SEDIMENT Units: umol/g  
 Basis: DRY

Sample Name: Sed 24 Lab Code: K1004833-006

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cadmium	6010B	0.0019	1.0	05/21/10	05/24/10	0.0019	U	
Copper	6010B	0.007	1.0	05/21/10	05/24/10	0.021		
Lead	6010B	0.011	1.0	05/21/10	05/24/10	0.029		
Nickel	6010B	0.015	1.0	05/21/10	05/24/10	0.029		
Zinc	6010B	0.007	1.0	05/21/10	05/24/10	0.208		

% Solids: 32.6

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: US Geological Survey Service Request: K1004833  
 Project No.: 07-47 Date Collected: 05/05/10  
 Project Name: East White Lake Date Received: 05/12/10  
 Matrix: SEDIMENT Units: umol/g  
 Basis: DRY

Sample Name: Sed 26 Lab Code: K1004833-007

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cadmium	6010B	0.0026	1.0	05/21/10	05/24/10	0.0039		
Copper	6010B	0.009	1.0	05/21/10	05/24/10	0.020		
Lead	6010B	0.014	1.0	05/21/10	05/24/10	0.094		
Nickel	6010B	0.020	1.0	05/21/10	05/24/10	0.088		
Zinc	6010B	0.009	1.0	05/21/10	05/24/10	0.665		

% Solids: 23.0

Comments:









Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Date Collected: 05/10/10

Project Name: East White Lake

Date Received: 05/14/10

Matrix: SEDIMENT

Units: umol/g

Basis: DRY

Sample Name: Sed Bk-06

Lab Code: K1004833-011

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cadmium	6010B	0.0019	1.0	05/21/10	05/24/10	0.0019	U	
Copper	6010B	0.007	1.0	05/21/10	05/24/10	0.010		
Lead	6010B	0.010	1.0	05/21/10	05/24/10	0.036		
Nickel	6010B	0.015	1.0	05/21/10	05/24/10	0.028		
Zinc	6010B	0.006	1.0	05/21/10	05/24/10	0.228		

% Solids: 32.8

Comments:



Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: US Geological Survey Service Request: K1004833  
 Project No.: 07-47 Date Collected: 05/10/10  
 Project Name: East White Lake Date Received: 05/14/10  
 Matrix: SEDIMENT Units: umol/g  
 Basis: DRY

Sample Name: Sed Bk-02 Lab Code: K1004833-013

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cadmium	6010B	0.0022	1.0	05/21/10	05/24/10	0.0022	U	
Copper	6010B	0.008	1.0	05/21/10	05/24/10	0.052		
Lead	6010B	0.012	1.0	05/21/10	05/24/10	0.030		
Nickel	6010B	0.017	1.0	05/21/10	05/24/10	0.043		
Zinc	6010B	0.008	1.0	05/21/10	05/24/10	0.189		

% Solids: 27.1

Comments:















Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: US Geological Survey Service Request: K1004833  
 Project No.: 07-47 Date Collected:  
 Project Name: East White Lake Date Received:  
 Matrix: SEDIMENT Units: umol/g  
 Basis: DRY

Sample Name: Method Blank Lab Code: K1004833-MB

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cadmium	6010B	0.0004	1.0	05/21/10	05/24/10	0.0004	U	
Copper	6010B	0.002	1.0	05/21/10	05/24/10	0.002	U	
Lead	6010B	0.002	1.0	05/21/10	05/24/10	0.002	U	
Nickel	6010B	0.003	1.0	05/21/10	05/24/10	0.003	U	
Zinc	6010B	0.002	1.0	05/21/10	05/24/10	0.002	U	

% Solids: 100.0

Comments:

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed

Concentration Units: umol/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Cadmium	11.10	11.11	100	2.22	2.11	95	2.23	100	6010B
Copper	9.83	9.74	99	3.93	3.92	100	4.01	102	6010B
Lead	12.10	11.97	99	1.21	1.14	94	1.21	100	6010B
Nickel	21.30	21.03	99	4.26	4.01	94	4.25	100	6010B
Zinc	19.10	18.96	99	3.82	3.62	95	3.85	101	6010B

**Metals**

- 2a -

**INITIAL AND CONTINUING CALIBRATION VERIFICATION**

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed

Concentration Units: umol/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Cadmium				2.22	2.20	99	2.15	97	6010B
Copper				3.93	4.00	102	3.96	101	6010B
Lead				1.21	1.19	98	1.16	96	6010B
Nickel				4.26	4.17	98	4.08	96	6010B
Zinc				3.82	3.77	99	3.70	97	6010B

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed

Concentration Units: umol/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Cadmium				2.22	2.21	100	2.15	97	6010B
Copper				3.93	3.99	102	3.97	101	6010B
Lead				1.21	1.20	99	1.17	97	6010B
Nickel				4.26	4.26	100	4.14	97	6010B
Zinc				3.82	3.81	100	3.72	97	6010B

**Metals**

- 2a -

**INITIAL AND CONTINUING CALIBRATION VERIFICATION**

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed

Concentration Units: umol/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Cadmium				2.22	2.21	100			6010B
Copper				3.93	3.98	101			6010B
Lead				1.21	1.20	99			6010B
Nickel				4.26	4.23	99			6010B
Zinc				3.82	3.82	100			6010B

Metals

- 2b -

CRDL STANDARD FOR AA AND ICP

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

Concentration Units: umol/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial		Final		
	True	Found	%R	True	Found	%R	Found	%R
Cadmium				0.0440	0.0441	100		
Copper				0.1600	0.149	93		
Lead				0.2400	0.230	96		
Nickel				0.3400	0.3017	89		
Zinc				0.1500	0.146	97		

**Metals**

- 3 -

**BLANKS**

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

Concentration Units: umol/L

Analyte	Initial Calib. Blank		Continuing Calibration Blank						Method
		C	1	C	2	C	3	C	
Cadmium	0.0440	U	0.0440	U	0.0440	U	0.0440	U	6010B
Copper	0.157	U	0.157	U	0.157	U	0.157	U	6010B
Lead	0.240	U	0.240	U	0.240	U	0.240	U	6010B
Nickel	0.340	U	0.340	U	0.340	U	0.340	U	6010B
Zinc	0.150	U	0.150	U	0.150	U	0.150	U	6010B



**Metals**

- 3 -

**BLANKS**

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

Concentration Units: umol/L

Analyte	Initial Calib. Blank	Continuing Calibration Blank						Method	
		C	1	C	2	C	3		C
Cadmium			0.0440	U	0.0440	U	0.0440	U	6010B
Copper			0.157	U	0.157	U	0.157	U	6010B
Lead			0.240	U	0.240	U	0.240	U	6010B
Nickel			0.340	U	0.340	U	0.340	U	6010B
Zinc			0.150	U	0.150	U	0.150	U	6010B

**Metals**

- 3 -

**BLANKS**

**Client:** US Geological Survey

**Service Request:** K1004833

**Project No.:** 07-47

**Project Name:** East White Lake

**Concentration Units:** umol/L

Analyte	Initial Calib. Blank	Continuing Calibration Blank						Method	
		C	1	C	2	C	3		C
Cadmium			0.0440	U					6010B
Copper			0.157	U					6010B
Lead			0.240	U					6010B
Nickel			0.340	U					6010B
Zinc			0.150	U					6010B

Metals

- 4 -

ICP INTERFERENCE CHECK SAMPLE

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICP ID Number: K-ICP-AES-03

ICS Source: Inorganic Ventures

Concentration Units: umol/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Cadmium		9	0	9	100			
Copper		8	0	7	91			
Lead		5	0	5	105			
Nickel		17	0	16	96			
Zinc		15	0	15	99			

80-120% control criteria is not applicable to interfering elements (Al,Ca,Fe,Mg).

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: US Geological Survey Service Request: K1004833  
 Project No.: 07-47 Units: UMOL/G  
 Project Name: East White Lake Basis: DRY  
 Matrix: SEDIMENT % Solids: 25.5

Sample Name: Sed 9S

Lab Code: K1004833-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Cadmium	75 - 125	0.0267		0.0024	U	0.024	111		6010B
Copper	75 - 125	0.167		0.081		0.086	100		6010B
Lead	75 - 125	0.176		0.052		0.132	94		6010B
Nickel	75 - 125	0.243		0.057		0.187	99		6010B
Zinc	75 - 125	0.424		0.325		0.084	118		6010B

An empty field in the Control Limit column indicates the control limit is not applicable



Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

Aqueous LCS Source: Inorganic Ventures

Solid LCS Source:

Analyte	Aqueous: umol/L			Solid: mg/kg				
	True	Found	%R	True	Found	C	Limits	%R
Cadmium	0.445	0.435	98					
Copper	1.570	1.629	104					
Lead	2.410	2.131	88					
Nickel	3.410	3.182	93					
Zinc	1.530	1.478	97					

Metals

- 9 -

ICP SERIAL DILUTIONS

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Units: UMOL/L

Project Name: East White Lake

Sample Name: Sed 9L

Lab Code: K1004833-001L

Analyte	Initial Sample Result (I)		Serial Dilution Result (S)		% Differ- ence	Q	M
Cadmium	0.0440	U	0.2200	U			P
Copper	1.484		1.585		6.8		P
Lead	0.946		1.200	U	100.0		P
Nickel	1.048		1.700	U	100.0		P
Zinc	5.936		6.385		7.6		P

Metals

- 10 -

DETECTION LIMITS

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICP/ICP-MS ID #:

GFAA ID #:

AA ID #:

Analyte	Wave-length (nm)	Back-ground	MRL umol/L	PQL umol/L	M
Cadmium	226.5		0.0440	0.0440	P
Copper	327.3		0.157	0.157	P
Lead	220.3		0.240	0.240	P
Nickel	221.6		0.34	0.34	P
Zinc	206.2		0.150	0.150	P

Comments:

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## Metals

- 11A -

## ICP INTERELEMENT CORRECTION FACTORS

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICP ID Number: K-ICP-AES-03

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Al	Ca	Fe	Mg	Co
Aluminum	394.401	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	-0.0000650	0.0000000	0.0000000
Arsenic	189.042	0.0000430	0.0000000	0.0000000	0.0000000	0.0000000
Barium	455.403	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000080	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0001930	0.0000000	0.0019780
Cadmium	226.502	0.0000000	0.0000000	0.0000910	0.0000000	-0.0001330
Calcium	393.366	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000070	0.0000000
Cobalt	230.786	0.0000000	0.0000000	0.0000140	0.0000000	0.0000000
Copper	327.396	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	259.94	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000370	0.0000000	0.0000000	0.0000000	0.0000000
Lithium	670.784	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	221.647	0.0000060	0.0000000	0.0000130	0.0000000	0.0000000
Phosphorus	214.914	-0.0008250	0.0000000	0.0009490	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	251.611	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	407.771	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0016260
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	336.121	0.0000000	0.0000000	0.0000000	0.0000000	0.0000280
Vanadium	292.402	0.0000000	0.0000000	0.0000220	0.0000000	0.0000000
Zinc	206.2	0.0000000	0.0000000	-0.0000570	0.0000000	0.0000000

Comments:

## Metals

- 11B -

## ICP INTERELEMENT CORRECTION FACTORS

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICP ID Number: K-ICP-AES-03

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Cr	Mn	Mo	Ni	Si
Aluminum	394.401	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0126720	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0005400	0.0000000	0.0004600	0.0000000	0.0000000
Barium	455.403	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	-0.0000220	-0.0001550	-0.0000290	0.0000000
Boron	249.678	0.0002310	0.0000000	-0.0008330	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000360	0.0000000	0.0000000
Calcium	393.366	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000920	0.0000000	0.0000000	0.0000000
Cobalt	230.786	-0.0000550	0.0000310	-0.0082200	0.0004230	0.0000000
Copper	327.396	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	259.94	0.0000000	0.0000000	-0.0002380	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0000000	-0.0064070	0.0000000	0.0001690
Lithium	670.784	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.03	0.0000490	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	221.647	-0.0002770	0.0000000	0.0000000	0.0000000	0.0002490
Phosphorus	214.914	0.0000000	-0.0011200	0.0084760	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0010370	0.0000000	0.0000000	0.0000000
Silicon	251.611	0.0000000	0.0000000	0.0078910	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	407.771	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0002230	0.0007110	0.0000000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	336.121	0.0000000	0.0000000	0.0000380	0.0001210	0.0000000
Vanadium	292.402	0.0000000	0.0000000	-0.0078980	0.0000000	0.0000000
Zinc	206.2	-0.0001370	0.0000000	0.0005030	0.0000000	0.0000000

Comments:

Metals

- 11B -

ICP INTERELEMENT CORRECTION FACTORS

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICP ID Number: K-ICP-AES-03

Analyte	Wave-length (nm)	Interelement Correction Factors for:			
		Ti	V		
Aluminum	394.401	0.0000000	0.0006800		
Antimony	206.833	0.0002810	0.0000000		
Arsenic	189.042	0.0000000	0.0000000		
Barium	455.403	0.0000000	0.0000000		
Beryllium	234.861	0.0000000	0.0000000		
Boron	249.678	0.0000000	0.0000000		
Cadmium	226.502	0.0000300	0.0000000		
Calcium	393.366	0.0000000	0.0000000		
Chromium	267.716	0.0000000	-0.0000780		
Cobalt	230.786	0.0000000	0.0000000		
Copper	327.396	0.0000840	-0.0000420		
Iron	259.94	0.0000000	0.0000000		
Lead	220.353	-0.0005950	0.0000000		
Lithium	670.784	0.0000000	0.0000000		
Magnesium	285.213	0.0000000	0.0000000		
Manganese	257.61	0.0000000	0.0000000		
Molybdenum	202.03	0.0000000	0.0000000		
Nickel	221.647	-0.0006910	0.0000000		
Phosphorus	214.914	0.0000000	-0.0043120		
Potassium	766.491	0.0000000	0.0000000		
Selenium	196.0	0.0000000	0.0000000		
Silicon	251.611	0.0000000	0.0000000		
Silver	328.068	-0.0001050	0.0000730		
Sodium	589.592	0.0000000	0.0000000		
Strontium	407.771	0.0000000	0.0000000		
Thallium	190.856	-0.0008150	-0.0087710		
Tin	189.989	-0.0012350	0.0000000		
Titanium	336.121	0.0000000	0.0000000		
Vanadium	292.402	0.0003520	0.0000000		
Zinc	206.2	0.0000000	0.0000000		

Comments: \_\_\_\_\_

Metals

-12-

ICP LINEAR RANGES (QUARTERLY)

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

ICP ID Number: K-ICP-AES-03

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Cadmium	15.000	22500	6010B
Copper	15.000	90000	6010B
Lead	15.000	90000	6010B
Nickel	15.000	45000	6010B
Zinc	15.000	18000	6010B

Comments:

Metals  
-13-  
PREPARATION LOG

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

Method: P

Sample ID	Preparation Date	Initial Weight (g)	Final Volume (mL)
K1004833-001	05/21/10	7.17	0.0 100
K1004833-001D	05/21/10	7.28	0.0
K1004833-001S	05/21/10	7.17	0.0
K1004833-002	05/21/10	7.31	0.0
K1004833-003	05/21/10	7.13	0.0
K1004833-004	05/21/10	7.40	0.0
K1004833-005	05/21/10	7.26	0.0
K1004833-006	05/21/10	7.01	0.0
K1004833-007	05/21/10	7.41	0.0
K1004833-008	05/21/10	6.95	0.0
K1004833-009	05/21/10	7.28	0.0
K1004833-010	05/21/10	6.25	0.0
K1004833-011	05/21/10	7.06	0.0
K1004833-012	05/21/10	7.16	0.0
K1004833-013	05/21/10	7.31	0.0
K1004833-014	05/21/10	7.30	0.0
K1004833-015	05/21/10	6.68	0.0
K1004833-016	05/21/10	7.40	0.0
K1004833-017	05/21/10	7.30	0.0
K1004833-018	05/21/10	7.63	0.0
K1004833-019	05/21/10	7.34	0.0
K1004833-MB	05/21/10	10.00	0.0
LCSW	05/21/10	-50.0 100	50.0

**Metals**  
- 14 -  
**ANALYSIS RUN LOG**

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

Instrument ID Number: K-ICP-AES-03

Method: P

Start Date: 5/24/2010

End Date: 5/24/2010

Sample No.	D/F	Time	% R	Analytes																											
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K	S E	A G	N A	T L	V	Z N	C N				
BLK	1	14:52						X				X	X					X										X			
STD A	1	14:55						X				X	X					X										X			
STD B	1	14:58																													
ICV1	1	15:02						X				X	X					X										X			
ZZZZZ	1	15:05																													
ICB1	1	15:08						X				X	X					X										X			
CCVA1	1	15:10						X				X	X					X										X			
ZZZZZ	1	15:13																													
CCB1	1	15:17						X				X	X					X										X			
CRDL1	1	15:19						X				X	X					X										X			
ZZZZZ	1	15:22																													
ICSA	1	15:24						X				X	X					X										X			
IC SAB	1	15:28						X				X	X					X										X			
ZZZZZ	1	15:32																													
K1004833-MB	1	15:35						X				X	X					X										X			
LCSW	1	15:38						X				X	X					X										X			
K1004833-001	1	15:41						X				X	X					X										X			
K1004833-001D	1	15:44						X				X	X					X										X			
K1004833-001L	5	15:48						X				X	X					X										X			
CCVA2	1	15:51						X				X	X					X										X			
ZZZZZ	1	15:54																													
CCB2	1	15:57						X				X	X					X										X			
K1004833-001S	1	15:59						X				X	X					X										X			
K1004833-002	1	16:03						X				X	X					X										X			
K1004833-003	1	16:06						X				X	X					X										X			
K1004833-004	1	16:09						X				X	X					X										X			
K1004833-005	1	16:13						X				X	X					X										X			
K1004833-006	1	16:16						X				X	X					X										X			
K1004833-007	1	16:19						X				X	X					X										X			
K1004833-008	1	16:23						X				X	X					X										X			
K1004833-009	1	16:26						X				X	X					X										X			
K1004833-010	1	16:29						X				X	X					X										X			

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

**Metals**  
- 14 -  
**ANALYSIS RUN LOG**

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

Instrument ID Number: K-ICP-AES-03

Method: P

Start Date: 5/24/2010

End Date: 5/24/2010

Sample No.	D/F	Time	% R	Analytes																						
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K	S E	A G	N A	T L	V	Z N
CCVA3	1	16:32						X				X	X				X								X	
ZZZZZZ	1	16:35																								
CCB3	1	16:38						X				X	X				X								X	
K1004833-011	1	16:41						X				X	X				X								X	
K1004833-012	1	16:44						X				X	X				X								X	
K1004833-013	1	16:47						X				X	X				X								X	
K1004833-014	1	16:51						X				X	X				X								X	
K1004833-015	1	16:54						X				X	X				X								X	
K1004833-016	1	16:57						X				X	X				X								X	
K1004833-017	1	17:01						X				X	X				X								X	
K1004833-018	1	17:04						X				X	X				X								X	
K1004833-019	1	17:07						X				X	X				X								X	
ZZZZZZ	1	17:11																								
CCVA4	1	17:14						X				X	X				X								X	
ZZZZZZ	1	17:16																								
CCB4	1	17:20						X				X	X				X								X	
ZZZZZZ	1	17:22																								
ZZZZZZ	1	17:25																								
ZZZZZZ	1	17:28																								
ZZZZZZ	1	17:32																								
ZZZZZZ	1	17:36																								
ZZZZZZ	1	17:39																								
ZZZZZZ	1	17:43																								
ZZZZZZ	1	17:47																								
ZZZZZZ	1	17:50																								
ZZZZZZ	1	17:53																								
CCVA5	1	17:58						X				X	X				X								X	
ZZZZZZ	1	18:00																								
CCB5	1	18:04						X				X	X				X								X	
ZZZZZZ	1	18:06																								
ZZZZZZ	1	18:10																								
ZZZZZZ	1	18:15																								

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

**Metals**  
- 14 -  
**ANALYSIS RUN LOG**

Client: US Geological Survey

Service Request: K1004833

Project No.: 07-47

Project Name: East White Lake

Instrument ID Number: K-ICP-AES-03

Method: P

Start Date: 5/24/2010

End Date: 5/24/2010

Sample No.	D/F	Time	% R	Analytes																											
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K	S E	A G	A L	N T	V L	Z N	C N				
ZZZZZZ	1	18:18																													
ZZZZZZ	1	18:21																													
ZZZZZZ	1	18:24																													
ZZZZZZ	1	18:27																													
ZZZZZZ	1	18:30																													
ZZZZZZ	1	18:33																													
ZZZZZZ	1	18:36																													
CCVA6	1	18:39						X			X	X				X											X				
ZZZZZZ	1	18:42																													
CCB6	1	18:45						X			X	X				X											X				
ZZZZZZ	1	18:48																													
ZZZZZZ	1	18:51																													
ZZZZZZ	1	18:54																													
ZZZZZZ	1	18:57																													
CCVA7	1	19:00						X			X	X				X											X				
ZZZZZZ	1	19:03																													
CCB7	1	19:06						X			X	X				X											X				

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14



COLUMBIA ANALYTICAL SERVICES, INC.

Work Order #: K4833

Method: 821/R-91-100

Analysis: AVS/SEM

Date Prepared	Sample Name Lab Code	Initial Wt./Vol. (g) or (ml)	AVS - Final Volume (mL)	mLs 50% HCl added	SEM - Final Volume (mL)	Sample description:
5/18/10	MS	50.0	40.6	10.0	100.0	
	LCS	10.001				
	4833-1	7.168				Dark Brown mud
	-14	7.278				
	-1nc	6.812				
	-1msd	7.005				
	-2	7.311				Dark brown mud w/ oil streaks
	-3	7.126				Dark Brown mud
	-4	7.398				
	-5	7.259				
	-6	7.008				
	-7	7.412				Brown mud w/ oil streaks
	-8	6.977				Brown Mud
	-9	7.280				
	-10	6.257				
	-11	7.064				oil mud w/ organic material
	-12	7.160				Brown mud
	-13	7.312				Dark Brown mud w/ organic material
	-14	7.295				Brown mud
	-15	6.680				
	-16	7.407				Dark Brown mud w/ organic material
	-17	7.296				Brown mud
	-18	7.627				
	-19	7.342				

LCS 1 = \_\_\_\_\_ % REC = \_\_\_\_\_  
 LCS 2 = \_\_\_\_\_ % REC = \_\_\_\_\_  
 Spike = \_\_\_\_\_ % REC = \_\_\_\_\_  
 Spike Dup. = \_\_\_\_\_ % REC = \_\_\_\_\_

*copy*

K4833 #1's 16-19 added to distillation within 24 hours of start time x = \_\_\_\_\_  
 STD ID# = S2/2-2-I 3530 5/16 RPD = \_\_\_\_\_

Prepared By: <u>G. Nathan</u>	Date Prepared: <u>5/18/10</u> <u>11:30</u>
Analyzes By:	Date Analyzed:
Reviewed By:	Date Reviewed:

Service Request # K1004833  
Instrument ID# K-ICP-AES-03

## ICP-OES Data Review Form

	Yes	No
1. Standardization completed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. ICV within 10 % of true value	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. ICB below MRL	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. CRI standard analyzed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. ICS standards within 20% of true value	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. All preceding CCVs within 10 % of true value	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Following CCV within 10 % of true value	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Bracketing CCBs below MRL	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Method Blank below MRL	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. MS-MSD or Dup-MS and LCS within CAS control limits	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. All analytes within instrument linear range	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Adequate rinse out time allowed between samples to eliminate memory effect	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Comments:

StarLIMS Run # 201920      Saved under 052410DICP03  
NR 200.7. NR LL Ni. NR Fe. *Report CdZnCu, Zn 2062.*  
ICV/CCV/LCS: Cd=11.1/2.22/.445; Cu=9.83/3.93/1.57; Pb=  
12.1/1.21/2.41;

Ni=21.3/4.26/3.41; Ag=5.79/2.32/.927; Zn=19.1/3.82/1.53

*High RPD for Pb (68), Ag (37), Ni (32)  
Cu mark 5/24/10.*

Primary Review by UMMR      Date 5/25/10

Secondary Review by 3C      Date 5/25/10

**ICP SPIKE FORM**

Service Request # K1004833

Q.C. Sample # #1

Initials / Date mmw / 5/24/10

Circle type of sample: Water Aqueous **SEM** Soil Other: \_\_\_\_\_

Solution Name	Element	mLs of 1000ppm Solution	Final Volume	Solution Conc. mg/L	Enter mls Added
<b>SPIKE SOLN ICP7-33-A</b>	Al*	0.05	10	50	0.1
	Sb	0.50	10	50	
	As	0.10	10	100	
	Ba	0.05	10	5	
	Be	0.05	10	5	
	B	0.50	10	50	
	Cd	0.05	10	5	
	Ca*	0.05	10	50	
	Cr	0.05	10	5	
	Co	0.10	10	10	
	Cu	0.10	10	10	
	Fe	0.20	10	20	
	Pb	0.50	10	50	
	Mg	0.20	10	20	
	Mn	0.05	10	5	
	Mo	0.10	10	10	
	Ni	0.20	10	20	
	K*	0.30	10	300	
	Se	1.00	10	100	
	Na*	0.20	10	200	
	Sn	0.50	10	50	
	V	0.10	10	10	
	Zn	0.10	10	10	
	P*	0.20	10	200	
Si*	0.40	10	400		
Tl*	0.20	10	200		
Ti	0.10	10	10		
Li	0.10	10	10		
Sr	0.10	10	10		

**Expires:  
5/19/2010**

\* Denotes 10000ppm stock standard.

Additional Spikes

Individual Stock Standards	mls of standard	ppm	Logbook #	Exp. Date
<del>Ag</del>	<del>0.1 x 1/100</del>	<del>1000</del>	<del>MCH-83-5</del>	<del>5/16/10</del>

*mmw*  
*5/25/10*

Sample Name: BLK      Acquired: 5/24/2010 14:52:50      Type: Cal  
 Method: 2010aSEM(v7)      Mode: IR      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-70.98	3.307	.0001	1.740	.0035	.0000	.0039	16.87
Stddev	.74	1.512	.0009	.625	.0009	.000	.0011	2.64
%RSD	1.036	45.72	632.9	35.89	24.84	674.7	27.69	15.66

#1	-71.50	4.376	.0008	2.182	.0029	.0000	.0032	15.00
#2	-70.46	2.238	-.0005	1.299	.0042	-.0001	.0047	18.74

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.0058	-.0001	.0002	35.13	.0005	.0000	.0005	.0185
Stddev	.0006	.0008	.0002	8.80	.0000	.0000	.0003	.0003
%RSD	10.61	536.8	99.90	25.06	4.557	10.76	55.60	1.762

#1	.0063	-.0007	.0001	28.90	.0006	.0000	.0003	.0183
#2	.0054	.0004	.0004	41.35	.0005	.0000	.0007	.0187

Elem	Ag3280	V_2924	Zn2062	Zn2138	Si2516	Ti3361
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-22.98	.0005	-.0002	5.380	9.500	.0020
Stddev	3.44	.0000	.0012	.735	2.970	.0000
%RSD	14.96	6.603	532.8	13.66	31.26	2.175

#1	-20.55	.0005	-.0011	4.861	11.60	.0020
#2	-25.41	.0006	.0006	5.900	7.400	.0021

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	103910.	7867.4	1159.0
Stddev	514.	32.5	.3
%RSD	.49498	.41254	.02546

#1	103550.	7844.4	1159.2
#2	104280.	7890.3	1158.8

*unmarked  
5/24/10*

Sample Name: STD A      Acquired: 5/24/2010 14:55:52      Type: Cal  
 Method: 2010aSEM(v7)      Mode: IR      Corr. Factor: 1.000000  
 Jser: admin      :      :      :  
 Comment: 052410D ICP7-37-B

Elem	Cd2265	Cd2288	Cr2677	Co2307	Cu3273	Pb2203	Mn2576	Mn2605
Jnits	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	10.62	5968.	.1115	3.325	11580.	.7989	.5613	.0170
Stddev	.15	30.	.0002	.048	5.	.0120	.0014	.0000
%RSD	1.436	.4953	.2132	1.443	.0391	1.506	.2410	.2207
#1	10.51	5948.	.1113	3.291	11580.	.7904	.5603	.0170
#2	10.73	5989.	.1116	3.359	11580.	.8074	.5622	.0171

Elem	Mo2020	Ni2216	Ag3280	V_2924	Zn2062	Zn2138	Ti3361
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.481	3.764	12850.	.1200	3.497	R 9130.	.4526
Stddev	.037	.054	20.	.0001	.052	42.	.0003
%RSD	1.497	1.441	.1561	.1063	1.498	.4623	.0591
#1	2.455	3.726	12860.	.1199	3.460	9100.	.4524
#2	2.507	3.802	12830.	.1201	3.534	9160.	.4528

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	104220.	7825.1	1165.9
Stddev	55.	1.8	12.5
%RSD	.05295	.02243	1.0732
#1	104180.	7826.3	1174.7
#2	104260.	7823.8	1157.0

Sample Name: STD B      Acquired: 5/24/2010 14:58:44      Type: Cal  
 Method: 2010aSEM(v7)      Mode: IR      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D ICP7-38-B

Elem	Al3944	As1890	Ca3158	Fe2599	Mg2790	Mg2852
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	R 133100.	1103.	3.626	4.496	.6865	R 74250.
Stddev	25.		.003	.002	.0025	572.
%RSD	.0188	.0359	.0873	.0390	.3593	.7707

#1	133100.	1104.	3.628	4.495	.6882	74650.
#2	133000.	1103.	3.624	4.497	.6847	73840.

Elem	Si2516
Units	Cts/S
Avg	9041.
Stddev	12.
%RSD	.1353

#1	9050.
#2	9032.

Int. Std.	Y_3600-2	In2306
Units	Cts/S	Cts/S
Avg	7795.5	1122.0
Stddev	41.7	5.5
%RSD	.53511	.48854

#1	7825.0	1125.9
#2	7766.0	1118.1

Sample Name: ICV1      Acquired: 5/24/2010 15:02:11      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D ICP7-37-C

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L
Avg	183.7	33.48	11.11	10.92	314.0	9.671	21.24	9.744	45.08
Stddev	.8	.15	.12	.03	.6	.005	.22	.028	.02
%RSD	.4100	.4399	1.040	.2336	.1798	.0570	1.019	.2874	.0349
#1	183.1	33.37	11.02	10.90	313.6	9.675	21.08	9.724	45.09
#2	184.2	33.58	11.19	10.93	314.4	9.667	21.39	9.764	45.07

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 Value  
 Range

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	11.97	514.0	514.8	22.75	23.21	21.24	21.03	5.749	24.76
Stddev	.11	.5	2.5	.04	.19	.22	.23	.006	.02
%RSD	.9383	.0919	.4791	.1544	.8314	1.021	1.080	.0987	.0951
#1	11.89	513.7	513.0	22.73	23.08	21.08	20.87	5.753	24.75
#2	12.05	514.4	516.5	22.77	23.35	21.39	21.19	5.745	24.78

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 Value  
 Range

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	18.96	18.46	.1766	42.34	*****
Stddev	.21	.02	.1388	.02	----
%RSD	1.129	.1329	78.59	.0480	----
#1	18.80	18.44	.2747	42.35	4873.
#2	19.11	18.47	.0785	42.33	4834.

Check ?    Chk Pass   Chk Pass        None   Chk Pass        None  
 Value  
 Range

Sample Name: ICV1      Acquired: 5/24/2010 15:02:11      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D ICP7-37-C

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	102520.	7809.4	1138.8
Stddev	125.	20.1	9.2
%RSD	.12234	.25727	.80687
#1	102430.	7795.2	1145.3
#2	102610.	7823.6	1132.4



Sample Name: ICVB1      Acquired: 5/24/2010 15:05:18      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D ICP7-43-D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	37.20	.0062	.0010	.0017	127.7	-.0477	-.0062	-.0061	177.7
Stddev	.06	.0282	.0003	.0002	.2	.0012	.0033	.0167	.4
%RSD	.1570	455.4	28.06	13.17	.1850	2.620	53.24	275.4	.2203

#1	37.24	-.0138	.0012	.0018	127.5	-.0468	-.0039	.0057	177.4
#2	37.16	.0262	.0008	.0015	127.8	-.0486	-.0085	-.0179	177.9

Check ?	None	None	None	None	None	None	None	None	None
High Limit									
Low Limit									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0099	203.7	205.9	172.4	181.2	.0281	-.0615	.0202	.0567
Stddev	.0005	.3	.3	.1	1.0	.0047	.0025	.0046	.0029
%RSD	4.568	.1624	.1646	.0689	.5514	16.55	4.142	22.86	5.124

#1	.0096	203.4	206.1	172.5	181.9	.0314	-.0633	.0234	.0588
#2	.0102	203.9	205.6	172.4	180.5	.0248	-.0597	.0169	.0546

Check ?	None	None	None	None	None	None	None	None	None
High Limit									
Low Limit									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0119	.0180	181.2	.0055	*****
Stddev	.0017	.0001	.2	.0035	----
%RSD	14.42	.8159	.1255	62.39	----

#1	-.0107	.0181	181.0	.0080	4929.
#2	-.0131	.0179	181.4	.0031	4883.

Check ?	None	None	Chk Pass	None	None
High Limit					
Low Limit					

Sample Name: ICVB1      Acquired: 5/24/2010 15:05:18      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D ICP7-43-D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	104030.	7821.1	1153.9
Stddev	245.	.8	10.3
%RSD	.23564	.01018	.88976
#1	103860.	7820.5	1161.2
#2	104210.	7821.6	1146.7

Sample Name: ICB      Acquired: 5/24/2010 15:08:30      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	-.0071	-.0207	-.0001	-.0009	.1140	.0003	-.0069	.0037	-.0441
Stddev	.0476	.0074	.0000	.0017	.0444	.0017	.0024	.0008	.0336
%RSD	674.4	35.72	25.27	181.5	38.96	523.6	35.03	20.77	76.09
#1	.0266	-.0155	-.0001	-.0021	.0826	.0016	-.0086	.0042	-.0678
#2	-.0407	-.0259	-.0001	.0003	.1455	-.0009	-.0052	.0031	-.0204

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0014	-.5338	.1158	.0149	.0288	.0095	-.0105	-.0015	-.0080
Stddev	.0004	.1302	.0851	.0007	.0153	.0018	.0012	.0021	.0026
%RSD	30.37	24.39	73.42	4.861	53.19	18.52	11.05	138.7	33.25
#1	.0017	-.4418	.1760	.0154	.0180	.0107	-.0097	-.0030	-.0098
#2	.0011	-.6259	.0557	.0144	.0396	.0082	-.0113	.0000	-.0061

Check ?    Chk Pass        None   Chk Pass   Chk Pass        None   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0021	-.0002	.4568	-.0024	*****
Stddev	.0007	.0005	.4126	.0012	----
%RSD	32.72	276.3	90.33	50.78	----
#1	.0026	-.0005	.1650	-.0015	4842.
#2	.0016	.0002	.7485	-.0033	4836.

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass        None  
 High Limit  
 Low Limit

Sample Name: ICB      Acquired: 5/24/2010 15:08:30      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	103370.	7747.8	1147.1
Stddev	195.	21.7	3.6
%RSD	.18827	.27982	.31239
#1	103500.	7763.2	1149.6
#2	103230.	7732.5	1144.6

Sample Name: CCVA1      Acquired: 5/24/2010 15:10:58      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	9.323	3.346	2.105	2.208	6.485	4.556	4.032	3.924	4.261
Stddev	.111	.000	.009	.001	.010	.003	.020	.022	.096
%RSD	1.186	.0072	.4049	.0569	.1474	.0756	.4956	.5628	2.249
#1	9.245	3.346	2.099	2.209	6.479	4.554	4.018	3.940	4.329
#2	9.401	3.346	2.111	2.207	6.492	4.559	4.046	3.908	4.193
Check ?	None	None	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass	Chk Pass	None
High Limit									
Low Limit									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1.143	9.294	10.30	4.336	4.343	2.459	4.009	2.316	4.669
Stddev	.004	.594	.01	.005	.031	.016	.020	.007	.013
%RSD	.3868	6.396	.0835	.1244	.7223	.6451	.4901	.3041	.2872
#1	1.140	8.873	10.30	4.332	4.365	2.447	3.995	2.321	4.659
#2	1.147	9.714	10.31	4.339	4.321	2.470	4.023	2.312	4.678
Check ?	Chk Pass	None	None	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	3.620	3.772	4.341	4.967	*****
Stddev	.015	.000	.108	.004	----
%RSD	.4041	.0045	2.497	.0805	----
#1	3.610	3.773	4.417	4.964	5093.
#2	3.631	3.772	4.264	4.970	5070.
Check ?	Chk Pass	Chk Pass	None	Chk Pass	None
High Limit					
Low Limit					

Sample Name: CCVA1      Acquired: 5/24/2010 15:10:58      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	108570.	8111.0	1220.7
Stddev	97.	46.7	5.4
%RSD	.08900	.57595	.44517
#1	108640.	8078.0	1224.5
#2	108500.	8144.1	1216.9

Sample Name: CCVB1      Acquired: 5/24/2010 15:13:50      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	363.8	13.27	.0002	.0333	237.2	.0201	.0005	.0134	170.9
Stddev	.4	.00	.0001	.0011	.9	.0059	.0029	.0019	.3
%RSD	.0987	.0095	64.56	3.323	.3707	29.25	589.3	14.31	.1978

#1	363.5	13.27	.0002	.0341	236.6	.0159	.0025	.0148	170.7
#2	364.0	13.27	.0001	.0325	237.9	.0242	-.0016	.0120	171.2

Check ?	Chk Pass	Chk Pass	None	None	Chk Pass	None	None	None	Chk Pass
Value Range									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0076	384.3	403.3	.0038	.0108	.0074	-.1087	-.0060	-.0168
Stddev	.0013	1.3	.7	.0005	.0179	.0014	.0016	.0006	.0045
%RSD	17.56	.3418	.1802	12.80	166.3	19.11	1.433	10.58	26.58

#1	.0085	383.3	402.8	.0042	.0234	.0064	-.1098	-.0065	-.0199
#2	.0066	385.2	403.8	.0035	-.0019	.0084	-.1076	-.0056	-.0136

Check ?	None	Chk Pass	Chk Pass	None	None	None	None	None	None
Value Range									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0056	.0159	354.4	.0052	*****
Stddev	.0021	.0007	.6	.0005	----
%RSD	37.74	4.235	.1798	8.910	----

#1	.0070	.0164	354.8	.0056	5093.
#2	.0041	.0154	353.9	.0049	5068.

Check ?	None	None	Chk Pass	None	None
Value Range					

Sample Name: CCVB1      Acquired: 5/24/2010 15:13:50      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	107630.	8145.4	1191.5
Stddev	338.	27.5	4.0
%RSD	.31425	.33791	.33379
#1	107390.	8164.8	1194.3
#2	107870.	8125.9	1188.7



Sample Name: CCB1      Acquired: 5/24/2010 15:17:10      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.1057	.0117	-.0003	.0011	-.0976	.0106	-.0030	.0008	-.1429
Stddev	.1371	.0115	.0002	.0008	.0304	.0048	.0044	.0010	.0180
%RSD	129.7	97.96	50.12	67.84	31.13	45.33	143.1	131.3	12.62

#1	.2026	.0036	-.0004	.0006	-.1191	.0140	-.0061	.0001	-.1302
#2	.0088	.0199	-.0002	.0017	-.0762	.0072	.0000	.0015	-.1557

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0003	-.2570	.0654	-.0003	-.0067	.0024	-.0153	-.0011	-.0122
Stddev	.0039	1.722	.0749	.0007	.0161	.0045	.0031	.0001	.0027
%RSD	1290.	669.8	114.4	206.3	239.1	184.2	20.48	9.479	21.72

#1	.0030	-1.474	.1183	.0002	.0046	.0056	-.0130	-.0010	-.0104
#2	-.0024	.9603	.0125	-.0008	-.0181	-.0007	-.0175	-.0012	-.0141

Check ?    Chk Pass        None   Chk Pass   Chk Pass        None   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0004	-.0011	.2581	-.0010	*****
Stddev	.0005	.0016	.1754	.0039	----
%RSD	129.8	139.9	67.96	381.8	----

#1	.0000	.0000	.3821	.0017	4888.
#2	-.0008	-.0022	.1341	-.0037	4873.

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass        None  
 High Limit  
 Low Limit

Sample Name: CCB1      Acquired: 5/24/2010 15:17:10      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	104950.	7853.7	1156.8
Stddev	67.	37.3	3.5
%RSD	.06386	.47458	.30421

#1	104900.	7827.3	1159.3
#2	105000.	7880.0	1154.3

Sample Name: CRI      Acquired: 5/24/2010 15:19:37      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 Jser: admin      :      :  
 Comment: 052410D ICP7-41-A

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Jnits	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1.950	1.321	.0441	.0476	1.102	.0873	.1686	.1487
Stddev	.030	.027	.0006	.0004	.189	.0048	.0021	.0067
%RSD	1.561	2.065	1.382	.8513	17.13	5.494	1.228	4.481

#1	1.971	1.302	.0436	.0473	1.235	.0907	.1672	.1440
#2	1.928	1.341	.0445	.0479	.9681	.0839	.1701	.1534

Check ?      Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 Value  
 Range

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F .1366	.2301	.5004	.8159	.0863	.0933	.1002	.3017
Stddev	.0066	.0040	.5532	.0553	.0002	.0199	.0019	.0007
%RSD	4.797	1.719	110.6	6.784	.2059	21.33	1.847	.2176

#1	.1412	.2273	.8916	.7767	.0864	.0792	.1015	.3012
#2	.1319	.2329	.1092	.8550	.0862	.1074	.0989	.3021

Check ?      Chk Fail   Chk Pass        None   Chk Pass   Chk Pass        None   Chk Pass   Chk Pass  
 Value  
 Range      .3581  
 -50.00%

Elem	Ag3280	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0902	.1804	.1458	.1470	13.60	.2048	*****
Stddev	.0037	.0006	.0025	.0010	.06	.0036	----
%RSD	4.071	.3289	1.742	.6564	.4573	1.742	----

#1	.0876	.1800	.1440	.1463	13.64	.2073	4883.
#2	.0928	.1808	.1476	.1476	13.55	.2022	4854.

Check ?      Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass        None  
 Value  
 Range

Sample Name: CRI    Acquired: 5/24/2010 15:19:37    Type: QC  
Method: 2010aSEM(v7)    Mode: CONC    Corr. Factor: 1.000000  
Jser: admin    :    :    :  
Comment: 052410D ICP7-41-A

nt. Std.	Y_3600	Y_3600-2	In2306
Jnits	Cts/S	Cts/S	Cts/S
Avg	104160.	7793.9	1172.5
Stddev	185.	3.4	7.7
%RSD	.17800	.04347	.65408
#1	104290.	7791.5	1177.9
#2	104020.	7796.3	1167.0

Sample Name: CRI      Acquired: 5/24/2010 15:22:04      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D ICAP ICP7-39-B 0.1/10

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.1156	.1270	.0044	.0047	-.0129	.0406	.0131	.0360
Stddev	.0962	.0234	.0002	.0003	.1396	.0014	.0033	.0027
%RSD	83.23	18.45	5.160	5.383	1082.	3.545	25.11	7.538

#1	.0476	.1105	.0046	.0045	-.1116	.0396	.0154	.0341
#2	.1836	.1436	.0043	.0048	.0858	.0416	.0108	.0379

Check ?	None	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Fe2599	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F -.0205	.0448	.5521	.1513	.0098	.0158	.0215	F .0108
Stddev	.0080	.0033	.7046	.0012	.0006	.0253	.0016	.0038
%RSD	38.89	7.406	127.6	.7775	5.776	160.8	7.524	34.87

#1	-.0262	.0471	1.050	.1505	.0094	-.0022	.0226	.0081
#2	-.0149	.0425	.0539	.1522	.0102	.0337	.0204	.0134

Check ?	Chk Fail	Chk Pass	None	None	Chk Pass	None	Chk Pass	Chk Fail
High Limit	.1790							.0341
Low Limit	-50.00%							-50.00%

Elem	Ag3280	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0205	.0345	.0307	.0290	2.222	.0211	*****
Stddev	.0051	.0000	.0014	.0010	.145	.0069	----
%RSD	24.80	.0541	4.703	3.304	6.526	32.56	----

#1	.0241	.0345	.0297	.0283	2.120	.0162	4846.
#2	.0169	.0345	.0317	.0296	2.325	.0259	4820.

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None
High Limit							
Low Limit							

Sample Name: CRI      Acquired: 5/24/2010 15:22:04      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D ICAP ICP7-39-B 0.1/10

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	103150.	7735.5	1151.2
Stddev	52.	37.5	3.5
%RSD	.05046	.48539	.30212
#1	103110.	7762.1	1153.7
#2	103180.	7709.0	1148.8

Sample Name: ICSA      Acquired: 5/24/2010 15:24:32      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D ICP7-43-B

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/LR
Avg	15160.	.0217	.0248	-.0006	10920.	.0585	-.0168	.0347	2986.
Stddev	36.	.0208	.0006	.0019	35.	.0048	.0002	.0147	7.
%RSD	.2404	95.85	2.389	311.8	.3233	8.277	1.395	42.22	.2475

#1	15180.	.0365	.0244	.0008	10950.	.0619	-.0167	.0451	2992.
#2	15130.	.0070	.0252	-.0020	10900.	.0551	-.0170	.0244	2981.

Check ?	Chk Pass	None	None	None	Chk Pass	None	None	None	Chk Pass
Value Range									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0064	19130.	17790.	.2254	.0636	.0064	.0256	.0225	.0287
Stddev	.0059	11.	41.	.0014	.0206	.0003	.0024	.0050	.0090
%RSD	92.55	.0580	.2290	.6326	32.42	4.414	9.450	22.00	31.39

#1	.0022	19120.	17760.	.2244	.0490	.0066	.0239	.0190	.0223
#2	.0106	19140.	17820.	.2264	.0782	.0062	.0273	.0261	.0350

Check ?	None	Chk Pass	None	None	None	None	None	None	None
Value Range									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0291	.2188	-.7021	.1025	*****
Stddev	.0032	.0015	.2667	.0020	----
%RSD	10.99	.6782	37.99	1.994	----

#1	.0268	.2198	-.8907	.1010	4901.
#2	.0313	.2177	-.5135	.1039	4872.

Check ?	None	None	None	None	None
Value Range					

Sample Name: ICSA      Acquired: 5/24/2010 15:24:32      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
Jser: admin      :      :      :  
Comment: 052410D ICP7-43-B

nt. Std.	Y_3600	Y_3600-2	In2306
Jnits	Cts/S	Cts/S	Cts/S
Avg	97153.	7957.3	1016.8
Stddev	32.	37.9	5.2
%RSD	.03318	.47620	.51081
#1	97176.	7930.5	1020.4
#2	97130.	7984.1	1013.1



Sample Name: ICSAB      Acquired: 5/24/2010 15:28:43      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D ICP7-38-C

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/LR
Avg	15810.	.0585	8.774	7.830	11920.	9.427	8.431	7.185	3247.
Stddev	94.	.0173	.037	.018	85.	.010	.032	.056	22.
%RSD	.5933	29.63	.4228	.2318	.7101	.1017	.3829	.7824	.6767

#1	15750.	.0707	8.747	7.817	11980.	9.420	8.408	7.225	3263.
#2	15880.	.0462	8.800	7.843	11860.	9.433	8.454	7.145	3231.

Check ?	Chk Pass	None	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value Range									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	4.707	20890.	18260.	8.950	9.609	-.0005	16.39	8.762	9.924
Stddev	.014	9.	113.	.027	.090	.0020	.08	.054	.018
%RSD	.3061	.0430	.6160	.2991	.9417	385.7	.4820	.6112	.1829

#1	4.696	20890.	18180.	8.931	9.545	.0009	16.34	8.800	9.911
#2	4.717	20880.	18340.	8.969	9.673	-.0019	16.45	8.724	9.937

Check ?	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass	Chk Pass
Value Range									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	14.82	13.26	.2702	.1004	*****
Stddev	.07	.04	.1349	.0043	----
%RSD	.4761	.3135	49.91	4.326	----

#1	14.77	13.23	.3656	.0974	4642.
#2	14.87	13.29	.1749	.1035	4622.

Check ?	Chk Pass	Chk Pass	None	None	None
Value Range					

Sample Name: ICSAB      Acquired: 5/24/2010 15:28:43      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D ICP7-38-C

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	91546.	7494.4	954.65
Stddev	224.	32.4	2.53
%RSD	.24434	.43235	.26467
#1	91705.	7471.5	956.44
#2	91388.	7517.3	952.86

Sample Name: RB      Acquired: 5/24/2010 15:32:50      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 Jser: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	3.410	.0148	.0011	.0008	2.403	F .0082	.0013	.0084
#1	3.494	.0219	.0017	.0000	2.463	.0071	-.0001	.0207
#2	3.325	.0077	.0004	.0016	2.342	.0093	.0027	-.0039

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	2.662	-.0002	5.153	-.0005	-.0008	-.0111	-.0027	-.0019
#1	2.772	.0028	5.131	-.0015	.0020	-.0120	-.0034	-.0019
#2	2.552	-.0031	5.176	.0004	-.0036	-.0101	-.0019	-.0020

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	F .0060	F .0050	.2721	-.0016	*****
#1	.0077	.0055	.0543	-.0019	4830.
#2	.0043	.0044	.4899	-.0012	4803.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	102590.	7701.8	1138.4
#1	102840.	7676.6	1143.7
#2	102340.	7727.0	1133.1

Sample Name: K1004833-MB      Acquired: 5/24/2010 15:35:51      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.5566	.0039	.0001	.0001	.9167	.0022	-.0001	.0926
#1	.4743	.0063	.0002	.0010	1.040	-.0066	-.0012	.0954
#2	.6390	.0016	.0000	-.0009	.7934	.0111	.0011	.0897

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1.332	-.0021	F 2.246	.0041	.0020	-.0172	-.0034	-.0038
#1	1.345	-.0004	2.294	.0038	.0019	-.0201	-.0027	-.0003
#2	1.319	-.0037	2.198	.0045	.0022	-.0142	-.0041	-.0074

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0169	.0161	.6128	-.0002	*****
#1	.0180	.0161	.4256	-.0012	5034.
#2	.0159	.0161	.8001	.0008	5028.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	107710.	8088.8	1193.5
#1	107670.	8114.3	1197.3
#2	107750.	8063.2	1189.6

Sample Name: LCSW      Acquired: 5/24/2010 15:38:52      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

Jser: admin      :      :      :

Comment: 052410D LCSW=0.1ml ICP7-33-A to 10ml

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Jnits	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	19.20	13.31	.4352	.4862	12.67	.9158	1.671	1.629	4.365

#1	19.35	13.31	.4336	.4835	12.81	.9050	1.663	1.630	4.331
#2	19.05	13.31	.4368	.4888	12.53	.9266	1.679	1.627	4.399

Elem	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062	Zn2138
Jnits	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	2.131	9.888	.8831	.9454	3.182	-.0074	1.933	1.478	1.548

#1	2.121	9.878	.8834	.9419	3.173	-.0132	1.940	1.474	1.545
#2	2.140	9.899	.8827	.9488	3.191	-.0017	1.926	1.482	1.550

Elem	Si2516	Ti3361	Y_2243
Jnits	umol/L	umol/L	Cts/S
Avg	139.1	1.982	*****

#1	139.1	1.986	5022.
#2	139.1	1.978	4990.

nt. Std.	Y_3600	Y_3600-2	In2306
Jnits	Cts/S	Cts/S	Cts/S
Avg	107340.	8066.4	1206.0

#1	107370.	8065.6	1208.3
#2	107310.	8067.1	1203.7

Sample Name: K1004833-001      Acquired: 5/24/2010 15:41:38      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 696.9	.4580	.0322	.0132	F 646.4	.3816	.6322	1.484

#1	694.7	.4475	.0312	.0133	648.6	.3841	.6383	1.477
#2	699.1	.4685	.0333	.0132	644.3	.3792	.6260	1.491

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1643.	.9464	F 1561.	64.17	.0105	1.048	.0062	2.630

#1	1645.	.9401	1560.	64.33	.0092	1.041	.0083	2.636
#2	1640.	.9527	1562.	64.00	.0118	1.055	.0041	2.623

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	5.936	6.047	559.1	2.794	*****

#1	5.909	6.042	557.4	2.797	5825.
#2	5.963	6.052	560.7	2.791	5785.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	122660.	9457.6	1148.0

#1	122720.	9424.2	1152.4
#2	122600.	9491.0	1143.6

Sample Name: K1004833-001D      Acquired: 5/24/2010 15:44:53      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 510.4	.2694	.0237	.0112	F 522.5	.2766	.4846	.7306

#1	512.7	.2756	.0232	.0099	522.8	.2717	.4855	.7361
#2	508.1	.2632	.0242	.0126	522.3	.2815	.4838	.7251

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1340.	.6501	F 1161.	51.97	.0057	.7577	.0019	1.982

#1	1338.	.6446	1164.	51.76	.0065	.7586	.0013	1.971
#2	1341.	.6556	1158.	52.17	.0050	.7567	.0025	1.992

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	4.542	4.637	340.2	2.137	*****

#1	4.521	4.633	340.3	2.136	5623.
#2	4.563	4.642	340.1	2.137	5598.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	118900.	9070.6	1154.6

#1	119260.	9053.3	1156.0
#2	118550.	9087.8	1153.2

Sample Name: K1004833-001L      Acquired: 5/24/2010 15:48:11      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

User: admin      :      :      :

Comment: 052410D 1/5

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	143.6	.1114	.0057	.0029	152.1	F .0955	.1387	.3169

#1	142.9	.1060	.0062	.0014	151.0	.0893	.1365	.3185
#2	144.2	.1167	.0053	.0045	153.2	.1016	.1408	.3153

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 389.8	.2076	308.8	15.86	.0018	.2081	-.0058	.6149

#1	387.3	.2072	305.3	15.79	.0022	.2080	-.0097	.6121
#2	392.3	.2079	312.3	15.93	.0014	.2083	-.0019	.6177

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	1.277	1.285	111.5	.6717	*****

#1	1.265	1.282	110.6	.6686	5084.
#2	1.289	1.289	112.5	.6749	5032.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	107450.	8128.3	1151.9

#1	107370.	8085.1	1157.7
#2	107530.	8171.4	1146.0



Sample Name: CCVA2      Acquired: 5/24/2010 15:51:22      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	9.651	3.346	2.233	2.226	6.813	4.816	4.300	4.005	5.062
Stddev	.074	.006	.018	.003	.033	.000	.040	.013	.078
%RSD	.7685	.1718	.8175	.1466	.4861	.0029	.9380	.3290	1.538
#1	9.704	3.350	2.220	2.223	6.836	4.816	4.271	3.996	5.117
#2	9.599	3.342	2.246	2.228	6.790	4.816	4.329	4.014	5.007
Check ?	None	None	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass	Chk Pass	None
High Limit									
Low Limit									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1.205	10.54	10.77	4.594	4.604	2.596	4.252	2.347	4.966
Stddev	.011	.15	.22	.003	.041	.024	.029	.006	.015
%RSD	.9162	1.380	2.047	.0627	.8818	.9350	.6744	.2516	.3068
#1	1.197	10.44	10.62	4.596	4.575	2.578	4.231	2.343	4.977
#2	1.212	10.65	10.93	4.591	4.633	2.613	4.272	2.351	4.955
Check ?	Chk Pass	None	None	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	3.845	3.801	4.862	5.269	*****
Stddev	.028	.015	.092	.007	----
%RSD	.7245	.3887	1.885	.1375	----
#1	3.825	3.790	4.797	5.264	4860.
#2	3.865	3.811	4.926	5.274	4836.
Check ?	Chk Pass	Chk Pass	None	Chk Pass	None
High Limit					
Low Limit					

Sample Name: CCVA2      Acquired: 5/24/2010 15:51:22      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
Jser: admin      :      :  
Comment: 052410D

nt. Std.	Y_3600	Y_3600-2	In2306
Jnits	Cts/S	Cts/S	Cts/S
Avg	103810.	7787.9	1159.3
Stddev	163.	38.7	8.1
%RSD	.15670	.49699	.69758
#1	103690.	7760.5	1165.0
#2	103920.	7815.3	1153.6

Sample Name: CCVB2      Acquired: 5/24/2010 15:54:13      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/LR
Avg	374.4	13.46	.0009	.0330	252.7	.0126	.0058	.0066	182.3
Stddev	.7	.06	.0004	.0011	.3	.0092	.0031	.0116	.5
%RSD	.1778	.4652	45.96	3.463	.1155	73.23	53.55	175.6	.2476

#1	373.9	13.41	.0006	.0322	252.5	.0061	.0080	.0148	182.0
#2	374.9	13.50	.0012	.0338	252.9	.0191	.0036	-.0016	182.6

Check ?	Chk Pass	Chk Pass	None	None	Chk Pass	None	None	None	Chk Pass
Value									
Range									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0056	415.7	416.9	.0040	.0075	.0061	-.1192	-.0064	-.0076
Stddev	.0065	2.3	.7	.0005	.0345	.0014	.0042	.0000	.0073
%RSD	115.3	.5595	.1713	11.51	462.1	22.61	3.496	.1446	96.34

#1	.0102	417.4	416.4	.0037	.0318	.0071	-.1221	-.0064	-.0024
#2	.0010	414.1	417.4	.0043	-.0169	.0051	-.1162	-.0064	-.0127

Check ?	None	Chk Pass	Chk Pass	None	None	None	None	None	None
Value									
Range									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0062	.0172	364.6	.0078	*****
Stddev	.0017	.0011	1.7	.0021	----
%RSD	28.00	6.441	.4684	27.33	----

#1	.0074	.0180	363.4	.0093	4819.
#2	.0050	.0165	365.8	.0063	4812.

Check ?	None	None	Chk Pass	None	None
Value					
Range					

Sample Name: CCVB2      Acquired: 5/24/2010 15:54:13      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
Jser: admin      :      :  
Comment: 052410D

nt. Std.	Y_3600	Y_3600-2	In2306
Jnits	Cts/S	Cts/S	Cts/S
Avg	102240.	7791.2	1126.4
Stddev	96.	20.2	1.4
%RSD	.09355	.25964	.12402
#1	102310.	7776.9	1127.4
#2	102170.	7805.5	1125.5

Sample Name: CCB2      Acquired: 5/24/2010 15:57:30      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.1081	-.0072	.0000	-.0003	-.0315	-.0022	-.0040	.0020	.1586
Stddev	.0388	.0237	.0000	.0013	.0845	.0071	.0001	.0008	.0252
%RSD	35.91	327.9	179.1	398.2	268.0	323.5	1.356	40.21	15.88

#1	.1355	.0095	.0000	.0006	-.0913	-.0072	-.0040	.0014	.1764
#2	.0806	-.0240	.0000	-.0012	.0282	.0028	-.0039	.0026	.1408

Check ?    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass  
 High Limit  
 Low Limit

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0034	.2494	.2749	-.0008	.0070	.0012	-.0199	-.0088	-.0088
Stddev	.0008	.2629	.0137	.0009	.0176	.0011	.0001	.0007	.0059
%RSD	24.47	105.4	4.988	120.5	251.1	88.88	.6473	7.851	66.80

#1	.0040	.4353	.2846	-.0014	.0195	.0005	-.0198	-.0083	-.0046
#2	.0028	.0636	.2652	-.0001	-.0054	.0020	-.0200	-.0093	-.0129

Check ?    Chk Pass      None    Chk Pass    Chk Pass      None    Chk Pass    Chk Pass    Chk Pass    Chk Pass  
 High Limit  
 Low Limit

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0010	-.0004	.1793	-.0035	*****
Stddev	.0032	.0010	.0362	.0014	----
%RSD	320.2	295.6	20.18	40.89	----

#1	-.0013	.0004	.1537	-.0025	4876.
#2	.0033	-.0011	.2049	-.0045	4861.

Check ?    Chk Pass    Chk Pass    Chk Pass    Chk Pass      None  
 High Limit  
 Low Limit

Sample Name: CCB2      Acquired: 5/24/2010 15:57:30      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	104180.	7818.5	1156.6
Stddev	105.	3.8	6.4
%RSD	.10091	.04857	.55712
#1	104250.	7815.8	1161.2
#2	104100.	7821.1	1152.1

Sample Name: K1004833-001S      Acquired: 5/24/2010 15:59:58      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

Jser: admin      :      :      :

Comment: 052410D S=0.1ml ICP7-33-A to 10ml

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 723.1	13.75	.4880	.4885	F 685.3	1.207	2.437	3.044

#1	721.4	13.73	.4861	.4888	685.0	1.209	2.423	3.050
#2	724.9	13.78	.4899	.4881	685.6	1.206	2.450	3.038

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1715.	3.219	F 1581.	67.91	1.027	4.445	.0045	4.506

#1	1714.	3.208	1584.	68.06	1.023	4.415	.0037	4.487
#2	1715.	3.230	1578.	67.75	1.030	4.475	.0052	4.525

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	7.748	7.528	706.3	4.702	*****

#1	7.719	7.518	707.4	4.707	5650.
#2	7.777	7.539	705.2	4.696	5644.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	118350.	9122.3	1104.1

#1	118230.	9136.1	1107.4
#2	118460.	9108.5	1100.8

Sample Name: K1004833-002      Acquired: 5/24/2010 16:03:05      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 1382.	.3792	.0774	.0294	F 1075.	.6826	.9377	1.324
#1	1385.	.3752	.0767	.0281	1076.	.6804	.9333	1.329
#2	1379.	.3832	.0780	.0307	1075.	.6847	.9421	1.320

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 2506.	1.884	F 2619.	79.39	.0022	1.756	.0030	4.861
#1	2496.	1.874	2613.	79.78	.0020	1.748	.0053	4.858
#2	2516.	1.893	2625.	79.00	.0024	1.764	.0007	4.865

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	11.36	11.45	1116.	3.974	*****
#1	11.31	11.43	1114.	3.981	6522.
#2	11.41	11.47	1117.	3.967	6490.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	136790.	10722.	1129.9
#1	136780.	10712.	1134.4
#2	136810.	10732.	1125.3



Sample Name: K1004833-003      Acquired: 5/24/2010 16:06:29      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 1884.	.2144	.0590	.0233	F 895.7	1.098	.4611	.0982

#1	1898.	.1934	.0584	.0241	894.9	1.097	.4605	.0991
#2	1870.	.2353	.0596	.0225	896.6	1.100	.4617	.0974

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 2265.	1.512	F 2545.	34.61	.0004	.9435	-.0043	3.485

#1	2234.	1.506	2547.	34.61	.0003	.9391	-.0027	3.485
#2	2296.	1.517	2544.	34.61	.0006	.9480	-.0058	3.486

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	10.75	10.76	1362.	4.404	*****

#1	10.71	10.74	1361.	4.411	6179.
#2	10.78	10.78	1363.	4.398	6170.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	129690.	10113.	1130.6

#1	129660.	10133.	1132.8
#2	129710.	10092.	1128.4

Sample Name: K1004833-004      Acquired: 5/24/2010 16:09:56      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

User: admin      :      :      :

Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 844.6	.1160	.0294	.0109	F 616.7	.3792	.3525	.1478

#1	844.9	.1244	.0289	.0116	616.9	.3803	.3482	.1574
#2	844.3	.1077	.0299	.0103	616.4	.3781	.3567	.1383

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1624.	.6966	F 1512.	33.98	-.0024	.6152	.0037	2.015

#1	1626.	.6955	1508.	33.95	-.0009	.6043	.0069	2.008
#2	1622.	.6977	1517.	34.01	-.0039	.6261	.0005	2.022

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	5.328	5.397	548.5	3.028	*****

#1	5.301	5.394	548.3	3.030	5660.
#2	5.356	5.400	548.7	3.026	5641.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	119290.	9212.5	1141.4

#1	119240.	9178.0	1145.0
#2	119350.	9247.1	1137.8

Sample Name: K1004833-005      Acquired: 5/24/2010 16:13:10      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

User: admin      :      :

Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1820.	.1747	.0474	.0161	871.9	.6878	.5267	.1308	2302.

#1	1803.	.1635	.0464	.0165	869.7	.6962	.5229	.1280	2296.
#2	1837.	.1859	.0483	.0158	874.0	.6794	.5304	.1337	2309.

Elem	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062	Zn2138
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1.228	2469.	26.74	-.0027	.8471	.0047	3.371	8.414	8.583

#1	1.225	2471.	26.76	-.0010	.8405	.0034	3.370	8.394	8.580
#2	1.230	2468.	26.73	-.0044	.8537	.0059	3.372	8.434	8.586

Elem	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	Cts/S
Avg	1285.	4.013	*****

#1	1285.	4.018	6041.
#2	1284.	4.007	6024.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	126590.	9909.3	1139.6

#1	126670.	9932.1	1141.5
#2	126500.	9886.4	1137.7

Sample Name: K1004833-006      Acquired: 5/24/2010 16:16:29      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 653.0	.1487	.0254	.0103	F 604.5	.4108	.3877	.4735

#1	655.7	.1243	.0252	.0103	604.2	.4086	.3846	.4778
#2	650.3	.1731	.0257	.0102	604.8	.4130	.3908	.4692

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1607.	.6563	F 1312.	59.63	.0007	.6587	.0104	1.694

#1	1604.	.6574	1314.	59.19	.0008	.6589	.0095	1.687
#2	1609.	.6552	1310.	60.07	.0007	.6585	.0113	1.700

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	4.750	4.809	379.1	2.297	*****

#1	4.725	4.815	379.1	2.290	5601.
#2	4.774	4.802	379.0	2.303	5582.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	117680.	9006.4	1137.4

#1	117850.	9018.9	1140.3
#2	117510.	8993.9	1134.4

Sample Name: K1004833-007      Acquired: 5/24/2010 16:19:45      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

Jser: admin      :      :      :

Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Jnits	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 1362.	.2798	.0660	.0303	F 1171.	.4391	.7962	.3457

#1	1362.	.2660	.0655	.0315	1164.	.4391	.7896	.3499
#2	1363.	.2937	.0665	.0291	1177.	.4390	.8028	.3414

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 2090.	1.598	F 2469.	79.55	-.0017	1.504	-.0013	4.618

#1	2079.	1.587	2463.	79.59	-.0020	1.496	.0018	4.617
#2	2100.	1.608	2475.	79.52	-.0014	1.511	-.0045	4.620

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	11.33	11.55	937.2	4.879	*****

#1	11.25	11.54	934.0	4.882	6516.
#2	11.40	11.55	940.5	4.875	6499.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	137880.	10726.	1144.0

#1	137820.	10760.	1149.1
#2	137930.	10692.	1138.9

Sample Name: K1004833-008      Acquired: 5/24/2010 16:23:02      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 1101.	.8054	.0629	.0253	F 819.4	.4497	1.307	2.318
#1	1103.	.8169	.0638	.0254	818.0	.4486	1.301	2.313
#2	1098.	.7939	.0620	.0253	820.8	.4508	1.313	2.322

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 2554.	1.554	F 2232.	146.6	.0113	1.758	.0149	4.023
#1	2556.	1.557	2233.	146.4	.0110	1.761	.0130	4.032
#2	2552.	1.551	2230.	146.8	.0116	1.755	.0168	4.015

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	9.944	10.28	782.8	3.418	*****
#1	9.938	10.28	783.3	3.405	6306.
#2	9.951	10.27	782.4	3.431	6288.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	132600.	10314.	1155.1
#1	132910.	10340.	1154.1
#2	132300.	10289.	1156.2

Sample Name: K1004833-009      Acquired: 5/24/2010 16:26:21      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	585.2	.0908	.0204	.0087	522.8	.2465	.2346	.3709	1327.
#1	585.2	.1065	.0198	.0087	522.7	.2498	.2315	.3826	1326.
#2	585.1	.0751	.0211	.0087	522.9	.2433	.2376	.3593	1327.

Elem	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062	Zn2138
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.4798	1131.	27.68	.0034	.4526	.0000	1.147	4.452	4.506
#1	.4799	1135.	27.70	.0033	.4533	-.0019	1.147	4.447	4.494
#2	.4798	1128.	27.65	.0035	.4519	.0019	1.147	4.457	4.517

Elem	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	Cts/S
Avg	280.7	1.595	*****
#1	281.7	1.597	5488.
#2	279.8	1.592	5469.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	115310.	8910.8	1144.7
#1	115240.	8925.9	1145.2
#2	115380.	8895.7	1144.1

Sample Name: K1004833-010      Acquired: 5/24/2010 16:29:33      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

User: admin      :      :      :

Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	387.8	.0960	.0200	.0183	850.5	.0677	.0424	.0392	90.79

#1	387.4	.1116	.0203	.0181	852.0	.0648	.0415	.0379	90.73
#2	388.2	.0804	.0196	.0184	848.9	.0707	.0432	.0404	90.85

Elem	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924	Zn2062	Zn2138
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.4000	622.6	7.519	.0044	.0803	-.0064	.5578	22.23	22.04

#1	.3978	624.0	7.497	.0039	.0778	-.0061	.5581	22.19	21.98
#2	.4022	621.3	7.540	.0049	.0827	-.0067	.5576	22.27	22.09

Elem	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	Cts/S
Avg	154.7	1.098	*****

#1	154.4	1.097	5198.
#2	154.9	1.100	5175.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	110470.	8546.7	1149.5

#1	110450.	8546.6	1151.2
#2	110490.	8546.8	1147.8



Sample Name: CCVA3      Acquired: 5/24/2010 16:32:43      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	9.520	3.347	2.195	2.217	6.888	4.726	4.223	3.996	5.024
Stddev	.064	.013	.017	.001	.005	.003	.039	.005	.060
%RSD	.6715	.3908	.7677	.0468	.0714	.0545	.9123	.1311	1.194
#1	9.475	3.338	2.183	2.217	6.891	4.728	4.196	3.992	5.066
#2	9.565	3.356	2.207	2.216	6.884	4.725	4.250	3.999	4.981
Check ?	None	None	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass	Chk Pass	None
High Limit									
Low Limit									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1.192	9.740	10.72	4.515	4.578	2.556	4.166	2.346	4.876
Stddev	.004	.201	.12	.001	.022	.032	.030	.013	.002
%RSD	.3334	2.063	1.105	.0313	.4761	1.255	.7119	.5477	.0298
#1	1.189	9.598	10.63	4.516	4.563	2.533	4.145	2.337	4.877
#2	1.195	9.882	10.80	4.514	4.594	2.578	4.187	2.355	4.875
Check ?	Chk Pass	None	None	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	3.765	3.788	4.723	5.185	*****
Stddev	.033	.004	.102	.011	----
%RSD	.8746	.1031	2.152	.2107	----
#1	3.742	3.785	4.795	5.178	4894.
#2	3.788	3.791	4.651	5.193	4874.
Check ?	Chk Pass	Chk Pass	None	Chk Pass	None
High Limit					
Low Limit					

Sample Name: CCVA3      Acquired: 5/24/2010 16:32:43      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	105270.	7908.5	1172.1
Stddev	329.	2.1	7.3
%RSD	.31231	.02682	.62698
#1	105500.	7907.0	1177.3
#2	105030.	7910.0	1166.9

Sample Name: CCVB3      Acquired: 5/24/2010 16:35:34      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	365.4	13.23	.0010	.0347	235.1	.0093	-.0017	.0024	169.6
Stddev	.5	.09	.0003	.0025	.1	.0006	.0016	.0117	.6
%RSD	.1401	.6761	30.70	7.134	.0462	6.739	94.98	492.3	.3807
#1	365.8	13.16	.0013	.0364	235.2	.0089	-.0005	.0107	170.0
#2	365.0	13.29	.0008	.0329	235.0	.0098	-.0028	-.0059	169.1
Check ?	Chk Pass	Chk Pass	None	None	Chk Pass	None	None	None	Chk Pass
Value									
Range									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0008	383.1	406.4	.0087	.0168	.0045	-.1202	.0010	-.0042
Stddev	.0018	.7	1.5	.0005	.0192	.0020	.0037	.0023	.0108
%RSD	225.9	.1715	.3799	6.127	114.2	44.29	3.084	238.8	258.8
#1	.0021	382.7	405.3	.0084	.0304	.0031	-.1228	.0026	.0035
#2	-.0005	383.6	407.5	.0091	.0032	.0059	-.1176	-.0007	-.0118
Check ?	None	Chk Pass	Chk Pass	None	None	None	None	None	None
Value									
Range									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0064	.0147	355.2	.0040	*****
Stddev	.0015	.0001	.4	.0013	----
%RSD	22.57	.9880	.1042	33.15	----
#1	.0075	.0148	355.5	.0049	5030.
#2	.0054	.0146	355.0	.0031	5004.
Check ?	None	None	Chk Pass	None	None
Value					
Range					

Sample Name: CCVB3      Acquired: 5/24/2010 16:35:34      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	107100.	8187.5	1176.2
Stddev	294.	13.5	5.3
%RSD	.27446	.16534	.44972
#1	106900.	8178.0	1180.0
#2	107310.	8197.1	1172.5

Sample Name: CCB3      Acquired: 5/24/2010 16:38:53      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0852	.0148	.0003	-.0004	-.0647	.0028	.0003	.0005	.2763
Stddev	.0136	.0169	.0002	.0002	.1800	.0015	.0006	.0063	.1045
%RSD	16.00	114.3	47.37	60.06	278.0	54.35	198.3	1311.	37.81

#1	.0949	.0028	.0004	-.0005	.0625	.0039	.0007	.0050	.3502
#2	.0756	.0267	.0002	-.0002	-.1920	.0017	-.0001	-.0040	.2025

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0032	.7713	.1691	.0056	.0317	.0018	-.0316	-.0041	-.0027
Stddev	.0030	.2870	.0020	.0009	.0166	.0022	.0017	.0005	.0013
%RSD	94.98	37.22	1.160	16.96	52.23	122.9	5.358	13.08	48.73

#1	.0011	.5683	.1704	.0062	.0200	.0002	-.0328	-.0038	-.0036
#2	.0054	.9743	.1677	.0049	.0434	.0033	-.0304	-.0045	-.0018

Check ?    Chk Pass      None   Chk Pass   Chk Pass      None   Chk Pass   Chk Pass   Chk Pass   Chk Pass  
 High Limit  
 Low Limit

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0005	-.0016	.4493	-.0026	*****
Stddev	.0007	.0016	.0891	.0007	----
%RSD	139.0	102.4	19.83	27.68	----

#1	.0000	-.0004	.3863	-.0031	4887.
#2	.0010	-.0027	.5123	-.0021	4872.

Check ?    Chk Pass   Chk Pass   Chk Pass   Chk Pass      None  
 High Limit  
 Low Limit

Sample Name: CCB3      Acquired: 5/24/2010 16:38:53      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	ln2306
Units	Cts/S	Cts/S	Cts/S
Avg	104890.	7870.0	1156.1
Stddev	102.	32.9	3.7
%RSD	.09769	.41775	.31667
#1	104820.	7846.8	1158.7
#2	104960.	7893.3	1153.5

Sample Name: K1004833-011      Acquired: 5/24/2010 16:41:22      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 1030.	.1928	.0241	.0108	F 753.8	.5518	.2734	.2295
#1	1029.	.1996	.0232	.0116	753.3	.5523	.2767	.2179
#2	1030.	.1861	.0250	.0100	754.3	.5512	.2700	.2412

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1109.	.8420	F 1561.	35.56	.0022	.6472	-.0060	1.826
#1	1111.	.8385	1563.	35.61	.0034	.6379	-.0047	1.821
#2	1107.	.8455	1559.	35.52	.0011	.6565	-.0073	1.830

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	5.286	5.328	688.0	2.716	*****
#1	5.278	5.315	690.2	2.714	5751.
#2	5.294	5.341	685.8	2.718	5727.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	121830.	9473.9	1142.1
#1	121910.	9488.6	1143.2
#2	121740.	9459.3	1140.9

Sample Name: K1004833-012      Acquired: 5/24/2010 16:44:36      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 1115.	.2885	.0120	.0065	F 2605.	F .0832	.1333	.2100

#1	1115.	.2992	.0113	.0080	2599.	.0882	.1302	.2213
#2	1115.	.2779	.0128	.0050	2612.	.0782	.1364	.1986

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 211.4	.7458	F 3385.	43.50	.0051	.7992	-.0073	2.340

#1	210.9	.7496	3376.	43.65	.0054	.7983	-.0027	2.342
#2	211.9	.7419	3393.	43.35	.0047	.8000	-.0118	2.338

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	1.428	1.369	412.7	3.875	*****

#1	1.424	1.368	413.2	3.886	5767.
#2	1.433	1.370	412.1	3.864	5745.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	122790.	9634.9	1071.6

#1	122570.	9643.9	1072.6
#2	123010.	9625.9	1070.6



Sample Name: K1004833-013      Acquired: 5/24/2010 16:47:57      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

Jser: admin      :      :      :

Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Jnits	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 590.4	.1225	.0221	.0087	F 592.4	.2486	.4976	1.037

#1	592.9	.1131	.0219	.0083	591.1	.2432	.4931	1.054
#2	587.8	.1318	.0223	.0092	593.7	.2541	.5021	1.020

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Jnits	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1298.	.5863	F 1319.	91.69	.0003	.8558	.0102	1.680

#1	1301.	.5822	1317.	91.87	-.0012	.8524	.0042	1.683
#2	1296.	.5905	1321.	91.51	.0019	.8592	.0163	1.677

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	3.738	3.819	390.0	2.428	*****

#1	3.720	3.816	390.5	2.428	5580.
#2	3.756	3.823	389.6	2.429	5546.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	117800.	9072.5	1145.2

#1	117630.	9090.0	1150.0
#2	117970.	9055.0	1140.5

Sample Name: K1004833-014      Acquired: 5/24/2010 16:51:15      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

Jser: admin      :      :      :

Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Jnits	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 489.2	.1199	.0164	.0058	F 395.3	.2270	.4478	.9383

#1	489.8	.1207	.0157	.0055	396.6	.2260	.4440	.9400
#2	488.6	.1191	.0172	.0062	394.0	.2279	.4515	.9366

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1430.	.3828	F 1023.	38.62	-.0021	.6134	.0132	1.078

#1	1436.	.3795	1019.	38.41	-.0043	.6043	.0121	1.074
#2	1425.	.3861	1027.	38.83	.0000	.6224	.0144	1.081

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	2.845	2.929	270.1	1.220	*****

#1	2.823	2.921	269.3	1.218	5393.
#2	2.867	2.937	270.9	1.221	5372.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	113460.	8779.3	1147.8

#1	113750.	8730.7	1153.9
#2	113180.	8827.9	1141.7

Sample Name: K1004833-015      Acquired: 5/24/2010 16:54:32      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 Jser: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Jnits	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 461.2	.0928	.0177	.0082	F 487.4	.1935	.4576	.4723

#1	465.1	.0723	.0186	.0074	489.6	.1964	.4626	.4778
#2	457.2	.1132	.0168	.0091	485.3	.1906	.4526	.4669

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1092.	.4859	F 927.0	59.23	.0018	.8103	.0011	1.336

#1	1094.	.4922	930.7	59.49	.0007	.8205	.0015	1.351
#2	1091.	.4796	923.3	58.98	.0028	.8001	.0008	1.320

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	3.385	3.684	257.2	1.547	*****

#1	3.420	3.686	257.1	1.554	5829.
#2	3.351	3.682	257.3	1.539	5904.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	122640.	9355.2	1230.2

#1	122450.	9344.7	1218.9
#2	122830.	9365.8	1241.4

Sample Name: K1004833-016      Acquired: 5/24/2010 16:57:50      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

Jser: admin      :      :      :

Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Jnits	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 578.3	.3555	.0140	.0072	F 2474.	F -.0243	.0554	.1814

#1	580.6	.3679	.0138	.0075	2473.	-.0245	.0526	.1895
#2	575.9	.3431	.0141	.0068	2475.	-.0242	.0582	.1734

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 764.5	.1825	F 2650.	163.1	178.3	.0025	.4117	.0175

#1	762.0	.1825	2657.	162.7	178.4	.0018	.4085	.0184
#2	767.0	.1826	2644.	163.5	178.3	.0032	.4149	.0166

Elem	V_2924	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.9116	1.467	1.473	116.3	3.898	*****

#1	.9145	1.458	1.467	116.7	3.892	5068.
#2	.9087	1.475	1.479	115.8	3.905	5058.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	106290.	8344.3	1086.8

#1	106590.	8357.0	1089.6
#2	105990.	8331.6	1084.1

Sample Name: K1004833-017    Acquired: 5/24/2010 17:01:06    Type: Unk

Method: 2010aSEM(v7)    Mode: CONC    Corr. Factor: 1.000000

User: admin    :    :    :

Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 771.1	.9390	.0127	.0084	F 1941.	F .0077	.5500	.3105

#1	771.6	.9319	.0123	.0087	1942.	.0100	.5497	.3146
#2	770.6	.9462	.0130	.0081	1940.	.0054	.5502	.3063

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 294.4	.6205	F 2798.	57.65	.0033	1.145	-.0003	2.951

#1	294.9	.6229	2786.	57.79	.0015	1.142	.0017	2.950
#2	293.9	.6181	2810.	57.52	.0051	1.147	-.0023	2.953

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	1.636	1.602	161.2	4.881	*****

#1	1.628	1.600	161.8	4.884	5452.
#2	1.645	1.603	160.7	4.878	5418.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	115390.	9118.1	1092.4

#1	115370.	9134.7	1096.0
#2	115400.	9101.6	1088.7

Sample Name: K1004833-018      Acquired: 5/24/2010 17:04:29      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 Jser: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 669.7	.0978	.0179	.0087	F 629.4	.1695	.1116	.2596

#1	670.9	.1179	.0188	.0093	630.0	.1727	.1106	.2667
#2	668.4	.0777	.0170	.0082	628.9	.1662	.1127	.2524

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 941.4	.4797	F 1409.	14.63	.0004	.3450	-.0011	1.243

#1	941.9	.4815	1410.	14.64	.0020	.3396	.0050	1.237
#2	940.8	.4778	1408.	14.63	-.0012	.3504	-.0072	1.249

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	4.638	4.587	237.7	1.638	*****

#1	4.609	4.582	237.3	1.639	5419.
#2	4.667	4.593	238.0	1.636	5405.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	114650.	8948.1	1127.4

#1	114790.	8942.8	1130.5
#2	114500.	8953.3	1124.2

Sample Name: K1004833-019      Acquired: 5/24/2010 17:07:41      Type: Unk

Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000

Jser: admin      :      :      :

Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/LR	umol/L	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L
Avg	F 435.3	.1202	.0202	.0073	F 508.7	.1718	.5345	.3187

#1	435.4	.1002	.0197	.0060	510.2	.1699	.5329	.3246
#2	435.2	.1403	.0206	.0087	507.3	.1738	.5360	.3127

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/LR	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1265.	.4743	F 1234.	102.7	.0017	.8880	.0109	1.260

#1	1266.	.4703	1240.	102.7	.0020	.8793	.0131	1.257
#2	1264.	.4782	1228.	102.8	.0014	.8966	.0086	1.262

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	3.194	3.292	222.6	1.565	*****

#1	3.175	3.284	222.8	1.566	5511.
#2	3.214	3.300	222.4	1.563	5506.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	116300.	8953.9	1144.2

#1	116460.	8977.6	1146.8
#2	116140.	8930.2	1141.6

Sample Name: K1005040-MB      Acquired: 5/24/2010 17:11:00      Type: Unk  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.3243	-.0129	.0004	-.0009	F 2.273	.0065	-.0062	.0795

#1	.3220	-.0172	.0005	-.0002	2.192	.0062	-.0075	.0770
#2	.3267	-.0086	.0002	-.0015	2.354	.0068	-.0049	.0820

Elem	Fe2599	Pb2203	Mg2852	Mn2576	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	F 1.382	.0042	.7312	.0362	.0002	-.0048	-.0003	-.0097

#1	1.426	.0033	.7266	.0368	.0004	-.0047	.0019	-.0178
#2	1.339	.0051	.7359	.0356	.0000	-.0049	-.0025	-.0017

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.1180	.1212	1.833	.0072	*****

#1	.1191	.1222	1.823	.0090	4997.
#2	.1169	.1202	1.844	.0053	4979.

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	107380.	8182.0	1198.5

#1	107360.	8186.6	1202.8
#2	107390.	8177.5	1194.2



Sample Name: CCVA4      Acquired: 5/24/2010 17:14:01      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	9.403	3.294	2.151	2.202	6.415	4.640	4.147	3.960	4.514
Stddev	.113	.002	.015	.000	.176	.027	.022	.016	.018
%RSD	1.200	.0449	.6860	.0083	2.750	.5878	.5350	.3955	.4033
#1	9.483	3.293	2.141	2.203	6.290	4.621	4.131	3.971	4.527
#2	9.323	3.295	2.161	2.202	6.540	4.659	4.162	3.949	4.501
Check ?	None	None	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass	Chk Pass	None
High Limit									
Low Limit									

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	1.162	9.344	10.65	4.450	4.482	2.504	4.076	2.311	4.799
Stddev	.006	.052	.07	.001	.020	.017	.028	.006	.015
%RSD	.5163	.5533	.6291	.0280	.4411	.6717	.6977	.2707	.3024
#1	1.158	9.381	10.60	4.451	4.468	2.492	4.056	2.306	4.810
#2	1.166	9.308	10.69	4.449	4.496	2.516	4.096	2.315	4.789
Check ?	Chk Pass	None	None	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	3.698	3.759	4.887	5.096	*****
Stddev	.024	.008	.283	.001	----
%RSD	.6494	.2036	5.783	.0246	----
#1	3.681	3.754	4.687	5.095	4956.
#2	3.715	3.765	5.087	5.097	4931.
Check ?	Chk Pass	Chk Pass	None	Chk Pass	None
High Limit					
Low Limit					

Sample Name: CCVA4      Acquired: 5/24/2010 17:14:01      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	106300.	8046.6	1185.9
Stddev	246.	10.2	6.2
%RSD	.23137	.12660	.52506
#1	106130.	8053.8	1190.3
#2	106480.	8039.4	1181.5

Sample Name: CCVB4      Acquired: 5/24/2010 17:16:52      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 Jser: admin      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Jnits	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	368.8	13.37	.0005	.0344	246.8	.0087	-.0007	.0089	177.9
Stddev	1.8	.08	.0006	.0014	.8	.0039	.0018	.0070	.7
%RSD	.4856	.5709	113.9	4.174	.3356	44.86	242.0	78.06	.3745
#1	367.5	13.32	.0001	.0354	247.4	.0115	-.0020	.0138	178.3
#2	370.0	13.43	.0009	.0334	246.3	.0059	.0005	.0040	177.4

Check ?    Chk Pass   Chk Pass    None    None   Chk Pass    None    None    None   Chk Pass  
 Value  
 Range

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/LR	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0055	401.0	411.8	.0082	.0207	.0070	-.1305	.0004	.0044
Stddev	.0005	.4	.0	.0018	.0075	.0005	.0009	.0032	.0042
%RSD	9.704	.1062	.0062	21.42	36.39	7.125	.6853	764.8	95.46
#1	.0051	401.3	411.8	.0095	.0153	.0073	-.1298	-.0018	.0074
#2	.0059	400.7	411.8	.0070	.0260	.0066	-.1311	.0027	.0014

Check ?    None   Chk Pass   Chk Pass    None    None    None    None    None    None  
 Value  
 Range

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	.0048	.0154	360.7	.0036	*****
Stddev	.0011	.0004	.9	.0012	----
%RSD	23.88	2.579	.2546	32.95	----
#1	.0040	.0151	361.4	.0028	4888.
#2	.0056	.0157	360.1	.0045	4864.

Check ?    None    None   Chk Pass    None    None  
 Value  
 Range

Sample Name: CCVB4      Acquired: 5/24/2010 17:16:52      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
Jser: admin      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	103260.	7920.3	1146.3
Stddev	189.	14.6	2.9
%RSD	.18294	.18450	.25454
#1	103390.	7910.0	1148.3
#2	103130.	7930.7	1144.2

Sample Name: CCB4      Acquired: 5/24/2010 17:20:13      Type: QC  
 Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
 User: admin      :      :      :  
 Comment: 052410D

Elem	Al3944	As1890	Cd2265	Cd2288	Ca3158	Cr2677	Co2307	Cu3273	Fe2599
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0734	.0227	.0000	.0000	-.0745	.0099	-.0037	.0122	.0714
Stddev	.0858	.0171	.001	.001	.1164	.0043	.0040	.0105	.0461
%RSD	116.8	75.35	1650.	1942.	156.3	43.38	108.1	86.44	64.56
#1	.1341	.0347	.0005	.0004	.0078	.0130	-.0065	.0196	.0388
#2	.0128	.0106	-.0006	-.0004	-.1568	.0069	-.0009	.0047	.1040

Check ?    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass    Chk Pass  
 High Limit  
 Low Limit

Elem	Pb2203	Mg2790	Mg2852	Mn2576	Mn2605	Mo2020	Ni2216	Ag3280	V_2924
Units	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L	umol/L
Avg	.0046	-.1272	.2422	.0060	.0375	.0007	-.0313	.0009	-.0074
Stddev	.0030	.1906	.0984	.0000	.0139	.0012	.0023	.0043	.0031
%RSD	66.01	149.9	40.61	.5412	37.08	161.0	7.491	493.3	41.36
#1	.0025	-.2619	.3118	.0061	.0276	.0016	-.0297	.0040	-.0052
#2	.0067	.0076	.1727	.0060	.0473	-.0001	-.0330	-.0022	-.0096

Check ?    Chk Pass      None    Chk Pass    Chk Pass      None    Chk Pass    Chk Pass    Chk Pass    Chk Pass  
 High Limit  
 Low Limit

Elem	Zn2062	Zn2138	Si2516	Ti3361	Y_2243
Units	umol/L	umol/L	umol/L	umol/L	Cts/S
Avg	-.0013	-.0011	.3665	-.0014	*****
Stddev	.0004	.0016	.4682	.0060	----
%RSD	31.89	154.0	127.7	439.4	----
#1	-.0010	.0001	.6976	-.0056	4847.
#2	-.0016	-.0022	.0355	.0029	4829.

Check ?    Chk Pass    Chk Pass    Chk Pass    Chk Pass      None  
 High Limit  
 Low Limit

Sample Name: CCB4      Acquired: 5/24/2010 17:20:13      Type: QC  
Method: 2010aSEM(v7)      Mode: CONC      Corr. Factor: 1.000000  
User: admin      :      :      :  
Comment: 052410D

Int. Std.	Y_3600	Y_3600-2	In2306
Units	Cts/S	Cts/S	Cts/S
Avg	103980.	7899.6	1144.2
Stddev	237.	9.6	3.4
%RSD	.22784	.12129	.29745
#1	103810.	7892.8	1146.6
#2	104140.	7906.3	1141.8

# ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.  
7979 GSRI Avenue  
Baton Rouge, LA 70820

Report Date

GCAL Report 210090233



**Deliver To** Michael Pisani & Associates  
1100 Poydras St  
Suite 1430  
New Orleans, LA 70163  
504-582-2468

**Attn** Jonathan Miller

**Project** East White Lake 07-47

## CASE NARRATIVE

**Client:** Michael Pisani & Associates      **Report:** 210090233

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

### **METALS**

In the SW-846 6010B analysis for prep batch 441154, the MS/MSD recoveries are not applicable for Calcium, Sodium, and Magnesium because the sample concentration is greater than 4 times the spike concentration.

### **CONVENTIONALS**

In the SM 4500 CL E (Chloride) analysis, all samples had to be diluted to bracket the concentration within the calibration range of the instrument.

In EPA 375.4 analysis, samples 21009023310 (PURVIS HEBERT WELL) and 21009023311 (A. CROUCH WELL) had to be diluted to bracket the concentration within the calibration range of the instrument.



# Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

## Common Abbreviations Utilized in this Report

<b>ND</b>	Indicates the result was Not Detected at the specified RDL
<b>DO</b>	Indicates the result was Diluted Out
<b>MI</b>	Indicates the result was subject to Matrix Interference
<b>TNTC</b>	Indicates the result was Too Numerous To Count
<b>SUBC</b>	Indicates the analysis was Sub-Contracted
<b>FLD</b>	Indicates the analysis was performed in the Field
<b>PQL</b>	Practical Quantitation Limit
<b>MDL</b>	Method Detection Limit
<b>RDL</b>	Reporting Detection Limit
<b>00:00</b>	Reported as a time equivalent to 12:00 AM

## Reporting Flags Utilized in this Report

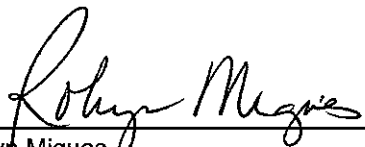
<b>J</b>	Indicates an estimated value
<b>U</b>	Indicates the compound was analyzed for but not detected
<b>B</b>	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
<b>B</b>	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Robyn Miguez  
Technical Director

GCAL REPORT 210090233

# Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023301	J GUIDRY WELL AT 400 GAL	Water	09/01/2010 09:35	09/02/2010 13:12
21009023302	J GUIDRY WELL AT 525 GAL	Water	09/01/2010 10:00	09/02/2010 13:12
21009023303	PURVIS HEBERT WELL AT 5 GAL	Water	09/01/2010 11:25	09/02/2010 13:12
21009023304	PURVIS HEBERT WELL AT 25 GAL	Water	09/01/2010 11:35	09/02/2010 13:12
21009023305	A CROUCH WELL AT 1 GAL	Water	09/01/2010 12:20	09/02/2010 13:12
21009023306	A CROUCH SW	Water	09/01/2010 12:55	09/02/2010 13:12
21009023307	J GUIDRY WELL-1	Water	09/01/2010 10:50	09/02/2010 13:12
21009023308	J GUIDRY WELL-2	Water	09/01/2010 10:55	09/02/2010 13:12
21009023309	J GUIDRY WELL-3	Water	09/01/2010 11:00	09/02/2010 13:12
21009023310	PURVIS HEBERT WELL	Water	09/01/2010 11:45	09/02/2010 13:12
21009023311	A. CROUCH WELL	Water	09/01/2010 12:50	09/02/2010 13:12
21009023312	WELL 210	Water	09/01/2010 13:00	09/02/2010 13:12
21009023313	TRIP BLANK	Water	09/01/2010 00:00	09/02/2010 13:12

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023301	J GUIDRY WELL AT 400 GAL	Water	09/01/2010 09:35	09/02/2010 13:12

### SM 2540C TDS

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/02/2010 15:30	DJH	441149

CAS#	Parameter	Result	RDL	REG LIMIT	Units
WET-035	Total Dissolved Solids(TDS)	640	10.0		mg/L

### SM 4500 CL E Chloride

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	09/08/2010 09:33	AEL	441489

CAS#	Parameter	Result	RDL	REG LIMIT	Units
16887-00-6	Chloride	146	5.0		mg/L

### SM 2510 B Conductivity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:50	DJH	441247

CAS#	Parameter	Result	RDL	REG LIMIT	Units
C-011	Specific Conductance	1116	10		umhos/cm

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023302	J GUIDRY WELL AT 525 GAL	Water	09/01/2010 10:00	09/02/2010 13:12

**SM 2540C TDS**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/02/2010 15:30	DJH	441149
CAS#	Parameter		Result	RDL	REG LIMIT	Units
WET-035	Total Dissolved Solids(TDS)		620	10.0		mg/L

**SM 4500 CL E Chloride**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	09/08/2010 09:33	AEL	441489
CAS#	Parameter		Result	RDL	REG LIMIT	Units
16887-00-6	Chloride		149	5.0		mg/L

**SM 2510 B Conductivity**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:50	DJH	441247
CAS#	Parameter		Result	RDL	REG LIMIT	Units
C-011	Specific Conductance		1073	10		umhos/cm

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023303	PURVIS HEBERT WELL AT 5 GAL	Water	09/01/2010 11:25	09/02/2010 13:12

**SM 2540C TDS**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/02/2010 15:30	DJH	441149
CAS#	Parameter		Result	RDL	REG LIMIT	Units
WET-035	Total Dissolved Solids(TDS)		1730	10.0		mg/L

**SM 4500 CL E Chloride**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			20	09/08/2010 09:34	AEL	441489
CAS#	Parameter		Result	RDL	REG LIMIT	Units
16887-00-6	Chloride		804	20.0		mg/L

**SM 2510 B Conductivity**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:50	DJH	441247
CAS#	Parameter		Result	RDL	REG LIMIT	Units
C-011	Specific Conductance		2930	10		umhos/cm

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023304	PURVIS HEBERT WELL AT 25 GAL	Water	09/01/2010 11:35	09/02/2010 13:12

**SM 2540C TDS**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/02/2010 15:30	DJH	441149

CAS#	Parameter	Result	RDL	REG LIMIT	Units
WET-035	Total Dissolved Solids(TDS)	1810	10.0		mg/L

**SM 4500 CL E Chloride**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			20	09/08/2010 09:37	AEL	441489

CAS#	Parameter	Result	RDL	REG LIMIT	Units
16887-00-6	Chloride	827	20.0		mg/L

**SM 2510 B Conductivity**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:50	DJH	441247

CAS#	Parameter	Result	RDL	REG LIMIT	Units
C-011	Specific Conductance	3080	10		umhos/cm

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023305	A CROUCH WELL AT 1 GAL	Water	09/01/2010 12:20	09/02/2010 13:12

### SM 2540C TDS

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/02/2010 15:30	DJH	441149
CAS#	Parameter		Result	RDL	REG LIMIT	Units
WET-035	Total Dissolved Solids(TDS)		2510	10.0		mg/L

### SM 4500 CL E Chloride

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			20	09/08/2010 09:38	AEL	441489
CAS#	Parameter		Result	RDL	REG LIMIT	Units
16887-00-6	Chloride		1320	20.0		mg/L

### SM 2510 B Conductivity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:50	DJH	441247
CAS#	Parameter		Result	RDL	REG LIMIT	Units
C-011	Specific Conductance		4410	10		umhos/cm

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
21009023306	A CROUCH SW	Water	09/01/2010 12:55	09/02/2010 13:12

**SM 2540C TDS**

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/02/2010 15:30	DJH	441149

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
WET-035	Total Dissolved Solids(TDS)	970	10.0		mg/L

**SM 4500 CL E Chloride**

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			10	09/08/2010 09:39	AEL	441489

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
16887-00-6	Chloride	523	10.0		mg/L

**SM 2510 B Conductivity**

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/03/2010 09:50	DJH	441247

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
C-011	Specific Conductance	1880	10		umhos/cm



<b>GCAL ID</b> 21009023307	<b>Client ID</b> J.GUIDRY WELL-1	<b>Matrix</b> Water	<b>Collect Date/Time</b> 09/01/2010 10:50	<b>Receive Date/Time</b> 09/02/2010 13:12
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SW-846 8260B

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/05/2010 15:05	MSS	441368

CAS#	Parameter	Result	RDL	REG LIMIT	Units
71-43-2	Benzene	ND	0.005		mg/L
100-41-4	Ethylbenzene	ND	0.005		mg/L
108-88-3	Toluene	ND	0.005		mg/L
1330-20-7	Xylene (total)	ND	0.01		mg/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	.05	.047	mg/L	94	78 - 130
1868-53-7	Dibromofluoromethane	.05	.05	mg/L	101	77 - 127
2037-26-5	Toluene d8	.05	.05	mg/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	.05	.05	mg/L	101	71 - 127

SW-846 6010B

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
09/02/2010 16:00	441154	SW-846 3010A	1	09/10/2010 08:30	TEA	441642

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.78	0.010		mg/L
7440-43-9	Cadmium	ND	0.0050		mg/L
7440-70-2	Calcium	72.5	0.10		mg/L
7440-47-3	Chromium	ND	0.010		mg/L
7439-89-6	Iron	1.08	0.10		mg/L
7439-92-1	Lead	ND	0.015		mg/L
7439-95-4	Magnesium	23.8	0.10		mg/L
7439-96-5	Manganese	0.073	0.015		mg/L
7440-09-7	Potassium	2.68	0.50		mg/L
7782-49-2	Selenium	ND	0.040		mg/L
7440-23-5	Sodium	117	1.00		mg/L
7440-24-6	Strontium	0.57	0.050		mg/L
7440-86-6	Zinc	0.32	0.020		mg/L

SW-846 7010 Arsenic

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
09/03/2010 13:30	441205	SW-846 3020A	1	09/09/2010 11:28	CLB	441537

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	ND	0.010		mg/L

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
21009023307	J-GUIDRY WELL-1	Water	09/01/2010 10:50	09/02/2010 13:12

### SM 2540C TDS

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/02/2010 15:30	DJH	441149
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
WET-035	Total Dissolved Solids(TDS)		604	10.0		mg/L

### SM 4500 CL E Chloride

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			5	09/08/2010 09:40	AEL	441489
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
16887-00-6	Chloride		139	5.0		mg/L

### SM 2320B Carbonate

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/03/2010 09:05	DJH	441256
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
T-005-C	Carbonate Alkalinity		ND	1.0		mg/L CaCO3

### SM 2320B Bicarbonate

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/03/2010 09:05	DJH	441256
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
T-005-B	Bicarbonate Alkalinity		340	1.0		mg/L CaCO3

### SM 2510 B Conductivity

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/03/2010 09:50	DJH	441247
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
C-011	Specific Conductance		1099	10		umhos/cm

### EPA 375.4 Sulfate

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/10/2010 11:23	JEM	441670
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
14808-79-8	Sulfate		ND	5.0		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023307	J GUIDRY WELL-1	Water	9/1/2010 10:50	9/2/2010 13:12

**SW-846 7470A**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/14/2010 11:30	441902	7470A	1	9/14/2010 14:55	CLB	441900

CAS#	Parameter	Result	RDL	MDL	Units
C-007	Mercury	ND	0.00020	0.000055	mg/L

**LA1006 Hydrocarbons by Range**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/7/2010 11:00	441250	1006	1	9/14/2010 15:44	SMH	91410

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-02-11	Aliphatic >C10-C12	ND	0.150	0.113	mg/L
GCSV-02-12	Aliphatic >C12-C16	ND	0.150	0.131	mg/L
GCSV-02-31	Aliphatic >C16-C35	ND	0.150	0.131	mg/L
GCSV-02-10	Aliphatic >C6-C10	ND	0.150	0.113	mg/L
GCSV-02-31	Aliphatic C6-C8	ND	0.150	0.113	mg/L
GCSV-02-15	Aromatic >C10-C12	ND	0.150	0.131	mg/L
GCSV-02-16	Aromatic >C12-C16	ND	0.150	0.131	mg/L
GCSV-02-17	Aromatic >C16-C21	ND	0.150	0.131	mg/L
GCSV-02-18	Aromatic >C21-C35	ND	0.150	0.131	mg/L
GCSV-02-14	Aromatic >C8-C10	ND	0.150	0.113	mg/L

CAS#	Surrogate	Conc.	Conc. Rec	Units	%	Rec Limits
84-15-1	o-Terphenyl	16.1	13.4	ug/L	83	60-140

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023308	J GUIDRY WELL-2	Water	09/01/2010 10:55	09/02/2010 13:12

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/06/2010 20:33	RJU	441397

CAS#	Parameter	Result	RDL	REG LIMIT	Units
71-43-2	Benzene	ND	0.005		mg/L
100-41-4	Ethylbenzene	ND	0.005		mg/L
108-88-3	Toluene	ND	0.005		mg/L
1330-20-7	Xylene (total)	ND	0.01		mg/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	.05	.04	mg/L	79	78 - 130
1868-53-7	Dibromofluoromethane	.05	.052	mg/L	104	77 - 127
2037-26-5	Toluene d8	.05	.047	mg/L	94	76 - 134
17060-07-0	1,2-Dichloroethane-d4	.05	.051	mg/L	103	71 - 127

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/02/2010 16:00	441154	SW-846 3010A	1	09/10/2010 11:52	TEA	441642

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.73	0.010		mg/L
7440-43-9	Cadmium	ND	0.0050		mg/L
7440-70-2	Calcium	68.3	0.10		mg/L
7440-47-3	Chromium	ND	0.010		mg/L
7439-89-6	Iron	1.02	0.10		mg/L
7439-92-1	Lead	ND	0.015		mg/L
7439-95-4	Magnesium	22.0	0.10		mg/L
7439-96-5	Manganese	0.068	0.015		mg/L
7440-09-7	Potassium	2.47	0.50		mg/L
7782-49-2	Selenium	ND	0.040		mg/L
7440-23-5	Sodium	109	1.00		mg/L
7440-24-6	Strontium	0.54	0.050		mg/L
7440-66-6	Zinc	0.31	0.020		mg/L

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/03/2010 13:30	441205	SW-846 3020A	1	09/09/2010 11:34	CLB	441537

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	ND	0.010		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023308	J.GUIDRY WELL-2	Water	09/01/2010 10:55	09/02/2010 13:12

### SM 2540C TDS

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/02/2010 15:30	DJH	441149
CAS#	Parameter		Result	RDL	REG LIMIT	Units
WET-035	Total Dissolved Solids(TDS)		582	10.0		mg/L

### SM 4500 CL E Chloride

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	09/08/2010 09:41	AEL	441489
CAS#	Parameter		Result	RDL	REG LIMIT	Units
16887-00-6	Chloride		139	5.0		mg/L

### SM 2320B Carbonate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:05	DJH	441256
CAS#	Parameter		Result	RDL	REG LIMIT	Units
T-005-C	Carbonate Alkalinity		ND	1.0		mg/L CaCO3

### SM 2320B Bicarbonate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:05	DJH	441256
CAS#	Parameter		Result	RDL	REG LIMIT	Units
T-005-B	Bicarbonate Alkalinity		334	1.0		mg/L CaCO3

### SM 2510 B Conductivity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:50	DJH	441247
CAS#	Parameter		Result	RDL	REG LIMIT	Units
C-011	Specific Conductance		1094	10		umhos/cm

### EPA 375.4 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/10/2010 11:25	JEM	441670
CAS#	Parameter		Result	RDL	REG LIMIT	Units
14808-79-8	Sulfate		ND	5.0		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023308	J.GUIDRY WELL-2	Water	9/1/2010 10:55	9/2/2010 13:12

**SW-846 7470A**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/14/2010 11:30	441902	7470A	1	9/14/2010 14:57	CLB	441900

CAS#	Parameter	Result	RDL	MDL	Units
C-007	Mercury	ND	0.00020	0.000055	mg/L

**LA1006 Hydrocarbons by Range**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/7/2010 11:00	441250	1006	1	9/14/2010 15:44	SMH	91410

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-02-11	Aliphatic >C10-C12	ND	0.150	0.113	mg/L
GCSV-02-12	Aliphatic >C12-C16	ND	0.150	0.131	mg/L
GCSV-02-31	Aliphatic >C16-C35	ND	0.150	0.131	mg/L
GCSV-02-10	Aliphatic >C6-C10	ND	0.150	0.113	mg/L
GCSV-02-31	Aliphatic C6-C8	ND	0.150	0.113	mg/L
GCSV-02-15	Aromatic >C10-C12	ND	0.150	0.131	mg/L
GCSV-02-16	Aromatic >C12-C16	ND	0.150	0.131	mg/L
GCSV-02-17	Aromatic >C16-C21	ND	0.150	0.131	mg/L
GCSV-02-18	Aromatic >C21-C35	ND	0.150	0.131	mg/L
GCSV-02-14	Aromatic >C8-C10	ND	0.150	0.113	mg/L

CAS#	Surrogate	Conc.	Conc. Rec	Units	%	Rec Limits
84-15-1	o-Terphenyl	16.2	15.9	ug/L	98	60-140

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023309	J-GUIDRY WELL-3	Water	09/01/2010 11:00	09/02/2010 13:12

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/06/2010 21:14	RJU	441397

CAS#	Parameter	Result	RDL	REG LIMIT	Units
71-43-2	Benzene	ND	0.005		mg/L
100-41-4	Ethylbenzene	ND	0.005		mg/L
108-88-3	Toluene	ND	0.005		mg/L
1330-20-7	Xylene (total)	ND	0.01		mg/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	.05	.042	mg/L	84	78 - 130
1868-53-7	Dibromofluoromethane	.05	.051	mg/L	102	77 - 127
2037-26-5	Toluene d8	.05	.048	mg/L	96	76 - 134
17060-07-0	1,2-Dichloroethane-d4	.05	.05	mg/L	101	71 - 127

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/02/2010 16:00	441154	SW-846 3010A	1	09/10/2010 11:56	TEA	441642

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.74	0.010		mg/L
7440-43-9	Cadmium	ND	0.0050		mg/L
7440-70-2	Calcium	70.5	0.10		mg/L
7440-47-3	Chromium	ND	0.010		mg/L
7439-89-6	Iron	1.01	0.10		mg/L
7439-92-1	Lead	ND	0.015		mg/L
7439-95-4	Magnesium	22.8	0.10		mg/L
7439-96-5	Manganese	0.068	0.015		mg/L
7440-09-7	Potassium	2.46	0.50		mg/L
7782-49-2	Selenium	ND	0.040		mg/L
7440-23-5	Sodium	109	1.00		mg/L
7440-24-6	Strontium	0.54	0.050		mg/L
7440-66-6	Zinc	0.26	0.020		mg/L

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/03/2010 13:30	441205	SW-846 3020A	1	09/09/2010 10:57	CLB	441537

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	ND	0.010		mg/L

<b>GCAL ID</b> 21009023309	<b>Client ID</b> J.GUIDRY WELL-3	<b>Matrix</b> Water	<b>Collect Date/Time</b> 09/01/2010 11:00	<b>Receive Date/Time</b> 09/02/2010 13:12
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**SM 2540C TDS**

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/02/2010 15:30	DJH	441149

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
WET-035	Total Dissolved Solids(TDS)	632	10.0		mg/L

**SM 4500 CL E Chloride**

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			5	09/08/2010 09:42	AEL	441489

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
16887-00-6	Chloride	139	5.0		mg/L

**SM 2320B Carbonate**

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/03/2010 09:05	DJH	441256

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
T-005-C	Carbonate Alkalinity	ND	1.0		mg/L CaCO3

**SM 2320B Bicarbonate**

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/03/2010 09:05	DJH	441256

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
T-005-B	Bicarbonate Alkalinity	345	1.0		mg/L CaCO3

**SM 2510 B Conductivity**

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/03/2010 09:50	DJH	441247

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
C-011	Specific Conductance	1097	10		umhos/cm

**EPA 375.4 Sulfate**

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	09/10/2010 11:25	JEM	441670

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
14808-79-8	Sulfate	ND	5.0		mg/L



GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023309	J GUIDRY WELL-3	Water	9/1/2010 11:00	9/2/2010 13:12

SW-846 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/14/2010 11:30	441902	7470A	1	9/14/2010 14:58	CLB	441900

CAS#	Parameter	Result	RDL	Units
C-007	Mercury	ND	0.00020	mg/L

LA1006 Hydrocarbons by Range

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/7/2010 11:00	441250	1006	1	9/14/2010 18:22	SMH	91410

CAS#	Parameter	Result	RDL	Units
GCSV-02-11	Aliphatic >C10-C12	ND	0.150	mg/L
GCSV-02-12	Aliphatic >C12-C16	ND	0.150	mg/L
GCSV-02-31	Aliphatic >C16-C35	ND	0.150	mg/L
GCSV-02-10	Aliphatic >C6-C10	ND	0.150	mg/L
GCSV-02-31	Aliphatic C6-C8	ND	0.150	mg/L
GCSV-02-15	Aromatic >C10-C12	ND	0.150	mg/L
GCSV-02-16	Aromatic >C12-C16	ND	0.150	mg/L
GCSV-02-17	Aromatic >C16-C21	ND	0.150	mg/L
GCSV-02-18	Aromatic >C21-C35	ND	0.150	mg/L
GCSV-02-14	Aromatic >C8-C10	ND	0.150	mg/L

CAS#	Surrogate	Conc.	Conc. Rec	Units	%	Rec Limits
84-15-1	o-Terphenyl	16.2	11.9	ug/L	73	60-140

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023310	PURVIS HEBERT WELL	Water	09/01/2010 11:45	09/02/2010 13:12

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/06/2010 21:35	RJU	441397

CAS#	Parameter	Result	RDL	REG LIMIT	Units
71-43-2	Benzene	ND	0.005		mg/L
100-41-4	Ethylbenzene	ND	0.005		mg/L
108-88-3	Toluene	ND	0.005		mg/L
1330-20-7	Xylene (total)	ND	0.01		mg/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	.05	.039	mg/L	78	78 - 130
1868-53-7	Dibromofluoromethane	.05	.054	mg/L	107	77 - 127
2037-26-5	Toluene d8	.05	.059	mg/L	119	76 - 134
17060-07-0	1,2-Dichloroethane-d4	.05	.052	mg/L	103	71 - 127

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/02/2010 16:00	441154	SW-846 3010A	1	09/10/2010 13:12	TEA	441642

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.28	0.010		mg/L
7440-43-9	Cadmium	ND	0.0050		mg/L
7440-70-2	Calcium	88.6	0.10		mg/L
7440-47-3	Chromium	ND	0.010		mg/L
7439-89-6	Iron	13.5	0.10		mg/L
7439-92-1	Lead	ND	0.015		mg/L
7439-95-4	Magnesium	56.3	0.10		mg/L
7439-96-5	Manganese	2.42	0.015		mg/L
7440-09-7	Potassium	7.89	0.50		mg/L
7782-49-2	Selenium	ND	0.040		mg/L
7440-23-5	Sodium	389	1.00		mg/L
7440-24-6	Strontium	0.66	0.050		mg/L
7440-66-6	Zinc	0.035	0.020		mg/L

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/03/2010 13:30	441205	SW-846 3020A	1	09/09/2010 11:40	CLB	441537

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	ND	0.010		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023310	PURVIS HEBERT WELL	Water	09/01/2010 11:45	09/02/2010 13:12

### SM 2540C TDS

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/02/2010 15:30	DJH	441149

CAS#	Parameter	Result	RDL	REG LIMIT	Units
WET-035	Total Dissolved Solids(TDS)	1780	10.0		mg/L

### SM 4500 CL E Chloride

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			20	09/08/2010 09:43	AEL	441489

CAS#	Parameter	Result	RDL	REG LIMIT	Units
16887-00-6	Chloride	851	20.0		mg/L

### SM 2320B Carbonate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:05	DJH	441256

CAS#	Parameter	Result	RDL	REG LIMIT	Units
T-005-C	Carbonate Alkalinity	ND	1.0		mg/L CaCO3

### SM 2320B Bicarbonate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:05	DJH	441256

CAS#	Parameter	Result	RDL	REG LIMIT	Units
T-005-B	Bicarbonate Alkalinity	225	1.0		mg/L CaCO3

### SM 2510 B Conductivity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2010 09:50	DJH	441247

CAS#	Parameter	Result	RDL	REG LIMIT	Units
C-011	Specific Conductance	3210	10		umhos/cm

### EPA 375.4 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	09/10/2010 11:27	JEM	441670

CAS#	Parameter	Result	RDL	REG LIMIT	Units
14808-79-8	Sulfate	90.0	25.0		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023310	PURVIS HEBERT WELL	Water	9/1/2010 11:45	9/2/2010 13:12

**SW-846 7470A**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/14/2010 11:30	441902	7470A	1	9/14/2010 14:49	CLB	441900

CAS#	Parameter	Result	RDL	Units
C-007	Mercury	ND	0.00020	mg/L

**LA1006 Hydrocarbons by Range**

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/7/2010 11:00	441250	1006	1	9/14/2010 19:24	SMH	91410

CAS#	Parameter	Result	RDL	Units
GCSV-02-11	Aliphatic >C10-C12	ND	0.150	mg/L
GCSV-02-12	Aliphatic >C12-C16	ND	0.150	mg/L
GCSV-02-31	Aliphatic >C16-C35	ND	0.150	mg/L
GCSV-02-10	Aliphatic >C6-C10	ND	0.150	mg/L
GCSV-02-31	Aliphatic C6-C8	ND	0.150	mg/L
GCSV-02-15	Aromatic >C10-C12	ND	0.150	mg/L
GCSV-02-16	Aromatic >C12-C16	ND	0.150	mg/L
GCSV-02-17	Aromatic >C16-C21	ND	0.150	mg/L
GCSV-02-18	Aromatic >C21-C35	ND	0.150	mg/L
GCSV-02-14	Aromatic >C8-C10	ND	0.150	mg/L

CAS#	Surrogate	Conc.	Conc. Rec	Units	%	Rec Limits
84-15-1	o-Terphenyl	16.0	12.4	ug/L	78	60-140

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023311	A. CROUCH WELL	Water	09/01/2010 12:50	09/02/2010 13:12

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/06/2010 22:16	RJU	441397

CAS#	Parameter	Result	RDL	REG LIMIT	Units
71-43-2	Benzene	ND	0.005		mg/L
100-41-4	Ethylbenzene	ND	0.005		mg/L
108-88-3	Toluene	ND	0.005		mg/L
1330-20-7	Xylene (total)	ND	0.01		mg/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	.05	.045	mg/L	90	78 - 130
1868-53-7	Dibromofluoromethane	.05	.052	mg/L	104	77 - 127
2037-26-5	Toluene d8	.05	.051	mg/L	103	76 - 134
17060-07-0	1,2-Dichloroethane-d4	.05	.051	mg/L	103	71 - 127

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/02/2010 16:00	441154	SW-846 3010A	2	09/10/2010 11:47	TEA	441642

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.61	0.020		mg/L
7440-43-9	Cadmium	ND	0.005		mg/L
7440-70-2	Calcium	160	0.20		mg/L
7440-47-3	Chromium	ND	0.020		mg/L
7439-89-6	Iron	68.9	0.20		mg/L
7439-92-1	Lead	ND	0.015		mg/L
7439-95-4	Magnesium	94.5	0.20		mg/L
7439-96-5	Manganese	4.30	0.030		mg/L
7440-09-7	Potassium	14.5	1.00		mg/L
7782-49-2	Selenium	ND	0.040		mg/L
7440-23-5	Sodium	683	2.00		mg/L
7440-24-6	Strontium	1.38	0.10		mg/L
7440-66-6	Zinc	0.11	0.040		mg/L

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/03/2010 13:30	441205	SW-846 3020A	1	09/09/2010 12:21	CLB	441537

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	ND	0.010		mg/L

<b>GCAL ID</b> 21009023311	<b>Client ID</b> A. CROUCH WELL	<b>Matrix</b> Water	<b>Collect Date/Time</b> 09/01/2010 12:50	<b>Receive Date/Time</b> 09/02/2010 13:12
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### SM 2540C TDS

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b> 1	<b>Analyzed</b> 09/02/2010 15:30	<b>By</b> DJH	<b>Analytical Batch</b> 441149
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
WET-035	Total Dissolved Solids(TDS)		3240	10.0		mg/L

### SM 4500 CL E Chloride

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b> 20	<b>Analyzed</b> 09/08/2010 09:44	<b>By</b> AEL	<b>Analytical Batch</b> 441489
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
16887-00-6	Chloride		1570	20.0		mg/L

### SM 2320B Carbonate

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b> 1	<b>Analyzed</b> 09/03/2010 09:05	<b>By</b> DJH	<b>Analytical Batch</b> 441256
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
T-005-C	Carbonate Alkalinity		ND	1.0		mg/L CaCO3

### SM 2320B Bicarbonate

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b> 1	<b>Analyzed</b> 09/03/2010 09:05	<b>By</b> DJH	<b>Analytical Batch</b> 441256
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
T-005-B	Bicarbonate Alkalinity		120	1.0		mg/L CaCO3

### SM 2510 B Conductivity

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b> 1	<b>Analyzed</b> 09/03/2010 09:50	<b>By</b> DJH	<b>Analytical Batch</b> 441247
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
C-011	Specific Conductance		5530	10		umhos/cm

### EPA 375.4 Sulfate

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b> 10	<b>Analyzed</b> 09/10/2010 11:28	<b>By</b> JEM	<b>Analytical Batch</b> 441670
<b>CAS#</b>	<b>Parameter</b>		<b>Result</b>	<b>RDL</b>	<b>REG LIMIT</b>	<b>Units</b>
14808-79-8	Sulfate		176	50.0		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023311	A. CROUCH WELL	Water	9/1/2010 12:50	9/2/2010 13:12

SW-846 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/14/2010 11:30	441902	7470A	1	9/14/2010 15:00	CLB	441900

CAS#	Parameter	Result	RDL	Units
C-007	Mercury	ND	0.00020	mg/L

LA1006 Hydrocarbons by Range

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
9/7/2010 11:00	441250	1006	1	9/14/2010 20:23	SMH	91410

CAS#	Parameter	Result	RDL	Units
GCSV-02-11	Aliphatic >C10-C12	ND	0.150	mg/L
GCSV-02-12	Aliphatic >C12-C16	ND	0.150	mg/L
GCSV-02-31	Aliphatic >C16-C35	ND	0.150	mg/L
GCSV-02-10	Aliphatic >C6-C10	ND	0.150	mg/L
GCSV-02-31	Aliphatic C6-C8	ND	0.150	mg/L
GCSV-02-15	Aromatic >C10-C12	ND	0.150	mg/L
GCSV-02-16	Aromatic >C12-C16	ND	0.150	mg/L
GCSV-02-17	Aromatic >C16-C21	ND	0.150	mg/L
GCSV-02-18	Aromatic >C21-C35	ND	0.150	mg/L
GCSV-02-14	Aromatic >C8-C10	ND	0.150	mg/L

CAS#	Surrogate	Conc.	Conc. Rec	Units	%	Rec Limits
84-15-1	o-Terphenyl	15.8	13.3	ug/L	84	60-140

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023312	WELL 210	Water	09/01/2010 13:00	09/02/2010 13:12

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/06/2010 22:37	SLR	441397

CAS#	Parameter	Result	RDL	REG LIMIT	Units
71-43-2	Benzene	ND	0.005		mg/L
100-41-4	Ethylbenzene	ND	0.005		mg/L
108-88-3	Toluene	ND	0.005		mg/L
1330-20-7	Xylene (total)	ND	0.01		mg/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	.05	.042	mg/L	83	78 - 130
1868-53-7	Dibromofluoromethane	.05	.055	mg/L	110	77 - 127
2037-26-5	Toluene d8	.05	.045	mg/L	91	76 - 134
17060-07-0	1,2-Dichloroethane-d4	.05	.05	mg/L	100	71 - 127



GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21009023313	TRIP BLANK	Water	09/01/2010 00:00	09/02/2010 13:12

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/06/2010 22:57	SLR	441397

CAS#	Parameter	Result	RDL	REG LIMIT	Units
71-43-2	Benzene	ND	0.005		mg/L
100-41-4	Ethylbenzene	ND	0.005		mg/L
108-88-3	Toluene	ND	0.005		mg/L
1330-20-7	Xylene (total)	ND	0.01		mg/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	.05	.05	mg/L	99	78 - 130
1868-53-7	Dibromofluoromethane	.05	.052	mg/L	104	77 - 127
2037-26-5	Toluene d8	.05	.056	mg/L	111	76 - 134
17060-07-0	1,2-Dichloroethane-d4	.05	.052	mg/L	103	71 - 127

# GC/MS Volatiles Quality Control Summary

Analytical Batch Prep Batch	441368 N/A	Client ID GCAL ID	MB441368 875534	Sample Type Analytical Date Matrix	Method Blank 09/05/2010 11:20 Water	LCS441368 875535 LCS 09/05/2010 09:21 Water		LCSD441368 875536 LCSD 09/05/2010 10:35 Water			
						Units Result	mg/L RDL	Spike Added	% R Result	Control Limits % R	Result
<b>SW-846 8260B</b>											
100-41-4	Ethylbenzene	ND	0.005	0.050	0.053	106	74 - 126	0.046	93	14	30
1330-20-7	Xylene (total)	ND	0.01	0.150	0.167	111	74 - 127	0.145	97	14	30
71-43-2	Benzene	ND	0.005	0.050	0.046	92	70 - 129	0.041	81	11	20
108-88-3	Toluene	ND	0.005	0.050	0.053	105	72 - 120	0.046	91	14	20
<b>Surrogate</b>											
460-00-4	4-Bromofluorobenzene	49.1	98	50	51.6	103	78 - 130	52.1	104		
1868-53-7	Dibromofluoromethane	50.8	102	50	50.5	101	77 - 127	50.3	101		
2037-26-5	Toluene d8	51.5	103	50	50.3	101	76 - 134	50.3	101		
17060-07-0	1,2-Dichloroethane-d4	49	98	50	48	96	71 - 127	48.4	97		

Analytical Batch Prep Batch	441397 N/A	Client ID GCAL ID	MB441397 875614	Sample Type Analytical Date Matrix	Method Blank 09/06/2010 19:06 Water	LCS441397 875615 LCS 09/06/2010 17:15 Water		LCSD441397 875616 LCSD 09/06/2010 18:25 Water			
						Units Result	mg/L RDL	Spike Added	% R Result	Control Limits % R	Result
<b>SW-846 8260B</b>											
100-41-4	Ethylbenzene	ND	0.005	0.050	0.053	105	74 - 126	0.056	112	6	30
1330-20-7	Xylene (total)	ND	0.01	0.150	0.143	95	74 - 127	0.145	97	1	30
71-43-2	Benzene	ND	0.005	0.050	0.050	100	70 - 129	0.051	103	2	20
108-88-3	Toluene	ND	0.005	0.050	0.046	93	72 - 120	0.050	100	8	20
<b>Surrogate</b>											
460-00-4	4-Bromofluorobenzene	50.4	101	50	49	98	78 - 130	48.8	98		
1868-53-7	Dibromofluoromethane	51.3	103	50	47.8	96	77 - 127	49.5	99		
2037-26-5	Toluene d8	53.3	107	50	46.1	92	76 - 134	47	94		
17060-07-0	1,2-Dichloroethane-d4	49.6	99	50	47	94	71 - 127	48.8	98		

# General Chromatography Quality Control Summary

Analytical Batch 091410 Prep Batch 441250 Prep Method 1006	Client ID MB441250 GCAL ID 874819 Sample Type Method Blank Prep Date Analytical 09/07/2010 11:00 Date 09/14/2010 12:36 Matrix Water	LCS441250 874820 LCS 09/07/2010 11:00 09/14/2010 14:40 Water	LCS441250 874821 LCS 09/07/2010 11:00 09/14/2010 14:40 Water							
<b>LA1006 Hydrocarbons by Range</b>										
	Units Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
GCSV-02-11 Aliphatic >C10-C12	ND	0.150								
GCSV-02-12 Aliphatic >C12-C16	ND	0.150								
GCSV-02-31 Aliphatic >C16-C35	ND	0.150								
GCSV-02-10 Aliphatic >C18-C10	ND	0.150								
GCSV-02-30 Aliphatic >C6-C8	ND	0.150								
GCSV-02-15 Aromatic >C10-C12	ND	0.150								
GCSV-02-16 Aromatic >C12-C16	ND	0.150								
GCSV-02-17 Aromatic >C16-C21	ND	0.150								
GCSV-02-18 Aromatic >C21-C35	ND	0.150								
GCSV-02-14 Aromatic >C8-C10	ND	0.150								
GCSV-05-04 Total TPH (C6-C35)	ND	0.150	65.1	67.6	104	60-140	65.2	102	4	20
<b>Surrogate</b>										
84-15-1 o-Terphenyl	14.3	88	16.3	18.3	112	60-140	17.9	112		

## Inorganics Quality Control Summary

Analytical Batch 441900 Prep Batch 441902 Prep Method 7470A	Client ID MB441902 GCAL ID 877848 Sample Type Method Blank Prep Date Analytical 09/14/2010 11:30 Date 09/14/2010 14:45 Matrix Water	LCS441902 877849 LCS 09/14/2010 11:30 09/16/2010 14:47 Water	
<b>SW-846 7470A</b>		mg/L RDL	Control Limits % R
Units Result		Spike Added	% R
7439-97-6 Mercury		0.0002	84
		0.0005	80-120

Analytical Batch 441900 Prep Batch 441902 Prep Method 7470A	Client ID PURVIS HEBERT WELL GCAL ID 21009023310 Sample Type SAMPLE Prep Date Analytical 09/14/2010 11:30 Date 09/14/2010 14:49 Matrix Water	MS877851 MS 09/14/2010 11:30 09/16/2010 14:52 Water	
<b>SW-846 7470A</b>		mg/L RDL	Control Limits % R
Units Result		Spike Added	% R
7439-97-6 Mercury		0.0000	82
		0.0005	80-120



# Inorganics Quality Control Summary

Analytical Batch Prep Batch 441154 Prep Method SW-846 3010A	Client ID GCAL ID Sample Type Prep Date Analytical Date Matrix	T6LF28904 21009021304 SAMPLE 09/02/2010 16:00 09/10/2010 07:59 Water	874395MS		874395MSD					
			874489 MS 09/02/2010 16:00 09/10/2010 08:06 Water	874490 MSD 09/02/2010 16:00 09/10/2010 08:11 Water	Result	RPD	Result	RPD		
<b>SW-846 6010B</b>		Units Result	ng/L RDL	Spike Added	% R	Control Limits % R	% R	Result	RPD	Limit
7782-49-2	Selenium	0.0	0.040	0.50	95	75 - 125	99	0.49	2	20
7440-23-5	Sodium	149	1.00	20.0	80	75 - 125	83	166	0.6	20
7440-24-6	Strontium	1.09	0.050	0.50	90	75 - 125	91	1.54	0	20
7440-66-6	Zinc	0.021	0.020	0.50	94	75 - 125	94	0.49	0	20

# Inorganics Quality Control Summary

Analytical Batch 441537 Prep Batch 441205 Prep Method SW-846 3020A	Client ID GCAL ID Sample Type Prep Date Analytical Date Matrix	MB441205 874597 Method Blank 09/03/2010 13:30 09/09/2010 10:45 Water	LCS441205 874598 LCS 09/03/2010 13:30 09/09/2010 10:51 Water	Units Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R
<b>SW-846 7010 Arsenic</b>		ND	0.040	0.040	0.010	0.039	98	80 - 120	
7440-38-2 Arsenic									

Analytical Batch 441537 Prep Batch 441205 Prep Method SW-846 3020A	Client ID GCAL ID Sample Type Prep Date Analytical Date Matrix	J GUIDRY WELL-3 21009023309 SAMPLE 09/03/2010 13:30 09/09/2010 10:57 Water	874540MS 874600 MS 09/03/2010 13:30 09/09/2010 11:10 Water	Units Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R
<b>SW-846 7010 Arsenic</b>		0.0	0.040	0.040	0.010	0.046	115	75 - 125	
7440-38-2 Arsenic									

Analytical Batch 441537 Prep Batch 441205 Prep Method SW-846 3020A	Client ID GCAL ID Sample Type Prep Date Analytical Date Matrix	J GUIDRY WELL-3 21009023309 SAMPLE 09/03/2010 13:30 09/09/2010 10:57 Water	874540DUP 874599 DUP 09/03/2010 13:30 09/09/2010 11:03 Water	Units Result	mg/L RDL	Spike Added	Result	RPD Limit
<b>SW-846 7010 Arsenic</b>		0.0	0.010	0.010	0.010	0.0	0	20
7440-38-2 Arsenic								

# General Chemistry Quality Control Summary

Analytical Batch 441149 Prep Batch N/A	Client ID GCAL ID Sample Type Analytical Date Matrix	MB441149 874405 Method Blank 09/02/2010 15:30 Water	mg/L RDL	10.0	Spike Added	1000	Result	972	% R	97.2	Control Limits % R	80 - 120
<b>SM 2540C TDS</b>												
WET-035 Total Dissolved Solids(TDS)												

Analytical Batch 441149 Prep Batch N/A	Client ID GCAL ID Sample Type Analytical Date Matrix	TK-470 21009011401 SAMPLE 09/02/2010 15:30 Water	mg/L RDL	10.0	Spike Added	873966DUP 874407 DUP 09/02/2010 15:30 Water	Result	182	RPD Limit	2.2	RPD Limit	5
<b>SM 2540C TDS</b>												
WET-035 Total Dissolved Solids(TDS)												



# General Chemistry Quality Control Summary

Analytical Batch Prep Batch	441489 N/A	Client ID GCAL ID	MB441489 876148	LCS441489 876149	
		Sample Type Analytical Date	Method Blank 09/08/2010 09:26	LCS 09/08/2010 09:27	
		Matrix	Water	Water	
<b>SM 4500 CL E Chloride</b>			Units Result	mg/L RDL	Spike Added
16887-00-6	Chloride		ND	1.0	60.0
					Result
					58.5
				% R	98
				Control Limits % R	80 - 120

Analytical Batch Prep Batch	441489 N/A	Client ID GCAL ID	343763 NN5 21008313412	343763 NN5 LAB SPIKE 21008313414	
		Sample Type Analytical Date	SAMPLE 09/08/2010 09:28	MS 09/08/2010 09:30	
		Matrix	Water	Water	
<b>SM 4500 CL E Chloride</b>			Units Result	mg/L RDL	Spike Added
16887-00-6	Chloride		13.0	1.0	60.0
					Result
					72.4
				% R	99
				Control Limits % R	75 - 125

Analytical Batch Prep Batch	441489 N/A	Client ID GCAL ID	343702 MW 1 21009073401	343702 MW 1 LAB SPK 21009073403	
		Sample Type Analytical Date	SAMPLE 09/08/2010 09:44	MS 09/08/2010 09:48	
		Matrix	Water	Water	
<b>SM 4500 CL E Chloride</b>			Units Result	mg/L RDL	Spike Added
16887-00-6	Chloride		570	20.0	1200
					Result
					1670
				% R	92
				Control Limits % R	75 - 125

Analytical Batch Prep Batch	441489 N/A	Client ID GCAL ID	343763 NN5 21008313412	343763 NN5 LAB DUP 21008313413	
		Sample Type Analytical Date	SAMPLE 09/08/2010 09:28	DUP 09/08/2010 09:29	
		Matrix	Water	Water	
<b>SM 4500 CL E Chloride</b>			Units Result	mg/L RDL	Spike Added
16887-00-6	Chloride		13.0	1.0	13.1
					Result
					0.8
				RPD Limit	25

GCAL Report 210090233

# General Chemistry Quality Control Summary

Analytical Batch 441489 Prep Batch N/A	Client ID 343702 MW 1 GCAL ID 21009073401 Sample Type SAMPLE Analytical Date 09/08/2010 09:44 Matrix Water	343702 MW 1 LAB DUPL 21009073402 DUP 09/08/2010 09:45 Water
<b>SM 4500 CL E Chloride</b>	Units Result 570	Result 573
16887-00-6 Chloride	mg/L RDL 20.0	RPD Limit 25
		RPD 0.5

GCAL Report 210090233

# General Chemistry Quality Control Summary

Analytical Batch 441256 Prep Batch N/A	Client ID J GUIDRY WELL-1 GCAL ID 21009023307 Sample Type SAMPLE Analytical Date 09/03/2010 09:05 Matrix Water	874538DUP 874839 DUP 09/03/2010 09:05 Water	
<b>SM 2320B Carbonate</b>	Units Result	Result	RPD Limit
T-005-B Bicarbonate Alkalinity	340	341	0.3
T-005-C Carbonate Alkalinity	0.00	0.00	0
	mg/L CaCO3 RDL		
	1.0		11
	1.0		11

# General Chemistry Quality Control Summary

Analytical Batch 441247 Prep Batch N/A	Client ID GCAL ID Sample Type Analytical Date Matrix	J GUIDRY WELL AT 400 GAL 21009023301 SAMPLE 09/03/2010 09:50 Water	874529DUP 874815 DUP 09/03/2010 09:50 Water
<b>SM 2510 B Conductivity</b>	Units Result	umhos/cm RDL	RPD Limit
C-011 Specific Conductance	1116	10	1114 0.2 10

# General Chemistry Quality Control Summary

Analytical Batch Prep Batch	441670 N/A	Client ID GCAL ID	MB441670 876993	LCS441670 876994 LCS 09/10/2010 11:22 Water		
Sample Type Analytical Date		Matrix	Method Blank 09/10/2010 11:21 Water	mg/L RDL	Spike Added	Control Limits % R
<b>EPA 375.4 Sulfate</b>			ND	5.0	20.0	80 - 120
14808-79-8	Sulfate					
		Units Result			Result	% R
					21.2	106

Analytical Batch Prep Batch	441670 N/A	Client ID GCAL ID	J GUIDRY WELL-1 21009023307	874538MS 876996 MS 09/10/2010 11:24 Water		
Sample Type Analytical Date		Matrix	SAMPLE 09/10/2010 11:23 Water	mg/L RDL	Spike Added	Control Limits % R
<b>EPA 375.4 Sulfate</b>			0.00	5.0	20.0	75 - 125
14808-79-8	Sulfate					
		Units Result			Result	% R
					20.5	102

Analytical Batch Prep Batch	441670 N/A	Client ID GCAL ID	J GUIDRY WELL-1 21009023307	874538DUP 876995 DUP 09/10/2010 11:23 Water		
Sample Type Analytical Date		Matrix	SAMPLE 09/10/2010 11:23 Water	mg/L RDL	Result	RPD Limit
<b>EPA 375.4 Sulfate</b>			0.00	5.0	0.00	25
14808-79-8	Sulfate					
		Units Result			RPD	Limit
					0	25



GULF COAST ANALYTICAL LABORATORIES, INC.  
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402  
Phone 225-769-4900 • Fax 225-767-5717

### CHAIN OF CUSTODY RECORD

Lab use only

Client Name

Pres. #

Client #

Workorder #

Due Date

#### Report to:

Client: MP&A  
Address: 1100 Paydreas  
Sumite 1430  
Contact: J. Muller  
Phone: 504-582-2468  
Fax:

#### Bill to:

Client: [Signature]  
Address: [Signature]  
Contact: [Signature]  
Phone:  
Fax:

P.O. Number

Project Name/Number  
07-47 East White Lake - VP SB

Sampled By:

Jounthaw Miller / Patrick Ritchie

Matrix	Date	Time (2400)	C o m p	G a b	Sample Description	Preservatives	No Con-tainers
W	9/1/00	0935	X		J Gundry Well @ 400 gal	Var	1
		1000			J Gundry well @ 500 gal		1
		1050			J Gundry well @ 800 gal		8
		1055			J Gundry Well -1		8
		1100			J Gundry Well -2		8
		1125			J Gundry Well -3		1
		1135			Purvis Herbert well @ 5 gal		1
		1145			Purvis Herbert @ 25 gal		8
		1220			Purvis Herbert well		1
		1250			A. Crouch well @ 1 gal		8
		1255			A. Crouch well @ 8 gal		1
		1300			A. Crouch well		6

Turn Around Time:  24-48 hrs.  3 days  1 week  Standard  Other

Received by: (Signature)

Date: 9/1/00

Time: 10:00

Received by: (Signature)

Date: 9/2/00

Time: 12:38

Received by: (Signature)

Date: 9-2-00

Time: 1:12

#### Analytical Requests & Method

Request	Method
Asbestos by AA	Asbestos by AA
Models * Baga M.K. 150	Models * Baga M.K. 150
Iron manganos & Sr	Iron manganos & Sr
BTX	BTX
TPT Fractions (GPO)	TPT Fractions (GPO)
CAK / BAK / sulfate	CAK / BAK / sulfate

#### Lab use only:

Custody Seal

used  yes  no

intact  yes  no

Temperature °C

3.8°C

#### Remarks:

Remarks	Lab ID
	1
	2
	7
	8
	9
	3
	4
	6
	5
	1
	6
	12

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

Matrix W = water, S = soil, SD = solid, L = liquid, SL = sludge, o = oil, CT = charcoal tube, A = air bag  
We cannot accept verbal changes. Please fax written changes to (225) 767-5717



GULF COAST ANALYTICAL LABORATORIES, INC.  
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402  
Phone 225.769.4900 • Fax 225.767.5717

### CHAIN OF CUSTODY RECORD

Lab use only

Client Name

P. Sant

Client # 4271

Workorder # 215050233

Due Date 5-14-10

#### Report to:

Client: MDPA  
Address: 1100 Paydras St #430  
NDLA  
Contact: J. Q. Miller  
Phone: 504-582-2468  
Fax:

#### Bill to:

Client: [Signature]  
Address: [Signature]  
Contact: [Signature]  
Phone:  
Fax:

P.O. Number 07-47 Project Name/Number 07-47 E. White Lake

Sampled By: J. Q. Miller

Matrix	Date	Time (2400)	Comp	G	Sample Description	Preservatives	No Containers
W	9/1/10		X		Trip Blank	ALL	3

#### Analytical Requests & Method

TPH (T) Floc Test 100g  
PHI BTEX  
X  
X

#### Lab use only:

Custody Seal

used  yes  no

intact  yes  no

Temperature °C 3.8°C

Lab ID

#### Remarks:

Turn Around Time:  24-48 hrs.  3 days  1 week  Standard  Other

#### Note:

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
<u>[Signature]</u>	<u>[Signature]</u>	9/1/10	1710
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
<u>[Signature]</u>	<u>[Signature]</u>	9/2/10	1238
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
<u>[Signature]</u>	<u>[Signature]</u>	9-2-10	1:12

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

Matrix: W = water, S = soil, SD = solid, L = liquid, SL = sludge, o = oil, CT = charcoal tube, A = air bag

We cannot accept verbal changes. Please fax written changes to (225) 767-5717

# PRESERVATION CHECKLIST / COOLER RECEIPT

Gulf Coast Analytical Laboratories, Inc.

**WO:** 210090233  
**Desc:**  
**Work ID:** East White Lake 07-47  
**Project Seq:** 108610  
**Client:** 4271 - Michael Pisani & Associates  
**Profile:** 174115 - East White - East White Lake 07-47

**Type:** M  
**Report:** REVIEW\_RPT  
**Status:** WP  
**Created:** 9/2/2010 14:07  
**QA:**  
**PO:** 07-47

## WORKORDER SAMPLES

Container ID	Type	Preservative	pH PRESERVATIVE			VOA HEADSPACE			CONTAINER CONDITION
			A	U	N/A	A	U	N/A	
21009023301-1	OC	NONE			X			X	OK
21009023302-1	OC	NONE			X			X	OK
21009023303-1	OC	NONE			X			X	OK
21009023304-1	OC	NONE			X			X	OK
21009023305-1	OC	NONE			X			X	OK
21009023306-1	OC	NONE			X			X	OK
21009023307-1	LP	NONE			X			X	OK
21009023307-2	OC	HNO3						X	OK
21009023307-3	40	HCL			/				OK
21009023307-4	40	HCL			/				OK
21009023307-5	40	HCL			/				OK
21009023307-6	40	HCL			/				OK
21009023307-7	40	HCL			/				OK
21009023307-8	40	HCL			/				OK



Container ID	Type	Preservative	pH PRESERVATIVE			VOA HEADSPACE			CONTAINER CONDITION
			A	U	N/A	A	U	N/A	
21009023308-1	LP	NONE			X			X	OK
21009023308-2	OC	HNO3	—					X	OK
21009023308-3	40	HCL			—	—			OK
21009023308-4	40	HCL			—	—			OK
21009023308-5	40	HCL			—	—			OK
21009023308-6	40	HCL			—	—			OK
21009023308-7	40	HCL			—	—			OK
21009023308-8	40	HCL			—	—			OK

Container ID	Type	Preservative	pH PRESERVATIVE			VOA HEADSPACE			CONTAINER CONDITION
			A	U	N/A	A	U	N/A	
21009023309-1	LP	NONE			X			X	OK
21009023309-2	OC	HNO3	—					X	OK
21009023309-3	40	HCL			—	—			OK
21009023309-4	40	HCL			—	—			OK
21009023309-5	40	HCL			—	—			OK
21009023309-6	40	HCL			—	—			OK
21009023309-7	40	HCL			—	—			OK
21009023309-8	40	HCL			—	—			OK

Container ID	Type	Preservative	pH PRESERVATIVE			VOA HEADSPACE			CONTAINER CONDITION
			A	U	N/A	A	U	N/A	
21009023310-1	LP	NONE			X			X	OK
21009023310-2	OC	HNO3	—					X	OK
21009023310-3	40	HCL			—	—			OK
21009023310-4	40	HCL			—	—			OK
21009023310-5	40	HCL			—	—			OK
21009023310-6	40	HCL			—	—			OK
21009023310-7	40	HCL			—	—			OK
21009023310-8	40	HCL			—	—			OK

Container ID	Type	Preservative	pH PRESERVATIVE			VOA HEADSPACE			CONTAINER CONDITION
			A	U	N/A	A	U	N/A	
21009023311-1	LP	NONE			X			X	OK
21009023311-2	OC	HNO3	—					X	OK
21009023311-3	40	HCL			—	—			OK
21009023311-4	40	HCL			—	—			OK
21009023311-5	40	HCL			—	—			OK
21009023311-6	40	HCL			—	—			OK
21009023311-7	40	HCL			—	—			OK
21009023311-8	40	HCL			—	—			OK

pH PRESERVATIVE      VOA HEADSPACE

Container ID	Type	Preservative	pH PRESERVATIVE			VOA HEADSPACE			CONTAINER CONDITION
			A	U	N/A	A	U	N/A	
21009023312-1	40	HCL			-	-			OK
21009023312-2	40	HCL			-	-			OK
21009023312-3	40	HCL			-	-			OK
21009023312-4	40	HCL			-	-			OK
21009023312-5	40	HCL			-	-			OK
21009023312-6	40	HCL			-	-			OK

Container ID	Type	Preservative	pH PRESERVATIVE			VOA HEADSPACE			CONTAINER CONDITION
			A	U	N/A	A	U	N/A	
21009023313-1	40	HCL			-	-			OK
21009023313-2	40	HCL			-	-			OK
21009023313-3	40	HCL			-	-			OK

A = ACCEPTABLE  
 U = UNACCEPTABLE  
 N/A = NOT APPLICABLE

COOLER (S) TEMPERATURE *A* U  
 MAXIMUM VOLATILE HEADSPACE BUBBLE 6MM

LIMIT = 4C + \ - 2C

**Custody Seal**  
 used  Yes  No  
 in tact  Yes  No

LABEL(S) VERIFIED \_\_\_\_\_ CUSTODIAN *[Signature]*

# ANALYTICAL RESULTS

PERFORMED BY

**GULF COAST ANALYTICAL LABORATORIES, INC.**

7979 GSRI Avenue  
Baton Rouge, LA 70820

**Report Date** 08/17/2010

**GCAL Report** 210081157



**Deliver To** Michael Pisani & Associates  
1100 Poydras St  
Suite 1430  
New Orleans, LA 70163  
504-582-2468

**Attn** Jonathan Miller

**Project** East White Lake 07-47

## CASE NARRATIVE

**Client:** Michael Pisani & Associates      **Report:** 210081157

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

### **SEMI-VOLATILES GAS CHROMATOGRAPHY**

In the TNRCC 1006/LA 1006 analysis for prep batch 439592, the MS/MSD exhibited recovery and RPD failures. The LCS/LCSD recoveries are acceptable.

# Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

## Common Abbreviations Utilized in this Report

<b>ND</b>	Indicates the result was Not Detected at the specified RDL
<b>DO</b>	Indicates the result was Diluted Out
<b>MI</b>	Indicates the result was subject to Matrix Interference
<b>TNTC</b>	Indicates the result was Too Numerous To Count
<b>SUBC</b>	Indicates the analysis was Sub-Contracted
<b>FLD</b>	Indicates the analysis was performed in the Field
<b>PQL</b>	Practical Quantitation Limit
<b>MDL</b>	Method Detection Limit
<b>RDL</b>	Reporting Detection Limit
<b>00:00</b>	Reported as a time equivalent to 12:00 AM

## Reporting Flags Utilized in this Report

<b>J</b>	Indicates an estimated value
<b>U</b>	Indicates the compound was analyzed for but not detected
<b>B</b>	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
<b>B</b>	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with [NELAC](#), this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

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Robyn Miguez  
Technical Director  
**GCAL REPORT 210081157**

# Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115701	AB-5a (4-5.5)	Solid	08/10/2010 13:30	08/11/2010 16:15
21008115702	AB-15 (4-5.5)	Solid	08/10/2010 13:30	08/11/2010 16:15
21008115703	AB-5 SO-NE (4-6)	Solid	08/10/2010 13:45	08/11/2010 16:15
21008115704	AB-5 SO-NW (4-6)	Solid	08/10/2010 14:00	08/11/2010 16:15
21008115705	AB-6 (8-10)	Solid	08/10/2010 12:10	08/11/2010 16:15
21008115706	AB-8 (6-8)	Solid	08/10/2010 14:15	08/11/2010 16:15
21008115707	AB-13 (0-3)	Solid	08/10/2010 16:00	08/11/2010 16:15
21008115708	AB-13 SO-E (0-3)	Solid	08/10/2010 16:15	08/11/2010 16:15
21008115709	AB-8 SO-S (6-8)	Solid	08/10/2010 14:50	08/11/2010 16:15
21008115710	AB-14 (0-3)	Solid	08/10/2010 17:00	08/11/2010 16:15

# Summary of Compounds Detected

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115701	AB-5a (4-5.5)	Solid	08/10/2010 13:30	08/11/2010 16:15

## LA1006 Hydrocarbons by Range

CAS#	Parameter	Result	RDL	REG LIMIT	Units
GCSV-02-31	Aliphatic >C16-C35	31.6	10.0		mg/kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115702	AB-15 (4-5.5)	Solid	08/10/2010 13:30	08/11/2010 16:15

## LA1006 Hydrocarbons by Range

CAS#	Parameter	Result	RDL	REG LIMIT	Units
GCSV-02-12	Aliphatic >C12-C16	16.5	10.0		mg/kg
GCSV-02-31	Aliphatic >C16-C35	55.3	10.0		mg/kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115704	AB-5 SO-NW (4-6)	Solid	08/10/2010 14:00	08/11/2010 16:15

## LA1006 Hydrocarbons by Range

CAS#	Parameter	Result	RDL	REG LIMIT	Units
GCSV-02-31	Aliphatic >C16-C35	38.7	10.0		mg/kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115705	AB-6 (8-10)	Solid	08/10/2010 12:10	08/11/2010 16:15

## SW-846 7010 Arsenic

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	1.16	0.12		mg/kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115706	AB-8 (6-8)	Solid	08/10/2010 14:15	08/11/2010 16:15

## SW-846 7010 Arsenic

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	1.82	0.12		mg/kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115707	AB-13 (0-3)	Solid	08/10/2010 16:00	08/11/2010 16:15

## SW-846 7010 Arsenic

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	2.22	0.12		mg/kg

## Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115708	AB-13 SO-E (0-3)	Solid	08/10/2010 16:15	08/11/2010 16:15

SW-846 7010 Arsenic

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	1.33	0.12		mg/kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115709	AB-8 SO-S (6-8)	Solid	08/10/2010 14:50	08/11/2010 16:15

SW-846 7010 Arsenic

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	1.73	0.12		mg/kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115710	AB-14 (0-3)	Solid	08/10/2010 17:00	08/11/2010 16:15

SW-846 7010 Arsenic

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	2.34	0.12		mg/kg



GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115701	AB-5a (4-5.5)	Solid	08/10/2010 13:30	08/11/2010 16:15

LA1006 Hydrocarbons by Range

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/12/2010 14:00	439592	TNRCC 1006/LA 1006	1	08/14/2010 11:06	SMH	439840

CAS#	Parameter	Result	RDL	REG LIMIT	Units
GCSV-02-11	Aliphatic >C10-C12	ND	15.0		mg/kg
GCSV-02-12	Aliphatic >C12-C16	ND	10.0		mg/kg
<b>GCSV-02-31</b>	<b>Aliphatic &gt;C16-C35</b>	<b>31.6</b>	<b>10.0</b>		<b>mg/kg</b>
GCSV-02-15	Aromatic >C10-C12	ND	10.0		mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0		mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0		mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0		mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	49	53	mg/kg	108	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115702	AB-15 (4-5.5)	Solid	08/10/2010 13:30	08/11/2010 16:15

LA1006 Hydrocarbons by Range

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/12/2010 14:00	439592	TNRCC 1006/LA 1006	1	08/14/2010 16:31	SMH	439840

CAS#	Parameter	Result	RDL	REG LIMIT	Units
GCSV-02-11	Aliphatic >C10-C12	ND	15.0		mg/kg
<b>GCSV-02-12</b>	<b>Aliphatic &gt;C12-C16</b>	<b>16.5</b>	<b>10.0</b>		<b>mg/kg</b>
<b>GCSV-02-31</b>	<b>Aliphatic &gt;C16-C35</b>	<b>55.3</b>	<b>10.0</b>		<b>mg/kg</b>
GCSV-02-15	Aromatic >C10-C12	ND	10.0		mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0		mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0		mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0		mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	50	57.6	mg/kg	115	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
21008115703	AB-5 SO-NE (4-6)	Solid	08/10/2010 13:45	08/11/2010 16:15

LA1006 Hydrocarbons by Range

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
08/12/2010 14:00	439592	TNRCC 1006/LA 1006	1	08/14/2010 17:43	SMH	439840

CAS#	Parameter	Result	RDL	REG LIMIT	Units
GCSV-02-11	Aliphatic >C10-C12	ND	15.0		mg/kg
GCSV-02-12	Aliphatic >C12-C16	ND	10.0		mg/kg
GCSV-02-31	Aliphatic >C16-C35	ND	10.0		mg/kg
GCSV-02-15	Aromatic >C10-C12	ND	10.0		mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0		mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0		mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0		mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	49	60	mg/kg	122	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115704	AB-5 SO-NW (4-6)	Solid	08/10/2010 14:00	08/11/2010 16:15

### LA1006 Hydrocarbons by Range

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/12/2010 14:00	439592	TNRCC 1006/LA 1006	1	08/16/2010 10:24	SMH	439843

CAS#	Parameter	Result	RDL	REG LIMIT	Units
GCSV-02-11	Aliphatic >C10-C12	ND	15.0		mg/kg
GCSV-02-12	Aliphatic >C12-C16	ND	10.0		mg/kg
<b>GCSV-02-31</b>	<b>Aliphatic &gt;C16-C35</b>	<b>38.7</b>	<b>10.0</b>		<b>mg/kg</b>
GCSV-02-15	Aromatic >C10-C12	ND	10.0		mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0		mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0		mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0		mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	49.5	68.9	mg/kg	139	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115705	AB-6 (8-10)	Solid	08/10/2010 12:10	08/11/2010 16:15

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/13/2010 10:50	439679	SW-846 3050B	1	08/16/2010 10:13	CLB	439768

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	1.16	0.12		mg/kg

RESULTS REPORTED ON A WET WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115706	AB-8 (6-8)	Solid	08/10/2010 14:15	08/11/2010 16:15

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/13/2010 10:50	439679	SW-846 3050B	1	08/16/2010 10:44	CLB	439768

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	1.82	0.12		mg/kg

RESULTS REPORTED ON A WET WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115707	AB-13 (0-3)	Solid	08/10/2010 16:00	08/11/2010 16:15

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/13/2010 10:50	439679	SW-846 3050B	1	08/16/2010 10:50	CLB	439768

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	2.22	0.12		mg/kg

RESULTS REPORTED ON A WET WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115708	AB-13 SO-E (0-3)	Solid	08/10/2010 16:15	08/11/2010 16:15

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/13/2010 10:50	439679	SW-846 3050B	1	08/16/2010 10:56	CLB	439768

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	1.33	0.12		mg/kg

RESULTS REPORTED ON A WET WEIGHT BASIS



GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115709	AB-8 SO-S (6-8)	Solid	08/10/2010 14:50	08/11/2010 16:15

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/13/2010 10:50	439679	SW-846 3050B	1	08/16/2010 11:21	CLB	439768

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	1.73	0.12		mg/kg

RESULTS REPORTED ON A WET WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21008115710	AB-14 (0-3)	Solid	08/10/2010 17:00	08/11/2010 16:15

SW-846 7010 Arsenic

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/13/2010 10:50	439679	SW-846 3050B	1	08/16/2010 11:27	CLB	439768

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	2.34	0.12		mg/kg

RESULTS REPORTED ON A WET WEIGHT BASIS

# General Chromatography Quality Control Summary

<b>Analytical Batch</b> 439840 <b>Prep Batch</b> 439592 <b>Prep Method</b> TNRCC 1006/LA 1006	<b>Client ID</b> MB439592 <b>GCAL ID</b> 867229 <b>Sample Type</b> Method Blank <b>Prep Date</b> 08/12/2010 14:00 <b>Analytical Date</b> 08/14/2010 07:49 <b>Matrix</b> Solid	LCS439592 867230 LCS 08/12/2010 14:00 08/14/2010 08:52 Solid	LCSD439592 867231 LCSD 08/12/2010 14:00 08/14/2010 09:58 Solid							
<b>LA1006 Hydrocarbons by Range</b>	<b>Units</b> <b>Result</b>	<b>ug/Kg</b> <b>RDL</b>	<b>Spike</b> <b>Added</b>	<b>Result</b>	<b>% R</b>	<b>Control</b> <b>Limits % R</b>	<b>Result</b>	<b>% R</b>	<b>RPD</b>	<b>RPD</b> <b>Limit</b>
GCSV-02-11 Aliphatic >C10-C12	ND	15.0								
GCSV-02-12 Aliphatic >C12-C16	ND	10.0								
GCSV-02-31 Aliphatic >C16-C35	ND	10.0								
GCSV-02-15 Aromatic >C10-C12	ND	10.0								
GCSV-02-16 Aromatic >C12-C16	ND	15.0								
GCSV-02-17 Aromatic >C16-C21	ND	15.0								
GCSV-05-18 Aromatic >C21-C35	ND	15.0								
GCSV-05-04 Total TPH (C6-C35)	ND	150000	200000	228000	114	60 - 140	191000	96	18	20
<b>Surrogate</b>										
84-15-1 o-Terphenyl	61000	122	50000	56600	113	60 - 140	61400	124		

<b>Analytical Batch</b> 439840 <b>Prep Batch</b> 439592 <b>Prep Method</b> TNRCC 1006/LA 1006	<b>Client ID</b> AB-5a (4-5.5) <b>GCAL ID</b> 21008115701 <b>Sample Type</b> SAMPLE <b>Prep Date</b> 08/12/2010 14:00 <b>Analytical Date</b> 08/14/2010 11:06 <b>Matrix</b> Solid	867115MS 867232 MS 08/12/2010 14:00 08/14/2010 13:28 Solid	867115MSD 867233 MSD 08/12/2010 14:00 08/14/2010 15:18 Solid							
<b>LA1006 Hydrocarbons by Range</b>	<b>Units</b> <b>Result</b>	<b>mg/kg</b> <b>RDL</b>	<b>Spike</b> <b>Added</b>	<b>Result</b>	<b>% R</b>	<b>Control</b> <b>Limits % R</b>	<b>Result</b>	<b>% R</b>	<b>RPD</b>	<b>RPD</b> <b>Limit</b>
GCSV-05-04 Total TPH (C6-C35)	31600	150000	198000	99100	34*	60 - 140	133000	51*	29*	20
<b>Surrogate</b>										
84-15-1 o-Terphenyl	53	108	49500	52300	106	60 - 140	54800	110		

# Inorganics Quality Control Summary

<b>Analytical Batch</b> 439768 <b>Prep Batch</b> 439679 <b>Prep Method</b> SW-846 3050B	<b>Client ID</b> MB439679 <b>GCAL ID</b> 867570 <b>Sample Type</b> Method Blank <b>Prep Date</b> 08/13/2010 10:50 <b>Analytical Date</b> 08/16/2010 10:01 <b>Matrix</b> Solid	LCS439679 867571 LCS 08/13/2010 10:50 08/16/2010 10:07 Solid					
<b>SW-846 7010 Arsenic</b>		<b>Units</b> mg/kg <b>Result</b> RDL	<b>Spike</b> <b>Added</b>	<b>Result</b>	<b>% R</b>	<b>Control</b> <b>Limits % R</b>	
7440-38-2	Arsenic	ND	0.12	1.60	1.36	85	80 - 120

<b>Analytical Batch</b> 439768 <b>Prep Batch</b> 439679 <b>Prep Method</b> SW-846 3050B	<b>Client ID</b> AB-6 (8-10) <b>GCAL ID</b> 21008115705 <b>Sample Type</b> SAMPLE <b>Prep Date</b> 08/13/2010 10:50 <b>Analytical Date</b> 08/16/2010 10:13 <b>Matrix</b> Solid	867119MS 867572 MS 08/13/2010 10:50 08/16/2010 10:25 Solid					
<b>SW-846 7010 Arsenic</b>		<b>Units</b> mg/kg <b>Result</b> RDL	<b>Spike</b> <b>Added</b>	<b>Result</b>	<b>% R</b>	<b>Control</b> <b>Limits % R</b>	
7440-38-2	Arsenic	1.16	0.12	1.60	2.43	80	75 - 125

<b>Analytical Batch</b> 439768 <b>Prep Batch</b> 439679 <b>Prep Method</b> SW-846 3050B	<b>Client ID</b> AB-6 (8-10) <b>GCAL ID</b> 21008115705 <b>Sample Type</b> SAMPLE <b>Prep Date</b> 08/13/2010 10:50 <b>Analytical Date</b> 08/16/2010 10:13 <b>Matrix</b> Solid	867119DUP 867573 DUP 08/13/2010 10:50 08/16/2010 10:19 Solid				
<b>SW-846 7010 Arsenic</b>		<b>Units</b> mg/kg <b>Result</b> RDL	<b>Result</b>	<b>RPD</b>	<b>RPD</b> <b>Limit</b>	
7440-38-2	Arsenic	1.16	0.12	1.02	13	20



# ANALYTICAL RESULTS

PERFORMED BY

**GULF COAST ANALYTICAL LABORATORIES, INC.**

**7979 GSRI Rd.**

**Baton Rouge, LA 70820**

**Report Date** 06/16/2010

**GCAL Report** 210060921



**Deliver To** Michael Pisani & Associates  
1100 Poydras St  
Suite 1430  
New Orleans, LA 70163  
504-582-2468

**Attn** Jonathan Miller

**Project** East White Lake 07-47

## CASE NARRATIVE

**Client:** Michael Pisani & Associates      **Report:** 210060921

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

J Flag (Organics) - Indicates an estimated value. This flag is used when the data indicated the presence of an analyte meeting all the identification criteria for the method and the result is greater than or equal to the laboratory MDL (method detection limit) and less than the RDL (reporting limit based on a low level calibration standard included in the initial calibration curve).

**No anomalies were found for the analyzed sample(s).**

# Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

## Common Abbreviations Utilized in this Report

<b>ND</b>	Indicates the result was Not Detected at the specified RDL
<b>DO</b>	Indicates the result was Diluted Out
<b>MI</b>	Indicates the result was subject to Matrix Interference
<b>TNTC</b>	Indicates the result was Too Numerous To Count
<b>SUBC</b>	Indicates the analysis was Sub-Contracted
<b>FLD</b>	Indicates the analysis was performed in the Field
<b>PQL</b>	Practical Quantitation Limit
<b>MDL</b>	Method Detection Limit
<b>RDL</b>	Reporting Detection Limit
<b>00:00</b>	Reported as a time equivalent to 12:00 AM

## Reporting Flags Utilized in this Report

<b>J</b>	Indicates an estimated value
<b>U</b>	Indicates the compound was analyzed for but not detected
<b>B</b>	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
<b>B</b>	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with [NELAC](#), this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

---

Robyn Miguez  
Technical Director  
**GCAL REPORT 210060921**

THIS REPORT CONTAINS \_\_\_\_\_ PAGES.



# Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21006092101	SED 15 (8-10)	Solid	06/08/2010 13:15	06/09/2010 10:33
21006092102	SED 15 W (0-2)	Solid	06/08/2010 13:35	06/09/2010 10:33
21006092103	SED 15 W 2 (0-2)	Solid	06/08/2010 16:00	06/09/2010 10:33
21006092104	SED 15 E (0-2)	Solid	06/08/2010 13:50	06/09/2010 10:33
21006092105	SED 15 E 2 (0-2)	Solid	06/08/2010 14:15	06/09/2010 10:33
21006092106	SED 15 N (0-2)	Solid	06/08/2010 14:00	06/09/2010 10:33

# Summary of Compounds Detected

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21006092101	SED 15 (8-10)	Solid	06/08/2010 13:15	06/09/2010 10:33

## LA1006 Hydrocarbons by Range

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-02-11	Aliphatic >C10-C12	9.34J	15.0	4.45	mg/kg
GCSV-02-12	Aliphatic >C12-C16	96.4	10.0	4.35	mg/kg
GCSV-02-31	Aliphatic >C16-C35	1770	10.0	4.35	mg/kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21006092101	SED 15 (8-10)	Solid	06/08/2010 13:15	06/09/2010 10:33

### LA1006 Hydrocarbons by Range

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
06/09/2010 14:00	434060	TNRCC 1006/LA 1006	1	06/11/2010 21:09	SMH	434479

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-02-11	Aliphatic >C10-C12	9.34J	15.0	4.45	mg/kg
GCSV-02-12	Aliphatic >C12-C16	96.4	10.0	4.35	mg/kg
GCSV-02-31	Aliphatic >C16-C35	1770	10.0	4.35	mg/kg
GCSV-02-15	Aromatic >C10-C12	ND	10.0	3.21	mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0	6.59	mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0	7.13	mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0	7.13	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	50	40.6	mg/kg	81	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
21006092102	SED 15 W (0-2)	Solid	06/08/2010 13:35	06/09/2010 10:33

### LA1006 Hydrocarbons by Range

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
06/09/2010 14:00	434060	TNRCC 1006/LA 1006	1	06/11/2010 22:16	SMH	434479

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-02-11	Aliphatic >C10-C12	ND	15.0	4.45	mg/kg
GCSV-02-12	Aliphatic >C12-C16	ND	10.0	4.35	mg/kg
GCSV-02-31	Aliphatic >C16-C35	ND	10.0	4.35	mg/kg
GCSV-02-15	Aromatic >C10-C12	ND	10.0	3.21	mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0	6.59	mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0	7.13	mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0	7.13	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	50	43.1	mg/kg	86	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
21006092103	SED 15 W 2 (0-2)	Solid	06/08/2010 16:00	06/09/2010 10:33

### LA1006 Hydrocarbons by Range

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
06/09/2010 14:00	434060	TNRCC 1006/LA 1006	1	06/14/2010 15:35	SMH	434479

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-02-11	Aliphatic >C10-C12	ND	15.0	4.45	mg/kg
GCSV-02-12	Aliphatic >C12-C16	ND	10.0	4.35	mg/kg
GCSV-02-31	Aliphatic >C16-C35	ND	10.0	4.35	mg/kg
GCSV-02-15	Aromatic >C10-C12	ND	10.0	3.21	mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0	6.59	mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0	7.13	mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0	7.13	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	49.5	33.9	mg/kg	68	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
21006092104	SED 15 E (0-2)	Solid	06/08/2010 13:50	06/09/2010 10:33

LA1006 Hydrocarbons by Range

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
06/09/2010 14:00	434060	TNRCC 1006/LA 1006	1	06/12/2010 01:27	SMH	434479

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-02-11	Aliphatic >C10-C12	ND	15.0	4.45	mg/kg
GCSV-02-12	Aliphatic >C12-C16	ND	10.0	4.35	mg/kg
GCSV-02-31	Aliphatic >C16-C35	ND	10.0	4.35	mg/kg
GCSV-02-15	Aromatic >C10-C12	ND	10.0	3.21	mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0	6.59	mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0	7.13	mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0	7.13	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	49	50.8	mg/kg	104	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21006092105	SED 15 E 2 (0-2)	Solid	06/08/2010 14:15	06/09/2010 10:33

### LA1006 Hydrocarbons by Range

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
06/09/2010 14:00	434060	TNRCC 1006/LA 1006	1	06/12/2010 02:30	SMH	434479

CAS#	Parameter	Result	RDL	MDL	Units
GCSV-02-11	Aliphatic >C10-C12	ND	15.0	4.45	mg/kg
GCSV-02-12	Aliphatic >C12-C16	ND	10.0	4.35	mg/kg
GCSV-02-31	Aliphatic >C16-C35	ND	10.0	4.35	mg/kg
GCSV-02-15	Aromatic >C10-C12	ND	10.0	3.21	mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0	6.59	mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0	7.13	mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0	7.13	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	50	54.5	mg/kg	109	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
21006092106	SED 15 N (0-2)	Solid	06/08/2010 14:00	06/09/2010 10:33

### LA1006 Hydrocarbons by Range

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
06/09/2010 14:00	434060	TNRCC 1006/LA 1006	1	06/12/2010 03:32	SMH	434479

<b>CAS#</b>	<b>Parameter</b>	<b>Result</b>	<b>RDL</b>	<b>MDL</b>	<b>Units</b>
GCSV-02-11	Aliphatic >C10-C12	ND	15.0	4.45	mg/kg
GCSV-02-12	Aliphatic >C12-C16	ND	10.0	4.35	mg/kg
GCSV-02-31	Aliphatic >C16-C35	ND	10.0	4.35	mg/kg
GCSV-02-15	Aromatic >C10-C12	ND	10.0	3.21	mg/kg
GCSV-02-16	Aromatic >C12-C16	ND	15.0	6.59	mg/kg
GCSV-02-17	Aromatic >C16-C21	ND	15.0	7.13	mg/kg
GCSV-05-18	Aromatic >C21-C35	ND	15.0	7.13	mg/kg

<b>CAS#</b>	<b>Surrogate</b>	<b>Conc. Spiked</b>	<b>Conc. Rec</b>	<b>Units</b>	<b>% Recovery</b>	<b>Rec Limits</b>
84-15-1	o-Terphenyl	49.5	47.6	mg/kg	96	60 - 140

RESULTS REPORTED ON A WET WEIGHT BASIS



# General Chromatography Quality Control Summary

Analytical Batch 434479 Prep Batch 434060 Prep Method TNRCC 1006/LA 1006		Client ID MB434060 GCAL ID 841828 Sample Type Method Blank Prep Date 06/09/2010 14:00 Analytical Date 06/14/2010 14:10 Matrix Solid		LCS434060 841829 LCS 06/09/2010 14:00 06/14/2010 14:52 Solid			LCSD434060 841830 LCSD 06/09/2010 14:00 06/11/2010 19:58 Solid				
LA1006 Hydrocarbons by Range		Units Result	ug/Kg RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
GCSV-02-11	Aliphatic >C10-C12	ND	15.0								
GCSV-02-12	Aliphatic >C12-C16	ND	10.0								
GCSV-02-31	Aliphatic >C16-C35	ND	10.0								
GCSV-02-15	Aromatic >C10-C12	ND	10.0								
GCSV-02-16	Aromatic >C12-C16	ND	15.0								
GCSV-02-17	Aromatic >C16-C21	ND	15.0								
GCSV-05-18	Aromatic >C21-C35	ND	15.0								
GCSV-05-04	Total TPH (C6-C35)	ND	150000	198000	222000	112	60 - 140	224000	112	0.9	20
<b>Surrogate</b>											
84-15-1	o-Terphenyl	52800	106	49500	59600	120	60 - 140	69700	139		

GULF COAST ANALYTICAL LABORATORIES, INC.  
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402  
Phone 225.769.4900 • Fax 225.767.5717

Lab use only

Client Name: <u>P. Giani</u>	Client #: <u>4271</u>	Workorder #: <u>2100609-21</u>	Due Date: <u>6-15-10</u>
------------------------------	-----------------------	--------------------------------	--------------------------

<b>Report to:</b> Client: <u>MPA</u> Address: <u>1100 Poydras St 1430</u> <u>NOLA, LA</u> Contact: <u>Jonathan Miller</u> Phone: <u>504.582.2464</u> Fax: <u>jgmiller@ix.netcom.com</u>	<b>Bill to:</b> Client: _____ Address: _____ Contact: <u>SAME</u> Phone: _____ Fax: _____	<b>Analytical Requests &amp; Method</b> <u>SPLP 1005/1006 D+O *</u> <u>SPLP Bu, Cr, Lb</u> <u>1005/1006 TPH D+O</u> <u>BTEX</u> <u>Mercury **</u>	<b>Lab use only:</b> Custody Seal used <input type="checkbox"/> yes <input type="checkbox"/> no in tact <input type="checkbox"/> yes <input type="checkbox"/> no Temperature °C <u>5</u>
---	--	--	--

P.O. Number \_\_\_\_\_ Project Name/Number 07-47 East White Lake

Sampled By: \_\_\_\_\_

Matrix <sup>1</sup>	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	1005/1006 D+O *	SPLP Bu, Cr, Lb	1005/1006 TPH D+O	BTEX	Mercury **	Remarks:	Lab ID
S	6.8.10	1315		X	Sed 15 (8-10')	ice	1	X	X	X			SPLP not required per Patrick ASW Ritchie 6-15-10	1
		1335			Sed 15 W (0-2')									2
		1600			Sed 15 W 2 (0-2')									3
		1350			Sed 15 E (0-2')									4
		1415			Sed 15 E 2 (0-2')									5
		1400			Sed 15 N (0-2')									6
W		1045			MPA SB-1 SB	HCl	3				X		X	
W		1045			Trip Blank	HCl	3				X		X	
					Filter		2					X	X	

Turn Around Time:  24-48 hrs.  3 days  1 week  Standard  Other \_\_\_\_\_

Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>6-9-10</u>	Time: <u>10:33</u>	Note: <u>* Hold SPLP pending 1005/1006 results</u> <u>** run lab water thru filter then test for Mercury, call Jonathan Miller @ 504, 582, 2468</u> <u>* samples in elute water</u>
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:	
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:	

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

**MICHAEL PISANI & ASSOCIATES**

**07-47 East White Lake**

**STANDARD LEVEL IV  
REPORT OF ANALYSIS**

**WORK ORDER #10-06016-OR**

**June 23, 2010**

**EBERLINE ANALYTICAL/OAK RIDGE LABORATORY  
OAK RIDGE, TN**

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**Eberline Services – Oak Ridge Laboratory  
LABORATORY DATA SUPPORT CHECKLIST**

MP-001-3

**10 060 16**

Eberline Services Work Order # \_\_\_\_\_

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		6-3-10	KF	Sample Log-In
		6/16/10	KBS	Data Compilation
		6-18-10	MLZ	First Technical Data Review
		6/18/10	CAF	Second Technical Data Review
		6/22/10	J	Data Entry/Electronic Deliverable
		6/22/10	CAF	Case Narrative
		6/23/10	KBS	Electronic Deliverable Proof
		6/23/10	CAF	Samples Analyzed within Holding Time Yes? <input checked="" type="checkbox"/> No? <input type="checkbox"/>
		6/23/10	CAF	QA/QC Review
		6/16/10	eyr	Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by:

Laboratory Manager

6/23/10  
Date

Copy No. \_\_\_\_\_

Radiochemistry Services

**SECTION I**  
**CHAIN OF CUSTODY & pH CHECK SHEET**








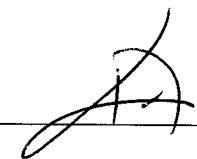




	<b>Sample Receiving Report</b> (Volumes, pH, & CPM)	Internal Work Order
		<b>10-06016</b>
		Received By <b>KFOX</b>

FR	ClientID	# Btls	Comments	Matrix	Storage	Rec Vol Ttl	CPM Max	
01	LCS	0		WA	OO1.5			
02	BLANK	0		WA	OO1.5			
03	DUP	0		WA	OO1.5			
04	MPA-WW-1 ✓	3		WA	OO1.5	2.25	39	
				Container Number	pH Orig	pH Final	Volume (L)	CPM
				1	7	7	1.0000	39
				2	7	7	1.0000	39
				3	7	7	0.2500	39

*1st  
04/03/10*

Received by:  Date: 6-3-10

**SECTION II**  
**SAMPLE ACKNOWLEDGEMENT**





# STANDARD OPERATING PROCEDURE

MP-001, Rev. 10  
Effective: 4/27/09  
Page 12 of 13

Sample Receiving

Eberline Services – Oak Ridge Laboratory

## SAMPLE RECEIPT CHECKLIST MP-001-2

WORK ORDER # 10 060 16

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

AQUEOUS NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	<input checked="" type="radio"/> Y	<input type="radio"/> N	
If aqueous, properly preserved	<input checked="" type="radio"/> Y	<input type="radio"/> N	N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Unbroken on outside of package?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Present on samples?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Unbroken on samples?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Was chain of custody present upon sample receipt?	<input checked="" type="radio"/> Y	<input type="radio"/> N

IF THE RESPONSE TO ANY OF THE ABOVE IS NO, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: 3 1L bottles, 14 cubes unpreserved KF 6-3-10

SIGNATURE: \_\_\_\_\_

DATE: 6-3-10

**SECTION III**  
**CASE NARRATIVE**



EBERLINE ANALYTICAL CORPORATION  
601 SCARBORO ROAD  
OAK RIDGE, TENNESSEE 37830  
PHONE (865) 481-0683  
FAX (865) 483-4621

EBS-OR-30569

June 23, 2010

Patrick Ritchie  
Michael Pisani & Associates  
1100 Poydras Street, 1430 Energy Center  
New Orleans, LA 70163

CASE NARRATIVE  
Work Order # 10-06016-OR

SAMPLE RECEIPT

This work order contains one water sample received 06/01/10. This sample was analyzed for Radium-226/228 and Gross Alpha/Beta.

<u>CLIENT ID</u>	<u>LAB ID</u>
MPA-WW-1	10-06016-04

ANALYTICAL METHODS

Radium-226 was analyzed using EPA Method 903.0 Modified. Radium-228 was analyzed using EPA Method 904.0 Modified. Gross Alpha/Beta was performed using EPA Method 900.0 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 2-sigma value.

RADIUM-226

Sample was prepared by removing a representative aliquot followed by mixed acid digestions as appropriate. This was followed by selective sulfate precipitations of the Radium. Sample was then mounted by semi-micro-precipitations onto micro-porous filters. Sample was counted by alpha spectroscopy using an energy specific region of interest for Radium-226. Chemical recovery was calculated by the use of a Barium-133 tracer, which was determined by HPGe gamma spectroscopy.

Sample demonstrated acceptable results for Radium-226 activity. Chemical recovery was acceptable for all samples. Results for the Radium-226 method blank demonstrated acceptable activity. Results for the Radium-226 replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable analytical technique limits. Results for the Radium-226 laboratory control sample demonstrated an acceptable percent recovery.



## ANALYTICAL RESULTS CONTINUED

### RADIUM-228

Following alpha spectroscopy analysis of Radium-226, Barium/Radium Sulfate precipitates were redissolved and allowed for sufficient ingrowth of the Actinium-228 daughter. After ingrowth, Actinium-228 was selectively precipitated. Precipitates were filtered and beta emissions for Actinium-228 were then counted on a gas proportional counter. Chemical recovery was determined by the use of a Barium-133 tracer. Sample activity was determined by HPGe gamma spectroscopy and an elemental Yttrium carrier by gravimetric measurements. The product of these two recoveries was used to calculate chemical yield.

Sample demonstrated acceptable results for Radium-228 activity. Chemical recovery was acceptable for all samples. Results for the Radium-228 method blank demonstrated acceptable activity. Results for the Radium-228 replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable analytical technique limits. Results for the Radium-228 laboratory control sample demonstrated an acceptable percent recovery.

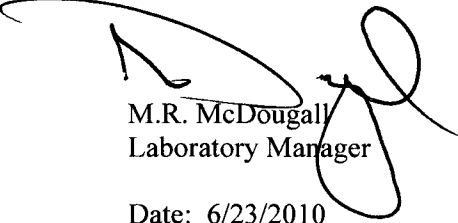
### GROSS ALPHA & BETA

Sample was prepared by evaporation of a representative volumetric aliquot acidified with HNO<sub>3</sub>. Reduced sample was then transferred to a steel planchet for final evaporation to dryness and flaming if appropriate. Sample was then counted on a gas proportional counter. Results were corrected as required for inherent self-absorption based on residual mass present.

Sample demonstrated acceptable results for Gross Alpha and Beta activity. Results for the Gross Alpha and Beta method blank demonstrated acceptable activity. Results for the Gross Alpha and Beta replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable analytical technique limits. Results for the Gross Alpha and Beta laboratory control sample demonstrated an acceptable percent recovery.

### CERTIFICATION OF ACCURACY

I certify that this data report is in compliance with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall  
Laboratory Manager

Date: 6/23/2010

**SECTION IV**  
**ANALYTICAL RESULTS SUMMARY**

# Eberline Analytical

## Final Report of Analysis

**Patrick Ritchie**  
**Michael Pisani & Associates**  
**1100 Poydras St Suite 1430**  
**New Orleans, LA 70163**

**SDG: 10-06016**  
**Project: 07-47 East White Lake**  
**Analysis Category: ENVIRONMENTAL**  
**Sample Matrix: WA**

Report To:

Work Order Details:

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-06016-01	LCS	KNOWN	06/03/10 00:00	6/1/2010	6/7/2010	10-06016	Gross Alpha	EPA 900.0 Modified	3.13E+02	1.35E+01			pCi/l
10-06016-01	LCS	SPIKE	06/03/10 00:00	6/1/2010	6/7/2010	10-06016	Gross Alpha	EPA 900.0 Modified	2.79E+02	7.45E+00	7.57E+00	4.11E-01	pCi/l
10-06016-02	MBL	BLANK	06/03/10 00:00	6/1/2010	6/7/2010	10-06016	Gross Alpha	EPA 900.0 Modified	5.33E-02	7.38E-02	7.38E-02	1.47E-01	pCi/l
10-06016-03	DUP	MPA-WW-1	05/25/10 14:40	6/1/2010	6/7/2010	10-06016	Gross Alpha	EPA 900.0 Modified	1.22E+00	1.97E+00	1.97E+00	4.14E+00	pCi/l
10-06016-04	DO	MPA-WW-1	05/25/10 14:40	6/1/2010	6/7/2010	10-06016	Gross Alpha	EPA 900.0 Modified	3.11E+00	2.39E+00	2.39E+00	4.25E+00	pCi/l
10-06016-01	LCS	KNOWN	06/03/10 00:00	6/1/2010	6/7/2010	10-06016	Gross Beta	EPA 900.0 Modified	2.36E+02	7.08E+00			pCi/l
10-06016-01	LCS	SPIKE	06/03/10 00:00	6/1/2010	6/7/2010	10-06016	Gross Beta	EPA 900.0 Modified	2.55E+02	5.87E+00	5.90E+00	7.70E-01	pCi/l
10-06016-02	MBL	BLANK	06/03/10 00:00	6/1/2010	6/7/2010	10-06016	Gross Beta	EPA 900.0 Modified	1.54E-02	2.30E-01	2.30E-01	4.95E-01	pCi/l
10-06016-03	DUP	MPA-WW-1	05/25/10 14:40	6/1/2010	6/7/2010	10-06016	Gross Beta	EPA 900.0 Modified	3.56E+00	2.03E+00	2.03E+00	3.94E+00	pCi/l
10-06016-04	DO	MPA-WW-1	05/25/10 14:40	6/1/2010	6/7/2010	10-06016	Gross Beta	EPA 900.0 Modified	2.26E+00	1.98E+00	1.98E+00	3.99E+00	pCi/l
10-06016-01	LCS	KNOWN	06/03/10 00:00	6/1/2010	6/10/2010	10-06016	Radium-226	EPA 903.0 Modified	1.02E+01	4.68E-01			pCi/l
10-06016-01	LCS	SPIKE	06/03/10 00:00	6/1/2010	6/10/2010	10-06016	Radium-226	EPA 903.0 Modified	9.06E+00	1.17E+00	1.17E+00	1.73E-01	pCi/l
10-06016-02	MBL	BLANK	06/03/10 00:00	6/1/2010	6/10/2010	10-06016	Radium-226	EPA 903.0 Modified	4.74E-02	7.79E-02	7.79E-02	1.63E-01	pCi/l
10-06016-03	DUP	MPA-WW-1	05/25/10 14:40	6/1/2010	6/10/2010	10-06016	Radium-226	EPA 903.0 Modified	5.50E-01	2.79E-01	2.79E-01	1.58E-01	pCi/l
10-06016-04	DO	MPA-WW-1	05/25/10 14:40	6/1/2010	6/10/2010	10-06016	Radium-226	EPA 903.0 Modified	3.24E-01	2.17E-01	2.17E-01	9.53E-02	pCi/l
10-06016-01	LCS	KNOWN	06/03/10 00:00	6/1/2010	6/16/2010	10-06016	Radium-228	EPA 904.0 Modified	1.69E+01	8.60E-01			pCi/l
10-06016-01	LCS	SPIKE	06/03/10 00:00	6/1/2010	6/16/2010	10-06016	Radium-228	EPA 904.0 Modified	1.50E+01	1.01E+00	1.12E+00	1.12E+00	pCi/l
10-06016-02	MBL	BLANK	06/03/10 00:00	6/1/2010	6/16/2010	10-06016	Radium-228	EPA 904.0 Modified	1.43E-01	4.73E-01	4.73E-01	9.98E-01	pCi/l
10-06016-03	DUP	MPA-WW-1	05/25/10 14:40	6/1/2010	6/16/2010	10-06016	Radium-228	EPA 904.0 Modified	8.55E-01	4.52E-01	4.53E-01	8.68E-01	pCi/l
10-06016-04	DO	MPA-WW-1	05/25/10 14:40	6/1/2010	6/16/2010	10-06016	Radium-228	EPA 904.0 Modified	1.79E-01	4.94E-01	4.94E-01	1.04E+00	pCi/l

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original



**EBERLINE ANALYTICAL CORPORATION**

601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

**SECTION V**  
**ANALYTICAL STANDARD**



# National Institute of Standards & Technology

## Certificate

Ba-6  
(f 6a)

### Standard Reference Material 4251C Barium-133 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive barium-133 chloride, non-radioactive barium chloride, and hydrochloric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of ionization chambers and solid-state gamma-ray spectrometry systems.

#### Radiological Hazard

The SRM ampoule contains barium-133 with a total activity of approximately 2.5 MBq. Barium-133 decays by electron capture and during the decay process X-rays and gamma rays with energies from 4 to 400 keV are emitted. Most of these photons escape from the SRM ampoule and can represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]\*. Appropriate shielding and/or distance should be used to minimize personnel exposure. The SRM should be used only by persons qualified to handle radioactive material.

#### Chemical Hazard

The SRM ampoule contains hydrochloric acid (HCl) with a concentration of 1 mole per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

#### Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least June 2004.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

#### Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group and D.B. Golas, Nuclear Energy Institute Research Associate.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899  
October 1994

Thomas E. Gills, Chief  
Standard Reference Materials Program



**QUALITY CONTROL PROGRAM**  
QCP-009

Rev.8; 11/10/03  
Title: Radioactive Reference Standards Solutions & Records

**EBERLINE SERVICES - OAK RIDGE LABORATORY**  
**RADIOACTIVE REFERENCE SOLUTIONS**  
**PRIMARY DILUTION RECERTIFICATION**  
QCP 009-1

SOLUTION REFERENCE # NIST SRM4251C      CURRENT DATE 10/28/2009 0:00  
SOLUTION # Ba-6

Principal Radionuclide	Half Life, Years	Half Life, Days
<sup>133</sup> Barium	<u>1.048E+01</u>	<u>3.828E+03</u>

Radionuclide	<u><sup>133</sup>Barium</u>	Reference Date	<u>9/1/1993 0:00</u>
Certified Activity	<u>                    </u> μCi		
Certified Concentration	<u>1.318E+01</u> μCi per gram		

Ampoule /Solution Gross	<u>9.3081</u>	Weight, Grams
Empty Ampoule	<u>4.2582</u>	Weight, Grams
Solution Net	<u>5.0499</u>	Weight, Grams
Total Activity in Ampoule	<u>66.5577</u>	μCi

Chemical Composition of Standard Solution  
<sup>133</sup>BaCl<sub>2</sub> in 1M HCl

Dilution Instructions:      Dilution Solvent Used 1M HCl

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 66.5577 μCi      Which Equals 1.478E+08 dpm at the date listed above

And after dilution the activity of this solution is 1.478E+05 dpm/ml      This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: October 28, 2010

Recertified By	<u></u>	Date:	<u>10/28/09</u>
Verified & Approved By	<u></u>	Date:	<u>11/4/09</u>
QC Approval	<u></u>	Date:	<u>11/4/09</u>



QUALITY CONTROL PROGRAM  
QCP-009

Rev.8; 11/10/03  
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY  
RADIOACTIVE REFERENCE STANDARD SOLUTIONS  
SECONDARY DILUTION RECERTIFICATION

Solution Reference # QCP-009-1-A      Date 10/28/09  
NIST SRM4251C      Solution # Ba-6a

Principal Radionuclide <sup>133</sup>Ba      Half Life, Years 1.048E+01      Half Life, Days 3.828E+03

Radionuclide of Interest <sup>133</sup>Ba      Reference Date 9/1/1993 0:00  
Parent Solution Conc. 1.48E+05 dpm/ml

Chemical Composition of Standard Solution  
<sup>133</sup>BaCl<sub>2</sub> in 1M HCl

Dilution Instructions:      Dilution Solvent Used 1M HCl

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 25.0000 ml  
Total Activity: 3.6950E+06 dpm      Final Activity Concentration: 3.6950E+03 dpm/ml  
Final Volume: 1000.00 ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: October 28, 2010

Recertified By [Signature]

Date: 10/28/09

Verified & Approved By [Signature]

Date: 11/4/09

QC Approval [Signature]

Date: 11/4/09

# CERTIFICATE OF CALIBRATION ALPHA STANDARD SOLUTION

<sup>Ra-5</sup>  
QA/QC REVIEWED  
Date 2/8/94 Initials W

Radionuclide: Ra-226  
Half Life: 1600 ± 7 years  
Catalog No.: 7226  
Source No.: 453-26

Customer: TMA EBERLINE  
P.O.No.: VH1888  
Reference Date: February 1 1994 12:00 PST.  
Contained Radioactivity: (Ra-226) 1.001 µCi.  
Contained Radioactivity: (Ra-226) 37.0 kBq.

Description of Solution  
a. Mass of solution: 5.1864 g (in a 5 ml Flame Sealed Ampoule)  
b. Chemical form: Ra(NO<sub>3</sub>)<sub>2</sub> in 1 N HNO<sub>3</sub>  
c. Carrier content: None added  
d. Density: 1.0318 g/ml @ 20°C.

Radioimpurities: None detected (other than daughters)

Radioactive Daughters  
Rn-222, Po-218, At-218, Pb-214, Bi-214, Po-214, Tl-210, Pb-210, Bi-210, Po-210 and Tl-206.

Radionuclide Concentration  
(Ra-226) 0.1929 µCi/g.

### Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry:  
Energy peak(s) integrated under: 186 keV.  
Branching ratio(s) used: 0.0351 gamma rays per decay.

### Uncertainty of Measurement

- a. Systematic uncertainty in instrument calibration: ±3.4%
- b. Random uncertainty in assay: ±3.1%
- c. Random uncertainty in weighing(s): ±0.2%
- d. Total uncertainty at the 99% confidence level: ±4.6%

### NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

### Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

### Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).



ISOTOPE PRODUCTS LABORATORIES  
1800 North Keystone Street  
Burbank, California 91504  
(818) 843 - 7000

Anna U. Kuen  
QUALITY CONTROL  
Feb. 3, 1994  
Date Signed





**QUALITY CONTROL PROGRAM**  
MP 009

Rev.8; 11/01/03  
Title: Radioactive Reference Standards Solutions & Records

**EBERLINE SERVICES - OAK RIDGE LABORATORY**  
**RADIOACTIVE REFERENCE SOLUTIONS**  
**PRIMARY DILUTION RECERTIFICATION**  
MP 009

**SOLUTION REFERENCE #** IPL 453-26      **CURRENT DATE** 12/17/2009 0:00  
**SOLUTION #** Ra-5

<b>Principal Radionuclide</b>	<b>Half Life, Years</b>	<b>Half Life, Days</b>
<sup>226</sup> Radium	<u>1.600E+03</u>	<u>5.844E+05</u>

<b>Radionuclide</b>	<u><sup>226</sup>Radium</u>	<b>Reference Date</b>	<u>2/1/1994 0:00</u>
<b>Certified Activity</b>	<u>1.001E+00</u> $\mu$ Ci		
<b>Certified Concentration</b>	<u>                    </u> $\mu$ Ci per gram		

<b>Ampoule /Solution Gross</b>	<u>                    </u>	<b>Weight, Grams</b>
<b>Empty Ampoule</b>	<u>                    </u>	<b>Weight, Grams</b>
<b>Solution Net</b>	<u>                    </u>	<b>Weight, Grams</b>
<b>Total Activity in Ampoule</b>	<u>1.0010</u>	$\mu$ Ci

**Chemical Composition of Standard Solution**  
<sup>226</sup>Ra(NO<sub>3</sub>)<sub>2</sub> in 1M HNO<sub>3</sub>

**Dilution Instructions:**      **Dilution Solvent Used** 1M HNO<sub>3</sub>

Dilute to a volume of 1000.00 milliliters

**Certified Total Activity of** 1.0010  $\mu$ Ci      **Which Equals** 2.222E+06 dpm at the date listed above

**And after dilution the activity of this solution is** 2.222E+03 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

**Expiration Date:** December 17, 2010

Diluted By [Signature]

Date: 12/17/2009

Verified & Approved By [Signature]

Date: 11/5/10

QC Approval [Signature]

Date: 11/5/10



# QUALITY CONTROL PROGRAM

MP 009

Rev.8; 11/01/03

Title: Radioactive Reference Standards Solutions & Records

## EBERLINE SERVICES - OAK RIDGE LABORATORY RADIOACTIVE REFERENCE STANDARD SOLUTIONS SECONDARY DILUTION RECERTIFICATION

Solution Reference # <b>MP 009</b> <b>IPL-453-26</b>		Date <b>12/17/2009 0:00</b>
Principal Radionuclide <b><sup>226</sup>Radium</b>	Half Life, Years <b>1.600E+03</b>	Solution # <b>Ra-5b</b> Half Life, Days <b>5.844E+05</b>
Radionuclide of Interest <b><sup>226</sup>Radium</b>	Parent Solution Conc. <b>2.22E+03</b> dpm/ml	Reference Date <b>2/1/1994 0:00</b>
Chemical Composition of Standard Solution <b><sup>226</sup>Ra(NO<sub>3</sub>)<sub>2</sub> in 1M HNO<sub>3</sub></b>		

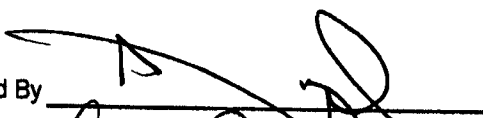
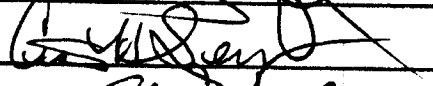
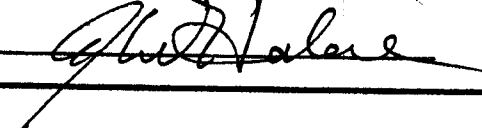
Dilution Instructions: Dilution Solvent Used **1M HNO<sub>3</sub>**

### SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution:	<b>20.0000</b> ml	Final Activity Concentration:	<b>4.4440E+01</b> dpm/ml
Total Activity:	<b>4.4440E+04</b> dpm	This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.	
Final Volume:	<b>1000.00</b> ml		

NOTES:

Expiration Date: **December 17, 2010**

Recertified By		Date:	<b>12/17/2009 0:00</b>
Verified & Approved By		Date:	<b>1/15/10</b>
QC Approval		Date:	<b>1/15/10</b>



# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

61680-416

Ra-228 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Ra-228
ACTIVITY (dps):	3.586 E3
HALF-LIFE:	5.75 years
CALIBRATION DATE:	June 4, 2001 12:00 EST
TOTAL UNCERTAINTY*:	5.1%
SYSTEMATIC:	3.6%
RANDOM:	1.5%

SOURCE RECEIVED  
 DATE 6/11/01 INITIALS *MD*

\*99% Confidence Level

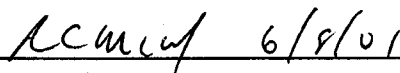
Impurities:  $\gamma$ -impurities (other than decay products) <0.1%5.00872 grams 0.1M HCl solution with 50  $\mu$ g/g Ba carrier.

P O NUMBER 00008864, Item 1

SOURCE PREPARED BY:

  
 M. D. Currie, Radiochemist

Q A APPROVED:

  
 RCM 6/8/01



**QUALITY CONTROL PROGRAM**  
MP-009

Rev.8; 1/10/03  
Title: Radioactive Reference Standards Solutions & Records

**EBERLINE SERVICES - OAK RIDGE LABORATORY**  
**RADIOACTIVE REFERENCE SOLUTIONS**  
**PRIMARY DILUTION RECERTIFICATION**  
MP 009

**SOLUTION REFERENCE #** Analytics 61680-416      **CURRENT DATE** 12/17/2009 0:00  
**SOLUTION #** Ra-10

**Principal Radionuclide** <sup>228</sup>Ra      **Half Life, Years** 5.750E+00      **Half Life, Days** 2.100E+03

**Radionuclide** <sup>228</sup>Ra      **Reference Date** 6/4/2001 0:00  
**Certified Activity** 9.692E-02  $\mu\text{Ci}$   
**Certified Concentration**                       $\mu\text{Ci per gram}$

<b>Ampoule /Solution Gross</b>	<u>9.4982</u>	<b>Weight, Grams</b>
<b>Empty Ampoule</b>	<u>4.4895</u>	<b>Weight, Grams</b>
<b>Solution Net</b>	<u>5.0087</u>	<b>Weight, Grams</b>
<b>Total Activity in Ampoule</b>	<u>0.0969</u>	$\mu\text{Ci}$

**Chemical Composition of Standard Solution**  
<sup>228</sup>Ra(NO<sub>3</sub>)<sub>2</sub> in 0.5 M HCl

**Dilution Instructions:**      **Dilution Solvent Used** 0.5 M HCl  
**Dilute to a volume of** 1000.00 **milliliters**

**Certified Total Activity of** 0.0969  $\mu\text{Ci}$       **Which Equals** 2.152E+05 **dpm at the date listed above**

**And after dilution the activity of this solution is** 2.152E+02 **dpm/ml**      This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

**Expiration Date:** December 17, 2010

**Recertified By**       **Date:** 12/17/2009 0:00

**Verified & Approved By**       **Date:** 1/4/10

**QC Approval**       **Date:** 1/5/10



ANALYTICS

QA/QC REVIEWED  
Date 4/30/96 Initials WT

Am-4

1380 Seaboard Industrial Blvd.  
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677  
Fax (404) 352-2837

# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

52094-416

Am-241 10 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master liquid radionuclide solution source. The master source was calibrated by liquid scintillation counting.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Am-241
ACTIVITY (dps):	1.975 E+05
HALF-LIFE:	432.2 years
CALIBRATION DATE:	March 19, 1996 12:00 EST
TOTAL ERROR:	3.0%
SYSTEMATIC ERROR:	2.37%
RANDOM ERROR:	0.63%

10.01177 grams of solution 1M HCl.

P O NUMBER OR3830, Item 1

SOURCE PREPARED BY: Kare O'Brien Beverly  
K. O. Beverly, Radiochemist

Q A APPROVED: DM. [Signature] 4-26-96



# QUALITY CONTROL PROGRAM

MP-009

Rev.8; 1/10/03

Title: Radioactive Reference Standards Solutions & Records

## EBERLINE SERVICES - OAK RIDGE LABORATORY RADIOACTIVE REFERENCE STANDARD SOLUTIONS SECONDARY DILUTION (RE-CERTIFICATION)

Solution Reference # Analytics 52094-416

Date 11/9/2009 0:00

Solution # A/B-7 (alpha)

Principal Radionuclide

Half Life, Years

Half Life, Days

<sup>241</sup> Americium

4.322E+02

1.579E+05

Radionuclide of Interest

<sup>241</sup>Am

Reference Date

3/19/1996 0:00

Parent Solution Conc. 1.19E+04 dpm/ml

Chemical Composition of Standard Solution

<sup>241</sup>AmCl<sub>3</sub> in 1M HCL

Dilution Instructions:

Dilution Solvent Used

1 M HNO<sub>3</sub>

### SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 60.0000 ml

Total Activity: 7.1100E+05 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 7.1100E+02 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: November 9, 2010

Recertified By: [Signature]

Date: 11/9/09

Verified & Approved By: [Signature]

Date: 12/1/09

QC Approval: [Signature]

Date: 12/1/09



5-75  
13-22

# National Institute of Standards & Technology

## Certificate

### Standard Reference Material 4234A Strontium-90 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive strontium-90 chloride, non-radioactive strontium chloride, non-radioactive yttrium chloride, and hydrochloric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of beta-particle counting instruments and for the monitoring of radiochemical procedures.

#### Radiological Hazard

The SRM ampoule contains strontium-90 with a total activity of approximately 13 MBq. Strontium-90 decays by beta-particle emission to yttrium-90, which also decays by beta-particle emission. None of the beta particles escape from the SRM ampoule. The beta particles emitted from strontium-90 and yttrium-90 produce bremsstrahlung photons with energies up to 2 MeV. Most of these photons escape from the SRM ampoule and can represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]\*. Appropriate shielding and/or distance should be used to minimize personnel exposure. The SRM should be used only by persons qualified to handle radioactive material.

#### Chemical Hazard

The SRM ampoule contains hydrochloric acid (HCl) with a concentration of 1 mole per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

#### Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least March 2005.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

#### Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group and D.B. Golas, Nuclear Energy Institute Research Associate.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899  
May 1995 (Text only revised November 1997)

Thomas E. Gills, Chief  
Standard Reference Materials Program



QUALITY CONTROL PROGRAM  
QCP-009

Rev.7; 9/29/99  
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY  
RADIOACTIVE REFERENCE STANDARD SOLUTIONS  
SECONDARY DILUTION (RE-CERTIFICATION)

Solution Reference # QCP-009-1-A Date 11/9/2009 0:00  
NIST 4234A Solution # A/B-7 (beta)

Principal Radionuclide	Half Life, Years	Half Life, Days
<sup>90</sup> Sr	2.878E+01	1.051E+04

Radionuclide of Interest: <sup>90</sup>Sr Reference Date: 3/13/1995 0:00  
Parent Solution Conc.: 1.52E+06 dpm/ml

The beta activity of solution reflects the original <sup>90</sup>Sr concentration and an equal concentration of <sup>90</sup>Yttrium.

Chemical Composition of Standard Solution

<sup>90</sup>SrCl<sub>2</sub> in 1 M HCl

Dilution Instructions: Dilution Solvent Used 1 M HNO<sub>3</sub>

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 0.5000 ml  
Total Activity: 7.5764E+05 dpm  
Final Volume: 1000.00 ml  
Final Activity Concentration: 7.5764E+02 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: November 9, 2010

Recertified By: [Signature] Date: 11/09/09

Verified & Approved By: [Signature] Date: 12/11/09

QC Approval: [Signature] Date: 12/11/09



**SECTION VI**  
**QUALITY CONTROL SAMPLE RESULTS SUMMARY**

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-06016</b>	<b>Ra226</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-226	1.80	89.09%	12.90%	100.00%	4.60%	1.02E+01	4.68E-01	9.06E+00	1.17E+00	Ra-5b	4.41E+01	4.60E+00	5.12E-01

**Matrix Spike**

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

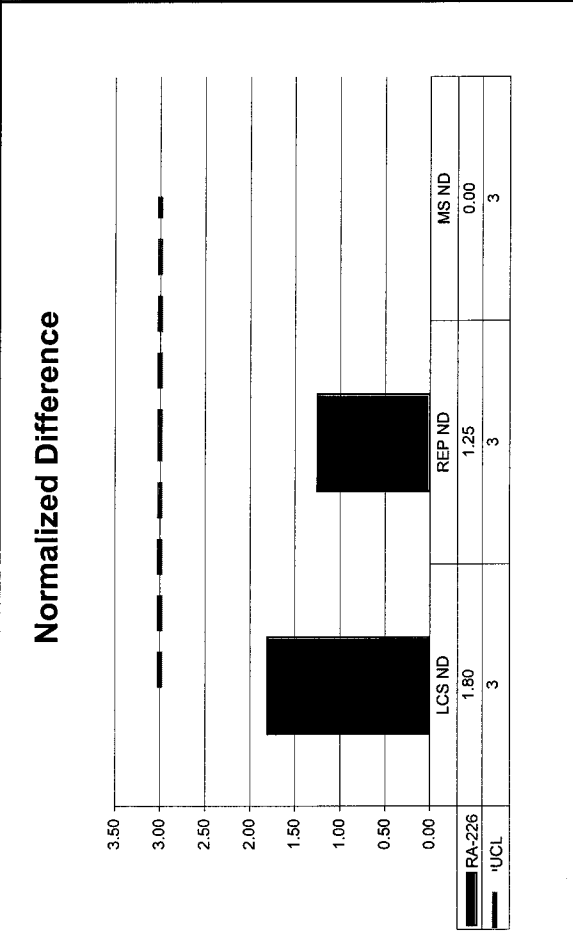
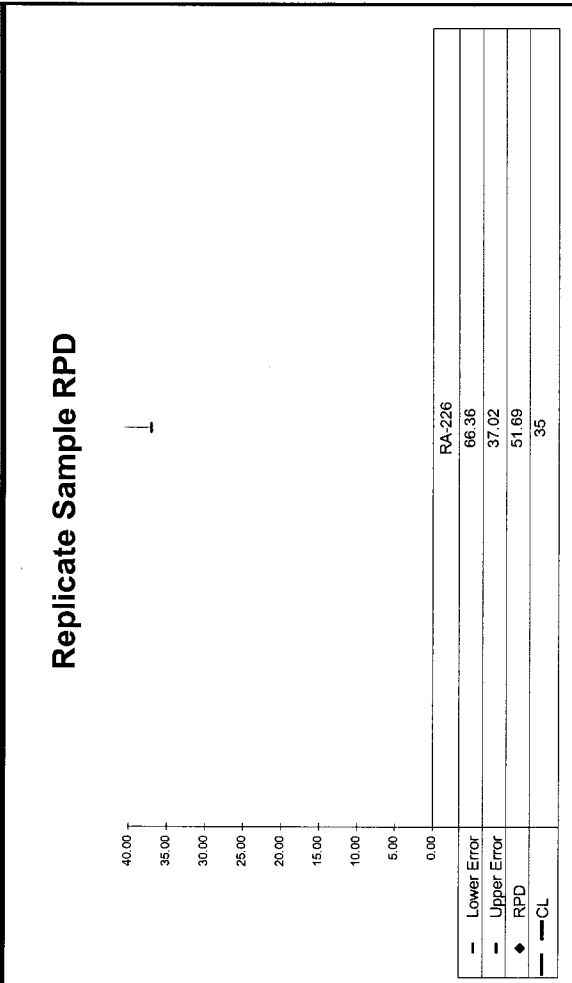
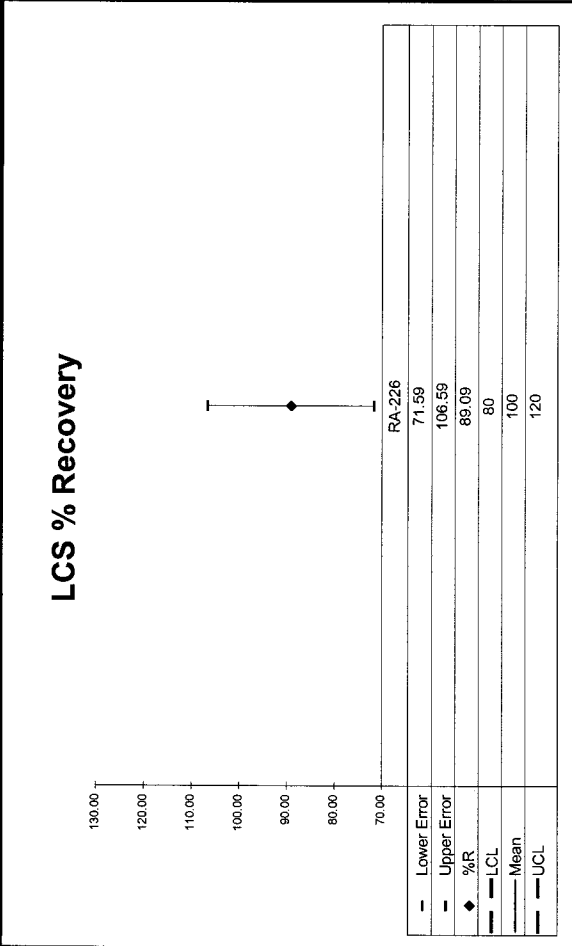
**Replicate Sample**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-226	1.25	51.69	3.24E-01	2.17E-01	5.50E-01	2.79E-01	0.89	OK	OK	OK	INV	OK	OK

**QC Summary**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-226	1.25	51.69	3.24E-01	2.17E-01	5.50E-01	2.79E-01	0.89	OK	OK	OK	INV	OK	OK

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-06016</b>	<b>Ra226</b>	<b>1</b>	<b>pCi</b>	<b>1</b>	<b>Michael Pisani &amp; Associates</b>



**No Matrix Spike**

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-06016</b>	<b>Ra228</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-228	2.86	89.18%	7.44%	100.00%	5.10%	1.69E+01	8.60E-01	1.50E+01	1.12E+00	Ra-10	7.27E+01	5.10E+00	5.15E-01

**Matrix Spike**

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

**Replicate Sample**

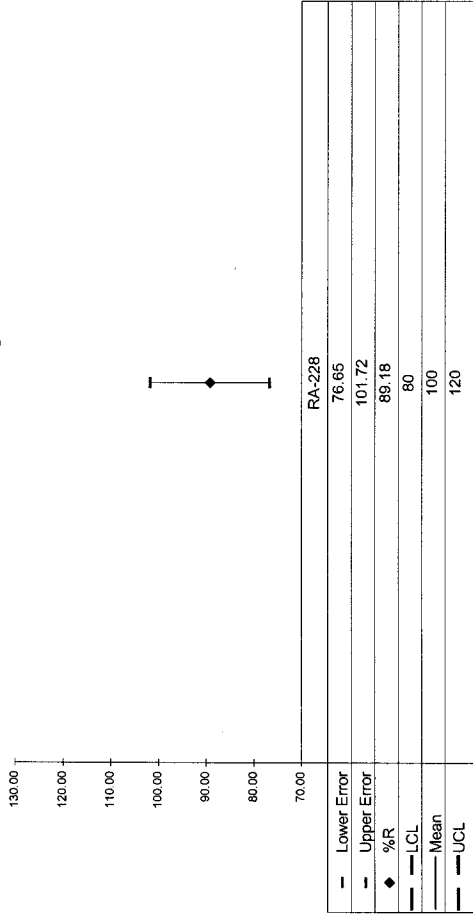
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-228	1.98	130.88	1.79E-01	4.94E-01	8.55E-01	4.53E-01	0.89	OK	OK			INV	OK

**QC Summary**

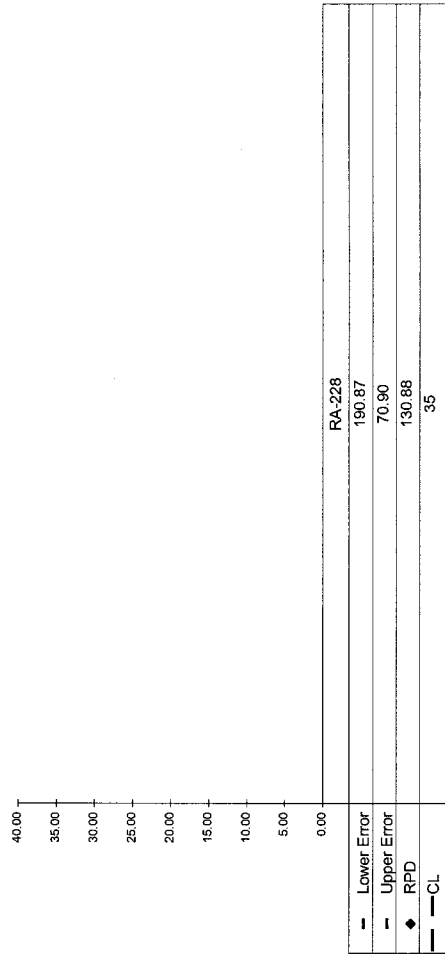
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-228	1.98	130.88	1.79E-01	4.94E-01	8.55E-01	4.53E-01	0.89	OK	OK			INV	OK

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-06016</b>	<b>Ra228</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>

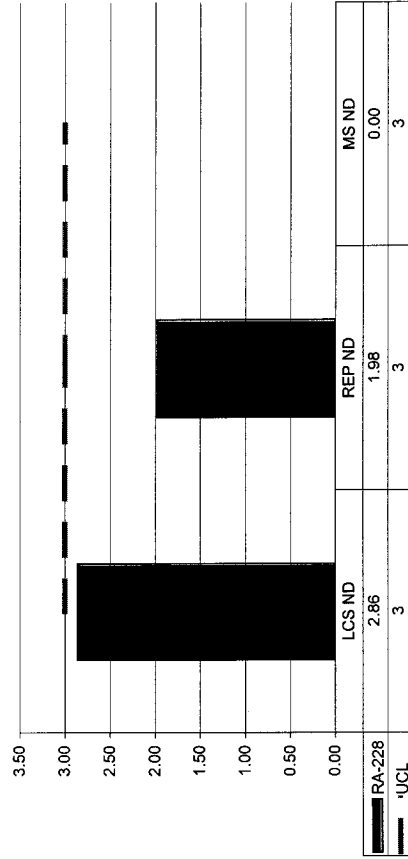
### LCS % Recovery



### Replicate Sample RPD



### Normalized Difference



No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-06016</b>	<b>GaGbt_ThSr</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
GROSS ALPHA_TH	5.82	89.00%	2.71%	100.00%	4.30%	3.13E+02	1.35E+01	2.79E+02	7.57E+00	A/B-07	6.95E+02	4.30E+00	1.00E+00
GROSS BETA_SR	4.99	108.08%	2.31%	100.00%	3.00%	2.36E+02	7.08E+00	2.55E+02	5.90E+00	A/B-07	5.24E+02	3.00E+00	1.00E+00

**Matrix Spike**

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

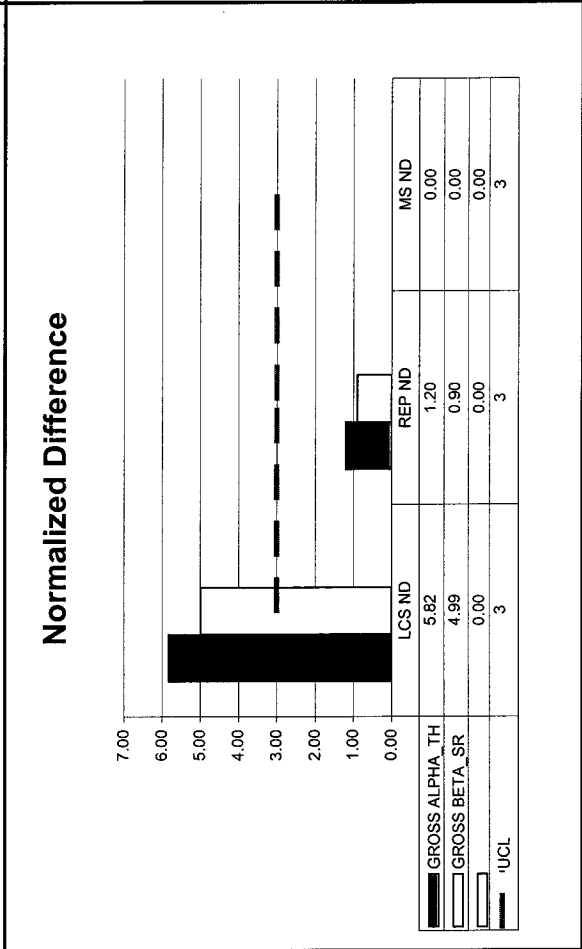
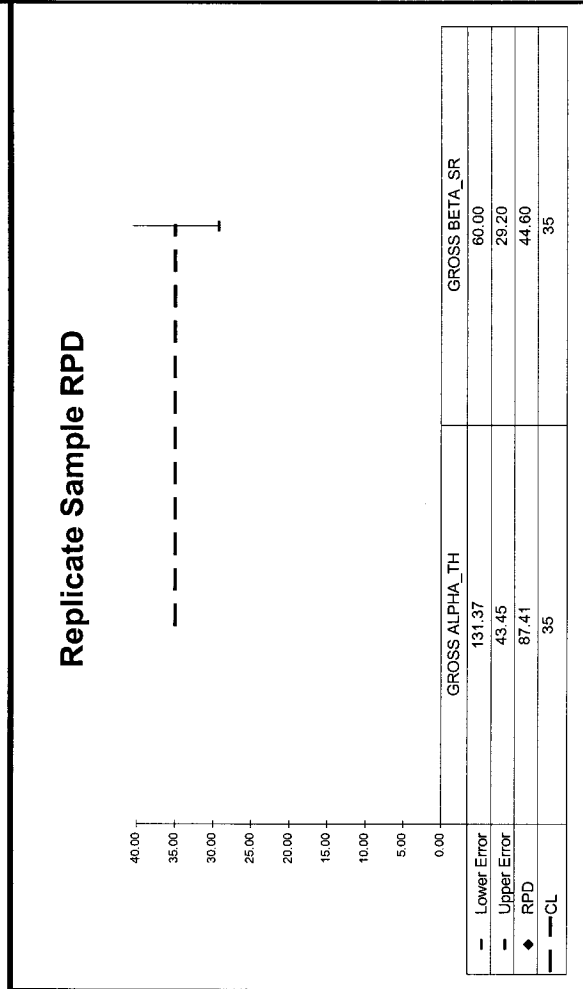
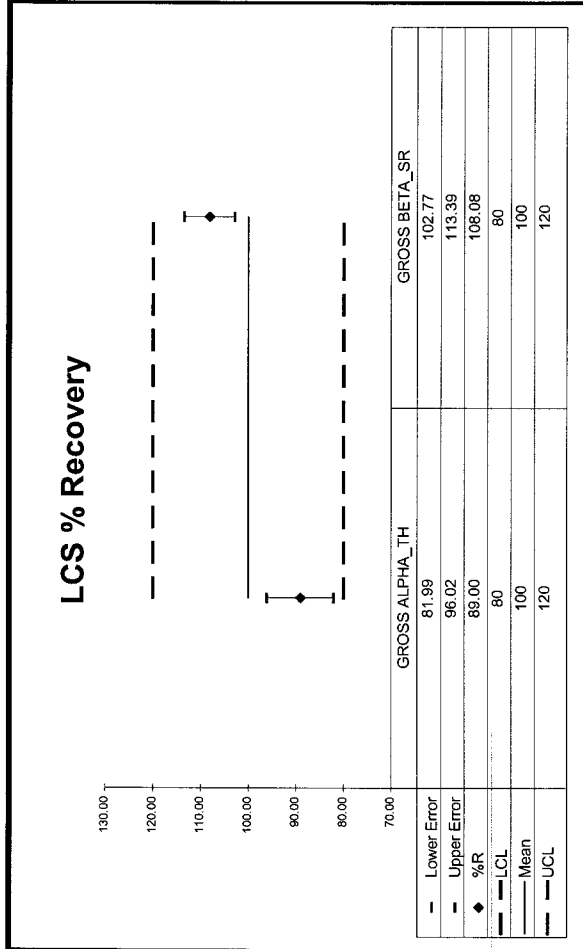
**Replicate Sample**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
GROSS ALPHA_TH	1.20	87.41	3.11E+00	2.39E+00	1.22E+00	1.97E+00	0.89	OK	INV			INV	OK
GROSS BETA_SR	0.90	44.60	2.26E+00	1.98E+00	3.56E+00	2.03E+00	1.08	OK	INV			INV	OK

**QC Summary**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
GROSS ALPHA_TH	1.20	87.41	3.11E+00	2.39E+00	1.22E+00	1.97E+00	0.89	OK	INV			INV	OK
GROSS BETA_SR	0.90	44.60	2.26E+00	1.98E+00	3.56E+00	2.03E+00	1.08	OK	INV			INV	OK

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-06016</b>	<b>GaGbT_ThSr</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>




**No Matrix Spike**

**SECTION VII**  
**LABORATORY TECHNICIAN'S NOTES**




**RA-226 NOTES**

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-06016
		Analysis Code	Ra226
		Run Number	1

#	Date	Dept	User	Notes
1	06/04/10 12:02	PREP	JBARNARD	ALIQOTED AND ADDED SPIKES AND TRACERS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS

*Handwritten signature and date:*  
 JB  
 6/4/10

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-06016
		Analysis Code	Ra226
		Run Number	1

#	Date	Dept	User	Notes
1	06/04/10 12:02	PREP	JBARNARD	ALIUQUOTED AND ADDED SPIKES AND TRACERS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	06/07/10 11:25	CHEM	TSMITH	Dissolved samples from prep in EDTA.
3	06/09/10 08:32	CHEM	TSMITH	Followed steps 12.2 to 12.8 in AP-006 rev. 9 . ( Sringe filtered samples. Precipitated and filtered samples, obtained final weights, and took to count room )

*6-9-10  
DMZ*




Reagents Used in an Analysis

Internal Work Order				
10-06016				
Analysis Code				Run
Ra226				1
Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
008823P	Ammonium Hydroxide	Reagent Grade	JBARNARD	6/4/2010
009343D06	Ammonium Sulfate	200 mg/ml	JBARNARD	6/4/2010
009718D01	Barium Carrier	1 mg/ml	JBARNARD	6/4/2010
007701D10	Lead Carrier	166 mg/ml	JBARNARD	6/4/2010
009536P	Nitric Acid	Reagent Grade	JBARNARD	6/4/2010
009757S	EDTA	0.25M	TSMITH	6/7/2010
008735P	Acetic Acid	Reagent Grade	TSMITH	6/9/2010
009323D03	Ammonium Sulfate	200 mg/ml	TSMITH	6/9/2010

# Alpha #3


Date	Sample #	Client	Load time	Cr. time	Analysts	Tech
6/7/10	1005120A (1-8)	NNE	1738	2hr 50min	UU	ICB
6/8/10	Daily Pulsers	Lab	0214	10 min	NA	KM
6/8/10	1005120A (11-16)	NNE	0309	2hr 50min	Pu	KM
6/8/10	1005135A (10)	MFA	0825	2hr 50min	RAG	KM
6/8/10	1006012A (14-20)	M. Pisani	.1036	2hr 50min	RA 226	AB
6/8/10	1005142A (1-3, 6)	Dept. of Health	1101	2hr 50min	Am 241	ICB
6/8/10	1005145A (1-4)	BJC	1409	2hr 50min	Th	KB
6/8/10	1005145A (4)	BJC	1410	2hr 50min	Th NT	KB
6/8/10	1005145A (1-4, 7)	BJC	1412	2hr 50min	Pu	KB
6/8/10	1005145A (1-4)	BJC	1414	2hr 50min	Am 241	KB
6/8/10	1005145A (4)	BJC	1725	2hr 50min	PUNT	KB
6/8/10	1005145A (1-4)	BJC	1726	2hr 50min	Am 243	KB
6/8/10	1005142A (1-4)	Dept. of Health	1729	2hr 50min	UU	ICB
6/9/10	Daily Pulsers	Lab	0417	10 min	NA	KM
6/9/10	1005121A (14-16)	NNE	0935	2hr 50min	Am	KM
6/9/10	1005121A (1-10)	NNE	1055	2hr 50min	UU	KM
6/9/10	1005121A (5-8)	NNE	1248	2hr 50min	Pu	KM
6/9/10	1005121A (9-16)	NNE	1454	2hr 50min	Pu	AG
6/10/10	Daily Pulsers	Lab	0504	10 min	NA	KM
6/10/10	1005145A (3-4)	BJC	1219	2hr 50min	Np	KB
6/10/10	1006009A (1-3, 6-8, 13)	Utah	1222	2hr 50min	Np	KB
6/10/10	1006013A (13-20)	MFA	1706	2hr 50min	Rab	KB
6/10/10	1006011A (1-4)	MFA	1811	2hr 50min	Rab	KB

**RA-228 NOTES**

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com		Internal Work Order	10-06016
			Analysis Code	Ra228
			Run Number	1

#	Date	Dept	User	Notes
1	06/04/10 12:03	PREP	JBARNARD	ALIQOTED AND ADDED SPIKES AND TRACERS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP. TO SEPARATIONS

*Bob White*

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-06016
		Analysis Code	Ra228
		Run Number	1

#	Date	Dept	User	Notes
1	06/04/10 12:03	PREP	JBARNARD	ALIQOTED AND ADDED SPIKES AND TRACERS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	06/11/10 12:14	CHEM	TSMITH	Placed filters from count room into labeled centrifuge tubes. Added EDTA to samples and swirled.
3	06/15/10 06:15	CHEM	TSMITH	Followed steps 12.2 to 12.9 in AP-007 rev. 14 . ( Chemical cleanup for Ra 228 )
4	06/16/10 09:43	CHEM	TSMITH	Followed steps 12.10 to 12.18 in AP-007 rev. 14 . ( Precipitated samples, centrifuged, and discarded supernate. Dissolved precip, precipitated samples, hot bathed, centrifuged, and discarded supernate. Dissolved precip, precipitated and filtered samples, obtained final weights, covered with aluminum foil, and took to count room )

6-16-10  
*ms*





Reagents Used in an Analysis

Internal Work Order

10-06016

Analysis Code

Run


Ra228

1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
008823P	Ammonium Hydroxide	Reagent Grade	JBARNARD	6/4/2010
009343D06	Ammonium Sulfate	200 mg/ml	JBARNARD	6/4/2010
009718D01	Barium Carrier	1 mg/ml	JBARNARD	6/4/2010
007701D10	Lead Carrier	166 mg/ml	JBARNARD	6/4/2010
009536P	Nitric Acid	Reagent Grade	JBARNARD	6/4/2010
009771S	EDTA	0.25M	TSMITH	6/11/2010
009040D13	Ammonium Sulfide	2%	TSMITH	6/15/2010
009735D01	Lead Carrier	1.5 mg/ml	TSMITH	6/15/2010
009621P	Nitric Acid	Reagent Grade	TSMITH	6/15/2010
009625S	Yttrium Carrier	9 mg/ml	TSMITH	6/15/2010
008974D04	Ammonium Oxalate	5%	TSMITH	6/16/2010
009621D04	Nitric Acid	1N	TSMITH	6/16/2010
009621D07	Nitric Acid	6N	TSMITH	6/16/2010
008736D20	Sodium Hydroxide	10M	TSMITH	6/16/2010
008736D21	Sodium Hydroxide	18M	TSMITH	6/16/2010



**ALPHA/BETA NOTES**

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-06016
		Analysis Code	GaGbT_ThSr
		Run Number	1

#	Date	Dept	User	Notes
1	06/07/10 14:07	PREP	BLESTER	Determined total dissolved and suspended solids concentration for maximum aliquot volume. Samples were aliquoted into beakers and placed on a hot plate. Once dry, the solids were nitrated and transferred to a pre-weighed planchet under a heat lamp. Spike and blank fractions were prepared. The samples were flamed, reweighed, and submitted to the count room.

*Brian P. Lester*

6.7.2010



**EBERLINE**  
SERVICES

Reagents Used in an Analysis

Internal Work Order

**10-06016**

Analysis Code

Run

**GaGbT\_ThSr**

**1**

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
009536D13	Nitric Acid	3N	BLESTER	6/7/2010

# LB4110 Red

Date	Sample #	Client	Lead Time	Cr. Time	Analyst	Tech
6/1/10	1004041AB2(2-14)	MWRD	1702	8 hrs	αβ	ICB
6/2/10	Daily Bkgd/QC	Lab	0512/0614	1hr/30min	αβ	KM
6/2/10	1006005AB(27)	BTC	0950	1hr	αβ	KM
6/2/10	1006005AB(1)	BTC	0950	30min	αβ	KM
6/2/10	Std Cert	Lab	1044	15min	αβ	KM
6/2/10	1005084RA(1-3)	MP&A	1102	2hrs	Rαβ	ICB
6/2/10	1005060AB1(1)	MWRD	1204	30min	αβ	KM
6/2/10	1005084AB(2-8)	MPA	1407	2hrs	αβ	ICB
6/2/10	1005084AB(1)	MPA	1407	30min	αβ	ICB
6/3/10	Daily Bkgd/QC	Lab	0505/0612	1hr/30min	αβ	KM
6/3/10	10051400p(1-6)	Unitech	0905	10 min	NP	KM
6/3/10	1005027RA(1-5,8)	RTI Lab	1137	2hrs	Rαβ	KM
6/3/10	1005130RA(1-5,5)	SES	1137	2hrs	Rαβ	KM
6/3/10	1005128AB(1)	GRACE	1153	30min	αβ	ICB
6/3/10	1005053AB(1)	CT Dept Env.	1240	30min	αβ	ICB
6/3/10	1005053AB(2-9)	CT Dept. Env.	1341	4hrs	αβ	ICB
6/4/10	Daily Bkgd/QC	Lab	0506/0609	1hr/30min	αβ	KM
6/4/10	1005150RA(1-8)	Aecom	0935	2hrs	Rαβ	KM
6/4/10	1005133AB(2-6)	MPA	1103	2hrs	αβ	KM
6/4/10	1005134AB(2-14)	MPA	1420	2hrs	αβ	ICB
6/5/10	Weekly Bkgd	Lab	0250	8 hrs	αβ	ICB
6/7/10	Daily Bkgd/QC	Lab	0505/0610	1hr/30min	αβ	KM
6/7/10	1005135AB(2-15)	MPA	1018	2hrs	αβ	KM
6/7/10	1005126RA(5-7)	Grac Davison	1224	2hrs	Rαβ	KM
6/7/10	1006016AB(2-4)	MPA	1417	2hrs	αβ	ICB
6/7/10	1006016AB(1)	MPA	1418	30min	αβ	ICB

**SECTION VIII**  
**ANALYTICAL DATA (RADIUM-226)**























Eberline Services  
Oak Ridge Laboratory

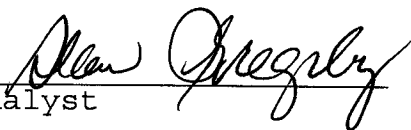
ALPHA SPECTROMETRY REPORT  
11-JUN-2010 08:43:46

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_C:C\_1006016A-RA\$01\_RA.CNF  
\*\*\*\*\*


BATCH ID: 1006016A-RA \* SAMPLE ID: 01  
SAMPLE DATE: 10-JUN-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: SPIKE \* DETECTOR NUMBER: 045  
ACQ DATE: 10-JUN-2010 18:11 \* AVERAGE EFFICIENCY: 19.86%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 100.00%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: MANUAL  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 11:49 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_045\_4JUN10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 2.00  
\*

\*\*\*\*\*  
NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	2389.66	0.34	100.0	3.189E+01	2.888E+00	1.431E-01
RN-222	5490.0	2225.49	0.51	99.9	2.972E+01	2.732E+00	1.594E-01
RA-226	4785.0	679.32	0.68	100.0	9.063E+00	1.169E+00	1.730E-01

\*\*\*\*\*  
  
Analyst

6/11/10  
Date

  
Reviewer

6/11/10  
Date

Spectrum : DKA100: [ALPHA,ALUSR.ARCHIVE.C]C\_1006016A-RA\$01\_RA.CNF;3

Title : 045

Sample Title: SPIKE

Start Time: 10-JUN-2010 18:11

Sample Time: 10-JUN-2010 00:00

Energy Offset: 3.46457E+03

Real Time : 0 02:50:00.40

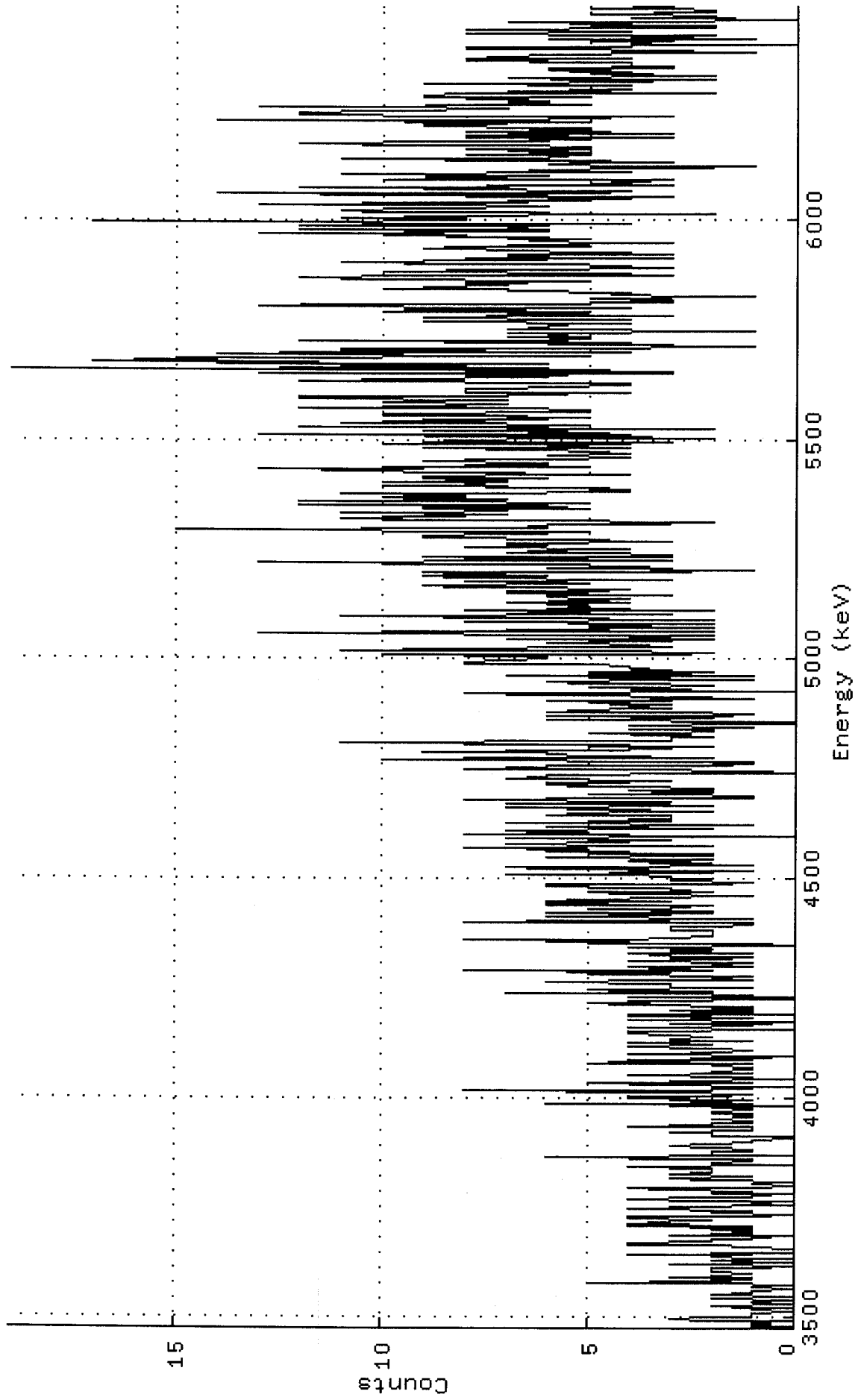
Sample ID : 01

Energy Slope : 3.12611E+00

Live Time : 0 02:50:00.00

Sample Type: RA

Energy Quad : -1.79643E-04



Channel Contents for ND\_AMS\_ARCHIVE\_C:C\_1006016A-RA\$01\_RA

Channel

1:	0	1	1	1	0	1	1	0	2	3	2	1	1	1
15:	0	0	1	0	1	2	0	1	1	0	2	0	0	2
29:	1	1	1	0	1	1	0	2	5	2	1	3	1	2
43:	1	1	2	2	2	0	0	2	3	0	2	0	1	2
57:	1	4	0	0	0	0	0	2	4	4	2	2	1	1
71:	0	3	1	1	2	1	1	4	1	4	3	3	2	4
85:	4	1	0	2	1	1	4	2	3	0	1	0	2	4
99:	2	1	1	0	2	1	3	4	1	0	1	1	0	2
113:	3	3	1	3	3	2	2	2	2	4	0	1	2	1
127:	1	2	6	0	2	2	2	1	1	2	3	3	2	1
141:	1	1	0	0	2	2	2	3	1	1	1	4	2	2
155:	1	1	2	2	1	1	2	1	2	1	1	2	0	6
169:	1	2	3	1	4	4	1	2	3	8	2	2	0	1
183:	3	5	1	3	0	2	1	4	1	1	2	1	1	1
197:	2	1	5	4	1	4	1	0	4	3	2	1	1	2
211:	4	4	2	4	1	3	3	2	2	3	4	4	4	0
225:	4	3	1	3	1	0	4	4	1	4	0	4	1	1
239:	3	1	2	1	4	5	2	4	0	4	0	2	2	7
253:	2	5	1	3	3	3	3	6	3	1	2	1	5	4
267:	3	8	2	3	4	1	2	1	4	4	2	1	3	3
281:	4	1	3	3	2	4	0	1	5	4	8	4	3	2
295:	2	2	2	2	3	3	3	2	1	1	8	5	1	1
309:	6	3	6	2	2	5	3	3	2	6	6	3	6	5
323:	3	2	1	4	5	2	3	3	4	6	6	2	1	3
337:	2	3	3	4	7	2	4	1	6	7	5	1	3	4
351:	3	2	6	6	2	5	2	6	5	5	8	2	4	7
365:	4	4	3	7	2	0	8	5	5	7	3	2	6	1
379:	1	7	3	4	3	3	3	6	5	4	2	5	6	7
393:	2	4	7	3	8	4	1	1	3	5	2	2	4	2
407:	4	5	6	4	6	3	7	6	6	6	2	0	1	4
421:	8	6	6	2	1	3	1	10	6	2	5	6	6	9
435:	5	3	4	2	8	4	4	4	3	3	3	2	3	5
449:	3	2	2	4	1	4	1	0	0	6	4	2	6	2
463:	1	3	6	5	4	3	4	3	4	5	3	6	1	3
477:	5	6	8	0	2	3	5	4	2	4	5	6	3	1
491:	5	1	7	3	2	5	3	4	4	4	5	8	8	7
505:	6	6	6	10	3	2	5	11	8	5	3	4	5	6
519:	3	7	2	4	2	3	13	7	2	7	2	5	5	2
533:	3	8	2	3	6	11	3	6	5	8	2	6	5	5
547:	6	4	7	5	4	5	6	6	3	7	7	5	4	7
561:	8	9	5	5	8	3	4	8	9	6	8	9	4	1
575:	6	3	4	6	7	13	5	3	7	9	3	3	5	7
589:	6	5	4	8	6	7	7	3	4	5	9	9	9	7
603:	5	5	15	6	7	6	6	4	2	7	9	9	9	7
617:	7	11	9	7	9	5	6	12	7	5	9	11	8	10
631:	8	8	11	8	4	5	4	5	10	7	8	7	10	10
645:	9	6	9	6	4	9	10	10	13	5	10	6	6	6
659:	9	7	6	4	6	6	4	5	5	6	9	4	6	4
673:	10	3	9	8	6	2	5	13	4	5	8	9	2	12
687:	7	5	9	11	9	6	9	5	8	10	10	5	5	5
701:	7	12	8	8	7	10	7	7	12	12	7	7	4	8
715:	8	8	7	6	4	4	4	12	11	10	6	8	8	3
729:	13	3	6	19	6	9	8	14	6	17	14	16	14	6
743:	5	14	11	4	11	11	6	1	6	3	5	12	6	5
757:	7	5	6	5	7	1	7	7	6	6	6	5	4	9
771:	4	5	9	6	3	7	5	10	9	4	6	13	11	7
785:	3	4	3	5	1	3	4	5	4	7	7	10	8	9
799:	7	7	8	5	11	10	12	9	3	5	9	10	7	3
813:	4	4	6	8	11	7	9	3	8	6	7	3	5	7
827:	6	9	8	5	7	3	5	6	7	5	7	10	8	9
841:	13	6	12	6	7	6	12	4	17	12	8	8	11	8
855:	5	2	10	11	11	9	9	6	9	13	8	5	7	4
869:	8	3	9	14	5	4	9	7	7	12	3	5	5	4
883:	3	10	8	6	7	11	4	7	6	4	3	1	4	6
897:	5	3	6	11	6	6	5	8	5	6	6	8	5	5
911:	7	9	12	8	7	5	8	3	8	6	3	6	8	5
925:	5	6	9	8	9	5	14	6	6	3	9	11	12	12
939:	10	10	7	10	13	5	5	7	6	8	8	5	9	9
953:	8	2	7	4	5	5	5	4	9	6	5	2	5	7
967:	2	2	5	4	5	6	3	6	3	4	4	4	5	8
981:	4	8	7	6	6	3	1	4	5	8	8	0	4	4
995:	3	4	6	1	4	2	4	8	4	4	8	3	2	2
1009:	5	4	7	4	0	3	4	2	4	5	2	2	2	3
1023:	0	0												



VMS Nuclide Identification Report V3.0 Generated 11-JUN-2010 08:43:45

Configuration : MCA0:[AMSCOUNT]00001E30\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : SPIKE  
 Sample date : 10-JUN-2010 00:00:00 Acquisition date : 10-JUN-2010 18:11:03  
 Sample ID : 01 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 045 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%  
 Energy tolerance : 150.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4717.90*	679222.26	410.61	370	81	10.9			RA-226	9.06
0	5292.92*	2225	0.00	605.97	513	175	6.0		RN-222	29.7
0	5813.53*	2390488.30	786.99	707	162	5.8			PO-218	31.9

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
11-JUN-2010 07:14:05

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_R:R\_1006016A-RA\$02\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1006016A-RA \* SAMPLE ID: 02  
SAMPLE DATE: 10-JUN-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: BLANK \* DETECTOR NUMBER: 046  
ACQ DATE: 10-JUN-2010 18:11 \* AVERAGE EFFICIENCY: 19.61%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 94.35%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 11:50 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_046\_4JUN10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 1.91  
\*

\*\*\*\*\*

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	3.14	0.68	100.0	4.499E-02	7.807E-02	1.774E-01
RN-222	5490.0	13.37	0.00	99.9	1.917E-01	1.455E-01	7.256E-02
RA-226	4785.0	3.31	0.51	100.0	4.741E-02	7.791E-02	1.634E-01

\*\*\*\*\*

KM  
Analyst  
6-11-10  
Date

Alan Gregory  
Reviewer  
6/11/10  
Date

Spectrum : DKR100: [ALPHA.ALUSR.ARCHIVE.R]R\_1006016A-RA\$02\_RA.CNF; 1

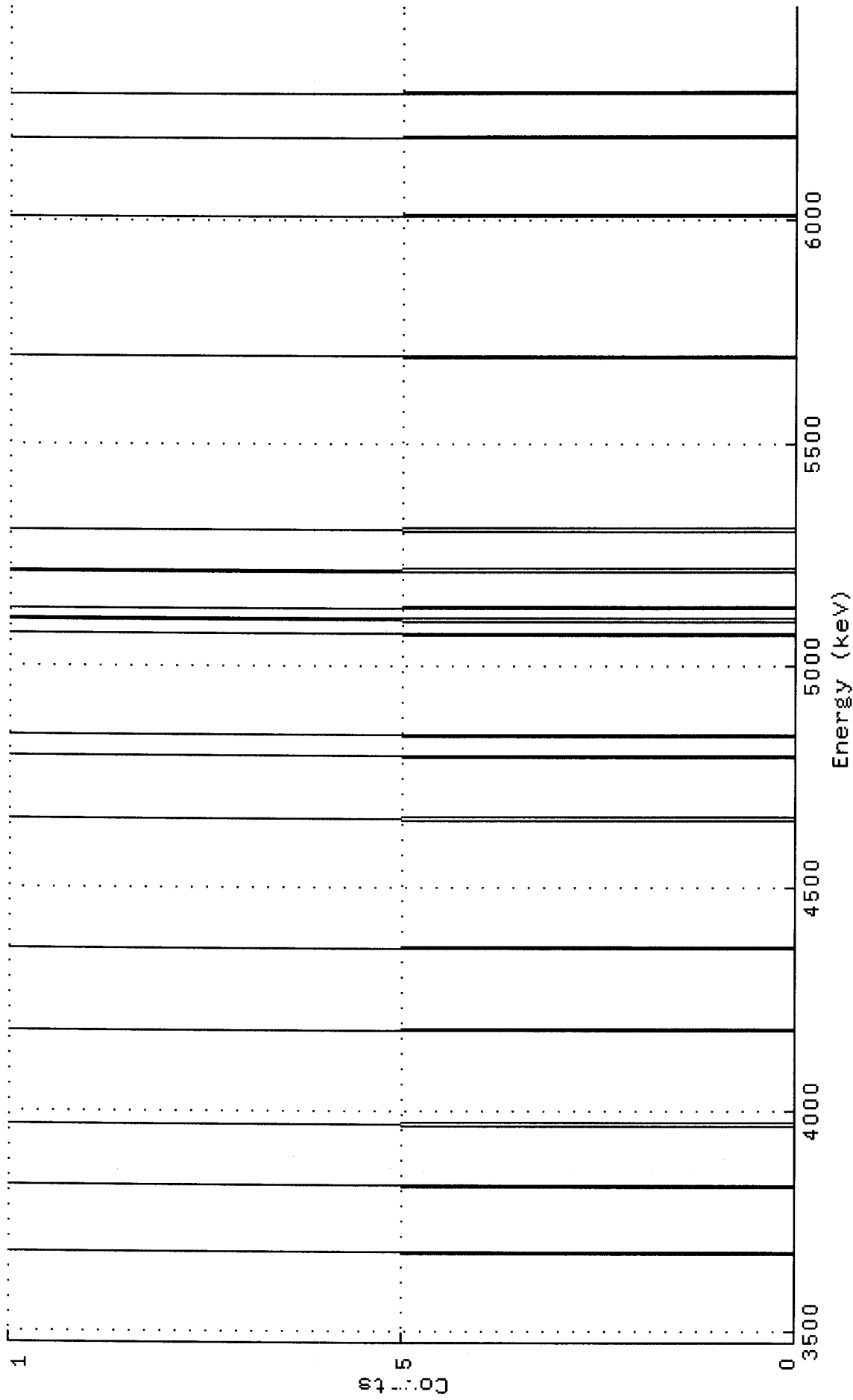
Title : 046

Sample Title: BLANK

Start Time: 10-JUN-2010 18:11 Sample Time: 10-JUN-2010 00:00 Energy Offset: 3.46469E+03

Real Time : 0 02:50:00.40 Sample ID : 02 Energy Slope : 3.10870E+00

Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.65968E-04



Channel Contents for ND\_AMS\_ARCHIVE\_R:R\_1006016A-RA\$02\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
407:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
435:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
533:	0	0	0	0	0	0	0	0	0	1	1	0	0	0
547:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	1	1	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
631:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0





VMS Nuclide Identification Report V3.0 Generated 11-JUN-2010 07:14:04

Configuration : MCA0: [AMSCOUNT] 00004C7E\$1  
 Analyses by : ROIPEAK V1.2, PEAKEFF V2.2, ENBACK V1.6, NID V3.3  
 Sample title : BLANK  
 Sample date : 10-JUN-2010 00:00:00 Acquisition date : 10-JUN-2010 18:11:18  
 Sample ID : 02 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 046 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4724.73*	3149.22	414.50	298	155164.2				RA-226	4.473E-02
0	5160.61*	13251.80	562.43	514	176 75.6				RN-222	0.181
0	5849.69*	3348.17	801.50	709	162173.4				PO-218	4.245E-02

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
11-JUN-2010 07:14:18

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1006016A-RA\$03\_RA.CNF  
\*\*\*\*\*

BATCH ID:	1006016A-RA	SAMPLE ID:	03
SAMPLE DATE:	25-MAY-2010 00:00	ALIQUOT:	9.900E-01 liter
SAMPLE TITLE:	MPA-WW-1	DETECTOR NUMBER:	047
ACQ DATE:	10-JUN-2010 18:11	AVERAGE EFFICIENCY:	17.92%
ELAPSED LIVE TIME:	10200.	RECOVERY:	100.00%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	WATER	LLD CONSTANT:	2.65
ENERGY CAL DATE:	4-JUN-2010 11:50	EFF CAL DATE:	17-APR-2010 13:09
BKG FILENAME:	B_047_4JUN10	BKG ELAPSED TIME:	60000.
		SAF:	2.31

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	16.00	0.17	100.0	2.390E-01	1.835E-01	1.576E-01
RN-222	5490.0	16.00	0.17	99.9	2.392E-01	1.836E-01	1.577E-01
RA-226	4785.0	36.79	0.17	100.0	5.495E-01	2.788E-01	1.576E-01

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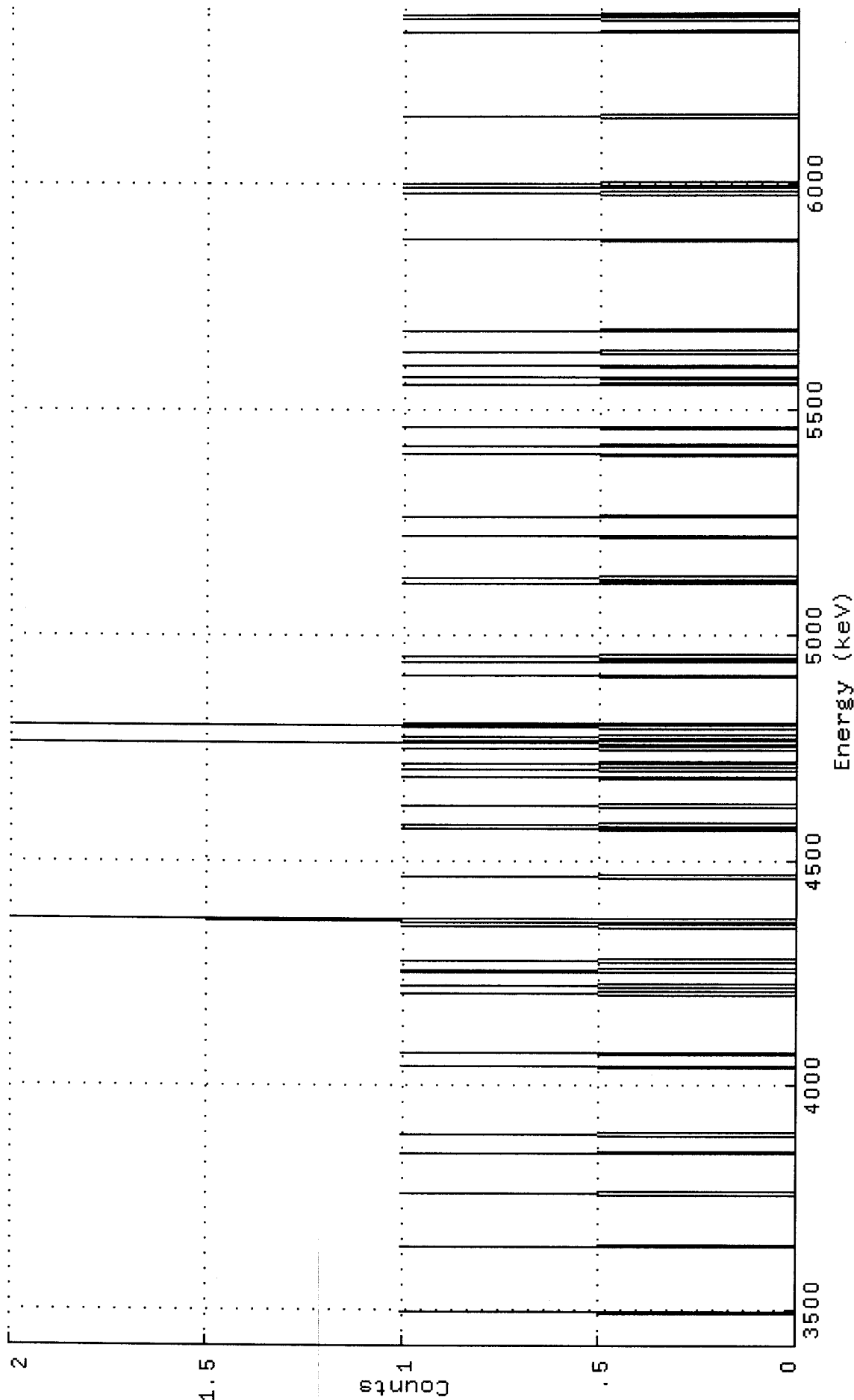
        KM          
Analyst

        6-11-10          
Date

        Alan Gregory          
Reviewer

        6/11/10          
Date

Spectrum : DKA100: [ALPHA,ALUSR.ARCHIVE.S]S\_1006016A-RA#03\_RA.CNF;1  
 Title : 047  
 Sample Title: MPA-WU-1  
 Start Time: 10-JUN-2010 18:11 Sample Time: 25-MAY-2010 00:00 Energy Offset: 3.41022E+03  
 Real Time : 0 02:50:00.30 Sample ID : 03 Energy Slope : 3.10096E+00  
 Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.93270E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1006016A-RA\$03\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
155:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
211:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	1	0	0	0	0	0	1
267:	0	0	0	0	0	0	0	0	0	1	1	0	0	0
281:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	1	0	0	1	1	2	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	1	0	0	1	1	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
407:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421:	1	0	0	0	0	0	1	0	0	0	0	1	0	0
435:	0	0	0	0	0	0	0	0	1	0	0	0	1	2
449:	0	0	0	1	0	0	0	0	0	0	1	0	2	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
505:	0	0	0	0	1	0	0	0	1	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	1	0	0	0	1	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
631:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	1	0	0	0	0	0	0	1	0	0	0
687:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
729:	1	0	0	0	0	0	0	0	0	1	0	0	0	0
743:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	1	0	0	0	0	0	1	0	0	0	0	1	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1009:	0	0	0	0	0	0	0	1	0	0	0	1	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0



VMS Nuclide Identification Report V3.0 Generated 11-JUN-2010 07:14:17

Configuration : MCA0:[AMSCOUNT]00004C7E\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : MPA-WW-1  
 Sample date : 25-MAY-2010 00:00:00 Acquisition date : 10-JUN-2010 18:11:32  
 Sample ID : 03 Sample quantity : 0.99000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 047 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.30 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4693.04*	37	44.87	424.94	317	158	50.2		RA-226	0.550
0	5284.26*	16378.32	629.00	629.00	537	179	76.4		RN-222	0.239
0	5818.68*	16452.74	818.43	818.43	735	165	76.4		PO-218	0.239

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
11-JUN-2010 07:14:28

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1006016A-RA\$04\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1006016A-RA \* SAMPLE ID: 04  
SAMPLE DATE: 25-MAY-2010 00:00 \* ALIQUOT: 9.900E-01 liter  
SAMPLE TITLE: MPA-WW-1 \* DETECTOR NUMBER: 048  
ACQ DATE: 10-JUN-2010 18:11 \* AVERAGE EFFICIENCY: 18.20%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 98.11%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 11:50 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_048\_4JUN10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 2.40  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	14.06	0.34	100.0	2.108E-01	1.770E-01	1.929E-01
RN-222	5490.0	20.24	1.36	99.9	3.036E-01	2.175E-01	2.906E-01
RA-226	4785.0	21.60	0.00	100.0	3.238E-01	2.170E-01	9.533E-02

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KM  
Analyst

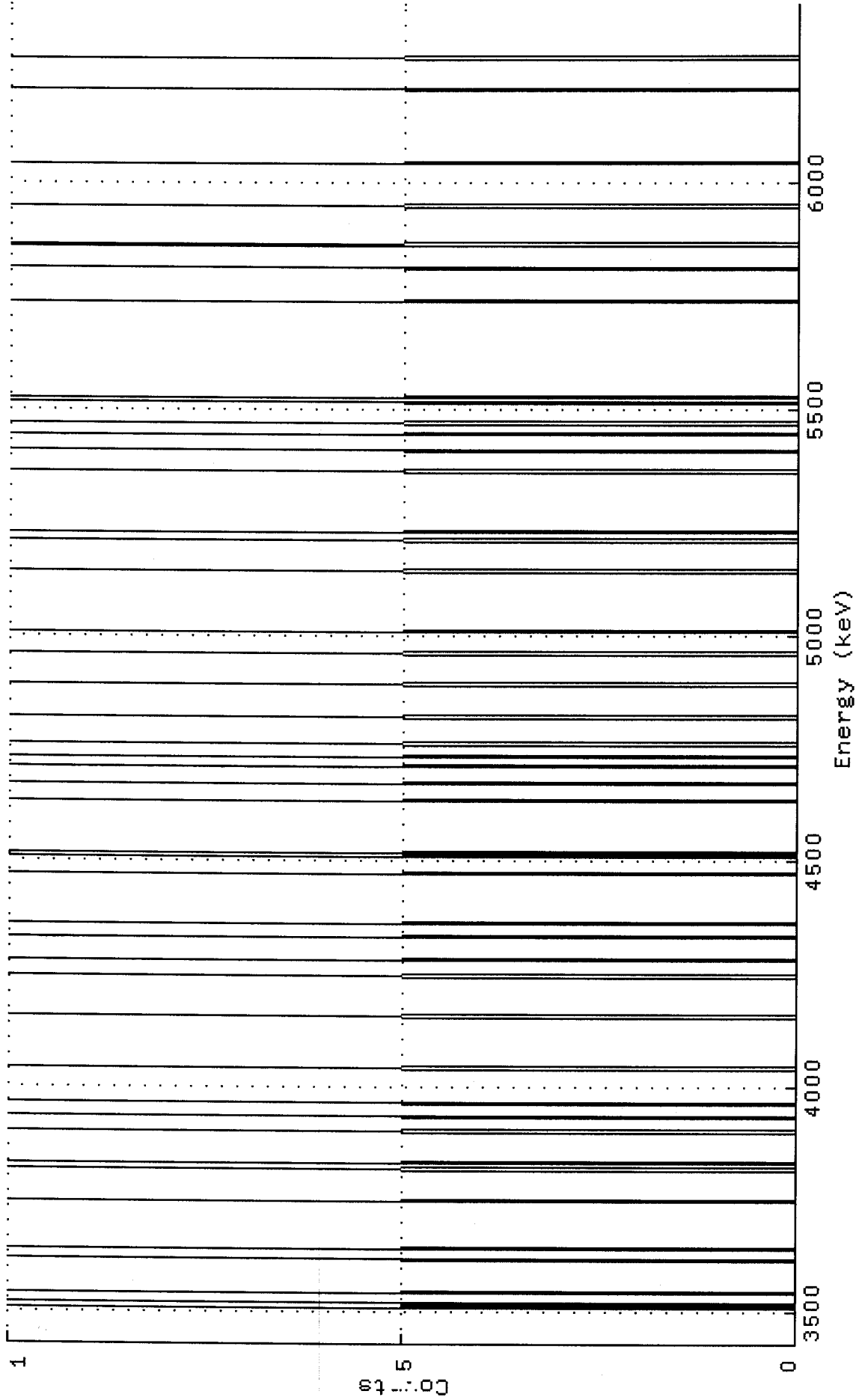
6-11-10  
Date

Alan Magley  
Reviewer

6/11/10  
Date



Spectrum : DKA100: [ALPHA,ALUSR,ARCHIVE,S]S\_1006016A-RA\$04\_RA.CNF;1  
 Title : 048  
 Sample Title: MPA-uw-1  
 Start Time: 10-JUN-2010 18:11 Sample Time: 25-MAY-2010 00:00 Energy Offset: 3.41704E+03  
 Real Time : 0 02:50:00.40 Sample ID : 04 Energy Slope : 3.06718E+00  
 Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.57153E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1006016A-RA\$04\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	1	0	0	1	0	0	0	0	0	0	0	1	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
71:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
169:	0	1	0	0	0	0	0	0	0	0	0	1	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
281:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
309:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
351:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
365:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
407:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
421:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
435:	0	0	0	1	0	0	0	0	0	0	0	0	0	1
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	1	0	0	0	0	0	1	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
631:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
673:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
687:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	1	0	0	0	1	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	1	1	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Eberline Services  
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions      Generated: 11-JUN-2010 07:14:23.28

Detector ID: 48	Acquisition Start: 10-JUN-2010 18:11:48.01
Live Time: 0 02:50:00.00	Real Time: 0 02:50:00.40
Batch Id: 1006016A-RA	Sample Id: 04
Sample Type: RA	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4647.19	9	0364.99	409.67	317	158	8.82E-04	33.3		
2	0	5366.25	9	0414.07	657.67	537	178	8.82E-04	33.3		
3	0	5876.51	6	0 0.00	837.83	734	164	5.88E-04	40.8		

Background Counts Within Peak Regions      Generated: 11-JUN-2010 07:14:26.60

Live Time: 0 16:40:00.00	Acquisition Start: 4-JUN-2010 15:35:44.01
	Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.04	0	0 0.00	395.50	317	158	0.00E+00	0.0		
2	0	5273.33	8	0353.27	625.50	537	178	1.33E-04	35.4		
3	0	5811.23	2	0107.52	815.50	734	164	3.33E-05	70.7		

Net Sample Counts Within Peak Regions      Generated: 11-JUN-2010 07:14:26.95

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4647.19*	22	0364.99	409.67	317	158	2.12E-03	33.3		
2	0	5366.25*	20	0414.07	657.67	537	178	1.98E-03	35.7		
3	0	5876.51*	14	0 0.00	837.83	734	164	1.38E-03	41.8		

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

Configuration : MCA0:[AMSCOUNT]00004C7E\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : MPA-WW-1  
 Sample date : 25-MAY-2010 00:00:00 Acquisition date : 10-JUN-2010 18:11:48  
 Sample ID : 04 Sample quantity : 0.99000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 048 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4647.19*	22364.99	409.67	317	158	66.7			RA-226	0.318
0	5366.25*	20414.07	657.67	537	178	71.3			RN-222	0.298
0	5876.51*	14	0.00	837.83	734	164	83.7		PO-218	0.207

Detector	Parameter	Flag	Filename
1	OFFLINE		
2	OFFLINE		
3	ALL	Passed	D_003_NONE
4	ALL	Passed	D_004_NONE
5	ALL	Passed	D_005_NONE
6	OFFLINE		
7	OFFLINE		
8	OFFLINE		
9	OFFLINE		
10	OFFLINE		
11	ALL	Passed	D_011_NONE
12	OFFLINE		
13	ALL	Passed	D_013_NONE
14	OFFLINE		
15	ALL	Passed	D_015_NONE
16	OFFLINE		
17	OFFLINE		
18	ALL	Passed	D_018_NONE
19	ALL	Passed	D_019_NONE
20	OFFLINE		
21	ALL	Passed	D_021_NONE
22	OFFLINE		
23	ALL	Passed	D_023_NONE
24	OFFLINE		
25	OFFLINE		
26	OFFLINE		
27	ALL	Passed	D_027_NONE
28	OFFLINE		
29	OFFLINE		
30	ALL	Passed	D_030_NONE
31	OFFLINE		
32	OFFLINE		
33	ALL	Passed	D_033_NONE
34	ALL	Passed	D_034_NONE
35	ALL	Passed	D_035_NONE
36	ALL	Passed	D_036_NONE
37	ALL	Passed	D_037_NONE
38	ALL	Passed	D_038_NONE
39	ALL	Passed	D_039_NONE
40	ALL	Passed	D_040_NONE
41	OFFLINE		
42	ALL	Passed	D_042_NONE
43	ALL	Passed	D_043_NONE
44	OFFLINE		
45	ALL	Passed	D_045_NONE
46	ALL	Passed	D_046_NONE
47	ALL	Passed	D_047_NONE
48	ALL	Passed	D_048_NONE

APPROVAL DATE: 6/10/10

APPROVAL TIME: \_\_\_\_\_

APPROVED BY: KM

PROCEDURE # \_\_\_\_\_

**SECTION IX**  
**ANALYTICAL DATA (RADIUM-228)**

























(R)  
6/16/10  
105

Detector ID	Sample ID	Alpha	Beta	Count	Time	Voltage	TOD
A1	1006016-01	16	1362	120		1400	6/16/10 11:47
A2	1006016-02	14	148	120		1400	6/16/10 11:47
A3	1006016-03	13	197	120		1400	6/16/10 11:47
A4	1006016-04	11	175	120		1400	6/16/10 11:47

GPC Detector Report  
(ALL Efficiencies)

KAM  
6/16/10

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	6/16/2010	0.2506	P	0.2375	0.2504	0.2633
LB4110A - A2	Alpha	11/18/2007	6/16/2010	0.2171	P	0.1960	0.2208	0.2455
LB4110A - A3	Alpha	11/18/2007	6/16/2010	0.2146	P	0.2049	0.2178	0.2307
LB4110A - A4	Alpha	11/18/2007	6/16/2010	0.2269	P	0.2157	0.2289	0.2421
LB4110A - B1	Alpha	11/18/2007	6/16/2010	0.2293	P	0.2176	0.2316	0.2456
LB4110A - B2	Alpha	11/18/2007	6/16/2010	0.2255	P	0.2138	0.2276	0.2415
LB4110A - B3	Alpha	11/18/2007	6/16/2010	0.2368	P	0.2267	0.2423	0.2579
LB4110A - B4	Alpha	11/18/2007	6/16/2010	0.2334	P	0.2283	0.2409	0.2536
LB4110A - C1	Alpha	11/18/2007	6/16/2010	0.2213	P	0.2115	0.2225	0.2335
LB4110A - C2	Alpha	11/18/2007	6/16/2010	0.2156	P	0.2022	0.2269	0.2516
LB4110A - C3	Alpha	11/18/2007	6/16/2010	0.2462	P	0.2360	0.2494	0.2628
LB4110A - C4	Alpha	11/18/2007	6/16/2010	0.2160	F	0.2174	0.2319	0.2464
LB4110A - D1	Alpha	11/18/2007	6/16/2010	0.2381	P	0.2251	0.2397	0.2544
LB4110A - D2	Alpha	11/18/2007	6/16/2010	0.2599	P	0.2481	0.2632	0.2783
LB4110A - D3	Alpha	11/18/2007	6/16/2010	0.2602	P	0.2513	0.2688	0.2863
LB4110A - D4	Alpha	11/18/2007	6/16/2010	0.2008	P	0.1921	0.2103	0.2285
LB4110R - A1	Alpha	11/24/2006	6/16/2010	0.2274	P	0.2064	0.2424	0.2783
LB4110R - A2	Alpha	11/24/2006	6/16/2010	0.2219	P	0.1928	0.2243	0.2558
LB4110R - A3	Alpha	11/24/2006	6/16/2010	0.2236	P	0.1986	0.2283	0.2580
LB4110R - A4	Alpha	11/24/2006	6/16/2010	0.2400	P	0.2142	0.2469	0.2797
LB4110R - B1	Alpha	11/24/2006	6/16/2010	0.2253	P	0.1940	0.2305	0.2670
LB4110R - B2	Alpha	11/24/2006	6/16/2010	0.2114	P	0.1860	0.2213	0.2566
LB4110R - B3	Alpha	11/24/2006	6/16/2010	0.2413	P	0.2094	0.2477	0.2859
LB4110R - B4	Alpha	11/24/2006	6/16/2010	0.2283	P	0.2006	0.2376	0.2746
LB4110R - C1	Alpha	11/24/2006	6/16/2010	0.2174	P	0.1837	0.2173	0.2509
LB4110R - C2	Alpha	11/24/2006	6/16/2010	0.2236	P	0.1948	0.2266	0.2584
LB4110R - C3	Alpha	11/24/2006	6/16/2010	0.2404	P	0.2042	0.2425	0.2809
LB4110R - C4	Alpha	11/24/2006	6/16/2010	0.2173	P	0.1990	0.2313	0.2636
LB4110R - D1	Alpha	11/24/2006	6/16/2010	0.2273	P	0.1944	0.2296	0.2647
LB4110R - D2	Alpha	11/24/2006	6/16/2010	0.2610	P	0.2247	0.2592	0.2936
LB4110R - D3	Alpha	11/24/2006	6/16/2010	0.2501	P	0.2223	0.2548	0.2872
LB4110R - D4	Alpha	11/24/2006	6/16/2010	0.1975	P	0.1812	0.2115	0.2419
LB5100 - 1	Alpha	7/10/2006	10/26/2007	0.3368	P	0.3332	0.3455	0.3578

GPC Detector Report  
(ALL Efficiencies)

KM  
6/16/10

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	6/16/2010	0.5849	P	0.5582	0.5898	0.6214
LB4110A - A2	Beta	11/18/2007	6/16/2010	0.5185	P	0.4658	0.5228	0.5797
LB4110A - A3	Beta	11/18/2007	6/16/2010	0.5216	P	0.4935	0.5267	0.5599
LB4110A - A4	Beta	11/18/2007	6/16/2010	0.5487	P	0.5202	0.5489	0.5777
LB4110A - B1	Beta	11/18/2007	6/16/2010	0.5297	P	0.5115	0.5422	0.5728
LB4110A - B2	Beta	11/18/2007	6/16/2010	0.5261	P	0.5099	0.5395	0.5690
LB4110A - B3	Beta	11/18/2007	6/16/2010	0.5334	P	0.5023	0.5528	0.6032
LB4110A - B4	Beta	11/18/2007	6/16/2010	0.5396	W	0.5348	0.5601	0.5855
LB4110A - C1	Beta	11/18/2007	6/16/2010	0.4981	P	0.4834	0.5060	0.5285
LB4110A - C2	Beta	11/18/2007	6/16/2010	0.4796	P	0.4356	0.5087	0.5819
LB4110A - C3	Beta	11/18/2007	6/16/2010	0.5805	P	0.5622	0.5874	0.6125
LB4110A - C4	Beta	11/18/2007	6/16/2010	0.4962	F	0.5045	0.5399	0.5753
LB4110A - D1	Beta	11/18/2007	6/16/2010	0.5544	P	0.5342	0.5724	0.6105
LB4110A - D2	Beta	11/18/2007	6/16/2010	0.5766	P	0.5521	0.6160	0.6799
LB4110A - D3	Beta	11/18/2007	6/16/2010	0.6104	P	0.5815	0.6262	0.6708
LB4110A - D4	Beta	11/18/2007	6/16/2010	0.4658	W	0.4619	0.5015	0.5411
LB4110R - A1	Beta	11/24/2006	6/16/2010	0.5581	P	0.4784	0.5760	0.6736
LB4110R - A2	Beta	11/24/2006	6/16/2010	0.4906	P	0.4099	0.5129	0.6160
LB4110R - A3	Beta	11/24/2006	6/16/2010	0.5394	P	0.4562	0.5486	0.6411
LB4110R - A4	Beta	11/24/2006	6/16/2010	0.5836	P	0.4951	0.5910	0.6869
LB4110R - B1	Beta	11/24/2006	6/16/2010	0.5446	P	0.4512	0.5519	0.6527
LB4110R - B2	Beta	11/24/2006	6/16/2010	0.5165	P	0.4302	0.5291	0.6280
LB4110R - B3	Beta	11/24/2006	6/16/2010	0.5788	P	0.4927	0.5962	0.6996
LB4110R - B4	Beta	11/24/2006	6/16/2010	0.5460	P	0.4636	0.5607	0.6578
LB4110R - C1	Beta	11/24/2006	6/16/2010	0.5101	P	0.4131	0.5065	0.6000
LB4110R - C2	Beta	11/24/2006	6/16/2010	0.5378	P	0.4373	0.5316	0.6260
LB4110R - C3	Beta	11/24/2006	6/16/2010	0.5753	P	0.4639	0.5741	0.6844
LB4110R - C4	Beta	11/24/2006	6/16/2010	0.5186	P	0.4468	0.5439	0.6410
LB4110R - D1	Beta	11/24/2006	6/16/2010	0.5426	P	0.4500	0.5463	0.6427
LB4110R - D2	Beta	11/24/2006	6/16/2010	0.6128	P	0.5062	0.6092	0.7121
LB4110R - D3	Beta	11/24/2006	6/16/2010	0.5883	P	0.4927	0.5908	0.6889
LB4110R - D4	Beta	11/24/2006	6/16/2010	0.4733	P	0.4078	0.5016	0.5953
LB5100 - 1	Beta	7/10/2006	10/26/2007	0.4428	F	0.4555	0.4731	0.4906

GPC Detector Report  
(ALL Backgrounds)

YAM  
6/16/10

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	6/16/2010	1.17E-01	P	-5.51E-02	7.01E-02	1.95E-01
LB4110A - A2	Alpha	11/18/2007	6/16/2010	8.33E-02	P	-5.69E-02	1.00E-01	2.58E-01
LB4110A - A3	Alpha	11/18/2007	6/16/2010	6.67E-02	P	-4.90E-02	5.08E-02	1.51E-01
LB4110A - A4	Alpha	11/18/2007	6/16/2010	1.00E-01	P	-6.11E-02	5.93E-02	1.80E-01
LB4110A - B1	Alpha	11/18/2007	6/16/2010	3.33E-02	P	-1.33E-01	8.33E-02	3.00E-01
LB4110A - B2	Alpha	11/18/2007	6/16/2010	1.67E-02	P	-6.65E-02	7.71E-02	2.21E-01
LB4110A - B3	Alpha	11/18/2007	6/16/2010	0.00E+00	P	-5.48E-02	4.48E-02	1.44E-01
LB4110A - B4	Alpha	11/18/2007	6/16/2010	5.00E-02	P	-4.57E-02	5.39E-02	1.53E-01
LB4110A - C1	Alpha	11/18/2007	6/16/2010	1.00E-01	P	-6.34E-02	8.16E-02	2.27E-01
LB4110A - C2	Alpha	11/18/2007	6/16/2010	1.67E-02	P	-2.02E-01	1.22E-01	4.46E-01
LB4110A - C3	Alpha	11/18/2007	6/16/2010	1.67E-02	P	-2.45E-01	1.21E-01	4.88E-01
LB4110A - C4	Alpha	11/18/2007	6/16/2010	8.33E-02	P	-7.01E-02	7.84E-02	2.27E-01
LB4110A - D1	Alpha	11/18/2007	6/16/2010	8.33E-02	P	-4.56E-02	8.38E-02	2.13E-01
LB4110A - D2	Alpha	11/18/2007	6/16/2010	6.67E-02	P	-6.85E-02	6.91E-02	2.07E-01
LB4110A - D3	Alpha	11/18/2007	6/16/2010	1.00E-01	P	-3.64E-02	6.27E-02	1.62E-01
LB4110A - D4	Alpha	11/18/2007	6/16/2010	3.33E-02	P	-5.88E-02	7.83E-02	2.15E-01
LB4110R - A1	Alpha	11/24/2006	6/16/2010	5.00E-02	P	-1.11E-01	8.38E-02	2.78E-01
LB4110R - A2	Alpha	11/24/2006	6/16/2010	5.00E-02	P	-9.78E-02	9.64E-02	2.91E-01
LB4110R - A3	Alpha	11/24/2006	6/16/2010	1.67E-02	P	-8.97E-02	7.72E-02	2.44E-01
LB4110R - A4	Alpha	11/24/2006	6/16/2010	1.17E-01	P	-5.06E-02	8.31E-02	2.17E-01
LB4110R - B1	Alpha	11/24/2006	6/16/2010	3.33E-02	P	-1.17E-01	6.84E-02	2.53E-01
LB4110R - B2	Alpha	11/24/2006	6/16/2010	1.67E-02	P	-7.83E-02	7.66E-02	2.32E-01
LB4110R - B3	Alpha	11/24/2006	6/16/2010	1.67E-02	P	-7.65E-02	7.14E-02	2.19E-01
LB4110R - B4	Alpha	11/24/2006	6/16/2010	8.33E-02	P	-6.48E-02	8.50E-02	2.35E-01
LB4110R - C1	Alpha	11/24/2006	6/16/2010	3.33E-02	P	-8.45E-02	8.83E-02	2.61E-01
LB4110R - C2	Alpha	11/24/2006	6/16/2010	6.67E-02	P	-8.32E-02	8.61E-02	2.55E-01
LB4110R - C3	Alpha	11/24/2006	6/16/2010	5.00E-02	P	-1.04E-01	9.59E-02	2.96E-01
LB4110R - C4	Alpha	11/24/2006	6/16/2010	1.67E-02	P	-7.23E-02	9.25E-02	2.57E-01
LB4110R - D1	Alpha	11/24/2006	6/16/2010	6.67E-02	P	-9.12E-02	8.66E-02	2.64E-01
LB4110R - D2	Alpha	11/24/2006	6/16/2010	6.67E-02	P	-6.14E-02	8.94E-02	2.40E-01
LB4110R - D3	Alpha	11/24/2006	6/16/2010	6.67E-02	P	-5.95E-02	7.78E-02	2.15E-01
LB4110R - D4	Alpha	11/24/2006	6/16/2010	6.67E-02	P	-5.25E-02	9.38E-02	2.40E-01
LB5100 - 1	Alpha	7/10/2006	10/26/2007	5.00E-02	P	-1.56E-02	9.58E-02	2.07E-01

GPC Detector Report  
(ALL Backgrounds)

LM  
6/16/10

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	6/16/2010	1.15E+00	P	-7.67E+00	2.70E+00	1.31E+01
LB4110A - A2	Beta	11/18/2007	6/16/2010	1.13E+00	P	-5.71E-02	1.58E+00	3.21E+00
LB4110A - A3	Beta	11/18/2007	6/16/2010	1.38E+00	P	3.88E-01	1.29E+00	2.19E+00
LB4110A - A4	Beta	11/18/2007	6/16/2010	1.48E+00	P	4.73E-01	1.71E+00	2.94E+00
LB4110A - B1	Beta	11/18/2007	6/16/2010	1.15E+00	P	-8.52E+00	3.92E+00	1.64E+01
LB4110A - B2	Beta	11/18/2007	6/16/2010	1.18E+00	P	6.56E-02	1.48E+00	2.90E+00
LB4110A - B3	Beta	11/18/2007	6/16/2010	1.43E+00	P	1.23E-01	1.48E+00	2.84E+00
LB4110A - B4	Beta	11/18/2007	6/16/2010	1.47E+00	P	-4.91E-02	1.42E+00	2.89E+00
LB4110A - C1	Beta	11/18/2007	6/16/2010	1.23E+00	P	-7.54E+00	3.08E+00	1.37E+01
LB4110A - C2	Beta	11/18/2007	6/16/2010	1.10E+00	P	3.30E-01	1.42E+00	2.52E+00
LB4110A - C3	Beta	11/18/2007	6/16/2010	1.35E+00	P	4.53E-01	1.48E+00	2.52E+00
LB4110A - C4	Beta	11/18/2007	6/16/2010	1.60E+00	P	-1.27E+00	2.12E+00	5.52E+00
LB4110A - D1	Beta	11/18/2007	6/16/2010	2.02E+00	P	-3.91E+00	3.03E+00	9.98E+00
LB4110A - D2	Beta	11/18/2007	6/16/2010	1.73E+00	P	-1.32E+00	1.76E+00	4.84E+00
LB4110A - D3	Beta	11/18/2007	6/16/2010	5.42E+00	P	-2.56E-01	4.11E+00	8.47E+00
LB4110A - D4	Beta	11/18/2007	6/16/2010	1.10E+00	P	-9.04E-01	1.56E+00	4.03E+00
LB4110R - A1	Beta	11/24/2006	6/16/2010	1.75E+00	P	-6.13E+01	2.77E+00	6.69E+01
LB4110R - A2	Beta	11/24/2006	6/16/2010	1.15E+00	P	-6.16E+01	2.50E+00	6.66E+01
LB4110R - A3	Beta	11/24/2006	6/16/2010	1.08E+00	P	-6.10E+01	4.12E+00	6.93E+01
LB4110R - A4	Beta	11/24/2006	6/16/2010	1.35E+00	P	-6.15E+01	2.64E+00	6.68E+01
LB4110R - B1	Beta	11/24/2006	6/16/2010	1.30E+00	P	-6.46E+01	2.74E+00	7.01E+01
LB4110R - B2	Beta	11/24/2006	6/16/2010	1.35E+00	P	-6.45E+01	2.81E+00	7.02E+01
LB4110R - B3	Beta	11/24/2006	6/16/2010	1.33E+00	P	-6.39E+01	3.89E+00	7.17E+01
LB4110R - B4	Beta	11/24/2006	6/16/2010	1.23E+00	P	-6.48E+01	2.58E+00	6.99E+01
LB4110R - C1	Beta	11/24/2006	6/16/2010	1.13E+00	P	-6.38E+01	4.56E+00	7.29E+01
LB4110R - C2	Beta	11/24/2006	6/16/2010	1.93E+00	P	-6.46E+01	3.55E+00	7.17E+01
LB4110R - C3	Beta	11/24/2006	6/16/2010	1.25E+00	P	-6.49E+01	3.56E+00	7.20E+01
LB4110R - C4	Beta	11/24/2006	6/16/2010	1.42E+00	P	-7.32E+01	4.17E+00	8.15E+01
LB4110R - D1	Beta	11/24/2006	6/16/2010	7.52E+00	P	-6.17E+01	6.58E+00	7.49E+01
LB4110R - D2	Beta	11/24/2006	6/16/2010	8.17E-01	P	-6.56E+01	2.67E+00	7.09E+01
LB4110R - D3	Beta	11/24/2006	6/16/2010	3.02E+00	P	-6.94E+01	7.53E+00	8.45E+01
LB4110R - D4	Beta	11/24/2006	6/16/2010	1.57E+00	P	-6.52E+01	3.08E+00	7.14E+01
LB5100 - 1	Beta	7/10/2006	10/26/2007	4.52E+00	F	-3.19E-01	1.58E+00	3.48E+00

**SECTION X**

**BARIUM-133 ANALYTICAL TRACER DATA**

ICB  
6/15/10

VAX/VMS Peak Search Report Generated 10-JUN-2010 17:11:32.99

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100601601\_GE5\_BAFIL\_150211.CN  
 Analyses by : PEAK V16.9 PEAKEFF V2.2  
 Client ID : SPIKE  
 Deposition Date :  
 Sample Date : 10-JUN-2010 00:00:00 Acquisition date : 10-JUN-2010 16:55:21  
 Sample ID : 1006016-01 Sample Quantity : 1.00000E+00 filter  
 Sample type : FILTER Sample Geometry : 0  
 Detector name : GE5 Detector Geometry: BAFIL  
 Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:54.31 5.7%  
 Start channel : 25 End channel : 4096  
 Sensitivity : 3.00000 Gaussian : 10.00000  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	6.84	23	27	0.74	71.16	54	22	2.54E-02	62.1	
2	2	17.93	32	10	0.64	177.87	168	22	3.60E-02	28.0	1.74E+00
3	2	18.83	18	3	0.48	186.51	168	22	2.01E-02	24.4	
4	0	21.15	102	35	0.75	208.81	201	20	1.13E-01	18.7	
5	3	24.87	43	0	0.67	244.58	233	24	4.75E-02	17.7	1.93E+00
6	3	25.76	23	0	0.77	253.10	233	24	2.59E-02	19.2	
7	0	30.91	2448	104	0.76	302.66	289	30	2.72E+00	2.4	
8	6	34.95	368	41	0.51	341.48	332	27	4.08E-01	6.7	1.24E+00
9	6	35.71	187	30	0.89	348.82	332	27	2.08E-01	14.6	
10	0	51.97	33	23	0.96	505.12	496	14	3.66E-02	31.9	
11	0	53.28	71	6	0.49	517.77	511	17	7.93E-02	13.5	
12	0	61.76	296	51	0.64	599.35	588	26	3.29E-01	8.1	
13	1	65.85	142	7	0.76	638.66	627	30	1.57E-01	9.9	2.33E+00
14	1	66.72	53	7	0.69	647.00	627	30	5.93E-02	23.8	
15	0	77.12	41	12	0.57	746.99	736	19	4.57E-02	23.5	
16	3	79.49	76	0	0.95	769.84	760	38	8.43E-02	13.9	1.47E+00
17	3	81.01	949	7	0.65	784.46	760	38	1.05E+00	3.3	
18	0	111.83	216	79	0.97	1080.81	1068	27	2.40E-01	11.9	
19	0	115.99	44	25	0.85	1120.80	1112	15	4.89E-02	26.1	
20	0	158.93	15	16	0.41	1533.75	1521	19	1.69E-02	59.1	
21	0	276.26	66	0	0.76	2662.00	2648	25	7.33E-02	12.3	
22	0	302.65	142	6	0.71	2915.77	2903	23	1.58E-01	9.0	
23	0	307.38	14	11	0.63	2961.23	2952	15	1.58E-02	47.7	
24	1	333.25	82	0	0.97	3210.00	3197	27	9.15E-02	9.9	2.45E+00
25	1	333.77	10	0	0.97	3215.00	3197	27	1.10E-02	77.8	
26	0	355.80	486	0	0.96	3426.90	3412	28	5.40E-01	4.5	
27	0	383.56	100	10	0.49	3693.82	3680	27	1.11E-01	12.0	
28	1	386.39	70	27	1.01	3721.00	3707	28	7.75E-02	23.6	2.92E+00
29	1	387.22	82	13	1.01	3729.00	3707	28	9.10E-02	14.5	
30	0	390.74	25	6	0.82	3762.83	3748	23	2.72E-02	30.5	

Total number of lines in spectrum 30  
 Number of unidentified lines 25  
 Number of lines tentatively identified by NID 5 16.67%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	4.729E+02	4.729E+02	0.776E+02	16.41	
Total Activity :			4.729E+02	4.729E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	8.165E+02	8.165E+02	1.390E+02	17.03	
Total Activity :			8.165E+02	8.165E+02			

Grand Total Activity : 1.289E+03 1.289E+03

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit



Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	4.729E+02	4.729E+02	16.41	OK
	302.84	17.80	4.662E+00	5.147E+02	5.148E+02	26.18	OK
	356.01	60.00	4.450E+00	5.467E+02	5.467E+02	16.53	OK

Final Mean for 3 Valid Peaks = 4.729E+02 +/- 7.762E+01 ( 16.41%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	8.165E+02	8.165E+02	17.03	OK

Final Mean for 1 Valid Peaks = 8.165E+02 +/- 1.390E+02 ( 17.03%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.729E+02	7.762E+01	1.255E+01	1.817E+00	37.696
TH-234	8.165E+02	1.390E+02	4.039E+01	1.455E+00	20.216

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

Nuclide	Key-Line Activity (pCi/filter)	K.L. Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-6.263E-01		4.769E+00	8.622E+00	8.498E-01	-0.073
CD-109	5.008E+01		7.382E+01	1.448E+02	9.306E+00	0.346
PA-231	-2.796E-01		1.028E+00	1.820E+00	1.880E-02	-0.154
PA-234	4.711E+00	+	1.771E+00	2.302E+00	2.377E-02	2.047
NP-237	6.816E-02		2.168E+01	3.922E+01	2.456E+00	0.002
AM-241	6.261E+00		5.146E+00	9.282E+00	2.963E-01	0.675

ICB  
6/10/10

VAX/VMS Peak Search Report Generated 10-JUN-2010 17:31:34.16

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100601602\_GE5\_BAFIL\_150215.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : BLANK  
Deposition Date :  
Sample Date : 10-JUN-2010 00:00:00 Acquisition date : 10-JUN-2010 17:15:17  
Sample ID : 1006016-02 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:55.66 5.8%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	20.93	137	12	0.59	206.65	194	22	1.52E-01	10.6	
2	0	30.92	2512	69	0.75	302.71	290	29	2.79E+00	2.2	
3	2	35.05	568	23	0.76	342.45	329	32	6.32E-01	4.5	3.46E+00
4	2	35.88	120	18	0.77	350.47	329	32	1.34E-01	21.1	
5	0	53.24	36	28	0.60	517.38	510	18	4.04E-02	33.1	
6	0	61.68	279	31	0.83	598.50	586	26	3.11E-01	7.5	
7	1	65.96	115	30	0.76	639.66	626	39	1.27E-01	14.6	1.23E+00
8	1	66.82	48	23	0.69	648.00	626	39	5.33E-02	31.0	
9	0	77.48	9	24	0.12	750.52	737	18	1.00E-02	113.9	
10	3	79.61	52	17	0.95	771.00	758	48	5.76E-02	37.2	1.22E+00
11	3	81.04	851	15	0.62	784.72	758	48	9.45E-01	3.6	
12	0	84.56	17	26	0.10	818.55	807	22	1.87E-02	69.6	
13	0	111.92	199	49	0.76	1081.62	1071	22	2.21E-01	10.7	
14	0	116.22	76	21	0.77	1123.03	1111	26	8.42E-02	18.2	
15	0	160.63	43	12	0.62	1550.11	1541	22	4.83E-02	22.5	
16	0	276.35	60	8	0.84	2662.87	2645	27	6.64E-02	15.9	
17	0	302.63	127	0	0.57	2915.61	2904	23	1.41E-01	8.9	
18	1	333.35	65	3	0.97	3211.00	3198	26	7.21E-02	14.2	8.16E-01
19	1	333.77	10	3	0.97	3215.00	3198	26	1.10E-02	85.3	
20	9	355.81	426	7	0.99	3426.98	3412	35	4.74E-01	5.1	4.49E-01
21	9	358.29	38	0	1.75	3450.78	3412	35	4.21E-02	3.7	
22	2	383.47	112	3	1.00	3692.90	3680	27	1.24E-01	9.4	1.93E+00
23	2	384.19	15	3	0.81	3699.84	3680	27	1.72E-02	59.0	
24	0	386.67	190	8	0.95	3723.75	3709	30	2.11E-01	7.9	

Summary of Nuclide Activity  
Sample ID : 1006016-02

Page : 2  
Acquisition date : 10-JUN-2010 17:15:17

Total number of lines in spectrum 24  
Number of unidentified lines 18  
Number of lines tentatively identified by NID 6 25.00%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
BA-133	10.50Y	1.00	4.237E+02	4.238E+02	0.707E+02	16.67	
NP-237	2.14E+06Y	1.00	2.450E+01	2.450E+01	3.414E+01	139.35	
Total Activity :			4.482E+02	4.483E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
TH-234	4.47E+09Y	1.00	7.705E+02	7.705E+02	1.230E+02	15.97	
Total Activity :			7.705E+02	7.705E+02			

Grand Total Activity : 1.219E+03 1.219E+03

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	4.237E+02	4.238E+02	16.67	OK
	302.84	17.80	4.662E+00	4.596E+02	4.596E+02	25.98	OK
	356.01	60.00	4.450E+00	4.795E+02	4.796E+02	17.19	OK

Final Mean for 3 Valid Peaks = 4.238E+02 +/- 7.065E+01 ( 16.67%)

NP-237	86.50	12.60*	1.637E+01	2.450E+01	2.450E+01	139.35	OK
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Final Mean for 1 Valid Peaks = 2.450E+01 +/- 3.414E+01 (139.35%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	7.705E+02	7.705E+02	15.97	OK

Final Mean for 1 Valid Peaks = 7.705E+02 +/- 1.230E+02 ( 15.97%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.238E+02	7.065E+01	1.187E+01	1.718E+00	35.713
TH-234	7.705E+02	1.230E+02	8.813E+01	3.175E+00	8.743
NP-237	2.450E+01	3.414E+01	3.755E+01	2.351E+00	0.652

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

Nuclide	Key-Line Activity (pCi/filter)	K.L. Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	1.668E+00		5.491E+00	1.031E+01	1.016E+00	0.162
CD-109	9.446E+00		7.262E+01	1.340E+02	8.612E+00	0.071
PA-231	-4.011E-01		1.031E+00	1.796E+00	1.855E-02	-0.223
PA-234	6.333E+00	+	1.365E+00	2.246E+00	2.320E-02	2.820
AM-241	1.801E+00		5.075E+00	8.213E+00	2.622E-01	0.219

1013  
6/15/10

VAX/VMS Peak Search Report Generated 10-JUN-2010 17:48:24.09

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100601603\_GE5\_BAFIL\_150216.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : MPA-WW-1  
Deposition Date :  
Sample Date : 10-JUN-2010 00:00:00 Acquisition date : 10-JUN-2010 17:32:09  
Sample ID : 1006016-03 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:55.45 5.8%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	8.78	17	8	1.27	89.86	80	16	1.92E-02	43.8	
2	0	21.09	97	25	0.58	208.19	197	20	1.08E-01	16.2	
3	0	30.89	2282	54	0.74	302.42	289	27	2.54E+00	2.3	
4	1	35.07	557	24	0.69	342.61	332	30	6.18E-01	4.7	2.53E+00
5	1	35.83	144	18	0.70	349.99	332	30	1.60E-01	17.4	
6	4	52.89	36	8	0.67	514.00	510	13	4.05E-02	15.7	5.16E+00
7	4	53.44	30	4	0.44	519.31	510	13	3.29E-02	22.9	
8	0	61.63	271	28	0.80	598.09	582	29	3.01E-01	7.7	
9	1	65.58	55	13	0.69	636.00	629	27	6.07E-02	21.9	5.84E+00
10	1	66.20	88	16	0.69	642.00	629	27	9.73E-02	16.4	
11	0	70.28	18	21	0.50	681.28	672	18	1.99E-02	56.5	
12	2	79.67	47	24	0.86	771.56	758	36	5.24E-02	46.5	1.32E+00
13	2	81.00	927	16	0.67	784.37	758	36	1.03E+00	3.4	
14	2	111.43	40	13	0.75	1076.93	1070	23	4.42E-02	35.3	3.97E+00
15	2	111.96	223	18	0.76	1082.00	1070	23	2.47E-01	7.6	
16	0	160.71	26	9	0.13	1550.85	1541	18	2.91E-02	30.1	
17	0	276.12	37	12	0.82	2660.62	2645	23	4.12E-02	25.6	
18	0	302.69	151	5	0.97	2916.18	2903	24	1.67E-01	8.8	
19	1	333.14	44	5	1.07	3208.93	3199	23	4.88E-02	21.0	6.26E+00
20	1	333.87	82	3	0.97	3216.00	3199	23	9.08E-02	9.4	
21	5	355.54	194	9	0.78	3424.32	3411	28	2.16E-01	11.0	1.34E+00
22	5	355.97	219	12	0.88	3428.45	3411	28	2.44E-01	9.7	
23	0	383.57	72	7	0.98	3693.94	3680	23	8.03E-02	14.1	
24	1	386.49	129	19	1.11	3721.97	3708	27	1.44E-01	11.8	9.60E-01
25	1	387.03	46	14	0.91	3727.15	3708	27	5.09E-02	28.4	
26	0	390.91	20	11	0.54	3764.46	3750	24	2.17E-02	41.9	

Total number of lines in spectrum 26  
 Number of unidentified lines 20  
 Number of lines tentatively identified by NID 6 23.08%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	4.617E+02	4.618E+02	0.760E+02	16.45	
Total Activity :			4.617E+02	4.618E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
PA-231	3.28E+04Y	1.00	1.233E+00	1.233E+00	1.081E+00	87.68	
PA-234	4.47E+09Y	1.00	4.493E+00	4.493E+00	1.466E+00	32.63	
TH-234	4.47E+09Y	1.00	7.471E+02	7.471E+02	1.223E+02	16.38	
Total Activity :			7.528E+02	7.528E+02			

Grand Total Activity : 1.214E+03 1.215E+03

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit



Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	4.617E+02	4.618E+02	16.45	OK
	302.84	17.80	4.662E+00	5.449E+02	5.450E+02	25.82	OK
	356.01	60.00	4.450E+00	2.468E+02	2.468E+02	23.76	OK

Final Mean for 3 Valid Peaks = 4.618E+02 +/- 7.598E+01 ( 16.45%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
PA-231	9.28	42.00*	1.000E+02	1.233E+00	1.233E+00	87.68	OK
	10.11	20.20	1.000E+02	2.563E+00	2.563E+00	87.68	OK
	283.67	1.60	4.787E+00	-----	Line Not Found	-----	Absent
	302.67	2.30	4.663E+00	4.216E+03	4.216E+03	23.76	OK

Final Mean for 3 Valid Peaks = 1.233E+00 +/- 1.081E+00 ( 87.68%)

PA-234	9.89	89.00	1.000E+02	5.817E-01	5.817E-01	87.68	OK
	21.72	64.90*	1.000E+02	4.493E+00	4.493E+00	32.63	OK
	37.93	23.75	8.878E+01	-----	Line Not Found	-----	Absent
	131.42	20.40	9.027E+00	-----	Line Not Found	-----	Absent

Final Mean for 2 Valid Peaks = 4.493E+00 +/- 1.466E+00 ( 32.63%)

TH-234	63.29	3.80*	2.867E+01	7.471E+02	7.471E+02	16.38	OK
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Final Mean for 1 Valid Peaks = 7.471E+02 +/- 1.223E+02 ( 16.38%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.618E+02	7.598E+01	1.086E+01	1.573E+00	42.512
PA-231	1.233E+00	1.081E+00	1.906E+00	1.969E-02	0.647
PA-234	4.493E+00	1.466E+00	1.061E+00	1.096E-02	4.235
TH-234	7.471E+02	1.223E+02	8.813E+01	3.175E+00	8.477

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

Nuclide	Key-Line Activity (pCi/filter)	K.L. Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-2.160E+00		5.175E+00	8.929E+00	8.800E-01	-0.242
CD-109	5.702E+01		6.864E+01	1.386E+02	8.911E+00	0.411
NP-237	-1.790E+01		2.097E+01	3.344E+01	2.094E+00	-0.535
AM-241	2.274E+00		4.993E+00	8.218E+00	2.624E-01	0.277

10/5  
6/10/10

VAX/VMS Peak Search Report Generated 10-JUN-2010 18:05:12.53

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100601604\_GE5\_BAFIL\_150217.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : MPA-WW-1  
Deposition Date :  
Sample Date : 10-JUN-2010 00:00:00 Acquisition date : 10-JUN-2010 17:48:57  
Sample ID : 1006016-04 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:53.22 5.6%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	17.91	15	17	0.33	177.62	164	17	1.68E-02	67.5	
2	0	21.14	103	27	0.55	208.71	200	20	1.14E-01	17.0	
3	0	30.91	2272	133	0.70	302.63	288	29	2.52E+00	2.5	
4	5	34.97	424	30	0.59	341.71	330	29	4.71E-01	5.9	1.23E+00
5	5	35.80	159	15	0.73	349.70	330	29	1.77E-01	15.8	
6	0	53.16	65	19	0.66	516.61	506	19	7.20E-02	18.5	
7	0	61.78	275	60	0.90	599.50	588	25	3.05E-01	8.9	
8	0	66.15	102	59	0.64	641.51	629	25	1.13E-01	20.2	
9	1	79.58	74	15	0.78	770.69	756	39	8.27E-02	21.8	1.74E+00
10	1	81.01	877	10	0.69	784.39	756	39	9.74E-01	3.5	
11	0	100.91	16	7	0.13	975.74	968	14	1.79E-02	39.0	
12	2	110.89	25	28	0.92	1071.71	1067	27	2.76E-02	30.8	1.41E+01
13	2	111.47	177	50	0.86	1077.38	1067	27	1.96E-01	11.5	
14	2	112.19	104	28	0.68	1084.27	1067	27	1.16E-01	18.7	
15	0	115.95	34	30	0.80	1120.45	1112	16	3.79E-02	35.0	
16	0	133.94	28	6	0.96	1293.42	1282	19	3.07E-02	26.6	
17	1	275.74	44	2	0.92	2657.00	2648	22	4.90E-02	19.2	1.13E+00
18	1	276.68	42	2	0.92	2666.00	2648	22	4.71E-02	12.0	
19	0	302.72	132	5	0.97	2916.43	2903	23	1.47E-01	9.4	
20	1	333.35	48	15	0.97	3211.00	3196	25	5.34E-02	22.2	1.29E+00
21	1	333.98	13	9	0.97	3217.00	3196	25	1.41E-02	48.7	
22	1	355.19	21	4	0.98	3421.00	3412	27	2.29E-02	88.3	1.31E+00
23	1	355.81	371	12	0.92	3426.95	3412	27	4.12E-01	5.8	
24	5	383.27	152	7	1.11	3690.97	3678	26	1.69E-01	6.5	8.87E+00
25	5	383.58	10	5	1.01	3694.00	3678	26	1.14E-02	90.7	
26	5	384.19	25	2	0.59	3699.91	3678	26	2.81E-02	23.9	
27	1	386.18	66	4	1.01	3719.00	3709	28	7.28E-02	18.0	3.45E+00
28	1	387.01	164	2	1.01	3727.00	3709	28	1.82E-01	7.9	
29	1	390.65	17	8	1.01	3762.00	3750	23	1.88E-02	44.9	1.12E+00
30	1	391.28	31	5	1.01	3768.00	3750	23	3.40E-02	18.4	

Total number of lines in spectrum 30  
 Number of unidentified lines 25  
 Number of lines tentatively identified by NID 5 16.67%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma	Flags
			Uncorrected	Decay Corr				
BA-133	10.50Y	1.00	4.367E+02	4.368E+02	0.724E+02	16.57		
Total Activity :			4.367E+02	4.368E+02				

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma	Flags
			Uncorrected	Decay Corr				
TH-234	4.47E+09Y	1.00	7.575E+02	7.575E+02	1.406E+02	18.56		
Total Activity :			7.575E+02	7.575E+02				

Grand Total Activity : 1.194E+03 1.194E+03

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	4.367E+02	4.368E+02	16.57	OK
	302.84	17.80	4.662E+00	4.785E+02	4.786E+02	26.67	OK
	356.01	60.00	4.450E+00	4.172E+02	4.173E+02	18.10	OK

Final Mean for 3 Valid Peaks = 4.368E+02 +/- 7.237E+01 ( 16.57%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	7.575E+02	7.575E+02	18.56	OK

Final Mean for 1 Valid Peaks = 7.575E+02 +/- 1.406E+02 ( 18.56%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.368E+02	7.237E+01	1.321E+01	1.914E+00	33.054
TH-234	7.575E+02	1.406E+02	1.095E+02	3.946E+00	6.918

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

Nuclide	Key-Line Activity (pCi/filter)	K.L. Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	2.629E-01		4.900E+00	9.057E+00	8.927E-01	0.029
CD-109	1.018E+01		6.637E+01	1.242E+02	7.985E+00	0.082
PA-231	-9.267E-01		1.166E+00	1.916E+00	1.979E-02	-0.484
PA-234	4.752E+00	+	1.628E+00	2.257E+00	2.331E-02	2.106
NP-237	-1.008E+00		2.068E+01	3.733E+01	2.338E+00	-0.027
AM-241	3.337E+00		5.231E+00	8.764E+00	2.798E-01	0.381

**SECTION XI**  
**ANALYTICAL DATA (GROSS ALPHA/BETA)**

































(R)  
6/7/10  
105

Sheet1

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
D2	1006016-01	5387	9903	30	1400	6/7/10 14:47

6/7/10  
JCB

Sheet1

Detector ID	Sample ID	Alpha	Beta	Count	Time	Voltage	TOD
B1	1006016-02	6	118	120		1400	6/7/10 16:17
B2	1006016-03	11	206	120		1400	6/7/10 16:17
B3	1006016-04	22	198	120		1400	6/7/10 16:17

GPC Detector Report  
(ALL Backgrounds)

AM  
6/7/10

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	6/7/2010	5.00E-02	P	-5.51E-02	7.03E-02	1.96E-01
LB4110A - A2	Alpha	11/18/2007	6/7/2010	1.67E-02	P	-5.69E-02	1.01E-01	2.58E-01
LB4110A - A3	Alpha	11/18/2007	6/7/2010	5.00E-02	P	-4.90E-02	5.05E-02	1.50E-01
LB4110A - A4	Alpha	11/18/2007	6/7/2010	3.33E-02	P	-6.17E-02	5.91E-02	1.80E-01
LB4110A - B1	Alpha	11/18/2007	6/7/2010	1.00E-01	P	-1.34E-01	8.36E-02	3.01E-01
LB4110A - B2	Alpha	11/18/2007	6/7/2010	1.67E-02	P	-6.59E-02	7.76E-02	2.21E-01
LB4110A - B3	Alpha	11/18/2007	6/7/2010	0.00E+00	P	-5.44E-02	4.47E-02	1.44E-01
LB4110A - B4	Alpha	11/18/2007	6/7/2010	3.33E-02	P	-4.58E-02	5.35E-02	1.53E-01
LB4110A - C1	Alpha	11/18/2007	6/7/2010	5.00E-02	P	-6.37E-02	8.18E-02	2.27E-01
LB4110A - C2	Alpha	11/18/2007	6/7/2010	5.00E-02	P	-2.03E-01	1.23E-01	4.48E-01
LB4110A - C3	Alpha	11/18/2007	6/7/2010	1.67E-02	P	-2.46E-01	1.22E-01	4.90E-01
LB4110A - C4	Alpha	11/18/2007	6/7/2010	6.67E-02	P	-7.08E-02	7.84E-02	2.28E-01
LB4110A - D1	Alpha	11/18/2007	6/7/2010	3.33E-02	P	-4.59E-02	8.40E-02	2.14E-01
LB4110A - D2	Alpha	11/18/2007	6/7/2010	1.67E-02	P	-6.86E-02	6.94E-02	2.07E-01
LB4110A - D3	Alpha	11/18/2007	6/7/2010	3.33E-02	P	-3.66E-02	6.27E-02	1.62E-01
LB4110A - D4	Alpha	11/18/2007	6/7/2010	1.00E-01	P	-5.91E-02	7.83E-02	2.16E-01
LB4110R - A1	Alpha	11/24/2006	6/7/2010	5.00E-02	P	-1.11E-01	8.40E-02	2.79E-01
LB4110R - A2	Alpha	11/24/2006	6/7/2010	5.00E-02	P	-9.80E-02	9.67E-02	2.91E-01
LB4110R - A3	Alpha	11/24/2006	6/7/2010	1.67E-02	P	-8.99E-02	7.74E-02	2.45E-01
LB4110R - A4	Alpha	11/24/2006	6/7/2010	1.67E-02	P	-5.09E-02	8.31E-02	2.17E-01
LB4110R - B1	Alpha	11/24/2006	6/7/2010	1.67E-02	P	-1.17E-01	6.87E-02	2.54E-01
LB4110R - B2	Alpha	11/24/2006	6/7/2010	5.00E-02	P	-7.84E-02	7.68E-02	2.32E-01
LB4110R - B3	Alpha	11/24/2006	6/7/2010	6.67E-02	P	-7.64E-02	7.16E-02	2.20E-01
LB4110R - B4	Alpha	11/24/2006	6/7/2010	3.33E-02	P	-6.53E-02	8.50E-02	2.35E-01
LB4110R - C1	Alpha	11/24/2006	6/7/2010	3.33E-02	P	-8.44E-02	8.87E-02	2.62E-01
LB4110R - C2	Alpha	11/24/2006	6/7/2010	1.67E-02	P	-8.35E-02	8.63E-02	2.56E-01
LB4110R - C3	Alpha	11/24/2006	6/7/2010	3.33E-02	P	-1.04E-01	9.63E-02	2.97E-01
LB4110R - C4	Alpha	11/24/2006	6/7/2010	0.00E+00	P	-7.24E-02	9.25E-02	2.57E-01
LB4110R - D1	Alpha	11/24/2006	6/7/2010	5.00E-02	P	-9.12E-02	8.69E-02	2.65E-01
LB4110R - D2	Alpha	11/24/2006	6/7/2010	5.00E-02	P	-6.18E-02	8.95E-02	2.41E-01
LB4110R - D3	Alpha	11/24/2006	6/7/2010	8.33E-02	P	-5.96E-02	7.79E-02	2.15E-01
LB4110R - D4	Alpha	11/24/2006	6/7/2010	3.33E-02	P	-5.27E-02	9.39E-02	2.41E-01
LB5100 - 1	Alpha	7/10/2006	10/26/2007	5.00E-02	P	-1.56E-02	9.58E-02	2.07E-01



GPC Detector Report  
(ALL Backgrounds)

*MA  
6/7/10*

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PPW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	6/7/2010	1.28E+00	P	-7.70E+00	2.71E+00	1.31E+01
LB4110A - A2	Beta	11/18/2007	6/7/2010	1.33E+00	P	-5.93E-02	1.58E+00	3.22E+00
LB4110A - A3	Beta	11/18/2007	6/7/2010	1.23E+00	P	3.85E-01	1.29E+00	2.20E+00
LB4110A - A4	Beta	11/18/2007	6/7/2010	1.87E+00	P	4.72E-01	1.71E+00	2.95E+00
LB4110A - B1	Beta	11/18/2007	6/7/2010	1.43E+00	P	-8.54E+00	3.94E+00	1.64E+01
LB4110A - B2	Beta	11/18/2007	6/7/2010	8.00E-01	P	6.25E-02	1.49E+00	2.91E+00
LB4110A - B3	Beta	11/18/2007	6/7/2010	1.30E+00	P	1.19E-01	1.49E+00	2.85E+00
LB4110A - B4	Beta	11/18/2007	6/7/2010	1.23E+00	P	-5.54E-02	1.42E+00	2.90E+00
LB4110A - C1	Beta	11/18/2007	6/7/2010	1.08E+00	P	-7.57E+00	3.10E+00	1.38E+01
LB4110A - C2	Beta	11/18/2007	6/7/2010	1.17E+00	P	3.30E-01	1.43E+00	2.52E+00
LB4110A - C3	Beta	11/18/2007	6/7/2010	1.40E+00	P	4.49E-01	1.48E+00	2.52E+00
LB4110A - C4	Beta	11/18/2007	6/7/2010	1.72E+00	P	-1.28E+00	2.13E+00	5.54E+00
LB4110A - D1	Beta	11/18/2007	6/7/2010	2.17E+00	P	-3.93E+00	3.04E+00	1.00E+01
LB4110A - D2	Beta	11/18/2007	6/7/2010	1.22E+00	P	-1.33E+00	1.76E+00	4.85E+00
LB4110A - D3	Beta	11/18/2007	6/7/2010	4.67E+00	P	-2.79E-01	4.10E+00	8.48E+00
LB4110A - D4	Beta	11/18/2007	6/7/2010	1.18E+00	P	-9.13E-01	1.57E+00	4.05E+00
LB4110R - A1	Beta	11/24/2006	6/7/2010	1.03E+00	P	-6.16E+01	2.78E+00	6.71E+01
LB4110R - A2	Beta	11/24/2006	6/7/2010	9.67E-01	P	-6.19E+01	2.51E+00	6.69E+01
LB4110R - A3	Beta	11/24/2006	6/7/2010	1.23E+00	P	-6.12E+01	4.15E+00	6.95E+01
LB4110R - A4	Beta	11/24/2006	6/7/2010	1.17E+00	P	-6.17E+01	2.65E+00	6.70E+01
LB4110R - B1	Beta	11/24/2006	6/7/2010	9.67E-01	P	-6.49E+01	2.75E+00	7.04E+01
LB4110R - B2	Beta	11/24/2006	6/7/2010	1.18E+00	P	-6.48E+01	2.82E+00	7.04E+01
LB4110R - B3	Beta	11/24/2006	6/7/2010	1.30E+00	P	-6.41E+01	3.91E+00	7.20E+01
LB4110R - B4	Beta	11/24/2006	6/7/2010	9.33E-01	P	-6.50E+01	2.60E+00	7.02E+01
LB4110R - C1	Beta	11/24/2006	6/7/2010	1.02E+00	P	-6.40E+01	4.59E+00	7.32E+01
LB4110R - C2	Beta	11/24/2006	6/7/2010	1.78E+00	P	-6.48E+01	3.57E+00	7.19E+01
LB4110R - C3	Beta	11/24/2006	6/7/2010	1.20E+00	P	-6.51E+01	3.58E+00	7.23E+01
LB4110R - C4	Beta	11/24/2006	6/7/2010	1.52E+00	P	-7.34E+01	4.19E+00	8.18E+01
LB4110R - D1	Beta	11/24/2006	6/7/2010	7.73E+00	P	-6.20E+01	6.57E+00	7.51E+01
LB4110R - D2	Beta	11/24/2006	6/7/2010	1.05E+00	P	-6.59E+01	2.68E+00	7.12E+01
LB4110R - D3	Beta	11/24/2006	6/7/2010	3.43E+00	P	-6.97E+01	7.56E+00	8.48E+01
LB4110R - D4	Beta	11/24/2006	6/7/2010	1.02E+00	P	-6.54E+01	3.09E+00	7.16E+01
LB5100 - 1	Beta	7/10/2006	10/26/2007	4.52E+00	F	-3.19E-01	1.58E+00	3.48E+00

GPC Detector Report  
(ALL Efficiencies)

MM  
6/7/10

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	6/7/2010	0.2461	P	0.2376	0.2505	0.2634
LB4110A - A2	Alpha	11/18/2007	6/7/2010	0.2167	P	0.1959	0.2208	0.2457
LB4110A - A3	Alpha	11/18/2007	6/7/2010	0.2154	P	0.2049	0.2178	0.2308
LB4110A - A4	Alpha	11/18/2007	6/7/2010	0.2266	P	0.2156	0.2289	0.2421
LB4110A - B1	Alpha	11/18/2007	6/7/2010	0.2253	P	0.2177	0.2317	0.2456
LB4110A - B2	Alpha	11/18/2007	6/7/2010	0.2268	P	0.2139	0.2277	0.2415
LB4110A - B3	Alpha	11/18/2007	6/7/2010	0.2435	P	0.2267	0.2423	0.2580
LB4110A - B4	Alpha	11/18/2007	6/7/2010	0.2307	W	0.2284	0.2410	0.2536
LB4110A - C1	Alpha	11/18/2007	6/7/2010	0.2195	P	0.2116	0.2226	0.2335
LB4110A - C2	Alpha	11/18/2007	6/7/2010	0.2257	P	0.2022	0.2270	0.2517
LB4110A - C3	Alpha	11/18/2007	6/7/2010	0.2490	P	0.2360	0.2494	0.2628
LB4110A - C4	Alpha	11/18/2007	6/7/2010	0.2337	P	0.2179	0.2320	0.2462
LB4110A - D1	Alpha	11/18/2007	6/7/2010	0.2365	P	0.2252	0.2398	0.2544
LB4110A - D2	Alpha	11/18/2007	6/7/2010	0.2549	P	0.2481	0.2632	0.2784
LB4110A - D3	Alpha	11/18/2007	6/7/2010	0.2640	P	0.2514	0.2689	0.2863
LB4110A - D4	Alpha	11/18/2007	6/7/2010	0.2002	P	0.1924	0.2104	0.2284
LB4110R - A1	Alpha	11/24/2006	6/7/2010	0.2292	P	0.2065	0.2424	0.2784
LB4110R - A2	Alpha	11/24/2006	6/7/2010	0.2246	P	0.1928	0.2243	0.2559
LB4110R - A3	Alpha	11/24/2006	6/7/2010	0.2228	P	0.1986	0.2283	0.2581
LB4110R - A4	Alpha	11/24/2006	6/7/2010	0.2403	P	0.2141	0.2470	0.2798
LB4110R - B1	Alpha	11/24/2006	6/7/2010	0.2328	P	0.1939	0.2306	0.2672
LB4110R - B2	Alpha	11/24/2006	6/7/2010	0.2118	P	0.1860	0.2213	0.2567
LB4110R - B3	Alpha	11/24/2006	6/7/2010	0.2369	P	0.2094	0.2477	0.2861
LB4110R - B4	Alpha	11/24/2006	6/7/2010	0.2345	P	0.2006	0.2377	0.2747
LB4110R - C1	Alpha	11/24/2006	6/7/2010	0.2161	P	0.1836	0.2173	0.2510
LB4110R - C2	Alpha	11/24/2006	6/7/2010	0.2198	P	0.1947	0.2266	0.2585
LB4110R - C3	Alpha	11/24/2006	6/7/2010	0.2399	P	0.2041	0.2426	0.2810
LB4110R - C4	Alpha	11/24/2006	6/7/2010	0.2191	P	0.1991	0.2314	0.2637
LB4110R - D1	Alpha	11/24/2006	6/7/2010	0.2256	P	0.1944	0.2296	0.2649
LB4110R - D2	Alpha	11/24/2006	6/7/2010	0.2590	P	0.2246	0.2592	0.2938
LB4110R - D3	Alpha	11/24/2006	6/7/2010	0.2501	P	0.2223	0.2548	0.2874
LB4110R - D4	Alpha	11/24/2006	6/7/2010	0.1974	P	0.1813	0.2116	0.2419
LB5100 - 1	Alpha	7/10/2006	10/26/2007	0.3368	P	0.3332	0.3455	0.3578

GPC Detector Report  
(ALL Efficiencies)

*MM*  
*6/7/10*

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	6/7/2010	0.5793	P	0.5582	0.5898	0.6215
LB4110A - A2	Beta	11/18/2007	6/7/2010	0.5123	P	0.4657	0.5229	0.5800
LB4110A - A3	Beta	11/18/2007	6/7/2010	0.5285	P	0.4935	0.5268	0.5600
LB4110A - A4	Beta	11/18/2007	6/7/2010	0.5445	P	0.5202	0.5490	0.5778
LB4110A - B1	Beta	11/18/2007	6/7/2010	0.5276	P	0.5118	0.5423	0.5729
LB4110A - B2	Beta	11/18/2007	6/7/2010	0.5344	P	0.5101	0.5396	0.5691
LB4110A - B3	Beta	11/18/2007	6/7/2010	0.5455	P	0.5023	0.5529	0.6035
LB4110A - B4	Beta	11/18/2007	6/7/2010	0.5425	P	0.5352	0.5603	0.5854
LB4110A - C1	Beta	11/18/2007	6/7/2010	0.4927	P	0.4836	0.5061	0.5285
LB4110A - C2	Beta	11/18/2007	6/7/2010	0.4917	P	0.4358	0.5090	0.5822
LB4110A - C3	Beta	11/18/2007	6/7/2010	0.5882	P	0.5622	0.5874	0.6126
LB4110A - C4	Beta	11/18/2007	6/7/2010	0.5225	P	0.5058	0.5402	0.5746
LB4110A - D1	Beta	11/18/2007	6/7/2010	0.5433	W	0.5346	0.5726	0.6105
LB4110A - D2	Beta	11/18/2007	6/7/2010	0.5732	P	0.5529	0.6164	0.6798
LB4110A - D3	Beta	11/18/2007	6/7/2010	0.6033	P	0.5818	0.6264	0.6709
LB4110A - D4	Beta	11/18/2007	6/7/2010	0.4580	F	0.4635	0.5019	0.5403
LB4110R - A1	Beta	11/24/2006	6/7/2010	0.5579	P	0.4783	0.5761	0.6740
LB4110R - A2	Beta	11/24/2006	6/7/2010	0.4875	P	0.4099	0.5132	0.6164
LB4110R - A3	Beta	11/24/2006	6/7/2010	0.5379	P	0.4560	0.5487	0.6415
LB4110R - A4	Beta	11/24/2006	6/7/2010	0.5853	P	0.4949	0.5911	0.6873
LB4110R - B1	Beta	11/24/2006	6/7/2010	0.5449	P	0.4509	0.5520	0.6531
LB4110R - B2	Beta	11/24/2006	6/7/2010	0.5174	P	0.4299	0.5292	0.6284
LB4110R - B3	Beta	11/24/2006	6/7/2010	0.5801	P	0.4925	0.5963	0.7001
LB4110R - B4	Beta	11/24/2006	6/7/2010	0.5473	P	0.4635	0.5608	0.6582
LB4110R - C1	Beta	11/24/2006	6/7/2010	0.5080	P	0.4128	0.5066	0.6004
LB4110R - C2	Beta	11/24/2006	6/7/2010	0.5331	P	0.4370	0.5316	0.6263
LB4110R - C3	Beta	11/24/2006	6/7/2010	0.5659	P	0.4635	0.5742	0.6848
LB4110R - C4	Beta	11/24/2006	6/7/2010	0.5181	P	0.4467	0.5440	0.6414
LB4110R - D1	Beta	11/24/2006	6/7/2010	0.5506	P	0.4497	0.5464	0.6430
LB4110R - D2	Beta	11/24/2006	6/7/2010	0.6081	P	0.5058	0.6091	0.7125
LB4110R - D3	Beta	11/24/2006	6/7/2010	0.5956	P	0.4923	0.5908	0.6893
LB4110R - D4	Beta	11/24/2006	6/7/2010	0.4784	P	0.4078	0.5018	0.5957
LB5100 - 1	Beta	7/10/2006	10/26/2007	0.4428	F	0.4555	0.4731	0.4906

**MICHAEL PISANI & ASSOCIATES**

**07-47 East White Lake**

**STANDARD LEVEL IV  
REPORT OF ANALYSIS**

**WORK ORDER #10-05133-OR**

**June 15, 2010**

**EBERLINE ANALYTICAL/OAK RIDGE LABORATORY  
OAK RIDGE, TN**

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# STANDARD OPERATING PROCEDURE

Sample Receiving

MP-001, Rev. 10  
Effective: 4/27/09  
Page 13 of 13

## Eberline Services – Oak Ridge Laboratory, LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Services Work Order # 10 051 33

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		5/26/10	KF	Sample Log-In
		6-9-10	KW	Data Compilation
		6-10-10	MLT	First Technical Data Review
		6/11/10	DA	Second Technical Data Review
		6/15/10	J	Data Entry/Electronic Deliverable
		6/15/10	J	Case Narrative
		6/15/10	KBS	Electronic Deliverable Proof
		6/15/10	J.H.	Samples Analyzed within Holding Time Yes? <input type="checkbox"/> No? <input type="checkbox"/> <b>YES</b>
		6/15/10	J.H.	QA/QC Review
		6/21/10	EYT	Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by:

C. Seary  
Laboratory Manager

6/15/10  
Date

Copy No. \_\_\_\_\_

Radiochemistry Services

**SECTION I**  
**CHAIN OF CUSTODY & pH CHECK SHEET**



Richmond Laboratory

# Chain of Custody

10 051 33

CLIENT: Michael Pisani Associates

PURCHASE ORDER NO. \_\_\_\_\_

ADDRESS: 120 Raymond Street, Suite 1430

PARAMETERS \_\_\_\_\_

PROJECT: 07-47 East White Lake

SAMPLE TYPE OR MATRIX

SAMPLERS SIGNATURE: [Signature]

OBSERVATIONS, COMMENTS, VOLUMES, SPECIAL OR ADDITIONAL TEST

DATE: \_\_\_\_\_

# CONTAINERS

TIME

TAT (IN DAYS) \_\_\_\_\_

LOCATION

RECEIVED BY / DATE

MPA-R-1 5-22-10 07-47 East White Lake

COMPANY: MPA & A

MPA-R-2 5-22-10 07-47 East White Lake

COMPANY: Eberline

MPA-R-3 5-21-10 07-47 East White Lake

COMPANY: Eberline

RELINQUISHED BY / DATE

COMPANY

RELINQUISHED BY / DATE

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COMPANY

2030 Wright Avenue P.O. Box 4040 Richmond, CA 94804-0040 (510) 235-2633 (510) 235-0438

RECEIVED MAY 25 2010 BY: KF







# Internal Chain of Custody

Work Order #	<b>10-05133</b>
Lab Deadline	<b>6/8/2010</b>
Analysis	<b>Ra226 - Level 4</b>
Sample Matrix	<b>Water</b>

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
<b>Fractions 05, 07 &amp; 09 are SUSPENDED.</b>	04	27	DD1.1
	05	27	DD1.1
	06	29	DD1.1
	07	29	DD1.1
	08	26	DD1.1
	09	26	DD1.1

	Location (circle one)						Initials	Date
Received by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room			
Relinquished by	Sample Storage	Rough Prep	<u>Prep</u>	Separations	Count Room	<i>[Signature]</i>	6/2/10 1840	
Received by	Sample Storage	Rough Prep	Prep	<u>Separations</u>	Count Room			
Relinquished by	Sample Storage	Rough Prep	Prep	<u>Separations</u>	Count Room	<i>[Signature]</i>	6-2-10 0800	
Received by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>			
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>	<i>[Signature]</i>	6-4-10 1002	
Received by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room			
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room			
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room			
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room			
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room			
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room			
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room			
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room			



# Internal Chain of Custody

Work Order #	<b>10-05133</b>
Lab Deadline	<b>6/8/2010</b>
Analysis	<b>Ra228 - Level 4</b>
Sample Matrix	<b>Water</b>

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
<b>Fractions 04, 06 &amp; 08 are DISSOLVED.</b>	04	27	DD1.1
	05	27	DD1.1
	06	29	DD1.1
	07	29	DD1.1
	08	26	DD1.1
	09	26	DD1.1

	Location (circle one)						Initials	Date
Received by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room		<i>[Signature]</i> 6/10/10 1330	
Relinquished by	Sample Storage	Rough Prep	<u>Prep</u>	Separations	Count Room		<i>[Signature]</i> 6/2/10 1840	
Received by	Sample Storage	Rough Prep	Prep	<u>Separations</u>	Count Room		<i>[Signature]</i> 6-3-10 0600	
Relinquished by	Sample Storage	Rough Prep	Prep	<u>Separations</u>	Count Room		<i>[Signature]</i> 6-4-10 1000	
Received by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>		<i>[Signature]</i> 6-4-10 1002	
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>		<i>[Signature]</i> 6-7-10 1081	
Received by	Sample Storage	Rough Prep	Prep	<u>Separations</u>	Count Room		<i>[Signature]</i> 6-7-10 1031	
Relinquished by	Sample Storage	Rough Prep	Prep	<u>Separations</u>	Count Room		<i>[Signature]</i> 6-8-10 1348	
Received by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>		ICB 6/8/10 1350	
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>		ICB 6/8/10 1552	
Received by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room			
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room			
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room			
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room			





# Internal Chain of Custody

Work Order #	<b>10-05133</b>
Lab Deadline	<b>6/8/2010</b>
Analysis	<b>GaGdT_ThSr - Level 4</b>
Sample Matrix	<b>Water</b>

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
<b>Fractions 05, 07 &amp; 09 are SUSPENDED.</b>	04	27	DD1.1
	05	27	DD1.1
	06	29	DD1.1
	07	29	DD1.1
	08	26	DD1.1
	09	26	DD1.1

	Location (circle one)					Initials	Date
Received by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room	RL	6.3.2010
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	RL	6.4.2010 043
Received by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>	Kandhi	6-4-10 1045
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>	ICB	6/4/10 1515
Received by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		



# Internal Chain of Custody

Work Order #	<b>10-05133</b>
Lab Deadline	<b>6/8/2010</b>
Analysis	<b>GaGdT_ThSr - Level 4</b>
Sample Matrix	<b>Water</b>

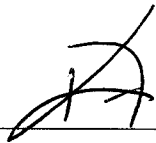
Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
<b>Fractions 04, 06 &amp; 08 are DISSOLVED.</b>	04	27	DD1.1
	05	27	DD1.1
	06	29	DD1.1
	07	29	DD1.1
	08	26	DD1.1
	09	26	DD1.1

	Location (circle one)					Initials	Date
Received by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room	BL	6.3.2010
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	BL	6.4.2010 6.3.2010 1043
Received by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>	KMelli	6-4-10 1045
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>	<del>KMelli</del>	<del>6-4-10</del> KM 6-4-10
Received by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>	ICB	6/4/10 1015
Relinquished by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

	<b>Sample Receiving Report</b> (Volumes, pH, & CPM)	Internal Work Order
		<b>10-05133</b>
		Received By <b>KFOX</b>

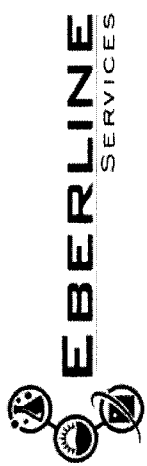
FR	ClientID	# Btls	Comments	Matrix	Storage	Rec Vol Ttl	CPM Max
01	LCS	0		WA	DD1.1		
02	BLANK	0		WA	DD1.1		
03	DUP	0		WA	DD1.1		
04	MPA-RA-1 DIS ✓	1		WA	DD1.1	2.00	27
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	2.0000	27
05	MPA-RA-1 SUS ✓	1	SAME SAMPLE	WA	DD1.1	0.00	27
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	2.0000	27
06	MPA-RA-2 DIS ✓	1		WA	DD1.1	2.00	29
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	2.0000	29
07	MPA-RA-2 SUS ✓	1	SAME SAMPLE	WA	DD1.1	0.00	29
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	2.0000	29
08	MPA-RA-3 DIS ✓	1		WA	DD1.1	2.00	26
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	2.0000	26
09	MPA-RA-3 SUS ✓	1	SAME SAMPLE	WA	DD1.1	0.00	26
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	2.0000	26

*Handwritten:* 1-5  
05/26/10

Received by:  Date: 5-26-10

**SECTION II**  
**SAMPLE ACKNOWLEDGEMENT**



Client Name		Contract/PO		Project Type		Date Received		Required Turnaround Days		Eberline Services Work Order										
Michael Pisani & Associates		ENV/JM		Environmental		05/25/2010		21		10-05133										
Project Name		Client WO		Sample Disp		Lab Deadline		Internal Deadline		Client Deadline										
ENV/JM		07-47 East White Lake		W		06/08/2010		06/14/2010		06/15/2010										
Internal ID	Client ID	Sample Date	Matrix	Storage	GA/PT	Ra228														
01	LCS	05/26/10	WA	DD1.1	X	X														
02	BLANK	05/26/10	WA	DD1.1	X	X														
03	DUP	05/26/10	WA	DD1.1	X	X														
04	MPA-RA-1 DIS	05/20/10 14:40	WA	DD1.1	X	X														
05	MPA-RA-1 SUS	05/20/10 14:40	WA	DD1.1	X	X														
06	MPA-RA-2 DIS	05/20/10 15:00	WA	DD1.1	X	X														
07	MPA-RA-2 SUS	05/20/10 15:00	WA	DD1.1	X	X														
08	MPA-RA-3 DIS	05/21/10 08:38	WA	DD1.1	X	X														
09	MPA-RA-3 SUS	05/21/10 08:38	WA	DD1.1	X	X														
							6	6	6	0	0	0	0	0	0	0	0	0	0	
Totals Per Analysis (non QA samples)							6	6	6	0	0	0	0	0	0	0	0	0	0	0
 <b>EBERLINE SERVICES</b>				<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830				<b>Invoice</b> Accounts Payable Michael Pisani & Associates 1100 Poydras St #1430 New Orleans, LA 70163 Voice: 504-582-2468 Fax: 504-582-2470				<b>Report Data</b> Jonathan Miller Michael Pisani & Associates 1100 Poydras St Suite 1430 New Orleans, LA 70163 Voice: 504-582-2468 Fax: 504-582-2470								
<b>Sample Log In Report</b>				<b>Contact</b> Jonathan Miller Voice: 504-582-2468 Fax: 504-582-2470																



Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST  
MP-001-2

WORK ORDER # 10 051 33

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

AQUEOUS NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

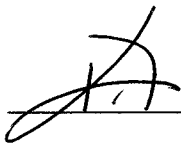
Received in good condition?	<input checked="" type="radio"/> Y	<input type="radio"/> N	
If aqueous, properly preserved	<input checked="" type="radio"/> Y	<input type="radio"/> N	N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Unbroken on outside of package?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Present on samples?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Unbroken on samples?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Was chain of custody present upon sample receipt?	<input checked="" type="radio"/> Y	<input type="radio"/> N

IF THE RESPONSE TO ANY OF THE ABOVE IS NO, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: 3 cubes unpreserved  
\_\_\_\_\_  
\_\_\_\_\_

SIGNATURE:  DATE: 5-26-10

**SECTION III**  
**CASE NARRATIVE**



EBERLINE ANALYTICAL CORPORATION  
601 SCARBORO ROAD  
OAK RIDGE, TENNESSEE 37830  
PHONE (865) 481-0683  
FAX (865) 483-4621

EBS-OR-30518

June 15, 2010

Jonathan Miller  
Michael Pisani & Associates  
1100 Poydras Street, 1430 Energy Center  
New Orleans, LA 70163

CASE NARRATIVE  
Work Order # 10-05133-OR

SAMPLE RECEIPT

This work order contains three water samples received 05/25/2010. These samples were analyzed as dissolved and suspended for Radium-226/228 and Gross Alpha/Beta.

<u>CLIENT ID</u>	<u>LAB ID</u>	<u>CLIENT ID</u>	<u>LAB ID</u>
MPA-Ra-1 DIS	10-05133-04	MPA-Ra-2 SUS	10-05133-07
MPA-Ra-1 SUS	10-05133-05	MPA-Ra-3 DIS	10-05133-08
MPA-Ra-2 DIS	10-05133-06	MPA-Ra-3 SUS	10-05133-09

ANALYTICAL METHODS

Radium-226 was analyzed using EPA Method 903.0 Modified. Radium-228 was analyzed using EPA Method 904.0 Modified. Gross Alpha/Beta was performed using EPA Method 900.0 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 2-sigma value.

RADIUM-226

Samples were prepared by removing representative aliquots followed by filtering and mixed acid digestions as appropriate. This was followed by selective sulfate precipitations of the Radium. Samples were then mounted by semi-micro-precipitations onto micro-porous filters. Samples were counted by alpha spectroscopy using an energy specific region of interest for Radium-226. Chemical recovery was calculated by the use of a Barium-133 tracer, which was determined by HPGe gamma spectroscopy.

Samples demonstrated acceptable results for Radium-226 activity. Chemical recovery was acceptable for all samples. Results for the Radium-226 method blank demonstrated acceptable activity. Results for the Radium-226 replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable analytical technique limits. Results for the Radium-226 laboratory control sample demonstrated an acceptable percent recovery.

## ANALYTICAL RESULTS CONTINUED

### RADIUM-228

Following alpha spectroscopy analysis of Radium-226, Barium/Radium Sulfate precipitates were redissolved and allowed for sufficient ingrowth of the Actinium-228 daughter. After ingrowth, Actinium-228 was selectively precipitated. Precipitates were filtered and beta emissions for Actinium-228 were then counted on a gas proportional counter. Chemical recovery was determined by the use of a Barium-133 tracer. Sample activity was determined by HPGe gamma spectroscopy and an elemental Yttrium carrier by gravimetric measurements. The product of these two recoveries was used to calculate chemical yield.

Samples demonstrated acceptable results for Radium-228 activity. Results for sample fractions -06, -07 and -09 (Client IDs: MPA-RA-2 DIS, MPA-RA-2 SUS and MPA-RA-3 SUS) demonstrated slightly high detection limits. Chemical recovery was acceptable for all samples. Results for the Radium-228 method blank demonstrated acceptable activity. Results for the Radium-228 replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable analytical technique limits. Results for the Radium-228 laboratory control sample demonstrated an acceptable percent recovery.

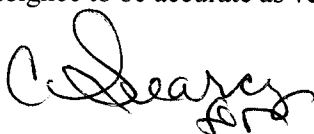
### GROSS ALPHA/BETA

Samples were filtered to disassociate the dissolved and suspended fractions. Volumetric aliquots from dissolved fractions were acidified with  $\text{HNO}_3$ . Reduced samples were then transferred to steel planchets for final evaporation to dryness and flaming if appropriate. Volumetric equivalent aliquots from suspended fractions were digested in mixed acids, nitrated with  $\text{HNO}_3$ , and were then transferred to steel planchets for final evaporation to dryness and flaming if appropriate. Samples were then counted on a gas proportional counter. Results were corrected as required for inherent self-absorption based on residual mass present.

Samples demonstrated acceptable results for Gross Alpha and Beta activity. Due to high total dissolved solids, all sample results demonstrated slightly high detection limits. Results for the Gross Alpha and Beta method blank demonstrated acceptable activity. Results for the Gross Alpha replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable analytical technique limits. Results for the Gross Beta replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Gross Alpha and Beta laboratory control sample demonstrated an acceptable percent recovery.

### CERTIFICATION OF ACCURACY

I certify that this data report is in compliance with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall  
Laboratory Manager

Date: 6/15/2010

**SECTION IV**  
**ANALYTICAL RESULTS SUMMARY**

# Eberline Analytical

## Final Report of Analysis

**Jonathan Miller**  
**Michael Pisani & Associates**  
**1100 Poydras St Suite 1430**  
**New Orleans, LA 70163**

**10-05133**  
**07-47 East White Lake**  
**ENVIRONMENTAL**  
**WA**

Work Order Details:

Report To:

**SDG:**  
**Project:**  
**Analysis Category:**  
**Sample Matrix:**

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-05133-01	LCS	KNOWN	05/26/10 00:00	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	3.15E+02	1.35E+01			pCi/l
10-05133-01	LCS	LCS	05/26/10 00:00	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	2.88E+02	7.55E+00	7.67E+00	4.09E-01	pCi/l
10-05133-02	MBL	BLANK	05/26/10 00:00	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	6.99E-02	9.45E-02	9.45E-02	1.93E-01	pCi/l
10-05133-03	DUP	MPA-RA-1 DIS	05/20/10 14:40	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	-4.59E+00	1.24E+01	1.24E+01	3.22E+01	pCi/l
10-05133-04	DO	MPA-RA-1 DIS	05/20/10 14:40	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	1.51E+00	1.22E+01	1.22E+01	2.89E+01	pCi/l
10-05133-05	TRG	MPA-RA-1 DIS	05/20/10 14:40	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	3.79E+01	3.91E+01	3.91E+01	7.68E+01	pCi/l
10-05133-06	TRG	MPA-RA-2 DIS	05/20/10 15:00	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	-1.41E+01	1.15E+01	1.15E+01	3.31E+01	pCi/l
10-05133-07	TRG	MPA-RA-2 SUS	05/20/10 15:00	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	1.51E+01	2.71E+01	2.71E+01	5.74E+01	pCi/l
10-05133-08	TRG	MPA-RA-3 DIS	05/21/10 08:38	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	-4.48E+00	1.05E+01	1.05E+01	2.85E+01	pCi/l
10-05133-09	TRG	MPA-RA-3 SUS	05/21/10 08:38	5/25/2010	6/4/2010	10-05133	Gross Alpha	EPA 900.0 Modified	4.07E+02	2.82E+02	2.82E+02	4.51E+02	pCi/l
10-05133-01	LCS	KNOWN	05/26/10 00:00	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	2.37E+02	7.12E+00			pCi/l
10-05133-01	LCS	SPIKE	05/26/10 00:00	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	2.47E+02	5.81E+00	5.84E+00	8.97E-01	pCi/l
10-05133-02	MBL	BLANK	05/26/10 00:00	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	1.33E-01	2.52E-01	2.52E-01	5.24E-01	pCi/l
10-05133-03	DUP	MPA-RA-1 DIS	05/20/10 14:40	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	1.77E+01	1.64E+01	1.64E+01	3.32E+01	pCi/l
10-05133-04	DO	MPA-RA-1 DIS	05/20/10 14:40	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	1.38E+01	1.78E+01	1.78E+01	3.66E+01	pCi/l
10-05133-05	TRG	MPA-RA-1 SUS	05/20/10 14:40	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	7.59E+01	5.30E+01	5.30E+01	1.05E+02	pCi/l
10-05133-06	TRG	MPA-RA-2 DIS	05/20/10 15:00	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	1.68E+01	1.14E+01	1.14E+01	2.26E+01	pCi/l
10-05133-07	TRG	MPA-RA-2 SUS	05/20/10 15:00	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	8.08E+01	5.48E+01	5.48E+01	1.08E+02	pCi/l
10-05133-08	TRG	MPA-RA-3 DIS	05/21/10 08:38	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	3.24E+01	1.56E+01	1.56E+01	2.95E+01	pCi/l
10-05133-09	TRG	MPA-RA-3 SUS	05/21/10 08:38	5/25/2010	6/4/2010	10-05133	Gross Beta	EPA 900.0 Modified	1.43E+03	3.31E+02	3.31E+02	5.32E+02	pCi/l
10-05133-01	LCS	KNOWN	05/26/10 00:00	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	1.01E+01	4.66E-01			pCi/l
10-05133-01	LCS	SPIKE	05/26/10 00:00	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	9.29E+00	1.22E+00	1.22E+00	1.90E-01	pCi/l
10-05133-02	MBL	BLANK	05/26/10 00:00	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	1.05E-01	1.20E-01	1.20E-01	2.18E-01	pCi/l
10-05133-03	DUP	MPA-RA-2 DIS	05/20/10 15:00	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	8.57E-01	4.21E-01	4.21E-01	3.40E-01	pCi/l
10-05133-04	TRG	MPA-RA-1 DIS	05/20/10 14:40	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	6.56E-01	3.09E-01	3.09E-01	3.08E-01	pCi/l
10-05133-05	TRG	MPA-RA-1 SUS	05/20/10 14:40	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	2.17E+00	5.75E-01	5.75E-01	9.42E-02	pCi/l
10-05133-06	DO	MPA-RA-2 DIS	05/20/10 15:00	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	4.24E-01	2.58E-01	2.58E-01	1.02E-01	pCi/l
10-05133-07	TRG	MPA-RA-2 SUS	05/20/10 15:00	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	8.54E-01	5.21E-01	5.21E-01	5.76E-01	pCi/l
10-05133-08	TRG	MPA-RA-3 DIS	05/21/10 08:38	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	9.59E-01	4.21E-01	4.21E-01	2.64E-01	pCi/l
10-05133-09	TRG	MPA-RA-3 SUS	05/21/10 08:38	5/25/2010	6/7/2010	10-05133	Radium-226	EPA 903.0 Modified	4.79E+00	1.31E+00	1.31E+00	4.95E-01	pCi/l

CU=Counting Uncertainty; CSU=Combined Standard Uncertainty (2-sigma); MDA=Minimal Detected Activity; LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original



**EBERLINE**  
 SERVICES

**EBERLINE ANALYTICAL CORPORATION**

601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

# Eberline Analytical

## Final Report of Analysis

Lab ID		Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-05133-01		LCS	KNOWN	05/26/10 00:00	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	1.68E+01	8.57E-01			pCi/l
10-05133-01		LCS	SPIKE	05/26/10 00:00	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	1.46E+01	1.89E+00	1.94E+00	1.21E+00	pCi/l
10-05133-02		MBL	BLANK	05/26/10 00:00	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	4.82E-01	4.98E-01	4.98E-01	1.01E+00	pCi/l
10-05133-03		DUP	MPA-RA-2 DIS	05/20/10 15:00	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	2.59E+00	1.90E+00	1.90E+00	3.76E+00	pCi/l
10-05133-04		TRG	MPA-RA-1 DIS	05/20/10 14:40	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	7.61E-01	5.08E-01	5.08E-01	9.98E-01	pCi/l
10-05133-05		TRG	MPA-RA-1 SUS	05/20/10 14:40	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	9.91E-01	7.75E-01	7.75E-01	1.55E+00	pCi/l
10-05133-06		DO	MPA-RA-2 DIS	05/20/10 15:00	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	6.46E-01	1.45E+00	1.45E+00	3.03E+00	pCi/l
10-05133-07		TRG	MPA-RA-2 SUS	05/20/10 15:00	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	8.39E-01	1.51E+00	1.51E+00	3.14E+00	pCi/l
10-05133-08		TRG	MPA-RA-3 DIS	05/21/10 08:38	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	4.02E-01	1.23E+00	1.23E+00	2.58E+00	pCi/l
10-05133-09		TRG	MPA-RA-3 SUS	05/21/10 08:38	5/25/2010	6/8/2010	10-05133	Radium-228	EPA 904.0 Modified	2.23E+00	1.55E+00	1.56E+00	3.09E+00	pCi/l

Work Order Details:

Jonathan Miller  
 Michael Pisani & Associates  
 1100 Poydras St Suite 1430  
 New Orleans, LA 70163

SDG: 10-05133  
 Project: 07-47 East White Lake  
 Analysis Category: ENVIRONMENTAL  
 Sample Matrix: WA

Report To: **Jonathan Miller**  
 Michael Pisani & Associates  
 1100 Poydras St Suite 1430  
 New Orleans, LA 70163

SDG: 10-05133  
 Project: 07-47 East White Lake  
 Analysis Category: ENVIRONMENTAL  
 Sample Matrix: WA

Method: EPA 904.0 Modified  
 Result: 1.68E+01  
 CU: 8.57E-01  
 CSU: 1.94E+00  
 MDA: 1.21E+00  
 Report Units: pCi/l

Method: EPA 904.0 Modified  
 Result: 1.46E+01  
 CU: 1.89E+00  
 CSU: 1.94E+00  
 MDA: 1.21E+00  
 Report Units: pCi/l

Method: EPA 904.0 Modified  
 Result: 4.82E-01  
 CU: 4.98E-01  
 CSU: 4.98E-01  
 MDA: 1.01E+00  
 Report Units: pCi/l

Method: EPA 904.0 Modified  
 Result: 2.59E+00  
 CU: 1.90E+00  
 CSU: 1.90E+00  
 MDA: 3.76E+00  
 Report Units: pCi/l

Method: EPA 904.0 Modified  
 Result: 7.61E-01  
 CU: 5.08E-01  
 CSU: 5.08E-01  
 MDA: 9.98E-01  
 Report Units: pCi/l

Method: EPA 904.0 Modified  
 Result: 9.91E-01  
 CU: 7.75E-01  
 CSU: 7.75E-01  
 MDA: 1.55E+00  
 Report Units: pCi/l

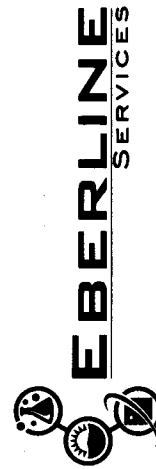
Method: EPA 904.0 Modified  
 Result: 6.46E-01  
 CU: 1.45E+00  
 CSU: 1.45E+00  
 MDA: 3.03E+00  
 Report Units: pCi/l

Method: EPA 904.0 Modified  
 Result: 8.39E-01  
 CU: 1.51E+00  
 CSU: 1.51E+00  
 MDA: 3.14E+00  
 Report Units: pCi/l

Method: EPA 904.0 Modified  
 Result: 4.02E-01  
 CU: 1.23E+00  
 CSU: 1.23E+00  
 MDA: 2.58E+00  
 Report Units: pCi/l

Method: EPA 904.0 Modified  
 Result: 2.23E+00  
 CU: 1.55E+00  
 CSU: 1.56E+00  
 MDA: 3.09E+00  
 Report Units: pCi/l

CU=Counting Uncertainty; CSU=Combined Standard Uncertainty (2-sigma); MDA=Minimal Detected Activity; LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original



EBERLINE ANALYTICAL CORPORATION

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**SECTION V**  
**ANALYTICAL STANDARD**



# National Institute of Standards & Technology Certificate

Ba-6  
(#6a)

## Standard Reference Material 4251C Barium-133 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive barium-133 chloride, non-radioactive barium chloride, and hydrochloric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of ionization chambers and solid-state gamma-ray spectrometry systems.

### Radiological Hazard

The SRM ampoule contains barium-133 with a total activity of approximately 2.5 MBq. Barium-133 decays by electron capture and during the decay process X-rays and gamma rays with energies from 4 to 400 keV are emitted. Most of these photons escape from the SRM ampoule and can represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]\*. Appropriate shielding and/or distance should be used to minimize personnel exposure. The SRM should be used only by persons qualified to handle radioactive material.

### Chemical Hazard

The SRM ampoule contains hydrochloric acid (HCl) with a concentration of 1 mole per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

### Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least June 2004.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

### Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group and D.B. Golas, Nuclear Energy Institute Research Associate.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899  
October 1994

Thomas E. Gills, Chief  
Standard Reference Materials Program





**QUALITY CONTROL PROGRAM**  
QCP-009

Rev.8; 11/10/03  
Title: **Radioactive Reference Standards Solutions & Records**

**EBERLINE SERVICES - OAK RIDGE LABORATORY**  
**RADIOACTIVE REFERENCE STANDARD SOLUTIONS**  
SECONDARY DILUTION RECERTIFICATION

Solution Reference # QCP-009-1-A      Date 10/28/09  
NIST SRM4251C      Solution # Ba-6a

Principal Radionuclide	Half Life, Years	Half Life, Days
<sup>135</sup> Ba	1.048E+01	3.828E+03

Radionuclide of Interest: <sup>135</sup>Ba      Reference Date 9/1/1993 0:00  
Parent Solution Conc. 1.48E+05 dpm/ml

**Chemical Composition of Standard Solution**

<sup>135</sup>BaCl<sub>2</sub> in 1M HCl

Dilution Instructions:      Dilution Solvent Used 1M HCl

**SECONDARY VOLUMETRIC DILUTION**

Vol. Parent Solution: 25.0000 ml  
Total Activity: 3.6950E+06 dpm      Final Activity Concentration: 3.6950E+03 dpm/ml  
Final Volume: 1000.00 ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

**NOTES:**

Expiration Date: October 28, 2010

Recertified By [Signature]

Date: 10/28/09

Verified & Approved By [Signature]

Date: 11/4/09

QC Approval [Signature]

Date: 11/4/09

# CERTIFICATE OF CALIBRATION ALPHA STANDARD SOLUTION

<sup>Ra-5</sup>  
QA/QC REVIEWED  
Date 2/8/94 Initials W

Radionuclide: Ra-226 Customer: TMA EBERLINE  
Half Life: 1600 ± 7 years P.O.No.: VH1888  
Catalog No.: 7226 Reference Date: February 1 1994 12:00 PST.  
Source No.: 453-26 Contained Radioactivity: (Ra-226) 1.001 μCi.  
Contained Radioactivity: (Ra-226) 37.0 kBq.

## Description of Solution

a. Mass of solution: 5.1864 g (in a 5 ml Flame Sealed Ampoule)  
b. Chemical form: Ra(NO<sub>3</sub>)<sub>2</sub> in 1 N HNO<sub>3</sub>  
c. Carrier content: None added  
d. Density: 1.0318 g/ml @ 20°C.

## Radioimpurities

None detected (other than daughters)

## Radioactive Daughters

Rn-222, Po-218, At-218, Pb-214, Bi-214, Po-214, Tl-210, Pb-210, Bi-210, Po-210 and Tl-206.

## Radionuclide Concentration

(Ra-226) 0.1929 μCi/g.

## Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry:

Energy peak(s) integrated under: 186 keV.

Branching ratio(s) used: 0.0351 gamma rays per decay.

## Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: ±3.4%  
b. Random uncertainty in assay: ±3.1%  
c. Random uncertainty in weighing(s): ±0.2%  
d. Total uncertainty at the 99% confidence level: ±4.6%

## NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

## Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

## Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).



ISOTOPE PRODUCTS LABORATORIES  
1800 North Keystone Street  
Burbank, California 91504  
(818) 843 - 7000

*Ana H. Kuen*  
QUALITY CONTROL

*Feb. 3, 1994*  
Date Signed



**QUALITY CONTROL PROGRAM**  
MP 009

Rev.8; 11/01/03  
Title: Radioactive Reference Standards Solutions & Records

**EBERLINE SERVICES - OAK RIDGE LABORATORY**  
**RADIOACTIVE REFERENCE SOLUTIONS**  
**PRIMARY DILUTION RECERTIFICATION**  
MP 009

SOLUTION REFERENCE # IPL 453-26 CURRENT DATE 12/17/2009 0:00  
SOLUTION # Ra-5

Principal Radionuclide <sup>226</sup>Radium Half Life, Years 1.600E+03 Half Life, Days 5.844E+05

Radionuclide <sup>226</sup>Radium Reference Date 2/1/1994 0:00  
Certified Activity 1.001E+00  $\mu\text{Ci}$   
Certified Concentration                       $\mu\text{Ci per gram}$

Ampoule /Solution Gross                      Weight, Grams  
Empty Ampoule                      Weight, Grams  
Solution Net                      Weight, Grams  
Total Activity in Ampoule 1.0010  $\mu\text{Ci}$

Chemical Composition of Standard Solution  
<sup>226</sup>Ra(NO<sub>3</sub>)<sub>2</sub> in 1M HNO<sub>3</sub>

Dilution Instructions: Dilution Solvent Used 1M HNO<sub>3</sub>

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 1.0010  $\mu\text{Ci}$  Which Equals 2.222E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.222E+03 dpm/ml  
This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: December 17, 2010

Diluted By [Signature]

Date: 12/17/2009

Verified & Approved By [Signature]

Date: 11/5/10

QC Approval [Signature]

Date: 11/5/10



QUALITY CONTROL PROGRAM

MP 009

Rev.8; 11/01/03

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY  
RADIOACTIVE REFERENCE STANDARD SOLUTIONS  
SECONDARY DILUTION RECERTIFICATION

Solution Reference # MP 009  
IPL-453-26

Date 12/17/2009 0:00  
Solution # Ra-5b

Principal Radionuclide

Half Life, Years

Half Life, Days

<sup>226</sup>Radium

1.600E+03

5.844E+05

Radionuclide of Interest

<sup>226</sup>Radium

Reference Date

2/1/1994 0:00

Parent Solution Conc. 2.22E+03 dpm/ml

Chemical Composition of Standard Solution

<sup>226</sup>Ra(NO<sub>3</sub>)<sub>2</sub> in 1M HNO<sub>3</sub>

Dilution Instructions:

Dilution Solvent Used

1M HNO<sub>3</sub>

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 20.0000 ml

Total Activity: 4.4440E+04 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 4.4440E+01 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Expiration Date: December 17, 2010

Recertified By

Date: 12/17/2009 0:00

Verified & Approved By

Date: 1/5/10

QC Approval

Date: 1/15/10



# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

61680-416

Ra-228 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Ra-228
ACTIVITY (dps):	3.586 E3
HALF-LIFE:	5.75 years
CALIBRATION DATE:	June 4, 2001 12:00 EST
TOTAL UNCERTAINTY*:	5.1%
SYSTEMATIC:	3.6%
RANDOM:	1.5%


RECEIVED  
 INITIALS  
 6/11/01

\*99% Confidence Level

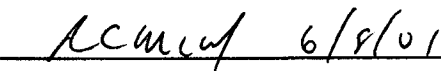
Impurities:  $\gamma$ -impurities (other than decay products) <0.1%5.00872 grams 0.1M HCl solution with 50  $\mu$ g/g Ba carrier.

P O NUMBER 00008864, Item 1

SOURCE PREPARED BY:

  
 M. D. Currie, Radiochemist

Q A APPROVED:

  
 M. D. Currie, Radiochemist





**QUALITY CONTROL PROGRAM**  
MP-009

Rev.8; 1/10/03  
Title: Radioactive Reference Standards Solutions & Records

**EBERLINE SERVICES - OAK RIDGE LABORATORY**  
**RADIOACTIVE REFERENCE SOLUTIONS**  
**PRIMARY DILUTION RECERTIFICATION**  
**MP 009**

**SOLUTION REFERENCE #** Analytics 61680-416      **CURRENT DATE** 12/17/2009 0:00  
**SOLUTION #** Ra-10

Principal Radionuclide	Half Life, Years	Half Life, Days
<sup>228</sup> Ra	5.750E+00	2.100E+03

<b>Radionuclide</b>	<u><sup>228</sup>Ra</u>	<b>Reference Date</b>	<u>6/4/2001 0:00</u>
<b>Certified Activity</b>	<u>9.692E-02</u> $\mu\text{Ci}$		
<b>Certified Concentration</b>	<u>                    </u> $\mu\text{Ci per gram}$		

<b>Ampoule /Solution Gross</b>	<u>9.4982</u>	<b>Weight, Grams</b>
<b>Empty Ampoule</b>	<u>4.4895</u>	<b>Weight, Grams</b>
<b>Solution Net</b>	<u>5.0087</u>	<b>Weight, Grams</b>
<b>Total Activity in Ampoule</b>	<u>0.0969</u>	$\mu\text{Ci}$

**Chemical Composition of Standard Solution**  
<sup>228</sup>Ra(NO<sub>3</sub>)<sub>2</sub> in 0.5 M HCl

**Dilution Instructions:**      **Dilution Solvent Used** 0.5 M HCl

Dilute to a volume of 1000.00 milliliters

**Certified Total Activity of** 0.0969  $\mu\text{Ci}$       **Which Equals** 2.152E+05 dpm at the date listed above

**And after dilution the activity of this solution is** 2.152E+02 dpm/ml      This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

**Expiration Date:** December 17, 2010

Recertified By [Signature]

Date: 12/17/2009 0:00

Verified & Approved By [Signature]

Date: 1/4/10

QC Approval [Signature]

Date: 1/5/10

ANALYTICS

QA/QC REVIEWED  
Date 4/30/96 Initials WT

Am-4

1380 Seaboard Industrial Blvd.  
Atlanta, Georgia 30318 - U.S.A.

Phone (404) 352-8677  
Fax (404) 352-2837

# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

52094-416

Am-241 10 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master liquid radionuclide solution source. The master source was calibrated by liquid scintillation counting.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Am-241
ACTIVITY (dps):	1.975 E+05
HALF-LIFE:	432.2 years
CALIBRATION DATE:	March 19, 1996 12:00 EST
TOTAL ERROR:	3.0%
SYSTEMATIC ERROR:	2.37%
RANDOM ERROR:	0.63%

10.01177 grams of solution 1M HCl.

P O NUMBER OR3830, Item 1.

SOURCE PREPARED BY:

Kare O'Brien Beverly  
K. O. Beverly, Radiochemist

Q A APPROVED:

D.M. Beverly 4-26-96



QUALITY CONTROL PROGRAM  
MP-009

Rev.8; 1/10/03  
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY  
RADIOACTIVE REFERENCE STANDARD SOLUTIONS  
SECONDARY DILUTION (RE-CERTIFICATION)

Solution Reference # Analytics 52094-416

Date 11/9/2009 0:00  
Solution # A/B-7 (alpha)

Principal Radionuclide  
<sup>241</sup>Americium

Half Life, Years  
4.322E+02

Half Life, Days  
1.579E+05

Radionuclide of Interest <sup>241</sup>Am  
Parent Solution Conc. 1.19E+04 dpm/ml

Reference Date 3/19/1996 0:00

Chemical Composition of Standard Solution

<sup>241</sup>AmCl<sub>3</sub> in 1M HCL

Dilution Instructions:

Dilution Solvent Used 1 M HNO<sub>3</sub>

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 60.0000 ml  
Total Activity: 7.1100E+05 dpm  
Final Volume: 1000.00 ml

Final Activity Concentration: 7.1100E+02 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: November 9, 2010

Recertified By: [Signature]

Date: 11/9/09

Verified & Approved By: [Signature]

Date: 12/11/09

QC Approval: [Signature]

Date: 12/11/09



5-75  
13-11

# National Institute of Standards & Technology

## Certificate

### Standard Reference Material 4234A Strontium-90 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive strontium-90 chloride, non-radioactive strontium chloride, non-radioactive yttrium chloride, and hydrochloric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of beta-particle counting instruments and for the monitoring of radiochemical procedures.

#### Radiological Hazard

The SRM ampoule contains strontium-90 with a total activity of approximately 13 MBq. Strontium-90 decays by beta-particle emission to yttrium-90, which also decays by beta-particle emission. None of the beta particles escape from the SRM ampoule. The beta particles emitted from strontium-90 and yttrium-90 produce bremsstrahlung photons with energies up to 2 MeV. Most of these photons escape from the SRM ampoule and can represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]\*. Appropriate shielding and/or distance should be used to minimize personnel exposure. The SRM should be used only by persons qualified to handle radioactive material.

#### Chemical Hazard

The SRM ampoule contains hydrochloric acid (HCl) with a concentration of 1 mole per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

#### Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least March 2005.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

#### Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group and D.B. Golas, Nuclear Energy Institute Research Associate.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899  
May 1995 (Text only revised November 1997)

Thomas E. Gills, Chief  
Standard Reference Materials Program



QUALITY CONTROL PROGRAM  
QCP-009

Rev.7; 9/29/99  
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY  
RADIOACTIVE REFERENCE STANDARD SOLUTIONS  
SECONDARY DILUTION (RE-CERTIFICATION)

Solution Reference # QCP-009-1-A NIST 4234A Date 11/9/2009 0:00  
Solution # A/B-7 (beta)

Principal Radionuclide	Half Life, Years	Half Life, Days
<sup>90</sup> Sr	2.878E+01	1.051E+04

Radionuclide of Interest <sup>90</sup>Sr Reference Date 3/13/1995 0:00  
Parent Solution Conc. 1.52E+06 dpm/ml

The beta activity of solution reflects the original <sup>90</sup>Sr concentration and an equal concentration of <sup>90</sup>Yttrium.

Chemical Composition of Standard Solution  
<sup>90</sup>SrCl<sub>2</sub> in 1 M HCl

Dilution Instructions: Dilution Solvent Used 1 M HNO<sub>3</sub>

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 0.5000 ml  
Total Activity: 7.5764E+05 dpm Final Activity Concentration: 7.5764E+02 dpm/ml  
Final Volume: 1000.00 ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: November 9, 2010

Recertified By: [Signature] Date: 11/09/09

Verified & Approved By: [Signature] Date: 12/11/09

QC Approval: [Signature] Date: 12/11/09

**SECTION VI**  
**QUALITY CONTROL SAMPLE RESULTS SUMMARY**

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05133</b>	<b>Ra226</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-226	1.31	91.72%	13.11%	100.00%	4.60%	1.01E+01	4.66E-01	9.29E+00	1.22E+00	Ra-5b	4.41E+01	4.60E+00	5.09E-01

**Matrix Spike**

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

**Replicate Sample**

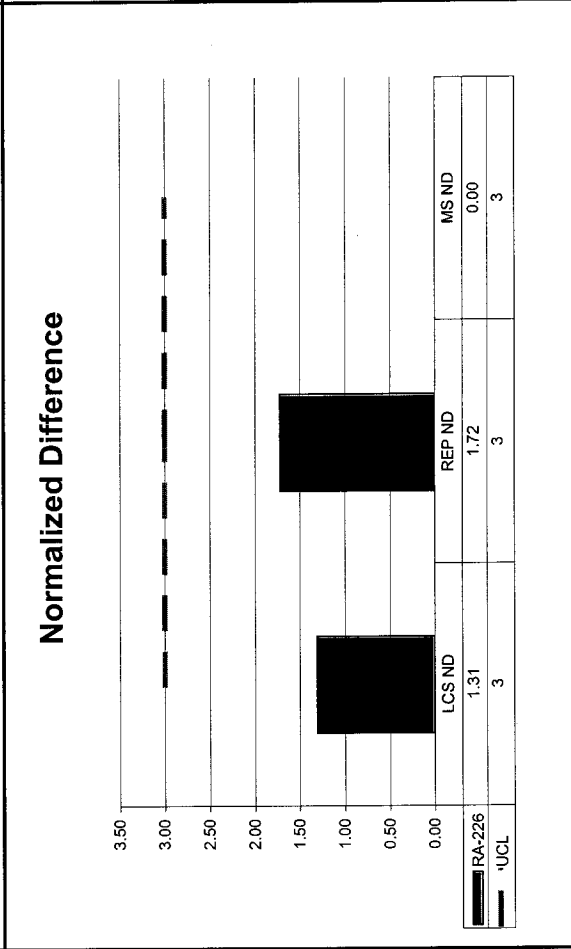
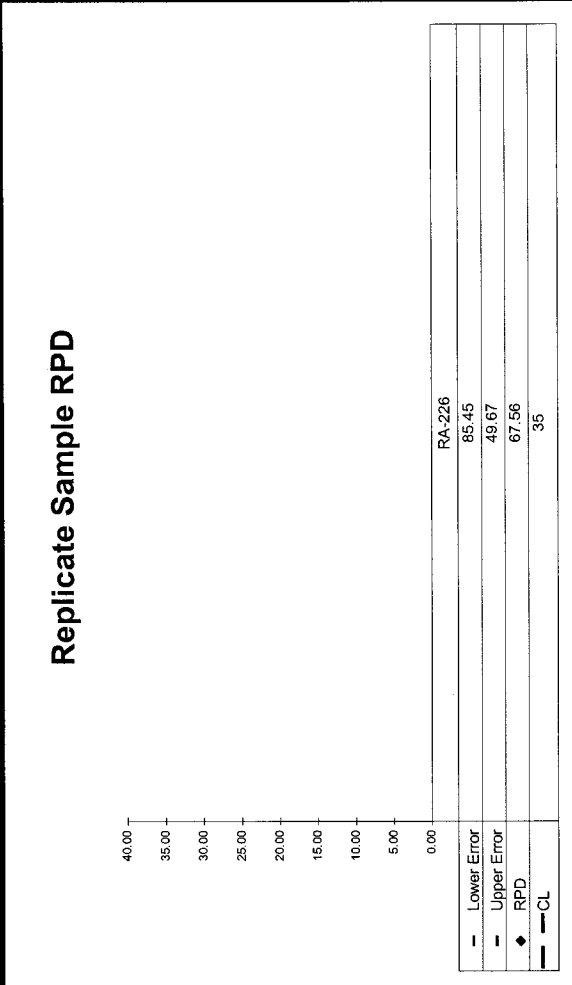
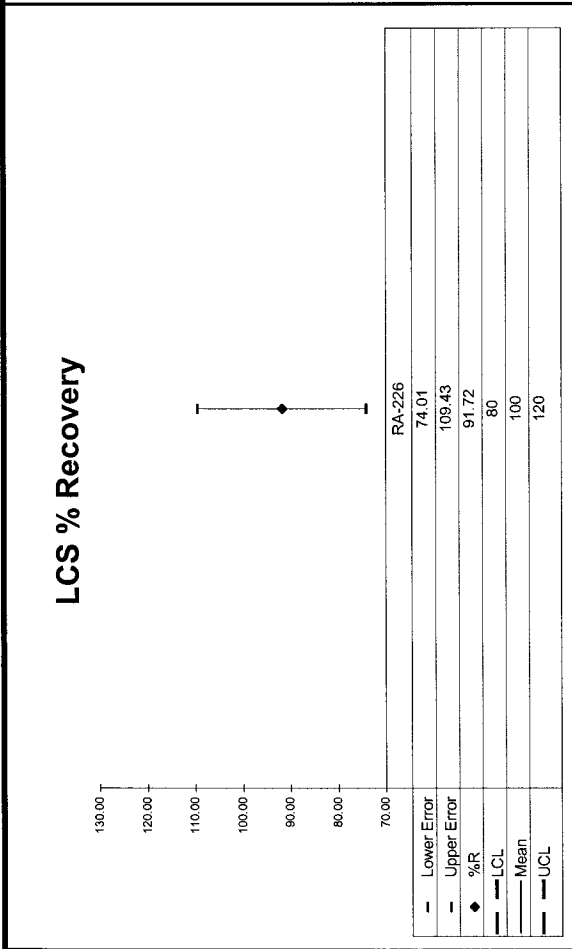
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-226	1.72	67.56	4.24E-01	2.58E-01	8.57E-01	4.21E-01	0.92	OK	OK			INV	OK

**QC Summary**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-226	1.72	67.56	4.24E-01	2.58E-01	8.57E-01	4.21E-01	0.92	OK	OK			INV	OK



WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05133</b>	<b>Ra226</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>



**No Matrix Spike**



WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05133</b>	<b>Ra228</b>	<b>1</b>	<b>pCi</b>	<b>1</b>	<b>Michael Pisani &amp; Associates</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-228	2.13	86.93%	13.31%	100.00%	5.10%	1.68E+01	8.57E-01	1.46E+01	1.94E+00	Ra-10	7.29E+01	5.10E+00	5.12E-01

**Matrix Spike**

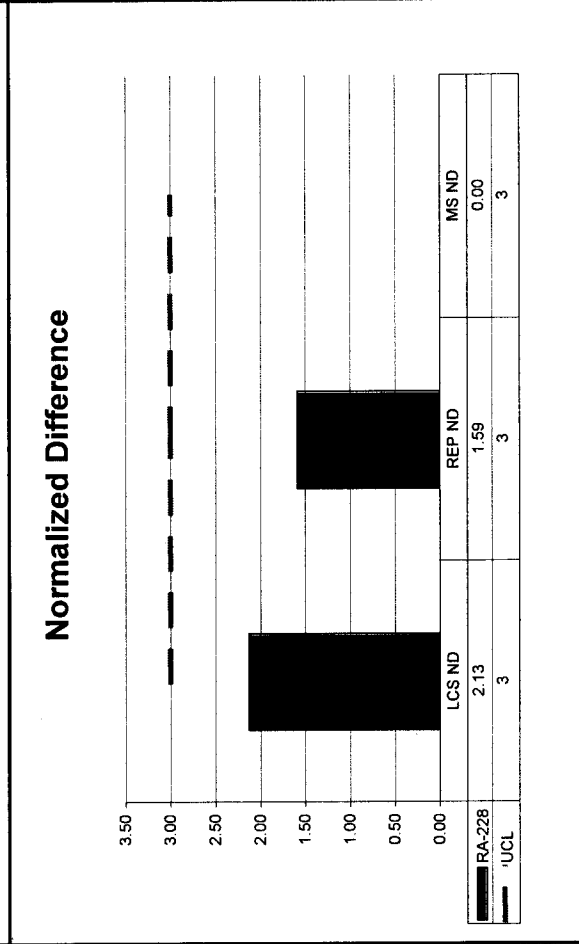
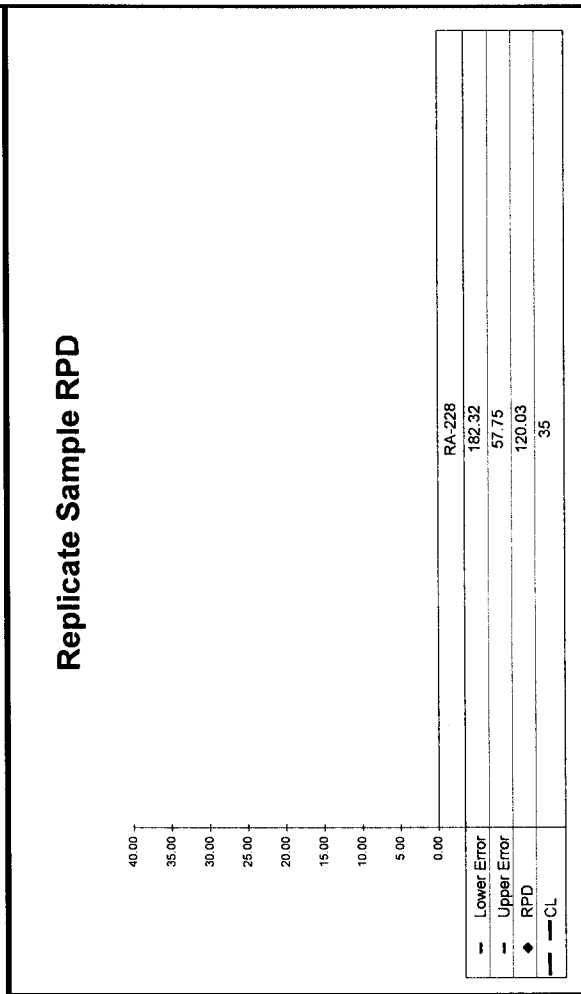
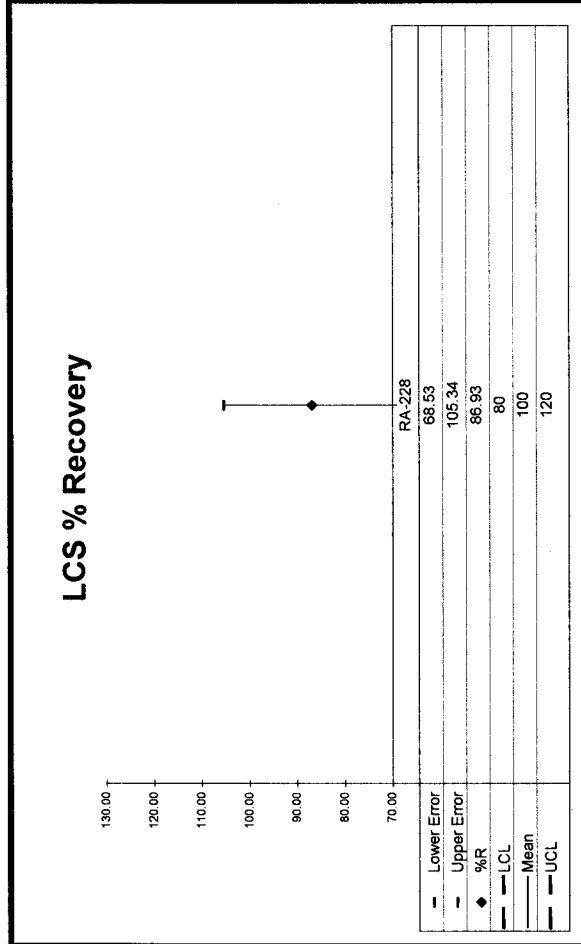
Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

**Replicate Sample**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-228	1.59	120.03	6.46E-01	1.45E+00	2.59E+00	1.90E+00	0.87	OK	OK			INV	OK

**QC Summary**

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05133</b>	<b>Ra228</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>



**No Matrix Spike**



WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05133</b>	<b>GaGt_ThSr</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
GROSS ALPHA_TH	4.60	91.27%	2.67%	100.00%	4.30%	3.15E+02	1.35E+01	2.88E+02	7.67E+00	A/B-07	6.95E+02	4.30E+00	1.01E+00
GROSS BETA_SR	2.57	104.12%	2.36%	100.00%	3.00%	2.37E+02	7.12E+00	2.47E+02	5.84E+00	A/B-07	5.24E+02	3.00E+00	1.01E+00

**Matrix Spike**

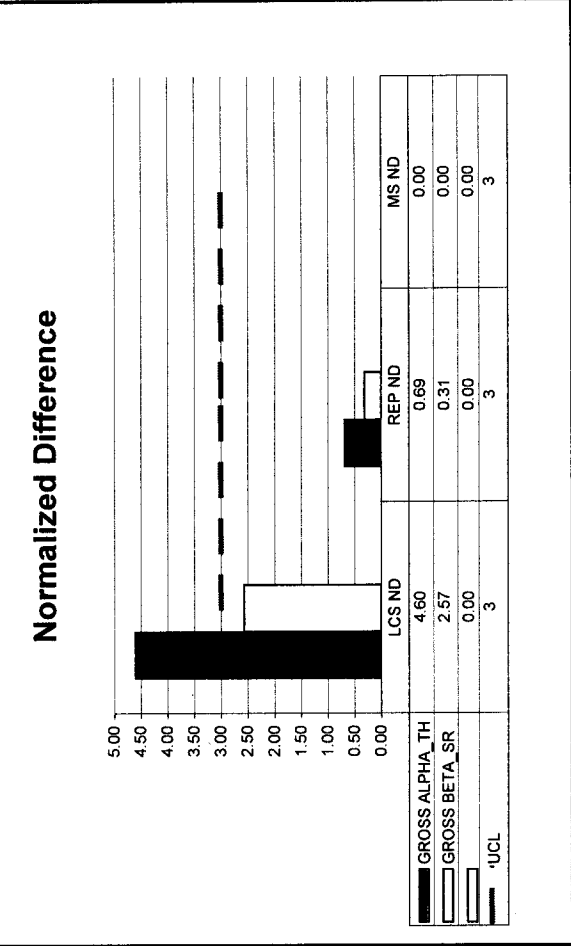
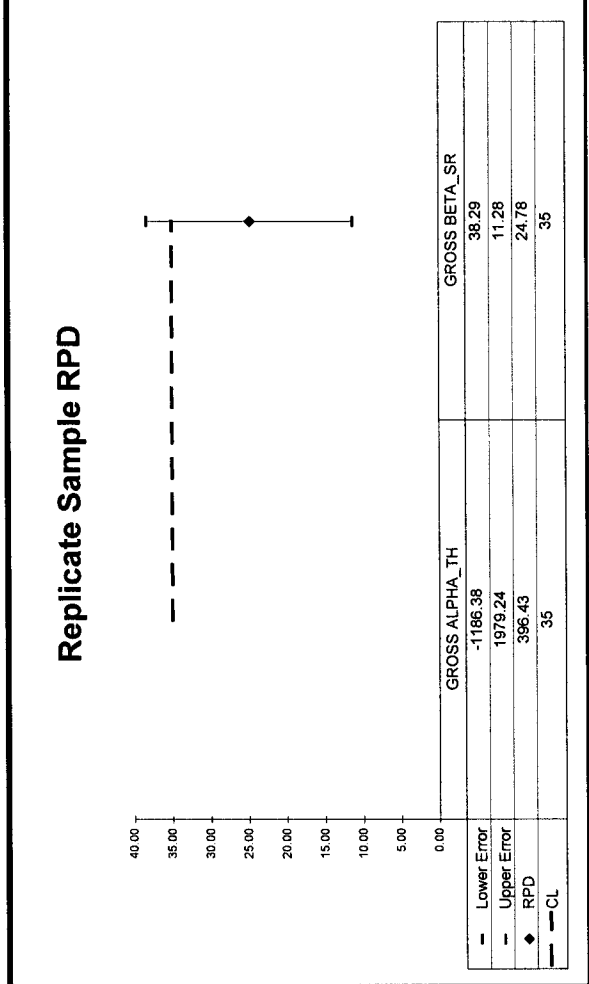
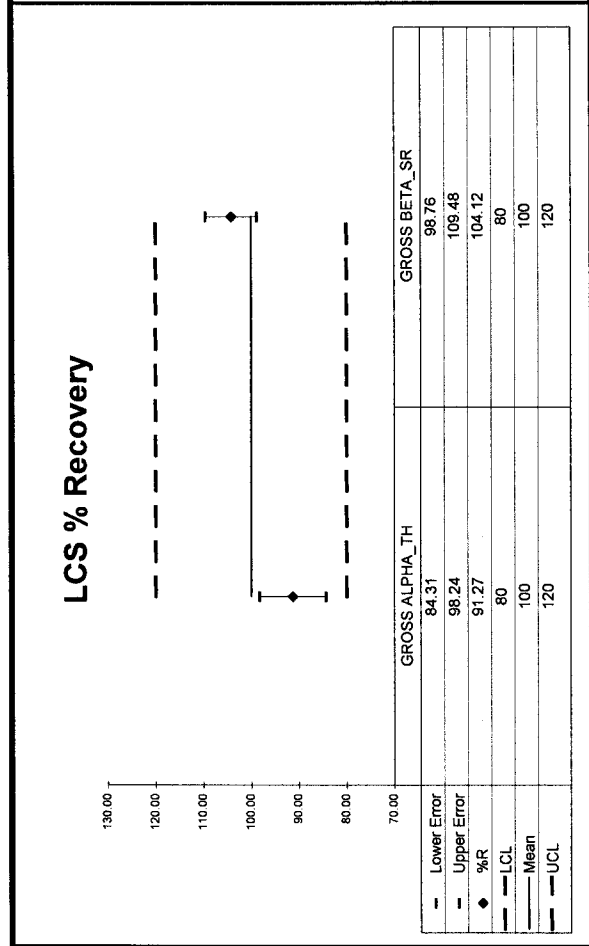
Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

**Replicate Sample**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
GROSS ALPHA_TH	0.69	396.43	1.51E+00	1.22E+01	-4.59E+00	1.24E+01	0.91	OK	INV	OK	INV	INV	OK
GROSS BETA_SR	0.31	24.78	1.38E+01	1.78E+01	1.77E+01	1.64E+01	1.04	OK	OK	OK	OK	OK	OK

**QC Summary**


WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05133</b>	<b>GaGbt_ThSr</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Associates</b>



**No Matrix Spike**


**SECTION VII**  
**LABORATORY TECHNICIAN'S NOTES**

**RA-226 NOTES**

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05133
		Analysis Code	Ra226
		Run Number	1

#	Date	Dept	User	Notes
1	05/28/10 10:44	PREP	JBARNARD	ALIUQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDED FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS


*JB*  
5/28/10

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05133
		Analysis Code	Ra226
		Run Number	1

#	Date	Dept	User	Notes
1	05/28/10 10:44	PREP	JBARNARD	ALIQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDED FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	06/01/10 07:51	PREP	JBARNARD	SAMPLES WERE VERY DIRTY AND HARD TO FILTER- CUT ALIQUOTS BACK ON SOME DUE TO FILTERING PROCESS TAKING ABOUT 12 HOURS- FRACTION 5 EXTREMELY HEAVY WITH SOLIDS


*JB*  
*6/1/10*



 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05133
		Analysis Code	Ra226
		Run Number	1

#	Date	Dept	User	Notes
1	05/28/10 10:44	PREP	JBARNARD	ALIQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDED FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	06/01/10 07:51	PREP	JBARNARD	SAMPLES WERE VERY DIRTY AND HARD TO FILTER- CUT ALIQUOTS BACK ON SOME DUE TO FILTERING PROCESS TAKING ABOUT 12 HOURS- FRACTION 5 EXTREMELY HEAVY WITH SOLIDS
3	06/03/10 13:26	CHEM	TSMITH	Dissolved samples from prep in EDTA.
4	06/04/10 09:19	CHEM	TSMITH	Followed steps 12.2 to 12.9 in AP-006 rev. 9 . ( Sringe filtered samples. Precipitated and filtered samples, obtained final weights, and took to count room )

*6-4-10  
JSM*

 <b>Reagents Used in an Analysis</b>		Internal Work Order		
		10-05133		
		Analysis Code		Run
		Ra226		1
Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
008823P	Ammonium Hydroxide	Reagent Grade	JBARNARD	5/28/2010
009343D05	Ammonium Sulfate	200 mg/ml	JBARNARD	5/28/2010
009718D01	Barium Carrier	1 mg/ml	JBARNARD	5/28/2010
007701D10	Lead Carrier	166 mg/ml	JBARNARD	5/28/2010
009536P	Nitric Acid	Reagent Grade	JBARNARD	5/28/2010
009327P	Nitric Acid	Reagent Grade	JBARNARD	5/28/2010
006799P	Sulfuric Acid	Reagent Grade	JBARNARD	5/28/2010
009752S	EDTA	0.25M	TSMITH	6/3/2010
008735P	Acetic Acid	Reagent Grade	TSMITH	6/4/2010
009323D03	Ammonium Sulfate	200 mg/ml	TSMITH	6/4/2010

# Alpha #2


105

Date	Sample #	Client	Lead Time	CT Time	Analysis	Tech
5/25/10	1005027A(6-14)	mp: A	1211	2hr 50m	Rate	KB
5/26/10	Daily Pulsers	Lab	0517	10 min	NA	KM
5/26/10	1005080A(8-16)	Weston	1134	2hr. 50min	UU	KM
5/26/10	1005062A(1-9)	mp: A	1523	2hr 50m	Rate	KB
5/27/10	Daily Pulsers	Lab	0440	10 min	NA	KB
5/27/10	1005083A(6-14)	RTI	1019	2hr 50m	UU	KB
5/27/10	1005098A(7-12)	RTI Lab	1401	2hr 50min	Th	KM
5/27/10	1005099A(1-5)	RTI Lab	1402	2hr 50min	Th	KM
5/28/10	Daily Pulsers	Lab	0518	10 min	NA	KM
5/28/10	Secondary check	Lab	0924	2hr. 30min	NA	KM
5/28/10	1005114A(2-3,5)	OJC	1242	2hr 50min	pu	KM
5/28/10	1005102A(1-4)	RTI	1244	2hr 50m	UU	KM
5/29/10	Weekly Bkgd	Lab	1549	16.40 hrs	α	KB
6/1/10	Daily Pulsers	Lab	0522	10 min	NA	KM
6/1/10	1005102A(6-7)	PCC structural	0649	2hr. 50min	Th	KM
6/1/10	1005108A(1-6)	RTI Lab	0651	2hr. 50min	Th	KM
6/1/10	1005114A(5)	BTC	0959	2hr. 50min	Am	KM
6/1/10	1005117A(1-7)	Kaizen	1001	2hr 50min	UU	KM
6/1/10	1005117A(12-13)	Kaizen	1310	2hr. 50min	Th	KM
6/1/10	1005117A(1-6)	Kaizen	1312	2hr 50min	Razze	KM
6/2/10	Daily Pulsers	Lab	0524	10 min	NA	KM
6/2/10	1005136A(1-8)	Energy Schs	1056	2hr. 50min	UU	KM
6/2/10	1005118A(10-13)	Kaizen	1434	2hr 50m	Rate	KB
6/2/10	1005150A(1-4)	AECpm	1436	2hr 50m	Rate	KB
6/3/10	Daily Pulsers	Lab	0525	10 min	NA	KM
6/3/10	1005144A(4-6)	Unitech	0945	2hr 50min	UU	KM
6/3/10	1005144A(1-5)	Unitech	0947	2hr 50min	Adp	KM
6/4/10	Daily Pulsers	Lab	0519	10 min	NA	KM
6/4/10	Secondary check	Lab	0903	2hr 30min	NA	KM
6/4/10	1005119A(10-17)	NNE	1223	2hr 50m	Am	KB
6/4/10	Weekly Bkgd	Lab	1534	16.40 hrs	α	KB
6/7/10	Daily Pulsers	Lab	0515	10 min	NA	KM
6/7/10	1005134A(15-17)	MVA	0650	2hr. 50min	Rate	KM
6/7/10	1005133A(1-4)	MVA	0652	2hr 50min	Rate	KM

# Alpha #3


Date	Sample #	Client	Load time	Cr. Time	Analysis	Tech
6/1/10	Daily Pulsers	Lab	0522	10 min	NA	KM
6/1/10	1005107A(1-3,5-6,8-9)	RTI Lab	0653	2hr.50min	Th	KM
6/1/10	1005099A(1-5)	RTI Lab	0654	2hr.50min	UU	KM
6/1/10	1005117A(8-13)	Kaizen	1003	2hr.50min	UU	KM
6/1/10	1005114A(1-3,5)	BJC	1104	2hr.50min	Th	KM
6/1/10	1005117A(1-2)	Kaizen	1105	2hr.50min	Th	KM
6/1/10	1005117A(7-12)	Kaizen	1315	2hr.50min	Razag	KM
6/1/10	1005117A(13)	Kaizen	1402	2hr50min	Rab	ICB
6/1/10	1005103A(16) red.	RTI Lab	1438	2hr50min	Th	ICB
6/1/10	1005136A(1-10)	Energy Solutions	1729	2hr50min	Rab	ICB
6/2/10	Daily Pulsers	Lab	0524	10 min	NA	KM
6/2/10	1005118A(10-13)	Kaizen	0943	2hr.50min	UU	KM
6/2/10	1005136A(9-10)	Energy solns.	1057	2hr.50min	UU	KM
6/2/10	1005136A(1-6)	Energy solns.	1059	2hr.50min	Th	KM
6/2/10	1005118A(6-9)	Kaizen	1251	2hr50min	Rab	KM
6/2/10	1005150A(5-8)	AECOM	1436	2hr50min	Rab	ICB
6/2/10	1005118A(1-4)	Kaizen	1438	2hr50min	Th	ICB
6/3/10	Daily Pulsers	Lab	0525	10 min	NA	KM
6/3/10	1005144A(6)	Unitech	0948	2hr.50min	Np	KM
6/3/10	1005144A(1-6)	Unitech	1058	2hr50min	Th	KM
6/3/10	1005144A(15)	Unitech	1100	2hr.50min	Pu	KM
6/3/10	1005144A(6)	Unitech	1240	2hr50min	Pu	KM
6/3/10	1005124A(1-7)	Grace	1525	2hr50min	Rab	ICB
6/4/10	Daily Pulsers	Lab	0519	10 min	NA	KM
6/4/10	Secondary Check	Lab	1150	2 1/2 hrs.	α	ICB
6/4/10	Weekly Bkgd	Lab	1535	16.40 hrs	α	ICB
6/7/10	Daily Pulsers	Lab	0515	10 min	NA	KM
6/7/10	1005133A(6-9)	MPA	0854	2hr.50min	Rab	KM
6/7/10	1005145A(1-4)	BJC	0656	2hr.50min	Rab	KM
6/7/10	1005119A(1-5)	NNE	0658	2hr.50min	UU	KM

**RA-228 NOTES**

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05133
		Analysis Code	Ra228
		Run Number	1

#	Date	Dept	User	Notes
1	05/28/10 10:44	PREP	JBARNARD	ALIUQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDED FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS

*Handwritten signature and date:*  
 [Signature]  
 5/28/10

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05133
		Analysis Code	Ra228
		Run Number	1

#	Date	Dept	User	Notes
1	05/28/10 10:44	PREP	JBARNARD	ALIQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDED FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	06/01/10 07:52	PREP	JBARNARD	SAMPLES WERE VERY DIRTY AND HARD TO FILTER- CUT ALIQUOTS BACK ON SOME DUE TO FILTERING PROCESS TAKING ABOUT 12 HOURS- FRACTION 5 EXTREMELY HEAVY WITH SOLIDS

*Bob*  
*Wilk*

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05133
		Analysis Code	Ra228
		Run Number	1

#	Date	Dept	User	Notes
1	05/28/10 10:44	PREP	JBARNARD	ALIUQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDE FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	06/01/10 07:52	PREP	JBARNARD	SAMPLES WERE VERY DIRTY AND HARD TO FILTER- CUT ALIQUOTS BACK ON SOME DUE TO FILTERING PROCESS TAKING ABOUT 12 HOURS- FRACTION 5 EXTREMELY HEAVY WITH SOLIDS
3	06/07/10 12:16	CHEM	TSMITH	Placed filters from count room into labeled centrifuge tubes. Added EDTA to samples and swirled.
4	06/08/10 09:36	CHEM	TSMITH	Followed steps 12.2 to 12.9 in AP-007 rev. 14 . ( Chemical cleanup for Ra 228 )
5	06/08/10 13:16	CHEM	TSMITH	Followed steps 12.10 to 12.18 in AP-007 rev. 14 . ( Precipitated samples, centrifuged, and discarded supernate. Dissolved precip, precipitated samples, hot centrifuged, and discardupernate. Dissolved precip, tated and filtered samples, obtained final weights, covered with aluminum foil, and took to count room )

*f. s. w.  
sm*





Reagents Used in an Analysis

Internal Work Order

10-05133

Analysis Code

Run

Ra228

1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
008823P	Ammonium Hydroxide	Reagent Grade	JBARNARD	5/28/2010
009343D05	Ammonium Sulfate	200 mg/ml	JBARNARD	5/28/2010
009718D01	Barium Carrier	1 mg/ml	JBARNARD	5/28/2010
007701D10	Lead Carrier	166 mg/ml	JBARNARD	5/28/2010
009536P	Nitric Acid	Reagent Grade	JBARNARD	5/28/2010
009472P	Perchloric Acid	Reagent Grade	JBARNARD	5/28/2010
006799P	Sulfuric Acid	Reagent Grade	JBARNARD	5/28/2010
009757S	EDTA	0.25M	TSMITH	6/7/2010
007701D11	Lead Carrier	1.5 mg/ml	TSMITH	6/8/2010
009621P	Nitric Acid	Reagent Grade	TSMITH	6/8/2010
009625S	Yttrium Carrier	9 mg/ml	TSMITH	6/8/2010
009040D13	Ammonium Sulfide	2%	TSMITH	6/8/2010
008974D03	Ammonium Oxalate	5%	TSMITH	6/8/2010
009621D04	Nitric Acid	1N	TSMITH	6/8/2010
008736D20	Sodium Hydroxide	10M	TSMITH	6/8/2010
009731S	Sodium Hydroxide	18M	TSMITH	6/8/2010
009621D07	Nitric Acid	6N	TSMITH	6/8/2010


0053-A

# LB4110 Red

Date	Sample #	Client	Lead Time	Cr. Time	Analysis	Tech
6/1/10	1004041AB2(2-14)	MWRD	1702	8 hrs	αβ	ICB
6/2/10	Daily Bkgd/QC	Lab	0512/0614	1hr/30min	αβ	KM
6/2/10	1006005AB(2-7)	BTC	0950	1hr	αβ	KM
6/2/10	1006005AB(1)	BTC	0950	30min	αβ	KM
6/2/10	Std Cert.	Lab	1044	15min	αβ	KM
6/2/10	1005084RA(1-9)	MPA	1102	2hrs	RaP	ICB
6/2/10	1005060AB1(1)	MWRD	1204	30min	αβ	KM
6/2/10	1005084AB(2-9)	MPA	1407	2hrs	αβ	ICB
6/2/10	1005084AB(1)	MPA	1407	30min	αβ	ICB
6/3/10	Daily Bkgd/QC	Lab	0505/0612	1hr/30min	αβ	KM
6/3/10	1005140Up(1-6)	unitech	0905	10min	MP	KM
6/3/10	1005027RA(1-5,8)	RTE Lab	1137	2hrs	RaP	KM
6/3/10	10051302A(1-5,5)	SES	1137	2hrs	RaP	KM
6/3/10	1005128AB(1)	GRACE	1153	30min	αβ	ICB
6/3/10	1005053AB(1)	CT. Dept. Env.	1240	30min	αβ	ICB
6/3/10	1005053 AB(2-9)	CT. Dept. Env.	1341	4hrs	αβ	ICB
6/4/10	Daily Bkgd/QC	Lab	0506/0609	1hr/30min	αβ	KM
6/4/10	1005150RA(1-8)	Aecom	0935	2hrs	RaP	KM
6/4/10	1005133AB(2-6)	MPA	1103	2hrs	αβ	KM
6/4/10	1005134AB(2-14)	MPA	1420	2hrs	αβ	ICB
6/5/10	Weekly Bkgd	Lab	0250	8 hrs	αβ	ICB
6/7/10	Daily Bkgd/QC	Lab	0505/0610	1hr/30min	αβ	KM
6/7/10	1005135AB(2-15)	MPA	1018	2hrs	αβ	KM
6/7/10	1005126RA(5-7)	Grace Dawson	1224	2hrs	RaP	KM
6/7/10	1006016AB(2-4)	MPA	1417	2hrs	αβ	ICB
6/7/10	1006016AB(1)	MPA	1419	30min	αβ	ICB
6/8/10	Daily Bkgd/QC	Lab	0208/0314	1hr/30min	αβ	KM
6/8/10	1006012AB(1-4)	M. Pisani	1041	2hr	αβ	AG
6/8/10	1005133 RA(2-9)	MPA	1352	2hr	RaP	ICB
6/8/10	1005133 RA(1 C)	MPA	1353	30min	RaP	ICB

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**ALPHA/BETA NOTES**

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05133
		Analysis Code	GaGbT_ThSr
		Run Number	1

#	Date	Dept	User	Notes
1	06/04/10 10:02	PREP	BLESTER	Determined total dissolved solids concentration for maximum aliquot volume. Each fraction was suction filtered through a pre-weighed .45 mm filter to separate the suspended from dissolved solids. The filter was dried, reweighed, and glued to planchets. The dissolved solids fractions were placed in beakers on a hot plate. Once dry, the dissolved solids were transferred to a pre-weighed planchet under a heat lamp. Spike and blank fractions were prepared. The samples were flamed, reweighed, and submitted to the count room.

*Brian P. Sexton*

6.4.2010



**EBERLINE**  
SERVICES

Reagents Used in an Analysis

Internal Work Order

**10-05133**

Analysis Code

Run

**GaGbT\_ThSr**

**1**

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
009536D13	Nitric Acid	3N	BLESTER	6/4/2010

# LB4110 Agua

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Date	Sample #	Client	Load Time	CT Time	Analysis	Tech
5/27/10	1005048SR(1)	BJC	1342	30 min	Sr90/y	KM
5/27/10	1005048SR(2-4)	BJC	1342	.2 hrs	Sr90/y	KM
5/27/10	1005130AB(2-5)	SET	1343	2 hrs	αB	KM
5/27/10	1005048SR(1)	BJC	1530	30 mins	Sr90/y	KM
5/28/10	Daily Bkgd/QC	Lab	0552/0514	1hr/30mins	αB	KM
5/28/10	1005067RA(15-19)	MPA	0950	2 hrs	Ra8	KM
5/28/10	1005126Pb(1-7)	Grace Davison	1013	2 hrs	Pb	KM
5/29/10	Weekly Bkgd	Lab	0917	8 hrs	αB	ICB
6/1/10	Daily Bkgd/QC	Lab	0551/0513	1hr/30 min	αB	KM
6/1/10	1005068RA(14-19)	MPA	1022	2 hrs	Ra8	KM
6/1/10	1005056341(1)	MWRD	1207	30 mins	Sr90/y	ICB
6/1/10	100505654(15-18)	MWRD	1236	2 hrs	Sr90/y	ICB
6/1/10	1004041ABA(1)	MWRD	1422	30 min	αB	ICB
6/1/10	1004041AB2(15-18)	MWRD	1403	8 hrs	αB	ICB
6/2/10	Daily Bkgd/QC	Lab	0550/0512	1hr/30 min	αB	KM
6/2/10	1006007AB(2-4)	BJC	0951	1 hr	αB	KM
6/2/10	1006007AB(1)	BJC	0951	30 min	αB	KM
6/2/10	1005083RA(1-4,6,7,9)	RTI	1109	2 hrs	Ra8	ICB
6/2/10	1006007AB(2-4)	CERAC	1400	2 hrs	αB	ICB
6/2/10	1006007AB(1)	CERAC	1401	30 min	αB	ICB
6/2/10	1005102A0(2-9)	Tetra Tech	1442	2 hrs	αB	ICB
6/2/10	1005102AB(1)	Tetra Tech	1443	30 min	αB	ICB
6/2/10	1005060AA(2-10)	MWRD	1754	8 hrs	αB	ICB
6/3/10	Daily Bkgd/QC	Lab	0540/0505	1hr/30 min	αB	KM
6/3/10	1005102RA(1-9)	Tetra Tech	1138	2 hrs	Ra8	KM
6/3/10	1005128AB(2-5)	Grace	1153	2 hrs	αB	ICB
6/3/10	1005143SR(1-4)	Unitech	1406	2 hrs	TOTα	ICB
6/3/10	1005145SR(1-6)	Unitech	1409	1 hr	TOTα	ICB
6/3/10	1005145CL(1-3,5)	BJC	1532	30 min	CL36	ICB
6/4/10	Daily Bkgd/QC	Lab	0549/0506	1hr/30 min	αB	KM
6/4/10	1005151AB(1-9)	New York	1057	15 min	αB	KM
6/4/10	1005133AB(1)	MPA	1057	30 min	αB	KM
6/4/10	1005133AB(7-9)	MPA	1004	2 hrs	αB	KM

# LB4110 Red

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Date	Sample #	Client	Lead Time	CT. Time	Analysis	Tech
6/1/10	1004041AB2(2-14)	MWRD	1702	8 hrs	αβ	ICB
6/2/10	Daily Bkgd/QC	Lab	0512/0614	1hr/30min	αβ	KM
6/2/10	1006005AB(2-7)	BTC	0950	1hr	αβ	KM
6/2/10	1006005AB(1)	BTC	0950	30min	αβ	KM
6/2/10	Std Cert	Lab	1044	15min	αβ	KM
6/2/10	1005084RA(1-9)	MPA	1102	2hrs	Rad	ICB
6/2/10	1005060AB1(1)	MWRD	1204	30min	αβ	KM
6/2/10	1005084AB(2-8)	MPA	1407	2hrs	αβ	ICB
6/2/10	1005084AB(1)	MPA	1407	30min	αβ	ICB
6/3/10	Daily Bkgd/QC	Lab	0505/0612	1hr/30min	αβ	KM
6/3/10	1005141WP(1-6)	Unitech	0905	10min	Np	KM
6/3/10	1005027RA(1-5,8)	RTT Lab	1137	2hrs	Rad	KM
6/3/10	1005130RA(1-5,5)	SES	1137	2hrs	Rad	KM
6/3/10	1005128AB(1)	GRACE	1153	30min	αβ	ICB
6/3/10	1005053AB(1)	CT. Dept. Env.	1240	30min	αβ	ICB
6/3/10	1005053AB(2-9)	CT. Dept. Env.	1341	4hrs	αβ	ICB
6/4/10	Daily Bkgd/QC	Lab	0506/0609	1hr/30min	αβ	KM
6/4/10	1005150RA(1-8)	Aecom	0935	2hrs	Rad	KM
6/4/10	1005133AB(2-6)	MPA	1103	2hrs	αβ	KM

**SECTION VIII**  
**ANALYTICAL DATA (RADIUM-226)**





















# Aliquot Worksheet

<b>Work Order</b>	<b>Run</b>	<b>Analysis Code</b>	<b>Rpt Units</b>	<b>Lab Deadline</b>	<b>Technician</b>
<b>10-05133</b>	<b>1</b>	<b>Ra226</b>	<b>liters</b>	<b>6/8/2010</b>	<b>JBARNARD</b>

Lab Fraction	Michael Pisani & Associates		Sample		Muffle Data		Dilution Data			Aliquot Data			MS Aliquot Data		H-3 Solids Only	
	Client ID	Type	Ratio Post/Pre	No of Dils	Dil Factor	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist	Aliq			
01	LCS	LCS				1.00E+00	1.0000E+00	1.0000E+00	1.0000E+00							
02	BLANK	MBL				1.00E+00	1.0000E+00	1.0000E+00	1.0000E+00							
03	MPA-RA-2 DIS	DUP				1.00E+00	7.0000E-01	7.0000E-01	7.0000E-01							
04	MPA-RA-1 DIS	TRG				1.00E+00	1.0000E+00	1.0000E+00	1.0000E+00							
05	MPA-RA-1 SUS	TRG				1.00E+00	1.0000E+00	1.0000E+00	1.0000E+00							
06	MPA-RA-2 DIS	DO				1.00E+00	7.0000E-01	7.0000E-01	7.0000E-01							
07	MPA-RA-2 SUS	TRG				1.00E+00	7.0000E-01	7.0000E-01	7.0000E-01							
08	MPA-RA-3 DIS	TRG				1.00E+00	7.5000E-01	7.5000E-01	7.5000E-01							
09	MPA-RA-3 SUS	TRG				1.00E+00	7.5000E-01	7.5000E-01	7.5000E-01							

<b>Comments</b>	
-----------------	--

Technician: JB Date: 6/1/10



Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
7-JUN-2010 13:02:17

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_C:C\_1005133A-RA\$01\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005133A-RA \* SAMPLE ID: 01  
SAMPLE DATE: 7-JUN-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: SPIKE \* DETECTOR NUMBER: 023  
ACQ DATE: 7-JUN-2010 06:52 \* AVERAGE EFFICIENCY: 19.21%  
ELAPSED LIVE TIME: 10202. \* RECOVERY: 96.27%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: MANUAL  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 09:04 \* EFF CAL DATE: 7-MAR-2009 10:35  
BKG FILENAME: B\_023\_4JUN10 \* BKG ELAPSED TIME: 60001.  
\* SAF: 2.04  
\*

\*\*\*\*\*

NUCLIDE ACTIVITY SUMMARY

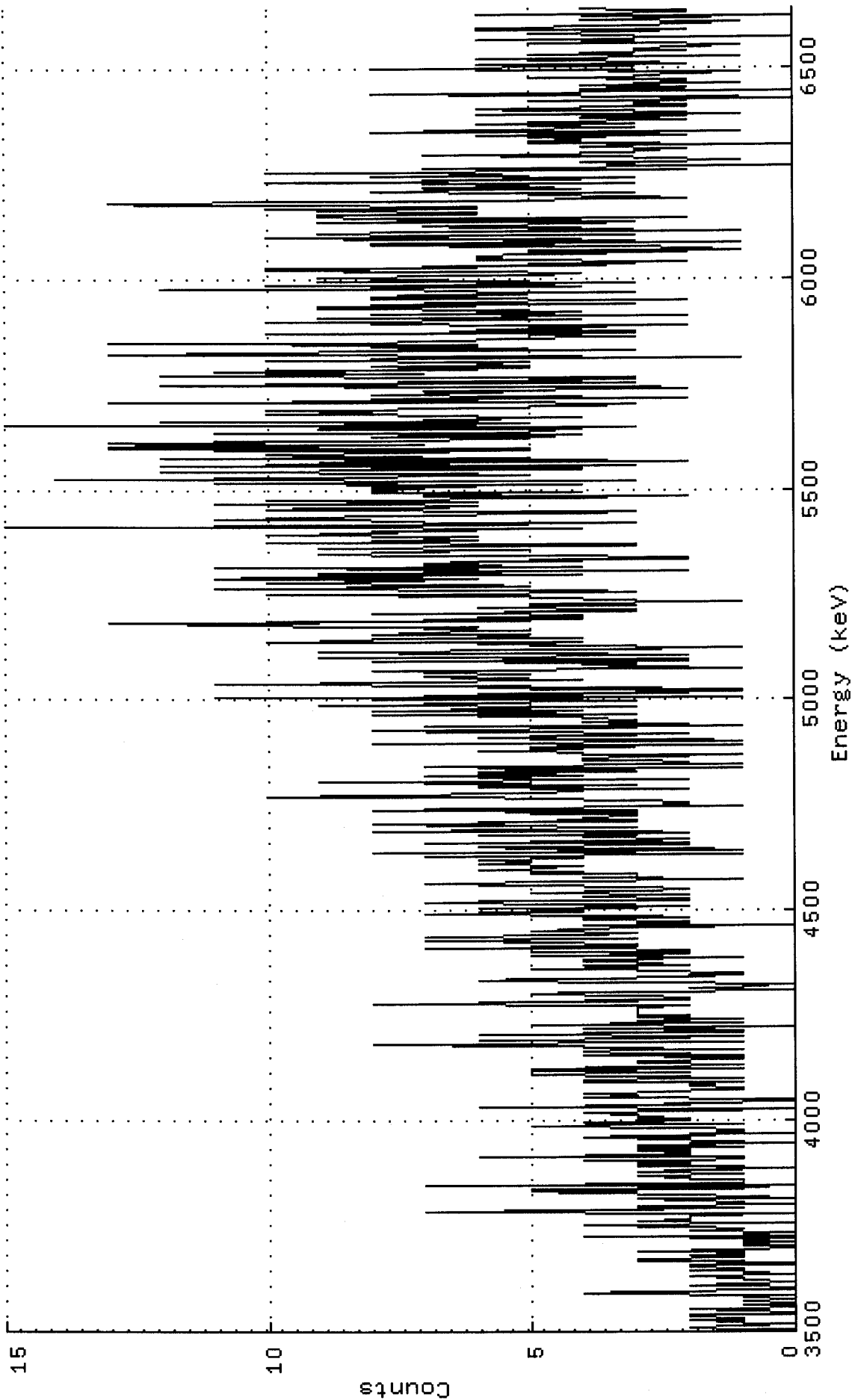
NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	2108.51	2.89	100.0	3.022E+01	2.780E+00	3.086E-01
RN-222	5490.0	2153.05	1.19	99.9	3.087E+01	2.826E+00	2.259E-01
RA-226	4785.0	648.04	0.68	100.0	9.285E+00	1.217E+00	1.895E-01

\*\*\*\*\*

Alan Mozley  
Analyst  
6/7/10  
Date

Alan Mozley  
Reviewer  
6/7/10  
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.C]C-1005133A-RA\$01-RA.CNF;2  
Title : 023  
Sample Title: SPIKE  
Start Time: 7-JUN-2010 06:52: Sample Time: 7-JUN-2010 00:00: Energy Offset: 3.48551E+03  
Real Time : 0 02:49:55.00 Sample ID : 01 Energy Slope : 3.28250E+00  
Live Time : 0 02:50:02.00 Sample Type: RA Energy Quad : -2.00433E-04



Channel Contents for ND\_AMS\_ARCHIVE\_C:C\_1005133A-RA\$01\_RA

Channel

1:	10195	10202	0	0	1	2	1	0	1	1	2	1	1	2
15:	2	0	0	1	2	1	0	1	0	1	0	1	0	1
29:	1	0	4	3	0	0	0	1	2	1	0	1	1	1
43:	2	0	0	1	1	2	1	2	0	0	0	3	1	3
57:	1	1	2	1	1	3	1	0	0	1	1	0	1	1
71:	0	4	0	1	0	0	2	1	2	2	4	0	1	3
85:	2	2	2	2	0	1	7	4	1	3	3	0	1	1
99:	2	3	0	1	2	2	4	5	1	5	1	0	7	1
113:	1	1	2	2	3	3	1	3	2	2	0	3	1	3
127:	2	4	2	1	1	6	2	2	3	2	3	1	3	3
141:	0	2	1	3	2	4	3	0	2	1	1	2	2	5
155:	3	1	4	2	3	2	3	3	3	4	2	2	0	6
169:	2	3	2	0	1	0	4	3	3	4	2	3	1	1
183:	1	2	2	1	4	4	2	1	3	5	3	2	5	1
197:	5	3	1	1	3	3	1	1	1	4	1	3	4	3
211:	1	4	4	5	8	1	2	6	2	2	1	6	1	4
225:	1	2	4	0	5	2	1	3	2	1	3	2	3	3
239:	3	3	3	3	2	3	8	3	6	2	2	3	3	5
253:	4	3	0	2	1	1	0	3	3	6	5	4	2	1
267:	2	1	3	3	5	3	4	2	3	3	4	4	1	5
281:	3	2	5	2	4	4	7	3	3	5	4	7	3	4
295:	7	4	4	3	5	5	4	3	0	4	2	3	2	4
309:	4	2	3	7	5	4	5	3	6	2	4	4	7	5
323:	2	2	4	3	2	5	3	3	2	3	3	5	7	6
337:	5	1	4	3	3	3	5	4	6	5	5	4	4	6
351:	5	5	6	4	4	7	1	5	8	1	2	5	6	2
365:	2	7	3	2	2	4	3	6	2	3	8	5	4	3
379:	6	8	3	6	3	4	4	3	3	5	3	8	3	7
393:	1	3	2	2	3	3	5	6	10	8	5	5	4	5
407:	2	6	3	6	5	9	2	5	5	7	4	6	3	6
421:	5	1	5	7	1	2	2	3	4	4	3	1	4	4
435:	5	6	4	5	5	1	8	7	1	2	4	6	3	5
449:	2	6	8	7	3	7	1	3	4	3	3	4	4	4
463:	8	3	6	4	8	5	5	3	9	5	5	3	5	11
477:	1	7	5	3	1	5	1	4	8	5	11	7	8	4
491:	6	6	7	5	5	7	7	8	1	3	4	3	3	8
505:	2	2	9	7	2	5	6	9	4	4	1	5	3	6
519:	4	10	8	8	4	6	5	8	7	6	5	7	6	9
533:	10	13	5	10	4	6	4	4	6	8	3	3	3	6
547:	4	3	5	1	3	3	5	5	5	10	7	3	4	4
561:	11	6	5	6	10	9	8	6	11	10	4	9	9	2
575:	7	6	11	4	7	6	7	6	2	5	2	5	7	9
589:	7	6	5	9	5	3	3	10	10	6	7	7	6	10
603:	10	8	7	8	4	10	15	7	3	7	7	9	11	9
617:	8	8	4	3	4	10	9	7	6	8	11	6	10	8
631:	5	2	7	7	4	8	8	7	8	8	4	6	11	4
645:	3	14	8	10	5	7	6	12	6	4	4	12	3	10
659:	8	2	5	12	5	9	10	9	8	5	9	13	5	13
673:	12	7	13	9	8	5	8	5	4	11	5	5	4	9
687:	3	15	7	5	12	6	7	4	6	6	9	10	8	9
701:	10	5	5	4	3	6	13	6	8	2	6	7	8	6
715:	5	7	2	3	5	12	3	10	5	3	5	3	5	12
729:	7	9	11	6	10	5	8	5	6	6	5	10	6	1
743:	7	8	13	10	8	3	7	8	6	6	13	8	7	5
757:	6	3	4	5	3	10	3	6	4	5	2	6	7	9
771:	10	4	6	9	2	7	8	4	6	5	9	8	9	3
785:	8	6	4	2	8	6	8	7	3	6	6	8	12	4
799:	10	6	3	9	5	8	8	9	6	5	4	6	7	10
813:	6	10	4	3	5	2	6	5	6	6	6	5	2	5
827:	5	1	2	3	5	8	1	8	3	5	7	10	3	7
841:	9	7	1	5	4	6	7	6	4	3	9	6	2	8
855:	9	9	6	6	9	9	6	10	6	10	12	13	9	7
869:	2	3	3	5	3	5	8	6	4	5	7	5	7	3
883:	10	4	7	3	8	5	6	7	10	2	3	7	0	3
897:	3	4	3	1	3	2	4	7	4	4	3	3	2	2
911:	4	3	0	5	5	4	4	5	5	2	6	4	1	8
925:	6	3	4	5	3	6	4	3	2	4	3	2	6	1
939:	3	3	5	6	2	4	2	3	3	2	5	0	2	3
953:	5	8	4	4	0	4	2	3	4	1	3	2	3	2
967:	5	3	3	2	2	1	6	3	8	3	3	6	2	3
981:	4	4	6	1	1	5	3	4	2	3	3	2	2	1
995:	3	5	3	3	6	0	3	3	3	5	3	2	6	6
1009:	3	3	2	2	1	4	3	3	0	2	6	4	2	2
1023:	0	0												

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Gross Sample Counts Within Peak Regions      Generated:      7-JUN-2010 13:02:10.44

Detector ID: 23	Acquisition Start: 7-JUN-2010 06:52:48.01
Live Time: 0 02:50:02.00	Real Time: 0 02:49:55.00
Batch Id: 1005133A-RA	Sample Id: 01
Sample Type: RA	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4727.33	318		0226.22	387.48	351	72	3.12E-02	5.6	
2	0	5292.83	1056	0	0.00	570.46	482	167	1.04E-01	3.1	
3	0	5803.29	1035	0	0.00	739.49	666	155	1.01E-01	3.1	

Background Counts Within Peak Regions      Generated:      7-JUN-2010 13:02:15.85

Live Time: 0 16:40:01.00	Acquisition Start: 4-JUN-2010 15:34:46.01
	Real Time: 0 16:40:01.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4728.52	4		0157.60	386.50	351	72	6.67E-05	50.0	
2	0	5280.87	7		0430.12	565.00	482	167	1.17E-04	37.8	
3	0	5819.06	17	0	7.90	743.00	666	155	2.83E-04	24.3	

Net Sample Counts Within Peak Regions      Generated:      7-JUN-2010 13:02:16.13

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4727.33*	648		0226.22	387.48	351	72	6.35E-02	5.6	
2	0	5292.83*	2153	0	0.00	570.46	482	167	2.11E-01	3.1	
3	0	5803.29*	2109	0	0.00	739.49	666	155	2.07E-01	3.1	

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

Configuration : MCA0: [AMSCOUNT]00001E30\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : SPIKE  
 Sample date : 7-JUN-2010 00:00:00 Acquisition date : 7-JUN-2010 06:52:48  
 Sample ID : 01 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 023 Detector geometry:  
 Elapsed live time: 0 02:50:02.00 Elapsed real time: 0 02:49:55.00 0.1%  
 Energy tolerance : 150.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4727.33*	648226.22	387.48	351	72	11.2			RA-226	8.94
0	5292.83*	2153	0.00	570.46	482	167	6.2		RN-222	29.7
0	5803.29*	2109	0.00	739.49	666	155	6.2		PO-218	29.1

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ALPHA SPECTROMETRY REPORT  
7-JUN-2010 10:53:21

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE R:R\_1005133A-RA\$02\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005133A-RA \* SAMPLE ID: 02  
SAMPLE DATE: 7-JUN-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: BLANK \* DETECTOR NUMBER: 027  
ACQ DATE: 7-JUN-2010 06:53 \* AVERAGE EFFICIENCY: 20.12%  
ELAPSED LIVE TIME: 10201. \* RECOVERY: 95.83%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 09:04 \* EFF CAL DATE: 7-NOV-2009 11:51  
BKG FILENAME: B\_027\_4JUN10 \* BKG ELAPSED TIME: 60003.  
\* SAF: 2.16  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	6.60	2.04	100.0	9.071E-02	1.200E-01	2.759E-01
RN-222	5490.0	33.03	1.53	99.9	4.543E-01	2.402E-01	2.496E-01
RA-226	4785.0	7.62	1.02	100.0	1.047E-01	1.195E-01	2.181E-01

\*\*\*\*\*

MM  
Analyst

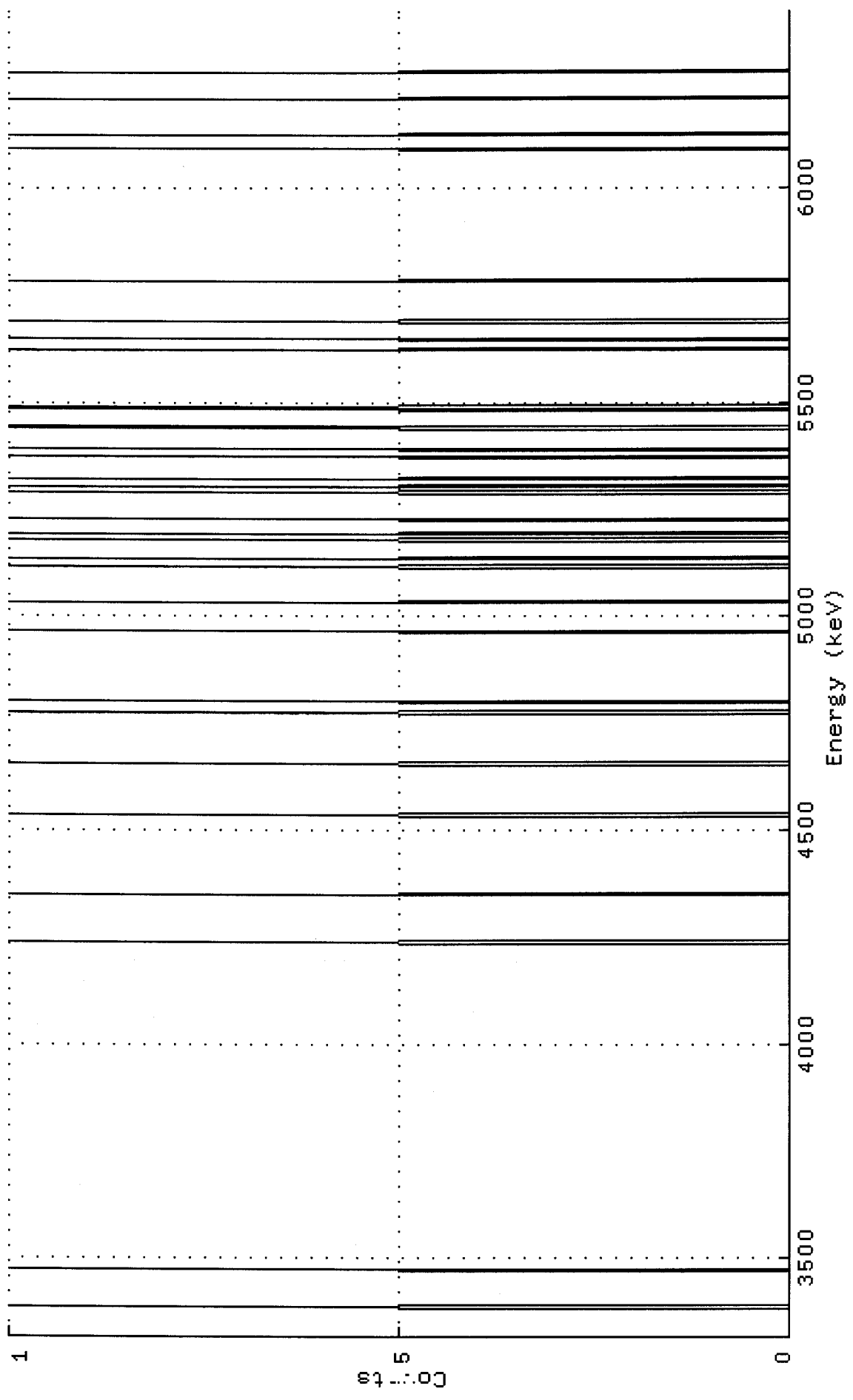
6-7-10  
Date

Alan Gregory  
Reviewer

6/7/10  
Date



Spectrum : DKA100: [ALPHA.ALUSR.ARCHIVE.R]R\_1005133A-RA#02\_RA.CNF;1  
Title : 027  
Sample Title: BLANK  
Start Time: 7-JUN-2010 06:53; Sample Time: 7-JUN-2010 00:00; Energy Offset: 3.30180E+03  
Real Time : 0 02:50:01.00 Sample ID : 02 Energy Slope : 3.22788E+00  
Live Time : 0 02:50:01.00 Sample Type: RA Energy Quad : -1.89553E-04



Channel Contents for ND\_AMS\_ARCHIVE\_R:R\_1005133A-RA\$02\_RA

Channel

1:	10201	10201	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
393:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
407:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
435:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
477:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	1	1	0	0	0	0	0	1
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
603:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
617:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
631:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
645:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
673:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	1	1	0	0	0	0	0	0	0	0	0
701:	0	0	0	1	0	1	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
757:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	1	0	0	0	0	0	0	0	0	0	0	0	1
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Gross Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:53:14.09

Detector ID: 27	Acquisition Start: 7-JUN-2010 06:53:01.01
Live Time: 0 02:50:01.00	Real Time: 0 02:50:01.00
Batch Id: 1005133A-RA	Sample Id: 02
Sample Type: RA	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4690.72	4	0280.83	441.75	339	151	3.92E-04	50.0		
2	0	5281.79	16	0493.87	637.25	550	171	1.57E-03	25.0		
3	0	5683.69	4	0177.53	773.00	739	158	3.92E-04	50.0		

Background Counts Within Peak Regions      Generated:      7-JUN-2010 10:53:19.15

Live Time: 0 16:40:03.00	Acquisition Start: 4-JUN-2010 15:34:49.01
	Real Time: 0 16:40:03.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4601.73	6	0365.16	414.00	339	151	1.00E-04	40.8		
2	0	5270.52	9	0419.62	635.00	550	171	1.50E-04	33.3		
3	0	5810.39	12	0 3.20	817.50	739	158	2.00E-04	28.9		

Net Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:53:19.47

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4690.72*	8	0280.83	441.75	339	151	7.47E-04	57.0		
2	0	5281.79*	33	0493.87	637.25	550	171	3.24E-03	26.2		
3	0	5683.69*	7	0177.53	773.00	739	158	6.47E-04	66.1		

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

Configuration : MCA0: [AMSCOUNT] 00004C7E\$1  
 Analyses by : ROIPEAK V1.2, PEAKEFF V2.2, ENBACK V1.6, NID V3.3  
 Sample title : BLANK  
 Sample date : 7-JUN-2010 00:00:00 Acquisition date : 7-JUN-2010 06:53:01  
 Sample ID : 02 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 027 Detector geometry:  
 Elapsed live time: 0 02:50:01.00 Elapsed real time: 0 02:50:01.00 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4690.72*	8280.83	441.75	339	151113.9				RA-226	0.100
0	5281.79*	33493.87	637.25	550	171 52.4				RN-222	0.435
0	5683.69*	7177.53	773.00	739	158132.1				PO-218	8.693E-02

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ALPHA SPECTROMETRY REPORT  
7-JUN-2010 10:53:36

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Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$03\_RA.CNF  
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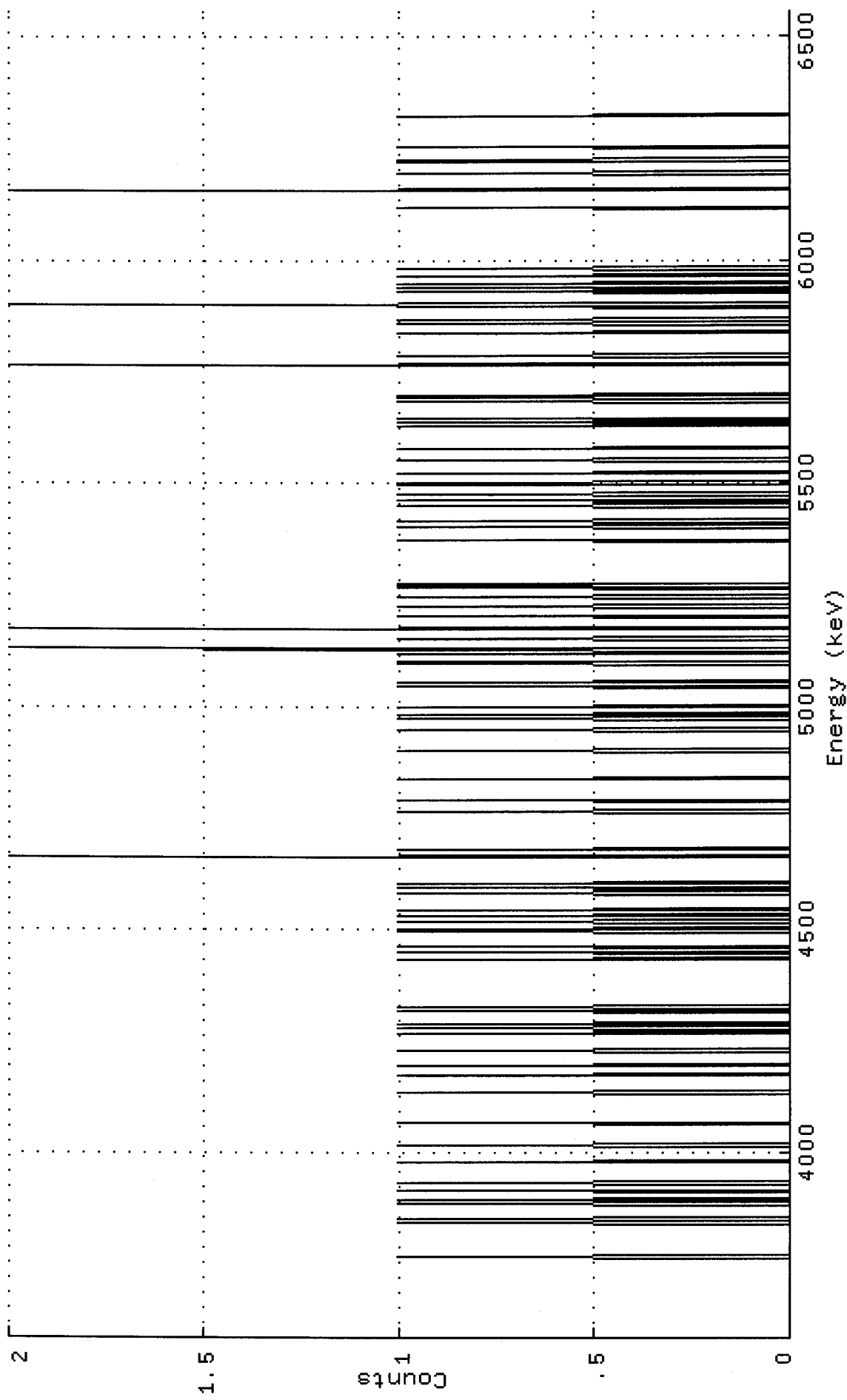
BATCH ID: 1005133A-RA \* SAMPLE ID: 03  
SAMPLE DATE: 20-MAY-2010 00:00 \* ALIQUOT: 7.000E-01 liter  
SAMPLE TITLE: MPA-RA-2-DIS \* DETECTOR NUMBER: 028  
ACQ DATE: 7-JUN-2010 06:53 \* AVERAGE EFFICIENCY: 17.24%  
ELAPSED LIVE TIME: 10201. \* RECOVERY: 72.05%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 09:04 \* EFF CAL DATE: 24-APR-2010 09:57  
BKG FILENAME: B\_028\_4JUN10 \* BKG ELAPSED TIME: 60001.  
\* SAF: 1.61  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	27.44	4.76	100.0	8.365E-01	4.463E-01	6.280E-01
RN-222	5490.0	36.08	5.78	99.9	1.101E+00	5.103E-01	6.792E-01
RA-226	4785.0	28.13	0.85	100.0	8.574E-01	4.213E-01	3.404E-01

\*\*\*\*\*  
Analyst km Date 6-7-10  
Reviewer Alan Gregory Date 6/7/10

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S\_1005133A-RA\$03-RA.CNF;1  
 Title : 028  
 Sample Title: MPA-RA-2-DIS  
 Start Time: 7-JUN-2010 06:53: Sample Time: 20-MAY-2010 00:00 Energy Offset: 3.57217E+03  
 Real Time : 0 02:50:01.00 Sample ID : 03 Energy Slope : 3.10448E+00  
 Live Time : 0 02:50:01.00 Sample Type: RA Energy Quad : -1.89753E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$03\_RA

Channel

1:	10201	10201	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
99:	0	0	1	0	0	1	0	0	0	0	0	0	1	0
113:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
141:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	1	0	0	0	0	0	0	0	0	0	0	0	0	1
197:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
211:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
225:	0	0	1	0	0	0	1	0	0	1	0	0	0	0
239:	0	0	0	0	1	0	0	1	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	1	0	0	0	0	1	0	0	0	1	0	0	0
295:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
309:	0	1	0	0	0	0	1	0	0	0	1	0	0	0
323:	0	0	0	0	0	0	0	0	1	1	0	0	1	0
337:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	2	0	0	0	0	0
365:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
393:	1	0	0	0	0	0	0	0	1	0	0	0	0	0
407:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
421:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
435:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
463:	0	1	0	0	1	0	0	0	0	0	1	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
491:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	1	1	0	0	0	0	0	0	1	0	1	2	0
519:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
533:	2	0	0	0	0	0	0	0	0	1	0	0	0	0
547:	0	0	0	1	0	0	0	0	0	0	1	0	0	0
561:	0	0	0	1	0	1	1	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
603:	0	0	0	0	0	0	0	0	0	1	0	0	0	1
617:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
631:	0	1	0	0	0	0	1	0	0	0	0	0	0	0
645:	1	1	0	0	0	0	0	0	0	1	0	0	0	0
659:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
673:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	1	0	1	0	0	1	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
715:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	2	0	0	0
743:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
771:	0	1	0	0	1	0	0	0	0	0	0	0	0	0
785:	1	0	2	0	0	0	0	0	0	0	0	0	0	1
799:	0	1	0	0	0	1	0	0	0	0	0	0	1	0
813:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	2	0	0	0
883:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
897:	0	0	0	0	0	1	1	0	0	0	0	0	0	0
911:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Eberline Services  
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Gross Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:53:27.17

Detector ID: 28	Acquisition Start: 7-JUN-2010 06:53:17.01
Live Time: 0 02:50:01.00	Real Time: 0 02:50:01.00
Batch Id: 1005133A-RA	Sample Id: 03
Sample Type: RA	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4593.19	18	0	3.10	335.78	263	156	1.76E-03	23.6	
2	0	5262.85	26	0	54.23	564.04	480	177	2.55E-03	19.6	
3	0	5813.52	20	0	152.12	757.00	676	164	1.96E-03	22.4	

Background Counts Within Peak Regions      Generated:      7-JUN-2010 10:53:33.91

Live Time: 0 16:40:01.00	Acquisition Start: 4-JUN-2010 15:34:52.01
	Real Time: 0 16:40:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4646.74	5	0	210.30	340.50	263	156	8.33E-05	44.7	
2	0	5306.04	34	0	129.92	568.00	480	177	5.67E-04	17.1	
3	0	5853.22	28	0	35.05	757.50	676	164	4.67E-04	18.9	

Net Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:53:34.21

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4593.19*	28	0	3.10	335.78	263	156	2.76E-03	24.3	
2	0	5262.85*	36	0	54.23	564.04	480	177	3.54E-03	22.9	
3	0	5813.52*	27	0	152.12	757.00	676	164	2.69E-03	26.4	

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



Configuration : MCA0:[AMSCOUNT]00004C7E\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : MPA-RA-2-DIS  
 Sample date : 20-MAY-2010 00:00:00 Acquisition date : 7-JUN-2010 06:53:17  
 Sample ID : 03 Sample quantity : 0.70000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 028 Detector geometry:  
 Elapsed live time: 0 02:50:01.00 Elapsed real time: 0 02:50:01.00 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4593.19*	28	3.10	335.78	263	156	48.6		RA-226	0.618
0	5262.85*	36	54.23	564.04	480	177	45.8		RN-222	0.793
0	5813.52*	27152.12	757.00		676	164	52.9		PO-218	0.603

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
7-JUN-2010 10:53:47

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$04\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005133A-RA \* SAMPLE ID: 04  
SAMPLE DATE: 20-MAY-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: MPA-RA-1 DIS \* DETECTOR NUMBER: 030  
ACQ DATE: 7-JUN-2010 06:53 \* AVERAGE EFFICIENCY: 18.61%  
ELAPSED LIVE TIME: 10204. \* RECOVERY: 97.51%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 09:04 \* EFF CAL DATE: 18-APR-2010 11:15  
BKG FILENAME: B\_030\_4JUN10 \* BKG ELAPSED TIME: 60003.  
\* SAF: 2.34  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	37.57	2.21	100.0	5.486E-01	2.849E-01	3.268E-01
RN-222	5490.0	46.42	2.72	99.9	6.782E-01	3.175E-01	3.528E-01
RA-226	4785.0	44.93	1.87	100.0	6.559E-01	3.094E-01	3.078E-01

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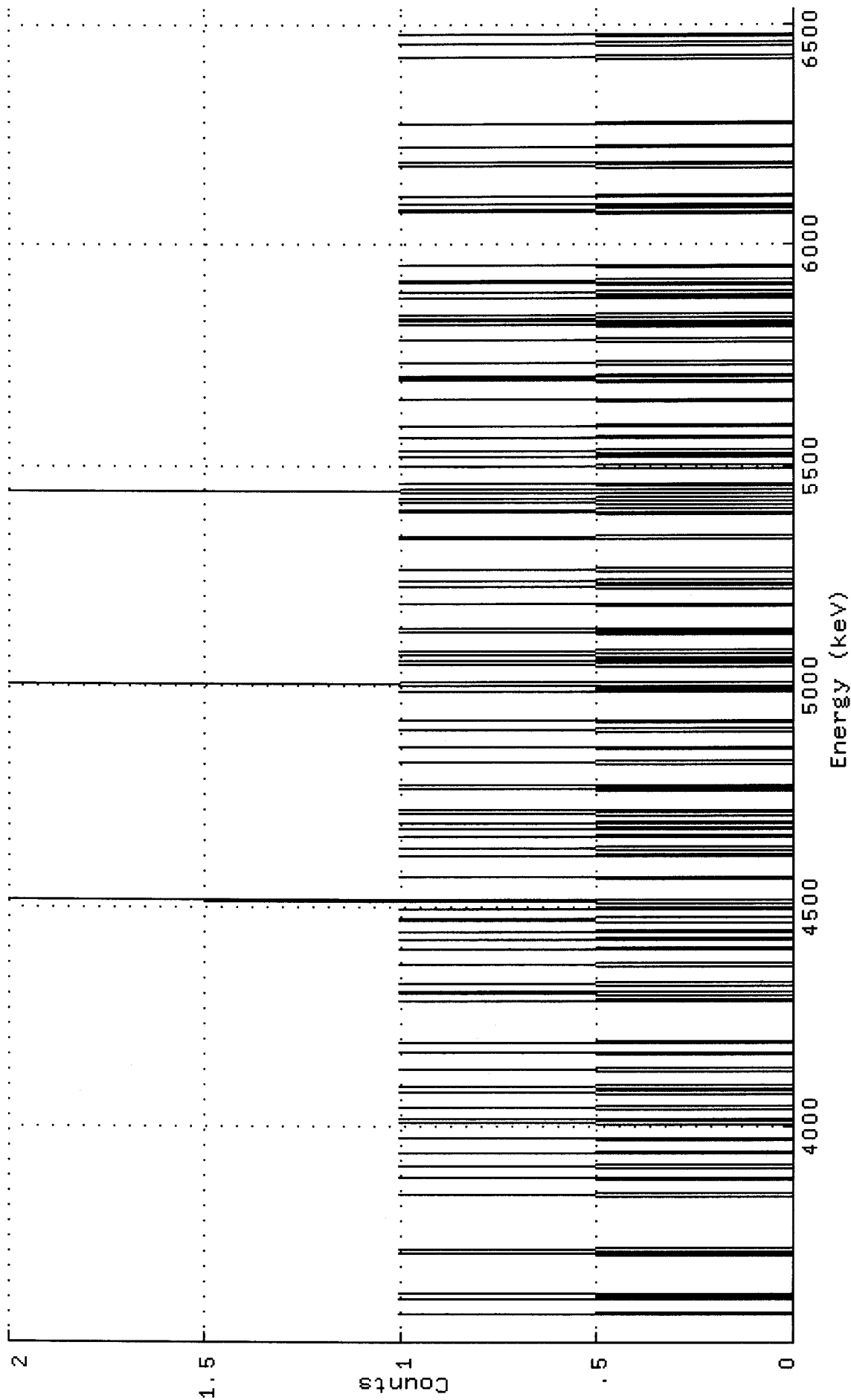
        KM          
Analyst

        6-7-10          
Date

        Alan Megibey          
Reviewer

        6/7/10          
Date

Spectrum : DKA100: [ALPHA.ALUSR.ARCHIVE.S]S\_1005133A-RA\$04\_RA.CNF;1  
Title : 030  
Sample Title: MPA-RA-1 DIS  
Start Time: 7-JUN-2010 06:53: Sample Time: 20-MAY-2010 00:00 Energy Offset: 3.49728E+03  
Real Time : 0 02:50:04.00 Sample ID : 04 Energy Slope : 3.17384E+00  
Live Time : 0 02:50:04.00 Sample Type: RA Energy Quad : -2.07391E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$04\_RA

Channel

1:	10204	10204	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
29:	0	0	0	0	0	0	1	0	0	1	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
113:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
127:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
141:	1	0	0	0	0	0	0	0	0	0	1	0	0	0
155:	0	0	0	0	0	0	0	0	1	0	1	0	0	0
169:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
183:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
197:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
211:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	1	0	0	0	0	1	1	0	0	0	0	0	1	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
281:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
295:	0	0	0	1	0	0	0	0	0	1	0	0	0	0
309:	0	0	0	1	1	0	0	0	0	0	0	0	1	0
323:	0	0	0	1	2	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
365:	0	1	0	0	0	0	0	0	0	0	1	0	0	0
379:	0	0	1	0	0	0	1	0	0	0	0	0	0	1
393:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
407:	0	0	0	1	0	0	1	0	0	0	0	0	0	0
421:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
435:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
449:	0	0	0	0	0	0	1	1	0	0	0	0	0	1
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	1	0	0	1	0	2
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	1	0	0	1	0	0	0	1	0	0	1	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	1	0	0	0	1	0	0	0	0	0
575:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
603:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	1	0	1	0	0	0	0	0	1
631:	0	0	1	0	0	0	0	0	2	0	0	0	0	1
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
659:	0	0	0	0	0	0	0	1	0	0	0	1	0	0
673:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
687:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	1	0	1	0
729:	1	0	0	0	0	0	0	0	0	0	1	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	1	0	0	0	0	0	0	0	0	0	0	0	1	0
771:	0	1	0	1	0	0	1	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	1	0	0	0	1	0	0	0
799:	0	0	0	1	0	1	1	0	0	0	0	0	0	0
813:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	1	0	1	0	0	0	1	0	0	0
869:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
897:	1	0	1	0	0	0	0	0	0	0	0	0	0	0
911:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
995:	1	1	0	0	0	0	0	0	1	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Gross Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:53:41.03

Detector ID: 30	Acquisition Start: 7-JUN-2010 06:53:34.01
Live Time: 0 02:50:04.00	Real Time: 0 02:50:04.00
Batch Id: 1005133A-RA	Sample Id: 04
Sample Type: RA	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4593.46	20	0	4.66	353.55	282	153	1.96E-03	22.4	
2	0	5288.44	21	0	3.17	586.86	496	174	2.06E-03	21.8	
3	0	5800.03	17	0403.08		763.65	688	162	1.67E-03	24.3	

Background Counts Within Peak Regions      Generated:      7-JUN-2010 10:53:45.55

Live Time: 0 16:40:03.00	Acquisition Start: 4-JUN-2010 15:34:58.01
	Real Time: 0 16:40:03.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4604.81	11	0	3.16	358.00	282	153	1.83E-04	30.2	
2	0	5273.02	16	0486.84		582.50	496	174	2.67E-04	25.0	
3	0	5811.64	13	0328.38		768.50	688	162	2.17E-04	27.7	

Net Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:53:45.82

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4593.46*	45	0	4.66	353.55	282	153	4.40E-03	23.3	
2	0	5288.44*	46	0	3.17	586.86	496	174	4.55E-03	23.1	
3	0	5800.03*	38	0403.08		763.65	688	162	3.68E-03	25.7	

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

Configuration : MCA0: [AMSCOUNT]00004C7E\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : MPA-RA-1 DIS  
 Sample date : 20-MAY-2010 00:00:00 Acquisition date : 7-JUN-2010 06:53:34  
 Sample ID : 04 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 030 Detector geometry:  
 Elapsed live time: 0 02:50:04.00 Elapsed real time: 0 02:50:04.00 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4593.46*	45	4.66	353.55	282	153	46.7		RA-226	0.640
0	5288.44*	46	3.17	586.86	496	174	46.3		RN-222	0.661
0	5800.03*	38403.08	763.65	763.65	688	162	51.5		PO-218	0.535

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ALPHA SPECTROMETRY REPORT  
7-JUN-2010 10:53:59

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$05\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005133A-RA \* SAMPLE ID: 05  
SAMPLE DATE: 20-MAY-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: MPA-RA-1 SUS \* DETECTOR NUMBER: 033  
ACQ DATE: 7-JUN-2010 06:53 \* AVERAGE EFFICIENCY: 19.88%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 66.01%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 11:49 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_033\_4JUN10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 1.76  
\*

\*\*\*\*\*  
NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	95.78	1.02	100.0	1.934E+00	5.445E-01	2.611E-01
RN-222	5490.0	108.27	0.85	99.9	2.188E+00	5.807E-01	2.467E-01
RA-226	4785.0	107.36	0.00	100.0	2.168E+00	5.753E-01	9.417E-02

\*\*\*\*\*

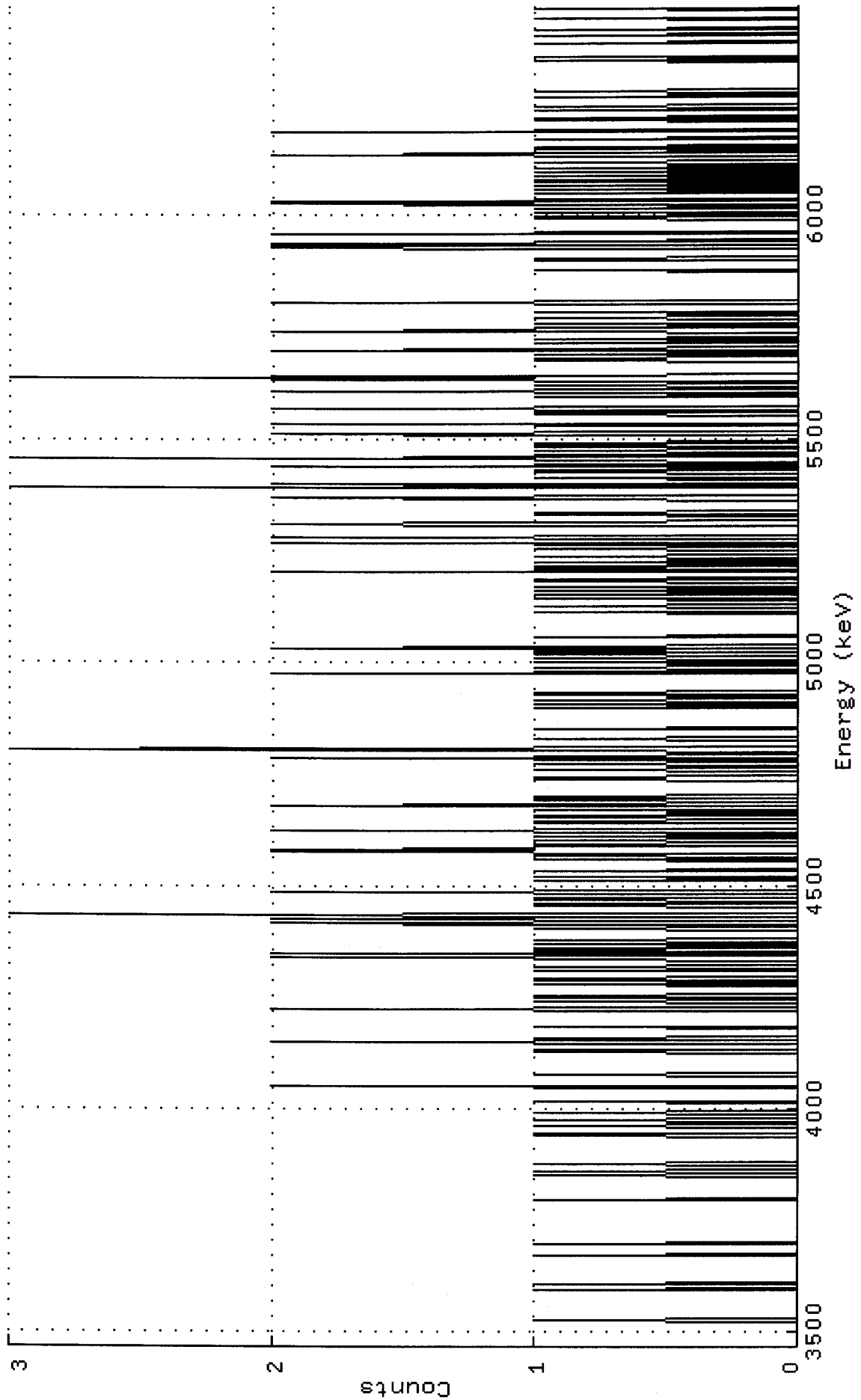
ISM  
Analyst

6-7-10  
Date

Don Gregory  
Reviewer

6/7/10  
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S\_1005133A-RA\$05\_RA.CNF;1  
Title : 033  
Sample Title: MPA-RA-1 SUS  
Start Time: 7-JUN-2010 06:53: Sample Time: 20-MAY-2010 00:00 Energy Offset: 3.45602E+03  
Real Time : 0 02:50:00.20 Sample ID : 05 Energy Slope : 3.11202E+00  
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.74816E-04





Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$05\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
71:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	1	0	1	1	0	0	0	0	1	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	1	1	0	0	0	0	0	1	0	0	0	1
169:	1	0	0	0	0	1	0	0	0	0	0	0	0	1
183:	0	0	0	0	0	0	0	0	0	0	2	0	0	0
197:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	1	1	0	0	0	0
225:	0	2	0	0	1	0	0	0	0	0	0	0	1	0
239:	0	0	0	0	0	0	0	0	0	0	0	2	0	0
253:	0	0	0	1	0	0	1	1	0	0	0	0	0	0
267:	0	1	0	0	1	0	1	0	0	0	0	0	1	0
281:	1	1	0	0	0	0	1	1	2	0	0	2	0	1
295:	0	1	0	1	0	0	1	0	0	0	0	0	0	0
309:	0	1	0	0	1	2	0	0	2	0	0	3	0	0
323:	0	0	0	0	1	0	1	0	1	1	0	0	0	0
337:	2	0	0	0	0	0	0	0	0	1	0	1	0	0
351:	0	0	1	0	0	0	0	0	0	0	1	0	0	1
365:	0	0	2	1	2	1	1	0	1	0	1	1	0	1
379:	0	0	1	0	2	0	0	0	0	0	1	1	0	0
393:	1	0	1	0	0	1	0	0	0	2	1	0	0	1
407:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
421:	0	1	1	0	0	0	0	0	1	0	0	0	1	1
435:	0	0	2	0	1	0	0	0	1	3	2	0	0	0
449:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
477:	0	0	1	0	1	0	0	0	1	0	1	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	2	0	0
505:	0	1	0	0	0	1	0	0	1	1	0	1	0	1
519:	1	0	2	1	0	0	0	0	0	0	0	1	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	1	0	0	0	0	1	0	0	0	0	1	0	0
561:	0	1	0	1	0	0	1	0	0	0	0	1	0	1
575:	0	0	0	0	0	2	0	1	0	1	0	0	1	0
589:	0	0	1	0	0	0	0	0	1	0	0	0	2	0
603:	0	0	0	2	0	0	0	0	0	0	0	0	1	0
617:	1	1	0	0	0	0	1	0	1	0	0	0	0	0
631:	0	0	0	0	1	1	2	0	0	0	0	0	0	0
645:	3	0	2	0	0	0	1	0	0	0	0	1	0	1
659:	0	0	2	0	0	0	1	1	3	0	0	0	1	1
673:	1	0	1	0	1	0	1	0	0	0	0	1	1	2
687:	0	0	0	0	0	0	2	0	0	0	0	0	0	0
701:	1	1	0	0	2	2	0	0	0	0	0	0	0	0
715:	1	0	0	0	2	0	0	0	1	1	0	0	0	2
729:	1	3	1	0	0	0	0	0	0	0	0	0	0	0
743:	1	1	1	0	0	1	0	0	2	1	0	0	0	0
757:	1	0	0	1	0	0	0	0	1	2	1	1	0	0
771:	1	0	0	0	0	1	0	0	0	1	0	0	0	0
785:	0	0	0	2	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	1	0	0	0	0	0	0	0	0	1	1	0	0	0
827:	0	0	0	0	1	2	2	0	2	0	1	0	0	0
841:	0	0	2	0	0	0	0	0	0	0	0	0	0	1
855:	1	1	0	0	1	0	0	0	1	0	0	1	2	0
869:	2	0	0	0	0	0	1	0	0	1	0	0	1	0
883:	1	0	0	1	0	0	1	0	0	1	0	0	1	0
897:	0	0	1	0	0	0	0	0	2	1	0	0	1	0
911:	0	1	0	0	0	0	0	1	0	0	0	0	0	2
925:	0	0	0	0	0	0	0	1	0	0	1	0	0	0
939:	0	0	1	0	1	1	0	0	0	0	0	0	0	1
953:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
967:	0	0	1	0	0	0	0	0	0	0	0	0	0	1
981:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
995:	1	0	0	0	0	0	1	0	0	0	0	1	0	0
1009:	0	0	0	0	0	1	0	0	0	0	0	0	0	1
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Configuration : MCA0:[AMSCOUNT]00004C7E\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : MPA-RA-1 SUS  
 Sample date : 20-MAY-2010 00:00:00 Acquisition date : 7-JUN-2010 06:53:55  
 Sample ID : 05 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 033 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.20 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4609.78*	107410.01	378.80	300	156	25.6			RA-226	1.43
0	5314.35*	108	0.00	618.65	518	176	25.6		RN-222	1.44
0	5800.52*	96468.36	788.27	712	163	27.3			PO-218	1.28

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
7-JUN-2010 10:54:10

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$06\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005133A-RA \* SAMPLE ID: 06  
SAMPLE DATE: 20-MAY-2010 00:00 \* ALIQUOT: 7.000E-01 liter  
SAMPLE TITLE: MPA-RA-2 DIS \* DETECTOR NUMBER: 034  
ACQ DATE: 7-JUN-2010 06:54 \* AVERAGE EFFICIENCY: 19.83%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 49.49%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 11:49 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_034\_4JUN10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 1.00  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	6.00	0.00	100.0	2.315E-01	1.897E-01	1.023E-01
RN-222	5490.0	9.66	0.34	99.9	3.730E-01	2.463E-01	2.070E-01
RA-226	4785.0	11.00	0.00	100.0	4.244E-01	2.576E-01	1.022E-01

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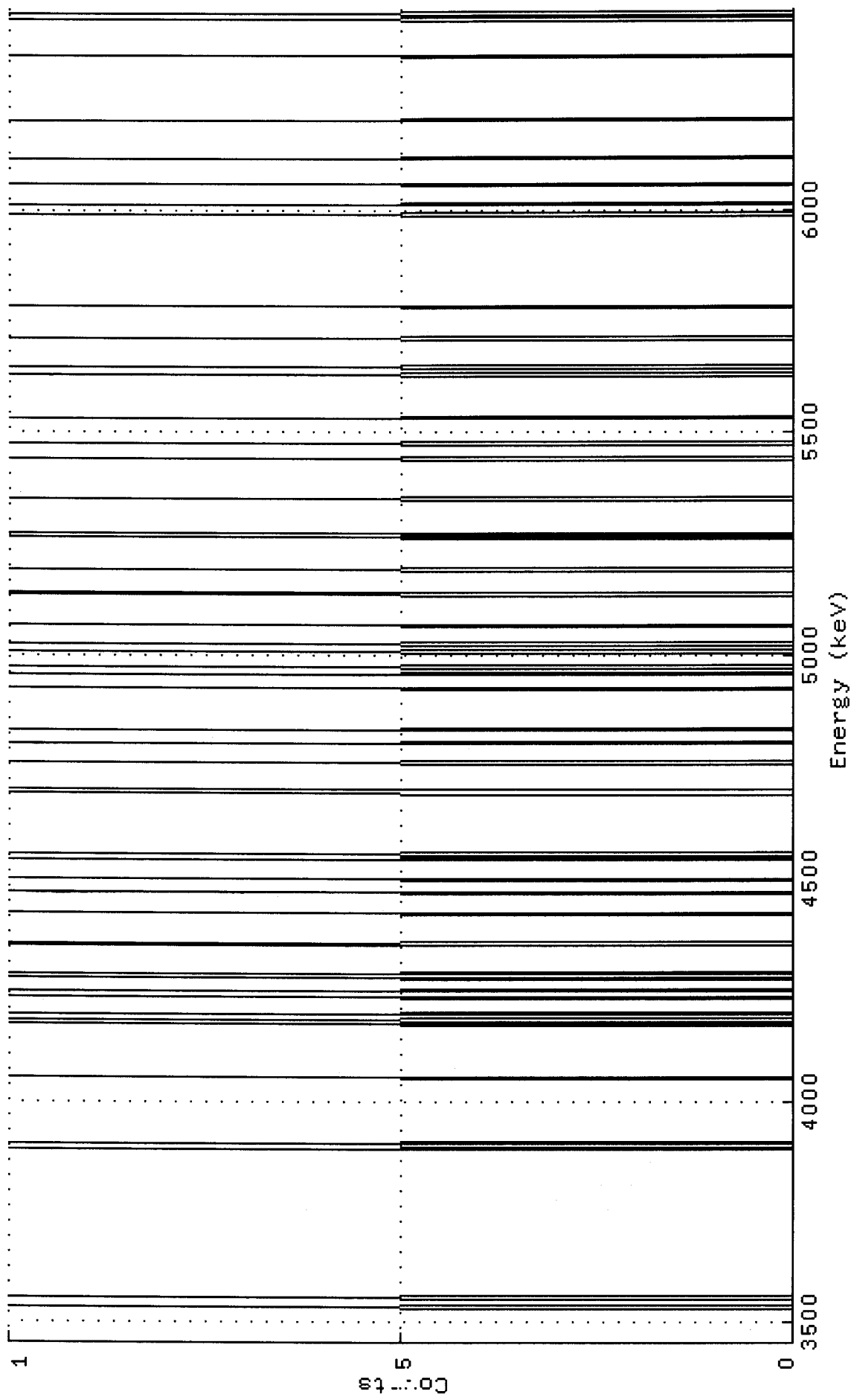
        KM          
Analyst

        6-7-10          
Date

        Alan Gregory          
Reviewer

        4/7/10          
Date

Spectrum : DKA100: [ALPHA.ALUSR.ARCHIVE.S]S\_1005133A-RA\$06\_RA.CNF; 1  
 Title : 034  
 Sample Title: MPA-RA-2 DIS  
 Start Time: 7-JUN-2010 06:54: Sample Time: 20-MAY-2010 00:00 Energy Offset: 3.44548E+03  
 Real Time : 0 02:50:00.20 Sample ID : 06 Energy Slope : 3.13670E+00  
 Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -2.03357E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$06\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	1	0	0	0	0	0	0	1	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	1	0	0	1
239:	1	0	0	0	1	0	0	0	0	0	0	0	0	0
253:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
267:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
295:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
337:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	1	0	0	0	1	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
407:	0	1	1	1	0	0	0	0	0	0	0	0	0	0
421:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
435:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
449:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
491:	0	0	0	0	0	0	0	1	0	0	0	0	1	1
505:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
519:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	1	1
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	1	0	0	1	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
631:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
673:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	1	0	0	0	0	0	1	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	1	0	0	0	0	0	0	0	1	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	1	0	0	0	0	1	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Gross Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:54:04.91

Detector ID: 34	Acquisition Start: 7-JUN-2010 06:54:10.01
Live Time: 0 02:50:00.00	Real Time: 0 02:50:00.20
Batch Id: 1005133A-RA	Sample Id: 06
Sample Type: RA	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4633.26	11	0439.14	388.45	302	156	1.08E-03	30.2		
2	0	5235.48	10	0489.32	593.50	519	177	9.80E-04	31.6		
3	0	5793.28	6	0429.73	788.83	715	164	5.88E-04	40.8		

Background Counts Within Peak Regions      Generated:      7-JUN-2010 10:54:08.28

Live Time: 0 16:40:00.00	Acquisition Start: 4-JUN-2010 15:35:07.01
	Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4607.18	0	0	0.00	379.50	302	156	0.00E+00	0.0	
2	0	5274.16	2	0	24.96	607.00	519	177	3.33E-05	70.7	
3	0	5814.65	0	0	0.00	796.50	715	164	0.00E+00	0.0	

Net Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:54:08.61

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4633.26*	11	0439.14	388.45	302	156	1.08E-03	30.2		
2	0	5235.48*	10	0489.32	593.50	519	177	9.47E-04	32.8		
3	0	5793.28*	6	0429.73	788.83	715	164	5.88E-04	40.8		

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

Configuration : MCA0: [AMSCOUNT]00004C7E\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : MPA-RA-2 DIS  
 Sample date : 20-MAY-2010 00:00:00 Acquisition date : 7-JUN-2010 06:54:10  
 Sample ID : 06 Sample quantity : 0.70000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 034 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.20 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4633.26*	11439.14	388.45	302	156	60.3			RA-226	0.210
0	5235.48*	10489.32	593.50	519	177	65.7			RN-222	0.185
0	5793.28*	6429.73	788.83	715	164	81.6			PO-218	0.115



Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
7-JUN-2010 10:54:22

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$07\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005133A-RA \* SAMPLE ID: 07  
SAMPLE DATE: 20-MAY-2010 00:00 \* ALIQUOT: 7.000E-01 liter  
SAMPLE TITLE: MPA-RA-2 SUS \* DETECTOR NUMBER: 035  
ACQ DATE: 7-JUN-2010 06:54 \* AVERAGE EFFICIENCY: 19.76%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 54.41%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 11:49 \* EFF CAL DATE: 7-MAR-2009 22:44  
BKG FILENAME: B\_035\_4JUN10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 2.12  
\*

\*\*\*\*\*  
NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	13.99	0.85	100.0	4.926E-01	3.973E-01	5.178E-01
RN-222	5490.0	38.92	1.36	99.9	1.371E+00	6.586E-01	6.029E-01
RA-226	4785.0	24.25	1.19	100.0	8.536E-01	5.212E-01	5.763E-01

\*\*\*\*\*

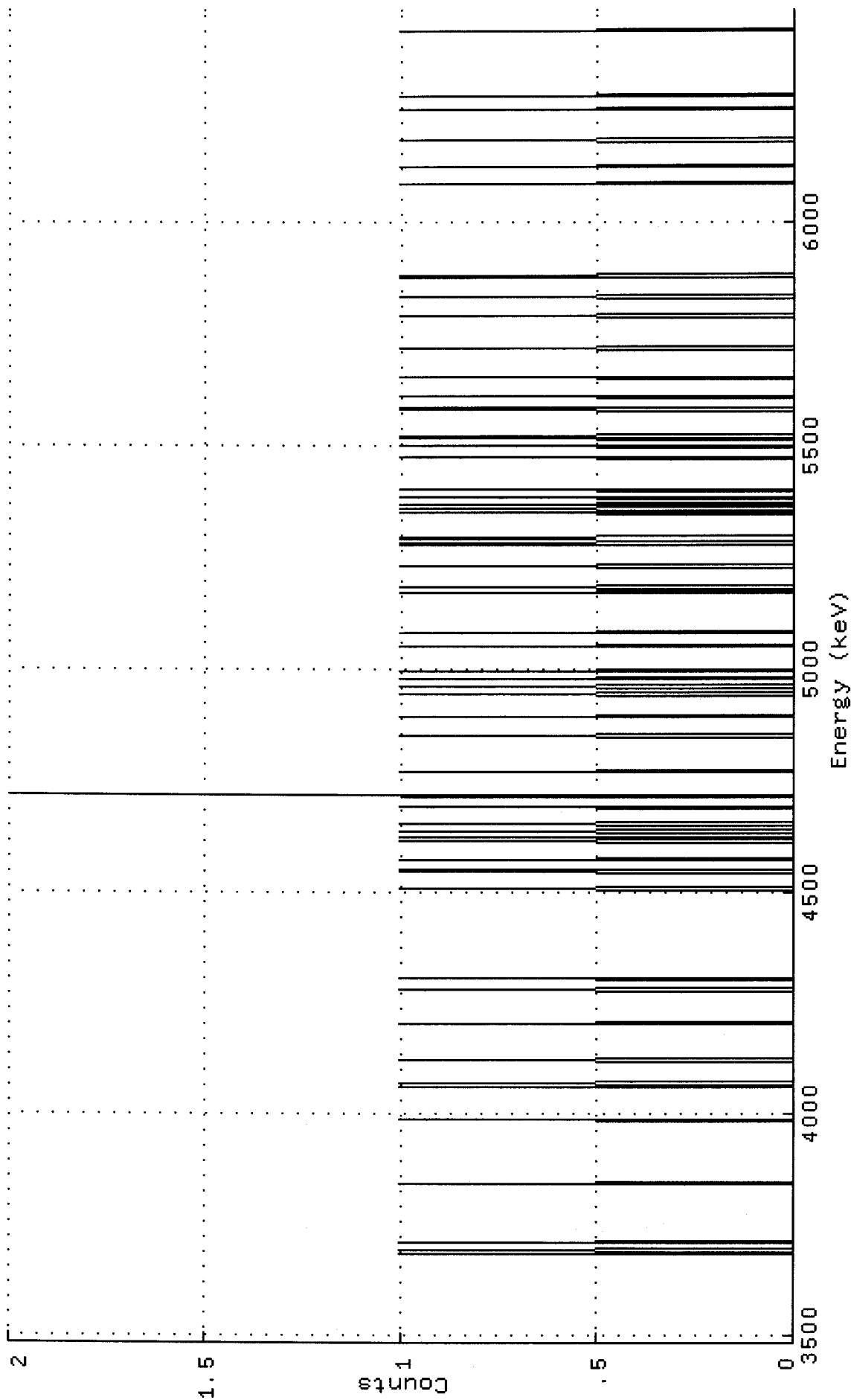
KM  
Analyst

6-7-10  
Date

Alan Magby  
Reviewer

6/7/10  
Date

Spectrum : DKA100: [ALPHA.ALUSR.ARCHIVE.S]S\_1005133A-RA#07\_RA.CNF; 1  
 Title : 035  
 Sample Title: MPA-RA-2 SUS  
 Start Time: 7-JUN-2010 06:54; Sample Time: 20-MAY-2010 00:00 Energy Offset: 3.47484E+03  
 Real Time : 0 02:50:00.20 Sample ID : 07 Energy Slope : 3.13319E+00  
 Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -2.03796E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$07\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
71:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
267:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
337:	0	0	0	0	0	0	0	0	0	0	0	0	1	1
351:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
379:	1	0	0	0	0	0	1	0	0	0	0	0	0	0
393:	0	0	0	0	1	0	0	0	0	0	0	0	0	2
407:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
435:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
449:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	1	0	0	0	0	0	1	0
491:	0	0	0	0	1	0	0	0	0	0	1	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	1	0	0	0	0	0	0	0	0	0	1	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	1	0	0	0	1	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	1	1	0	0	1
603:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	1	0	0	1	1	0	0	1	0
631:	0	0	0	1	0	0	0	0	0	1	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
673:	0	1	0	0	0	0	0	1	0	1	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	1	1	0	0	0	0	0	0	0	0	1	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	1	1	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
953:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Configuration : MCA0: [AMSCOUNT]00004C7E\$1  
 Analyses by : ROIPEAK V1.2, PEAKEFF V2.2, ENBACK V1.6, NID V3.3  
 Sample title : MPA-RA-2 SUS  
 Sample date : 20-MAY-2010 00:00:00 Acquisition date : 7-JUN-2010 06:54:26  
 Sample ID : 07 Sample quantity : 0.70000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 035 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.20 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4630.07*	24	3.13	378.00	293	155	60.7		RA-226	0.464
0	5317.24*	39510.71	612.42	510	177	47.6			RN-222	0.746
0	5761.73*	14303.92	768.29	706	164	80.4			PO-218	0.268

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
7-JUN-2010 10:54:36

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$08\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005133A-RA \* SAMPLE ID: 08  
SAMPLE DATE: 21-MAY-2010 00:00 \* ALIQUOT: 7.500E-01 liter  
SAMPLE TITLE: MPA-RA-3 DIS \* DETECTOR NUMBER: 036  
ACQ DATE: 7-JUN-2010 06:54 \* AVERAGE EFFICIENCY: 19.64%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 63.02%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 11:49 \* EFF CAL DATE: 24-APR-2010 09:57  
BKG FILENAME: B\_036\_4JUN10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 1.55  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	37.24	3.06	100.0	1.063E+00	4.591E-01	4.771E-01
RN-222	5490.0	28.64	3.91	99.9	8.180E-01	4.124E-01	5.244E-01
RA-226	4785.0	33.59	0.51	100.0	9.587E-01	4.207E-01	2.641E-01

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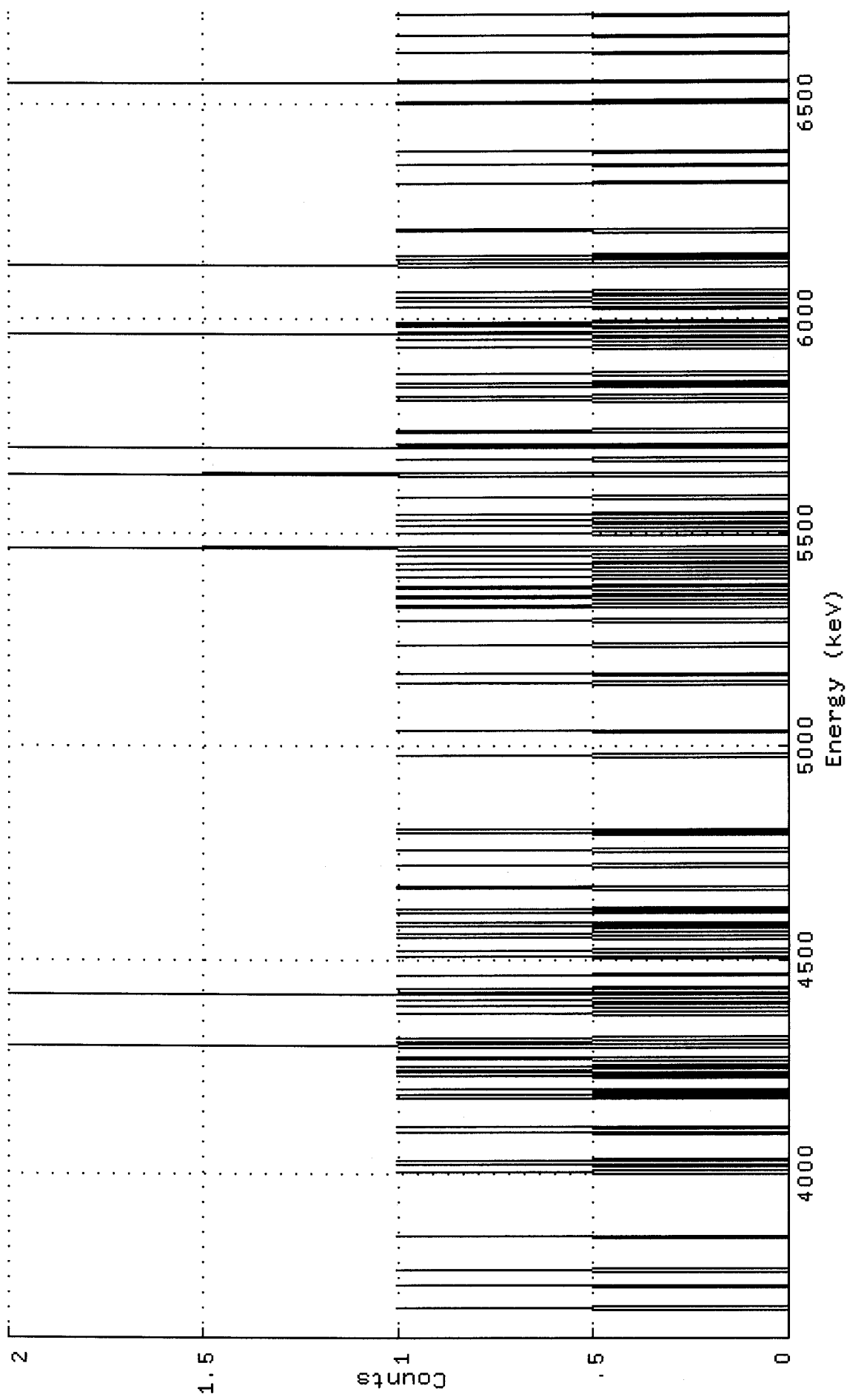
        KM          
Analyst

        6-7-10          
Date

        Alan Adeyly          
Reviewer

        6/7/10          
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S\_1005133A-RA\$08\_RA.CNF;1  
 Title : 036  
 Sample Title: MPA-RA-3 DIS  
 Start Time: 7-JUN-2010 06:54: Sample Time: 21-MAY-2010 00:00 Energy Offset: 3.60347E+03  
 Real Time : 0 02:50:00.20 Sample ID : 08 Energy Slope : 3.21606E+00  
 Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.79455E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$08\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
43:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
127:	0	0	0	1	0	0	0	1	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
155:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
183:	1	0	0	1	0	0	0	0	0	0	0	0	0	1
197:	0	0	1	0	1	0	0	1	0	0	0	0	1	1
211:	0	0	0	0	0	0	0	0	2	0	0	1	0	0
225:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	1	0	0	0	0	0	1	0	0	0
253:	1	0	0	0	0	2	0	0	0	1	0	0	0	0
267:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
281:	0	0	0	0	1	0	0	0	0	1	0	0	0	0
295:	0	0	0	0	0	1	0	0	1	0	0	0	0	1
309:	0	0	1	0	0	0	0	0	0	0	1	0	0	1
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	1	1	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
365:	1	1	0	0	0	0	0	0	0	0	0	0	0	1
379:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
407:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
435:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	1	0	0	0	0	0	0	1	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
547:	0	0	0	0	0	0	1	1	0	0	0	0	1	0
561:	1	0	0	0	0	1	0	1	0	0	0	0	0	0
575:	1	0	0	0	0	0	1	0	0	0	0	1	0	0
589:	0	0	1	0	0	0	0	0	2	1	0	0	0	0
603:	0	0	0	0	0	0	1	0	0	0	0	0	1	0
617:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
631:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	0	0	2	1	0	0
659:	0	0	0	0	0	0	0	1	1	0	0	0	0	0
673:	0	0	0	2	0	1	0	0	0	0	0	0	0	0
687:	0	1	1	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
715:	0	1	0	0	0	0	0	0	0	0	0	0	1	0
729:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
757:	0	0	0	0	1	0	0	0	1	2	0	0	0	0
771:	1	0	1	0	1	0	0	0	0	0	0	0	0	0
785:	0	1	0	0	0	0	1	0	0	1	0	0	0	1
799:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	2	0	0	0	0	1	0
827:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	1	1	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
911:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
967:	2	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	1



Eberline Services  
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:54:26.91

Detector ID: 36	Acquisition Start: 7-JUN-2010 06:54:49.01
Live Time: 0 02:50:00.00	Real Time: 0 02:50:00.20
Batch Id: 1005133A-RA	Sample Id: 08
Sample Type: RA	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4573.60	22	0	3.22	306.91	243	150	2.16E-03	21.3	
2	0	5359.52	21	0	4.72	563.76	452	169	2.06E-03	21.8	
3	0	5837.71	26	0360.13		723.96	639	156	2.55E-03	19.6	

Background Counts Within Peak Regions      Generated:      7-JUN-2010 10:54:34.33

Live Time: 0 16:40:00.00	Acquisition Start: 4-JUN-2010 15:35:13.01
	Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4606.15	3	0118.09		317.50	243	150	5.00E-05	57.7	
2	0	5275.42	23	0 15.16		536.00	452	169	3.83E-04	20.9	
3	0	5817.45	18	0 70.21		716.50	639	156	3.00E-04	23.6	

Net Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:54:34.66

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4573.60*	34	0	3.22	306.91	243	150	3.29E-03	21.7	
2	0	5359.52*	29	0	4.72	563.76	452	169	2.81E-03	25.0	
3	0	5837.71*	37	0360.13		723.96	639	156	3.65E-03	21.3	

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

Configuration : MCA0:[AMSCOUNT]00004C7E\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : MPA-RA-3 DIS  
 Sample date : 21-MAY-2010 00:00:00 Acquisition date : 7-JUN-2010 06:54:49  
 Sample ID : 08 Sample quantity : 0.75000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 036 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.20 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4573.60*	34	3.22	306.91	243	150	43.3		RA-226	0.604
0	5359.52*	29	4.72	563.76	452	169	49.9		RN-222	0.516
0	5837.71*	37360.13	723.96		639	156	42.6		PO-218	0.670

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
7-JUN-2010 10:54:46

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$09\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005133A-RA \* SAMPLE ID: 09  
SAMPLE DATE: 21-MAY-2010 00:00 \* ALIQUOT: 7.500E-01 liter  
SAMPLE TITLE: MPA-RA-3-SUS \* DETECTOR NUMBER: 037  
ACQ DATE: 7-JUN-2010 06:55 \* AVERAGE EFFICIENCY: 19.91%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 49.40%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 4-JUN-2010 11:49 \* EFF CAL DATE: 7-MAR-2009 22:44  
BKG FILENAME: B\_037\_4JUN10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 2.31  
\*

\*\*\*\*\*  
NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	154.09	0.68	100.0	5.536E+00	1.410E+00	5.381E-01
RN-222	5490.0	181.98	0.51	99.9	6.542E+00	1.541E+00	4.958E-01
RA-226	4785.0	133.47	0.51	100.0	4.794E+00	1.305E+00	4.954E-01

\*\*\*\*\*

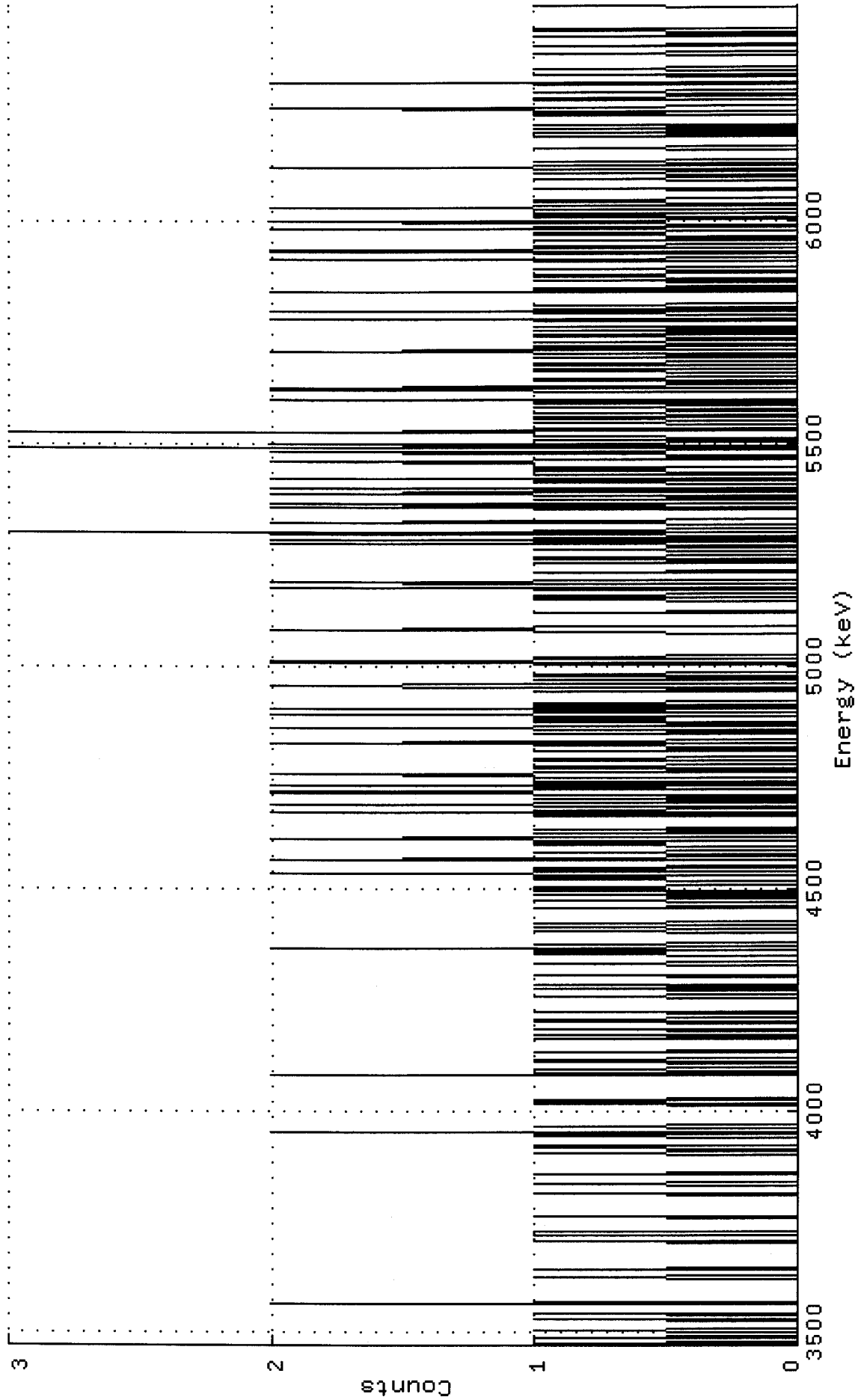
        KM          
Analyst

        6-7-10          
Date

        Alan Grealy          
Reviewer

        6/7/10          
Date

Spectrum : DKA100:[ALPHA.ALUSR.ARCHIVE.S]S\_1005133A-RA\$09\_RA.CNF;1  
Title : 037  
Sample Title: MPA-RA-3-SUS  
Start Time: 7-JUN-2010 06:55; Sample Time: 21-MAY-2010 00:00 Energy Offset: 3.46090E+03  
Real Time : 0 02:50:00.20 Sample ID : 09 Energy Slope : 3.10618E+00  
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.57747E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005133A-RA\$09\_RA

Channel

1:	0	0	0	0	1	0	0	0	1	0	0	0	0	1
15:	0	0	0	0	0	0	0	1	0	0	0	1	0	0
29:	0	0	0	0	0	2	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
57:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
85:	1	1	0	0	0	0	0	0	0	0	0	0	1	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	1	0	0	0	0	0	0	1	1	0	0	0	0
127:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	1	0	0	0	1	1	0	0	0	0	0
155:	0	1	1	0	2	0	0	0	1	1	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	1	0	1
183:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	2	0	0	0	1	0	0	0	0
211:	1	0	1	0	0	0	0	0	1	0	0	0	0	0
225:	0	0	0	0	1	0	1	0	0	0	1	0	0	0
239:	0	0	1	0	1	0	0	0	0	1	0	0	0	0
253:	0	0	0	0	0	0	0	1	0	0	0	0	1	0
267:	0	1	0	0	0	0	0	0	1	0	0	0	0	0
281:	0	0	0	1	0	0	0	0	0	0	1	1	1	0
295:	2	1	0	1	0	0	0	0	0	0	0	0	0	1
309:	0	0	1	0	0	1	0	0	0	0	0	0	0	0
323:	0	0	0	1	0	0	0	0	1	0	0	0	1	0
337:	0	1	0	1	1	0	0	0	0	0	1	1	1	0
351:	2	0	0	1	0	1	0	0	0	0	0	2	1	0
365:	0	0	1	0	0	0	0	0	1	1	0	0	2	1
379:	0	0	0	1	0	0	1	0	0	0	0	0	0	0
393:	0	0	1	0	2	0	1	0	0	0	2	0	1	0
407:	0	1	0	0	2	2	2	0	0	1	0	2	0	1
421:	0	0	0	1	1	2	0	0	0	1	0	1	0	0
435:	0	0	1	1	0	0	0	0	0	1	0	0	0	1
449:	0	2	1	0	0	0	0	0	1	0	0	0	2	0
463:	0	0	1	0	1	1	0	0	2	0	1	1	0	2
477:	0	0	1	1	0	0	0	0	0	0	0	0	1	0
491:	0	1	2	1	0	0	0	0	1	0	1	1	0	0
505:	0	0	0	0	0	2	0	2	0	0	1	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	1	1	2	1	1	0	0	0	0	0	0	0	0
547:	0	0	1	0	0	0	0	0	0	0	0	0	1	0
561:	1	1	0	0	0	0	2	0	0	0	1	2	0	0
575:	0	0	0	0	0	1	0	0	0	0	0	0	1	0
589:	1	0	1	0	0	0	0	0	1	0	0	0	1	2
603:	0	0	2	0	0	0	1	3	0	0	0	0	0	0
617:	1	2	1	0	0	0	0	0	0	1	0	0	2	0
631:	1	2	0	0	0	1	0	0	0	2	1	0	0	2
645:	0	0	0	0	1	0	2	0	0	0	1	0	1	1
659:	1	0	1	1	1	1	2	0	1	0	0	0	1	2
673:	1	0	0	3	0	2	1	0	0	1	0	1	1	1
687:	1	3	0	1	0	0	0	0	1	0	0	1	1	0
701:	0	1	1	0	0	0	1	0	0	1	0	2	0	0
715:	0	0	0	0	0	2	0	2	1	0	0	0	1	0
729:	1	0	0	0	0	0	1	1	0	0	0	1	1	0
743:	0	0	0	1	0	0	0	2	1	0	1	1	0	0
757:	1	1	0	0	0	1	0	1	0	1	0	0	1	0
771:	0	0	0	0	2	0	0	0	0	1	0	2	0	0
785:	0	1	0	0	0	0	0	0	0	0	0	0	2	0
799:	0	1	0	0	0	0	1	0	0	0	1	1	1	0
813:	0	0	1	0	0	0	0	0	0	2	1	0	0	0
827:	0	2	0	2	0	0	1	0	0	0	0	1	0	0
841:	0	1	1	1	0	1	2	0	0	0	1	2	1	0
855:	1	0	1	1	0	0	0	0	2	0	0	0	0	1
869:	1	1	0	0	0	0	0	0	0	1	0	0	0	0
883:	0	0	0	1	0	0	0	1	1	0	1	0	2	0
897:	1	0	1	1	0	0	0	0	0	0	0	0	0	1
911:	1	0	0	0	0	0	0	0	0	1	0	0	1	0
925:	1	0	0	1	0	0	0	0	0	0	0	0	1	1
939:	0	1	1	2	1	0	0	0	0	0	1	1	0	0
953:	0	1	1	0	0	0	0	0	0	2	0	0	0	0
967:	0	1	0	0	0	0	1	0	0	0	0	0	0	0
981:	0	0	0	0	1	1	0	0	0	0	0	1	0	0
995:	0	0	0	0	0	1	0	0	0	1	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Eberline Services  
Oak Ridge Laboratory

Gross Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:54:41.05

Detector ID: 37	Acquisition Start: 7-JUN-2010 06:55:06.01
Live Time: 0 02:50:00.00	Real Time: 0 02:50:00.20
Batch Id: 1005133A-RA	Sample Id: 09
Sample Type: RA	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4643.80	58		0312.17	388.48	299	155	5.69E-03	13.1	
2	0	5343.30	79		0475.19	625.91	515	176	7.75E-03	11.3	
3	0	5827.30	67		0472.14	793.84	709	162	6.57E-03	12.2	

Background Counts Within Peak Regions      Generated:      7-JUN-2010 10:54:44.41

Live Time: 0 16:40:00.00	Acquisition Start: 4-JUN-2010 15:35:16.01
	Real Time: 0 16:40:00.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4596.36	3	0	0.00	376.00	299	155	5.00E-05	57.7	
2	0	5262.20	3	0	67.49	602.50	515	176	5.00E-05	57.7	
3	0	5801.78	4	3	0233.16	789.50	709	162	6.67E-05	50.0	

Net Sample Counts Within Peak Regions      Generated:      7-JUN-2010 10:54:44.73

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4643.80*	133		0312.17	388.48	299	155	1.31E-02	13.2	
2	0	5343.30*	182		0475.19	625.91	515	176	1.78E-02	11.3	
3	0	5827.30*	154		0472.14	793.84	709	162	1.51E-02	12.3	

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

```

Configuration      : MCA0:[AMSCOUNT]00004C7E$1
Analyses by       : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : MPA-RA-3-SUS
Sample date       : 21-MAY-2010 00:00:00 Acquisition date : 7-JUN-2010 06:55:06
Sample ID         : 09                               Sample quantity  : 0.75000 liter
Sample type       : RA                               Sample geometry   :
Detector name     : 037                             Detector geometry:
Elapsed live time: 0 02:50:00.00                   Elapsed real time: 0 02:50:00.20   0.0%
Energy tolerance  : 100.00 keV                     Half life ratio  : 8.00
Errors propagated: Yes                             Systematic Error : 3.00 %
Efficiency type   : Average value                   Efficiencies at  : Peak Energy
Abundance limit   : 75.00
    
```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4643.80*	133312.17	388.48	299	155	26.4			RA-226	2.37
0	5343.30*	182475.19	625.91	515	176	22.6			RN-222	3.23
0	5827.30*	154472.14	793.84	709	162	24.5			PO-218	2.73

Detector	Parameter	Flag	Filename
1	OFFLINE		
2	OFFLINE		
3	ALL	Passed	D_003_NONE
4	ALL	Passed	D_004_NONE
5	ALL	Passed	D_005_NONE
6	OFFLINE		
7	OFFLINE		
8	OFFLINE		
9	OFFLINE		
10	OFFLINE		
11	ALL	Passed	D_011_NONE
12	OFFLINE		
13	ALL	Passed	D_013_NONE
14	OFFLINE		
15	ALL	Passed	D_015_NONE
16	OFFLINE		
17	OFFLINE		
18	ALL	Passed	D_018_NONE
19	ALL	Passed	D_019_NONE
20	OFFLINE		
21	ALL	Passed	D_021_NONE
22	OFFLINE		
23	ALL	Passed	D_023_NONE
24	OFFLINE		
25	OFFLINE		
26	OFFLINE		
27	ALL	Passed	D_027_NONE
28	ALL	Passed	D_028_NONE
29	OFFLINE		
30	ALL	Passed	D_030_NONE
31	OFFLINE		
32	OFFLINE		
33	ALL	Passed	D_033_NONE
34	ALL	Passed	D_034_NONE
35	ALL	Passed	D_035_NONE
36	ALL	Passed	D_036_NONE
37	ALL	Passed	D_037_NONE
38	ALL	Passed	D_038_NONE
39	ALL	Passed	D_039_NONE
40	ALL	Passed	D_040_NONE
41	OFFLINE		
42	ALL	Passed	D_042_NONE
43	ALL	Passed	D_043_NONE
44	OFFLINE		
45	ALL	Passed	D_045_NONE
46	ALL	Passed	D_046_NONE
47	ALL	Passed	D_047_NONE
48	ALL	Passed	D_048_NONE

APPROVAL DATE: 6/7/10

APPROVAL TIME: \_\_\_\_\_

APPROVED BY: KM

PROCEDURE # \_\_\_\_\_



**SECTION IX**  
**ANALYTICAL DATA (RADIUM-228)**

















# Aliquot Worksheet

<b>Work Order</b>	<b>Run</b>	<b>Analysis Code</b>	<b>Rpt Units</b>	<b>Lab Deadline</b>	<b>Technician</b>
<b>10-05133</b>	<b>1</b>	<b>Ra228</b>	<b>liters</b>	<b>6/8/2010</b>	<b>JBARNARD</b>

Lab Fraction	Michael Pisani & Associates		Sample		Muffle Data		Dilution Data			Aliquot Data			MS Aliquot Data		H-3 Solids Only	
	Client ID	Type	Ratio Post/Pre	No of Dilis	Dil Factor	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist Aliq				
01	LCS	LCS				1.00E+00	1.0000E+00	1.0000E+00	1.0000E+00							
02	BLANK	MBL				1.00E+00	1.0000E+00	1.0000E+00	1.0000E+00							
03	MPA-RA-2 DIS	DUP				1.00E+00	7.0000E-01	7.0000E-01	7.0000E-01							
04	MPA-RA-1 DIS	TRG				1.00E+00	1.0000E+00	1.0000E+00	1.0000E+00							
05	MPA-RA-1 SUS	TRG				1.00E+00	1.0000E+00	1.0000E+00	1.0000E+00							
06	MPA-RA-2 DIS	DO				1.00E+00	7.0000E-01	7.0000E-01	7.0000E-01							
07	MPA-RA-2 SUS	TRG				1.00E+00	7.0000E-01	7.0000E-01	7.0000E-01							
08	MPA-RA-3 DIS	TRG				1.00E+00	7.5000E-01	7.5000E-01	7.5000E-01							
09	MPA-RA-3 SUS	TRG				1.00E+00	7.5000E-01	7.5000E-01	7.5000E-01							

<b>Comments</b>	
-----------------	--

Technician: JB Date: 6/1/10



(R) 01210  
10B

Sheet1

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
D2	1005133-01	3	292	30	1400	6/8/10 14:10

Page 1

(R)  
6/21/10  
JCS

Sheet1

Detector ID	Sample ID	Alpha	Beta	Count	Time	Voltage	TOD
C1	1005133-06	7	176	120		1400	6/8/10 15:40
C2	1005133-07	10	235	120		1400	6/8/10 15:40
C3	1005133-08	7	213	120		1400	6/8/10 15:40
C4	1005133-09	13	249	120		1400	6/8/10 15:40
B1	1005133-02	12	158	120		1400	6/8/10 15:40
B2	1005133-03	5	165	120		1400	6/8/10 15:40
B3	1005133-04	15	189	120		1400	6/8/10 15:40
B4	1005133-05	11	199	120		1400	6/8/10 15:40

Page 1

GPC Detector Report  
(ALL Efficiencies)

AM  
6/8/10

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	6/8/2010	0.2453	P	0.2375	0.2504	0.2634
LB4110A - A2	Alpha	11/18/2007	6/8/2010	0.2197	P	0.1959	0.2208	0.2456
LB4110A - A3	Alpha	11/18/2007	6/8/2010	0.2176	P	0.2049	0.2178	0.2308
LB4110A - A4	Alpha	11/18/2007	6/8/2010	0.2341	P	0.2156	0.2289	0.2422
LB4110A - B1	Alpha	11/18/2007	6/8/2010	0.2257	P	0.2177	0.2316	0.2456
LB4110A - B2	Alpha	11/18/2007	6/8/2010	0.2237	P	0.2139	0.2277	0.2415
LB4110A - B3	Alpha	11/18/2007	6/8/2010	0.2414	P	0.2267	0.2423	0.2579
LB4110A - B4	Alpha	11/18/2007	6/8/2010	0.2382	P	0.2284	0.2410	0.2536
LB4110A - C1	Alpha	11/18/2007	6/8/2010	0.2134	W	0.2115	0.2225	0.2336
LB4110A - C2	Alpha	11/18/2007	6/8/2010	0.2232	P	0.2022	0.2270	0.2517
LB4110A - C3	Alpha	11/18/2007	6/8/2010	0.2432	P	0.2360	0.2494	0.2628
LB4110A - C4	Alpha	11/18/2007	6/8/2010	0.2160	F	0.2178	0.2320	0.2462
LB4110A - D1	Alpha	11/18/2007	6/8/2010	0.2336	P	0.2252	0.2398	0.2544
LB4110A - D2	Alpha	11/18/2007	6/8/2010	0.2657	P	0.2481	0.2632	0.2784
LB4110A - D3	Alpha	11/18/2007	6/8/2010	0.2616	P	0.2514	0.2689	0.2863
LB4110A - D4	Alpha	11/18/2007	6/8/2010	0.1981	P	0.1924	0.2104	0.2284
LB4110R - A1	Alpha	11/24/2006	6/8/2010	0.2280	P	0.2065	0.2424	0.2784
LB4110R - A2	Alpha	11/24/2006	6/8/2010	0.2179	P	0.1928	0.2243	0.2559
LB4110R - A3	Alpha	11/24/2006	6/8/2010	0.2200	P	0.1986	0.2283	0.2581
LB4110R - A4	Alpha	11/24/2006	6/8/2010	0.2451	P	0.2141	0.2470	0.2798
LB4110R - B1	Alpha	11/24/2006	6/8/2010	0.2266	P	0.1939	0.2306	0.2672
LB4110R - B2	Alpha	11/24/2006	6/8/2010	0.2162	P	0.1860	0.2213	0.2567
LB4110R - B3	Alpha	11/24/2006	6/8/2010	0.2372	P	0.2094	0.2477	0.2861
LB4110R - B4	Alpha	11/24/2006	6/8/2010	0.2271	P	0.2006	0.2376	0.2747
LB4110R - C1	Alpha	11/24/2006	6/8/2010	0.2134	P	0.1836	0.2173	0.2510
LB4110R - C2	Alpha	11/24/2006	6/8/2010	0.2269	P	0.1947	0.2266	0.2585
LB4110R - C3	Alpha	11/24/2006	6/8/2010	0.2386	P	0.2041	0.2425	0.2810
LB4110R - C4	Alpha	11/24/2006	6/8/2010	0.2138	P	0.1991	0.2314	0.2637
LB4110R - D1	Alpha	11/24/2006	6/8/2010	0.2229	P	0.1944	0.2296	0.2649
LB4110R - D2	Alpha	11/24/2006	6/8/2010	0.2587	P	0.2246	0.2592	0.2937
LB4110R - D3	Alpha	11/24/2006	6/8/2010	0.2500	P	0.2223	0.2548	0.2873
LB4110R - D4	Alpha	11/24/2006	6/8/2010	0.1943	P	0.1813	0.2116	0.2419
LB5100 - 1	Alpha	7/10/2006	10/26/2007	0.3368	P	0.3332	0.3455	0.3578

GPC Detector Report  
(ALL Efficiencies)

AM  
6/8/10

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	6/8/2010	0.5826	P	0.5582	0.5898	0.6215
LB4110A - A2	Beta	11/18/2007	6/8/2010	0.5125	P	0.4658	0.5229	0.5800
LB4110A - A3	Beta	11/18/2007	6/8/2010	0.5221	P	0.4935	0.5268	0.5600
LB4110A - A4	Beta	11/18/2007	6/8/2010	0.5584	P	0.5202	0.5490	0.5778
LB4110A - B1	Beta	11/18/2007	6/8/2010	0.5210	P	0.5118	0.5423	0.5729
LB4110A - B2	Beta	11/18/2007	6/8/2010	0.5353	P	0.5101	0.5396	0.5691
LB4110A - B3	Beta	11/18/2007	6/8/2010	0.5398	P	0.5023	0.5529	0.6035
LB4110A - B4	Beta	11/18/2007	6/8/2010	0.5554	P	0.5352	0.5603	0.5853
LB4110A - C1	Beta	11/18/2007	6/8/2010	0.4897	P	0.4836	0.5061	0.5285
LB4110A - C2	Beta	11/18/2007	6/8/2010	0.4843	P	0.4358	0.5090	0.5821
LB4110A - C3	Beta	11/18/2007	6/8/2010	0.5758	P	0.5622	0.5874	0.6126
LB4110A - C4	Beta	11/18/2007	6/8/2010	0.5091	W	0.5057	0.5402	0.5747
LB4110A - D1	Beta	11/18/2007	6/8/2010	0.5461	P	0.5345	0.5725	0.6105
LB4110A - D2	Beta	11/18/2007	6/8/2010	0.5842	P	0.5528	0.6163	0.6798
LB4110A - D3	Beta	11/18/2007	6/8/2010	0.6106	P	0.5818	0.6263	0.6709
LB4110A - D4	Beta	11/18/2007	6/8/2010	0.4638	W	0.4633	0.5019	0.5404
LB4110R - A1	Beta	11/24/2006	6/8/2010	0.5587	P	0.4783	0.5761	0.6740
LB4110R - A2	Beta	11/24/2006	6/8/2010	0.4853	P	0.4099	0.5131	0.6163
LB4110R - A3	Beta	11/24/2006	6/8/2010	0.5395	P	0.4560	0.5487	0.6414
LB4110R - A4	Beta	11/24/2006	6/8/2010	0.5843	P	0.4949	0.5911	0.6872
LB4110R - B1	Beta	11/24/2006	6/8/2010	0.5406	P	0.4509	0.5520	0.6530
LB4110R - B2	Beta	11/24/2006	6/8/2010	0.5260	P	0.4300	0.5292	0.6283
LB4110R - B3	Beta	11/24/2006	6/8/2010	0.5780	P	0.4925	0.5963	0.7000
LB4110R - B4	Beta	11/24/2006	6/8/2010	0.5417	P	0.4635	0.5608	0.6582
LB4110R - C1	Beta	11/24/2006	6/8/2010	0.5029	P	0.4128	0.5066	0.6003
LB4110R - C2	Beta	11/24/2006	6/8/2010	0.5313	P	0.4370	0.5316	0.6263
LB4110R - C3	Beta	11/24/2006	6/8/2010	0.5773	P	0.4635	0.5742	0.6848
LB4110R - C4	Beta	11/24/2006	6/8/2010	0.5214	P	0.4467	0.5440	0.6413
LB4110R - D1	Beta	11/24/2006	6/8/2010	0.5491	P	0.4497	0.5464	0.6430
LB4110R - D2	Beta	11/24/2006	6/8/2010	0.6098	P	0.5058	0.6091	0.7124
LB4110R - D3	Beta	11/24/2006	6/8/2010	0.5945	P	0.4924	0.5908	0.6892
LB4110R - D4	Beta	11/24/2006	6/8/2010	0.4788	P	0.4078	0.5017	0.5956
LB5100 - 1	Beta	7/10/2006	10/26/2007	0.4428	F	0.4555	0.4731	0.4906

*Handwritten:* 6/8/10

GPC Detector Report  
(ALL Backgrounds)

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	6/8/2010	3.33E-02	P	-5.51E-02	7.03E-02	1.96E-01
LB4110A - A2	Alpha	11/18/2007	6/8/2010	1.00E-01	P	-5.68E-02	1.01E-01	2.58E-01
LB4110A - A3	Alpha	11/18/2007	6/8/2010	1.17E-01	P	-4.90E-02	5.06E-02	1.50E-01
LB4110A - A4	Alpha	11/18/2007	6/8/2010	5.00E-02	P	-6.16E-02	5.91E-02	1.80E-01
LB4110A - B1	Alpha	11/18/2007	6/8/2010	6.67E-02	P	-1.34E-01	8.35E-02	3.01E-01
LB4110A - B2	Alpha	11/18/2007	6/8/2010	3.33E-02	P	-6.60E-02	7.75E-02	2.21E-01
LB4110A - B3	Alpha	11/18/2007	6/8/2010	3.33E-02	P	-5.44E-02	4.47E-02	1.44E-01
LB4110A - B4	Alpha	11/18/2007	6/8/2010	1.17E-01	P	-4.58E-02	5.36E-02	1.53E-01
LB4110A - C1	Alpha	11/18/2007	6/8/2010	6.67E-02	P	-6.36E-02	8.18E-02	2.27E-01
LB4110A - C2	Alpha	11/18/2007	6/8/2010	6.67E-02	P	-2.02E-01	1.22E-01	4.47E-01
LB4110A - C3	Alpha	11/18/2007	6/8/2010	1.00E-01	P	-2.46E-01	1.22E-01	4.90E-01
LB4110A - C4	Alpha	11/18/2007	6/8/2010	5.00E-02	P	-7.08E-02	7.83E-02	2.27E-01
LB4110A - D1	Alpha	11/18/2007	6/8/2010	8.33E-02	P	-4.58E-02	8.40E-02	2.14E-01
LB4110A - D2	Alpha	11/18/2007	6/8/2010	0.00E+00	P	-6.87E-02	6.93E-02	2.07E-01
LB4110A - D3	Alpha	11/18/2007	6/8/2010	6.67E-02	P	-3.65E-02	6.27E-02	1.62E-01
LB4110A - D4	Alpha	11/18/2007	6/8/2010	8.33E-02	P	-5.90E-02	7.83E-02	2.16E-01
LB4110R - A1	Alpha	11/24/2006	6/8/2010	1.00E-01	P	-1.11E-01	8.40E-02	2.79E-01
LB4110R - A2	Alpha	11/24/2006	6/8/2010	1.67E-02	P	-9.81E-02	9.66E-02	2.91E-01
LB4110R - A3	Alpha	11/24/2006	6/8/2010	5.00E-02	P	-8.99E-02	7.74E-02	2.45E-01
LB4110R - A4	Alpha	11/24/2006	6/8/2010	1.00E-01	P	-5.08E-02	8.31E-02	2.17E-01
LB4110R - B1	Alpha	11/24/2006	6/8/2010	1.67E-02	P	-1.17E-01	6.86E-02	2.54E-01
LB4110R - B2	Alpha	11/24/2006	6/8/2010	1.50E-01	P	-7.84E-02	7.68E-02	2.32E-01
LB4110R - B3	Alpha	11/24/2006	6/8/2010	3.33E-02	P	-7.64E-02	7.16E-02	2.20E-01
LB4110R - B4	Alpha	11/24/2006	6/8/2010	8.33E-02	P	-6.52E-02	8.50E-02	2.35E-01
LB4110R - C1	Alpha	11/24/2006	6/8/2010	1.00E-01	P	-8.43E-02	8.87E-02	2.62E-01
LB4110R - C2	Alpha	11/24/2006	6/8/2010	1.67E-02	P	-8.36E-02	8.62E-02	2.56E-01
LB4110R - C3	Alpha	11/24/2006	6/8/2010	5.00E-02	P	-1.04E-01	9.62E-02	2.96E-01
LB4110R - C4	Alpha	11/24/2006	6/8/2010	1.50E-01	P	-7.23E-02	9.26E-02	2.57E-01
LB4110R - D1	Alpha	11/24/2006	6/8/2010	1.00E-01	P	-9.11E-02	8.69E-02	2.65E-01
LB4110R - D2	Alpha	11/24/2006	6/8/2010	8.33E-02	P	-6.18E-02	8.95E-02	2.41E-01
LB4110R - D3	Alpha	11/24/2006	6/8/2010	5.00E-02	P	-5.96E-02	7.79E-02	2.15E-01
LB4110R - D4	Alpha	11/24/2006	6/8/2010	8.33E-02	P	-5.26E-02	9.39E-02	2.40E-01
LB5100 - 1	Alpha	7/10/2006	10/26/2007	5.00E-02	P	-1.56E-02	9.58E-02	2.07E-01

GPC Detector Report  
(ALL Backgrounds)

MM  
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Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	6/8/2010	1.52E+00	P	-7.69E+00	2.71E+00	1.31E+01
LB4110A - A2	Beta	11/18/2007	6/8/2010	1.38E+00	P	-5.85E-02	1.58E+00	3.22E+00
LB4110A - A3	Beta	11/18/2007	6/8/2010	1.33E+00	P	3.86E-01	1.29E+00	2.20E+00
LB4110A - A4	Beta	11/18/2007	6/8/2010	1.15E+00	P	4.71E-01	1.71E+00	2.95E+00
LB4110A - B1	Beta	11/18/2007	6/8/2010	1.35E+00	P	-8.53E+00	3.94E+00	1.64E+01
LB4110A - B2	Beta	11/18/2007	6/8/2010	1.05E+00	P	6.23E-02	1.49E+00	2.91E+00
LB4110A - B3	Beta	11/18/2007	6/8/2010	1.32E+00	P	1.20E-01	1.49E+00	2.85E+00
LB4110A - B4	Beta	11/18/2007	6/8/2010	1.38E+00	P	-5.44E-02	1.42E+00	2.90E+00
LB4110A - C1	Beta	11/18/2007	6/8/2010	1.33E+00	P	-7.57E+00	3.09E+00	1.38E+01
LB4110A - C2	Beta	11/18/2007	6/8/2010	1.12E+00	P	3.30E-01	1.43E+00	2.52E+00
LB4110A - C3	Beta	11/18/2007	6/8/2010	1.60E+00	P	4.49E-01	1.48E+00	2.52E+00
LB4110A - C4	Beta	11/18/2007	6/8/2010	1.52E+00	P	-1.28E+00	2.13E+00	5.54E+00
LB4110A - D1	Beta	11/18/2007	6/8/2010	2.28E+00	P	-3.93E+00	3.04E+00	1.00E+01
LB4110A - D2	Beta	11/18/2007	6/8/2010	1.52E+00	P	-1.33E+00	1.76E+00	4.85E+00
LB4110A - D3	Beta	11/18/2007	6/8/2010	4.95E+00	P	-2.76E-01	4.10E+00	8.48E+00
LB4110A - D4	Beta	11/18/2007	6/8/2010	1.38E+00	P	-9.11E-01	1.57E+00	4.04E+00
LB4110R - A1	Beta	11/24/2006	6/8/2010	1.70E+00	P	-6.15E+01	2.78E+00	6.71E+01
LB4110R - A2	Beta	11/24/2006	6/8/2010	7.67E-01	P	-6.18E+01	2.51E+00	6.69E+01
LB4110R - A3	Beta	11/24/2006	6/8/2010	1.07E+00	P	-6.12E+01	4.14E+00	6.95E+01
LB4110R - A4	Beta	11/24/2006	6/8/2010	1.33E+00	P	-6.17E+01	2.65E+00	6.70E+01
LB4110R - B1	Beta	11/24/2006	6/8/2010	1.05E+00	P	-6.48E+01	2.75E+00	7.03E+01
LB4110R - B2	Beta	11/24/2006	6/8/2010	1.00E+00	P	-6.47E+01	2.82E+00	7.04E+01
LB4110R - B3	Beta	11/24/2006	6/8/2010	1.13E+00	P	-6.41E+01	3.90E+00	7.19E+01
LB4110R - B4	Beta	11/24/2006	6/8/2010	1.27E+00	P	-6.50E+01	2.59E+00	7.02E+01
LB4110R - C1	Beta	11/24/2006	6/8/2010	1.33E+00	P	-6.40E+01	4.59E+00	7.31E+01
LB4110R - C2	Beta	11/24/2006	6/8/2010	1.77E+00	P	-6.48E+01	3.56E+00	7.19E+01
LB4110R - C3	Beta	11/24/2006	6/8/2010	1.67E+00	P	-6.51E+01	3.58E+00	7.23E+01
LB4110R - C4	Beta	11/24/2006	6/8/2010	1.58E+00	P	-7.34E+01	4.19E+00	8.18E+01
LB4110R - D1	Beta	11/24/2006	6/8/2010	8.18E+00	P	-6.19E+01	6.57E+00	7.51E+01
LB4110R - D2	Beta	11/24/2006	6/8/2010	7.67E-01	P	-6.58E+01	2.68E+00	7.12E+01
LB4110R - D3	Beta	11/24/2006	6/8/2010	3.52E+00	P	-6.96E+01	7.55E+00	8.48E+01
LB4110R - D4	Beta	11/24/2006	6/8/2010	1.37E+00	P	-6.54E+01	3.09E+00	7.16E+01
LB5100 - 1	Beta	7/10/2006	10/26/2007	4.52E+00	F	-3.19E-01	1.58E+00	3.48E+00



**SECTION X**  
**BARIUM-133 ANALYTICAL TRACER DATA**

ICB  
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VAX/VMS Peak Search Report Generated 4-JUN-2010 13:22:48.36

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100513301\_GE5\_BAFIL\_149917.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : SPIKE  
Deposition Date :  
Sample Date : 4-JUN-2010 00:00:00. Acquisition date : 4-JUN-2010 13:07:24.  
Sample ID : 1005133-01 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:01.25 0.1%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4.33	15	15	0.30	47.05	41	12	1.64E-02	62.2	
2	0	13.33	10	18	0.31	133.56	123	13	1.08E-02	98.4	
3	0	21.09	86	48	0.53	208.18	199	17	9.57E-02	21.8	
4	0	30.91	2204	128	0.69	302.62	290	31	2.45E+00	2.7	
5	1	35.05	470	31	0.62	342.44	332	26	5.22E-01	5.4	2.19E+00
6	1	35.88	142	20	0.69	350.39	332	26	1.58E-01	15.7	
7	0	53.31	49	14	0.24	518.04	511	14	5.48E-02	19.8	
8	0	61.76	244	40	0.83	599.28	589	24	2.71E-01	8.6	
9	2	65.67	68	38	0.75	636.93	626	27	7.59E-02	24.5	1.96E+00
10	2	66.20	75	32	0.69	642.00	626	27	8.31E-02	21.6	
11	0	81.09	869	126	0.57	785.14	770	27	9.65E-01	4.5	
12	0	112.10	171	54	0.97	1083.36	1070	25	1.90E-01	12.6	
13	0	134.23	14	9	1.22	1296.17	1284	18	1.53E-02	51.2	
14	0	302.91	114	3	0.72	2918.23	2905	23	1.26E-01	9.8	
15	0	307.30	19	6	0.35	2960.50	2952	16	2.06E-02	32.4	
16	2	333.34	39	3	1.17	3210.91	3203	26	4.31E-02	18.4	2.66E+00
17	2	333.98	56	3	0.97	3217.00	3203	26	6.20E-02	14.8	
18	1	355.61	10	12	0.99	3425.00	3414	28	1.12E-02	207.8	1.40E+00
19	1	356.13	460	18	0.99	3430.00	3414	28	5.11E-01	4.8	
20	3	382.89	12	2	0.73	3687.40	3684	29	1.35E-02	23.3	1.44E+00
21	3	383.89	53	11	1.01	3697.00	3684	29	5.85E-02	22.2	
22	3	384.31	53	13	1.01	3701.00	3684	29	5.92E-02	22.2	
23	2	386.70	197	10	1.01	3724.00	3713	30	2.19E-01	6.7	4.62E+00
24	2	387.43	40	6	1.02	3731.03	3713	30	4.47E-02	34.4	

Total number of lines in spectrum 24  
Number of unidentified lines 19  
Number of lines tentatively identified by NID 5 20.83%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/filter	Wtd Mean Decay Corr pCi/filter	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.327E+02	4.327E+02	0.759E+02	17.53	
Total Activity :			4.327E+02	4.327E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/filter	Wtd Mean Decay Corr pCi/filter	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	6.727E+02	6.727E+02	1.217E+02	18.09	
Total Activity :			6.727E+02	6.727E+02			

Grand Total Activity : 1.105E+03 1.105E+03

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	4.327E+02	4.327E+02	17.53	OK
	302.84	17.80	4.662E+00	4.116E+02	4.116E+02	27.34	OK
	356.01	60.00	4.450E+00	5.171E+02	5.171E+02	16.80	OK

Final Mean for 3 Valid Peaks = 4.327E+02 +/- 7.587E+01 ( 17.53%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	6.727E+02	6.727E+02	18.09	OK

Final Mean for 1 Valid Peaks = 6.727E+02 +/- 1.217E+02 ( 18.09%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.327E+02	7.587E+01	1.622E+01	2.349E+00	26.673
TH-234	6.727E+02	1.217E+02	1.063E+02	3.829E+00	6.330

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-7.104E-01	4.646E+00	8.393E+00	8.272E-01	-0.085
CD-109	8.228E+01	7.392E+01	1.514E+02	9.731E+00	0.544
PA-231	2.240E-01	9.574E-01	1.823E+00	1.883E-02	0.123
PA-234	3.984E+00 +	1.741E+00	2.317E+00	2.393E-02	1.720
NP-237	3.028E+00	2.288E+01	4.180E+01	2.617E+00	0.072
AM-241	4.935E+00	4.735E+00	8.515E+00	2.719E-01	0.580

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VAX/VMS Peak Search Report Generated 4-JUN-2010 13:38:14.41

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100513302\_GE5\_BAFIL\_149918.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : BLANK  
Deposition Date :  
Sample Date : 4-JUN-2010 00:00:00. Acquisition date : 4-JUN-2010 13:22:58.  
Sample ID : 1005133-02 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:01.22 0.1%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	21.06	95	20	0.62	207.89	197	18	1.06E-01	14.7	
2	0	30.90	2127	140	0.74	302.55	289	25	2.36E+00	2.5	
3	5	34.97	406	15	0.55	341.71	329	32	4.51E-01	5.7	6.23E-01
4	5	35.75	168	15	0.84	349.20	329	32	1.87E-01	15.2	
5	1	53.16	45	34	0.73	516.64	505	21	4.95E-02	31.0	2.18E+00
6	1	53.61	25	8	0.63	520.91	505	21	2.81E-02	34.4	
7	0	61.75	294	40	0.86	599.25	584	30	3.27E-01	7.9	
8	1	65.78	138	24	0.69	638.00	624	35	1.53E-01	10.8	2.97E+00
9	1	66.51	28	22	0.69	645.00	624	35	3.14E-02	53.3	
10	0	71.20	15	24	0.18	690.07	683	18	1.67E-02	70.2	
11	3	79.64	64	19	0.87	771.25	762	36	7.07E-02	20.9	9.47E-01
12	3	81.07	845	19	0.65	785.04	762	36	9.39E-01	3.6	
13	2	110.62	46	25	0.83	1069.16	1064	35	5.10E-02	17.4	2.14E+00
14	2	111.90	245	33	0.91	1081.49	1064	35	2.72E-01	8.5	
15	0	116.25	37	36	0.82	1123.25	1113	17	4.06E-02	36.4	
16	0	160.96	14	23	0.53	1553.19	1540	17	1.61E-02	69.6	
17	0	276.53	47	6	0.41	2664.54	2653	20	5.19E-02	18.1	
18	5	302.47	26	4	0.95	2914.00	2906	23	2.93E-02	38.4	1.85E+00
19	5	302.98	86	4	0.56	2918.91	2906	23	9.51E-02	14.1	
20	5	303.54	24	3	0.56	2924.32	2906	23	2.62E-02	38.6	
21	1	333.25	19	5	0.97	3210.00	3201	28	2.15E-02	37.4	6.95E-01
22	1	333.87	24	7	0.97	3216.00	3201	28	2.63E-02	38.5	
23	1	334.35	16	4	0.87	3220.58	3201	28	1.77E-02	48.2	
24	0	356.19	412	11	0.90	3430.59	3416	29	4.58E-01	5.2	
25	1	383.68	132	3	1.01	3695.00	3680	29	1.46E-01	8.6	1.43E+01
26	1	384.41	90	3	1.01	3702.00	3680	29	1.00E-01	11.2	
27	2	386.59	87	3	1.11	3722.97	3713	26	9.72E-02	14.5	1.52E+00
28	2	387.31	77	6	0.82	3729.84	3713	26	8.57E-02	16.8	
29	0	391.08	24	11	0.69	3766.10	3750	25	2.63E-02	36.3	

Total number of lines in spectrum 29  
 Number of unidentified lines 23  
 Number of lines tentatively identified by NID 6 20.69%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
BA-133	10.50Y	1.00	4.207E+02	4.208E+02	0.702E+02	16.69	
Total Activity :			4.207E+02	4.208E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
TH-234	4.47E+09Y	1.00	8.108E+02	8.108E+02	1.347E+02	16.61	
Total Activity :			8.108E+02	8.108E+02			

Grand Total Activity : 1.232E+03 1.232E+03

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	4.207E+02	4.208E+02	16.69	OK
	302.84	17.80	4.662E+00	3.098E+02	3.098E+02	33.93	OK
	356.01	60.00	4.450E+00	4.637E+02	4.638E+02	17.32	OK

Final Mean for 3 Valid Peaks = 4.208E+02 +/- 7.021E+01 ( 16.69%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	8.108E+02	8.108E+02	16.61	OK

Final Mean for 1 Valid Peaks = 8.108E+02 +/- 1.347E+02 ( 16.61%)

Flag: "\*" = Keyline



---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.208E+02	7.021E+01	1.401E+01	2.029E+00	30.028
TH-234	8.108E+02	1.347E+02	9.765E+01	3.519E+00	8.303

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

Nuclide	Key-Line Activity (pCi/filter)	K.L. Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-2.062E+00		4.322E+00	7.449E+00	7.342E-01	-0.277
CD-109	-7.347E+00		7.177E+01	1.286E+02	8.266E+00	-0.057
PA-231	-6.688E-01		1.014E+00	1.699E+00	1.754E-02	-0.394
PA-234	4.406E+00	+	1.308E+00	2.134E+00	2.204E-02	2.065
NP-237	8.670E+00		2.074E+01	3.966E+01	2.484E+00	0.219
AM-241	4.442E+00		4.535E+00	8.166E+00	2.607E-01	0.544

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KCS  
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VAX/VMS Peak Search Report Generated 4-JUN-2010 13:53:47.94

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100513303\_GE5\_BAFIL\_149921.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : MPA-RA-2 DIS  
Deposition Date :  
Sample Date : 4-JUN-2010 00:00:00. Acquisition date : 4-JUN-2010 13:38:29.  
Sample ID : 1005133-03 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:01.18 0.1%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	15.95	6	7	0.19	158.80	148	15	6.11E-03	115.2	
2	0	21.10	70	28	0.67	208.33	198	19	7.81E-02	21.7	
3	0	23.86	7	3	0.13	234.86	230	10	7.67E-03	58.4	
4	0	30.91	1595	63	0.71	302.67	288	25	1.77E+00	2.8	
5	1	35.07	371	24	0.69	342.61	332	29	4.12E-01	6.0	2.25E+00
6	1	35.81	75	22	0.70	349.73	332	29	8.29E-02	29.2	
7	0	53.31	38	23	0.52	518.04	510	16	4.21E-02	29.5	
8	1	61.31	18	21	0.68	595.00	589	23	2.02E-02	68.6	2.61E+00
9	1	61.94	179	25	0.68	601.00	589	23	1.99E-01	9.6	
10	1	65.68	43	27	0.69	637.00	627	29	4.77E-02	30.3	1.84E+00
11	1	66.30	33	17	0.69	643.00	627	29	3.64E-02	40.9	
12	0	76.67	19	3	0.48	742.70	733	16	2.12E-02	28.3	
13	0	79.73	27	19	0.52	772.10	760	17	3.02E-02	38.7	
14	0	81.08	647	12	0.63	785.07	776	19	7.19E-01	4.1	
15	0	111.84	167	22	0.56	1080.91	1067	26	1.86E-01	10.1	
16	0	115.94	23	17	0.50	1120.28	1110	17	2.57E-02	40.5	
17	0	160.75	21	12	0.31	1551.20	1536	22	2.38E-02	40.0	
18	0	276.64	40	6	0.38	2665.59	2652	23	4.47E-02	19.6	
19	1	302.78	84	0	0.95	2917.00	2905	24	9.30E-02	11.3	2.15E+00
20	1	303.40	42	0	0.95	2923.00	2905	24	4.72E-02	20.1	
21	5	333.35	23	8	0.97	3211.00	3200	25	2.55E-02	34.0	1.65E+00
22	5	333.80	19	4	0.57	3215.26	3200	25	2.08E-02	40.6	
23	5	334.53	19	0	0.57	3222.34	3200	25	2.16E-02	17.7	
24	5	355.58	56	3	1.05	3424.74	3417	25	6.27E-02	25.2	1.53E+00
25	5	356.35	251	2	0.84	3432.17	3417	25	2.78E-01	7.1	
26	1	383.79	29	4	1.01	3696.00	3688	22	3.18E-02	24.7	9.36E-01
27	1	384.51	28	4	1.11	3702.97	3688	22	3.15E-02	26.2	
28	0	387.04	110	7	1.01	3727.25	3713	28	1.22E-01	10.8	

Total number of lines in spectrum 28  
 Number of unidentified lines 22  
 Number of lines tentatively identified by NID 6 21.43%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			pCi/filter	pCi/filter	2-Sigma Error		
BA-133	10.50Y	1.00	3.222E+02	3.223E+02	0.551E+02	17.10	
Total Activity :			3.222E+02	3.223E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			pCi/filter	pCi/filter	2-Sigma Error		
TH-234	4.47E+09Y	1.00	4.940E+02	4.940E+02	0.987E+02	19.97	
AM-241	432.20Y	1.00	4.691E+00	4.691E+00	6.443E+00	137.34	
Total Activity :			4.987E+02	4.987E+02			

Grand Total Activity : 8.209E+02 8.210E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	3.222E+02	3.223E+02	17.10	OK
	302.84	17.80	4.662E+00	3.028E+02	3.028E+02	29.47	OK
	356.01	60.00	4.450E+00	2.819E+02	2.819E+02	19.80	OK

Final Mean for 3 Valid Peaks = 3.223E+02 +/- 5.512E+01 ( 17.10%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	4.940E+02	4.940E+02	19.97	OK

Final Mean for 1 Valid Peaks = 4.940E+02 +/- 9.866E+01 ( 19.97%)

AM-241	59.54	35.90*	3.235E+01	4.691E+00	4.691E+00	137.34	OK
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Final Mean for 1 Valid Peaks = 4.691E+00 +/- 6.443E+00 (137.34%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	3.223E+02	5.512E+01	1.278E+01	1.851E+00	25.212
TH-234	4.940E+02	9.866E+01	7.332E+01	2.642E+00	6.737
AM-241	4.691E+00	6.443E+00	5.240E+00	1.673E-01	0.895

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

Nuclide	Key-Line Activity (pCi/filter)	K.L. Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-1.738E-01		3.893E+00	7.289E+00	7.185E-01	-0.024
CD-109	-1.487E+01		5.877E+01	1.047E+02	6.733E+00	-0.142
PA-231	4.748E-01		9.526E-01	1.874E+00	1.935E-02	0.253
PA-234	3.253E+00	+	1.420E+00	1.995E+00	2.061E-02	1.630
NP-237	-9.553E+00		1.588E+01	2.656E+01	1.663E+00	-0.360

ICB  
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VAX/VMS Peak Search Report Generated 4-JUN-2010 14:22:45.13

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100513304\_GE5\_BAFIL\_149923.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : MPA-RA-1 DIS  
Deposition Date :  
Sample Date : 4-JUN-2010 00:00:00. Acquisition date : 4-JUN-2010 14:07:27.  
Sample ID : 1005133-04 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:01.26 0.1%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	14.03	9	8	0.14	140.28	134	11	1.03E-02	68.2	
2	0	15.59	16	4	0.91	155.34	147	16	1.82E-02	36.6	
3	0	21.02	115	29	0.80	207.57	199	19	1.27E-01	15.2	
4	0	30.90	2246	80	0.72	302.59	288	29	2.50E+00	2.4	
5	3	34.95	387	20	0.58	341.47	327	34	4.30E-01	6.2	9.02E-01
6	3	35.83	172	14	0.84	349.99	327	34	1.91E-01	14.9	
7	0	53.27	59	9	0.88	517.69	511	13	6.60E-02	15.7	
8	0	61.85	251	51	0.78	600.20	586	33	2.78E-01	9.8	
9	0	66.11	114	50	0.63	641.17	630	23	1.27E-01	16.8	
10	6	79.66	53	28	0.81	771.43	763	35	5.91E-02	22.8	2.06E+00
11	6	81.08	874	25	0.65	785.05	763	35	9.71E-01	3.6	
12	8	110.62	61	9	1.59	1069.18	1058	34	6.83E-02	21.0	1.24E+00
13	8	112.02	168	14	0.66	1082.63	1058	34	1.87E-01	9.9	
14	3	115.84	50	20	0.99	1119.33	1111	18	5.60E-02	22.2	4.27E+00
15	3	116.43	33	10	0.76	1125.00	1111	18	3.61E-02	20.7	
16	2	204.71	18	3	0.85	1973.92	1969	23	2.05E-02	21.5	8.96E-01
17	2	205.65	32	4	0.86	1983.00	1969	23	3.56E-02	16.2	
18	0	276.47	55	6	0.82	2664.04	2652	20	6.12E-02	16.2	
19	1	302.68	91	12	0.95	2916.00	2903	25	1.01E-01	13.4	1.09E+00
20	1	303.29	21	8	0.90	2921.91	2903	25	2.31E-02	43.9	
21	0	307.90	13	10	0.51	2966.26	2957	14	1.48E-02	48.4	
22	1	333.56	30	11	0.97	3213.00	3201	25	3.34E-02	35.1	7.25E-01
23	1	333.93	31	10	1.07	3216.56	3201	25	3.44E-02	31.4	
24	4	356.16	412	10	0.94	3430.29	3416	31	4.57E-01	5.1	1.21E+00
25	4	356.54	10	10	0.99	3434.00	3416	31	1.12E-02	2209.6	
26	0	383.98	78	8	0.58	3697.89	3683	26	8.65E-02	13.9	
27	4	386.88	122	7	1.21	3725.73	3713	26	1.35E-01	11.2	7.78E-01
28	4	387.31	25	3	0.82	3729.84	3713	26	2.79E-02	50.5	
29	1	390.86	23	2	0.91	3764.03	3753	26	2.52E-02	25.9	3.58E-01
30	1	391.48	26	3	1.01	3770.00	3753	26	2.87E-02	23.1	
31	1	415.09	61	2	1.03	3997.00	3983	24	6.81E-02	10.5	3.14E+00
32	1	415.61	10	0	1.03	4002.00	3983	24	1.16E-02	43.3	

Total number of lines in spectrum 32  
 Number of unidentified lines 27  
 Number of lines tentatively identified by NID 5 15.63%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/filter	Wtd Mean Decay Corr pCi/filter	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-133	10.50Y	1.00	4.354E+02	4.354E+02	0.724E+02	16.63	
Total Activity :			4.354E+02	4.354E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean Uncorrected pCi/filter	Wtd Mean Decay Corr pCi/filter	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TH-234	4.47E+09Y	1.00	6.908E+02	6.908E+02	1.406E+02	20.35	
Total Activity :			6.908E+02	6.908E+02			

Grand Total Activity : 1.126E+03 1.126E+03

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	4.354E+02	4.354E+02	16.63	OK
	302.84	17.80	4.662E+00	3.286E+02	3.286E+02	32.84	OK
	356.01	60.00	4.450E+00	4.631E+02	4.632E+02	17.20	OK

Final Mean for 3 Valid Peaks = 4.354E+02 +/- 7.241E+01 ( 16.63%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	6.908E+02	6.908E+02	20.35	OK

Final Mean for 1 Valid Peaks = 6.908E+02 +/- 1.406E+02 ( 20.35%)

Flag: "\*" = Keyline



---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.354E+02	7.241E+01	1.311E+01	1.898E+00	33.221
TH-234	6.908E+02	1.406E+02	1.090E+02	3.926E+00	6.339

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

Nuclide	Key-Line Activity (pCi/filter)	K.L. Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-1.158E+00		4.689E+00	8.348E+00	8.228E-01	-0.139
CD-109	-8.000E+01		7.550E+01	1.160E+02	7.459E+00	-0.689
PA-231	-4.768E-01		1.097E+00	1.894E+00	1.956E-02	-0.252
PA-234	5.304E+00	+	1.623E+00	2.270E+00	2.344E-02	2.337
NP-237	-5.439E+00		1.865E+01	3.279E+01	2.053E+00	-0.166
AM-241	4.722E+00		5.244E+00	9.079E+00	2.898E-01	0.520

09  
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38  
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61

18  
21  
28

KBS  
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VAX/VMS Peak Search Report Generated 4-JUN-2010 14:44:30.32

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100513305\_GE5\_BAFIL\_149926.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : MPA-RA-1 SUS  
Deposition Date :  
Sample Date : 4-JUN-2010 00:00:00. Acquisition date : 4-JUN-2010 14:29:11.  
Sample ID : 1005133-05 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:01.14 0.1%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	14.49	12	8	1.12	144.74	136	15	1.28E-02	59.7	
2	1	20.65	19	27	0.59	204.00	194	24	2.16E-02	66.4	4.55E+00
3	1	21.13	50	18	0.65	208.57	194	24	5.54E-02	27.8	
4	0	30.89	1659	39	0.75	302.46	288	32	1.84E+00	2.7	
5	3	35.03	343	18	0.66	342.30	332	27	3.81E-01	6.2	1.50E+00
6	3	35.96	91	3	0.66	351.17	332	27	1.02E-01	16.6	
7	0	53.40	36	7	0.68	518.87	512	15	3.98E-02	22.0	
8	0	61.73	176	14	0.90	598.97	589	22	1.96E-01	8.9	
9	0	66.12	60	31	1.62	641.26	628	23	6.70E-02	23.9	
10	0	70.74	5	24	1.10	685.64	667	20	5.50E-03	219.2	
11	1	79.69	43	22	0.78	771.69	759	39	4.79E-02	35.7	9.14E-01
12	1	81.07	585	13	0.69	785.02	759	39	6.50E-01	4.3	
13	0	112.00	109	45	0.75	1082.43	1069	22	1.21E-01	16.3	
14	0	116.45	34	22	0.30	1125.23	1112	23	3.79E-02	35.2	
15	0	276.54	22	6	0.79	2664.66	2656	14	2.39E-02	29.4	
16	0	303.04	106	3	0.39	2919.47	2906	25	1.18E-01	10.3	
17	0	333.75	33	11	1.39	3214.80	3201	23	3.64E-02	28.2	
18	0	356.15	293	14	0.66	3430.21	3415	29	3.26E-01	6.5	
19	4	383.89	86	7	1.01	3697.00	3684	23	9.55E-02	10.9	5.85E+00
20	4	384.53	16	3	0.66	3703.17	3684	23	1.78E-02	33.2	
21	1	386.60	31	1	1.01	3723.00	3713	26	3.46E-02	31.2	7.59E-01
22	1	387.32	83	3	1.01	3730.00	3713	26	9.25E-02	12.6	
23	0	415.07	25	0	0.63	3996.80	3985	20	2.78E-02	20.0	

Total number of lines in spectrum 23  
 Number of unidentified lines 17  
 Number of lines tentatively identified by NID 6 26.09%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	2.915E+02	2.916E+02	0.506E+02	17.35	
Total Activity :			2.915E+02	2.916E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	4.856E+02	4.856E+02	0.900E+02	18.53	
Total Activity :			4.856E+02	4.856E+02			

Grand Total Activity : 7.771E+02 7.772E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	2.915E+02	2.916E+02	17.35	OK
	302.84	17.80	4.662E+00	3.840E+02	3.841E+02	27.96	OK
	356.01	60.00	4.450E+00	3.300E+02	3.300E+02	18.92	OK

Final Mean for 3 Valid Peaks = 2.916E+02+/- 5.058E+01 ( 17.35%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	4.856E+02	4.856E+02	18.53	OK

Final Mean for 1 Valid Peaks = 4.856E+02+/- 8.997E+01 ( 18.53%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	2.916E+02	5.058E+01	1.015E+01	1.470E+00	28.734
TH-234	4.856E+02	8.997E+01	7.123E+01	2.567E+00	6.817

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	1.571E-01	4.205E+00	7.898E+00	7.784E-01	0.020
CD-109	4.883E+01	5.669E+01	1.195E+02	7.684E+00	0.409
PA-231	-9.971E-01	9.015E-01	1.388E+00	1.434E-02	-0.718
PA-234	2.309E+00 +	1.289E+00	1.703E+00	1.759E-02	1.356
NP-237	-2.196E+01	1.856E+01	2.742E+01	1.717E+00	-0.801
AM-241	-4.923E-01	4.404E+00	6.691E+00	2.136E-01	-0.074

10B  
6/4/10

VAX/VMS Peak Search Report Generated 4-JUN-2010 15:02:53.90

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100513306\_GE5\_BAFIL\_149929.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : MPA-RA-2 DIS  
Deposition Date :  
Sample Date : 4-JUN-2010 00:00:00. Acquisition date : 4-JUN-2010 14:47:39.  
Sample ID : 1005133-06 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:01.10 0.1%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.90	1251	29	0.64	302.60	288	25	1.39E+00	3.0	
2	0	35.18	324	13	0.37	343.71	332	26	3.61E-01	6.1	
3	10	61.06	21	20	0.87	592.62	588	23	2.28E-02	38.4	3.47E+00
4	10	61.71	109	37	0.83	598.84	588	23	1.22E-01	15.5	
5	0	66.05	53	21	0.97	640.55	629	21	5.94E-02	22.7	
6	0	81.08	442	44	0.59	785.13	771	26	4.91E-01	5.9	
7	0	111.96	119	0	0.67	1082.03	1073	21	1.32E-01	9.2	
8	0	116.23	15	13	0.48	1123.11	1115	13	1.71E-02	48.8	
9	1	302.68	22	12	0.95	2916.00	2903	24	2.49E-02	43.7	1.43E+00
10	1	303.40	58	5	0.95	2923.00	2903	24	6.48E-02	11.0	
11	0	333.83	23	6	0.66	3215.57	3202	22	2.50E-02	29.2	
12	0	356.16	249	7	0.73	3430.29	3415	30	2.76E-01	6.8	
13	2	383.37	23	0	1.01	3692.00	3685	24	2.54E-02	21.9	4.94E-01
14	2	384.19	22	0	0.81	3699.84	3685	24	2.49E-02	30.6	
15	2	386.60	34	2	1.01	3723.00	3712	26	3.73E-02	28.4	4.03E+00
16	2	387.31	71	3	0.82	3729.90	3712	26	7.87E-02	12.3	
17	0	391.27	20	5	0.53	3767.90	3757	18	2.17E-02	30.0	

Total number of lines in spectrum 17  
 Number of unidentified lines 12  
 Number of lines tentatively identified by NID 5 29.41%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	2.200E+02	2.200E+02	0.420E+02	19.07	
Total Activity :			2.200E+02	2.200E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	3.016E+02	3.016E+02	0.950E+02	31.51	
AM-241	432.20Y	1.00	5.316E+00	5.316E+00	4.097E+00	77.07	
Total Activity :			3.069E+02	3.069E+02			

Grand Total Activity : 5.269E+02 5.269E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	2.200E+02	2.200E+02	19.07	OK
	302.84	17.80	4.662E+00	8.121E+01	8.122E+01	89.38	OK
	356.01	60.00	4.450E+00	2.797E+02	2.798E+02	19.36	OK

Final Mean for 3 Valid Peaks = 2.200E+02 +/- 4.197E+01 ( 19.07%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	3.016E+02	3.016E+02	31.51	OK

Final Mean for 1 Valid Peaks = 3.016E+02 +/- 9.504E+01 ( 31.51%)

AM-241	59.54	35.90*	3.235E+01	5.316E+00	5.316E+00	77.07	OK
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Final Mean for 1 Valid Peaks = 5.316E+00 +/- 4.097E+00 ( 77.07%)

Flag: "\*" = Keyline



---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	2.200E+02	4.197E+01	1.263E+01	1.829E+00	17.425
TH-234	3.016E+02	9.504E+01	7.961E+01	2.869E+00	3.788
AM-241	5.316E+00	4.097E+00	6.260E+00	1.999E-01	0.849

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	5.974E-01	3.630E+00	7.101E+00	6.999E-01	0.084
CD-109	1.863E+01	4.634E+01	9.565E+01	6.149E+00	0.195
PA-231	-1.610E-01	8.517E-01	1.550E+00	1.601E-02	-0.104
PA-234	8.842E-01	7.517E-01	1.536E+00	1.586E-02	0.576
NP-237	-8.798E+00	1.601E+01	2.708E+01	1.696E+00	-0.325

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VAX/VMS Peak Search Report Generated 4-JUN-2010 15:19:52.58

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100513307\_GE5\_BAFIL\_149930.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : MPA-RA-2 SUS  
Deposition Date :  
Sample Date : 4-JUN-2010 00:00:00. Acquisition date : 4-JUN-2010 15:04:37.  
Sample ID : 1005133-07 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:01.18 0.1%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	9.13	8	17	0.17	93.16	81	14	8.42E-03	122.5	
2	0	24.18	15	4	0.15	237.92	228	16	1.64E-02	40.0	
3	0	25.39	6	7	0.17	249.59	243	10	6.50E-03	96.4	
4	0	30.91	1215	72	0.71	302.65	288	29	1.35E+00	3.5	
5	1	35.07	262	37	0.60	342.65	334	25	2.91E-01	7.7	2.08E+00
6	1	36.03	41	14	0.59	351.88	334	25	4.50E-02	37.9	
7	0	53.78	23	25	0.27	522.56	509	17	2.51E-02	48.6	
8	1	61.69	119	22	0.75	598.66	588	24	1.32E-01	13.6	2.79E+00
9	1	62.25	57	10	0.68	604.00	588	24	6.31E-02	24.8	
10	5	65.32	11	4	0.41	633.55	631	24	1.27E-02	32.8	1.35E+00
11	5	66.06	54	7	0.76	640.66	631	24	6.04E-02	18.9	
12	0	70.03	27	2	0.76	678.83	669	17	2.96E-02	22.9	
13	0	80.06	11	20	0.10	775.24	759	18	1.23E-02	87.9	
14	0	81.06	485	13	0.63	784.94	776	19	5.39E-01	4.8	
15	0	111.94	140	29	0.49	1081.85	1071	19	1.56E-01	11.5	
16	0	116.09	28	14	0.71	1121.78	1110	21	3.13E-02	33.9	
17	0	160.63	18	10	0.54	1550.06	1540	15	2.00E-02	40.4	
18	1	302.57	17	0	0.95	2915.00	2906	26	1.89E-02	42.0	8.78E-01
19	1	303.20	72	0	0.95	2921.00	2906	26	8.00E-02	11.4	
20	2	333.49	28	8	0.93	3212.32	3203	21	3.08E-02	28.9	9.88E-01
21	2	334.39	30	3	0.79	3220.96	3203	21	3.37E-02	14.2	
22	0	356.22	232	7	0.91	3430.90	3416	29	2.58E-01	7.0	
23	0	384.07	47	5	0.53	3698.66	3686	23	5.20E-02	17.7	
24	1	386.91	85	12	1.01	3726.00	3713	23	9.47E-02	13.6	2.34E+00
25	1	387.53	33	8	1.01	3732.00	3713	23	3.62E-02	23.9	

Total number of lines in spectrum 25  
 Number of unidentified lines 19  
 Number of lines tentatively identified by NID 6 24.00%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	2.415E+02	2.416E+02	0.430E+02	17.81	
Total Activity :			2.415E+02	2.416E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
PA-231	3.28E+04Y	1.00	5.420E-01	5.420E-01	13.28E-01	245.08	
TH-234	4.47E+09Y	1.00	1.567E+02	1.567E+02	0.782E+02	49.90	
Total Activity :			1.572E+02	1.572E+02			

Grand Total Activity : 3.987E+02 3.988E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	2.415E+02	2.416E+02	17.81	OK
	302.84	17.80	4.662E+00	6.154E+01	6.154E+01	86.11	OK
	356.01	60.00	4.450E+00	2.610E+02	2.610E+02	19.70	OK

Final Mean for 3 Valid Peaks = 2.416E+02 +/- 4.303E+01 ( 17.81%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
PA-231	9.28	42.00*	1.000E+02	5.420E-01	5.420E-01	245.08	OK
	10.11	20.20	1.000E+02	1.127E+00	1.127E+00	245.08	OK
	283.67	1.60	4.787E+00	-----	Line Not Found	-----	Absent
	302.67	2.30	4.663E+00	4.761E+02	4.761E+02	85.51	OK

Final Mean for 3 Valid Peaks = 5.420E-01 +/- 1.328E+00 (245.08%)

TH-234	63.29	3.80*	2.867E+01	1.567E+02	1.567E+02	49.90	OK
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Final Mean for 1 Valid Peaks = 1.567E+02 +/- 7.817E+01 ( 49.90%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	2.416E+02	4.303E+01	9.738E+00	1.410E+00	24.806
PA-231	5.420E-01	1.328E+00	2.171E+00	2.242E-02	0.250
TH-234	1.567E+02	7.817E+01	5.058E+01	1.822E+00	3.098

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	6.784E-01	3.031E+00	6.185E+00	6.096E-01	0.110
CD-109	3.743E+01	5.847E+01	1.191E+02	7.658E+00	0.314
PA-234	4.223E-01	9.030E-01	1.587E+00	1.639E-02	0.266
NP-237	-1.583E+00	1.778E+01	3.240E+01	2.029E+00	-0.049
AM-241	3.723E+00	3.630E+00	6.932E+00	2.213E-01	0.537

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Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100513308\_GE5\_BAFIL\_149932.CN  
 Analyses by : PEAK V16.9 PEAKEFF V2.2  
 Client ID : MPA-RA-3 DIS  
 Deposition Date :  
 Sample Date : 4-JUN-2010 00:00:00. Acquisition date : 4-JUN-2010 15:21:24.  
 Sample ID : 1005133-08 Sample Quantity : 1.00000E+00 filter  
 Sample type : FILTER Sample Geometry : 0  
 Detector name : GE5 Detector Geometry: BAFIL  
 Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:01.12 0.1%  
 Start channel : 25 End channel : 4096  
 Sensitivity : 3.00000 Gaussian : 10.00000  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	17.86	11	3	0.61	177.20	169	13	1.18E-02	46.7	
2	0	21.02	71	13	0.46	207.57	200	18	7.92E-02	16.9	
3	0	30.91	1397	34	0.67	302.65	288	25	1.55E+00	2.9	
4	3	35.02	247	23	0.51	342.16	332	31	2.74E-01	7.7	8.35E-01
5	3	35.83	84	21	0.84	349.99	332	31	9.38E-02	26.4	
6	0	40.84	11	7	0.39	398.11	388	14	1.20E-02	54.1	
7	0	53.31	37	7	0.38	518.07	510	16	4.08E-02	22.0	
8	0	61.70	185	10	0.77	598.76	587	21	2.05E-01	8.2	
9	0	65.94	72	27	0.64	639.55	627	21	7.98E-02	20.1	
10	1	79.54	36	0	0.78	770.31	761	36	3.99E-02	21.2	7.87E-01
11	1	81.08	562	3	0.68	785.11	761	36	6.24E-01	4.3	
12	0	112.02	119	41	0.82	1082.64	1070	22	1.33E-01	14.7	
13	0	276.56	35	5	0.66	2664.91	2652	24	3.84E-02	22.0	
14	0	302.96	82	0	0.74	2918.78	2905	24	9.11E-02	11.0	
15	7	333.66	27	8	0.97	3214.00	3206	18	3.04E-02	26.6	8.87E-01
16	7	334.41	10	6	0.46	3221.12	3206	18	1.13E-02	43.9	
17	5	355.71	83	3	0.99	3426.00	3416	28	9.26E-02	18.6	1.86E+00
18	5	356.26	150	5	0.58	3431.24	3416	28	1.67E-01	10.6	
19	5	356.75	20	6	1.08	3435.95	3416	28	2.18E-02	76.6	
20	0	384.05	35	8	1.19	3698.53	3686	23	3.93E-02	23.3	
21	1	386.80	10	20	1.01	3725.00	3712	30	1.14E-02	123.0	5.91E+00
22	1	387.32	138	18	1.01	3730.00	3712	30	1.54E-01	9.2	

Total number of lines in spectrum 22  
Number of unidentified lines 17  
Number of lines tentatively identified by NID 5 22.73%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			pCi/filter	pCi/filter	2-Sigma Error	%Error	
BA-133	10.50Y	1.00	2.797E+02	2.798E+02	0.484E+02	17.29	
Total Activity :			2.797E+02	2.798E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			pCi/filter	pCi/filter	2-Sigma Error	%Error	
TH-234	4.47E+09Y	1.00	5.097E+02	5.097E+02	0.883E+02	17.32	
Total Activity :			5.097E+02	5.097E+02			

Grand Total Activity : 7.895E+02 7.895E+02

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	2.797E+02	2.798E+02	17.29	OK
	302.84	17.80	4.662E+00	2.967E+02	2.968E+02	29.12	OK
	356.01	60.00	4.450E+00	1.692E+02	1.692E+02	25.30	OK

Final Mean for 3 Valid Peaks = 2.798E+02 +/- 4.837E+01 ( 17.29%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	5.097E+02	5.097E+02	17.32	OK

Final Mean for 1 Valid Peaks = 5.097E+02 +/- 8.831E+01 ( 17.32%)

Flag: "\*" = Keyline



---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	2.798E+02	4.837E+01	8.785E+00	1.272E+00	31.846
TH-234	5.097E+02	8.831E+01	5.403E+01	1.947E+00	9.434

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-6.274E+00	4.270E+00	5.815E+00	5.732E-01	-1.079
CD-109	-3.472E+01	5.725E+01	9.551E+01	6.140E+00	-0.364
PA-231	-6.907E-01	9.045E-01	1.490E+00	1.539E-02	-0.463
PA-234	3.299E+00 +	1.122E+00	1.786E+00	1.844E-02	1.847
NP-237	-3.921E+00	1.632E+01	2.926E+01	1.832E+00	-0.134
AM-241	1.215E+00	3.812E+00	6.406E+00	2.045E-01	0.190

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VAX/VMS Peak Search Report Generated 4-JUN-2010 15:53:17.22

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100513309\_GE5\_BAFIL\_149933.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : MPA-RA-3 SUS  
Deposition Date :  
Sample Date : 4-JUN-2010 00:00:00. Acquisition date : 4-JUN-2010 15:37:57.  
Sample ID : 1005133-09 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE5 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:01.10 0.1%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	13.62	8	7	0.19	136.40	128	13	8.33E-03	79.0	
2	0	21.06	59	20	0.74	207.94	196	18	6.54E-02	21.5	
3	0	30.92	1204	40	0.66	302.75	290	27	1.34E+00	3.2	
4	0	35.10	227	83	0.39	342.90	333	20	2.52E-01	10.7	
5	0	46.83	8	8	0.31	455.69	444	16	9.00E-03	75.4	
6	0	53.29	18	14	0.26	517.90	510	15	1.97E-02	47.1	
7	2	61.41	80	29	0.68	595.93	587	21	8.94E-02	18.1	2.55E+00
8	2	61.98	64	12	0.67	601.42	587	21	7.09E-02	20.0	
9	0	65.92	34	55	0.39	639.28	628	19	3.78E-02	48.2	
10	0	81.13	439	70	0.58	785.60	773	23	4.88E-01	6.3	
11	0	112.09	102	35	0.44	1083.31	1069	28	1.14E-01	17.3	
12	0	161.39	10	14	0.31	1557.38	1542	17	1.06E-02	83.8	
13	0	276.71	25	5	0.44	2666.28	2656	19	2.81E-02	25.4	
14	0	302.95	58	6	0.67	2918.68	2905	23	6.47E-02	15.4	
15	0	356.19	220	8	0.84	3430.58	3416	25	2.45E-01	7.3	
16	0	384.02	55	5	0.58	3698.18	3684	24	6.12E-02	16.0	
17	2	386.69	19	8	1.16	3723.90	3714	23	2.12E-02	53.8	3.07E+00
18	2	387.32	106	8	1.01	3730.00	3714	23	1.18E-01	8.9	

Total number of lines in spectrum 18  
 Number of unidentified lines 12  
 Number of lines tentatively identified by NID 6 33.33%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	2.187E+02	2.187E+02	0.430E+02	19.65	
Total Activity :			2.187E+02	2.187E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	1.760E+02	1.760E+02	0.709E+02	40.30	
AM-241	432.20Y	1.00	2.080E+01	2.080E+01	0.759E+01	36.48	
Total Activity :			1.968E+02	1.968E+02			

Grand Total Activity : 4.155E+02 4.155E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.827E+01	2.187E+02	2.187E+02	19.65	OK
	302.84	17.80	4.662E+00	2.108E+02	2.108E+02	36.18	OK
	356.01	60.00	4.450E+00	2.477E+02	2.477E+02	20.08	OK

Final Mean for 3 Valid Peaks = 2.187E+02+/- 4.298E+01 ( 19.65%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	2.867E+01	1.760E+02	1.760E+02	40.30	OK

Final Mean for 1 Valid Peaks = 1.760E+02+/- 7.093E+01 ( 40.30%)

AM-241	59.54	35.90*	3.235E+01	2.080E+01	2.080E+01	36.48	OK
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Final Mean for 1 Valid Peaks = 2.080E+01+/- 7.587E+00 ( 36.48%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	2.187E+02	4.298E+01	1.565E+01	2.267E+00	13.970
TH-234	1.760E+02	7.093E+01	6.450E+01	2.324E+00	2.729
AM-241	2.080E+01	7.587E+00	6.260E+00	1.999E-01	3.322

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-1.575E+00	4.515E+00	7.934E+00	7.821E-01	-0.198
CD-109	-2.602E+00	4.875E+01	9.203E+01	5.916E+00	-0.028
PA-231	-5.706E-01	8.058E-01	1.341E+00	1.385E-02	-0.425
PA-234	2.724E+00 +	1.176E+00	1.658E+00	1.712E-02	1.643
NP-237	-8.351E+00	1.609E+01	2.738E+01	1.714E+00	-0.305

**SECTION XI**  
**ANALYTICAL DATA (GROSS ALPHA/BETA)**

























# Spike and Tracer Worksheet

Internal Work Order		Run	Analysis Code		Date	Technician		Technician Initials		Witness Initials			
<b>10-05133</b>		<b>1</b>	<b>GaGbT_ThSr</b>		<b>6/4/2010 7:40</b>	<b>BLESTER</b>		<b>BZ</b>					
LCS & Matrix Spikes													
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	LCS Volume Used (g)	MS Volume Used (g)	LCS Volume Used (g)	MSD Volume Used (g)	LCS Known pCi	MS Error Estimate	LCS Error Estimate	MSD Added pCi	Error Estimate
<b>Am-241</b>	A/B-07	694.994	6/4/2010	0.680	1.0063		315.03	13.546	0.00	0.000	0.00	0.00	0.000
<b>SrY-90</b>	A/B-07	523.816	6/4/2010	1.050	1.0063		237.44	7.123	0.00	0.000	0.00	0.00	0.000

Tracers												
fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition	Balance Printer Tapes					
							Tracer					LCS
							Matrix Spike					

# Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
<b>10-05133</b>	<b>1</b>	<b>GaGbT_ThSr</b>	<b>liters</b>	<b>6/8/2010</b>	<b>BLESTER</b>

Lab Fraction	Client ID	Sample Type	Muffle Data		Dilution Data			Aliquot Data			MS Aliquot Data		H-3 Solids Only		
			Ratio Post/Pre	No of Dils	Dil Factor	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist Aliq			
01	LCS	LCS					1.00E+00	1.0000E+00	1.0000E+00						
02	BLANK	MBL					1.00E+00	1.0000E+00	1.0000E+00						
03	MPA-RA-1 DIS	DUP					1.00E+00	2.0000E-02	2.0000E-02						
04	MPA-RA-1 DIS	DO					1.00E+00	2.0000E-02	2.0000E-02						
05	MPA-RA-1 SUS	TRG					1.00E+00	5.0000E-03	5.0000E-03						
06	MPA-RA-2 DIS	TRG					1.00E+00	3.0000E-02	3.0000E-02						
07	MPA-RA-2 SUS	TRG					1.00E+00	5.0000E-03	5.0000E-03						
08	MPA-RA-3 DIS	TRG					1.00E+00	2.0000E-02	2.0000E-02						
09	MPA-RA-3 SUS	TRG					1.00E+00	1.0000E-03	1.0000E-03						

Comments

Technician: *PL* Date: 6/4/2010





Ⓟ 6/4/10  
614 105

Sheet1

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
D2	1005133-01	5578	9631	30	1400	6/4/10 11:20

KM  
6/4/10

Sheet1

Detector ID	Sample ID	Alpha	Beta	Count	Time	Voltage	TOD
C1	1005133-02	9	143	120		1400	6/4/10 12:49
C3	1005133-03	7	191	120		1400	6/4/10 12:49
C4	1005133-04	9	225	120		1400	6/4/10 12:49
D2	1005133-05	26	177	120		1400	6/4/10 12:49
D4	1005133-06	5	204	120		1400	6/4/10 12:49

(A)  
6/4/10  
1013

Sheet1

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
A1	1005133-07	18	202	120	1400	6/4/10 14:59
A2	1005133-08	5	202	120	1400	6/4/10 14:59
A3	1005133-09	17	258	120	1400	6/4/10 14:59

GPC Detector Report  
(ALL Efficiencies)

*MM*  
*6/4/10*

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	6/4/2010	0.2553	P	0.2376	0.2505	0.2634
LB4110A - A2	Alpha	11/18/2007	6/4/2010	0.2191	P	0.1959	0.2208	0.2457
LB4110A - A3	Alpha	11/18/2007	6/4/2010	0.2178	P	0.2049	0.2178	0.2308
LB4110A - A4	Alpha	11/18/2007	6/4/2010	0.2218	P	0.2156	0.2289	0.2422
LB4110A - B1	Alpha	11/18/2007	6/4/2010	0.2231	P	0.2177	0.2317	0.2456
LB4110A - B2	Alpha	11/18/2007	6/4/2010	0.2249	P	0.2139	0.2277	0.2415
LB4110A - B3	Alpha	11/18/2007	6/4/2010	0.2375	P	0.2267	0.2423	0.2580
LB4110A - B4	Alpha	11/18/2007	6/4/2010	0.2361	P	0.2284	0.2410	0.2536
LB4110A - C1	Alpha	11/18/2007	6/4/2010	0.2186	P	0.2116	0.2226	0.2335
LB4110A - C2	Alpha	11/18/2007	6/4/2010	0.2184	P	0.2022	0.2270	0.2517
LB4110A - C3	Alpha	11/18/2007	6/4/2010	0.2535	P	0.2360	0.2494	0.2628
LB4110A - C4	Alpha	11/18/2007	6/4/2010	0.2230	P	0.2179	0.2320	0.2462
LB4110A - D1	Alpha	11/18/2007	6/4/2010	0.2358	P	0.2252	0.2398	0.2544
LB4110A - D2	Alpha	11/18/2007	6/4/2010	0.2618	P	0.2481	0.2633	0.2784
LB4110A - D3	Alpha	11/18/2007	6/4/2010	0.2647	P	0.2514	0.2689	0.2863
LB4110A - D4	Alpha	11/18/2007	6/4/2010	0.1968	P	0.1924	0.2104	0.2284
LB4110R - A1	Alpha	11/24/2006	6/4/2010	0.2349	P	0.2065	0.2425	0.2784
LB4110R - A2	Alpha	11/24/2006	6/4/2010	0.2038	P	0.1928	0.2243	0.2559
LB4110R - A3	Alpha	11/24/2006	6/4/2010	0.2241	P	0.1986	0.2283	0.2581
LB4110R - A4	Alpha	11/24/2006	6/4/2010	0.2438	P	0.2141	0.2470	0.2798
LB4110R - B1	Alpha	11/24/2006	6/4/2010	0.2266	P	0.1939	0.2306	0.2672
LB4110R - B2	Alpha	11/24/2006	6/4/2010	0.2182	P	0.1860	0.2213	0.2567
LB4110R - B3	Alpha	11/24/2006	6/4/2010	0.2450	P	0.2094	0.2477	0.2861
LB4110R - B4	Alpha	11/24/2006	6/4/2010	0.2298	P	0.2006	0.2377	0.2747
LB4110R - C1	Alpha	11/24/2006	6/4/2010	0.2135	P	0.1835	0.2173	0.2510
LB4110R - C2	Alpha	11/24/2006	6/4/2010	0.2262	P	0.1947	0.2266	0.2586
LB4110R - C3	Alpha	11/24/2006	6/4/2010	0.2357	P	0.2041	0.2426	0.2810
LB4110R - C4	Alpha	11/24/2006	6/4/2010	0.2204	P	0.1992	0.2314	0.2637
LB4110R - D1	Alpha	11/24/2006	6/4/2010	0.2263	P	0.1943	0.2296	0.2649
LB4110R - D2	Alpha	11/24/2006	6/4/2010	0.2616	P	0.2246	0.2592	0.2938
LB4110R - D3	Alpha	11/24/2006	6/4/2010	0.2467	P	0.2223	0.2548	0.2874
LB4110R - D4	Alpha	11/24/2006	6/4/2010	0.1950	P	0.1813	0.2116	0.2420
LB5100 - 1	Alpha	7/10/2006	10/26/2007	0.3368	P	0.3332	0.3455	0.3578



GPC Detector Report  
(ALL Efficiencies)

*LM*  
*6/4/10*

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	6/4/2010	0.5902	P	0.5582	0.5898	0.6215
LB4110A - A2	Beta	11/18/2007	6/4/2010	0.5123	P	0.4657	0.5229	0.5800
LB4110A - A3	Beta	11/18/2007	6/4/2010	0.5133	P	0.4935	0.5268	0.5600
LB4110A - A4	Beta	11/18/2007	6/4/2010	0.5449	P	0.5202	0.5490	0.5778
LB4110A - B1	Beta	11/18/2007	6/4/2010	0.5270	P	0.5119	0.5424	0.5729
LB4110A - B2	Beta	11/18/2007	6/4/2010	0.5349	P	0.5101	0.5396	0.5691
LB4110A - B3	Beta	11/18/2007	6/4/2010	0.5423	P	0.5022	0.5529	0.6035
LB4110A - B4	Beta	11/18/2007	6/4/2010	0.5507	P	0.5352	0.5603	0.5853
LB4110A - C1	Beta	11/18/2007	6/4/2010	0.4882	W	0.4837	0.5061	0.5285
LB4110A - C2	Beta	11/18/2007	6/4/2010	0.4794	P	0.4358	0.5090	0.5822
LB4110A - C3	Beta	11/18/2007	6/4/2010	0.5964	P	0.5622	0.5874	0.6126
LB4110A - C4	Beta	11/18/2007	6/4/2010	0.5116	W	0.5059	0.5403	0.5746
LB4110A - D1	Beta	11/18/2007	6/4/2010	0.5555	P	0.5347	0.5726	0.6105
LB4110A - D2	Beta	11/18/2007	6/4/2010	0.5721	P	0.5531	0.6164	0.6798
LB4110A - D3	Beta	11/18/2007	6/4/2010	0.6125	P	0.5818	0.6264	0.6710
LB4110A - D4	Beta	11/18/2007	6/4/2010	0.4607	F	0.4638	0.5020	0.5401
LB4110R - A1	Beta	11/24/2006	6/4/2010	0.5696	P	0.4782	0.5762	0.6741
LB4110R - A2	Beta	11/24/2006	6/4/2010	0.4723	P	0.4099	0.5132	0.6164
LB4110R - A3	Beta	11/24/2006	6/4/2010	0.5425	P	0.4559	0.5487	0.6415
LB4110R - A4	Beta	11/24/2006	6/4/2010	0.5855	P	0.4948	0.5911	0.6873
LB4110R - B1	Beta	11/24/2006	6/4/2010	0.5364	P	0.4508	0.5520	0.6532
LB4110R - B2	Beta	11/24/2006	6/4/2010	0.5116	P	0.4299	0.5292	0.6284
LB4110R - B3	Beta	11/24/2006	6/4/2010	0.5789	P	0.4925	0.5963	0.7001
LB4110R - B4	Beta	11/24/2006	6/4/2010	0.5499	P	0.4634	0.5608	0.6583
LB4110R - C1	Beta	11/24/2006	6/4/2010	0.5009	P	0.4127	0.5066	0.6004
LB4110R - C2	Beta	11/24/2006	6/4/2010	0.5295	P	0.4369	0.5316	0.6264
LB4110R - C3	Beta	11/24/2006	6/4/2010	0.5692	P	0.4634	0.5742	0.6849
LB4110R - C4	Beta	11/24/2006	6/4/2010	0.5180	P	0.4467	0.5441	0.6414
LB4110R - D1	Beta	11/24/2006	6/4/2010	0.5404	P	0.4496	0.5464	0.6431
LB4110R - D2	Beta	11/24/2006	6/4/2010	0.6200	P	0.5057	0.6091	0.7125
LB4110R - D3	Beta	11/24/2006	6/4/2010	0.5862	P	0.4923	0.5908	0.6893
LB4110R - D4	Beta	11/24/2006	6/4/2010	0.4751	P	0.4078	0.5018	0.5957
LB5100 - 1	Beta	7/10/2006	10/26/2007	0.4428	F	0.4555	0.4731	0.4906

GPC Detector Report  
(ALL Backgrounds)

AM  
6/4/10

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	6/4/2010	1.00E-01	P	-5.52E-02	7.04E-02	1.96E-01
LB4110A - A2	Alpha	11/18/2007	6/4/2010	6.67E-02	P	-5.67E-02	1.01E-01	2.58E-01
LB4110A - A3	Alpha	11/18/2007	6/4/2010	3.33E-02	P	-4.91E-02	5.05E-02	1.50E-01
LB4110A - A4	Alpha	11/18/2007	6/4/2010	1.17E-01	P	-6.17E-02	5.92E-02	1.80E-01
LB4110A - B1	Alpha	11/18/2007	6/4/2010	3.33E-02	P	-1.34E-01	8.35E-02	3.01E-01
LB4110A - B2	Alpha	11/18/2007	6/4/2010	8.33E-02	P	-6.58E-02	7.77E-02	2.21E-01
LB4110A - B3	Alpha	11/18/2007	6/4/2010	6.67E-02	P	-5.44E-02	4.48E-02	1.44E-01
LB4110A - B4	Alpha	11/18/2007	6/4/2010	8.33E-02	P	-4.58E-02	5.36E-02	1.53E-01
LB4110A - C1	Alpha	11/18/2007	6/4/2010	1.67E-02	P	-6.37E-02	8.18E-02	2.27E-01
LB4110A - C2	Alpha	11/18/2007	6/4/2010	1.67E-02	P	-2.03E-01	1.23E-01	4.48E-01
LB4110A - C3	Alpha	11/18/2007	6/4/2010	1.67E-01	P	-2.46E-01	1.22E-01	4.90E-01
LB4110A - C4	Alpha	11/18/2007	6/4/2010	1.00E-01	P	-7.09E-02	7.84E-02	2.28E-01
LB4110A - D1	Alpha	11/18/2007	6/4/2010	1.17E-01	P	-4.59E-02	8.40E-02	2.14E-01
LB4110A - D2	Alpha	11/18/2007	6/4/2010	5.00E-02	P	-6.85E-02	6.94E-02	2.07E-01
LB4110A - D3	Alpha	11/18/2007	6/4/2010	5.00E-02	P	-3.66E-02	6.27E-02	1.62E-01
LB4110A - D4	Alpha	11/18/2007	6/4/2010	1.50E-01	P	-5.92E-02	7.83E-02	2.16E-01
LB4110R - A1	Alpha	11/24/2006	6/4/2010	1.17E-01	P	-1.11E-01	8.40E-02	2.79E-01
LB4110R - A2	Alpha	11/24/2006	6/4/2010	3.33E-02	P	-9.80E-02	9.67E-02	2.91E-01
LB4110R - A3	Alpha	11/24/2006	6/4/2010	1.67E-02	P	-8.99E-02	7.75E-02	2.45E-01
LB4110R - A4	Alpha	11/24/2006	6/4/2010	1.83E-01	P	-5.08E-02	8.32E-02	2.17E-01
LB4110R - B1	Alpha	11/24/2006	6/4/2010	3.33E-02	P	-1.17E-01	6.87E-02	2.54E-01
LB4110R - B2	Alpha	11/24/2006	6/4/2010	1.67E-02	P	-7.84E-02	7.68E-02	2.32E-01
LB4110R - B3	Alpha	11/24/2006	6/4/2010	3.33E-02	P	-7.65E-02	7.16E-02	2.20E-01
LB4110R - B4	Alpha	11/24/2006	6/4/2010	1.17E-01	P	-6.53E-02	8.50E-02	2.35E-01
LB4110R - C1	Alpha	11/24/2006	6/4/2010	3.33E-02	P	-8.44E-02	8.87E-02	2.62E-01
LB4110R - C2	Alpha	11/24/2006	6/4/2010	1.50E-01	P	-8.34E-02	8.63E-02	2.56E-01
LB4110R - C3	Alpha	11/24/2006	6/4/2010	8.33E-02	P	-1.04E-01	9.63E-02	2.97E-01
LB4110R - C4	Alpha	11/24/2006	6/4/2010	6.67E-02	P	-7.22E-02	9.26E-02	2.57E-01
LB4110R - D1	Alpha	11/24/2006	6/4/2010	3.33E-02	P	-9.12E-02	8.69E-02	2.65E-01
LB4110R - D2	Alpha	11/24/2006	6/4/2010	1.17E-01	P	-6.18E-02	8.95E-02	2.41E-01
LB4110R - D3	Alpha	11/24/2006	6/4/2010	3.33E-02	P	-5.97E-02	7.79E-02	2.16E-01
LB4110R - D4	Alpha	11/24/2006	6/4/2010	1.33E-01	P	-5.26E-02	9.40E-02	2.41E-01
LB5100 - 1	Alpha	7/10/2006	10/26/2007	5.00E-02	P	-1.56E-02	9.58E-02	2.07E-01

GPC Detector Report  
(ALL Backgrounds)

KM  
6/4/10

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PRW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	6/4/2010	1.23E+00	P	-7.70E+00	2.72E+00	1.31E+01
LB4110A - A2	Beta	11/18/2007	6/4/2010	1.07E+00	P	-5.99E-02	1.58E+00	3.22E+00
LB4110A - A3	Beta	11/18/2007	6/4/2010	8.17E-01	P	3.84E-01	1.29E+00	2.20E+00
LB4110A - A4	Beta	11/18/2007	6/4/2010	1.40E+00	P	4.71E-01	1.71E+00	2.95E+00
LB4110A - B1	Beta	11/18/2007	6/4/2010	1.55E+00	P	-8.54E+00	3.95E+00	1.64E+01
LB4110A - B2	Beta	11/18/2007	6/4/2010	1.23E+00	P	6.41E-02	1.49E+00	2.91E+00
LB4110A - B3	Beta	11/18/2007	6/4/2010	1.42E+00	P	1.18E-01	1.49E+00	2.85E+00
LB4110A - B4	Beta	11/18/2007	6/4/2010	1.25E+00	P	-5.60E-02	1.42E+00	2.90E+00
LB4110A - C1	Beta	11/18/2007	6/4/2010	1.18E+00	P	-7.57E+00	3.10E+00	1.38E+01
LB4110A - C2	Beta	11/18/2007	6/4/2010	1.03E+00	P	3.30E-01	1.43E+00	2.52E+00
LB4110A - C3	Beta	11/18/2007	6/4/2010	1.52E+00	P	4.48E-01	1.48E+00	2.52E+00
LB4110A - C4	Beta	11/18/2007	6/4/2010	1.63E+00	P	-1.28E+00	2.13E+00	5.54E+00
LB4110A - D1	Beta	11/18/2007	6/4/2010	2.07E+00	P	-3.94E+00	3.05E+00	1.00E+01
LB4110A - D2	Beta	11/18/2007	6/4/2010	1.47E+00	P	-1.33E+00	1.76E+00	4.86E+00
LB4110A - D3	Beta	11/18/2007	6/4/2010	5.33E+00	P	-2.83E-01	4.10E+00	8.48E+00
LB4110A - D4	Beta	11/18/2007	6/4/2010	1.40E+00	P	-9.14E-01	1.57E+00	4.05E+00
LB4110R - A1	Beta	11/24/2006	6/4/2010	1.48E+00	P	-6.16E+01	2.78E+00	6.72E+01
LB4110R - A2	Beta	11/24/2006	6/4/2010	9.33E-01	P	-6.19E+01	2.52E+00	6.69E+01
LB4110R - A3	Beta	11/24/2006	6/4/2010	1.27E+00	P	-6.13E+01	4.15E+00	6.96E+01
LB4110R - A4	Beta	11/24/2006	6/4/2010	1.52E+00	P	-6.17E+01	2.65E+00	6.70E+01
LB4110R - B1	Beta	11/24/2006	6/4/2010	1.12E+00	P	-6.49E+01	2.75E+00	7.04E+01
LB4110R - B2	Beta	11/24/2006	6/4/2010	1.18E+00	P	-6.48E+01	2.82E+00	7.05E+01
LB4110R - B3	Beta	11/24/2006	6/4/2010	1.30E+00	P	-6.42E+01	3.91E+00	7.20E+01
LB4110R - B4	Beta	11/24/2006	6/4/2010	1.13E+00	P	-6.51E+01	2.60E+00	7.03E+01
LB4110R - C1	Beta	11/24/2006	6/4/2010	1.05E+00	P	-6.40E+01	4.59E+00	7.32E+01
LB4110R - C2	Beta	11/24/2006	6/4/2010	2.17E+00	P	-6.48E+01	3.57E+00	7.20E+01
LB4110R - C3	Beta	11/24/2006	6/4/2010	1.27E+00	P	-6.52E+01	3.58E+00	7.23E+01
LB4110R - C4	Beta	11/24/2006	6/4/2010	1.62E+00	P	-7.35E+01	4.20E+00	8.19E+01
LB4110R - D1	Beta	11/24/2006	6/4/2010	8.00E+00	P	-6.20E+01	6.57E+00	7.51E+01
LB4110R - D2	Beta	11/24/2006	6/4/2010	1.07E+00	P	-6.59E+01	2.68E+00	7.12E+01
LB4110R - D3	Beta	11/24/2006	6/4/2010	3.45E+00	P	-6.97E+01	7.56E+00	8.48E+01
LB4110R - D4	Beta	11/24/2006	6/4/2010	1.25E+00	P	-6.55E+01	3.10E+00	7.17E+01
LB5100 - 1	Beta	7/10/2006	10/26/2007	4.52E+00	F	-3.19E-01	1.58E+00	3.48E+00

**MICHAEL PISANI & ASSOCIATES**

**07-47 East White Lake**

**STANDARD LEVEL IV  
REPORT OF ANALYSIS**

**WORK ORDER #10-05127-OR**

**June 23, 2010**

**EBERLINE ANALYTICAL/OAK RIDGE LABORATORY  
OAK RIDGE, TN**

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VIII	Analytical Data (Gamma Spectroscopy)	0027
	Last Page Number	0203



**Eberline Services – Oak Ridge Laboratory,  
LABORATORY DATA SUPPORT CHECKLIST**

MP-001-3

**10 051 27**

Eberline Services Work Order # \_\_\_\_\_

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		5-25-10	KF	Sample Log-In
		6/17/10	KBS	Data Compilation
		6-18-10	MT	First Technical Data Review
		6/18/10	CD	Second Technical Data Review
		6/22/10	A	Data Entry/Electronic Deliverable
		6/22/10	A	Case Narrative
		6/23/10	KBS	Electronic Deliverable Proof
		6/23/10	CD	Samples Analyzed within Holding Time Yes? <input checked="" type="checkbox"/> No? <input type="checkbox"/>
		6/23/10	CD	QA/QC Review
		06/17/10	eyt	Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by: \_\_\_\_\_

Laboratory Manager

Date

6-17-10  
KBS

Copy No. \_\_\_\_\_

Radiochemistry Services

**SECTION I**  
**CHAIN OF CUSTODY**



Richmond Laboratory

# Chain of Custody

10 051 27

CLIENT: Michael Pisanix Assoc  
 ADDRESS: 1100 Bay Area St Suite 1430  
NOLA 70163  
 PROJECT: 07-47 East White Lake VPCB

PURCHASE ORDER NO. 07-47

### PARAMETERS

SAMPLE NO.	DATE	TIME	LOCATION	SAMPLE TYPE OR MATRIX	# CONTAINERS
4 MPA-Rc-1	5-20-10	1305	8-10'	Soil	1
5 MPA-Rc-1	5-20-10	1325	6.5-7.0'		
6 MPA-Rc-2	5-20-10	1202	9-11'		
7 MPA-Rc-2	5-20-10	1207	11-12'		
8 MPA-Rc-3	5-20-10	1630	9-10.5'		
9 MPA-Rc-3	5-20-10	1640	13-15'		

DATE 5/25/10 PAGE 1 OF 1  
 TAT (IN DAYS) 5+1  
 OBSERVATIONS, COMMENTS, VOLUMES, SPECIAL OR ADDITIONAL TEST

SAMPLERS SIGNATURE: [Signature]

1) RELINQUISHED BY / DATE:	2) RECEIVED BY / DATE:	3) RELINQUISHED BY / DATE:	4) RECEIVED BY / DATE:	TOTAL NO. OF CONTAINERS:
<u>[Signature]</u> COMPANY: <u>MPA</u>	<u>Kevin Fox</u> 5-25-10 1030 COMPANY: <u>Eberline</u>			<u>6</u>
5) RELINQUISHED BY / DATE:	6) RECEIVED BY / DATE:	7) RELINQUISHED BY / DATE:	8) RECEIVED BY / DATE:	METHOD OF SHIPMENT:
				<u>5</u>

SPECIAL SHIPMENT-HANDLING, STORAGE REQUIREMENTS, OR POSSIBLE HAZARDS  
**RECEIVED**  
 MAY 25 2010

BY: KF

2030 Wright Avenue P.O. Box 4040 Richmond, CA 94804-0040 (510) 235-2633 FAX No. (510) 235-0438





**SECTION II**  
**SAMPLE ACKNOWLEDGEMENT**





**Eberline Services – Oak Ridge Laboratory**

**SAMPLE RECEIPT CHECKLIST**  
MP-001-2

WORK ORDER # 10 051 27

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

AQUEOUS    NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	<input checked="" type="radio"/> Y	<input type="radio"/> N	
If aqueous, properly preserved	<input type="radio"/> Y	<input type="radio"/> N	<input checked="" type="radio"/> N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Unbroken on outside of package?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Present on samples?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Unbroken on samples?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Was chain of custody present upon sample receipt?	<input checked="" type="radio"/> Y	<input type="radio"/> N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: 6 soils in ziplock bags

SIGNATURE: [Signature]      DATE: 5-25-10

**SECTION III**  
**CASE NARRATIVE**



EBERLINE ANALYTICAL CORPORATION  
601 SCARBORO ROAD  
OAK RIDGE, TENNESSEE 37830  
PHONE (865) 481-0683  
FAX (865) 483-4621

EBS-OR-30565

June 23, 2010

Patrick Ritchie  
Michael Pisani & Associates  
1100 Poydras Street, 1430 Energy Center  
New Orleans, LA 70163

CASE NARRATIVE  
Work Order # 10-05127-OR

SAMPLE RECEIPT

This work order contains six soil samples received 05/25/10. These samples were analyzed for Radium-226/228 by Gamma Spectroscopy.

<u>CLIENT ID</u>	<u>LAB ID</u>	<u>CLIENT ID</u>	<u>LAB ID</u>
MPA-RA-1 8-10'	10-05127-04	MPA-RA-2 11-12'	10-05127-07
MPA-RA-1 6.5-7.0'	10-05127-05	MPA-RA-3 9-10.5'	10-05127-08
MPA-RA-2 9-11'	10-05127-06	MPA-RA-3 13-15'	10-05127-09

ANALYTICAL METHODS

Gamma Spectroscopy was performed using Method LANL ER-130 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 2-sigma value.

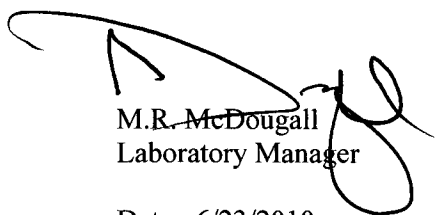
GAMMA SPECTROSCOPY

Samples were dried, homogenized and placed into appropriate gamma spectroscopy geometry containers. Samples were then sealed for 21 days to allow for ingrowth of Radon-222 and progeny. Samples were counted on High Purity Germanium (HPGe) gamma ray detectors. Energy lines from Lead-214 and Bismuth-214 were analyzed for determinations of Radium-226 activity.

Samples demonstrated acceptable results for Radium-226 and Radium-228 activity. Results for sample fraction -05 (Client ID: MPA-RA-1 6.5-7.0') demonstrated slightly high detection limits. Results for the method blank demonstrated acceptable Radium-226 and Radium-228 activity. Results for the Radium-226 and Radium-228 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Cobalt-60 and Cesium-137 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report is in compliance with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall  
Laboratory Manager

Date: 6/23/2010

**SECTION IV**  
**ANALYTICAL RESULTS SUMMARY**



# Eberline Analytical

## Final Report of Analysis

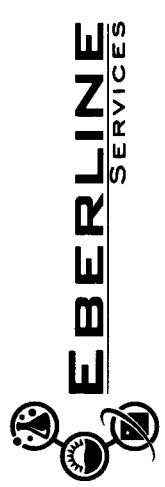
Lab ID		Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-05127-01	LCS	KNOWN		05/26/10 00:00	5/25/2010	6/17/2010	10-05127	Cobalt-60	LANL ER-130 Modified	2.56E+02	7.30E+00			pCi/g
10-05127-01	LCS	KNOWN		05/26/10 00:00	5/25/2010	6/17/2010	10-05127	Cesium-137	LANL ER-130 Modified	1.55E+02	4.33E+00			pCi/g
10-05127-01	LCS	SPIKE		05/26/10 00:00	5/25/2010	6/17/2010	10-05127	Cobalt-60	LANL ER-130 Modified	2.46E+02	1.70E+01	1.70E+01	1.92E+00	pCi/g
10-05127-01	LCS	SPIKE		05/26/10 00:00	5/25/2010	6/17/2010	10-05127	Cesium-137	LANL ER-130 Modified	1.54E+02	1.87E+01	1.87E+01	1.61E+00	pCi/g
10-05127-02	MBL	BLANK		05/26/10 00:00	5/25/2010	6/17/2010	10-05127	Radium-226	LANL ER-130 Modified	8.70E-03	8.22E-02	8.22E-02	1.56E-01	pCi/g
10-05127-02	MBL	BLANK		05/26/10 00:00	5/25/2010	6/17/2010	10-05127	Radium-228	LANL ER-130 Modified	-7.18E-02	1.35E-01	1.35E-01	2.45E-01	pCi/g
10-05127-03	DUP	MPA-RA-1 8-10'		05/20/10 13:05	5/25/2010	6/17/2010	10-05127	Radium-226	LANL ER-130 Modified	1.86E+00	2.82E-01	2.82E-01	2.36E-01	pCi/g
10-05127-03	DUP	MPA-RA-1 8-10'		05/20/10 13:05	5/25/2010	6/17/2010	10-05127	Radium-228	LANL ER-130 Modified	2.33E+00	3.88E-01	3.88E-01	4.52E-01	pCi/g
10-05127-04	DO	MPA-RA-1 8-10'		05/20/10 13:05	5/25/2010	6/17/2010	10-05127	Radium-226	LANL ER-130 Modified	1.92E+00	4.65E-01	4.65E-01	5.65E-01	pCi/g
10-05127-04	DO	MPA-RA-1 8-10'		05/20/10 13:05	5/25/2010	6/17/2010	10-05127	Radium-228	LANL ER-130 Modified	2.47E+00	4.41E-01	4.41E-01	4.61E-01	pCi/g
10-05127-05	TRG	MPA-RA-1 6.5-7.0'		05/20/10 13:25	5/25/2010	6/17/2010	10-05127	Radium-226	LANL ER-130 Modified	1.79E+00	1.05E+00	1.05E+00	1.54E+00	pCi/g
10-05127-05	TRG	MPA-RA-1 6.5-7.0'		05/20/10 13:25	5/25/2010	6/17/2010	10-05127	Radium-228	LANL ER-130 Modified	1.71E+00	1.29E+00	1.29E+00	2.48E+00	pCi/g
10-05127-06	TRG	MPA-RA-2 9-11'		05/20/10 12:02	5/25/2010	6/17/2010	10-05127	Radium-226	LANL ER-130 Modified	1.34E+00	6.89E-01	6.89E-01	7.47E-01	pCi/g
10-05127-06	TRG	MPA-RA-2 9-11'		05/20/10 12:02	5/25/2010	6/17/2010	10-05127	Radium-228	LANL ER-130 Modified	1.17E+00	1.10E+00	1.10E+00	1.79E+00	pCi/g
10-05127-07	TRG	MPA-RA-2 11-12'		05/20/10 12:07	5/25/2010	6/17/2010	10-05127	Radium-226	LANL ER-130 Modified	1.67E+00	5.67E-01	5.67E-01	5.76E-01	pCi/g
10-05127-07	TRG	MPA-RA-2 11-12'		05/20/10 12:07	5/25/2010	6/17/2010	10-05127	Radium-228	LANL ER-130 Modified	1.79E+00	7.96E-01	7.96E-01	1.75E+00	pCi/g
10-05127-08	TRG	MPA-RA-3 9-10.5'		05/20/10 16:30	5/25/2010	6/17/2010	10-05127	Radium-226	LANL ER-130 Modified	1.02E+00	5.69E-01	5.69E-01	6.43E-01	pCi/g
10-05127-08	TRG	MPA-RA-3 9-10.5'		05/20/10 16:30	5/25/2010	6/17/2010	10-05127	Radium-228	LANL ER-130 Modified	1.47E+00	1.03E+00	1.03E+00	1.68E+00	pCi/g
10-05127-09	TRG	MPA-RA-3 13-15'		05/20/10 16:40	5/25/2010	6/17/2010	10-05127	Radium-226	LANL ER-130 Modified	2.26E+00	3.52E-01	3.52E-01	2.33E-01	pCi/g
10-05127-09	TRG	MPA-RA-3 13-15'		05/20/10 16:40	5/25/2010	6/17/2010	10-05127	Radium-228	LANL ER-130 Modified	2.54E+00	5.23E-01	5.23E-01	9.54E-01	pCi/g

Work Order Details:

SDG: **10-05127**  
 Project: **07-47 East White Lake**  
 Analysis Category: **ENVIRONMENTAL**  
 Sample Matrix: **SO**

Report To:  
**Patrick Ritchie**  
**Michael Pisani & Associates**  
**1100 Poydras St. #1430**  
**New Orleans, LA 70163**

CU=Counting Uncertainty; CSU=Combined Standard Uncertainty (2-sigma); MDA=Minimal Detected Activity; LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original



**EBERLINE ANALYTICAL CORPORATION**

601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

**SECTION V**  
**ANALYTICAL STANDARD**

**CERTIFICATE OF CALIBRATION**  
Standard Radionuclide Source

GAS-1001

81340-416

Sand in 16 oz PP Taral Jar Half Filled

**Customer:** Eberline Services / Eberline Analytical Corp. / Oak Ridge

**P.O. No.:** 5964, Item 5

**Reference Date:** 01-Jan-2010 12:00 PM EST **Grams of Master Source:** 0.017495

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytix (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* $\mu\text{ps}/\text{gram}$	This Source $\mu\text{ps}$	Uncertainty, %			Calibration Method
					$u_A$	$u_B$	U	
Am-241	59.5	1.580E+05	—	2.025E+03	0.1	1.7	3.5	4 $\pi$ LS
Cd-109	88.0	4.626E+02	1.606E+05	2.810E+03	0.4	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	8.471E+04	1.482E+03	0.5	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.209E+05	2.115E+03	0.4	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.726E+05	4.769E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.672E+05	2.925E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.096E+06	1.917E+03	0.6	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.077E+05	7.133E+03	0.4	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.055E+05	3.595E+03	0.5	1.9	3.9	HPGe
Co-60	1332.5	1.925E+03	2.056E+05	3.597E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.308E+05	7.537E+03	0.5	1.9	3.9	HPGe

\* Master Source refers to Analytix' 8-isotope mixture which is calibrated quarterly.

**Calibration Methods:** 4 $\pi$  LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)



**Comments:**

260 mL / 416 g of sand.

This standard will expire one year after the reference date.

Source Prepared by:

M. I. Taskaeva  
M. I. Taskaeva, Radiochemist

QA Approved:

J. D. McCorvey  
J. D. McCorvey, QA Manager Alternate

Date:

1/29/10



**CERTIFICATE OF CALIBRATION**  
Standard Radionuclide Source

**GAS-1002**

**81341-416**

Sand in 16 oz PP Taral Jar Filled to Top

**Customer:** Eberline Services / Eberline Analytical Corp. / Oak Ridge

**P.O. No.:** 5964, Item 6

**Reference Date:** 01-Jan-2010 12:00 PM EST **Grams of Master Source:** 0.017446

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* ypg/gram	This Source ypg	Uncertainty, %			Calibration Method
					u <sub>1</sub>	u <sub>2</sub>	U	
Am-241	59.5	1.580E+05	—	2.020E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.606E+05	2.802E+03	0.4	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	8.471E+04	1.478E+03	0.5	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.209E+05	2.109E+03	0.4	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.726E+05	4.756E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.672E+05	2.917E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.096E+05	1.912E+03	0.6	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.077E+05	7.113E+03	0.4	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.055E+05	3.585E+03	0.5	1.9	3.9	HPGe
Co-60	1332.5	1.925E+03	2.056E+05	3.587E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.308E+05	7.516E+03	0.5	1.9	3.9	HPGe

\* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

**Calibration Methods:** 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)



**Comments:**

260 mL / 260 g of pulverized soil.

This standard will expire one year after the reference date.

Source Prepared by:

M. I. Taskaeva  
M. I. Taskaeva, Radiochemist

QA Approved:

J. D. McCorvey  
J. D. McCorvey, QA Manager Alternate

Date:

1/29/10



**SECTION VI**  
**QUALITY CONTROL SAMPLE RESULTS SUMMARY**

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05127</b>	<b>Gamma</b>	<b>1</b>	<b>pCi</b>	<b>g</b>	<b>Michael Pisani &amp; Associates</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
CO-60	1.09	96.18%	6.89%	100.00%	2.85%	2.58E+02	7.30E+00	2.46E+02	1.70E+01	GAS-90	2.56E+02	7.30E+00	3.68E+02
CS-137	0.09	99.46%	12.18%	100.00%	2.80%	1.55E+02	4.33E+00	1.54E+02	1.87E+01	GAS-90	1.55E+02	4.33E+00	3.68E+02

**Matrix Spike**

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

**Replicate Sample**

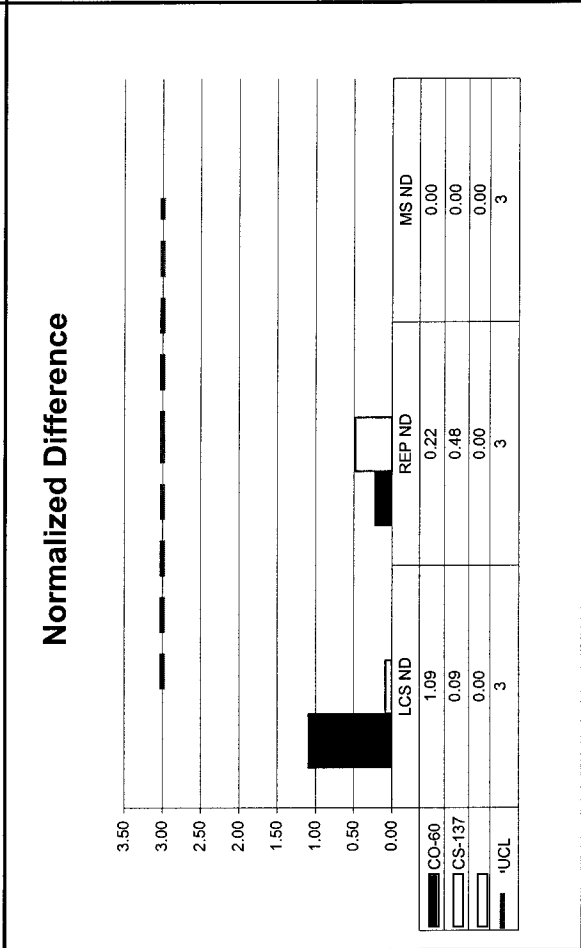
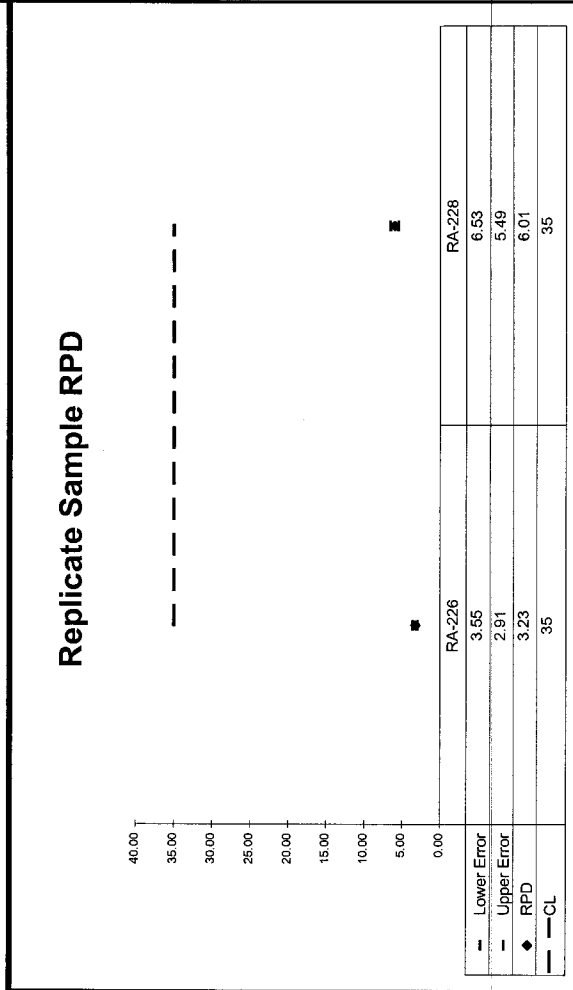
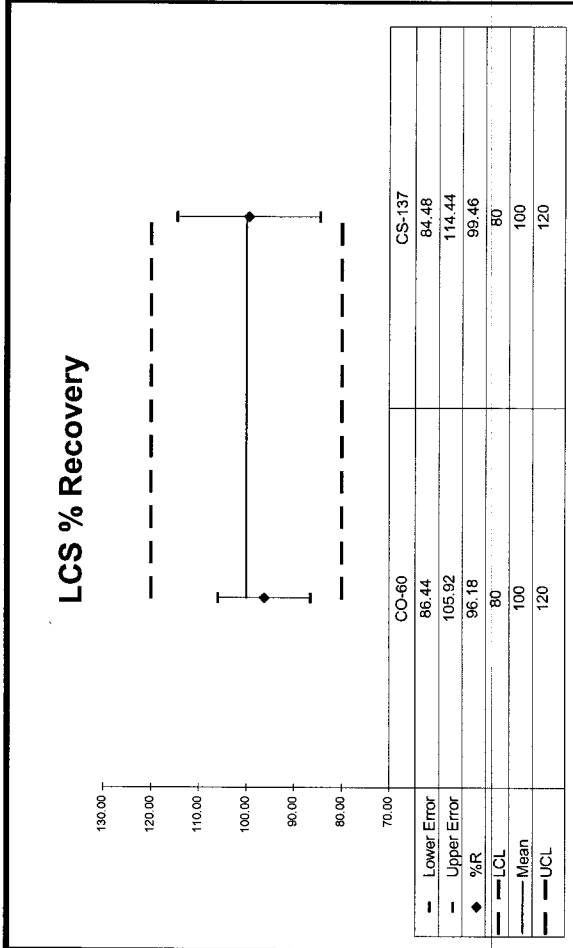
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-226	0.22	3.23	1.92E+00	4.65E-01	1.86E+00	2.82E-01	0.96	OK	OK	<CS-137	RA-226>	OK	OK
RA-228	0.48	6.01	2.47E+00	4.41E-01	2.33E+00	3.88E-01	0.99	OK	OK	<CO-60	RA-228>	OK	OK

**QC Summary**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-226	0.22	3.23	1.92E+00	4.65E-01	1.86E+00	2.82E-01	0.96	OK	OK	<CS-137	RA-226>	OK	OK
RA-228	0.48	6.01	2.47E+00	4.41E-01	2.33E+00	3.88E-01	0.99	OK	OK	<CO-60	RA-228>	OK	OK



WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05127</b>	<b>Gamma</b>	<b>1</b>	<b>pCi</b>	<b>g</b>	<b>Michael Pisani &amp; Associates</b>



No Matrix Spike

**SECTION VII**  
**LABORATORY TECHNICIAN'S NOTES**



# GE-2

Date	Sample #	Client	Load Time	CT-Time	Analysis	Tech
6/16/10	Gams-9	Lab	1105	15min	✓	KM
6/16/10	1005132-03	CT Dept	1122	1hr	✓	KM
6/16/10	1005132-04	CT Dept	1223	1hr	✓	KB
6/16/10	1005132-05	CT Dept	1324	1hr	✓	KB
6/16/10	1005132-07	CT Dept	1425	1hr	✓	KB
6/16/10	1005132-09	CT Dept	1526	1hr	✓	KB
6/16/10	1005132-11	CT Dept	1626	1hr	✓	KB
6/16/10	1005132-13	CT Dept	1727	1hr	✓	KB
6/16/10	1006043-04	BSC	1829	4hrs	✓	KB
6/17/10	Gas-1002	Lab	0503	15min	✓	KM
6/17/10	Gas-1001	Lab	0531	15min	✓	KM
6/17/10	Daily @kgf	Lab	0551	15min	✓	KM
6/17/10	Gas-10	Lab	0622	15min	✓	KM
6/17/10	Gas-1001	Lab	0657	15min	✓	KM
6/17/10	Gas-1002	Lab	0714	15min	✓	KM
6/17/10	1005127-03	MFA	0738	1hr	✓	KM
6/17/10	1005127-04	MFA	0842	1hr	✓	KM
6/17/10	1005127-09	MFA	0950	1hr	✓	KM

# GE-4

69

Date	Sample #	Client	Load Time	Off Time	Analysis	Tech
6/16/10	Gams-9	Lab	1022	15 min	Y	KM
6/16/10	Gams-9	Lab	1047	15 min	Y	KM
6/16/10	1006052-03	Unitech	1106	1 hr	Y	ICB
6/16/10	1006052-04	Unitech	1207	1 hr	Y	ICB
6/16/10	1006052-05	Unitech	1308	1 hr	Y	ICB
6/16/10	1006052-02	Unitech	1408	1 hr	Y	ICB
6/16/10	1006052-01	Unitech	1511	30 min	Y	ICB
6/16/10	1004020-11	Weston	1543	1 hr	Y	ICB
6/16/10	1006043-01	BSC	1645	30 mins	Y	ICB
6/16/10	1005090-02	Weston	1717	1 hr	Y	ICB
6/16/10	1006043-02	BSC	1721	4 hrs	Y	ICB
6/17/10	Gaw-10	Lab	0503	15 min	Y	KM
6/17/10	GAS1002	Lab	0531	15 min	Y	KM
6/17/10	GAS1001	Lab	0551	15 min	Y	KM
6/17/10	Daily Bkgd	Lab	0622	15 min	Y	KM
6/17/10	Gaw-10	Lab	0651	15 min	Y	KM
6/17/10	GAS1001	Lab	0714	15 min	Y	KM
6/17/10	GAS1001	Lab	0733	15 min	Y	KM
6/17/10	1005127-05	MPA	0759	1 hr	Y	KM
6/17/10	1005127-07	MPA	0859	1 hr	Y	KM
6/17/10	1005127-01	MPA	1004	30 min	Y	KM
6/17/10	1005127-02	MPA	1050	1 hr	Y	KM

**SECTION VIII**  
**ANALYTICAL DATA (GAMMA SPECTROSCOPY)**









Preliminary Data Report & Analytical Calculations  
**Work Order: 10-05127-Gamma-1**

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LSC Known	LCS %R	LCS Flag	RPD Flag	Sample Date	Sample Aliquot	Counting Date/Time	Identified
01	CO-60	LCS	LCS	pCi/g	2.46E+02	1.70E+01	1.92E+00	2.58E+02	96.18	OK		05/26/10 00:00	1.00E+00	06/17/10 10:04	YES
01	CS-137	LCS	LCS	pCi/g	1.54E+02	1.87E+01	1.61E+00	1.55E+02	99.46	OK		05/26/10 00:00	1.00E+00	06/17/10 10:04	YES
02	RA-228	MBL	BLANK	pCi/g	-7.18E-02	1.35E-01	2.45E-01					05/26/10 00:00	1.00E+00	06/17/10 10:50	NO
02	RA-226	MBL	BLANK	pCi/g	8.70E-03	8.22E-02	1.56E-01					05/26/10 00:00	1.00E+00	06/17/10 10:50	NO
03	RA-228	DUP	MPA-RA-1 8-10	pCi/g	2.33E+00	3.88E-01	4.52E-01				OK	05/20/10 13:05	2.54E+02	06/17/10 07:38	YES
03	RA-226	DUP	MPA-RA-1 8-10	pCi/g	1.86E+00	2.82E-01	2.36E-01				OK	05/20/10 13:05	2.54E+02	06/17/10 07:38	YES
04	RA-228	DO	MPA-RA-1 8-10	pCi/g	2.47E+00	4.41E-01	4.81E-01					05/20/10 13:05	2.54E+02	06/17/10 08:42	YES
04	RA-226	DO	MPA-RA-1 8-10	pCi/g	1.92E+00	4.65E-01	5.65E-01					05/20/10 13:05	2.54E+02	06/17/10 08:42	NO
05	RA-228	TRG	MPA-RA-1 6.5-7.0	pCi/g	1.71E+00	1.29E+00	2.48E+00					05/20/10 13:25	5.76E+01	06/17/10 07:59	NO
05	RA-226	TRG	MPA-RA-1 6.5-7.0	pCi/g	1.79E+00	1.05E+00	1.54E+00					05/20/10 13:25	5.76E+01	06/17/10 07:59	NO
06	RA-228	TRG	MPA-RA-2 9-11	pCi/g	1.17E+00	1.10E+00	1.79E+00					05/20/10 12:02	3.88E+01	06/17/10 08:40	NO
06	RA-226	TRG	MPA-RA-2 9-11	pCi/g	1.34E+00	6.89E-01	7.47E-01					05/20/10 12:02	3.88E+01	06/17/10 08:40	YES
07	RA-228	TRG	MPA-RA-2 11-12	pCi/g	1.79E+00	7.96E-01	1.75E+00					05/20/10 12:07	1.19E+02	06/17/10 08:59	NO
07	RA-226	TRG	MPA-RA-2 11-12	pCi/g	1.67E+00	5.67E-01	5.76E-01					05/20/10 12:07	1.19E+02	06/17/10 08:59	YES
08	RA-228	TRG	MPA-RA-3 9-10.5	pCi/g	1.47E+00	1.03E+00	1.68E+00					05/20/10 16:30	4.38E+01	06/17/10 09:50	NO
08	RA-226	TRG	MPA-RA-3 9-10.5	pCi/g	1.02E+00	5.69E-01	6.43E-01					05/20/10 16:30	4.38E+01	06/17/10 09:50	YES
09	RA-228	TRG	MPA-RA-3 13-15	pCi/g	2.54E+00	5.23E-01	9.54E-01					05/20/10 16:40	2.66E+02	06/17/10 09:50	NO
09	RA-226	TRG	MPA-RA-3 13-15	pCi/g	2.26E+00	3.52E-01	2.33E-01					05/20/10 16:40	2.66E+02	06/17/10 09:50	YES



**CERTIFICATE OF CALIBRATION**  
Standard Radionuclide Source

<sup>90</sup>  
GAS-~~8076~~

78854-416

Sand in 16 oz PP Taral Jar Half Filled

**Customer:** Eberline Services / Oak Ridge

**P.O. No.:** 5258, Item 5

**Calibration Date:** 01-Jan-2009 12:00 EST **Grams of Master Source:** 0.016724

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* yps/gram	This Source yps	Uncertainty, %			Calibration Method
					$u_A$	$u_B$	U	
Am-241	59.5	157860	—	1.942E+03	0.3	1.5	3.1	4π LS
Cd-109	88.0	462.60	1.694E+05	2.833E+03	0.6	1.7	3.6	HPGe
Co-57	122.1	271.79	8.597E+04	1.438E+03	0.7	1.3	3.0	HPGe
Ce-139	165.9	137.6	1.217E+05	2.035E+03	0.5	1.1	2.4	HPGe
Hg-203	279.2	46.61	2.692E+05	4.502E+03	0.5	1.1	2.4	HPGe
Sn-113	391.7	115.1	1.709E+05	2.858E+03	0.6	1.1	2.5	HPGe
Cs-137	661.7	10983	1.071E+05	1.791E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	106.6	4.084E+05	6.830E+03	0.7	1.1	2.6	HPGe
Co-60	1173.2	1925.4	2.084E+05	3.485E+03	0.8	1.1	2.7	HPGe
Co-60	1332.5	1925.4	2.086E+05	3.489E+03	1.0	1.1	3.0	HPGe
Y-88	1836.1	106.6	4.320E+05	7.225E+03	0.8	1.1	2.7	HPGe

\* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

**Calibration Methods:** 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

**Comments:**

230 mL/368 g of sand.

This standard will expire one year after the calibration date.

Source Prepared by: W. Mao

W. Mao, Radiochemist

QA Approved: D. M. Montgomery

D. M. Montgomery, QA Manager

Date: 1/28/09

End of Certificate

# Aliquot Worksheet

Work Order	Run	Analysis Code	Rpt Units	Lab Deadline	Technician
<b>10-05127</b>	<b>1</b>	<b>Gamma</b>	<b>grams</b>	<b>6/16/2010</b>	<b>KSALLINGS</b>

Lab Fraction	Michael Pisani & Associates		Sample		Muffle Data		Dilution Data			Aliquot Data		MS Aliquot Data		H-3 Solids Only	
	Client ID	Type	Ratio Post/Pre	No of Dilis	Dil Factor	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist Aliq			
01	LCS	LCS					1.0000E+00	1.0000E+00							
02	BLANK	MBL					1.0000E+00	1.0000E+00							
03	MPA-RA-1 8-10	DUP					2.5411E+02	2.5411E+02							
04	MPA-RA-1 8-10	DO					2.5411E+02	2.5411E+02							
05	MPA-RA-1 6.5-7.0	TRG					5.7580E+01	5.7580E+01							
06	MPA-RA-2 9-11	TRG					3.8790E+01	3.8790E+01							
07	MPA-RA-2 11-12	TRG					1.1874E+02	1.1874E+02							
08	MPA-RA-3 9-10.5	TRG					4.3830E+01	4.3830E+01							
09	MPA-RA-3 13-15	TRG					2.6563E+02	2.6563E+02							

Comments
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Technician: Kenny Selley Date: 5/27/10



LM  
6-17-10

Sample ID : 1005127-01

Acquisition date : 17-JUN-2010 10:04:46

VAX/VMS Peak Search Report Generated 17-JUN-2010 10:35:46.08

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512701\_GE4\_GAS1001\_150525.  
 Analyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2  
 Client ID : GAS-90  
 Deposition Date :  
 Sample Date : 1-JAN-2009 00:00:00. Acquisition date : 17-JUN-2010 10:04:46  
 Sample ID : 1005127-01 Sample Quantity : 3.68000E+02 GRAM  
 Sample type : SOIL Sample Geometry : 0  
 Detector name : GE4 Detector Geometry: GAS-1001  
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:44.49 2.4%  
 Start channel : 5 End channel : 4096  
 Sensitivity : 2.40000 Gaussian : 15.00000  
 Critical level : Yes

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	22.69	231495	77199	2.15	22.70	20	7	0.6		
0	32.63	3402	10872	2.37	32.63	31	6	10.2		
2	50.40	8827	20124	2.26	50.39	45	19	6.1	1.10E+03	
2	59.68	102408	18568	2.28	59.67	45	19	0.8		AM-241
0	69.23	4120	33280	6.51	69.21	65	11	17.4		
0	88.24	73386	29419	2.12	88.21	82	12	1.2		SN-126 CD-109
0	122.35	19751	11766	2.09	122.31	118	9	2.4		CO-57
0	136.81	2509	9742	2.08	136.77	133	9	14.8		CO-57
0	166.13	6034	8640	1.96	166.08	162	9	6.1		CE-139
0	392.09	2125	4795	2.08	391.94	388	9	12.5		SN-113
0	456.86	130	2626	2.12	456.69	455		5119.9		
0	473.43	171	2989	2.11	473.25	471		6102.3		
0	661.91	19932	3564	2.28	661.65	656	12	1.9		CS-137
0	821.07	140	2278	3.93	820.74	818		8119.6		
0	898.22	1819	3288	2.53	897.86	893	10	12.7		Y-88
0	1173.46	17853	1507	2.49	1172.99	1168	12	1.7		CO-60
0	1332.69	16493	460	2.53	1332.15	1326	13	1.6		CO-60
0	1836.26	1011	81	2.76	1835.51	1829	13	7.3		Y-88
0	1876.39	13	10	2.98	1875.63	1873	6	96.4		
0	1892.12	13	18	3.33	1891.35	1887		8127.8		
0	1912.30	68	99	28.44	1911.52	1894	33	92.9		
0	2033.12	21	8	3.94	2032.29	2029	7	62.8		
0	2046.52	27	10	3.80	2045.69	2042	8	58.7		
0	2221.33	16	19	6.68	2220.43	2215		12116.1		
0	2318.95	14	10	1.20	2318.00	2313		11104.0		
0	2505.63	94	0	3.96	2504.61	2500	11	20.6		

AG  
6/17/10

Total number of lines in spectrum 26  
 Number of unidentified lines 11  
 Number of lines tentatively identified by NID 15 57.69%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CO-57	270.90D	3.91	3.376E+01	1.318E+02	0.125E+02	9.47	
Y-88	106.60D	31.9	1.644E+01	5.243E+02	0.502E+02	9.58	
CD-109	464.00D	2.22	2.580E+03	5.716E+03	0.690E+03	12.06	
SN-113	115.10D	24.7	1.192E+01	2.943E+02	0.514E+02	17.45	
SN-126	1.00E+05Y	1.00	2.593E+02	2.593E+02	0.271E+02	10.46	
CS-137	30.17Y	1.03	1.487E+02	1.537E+02	0.187E+02	12.18	
CE-139	137.66D	14.6	1.276E+01	1.863E+02	0.214E+02	11.48	
Total Activity :			3.063E+03	7.266E+03			

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CO-60	5.27Y	1.21	2.033E+02	2.463E+02	0.170E+02	6.89	
Total Activity :			2.033E+02	2.463E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
AM-241	432.20Y	1.00	3.872E+02	3.881E+02	0.326E+02	8.41	
Total Activity :			3.872E+02	3.881E+02			

Grand Total Activity : 3.654E+03 7.900E+03

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit



Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr		2-Sigma %Error	Status
				pCi/GRAM	pCi/GRAM		
CO-57	122.06	85.51*	2.845E+00	3.313E+01	1.294E+02	11.03	OK
	136.48	10.60	2.697E+00	3.581E+01	1.399E+02	18.40	OK
Final Mean for 2 Valid Peaks = 1.318E+02+/- 1.248E+01 ( 9.47%)							
Y-88	898.02	93.40	4.689E-01	1.695E+01	5.403E+02	16.93	OK
	1836.01	99.38*	2.557E-01	1.623E+01	5.174E+02	11.62	OK
Final Mean for 2 Valid Peaks = 5.243E+02+/- 5.025E+01 ( 9.58%)							
CD-109	88.03	3.72*	3.119E+00	2.580E+03	5.716E+03	12.06	OK
Final Mean for 1 Valid Peaks = 5.716E+03+/- 6.895E+02 ( 12.06%)							
SN-113	255.12	1.93	1.706E+00	----- Line Not Found		-----	Absent
	391.69	64.90*	1.121E+00	1.192E+01	2.943E+02	17.45	OK
Final Mean for 1 Valid Peaks = 2.943E+02+/- 5.136E+01 ( 17.45%)							
SN-126	87.57	37.00*	3.121E+00	2.593E+02	2.593E+02	10.46	OK
Final Mean for 1 Valid Peaks = 2.593E+02+/- 2.713E+01 ( 10.46%)							
CS-137	661.65	85.12*	6.427E-01	1.487E+02	1.537E+02	12.18	OK
Final Mean for 1 Valid Peaks = 1.537E+02+/- 1.872E+01 ( 12.18%)							
CE-139	165.85	80.35*	2.401E+00	1.276E+01	1.863E+02	11.48	OK
Final Mean for 1 Valid Peaks = 1.863E+02+/- 2.138E+01 ( 11.48%)							

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr		2-Sigma %Error	Status
				pCi/GRAM	pCi/GRAM		
CO-60	1173.22	100.00*	3.634E-01	2.004E+02	2.428E+02	9.39	OK
	1332.49	100.00	3.253E-01	2.069E+02	2.506E+02	10.15	OK
Final Mean for 2 Valid Peaks = 2.463E+02+/- 1.697E+01 ( 6.89%)							

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr		2-Sigma %Error	Status
				pCi/GRAM	pCi/GRAM		
AM-241	59.54	35.90*	3.006E+00	3.872E+02	3.881E+02	8.41	OK
Final Mean for 1 Valid Peaks = 3.881E+02+/- 3.265E+01 ( 8.41%)							

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CO-57	1.318E+02	1.248E+01	2.718E+00	2.714E-01	48.500
CO-60	2.463E+02	1.697E+01	1.923E+00	1.599E-01	128.047
Y-88	5.243E+02	5.025E+01	1.897E+01	1.541E+00	27.636
CD-109	5.716E+03	6.895E+02	4.335E+01	4.905E+00	131.876
SN-113	2.943E+02	5.136E+01	3.804E+01	4.365E+00	7.737
SN-126	2.593E+02	2.713E+01	1.966E+00	1.886E-01	131.893
CS-137	1.537E+02	1.872E+01	1.606E+00	1.823E-01	95.699
CE-139	1.863E+02	2.138E+01	1.087E+01	9.614E-01	17.130
AM-241	3.881E+02	3.265E+01	2.147E+00	1.579E-01	180.795

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NA-22	-1.821E-01		8.492E-01	1.461E+00	1.297E-01	-0.125
AL-26	-9.686E-02		2.938E-01	5.119E-01	4.214E-02	-0.189
K-40	-9.237E-01		3.837E+00	6.659E+00	6.230E-01	-0.139
TI-44	5.829E+00	+	1.136E+00	9.210E-01	7.252E-02	6.329
SC-46	5.874E+01		1.035E+02	1.586E+02	1.669E+01	0.370
MN-54	3.684E+00		3.494E+00	5.661E+00	6.207E-01	0.651
CO-56	5.330E+00		1.174E+02	1.884E+02	2.049E+01	0.028
CO-58	-9.392E+01		1.905E+02	3.026E+02	3.381E+01	-0.310
ZN-65	3.609E+00		1.076E+01	1.848E+01	1.660E+00	0.195
SE-75	-1.863E+01		1.740E+01	2.815E+01	2.663E+00	-0.662
RB-83	7.717E+01		1.119E+02	1.822E+02	3.242E+01	0.423
KR-85	-1.336E+01		1.804E+02	2.929E+02	3.528E+01	-0.046
NB-93M	8.385E+01		4.093E+01	3.957E+01	1.511E+01	2.119
NB-94	3.899E-01		1.149E+00	1.848E+00	1.975E-01	0.211
RU-106	-1.675E+01		2.201E+01	3.490E+01	5.431E+00	-0.480
AG-108M	1.376E-01		9.648E-01	1.559E+00	1.775E-01	0.088
AG-110M	1.253E+02		1.625E+01	1.112E+01	1.265E+00	11.274
TE123M	-6.900E-01		1.049E+01	1.557E+01	1.410E+00	-0.044
SB-125	-2.364E+00		3.304E+00	5.318E+00	6.229E-01	-0.445
I-129	-2.419E+02		3.285E+01	2.174E+00	2.801E-01	-111.248
BA-133	-1.204E+00		1.033E+00	1.641E+00	2.399E-01	-0.734
CS-134	4.864E-01		1.287E+00	2.096E+00	2.489E-01	0.232
CS-135	1.620E+00		2.943E+00	4.866E+00	4.569E-01	0.333
LA-138	1.739E-01		6.181E-01	1.105E+00	1.010E-01	0.157
CE-144	3.963E+01		1.401E+01	2.057E+01	1.995E+00	1.927
PM-144	2.673E-01		2.340E+00	3.783E+00	5.232E-01	0.071
PM-145	-1.414E+01		9.743E+00	4.424E+00	2.891E+00	-3.196
PM-146	-6.793E-01		2.461E+00	3.551E+00	4.178E-01	-0.191
EU-152	9.487E-02		2.974E+00	5.237E+00	5.945E-01	0.018
GD-153	-3.967E+00		7.352E+00	1.220E+01	1.183E+00	-0.325
EU-154	-3.968E-01		1.818E+00	3.128E+00	2.776E-01	-0.127
EU-155	3.460E+02		3.576E+01	6.867E+00	6.514E-01	50.382
HO-166M	-4.226E-02		1.574E+00	2.538E+00	2.891E-01	-0.017
HF-172	1.318E+02		1.551E+01	1.159E+01	1.144E+00	11.373

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
LU-173	2.117E-01		4.673E+00	7.696E+00	7.217E-01	0.028
HF-175	5.434E+01		1.268E+02	2.086E+02	2.184E+01	0.260
LU-176	-1.053E-01		5.350E-01	8.766E-01	8.640E-02	-0.120
TA-182	-2.401E+01		8.133E+01	1.384E+02	1.233E+01	-0.173
IR-192	1.633E+01		2.555E+02	3.707E+02	4.395E+01	0.044
BI-207	2.885E-01		7.593E-01	1.238E+00	1.488E-01	0.233
TL-208	6.112E-01		2.425E+00	3.947E+00	4.726E-01	0.155
BI-210M	8.735E-01		1.048E+00	1.735E+00	1.631E-01	0.504
PB-210	2.845E+02		3.064E+01	2.674E+01	2.220E+00	10.640
PB-211	-1.139E+00		2.168E+01	3.538E+01	3.998E+00	-0.032
BI-212	4.039E+00		7.390E+00	1.200E+01	1.366E+00	0.336
PB-212	4.807E-01		1.043E+00	1.727E+00	1.622E-01	0.278
BI-214	3.737E-01		1.680E+00	2.730E+00	3.229E-01	0.137
PB-214	5.104E-01		1.489E+00	2.448E+00	2.595E-01	0.209
RN-219	-3.218E-01		1.084E+01	1.577E+01	1.777E+00	-0.020
RA-223	5.555E+00		1.345E+01	2.216E+01	2.249E+00	0.251
RA-224	3.021E+00		1.179E+01	1.949E+01	1.831E+00	0.155
RA-226	1.223E+01		2.542E+01	2.007E+01	3.675E+01	0.610
TH-227	8.587E-01		4.039E+00	6.673E+00	6.262E-01	0.129
AC-228	-4.726E-01		4.326E+00	7.414E+00	7.705E-01	-0.064
TH-230	3.982E+02		1.549E+02	2.304E+02	1.811E+01	1.729
PA-231	-1.256E+01		2.180E+01	3.551E+01	3.474E+00	-0.354
TH-231	2.534E+03		4.191E+02	3.535E+01	5.668E+00	71.688
PA-234	-1.876E+00		2.393E+00	2.773E+00	2.705E-01	-0.676
PA-234M	-1.386E+01		1.287E+02	2.203E+02	2.191E+01	-0.063
TH-234	7.380E+02		6.613E+01	3.092E+01	2.341E+00	23.865
U-235	2.683E+00		3.679E+00	5.473E+00	9.814E-01	0.490
NP-237	6.928E+02		7.161E+01	1.374E+01	1.304E+00	50.413
AM-243	3.638E-02		8.559E-01	1.283E+00	1.078E-01	0.028
CM-243	4.186E+00		3.593E+00	5.944E+00	5.560E-01	0.704

Total number of lines in spectrum 26  
 Number of unidentified lines 11  
 Number of lines tentatively identified by NID 15 57.69%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CO-57	270.90D	3.91	3.376E+01	1.318E+02	0.125E+02	9.47	
Y-88	106.60D	31.9	1.644E+01	5.243E+02	0.502E+02	9.58	
CD-109	464.00D	2.22	2.580E+03	5.716E+03	0.690E+03	12.06	
SN-113	115.10D	24.7	1.192E+01	2.943E+02	0.514E+02	17.45	
SN-126	1.00E+05Y	1.00	2.593E+02	2.593E+02	0.271E+02	10.46	
CS-137	30.17Y	1.03	1.487E+02	1.537E+02	0.187E+02	12.18	
CE-139	137.66D	14.6	1.276E+01	1.863E+02	0.214E+02	11.48	
Total Activity :			3.063E+03	7.266E+03			

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CO-60	5.27Y	1.21	2.033E+02	2.463E+02	0.170E+02	6.89	
Total Activity :			2.033E+02	2.463E+02			

Nuclide Type : NATURAL

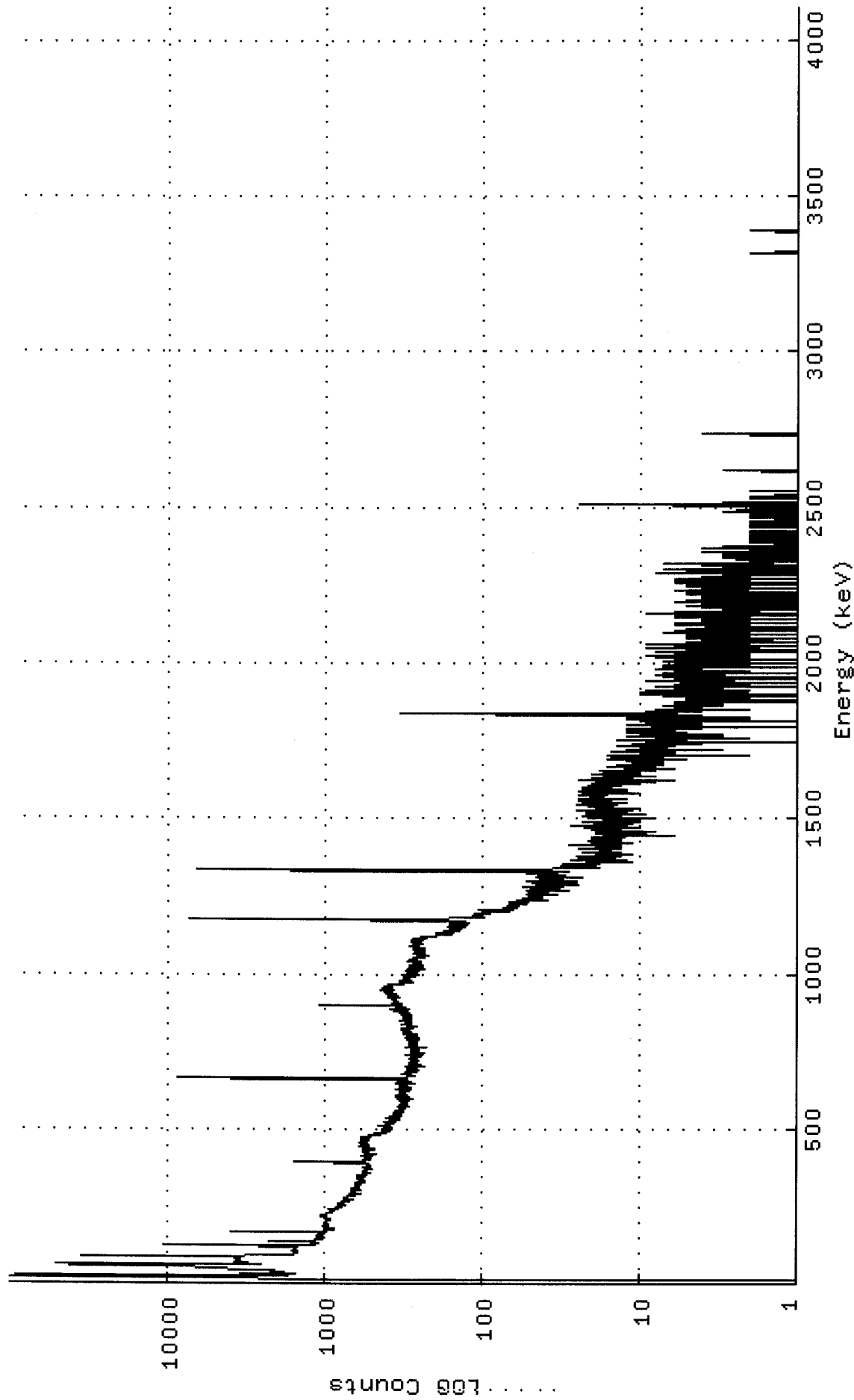
Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
AM-241	432.20Y	1.00	3.872E+02	3.881E+02	0.326E+02	8.41	
Total Activity :			3.872E+02	3.881E+02			

Grand Total Activity : 3.654E+03 7.900E+03

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Spectrum : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100512701\_GE4\_GAS1001\_150525.CNF;1  
Title ;  
Sample Title: GAS-90  
Start Time: 17-JUN-2010 10:04 Sample Time: 1-JAN-2009 00:00: Energy Offset: -1.37255E-02  
Real Time : 0 00:30:44.49 Sample ID : 1005127-01 Energy Slope : 1.00041E+00  
Live Time : 0 00:30:00.00 Sample Type: SOIL Energy Quad : 0.00000E+00



Channel Contents for DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512701\_GE4\_GAS1001\_1505

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	31	2107
17:	2946	3349	3457	7458	35852	98680	80145	28348
25:	34125	24086	5957	1783	1470	1481	1915	2847
33:	3348	2630	1801	1733	2036	2041	1957	1941
41:	2002	2356	2610	2858	3010	3194	3648	4480
49:	5461	6274	6264	6366	6248	6531	6807	7001
57:	7470	11131	34314	49008	19884	3436	2426	2583
65:	2751	3193	3469	3545	3591	3600	3534	3508
73:	3445	3455	3309	3361	3402	3432	3439	3336
81:	3478	3448	3599	3708	3851	4346	12806	33878
89:	26763	5610	1640	1599	1557	1508	1508	1528
97:	1483	1531	1495	1507	1516	1461	1517	1525
105:	1443	1479	1545	1558	1485	1532	1540	1503
113:	1514	1489	1486	1536	1494	1468	1445	1581
121:	4039	10234	8113	2350	1152	1135	1188	1182
129:	1173	1055	1123	1158	1114	1142	1258	1881
137:	2200	1441	1116	1053	1046	1037	1007	1114
145:	1076	1020	1092	1050	965	1031	996	1078
153:	1005	1031	1005	1056	1034	1004	1005	971
161:	1004	1008	998	1107	2197	3843	2522	1145
169:	970	884	963	843	897	875	936	971
177:	897	869	852	932	864	908	960	912
185:	959	956	991	997	980	924	979	953
193:	944	953	950	940	941	965	954	965
201:	912	899	902	908	918	955	890	912
209:	955	940	973	950	988	997	956	1013
217:	954	1020	1022	1006	1005	992	971	969
225:	949	946	881	895	924	910	926	901
233:	888	859	891	850	892	876	931	813
241:	850	834	828	820	814	782	829	757
249:	792	727	736	730	796	763	803	764
257:	733	760	772	792	753	734	749	711
265:	719	678	729	669	716	745	730	658
273:	669	644	718	695	694	694	745	708
281:	699	634	695	649	625	636	685	615
289:	643	652	661	570	634	651	663	665
297:	643	642	620	666	618	592	628	574
305:	612	617	604	590	642	661	638	615
313:	598	627	620	631	588	572	610	619
321:	582	580	583	621	601	585	607	572
329:	535	582	570	580	541	594	573	556
337:	562	576	553	608	566	573	606	553
345:	551	586	536	591	559	567	559	609
353:	527	544	519	512	556	508	505	536
361:	524	548	524	522	563	553	530	531
369:	547	533	490	542	552	536	505	530
377:	542	518	496	527	516	516	519	527
385:	523	545	548	513	520	634	1122	1508
393:	953	592	540	538	531	517	550	545
401:	535	548	495	535	500	542	522	539
409:	537	489	518	574	489	543	488	547
417:	509	510	517	520	455	542	559	526
425:	543	526	514	511	516	514	477	553

433:	507	531	475	560	551	528	531	541
441:	521	508	528	588	507	555	575	536
449:	558	542	517	540	539	528	531	567
457:	593	556	509	536	531	567	538	525
465:	514	546	572	528	555	512	528	530
473:	568	547	494	493	473	506	501	475
481:	459	437	470	448	402	418	410	412
489:	414	412	421	413	405	374	398	422
497:	408	419	362	404	397	362	400	377
505:	414	367	414	373	395	449	447	411
513:	373	370	396	362	377	403	361	379
521:	386	414	353	361	345	368	363	352
529:	381	356	327	361	349	401	385	368
537:	332	381	315	380	344	338	325	344
545:	355	355	344	320	343	339	361	344
553:	345	311	307	343	330	350	322	322
561:	314	316	304	316	330	311	330	313
569:	329	300	335	322	285	306	310	305
577:	310	331	296	321	311	304	310	323
585:	311	311	290	332	288	315	300	302
593:	299	306	338	281	270	309	331	288
601:	291	321	349	308	304	314	315	350
609:	321	322	294	309	303	307	308	329
617:	320	302	295	282	292	286	331	310
625:	306	278	313	342	308	301	330	280
633:	312	317	301	289	322	303	293	314
641:	326	292	289	297	291	263	316	347
649:	326	308	331	338	305	275	315	295
657:	295	329	421	2068	7035	8334	3241	591
665:	305	292	290	290	288	264	273	291
673:	274	318	282	276	295	293	284	276
681:	284	253	270	276	304	270	249	297
689:	272	266	275	287	291	259	254	277
697:	253	294	299	229	287	241	274	242
705:	266	250	282	287	248	256	274	254
713:	257	281	287	269	261	263	280	260
721:	265	251	271	263	274	284	252	264
729:	273	275	258	279	242	262	294	301
737:	261	272	284	237	266	271	260	228
745:	243	279	254	275	271	251	276	261
753:	264	247	274	280	266	248	253	256
761:	269	303	272	281	223	274	271	261
769:	272	272	288	252	257	284	276	288
777:	279	270	259	268	256	283	265	257
785:	251	278	281	265	294	272	247	286
793:	287	303	285	271	266	286	252	296
801:	283	282	264	314	261	295	252	280
809:	278	275	294	296	290	303	322	287
817:	281	292	300	319	322	316	322	266
825:	281	286	275	252	262	280	282	296
833:	279	301	314	319	306	291	309	290
841:	288	290	289	277	285	274	299	326
849:	286	283	289	301	280	299	281	313
857:	291	280	312	314	277	290	279	279
865:	310	297	303	313	323	311	281	313
873:	305	329	290	290	353	291	323	295
881:	344	314	284	331	373	314	319	344
889:	338	299	342	334	306	345	323	450
897:	806	1050	756	433	322	316	357	346
905:	331	346	334	356	346	351	349	335



913:	344	365	347	356	355	364	359	392
921:	331	392	351	339	368	377	339	355
929:	392	370	352	368	351	396	397	361
937:	351	367	405	366	409	378	365	398
945:	372	377	378	428	361	370	400	383
953:	415	371	426	366	396	404	365	392
961:	409	365	362	362	317	306	334	310
969:	325	302	290	309	267	308	308	285
977:	330	303	277	290	290	287	287	294
985:	300	311	276	280	309	264	309	292
993:	317	258	294	250	313	289	277	256
1001:	269	289	265	287	302	260	305	249
1009:	278	246	263	281	294	261	283	257
1017:	228	263	286	271	233	270	279	236
1025:	254	252	245	285	243	266	266	254
1033:	254	268	241	238	287	253	290	259
1041:	265	261	285	253	253	263	267	228
1049:	247	249	268	262	243	216	252	254
1057:	247	235	245	238	228	235	269	256
1065:	225	249	256	255	262	258	237	230
1073:	232	266	233	244	239	225	245	250
1081:	236	240	225	271	249	259	261	272
1089:	268	282	264	240	240	256	265	236
1097:	244	240	261	241	278	253	256	250
1105:	249	277	276	267	235	256	240	269
1113:	224	247	223	240	206	224	205	215
1121:	192	190	188	163	156	174	156	192
1129:	172	178	148	150	157	162	153	171
1137:	139	144	147	137	157	147	133	143
1145:	147	158	162	147	144	161	127	127
1153:	158	150	154	124	145	128	157	132
1161:	129	155	120	140	149	133	148	127
1169:	128	209	1211	4597	7136	4308	1062	208
1177:	119	121	134	100	112	95	102	106
1185:	114	99	114	101	98	103	103	102
1193:	110	95	89	84	89	83	98	77
1201:	66	104	71	78	77	63	81	64
1209:	71	66	62	59	61	68	61	63
1217:	58	60	67	62	52	62	62	67
1225:	55	50	52	61	66	55	51	59
1233:	44	55	38	44	48	39	43	48
1241:	46	54	43	42	42	41	42	42
1249:	41	50	44	47	33	33	41	51
1257:	41	46	50	43	48	38	51	37
1265:	42	40	28	40	49	45	37	32
1273:	44	44	45	42	30	47	33	45
1281:	54	38	36	40	24	36	42	25
1289:	47	36	43	39	38	38	27	30
1297:	39	25	51	30	39	32	43	31
1305:	42	35	32	39	45	23	28	30
1313:	31	33	44	41	44	33	41	35
1321:	41	51	45	43	47	28	39	35
1329:	126	807	3386	6274	4653	1344	157	40
1337:	30	34	33	18	30	32	30	20
1345:	26	19	24	23	23	30	24	25
1353:	23	18	19	19	22	18	11	21
1361:	16	16	21	20	20	27	12	21
1369:	24	15	16	16	15	13	18	17
1377:	19	25	19	13	11	16	19	19
1385:	12	23	22	13	16	15	15	15

1393:	16	18	15	18	15	20	18	13
1401:	24	17	13	16	13	17	17	18
1409:	19	13	28	20	16	14	19	16
1417:	20	17	17	15	14	11	15	14
1425:	15	21	18	17	15	17	13	14
1433:	14	20	16	20	15	17	18	13
1441:	11	17	16	13	11	6	18	18
1449:	9	19	17	14	16	16	17	17
1457:	8	15	19	15	17	20	14	13
1465:	16	21	10	19	18	15	19	27
1473:	16	22	12	18	20	19	19	18
1481:	18	11	15	16	10	16	15	23
1489:	20	11	10	17	12	15	11	12
1497:	20	14	18	8	21	20	23	13
1505:	18	15	15	18	9	9	22	18
1513:	13	14	22	14	14	12	22	13
1521:	22	25	11	15	13	18	19	10
1529:	11	17	12	13	18	19	21	20
1537:	21	15	14	14	17	16	25	21
1545:	17	19	20	23	22	12	21	15
1553:	21	16	24	19	15	20	12	20
1561:	15	14	24	18	17	17	20	17
1569:	19	23	17	24	20	16	16	21
1577:	19	10	14	22	23	15	20	24
1585:	18	12	24	18	18	23	17	23
1593:	12	16	21	22	17	19	15	23
1601:	14	15	19	14	13	21	19	14
1609:	13	10	17	17	15	16	18	12
1617:	19	10	6	15	16	10	8	24
1625:	17	19	14	14	11	15	15	17
1633:	12	13	10	8	14	20	13	17
1641:	10	14	16	15	17	13	13	10
1649:	14	8	12	18	9	16	17	9
1657:	9	10	11	10	6	10	12	10
1665:	16	8	9	7	8	11	7	11
1673:	14	9	11	10	8	7	10	11
1681:	7	11	12	11	11	9	10	13
1689:	16	5	11	11	9	12	10	13
1697:	15	7	9	2	10	16	5	10
1705:	10	8	6	9	6	9	9	6
1713:	7	9	15	9	10	10	12	6
1721:	3	12	6	7	10	7	8	7
1729:	7	13	6	9	14	7	6	11
1737:	4	7	5	5	8	3	7	5
1745:	8	1	9	5	14	7	5	9
1753:	5	6	2	2	6	7	8	4
1761:	8	7	3	6	12	6	5	3
1769:	5	6	10	4	6	7	9	9
1777:	12	6	12	7	7	9	6	7
1785:	5	4	6	7	12	4	5	6
1793:	1	3	2	6	12	7	4	5
1801:	8	7	4	9	5	7	7	4
1809:	6	4	3	1	6	10	4	4
1817:	8	2	8	6	12	12	2	11
1825:	9	11	4	7	7	9	4	13
1833:	43	155	332	313	159	41	8	4
1841:	4	7	4	5	9	7	8	2
1849:	4	5	4	6	4	6	6	5
1857:	5	5	7	3	7	6	4	5
1865:	5	5	3	6	4	5	5	1

1873:	3	4	6	6	4	0	3	3
1881:	4	5	5	4	4	2	2	3
1889:	3	7	4	7	4	1	4	10
1897:	6	4	3	4	1	4	4	10
1905:	6	7	4	5	2	7	9	9
1913:	8	4	6	6	4	3	3	8
1921:	1	5	8	7	2	2	5	3
1929:	4	6	6	5	3	3	4	3
1937:	0	6	5	6	9	3	7	7
1945:	5	4	1	5	2	4	3	7
1953:	3	3	3	1	8	6	3	4
1961:	5	7	2	4	1	1	4	7
1969:	5	3	6	2	3	6	4	5
1977:	4	6	6	8	5	1	5	7
1985:	2	1	4	4	3	2	2	5
1993:	7	0	2	5	4	6	2	6
2001:	7	4	2	5	4	3	0	2
2009:	6	3	4	5	5	8	4	2
2017:	4	4	2	3	4	9	2	6
2025:	4	2	5	2	2	3	8	6
2033:	4	6	0	1	2	4	2	5
2041:	4	1	4	8	9	7	5	3
2049:	0	1	6	5	3	2	6	8
2057:	9	2	2	3	2	3	1	2
2065:	3	5	2	2	2	4	3	4
2073:	2	1	3	1	4	5	4	5
2081:	2	3	2	2	2	5	2	0
2089:	4	2	2	5	7	3	4	3
2097:	2	6	1	6	2	0	3	4
2105:	5	4	5	1	5	3	2	3
2113:	2	0	3	3	5	2	3	2
2121:	2	6	2	1	3	4	6	3
2129:	2	2	4	3	4	3	4	4
2137:	3	2	4	1	6	2	4	5
2145:	2	2	3	2	5	6	2	1
2153:	6	4	9	4	2	3	1	6
2161:	3	3	2	2	3	0	3	1
2169:	1	3	2	4	0	3	3	4
2177:	1	5	3	2	1	1	4	1
2185:	3	4	3	3	3	0	6	1
2193:	4	2	4	4	1	3	1	1
2201:	5	0	4	4	1	4	2	3
2209:	1	0	2	2	4	1	0	4
2217:	2	4	1	5	5	5	2	4
2225:	2	1	4	6	4	5	4	3
2233:	2	2	0	4	3	2	3	3
2241:	3	5	2	3	4	2	1	5
2249:	3	3	4	2	6	1	2	4
2257:	5	2	3	2	6	2	3	3
2265:	3	6	3	1	4	4	2	4
2273:	2	3	3	2	1	3	2	2
2281:	3	1	3	8	3	7	3	0
2289:	5	1	2	4	1	0	7	1
2297:	2	3	0	0	1	1	0	3
2305:	0	3	1	2	2	3	4	1
2313:	2	2	2	2	7	2	1	2
2321:	2	2	0	1	1	0	2	2
2329:	1	2	3	1	2	1	0	2
2337:	1	1	0	1	1	3	1	1
2345:	0	2	1	3	1	3	1	1

2353:	4	1	1	2	2	2	1	1
2361:	1	4	1	2	3	0	3	2
2369:	3	0	2	0	2	1	1	0
2377:	0	1	0	1	2	1	1	1
2385:	1	1	1	0	2	2	0	1
2393:	0	2	1	1	1	1	1	0
2401:	1	2	1	0	2	0	0	1
2409:	0	0	0	1	1	1	2	0
2417:	0	0	2	1	1	1	1	1
2425:	0	0	1	1	1	0	2	1
2433:	0	1	0	1	1	2	1	0
2441:	0	1	1	0	2	1	1	0
2449:	0	1	1	0	2	0	1	1
2457:	1	1	1	0	0	2	0	0
2465:	0	1	1	1	0	0	2	1
2473:	0	0	1	1	0	2	0	1
2481:	0	0	0	3	2	0	0	0
2489:	0	0	0	1	2	1	2	1
2497:	0	1	0	0	2	2	19	24
2505:	20	18	7	1	1	0	0	0
2513:	1	3	1	1	0	0	0	1
2521:	0	0	0	2	0	0	1	1
2529:	0	0	0	0	2	0	0	0
2537:	0	0	0	0	0	0	0	0
2545:	0	0	0	1	2	0	1	0
2553:	0	0	0	1	0	0	0	1
2561:	0	0	0	0	0	0	0	0
2569:	0	1	0	0	0	0	0	0
2577:	0	1	0	0	0	0	0	1
2585:	0	0	0	0	0	0	1	0
2593:	0	0	0	0	0	1	0	0
2601:	1	0	0	0	0	1	0	0
2609:	0	0	0	0	0	3	0	1
2617:	0	0	0	0	0	0	1	0
2625:	0	0	0	0	0	0	0	0
2633:	0	0	0	0	0	0	0	0
2641:	0	0	0	0	0	0	0	0
2649:	1	0	0	0	0	0	0	0
2657:	0	0	0	0	0	0	0	0
2665:	0	0	1	0	0	0	0	0
2673:	0	0	0	0	0	0	1	0
2681:	0	0	0	0	0	0	1	0
2689:	0	1	0	0	0	1	0	0
2697:	0	0	0	0	0	0	0	1
2705:	0	0	0	0	0	0	0	0
2713:	0	1	0	0	0	0	0	0
2721:	0	0	0	0	0	0	0	0
2729:	2	0	1	4	1	0	1	0
2737:	0	0	0	0	0	0	0	0
2745:	0	0	0	0	1	0	0	0
2753:	0	0	1	0	0	0	0	0
2761:	1	0	0	0	0	1	0	0
2769:	0	0	0	0	0	0	0	0
2777:	0	0	0	0	0	1	0	0
2785:	0	0	0	0	0	0	1	0
2793:	0	1	0	0	0	0	0	1
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	0	1
2817:	0	0	0	0	1	0	0	0
2825:	0	0	0	0	0	0	0	0

2833:	0	0	0	0	0	0	0	0
2841:	0	0	0	0	0	0	0	0
2849:	0	0	0	0	0	0	1	0
2857:	0	0	0	0	0	0	0	0
2865:	0	0	1	0	0	0	0	0
2873:	0	0	0	0	0	1	0	0
2881:	0	0	0	0	0	0	0	0
2889:	0	0	0	0	0	0	0	0
2897:	0	0	0	1	0	0	0	0
2905:	0	1	0	1	0	0	0	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	0	0	0	0	0	1
2929:	0	0	0	0	0	0	0	0
2937:	0	0	0	0	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	1	0	0	0	0	0
2961:	0	0	0	0	0	0	0	0
2969:	0	0	0	0	0	0	1	0
2977:	0	0	0	0	0	0	0	0
2985:	0	0	0	1	0	0	0	0
2993:	0	0	0	0	0	1	0	0
3001:	0	0	0	0	0	0	0	0
3009:	1	0	0	0	1	0	1	1
3017:	0	1	0	0	0	0	0	0
3025:	0	0	0	0	0	0	0	0
3033:	0	0	0	0	0	0	0	0
3041:	1	0	0	0	0	1	0	0
3049:	0	0	0	0	0	0	0	0
3057:	0	0	0	0	0	0	0	0
3065:	0	0	1	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	1	0	0	0	0	0	0	0
3089:	0	1	0	0	0	0	0	0
3097:	0	0	0	1	0	0	0	0
3105:	0	0	0	0	0	0	0	1
3113:	0	0	0	0	0	0	0	0
3121:	0	0	1	0	0	0	0	0
3129:	0	1	0	1	0	0	0	0
3137:	0	0	0	0	0	0	0	0
3145:	0	0	0	1	0	0	0	0
3153:	1	0	0	0	0	0	0	0
3161:	0	0	0	0	0	0	1	0
3169:	0	0	0	0	0	0	0	0
3177:	0	1	0	0	0	0	0	0
3185:	0	0	1	0	0	0	0	0
3193:	0	0	0	0	0	0	0	0
3201:	0	0	0	0	0	0	0	0
3209:	0	1	0	0	0	0	0	0
3217:	0	0	0	0	0	0	0	1
3225:	0	0	0	0	0	0	0	0
3233:	1	0	0	0	0	0	0	0
3241:	0	0	0	0	1	0	0	0
3249:	0	0	0	1	0	0	0	0
3257:	0	0	0	0	0	1	0	0
3265:	0	0	1	0	0	0	0	0
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	0	0	0	0	1
3289:	0	0	0	0	0	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0

3313:	2	0	0	0	1	0	0	0
3321:	0	0	0	0	1	0	0	0
3329:	0	0	1	0	1	0	0	0
3337:	0	0	0	0	0	1	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	0	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	0	1	0	0	2	0	0	0
3385:	0	0	0	0	0	0	0	0
3393:	0	0	0	0	0	0	0	0
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	1	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	1	0	0	0	0	0	0	0
3537:	0	0	0	1	1	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	1	0	0	0	1
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	1	0	0	0	1
3577:	0	0	0	0	0	0	1	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	1	0	0
3625:	0	0	1	1	1	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	0	0	0	0	0	0	0	0
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	0	0	1	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	1	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	1	0	0	0	0	0	0	0
3713:	0	0	0	1	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	0	1	0	1	0
3777:	0	0	0	0	0	1	0	0
3785:	0	0	0	0	0	0	0	0

3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	0	0	1	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0
3825:	0	0	0	0	0	0	1	0
3833:	0	0	0	0	0	0	0	0
3841:	1	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	1	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	1
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	1	0	0	0	0	0	0
3929:	1	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	1	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	1	0	0	0	0	0	0
3977:	0	0	1	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	1	1	1	0	0
4025:	0	0	0	0	1	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0	0

RB  
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Sample ID : 1005127-02

Acquisition date : 17-JUN-2010 10:50:15

VAX/VMS Peak Search Report Generated 17-JUN-2010 11:50:30.84

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512702\_GE4\_GAS1001\_150527.  
 Analyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2  
 Client ID : BLANK  
 Deposition Date :  
 Sample Date : 17-JUN-2010 00:00:00 Acquisition date : 17-JUN-2010 10:50:15  
 Sample ID : 1005127-02 Sample Quantity : 3.73490E+02 GRAM  
 Sample type : SOIL Sample Geometry : 0  
 Detector name : GE4 Detector Geometry: GAS-1001  
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.80 0.0%  
 Start channel : 5 End channel : 4096  
 Sensitivity : 2.40000 Gaussian : 15.00000  
 Critical level : Yes

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw %Err	Fit	Nuclides
0	83.03	24	61	1.30	83.01	81	5108.3		HF-172
0	126.29	22	46	1.65	126.25	123	6107.0		HF-172
0	650.69	9	5	2.65	650.44	647	7115.7		
0	662.83	14	9	3.74	662.57	658	8 91.0		CS-137
0	747.73	9	7	1.52	747.43	744	7129.3		
0	936.67	17	3	6.65	936.30	932	10 59.7		
0	963.54	14	3	6.71	963.16	958	11 70.4		
0	998.40	5	3	0.90	998.00	996	5141.4		
0	1072.14	7	0	1.16	1071.71	1068	7 75.6		
0	1243.31	7	1	1.24	1242.81	1240	5 91.6		
0	1392.96	5	0	1.70	1392.40	1389	6 89.4		
0	1630.26	5	0	1.70	1629.60	1627	5 89.4		

AG  
6/17/10



Total number of lines in spectrum 12  
 Number of unidentified lines 7  
 Number of lines tentatively identified by NID 5 41.67%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CS-137	30.17Y	1.00	5.296E-02	5.296E-02	4.861E-02	91.79	
Total Activity :			5.296E-02	5.296E-02			

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
HF-172	1.87Y	1.00	1.687E-01	1.687E-01	1.393E-01	82.54	
Total Activity :			1.687E-01	1.687E-01			

Grand Total Activity : 2.216E-01 2.217E-01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma			Status
				pCi/GRAM	pCi/GRAM	%Error	
CS-137	661.65	85.12*	6.427E-01	5.296E-02	5.296E-02	91.79	OK

Final Mean for 1 Valid Peaks = 5.296E-02+/- 4.861E-02 ( 91.79%)

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma			Status
				pCi/GRAM	pCi/GRAM	%Error	
HF-172	81.75	4.52	3.139E+00	3.343E-01	3.345E-01	108.71	OK
	125.81	11.30*	2.807E+00	1.402E-01	1.402E-01	107.52	OK

Final Mean for 2 Valid Peaks = 1.687E-01+/- 1.393E-01 ( 82.54%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CS-137	5.296E-02	4.861E-02	7.007E-02	7.953E-03	0.756
HF-172	1.687E-01	1.393E-01	2.392E-01	2.362E-02	0.706

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	1.158E-01		2.524E-01	4.964E-01	5.912E-02	0.233
NA-22	1.429E-02		3.995E-02	8.941E-02	7.935E-03	0.160
NA-24	3.276E-02		4.719E-02	1.282E-01	1.176E-02	0.256
AL-26	-1.886E-02		3.581E-02	6.517E-02	5.364E-03	-0.289
K-40	3.854E-01		3.769E-01	9.942E-01	9.302E-02	0.388
AR-41	-1.349E-01		2.609E+00	5.512E+00	4.947E-01	-0.024
TI-44	-1.759E-02		2.030E-02	3.365E-02	2.650E-03	-0.523
SC-46	-2.852E-02		3.785E-02	6.515E-02	6.852E-03	-0.438
V-48	-3.081E-03		4.221E-02	8.335E-02	8.380E-03	-0.037
CR-51	-1.421E-01		2.315E-01	3.834E-01	4.019E-02	-0.371
MN-54	-1.287E-03		3.536E-02	6.625E-02	7.262E-03	-0.019
CO-56	2.289E-02		4.122E-02	8.390E-02	9.126E-03	0.273
CO-57	-7.934E-03		2.022E-02	3.072E-02	3.062E-03	-0.258
CO-58	-1.269E-02		4.389E-02	7.584E-02	8.437E-03	-0.167
FE-59	-1.021E-02		6.131E-02	1.237E-01	1.212E-02	-0.083
CO-60	9.052E-03		3.241E-02	7.405E-02	6.156E-03	0.122
ZN-65	-1.627E-02		8.678E-02	1.684E-01	1.512E-02	-0.097
GA-67	-3.141E-02		6.891E-02	1.071E-01	1.206E-01	-0.293
SE-75	-8.352E-03		3.828E-02	6.650E-02	6.286E-03	-0.126
RB-82	-2.395E-02		2.662E-01	4.909E-01	5.529E-02	-0.049
RB-83	-4.294E-02		6.736E-02	1.091E-01	1.938E-02	-0.394
KR-85	1.443E+01		1.050E+01	2.061E+01	2.483E+00	0.700
SR-85	6.340E-02		4.611E-02	9.055E-02	1.091E-02	0.700
Y-88	-6.475E-03		2.764E-02	6.077E-02	4.935E-03	-0.107
NB-93M	4.446E+00		2.219E+00	2.817E+00	1.076E+00	1.578
NB-94	2.115E-02		3.971E-02	8.161E-02	8.718E-03	0.259
NB-95	1.475E-02		4.269E-02	8.219E-02	9.288E-03	0.179
NB-95M	2.134E-02		1.007E-01	1.811E-01	1.699E-02	0.118
ZR-95	3.910E-02		6.628E-02	1.324E-01	1.590E-02	0.295
MO-99	-9.281E-02		3.614E-01	5.540E-01	6.296E-02	-0.168
RU-103	3.392E-03		3.211E-02	5.967E-02	9.808E-03	0.057
RU-106	8.520E-02		3.345E-01	6.417E-01	9.979E-02	0.133
AG-108M	5.115E-02		4.066E-02	8.977E-02	1.022E-02	0.570
CD-109	-8.533E-01		5.929E-01	8.004E-01	9.053E-02	-1.066
AG-110M	3.493E-02		3.381E-02	6.683E-02	7.607E-03	0.523
SN-113	4.142E-02		4.203E-02	8.393E-02	9.528E-03	0.493
TE123M	1.432E-02		2.055E-02	3.856E-02	3.486E-03	0.371
SB-124	-2.244E-02		3.872E-02	6.331E-02	7.515E-03	-0.354
I-125	1.723E-02		4.126E-01	7.334E-01	7.663E-02	0.023
SB-125	1.746E-02		8.537E-02	1.606E-01	1.874E-02	0.109
SB-126	1.188E-02		7.267E-02	1.371E-01	1.561E-02	0.087

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SN-126	-8.051E-02		5.771E-02	7.850E-02	7.532E-03	-1.026
SB-127	5.582E-02		8.895E-02	1.890E-01	2.151E-02	0.295
I-129	-6.170E-02		7.055E-02	1.174E-01	1.513E-02	-0.525
I-131	-5.377E-03		3.204E-02	5.647E-02	6.090E-03	-0.095
TE-132	-1.071E-03		2.480E-02	4.404E-02	4.120E-03	-0.024
BA-133	3.833E-02		4.074E-02	8.103E-02	1.184E-02	0.473
I-133	3.804E-02		5.678E-02	1.115E-01	1.346E-02	0.341
CS-134	-2.429E-02		3.955E-02	6.421E-02	7.623E-03	-0.378
CS-135	1.509E-02		1.427E-01	2.564E-01	2.408E-02	0.059
I-135	-2.375E-01		3.602E-01	6.280E-01	5.525E-02	-0.378
CS-136	2.195E-02		4.106E-02	9.634E-02	9.447E-03	0.228
LA-138	1.059E-02		4.315E-02	1.063E-01	9.728E-03	0.100
CE-139	-1.647E-02		2.128E-02	3.500E-02	3.089E-03	-0.471
BA-140	-7.198E-02		1.452E-01	2.383E-01	8.152E-02	-0.302
LA-140	3.065E-02		3.079E-02	9.202E-02	8.190E-03	0.333
CE-141	5.590E-04		3.554E-02	6.308E-02	1.200E-02	0.009
CE-143	3.031E-02		7.132E-02	1.327E-01	1.276E-02	0.228
CE-144	8.642E-02		1.533E-01	2.735E-01	2.653E-02	0.316
PM-144	-1.028E-02		3.961E-02	6.885E-02	7.841E-03	-0.149
PM-145	-1.239E-02		1.156E-01	2.033E-01	1.327E-01	-0.061
PM-146	2.223E-02		6.652E-02	1.273E-01	1.497E-02	0.175
ND-147	8.645E-02		2.768E-01	5.176E-01	6.247E-02	0.167
PM-149	-6.210E-02		7.969E-01	1.419E+00	1.344E-01	-0.044
EU-152	-1.062E-02		1.589E-01	3.738E-01	4.243E-02	-0.028
GD-153	2.227E-02		7.021E-02	1.275E-01	1.237E-02	0.175
EU-154	4.021E-02		1.124E-01	2.516E-01	2.233E-02	0.160
EU-155	-1.568E-02		6.370E-02	9.828E-02	9.323E-03	-0.160
EU-156	8.857E-02		4.317E-01	8.142E-01	1.945E-01	0.109
HO-166M	3.977E-02		7.698E-02	1.503E-01	1.712E-02	0.265
LU-172	-4.270E-02		6.514E-02	1.142E-01	1.050E-02	-0.374
LU-173	1.702E-02		1.085E-01	1.961E-01	1.839E-02	0.087
HF-175	4.186E-03		3.214E-02	5.807E-02	6.080E-03	0.072
LU-176	1.684E-02		2.401E-02	4.640E-02	4.574E-03	0.363
TA-182	1.063E-01		1.208E-01	2.817E-01	2.509E-02	0.377
IR-192	-1.253E-02		6.334E-02	1.111E-01	1.317E-02	-0.113
HG-203	7.604E-04		2.950E-02	5.277E-02	5.052E-03	0.014
BI-207	2.899E-04		3.440E-02	6.259E-02	7.524E-03	0.005
TL-208	2.182E-02		1.071E-01	2.011E-01	2.407E-02	0.108
BI-210M	8.139E-03		4.988E-02	9.016E-02	8.479E-03	0.090
PB-210	1.373E-01		5.353E-01	9.889E-01	8.209E-02	0.139
PB-211	2.127E-01		8.618E-01	1.620E+00	1.830E-01	0.131
BI-212	-6.574E-02		3.303E-01	5.828E-01	6.633E-02	-0.113
PB-212	2.459E-02		5.536E-02	1.022E-01	9.603E-03	0.241
BI-214	8.702E-03		8.222E-02	1.564E-01	1.849E-02	0.056
PB-214	-6.586E-02		7.230E-02	1.164E-01	1.234E-02	-0.566
RN-219	-1.489E-01		4.180E-01	7.162E-01	8.069E-02	-0.208
RA-223	-2.117E-02		6.081E-01	1.087E+00	1.104E-01	-0.019
RA-224	1.845E-01		6.053E-01	1.095E+00	1.029E-01	0.169

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RA-225	-5.962E-02		7.637E-02	1.281E-01	1.193E-02	-0.465
RA-226	3.954E-03		6.358E-01	1.161E+00	2.126E+00	0.003
TH-227	5.131E-02		2.010E-01	3.627E-01	3.404E-02	0.141
AC-228	-7.178E-02		1.353E-01	2.454E-01	2.550E-02	-0.293
TH-230	-3.369E+00		5.141E+00	8.657E+00	6.804E-01	-0.389
PA-231	-1.554E+00		1.107E+00	1.653E+00	1.617E-01	-0.940
TH-231	-2.598E-01		3.978E-01	6.657E-01	1.067E-01	-0.390
PA-233	-4.073E-02		5.939E-02	9.622E-02	2.212E-02	-0.423
PA-234	-4.295E-03		8.593E-02	1.361E-01	1.327E-02	-0.032
PA-234M	-1.909E+00		4.756E+00	8.143E+00	8.098E-01	-0.234
TH-234	-8.518E-02		5.304E-01	9.645E-01	7.302E-02	-0.088
U-235	1.386E-02		1.608E-01	2.871E-01	5.149E-02	0.048
NP-237	-3.864E-02		1.562E-01	2.409E-01	2.285E-02	-0.160
NP-239	-2.254E-02		7.876E-02	1.365E-01	1.328E-02	-0.165
AM-241	-5.448E-02		5.513E-02	9.073E-02	6.675E-03	-0.600
AM-243	5.532E-04		2.846E-02	4.809E-02	4.038E-03	0.012
CM-243	2.672E-02		1.591E-01	2.891E-01	2.705E-02	0.092

Total number of lines in spectrum 12  
 Number of unidentified lines 7  
 Number of lines tentatively identified by NID 5 41.67%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CS-137	30.17Y	1.00	5.296E-02	5.296E-02	4.861E-02	91.79	
Total Activity :			5.296E-02	5.296E-02			

Nuclide Type : ACTIVATION

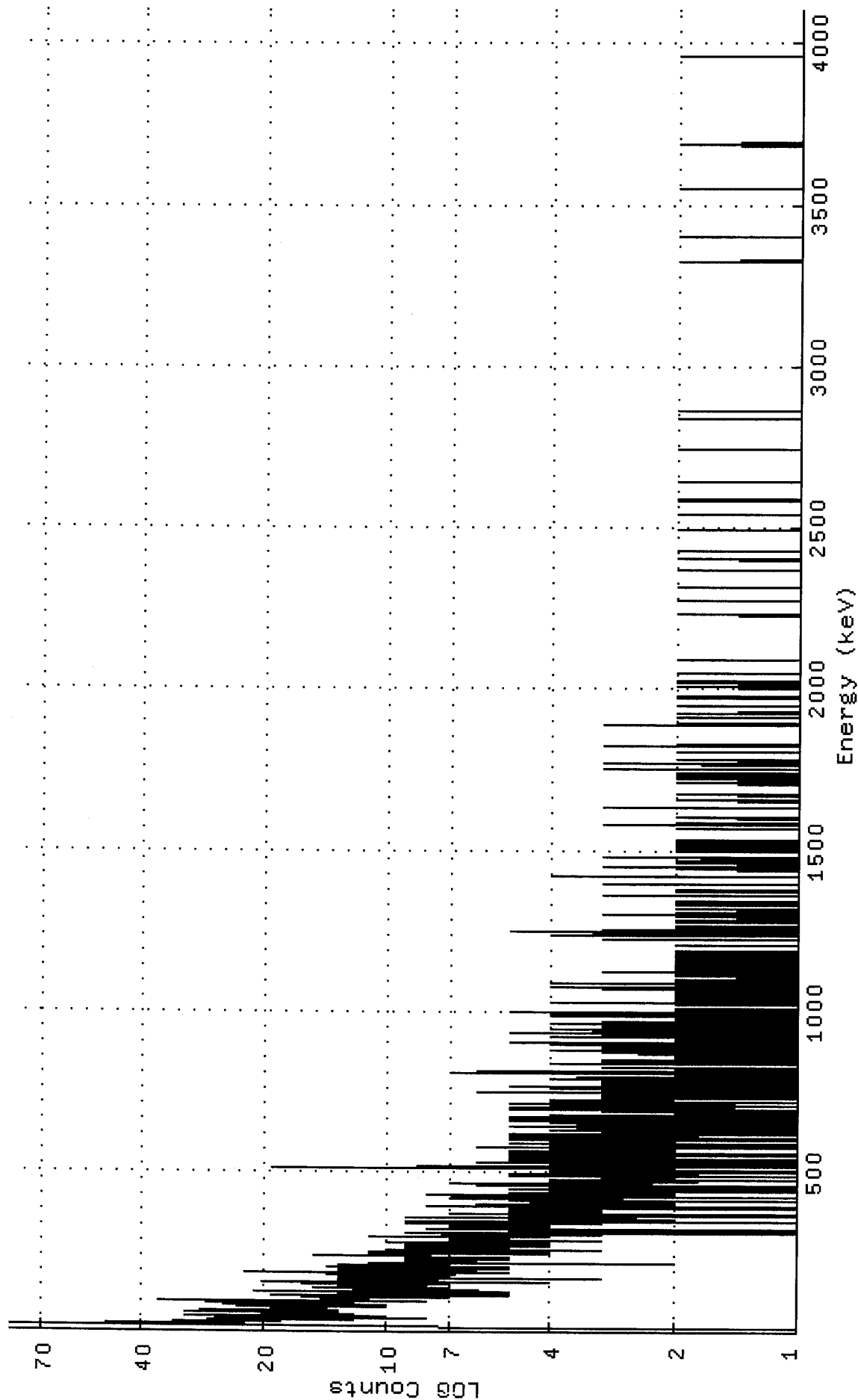
Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
HF-172	1.87Y	1.00	1.687E-01	1.687E-01	1.393E-01	82.54	
Total Activity :			1.687E-01	1.687E-01			

Grand Total Activity : 2.216E-01 2.217E-01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Spectrum : DKA100: [GAMMA, SCUSR, ARCHIVE] SMP\_100512702\_GE4\_GAS1001\_150527.CNF; 1  
Title :  
Sample Title: BLANK  
Start Time: 17-JUN-2010 10:50 Sample Time: 17-JUN-2010 00:00 Energy Offset: -1.37255E-02  
Real Time : 0 01:00:00.80 Sample ID : 1005127-02 Energy Slope : 1.00041E+00  
Live Time : 0 01:00:00.00 Sample Type: SOIL Energy Quad : 0.00000E+00



Channel Contents for DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512702\_GE4\_GAS1001\_1505

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	55
17:	83	72	53	55	44	46	45	48
25:	36	35	22	27	33	21	27	18
33:	19	27	21	15	12	17	18	12
41:	14	19	10	8	26	19	31	27
49:	10	12	13	14	12	16	20	20
57:	15	13	22	19	14	21	31	26
65:	22	25	15	13	17	16	14	19
73:	16	19	16	14	23	17	15	10
81:	17	15	18	25	10	13	16	20
89:	12	15	20	21	36	25	9	8
97:	12	16	12	11	14	12	11	13
105:	16	8	9	12	7	11	15	11
113:	19	11	10	5	13	13	10	5
121:	9	13	7	10	15	21	10	5
129:	7	11	12	8	11	12	8	15
137:	10	7	9	7	13	11	10	10
145:	12	8	8	15	7	16	10	11
153:	11	10	4	20	10	5	11	11
161:	12	9	13	7	4	13	6	3
169:	7	7	10	11	10	13	8	11
177:	9	7	14	7	9	5	7	8
185:	12	22	13	9	7	13	9	6
193:	8	10	5	8	8	13	5	14
201:	11	5	6	8	13	10	13	10
209:	8	7	8	11	8	2	10	8
217:	8	6	9	8	9	6	9	6
225:	9	8	7	7	5	5	9	7
233:	8	6	6	10	10	15	11	10
241:	11	9	4	10	11	7	8	4
249:	11	8	7	10	5	7	3	7
257:	10	5	7	9	6	6	9	5
265:	9	4	7	7	7	9	7	4
273:	9	7	5	5	10	6	7	5
281:	4	6	5	4	7	3	5	6
289:	7	5	6	6	5	7	7	11
297:	4	6	5	4	7	3	7	3
305:	3	6	9	9	6	5	1	6
313:	1	5	4	4	3	3	3	8
321:	1	4	5	6	6	7	5	4
329:	5	7	4	6	6	7	5	6
337:	3	8	8	9	6	6	1	5
345:	9	7	7	2	5	4	5	2
353:	5	5	4	5	4	9	6	0
361:	3	5	4	3	3	7	3	3
369:	6	1	5	5	4	5	4	4
377:	3	3	4	4	5	4	5	3
385:	5	2	1	5	5	1	8	7
393:	8	4	6	2	6	3	6	4
401:	3	4	2	3	4	4	5	4
409:	3	2	1	1	7	5	3	6
417:	4	4	3	6	4	2	1	6
425:	8	2	2	2	3	3	2	2



433:	2	4	5	3	3	2	2	4
441:	1	3	5	3	1	2	4	3
449:	1	4	3	2	4	3	3	6
457:	1	4	3	1	5	5	7	5
465:	3	5	2	2	4	4	4	3
473:	0	3	4	4	2	2	3	3
481:	3	2	2	2	4	1	2	5
489:	2	2	2	2	5	2	3	1
497:	4	4	3	3	1	4	2	1
505:	2	3	2	2	6	11	13	19
513:	9	8	4	0	5	3	1	4
521:	0	2	2	3	3	3	5	1
529:	4	6	3	5	5	4	1	3
537:	5	3	1	4	1	5	5	4
545:	5	2	3	2	2	5	2	3
553:	3	1	4	2	3	4	5	4
561:	0	5	3	2	2	3	3	2
569:	4	2	2	4	3	0	6	4
577:	1	3	2	1	2	2	4	1
585:	4	5	2	3	1	4	2	2
593:	3	2	3	4	1	5	4	3
601:	2	2	3	2	3	1	4	5
609:	3	5	3	3	2	3	1	1
617:	1	1	5	4	0	1	3	3
625:	0	2	4	3	2	2	3	1
633:	2	3	2	1	2	3	4	0
641:	5	2	3	2	1	2	2	1
649:	3	4	3	1	0	0	4	1
657:	1	4	1	1	5	4	3	5
665:	0	0	2	3	3	5	1	5
673:	2	2	4	2	0	3	1	1
681:	0	1	1	2	1	2	3	3
689:	3	0	1	5	1	0	3	1
697:	3	3	4	3	5	3	2	0
705:	2	3	4	1	4	2	2	5
713:	4	3	2	0	3	1	0	2
721:	4	3	3	3	3	4	0	1
729:	1	2	1	3	1	2	3	2
737:	2	1	1	3	1	1	2	2
745:	1	4	6	1	2	0	1	0
753:	1	3	2	1	0	4	3	2
761:	2	2	1	4	0	5	2	4
769:	2	3	1	1	3	0	0	0
777:	1	3	3	2	1	1	2	2
785:	3	2	1	1	3	3	2	4
793:	3	1	0	3	0	1	0	1
801:	0	1	2	0	7	1	1	3
809:	1	1	3	0	2	6	4	1
817:	1	1	1	1	0	3	1	2
825:	1	2	1	0	0	1	0	1
833:	1	0	2	0	4	2	2	3
841:	2	1	2	2	2	2	3	3
849:	1	2	0	1	1	1	2	1
857:	2	1	2	1	1	2	0	0
865:	2	0	0	2	2	3	2	2
873:	0	3	3	2	0	1	1	0
881:	4	1	3	2	3	0	0	3
889:	1	1	2	0	1	1	3	1
897:	4	1	1	2	5	1	0	4
905:	1	1	0	0	1	0	2	2

913:	2	1	2	2	0	4	0	0
921:	0	1	1	0	2	2	3	0
929:	0	4	0	0	1	5	2	3
937:	3	2	1	3	0	1	1	4
945:	1	1	2	2	0	2	0	3
953:	0	0	0	3	0	0	2	2
961:	0	1	4	2	3	2	1	0
969:	1	2	2	2	1	1	0	2
977:	2	1	1	0	2	0	4	3
985:	0	1	0	4	0	0	2	4
993:	2	1	1	0	5	0	2	0
1001:	1	0	2	1	1	1	2	1
1009:	2	0	1	1	0	0	1	1
1017:	0	1	2	2	0	1	0	2
1025:	2	1	1	1	4	0	1	0
1033:	2	0	1	1	2	0	0	0
1041:	0	1	1	0	1	2	1	2
1049:	0	1	0	1	0	1	0	1
1057:	2	1	1	1	0	2	0	1
1065:	1	3	0	0	0	0	4	1
1073:	2	0	0	0	2	1	0	1
1081:	1	2	1	3	1	2	4	1
1089:	1	0	2	0	1	0	1	1
1097:	0	0	1	2	0	1	1	1
1105:	1	1	1	2	2	0	0	2
1113:	0	0	0	2	2	2	2	0
1121:	2	1	3	1	1	0	0	2
1129:	1	1	2	0	0	0	0	1
1137:	0	2	0	1	1	2	1	0
1145:	0	0	0	2	0	2	1	0
1153:	0	2	1	0	0	1	0	2
1161:	0	1	0	1	0	0	1	2
1169:	1	0	2	0	0	2	0	1
1177:	1	0	0	0	0	0	2	2
1185:	1	1	1	0	1	1	1	0
1193:	1	0	0	1	0	0	0	0
1201:	0	1	0	0	2	1	1	1
1209:	0	0	1	0	1	0	0	1
1217:	0	0	0	2	0	3	2	0
1225:	0	0	0	1	1	1	1	0
1233:	0	0	0	4	1	0	1	0
1241:	1	2	5	0	0	2	0	0
1249:	3	1	1	0	1	0	2	0
1257:	0	0	1	1	0	0	0	0
1265:	2	0	1	0	1	0	0	1
1273:	0	0	2	2	2	0	0	2
1281:	0	1	0	2	1	0	0	0
1289:	0	1	0	2	0	0	0	1
1297:	1	3	0	1	0	0	0	2
1305:	1	0	1	0	0	0	0	0
1313:	1	2	0	0	1	0	1	0
1321:	0	0	0	1	0	1	0	1
1329:	2	0	1	2	0	2	0	1
1337:	1	1	0	2	0	1	0	0
1345:	0	1	0	0	0	0	1	0
1353:	0	1	1	0	3	0	0	0
1361:	0	0	0	0	0	0	0	2
1369:	2	0	0	0	0	1	0	0
1377:	2	0	0	0	0	1	0	0
1385:	0	1	1	0	0	0	0	3

1393:	2	0	0	0	0	1	0	0
1401:	1	0	0	0	0	0	0	0
1409:	1	0	1	1	0	0	0	1
1417:	4	0	0	0	0	1	0	1
1425:	1	0	1	0	0	0	0	1
1433:	0	0	0	0	1	0	2	1
1441:	0	0	0	0	0	1	3	0
1449:	0	0	0	0	0	0	0	2
1457:	0	2	1	0	2	1	2	0
1465:	0	0	0	0	1	1	0	0
1473:	0	3	0	1	0	0	0	0
1481:	0	1	0	0	1	0	0	1
1489:	0	1	0	0	0	0	0	2
1497:	1	1	1	2	0	0	2	1
1505:	0	2	0	1	2	1	1	2
1513:	0	0	0	0	1	0	1	1
1521:	2	1	0	2	0	0	1	0
1529:	0	1	2	0	0	0	0	1
1537:	0	0	0	0	0	0	1	0
1545:	0	1	1	1	1	0	0	0
1553:	0	0	0	0	0	0	0	0
1561:	1	0	1	1	0	1	2	0
1569:	0	0	0	0	0	0	0	0
1577:	3	3	0	1	0	0	1	1
1585:	2	0	1	0	0	0	0	0
1593:	0	1	0	1	0	0	2	0
1601:	0	0	0	0	0	1	0	1
1609:	0	0	0	1	1	0	1	1
1617:	0	0	0	0	0	0	0	1
1625:	0	0	0	0	2	3	0	0
1633:	0	0	0	0	0	0	1	0
1641:	0	0	0	0	0	0	1	0
1649:	1	0	0	2	0	1	0	0
1657:	0	1	0	1	1	0	1	0
1665:	0	1	0	0	0	2	1	0
1673:	0	0	0	0	0	0	1	0
1681:	0	1	1	0	1	1	0	1
1689:	0	1	0	1	1	1	1	1
1697:	0	0	0	1	1	1	1	1
1705:	2	0	0	0	0	0	0	0
1713:	0	0	0	0	2	0	0	0
1721:	0	0	0	2	0	0	0	2
1729:	2	0	0	1	0	0	0	0
1737:	0	2	0	0	0	0	1	0
1745:	0	0	0	0	3	1	0	0
1753:	0	0	0	0	0	0	0	0
1761:	0	0	1	0	3	0	0	0
1769:	2	0	0	1	1	0	0	0
1777:	1	0	2	0	1	0	0	1
1785:	1	0	0	0	0	0	0	1
1793:	0	1	1	0	1	0	0	1
1801:	2	1	0	1	0	1	0	0
1809:	0	0	0	0	0	0	0	0
1817:	0	0	0	1	0	3	1	2
1825:	0	1	0	0	1	0	1	1
1833:	0	0	0	0	0	0	0	0
1841:	0	1	0	0	1	0	0	0
1849:	0	0	0	1	1	0	0	0
1857:	0	0	0	0	0	0	1	0
1865:	0	1	1	1	0	0	1	0

1873:	0	0	1	1	0	0	0	1
1881:	1	0	0	3	1	1	0	0
1889:	1	0	0	2	0	0	1	0
1897:	0	0	0	0	0	1	0	0
1905:	0	0	0	1	2	0	0	0
1913:	0	1	0	0	1	0	0	1
1921:	0	0	0	2	1	0	1	0
1929:	1	0	0	0	0	0	1	0
1937:	0	0	0	1	0	0	1	1
1945:	0	2	0	0	0	0	0	0
1953:	0	0	0	0	0	0	0	0
1961:	0	0	0	1	1	0	1	0
1969:	0	0	2	0	0	1	0	2
1977:	0	0	0	0	0	1	0	1
1985:	0	0	0	1	0	0	0	0
1993:	0	0	0	0	0	1	1	0
2001:	0	2	0	1	0	0	1	1
2009:	0	1	1	0	2	0	1	1
2017:	0	0	0	0	0	2	1	0
2025:	0	0	0	0	1	1	0	0
2033:	1	0	0	0	0	0	0	0
2041:	0	0	0	2	1	0	0	0
2049:	0	0	1	0	0	0	0	0
2057:	0	0	0	0	0	1	0	0
2065:	0	1	0	1	0	0	0	0
2073:	0	0	1	0	1	0	0	1
2081:	0	0	0	1	0	0	2	2
2089:	0	0	0	0	1	0	0	0
2097:	0	0	0	0	0	0	0	0
2105:	1	0	0	0	0	0	0	0
2113:	0	0	1	0	0	1	1	0
2121:	0	0	0	0	0	0	0	1
2129:	0	0	0	0	1	1	0	0
2137:	0	0	0	0	0	1	0	0
2145:	0	1	0	0	0	0	0	0
2153:	0	0	0	0	1	0	0	1
2161:	0	0	1	0	0	0	0	0
2169:	0	1	1	0	0	0	0	0
2177:	0	0	0	0	0	0	0	0
2185:	0	1	0	0	0	0	0	0
2193:	0	0	0	0	0	1	0	1
2201:	0	0	0	0	0	1	0	1
2209:	0	0	0	0	0	0	0	1
2217:	0	0	0	0	0	0	0	0
2225:	0	0	2	0	1	1	1	0
2233:	0	0	0	0	0	1	0	1
2241:	0	0	0	0	0	1	0	1
2249:	0	0	0	1	1	1	0	0
2257:	1	0	0	1	0	1	1	1
2265:	0	0	1	1	0	0	2	0
2273:	0	0	1	0	0	0	0	0
2281:	0	0	0	0	0	0	0	0
2289:	0	0	0	1	0	0	0	1
2297:	0	0	0	1	1	0	0	0
2305:	0	0	0	0	0	0	0	0
2313:	0	2	0	0	1	0	1	0
2321:	0	0	0	0	0	0	0	0
2329:	0	1	0	0	0	0	0	0
2337:	0	0	0	1	1	0	0	0
2345:	0	0	0	1	0	1	0	1

2353:	0	1	0	0	0	0	0	0	0
2361:	0	0	0	0	0	0	1	2	0
2369:	0	0	1	0	0	0	0	1	0
2377:	0	0	0	0	0	0	0	0	0
2385:	0	1	0	0	0	0	0	1	0
2393:	0	0	0	0	0	0	0	2	1
2401:	0	2	1	0	0	0	0	1	0
2409:	1	0	1	0	0	0	1	0	0
2417:	0	0	0	1	0	0	0	1	0
2425:	2	1	0	0	0	0	1	0	0
2433:	1	0	0	0	0	0	0	0	0
2441:	0	0	0	0	0	0	0	0	1
2449:	0	0	1	0	0	0	0	1	0
2457:	0	0	1	0	0	0	1	0	0
2465:	0	0	0	0	1	0	0	0	0
2473:	0	0	0	0	1	0	0	0	1
2481:	0	0	0	1	0	0	0	0	0
2489:	0	0	2	0	0	0	0	0	0
2497:	1	0	0	0	1	0	0	0	0
2505:	0	0	1	0	0	1	0	0	0
2513:	1	1	0	0	0	0	0	1	0
2521:	0	0	0	0	0	1	0	0	0
2529:	0	1	0	0	1	0	0	0	2
2537:	0	0	0	0	1	0	0	0	0
2545:	0	0	0	0	0	0	0	0	0
2553:	0	0	1	0	0	0	0	0	0
2561:	0	0	1	1	0	0	0	0	0
2569:	0	1	0	0	0	0	0	1	0
2577:	0	0	0	0	2	1	0	0	0
2585:	2	0	0	0	0	0	0	1	0
2593:	0	0	1	1	0	1	0	0	0
2601:	0	0	0	0	0	0	0	0	0
2609:	1	0	0	0	1	1	0	0	0
2617:	0	0	0	0	0	0	0	0	0
2625:	1	0	1	0	0	0	0	0	0
2633:	0	0	0	0	0	2	0	0	0
2641:	0	0	0	1	0	1	0	0	0
2649:	0	0	1	0	0	0	1	1	1
2657:	0	0	0	0	0	0	0	0	0
2665:	0	0	1	0	0	0	1	1	0
2673:	0	0	0	0	0	0	0	0	0
2681:	0	0	0	0	0	0	0	0	0
2689:	0	0	1	0	1	1	0	0	0
2697:	0	0	0	1	0	0	0	0	0
2705:	0	0	0	0	0	1	0	0	0
2713:	0	0	1	0	0	1	0	0	0
2721:	1	1	0	0	1	0	0	0	0
2729:	0	0	0	0	0	0	1	1	1
2737:	0	2	0	0	0	0	0	0	1
2745:	0	0	0	0	0	0	0	0	0
2753:	0	0	0	1	0	0	0	0	1
2761:	0	0	0	0	0	0	0	0	0
2769:	0	1	0	0	0	0	0	0	0
2777:	0	0	1	0	1	0	0	0	0
2785:	0	0	0	0	0	0	0	0	0
2793:	0	1	0	0	0	0	0	0	1
2801:	0	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	1	1	1
2817:	0	0	0	0	0	0	0	0	0
2825:	1	0	0	0	0	0	0	0	0

2833:	0	2	0	0	0	0	0	0	0
2841:	0	0	0	0	0	0	1	0	0
2849:	0	0	0	0	0	0	0	0	0
2857:	1	2	0	0	0	0	0	0	0
2865:	0	0	0	0	0	0	0	0	0
2873:	1	0	0	1	0	0	0	0	0
2881:	0	0	0	0	0	0	1	0	0
2889:	0	0	0	0	0	0	0	0	0
2897:	0	0	1	1	1	0	0	0	0
2905:	0	0	0	1	1	0	0	0	0
2913:	0	0	0	0	0	0	0	0	1
2921:	0	0	0	1	0	0	0	0	0
2929:	0	0	1	0	0	0	0	1	0
2937:	1	0	0	0	0	0	0	0	1
2945:	1	0	1	0	0	0	0	0	0
2953:	1	0	0	0	0	1	0	0	0
2961:	0	0	0	0	0	0	0	0	0
2969:	1	0	0	1	0	0	0	0	0
2977:	0	0	1	0	1	0	0	0	0
2985:	0	0	0	0	0	0	0	0	0
2993:	0	0	0	0	0	0	0	1	0
3001:	0	0	0	0	0	0	1	0	0
3009:	0	0	0	0	0	0	0	0	0
3017:	0	0	0	0	0	0	0	0	0
3025:	0	0	0	0	0	0	0	0	0
3033:	0	0	0	0	0	0	0	0	0
3041:	0	0	0	0	0	0	0	0	0
3049:	0	0	1	1	0	0	0	0	0
3057:	0	0	0	0	0	0	0	0	0
3065:	0	0	0	0	0	0	0	0	0
3073:	0	1	0	0	0	0	0	0	0
3081:	0	1	0	0	0	0	0	0	0
3089:	1	0	0	0	0	0	0	1	0
3097:	0	0	0	0	0	0	0	0	0
3105:	0	0	0	0	0	0	0	0	0
3113:	0	0	0	0	0	0	0	0	0
3121:	0	0	1	0	0	0	0	0	0
3129:	0	1	1	0	0	0	0	0	0
3137:	1	0	0	0	0	0	0	0	0
3145:	1	0	0	0	0	0	0	0	0
3153:	0	0	0	0	0	0	0	0	0
3161:	0	0	0	0	0	0	0	0	0
3169:	0	1	0	0	0	0	0	0	0
3177:	1	0	0	0	1	0	0	0	0
3185:	1	1	0	1	0	0	0	0	0
3193:	0	0	0	0	0	1	0	0	0
3201:	0	0	1	0	0	0	0	0	0
3209:	0	0	0	0	0	0	0	1	0
3217:	0	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0	0
3233:	0	1	0	0	0	0	0	0	1
3241:	0	0	0	0	0	0	0	0	0
3249:	0	0	0	0	1	0	0	0	0
3257:	0	0	0	0	0	0	0	0	0
3265:	0	0	0	0	0	0	0	0	1
3273:	0	0	1	0	0	0	0	0	0
3281:	0	0	0	0	0	0	0	0	0
3289:	0	0	0	1	1	1	0	0	0
3297:	0	0	0	0	0	0	0	0	0
3305:	0	0	0	0	1	0	0	0	0

3313:	0	0	0	0	1	0	0	0
3321:	0	2	1	0	1	0	0	0
3329:	1	1	0	0	0	0	0	0
3337:	0	0	0	0	0	1	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	1	0	0	0	0	0	0	1
3369:	0	0	0	1	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	0	0	0	0
3393:	0	0	2	0	0	0	0	0
3401:	0	0	0	0	0	0	0	1
3409:	0	0	1	0	0	0	0	0
3417:	0	0	0	0	0	1	1	0
3425:	0	0	0	0	0	0	0	1
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	1
3473:	0	0	0	0	1	0	0	0
3481:	0	0	0	0	1	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	1	0	0	0	0	0	0	1
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	1	1	0	0	0
3537:	0	0	0	0	1	0	2	0
3545:	0	0	1	0	0	0	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	1	0	0	0	0	0	0
3585:	0	0	0	0	0	0	1	0
3593:	0	0	1	0	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	1	0	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	1	0	0	0	1	0
3633:	0	0	0	0	0	0	1	0
3641:	0	0	0	0	1	0	0	0
3649:	1	0	0	0	0	0	0	0
3657:	0	0	0	0	0	1	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	1	0	2	0
3681:	0	0	0	2	0	0	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	1	0	0	1
3769:	0	1	0	1	0	0	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	0	0	0

3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0
3825:	0	0	0	0	0	0	0	0
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	1	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	1	1	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	1	0	0	0	0	0	0
3881:	0	0	0	0	1	0	0	1
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	0	0	1	0	0	0	0
3913:	0	0	0	0	0	0	0	1
3921:	0	1	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	2
3953:	0	0	0	0	0	0	0	0
3961:	1	0	0	0	0	1	0	0
3969:	0	0	0	0	0	0	0	0
3977:	1	0	0	0	0	0	0	0
3985:	1	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	1	0	0	1	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	1	0	0	0	0	0	1
4033:	0	0	1	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
4057:	1	0	0	0	0	1	0	0
4065:	0	0	0	0	1	0	0	0
4073:	0	0	0	0	0	1	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	0	1	0	0



WM  
6-17-10

Sample ID : 1005127-03

Acquisition date : 17-JUN-2010 07:38:59

VAX/VMS Peak Search Report Generated 17-JUN-2010 08:39:13.33

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100512703\_GE2\_GAS1002\_150511.  
 Analyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2  
 Client ID : MPA-RA-1 8-10  
 Deposition Date :  
 Sample Date : 20-MAY-2010 00:00:00 Acquisition date : 17-JUN-2010 07:38:59  
 Sample ID : 1005127-03 Sample Quantity : 2.54110E+02 GRAM  
 Sample type : SOIL Sample Geometry : 0  
 Detector name : GE2 Detector Geometry: GAS-1002  
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.22 0.0%  
 Start channel : 5 End channel : 4096  
 Sensitivity : 2.40000 Gaussian : 15.00000  
 Critical level : Yes

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	38.89*	599	802	1.48	38.35	37	6	20.6		RA-225
0	46.68*	150	740	2.10	46.14	43	7	63.8		PB-210
0	53.17*	78	612	1.36	52.63	50	6	105.5		
0	76.26*	1016	1303	2.58	75.72	71	12	15.6		
0	87.96	88	483	0.92	87.41	85	4	74.1		NP-237 SN-126 CD-109
0	93.13*	120	754	1.69	92.59	90	8	86.1		
0	129.27	107	458	1.15	128.73	125	8	72.1		
0	177.96	80	359	3.77	177.42	173	9	89.2		
0	186.01*	227	360	1.91	185.47	182	9	33.5		RA-226
0	210.25	80	282	1.78	209.71	206	7	73.4		
0	239.68*	1001	358	1.91	239.14	235	10	9.7		PB-212 RA-224 HG-203
0	279.28	96	239	4.43	278.74	274	10	64.4		
1	292.42	24	67	1.72	291.88	290	15	96.7	3.16E+00	
1	295.70*	256	109	1.72	295.16	290	15	17.8		PB-214
1	300.51	69	107	1.72	299.97	290	15	51.5		PB-212
0	329.09	43	180	1.42	328.55	325	7	107.0		
0	338.77	141	171	1.66	338.23	335	7	35.2		AC-228
0	352.34*	405	187	1.53	351.80	348	10	16.3		PB-214
0	411.10	44	123	4.67	410.56	406	9	96.2		
0	438.70	23	59	1.87	438.17	435	6	113.4		
0	462.72	52	136	2.10	462.18	458	10	88.7		
0	510.97*	53	112	2.22	510.43	506	9	88.8		
4	579.33	28	28	2.15	578.79	577	12	67.1	2.06E+00	
4	583.76*	290	47	2.07	583.22	577	12	14.2		
0	592.59	27	49	1.84	592.05	589	7	95.8		
0	609.79*	300	100	1.87	609.26	606	9	16.9		BI-214
0	729.37	49	113	1.90	728.84	724	10	86.5		
0	770.69	66	63	2.12	770.16	766	10	52.4		
0	796.03*	30	56	1.44	795.50	792	8	96.2		
0	816.54	30	57	3.56	816.01	812	11	104.0		
0	862.38	48	61	2.33	861.85	857	11	69.7		
0	912.23*	162	54	2.00	911.70	908	9	22.9		AC-228
4	965.52	42	38	1.93	964.99	961	13	57.8	1.45E+00	

AG  
6/17/10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
4	969.98*	111	48	1.98	969.45	961	13	27.4		AC-228
0	1001.88*	21	27	2.79	1001.35	998	8	98.2		PA-234M
0	1065.57	32	54	3.79	1065.05	1059	12	99.0		
0	1090.33	29	42	4.25	1089.80	1085	9	88.9		
3	1117.50	14	13	2.43	1116.98	1115	9	77.3	1.40E+01	
3	1121.08*	66	31	2.10	1120.55	1115	9	36.5		BI-214
0	1140.10	22	37	3.61	1139.58	1135		8106.9		
0	1215.26	42	54	5.36	1214.74	1209	13	78.8		
0	1239.38	58	52	1.90	1238.86	1234	11	54.8		
0	1318.53	17	28	2.56	1318.01	1314		9123.2		
0	1379.18	27	12	1.97	1378.66	1374	8	58.0		
0	1397.19	12	12	1.99	1396.67	1394		6108.0		
0	1409.70	53	27	15.10	1409.18	1400	19	55.8		
0	1461.92*	772	24	2.31	1461.40	1456	12	7.7		K-40
0	1546.36	19	0	5.50	1545.84	1542	9	45.9		
0	1558.26	9	4	1.70	1557.74	1553	7	94.0		
3	1589.05	23	5	2.91	1588.53	1585	19	52.9	2.88E+00	
3	1593.24	20	4	2.91	1592.72	1585	19	73.9		
0	1621.77	8	2	1.19	1621.25	1617	8	93.0		
5	1630.83	12	6	3.54	1630.31	1625	17105.2		5.75E-01	
5	1637.22	10	6	3.54	1636.71	1625	17131.6			
0	1688.23	6	4	2.44	1687.72	1684		7125.5		
0	1697.61	7	2	2.95	1697.10	1694		7118.7		
0	1731.17*	25	0	4.19	1730.65	1726	10	41.4		
0	1757.84	9	0	2.87	1757.33	1755	6	66.7		
0	1765.98*	53	0	2.38	1765.47	1762	8	28.4		BI-214
0	1848.65	14	0	2.79	1848.14	1845	7	53.5		
0	1925.90	18	3	7.71	1925.39	1920	12	61.8		
0	1970.21	10	0	3.00	1969.70	1966	8	63.2		
0	1977.10	6	2	2.63	1976.59	1974		6102.4		
0	2096.20	6	3	1.30	2095.69	2092		6120.2		
0	2106.95	8	7	2.87	2106.45	2101		9130.8		
0	2173.23	9	5	4.19	2172.72	2167	10114.4			
0	2207.49	15	15	3.42	2206.99	2202		9111.2		
0	2219.51	6	2	1.59	2219.01	2215		7105.4		
0	2380.79	12	3	1.93	2380.29	2376	10	74.8		
0	2421.13	7	4	2.67	2420.63	2416		8116.9		
0	2429.90	15	0	7.99	2429.40	2424	11	51.6		
0	2599.89	5	0	1.24	2599.40	2597	5	89.4		
0	2616.23*	104	0	2.29	2615.73	2610	11	20.1		

Total number of lines in spectrum 73  
 Number of unidentified lines 42  
 Number of lines tentatively identified by NID 31 42.47%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	3.821E+01	3.821E+01	0.463E+01	12.12	
PB-210	22.26Y	1.00	4.080E+00	4.090E+00	2.633E+00	64.37	
PB-212	1.41E+10Y	1.00	3.363E+00	3.363E+00	1.757E+00	52.24	
BI-214	1602.00Y	1.00	1.860E+00	1.860E+00	0.282E+00	15.14	
PB-214	1602.00Y	1.00	2.100E+00	2.100E+00	0.286E+00	13.61	
RA-224	1.41E+10Y	1.00	3.697E+01	3.697E+01	0.488E+01	13.21	
RA-225	14.80D	3.77	2.275E+00	8.580E+00	1.927E+00	22.47	
RA-226	1602.00Y	1.00	8.798E+00	8.798E+00	16.38E+00	186.19	
AC-228	1.41E+10Y	1.00	2.325E+00	2.325E+00	0.388E+00	16.69	
PA-234M	4.47E+09Y	1.00	9.339E+00	9.339E+00	9.213E+00	98.64	
Total Activity :			1.093E+02	1.156E+02			

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CD-109	464.00D	1.04	2.377E+00	2.480E+00	1.862E+00	75.09	
SN-126	1.00E+05Y	1.00	2.389E-01	2.389E-01	1.788E-01	74.85	
NP-237	2.14E+06Y	1.00	7.008E-01	7.008E-01	5.245E-01	74.84	
Total Activity :			3.317E+00	3.420E+00			

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
HG-203	46.60D	1.52	1.981E-01	3.019E-01	1.963E-01	65.01	
Total Activity :			1.981E-01	3.019E-01			

Grand Total Activity : 1.128E+02 1.194E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma			Status
				pCi/GRAM	pCi/GRAM	%Error	
K-40	1460.81	10.67*	5.598E-01	3.821E+01	3.821E+01	12.12	OK
Final Mean for 1 Valid Peaks = 3.821E+01+/- 4.632E+00 ( 12.12%)							
PB-210	46.50	4.05*	2.685E+00	4.080E+00	4.090E+00	64.37	OK
Final Mean for 1 Valid Peaks = 4.090E+00+/- 2.633E+00 ( 64.37%)							
PB-212	238.63	44.60*	2.038E+00	3.256E+00	3.256E+00	13.21	<<WM Interf
	300.09	3.41	1.768E+00	3.363E+00	3.363E+00	52.24	OK
Final Mean for 1 Valid Peaks = 3.363E+00+/- 1.757E+00 ( 52.24%)							
BI-214	609.31	46.30*	1.064E+00	1.799E+00	1.799E+00	19.85	OK
	1120.29	15.10	6.737E-01	1.926E+00	1.926E+00	37.61	OK
	1764.49	15.80	4.955E-01	1.982E+00	1.982E+00	29.84	OK
	2204.22	4.98	4.351E-01	-----	Line Not Found	-----	Absent
Final Mean for 3 Valid Peaks = 1.860E+00+/- 2.817E-01 ( 15.14%)							
PB-214	295.21	19.19	1.787E+00	2.202E+00	2.202E+00	19.93	OK
	351.92	37.19*	1.589E+00	2.024E+00	2.024E+00	18.60	OK
Final Mean for 2 Valid Peaks = 2.100E+00+/- 2.858E-01 ( 13.61%)							
RA-224	240.98	3.95*	2.026E+00	3.697E+01	3.697E+01	13.21	OK
Final Mean for 1 Valid Peaks = 3.697E+01+/- 4.885E+00 ( 13.21%)							
RA-225	40.00	31.00*	2.508E+00	2.275E+00	8.580E+00	22.47	OK
Final Mean for 1 Valid Peaks = 8.580E+00+/- 1.927E+00 ( 22.47%)							
RA-226	186.21	3.28*	2.329E+00	8.798E+00	8.798E+00	186.19	OK
Final Mean for 1 Valid Peaks = 8.798E+00+/- 1.638E+01 (186.19%)							
AC-228	338.32	11.40	1.632E+00	2.236E+00	2.236E+00	36.36	OK
	911.07	27.70*	7.844E-01	2.204E+00	2.204E+00	24.61	OK
	969.11	16.60	7.492E-01	2.644E+00	2.644E+00	28.81	OK
Final Mean for 3 Valid Peaks = 2.325E+00+/- 3.882E-01 ( 16.69%)							
PA-234M	1001.03	0.92*	7.314E-01	9.339E+00	9.339E+00	98.64	OK
Final Mean for 1 Valid Peaks = 9.339E+00+/- 9.213E+00 ( 98.64%)							

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
CD-109	88.03	3.72*	2.929E+00	2.377E+00	2.480E+00	75.09	OK

Final Mean for 1 Valid Peaks = 2.480E+00+/- 1.862E+00 ( 75.09%)

SN-126	87.57	37.00*	2.930E+00	2.389E-01	2.389E-01	74.85	OK
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Final Mean for 1 Valid Peaks = 2.389E-01+/- 1.788E-01 ( 74.85%)

NP-237	86.50	12.60*	2.933E+00	7.008E-01	7.008E-01	74.84	OK
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Final Mean for 1 Valid Peaks = 7.008E-01+/- 5.245E-01 ( 74.84%)

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
HG-203	279.19	77.30*	1.852E+00	1.981E-01	3.019E-01	65.01	OK

Final Mean for 1 Valid Peaks = 3.019E-01+/- 1.963E-01 ( 65.01%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.821E+01	4.632E+00	1.085E+00	9.221E-02	35.199
CD-109	2.480E+00	1.862E+00	3.097E+00	3.493E-01	0.801
SN-126	2.389E-01	1.788E-01	3.067E-01	2.931E-02	0.779
HG-203	3.019E-01	1.963E-01	1.746E-01	1.443E-02	1.729
PB-210	4.090E+00	2.633E+00	2.603E+00	1.980E-01	1.571
PB-212	3.363E+00	1.757E+00	2.035E-01	1.643E-02	16.528
BI-214	1.860E+00	2.817E-01	2.357E-01	2.248E-02	7.892
PB-214	2.100E+00	2.858E-01	2.661E-01	2.157E-02	7.891
RA-224	3.697E+01	4.885E+00	2.312E+00	1.867E-01	15.990
RA-225	8.580E+00	1.927E+00	1.699E+00	1.383E-01	5.050
RA-226	8.798E+00	1.638E+01	2.500E+00	4.577E+00	3.519
AC-228	2.325E+00	3.882E-01	4.522E-01	3.615E-02	5.142
PA-234M	9.339E+00	9.213E+00	1.331E+01	1.074E+00	0.702
NP-237	7.008E-01	5.245E-01	8.551E-01	8.079E-02	0.820

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-1.170E-01		6.968E-01	1.264E+00	1.105E-01	-0.093
NA-22	-4.673E-02		7.879E-02	1.313E-01	1.066E-02	-0.356
AL-26	3.581E-02		4.406E-02	1.024E-01	8.198E-03	0.350
TI-44	-1.608E-01		7.592E-02	1.072E-01	8.289E-03	-1.500
SC-46	3.761E-02		8.698E-02	1.635E-01	1.320E-02	0.230
V-48	-9.939E-02		2.152E-01	3.716E-01	2.995E-02	-0.267
CR-51	-2.112E-01		1.199E+00	1.959E+00	1.683E-01	-0.108
MN-54	9.143E-03		7.557E-02	1.377E-01	1.190E-02	0.066
CO-56	-2.872E-02		9.083E-02	1.592E-01	1.357E-02	-0.180
CO-57	4.187E-02		6.567E-02	1.057E-01	9.696E-03	0.396
CO-58	-4.567E-02		9.387E-02	1.433E-01	1.272E-02	-0.319
FE-59	-1.185E-02		2.206E-01	3.757E-01	3.304E-02	-0.032
CO-60	5.831E-02		8.726E-02	1.649E-01	1.315E-02	0.354
ZN-65	1.167E-01		1.597E-01	2.879E-01	2.316E-02	0.406
SE-75	-9.115E-03		1.035E-01	1.713E-01	1.389E-02	-0.053
RB-82	-8.414E-02		1.117E+00	1.812E+00	1.655E-01	-0.046
RB-83	2.806E-02		1.571E-01	2.785E-01	4.419E-02	0.101
KR-85	2.839E+01		1.714E+01	3.106E+01	2.795E+00	0.914
SR-85	1.672E-01		1.010E-01	1.829E-01	1.646E-02	0.914
Y-88	-5.889E-03		6.767E-02	1.254E-01	9.984E-03	-0.047
NB-93M	0.000E+00		0.000E+00	7.885E-02	1.490E-02	0.000
NB-94	3.557E-02		6.889E-02	1.203E-01	9.956E-03	0.296
NB-95	1.269E-01		1.351E-01	2.397E-01	2.209E-02	0.529
NB-95M	5.111E+01		5.742E+01	9.268E+01	7.485E+00	0.552
ZR-95	3.078E-02		1.704E-01	3.119E-01	3.147E-02	0.099
RU-103	-1.409E-02		1.027E-01	1.857E-01	2.660E-02	-0.076
RU-106	-2.449E-01		6.157E-01	1.086E+00	1.520E-01	-0.226
AG-108M	-3.997E-02		8.789E-02	1.353E-01	1.282E-02	-0.295
AG-110M	-6.062E-02		7.307E-02	1.232E-01	1.199E-02	-0.492

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SN-113	-7.674E-02		1.073E-01	1.664E-01	1.382E-02	-0.461
TE123M	-6.533E-02		7.552E-02	1.208E-01	9.801E-03	-0.541
SB-124	6.167E-02		9.991E-02	1.721E-01	1.637E-02	0.358
I-125	9.311E+00		1.889E+00	3.181E+00	2.773E-01	2.927
SB-125	7.246E-02		1.898E-01	3.252E-01	2.769E-02	0.223
SB-126	1.635E-01		6.249E-01	1.051E+00	9.981E-02	0.156
SB-127	-1.955E+01		2.574E+01	4.364E+01	4.216E+00	-0.448
I-129	-1.867E-01		4.624E-02	6.796E-03	6.712E-04	-27.469
I-131	3.992E-01		7.937E-01	1.363E+00	1.103E-01	0.293
BA-133	6.520E-02		1.008E-01	1.622E-01	2.088E-02	0.402
CS-134	6.591E-03		7.538E-02	1.239E-01	1.181E-02	0.053
CS-135	2.256E-01		3.548E-01	6.096E-01	4.899E-02	0.370
CS-136	9.160E-02		4.092E-01	7.545E-01	6.297E-02	0.121
CS-137	6.364E-02		7.936E-02	1.511E-01	1.476E-02	0.421
LA-138	7.077E-02		1.103E-01	2.163E-01	1.782E-02	0.327
CE-139	-3.046E-02		7.520E-02	1.233E-01	9.730E-03	-0.247
BA-140	-9.444E-01		1.127E+00	1.845E+00	6.139E-01	-0.512
LA-140	2.736E-01		2.889E-01	6.183E-01	5.079E-02	0.443
CE-141	6.429E-02		2.023E-01	3.420E-01	8.144E-02	0.188
CE-144	4.325E-01		5.259E-01	8.525E-01	7.549E-02	0.507
PM-144	3.323E-02		6.679E-02	1.254E-01	1.207E-02	0.265
PM-145	5.720E+00		3.761E+00	9.962E-01	6.483E-01	5.742
PM-146	-3.546E-02		1.430E-01	2.311E-01	1.977E-02	-0.153
ND-147	7.434E-01		2.609E+00	4.849E+00	4.417E-01	0.153
EU-152	1.025E+00		5.040E-01	1.080E+00	1.145E-01	0.949
GD-153	-2.555E-01		2.368E-01	3.792E-01	3.552E-02	-0.674
EU-154	-1.345E-01		2.180E-01	3.620E-01	2.940E-02	-0.372
EU-155	2.889E-01	+	2.162E-01	3.823E-01	3.612E-02	0.756
EU-156	-2.621E-01		2.410E+00	3.885E+00	8.908E-01	-0.067
HO-166M	-4.943E-02		1.183E-01	2.069E-01	1.974E-02	-0.239
HF-172	-3.381E-02		4.879E-01	7.563E-01	6.855E-02	-0.045
LU-172	3.354E-01		2.537E+00	4.158E+00	3.348E-01	0.081
LU-173	3.635E-01		3.173E-01	5.194E-01	4.168E-02	0.700
HF-175	-8.849E-02		1.031E-01	1.442E-01	1.170E-02	-0.614
LU-176	9.363E-03		5.947E-02	9.239E-02	7.466E-03	0.101
TA-182	9.899E-01	+	3.724E-01	7.395E-01	5.940E-02	1.339
IR-192	-4.506E-02		1.612E-01	2.589E-01	2.244E-02	-0.174
BI-207	1.391E-02		5.959E-02	1.104E-01	1.031E-02	0.126
TL-208	2.578E+00	+	4.513E-01	7.826E-01	7.364E-02	3.295
BI-210M	6.602E-03		1.169E-01	1.952E-01	1.572E-02	0.034
PB-211	-9.848E-01		2.184E+00	3.159E+00	2.571E-01	-0.312
BI-212	1.357E+00		7.185E-01	1.407E+00	1.331E-01	0.965
RN-219	3.780E-01		9.678E-01	1.525E+00	1.237E-01	0.248
RA-223	-3.320E-01		1.632E+00	2.439E+00	1.977E-01	-0.136
TH-227	1.592E+00		6.062E-01	1.037E+00	8.375E-02	1.535
TH-230	-4.110E+01		1.935E+01	2.732E+01	2.108E+00	-1.504
PA-231	3.196E+00		2.469E+00	4.401E+00	3.553E-01	0.726
TH-231	0.000E+00		0.000E+00	3.003E-02	3.380E-03	0.000

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PA-233	-2.091E-01		3.006E-01	4.674E-01	1.040E-01	-0.447
PA-234	3.784E-01		2.781E-01	4.578E-01	4.083E-02	0.826
TH-234	9.999E-01		1.710E+00	2.979E+00	2.195E-01	0.336
U-235	4.274E-01		5.073E-01	8.701E-01	1.521E-01	0.491
AM-241	-3.218E-01		1.928E-01	2.805E-01	1.989E-02	-1.147
AM-243	6.891E-01		1.308E-01	2.199E-01	1.829E-02	3.133
CM-243	6.464E-01		4.205E-01	7.516E-01	6.018E-02	0.860



Total number of lines in spectrum 73  
 Number of unidentified lines 42  
 Number of lines tentatively identified by NID 31 42.47%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	3.821E+01	3.821E+01	0.463E+01	12.12	
PB-210	22.26Y	1.00	4.080E+00	4.090E+00	2.633E+00	64.37	
PB-212	1.41E+10Y	1.00	3.363E+00	3.363E+00	1.757E+00	52.24	
BI-214	1602.00Y	1.00	1.860E+00	1.860E+00	0.282E+00	15.14	
PB-214	1602.00Y	1.00	2.100E+00	2.100E+00	0.286E+00	13.61	
RA-224	1.41E+10Y	1.00	3.697E+01	3.697E+01	0.488E+01	13.21	
RA-225	14.80D	3.77	2.275E+00	8.580E+00	1.927E+00	22.47	
RA-226	1602.00Y	1.00	8.798E+00	8.798E+00	16.38E+00	186.19	
AC-228	1.41E+10Y	1.00	2.325E+00	2.325E+00	0.388E+00	16.69	
PA-234M	4.47E+09Y	1.00	9.339E+00	9.339E+00	9.213E+00	98.64	
Total Activity :			1.093E+02	1.156E+02			

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CD-109	464.00D	1.04	2.377E+00	2.480E+00	1.862E+00	75.09	
SN-126	1.00E+05Y	1.00	2.389E-01	2.389E-01	1.788E-01	74.85	
NP-237	2.14E+06Y	1.00	7.008E-01	7.008E-01	5.245E-01	74.84	
Total Activity :			3.317E+00	3.420E+00			

Nuclide Type : ACTIVATION

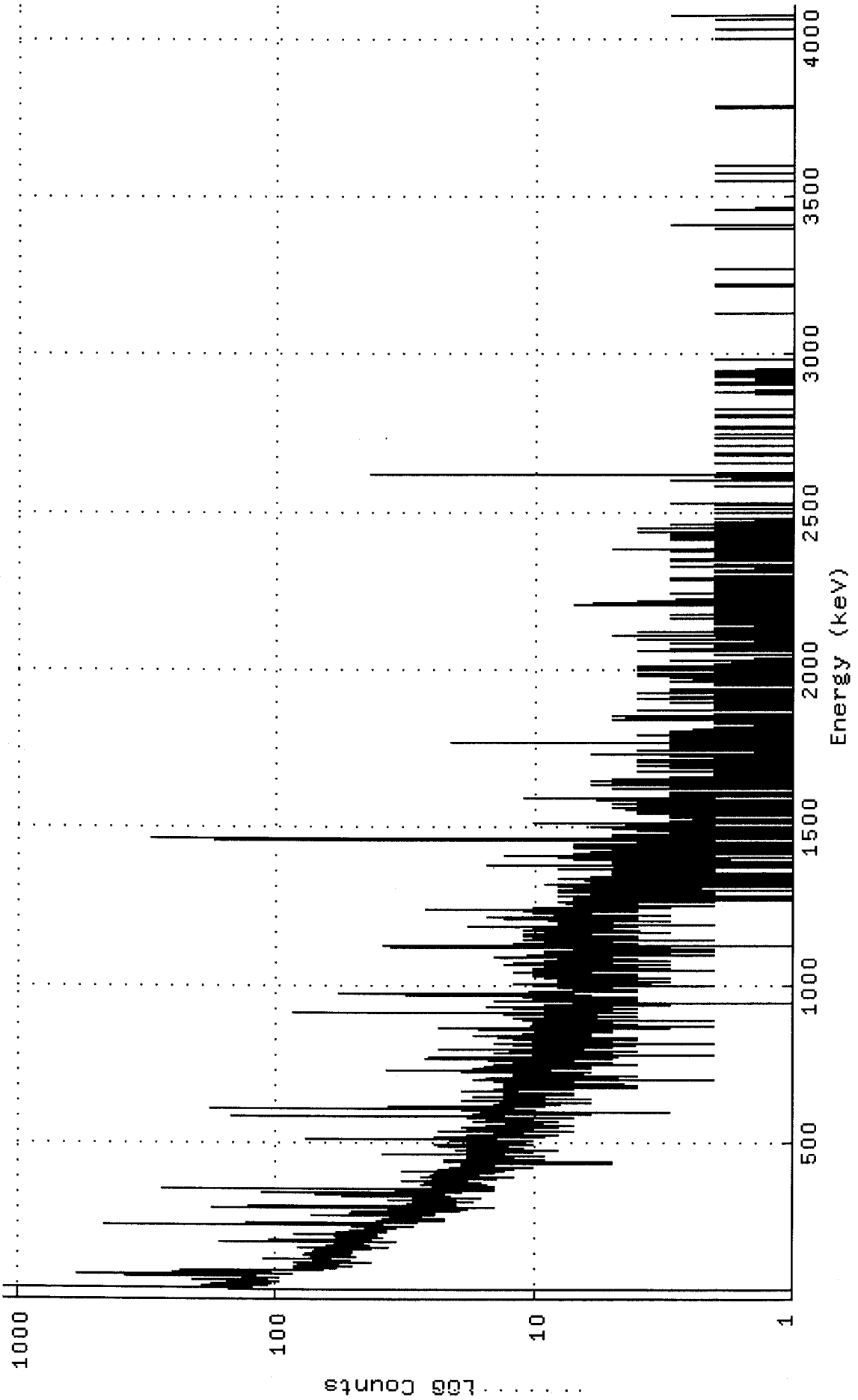
Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
HG-203	46.60D	1.52	1.981E-01	3.019E-01	1.963E-01	65.01	
Total Activity :			1.981E-01	3.019E-01			

Grand Total Activity : 1.128E+02 1.194E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Spectrum : DKA100: [GAMMA.SCUSR.ARCHIVE]SMP\_100512703\_GE2\_GAS1002\_150511.CNF;1  
 Title :  
 Sample Title: MPA-RA-1 8-10  
 Start Time: 17-JUN-2010 07:38 Sample Time: 20-MAY-2010 00:00 Energy Offset: 5.46857E-01  
 Real Time : 0 01:00:01.22 Sample ID : 1005127-03 Energy Slope : 9.99980E-01  
 Live Time : 0 01:00:00.00 Sample Type: SOIL Energy Quad : 0.00000E+00



Channel Contents for DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512703\_GE2\_GAS1002\_1505

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	4
33:	76	130	174	211	205	1118	608	127
41:	114	106	106	120	139	189	159	118
49:	109	102	126	119	151	110	103	96
57:	114	95	121	106	105	108	206	137
65:	98	119	132	95	100	106	128	121
73:	125	261	349	250	578	158	88	90
81:	100	85	120	142	105	111	246	109
89:	129	152	80	190	227	107	65	74
97:	63	73	83	70	57	58	50	67
105:	83	64	69	63	62	56	63	68
113:	80	64	71	84	68	42	58	62
121:	70	62	60	51	57	65	69	68
129:	110	60	64	72	48	64	61	56
137:	53	68	58	51	54	56	77	75
145:	59	50	59	58	65	60	58	56
153:	70	65	58	42	52	49	69	44
161:	58	46	80	36	46	61	48	52
169:	62	52	44	43	47	48	45	49
177:	57	58	55	46	34	38	58	65
185:	114	161	67	50	44	44	42	45
193:	54	47	38	49	57	45	55	40
201:	58	40	41	57	46	43	40	44
209:	83	64	51	37	37	46	41	46
217:	48	51	37	48	47	41	44	37
225:	42	44	34	36	50	31	29	36
233:	37	47	44	38	61	420	454	64
241:	109	128	42	30	28	34	36	22
249:	27	40	28	30	22	28	29	24
257:	24	38	34	30	30	31	27	31
265:	26	30	24	34	39	72	36	30
273:	37	24	37	33	41	50	38	34
281:	36	22	20	18	26	27	36	30
289:	23	22	27	37	14	64	174	91
297:	28	20	32	63	33	28	25	22
305:	20	20	25	28	24	29	17	22
313:	23	20	30	27	25	27	36	16
321:	25	27	23	29	24	21	35	54
329:	33	35	21	29	27	29	25	22
337:	43	111	69	23	19	26	20	18
345:	26	34	24	14	26	22	141	272
353:	54	14	29	21	14	23	17	16
361:	20	18	22	26	27	15	21	18
369:	20	24	16	19	19	26	18	24
377:	30	32	18	26	23	17	15	22
385:	22	16	12	27	18	15	21	14
393:	18	20	25	22	17	20	14	20
401:	23	24	17	16	15	14	13	17
409:	32	22	14	18	23	14	12	23
417:	10	21	14	17	17	17	15	16
425:	18	14	18	19	13	8	19	5

433:	17	12	5	14	12	21	22	8
441:	14	22	19	12	9	18	13	18
449:	12	14	18	16	12	13	11	11
457:	15	9	18	13	18	28	38	24
465:	18	10	12	18	16	11	13	20
473:	11	11	13	8	11	11	18	17
481:	12	12	12	13	17	18	23	13
489:	16	24	11	19	11	14	10	18
497:	18	12	11	14	12	21	17	19
505:	10	17	14	21	29	60	75	33
513:	17	11	12	13	24	14	9	14
521:	13	15	12	8	18	11	14	13
529:	14	14	12	12	23	14	13	7
537:	10	18	11	16	14	18	10	14
545:	15	19	14	8	14	16	12	10
553:	10	15	10	7	12	10	10	10
561:	11	11	15	17	9	8	11	10
569:	15	14	14	13	13	10	14	7
577:	7	18	13	17	13	56	147	97
585:	20	13	15	6	11	8	13	17
593:	10	8	9	3	16	8	12	19
601:	11	18	12	16	12	12	13	40
609:	177	132	10	12	9	9	12	10
617:	8	14	11	10	9	10	6	13
625:	11	13	10	10	18	12	9	19
633:	12	16	7	6	12	12	12	13
641:	12	11	17	16	10	9	9	13
649:	12	10	8	7	9	13	7	8
657:	10	12	8	16	19	17	12	12
665:	13	14	13	9	14	10	7	13
673:	11	4	9	9	8	13	10	8
681:	7	11	4	5	7	5	12	13
689:	11	8	7	14	10	12	9	17
697:	7	10	8	6	2	11	12	15
705:	12	14	14	10	12	10	9	11
713:	4	10	8	7	10	12	11	6
721:	9	9	19	10	12	11	37	36
729:	13	12	13	12	6	12	11	9
737:	8	17	14	11	9	8	6	11
745:	4	8	9	6	10	14	10	5
753:	7	12	9	12	10	12	10	12
761:	7	13	17	13	5	15	5	26
769:	25	13	10	10	12	11	2	6
777:	9	9	4	10	10	5	11	12
785:	13	14	11	5	4	9	11	6
793:	12	12	23	12	10	8	5	7
801:	9	8	10	10	10	12	6	7
809:	12	8	2	4	8	10	9	14
817:	7	6	6	8	10	5	9	9
825:	7	9	8	12	4	6	11	4
833:	8	8	11	17	8	6	12	14
841:	13	6	7	8	6	10	11	9
849:	5	8	7	9	7	13	7	5
857:	6	6	14	19	23	6	3	8
865:	13	8	2	9	6	8	6	10
873:	6	10	4	7	6	8	10	8
881:	9	8	5	9	7	2	9	7
889:	11	7	12	10	7	6	8	4
897:	9	5	9	9	5	13	7	7
905:	7	7	8	4	4	15	76	85

913:	18	6	8	5	7	7	9	7
921:	7	5	12	8	4	9	15	5
929:	8	12	8	8	7	3	8	8
937:	7	9	5	1	4	7	5	3
945:	9	4	14	7	7	8	10	9
953:	5	4	6	4	6	5	11	4
961:	7	8	7	15	28	17	6	17
969:	56	55	11	8	7	12	9	8
977:	6	7	5	4	7	5	4	4
985:	4	5	6	5	7	6	5	8
993:	5	3	6	10	2	2	6	7
1001:	10	12	7	6	4	5	5	8
1009:	8	7	3	6	5	8	4	6
1017:	6	9	5	6	7	5	3	7
1025:	10	4	4	5	9	4	4	9
1033:	10	5	8	10	12	8	9	6
1041:	11	8	2	8	7	7	10	3
1049:	10	4	5	8	4	7	9	7
1057:	5	4	4	7	5	3	9	13
1065:	6	12	8	6	8	5	5	8
1073:	4	9	9	8	3	6	4	5
1081:	7	8	5	6	5	8	6	10
1089:	14	8	8	10	2	6	8	5
1097:	4	6	9	7	8	3	9	4
1105:	6	5	6	2	4	2	5	4
1113:	7	5	3	6	11	5	12	33
1121:	38	12	1	6	0	8	6	4
1129:	4	10	12	8	8	6	5	7
1137:	7	9	9	11	9	2	6	4
1145:	9	7	5	4	10	5	4	7
1153:	7	7	5	11	11	6	8	6
1161:	7	7	9	5	6	7	7	3
1169:	5	6	8	11	6	11	9	5
1177:	6	7	10	5	6	8	18	5
1185:	4	8	5	5	8	2	7	7
1193:	8	7	6	5	8	5	7	6
1201:	3	7	4	4	6	13	5	4
1209:	6	7	10	11	7	8	4	15
1217:	4	7	6	8	3	4	7	10
1225:	10	6	9	6	8	6	5	11
1233:	6	4	9	8	12	17	26	9
1241:	4	7	10	4	5	3	4	4
1249:	5	7	2	4	5	6	4	7
1257:	4	7	7	8	2	6	5	5
1265:	6	7	5	6	7	5	1	1
1273:	4	7	6	5	5	2	7	8
1281:	5	7	1	2	4	4	6	6
1289:	2	5	5	2	8	5	8	2
1297:	5	5	8	4	5	1	5	7
1305:	3	3	6	5	3	3	8	2
1313:	0	3	5	1	9	8	8	3
1321:	5	3	6	2	1	0	1	3
1329:	6	6	4	5	8	1	3	4
1337:	4	4	2	6	6	5	1	5
1345:	3	2	5	2	3	1	5	4
1353:	5	0	3	4	2	3	3	5
1361:	4	4	2	2	8	4	2	6
1369:	6	4	2	2	4	1	1	3
1377:	8	15	8	3	0	1	2	3
1385:	5	5	3	4	4	5	4	2

1393:	1	3	3	4	7	5	2	2
1401:	4	8	5	1	1	4	5	13
1409:	9	5	3	3	3	3	1	3
1417:	7	0	2	1	0	2	6	0
1425:	0	3	0	4	5	3	3	3
1433:	1	7	4	3	7	5	3	3
1441:	1	4	7	5	6	2	1	1
1449:	2	4	3	2	4	2	2	2
1457:	2	4	24	98	298	282	83	5
1465:	3	1	2	2	5	1	0	3
1473:	0	1	1	5	1	2	3	1
1481:	1	2	0	1	0	1	2	4
1489:	0	3	1	0	1	4	3	5
1497:	1	0	6	3	3	5	4	2
1505:	2	2	2	2	7	10	2	1
1513:	1	3	3	2	3	1	1	1
1521:	1	2	0	2	1	2	3	2
1529:	2	2	3	3	3	1	2	1
1537:	2	3	3	2	0	0	2	4
1545:	2	3	4	3	1	0	0	2
1553:	0	1	3	0	4	5	0	0
1561:	1	2	2	1	2	1	1	0
1569:	4	3	1	1	3	5	2	0
1577:	3	0	4	1	2	1	3	1
1585:	1	1	3	11	9	4	2	2
1593:	9	1	1	3	2	2	3	3
1601:	3	1	0	0	1	1	1	1
1609:	1	3	0	1	1	1	1	0
1617:	0	1	0	1	5	1	2	0
1625:	1	1	1	3	2	3	6	4
1633:	1	2	2	5	2	4	1	1
1641:	0	1	0	6	1	2	4	2
1649:	2	1	1	2	4	5	0	3
1657:	2	0	2	2	0	1	0	1
1665:	2	1	2	1	2	0	1	1
1673:	3	0	4	3	1	2	1	1
1681:	2	0	0	0	1	1	3	3
1689:	2	0	2	0	2	0	4	0
1697:	3	1	1	0	0	0	2	3
1705:	2	0	4	1	2	2	2	1
1713:	4	1	1	1	2	1	1	1
1721:	0	2	1	3	0	0	1	1
1729:	5	5	5	6	2	1	0	0
1737:	0	1	1	0	1	4	1	1
1745:	1	1	2	2	1	1	3	1
1753:	3	0	0	2	3	3	1	0
1761:	0	0	1	8	21	16	7	2
1769:	0	0	2	0	2	1	3	1
1777:	1	0	0	1	3	2	1	3
1785:	1	1	2	1	1	1	2	1
1793:	4	2	1	0	3	1	2	0
1801:	1	2	0	0	3	2	0	2
1809:	1	1	1	2	1	0	0	2
1817:	2	1	0	0	0	0	1	1
1825:	0	2	2	1	0	2	1	0
1833:	2	0	1	0	1	5	1	2
1841:	2	2	3	0	0	1	3	4
1849:	5	1	0	0	0	0	2	1
1857:	2	2	0	0	1	1	0	1
1865:	1	1	0	1	2	0	4	1

1873:	2	1	2	2	2	0	0	1
1881:	1	2	1	1	2	1	1	0
1889:	2	0	3	2	1	0	0	1
1897:	1	0	1	1	0	2	0	0
1905:	4	1	0	4	2	0	1	0
1913:	3	0	1	2	1	1	0	0
1921:	2	2	0	3	4	3	1	3
1929:	2	1	0	1	1	0	0	1
1937:	3	1	0	0	0	0	0	1
1945:	0	1	0	1	0	0	2	0
1953:	2	0	1	0	2	1	1	3
1961:	0	1	0	1	0	0	1	1
1969:	2	3	2	1	0	0	2	1
1977:	4	1	0	1	4	2	0	1
1985:	4	0	1	0	0	1	2	1
1993:	0	1	1	0	0	4	4	0
2001:	4	0	2	0	0	0	0	4
2009:	1	0	2	1	2	1	1	1
2017:	1	2	0	1	0	0	0	0
2025:	3	0	0	2	0	2	1	0
2033:	1	0	0	1	0	0	1	1
2041:	0	1	0	2	0	2	0	1
2049:	1	1	0	0	1	0	0	2
2057:	0	0	0	4	0	1	3	0
2065:	0	0	2	0	1	1	1	0
2073:	2	0	2	2	0	1	1	3
2081:	0	1	2	0	0	0	1	0
2089:	0	0	2	0	2	1	2	4
2097:	0	0	0	1	1	0	1	4
2105:	1	5	1	2	0	1	1	1
2113:	0	2	1	1	1	4	1	3
2121:	0	1	0	0	2	1	1	0
2129:	1	0	0	2	0	0	0	1
2137:	1	1	0	2	1	0	1	0
2145:	0	0	2	0	1	0	1	1
2153:	1	2	0	0	1	1	1	0
2161:	0	3	2	0	2	0	1	0
2169:	1	1	2	3	3	1	2	0
2177:	1	2	0	1	0	2	0	0
2185:	1	2	0	1	0	1	2	1
2193:	0	2	0	2	0	0	1	1
2201:	4	0	1	5	7	7	5	3
2209:	2	0	3	2	0	1	0	0
2217:	1	4	2	1	0	0	0	2
2225:	0	1	1	1	1	2	2	0
2233:	2	0	0	1	0	3	3	1
2241:	1	2	1	1	0	2	0	1
2249:	2	1	1	2	2	1	1	2
2257:	2	1	0	0	0	2	0	1
2265:	1	0	2	1	2	0	1	2
2273:	2	0	0	1	0	0	0	2
2281:	3	0	0	2	3	0	2	2
2289:	1	2	3	0	0	0	2	0
2297:	1	1	1	1	1	0	0	0
2305:	0	0	2	0	0	2	2	0
2313:	2	1	2	0	1	0	1	0
2321:	1	1	2	2	1	3	0	1
2329:	0	1	2	2	0	0	1	1
2337:	1	1	0	1	0	1	3	1
2345:	1	2	1	3	3	3	0	0

2353:	1	0	2	1	2	1	2	0
2361:	1	0	2	1	2	2	1	0
2369:	0	1	3	0	1	0	0	0
2377:	1	0	3	5	2	1	1	1
2385:	1	0	2	2	1	2	1	1
2393:	0	0	1	2	0	1	0	0
2401:	1	0	1	1	2	0	0	1
2409:	0	3	1	1	3	0	1	1
2417:	1	2	0	3	2	2	0	0
2425:	1	3	2	1	0	1	2	1
2433:	4	0	0	0	1	0	0	1
2441:	0	2	0	1	4	0	0	0
2449:	2	1	1	1	0	0	1	0
2457:	3	0	0	2	1	2	0	1
2465:	0	1	0	1	1	1	0	0
2473:	1	2	0	1	0	1	1	0
2481:	0	0	1	0	0	0	1	1
2489:	1	1	0	0	0	2	2	0
2497:	1	0	1	1	0	1	0	0
2505:	0	0	0	2	0	0	0	1
2513:	1	0	1	0	0	0	0	2
2521:	1	1	3	1	2	0	1	1
2529:	0	1	0	0	0	0	1	0
2537:	0	1	0	1	0	0	1	1
2545:	0	1	0	0	0	0	1	0
2553:	1	0	0	1	0	0	0	0
2561:	1	1	0	1	1	1	1	0
2569:	0	1	0	0	0	1	1	0
2577:	1	0	0	0	2	1	0	0
2585:	0	0	0	0	1	0	1	1
2593:	0	1	0	0	0	1	1	3
2601:	0	0	0	1	0	1	1	0
2609:	0	0	2	1	0	10	27	43
2617:	21	4	1	0	0	1	0	0
2625:	0	1	1	0	1	0	0	0
2633:	0	0	0	0	1	0	1	0
2641:	0	0	1	0	0	1	0	1
2649:	0	0	0	0	0	2	0	1
2657:	0	0	0	1	0	1	0	0
2665:	0	0	0	0	0	1	0	0
2673:	0	1	1	2	0	0	1	0
2681:	1	0	2	0	0	0	1	1
2689:	1	0	0	0	0	0	0	0
2697:	1	0	0	0	0	1	0	1
2705:	0	0	2	0	1	0	0	0
2713:	0	1	0	1	0	0	0	1
2721:	1	0	0	0	1	0	1	1
2729:	0	0	0	1	2	0	1	0
2737:	0	0	0	0	0	2	2	0
2745:	0	1	0	1	1	0	0	0
2753:	1	1	0	1	0	0	1	0
2761:	2	1	1	0	1	0	1	2
2769:	0	0	0	0	0	0	0	0
2777:	0	1	0	1	0	0	1	0
2785:	0	1	0	0	0	0	1	0
2793:	0	0	0	2	1	0	1	0
2801:	2	0	1	0	1	1	0	1
2809:	1	1	1	0	1	0	0	0
2817:	0	1	0	0	0	1	0	2
2825:	0	0	0	0	0	0	0	0



2833:	0	1	0	0	0	0	0	0
2841:	0	0	0	0	0	0	0	1
2849:	0	0	1	1	0	0	0	1
2857:	0	0	0	0	0	0	0	0
2865:	0	0	0	0	0	0	0	0
2873:	0	2	2	1	2	0	2	1
2881:	1	0	0	0	0	1	0	0
2889:	1	0	0	0	1	1	0	0
2897:	1	0	0	1	2	0	1	0
2905:	1	1	0	0	2	0	0	0
2913:	0	0	0	0	0	0	1	0
2921:	0	0	2	0	0	1	1	0
2929:	1	1	0	0	0	2	1	2
2937:	0	0	0	1	0	0	0	0
2945:	0	2	0	0	1	1	0	0
2953:	0	0	0	0	0	0	1	0
2961:	1	0	1	0	1	0	0	0
2969:	0	0	0	0	0	1	1	0
2977:	0	0	0	1	2	1	0	0
2985:	0	0	1	0	1	0	1	0
2993:	0	0	0	0	0	0	0	1
3001:	0	1	0	0	0	1	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	0	1	0	0	1	0	1
3025:	0	0	1	0	0	0	0	1
3033:	0	0	0	0	0	1	0	1
3041:	0	0	0	0	1	1	0	0
3049:	1	0	1	0	0	1	1	0
3057:	0	0	0	0	0	1	1	0
3065:	0	0	0	1	1	0	0	1
3073:	0	0	0	0	0	0	0	1
3081:	0	0	1	0	0	0	0	0
3089:	0	0	0	0	1	1	0	0
3097:	0	0	0	0	0	0	1	0
3105:	0	0	0	0	0	1	0	0
3113:	1	0	0	0	1	1	0	0
3121:	0	0	0	0	1	2	0	1
3129:	0	0	1	0	0	0	0	0
3137:	0	0	0	0	0	0	0	0
3145:	0	0	1	0	0	1	0	0
3153:	0	0	1	0	1	0	0	0
3161:	0	1	1	1	0	0	0	0
3169:	0	0	0	1	0	0	0	0
3177:	0	1	0	0	0	0	0	0
3185:	0	0	0	1	0	1	0	0
3193:	0	0	0	0	0	1	1	0
3201:	0	0	0	0	0	1	0	0
3209:	0	0	0	0	2	1	2	1
3217:	0	0	0	0	0	0	0	0
3225:	0	0	1	1	0	0	0	0
3233:	0	0	0	0	0	1	1	1
3241:	0	0	0	1	1	0	0	0
3249:	0	1	0	0	0	0	0	1
3257:	0	0	0	1	0	0	0	0
3265:	2	0	0	0	0	0	0	0
3273:	0	0	0	0	0	0	0	0
3281:	0	1	0	0	0	0	0	0
3289:	0	1	0	0	1	1	1	1
3297:	0	0	0	1	0	0	0	0
3305:	0	1	0	1	0	0	0	0

3313:	0	0	0	0	1	0	0	0
3321:	0	0	0	0	0	1	0	0
3329:	0	1	0	1	0	0	0	0
3337:	0	0	0	0	0	1	0	0
3345:	0	0	0	0	0	0	0	0
3353:	1	1	0	0	0	0	0	0
3361:	0	0	0	0	0	0	1	0
3369:	0	1	0	0	0	0	0	0
3377:	0	1	0	0	1	0	1	0
3385:	0	0	0	0	0	0	2	0
3393:	0	0	0	0	0	1	0	0
3401:	1	0	3	0	0	0	0	0
3409:	0	0	0	1	0	0	0	0
3417:	0	0	0	1	0	0	0	1
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	1	1	0	0
3441:	0	0	0	0	0	0	0	1
3449:	0	0	1	0	0	0	2	0
3457:	0	0	0	0	0	1	1	1
3465:	0	0	0	1	0	0	0	0
3473:	1	0	1	0	0	0	1	0
3481:	0	0	0	0	0	0	0	1
3489:	0	0	1	0	0	1	0	1
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	1
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	0	0	0	0	0
3537:	0	0	0	0	0	2	0	0
3545:	1	0	0	0	0	0	0	1
3553:	0	0	0	0	0	0	0	0
3561:	0	0	0	0	0	0	2	0
3569:	0	0	1	0	0	0	1	1
3577:	1	1	0	0	0	0	0	0
3585:	1	0	0	0	0	0	0	2
3593:	1	0	0	0	0	0	0	0
3601:	0	0	0	0	0	0	1	0
3609:	1	0	1	0	0	0	0	1
3617:	0	0	0	0	0	0	1	0
3625:	0	0	0	0	0	1	0	1
3633:	0	0	1	0	0	0	0	0
3641:	0	0	0	0	0	1	0	0
3649:	0	0	0	1	0	0	0	0
3657:	0	0	0	0	1	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	1	0	0	1	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	1	0	0	0	0	1	0	1
3697:	0	0	0	0	1	1	1	0
3705:	0	0	1	1	0	0	0	1
3713:	1	0	0	0	0	0	0	0
3721:	0	0	0	1	0	0	1	0
3729:	0	0	0	0	0	0	1	0
3737:	0	1	0	0	0	1	1	0
3745:	0	0	1	1	0	0	0	0
3753:	0	0	0	1	1	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	0	1	1	2	0
3777:	0	0	0	2	0	0	0	0
3785:	0	0	0	0	0	0	0	1

3793:	0	1	0	0	1	0	1	0
3801:	1	0	0	0	1	0	1	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	1	0	0	0	0	0
3825:	0	1	0	0	0	0	0	0
3833:	0	0	0	1	0	0	0	1
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	1	0	1	0
3857:	0	0	0	0	0	0	0	1
3865:	0	0	0	1	0	0	0	0
3873:	0	0	0	0	0	0	0	1
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	1	0	1	0	0	1	0	0
3905:	0	0	0	0	1	0	0	0
3913:	0	1	0	0	1	1	0	0
3921:	0	0	0	0	1	0	0	0
3929:	0	1	0	0	1	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	1	0	1	1	0	0	0	1
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	2
3993:	0	0	0	0	1	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	1	0	0	1	2	0	0
4025:	0	0	1	0	0	0	0	0
4033:	0	0	0	0	0	0	1	0
4041:	1	0	0	0	0	0	0	0
4049:	1	0	0	0	0	0	2	0
4057:	0	0	0	0	1	0	1	0
4065:	3	0	1	0	1	1	0	0
4073:	0	0	0	0	0	0	0	1
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	1	0	0	0

KM  
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Sample ID : 1005127-04

Acquisition date : 17-JUN-2010 08:42:19

VAX/VMS Peak Search Report Generated 17-JUN-2010 09:43:04.52

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100512704\_GE2\_GAS1002\_150517.  
 Analyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2  
 Client ID : MPA-RA-1 8-10  
 Deposition Date :  
 Sample Date : 20-MAY-2010 00:00:00 Acquisition date : 17-JUN-2010 08:42:19  
 Sample ID : 1005127-04 Sample Quantity : 2.54110E+02 GRAM  
 Sample type : SOIL Sample Geometry : 0  
 Detector name : GE2 Detector Geometry: GAS-1002  
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.22 0.0%  
 Start channel : 5 End channel : 4096  
 Sensitivity : 2.40000 Gaussian : 15.00000  
 Critical level : Yes

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	38.96*	643	864	1.78	38.41	37	6	19.6		RA-225
0	76.42*	975	1038	3.01	75.88	71	10	14.0		
0	93.21*	216	646	1.64	92.66	90	7	43.3		
0	100.65	46	321	1.41	100.11	98	5	120.5		
0	168.47	53	257	1.28	167.93	166	6	99.1		
0	185.14*	210	444	1.86	184.59	179	11	42.1		RA-226
0	209.69	51	312	1.20	209.14	206	7	119.3		
1	236.54	49	167	1.51	236.00	233	14	122.9	1.03E+02	NB-95M
1	241.54	159	145	1.52	241.00	233	14	38.8		RA-224
0	259.31	47	238	2.92	258.77	254	8	116.2		
0	270.39*	64	186	1.68	269.85	267	7	76.5		
1	295.55*	256	132	1.54	295.01	290	14	18.6	6.92E-01	PB-214
1	300.51	69	128	1.72	299.97	290	14	55.2		
0	324.08	126	336	9.96	323.54	317	15	65.7		RA-223
0	338.54	143	200	1.51	338.00	333	8	38.2		AC-228
0	352.65*	464	247	1.60	352.11	348	14	17.1		PB-214
0	388.50	32	113	1.98	387.96	386	7	116.6		
0	409.34	51	103	1.89	408.80	405	7	72.0		
0	463.48	86	84	2.36	462.94	459	9	44.1		
0	511.33*	56	157	2.38	510.79	505	13	104.9		
0	583.78*	276	116	1.76	583.24	579	9	18.8		TL-208
0	609.86*	320	188	1.87	609.33	603	15	21.9		
0	634.96	70	78	10.22	634.42	628	15	60.4		
1	662.71	26	62	1.98	662.18	659	15	101.1	1.34E+00	CS-137
1	666.35	22	58	1.98	665.82	659	15	119.1		
0	727.69	61	51	2.38	727.16	723	7	46.3		BI-212
1	766.53	17	35	1.85	766.00	764	15	99.1	5.25E+00	NB-95
1	775.53	19	29	1.85	775.00	764	15	119.4		RB-82
0	786.93	24	47	1.92	786.40	783	7	103.0		
0	796.38*	29	58	1.81	795.85	792	8	99.3		
0	861.27	48	68	2.36	860.74	856	9	68.8		TL-208
0	912.16*	203	56	2.10	911.63	907	11	20.1		AC-228
0	970.28	84	87	1.86	969.75	966	8	45.1		AC-228
0	1048.63	55	85	12.78	1048.11	1039	18	83.7		
0	1082.40	27	43	3.00	1081.88	1075	12	105.9		
0	1112.11	21	23	1.78	1111.59	1107	7	85.5		

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It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1122.04*	54	58	1.82	1121.52	1117	10	60.7		
0	1242.48	71	73	11.45	1241.96	1234	16	60.7		
0	1378.35	27	23	2.71	1377.83	1373	10	75.5		
0	1461.85*	762	7	2.28	1461.33	1455	13	7.4		K-40
0	1547.63	6	4	1.97	1547.12	1545		5129.9		
0	1607.46	7	1	2.91	1606.94	1604	6	95.7		
0	1622.61	9	6	1.39	1622.09	1619		6119.2		
0	1662.13	12	8	2.23	1661.62	1657		9108.0		
0	1680.22	9	6	3.75	1679.70	1676		8119.9		
0	1766.08*	65	11	1.85	1765.57	1760	12	33.0		
0	1849.06	9	3	1.52	1848.55	1845	6	87.8		
0	1889.40*	8	0	2.75	1888.89	1885	7	72.1		
0	2104.10	31	2	5.61	2103.60	2098	10	40.7		
0	2205.61*	18	0	1.32	2205.11	2201	7	49.5		
0	2229.70	10	0	2.79	2229.20	2225	8	63.2		
0	2265.00	5	3	2.49	2264.50	2261		6141.4		
0	2315.13	8	3	1.01	2314.63	2311	6	98.4		
0	2449.40	12	3	4.67	2448.90	2445	9	71.9		
0	2616.03*	106	0	2.71	2615.53	2611	10	19.9		TL-208

Total number of lines in spectrum 55  
 Number of unidentified lines 24  
 Number of lines tentatively identified by NID 31 56.36%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	3.769E+01	3.769E+01	0.451E+01	11.97	
TL-208	1.41E+10Y	1.00	2.345E+00	2.345E+00	0.356E+00	15.19	
BI-212	1.41E+10Y	1.00	1.649E+00	1.649E+00	0.782E+00	47.39	
PB-214	1602.00Y	1.00	2.264E+00	2.264E+00	0.320E+00	14.12	
RA-223	3.28E+04Y	1.00	5.711E+00	5.711E+00	3.785E+00	66.28	
RA-224	1.41E+10Y	1.00	5.880E+00	5.880E+00	2.342E+00	39.83	
RA-225	14.80D	3.78	2.444E+00	9.234E+00	1.991E+00	21.57	
RA-226	1602.00Y	1.00	8.114E+00	8.114E+00	15.25E+00	187.91	
AC-228	1.41E+10Y	1.00	2.469E+00	2.469E+00	0.441E+00	17.86	
Total Activity :			6.856E+01	7.535E+01			

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
RB-82	25.55D	2.16	4.785E-01	1.034E+00	1.239E+00	119.84	
NB-95M	3.61D	233.	2.795E-01	6.505E+01	8.019E+01	123.27	
Total Activity :			7.580E-01	6.608E+01			

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
NB-95	35.06D	1.75	5.507E-02	9.652E-02	9.618E-02	99.65	
CS-137	30.17Y	1.00	9.003E-02	9.019E-02	9.171E-02	101.69	
Total Activity :			1.451E-01	1.867E-01			

Grand Total Activity : 6.947E+01 1.416E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma		%Error	Status
				pCi/GRAM	pCi/GRAM		
K-40	1460.81	10.67*	5.598E-01	3.769E+01	3.769E+01	11.97	OK
Final Mean for 1 Valid Peaks = 3.769E+01+/- 4.510E+00 ( 11.97%)							
TL-208	583.14	30.22*	1.100E+00	2.450E+00	2.450E+00	21.39	OK
	860.37	4.48	8.189E-01	3.866E+00	3.866E+00	69.46	OK
	2614.66	35.85	3.986E-01	2.201E+00	2.201E+00	22.45	OK
Final Mean for 3 Valid Peaks = 2.345E+00+/- 3.563E-01 ( 15.19%)							
BI-212	727.17	11.80*	9.300E-01	1.649E+00	1.649E+00	47.39	OK
	1620.62	2.75	5.228E-01	-----	Line Not Found	-----	Absent
Final Mean for 1 Valid Peaks = 1.649E+00+/- 7.816E-01 ( 47.39%)							
PB-214	295.21	19.19	1.787E+00	2.204E+00	2.204E+00	20.64	OK
	351.92	37.19*	1.589E+00	2.322E+00	2.322E+00	19.35	OK
Final Mean for 2 Valid Peaks = 2.264E+00+/- 3.197E-01 ( 14.12%)							
RA-223	323.87	3.88*	1.681E+00	5.711E+00	5.711E+00	66.28	OK
Final Mean for 1 Valid Peaks = 5.711E+00+/- 3.785E+00 ( 66.28%)							
RA-224	240.98	3.95*	2.026E+00	5.880E+00	5.880E+00	39.83	OK
Final Mean for 1 Valid Peaks = 5.880E+00+/- 2.342E+00 ( 39.83%)							
RA-225	40.00	31.00*	2.508E+00	2.444E+00	9.234E+00	21.57	OK
Final Mean for 1 Valid Peaks = 9.234E+00+/- 1.991E+00 ( 21.57%)							
RA-226	186.21	3.28*	2.329E+00	8.114E+00	8.114E+00	187.91	OK
Final Mean for 1 Valid Peaks = 8.114E+00+/- 1.525E+01 (187.91%)							
AC-228	338.32	11.40	1.632E+00	2.267E+00	2.267E+00	39.24	OK
	911.07	27.70*	7.844E-01	2.765E+00	2.765E+00	22.00	OK
	969.11	16.60	7.492E-01	2.006E+00	2.006E+00	46.01	OK
Final Mean for 3 Valid Peaks = 2.469E+00+/- 4.411E-01 ( 17.86%)							

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma		%Error	Status
				pCi/GRAM	pCi/GRAM		
RB-82	776.52	13.00*	8.848E-01	4.785E-01	1.034E+00	119.84	OK
Final Mean for 1 Valid Peaks = 1.034E+00+/- 1.239E+00 (119.84%)							

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma			Status
				pCi/GRAM	pCi/GRAM	%Error	
NB-95M	235.69	25.00*	2.052E+00	2.795E-01	6.505E+01	123.27	OK

Final Mean for 1 Valid Peaks = 6.505E+01+/- 8.019E+01 (123.27%)

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma			Status
				pCi/GRAM	pCi/GRAM	%Error	
NB-95	765.79	99.81*	8.942E-01	5.507E-02	9.652E-02	99.65	OK

Final Mean for 1 Valid Peaks = 9.652E-02+/- 9.618E-02 ( 99.65%)

CS-137	661.65	85.12*	9.991E-01	9.003E-02	9.019E-02	101.69	OK
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Final Mean for 1 Valid Peaks = 9.019E-02+/- 9.171E-02 (101.69%)

Flag: "\*" = Keyline



---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.769E+01	4.510E+00	8.862E-01	7.528E-02	42.527
RB-82	1.034E+00	1.239E+00	1.950E+00	1.781E-01	0.530
NB-95	9.652E-02	9.618E-02	2.090E-01	1.926E-02	0.462
NB-95M	6.505E+01	8.019E+01	8.326E+01	6.724E+00	0.781
CS-137	9.019E-02	9.171E-02	1.368E-01	1.336E-02	0.659
TL-208	2.345E+00	3.563E-01	3.615E-01	3.402E-02	6.487
BI-212	1.649E+00	7.816E-01	9.530E-01	9.012E-02	1.730
PB-214	2.264E+00	3.197E-01	2.569E-01	2.082E-02	8.812
RA-223	5.711E+00	3.785E+00	2.388E+00	1.935E-01	2.392
RA-224	5.880E+00	2.342E+00	2.297E+00	1.855E-01	2.560
RA-225	9.234E+00	1.991E+00	1.633E+00	1.329E-01	5.655
RA-226	8.114E+00	1.525E+01	2.718E+00	4.976E+00	2.986
AC-228	2.469E+00	4.411E-01	4.614E-01	3.688E-02	5.352

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-4.554E-01		6.903E-01	1.203E+00	1.052E-01	-0.378
NA-22	-3.274E-02		8.046E-02	1.374E-01	1.116E-02	-0.238
AL-26	-3.315E-02		4.511E-02	6.973E-02	5.580E-03	-0.475
TI-44	-1.829E-01		7.686E-02	1.068E-01	8.256E-03	-1.713
SC-46	4.854E-02		8.248E-02	1.581E-01	1.277E-02	0.307
V-48	1.251E-01		2.365E-01	4.505E-01	3.631E-02	0.278
CR-51	1.322E+00		1.326E+00	2.167E+00	1.861E-01	0.610
MN-54	8.666E-04		7.264E-02	1.315E-01	1.136E-02	0.007
CO-56	-1.654E-02		8.865E-02	1.575E-01	1.343E-02	-0.105
CO-57	-2.966E-02		6.164E-02	1.015E-01	9.312E-03	-0.292
CO-58	-1.744E-02		8.175E-02	1.459E-01	1.295E-02	-0.120
FE-59	-1.309E-01		2.145E-01	3.595E-01	3.162E-02	-0.364
CO-60	5.179E-02		8.249E-02	1.566E-01	1.248E-02	0.331
ZN-65	-4.588E-02		2.392E-01	2.902E-01	2.335E-02	-0.158
SE-75	8.877E-02		1.200E-01	1.741E-01	1.411E-02	0.510
RB-83	5.958E-02		1.654E-01	2.815E-01	4.468E-02	0.212
KR-85	4.294E+01		1.655E+01	3.296E+01	2.966E+00	1.303
SR-85	2.530E-01		9.751E-02	1.942E-01	1.748E-02	1.303
Y-88	1.970E-02		6.546E-02	1.319E-01	1.050E-02	0.149
NB-93M	0.000E+00		0.000E+00	7.885E-02	1.490E-02	0.000
NB-94	6.068E-02		6.962E-02	1.351E-01	1.118E-02	0.449
ZR-95	1.718E-02		1.636E-01	2.988E-01	3.015E-02	0.058
RU-103	-2.650E-02		1.053E-01	1.886E-01	2.701E-02	-0.140
RU-106	3.471E-01		7.326E-01	1.252E+00	1.754E-01	0.277
AG-108M	-2.087E-02		7.689E-02	1.215E-01	1.152E-02	-0.172
CD-109	2.390E+00		2.028E+00	3.258E+00	3.674E-01	0.734
AG-110M	3.670E-03		7.906E-02	1.299E-01	1.265E-02	0.028
SN-113	3.850E-02		1.172E-01	1.833E-01	1.522E-02	0.210
TE123M	-3.899E-02		7.573E-02	1.235E-01	1.002E-02	-0.316
SB-124	-5.252E-02		1.040E-01	1.609E-01	1.530E-02	-0.326

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-125	9.225E+00		1.870E+00	3.155E+00	2.750E-01	2.924
SB-125	2.084E-01		2.040E-01	3.635E-01	3.094E-02	0.573
SB-126	5.806E-01		5.711E-01	1.049E+00	9.960E-02	0.553
SN-126	4.119E-02		1.987E-01	3.111E-01	2.973E-02	0.132
SB-127	6.286E+00		2.832E+01	5.247E+01	5.069E+00	0.120
I-129	-1.610E-01		4.239E-02	6.796E-03	6.712E-04	-23.692
I-131	1.148E-01		8.841E-01	1.361E+00	1.101E-01	0.084
BA-133	6.383E-02		1.021E-01	1.750E-01	2.253E-02	0.365
CS-134	3.008E-02		7.519E-02	1.271E-01	1.212E-02	0.237
CS-135	3.982E-01		3.755E-01	6.164E-01	4.954E-02	0.646
CS-136	1.281E+00	+	1.079E+00	7.587E-01	6.332E-02	1.688
LA-138	-5.549E-02		8.071E-02	1.314E-01	1.082E-02	-0.422
CE-139	5.462E-02		8.009E-02	1.285E-01	1.015E-02	0.425
BA-140	-6.325E-01		1.112E+00	1.905E+00	6.340E-01	-0.332
LA-140	1.074E-01		3.833E-01	7.148E-01	5.872E-02	0.150
CE-141	1.103E-01		2.060E-01	3.493E-01	8.324E-02	0.316
CE-144	-3.242E-01		5.233E-01	8.530E-01	7.554E-02	-0.380
PM-144	2.866E-02		7.369E-02	1.361E-01	1.310E-02	0.211
PM-145	5.462E+00		3.593E+00	9.734E-01	6.335E-01	5.611
PM-146	1.835E-02		1.391E-01	2.462E-01	2.106E-02	0.075
ND-147	-4.918E-01		2.571E+00	4.627E+00	4.215E-01	-0.106
EU-152	1.016E-01		4.135E-01	7.919E-01	8.398E-02	0.128
GD-153	1.548E-01		2.525E-01	4.069E-01	3.812E-02	0.380
EU-154	-8.591E-02		2.238E-01	3.834E-01	3.113E-02	-0.224
EU-155	5.820E-01		2.295E-01	3.790E-01	3.580E-02	1.536
EU-156	-6.344E-01		2.198E+00	3.881E+00	8.899E-01	-0.163
HO-166M	-5.161E-03		1.156E-01	2.093E-01	1.997E-02	-0.025
HF-172	-4.366E-01		4.780E-01	7.685E-01	6.966E-02	-0.568
LU-172	1.087E+00		2.086E+00	3.995E+00	3.217E-01	0.272
LU-173	4.575E-01		2.989E-01	5.031E-01	4.037E-02	0.909
HF-175	-2.023E-02		1.034E-01	1.542E-01	1.251E-02	-0.131
LU-176	4.036E-02		6.012E-02	9.726E-02	7.860E-03	0.415
TA-182	8.035E-01	+	4.932E-01	7.194E-01	5.778E-02	1.117
IR-192	-3.261E-02		1.451E-01	2.355E-01	2.041E-02	-0.138
HG-203	1.377E-01		1.116E-01	1.976E-01	1.633E-02	0.697
BI-207	3.647E-02		6.361E-02	1.197E-01	1.118E-02	0.305
BI-210M	-1.941E-02		1.321E-01	1.998E-01	1.609E-02	-0.097
PB-210	1.584E+00		1.862E+00	3.031E+00	2.305E-01	0.523
PB-211	-1.840E+00		2.437E+00	3.407E+00	2.773E-01	-0.540
PB-212	2.813E+00		3.431E-01	5.009E-01	4.045E-02	5.616
BI-214	1.921E+00	+	4.654E-01	5.654E-01	5.392E-02	3.397
RN-219	-1.117E-01		1.047E+00	1.567E+00	1.271E-01	-0.071
TH-227	6.081E-01	+	7.496E-01	1.094E+00	8.832E-02	0.556
TH-230	-4.617E+01		1.960E+01	2.727E+01	2.104E+00	-1.693
PA-231	2.276E+00		2.785E+00	4.491E+00	3.625E-01	0.507
TH-231	0.000E+00		0.000E+00	3.003E-02	3.380E-03	0.000
PA-233	5.342E-02		2.856E-01	4.804E-01	1.069E-01	0.111
PA-234	4.186E-01		2.616E-01	4.626E-01	4.126E-02	0.905

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PA-234M	-6.478E+00		7.852E+00	1.312E+01	1.059E+00	-0.494
TH-234	2.568E+00		1.688E+00	3.002E+00	2.211E-01	0.856
U-235	-6.730E-02		5.199E-01	8.637E-01	1.510E-01	-0.078
NP-237	1.411E+00		5.566E-01	9.192E-01	8.685E-02	1.535
AM-241	-3.650E-01		1.727E-01	2.685E-01	1.903E-02	-1.359
AM-243	7.562E-01		1.309E-01	2.173E-01	1.808E-02	3.480
CM-243	2.688E-01		4.386E-01	6.995E-01	5.602E-02	0.384

Total number of lines in spectrum 55  
 Number of unidentified lines 24  
 Number of lines tentatively identified by NID 31 56.36%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	3.769E+01	3.769E+01	0.451E+01	11.97	
TL-208	1.41E+10Y	1.00	2.345E+00	2.345E+00	0.356E+00	15.19	
BI-212	1.41E+10Y	1.00	1.649E+00	1.649E+00	0.782E+00	47.39	
PB-214	1602.00Y	1.00	2.264E+00	2.264E+00	0.320E+00	14.12	
RA-223	3.28E+04Y	1.00	5.711E+00	5.711E+00	3.785E+00	66.28	
RA-224	1.41E+10Y	1.00	5.880E+00	5.880E+00	2.342E+00	39.83	
RA-225	14.80D	3.78	2.444E+00	9.234E+00	1.991E+00	21.57	
RA-226	1602.00Y	1.00	8.114E+00	8.114E+00	15.25E+00	187.91	
AC-228	1.41E+10Y	1.00	2.469E+00	2.469E+00	0.441E+00	17.86	
Total Activity :			6.856E+01	7.535E+01			

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
RB-82	25.55D	2.16	4.785E-01	1.034E+00	1.239E+00	119.84	
NB-95M	3.61D	233.	2.795E-01	6.505E+01	8.019E+01	123.27	
Total Activity :			7.580E-01	6.608E+01			

Nuclide Type : FISSION

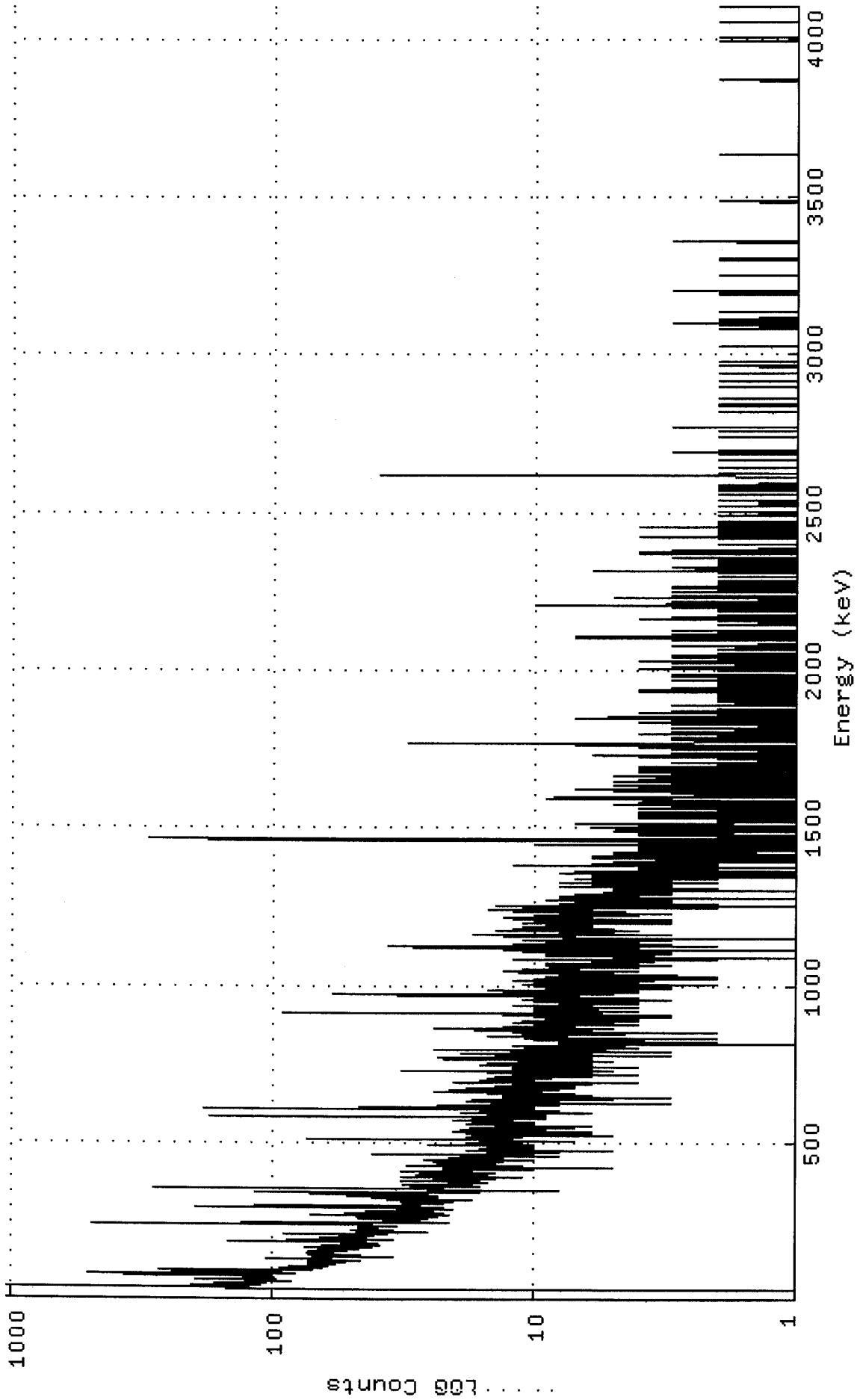
Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
NB-95	35.06D	1.75	5.507E-02	9.652E-02	9.618E-02	99.65	
CS-137	30.17Y	1.00	9.003E-02	9.019E-02	9.171E-02	101.69	
Total Activity :			1.451E-01	1.867E-01			

Grand Total Activity : 6.947E+01 1.416E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Spectrum : DKA100: [GAMMA.SCUSR.ARCHIVE]SMP\_100512704\_GE2\_GAS1002\_150517.CNF; 1  
Title :  
Sample Title: MPA-RA-1 8-10  
Start Time: 17-JUN-2010 08:42 Sample Time: 20-MAY-2010 00:00 Energy Offset: 5.46857E-01  
Real Time : 0 01:00:01.22 Sample ID : 1005127-04 Energy Slope : 9.99980E-01  
Live Time : 0 01:00:00.00 Sample Type: SOIL Energy Quad : 0.00000E+00



Channel Contents for DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512704\_GE2\_GAS1002\_1505

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	1
33:	68	129	168	208	213	1028	786	120
41:	118	120	116	109	120	201	135	104
49:	118	108	132	105	125	108	106	107
57:	83	99	103	102	96	117	195	152
65:	108	97	125	119	100	115	100	122
73:	98	272	331	268	500	156	83	96
81:	105	81	109	150	91	117	236	115
89:	112	156	79	203	266	105	71	66
97:	66	63	75	92	69	68	60	74
105:	84	63	60	63	56	62	60	56
113:	72	68	66	72	57	62	58	45
121:	71	59	57	58	63	71	58	58
129:	103	69	71	66	61	53	61	69
137:	34	59	63	64	58	55	72	70
145:	65	57	73	62	59	62	60	52
153:	64	71	51	66	57	56	62	46
161:	47	52	70	56	44	41	74	55
169:	46	46	48	38	61	42	50	39
177:	53	41	45	64	63	43	53	46
185:	118	145	52	44	34	42	56	43
193:	51	55	45	43	65	58	48	55
201:	40	46	52	46	46	49	36	56
209:	89	48	42	43	42	39	25	47
217:	44	44	34	42	49	40	42	39
225:	39	39	43	46	35	36	39	33
233:	36	46	41	64	59	485	421	59
241:	128	111	40	31	30	21	35	37
249:	28	27	31	30	36	25	29	36
257:	37	45	47	40	26	32	23	29
265:	34	32	21	30	48	70	39	26
273:	23	30	22	27	49	38	33	28
281:	30	24	30	29	27	30	20	33
289:	33	22	26	24	23	75	192	69
297:	32	27	41	64	39	25	22	28
305:	27	27	27	20	32	20	21	25
313:	25	29	26	18	17	29	32	41
321:	35	23	29	23	24	26	45	51
329:	39	23	25	29	25	30	27	25
337:	43	114	63	16	30	25	27	20
345:	22	25	24	8	19	29	146	279
353:	70	22	25	19	26	18	29	20
361:	16	21	21	19	17	31	25	21
369:	18	15	21	18	20	19	19	32
377:	22	27	21	16	20	17	24	21
385:	14	16	22	22	30	32	11	12
393:	22	26	15	20	20	28	16	27
401:	25	21	14	22	17	22	25	17
409:	32	31	10	12	11	16	22	18
417:	10	15	19	15	5	22	11	15
425:	16	21	14	30	16	23	17	14

433:	22	17	20	18	13	17	24	18
441:	26	17	14	10	16	11	20	17
449:	19	13	15	21	17	13	12	13
457:	17	8	8	12	14	30	41	26
465:	13	15	11	10	11	8	9	18
473:	13	12	11	5	14	10	15	13
481:	10	16	14	10	12	11	15	15
489:	11	18	10	16	25	15	14	15
497:	11	18	14	12	18	13	13	15
505:	7	16	14	12	19	69	73	40
513:	18	18	16	11	12	14	12	11
521:	17	15	5	14	15	9	12	14
529:	6	11	18	13	16	20	19	6
537:	13	14	9	18	16	11	19	16
545:	13	13	14	12	7	15	6	11
553:	14	7	13	13	13	10	11	13
561:	12	18	14	14	10	12	14	17
569:	13	13	20	12	13	12	15	15
577:	16	11	17	9	9	57	171	98
585:	15	11	15	9	11	14	9	10
593:	14	8	11	6	16	19	12	8
601:	16	15	9	16	15	20	10	32
609:	181	143	15	10	13	16	18	15
617:	10	16	14	12	8	23	9	10
625:	14	10	3	8	10	11	18	10
633:	8	8	9	17	13	6	6	13
641:	8	3	7	11	8	13	9	13
649:	11	13	6	10	9	8	12	10
657:	9	15	7	12	14	24	13	14
665:	14	21	11	8	8	8	12	18
673:	7	10	15	7	11	10	10	8
681:	10	7	14	9	12	11	6	12
689:	12	4	8	8	6	14	20	12
697:	11	10	10	16	11	15	12	13
705:	15	10	9	8	14	7	6	12
713:	10	6	4	8	12	9	12	10
721:	11	6	9	6	11	20	32	29
729:	5	9	9	9	12	11	6	10
737:	8	9	6	8	11	4	11	12
745:	9	7	6	12	7	16	10	8
753:	9	6	15	9	11	8	11	5
761:	8	10	13	6	9	17	9	21
769:	23	12	16	14	15	6	14	7
777:	7	3	5	8	11	11	6	10
785:	16	19	8	9	3	8	10	8
793:	10	8	22	24	6	7	4	8
801:	10	7	8	10	12	9	12	6
809:	8	10	2	8	8	6	1	8
817:	6	3	8	8	8	2	7	7
825:	9	8	10	9	7	2	10	10
833:	3	7	8	15	8	12	10	11
841:	9	6	7	6	10	11	10	2
849:	12	8	9	10	11	9	13	6
857:	9	16	14	20	24	13	9	5
865:	7	7	9	13	10	9	11	9
873:	6	4	7	6	5	5	12	5
881:	6	6	7	11	4	11	4	10
889:	6	8	9	8	5	5	4	8
897:	6	10	7	9	3	6	4	13
905:	8	6	3	10	8	27	68	90

913:	25	8	10	8	7	4	6	10
921:	10	8	10	7	10	8	4	8
929:	6	10	7	7	7	12	11	7
937:	7	6	7	4	8	5	6	5
945:	6	4	10	8	6	9	5	9
953:	11	3	8	6	9	10	5	6
961:	6	4	11	7	20	15	11	19
969:	58	46	7	10	5	8	10	13
977:	6	9	4	7	11	4	9	4
985:	5	15	3	6	6	8	9	5
993:	9	6	8	3	10	8	4	2
1001:	11	5	5	9	9	5	10	6
1009:	4	7	5	9	6	6	12	6
1017:	6	2	10	2	5	6	5	6
1025:	5	9	3	9	2	4	3	3
1033:	5	4	8	8	10	5	5	6
1041:	10	13	5	11	4	5	5	9
1049:	11	7	10	10	11	7	7	4
1057:	5	5	6	7	8	3	7	9
1065:	8	9	7	4	6	5	4	6
1073:	6	6	4	4	6	2	12	11
1081:	9	7	6	4	4	1	4	4
1089:	5	5	5	4	8	9	6	4
1097:	3	6	6	8	7	9	7	5
1105:	11	5	3	3	8	5	11	13
1113:	1	4	8	10	4	7	8	23
1121:	36	15	7	5	8	2	8	4
1129:	3	6	12	5	5	5	7	8
1137:	4	9	7	3	11	7	7	7
1145:	4	7	1	6	6	6	10	7
1153:	12	9	7	13	4	5	17	3
1161:	6	8	5	8	5	7	6	6
1169:	5	7	4	5	9	14	5	12
1177:	6	5	6	8	6	10	7	6
1185:	6	6	11	7	9	7	8	6
1193:	6	11	9	3	5	6	6	8
1201:	10	8	8	8	3	10	3	12
1209:	9	8	9	13	10	10	7	6
1217:	10	10	5	4	4	9	9	6
1225:	3	6	8	8	4	5	7	7
1233:	10	5	12	10	12	14	15	11
1241:	6	11	9	10	4	9	2	14
1249:	0	5	7	6	6	2	6	3
1257:	8	6	3	7	7	7	3	4
1265:	7	4	4	9	5	3	5	7
1273:	8	4	4	3	1	6	8	4
1281:	6	5	6	8	3	4	7	3
1289:	6	6	5	4	3	5	3	5
1297:	4	4	3	1	5	4	2	2
1305:	5	4	3	4	4	4	8	3
1313:	5	3	3	5	4	5	6	4
1321:	3	5	4	8	2	5	5	4
1329:	6	3	6	3	7	3	5	3
1337:	2	3	3	1	6	3	5	2
1345:	4	4	5	3	0	6	1	4
1353:	3	3	2	8	2	3	1	2
1361:	7	3	3	3	2	3	2	2
1369:	4	2	0	3	1	3	4	4
1377:	12	10	8	4	2	2	3	3
1385:	6	5	4	2	5	1	3	2



1393:	3	3	3	1	1	2	3	4
1401:	0	6	3	2	1	1	5	6
1409:	4	1	3	3	0	3	1	5
1417:	1	2	4	2	3	3	5	0
1425:	2	3	4	3	1	2	4	0
1433:	0	1	2	1	3	2	3	1
1441:	4	2	6	1	3	2	10	1
1449:	2	1	3	4	3	1	0	1
1457:	4	7	20	105	295	269	62	7
1465:	1	4	1	0	2	0	1	2
1473:	2	4	0	1	1	1	3	2
1481:	2	2	2	4	2	1	3	4
1489:	0	5	1	2	2	3	2	4
1497:	6	3	1	1	1	2	0	0
1505:	1	2	4	1	7	3	2	4
1513:	4	3	1	1	2	1	2	2
1521:	0	0	2	1	1	2	1	2
1529:	0	3	4	2	1	3	3	4
1537:	1	0	2	1	2	4	2	1
1545:	0	4	4	2	0	2	1	1
1553:	1	2	2	1	1	2	4	1
1561:	2	3	2	2	0	1	3	1
1569:	1	5	2	1	2	4	2	3
1577:	1	2	1	3	4	2	2	3
1585:	2	0	3	5	5	7	5	3
1593:	9	8	2	2	3	1	3	2
1601:	1	1	1	0	1	3	2	2
1609:	0	0	0	1	0	0	2	1
1617:	5	2	2	1	4	7	1	0
1625:	1	0	2	4	2	2	5	3
1633:	2	2	0	1	0	1	0	2
1641:	3	2	1	2	5	1	3	0
1649:	1	2	2	0	1	4	0	1
1657:	2	1	2	3	4	5	1	2
1665:	0	1	1	3	3	0	1	2
1673:	3	2	0	1	0	4	4	1
1681:	4	1	0	2	3	2	4	3
1689:	1	3	4	1	1	1	1	1
1697:	1	1	1	1	2	0	0	2
1705:	2	1	3	2	1	0	0	0
1713:	0	1	0	1	0	1	2	1
1721:	4	3	2	0	3	0	2	2
1729:	3	6	6	1	1	1	0	3
1737:	1	0	2	0	1	0	1	0
1745:	1	1	0	1	0	0	3	3
1753:	0	1	0	2	4	2	1	2
1761:	1	1	5	10	30	17	5	3
1769:	3	2	0	1	2	0	0	2
1777:	1	1	3	1	1	2	3	2
1785:	1	1	1	0	1	2	1	0
1793:	2	0	1	0	4	1	1	0
1801:	0	3	0	0	2	0	0	1
1809:	0	1	0	3	1	1	3	0
1817:	0	0	0	0	0	1	1	0
1825:	2	1	3	2	2	1	2	1
1833:	0	0	4	3	1	1	3	2
1841:	0	0	1	0	0	0	1	7
1849:	4	0	2	2	1	0	1	1
1857:	1	1	2	0	4	0	2	0
1865:	2	1	3	0	0	0	0	0

1873:	2	0	0	1	1	1	0	1
1881:	1	0	0	0	0	0	1	2
1889:	3	3	0	0	0	0	1	0
1897:	0	1	0	0	2	1	2	0
1905:	1	0	2	1	0	1	2	1
1913:	1	1	1	2	1	0	2	0
1921:	1	0	0	0	0	2	0	1
1929:	1	0	3	2	4	2	1	1
1937:	4	0	2	3	1	0	0	1
1945:	1	1	0	2	0	0	1	2
1953:	2	1	2	2	0	2	2	1
1961:	1	1	1	1	1	0	0	0
1969:	3	0	2	2	2	0	1	3
1977:	0	0	0	1	0	3	0	0
1985:	1	0	0	1	1	1	0	1
1993:	0	1	1	2	1	1	0	1
2001:	0	2	0	4	0	0	2	1
2009:	2	1	0	3	1	0	0	1
2017:	1	1	2	0	1	3	0	1
2025:	1	0	0	1	4	0	2	1
2033:	1	1	1	2	0	0	1	3
2041:	1	1	1	2	2	1	3	0
2049:	0	0	2	2	0	0	0	0
2057:	1	1	0	0	0	2	2	0
2065:	2	1	0	0	1	0	0	1
2073:	3	0	0	0	0	2	0	1
2081:	0	0	0	1	0	1	0	1
2089:	1	0	1	1	1	1	3	1
2097:	0	0	1	1	4	3	7	5
2105:	5	7	0	1	0	2	1	3
2113:	1	1	0	0	0	1	2	0
2121:	0	2	3	1	3	0	1	0
2129:	1	1	0	1	1	1	1	0
2137:	1	0	0	0	0	0	0	2
2145:	1	0	0	1	1	0	1	2
2153:	1	1	1	1	1	4	2	2
2161:	0	0	0	3	0	0	0	3
2169:	1	1	0	0	2	1	0	0
2177:	0	1	0	1	1	1	1	1
2185:	2	1	0	0	0	0	0	1
2193:	2	1	1	3	0	2	0	0
2201:	0	1	1	3	4	10	0	0
2209:	2	1	3	2	0	0	1	3
2217:	0	2	0	1	1	0	1	0
2225:	0	1	0	1	5	0	3	0
2233:	0	0	0	1	0	1	0	1
2241:	1	1	1	3	0	1	1	1
2249:	1	2	1	0	1	1	0	3
2257:	2	1	1	0	1	0	2	2
2265:	3	0	1	0	1	1	2	0
2273:	0	0	2	1	1	1	1	2
2281:	0	0	1	0	1	0	0	1
2289:	0	0	1	0	2	0	2	2
2297:	1	0	0	1	0	1	1	0
2305:	0	0	1	0	2	1	0	1
2313:	3	1	6	0	1	1	0	1
2321:	2	1	1	0	2	0	3	1
2329:	1	1	1	1	2	0	0	0
2337:	0	1	2	0	1	2	2	2
2345:	1	0	2	1	0	2	1	0

2353:	1	1	3	0	0	1	1	1
2361:	1	1	0	1	1	1	4	3
2369:	2	2	0	4	1	2	1	1
2377:	2	2	3	1	0	2	1	0
2385:	0	1	0	1	0	1	1	0
2393:	1	0	0	2	1	2	1	1
2401:	0	0	1	1	0	0	0	1
2409:	0	0	0	0	0	1	1	1
2417:	2	0	4	1	1	3	0	1
2425:	1	1	2	1	0	2	1	1
2433:	0	2	0	1	1	0	2	0
2441:	0	1	0	0	0	2	2	1
2449:	4	3	2	1	0	1	0	1
2457:	0	2	0	0	1	0	1	0
2465:	0	2	1	1	1	1	2	1
2473:	1	1	1	1	0	1	0	0
2481:	0	0	0	1	1	1	1	1
2489:	1	2	2	0	0	1	1	0
2497:	0	1	1	2	2	1	1	0
2505:	0	1	0	1	0	0	0	0
2513:	0	0	0	1	0	1	0	1
2521:	2	1	0	0	0	0	0	0
2529:	1	0	0	0	0	2	1	0
2537:	0	0	1	0	0	0	0	1
2545:	0	0	0	0	0	0	0	0
2553:	0	0	0	1	2	0	0	1
2561:	0	0	0	0	0	0	2	1
2569:	1	2	0	0	2	0	0	1
2577:	2	0	0	1	0	2	0	0
2585:	0	0	0	2	0	1	0	0
2593:	1	1	0	0	1	0	0	1
2601:	0	1	1	0	0	1	0	1
2609:	0	0	0	1	3	15	39	29
2617:	19	4	1	0	0	0	0	0
2625:	0	0	0	0	0	0	1	0
2633:	0	0	0	1	0	0	2	0
2641:	0	0	0	0	1	0	0	1
2649:	1	1	0	0	0	0	1	0
2657:	1	0	1	0	0	1	0	0
2665:	2	1	1	1	0	0	0	0
2673:	0	1	0	0	1	0	1	0
2681:	1	0	0	0	2	1	0	3
2689:	0	3	1	0	2	2	1	1
2697:	0	0	0	1	0	0	1	0
2705:	1	1	0	0	1	0	0	0
2713:	0	1	0	0	0	0	0	1
2721:	0	1	1	1	0	0	0	0
2729:	0	1	1	1	0	0	0	1
2737:	1	1	2	1	1	0	0	0
2745:	1	0	0	0	0	1	0	0
2753:	0	2	0	0	1	0	1	1
2761:	0	1	1	0	0	0	1	3
2769:	2	0	1	0	0	1	0	0
2777:	0	0	0	0	0	0	1	0
2785:	1	0	1	0	0	0	0	0
2793:	1	0	0	1	0	1	0	1
2801:	0	1	1	0	0	0	0	1
2809:	0	0	0	0	0	0	1	0
2817:	2	0	0	0	0	1	0	1
2825:	0	0	0	0	0	1	0	1

2833:	0	0	0	2	0	1	2	0
2841:	0	2	1	0	0	0	0	1
2849:	0	1	1	0	0	0	1	0
2857:	0	2	1	0	0	0	0	1
2865:	0	0	0	0	0	0	0	0
2873:	0	0	1	0	0	0	1	0
2881:	0	0	0	0	0	1	0	0
2889:	0	0	0	0	0	2	0	0
2897:	0	0	0	0	0	0	0	1
2905:	0	0	0	1	0	0	0	0
2913:	1	2	1	0	0	0	1	1
2921:	0	0	0	1	0	1	0	0
2929:	0	0	0	0	0	1	1	0
2937:	2	1	0	0	1	0	0	0
2945:	0	1	0	0	0	1	0	0
2953:	0	0	1	0	0	0	2	0
2961:	1	0	0	0	1	1	0	0
2969:	1	1	1	1	1	0	2	1
2977:	0	0	0	1	1	0	0	0
2985:	0	0	0	0	0	1	1	1
2993:	0	0	0	0	0	0	1	1
3001:	0	0	1	1	1	0	0	0
3009:	0	1	1	0	0	0	0	0
3017:	0	0	0	0	2	1	1	0
3025:	0	0	0	1	1	0	1	0
3033:	0	0	0	1	0	0	0	0
3041:	0	0	1	0	0	0	0	0
3049:	0	1	0	0	0	0	0	0
3057:	0	0	1	0	0	0	0	1
3065:	1	0	0	0	0	0	0	0
3073:	0	1	0	0	2	0	0	0
3081:	0	0	0	1	1	2	0	1
3089:	0	0	1	3	0	0	1	0
3097:	0	0	0	0	0	0	2	0
3105:	1	0	1	0	0	2	0	0
3113:	0	1	0	0	0	0	0	0
3121:	1	0	0	1	0	0	1	0
3129:	0	0	2	1	1	0	0	0
3137:	0	0	0	0	1	0	0	1
3145:	1	1	1	0	1	0	0	0
3153:	0	1	0	0	0	0	0	1
3161:	0	0	0	0	1	0	0	0
3169:	0	1	0	0	0	0	0	0
3177:	0	0	1	1	0	0	0	0
3185:	1	1	0	0	2	0	0	1
3193:	2	0	0	1	0	1	3	0
3201:	1	1	0	0	0	1	0	0
3209:	0	0	0	1	1	0	1	0
3217:	0	0	0	0	0	1	0	1
3225:	0	0	0	0	0	1	0	1
3233:	0	1	0	1	0	0	0	1
3241:	0	0	0	1	2	1	0	0
3249:	0	0	0	1	0	0	0	0
3257:	0	0	0	0	1	0	0	1
3265:	0	0	0	0	1	0	0	0
3273:	0	0	0	0	0	1	1	0
3281:	1	0	0	0	0	0	0	0
3289:	1	1	0	1	1	0	0	1
3297:	0	2	0	0	2	1	0	0
3305:	0	0	0	0	0	0	0	0

3313:	1	0	0	0	0	0	0	1
3321:	0	0	0	0	1	0	0	0
3329:	0	0	0	0	0	0	1	0
3337:	0	0	0	0	0	1	0	0
3345:	0	1	1	0	0	0	1	1
3353:	3	0	0	0	0	0	1	0
3361:	0	1	0	0	0	0	0	0
3369:	1	1	0	1	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	0	0	0	0
3393:	0	1	0	1	0	0	0	0
3401:	0	0	0	0	0	0	0	1
3409:	1	0	0	1	1	0	0	1
3417:	0	0	0	1	0	1	0	0
3425:	1	0	0	0	1	1	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	1	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	1	1
3473:	0	0	0	0	0	0	1	0
3481:	2	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	1	0	0
3505:	0	0	0	0	0	1	1	0
3513:	0	1	0	0	0	0	1	0
3521:	0	0	0	0	0	1	0	1
3529:	0	0	0	1	0	0	0	0
3537:	0	0	0	0	0	0	0	0
3545:	0	0	0	1	0	0	1	0
3553:	1	1	0	0	0	0	0	0
3561:	0	0	0	0	1	0	0	0
3569:	0	0	1	0	0	0	0	0
3577:	0	0	0	0	0	1	0	0
3585:	0	0	0	0	0	0	1	0
3593:	0	0	1	0	0	0	1	1
3601:	0	0	0	0	0	0	0	1
3609:	1	1	0	0	1	0	0	0
3617:	0	0	0	0	1	1	0	0
3625:	0	0	0	2	0	0	1	1
3633:	0	0	0	1	0	0	0	0
3641:	0	0	1	0	0	0	0	1
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	1	0	0	0	0
3665:	1	0	0	0	0	0	1	0
3673:	0	0	0	0	0	0	0	1
3681:	0	0	0	0	0	1	1	0
3689:	0	0	0	0	0	0	1	0
3697:	0	0	1	0	1	0	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	1	0	0	0
3721:	0	0	0	0	0	0	1	1
3729:	1	0	0	0	0	0	0	0
3737:	0	0	0	0	0	1	0	0
3745:	1	0	1	0	0	0	0	1
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	1	0	0	0	0
3769:	0	0	0	0	0	0	0	0
3777:	0	0	1	0	0	1	0	0
3785:	0	0	0	0	0	0	0	1

3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	0	0	1	0	1	0	1	0
3817:	0	0	0	0	0	0	1	0
3825:	0	1	1	1	0	1	0	0
3833:	0	0	0	0	0	1	0	0
3841:	1	1	0	0	0	0	0	1
3849:	0	0	0	0	0	0	0	0
3857:	1	0	0	0	0	1	2	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	1	0	0
3889:	0	0	1	0	0	0	1	0
3897:	0	0	0	0	1	1	1	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	1	0	0	0	0
3921:	0	0	0	0	0	0	0	1
3929:	0	1	1	0	0	1	1	0
3937:	1	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	1	0	1	1	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	1	0	0	0	0	1
3977:	1	0	0	0	0	0	0	0
3985:	0	2	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	2
4001:	0	0	0	1	0	1	0	0
4009:	0	1	0	0	0	0	0	0
4017:	0	1	0	0	0	0	0	1
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	1	0	0	1	0
4041:	0	0	0	0	0	0	2	0
4049:	0	1	1	0	0	0	0	0
4057:	0	0	0	0	1	0	1	0
4065:	0	0	0	0	0	1	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	0	2	0	0

KM  
6-17-10

Sample ID : 1005127-05

Acquisition date : 17-JUN-2010 07:59:05

VAX/VMS Peak Search Report Generated 17-JUN-2010 08:59:20.67

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512705\_GE4\_GAS1001\_150512.  
 Analyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2  
 Client ID : MPA-RA-1 6.5-7.0  
 Deposition Date :  
 Sample Date : 20-MAY-2010 00:00:00 Acquisition date : 17-JUN-2010 07:59:05  
 Sample ID : 1005127-05 Sample Quantity : 5.75800E+01 GRAM  
 Sample type : SOIL Sample Geometry : 0  
 Detector name : GE4 Detector Geometry: GAS-1001  
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.80 0.0%  
 Start channel : 5 End channel : 4096  
 Sensitivity : 2.40000 Gaussian : 15.00000  
 Critical level : Yes

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	76.24*	131	226	3.95	76.22	71	11	49.0		
0	92.05*	99	202	2.57	92.03	87	12	63.4		
0	142.87	33	50	2.20	142.83	140	6	76.3		
0	184.14	98	189	8.99	184.08	175	22	74.3		
0	239.68*	101	93	1.70	239.60	235	10	42.2		PB-212 RA-224
0	288.85	20	39	1.36	288.75	285	7	112.6		
0	295.76*	44	38	2.43	295.65	292	8	58.6		PB-214
0	352.81*	49	66	2.29	352.68	347	13	75.5		PB-214
0	584.27	21	12	1.85	584.05	581	6	72.1		TL-208
0	609.35*	45	27	1.94	609.11	603	12	57.1		
0	692.21	14	7	1.36	691.94	689	7	85.1		
0	738.33	14	15	3.55	738.04	732	10	116.5		
0	810.05	14	11	1.43	809.73	805	9	109.3		CO-58
0	818.76	15	4	2.79	818.43	814	8	69.3		
0	905.18	6	4	1.17	904.82	901	7	141.4		
0	911.90	17	7	2.04	911.54	908	9	74.7		
0	1080.97	7	4	1.79	1080.54	1076	7	123.6		
0	1121.27	14	13	3.46	1120.82	1115	12	109.9		
0	1145.00	5	2	2.25	1144.54	1142	5	127.3		
0	1194.03	10	2	2.90	1193.55	1190	7	74.8		
0	1461.11*	38	2	1.94	1460.52	1456	9	36.6		K-40
0	1519.74*	7	0	3.25	1519.13	1515	8	87.9		
0	2614.84*	8	0	2.92	2613.78	2609	9	80.3		TL-208

AG  
6/17/10

Total number of lines in spectrum 23  
 Number of unidentified lines 8  
 Number of lines tentatively identified by NID 15 65.22%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	1.535E+01	1.535E+01	0.583E+01	37.94	
TL-208	1.41E+10Y	1.00	1.250E+00	1.250E+00	0.679E+00	54.33	
PB-212	1.41E+10Y	1.00	1.634E+00	1.634E+00	0.710E+00	43.44	
PB-214	1602.00Y	1.00	1.641E+00	1.641E+00	0.785E+00	47.84	
RA-224	1.41E+10Y	1.00	1.861E+01	1.861E+01	0.808E+01	43.44	
Total Activity :			3.848E+01	3.848E+01			

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CO-58	70.80D	1.32	3.436E-01	4.535E-01	4.985E-01	109.91	
Total Activity :			3.436E-01	4.535E-01			

Grand Total Activity : 3.883E+01 3.894E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit



Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr		2-Sigma %Error	Status
				pCi/GRAM	pCi/GRAM		
K-40	1460.81	10.67*	3.017E-01	1.535E+01	1.535E+01	37.94	OK
Final Mean for 1 Valid Peaks = 1.535E+01+/- 5.825E+00 ( 37.94%)							
TL-208	583.14	30.22*	7.351E-01	1.213E+00	1.213E+00	73.19	OK
	860.37	4.48	4.895E-01	----- Line Not Found		-----	Absent
	2614.66	35.85	2.132E-01	1.301E+00	1.301E+00	80.97	OK
Final Mean for 2 Valid Peaks = 1.250E+00+/- 6.789E-01 ( 54.33%)							
PB-212	238.63	44.60*	1.810E+00	1.634E+00	1.634E+00	43.44	OK
	300.09	3.41	1.465E+00	----- Line Not Found		-----	Absent
Final Mean for 1 Valid Peaks = 1.634E+00+/- 7.097E-01 ( 43.44%)							
PB-214	295.21	19.19	1.488E+00	2.010E+00	2.010E+00	59.56	OK
	351.92	37.19*	1.251E+00	1.362E+00	1.362E+00	76.32	OK
Final Mean for 2 Valid Peaks = 1.641E+00+/- 7.850E-01 ( 47.84%)							
RA-224	240.98	3.95*	1.795E+00	1.861E+01	1.861E+01	43.44	OK
Final Mean for 1 Valid Peaks = 1.861E+01+/- 8.083E+00 ( 43.44%)							

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr		2-Sigma %Error	Status
				pCi/GRAM	pCi/GRAM		
CO-58	810.76	99.40*	5.200E-01	3.436E-01	4.535E-01	109.91	OK
Final Mean for 1 Valid Peaks = 4.535E-01+/- 4.985E-01 (109.91%)							

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	1.535E+01	5.825E+00	3.679E+00	3.442E-01	4.173
CO-58	4.535E-01	4.985E-01	3.782E-01	4.208E-02	1.199
TL-208	1.250E+00	6.789E-01	1.507E+00	1.804E-01	0.829
PB-212	1.634E+00	7.097E-01	6.410E-01	6.020E-02	2.549
PB-214	1.641E+00	7.850E-01	8.675E-01	9.197E-02	1.891
RA-224	1.861E+01	8.083E+00	7.303E+00	6.863E-01	2.548

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-3.494E-01		2.943E+00	5.193E+00	6.185E-01	-0.067
NA-22	-1.915E-03		3.310E-01	6.615E-01	5.871E-02	-0.003
AL-26	1.532E-01		2.255E-01	6.078E-01	5.003E-02	0.252
TI-44	-2.678E-01		1.835E-01	2.547E-01	2.005E-02	-1.052
SC-46	-9.730E-02		3.375E-01	6.363E-01	6.693E-02	-0.153
V-48	5.132E-01		9.709E-01	2.081E+00	2.092E-01	0.247
CR-51	3.830E-01		3.926E+00	6.978E+00	7.315E-01	0.055
MN-54	8.297E-02		3.040E-01	5.824E-01	6.384E-02	0.142
CO-56	9.957E-02		4.286E-01	7.972E-01	8.672E-02	0.125
CO-57	-4.145E-03		1.506E-01	2.643E-01	2.634E-02	-0.016
FE-59	2.703E-02		7.754E-01	1.569E+00	1.538E-01	0.017
CO-60	4.414E-02		3.535E-01	7.067E-01	5.875E-02	0.062
ZN-65	-1.737E-01		6.917E-01	1.144E+00	1.027E-01	-0.152
SE-75	-6.280E-02		3.216E-01	5.567E-01	5.263E-02	-0.113
RB-82	1.871E+00		4.831E+00	9.279E+00	1.045E+00	0.202
RB-83	-7.209E-01		6.458E-01	9.421E-01	1.674E-01	-0.765
KR-85	8.430E+01		7.545E+01	1.432E+02	1.725E+01	0.589
SR-85	4.966E-01		4.444E-01	8.436E-01	1.016E-01	0.589
Y-88	-2.596E-01		2.881E-01	4.011E-01	3.257E-02	-0.647
NB-93M	2.516E+01		1.220E+01	1.545E+01	5.903E+00	1.628
NB-94	-5.348E-02		2.867E-01	5.072E-01	5.419E-02	-0.105
NB-95	-2.070E-01		5.670E-01	9.548E-01	1.079E-01	-0.217
NB-95M	1.862E+02		1.867E+02	3.175E+02	2.980E+01	0.586
ZR-95	-5.555E-01		7.876E-01	1.244E+00	1.493E-01	-0.447
RU-103	-9.015E-02		3.795E-01	6.613E-01	1.087E-01	-0.136
RU-106	-6.892E-01		2.142E+00	3.729E+00	5.798E-01	-0.185
AG-108M	-5.528E-02		3.172E-01	5.553E-01	6.322E-02	-0.100
CD-109	4.975E+00		4.140E+00	7.000E+00	7.917E-01	0.711
AG-110M	-1.261E-01		2.784E-01	4.669E-01	5.315E-02	-0.270
SN-113	-9.349E-02		3.623E-01	6.244E-01	7.088E-02	-0.150
TE123M	-9.061E-02		1.872E-01	3.162E-01	2.858E-02	-0.287
SB-124	-3.812E-01		4.777E-01	6.391E-01	7.586E-02	-0.597
I-125	-1.245E+00		4.028E+00	6.978E+00	7.291E-01	-0.178
SB-125	-2.261E-01		7.341E-01	1.256E+00	1.465E-01	-0.180
SB-126	-6.180E-01		2.567E+00	4.447E+00	5.064E-01	-0.139
SN-126	4.659E-01		3.967E-01	6.716E-01	6.443E-02	0.694
SB-127	-6.627E+00		1.164E+02	1.885E+02	2.145E+01	-0.035

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-129	-2.285E-01		4.275E-01	7.296E-01	9.399E-02	-0.313
I-131	1.752E+00		2.770E+00	4.832E+00	5.212E-01	0.363
BA-133	1.389E-01		3.241E-01	5.977E-01	8.737E-02	0.232
CS-134	-1.395E-01		3.516E-01	5.142E-01	6.105E-02	-0.271
CS-135	-3.119E-01		1.044E+00	1.787E+00	1.678E-01	-0.175
CS-136	6.958E-01		1.780E+00	3.700E+00	3.637E-01	0.188
CS-137	-1.515E-01		2.991E-01	4.952E-01	5.620E-02	-0.306
LA-138	2.788E-02		4.346E-01	9.139E-01	8.361E-02	0.031
CE-139	-8.317E-02		1.960E-01	3.326E-01	2.936E-02	-0.250
BA-140	-6.748E-01		3.906E+00	6.889E+00	2.356E+00	-0.098
LA-140	-3.865E-01		1.385E+00	2.705E+00	2.407E-01	-0.143
CE-141	2.429E-01		5.135E-01	8.430E-01	2.036E-01	0.288
CE-144	-1.773E-01		1.255E+00	2.180E+00	2.114E-01	-0.081
PM-144	-1.835E-01		3.410E-01	4.802E-01	5.472E-02	-0.382
PM-145	3.198E-01		8.674E-01	1.517E+00	9.904E-01	0.211
PM-146	-2.381E-01		5.145E-01	8.637E-01	1.016E-01	-0.276
ND-147	-3.668E+00		1.041E+01	1.775E+01	2.142E+00	-0.207
EU-152	6.916E-02		1.877E+00	3.935E+00	4.466E-01	0.018
GD-153	-9.816E-06		6.105E-01	9.641E-01	9.352E-02	0.000
EU-154	4.526E-03		9.206E-01	1.843E+00	1.635E-01	0.002
EU-155	5.094E-01		4.926E-01	7.743E-01	7.345E-02	0.658
EU-156	1.176E+01		9.868E+00	1.917E+01	4.581E+00	0.613
HO-166M	-2.185E-02		5.007E-01	9.001E-01	1.025E-01	-0.024
HF-172	8.730E-01		1.112E+00	2.051E+00	2.025E-01	0.426
LU-172	1.792E-01		9.575E+00	1.895E+01	1.741E+00	0.009
LU-173	3.199E-01		8.135E-01	1.486E+00	1.393E-01	0.215
HF-175	-4.745E-01		3.900E-01	5.043E-01	5.280E-02	-0.941
LU-176	-1.854E-02		1.894E-01	3.312E-01	3.265E-02	-0.056
TA-182	1.692E+00	+	1.867E+00	2.955E+00	2.632E-01	0.573
IR-192	-1.585E-01		5.621E-01	9.696E-01	1.150E-01	-0.163
HG-203	-2.075E-01		3.479E-01	5.447E-01	5.215E-02	-0.381
BI-207	1.585E-02		2.383E-01	4.340E-01	5.217E-02	0.037
BI-210M	1.888E-01		3.565E-01	6.586E-01	6.194E-02	0.287
PB-210	1.083E+00		4.042E+00	7.347E+00	6.099E-01	0.147
PB-211	2.336E+00		7.863E+00	1.425E+01	1.610E+00	0.164
BI-212	1.860E+00		2.475E+00	4.632E+00	5.271E-01	0.402
BI-214	1.790E+00	+	1.047E+00	1.539E+00	1.820E-01	1.163
RN-219	9.263E-01		3.510E+00	6.335E+00	7.137E-01	0.146
RA-223	2.028E+00		4.794E+00	8.801E+00	8.935E-01	0.230
RA-225	-5.168E-01		2.105E+00	3.653E+00	3.402E-01	-0.141
RA-226	8.714E-02		4.662E+00	8.386E+00	1.536E+01	0.010
TH-227	2.598E+00		1.826E+00	3.182E+00	2.986E-01	0.817
AC-228	1.706E+00	+	1.289E+00	2.483E+00	2.580E-01	0.687
TH-230	-5.532E+01		4.616E+01	6.560E+01	5.156E+00	-0.843
PA-231	2.837E+00		8.706E+00	1.454E+01	1.423E+00	0.195
TH-231	-4.111E-01		2.190E+00	3.776E+00	6.055E-01	-0.109
PA-233	2.200E-01		9.063E-01	1.647E+00	3.787E-01	0.134
PA-234	-1.842E-01		6.172E-01	1.060E+00	1.033E-01	-0.174

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PA-234M	5.567E-01		3.430E+01	6.903E+01	6.865E+00	0.008
TH-234	2.814E-01		3.999E+00	7.231E+00	5.474E-01	0.039
U-235	1.567E+00	+	1.230E+00	2.141E+00	3.840E-01	0.732
NP-237	1.236E+00		1.195E+00	1.879E+00	1.782E-01	0.658
AM-241	-9.258E-01		4.104E-01	6.114E-01	4.498E-02	-1.514
AM-243	5.599E-01		2.503E-01	4.669E-01	3.920E-02	1.199
CM-243	-1.283E+00		1.178E+00	1.836E+00	1.718E-01	-0.699

Total number of lines in spectrum 23  
 Number of unidentified lines 8  
 Number of lines tentatively identified by NID 15 65.22%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	1.535E+01	1.535E+01	0.583E+01	37.94	
TL-208	1.41E+10Y	1.00	1.250E+00	1.250E+00	0.679E+00	54.33	
PB-212	1.41E+10Y	1.00	1.634E+00	1.634E+00	0.710E+00	43.44	
PB-214	1602.00Y	1.00	1.641E+00	1.641E+00	0.785E+00	47.84	
RA-224	1.41E+10Y	1.00	1.861E+01	1.861E+01	0.808E+01	43.44	
Total Activity :			3.848E+01	3.848E+01			

Nuclide Type : ACTIVATION

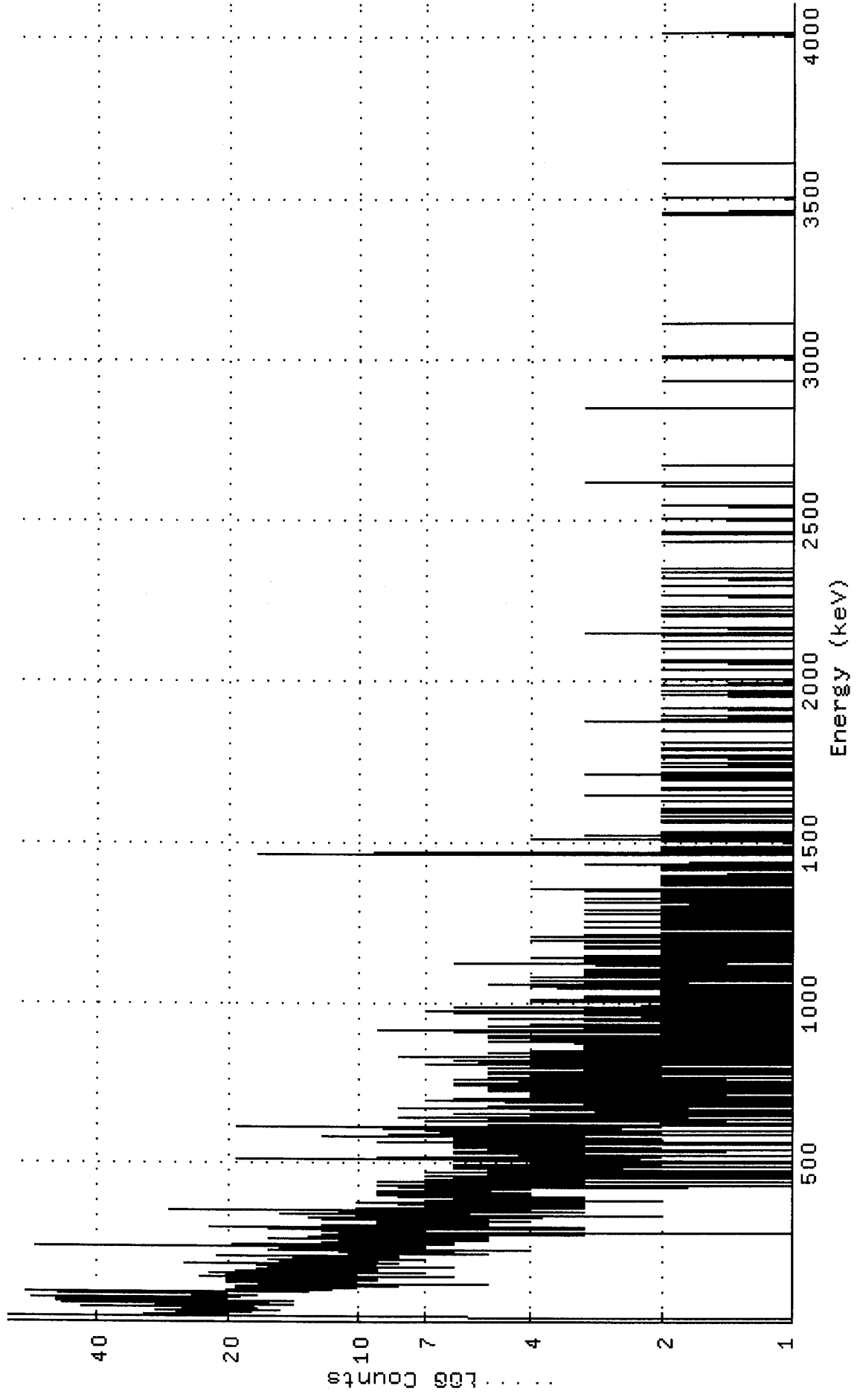
Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CO-58	70.80D	1.32	3.436E-01	4.535E-01	4.985E-01	109.91	
Total Activity :			3.436E-01	4.535E-01			

Grand Total Activity : 3.883E+01 3.894E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Spectrum : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100512705\_GE4\_GAS1001\_150512.CNF;1  
 Title :  
 Sample Title: MPA-RA-1 6.5-7.0  
 Start Time: 17-JUN-2010 07:59 Sample Time: 20-MAY-2010 00:00 Energy Offset: -1.37255E-02  
 Real Time : 0 01:00:00.80 Sample ID : 1005127-05 Energy Slope : 1.00041E+00  
 Live Time : 0 01:00:00.00 Sample Type: SOIL Energy Quad : 0.00000E+00



Channel Contents for DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512705\_GE4\_GAS1001\_1505

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	31
17:	64	49	41	27	25	27	31	27
25:	31	28	20	23	26	22	26	18
33:	20	15	25	29	18	19	28	23
41:	20	25	17	25	21	28	43	25
49:	23	24	21	14	18	29	19	16
57:	17	19	23	16	20	17	47	49
65:	34	14	26	30	21	26	20	31
73:	27	33	48	50	56	45	25	20
81:	20	17	17	24	23	17	23	25
89:	30	38	23	41	58	50	18	13
97:	14	17	12	18	20	16	16	13
105:	10	11	12	16	19	17	16	16
113:	8	15	15	19	15	12	11	14
121:	15	5	20	20	17	16	10	17
129:	18	14	10	20	13	9	20	16
137:	16	17	10	9	11	21	23	13
145:	6	9	20	10	15	11	11	11
153:	16	7	22	14	10	12	9	13
161:	18	11	19	14	9	17	9	9
169:	10	16	15	12	15	8	6	15
177:	14	17	17	16	10	8	13	12
185:	18	25	11	9	15	10	14	11
193:	10	16	13	7	13	11	8	14
201:	14	13	8	11	11	11	8	21
209:	12	16	11	10	6	9	7	5
217:	9	7	11	11	6	11	7	12
225:	4	7	10	9	16	12	7	14
233:	11	11	15	14	7	29	55	28
241:	27	14	9	7	6	11	9	11
249:	6	8	11	12	9	9	10	11
257:	7	5	7	16	7	9	5	9
265:	13	5	8	9	8	8	9	9
273:	12	11	3	11	6	7	1	7
281:	11	8	12	7	7	8	9	8
289:	16	8	3	6	9	10	15	22
297:	14	8	3	7	11	5	12	8
305:	11	6	7	6	6	8	5	9
313:	4	8	9	6	6	6	12	6
321:	11	8	5	6	13	4	11	7
329:	7	2	10	8	7	9	8	7
337:	8	14	15	9	6	5	3	7
345:	11	3	6	5	8	4	19	27
353:	17	6	4	6	3	8	8	3
361:	4	7	7	5	6	4	8	5
369:	6	5	3	5	9	3	3	10
377:	5	3	3	5	7	2	5	3
385:	5	6	5	3	4	5	8	5
393:	3	6	6	9	6	4	5	8
401:	5	8	9	9	7	4	6	8
409:	7	7	7	9	5	4	7	5
417:	4	6	3	7	5	5	8	3
425:	1	2	4	5	8	9	3	7

433:	3	7	5	3	7	9	4	1
441:	3	4	7	5	3	5	4	7
449:	4	3	1	5	4	6	3	1
457:	7	4	3	6	1	4	5	4
465:	4	3	7	3	5	0	4	4
473:	5	4	3	5	1	3	5	6
481:	6	5	6	1	2	6	2	2
489:	2	6	5	2	6	5	5	2
497:	4	1	3	2	4	3	2	6
505:	4	4	1	5	9	15	19	16
513:	9	6	4	9	2	3	4	1
521:	4	3	1	3	3	6	3	4
529:	3	3	3	4	2	4	4	6
537:	2	1	2	1	2	5	3	3
545:	6	5	3	2	4	3	3	4
553:	3	6	3	3	5	1	2	2
561:	4	9	0	3	3	3	2	6
569:	3	3	2	4	3	6	5	2
577:	5	5	5	4	5	3	7	12
585:	6	0	1	4	2	2	3	2
593:	5	3	5	6	7	7	5	6
601:	0	2	3	3	5	4	8	4
609:	19	15	5	5	5	2	2	2
617:	5	1	2	2	2	2	1	1
625:	2	0	2	2	7	3	5	3
633:	1	3	1	4	0	5	4	2
641:	8	7	3	1	1	2	1	1
649:	4	3	6	2	2	0	4	2
657:	1	2	2	2	2	3	3	1
665:	4	3	1	8	3	3	4	7
673:	3	1	4	0	5	4	3	2
681:	2	3	1	3	1	3	2	0
689:	1	3	3	7	2	4	1	2
697:	4	1	2	3	4	6	2	3
705:	3	3	4	2	0	3	4	3
713:	3	3	2	1	2	3	2	4
721:	2	0	5	0	5	3	4	5
729:	3	2	1	2	3	2	1	2
737:	4	5	3	6	1	2	1	2
745:	3	2	1	4	4	6	3	2
753:	3	2	4	1	2	2	2	6
761:	3	4	5	2	2	1	3	3
769:	3	2	4	4	2	2	2	3
777:	3	5	3	1	3	0	0	0
785:	5	2	3	3	3	1	1	1
793:	1	0	5	4	2	4	3	3
801:	3	2	4	3	2	4	4	0
809:	7	4	2	2	0	1	2	1
817:	2	4	3	6	0	1	4	0
825:	3	3	4	3	2	1	8	1
833:	3	0	4	1	2	2	0	3
841:	2	3	1	5	4	3	1	4
849:	2	2	4	2	1	2	3	2
857:	0	3	2	3	1	1	2	1
865:	1	2	1	0	3	2	2	3
873:	1	1	2	5	1	2	4	1
881:	2	1	3	4	2	2	0	5
889:	1	1	2	0	2	1	1	2
897:	5	2	1	0	1	0	2	1
905:	4	1	0	1	0	4	9	6



913:	1	1	2	0	2	3	2	3
921:	2	1	2	1	5	1	0	0
929:	3	3	2	2	1	4	1	2
937:	2	2	0	1	3	2	2	2
945:	1	1	4	0	3	3	2	5
953:	1	2	1	0	0	1	3	1
961:	1	2	1	0	0	2	0	6
969:	1	7	4	1	0	4	2	3
977:	1	1	1	1	1	1	6	1
985:	1	2	5	0	1	2	1	0
993:	1	2	0	1	0	2	2	1
1001:	4	4	1	1	2	4	3	0
1009:	3	1	3	1	1	2	3	3
1017:	0	0	3	0	2	0	1	1
1025:	1	1	1	2	0	1	1	2
1033:	2	1	1	1	2	2	1	0
1041:	1	0	1	2	0	3	4	3
1049:	1	2	1	2	1	2	5	1
1057:	1	0	3	3	2	2	2	2
1065:	4	1	1	1	3	1	0	2
1073:	0	1	1	0	1	1	1	4
1081:	3	0	1	1	1	3	2	1
1089:	2	1	1	2	2	3	2	1
1097:	0	1	1	3	0	3	0	1
1105:	1	0	1	1	2	2	0	1
1113:	0	1	0	1	2	2	4	6
1121:	3	4	2	2	1	0	3	1
1129:	1	0	3	0	1	1	1	2
1137:	4	1	1	0	2	0	2	3
1145:	2	0	0	2	1	1	1	2
1153:	0	0	2	0	0	1	1	0
1161:	1	1	2	1	1	1	2	2
1169:	1	2	3	2	1	0	2	3
1177:	2	2	1	2	1	1	0	0
1185:	3	1	0	0	1	0	1	2
1193:	4	3	2	0	0	1	2	2
1201:	1	2	0	0	1	4	1	1
1209:	1	3	1	1	0	0	2	2
1217:	0	1	0	0	1	1	0	1
1225:	0	2	1	1	0	2	0	2
1233:	3	1	1	1	1	2	2	2
1241:	1	1	0	2	0	1	2	1
1249:	1	1	1	3	0	1	2	1
1257:	0	2	2	2	0	2	0	1
1265:	1	1	2	1	2	1	2	1
1273:	0	3	1	2	0	0	2	1
1281:	1	0	1	0	0	0	3	1
1289:	0	1	2	0	0	0	0	0
1297:	1	2	0	0	2	1	0	0
1305:	0	1	0	3	2	2	0	2
1313:	0	2	0	0	1	1	1	0
1321:	0	3	1	1	1	0	2	2
1329:	1	0	1	0	1	1	1	2
1337:	0	1	1	2	0	1	0	0
1345:	1	3	1	2	1	4	0	0
1353:	1	3	1	1	1	0	0	0
1361:	0	0	1	2	0	0	1	0
1369:	1	0	0	2	1	2	0	1
1377:	0	1	0	2	0	2	1	0
1385:	2	1	1	0	0	0	0	1

1393:	0	2	0	2	0	1	0	0
1401:	1	0	1	1	1	0	1	1
1409:	1	1	0	2	2	0	0	2
1417:	1	2	0	1	1	1	0	2
1425:	2	0	1	0	1	1	2	3
1433:	1	1	0	0	0	1	0	1
1441:	0	1	1	0	1	1	0	0
1449:	1	1	0	0	1	0	1	0
1457:	1	3	5	10	17	5	1	0
1465:	0	0	0	0	1	0	1	2
1473:	1	0	1	0	2	1	1	0
1481:	2	0	0	1	0	0	1	1
1489:	1	1	1	0	0	1	1	1
1497:	0	0	0	0	0	2	1	0
1505:	0	0	1	0	4	0	0	2
1513:	0	0	0	0	1	2	1	3
1521:	1	0	0	2	0	1	1	2
1529:	0	0	0	0	0	1	1	0
1537:	0	0	1	0	0	0	1	0
1545:	0	1	0	0	0	1	1	0
1553:	1	0	1	0	0	0	0	0
1561:	2	1	2	1	0	1	0	0
1569:	1	0	1	0	1	1	1	0
1577:	2	0	1	1	0	0	1	0
1585:	1	0	0	0	0	2	2	0
1593:	1	0	0	0	0	2	1	0
1601:	0	2	0	0	0	1	1	0
1609:	0	0	0	0	1	0	1	0
1617:	1	1	1	1	1	0	1	1
1625:	2	0	0	1	0	0	0	0
1633:	1	0	1	0	1	1	0	0
1641:	2	3	0	1	1	0	0	0
1649:	1	0	1	0	1	1	1	0
1657:	0	0	1	2	0	1	1	0
1665:	1	0	1	2	1	1	0	1
1673:	1	0	1	0	1	1	1	0
1681:	0	0	0	0	0	0	0	1
1689:	1	1	2	0	0	2	0	1
1697:	0	0	0	2	1	1	0	2
1705:	0	0	0	0	0	3	0	1
1713:	2	0	1	0	0	0	0	1
1721:	0	0	0	1	1	0	0	1
1729:	1	0	0	2	0	1	1	0
1737:	0	0	0	0	2	1	1	0
1745:	0	1	1	0	0	0	1	1
1753:	0	1	0	1	1	0	2	1
1761:	0	0	0	2	1	1	2	0
1769:	0	1	0	0	0	0	1	0
1777:	1	1	0	0	0	0	0	2
1785:	0	0	0	0	2	0	0	1
1793:	0	0	0	0	0	0	0	0
1801:	0	0	0	0	0	0	2	0
1809:	1	0	1	0	0	0	1	0
1817:	0	1	0	0	1	0	0	0
1825:	0	0	0	1	1	0	0	0
1833:	0	0	0	0	0	0	1	1
1841:	1	1	0	1	2	0	0	0
1849:	1	0	0	0	0	1	1	0
1857:	0	0	0	0	1	0	0	0
1865:	0	0	1	0	0	0	0	1

1873:	0	2	3	0	0	0	0	0
1881:	2	0	1	0	0	1	0	0
1889:	2	1	0	0	1	1	0	0
1897:	1	0	0	0	1	0	0	1
1905:	0	0	0	0	0	0	0	0
1913:	2	0	0	0	0	1	0	0
1921:	0	0	1	1	1	0	0	0
1929:	0	0	0	0	0	0	0	1
1937:	1	1	1	0	0	0	1	0
1945:	1	1	1	1	0	0	0	1
1953:	0	2	0	0	0	0	1	1
1961:	0	0	0	0	0	2	0	0
1969:	0	0	0	1	0	1	1	0
1977:	0	1	0	1	0	0	1	0
1985:	0	0	0	0	2	0	0	0
1993:	0	0	0	1	0	0	0	1
2001:	0	0	2	0	1	0	0	0
2009:	1	0	0	1	0	0	0	0
2017:	0	1	1	0	0	0	1	0
2025:	0	0	1	0	0	0	1	0
2033:	1	2	0	0	0	0	0	1
2041:	0	0	1	0	0	1	0	1
2049:	0	1	0	0	0	1	2	0
2057:	1	2	1	0	0	0	2	1
2065:	0	0	1	0	0	0	0	0
2073:	0	1	1	0	0	1	0	0
2081:	0	0	1	0	0	0	0	0
2089:	0	0	0	1	0	1	1	0
2097:	0	2	0	0	0	1	0	1
2105:	0	0	0	0	0	0	0	0
2113:	0	0	0	1	0	0	0	0
2121:	1	2	0	0	0	1	1	0
2129:	0	1	0	1	0	1	0	1
2137:	0	0	2	2	0	0	0	1
2145:	1	3	0	1	0	0	0	0
2153:	0	1	0	1	0	0	1	0
2161:	1	2	0	0	2	0	0	0
2169:	0	0	0	0	0	0	0	1
2177:	0	0	1	0	1	0	0	0
2185:	0	0	0	0	0	0	1	0
2193:	0	0	0	0	0	0	0	1
2201:	0	2	2	1	1	0	0	0
2209:	0	0	0	0	0	0	0	0
2217:	1	0	2	1	0	0	0	0
2225:	1	0	0	1	0	0	2	0
2233:	0	0	0	0	1	1	0	0
2241:	0	1	0	0	0	0	0	0
2249:	0	1	1	1	0	0	0	0
2257:	1	0	0	0	0	2	0	0
2265:	0	0	0	0	0	1	0	0
2273:	0	1	0	0	1	0	0	1
2281:	0	0	0	1	0	0	1	1
2289:	0	1	0	0	0	0	2	0
2297:	0	0	0	0	0	1	0	0
2305:	0	0	1	1	0	1	0	0
2313:	0	0	0	2	1	0	0	0
2321:	0	0	0	0	1	0	0	0
2329:	0	0	0	0	0	0	0	2
2337:	0	0	0	1	0	0	0	0
2345:	1	0	2	0	0	0	0	0

2353:	1	1	0	0	0	0	0	0
2361:	0	1	0	0	0	0	1	0
2369:	0	0	0	0	0	0	0	0
2377:	0	1	0	1	1	1	1	1
2385:	0	1	0	0	1	1	0	0
2393:	1	0	0	0	0	0	0	0
2401:	0	0	1	0	0	0	0	1
2409:	0	0	0	0	0	1	0	0
2417:	0	1	0	0	0	0	0	0
2425:	0	0	0	0	0	0	2	0
2433:	1	0	0	0	1	0	0	0
2441:	0	1	1	0	0	0	0	0
2449:	0	0	0	0	2	0	0	0
2457:	0	1	1	0	0	2	0	0
2465:	0	0	0	1	0	0	0	0
2473:	0	0	0	0	0	0	0	0
2481:	1	0	0	0	0	0	0	0
2489:	1	1	0	0	0	0	0	0
2497:	0	0	2	0	1	0	0	0
2505:	0	0	0	1	0	0	0	0
2513:	0	0	0	0	0	0	0	0
2521:	1	1	0	0	0	0	0	0
2529:	0	0	0	0	0	0	0	1
2537:	1	0	0	1	2	0	0	0
2545:	1	0	0	0	0	0	1	0
2553:	0	1	0	0	0	0	0	0
2561:	0	0	0	0	0	0	1	0
2569:	1	0	1	0	0	0	0	0
2577:	0	0	0	0	0	0	0	0
2585:	0	0	0	0	0	0	0	0
2593:	0	0	0	0	0	1	0	0
2601:	2	0	1	0	0	0	0	0
2609:	0	0	1	0	3	2	2	1
2617:	0	0	0	0	0	0	1	0
2625:	0	0	0	1	0	0	0	1
2633:	0	0	0	1	0	0	0	0
2641:	0	0	0	0	0	0	0	0
2649:	0	0	0	0	0	0	0	0
2657:	0	0	0	0	0	0	0	0
2665:	0	2	0	1	0	0	0	0
2673:	0	0	0	0	1	0	0	0
2681:	0	0	1	0	0	0	0	0
2689:	0	0	0	0	0	0	0	0
2697:	0	1	0	0	0	1	0	0
2705:	0	0	0	0	0	0	0	0
2713:	0	0	0	0	0	0	1	0
2721:	0	1	0	0	0	0	1	1
2729:	0	0	1	1	0	1	0	0
2737:	0	0	0	0	0	0	1	0
2745:	0	1	0	0	0	0	0	0
2753:	0	1	0	0	0	0	0	0
2761:	0	0	0	0	0	1	0	0
2769:	1	0	0	0	0	0	0	0
2777:	0	0	1	0	0	1	0	1
2785:	0	1	0	0	0	0	0	0
2793:	0	0	0	0	0	0	1	0
2801:	0	0	0	0	0	0	0	0
2809:	0	1	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	0	0	0	0	0	0	0	0

2833:	0	0	0	0	0	0	0	0
2841:	1	1	0	0	0	3	0	0
2849:	1	0	0	0	1	0	1	0
2857:	0	0	0	0	1	0	0	0
2865:	0	0	0	0	0	0	0	0
2873:	0	0	1	1	0	0	0	1
2881:	0	0	0	0	1	0	0	0
2889:	0	1	1	0	1	1	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	0	1	1	0	1	0	0
2921:	0	0	0	1	0	0	0	2
2929:	0	0	0	0	0	0	0	1
2937:	1	0	0	0	0	0	0	0
2945:	0	0	0	0	0	0	0	1
2953:	0	0	1	0	0	0	0	0
2961:	1	0	0	0	1	1	0	0
2969:	0	0	0	0	0	0	0	0
2977:	0	0	0	0	0	0	0	0
2985:	0	1	0	0	0	0	1	0
2993:	0	0	0	0	0	0	0	2
3001:	0	0	0	0	2	0	1	1
3009:	0	0	0	0	0	0	0	1
3017:	0	0	0	0	0	1	0	0
3025:	0	0	0	0	0	0	0	0
3033:	0	0	0	0	0	0	0	0
3041:	1	0	0	0	0	0	0	0
3049:	0	0	0	0	0	0	0	0
3057:	1	0	0	0	0	0	1	0
3065:	0	0	0	1	0	1	1	0
3073:	0	0	1	0	0	0	0	1
3081:	0	0	0	0	0	0	0	0
3089:	0	0	0	0	0	0	0	1
3097:	0	0	0	0	0	0	0	0
3105:	0	2	0	0	0	0	0	0
3113:	1	0	0	0	0	0	0	0
3121:	0	0	0	0	0	0	0	0
3129:	0	0	1	0	0	0	0	0
3137:	0	0	0	1	0	0	0	0
3145:	0	0	0	0	0	0	0	0
3153:	0	0	1	0	0	0	0	1
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	1	0	0	0
3177:	0	0	0	0	0	0	0	1
3185:	0	0	0	1	0	0	0	0
3193:	0	0	0	0	0	0	1	0
3201:	0	0	0	0	0	0	0	0
3209:	0	0	0	0	0	0	0	1
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	0	0	0	0	0
3241:	0	0	0	0	0	1	0	0
3249:	0	0	1	0	1	0	0	0
3257:	0	0	0	0	0	0	0	0
3265:	0	0	0	1	0	0	0	0
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	0	1	1	0	0
3289:	0	0	0	0	0	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0

3313:	0	0	0	0	0	0	0	0
3321:	0	0	0	0	0	0	1	1
3329:	0	0	0	1	0	0	1	1
3337:	0	0	0	0	0	0	0	0
3345:	0	0	0	0	0	0	0	0
3353:	1	0	0	0	0	0	0	0
3361:	0	0	0	0	0	0	0	0
3369:	0	1	1	0	0	0	0	0
3377:	0	0	0	0	1	0	1	0
3385:	0	0	0	0	0	0	0	0
3393:	0	0	0	0	0	0	0	0
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	1	0	0	0	0
3425:	0	0	0	1	0	0	0	1
3433:	0	0	0	0	0	0	0	0
3441:	0	0	1	0	0	1	2	0
3449:	0	0	0	0	2	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	1	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	1	0	1	1	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	2	0	0	0	0	0	1
3505:	0	1	0	0	0	0	0	0
3513:	1	0	0	0	0	0	1	0
3521:	0	0	0	1	0	0	0	0
3529:	0	0	1	0	0	0	0	0
3537:	0	0	0	0	0	0	0	0
3545:	0	0	0	1	0	0	1	1
3553:	0	0	0	0	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	0	0	1	0	0
3593:	0	0	0	1	0	0	0	0
3601:	0	0	0	0	0	2	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	1	0	0	0	0	0	0
3625:	0	0	1	0	0	0	0	0
3633:	0	0	1	0	0	0	0	0
3641:	0	0	0	0	0	0	0	0
3649:	1	0	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	1	0	0	0	0	0	0
3673:	1	0	0	0	0	0	1	0
3681:	0	0	0	0	1	0	0	0
3689:	0	0	0	0	0	0	1	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	1	1	0	0
3721:	1	0	0	0	0	0	0	0
3729:	1	1	0	0	1	0	1	0
3737:	0	0	0	0	0	1	0	0
3745:	0	0	0	1	1	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	1	0	0	0	0
3777:	0	0	0	0	1	0	1	0
3785:	0	0	0	0	0	1	1	0

3793:	0	0	0	0	0	0	0	0
3801:	1	0	0	0	0	0	1	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0
3825:	0	0	0	0	0	0	0	0
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	1	0	0	0	0	0	0
3857:	0	0	0	0	0	0	1	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	1	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	1	0
3897:	0	0	0	0	0	0	1	0
3905:	0	1	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	1	0	0	1	0	0	0
3929:	1	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	1
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	1	0	0	1
3977:	0	0	0	0	1	0	1	0
3985:	0	0	0	1	0	0	0	0
3993:	0	0	0	0	1	0	0	0
4001:	0	0	0	0	2	0	0	0
4009:	0	0	0	0	0	1	0	0
4017:	0	0	1	0	0	0	0	1
4025:	0	0	0	0	0	0	0	0
4033:	0	1	0	0	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	1	0	0
4065:	0	0	0	0	0	0	1	0
4073:	0	0	0	1	0	0	0	0
4081:	0	0	0	1	1	0	0	0
4089:	0	0	0	0	0	1	0	0

KM  
6-17-10

Sample ID : 1005127-06

Acquisition date : 17-JUN-2010 08:40:18

VAX/VMS Peak Search Report Generated 17-JUN-2010 09:41:03.50

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512706\_GE1\_GAS1001\_150515.  
 Analyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2  
 Client ID : MPA-RA-2 9-11  
 Deposition Date :  
 Sample Date : 20-MAY-2010 00:00:00 Acquisition date : 17-JUN-2010 08:40:18  
 Sample ID : 1005127-06 Sample Quantity : 3.87900E+01 GRAM  
 Sample type : SOIL Sample Geometry : 0  
 Detector name : GE1 Detector Geometry: GAS-1001  
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.76 0.0%  
 Start channel : 5 End channel : 4096  
 Sensitivity : 2.40000 Gaussian : 15.00000  
 Critical level : Yes

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	75.55*	159	546	4.94	75.00	69	16	68.3		AM-243
0	143.11*	45	148	5.41	142.61	139	8101.3	0.00E+00		
0	196.31	33	109	3.79	195.84	192	9120.9			
0	239.49*	94	152	2.64	239.06	231	15	61.7		PB-212 RA-224
0	352.82*	39	68	2.08	352.47	348	10	89.2		
0	416.25	18	18	2.85	415.94	413	7	93.6		
0	422.58	17	16	3.19	422.28	420	6	85.2		
6	505.47	16	3	2.53	505.23	504	15	40.0	4.54E+00	
0	529.65	17	18	3.69	529.42	526	7	97.4		
0	543.55	12	14	2.63	543.34	541	6118.1			
0	583.18*	32	10	6.19	583.00	578	11	56.7		
0	590.99	15	12	1.91	590.81	589	6	89.3		
0	609.56*	46	42	2.49	609.39	605	11	62.6		BI-214
0	912.08*	19	13	3.38	912.14	907	11	93.0		
0	932.57	16	12	2.02	932.64	927	12100.2			
0	961.57	15	9	3.71	961.66	958	9	91.5		
0	975.44	27	18	10.10	975.55	967	20	89.0		
0	1034.74	7	5	3.09	1034.89	1032	7127.0			
0	1046.64	13	1	4.43	1046.79	1044	7	65.2		
0	1071.90	13	11	3.74	1072.08	1066	11113.3			
0	1177.65	9	1	2.63	1177.90	1176	6	76.9		
0	1281.75	13	0	2.97	1282.08	1279	7	55.5		
0	1303.89	11	3	4.58	1304.23	1301	9	77.1		
0	1461.87*	12	9	3.58	1462.33	1457	9118.5			K-40
0	1763.88*	11	2	1.49	1764.56	1760	8	83.5		BI-214
0	1959.77	5	0	1.24	1960.60	1957	7	89.4		

AG  
6/17/10



Total number of lines in spectrum 26  
 Number of unidentified lines 14  
 Number of lines tentatively identified by NID 12 46.15%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma	Flags
			Uncorrected	Decay Corr				
			pCi/GRAM	pCi/GRAM			%Error	
K-40	1.28E+09Y	1.00	2.715E+00	2.715E+00		3.227E+00	118.87	
PB-212	1.41E+10Y	1.00	1.148E+00	1.148E+00		0.718E+00	62.58	
BI-214	1602.00Y	1.00	1.340E+00	1.340E+00		0.689E+00	51.39	
RA-224	1.41E+10Y	1.00	1.305E+01	1.305E+01		0.817E+01	62.57	
Total Activity :			1.825E+01	1.825E+01				

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma	Flags
			Uncorrected	Decay Corr				
			pCi/GRAM	pCi/GRAM			%Error	
AM-243	7380.00Y	1.00	8.686E-01	8.686E-01		6.027E-01	69.39	
Total Activity :			8.686E-01	8.686E-01				

Grand Total Activity : 1.912E+01 1.912E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma			Status
				pCi/GRAM	pCi/GRAM	%Error	
K-40	1460.81	10.67*	8.102E-01	2.715E+00	2.715E+00	118.87	OK

Final Mean for 1 Valid Peaks = 2.715E+00+/- 3.227E+00 (118.87%)

PB-212	238.63	44.60*	3.549E+00	1.148E+00	1.148E+00	62.58	OK
	300.09	3.41	2.958E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.148E+00+/- 7.181E-01 ( 62.58%)

BI-214	609.31	46.30*	1.575E+00	1.219E+00	1.219E+00	63.34	OK
	1120.29	15.10	9.574E-01	-----	Line Not Found	-----	Absent
	1764.49	15.80	7.398E-01	1.813E+00	1.813E+00	84.06	OK
	2204.22	4.98	6.890E-01	-----	Line Not Found	-----	Absent

Final Mean for 2 Valid Peaks = 1.340E+00+/- 6.886E-01 ( 51.39%)

RA-224	240.98	3.95*	3.523E+00	1.305E+01	1.305E+01	62.57	OK
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Final Mean for 1 Valid Peaks = 1.305E+01+/- 8.167E+00 ( 62.57%)

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma			Status
				pCi/GRAM	pCi/GRAM	%Error	
AM-243	74.67	66.00*	5.361E+00	8.686E-01	8.686E-01	69.39	OK

Final Mean for 1 Valid Peaks = 8.686E-01+/- 6.027E-01 ( 69.39%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	2.715E+00	3.227E+00	3.519E+00	3.089E-01	0.771
PB-212	1.148E+00	7.181E-01	4.949E-01	4.917E-02	2.319
BI-214	1.340E+00	6.886E-01	7.466E-01	6.718E-02	1.795
RA-224	1.305E+01	8.167E+00	5.631E+00	5.563E-01	2.318
AM-243	8.686E-01	6.027E-01	4.092E-01	4.826E-02	2.123

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	1.574E-01		2.325E+00	4.095E+00	3.527E-01	0.038
NA-22	2.997E-02		1.852E-01	3.472E-01	3.866E-02	0.086
AL-26	-8.385E-02		1.763E-01	3.152E-01	2.936E-02	-0.266
TI-44	-5.932E-01		2.325E-01	2.885E-01	2.898E-02	-2.056
SC-46	-1.029E-01		2.077E-01	3.720E-01	3.314E-02	-0.277
V-48	-4.250E-01		7.346E-01	1.078E+00	1.177E-01	-0.394
CR-51	-9.416E-01		3.181E+00	5.331E+00	4.850E-01	-0.177
MN-54	4.312E-02		2.194E-01	4.258E-01	3.852E-02	0.101
CO-56	-7.955E-02		2.196E-01	4.058E-01	3.662E-02	-0.196
CO-57	6.052E-02		1.623E-01	2.828E-01	2.796E-02	0.214
CO-58	-6.211E-03		2.322E-01	4.460E-01	4.060E-02	-0.014
FE-59	2.321E-01		5.423E-01	1.123E+00	1.609E-01	0.207
CO-60	1.678E-01		2.223E-01	4.580E-01	7.278E-02	0.366
ZN-65	-7.131E-02		4.219E-01	7.968E-01	1.142E-01	-0.089
SE-75	-7.807E-02		2.834E-01	4.758E-01	4.410E-02	-0.164
RB-82	-2.499E+00		2.755E+00	4.548E+00	4.141E-01	-0.550
RB-83	3.171E-01		5.945E-01	8.404E-01	1.323E-01	0.377
KR-85	1.719E+02		5.806E+01	1.190E+02	1.047E+01	1.445
SR-85	1.013E+00		3.421E-01	7.011E-01	6.167E-02	1.445
Y-88	5.684E-02		1.807E-01	4.150E-01	3.883E-02	0.137
NB-93M	0.000E+00		0.000E+00	7.076E-01	3.562E-01	0.000
NB-94	-1.036E-01		1.625E-01	2.827E-01	2.534E-02	-0.366
NB-95	2.316E-02		3.415E-01	6.527E-01	5.946E-02	0.035
NB-95M	3.057E+02		1.453E+02	2.768E+02	2.769E+01	1.104
ZR-95	-5.953E-01		4.471E-01	6.773E-01	6.729E-02	-0.879
RU-103	-1.819E-02		3.182E-01	5.521E-01	7.852E-02	-0.033
RU-106	-1.631E+00		2.089E+00	3.220E+00	4.380E-01	-0.506
AG-108M	-1.854E-01		1.898E-01	3.108E-01	2.821E-02	-0.597
CD-109	-1.247E+01		6.011E+00	7.427E+00	1.229E+00	-1.680
AG-110M	-2.172E-02		1.901E-01	3.579E-01	3.202E-02	-0.061
SN-113	-7.473E-02		2.548E-01	4.309E-01	3.555E-02	-0.173
TE123M	-6.133E-02		1.744E-01	2.914E-01	3.142E-02	-0.210
SB-124	-1.325E-01		2.888E-01	4.445E-01	4.000E-02	-0.298
I-125	0.000E+00		0.000E+00	3.417E-01	4.136E-02	0.000
SB-125	-4.087E-01		6.400E-01	8.871E-01	7.494E-02	-0.461
SB-126	-6.097E-01		1.478E+00	2.679E+00	2.430E-01	-0.228
SN-126	-1.616E+00		6.180E-01	7.132E-01	1.092E-01	-2.266
SB-127	-4.177E+01		8.227E+01	1.461E+02	1.315E+01	-0.286

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-129	0.000E+00		0.000E+00	3.552E-02	5.443E-03	0.000
I-131	-2.237E-01		2.143E+00	3.682E+00	3.059E-01	-0.061
BA-133	1.666E-01		2.992E-01	4.912E-01	6.412E-02	0.339
CS-134	8.050E-02		2.258E-01	3.918E-01	3.534E-02	0.205
CS-135	5.033E-02		8.769E-01	1.519E+00	1.382E-01	0.033
CS-136	1.369E+00	+	9.103E-01	2.233E+00	2.841E-01	0.613
CS-137	-3.560E-02		2.145E-01	3.945E-01	3.532E-02	-0.090
LA-138	-2.647E-02		3.245E-01	6.243E-01	5.280E-02	-0.042
CE-139	-9.669E-02		1.745E-01	2.872E-01	3.152E-02	-0.337
BA-140	2.517E+00		3.966E+00	5.730E+00	1.903E+00	0.439
LA-140	-3.099E-01		6.610E-01	1.212E+00	1.077E-01	-0.256
CE-141	6.543E-01		6.015E-01	9.577E-01	2.353E-01	0.683
CE-144	9.319E-01		1.357E+00	2.301E+00	2.330E-01	0.405
PM-144	4.281E-02		2.146E-01	4.111E-01	3.716E-02	0.104
PM-145	0.000E+00		0.000E+00	7.073E-02	4.636E-02	0.000
PM-146	4.571E-02		4.122E-01	7.292E-01	6.172E-02	0.063
ND-147	8.202E+00	+	8.032E+00	1.479E+01	1.310E+00	0.555
EU-152	1.893E-01		1.204E+00	2.497E+00	2.676E-01	0.076
GD-153	2.930E-01		6.755E-01	1.174E+00	1.516E-01	0.250
EU-154	8.879E-02		5.152E-01	9.681E-01	1.078E-01	0.092
EU-155	-1.612E+00		7.086E-01	8.638E-01	1.297E-01	-1.866
EU-156	-1.145E+00		5.973E+00	1.122E+01	2.582E+00	-0.102
HO-166M	-1.040E-01		3.297E-01	6.020E-01	5.453E-02	-0.173
HF-172	1.023E-01		1.163E+00	1.997E+00	1.988E-01	0.051
LU-172	-2.328E+00		6.041E+00	1.094E+01	1.502E+00	-0.213
LU-173	-2.968E-01		7.090E-01	1.175E+00	1.053E-01	-0.253
HF-175	-2.817E-01		2.921E-01	3.883E-01	3.301E-02	-0.725
LU-176	-1.872E-02		1.710E-01	2.908E-01	2.526E-02	-0.064
TA-182	-4.503E-02		7.523E-01	1.449E+00	2.097E-01	-0.031
IR-192	2.415E-01		4.174E-01	7.862E-01	6.727E-02	0.307
HG-203	6.568E-02		2.977E-01	5.205E-01	4.663E-02	0.126
BI-207	9.996E-02		1.615E-01	3.126E-01	2.802E-02	0.320
TL-208	1.260E+00	+	7.252E-01	1.281E+00	1.151E-01	0.983
BI-210M	9.565E-03		3.269E-01	5.626E-01	5.230E-02	0.017
PB-210	-5.559E+01		8.714E+00	7.613E+00	7.050E-01	-7.302
PB-211	-3.198E+00		5.405E+00	8.749E+00	7.071E-01	-0.365
BI-212	1.528E+00		1.405E+00	3.061E+00	2.780E-01	0.499
PB-214	7.771E-01	+	6.967E-01	9.726E-01	8.198E-02	0.799
RN-219	-3.680E-01		2.265E+00	3.886E+00	3.130E-01	-0.095
RA-223	-6.650E-02		3.797E+00	6.560E+00	5.657E-01	-0.010
RA-225	0.000E+00		0.000E+00	1.707E-01	1.811E-02	0.000
RA-226	9.753E-01		5.395E+00	9.056E+00	1.660E+01	0.108
TH-227	3.168E+00		1.388E+00	2.652E+00	2.651E-01	1.195
AC-228	1.174E+00	+	1.098E+00	1.787E+00	1.640E-01	0.657
TH-230	-1.488E+02		5.930E+01	7.398E+01	7.392E+00	-2.012
PA-231	8.932E-01		6.654E+00	1.159E+01	1.008E+00	0.077
TH-231	0.000E+00		0.000E+00	1.756E-01	3.430E-02	0.000
PA-233	1.564E-01		8.487E-01	1.481E+00	3.329E-01	0.106

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PA-234	-3.916E-01		6.352E-01	1.042E+00	1.049E-01	-0.376
PA-234M	1.836E+01		2.534E+01	5.389E+01	6.117E+00	0.341
TH-234	3.050E+00		5.130E+00	9.134E+00	8.119E-01	0.334
U-235	1.703E+00	+	1.755E+00	2.364E+00	4.357E-01	0.721
NP-237	-3.910E+00		1.719E+00	2.096E+00	3.146E-01	-1.866
AM-241	-3.167E+00		7.072E-01	9.054E-01	7.197E-02	-3.497
CM-243	3.457E-01		1.042E+00	1.843E+00	1.617E-01	0.188

Total number of lines in spectrum 26  
 Number of unidentified lines 14  
 Number of lines tentatively identified by NID 12 46.15%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	2.715E+00	2.715E+00	3.227E+00	118.87	
PB-212	1.41E+10Y	1.00	1.148E+00	1.148E+00	0.718E+00	62.58	
BI-214	1602.00Y	1.00	1.340E+00	1.340E+00	0.689E+00	51.39	
RA-224	1.41E+10Y	1.00	1.305E+01	1.305E+01	0.817E+01	62.57	
Total Activity :			1.825E+01	1.825E+01			

Nuclide Type : ACTIVATION

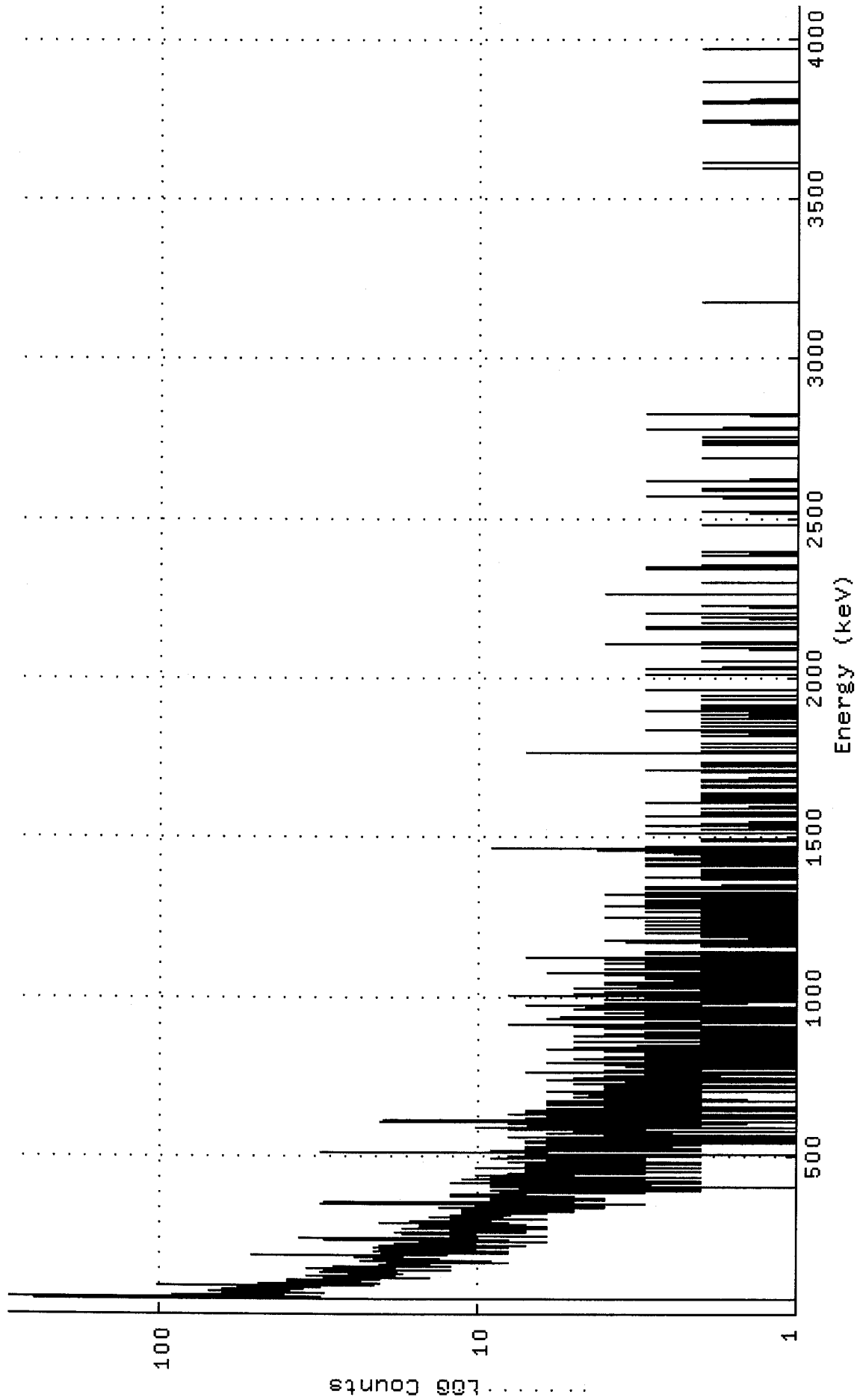
Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
AM-243	7380.00Y	1.00	8.686E-01	8.686E-01	6.027E-01	69.39	
Total Activity :			8.686E-01	8.686E-01			

Grand Total Activity : 1.912E+01 1.912E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Spectrum : DKA100: [GAMMA.SCUSR.ARCHIVE]SMP\_100512706\_GE1\_GAS1001\_150515.CNF;1  
 Title :  
 Sample Title: MPA-RA-2 9-11  
 Start Time: 17-JUN-2010 08:40 Sample Time: 20-MAY-2010 00:00 Energy Offset: 6.08450E-01  
 Real Time : 0 01:00:00.76 Sample ID : 1005127-06 Energy Slope : 9.99268E-01  
 Live Time : 0 01:00:00.00 Sample Type: SOIL Energy Quad : 0.00000E+00



Channel Contents for DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100512706\_GE1\_GAS1001\_1505

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	1	31	98
49:	164	207	198	293	269	118	31	39
57:	49	40	42	54	55	89	73	54
65:	42	47	32	30	35	42	48	39
73:	57	69	52	62	59	48	37	38
81:	39	31	44	37	34	38	56	21
89:	45	37	69	100	56	42	45	30
97:	37	28	20	26	30	33	26	39
105:	29	30	26	29	27	20	39	14
113:	30	29	20	24	25	22	22	21
121:	34	18	30	21	21	20	25	19
129:	17	18	20	26	19	30	31	21
137:	24	16	20	30	12	33	34	29
145:	27	18	20	28	21	12	20	20
153:	16	20	19	16	14	15	18	16
161:	18	8	17	19	14	9	13	14
169:	14	11	23	13	20	19	14	21
177:	20	17	20	17	20	24	21	22
185:	51	31	19	26	19	8	12	14
193:	13	15	19	21	21	18	13	8
201:	15	10	12	20	15	14	17	13
209:	21	12	15	8	15	15	20	16
217:	11	7	9	15	18	11	10	12
225:	11	11	10	6	12	15	10	8
233:	16	12	18	16	25	36	29	16
241:	21	14	10	11	10	6	10	12
249:	11	12	16	13	10	10	17	14
257:	10	11	18	7	10	12	12	11
265:	11	7	9	12	17	6	9	7
273:	12	6	11	14	11	15	8	9
281:	10	13	7	15	12	9	10	8
289:	20	9	11	9	10	14	16	11
297:	9	9	9	11	12	10	6	11
305:	10	14	9	10	9	12	10	9
313:	12	9	10	6	7	11	11	7
321:	10	5	7	6	9	10	11	5
329:	7	7	11	11	8	6	8	4
337:	8	12	13	6	4	10	4	6
345:	10	6	8	5	3	8	31	29
353:	14	5	11	7	6	8	7	9
361:	4	7	5	9	4	8	8	7
369:	5	5	5	6	6	6	12	8
377:	7	12	8	7	9	8	6	3
385:	6	4	7	5	4	6	9	4
393:	2	3	2	6	4	5	6	9
401:	2	5	6	4	1	8	7	6
409:	9	5	6	5	2	5	12	4
417:	8	3	2	2	8	6	9	5
425:	3	3	4	11	5	2	3	6



433:	9	8	3	10	5	9	5	6
441:	6	4	8	5	3	3	7	2
449:	4	5	4	4	7	6	6	6
457:	3	7	4	6	5	5	2	10
465:	5	4	5	5	6	3	7	5
473:	2	3	7	4	6	4	8	3
481:	2	6	6	3	4	6	5	3
489:	6	4	7	9	6	3	4	8
497:	2	6	4	6	5	2	2	1
505:	7	2	7	6	16	17	30	31
513:	8	6	9	5	8	2	4	4
521:	7	4	4	3	2	3	3	6
529:	7	7	6	2	3	3	6	6
537:	3	7	3	2	1	7	7	7
545:	1	3	3	7	4	2	5	2
553:	6	3	1	3	4	6	8	1
561:	4	4	2	2	1	3	2	3
569:	4	6	4	3	5	3	5	2
577:	1	2	4	4	7	7	5	8
585:	3	8	1	0	1	7	10	4
593:	3	2	4	4	6	8	3	3
601:	2	7	2	1	6	4	11	7
609:	20	19	12	6	4	5	2	5
617:	3	7	7	1	2	2	1	4
625:	2	6	3	3	8	1	5	1
633:	6	7	5	6	3	2	3	2
641:	5	7	1	3	3	6	6	1
649:	5	2	3	4	3	2	1	3
657:	2	3	2	6	3	2	3	5
665:	2	6	4	3	3	4	2	2
673:	6	3	0	2	2	4	3	4
681:	3	3	2	2	3	2	5	2
689:	2	4	3	4	4	5	4	5
697:	2	5	5	2	3	3	1	6
705:	3	2	2	4	4	2	2	4
713:	3	1	2	4	3	4	2	2
721:	1	1	1	4	2	2	3	5
729:	4	3	2	1	1	3	2	3
737:	4	2	1	6	2	2	1	2
745:	1	2	5	3	4	4	3	3
753:	3	0	2	1	0	3	2	3
761:	4	5	1	7	4	2	3	2
769:	2	4	3	3	2	1	2	0
777:	2	2	2	1	3	1	3	4
785:	0	1	3	2	1	2	1	1
793:	6	2	2	3	3	0	0	3
801:	3	2	1	3	2	5	3	4
809:	1	1	0	4	4	1	2	3
817:	1	1	0	1	2	3	3	3
825:	2	1	3	2	4	4	2	6
833:	4	3	2	3	1	3	3	1
841:	1	4	5	2	1	1	1	3
849:	2	1	2	1	2	1	1	3
857:	1	5	3	3	2	1	2	0
865:	2	2	2	0	1	3	0	2
873:	2	1	1	5	0	4	2	3
881:	2	0	2	4	3	1	1	2
889:	3	3	0	0	0	2	1	2
897:	2	1	1	2	0	4	3	5
905:	1	2	1	2	4	5	4	8

913:	5	2	3	2	0	2	2	3
921:	1	2	1	2	2	0	1	2
929:	1	1	3	2	6	5	2	1
937:	2	2	1	1	2	2	0	2
945:	3	3	4	1	1	3	3	0
953:	0	2	3	2	0	1	1	4
961:	4	5	4	1	2	2	1	2
969:	3	7	3	2	3	2	2	2
977:	2	2	4	3	2	1	1	2
985:	1	0	1	4	0	4	2	3
993:	0	2	0	3	1	2	2	0
1001:	6	5	8	3	1	0	5	1
1009:	2	1	2	4	1	2	2	3
1017:	2	1	1	0	1	2	2	0
1025:	1	1	0	2	5	2	0	2
1033:	1	3	2	3	1	0	1	0
1041:	4	2	1	0	4	3	3	2
1049:	2	0	0	2	2	1	1	2
1057:	3	3	2	3	3	1	3	2
1065:	0	2	2	1	1	2	4	3
1073:	2	6	1	0	2	0	1	1
1081:	2	2	0	2	1	4	3	1
1089:	1	2	3	3	1	0	1	1
1097:	1	3	3	0	2	2	4	0
1105:	2	0	4	1	1	3	2	1
1113:	1	1	4	1	3	1	0	7
1121:	4	1	0	2	1	2	2	2
1129:	0	0	1	3	2	1	1	0
1137:	1	1	1	0	3	2	0	0
1145:	1	0	1	1	1	0	1	0
1153:	1	1	1	1	2	1	0	1
1161:	1	1	1	0	2	0	2	1
1169:	1	2	1	3	3	4	0	1
1177:	4	2	2	1	0	0	1	1
1185:	0	2	1	1	1	1	1	2
1193:	2	1	1	1	0	1	0	1
1201:	0	0	3	0	2	0	1	1
1209:	0	0	3	1	0	1	1	1
1217:	1	2	2	2	2	2	0	2
1225:	3	1	1	2	0	2	0	1
1233:	0	2	0	0	0	3	1	2
1241:	1	0	1	0	2	1	1	4
1249:	1	1	0	0	2	1	2	0
1257:	1	2	1	0	2	0	2	0
1265:	3	0	0	1	3	0	1	1
1273:	0	1	2	0	3	0	0	2
1281:	2	4	3	2	0	0	1	2
1289:	1	3	2	1	0	1	0	1
1297:	0	3	1	0	0	3	2	3
1305:	1	2	1	1	1	0	2	2
1313:	3	1	0	2	0	4	2	0
1321:	1	2	1	3	1	1	0	0
1329:	1	1	0	1	0	0	1	1
1337:	0	0	3	1	3	1	0	0
1345:	2	0	3	1	0	1	0	0
1353:	0	0	0	0	0	0	1	1
1361:	1	1	0	0	0	1	1	0
1369:	2	0	0	2	1	0	3	1
1377:	1	1	2	2	1	2	0	1
1385:	0	2	1	1	0	0	1	2

1393:	2	0	2	0	0	0	0	0
1401:	1	0	0	1	0	1	1	2
1409:	1	0	3	0	3	1	1	1
1417:	0	0	1	1	2	1	0	0
1425:	0	0	0	1	3	1	0	0
1433:	3	1	2	2	1	1	0	0
1441:	2	2	1	1	1	2	0	2
1449:	3	0	2	0	0	0	0	2
1457:	0	1	2	2	9	9	1	6
1465:	0	2	1	0	3	0	1	0
1473:	0	1	0	0	0	0	0	0
1481:	1	0	1	0	0	0	2	0
1489:	0	1	2	1	0	0	2	1
1497:	0	0	0	1	1	0	1	1
1505:	1	0	1	1	0	1	3	1
1513:	1	0	1	1	0	0	1	0
1521:	0	0	1	1	2	2	0	0
1529:	0	0	1	0	1	0	1	1
1537:	3	1	0	1	1	1	1	2
1545:	1	0	0	0	0	0	1	0
1553:	1	0	0	0	1	1	1	0
1561:	1	0	1	2	0	0	3	3
1569:	0	0	1	1	2	0	0	2
1577:	1	0	0	0	0	0	0	0
1585:	0	1	0	0	2	0	0	2
1593:	1	0	0	0	0	1	0	1
1601:	0	0	0	1	0	1	1	3
1609:	0	0	0	0	2	0	1	1
1617:	0	0	0	1	0	2	2	0
1625:	0	0	0	1	0	2	1	1
1633:	0	1	1	0	1	1	2	1
1641:	1	0	0	1	1	0	1	0
1649:	1	0	0	1	1	1	0	2
1657:	0	1	0	0	0	2	0	0
1665:	0	0	1	0	1	0	1	0
1673:	2	0	0	1	0	1	2	1
1681:	1	2	0	1	0	0	0	1
1689:	0	0	0	1	1	1	1	0
1697:	1	0	1	0	0	2	0	0
1705:	1	0	1	0	0	0	3	0
1713:	0	1	1	0	0	0	0	2
1721:	1	1	0	0	1	0	1	2
1729:	1	1	2	0	1	0	1	0
1737:	0	1	1	0	0	1	0	0
1745:	1	1	0	0	0	0	0	0
1753:	0	0	1	0	0	1	0	0
1761:	1	0	3	2	7	3	0	1
1769:	2	0	1	0	0	0	0	0
1777:	0	1	0	0	2	2	0	1
1785:	1	0	0	0	0	0	0	0
1793:	2	0	1	0	1	0	0	1
1801:	0	1	1	1	0	0	1	0
1809:	0	1	1	0	1	1	1	1
1817:	1	0	0	2	0	1	0	0
1825:	1	1	0	1	0	0	0	2
1833:	1	0	0	3	0	1	0	0
1841:	0	0	0	1	0	1	0	1
1849:	2	1	0	1	0	0	1	0
1857:	0	2	1	0	0	0	1	0
1865:	0	1	0	0	0	0	1	1

1873:	0	2	1	0	0	0	0	0
1881:	0	2	0	0	1	1	1	0
1889:	0	0	0	0	2	0	3	1
1897:	0	0	0	2	0	0	0	0
1905:	0	0	2	1	0	0	1	1
1913:	1	2	0	0	0	1	0	1
1921:	1	0	0	0	1	0	0	0
1929:	0	2	1	0	0	0	1	1
1937:	1	0	1	1	0	0	2	2
1945:	2	0	1	0	0	0	0	0
1953:	1	0	0	0	0	0	0	3
1961:	1	1	0	0	0	0	0	1
1969:	0	0	0	1	0	0	0	0
1977:	0	0	0	0	0	0	0	0
1985:	0	0	1	0	1	1	0	1
1993:	0	1	0	1	0	0	0	0
2001:	0	0	1	1	0	1	0	0
2009:	3	0	0	0	0	0	1	0
2017:	1	1	0	0	0	0	0	1
2025:	0	0	1	3	0	3	1	1
2033:	0	0	1	0	1	1	1	0
2041:	0	0	0	0	0	0	1	0
2049:	0	2	1	0	2	1	1	0
2057:	1	0	0	0	0	0	0	0
2065:	0	1	0	0	0	1	0	0
2073:	0	0	1	0	1	0	1	0
2081:	0	1	0	0	0	0	1	1
2089:	1	1	2	0	0	0	1	1
2097:	0	0	0	0	1	0	1	0
2105:	1	0	0	4	0	0	0	0
2113:	2	0	1	1	0	0	1	0
2121:	0	0	0	0	0	0	0	1
2129:	0	1	0	0	1	0	0	0
2137:	0	0	1	0	0	1	1	0
2145:	0	0	0	1	0	1	0	3
2153:	0	1	0	0	1	1	0	3
2161:	2	0	1	0	0	0	1	0
2169:	1	1	0	2	0	0	0	0
2177:	0	0	1	0	1	0	0	0
2185:	0	1	2	1	1	0	0	0
2193:	0	0	0	0	1	0	0	0
2201:	3	0	0	1	0	1	0	0
2209:	0	1	0	0	0	0	0	0
2217:	0	1	0	1	0	0	2	1
2225:	0	0	0	0	1	0	0	0
2233:	0	1	0	0	0	0	0	0
2241:	0	1	0	1	1	1	1	0
2249:	0	0	0	0	0	0	0	1
2257:	0	0	1	4	0	0	1	1
2265:	0	0	1	0	0	0	0	0
2273:	0	0	1	0	0	0	0	0
2281:	1	0	1	1	0	0	0	1
2289:	1	1	1	0	0	0	0	1
2297:	0	0	2	0	0	1	1	0
2305:	0	0	1	0	0	1	1	1
2313:	0	0	0	0	0	0	0	1
2321:	0	0	0	1	0	0	0	0
2329:	0	1	0	0	0	0	0	1
2337:	0	0	1	0	3	0	0	0
2345:	0	1	0	3	1	1	2	1

2353:	0	1	0	1	0	0	0	0
2361:	1	0	0	1	1	0	0	0
2369:	1	0	0	0	0	0	0	0
2377:	0	0	1	0	0	2	0	0
2385:	0	0	0	0	0	0	2	1
2393:	1	1	1	0	0	1	0	0
2401:	0	0	0	1	0	0	1	0
2409:	0	0	0	0	0	0	0	0
2417:	0	0	0	0	0	0	0	0
2425:	0	0	1	0	0	1	0	1
2433:	0	1	0	0	1	0	0	0
2441:	0	0	1	0	0	1	1	0
2449:	0	0	1	1	1	0	0	1
2457:	1	0	1	0	1	0	1	0
2465:	1	0	0	1	0	1	0	0
2473:	0	0	0	0	0	2	0	0
2481:	0	0	0	0	0	0	0	0
2489:	0	1	0	0	0	0	1	0
2497:	0	1	0	1	1	0	0	0
2505:	0	0	0	0	0	0	0	0
2513:	0	0	0	0	2	0	0	1
2521:	0	0	0	1	0	1	0	0
2529:	0	0	0	1	0	0	0	1
2537:	1	0	0	0	0	0	1	0
2545:	0	1	0	1	1	0	1	0
2553:	0	0	0	0	0	0	1	0
2561:	1	0	0	1	3	0	0	0
2569:	0	0	0	0	0	0	0	0
2577:	1	0	0	1	0	0	0	0
2585:	0	0	0	2	0	0	2	0
2593:	1	1	0	0	0	0	0	0
2601:	1	0	1	1	1	0	0	0
2609:	0	0	0	0	1	0	0	3
2617:	3	2	0	1	1	0	0	0
2625:	0	0	1	0	0	0	0	0
2633:	0	0	1	0	1	0	0	1
2641:	0	0	0	1	0	0	0	0
2649:	1	0	0	0	0	0	0	1
2657:	0	1	0	0	0	0	0	0
2665:	0	0	0	0	1	0	0	1
2673:	0	0	0	0	0	0	1	1
2681:	0	0	1	1	0	0	0	0
2689:	2	0	0	0	1	1	0	0
2697:	1	1	0	0	0	0	0	0
2705:	0	0	0	0	0	0	0	1
2713:	0	1	1	0	0	0	1	0
2721:	0	1	1	1	0	0	1	2
2729:	0	1	0	0	2	0	0	0
2737:	0	0	1	2	0	0	1	0
2745:	0	0	0	0	0	0	2	0
2753:	1	0	0	0	0	0	0	0
2761:	0	0	0	0	1	0	0	0
2769:	0	1	0	0	0	0	1	0
2777:	0	0	3	1	0	0	0	0
2785:	0	0	0	0	0	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	1	0	0	0	0	1	0	1
2809:	0	0	1	0	0	0	1	0
2817:	0	1	1	0	0	2	3	0
2825:	1	0	0	0	0	0	0	0

2833:	0	0	0	1	0	0	0	0
2841:	0	1	0	0	0	1	0	0
2849:	1	0	1	1	0	0	0	1
2857:	0	1	0	0	0	1	0	0
2865:	0	0	0	0	0	0	0	0
2873:	1	0	0	0	0	1	0	0
2881:	0	0	0	0	1	1	0	0
2889:	0	0	0	1	0	1	1	0
2897:	0	0	1	0	0	0	0	0
2905:	1	0	1	0	0	0	1	0
2913:	0	0	0	1	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	1	0	0	0	0	1
2937:	1	0	0	0	0	0	0	0
2945:	0	0	0	1	0	0	0	0
2953:	0	0	0	0	0	0	0	0
2961:	0	0	0	0	0	0	0	1
2969:	1	0	0	0	0	0	0	0
2977:	0	0	0	0	0	0	0	0
2985:	0	0	0	0	0	0	0	0
2993:	0	0	0	0	1	0	0	0
3001:	0	0	0	0	0	1	0	0
3009:	0	1	0	0	0	0	0	0
3017:	0	1	0	0	1	0	1	0
3025:	0	0	0	0	0	0	0	0
3033:	0	0	0	1	0	0	0	0
3041:	0	0	0	0	1	1	1	0
3049:	0	0	0	0	0	0	0	0
3057:	0	1	0	0	0	0	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	1	0	0	0	0	0	0	0
3089:	0	1	0	0	0	0	0	0
3097:	0	0	0	0	0	0	0	1
3105:	0	1	0	0	0	0	0	0
3113:	0	0	0	0	0	0	0	0
3121:	0	0	1	0	0	1	0	0
3129:	0	0	0	0	0	0	1	0
3137:	0	0	1	1	0	0	0	0
3145:	0	0	0	1	0	0	0	0
3153:	0	0	0	0	0	1	0	0
3161:	0	1	0	1	0	0	0	0
3169:	0	0	0	2	0	0	0	0
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	0	1	0	0
3193:	0	0	0	0	0	0	0	0
3201:	1	0	0	1	0	1	0	0
3209:	0	0	0	0	1	0	0	0
3217:	0	1	0	1	0	0	0	0
3225:	0	0	1	1	0	0	0	0
3233:	0	0	0	0	0	0	1	0
3241:	0	0	0	0	0	0	0	0
3249:	0	0	0	1	0	0	1	0
3257:	0	1	1	0	0	0	0	0
3265:	0	0	0	1	0	0	0	0
3273:	1	0	0	0	0	0	0	0
3281:	1	0	0	0	1	0	0	0
3289:	0	0	0	0	0	0	1	0
3297:	0	0	1	0	0	0	0	0
3305:	0	0	0	1	0	1	0	0

3313:	1	1	0	0	0	0	0	0
3321:	0	0	0	0	0	0	0	0
3329:	0	1	0	0	0	0	0	0
3337:	0	1	0	0	0	0	0	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	1	0	1	1	0	1
3369:	0	0	0	0	0	0	0	0
3377:	0	0	0	0	0	0	1	0
3385:	0	1	0	0	0	0	0	0
3393:	0	0	0	0	0	0	0	0
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	1	0	0	0	0	0
3433:	0	0	0	1	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	1	0	0	0	0	0	1
3457:	0	0	0	0	0	1	1	1
3465:	0	0	0	0	0	1	0	0
3473:	0	0	1	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	1	0	1	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	1	0	0	0
3529:	0	0	0	1	0	0	1	0
3537:	0	0	0	0	0	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	1	0	0	0	0	1
3561:	0	0	0	0	0	0	0	0
3569:	0	0	1	0	1	0	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	0	0	0	0	0	2	0
3593:	0	0	0	1	0	0	0	0
3601:	1	0	1	0	0	0	1	1
3609:	0	0	2	1	0	0	0	1
3617:	0	0	0	0	0	0	1	0
3625:	0	0	1	0	0	0	0	0
3633:	0	0	0	0	0	0	1	1
3641:	0	0	0	0	0	0	0	0
3649:	1	0	0	0	0	0	0	0
3657:	1	0	0	0	0	0	0	0
3665:	0	0	1	0	0	0	0	0
3673:	1	1	0	0	0	0	0	0
3681:	0	1	0	0	0	1	0	0
3689:	0	0	0	0	0	0	0	0
3697:	0	1	0	0	0	0	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	0	0	0	0	0	0	0
3721:	0	1	1	0	0	0	0	0
3729:	0	0	1	0	1	2	0	0
3737:	0	0	0	1	2	0	0	0
3745:	1	0	0	0	0	0	0	0
3753:	0	0	0	0	0	1	1	0
3761:	0	0	0	1	1	0	0	1
3769:	0	0	0	0	0	0	0	0
3777:	0	0	0	0	0	0	0	0
3785:	1	0	0	0	0	0	0	0

3793:	0	0	2	0	1	0	0	0
3801:	0	0	0	0	2	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	1	0	0	0	0
3825:	0	0	0	0	0	0	0	1
3833:	0	0	0	0	0	0	0	0
3841:	1	0	0	0	1	0	1	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	1	0	0	0	0	2
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	1	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	1	0	0	0	0	0	0	0
3897:	0	0	1	0	0	0	0	0
3905:	0	1	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	1
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	1	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	1
3953:	0	0	0	1	0	0	1	0
3961:	0	0	2	0	0	0	0	1
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	1	0	0	1	0
3985:	0	0	0	0	1	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	1	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	1	0	0	0	0	0	0
4033:	0	0	0	0	0	1	0	0
4041:	1	0	1	1	0	0	0	1
4049:	0	0	1	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	1	0	0	0	1	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	1	0	0	0



KM  
6-17-10

Sample ID : 1005127-07

Acquisition date : 17-JUN-2010 08:59:50

VAX/VMS Peak Search Report Generated 17-JUN-2010 10:00:37.27

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100512707\_GE4\_GAS1001\_150519.  
 Analyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2  
 Client ID : MPA-RA-2 11-12  
 Deposition Date :  
 Sample Date : 20-MAY-2010 00:00:00 Acquisition date : 17-JUN-2010 08:59:50  
 Sample ID : 1005127-07 Sample Quantity : 1.18740E+02 GRAM  
 Sample type : SOIL Sample Geometry : 0  
 Detector name : GE4 Detector Geometry: GAS-1001  
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.00 0.0%  
 Start channel : 5 End channel : 4096  
 Sensitivity : 2.40000 Gaussian : 15.00000  
 Critical level : Yes

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	76.66*	495	498	3.70	76.65	70	13	20.8		
3	88.02	104	264	2.55	88.00	83	17	60.7	3.32E+00	SN-126 CD-109
3	92.97*	111	255	2.56	92.94	83	17	57.2		
0	156.58	43	196	1.44	156.53	153		9119.9		
0	185.96*	116	177	3.18	185.90	180	12	50.3		RA-226
2	238.97*	215	107	2.01	238.89	235	12	20.7	3.15E+00	PB-212
2	242.66	57	107	2.47	242.57	235	12	81.5		
0	282.73	61	171	8.56	282.63	275		17101.8		
0	295.13*	43	99	1.95	295.02	292	9	89.5		PB-214
0	339.03	76	94	2.50	338.91	334	12	56.1		
0	353.14*	138	95	2.23	353.00	348	12	33.7		PB-214
3	583.67*	78	26	2.18	583.45	580	13	31.5	1.47E+00	TL-208
3	589.64	14	28	2.96	589.41	580		13130.2		
0	610.10	72	39	2.11	609.86	605	11	41.7		BI-214
0	727.84	23	29	5.95	727.55	722		11101.0		BI-212
0	803.36	51	32	14.34	803.04	793	20	62.7		
3	823.71	18	11	3.08	823.39	820	28	69.5	1.90E+00	
3	829.09	15	14	3.08	828.77	820		28107.0		
0	861.14	15	8	3.51	860.80	859	6	80.1		TL-208
0	868.02	13	13	2.37	867.68	865		8108.5		
0	913.01	31	41	2.79	912.64	905	16	97.8		
0	980.25	17	6	3.53	979.86	977	7	70.1		
0	1034.55	8	7	2.33	1034.14	1032		5117.9		
0	1052.77	13	13	1.29	1052.35	1047		9118.3		
0	1059.39	12	5	1.50	1058.97	1056	8	92.7		
0	1122.01	16	17	1.06	1121.56	1116		11111.5		
0	1183.82	11	9	1.86	1183.34	1180		6101.1		
0	1203.40	10	12	1.14	1202.91	1199		9133.6		
0	1325.81	9	4	1.71	1325.28	1322		6102.7		
0	1461.15*	136	4	2.72	1460.56	1456	9	18.2		K-40
0	1529.62	7	0	1.47	1529.00	1526	6	75.6		
0	1592.99	10	5	1.94	1592.34	1588		8105.0		
0	1629.33	6	0	1.47	1628.67	1626	5	81.6		
0	1764.88*	22	0	3.18	1764.17	1760	9	44.4		BI-214
0	2339.67	7	0	2.74	2338.71	2335	7	75.6		

AG  
6/17/10

Sample ID : 1005127-07

Acquisition date : 17-JUN-2010 08:59:50

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	2615.92	21	0	3.61	2614.86	2610	9	43.6		TL-208

Total number of lines in spectrum 36  
 Number of unidentified lines 18  
 Number of lines tentatively identified by NID 18 50.00%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	2.664E+01	2.664E+01	0.556E+01	20.89	
TL-208	1.41E+10Y	1.00	2.048E+00	2.048E+00	0.537E+00	26.23	
BI-212	1.41E+10Y	1.00	2.119E+00	2.119E+00	2.156E+00	101.74	
PB-212	1.41E+10Y	1.00	1.683E+00	1.683E+00	0.389E+00	23.11	
BI-214	1602.00Y	1.00	1.670E+00	1.670E+00	0.567E+00	33.92	
PB-214	1602.00Y	1.00	1.526E+00	1.526E+00	0.526E+00	34.47	
RA-226	1602.00Y	1.00	1.013E+01	1.013E+01	1.925E+01	189.99	
Total Activity :			4.582E+01	4.582E+01			

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CD-109	464.00D	1.04	5.656E+00	5.901E+00	3.650E+00	61.86	
SN-126	1.00E+05Y	1.00	5.683E-01	5.683E-01	3.499E-01	61.57	
Total Activity :			6.224E+00	6.469E+00			

Grand Total Activity : 5.204E+01 5.229E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr		2-Sigma %Error	Status
				pCi/GRAM	pCi/GRAM		
K-40	1460.81	10.67*	3.017E-01	2.664E+01	2.664E+01	20.89	OK
Final Mean for 1 Valid Peaks = 2.664E+01 +/- 5.564E+00 ( 20.89%)							
TL-208	583.14	30.22*	7.351E-01	2.233E+00	2.233E+00	33.92	OK
	860.37	4.48	4.895E-01	4.350E+00	4.350E+00	80.91	OK
	2614.66	35.85	2.132E-01	1.737E+00	1.737E+00	44.90	OK
Final Mean for 3 Valid Peaks = 2.048E+00 +/- 5.371E-01 ( 26.23%)							
BI-212	727.17	11.80*	5.819E-01	2.119E+00	2.119E+00	101.74	OK
	1620.62	2.75	2.788E-01	-----	Line Not Found	-----	Absent
Final Mean for 1 Valid Peaks = 2.119E+00 +/- 2.156E+00 (101.74%)							
PB-212	238.63	44.60*	1.810E+00	1.683E+00	1.683E+00	23.11	OK
	300.09	3.41	1.465E+00	-----	Line Not Found	-----	Absent
Final Mean for 1 Valid Peaks = 1.683E+00 +/- 3.891E-01 ( 23.11%)							
BI-214	609.31	46.30*	7.015E-01	1.400E+00	1.400E+00	43.49	OK
	1120.29	15.10	3.791E-01	-----	Line Not Found	-----	Absent
	1764.49	15.80	2.626E-01	3.409E+00	3.410E+00	45.32	OK
	2204.22	4.98	2.299E-01	-----	Line Not Found	-----	Absent
Final Mean for 2 Valid Peaks = 1.670E+00 +/- 5.665E-01 ( 33.92%)							
PB-214	295.21	19.19	1.488E+00	9.496E-01	9.496E-01	90.08	OK
	351.92	37.19*	1.251E+00	1.877E+00	1.877E+00	35.54	OK
Final Mean for 2 Valid Peaks = 1.526E+00 +/- 5.261E-01 ( 34.47%)							
RA-226	186.21	3.28*	2.213E+00	1.013E+01	1.013E+01	189.99	OK
Final Mean for 1 Valid Peaks = 1.013E+01 +/- 1.925E+01 (189.99%)							

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr		2-Sigma %Error	Status
				pCi/GRAM	pCi/GRAM		
CD-109	88.03	3.72*	3.119E+00	5.656E+00	5.901E+00	61.86	OK
Final Mean for 1 Valid Peaks = 5.901E+00 +/- 3.650E+00 ( 61.86%)							
SN-126	87.57	37.00*	3.121E+00	5.683E-01	5.683E-01	61.57	OK
Final Mean for 1 Valid Peaks = 5.683E-01 +/- 3.499E-01 ( 61.57%)							

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	2.664E+01	5.564E+00	3.036E+00	2.840E-01	8.774
CD-109	5.901E+00	3.650E+00	3.931E+00	4.447E-01	1.501
SN-126	5.683E-01	3.499E-01	3.533E-01	3.390E-02	1.608
TL-208	2.048E+00	5.371E-01	8.656E-01	1.036E-01	2.366
BI-212	2.119E+00	2.156E+00	2.487E+00	2.830E-01	0.852
PB-212	1.683E+00	3.891E-01	3.778E-01	3.549E-02	4.455
BI-214	1.670E+00	5.665E-01	5.762E-01	6.814E-02	2.899
PB-214	1.526E+00	5.261E-01	5.189E-01	5.501E-02	2.942
RA-226	1.013E+01	1.925E+01	4.714E+00	8.633E+00	2.149

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-1.348E+00		1.792E+00	2.867E+00	3.415E-01	-0.470
NA-22	-1.433E-02		1.729E-01	3.370E-01	2.991E-02	-0.043
AL-26	-7.023E-02		1.275E-01	2.279E-01	1.876E-02	-0.308
TI-44	-1.981E-01		1.177E-01	1.634E-01	1.287E-02	-1.212
SC-46	6.020E-02		2.172E-01	4.280E-01	4.502E-02	0.141
V-48	-3.413E-02		6.162E-01	1.046E+00	1.052E-01	-0.033
CR-51	-3.445E-01		2.197E+00	3.777E+00	3.960E-01	-0.091
MN-54	1.089E-01		1.598E-01	3.198E-01	3.506E-02	0.340
CO-56	-3.115E-02		2.321E-01	3.593E-01	3.908E-02	-0.087
CO-57	5.149E-03		9.722E-02	1.689E-01	1.683E-02	0.030
CO-58	1.559E-01		2.233E-01	4.078E-01	4.537E-02	0.382
FE-59	-8.695E-02		4.989E-01	9.391E-01	9.202E-02	-0.093
CO-60	6.510E-02		2.156E-01	4.161E-01	3.459E-02	0.156
ZN-65	1.694E-01		3.857E-01	7.327E-01	6.578E-02	0.231
SE-75	-6.502E-02		1.786E-01	3.024E-01	2.859E-02	-0.215
RB-82	9.750E-01		2.786E+00	5.181E+00	5.836E-01	0.188
RB-83	-2.021E-01		3.735E-01	6.122E-01	1.087E-01	-0.330
KR-85	5.463E+01		4.163E+01	7.837E+01	9.440E+00	0.697
SR-85	3.219E-01		2.453E-01	4.618E-01	5.563E-02	0.697
Y-88	-4.734E-02		1.890E-01	3.685E-01	2.992E-02	-0.128
NB-93M	5.897E+00		4.839E+00	7.993E+00	3.053E+00	0.738
NB-94	7.139E-02		1.825E-01	3.153E-01	3.368E-02	0.226
NB-95	3.085E-01		3.193E-01	6.248E-01	7.063E-02	0.494
NB-95M	3.188E+02		1.230E+02	2.174E+02	2.040E+01	1.467
ZR-95	-3.284E-02		4.229E-01	7.391E-01	8.873E-02	-0.044
RU-103	2.071E-02		2.247E-01	4.021E-01	6.610E-02	0.052
RU-106	1.436E-01		1.589E+00	2.720E+00	4.229E-01	0.053
AG-108M	5.901E-02		2.057E-01	3.390E-01	3.860E-02	0.174
AG-110M	-5.716E-02		2.014E-01	3.401E-01	3.872E-02	-0.168
SN-113	-2.088E-02		2.186E-01	3.782E-01	4.293E-02	-0.055
TE123M	1.802E-02		1.431E-01	2.227E-01	2.013E-02	0.081
SB-124	-1.390E-01		2.646E-01	3.769E-01	4.473E-02	-0.369
I-125	-1.931E+00		2.344E+00	3.918E+00	4.094E-01	-0.493
SB-125	-1.386E-01		4.456E-01	7.535E-01	8.791E-02	-0.184

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-126	-3.781E-02		1.676E+00	2.624E+00	2.988E-01	-0.014
SB-127	9.496E+00		8.180E+01	1.451E+02	1.652E+01	0.065
I-129	-1.586E-02		2.531E-01	4.411E-01	5.683E-02	-0.036
I-131	1.764E-01		1.616E+00	2.575E+00	2.777E-01	0.068
BA-133	4.288E-01		2.401E-01	4.378E-01	6.399E-02	0.979
CS-134	2.550E-02		1.889E-01	3.001E-01	3.564E-02	0.085
CS-135	-7.098E-02		6.178E-01	1.064E+00	9.996E-02	-0.067
CS-136	-9.158E-01		1.315E+00	1.911E+00	1.879E-01	-0.479
CS-137	1.026E-01		2.051E-01	3.781E-01	4.292E-02	0.271
LA-138	4.484E-02		2.199E-01	4.716E-01	4.315E-02	0.095
CE-139	3.400E-02		1.401E-01	2.206E-01	1.948E-02	0.154
BA-140	1.838E+00		2.657E+00	4.893E+00	1.673E+00	0.376
LA-140	3.359E-01		8.375E-01	1.704E+00	1.516E-01	0.197
CE-141	9.791E-02		3.100E-01	5.442E-01	1.315E-01	0.180
CE-144	-6.533E-02		8.300E-01	1.428E+00	1.385E-01	-0.046
PM-144	-1.196E-01		1.896E-01	3.047E-01	3.472E-02	-0.392
PM-145	-1.821E-01		4.984E-01	8.313E-01	5.428E-01	-0.219
PM-146	-1.003E-01		3.171E-01	5.373E-01	6.318E-02	-0.187
ND-147	-1.561E-01		5.812E+00	1.026E+01	1.239E+00	-0.015
EU-152	5.405E-02		9.166E-01	1.928E+00	2.188E-01	0.028
GD-153	-7.480E-02		4.205E-01	6.444E-01	6.250E-02	-0.116
EU-154	-4.454E-02		4.787E-01	9.315E-01	8.267E-02	-0.048
EU-155	1.101E+00		3.427E-01	5.879E-01	5.577E-02	1.873
EU-156	2.490E+00		5.368E+00	9.582E+00	2.289E+00	0.260
HO-166M	-2.295E-02		2.901E-01	5.091E-01	5.800E-02	-0.045
HF-172	-7.191E-01		7.297E-01	1.188E+00	1.173E-01	-0.605
LU-172	-3.202E+00		5.654E+00	9.966E+00	9.158E-01	-0.321
LU-173	4.126E-01		5.454E-01	9.080E-01	8.515E-02	0.454
HF-175	-2.224E-02		2.375E-01	2.866E-01	3.001E-02	-0.078
LU-176	-7.092E-02		1.087E-01	1.785E-01	1.759E-02	-0.397
TA-182	9.021E-01	+	1.010E+00	1.537E+00	1.369E-01	0.587
IR-192	1.550E-01		3.835E-01	6.925E-01	8.210E-02	0.224
HG-203	1.116E-01		2.421E-01	3.899E-01	3.732E-02	0.286
BI-207	-4.712E-02		1.431E-01	2.420E-01	2.909E-02	-0.195
BI-210M	-5.711E-02		1.962E-01	3.346E-01	3.147E-02	-0.171
PB-210	1.575E+00		2.553E+00	4.594E+00	3.813E-01	0.343
PB-211	-1.402E+00		4.099E+00	6.925E+00	7.825E-01	-0.202
RN-219	-6.801E-01		1.865E+00	3.140E+00	3.538E-01	-0.217
RA-223	-5.105E-01		2.718E+00	4.664E+00	4.735E-01	-0.109
RA-224	2.311E+01		4.470E+00	8.056E+00	7.571E-01	2.868
RA-225	-3.466E-01		1.234E+00	2.126E+00	1.980E-01	-0.163
TH-227	3.973E+00		1.229E+00	2.188E+00	2.054E-01	1.815
AC-228	1.787E+00		7.961E-01	1.747E+00	1.815E-01	1.023
TH-230	-5.109E+01		3.000E+01	4.160E+01	3.269E+00	-1.228
PA-231	-4.275E+00		5.130E+00	7.311E+00	7.153E-01	-0.585
TH-231	-1.516E+00		1.373E+00	2.226E+00	3.570E-01	-0.681
PA-233	3.822E-01		5.965E-01	1.076E+00	2.475E-01	0.355
PA-234	1.895E-01		4.067E-01	7.186E-01	7.009E-02	0.264

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PA-234M	-6.526E+00		1.795E+01	3.375E+01	3.356E+00	-0.193
TH-234	6.724E-01		2.555E+00	4.538E+00	3.436E-01	0.148
U-235	2.592E-01		7.472E-01	1.318E+00	2.364E-01	0.197
NP-237	2.671E+00		8.313E-01	1.426E+00	1.353E-01	1.873
AM-241	-8.345E-02		2.620E-01	4.470E-01	3.288E-02	-0.187
AM-243	9.843E-01		2.083E-01	3.500E-01	2.939E-02	2.812
CM-243	1.219E-01		8.833E-01	1.382E+00	1.292E-01	0.088



Total number of lines in spectrum 36  
 Number of unidentified lines 18  
 Number of lines tentatively identified by NID 18 50.00%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	2.664E+01	2.664E+01	0.556E+01	20.89	
TL-208	1.41E+10Y	1.00	2.048E+00	2.048E+00	0.537E+00	26.23	
BI-212	1.41E+10Y	1.00	2.119E+00	2.119E+00	2.156E+00	101.74	
PB-212	1.41E+10Y	1.00	1.683E+00	1.683E+00	0.389E+00	23.11	
BI-214	1602.00Y	1.00	1.670E+00	1.670E+00	0.567E+00	33.92	
PB-214	1602.00Y	1.00	1.526E+00	1.526E+00	0.526E+00	34.47	
RA-226	1602.00Y	1.00	1.013E+01	1.013E+01	1.925E+01	189.99	
Total Activity :			4.582E+01	4.582E+01			

Nuclide Type : FISSION

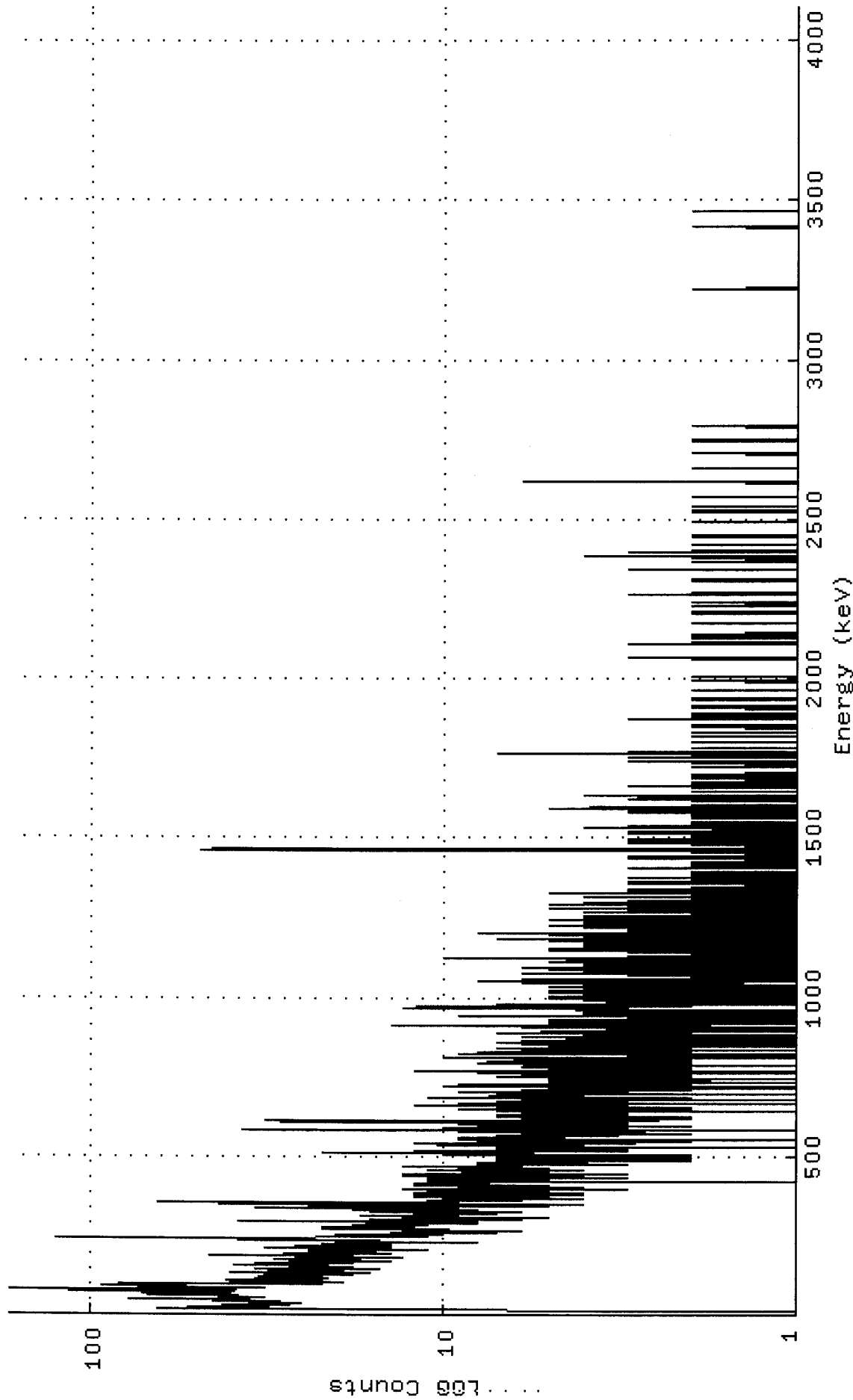
Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CD-109	464.00D	1.04	5.656E+00	5.901E+00	3.650E+00	61.86	
SN-126	1.00E+05Y	1.00	5.683E-01	5.683E-01	3.499E-01	61.57	
Total Activity :			6.224E+00	6.469E+00			

Grand Total Activity : 5.204E+01 5.229E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Spectrum : DKA100: [GAMMA.SCUSR.ARCHIVE]SMP\_100512707\_GE4\_GAS1001\_150519.CNF; 1  
 Title :  
 Sample Title: MPA-RA-2 11-12  
 Start Time: 17-JUN-2010 08:59 Sample Time: 20-MAY-2010 00:00 Energy Offset: -1.37255E-02  
 Real Time : 0 01:00:01.00 Sample ID : 1005127-07 Energy Slope : 1.00041E+00  
 Live Time : 0 01:00:00.00 Sample Type: SOIL Energy Quad : 0.00000E+00



Channel Contents for DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512707\_GE4\_GAS1001\_1505

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	43
17:	64	60	44	61	56	50	37	50
25:	37	45	31	37	42	39	31	34
33:	27	30	27	30	32	25	35	32
41:	34	39	29	31	39	51	77	44
49:	35	40	42	34	43	39	32	33
57:	38	47	38	48	41	54	66	71
65:	40	44	44	44	47	39	45	42
73:	58	91	110	120	170	143	67	50
81:	40	36	32	49	55	48	69	77
89:	59	62	53	56	92	74	39	32
97:	29	23	22	40	28	19	30	33
105:	30	33	35	24	40	41	22	28
113:	29	34	21	23	33	23	29	27
121:	28	33	26	18	23	26	23	28
129:	28	36	40	16	31	23	26	31
137:	30	19	28	20	24	15	30	21
145:	34	16	27	22	19	21	27	18
153:	20	22	26	39	27	29	29	23
161:	24	24	18	34	30	22	14	25
169:	21	27	20	19	25	30	17	23
177:	19	26	13	17	18	25	24	18
185:	33	46	45	31	29	15	14	15
193:	28	21	14	19	23	22	24	23
201:	18	13	14	24	22	21	11	21
209:	25	32	27	18	14	15	17	26
217:	18	14	22	22	14	19	19	14
225:	14	20	14	15	12	8	16	15
233:	18	23	18	16	18	81	125	60
241:	34	36	40	13	18	17	11	16
249:	11	11	20	17	17	14	10	14
257:	11	10	7	10	10	12	8	13
265:	11	12	6	15	15	16	13	22
273:	12	12	12	13	13	22	19	14
281:	15	14	11	11	18	15	11	9
289:	14	13	8	9	8	19	28	38
297:	12	8	15	10	16	6	13	7
305:	5	10	13	7	12	14	9	15
313:	11	17	13	11	10	12	9	7
321:	8	11	16	10	6	7	9	11
329:	15	8	18	8	8	10	10	13
337:	20	26	34	17	13	6	5	10
345:	6	8	10	10	4	11	29	64
353:	53	18	13	12	9	11	6	7
361:	11	10	9	8	6	4	6	10
369:	6	5	10	7	12	6	8	11
377:	10	4	12	12	7	5	9	10
385:	4	12	7	8	11	9	11	5
393:	11	3	9	13	7	9	8	8
401:	8	9	9	4	7	5	8	11
409:	7	12	6	9	12	9	12	8
417:	9	11	6	3	0	9	10	7
425:	5	8	11	7	5	11	3	9

433:	8	8	8	9	8	4	10	8
441:	13	5	5	3	7	13	6	6
449:	6	6	6	5	7	11	5	4
457:	5	8	9	8	5	5	9	7
465:	5	7	7	8	13	11	9	7
473:	8	8	5	8	3	5	5	4
481:	6	7	8	5	2	6	7	5
489:	3	6	2	7	4	6	5	7
497:	5	6	2	6	2	10	5	2
505:	5	3	5	6	14	15	22	20
513:	10	12	6	9	7	4	3	5
521:	3	7	7	6	3	3	4	1
529:	7	7	5	4	5	4	5	5
537:	9	12	5	5	3	7	4	2
545:	4	8	4	2	5	7	1	9
553:	6	4	4	5	9	5	7	5
561:	9	5	4	7	7	5	5	2
569:	5	4	5	6	4	3	6	5
577:	9	3	7	0	4	14	35	37
585:	10	4	4	3	10	5	7	2
593:	6	3	4	8	7	5	6	4
601:	4	3	9	7	3	6	6	13
609:	26	32	8	4	3	7	3	2
617:	5	4	6	2	2	7	5	3
625:	5	2	4	7	6	3	6	4
633:	5	5	6	4	6	6	3	4
641:	4	0	6	7	4	9	7	5
649:	2	6	5	7	3	2	3	6
657:	6	5	8	3	7	12	3	5
665:	4	9	1	4	3	5	3	4
673:	7	5	3	4	1	2	1	6
681:	6	5	7	2	5	2	11	5
689:	4	6	7	6	7	5	2	6
697:	7	1	2	9	6	7	3	6
705:	4	5	6	2	5	5	4	1
713:	5	3	3	3	2	3	2	3
721:	7	0	10	4	2	7	9	7
729:	5	5	2	1	3	4	5	3
737:	3	5	2	3	3	1	2	2
745:	1	5	1	4	5	6	7	2
753:	5	4	4	4	3	2	6	2
761:	4	0	5	4	8	6	4	5
769:	12	1	3	3	4	5	5	5
777:	2	4	2	6	3	5	4	3
785:	3	3	4	1	5	7	3	4
793:	2	6	8	7	4	5	3	2
801:	4	4	3	2	4	5	4	10
809:	5	2	3	0	1	1	2	3
817:	2	1	1	2	2	0	0	9
825:	1	6	2	8	3	5	2	2
833:	4	1	2	4	6	2	4	7
841:	6	5	4	3	5	1	2	1
849:	1	5	1	6	3	2	3	4
857:	7	0	4	6	5	5	2	1
865:	1	6	5	4	4	2	3	1
873:	3	4	0	6	0	6	0	2
881:	2	4	3	4	1	4	2	2
889:	2	3	7	4	1	4	2	3
897:	4	3	2	3	1	0	2	3
905:	1	3	3	1	4	9	14	13

913:	6	2	3	1	5	2	2	3
921:	3	0	1	5	3	4	3	5
929:	2	4	2	1	3	3	1	2
937:	3	1	1	5	3	9	2	1
945:	1	1	2	1	4	4	2	1
953:	1	2	3	4	1	1	0	4
961:	3	4	3	6	5	7	3	13
969:	13	11	6	2	4	4	3	2
977:	1	5	7	3	4	3	0	1
985:	2	2	1	2	3	4	1	4
993:	2	5	0	5	3	2	2	1
1001:	5	3	0	1	1	2	0	3
1009:	2	4	1	1	4	1	2	0
1017:	5	2	4	5	1	0	4	2
1025:	1	3	4	2	0	5	1	0
1033:	5	5	4	1	3	4	1	4
1041:	2	5	6	2	3	2	2	1
1049:	3	2	4	4	8	1	1	1
1057:	3	6	2	1	2	2	0	1
1065:	2	1	2	1	3	3	1	6
1073:	4	3	1	2	5	2	4	1
1081:	3	4	1	3	1	2	5	2
1089:	4	1	3	2	0	6	2	0
1097:	1	1	1	4	4	4	2	2
1105:	4	0	2	2	3	0	4	3
1113:	5	1	0	2	2	1	4	5
1121:	3	10	1	3	1	1	3	1
1129:	0	2	2	2	1	1	1	1
1137:	1	1	3	3	1	3	2	0
1145:	5	1	4	5	3	1	2	4
1153:	1	2	5	2	2	4	1	4
1161:	2	0	2	4	2	3	3	1
1169:	4	1	3	2	3	5	3	2
1177:	1	3	3	1	4	3	7	5
1185:	0	2	1	1	4	2	3	3
1193:	4	1	4	5	3	2	0	2
1201:	8	2	3	2	2	3	0	3
1209:	1	3	2	1	1	1	2	0
1217:	4	3	3	2	3	5	0	1
1225:	4	3	1	4	2	2	1	1
1233:	1	2	2	2	4	1	3	5
1241:	4	1	1	3	3	0	4	3
1249:	3	1	2	3	3	3	1	4
1257:	1	2	0	1	1	2	1	0
1265:	4	2	1	1	0	3	2	1
1273:	3	0	0	1	2	4	3	0
1281:	5	0	3	3	1	2	1	5
1289:	1	0	2	4	1	3	4	1
1297:	0	4	2	1	3	0	1	0
1305:	3	1	0	1	2	1	0	2
1313:	3	4	1	0	1	0	2	2
1321:	0	2	1	1	4	5	0	1
1329:	2	0	0	0	3	3	0	0
1337:	2	1	0	1	3	0	2	1
1345:	1	0	2	0	0	0	0	1
1353:	0	0	0	3	1	0	2	0
1361:	3	1	0	2	1	0	2	1
1369:	1	2	1	2	1	2	3	3
1377:	1	1	2	0	0	1	2	0
1385:	2	1	1	1	0	0	2	2

1393:	2	1	1	0	1	1	1	1
1401:	0	3	0	0	3	0	0	0
1409:	1	2	0	1	1	0	0	2
1417:	0	2	1	0	0	2	1	1
1425:	1	1	1	0	0	1	2	3
1433:	0	0	2	0	2	0	0	1
1441:	3	0	0	1	1	0	1	0
1449:	2	0	1	1	2	2	1	1
1457:	0	3	21	49	42	23	3	0
1465:	0	2	0	0	1	1	0	1
1473:	0	1	1	2	2	0	1	3
1481:	2	1	1	2	0	2	3	1
1489:	0	0	2	1	1	3	1	0
1497:	0	1	1	1	2	0	0	2
1505:	1	0	2	2	0	0	1	0
1513:	3	0	1	2	1	1	1	3
1521:	1	1	0	1	0	0	1	0
1529:	4	2	0	0	0	1	0	3
1537:	1	0	0	0	0	0	1	2
1545:	0	0	1	1	2	0	0	0
1553:	0	0	0	0	1	2	1	2
1561:	1	0	1	2	1	0	0	1
1569:	1	2	0	1	1	2	0	0
1577:	3	1	1	0	0	1	3	3
1585:	0	3	2	1	2	1	2	5
1593:	3	1	0	0	1	0	0	2
1601:	0	1	2	0	1	0	1	1
1609:	1	1	1	2	1	0	0	1
1617:	1	0	1	2	1	3	1	1
1625:	0	0	0	2	4	0	0	0
1633:	1	1	1	1	1	0	1	0
1641:	0	1	2	0	0	1	0	1
1649:	0	0	1	0	0	2	0	1
1657:	1	1	0	1	1	2	3	0
1665:	0	0	2	0	0	2	0	1
1673:	1	2	0	0	0	0	0	1
1681:	0	0	2	0	0	2	0	1
1689:	0	0	2	0	0	1	1	1
1697:	2	1	0	2	0	0	0	1
1705:	0	1	1	0	0	1	0	0
1713:	0	0	1	0	0	1	0	0
1721:	2	0	1	2	0	1	1	0
1729:	1	1	0	2	1	0	1	1
1737:	0	3	1	1	0	1	0	1
1745:	0	0	0	0	0	1	0	0
1753:	0	3	1	0	2	0	0	0
1761:	1	2	7	4	5	2	3	0
1769:	0	2	1	0	0	0	0	0
1777:	1	1	1	1	0	2	1	1
1785:	0	0	0	0	1	0	0	0
1793:	0	1	0	1	0	1	2	1
1801:	1	1	1	0	0	1	0	0
1809:	0	0	1	0	0	1	0	0
1817:	2	0	2	1	0	0	1	1
1825:	0	0	1	1	2	0	2	1
1833:	0	0	0	1	1	1	0	0
1841:	1	1	0	1	2	0	0	1
1849:	1	1	2	1	0	1	1	0
1857:	0	0	0	0	0	0	1	0
1865:	0	0	0	0	0	0	3	0

1873:	0	0	2	0	0	1	0	0
1881:	0	0	0	1	1	2	1	1
1889:	2	1	0	1	1	0	0	0
1897:	0	1	0	0	0	0	0	0
1905:	2	0	0	0	0	1	1	0
1913:	0	2	0	0	0	0	0	0
1921:	1	1	0	0	0	0	0	0
1929:	0	0	0	2	0	0	1	0
1937:	0	0	2	1	0	0	0	0
1945:	0	1	0	0	1	0	0	1
1953:	0	0	0	0	0	0	0	1
1961:	2	0	1	0	0	0	0	0
1969:	0	1	0	1	0	1	0	1
1977:	1	0	1	1	0	0	0	0
1985:	0	1	0	0	2	0	0	0
1993:	2	0	1	0	1	1	1	0
2001:	0	2	1	1	0	0	0	0
2009:	0	0	1	1	1	0	1	0
2017:	0	1	0	1	1	1	1	0
2025:	0	1	1	1	0	0	0	0
2033:	0	1	0	0	1	1	0	0
2041:	0	0	0	0	0	0	1	1
2049:	0	1	1	0	0	0	0	2
2057:	0	0	0	0	0	3	0	0
2065:	0	1	0	0	0	1	0	0
2073:	0	0	1	0	1	0	0	1
2081:	0	1	0	0	0	1	0	1
2089:	0	0	0	0	0	1	0	0
2097:	0	1	0	1	1	0	0	1
2105:	0	3	1	0	0	2	2	0
2113:	0	0	0	0	0	0	0	0
2121:	0	0	0	1	2	1	1	1
2129:	0	1	2	0	0	1	0	0
2137:	1	2	1	0	0	0	1	0
2145:	0	1	0	1	0	0	0	0
2153:	0	1	0	0	0	1	0	0
2161:	0	0	1	0	0	1	1	1
2169:	0	0	2	0	0	0	0	1
2177:	1	1	0	0	0	0	0	1
2185:	0	0	0	0	1	0	1	1
2193:	0	1	0	1	0	0	0	1
2201:	2	0	1	1	0	0	2	1
2209:	0	0	0	0	1	0	1	0
2217:	0	1	1	0	0	0	0	1
2225:	0	1	0	2	0	1	1	0
2233:	1	0	2	1	0	1	0	1
2241:	0	0	0	0	0	1	0	0
2249:	0	0	0	0	0	0	0	0
2257:	1	0	0	2	3	1	1	0
2265:	2	0	1	0	0	0	0	1
2273:	0	1	0	1	0	0	1	0
2281:	1	0	0	0	0	0	0	0
2289:	0	0	0	0	0	0	1	1
2297:	0	0	0	0	1	2	0	0
2305:	0	0	2	0	0	1	1	1
2313:	0	0	1	1	1	0	0	0
2321:	0	0	0	0	0	0	0	1
2329:	0	1	0	0	0	0	0	1
2337:	0	2	1	3	0	0	0	0
2345:	0	0	0	0	1	1	0	0

2353:	1	0	1	0	0	0	1	1
2361:	0	0	1	0	0	2	0	0
2369:	0	0	0	1	1	0	0	0
2377:	0	2	0	1	0	4	0	0
2385:	0	0	0	1	0	0	1	0
2393:	0	3	0	1	0	0	1	2
2401:	0	0	0	0	1	0	1	0
2409:	0	0	1	0	0	0	1	1
2417:	2	0	2	0	1	1	0	0
2425:	1	1	0	0	0	0	0	1
2433:	0	1	0	0	1	0	0	0
2441:	2	1	0	0	2	0	1	0
2449:	0	0	0	1	0	0	0	0
2457:	0	0	0	0	0	0	1	0
2465:	0	0	0	0	1	1	0	0
2473:	0	1	0	0	0	0	0	1
2481:	0	0	0	0	0	0	1	0
2489:	0	0	2	0	1	1	0	1
2497:	0	0	0	0	0	0	0	0
2505:	0	0	0	0	0	1	0	0
2513:	0	1	0	0	0	2	0	1
2521:	1	0	1	1	1	0	2	0
2529:	0	0	1	0	0	0	0	2
2537:	0	2	0	1	0	0	0	0
2545:	0	0	0	0	0	1	0	0
2553:	0	0	0	0	0	1	0	0
2561:	0	0	0	0	0	2	0	0
2569:	1	0	0	0	0	0	0	0
2577:	0	0	0	0	0	0	0	0
2585:	0	0	1	0	0	0	0	0
2593:	1	0	0	0	0	0	0	0
2601:	0	0	0	0	0	0	0	0
2609:	0	0	0	1	2	6	5	4
2617:	3	0	0	0	0	0	0	0
2625:	0	0	0	0	0	0	1	0
2633:	0	1	0	0	0	0	0	0
2641:	0	1	0	0	0	1	0	0
2649:	0	0	0	0	0	0	0	0
2657:	1	2	0	0	0	0	0	0
2665:	1	0	0	1	1	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	1	0	0	0	0	0	1	0
2689:	1	1	0	1	0	0	0	0
2697:	0	0	0	0	0	0	2	0
2705:	0	0	0	1	0	0	0	1
2713:	0	0	0	0	0	1	0	1
2721:	0	0	0	1	1	0	0	0
2729:	0	1	0	0	0	0	0	0
2737:	0	1	2	0	0	0	1	0
2745:	0	2	0	0	0	0	0	1
2753:	0	0	0	0	0	0	1	0
2761:	0	1	0	1	0	0	0	0
2769:	0	0	0	0	0	0	1	0
2777:	0	0	0	0	1	1	0	0
2785:	0	2	0	0	0	0	0	1
2793:	1	1	0	1	0	0	0	0
2801:	0	0	0	0	1	0	0	1
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	0	0	0	0	0	0	1	0



2833:	0	0	0	0	0	0	0	0
2841:	0	1	0	0	0	1	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	1	0	0	0	0	0	1
2865:	0	0	0	0	0	1	0	0
2873:	1	0	1	0	0	0	0	0
2881:	0	0	1	0	0	1	0	0
2889:	0	0	0	1	0	0	0	0
2897:	0	0	0	1	0	0	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	0	1	0	0	1	0
2929:	0	1	0	1	0	0	0	0
2937:	1	0	0	0	0	0	1	0
2945:	0	0	1	0	0	0	0	0
2953:	0	0	0	0	0	0	0	0
2961:	1	0	0	0	1	0	0	0
2969:	1	1	0	0	1	0	0	0
2977:	0	0	1	1	0	0	0	1
2985:	1	0	0	0	0	0	0	0
2993:	0	0	0	0	0	0	1	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	0	0	0	0	1	0	0
3025:	0	0	0	0	1	0	0	1
3033:	0	0	0	0	0	0	0	0
3041:	0	1	0	0	0	0	0	1
3049:	0	0	1	0	0	0	0	0
3057:	0	0	0	0	0	0	0	0
3065:	0	0	1	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	0	1	0	0	0	0	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	0	0	0	1	0	0	0
3113:	0	0	0	0	0	0	0	0
3121:	0	0	0	0	0	0	0	1
3129:	0	0	0	0	1	0	0	0
3137:	0	0	1	0	0	0	0	0
3145:	0	0	0	0	0	0	0	1
3153:	0	0	0	0	0	0	0	0
3161:	0	0	0	0	0	0	1	0
3169:	0	0	0	0	1	0	1	0
3177:	0	0	0	0	1	1	0	0
3185:	0	0	0	1	0	1	0	1
3193:	0	0	0	0	1	1	0	0
3201:	0	0	0	0	1	0	0	0
3209:	0	0	0	1	2	0	0	0
3217:	2	1	0	0	0	0	0	0
3225:	0	0	0	0	0	0	1	0
3233:	0	0	0	0	0	0	0	0
3241:	0	1	0	0	0	0	0	0
3249:	0	0	0	0	0	0	0	0
3257:	0	0	1	0	0	0	0	0
3265:	0	0	0	0	0	0	0	0
3273:	1	0	0	0	0	0	0	1
3281:	1	0	0	0	0	0	0	0
3289:	0	0	0	0	0	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	1

3313:	0	0	0	0	0	0	0	0
3321:	0	1	0	0	0	0	1	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	1	0	0	0
3345:	0	1	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	0	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	0	0	0	0	0	1	0	0
3385:	0	0	0	0	1	0	0	0
3393:	0	0	0	0	1	0	0	0
3401:	0	0	0	0	0	0	0	1
3409:	0	2	0	0	0	0	0	1
3417:	0	0	1	0	0	0	0	0
3425:	0	0	0	0	0	0	0	1
3433:	1	1	0	1	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	1	0	0	0	0	0
3457:	0	0	0	0	2	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	1	0	0	0	1	0
3489:	0	0	0	0	1	0	0	1
3497:	0	0	0	0	0	0	0	0
3505:	0	1	0	0	0	0	0	0
3513:	0	0	0	0	0	1	0	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	1	0	1	0	0
3537:	0	0	0	0	1	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	1	0	0	1	0	0	1	0
3561:	0	0	0	0	1	0	0	1
3569:	0	0	0	0	1	0	0	0
3577:	0	0	0	0	0	0	1	0
3585:	0	1	0	0	0	0	1	0
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	1	0	0	0	1	0	1
3617:	0	0	1	0	0	0	1	0
3625:	0	0	0	0	0	0	0	1
3633:	0	0	0	0	0	0	0	0
3641:	1	0	0	0	0	0	1	0
3649:	0	0	0	0	1	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	1	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	0	1	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	1	0	0	0	0
3713:	0	0	0	0	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	1	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	0
3753:	1	0	0	0	0	1	0	0
3761:	0	0	0	0	0	0	0	0
3769:	0	0	0	0	0	0	0	0
3777:	0	0	0	0	0	0	1	0
3785:	1	0	1	0	1	0	0	0

3793:	0	0	0	0	0	0	0	0
3801:	1	0	1	0	0	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0
3825:	0	0	0	0	0	0	0	1
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	1	1	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	1	1	0	0
3889:	0	0	0	0	0	0	0	0
3897:	1	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	1
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	1	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	0	0	0	0	0	1
3961:	0	0	0	0	0	0	0	0
3969:	0	1	0	0	0	0	1	0
3977:	0	0	0	0	1	0	0	0
3985:	0	0	0	0	0	1	0	0
3993:	0	1	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	1	0	1	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	1	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	1	0	0	0	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	1	0	0	0
4065:	0	0	0	0	1	0	0	0
4073:	0	1	0	0	0	0	1	0
4081:	0	0	0	0	0	0	1	0
4089:	1	0	0	0	0	0	0	0

VM  
6-17-10

Sample ID : 1005127-08

Acquisition date : 17-JUN-2010 09:50:01

VAX/VMS Peak Search Report Generated 17-JUN-2010 10:50:15.37

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100512708\_GE1\_GAS1001\_150522.  
 Analyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2  
 Client ID : MPA-RA-3 9-10.5  
 Deposition Date :  
 Sample Date : 20-MAY-2010 00:00:00 Acquisition date : 17-JUN-2010 09:50:01  
 Sample ID : 1005127-08 Sample Quantity : 4.38300E+01 GRAM  
 Sample type : SOIL Sample Geometry : 0  
 Detector name : GE1 Detector Geometry: GAS-1001  
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.47 0.0%  
 Start channel : 5 End channel : 4096  
 Sensitivity : 2.40000 Gaussian : 15.00000  
 Critical level : Yes

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	75.91*	148	258	4.55	75.36	70	12	47.9		AM-243
0	207.82	30	100	4.62	207.37	204	9	123.5		
5	238.52*	72	65	2.79	238.09	232	22	49.5	3.04E+00	PB-212
5	241.98	34	69	2.62	241.55	232	22	101.0		RA-224
0	352.38*	72	45	2.50	352.03	346	13	47.1		
0	580.79	59	50	11.83	580.61	567	22	65.7		
0	597.61	22	39	7.42	597.44	591	12	122.8		
2	609.67*	41	34	2.83	609.51	603	21	63.8	4.98E+00	BI-214
2	614.59	18	33	2.84	614.44	603	21	129.0		
0	682.51	13	7	1.09	682.40	680	7	89.5		
0	912.06*	27	13	2.01	912.12	907	11	69.0		
0	924.03	11	6	1.73	924.10	921	7	93.8		
0	994.62	10	3	3.88	994.73	991	7	88.8		
0	1222.85	15	4	5.28	1223.13	1219	8	67.9		
0	1283.56	9	5	5.11	1283.89	1279	10	114.4		
0	1395.36	7	5	1.45	1395.77	1391	9	141.4		
0	1401.83	9	1	1.40	1402.25	1400	6	78.2		
0	1430.04	8	2	2.06	1430.48	1427	7	85.5		
0	1461.87*	23	4	1.89	1462.33	1458	8	58.2		K-40
0	1510.40	7	6	1.65	1510.89	1506	8	139.0		
0	1764.60*	9	3	1.86	1765.28	1761	10	106.5		BI-214
0	2615.68*	10	3	4.96	2616.98	2613	9	90.9		

AG  
6/17/10

Total number of lines in spectrum 22  
 Number of unidentified lines 10  
 Number of lines tentatively identified by NID 12 54.55%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	4.582E+00	4.582E+00	2.705E+00	59.04	
PB-212	1.41E+10Y	1.00	7.748E-01	7.748E-01	3.926E-01	50.68	
BI-214	1602.00Y	1.00	1.022E+00	1.022E+00	0.569E+00	55.66	
RA-224	1.41E+10Y	1.00	4.236E+00	4.236E+00	4.302E+00	101.56	
Total Activity :			1.062E+01	1.062E+01			

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
AM-243	7380.00Y	1.00	7.185E-01	7.185E-01	3.556E-01	49.49	
Total Activity :			7.185E-01	7.185E-01			

Grand Total Activity : 1.133E+01 1.133E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.81	10.67*	8.102E-01	4.582E+00	4.582E+00	59.04	OK

Final Mean for 1 Valid Peaks = 4.582E+00+/- 2.705E+00 ( 59.04%)

PB-212	238.63	44.60*	3.549E+00	7.748E-01	7.748E-01	50.68	OK
	300.09	3.41	2.958E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 7.748E-01+/- 3.926E-01 ( 50.68%)

BI-214	609.31	46.30*	1.575E+00	9.672E-01	9.672E-01	64.53	OK
	1120.29	15.10	9.574E-01	-----	Line Not Found	-----	Absent
	1764.49	15.80	7.398E-01	1.294E+00	1.294E+00	107.01	OK
	2204.22	4.98	6.890E-01	-----	Line Not Found	-----	Absent

Final Mean for 2 Valid Peaks = 1.022E+00+/- 5.690E-01 ( 55.66%)

RA-224	240.98	3.95*	3.523E+00	4.236E+00	4.236E+00	101.56	OK
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Final Mean for 1 Valid Peaks = 4.236E+00+/- 4.302E+00 (101.56%)

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
AM-243	74.67	66.00*	5.361E+00	7.185E-01	7.185E-01	49.49	OK

Final Mean for 1 Valid Peaks = 7.185E-01+/- 3.556E-01 ( 49.49%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	4.582E+00	2.705E+00	3.115E+00	2.734E-01	1.471
PB-212	7.748E-01	3.926E-01	4.380E-01	4.352E-02	1.769
BI-214	1.022E+00	5.690E-01	6.429E-01	5.785E-02	1.590
RA-224	4.236E+00	4.302E+00	4.983E+00	4.923E-01	0.850
AM-243	7.185E-01	3.556E-01	2.954E-01	3.484E-02	2.432

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-2.104E+00		1.977E+00	2.939E+00	2.532E-01	-0.716
NA-22	1.062E-01		1.827E-01	3.678E-01	4.096E-02	0.289
AL-26	2.417E-02		1.568E-01	3.324E-01	3.095E-02	0.073
TI-44	-3.167E-01		1.684E-01	2.197E-01	2.207E-02	-1.442
SC-46	-7.767E-02		2.060E-01	3.744E-01	3.335E-02	-0.207
V-48	-1.778E-01		4.833E-01	8.593E-01	9.381E-02	-0.207
CR-51	-2.010E+00		2.825E+00	4.526E+00	4.119E-01	-0.444
MN-54	-9.645E-02		1.811E-01	3.196E-01	2.891E-02	-0.302
CO-56	-2.413E-01		2.118E-01	3.353E-01	3.025E-02	-0.720
CO-57	4.513E-02		1.156E-01	2.049E-01	2.026E-02	0.220
CO-58	7.596E-02		2.406E-01	4.725E-01	4.301E-02	0.161
FE-59	-2.323E-01		4.994E-01	8.885E-01	1.273E-01	-0.261
CO-60	3.347E-02		1.913E-01	3.858E-01	6.130E-02	0.087
ZN-65	-2.909E-01		4.614E-01	7.894E-01	1.131E-01	-0.368
SE-75	-1.656E-01		2.268E-01	3.643E-01	3.376E-02	-0.455
RB-82	-7.434E-02		2.736E+00	5.199E+00	4.734E-01	-0.014
RB-83	-1.711E-01		4.627E-01	7.658E-01	1.206E-01	-0.223
KR-85	7.811E+01		5.348E+01	1.007E+02	8.856E+00	0.776
SR-85	4.605E-01		3.152E-01	5.935E-01	5.221E-02	0.776
Y-88	-1.087E-03		1.404E-01	3.065E-01	2.868E-02	-0.004
NB-93M	0.000E+00		0.000E+00	6.263E-01	3.152E-01	0.000
NB-94	-1.039E-01		1.518E-01	2.611E-01	2.341E-02	-0.398
NB-95	1.334E-01		2.891E-01	5.819E-01	5.302E-02	0.229
NB-95M	2.547E+02		1.280E+02	2.435E+02	2.436E+01	1.046
ZR-95	-1.177E-01		3.772E-01	6.922E-01	6.877E-02	-0.170
RU-103	-1.679E-02		2.867E-01	4.965E-01	7.062E-02	-0.034
RU-106	-3.458E-01		2.021E+00	3.262E+00	4.437E-01	-0.106
AG-108M	1.546E-01		2.017E-01	4.086E-01	3.708E-02	0.378
CD-109	-8.497E+00		4.455E+00	6.071E+00	1.004E+00	-1.400
AG-110M	-1.318E-01		1.893E-01	3.266E-01	2.922E-02	-0.404
SN-113	8.209E-02		2.722E-01	4.844E-01	3.996E-02	0.169
TE123M	-7.350E-02		1.378E-01	2.276E-01	2.453E-02	-0.323
SB-124	1.180E-01		3.542E-01	4.662E-01	4.195E-02	0.253
I-125	0.000E+00		0.000E+00	3.026E-01	3.663E-02	0.000
SB-125	-2.453E-01		4.703E-01	7.686E-01	6.493E-02	-0.319
SB-126	1.528E-02		1.640E+00	3.084E+00	2.798E-01	0.005
SN-126	-1.044E+00		4.457E-01	5.787E-01	8.865E-02	-1.804
SB-127	-3.763E+01		7.596E+01	1.160E+02	1.044E+01	-0.324

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-129	0.000E+00		0.000E+00	3.143E-02	4.817E-03	0.000
I-131	1.236E+00		1.629E+00	3.022E+00	2.510E-01	0.409
BA-133	2.195E-01		2.315E-01	4.045E-01	5.280E-02	0.543
CS-134	1.918E-01		2.730E-01	3.851E-01	3.473E-02	0.498
CS-135	6.444E-02		7.317E-01	1.276E+00	1.161E-01	0.050
CS-136	-1.057E+00		1.069E+00	1.702E+00	2.165E-01	-0.621
CS-137	-9.001E-02		2.044E-01	3.617E-01	3.239E-02	-0.249
LA-138	-1.626E-01		3.039E-01	4.416E-01	3.735E-02	-0.368
CE-139	8.862E-02		1.551E-01	2.762E-01	3.033E-02	0.321
BA-140	-5.700E-02		2.914E+00	5.092E+00	1.691E+00	-0.011
LA-140	2.660E-01		7.604E-01	1.663E+00	1.478E-01	0.160
CE-141	-1.931E-01		4.233E-01	6.937E-01	1.705E-01	-0.278
CE-144	-5.160E-01		1.030E+00	1.706E+00	1.727E-01	-0.302
PM-144	-4.378E-02		2.052E-01	3.734E-01	3.375E-02	-0.117
PM-145	0.000E+00		0.000E+00	6.260E-02	4.103E-02	0.000
PM-146	-1.522E-01		4.003E-01	6.633E-01	5.615E-02	-0.230
ND-147	1.111E+00		7.241E+00	1.291E+01	1.144E+00	0.086
EU-152	1.100E+00		1.116E+00	2.525E+00	2.707E-01	0.436
GD-153	1.444E-01		5.197E-01	9.043E-01	1.168E-01	0.160
EU-154	2.997E-01		5.079E-01	1.024E+00	1.141E-01	0.293
EU-155	-1.399E+00		5.857E-01	6.935E-01	1.041E-01	-2.017
EU-156	1.940E+00		6.378E+00	1.249E+01	2.875E+00	0.155
HO-166M	-3.724E-03		2.871E-01	5.466E-01	4.951E-02	-0.007
HF-172	-2.426E-01		8.884E-01	1.500E+00	1.493E-01	-0.162
LU-172	3.447E+00		4.703E+00	1.040E+01	1.429E+00	0.331
LU-173	1.690E-02		6.253E-01	1.079E+00	9.674E-02	0.016
HF-175	-4.487E-02		2.368E-01	3.555E-01	3.021E-02	-0.126
LU-176	-7.696E-03		1.396E-01	2.397E-01	2.083E-02	-0.032
TA-182	1.912E-02		8.054E-01	1.528E+00	2.212E-01	0.013
IR-192	4.389E-02		3.831E-01	6.812E-01	5.829E-02	0.064
HG-203	6.528E-02		2.662E-01	4.661E-01	4.175E-02	0.140
BI-207	8.852E-02		1.438E-01	2.594E-01	2.325E-02	0.341
TL-208	1.028E+00		6.311E-01	1.287E+00	1.156E-01	0.799
BI-210M	-5.749E-02		2.453E-01	4.162E-01	3.870E-02	-0.138
PB-210	-1.586E+01		3.650E+00	3.763E+00	3.485E-01	-4.216
PB-211	-2.552E+00		4.812E+00	7.853E+00	6.346E-01	-0.325
BI-212	-1.434E-01		1.568E+00	2.909E+00	2.642E-01	-0.049
PB-214	1.277E+00	+	6.135E-01	8.471E-01	7.141E-02	1.508
RN-219	2.824E-01		1.947E+00	3.475E+00	2.799E-01	0.081
RA-223	-9.039E-01		3.281E+00	5.528E+00	4.767E-01	-0.164
RA-225	0.000E+00		0.000E+00	1.514E-01	1.606E-02	0.000
RA-226	1.687E+00		5.183E+00	7.806E+00	1.430E+01	0.216
TH-227	2.601E+00		1.209E+00	2.306E+00	2.305E-01	1.128
AC-228	1.473E+00	+	1.027E+00	1.679E+00	1.541E-01	0.878
TH-230	-8.118E+01		4.294E+01	5.598E+01	5.594E+00	-1.450
PA-231	8.250E-01		5.581E+00	9.771E+00	8.500E-01	0.084
TH-231	0.000E+00		0.000E+00	1.554E-01	3.036E-02	0.000
PA-233	2.986E-01		6.820E-01	1.224E+00	2.751E-01	0.244



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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PA-234	-1.109E-01		4.997E-01	8.454E-01	8.513E-02	-0.131
PA-234M	-2.020E+01		2.162E+01	3.169E+01	3.597E+00	-0.638
TH-234	-2.054E+00		3.414E+00	6.312E+00	5.610E-01	-0.325
U-235	-1.048E+00		1.098E+00	1.718E+00	3.167E-01	-0.610
NP-237	-3.394E+00		1.421E+00	1.682E+00	2.526E-01	-2.018
AM-241	-1.879E+00		4.431E-01	5.382E-01	4.279E-02	-3.491
CM-243	-2.740E-01		9.693E-01	1.623E+00	1.424E-01	-0.169

Total number of lines in spectrum 22  
 Number of unidentified lines 10  
 Number of lines tentatively identified by NID 12 54.55%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	4.582E+00	4.582E+00	2.705E+00	59.04	
PB-212	1.41E+10Y	1.00	7.748E-01	7.748E-01	3.926E-01	50.68	
BI-214	1602.00Y	1.00	1.022E+00	1.022E+00	0.569E+00	55.66	
RA-224	1.41E+10Y	1.00	4.236E+00	4.236E+00	4.302E+00	101.56	
Total Activity :			1.062E+01	1.062E+01			

Nuclide Type : ACTIVATION

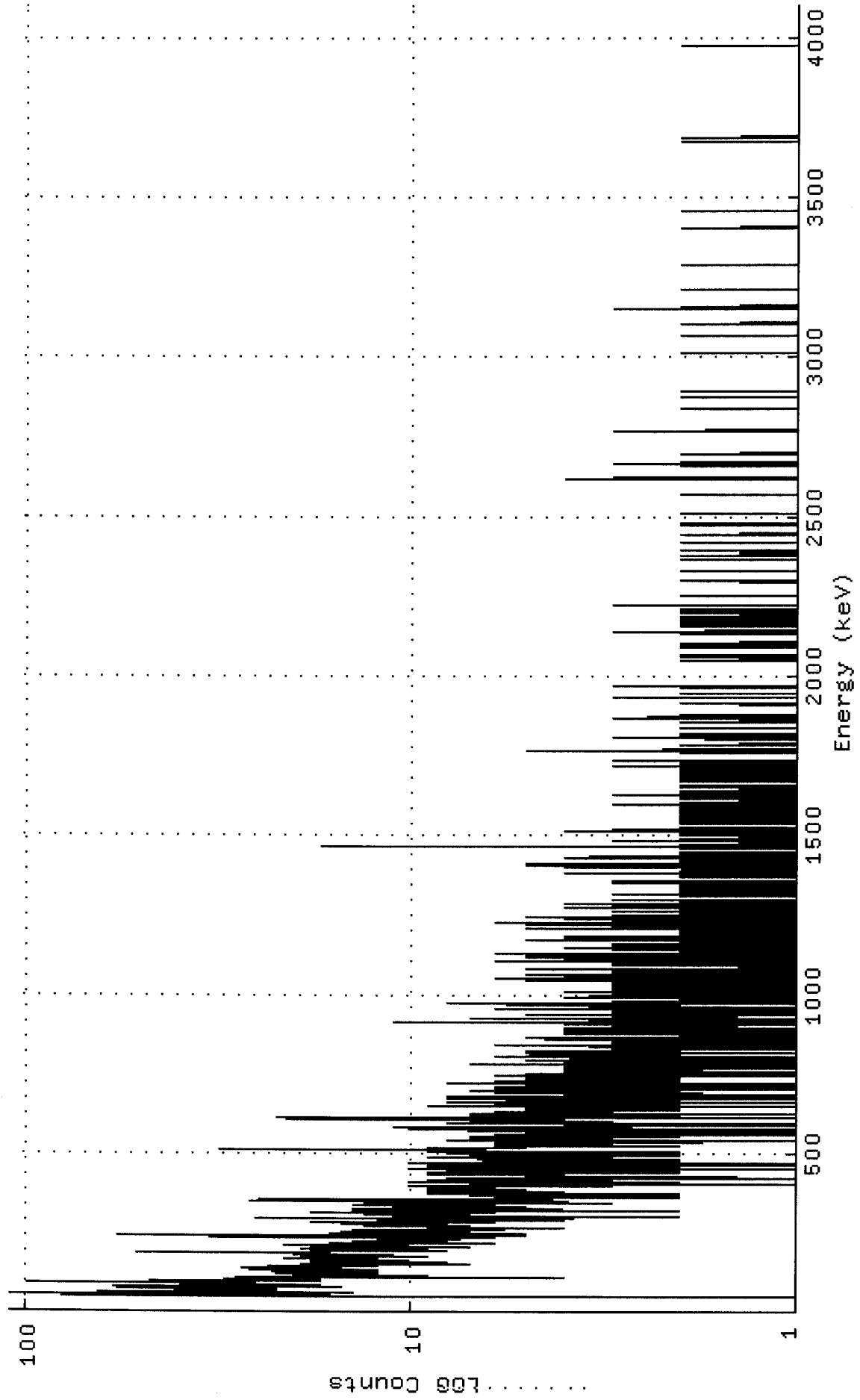
Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
AM-243	7380.00Y	1.00	7.185E-01	7.185E-01	3.556E-01	49.49	
Total Activity :			7.185E-01	7.185E-01			

Grand Total Activity : 1.133E+01 1.133E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Spectrum : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100512708\_GE1\_GAS1001\_150522.CNF;1  
 Title :  
 Sample Title: MPA-RA-3 9-10.5  
 Start Time: 17-JUN-2010 09:50 Sample Time: 20-MAY-2010 00:00 Energy Offset: 6.08450E-01  
 Real Time : 0 01:00:00.47 Sample ID : 1005127-08 Energy Slope : 9.99268E-01  
 Live Time : 0 01:00:00.00 Sample Type: SOIL Energy Quad : 0.00000E+00



Channel Contents for DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512708\_GE1\_GAS1001\_1505

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	5	25
49:	67	79	63	77	109	65	28	16
57:	17	20	21	14	21	64	57	29
65:	32	25	22	35	24	31	31	22
73:	46	55	56	58	49	24	28	23
81:	15	19	26	29	34	39	33	29
89:	25	36	58	97	55	40	19	20
97:	17	25	22	26	19	17	30	24
105:	23	15	15	21	28	16	4	20
113:	14	14	16	11	16	19	18	13
121:	12	16	22	14	17	15	15	12
129:	20	26	14	17	12	18	14	20
137:	27	20	20	25	15	16	23	12
145:	14	20	19	18	19	15	15	7
153:	16	14	10	11	8	14	18	10
161:	12	18	17	16	17	16	21	13
169:	16	12	19	14	11	19	9	15
177:	13	18	18	12	15	18	11	36
185:	51	30	16	16	19	17	8	12
193:	10	17	9	14	16	19	13	9
201:	18	7	11	10	16	13	18	18
209:	21	13	11	10	13	9	10	6
217:	9	16	11	12	8	13	13	14
225:	13	8	9	10	12	8	9	6
233:	11	12	9	12	19	57	24	16
241:	21	22	5	5	16	13	15	11
249:	9	14	11	15	8	11	7	14
257:	7	10	11	8	8	4	9	7
265:	8	8	9	7	12	12	7	13
273:	10	10	8	10	15	12	9	11
281:	14	9	18	6	12	8	9	5
289:	9	12	4	6	13	16	25	16
297:	7	2	11	9	11	7	6	13
305:	7	8	12	7	7	9	7	10
313:	10	6	18	3	8	6	14	9
321:	2	8	6	6	14	6	8	7
329:	8	5	10	7	11	7	7	7
337:	8	14	6	10	7	8	4	13
345:	3	5	7	6	6	11	26	23
353:	13	10	5	6	9	2	4	6
361:	4	5	5	6	5	6	7	2
369:	4	2	8	8	7	5	9	9
377:	5	6	6	4	5	5	6	5
385:	9	8	5	8	7	6	8	9
393:	9	8	5	3	6	10	6	5
401:	4	7	6	1	6	3	10	2
409:	7	8	4	5	5	9	3	8
417:	9	5	7	6	8	4	1	2
425:	4	4	4	5	5	5	4	8

433:	4	9	4	9	3	6	2	3
441:	4	2	7	6	3	8	6	8
449:	8	5	0	8	10	6	6	2
457:	9	4	6	8	7	9	1	5
465:	4	10	2	1	6	4	7	6
473:	2	2	3	3	2	4	2	5
481:	5	5	5	9	3	7	6	5
489:	4	4	3	6	3	2	7	7
497:	8	2	4	4	7	4	6	2
505:	5	9	5	8	16	31	22	24
513:	12	5	9	6	7	6	6	5
521:	4	3	4	2	6	6	3	3
529:	6	5	4	5	6	4	5	4
537:	3	1	5	8	4	4	4	3
545:	7	4	4	4	6	2	5	7
553:	5	2	3	4	1	3	6	5
561:	2	5	1	0	3	4	1	3
569:	5	5	3	1	5	10	9	2
577:	4	3	1	7	10	9	9	11
585:	8	1	2	0	4	4	1	1
593:	7	7	8	4	6	7	7	7
601:	3	3	5	5	4	10	10	12
609:	20	22	8	5	1	11	3	2
617:	2	5	6	7	4	1	0	7
625:	2	2	6	3	4	6	4	6
633:	5	5	4	4	4	4	2	2
641:	5	5	4	3	5	1	9	1
649:	3	5	2	5	6	3	5	2
657:	4	1	4	2	3	8	4	3
665:	2	4	5	4	4	8	4	3
673:	3	0	2	0	7	3	2	2
681:	8	2	3	3	2	0	1	3
689:	5	2	6	4	2	4	7	2
697:	5	7	5	0	6	3	3	6
705:	1	2	3	5	1	6	3	1
713:	0	5	3	3	3	1	4	2
721:	4	8	5	2	5	6	2	6
729:	4	2	2	3	3	5	2	5
737:	3	2	5	5	4	6	2	4
745:	2	0	3	2	1	5	0	3
753:	2	4	1	1	4	2	1	3
761:	3	4	2	4	3	1	4	4
769:	4	1	2	3	4	0	1	3
777:	1	5	7	0	1	3	4	4
785:	3	4	1	4	3	3	1	0
793:	3	2	5	3	0	2	0	2
801:	1	3	1	3	2	4	6	4
809:	4	2	4	4	2	2	5	1
817:	3	3	0	5	3	4	3	4
825:	4	1	2	3	0	2	2	1
833:	1	3	3	0	3	4	6	3
841:	4	4	0	2	2	3	0	1
849:	2	1	2	0	3	1	0	0
857:	3	3	0	1	4	5	2	1
865:	3	5	2	1	1	1	2	2
873:	2	1	1	2	1	1	4	3
881:	0	4	2	1	2	1	3	4
889:	2	0	1	2	1	3	4	2
897:	1	2	3	3	3	2	2	3
905:	3	1	2	4	3	2	4	11

913:	9	1	4	3	1	1	2	0
921:	0	2	4	7	1	3	0	3
929:	3	2	2	3	2	1	3	2
937:	1	5	0	2	1	1	1	3
945:	3	3	0	3	3	0	3	1
953:	6	2	1	2	2	1	2	0
961:	1	2	3	4	2	4	4	4
969:	4	8	2	5	1	1	2	2
977:	1	1	3	1	1	0	2	0
985:	2	1	1	1	0	2	0	1
993:	4	3	2	3	0	0	0	3
1001:	2	3	1	1	1	0	4	3
1009:	4	1	2	3	1	1	2	2
1017:	1	0	1	2	3	3	2	3
1025:	2	1	1	1	2	1	1	3
1033:	3	2	3	3	3	1	0	3
1041:	1	5	5	1	2	2	1	1
1049:	0	3	1	1	6	1	2	0
1057:	4	2	1	2	0	2	1	5
1065:	2	1	2	2	2	3	3	1
1073:	2	1	1	1	3	1	5	2
1081:	0	2	0	1	1	0	1	1
1089:	1	2	2	1	0	3	1	3
1097:	2	2	0	2	0	2	1	6
1105:	0	3	3	4	0	3	3	0
1113:	1	1	2	3	5	1	2	4
1121:	5	5	1	3	3	2	6	1
1129:	2	1	2	1	2	2	1	1
1137:	0	3	3	1	2	0	3	2
1145:	4	3	1	2	4	0	1	1
1153:	1	3	1	1	3	2	0	1
1161:	3	1	1	0	2	1	1	0
1169:	1	5	0	1	2	2	1	4
1177:	1	2	1	4	1	1	2	1
1185:	1	2	2	1	2	0	0	2
1193:	2	1	2	0	1	1	2	0
1201:	1	1	0	0	5	0	0	1
1209:	2	1	1	3	1	2	1	2
1217:	3	2	0	5	1	1	3	6
1225:	3	0	0	2	3	1	1	2
1233:	1	2	2	0	4	2	4	0
1241:	3	1	5	0	1	1	0	1
1249:	2	1	3	0	2	2	0	1
1257:	0	3	0	0	2	0	3	0
1265:	0	2	0	1	1	1	1	4
1273:	1	1	1	2	1	1	0	3
1281:	1	0	1	4	2	1	1	1
1289:	0	2	1	1	0	0	3	1
1297:	0	0	1	0	0	1	1	1
1305:	0	0	1	1	1	2	1	2
1313:	2	0	0	3	1	2	0	0
1321:	1	0	1	0	1	1	0	1
1329:	2	1	2	2	0	0	1	2
1337:	0	1	2	0	2	2	1	1
1345:	1	0	2	0	1	1	0	2
1353:	3	1	3	3	0	1	1	1
1361:	0	0	1	0	1	1	0	1
1369:	2	0	0	0	1	1	0	2
1377:	1	2	1	2	4	1	1	1
1385:	0	0	2	0	1	1	0	1

1393:	1	1	4	2	1	1	0	1
1401:	1	5	2	1	0	0	2	2
1409:	5	0	2	0	2	0	0	0
1417:	0	0	0	0	0	1	2	1
1425:	1	0	1	0	1	4	3	1
1433:	0	0	1	0	0	2	2	1
1441:	1	2	2	2	1	2	2	0
1449:	1	0	1	0	1	1	0	1
1457:	1	0	2	0	4	17	12	1
1465:	0	1	1	2	1	1	1	0
1473:	1	0	1	1	0	0	2	3
1481:	1	1	1	1	0	0	1	0
1489:	2	2	0	1	1	1	1	1
1497:	2	1	1	0	0	2	0	1
1505:	0	2	2	1	0	1	3	4
1513:	0	1	0	1	2	0	2	3
1521:	1	1	0	1	2	0	1	1
1529:	0	1	0	0	0	1	1	1
1537:	0	2	0	0	1	0	2	0
1545:	1	1	2	1	2	1	0	1
1553:	2	1	1	2	2	2	0	2
1561:	2	0	1	0	0	1	2	2
1569:	1	2	1	0	2	1	1	2
1577:	2	1	0	0	1	2	1	0
1585:	1	1	2	0	1	2	0	0
1593:	1	1	0	3	1	1	1	0
1601:	0	0	0	2	0	1	0	1
1609:	0	0	2	1	0	0	1	1
1617:	0	0	1	1	2	1	0	3
1625:	0	0	0	0	0	0	0	0
1633:	0	2	0	2	2	1	0	0
1641:	0	1	0	1	0	0	2	0
1649:	0	1	1	1	1	2	0	1
1657:	1	1	1	0	0	1	0	0
1665:	0	2	0	1	0	1	0	0
1673:	0	2	0	1	0	0	2	0
1681:	1	0	0	0	0	2	0	2
1689:	1	0	0	2	1	2	0	0
1697:	1	0	0	2	0	2	0	0
1705:	0	1	1	1	0	0	2	2
1713:	2	2	2	1	3	0	1	0
1721:	1	0	2	0	0	2	0	2
1729:	0	1	3	1	2	0	0	0
1737:	0	0	0	1	0	0	1	0
1745:	1	1	0	0	0	0	0	0
1753:	1	0	1	1	0	2	0	0
1761:	0	2	1	1	4	5	0	1
1769:	1	0	1	1	1	0	0	0
1777:	0	0	0	0	0	1	0	2
1785:	1	1	0	0	0	0	0	1
1793:	0	1	0	1	0	1	0	1
1801:	1	0	3	0	1	0	0	0
1809:	1	2	2	0	1	0	0	1
1817:	0	0	2	1	0	0	0	1
1825:	1	0	0	0	0	1	0	1
1833:	0	0	0	2	1	0	0	0
1841:	0	0	0	0	1	0	0	0
1849:	1	0	0	0	0	2	0	2
1857:	1	0	0	1	1	0	0	0
1865:	1	0	0	3	2	1	2	0

1873:	0	0	0	0	0	1	2	0
1881:	0	0	0	0	0	1	0	1
1889:	0	0	0	0	0	0	1	0
1897:	0	0	1	1	1	1	0	1
1905:	1	0	0	1	1	1	2	1
1913:	0	0	1	0	1	1	1	0
1921:	0	0	0	0	0	0	1	0
1929:	1	1	0	1	3	1	1	0
1937:	1	0	0	1	0	1	0	2
1945:	2	0	1	0	0	0	0	0
1953:	1	0	0	0	0	1	0	2
1961:	1	0	1	0	1	3	0	0
1969:	1	0	0	0	0	1	1	0
1977:	0	0	0	0	0	1	1	0
1985:	0	1	0	1	0	0	1	0
1993:	0	1	0	1	1	0	0	0
2001:	0	0	0	1	1	0	1	0
2009:	0	0	1	1	0	0	0	0
2017:	0	0	1	0	0	1	0	0
2025:	1	0	1	0	0	1	0	1
2033:	0	0	1	0	0	1	0	0
2041:	0	0	0	2	0	1	1	1
2049:	0	0	1	0	0	0	2	0
2057:	2	0	1	0	1	0	0	2
2065:	0	0	0	0	0	0	1	0
2073:	0	0	0	0	0	1	0	0
2081:	1	0	1	1	0	0	2	0
2089:	1	1	1	0	0	1	2	0
2097:	1	0	1	0	2	2	0	0
2105:	1	0	1	0	0	1	0	1
2113:	0	0	0	0	0	0	0	0
2121:	0	0	0	0	0	1	0	0
2129:	0	0	0	2	0	1	1	0
2137:	0	3	1	0	1	0	0	0
2145:	1	0	1	0	0	0	0	0
2153:	1	2	1	0	2	0	0	1
2161:	1	0	0	2	0	0	1	1
2169:	2	1	0	0	1	0	0	2
2177:	1	0	1	2	0	2	0	1
2185:	0	0	1	0	0	1	0	0
2193:	2	0	0	1	0	0	0	1
2201:	0	0	2	1	1	2	1	1
2209:	0	0	1	1	1	1	1	0
2217:	0	1	3	1	0	0	1	0
2225:	0	0	0	0	0	0	1	0
2233:	0	0	0	0	0	1	0	0
2241:	1	0	0	0	0	0	0	0
2249:	0	0	2	0	1	1	0	0
2257:	0	0	1	0	0	0	0	1
2265:	0	0	0	0	0	0	0	1
2273:	0	0	1	0	0	0	0	1
2281:	0	1	1	1	0	0	0	0
2289:	1	0	1	0	0	1	2	1
2297:	0	0	0	0	0	1	0	0
2305:	1	0	1	0	0	0	1	0
2313:	1	0	0	0	0	0	0	0
2321:	0	0	0	0	1	2	0	1
2329:	0	0	0	0	1	0	0	1
2337:	0	0	1	1	1	1	0	0
2345:	0	0	1	0	0	0	1	1



2353:	0	0	0	0	0	0	0	1
2361:	0	0	0	0	2	0	0	0
2369:	0	0	0	0	1	0	0	0
2377:	0	2	0	0	0	0	0	0
2385:	0	0	0	0	0	0	2	1
2393:	0	1	0	0	0	1	0	0
2401:	0	0	0	0	0	1	0	0
2409:	0	0	0	1	1	0	0	0
2417:	0	2	0	0	0	0	0	0
2425:	0	1	1	0	0	1	0	0
2433:	0	1	0	0	0	1	0	0
2441:	0	1	0	2	1	0	0	0
2449:	0	1	1	0	0	0	0	0
2457:	0	0	0	1	0	0	0	0
2465:	1	0	0	0	0	0	2	0
2473:	0	0	1	0	2	1	0	1
2481:	0	0	1	1	1	0	0	1
2489:	1	0	0	0	0	0	1	0
2497:	1	1	1	1	0	1	0	0
2505:	0	0	2	0	2	1	0	0
2513:	0	0	0	0	0	0	0	0
2521:	0	0	1	0	1	1	0	0
2529:	0	0	0	0	0	0	0	1
2537:	0	0	0	0	0	0	0	0
2545:	1	0	0	0	1	0	0	0
2553:	1	0	0	0	0	1	0	0
2561:	0	0	0	0	0	0	0	2
2569:	0	0	0	1	1	0	0	0
2577:	0	0	1	1	0	0	0	0
2585:	0	0	1	0	0	0	0	0
2593:	0	1	0	0	0	0	0	0
2601:	0	0	1	0	0	1	0	0
2609:	0	0	0	0	0	1	4	1
2617:	3	3	3	1	0	1	0	1
2625:	0	0	0	0	0	0	1	0
2633:	1	0	0	0	0	1	0	0
2641:	0	0	1	1	0	0	1	0
2649:	0	0	0	0	0	0	0	0
2657:	0	1	1	2	0	0	3	0
2665:	2	0	2	0	0	0	0	1
2673:	0	0	0	0	0	1	0	0
2681:	0	0	0	0	0	0	1	1
2689:	0	0	0	0	0	0	0	2
2697:	0	0	0	0	0	0	0	1
2705:	0	0	1	0	1	0	0	0
2713:	0	1	1	0	0	0	0	1
2721:	1	0	1	1	0	0	0	0
2729:	1	0	0	0	0	0	1	1
2737:	0	1	0	0	0	0	0	0
2745:	1	0	0	0	0	0	0	1
2753:	1	0	0	0	0	0	0	0
2761:	0	0	0	0	1	0	3	0
2769:	0	0	0	0	0	0	1	1
2777:	0	1	0	0	0	0	0	0
2785:	1	0	0	0	0	0	0	1
2793:	0	0	0	0	1	0	0	0
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	1	0	0	0	1	0	0	1

2833:	1	0	0	0	0	2	0	0
2841:	0	1	0	0	0	0	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	1	1	1	1	1	1
2865:	0	0	0	0	0	0	0	0
2873:	2	0	1	0	0	0	1	0
2881:	0	0	1	1	0	0	0	1
2889:	2	0	0	0	0	0	0	1
2897:	0	0	0	0	0	1	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	0	0	1	1	0	0	1
2921:	0	0	0	1	0	0	1	0
2929:	0	0	1	1	0	0	0	1
2937:	0	0	0	1	0	1	0	0
2945:	0	0	0	0	0	0	0	1
2953:	0	0	0	1	0	0	0	0
2961:	0	1	0	0	0	1	0	1
2969:	1	0	0	0	0	0	0	1
2977:	0	1	0	0	0	0	0	0
2985:	0	1	1	0	0	0	0	0
2993:	0	0	0	1	0	0	1	0
3001:	0	0	1	1	0	0	1	1
3009:	2	0	0	0	1	1	0	0
3017:	0	0	1	0	0	0	1	1
3025:	0	0	0	0	0	0	0	0
3033:	1	1	0	1	0	0	0	0
3041:	0	0	0	1	0	0	0	0
3049:	0	0	0	0	0	0	1	0
3057:	0	0	1	0	0	0	0	0
3065:	0	2	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	1	1	1	0	0	0	0	0
3097:	0	0	0	0	0	0	2	0
3105:	0	0	0	0	0	0	0	0
3113:	0	0	0	0	0	0	0	0
3121:	0	0	0	0	0	0	0	0
3129:	0	0	0	1	0	0	0	0
3137:	0	0	0	1	0	0	0	0
3145:	0	0	0	0	3	0	0	1
3153:	0	0	0	0	2	0	0	0
3161:	0	0	0	0	0	0	1	0
3169:	0	0	0	0	0	0	1	0
3177:	1	1	0	0	0	0	0	0
3185:	0	0	0	0	0	0	1	0
3193:	0	1	0	0	0	0	0	0
3201:	0	1	0	0	0	0	0	0
3209:	0	2	0	0	0	0	0	0
3217:	0	0	0	0	0	1	0	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	0	1	0	0	1
3241:	0	0	0	0	0	0	0	0
3249:	0	0	0	1	1	0	0	0
3257:	1	0	1	0	0	0	0	0
3265:	0	0	0	0	0	0	1	0
3273:	0	0	0	1	0	0	0	0
3281:	0	0	0	0	2	0	0	0
3289:	0	0	0	0	1	1	0	0
3297:	0	0	0	0	1	1	0	0
3305:	0	0	0	0	0	0	0	1

3313:	0	1	1	0	1	0	1	0
3321:	0	1	0	0	0	0	0	0
3329:	0	1	0	0	0	0	0	0
3337:	0	0	0	0	0	0	0	1
3345:	1	1	0	0	0	0	0	1
3353:	0	0	0	0	0	1	0	0
3361:	0	0	1	0	0	0	0	0
3369:	0	0	0	0	0	0	0	1
3377:	0	0	0	0	0	0	0	1
3385:	0	0	0	1	0	1	0	0
3393:	1	0	0	1	0	1	0	0
3401:	0	0	2	0	0	0	1	0
3409:	0	1	0	0	1	0	0	0
3417:	0	1	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	1	0	0	0	0	0	0
3441:	0	0	0	1	0	0	0	0
3449:	0	0	0	1	0	0	0	2
3457:	0	0	1	0	0	0	0	1
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	1	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	1	0	0	0	1	1	0
3505:	0	0	0	0	0	0	0	1
3513:	0	0	0	1	1	0	0	0
3521:	0	0	0	0	0	0	1	0
3529:	0	0	0	0	1	1	0	0
3537:	1	0	0	0	0	0	0	0
3545:	0	0	0	1	1	0	0	0
3553:	0	0	0	0	0	0	1	1
3561:	0	0	0	0	0	0	0	0
3569:	1	0	0	0	0	0	0	1
3577:	0	0	1	0	0	0	1	0
3585:	0	0	0	0	0	0	0	1
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	1	0	0	0	0	0
3625:	0	0	0	0	0	0	0	0
3633:	0	0	0	1	0	0	0	0
3641:	0	0	0	0	1	0	0	0
3649:	0	0	0	0	0	1	0	0
3657:	0	0	0	0	0	0	1	0
3665:	0	0	0	0	0	0	0	2
3673:	0	0	0	0	1	0	0	0
3681:	0	1	0	0	2	0	0	0
3689:	0	1	0	0	0	0	0	0
3697:	0	0	0	1	0	1	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	1	0	0	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	1	0	0
3745:	0	0	0	0	1	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	1	0	0	0	1	0	0	0
3769:	0	0	0	0	0	0	0	0
3777:	0	0	0	0	0	0	1	0
3785:	0	1	0	0	0	0	0	0

3793:	0	0	1	0	0	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0
3825:	0	0	0	0	0	0	1	1
3833:	0	0	1	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	1	1	0	1
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	1	0	0	0	0	1	0	0
3897:	0	0	0	0	0	0	0	1
3905:	0	0	0	1	0	0	0	0
3913:	1	0	0	0	0	0	0	0
3921:	0	0	0	0	1	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	1	1	1
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	0	1	0
3969:	0	0	2	0	0	1	0	0
3977:	0	0	1	0	1	0	1	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	1	0	0	0	0	0	0
4009:	1	0	0	1	0	0	0	0
4017:	0	0	0	0	0	0	0	1
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	1	0	0	0	0
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	1	0	0	0	1
4057:	0	0	0	0	0	0	0	0
4065:	0	1	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	1	0	0
4089:	0	0	0	0	0	0	0	0

KM  
6-17-10

Sample ID : 1005127-09

Acquisition date : 17-JUN-2010 09:50:59

VAX/VMS Peak Search Report Generated 17-JUN-2010 10:51:17.24

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100512709\_GE2\_GAS1002\_150523.  
 Analyses by : PEAK V16.9 ENBACK V1.6 PEAKEFF V2.2  
 Client ID : MPA-RA-3 13-15  
 Deposition Date :  
 Sample Date : 20-MAY-2010 00:00:00 Acquisition date : 17-JUN-2010 09:50:59  
 Sample ID : 1005127-09 Sample Quantity : 2.65630E+02 GRAM  
 Sample type : SOIL Sample Geometry : 0  
 Detector name : GE2 Detector Geometry: GAS-1002  
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.22 0.0%  
 Start channel : 5 End channel : 4096  
 Sensitivity : 2.40000 Gaussian : 15.00000  
 Critical level : Yes

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	63.80*	202	887	1.55	63.25	60	8	53.4		TH-234
0	76.45*	1157	1192	2.89	75.90	72	11	13.2		
0	88.24	87	539	0.99	87.69	85	4	78.2		SN-126 CD-109
0	93.38*	164	588	1.70	92.83	91	7	54.9		
0	154.88	65	474	1.26	154.34	150		8118.4		
0	186.01*	221	446	1.97	185.46	181	10	38.8		RA-226
0	209.26	63	405	1.58	208.71	205		8114.8		
3	238.97*	860	167	1.49	238.42	233	12	8.0	3.66E+00	PB-212
3	242.29	226	192	1.66	241.75	233	12	28.8		RA-224
0	270.46*	102	172	1.65	269.92	267	7	48.0		
0	276.29	52	220	3.38	275.75	274		8102.6		
4	295.63*	345	116	1.54	295.09	289	16	14.4	1.20E+00	PB-214
4	300.64	77	141	2.29	300.10	289	16	58.7		PB-212
0	327.50	54	222	1.98	326.96	323		10105.5		
0	339.06	153	196	1.53	338.52	334	9	37.0		
0	352.39*	598	172	1.46	351.85	348	9	11.5		PB-214
0	389.96	62	196	8.74	389.42	384	12	93.2		
0	410.71	72	106	2.19	410.17	406	9	57.3		
0	464.14	40	94	1.48	463.60	460	7	85.9		
0	511.54*	85	91	2.28	511.01	507	9	53.0		
0	583.75*	270	103	1.54	583.21	578	10	18.8		TL-208
0	609.95*	380	110	1.66	609.42	605	9	14.5		BI-214
0	727.74	106	56	1.99	727.20	722	9	32.2		BI-212
0	769.95	51	90	1.94	769.42	765	11	76.1		
0	795.94*	31	28	1.85	795.41	793	6	65.0		
0	911.84*	195	42	2.26	911.31	907	8	18.6		
0	934.96	25	40	2.12	934.44	931	7	95.0		
0	971.27	72	109	1.92	970.74	966	11	63.4		
0	1038.21	14	15	2.43	1037.69	1035		5100.8		
0	1054.89	23	21	4.64	1054.37	1051	9	81.4		
0	1096.30	33	21	4.43	1095.77	1092	9	60.3		
0	1121.74*	101	49	2.31	1121.22	1115	13	34.9		BI-214
3	1233.84	16	38	2.73	1233.32	1226	20	136.8	1.03E+00	
3	1239.26	30	31	2.73	1238.74	1226	20	76.8		
3	1242.84	15	27	2.74	1242.32	1226	20	159.8		

AG  
6/17/10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1282.96*	21	21	3.29	1282.44	1278	9	91.8		
0	1290.92	18	14	1.65	1290.40	1286	9	89.5		
3	1378.22	34	10	2.81	1377.70	1373	17	52.2	1.14E+00	
3	1386.82	13	15	2.81	1386.30	1373	17	117.2		
0	1453.07	20	9	5.17	1452.55	1448	9	70.2		
0	1461.76*	425	19	2.21	1461.24	1456	11	10.6		K-40
1	1508.30	10	9	2.37	1507.78	1505	15	103.3	1.26E+00	
1	1511.31	15	11	2.37	1510.79	1505	15	96.3		
0	1527.99	8	3	2.30	1527.48	1525	6	105.3		
0	1588.67	11	13	2.93	1588.15	1586	6	119.6		
0	1730.18*	12	4	3.16	1729.67	1726	7	78.4		
0	1743.41	10	5	2.62	1742.89	1737	9	103.4		
0	1766.04*	82	12	2.18	1765.53	1761	11	28.5		
0	1849.59	9	4	2.08	1849.08	1846	6	95.5		
1	1930.74	6	1	2.52	1930.23	1929	11	66.6	4.18E-01	
1	1934.51	10	6	2.30	1934.00	1929	11	95.0		
0	2020.93	7	3	2.34	2020.43	2018	6	112.0		
0	2034.87	5	1	2.72	2034.36	2032	5	120.0		
0	2106.52	17	8	4.69	2106.01	2101	12	86.6		
0	2119.87	14	3	3.14	2119.37	2116	7	68.7		
0	2133.08	7	0	1.33	2132.57	2129	7	75.6		
1	2202.60	8	1	2.62	2202.10	2201	13	52.3	2.10E+00	
1	2205.50*	17	5	2.38	2205.00	2201	13	65.6		BI-214
0	2267.89	7	4	1.75	2267.38	2264	7	123.6		
0	2354.50	7	5	3.17	2354.00	2347	10	139.8		
0	2378.67	7	6	1.38	2378.17	2374	8	136.8		
0	2397.59	7	1	3.07	2397.09	2394	6	96.7		
0	2412.50	6	0	2.87	2412.00	2408	7	81.6		
0	2615.63*	128	3	2.82	2615.14	2609	11	18.7		TL-208

Total number of lines in spectrum 64  
 Number of unidentified lines 36  
 Number of lines tentatively identified by NID 28 43.75%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	2.011E+01	2.011E+01	0.285E+01	14.15	
TL-208	1.41E+10Y	1.00	2.407E+00	2.407E+00	0.365E+00	15.16	
BI-212	1.41E+10Y	1.00	2.719E+00	2.719E+00	0.918E+00	33.78	
PB-212	1.41E+10Y	1.00	2.697E+00	2.697E+00	0.319E+00	11.83	
BI-214	1602.00Y	1.00	2.257E+00	2.257E+00	0.352E+00	15.61	
PB-214	1602.00Y	1.00	2.852E+00	2.852E+00	0.316E+00	11.09	
RA-224	1.41E+10Y	1.00	7.986E+00	7.986E+00	2.406E+00	30.13	
RA-226	1602.00Y	1.00	8.173E+00	8.174E+00	15.30E+00	187.22	
TH-234	4.47E+09Y	1.00	5.154E+00	5.154E+00	2.787E+00	54.06	
Total Activity :			5.436E+01	5.436E+01			

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CD-109	464.00D	1.04	2.262E+00	2.360E+00	1.867E+00	79.11	
SN-126	1.00E+05Y	1.00	2.273E-01	2.273E-01	1.793E-01	78.88	
Total Activity :			2.489E+00	2.587E+00			

Grand Total Activity : 5.685E+01 5.695E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected Decay Corr 2-Sigma			Status
				pCi/GRAM	pCi/GRAM	%Error	
K-40	1460.81	10.67*	5.598E-01	2.011E+01	2.011E+01	14.15	OK
Final Mean for 1 Valid Peaks = 2.011E+01 +/- 2.846E+00 ( 14.15%)							
TL-208	583.14	30.22*	1.100E+00	2.299E+00	2.299E+00	21.38	OK
	860.37	4.48	8.189E-01	-----	Line Not Found	-----	Absent
	2614.66	35.85	3.986E-01	2.540E+00	2.540E+00	21.43	OK
Final Mean for 2 Valid Peaks = 2.407E+00 +/- 3.648E-01 ( 15.16%)							
BI-212	727.17	11.80*	9.300E-01	2.719E+00	2.719E+00	33.78	OK
	1620.62	2.75	5.228E-01	-----	Line Not Found	-----	Absent
Final Mean for 1 Valid Peaks = 2.719E+00 +/- 9.185E-01 ( 33.78%)							
PB-212	238.63	44.60*	2.038E+00	2.676E+00	2.676E+00	12.06	OK
	300.09	3.41	1.768E+00	3.603E+00	3.603E+00	59.43	OK
Final Mean for 2 Valid Peaks = 2.697E+00 +/- 3.191E-01 ( 11.83%)							
BI-214	609.31	46.30*	1.064E+00	2.179E+00	2.179E+00	17.84	OK
	1120.29	15.10	6.737E-01	2.818E+00	2.819E+00	36.03	OK
	1764.49	15.80	4.955E-01	-----	Line Not Found	-----	Absent
	2204.22	4.98	4.351E-01	2.203E+00	2.203E+00	66.33	OK
Final Mean for 3 Valid Peaks = 2.257E+00 +/- 3.523E-01 ( 15.61%)							
PB-214	295.21	19.19	1.787E+00	2.845E+00	2.845E+00	17.01	OK
	351.92	37.19*	1.589E+00	2.858E+00	2.858E+00	14.63	OK
Final Mean for 2 Valid Peaks = 2.852E+00 +/- 3.164E-01 ( 11.09%)							
RA-224	240.98	3.95*	2.026E+00	7.986E+00	7.986E+00	30.13	OK
Final Mean for 1 Valid Peaks = 7.986E+00 +/- 2.406E+00 ( 30.13%)							
RA-226	186.21	3.28*	2.329E+00	8.173E+00	8.174E+00	187.22	OK
Final Mean for 1 Valid Peaks = 8.174E+00 +/- 1.530E+01 (187.22%)							
TH-234	63.29	3.80*	2.909E+00	5.154E+00	5.154E+00	54.06	OK
Final Mean for 1 Valid Peaks = 5.154E+00 +/- 2.787E+00 ( 54.06%)							



Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
CD-109	88.03	3.72*	2.929E+00	2.262E+00	2.360E+00	79.11	OK

Final Mean for 1 Valid Peaks = 2.360E+00+/- 1.867E+00 ( 79.11%)

SN-126	87.57	37.00*	2.930E+00	2.273E-01	2.273E-01	78.88	OK
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Final Mean for 1 Valid Peaks = 2.273E-01+/- 1.793E-01 ( 78.88%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	2.011E+01	2.846E+00	8.109E-01	6.888E-02	24.804
CD-109	2.360E+00	1.867E+00	2.881E+00	3.249E-01	0.819
SN-126	2.273E-01	1.793E-01	3.053E-01	2.917E-02	0.745
TL-208	2.407E+00	3.648E-01	3.123E-01	2.938E-02	7.709
BI-212	2.719E+00	9.185E-01	9.498E-01	8.982E-02	2.863
PB-212	2.697E+00	3.191E-01	2.076E-01	1.677E-02	12.989
BI-214	2.257E+00	3.523E-01	2.328E-01	2.221E-02	9.694
PB-214	2.852E+00	3.164E-01	2.521E-01	2.043E-02	11.316
RA-224	7.986E+00	2.406E+00	2.359E+00	1.905E-01	3.385
RA-226	8.174E+00	1.530E+01	2.645E+00	4.843E+00	3.090
TH-234	5.154E+00	2.787E+00	2.577E+00	1.898E-01	2.000

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	1.755E-01		7.266E-01	1.348E+00	1.178E-01	0.130
NA-22	-1.101E-02		7.575E-02	1.198E-01	9.731E-03	-0.092
AL-26	2.708E-02		4.008E-02	9.233E-02	7.388E-03	0.293
TI-44	-4.189E-02		6.920E-02	1.058E-01	8.181E-03	-0.396
SC-46	2.517E-02		7.737E-02	1.453E-01	1.173E-02	0.173
V-48	-6.630E-02		2.006E-01	3.529E-01	2.844E-02	-0.188
CR-51	1.386E-01		1.209E+00	1.861E+00	1.599E-01	0.074
MN-54	-4.248E-03		7.231E-02	1.297E-01	1.121E-02	-0.033
CO-56	-3.992E-02		8.324E-02	1.437E-01	1.225E-02	-0.278
CO-57	5.905E-03		5.686E-02	9.638E-02	8.842E-03	0.061
CO-58	1.564E-02		7.650E-02	1.425E-01	1.265E-02	0.110
FE-59	2.963E-02		2.007E-01	3.332E-01	2.931E-02	0.089
CO-60	-5.404E-02		7.634E-02	1.259E-01	1.003E-02	-0.429
ZN-65	-8.015E-02		1.614E-01	2.406E-01	1.936E-02	-0.333
SE-75	3.327E-02		1.108E-01	1.735E-01	1.406E-02	0.192
RB-82	-2.708E-01		1.138E+00	1.801E+00	1.645E-01	-0.150
RB-83	-6.979E-02		1.694E-01	2.665E-01	4.229E-02	-0.262
KR-85	4.199E+01		1.684E+01	3.158E+01	2.841E+00	1.330
SR-85	2.475E-01		9.925E-02	1.861E-01	1.675E-02	1.330
Y-88	6.576E-03		5.105E-02	1.037E-01	8.253E-03	0.063
NB-93M	0.000E+00		0.000E+00	7.543E-02	1.425E-02	0.000
NB-94	-2.020E-03		5.339E-02	9.791E-02	8.101E-03	-0.021
NB-95	-3.437E-02		1.313E-01	2.064E-01	1.902E-02	-0.167
NB-95M	1.864E+01		5.296E+01	8.939E+01	7.219E+00	0.209
ZR-95	-3.792E-03		1.613E-01	2.907E-01	2.934E-02	-0.013
RU-103	-3.537E-02		9.429E-02	1.676E-01	2.401E-02	-0.211
RU-106	-1.839E-01		6.439E-01	1.142E+00	1.600E-01	-0.161
AG-108M	-1.118E-02		7.031E-02	1.130E-01	1.071E-02	-0.099
AG-110M	-6.479E-02		6.882E-02	1.147E-01	1.116E-02	-0.565
SN-113	2.623E-03		1.075E-01	1.774E-01	1.473E-02	0.015
TE123M	3.219E-02		7.448E-02	1.180E-01	9.575E-03	0.273
SB-124	7.500E-03		9.683E-02	1.590E-01	1.512E-02	0.047

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-125	-2.822E+01		3.609E+00	2.941E+00	2.564E-01	-9.598
SB-125	5.684E-02		1.774E-01	3.031E-01	2.581E-02	0.188
SB-126	4.725E-01		5.651E-01	1.015E+00	9.639E-02	0.465
SB-127	-1.123E+01		2.725E+01	4.782E+01	4.620E+00	-0.235
I-129	-7.812E-02		2.769E-02	6.501E-03	6.421E-04	-12.018
I-131	-3.222E-01		7.403E-01	1.183E+00	9.574E-02	-0.272
BA-133	1.195E-01		9.858E-02	1.643E-01	2.115E-02	0.727
CS-134	-2.363E-02		7.443E-02	1.174E-01	1.119E-02	-0.201
CS-135	4.541E-01		3.637E-01	6.026E-01	4.843E-02	0.754
CS-136	1.849E-02		3.471E-01	5.781E-01	4.825E-02	0.032
CS-137	8.140E-02		7.494E-02	1.453E-01	1.418E-02	0.560
LA-138	-2.478E-02		8.835E-02	1.559E-01	1.284E-02	-0.159
CE-139	-5.843E-02		7.366E-02	1.182E-01	9.326E-03	-0.495
BA-140	2.796E-02		9.940E-01	1.819E+00	6.054E-01	0.015
LA-140	1.543E-01		3.743E-01	6.557E-01	5.387E-02	0.235
CE-141	9.293E-02		2.020E-01	3.418E-01	8.150E-02	0.272
CE-144	-1.935E-01		4.906E-01	8.090E-01	7.164E-02	-0.239
PM-144	2.310E-02		6.715E-02	1.242E-01	1.195E-02	0.186
PM-145	8.550E-02		5.092E-01	8.618E-01	5.608E-01	0.099
PM-146	2.755E-02		1.340E-01	2.476E-01	2.118E-02	0.111
ND-147	-6.680E-01		2.512E+00	4.492E+00	4.092E-01	-0.149
EU-152	5.064E-01		5.021E-01	1.006E+00	1.067E-01	0.503
GD-153	-1.365E-01		2.268E-01	3.729E-01	3.493E-02	-0.366
EU-154	-3.054E-02		2.102E-01	3.325E-01	2.700E-02	-0.092
EU-155	2.010E-01		2.386E-01	3.801E-01	3.591E-02	0.529
EU-156	2.303E-01		2.148E+00	3.943E+00	9.041E-01	0.058
HO-166M	1.898E-02		1.082E-01	1.998E-01	1.906E-02	0.095
HF-172	-4.486E-01		4.487E-01	7.177E-01	6.506E-02	-0.625
LU-172	-2.503E-01		2.240E+00	3.571E+00	2.876E-01	-0.070
LU-173	6.516E-01		3.203E-01	5.039E-01	4.044E-02	1.293
HF-175	6.746E-03		9.111E-02	1.398E-01	1.134E-02	0.048
LU-176	-2.504E-02		5.698E-02	8.369E-02	6.763E-03	-0.299
TA-182	1.450E+00	+	5.223E-01	7.529E-01	6.047E-02	1.925
IR-192	6.085E-02		1.480E-01	2.539E-01	2.200E-02	0.240
HG-203	1.328E-01		1.112E-01	1.847E-01	1.527E-02	0.719
BI-207	4.810E-02		5.842E-02	1.121E-01	1.046E-02	0.429
BI-210M	3.836E-03		1.172E-01	1.950E-01	1.570E-02	0.020
PB-210	1.026E+00		1.722E+00	2.962E+00	2.253E-01	0.347
PB-211	-1.646E+00		2.142E+00	2.983E+00	2.428E-01	-0.552
RN-219	1.470E-01		9.695E-01	1.490E+00	1.208E-01	0.099
RA-223	-7.119E-01		1.520E+00	2.218E+00	1.798E-01	-0.321
RA-225	6.197E+00		1.520E+00	2.862E+00	2.330E-01	2.165
TH-227	1.410E+00		5.621E-01	1.009E+00	8.149E-02	1.397
AC-228	2.537E+00	+	5.233E-01	9.540E-01	7.625E-02	2.659
TH-230	-9.198E+00		1.768E+01	2.713E+01	2.093E+00	-0.339
PA-231	1.899E+00		2.368E+00	4.115E+00	3.322E-01	0.461
TH-231	0.000E+00		0.000E+00	2.872E-02	3.233E-03	0.000
PA-233	5.865E-02		2.755E-01	4.640E-01	1.033E-01	0.126

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PA-234	1.798E-01		2.437E-01	4.211E-01	3.756E-02	0.427
PA-234M	-1.178E+00		7.133E+00	1.291E+01	1.042E+00	-0.091
U-235	3.167E-01		5.095E-01	8.677E-01	1.517E-01	0.365
NP-237	4.870E-01		5.788E-01	9.221E-01	8.712E-02	0.528
AM-241	4.437E-02		1.706E-01	2.715E-01	1.925E-02	0.163
AM-243	7.147E-01		1.338E-01	2.226E-01	1.852E-02	3.210
CM-243	5.628E-01	+	5.796E-01	7.016E-01	5.618E-02	0.802

Total number of lines in spectrum 64  
 Number of unidentified lines 36  
 Number of lines tentatively identified by NID 28 43.75%

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
K-40	1.28E+09Y	1.00	2.011E+01	2.011E+01	0.285E+01	14.15	
TL-208	1.41E+10Y	1.00	2.407E+00	2.407E+00	0.365E+00	15.16	
BI-212	1.41E+10Y	1.00	2.719E+00	2.719E+00	0.918E+00	33.78	
PB-212	1.41E+10Y	1.00	2.697E+00	2.697E+00	0.319E+00	11.83	
BI-214	1602.00Y	1.00	2.257E+00	2.257E+00	0.352E+00	15.61	
PB-214	1602.00Y	1.00	2.852E+00	2.852E+00	0.316E+00	11.09	
RA-224	1.41E+10Y	1.00	7.986E+00	7.986E+00	2.406E+00	30.13	
RA-226	1602.00Y	1.00	8.173E+00	8.174E+00	15.30E+00	187.22	
TH-234	4.47E+09Y	1.00	5.154E+00	5.154E+00	2.787E+00	54.06	
Total Activity :			5.436E+01	5.436E+01			

Nuclide Type : FISSION

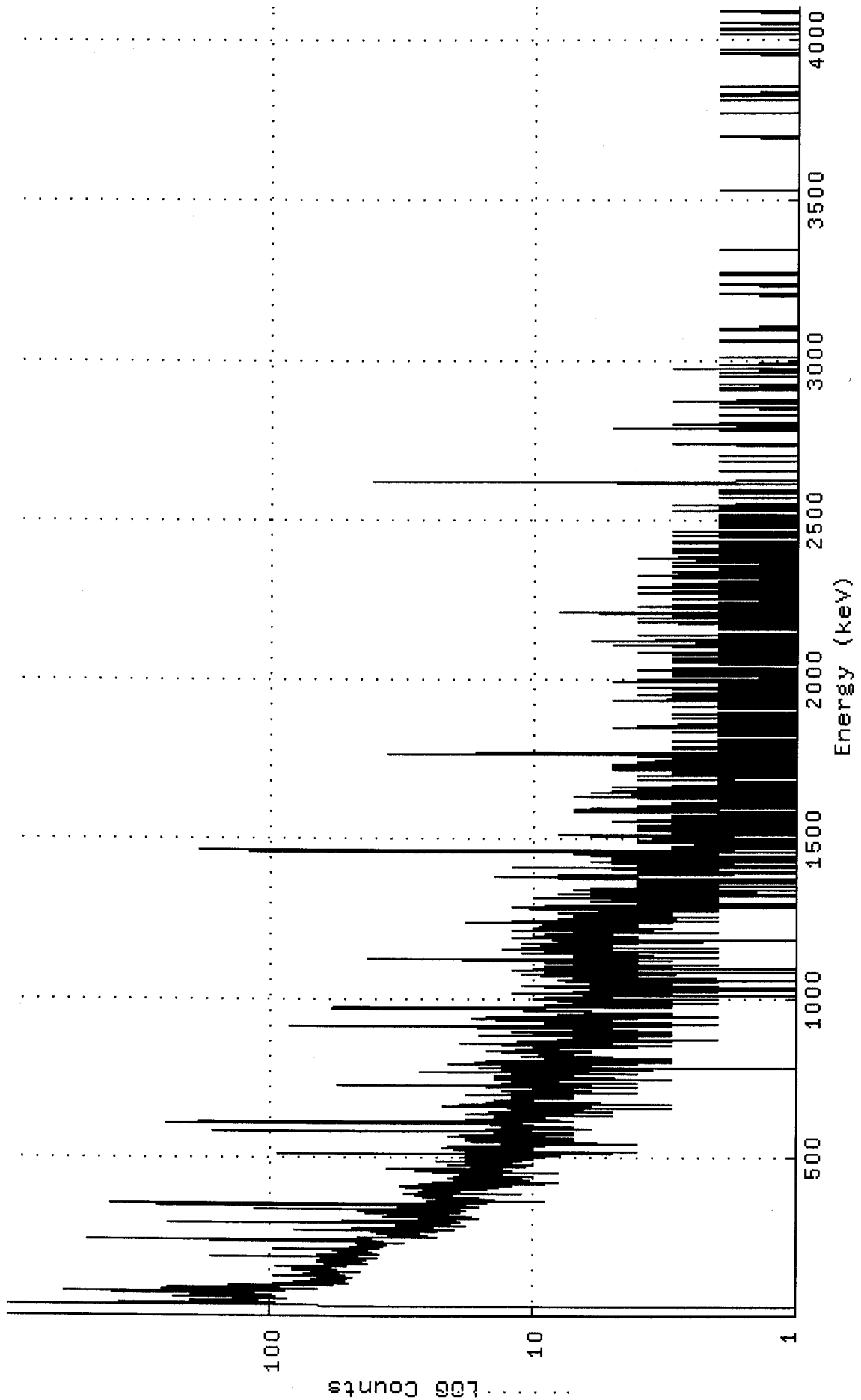
Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/GRAM	Decay Corr pCi/GRAM			
CD-109	464.00D	1.04	2.262E+00	2.360E+00	1.867E+00	79.11	
SN-126	1.00E+05Y	1.00	2.273E-01	2.273E-01	1.793E-01	78.88	
Total Activity :			2.489E+00	2.587E+00			

Grand Total Activity : 5.685E+01 5.695E+01

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Spectrum : DKA100: [GAMMA.SCUSR.ARCHIVE]SMP\_100512709\_GE2\_GAS1002\_150523.CNF; 1  
 Title :  
 Sample Title: MPA-RA-3 13-15  
 Start Time: 17-JUN-2010 09:50 Sample Time: 20-MAY-2010 00:00 Energy Offset: 5.46857E-01  
 Real Time : 0 01:00:01.22 Sample ID : 1005127-09 Energy Slope : 9.99980E-01  
 Live Time : 0 01:00:00.00 Sample Type: SOIL Energy Quad : 0.00000E+00



Channel Contents for DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100512709\_GE2\_GAS1002\_1505

Channel

1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	35	119	172	201	199	777	994	138
41:	98	118	136	105	95	198	187	110
49:	118	129	110	130	137	114	110	114
57:	86	139	95	104	121	123	231	173
65:	125	133	119	121	98	128	139	128
73:	146	306	398	244	601	162	108	91
81:	112	66	119	158	101	132	255	138
89:	139	172	92	217	243	84	80	63
97:	57	61	93	65	63	65	66	50
105:	97	68	52	61	77	66	56	69
113:	51	61	60	63	51	58	58	58
121:	55	66	48	69	63	52	56	64
129:	97	56	63	62	59	58	63	45
137:	62	54	69	63	54	66	75	82
145:	71	55	63	63	66	58	67	59
153:	71	95	61	65	63	51	57	48
161:	61	49	52	57	42	46	57	59
169:	66	59	56	65	49	63	43	51
177:	53	63	52	39	42	50	50	60
185:	134	167	70	48	46	53	43	65
193:	39	43	38	42	46	54	53	43
201:	52	56	50	57	57	56	42	72
209:	97	62	38	44	48	49	38	37
217:	47	41	46	37	46	41	45	40
225:	36	40	31	46	47	42	34	45
233:	43	47	37	40	58	494	414	68
241:	108	162	50	33	42	46	23	45
249:	35	35	29	29	33	25	33	34
257:	27	34	32	39	28	39	26	30
265:	41	28	23	34	48	80	45	32
273:	20	28	43	34	48	37	28	27
281:	27	33	21	25	18	25	22	33
289:	21	32	22	19	34	65	241	106
297:	21	28	37	53	42	27	20	19
305:	19	27	16	21	24	19	33	17
313:	25	37	20	35	21	25	27	30
321:	23	22	19	29	21	25	40	46
329:	27	28	23	18	29	24	19	23
337:	46	113	59	18	27	20	16	26
345:	22	27	22	18	20	21	178	403
353:	93	17	20	15	22	25	13	18
361:	16	18	9	21	17	23	23	23
369:	22	21	18	26	26	18	16	25
377:	25	23	28	27	24	24	20	11
385:	20	31	24	24	22	19	19	21
393:	27	25	15	19	23	21	21	18
401:	30	19	16	18	15	12	21	17
409:	28	32	18	17	21	12	9	27
417:	15	19	16	24	10	21	8	13
425:	17	20	13	11	12	21	21	11

433:	20	18	15	10	14	20	15	10
441:	14	15	19	13	13	13	15	24
449:	11	12	9	18	8	22	28	12
457:	20	14	16	13	15	15	36	24
465:	18	13	12	17	16	14	11	10
473:	18	18	11	17	21	13	15	18
481:	12	14	14	19	11	13	23	12
489:	14	15	18	12	10	16	15	12
497:	9	13	10	11	19	14	15	18
505:	17	10	12	5	36	65	93	44
513:	23	7	4	15	8	10	18	16
521:	12	12	17	20	10	22	11	12
529:	15	10	14	13	14	9	21	12
537:	10	10	11	13	11	10	4	8
545:	11	12	17	12	9	7	18	13
553:	12	11	12	7	18	10	11	10
561:	14	14	19	15	13	9	21	7
569:	19	17	10	10	10	11	8	9
577:	14	7	9	11	20	54	166	74
585:	13	15	14	6	10	14	6	9
593:	7	10	12	13	10	11	12	14
601:	14	11	10	21	12	15	11	41
609:	245	141	21	9	9	8	7	18
617:	11	10	8	11	16	9	14	11
625:	11	14	13	6	12	9	13	14
633:	5	16	7	12	13	8	18	12
641:	9	11	10	8	5	8	11	12
649:	12	10	9	7	6	10	3	5
657:	11	14	13	6	19	22	12	14
665:	12	19	9	11	3	10	8	8
673:	13	15	12	12	11	11	10	14
681:	10	12	8	8	11	9	7	10
689:	7	12	9	10	8	13	11	7
697:	18	11	8	12	7	6	5	4
705:	10	6	11	13	8	12	8	10
713:	10	7	8	8	10	9	12	15
721:	4	10	7	6	8	23	55	36
729:	13	4	7	8	13	12	9	8
737:	12	8	11	8	10	11	10	7
745:	7	14	3	8	12	14	11	6
753:	10	9	14	11	7	9	13	11
761:	12	8	11	8	4	9	11	22
769:	27	9	13	10	13	12	11	9
777:	4	3	8	1	10	16	6	12
785:	13	13	6	12	13	10	11	4
793:	4	11	21	13	9	3	7	6
801:	6	15	9	7	3	8	9	3
809:	9	7	9	8	8	7	10	5
817:	11	10	9	9	8	8	9	7
825:	7	13	8	9	6	12	8	8
833:	6	7	11	10	15	9	9	11
841:	10	9	9	7	9	10	7	4
849:	7	7	13	4	3	6	7	5
857:	8	6	5	14	19	7	8	4
865:	3	9	4	7	5	7	2	3
873:	8	5	4	7	6	7	4	7
881:	8	9	3	5	16	3	6	10
889:	8	9	5	12	5	3	5	6
897:	4	7	4	7	6	4	6	7
905:	7	5	6	7	7	38	83	84



913:	14	3	7	6	4	5	9	2
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929:	5	5	6	6	11	17	12	9
937:	4	8	9	10	2	15	7	5
945:	7	8	3	5	3	6	7	5
953:	4	3	4	4	5	8	7	10
961:	8	6	7	17	18	12	9	21
969:	58	56	5	4	3	3	4	6
977:	9	5	7	7	3	5	7	5
985:	2	5	2	6	4	8	7	3
993:	3	10	5	3	7	2	7	7
1001:	7	5	9	6	7	6	2	1
1009:	2	6	5	8	3	6	7	12
1017:	3	3	4	7	2	3	3	3
1025:	4	4	3	0	6	5	5	9
1033:	6	4	1	7	8	11	2	5
1041:	5	5	3	6	6	3	3	6
1049:	5	2	2	7	7	8	6	6
1057:	3	4	1	4	4	5	6	7
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1073:	6	3	5	7	8	1	9	3
1081:	9	7	5	9	8	9	5	4
1089:	12	6	1	2	5	7	10	6
1097:	9	6	6	3	3	4	3	7
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1113:	4	4	4	4	5	3	10	35
1121:	42	20	4	8	7	7	4	3
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1137:	4	6	11	7	4	7	8	6
1145:	3	5	9	2	7	6	7	7
1153:	5	6	13	5	6	5	2	6
1161:	11	8	9	7	7	5	6	11
1169:	8	4	5	5	9	3	4	8
1177:	6	7	5	1	6	3	6	2
1185:	6	12	7	5	4	5	10	10
1193:	5	4	5	5	9	7	6	9
1201:	5	7	6	5	7	5	6	6
1209:	2	6	6	9	6	6	12	3
1217:	5	5	8	5	10	9	5	4
1225:	6	5	7	4	6	4	7	8
1233:	7	12	4	3	8	11	18	8
1241:	9	6	10	4	2	4	7	6
1249:	4	8	4	6	6	5	7	7
1257:	2	7	5	3	7	7	4	5
1265:	5	4	7	3	8	4	5	5
1273:	4	2	5	2	5	2	4	4
1281:	9	12	3	7	2	1	2	9
1289:	6	1	2	5	5	0	3	1
1297:	2	4	3	3	5	5	2	4
1305:	6	2	5	5	2	3	3	2
1313:	3	7	3	4	10	2	1	4
1321:	3	4	6	2	8	4	3	1
1329:	2	3	2	4	4	6	2	1
1337:	7	2	3	3	4	3	6	2
1345:	4	3	3	2	4	4	2	1
1353:	3	2	2	4	3	3	2	3
1361:	2	0	2	4	1	3	0	2
1369:	4	1	1	1	1	2	1	5
1377:	13	14	13	4	5	5	6	3
1385:	3	7	8	3	0	4	1	1

1393:	1	0	1	2	1	2	2	4
1401:	2	4	5	4	4	3	3	12
1409:	9	3	4	1	4	3	3	1
1417:	1	2	5	2	3	4	5	3
1425:	1	3	3	1	2	6	1	2
1433:	5	1	2	4	2	0	5	3
1441:	0	4	2	0	3	6	2	0
1449:	5	2	2	6	7	4	3	0
1457:	2	3	11	77	186	135	30	3
1465:	2	3	1	2	0	2	3	3
1473:	0	0	2	1	0	3	2	1
1481:	2	1	1	0	3	3	4	1
1489:	2	2	0	3	2	2	3	4
1497:	3	3	1	3	3	0	3	2
1505:	2	2	2	6	3	5	8	3
1513:	6	1	2	2	2	3	0	2
1521:	2	2	3	3	0	4	4	2
1529:	1	0	0	2	1	2	4	4
1537:	2	3	3	2	1	1	1	4
1545:	2	1	3	2	3	1	1	5
1553:	0	0	2	2	1	4	3	0
1561:	2	3	2	2	3	1	0	1
1569:	1	1	2	3	2	2	2	1
1577:	1	1	2	1	3	2	4	7
1585:	0	2	5	5	7	3	2	4
1593:	6	5	4	1	2	4	3	2
1601:	1	3	0	4	1	1	2	2
1609:	0	3	1	1	3	0	2	2
1617:	0	0	1	2	1	0	1	3
1625:	4	0	3	2	3	2	2	7
1633:	3	1	0	2	1	1	4	3
1641:	6	1	1	2	2	1	3	0
1649:	3	0	5	0	2	2	2	1
1657:	1	4	1	1	5	5	2	1
1665:	3	2	2	3	0	2	0	2
1673:	2	2	0	2	0	0	2	2
1681:	2	1	3	2	2	2	2	4
1689:	0	2	2	0	1	0	4	2
1697:	0	2	0	2	3	1	1	1
1705:	0	1	2	1	3	2	1	1
1713:	1	5	3	0	4	1	2	3
1721:	5	1	4	1	0	1	1	2
1729:	5	3	5	0	1	0	1	1
1737:	0	1	1	2	0	4	3	3
1745:	0	1	1	1	3	1	0	3
1753:	3	2	3	0	1	3	3	4
1761:	0	2	6	11	36	28	10	1
1769:	1	1	0	1	2	0	0	0
1777:	2	1	3	2	2	0	1	3
1785:	2	0	3	2	1	2	1	0
1793:	0	1	1	2	1	1	2	2
1801:	2	0	0	1	0	3	3	0
1809:	0	1	1	2	0	1	1	1
1817:	1	1	0	0	0	1	1	2
1825:	1	0	2	1	0	1	1	2
1833:	0	0	0	0	3	2	2	1
1841:	2	0	2	2	2	1	1	4
1849:	5	2	0	0	1	0	0	4
1857:	2	1	0	1	0	0	1	1
1865:	0	2	1	2	2	0	2	2

1873:	1	2	0	0	0	2	0	3
1881:	0	2	0	0	2	0	1	0
1889:	1	0	3	0	0	2	1	0
1897:	2	0	0	1	0	0	1	1
1905:	0	1	1	1	2	0	1	1
1913:	3	1	0	1	1	0	2	0
1921:	2	0	2	0	1	1	0	1
1929:	0	3	0	1	3	5	2	1
1937:	2	1	0	2	1	1	3	1
1945:	1	1	3	0	1	0	0	4
1953:	0	1	1	1	1	3	1	2
1961:	2	2	2	1	1	3	0	0
1969:	0	3	0	0	1	4	0	0
1977:	0	1	2	2	1	2	1	2
1985:	1	0	0	0	2	0	1	0
1993:	0	5	3	0	2	4	0	2
2001:	1	0	0	1	1	1	2	0
2009:	1	0	3	0	1	3	3	0
2017:	0	0	2	3	2	1	2	0
2025:	3	4	1	2	2	0	0	0
2033:	2	1	3	0	1	1	1	1
2041:	0	0	1	2	0	1	1	2
2049:	0	3	0	2	0	0	2	2
2057:	3	3	0	2	0	2	0	0
2065:	3	0	0	2	0	0	1	1
2073:	2	3	1	1	0	1	1	4
2081:	0	2	1	2	0	1	0	0
2089:	2	2	1	0	2	0	0	2
2097:	0	1	3	0	2	1	1	5
2105:	4	3	2	3	2	1	1	0
2113:	1	0	2	0	3	4	2	6
2121:	2	0	0	0	0	0	0	0
2129:	0	1	0	1	4	1	0	0
2137:	1	1	1	1	2	2	2	1
2145:	0	0	0	1	0	0	0	1
2153:	0	1	1	2	2	0	2	0
2161:	0	2	0	2	1	1	1	1
2169:	1	0	1	1	1	2	4	1
2177:	2	2	3	3	0	1	2	1
2185:	1	1	4	1	1	2	2	0
2193:	1	0	2	1	3	0	0	1
2201:	0	4	1	4	8	2	2	2
2209:	1	2	1	1	0	2	0	1
2217:	3	1	1	2	0	2	1	4
2225:	2	1	1	0	2	0	1	1
2233:	3	2	0	0	1	0	2	1
2241:	1	1	1	0	1	1	2	0
2249:	1	1	3	3	0	2	2	1
2257:	0	2	2	0	0	2	0	1
2265:	0	2	4	2	1	0	1	0
2273:	0	3	1	0	0	2	2	2
2281:	1	1	0	4	1	2	0	2
2289:	0	1	1	1	2	3	2	0
2297:	3	0	1	0	0	0	1	0
2305:	2	1	0	0	1	0	1	1
2313:	2	0	3	0	3	3	0	2
2321:	0	0	0	4	2	0	2	0
2329:	0	2	2	2	1	0	1	3
2337:	0	1	0	1	2	1	0	1
2345:	1	2	0	1	0	1	3	2

2353:	3	1	1	0	0	0	0	1
2361:	2	1	1	0	1	3	2	2
2369:	1	1	2	2	0	2	1	1
2377:	1	4	2	2	0	1	0	1
2385:	0	2	1	0	1	1	3	0
2393:	1	0	1	3	1	3	0	0
2401:	1	0	1	2	0	3	0	0
2409:	0	0	2	2	2	0	0	1
2417:	2	1	0	0	0	3	1	0
2425:	0	1	3	1	0	2	0	1
2433:	0	1	1	0	0	1	1	1
2441:	1	1	2	0	1	1	3	3
2449:	2	0	1	0	2	1	0	1
2457:	0	3	2	0	0	1	0	0
2465:	1	1	1	0	0	1	0	0
2473:	2	0	0	0	1	1	0	2
2481:	0	1	0	2	0	0	0	1
2489:	2	1	2	0	0	2	2	0
2497:	1	1	0	2	0	0	0	0
2505:	0	0	2	2	0	0	0	1
2513:	2	1	1	1	0	0	0	1
2521:	0	0	1	0	0	0	3	0
2529:	1	0	2	1	0	1	2	0
2537:	1	1	0	0	0	1	0	0
2545:	0	3	0	0	0	0	0	0
2553:	0	0	0	0	0	0	0	0
2561:	1	1	0	1	1	2	0	1
2569:	0	1	0	1	1	1	0	1
2577:	1	0	0	0	2	0	0	2
2585:	0	0	1	0	1	0	0	0
2593:	2	0	0	0	0	0	1	0
2601:	1	0	1	0	0	0	1	1
2609:	0	1	3	2	12	22	41	36
2617:	16	3	0	0	0	0	0	0
2625:	0	0	0	0	0	0	0	1
2633:	0	0	0	0	0	1	0	0
2641:	0	0	0	0	0	0	0	0
2649:	0	1	0	2	0	0	0	0
2657:	0	0	0	0	0	0	0	0
2665:	0	0	0	0	1	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	2	1	0	0	0	0	1	0
2689:	1	1	1	1	0	1	0	0
2697:	0	2	1	0	0	0	1	1
2705:	0	0	0	0	0	1	0	0
2713:	1	0	0	0	1	1	1	0
2721:	0	0	1	0	0	0	0	0
2729:	0	0	0	3	0	1	1	3
2737:	0	1	0	0	0	1	0	0
2745:	0	0	0	0	0	0	0	1
2753:	0	0	0	1	0	1	0	0
2761:	0	1	1	1	0	0	1	0
2769:	0	0	0	0	0	1	0	2
2777:	0	0	1	1	0	0	5	0
2785:	0	1	0	0	0	1	0	3
2793:	0	0	1	1	0	1	1	1
2801:	0	2	0	0	0	1	0	0
2809:	0	0	1	0	1	0	0	0
2817:	0	0	1	0	0	0	0	0
2825:	0	2	0	0	1	1	0	0

2833:	0	1	0	0	0	0	0	1
2841:	0	0	0	0	0	2	0	0
2849:	1	0	0	0	0	1	0	1
2857:	0	0	2	0	0	1	0	0
2865:	0	0	0	0	3	0	0	0
2873:	1	0	0	0	0	0	0	0
2881:	0	1	0	1	0	0	0	0
2889:	0	1	1	0	0	0	0	1
2897:	0	0	0	0	0	2	1	1
2905:	0	0	0	0	1	0	2	1
2913:	0	1	0	0	0	0	0	2
2921:	0	0	0	1	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	0	0	0	0	0	2	0
2945:	1	0	0	1	0	1	1	0
2953:	1	0	1	0	1	1	2	0
2961:	1	0	0	0	0	0	0	0
2969:	0	3	0	0	1	0	0	0
2977:	0	0	0	0	0	0	2	1
2985:	0	0	0	0	1	1	0	0
2993:	0	0	0	0	0	0	0	0
3001:	0	0	0	0	2	0	0	0
3009:	0	0	0	0	1	0	0	0
3017:	0	0	1	0	0	0	0	0
3025:	0	0	0	0	0	0	1	1
3033:	0	0	0	0	1	0	0	0
3041:	1	0	0	0	0	0	0	0
3049:	0	0	2	0	0	1	1	0
3057:	1	2	0	0	0	1	0	0
3065:	0	1	1	0	0	1	0	0
3073:	0	0	0	0	0	1	1	0
3081:	0	0	0	0	0	0	0	2
3089:	1	0	0	0	0	0	0	0
3097:	2	0	1	0	0	0	0	0
3105:	0	1	1	0	1	0	1	0
3113:	1	1	0	0	1	0	1	1
3121:	0	0	0	0	1	0	0	1
3129:	0	1	0	0	0	0	0	0
3137:	0	0	0	0	0	0	0	0
3145:	0	0	0	0	0	0	0	0
3153:	0	0	0	0	1	1	0	0
3161:	0	0	0	0	1	0	0	0
3169:	0	0	0	0	0	0	1	0
3177:	0	0	0	1	1	0	0	0
3185:	0	0	0	0	1	0	0	0
3193:	0	0	1	0	0	0	0	2
3201:	1	0	0	1	0	1	0	0
3209:	0	0	0	0	0	0	0	0
3217:	1	0	1	0	0	0	1	0
3225:	0	0	1	0	0	2	0	0
3233:	0	1	0	0	0	0	0	1
3241:	1	0	0	0	1	0	0	0
3249:	0	0	0	1	0	1	1	0
3257:	0	0	0	0	0	0	2	0
3265:	0	0	0	0	2	0	1	1
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	1	0	0	0	0
3289:	0	0	0	1	0	0	0	0
3297:	0	0	0	0	0	0	1	0
3305:	0	0	0	0	0	1	0	0

3313:	1	0	0	0	1	0	0	0
3321:	0	0	0	0	0	1	0	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	0	2	0	1
3345:	0	0	0	1	0	0	0	0
3353:	0	0	1	0	0	0	0	0
3361:	0	0	0	0	0	0	0	0
3369:	0	0	0	0	0	0	0	1
3377:	0	0	0	0	0	0	1	0
3385:	0	1	0	1	1	0	0	1
3393:	0	0	0	0	0	0	0	0
3401:	0	0	0	0	0	0	1	0
3409:	0	0	0	0	0	0	0	0
3417:	1	0	0	1	0	1	0	0
3425:	1	0	0	0	0	0	0	0
3433:	0	0	0	0	1	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	0	0	0	1
3457:	1	0	1	0	0	0	0	0
3465:	1	0	1	0	1	0	0	1
3473:	0	0	0	0	0	1	1	0
3481:	0	0	0	1	0	0	0	1
3489:	0	1	0	0	0	0	0	1
3497:	0	0	1	0	0	0	1	1
3505:	0	0	0	0	0	0	0	0
3513:	1	1	0	0	0	0	0	0
3521:	1	0	1	0	1	0	0	2
3529:	0	0	0	0	0	0	0	0
3537:	1	0	0	0	0	0	0	0
3545:	0	0	0	0	1	0	0	0
3553:	0	1	0	0	0	0	0	0
3561:	0	0	0	1	1	0	1	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	0	0	1
3585:	0	1	0	0	1	0	1	1
3593:	0	0	1	0	0	1	0	0
3601:	0	0	0	1	0	0	0	1
3609:	0	0	0	0	0	0	0	1
3617:	1	0	0	0	0	0	1	0
3625:	0	0	0	0	0	1	0	0
3633:	0	0	0	0	0	0	0	1
3641:	0	1	0	0	0	0	0	0
3649:	0	0	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0	1
3665:	1	1	0	1	0	0	0	0
3673:	0	1	0	1	0	0	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	2	0	0	0	1
3697:	0	0	0	0	0	0	0	0
3705:	0	0	1	0	0	0	0	0
3713:	1	0	1	1	0	0	0	0
3721:	0	0	0	1	0	1	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	1	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	1	0	0	0	0	0	2	0
3769:	0	0	0	1	0	0	0	0
3777:	0	0	0	0	1	0	0	0
3785:	0	0	0	0	0	0	0	0

3793:	0	0	1	0	1	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	2	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	2	0
3825:	0	1	0	0	2	0	1	0
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	1	0	2	0	0	0	0	0
3857:	0	0	0	0	0	0	0	0
3865:	0	0	0	0	0	0	0	1
3873:	0	0	0	0	1	0	1	0
3881:	1	0	0	0	0	1	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	1	0	0	0	0	0	1
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	0	0	1	0	0	0
3929:	0	0	0	0	0	0	1	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	2	0	0
3953:	0	0	0	0	0	1	0	0
3961:	0	0	0	1	2	0	0	0
3969:	0	0	0	0	1	0	0	1
3977:	0	1	0	0	0	0	0	0
3985:	0	0	1	0	1	0	0	0
3993:	0	0	0	0	0	0	1	0
4001:	0	0	1	0	0	0	0	0
4009:	0	0	0	2	0	0	0	0
4017:	0	1	0	0	0	0	0	0
4025:	0	0	2	1	0	0	2	0
4033:	0	0	0	0	1	0	0	0
4041:	0	1	0	0	0	2	0	0
4049:	0	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	2	0	0	0	0	0	0
4089:	0	0	1	0	0	1	0	0







QA filename : DKA100:[GAMMA.SCUSR.QA]QCC\_GE4\_GAS1001.QAF;1

Sample ID : Calib Check

Sample quantity : 368. GRAM

Sample date : 1-JAN-2010 00:00:00

Acquisition date : 17-JUN-2010 07:31:

Elapsed live time: 0 00:15:00.00

Elapsed real time: 0 00:15:39.73

Out-of-range Test: BOUNDARY

Parameter Description	Lower	Upper	Value	Flag
*Peak Centroid 59.54 keV	58	61	60	
*Peak Centroid 661.65 keV	660	663	662	
*Peak Centroid 1173.22 keV	1172	1175	1173	
*Peak Centroid 1332.49 keV	1331	1334	1332	
*Peak Centroid 1836.01 keV	1835	1838	1835	
*Peak FWHM Am-241 59.54 keV	0.5	3.0	2.3	
*Peak FWHM Cs-137 661.65 keV	0.5	3.0	2.2	
*Peak FWHM Co-60 1173.22 keV	0.5	3.0	2.5	
*Peak FWHM Co-60 1332.49 keV	0.5	3.0	2.5	
*Peak FWHM Y-88 1836.01 keV	0.5	3.0	2.7	
*DC Activity Am-241 59.54 keV	373	456	389	
*DC Activity Cs-137 661.65 keV	149	182	158	
*DC Activity Co-60 1173.22 keV	238	290	241	
*DC Activity Co-60 1332.49 keV	238	291	250	
*DC Activity Y-88 1836.01 keV	501	613	534	

Flags: "\*" means the out-of-range test is parameter-dependent

Approved by: \_\_\_\_\_

*KM*

Approval Date: \_\_\_\_\_

*6, 17, 10*

QA filename : DKA100:[GAMMA.SCUSR.QA]QCC\_GE2\_GAS1002.QAF;1

Sample ID : Calib Check Sample quantity : 736. GRAM  
Sample date : 1-JAN-2010 00:00:00 Acquisition date : 17-JUN-2010 07:17:4  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:24.53

Out-of-range Test: BOUNDARY

Parameter Description	Lower	Upper	Value	Flag
*Peak Centroid 59.54 keV	58	61	59	
*Peak Centroid 661.65 keV	660	663	662	
*Peak Centroid 1173.22 keV	1172	1175	1174	
*Peak Centroid 1332.49 keV	1331	1334	1333	
*Peak Centroid 1836.01 keV	1835	1838	1837	
*Peak FWHM Am-241 59.54 keV	0.5	3.0	1.6	
*Peak FWHM Cs-137 661.65 keV	0.5	3.0	1.6	
*Peak FWHM Co-60 1173.22 keV	0.5	3.0	2.0	
*Peak FWHM Co-60 1332.49 keV	0.5	3.0	2.1	
*Peak FWHM Y-88 1836.01 keV	0.5	3.0	2.4	
*DC Activity Am-241 59.54 keV	186	227	172	Below
*DC Activity Cs-137 661.65 keV	74	91	85	
*DC Activity Co-60 1173.22 keV	119	145	135	
*DC Activity Co-60 1332.49 keV	119	145	137	
*DC Activity Y-88 1836.01 keV	250	306	288	

OK  
2/17/10

Flags: "\*" means the out-of-range test is parameter-dependent

Approved by: LM

Approval Date: 6/17/10

QA filename : DKA100: [GAMMA.SCUSR.QA] QCB\_GE1.QAF;1

Sample ID : Bkgrnd Check Sample quantity : 1.00 EACH  
Sample date : 17-JUN-2010 05:31:50 Acquisition date : 17-JUN-2010 05:31:50  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.09

Out-of-range Test: N-SIGMA

Parameter Description	Value	Deviation	Flag
[Mean+/-Stdev]			
Background Counts	1754	-0.37	
[1838+/-225]			
Background Rate	1.95	-0.40	
[2.05+/-0.24]			

Flags: "\*" means the out-of-range test is parameter-dependent

Approved by:                     KM                     Approval Date:   6   /  17  /  10





**MICHAEL PISANI & ASSOCIATES**

**07-47 East White Lake**

**STANDARD LEVEL IV  
REPORT OF ANALYSIS**

**WORK ORDER #10-05066-OR**

**June 11, 2010**

**EBERLINE ANALYTICAL/OAK RIDGE LABORATORY  
OAK RIDGE, TN**

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STANDARD OPERATING PROCEDURE

Sample Receiving

MP-001, Rev. 10  
Effective: 4/27/09  
Page 13 of 13

Eberline Services – Oak Ridge Laboratory  
LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

10 050 66

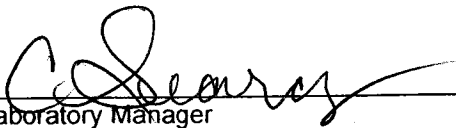
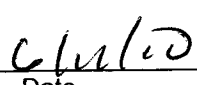
Eberline Services Work Order # \_\_\_\_\_

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		5-14-10	KF	Sample Log-In
		5/28/10	KBJ	Data Compilation
		6-1-10	MLT	First Technical Data Review
		6/1/10	CS	Second Technical Data Review
		6/7/10	[Signature]	Data Entry/Electronic Deliverable
		6/7/10	[Signature]	Case Narrative
		6/10/10	eyt	Electronic Deliverable Proof
		6/10/10	[Signature]	Samples Analyzed within Holding Time Yes? <input type="checkbox"/> No? <input checked="" type="checkbox"/> YES
		6/10/10	[Signature]	QA/QC Review
		6/10/10	eyt	Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by:


  
 Laboratory Manager Date

Copy No. \_\_\_\_\_

Radiochemistry Services

**SECTION I**  
**CHAIN OF CUSTODY & pH CHECK SHEET**











# Internal Chain of Custody

Work Order #

**10-05066**

Lab Deadline

**5/28/2010**

Analysis

**Ra228 - Level 4**

Sample Matrix

**Water**

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
Fractions 05, 07 & 09 are SUSPENDED.	04	19	R1.0
	05	19	R1.0
	06	42	R1.0
	07	42	R1.0
	08	35	R1.0
	09	35	R1.0

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	5/17/10 0500
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	5/17/10 1228
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	5-12-10/230
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	5-18-10 1424
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	5/18/10 1430
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	5/25/10 1457
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	5-26-10 0640
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	5-27-10 1102
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	5-27-10 1350
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		





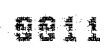


	<b>Sample Receiving Report</b> (Volumes, pH, & CPM)	Internal Work Order
		<b>10-05066</b>
		Received By <b>KFOX</b>

FR	ClientID	# Btls	Comments	Matrix	Storage	Rec Vol Ttl	CPM Max
01	LCS	0		WA	R1.0		
02	BLANK	0		WA	R1.0		
03	DUP	0		WA	R1.0		
04	SB-2-MW-S DIS	1		WA	R1.0	4.00	19
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	4.0000	19
05	SB-2-MW-S SUS	1		WA	R1.0	0.00	19
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	4.0000	19
06	SB-3-MW-S DIS	1		WA	R1.0	4.00	42
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	4.0000	42
07	SB-3-MW-S SUS	1		WA	R1.0	0.00	42
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	4.0000	42
08	SB-3-MW-SD DIS	1		WA	R1.0	4.00	35
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	4.0000	35
09	SB-3-MW-SD SUS	1		WA	R1.0	0.00	35
			Container Number	pH Orig	pH Final	Volume (L)	CPM
			1	7	7	4.0000	35

*1617  
05/14/10*

Received by: *[Signature]* Date: 5-14-10



**SECTION II**  
**SAMPLE ACKNOWLEDGEMENT**





**Eberline Services – Oak Ridge Laboratory**

**SAMPLE RECEIPT CHECKLIST**

MP-001-2

WORK ORDER # 10 050 66

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

AQUEOUS       NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	<input checked="" type="radio"/> Y	<input type="radio"/> N	
If aqueous, properly preserved	<input checked="" type="radio"/> Y	<input type="radio"/> N	N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Unbroken on outside of package?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Present on samples?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Unbroken on samples?	<input checked="" type="radio"/> Y	<input type="radio"/> N
Was chain of custody present upon sample receipt?	<input checked="" type="radio"/> Y	<input type="radio"/> N

IF THE RESPONSE TO ANY OF THE ABOVE IS NO, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: 3 cubes unpreserved

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SIGNATURE:       DATE: 5-14-10

**SECTION III**  
**CASE NARRATIVE**



EBERLINE ANALYTICAL CORPORATION  
601 SCARBORO ROAD  
OAK RIDGE, TENNESSEE 37830  
PHONE (865) 481-0683  
FAX (865) 483-4621

EBS-OR-30454

June 11, 2010

Patrick Ritchie  
Michael Pisani & Associates  
17431 Jefferson Hwy Suite A  
Baton Rouge, LA 70817

CASE NARRATIVE  
Work Order # 10-05066-OR

SAMPLE RECEIPT

This work order contains three water samples received 05/14/2010. All samples were analyzed as dissolved and suspended for Radium-226/228 and Gross Alpha/Beta.

<u>CLIENT ID</u>	<u>LAB ID</u>	<u>CLIENT ID</u>	<u>LAB ID</u>
SB-2-MW-S DIS	10-05066-04	SB-3-MW-S DIS	10-05066-07
SB-2-MW-S SUS	10-05066-05	SB-3-MW-SD DIS	10-05066-08
SB-3-MW-S DIS	10-05066-06	SB-3-MW-SD SUS	10-05066-09

ANALYTICAL METHODS

Radium-226 was analyzed using EPA Method 903.0 Modified. Radium-228 was analyzed using EPA Method 904.0 Modified. Gross Alpha/Beta was performed using EPA Method 900.0 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 2-sigma value.

RADIUM-226

Samples were prepared by removing aliquots followed by filtering to disassociate the dissolved and suspended fractions. Suspended sample fractions were prepared by dissolving in nitric acids followed by mixed acid digestions as appropriate. This was followed by selective sulfate precipitations of the Radium from all samples. Samples were then mounted by semi-micro-precipitations onto micro-porous filters. Samples were counted by alpha spectroscopy using an energy specific region of interest for Radium-226. Chemical recovery was calculated by the use of a Barium-133 tracer, which was determined by HPGe gamma spectroscopy.

Samples demonstrated acceptable results for Radium-226 activity. Chemical recovery was acceptable for all samples. Results for the Radium-226 method blank demonstrated acceptable activity. Results for the Radium-226 replicate demonstrated a high relative percent difference and normalized difference. Results for the Radium-226 laboratory control sample demonstrated an acceptable percent recovery.

## ANALYTICAL RESULTS CONTINUED

### RADIUM-228

Following alpha spectroscopy analysis of Radium-226, Barium/Radium Sulfate precipitates were redissolved and allowed for sufficient ingrowth of the Actinium-228 daughter. After ingrowth, Actinium-228 was selectively precipitated. Precipitates were filtered and beta emissions for Actinium-228 were then counted on a gas proportional counter. Chemical recovery was determined by the use of a Barium-133 tracer determined by HPGe gamma spectroscopy and an elemental Yttrium carrier by gravimetric measurements. The product of these two recoveries was used to calculate chemical yield.

Samples demonstrated acceptable results for Radium-228 activity. Chemical recovery was acceptable for all samples. Results for the Radium-228 method blank demonstrated acceptable activity. Results for the Radium-228 replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Radium-228 laboratory control sample demonstrated an acceptable percent recovery.

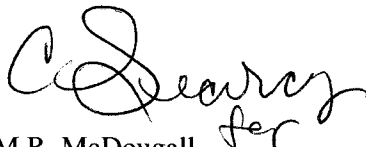
### GROSS ALPHA/BETA

Samples were filtered to disassociate the dissolved and suspended fractions. Volumetric aliquots from dissolved fractions were acidified with  $\text{HNO}_3$ . Reduced samples were then transferred to steel planchets for final evaporation to dryness and flaming if appropriate. Volumetric equivalent aliquots from suspended fractions were digested in mixed acids, nitrated with  $\text{HNO}_3$ , and were then transferred to steel planchets for final evaporation to dryness and flaming if appropriate. Samples were then counted on a gas proportional counter. Results were corrected as required for inherent self-absorption based on residual mass present.

Samples demonstrated acceptable results for Gross Alpha and Beta activity. Due to high total dissolved solids, most results demonstrated slightly high detection limits. Results for the Gross Alpha and Beta method blank demonstrated acceptable activity. Results for the Gross Alpha and Beta replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Gross Alpha and Beta laboratory control sample demonstrated an acceptable percent recovery.

### CERTIFICATION OF ACCURACY

I certify that this data report is in compliance with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall  
Laboratory Manager

Date: 6/11/2010



**SECTION IV**  
**ANALYTICAL RESULTS SUMMARY**

# Eberline Analytical

## Final Report of Analysis

**Patrick Ritchie**  
**Michael Pisani & Associates, Inc.**  
**17431 Jefferson Hwy Suite A**  
**Baton Rouge, LA 70817**

**SDG: 10-05066**  
**Project: 07-47 East White Lake**  
**Analysis Category: ENVIRONMENTAL**  
**Sample Matrix: WA**

Report To:

Work Order Details:

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-05066-01	LCS	KNOWN	05/14/10 00:00	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	3.17E+02	1.36E+01			pCi/l
10-05066-01	LCS	SPIKE	05/14/10 00:00	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	2.76E+02	7.41E+00	7.52E+00	4.11E-01	pCi/l
10-05066-02	MBL	BLANK	05/14/10 00:00	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	0.00E+00	1.04E-01	1.04E-01	2.55E-01	pCi/l
10-05066-03	DUP	SB-2-MW-S DIS	05/11/10 10:35	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	-9.65E-01	7.32E+00	7.32E+00	1.84E+01	pCi/l
10-05066-04	DO	SB-2-MW-S DIS	05/11/10 10:35	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	6.33E+00	5.37E+00	5.37E+00	8.75E+00	pCi/l
10-05066-05	TRG	SB-2-MW-S SUS	05/11/10 10:35	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	1.38E+00	8.66E-01	8.66E-01	1.50E+00	pCi/l
10-05066-06	TRG	SB-3-MW-S DIS	05/12/10 10:20	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	6.10E+01	3.47E+01	3.47E+01	4.49E+01	pCi/l
10-05066-07	TRG	SB-3-MW-S SUS	05/12/10 10:20	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	5.07E+00	2.02E+00	2.02E+00	2.96E+00	pCi/l
10-05066-08	TRG	SB-3-MW-SD DIS	05/12/10 10:20	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	-2.90E+01	3.48E+01	3.48E+01	9.35E+01	pCi/l
10-05066-09	TRG	SB-3-MW-SD SUS	05/12/10 10:20	5/14/2010	5/20/2010	10-05066	Gross Alpha	EPA 900.0 Modified	4.14E+00	1.75E+00	1.75E+00	2.34E+00	pCi/l
10-05066-01	LCS	KNOWN	05/14/10 00:00	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	2.39E+02	7.18E+00			pCi/l
10-05066-01	LCS	SPIKE	05/14/10 00:00	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	2.44E+02	5.76E+00	5.78E+00	7.48E-01	pCi/l
10-05066-02	MBL	BLANK	05/14/10 00:00	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	-1.84E-01	2.43E-01	2.43E-01	5.45E-01	pCi/l
10-05066-03	DUP	SB-2-MW-S DIS	05/11/10 10:35	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	9.04E+00	8.52E+00	8.52E+00	1.72E+01	pCi/l
10-05066-04	DO	SB-2-MW-S DIS	05/11/10 10:35	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	1.10E+00	7.84E+00	7.84E+00	1.67E+01	pCi/l
10-05066-05	TRG	SB-2-MW-S SUS	05/11/10 10:35	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	2.26E+00	1.45E+00	1.45E+00	2.84E+00	pCi/l
10-05066-06	TRG	SB-3-MW-S DIS	05/12/10 10:20	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	2.87E+00	3.17E+01	3.17E+01	6.77E+01	pCi/l
10-05066-07	TRG	SB-3-MW-S SUS	05/12/10 10:20	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	1.25E+01	3.81E+00	3.81E+00	6.86E+00	pCi/l
10-05066-08	TRG	SB-3-MW-SD DIS	05/12/10 10:20	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	-2.35E+01	3.35E+01	3.35E+01	7.43E+01	pCi/l
10-05066-09	TRG	SB-3-MW-SD SUS	05/12/10 10:20	5/14/2010	5/20/2010	10-05066	Gross Beta	EPA 900.0 Modified	1.23E+01	3.40E+00	3.40E+00	6.00E+00	pCi/l
10-05066-01	LCS	KNOWN	05/14/10 00:00	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	1.02E+01	4.70E-01			pCi/l
10-05066-01	LCS	SPIKE	05/14/10 00:00	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	9.45E+00	1.26E+00	1.26E+00	1.39E-01	pCi/l
10-05066-02	MBL	BLANK	05/14/10 00:00	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	5.87E-02	8.65E-02	8.65E-02	1.39E-01	pCi/l
10-05066-03	DUP	SB-2-MW-S DIS	05/11/10 10:35	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	1.10E-01	1.56E-01	1.56E-01	1.46E-01	pCi/l
10-05066-04	DO	SB-2-MW-S DIS	05/11/10 10:35	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	2.27E+00	6.61E-01	6.61E-01	2.07E-01	pCi/l
10-05066-05	TRG	SB-2-MW-S SUS	05/11/10 10:35	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	1.32E-01	1.35E-01	1.35E-01	1.54E-01	pCi/l
10-05066-06	TRG	SB-3-MW-S DIS	05/12/10 10:20	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	2.26E+01	4.14E+00	4.14E+00	4.28E-01	pCi/l
10-05066-07	TRG	SB-3-MW-S SUS	05/12/10 10:20	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	1.23E+00	4.32E-01	4.32E-01	2.17E-01	pCi/l
10-05066-08	TRG	SB-3-MW-SD DIS	05/12/10 10:20	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	1.22E+01	2.39E+00	2.39E+00	4.68E-01	pCi/l
10-05066-09	TRG	SB-3-MW-SD SUS	05/12/10 10:20	5/14/2010	5/25/2010	10-05066	Radium-226	EPA 903.0 Modified	1.26E+00	4.21E-01	4.21E-01	2.17E-01	pCi/l

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty;(2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original



**EBERLINE ANALYTICAL CORPORATION**

601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621



# Eberline Analytical Final Report of Analysis

**Patrick Ritchie**  
**Michael Pisani & Associates, Inc.**  
**17431 Jefferson Hwy Suite A**  
**Baton Rouge, LA 70817**

SDG: **10-05066**  
 Project: **07-47 East White Lake**  
 Analysis Category: **ENVIRONMENTAL**  
 Sample Matrix: **WA**

Work Order Details:

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-05066-01	LCS	KNOWN	05/14/10 00:00	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	1.70E+01	8.66E-01			pCi/l
10-05066-01	LCS	SPIKE	05/14/10 00:00	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	1.28E+01	8.66E-01	9.55E-01	8.43E-01	pCi/l
10-05066-02	MBL	BLANK	05/14/10 00:00	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	3.40E-01	4.30E-01	4.30E-01	8.80E-01	pCi/l
10-05066-03	DUP	SB-2-MW-S DIS	05/11/10 10:35	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	2.39E+00	6.73E-01	6.77E-01	1.18E+00	pCi/l
10-05066-04	DO	SB-2-MW-S DIS	05/11/10 10:35	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	1.76E+00	4.78E-01	4.81E-01	8.21E-01	pCi/l
10-05066-05	TRG	SB-2-MW-S SUS	05/11/10 10:35	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	1.28E-01	4.87E-01	4.87E-01	1.03E+00	pCi/l
10-05066-06	TRG	SB-3-MW-S DIS	05/12/10 10:20	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	9.89E+00	1.64E+00	1.67E+00	2.49E+00	pCi/l
10-05066-07	TRG	SB-3-MW-S SUS	05/12/10 10:20	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	1.18E+00	5.60E-01	5.62E-01	1.08E+00	pCi/l
10-05066-08	TRG	SB-3-MW-SD DIS	05/12/10 10:20	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	5.16E+00	1.32E+00	1.33E+00	2.33E+00	pCi/l
10-05066-09	TRG	SB-3-MW-SD SUS	05/12/10 10:20	5/14/2010	5/27/2010	10-05066	Radium-228	EPA 904.0 Modified	1.17E+00	5.16E-01	5.17E-01	9.71E-01	pCi/l

CU=Counting Uncertainty; CSU=Combined Standard Uncertainty (2-sigma); MDA=Minimal Detected Activity; LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original



**EBERLINE ANALYTICAL CORPORATION**

601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

**SECTION V**  
**ANALYTICAL STANDARD**



Ba-6  
(f 6a)

# National Institute of Standards & Technology Certificate

## Standard Reference Material 4251C Barium-133 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive barium-133 chloride, non-radioactive barium chloride, and hydrochloric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of ionization chambers and solid-state gamma-ray spectrometry systems.

### Radiological Hazard

The SRM ampoule contains barium-133 with a total activity of approximately 2.5 MBq. Barium-133 decays by electron capture and during the decay process X-rays and gamma rays with energies from 4 to 400 keV are emitted. Most of these photons escape from the SRM ampoule and can represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]\*. Appropriate shielding and/or distance should be used to minimize personnel exposure. The SRM should be used only by persons qualified to handle radioactive material.

### Chemical Hazard

The SRM ampoule contains hydrochloric acid (HCl) with a concentration of 1 mole per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

### Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least June 2004.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

### Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group and D.B. Golas, Nuclear Energy Institute Research Associate.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899  
October 1994

Thomas E. Gills, Chief  
Standard Reference Materials Program



**QUALITY CONTROL PROGRAM**  
QCP-009

Rev.8; 11/10/03

Title: Radioactive Reference Standards Solutions & Records

**EBERLINE SERVICES - OAK RIDGE LABORATORY**  
**RADIOACTIVE REFERENCE SOLUTIONS**  
**PRIMARY DILUTION RECERTIFICATION**  
QCP 009-1

SOLUTION REFERENCE # NIST SRM4251C      CURRENT DATE 10/28/2009 0:00  
SOLUTION # Ba-6

Principal Radionuclide <sup>133</sup>Barium      Half Life, Years 1.048E+01      Half Life, Days 3.828E+03

Radionuclide <sup>133</sup>Barium      Reference Date 9/1/1993 0:00  
Certified Activity \_\_\_\_\_  $\mu\text{Ci}$   
Certified Concentration 1.318E+01  $\mu\text{Ci per gram}$

Ampoule /Solution Gross	<u>9.3081</u>	Weight, Grams
Empty Ampoule	<u>4.2582</u>	Weight, Grams
Solution Net	<u>5.0499</u>	Weight, Grams
Total Activity in Ampoule	<u>66.5577</u>	$\mu\text{Ci}$

**Chemical Composition of Standard Solution**

<sup>133</sup>BaCl<sub>2</sub> in 1M HCl

Dilution Instructions:      Dilution Solvent Used 1M HCl

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 66.5577  $\mu\text{Ci}$       Which Equals 1.478E+08 dpm at the date listed above

And after dilution the activity of this solution is 1.478E+05 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: October 28, 2010

Recertified By [Signature]

Date: 10/28/09

Verified & Approved By [Signature]

Date: 11/4/09

QC Approval [Signature]

Date: 11/4/09



QUALITY CONTROL PROGRAM  
QCP-009

Rev.8; 11/10/03  
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY  
RADIOACTIVE REFERENCE STANDARD SOLUTIONS  
SECONDARY DILUTION RECERTIFICATION

Solution Reference #		QCP-009-1-A NIST SRM4251C	Date	10/28/09
Solution #				Ba-6a
Principal Radionuclide	Half Life, Years	Half Life, Days		
<sup>133</sup> Ba	1.048E+01	3.828E+03		
Radionuclide of Interest	<sup>133</sup> Ba	Reference Date	9/1/1993 0:00	
Parent Solution Conc.	1.48E+05 dpm/ml			
Chemical Composition of Standard Solution				
<sup>133</sup> BaCl <sub>2</sub> in 1M HCl				

Dilution Instructions: Dilution Solvent Used 1M HCl

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution:	25.0000 ml	Final Activity Concentration:	3.6950E+03 dpm/ml
Total Activity:	3.6950E+06 dpm		
Final Volume:	1000.00 ml		

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: October 28, 2010

Recertified By		Date:	10/28/09
Verified & Approved By		Date:	11/4/09
QC Approval		Date:	11/4/09

# CERTIFICATE OF CALIBRATION ALPHA STANDARD SOLUTION

<sup>Ra-5</sup>  
QA/QC REVIEWED  
Date 2/8/94 Initials W

Radionuclide: Ra-226  
Half Life: 1600 ± 7 years  
Catalog No.: 7226  
Source No.: 453-26

Customer: TMA EBERLINE  
P.O.No.: VH1888  
Reference Date: February 1 1994 12:00 PST.  
Contained Radioactivity: (Ra-226) 1.001 µCi.  
Contained Radioactivity: (Ra-226) 37.0 kBq.

### Description of Solution

- a. Mass of solution: 5.1864 g (in a 5 ml Flame Sealed Ampoule)
- b. Chemical form: Ra(NO<sub>3</sub>)<sub>2</sub> in 1 N HNO<sub>3</sub>
- c. Carrier content: None added
- d. Density: 1.0318 g/ml @ 20°C.

Radioimpurities None detected (other than daughters)

### Radioactive Daughters

Rn-222, Po-218, At-218, Pb-214, Bi-214, Po-214, Tl-210, Pb-210, Bi-210, Po-210 and Tl-206.

### Radionuclide Concentration

(Ra-226) 0.1929 µCi/g.

### Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry:

Energy peak(s) integrated under: 186 keV.

Branching ratio(s) used: 0.0351 gamma rays per decay.

### Uncertainty of Measurement

- a. Systematic uncertainty in instrument calibration: ±3.4%
- b. Random uncertainty in assay: ±3.1%
- c. Random uncertainty in weighing(s): ±0.2%
- d. Total uncertainty at the 99% confidence level: ±4.6%

### NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

### Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

### Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).



ISOTOPE PRODUCTS LABORATORIES  
1800 North Keystone Street  
Burbank, California 91504  
(818) 843 - 7000

Ana U. Kuman  
QUALITY CONTROL

Feb. 3, 1994  
Date Signed





**QUALITY CONTROL PROGRAM**  
MP 009

Rev.8; 11/01/03  
Title: Radioactive Reference Standards Solutions & Records

**EBERLINE SERVICES - OAK RIDGE LABORATORY**  
**RADIOACTIVE REFERENCE SOLUTIONS**  
**PRIMARY DILUTION RECERTIFICATION**  
MP 009

SOLUTION REFERENCE # IPL 453-26 CURRENT DATE 12/17/2009 0:00  
SOLUTION # Ra-5

Principal Radionuclide <sup>226</sup>Radium Half Life, Years 1.600E+03 Half Life, Days 5.844E+05

Radionuclide <sup>226</sup>Radium Reference Date 2/1/1994 0:00  
Certified Activity 1.001E+00  $\mu\text{Ci}$   
Certified Concentration                       $\mu\text{Ci per gram}$

Ampoule /Solution Gross                      Weight, Grams  
Empty Ampoule                      Weight, Grams  
Solution Net                      Weight, Grams  
Total Activity in Ampoule 1.0010  $\mu\text{Ci}$

Chemical Composition of Standard Solution  
<sup>226</sup>Ra(NO<sub>3</sub>)<sub>2</sub> in 1M HNO<sub>3</sub>

Dilution Instructions: Dilution Solvent Used 1M HNO<sub>3</sub>

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 1.0010  $\mu\text{Ci}$  Which Equals 2.222E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.222E+03 dpm/ml This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: December 17, 2010

Diluted By [Signature] Date: 12/17/2009

Verified & Approved By [Signature] Date: 11/5/10

QC Approval [Signature] Date: 11/5/10



QUALITY CONTROL PROGRAM

MP 009

Rev.8; 11/01/03

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY  
RADIOACTIVE REFERENCE STANDARD SOLUTIONS  
SECONDARY DILUTION RECERTIFICATION

Solution Reference # MP 009  
IPL-453-28

Date 12/17/2009 0:00  
Solution # Ra-5b

Principal Radionuclide

<sup>226</sup>Radium

Half Life, Years

1.600E+03

Half Life, Days

5.844E+05

Radionuclide of Interest

<sup>226</sup>Radium

Reference Date

2/1/1994 0:00

Parent Solution Conc. 2.22E+03 dpm/ml

Chemical Composition of Standard Solution

<sup>226</sup>Ra(NO<sub>3</sub>)<sub>2</sub> in 1M HNO<sub>3</sub>

Dilution Instructions:

Dilution Solvent Used

1M HNO<sub>3</sub>

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 20.0000 ml

Total Activity: 4.4440E+04 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 4.4440E+01 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Expiration Date: December 17, 2010

Recertified By

Date: 12/17/2009 0:00

Verified & Approved By

Date: 1/15/10

QC Approval

Date: 1/15/10

# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

61680-416

Ra-228 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Ra-228
ACTIVITY (dps):	3.586 E3
HALF-LIFE:	5.75 years
CALIBRATION DATE:	June 4, 2001 12:00 EST
TOTAL UNCERTAINTY*:	5.1%
SYSTEMATIC:	3.6%
RANDOM:	1.5%

RECEIVED  
 DIRECTOR  
 DATE 6/11/01 INITIALS *PK*

\*99% Confidence Level

Impurities:  $\gamma$ -impurities (other than decay products) <0.1%5.00872 grams 0.1M HCl solution with 50  $\mu$ g/g Ba carrier.

P O NUMBER 00008864, Item 1

SOURCE PREPARED BY:

*M. D. Currie*  
M. D. Currie, Radiochemist

Q A APPROVED:

*ACM* 6/8/01



QUALITY CONTROL PROGRAM  
MP-009

Rev.8; 1/10/03

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY  
RADIOACTIVE REFERENCE SOLUTIONS  
PRIMARY DILUTION RECERTIFICATION  
MP 009

SOLUTION REFERENCE # Analytics 61680-416 CURRENT DATE 12/17/2009 0:00  
SOLUTION # Ra-10

Principal Radionuclide <sup>228</sup>Ra Half Life, Years 5.750E+00 Half Life, Days 2.100E+03

Radionuclide <sup>228</sup>Ra Reference Date 6/4/2001 0:00  
Certified Activity 9.692E-02  $\mu\text{Ci}$   
Certified Concentration                       $\mu\text{Ci per gram}$

Ampoule /Solution Gross	<u>9.4982</u>	Weight, Grams
Empty Ampoule	<u>4.4895</u>	Weight, Grams
Solution Net	<u>5.0087</u>	Weight, Grams
Total Activity in Ampoule	<u>0.0969</u>	$\mu\text{Ci}$

Chemical Composition of Standard Solution  
<sup>228</sup>Ra(NO<sub>3</sub>)<sub>2</sub> in 0.5 M HCl

Dilution Instructions: Dilution Solvent Used 0.5 M HCl

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 0.0969  $\mu\text{Ci}$  Which Equals 2.152E+05 dpm at the date listed above

And after dilution the activity of this solution is 2.152E+02 dpm/ml This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: December 17, 2010

Recertified By [Signature] Date: 12/17/2009 0:00

Verified & Approved By [Signature] Date: 1/4/10

QC Approval [Signature] Date: 1/5/10

ANALYTICS

QA/QC REVIEWED  
Date 4/30/96 Initials WT

Am-4

1380 Seaboard Industrial Blvd.  
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677  
Fax (404) 352-2837

# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

52094-416

Am-241 10 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master liquid radionuclide solution source. The master source was calibrated by liquid scintillation counting.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Am-241
ACTIVITY (dps):	1.975 E+05
HALF-LIFE:	432.2 years
CALIBRATION DATE:	March 19, 1996 12:00 EST
TOTAL ERROR:	3.0%
SYSTEMATIC ERROR:	2.37%
RANDOM ERROR:	0.63%

10.01177 grams of solution 1M HCl.

P O NUMBER OR3830, Item 1

SOURCE PREPARED BY: Kare O'Brien Beverly  
K. O. Beverly, Radiochemist

Q A APPROVED: DM. Phily 4-26-96



# QUALITY CONTROL PROGRAM

MP-009

Rev. 8; 1/10/03

Title: Radioactive Reference Standards Solutions & Records

## EBERLINE SERVICES - OAK RIDGE LABORATORY RADIOACTIVE REFERENCE STANDARD SOLUTIONS SECONDARY DILUTION (RE-CERTIFICATION)

Solution Reference #	Analytics 52094-416	Date	11/9/2009 0:00
Principal Radionuclide		Solution #	A/B-7 (alpha)
<sup>241</sup> Americium	Half Life, Years 4.322E+02	Half Life, Days	1.579E+05
Radionuclide of Interest	<sup>241</sup> Am	Reference Date	3/19/1996 0:00
Parent Solution Conc.	1.19E+04 dpm/ml		
Chemical Composition of Standard Solution			
<sup>241</sup> AmCl <sub>3</sub> in 1M HCL			

Dilution Instructions:	Dilution Solvent Used	1 M HNO <sub>3</sub>
------------------------	-----------------------	----------------------

### SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution:	60.0000 ml	Final Activity Concentration:	7.1100E+02 dpm/ml
Total Activity:	7.1100E+05 dpm		
Final Volume:	1000.00 ml		

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

#### NOTES:

Expiration Date: November 9, 2010

Recertified By: 

Date: 11/9/09

Verified & Approved By: 

Date: 12/11/09

QC Approval: 

Date: 12/11/09



# National Institute of Standards & Technology

## Certificate

### Standard Reference Material 4234A Strontium-90 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive strontium-90 chloride, non-radioactive strontium chloride, non-radioactive yttrium chloride, and hydrochloric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of beta-particle counting instruments and for the monitoring of radiochemical procedures.

#### Radiological Hazard

The SRM ampoule contains strontium-90 with a total activity of approximately 13 MBq. Strontium-90 decays by beta-particle emission to yttrium-90, which also decays by beta-particle emission. None of the beta particles escape from the SRM ampoule. The beta particles emitted from strontium-90 and yttrium-90 produce bremsstrahlung photons with energies up to 2 MeV. Most of these photons escape from the SRM ampoule and can represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]\*. Appropriate shielding and/or distance should be used to minimize personnel exposure. The SRM should be used only by persons qualified to handle radioactive material.

#### Chemical Hazard

The SRM ampoule contains hydrochloric acid (HCl) with a concentration of 1 mole per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

#### Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least March 2005.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

#### Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group and D.B. Golas, Nuclear Energy Institute Research Associate.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899  
May 1995 (Text only revised November 1997)

Thomas E. Gills, Chief  
Standard Reference Materials Program



**QUALITY CONTROL PROGRAM**  
QCP-009

Rev.7; 9/29/99

Title: Radioactive Reference Standards Solutions & Records

**EBERLINE SERVICES - OAK RIDGE LABORATORY**  
**RADIOACTIVE REFERENCE STANDARD SOLUTIONS**  
SECONDARY DILUTION (RE-CERTIFICATION)

Solution Reference # QCP-009-1-A Date 11/9/2009 0:00  
Solution # NIST 4234A A/B-7 (beta)

Principal Radionuclide <sup>90</sup> Strontium	Half Life, Years <u>2.878E+01</u>	Half Life, Days <u>1.051E+04</u>
---	--------------------------------------	-------------------------------------

Radionuclide of Interest <sup>90</sup>Sr Reference Date 3/13/1995 0:00  
Parent Solution Conc. 1.52E+06 dpm/ml

The beta activity of solution reflects the original <sup>90</sup>Strontium concentration and an equal concentration of <sup>90</sup>Yttrium.

Chemical Composition of Standard Solution  
<sup>90</sup>SrCl<sub>2</sub> in 1 M HCl

Dilution Instructions: Dilution Solvent Used 1 M HNO<sub>3</sub>

**SECONDARY VOLUMETRIC DILUTION**

Vol. Parent Solution:	<u>0.5000</u> ml	Final Activity Concentration:	<u>7.5764E+02</u> dpm/ml
Total Activity:	<u>7.5764E+05</u> dpm		
Final Volume:	<u>1000.00</u> ml		

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

NOTES:

Expiration Date: November 9, 2010

Recertified By: [Signature] Date: 11/09/09  
Verified & Approved By: [Signature] Date: 12/11/09  
QC Approval: [Signature] Date: 12/11/09



**SECTION VI**  
**QUALITY CONTROL SAMPLE RESULTS SUMMARY**

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05066</b>	<b>Ra226</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Assoc., Inc.</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-226	1.15	92.53%	13.32%	100.00%	4.60%	1.02E+01	4.70E-01	9.45E+00	1.26E+00	Ra-5b	4.41E+01	4.60E+00	5.14E-01

**Matrix Spike**

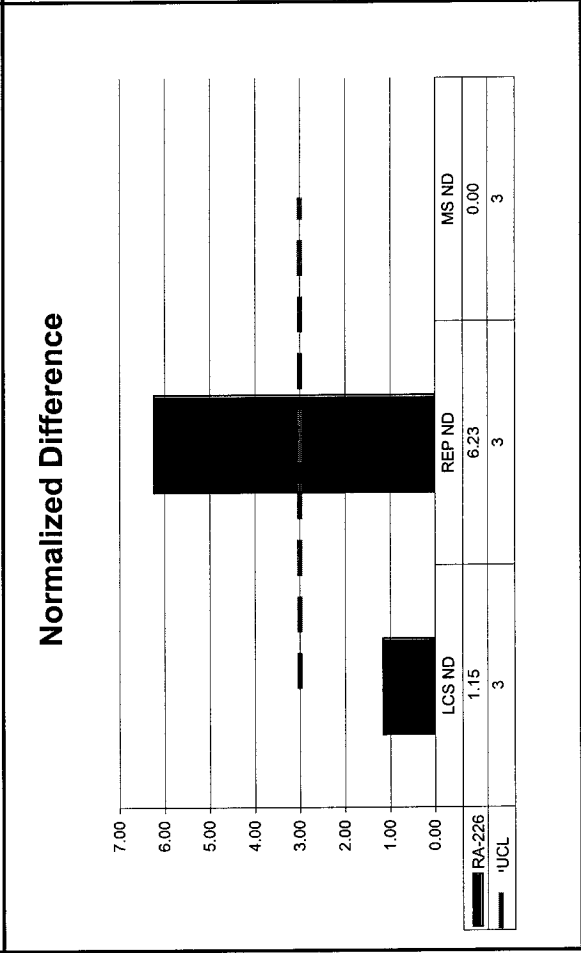
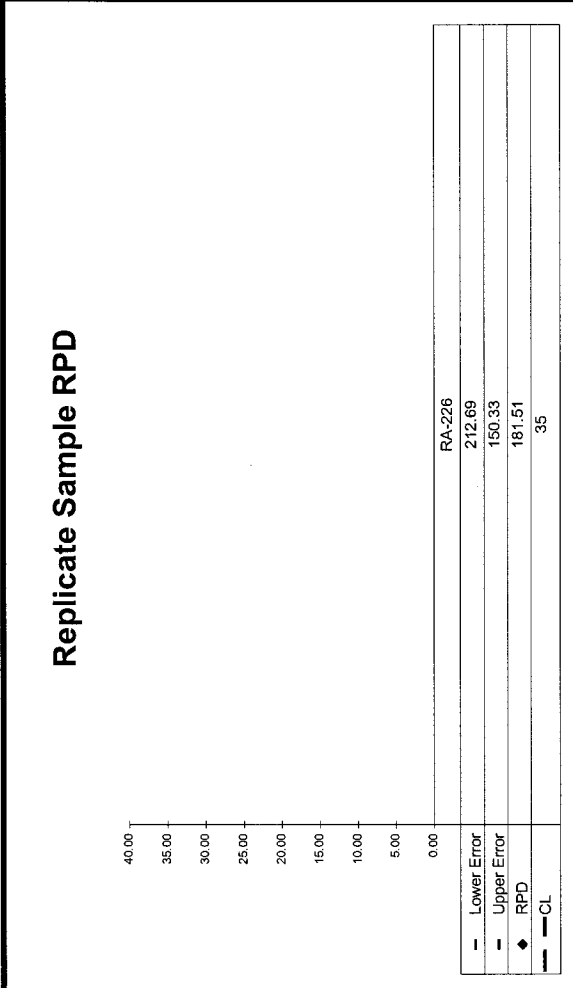
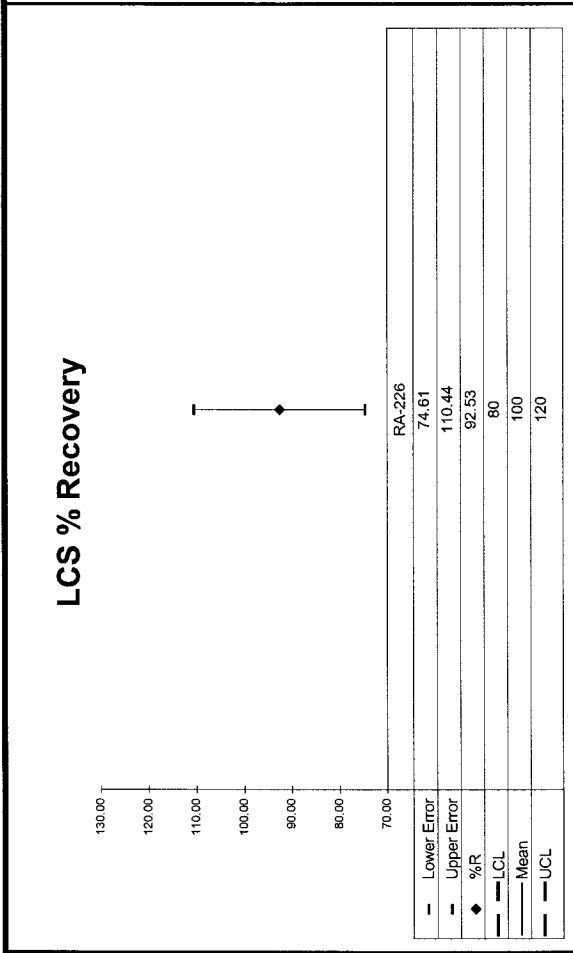
Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

**Replicate Sample**

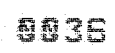
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-226	6.23	181.51	2.27E+00	6.61E-01	1.10E-01	1.56E-01	0.93	OK	OK	OK	INV	INV	INV

**QC Summary**

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05066</b>	<b>Ra226</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Assoc., Inc.</b>



**No Matrix Spike**



WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05066</b>	<b>Ra228</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Asoc., Inc.</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
RA-228	7.37	75.43%	7.46%	100.00%	5.10%	1.70E+01	8.66E-01	1.28E+01	9.55E-01	Ra-10	7.32E+01	5.10E+00	5.15E-01

**Matrix Spike**

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

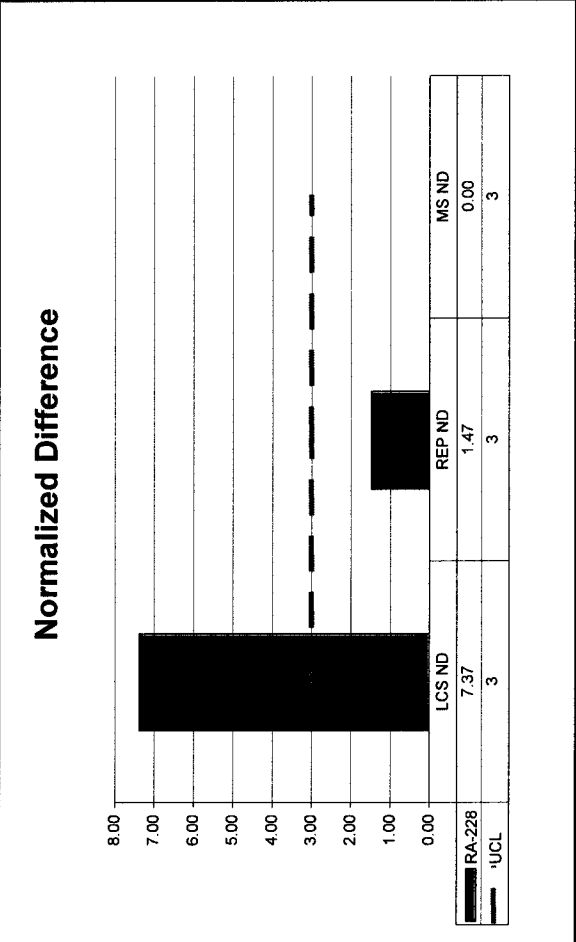
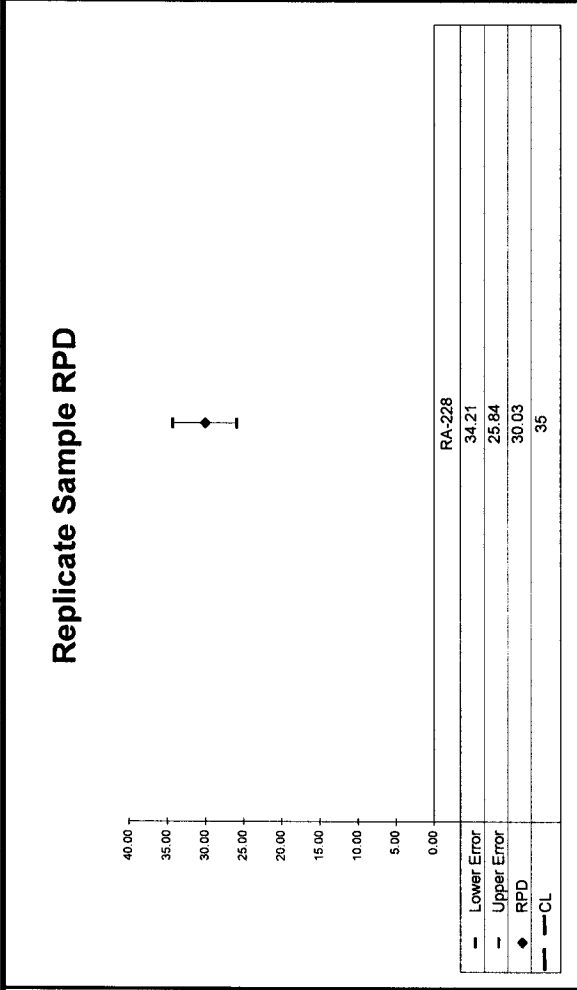
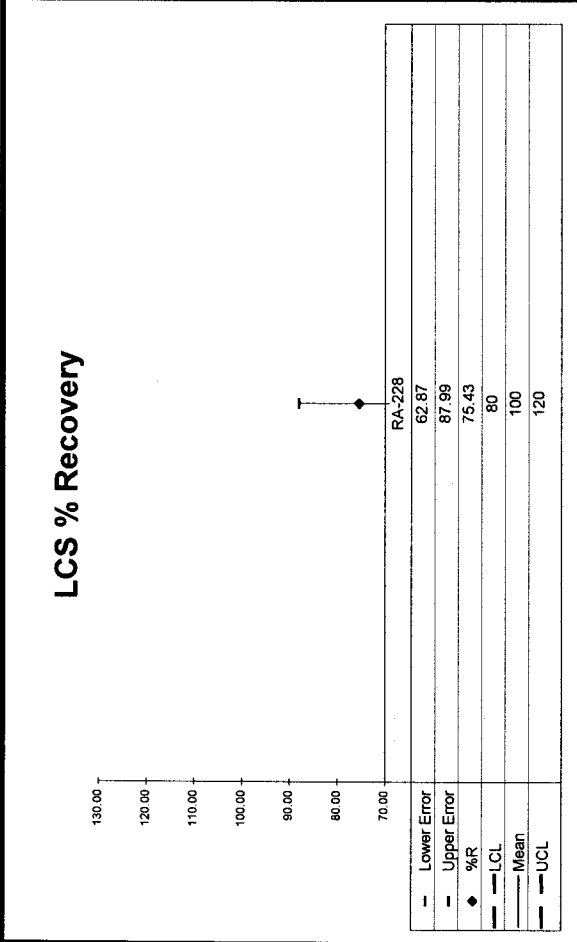
**Replicate Sample**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-228	1.47	30.03	1.76E+00	4.81E-01	2.39E+00	6.77E-01	0.75	OK	INV	INV	MS ND	INV	OK

**QC Summary**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
RA-228	1.47	30.03	1.76E+00	4.81E-01	2.39E+00	6.77E-01	0.75	OK	INV	INV	MS ND	INV	OK

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05066</b>	<b>Ra228</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Assoc., Inc.</b>



**No Matrix Spike**

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05066</b>	<b>GaGbT_ThSr</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Asoc., Inc.</b>

**Laboratory Control Sample**

Analyte	Normalized Difference	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
GROSS ALPHA_TH	6.95	86.95%	2.73%	100.00%	4.30%	3.17E+02	1.36E+01	2.76E+02	7.52E+00	A/B-07	6.95E+02	4.30E+00	1.01E+00
GROSS BETA_SR	1.29	102.04%	2.37%	100.00%	3.00%	2.39E+02	7.18E+00	2.44E+02	5.78E+00	A/B-07	5.24E+02	3.00E+00	1.01E+00

**Matrix Spike**

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

**Replicate Sample**

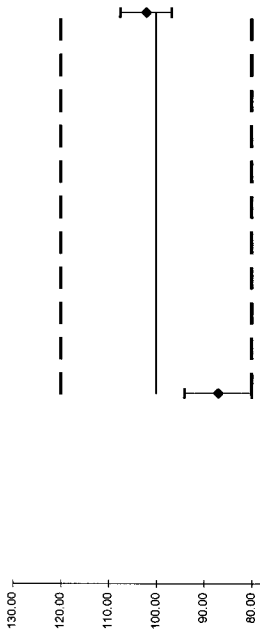
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
GROSS ALPHA_TH	1.57	271.93	6.33E+00	5.37E+00	-9.65E-01	7.32E+00	0.87	OK	INV			INV	OK
GROSS BETA_SR	1.35	156.76	1.10E+00	7.84E+00	9.04E+00	8.52E+00	1.02	OK	OK			INV	OK

**QC Summary**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	LCS ND	MS % R	MS ND	Rep RPD	Rep ND
GROSS ALPHA_TH	1.57	271.93	6.33E+00	5.37E+00	-9.65E-01	7.32E+00	0.87	OK	INV			INV	OK
GROSS BETA_SR	1.35	156.76	1.10E+00	7.84E+00	9.04E+00	8.52E+00	1.02	OK	OK			INV	OK

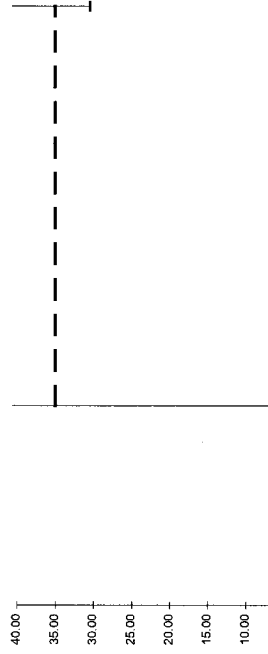
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>10-05066</b>	<b>GaGbT_ThSr</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>Michael Pisani &amp; Asoc.,Inc.</b>

### LCS % Recovery



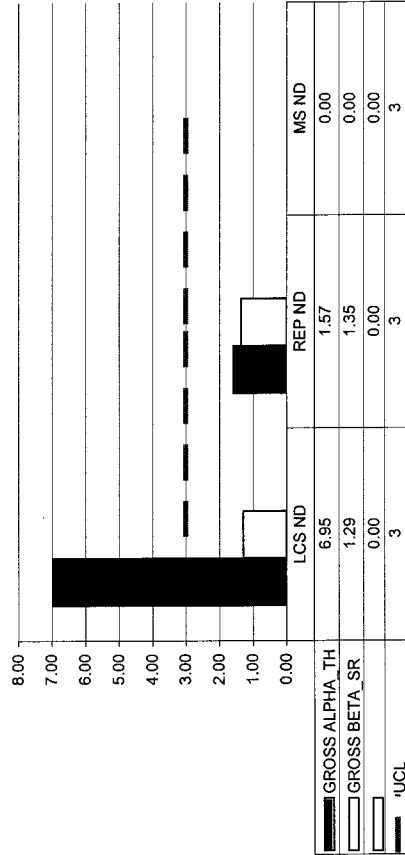
	GROSS ALPHA_TH	GROSS BETA_SR
Lower Error	79.93	96.68
Upper Error	93.98	107.41
%R	86.95	102.04
LCL	80	80
Mean	100	100
UCL	120	120

### Replicate Sample RPD



	GROSS ALPHA_TH	GROSS BETA_SR
Lower Error	593.66	283.19
Upper Error	49.81	90.33
RPD	271.93	156.76
CL	35	35

### Normalized Difference




GROSS ALPHA_TH	GROSS BETA_SR	UCL
6.95	1.57	3
1.29	1.35	3
0.00	0.00	3

No Matrix Spike

**SECTION VII**  
**LABORATORY TECHNICIAN'S NOTES**




**RA-226 NOTES**

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com		Internal Work Order	10-05066
			Analysis Code	Ra226
			Run Number	1

#	Date	Dept	User	Notes
1	05/17/10 06:46	PREP	JBARNARD	ALIUQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDED FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D ALL SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS

*JB*  
*5/17/10*

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05066
		Analysis Code	Ra226
		Run Number	1

#	Date	Dept	User	Notes
1	05/17/10 06:46	PREP	JBARNARD	ALIQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDED FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D ALL SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	05/17/10 14:37	CHEM	TSMITH	Dissolved samples from prep in EDTA.
3	05/18/10 12:14	CHEM	TSMITH	Followed steps 12.2 to 12.8 in AP-006 rev. 9 . ( Sringe filtered samples. Precipitated and filtered samples, obtained final weights, and took to count room )

*S-18-10  
JM*



Reagents Used in an Analysis

Internal Work Order

10-05066

Analysis Code

Run


Ra226

1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
008823P	Ammonium Hydroxide	Reagent Grade	JBARNARD	5/17/2010
009343D04	Ammonium Sulfate	200 mg/ml	JBARNARD	5/17/2010
008327D07	Barium Carrier	1 mg/ml	JBARNARD	5/17/2010
008973D12	Lead Carrier	166 mg/ml	JBARNARD	5/17/2010
009536P	Nitric Acid	Reagent Grade	JBARNARD	5/17/2010
009472P	Perchloric Acid	Reagent Grade	JBARNARD	5/17/2010
006799P	Sulfuric Acid	Reagent Grade	JBARNARD	5/17/2010
009662S	EDTA	0.25M	TSMITH	5/17/2010
008735P	Acetic Acid	Reagent Grade	TSMITH	5/18/2010
009323D03	Ammonium Sulfate	200 mg/ml	TSMITH	5/18/2010




**RA-228 NOTES**

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05066
		Analysis Code	Ra228
		Run Number	1

#	Date	Dept	User	Notes
1	05/17/10 06:46	PREP	JBARNARD	ALIQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDED FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D ALL SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS

*JB*  
*5/17/10*

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05066
		Analysis Code	Ra228
		Run Number	1

#	Date	Dept	User	Notes
1	05/17/10 06:46	PREP	JBARNARD	ALIQUOTED AND FILTERED SAMPLES- ADDED SPIKES AND TRACERS- DISSOLVED SUSPENDED FRACTIONS WITH HNO3 AND DIGESTED WITH MIXED ACIDS- PH'D ALL SAMPLES- PRECIPITATED WITH BA AND PB CARRIERS AND AMMONIUM SULFATE- DECANTED SAMPLES AND CENTRIFUGED- SUBMITTED RADIUM PRECIP TO SEPARATIONS
2	05/26/10 14:27	CHEM	TSMITH	Placed filters from count room into labeled centrifuge tubes. Added EDTA to samples and swirled.
3	05/27/10 10:25	CHEM	TSMITH	Followed steps 12.2 to 12.9 in AP-007 rev. 14 . ( Chemical cleanup fro Ra 228 ) Followed steps 12.10 to 12.18 in AP-007 rev. 14 . ( Precipitated samples, centrifuged, and discarded supernate. Dissolved precip, precipitated samples, hot bathed, centrifuged, and discarded supernate. Dissolved precip, precipitated and filterd samples, obtained final weights, covered with aluminum foil, and took to count room )

527-10  
 TSM





Reagents Used in an Analysis

Internal Work Order

10-05066

Analysis Code

Run

Ra228

1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
008823P	Ammonium Hydroxide	Reagent Grade	JBARNARD	5/17/2010
009343D04	Ammonium Sulfate	200 mg/ml	JBARNARD	5/17/2010
008327D07	Barium Carrier	1 mg/ml	JBARNARD	5/17/2010
008973D12	Lead Carrier	166 mg/ml	JBARNARD	5/17/2010
009536P	Nitric Acid	Reagent Grade	JBARNARD	5/17/2010
009472P	Perchloric Acid	Reagent Grade	JBARNARD	5/17/2010
006799P	Sulfuric Acid	Reagent Grade	JBARNARD	5/17/2010
009713S	EDTA	0.25M	TSMITH	5/26/2010
008974D03	Ammonium Oxalate	5%	TSMITH	5/27/2010
009040D12	Ammonium Sulfide	2%	TSMITH	5/27/2010
007701D11	Lead Carrier	1.5 mg/ml	TSMITH	5/27/2010
009327D04	Nitric Acid	1N	TSMITH	5/27/2010
009424D02	Nitric Acid	6N	TSMITH	5/27/2010
009621P	Nitric Acid	Reagent Grade	TSMITH	5/27/2010
008736D16	Sodium Hydroxide	10M	TSMITH	5/27/2010
008736D17	Sodium Hydroxide	10M	TSMITH	5/27/2010
008736D18	Sodium Hydroxide	18M	TSMITH	5/27/2010
009625S	Yttrium Carrier	9 mg/ml	TSMITH	5/27/2010

# LB4110 Agua

59


Date	Sample #	Client	Load Time	CT TIME	Analysis	Tech
5/21/10	1005067AB(16-19)	MP&A	1227	2hrs	αβ	ICB
5/21/10	1005067AB(1)	MP&A	1227	30min	αβ	ICB
5/21/10	1005068AB(16-19)	MP&A	1440	2hrs	αβ	ICB
5/21/10	1005068AB(1)	MP&A	1440	30min	αβ	ICB
5/22/10	Weekly Bkgd	Lab	0901	8 hrs	αβ	ICB
5/24/10	Daily Bkgd/QC	Lab	0552/0511	1hr/30min	αβ	KM
5/24/10	1005070AB(1-3,5)	NYC Dept. Env.	1010	15min	αβ	KM
5/24/10	1005070AB(1)	Louisiana Energy	1011	30min	αβ	KM
5/24/10	1005070AB(14)	NYC Dept. Env.	1039	15min	αβ	KM
5/24/10	1005089AB(2-5)	SES	1105	2hrs	αβ	KM
5/24/10	1005089AB(1)	SES	1106	30min	αβ	KM
5/24/10	100501254(2-7,6)	BJC	1159	2hrs	Sr90/Y	ICB
5/24/10	100501254(1)	BJC	1159	30min	Sr90/Y	ICB
5/24/10	1005032AB(2-12)	TDX	1445	2hrs	αβ	ICB
5/24/10	1005032AB(1)	TDX	1446	30min	αβ	ICB
5/25/10	1005044EA(15)	M&P	1024	2hrs	Ra8	KM
5/25/10	100508912A(1-3,5)	SES	1025	2hrs	Ra8	KM
5/25/10	1005048PB(2-4)	BJC	<del>1025</del> 1026	4hrs	Pb	KM
5/25/10	1005048PB(1)	BJC	1026	30min	Pb	KM
5/25/10	1005111AB(1-4)	BJC	1140	1 hr	αβ	ICB
5/26/10	Daily Bkgd/QC	Lab	0554/0512	1hr/30min	αβ	KM
5/26/10	1005046RA(2-13)	MP&A	1209	2hrs	Ra8	ICB
5/26/10	1005046RA(1)	MP&A	1210	30min	Ra8	ICB
5/26/10	1005116AB(2-3)	ALMAC	1355	2hrs	αβ	ICB
5/26/10	1005074RA(1-4)	BJC	1446	2hrs	Ra8/Ei	ICB
5/26/10	1005114AB(2-5)	BJC	1457	2hrs	αβ	ICB
5/26/10	1005110ABA(4)	ALMAC	1604	2hrs	αβ	ICB
5/26/10	1005048CL(13,5)	BJC	1609	30min	CL36	ICB
5/27/10	Daily Bkgd/QC	Lab	0513/0513	1hr/30min	αβ	ICB
5/27/10	1005124AB(1-3,5-8)	Clean Harbors	0937	15min	αβ	ICB
5/27/10	1005124AB(1)	Clean Harbors	0954	15min	αβ	ICB
5/27/10	1005060RA(1-9)	M&P	1107	2hrs	Ra8	KM

**ALPHA/BETA NOTES**

 <b>EBERLINE</b> <small>SERVICES</small> <b>Work Order Analysis Notes</b>	<b>Oak Ridge Laboratory</b> 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	10-05066
		Analysis Code	GaGbT_ThSr
		Run Number	1

#	Date	Dept	User	Notes
1	05/20/10 14:02	PREP	BLESTER	Determined total dissolved solids concentration for maximum aliquot volume. Each fraction was suction filtered through a pre-weighed .45 mm filter to separate the suspended from dissolved solids. The filter was dried, reweighed, and glued to planchets. The dissolved solids fractions were placed in beakers on a hot plate. Once dry, the dissolved solids were transferred to a pre-weighed planchet under a heat lamp. Spike and blank fractions were prepared. The samples were flamed, reweighed, and submitted to the count room.

*Brian P. Zetter*  
 5.20.2010

 <p><b>Reagents Used in an Analysis</b></p>		Internal Work Order		
		10-05066		
		Analysis Code		Run
		GaGbT_ThSr		1
Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
009424D05	Nitric Acid	3N	BLESTER	5/20/2010

# LB4110 Red

Date	Sample #	Client	Load Time	CT Time	Analysis	Tech
5/17/10	1004069B(1G,14B)	Eberline	1021	2 hrs.	RaP	KM
5/17/10	1005008AB(1)	MWRD	1435	30 mins	αβ	KB
5/17/10	1005008AB(2-15)	MWRD	1722	8 hrs	αβ	ICB
5/18/10	Daily Bldg/QC	Lab	0511/0620	1hr/30min	αβ	KM
5/18/10	1005035NP(1-4)	BTC	0961	10 min.	Np	KM
5/18/10	1005075AB(2-4)	BTC	0951	1hr.	αβ	KM
5/18/10	1005075AB(1)	BTC	0951	30 min	αβ	KM
5/18/10	1005055RA(1-4)	Univ. Lab.	1050	2 hrs	RaP	KM
5/18/10	1005028RA(1-4)	North Dakota	1051	2 hrs	RaP	KM
5/18/10	1005027AB(1)	Bionomics	1211	30 min.	αβ	KM
5/18/10	1005056AAB(1-4-12)	MWRD	1807	8 hrs	αβ	KB
5/18/10	1005057AB(2-9)	MWRD	1807	8 hrs	αβ	ICB
5/19/10	Daily Bldg/QC	Lab	0509/0617	1hr/30min	αβ	KM
5/19/10	1005055AB(1)	MWRD	0844	30 min	αβ	KM
5/19/10	1005028NP(1-4)	BTC	0933	10 min.	Np	KM
5/19/10	1005026Ph(2-4)	BTC	1057	4 hrs	Pbcp	ICB
5/19/10	1005026Ph(1)	BTC	1059	30 min.	Pb <sup>200</sup>	KB
5/19/10	100414654(2-4,6)	BSC	1123	2 hrs	Sr <sup>90</sup> /Y	KB
5/19/10	100414654(1)	BSC	1124	30 min.	Sr <sup>90</sup> /Y	KB
5/19/10	1005032SR(1-3,19)	TDX	1223	2 hrs	TJ SR	KB
5/19/10	1005044AB(2-15)	MPFA	1517	2 hrs	αβ	KB
5/19/10	1005058AB(2-15)	MWRD	1807	8 hrs	αβ	ICB
5/20/10	Daily Bldg/QC	Lab	0511/0619	1hr/30min	αβ	KM
5/20/10	1005066AB(2-9)	MPFA	1418	2 hrs	αβ	KB
5/20/10	1005066AB(1)	MPFA	1419	30 min	αβ	KB

**SECTION VIII**  
**ANALYTICAL DATA (RADIUM-226)**


















# Spike and Tracer Worksheet

Internal Work Order		Run	Analysis Code		Date		Technician		Technician Initials		Witness Initials		
<b>10-05066</b>		<b>1</b>	<b>Ra226</b>		<b>5/17/2010 11:05</b>		<b>JBARNARD</b>						
<b>LCS &amp; Matrix Spikes</b>													
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	LCS Volume Used (g)	MS Volume Used (g)	LCSD Volume Used (g)	MSD Volume Used (g)	LCS Known pCi	MS Added pCi	LCSD Known pCi	MSD Added pCi	Error Estimate
Ra-226	Ra-5b	44.128	5/17/2010	0.500	0.5137				10.21	0.00	0.00	0.00	0.000
													0.000

<b>Tracers</b>													
fraction	Isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition	Balance Printer Tapes						
01	Ba-133	Ba-6a	1225.659	5/17/2010	0.8223	0.8300	Tracer						LCS
02	Ba-133	Ba-6a	1225.659	5/17/2010	0.8185	0.8300	0.8223 g						0.5137 g
03	Ba-133	Ba-6a	1225.659	5/17/2010	0.8105	0.8300	0.8185 g						0.5151 g
04	Ba-133	Ba-6a	1225.659	5/17/2010	0.8091	0.8300	-0.8105 g						
05	Ba-133	Ba-6a	1225.659	5/17/2010	0.8088	0.8300	-0.8091 g						
06	Ba-133	Ba-6a	1225.659	5/17/2010	0.8075	0.8300	-0.8088 g						
07	Ba-133	Ba-6a	1225.659	5/17/2010	0.8095	0.8300	-0.8075 g						
08	Ba-133	Ba-6a	1225.659	5/17/2010	0.8143	0.8300	-0.8095 g						
09	Ba-133	Ba-6a	1225.659	5/17/2010	0.8099	0.8300	-0.8143 g						
							-0.8099 g						
							Matrix Spike						







Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
26-MAY-2010 11:00:14

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_C:C\_1005066A-RA\$01\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005066A-RA \* SAMPLE ID: 01  
SAMPLE DATE: 25-MAY-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: SPIKE \* DETECTOR NUMBER: 039  
ACQ DATE: 25-MAY-2010 10:57 \* AVERAGE EFFICIENCY: 19.79%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 100.00%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: MANUAL  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 21-MAY-2010 12:05 \* EFF CAL DATE: 18-APR-2010 11:15  
BKG FILENAME: B\_039\_21MAY10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 2.27  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	1434.47	0.17	100.0	1.921E+01	2.031E+00	1.388E-01
RN-222	5490.0	1706.87	0.17	99.9	2.287E+01	2.307E+00	1.389E-01
RA-226	4785.0	705.80	0.17	100.0	9.448E+00	1.258E+00	1.388E-01

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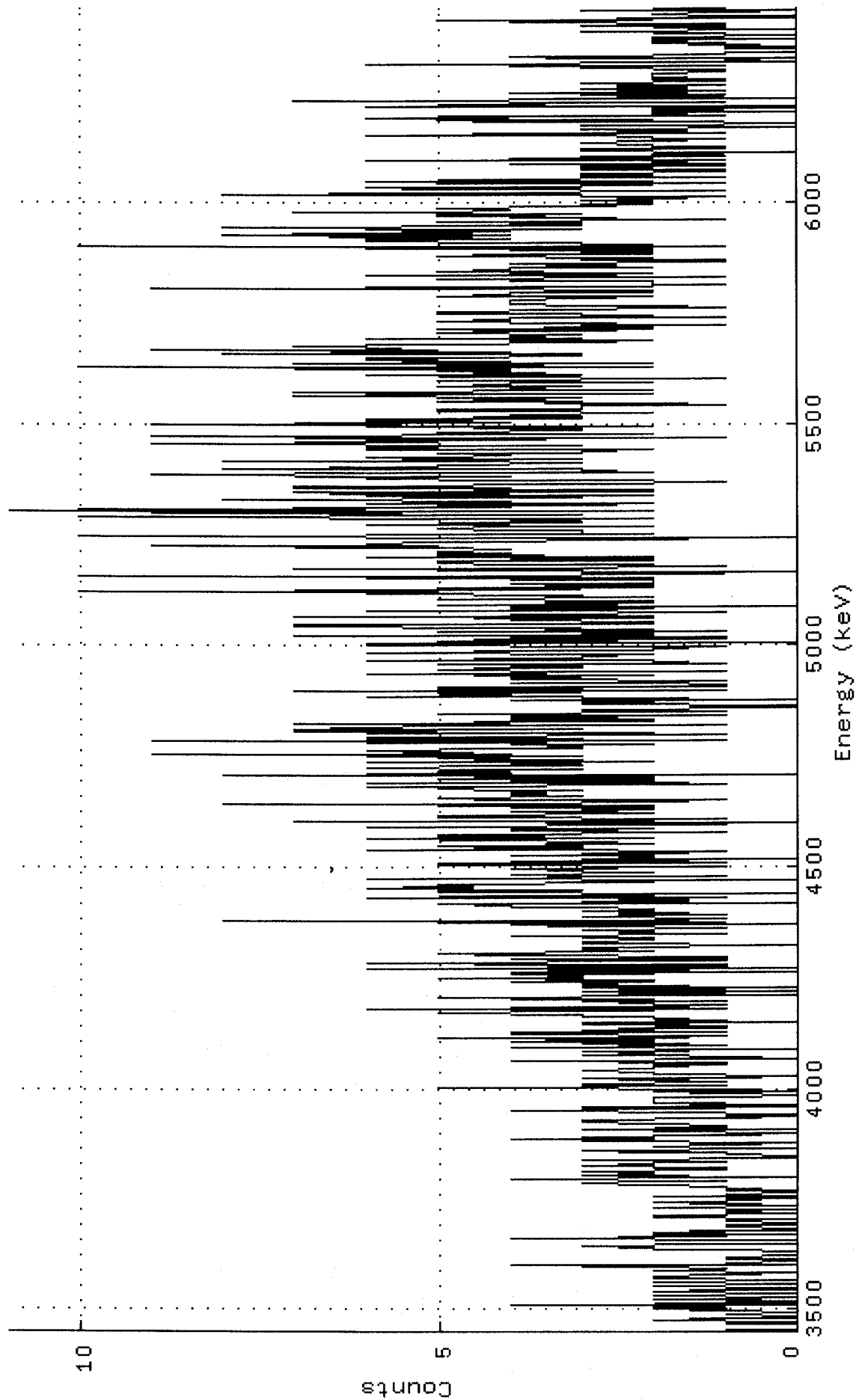
Alan Mezley  
Analyst

5/27/10  
Date

Alan Mezley  
Reviewer

5/27/10  
Date

Spectrum : DKA100:[ALPHA:ALUSR:ARCHIVE.C]C\_1005066A-RA\$01\_RA.CNF;2  
Title : 039  
Sample Title: SPIKE  
Start Time: 25-MAY-2010 10:57 Sample Time: 25-MAY-2010 00:00 Energy Offset: 3.43934E+03  
Real Time : 0 02:50:00.40 Sample ID : 01 Energy Slope : 3.13485E+00  
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -2.06058E-04



Channel Contents for ND\_AMS\_ARCHIVE\_C:C\_1005066A-RA\$01\_RA

Channel

1:	1	0	0	1	0	0	0	0	1	0	2	1	0	0
15:	1	1	0	1	2	1	2	0	4	0	0	2	1	0
29:	2	0	0	2	1	0	0	2	0	0	2	0	0	2
43:	2	1	1	0	2	1	1	2	4	0	1	0	0	1
57:	1	0	0	0	0	1	2	2	3	1	0	0	0	0
71:	4	1	2	0	2	1	0	0	1	1	0	0	1	1
85:	0	2	1	2	0	1	1	0	2	0	0	1	2	1
99:	1	0	2	0	1	0	1	0	1	1	1	2	3	2
113:	1	4	1	0	3	2	2	3	1	2	1	3	2	2
127:	1	3	0	0	0	1	1	2	3	0	1	2	1	1
141:	0	3	2	4	2	2	1	0	2	0	3	1	1	1
155:	2	3	3	3	1	0	1	0	2	3	4	2	0	3
169:	0	2	2	2	2	2	1	0	1	2	0	1	4	5
183:	1	3	3	1	2	3	1	0	2	2	2	3	2	2
197:	2	1	2	1	4	4	0	1	2	3	2	2	3	0
211:	4	1	1	2	4	2	2	5	2	1	4	2	1	3
225:	2	1	1	3	0	3	1	2	2	2	4	3	5	3
239:	1	6	2	1	2	2	3	1	3	5	1	0	2	3
253:	0	2	3	0	3	3	2	4	2	5	3	3	4	0
267:	4	3	0	6	1	1	3	6	1	1	4	1	4	4
281:	5	2	2	3	2	3	0	3	3	3	2	2	2	4
295:	1	2	2	3	1	1	3	4	0	2	8	2	1	3
309:	2	1	2	3	2	2	3	4	4	5	0	3	2	1
323:	6	4	0	1	5	5	3	6	5	4	5	2	2	0
337:	6	1	3	4	2	3	3	4	1	1	5	1	5	3
351:	0	3	2	2	4	2	1	4	6	3	3	5	2	3
365:	3	4	6	2	5	5	1	1	4	2	2	6	1	3
379:	0	7	3	1	5	5	5	2	3	4	2	2	4	2
393:	8	4	2	1	4	5	3	4	4	4	3	4	5	4
407:	6	1	2	6	2	2	5	4	0	8	4	5	3	4
421:	6	4	3	4	2	6	3	5	5	3	9	4	5	6
435:	4	3	3	4	2	6	1	9	3	6	6	1	3	5
449:	7	3	7	6	5	1	7	2	4	2	4	1	3	5
463:	1	2	3	0	1	0	3	2	2	4	0	3	3	6
477:	4	5	1	7	3	5	1	1	2	4	1	4	3	4
491:	2	3	6	1	3	5	4	3	3	5	1	2	2	6
505:	3	3	2	2	6	3	2	2	1	2	6	6	0	5
519:	4	1	1	7	2	3	1	5	2	4	4	7	7	2
533:	2	4	4	2	7	2	4	1	4	6	2	4	0	5
547:	2	3	2	5	5	2	4	3	6	5	10	4	2	5
561:	2	4	2	2	2	4	2	10	4	2	0	3	3	7
575:	4	1	3	4	5	5	2	2	6	2	5	5	4	5
589:	4	4	5	9	5	6	5	4	3	0	2	10	2	3
603:	3	3	4	5	4	2	6	4	3	4	2	3	10	3
617:	4	7	11	2	10	4	7	3	2	6	4	7	8	3
631:	6	2	6	7	2	2	7	4	7	2	3	1	3	4
645:	6	4	5	9	5	2	3	3	8	5	5	5	3	5
659:	8	3	6	5	4	5	3	3	2	6	6	4	3	9
673:	5	5	6	1	5	9	2	5	5	3	4	3	6	2
687:	9	5	4	6	3	6	3	4	4	2	4	5	5	3
701:	3	3	1	2	5	3	4	5	3	7	5	2	7	2
715:	4	4	3	5	4	4	2	5	1	2	4	6	3	4
729:	5	4	4	10	2	5	2	7	4	4	6	6	5	3
743:	3	8	4	9	5	6	6	7	5	3	3	2	6	3
757:	4	3	3	5	4	3	2	5	2	3	1	4	4	5
771:	4	4	1	3	3	5	5	3	4	1	2	3	4	4
785:	4	4	4	3	2	5	4	4	2	2	5	9	3	1
799:	2	2	2	3	5	2	1	4	6	2	5	5	4	4
813:	2	3	4	4	1	3	1	3	4	5	4	2	2	4
827:	2	2	10	1	3	3	4	6	6	4	5	8	4	5
841:	7	4	6	3	8	3	5	3	3	5	1	4	3	5
855:	4	3	7	5	4	5	5	3	2	3	2	2	3	2
869:	1	3	3	8	5	1	1	5	6	3	3	1	5	2
883:	6	4	2	1	3	3	3	1	3	1	3	3	1	4
897:	1	2	1	6	2	3	1	2	0	1	3	3	1	1
911:	2	2	3	3	2	1	2	2	3	6	3	1	2	3
925:	3	0	3	2	0	2	4	5	2	6	4	1	2	2
939:	0	2	2	0	0	6	4	3	1	7	1	0	2	3
953:	1	2	4	1	2	3	2	1	2	3	1	1	2	1
967:	2	2	2	2	1	1	1	1	3	1	2	6	0	1
981:	1	0	3	4	3	1	1	0	0	0	1	1	0	1
995:	2	1	2	2	0	2	0	1	1	1	3	0	1	1
1009:	3	1	2	1	4	2	5	0	0	1	2	2	1	0
1023:	0	0												



Configuration : MCA0:[AMSCOUNT]00001E30\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : SPIKE  
 Sample date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 10:57:27  
 Sample ID : 01 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 039 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%  
 Energy tolerance : 150.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4726.40*	706227.66	422.29	382	78	11.3			RA-226	9.45
0	5287.14*	1707	0.00	614.24	522	177	7.3		RN-222	22.9
0	5808.40*	1434475.93	797.53	718	165	8.0			PO-218	19.2

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
25-MAY-2010 14:50:59

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE R:R\_1005066A-RA\$02\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005066A-RA \* SAMPLE ID: 02  
SAMPLE DATE: 25-MAY-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: BLANK \* DETECTOR NUMBER: 040  
ACQ DATE: 25-MAY-2010 10:57 \* AVERAGE EFFICIENCY: 20.17%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 96.02%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 21-MAY-2010 12:05 \* EFF CAL DATE: 18-APR-2010 11:15  
BKG FILENAME: B\_040\_21MAY10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 2.23  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	0.00	0.00	100.0	0.000E+00	0.000E+00	8.088E-02
RN-222	5490.0	4.12	0.34	99.9	5.642E-02	8.671E-02	1.637E-01
RA-226	4785.0	4.29	0.17	100.0	5.870E-02	8.653E-02	1.394E-01

\*\*\*\*\*

IC Bannister  
Analyst

5/25/10  
Date

Alan Greigley  
Reviewer

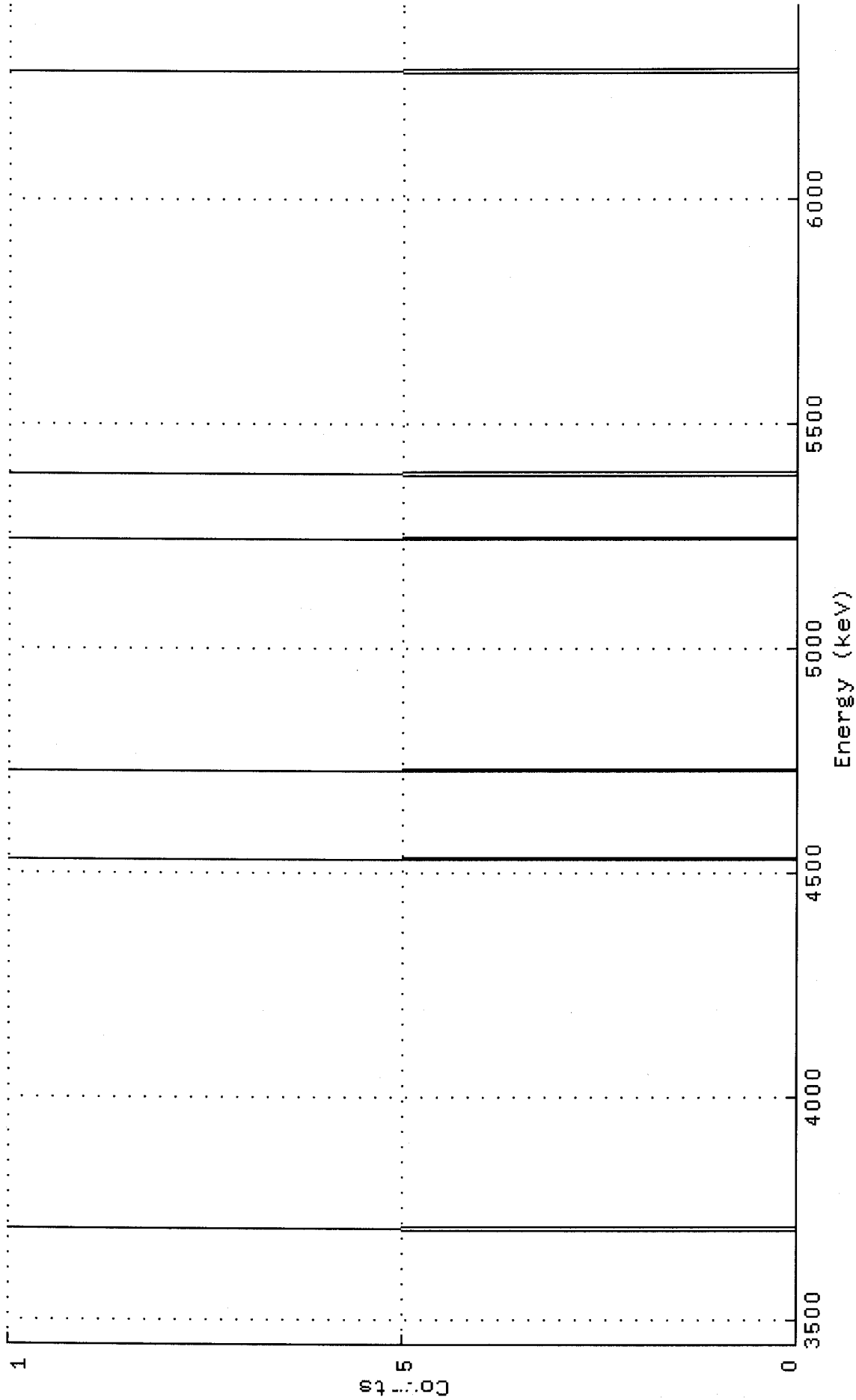
5/26/10  
Date

Spectrum : DKA100: [ALPHA.ALUSR.ARCHIVE.R]R\_1005066A-RA#02\_RA.CNF; 1

Title : 040

Sample Title: BLANK

Start Time: 25-MAY-2010 10:57    Sample Time: 25-MAY-2010 00:00    Energy Offset: 3.43391E+03  
Real Time : 0 02:50:00.40    Sample ID : 02    Energy Slope : 3.12058E+00  
Live Time : 0 02:50:00.00    Sample Type: RA    Energy Quad : -1.91013E-04





Channel Contents for ND\_AMS\_ARCHIVE\_R:R\_1005066A-RA\$02\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
407:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
435:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
603:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
631:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0



VMS Nuclide Identification Report V3.0 Generated 25-MAY-2010 14:50:57

Configuration : MCA0:[AMSCOUNT]00003742\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BLANK  
 Sample date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 10:57:39  
 Sample ID : 02 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 040 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4627.83*	4209.08	392.00	307	156147.2				RA-226	5.636E-02
0	5315.42*	4159.15	627.00	525	177153.5				RN-222	5.417E-02
0	5815.16*	0	0.00	802.50	721	164	0.0		PO-218	0.000E+00

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
25-MAY-2010 14:51:24

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$03\_RA.CNF  
\*\*\*\*\*

BATCH ID:	1005066A-RA	*	SAMPLE ID:	03
SAMPLE DATE:	11-MAY-2010 00:00	*	ALIQUOT:	1.000E+00 liter
SAMPLE TITLE:	SB-2-MW-S DIS	*	DETECTOR NUMBER:	043
ACQ DATE:	25-MAY-2010 10:57	*	AVERAGE EFFICIENCY:	21.19%
ELAPSED LIVE TIME:	10200.	*	RECOVERY:	75.38%
TRACER ID:	NONE	*	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	*	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	*	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	WATER	*	LLD CONSTANT:	2.65
ENERGY CAL DATE:	21-MAY-2010 12:06	*	EFF CAL DATE:	18-APR-2010 11:15
BKG FILENAME:	B_043_21MAY10	*	BKG ELAPSED TIME:	60000.
		*	SAF:	3.31
		*		

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	-1.87	1.87	100.0	-3.103E-02	1.883E-02	4.947E-01
RN-222	5490.0	2.63	0.68	99.9	4.366E-02	1.105E-01	3.563E-01
RA-226	4785.0	6.62	0.00	100.0	1.098E-01	1.555E-01	1.455E-01

\*\*\*\*\*

K Bannister  
Analyst

5/25/10  
Date

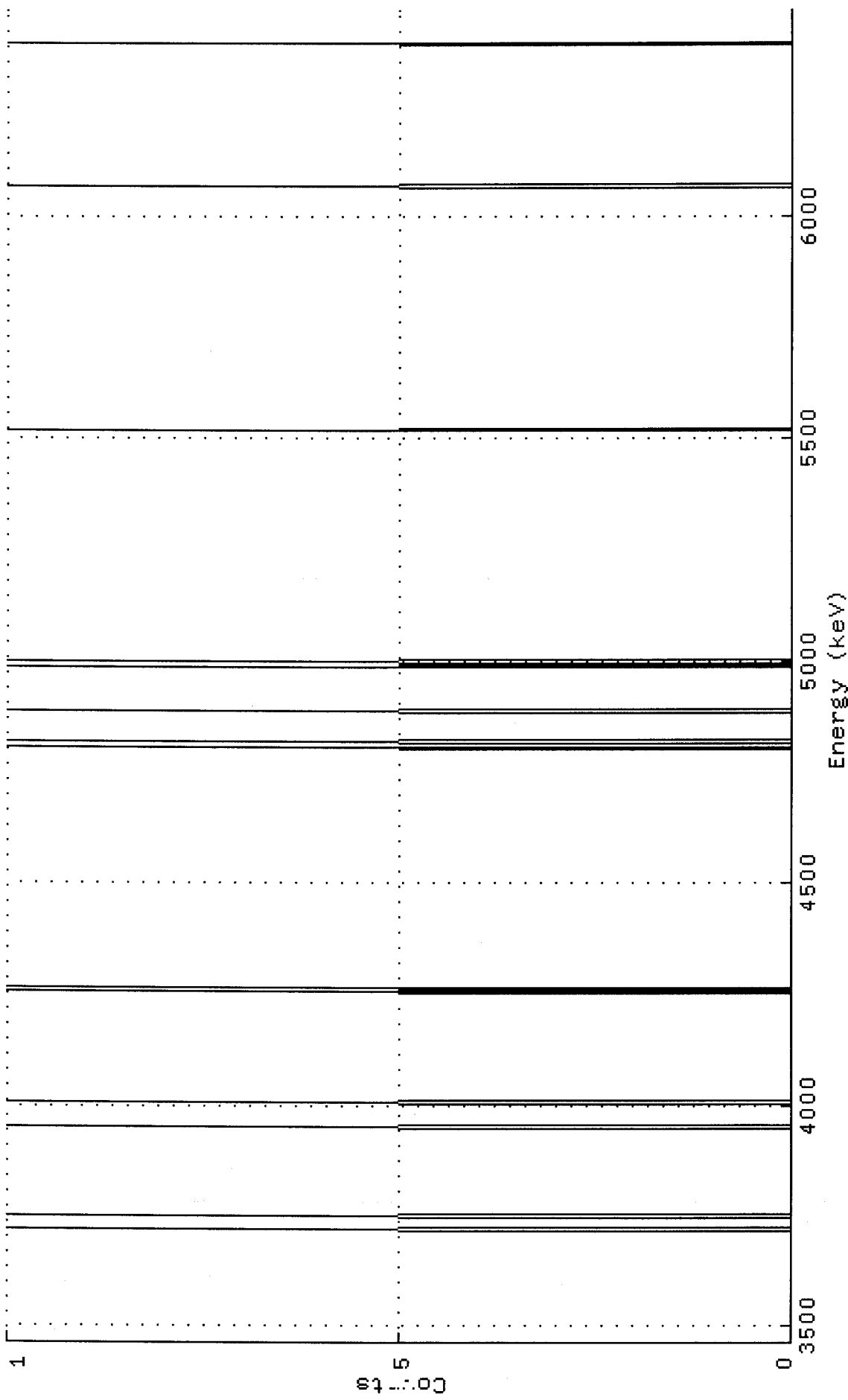
Alan Oring  
Reviewer

5/26/10  
Date

Spectrum : DKA100: [ALPHA,ALUSR,ARCHIVE,SJS\_1005066A-RA#03\_RA.CNF;1  
Title : 043

Sample Title: SB-2-Mu-S DIS

Start Time: 25-MAY-2010 10:57 Sample Time: 11-MAY-2010 00:00 Energy Offset: 3.45238E+03  
Real Time : 0 02:50:00.40 Sample ID : 03 Energy Slope : 3.14397E+00  
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -2.04122E-04







VMS Nuclide Identification Report V3.0 Generated 25-MAY-2010 14:51:22

Configuration : MCA0:[AMSCOUNT]00003742\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : SB-2-MW-S DIS  
 Sample date : 11-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 10:57:55  
 Sample ID : 03 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 043 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.40 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4809.54*	7	18.86	444.50	299	155141.4			RA-226	8.278E-02
0	5515.95*	3	3.14	687.00	516	176253.0			RN-222	3.291E-02
0	5815.77*	-2	0.00	792.50	711	164 60.3			PO-218	-2.339E-02



Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
25-MAY-2010 14:51:49

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$04\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005066A-RA \* SAMPLE ID: 04  
SAMPLE DATE: 11-MAY-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: SB-2-MW-S DIS \* DETECTOR NUMBER: 045  
ACQ DATE: 25-MAY-2010 10:58 \* AVERAGE EFFICIENCY: 19.86%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 100.00%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 21-MAY-2010 12:06 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_045\_21MAY10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 3.40  
\*

\*\*\*\*\*

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	115.43	0.17	100.0	1.540E+00	5.399E-01	2.072E-01
RN-222	5490.0	173.06	0.34	99.9	2.311E+00	6.681E-01	2.434E-01
RA-226	4785.0	169.83	0.17	100.0	2.266E+00	6.607E-01	2.072E-01

\*\*\*\*\*

IC Bannister  
Analyst

5/25/10  
Date

Alan Orszag  
Reviewer

5/26/10  
Date

Spectrum : DKA100: [ALPHA.ALUSR.ARCHIVE.S]S\_1005066A-RA\$04\_RA.CNF; 1

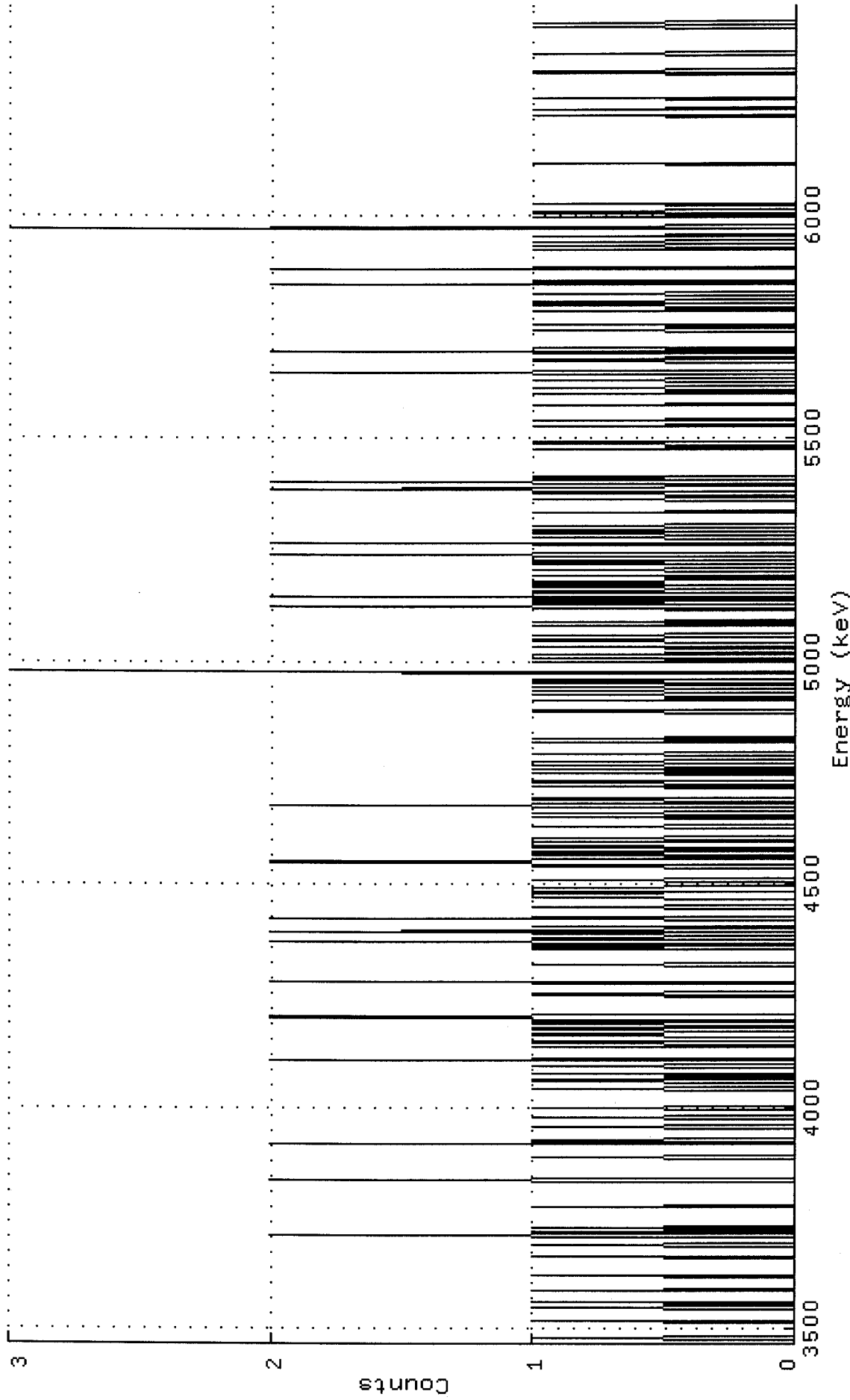
Title : 045

Sample Title: SB-2-MU-S DIS

Start Time: 25-MAY-2010 10:58 Sample Time: 11-MAY-2010 00:00 Energy Offset: 3.45824E+03

Real Time : 0 02:50:05.40 Sample ID : 04 Energy Slope : 3.11431E+00

Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.77214E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$04\_RA

Channel

1:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
15:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
29:	1	0	0	0	1	0	0	0	0	0	0	0	0	1
43:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
71:	0	0	0	0	1	0	0	0	0	0	0	2	0	0
85:	1	0	0	1	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	2	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
141:	0	0	0	0	0	0	0	0	2	0	1	1	0	0
155:	0	0	0	0	0	0	1	0	0	0	0	0	0	1
169:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	1	1	0	0	0	0	1	0
197:	1	0	0	1	0	0	0	0	0	1	0	0	0	0
211:	2	0	0	0	0	0	0	0	0	0	1	0	1	1
225:	0	0	0	0	1	1	0	0	1	0	1	0	1	0
239:	1	0	2	1	2	0	0	0	0	0	0	0	0	0
253:	0	0	0	0	0	1	0	1	0	0	0	0	0	0
267:	0	2	0	0	0	0	0	0	0	0	0	0	0	0
281:	1	0	0	0	0	0	0	0	0	0	0	0	1	1
295:	0	1	0	2	0	0	1	0	0	1	0	2	1	0
309:	1	0	0	0	0	0	1	2	0	0	0	0	0	0
323:	0	1	0	0	0	0	0	0	1	1	1	0	0	1
337:	1	1	0	0	0	0	0	1	0	0	1	0	0	0
351:	0	0	0	1	0	0	2	2	0	1	0	0	1	1
365:	0	1	0	1	0	1	1	1	0	0	1	1	0	0
379:	0	0	0	0	0	1	0	0	0	0	0	0	1	0
393:	0	1	0	0	0	0	0	2	0	0	0	1	1	0
407:	0	0	0	0	0	0	0	1	0	0	1	1	0	0
421:	0	0	0	1	0	0	1	0	0	1	0	0	1	0
435:	0	0	0	0	1	0	0	0	0	0	0	0	0	1
449:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	1	1	0	0	0	0
477:	0	0	0	1	0	0	0	1	0	0	1	0	0	1
491:	0	1	0	1	1	0	0	0	0	0	3	0	0	0
505:	0	0	0	0	1	0	1	0	0	0	1	0	0	0
519:	0	1	0	0	0	0	1	1	0	0	1	0	0	0
533:	0	0	0	0	1	0	0	1	0	0	0	0	0	0
547:	0	0	1	0	2	0	0	1	1	0	0	2	0	0
561:	0	1	1	0	0	1	1	1	1	1	0	0	0	1
575:	0	0	0	0	1	0	0	0	0	1	1	0	1	1
589:	1	0	2	0	0	0	0	0	0	0	2	0	0	0
603:	0	1	0	0	1	1	0	1	0	0	1	0	0	0
617:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
631:	0	0	1	1	0	0	0	1	0	0	2	1	1	0
645:	0	0	2	0	0	1	1	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
673:	1	0	0	0	1	1	0	0	0	0	0	0	0	0
687:	0	0	0	0	1	0	0	0	1	0	0	0	0	0
701:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
715:	0	1	0	0	0	1	0	0	0	0	0	0	0	0
729:	0	0	0	2	0	0	0	0	0	0	0	1	0	1
743:	1	0	0	0	0	2	0	0	1	0	0	0	0	0
757:	0	0	0	0	0	0	0	0	1	0	0	0	1	0
771:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
785:	1	0	1	1	0	0	0	0	0	1	0	0	0	0
799:	0	0	0	2	0	1	0	0	0	0	0	0	0	0
813:	0	2	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	1	0	0	1	0	0	1	0	0	0	0	1
841:	0	0	0	0	0	3	1	0	0	0	0	0	0	0
855:	1	0	0	1	1	0	0	0	0	0	1	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
939:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
967:	0	0	1	0	1	1	0	0	0	0	0	0	0	0
981:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	1	0	0	0	0	0	0	0	0	0	0	1	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0



VMS Nuclide Identification Report V3.0 Generated 25-MAY-2010 14:51:47

Configuration : MCA0:[AMSCOUNT]00003742\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : SB-2-MW-S DIS  
 Sample date : 11-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 10:58:11  
 Sample ID : 04 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 045 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:05.40 0.1%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4576.55*	170295.79	366.74	299	156	28.3			RA-226	2.27
0	5249.83*	173302.09	595.45	517	176	28.1			RN-222	2.31
0	5821.28*	115358.11	794.71	711	163	34.4			PO-218	1.54

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
25-MAY-2010 14:52:33

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$05\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005066A-RA \* SAMPLE ID: 05  
SAMPLE DATE: 11-MAY-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: SB-2-MW-S SUS \* DETECTOR NUMBER: 046  
ACQ DATE: 25-MAY-2010 10:58 \* AVERAGE EFFICIENCY: 19.61%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 93.90%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 21-MAY-2010 12:06 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_046\_21MAY10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 2.34  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	4.68	0.00	100.0	6.737E-02	9.540E-02	8.927E-02
RN-222	5490.0	16.21	0.17	99.9	2.335E-01	1.792E-01	1.539E-01
RA-226	4785.0	9.19	0.17	100.0	1.323E-01	1.351E-01	1.538E-01

\*\*\*\*\*

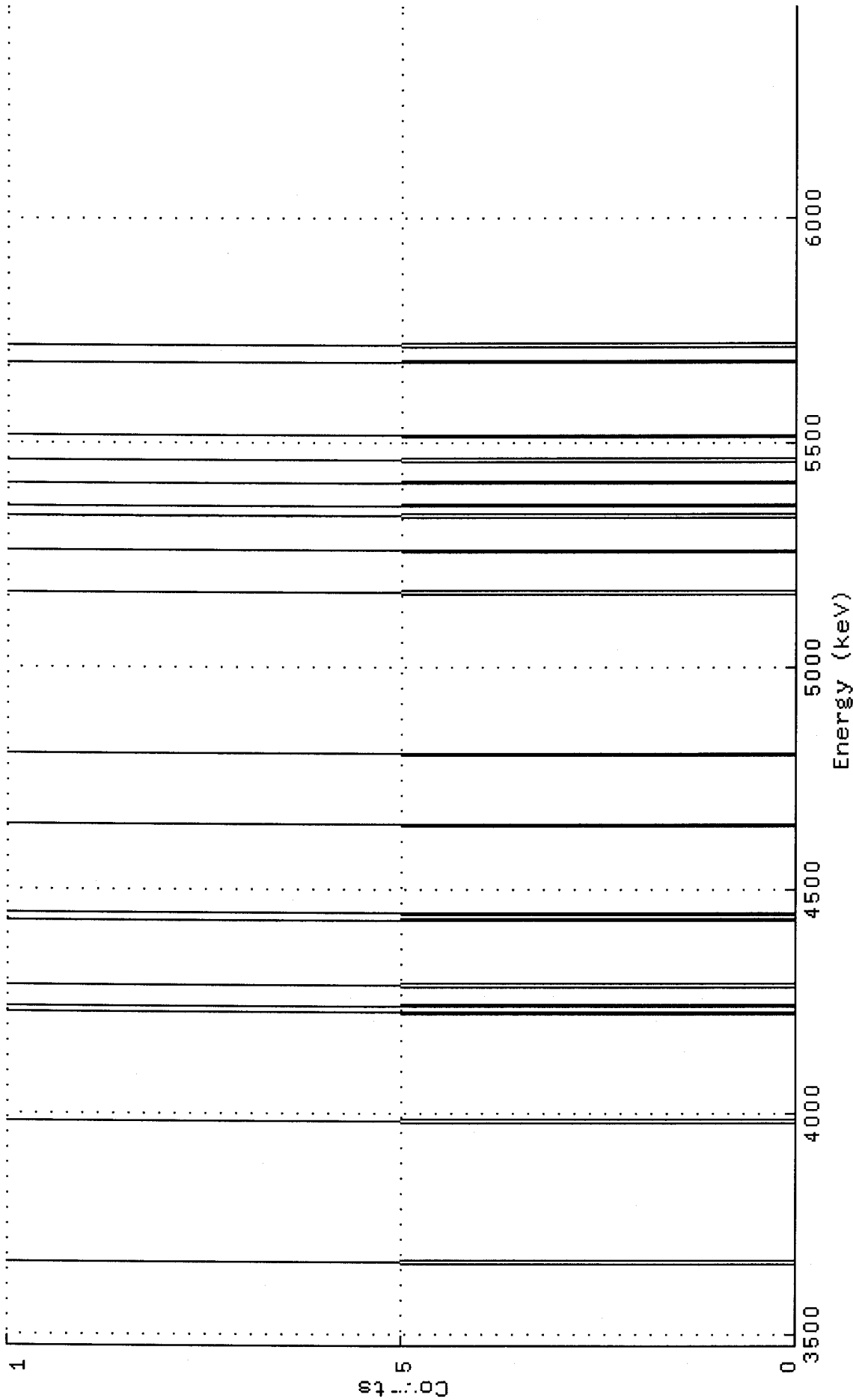
IC Bannister  
Analyst

5/25/10  
Date

Alan Gregory  
Reviewer

5/26/10  
Date

Spectrum : DKA100: [ALPHA.ALUSR.ARCHIVE.S]S\_1005066A-RA\$05\_RA.CNF; 1  
Title : 046  
Sample Title: SB-2-MW-S SUS  
Start Time: 25-MAY-2010 10:58 Sample Time: 11-MAY-2010 00:00 Energy Offset: 3.46625E+03  
Real Time : 0 02:50:05.40 Sample ID : 05 Energy Slope : 3.11016E+00  
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.73226E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$05\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
169:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239:	0	0	0	0	0	0	0	0	1	0	0	0	0	1
253:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	0	0	0	0	0	0	1	0	0	0	0	1	0
323:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
351:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
379:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
393:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
407:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
435:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
477:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
505:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
519:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
575:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	1	0	0	0	0	0	0	0	1
631:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
645:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
659:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0	0	0	0	1	0	0
687:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
743:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
757:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
771:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0





Configuration : MCA0: [AMSCOUNT] 00003742\$1  
 Analyses by : ROIPEAK V1.2, PEAKEFF V2.2, ENBACK V1.6, NID V3.3  
 Sample title : SB-2-MW-S SUS  
 Sample date : 11-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 10:58:30  
 Sample ID : 05 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 046 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:05.40 0.1%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4581.37*	9388.77	366.00	297	156101.9				RA-226	0.124
0	5355.66*	16379.44	629.57	514	176 76.4				RN-222	0.219
0	5697.16*	5 43.54	748.50	709	163141.4				PO-218	6.326E-02

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
25-MAY-2010 14:54:01

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$06\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005066A-RA \* SAMPLE ID: 06  
SAMPLE DATE: 12-MAY-2010 00:00 \* ALIQUOT: 5.000E-01 liter  
SAMPLE TITLE: SB-3-MW-S DIS \* DETECTOR NUMBER: 047  
ACQ DATE: 25-MAY-2010 10:58 \* AVERAGE EFFICIENCY: 17.92%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 72.54%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 21-MAY-2010 12:06 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_047\_21MAY10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 3.96  
\*

\*\*\*\*\*  
NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	351.93	0.51	100.0	1.435E+01	3.208E+00	9.642E-01
RN-222	5490.0	506.54	0.34	99.9	2.067E+01	3.932E+00	8.663E-01
RA-226	4785.0	554.40	0.00	100.0	2.260E+01	4.135E+00	4.279E-01

\*\*\*\*\*

K Bannister  
Analyst

5/25/10  
Date

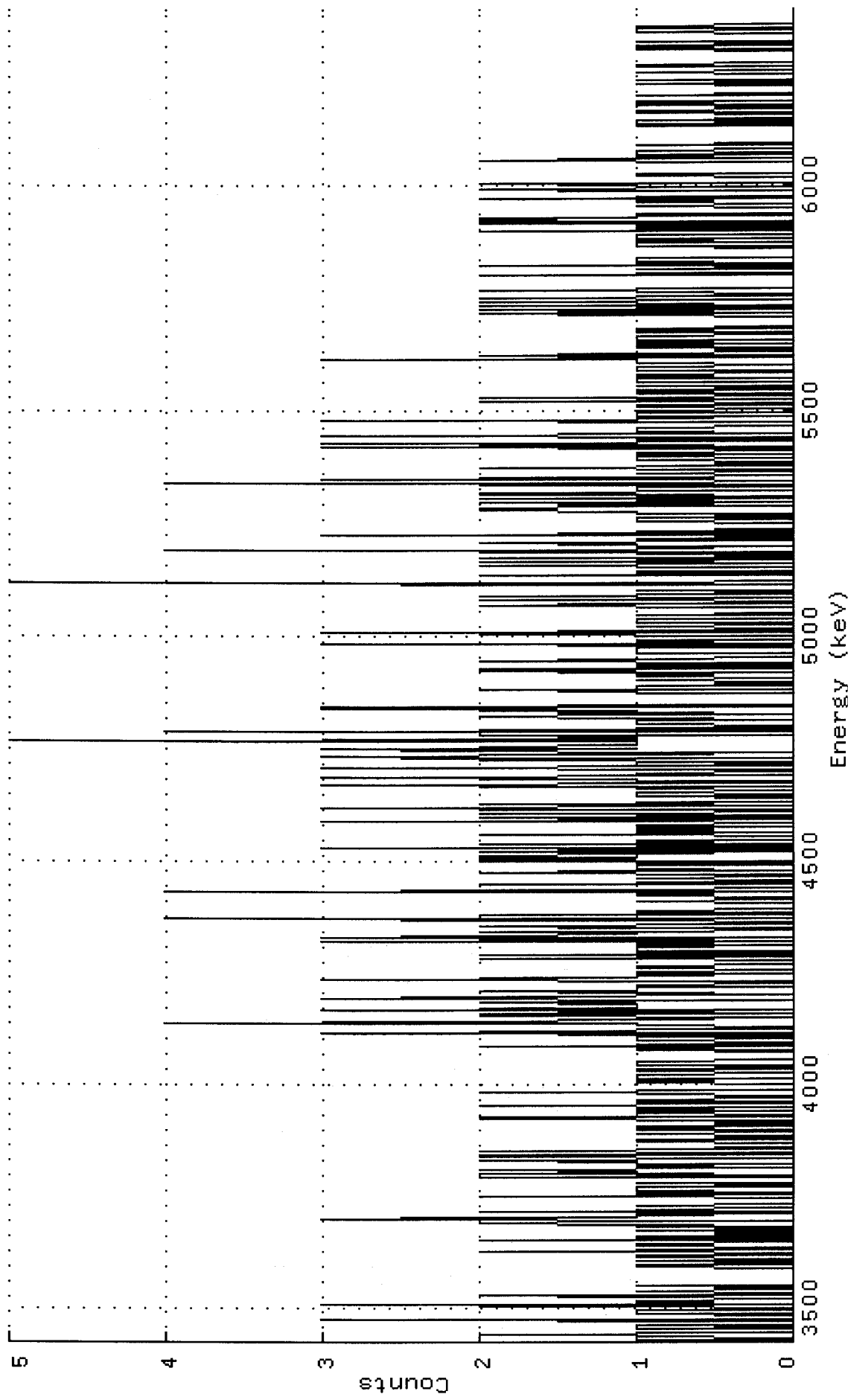
Alan Magaly  
Reviewer

5/26/10  
Date

Spectrum : DKA100: [ALPHA,ALUSR.ARCHIVE.SJS\_1005066A-RA#06-RA.CNF;1  
Title : 047

Sample Title: SB-3-MU-S DIS

Start Time: 25-MAY-2010 10:58 Sample Time: 12-MAY-2010 00:00 Energy Offset: 3.41533E+03  
Real Time : 0 02:50:05.40 Sample ID : 06 Energy Slope : 3.07896E+00  
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.72095E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$06\_RA

Channel

1:	0	1	0	1	0	0	1	1	2	0	0	0	1	0
15:	1	0	0	0	3	0	0	0	1	0	0	0	1	0
29:	1	3	0	1	1	1	0	1	2	0	0	1	0	0
43:	0	1	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	1	1	0	0	1	0	0	1	1	0	0	1	2
71:	0	0	1	1	1	0	0	2	0	0	1	0	0	1
85:	0	0	1	0	1	2	1	0	3	2	1	1	0	2
99:	0	1	0	0	1	0	0	0	0	0	1	2	0	1
113:	0	1	1	1	0	0	1	0	0	0	0	2	0	1
127:	2	1	2	0	1	1	0	1	1	2	0	0	2	2
141:	0	0	2	0	1	0	0	0	0	1	0	1	0	2
155:	0	1	0	1	0	1	0	1	0	0	1	0	2	0
169:	0	0	1	1	0	1	1	0	2	0	1	0	1	0
183:	0	0	1	1	2	0	0	0	0	0	0	1	1	0
197:	1	1	1	1	0	1	0	1	0	0	1	1	1	0
211:	0	0	0	0	0	0	1	0	1	0	2	0	0	0
225:	1	0	1	0	0	3	0	2	0	0	0	1	1	4
239:	2	1	0	0	2	0	2	1	0	3	1	1	1	1
253:	2	0	0	3	2	0	0	1	2	1	1	1	0	1
267:	0	1	0	3	1	1	1	0	1	1	0	1	1	1
281:	0	0	0	0	1	2	0	0	2	0	0	1	1	1
295:	0	1	1	0	3	1	0	3	2	1	2	1	0	0
309:	1	2	0	1	0	1	4	0	0	0	2	0	1	1
323:	0	0	0	0	0	0	1	0	0	0	1	1	0	4
337:	1	0	0	0	0	2	0	0	1	1	0	1	0	2
351:	1	0	1	1	1	0	0	2	0	2	1	2	2	1
365:	0	2	0	3	0	0	2	0	1	1	0	0	0	1
379:	2	0	1	1	1	0	1	0	0	0	3	0	2	0
393:	0	2	1	0	0	1	3	0	1	2	0	0	0	0
407:	1	0	0	1	1	0	1	0	1	3	0	1	0	2
421:	1	3	0	1	1	0	1	0	3	0	1	0	1	0
435:	2	0	2	3	1	0	1	2	3	1	1	1	1	1
449:	1	5	1	1	2	0	0	0	4	0	0	1	0	1
463:	1	1	1	0	1	2	1	0	1	2	1	3	0	3
477:	0	0	0	0	0	0	0	0	0	1	1	2	0	0
491:	0	1	0	0	0	1	0	0	1	1	0	1	2	0
505:	2	0	0	1	0	2	2	1	0	0	0	0	1	1
519:	1	1	0	0	3	0	1	1	0	0	0	0	2	0
533:	3	0	0	0	1	0	0	1	1	1	0	0	0	1
547:	0	0	0	0	0	0	2	1	0	0	1	2	0	2
561:	0	0	0	1	0	0	0	0	0	5	1	0	0	0
575:	0	0	2	0	1	0	0	0	0	2	0	1	2	0
589:	2	0	0	1	0	0	4	1	1	0	1	1	2	2
603:	0	0	1	0	0	3	0	0	1	0	0	0	0	0
617:	1	1	0	0	1	0	0	1	1	2	2	2	1	0
631:	1	2	0	1	0	2	0	1	2	2	0	0	0	0
645:	1	0	4	1	0	1	3	1	0	0	1	0	0	0
659:	2	0	1	0	0	0	1	0	0	1	1	0	1	0
673:	0	0	3	0	1	3	2	0	0	1	0	3	3	0
687:	1	1	1	1	1	0	0	0	0	3	1	1	0	1
701:	1	1	0	1	0	0	1	0	1	0	1	2	0	2
715:	1	0	0	1	1	0	1	0	1	0	0	0	1	1
729:	1	0	1	1	1	0	0	1	1	1	1	0	1	1
743:	1	1	3	0	0	2	1	0	0	0	1	0	1	1
757:	0	1	0	1	1	1	1	0	0	1	1	0	1	0
771:	0	0	0	0	0	0	0	0	1	2	0	1	2	0
785:	0	2	0	1	1	2	0	2	2	0	0	0	1	1
799:	2	0	0	0	0	0	0	0	0	0	0	0	2	0
813:	0	0	0	1	0	0	2	0	1	1	1	1	0	0
827:	0	0	0	0	0	0	1	0	0	0	1	1	0	1
841:	1	1	0	0	0	2	0	0	1	0	2	0	0	2
855:	2	1	2	0	1	0	0	0	0	0	1	1	0	1
869:	1	1	0	2	0	0	0	0	0	1	2	0	1	1
883:	2	0	0	0	0	0	0	1	0	0	0	0	0	0
897:	0	0	0	0	0	2	1	0	1	1	0	0	0	1
911:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	1	0	1	0	0	1	0	0	0
939:	0	1	0	1	0	0	0	0	1	0	1	0	0	0
953:	0	0	1	0	0	0	0	0	0	0	1	0	0	1
967:	0	0	0	0	0	0	1	0	0	0	0	1	1	0
981:	0	0	0	0	0	0	0	0	0	0	1	0	1	0
995:	0	0	1	0	0	0	0	0	0	0	1	1	0	0
1009:	1	1	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Configuration : MCA0:[AMSCOUNT]00003742\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : SB-3-MW-S DIS  
 Sample date : 12-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 10:58:51  
 Sample ID : 06 Sample quantity : 0.50000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 047 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:05.40 0.1%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4635.45*	554	0.00	405.46	317	158	16.9		RA-226	16.4
0	5295.74*	507390.24	633.13	633.13	537	179	17.7		RN-222	15.0
0	5795.56*	352427.94	809.71	809.71	735	165	21.2		PO-218	10.4

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
25-MAY-2010 14:55:12

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$07\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005066A-RA \* SAMPLE ID: 07  
SAMPLE DATE: 12-MAY-2010 00:00 \* ALIQUOT: 1.000E+00 liter  
SAMPLE TITLE: SB-3-MW-S SUS \* DETECTOR NUMBER: 048  
ACQ DATE: 25-MAY-2010 10:59 \* AVERAGE EFFICIENCY: 18.20%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 90.98%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 21-MAY-2010 12:06 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_048\_21MAY10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 2.27  
\*

\*\*\*\*\*  
NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	36.15	0.17	100.0	5.786E-01	2.935E-01	1.659E-01
RN-222	5490.0	60.27	1.02	99.9	9.652E-01	3.840E-01	2.671E-01
RA-226	4785.0	76.67	0.51	100.0	1.227E+00	4.323E-01	2.169E-01

\*\*\*\*\*

IC Bannister  
Analyst

5/25/10  
Date

Alan Gregory  
Reviewer

5/26/10  
Date



Spectrum : DKA100: [ALPHA.ALUSR.ARCHIVE.SJS\_1005066A-RA\$07\_RA.CNF;1

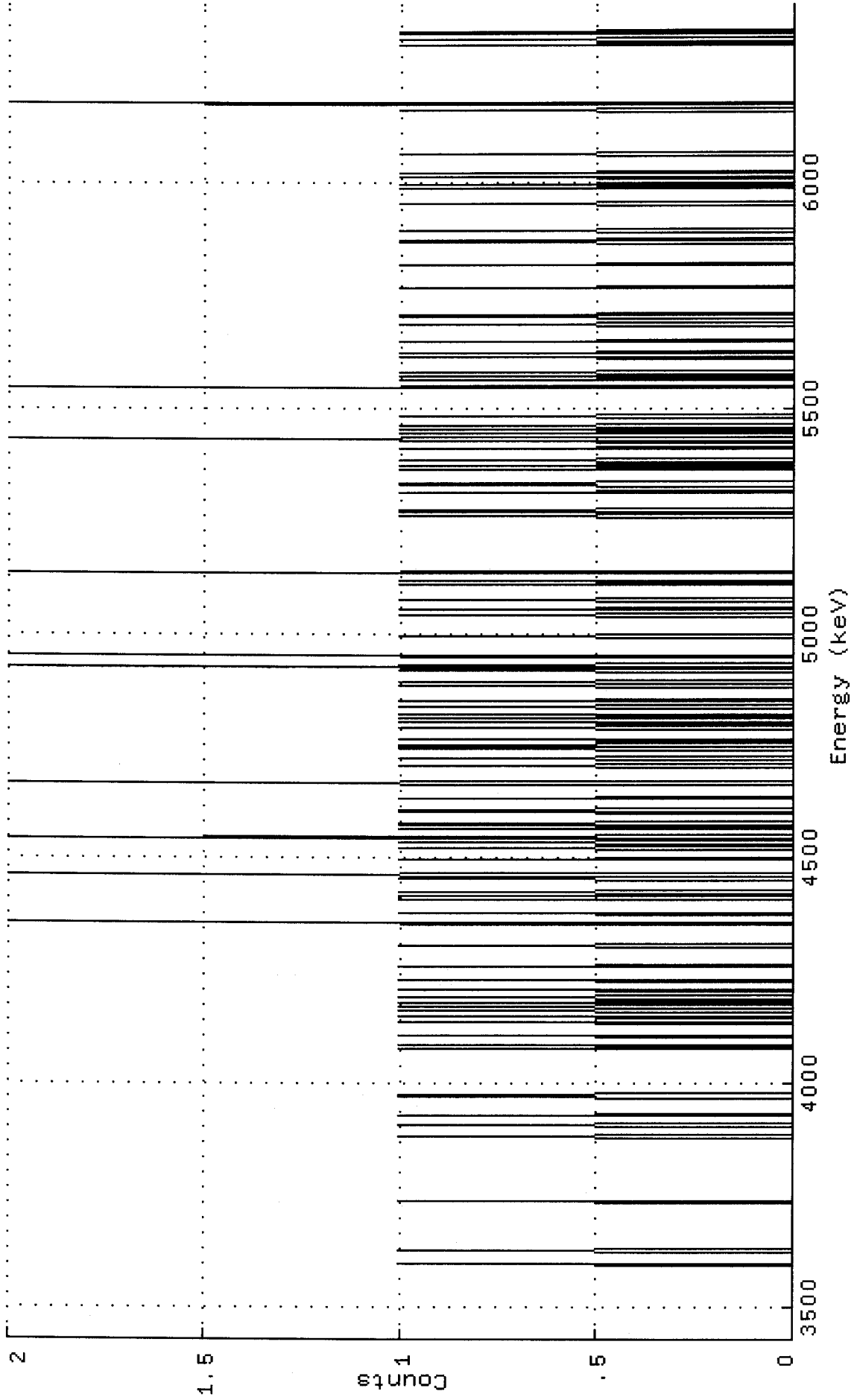
Title : 048

Sample Title: SB-3-MW-S SUS

Start Time: 25-MAY-2010 10:59 Sample Time: 12-MAY-2010 00:00 Energy Offset: 3.41824E+03

Real Time : 0 02:50:05.40 Sample ID : 07 Energy Slope : 3.07216E+00

Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.65861E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$07\_RA

Channel

1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57:	0	1	0	0	0	0	0	0	0	0	0	1	0	0
71:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:	0	0	0	0	0	1	0	0	0	0	0	1	0	1
169:	0	0	0	0	0	0	0	0	0	0	0	0	1	1
183:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
197:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	1	0	1	0	0	0	0	0
225:	0	1	0	0	0	0	0	0	0	0	0	1	0	0
239:	0	1	0	0	0	0	1	0	0	1	0	0	1	0
253:	0	0	1	0	0	0	0	1	0	0	0	0	0	0
267:	1	0	0	0	0	0	0	0	0	0	0	1	0	0
281:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
295:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309:	0	2	0	0	0	0	0	0	1	0	0	0	0	0
323:	0	0	0	0	0	1	1	1	0	0	1	0	0	0
337:	0	0	0	0	0	0	1	0	0	2	0	0	0	0
351:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
365:	0	1	0	0	0	1	1	0	0	2	1	0	0	0
379:	0	0	1	0	0	1	1	0	0	0	0	0	0	0
393:	1	0	1	0	0	0	0	0	0	0	0	1	0	0
407:	0	0	0	0	0	0	0	0	2	0	0	0	0	0
421:	0	0	0	0	0	0	0	1	0	0	0	0	0	1
435:	0	0	0	0	0	0	1	1	0	1	0	0	0	0
449:	0	0	0	0	0	0	0	0	1	0	0	0	1	0
463:	0	0	1	0	0	1	0	0	0	0	1	0	0	0
477:	0	1	0	0	0	0	0	0	0	0	0	0	1	0
491:	0	1	0	0	0	0	0	0	0	0	1	0	0	0
505:	1	0	0	0	0	0	0	2	0	0	0	0	2	0
519:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
533:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
547:	0	1	0	0	0	0	0	0	1	0	0	0	0	0
561:	0	0	0	0	0	0	1	0	1	0	0	0	0	0
575:	0	2	0	0	0	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
617:	0	0	0	1	0	1	0	1	0	0	0	0	0	0
631:	0	0	0	0	0	0	0	0	1	0	0	0	1	1
645:	1	0	0	0	0	0	0	0	0	0	0	1	0	0
659:	1	0	0	1	1	0	0	0	0	0	0	0	0	1
673:	0	0	0	0	1	0	2	0	0	0	0	1	0	0
687:	1	0	1	1	0	0	0	0	0	0	1	0	0	0
701:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715:	0	0	0	0	0	2	0	0	0	0	0	1	0	0
729:	1	0	1	1	0	0	0	0	0	0	0	0	0	0
743:	1	0	0	0	1	0	0	0	0	0	0	0	0	1
757:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
771:	0	0	0	0	1	0	1	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
827:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
841:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
855:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
869:	0	0	0	0	0	0	0	0	1	0	0	1	0	0
883:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
911:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
939:	1	0	0	0	0	1	2	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
995:	0	1	0	0	0	0	1	0	0	1	0	1	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Configuration : MCA0: [AMSCOUNT] 00003742\$1  
 Analyses by : ROIPEAK V1.2, PEAKEFF V2.2, ENBACK V1.6, NID V3.3  
 Sample title : SB-3-MW-S SUS  
 Sample date : 12-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 10:59:09  
 Sample ID : 07 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 048 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:05.40 0.1%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4602.49*	77215.05	393.85	317	158	34.5			RA-226	1.12
0	5304.20*	60319.50	635.70	537	178	39.2			RN-222	0.878
0	5820.46*	36451.61	818.06	734	165	50.2			PO-218	0.526

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
25-MAY-2010 14:55:41

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$08\_RA.CNF  
\*\*\*\*\*

BATCH ID: 1005066A-RA \* SAMPLE ID: 08  
SAMPLE DATE: 12-MAY-2010 00:00 \* ALIQUOT: 5.000E-01 liter  
SAMPLE TITLE: SB-3-MW-SD DIS \* DETECTOR NUMBER: 033  
ACQ DATE: 25-MAY-2010 11:35 \* AVERAGE EFFICIENCY: 19.88%  
ELAPSED LIVE TIME: 10200. \* RECOVERY: 84.59%  
TRACER ID: NONE \* TRACER FWHM (kev): 0.00  
LAMBDA VALUE: 0. \* ROI TYPE: STANDARD  
TRACER DPM AT SAMPLE DATE: 0.000 \* CONFIDENCE FACTOR: 4.65  
SAMPLE MATRIX: WATER \* LLD CONSTANT: 2.65  
ENERGY CAL DATE: 21-MAY-2010 12:05 \* EFF CAL DATE: 17-APR-2010 13:09  
BKG FILENAME: B\_033\_21MAY10 \* BKG ELAPSED TIME: 60000.  
\* SAF: 3.25  
\*

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NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	239.99	0.51	100.0	7.564E+00	1.840E+00	6.116E-01
RN-222	5490.0	295.58	0.17	99.9	9.322E+00	2.061E+00	4.681E-01
RA-226	4785.0	386.58	0.17	100.0	1.218E+01	2.391E+00	4.678E-01

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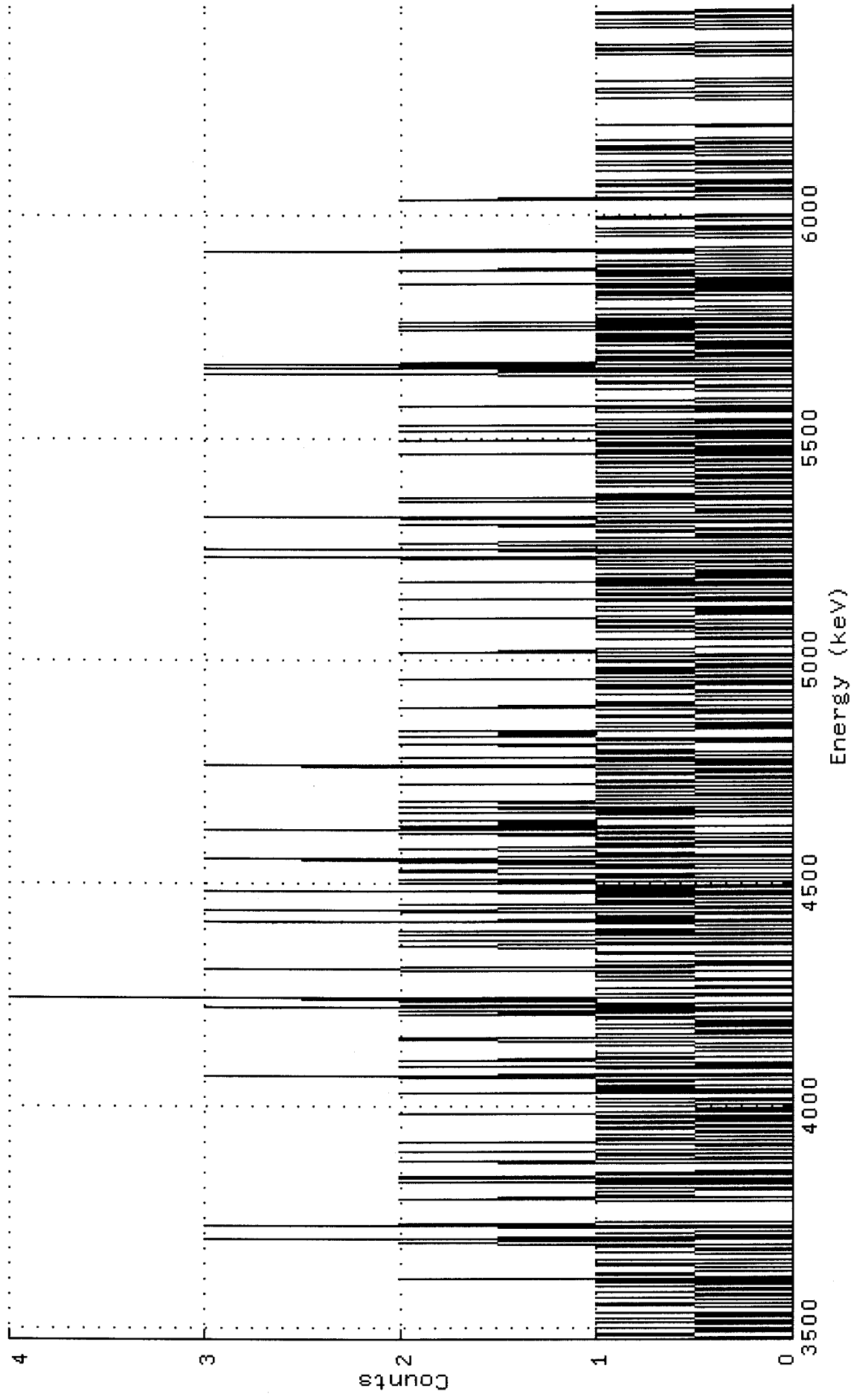
K Bannister  
Analyst

5/25/10  
Date

Alan Gregory  
Reviewer

5/26/10  
Date

Spectrum : DKA100:[ALPHA..ALUSR.ARCHIVE.S]S\_1005066A-RA\$08\_RA.CNF;1  
Title : 033  
Sample Title: SB-3-MW-SD DIS  
Start Time: 25-MAY-2010 11:35 Sample Time: 12-MAY-2010 00:00 Energy Offset: 3.46352E+03  
Real Time : 0 02:50:00.30 Sample ID : 08 Energy Slope : 3.08993E+00  
Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.57123E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$08\_RA

Channel

1:	0	1	1	0	0	1	1	0	0	0	1	0	0
15:	1	0	0	1	0	0	0	1	0	0	0	0	1
29:	1	0	0	0	1	1	0	0	1	1	0	0	1
43:	0	1	0	0	2	0	0	1	1	1	0	0	0
57:	1	0	1	1	1	0	0	0	0	0	1	0	0
71:	1	0	1	2	1	0	3	0	0	0	1	0	0
85:	0	3	0	2	0	0	0	0	0	0	0	0	0
99:	0	0	0	0	0	0	0	2	1	0	1	1	1
113:	0	1	0	0	0	2	0	0	2	0	2	0	1
127:	0	0	0	0	0	0	1	2	0	0	0	1	0
141:	2	0	0	0	0	1	0	2	0	0	1	0	1
155:	0	0	0	1	0	0	1	1	0	1	0	0	1
169:	2	0	1	0	0	0	1	0	1	1	0	1	0
183:	0	0	2	0	0	1	1	0	1	1	1	0	2
197:	0	3	0	0	0	0	0	2	0	0	1	0	2
211:	0	1	1	1	1	0	0	0	0	1	0	0	1
225:	2	0	0	0	1	0	0	0	1	0	0	1	0
239:	0	1	0	0	2	1	0	2	0	0	3	1	2
253:	1	1	4	1	0	1	0	0	0	0	1	0	0
267:	0	0	1	0	1	1	1	1	0	1	3	1	1
281:	0	1	0	0	0	0	0	1	0	1	1	1	2
295:	1	0	0	2	0	0	0	0	2	0	1	2	0
309:	0	0	1	0	3	0	1	1	1	0	0	1	0
323:	0	0	1	2	0	1	0	0	1	1	0	3	0
337:	1	0	1	0	2	1	0	2	0	1	1	0	2
351:	2	1	0	1	0	1	2	0	2	3	0	1	1
365:	1	1	2	1	0	1	0	1	0	1	0	1	2
379:	0	1	1	3	1	0	2	1	1	2	1	0	0
393:	1	0	2	0	1	2	0	0	0	1	2	0	0
407:	0	1	0	1	0	0	1	0	0	2	0	0	0
421:	0	0	1	1	0	0	1	0	2	3	0	0	1
435:	0	2	1	0	1	1	0	1	1	1	1	2	0
449:	1	0	0	2	1	1	1	2	1	0	1	0	1
463:	0	0	0	0	1	1	0	0	0	1	0	2	0
477:	1	1	1	0	0	0	0	1	0	0	0	1	1
491:	0	1	0	0	0	2	0	0	0	1	0	1	0
505:	1	0	0	0	1	0	1	1	1	0	0	1	2
519:	1	0	0	0	0	0	0	0	1	0	0	0	1
533:	1	0	1	0	1	0	1	1	0	2	1	1	0
547:	0	1	0	0	1	0	0	0	0	0	2	0	1
561:	0	1	1	1	0	0	0	1	0	2	0	1	0
575:	0	0	1	0	0	0	1	0	0	1	0	0	1
589:	3	0	0	0	1	0	3	0	0	0	1	2	0
603:	0	0	1	0	0	0	1	1	0	0	1	2	1
617:	0	1	1	3	0	0	0	1	0	0	0	2	0
631:	1	1	2	0	0	2	0	1	1	0	0	0	1
645:	1	0	0	1	1	0	1	0	0	1	1	0	0
659:	1	0	0	1	0	1	0	1	1	0	0	2	0
673:	1	0	1	0	1	0	0	2	0	0	0	1	0
687:	2	0	0	0	0	2	0	0	0	1	0	0	0
701:	0	0	1	0	0	2	0	0	0	0	1	0	0
715:	0	0	0	0	0	1	0	0	0	1	1	0	0
729:	0	0	0	3	0	0	0	3	0	2	0	3	1
743:	0	1	1	0	0	1	0	1	0	0	0	1	0
757:	1	0	1	1	0	1	1	0	0	1	2	0	2
771:	0	1	2	0	0	1	1	1	0	0	0	0	0
785:	0	0	0	0	0	1	1	1	1	0	1	0	0
799:	0	1	0	2	0	0	1	0	0	1	1	1	1
813:	0	2	1	1	0	1	0	0	1	0	0	0	0
827:	1	0	3	1	0	0	0	0	0	0	0	0	1
841:	1	0	1	1	0	0	1	0	0	0	0	0	1
855:	0	1	0	0	0	0	0	0	0	0	0	0	0
869:	0	2	1	0	0	0	0	1	0	0	0	1	0
883:	0	1	0	0	0	0	0	0	0	1	0	0	0
897:	1	0	1	0	0	0	0	0	0	1	0	1	0
911:	1	1	0	0	0	1	1	0	0	0	0	0	0
925:	0	0	0	1	0	0	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	1	0
953:	0	0	1	1	1	1	0	0	0	0	0	1	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	1	1	0	0	1	0	0	0
995:	0	0	0	0	0	0	0	1	0	0	0	1	0
1009:	0	1	0	0	1	0	0	0	0	1	0	0	0
1023:	0	0	0	0	1	0	0	0	0	1	0	1	0





Configuration : MCA0:[AMSCOUNT]00003742\$1  
 Analyses by : ROIPEAK V1.2,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : SB-3-MW-SD DIS  
 Sample date : 12-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 11:35:03  
 Sample ID : 08 Sample quantity : 0.50000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 033 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.30 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4606.82*	387462.72	377.24	300	156	18.3			RA-226	10.3
0	5277.36*	296	0.00	605.67	517	177	21.0		RN-222	7.89
0	5791.75*	240429.50	784.81	712	163	23.3			PO-218	6.40

Eberline Services  
Oak Ridge Laboratory

ALPHA SPECTROMETRY REPORT  
25-MAY-2010 14:56:08

\*\*\*\*\*  
Spectral File: ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$09\_RA.CNF  
\*\*\*\*\*

BATCH ID:	1005066A-RA	SAMPLE ID:	09
SAMPLE DATE:	12-MAY-2010 00:00	ALIQUOT:	1.000E+00 liter
SAMPLE TITLE:	SB-3-MW-SD SUS	DETECTOR NUMBER:	034
ACQ DATE:	25-MAY-2010 11:35	AVERAGE EFFICIENCY:	19.83%
ELAPSED LIVE TIME:	10200.	RECOVERY:	88.00%
TRACER ID:	NONE	TRACER FWHM (kev):	0.00
LAMBDA VALUE:	0.	ROI TYPE:	STANDARD
TRACER DPM AT SAMPLE DATE:	0.000	CONFIDENCE FACTOR:	4.65
SAMPLE MATRIX:	WATER	LLD CONSTANT:	2.65
ENERGY CAL DATE:	21-MAY-2010 12:05	EFF CAL DATE:	17-APR-2010 13:09
BKG FILENAME:	B_034_21MAY10	BKG ELAPSED TIME:	60000.
		SAF:	2.20

\*\*\*\*\*  
NUCLIDE ACTIVITY SUMMARY

NUCLIDE	ENERGY	NET AREA	BKG	%ABN	ACTIVITY pCi/ liter	TPU/ERROR 2-SIGMA	MDC pCi/ liter
PO-218	6003.0	34.52	0.68	100.0	5.244E-01	2.700E-01	2.167E-01
RN-222	5490.0	83.09	0.51	99.9	1.263E+00	4.216E-01	1.997E-01
RA-226	4785.0	82.92	0.68	100.0	1.259E+00	4.213E-01	2.167E-01

\*\*\*\*\*

K Bannister  
Analyst

5/25/10  
Date

Alan Gray  
Reviewer

5/26/10  
Date

Spectrum : DKA100:[ALPHA]ALUSR.ARCHIVE.S]S\_1005066A-RA#09\_RA.CNF;1

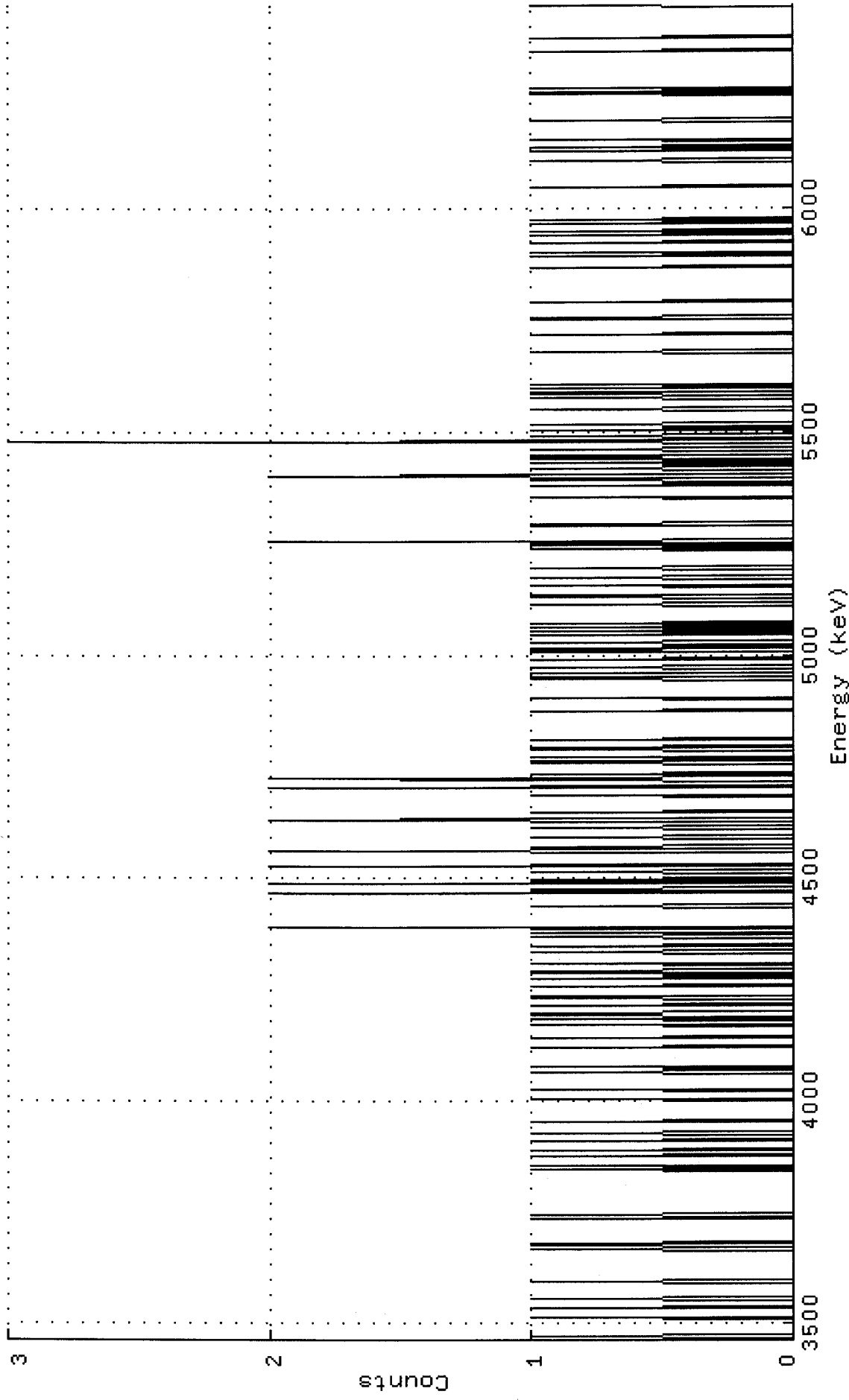
Title : 034

Sample Title: SB-3-MU-SD SUS

Start Time: 25-MAY-2010 11:35 Sample Time: 12-MAY-2010 00:00 Energy Offset: 3.45114E+03

Real Time : 0 02:50:00.30 Sample ID : 09 Energy Slope : 3.11165E+00

Live Time : 0 02:50:00.00 Sample Type: RA Energy Quad : -1.78210E-04



Channel Contents for ND\_AMS\_ARCHIVE\_S:S\_1005066A-RA\$09\_RA

Channel

1:	0	0	0	0	0	1	0	0	0	0	0	0	0	0
15:	0	0	0	0	1	0	0	0	0	0	0	0	1	0
29:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
43:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0	0	0	0	0	1	0
71:	0	1	0	1	0	0	0	0	0	0	0	0	0	0
85:	0	0	0	0	0	0	0	1	0	1	0	0	0	0
99:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127:	1	0	0	1	0	0	0	0	0	0	0	1	0	0
141:	0	1	0	0	0	0	0	0	1	0	0	0	0	1
155:	0	0	0	0	0	0	0	0	1	0	0	0	0	0
169:	0	0	0	0	0	0	0	0	0	0	1	0	0	0
183:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
197:	0	0	1	0	0	0	1	0	0	0	0	0	0	0
211:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
225:	1	0	0	0	0	0	0	0	0	1	0	0	0	1
239:	0	0	1	1	1	0	0	0	0	0	1	0	0	0
253:	0	1	1	0	0	0	0	0	0	0	1	0	0	0
267:	0	0	1	0	0	1	0	1	0	0	0	0	1	0
281:	0	0	0	0	0	0	0	1	0	0	0	0	1	0
295:	0	0	0	0	1	1	0	1	0	0	0	2	0	0
309:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
323:	1	0	0	0	0	0	0	0	0	0	2	0	1	0
337:	0	0	0	2	0	0	1	0	0	0	0	1	0	0
351:	0	0	2	0	0	0	0	0	0	0	0	0	0	2
365:	0	1	1	0	0	0	0	0	0	1	0	0	0	0
379:	0	0	1	0	0	0	0	0	2	1	0	0	0	0
393:	1	0	0	0	0	0	0	0	0	0	0	0	1	0
407:	0	0	0	0	0	2	0	0	0	0	1	2	1	0
421:	0	1	0	0	0	0	0	0	0	1	1	0	0	1
435:	0	0	0	0	0	1	0	1	0	0	0	0	0	1
449:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
463:	0	0	0	0	0	0	0	1	0	0	0	0	0	0
477:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
491:	0	0	0	1	1	1	1	1	0	0	0	0	1	0
505:	0	0	0	0	1	0	0	0	0	0	1	1	0	1
519:	0	0	0	1	0	0	0	0	0	1	0	0	1	0
533:	0	1	0	0	1	0	0	0	0	0	0	0	0	0
547:	0	0	0	0	1	0	0	0	0	0	1	1	0	0
561:	0	0	0	0	1	0	0	0	0	0	1	1	0	0
575:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
589:	0	0	0	0	1	0	0	1	0	0	2	1	0	0
603:	0	0	0	0	0	0	0	0	0	1	1	0	0	0
617:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
631:	0	0	1	0	0	0	0	0	0	0	0	0	1	0
645:	0	0	1	0	0	2	1	0	0	0	0	1	0	0
659:	0	1	0	0	1	0	1	1	0	0	0	0	1	0
673:	0	0	0	1	3	0	0	0	1	0	0	0	0	1
687:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
701:	0	1	0	0	0	0	0	0	0	0	1	0	0	1
715:	1	0	0	0	1	0	1	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
757:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
771:	0	0	1	1	0	0	0	0	0	0	0	0	0	0
785:	0	0	1	0	0	0	0	0	0	0	0	0	0	0
799:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813:	0	1	0	0	0	0	0	0	0	0	1	0	1	0
827:	0	0	0	0	0	0	0	1	0	0	0	0	0	1
841:	0	0	1	0	0	0	0	0	1	0	0	1	0	0
855:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
869:	0	0	0	0	0	0	0	0	0	1	0	0	0	0
883:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
897:	0	0	1	0	0	0	0	0	0	0	1	0	0	1
911:	0	0	0	0	1	0	0	0	0	0	0	0	0	0
925:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
939:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
953:	0	0	1	0	1	0	0	0	0	0	0	0	0	0
967:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
981:	0	0	0	0	0	0	1	0	0	0	0	0	0	0
995:	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023:	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Configuration : MCA0: [AMSCOUNT] 00003742\$1  
 Analyses by : ROIPEAK V1.2, PEAKEFF V2.2, ENBACK V1.6, NID V3.3  
 Sample title : SB-3-MW-SD SUS  
 Sample date : 12-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 11:35:23  
 Sample ID : 09 Sample quantity : 1.0000 liter  
 Sample type : RA Sample geometry :  
 Detector name : 034 Detector geometry:  
 Elapsed live time: 0 02:50:00.00 Elapsed real time: 0 02:50:00.30 0.0%  
 Energy tolerance : 100.00 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 3.00 %  
 Efficiency type : Average value Efficiencies at : Peak Energy  
 Abundance limit : 75.00

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity pCi/liter
0	4601.25*	83353.17	377.79	302	156	32.7			RA-226	1.11
0	5302.42*	83245.01	616.74	520	176	32.7			RN-222	1.11
0	5804.66*	35	0.00	792.31	715	163	51.0		PO-218	0.461

Detector	Parameter	Flag	Filename
1	OFFLINE		
2	OFFLINE		
3	OFFLINE		
4	ALL	Passed	D_004_NONE
5	ALL	Passed	D_005_NONE
6	ALL	Passed	D_006_NONE
7	OFFLINE		
8	OFFLINE		
9	OFFLINE		
10	ALL	Passed	D_010_NONE
11	ALL	Passed	D_011_NONE
12	ALL	Passed	D_012_NONE
13	ALL	Passed	D_013_NONE
14	ALL	Passed	D_014_NONE
15	ALL	Passed	D_015_NONE
16	OFFLINE		
17	OFFLINE		
18	ALL	Passed	D_018_NONE
19	ALL	Passed	D_019_NONE
20	OFFLINE		
21	ALL	Passed	D_021_NONE
22	OFFLINE		
23	ALL	Passed	D_023_NONE
24	ALL	Passed	D_024_NONE
25	OFFLINE		
26	OFFLINE		
27	ALL	Passed	D_027_NONE
28	OFFLINE		
29	ALL	Passed	D_029_NONE
30	ALL	Passed	D_030_NONE
31	OFFLINE		
32	ALL	Passed	D_032_NONE
33	ALL	Passed	D_033_NONE
34	ALL	Passed	D_034_NONE
35	ALL	Passed	D_035_NONE
36	ALL	Passed	D_036_NONE
37	ALL	Passed	D_037_NONE
38	ALL	Passed	D_038_NONE
39	ALL	Passed	D_039_NONE
40	ALL	Passed	D_040_NONE
41	OFFLINE		
42	ALL	Passed	D_042_NONE
43	ALL	Passed	D_043_NONE
44	OFFLINE		
45	ALL	Passed	D_045_NONE
46	ALL	Passed	D_046_NONE
47	ALL	Passed	D_047_NONE
48	ALL	Passed	D_048_NONE

APPROVAL DATE: 5/25/10

APPROVAL TIME: \_\_\_\_\_

APPROVED BY: KM

PROCEDURE # \_\_\_\_\_

**SECTION IX**  
**ANALYTICAL DATA (RADIUM-228)**

























KM  
05/27/10  
A

Detector ID	Sample ID	Alpha	Beta	Count	Time	Voltage	TOD
B1	1005066-01	16	1191	120		1400	5/27/10 12:43
B2	1005066-02	9	165	120		1400	5/27/10 12:43
B3	1005066-03	5	283	120		1400	5/27/10 12:43
B4	1005066-04	12	270	120		1400	5/27/10 12:43
C1	1005066-05	20	194	120		1400	5/27/10 12:43
C2	1005066-06	12	412	120		1400	5/27/10 12:43
C3	1005066-07	6	282	120		1400	5/27/10 12:43
C4	1005066-08	10	368	120		1400	5/27/10 12:43
D2	1005066-09	8	222	120		1400	5/27/10 12:43

100 5107110

GPC Detector Report  
(ALL Backgrounds)

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	5/27/2010	1.50E-01	P	-5.53E-02	7.05E-02	1.96E-01
LB4110A - A2	Alpha	11/18/2007	5/27/2010	1.67E-02	P	-5.70E-02	1.01E-01	2.59E-01
LB4110A - A3	Alpha	11/18/2007	5/27/2010	5.00E-02	P	-4.91E-02	5.07E-02	1.51E-01
LB4110A - A4	Alpha	11/18/2007	5/27/2010	5.00E-02	P	-6.19E-02	5.89E-02	1.80E-01
LB4110A - B1	Alpha	11/18/2007	5/27/2010	8.33E-02	P	-1.35E-01	8.37E-02	3.02E-01
LB4110A - B2	Alpha	11/18/2007	5/27/2010	5.00E-02	P	-6.60E-02	7.78E-02	2.22E-01
LB4110A - B3	Alpha	11/18/2007	5/27/2010	3.33E-02	P	-5.46E-02	4.48E-02	1.44E-01
LB4110A - B4	Alpha	11/18/2007	5/27/2010	8.33E-02	P	-4.61E-02	5.35E-02	1.53E-01
LB4110A - C1	Alpha	11/18/2007	5/27/2010	1.00E-01	P	-6.37E-02	8.21E-02	2.28E-01
LB4110A - C2	Alpha	11/18/2007	5/27/2010	1.67E-02	P	-2.03E-01	1.23E-01	4.49E-01
LB4110A - C3	Alpha	11/18/2007	5/27/2010	1.00E-01	P	-2.47E-01	1.22E-01	4.91E-01
LB4110A - C4	Alpha	11/18/2007	5/27/2010	1.33E-01	P	-7.12E-02	7.84E-02	2.28E-01
LB4110A - D1	Alpha	11/18/2007	5/27/2010	1.33E-01	P	-4.59E-02	8.41E-02	2.14E-01
LB4110A - D2	Alpha	11/18/2007	5/27/2010	0.00E+00	P	-6.87E-02	6.96E-02	2.08E-01
LB4110A - D3	Alpha	11/18/2007	5/27/2010	1.17E-01	P	-3.67E-02	6.26E-02	1.62E-01
LB4110A - D4	Alpha	11/18/2007	5/27/2010	5.00E-02	P	-5.95E-02	7.80E-02	2.15E-01
LB4110R - A1	Alpha	11/24/2006	5/27/2010	6.67E-02	P	-1.11E-01	8.42E-02	2.79E-01
LB4110R - A2	Alpha	11/24/2006	5/27/2010	1.67E-02	P	-9.82E-02	9.68E-02	2.92E-01
LB4110R - A3	Alpha	11/24/2006	5/27/2010	1.50E-01	P	-8.98E-02	7.77E-02	2.45E-01
LB4110R - A4	Alpha	11/24/2006	5/27/2010	8.33E-02	P	-5.08E-02	8.32E-02	2.17E-01
LB4110R - B1	Alpha	11/24/2006	5/27/2010	3.33E-02	P	-1.17E-01	6.89E-02	2.55E-01
LB4110R - B2	Alpha	11/24/2006	5/27/2010	0.00E+00	P	-7.81E-02	7.71E-02	2.32E-01
LB4110R - B3	Alpha	11/24/2006	5/27/2010	1.00E-01	P	-7.62E-02	7.19E-02	2.20E-01
LB4110R - B4	Alpha	11/24/2006	5/27/2010	3.33E-02	P	-6.55E-02	8.51E-02	2.36E-01
LB4110R - C1	Alpha	11/24/2006	5/27/2010	1.17E-01	P	-8.43E-02	8.88E-02	2.62E-01
LB4110R - C2	Alpha	11/24/2006	5/27/2010	5.00E-02	P	-8.36E-02	8.64E-02	2.56E-01
LB4110R - C3	Alpha	11/24/2006	5/27/2010	1.50E-01	P	-1.04E-01	9.66E-02	2.97E-01
LB4110R - C4	Alpha	11/24/2006	5/27/2010	5.00E-02	P	-7.22E-02	9.28E-02	2.58E-01
LB4110R - D1	Alpha	11/24/2006	5/27/2010	5.00E-02	P	-9.11E-02	8.72E-02	2.65E-01
LB4110R - D2	Alpha	11/24/2006	5/27/2010	1.00E-01	P	-6.17E-02	8.97E-02	2.41E-01
LB4110R - D3	Alpha	11/24/2006	5/27/2010	8.33E-02	P	-5.98E-02	7.81E-02	2.16E-01
LB4110R - D4	Alpha	11/24/2006	5/27/2010	1.17E-01	P	-5.29E-02	9.40E-02	2.41E-01
LB5100 - 1	Alpha	7/10/2006	10/26/2007	5.00E-02	P	-1.56E-02	9.58E-02	2.07E-01

5127110

GPC Detector Report  
(ALL Backgrounds)

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	5/27/2010	1.58E+00	P	-7.73E+00	2.73E+00	1.32E+01
LB4110A - A2	Beta	11/18/2007	5/27/2010	1.18E+00	P	-6.04E-02	1.58E+00	3.23E+00
LB4110A - A3	Beta	11/18/2007	5/27/2010	1.27E+00	P	3.84E-01	1.29E+00	2.20E+00
LB4110A - A4	Beta	11/18/2007	5/27/2010	1.35E+00	P	4.68E-01	1.71E+00	2.95E+00
LB4110A - B1	Beta	11/18/2007	5/27/2010	1.13E+00	P	-8.55E+00	3.97E+00	1.65E+01
LB4110A - B2	Beta	11/18/2007	5/27/2010	1.15E+00	P	6.11E-02	1.49E+00	2.92E+00
LB4110A - B3	Beta	11/18/2007	5/27/2010	1.17E+00	P	1.17E-01	1.49E+00	2.86E+00
LB4110A - B4	Beta	11/18/2007	5/27/2010	1.05E+00	P	-5.89E-02	1.42E+00	2.91E+00
LB4110A - C1	Beta	11/18/2007	5/27/2010	1.53E+00	P	-7.59E+00	3.11E+00	1.38E+01
LB4110A - C2	Beta	11/18/2007	5/27/2010	1.13E+00	P	3.29E-01	1.43E+00	2.53E+00
LB4110A - C3	Beta	11/18/2007	5/27/2010	1.60E+00	P	4.44E-01	1.48E+00	2.52E+00
LB4110A - C4	Beta	11/18/2007	5/27/2010	1.57E+00	P	-1.29E+00	2.13E+00	5.56E+00
LB4110A - D1	Beta	11/18/2007	5/27/2010	2.08E+00	P	-3.95E+00	3.05E+00	1.01E+01
LB4110A - D2	Beta	11/18/2007	5/27/2010	1.15E+00	P	-1.34E+00	1.77E+00	4.87E+00
LB4110A - D3	Beta	11/18/2007	5/27/2010	4.88E+00	P	-3.00E-01	4.09E+00	8.48E+00
LB4110A - D4	Beta	11/18/2007	5/27/2010	1.35E+00	P	-9.20E-01	1.57E+00	4.06E+00
LB4110R - A1	Beta	11/24/2006	5/27/2010	1.28E+00	P	-6.18E+01	2.79E+00	6.73E+01
LB4110R - A2	Beta	11/24/2006	5/27/2010	8.33E-01	P	-6.21E+01	2.52E+00	6.71E+01
LB4110R - A3	Beta	11/24/2006	5/27/2010	1.08E+00	P	-6.14E+01	4.16E+00	6.98E+01
LB4110R - A4	Beta	11/24/2006	5/27/2010	1.28E+00	P	-6.19E+01	2.66E+00	6.72E+01
LB4110R - B1	Beta	11/24/2006	5/27/2010	1.25E+00	P	-6.51E+01	2.76E+00	7.06E+01
LB4110R - B2	Beta	11/24/2006	5/27/2010	1.23E+00	P	-6.50E+01	2.83E+00	7.07E+01
LB4110R - B3	Beta	11/24/2006	5/27/2010	1.03E+00	P	-6.43E+01	3.92E+00	7.22E+01
LB4110R - B4	Beta	11/24/2006	5/27/2010	1.13E+00	P	-6.52E+01	2.61E+00	7.04E+01
LB4110R - C1	Beta	11/24/2006	5/27/2010	1.40E+00	P	-6.42E+01	4.61E+00	7.34E+01
LB4110R - C2	Beta	11/24/2006	5/27/2010	1.62E+00	P	-6.50E+01	3.58E+00	7.22E+01
LB4110R - C3	Beta	11/24/2006	5/27/2010	1.37E+00	P	-6.54E+01	3.59E+00	7.25E+01
LB4110R - C4	Beta	11/24/2006	5/27/2010	1.35E+00	P	-7.37E+01	4.21E+00	8.21E+01
LB4110R - D1	Beta	11/24/2006	5/27/2010	7.95E+00	P	-6.22E+01	6.56E+00	7.53E+01
LB4110R - D2	Beta	11/24/2006	5/27/2010	1.12E+00	P	-6.61E+01	2.69E+00	7.14E+01
LB4110R - D3	Beta	11/24/2006	5/27/2010	3.77E+00	P	-6.99E+01	7.59E+00	8.51E+01
LB4110R - D4	Beta	11/24/2006	5/27/2010	1.45E+00	P	-6.57E+01	3.10E+00	7.19E+01
LB5100 - 1	Beta	7/10/2006	10/26/2007	4.52E+00	F	-3.19E-01	1.58E+00	3.48E+00

GPC Detector Report  
(ALL Efficiencies)

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	5/27/2010	0.2414	P	0.2375	0.2505	0.2634
LB4110A - A2	Alpha	11/18/2007	5/27/2010	0.2171	P	0.1958	0.2208	0.2458
LB4110A - A3	Alpha	11/18/2007	5/27/2010	0.2153	P	0.2049	0.2179	0.2308
LB4110A - A4	Alpha	11/18/2007	5/27/2010	0.2284	P	0.2156	0.2289	0.2422
LB4110A - B1	Alpha	11/18/2007	5/27/2010	0.2259	P	0.2178	0.2317	0.2456
LB4110A - B2	Alpha	11/18/2007	5/27/2010	0.2228	P	0.2139	0.2277	0.2415
LB4110A - B3	Alpha	11/18/2007	5/27/2010	0.2400	P	0.2267	0.2424	0.2580
LB4110A - B4	Alpha	11/18/2007	5/27/2010	0.2351	P	0.2285	0.2410	0.2535
LB4110A - C1	Alpha	11/18/2007	5/27/2010	0.2210	P	0.2116	0.2226	0.2336
LB4110A - C2	Alpha	11/18/2007	5/27/2010	0.2285	P	0.2022	0.2270	0.2518
LB4110A - C3	Alpha	11/18/2007	5/27/2010	0.2408	P	0.2360	0.2494	0.2629
LB4110A - C4	Alpha	11/18/2007	5/27/2010	0.2213	W	0.2181	0.2321	0.2461
LB4110A - D1	Alpha	11/18/2007	5/27/2010	0.2357	P	0.2253	0.2398	0.2544
LB4110A - D2	Alpha	11/18/2007	5/27/2010	0.2636	P	0.2481	0.2633	0.2784
LB4110A - D3	Alpha	11/18/2007	5/27/2010	0.2672	P	0.2514	0.2689	0.2864
LB4110A - D4	Alpha	11/18/2007	5/27/2010	0.1994	P	0.1927	0.2105	0.2284
LB4110R - A1	Alpha	11/24/2006	5/27/2010	0.2337	P	0.2065	0.2425	0.2785
LB4110R - A2	Alpha	11/24/2006	5/27/2010	0.2226	P	0.1929	0.2244	0.2559
LB4110R - A3	Alpha	11/24/2006	5/27/2010	0.2259	P	0.1985	0.2284	0.2582
LB4110R - A4	Alpha	11/24/2006	5/27/2010	0.2407	P	0.2141	0.2470	0.2799
LB4110R - B1	Alpha	11/24/2006	5/27/2010	0.2236	P	0.1938	0.2306	0.2673
LB4110R - B2	Alpha	11/24/2006	5/27/2010	0.2124	P	0.1859	0.2214	0.2568
LB4110R - B3	Alpha	11/24/2006	5/27/2010	0.2466	P	0.2093	0.2478	0.2862
LB4110R - B4	Alpha	11/24/2006	5/27/2010	0.2295	P	0.2006	0.2377	0.2749
LB4110R - C1	Alpha	11/24/2006	5/27/2010	0.2172	P	0.1835	0.2173	0.2511
LB4110R - C2	Alpha	11/24/2006	5/27/2010	0.2281	P	0.1946	0.2266	0.2586
LB4110R - C3	Alpha	11/24/2006	5/27/2010	0.2342	P	0.2040	0.2426	0.2811
LB4110R - C4	Alpha	11/24/2006	5/27/2010	0.2155	P	0.1992	0.2315	0.2638
LB4110R - D1	Alpha	11/24/2006	5/27/2010	0.2332	P	0.1943	0.2296	0.2650
LB4110R - D2	Alpha	11/24/2006	5/27/2010	0.2586	P	0.2245	0.2592	0.2939
LB4110R - D3	Alpha	11/24/2006	5/27/2010	0.2523	P	0.2222	0.2549	0.2875
LB4110R - D4	Alpha	11/24/2006	5/27/2010	0.2010	P	0.1815	0.2117	0.2420
LB5100 - 1	Alpha	7/10/2006	10/26/2007	0.3368	P	0.3332	0.3455	0.3578

GPC Detector Report  
(ALL Efficiencies)

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	5/27/2010	0.5768	P	0.5581	0.5899	0.6216
LB4110A - A2	Beta	11/18/2007	5/27/2010	0.5075	P	0.4656	0.5230	0.5803
LB4110A - A3	Beta	11/18/2007	5/27/2010	0.5204	P	0.4934	0.5268	0.5602
LB4110A - A4	Beta	11/18/2007	5/27/2010	0.5388	P	0.5201	0.5490	0.5779
LB4110A - B1	Beta	11/18/2007	5/27/2010	0.5222	P	0.5122	0.5425	0.5728
LB4110A - B2	Beta	11/18/2007	5/27/2010	0.5173	P	0.5102	0.5397	0.5691
LB4110A - B3	Beta	11/18/2007	5/27/2010	0.5464	P	0.5021	0.5529	0.6037
LB4110A - B4	Beta	11/18/2007	5/27/2010	0.5532	P	0.5354	0.5604	0.5853
LB4110A - C1	Beta	11/18/2007	5/27/2010	0.5022	P	0.4838	0.5062	0.5285
LB4110A - C2	Beta	11/18/2007	5/27/2010	0.4945	P	0.4359	0.5092	0.5825
LB4110A - C3	Beta	11/18/2007	5/27/2010	0.5838	P	0.5621	0.5874	0.6127
LB4110A - C4	Beta	11/18/2007	5/27/2010	0.5093	W	0.5064	0.5404	0.5744
LB4110A - D1	Beta	11/18/2007	5/27/2010	0.5632	P	0.5351	0.5728	0.6105
LB4110A - D2	Beta	11/18/2007	5/27/2010	0.6213	P	0.5535	0.6166	0.6798
LB4110A - D3	Beta	11/18/2007	5/27/2010	0.6127	P	0.5819	0.6265	0.6711
LB4110A - D4	Beta	11/18/2007	5/27/2010	0.4715	W	0.4647	0.5022	0.5397
LB4110R - A1	Beta	11/24/2006	5/27/2010	0.5641	P	0.4781	0.5762	0.6744
LB4110R - A2	Beta	11/24/2006	5/27/2010	0.4893	P	0.4099	0.5133	0.6167
LB4110R - A3	Beta	11/24/2006	5/27/2010	0.5426	P	0.4557	0.5488	0.6418
LB4110R - A4	Beta	11/24/2006	5/27/2010	0.5788	P	0.4946	0.5911	0.6876
LB4110R - B1	Beta	11/24/2006	5/27/2010	0.5413	P	0.4507	0.5521	0.6535
LB4110R - B2	Beta	11/24/2006	5/27/2010	0.5207	P	0.4297	0.5292	0.6287
LB4110R - B3	Beta	11/24/2006	5/27/2010	0.5812	P	0.4923	0.5964	0.7004
LB4110R - B4	Beta	11/24/2006	5/27/2010	0.5483	P	0.4633	0.5609	0.6586
LB4110R - C1	Beta	11/24/2006	5/27/2010	0.5014	P	0.4125	0.5066	0.6007
LB4110R - C2	Beta	11/24/2006	5/27/2010	0.5295	P	0.4366	0.5316	0.6266
LB4110R - C3	Beta	11/24/2006	5/27/2010	0.5672	P	0.4631	0.5742	0.6852
LB4110R - C4	Beta	11/24/2006	5/27/2010	0.5253	P	0.4467	0.5442	0.6417
LB4110R - D1	Beta	11/24/2006	5/27/2010	0.5478	P	0.4494	0.5464	0.6433
LB4110R - D2	Beta	11/24/2006	5/27/2010	0.6133	P	0.5054	0.6091	0.7128
LB4110R - D3	Beta	11/24/2006	5/27/2010	0.5864	P	0.4920	0.5908	0.6896
LB4110R - D4	Beta	11/24/2006	5/27/2010	0.4786	P	0.4079	0.5019	0.5960
LB5100 - 1	Beta	7/10/2006	10/26/2007	0.4428	F	0.4555	0.4731	0.4906

**SECTION X**

**BARIUM-133 ANALYTICAL TRACER DATA**



KM  
0525-10

VAX/VMS Peak Search Report Generated 25-MAY-2010 07:34:22.30

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100506601\_GE4\_BAFIL\_149331.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : SPIKE  
Deposition Date :  
Sample Date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 07:19:04  
Sample ID : 1005066-01 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE4 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.37 0.0%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	31.02	1757	91	2.02	31.02	25	17	1.95E+00	2.6	4.15E+00
2	1	35.19	455	57	2.00	35.18	25	17	5.05E-01	7.4	
3	0	53.36	62	65	1.90	53.35	50	7	6.86E-02	25.1	
4	0	61.45	92	111	1.85	61.44	58	7	1.03E-01	21.5	
5	0	81.29	659	164	2.09	81.27	76	11	7.32E-01	5.5	
6	0	111.11	80	101	2.30	111.08	108	9	8.86E-02	25.0	
7	0	160.91	28	83	3.18	160.86	156	11	3.08E-02	66.3	
8	0	198.26	19	34	1.20	198.20	196	6	2.15E-02	52.3	
9	0	277.31	47	26	2.06	277.21	272	11	5.22E-02	26.0	
10	0	303.13	140	30	1.90	303.02	298	11	1.55E-01	11.4	
11	0	333.44	40	12	2.21	333.32	329	8	4.47E-02	21.6	
12	0	356.05	320	13	2.14	355.92	350	10	3.56E-01	6.0	
13	0	386.36	147	17	5.22	386.22	380	16	1.63E-01	10.6	
14	0	437.20	30	0	2.62	437.03	433	8	3.33E-02	18.3	
15	0	511.21	13	5	3.78	511.01	504	10	1.40E-02	44.0	
16	0	562.02	9	2	2.26	561.80	558	7	1.04E-02	40.2	
17	0	913.94	4	5	2.20	913.58	908	7	4.81E-03	98.4	

Total number of lines in spectrum 17  
 Number of unidentified lines 13  
 Number of lines tentatively identified by NID 4 23.53%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	4.642E+02	4.642E+02	0.909E+02	19.59	
Total Activity :			4.642E+02	4.642E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	4.916E+02	4.916E+02	2.154E+02	43.83	
AM-241	432.20Y	1.00	5.043E+01	5.043E+01	2.208E+01	43.79	
Total Activity :			5.420E+02	5.420E+02			

Grand Total Activity : 1.006E+03 1.006E+03

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.292E+01	4.642E+02	4.642E+02	19.59	OK
	302.84	17.80	4.148E+00	5.675E+02	5.675E+02	30.75	OK
	356.01	60.00	3.452E+00	4.641E+02	4.641E+02	18.78	OK

Final Mean for 3 Valid Peaks = 4.642E+02 +/- 9.093E+01 ( 19.59%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	1.487E+01	4.916E+02	4.916E+02	43.83	OK

Final Mean for 1 Valid Peaks = 4.916E+02 +/- 2.154E+02 ( 43.83%)

AM-241	59.54	35.90*	1.534E+01	5.043E+01	5.043E+01	43.79	OK
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Final Mean for 1 Valid Peaks = 5.043E+01 +/- 2.208E+01 ( 43.79%)

Flag: "\*" = Keyline



KM  
S-25-10

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100506602\_GE4\_BAFIL\_149333.CN  
 Analyses by : PEAK V16.9 PEAKEFF V2.2  
 Client ID : BLANK  
 Deposition Date :  
 Sample Date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 07:37:30  
 Sample ID : 1005066-02 Sample Quantity : 1.00000E+00 filter  
 Sample type : FILTER Sample Geometry : 0  
 Detector name : GE4 Detector Geometry: BAFIL  
 Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.33 0.0%  
 Start channel : 25 End channel : 4096  
 Sensitivity : 3.00000 Gaussian : 10.00000  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	31.03	1722	89	2.10	31.03	25	19	1.91E+00	2.6	4.76E+00
2	2	35.37	397	65	2.23	35.37	25	19	4.41E-01	8.4	
3	0	52.45	19	108	1.05	52.44	50	8	2.07E-02	98.7	
4	3	62.17	76	121	2.51	62.15	57	20	8.42E-02	27.3	1.27E+00
5	3	66.39	22	110	2.52	66.37	57	20	2.48E-02	89.5	
6	0	81.16	616	111	1.91	81.14	77	10	6.84E-01	5.2	
7	0	111.74	102	51	2.28	111.71	109	7	1.14E-01	15.0	
8	0	160.59	21	37	2.81	160.54	157	8	2.38E-02	53.3	
9	0	224.54	22	27	1.02	224.46	221	8	2.41E-02	47.2	
10	0	277.33	42	30	2.06	277.23	271	10	4.70E-02	28.7	
11	0	303.30	93	53	1.78	303.19	298	11	1.04E-01	18.2	
12	0	337.55	54	26	5.70	337.43	329	18	6.02E-02	26.2	
13	0	356.29	312	28	1.77	356.16	352	8	3.47E-01	6.4	
14	5	385.35	85	12	3.42	385.21	379	17	9.40E-02	14.6	2.65E+00
15	5	390.22	24	3	3.43	390.07	379	17	2.70E-02	45.9	
16	0	437.50	38	3	2.23	437.33	432	11	4.27E-02	18.1	
17	0	468.27	6	3	1.05	468.09	464	6	6.54E-03	62.4	
18	1	509.08	7	0	2.41	508.88	506	14	7.33E-03	44.3	6.05E-01
19	1	512.42	13	2	2.41	512.22	506	14	1.45E-02	36.8	
20	1	515.98	6	3	2.41	515.78	506	14	6.47E-03	76.9	
21	0	559.56	6	2	2.91	559.34	555	7	6.87E-03	53.8	
22	0	661.32	5	4	2.48	661.07	655	8	5.68E-03	80.7	

Total number of lines in spectrum 22  
Number of unidentified lines 18  
Number of lines tentatively identified by NID 4 18.18%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	4.338E+02	4.339E+02	0.836E+02	19.26	
Total Activity :			4.338E+02	4.339E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	4.026E+02	4.026E+02	2.225E+02	55.25	
Total Activity :			4.026E+02	4.026E+02			

Grand Total Activity : 8.365E+02 8.365E+02

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.292E+01	4.338E+02	4.339E+02	19.26	OK
	302.84	17.80	4.148E+00	3.799E+02	3.800E+02	41.87	OK
	356.01	60.00	3.452E+00	4.527E+02	4.527E+02	19.31	OK

Final Mean for 3 Valid Peaks = 4.339E+02 +/- 8.358E+01 ( 19.26%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	1.487E+01	4.026E+02	4.026E+02	55.25	OK

Final Mean for 1 Valid Peaks = 4.026E+02 +/- 2.225E+02 ( 55.25%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.339E+02	8.358E+01	2.670E+01	4.211E+00	16.249
TH-234	4.026E+02	2.225E+02	2.639E+02	1.930E+01	1.526

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-5.500E+00	6.844E+00	1.127E+01	1.183E+00	-0.488
CD-109	-1.613E+02	1.681E+02	2.383E+02	2.092E+01	-0.677
PA-231	0.000E+00	0.000E+00	9.391E-01	4.963E-02	0.000
PA-234	9.484E+00	7.355E+00	1.279E+01	6.594E-01	0.742
NP-237	-6.985E+00	4.717E+01	7.422E+01	6.461E+00	-0.094
AM-241	1.468E+01	2.227E+01	3.022E+01	2.142E+00	0.486



KM  
05-25-10

VAX/VMS Peak Search Report Generated 25-MAY-2010 08:13:21.91

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100506603\_GE4\_BAFIL\_149335.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : SB-2-MW-S DIS  
Deposition Date :  
Sample Date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 07:57:47  
Sample ID : 1005066-03 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE4 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.28 0.0%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	31.02	1280	76	2.02	31.02	26	16	1.42E+00	3.0	3.29E+00
2	1	35.19	299	52	2.01	35.18	26	16	3.32E-01	9.6	
3	0	53.90	40	61	2.37	53.90	49	9	4.46E-02	38.4	
4	3	62.64	41	72	2.51	62.62	59	12	4.57E-02	40.8	1.54E+00
5	3	66.13	20	72	2.27	66.11	59	12	2.17E-02	77.1	
6	0	81.30	479	97	1.85	81.28	76	10	5.32E-01	6.0	
7	0	94.59	13	46	1.41	94.56	90	8	1.40E-02	97.6	
8	0	112.63	75	44	2.01	112.60	109	10	8.36E-02	20.2	
9	0	186.44	21	69	2.75	186.38	179	14	2.31E-02	87.9	
10	0	283.65	5	21	1.27	283.55	280	8	5.90E-03	153.1	
11	0	303.16	77	23	1.89	303.05	298	9	8.61E-02	15.8	
12	0	334.66	26	15	1.84	334.54	329	12	2.93E-02	35.2	
13	0	356.23	228	19	1.94	356.10	351	11	2.53E-01	7.6	
14	3	384.16	47	9	2.83	384.02	380	10	5.23E-02	20.9	1.40E+00
15	3	387.24	26	10	2.04	387.09	380	10	2.84E-02	34.6	
16	0	437.55	17	4	1.63	437.38	433	9	1.90E-02	32.6	
17	0	444.92	8	0	3.24	444.75	442	6	8.89E-03	35.4	
18	0	496.19	6	0	2.88	496.00	493	6	6.67E-03	40.8	
19	0	512.24	9	5	1.06	512.04	508	6	1.04E-02	48.5	

Total number of lines in spectrum 19  
 Number of unidentified lines 14  
 Number of lines tentatively identified by NID 5 26.32%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	3.373E+02	3.373E+02	0.681E+02	20.19	
Total Activity :			3.373E+02	3.373E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
PA-231	3.28E+04Y	1.00	2.436E+03	2.436E+03	0.888E+03	36.43	
TH-234	4.47E+09Y	1.00	2.185E+02	2.185E+02	1.791E+02	81.99	
Total Activity :			2.655E+03	2.655E+03			

Grand Total Activity : 2.992E+03 2.992E+03

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.292E+01	3.373E+02	3.373E+02	20.19	OK
	302.84	17.80	4.148E+00	3.150E+02	3.150E+02	37.81	OK
	356.01	60.00	3.452E+00	3.306E+02	3.306E+02	21.01	OK

Final Mean for 3 Valid Peaks = 3.373E+02 +/- 6.812E+01 ( 20.19%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
PA-231	9.28	42.00*	2.058E+01	-----	Line Out Of Range	----	Absent
	10.11	20.20	2.088E+01	-----	Line Out Of Range	----	Absent
	283.67	1.60	4.456E+00	2.236E+02	2.236E+02	306.62	OK
	302.67	2.30	4.151E+00	2.436E+03	2.436E+03	36.43	OK

Final Mean for 2 Valid Peaks = 2.436E+03 +/- 8.876E+02 ( 36.43%)

TH-234	63.29	3.80*	1.487E+01	2.185E+02	2.185E+02	81.99	OK
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Final Mean for 1 Valid Peaks = 2.185E+02 +/- 1.791E+02 ( 81.99%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	3.373E+02	6.812E+01	2.830E+01	4.463E+00	11.919
PA-231	2.436E+03	8.876E+02	9.391E-01	4.963E-02	2594.328
TH-234	2.185E+02	1.791E+02	2.094E+02	1.532E+01	1.043

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-7.422E-01	5.393E+00	8.747E+00	9.185E-01	-0.085
CD-109	-6.095E+01	1.771E+02	2.108E+02	1.851E+01	-0.289
PA-234	4.056E+00	7.001E+00	1.168E+01	6.023E-01	0.347
NP-237	2.481E+01	4.834E+01	6.859E+01	5.970E+00	0.362
AM-241	1.550E+01	1.467E+01	2.237E+01	1.586E+00	0.693

KM  
082510

VAX/VMS Peak Search Report Generated 25-MAY-2010 08:39:05.36

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100506604\_GE4\_BAFIL\_149339.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : SB-2-MW-S DIS  
Deposition Date :  
Sample Date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 08:23:44  
Sample ID : 1005066-04 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE4 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.32 0.0%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	31.05	1636	73	2.19	31.05	25	16	1.82E+00	2.7	5.13E+00
2	2	35.34	396	54	2.23	35.34	25	16	4.40E-01	8.2	
3	0	52.76	25	72	1.75	52.75	49	7	2.79E-02	59.4	
4	3	61.64	77	97	2.51	61.62	57	13	8.54E-02	25.6	1.18E+00
5	3	65.87	31	109	2.52	65.86	57	13	3.49E-02	61.9	
6	0	81.21	638	117	2.29	81.19	75	12	7.09E-01	5.2	
7	1	111.84	84	33	2.14	111.81	106	14	9.37E-02	15.8	1.45E+00
8	1	116.20	26	29	2.14	116.16	106	14	2.89E-02	43.2	
9	0	129.13	58	58	13.54	129.09	121	17	6.49E-02	32.9	
10	0	194.64	31	60	2.52	194.57	190	9	3.39E-02	49.5	
11	0	277.15	45	36	1.93	277.05	273	8	5.05E-02	27.2	
12	0	287.56	15	15	2.31	287.45	284	9	1.61E-02	57.8	
13	0	303.15	112	25	2.52	303.04	297	10	1.24E-01	12.6	
14	2	333.56	16	29	2.54	333.44	329	13	1.72E-02	60.8	1.73E+00
15	2	338.57	15	12	2.54	338.44	329	13	1.71E-02	45.9	
16	3	351.83	12	3	2.81	351.70	350	11	1.32E-02	25.9	2.53E+00
17	3	356.24	333	9	2.07	356.11	350	11	3.69E-01	5.6	
18	2	384.03	67	3	2.34	383.88	379	15	7.49E-02	13.9	3.39E+00
19	2	386.86	50	2	2.57	386.72	379	15	5.58E-02	22.6	
20	0	437.39	22	7	1.50	437.22	432	9	2.47E-02	29.9	
21	0	512.67	9	2	2.75	512.47	507	8	9.70E-03	44.4	

Total number of lines in spectrum 21  
Number of unidentified lines 17  
Number of lines tentatively identified by NID 4 19.05%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	4.498E+02	4.498E+02	0.869E+02	19.32	
Total Activity :			4.498E+02	4.498E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	4.084E+02	4.084E+02	2.119E+02	51.87	
Total Activity :			4.084E+02	4.084E+02			

Grand Total Activity : 8.582E+02 8.583E+02

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.292E+01	4.498E+02	4.498E+02	19.32	OK
	302.84	17.80	4.148E+00	4.555E+02	4.556E+02	32.58	OK
	356.01	60.00	3.452E+00	4.821E+02	4.822E+02	18.39	OK

Final Mean for 3 Valid Peaks = 4.498E+02 +/- 8.690E+01 ( 19.32%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	1.487E+01	4.084E+02	4.084E+02	51.87	OK

Final Mean for 1 Valid Peaks = 4.084E+02 +/- 2.119E+02 ( 51.87%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.498E+02	8.690E+01	2.771E+01	4.370E+00	16.231
TH-234	4.084E+02	2.119E+02	2.264E+02	1.656E+01	1.804

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	3.856E+00	7.337E+00	1.079E+01	1.133E+00	0.357
CD-109	-1.096E+02	1.510E+02	2.206E+02	1.937E+01	-0.497
PA-231	0.000E+00	0.000E+00	9.391E-01	4.963E-02	0.000
PA-234	3.819E+00	7.459E+00	1.232E+01	6.351E-01	0.310
NP-237	-2.931E+01	4.306E+01	6.331E+01	5.510E+00	-0.463
AM-241	2.637E+01	1.651E+01	2.945E+01	2.088E+00	0.895

51  
104

10  
10  
63  
95

51  
104



*KM*  
*OS-25-10*

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100506605\_GE4\_BAFIL\_149341.CN  
 Analyses by : PEAK V16.9 PEAKEFF V2.2  
 Client ID : SB-2-MW-S SUS  
 Deposition Date :  
 Sample Date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 08:40:55  
 Sample ID : 1005066-05 Sample Quantity : 1.00000E+00 filter  
 Sample type : FILTER Sample Geometry : 0  
 Detector name : GE4 Detector Geometry: BAFIL  
 Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.39 0.0%  
 Start channel : 25 End channel : 4096  
 Sensitivity : 3.00000 Gaussian : 10.00000  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	31.03	1471	75	2.10	31.03	25	15	1.63E+00	2.8	3.55E+00
2	2	35.31	354	49	2.08	35.31	25	15	3.93E-01	8.7	
3	0	53.46	60	67	1.92	53.46	50	8	6.67E-02	26.8	
4	0	62.56	96	119	2.76	62.55	58	10	1.07E-01	23.4	
5	0	81.33	595	120	1.95	81.31	75	12	6.61E-01	5.5	
6	0	112.70	72	79	2.23	112.67	108	9	7.95E-02	25.3	
7	0	161.60	36	60	2.01	161.54	156	12	4.01E-02	46.8	
8	4	213.82	14	10	2.96	213.75	211	26	1.59E-02	42.6	1.36E+00
9	4	225.02	16	21	2.97	224.94	211	26	1.77E-02	59.3	
10	0	255.73	14	25	3.51	255.63	250	8	1.51E-02	70.3	
11	0	276.54	45	24	1.52	276.44	272	8	5.00E-02	24.0	
12	0	303.53	78	26	2.22	303.42	297	10	8.63E-02	16.6	
13	0	321.99	13	7	2.50	321.88	319	6	1.41E-02	44.1	
14	0	336.45	13	30	1.14	336.33	331	11	1.49E-02	88.7	
15	0	356.24	321	17	2.05	356.11	350	10	3.57E-01	6.0	
16	7	384.39	48	7	2.90	384.24	379	16	5.31E-02	21.8	1.45E+00
17	7	387.22	25	5	2.22	387.07	379	16	2.79E-02	37.8	
18	7	391.38	19	4	3.37	391.24	379	16	2.15E-02	41.0	
19	0	415.69	8	11	1.98	415.53	411	7	8.33E-03	80.4	
20	0	436.62	30	7	1.52	436.45	431	10	3.29E-02	25.2	
21	0	511.57	13	6	1.64	511.38	508	8	1.42E-02	43.6	
22	0	527.04	6	0	1.98	526.83	523	7	6.67E-03	40.8	

Total number of lines in spectrum 22  
 Number of unidentified lines 18  
 Number of lines tentatively identified by NID 4 18.18%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	4.193E+02	4.193E+02	0.824E+02	19.65	
Total Activity :			4.193E+02	4.193E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	5.116E+02	5.116E+02	2.435E+02	47.60	
Total Activity :			5.116E+02	5.116E+02			

Grand Total Activity : 9.309E+02 9.309E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.292E+01	4.193E+02	4.193E+02	19.65	OK
	302.84	17.80	4.148E+00	3.159E+02	3.159E+02	39.10	OK
	356.01	60.00	3.452E+00	4.656E+02	4.656E+02	18.87	OK

Final Mean for 3 Valid Peaks = 4.193E+02 +/- 8.239E+01 ( 19.65%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	1.487E+01	5.116E+02	5.116E+02	47.60	OK

Final Mean for 1 Valid Peaks = 5.116E+02 +/- 2.435E+02 ( 47.60%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.193E+02	8.239E+01	2.751E+01	4.339E+00	15.239
TH-234	5.116E+02	2.435E+02	2.440E+02	1.785E+01	2.096

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-6.426E+00	7.236E+00	1.108E+01	1.163E+00	-0.580
CD-109	-1.083E+02	1.571E+02	2.308E+02	2.027E+01	-0.469
PA-231	-3.106E-01	6.215E-01	9.391E-01	4.963E-02	-0.331
PA-234	1.447E+01	7.002E+00	1.283E+01	6.613E-01	1.128
NP-237	-1.339E+01	4.438E+01	6.875E+01	5.984E+00	-0.195
AM-241	2.626E+01	1.749E+01	2.706E+01	1.918E+00	0.971

KM  
5-25-10

VAX/VMS Peak Search Report Generated 25-MAY-2010 09:12:40.17

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100506606\_GE4\_BAFIL\_149343.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : SB-3-MW-S DIS  
Deposition Date :  
Sample Date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 08:57:15  
Sample ID : 1005066-06 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE4 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.32 0.0%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	31.02	1333	68	2.02	31.02	25	16	1.48E+00	3.0	6.04E+00
2	1	35.19	353	43	2.03	35.18	25	16	3.93E-01	8.5	
3	1	62.20	72	61	2.08	62.19	58	12	8.03E-02	21.1	6.96E-01
4	1	65.82	18	70	2.08	65.81	58	12	2.01E-02	79.4	
5	0	81.41	459	133	2.21	81.39	76	12	5.10E-01	6.9	
6	1	112.17	58	31	2.14	112.14	106	13	6.46E-02	21.4	2.37E+00
7	1	115.84	32	16	2.14	115.81	106	13	3.58E-02	32.5	
8	0	120.82	11	19	1.21	120.78	119	5	1.26E-02	61.4	
9	0	276.71	41	23	1.95	276.61	273	10	4.54E-02	26.8	
10	1	303.01	94	22	2.29	302.90	297	19	1.04E-01	12.9	1.31E+00
11	1	312.27	12	18	2.30	312.15	297	19	1.33E-02	64.7	
12	0	333.43	33	13	1.83	333.31	329	10	3.67E-02	26.6	
13	0	356.18	299	15	2.05	356.05	350	12	3.32E-01	6.3	
14	1	383.93	38	20	2.34	383.79	380	13	4.25E-02	26.0	1.21E+00
15	1	386.93	34	19	2.34	386.79	380	13	3.80E-02	31.7	
16	0	437.12	21	8	1.71	436.95	432	8	2.32E-02	32.2	
17	0	510.37	16	7	2.46	510.18	505	9	1.81E-02	38.0	

Total number of lines in spectrum 17  
 Number of unidentified lines 12  
 Number of lines tentatively identified by NID 5 29.41%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
CO-57	270.90D	1.00	4.110E+00	4.114E+00	5.071E+00	123.25	
BA-133	10.50Y	1.00	3.233E+02	3.234E+02	0.690E+02	21.35	
Total Activity :			3.275E+02	3.275E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	3.841E+02	3.841E+02	1.653E+02	43.04	
Total Activity :			3.841E+02	3.841E+02			

Grand Total Activity : 7.115E+02 7.115E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
CO-57	122.06	85.51*	9.721E+00	4.110E+00	4.114E+00	123.25	OK
	136.48	10.60	8.901E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 4.114E+00 +/- 5.071E+00 (123.25%)

BA-133	81.00	33.00*	1.292E+01	3.233E+02	3.234E+02	21.35	OK
	302.84	17.80	4.148E+00	3.824E+02	3.825E+02	33.00	OK
	356.01	60.00	3.452E+00	4.336E+02	4.336E+02	19.27	OK

Final Mean for 3 Valid Peaks = 3.234E+02 +/- 6.903E+01 ( 21.35%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	1.487E+01	3.841E+02	3.841E+02	43.04	OK

Final Mean for 1 Valid Peaks = 3.841E+02 +/- 1.653E+02 ( 43.04%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	4.114E+00	5.071E+00	1.094E+01	1.149E+00	0.376
BA-133	3.234E+02	6.903E+01	3.107E+01	4.900E+00	10.408
TH-234	3.841E+02	1.653E+02	2.034E+02	1.488E+01	1.888

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CD-109	-8.535E+01	1.550E+02	2.321E+02	2.038E+01	-0.368
PA-231	0.000E+00	0.000E+00	9.391E-01	4.963E-02	0.000
PA-234	1.400E+01	7.057E+00	1.285E+01	6.626E-01	1.090
NP-237	-8.434E+00	4.181E+01	6.578E+01	5.726E+00	-0.128
AM-241	2.192E+01	1.473E+01	2.658E+01	1.884E+00	0.824



KM  
05-25-10

VAX/VMS Peak Search Report Generated 25-MAY-2010 09:31:41.40

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100506607\_GE4\_BAFIL\_149347.CN  
Analyses by : PEAK V16.9 PEAKEFF V2.2  
Client ID : SB-3-MW-S SUS  
Deposition Date :  
Sample Date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 09:16:21  
Sample ID : 1005066-07 Sample Quantity : 1.00000E+00 filter  
Sample type : FILTER Sample Geometry : 0  
Detector name : GE4 Detector Geometry: BAFIL  
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.32 0.0%  
Start channel : 25 End channel : 4096  
Sensitivity : 3.00000 Gaussian : 10.00000  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	28.38	108	110	2.22	28.39	25	17	1.20E-01	34.0	2.88E+00
2	2	31.10	1464	75	2.00	31.10	25	17	1.63E+00	2.8	
3	2	35.17	366	48	2.23	35.17	25	17	4.06E-01	8.8	
4	0	52.99	51	65	3.35	52.98	49	8	5.69E-02	30.5	
5	1	62.20	96	67	2.08	62.19	57	15	1.07E-01	17.3	1.04E+00
6	1	65.82	26	77	2.08	65.81	57	15	2.87E-02	60.9	
7	0	81.13	577	123	2.13	81.11	75	12	6.41E-01	5.7	
8	0	112.46	91	68	2.33	112.43	108	11	1.01E-01	20.3	
9	0	277.41	39	26	2.01	277.31	273	10	4.28E-02	30.7	
10	0	303.28	100	35	1.77	303.17	298	10	1.11E-01	14.9	
11	0	334.08	22	20	1.65	333.95	329	10	2.44E-02	43.6	
12	3	351.47	8	3	2.81	351.34	350	12	8.48E-03	34.7	8.67E-01
13	3	356.32	304	6	2.15	356.19	350	12	3.38E-01	5.9	
14	4	384.68	49	8	3.11	384.53	379	15	5.44E-02	21.4	7.34E-01
15	4	387.46	36	5	2.39	387.31	379	15	4.03E-02	27.5	
16	4	390.99	27	3	2.60	390.85	379	15	3.02E-02	26.2	
17	0	417.51	9	18	6.97	417.35	409	14	1.05E-02	99.1	
18	0	436.36	26	8	2.23	436.20	431	11	2.89E-02	28.9	
19	0	513.48	9	5	1.14	513.28	508	8	9.48E-03	59.7	
20	0	697.37	5	4	1.24	697.09	690	9	5.31E-03	91.5	

Total number of lines in spectrum 20  
 Number of unidentified lines 16  
 Number of lines tentatively identified by NID 4 20.00%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	4.066E+02	4.066E+02	0.806E+02	19.83	
Total Activity :			4.066E+02	4.066E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	5.115E+02	5.115E+02	1.819E+02	35.56	
Total Activity :			5.115E+02	5.115E+02			

Grand Total Activity : 9.181E+02 9.181E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.292E+01	4.066E+02	4.066E+02	19.83	OK
	302.84	17.80	4.148E+00	4.074E+02	4.074E+02	36.22	OK
	356.01	60.00	3.452E+00	4.413E+02	4.413E+02	18.66	OK

Final Mean for 3 Valid Peaks = 4.066E+02 +/- 8.062E+01 ( 19.83%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	1.487E+01	5.115E+02	5.115E+02	35.56	OK

Final Mean for 1 Valid Peaks = 5.115E+02 +/- 1.819E+02 ( 35.56%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	4.066E+02	8.062E+01	2.731E+01	4.307E+00	14.887
TH-234	5.115E+02	1.819E+02	2.094E+02	1.532E+01	2.442

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-2.071E+00	7.699E+00	1.195E+01	1.255E+00	-0.173
CD-109	-1.584E+02	1.702E+02	2.423E+02	2.128E+01	-0.654
PA-231	0.000E+00	0.000E+00	9.391E-01	4.963E-02	0.000
PA-234	1.058E+01	7.299E+00	1.283E+01	6.613E-01	0.825
NP-237	-3.712E+00	4.520E+01	7.184E+01	6.253E+00	-0.052
AM-241	3.236E+01	1.599E+01	2.942E+01	2.085E+00	1.100

87  
42

11  
52  
00

00  
62

VAX/VMS Peak Search Report Generated 25-MAY-2010 09:55:21.51

Configuration : DKA100: [GAMMA.SCUSR.ARCHIVE] SMP\_100506608\_GE4\_BAFIL\_149349.CN  
 Analyses by : PEAK V16.9 PEAKEFF V2.2  
 Client ID : SB-3-MW-SD DIS  
 Deposition Date :  
 Sample Date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 09:39:55  
 Sample ID : 1005066-08 Sample Quantity : 1.00000E+00 filter  
 Sample type : FILTER Sample Geometry : 0  
 Detector name : GE4 Detector Geometry: BAFIL  
 Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.31 0.0%  
 Start channel : 25 End channel : 4096  
 Sensitivity : 3.00000 Gaussian : 10.00000  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	31.05	1502	64	2.10	31.05	25	14	1.67E+00	2.7	3.81E+00
2	2	35.38	365	39	2.08	35.38	25	14	4.05E-01	8.4	
3	0	53.02	44	62	2.02	53.01	50	7	4.85E-02	33.7	
4	5	62.21	114	68	3.04	62.20	57	16	1.27E-01	17.0	1.73E+00
5	5	66.39	54	53	2.52	66.37	57	16	6.02E-02	31.7	
6	2	77.42	17	38	2.31	77.40	76	11	1.84E-02	50.7	5.34E+00
7	2	81.41	540	58	1.93	81.39	76	11	6.00E-01	4.8	
8	0	111.73	59	64	1.52	111.70	107	8	6.59E-02	26.7	
9	1	130.18	26	26	2.15	130.14	126	14	2.90E-02	34.6	2.39E+00
10	1	137.14	16	25	2.16	137.10	126	14	1.82E-02	54.1	
11	0	147.00	12	60	0.94	146.95	143	8	1.31E-02	116.1	
12	0	161.66	27	55	1.00	161.60	157	9	3.04E-02	52.1	
13	7	271.48	10	3	2.87	271.38	270	13	1.11E-02	36.6	1.98E+00
14	7	275.99	37	12	2.69	275.89	270	13	4.13E-02	24.5	
15	1	303.26	92	19	2.29	303.14	298	14	1.02E-01	12.9	3.55E+00
16	1	307.11	14	21	2.08	307.00	298	14	1.56E-02	60.7	
17	0	356.30	298	17	1.89	356.16	350	11	3.31E-01	6.4	
18	1	384.36	74	19	2.34	384.21	379	15	8.25E-02	15.7	7.33E+00
19	1	387.36	58	14	2.34	387.21	379	15	6.45E-02	20.0	
20	0	438.10	15	8	1.26	437.93	434	9	1.70E-02	45.5	
21	0	511.83	22	0	4.37	511.64	507	9	2.44E-02	21.3	

Total number of lines in spectrum 21  
Number of unidentified lines 15  
Number of lines tentatively identified by NID 6 28.57%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
BA-133	10.50Y	1.00	3.803E+02	3.803E+02	0.719E+02	18.91	
Total Activity :			3.803E+02	3.803E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected pCi/filter	Decay Corr pCi/filter			
TH-234	4.47E+09Y	1.00	6.063E+02	6.063E+02	2.119E+02	34.95	
Total Activity :			6.063E+02	6.063E+02			

Grand Total Activity : 9.865E+02 9.866E+02

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.292E+01	3.803E+02	3.803E+02	18.91	OK
	302.84	17.80	4.148E+00	3.732E+02	3.732E+02	33.07	OK
	356.01	60.00	3.452E+00	4.320E+02	4.321E+02	19.31	OK

Final Mean for 3 Valid Peaks = 3.803E+02 +/- 7.193E+01 ( 18.91%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	1.487E+01	6.063E+02	6.063E+02	34.95	OK

Final Mean for 1 Valid Peaks = 6.063E+02 +/- 2.119E+02 ( 34.95%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	3.803E+02	7.193E+01	2.607E+01	4.112E+00	14.586
TH-234	6.063E+02	2.119E+02	1.980E+02	1.448E+01	3.062

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	-7.381E+00	8.089E+00	1.136E+01	1.193E+00	-0.650
CD-109	-8.406E+01	1.491E+02	2.229E+02	1.958E+01	-0.377
PA-231	0.000E+00	0.000E+00	9.391E-01	4.963E-02	0.000
PA-234	1.264E+01	7.050E+00	1.270E+01	6.550E-01	0.995
NP-237	-2.759E+00	4.232E+01	6.770E+01	5.893E+00	-0.041
AM-241	3.252E+01	1.536E+01	2.863E+01	2.029E+00	1.136



VAX/VMS Peak Search Report Generated 25-MAY-2010 10:11:49.25

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP\_100506609\_GE4\_BAFIL\_149351.CN  
 Analyses by : PEAK V16.9 PEAKEFF V2.2  
 Client ID : SB-3-MW-DS SUS  
 Deposition Date :  
 Sample Date : 25-MAY-2010 00:00:00 Acquisition date : 25-MAY-2010 09:56:30  
 Sample ID : 1005066-09 Sample Quantity : 1.00000E+00 filter  
 Sample type : FILTER Sample Geometry : 0  
 Detector name : GE4 Detector Geometry: BAFIL  
 Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:00.31 0.0%  
 Start channel : 25 End channel : 4096  
 Sensitivity : 3.00000 Gaussian : 10.00000  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	31.04	1559	76	2.12	31.04	25	15	1.73E+00	2.7	5.07E+00
2	2	35.39	401	45	2.12	35.39	25	15	4.46E-01	7.9	
3	0	53.70	68	85	1.87	53.69	48	11	7.54E-02	29.0	
4	1	62.14	75	88	2.08	62.13	58	13	8.38E-02	22.8	3.19E+00
5	1	66.82	20	101	2.08	66.81	58	13	2.18E-02	83.1	
6	0	81.28	558	123	2.15	81.26	75	12	6.20E-01	5.8	
7	0	92.82	35	25	1.39	92.79	89	8	3.87E-02	30.4	
8	3	112.39	79	47	2.52	112.36	107	13	8.76E-02	20.1	4.09E+00
9	3	116.39	22	45	2.59	116.36	107	13	2.41E-02	68.1	
10	6	184.40	21	13	3.06	184.34	182	11	2.36E-02	38.0	3.60E+00
11	6	187.06	16	28	2.01	187.00	182	11	1.77E-02	59.9	
12	0	252.74	17	13	1.65	252.65	250	6	1.93E-02	40.0	
13	2	258.52	11	14	2.49	258.43	256	13	1.22E-02	59.2	1.36E+00
14	2	265.66	12	18	2.49	265.57	256	13	1.30E-02	64.9	
15	0	277.08	58	17	2.05	276.98	273	9	6.46E-02	18.9	
16	1	303.05	74	9	2.29	302.94	296	22	8.18E-02	13.7	1.23E+00
17	1	314.27	10	10	2.30	314.15	296	22	1.10E-02	59.9	
18	0	334.39	21	17	1.41	334.27	331	8	2.39E-02	39.0	
19	0	356.42	278	27	2.02	356.28	350	12	3.09E-01	7.1	
20	4	384.10	54	10	2.60	383.95	378	20	5.95E-02	20.6	1.57E+00
21	4	387.20	44	13	2.64	387.05	378	20	4.93E-02	26.4	
22	4	392.63	13	17	3.12	392.48	378	20	1.46E-02	65.9	
23	0	415.18	16	5	1.47	415.02	410	10	1.82E-02	35.3	
24	0	437.46	19	4	1.18	437.29	434	8	2.11E-02	29.3	
25	0	468.33	11	2	3.72	468.15	463	9	1.19E-02	39.6	
26	0	510.81	11	7	1.85	510.61	507	9	1.20E-02	53.5	

Total number of lines in spectrum 26  
 Number of unidentified lines 22  
 Number of lines tentatively identified by NID 4 15.38%

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			pCi/filter	pCi/filter	2-Sigma Error	%Error	
BA-133	10.50Y	1.00	3.935E+02	3.935E+02	0.786E+02	19.98	
Total Activity :			3.935E+02	3.935E+02			

Nuclide Type : NATURAL

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			pCi/filter	pCi/filter	2-Sigma Error	%Error	
TH-234	4.47E+09Y	1.00	4.011E+02	4.011E+02	1.861E+02	46.39	
Total Activity :			4.011E+02	4.011E+02			

Grand Total Activity : 7.946E+02 7.946E+02

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

Nuclide Type: FISSION

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
BA-133	81.00	33.00*	1.292E+01	3.935E+02	3.935E+02	19.98	OK
	302.84	17.80	4.148E+00	2.994E+02	2.995E+02	34.35	OK
	356.01	60.00	3.452E+00	4.029E+02	4.029E+02	20.26	OK

Final Mean for 3 Valid Peaks = 3.935E+02 +/- 7.864E+01 ( 19.98%)

Nuclide Type: NATURAL

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/filter	Decay Corr pCi/filter	2-Sigma %Error	Status
TH-234	63.29	3.80*	1.487E+01	4.011E+02	4.011E+02	46.39	OK

Final Mean for 1 Valid Peaks = 4.011E+02 +/- 1.861E+02 ( 46.39%)

Flag: "\*" = Keyline

---- Identified Nuclides ----

Nuclide	Activity (pCi/filter)	Act error	MDA (pCi/filter)	MDA error	Act/MDA
BA-133	3.935E+02	7.864E+01	2.929E+01	4.620E+00	13.433
TH-234	4.011E+02	1.861E+02	2.515E+02	1.839E+01	1.595

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

Nuclide	Key-Line Activity K.L. (pCi/filter) Ided	Act error	MDA (pCi/filter)	MDA error	Act/MDA
CO-57	7.118E-01	6.521E+00	1.081E+01	1.135E+00	0.066
CD-109	-1.487E+01	1.575E+02	1.995E+02	1.752E+01	-0.075
PA-231	0.000E+00	0.000E+00	9.391E-01	4.963E-02	0.000
PA-234	1.256E+01	7.044E+00	1.269E+01	6.542E-01	0.990
NP-237	1.432E+01	4.746E+01	6.505E+01	5.662E+00	0.220
AM-241	2.758E+01	1.998E+01	2.971E+01	2.106E+00	0.928

**SECTION XI**  
**ANALYTICAL DATA (GROSS ALPHA/BETA)**























Internal Work Order		Run	Analysis Code		Date		Technician		Technician Initials		Witness Initials	
10-05066		1	GaGbT_ThSr		5/20/2010 12:56		BLESTER		BL			
LCS & Matrix Spikes												
Isotope	Sol #	Activity dpm/g	Solution Date	Approx Addition	LCS Volume Used (g)	MS Volume Used (g)	LCS Volume Used (g)	LCSD Volume Used (g)	MSD Volume Used (g)	LCS Known pCi	MS Added pCi	MSD Added pCi
Am-241	A/B-07	695.040	5/20/2010	0.680	1.0130		317.15			0.00	0.000	0.00
SrY-90	A/B-07	524.338	5/20/2010	1.050	1.0130		239.26			0.00	0.000	0.00

Tracers				Balance Printer Tapes			
fraction	isotope	Sol #	Activity dpm/g	Solution Date	Volume Used (g)	Approx Addition	
							Tracer
							LCS
							Matrix Spike



# Aliquot Worksheet

Work Order		Run		Analysis Code		Rpt Units		Lab Deadline		Technician	
<b>10-05066</b>		<b>1</b>		<b>GaGbT_ThSr</b>		<b>liters</b>		<b>5/28/2010</b>		<b>BLESTER</b>	

Lab Fraction	Client ID		Sample Type	Muffle Data		Dilution Data			Aliquot Data		MS Aliquot Data		H-3 Solids Only	
	Client ID	Asoc., Inc.		Ratio Post/Pre	No of Dilis	Dil Factor	Ratio	Aliquot	Net Equiv	Aliquot	Net Equiv	Water Added (ml)	H3 Dist Aliq	
01	LCS	Michael Pisani & Assoc., Inc.	LCS						1.0000E+00	1.0000E+00				
02	BLANK		MBL						1.0000E+00	1.0000E+00				
03	SB-2-MW-S DIS		DUP						4.0000E-02	4.0000E-02				
04	SB-2-MW-S DIS		DO						4.0000E-02	4.0000E-02				
05	SB-2-MW-S SUS		TRG						2.0000E-01	2.0000E-01				
06	SB-3-MW-S DIS		TRG						1.0000E-02	1.0000E-02				
07	SB-3-MW-S SUS		TRG						1.0000E-01	1.0000E-01				
08	SB-3-MW-SD DIS		TRG						1.0000E-02	1.0000E-02				
09	SB-3-MW-SD SUS		TRG						1.0000E-01	1.0000E-01				

Comments
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Technician: *BL*

Date: 5/20/2010





(R)  
S 120/W  
KPB

Sheet1

Detector ID	Sample ID	Alpha	Beta	Count Time	Voltage	TOD
D2	1005066-01	5326	9516	30	1400	5/20/10 14:37

②  
5/20/10  
10B

Sheet1

Detector ID	Sample ID	Alpha	Beta	Count	Time	Voltage	TOD
C1	1005066-06	17	145	120		1400	5/20/10 16:06
C2	1005066-07	51	387	120		1400	5/20/10 16:06
C3	1005066-08	8	153	120		1400	5/20/10 16:06
B1	1005066-02	8	118	120		1400	5/20/10 16:06
C4	1005066-09	36	323	120		1400	5/20/10 16:06
B2	1005066-03	7	195	120		1400	5/20/10 16:06
B3	1005066-04	10	169	120		1400	5/20/10 16:06
B4	1005066-05	33	208	120		1400	5/20/10 16:06

GPC Detector Report  
(ALL Efficiencies)

KM  
05-20-10

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	5/20/2010	0.2515	P	0.2375	0.2505	0.2634
LB4110A - A2	Alpha	11/18/2007	5/20/2010	0.2160	P	0.1958	0.2208	0.2459
LB4110A - A3	Alpha	11/18/2007	5/20/2010	0.2161	P	0.2049	0.2179	0.2308
LB4110A - A4	Alpha	11/18/2007	5/20/2010	0.2285	P	0.2156	0.2289	0.2422
LB4110A - B1	Alpha	11/18/2007	5/20/2010	0.2266	P	0.2179	0.2318	0.2456
LB4110A - B2	Alpha	11/18/2007	5/20/2010	0.2209	P	0.2140	0.2278	0.2416
LB4110A - B3	Alpha	11/18/2007	5/20/2010	0.2389	P	0.2267	0.2424	0.2581
LB4110A - B4	Alpha	11/18/2007	5/20/2010	0.2351	P	0.2285	0.2411	0.2536
LB4110A - C1	Alpha	11/18/2007	5/20/2010	0.2222	P	0.2116	0.2226	0.2336
LB4110A - C2	Alpha	11/18/2007	5/20/2010	0.2260	P	0.2021	0.2270	0.2519
LB4110A - C3	Alpha	11/18/2007	5/20/2010	0.2437	P	0.2360	0.2494	0.2629
LB4110A - C4	Alpha	11/18/2007	5/20/2010	0.2223	P	0.2185	0.2322	0.2459
LB4110A - D1	Alpha	11/18/2007	5/20/2010	0.2372	P	0.2253	0.2399	0.2544
LB4110A - D2	Alpha	11/18/2007	5/20/2010	0.2641	P	0.2481	0.2633	0.2785
LB4110A - D3	Alpha	11/18/2007	5/20/2010	0.2659	P	0.2514	0.2689	0.2865
LB4110A - D4	Alpha	11/18/2007	5/20/2010	0.1980	P	0.1929	0.2106	0.2283
LB4110R - A1	Alpha	11/24/2006	5/20/2010	0.2343	P	0.2066	0.2426	0.2786
LB4110R - A2	Alpha	11/24/2006	5/20/2010	0.2197	P	0.1929	0.2244	0.2560
LB4110R - A3	Alpha	11/24/2006	5/20/2010	0.2243	P	0.1985	0.2284	0.2583
LB4110R - A4	Alpha	11/24/2006	5/20/2010	0.2448	P	0.2140	0.2470	0.2800
LB4110R - B1	Alpha	11/24/2006	5/20/2010	0.2224	P	0.1938	0.2306	0.2674
LB4110R - B2	Alpha	11/24/2006	5/20/2010	0.2190	P	0.1859	0.2214	0.2569
LB4110R - B3	Alpha	11/24/2006	5/20/2010	0.2437	P	0.2093	0.2478	0.2863
LB4110R - B4	Alpha	11/24/2006	5/20/2010	0.2271	P	0.2006	0.2378	0.2750
LB4110R - C1	Alpha	11/24/2006	5/20/2010	0.2178	P	0.1834	0.2173	0.2512
LB4110R - C2	Alpha	11/24/2006	5/20/2010	0.2236	P	0.1945	0.2266	0.2587
LB4110R - C3	Alpha	11/24/2006	5/20/2010	0.2399	P	0.2039	0.2426	0.2813
LB4110R - C4	Alpha	11/24/2006	5/20/2010	0.2170	P	0.1993	0.2316	0.2639
LB4110R - D1	Alpha	11/24/2006	5/20/2010	0.2254	P	0.1942	0.2296	0.2651
LB4110R - D2	Alpha	11/24/2006	5/20/2010	0.2595	P	0.2244	0.2592	0.2940
LB4110R - D3	Alpha	11/24/2006	5/20/2010	0.2576	P	0.2222	0.2549	0.2876
LB4110R - D4	Alpha	11/24/2006	5/20/2010	0.1976	P	0.1816	0.2118	0.2420
LB5100 - 1	Alpha	7/10/2006	10/26/2007	0.3368	P	0.3332	0.3455	0.3578

GPC Detector Report  
(ALL Efficiencies)

KM  
05-20-10

Detector	Alpha/Beta	Calibration Date	Count Date	Eff	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	5/20/2010	0.5833	P	0.5580	0.5899	0.6217
LB4110A - A2	Beta	11/18/2007	5/20/2010	0.5261	P	0.4655	0.5230	0.5805
LB4110A - A3	Beta	11/18/2007	5/20/2010	0.5213	P	0.4933	0.5268	0.5603
LB4110A - A4	Beta	11/18/2007	5/20/2010	0.5459	P	0.5200	0.5490	0.5780
LB4110A - B1	Beta	11/18/2007	5/20/2010	0.5298	P	0.5126	0.5427	0.5727
LB4110A - B2	Beta	11/18/2007	5/20/2010	0.5326	P	0.5103	0.5397	0.5692
LB4110A - B3	Beta	11/18/2007	5/20/2010	0.5511	P	0.5020	0.5530	0.6040
LB4110A - B4	Beta	11/18/2007	5/20/2010	0.5619	P	0.5355	0.5605	0.5854
LB4110A - C1	Beta	11/18/2007	5/20/2010	0.5101	P	0.4839	0.5062	0.5286
LB4110A - C2	Beta	11/18/2007	5/20/2010	0.4920	P	0.4359	0.5094	0.5828
LB4110A - C3	Beta	11/18/2007	5/20/2010	0.5813	P	0.5621	0.5874	0.6127
LB4110A - C4	Beta	11/18/2007	5/20/2010	0.5196	P	0.5073	0.5407	0.5741
LB4110A - D1	Beta	11/18/2007	5/20/2010	0.5629	P	0.5350	0.5728	0.6106
LB4110A - D2	Beta	11/18/2007	5/20/2010	0.6259	P	0.5531	0.6166	0.6800
LB4110A - D3	Beta	11/18/2007	5/20/2010	0.6221	P	0.5819	0.6266	0.6713
LB4110A - D4	Beta	11/18/2007	5/20/2010	0.4726	W	0.4652	0.5024	0.5396
LB4110R - A1	Beta	11/24/2006	5/20/2010	0.5628	P	0.4780	0.5763	0.6747
LB4110R - A2	Beta	11/24/2006	5/20/2010	0.4916	P	0.4099	0.5135	0.6170
LB4110R - A3	Beta	11/24/2006	5/20/2010	0.5312	P	0.4556	0.5488	0.6421
LB4110R - A4	Beta	11/24/2006	5/20/2010	0.5796	P	0.4944	0.5912	0.6879
LB4110R - B1	Beta	11/24/2006	5/20/2010	0.5385	P	0.4505	0.5521	0.6538
LB4110R - B2	Beta	11/24/2006	5/20/2010	0.5146	P	0.4295	0.5293	0.6290
LB4110R - B3	Beta	11/24/2006	5/20/2010	0.5859	P	0.4922	0.5965	0.7008
LB4110R - B4	Beta	11/24/2006	5/20/2010	0.5453	P	0.4632	0.5610	0.6589
LB4110R - C1	Beta	11/24/2006	5/20/2010	0.5060	P	0.4122	0.5066	0.6010
LB4110R - C2	Beta	11/24/2006	5/20/2010	0.5312	P	0.4364	0.5316	0.6268
LB4110R - C3	Beta	11/24/2006	5/20/2010	0.5823	P	0.4629	0.5742	0.6855
LB4110R - C4	Beta	11/24/2006	5/20/2010	0.5252	P	0.4466	0.5443	0.6420
LB4110R - D1	Beta	11/24/2006	5/20/2010	0.5536	P	0.4491	0.5464	0.6436
LB4110R - D2	Beta	11/24/2006	5/20/2010	0.6152	P	0.5051	0.6091	0.7130
LB4110R - D3	Beta	11/24/2006	5/20/2010	0.5870	P	0.4918	0.5908	0.6899
LB4110R - D4	Beta	11/24/2006	5/20/2010	0.4775	P	0.4079	0.5021	0.5963
LB5100 - 1	Beta	7/10/2006	10/26/2007	0.4428	F	0.4555	0.4731	0.4906

GPC Detector Report  
(ALL Backgrounds)

KM  
05-20-10

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Alpha	11/18/2007	5/20/2010	1.00E-01	P	-5.53E-02	7.00E-02	1.95E-01
LB4110A - A2	Alpha	11/18/2007	5/20/2010	8.33E-02	P	-5.66E-02	1.01E-01	2.59E-01
LB4110A - A3	Alpha	11/18/2007	5/20/2010	1.33E-01	W	-4.89E-02	5.05E-02	1.50E-01
LB4110A - A4	Alpha	11/18/2007	5/20/2010	5.00E-02	P	-6.21E-02	5.87E-02	1.80E-01
LB4110A - B1	Alpha	11/18/2007	5/20/2010	0.00E+00	P	-1.35E-01	8.40E-02	3.03E-01
LB4110A - B2	Alpha	11/18/2007	5/20/2010	5.00E-02	P	-6.61E-02	7.81E-02	2.22E-01
LB4110A - B3	Alpha	11/18/2007	5/20/2010	3.33E-02	P	-5.47E-02	4.46E-02	1.44E-01
LB4110A - B4	Alpha	11/18/2007	5/20/2010	6.67E-02	P	-4.64E-02	5.32E-02	1.53E-01
LB4110A - C1	Alpha	11/18/2007	5/20/2010	3.33E-02	P	-6.36E-02	8.24E-02	2.28E-01
LB4110A - C2	Alpha	11/18/2007	5/20/2010	6.67E-02	P	-2.03E-01	1.24E-01	4.51E-01
LB4110A - C3	Alpha	11/18/2007	5/20/2010	6.67E-02	P	-2.48E-01	1.23E-01	4.93E-01
LB4110A - C4	Alpha	11/18/2007	5/20/2010	6.67E-02	P	-7.19E-02	7.83E-02	2.28E-01
LB4110A - D1	Alpha	11/18/2007	5/20/2010	3.33E-02	P	-4.48E-02	8.38E-02	2.13E-01
LB4110A - D2	Alpha	11/18/2007	5/20/2010	5.00E-02	P	-6.85E-02	6.99E-02	2.08E-01
LB4110A - D3	Alpha	11/18/2007	5/20/2010	5.00E-02	P	-3.69E-02	6.25E-02	1.62E-01
LB4110A - D4	Alpha	11/18/2007	5/20/2010	1.00E-01	P	-5.99E-02	7.78E-02	2.15E-01
LB4110R - A1	Alpha	11/24/2006	5/20/2010	6.67E-02	P	-1.11E-01	8.43E-02	2.80E-01
LB4110R - A2	Alpha	11/24/2006	5/20/2010	0.00E+00	P	-9.84E-02	9.70E-02	2.92E-01
LB4110R - A3	Alpha	11/24/2006	5/20/2010	5.00E-02	P	-8.98E-02	7.78E-02	2.45E-01
LB4110R - A4	Alpha	11/24/2006	5/20/2010	1.50E-01	P	-5.07E-02	8.30E-02	2.17E-01
LB4110R - B1	Alpha	11/24/2006	5/20/2010	6.67E-02	P	-1.17E-01	6.91E-02	2.55E-01
LB4110R - B2	Alpha	11/24/2006	5/20/2010	6.67E-02	P	-7.79E-02	7.74E-02	2.33E-01
LB4110R - B3	Alpha	11/24/2006	5/20/2010	1.67E-02	P	-7.63E-02	7.21E-02	2.20E-01
LB4110R - B4	Alpha	11/24/2006	5/20/2010	1.00E-01	P	-6.56E-02	8.52E-02	2.36E-01
LB4110R - C1	Alpha	11/24/2006	5/20/2010	1.67E-02	P	-8.44E-02	8.89E-02	2.62E-01
LB4110R - C2	Alpha	11/24/2006	5/20/2010	1.00E-01	P	-8.35E-02	8.67E-02	2.57E-01
LB4110R - C3	Alpha	11/24/2006	5/20/2010	1.33E-01	P	-1.04E-01	9.68E-02	2.98E-01
LB4110R - C4	Alpha	11/24/2006	5/20/2010	5.00E-02	P	-7.25E-02	9.29E-02	2.58E-01
LB4110R - D1	Alpha	11/24/2006	5/20/2010	5.00E-02	P	-9.12E-02	8.74E-02	2.66E-01
LB4110R - D2	Alpha	11/24/2006	5/20/2010	5.00E-02	P	-6.16E-02	8.99E-02	2.41E-01
LB4110R - D3	Alpha	11/24/2006	5/20/2010	6.67E-02	P	-5.99E-02	7.80E-02	2.16E-01
LB4110R - D4	Alpha	11/24/2006	5/20/2010	1.17E-01	P	-5.32E-02	9.40E-02	2.41E-01
LB5100 - 1	Alpha	7/10/2006	10/26/2007	5.00E-02	P	-1.56E-02	9.58E-02	2.07E-01



GPC Detector Report  
(ALL Backgrounds)

KM  
05-20-10

Detector	Alpha/Beta	Calibration Date	Count Date	Bkg CPM	PFW	LCL	Mean	UCL
LB4110A - A1	Beta	11/18/2007	5/20/2010	1.53E+00	P	-7.76E+00	2.74E+00	1.32E+01
LB4110A - A2	Beta	11/18/2007	5/20/2010	1.08E+00	P	-6.21E-02	1.59E+00	3.23E+00
LB4110A - A3	Beta	11/18/2007	5/20/2010	1.37E+00	P	3.81E-01	1.29E+00	2.20E+00
LB4110A - A4	Beta	11/18/2007	5/20/2010	1.33E+00	P	4.65E-01	1.71E+00	2.96E+00
LB4110A - B1	Beta	11/18/2007	5/20/2010	1.27E+00	P	-8.57E+00	3.99E+00	1.65E+01
LB4110A - B2	Beta	11/18/2007	5/20/2010	1.12E+00	P	5.87E-02	1.49E+00	2.92E+00
LB4110A - B3	Beta	11/18/2007	5/20/2010	1.40E+00	P	1.12E-01	1.49E+00	2.86E+00
LB4110A - B4	Beta	11/18/2007	5/20/2010	1.63E+00	P	-6.28E-02	1.43E+00	2.91E+00
LB4110A - C1	Beta	11/18/2007	5/20/2010	1.27E+00	P	-7.61E+00	3.13E+00	1.39E+01
LB4110A - C2	Beta	11/18/2007	5/20/2010	1.13E+00	P	3.29E-01	1.43E+00	2.53E+00
LB4110A - C3	Beta	11/18/2007	5/20/2010	1.85E+00	P	4.40E-01	1.48E+00	2.53E+00
LB4110A - C4	Beta	11/18/2007	5/20/2010	1.75E+00	P	-1.30E+00	2.14E+00	5.57E+00
LB4110A - D1	Beta	11/18/2007	5/20/2010	2.02E+00	P	-3.97E+00	3.06E+00	1.01E+01
LB4110A - D2	Beta	11/18/2007	5/20/2010	1.23E+00	P	-1.34E+00	1.77E+00	4.89E+00
LB4110A - D3	Beta	11/18/2007	5/20/2010	4.68E+00	P	-3.22E-01	4.08E+00	8.49E+00
LB4110A - D4	Beta	11/18/2007	5/20/2010	1.20E+00	P	-9.29E-01	1.57E+00	4.07E+00
LB4110R - A1	Beta	11/24/2006	5/20/2010	1.42E+00	P	-6.19E+01	2.79E+00	6.75E+01
LB4110R - A2	Beta	11/24/2006	5/20/2010	1.12E+00	P	-6.22E+01	2.53E+00	6.73E+01
LB4110R - A3	Beta	11/24/2006	5/20/2010	1.52E+00	P	-6.16E+01	4.18E+00	6.99E+01
LB4110R - A4	Beta	11/24/2006	5/20/2010	1.30E+00	P	-6.21E+01	2.67E+00	6.74E+01
LB4110R - B1	Beta	11/24/2006	5/20/2010	1.18E+00	P	-6.52E+01	2.77E+00	7.08E+01
LB4110R - B2	Beta	11/24/2006	5/20/2010	1.30E+00	P	-6.52E+01	2.84E+00	7.08E+01
LB4110R - B3	Beta	11/24/2006	5/20/2010	1.37E+00	P	-6.45E+01	3.94E+00	7.24E+01
LB4110R - B4	Beta	11/24/2006	5/20/2010	1.25E+00	P	-6.54E+01	2.61E+00	7.06E+01
LB4110R - C1	Beta	11/24/2006	5/20/2010	1.18E+00	P	-6.43E+01	4.63E+00	7.36E+01
LB4110R - C2	Beta	11/24/2006	5/20/2010	1.80E+00	P	-6.52E+01	3.59E+00	7.24E+01
LB4110R - C3	Beta	11/24/2006	5/20/2010	1.48E+00	P	-6.55E+01	3.61E+00	7.27E+01
LB4110R - C4	Beta	11/24/2006	5/20/2010	1.38E+00	P	-7.39E+01	4.23E+00	8.23E+01
LB4110R - D1	Beta	11/24/2006	5/20/2010	7.70E+00	P	-6.24E+01	6.55E+00	7.55E+01
LB4110R - D2	Beta	11/24/2006	5/20/2010	9.83E-01	P	-6.62E+01	2.70E+00	7.16E+01
LB4110R - D3	Beta	11/24/2006	5/20/2010	3.33E+00	P	-7.01E+01	7.61E+00	8.53E+01
LB4110R - D4	Beta	11/24/2006	5/20/2010	1.22E+00	P	-6.58E+01	3.11E+00	7.21E+01
LB5100 - 1	Beta	7/10/2006	10/26/2007	4.52E+00	F	-3.19E-01	1.58E+00	3.48E+00

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InternalID	InternalWorkOrder	Fraction	AnalysisCode	Isotope	Run	ClientName	SampleType	ClientID	ReportUnits	Result	Uncertainty	MDA	LSCKnown	LCSPercentR	LCSFlag	RPDFlag	MDAFlag	BlankFlag	SampleDate
10-09020-01	10-09020	01	GaGbt_ThSr	GROSS ALPHA	1	Michael Pisani & Associates	LCS	LCS	pCi/l	316.001	8.01E+00	4.95E-01	3.38E+02	9.35E+01	OK		OK		9/3/2010
10-09020-02	10-09020	02	GaGbt_ThSr	GROSS ALPHA	1	Michael Pisani & Associates	MBL	BLANK	pCi/l	-0.088	1.02E-01	2.87E-01					OK	OK	9/3/2010
10-09020-03	10-09020	03	GaGbt_ThSr	GROSS ALPHA	1	Michael Pisani & Associates	DUP	J. GUIDRY #1	pCi/l	2.107	3.08E+00	6.36E+00				NA	INV		9/1/2010
10-09020-04	10-09020	04	GaGbt_ThSr	GROSS ALPHA	1	Michael Pisani & Associates	DO	J. GUIDRY #1	pCi/l	0.960	2.66E+00	5.84E+00					INV		9/1/2010
10-09020-05	10-09020	05	GaGbt_ThSr	GROSS ALPHA	1	Michael Pisani & Associates	TRG	PURVIS HEBERT	pCi/l	5.310	5.76E+00	1.09E+01					INV		9/1/2010
10-09020-06	10-09020	06	GaGbt_ThSr	GROSS ALPHA	1	Michael Pisani & Associates	TRG	A. CROUCH	pCi/l	7.440	9.09E+00	1.79E+01					INV		9/1/2010
10-09020-07	10-09020	07	GaGbt_ThSr	GROSS ALPHA	1	Michael Pisani & Associates	TRG	J. GUIDRY #2	pCi/l	0.000	1.82E+00	4.45E+00					OK		9/1/2010
10-09020-01	10-09020	01	GaGbt_ThSr	GROSS BETA	1	Michael Pisani & Associates	LCS	LCS	pCi/l	269.134	6.22E+00	9.11E-01	2.53E+02	1.06E+02	OK		OK		9/3/2010
10-09020-02	10-09020	02	GaGbt_ThSr	GROSS BETA	1	Michael Pisani & Associates	MBL	BLANK	pCi/l	-0.067	2.90E-01	6.25E-01					OK	OK	9/3/2010
10-09020-03	10-09020	03	GaGbt_ThSr	GROSS BETA	1	Michael Pisani & Associates	DUP	J. GUIDRY #1	pCi/l	5.194	1.96E+00	3.63E+00				NA	OK		9/1/2010
10-09020-04	10-09020	04	GaGbt_ThSr	GROSS BETA	1	Michael Pisani & Associates	DO	J. GUIDRY #1	pCi/l	2.745	1.90E+00	3.77E+00					OK		9/1/2010
10-09020-05	10-09020	05	GaGbt_ThSr	GROSS BETA	1	Michael Pisani & Associates	TRG	PURVIS HEBERT	pCi/l	20.104	7.71E+00	1.43E+01					INV		9/1/2010
10-09020-06	10-09020	06	GaGbt_ThSr	GROSS BETA	1	Michael Pisani & Associates	TRG	A. CROUCH	pCi/l	25.246	1.16E+01	2.20E+01					INV		9/1/2010
10-09020-07	10-09020	07	GaGbt_ThSr	GROSS BETA	1	Michael Pisani & Associates	TRG	J. GUIDRY #2	pCi/l	2.816	1.86E+00	3.67E+00					OK		9/1/2010
10-09020-01	10-09020	01	Ra226	RA-226	1	Michael Pisani & Associates	LCS	LCS	pCi/l	10.170	1.29E+00	1.58E-01	1.01E+01	1.01E+02	OK		OK		9/3/2010
10-09020-02	10-09020	02	Ra226	RA-226	1	Michael Pisani & Associates	MBL	BLANK	pCi/l	0.135	1.44E-01	2.78E-01					OK	INV	9/3/2010
10-09020-03	10-09020	03	Ra226	RA-226	1	Michael Pisani & Associates	DUP	J. GUIDRY #1	pCi/l	0.892	3.76E-01	2.92E-01				NA	OK		9/1/2010
10-09020-04	10-09020	04	Ra226	RA-226	1	Michael Pisani & Associates	DO	J. GUIDRY #1	pCi/l	1.217	4.46E-01	4.02E-01					OK		9/1/2010
10-09020-05	10-09020	05	Ra226	RA-226	1	Michael Pisani & Associates	TRG	PURVIS HEBERT	pCi/l	0.539	2.69E-01	2.24E-01					OK		9/1/2010
10-09020-06	10-09020	06	Ra226	RA-226	1	Michael Pisani & Associates	TRG	A. CROUCH	pCi/l	0.880	3.71E-01	2.88E-01					OK		9/1/2010
10-09020-07	10-09020	07	Ra226	RA-226	1	Michael Pisani & Associates	TRG	J. GUIDRY #2	pCi/l	1.219	4.36E-01	2.59E-01					OK		9/1/2010
10-09020-01	10-09020	01	Ra228	RA-228	1	Michael Pisani & Associates	LCS	LCS	pCi/l	13.997	1.01E+00	1.12E+00	1.62E+01	8.64E+01	OK		OK		9/3/2010
10-09020-02	10-09020	02	Ra228	RA-228	1	Michael Pisani & Associates	MBL	BLANK	pCi/l	1.004	5.78E-01	1.12E+00					OK	OK	9/3/2010
10-09020-03	10-09020	03	Ra228	RA-228	1	Michael Pisani & Associates	DUP	J. GUIDRY #1	pCi/l	1.398	5.03E-01	9.11E-01				NA	OK		9/1/2010
10-09020-04	10-09020	04	Ra228	RA-228	1	Michael Pisani & Associates	DO	J. GUIDRY #1	pCi/l	1.051	6.41E-01	1.26E+00					OK		9/1/2010
10-09020-05	10-09020	05	Ra228	RA-228	1	Michael Pisani & Associates	TRG	PURVIS HEBERT	pCi/l	0.767	5.89E-01	1.18E+00					OK		9/1/2010
10-09020-06	10-09020	06	Ra228	RA-228	1	Michael Pisani & Associates	TRG	A. CROUCH	pCi/l	1.713	6.16E-01	1.12E+00					OK		9/1/2010
10-09020-07	10-09020	07	Ra228	RA-228	1	Michael Pisani & Associates	TRG	J. GUIDRY #2	pCi/l	1.890	6.70E-01	1.23E+00					OK		9/1/2010

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AliquotNetEquiv	RadioPercentRec	GravPercentRec	MeanPercentRec	SAF	Sept0Date	Sept1Date	CountDate	Halflife_days	Detector	Carrier	CountTime	Counts	BkgCPM	Eff	UserName	ModDate	RPD_Value	Matrix	DateReceived	GrossWetWt
1	0	0	0	1			9/9/2010	0	LB4110A	C1	30	5990	0.083333333	0.2845	AGRIGSBY	9/10/2010		WA	9/3/2010	0
1	0	0	0	1			9/9/2010	0	LB4110A	A1	120	5	0.1	0.2976	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.2	0	0	0	3.620886			9/9/2010	0	LB4110A	A2	120	27	0.15	0.2903	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.2	0	0	0	3.67376399999999			9/9/2010	0	LB4110A	A3	120	18	0.116666667	0.2872	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.05	0	0	0	2.64641999999999			9/9/2010	0	LB4110A	A4	120	11	0.033333333	0.2619	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.03	0	0	0	2.88563			9/9/2010	0	LB4110A	D2	120	10	0.033333333	0.2912	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.2	0	0	0	3.64858400000001			9/9/2010	0	LB4110A	D4	120	8	0.066666667	0.2944	AGRIGSBY	9/10/2010		WA	9/3/2010	0
1	0	0	0	1			9/9/2010	0	LB4110A	C1	30	10144	1.383333333	0.4775	AGRIGSBY	9/10/2010		WA	9/3/2010	0
1	0	0	0	1			9/9/2010	0	LB4110A	A1	120	191	1.666666667	0.5019	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.2	0	0	0	1.2623675			9/9/2010	0	LB4110A	A2	120	262	1.3	0.4835	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.2	0	0	0	1.267145			9/9/2010	0	LB4110A	A3	120	217	1.35	0.4765	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.05	0	0	0	1.174325			9/9/2010	0	LB4110A	A4	120	250	1.233333333	0.4473	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.03	0	0	0	1.1959375			9/9/2010	0	LB4110A	D2	120	236	1.266666667	0.4979	AGRIGSBY	9/10/2010		WA	9/3/2010	0
0.2	0	0	0	1.26487			9/9/2010	0	LB4110A	D4	120	220	1.35	0.4889	AGRIGSBY	9/10/2010		WA	9/3/2010	0
1	100	0	107.0967361				9/13/2010	0	A_Spec	3	170.08	771	0.002	20.1	AGRIGSBY	9/13/2010		WA	9/3/2010	0
1	91.14	0	91.14447405				9/13/2010	0	A_Spec	4	170.07	9.45	0.01	20.3	AGRIGSBY	9/13/2010		WA	9/3/2010	0
1	100	0	107.4517672				9/13/2010	0	A_Spec	5	170.07	66.5	0.007	19.8	AGRIGSBY	9/13/2010	30.87502964	WA	9/3/2010	0
1	98.01	0	98.00606398				9/13/2010	0	A_Spec	6	170.02	87.5	0.017	19.4	AGRIGSBY	9/13/2010		WA	9/3/2010	0
1	100	0	102.2798662				9/13/2010	0	A_Spec	10	170.05	42.2	0.005	20.7	AGRIGSBY	9/13/2010		WA	9/3/2010	0
1	89.47	0	89.47080044				9/13/2010	0	A_Spec	11	170.03	62.2	0.007	20.9	AGRIGSBY	9/13/2010		WA	9/3/2010	0
1	94.22	0	94.21987611				9/13/2010	0	A_Spec	12	170.1	91.2	0.005	21	AGRIGSBY	9/13/2010		WA	9/3/2010	0
1	107.0967361	89.59016921	95.94814713	1	9/17/2010		9/17/2010	0	LB4110A	A1	120	1211	1.583333333	0.4803	AGRIGSBY	9/17/2010		WA	9/3/2010	0
1	91.14447405	89.10763688	81.21668697	1	9/17/2010		9/17/2010	0	LB4110A	A2	120	191	1.083333333	0.4724	AGRIGSBY	9/17/2010		WA	9/3/2010	0
1	107.4517672	90.87692209	97.6488588	1	9/17/2010		9/17/2010	0	LB4110A	A3	120	226	1.033333333	0.4719	AGRIGSBY	9/17/2010		WA	9/3/2010	0
1	98.00606398	90.39438976	88.59198346	1	9/17/2010		9/17/2010	0	LB4110A	A4	120	251	1.533333333	0.4548	AGRIGSBY	9/17/2010		WA	9/3/2010	0
1	102.2798662	90.55523387	92.61977208	1	9/17/2010		9/17/2010	0	LB4110A	B1	120	234	1.516666667	0.4626	AGRIGSBY	9/17/2010		WA	9/3/2010	0
1	89.47080044	91.35945442	81.74003514	1	9/17/2010		9/17/2010	0	LB4110A	B2	120	234	1.083333333	0.4691	AGRIGSBY	9/17/2010		WA	9/3/2010	0
1	94.21987611	89.26848099	84.1086522	1	9/17/2010		9/17/2010	0	LB4110A	B3	120	265	1.266666667	0.449	AGRIGSBY	9/17/2010		WA	9/3/2010	0

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PercentLiq	PercentSolid	Date_t_0	UserName_t_0	DilutionRatio	SolutionNo	PrepDate	AliquotDate	Identified	CoordinateY	XYUnits	CoordinateZ	ZUnits	GravFilterNet	InstCode	Method	TPUFactor	CSU	LCSKnownError
0	0			1		9/8/2010	9/8/2010						0.0011	2	EPA 900.0 Modified	0.0046922	8.143742502	14.535106
0	0			1		9/8/2010	9/8/2010						0.0017	2	EPA 900.0 Modified	0.0046922	0.101933508	
0	0			1		9/8/2010	9/8/2010						0.1177	2	EPA 900.0 Modified	0.0046922	3.077996829	
0	0			1		9/8/2010	9/8/2010						0.1198	2	EPA 900.0 Modified	0.0046922	2.661915623	
0	0			1		9/8/2010	9/8/2010						0.079	2	EPA 900.0 Modified	0.0046922	5.758704753	
0	0			1		9/8/2010	9/8/2010						0.0885	2	EPA 900.0 Modified	0.0046922	9.093207215	
0	0			1		9/8/2010	9/8/2010						0.1188	2	EPA 900.0 Modified	0.0046922	1.823636979	
0	0			1		9/8/2010	9/8/2010						0.0011	2	EPA 900.0 Modified	0.00216225	6.24729532	7.59774727
0	0			1		9/8/2010	9/8/2010						0.0017	2	EPA 900.0 Modified	0.00216225	0.289863204	
0	0			1		9/8/2010	9/8/2010						0.1177	2	EPA 900.0 Modified	0.00216225	1.963705816	
0	0			1		9/8/2010	9/8/2010						0.1198	2	EPA 900.0 Modified	0.00216225	1.904482467	
0	0			1		9/8/2010	9/8/2010						0.079	2	EPA 900.0 Modified	0.00216225	7.707077022	
0	0			1		9/8/2010	9/8/2010						0.0885	2	EPA 900.0 Modified	0.00216225	11.60346302	
0	0			1		9/8/2010	9/8/2010						0.1188	2	EPA 900.0 Modified	0.00216225	1.860166072	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0062	3	EPA 903.0 Modified	0.00233289	1.293217653	0.464890857
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0062	3	EPA 903.0 Modified	0.00233289	0.143600345	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0082	3	EPA 903.0 Modified	0.00233289	0.375805755	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0079	3	EPA 903.0 Modified	0.00233289	0.446009037	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0071	3	EPA 903.0 Modified	0.00233289	0.269302935	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0075	3	EPA 903.0 Modified	0.00233289	0.371005674	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0081	3	EPA 903.0 Modified	0.00233289	0.436409266	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0557	2A	EPA 904.0 Modified	0.0312936	1.096944298	0.825928136
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0554	2A	EPA 904.0 Modified	0.0312936	0.579079808	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0565	2A	EPA 904.0 Modified	0.0312936	0.504610716	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0562	2A	EPA 904.0 Modified	0.0312936	0.641801276	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0563	2A	EPA 904.0 Modified	0.0312936	0.589925517	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0568	2A	EPA 904.0 Modified	0.0312936	0.618428374	
0	0	9/10/2010	TSMITH	1	Ba-6a	9/8/2010	9/8/2010						0.0555	2A	EPA 904.0 Modified	0.0312936	0.672155558	