

**F7K190152\_BASIC REMEDIATION - TRNC/D-6RD**

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Analytical Data Package Prepared For  
**TESTAMERICA ST. LOUIS**

BASIC REMEDIATION - Tronox Parcel C/D

Radiochemical Analysis By

**TAL Richland**

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code:

Data Package Contains \_\_\_\_\_ Pages

Report No.: 37880

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
TRNC/D-6RD		RINSATE4	F7K190152-16	KCKE91AD	9KCKE910	7327118
		RINSATE4	F7K190152-16	KCKE91AA	9KCKE910	7327119
		RINSATE4	F7K190152-16	KCKE91AC	9KCKE910	7327122
		RINSATE4	F7K190152-16	KCKE91AE	9KCKE910	7327123
		TSB-FJ-01-0'	F7K190152-12	KCKEM1AD	9KCKEM10	7327115
		TSB-FJ-01-0'	F7K190152-12	KCKEM1AC	9KCKEM10	7327116
		TSB-FJ-01-0'	F7K190152-12	KCKEM1AA	9KCKEM10	7327117
		TSB-FJ-01-10'	F7K190152-13	KCKET1AD	9KCKET10	7327115
		TSB-FJ-01-10'	F7K190152-13	KCKET1AC	9KCKET10	7327116
		TSB-FJ-01-10'	F7K190152-13	KCKET1AA	9KCKET10	7327117
		TSB-FJ-08-0'	F7K190152-1	KCKD61AD	9KCKD610	7327115
		TSB-FJ-08-0'	F7K190152-1	KCKD61AC	9KCKD610	7327116
		TSB-FJ-08-0'	F7K190152-1	KCKD61AA	9KCKD610	7327117
		TSB-FJ-08-10'	F7K190152-2	KCKD81AD	9KCKD810	7327115
		TSB-FJ-08-10'	F7K190152-2	KCKD81AC	9KCKD810	7327116
		TSB-FJ-08-10'	F7K190152-2	KCKD81AA	9KCKD810	7327117
		TSB-FR-04-0'	F7K190152-5	KCKEC1AD	9KCKEC10	7327115
		TSB-FR-04-0'	F7K190152-5	KCKEC1AC	9KCKEC10	7327116
		TSB-FR-04-0'	F7K190152-5	KCKEC1AA	9KCKEC10	7327117
		TSB-FR-04-0'-FD	F7K190152-6	KCKED1AD	9KCKED10	7327115
		TSB-FR-04-0'-FD	F7K190152-6	KCKED1AC	9KCKED10	7327116
		TSB-FR-04-0'-FD	F7K190152-6	KCKED1AA	9KCKED10	7327117
		TSB-FR-04-10'	F7K190152-7	KCKEE1AD	9KCKEE10	7327115
		TSB-FR-04-10'	F7K190152-7	KCKEE1AC	9KCKEE10	7327116
		TSB-FR-04-10'	F7K190152-7	KCKEE1AA	9KCKEE10	7327117
		TSB-FR-05-0'	F7K190152-3	KCKD91AD	9KCKD910	7327115

Report No.: 37880

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
TRNC/D-6RD		TSB-FR-05-0'	F7K190152-3	KCKD91AC	9KCKD910	7327116
		TSB-FR-05-0'	F7K190152-3	KCKD91AA	9KCKD910	7327117
		TSB-FR-05-10'	F7K190152-4	KCKEA1AD	9KCKEA10	7327115
		TSB-FR-05-10'	F7K190152-4	KCKEA1AC	9KCKEA10	7327116
		TSB-FR-05-10'	F7K190152-4	KCKEA1AA	9KCKEA10	7327117
		TSB-GJ-01-0'	F7K190152-14	KCKE11AD	9KCKE110	7327115
		TSB-GJ-01-0'	F7K190152-14	KCKE11AC	9KCKE110	7327116
		TSB-GJ-01-0'	F7K190152-14	KCKE11AA	9KCKE110	7327117
		TSB-GJ-01-5'	F7K190152-15	KCKE21AD	9KCKE210	7327115
		TSB-GJ-01-5'	F7K190152-15	KCKE21AC	9KCKE210	7327116
		TSB-GJ-01-5'	F7K190152-15	KCKE21AA	9KCKE210	7327117
		TSB-GJ-06-0'	F7K190152-10	KCKEK1AD	9KCKEK10	7327115
		TSB-GJ-06-0'	F7K190152-10	KCKEK1AC	9KCKEK10	7327116
		TSB-GJ-06-0'	F7K190152-10	KCKEK1AA	9KCKEK10	7327117
		TSB-GJ-06-5'	F7K190152-11	KCKEL1AD	9KCKEL10	7327115
		TSB-GJ-06-5'	F7K190152-11	KCKEL1AC	9KCKEL10	7327116
		TSB-GJ-06-5'	F7K190152-11	KCKEL1AA	9KCKEL10	7327117
		TSB-GR-01-0'	F7K190152-8	KCKEG1AD	9KCKEG10	7327115
		TSB-GR-01-0'	F7K190152-8	KCKEG1AC	9KCKEG10	7327116
		TSB-GR-01-0'	F7K190152-8	KCKEG1AA	9KCKEG10	7327117
		TSB-GR-01-5'	F7K190152-9	KCKEJ1AD	9KCKEJ10	7327115
		TSB-GR-01-5'	F7K190152-9	KCKEJ1AC	9KCKEJ10	7327116
		TSB-GR-01-5'	F7K190152-9	KCKEJ1AA	9KCKEJ10	7327117

## Certificate of Analysis

December 26, 2007

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

Attention: Jerry Everett

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Date Received at Lab	:	November 20, 2007
Sample Type	:	Fifteen (15) Soil / One (1) Water
Project Name	:	Basic Remediation / Tronox Parcel C/D

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### CASE NARRATIVE

#### I. Introduction

On November 20, 2007, one water and fifteen soil samples were received at the TestAmerica Laboratories Richland (TALR) laboratory for radiochemical analysis. Upon receipt at TAL St. Louis, the samples were assigned to Lot Number F7K190152 with the laboratory ID numbers corresponding to the client ID as shown on the cover page.

#### II. Sample Receipt

The samples were received in good condition, and no anomalies were noted during check-in.

#### III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analysis requested was:

**Alpha Spectroscopy**

Thorium-228, -230, -232 by method RICH-RC-5087

Uranium-234, -235, -238 by method RICH-RC-5067

**Gamma Spectroscopy**

Gamma Analysis using Method RICH-RC-5017

**Gas Proportional Detectors**

Radium-228 by method STL RICH-RC-5005

**Alpha Scintillation**

Radium-226 by method STL RICH-RC-5005

#### IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

#### V. Comments

##### SOIL:

##### Alpha Spectroscopy

Thorium-228, -230, -232 by method RICH-RC-5087:

The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

Uranium-234, -235, -238 by method RICH-RC-5067:

The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

##### Gamma Spectroscopy

Gamma Analysis using Method RICH-RC-5017 (Includes Radium 226 and Radium 228)

The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

##### WATER:

##### Alpha Spectroscopy

Thorium-228, -230, -232 by method RICH-RC-5087:

The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

Uranium-234, -235, -238 by method RICH-RC-5067:

The LCS, batch blank, sample and sample duplicate results are within acceptance limits.

##### Gas Proportional Detectors

Radium-228 by method RICH-RC-5005:

There was insufficient sample volume available to process a sample duplicate. Except as noted, the LCS, batch blank, sample and sample duplicate results are within acceptance limits.

##### Alpha Scintillation

Radium-226 by method RICH-RC-5005:

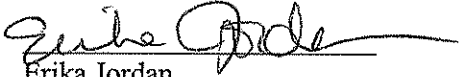
There was insufficient sample volume available to process a sample duplicate. Except as noted, the LCS, batch blank, sample and sample duplicate results are within acceptance limits.

TestAmerica St. Louis  
December 26, 2007

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I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:



Erika Jordan  
Manager, Project Management

## Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 00-02	Gross Alpha (Coprecipitation)	RICH-RC-5021
EPA 903.0	Total Alpha Radium (Ra-226)	RICH-RC-5027
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr-89/90	RICH-RC-5006
ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007

### Uncertainty Estimation

Test America Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship,  $R = \text{constants} * f(x,y,z, \dots)$ . The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties ( $u_i$ ) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty ( $u_c$ ) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ( $S/\sqrt{n}$ ), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.



## Report Definitions

<b>Action Lev</b>	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or STL Richland.
<b>Count Error (#s)</b>	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
<b>Total Uncert (#s) <i>u<sub>c</sub> - Combined Uncertainty.</i></b>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u<sub>c</sub> the combined uncertainty.</i> The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
<b>Lc</b>	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \sqrt{2 * (BkgrndCnt / BkgrndCntMin) / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
<b>Lot-Sample No</b>	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
<b>MDC MDA</b>	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \sqrt{((BkgrndCnt / BkgrndCntMin) / SCntMin) + 2.71 / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
<b>Rst/MDC</b>	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Rst/TotUcert</b>	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the <b>Work Order</b> Number.
<b>RER</b>	The equation Replicate Error Ratio = $(S-D) / [\sqrt{TPUs^2 + TPUd^2}]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 26-Dec-07

TAL Richland

Ordered by Method, Batch No., Client Sample ID.

Report No. : 37880

SDG No: TRNC/D-6RD

Batch	Client Id Work Order	Parameter	Result +- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7327116	HASL-300 Th Mod								
	TSB-FJ-01-0'								
	KCKEM1AC	THORIUM-228	2.12E+00 +- 2.23E-01		pci/g	86%	6.77E-02	1.00E-01	
		THORIUM-230	1.35E+00 +- 1.57E-01		pci/g	86%	4.61E-02	1.00E-01	
		THORIUM-232	1.83E+00 +- 1.97E-01		pci/g	86%	5.44E-02	1.00E-01	
	TSB-FJ-01-0' DUP								
	KCKEM1AF	THORIUM-228	2.25E+00 +- 2.40E-01		pci/g	95%	6.45E-02		0.4
		THORIUM-230	1.15E+00 +- 1.45E-01		pci/g	95%	5.33E-02		1.0
		THORIUM-232	2.07E+00 +- 2.24E-01		pci/g	95%	5.33E-02		0.8
	TSB-FJ-01-10'								
	KCKET1AC	THORIUM-228	1.48E+00 +- 1.70E-01		pci/g	89%	6.37E-02	1.00E-01	
		THORIUM-230	1.16E+00 +- 1.41E-01		pci/g	89%	4.71E-02	1.00E-01	
		THORIUM-232	1.87E+00 +- 2.01E-01		pci/g	89%	4.71E-02	1.00E-01	
	TSB-FJ-08-0'								
	KCKD61AC	THORIUM-228	1.78E+00 +- 1.90E-01		pci/g	96%	6.15E-02	1.00E-01	
		THORIUM-230	9.25E-01 +- 1.16E-01		pci/g	96%	4.19E-02	1.00E-01	
		THORIUM-232	1.89E+00 +- 1.98E-01		pci/g	96%	4.94E-02	1.00E-01	
	TSB-FJ-08-0' DUP								
	KCKD61AE	THORIUM-228	1.60E+00 +- 1.86E-01		pci/g	92%	5.55E-02		0.7
		THORIUM-230	1.04E+00 +- 1.37E-01		pci/g	92%	5.42E-02		0.6
		THORIUM-232	1.77E+00 +- 1.99E-01		pci/g	92%	5.42E-02		0.5
	TSB-FJ-08-10'								
	KCKD81AC	THORIUM-228	1.62E+00 +- 1.87E-01		pci/g	80%	6.35E-02	1.00E-01	
		THORIUM-230	1.18E+00 +- 1.48E-01		pci/g	80%	5.25E-02	1.00E-01	
		THORIUM-232	1.65E+00 +- 1.89E-01		pci/g	80%	5.25E-02	1.00E-01	
	TSB-FR-04-0'								
	KCKEC1AC	THORIUM-228	1.60E+00 +- 1.83E-01		pci/g	98%	5.24E-02	1.00E-01	
		THORIUM-230	1.11E+00 +- 1.40E-01		pci/g	98%	5.12E-02	1.00E-01	
		THORIUM-232	1.69E+00 +- 1.90E-01		pci/g	98%	5.12E-02	1.00E-01	
	TSB-FR-04-0'-FD								
	KCKED1AC	THORIUM-228	1.52E+00 +- 1.85E-01		pci/g	68%	8.08E-02	1.00E-01	
		THORIUM-230	9.70E-01 +- 1.35E-01		pci/g	68%	7.07E-02	1.00E-01	
		THORIUM-232	1.55E+00 +- 1.86E-01		pci/g	68%	5.99E-02	1.00E-01	
	TSB-FR-04-10'								
	KCKEE1AC	THORIUM-228	1.89E+00 +- 2.34E-01		pci/g	53%	8.02E-02	1.00E-01	
		THORIUM-230	1.04E+00 +- 1.55E-01		pci/g	53%	7.83E-02	1.00E-01	
		THORIUM-232	1.32E+00 +- 1.81E-01		pci/g	53%	7.83E-02	1.00E-01	
	TSB-FR-05-0'								
	KCKD91AC	THORIUM-228	1.58E+00 +- 1.74E-01		pci/g	96%	4.35E-02	1.00E-01	

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPU)+sq(TPUD))] as defined by ICPT BOA.

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A2002

Sample Results Summary

Date: 26-Dec-07

TAL Richland

Ordered by Method, Batch No., Client Sample ID.

Report No. : 37880

SDG No: TRNC/D-6RD

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7327116 HASL-300 Th Mod									
TSB-FR-05-0'									
	KCKD91AC	THORIUM-230	1.13E+00 +/- 1.35E-01		pci/g	96%	4.25E-02	1.00E-01	
		THORIUM-232	1.46E+00 +/- 1.63E-01		pci/g	96%	4.25E-02	1.00E-01	
TSB-FR-05-10'									
	KCKEA1AC	THORIUM-228	1.63E+00 +/- 1.78E-01		pci/g	93%	6.27E-02	1.00E-01	
		THORIUM-230	1.14E+00 +/- 1.35E-01		pci/g	93%	4.26E-02	1.00E-01	
		THORIUM-232	1.52E+00 +/- 1.68E-01		pci/g	93%	5.03E-02	1.00E-01	
TSB-GJ-01-0'									
	KCKE11AC	THORIUM-228	1.47E+00 +/- 1.68E-01		pci/g	88%	4.81E-02	1.00E-01	
		THORIUM-230	1.12E+00 +/- 1.38E-01		pci/g	88%	4.69E-02	1.00E-01	
		THORIUM-232	1.44E+00 +/- 1.65E-01		pci/g	88%	4.69E-02	1.00E-01	
TSB-GJ-01-5'									
	KCKE21AC	THORIUM-228	1.86E+00 +/- 1.96E-01		pci/g	95%	6.09E-02	1.00E-01	
		THORIUM-230	1.19E+00 +/- 1.39E-01		pci/g	95%	4.14E-02	1.00E-01	
		THORIUM-232	1.73E+00 +/- 1.84E-01		pci/g	95%	4.14E-02	1.00E-01	
TSB-GJ-06-0'									
	KCKEK1AC	THORIUM-228	2.33E+00 +/- 2.39E-01		pci/g	92%	6.13E-02	1.00E-01	
		THORIUM-230	1.38E+00 +/- 1.59E-01		pci/g	92%	5.35E-02	1.00E-01	
		THORIUM-232	1.86E+00 +/- 1.99E-01		pci/g	92%	4.54E-02	1.00E-01	
TSB-GJ-06-5'									
	KCKEL1AC	THORIUM-228	1.75E+00 +/- 2.03E-01		pci/g	70%	5.94E-02	1.00E-01	
		THORIUM-230	1.12E+00 +/- 1.47E-01		pci/g	70%	5.79E-02	1.00E-01	
		THORIUM-232	1.55E+00 +/- 1.84E-01		pci/g	70%	5.79E-02	1.00E-01	
TSB-GR-01-0'									
	KCKEG1AC	THORIUM-228	2.23E+00 +/- 2.42E-01		pci/g	70%	8.30E-02	1.00E-01	
		THORIUM-230	1.28E+00 +/- 1.60E-01		pci/g	70%	5.65E-02	1.00E-01	
		THORIUM-232	1.97E+00 +/- 2.19E-01		pci/g	70%	6.67E-02	1.00E-01	
TSB-GR-01-5'									
	KCKEJ1AC	THORIUM-228	1.67E+00 +/- 1.96E-01		pci/g	86%	5.98E-02	1.00E-01	
		THORIUM-230	1.16E+00 +/- 1.50E-01		pci/g	86%	5.84E-02	1.00E-01	
		THORIUM-232	1.46E+00 +/- 1.77E-01		pci/g	86%	5.84E-02	1.00E-01	
7327115 HASL-300 U Mod									
TSB-FJ-01-0'									
	KCKEM1AD	URANIUM-233/234	6.10E-01 +/- 6.67E-02		pci/g	96%	1.60E-02	6.00E-01	
		URANIUM-235/236	1.85E-02 +/- 8.03E-03	J	pci/g	96%	1.60E-02	6.00E-01	
		URANIUM-238	4.61E-01 +/- 5.39E-02	J	pci/g	96%	1.91E-02	6.00E-01	
TSB-FJ-01-0' DUP									
	KCKEM1AG	URANIUM-233/234	7.79E-01 +/- 8.93E-02		pci/g	95%	1.83E-02		1.5

TAL Richland

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

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J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

### Sample Results Summary

Date: 26-Dec-07

#### TAL Richland

Ordered by Method, Batch No., Client Sample ID.

Report No. : 37880

SDG No: TRNC/D-6RD

Batch	Client Id Work Order	Parameter	Result +- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7327115	HASL-300 U Mod								
	TSB-FJ-01-0' DUP								
	KCKEM1AG	URANIUM-235/236	3.04E-02 +- 1.23E-02		pci/g	95%	2.43E-02		0.8
		URANIUM-238	4.78E-01 +- 6.20E-02		pci/g	95%	1.83E-02		0.2
	TSB-FJ-01-10'								
	KCKET1AD	URANIUM-233/234	3.44E-01 +- 4.55E-02	J	pci/g	80%	1.75E-02	6.00E-01	
		URANIUM-235/236	1.39E-02 +- 7.45E-03	U	pci/g	80%	1.75E-02	6.00E-01	
		URANIUM-238	1.86E-01 +- 3.04E-02	J	pci/g	80%	1.75E-02	6.00E-01	
	TSB-FJ-08-0'								
	KCKD61AD	URANIUM-233/234	2.51E-01 +- 3.40E-02	J	pci/g	100%	1.42E-02	6.00E-01	
		URANIUM-235/236	-5.91E-04 +- 3.01E-03	U	pci/g	100%	1.42E-02	6.00E-01	
		URANIUM-238	2.45E-01 +- 3.34E-02	J	pci/g	100%	1.42E-02	6.00E-01	
	TSB-FJ-08-10'								
	KCKD81AD	URANIUM-233/234	1.18E+00 +- 1.15E-01		pci/g	93%	1.90E-02	6.00E-01	
		URANIUM-235/236	3.56E-02 +- 1.15E-02	J	pci/g	93%	1.90E-02	6.00E-01	
		URANIUM-238	7.20E-01 +- 7.68E-02		pci/g	93%	2.12E-02	6.00E-01	
	TSB-FR-04-0'								
	KCKEC1AD	URANIUM-233/234	5.27E-01 +- 5.91E-02	J	pci/g	94%	1.78E-02	6.00E-01	
		URANIUM-235/236	5.65E-03 +- 4.51E-03	U	pci/g	94%	1.50E-02	6.00E-01	
		URANIUM-238	2.82E-01 +- 3.76E-02	J	pci/g	94%	1.50E-02	6.00E-01	
	TSB-FR-04-0'-FD								
	KCKED1AD	URANIUM-233/234	6.62E-01 +- 7.22E-02		pci/g	88%	1.63E-02	6.00E-01	
		URANIUM-235/236	1.36E-02 +- 6.92E-03	U	pci/g	88%	1.63E-02	6.00E-01	
		URANIUM-238	3.77E-01 +- 4.73E-02	J	pci/g	88%	1.63E-02	6.00E-01	
	TSB-FR-04-10'								
	KCKEE1AD	URANIUM-233/234	5.50E-01 +- 6.15E-02	J	pci/g	89%	1.54E-02	6.00E-01	
		URANIUM-235/236	6.43E-03 +- 4.62E-03	U	pci/g	89%	1.54E-02	6.00E-01	
		URANIUM-238	2.96E-01 +- 3.92E-02	J	pci/g	89%	1.54E-02	6.00E-01	
	TSB-FR-05-0'								
	KCKD91AD	URANIUM-233/234	2.97E-01 +- 3.90E-02	J	pci/g	96%	1.97E-02	6.00E-01	
		URANIUM-235/236	7.48E-03 +- 5.54E-03	U	pci/g	96%	1.97E-02	6.00E-01	
		URANIUM-238	1.71E-01 +- 2.72E-02	J	pci/g	96%	2.43E-02	6.00E-01	
	TSB-FR-05-10'								
	KCKEA1AD	URANIUM-233/234	8.74E-01 +- 9.00E-02		pci/g	87%	2.76E-02	6.00E-01	
		URANIUM-235/236	2.62E-02 +- 9.78E-03	J	pci/g	87%	1.61E-02	6.00E-01	
		URANIUM-238	5.59E-01 +- 6.33E-02	J	pci/g	87%	2.31E-02	6.00E-01	
	TSB-FR-05-10' DUP								
	KCKEA1AE	URANIUM-233/234	7.79E-01 +- 8.45E-02		pci/g	71%	2.14E-02		0.8
		URANIUM-235/236	1.82E-02 +- 8.64E-03		pci/g	71%	1.81E-02		0.6

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RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUD))] as defined by ICPT BOA.  
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

Sample Results Summary

Date: 26-Dec-07

TAL Richland

Ordered by Method, Batch No., Client Sample ID.

Report No. : 37880

SDG No: TRNC/D-6RD

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7327115	HASL-300 U Mod								
	TSB-FR-05-10' DUP								
	KCKEA1AE	URANIUM-238	4.71E-01 +/- 5.78E-02		pci/g	71%	3.25E-02		1.0
	TSB-GJ-01-0'								
	KCKE11AD	URANIUM-233/234	4.39E-01 +/- 5.26E-02	J	pci/g	92%	2.11E-02	6.00E-01	
		URANIUM-235/236	8.68E-03 +/- 5.90E-03	U	pci/g	92%	1.89E-02	6.00E-01	
		URANIUM-238	2.96E-01 +/- 3.98E-02	J	pci/g	92%	1.89E-02	6.00E-01	
	TSB-GJ-01-5'								
	KCKE21AD	URANIUM-233/234	5.45E-01 +/- 6.13E-02	J	pci/g	83%	2.37E-02	6.00E-01	
		URANIUM-235/236	2.52E-02 +/- 9.37E-03	J	pci/g	83%	1.54E-02	6.00E-01	
		URANIUM-238	2.35E-01 +/- 3.38E-02	J	pci/g	83%	2.37E-02	6.00E-01	
	TSB-GJ-06-0'								
	KCKEK1AD	URANIUM-233/234	5.59E-01 +/- 6.13E-02	J	pci/g	90%	1.46E-02	6.00E-01	
		URANIUM-235/236	2.74E-02 +/- 9.40E-03	J	pci/g	90%	1.46E-02	6.00E-01	
		URANIUM-238	3.18E-01 +/- 4.04E-02	J	pci/g	90%	1.72E-02	6.00E-01	
	TSB-GJ-06-5'								
	KCKEL1AD	URANIUM-233/234	3.26E-01 +/- 4.44E-02	J	pci/g	77%	1.81E-02	6.00E-01	
		URANIUM-235/236	3.03E-03 +/- 3.87E-03	U	pci/g	77%	1.81E-02	6.00E-01	
		URANIUM-238	2.84E-01 +/- 4.04E-02	J	pci/g	77%	1.81E-02	6.00E-01	
	TSB-GR-01-0'								
	KCKEG1AD	URANIUM-233/234	4.57E-01 +/- 5.73E-02	J	pci/g	74%	1.90E-02	6.00E-01	
		URANIUM-235/236	-7.95E-04 +/- 4.06E-03	U	pci/g	74%	1.90E-02	6.00E-01	
		URANIUM-238	3.42E-01 +/- 4.67E-02	J	pci/g	74%	1.90E-02	6.00E-01	
	TSB-GR-01-5'								
	KCKEJ1AD	URANIUM-233/234	2.44E-01 +/- 3.50E-02	J	pci/g	93%	2.29E-02	6.00E-01	
		URANIUM-235/236	1.67E-02 +/- 7.62E-03	J	pci/g	93%	1.60E-02	6.00E-01	
		URANIUM-238	1.63E-01 +/- 2.69E-02	J	pci/g	93%	1.60E-02	6.00E-01	
7327118	HASL-300 Th Mod								
	RINSATE 3 DUP								
	KCFM81AF	THORIUM-228	4.81E-02 +/- 4.92E-02	U	pci/l	93%	2.30E-01		1.0
		THORIUM-230	3.75E-02 +/- 4.79E-02	U	pci/l	93%	2.25E-01		0.7
		THORIUM-232	-9.39E-03 +/- 4.79E-02	U	pci/l	93%	2.25E-01		0.0
	RINSATE4								
	KCKE91AD	THORIUM-228	9.23E-03 +/- 4.97E-02	U	pci/l	94%	3.17E-01	1.00E+00	
		THORIUM-230	3.60E-02 +/- 4.60E-02	U	pci/l	94%	2.16E-01	1.00E+00	
		THORIUM-232	-9.01E-03 +/- 4.59E-02	U	pci/l	94%	2.16E-01	1.00E+00	
7327123	HASL-300 U Mod								
	RINSATE 3 DUP								
	KCFM81AG	URANIUM-233/234	3.83E-02 +/- 3.92E-02	U	pci/l	79%	1.83E-01		0.2

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptSTLRchSaSum J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 mary2 V5.1.5 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by  
 A2002 gamma scan software.

**Sample Results Summary**

Date: 26-Dec-07

**TAL Richland**

Ordered by Method, Batch No., Client Sample ID.

Report No. : 37880

SDG No: TRNC/D-5RD

Batch	Client Id Work Order	Parameter	Result +- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7327123	HASL-300 U Mod								
	RINSATE 3 DUP								
	KCFM81AG	URANIUM-235/236	3.83E-02 +- 3.92E-02	U	pci/l	79%	1.83E-01		0.9
		URANIUM-238	0.00E+00 +- 3.91E-02	U	pci/l	79%	1.83E-01		0.1
	RINSATE4								
	KCKE91AE	URANIUM-233/234	3.28E-02 +- 3.36E-02	U	pci/l	88%	1.57E-01	1.00E+00	
		URANIUM-235/236	0.00E+00 +- 3.35E-02	U	pci/l	88%	1.57E-01	1.00E-01	
		URANIUM-238	3.28E-02 +- 3.36E-02	U	pci/l	88%	1.57E-01	1.00E+00	
7327117	EPA 901.1								
	TSB-FJ-01-0'								
	KCKEM1AA	RADIUM-226	1.04E+00 +- 7.82E-02		pCi/g		7.69E-02		
		RADIUM-228	1.84E+00 +- 1.57E-01		pCi/g		1.65E-01		
	TSB-FJ-01-0' DUP								
	KCKEM1AE	RADIUM-226	9.84E-01 +- 8.48E-02		pCi/g		7.29E-02		
		RADIUM-228	1.93E+00 +- 1.61E-01		pCi/g		1.48E-01		
	TSB-FJ-01-10'								
	KCKET1AA	RADIUM-226	9.01E-01 +- 7.50E-02		pCi/g		6.52E-02		
		RADIUM-228	1.79E+00 +- 1.40E-01		pCi/g		1.23E-01		
	TSB-FJ-08-0'								
	KCKD61AA	RADIUM-226	9.03E-01 +- 8.21E-02		pCi/g		7.26E-02		
		RADIUM-228	1.75E+00 +- 1.67E-01		pCi/g		1.45E-01		
	TSB-FJ-08-10'								
	KCKD81AA	RADIUM-226	9.72E-01 +- 8.40E-02		pCi/g		7.20E-02		
		RADIUM-228	1.90E+00 +- 1.78E-01		pCi/g		1.36E-01		
	TSB-FR-04-0'								
	KCKEC1AA	RADIUM-226	1.03E+00 +- 7.85E-02		pCi/g		7.62E-02		
		RADIUM-228	2.02E+00 +- 1.73E-01		pCi/g		1.56E-01		
	TSB-FR-04-0' DUP								
	KCKEC1AE	RADIUM-226	7.43E-01 +- 6.42E-02		pCi/g		6.04E-02		
		RADIUM-228	1.75E+00 +- 1.39E-01		pCi/g		1.21E-01		
	TSB-FR-04-0'-FD								
	KCKED1AA	RADIUM-226	8.14E-01 +- 6.83E-02		pCi/g		6.01E-02		
		RADIUM-228	1.73E+00 +- 1.44E-01		pCi/g		1.12E-01		
	TSB-FR-04-10'								
	KCKEE1AA	RADIUM-226	7.98E-01 +- 7.47E-02		pCi/g		6.03E-02		
		RADIUM-228	1.48E+00 +- 1.64E-01		pCi/g		1.33E-01		
	TSB-FR-05-0'								
	KCKD91AA	RADIUM-226	8.71E-01 +- 8.02E-02		pCi/g		7.24E-02		
		RADIUM-228	1.77E+00 +- 1.54E-01		pCi/g		1.47E-01		
	TSB-FR-05-10'								

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPuD))] as defined by ICPT BOA.  
 rptSTLRchSaSum U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by  
 mary2 V5.1.5 gamma scan software.  
 A2002

### Sample Results Summary

Date: 26-Dec-07

#### TAL Richland

Ordered by Method, Batch No., Client Sample ID.

Report No. : 37880

SDG No: TRNC/D-6RD

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7327117	EPA 901.1								
	TSB-FR-05-10'								
	KCKEA1AA	RADIUM-226	1.07E+00 +/- 8.98E-02		pCi/g		6.98E-02		
		RADIUM-228	1.74E+00 +/- 1.47E-01		pCi/g		1.44E-01		
	TSB-GJ-01-0'								
	KCKE11AA	RADIUM-226	1.01E+00 +/- 7.41E-02		pCi/g		6.29E-02		
		RADIUM-228	1.87E+00 +/- 1.50E-01		pCi/g		1.14E-01		
	TSB-GJ-01-5'								
	KCKE21AA	RADIUM-226	9.14E-01 +/- 7.76E-02		pCi/g		6.63E-02		
		RADIUM-228	1.58E+00 +/- 1.74E-01		pCi/g		1.39E-01		
	TSB-GJ-06-0'								
	KCKEK1AA	RADIUM-226	9.91E-01 +/- 8.49E-02		pCi/g		7.38E-02		
		RADIUM-228	1.93E+00 +/- 1.74E-01		pCi/g		1.49E-01		
	TSB-GJ-06-5'								
	KCKEL1AA	RADIUM-226	1.00E+00 +/- 7.55E-02		pCi/g		6.96E-02		
		RADIUM-228	1.68E+00 +/- 1.49E-01		pCi/g		1.37E-01		
	TSB-GR-01-0'								
	KCKEG1AA	RADIUM-226	1.05E+00 +/- 9.07E-02		pCi/g		8.20E-02		
		RADIUM-228	1.70E+00 +/- 1.66E-01		pCi/g		1.59E-01		
	TSB-GR-01-5'								
	KCKEJ1AA	RADIUM-226	8.64E-01 +/- 7.51E-02		pCi/g		7.30E-02		
		RADIUM-228	1.68E+00 +/- 1.50E-01		pCi/g		1.41E-01		
7327119	EPA 903.1								
	RINSATE4								
	KCKE91AA	RADIUM-226	1.30E-02 +/- 3.21E-02	U	pci/l	100%	1.26E-01	1.00E+00	
7327122	EPA 904.0								
	RINSATE4								
	KCKE91AC	RADIUM-228	2.78E-01 +/- 1.13E-01	U	pci/l	90%	4.78E-01	3.00E+00	
No. of Results:		150							

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RER2 - Replicate Error Ratio =  $(S-D)/[\sqrt{(\text{sq}(\text{TPUs})+\text{sq}(\text{TPUd}))}]$  as defined by ICPT BOA.  
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

QC Results Summary

Date: 26-Dec-07

TAL Richland

Ordered by Method, Batch No, QC Type,.

Report No. : 37880

SDG No.: TRNC/D-6RD

Batch	Work Order	Parameter	Result +- Uncertainty ( 1s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC MDA
<b>HASL-300 Th Mod</b>									
7327116 BLANK QC,									
	KCR6R1AA	THORIUM-228	9.14E-03 +- 1.17E-02	U	pci/g	95%			5.47E-02
		THORIUM-230	0.00E+00 +- 1.14E-02	U	pci/g	95%			5.34E-02
		THORIUM-232	0.00E+00 +- 1.14E-02	U	pci/g	95%			5.34E-02
7327116 LCS,									
	KCR6R1AC	THORIUM-230	2.52E+00 +- 2.53E-01		pci/g	94%	110%	0.1	5.27E-02
<b>HASL-300 U Mod</b>									
7327115 BLANK QC,									
	KCR6K1AA	URANIUM-233/234	-2.22E-03 +- 3.91E-03	U	pci/g	79%			2.33E-02
		URANIUM-235/236	-7.39E-04 +- 3.77E-03	U	pci/g	79%			1.77E-02
		URANIUM-238	-7.39E-04 +- 3.77E-03	U	pci/g	79%			1.77E-02
7327115 LCS,									
	KCR6K1AC	URANIUM-233/234	8.09E-01 +- 8.22E-02		pci/g	99%	94%	-0.1	1.45E-02
		URANIUM-238	8.97E-01 +- 8.95E-02		pci/g	99%	99%	0.0	1.45E-02
<b>HASL-300 Th Mod</b>									
7327118 BLANK QC,									
	KCR641AA	THORIUM-228	-1.90E-02 +- 4.93E-02	U	pci/l	95%			2.68E-01
		THORIUM-230	3.70E-02 +- 4.73E-02	U	pci/l	95%			2.22E-01
		THORIUM-232	-9.25E-03 +- 4.72E-02	U	pci/l	95%			2.22E-01
7327118 LCS,									
	KCR641AC	THORIUM-230	1.21E+01 +- 1.20E+00		pci/l	94%	106%	0.1	2.22E-01
<b>HASL-300 U Mod</b>									
7327123 BLANK QC,									
	KCR7M1AA	URANIUM-233/234	-2.83E-02 +- 3.82E-02	U	pci/l	88%			2.43E-01
		URANIUM-235/236	0.00E+00 +- 3.61E-02	U	pci/l	88%			1.69E-01
		URANIUM-238	-7.08E-03 +- 3.61E-02	U	pci/l	88%			1.69E-01
7327123 LCS,									
	KCR7M1AC	URANIUM-233/234	8.63E+00 +- 8.86E-01		pci/l	82%	98%	0.0	1.60E-01
		URANIUM-238	1.02E+01 +- 1.02E+00		pci/l	82%	111%	0.1	2.11E-01
<b>EPA 901.1</b>									
7327117 BLANK QC,									
	KCR6V1AA	RADIUM-226	-1.39E-01 +- 7.62E-02	U	pCi/g				1.71E-01
		RADIUM-228	3.10E-01 +- 1.42E-01	U	pCi/g				3.10E-01
7327117 LCS,									
	KCR6V1AC	CESIUM-137	8.32E+00 +- 5.67E-01		pCi/g		104%	0.0	6.43E-02
<b>EPA 903.1</b>									
7327119 BLANK QC,									
	KCR7F1AA	RADIUM-226	-5.14E-03 +- 2.14E-02	U	pci/l	100%			8.95E-02
7327119 LCS,									
	KCR7F1AC	RADIUM-226	1.29E+00 +- 1.55E-01		pci/l	100%	93%	-0.1	9.06E-02
<b>EPA 904.0</b>									

TAL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.



**QC Results Summary**

Date: 26-Dec-07

**TAL Richland**

Ordered by Method, Batch No, QC Type,.

**Report No. : 37880**

**SDG No.: TRNC/D-7RD**

Batch	Work Order	Parameter	Result +- Uncertainty ( 1s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC MDA
7327122	BLANK QC, KCR7G1AA	RADIUM-228	1.85E-01 +- 1.10E-01	U	pci/l	91%			4.87E-01
7327122	LCS, KCR7G1AC	RADIUM-228	4.34E+00 +- 3.37E-01		pci/l	90%	88%	-0.1	5.27E-01
No. of Results: 25									

TAL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I  
SAMPLE RESULTS

Date: 26-Dec-07

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-16  
 Client Sample ID: RINSATE4  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 2:00:00 PM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/TotUcert Rst/Total	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327118 HASL-300 Th Mod												
THORIUM-228	9.23E-03	U	5.0E-02	5.0E-02	3.17E-01	pci/l	94%	0.03	12/10/07 06:45 a	0.2001	L	ALP176
THORIUM-230	3.60E-02	U	4.6E-02	4.6E-02	2.16E-01	pci/l	94%	0.17	12/10/07 06:45 a	0.2001	L	ALP176
THORIUM-232	-9.01E-03	U	4.6E-02	4.6E-02	2.16E-01	pci/l	94%	-0.04	12/10/07 06:45 a	0.2001	L	ALP176
Work Order: KCKE91AD Report DB ID: 9KCKE910												
Batch: 7327119 EPA 903.1												
RADIUM-226	1.30E-02	U	3.2E-02	3.2E-02	1.26E-01	pci/l	100%	0.1	12/17/07 02:58 p	0.9942	L	ASCGSA
Work Order: KCKE91AA Report DB ID: 9KCKE910												
Batch: 7327122 EPA 904.0												
RADIUM-228	2.78E-01	U	1.1E-01	1.1E-01	4.78E-01	pci/l	90%	0.58	12/19/07 06:37 a	0.9942	L	GPC5B
Work Order: KCKE91AC Report DB ID: 9KCKE910												
Batch: 7327123 HASL-300 U Mod												
URANIUM-233/234	3.28E-02	U	3.3E-02	3.4E-02	1.57E-01	pci/l	88%	0.21	12/10/07 02:47 p	0.2002	L	ALP8
URANIUM-235/236	0.00E+00	U	0.0E+00	3.3E-02	1.57E-01	pci/l	88%	0.	12/10/07 02:47 p	0.2002	L	ALP8
URANIUM-238	3.28E-02	U	3.3E-02	3.4E-02	1.57E-01	pci/l	88%	0.21	12/10/07 02:47 p	0.2002	L	ALP8
Work Order: KCKE91AE Report DB ID: 9KCKE910												
Ratio U-234/238 = 1.0												

TAL Richland MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
 V5.1.5 A2002

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

**Lab Name:** TA Richland **SDG:** TRNC/D-6RD **Collection Date:** 11/16/2007 2:00:00 PM  
**Lot-Sample No.:** F7K190152-16 **Report No.:** 37880 **Received Date:** 11/19/2007 8:45:00 AM  
**Client Sample ID:** RINSATE4 **COC No.:** **Matrix:** WATER W  
 BASIC REMEDIATION - Tronox Parcel C/D Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 1 s)	Total Uncert( 1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
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No. of Results: 8    Comments:

TAL Richland    MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample    U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
 V5.1.5 A2002

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-12  
 Client Sample ID: TSB-FJ-01-0'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Matrix: Solid  
 Collection Date: 11/16/2007 9:16:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Work Order: KCKEM1AD Report DB ID: 9KCKEM10												
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	<b>6.10E-01</b>		4.4E-02	6.7E-02	1.60E-02	pci/g	96%	(38.)	12/17/07 02:26 p	2.01	2.01	ALP71
							3.67E-03	(9.2)		G		
URANIUM-235/236	<b>1.85E-02</b>	J	7.9E-03	8.0E-03	1.60E-02	pci/g	96%	(1.2)	12/17/07 02:26 p	2.01	2.01	ALP71
							3.67E-03	(2.3)		G		
URANIUM-238	<b>4.61E-01</b>	J	3.9E-02	5.4E-02	1.91E-02	pci/g	96%	(24.2)	12/17/07 02:26 p	2.01	2.01	ALP71
							5.18E-03	(8.6)		G		

Ratio U-234/238 = 1.3												
Work Order: KCKEM1AC Report DB ID: 9KCKEM10												
Batch: 7327116	HASL-300 Th Mod											
THORIUM-228	<b>2.12E+00</b>		1.5E-01	2.2E-01	6.77E-02	pci/g	86%	(31.3)	12/11/07 03:25 p	1.03	1.03	ALP176
							2.05E-02	(9.5)		G		
THORIUM-230	<b>1.35E+00</b>		1.1E-01	1.6E-01	4.61E-02	pci/g	86%	(29.4)	12/11/07 03:25 p	1.03	1.03	ALP176
							1.00E-02	(8.6)		G		
THORIUM-232	<b>1.83E+00</b>		1.3E-01	2.0E-01	5.44E-02	pci/g	86%	(33.7)	12/11/07 03:25 p	1.03	1.03	ALP176
							1.42E-02	(9.3)		G		

Work Order: KCKEM1AA Report DB ID: 9KCKEM10												
Batch: 7327117	EPA 901.1											
RADIUM-226	<b>1.04E+00</b>		7.8E-02	7.8E-02	7.69E-02	pCi/g		(13.6)	12/17/07 10:40 a	48.7	48.7	GER6\$1
								(13.3)		g		
RADIUM-228	<b>1.84E+00</b>		1.6E-01	1.6E-01	1.65E-01	pCi/g		(11.1)	12/17/07 10:40 a	48.7	48.7	GER6\$1
								(11.7)		g		

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 J Qual - No UJ< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
 V5.1.5 A2002

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-13  
 Client Sample ID: TSB-FJ-01-10'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 9:50:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

BASIC REMEDIATION - Tronox Parcel C/D

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115 HASL-300 U Mod												
Work Order: KCKET1AD Report DB ID: 9KCKET10												
URANIUM-233/234	3.44E-01	J	3.6E-02	4.6E-02	1.75E-02	pci/g	80%	(19.6)	12/17/07 06:05 p	2.01	2.01	ALP1
							3.81E-03	6.00E-01		G		
URANIUM-235/236	1.39E-02	U	7.4E-03	7.5E-03	1.75E-02	pci/g	80%	0.79	12/17/07 06:05 p	2.01	2.01	ALP1
							3.81E-03	6.00E-01		G		
URANIUM-238	1.86E-01	J	2.6E-02	3.0E-02	1.75E-02	pci/g	80%	(10.6)	12/17/07 06:05 p	2.01	2.01	ALP1
							3.81E-03	6.00E-01		G		

Ratio U-234/238 = 1.8

Batch:	7327116	HASL-300 Th Mod	Work Order:	KCKET1AC	Report DB ID:	9KCKET10					
THORIUM-228	1.48E+00	1.2E-01	1.7E-01	6.37E-02	pci/g	89%	(23.2)	12/11/07 07:13 p	1.01	1.01	ALP171
							1.82E-02	1.00E-01		G	
THORIUM-230	1.16E+00	1.1E-01	1.4E-01	4.71E-02	pci/g	89%	(24.6)	12/11/07 07:13 p	1.01	1.01	ALP171
							1.02E-02	1.00E-01		G	
THORIUM-232	1.87E+00	1.4E-01	2.0E-01	4.71E-02	pci/g	89%	(39.6)	12/11/07 07:13 p	1.01	1.01	ALP171
							1.02E-02	1.00E-01		G	

Batch:	7327117	EPA 901.1	Work Order:	KCKET1AA	Report DB ID:	9KCKET10				
RADIUM-226	9.01E-01	7.5E-02	7.5E-02	6.52E-02	pCi/g	(13.8)	12/17/07 10:42 a	51.0	51.0	GER8\$1
							(12.)	g		
RADIUM-228	1.79E+00	1.4E-01	1.4E-01	1.23E-01	pCi/g	(14.6)	12/17/07 10:42 a	51.0	51.0	GER8\$1
							(12.8)	g		

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rpt\$TLRchSample J Qual - No UJ< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-1  
 Client Sample ID: TSB-FJ-08-0'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 6:40:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

BASIC REMEDIATION - Tronox Parcel C/D

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC\MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	<b>2.51E-01</b>	J	2.7E-02	3.4E-02	1.42E-02	pci/g	100%	(17.7)	12/17/07 02:24 p	2.0	G	ALP1
URANIUM-235/236	<b>-5.91E-04</b>	U	3.0E-03	3.0E-03	1.42E-02	pci/g	100%	-0.04	12/17/07 02:24 p	2.0	G	ALP1
URANIUM-238	<b>2.45E-01</b>	J	2.7E-02	3.3E-02	1.42E-02	pci/g	100%	(17.3)	12/17/07 02:24 p	2.0	G	ALP1

Work Order: KCKD61AD Report DB ID: 9KCKD610  
 Ratio U-234/238 = 1.0

Batch:	Work Order:	MDC\MDA	Rpt Unit	Yield	Rst/MDC	Analysis	Aliquot Size	Primary Detector
7327116	HASL-300 Th Mod	KCKD61AC						
THORIUM-228	<b>1.78E+00</b>	6.15E-02	pci/g	96%	(29.)	12/10/07 10:33 a	1.01	ALP176
THORIUM-230	<b>9.25E-01</b>	4.19E-02	pci/g	96%	(22.1)	12/10/07 10:33 a	1.01	ALP176
THORIUM-232	<b>1.89E+00</b>	4.94E-02	pci/g	96%	(38.3)	12/10/07 10:33 a	1.01	ALP176

Work Order: KCKD61AA Report DB ID: 9KCKD610

Batch:	Work Order:	MDC\MDA	Rpt Unit	Yield	Rst/MDC	Analysis	Aliquot Size	Primary Detector
7327117	EPA 901.1	KCKD61AA						
RADIUM-226	<b>9.03E-01</b>	7.26E-02	pCi/g	(12.4)	12/14/07 12:52 p	52.3	G	GER4\$1
RADIUM-228	<b>1.75E+00</b>	1.45E-01	pCi/g	(11.)	12/14/07 12:52 p	52.3	G	GER4\$1

No. of Results: 8 Comments:

TAL Richland MDC\MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 J Qual - No Uj< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-2  
 Client Sample ID: TSB-FJ-08-10'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 7:05:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115 HASL-300 U Mod												
URANIUM-233/234	<b>1.18E+00</b>		6.3E-02	1.2E-01	1.90E-02	pc/g	93%	(62.)	12/17/07 02:24 p	2.01	2.01	ALP2
					4.94E-03		6.00E-01	(10.2)		G		
URANIUM-235/236	<b>3.56E-02</b>	J	1.1E-02	1.2E-02	1.90E-02	pc/g	93%	(1.9)	12/17/07 02:24 p	2.01	2.01	ALP2
					4.94E-03		6.00E-01	(3.1)		G		
URANIUM-238	<b>7.20E-01</b>		4.9E-02	7.7E-02	2.12E-02	pc/g	93%	(34.)	12/17/07 02:24 p	2.01	2.01	ALP2
					6.05E-03		6.00E-01	(9.4)		G		

Ratio U-234/238 = 1.6												
Batch: 7327116 HASL-300 Th Mod												
THORIUM-228	<b>1.62E+00</b>		1.4E-01	1.9E-01	6.35E-02	pc/g	80%	(25.6)	12/10/07 02:17 p	1.0	1.0	ALP171
					1.65E-02		1.00E-01	(8.7)		G		
THORIUM-230	<b>1.18E+00</b>		1.1E-01	1.5E-01	5.25E-02	pc/g	80%	(22.5)	12/10/07 02:17 p	1.0	1.0	ALP171
					1.14E-02		1.00E-01	(8.)		G		
THORIUM-232	<b>1.65E+00</b>		1.3E-01	1.9E-01	5.25E-02	pc/g	80%	(31.5)	12/10/07 02:17 p	1.0	1.0	ALP171
					1.14E-02		1.00E-01	(8.8)		G		

Batch: 7327117 EPA 901.1												
RADIUM-226	<b>9.72E-01</b>		8.4E-02	8.4E-02	7.20E-02	pCi/g		(13.5)	12/15/07 10:51 a	51.9	51.9	GER4\$1
								(11.6)		g		
RADIUM-228	<b>1.90E+00</b>		1.8E-01	1.8E-01	1.36E-01	pCi/g		(14.)	12/15/07 10:51 a	51.9	51.9	GER4\$1
								(10.7)		g		

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 J Qual - No Uj< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
 V5.1.5 A2002

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-5  
 Client Sample ID: TSB-FR-04-0'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 8:15:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Work Order: KCKEC1AD Report DB ID: 9KCKEC10												
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	5.27E-01	J	4.1E-02	5.9E-02	1.78E-02	pci/g	94%	(29.7)	12/17/07 02:25 p		2.0	ALP6
							4.62E-03	(8.9)			G	
URANIUM-235/236	5.65E-03	U	4.5E-03	4.5E-03	1.50E-02	pci/g	94%	0.38	12/17/07 02:25 p		2.0	ALP6
							3.27E-03	(1.3)			G	
URANIUM-238	2.82E-01	J	3.0E-02	3.8E-02	1.50E-02	pci/g	94%	(18.7)	12/17/07 02:25 p		2.0	ALP6
							3.27E-03	(7.5)			G	

Ratio U-234/238 = 1.9												
Work Order: KCKEC1AC Report DB ID: 9KCKEC10												
Batch: 7327116	HASL-300 Th Mod											
THORIUM-228	1.60E+00		1.3E-01	1.8E-01	5.24E-02	pci/g	98%	(30.4)	12/10/07 02:17 p		1.01	ALP177
							1.14E-02	(8.7)			G	
THORIUM-230	1.11E+00		1.1E-01	1.4E-01	5.12E-02	pci/g	98%	(21.7)	12/10/07 02:17 p		1.01	ALP177
							1.11E-02	(7.9)			G	
THORIUM-232	1.69E+00		1.3E-01	1.9E-01	5.12E-02	pci/g	98%	(33.)	12/10/07 02:17 p		1.01	ALP177
							1.11E-02	(8.9)			G	

Work Order: KCKEC1AA Report DB ID: 9KCKEC10												
Batch: 7327117	EPA 901.1											
RADIUM-226	1.03E+00		7.9E-02	7.9E-02	7.62E-02	pCi/g		(13.4)	12/15/07 10:53 a		51.6	GER6\$1
								(13.1)			g	
RADIUM-228	2.02E+00		1.7E-01	1.7E-01	1.56E-01	pCi/g		(12.9)	12/15/07 10:53 a		51.6	GER6\$1
								(11.7)			g	

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLrchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.



FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-6  
 Client Sample ID: TSB-FR-04-0'-FD  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Matrix: Solid SO  
 Collection Date: 11/16/2007 8:15:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Work Order: KCKED1AD Report DB ID: 9KCKED10												
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	<b>6.62E-01</b>		4.7E-02	7.2E-02	1.63E-02	pci/g	88%	(40.7)	12/17/07 02:25 p	2.01	2.01	ALP7
							3.53E-03	(9.2)		G		
URANIUM-235/236	<b>1.36E-02</b>	U	6.8E-03	6.9E-03	1.63E-02	pci/g	88%	0.84	12/17/07 02:25 p	2.01	2.01	ALP7
							3.53E-03	(2.)		G		
URANIUM-238	<b>3.77E-01</b>	J	3.6E-02	4.7E-02	1.63E-02	pci/g	88%	(23.2)	12/17/07 02:25 p	2.01	2.01	ALP7
							3.53E-03	(8.)		G		

Ratio U-234/238 = 1.8												
Work Order: KCKED1AC Report DB ID: 9KCKED10												
Batch: 7327116	HASL-300 Th Mod											
THORIUM-228	<b>1.52E+00</b>		1.4E-01	1.8E-01	8.08E-02	pci/g	68%	(18.8)	12/10/07 06:11 p	1.03	1.03	ALP171
							2.31E-02	(8.2)		G		
THORIUM-230	<b>9.70E-01</b>		1.1E-01	1.3E-01	7.07E-02	pci/g	68%	(13.7)	12/10/07 06:11 p	1.03	1.03	ALP171
							1.84E-02	(7.2)		G		
THORIUM-232	<b>1.55E+00</b>		1.4E-01	1.9E-01	5.99E-02	pci/g	68%	(25.8)	12/10/07 06:11 p	1.03	1.03	ALP171
							1.30E-02	(8.3)		G		

Work Order: KCKED1AA Report DB ID: 9KCKED10												
Batch: 7327117	EPA 901.1											
RADIUM-226	<b>8.14E-01</b>		6.8E-02	6.8E-02	6.01E-02	pCi/g		(13.5)	12/15/07 10:55 a	50.7	50.7	GER10\$1
								(11.9)		g		
RADIUM-228	<b>1.73E+00</b>		1.4E-01	1.4E-01	1.12E-01	pCi/g		(15.5)	12/15/07 10:55 a	50.7	50.7	GER10\$1
								(12.)		g		

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rpt\$TLRchSample J Qual - No UJ< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-7  
 Client Sample ID: TSB-FR-04-10'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 8:50:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115 HASL-300 U Mod												
URANIUM-233/234	<b>5.50E-01</b>	J	4.2E-02	6.2E-02	1.54E-02	pci/g	89%	(35.7)	12/17/07 02:25 p		2.02	ALP8
							3.35E-03	(8.9)			G	
URANIUM-235/236	<b>6.43E-03</b>	U	4.6E-03	4.6E-03	1.54E-02	pci/g	89%	0.42	12/17/07 02:25 p		2.02	ALP8
							3.35E-03	(1.4)			G	
URANIUM-238	<b>2.96E-01</b>	J	3.1E-02	3.9E-02	1.54E-02	pci/g	89%	(19.2)	12/17/07 02:25 p		2.02	ALP8
							3.35E-03	(7.6)			G	

Ratio U-234/238 = 1.9												
Batch: 7327116 HASL-300 Th Mod												
THORIUM-228	<b>1.89E+00</b>		1.8E-01	2.3E-01	8.02E-02	pci/g	53%	(23.6)	12/10/07 06:11 p		1.0	ALP172
							1.74E-02	(8.1)			G	
THORIUM-230	<b>1.04E+00</b>		1.3E-01	1.6E-01	7.83E-02	pci/g	53%	(13.3)	12/10/07 06:11 p		1.0	ALP172
							1.70E-02	(6.7)			G	
THORIUM-232	<b>1.32E+00</b>		1.5E-01	1.8E-01	7.83E-02	pci/g	53%	(16.9)	12/10/07 06:11 p		1.0	ALP172
							1.70E-02	(7.3)			G	

Batch: 7327117 EPA 901.1												
RADIUM-226	<b>7.98E-01</b>		7.5E-02	7.5E-02	6.03E-02	pCi/g		(13.2)	12/15/07 10:56 a		53.2	GER13\$1
								(10.7)			9	
RADIUM-228	<b>1.48E+00</b>		1.6E-01	1.6E-01	1.33E-01	pCi/g		(11.2)	12/15/07 10:56 a		53.2	GER13\$1
								(9.1)			9	

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rpt\$TLRchSample J Qual - No UJ< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-3  
 Client Sample ID: TSB-FR-05-0'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Matrix: Solid SO  
 Collection Date: 11/16/2007 7:35:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115 HASL-300 U Mod												
URANIUM-233/234	<b>2.97E-01</b>	J	3.1E-02	3.9E-02	1.97E-02	pci/g	96%	(15.1)	12/17/07 06:20 p	2.01	2.01	ALP3
							5.62E-03	(7.6)		G		
URANIUM-235/236	<b>7.48E-03</b>	U	5.5E-03	5.5E-03	1.97E-02	pci/g	96%	0.38	12/17/07 06:20 p	2.01	2.01	ALP3
							5.62E-03	(1.4)		G		
URANIUM-238	<b>1.71E-01</b>	J	2.3E-02	2.7E-02	2.43E-02	pci/g	96%	(7.)	12/17/07 06:20 p	2.01	2.01	ALP3
							7.95E-03	(6.3)		G		

Ratio U-234/238 = 1.7												
Work Order: KCKD91AD Report DB ID: 9KCKD910												
Batch: 7327116 HASL-300 Th Mod												
THORIUM-228	<b>1.58E+00</b>		1.2E-01	1.7E-01	4.35E-02	pci/g	96%	(36.3)	12/10/07 02:17 p	1.02	1.02	ALP172
							9.46E-03	(9.1)		G		
THORIUM-230	<b>1.13E+00</b>		1.0E-01	1.3E-01	4.25E-02	pci/g	96%	(26.7)	12/10/07 02:17 p	1.02	1.02	ALP172
							9.23E-03	(8.4)		G		
THORIUM-232	<b>1.46E+00</b>		1.1E-01	1.6E-01	4.25E-02	pci/g	96%	(34.4)	12/10/07 02:17 p	1.02	1.02	ALP172
							9.23E-03	(9.)		G		

Work Order: KCKD91AA Report DB ID: 9KCKD910												
Batch: 7327117 EPA 901.1												
RADIUM-226	<b>8.71E-01</b>		8.0E-02	8.0E-02	7.24E-02	pCi/g		(12.)	12/15/07 10:51 a	50.6	50.6	GER7\$1
								(10.9)		g		
RADIUM-228	<b>1.77E+00</b>		1.5E-01	1.5E-01	1.47E-01	pCi/g		(12.)	12/15/07 10:51 a	50.6	50.6	GER7\$1
								(11.4)		g		

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
 V5.1.5 A2002

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-4  
 Client Sample ID: TSB-FR-05-10'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 7:50:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

BASIC REMEDIATION - Tronox Parcel C/D

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC\MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115	HASL-300 U Mod							Report DB ID: 9KCKEA10				
URANIUM-233/234	<b>8.74E-01</b>		5.4E-02	9.0E-02	2.76E-02	pci/g	87%	(31.6)	12/17/07 06:21 p	2.04	2.04	ALP4
							9.26E-03	(9.7)		G		
URANIUM-235/236	<b>2.62E-02</b>	J	9.5E-03	9.8E-03	1.61E-02	pci/g	87%	(1.6)	12/17/07 06:21 p	2.04	2.04	ALP4
							3.50E-03	(2.7)		G		
URANIUM-238	<b>5.59E-01</b>	J	4.4E-02	6.3E-02	2.31E-02	pci/g	87%	(24.2)	12/17/07 06:21 p	2.04	2.04	ALP4
							7.00E-03	(8.8)		G		

Ratio U-234/238 = 1.6

Batch:	7327116	HASL-300 Th Mod	Work Order:	KCKEA1AC	Report DB ID:	9KCKEA10
THORIUM-228	<b>1.63E+00</b>		1.8E-01	6.27E-02	pci/g	93%
						(25.9)
						(9.1)
THORIUM-230	<b>1.14E+00</b>		1.4E-01	4.26E-02	pci/g	93%
						(26.7)
						(8.4)
THORIUM-232	<b>1.52E+00</b>		1.7E-01	5.03E-02	pci/g	93%
						(30.2)
						(9.1)

Batch:	7327117	EPA 901.1	Work Order:	KCKEA1AA	Report DB ID:	9KCKEA10
RADIUM-226	<b>1.07E+00</b>		9.0E-02	6.98E-02	pCi/g	(15.3)
						(11.9)
RADIUM-228	<b>1.74E+00</b>		1.5E-01	1.44E-01	pCi/g	(12.1)
						(11.8)

No. of Results: 8 Comments:

TAL Richland MDC\MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLrchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-14  
 Client Sample ID: TSB-GJ-01-0'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 11:50:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	<b>4.39E-01</b>	J	3.8E-02	5.3E-02	2.11E-02	pci/g	92%	(20.8)	12/17/07 06:05 p	2.03	2.03	ALP2
						6.02E-03	6.00E-01	(8.3)		G		
URANIUM-235/236	<b>8.68E-03</b>	U	5.9E-03	5.9E-03	1.89E-02	pci/g	92%	0.46	12/17/07 06:05 p	2.03	2.03	ALP2
						4.91E-03	6.00E-01	(1.5)		G		
URANIUM-238	<b>2.96E-01</b>	J	3.2E-02	4.0E-02	1.89E-02	pci/g	92%	(15.7)	12/17/07 06:05 p	2.03	2.03	ALP2
						4.91E-03	6.00E-01	(7.4)		G		

Work Order: KCKE11AD Report DB ID: 9KCKE110

Ratio U-234/238 = 1.5

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327116	HASL-300 Th Mod											
THORIUM-228	<b>1.47E+00</b>		1.2E-01	1.7E-01	4.81E-02	pci/g	88%	(30.5)	12/11/07 07:13 p	1.01	1.01	ALP172
						1.05E-02	1.00E-01	(8.7)		G		
THORIUM-230	<b>1.12E+00</b>		1.1E-01	1.4E-01	4.69E-02	pci/g	88%	(24.)	12/11/07 07:13 p	1.01	1.01	ALP172
						1.02E-02	1.00E-01	(8.1)		G		
THORIUM-232	<b>1.44E+00</b>		1.2E-01	1.7E-01	4.69E-02	pci/g	88%	(30.7)	12/11/07 07:13 p	1.01	1.01	ALP172
						1.02E-02	1.00E-01	(8.7)		G		

Work Order: KCKE11AA Report DB ID: 9KCKE110

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327117	EPA 901.1											
RADIUM-226	<b>1.01E+00</b>		7.4E-02	7.4E-02	6.29E-02	pCi/g		(16.)	12/17/07 10:43 a	50.7	50.7	GER10\$1
								(13.6)		9		
RADIUM-228	<b>1.87E+00</b>		1.5E-01	1.5E-01	1.14E-01	pCi/g		(16.4)	12/17/07 10:43 a	50.7	50.7	GER10\$1
								(12.5)		9		

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-15  
 Client Sample ID: TSB-GJ-01-5'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Matrix: Solid SO  
 Collection Date: 11/16/2007 12:10:00 PM  
 Received Date: 11/19/2007 8:45:00 AM  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115 HASL-300 U Mod												
URANIUM-233/234	<b>5.45E-01</b>	J	4.2E-02	6.1E-02	2.37E-02	pci/g	83%	(23.)	12/17/07 06:21 p	2.03	2.03	ALP5
							7.50E-03	(8.9)		G		
URANIUM-235/236	<b>2.52E-02</b>	J	9.1E-03	9.4E-03	1.54E-02	pci/g	83%	(1.6)	12/17/07 06:21 p	2.03	2.03	ALP5
							3.36E-03	(2.7)		G		
URANIUM-238	<b>2.35E-01</b>	J	2.8E-02	3.4E-02	2.37E-02	pci/g	83%	(9.9)	12/17/07 06:21 p	2.03	2.03	ALP5
							7.50E-03	(7.)		G		

Ratio U-234/238 = 2.3												
Batch: 7327116 HASL-300 Th Mod												
Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
THORIUM-228	<b>1.86E+00</b>		1.3E-01	2.0E-01	6.09E-02	pci/g	95%	(30.6)	12/11/07 07:13 p	1.03	1.03	ALP176
							1.85E-02	(9.5)		G		
THORIUM-230	<b>1.19E+00</b>		1.0E-01	1.4E-01	4.14E-02	pci/g	95%	(28.8)	12/11/07 07:13 p	1.03	1.03	ALP176
							9.00E-03	(8.6)		G		
THORIUM-232	<b>1.73E+00</b>		1.2E-01	1.8E-01	4.14E-02	pci/g	95%	(41.7)	12/11/07 07:13 p	1.03	1.03	ALP176
							9.00E-03	(9.4)		G		

Batch: 7327117 EPA 901.1												
Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
RADIUM-226	<b>9.14E-01</b>		7.8E-02	7.8E-02	6.63E-02	pCi/g		(13.8)	12/17/07 10:44 a	52.5	52.5	GER13\$1
								(11.8)		9		
RADIUM-228	<b>1.58E+00</b>		1.7E-01	1.7E-01	1.39E-01	pCi/g		(11.4)	12/17/07 10:44 a	52.5	52.5	GER13\$1
								(9.1)		9		

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-10  
 Client Sample ID: TSB-GJ-06-0'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 11:15:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC\MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115 HASL-300 U Mod												
URANIUM-233/234	<b>5.59E-01</b>	J	4.1E-02	6.1E-02	1.46E-02	pci/g	90%	(38.4)	12/17/07 02:25 p	2.01	2.01	ALP11
						3.16E-03	6.00E-01	(9.1)			G	
URANIUM-235/236	<b>2.74E-02</b>	J	9.1E-03	9.4E-03	1.46E-02	pci/g	90%	(1.9)	12/17/07 02:25 p	2.01	2.01	ALP11
						3.16E-03	6.00E-01	(2.9)			G	
URANIUM-238	<b>3.18E-01</b>	J	3.1E-02	4.0E-02	1.72E-02	pci/g	90%	(18.5)	12/17/07 02:25 p	2.01	2.01	ALP11
						4.47E-03	6.00E-01	(7.9)			G	

Ratio U-234/238 = 1.8

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC\MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327116 HASL-300 Th Mod												
THORIUM-228	<b>2.33E+00</b>		1.5E-01	2.4E-01	6.13E-02	pci/g	92%	(37.9)	12/11/07 03:25 p	1.01	1.01	ALP171
						1.75E-02	1.00E-01	(9.7)			G	
THORIUM-230	<b>1.38E+00</b>		1.1E-01	1.6E-01	5.35E-02	pci/g	92%	(25.8)	12/11/07 03:25 p	1.01	1.01	ALP171
						1.39E-02	1.00E-01	(8.7)			G	
THORIUM-232	<b>1.86E+00</b>		1.3E-01	2.0E-01	4.54E-02	pci/g	92%	(41.1)	12/11/07 03:25 p	1.01	1.01	ALP171
						9.86E-03	1.00E-01	(9.4)			G	

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC\MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327117 EPA 901.1												
RADIUM-226	<b>9.91E-01</b>		8.5E-02	8.5E-02	7.38E-02	pCi/g		(13.4)	12/17/07 10:37 a		51.0	GER4\$1
								(11.7)			g	
RADIUM-228	<b>1.93E+00</b>		1.7E-01	1.7E-01	1.49E-01	pCi/g		(12.9)	12/17/07 10:37 a		51.0	GER4\$1
								(11.1)			g	

No. of Results: 8 Comments:

TAL Richland MDC\MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rpt\STLRchSample J Qual - No UJ< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc\Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-11  
 Client Sample ID: TSB-GJ-06-5'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Matrix: Solid  
 Collection Date: 11/16/2007 11:25:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Work Order: KCKEL1AD Report DB ID: 9KCKEL10												
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	<b>3.26E-01</b>	J	3.5E-02	4.4E-02	1.81E-02	pci/g	77%	(18.)	12/17/07 02:26 p	2.02	2.02	ALP12
							3.94E-03	(7.3)		G		
URANIUM-235/236	<b>3.03E-03</b>	U	3.9E-03	3.9E-03	1.81E-02	pci/g	77%	0.17	12/17/07 02:26 p	2.02	2.02	ALP12
							3.94E-03	0.78		G		
URANIUM-238	<b>2.84E-01</b>	J	3.3E-02	4.0E-02	1.81E-02	pci/g	77%	(15.7)	12/17/07 02:26 p	2.02	2.02	ALP12
							3.94E-03	(7.)		G		

Ratio U-234/238 = 1.1

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Work Order: KCKEL1AC Report DB ID: 9KCKEL10												
Batch: 7327116	HASL-300 Th Mod											
THORIUM-228	<b>1.75E+00</b>		1.5E-01	2.0E-01	5.94E-02	pci/g	70%	(29.4)	12/11/07 03:25 p	1.02	1.02	ALP172
							1.29E-02	(8.6)		G		
THORIUM-230	<b>1.12E+00</b>		1.2E-01	1.5E-01	5.79E-02	pci/g	70%	(19.4)	12/11/07 03:25 p	1.02	1.02	ALP172
							1.26E-02	(7.6)		G		
THORIUM-232	<b>1.55E+00</b>		1.4E-01	1.8E-01	5.79E-02	pci/g	70%	(26.7)	12/11/07 03:25 p	1.02	1.02	ALP172
							1.26E-02	(8.4)		G		

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Work Order: KCKEL1AA Report DB ID: 9KCKEL10												
Batch: 7327117	EPA 901.1											
RADIUM-226	<b>1.00E+00</b>		7.6E-02	7.6E-02	6.96E-02	pCi/g		(14.4)	12/17/07 10:39 a	51.5	51.5	GER5\$1
								(13.3)		g		
RADIUM-228	<b>1.68E+00</b>		1.5E-01	1.5E-01	1.37E-01	pCi/g		(12.3)	12/17/07 10:39 a	51.5	51.5	GER5\$1
								(11.2)		g		

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 V5.1.5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.



FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-8  
 Client Sample ID: TSB-GR-01-0'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 10:20:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

BASIC REMEDIATION - Tronox Parcel C/D

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC\MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	<b>4.57E-01</b>	J	4.3E-02	5.7E-02	1.90E-02	pc/g	74%	(24.)	12/17/07 02:25 p	2.03	2.03	ALP9
							6.00E-01	(8.)		G		
URANIUM-235/236	<b>-7.95E-04</b>	U	4.1E-03	4.1E-03	1.90E-02	pc/g	74%	-0.04	12/17/07 02:25 p	2.03	2.03	ALP9
							6.00E-01	-0.2		G		
URANIUM-238	<b>3.42E-01</b>	J	3.7E-02	4.7E-02	1.90E-02	pc/g	74%	(18.)	12/17/07 02:25 p	2.03	2.03	ALP9
							6.00E-01	(7.3)		G		

Work Order: KCKEG1AD Report DB ID: 9KCKEG10

Ratio U-234/238 = 1.3

Batch:	7327116	HASL-300 Th Mod	Count Error (1 s)	Total Uncert(1 s)	MDC\MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
THORIUM-228	<b>2.23E+00</b>	J	1.6E-01	2.4E-01	8.30E-02	pc/g	70%	(26.8)	12/10/07 06:11 p	1.03	1.03	ALP176
							1.00E-01	(9.2)		G		
THORIUM-230	<b>1.28E+00</b>	J	1.2E-01	1.6E-01	5.65E-02	pc/g	70%	(22.7)	12/10/07 06:11 p	1.03	1.03	ALP176
							1.00E-01	(8.)		G		
THORIUM-232	<b>1.97E+00</b>	J	1.5E-01	2.2E-01	6.67E-02	pc/g	70%	(29.5)	12/10/07 06:11 p	1.03	1.03	ALP176
							1.00E-01	(9.)		G		

Work Order: KCKEG1AC Report DB ID: 9KCKEG10

Work Order: KCKEG1AA Report DB ID: 9KCKEG10

Batch:	7327117	EPA 901.1	Count Error (1 s)	Total Uncert(1 s)	MDC\MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
RADIUM-226	<b>1.05E+00</b>	J	9.1E-02	9.1E-02	8.20E-02	pCi/g		(12.8)	12/15/07 10:57 a	53.9	53.9	GER14\$1
								(11.6)		9		
RADIUM-228	<b>1.70E+00</b>	J	1.7E-01	1.7E-01	1.59E-01	pCi/g		(10.7)	12/15/07 10:57 a	53.9	53.9	GER14\$1
								(10.2)		9		

No. of Results: 8 Comments:

TAL Richland MDC\MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 J Qual - No UJ< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-9  
 Client Sample ID: TSB-GR-01-5'  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 10:40:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO  
 Ordered by Client Sample ID, Batch No.

BASIC REMEDIATION - Tronox Parcel C/D

Parameter	Result	Qual	Count Error ( I s)	Total Uncert( I s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	<b>2.44E-01</b>	J	2.9E-02	3.5E-02	2.29E-02	pci/g	93%	(10.7)	12/17/07 02:25 p	2.01	2.01	ALP10
							6.95E-03	(7.)		G		
URANIUM-235/236	<b>1.67E-02</b>	J	7.5E-03	7.6E-03	1.60E-02	pci/g	93%	(1.)	12/17/07 02:25 p	2.01	2.01	ALP10
							3.47E-03	(2.2)		G		
URANIUM-238	<b>1.63E-01</b>	J	2.3E-02	2.7E-02	1.60E-02	pci/g	93%	(10.2)	12/17/07 02:25 p	2.01	2.01	ALP10
							3.47E-03	(6.1)		G		

Ratio U-234/238 = 1.5

Parameter	Result	Qual	Count Error ( I s)	Total Uncert( I s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327116	HASL-300 Th Mod											
THORIUM-228	<b>1.67E+00</b>		1.4E-01	2.0E-01	5.98E-02	pci/g	86%	(27.9)	12/10/07 06:11 p	1.02	1.02	ALP177
							1.30E-02	(8.5)		G		
THORIUM-230	<b>1.16E+00</b>		1.2E-01	1.5E-01	5.84E-02	pci/g	86%	(19.8)	12/10/07 06:11 p	1.02	1.02	ALP177
							1.27E-02	(7.7)		G		
THORIUM-232	<b>1.46E+00</b>		1.3E-01	1.8E-01	5.84E-02	pci/g	86%	(25.1)	12/10/07 06:11 p	1.02	1.02	ALP177
							1.27E-02	(8.3)		G		

Parameter	Result	Qual	Count Error ( I s)	Total Uncert( I s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327117	EPA 901.1											
RADIUM-226	<b>8.64E-01</b>		7.5E-02	7.5E-02	7.30E-02	pCi/g		(11.8)	12/15/07 10:59 a	48.4	48.4	GER5\$1
								(11.5)		9		
RADIUM-228	<b>1.68E+00</b>		1.5E-01	1.5E-01	1.41E-01	pCi/g		(12.)	12/15/07 10:59 a	48.4	48.4	GER5\$1
								(11.2)		9		

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.  
 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
 V5.1.5 A2002

FORM II

Date: 26-Dec-07

DUPLICATE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K160242-17  
 Client Sample ID: RINSATE 3 DUP

SDG: TRNC/D-5RD  
 Report No.: 37880  
 COC No.:

Collection Date: 11/15/2007 1:15:00 PM  
 Received Date: 11/16/2007 9:15:00 AM  
 Matrix: WATER W

Parameter	Result, Orig Rst	Qual	Count Error ( I s)	Total Uncert( I s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDc, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327118	HASL-300 Th Mod								Orig Sa DB ID: 9KCFM810			
THORIUM-228	4.81E-02	U	4.9E-02	4.9E-02	2.30E-01	pci/l	93%	0.21	12/10/07 06:45 a	0.1999	L	ALP172
	-1.92E-02	U	RER2 1.0					0.98				
THORIUM-230	3.75E-02	U	4.8E-02	4.8E-02	2.25E-01	pci/l	93%	0.17	12/10/07 06:45 a	0.1999	L	ALP172
	-9.36E-03	U	RER2 0.7					0.78				
THORIUM-232	-9.39E-03	U	4.8E-02	4.8E-02	2.25E-01	pci/l	93%	-0.04	12/10/07 06:45 a	0.1999	L	ALP172
	-9.36E-03	U	RER2 0.0					-0.2				

Alpha Spec Result Sum = 7.6E-02

Parameter	Result, Orig Rst	Qual	Count Error ( I s)	Total Uncert( I s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDc, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327123	HASL-300 U Mod								Orig Sa DB ID: 9KCFM810			
URANIUM-233/234	3.83E-02	U	3.9E-02	3.9E-02	1.83E-01	pci/l	79%	0.21	12/10/07 02:47 p	0.2001	L	ALP7
	5.29E-02	U	RER2 0.2					0.98				
URANIUM-235/236	3.83E-02	U	3.9E-02	3.9E-02	1.83E-01	pci/l	79%	0.21	12/10/07 02:47 p	0.2001	L	ALP7
	-6.62E-03	U	RER2 0.9					0.98				
URANIUM-238	0.00E+00	U	0.0E+00	3.9E-02	1.83E-01	pci/l	79%	0.	12/10/07 02:47 p	0.2001	L	ALP7
	-6.62E-03	U	RER2 0.1					0.				

Alpha Spec Result Sum = 1.5E-01

No. of Results: 6 Comments:

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptS.TLRchDupV5.1 MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 .5 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II

Date: 26-Dec-07

DUPLICATE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-12  
 Client Sample ID: TSB-FJ-01-0' DUP  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 9:16:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: SOLID SO

Parameter	Result, Orig Rst	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Primary Detector
Work Order: KCKEM1AG Report DB ID: KCKEM1GR Orig Sa DB ID: 9KCKEM10												
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	7.79E-01		6.0E-02	8.9E-02	1.83E-02	pci/g	95%	(42.5)	12/17/07 02:26 p	2.03	2.03	ALP85
	6.10E-01		RER2 1.5					(8.7)			G	
URANIUM-235/236	3.04E-02		1.2E-02	1.2E-02	2.43E-02	pci/g	95%	(1.3)	12/17/07 02:26 p	2.03	2.03	ALP85
	1.85E-02		RER2 0.8					(2.5)			G	
URANIUM-238	4.78E-01		4.7E-02	6.2E-02	1.83E-02	pci/g	95%	(26.1)	12/17/07 02:26 p	2.03	2.03	ALP85
	4.61E-01		RER2 0.2					(7.7)			G	

Ratio U-234/238 = 1.6

Alpha Spec Result Sum = 1.3E+00

Parameter	Result, Orig Rst	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Primary Detector
Work Order: KCKEM1AF Report DB ID: KCKEM1FR Orig Sa DB ID: 9KCKEM10												
Batch: 7327116	HASL-300 Th Mod											
THORIUM-228	2.25E+00		1.6E-01	2.4E-01	6.45E-02	pci/g	95%	(34.8)	12/11/07 03:25 p	1.01	1.01	ALP177
	2.12E+00		RER2 0.4					(9.4)			G	
THORIUM-230	1.15E+00		1.1E-01	1.5E-01	5.33E-02	pci/g	95%	(21.5)	12/11/07 03:25 p	1.01	1.01	ALP177
	1.35E+00		RER2 1.0					(7.9)			G	
THORIUM-232	2.07E+00		1.5E-01	2.2E-01	5.33E-02	pci/g	95%	(38.8)	12/11/07 03:25 p	1.01	1.01	ALP177
	1.83E+00		RER2 0.8					(9.2)			G	

Alpha Spec Result Sum = 6.8E+00

Parameter	Result, Orig Rst	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Primary Detector
Work Order: KCKEM1AE Report DB ID: KCKEM1ER Orig Sa DB ID: 9KCKEM10												
Batch: 7327117	EPA 901.1											
RADIUM-226	9.84E-01		8.5E-02	8.5E-02	7.29E-02	pCi/g		(13.5)	12/17/07 10:41 a	48.5	48.5	GER7\$1
	1.04E+00		RER2 0.5					(11.6)			g	
RADIUM-228	1.93E+00		1.6E-01	1.6E-01	1.48E-01	pCi/g		(13.)	12/17/07 10:41 a	48.5	48.5	GER7\$1
	1.84E+00		RER2 0.4					(12.)			g	

Alpha Spec Result Sum = 6.8E+00

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt((sq(TPUs)+sq(TPUD))] as defined by ICPT BOA.  
 rptSTLRchDupV5.1 MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 .5 A2002

FORM II

Date: 26-Dec-07

DUPLICATE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-12  
 Client Sample ID: TSB-FJ-01-0' DUP  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 9:16:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO

Parameter	Result, Orig Rst	Qual	Count Error ( 1 s)	Total Uncert( 1 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
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No. of Results: 8 Comments:

TAL Richland RER2 - Replicate Error Ratio =  $(S-D)/[\sqrt{(\text{sq}(\text{TPUs})+\text{sq}(\text{TPUd}))}]$  as defined by ICPT BOA.  
 rptSTLRchDupV5.1 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 .5 A2002

FORM II

Date: 26-Dec-07

DUPLICATE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-1  
 Client Sample ID: TSB-FJ-08-0' DUP  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 6:40:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: SOLID SO

Parameter	Result, Orig Rst	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327116	HASL-300 Th Mod			Work Order: KCKD61AE	KCKD61ER	Report DB ID: KCKD61ER			Orig Sa DB ID: 9KCKD610			
THORIUM-228	1.60E+00		1.4E-01	1.9E-01	5.55E-02	pci/g	92%	(28.8)	12/10/07 10:33 a	1.02	1.02	ALP177
	1.78E+00		RER2 0.7					(8.6)		G	G	
THORIUM-230	1.04E+00		1.1E-01	1.4E-01	5.42E-02	pci/g	92%	(19.2)	12/10/07 10:33 a	1.02	1.02	ALP177
	9.25E-01		RER2 0.6					(7.6)		G	G	
THORIUM-232	1.77E+00		1.4E-01	2.0E-01	5.42E-02	pci/g	92%	(32.6)	12/10/07 10:33 a	1.02	1.02	ALP177
	1.89E+00		RER2 0.5					(8.9)		G	G	

Alpha Spec Result Sum = 4.4E+00

No. of Results: 3 Comments:

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptSTLRchDupV5.1 MDC|MDA,Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 .5 A2002

FORM II

Date: 26-Dec-07

DUPLICATE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-5  
 Client Sample ID: TSB-FR-04-0' DUP  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 8:15:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: Solid SO

Parameter	Result, Orig Rst	Qual	Count Error (1 s)	Total Uncert( 1 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327117	EPA 901.1								Orig Sa DB ID: 9KCKEC10			
RADIUM-226	7.43E-01		6.4E-02	6.4E-02	6.04E-02	pCi/g		(12.3)	12/15/07 10:54 a	51.7	51.7	GER8\$1
	1.03E+00		RER2 2.8					(11.6)			9	
RADIUM-228	1.75E+00		1.4E-01	1.4E-01	1.21E-01	pCi/g		(14.5)	12/15/07 10:54 a	51.7	51.7	GER8\$1
	2.02E+00		RER2 1.2					(12.6)			9	

No. of Results: 2      Comments:

TAL Richland      RER2      - Replicate Error Ratio = (S-D)/[sqrt((sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptSTLRchDupV5.1      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 .5 A2902

FORM II

Date: 26-Dec-07

DUPLICATE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K190152-4  
 Client Sample ID: TSB-FR-05-10' DUP  
 SDG: TRNC/D-6RD  
 Report No.: 37880  
 COC No.:  
 Collection Date: 11/16/2007 7:50:00 AM  
 Received Date: 11/19/2007 8:45:00 AM  
 Matrix: SOLID SO

Parameter	Result, Orig Rst	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327115	HASL-300 U Mod											
URANIUM-233/234	7.79E-01		5.4E-02	8.5E-02	2.14E-02	pci/g	71%	(36.4)	12/17/07 02:25 p	2.02	2.02	ALP5
	8.74E-01		RER2 0.8					(9.2)		G	G	
URANIUM-235/236	1.82E-02		8.5E-03	8.6E-03	1.81E-02	pci/g	71%	(1.)	12/17/07 02:25 p	2.02	2.02	ALP5
	2.62E-02		RER2 0.6					(2.1)		G	G	
URANIUM-238	4.71E-01		4.3E-02	5.8E-02	3.25E-02	pci/g	71%	(14.5)	12/17/07 02:25 p	2.02	2.02	ALP5
	5.59E-01		RER2 1.0					(8.1)		G	G	

Ratio U-234/238 = 1.7  
 Alpha Spec Result Sum = 1.3E+00

No. of Results: 3  
 Comments:

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUD))] as defined by ICPT BOA.  
 rptSTLRchDupV5.1 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 .5 A2002



FORM II

Date: 26-Dec-07

BLANK RESULTS

Lab Name: TA Richland

SDG: TRNC/D-6RD

Matrix: SOLID

Report No.: 37880

Parameter	Result	Qual	Count Error (1 s)	Total Uncert( 1 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
<b>Batch: 7327115</b> HASL-300 U Mod <b>Report DB ID: KCR6K1AB</b>												
URANIUM-233/234	-2.22E-03	U	3.9E-03	3.9E-03	2.33E-02	pci/g	79%	-0.1	12/17/07 06:21 p	2.03	2.03	ALP6
URANIUM-235/236	-7.39E-04	U	3.8E-03	3.8E-03	6.65E-03	6.00E-01	79%	-0.57	12/17/07 06:21 p	G	G	ALP6
URANIUM-238	-7.39E-04	U	3.8E-03	3.8E-03	1.77E-02	6.00E-01	79%	-0.04	12/17/07 06:21 p	G	G	ALP6
					3.84E-03	6.00E-01		-0.2				
					1.77E-02	pci/g		-0.04				
					3.84E-03	6.00E-01		-0.2				
<b>Ratio U-234/238 = 3.0</b>												
<b>Batch: 7327117</b> EPA 901.1 <b>Work Order: KCR6V1AA</b> <b>Report DB ID: KCR6V1AB</b>												
RADIUM-226	-1.39E-01	U	7.6E-02	7.6E-02	1.71E-01	pCi/g		-0.82	12/15/07 11:00 a	25.16	25.16	GER15\$1
RADIUM-228	3.10E-01	U	1.4E-01	1.4E-01	3.10E-01	pCi/g		-(1.8)		g	g	GER15\$1
								1.	12/15/07 11:00 a	25.16	25.16	GER15\$1
								(2.2)				
<b>Batch: 7327116</b> HASL-300 Th Mod <b>Work Order: KCR6R1AA</b> <b>Report DB ID: KCR6R1AB</b>												
THORIUM-228	9.14E-03	U	1.2E-02	1.2E-02	5.47E-02	pci/g	95%	0.17	12/11/07 07:13 p	1.01	1.01	ALP177
THORIUM-230	0.00E+00	U	0.0E+00	1.1E-02	1.19E-02	1.00E-01	95%	0.78	12/11/07 07:13 p	G	G	ALP177
THORIUM-232	0.00E+00	U	0.0E+00	1.1E-02	5.34E-02	pci/g	95%	0.	12/11/07 07:13 p	1.01	1.01	ALP177
					1.16E-02	1.00E-01		0.		G	G	ALP177
					5.34E-02	pci/g		0.				
					1.16E-02	1.00E-01		0.				

No. of Results: 8      Comments:

FORM II

Date: 26-Dec-07

BLANK RESULTS

Lab Name: TA Richland  
Matrix: WATER

SDG: TRNC/D-7RD  
Report No.: 37880

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327123 HASL-300 U Mod												
Work Order: KCR7M1AA Report DB ID: KCR7M1AB												
URANIUM-233/234	-2.83E-02	U	3.8E-02	3.8E-02	2.43E-01	pci/l	88%	-0.12	12/10/07 02:48 p	0.2	0.2	ALP10
URANIUM-235/236	0.00E+00	U	0.0E+00	3.6E-02	7.36E-02	1.00E+00	88%	-0.74	12/10/07 02:48 p	L	L	ALP10
URANIUM-238	-7.08E-03	U	3.6E-02	3.6E-02	1.69E-01	pci/l	88%	0.	12/10/07 02:48 p	L	L	ALP10
					3.68E-02	1.00E+00		-0.04		0.2	0.2	ALP10
					3.68E-02	1.00E+00		-0.2		L	L	ALP10

Ratio U-234/238 = 4.0

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327118 HASL-300 Th Mod												
Work Order: KCR641AA Report DB ID: KCR641AB												
THORIUM-228	-1.90E-02	U	4.9E-02	4.9E-02	2.68E-01	pci/l	95%	-0.07	12/10/07 10:33 a	0.2003	0.2003	ALP171
THORIUM-230	3.70E-02	U	4.7E-02	4.7E-02	6.98E-02	1.00E+00	95%	-0.38	12/10/07 10:33 a	L	L	ALP171
THORIUM-232	-9.25E-03	U	4.7E-02	4.7E-02	2.22E-01	pci/l	95%	0.17	12/10/07 10:33 a	L	L	ALP171
					4.81E-02	1.00E+00		0.78		0.2003	0.2003	ALP171
					2.22E-01	pci/l		-0.04		L	L	ALP171
					4.81E-02	1.00E+00		-0.2		L	L	ALP171

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327119 EPA 903.1												
Work Order: KCR7F1AA Report DB ID: KCR7F1AB												
RADIUM-226	-5.14E-03	U	2.1E-02	2.1E-02	8.95E-02	pci/l	100%	-0.06	12/17/07 03:06 p	1.001	1.001	ASCJUA
					3.78E-02	1.00E+00		-0.24		L	L	ASCJUA

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7327122 EPA 904.0												
Work Order: KCR7G1AA Report DB ID: KCR7G1AB												
RADIUM-228	1.85E-01	U	1.1E-01	1.1E-01	4.87E-01	pci/l	91%	0.38	12/19/07 06:37 a	1.001	1.001	GPC5D
					2.21E-01	3.00E+00		(1.7)		L	L	GPC5D

No. of Results: 8 Comments:

TAL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rpt\$TLRchBlank U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
 V5.1.5 A2002

FORM II

Date: 26-Dec-07

LCS RESULTS

Lab Name: TA Richland

SDG: TRNC/D-6RD

Matrix: SOLID

Report No.: 37880

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 7327115 HASL-300 U Mod													
Work Order: KCR6K1AC Report DB ID: KCR6K1CS													
URANIUM-233/234	8.09E-01		5.0E-02	8.2E-02	1.45E-02	pci/g	99%	8.63E-01	4.9E-03	94%	12/17/07 06:21 p	2.01	ALP7
							Rec Limits:	70	130	-0.1		G	
URANIUM-238	8.97E-01		5.2E-02	8.9E-02	1.45E-02	pci/g	99%	9.03E-01	5.1E-03	99%	12/17/07 06:21 p	2.01	ALP7
							Rec Limits:	70	130	0.0		G	
Batch: 7327117 EPA 901.1													
Work Order: KCR6V1AC Report DB ID: KCR6V1CS													
CESIUM-137	8.32E+00		5.7E-01	5.7E-01	6.43E-02	pCi/g		7.98E+00	1.9E+01	104%	12/17/07 10:46 a	25.3	GER15\$1
							Rec Limits:	70	130	0.0		g	
Batch: 7327116 HASL-300 Th Mod													
Work Order: KCR6R1AC Report DB ID: KCR6R1CS													
THORIUM-230	2.52E+00		1.5E-01	2.5E-01	5.27E-02	pci/g	94%	2.30E+00	6.9E-02	110%	12/14/07 03:01 p	1.0	ALP171
							Rec Limits:	75	125	0.1		G	

No. of Results: 4      Comments:

TAL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rp|STLRchLcs  
V5.1.5 A2002

FORM II  
LCS RESULTS

Date: 26-Dec-07

Lab Name: TA Richland  
Matrix: WATER

SDG: TRNC/D-7RD  
Report No.: 37880

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 7327123 HASL-300 U Mod													
Work Order: KCR7M1AC Report DB ID: KCR7M1CS													
URANIUM-233/234	8.63E+00		5.4E-01	8.9E-01	1.60E-01	pci/l	82%	8.77E+00	4.9E-02	98%	12/10/07 02:48 p	0.2001	ALP11
							Rec Limits:	75	125	0.0		L	
URANIUM-238	1.02E+01		5.8E-01	1.0E+00	2.11E-01	pci/l	82%	9.18E+00	5.2E-02	111%	12/10/07 02:48 p	0.2001	ALP11
							Rec Limits:	75	125	0.1		L	
Batch: 7327118 HASL-300 Th Mod													
Work Order: KCR641AC Report DB ID: KCR641CS													
THORIUM-230	1.21E+01		7.5E-01	1.2E+00	2.22E-01	pci/l	94%	1.14E+01	3.4E-01	106%	12/10/07 10:33 a	0.2003	ALP172
							Rec Limits:	70	130	0.1		L	
Batch: 7327119 EPA 903.1													
Work Order: KCR7F1AC Report DB ID: KCR7F1CS													
RADIUM-226	1.29E+00		8.6E-02	1.6E-01	9.06E-02	pci/l	100%	1.39E+00	2.1E-02	93%	12/17/07 03:07 p	1.0004	ASCKME
							Rec Limits:	70	130	-0.1		L	
Batch: 7327122 EPA 904.0													
Work Order: KCR7G1AC Report DB ID: KCR7G1CS													
RADIUM-228	4.34E+00		2.3E-01	3.4E-01	5.27E-01	pci/l	90%	4.96E+00	1.8E-02	88%	12/19/07 06:37 a	1.0004	GPC6A
							Rec Limits:	70	130	-0.1		L	

No. of Results: 5 Comments:

# CHAIN OF CUSTODY

COMMENTS:

Project Manager:

Project:

Report Type:

Client:

W

445691 - Basic Remediation Company

Phs2 Smpling Tronox Prcl

Date Received: 2007-11-19

Analytical Due Date: 2007-12-12

Report Due Date: 2007-12-18

**WORK LOCATION: 10 TestAmerica Richland**

SMP#: 1 CLIENT ID: TSB-FJ-08-0' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 Gamma by HPGE 10 day ingrowth  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKD61AA METAL: XX

METHOD: S1 NONE Thiso by ALP Thorium-228,230,232 by Alpha Spec  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKD61AC METAL: XX

METHOD: SR NONE Ulso by ALP Uranium-234,235,238 by Alpha Spec  
EXTRACTION: 7U Ulso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKD61AD METAL: XX

SMP#: 2 CLIENT ID: TSB-FJ-08-10' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 Gamma by HPGE 10 day ingrowth  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKD81AA METAL: XX

METHOD: S1 NONE Thiso by ALP Thorium-228,230,232 by Alpha Spec  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKD81AC METAL: XX

METHOD: SR NONE Ulso by ALP Uranium-234,235,238 by Alpha Spec  
EXTRACTION: 7U Ulso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKD81AD METAL: XX

SMP#: 3 CLIENT ID: TSB-FR-05-0' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 Gamma by HPGE 10 day ingrowth  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKD91AA METAL: XX

METHOD: S1 NONE Thiso by ALP Thorium-228,230,232 by Alpha Spec  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKD91AC METAL: XX

METHOD: SR NONE Ulso by ALP Uranium-234,235,238 by Alpha Spec  
EXTRACTION: 7U Ulso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKD91AD METAL: XX

SMP#: 4 CLIENT ID: TSB-FR-05-10' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 Gamma by HPGE 10 day ingrowth  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET

COMMENTS:

Project Manager:  
 Project: Phs2 Smpling Tronox Prol  
 Report Type: W  
 Client: 445691 - Basic Remediation Company

Date Received: 2007-11-19  
 Analytical Due Date: 2007-12-12  
 Report Due Date: 2007-12-18

WORKORDER KCKEA1AA METAL: XX

METHOD: S1 NONE Thiso by ALP **Thorium-228,230,232 by Alpha Spec**  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKEA1AC METAL: XX

METHOD: SR NONE Uiso by ALP **Uranium-234,235,238 by Alpha Spec**  
EXTRACTION: 7U Uiso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKEA1AD METAL: XX

SMP#: 5 CLIENT ID: TSB-FR-04-0' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 **Gamma by HPGE 10 day ingrowth**  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKEC1AA METAL: XX

METHOD: S1 NONE Thiso by ALP **Thorium-228,230,232 by Alpha Spec**  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKEC1AC METAL: XX

METHOD: SR NONE Uiso by ALP **Uranium-234,235,238 by Alpha Spec**  
EXTRACTION: 7U Uiso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKEC1AD METAL: XX

SMP#: 6 CLIENT ID: TSB-FR-04-0' FD DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 **Gamma by HPGE 10 day ingrowth**  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKED1AA METAL: XX

METHOD: S1 NONE Thiso by ALP **Thorium-228,230,232 by Alpha Spec**  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKED1AC METAL: XX

METHOD: SR NONE Uiso by ALP **Uranium-234,235,238 by Alpha Spec**  
EXTRACTION: 7U Uiso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKED1AD METAL: XX

SMP#: 7 CLIENT ID: TSB-FR-04-10' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 **Gamma by HPGE 10 day ingrowth**  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKEE1AA METAL: XX

METHOD: S1 NONE Thiso by ALP **Thorium-228,230,232 by Alpha Spec**  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET

WORKORDER KCKEE1AC METAL: XX

METHOD: SR NONE Uiso by ALP **Uranium-234,235,238 by Alpha Spec**

COMMENTS:

Project Manager:  
 Project: Phs2 Smpling Tronox Prcl  
 Report Type: W  
 Client: 445691 - Basic Remediation Company

Date Received: 2007-11-19  
 Analytical Due Date: 2007-12-12  
 Report Due Date: 2007-12-18

EXTRACTION: 7U Uiso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEE1AD METAL: XX

SMP#: 8 CLIENT ID: TSB-GR-01-0' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 Gamma by HPGE 10 day ingrowth  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEG1AA METAL: XX

METHOD: S1 NONE Thiso by ALP Thorium-228,230,232 by Alpha Spec  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEG1AC METAL: XX

METHOD: SR NONE Uiso by ALP Uranium-234,235,238 by Alpha Spec  
EXTRACTION: 7U Uiso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEG1AD METAL: XX

SMP#: 9 CLIENT ID: TSB-GR-01-5' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 Gamma by HPGE 10 day ingrowth  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEJ1AA METAL: XX

METHOD: S1 NONE Thiso by ALP Thorium-228,230,232 by Alpha Spec  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEJ1AC METAL: XX

METHOD: SR NONE Uiso by ALP Uranium-234,235,238 by Alpha Spec  
EXTRACTION: 7U Uiso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEJ1AD METAL: XX

SMP#: 10 CLIENT ID: TSB-GJ-06-0' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 Gamma by HPGE 10 day ingrowth  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEK1AA METAL: XX

METHOD: S1 NONE Thiso by ALP Thorium-228,230,232 by Alpha Spec  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEK1AC METAL: XX

METHOD: SR NONE Uiso by ALP Uranium-234,235,238 by Alpha Spec  
EXTRACTION: 7U Uiso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKEK1AD METAL: XX

SMP#: 11 CLIENT ID: TSB-GJ-06-5' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 Gamma by HPGE 10 day ingrowth





COMMENTS:

Project Manager:  
 Project: Phs2 Smplng Tronox PrcI  
 Report Type: W  
 Client: 445691 - Basic Remediation Company

Date Received: 2007-11-19  
 Analytical Due Date: 2007-12-12  
 Report Due Date: 2007-12-18

METHOD: S1 NONE Thlso by ALP Thorium-228,230,232 by Alpha Spec  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKE11AC METAL: XX

METHOD: SR NONE Ulso by ALP Uranium-234,235,238 by Alpha Spec  
EXTRACTION: 7U Ulso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKE11AD METAL: XX

SMP#: 15 CLIENT ID: TSB-GJ-01-5' DATE SAMPLED: 20071116 MATRIX: A SOLID

SAMPLE COMMENTS:

METHOD: T9 NONE Gamma by GER 1 Gamma by HPGE 10 day ingrowth  
EXTRACTION: AX Gamma PrpRC5013/5017 QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKE21AA METAL: XX

METHOD: S1 NONE Thlso by ALP Thorium-228,230,232 by Alpha Spec  
EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKE21AC METAL: XX

METHOD: SR NONE Ulso by ALP Uranium-234,235,238 by Alpha Spec  
EXTRACTION: 7U Ulso PrpRC5013, SepRC5079(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKE21AD METAL: XX

SMP#: 16 CLIENT ID: RINSATE4 DATE SAMPLED: 20071116 MATRIX: I WATER

SAMPLE COMMENTS:

METHOD: TE NONE Ra-226 by ASC-7 Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow  
EXTRACTION: BU Ra-226/228 Prp/SepRC5005 QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKE91AA METAL: XX

METHOD: TF NONE Ra-228 by GPC Radium-228 by GPC  
EXTRACTION: BU Ra-226/228 Prp/SepRC5005 QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKE91AC METAL: XX

METHOD: S1 NONE Thlso by ALP Thorium-228,230,232 by Alpha Spec  
EXTRACTION: 9N Thlso PrpRc5016, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKE91AD METAL: XX

METHOD: SR NONE Ulso by ALP Uranium-234,235,238 by Alpha Spec  
EXTRACTION: 7Y Ulso PrpRC5016/5086, SepRC5067(5039) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCKE91AE METAL: XX

COMMENTS:


Project Manager:  
Project: Phs2 Smpling Tronox Prcl  
Report Type: W  
Client: 445691 - Basic Remediation Company

Date Received: 2007-11-19  
Analytical Due Date: 2007-12-12  
Report Due Date: 2007-12-18

The sample(s) listed on this form are being sent to your location for the specified analysis. If you have any questions, please contact the Project Manager listed above. PLEASE RETURN THE ORIGINAL SIGNED FORM WITH THE REPORT AT THE COMPLETION OF ANALYSIS.

Thank You

STL- St. Louis  
Sample Receiving

RELINQUISHED BY:  DATE: 11-19-07 1730

RECEIVED FOR LAB BY:  DATE: 11/20/07 1000

## Sample Check-in List

DUE 12-6-07

Date/Time Received: 11-20-07

Client: TA-STL SDG #: \_\_\_\_\_ NA [ ] SAF #: \_\_\_\_\_ NA [ ]

Work Order Number: F7K190152 Chain of Custody # \_\_\_\_\_

Shipping Container ID: \_\_\_\_\_ Air Bill # \_\_\_\_\_

1. Custody Seals on shipping container intact? NA  Yes [ ] No [ ]
2. Custody Seals dated and signed? NA  Yes [ ] No [ ]
3. Chain of Custody record present? NA [ ] Yes  No [ ]
4. Cooler Temperature: \_\_\_\_\_ NA  5. Vermiculite/packing materials is NA  Wet [ ] Dry [ ]
6. Number of samples in shipping container: 7617
7. Sample holding times exceeded? NA  Yes [ ] No [ ]
8. Samples have:
  - \_\_\_\_\_ Tape
  - \_\_\_\_\_ Custody Seals
  - \_\_\_\_\_ Hazard Labels
  - Appropriate Sample Labels
9. Samples are:
  - In Good Condition
  - \_\_\_\_\_ Broken
  - \_\_\_\_\_ Leaking
  - \_\_\_\_\_ Have Air Bubbles
 (Only for samples requiring no head space.)
10. Sample pH taken? <sup>SOIL</sup> NA  <sup>H2O</sup> pH < 2  pH > 2 [ ] pH > 9 [ ]
11. Sample Location, Sample Collector Listed? \*  
\*For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes  No [ ]
13. Description of anomalies (include sample numbers): SAMPLE F7K190148-008 SENT WITH THIS LOT.

Sample Custodian: [Signature] Date: 11-20-07

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on \_\_\_\_\_ by \_\_\_\_\_ Person Contacted \_\_\_\_\_

[ ] No action necessary; process as is.

Project Manager \_\_\_\_\_ Date \_\_\_\_\_

THORIUM  
SAMPLE AND QC DATA

Lot No., Due Date: F7K190152; 12/18/2007  
Client, Site: 445691; Phs2 Smpling Tronox Prcl CDFG  
QC Batch No., Method Test: 7327116; RTHISO Thiso by ALP  
SDG, Matrix: TRNC/D-6RD; ,,,,,,,,,,,,,,

1.0 COC

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A

2.0 QC Batch

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A

2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A

3.0 QC & Samples

3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A

3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A

3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A

4.0 Raw Data

4.1 Were results calculated in the correct units?  Yes  No  N/A

4.2 Were analysis volumes entered correctly?  Yes  No  N/A

4.3 Were Yields entered correctly?  Yes  No  N/A

4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A

4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A

5.0 Other

5.1 Are all nonconformances included and noted?  Yes  No  N/A

5.2 Are all required forms filled out?  Yes  No  N/A

5.3 Was the correct methodology used?  Yes  No  N/A

5.4 Was transcription checked?  Yes  No  N/A

5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A

5.6 Are worksheet entries complete and correct?  Yes  No  N/A

6.0 Comments on any No response:

First Level Review

*John Hartman*

Date

*12-17-7*

**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 7327114

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Second Level Review: *Erika Ford* Date: 12/26/17

12/4/2007 5:41:45 AM

### Sample Preparation/Analysis

Balance Id: 1120373922

445691, Basic Remediation Company  
Basic Remediation Company

D2 Th PrpRC5013/5032, SepRC5084(5003)  
S1 Thorium-228,230,232 by Alpha Spec  
01 STANDARD TEST SET

Pipet #:  
Sep1 DT/Tm Tech:  
Sep2 DT/Tm Tech:

AnalyDueDate: 12/12/2007

# PRIORITY

PM, Quote: JAE, 77571

Prep Tech: WoodT

Batch: 7327116

pCi/g

SEO Batch, Test: None

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On/Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 KCKD6-1-AC F7K190152-1-SAMP 11/16/2007 06:40		1.01g.in	THTC12000 11/27/07.pd 09/24/07							
2 KCKD6-1-AE-X F7K190152-1-DUP 11/16/2007 06:40		1.02g.in	THTC12001 11/27/07.pd 09/24/07							
3 KCKD8-1-AC F7K190152-2-SAMP 11/16/2007 07:05		1.00g.in	THTC12002 11/27/07.pd 09/24/07							
4 KCKD9-1-AC F7K190152-3-SAMP 11/16/2007 07:35		1.02g.in	THTC12016 11/30/07.pd 11/29/07							
5 KCKEA-1-AC F7K190152-4-SAMP 11/16/2007 07:50		1.03g.in	THTC12017 11/30/07.pd 11/29/07							
6 KCKEC-1-AC F7K190152-5-SAMP 11/16/2007 08:15		1.01g.in	THTC12018 11/30/07.pd 11/29/07							
7 KCKED-1-AC F7K190152-6-SAMP 11/16/2007 08:15		1.03g.in	THTC12019 11/30/07.pd 11/29/07							

Handwritten numbers and scribbles at the bottom of the page, including '54' and '171'.



12/4/2007 5:41:46 AM

445691, Basic Remediation Company  
Basic Remediation Company

Analyte Due Date: 12/12/2007

Batch: 7327116  
SEQ Batch, Test: None

### Sample Preparation/Analysis

D2 Th PrpRC5013/5032, SepRC5084(5003)  
S1 Thorium-228,230,232 by Alpha Spec  
01 STANDARD TEST SET

Balance Id: 1120373922

Pipet #:

**PRIORITY** Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

PM, Quote: JAE, 77571

pCi/g

Prep Tech: , Barcotl

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 KCKEE-1-AC F7K190152-7-SAMP 11/16/2007 08:50		1.00g.in	THTC12020 11/30/07.pd 11/29/07			200				
9 KCKEG-1-AC F7K190152-8-SAMP 11/16/2007 10:20		1.03g.in	THTC12021 11/30/07.pd 11/29/07							Beta:
10 KCKEJ-1-AC F7K190152-9-SAMP 11/16/2007 10:40		1.02g.in	THTC12022 11/30/07.pd 11/29/07							Beta:
11 KCKEK-1-AC F7K190152-10-SAMP 11/16/2007 11:15		1.01g.in	THTC12023 11/30/07.pd 11/29/07							Beta:
12 KCKEL-1-AC F7K190152-11-SAMP 11/16/2007 11:25		1.02g.in	THTC12024 11/30/07.pd 11/29/07							Beta:
13 KCKEM-1-AC F7K190152-12-SAMP 11/16/2007 09:16		1.03g.in	THTC12025 11/30/07.pd 11/29/07							Beta:
14 KCKEM-1-AF-X F7K190152-12-DUP 11/16/2007 09:16		1.01g.in	THTC12026 11/30/07.pd 11/29/07							Beta:

12/4/2007 5:41:47 AM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
 AnalyzeDate: 12/12/2007  
 Batch: 7327116  
 SEQ Batch, Test: None

Sample Preparation/Analysis  
 D2 Th PrpRC5013/5032, SepRC5084(5003)  
 S1 Thorium-228,230,232 by Alpha Spec  
 01 STANDARD TEST SET  
 PM, Quote: JAE, 77571  
 pCi/g

Balance Id:1120373922  
 Pipet #:  
 Sep1 DT/Tm Tech:  
 Sep2 DT/Tm Tech:  
 Prep Tech: ,WoodT

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
15KCKE1-1-AC		1.01g.in	THTC12027 11/30/07.pd			250				
F7K190152-13-SAMP			11/30/07 11/30/07							
11/16/2007 09:50			AmtRec: 500SL							
16KCKE1-1-AC		1.01g.in	THTC12028 11/30/07.pd							
F7K190152-14-SAMP			11/30/07 11/30/07							
11/16/2007 11:50			AmtRec: 500SL							
17KCKE2-1-AC		1.03g.in	THTC12029 11/30/07.pd							
F7K190152-15-SAMP			11/30/07 11/30/07							
11/16/2007 12:10			AmtRec: 500SL							
18KCR6R-1-AA-B		1.01g.in	THTC12030 11/30/07.pd							
J7K230000-116-BLK			11/30/07 11/30/07							
11/16/2007 06:40			AmtRec:							
19KCR6R-1-AC-C		1.00g.in	THSI1114 11/27/07.pd							
J7K230000-116-LCS			09/24/07 09/24/07							
11/16/2007 06:40			AmtRec:							

**Comments:**

All Clients for Batch:  
 445691, Basic Remediation Company  
 Basic Remediation Company , JAE, 77571

KCKD61AC-SAMP Constituent List:

TA Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 3  
 Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added  
 ISV - Insufficient Volume for Analysis  
 WO Cnt: 19  
 Prep ,SamplePrep v4.8.29

# ICOC Fraction Transfer/Status Report

ByDate: 12/17/2006, 12/22/2007, Batch: '7327116', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>7327116</b>				
AC	<b>CalcC</b>	<b>WoodT</b>	12/4/2007 5:40:58	
SC		antonsonl	IsBatched	11/23/2007 10:46:18 AM
SC		WoodT	InPrep	12/4/2007 5:40:58 AM
SC		WoodT	Prep1C	12/4/2007 5:42:56 AM
SC		WoodT	InPrep2	12/4/2007 5:43:17 AM
SC		WoodT	Prep2C	12/4/2007 5:43:37 AM
SC		AshworthA	Sep1C	12/7/2007 1:52:45 PM
SC		FABREM	Sep2C	12/8/2007 12:50:14 PM
SC		BlackCL	InCnt1	12/8/2007 1:19:35 PM
SC		DAWKINSO	CalcC	12/14/2007 8:39:39 PM
AC		<b>WoodT</b>	12/4/2007 5:42:56	
AC		<b>WoodT</b>	12/4/2007 5:43:17	
AC		<b>WoodT</b>	12/4/2007 5:43:37	
AC		<b>AshworthA</b>	12/7/2007 1:52:45 PM	
AC		<b>FABREM</b>	12/8/2007 12:50:14	
AC		<b>BlackCL</b>	12/8/2007 1:19:35 PM	
AC		<b>DAWKINSO</b>	12/14/2007 8:39:39	

AC: Accepting Entry; SC: Status Change

## Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix Cnt Uncert	Received Date Tot uncert_mga	Sample Date Units	Expected Yield	Volumes	
<b>TRNC/D-6RD</b>	<b>9KCKD610</b>		<b>F7K1901521</b>	TSB-FJ-08-0'	SOLID	11/19/2007 8:45:00	11/16/2007 6:40:00 AM			
TH-228	D2S1	0	12/10/2007 10:33:09	1.7833E+00	1.267E-01	1.903E-01	6.149E-02	pCi/g	0.963	1.01E+0
TH-230	D2S1	0	12/10/2007 10:33:09	9.2475E-01	9.001E-02	1.163E-01	4.186E-02	pCi/g	0.963	1.01E+0
TH-232	D2S1	0	12/10/2007 10:33:09	1.8932E+00	1.288E-01	1.983E-01	4.939E-02	pCi/g	0.963	1.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKD810</b>		<b>F7K1901522</b>	TSB-FJ-08-10'	SOLID	11/19/2007 8:45:00	11/16/2007 7:05:00 AM			
TH-228	D2S1	0	12/10/2007 2:17:09 PM	1.6249E+00	1.354E-01	1.875E-01	6.35E-02	pCi/g	0.803	1.0E+0
TH-230	D2S1	0	12/10/2007 2:17:09 PM	1.1826E+00	1.14E-01	1.48E-01	5.254E-02	pCi/g	0.803	1.0E+0
TH-232	D2S1	0	12/10/2007 2:17:09 PM	1.6543E+00	1.348E-01	1.887E-01	5.254E-02	pCi/g	0.803	1.0E+0
<b>TRNC/D-6RD</b>	<b>9KCKD910</b>		<b>F7K1901523</b>	TSB-FR-05-0'	SOLID	11/19/2007 8:45:00	11/16/2007 7:35:00 AM			
TH-228	D2S1	0	12/10/2007 2:17:09 PM	1.5819E+00	1.199E-01	1.738E-01	4.354E-02	pCi/g	0.959	1.02E+0
TH-230	D2S1	0	12/10/2007 2:17:09 PM	1.1342E+00	1.004E-01	1.35E-01	4.251E-02	pCi/g	0.959	1.02E+0
TH-232	D2S1	0	12/10/2007 2:17:09 PM	1.4626E+00	1.14E-01	1.629E-01	4.251E-02	pCi/g	0.959	1.02E+0
<b>TRNC/D-6RD</b>	<b>9KCKE110</b>		<b>F7K19015214</b>	TSB-GJ-01-0'	SOLID	11/19/2007 8:45:00	11/16/2007 11:50:00 AM			
TH-228	D2S1	0	12/11/2007 7:13:27 PM	1.4668E+00	1.214E-01	1.685E-01	4.812E-02	pCi/g	0.878	1.01E+0
TH-230	D2S1	0	12/11/2007 7:13:27 PM	1.1247E+00	1.051E-01	1.381E-01	4.692E-02	pCi/g	0.878	1.01E+0
TH-232	D2S1	0	12/11/2007 7:13:27 PM	1.4383E+00	1.188E-01	1.65E-01	4.692E-02	pCi/g	0.878	1.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKE210</b>		<b>F7K19015215</b>	TSB-GJ-01-5'	SOLID	11/19/2007 8:45:00	11/16/2007 12:10:00 PM			
TH-228	D2S1	0	12/11/2007 7:13:27 PM	1.8648E+00	1.289E-01	1.965E-01	6.094E-02	pCi/g	0.954	1.03E+0
TH-230	D2S1	0	12/11/2007 7:13:27 PM	1.1922E+00	1.016E-01	1.39E-01	4.144E-02	pCi/g	0.954	1.03E+0
TH-232	D2S1	0	12/11/2007 7:13:27 PM	1.7286E+00	1.224E-01	1.84E-01	4.144E-02	pCi/g	0.954	1.03E+0
<b>TRNC/D-6RD</b>	<b>9KCKEA10</b>		<b>F7K1901524</b>	TSB-FR-05-10'	SOLID	11/19/2007 8:45:00	11/16/2007 7:50:00 AM			
TH-228	D2S1	0	12/10/2007 2:17:09 PM	1.6255E+00	1.221E-01	1.778E-01	6.266E-02	pCi/g	0.927	1.03E+0
TH-230	D2S1	0	12/10/2007 2:17:09 PM	1.138E+00	1.008E-01	1.354E-01	4.265E-02	pCi/g	0.927	1.03E+0
TH-232	D2S1	0	12/10/2007 2:17:09 PM	1.5192E+00	1.165E-01	1.678E-01	5.032E-02	pCi/g	0.927	1.03E+0
<b>TRNC/D-6RD</b>	<b>9KCKEC10</b>		<b>F7K1901525</b>	TSB-FR-04-0'	SOLID	11/19/2007 8:45:00	11/16/2007 8:15:00 AM			
TH-228	D2S1	0	12/10/2007 2:17:09 PM	1.5965E+00	1.323E-01	1.834E-01	5.244E-02	pCi/g	0.985	1.01E+0
TH-230	D2S1	0	12/10/2007 2:17:09 PM	1.1117E+00	1.09E-01	1.404E-01	5.12E-02	pCi/g	0.985	1.01E+0
TH-232	D2S1	0	12/10/2007 2:17:09 PM	1.6889E+00	1.344E-01	1.9E-01	5.12E-02	pCi/g	0.985	1.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKED10</b>		<b>F7K1901526</b>	TSB-FR-04-0'-FD	SOLID	11/19/2007 8:45:00	11/16/2007 8:15:00 AM			
TH-228	D2S1	0	12/10/2007 6:11:09 PM	1.5166E+00	1.398E-01	1.849E-01	8.085E-02	pCi/g	0.684	1.03E+0
TH-230	D2S1	0	12/10/2007 6:11:09 PM	9.7021E-01	1.105E-01	1.349E-01	7.065E-02	pCi/g	0.684	1.03E+0
TH-232	D2S1	0	12/10/2007 6:11:09 PM	1.5478E+00	1.392E-01	1.861E-01	5.988E-02	pCi/g	0.684	1.03E+0
<b>TRNC/D-6RD</b>	<b>9KCKEE10</b>		<b>F7K1901527</b>	TSB-FR-04-10'	SOLID	11/19/2007 8:45:00	11/16/2007 8:50:00 AM			
TH-228	D2S1	0	12/10/2007 6:11:09 PM	1.8915E+00	1.78E-01	2.34E-01	8.017E-02	pCi/g	0.532	1.0E+0
TH-230	D2S1	0	12/10/2007 6:11:09 PM	1.0424E+00	1.308E-01	1.552E-01	7.825E-02	pCi/g	0.532	1.0E+0
TH-232	D2S1	0	12/10/2007 6:11:09 PM	1.3202E+00	1.471E-01	1.813E-01	7.825E-02	pCi/g	0.532	1.0E+0
<b>TRNC/D-6RD</b>	<b>9KCKEG10</b>		<b>F7K1901528</b>	TSB-GR-01-0'	SOLID	11/19/2007 8:45:00	11/16/2007 10:20:00 AM			
TH-228	D2S1	0	12/10/2007 6:11:09 PM	2.2258E+00	1.644E-01	2.421E-01	8.3E-02	pCi/g	0.7	1.03E+0
TH-230	D2S1	0	12/10/2007 6:11:09 PM	1.2834E+00	1.232E-01	1.602E-01	5.649E-02	pCi/g	0.7	1.03E+0
TH-232	D2S1	0	12/10/2007 6:11:09 PM	1.9651E+00	1.525E-01	2.187E-01	6.665E-02	pCi/g	0.7	1.03E+0
<b>TRNC/D-6RD</b>	<b>9KCKEJ10</b>		<b>F7K1901529</b>	TSB-GR-01-5'	SOLID	11/19/2007 8:45:00	11/16/2007 10:40:00 AM			
TH-228	D2S1	0	12/10/2007 6:11:09 PM	1.6707E+00	1.446E-01	1.965E-01	5.981E-02	pCi/g	0.855	1.02E+0
TH-230	D2S1	0	12/10/2007 6:11:09 PM	1.158E+00	1.188E-01	1.504E-01	5.838E-02	pCi/g	0.855	1.02E+0
TH-232	D2S1	0	12/10/2007 6:11:09 PM	1.4627E+00	1.335E-01	1.772E-01	5.838E-02	pCi/g	0.855	1.02E+0
<b>TRNC/D-6RD</b>	<b>9KCKEK10</b>		<b>F7K19015210</b>	TSB-GJ-06-0'	SOLID	11/19/2007 8:45:00	11/16/2007 11:15:00 AM			
TH-228	D2S1	0	12/11/2007 3:25:19 PM	2.3259E+00	1.506E-01	2.386E-01	6.132E-02	pCi/g	0.92	1.01E+0
TH-230	D2S1	0	12/11/2007 3:25:19 PM	1.3797E+00	1.145E-01	1.587E-01	5.355E-02	pCi/g	0.92	1.01E+0
TH-232	D2S1	0	12/11/2007 3:25:19 PM	1.8649E+00	1.33E-01	1.993E-01	4.539E-02	pCi/g	0.92	1.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKEL10</b>		<b>F7K19015211</b>	TSB-GJ-06-5'	SOLID	11/19/2007 8:45:00	11/16/2007 11:25:00 AM			
TH-228	D2S1	0	12/11/2007 3:25:19 PM	1.7488E+00	1.473E-01	2.03E-01	5.94E-02	pCi/g	0.704	1.02E+0
TH-230	D2S1	0	12/11/2007 3:25:19 PM	1.1226E+00	1.167E-01	1.471E-01	5.794E-02	pCi/g	0.704	1.02E+0
TH-232	D2S1	0	12/11/2007 3:25:19 PM	1.546E+00	1.369E-01	1.843E-01	5.794E-02	pCi/g	0.704	1.02E+0

7327116, \*\*Samples Inserted | Updated | NotUpdated => 19 | 0 | 0,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 55 | 0 | 0 | 0.  
 \*\*Diff RptDb | Qtims => .

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix Cnt Uncert	Received Date Tot uncert	Sample Date Units	Expected Yield	Volumes
<b>TRNC/D-6RD</b>	<b>9KCKEM10</b>		<b>F7K19015212</b>	TSB-FJ-01-0'	SOLID	11/19/2007 8:45:00	11/16/2007 9:16:00 AM		
TH-228	D2S1	0	12/11/2007 3:25:19 PM	<b>2.1224E+00</b>	1.45E-01	2.226E-01 6.774E-02	pCi/g	0.858	1.03E+0
TH-230	D2S1	0	12/11/2007 3:25:19 PM	<b>1.3543E+00</b>	1.142E-01	1.571E-01 4.607E-02	pCi/g	0.858	1.03E+0
TH-232	D2S1	0	12/11/2007 3:25:19 PM	<b>1.8333E+00</b>	1.33E-01	1.974E-01 5.435E-02	pCi/g	0.858	1.03E+0
<b>TRNC/D-6RD</b>	<b>9KCKET10</b>		<b>F7K19015213</b>	TSB-FJ-01-10'	SOLID	11/19/2007 8:45:00	11/16/2007 9:50:00 AM		
TH-228	D2S1	0	12/11/2007 7:13:27 PM	<b>1.4771E+00</b>	1.224E-01	1.697E-01 6.368E-02	pCi/g	0.887	1.01E+0
TH-230	D2S1	0	12/11/2007 7:13:27 PM	<b>1.159E+00</b>	1.069E-01	1.412E-01 4.712E-02	pCi/g	0.887	1.01E+0
TH-232	D2S1	0	12/11/2007 7:13:27 PM	<b>1.8673E+00</b>	1.356E-01	2.012E-01 4.712E-02	pCi/g	0.887	1.01E+0
<b>TRNC/D-6RD</b>	<b>KCKD61ER</b>		<b>F7K1901521</b>	TSB-FJ-08-0' DUP	SOLID	11/19/2007 8:45:00	11/16/2007 6:40:00 AM		
TH-228	D2S1	0 R	12/10/2007 10:33:09	<b>1.5969E+00</b>	1.362E-01	1.863E-01 5.55E-02	pCi/g	0.921	1.02E+0
TH-230	D2S1	0 R	12/10/2007 10:33:09	<b>1.0409E+00</b>	1.085E-01	1.366E-01 5.419E-02	pCi/g	0.921	1.02E+0
TH-232	D2S1	0 R	12/10/2007 10:33:09	<b>1.765E+00</b>	1.413E-01	1.993E-01 5.419E-02	pCi/g	0.921	1.02E+0
<b>TRNC/D-6RD</b>	<b>KCKEM1FR</b>		<b>F7K19015212</b>	TSB-FJ-01-0' DUP	SOLID	11/19/2007 8:45:00	11/16/2007 9:16:00 AM		
TH-228	D2S1	0 R	12/11/2007 3:25:19 PM	<b>2.2451E+00</b>	1.603E-01	2.4E-01 6.453E-02	pCi/g	0.945	1.01E+0
TH-230	D2S1	0 R	12/11/2007 3:25:19 PM	<b>1.1471E+00</b>	1.131E-01	1.453E-01 5.334E-02	pCi/g	0.945	1.01E+0
TH-232	D2S1	0 R	12/11/2007 3:25:19 PM	<b>2.0715E+00</b>	1.519E-01	2.242E-01 5.334E-02	pCi/g	0.945	1.01E+0
<b>TRNC/D-6RD</b>	<b>KCR6R1AB</b>		<b>J7K230000116</b>	INTRA-LAB BLANK	SOLID	11/19/2007 8:45:00	11/16/2007 6:40:00 AM		
TH-228	D2S1	0 B	12/11/2007 7:13:27 PM	<b>9.141E-03</b>	1.165E-02	1.168E-02 5.473E-02	pCi/g	0.945	1.01E+0
TH-230	D2S1	0 B	12/11/2007 7:13:27 PM	<b>0.0E+00</b>	0.0E+00	1.136E-02 5.336E-02	pCi/g	0.945	1.01E+0
TH-232	D2S1	0 B	12/11/2007 7:13:27 PM	<b>0.0E+00</b>	0.0E+00	1.136E-02 5.336E-02	pCi/g	0.945	1.01E+0
<b>TRNC/D-6RD</b>	<b>KCR6R1CS</b>		<b>J7K230000116</b>	INTRA-LAB CHECK	SOLID	11/19/2007 8:45:00	11/16/2007 6:40:00 AM		
TH-230	D2S1	0 S	12/14/2007 3:01:40 PM	<b>2.5239E+00</b>	1.536E-01	2.53E-01 5.271E-02	pCi/g	2.2997E+00 0.944	1.0E+0

7327116, \*\*Samples Inserted | Updated | NotUpdated => 19 | 0 | 0,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 55 | 0 | 0 | 0.  
 \*\*Diff RptDb | Qtimes => .

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	IDC	QC	Trc	Yld	LCS	Yld
Thlso by ALP																
Richland Standard Alplso Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71																
Calc	S1	SOLID	KCKD61AC	TH-228	1.78E+00	(1.90E-01)		pCi/g	R	1.86E-02	6.15E-02			96%		
Calc	S1	SOLID	KCKD61AC	TH-230	9.25E-01	(1.16E-01)		pCi/g	R	9.09E-03	4.19E-02			96%		
Calc	S1	SOLID	KCKD61AC	TH-232	1.89E+00	(1.98E-01)		pCi/g	R	1.29E-02	4.94E-02			96%		
Calc	S1	SOLID	KCKD61AE	TH-228	1.60E+00	(1.86E-01)		pCi/g	R	1.21E-02	5.55E-02	R		92%		
Calc	S1	SOLID	KCKD61AE	TH-230	1.04E+00	(1.37E-01)		pCi/g	R	1.18E-02	5.42E-02	R		92%		
Calc	S1	SOLID	KCKD61AE	TH-232	1.77E+00	(1.99E-01)		pCi/g	R	1.18E-02	5.42E-02	R		92%		
Calc	S1	SOLID	KCKD81AC	TH-228	1.62E+00	(1.87E-01)		pCi/g	R	1.65E-02	6.35E-02			80%		
Calc	S1	SOLID	KCKD81AC	TH-230	1.18E+00	(1.48E-01)		pCi/g	R	1.14E-02	5.25E-02			80%		
Calc	S1	SOLID	KCKD81AC	TH-232	1.65E+00	(1.89E-01)		pCi/g	R	1.14E-02	5.25E-02			80%		
Calc	S1	SOLID	KCKD91AC	TH-228	1.58E+00	(1.74E-01)		pCi/g	R	9.46E-03	4.35E-02			96%		
Calc	S1	SOLID	KCKD91AC	TH-230	1.13E+00	(1.35E-01)		pCi/g	R	9.23E-03	4.25E-02			96%		
Calc	S1	SOLID	KCKD91AC	TH-232	1.46E+00	(1.63E-01)		pCi/g	R	9.23E-03	4.25E-02			96%		
Calc	S1	SOLID	KCKEA1AC	TH-228	1.63E+00	(1.78E-01)		pCi/g	R	1.90E-02	6.27E-02			93%		
Calc	S1	SOLID	KCKEA1AC	TH-230	1.14E+00	(1.35E-01)		pCi/g	R	9.26E-03	4.26E-02			93%		
Calc	S1	SOLID	KCKEA1AC	TH-232	1.52E+00	(1.68E-01)		pCi/g	R	1.31E-02	5.03E-02			93%		
Calc	S1	SOLID	KCKEC1AC	TH-228	1.60E+00	(1.83E-01)		pCi/g	R	1.14E-02	5.24E-02			98%		
Calc	S1	SOLID	KCKEC1AC	TH-230	1.11E+00	(1.40E-01)		pCi/g	R	1.11E-02	5.12E-02			98%		
Calc	S1	SOLID	KCKEC1AC	TH-232	1.69E+00	(1.90E-01)		pCi/g	R	1.11E-02	5.12E-02			98%		
Calc	S1	SOLID	KCKED1AC	TH-228	1.52E+00	(1.85E-01)		pCi/g	R	2.31E-02	8.08E-02			68%		
Calc	S1	SOLID	KCKED1AC	TH-230	9.70E-01	(1.35E-01)		pCi/g	R	1.84E-02	7.07E-02			68%		
Calc	S1	SOLID	KCKED1AC	TH-232	1.55E+00	(1.86E-01)		pCi/g	R	1.30E-02	5.99E-02			68%		
Calc	S1	SOLID	KCKEE1AC	TH-228	1.89E+00	(2.34E-01)		pCi/g	R	1.74E-02	8.02E-02			53%		
Calc	S1	SOLID	KCKEE1AC	TH-230	1.04E+00	(1.55E-01)		pCi/g	R	1.70E-02	7.83E-02			53%		
Calc	S1	SOLID	KCKEE1AC	TH-232	1.32E+00	(1.81E-01)		pCi/g	R	1.70E-02	7.83E-02			53%		
Calc	S1	SOLID	KCKEG1AC	TH-228	2.23E+00	(2.42E-01)		pCi/g	R	2.51E-02	8.30E-02			70%		
Calc	S1	SOLID	KCKEG1AC	TH-230	1.28E+00	(1.60E-01)		pCi/g	R	1.23E-02	5.65E-02			70%		
Calc	S1	SOLID	KCKEG1AC	TH-232	1.97E+00	(2.19E-01)		pCi/g	R	1.74E-02	6.67E-02			70%		
Calc	S1	SOLID	KCKEJ1AC	TH-228	1.67E+00	(1.96E-01)		pCi/g	R	1.30E-02	5.98E-02			86%		
Calc	S1	SOLID	KCKEJ1AC	TH-230	1.16E+00	(1.50E-01)		pCi/g	R	1.27E-02	5.84E-02			86%		
Calc	S1	SOLID	KCKEJ1AC	TH-232	1.46E+00	(1.77E-01)		pCi/g	R	1.27E-02	5.84E-02			86%		
Calc	S1	SOLID	KCKEK1AC	TH-228	2.33E+00	(2.39E-01)		pCi/g	R	1.75E-02	6.13E-02			92%		
Calc	S1	SOLID	KCKEK1AC	TH-230	1.38E+00	(1.59E-01)		pCi/g	R	1.39E-02	5.35E-02			92%		
Calc	S1	SOLID	KCKEK1AC	TH-232	1.86E+00	(1.99E-01)		pCi/g	R	9.86E-03	4.54E-02			92%		
Calc	S1	SOLID	KCKEL1AC	TH-228	1.75E+00	(2.03E-01)		pCi/g	R	1.29E-02	5.94E-02			70%		
Calc	S1	SOLID	KCKEL1AC	TH-230	1.12E+00	(1.47E-01)		pCi/g	R	1.26E-02	5.79E-02			70%		

( ) - (1s Uncertainties)  
 IDC - Instrument Detection Level in Conc Units  
 MLcC - Method Decision Level in Conc Units  
 MDC - Minimum Detectable Concentration  
 \*Std - Lc, MDC using StdDev for Set of Blanks

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	IDC	QC Trc Yld	LCS Yld
Calc	S1	SOLID	KCKEL1AC	TH-232	1.55E+00	(1.84E-01)		pCi/g	R	1.26E-02	5.79E-02	70%	
Calc	S1	SOLID	KCKEM1AC	TH-228	2.12E+00	(2.23E-01)		pCi/g	R	2.05E-02	6.77E-02	86%	
Calc	S1	SOLID	KCKEM1AC	TH-230	1.35E+00	(1.57E-01)		pCi/g	R	1.00E-02	4.61E-02	86%	
Calc	S1	SOLID	KCKEM1AC	TH-232	1.83E+00	(1.97E-01)		pCi/g	R	1.42E-02	5.44E-02	86%	
Calc	S1	SOLID	KCKEM1AF	TH-228	2.25E+00	(2.40E-01)		pCi/g	R	1.68E-02	6.45E-02	R 95%	
Calc	S1	SOLID	KCKEM1AF	TH-230	1.15E+00	(1.45E-01)		pCi/g	R	1.16E-02	5.33E-02	R 95%	
Calc	S1	SOLID	KCKEM1AF	TH-232	2.07E+00	(2.24E-01)		pCi/g	R	1.16E-02	5.33E-02	R 95%	
Calc	S1	SOLID	KCKET1AC	TH-228	1.48E+00	(1.70E-01)		pCi/g	R	1.82E-02	6.37E-02	89%	
Calc	S1	SOLID	KCKET1AC	TH-230	1.16E+00	(1.41E-01)		pCi/g	R	1.02E-02	4.71E-02	89%	
Calc	S1	SOLID	KCKET1AC	TH-232	1.87E+00	(2.01E-01)		pCi/g	R	1.02E-02	4.71E-02	89%	
Calc	S1	SOLID	KCKE11AC	TH-228	1.47E+00	(1.68E-01)		pCi/g	R	1.05E-02	4.81E-02	88%	
Calc	S1	SOLID	KCKE11AC	TH-230	1.12E+00	(1.38E-01)		pCi/g	R	1.02E-02	4.69E-02	88%	
Calc	S1	SOLID	KCKE11AC	TH-232	1.44E+00	(1.65E-01)		pCi/g	R	1.02E-02	4.69E-02	88%	
Calc	S1	SOLID	KCKE21AC	TH-228	1.86E+00	(1.96E-01)		pCi/g	R	1.85E-02	6.09E-02	95%	
Calc	S1	SOLID	KCKE21AC	TH-230	1.19E+00	(1.39E-01)		pCi/g	R	9.00E-03	4.14E-02	95%	
Calc	S1	SOLID	KCKE21AC	TH-232	1.73E+00	(1.84E-01)		pCi/g	R	9.00E-03	4.14E-02	95%	
Calc	S1	SOLID	KCR6R1AA	TH-228	9.14E-03	(1.17E-02)	U4	pCi/g	R	1.19E-02	5.47E-02	B 95%	
Calc	S1	SOLID	KCR6R1AA	TH-230	0.00E+00	(1.14E-02)	U4	pCi/g	R	1.16E-02	5.34E-02	B 95%	
Calc	S1	SOLID	KCR6R1AA	TH-232	0.00E+00	(1.14E-02)	U4	pCi/g	R	1.16E-02	5.34E-02	B 95%	
Calc	S1	SOLID	KCR6R1AC	TH-228	-3.84E-03	(9.97E-03)	U4	pCi/g	R	1.41E-02	5.42E-02	S 94%	
Calc	S1	SOLID	KCR6R1AC	TH-230	2.52E+00	(2.53E-01)		pCi/g	R	1.37E-02	5.27E-02	S 94%	110%
Calc	S1	SOLID	KCR6R1AC	TH-232	7.46E-03	(9.53E-03)	U4	pCi/g	R	9.70E-03	4.47E-02	S 94%	

( ) - (1s Uncertainties)  
 IDC - Instrument Detection Level in Conc Units  
 MLcC- Method Decision Level in Conc Units  
 MDC - Minimum Detectable Concentration  
 \*Std - Lc, MDC using StdDev for Set of Blanks

## Detailed Report

Sq	Calc	S1	SOLID	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	
1	445691,TSB-FJ-08-0'	STLE	AlpisoWoBS	KCKD61AC	pCi/g				11/16/07 06:40	12/10/07 10:33		786.47	Alq	1	9	1.01 g	
							SOLID										
Sq	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	TH-228	200	4	ALP176	COP	N	N	2.6518E-01	N	N	96%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0243E+00	
		199.7833333	998.95			Y		(7.955E-03)			5%		(0.000E+00)	0.990099			
1	TH-230	106	1	ALP176	COP	N	N	2.6518E-01	N	N	96%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
		199.7833333	998.95			Y		(7.955E-03)			5%		(0.000E+00)	0.990099			
2	TH-232	217	2	ALP176	COP	N	N	2.6518E-01	N	N	96%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
		199.7833333	998.95			Y		(7.955E-03)			5%		(0.000E+00)	0.990099			
3	Th-234	6675	685	GPC30C	COP	Y	N	4.3880E-01	N	N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
		20	500			Y		(1.755E-02)					(0.000E+00)	0.990099			
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC			
	12/14/07	TH-228	R	1.783341		9.97080E-01	3.903917	3.903917	1.01 G	96%		0.061495					
	3.508E+02			(0.19032)		(7.0816E-02)	(0.361936)	(0.361936)	(0.017321)			0.018628					
	12/14/07	TH-230	R	0.924746		5.29574E-01	2.073466	2.073466	1.01 G	96%		0.041863					
	3.508E+02			(0.116306)		(5.1544E-02)	(0.236632)	(0.236632)	(0.017321)			0.009093					
	12/14/07	TH-232	R	1.893193		1.08417E+00	4.244921	4.244921	1.01 G	96%		0.049391					
	3.508E+02			(0.198309)		(7.3748E-02)	(0.383881)	(0.383881)	(0.017321)			0.01286					
	12/14/07	Th-234	R	337.82632		3.32380E+02	757.474932	757.474932	1.01 G	96%							
	3.508E+02			(22.775518)		(4.0854E+00)	(31.697182)	(31.697182)	(0.017321)								

Sq	Calc	S1	SOLID	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	
2	445691,TSB-FJ-08-0' DUP	STLE	AlpisoWoBS	KCKD61AE	pCi/g				11/16/07 06:40	12/10/07 10:33		797.98	Alq	1	9	1.02 g	
							SOLID										
Sq	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	TH-228	138	1	ALP177	COP	N	N	2.1204E-01	N	N	92%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0243E+00	
		199.7833333	998.95			Y		(6.361E-03)			5%		(0.000E+00)	0.980392			
1	TH-230	92	0	ALP177	COP	N	N	2.1204E-01	N	N	92%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
		199.7833333	998.95			Y		(6.361E-03)			5%		(0.000E+00)	0.980392			
2	TH-232	156	0	ALP177	COP	N	N	2.1204E-01	N	N	92%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
		199.7833333	998.95			Y		(6.361E-03)			5%		(0.000E+00)	0.980392			
3	Th-234	6497	517	GPC30D	COP	Y	N	4.4042E-01	N	N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
		20	500			Y		(1.762E-02)					(0.000E+00)	0.980392			



Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFct	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
12/17/07	TH-228	R	1.596906	6.89747E-01	3.530405	3.530405	(0.367306)	3.530405	1.02 G	92%	0.055504			
			(0.186317)	(5.8809E-02)	(0.367306)	(0.367306)		(0.017321)			0.012056			
12/17/07	TH-230	R	1.040902	4.60499E-01	2.357019	2.357019	(0.283129)	2.357019	1.02 G	92%	0.054189			
			(0.136583)	(4.8021E-02)	(0.283129)	(0.283129)		(0.017321)			0.011771			
12/17/07	TH-232	R	1.765006	7.80846E-01	3.996685	3.996685	(0.399005)	3.996685	1.02 G	92%	0.054189			
			(0.199338)	(6.2526E-02)	(0.399005)	(0.399005)		(0.017321)			0.011771			
12/17/07	Th-234	R	324.696562	3.23816E+02	735.243631	735.243631	(30.800666)	735.243631	1.02 G	92%				
			(21.885782)	(4.0305E+00)	(30.800666)	(30.800666)		(0.017321)						

Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/IBB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol				
3	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCKD81AC	pCi/g	11/16/07 07:05	12/10/07 14:17		794.08 Alq	1	g					
							SOLID						1.00 g					
445691,TSB-FJ-08-10'																		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/10/07 12:37	TH-228	145	2	ALP171	COP	N	N	2.5595E-01		N	80%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0244E+00	
			199.7833333	998.95			Y		(7.679E-03)			4%		(0.000E+00)	1.00			
1	12/10/07 12:37	TH-230	108	1	ALP171	COP	N	N	2.5595E-01		N	80%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y		(7.679E-03)			4%		(0.000E+00)	1.00			
2	12/10/07 12:37	TH-232	151	1	ALP171	COP	N	N	2.5595E-01		N	80%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y		(7.679E-03)			4%		(0.000E+00)	1.00			
3	12/10/07 08:24	Th-234	5773	691	GPC30A	COP	Y	N	4.5050E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			20	500			Y		(1.802E-02)					(0.000E+00)	1.00			

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFct	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
12/14/07	TH-228	R	1.624946	7.23784E-01	3.521472	3.521472	(0.361076)	3.521472	1.00 G	80%	0.063502			
			(0.187493)	(6.0290E-02)	(0.361076)	(0.361076)		(0.017321)			0.016534			
12/14/07	TH-230	R	1.182556	5.39585E-01	2.625275	2.625275	(0.29785)	2.625275	1.00 G	80%	0.05254			
			(0.148042)	(5.2028E-02)	(0.29785)	(0.29785)		(0.017321)			0.011413			
12/14/07	TH-232	R	1.654261	7.54818E-01	3.672462	3.672462	(0.371205)	3.672462	1.00 G	80%	0.05254			
			(0.188736)	(6.1516E-02)	(0.371205)	(0.371205)		(0.017321)			0.011413			
12/14/07	Th-234	R	287.236117	2.87268E+02	637.664817	637.664817	(26.864724)	637.664817	1.00 G	80%				
			(19.42813)	(3.7994E+00)	(26.864724)	(26.864724)		(0.017321)						

445691,TSB-FR-05-0'

Sq Cnt Date Parameter Sample Cnt Bkgrnd Cnt Instr Geom Trc/Av Ent Efficiency1 Efficiency2 Ent Trc Yld Fct Ent Blk Value Ingr Fct Conv Fct/VolAdj Decay Abn

0 12/10/07 12:37 TH-228 174 0 ALP172 COP N N 2.5961E-01 96% N 1.0000E+00 4.5045E-01 1.0244E+00

199.7833333 998.95 Y (7.788E-03) 5% (0.000E+00) 0.980392

QC/Tracer Vial Multi/EntYld Total/Analy Vol Final/Count Vol

875.63 Alq 1 1.02 g

RecCnt:4 RADCALC v4.8.29 TA Richland

0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Alpha Spec, Thlso by ALP , Calculated Results

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC
1	12/10/07 12:37	TH-230	128	1	1	1.581903	3.496827	3.496827	1.02 G	96%	0.043543	0.0000E+00	4.5045E-01	1.0000E+00
			199.7833333	998.95		(0.173818)	(0.33695)	(0.33695)	(0.017321)	5%	0.009458	(0.000E+00)	0.980392	1.0000E+00
2	12/10/07 12:37	TH-232	165	1	1	1.134234	2.56836	2.56836	1.02 G	96%	0.042507	1.0000E+00	4.5045E-01	1.0000E+00
			199.7833333	998.95		(0.13499)	(0.273937)	(0.273937)	(0.017321)	5%	0.009233	(0.000E+00)	0.980392	1.0000E+00
3	12/10/07 08:24	Th-234	7384	743	500	1.46261	3.311938	3.311938	1.02 G	100%	0.042507	1.0000E+00	4.5045E-01	1.0000E+00
			20	500		(0.162881)	(0.324728)	(0.324728)	(0.017321)		0.009233	(0.000E+00)	0.980392	1.0000E+00
			370.995912			(24.955915)	840.083982	840.083982	1.02 G	96%	0.042507	1.0000E+00	4.5045E-01	1.0000E+00
			(24.955915)				(35.00789)	(35.00789)	(0.017321)		0.009233	(0.000E+00)	0.980392	1.0000E+00

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	S1	SOLID	*STLE	AlpisoWoBS	KCKEA1AC	pCi/g			11/16/07 07:50	12/10/07 14:17		875.63	Alq	1	9	
																1.03 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	12/10/07 12:37	TH-228	179	4	ALP176	COP	N	N	2.6518E-01		N	93%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0244E+00	
			199.7833333	998.95			Y	Y	(7.955E-03)		N	5%	N	(0.000E+00)	0.970874			
1	12/10/07 12:37	TH-230	128	1	ALP176	COP	N	N	2.6518E-01		N	93%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y	Y	(7.955E-03)		N	5%	N	(0.000E+00)	0.970874			
2	12/10/07 12:37	TH-232	171	2	ALP176	COP	N	N	2.6518E-01		N	93%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y	Y	(7.955E-03)		N	5%	N	(0.000E+00)	0.970874			
3	12/10/07 08:24	Th-234	7151	685	GPC30C	COP	Y	N	4.3880E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			20	500			Y	Y	(1.755E-02)		N		N	(0.000E+00)	0.970874			

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC
12/14/07	TH-228		R	1.625499		8.91966E-01	3.628464	3.628464	1.03 G	93%	0.062658	0.062658		
				(0.177809)		(6.6998E-02)	(0.347705)	(0.347705)	(0.017321)		0.01898	0.01898		
12/14/07	TH-230		R	1.138035		6.39693E-01	2.602231	2.602231	1.03 G	93%	0.04265	0.04265		
				(0.135436)		(5.6639E-02)	(0.277603)	(0.277603)	(0.017321)		0.009264	0.009264		
12/14/07	TH-232		R	1.51916		8.53925E-01	3.473714	3.473714	1.03 G	93%	0.05032	0.05032		
				(0.16781)		(6.5470E-02)	(0.337131)	(0.337131)	(0.017321)		0.013102	0.013102		
12/14/07	Th-234		R	354.98686		3.56180E+02	811.713765	811.713765	1.03 G	93%				
				(23.875918)		(4.2285E+00)	(33.86841)	(33.86841)	(0.017321)					

( ) - (1s Uncertainties). Q - Qualifier. U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Deflection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count. All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:6 RADCALC v4.8.29  
TA Richland

Sq	Calc	S1	SOLID	*STLE	Alpiso	WoBS	KCKED1AC	pCi/g	QC/BB	Sa/On	Date	11/16/07	08:15	12/10/07	14:17	874.94	Alq	1	g	1.01	g
0	12/10/07	12:37	TH-228	146	1	998.95	ALP177	COP	N	N	2.1204E-01	88%	N	98%	N	1.0000E+00	4.5045E-01	1.0243E+00	0.990099	0.990099	0.990099
1	12/10/07	12:37	TH-230	104	0	998.95	ALP177	COP	N	N	2.1204E-01	88%	N	98%	N	1.0000E+00	4.5045E-01	1.0000E+00	0.990099	0.990099	0.990099
2	12/10/07	12:37	TH-232	158	0	998.95	ALP177	COP	N	N	2.1204E-01	88%	N	98%	N	1.0000E+00	4.5045E-01	1.0000E+00	0.990099	0.990099	0.990099
3	12/10/07	08:24	Th-234	7611	517	500	GPC30D	COP	Y	N	4.4042E-01	100%	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00	0.990099	0.990099	0.990099

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm	Wo	Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC
12/14/07	TH-228	R	1.596466			7.29791E-01	3.494518	3.494518	(0.356409)	3.494518	1.01 G	98%	0.052444	0.052444		
3.902E+02			(0.183394)			(6.0489E-02)	(0.356409)	(0.356409)	(0.356409)	(0.356409)	(0.017321)	98%	0.011392	0.011392		
12/14/07	TH-230	R	1.111702			5.20564E-01	2.49266	2.49266	(0.285855)	2.49266	1.01 G	98%	0.051197	0.051197		
3.902E+02			(0.14038)			(5.1055E-02)	(0.285855)	(0.285855)	(0.285855)	(0.285855)	(0.017321)	98%	0.011121	0.011121		
12/14/07	TH-232	R	1.688932			7.90857E-01	3.786926	3.786926	(0.376087)	3.786926	1.01 G	98%	0.051197	0.051197		
3.902E+02			(0.19001)			(6.2925E-02)	(0.376087)	(0.376087)	(0.376087)	(0.376087)	(0.017321)	98%	0.011121	0.011121		
12/14/07	Th-234	R	384.315831			3.79516E+02	861.713819	861.713819	(35.863449)	861.713819	1.01 G	98%	0.051197	0.051197		
3.902E+02			(25.855657)			(4.3623E+00)	(35.863449)	(35.863449)	(35.863449)	(35.863449)	(0.017321)	98%	0.011121	0.011121		

Sq	Calc	S1	SOLID	*STLE	Alpiso	WoBS	KCKED1AC	pCi/g	QC/BB	Sa/On	Date	11/16/07	08:15	12/10/07	18:11	877.02	Alq	1	g	1.03	g
0	12/10/07	16:31	TH-228	119	3	998.95	ALP171	COP	N	N	2.5595E-01	68%	N	68%	N	1.0000E+00	4.5045E-01	1.0245E+00	0.970874	0.970874	0.970874
1	12/10/07	16:31	TH-230	78	2	998.95	ALP171	COP	N	N	2.5595E-01	4%	N	4%	N	1.0000E+00	4.5045E-01	1.0000E+00	0.970874	0.970874	0.970874
2	12/10/07	16:31	TH-232	124	1	998.95	ALP171	COP	N	N	2.5595E-01	68%	N	68%	N	1.0000E+00	4.5045E-01	1.0000E+00	0.970874	0.970874	0.970874
3	12/10/07	09:20	Th-234	5433	691	500	GPC30A	COP	Y	N	4.5050E-01	100%	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00	0.970874	0.970874	0.970874

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm	Wo	Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC
12/10/07	TH-228	R	1.596466			7.29791E-01	3.494518	3.494518	(0.356409)	3.494518	1.01 G	98%	0.052444	0.052444		
3.902E+02			(0.183394)			(6.0489E-02)	(0.356409)	(0.356409)	(0.356409)	(0.356409)	(0.017321)	98%	0.011392	0.011392		
12/10/07	TH-230	R	1.111702			5.20564E-01	2.49266	2.49266	(0.285855)	2.49266	1.01 G	98%	0.051197	0.051197		
3.902E+02			(0.14038)			(5.1055E-02)	(0.285855)	(0.285855)	(0.285855)	(0.285855)	(0.017321)	98%	0.011121	0.011121		
12/10/07	TH-232	R	1.688932			7.90857E-01	3.786926	3.786926	(0.376087)	3.786926	1.01 G	98%	0.051197	0.051197		
3.902E+02			(0.19001)			(6.2925E-02)	(0.376087)	(0.376087)	(0.376087)	(0.376087)	(0.017321)	98%	0.011121	0.011121		
12/10/07	Th-234	R	384.315831			3.79516E+02	861.713819	861.713819	(35.863449)	861.713819	1.01 G	98%	0.051197	0.051197		
3.902E+02			(25.855657)			(4.3623E+00)	(35.863449)	(35.863449)	(35.863449)	(35.863449)	(0.017321)	98%	0.011121	0.011121		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
12/14/07	TH-228		R	1.516604		5.92642E-01	3.384898	3.384898	1.03 G	68%		0.080849		
3.835E+02				(0.184914)		(5.4630E-02)	(0.372082)	(0.372082)	(0.017321)			0.023082		
12/14/07	TH-230		R	0.970209		3.88421E-01	2.218481	2.218481	1.03 G	68%		0.070651		
3.835E+02				(0.134908)		(4.4229E-02)	(0.28542)	(0.28542)	(0.017321)			0.018395		
12/14/07	TH-232		R	1.547832		6.19671E-01	3.539276	3.539276	1.03 G	68%		0.059882		
3.835E+02				(0.186139)		(5.5747E-02)	(0.382491)	(0.382491)	(0.017321)			0.013007		
12/14/07	Th-234		R	262.366994		2.70268E+02	599.928968	599.928968	1.03 G	68%				
3.835E+02				(17.734076)		(3.6858E+00)	(25.35355)	(25.35355)	(0.017321)					

Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCKEE1AC	pCi/g	11/16/07 08:50	12/10/07 18:11			880.49	Alq	1	9
															1.00 g

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	12/10/07 16:31	TH-228	113	0	ALP172	COP	N	N	2.5961E-01		N	53%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0245E+00	
			199.7833333	998.95			Y	Y	(7.788E-03)			3%		(0.000E+00)	1.00			
1	12/10/07 16:31	TH-230	64	1	ALP172	COP	N	N	2.5961E-01		N	53%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y	Y	(7.788E-03)			3%		(0.000E+00)	1.00			
2	12/10/07 16:31	TH-232	81	1	ALP172	COP	N	N	2.5961E-01		N	53%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y	Y	(7.788E-03)			3%		(0.000E+00)	1.00			
3	12/10/07 09:20	Th-234	4127	743	GPC30B	COP	Y	N	4.3771E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			20	500			Y	Y	(1.751E-02)					(0.000E+00)	1.00			

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
12/14/07	TH-228		R	1.891494		5.65613E-01	4.098753	4.098753	1.00 G	53%		0.080171		
3.966E+02				(0.233954)		(5.3218E-02)	(0.458229)	(0.458229)	(0.017321)			0.017415		
12/14/07	TH-230		R	1.042415		3.19346E-01	2.314163	2.314163	1.00 G	53%		0.078255		
3.966E+02				(0.155242)		(4.0056E-02)	(0.32215)	(0.32215)	(0.017321)			0.016998		
12/14/07	TH-232		R	1.320174		4.04438E-01	2.93079	2.93079	1.00 G	53%		0.078255		
3.966E+02				(0.181297)		(4.5060E-02)	(0.371401)	(0.371401)	(0.017321)			0.016998		
12/14/07	Th-234		R	210.826296		2.04864E+02	468.034845	468.034845	1.00 G	53%				
3.966E+02				(14.370106)		(3.2125E+00)	(20.10865)	(20.10865)	(0.017321)					

Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCKEG1AC	pCi/g	11/16/07 10:20	12/10/07 18:11			877.71	Alq	1	9
															1.03 g

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	12/10/07 16:31	TH-228	185	4	ALP176	COP	N	N	2.6518E-01		N	70%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0244E+00	
			199.7833333	998.95			Y	Y	(7.955E-03)			4%		(0.000E+00)	0.970874			

( ) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh.mm, 24hr Time  
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 RecCnt:9 RADCALC v4.8.29  
 TA Richland

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFcU	IDC/ILcC	BIKLC/MDC	StdDvMdc/LcC
1	12/10/07 16:31	TH-230	109	1	ALP176 COP	N	2.6518E-01	N	70%	N	1.0000E+00	4.5045E-01	1.0000E+00	1.0000E+00
			199.7833333	998.95		Y	(7.955E-03)		4%		(0.000E+00)	0.970874		1.0000E+00
2	12/10/07 16:31	TH-232	167	2	ALP176 COP	N	2.6518E-01	N	70%	N	1.0000E+00	4.5045E-01	1.0000E+00	1.0000E+00
			199.7833333	998.95		Y	(7.955E-03)		4%		(0.000E+00)	0.970874		1.0000E+00
3	12/10/07 09:20	Th-234	5418	685	GPC30C COP	Y	4.3880E-01	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00	1.0000E+00
			20	500		Y	(1.755E-02)				(0.000E+00)	0.970874		1.0000E+00

Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/IBB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCKEJ1AC	pCi/g	11/16/07 10:40	12/10/07 18:11		875.63	Alq	1	1.02 g
44	5691	T	S	B	G	R	01	5						

Sq	Cnt Date	Parameter	Sample Cnt	Bkgmd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/10/07 16:31	TH-228	134	1	ALP177	COP	N	N	2.1204E-01	N	N	86%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0244E+00	
			199.7833333	998.95		Y		Y	(6.361E-03)			4%		(0.000E+00)	0.980392			
1	12/10/07 16:31	TH-230	95	0	ALP177	COP	N	N	2.1204E-01	N	N	86%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95		Y		Y	(6.361E-03)			4%		(0.000E+00)	0.980392			
2	12/10/07 16:31	TH-232	120	0	ALP177	COP	N	N	2.1204E-01	N	N	86%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95		Y		Y	(6.361E-03)			4%		(0.000E+00)	0.980392			
3	12/10/07 09:20	Th-234	6617	517	GPC30D	COP	Y	N	4.4042E-01	N	N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			20	500		Y		Y	(1.762E-02)					(0.000E+00)	0.980392			

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFcU	IDC/ILcC	BIKLC/MDC	StdDvMdc/LcC
12/14/07	TH-228		R	1.670732		6.69726E-01	3.693062	3.693062	1.02 G	86%	0.059806			
				(0.196463)		(5.7951E-02)	(0.388024)	(0.388024)	(0.017321)		0.012991			
12/14/07	TH-230		R	1.157979		4.75515E-01	2.622129	2.622129	1.02 G	86%	0.058381			
				(0.150409)		(4.8797E-02)	(0.311171)	(0.311171)	(0.017321)		0.012681			
12/14/07	TH-232		R	1.46271		6.00651E-01	3.312163	3.312163	1.02 G	86%	0.058381			
				(0.177203)		(5.4841E-02)	(0.361135)	(0.361135)	(0.017321)		0.012681			
12/14/07	Th-234		R	330.712878		3.29816E+02	748.866991	748.866991	1.02 G	86%	0.058381			
				(22.284367)		(4.0675E+00)	(31.346091)	(31.346091)	(0.017321)		0.012681			

Sq	Calc	S1	SOLID	STLE	AlpIsoWoBS	KCKEK1AC	pCi/g	Wk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	
11	445691,TSB-GJ-06-0										11/16/07 11:15	12/11/07 15:25		876.33	Alq	1	9	1.01 g	
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
0	12/11/07 13:45	TH-228	240	3	ALP171	COP	N	N	2.5595E-01		N	92%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0253E+00		
			199.7833333	998.95			Y		(7.679E-03)			5%		(0.000E+00)	0.990099				
1	12/11/07 13:45	TH-230	146	2	ALP171	COP	N	N	2.5595E-01		N	92%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			199.7833333	998.95			Y		(7.679E-03)			5%		(0.000E+00)	0.990099				
2	12/11/07 13:45	TH-232	197	1	ALP171	COP	N	N	2.5595E-01		N	92%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			199.7833333	998.95			Y		(7.679E-03)			5%		(0.000E+00)	0.990099				
3	12/10/07 10:10	Th-234	7295	691	GPC30A	COP	Y	N	4.5050E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			20	500			Y		(1.802E-02)					(0.000E+00)	0.990099				
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EntFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDVMdC/LcC					
	12/14/07	TH-228	R	2.325915		1.19830E+00	5.08656	5.08656	1.01 G	92%		0.061323							
	3.908E+02			(0.238584)		(7.7563E-02)	(0.447149)	(0.447149)	(0.017321)			0.017507							
	12/14/07	TH-230	R	1.379707		7.28790E-01	3.09358	3.09358	1.01 G	92%		0.053548							
	3.908E+02			(0.158654)		(6.0497E-02)	(0.315923)	(0.315923)	(0.017321)			0.013942							
	12/14/07	TH-232	R	1.864877		9.85067E-01	4.181432	4.181432	1.01 G	92%		0.045385							
	3.908E+02			(0.199287)		(7.0262E-02)	(0.388348)	(0.388348)	(0.017321)			0.009859							
	12/14/07	Th-234	R	359.730367		3.63368E+02	806.588235	806.588235	1.01 G	92%									
	3.908E+02			(24.217722)		(4.2709E+00)	(33.627531)	(33.627531)	(0.017321)										
Sq	Status Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol				
12	445691,TSB-GJ-06-5	SOLID	*STLE	AlpIsoWoBS	KCKEL1AC	pCi/g		11/16/07 11:25	12/11/07 15:25		874.94	Alq	1	1.02 g					
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
0	12/11/07 13:45	TH-228	141	0	ALP172	COP	N	N	2.5961E-01		N	70%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0253E+00		
			199.7833333	998.95			Y		(7.788E-03)			4%		(0.000E+00)	0.980392				
1	12/11/07 13:45	TH-230	93	1	ALP172	COP	N	N	2.5961E-01		N	70%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			199.7833333	998.95			Y		(7.788E-03)			4%		(0.000E+00)	0.980392				
2	12/11/07 13:45	TH-232	128	1	ALP172	COP	N	N	2.5961E-01		N	70%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			199.7833333	998.95			Y		(7.788E-03)			4%		(0.000E+00)	0.980392				
3	12/10/07 10:10	Th-234	5421	743	GPC30B	COP	Y	N	4.3771E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			20	500			Y		(1.751E-02)					(0.000E+00)	0.980392				

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net.Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdVnMdc/LcC			
	12/14/07	TH-228	R	1.748791 (0.202959)		7.05765E-01 (5.9445E-02)	3.862335 (0.399164)	3.862335 (0.399164)	1.02 G (0.017321)	70%		0.059403 0.012903					
	12/14/07	TH-230	R	1.122601 (0.147136)		4.64503E-01 (4.8281E-02)	2.542019 (0.304939)	2.542019 (0.304939)	1.02 G (0.017321)	70%		0.057939 0.012585					
	12/14/07	TH-232	R	1.545995 (0.184319)		6.39693E-01 (5.6639E-02)	3.500755 (0.374204)	3.500755 (0.374204)	1.02 G (0.017321)	70%		0.057939 0.012585					
	12/14/07	Th-234	R	271.969906 (18.3955)		2.69564E+02 (3.6818E+00)	615.84927 (26.030457)	615.84927 (26.030457)	1.02 G (0.017321)	70%							
Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate	PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol

Sq	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCKEMTAC	pc/g											
13	445691,TSB-FJ-01-0*								11/16/07 09:16	12/11/07 15:25				877.02 Aliq	1	g	1.03 g	
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/11/07 13:45	TH-228	216	4	ALP176	COP	N	N	2.6518E-01		N	86%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0254E+00	
			199.7833333	998.95			Y	Y	(7.955E-03)		4%			(0.000E+00)	0.970874			
1	12/11/07 13:45	TH-230	141	1	ALP176	COP	N	N	2.6518E-01		N	86%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y	Y	(7.955E-03)		4%			(0.000E+00)	0.970874			
2	12/11/07 13:45	TH-232	191	2	ALP176	COP	N	N	2.6518E-01		N	86%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y	Y	(7.955E-03)		4%			(0.000E+00)	0.970874			
3	12/10/07 10:10	Th-234	6633	685	GPC30C	COP	Y	N	4.3880E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			20	500			Y	Y	(1.755E-02)					(0.000E+00)	0.970874			
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net.Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdVnMdc/LcC				
	12/14/07	TH-228	R	2.122379 (0.222621)		1.07717E+00 (7.3592E-02)	4.732967 (0.4291)	4.732967 (0.4291)	1.03 G (0.017321)	86%		0.067745 0.020521						
	12/14/07	TH-230	R	1.354264 (0.157055)		7.04764E-01 (5.9445E-02)	3.096662 (0.319818)	3.096662 (0.319818)	1.03 G (0.017321)	86%		0.046067 0.010007						
	12/14/07	TH-232	R	1.833257 (0.197402)		9.54034E-01 (6.9191E-02)	4.19193 (0.393502)	4.19193 (0.393502)	1.03 G (0.017321)	86%		0.054352 0.014152						
	12/14/07	Th-234	R	329.17362 (22.166901)		3.30280E+02 (4.0725E+00)	752.689152 (31.505591)	752.689152 (31.505591)	1.03 G (0.017321)	86%								
Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate	PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	

Sq	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCKEMTAF	pc/g											
14	445691,TSB-FJ-01-0* DUP								11/16/07 09:16	12/11/07 15:25				880.49 Aliq	1	g	1.01 g	
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/11/07 13:45	TH-228	197	2	ALP177	COP	N	N	2.1204E-01		N	95%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0254E+00	
			199.7833333	998.95			Y	Y	(6.361E-03)		5%			(0.000E+00)	0.990099			

( ) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count. All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

# Alpha Spec, Thlso by ALP , Calculated Results

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFcFu	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
1	12/11/07 13:45	TH-230	103	0	ALP177 COP	N	N	2.1204E-01 (6.361E-03)	1.01 G (0.017321)	95%	95%	N	4.5045E-01 (0.000E+00)	1.0000E+00 (0.000E+00)
2	12/11/07 13:45	TH-232	186	0	ALP177 COP	N	N	2.1204E-01 (6.361E-03)	1.01 G (0.017321)	95%	95%	N	4.5045E-01 (0.000E+00)	1.0000E+00 (0.000E+00)
3	12/10/07 10:10	Th-234	7352	517	GPC30D COP	Y	N	4.4042E-01 (1.762E-02)	1.01 G (0.017321)	100%	100%	N	4.5045E-01 (0.000E+00)	1.0000E+00 (0.000E+00)

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFcFu	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
1	12/14/07	TH-228	R	2.245136 (0.240028)		9.84066E-01 (7.0269E-02)	4.909501 (0.456232)	4.909501 (0.456232)	1.01 G (0.017321)	95%	95%		0.064532 0.016802	
2	12/14/07	TH-230	R	1.14714 (0.1453)		5.15559E-01 (5.0809E-02)	2.572119 (0.296065)	2.572119 (0.296065)	1.01 G (0.017321)	95%	95%		0.053342 0.011587	
3	12/14/07	TH-232	R	2.071534 (0.224151)		9.31009E-01 (6.8272E-02)	4.644797 (0.438541)	4.644797 (0.438541)	1.01 G (0.017321)	95%	95%		0.053342 0.011587	
4	12/14/07	Th-234	R	371.202049 (24.98631)		3.66566E+02 (4.2874E+00)	832.310068 (34.686478)	832.310068 (34.686478)	1.01 G (0.017321)	95%	95%			

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFcFu	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
0	12/11/07 17:33	TH-228	R	1.477062 (0.16971)		7.32794E-01 (6.0712E-02)	3.229502 (0.329461)	3.229502 (0.329461)	1.01 G (0.017321)	89%	89%		0.063681 0.018181	
1	12/11/07 17:33	TH-230	R	1.158951 (0.141199)		5.89639E-01 (5.4382E-02)	2.598601 (0.285247)	2.598601 (0.285247)	1.01 G (0.017321)	89%	89%		0.047121 0.010235	
2	12/11/07 17:33	TH-232	R	1.867307 (0.201224)		9.50029E-01 (6.9002E-02)	4.186881 (0.393176)	4.186881 (0.393176)	1.01 G (0.017321)	89%	89%		0.047121 0.010235	
3	12/10/07 10:36	Th-234	R	347.306003 (23.394087)		3.50818E+02 (4.1968E+00)	778.7303 (32.512414)	778.7303 (32.512414)	1.01 G (0.017321)	89%	89%			

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sepr1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol
15	Calc	S1	SOLID	*STLE	AlpisoWoBS	KCKET1AC	pCi/g			11/16/07 09:50	12/11/07 19:13				878.41	Alq	1	g	1.01 g	
445691	TSB-FJ-10'																			

( ) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh.mm, 24hr Time



Sq	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCKE11AC	pCi/g	QC/BB	Sa/On	Date	11/16/07	11:50	12/11/07	19:13	QC/Tracer	Vial	Multi	EntYld	Total	Analy	Vol	Final/Count	Vol	
Sq	Method	Matrix	Equation	Set	Wk	Ord	Units	Matrix	QC/BB	Sa/On	Date	11/16/07	11:50	12/11/07	19:13	QC/Tracer	Vial	Multi	EntYld	Total	Analy	Vol	Final/Count	Vol
16	445691	TSB-GJ-01-0'	SOLID	0	199.7833333	998.95	0	ALP172	COP	N	N	2.5961E-01	(7.788E-03)	88%	5%	1.0000E+00	(0.000E+00)	4.5045E-01	0.990099	1.0254E+00	1.01 g	1.01 g	1.01 g	
1	12/11/07	17:33	TH-230	115	199.7833333	998.95	1	ALP172	COP	N	N	2.5961E-01	(7.788E-03)	88%	5%	1.0000E+00	(0.000E+00)	4.5045E-01	0.990099	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	
2	12/11/07	17:33	TH-232	147	199.7833333	998.95	1	ALP172	COP	N	N	2.5961E-01	(7.788E-03)	88%	5%	1.0000E+00	(0.000E+00)	4.5045E-01	0.990099	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	
3	12/10/07	10:36	Th-234	6779	743	500	Y	GPC30B	COP	Y	N	4.3771E-01	(1.751E-02)	100%	100%	1.0000E+00	(0.000E+00)	4.5045E-01	0.990099	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total	U	Q	Net	Cnt	Rt	Dpm	Wo	Blk	Dpm-Blk	Vol	Used	Trc	Yld,EnFct	LCS	Yld,EFctU	IDC	ILcC	BlkLcC/MDC	Std	DvMdc/LcC
	12/14/07	TH-228	R	1.466779			7.30792E-01	3.207282	3.207282	1.01 G		0.048117		88%										
	3.918E+02			(0.168483)			(6.0489E-02)	(0.32708)	(0.32708)	(0.017321)		0.010452												
	12/14/07	TH-230	R	1.124739			5.74623E-01	2.52189	2.52189	1.01 G		0.046925		88%										
	3.918E+02			(0.138082)			(5.3687E-02)	(0.279439)	(0.279439)	(0.017321)		0.010193												
	12/14/07	TH-232	R	1.438254			7.34796E-01	3.224856	3.224856	1.01 G		0.046925		88%										
	3.918E+02			(0.16503)			(6.0699E-02)	(0.328429)	(0.328429)	(0.017321)		0.010193												
	12/14/07	Th-234	R	343.846974			3.37464E+02	770.974456	770.974456	1.01 G		88%												
	3.918E+02			(23.175723)			(4.1171E+00)	(32.241507)	(32.241507)	(0.017321)														

QC/BB Sa/On Date 11/16/07 11:50 12/11/07 19:13  
 Analysis Date/PptWt 12/11/07 19:13  
 QC/Tracer Vial Multi EntYld Total Analy Vol Final/Count Vol  
 878.41 Alq 1 1.01 g  
 877.02 Alq 1 1.03 g

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFcU	IDC/ILcC	BIKLC/MDC	StdDvMdc/LcC
12/14/07	TH-228	R	1.864802	(0.196457)		1.05214E+00	4.158408	(0.379209)	1.03 G	95%	0.060939			
3.835E+02						(7.2736E-02)	(0.379209)	(0.017321)			0.018459			
12/14/07	TH-230	R	1.192211	(0.138978)		6.89747E-01	2.726111	(0.283388)	1.03 G	95%	0.041438			
3.835E+02						(5.8809E-02)	(0.283388)	(0.017321)			0.009001			
12/14/07	TH-232	R	1.728619	(0.184002)		1.00008E+00	3.952664	(0.365439)	1.03 G	95%	0.041438			
3.835E+02						(7.0794E-02)	(0.365439)	(0.017321)			0.009001			
12/14/07	Th-234	R	365.950012	(24.60175)		3.67180E+02	836.782133	(34.871849)	1.03 G	95%				
3.835E+02						(4.2930E+00)	(34.871849)	(0.017321)						

Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/IBB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial Multi/EntYld Total/Analy Vol Final/Count Vol

Sq	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCR6R1AA	pCi/g	B	11/16/07	06:40	12/11/07	19:13	877.02	Alq	1	g
0	INTRA-LAB	BLANK					SOLID									
0	12/11/07	17:33	TH-228	1	1	ALP177	COP	N	N	2.1204E-01	N	95%	N	1.0000E+00	4.5045E-01	1.0256E+00
								Y	Y	(6.361E-03)		5%		(0.000E+00)	0.990099	
1	12/11/07	17:33	TH-230	0	0	ALP177	COP	N	N	2.1204E-01	N	95%	N	1.0000E+00	4.5045E-01	1.0000E+00
								Y	Y	(6.361E-03)		5%		(0.000E+00)	0.990099	
2	12/11/07	17:33	TH-232	0	0	ALP177	COP	N	N	2.1204E-01	N	95%	N	1.0000E+00	4.5045E-01	1.0000E+00
								Y	Y	(6.361E-03)		5%		(0.000E+00)	0.990099	
3	12/10/07	10:36	Th-234	7321	517	GPC30D	COP	Y	N	4.4042E-01	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00
				20	500			Y	Y	(1.762E-02)				(0.000E+00)	0.990099	

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFcU	IDC/ILcC	BIKLC/MDC	StdDvMdc/LcC
12/14/07	TH-228	R	0.009141	(0.011675)		4.00437E-03	0.019984	(0.025502)	1.01 G	95%	0.054726			
3.911E+02						(5.1045E-03)	(0.025502)	(0.017321)			0.011887			
12/14/07	TH-230	R	0.00E00	(0.011361)		0.00000E+00	0.00E00	(0.025474)	1.01 G	95%	0.053358			
3.911E+02						(5.1045E-03)	(0.025474)	(0.017321)			0.01159			
12/14/07	TH-232	R	0.00E00	(0.011361)		0.00000E+00	0.00E00	(0.025474)	1.01 G	95%	0.053357			
3.911E+02						(5.1045E-03)	(0.025474)	(0.017321)			0.01159			
12/14/07	Th-234	R	369.632446	(24.882257)		3.65016E+02	828.7907	(34.545602)	1.01 G	95%				
3.911E+02						(4.2784E+00)	(34.545602)	(0.017321)						

Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/IBB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial Multi/EntYld Total/Analy Vol Final/Count Vol

Sq	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCR6R1AC	pCi/g	S	11/16/07	06:40	12/14/07	15:01	5.1054	1	g	
0	INTRA-LAB	CHECK					SOLID									
0	12/14/07	13:21	TH-228	0	2	ALP171	COP	N	N	2.5595E-01	N	94%	N	1.0000E+00	4.5045E-01	1.0285E+00
								Y	Y	(7.679E-03)		5%		(0.000E+00)	1.00	

0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yyyy hh:mm, 24hr Time  
 RecCnt:19 RADCALC v4.8.29  
 TA Richland

Batch Nbr: 7327116

Alpha Spec, Thlso by ALP, Calculated Results

12/17/2007 1:56:00 PM

Sq	CalcDate	TrcAct	Parameter	Avg	Sa Act	Total U	Q	Net Cnt	Rt	Dpm	Wo Bk	Dpm-Bk	Vol Used	TrcYld	EnFct	LCSYld	EEFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
1	12/14/07	13:21	TH-230	271	2															
				199.7833333	998.95															
				271	2															
				(0.009974)																
2	12/14/07	13:21	TH-232	1	1															
				199.7833333	998.95															
				1	1															
				(0.253041)																
3	12/10/07	11:12	Th-234	6749	691															
				20	500															
				6749	691															
				(0.00953)																
				336.030701																
				(22.665055)																
				336.030701																
				(22.665055)																

() - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Page 12  
 RecCnt: 19  
 RADCALC v4.8.29  
 TA Richland

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 07:06:10.00

LBPRINT - Rev#: 2.5

Sample ID	Isotope	Geometry
CAL6452	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
10-DEC-2007 07:06:10.00	11081	20.00	691	500.00	30A

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
9	24	651	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 07:06:10.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6453	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:06:10.00	10841	20.00	743	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	9	651	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 07:06:10.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6454	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:06:10.00	11194	20.00	685	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	11	651	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 07:06:10.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6455	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:06:10.00	10939	20.00	517	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	12	651	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 07:29:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6537	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:29:55.00	70804	20.00	691	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	24	667	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 07:29:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6538	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:29:55.00	70740	20.00	743	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	9	667	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 07:29:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6539	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:29:55.00	72745	20.00	685	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	11	667	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 07:29:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6540	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:29:55.00	66721	20.00	517	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	12	667	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 07:59:23.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCKD61AC	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 07:59:23.00	6675	20.00	685	500.00	30C

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
5	11	657	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 07:59:23.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCKD61AE	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:59:23.00	6497	20.00	517	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
5	12	657	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 08:24:22.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCKD81AC	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 08:24:22.00	5773	20.00	691	500.00	30A

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
2	24	656	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 08:24:22.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCKD91AC	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 08:24:22.00	7384	20.00	743	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
7	9	656	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 08:24:22.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCKEA1AC	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 08:24:22.00	7151	20.00	685	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
12	11	656	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 08:24:22.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCKEC1AC	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 08:24:22.00	7611	20.00	517	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
7	12	656	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 09:20:36.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCKED1AC	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 09:20:36.00	5433	20.00	691	500.00	30A

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
1	24	652	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 09:20:36.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCKEE1AC	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 09:20:36.00	4127	20.00	743	500.00	30B

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
4	9	652	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 09:20:36.00

LBPRINT - Rev#: 2.5

Sample ID	Isotope	Geometry
KCKEGLAC	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
10-DEC-2007 09:20:36.00	5418	20.00	685	500.00	30C

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
8	11	652	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 09:20:36.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCKEJ1AC	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 09:20:36.00	6617	20.00	517	500.00	30D

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
6	12	652	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 10:10:47.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCKEK1AC	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 10:10:47.00	7295	20.00	691	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
9	24	657	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 10:10:47.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCKEL1AC	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 10:10:47.00	5421	20.00	743	500.00	30B

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
9	9	657	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 10:10:47.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCKEM1AC	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 10:10:47.00	6633	20.00	685	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	11	657	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 10:10:47.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCKEM1AF	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 10:10:47.00	7352	20.00	517	500.00	30D

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
13	12	657	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 10:36:27.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCKET1AC	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 10:36:27.00	7044	20.00	691	500.00	30A

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
10	24	646	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

10-DEC-2007 10:36:27.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCKE11AC	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 10:36:27.00	6779	20.00	743	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
7	9	646	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 10:36:27.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCKE21AC	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 10:36:27.00	7371	20.00	685	500.00	30C

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
13	11	646	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 10:36:27.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCR6R1AA	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 10:36:27.00	7321	20.00	517	500.00	30D

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
5	12	646	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 11:12:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCR6R1AC	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 11:12:55.00	6749	20.00	691	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	24	654	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

# THORIUM ISOTOPIIC COUNTING REQUEST

12/10  
RD

C.R. Technician CS  
Date Counted 10/10/02  
C.R. Analyst CS  
Date Analyzed 10/10/02

Counting Time 200 Minutes  
Sample 200  
SOP's RICHRD008  
Operating: RICHRD0016  
Review: 11/16

307116

WorkOrder #	Th-229 (4845 KeV) Tracer		TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)		
KCKD61AE		10		0			
		10		0			
		10		0			
		10		0			
		10		0			
		10		0			
		10		0			
		10		0			
		10		0			
		10		0			

Comments:

Approved by: CS Date: 10/10/02

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKD61AC

Detector: ALP171 6

Report Date: 10-Dec-07 01:12 PM

Acquire Date: 10-DEC-2007 08:53:15.13

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgnd Live Time: 999 minutes

Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Right
			C/Min	keV	keV	Chnl	Chnl
TH-228	200	4	0.997	5423.2	169.5	317	345
TH-230	106	1	0.530	4687.7	145.1	196	220
TH-232	217	2	1.084	4013.0	205.4	82	116

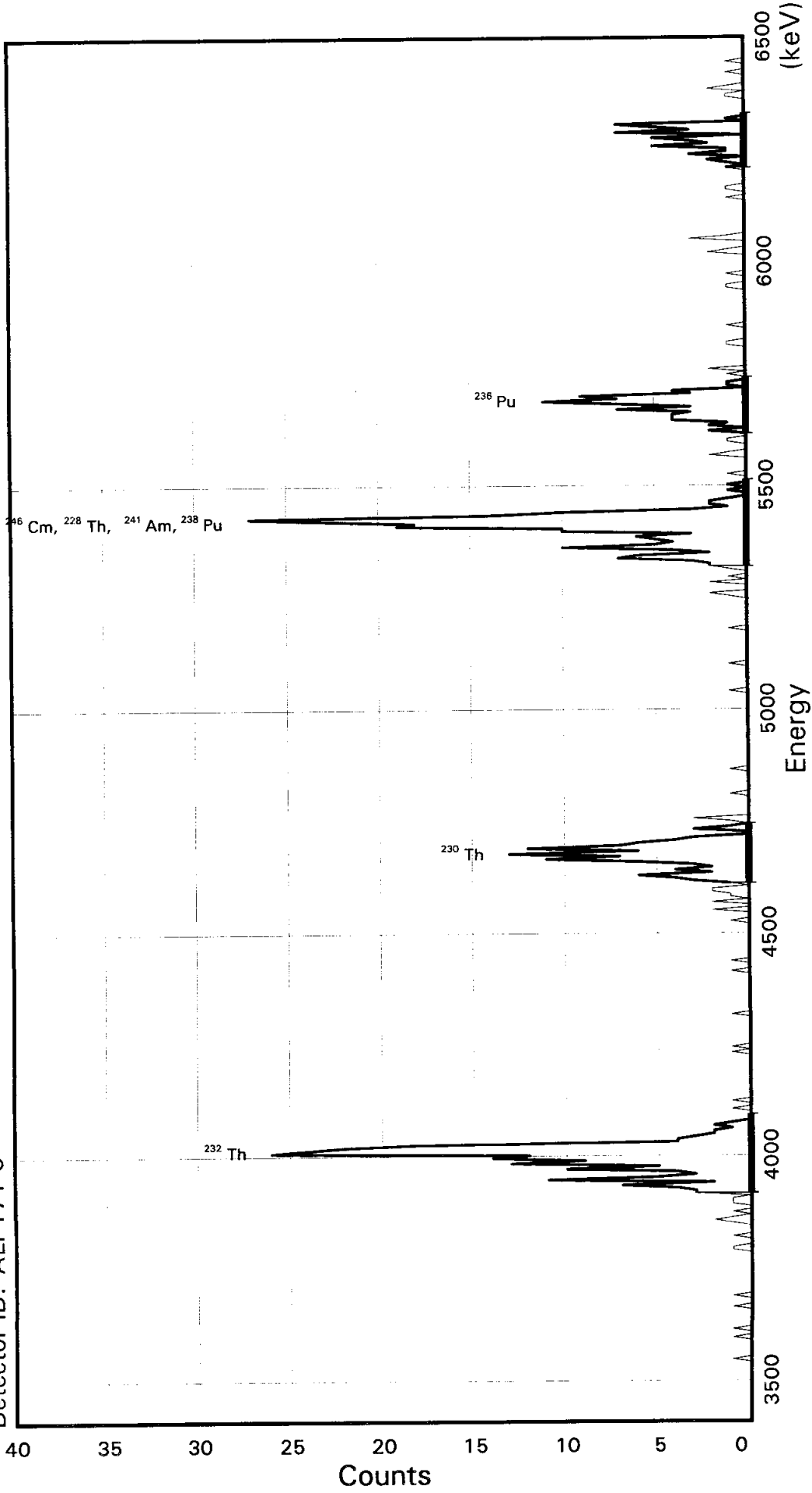
End of Alpha Region Report  
(Produced by ANAL Report)



STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKD61AC  
Detector ID: ALP171 6



Energy Coefficients:  
Offset: 3.39107E + 03  
Slope: 6.03714E + 00  
Quadrature: 2.23735E-05

Acquisition Start: 10-DEC-2007 08:53:15.13  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCKD61AC

TITLE : TH BRCO

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKD61AC\_101270853F.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 08:53:15 CALIB DATE : 09-DEC-2007 06:08:13

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3391.07 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 6.03714 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 2.237350E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: KCKD61AC

Flags Key

Detector: ALP171 6

Report Date: 10-Dec-07 12:13 PM

Intersect Region: @

Acquire Date: 10-DEC-2007 08:53:15.13

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn												
0		1	0		51	12		101	0		151	0		201	0		251	0		301	0		351	1		401	0		451	1		501
0		2	0		52	26		102	0		152	1		202	0		252	0		302	0		352	1		402	0		452	0		502
0		3	0		53	24		103	1		153	3		203	0		253	0		303	1		353	0		403	0		453	0		503
0		4	0		54	22		104	0		154	4		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	18		105	0		155	6		205	0		255	0		305	0		355	0		405	1		455	1		505
0		6	0		56	4		106	0		156	2		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	4		107	0		157	4		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	3		108	0		158	2		208	0		258	1		308	0		358	1		408	1		458	0		508
0		9	0		59	2		109	0		159	3		209	0		259	2		309	0		359	0		409	1		459	0		509
0		10	0		60	2		110	0		160	6		210	0		260	0		310	2		360	0		410	0		460	0		510
0		11	0		61	1		111	0		161	11		211	0		261	0		311	1		361	0		411	0		461	0		511
0		12	0		62	2		112	0		162	7		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	1		113	0		163	13		213	0		263	2		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	6		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	12		215	0		265	1		315	1		365	0		415	0		465			
0		16	1		66	0		116	0		166	7		216	0		266	0		316	1		366	0		416	1		466			
0		17	1		67	0		117	0		167	6		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	1		118	0		168	4		218	0		268	1		318	0		368	0		418	1		468			
0		19	0		69	0		119	1		169	3		219	0		269	2		319	2		369	0		419	2		469			
0		20	0		70	0		120	0		170	0		220	0		270	2		320	0		370	0		420	0		470			
0		21	1		71	1		121	0		171	0		221	0		271	3		321	2		371	0		421	3		471			
0		22	0		72	0		122	0		172	3		222	0		272	7		322	1		372	1		422	1		472			
0		23	0		73	0		123	1		173	1		223	1		273	6		323	4		373	1		423	1		473			
0		24	0		74	0		124	0		174	0		224	0		274	2		324	4		374	0		424	5		474			
0		25	0		75	0		125	0		175	1		225	0		275	4		325	4		375	0		425	2		475			
1		26	1		76	0		126	0		176	3		226	0		276	10		326	3		376	0		426	3		476			
0		27	2		77	0		127	0		177	0		227	0		277	5		327	7		377	1		427	5		477			
0		28	1		78	0		128	0		178	0		228	0		278	4		328	3		378	0		428	0		478			
0		29	0		79	0		129	0		179	0		229	0		279	5		329	7		379	0		429	7		479			
0		30	1		80	0		130	0		180	0		230	0		280	6		330	11		380	0		430	3		480			
0		31	0		81	0		131	0		181	0		231	0		281	3		331	7		381	0		431	5		481			
0		32	0		82	0		132	0		182	0		232	0		282	10		332	9		382	0		432	7		482			
0		33	1		83	0		133	0		183	0		233	1		283	10		333	3		383	0		433	0		483			
1		34	1		84	0		134	0		184	0		234	0		284	19		334	4		384	0		434	1		484			
0		35	1		85	0		135	0		185	1		235	0		285	18		335	0		385	2		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	23		336	1		386	1		436	0		486			
1		37	3		87	0		137	0		187	0		237	0		287	27		337	1		387	0		437	0		487			
0		38	3		88	0		138	1		188	0		238	0		288	14		338	0		388	0		438	0		488			
0		39	4		89	1		139	0		189	0		239	0		289	10		339	0		389	0		439	0		489			
0		40	7		90	0		140	0		190	0		240	0		290	3		340	1		390	3		440	0		490			
0		41	2		91	1		141	0		191	0		241	0		291	1		341	0		391	1		441	0		491			
0		42	11		92	0		142	2		192	0		242	0		292	2		342	2		392	0		442	1		492			
0		43	5		93	0		143	0		193	0		243	0		293	2		343	0		393	0		443	1		493			
0		44	3		94	0		144	0		194	1		244	0		294	1		344	0		394	0		444	0		494			
1		45	4		95	0		145	2		195	0		245	0		295	0		345	0		395	0		445	2		495			
0		46	10		96	0		146	0		196	0		246	1		296	0		346	0		396	0		446	1		496			
0		47	5		97	0		147	1		197	0		247	0		297	1		347	0		397	0		447	0		497			
0		48	13		98	0		148	1		198	0		248	0		298	0		348	0		398	0		448	0		498			
1		49	9		99	0		149	2		199	0		249	0		299	1		349	0		399	0		449	0		499			

0 50 14 100 0 150 2 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 12:13:36

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKD61AC_101270853F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 08:53:15
Sample ID         : KCKD61AC           Sample quantity  : 0.000000E+00 GRAMS
Sample type       : disk               Sample geometry   :
Detector name     : ALP171 1          Detector geometry:
Elapsed live time : 0 03:19:47.00     Elapsed real time: 0 03:19:47.00   0.0%
Start energy      : 3409.18 keV       End energy        : 6487.95 keV
Sensitivity       : 3.00              Sum Sensitivity   : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4010.83	214	0	36.22	102.62	87	29	1.79E-02	6.8	
2	0	4679.00	101	0	54.33	213.17	202	22	8.43E-03	10.0	
3	0	5420.21	199	0	36.22	335.69	319	32	1.66E-02	7.1	
4	0	5691.15	71	0	36.22	380.45	368	21	5.92E-03	11.9	
5	0	6288.69	48	0	54.33	479.11	466	20	4.00E-03	14.4	

Error Report (Date: 10-Dec-07 12:13 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKD61AE

Detector: ALP171 7

Report Date: 10-Dec-07 01:13 PM

Acquire Date: 10-DEC-2007 08:53:15.13

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

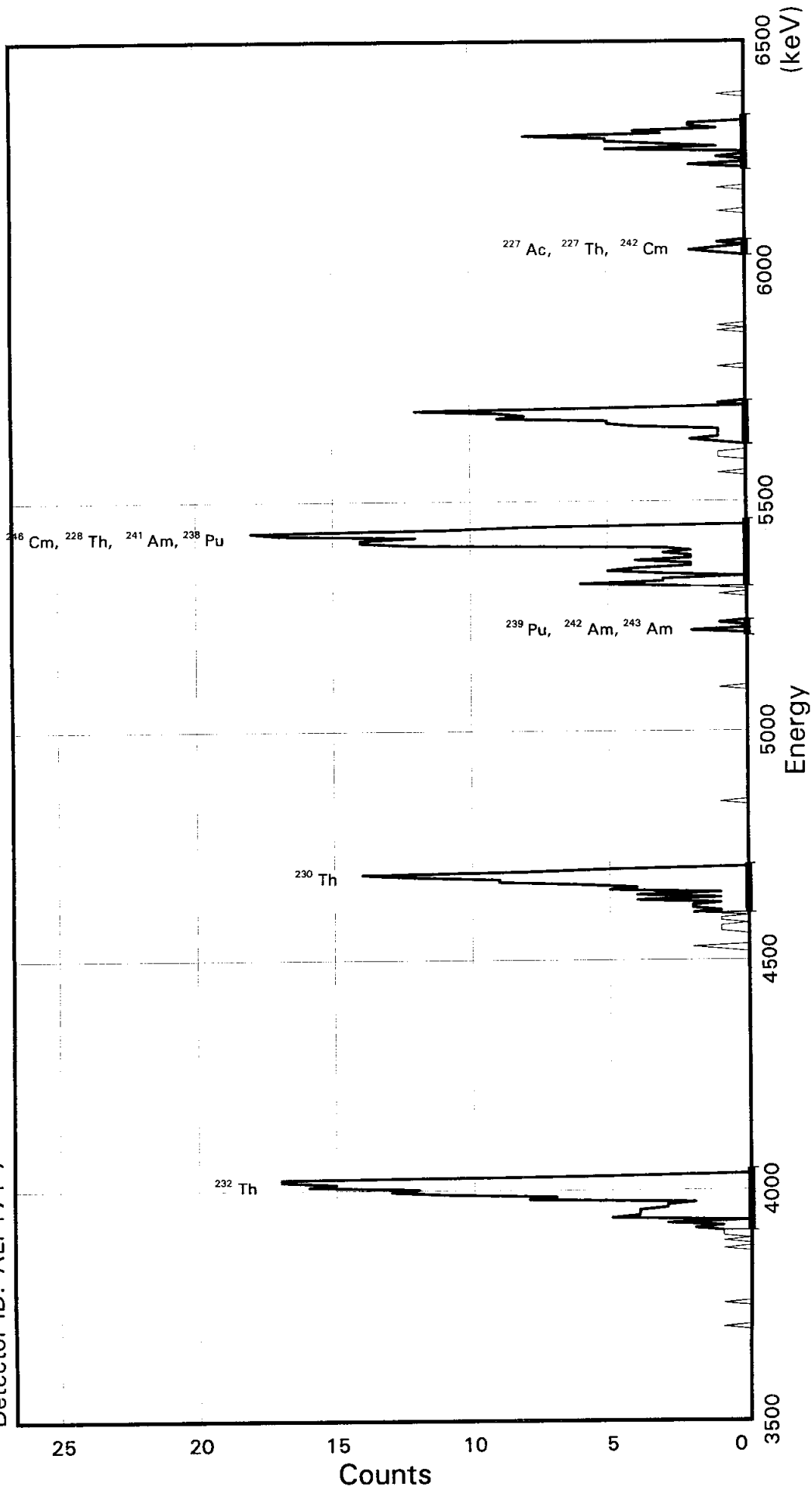
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	138	1	0.690	5423.2	112.6	310	330
TH-230	92	0	0.460	4687.7	135.2	176	200
TH-232	156	0	0.781	4013.0	140.8	55	80

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKD61AE  
Detector ID: ALP171 7



Energy Coefficients:  
Offset: 3.59067E+03  
Slope: 5.63322E+00  
Quadrature: -1.34904E-06

Acquisition Start: 10-DEC-2007 08:53:15.13  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00



SAMPLE IDENTIITY: KCKD61AE

TITLE : TH BRCO

DETECTOR : ALP171 7  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKD61AE\_101270853G.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 08:53:15 CALIB DATE : 09-DEC-2007 00:50:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3590.67 keV CONSTANT FWHM : 6.50000 Channels  
SLOPE : 5.63322 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.134904E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCKD61AE

Flags Key

Detector: ALP171 7

Report Date: 10-Dec 07 12:24 PM

Intersect Region: @

Acquire Date: 10-DEC 2007 08:53:15.13

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	1	0	51	0	101	0	151	0	201	0	251	0	301	0	351	0	401	1	451	0	501					
0	2	0	52	0	102	0	152	0	202	0	252	0	302	0	352	0	402	0	452	0	502					
0	3	1	53	0	103	0	153	0	203	0	253	1	303	0	353	0	403	0	453	0	503					
0	4	0	54	0	104	0	154	0	204	0	254	0	304	0	354	0	404	0	454	0	504					
0	5	1	55	0	105	0	155	0	205	0	255	0	305	0	355	1	405	0	455	0	505					
0	6	1	56	0	106	0	156	0	206	0	256	2	306	1	356	0	406	0	456	0	506					
0	7	1	57	0	107	0	157	0	207	0	257	6	307	1	357	1	407	0	457	0	507					
0	8	2	58	0	108	0	158	0	208	0	258	3	308	1	358	0	408	0	458	0	508					
0	9	1	59	0	109	0	159	0	209	0	259	3	309	0	359	0	409	0	459	0	509					
0	10	3	60	0	110	0	160	0	210	0	260	0	310	0	360	0	410	1	460	0	510					
0	11	0	61	0	111	0	161	0	211	0	261	3	311	0	361	0	411	0	461	0	511					
0	12	5	62	0	112	0	162	0	212	0	262	5	312	1	362	0	412	0	462	0	512					
0	13	4	63	0	113	0	163	0	213	0	263	4	313	2	363	0	413	0	463							
0	14	4	64	0	114	0	164	0	214	0	264	2	314	1	364	0	414	0	464							
0	15	4	65	0	115	0	165	0	215	0	265	2	315	1	365	0	415	0	465							
0	16	3	66	0	116	1	166	0	216	0	266	4	316	1	366	0	416	0	466							
0	17	3	67	0	117	2	167	0	217	1	267	2	317	1	367	0	417	0	467							
0	18	2	68	0	118	0	168	0	218	0	268	2	318	4	368	0	418	0	468							
0	19	8	69	0	119	0	169	0	219	0	269	3	319	5	369	0	419	2	469							
1	20	7	70	0	120	0	170	0	220	0	270	2	320	5	370	0	420	0	470							
0	21	11	71	0	121	0	171	0	221	0	271	3	321	9	371	0	421	0	471							
0	22	13	72	0	122	0	172	0	222	0	272	12	322	8	372	0	422	1	472							
0	23	12	73	0	123	1	173	1	223	0	273	14	323	9	373	0	423	0	473							
0	24	16	74	0	124	1	174	0	224	0	274	14	324	12	374	0	424	0	474							
0	25	15	75	0	125	1	175	0	225	0	275	12	325	5	375	0	425	5	475							
0	26	17	76	0	126	0	176	0	226	0	276	17	326	0	376	0	426	1	476							
0	27	17	77	0	127	1	177	0	227	0	277	18	327	1	377	0	427	3	477							
0	28	6	78	0	128	1	178	0	228	0	278	11	328	0	378	0	428	5	478							
1	29	0	79	0	129	0	179	0	229	0	279	8	329	0	379	0	429	5	479							
0	30	0	80	0	130	2	180	0	230	0	280	0	330	0	380	0	430	8	480							
0	31	0	81	0	131	1	181	0	231	0	281	0	331	0	381	0	431	3	481							
0	32	0	82	0	132	2	182	0	232	0	282	0	332	0	382	0	432	4	482							
0	33	0	83	0	133	2	183	0	233	0	283	0	333	0	383	0	433	1	483							
0	34	0	84	0	134	1	184	0	234	0	284	0	334	0	384	0	434	2	484							
0	35	0	85	0	135	4	185	0	235	0	285	0	335	0	385	1	435	2	485							
0	36	0	86	0	136	1	186	0	236	0	286	0	336	0	386	2	436	0	486							
0	37	0	87	0	137	4	187	0	237	0	287	0	337	0	387	1	437	0	487							
0	38	0	88	0	138	1	188	0	238	0	288	0	338	0	388	0	438	0	488							
0	39	0	89	0	139	5	189	0	239	2	289	0	339	0	389	1	439	0	489							
0	40	0	90	0	140	4	190	0	240	0	290	0	340	0	390	0	440	0	490							
0	41	0	91	0	141	6	191	0	241	0	291	0	341	1	391	0	441	0	491							
0	42	0	92	0	142	9	192	0	242	1	292	0	342	0	392	0	442	0	492							
0	43	0	93	0	143	9	193	0	243	0	293	0	343	0	393	0	443	0	493							
0	44	0	94	0	144	12	194	0	244	0	294	0	344	0	394	0	444	0	494							
0	45	0	95	0	145	14	195	0	245	0	295	0	345	0	395	0	445	0	495							
0	46	0	96	0	146	8	196	0	246	0	296	0	346	0	396	0	446	1	496							
0	47	0	97	0	147	5	197	0	247	0	297	0	347	0	397	0	447	0	497							
0	48	0	98	0	148	0	198	0	248	0	298	0	348	0	398	0	448	0	498							
0	49	0	99	0	149	0	199	0	249	0	299	0	349	0	399	0	449	0	499							

1 50 0 100 0 150 0 200 0 250 0 300 1 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 12:23:59

Configuration : \$DISK1:[ALP171.SAMPLE]KCKD61AE\_101270853G.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : TH BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 08:53:15  
 Sample ID : KCKD61AE Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP171 1 Detector geometry:  
 Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%  
 Start energy : 3607.57 keV End energy : 6474.53 keV  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4008.60	157	0	39.43	74.19	57	24	1.31E-02	8.0	
2	0	4682.01	92	0	33.80	193.74	180	19	7.67E-03	10.4	
3	0	5221.38	4	0	22.53	289.50	287	6	3.34E-04	50.0	
4	0	5422.28	151	0	39.43	325.17	306	26	1.26E-02	8.1	
5	0	5687.15	64	0	39.43	372.20	361	17	5.34E-03	12.5	
6	0	6049.32	4	0	22.53	436.50	434	6	3.34E-04	50.0	
7	0	6288.05	44	0	33.80	478.89	467	21	3.67E-03	15.1	

Error Report (Date: 10-Dec-07 12:24 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

# THORIUM ISOTOPIIC COUNTING REQUEST

C.R. Technician SD  
 Date Counted 12/10/07  
 C.R. Analyst SD  
 Date Analyzed 12/10/07

Counting Time 20 Minutes  
 Sample 200  
 Background See Alpha Analysis Report  
 SOP's RICHRD008  
 Operating: RICHRD008  
 Review: 1/16  
BRCO 7320116

WorkOrder #	Th-229 (4845 KeV) Tracer		TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	from Th-234 Beta Count (7)		
<u>KCKD8AC</u>		10		0	Th-228 (5423 KeV) (6)		
					Th-230 (4688 KeV) (8)	<u>171</u>	
					Th-232 (4010 KeV) (9)		
<u>KCKD91AC</u>		10		0	See Alpha Analysis Report for ROI Information		
<u>KCKE11AC</u>		10		0	See Alpha Analysis Report for ROI Information	<u>172</u>	
<u>KCKE12AC</u>		10		0	See Alpha Analysis Report for ROI Information	<u>176</u>	
<u>KCKE13AC</u>		10		0	See Alpha Analysis Report for ROI Information	<u>177</u>	
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		

Comments:

Form No: RC-012, 10/02, Rev 10  
 Approved by: AK Date: 12/10/07

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKD81AC

Detector: ALP171 1  
Report Date: 10-Dec-07 07:22 PM  
Acquire Date: 10-DEC-2007 12:37:15.07  
Tracer Nuclide: TH-229  
Sample Live Time: 200 minutes  
Bkgrnd Live Time: 999 minutes

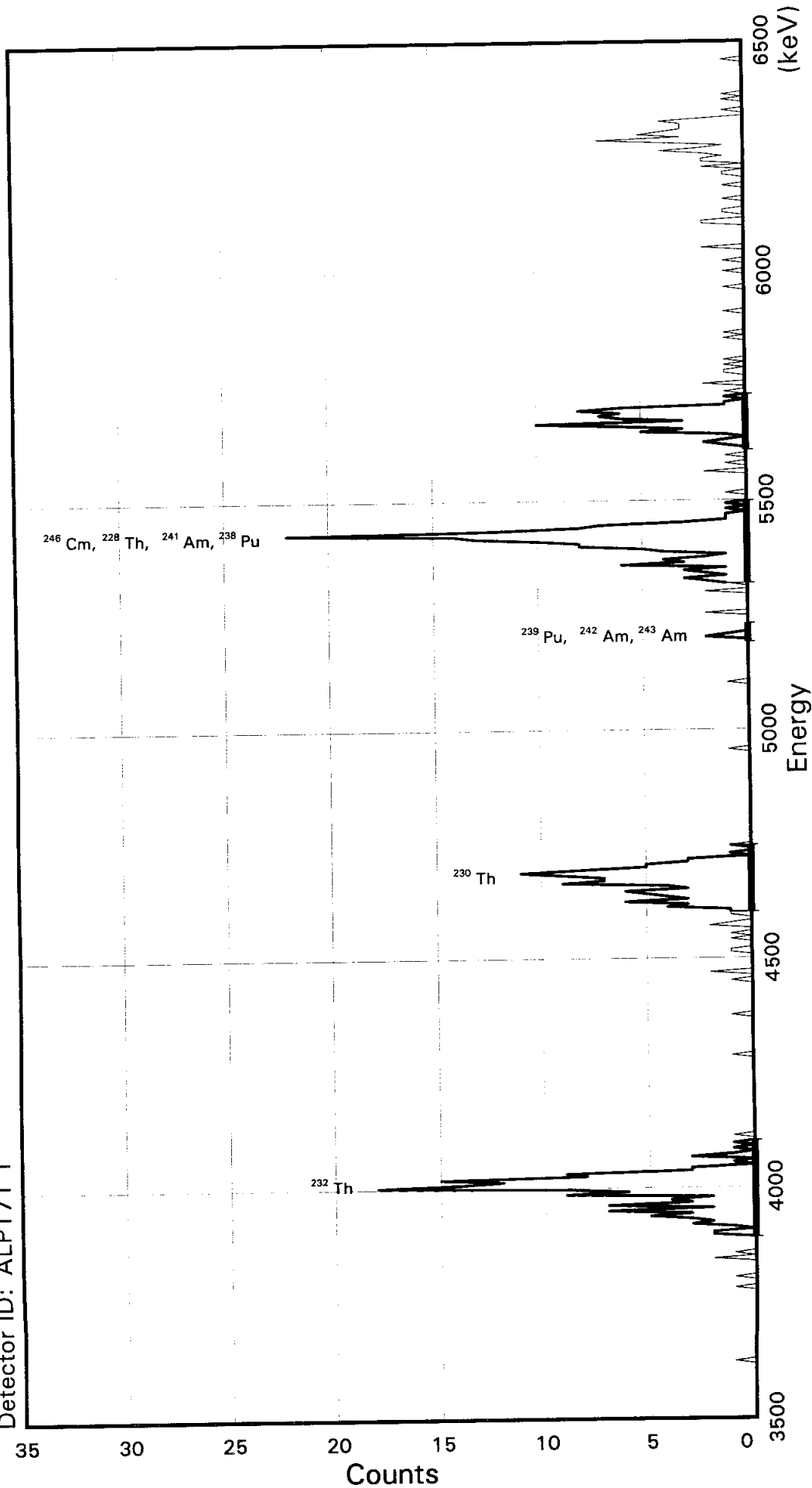
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	145	2	0.724	5423.2	145.6	313	338
TH-230	108	1	0.540	4687.7	128.1	190	212
TH-232	151	1	0.755	4013.0	151.3	70	96

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKD81AC  
Detector ID: ALP171 1



Energy Coefficients:  
Offset: 3.49623E + 03  
Slope: 5.81865E + 00  
Quadrature: 7.22650E-06

Acquisition Start: 10-DEC-2007 12:37:15.07  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00



SAMPLE IDENTIITY: KCKD81AC

TITLE : TH BRCO

DETECTOR : ALP171 1  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCKD81AC\_101271237A.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 12:37:15 CALIB DATE : 09-DEC-2007 00:48:55

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3496.23 keV CONSTANT FWHM : 8.66667 Channels  
SLOPE : 5.81865 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 7.226500E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr 07)

Sample Identity: KCKD81AC  
Detector: ALP17i 1  
Report Date: 10-Dec-07 03:57 PM  
Acquire Date: 10-DEC-2007 12:37:15.07

Flags Key  
Intersect Region: @  
Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	1		101	1		151	9		201	1		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	7		202	0		252	2		302	0		352	0		402	1		452	0		502
0		3	1		53	1		103	0		153	7		203	0		253	0		303	0		353	0		403	1		453	0		503
0		4	0		54	0		104	0		154	9		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	11		205	0		255	0		305	2		355	1		405	0		455	0		505
0		6	0		56	1		106	0		156	8		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	5		207	0		257	0		307	0		357	1		407	1		457	0		507
0		8	0		58	0		108	0		158	5		208	0		258	0		308	1		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	3		209	0		259	0		309	0		359	0		409	0		459	1		509
0		10	2		60	0		110	0		160	3		210	0		260	2		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	1		361	0		411	0		461	0		511
0		12	1		62	0		112	0		162	1		212	0		262	0		312	0		362	0		412	1		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	1		313	0		363	0		413	0		463			
0		14	0		64	0		114	1		164	0		214	0		264	2		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	1		215	0		265	3		315	1		365	1		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	1		316	2		366	0		416	1		466			
0		17	0		67	0		117	2		167	0		217	0		267	2		317	1		367	0		417	1		467			
0		18	0		68	0		118	0		168	0		218	0		268	3		318	0		368	0		418	0		468			
0		19	2		69	0		119	0		169	0		219	0		269	1		319	1		369	0		419	2		469			
0		20	2		70	0		120	0		170	0		220	0		270	6		320	5		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	3		321	3		371	0		421	2		471			
1		22	1		72	0		122	0		172	0		222	0		272	4		322	6		372	0		422	2		472			
0		23	3		73	0		123	0		173	0		223	0		273	2		323	10		373	0		423	1		473			
0		24	2		74	0		124	0		174	0		224	0		274	1		324	3		374	1		424	2		474			
0		25	3		75	0		125	1		175	0		225	0		275	4		325	6		375	0		425	4		475			
0		26	5		76	0		126	1		176	0		226	1		276	5		326	7		376	0		426	2		476			
0		27	3		77	0		127	0		177	0		227	0		277	8		327	6		377	0		427	1		477			
0		28	7		78	0		128	0		178	0		228	0		278	8		328	8		378	0		428	4		478			
0		29	2		79	0		129	0		179	0		229	0		279	10		329	6		379	0		429	7		479			
0		30	7		80	0		130	1		180	0		230	0		280	13		330	1		380	1		430	3		480			
0		31	3		81	0		131	0		181	0		231	0		281	14		331	1		381	0		431	5		481			
0		32	4		82	0		132	1		182	0		232	0		282	22		332	0		382	0		432	4		482			
0		33	2		83	0		133	0		183	0		233	0		283	12		333	1		383	0		433	3		483			
0		34	9		84	0		134	0		184	0		234	0		284	8		334	0		384	1		434	3		484			
0		35	6		85	0		135	2		185	0		235	0		285	7		335	1		385	0		435	3		485			
0		36	9		86	1		136	1		186	0		236	0		286	3		336	0		386	0		436	4		486			
0		37	18		87	0		137	0		187	0		237	0		287	1		337	0		387	0		437	2		487			
0		38	14		88	0		138	0		188	0		238	0		288	1		338	2		388	0		438	0		488			
0		39	12		89	0		139	1		189	0		239	0		289	1		339	0		389	2		439	0		489			
0		40	15		90	0		140	1		190	0		240	0		290	0		340	0		390	0		440	1		490			
0		41	8		91	0		141	1		191	0		241	0		291	1		341	0		391	0		441	0		491			
0		42	9		92	0		142	4		192	0		242	0		292	0		342	1		392	0		442	0		492			
0		43	3		93	0		143	3		193	0		243	2		293	1		343	1		393	0		443	0		493			
0		44	3		94	0		144	6		194	0		244	1		294	0		344	0		394	0		444	1		494			
0		45	0		95	0		145	3		195	0		245	0		295	0		345	1		395	0		445	0		495			
0		46	1		96	0		146	4		196	0		246	0		296	0		346	0		396	0		446	1		496			
0		47	0		97	0		147	5		197	0		247	0		297	1		347	1		397	0		447	0		497			
0		48	3		98	0		148	6		198	0		248	0		298	0		348	0		398	2		448	0		498			
1		49	1		99	0		149	3		199	0		249	0		299	0		349	0		399	2		449	0		499			

0 50 0 100 0 150 4 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 15:57:29

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKD81AC_101271237A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 12:37:15
Sample ID         : KCKD81AC           Sample quantity  : 0.00000E+00 GRAMS
Sample type       : disk               Sample geometry   :
Detector name     : ALP171 1          Detector geometry:
Elapsed live time: 0 03:19:47.00      Elapsed real time: 0 03:19:47.00   0.0%
Start energy      : 3513.69 keV        End energy        : 6477.28 keV
Sensitivity       : 3.00                Sum Sensitivity   : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4008.87	160	0	40.73	88.09	68	36	1.33E-02	7.9	
2	0	4681.46	109	0	58.19	203.64	190	25	9.09E-03	9.6	
3	0	5204.63	4	0	23.27	293.50	291	7	3.34E-04	50.0	
4	0	5423.87	146	0	40.73	331.15	313	31	1.22E-02	8.3	
5	0	5679.35	69	0	52.37	375.02	363	21	5.76E-03	12.0	

Error Report (Date: 10-Dec-07 03:57 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKD91AC

Detector: ALP171 2

Report Date: 10-Dec-07 07:25 PM

Acquire Date: 10-DEC-2007 12:37:15.07

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

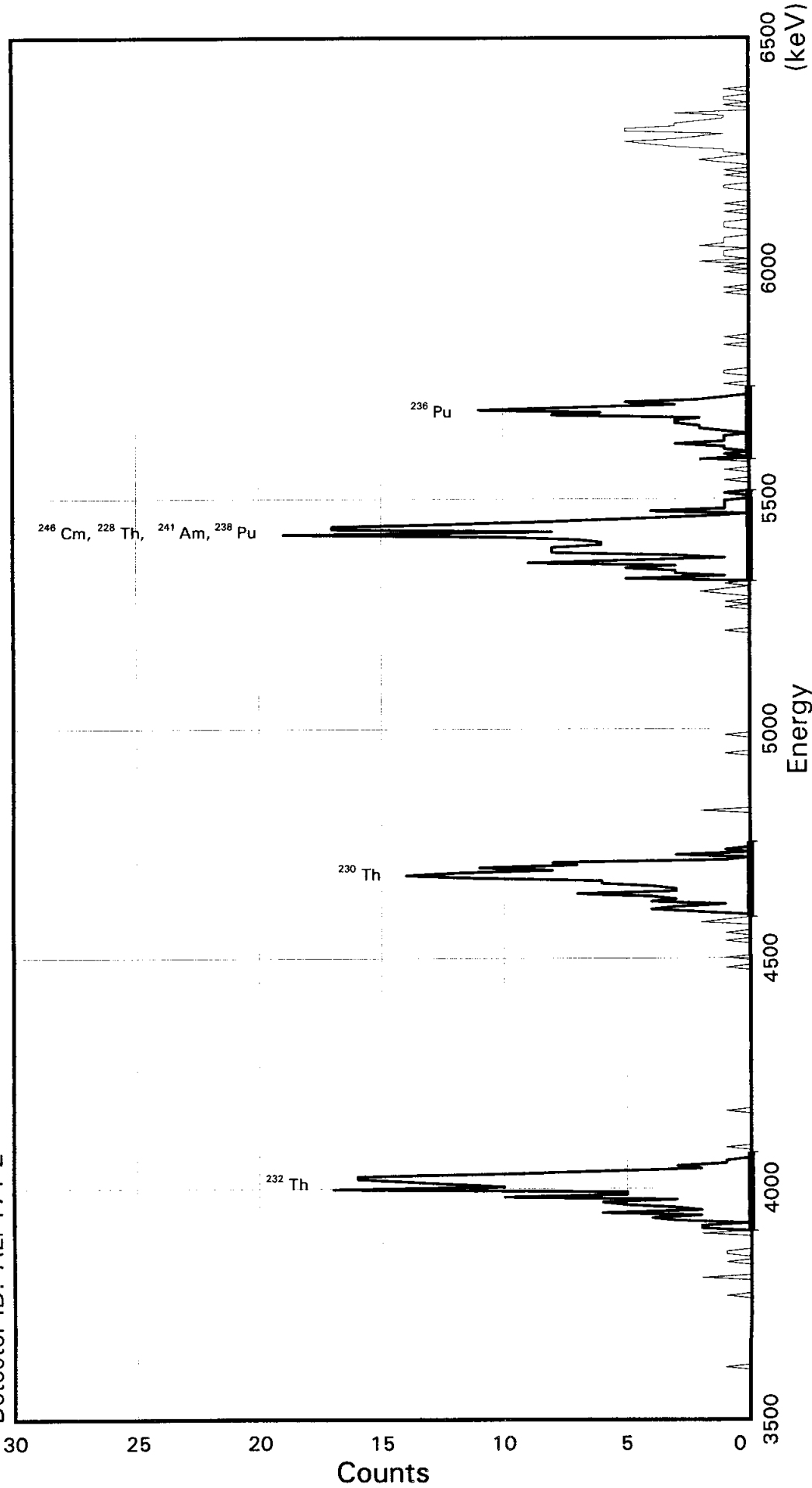
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	174	0	0.871	5423.2	135.6	319	343
TH-230	128	1	0.640	4687.7	163.9	184	213
TH-232	165	1	0.825	4013.0	141.3	68	93

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKD91AC  
Detector ID: ALP171 2



Energy Coefficients:  
Offset: 3.52881E+03  
Slope: 5.65426E+00  
Quadrature: -4.50688E-06

Acquisition Start: 10-DEC-2007 12:37:15.07  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCKD91AC

TITLE : TH BRCO

DETECTOR : ALP171 2  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKD91AC\_101271237B.CN  
F;1  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 12:37:15 CALIB DATE : 09-DEC-2007 00:49:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3528.81 keV CONSTANT FWHM : 9.33333 Channels  
SLOPE : 5.65426 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.450688E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %



Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1 Apr 07)

Sample Identity: KCKD91AC  
Detector: ALP171 2  
Report Date: 10-Dec-07 03:57 PM  
Acquire Date: 10-DEC-2007 12:37:15.07

Flags Key  
Intersect Region: @  
Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	6		201	1		251	0		301	1		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	6		202	0		252	0		302	0		352	0		402	0		452	1		502
0		3	0		53	0		103	0		153	11		203	0		253	0		303	0		353	0		403	1		453	1		503
0		4	0		54	0		104	0		154	14		204	0		254	0		304	0		354	0		404	1		454	0		504
0		5	1		55	0		105	0		155	12		205	0		255	0		305	0		355	0		405	1		455	0		505
0		6	0		56	0		106	0		156	8		206	0		256	0		306	1		356	0		406	0		456	1		506
0		7	0		57	0		107	0		157	11		207	0		257	1		307	0		357	0		407	0		457	0		507
0		8	1		58	0		108	0		158	7		208	1		258	0		308	0		358	1		408	0		458	0		508
0		9	1		59	0		109	0		159	8		209	0		259	1		309	0		359	0		409	1		459	0		509
0		10	0		60	0		110	0		160	1		210	0		260	0		310	1		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	1		411	0		461	0		511
0		12	0		62	0		112	0		162	3		212	0		262	1		312	0		362	0		412	1		462	0		512
0		13	0		63	1		113	0		163	0		213	0		263	2		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	1		214	0		264	1		314	2		364	0		414	0		464			
1		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	2		66	0		116	0		166	0		216	0		266	1		316	1		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	2		68	0		118	1		168	0		218	0		268	5		318	1		368	0		418	1		468			
0		19	2		69	0		119	0		169	0		219	0		269	1		319	1		369	0		419	1		469			
0		20	0		70	0		120	0		170	0		220	0		270	3		320	3		370	0		420	0		470			
0		21	3		71	0		121	0		171	0		221	0		271	3		321	1		371	0		421	0		471			
0		22	4		72	0		122	1		172	0		222	0		272	5		322	1		372	0		422	0		472			
0		23	2		73	0		123	0		173	0		223	0		273	3		323	1		373	0		423	1		473			
0		24	6		74	0		124	0		174	0		224	0		274	9		324	0		374	0		424	0		474			
0		25	2		75	0		125	0		175	0		225	0		275	5		325	1		375	0		425	1		475			
0		26	3		76	0		126	0		176	0		226	0		276	1		326	2		376	0		426	0		476			
0		27	5		77	0		127	0		177	0		227	0		277	3		327	2		377	0		427	0		477			
0		28	6		78	0		128	0		178	0		228	0		278	8		328	3		378	1		428	1		478			
0		29	3		79	0		129	1		179	2		229	0		279	8		329	3		379	0		429	2		479			
0		30	10		80	0		130	0		180	0		230	0		280	8		330	2		380	1		430	1		480			
0		31	5		81	0		131	0		181	0		231	0		281	6		331	8		381	0		431	0		481			
0		32	5		82	0		132	1		182	0		232	0		282	6		332	6		382	0		432	1		482			
0		33	17		83	0		133	0		183	0		233	0		283	7		333	11		383	0		433	1		483			
0		34	10		84	0		134	0		184	0		234	0		284	10		334	7		384	0		434	3		484			
0		35	12		85	0		135	0		185	0		235	0		285	19		335	3		385	0		435	4		485			
0		36	14		86	0		136	2		186	0		236	0		286	8		336	5		386	1		436	5		486			
0		37	16		87	0		137	1		187	0		237	0		287	17		337	2		387	0		437	3		487			
0		38	16		88	0		138	0		188	0		238	0		288	17		338	1		388	1		438	2		488			
0		39	10		89	0		139	0		189	0		239	0		289	12		339	0		389	0		439	1		489			
0		40	6		90	0		140	2		190	0		240	0		290	8		340	0		390	2		440	5		490			
0		41	2		91	0		141	4		191	0		241	0		291	5		341	0		391	0		441	5		491			
1		42	3		92	0		142	3		192	0		242	0		292	2		342	0		392	1		442	3		492			
0		43	1		93	0		143	1		193	0		243	0		293	0		343	1		393	1		443	3		493			
0		44	1		94	0		144	4		194	0		244	0		294	4		344	0		394	1		444	2		494			
0		45	0		95	0		145	3		195	0		245	0		295	1		345	0		395	0		445	1		495			
0		46	0		96	0		146	4		196	0		246	0		296	1		346	0		396	2		446	1		496			
0		47	0		97	0		147	7		197	0		247	0		297	1		347	1		397	1		447	3		497			
0		48	0		98	0		148	3		198	0		248	1		298	1		348	1		398	1		448	0		498			
2		49	1		99	0		149	3		199	0		249	0		299	0		349	0		399	1		449	0		499			

0 50 0 100 0 150 4 200 0 250 0 300 0 350 0 400 0 450 1 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 15:57:35

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKD91AC_101271237B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 12:37:15
Sample ID         : KCKD91AC           Sample quantity  : 0.000000E+00 GRAMS
Sample type       : disk               Sample geometry   :
Detector name     : ALP171 1          Detector geometry:
Elapsed live time : 0 03:19:47.00     Elapsed real time: 0 03:19:47.00   0.0%
Start energy      : 3545.77 keV       End energy        : 6422.61 keV
Sensitivity       : 3.00              Sum Sensitivity   : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4011.33	167	0	50.89	85.34	67	30	1.39E-02	7.7	
2	0	4685.68	127	0	45.23	204.64	188	29	1.06E-02	8.9	
3	0	5429.54	185	0	50.89	336.25	317	35	1.54E-02	7.4	
4	0	5691.20	68	0	33.93	382.55	364	28	5.67E-03	12.1	

Error Report (Date: 10-Dec-07 03:57 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKEA1AC

Detector: ALP171 6

Report Date: 10-Dec-07 07:58 PM

Acquire Date: 10-DEC-2007 12:37:15.07

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgnd Live Time: 999 minutes

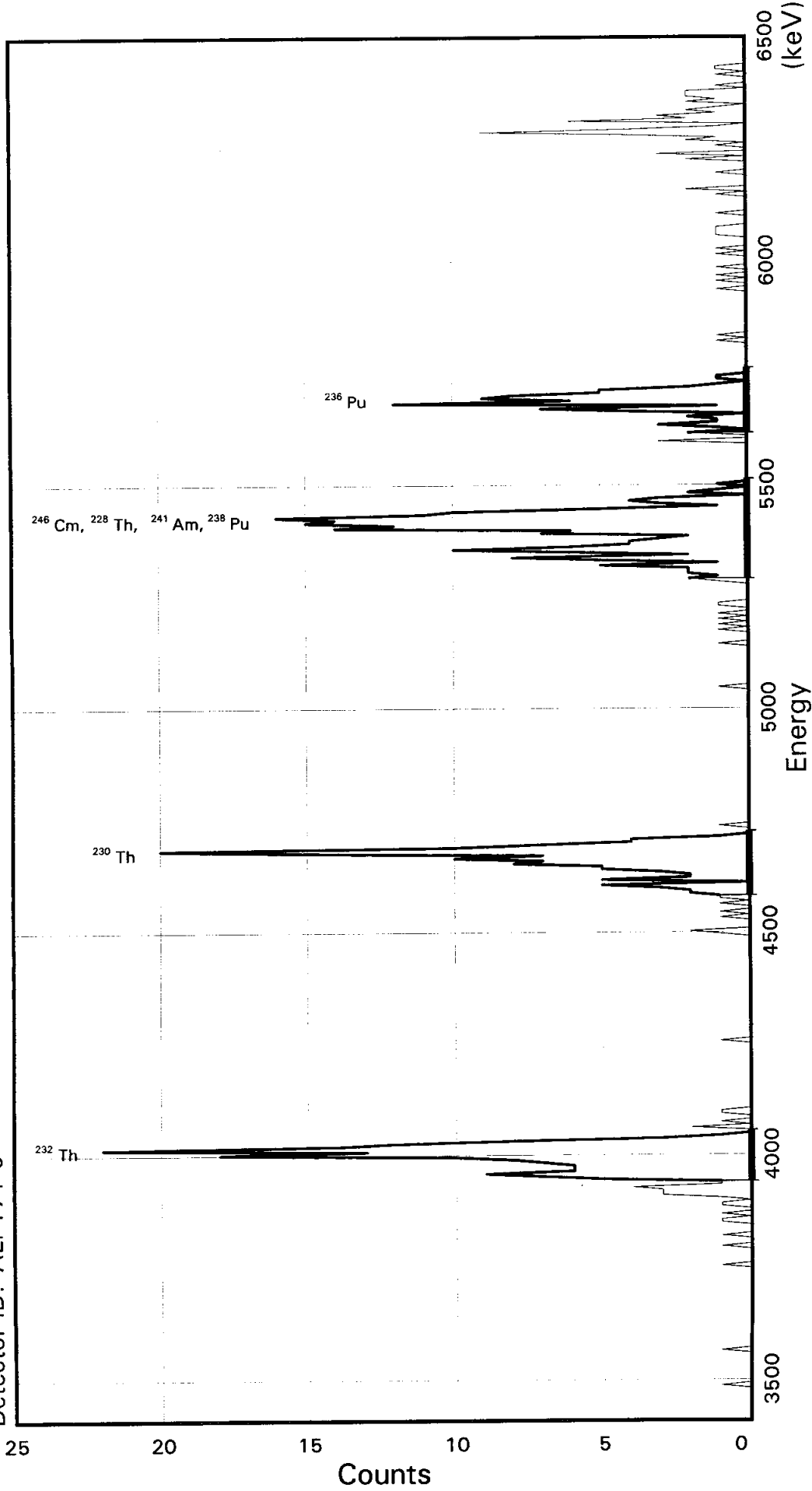
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	179	4	0.892	5423.2	163.4	318	345
TH-230	128	1	0.640	4687.7	145.1	197	221
TH-232	171	2	0.854	4013.0	151.0	85	110

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKEA1AC  
Detector ID: ALP171 6



Energy Coefficients:  
Offset: 3.39107E + 03  
Slope: 6.03714E + 00  
Quadrature: 2.23735E-05

Acquisition Start: 10-DEC-2007 12:37:15.07  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCKEA1AC

TITLE : TH BRCO

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKEA1AC\_101271237F.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 12:37:15 CALIB DATE : 09-DEC-2007 06:08:13

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3391.07 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 6.03714 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 2.237350E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1 Apr 07)

Sample Identity: KCKEA1AC

Flags Key

Detector: ALP171 6

Report Date: 10-Dec-07 03:57 PM

Intersect Region: @

Acquire Date: 10-DEC 2007 12:37:15.07

Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	
0	1	0	51	18	101	0	151	5	201	0	251	1	301	0	351	0	401	0	451	0	501
0	2	0	52	13	102	0	152	0	202	0	252	0	302	0	352	1	402	0	452	1	502
0	3	0	53	22	103	0	153	5	203	0	253	0	303	0	353	0	403	0	453	1	503
0	4	0	54	14	104	0	154	2	204	0	254	1	304	0	354	1	404	0	454	0	504
0	5	0	55	12	105	0	155	2	205	0	255	1	305	0	355	0	405	0	455	0	505
0	6	0	56	8	106	0	156	3	206	0	256	0	306	0	356	0	406	1	456	0	506
0	7	0	57	3	107	0	157	5	207	0	257	0	307	0	357	0	407	0	457	0	507
0	8	0	58	1	108	0	158	5	208	0	258	0	308	0	358	0	408	2	458	0	508
0	9	0	59	0	109	0	159	8	209	0	259	0	309	0	359	0	409	0	459	0	509
0	10	1	60	0	110	0	160	7	210	0	260	0	310	0	360	0	410	0	460	0	510
0	11	0	61	2	111	0	161	10	211	0	261	0	311	0	361	0	411	0	461	0	511
0	12	0	62	0	112	0	162	7	212	0	262	0	312	0	362	0	412	0	462	0	512
0	13	0	63	1	113	0	163	15	213	0	263	1	313	0	363	0	413	0	463		
0	14	0	64	0	114	0	164	20	214	0	264	2	314	0	364	0	414	1	464		
0	15	0	65	0	115	0	165	10	215	0	265	1	315	3	365	0	415	0	465		
1	16	0	66	1	116	0	166	7	216	0	266	2	316	0	366	0	416	0	466		
0	17	1	67	1	117	0	167	4	217	0	267	2	317	0	367	0	417	0	467		
0	18	0	68	0	118	0	168	4	218	0	268	2	318	2	368	0	418	0	468		
0	19	0	69	0	119	0	169	1	219	0	269	5	319	0	369	0	419	2	469		
0	20	0	70	0	120	0	170	0	220	0	270	1	320	1	370	0	420	0	470		
0	21	1	71	0	121	0	171	0	221	0	271	5	321	3	371	1	421	3	471		
0	22	0	72	0	122	0	172	0	222	0	272	8	322	1	372	0	422	0	472		
0	23	0	73	0	123	0	173	1	223	0	273	2	323	1	373	0	423	0	473		
0	24	0	74	0	124	0	174	0	224	1	274	6	324	2	374	1	424	1	474		
0	25	0	75	0	125	0	175	0	225	0	275	10	325	0	375	0	425	0	475		
0	26	1	76	0	126	0	176	0	226	0	276	6	326	4	376	1	426	2	476		
0	27	1	77	0	127	0	177	0	227	0	277	4	327	7	377	0	427	1	477		
0	28	0	78	0	128	0	178	0	228	0	278	4	328	1	378	0	428	4	478		
1	29	1	79	0	129	0	179	0	229	0	279	3	329	12	379	1	429	9	479		
0	30	0	80	0	130	0	180	0	230	0	280	2	330	6	380	0	430	4	480		
0	31	0	81	0	131	0	181	0	231	0	281	7	331	9	381	0	431	1	481		
0	32	1	82	0	132	0	182	0	232	0	282	6	332	8	382	0	432	0	482		
0	33	1	83	0	133	1	183	0	233	0	283	14	333	5	383	0	433	6	483		
0	34	0	84	0	134	2	184	0	234	0	284	12	334	5	384	1	434	2	484		
0	35	1	85	0	135	0	185	0	235	0	285	15	335	2	385	0	435	3	485		
0	36	3	86	0	136	0	186	0	236	0	286	14	336	1	386	1	436	1	486		
0	37	3	87	0	137	0	187	0	237	0	287	16	337	0	387	0	437	2	487		
0	38	3	88	0	138	0	188	0	238	0	288	11	338	1	388	0	438	1	488		
0	39	4	89	0	139	1	189	0	239	0	289	10	339	1	389	0	439	0	489		
0	40	1	90	0	140	0	190	0	240	1	290	5	340	0	390	0	440	2	490		
0	41	1	91	0	141	1	191	0	241	0	291	1	341	0	391	1	441	1	491		
0	42	5	92	0	142	0	192	0	242	0	292	3	342	0	392	1	442	2	492		
0	43	7	93	1	143	0	193	0	243	0	293	4	343	0	393	1	443	2	493		
0	44	9	94	0	144	1	194	0	244	0	294	3	344	0	394	1	444	2	494		
0	45	6	95	0	145	0	195	0	245	1	295	0	345	0	395	0	445	0	495		
0	46	6	96	0	146	1	196	0	246	0	296	2	346	0	396	0	446	1	496		
0	47	6	97	0	147	1	197	0	247	1	297	1	347	0	397	0	447	0	497		
0	48	7	98	0	148	2	198	0	248	0	298	0	348	0	398	0	448	0	498		
0	49	8	99	0	149	2	199	0	249	1	299	1	349	0	399	1	449	0	499		



0 50 10 100 0 150 3 200 0 250 0 300 0 350 0 400 0 450 1 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 15:57:42

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKEA1AC_101271237F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 12:37:15
Sample ID         : KCKEA1AC           Sample quantity  : 0.00000E+00 GRAMS
Sample type       : disk               Sample geometry   :
Detector name     : ALP171 1          Detector geometry :
Elapsed live time : 0 03:19:47.00     Elapsed real time: 0 03:19:47.00   0.0%
Start energy      : 3409.18 keV        End energy        : 6487.95 keV
Sensitivity       : 3.00                Sum Sensitivity  : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4008.51	156	0	42.26	102.23	91	19	1.30E-02	8.0	
2	0	4677.05	128	0	48.30	212.84	197	24	1.07E-02	8.8	
3	0	5419.52	190	0	48.30	335.58	314	37	1.59E-02	7.3	
4	0	5689.30	72	0	42.26	380.15	368	24	6.01E-03	11.8	

Error Report (Date: 10-Dec-07 03:57 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKEC1AC

Detector: ALP171 7

Report Date: 10-Dec-07 08:03 PM

Acquire Date: 10-DEC-2007 12:37:15.07

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

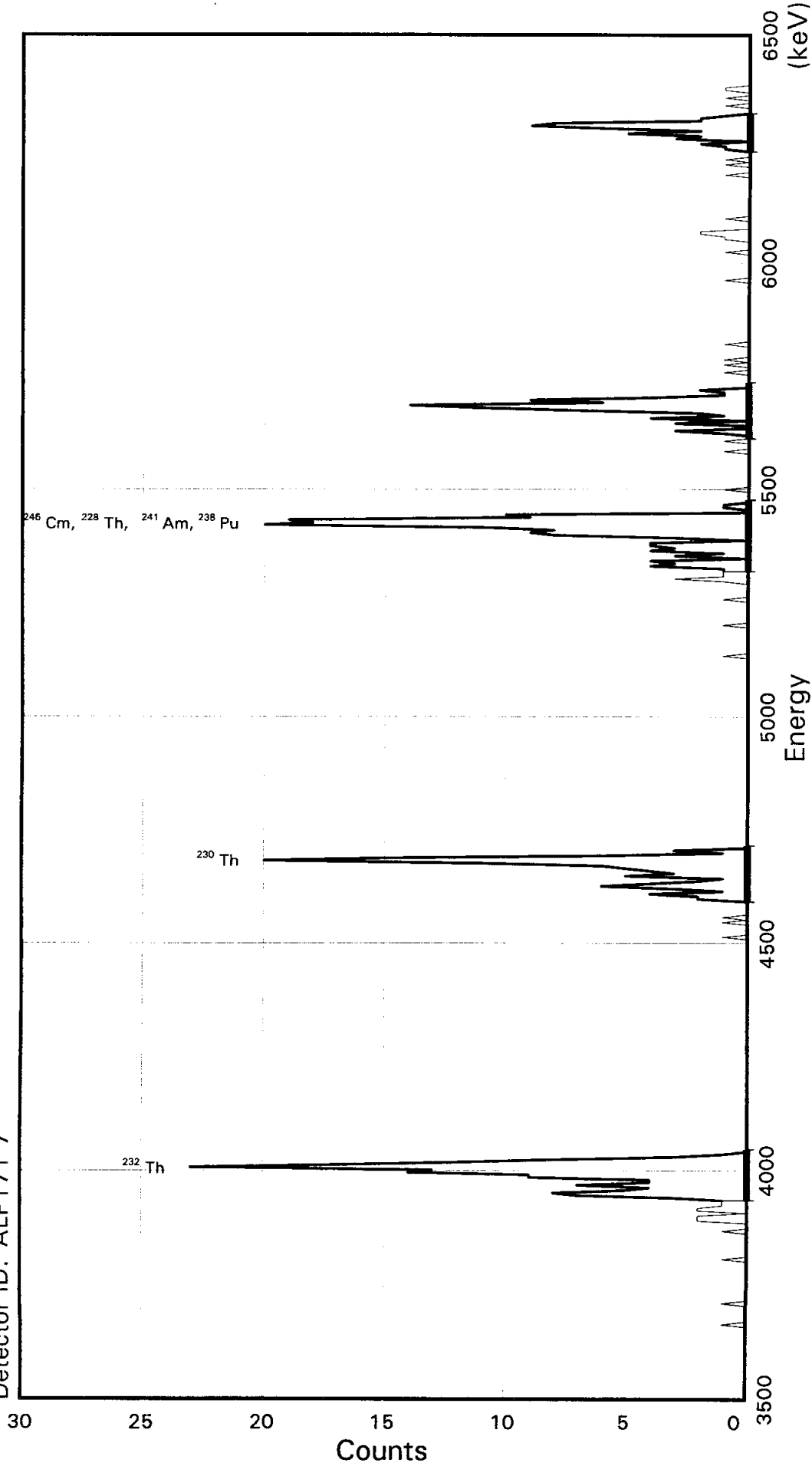
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	146	1	0.730	5423.2	123.9	308	330
TH-230	104	0	0.521	4687.7	129.6	177	200
TH-232	158	0	0.791	4013.0	135.2	56	80

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKEC1AC  
Detector ID: ALP171 7



Acquisition Start: 10-DEC-2007 12:37:15.07  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.59067E+03  
Slope: 5.63322E+00  
Quadrature: -1.34904E-06

SAMPLE IDENTIITY: KCKEC1AC

TITLE : TH BRCO

DETECTOR : ALP171 7  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKEC1AC\_101271237G.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 12:37:15 CALIB DATE : 09-DEC-2007 00:50:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3590.67 keV CONSTANT FWHM : 6.50000 Channels  
SLOPE : 5.63322 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.134904E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCKEClAC

Flags Key

Detector: ALP171 7

Report Date: 10-Dec-07 03:57 PM

Intersect Region: %

Acquire Date: 10-DEC-2007 12:37:15.07

Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	2		53	0		103	0		153	0		203	0		253	1		303	0		353	0		403	0		453	0		503
0		4	2		54	0		104	0		154	0		204	0		254	3		304	1		354	0		404	0		454	0		504
0		5	2		55	0		105	0		155	0		205	0		255	1		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	1		306	0		356	0		406	0		456	0		506
0		7	2		57	0		107	0		157	0		207	0		257	1		307	0		357	0		407	0		457	0		507
0		8	2		58	0		108	0		158	0		208	0		258	1		308	1		358	0		408	0		458	0		508
0		9	1		59	0		109	0		159	0		209	0		259	4		309	0		359	0		409	0		459	0		509
0		10	1		60	0		110	0		160	0		210	0		260	3		310	0		360	0		410	0		460	0		510
0		11	1		61	0		111	0		161	0		211	0		261	4		311	1		361	0		411	0		461	0		511
0		12	3		62	0		112	0		162	0		212	0		262	0		312	3		362	0		412	1		462	0		512
1		13	7		63	0		113	0		163	0		213	0		263	3		313	0		363	0		413	0		463			
0		14	8		64	0		114	1		164	0		214	0		264	1		314	0		364	0		414	0		464			
0		15	5		65	0		115	0		165	0		215	0		265	4		315	3		365	0		415	0		465			
0		16	4		66	0		116	0		166	0		216	0		266	3		316	0		366	0		416	1		466			
0		17	7		67	0		117	0		167	0		217	0		267	4		317	4		367	0		417	0		467			
0		18	4		68	0		118	0		168	0		218	0		268	4		318	1		368	0		418	1		468			
0		19	4		69	0		119	0		169	0		219	0		269	0		319	2		369	0		419	0		469			
0		20	9		70	0		120	1		170	0		220	0		270	3		320	7		370	0		420	0		470			
1		21	9		71	0		121	0		171	0		221	0		271	8		321	11		371	1		421	0		471			
0		22	14		72	0		122	1		172	0		222	0		272	9		322	14		372	0		422	1		472			
0		23	13		73	0		123	0		173	0		223	0		273	8		323	6		373	0		423	1		473			
0		24	23		74	0		124	0		174	0		224	1		274	11		324	9		374	0		424	2		474			
0		25	17		75	0		125	0		175	0		225	0		275	20		325	4		375	0		425	0		475			
0		26	12		76	0		126	0		176	0		226	0		276	18		326	1		376	0		426	3		476			
0		27	8		77	0		127	0		177	0		227	0		277	19		327	1		377	0		427	2		477			
0		28	3		78	0		128	0		178	0		228	0		278	9		328	2		378	0		428	5		478			
0		29	1		79	0		129	2		179	0		229	0		279	10		329	0		379	0		429	2		479			
0		30	0		80	0		130	2		180	0		230	0		280	0		330	0		380	0		430	6		480			
0		31	0		81	0		131	4		181	0		231	0		281	0		331	0		381	0		431	9		481			
0		32	0		82	0		132	1		182	0		232	0		282	1		332	0		382	1		432	8		482			
0		33	0		83	0		133	3		183	0		233	0		283	1		333	0		383	0		433	2		483			
0		34	0		84	0		134	6		184	0		234	0		284	0		334	0		384	0		434	2		484			
0		35	0		85	0		135	4		185	0		235	0		285	0		335	1		385	0		435	1		485			
0		36	0		86	0		136	2		186	0		236	1		286	0		336	0		386	0		436	0		486			
0		37	0		87	0		137	1		187	0		237	0		287	0		337	0		387	1		437	0		487			
1		38	0		88	0		138	5		188	0		238	0		288	0		338	1		388	1		438	0		488			
0		39	0		89	0		139	3		189	0		239	0		289	1		339	0		389	2		439	1		489			
0		40	0		90	0		140	4		190	0		240	0		290	0		340	1		390	2		440	0		490			
0		41	0		91	0		141	5		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	6		192	0		242	0		292	0		342	0		392	0		442	1		492			
0		43	0		93	0		143	11		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	20		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	15		195	0		245	0		295	0		345	0		395	1		445	1		495			
0		46	0		96	0		146	6		196	0		246	1		296	0		346	1		396	0		446	1		496			
0		47	0		97	0		147	1		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	3		198	0		248	0		298	0		348	0		398	0		448	0		498			
1		49	0		99	0		149	0		199	0		249	0		299	0		349	0		399	0		449	0		499			

0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 10-DEC-2007 15:57:46

Configuration : \$DISK1:[ALP171.SAMPLE]KCKEC1AC\_101271237G.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : TH BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 12:37:15  
 Sample ID : KCKEC1AC Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP171 1 Detector geometry:  
 Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%  
 Start energy : 3607.57 keV End energy : 6474.53 keV  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4005.81	152	0	33.80	73.70	61	20	1.27E-02	8.1	
2	0	4683.66	103	0	28.17	194.03	178	22	8.59E-03	9.9	
3	0	5424.89	150	0	33.80	325.63	307	28	1.25E-02	8.2	
4	0	5686.04	71	0	28.17	372.00	359	22	5.92E-03	11.9	
5	0	6299.94	42	0	28.17	481.00	471	15	3.50E-03	15.4	

Error Report (Date: 10-Dec-07 03:57 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

# THORIUM ISOTOPIIC COUNTING REQUEST

1951

C.R. Technician OK  
Date Counted 12/10/07  
C.R. Analyst OK  
Date Analyzed 12/10/07

Counting Time 200 Minutes  
Sample 200  
SOPs Operating: RICHRD008  
Background See Alpha Analysis Report  
Review: BRC 11/16 7327116

WorkOrder #	Th-229 (4845 KeV) Tracer		TOTAL COUNTS			Det #	Comment	
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)			Th-230 (4688 KeV) (8)
KCKED1AC		10		0			171	
KCKEE1AC		10		0			172	
KCKEG1AC		10		0			176	
KCKEJ1AC		10		0			177	
		10		0				
		10		0				
		10		0				
		10		0				
		10		0				
		10		0				

Comments:

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKED1AC

Detector: ALP171 1  
Report Date: 10-Dec-07 08:21 PM  
Acquire Date: 10-DEC-2007 16:31:15.57  
Tracer Nuclide: TH-229  
Sample Live Time: 200 minutes  
Bkgrnd Live Time: 999 minutes

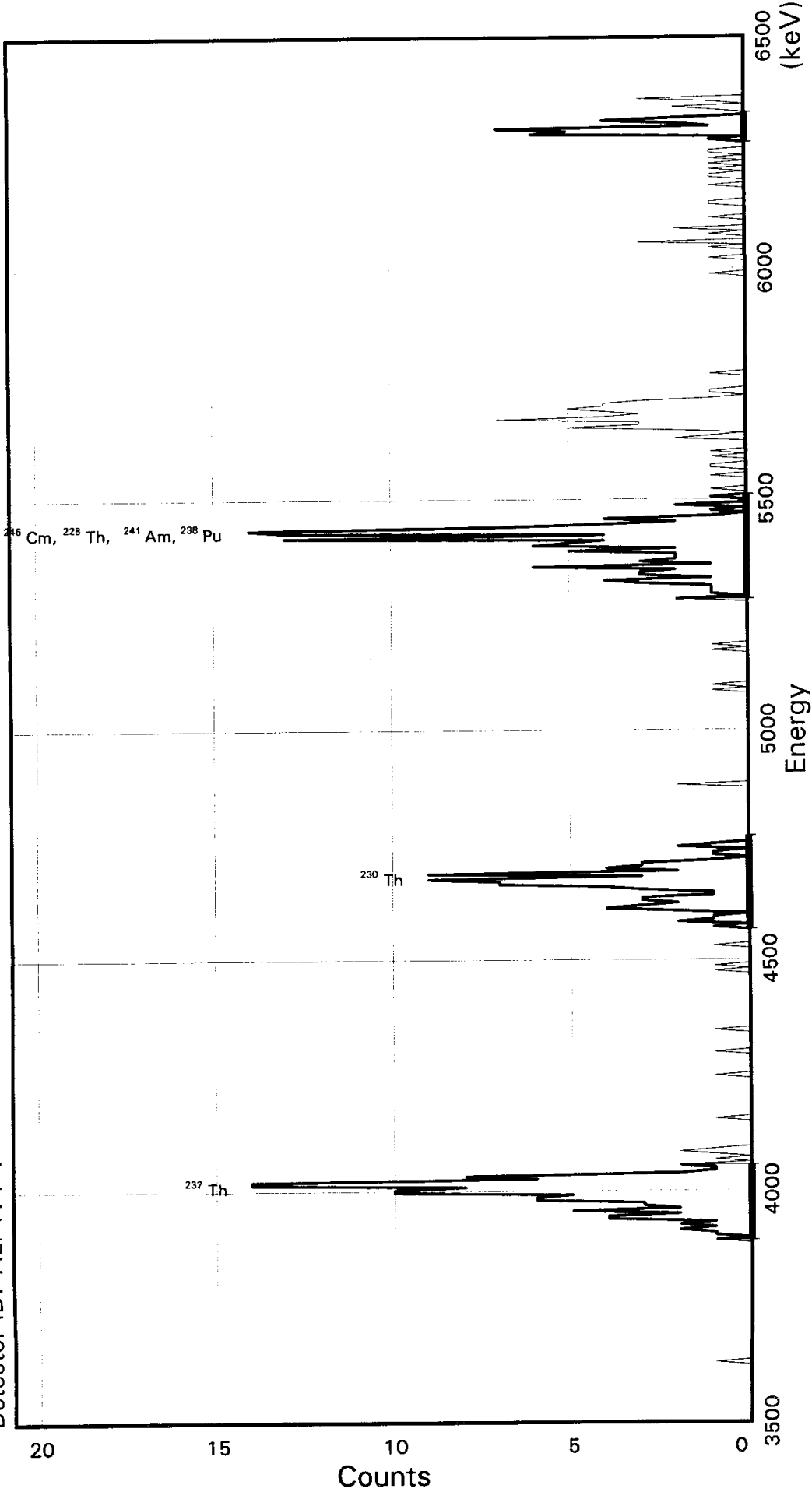
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	119	3	0.593	5423.2	168.9	311	340
TH-230	78	2	0.388	4687.7	151.4	188	214
TH-232	124	1	0.620	4013.0	157.1	70	97

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKED1AC  
Detector ID: ALP171 1



Energy Coefficients:  
Offset: 3.49623E + 03  
Slope: 5.81865E + 00  
Quadrature: 7.22650E-06

Acquisition Start: 10-DEC-2007 16:31:15.57  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCKED1AC

TITLE : TH BRCO

DETECTOR : ALP171 1  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKED1AC\_101271631A.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 16:31:15 CALIB DATE : 09-DEC-2007 00:48:55

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3496.23 keV CONSTANT FWHM : 8.66667 Channels  
SLOPE : 5.81865 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 7.226500E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: KCKED1AC

Flags Key

Detector: ALP171 1

Report Date: 10-Dec-07 07:51 PM

Intersect Region: @

Acquire Date: 10-DEC-2007 16:31:15.57

Non Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	2		101	0		151	7		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	1		102	0		152	7		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	9		203	0		253	0		303	1		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	3		204	0		254	0		304	0		354	0		404	1		454	0		504
0		5	0		55	0		105	0		155	9		205	0		255	0		305	0		355	0		405	1		455	0		505
0		6	0		56	0		106	0		156	2		206	0		256	0		306	1		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	4		207	0		257	2		307	1		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	3		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	3		209	0		259	1		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	1		210	0		260	1		310	1		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	1		311	0		361	0		411	1		461	0		511
0		12	0		62	0		112	0		162	1		212	0		262	1		312	1		362	0		412	0		462	0		512
0		13	0		63	1		113	0		163	1		213	0		263	3		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	4		314	0		364	0		414	1		464			
0		15	0		65	0		115	0		165	2		215	0		265	1		315	0		365	0		415	1		465			
0		16	0		66	0		116	0		166	1		216	0		266	3		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	3		317	2		367	0		417	1		467			
0		18	1		68	0		118	1		168	0		218	0		268	2		318	1		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	6		319	0		369	0		419	1		469			
0		20	1		70	0		120	1		170	0		220	0		270	1		320	2		370	0		420	0		470			
0		21	1		71	0		121	0		171	0		221	0		271	3		321	5		371	0		421	1		471			
0		22	2		72	0		122	0		172	0		222	0		272	2		322	3		372	0		422	0		472			
1		23	1		73	0		123	0		173	0		223	1		273	2		323	3		373	0		423	1		473			
0		24	2		74	0		124	0		174	0		224	0		274	2		324	7		374	0		424	1		474			
0		25	1		75	0		125	0		175	0		225	1		275	5		325	4		375	0		425	0		475			
0		26	4		76	0		126	0		176	0		226	0		276	2		326	3		376	0		426	0		476			
0		27	4		77	0		127	0		177	0		227	0		277	6		327	4		377	0		427	0		477			
0		28	2		78	0		128	1		178	0		228	0		278	5		328	5		378	1		428	1		478			
0		29	5		79	1		129	0		179	0		229	0		279	4		329	4		379	0		429	0		479			
0		30	2		80	0		130	0		180	0		230	0		280	13		330	4		380	0		430	6		480			
0		31	3		81	0		131	0		181	0		231	0		281	4		331	3		381	0		431	5		481			
0		32	3		82	0		132	0		182	0		232	0		282	13		332	1		382	0		432	7		482			
0		33	6		83	0		133	0		183	0		233	0		283	14		333	0		383	0		433	1		483			
0		34	6		84	0		134	0		184	0		234	0		284	7		334	1		384	1		434	2		484			
0		35	5		85	0		135	1		185	0		235	0		285	4		335	1		385	0		435	4		485			
0		36	10		86	0		136	0		186	0		236	0		286	2		336	0		386	0		436	2		486			
0		37	10		87	0		137	2		187	0		237	0		287	4		337	0		387	0		437	0		487			
0		38	8		88	1		138	1		188	2		238	1		288	1		338	0		388	1		438	0		488			
0		39	14		89	0		139	1		189	0		239	0		289	0		339	0		389	0		439	1		489			
0		40	14		90	0		140	0		190	0		240	1		290	1		340	0		390	3		440	2		490			
0		41	6		91	0		141	2		191	0		241	0		291	0		341	1		391	0		441	0		491			
0		42	8		92	0		142	4		192	0		242	0		292	2		342	0		392	0		442	1		492			
0		43	2		93	0		143	3		193	0		243	0		293	0		343	0		393	1		443	3		493			
0		44	1		94	0		144	2		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	1		95	0		145	3		195	0		245	0		295	1		345	0		395	2		445	0		495			
0		46	2		96	1		146	3		196	0		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	1		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	1		98	0		148	1		198	0		248	0		298	1		348	0		398	0		448	0		498			
0		49	0		99	0		149	3		199	0		249	0		299	0		349	0		399	1		449	0		499			

0 50 1 100 0 150 4 200 0 250 0 300 0 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 10-DEC-2007 19:51:29

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKED1AC_101271631A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 16:31:15
Sample ID        : KCKED1AC           Sample quantity  : 0.000000E+00 GRAMS
Sample type      : disk              Sample geometry   :
Detector name    : ALP171 1         Detector geometry:
Elapsed live time: 0 03:19:47.00    Elapsed real time: 0 03:19:47.00    0.0%
Start energy     : 3513.69 keV      End energy        : 6477.28 keV
Sensitivity      : 3.00              Sum Sensitivity   : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4007.54	121	0	46.55	87.86	68	28	1.01E-02	9.1	
2	0	4679.49	87	0	46.55	203.30	184	35	7.26E-03	10.7	
3	0	5428.92	125	0	40.73	332.02	307	39	1.04E-02	8.9	
4	0	6299.71	29	0	34.91	481.52	477	11	2.42E-03	18.6	

Error Report (Date: 10-Dec-07 07:51 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKEE1AC

Detector: ALP171 2

Report Date: 10-Dec-07 08:22 PM

Acquire Date: 10-DEC-2007 16:31:15.57

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

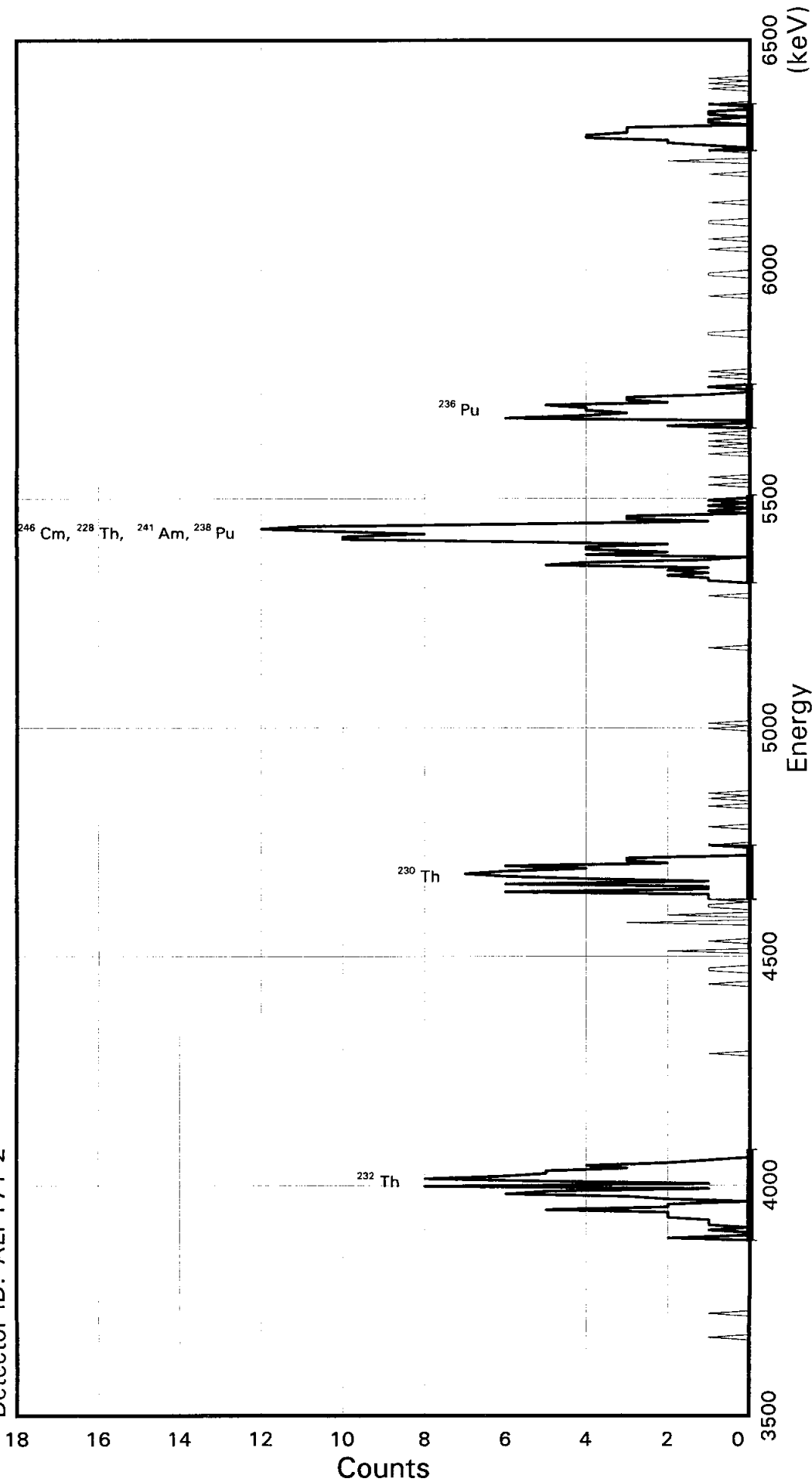
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	113	0	0.566	5423.2	146.9	317	343
TH-230	64	1	0.319	4687.7	158.3	187	215
TH-232	81	1	0.404	4013.0	135.7	70	94

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKEE1AC  
Detector ID: ALP171 2



Energy Coefficients:  
Offset: 3.52881E+03  
Slope: 5.65426E+00  
Quadrature: -4.50688E-06

Acquisition Start: 10-DEC-2007 16:31:15.57  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCKEE1AC

TITLE : TH BRCO

DETECTOR : ALP171 2  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKEE1AC\_101271631B.CN  
F;1  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 16:31:15 CALIB DATE : 09-DEC-2007 00:49:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3528.81 keV CONSTANT FWHM : 9.33333 Channels  
SLOPE : 5.65426 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.450688E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1 Apr-07)

Sample Identity: KCKEE1AC

Flags Key

Detector: ALP171 2

Report Date: 10-Dec-07 07:51 PM

Intersect Region: @

Acquire Date: 10-DEC-2007 16:31:15.57

Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	0		101	0		151	1		201	0		251	0		301	0		351	0		401	0		451	1		501
		2	0		52	0		102	0		152	4		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	6		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	7		204	0		254	0		304	1		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	6		205	0		255	0		305	0		355	0		405	1		455	0		505
0		6	0		56	0		106	0		156	4		206	0		256	0		306	0		356	0		406	1		456	0		506
0		7	0		57	0		107	0		157	6		207	0		257	0		307	1		357	0		407	0		457	1		507
0		8	0		58	0		108	0		158	2		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	3		209	0		259	0		309	0		359	0		409	0		459	1		509
0		10	0		60	0		110	0		160	3		210	1		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	1		161	0		211	0		261	1		311	0		361	0		411	0		461	1		511
0		12	0		62	0		112	0		162	0		212	1		262	0		312	0		362	1		412	0		462	0		512
0		13	2		63	0		113	0		163	0		213	0		263	0		313	0		363	1		413	1		463			
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	1		215	0		265	0		315	0		365	0		415	0		465			
0		16	1		66	0		116	1		166	0		216	0		266	0		316	1		366	0		416	0		466			
0		17	0		67	0		117	1		167	0		217	0		267	1		317	0		367	0		417	0		467			
0		18	1		68	0		118	0		168	0		218	0		268	1		318	0		368	0		418	0		468			
0		19	1		69	0		119	0		169	0		219	0		269	2		319	1		369	0		419	0		469			
0		20	1		70	0		120	0		170	0		220	0		270	1		320	0		370	0		420	0		470			
0		21	2		71	0		121	0		171	0		221	0		271	2		321	1		371	0		421	0		471			
0		22	2		72	0		122	0		172	1		222	0		272	1		322	0		372	0		422	0		472			
0		23	2		73	0		123	0		173	0		223	0		273	5		323	0		373	0		423	0		473			
0		24	5		74	0		124	2		174	0		224	0		274	4		324	1		374	0		424	1		474			
1		25	2		75	0		125	0		175	0		225	0		275	1		325	0		375	0		425	0		475			
0		26	2		76	0		126	0		176	0		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	0		127	0		177	0		227	0		277	4		327	2		377	1		427	0		477			
0		28	2		78	0		128	1		178	0		228	0		278	2		328	0		378	0		428	0		478			
0		29	3		79	0		129	0		179	0		229	0		279	4		329	0		379	0		429	2		479			
0		30	6		80	0		130	0		180	1		230	0		280	4		330	6		380	0		430	0		480			
0		31	5		81	0		131	0		181	0		231	0		281	2		331	4		381	0		431	0		481			
0		32	1		82	0		132	0		182	0		232	0		282	6		332	3		382	0		432	0		482			
0		33	8		83	0		133	0		183	1		233	0		283	10		333	4		383	0		433	1		483			
1		34	1		84	1		134	0		184	0		234	0		284	10		334	4		384	0		434	0		484			
0		35	5		85	0		135	3		185	1		235	0		285	8		335	5		385	1		435	1		485			
0		36	8		86	0		136	0		186	0		236	0		286	10		336	2		386	1		436	2		486			
0		37	6		87	0		137	0		187	0		237	0		287	12		337	3		387	0		437	2		487			
0		38	5		88	0		138	2		188	0		238	0		288	11		338	3		388	0		438	4		488			
0		39	5		89	0		139	0		189	0		239	0		289	5		339	1		389	0		439	4		489			
0		40	3		90	0		140	0		190	0		240	0		290	1		340	0		390	0		440	3		490			
0		41	4		91	0		141	1		191	0		241	1		291	3		341	0		391	0		441	3		491			
0		42	2		92	0		142	1		192	0		242	0		292	3		342	1		392	0		442	3		492			
0		43	1		93	0		143	0		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	1		194	0		244	0		294	1		344	0		394	0		444	1		494			
0		45	0		95	0		145	1		195	0		245	0		295	0		345	0		395	1		445	1		495			
0		46	0		96	0		146	1		196	0		246	0		296	1		346	1		396	0		446	0		496			
0		47	0		97	0		147	6		197	0		247	0		297	0		347	0		397	0		447	1		497			
0		48	0		98	0		148	1		198	0		248	0		298	1		348	1		398	0		448	1		498			
0		49	0		99	0		149	1		199	0		249	0		299	0		349	0		399	1		449	0		499			

0 50 0 100 0 150 6 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 19:51:36

Configuration : \$DISK1:[ALP171.SAMPLE]KCKEE1AC\_101271631B.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : TH BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 16:31:15  
 Sample ID : KCKEE1AC Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP171 1 Detector geometry:  
 Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%  
 Start energy : 3545.77 keV End energy : 6422.61 keV  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4008.97	86	0	67.85	84.93	62	35	7.17E-03	10.8	
2	0	4677.32	63	0	67.85	203.16	194	21	5.26E-03	12.6	
3	0	5425.92	114	0	45.23	335.61	316	34	9.51E-03	9.4	
4	0	5695.37	37	0	50.89	383.29	376	17	3.09E-03	16.4	
5	0	6290.78	28	0	33.93	488.67	483	18	2.34E-03	18.9	



Error Report (Date: 10-Dec-07 07:51 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKEGIAC

Detector: ALP171 6  
Report Date: 10-Dec-07 09:58 PM  
Acquire Date: 10-DEC-2007 16:31:15.57  
Tracer Nuclide: TH-229  
Sample Live Time: 200 minutes  
Bkgnd Live Time: 999 minutes

Nuclide	Smpl	Bkg	Count	C/Min	Rate	Centrd	Region	Left	Right
Name	Count	Count	Count	keV	keV	Energy	Width	Left	Right
Chnl	Chnl	Chnl	Chnl	Chnl	Chnl	Chnl	Chnl	Chnl	Chnl
TH-228	174	4	0.867	5423.2	151.3	318	343		
TH-230	107	1	0.535	4687.7	133.0	198	220		
TH-232	159	2	0.794	4013.0	145.0	86	110		

End of Alpha Region Report  
(Produced by ANAL Report)

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKEG1AC

Detector: ALP171 6

Report Date: 11-Dec-07 04:51 AM

Acquire Date: 10-DEC-2007 16:31:15.57

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

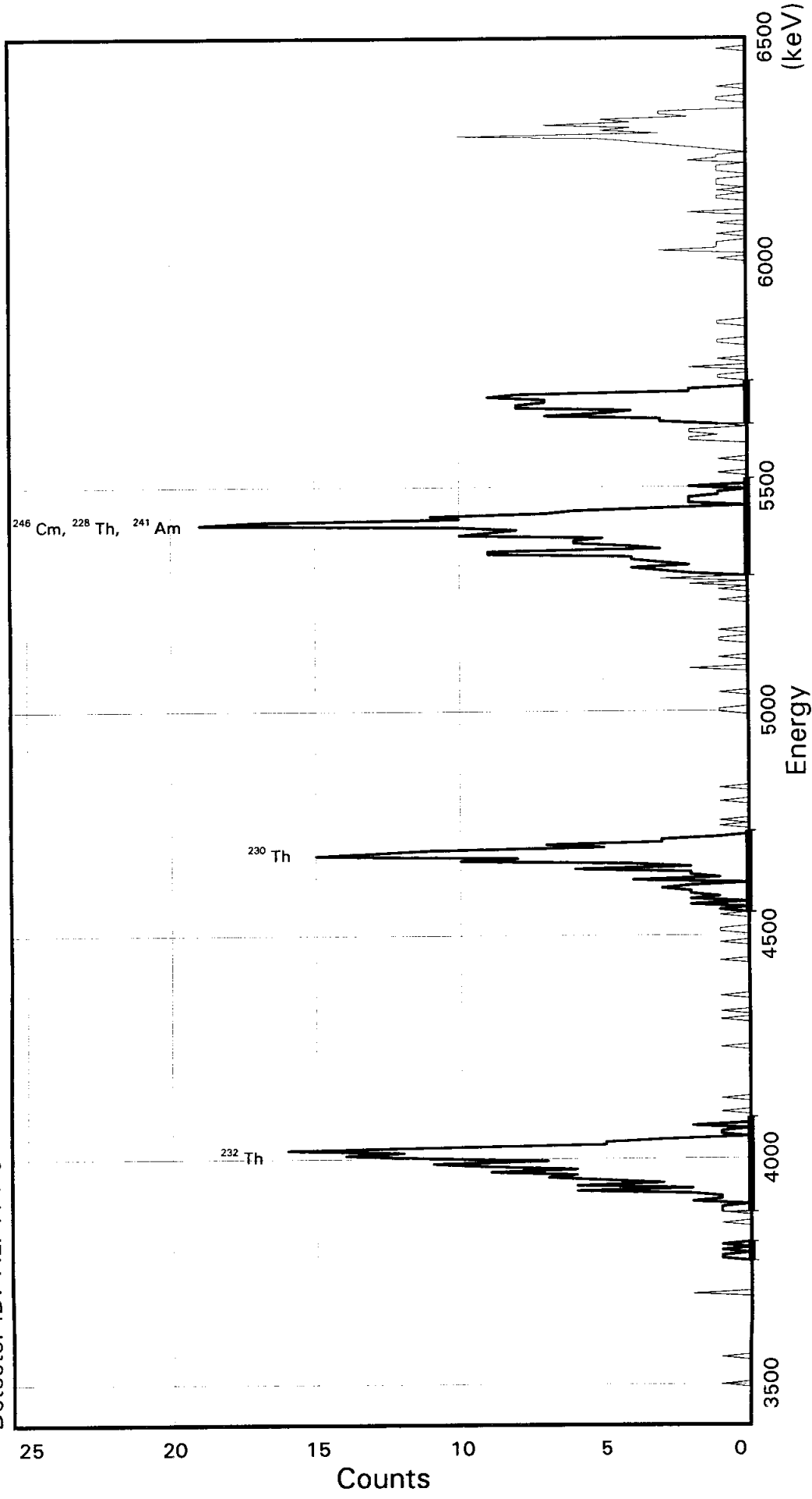
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	185	4	0.922	5423.2	205.8	314	348
TH-230	109	1	0.545	4687.7	145.1	196	220
TH-232	167	2	0.834	4013.0	205.4	80	114

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKEG1AC  
Detector ID: ALP171 6



Energy Coefficients:  
Offset: 3.39107E + 03  
Slope: 6.03714E + 00  
Quadrature: 2.23735E-05

Acquisition Start: 10-DEC-2007 16:31:15.57  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCKEG1AC

TITLE : TH BRCO

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCKEG1AC\_101271631F.CN  
F;3

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 16:31:15 CALIB DATE : 09-DEC-2007 06:08:13

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3391.07 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 6.03714 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 2.237350E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCKEG1AC

Flags Key

Detector: ALP171.6

Report Date: 11-Dec 07 04:47 AM

Intersect Region: %

Acquire Date: 10-DEC-2007 16:31:15.57

Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	2		51	11		101	0		151	3		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	14		102	1		152	2		202	0		252	0		302	0		352	1		402	0		452	0		502
0		3	0		53	12		103	0		153	0		203	0		253	0		303	0		353	1		403	0		453	0		503
0		4	0		54	16		104	0		154	4		204	0		254	0		304	1		354	0		404	0		454	0		504
0		5	0		55	11		105	1		155	1		205	0		255	0		305	0		355	0		405	1		455	0		505
0		6	0		56	5		106	0		156	2		206	0		256	0		306	0		356	0		406	1		456	0		506
0		7	0		57	5		107	0		157	2		207	0		257	1		307	0		357	0		407	0		457	0		507
0		8	0		58	3		108	0		158	6		208	0		258	0		308	0		358	0		408	1		458	0		508
0		9	0		59	0		109	0		159	2		209	0		259	0		309	1		359	1		409	0		459	0		509
0		10	0		60	1		110	0		160	4		210	0		260	0		310	0		360	1		410	1		460	1		510
0		11	0		61	1		111	1		161	10		211	0		261	1		311	0		361	0		411	1		461	0		511
0		12	0		62	0		112	0		162	8		212	0		262	0		312	0		362	0		412	1		462	0		512
0		13	0		63	2		113	0		163	15		213	0		263	2		313	0		363	0		413	0		463			
0		14	1		64	0		114	0		164	13		214	0		264	0		314	0		364	0		414	0		464			
0		15	1		65	0		115	0		165	11		215	0		265	3		315	0		365	0		415	1		465			
0		16	0		66	0		116	0		166	5		216	1		266	0		316	2		366	0		416	1		466			
0		17	1		67	0		117	0		167	7		217	1		267	2		317	2		367	0		417	1		467			
1		18	0		68	1		118	0		168	3		218	0		268	3		318	1		368	0		418	0		468			
0		19	1		69	0		119	0		169	3		219	0		269	4		319	2		369	0		419	2		469			
0		20	0		70	0		120	0		170	1		220	0		270	2		320	2		370	0		420	1		470			
0		21	0		71	0		121	0		171	0		221	0		271	3		321	0		371	0		421	1		471			
0		22	0		72	0		122	0		172	0		222	0		272	4		322	1		372	0		422	0		472			
0		23	0		73	1		123	0		173	0		223	1		273	4		323	3		373	0		423	1		473			
0		24	0		74	0		124	1		174	1		224	0		274	9		324	3		374	0		424	2		474			
0		25	0		75	0		125	0		175	0		225	0		275	9		325	7		375	0		425	3		475			
0		26	0		76	0		126	0		176	1		226	0		276	3		326	5		376	0		426	4		476			
0		27	1		77	0		127	0		177	0		227	0		277	4		327	4		377	0		427	5		477			
1		28	0		78	0		128	0		178	0		228	0		278	6		328	8		378	0		428	10		478			
0		29	0		79	0		129	0		179	0		229	0		279	6		329	8		379	0		429	3		479			
0		30	0		80	0		130	0		180	0		230	0		280	5		330	7		380	0		430	5		480			
0		31	1		81	0		131	1		181	0		231	0		281	10		331	7		381	0		431	4		481			
0		32	1		82	0		132	0		182	0		232	2		282	9		332	9		382	0		432	7		482			
0		33	1		83	0		133	0		183	1		233	0		283	8		333	8		383	1		433	4		483			
0		34	0		84	0		134	0		184	0		234	0		284	10		334	2		384	0		434	5		484			
0		35	2		85	0		135	1		185	0		235	0		285	19		335	2		385	0		435	2		485			
0		36	1		86	0		136	1		186	0		236	1		286	17		336	0		386	3		436	3		486			
0		37	1		87	0		137	0		187	0		237	0		287	10		337	0		387	1		437	3		487			
0		38	2		88	0		138	0		188	1		238	0		288	11		338	0		388	1		438	0		488			
0		39	6		89	0		139	0		189	0		239	0		289	7		339	1		389	1		439	0		489			
0		40	2		90	0		140	0		190	0		240	0		290	6		340	1		390	0		440	0		490			
0		41	6		91	0		141	1		191	0		241	0		291	3		341	0		391	0		441	1		491			
0		42	3		92	1		142	0		192	0		242	1		292	0		342	0		392	1		442	1		492			
0		43	5		93	0		143	1		193	0		243	1		293	2		343	2		393	0		443	0		493			
0		44	7		94	0		144	0		194	0		244	0		294	2		344	0		394	0		444	0		494			
0		45	6		95	0		145	2		195	0		245	0		295	2		345	0		395	0		445	0		495			
0		46	9		96	0		146	0		196	0		246	1		296	1		346	1		396	1		446	1		496			
0		47	6		97	0		147	2		197	0		247	0		297	1		347	0		397	0		447	0		497			
0		48	9		98	0		148	1		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	11		99	0		149	2		199	0		249	0		299	2		349	0		399	0		449	0		499			

0 50 7 100 0 150 2 200 0 250 0 300 0 350 0 400 2 450 0 500

VMS Peak Search Report V1.9 Generated 11-DEC-2007 04:47:11

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKEG1AC_101271631F.CNF;3
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 16:31:15
Sample ID        : KCKEG1AC Sample quantity : 0.000000E+00 GRAMS
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%
Start energy     : 3409.18 keV End energy : 6487.95 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3786.60	4	0	24.15	65.50	63	7	3.34E-04	50.0	
2	0	4005.46	166	0	60.37	101.73	81	35	1.38E-02	7.8	
3	0	4680.97	112	0	36.22	213.49	192	30	9.34E-03	9.4	
4	0	5415.06	186	0	48.30	334.84	316	36	1.55E-02	7.3	
5	0	5682.26	72	0	60.37	378.98	372	16	6.01E-03	11.8	



Error Report (Date: 11-Dec-07 04:47 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKEJ1AC

Detector: ALP171 7

Report Date: 11-Dec-07 04:51 AM

Acquire Date: 10-DEC-2007 16:31:15.57

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

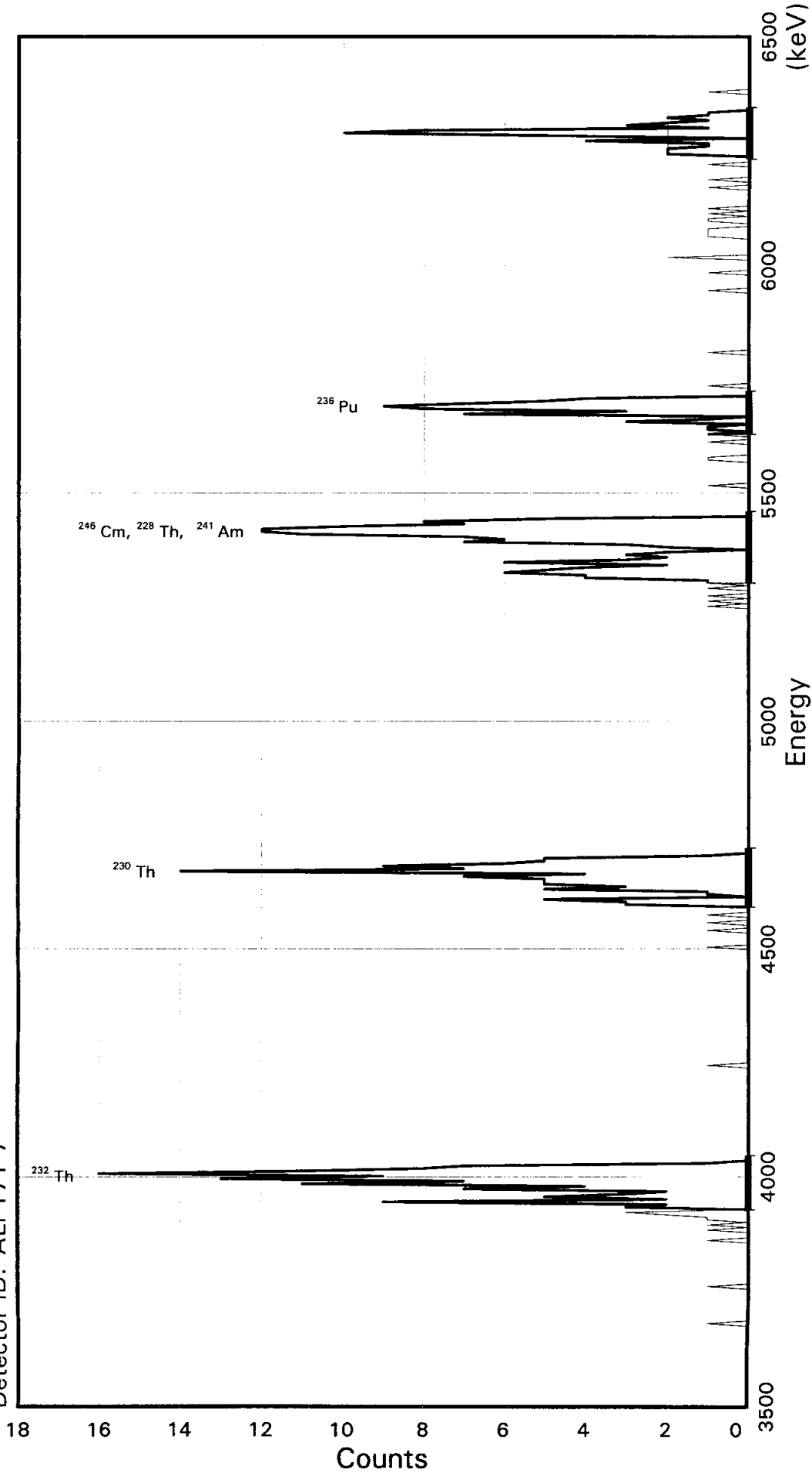
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	134	1	0.670	5423.2	163.3	301	330
TH-230	95	0	0.476	4687.7	152.1	173	200
TH-232	120	0	0.601	4013.0	112.7	60	80

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCKEJ1AC  
Detector ID: ALP171 7

Batch ID: 7327116



Acquisition Start: 10-DEC-2007 16:31:15.57  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.59067E+03  
Slope: 5.63322E+00  
Quadrature: -1.34904E-06

SAMPLE IDENTIITY: KCKEJ1AC

TITLE : TH BRCO

DETECTOR : ALP171 7  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKEJ1AC\_101271631G.CN  
F;2  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 16:31:15 CALIB DATE : 09-DEC-2007 00:50:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3590.67 keV CONSTANT FWHM : 6.50000 Channels  
SLOPE : 5.63322 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.134904E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCKEJ1AC

Flags Key

Detector: ALP171 7

Report Date: 11-Dec-07 04:46 AM

Intersect Region: @

Acquire Date: 10-DEC-2007 16:31:15.57

Non Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	1		52	0		102	0		152	0		202	0		252	1		302	1		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	1		353	0		403	0		453	0		503
0		4	1		54	0		104	0		154	0		204	0		254	1		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	1		305	0		355	0		405	0		455	0		505
0		6	1		56	0		106	0		156	0		206	0		256	4		306	0		356	0		406	0		456	0		506
0		7	1		57	0		107	0		157	0		207	0		257	4		307	0		357	0		407	0		457	0		507
0		8	2		58	0		108	0		158	0		208	0		258	6		308	0		358	0		408	1		458	0		508
0		9	3		59	0		109	0		159	0		209	0		259	5		309	1		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	4		310	0		360	0		410	0		460	0		510
0		11	3		61	0		111	0		161	0		211	0		261	2		311	0		361	0		411	1		461	0		511
0		12	2		62	0		112	1		162	0		212	0		262	6		312	1		362	0		412	0		462	0		512
0		13	9		63	0		113	0		163	0		213	0		263	3		313	0		363	0		413	0		463			
0		14	2		64	0		114	0		164	0		214	0		264	2		314	1		364	0		414	0		464			
0		15	5		65	0		115	0		165	0		215	0		265	3		315	1		365	0		415	0		465			
1		16	3		66	1		116	0		166	0		216	0		266	2		316	0		366	0		416	0		466			
0		17	2		67	0		117	0		167	0		217	0		267	0		317	3		367	0		417	1		467			
0		18	7		68	0		118	0		168	0		218	0		268	2		318	1		368	1		418	0		468			
0		19	4		69	0		119	1		169	0		219	0		269	3		319	0		369	0		419	0		469			
0		20	11		70	0		120	0		170	0		220	0		270	7		320	7		370	0		420	0		470			
0		21	7		71	0		121	0		171	0		221	0		271	6		321	3		371	0		421	2		471			
0		22	13		72	0		122	1		172	0		222	0		272	7		322	8		372	0		422	2		472			
0		23	9		73	0		123	0		173	0		223	0		273	11		323	9		373	0		423	2		473			
0		24	16		74	0		124	0		174	0		224	0		274	12		324	7		374	0		424	1		474			
0		25	11		75	0		125	1		175	0		225	0		275	12		325	5		375	1		425	1		475			
0		26	8		76	0		126	0		176	0		226	0		276	10		326	4		376	0		426	4		476			
0		27	7		77	0		127	0		177	0		227	0		277	7		327	0		377	0		427	0		477			
0		28	1		78	0		128	0		178	0		228	0		278	8		328	0		378	0		428	5		478			
0		29	0		79	0		129	3		179	0		229	0		279	5		329	0		379	0		429	10		479			
1		30	0		80	0		130	3		180	0		230	0		280	0		330	0		380	0		430	8		480			
0		31	0		81	0		131	5		181	0		231	0		281	0		331	1		381	2		431	1		481			
C		32	0		82	0		132	0		182	0		232	0		282	0		332	0		382	0		432	3		482			
C		33	0		83	0		133	1		183	0		233	0		283	0		333	0		383	0		433	2		483			
C		34	0		84	0		134	1		184	0		234	0		284	0		334	0		384	0		434	1		484			
C		35	0		85	0		135	5		185	0		235	0		285	0		335	0		385	0		435	2		485			
C		36	0		86	0		136	3		186	0		236	0		286	0		336	0		386	0		436	1		486			
C		37	0		87	0		137	5		187	0		237	0		287	0		337	0		387	0		437	1		487			
C		38	0		88	0		138	5		188	0		238	0		288	0		338	0		388	0		438	0		488			
C		39	0		89	0		139	5		189	0		239	0		289	0		339	0		389	1		439	0		489			
C		40	0		90	0		140	7		190	0		240	0		290	0		340	0		390	1		440	0		490			
C		41	0		91	0		141	4		191	0		241	0		291	0		341	0		391	1		441	0		491			
C		42	0		92	0		142	14		192	0		242	0		292	1		342	0		392	1		442	0		492			
C		43	0		93	0		143	7		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	9		194	0		244	0		294	0		344	1		394	0		444	0		494			
0		45	0		95	0		145	6		195	0		245	1		295	0		345	0		395	1		445	1		495			
0		46	0		96	0		146	5		196	0		246	0		296	0		346	0		396	1		446	0		496			
0		47	0		97	0		147	5		197	0		247	1		297	0		347	0		397	0		447	0		497			
1		48	0		98	0		148	1		198	0		248	0		298	0		348	0		398	1		448	0		498			
0		49	0		99	0		149	0		199	0		249	1		299	0		349	0		399	0		449	0		499			

0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 1 450 0 500

VMS Peak Search Report V1.9 Generated 11-DEC-2007 04:46:53

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKEJ1AC_101271631G.CNF;2
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 16:31:15
Sample ID         : KCKEJ1AC           Sample quantity  : 0.000000E+00 GRAMS
Sample type       : disk               Sample geometry   :
Detector name     : ALP171 1          Detector geometry:
Elapsed live time: 0 03:19:47.00      Elapsed real time: 0 03:19:47.00  0.0%
Start energy      : 3607.57 keV        End energy        : 6474.53 keV
Sensitivity       : 3.00                Sum Sensitivity   : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4002.35	122	0	39.43	73.08	60	21	1.02E-02	9.1	
2	0	4671.29	96	0	56.33	191.84	178	23	8.01E-03	10.2	
3	0	5416.62	133	0	39.43	324.16	304	28	1.11E-02	8.7	
4	0	5691.35	49	0	28.17	372.94	362	17	4.09E-03	14.3	
5	0	6291.15	46	0	22.53	479.44	469	20	3.84E-03	14.7	

Error Report (Date: 11-Dec-07 04:46 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000



# THORIUM ISOTOPIIC COUNTING REQUEST

Counting Time 200 Minutes 1705 SOP's  
 Sample 200 Operating: RICHRD008  
 Background See Alpha Analysis Report Review: RICHRD0016  
BRC 11/16/10 7327116

C.R. Technician CS  
 Date Counted 12/11/10  
 C.R. Analyst 86  
 Date Analyzed 12/11/10

WorkOrder #	Th-229 (4845 keV) Tracer		TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	from Th-234 Beta Count (7)		
KCKEKIAC		10		0	Th-228 (5423 KeV) (6)		
					Th-230 (4688 KeV) (8)	71	
					Th-232 (4010 KeV) (9)		
					See Alpha Analysis Report for ROI Information		
KCKELIAC		10		0	See Alpha Analysis Report for ROI Information	72	
					See Alpha Analysis Report for ROI Information		
					See Alpha Analysis Report for ROI Information	76	
					See Alpha Analysis Report for ROI Information		
KCKEMIAC		10		0	See Alpha Analysis Report for ROI Information	77	
					See Alpha Analysis Report for ROI Information		
					See Alpha Analysis Report for ROI Information		
					See Alpha Analysis Report for ROI Information		
KCKEMIAF		10		0	See Alpha Analysis Report for ROI Information		
					See Alpha Analysis Report for ROI Information		
					See Alpha Analysis Report for ROI Information		
					See Alpha Analysis Report for ROI Information		

Comments:

Approved by: [Signature] Date: 12/11/10

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCCEK1AC

Detector: ALP171 1

Report Date: 11-Dec-07 06:29 PM

Acquire Date: 11-DEC-2007 13:45:25.41

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

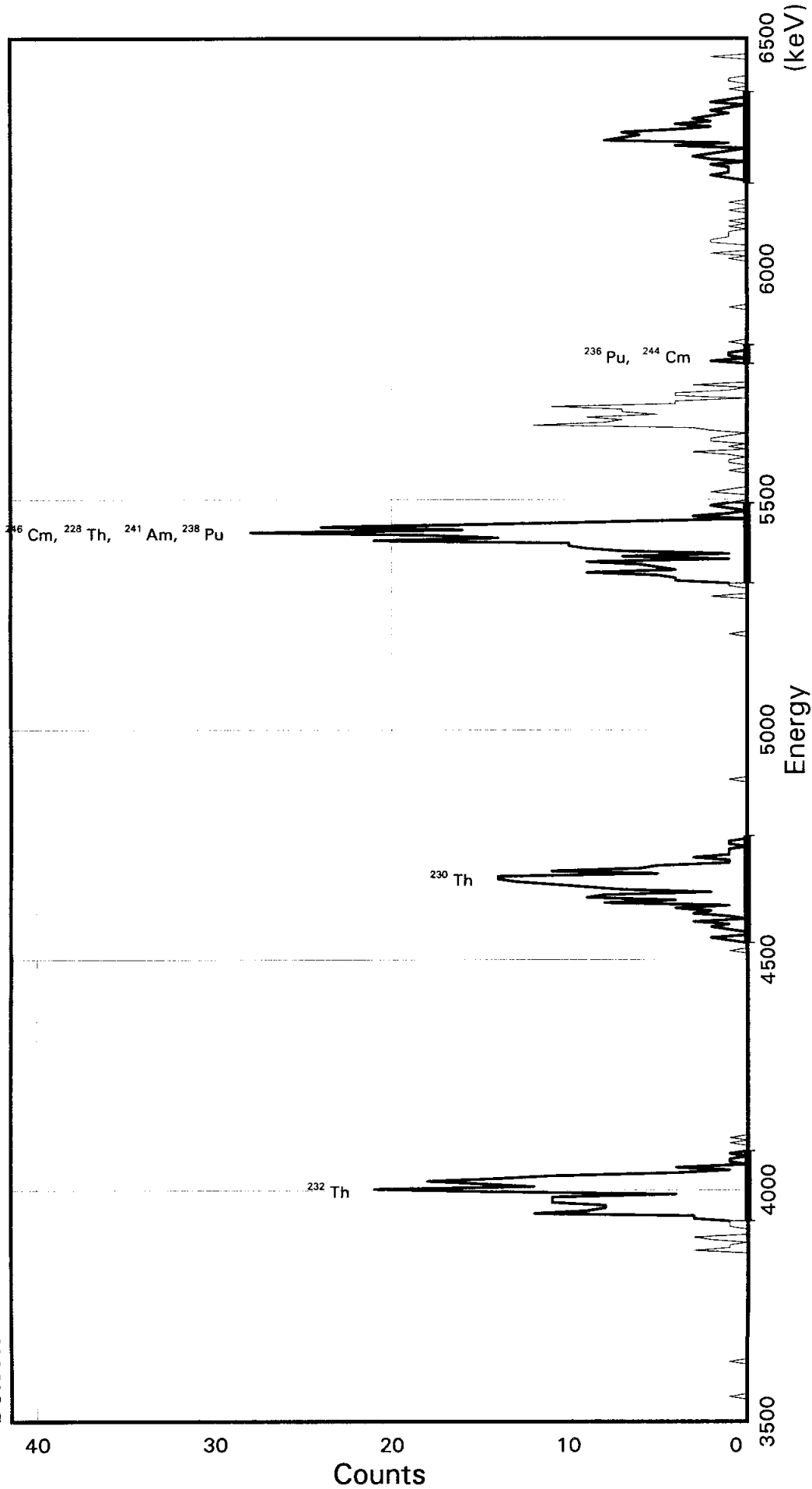
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	240	3	1.198	5423.2	157.2	312	339
TH-230	146	2	0.729	4687.7	151.4	184	210
TH-232	197	1	0.985	4013.0	133.9	74	97

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKEK1AC  
Detector ID: ALP171 1



Acquisition Start: 11-DEC-2007 13:45:25.41  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.49623E+03  
Slope: 5.81865E+00  
Quadrature: 7.22650E-06

SAMPLE IDENTIITY: KCKEK1AC

TITLE : TH BRCO

DETECTOR : ALP171 1  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKEK1AC\_111271345A.CN  
F;1  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 11-DEC-2007 13:45:25 CALIB DATE : 09-DEC-2007 00:48:55

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3496.23 keV CONSTANT FWHM : 8.66667 Channels  
SLOPE : 5.81865 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 7.226500E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1 Apr 07)

Sample Identity: KCKEKiAC

Flags Key

Detector: ALP171 1

Report Date: 11 Dec 07 05:05 PM

Intersect Region: \*

Acquire Date: 11 DEC 2007 13:45:25.41

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	0		101	0		151	11		201	0		251	0		301	0		351	0		401	0		451	1		501
		2	0		52	0		102	0		152	13		202	0		252	0		302	0		352	0		402	1		452	0		502
C		3	0		53	0		103	0		153	14		203	0		253	0		303	0		353	1		403	0		453	0		503
C		4	0		54	1		104	0		154	14		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	5		205	0		255	0		305	1		355	0		405	1		455	0		505
0		6	0		56	1		106	0		156	11		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	6		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	5		208	0		258	2		308	1		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	1		209	0		259	0		309	1		359	0		409	0		459	2		509
1		10	0		60	0		110	0		160	1		210	0		260	0		310	0		360	0		410	0		460	0		510
C		11	0		61	0		111	0		161	3		211	0		261	0		311	1		361	0		411	0		461	0		511
C		12	0		62	0		112	0		162	1		212	0		262	1		312	3		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	1		213	0		263	1		313	0		363	0		413	0		463			
C		14	3		64	0		114	0		164	1		214	0		264	4		314	1		364	0		414	1		464			
C		15	1		65	0		115	0		165	0		215	0		265	4		315	0		365	0		415	2		465			
C		16	1		66	0		116	0		166	1		216	0		266	5		316	2		366	1		416	1		466			
C		17	0		67	0		117	0		167	1		217	0		267	9		317	2		367	0		417	1		467			
C		18	2		68	0		118	0		168	0		218	0		268	4		318	1		368	0		418	1		468			
C		19	3		69	0		119	0		169	0		219	0		269	5		319	0		369	0		419	2		469			
0		20	0		70	0		120	0		170	0		220	0		270	6		320	2		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	9		321	3		371	0		421	2		471			
0		22	0		72	0		122	0		172	0		222	0		272	1		322	12		372	0		422	3		472			
1		23	1		73	0		123	0		173	0		223	0		273	7		323	8		373	0		423	2		473			
0		24	1		74	0		124	0		174	0		224	0		274	1		324	7		374	0		424	1		474			
0		25	1		75	0		125	0		175	0		225	0		275	7		325	9		375	0		425	0		475			
0		26	3		76	0		126	1		176	0		226	0		276	9		326	5		376	0		426	4		476			
0		27	3		77	0		127	0		177	0		227	0		277	10		327	7		377	0		427	1		477			
0		28	12		78	0		128	0		178	0		228	0		278	10		328	7		378	0		428	8		478			
0		29	9		79	0		129	0		179	0		229	0		279	21		329	11		379	0		429	7		479			
C		30	8		80	0		130	1		180	0		230	0		280	14		330	4		380	0		430	6		480			
0		31	8		81	0		131	2		181	0		231	0		281	18		331	4		381	0		431	7		481			
0		32	11		82	0		132	0		182	0		232	0		282	28		332	0		382	0		432	4		482			
0		33	11		83	0		133	0		183	0		233	0		283	16		333	4		383	0		433	2		483			
0		34	11		84	0		134	1		184	0		234	0		284	24		334	4		384	1		434	4		484			
0		35	4		85	0		135	2		185	0		235	0		285	15		335	1		385	0		435	2		485			
0		36	14		86	0		136	1		186	0		236	0		286	7		336	0		386	2		436	3		486			
0		37	21		87	0		137	3		187	0		237	0		287	0		337	3		387	0		437	2		487			
0		38	12		88	0		138	0		188	0		238	0		288	3		338	0		388	0		438	1		488			
0		39	15		89	0		139	1		189	0		239	0		289	1		339	0		389	0		439	2		489			
0		40	18		90	0		140	3		190	1		240	0		290	0		340	0		390	2		440	1		490			
0		41	14		91	0		141	2		191	0		241	0		291	1		341	0		391	2		441	0		491			
0		42	11		92	0		142	4		192	0		242	0		292	2		342	0		392	1		442	2		492			
C		43	4		93	0		143	1		193	0		243	0		293	1		343	0		393	1		443	1		493			
C		44	1		94	0		144	8		194	0		244	1		294	0		344	0		394	1		444	0		494			
C		45	4		95	0		145	4		195	0		245	0		295	0		345	0		395	0		445	0		495			
C		46	0		96	0		146	9		196	0		246	0		296	0		346	2		396	1		446	0		496			
C		47	1		97	0		147	8		197	0		247	0		297	2		347	0		397	0		447	1		497			
C		48	1		98	0		148	2		198	0		248	0		298	1		348	1		398	1		448	0		498			
C		49	0		99	0		149	7		199	0		249	0		299	0		349	1		399	0		449	0		499			

0 50 1 100 0 150 9 200 0 250 0 300 0 350 0 400 0 450 1 500

VMS Peak Search Report V1.9 Generated 11-DEC-2007 17:05:40

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKEK1AC_111271345A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 11-DEC-2007 13:45:25
Sample ID        : KCKEK1AC Sample quantity : 0.00000E+00 GRAMS
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%
Start energy     : 3513.69 keV End energy : 6477.28 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3997.15	200	0	81.46	86.08	75	26	1.67E-02	7.1	
2	0	4675.52	157	0	46.55	202.62	179	40	1.31E-02	8.0	
3	0	5426.58	240	0	46.55	331.62	313	30	2.00E-02	6.5	
4	0	5810.29	4	0	23.27	397.50	395	7	3.34E-04	50.0	
5	0	6290.06	74	0	40.73	479.86	462	34	6.17E-03	11.6	

Error Report (Date: 11-Dec-07 05:05 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000



Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKEL1AC

Detector: ALP171 2

Report Date: 11-Dec-07 06:31 PM

Acquire Date: 11-DEC-2007 13:45:25.41

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

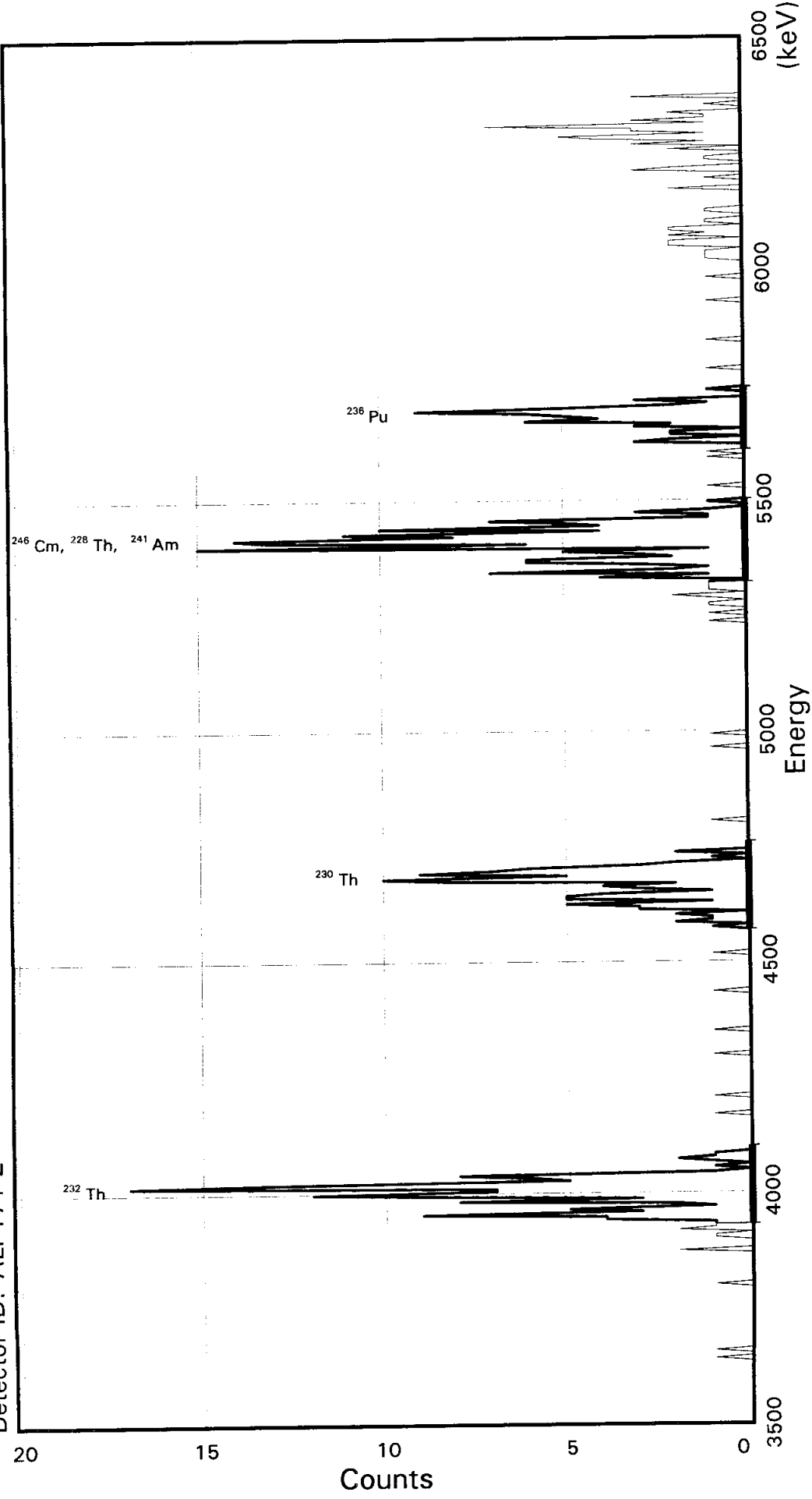
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	141	0	0.706	5423.2	146.9	317	343
TH-230	93	1	0.465	4687.7	147.0	186	212
TH-232	128	1	0.640	4013.0	130.0	68	91

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKEL1AC  
Detector ID: ALP171 2



Energy Coefficients:  
Offset: 3.52881E + 03  
Slope: 5.65426E + 00  
Quadrature: -4.50688E-06

Acquisition Start: 11-DEC-2007 13:45:25.41  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCKEL1AC

TITLE : TH BRCO

DETECTOR : ALP171 2  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKEL1AC\_111271345B.CN  
F;1  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 11-DEC-2007 13:45:25 CALIB DATE : 09-DEC-2007 00:49:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3528.81 keV CONSTANT FWHM : 9.33333 Channels  
SLOPE : 5.65426 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.450688E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: KCKELIAC

Flags Key

Detector: ALP171 2

Report Date: 11 Dec-07 05:05 PM

Intersect Region: #

Acquire Date: 11 DEC-2007 13:45:25.41

Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	0		101	0		151	4		201	0		251	0		301	0		351	0		401	1		451	0		501
		2	0		52	0		102	0		152	2		202	0		252	1		302	0		352	0		402	2		452	0		502
C		3	0		53	0		103	0		153	8		203	0		253	0		303	0		353	0		403	2		453	3		503
C		4	0		54	0		104	0		154	10		204	1		254	0		304	1		354	0		404	0		454	0		504
C		5	0		55	0		105	0		155	5		205	0		255	1		305	0		355	0		405	1		455	0		505
C		6	0		56	0		106	0		156	9		206	0		256	0		306	0		356	0		406	1		456	0		506
C		7	0		57	0		107	0		157	7		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	6		208	0		258	1		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	3		209	1		259	1		309	0		359	0		409	1		459	0		509
0		10	0		60	0		110	1		160	2		210	0		260	0		310	0		360	1		410	1		460	0		510
0		11	2		61	0		111	0		161	0		211	0		261	1		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	1		212	0		262	2		312	0		362	0		412	0		462	0		512
0		13	0		63	1		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	2		214	0		264	1		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	1		315	1		365	0		415	0		465			
0		16	1		66	0		116	0		166	0		216	0		266	1		316	0		366	0		416	0		466			
0		17	1		67	0		117	0		167	0		217	0		267	1		317	1		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	0		368	0		418	2		468			
0		19	2		69	0		119	0		169	0		219	0		269	4		319	0		369	0		419	0		469			
1		20	1		70	1		120	0		170	0		220	0		270	1		320	0		370	0		420	0		470			
0		21	1		71	0		121	0		171	0		221	0		271	7		321	3		371	0		421	0		471			
0		22	1		72	0		122	0		172	0		222	0		272	2		322	2		372	0		422	1		472			
1		23	4		73	0		123	0		173	0		223	0		273	1		323	0		373	0		423	0		473			
0		24	4		74	0		124	0		174	0		224	0		274	3		324	2		374	0		424	0		474			
0		25	9		75	0		125	1		175	0		225	0		275	6		325	2		375	1		425	3		475			
0		26	3		76	0		126	0		176	1		226	0		276	6		326	0		376	0		426	2		476			
0		27	5		77	0		127	0		177	0		227	0		277	2		327	3		377	0		427	0		477			
0		28	1		78	0		128	0		178	0		228	0		278	3		328	2		378	0		428	0		478			
0		29	2		79	0		129	0		179	0		229	0		279	5		329	6		379	0		429	1		479			
0		30	8		80	0		130	0		180	0		230	0		280	1		330	4		380	0		430	1		480			
0		31	3		81	0		131	0		181	0		231	0		281	15		331	5		381	0		431	0		481			
0		32	8		82	0		132	0		182	0		232	0		282	6		332	6		382	0		432	0		482			
0		33	12		83	0		133	0		183	0		233	0		283	13		333	9		383	0		433	2		483			
0		34	7		84	0		134	0		184	0		234	0		284	14		334	5		384	1		434	0		484			
0		35	7		85	0		135	1		185	0		235	0		285	8		335	2		385	0		435	3		485			
0		36	17		86	1		136	0		186	0		236	0		286	11		336	1		386	0		436	1		486			
0		37	13		87	0		137	2		187	0		237	0		287	4		337	3		387	0		437	4		487			
0		38	5		88	0		138	1		188	0		238	0		288	10		338	0		388	0		438	5		488			
0		39	6		89	0		139	1		189	0		239	0		289	4		339	0		389	0		439	1		489			
0		40	8		90	0		140	2		190	0		240	0		290	5		340	0		390	0		440	3		490			
0		41	1		91	0		141	0		191	0		241	0		291	7		341	1		391	1		441	3		491			
0		42	0		92	0		142	3		192	0		242	0		292	1		342	0		392	1		442	7		492			
0		43	1		93	0		143	3		193	0		243	0		293	1		343	0		393	1		443	1		493			
0		44	0		94	0		144	5		194	0		244	0		294	3		344	0		394	1		444	3		494			
0		45	1		95	1		145	1		195	0		245	0		295	1		345	0		395	0		445	1		495			
0		46	2		96	0		146	5		196	0		246	0		296	0		346	0		396	2		446	1		496			
0		47	1		97	0		147	5		197	0		247	0		297	0		347	0		397	2		447	2		497			
1		48	1		98	0		148	4		198	0		248	0		298	1		348	0		398	2		448	0		498			
0		49	0		99	0		149	1		199	0		249	0		299	0		349	1		399	0		449	0		499			

c 50 0 100 0 150 3 200 0 250 0 300 0 350 0 400 2 450 1 500

VMS Peak Search Report V1.9 Generated 11-DEC-2007 17:05:47

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKEL1AC_111271345B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 11-DEC-2007 13:45:25
Sample ID         : KCKEL1AC Sample quantity : 0.00000E+00 GRAMS
Sample type       : disk Sample geometry :
Detector name     : ALP171 1 Detector geometry:
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%
Start energy      : 3545.77 keV End energy : 6422.61 keV
Sensitivity       : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4010.65	130	0	50.89	85.22	71	30	1.08E-02	8.8	
2	0	4686.27	96	0	45.23	204.74	184	34	8.01E-03	10.2	
3	0	5416.56	147	0	50.89	333.95	317	32	1.23E-02	8.2	
4	0	5688.08	58	0	39.58	382.00	368	24	4.84E-03	13.1	

Error Report (Date: 11-Dec-07 05:05 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKEM1AC

Detector: ALP171 6

Report Date: 11-Dec-07 06:32 PM

Acquire Date: 11-DEC-2007 13:45:25.41

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	216	4	1.077	5423.2	163.4	316	343
TH-230	141	1	0.705	4687.7	133.0	198	220
TH-232	191	2	0.954	4013.0	151.0	85	110

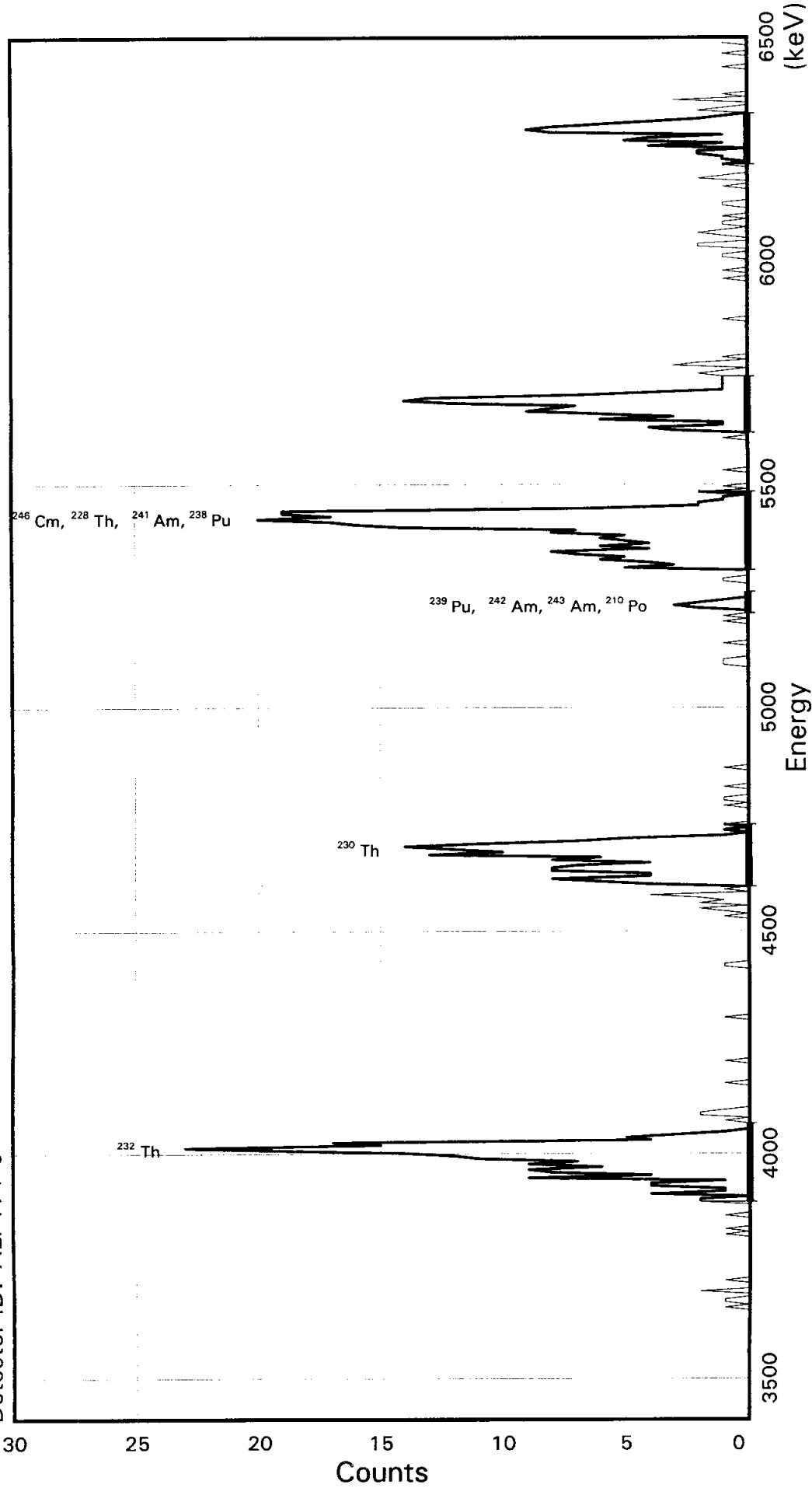
End of Alpha Region Report  
(Produced by ANAL Report)



STL Richland WA.  
TH BRCO

Sample ID: KCKEM1AC  
Detector ID: ALP171 6

Batch ID: 7327116



Acquisition Start: 11-DEC-2007 13:45:25.41  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.39107E+03  
Slope: 6.03714E+00  
Quadrature: 2.23735E-05

SAMPLE IDENTIITY: KCKEM1AC

TITLE : TH BRCO

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKEM1AC\_111271345F.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 11-DEC-2007 13:45:25 CALIB DATE : 09-DEC-2007 06:08:13

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3391.07 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 6.03714 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 2.237350E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: KCKEMLAC

Flags Key

Detector: ALP171 6

Report Date: 11 Dec 07 05:05 PM

Intersect Region: #

Acquire Date: 11 DEC 2007 13:45:25.41

Non Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
		1	0		51	14		101	1		151	4		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	19		102	0		152	6		202	0		252	0		302	0		352	0		402	1		452	0		502
0		3	0		53	23		103	0		153	8		203	0		253	2		303	0		353	0		403	1		453	1		503
0		4	1		54	15		104	0		154	4		204	0		254	3		304	1		354	0		404	0		454	0		504
0		5	0		55	17		105	0		155	4		205	0		255	2		305	0		355	0		405	0		455	0		505
0		6	0		56	4		106	0		156	8		206	0		256	1		306	0		356	0		406	0		456	0		506
C		7	0		57	5		107	0		157	8		207	0		257	0		307	0		357	0		407	0		457	0		507
C		8	0		58	3		108	0		158	7		208	0		258	0		308	0		358	0		408	0		458	1		508
C		9	0		59	1		109	0		159	4		209	0		259	0		309	0		359	0		409	1		459	0		509
C		10	0		60	0		110	0		160	8		210	0		260	0		310	0		360	1		410	0		460	0		510
0		11	0		61	0		111	0		161	6		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	13		212	0		262	0		312	0		362	0		412	2		462	1		512
0		13	0		63	1		113	0		163	10		213	0		263	1		313	0		363	0		413	1		463			
0		14	0		64	0		114	0		164	12		214	0		264	1		314	0		364	0		414	0		464			
0		15	0		65	2		115	0		165	14		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	2		116	0		166	11		216	0		266	0		316	1		366	0		416	0		466			
0		17	0		67	1		117	0		167	7		217	0		267	0		317	0		367	0		417	1		467			
0		18	0		68	0		118	0		168	5		218	0		268	5		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	1		219	0		269	3		319	3		369	0		419	1		469			
0		20	0		70	0		120	1		170	0		220	0		270	4		320	4		370	0		420	1		470			
0		21	1		71	0		121	1		171	1		221	0		271	6		321	1		371	0		421	2		471			
0		22	0		72	0		122	0		172	0		222	0		272	5		322	1		372	0		422	2		472			
0		23	1		73	0		123	0		173	1		223	0		273	7		323	6		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	8		324	3		374	0		424	4		474			
0		25	0		75	0		125	0		175	0		225	0		275	4		325	6		375	1		425	1		475			
0		26	0		76	0		126	0		176	0		226	0		276	6		326	9		376	0		426	5		476			
0		27	0		77	1		127	0		177	0		227	0		277	4		327	8		377	0		427	4		477			
0		28	1		78	0		128	0		178	0		228	0		278	5		328	7		378	1		428	1		478			
0		29	0		79	0		129	0		179	0		229	0		279	6		329	12		379	0		429	8		479			
0		30	0		80	0		130	0		180	1		230	0		280	5		330	14		380	0		430	9		480			
0		31	0		81	0		131	0		181	0		231	0		281	8		331	13		381	0		431	8		481			
0		32	0		82	0		132	0		182	1		232	1		282	7		332	7		382	0		432	6		482			
0		33	2		83	0		133	0		183	1		233	1		283	14		333	4		383	1		433	4		483			
0		34	2		84	0		134	0		184	0		234	1		284	16		334	1		384	1		434	2		484			
0		35	0		85	1		135	0		185	0		235	0		285	17		335	1		385	0		435	1		485			
0		36	4		86	0		136	0		186	0		236	0		286	20		336	1		386	0		436	0		486			
0		37	1		87	0		137	0		187	1		237	0		287	17		337	1		387	2		437	2		487			
0		38	1		88	0		138	0		188	0		238	0		288	19		338	1		388	2		438	1		488			
0		39	4		89	0		139	1		189	0		239	0		289	19		339	1		389	0		439	0		489			
0		40	4		90	0		140	0		190	0		240	1		290	6		340	2		390	0		440	0		490			
0		41	1		91	0		141	1		191	0		241	0		291	2		341	1		391	1		441	3		491			
0		42	9		92	0		142	2		192	0		242	0		292	2		342	0		392	2		442	0		492			
0		43	4		93	0		143	0		193	0		243	0		293	1		343	3		393	1		443	1		493			
1		44	8		94	0		144	2		194	1		244	0		294	1		344	2		394	0		444	0		494			
0		45	9		95	0		145	1		195	0		245	0		295	0		345	0		395	1		445	0		495			
1		46	6		96	0		146	2		196	0		246	0		296	2		346	1		396	1		446	0		496			
1		47	9		97	0		147	4		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	7		98	0		148	0		198	0		248	1		298	1		348	0		398	1		448	0		498			
0		49	11		99	0		149	1		199	0		249	0		299	0		349	0		399	0		449	0		499			

2 50 12 100 0 150 0 200 0 250 1 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 11-DEC-2007 17:05:51

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKEM1AC_111271345F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 11-DEC-2007 13:45:25
Sample ID         : KCKEM1AC           Sample quantity  : 0.000000E+00 GRAMS
Sample type       : disk               Sample geometry   :
Detector name     : ALP171 1          Detector geometry:
Elapsed live time: 0 03:19:47.00      Elapsed real time: 0 03:19:47.00    0.0%
Start energy      : 3409.18 keV        End energy        : 6487.95 keV
Sensitivity       : 3.00                Sum Sensitivity   : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4008.50	196	0	42.26	102.23	83	29	1.64E-02	7.1	
2	0	4682.10	144	0	48.30	213.68	200	23	1.20E-02	8.3	
3	0	5226.70	8	0	24.15	303.71	301	8	6.67E-04	35.4	
4	0	5422.80	217	0	42.26	336.12	317	29	1.81E-02	6.8	
5	0	5681.25	102	0	48.30	378.82	368	21	8.51E-03	9.9	
6	0	6294.79	60	0	30.19	480.12	467	19	5.01E-03	12.9	

Error Report (Date: 11-Dec-07 05:05 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKEM1AF

Detector: ALP171 7

Report Date: 11-Dec-07 06:34 PM

Acquire Date: 11-DEC-2007 13:45:25.41

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

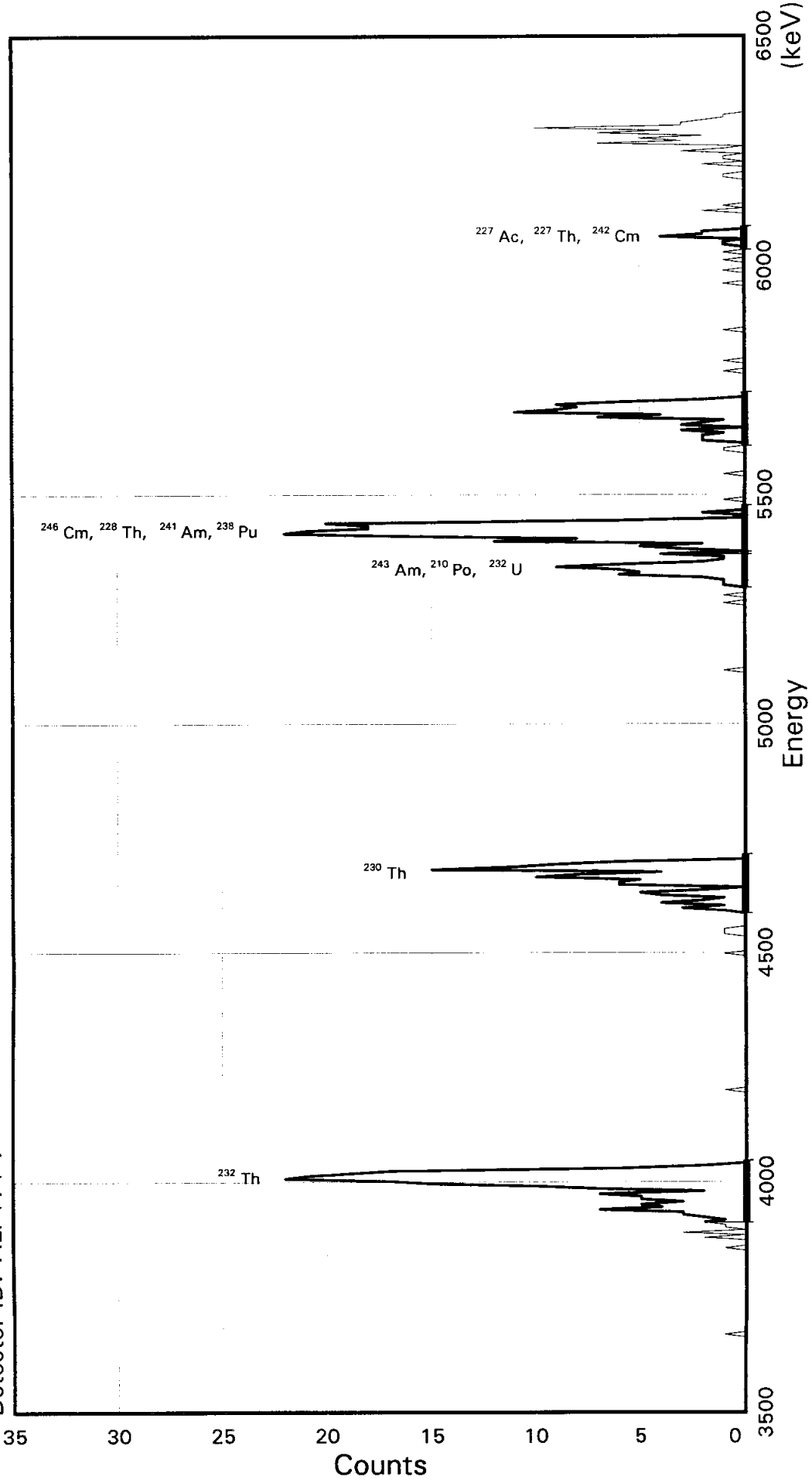
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	197	2	0.984	5423.2	157.7	305	333
TH-230	103	0	0.516	4687.7	129.6	177	200
TH-232	186	0	0.931	4013.0	135.2	56	80

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKEM1AF  
Detector ID: ALP171 7



Energy Coefficients:  
Offset: 3.59067E+03  
Slope: 5.63322E+00  
Quadrature: -1.34904E-06

Acquisition Start: 11-DEC-2007 13:45:25.41  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00



SAMPLE IDENTIITY: KCKEM1AF

TITLE : TH BRCO

DETECTOR : ALP171 7

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKEM1AF\_111271345G.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00

ACQUIRE DATE: 11-DEC-2007 13:45:25 CALIB DATE : 09-DEC-2007 00:50:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3590.67 keV CONSTANT FWHM : 6.50000 Channels

SLOPE : 5.63322 keV/C SENSITIVITY : 3.00000 Std Dev's

QUAD COEFF : -.134904E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: KCKEM1AF

Flags Key

Detector: ALP171 7

Report Date: 11 Dec-07 06:26 PM

Intersect Region: @

Acquire Date: 11 DEC 2007 13:45:25.41

Non Intersect Region: .,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	
		1	2	51	0	101	0	151	0	201	0	251	0	301	0	351	0	401	1	451	0	501		
		2	0	52	0	102	0	152	0	202	0	252	0	302	0	352	0	402	0	452	0	502		
C		3	3	53	0	103	0	153	0	203	0	253	0	303	0	353	1	403	0	453	0	503		
C		4	0	54	0	104	0	154	0	204	0	254	1	304	0	354	0	404	0	454	0	504		
0		5	1	55	0	105	0	155	0	205	0	255	1	305	0	355	0	405	0	455	0	505		
0		6	1	56	0	106	0	156	0	206	0	256	1	306	1	356	0	406	0	456	0	506		
0		7	2	57	0	107	0	157	0	207	0	257	2	307	1	357	0	407	0	457	0	507		
0		8	1	58	1	108	0	158	0	208	0	258	6	308	0	358	0	408	0	458	0	508		
0		9	2	59	0	109	0	159	0	209	0	259	5	309	0	359	0	409	0	459	0	509		
0		10	3	60	0	110	0	160	0	210	0	260	6	310	2	360	0	410	0	460	0	510		
0		11	3	61	0	111	1	161	0	211	0	261	9	311	2	361	0	411	0	461	0	511		
C		12	7	62	0	112	0	162	0	212	0	262	6	312	2	362	0	412	1	462	0	512		
C		13	4	63	0	113	0	163	0	213	0	263	2	313	1	363	0	413	1	463				
1		14	5	64	0	114	0	164	0	214	0	264	1	314	3	364	0	414	0	464				
0		15	3	65	0	115	0	165	0	215	0	265	1	315	0	365	0	415	0	465				
0		16	5	66	0	116	0	166	0	216	0	266	4	316	3	366	0	416	0	466				
0		17	5	67	0	117	0	167	0	217	0	267	0	317	2	367	0	417	2	467				
0		18	7	68	0	118	0	168	0	218	0	268	3	318	1	368	0	418	0	468				
0		19	2	69	0	119	1	169	0	219	0	269	5	319	7	369	0	419	1	469				
0		20	7	70	0	120	1	170	0	220	0	270	2	320	4	370	0	420	1	470				
0		21	10	71	0	121	1	171	0	221	1	271	12	321	11	371	1	421	0	471				
0		22	15	72	0	122	0	172	0	222	0	272	8	322	9	372	0	422	3	472				
0		23	17	73	0	123	0	173	0	223	0	273	16	323	8	373	0	423	1	473				
0		24	22	74	0	124	0	174	0	224	0	274	22	324	9	374	0	424	0	474				
0		25	21	75	0	125	0	175	0	225	0	275	21	325	6	375	0	425	7	475				
0		26	19	76	0	126	0	176	0	226	0	276	18	326	2	376	1	426	3	476				
0		27	17	77	0	127	0	177	0	227	0	277	18	327	0	377	0	427	5	477				
0		28	6	78	0	128	1	178	0	228	0	278	20	328	0	378	0	428	2	478				
0		29	2	79	0	129	3	179	0	229	0	279	6	329	0	379	0	429	7	479				
0		30	0	80	0	130	1	180	0	230	0	280	0	330	0	380	1	430	4	480				
0		31	0	81	0	131	4	181	0	231	0	281	0	331	0	381	0	431	10	481				
0		32	0	82	0	132	2	182	0	232	0	282	2	332	0	382	0	432	3	482				
0		33	0	83	0	133	1	183	0	233	0	283	0	333	0	383	1	433	3	483				
0		34	0	84	0	134	4	184	0	234	0	284	0	334	0	384	0	434	2	484				
0		35	0	85	0	135	5	185	0	235	0	285	0	335	0	385	0	435	1	485				
0		36	0	86	0	136	2	186	0	236	0	286	0	336	0	386	1	436	1	486				
0		37	0	87	0	137	0	187	0	237	0	287	1	337	1	387	1	437	0	487				
0		38	0	88	0	138	6	188	0	238	0	288	0	338	0	388	0	438	0	488				
0		39	0	89	0	139	6	189	0	239	0	289	0	339	0	389	4	439	0	489				
0		40	0	90	0	140	5	190	0	240	0	290	0	340	0	390	2	440	0	490				
0		41	0	91	0	141	10	191	0	241	0	291	0	341	1	391	2	441	0	491				
0		42	0	92	0	142	8	192	0	242	0	292	0	342	0	392	0	442	0	492				
0		43	0	93	0	143	4	193	0	243	0	293	0	343	0	393	0	443	0	493				
0		44	0	94	0	144	15	194	0	244	0	294	0	344	0	394	0	444	0	494				
0		45	0	95	0	145	11	195	0	245	0	295	0	345	0	395	0	445	0	495				
0		46	0	96	0	146	9	196	0	246	0	296	0	346	0	396	0	446	0	496				
1		47	0	97	0	147	6	197	0	247	1	297	1	347	0	397	0	447	0	497				
0		48	0	98	0	148	0	198	0	248	0	298	0	348	0	398	0	448	0	498				
0		49	0	99	0	149	0	199	0	249	0	299	0	349	0	399	2	449	0	499				

0 50 0 100 0 150 0 200 0 250 1 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 11-DEC-2007 18:26:14

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKEM1AF_111271345G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 11-DEC-2007 13:45:25
Sample ID         : KCKEM1AF Sample quantity : 0.000000E+00 GRAMS
Sample type       : disk Sample geometry :
Detector name     : ALP171 1 Detector geometry:
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%
Start energy      : 3607.57 keV End energy : 6474.53 keV
Sensitivity       : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4010.34	187	0	33.80	74.50	57	24	1.56E-02	7.3	
2	0	4677.34	105	0	45.07	192.91	177	23	8.76E-03	9.8	
3	0	5337.78	43	0	28.17	310.17	303	14	3.59E-03	15.2	
4	0	5421.88	159	0	39.43	325.10	316	19	1.33E-02	7.9	
5	0	5686.44	75	0	28.17	372.07	358	21	6.26E-03	11.5	
6	0	6064.65	10	0	28.17	439.22	434	9	8.34E-04	31.6	

Error Report (Date: 11-Dec-07 06:26 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

# THORIUM ISOTOPIIC COUNTING REQUEST

2053

C.R. Technician SP  
Date Counted 12/11/07  
C.R. Analyst SP  
Date Analyzed 12/11/07

Counting Time 200 Minutes  
Sample 1327116  
Background See Alpha Analysis Report  
SOP's RICHRD008  
Operating: RICHRD0016  
Review: 11/16/07

WorkOrder #	Th-229 (4845 KeV) Tracer		TOTAL COUNTS				Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)	Th-230 (4688 KeV) (8)		
KCKETIAC		10		0			171	See Alpha Analysis Report for ROI Information
KCKEIIAC		10		0			172	See Alpha Analysis Report for ROI Information
KCKE2IAC		10		0			176	See Alpha Analysis Report for ROI Information
KCR6R1AA		10		0			177	See Alpha Analysis Report for ROI Information
		10		0				See Alpha Analysis Report for ROI Information
		10		0				See Alpha Analysis Report for ROI Information
		10		0				See Alpha Analysis Report for ROI Information
		10		0				See Alpha Analysis Report for ROI Information
		10		0				See Alpha Analysis Report for ROI Information

Comments:

Approved by: SP

Date: 12/11/07

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKET1AC

Detector: ALP171 1

Report Date: 11-Dec-07 09:13 PM

Acquire Date: 11-DEC-2007 17:33:33.80

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

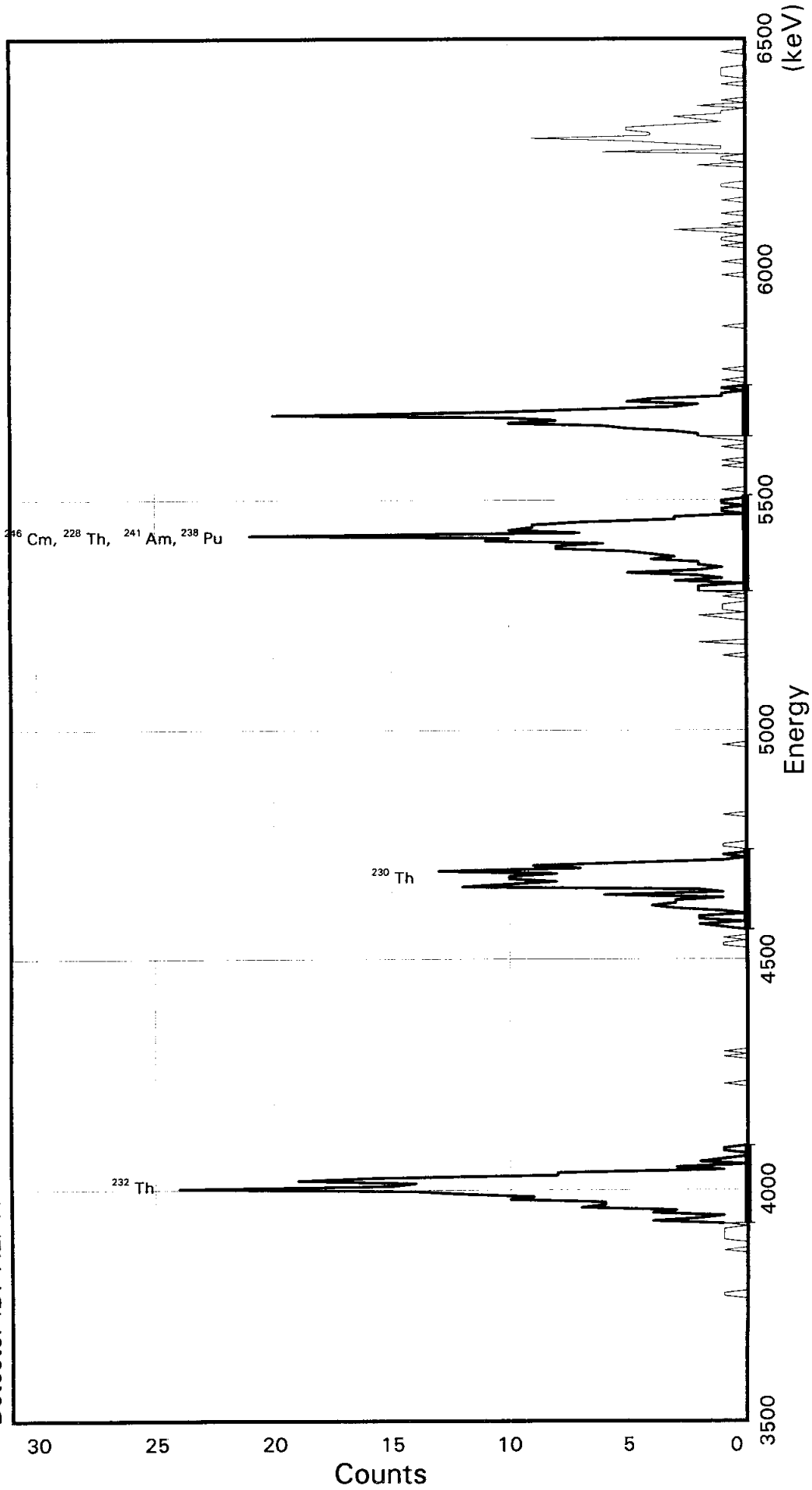
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	147	3	0.733	5423.2	157.2	313	340
TH-230	118	1	0.590	4687.7	133.9	190	213
TH-232	190	1	0.950	4013.0	145.5	74	99

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKET1AC  
Detector ID: ALP171 1



Energy Coefficients:  
Offset: 3.49623E + 03  
Slope: 5.81865E + 00  
Quadrature: 7.22650E-06

Acquisition Start: 11-DEC-2007 17:33:33.80  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00



SAMPLE IDENTIITY: KCKET1AC

TITLE : TH BRCO

DETECTOR : ALP171 1  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKET1AC\_111271733A.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 11-DEC-2007 17:33:33 CALIB DATE : 09-DEC-2007 00:48:55

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3496.23 keV CONSTANT FWHM : 8.66667 Channels  
SLOPE : 5.81865 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 7.226500E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCKET1AC  
 Detector: ALP171 1  
 Report Date: 11-Dec 07 08:53 PM  
 Acquire Date: 11-DEC 2007 17:33:33.80

Flags Key

Intersect Region: @  
 Non Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
		1	0		51	1		101	0		151	10		201	0		251	2		301	0		351	0		401	1		451	0		501
		2	0		52	1		102	0		152	8		202	0		252	0		302	0		352	0		402	0		452	1		502
0		3	0		53	0		103	0		153	10		203	1		253	1		303	0		353	0		403	0		453	1		503
0		4	0		54	0		104	0		154	10		204	0		254	1		304	0		354	0		404	0		454	1		504
0		5	0		55	0		105	0		155	8		205	0		255	1		305	0		355	0		405	0		455	1		505
0		6	0		56	0		106	0		156	13		206	0		256	0		306	0		356	0		406	1		456	0		506
0		7	0		57	0		107	0		157	7		207	0		257	0		307	1		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	9		208	0		258	1		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	5		209	0		259	0		309	1		359	1		409	0		459	0		509
0		10	0		60	0		110	0		160	1		210	0		260	2		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	2		311	0		361	0		411	1		461	1		511
0		12	0		62	0		112	0		162	1		212	0		262	2		312	0		362	0		412	1		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	1		64	0		114	0		164	0		214	0		264	3		314	1		364	0		414	0		464			
0		15	0		65	0		115	0		165	1		215	0		265	1		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	1		216	0		266	2		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	5		317	1		367	0		417	0		467			
0		18	1		68	0		118	0		168	0		218	0		268	2		318	2		368	0		418	0		468			
0		19	1		69	0		119	0		169	0		219	0		269	1		319	2		369	0		419	2		469			
0		20	1		70	0		120	0		170	0		220	0		270	2		320	3		370	0		420	0		470			
0		21	1		71	0		121	0		171	0		221	0		271	2		321	5		371	0		421	1		471			
0		22	1		72	0		122	0		172	0		222	0		272	4		322	6		372	0		422	1		472			
0		23	0		73	0		123	0		173	0		223	0		273	3		323	10		373	0		423	0		473			
0		24	1		74	0		124	0		174	0		224	0		274	4		324	8		374	0		424	6		474			
0		25	4		75	0		125	0		175	0		225	0		275	5		325	10		375	0		425	1		475			
0		26	2		76	1		126	0		176	0		226	0		276	8		326	20		376	0		426	1		476			
0		27	1		77	0		127	0		177	1		227	0		277	8		327	11		377	0		427	3		477			
0		28	4		78	0		128	1		178	0		228	0		278	6		328	7		378	1		428	5		478			
0		29	3		79	0		129	1		179	0		229	0		279	11		329	3		379	0		429	9		479			
0		30	7		80	0		130	0		180	0		230	0		280	10		330	2		380	0		430	4		480			
0		31	6		81	0		131	1		181	0		231	0		281	21		331	5		381	0		431	4		481			
0		32	6		82	0		132	0		182	0		232	0		282	7		332	4		382	0		432	5		482			
0		33	10		83	0		133	0		183	0		233	0		283	10		333	1		383	1		433	5		483			
0		34	9		84	0		134	0		184	0		234	0		284	9		334	1		384	0		434	3		484			
0		35	12		85	0		135	1		185	0		235	0		285	9		335	0		385	0		435	1		485			
0		36	14		86	1		136	2		186	0		236	1		286	7		336	1		386	0		436	2		486			
0		37	24		87	0		137	0		187	0		237	0		287	3		337	0		387	0		437	3		487			
0		38	15		88	1		138	2		188	0		238	0		288	3		338	0		388	0		438	1		488			
0		39	14		89	0		139	2		189	0		239	0		289	0		339	1		389	1		439	1		489			
0		40	19		90	0		140	0		190	0		240	0		290	1		340	0		390	0		440	0		490			
0		41	16		91	0		141	1		191	0		241	2		291	1		341	0		391	1		441	2		491			
0		42	8		92	0		142	3		192	0		242	0		292	0		342	0		392	1		442	0		492			
0		43	8		93	0		143	4		193	0		243	0		293	1		343	1		393	0		443	1		493			
0		44	1		94	0		144	3		194	0		244	0		294	1		344	0		394	1		444	0		494			
0		45	3		95	0		145	3		195	0		245	0		295	0		345	0		395	3		445	0		495			
0		46	0		96	0		146	1		196	0		246	0		296	0		346	0		396	0		446	0		496			
1		47	2		97	0		147	6		197	0		247	0		297	0		347	0		397	1		447	0		497			
1		48	1		98	0		148	1		198	0		248	0		298	1		348	0		398	0		448	0		498			
0		49	0		99	0		149	2		199	0		249	0		299	0		349	0		399	0		449	1		499			

C 50 0 100 0 150 12 200 0 250 1 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 11-DEC-2007 20:53:48

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKET1AC_111271733A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 11-DEC-2007 17:33:33
Sample ID        : KCKET1AC Sample quantity : 0.00000E+00 GRAMS
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%
Start energy     : 3513.69 keV End energy : 6477.28 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4008.33	190	0	52.37	88.00	74	29	1.59E-02	7.3	
2	0	4681.53	121	0	58.19	203.66	184	30	1.01E-02	9.1	
3	0	5421.02	155	0	58.19	330.66	310	36	1.29E-02	8.0	
4	0	5682.15	101	0	34.91	375.50	368	19	8.43E-03	10.0	

Error Report (Date: 11-Dec-07 08:53 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKE11AC

Detector: ALP171 2

Report Date: 11-Dec-07 09:14 PM

Acquire Date: 11-DEC-2007 17:33:33.80

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

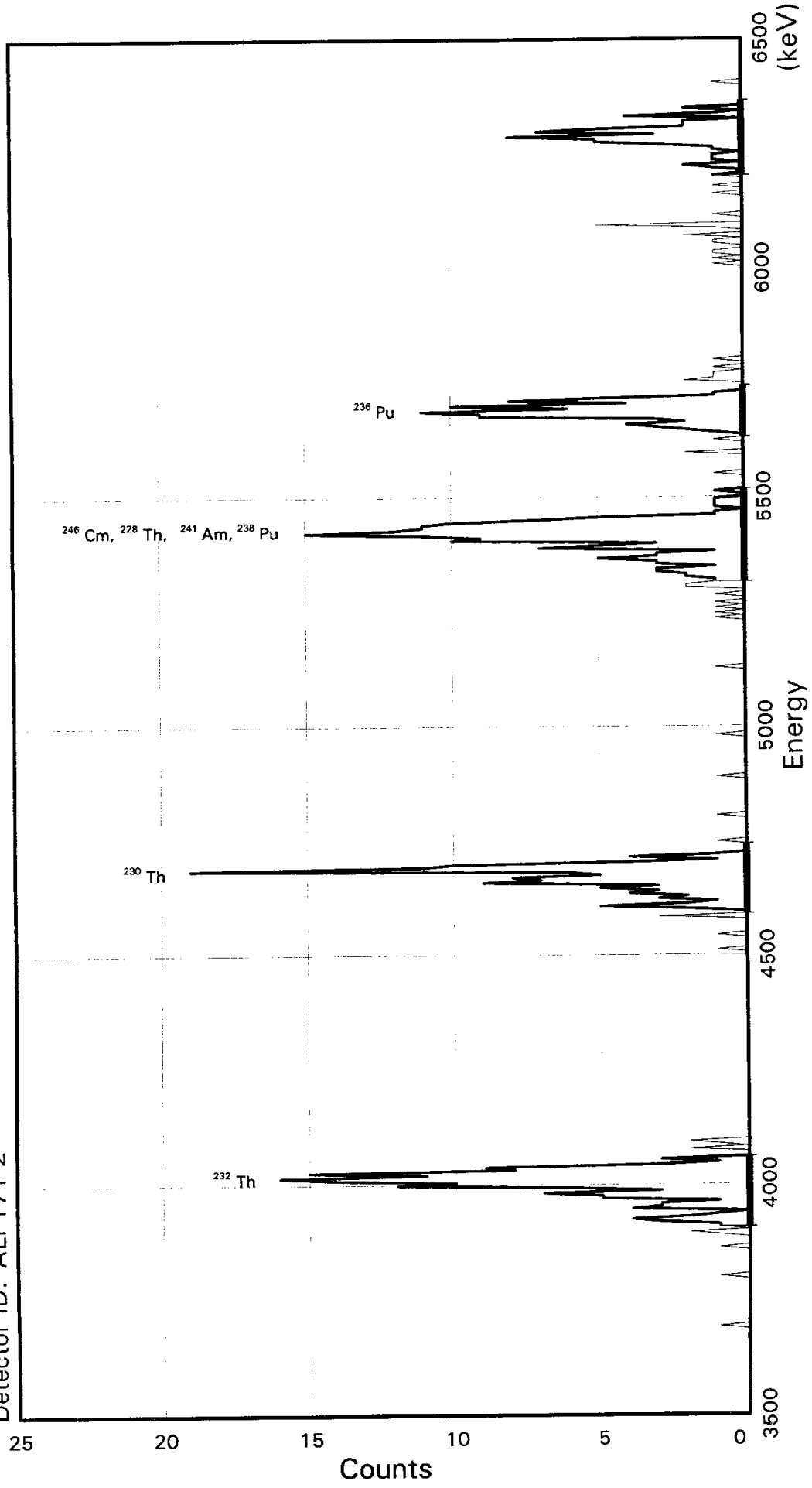
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	146	0	0.731	5423.2	135.6	318	342
TH-230	115	1	0.575	4687.7	135.7	188	212
TH-232	147	1	0.735	4013.0	135.7	68	92

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCKE11AC  
Detector ID: ALP171 2



Energy Coefficients:  
Offset: 3.52881E+03  
Slope: 5.65426E+00  
Quadrature: -4.50688E-06

Acquisition Start: 11-DEC-2007 17:33:33.80  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCKE11AC

TITLE : TH BRCO

DETECTOR : ALP171 2  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCKE11AC\_111271733B.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 11-DEC-2007 17:33:33 CALIB DATE : 09-DEC-2007 00:49:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3528.81 keV CONSTANT FWHM : 9.33333 Channels  
SLOPE : 5.65426 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.450688E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %



Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCKE11AC  
 Detector: ALP171 2  
 Report Date: 11-Dec-07 08:53 PM  
 Acquire Date: 11 DEC 2007 17:33:33.80

Flags Key  
 Intersect Region: @  
 Non-Intersect Region: +

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	0		101	0		151	7		201	0		251	0		301	1		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	8		202	0		252	1		302	0		352	1		402	0		452	0		502
C		3	0		53	0		103	0		153	5		203	0		253	0		303	0		353	0		403	1		453	0		503
C		4	0		54	0		104	0		154	6		204	0		254	1		304	0		354	0		404	5		454	0		504
0		5	0		55	0		105	0		155	19		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	11		206	0		256	1		306	0		356	0		406	0		456	0		506
C		7	0		57	0		107	0		157	10		207	1		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	4		208	0		258	1		308	1		358	0		408	1		458	0		508
0		9	1		59	0		109	0		159	1		209	0		259	0		309	0		359	0		409	0		459	1		509
0		10	0		60	0		110	0		160	4		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	1		211	0		261	1		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	1		64	0		114	0		164	0		214	0		264	2		314	0		364	0		414	0		464			
0		15	2		65	0		115	0		165	0		215	0		265	2		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	1		216	0		266	1		316	2		366	0		416	1		466			
0		17	1		67	0		117	0		167	0		217	0		267	1		317	0		367	0		417	0		467			
0		18	1		68	0		118	0		168	0		218	0		268	2		318	0		368	0		418	0		468			
0		19	3		69	0		119	0		169	0		219	0		269	2		319	0		369	0		419	1		469			
0		20	4		70	0		120	0		170	0		220	0		270	3		320	0		370	0		420	0		470			
0		21	2		71	0		121	0		171	0		221	0		271	3		321	1		371	0		421	0		471			
0		22	1		72	0		122	0		172	0		222	0		272	1		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	0		273	3		323	0		373	0		423	1		473			
0		24	4		74	0		124	1		174	0		224	0		274	3		324	1		374	0		424	0		474			
0		25	3		75	0		125	0		175	0		225	0		275	5		325	2		375	0		425	0		475			
0		26	3		76	0		126	0		176	1		226	0		276	3		326	3		376	0		426	1		476			
0		27	1		77	0		127	0		177	0		227	0		277	3		327	4		377	0		427	2		477			
0		28	5		78	0		128	0		178	0		228	0		278	1		328	2		378	0		428	0		478			
1		29	5		79	0		129	0		179	0		229	0		279	7		329	3		379	0		429	1		479			
0		30	7		80	0		130	1		180	0		230	0		280	5		330	9		380	0		430	1		480			
0		31	3		81	0		131	0		181	0		231	0		281	3		331	9		381	0		431	1		481			
0		32	6		82	0		132	0		182	0		232	0		282	10		332	11		382	0		432	0		482			
0		33	12		83	0		133	0		183	0		233	1		283	9		333	6		383	0		433	1		483			
0		34	10		84	0		134	0		184	0		234	0		284	11		334	10		384	0		434	1		484			
0		35	14		85	0		135	0		185	0		235	0		285	15		335	4		385	0		435	3		485			
0		36	16		86	0		136	0		186	0		236	0		286	12		336	8		386	0		436	5		486			
0		37	11		87	0		137	3		187	0		237	0		287	11		337	5		387	0		437	5		487			
0		38	15		88	0		138	0		188	0		238	0		288	11		338	1		388	0		438	8		488			
0		39	8		89	0		139	0		189	0		239	0		289	10		339	1		389	1		439	3		489			
0		40	9		90	0		140	2		190	0		240	0		290	7		340	0		390	0		440	7		490			
0		41	3		91	0		141	5		191	1		241	0		291	5		341	0		391	1		441	5		491			
0		42	1		92	0		142	2		192	0		242	0		292	1		342	0		392	0		442	2		492			
0		43	3		93	0		143	1		193	0		243	0		293	1		343	0		393	1		443	2		493			
0		44	0		94	0		144	3		194	0		244	0		294	0		344	2		394	1		444	2		494			
0		45	0		95	0		145	2		195	0		245	0		295	1		345	1		395	0		445	0		495			
0		46	0		96	0		146	4		196	0		246	0		296	1		346	1		396	0		446	4		496			
0		47	2		97	0		147	3		197	0		247	0		297	1		347	1		397	1		447	1		497			
1		48	0		98	0		148	5		198	0		248	0		298	1		348	0		398	1		448	0		498			
0		49	1		99	0		149	3		199	0		249	0		299	0		349	1		399	0		449	2		499			

0 50 2 100 0 150 9 200 0 250 0 300 0 350 0 400 2 450 0 500

VMS Peak Search Report V1.9 Generated 11-DEC-2007 20:53:55

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCKE11AC_111271733B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 11-DEC-2007 17:33:33
Sample ID         : KCKE11AC           Sample quantity  : 0.00000E+00 GRAMS
Sample type       : disk               Sample geometry   :
Detector name     : ALP171 1          Detector geometry:
Elapsed live time : 0 03:19:47.00     Elapsed real time: 0 03:19:47.00   0.0%
Start energy      : 3545.77 keV       End energy        : 6422.61 keV
Sensitivity       : 3.00               Sum Sensitivity   : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4013.58	151	0	45.23	85.74	67	27	1.26E-02	8.1	
2	0	4681.61	118	0	56.54	203.91	188	27	9.84E-03	9.2	
3	0	5427.53	154	0	50.89	335.89	316	36	1.28E-02	8.1	
4	0	5690.57	79	0	45.23	382.44	372	20	6.59E-03	11.3	
5	0	6288.04	58	0	39.58	488.18	473	29	4.84E-03	13.1	

Error Report (Date: 11-Dec-07 08:53 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKE21AC

Detector: ALP171 6

Report Date: 11-Dec-07 09:17 PM

Acquire Date: 11-DEC-2007 17:33:33.80

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

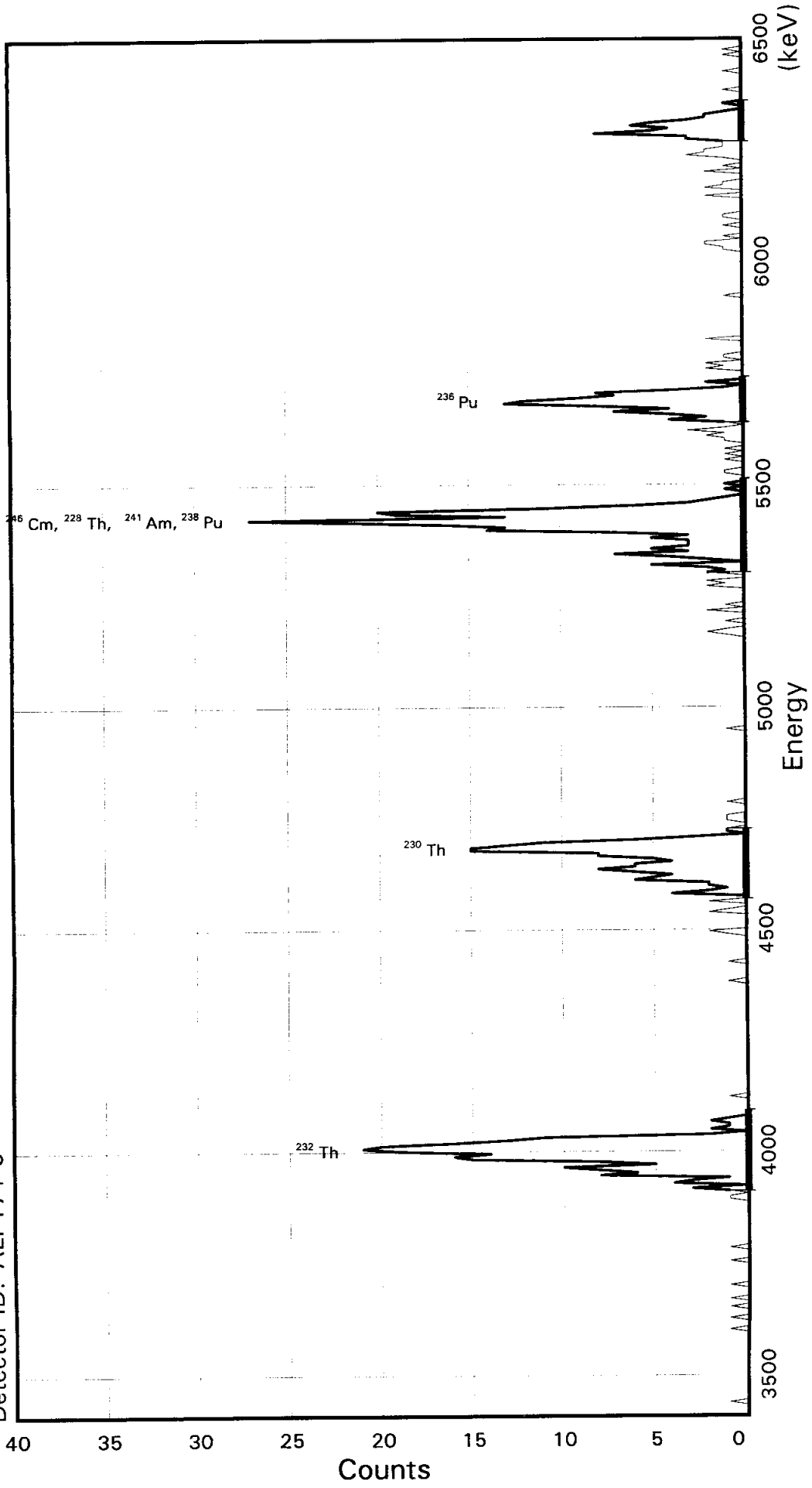
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Right
			C/Min	keV	keV	Chnl	Chnl
TH-228	211	4	1.052	5423.2	151.3	320	345
TH-230	138	1	0.690	4687.7	139.1	198	221
TH-232	200	1	1.000	4013.0	120.8	88	108

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCKE21AC  
Detector ID: ALP171 6

Batch ID: 7327116



Energy Coefficients:  
Offset: 3.39107E+03  
Slope: 6.03714E+00  
Quadrature: 2.23735E-05

Acquisition Start: 11-DEC-2007 17:33:33.80  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCKE21AC

TITLE : TH BRCO

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCKE21AC\_111271733F.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 11-DEC-2007 17:33:33 CALIB DATE : 09-DEC-2007 06:08:13

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3391.07 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 6.03714 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 2.237350E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: KCKE21AC

Flags Key

Detector: ALP171 6

Report Date: 11 Dec-07 08:54 PM

Intersect Region: @

Acquire Date: 11 DEC 2007 17:33:33.80

Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	1	51	19	101	0	151	2	201	0	251	0	301	0	351	0	401	0	451	0	501				
		2	0	52	21	102	0	152	6	202	0	252	2	302	0	352	0	402	0	452	1	502				
0		3	0	53	20	103	0	153	5	203	0	253	0	303	1	353	2	403	0	453	0	503				
0		4	0	54	16	104	0	154	4	204	0	254	1	304	1	354	0	404	0	454	0	504				
0		5	0	55	13	105	0	155	6	205	0	255	0	305	0	355	0	405	0	455	0	505				
0		6	0	56	11	106	0	156	8	206	0	256	0	306	0	356	0	406	2	456	0	506				
0		7	0	57	2	107	0	157	6	207	0	257	0	307	0	357	0	407	0	457	0	507				
1		8	0	58	0	108	0	158	6	208	1	258	0	308	1	358	0	408	0	458	1	508				
0		9	0	59	2	109	0	159	4	209	0	259	0	309	0	359	0	409	2	459	0	509				
0		10	1	60	1	110	0	160	5	210	0	260	0	310	1	360	0	410	1	460	1	510				
0		11	0	61	1	111	0	161	8	211	0	261	2	311	0	361	0	411	1	461	0	511				
0		12	0	62	2	112	0	162	8	212	0	262	1	312	1	362	0	412	0	462	0	512				
0		13	0	63	1	113	0	163	15	213	0	263	2	313	0	363	0	413	0	463						
0		14	0	64	0	114	1	164	15	214	0	264	0	314	0	364	0	414	0	464						
0		15	1	65	0	115	0	165	13	215	0	265	0	315	1	365	0	415	2	465						
0		16	0	66	0	116	0	166	11	216	0	266	2	316	1	366	0	416	0	466						
0		17	0	67	0	117	0	167	6	217	0	267	1	317	2	367	0	417	1	467						
0		18	0	68	0	118	0	168	3	218	0	268	2	318	1	368	0	418	0	468						
0		19	0	69	0	119	0	169	0	219	0	269	5	319	3	369	1	419	0	469						
0		20	0	70	0	120	0	170	1	220	0	270	0	320	1	370	0	420	1	470						
0		21	0	71	1	121	1	171	1	221	0	271	2	321	0	371	0	421	3	471						
0		22	0	72	0	122	0	172	0	222	0	272	4	322	1	372	0	422	2	472						
0		23	0	73	0	123	0	173	0	223	0	273	7	323	4	373	0	423	2	473						
0		24	0	74	0	124	0	174	1	224	0	274	3	324	2	374	0	424	1	474						
0		25	0	75	0	125	0	175	1	225	0	275	5	325	4	375	0	425	1	475						
0		26	0	76	0	126	0	176	1	226	0	276	3	326	7	376	0	426	1	476						
0		27	0	77	0	127	0	177	0	227	0	277	3	327	4	377	0	427	3	477						
0		28	0	78	0	128	0	178	0	228	0	278	3	328	8	378	0	428	3	478						
0		29	0	79	0	129	0	179	0	229	0	279	5	329	13	379	0	429	8	479						
0		30	0	80	0	130	0	180	0	230	0	280	3	330	12	380	0	430	5	480						
0		31	0	81	0	131	0	181	1	231	0	281	7	331	9	381	0	431	4	481						
0		32	0	82	0	132	1	182	0	232	0	282	14	332	7	382	0	432	6	482						
0		33	1	83	0	133	2	183	0	233	0	283	13	333	8	383	0	433	5	483						
0		34	1	84	0	134	0	184	0	234	0	284	16	334	4	384	0	434	3	484						
1		35	0	85	0	135	0	185	0	235	0	285	21	335	1	385	0	435	2	485						
0		36	1	86	0	136	0	186	0	236	0	286	27	336	0	386	1	436	2	486						
0		37	3	87	0	137	0	187	0	237	0	287	13	337	2	387	1	437	1	487						
0		38	0	88	0	138	0	188	0	238	0	288	19	338	0	388	2	438	0	488						
1		39	4	89	0	139	0	189	0	239	0	289	20	339	0	389	2	439	0	489						
0		40	3	90	0	140	2	190	0	240	0	290	11	340	0	390	0	440	1	490						
0		41	1	91	0	141	1	191	0	241	0	291	6	341	0	391	1	441	0	491						
0		42	8	92	0	142	0	192	0	242	0	292	3	342	2	392	0	442	0	492						
1		43	6	93	0	143	0	193	0	243	1	293	2	343	1	393	0	443	0	493						
0		44	8	94	0	144	2	194	0	244	2	294	1	344	2	394	0	444	0	494						
0		45	10	95	0	145	0	195	0	245	1	295	0	345	0	395	1	445	1	495						
1		46	5	96	0	146	0	196	0	246	0	296	0	346	1	396	0	446	0	496						
0		47	8	97	0	147	4	197	0	247	0	297	1	347	1	397	0	447	0	497						
0		48	15	98	0	148	2	198	0	248	1	298	0	348	0	398	1	448	0	498						
0		49	16	99	0	149	1	199	0	249	0	299	1	349	0	399	1	449	0	499						



C 50 14 100 0 150 2 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 11-DEC-2007 20:54:00

```

Configuration      : $DISK1:[ALP171.SAMPLE] KCKE21AC_111271733F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 11-DEC-2007 17:33:33
Sample ID        : KCKE21AC Sample quantity : 0.00000E+00 GRAMS
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%
Start energy     : 3409.18 keV End energy : 6487.95 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4002.67	209	0	54.33	101.27	86	30	1.74E-02	6.9	
2	0	4682.26	142	0	36.22	213.71	195	26	1.18E-02	8.4	
3	0	5422.55	222	0	54.33	336.08	316	35	1.85E-02	6.7	
4	0	5687.83	84	0	42.26	379.90	372	17	7.01E-03	10.9	
5	0	6297.24	44	0	48.30	480.53	476	15	3.67E-03	15.1	

Error Report (Date: 11-Dec-07 08:54 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCR6R1AA

Detector: ALP171 7

Report Date: 11-Dec-07 09:18 PM

Acquire Date: 11-DEC-2007 17:33:33.80

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

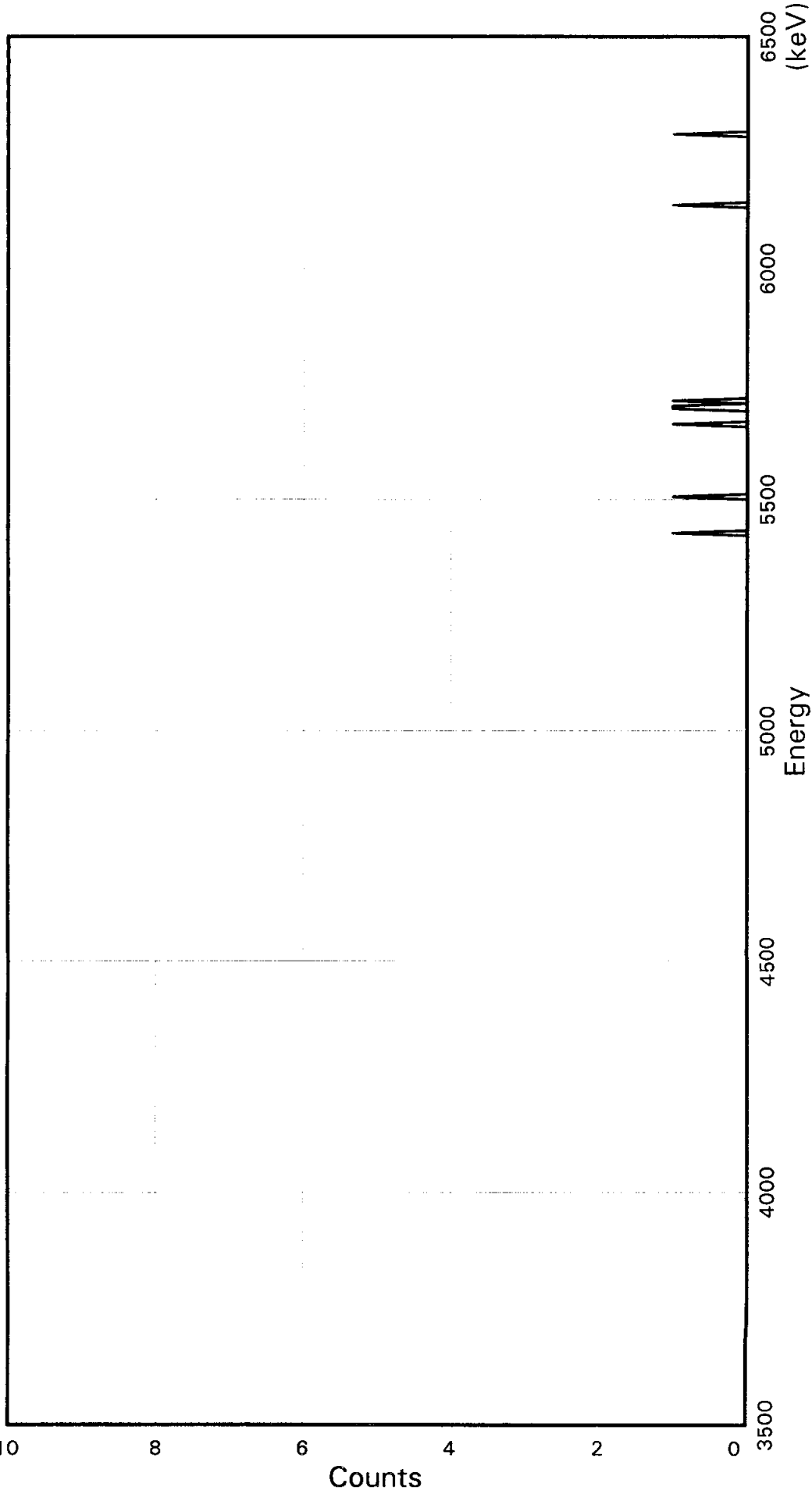
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	1	1	0.004	5423.2	112.6	310	330
TH-230	0	0	0.000	4687.7	112.7	180	200
TH-232	0	0	0.000	4013.0	112.7	60	80

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327116

Sample ID: KCR6R1AA  
Detector ID: ALP171 7



Acquisition Start: 11-DEC-2007 17:33:33.80  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.59067E + 03  
Slope: 5.63322E + 00  
Quadrature: -1.34904E-06

SAMPLE IDENTIITY: KCR6R1AA

TITLE : TH BRCO

DETECTOR : ALP171 7  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCR6R1AA\_111271733G.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 11-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 11-DEC-2007 17:33:33 CALIB DATE : 09-DEC-2007 00:50:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3590.67 keV CONSTANT FWHM : 6.50000 Channels  
SLOPE : 5.63322 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.134904E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: KCR6RIAA  
Detector: ALP171 7  
Report Date: 11-Dec-07 08:54 PM  
Acquire Date: 11 DEC 2007 17:33:33.80

Flags Key  
Intersect Region: #  
Non Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	1		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	1		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	1		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	1		375	0		425	0		475			
0		26	0		76	0		126	0		176	0		226	0		276	1		326	0		376	0		426	0		476			
0		27	0		77	0		127	0		177	0		227	0		277	0		327	1		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	0		328	0		378	0		428	0		478			
0		29	0		79	0		129	0		179	0		229	0		279	0		329	0		379	0		429	1		479			
0		30	0		80	0		130	0		180	0		230	0		280	0		330	0		380	0		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	0		381	0		431	0		481			
0		32	0		82	0		132	0		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	1		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0		242	0		292	0		342	0		392	0		442	0		492			
0		43	0		93	0		143	0		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	0		299	0		349	0		399	0		449	0		499			

0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 11-DEC-2007 20:54:04

Configuration : \$DISK1:[ALP171.SAMPLE]KCR6R1AA\_111271733G.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH BRCO  
Sample date : 16-NOV-2007 12:00:00 Acquisition date : 11-DEC-2007 17:33:33  
Sample ID : KCR6R1AA Sample quantity : 0.00000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP171 1 Detector geometry:  
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%  
Start energy : 3607.57 keV End energy : 6474.53 keV  
Sensitivity : 3.00 Sum Sensitivity : 1.00  
No peaks were found

Error Report (Date: 11-Dec-07 08:54 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

# THORIUM ISOTOPIIC COUNTING REQUEST

1091

C.R. Technician VS  
 Date Counted 12/14/07  
 C.R. Analyst oH  
 Date Analyzed 12/14/07

Counting Time 200 Minutes  
 Sample 200  
 Background See Alpha Analysis Report  
 SOP's RICHRD008  
 Operating: RICHRD0016  
 Review: 7377116

WorkOrder #	Th-229 (4845 keV) Tracer		TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	from Th-234 Beta Count (7)		
KCR6R1AC		10		0	Th-228 (5423 KeV) (6)	Th-230 (4688 KeV) (8)	Th-232 (4010 KeV) (9)
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		

Comments:

Approved by: oH Date: 12/14/07

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCR6R1AC

Detector: ALP171 1

Report Date: 14-Dec-07 06:06 PM

Acquire Date: 14-DEC-2007 13:21:46.58

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

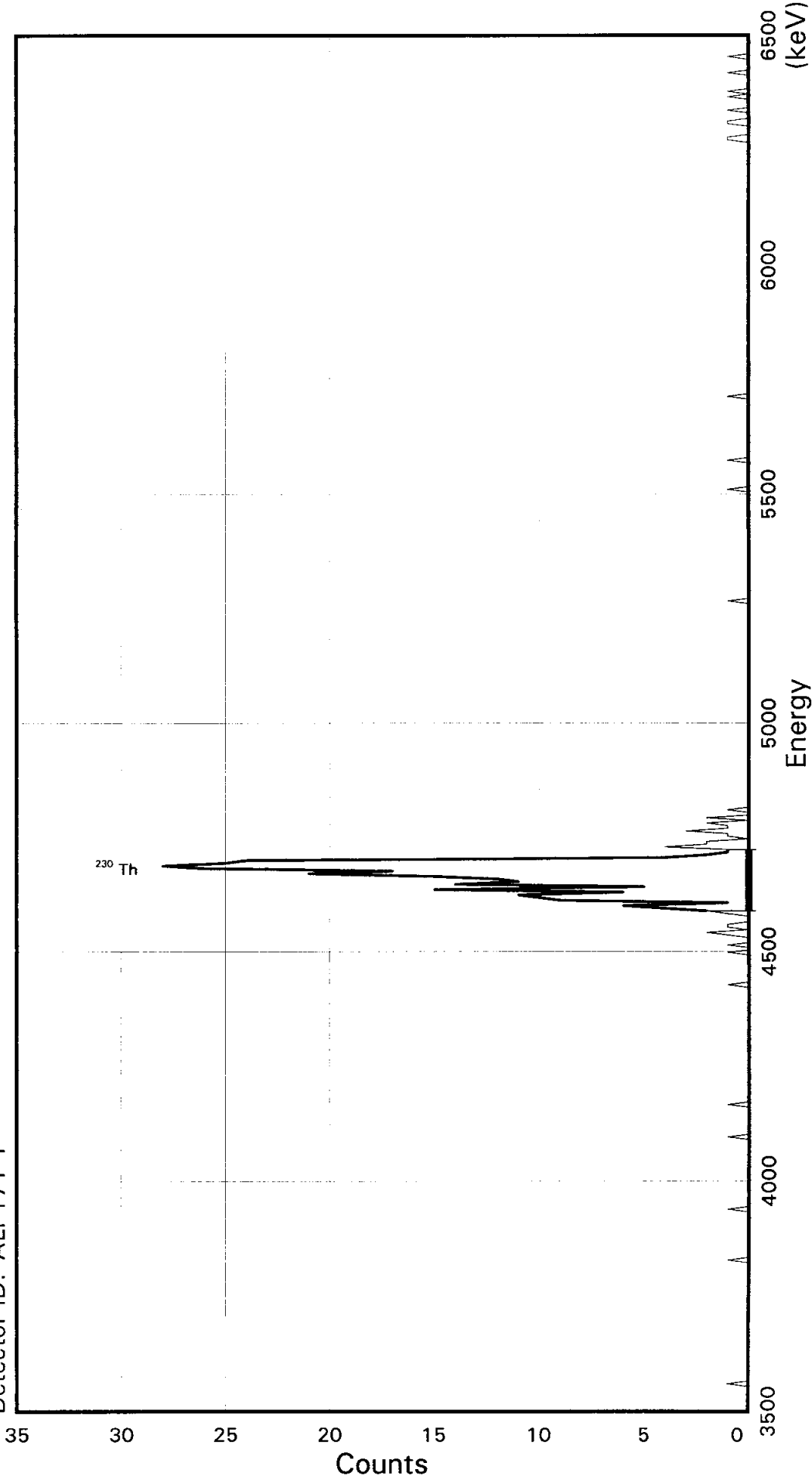
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Right
			C/Min	keV	keV	Chnl	Chnl
TH-228	0	2	-0.002	5423.2	116.5	316	336
TH-230	271	2	1.354	4687.7	151.4	185	211
TH-232	1	1	0.004	4013.0	116.4	74	94

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCR6R1AC  
Detector ID: ALP171 1

Batch ID: 7327116



Energy Coefficients:  
Offset: 3.49623E+03  
Slope: 5.81865E+00  
Quadrature: 7.22650E-06

Acquisition Start: 14-DEC-2007 13:21:46.58  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCR6R1AC

TITLE : TH BRCO

DETECTOR : ALP171 1  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCR6R1AC\_141271321A.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 14-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 14-DEC-2007 13:21:46 CALIB DATE : 09-DEC-2007 00:48:55

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3496.23 keV CONSTANT FWHM : 8.66667 Channels  
SLOPE : 5.81865 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 7.226500E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1 Apr-07)

Sample Identity: KCR6RIAC

Flags Key

Detector: ALP171 1

Report Date: 14 Dec 07 04:42 PM

Intersect Region: +

Acquire Date: 14 DEC 2007 13:21:46.58

Non Intersect Region: -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	15		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	21		202	0		252	0		302	0		352	0		402	0		452	1		502
0		3	0		53	1		103	0		153	17		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	26		204	0		254	1		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	28		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	25		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	1		57	0		107	0		157	24		207	0		257	0		307	1		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	4		208	0		258	0		308	0		358	0		408	0		458	1		508
0		9	0		59	0		109	0		159	2		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	1		160	1		210	0		260	0		310	0		360	0		410	0		460	0		510
1		11	0		61	0		111	0		161	1		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	4		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	2		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	2		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	1		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	1		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	1		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	3		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	1		219	0		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	0		170	1		220	0		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	2		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	1		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	2		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	1		175	0		225	0		275	0		325	0		375	0		425	0		475			
0		26	1		76	0		126	0		176	1		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	0		127	0		177	0		227	0		277	0		327	0		377	0		427	1		477			
0		28	0		78	0		128	0		178	0		228	0		278	0		328	0		378	0		428	1		478			
0		29	0		79	0		129	1		179	0		229	0		279	0		329	0		379	0		429	0		479			
0		30	0		80	0		130	2		180	0		230	0		280	0		330	0		380	0		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	1		381	0		431	0		481			
0		32	0		82	0		132	1		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0		133	1		183	0		233	0		283	0		333	0		383	0		433	1		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	1		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	0		137	1		187	0		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	0		138	2		188	0		238	0		288	0		338	0		388	0		438	1		488			
0		39	0		89	0		139	4		189	0		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	6		190	0		240	0		290	0		340	0		390	0		440	0		490			
0		41	0		91	0		141	1		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	9		192	0		242	0		292	0		342	0		392	0		442	0		492			
0		43	0		93	0		143	10		193	0		243	0		293	0		343	0		393	0		443	1		493			
0		44	0		94	0		144	11		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	6		195	0		245	0		295	0		345	0		395	0		445	1		495			
0		46	0		96	0		146	15		196	0		246	0		296	1		346	0		396	0		446	0		496			
0		47	0		97	0		147	5		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	14		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	11		199	0		249	0		299	0		349	0		399	0		449	0		499			

0 50 0 100 0 150 12 200 0 250 0 300 0 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 14-DEC-2007 16:41:59

Configuration : \$DISK1:[ALP171.SAMPLE]KCR6R1AC\_141271321A.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH BRCO  
Sample date : 16-NOV-2007 12:00:00 Acquisition date : 14-DEC-2007 13:21:46  
Sample ID : KCR6R1AC Sample quantity : 0.00000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP171 1 Detector geometry:  
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:46.00 0.0%  
Start energy : 3513.69 keV End energy : 6477.28 keV  
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4682.39	271	0	46.55	203.80	188	23	2.26E-02	6.1	

Error Report (Date: 14-Dec-07 04:42 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

THORIUM  
STANDARDS AND TRACEABILITY

## Standard Material Fractions (Vials)

Vial Prep:12/ 9/06 to 12/11/07,SMFractionIdentifier Between THTC12016 and THTC12030, Order by

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23407B300		Ref: 11/29/2007	4.1439E+03	± 2.999E+02	CPM/G	
THTC12016	Th-234	5.0382E+02 ± 3.647E+01 CPM	0.1263 g	11/30/2007 11/30/2007	Armstron	3.9891E+03 ± 2.887E+02 CPM/G
THTC12017	Th-234	5.0382E+02 ± 3.647E+01 CPM	0.1263 g	11/30/2007 11/30/2007	Armstron	3.9891E+03 ± 2.887E+02 CPM/G
THTC12018	Th-234	5.0342E+02 ± 3.644E+01 CPM	0.1262 g	11/30/2007 11/30/2007	Armstron	3.9891E+03 ± 2.887E+02 CPM/G
THTC12019	Th-234	5.0462E+02 ± 3.653E+01 CPM	0.1265 g	11/30/2007 11/30/2007	Armstron	3.9891E+03 ± 2.887E+02 CPM/G
THTC12020	Th-234	5.0660E+02 ± 3.667E+01 CPM	0.127 g	11/30/2007 11/30/2007	Armstron	3.9890E+03 ± 2.887E+02 CPM/G
THTC12021	Th-234	5.0501E+02 ± 3.656E+01 CPM	0.1266 g	11/30/2007 11/30/2007	Armstron	3.9890E+03 ± 2.887E+02 CPM/G
THTC12022	Th-234	5.0381E+02 ± 3.647E+01 CPM	0.1263 g	11/30/2007 11/30/2007	Armstron	3.9890E+03 ± 2.887E+02 CPM/G
THTC12023	Th-234	5.0421E+02 ± 3.650E+01 CPM	0.1264 g	11/30/2007 11/30/2007	Armstron	3.9890E+03 ± 2.887E+02 CPM/G
THTC12024	Th-234	5.0341E+02 ± 3.644E+01 CPM	0.1262 g	11/30/2007 11/30/2007	Armstron	3.9890E+03 ± 2.887E+02 CPM/G
THTC12025	Th-234	5.0460E+02 ± 3.653E+01 CPM	0.1265 g	11/30/2007 11/30/2007	Armstron	3.9889E+03 ± 2.887E+02 CPM/G
THTC12026	Th-234	5.0659E+02 ± 3.667E+01 CPM	0.127 g	11/30/2007 11/30/2007	Armstron	3.9889E+03 ± 2.887E+02 CPM/G
THTC12027	Th-234	5.0539E+02 ± 3.658E+01 CPM	0.1267 g	11/30/2007 11/30/2007	Armstron	3.9889E+03 ± 2.887E+02 CPM/G
THTC12028	Th-234	5.0539E+02 ± 3.658E+01 CPM	0.1267 g	11/30/2007 11/30/2007	Armstron	3.9889E+03 ± 2.887E+02 CPM/G
THTC12029	Th-234	5.0459E+02 ± 3.653E+01 CPM	0.1265 g	11/30/2007 11/30/2007	Armstron	3.9888E+03 ± 2.887E+02 CPM/G
THTC12030	Th-234	5.0459E+02 ± 3.653E+01 CPM	0.1265 g	11/30/2007 11/30/2007	Armstron	3.9888E+03 ± 2.887E+02 CPM/G

5.0466E+002 ± 1.005E+000 ( 15) 0.199% 5.0341E+002 , 5.0660E+002

# Standard Material Fractions (Vials)

Vial Prep:12/ 9/06 to 12/11/07,SMFractionIdentifier Between THTC12000 and THTC12002, Order by

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23407A200		Ref: 9/24/2007	2.2542E+03	± 1.709E+02	CPM/G	
<b>THTC12000</b>	Th-234	<b>5.0180E+02 ± 3.805E+01</b> CPM	1.4145 g	11/27/2007 11/27/2007	Armstron	3.5475E+02 ± 2.690E+01 CPM/G
<b>THTC12001</b>	Th-234	<b>5.0912E+02 ± 3.861E+01</b> CPM	1.4352 g	11/27/2007 11/27/2007	Armstron	3.5474E+02 ± 2.690E+01 CPM/G
<b>THTC12002</b>	Th-234	<b>5.0662E+02 ± 3.842E+01</b> CPM	1.4282 g	11/27/2007 11/27/2007	Armstron	3.5473E+02 ± 2.690E+01 CPM/G
		5.0585E+002 ± 3.723E+000 ( 3)	0.736%	5.0180E+002 , 5.0912E+002		

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard:		TH23407A200	Ref: 9/24/2007	2.2542E+03	± 1.709E+02	CPM/G
<b>THSI1114</b>	Th-234	<b>5.0412E+02</b> ± <b>3.823E+01</b> CPM	1.4206 g	11/27/2007 11/27/2007	Armstron	3.5487E+02 ± 2.691E+01 CPM/G
		5.0412E+002 ± 5.041E+002 ( 1)	5.0412E+002 , 5.0412E+002			
<p>STL Richland, SMFractions v4.8.29</p> <p>* - Isotope is an Impurity</p>						

## Memorandum

**Date:** 1 October 2007  
**To:** Count Room & Team Leaders  
**From:** Tim Armstrong  
**Subject:** New Th-234 Source {Th23407A200 #6254}

There is a new Th-234 source **Th23407A200 #6254**

With a reference date of **24 Sep 2007**

CAL ID	GRAMS FOUND	REFERENCE DATE
CAL6452	2.3043	24 Sep 2007
CAL6453	2.2203	24 Sep 2007
CAL6454	2.3707	24 Sep 2007
CAL6455	2.0704	24 Sep 2007

J.C.  
10/2/07

TH-234 CALIBRATION CALCULATIONS

Std ID: TH23407A200 #6254  
 Date: 27-Sep-07

Tracer Yield Calculations

Th-230 Isotopic Counts

Vial	Th-230		Background		Expected		
	Counts	Min	Counts	Min	Net cpm	Det. Eff	Yield
CAL6452	6768	999	3	999	6.772	0.2847	25.062
CAL6453	6547	999	6	999	6.548	0.2878	24.933
CAL6454	7115	999	2	999	7.120	0.2926	24.938
CAL6455	5543	999	1	999	5.548	0.2616	24.946

24-Sep-07 = Source Reference Date      10:33 = Source Reference Time

SET 30A-30D Reference Data

Thorium Beta Data

Date	Time	Th-234	Background		Net cpm	Decay	Th234 wt. grams	Th230 Yield	Th234
			Cts	Min					
27-Sep-07	16:06	93821	20	630	4689.79	1.0974	2.4276	0.9492	2233.46
27-Sep-07	16:06	89844	20	839	4490.52	1.0974	2.4330	0.9126	2219.43
27-Sep-07	16:06	92844	20	718	4640.76	1.0974	2.4295	0.9758	2148.24
27-Sep-07	16:06	91175	20	577	4557.60	1.0974	2.4355	0.8501	2415.72

Th234 YIELD CORRECTION FOR DATA HANDLERS

Th234 wt. g \* Th230 YIELD

CAL6452	2.3043
CAL6453	2.2203
CAL6454	2.3707
CAL6455	2.0704

2254.21	Average
5.06%	%RSD
-4.70%	Min Bias
7.16%	Max Bias

2.2542E+03	= Rad Calc. expected value, cpm/g
1.7093E+02	= Total Error of Rad Calc. expected value
24-Sep-07	= Reference Date of Rad Calc. expected value
10:33	= Reference Time of Rad Calc. expected value



Type of count: Alpha: \_\_\_\_\_  
 Beta: \_\_\_\_\_  
 Gamma: \_\_\_\_\_  
 Alpha Spec: X

count time: \_\_\_\_\_  
 count time: \_\_\_\_\_  
 count time: \_\_\_\_\_  
 count time: 1000

Geom.: \_\_\_\_\_

units: \_\_\_\_\_  
 units: \_\_\_\_\_  
 units: \_\_\_\_\_  
 units: dpm/Sa

Requested by: TDA

Date submitted: 9/25/07

	Sample ID	Isotopes of interest	Sample Date
171	CAL6452	Th2340.7A200 #6254	9/25/07
		Th23002B160 #6031	
172	CAL6453	...	
176	CAL6454		
177	CAL6455		
178	CAL6456	Th 234 only	
116	CAL6457	Purity check	

ADDITIONAL INSTRUCTIONS:

#T070164 PRECIPITATE

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Thorium Yield Determination by Beta-emitting Th-234 tracer

Reference Tracer Data: Ref. Date: 9-Jul-07

Ref. ID	Beta Detector	Gross Counts	Count Time	Bkg Counts	Bkg Time	Bkg CPM	Grams Found	SrY-90 Eff	DPM/g of Tracer
CAL6386	30A	8889	20	630	500	1.2600	2.0644	0.4505	476.54
CAL6387	30B	8924	20	839	500	1.6780	2.0736	0.4377	489.76
CAL6388	30C	8562	20	718	500	1.4360	1.7639	0.4388	551.24
CAL6389	30D	9150	20	577	500	1.1540	2.203	0.4404	470.34
Average DPM/g of tracer =									496.97

Sample Tracer Data:

VIAL ID	Tracer Mass	DPM Tracer
CAL6452	2.4276	1206.44
CAL6453	2.433	1209.13
CAL6454	2	1207.39
CAL6455	2.4355	1210.37
CAL6456	2.4341	1209.67
CAL6457	2.43	1207.63
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
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		0.00
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		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23407A200		Ref: 9/24/2007	2.1514E+03	± 1.050E+02	CPM/G	
CAL6452	Th-234	5.0219E+03 ± 2.451E+02 CPM	2.4276 g	9/25/2007 9/25/2007	Armstron	2.0687E+03 ± 1.010E+02 CPM/G
CAL6453	Th-234	5.0329E+03 ± 2.456E+02 CPM	2.433 g	9/25/2007 9/25/2007	Armstron	2.0686E+03 ± 1.010E+02 CPM/G
CAL6454	Th-234	5.0256E+03 ± 2.453E+02 CPM	2.4295 g	9/25/2007 9/25/2007	Armstron	2.0686E+03 ± 1.010E+02 CPM/G
CAL6455	Th-234	5.0379E+03 ± 2.459E+02 CPM	2.4355 g	9/25/2007 9/25/2007	Armstron	2.0685E+03 ± 1.010E+02 CPM/G
CAL6456	Th-234	5.0349E+03 ± 2.457E+02 CPM	2.4341 g	9/25/2007 9/25/2007	Armstron	2.0685E+03 ± 1.010E+02 CPM/G
CAL6457	Th-234	5.0264E+03 ± 2.453E+02 CPM	2.43 g	9/25/2007 9/25/2007	Armstron	2.0685E+03 ± 1.010E+02 CPM/G

5.0300E+003 ± 6.237E+000 ( 6) 0.124% 5.0219E+003 , 5.0379E+003

9/27/2007 4:35:27 PM

# Standard Material Fractions (Vials)

Vial Prep: 9/26/06 to 9/28/07, SMFractionIdentifier Between CAL6452 and CAL6457, Order by SMIdentifier, ConstituentCode, SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23002B160		Ref: 5/31/2002	4.2976E+01	± 1.503E+00	DPM/G	
CAL6452	TH-230	2.5062E+01 ± 8.765E-01 DPM	0.5832 g	9/25/2007 9/25/2007	Armstron	4.2974E+01 ± 1.503E+00 DPM/G
CAL6453	TH-230	2.4933E+01 ± 8.720E-01 DPM	0.5802 g	9/25/2007 9/25/2007	Armstron	4.2974E+01 ± 1.503E+00 DPM/G
CAL6454	TH-230	2.4938E+01 ± 8.722E-01 DPM	0.5803 g	9/25/2007 9/25/2007	Armstron	4.2974E+01 ± 1.503E+00 DPM/G
CAL6455	TH-230	2.4946E+01 ± 8.725E-01 DPM	0.5805 g	9/25/2007 9/25/2007	Armstron	4.2974E+01 ± 1.503E+00 DPM/G

2.4970E+001 ± 6.183E-002 ( 4) 0.248% 2.4933E+001 , 2.5062E+001

\* - Isotope is an Impurity

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 12:30:33.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6386	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 12:30:33.00	8889	20.00	630	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	18	658	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 12:30:33.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6387	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 12:30:33.00	8924	20.00	839	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	28	658	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 12:30:33.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6388	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 12:30:33.00	8561	20.00	718	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	36	658	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 12:30:33.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6389	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 12:30:33.00	9150	20.00	577	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	11	658	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:06:58.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6452	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:06:58.00	93821	20.00	630	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	18	672	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:06:58.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6453	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:06:58.00	89844	20.00	839	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	28	672	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:06:58.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6454	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:06:58.00	92844	20.00	718	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	36	672	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:06:58.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6455	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:06:58.00	91175	20.00	577	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	11	672	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:32:18.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6456	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:32:18.00	91710	20.00	630	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	18	676	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:32:18.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6457	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:32:18.00	90263	20.00	839	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	28	676	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

# THORIUM ISOTOPIC COUNTING REQUEST

C.R. Technician BP  
Date Counted 9/27/07  
C.R. Analyst CS  
Date Analyzed 9/28/07

Counting Time 1000 Minutes  
Sample 1000  
Background See Alpha Analysis Report  
TA-RLD

SOP's RICHRD008  
Operating: RICHRD0016  
Review: 1070164

9/28/07 1028  
1209

WorkOrder #	Th-229 (4845 KeV) Tracer			TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)	Th-230 (4688 KeV) (8)		
<u>CAL6452</u>		10		0	See Alpha Analysis Report for ROI Information		171	3.513
<u>CAL6453</u>		10		0	See Alpha Analysis Report for ROI Information		172	3.475
<u>CAL6454</u>		10		0	See Alpha Analysis Report for ROI Information		176	3.418
<u>CAL6455</u>		10		0	See Alpha Analysis Report for ROI Information		177	3.822
<u>CAL6456</u>		10		0	See Alpha Analysis Report for ROI Information		178	3.228
<u>CAL6457</u>		10		0	See Alpha Analysis Report for ROI Information		116	3.814
		10		0	See Alpha Analysis Report for ROI Information			
		10		0	See Alpha Analysis Report for ROI Information			
		10		0	See Alpha Analysis Report for ROI Information			

Comments:

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6452

Detector: ALP171 1

Report Date: 28-Sep-07 10:51 AM

Acquire Date: 27-SEP-2007 17:48:01.26

Tracer Nuclide: TH-229

Sample Live Time: 999 minutes

Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	4	5	-0.001	5423.2	116.4	316	336
TH-230	6768	3	6.772	4687.7	366.3	167	230
TH-232	31	0	0.031	4013.0	116.2	73	93

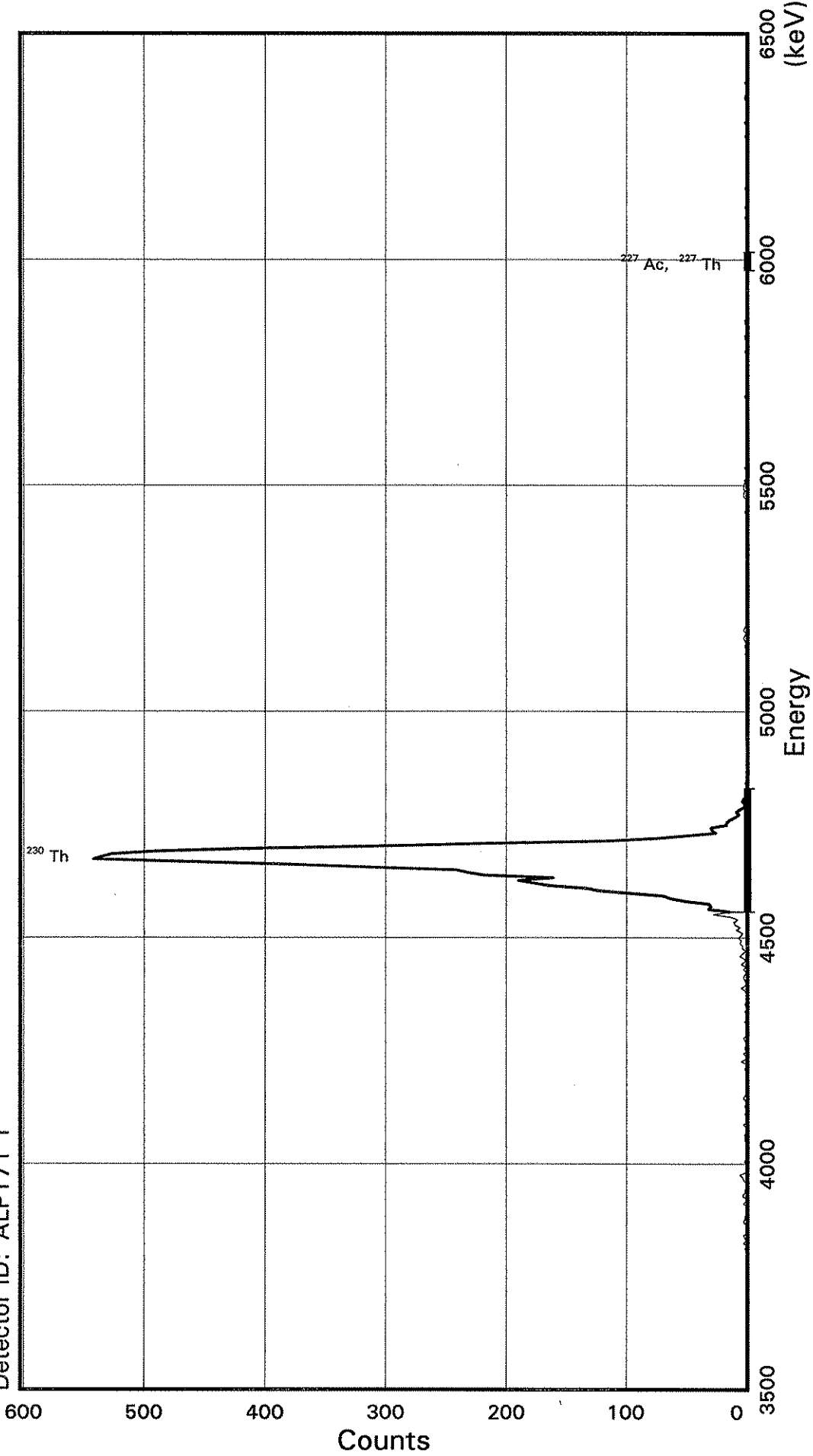
End of Alpha Region Report  
(Produced by ANAL Report)



STL Richland WA.  
TH TA-RLD

Sample ID: CAL6452  
Detector ID: ALP171 1

Batch ID: T070164



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.49940E+03  
Slope: 5.80758E+00  
Quadrature: 1.85842E-05

SAMPLE IDENTIITY: CAL6452

TITLE : TH TA-RLD

DETECTOR : ALP171 1

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]CAL6452\_270971748A.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 07:10:00

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3499.40 keV CONSTANT FWHM : 9.00000 Channels  
SLOPE : 5.80758 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 1.858420E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: CAL6452

Flags Key

Detector: ALP171 1

Report Date: 28-Sep-07 10:29 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	1	51	3	101	1	151	460	201	0	251	0	301	2	351	2	401	0	451	1	501				
		2	1	52	0	102	2	152	542	202	0	252	0	302	0	352	1	402	0	452	0	502				
0		3	0	53	1	103	5	153	535	203	0	253	0	303	1	353	1	403	1	453	0	503				
0		4	2	54	0	104	1	154	527	204	0	254	0	304	0	354	0	404	0	454	1	504				
0		5	0	55	2	105	1	155	491	205	0	255	0	305	0	355	0	405	0	455	0	505				
0		6	3	56	0	106	2	156	419	206	0	256	0	306	0	356	2	406	0	456	0	506				
0		7	1	57	0	107	3	157	309	207	0	257	0	307	0	357	2	407	2	457	0	507				
0		8	2	58	2	108	2	158	223	208	0	258	0	308	0	358	0	408	0	458	0	508				
0		9	3	59	0	109	0	159	116	209	0	259	0	309	0	359	0	409	0	459	0	509				
0		10	0	60	1	110	3	160	74	210	0	260	0	310	0	360	0	410	0	460	0	510				
0		11	1	61	3	111	1	161	50	211	0	261	1	311	0	361	0	411	0	461	0	511				
1		12	1	62	2	112	5	162	26	212	0	262	0	312	0	362	0	412	0	462	0	512				
0		13	1	63	0	113	2	163	29	213	0	263	0	313	0	363	1	413	0	463						
0		14	3	64	0	114	2	164	30	214	0	264	0	314	1	364	0	414	0	464						
0		15	2	65	0	115	6	165	17	215	0	265	0	315	0	365	0	415	0	465						
0		16	2	66	0	116	4	166	17	216	0	266	1	316	0	366	0	416	0	466						
0		17	0	67	1	117	1	167	14	217	0	267	0	317	0	367	0	417	1	467						
0		18	0	68	1	118	4	168	10	218	0	268	0	318	0	368	0	418	1	468						
0		19	1	69	0	119	4	169	7	219	0	269	0	319	0	369	0	419	0	469						
0		20	0	70	1	120	6	170	9	220	0	270	0	320	0	370	0	420	0	470						
0		21	3	71	0	121	5	171	6	221	0	271	0	321	0	371	0	421	0	471						
0		22	1	72	2	122	7	172	2	222	0	272	0	322	0	372	0	422	0	472						
0		23	1	73	1	123	5	173	2	223	0	273	0	323	1	373	0	423	1	473						
0		24	4	74	0	124	4	174	4	224	0	274	0	324	1	374	0	424	0	474						
1		25	2	75	5	125	9	175	3	225	0	275	0	325	1	375	0	425	0	475						
1		26	2	76	1	126	6	176	1	226	1	276	0	326	0	376	0	426	1	476						
0		27	0	77	0	127	10	177	1	227	0	277	0	327	1	377	1	427	2	477						
0		28	1	78	3	128	11	178	0	228	1	278	0	328	2	378	1	428	0	478						
0		29	1	79	0	129	8	179	1	229	0	279	0	329	1	379	0	429	1	479						
0		30	3	80	2	130	13	180	0	230	2	280	0	330	0	380	1	430	1	480						
0		31	4	81	1	131	28	181	2	231	0	281	0	331	0	381	0	431	1	481						
0		32	6	82	0	132	14	182	0	232	1	282	0	332	0	382	1	432	2	482						
0		33	0	83	2	133	32	183	1	233	2	283	0	333	1	383	0	433	1	483						
1		34	1	84	3	134	30	184	1	234	1	284	2	334	0	384	0	434	0	484						
0		35	0	85	0	135	32	185	0	235	2	285	1	335	0	385	0	435	1	485						
0		36	1	86	1	136	51	186	0	236	3	286	0	336	1	386	0	436	1	486						
0		37	2	87	0	137	63	187	0	237	2	287	1	337	0	387	0	437	1	487						
0		38	1	88	0	138	69	188	1	238	1	288	1	338	1	388	0	438	0	488						
0		39	0	89	0	139	96	189	1	239	3	289	1	339	0	389	1	439	0	489						
0		40	1	90	2	140	122	190	0	240	2	290	3	340	0	390	0	440	0	490						
0		41	0	91	1	141	134	191	0	241	1	291	3	341	0	391	0	441	2	491						
1		42	0	92	0	142	164	192	1	242	0	292	2	342	1	392	0	442	2	492						
0		43	1	93	0	143	177	193	0	243	1	293	3	343	0	393	1	443	0	493						
0		44	0	94	2	144	190	194	0	244	0	294	3	344	0	394	0	444	0	494						
0		45	2	95	0	145	161	195	0	245	1	295	2	345	2	395	0	445	0	495						
0		46	2	96	1	146	219	196	0	246	0	296	2	346	1	396	2	446	0	496						
0		47	2	97	2	147	232	197	0	247	0	297	1	347	0	397	0	447	2	497						
1		48	1	98	0	148	242	198	0	248	0	298	1	348	0	398	0	448	1	498						
0		49	0	99	1	149	315	199	0	249	0	299	1	349	0	399	0	449	0	499						

0 50 0 100 1 150 379 200 0 250 0 300 1 350 2 400 2 450 0 500

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6452_270971748A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID         : CAL6452 Sample quantity : 0.00000E+00 SAMPLE
Sample type       : disk Sample geometry :
Detector name     : ALP171 1 Detector geometry:
Elapsed live time : 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy      : 3516.82 keV End energy : 6477.75 keV
Sensitivity       : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4679.21	6652	0	52.27	203.02	182	47	1.11E-01	1.2	
2	0	5991.36	4	0	23.23	428.50	426	7	6.67E-05	50.0	

Error Report (Date: 28-Sep-07 10:29 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6453

Detector: ALP171 2  
Report Date: 28-Sep-07 10:52 AM  
Acquire Date: 27-SEP-2007 17:48:01.26  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

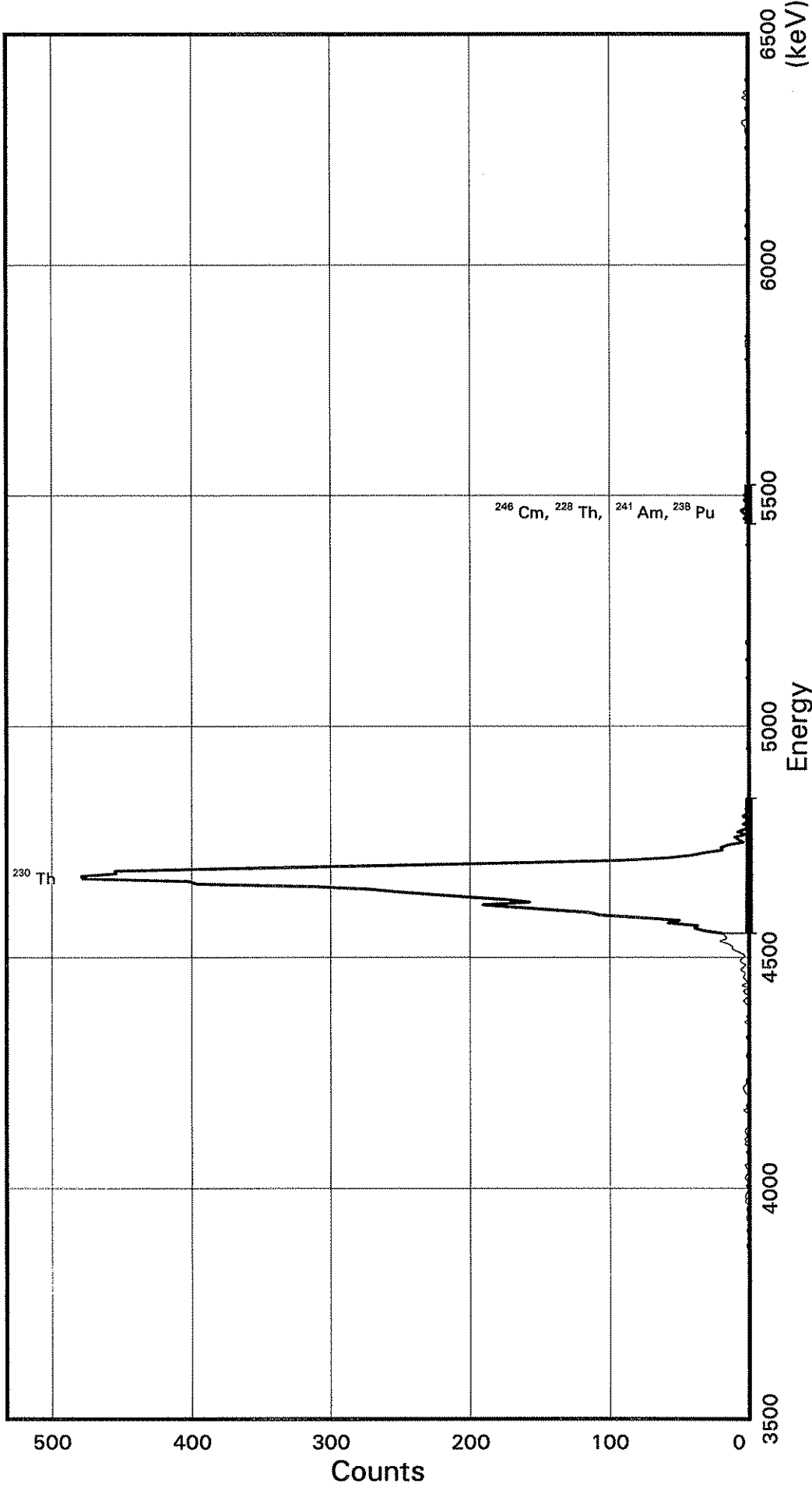
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	7	3	0.004	5423.2	113.1	320	340
TH-230	6547	6	6.548	4687.7	299.0	169	222
TH-232	32	2	0.030	4013.0	112.6	70	90

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Sample ID: CAL6453  
Detector ID: ALP171 2

Batch ID: T070164



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.53257E+03  
Slope: 5.62320E+00  
Quadrature: 4.79026E-05



SAMPLE IDENTIITY: CAL6453

TITLE : TH TA-RLD

DETECTOR : ALP171 2

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] CAL6453\_270971748B.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 04:52:07

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3532.57 keV CONSTANT FWHM : 9.83333 Channels  
SLOPE : 5.62320 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 4.790260E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: CAL6453

Flags Key

Detector: ALP171 2

Report Date: 28-Sep-07 10:36 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	2	101	0	151	402	201	0	251	0	301	0	351	2	401	1	451	4	501
		2	1		52	3	102	1	152	478	202	2	252	0	302	0	352	1	402	2	452	1	502
0		3	0		53	1	103	0	153	479	203	0	253	0	303	0	353	0	403	1	453	3	503
0		4	1		54	2	104	2	154	454	204	0	254	0	304	1	354	1	404	0	454	1	504
0		5	0		55	3	105	4	155	455	205	0	255	0	305	0	355	0	405	0	455	0	505
0		6	0		56	2	106	2	156	368	206	0	256	1	306	0	356	2	406	1	456	0	506
0		7	0		57	0	107	0	157	271	207	0	257	0	307	0	357	2	407	0	457	1	507
1		8	1		58	1	108	3	158	177	208	0	258	0	308	0	358	2	408	2	458	2	508
0		9	0		59	0	109	4	159	93	209	1	259	0	309	0	359	1	409	0	459	0	509
0		10	1		60	1	110	0	160	58	210	1	260	1	310	1	360	2	410	0	460	1	510
0		11	2		61	1	111	5	161	41	211	1	261	0	311	0	361	0	411	0	461	0	511
0		12	1		62	1	112	1	162	32	212	0	262	0	312	0	362	0	412	1	462	1	512
0		13	0		63	4	113	2	163	19	213	0	263	0	313	1	363	0	413	1	463		
0		14	1		64	1	114	4	164	20	214	1	264	0	314	0	364	1	414	0	464		
0		15	0		65	2	115	3	165	15	215	0	265	0	315	0	365	1	415	0	465		
0		16	1		66	0	116	3	166	4	216	0	266	0	316	0	366	0	416	0	466		
0		17	2		67	1	117	6	167	7	217	0	267	0	317	0	367	0	417	0	467		
0		18	0		68	0	118	4	168	10	218	0	268	0	318	0	368	0	418	1	468		
0		19	0		69	1	119	2	169	2	219	0	269	0	319	0	369	0	419	0	469		
0		20	0		70	3	120	6	170	8	220	0	270	0	320	1	370	0	420	0	470		
0		21	2		71	4	121	6	171	3	221	0	271	0	321	0	371	0	421	0	471		
0		22	2		72	4	122	3	172	0	222	0	272	0	322	0	372	0	422	1	472		
0		23	1		73	2	123	4	173	4	223	0	273	0	323	2	373	0	423	0	473		
0		24	1		74	2	124	8	174	0	224	0	274	0	324	0	374	0	424	0	474		
0		25	2		75	2	125	12	175	0	225	0	275	0	325	0	375	0	425	0	475		
0		26	1		76	0	126	12	176	4	226	0	276	0	326	0	376	0	426	1	476		
0		27	1		77	0	127	15	177	1	227	1	277	0	327	0	377	0	427	0	477		
0		28	3		78	1	128	21	178	0	228	0	278	0	328	1	378	0	428	0	478		
0		29	2		79	0	129	16	179	2	229	2	279	0	329	0	379	0	429	0	479		
0		30	3		80	1	130	17	180	1	230	0	280	2	330	0	380	0	430	0	480		
0		31	2		81	0	131	19	181	0	231	0	281	0	331	0	381	0	431	1	481		
0		32	1		82	1	132	32	182	1	232	0	282	0	332	0	382	0	432	2	482		
0		33	1		83	1	133	39	183	0	233	1	283	0	333	0	383	0	433	0	483		
0		34	2		84	2	134	37	184	0	234	0	284	1	334	1	384	0	434	1	484		
0		35	1		85	1	135	58	185	0	235	1	285	0	335	0	385	0	435	1	485		
1		36	1		86	0	136	50	186	1	236	2	286	0	336	0	386	0	436	0	486		
0		37	3		87	0	137	78	187	1	237	0	287	0	337	0	387	0	437	1	487		
0		38	2		88	1	138	107	188	1	238	1	288	1	338	1	388	0	438	2	488		
0		39	1		89	0	139	115	189	1	239	0	289	0	339	0	389	0	439	2	489		
0		40	0		90	1	140	141	190	0	240	0	290	3	340	0	390	0	440	2	490		
1		41	2		91	2	141	167	191	0	241	0	291	1	341	1	391	0	441	4	491		
0		42	3		92	1	142	191	192	0	242	2	292	3	342	1	392	0	442	4	492		
1		43	0		93	1	143	158	193	0	243	2	293	5	343	1	393	0	443	0	493		
0		44	1		94	1	144	175	194	0	244	0	294	2	344	1	394	1	444	1	494		
0		45	1		95	0	145	202	195	0	245	0	295	0	345	0	395	0	445	0	495		
0		46	1		96	1	146	228	196	0	246	1	296	0	346	0	396	0	446	1	496		
0		47	2		97	3	147	252	197	0	247	0	297	3	347	0	397	2	447	2	497		
0		48	0		98	0	148	272	198	1	248	0	298	0	348	1	398	1	448	0	498		
1		49	0		99	2	149	312	199	0	249	0	299	3	349	0	399	1	449	1	499		

0 50 3 100 0 150 396 200 1 250 1 300 0 350 0 400 1 450 1 500

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6453_270971748B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID        : CAL6453 Sample quantity : 0.00000E+00 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3549.44 keV End energy : 6424.21 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4671.69	6438	0	61.86	202.23	181	52	1.07E-01	1.2	
2	0	5463.57	21	0	33.74	342.40	338	15	3.50E-04	21.8	

Error Report (Date: 28-Sep-07 10:36 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6454

Detector: ALP171 6  
Report Date: 28-Sep-07 10:52 AM  
Acquire Date: 27-SEP-2007 17:48:01.26  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

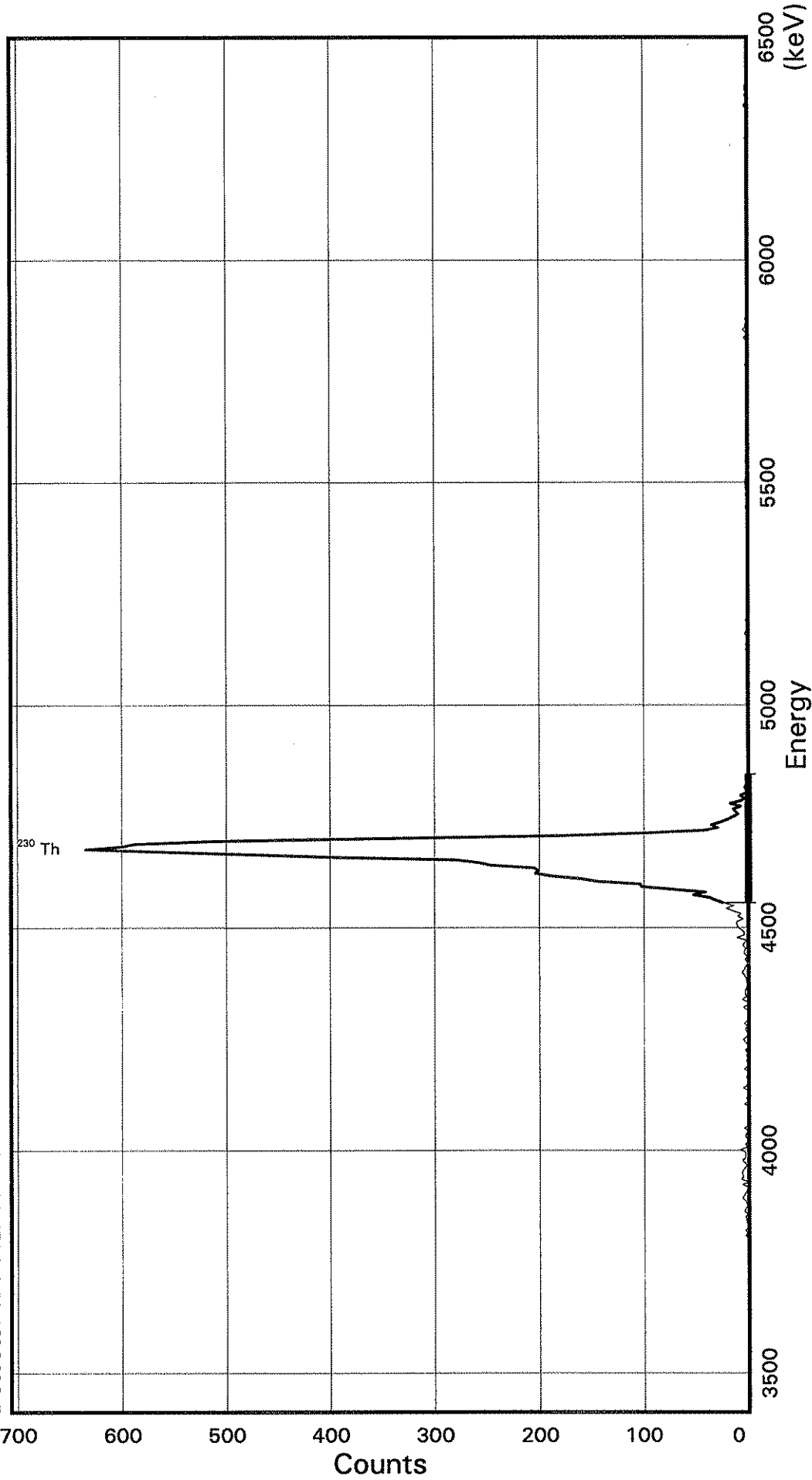
Nuclide	Smpl	Bkg	Count	Centrd	Region	Left	Rght
Name	Count	Count	C/Min	Energy	Width	Chnl	Chnl
TH-228	6	2	0.004	5423.2	120.9	322	342
TH-230	7115	2	7.120	4687.7	343.9	181	238
TH-232	73	0	0.073	4013.0	120.4	88	108

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Sample ID: CAL6454  
Detector ID: ALP171 6

Batch ID: T070164



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.39423E+03  
Slope: 6.00981E+00  
Quadrature: 5.58806E-05

SAMPLE IDENTIITY: CAL6454

TITLE : TH TA-RLD

DETECTOR : ALP171 6

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]CAL6454\_270971748F.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 04:52:41

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3394.23 keV CONSTANT FWHM : 7.83333 Channels  
SLOPE : 6.00981 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 5.588060E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %



Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: CAL6454

Flags Key

Detector: ALP171 6

Report Date: 28-Sep-07 10:29 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
1	0	51	8	101	1	151	145	201	1	251	0	301	1	351	1	401	1	451	0	501						
2	0	52	1	102	1	152	161	202	0	252	0	302	0	352	1	402	0	452	0	502						
0	3	53	3	103	1	153	188	203	0	253	0	303	1	353	3	403	0	453	0	503						
0	4	54	1	104	5	154	204	204	1	254	0	304	0	354	1	404	0	454	0	504						
0	5	55	1	105	0	155	201	205	1	255	0	305	0	355	1	405	1	455	1	505						
0	6	56	3	106	1	156	205	206	1	256	0	306	0	356	4	406	0	456	0	506						
0	7	57	2	107	6	157	246	207	1	257	0	307	2	357	2	407	0	457	0	507						
0	8	58	0	108	2	158	258	208	1	258	0	308	1	358	2	408	0	458	0	508						
0	9	59	4	109	3	159	279	209	0	259	0	309	0	359	0	409	0	459	0	509						
0	10	60	1	110	3	160	396	210	0	260	0	310	0	360	2	410	0	460	0	510						
0	11	61	0	111	2	161	475	211	0	261	0	311	0	361	1	411	0	461	0	511						
0	12	62	1	112	1	162	554	212	0	262	1	312	0	362	0	412	0	462	0	512						
0	13	63	1	113	1	163	635	213	0	263	0	313	0	363	0	413	0	463								
1	14	64	0	114	2	164	600	214	1	264	0	314	0	364	0	414	0	464								
0	15	65	1	115	2	165	588	215	0	265	0	315	0	365	0	415	1	465								
0	16	66	0	116	4	166	516	216	0	266	0	316	0	366	0	416	0	466								
0	17	67	0	117	6	167	350	217	0	267	0	317	1	367	0	417	0	467								
0	18	68	4	118	4	168	182	218	0	268	0	318	0	368	0	418	0	468								
0	19	69	0	119	3	169	98	219	0	269	0	319	0	369	0	419	0	469								
0	20	70	2	120	1	170	42	220	0	270	1	320	0	370	0	420	0	470								
0	21	71	1	121	1	171	29	221	0	271	0	321	0	371	0	421	0	471								
0	22	72	1	122	3	172	35	222	0	272	0	322	0	372	0	422	1	472								
0	23	73	0	123	1	173	27	223	0	273	0	323	0	373	0	423	0	473								
0	24	74	5	124	4	174	20	224	0	274	0	324	0	374	0	424	0	474								
0	25	75	1	125	4	175	15	225	0	275	0	325	0	375	0	425	0	475								
0	26	76	1	126	2	176	10	226	0	276	1	326	0	376	0	426	1	476								
1	27	77	1	127	5	177	12	227	0	277	0	327	0	377	1	427	2	477								
0	28	78	2	128	4	178	14	228	0	278	0	328	1	378	0	428	0	478								
0	29	79	1	129	1	179	7	229	0	279	0	329	0	379	0	429	0	479								
0	30	80	0	130	11	180	17	230	1	280	0	330	1	380	0	430	0	480								
0	31	81	4	131	4	181	7	231	0	281	0	331	0	381	0	431	1	481								
0	32	82	1	132	4	182	3	232	0	282	0	332	0	382	0	432	0	482								
0	33	83	0	133	7	183	7	233	0	283	0	333	1	383	0	433	1	483								
0	34	84	2	134	10	184	2	234	0	284	0	334	1	384	0	434	1	484								
0	35	85	1	135	11	185	1	235	0	285	0	335	1	385	0	435	0	485								
0	36	86	2	136	11	186	3	236	0	286	0	336	0	386	0	436	0	486								
1	37	87	1	137	5	187	2	237	2	287	0	337	0	387	0	437	0	487								
0	38	88	3	138	10	188	0	238	0	288	1	338	1	388	0	438	1	488								
0	39	89	0	139	7	189	0	239	2	289	1	339	0	389	0	439	3	489								
0	40	90	1	140	15	190	0	240	0	290	2	340	0	390	0	440	1	490								
1	41	91	3	141	21	191	0	241	0	291	1	341	0	391	0	441	1	491								
0	42	92	5	142	14	192	0	242	1	292	0	342	0	392	0	442	1	492								
0	43	93	2	143	24	193	1	243	3	293	0	343	2	393	0	443	2	493								
0	44	94	0	144	31	194	0	244	1	294	1	344	0	394	0	444	0	494								
0	45	95	2	145	37	195	1	245	1	295	2	345	0	395	1	445	2	495								
0	46	96	3	146	52	196	1	246	1	296	0	346	0	396	0	446	2	496								
0	47	97	1	147	41	197	0	247	1	297	2	347	0	397	1	447	1	497								
0	48	98	4	148	71	198	0	248	2	298	2	348	0	398	0	448	1	498								
1	49	99	1	149	102	199	0	249	0	299	2	349	0	399	0	449	1	499								

0 50 3 100 1 150 104 200 0 250 0 300 2 350 1 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 28-SEP-2007 10:29:14

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6454_270971748F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID        : CAL6454 Sample quantity : 0.00000E+00 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3412.26 keV End energy : 6485.90 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4679.80	6994	0	48.08	213.49	193	48	1.17E-01	1.2	

Error Report (Date: 28-Sep-07 10:29 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6455

Detector: ALP171 7

Report Date: 28-Sep-07 10:53 AM

Acquire Date: 27-SEP-2007 17:48:01.26

Tracer Nuclide: TH-229

Sample Live Time: 999 minutes

Bkgrnd Live Time: 999 minutes

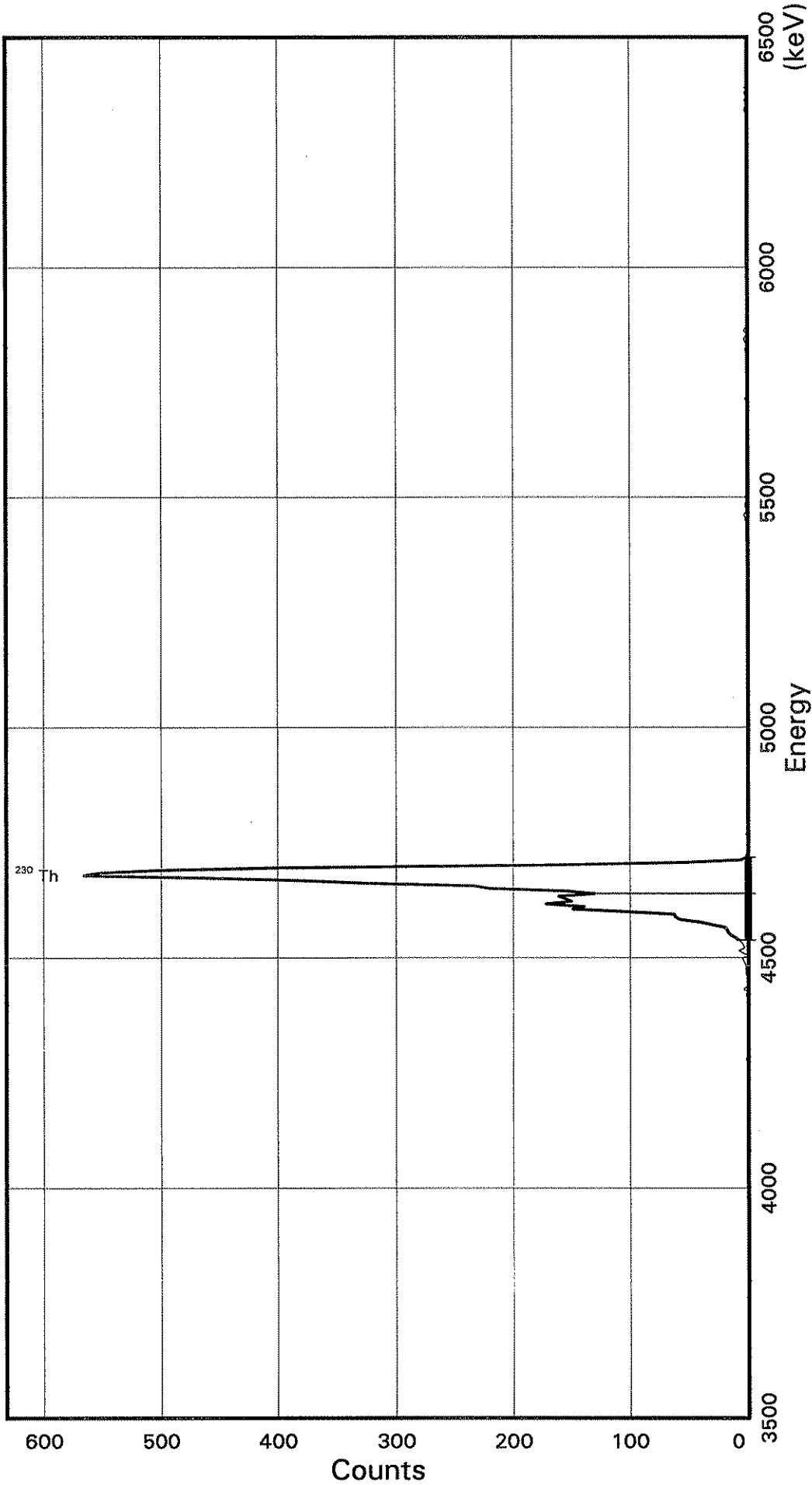
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	6	0	0.006	5423.2	112.6	310	330
TH-230	5543	1	5.548	4687.7	225.5	165	205
TH-232	2	0	0.002	4013.0	112.8	60	80

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Sample ID: CAL6455  
Detector ID: ALP171 7

Batch ID: T070164



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.59022E + 03  
Slope: 5.64599E + 00  
Quadrature: -2.53203E - 05

SAMPLE IDENTIITY: CAL6455

TITLE : TH TA-RLD

DETECTOR : ALP171 7

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]CAL6455\_270971748G.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 04:52:50

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3590.22 keV CONSTANT FWHM : 6.16667 Channels  
SLOPE : 5.64599 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.253203E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: CAL6455

Flags Key

Detector: ALP171 7

Report Date: 28-Sep-07 10:29 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	0		101	1		151	2		201	0		251	0		301	0		351	1		401	0		451	0		501
		2	0		52	0		102	1		152	0		202	0		252	1		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	3		403	0		453	0		503
0		4	0		54	0		104	1		154	0		204	0		254	0		304	0		354	2		404	0		454	0		504
0		5	0		55	1		105	2		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	2		156	1		206	0		256	0		306	0		356	0		406	0		456	0		506
1		7	0		57	1		107	2		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	2		158	1		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	1		59	0		109	3		159	2		209	0		259	1		309	0		359	0		409	0		459	0		509
0		10	0		60	1		110	4		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	5		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	1		212	1		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	4		163	1		213	0		263	0		313	0		363	0		413	0		463			
1		14	0		64	0		114	8		164	1		214	0		264	1		314	0		364	0		414	0		464			
0		15	0		65	0		115	3		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	1		116	4		166	0		216	0		266	0		316	1		366	0		416	0		466			
0		17	0		67	0		117	5		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	1		68	0		118	8		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	1		119	11		169	0		219	0		269	0		319	0		369	1		419	0		469			
0		20	0		70	0		120	15		170	0		220	1		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	17		171	0		221	0		271	1		321	1		371	0		421	0		471			
0		22	0		72	2		122	18		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	1		73	0		123	20		173	0		223	1		273	0		323	1		373	0		423	0		473			
0		24	0		74	0		124	31		174	0		224	1		274	1		324	0		374	0		424	1		474			
0		25	0		75	1		125	41		175	0		225	1		275	0		325	1		375	0		425	0		475			
0		26	0		76	0		126	58		176	0		226	0		276	1		326	0		376	1		426	0		476			
0		27	0		77	0		127	62		177	0		227	1		277	0		327	2		377	0		427	0		477			
0		28	0		78	0		128	63		178	0		228	1		278	0		328	0		378	1		428	0		478			
0		29	0		79	0		129	102		179	0		229	1		279	0		329	0		379	0		429	0		479			
0		30	0		80	0		130	149		180	0		230	0		280	2		330	0		380	0		430	1		480			
0		31	0		81	0		131	139		181	0		231	1		281	2		331	0		381	0		431	1		481			
0		32	0		82	0		132	172		182	0		232	1		282	3		332	1		382	0		432	0		482			
0		33	0		83	0		133	150		183	0		233	0		283	1		333	1		383	0		433	0		483			
0		34	0		84	0		134	155		184	0		234	1		284	0		334	0		384	0		434	0		484			
0		35	1		85	0		135	161		185	0		235	0		285	2		335	0		385	0		435	0		485			
0		36	0		86	1		136	130		186	0		236	0		286	2		336	0		386	0		436	0		486			
0		37	0		87	0		137	154		187	0		237	0		287	1		337	1		387	0		437	0		487			
0		38	0		88	1		138	220		188	0		238	0		288	1		338	0		388	0		438	2		488			
0		39	0		89	0		139	234		189	0		239	0		289	2		339	1		389	0		439	2		489			
0		40	0		90	1		140	324		190	0		240	1		290	0		340	0		390	0		440	0		490			
0		41	0		91	1		141	378		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	1		142	461		192	0		242	0		292	0		342	0		392	0		442	2		492			
0		43	1		93	0		143	566		193	0		243	1		293	0		343	0		393	1		443	1		493			
0		44	0		94	0		144	554		194	0		244	0		294	0		344	0		394	0		444	1		494			
0		45	0		95	1		145	504		195	0		245	0		295	0		345	1		395	0		445	2		495			
0		46	0		96	1		146	398		196	0		246	0		296	0		346	2		396	0		446	0		496			
0		47	0		97	2		147	171		197	0		247	0		297	0		347	0		397	0		447	2		497			
0		48	0		98	0		148	55		198	0		248	0		298	0		348	1		398	0		448	0		498			
0		49	0		99	4		149	6		199	0		249	0		299	0		349	2		399	0		449	0		499			



0 50 0 100 1 150 2 200 0 250 0 300 0 350 3 400 0 450 0 500

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6455_270971748G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID        : CAL6455 Sample quantity : 0.00000E+00 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3607.16 keV End energy : 6474.33 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4620.54	1563	0	45.17	182.64	168	18	2.61E-02	2.5	
2	0	4679.90	3967	0	39.52	193.17	186	14	6.62E-02	1.6	

Error Report (Date: 28-Sep-07 10:29 AM)

Program: Alp\_rgn\_cnts

subroutine: Main

Message: No trace pk or nucl

Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6456

Detector: ALP171 8  
Report Date: 28-Sep-07 10:53 AM  
Acquire Date: 27-SEP-2007 17:48:01.26  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

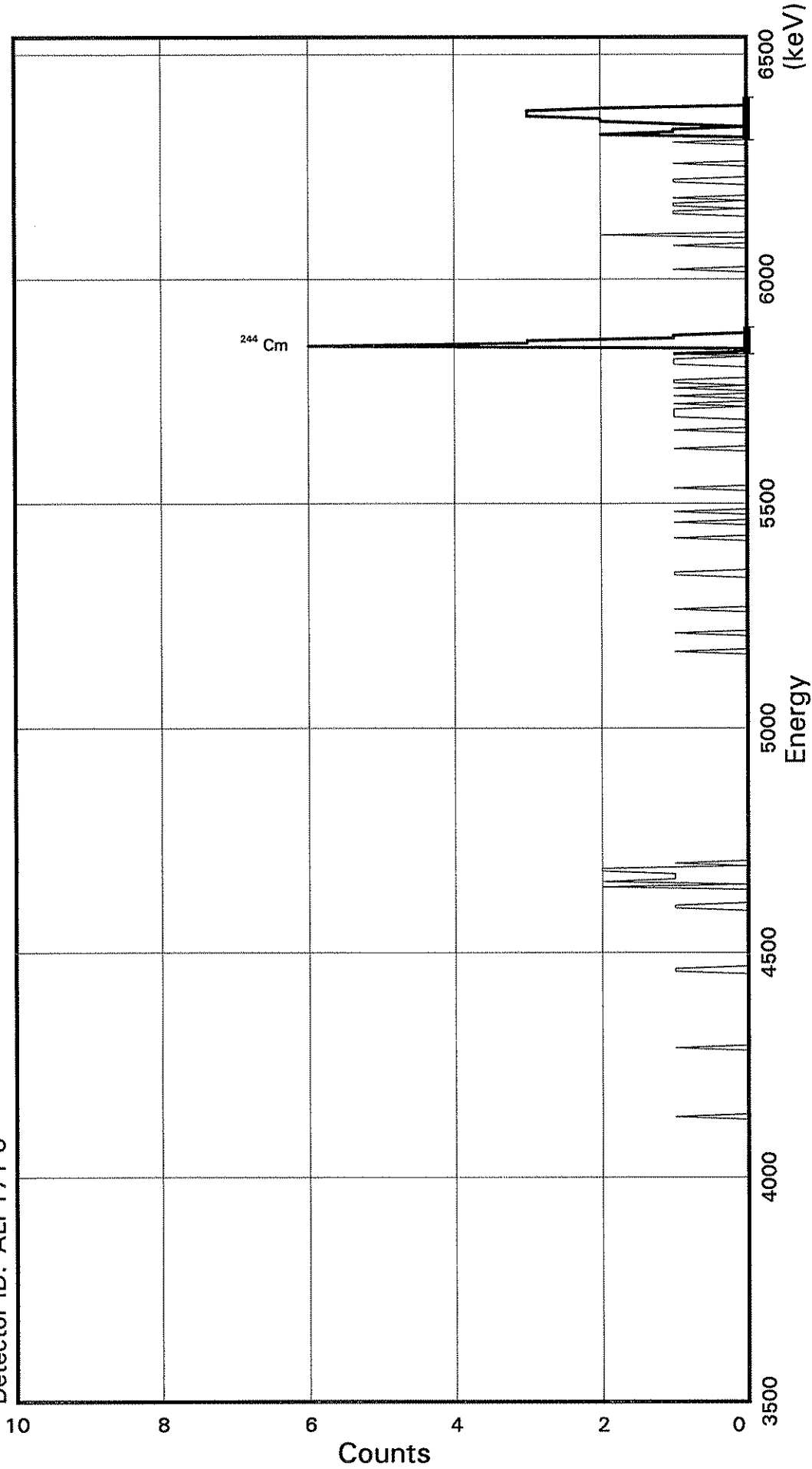
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Rght
			C/Min	keV	keV	Chnl	Chnl
TH-228	3	1	0.002	5423.2	117.6	307	327
TH-230	14	0	0.014	4687.7	117.6	182	202
TH-232	0	1	-0.001	4013.0	117.7	67	87

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Sample ID: CAL6456  
Detector ID: ALP171 8

Batch ID: T070164



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.52860E+03  
Slope: 5.88630E+00  
Quadrature: -1.37458E-05

SAMPLE IDENTIITY: CAL6456

TITLE : TH TA-RLD

DETECTOR : ALP171 8

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]CAL6456\_270971748H.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 04:53:04

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3528.60 keV CONSTANT FWHM : 7.50000 Channels  
SLOPE : 5.88630 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.137458E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: . CAL6456

Flags Key

Detector: ALP171 8

Report Date: 28-Sep-07 10:29 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	1		451	0		501
0		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	1		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	1		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	0		407	1		457	0		507
0		8	0		58	0		108	1		158	0		208	0		258	1		308	0		358	0		408	1		458	0		508
0		9	0		59	0		109	1		159	0		209	0		259	1		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	1		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	1		464			
0		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	1		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	1		369	0		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	0		320	1		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	1		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	1		322	0		372	0		422	1		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	1		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	1		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	0		375	0		425	2		475			
0		26	0		76	0		126	0		176	0		226	0		276	0		326	1		376	0		426	1		476			
0		27	0		77	0		127	0		177	0		227	0		277	0		327	0		377	0		427	1		477			
0		28	0		78	0		128	0		178	0		228	0		278	1		328	0		378	0		428	0		478			
0		29	0		79	1		129	0		179	0		229	1		279	0		329	1		379	0		429	1		479			
0		30	0		80	0		130	0		180	0		230	0		280	0		330	0		380	0		430	2		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	1		381	0		431	2		481			
0		32	0		82	0		132	1		182	0		232	0		282	1		332	1		382	0		432	3		482			
0		33	0		83	0		133	1		183	0		233	0		283	0		333	0		383	1		433	3		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	3		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	2		485			
0		36	0		86	0		136	0		186	0		236	1		286	0		336	0		386	0		436	0		486			
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	2		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	1		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	0		339	1		389	0		439	0		489			
0		40	0		90	0		140	2		190	0		240	0		290	0		340	1		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	1		341	0		391	0		441	0		491			
0		42	0		92	0		142	2		192	0		242	0		292	0		342	1		392	0		442	0		492			
0		43	0		93	0		143	1		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	1		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	1		195	0		245	1		295	0		345	6		395	1		445	0		495			
0		46	0		96	0		146	2		196	0		246	0		296	0		346	3		396	1		446	0		496			
0		47	0		97	0		147	2		197	0		247	0		297	0		347	3		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	0		348	1		398	1		448	0		498			
0		49	0		99	0		149	1		199	0		249	0		299	0		349	1		399	1		449	0		499			

0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 28-SEP-2007 10:29:22

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6456_270971748H.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID        : CAL6456 Sample quantity : 0.00000E+00 SAMPLE
Sample type       : disk Sample geometry  :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3546.26 keV End energy   : 6538.78 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5855.46	15	0	23.55	395.67	392	10	2.50E-04	25.8	
2	0	6366.12	22	0	35.32	482.60	473	16	3.67E-04	21.3	

Error Report (Date: 28-Sep-07 10:29 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6457

Detector: ALP116 1

Report Date: 28-Sep-07 12:16 PM

Acquire Date: 27-SEP-2007 19:29:49.88

Tracer Nuclide: TH-229

Sample Live Time: 1000 minutes

Bkgrnd Live Time: 1000 minutes

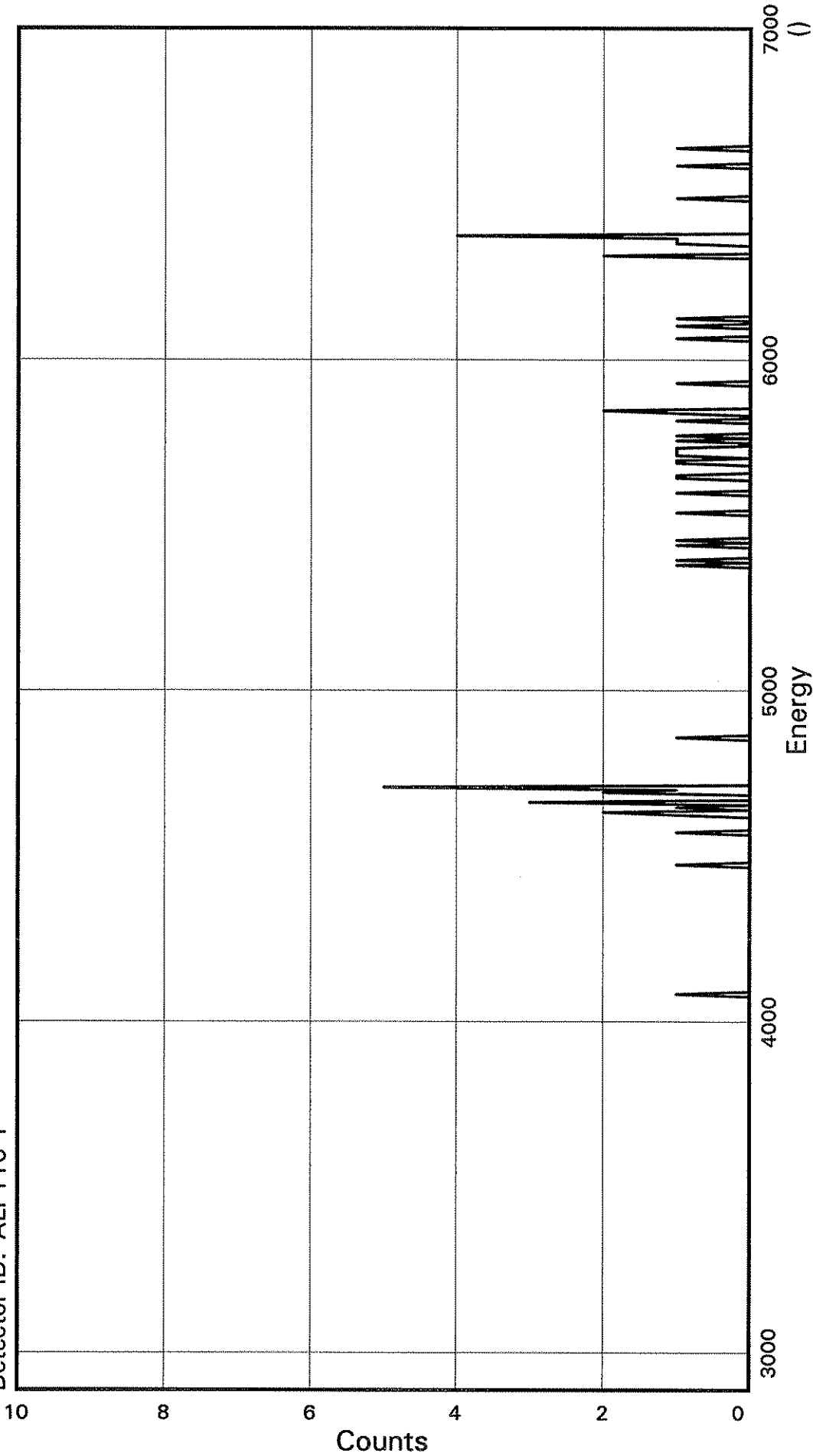
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	4	3	0.001	5423.2	150.8	325	345
TH-230	16	0	0.016	4687.7	150.6	227	247
TH-232	0	1	-0.001	4013.0	150.5	138	158

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Batch ID: T070164

Sample ID: CAL6457  
Detector ID: ALP116 1



Acquisition Start: 27-SEP-2007 19:29:49.88  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:03.00

Energy Coefficients:  
Offset: 2.86423E+03  
Slope: 7.51618E+00  
Quadrature: 3.30272E-05

SAMPLE IDENTIITY: CAL6457

TITLE : TH TA-RLD

DETECTOR : ALP116 1  
CONFIGURATION NAME : RDND06\$DKA100:[ALP116.SAMPLE]CAL6457\_2709719  
29.CNF;1  
ACQUIRE DATE of BACKGROUND: 17-SEP-2007 06:47:28

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00  
ACQUIRE DATE: 27-SEP-2007 19:29:49 CALIB DATE : 17-SEP-2007 03:35:06

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:40:03

OFFSET : 2864.23 keV CONSTANT FWHM : 8.50000 Channels  
SLOPE : 7.51618 keV/C SENSITIVITY : 6.00000 Std Dev's  
QUAD COEFF : 3.302720E-05 keV/C^2 SUM SENSITIVITY: 0.10000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: CAL6457

Flags Key

Detector: ALP116 1

Report Date: 28-Sep-07 12:09 PM

Intersect Region: @

Acquire Date: 27-SEP-2007 19:29:49.88

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn			
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	1		501
0		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	1		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	1		407	0		457	0		507
0		8	0		58	0		108	0		158	0		208	0		258	0		308	0		358	0		408	2		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	1		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	1		363	0		413	1		463			
0		14	0		64	0		114	0		164	1		214	0		264	0		314	0		364	0		414	1		464			
0		15	0		65	0		115	0		165	0		215	1		265	0		315	0		365	0		415	1		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	4		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	1		369	0		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	0		320	1		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	1		375	1		425	0		475			
0		26	0		76	0		126	0		176	0		226	0		276	0		326	1		376	0		426	0		476			
0		27	0		77	0		127	0		177	1		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	0		328	1		378	0		428	0		478			
0		29	0		79	0		129	0		179	0		229	0		279	0		329	1		379	0		429	0		479			
0		30	0		80	0		130	0		180	0		230	0		280	0		330	1		380	1		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	1		381	0		431	1		481			
0		32	0		82	0		132	0		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	1		433	0		483			
0		34	0		84	0		134	0		184	1		234	0		284	1		334	1		384	0		434	0		484			
0		35	0		85	0		135	0		185	2		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	1		336	1		386	0		436	0		486			
0		37	0		87	0		137	0		187	1		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	3		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0		242	0		292	1		342	1		392	0		442	0		492			
0		43	0		93	0		143	0		193	2		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	1		244	0		294	1		344	0		394	0		444	1		494			
0		45	0		95	0		145	0		195	5		245	0		295	0		345	1		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	0		296	0		346	2		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	0		299	0		349	0		399	0		449	0		499			

0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500





VMS Peak Search Report V1.9 Generated 28-SEP-2007 12:09:56

Configuration : RDND06\$DKA100:[ALP116.SAMPLE]CAL6457\_270971929.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH TA-RLD  
Sample date : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 19:29:49  
Sample ID : CAL6457 Sample quantity : 0.00000E+00 SAMPLE  
Sample type : disk Sample geometry :  
Detector name : ALP116 Detector geometry:  
Elapsed live time: 0 16:40:03.00 Elapsed real time: 0 16:40:03.00 0.0%  
Start energy : 2886.78 End energy : 6721.17  
Sensitivity : 6.00 Sum Sensitivity : 0.10  
No peaks were found

Error Report (Date: 28-Sep-07 12:09 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Th23407A200 #6254  
 24-Sep-07 = Source Reference Date 10:33 = Source Reference Time

SET 31A-31D Reference Data

Thorium Beta Data

ID	Date	Time	Th-234		Background		Decay	Th234 wt.		
			Cts	Min	Cts	Min		grams	cpm/g	
RDQC8978	24-Sep-07	10:33	4691	20	686	500	233.18	1.0000	0.1045	2231.37
RDQC8979	24-Sep-07	10:33	4408	20	611	500	219.18	1.0000	0.1055	2077.52
RDQC8980	24-Sep-07	10:33	4429	20	546	500	220.36	1.0000	0.1044	2110.71
RDQC8981	24-Sep-07	10:33	4623	20	596	500	229.96	1.0000	0.1052	2185.91
Average			225.67						2151.38	

Average	2151.38
%RSD	3.25%
Min Bias	-3.43%
Max Bias	3.72%

Th23407A200 #6254

2.1514E+03	= VAX expected value, cpm/g (entered as dpm in Vax)
1.0500E+02	= Total Error of VAX expected value
24-Sep-07	= Reference Date of VAX expected value
10:33	= Reference Time of VAX expected value

TH-234 INITIAL DILUTION CALCULATION

(A) INITIAL BETA COUNT ACTIVITY	2151.38	cpm/g
(B) INITIAL VOLUME	500.00	mL
(C) INITIAL ACTIVITY DESIRED	5000	cpm/g
(D) PROPOSED TOTAL VOLUME	215.14	mL
(E) PROPOSED VOLUME TO ADD NOT NECESSARY TO BE EXACT	-284.86	mL
(F) ACTUAL VOLUME ADDED	0.00	mL
(G) ACTIVITY	2151.38	cpm/g

$A * B / C = D$        $D - B = E$   
 $B / (B + F) * A = G$

tda 9/25/07

TO CALCULATE THE NET CPM BETA AND ALPHA FOR TH234 EVALUATION

TH234 Std. ID: TH23407A200 #6254

DATE: 9/24/2007

SAMPLE ID	total cts. Beta	beta ct. time	Bkg. Cts. beta	beta Bkg. ct. time	total cts. alpha	alpha ct. time	Bkg. Cts. alpha	alpha Bkg. ct. time	Net beta CPM	Net Alpha CPM	1% net beta
RDQC8978	4691	20	686	500	2	50	17	500	233.178	0.006	2.33
RDQC8979	4408	20	611	500	4	50	10	500	219.178	0.06	2.19
RDQC8980	4429	20	546	500	0	50	17	500	220.358	-0.034	2.20
RDQC8981	4623	20	596	500	0	50	20	500	229.958	-0.04	2.30



TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

24-SEP-2007 10:33:59.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
RDQC8978	111	15

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-SEP-2007 10:33:59.00	4691	20.00	686	500.00	26A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	27	654	1500	24-SEP-2007 01:23:34.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

24-SEP-2007 10:33:59.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
RDQC8979	111	15

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-SEP-2007 10:33:59.00	4408	20.00	611	500.00	26B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	26	654	1500	24-SEP-2007 01:23:34.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

24-SEP-2007 10:33:59.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
RDQC8980	111	15

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-SEP-2007 10:33:59.00	4429	20.00	546	500.00	26C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	27	654	1500	24-SEP-2007 01:23:34.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

24-SEP-2007 10:33:59.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
RCQD8981	111	15

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-SEP-2007 10:33:59.00	4623	20.00	596	500.00	26D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	6	654	1500	24-SEP-2007 01:23:34.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

**SEVERN**  
**TRENT**  
**SERVICES**

ALPHA/BETA COUNT SHEET

Sa Num	Alq (g)	Ppt. Wt.	Date	Time	Counts	Count time	Bkgd.	Bkgd. Time	Set	Initials
20028976	0.1056	0	9/24/07	0952		50MIN			10A	
20028979	0.0993								10B	
20028980	0.1030								10C	
20028981	0.1059								10F	

Client: TAR  
 Analyst: TPA  
 Requested Count Time: 50min  
 FORM NO: RC-76, 8/00, Rev. 1

Date: 9/24/07  
 Comments: #123407 A200 #6259  
#1070163

USI Number: RDQC8978 Isotope: 112 (QRRPORT Rev 11-OCT-98)

Detector: 10-A  
File: [quad10.sample.A]RDQC8978.112  
Dish Size: 15 Bkg File: [QUAD10.BKGRND]CURRENT.A\_15;4716

Cycle Alpha 1 Beta 00000 Min Guard 0050 Volts 1000 Finish Date/Time 24-SEP-2007 09:58:22.51

Bkg File: [quad10.bkgnd]2007-09-24\_0127.A\_15 (QRRPORT Rev 11-OCT-98)

Cycle Count 00017 Min 0500 CPM 0.03 Guard 00000 Volts 1000 Date/Time 24-SEP-2007 01:27:24.11

USt Number: RDQC8979 Isotope: 112 (QRREPORT Rev 11-OCT-98)

Detector: 10-B  
File: [quad10.sample.B] RDQC8979.112  
Bkg File: \$DISK1:[QUAD10.BKGRND] CURRENT.B\_15;4711

Cycle Alpha 1  
Beta 00004  
Min 0050  
Guard 00000  
Volts 1000  
Finish Date/Time 24-SEP-2007 09:58:22.51

Bkg File: [quad10.bkgnd] 2007-09-24\_0127.B\_15 (QRREPORT Rev 11-OCT-98)

Cycle Count 00010  
Min 0500  
CPM 0.02  
Guard 00000  
Volts 1000  
Date/Time 24-SEP-2007 01:27:24.11

UFT Number: RDQC8980 Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C  
File: [quad10.sample.c]RDQC8980.112  
Dish size: 15 Bkg file: \$DISK1:[QUAD10.BKGRND]CURRENT.C 15;4722

Cycle Alpha Beta Min Guard Volts Finish Date/Time  
1 00000 00000 0050 00000 1000 24-SEP-2007 09:58:22.51

Bkg file: [quad10.bkgnd]2007-09-24\_0127.C\_15 (QREPORT Rev 11-OCT-98)

Cycle Count Min CPM Guard Volts Date/Time  
Bkg 00017 0500 0.03 00000 1000 24-SEP-2007 01:27:24.11

U5T Number: RD0C8981 Isotope: 112 (QREPOR1 Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]RD0C8981.112  
Dish size: 15 Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.F\_15;4707

Cycle Alpha Beta Min Guard Volts Finish Date/Time  
1 00000 00000 0050 00000 1000 24-SEP-2007 09:58:22.51

Bkg File: [quad10.bkgnd]2007-09-24\_0127.F\_15 (QREPOR1 Rev 11-OCT-98)

Cycle Count Min CPM Guard Volts Date/Time  
Bkg 00020 0500 0.04 00000 1000 24-SEP-2007 01:27:24.11

# Standard Material Fractions (Vials)

Vial Prep:12/ 9/06 to 12/11/07,SMFractionIdentifier Like: THSI1114%, Order by SMIdentifier,ConstituentCode,SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard:		TH23006A100	Ref: 1/28/2004	2.1698E+01 ± 7.160E-01	DPM/G	
<b>THSI1114</b>	TH-230	<b>5.1054E+00 ± 1.685E-01</b> DPM	0.2353 g	11/27/2007 11/27/2007	Armstron	2.1697E+01 ± 7.160E-01 DPM/G
		5.1054E+000 ± 5.105E+000 ( 1)		5.1054E+000 , 5.1054E+000		

**Th23006**

Th23006A100  
Ref. 6096  
21.698 ± 0.716  
dpm/g  
5/24/2006 DVF



Th-230 Calibration Check

5/24/2006  
tda

Source  
Th23006A100 #6096

Source  
TH23406A100 #4857

Calculation for Th230 Radiochemical Yield  
(Th230 cpm \* d/c) / (Th230 dpm expected \* Tracer Yield) =

	Th230 cpm	d/c	Th230 dpm found	Th230 dpm expected	Tracer Yield	RCHEM Yield
DVF2601	6.485	3.406	22.088	22.123	1.128	0.998414
DVF2602	6.112	3.431	20.970	22.115	1.075	0.948237
DVF2604	6.338	3.191	20.225	22.069	1.081	0.916424
					Avg.	0.954
					Std. Dev.	0.04
					rsd<10%	8.66

Calculation for Th234Tracer Yield

	COUNTS TIME	SAMPLE COUNTS	BKGRD	BKGRD CT TIME	SAMPLE CPM	SAMPLE WT (g)	REF COUNTS	REF CPM	REF WT (g)	SAMPLE CPM/G
DVF2601	20	10658	667	500	531.566	0.265	138526	6926.300	3.891	2008.183
DVF2602	20	10138	795	500	505.310	0.266	137549	6877.450	3.894	1898.948
DVF2604	20	9951	562	500	496.426	0.265	135033	6751.650	3.898	1873.306

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>9/15/2004</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>FROM STL DENVER</u></b>		
4) Source Activity (dpm ± dpm/g)	<u>                    </u>	±	<u>                    </u>
5) Percent error of Source Activity	<u>                    </u>	%	
6) Weight of Source Material used (g)	<u>                    </u>		
7) (% Error) of Weight of Source Material used	<u>#DIV/0!</u>	%	
8) Diluent	<u>                    </u>		
9) Total Weight of the Dilution (g)	<u>                    </u>		
10) (% Error) of Total Weight of the Dilution	<u>3.3000</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.1698E+01</u></b>	±	<b><u>7.160E-01</u></b>
12) Total Uncertainty	<u>#DIV/0!</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>Th23006A100</u></b>		<b><u>6096</u></b>
14) Calibration Reference Date	<u>1/28/2004</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>6/8/2006</u>
16) Reviewed by/date	<u>                    </u>		<u>                    </u>
17) Location	<u>qclab</u>	18) Exhausted	<u>                    </u>

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**CALCULATIONS**

7) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

10) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

11) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

COUNTING REQUEST

Type of count: Alpha: \_\_\_\_\_ count time: \_\_\_\_\_ units: \_\_\_\_\_  
 Beta: \_\_\_\_\_ count time: \_\_\_\_\_ units: \_\_\_\_\_  
 Gamma: \_\_\_\_\_ count time: \_\_\_\_\_ Geom.: \_\_\_\_\_ units: \_\_\_\_\_  
 Alpha Spec: 30 count time: 1000 units: dpm/Sa

Requested by: TDA Date submitted: 5/24/06

	Sample ID	Isotopes of interest	Sample Date
175	DW 2601	Th 230 06 A 100	
		# 6096	
176	2602		
177	2603		
178	2604		

ADDITIONAL INSTRUCTIONS:

T060089 Cpdt Th 23006A100 #6096

DM 5/24/06 Th 23406A100 #6094

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STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:43:12.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2601	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:43:12.00	9187	20.00	662	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	15	647	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:43:12.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2602	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:43:12.00	8717	20.00	740	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	10	647	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:43:12.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2603	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:43:12.00	8688	20.00	711	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	13	647	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:43:12.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2604	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:43:12.00	8500	20.00	608	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	28	647	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:17:29.00

LBPRINT - Rev#: 2.4

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
CAL5799	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
30-MAY-2006 09:17:29.00	116642	20.00	662	500.00	30A

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
3	15	645	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:17:29.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5800	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:17:29.00	115697	20.00	740	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	10	645	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:17:29.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5801	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:17:29.00	114775	20.00	711	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	13	645	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:17:29.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5802	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:17:29.00	115181	20.00	608	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	28	645	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

7060089

THORIUM BETA DATA FORM

SEVERN TRENT SERVICES		Requested by: TDA			BETA				
Sample ID	Vial Code	TH-234 WT.	Date-time Counted	Lab Tech:	Set ID	Gross Counts	Counting Time	Bkg. Counts	Count Room Tech
DVF2601							20 min		TH 234
2602							↓		
2603									
2604									

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 17:14:03.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2601	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 17:14:03.00	10658	20.00	667	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	18	653	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 17:14:03.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2602	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 17:14:03.00	10138	20.00	795	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	15	653	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

GPC Report

24-MAY-2006 17:14:03.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2603	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 17:14:03.00	10593	20.00	704	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	17	653	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 17:14:03.00

LBPRINT - Rev#: 2.4

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
DVF2604	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
24-MAY-2006 17:14:03.00	9951	20.00	562	500.00	30D

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
2	14	653	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5734	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	535	20.00	667	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	18	646	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5735	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	431	20.00	795	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	15	646	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5736	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	478	20.00	704	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	17	646	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5737	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	440	20.00	562	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	14	646	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

Thorium Yield Determination by Beta-emitting Th-234 tracer

Reference Tracer Data: Ref. Date: 19-May-06

Ref. ID	Beta Detector	Gross Counts	Count Time	Bkg Counts	Bkg Time	Bkg CPM	Grams Found	SrY-90 Eff	DPM/g of Tracer
CAL5799	30A	138526	20	667	500	1.3340	3.891	0.4482	3971.00
CAL5800	30B	137549	20	795	500	1.5900	3.8941	0.4568	3865.08
CAL5801	30C	137829	20	704	500	1.4080	3.8875	0.4464	3970.03
CAL5802	30D	135033	20	562	500	1.1240	3.8977	0.4461	3882.36
Average DPM/g of tracer =									3905.82

Sample Tracer Data:

VIAL ID	Tracer Mass	DPM Tracer
DVF2601	0.2647	1033.87
DVF2602	0.2661	1039.34
DVF2603	0.2653	1036.22
DVF2604	0.265	1035.04
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23406A100		Ref: 5/18/2006	2.3166E+03 ± 3.168E+02	CPM/G		
DVF2601	TH-234	5.1029E+02 ± 6.979E+01 CPM	0.2647 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2602	TH-234	5.1298E+02 ± 7.016E+01 CPM	0.2661 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2603	TH-234	5.1143E+02 ± 6.994E+01 CPM	0.2653 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2604	TH-234	5.1085E+02 ± 6.987E+01 CPM	0.265 g	5/24/2006 5/24/2006	Armstron	1.9277E+03 ± 2.636E+02 CPM/G

5.1139E+002 ± 1.160E+000 ( 4) 0.227% 5.1029E+002 , 5.1298E+002

5/24/2006 5:38:39 PM

# Standard Material Fractions (Vials)

Vial Prep: 5/23/05 to 5/25/06, SMFractionIdentifier Between DVF2601 and DVF2604, Order by SMIdentifier, ConstituentCode, SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23006A100		Ref: 9/15/2004	2.1698E+01	± 7.160E-01	DPM/G	
DVF2601	TH-230	2.2123E+01 ± 7.300E-01 DPM	1.0196 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2602	TH-230	2.2115E+01 ± 7.298E-01 DPM	1.0192 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2603	TH-230	2.2106E+01 ± 7.295E-01 DPM	1.0188 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2604	TH-230	2.2069E+01 ± 7.283E-01 DPM	1.0171 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G

2.2103E+001 ± 2.386E-002 ( 4) 0.108% 2.2069E+001 , 2.2123E+001

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:23:54.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5799	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:23:54.00	138526	20.00	667	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	18	660	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:23:54.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5800	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:23:54.00	137549	20.00	795	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	15	660	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:23:54.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5801	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:23:54.00	137829	20.00	704	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	17	660	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:23:54.00

LBPRINT - Rev#: 2.4

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
CAL5802	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
24-MAY-2006 10:23:54.00	135033	20.00	562	500.00	30D

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
1	14	660	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

# THORIUM ISOTOPICTIC COUNTING REQUEST

C.R. Technician RD  
 Date Counted 5/24/06  
 C.R. Analyst D  
 Date Analyzed 6/28/06

Counting Time 1000 Minutes  
 Sample 1041  
 Background See Alpha Analysis Report  
 Review: 5/24/06  
 SOP's RICHRD0008  
 Operating: RICHRD0016  
 TO 60089

WorkOrder #	Th-229 (4845 keV) Tracer		TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)		
DVF2601		10		0	See Alpha Analysis Report for ROI Information	175	3.406
DVF2602		10		0	See Alpha Analysis Report for ROI Information	176	3.431
DVF2603		10		0	See Alpha Analysis Report for ROI Information	177	3.827
DVF2604		10		0	See Alpha Analysis Report for ROI Information	178	3.191
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		

Comments:

Approved by: S Date: 5/24/06

Alpha Analysis Report  
(Version: 7-Feb-98)

Sample Identity: DVF2601

Detector: ALP171 5  
Report Date: 25-May-06 10:48 AM  
Acquire Date: 24-MAY-2006 18:01:30.57  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	2	1	0.001	5423.2	118.1	301	321
TH-230	6479	1	6.485	4687.7	436.6	146	220
TH-232	55	1	0.054	4013.0	117.9	62	82

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH STLR

Batch ID: T060089

Sample ID: DVF2601  
Detector ID: ALP171 5



Energy Coefficients:  
Offset: 3.55777E+03  
Slope: 5.89519E+00  
Quadrature: 1.39841E-05

Acquisition Start: 24-MAY-2006 18:01:30.57  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

SAMPLE IDENTIITY: DVF2601

TITLE : TH STLR

DETECTOR : ALP171 5  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]DVF2601\_240561801E.CNF  
;1  
ACQUIRE DATE of BACKGROUND: 06-MAY-2006 14:12:16

REPORT DATE : 25-May-06 SAMPLE DATE: 24-MAY-2006 12:00:00  
ACQUIRE DATE: 24-MAY-2006 18:01:30 CALIB DATE : 06-MAY-2006 11:43:55

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3557.77 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 5.89519 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 1.398410E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 29-Jun-92)

Sample Identity: DVF2601  
Detector: ALP171 5  
Report Date: 25-May-06 10:46 AM  
Acquire Date: 24-MAY-2006 18:01:30.57

Flags Key  
Intersect Region: @  
Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	1	0	51	7	101	4	151	25	201	0	251	0	301	0	351	0	401	1	451	0	501					
0	2	1	52	3	102	6	152	18	202	0	252	0	302	0	352	0	402	0	452	0	502					
0	3	0	53	2	103	6	153	14	203	0	253	0	303	0	353	0	403	0	453	0	503					
0	4	2	54	4	104	4	154	7	204	0	254	1	304	0	354	0	404	0	454	0	504					
1	5	0	55	1	105	5	155	13	205	0	255	0	305	0	355	1	405	0	455	0	505					
1	6	1	56	0	106	5	156	10	206	0	256	1	306	0	356	1	406	0	456	0	506					
0	7	2	57	2	107	8	157	8	207	0	257	0	307	0	357	0	407	0	457	0	507					
1	8	1	58	1	108	9	158	8	208	0	258	0	308	0	358	0	408	0	458	0	508					
0	9	0	59	2	109	9	159	3	209	0	259	0	309	0	359	0	409	0	459	0	509					
1	10	1	60	3	110	5	160	4	210	0	260	0	310	0	360	0	410	1	460	0	510					
0	11	3	61	1	111	14	161	4	211	0	261	0	311	0	361	0	411	1	461	0	511					
0	12	1	62	3	112	12	162	1	212	0	262	0	312	0	362	0	412	0	462	0	512					
2	13	2	63	3	113	11	163	1	213	0	263	0	313	1	363	0	413	1	463							
1	14	0	64	2	114	15	164	2	214	0	264	0	314	1	364	0	414	1	464							
0	15	1	65	2	115	18	165	0	215	0	265	0	315	0	365	0	415	0	465							
0	16	2	66	0	116	26	166	0	216	0	266	0	316	1	366	0	416	1	466							
0	17	2	67	2	117	17	167	3	217	0	267	0	317	0	367	0	417	0	467							
0	18	3	68	2	118	26	168	1	218	0	268	0	318	0	368	0	418	0	468							
0	19	4	69	0	119	40	169	0	219	0	269	0	319	0	369	0	419	0	469							
0	20	2	70	2	120	40	170	0	220	0	270	0	320	0	370	0	420	0	470							
0	21	3	71	3	121	44	171	0	221	0	271	0	321	0	371	0	421	0	471							
0	22	3	72	0	122	60	172	1	222	0	272	0	322	0	372	0	422	0	472							
0	23	2	73	1	123	74	173	0	223	0	273	0	323	0	373	0	423	1	473							
0	24	1	74	1	124	79	174	0	224	0	274	1	324	0	374	0	424	3	474							
0	25	1	75	3	125	92	175	0	225	0	275	0	325	0	375	0	425	1	475							
0	26	11	76	1	126	111	176	0	226	1	276	1	326	1	376	0	426	5	476							
0	27	3	77	1	127	140	177	0	227	1	277	0	327	0	377	0	427	0	477							
0	28	4	78	0	128	160	178	0	228	0	278	0	328	0	378	0	428	1	478							
0	29	3	79	2	129	200	179	0	229	0	279	0	329	0	379	1	429	2	479							
1	30	6	80	1	130	200	180	0	230	0	280	0	330	1	380	0	430	0	480							
0	31	0	81	1	131	219	181	0	231	0	281	0	331	1	381	0	431	0	481							
0	32	1	82	3	132	215	182	0	232	0	282	0	332	1	382	0	432	1	482							
0	33	1	83	2	133	214	183	0	233	1	283	0	333	2	383	0	433	0	483							
0	34	2	84	4	134	266	184	0	234	0	284	0	334	0	384	0	434	0	484							
0	35	1	85	2	135	245	185	0	235	0	285	0	335	3	385	0	435	0	485							
0	36	4	86	1	136	355	186	0	236	0	286	0	336	1	386	0	436	0	486							
0	37	2	87	0	137	377	187	0	237	0	287	0	337	2	387	0	437	0	487							
0	38	4	88	2	138	465	188	0	238	0	288	0	338	2	388	0	438	0	488							
0	39	1	89	1	139	509	189	0	239	0	289	0	339	2	389	0	439	0	489							
0	40	0	90	2	140	513	190	0	240	0	290	0	340	2	390	0	440	0	490							
0	41	4	91	3	141	493	191	0	241	0	291	0	341	1	391	0	441	0	491							
0	42	1	92	2	142	415	192	0	242	0	292	1	342	0	392	0	442	1	492							
2	43	5	93	3	143	293	193	0	243	0	293	0	343	0	393	0	443	0	493							
0	44	0	94	3	144	141	194	0	244	0	294	0	344	0	394	0	444	0	494							
0	45	0	95	4	145	61	195	0	245	0	295	0	345	0	395	0	445	0	495							
0	46	3	96	1	146	35	196	0	246	0	296	0	346	0	396	0	446	0	496							
0	47	1	97	3	147	29	197	0	247	0	297	0	347	0	397	0	447	0	497							
0	48	5	98	3	148	23	198	1	248	0	298	0	348	0	398	0	448	0	498							
0	49	3	99	1	149	21	199	0	249	0	299	0	349	0	399	0	449	0	499							



1 50 4 100 1 150 19 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 25-MAY-2006 10:46:23

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2601_240561801E.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID        : DVF2601 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3575.46 keV End energy : 6579.77 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4673.22	6370	0	53.06	189.13	164	58	1.06E-01	1.3	
2	0	6366.51	14	0	29.48	475.91	471	12	2.34E-04	26.7	

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2601_240561801E.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID        : DVF2601 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Energy tolerance : 80.00 keV Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type  : Spline Efficiencies at : Peak Energy
Abundance limit  : 70.00
    
```

Summary of Nuclide Activity

```

Total number of lines in spectrum          2
Number of unidentified lines              1
Number of lines tentatively identified by NID 1      50.00%
    
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found "M" = Manually accepted  
 "E" = Manually edited "A" = Nuclide specific abn. limit

Error Report (Date: 25-May-06 10:46 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 7-Feb-98)

Sample Identity: DVF2602

Detector: ALP171 6  
Report Date: 25-May-06 10:49 AM  
Acquire Date: 24-MAY-2006 18:01:30.57  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

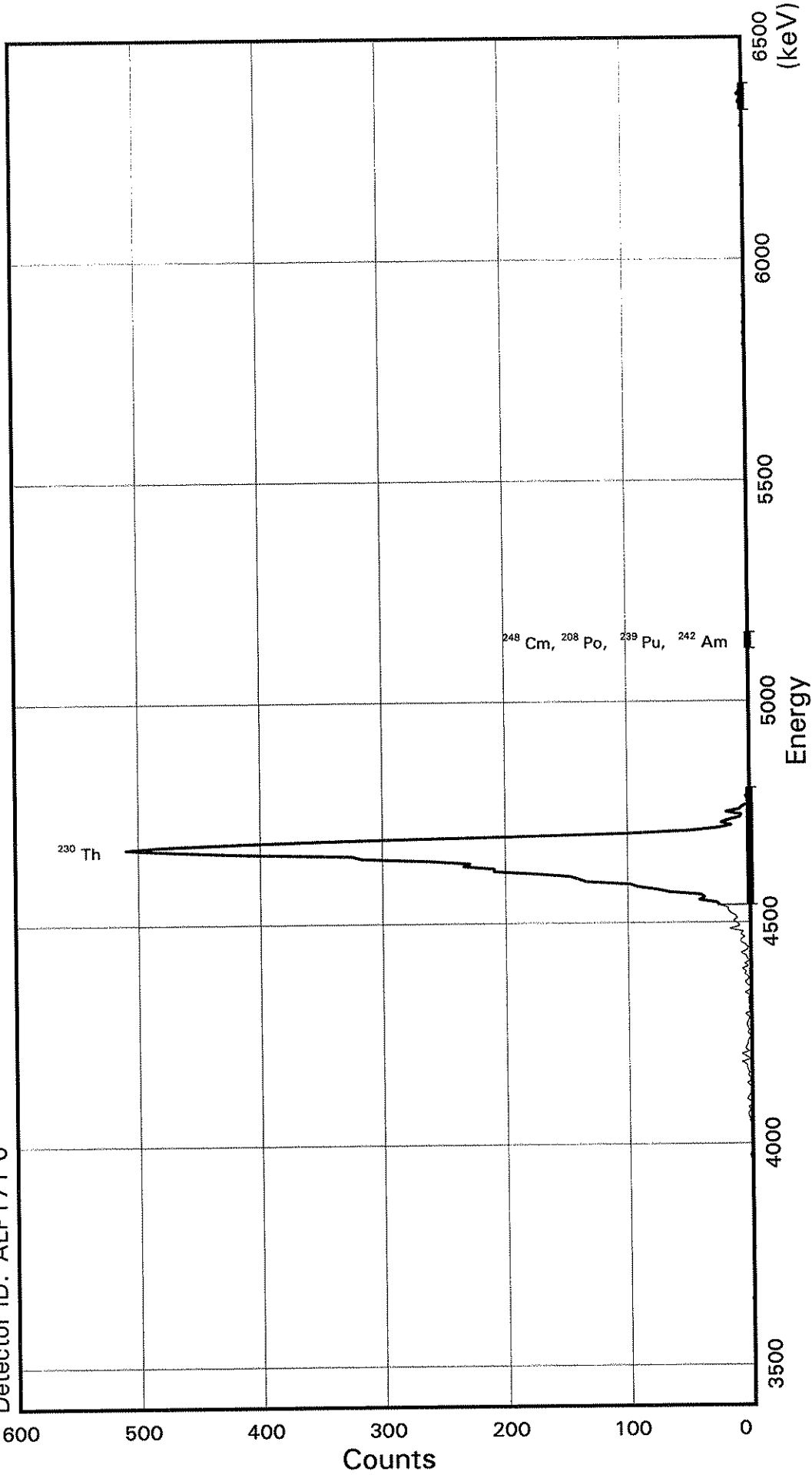
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	1	2	-0.001	5423.2	120.9	322	342
TH-230	6112	2	6.116	4687.7	325.6	179	233
TH-232	12	0	0.012	4013.0	120.3	89	109

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH STLR

Batch ID: T060089

Sample ID: DVF2602  
Detector ID: ALP171 6



Energy Coefficients:  
Offset: 3.39036E + 03  
Slope: 6.00329E + 00  
Quadrature: 6.37184E-05

Acquisition Start: 24-MAY-2006 18:01:30.57  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

SAMPLE IDENTIITY: DVF2602

TITLE : TH STL

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]DVF2602\_240561801F.CNF  
;1  
ACQUIRE DATE of BACKGROUND: 08-MAY-2006 04:40:02

REPORT DATE : 25-May-06 SAMPLE DATE: 24-MAY-2006 12:00:00  
ACQUIRE DATE: 24-MAY-2006 18:01:30 CALIB DATE : 07-MAY-2006 06:53:51

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3390.36 keV CONSTANT FWHM : 7.33333 Channels  
SLOPE : 6.00329 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 6.371840E-05 keV/C<sup>2</sup> SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 29-Jun-92)

Sample Identity: DVF2602

Flags Key

Detector: ALP171 6

Report Date: 25-May-06 10:46 AM

Intersect Region: @

Acquire Date: 24-MAY-2006 18:01:30.57

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	140		201	0		251	0		301	0		351	2		401	0		451	0		501
		2	0		52	1		102	2		152	147		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	1		153	174		203	1		253	0		303	0		353	1		403	0		453	0		503
0		4	0		54	1		104	2		154	209		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	1		55	1		105	2		155	209		205	0		255	0		305	0		355	2		405	0		455	0		505
0		6	0		56	0		106	2		156	234		206	0		256	0		306	0		356	1		406	0		456	0		506
0		7	0		57	1		107	1		157	229		207	0		257	0		307	0		357	0		407	0		457	0		507
1		8	0		58	0		108	5		158	261		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	1		59	1		109	1		159	317		209	0		259	0		309	0		359	2		409	0		459	0		509
0		10	0		60	2		110	0		160	325		210	0		260	0		310	0		360	0		410	2		460	1		510
0		11	0		61	2		111	3		161	414		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	3		112	5		162	468		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	3		113	2		163	510		213	0		263	0		313	0		363	0		413	0		463			
1		14	0		64	1		114	2		164	478		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	3		115	5		165	411		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	4		166	321		216	0		266	0		316	1		366	0		416	0		466			
0		17	0		67	0		117	7		167	200		217	0		267	0		317	0		367	1		417	0		467			
0		18	0		68	4		118	2		168	101		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	3		119	5		169	48		219	0		269	1		319	0		369	2		419	0		469			
0		20	1		70	1		120	1		170	26		220	0		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	3		171	15		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	1		122	4		172	23		222	0		272	0		322	0		372	0		422	0		472			
0		23	1		73	1		123	8		173	17		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	4		124	3		174	8		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	1		125	2		175	7		225	0		275	0		325	0		375	0		425	0		475			
0		26	0		76	1		126	4		176	19		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	3		127	8		177	8		227	0		277	0		327	0		377	0		427	0		477			
1		28	0		78	2		128	8		178	6		228	0		278	0		328	0		378	0		428	0		478			
0		29	0		79	3		129	5		179	1		229	0		279	0		329	1		379	0		429	0		479			
0		30	1		80	4		130	8		180	1		230	0		280	0		330	0		380	0		430	0		480			
0		31	0		81	4		131	6		181	2		231	0		281	1		331	1		381	0		431	0		481			
0		32	1		82	8		132	17		182	3		232	0		282	0		332	0		382	0		432	2		482			
0		33	0		83	1		133	9		183	0		233	0		283	0		333	0		383	0		433	1		483			
0		34	0		84	4		134	10		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	8		135	14		185	0		235	0		285	0		335	0		385	1		435	1		485			
0		36	0		86	2		136	11		186	1		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	5		137	12		187	0		237	1		287	0		337	0		387	0		437	0		487			
0		38	0		88	4		138	16		188	1		238	0		288	0		338	0		388	0		438	1		488			
0		39	0		89	3		139	18		189	1		239	1		289	0		339	0		389	0		439	0		489			
0		40	0		90	3		140	18		190	0		240	1		290	0		340	1		390	0		440	0		490			
1		41	1		91	1		141	25		191	0		241	1		291	0		341	0		391	0		441	3		491			
0		42	1		92	1		142	27		192	0		242	0		292	0		342	1		392	0		442	2		492			
2		43	0		93	3		143	41		193	1		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	2		144	37		194	1		244	1		294	0		344	1		394	0		444	4		494			
0		45	0		95	3		145	40		195	0		245	0		295	0		345	0		395	0		445	2		495			
0		46	1		96	4		146	66		196	0		246	0		296	0		346	0		396	0		446	1		496			
0		47	2		97	3		147	76		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	1		98	2		148	92		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	1		99	2		149	98		199	1		249	0		299	0		349	0		399	1		449	0		499			



0 50 0 100 5 150 134 200 0 250 1 300 0 350 1 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 25-MAY-2006 10:46:39

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2602_240561801F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID        : DVF2602 Sample quantity : 1.0000 SAMPLE
Sample type       : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3408.37 keV End energy : 6480.74 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4667.42	5969	0	54.03	212.25	191	44	9.96E-02	1.3	
2	0	5133.65	4	0	24.01	289.50	287	6	6.67E-05	50.0	
3	0	6362.71	12	0	42.02	492.55	488	10	2.00E-04	28.9	

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2602_240561801F.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID        : DVF2602 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Energy tolerance : 80.00 keV Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type  : Spline Efficiencies at : Peak Energy
Abundance limit  : 70.00
    
```

Summary of Nuclide Activity

```

Total number of lines in spectrum      3
Number of unidentified lines           1
Number of lines tentatively identified by NID 2        66.67%
    
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PU-239	24110.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
AM-242M	141.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

```

Flags: "K" = Keyline not found      "M" = Manually accepted
       "E" = Manually edited        "A" = Nuclide specific abn. limit
    
```

Error Report (Date: 25-May-06 10:46 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 7-Feb-98)

Sample Identity: DVF2603

Detector: ALP171 7  
Report Date: 25-May-06 10:49 AM  
Acquire Date: 24-MAY-2006 18:01:30.57  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

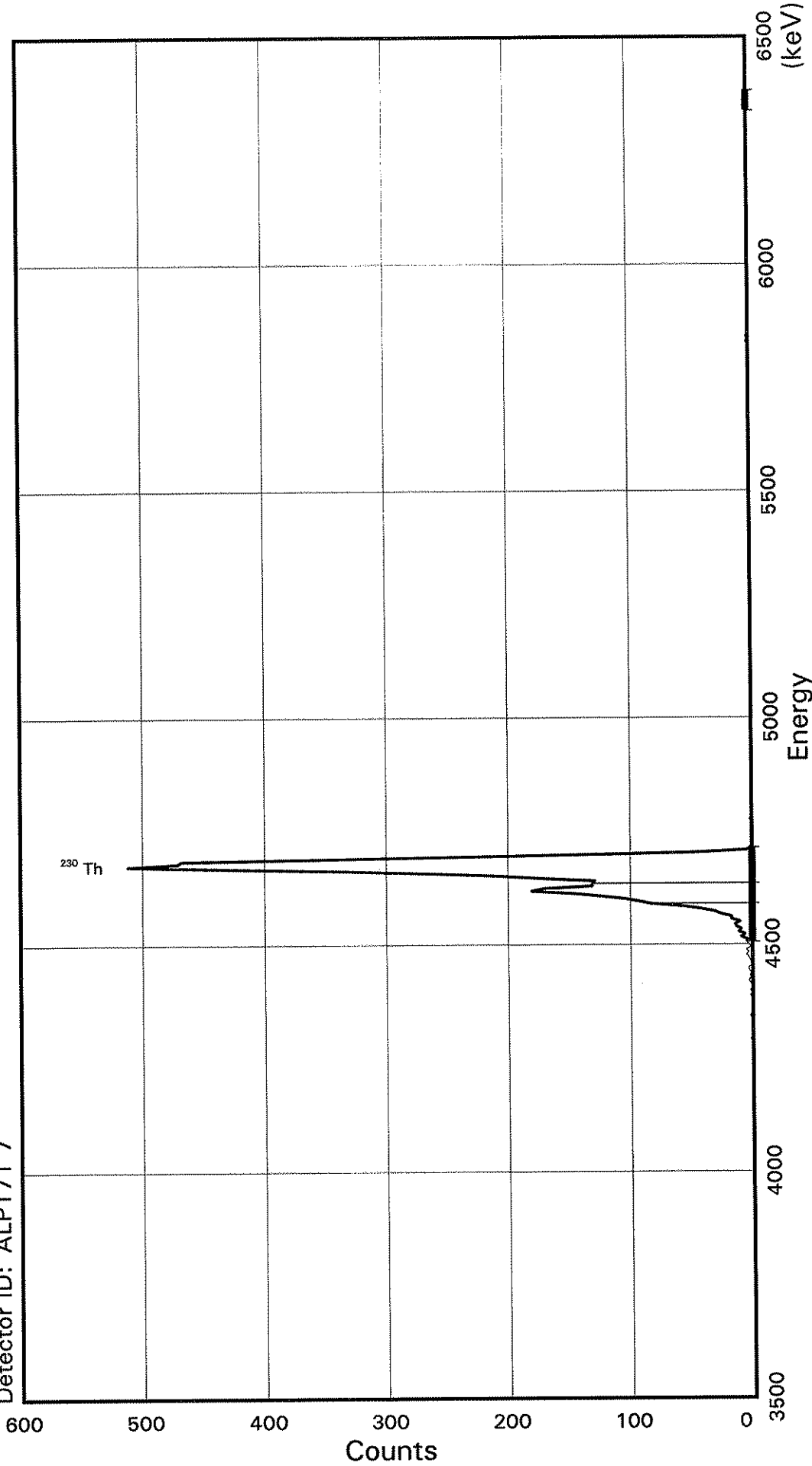
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Rght
			C/Min	keV	keV	Chnl	Chnl
TH-228	0	0	0.000	5423.2	112.7	311	331
TH-230	4956	3	4.958	4687.7	220.0	161	200
TH-232	2	0	0.002	4013.0	112.9	61	81

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH STLR

Batch ID: T060089

Sample ID: DVF2603  
Detector ID: ALP171 7



Energy Coefficients:  
Offset: 3.58497E + 03  
Slope: 5.64847E + 00  
Quadrature: -1.76165E-05

Acquisition Start: 24-MAY-2006 18:01:30.57  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

SAMPLE IDENTIITY: DVF2603

TITLE : TH STL

DETECTOR : ALP171 7  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]DVF2603\_240561801G.CNF  
;1  
ACQUIRE DATE of BACKGROUND: 06-MAY-2006 14:12:16

REPORT DATE : 25-May-06 SAMPLE DATE: 24-MAY-2006 12:00:00  
ACQUIRE DATE: 24-MAY-2006 18:01:30 CALIB DATE : 06-MAY-2006 00:06:10

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3584.97 keV CONSTANT FWHM : 6.33333 Channels  
SLOPE : 5.64847 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.176165E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 29-Jun-92)

Sample Identity: DVF2603  
Detector: ALP171 7  
Report Date: 25-May-06 10:47 AM  
Acquire Date: 24-MAY-2006 18:01:30.57

Flags Key  
Intersect Region: @  
Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	1	0	51	1	101	1	151	0	201	0	251	0	301	0	351	0	401	0	451	0	501		
0	2	0	52	0	102	3	152	1	202	0	252	0	302	0	352	0	402	0	452	0	502		
0	3	0	53	0	103	3	153	1	203	0	253	0	303	0	353	1	403	1	453	0	503		
0	4	0	54	0	104	0	154	0	204	0	254	0	304	0	354	0	404	0	454	0	504		
0	5	0	55	1	105	1	155	0	205	0	255	0	305	0	355	0	405	0	455	0	505		
0	6	0	56	0	106	2	156	0	206	0	256	0	306	0	356	0	406	0	456	0	506		
1	7	0	57	0	107	3	157	0	207	0	257	0	307	0	357	0	407	0	457	0	507		
0	8	0	58	0	108	5	158	0	208	0	258	0	308	0	358	0	408	0	458	0	508		
0	9	0	59	0	109	3	159	0	209	0	259	0	309	0	359	0	409	0	459	0	509		
0	10	1	60	0	110	5	160	0	210	0	260	0	310	0	360	0	410	0	460	0	510		
0	11	0	61	1	111	1	161	2	211	0	261	0	311	0	361	0	411	0	461	0	511		
0	12	0	62	1	112	3	162	0	212	0	262	0	312	0	362	0	412	0	462	0	512		
0	13	0	63	0	113	5	163	0	213	0	263	0	313	0	363	0	413	0	463				
0	14	0	64	0	114	4	164	0	214	0	264	0	314	0	364	0	414	0	464				
0	15	0	65	0	115	9	165	0	215	0	265	0	315	0	365	1	415	0	465				
0	16	1	66	0	116	6	166	0	216	0	266	0	316	0	366	0	416	0	466				
1	17	0	67	0	117	11	167	0	217	0	267	0	317	0	367	0	417	0	467				
0	18	0	68	0	118	9	168	0	218	0	268	0	318	0	368	0	418	0	468				
1	19	0	69	0	119	13	169	0	219	0	269	0	319	0	369	0	419	0	469				
0	20	0	70	0	120	14	170	0	220	0	270	0	320	0	370	1	420	0	470				
0	21	0	71	0	121	10	171	0	221	0	271	0	321	0	371	1	421	0	471				
0	22	0	72	0	122	17	172	0	222	0	272	0	322	0	372	0	422	0	472				
0	23	0	73	1	123	17	173	0	223	0	273	0	323	0	373	0	423	0	473				
0	24	1	74	0	124	26	174	0	224	0	274	0	324	0	374	0	424	1	474				
0	25	0	75	2	125	31	175	0	225	0	275	0	325	0	375	0	425	0	475				
0	26	0	76	0	126	42	176	0	226	0	276	0	326	0	376	0	426	0	476				
0	27	0	77	1	127	56	177	0	227	0	277	0	327	0	377	0	427	0	477				
0	28	0	78	0	128	83	178	0	228	0	278	0	328	0	378	0	428	0	478				
0	29	0	79	0	129	93	179	0	229	0	279	0	329	0	379	0	429	0	479				
0	30	0	80	1	130	105	180	0	230	0	280	0	330	0	380	0	430	0	480				
0	31	0	81	0	131	124	181	0	231	0	281	0	331	0	381	0	431	0	481				
0	32	0	82	0	132	145	182	0	232	1	282	1	332	0	382	0	432	0	482				
0	33	1	83	1	133	181	183	0	233	1	283	0	333	0	383	0	433	0	483				
0	34	0	84	2	134	171	184	0	234	0	284	0	334	0	384	0	434	0	484				
0	35	0	85	1	135	131	185	0	235	0	285	0	335	1	385	0	435	0	485				
0	36	0	86	1	136	131	186	0	236	0	286	0	336	1	386	0	436	0	486				
0	37	0	87	0	137	129	187	0	237	0	287	0	337	0	387	0	437	0	487				
0	38	0	88	0	138	174	188	0	238	0	288	1	338	0	388	0	438	0	488				
0	39	0	89	0	139	207	189	0	239	0	289	0	339	0	389	0	439	1	489				
0	40	0	90	0	140	262	190	0	240	0	290	1	340	0	390	0	440	2	490				
0	41	1	91	0	141	332	191	0	241	0	291	0	341	0	391	0	441	1	491				
0	42	0	92	2	142	426	192	1	242	0	292	0	342	0	392	0	442	2	492				
0	43	0	93	0	143	512	193	0	243	0	293	0	343	1	393	0	443	1	493				
1	44	1	94	2	144	471	194	0	244	0	294	0	344	0	394	0	444	1	494				
0	45	1	95	0	145	468	195	0	245	0	295	0	345	1	395	0	445	0	495				
0	46	0	96	0	146	314	196	0	246	0	296	0	346	0	396	0	446	0	496				
1	47	0	97	2	147	169	197	0	247	0	297	0	347	0	397	0	447	0	497				
0	48	0	98	3	148	49	198	0	248	0	298	1	348	2	398	0	448	0	498				
0	49	1	99	1	149	4	199	0	249	0	299	0	349	1	399	0	449	0	499				



0 50 0 100 2 150 1 200 0 250 0 300 0 350 2 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 25-MAY-2006 10:47:40

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2603_240561801G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID        : DVF2603 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3601.91 keV End energy : 6472.36 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4605.53	912	0	45.19	180.78	163	23	1.52E-02	3.3	
2	0	4675.41	4040	0	39.54	193.17	178	22	6.74E-02	1.6	
3	0	6349.89	7	0	16.95	490.25	488	8	1.17E-04	37.8	

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2603_240561801G.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID        : DVF2603 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Energy tolerance : 80.00 keV Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type  : Spline Efficiencies at : Peak Energy
Abundance limit  : 70.00
    
```

Summary of Nuclide Activity

```

Total number of lines in spectrum          3
Number of unidentified lines              2
Number of lines tentatively identified by NID 1      33.33%
    
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

```

Flags: "K" = Keyline not found      "M" = Manually accepted
       "E" = Manually edited         "A" = Nuclide specific abn. limit
    
```

Error Report (Date: 25-May-06 10:47 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 7-Feb-98)

Sample Identity: DVF2604

Detector: ALP171 8  
Report Date: 25-May-06 10:49 AM  
Acquire Date: 24-MAY-2006 18:01:30.57  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

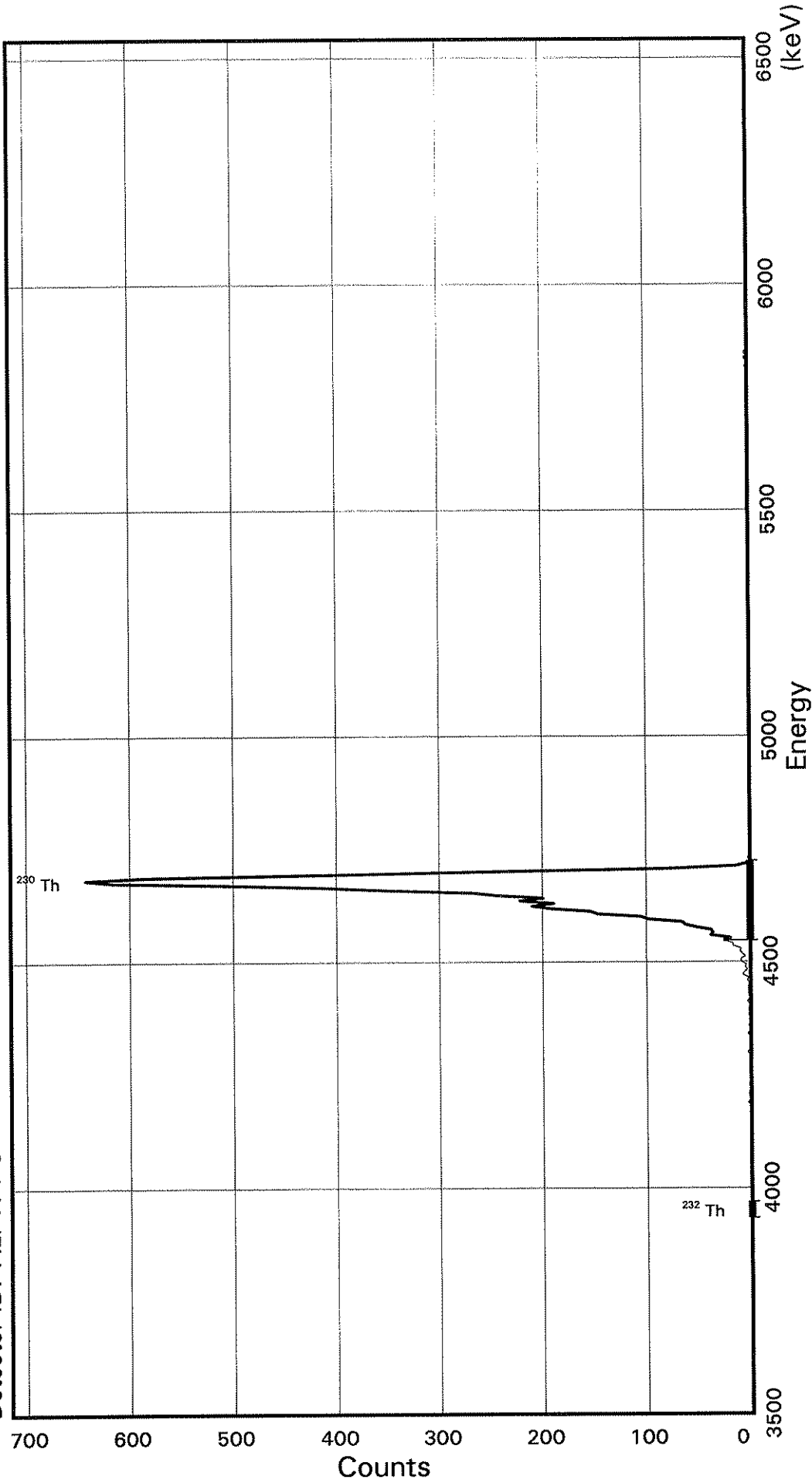
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	0	2	-0.002	5423.2	117.7	307	327
TH-230	6331	0	6.338	4687.7	282.7	157	205
TH-232	4	0	0.004	4013.0	117.9	67	87

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH STLR

Batch ID: T060089

Sample ID: DVF2604  
Detector ID: ALP171 8



Energy Coefficients:  
Offset: 3.52756E + 03  
Slope: 5.89937E + 00  
Quadrature: -2.58312E-05

Acquisition Start: 24-MAY-2006 18:01:30.57  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

SAMPLE IDENTIITY: DVF2604

TITLE : TH STLR

DETECTOR : ALP171 8  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]DVF2604\_240561801H.CNF  
;1  
ACQUIRE DATE of BACKGROUND: 06-MAY-2006 14:12:16

REPORT DATE : 25-May-06 SAMPLE DATE: 24-MAY-2006 12:00:00  
ACQUIRE DATE: 24-MAY-2006 18:01:30 CALIB DATE : 06-MAY-2006 00:06:38

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3527.56 keV CONSTANT FWHM : 7.33333 Channels  
SLOPE : 5.89937 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.258312E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 29-Jun-92)

Sample Identity: DVF2604

Flags Key

Detector: ALP171 8

Report Date: 25-May-06 10:42 AM

Intersect Region: @

Acquire Date: 24-MAY-2006 18:01:30.57

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	0		101	1		151	14		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	1		152	3		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	2		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	1		54	0		104	2		154	2		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	2		155	0		205	0		255	0		305	1		355	0		405	0		455	0		505
0		6	0		56	0		106	2		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
1		7	0		57	1		107	1		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	3		158	0		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	2		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
1		10	0		60	1		110	7		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
1		11	0		61	0		111	6		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	3		112	3		162	0		212	0		262	0		312	1		362	0		412	0		462	0		512
0		13	0		63	1		113	5		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	1		114	4		164	0		214	0		264	0		314	0		364	0		414	1		464			
0		15	0		65	2		115	9		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	2		116	9		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	1		67	0		117	5		167	0		217	0		267	0		317	1		367	0		417	0		467			
0		18	0		68	0		118	8		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	2		119	10		169	0		219	0		269	0		319	0		369	1		419	0		469			
0		20	0		70	0		120	9		170	0		220	0		270	0		320	0		370	0		420	0		470			
0		21	2		71	0		121	17		171	1		221	0		271	0		321	0		371	0		421	1		471			
0		22	1		72	0		122	17		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	26		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	19		174	0		224	0		274	0		324	0		374	0		424	0		474			
1		25	0		75	0		125	38		175	0		225	0		275	0		325	0		375	0		425	0		475			
1		26	0		76	0		126	36		176	0		226	1		276	0		326	0		376	0		426	1		476			
0		27	0		77	0		127	38		177	0		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	1		128	52		178	0		228	0		278	1		328	0		378	1		428	1		478			
0		29	0		79	1		129	63		179	0		229	0		279	0		329	0		379	0		429	0		479			
0		30	0		80	1		130	66		180	0		230	0		280	0		330	1		380	0		430	2		480			
0		31	0		81	3		131	98		181	0		231	0		281	0		331	1		381	0		431	0		481			
0		32	0		82	1		132	105		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0		133	147		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	1		134	154		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0		135	191		185	0		235	0		285	0		335	1		385	0		435	2		485			
0		36	0		86	1		136	210		186	0		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	1		137	189		187	0		237	0		287	0		337	1		387	0		437	0		487			
1		38	0		88	3		138	222		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	199		189	0		239	0		289	0		339	2		389	0		439	0		489			
0		40	1		90	0		140	244		190	0		240	0		290	0		340	1		390	0		440	0		490			
0		41	0		91	2		141	268		191	0		241	1		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	350		192	0		242	0		292	0		342	3		392	0		442	0		492			
0		43	0		93	1		143	407		193	0		243	0		293	0		343	1		393	0		443	0		493			
0		44	0		94	0		144	496		194	0		244	0		294	0		344	3		394	0		444	0		494			
0		45	0		95	2		145	616		195	0		245	0		295	0		345	1		395	0		445	0		495			
0		46	0		96	1		146	643		196	0		246	0		296	0		346	0		396	1		446	0		496			
0		47	0		97	2		147	585		197	0		247	0		297	0		347	1		397	0		447	0		497			
0		48	0		98	1		148	407		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	1		99	0		149	248		199	0		249	0		299	0		349	1		399	0		449	0		499			



0 50 1 100 3 150 80 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 25-MAY-2006 10:42:58

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2604_240561801H.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID         : DVF2604 Sample quantity : 1.0000 SAMPLE
Sample type       : disk Sample geometry :
Detector name     : ALP171 1 Detector geometry:
Elapsed live time : 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy      : 3545.25 keV End energy : 6541.26 keV
Sensitivity       : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3949.23	4	0	23.60	71.50	69	6	6.67E-05	50.0	
2	0	4678.02	6227	0	41.30	195.18	173	30	1.04E-01	1.3	

VMS Nuclide Identification Report V3.0 Generated 25-MAY-2006 10:43:00

Configuration : \$DISK1:[ALP171.SAMPLE]DVF2604\_240561801H.CNF;1  
 Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.3  
 Sample title : TH STLR  
 Sample date : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30  
 Sample ID : DVF2604 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Detector name : ALP171 1 Detector geometry:  
 Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%  
 Energy tolerance : 80.00 keV Half life ratio : 1.00  
 Errors propagated: No Systematic Error : 0.00 %  
 Efficiency type : Spline Efficiencies at : Peak Energy  
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	2	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	2	100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-232	1.41E+10Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found "M" = Manually accepted  
 "E" = Manually edited "A" = Nuclide specific abn. limit

Error Report (Date: 25-May-06 10:43 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23406A100			Ref: 5/18/2006	2.3166E+03 ± 3.168E+02	CPM/G	
DVF2601	TH-234	5.1029E+02 ± 6.979E+01 CPM	0.2647 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2602	TH-234	5.1298E+02 ± 7.016E+01 CPM	0.2661 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2603	TH-234	5.1143E+02 ± 6.994E+01 CPM	0.2653 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2604	TH-234	5.1085E+02 ± 6.987E+01 CPM	0.265 g	5/24/2006 5/24/2006	Armstron	1.9277E+03 ± 2.636E+02 CPM/G

5.1139E+002 ± 1.160E+000 ( 4) 0.227% 5.1029E+002 , 5.1298E+002

## Standard Material Fractions (Vials)

Vial Prep: 5/23/05 to 5/25/06, SMFractionIdentifier Between dvf2601 and dvf2604, Order by SMIdentifier, ConstituentCode, SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep, Decayed To Date	Prep by	Std Decayed Activity/Concentration
	Parent Standard: TH23006A100		Ref: 9/15/2004	2.1698E+01 ± 7.160E-01	DPM/G	
DVF2601	TH-230	2.2123E+01 ± 7.300E-01 DPM	1.0196 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2602	TH-230	2.2115E+01 ± 7.298E-01 DPM	1.0192 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2603	TH-230	2.2106E+01 ± 7.295E-01 DPM	1.0188 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2604	TH-230	2.2069E+01 ± 7.283E-01 DPM	1.0171 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G

2.2103E+001 ± 2.386E-002 ( 4) 0.108% 2.2069E+001 , 2.2123E+001

THORIUM  
CONTINUING CALIBRATION

Quality Assurance Report. Generated 24-DEC-2007 11:30:18.38

QA Filename : \$DISK1:[ALP171.QA]GROUP\_6\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Pu-239

Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.296080 Std Deviation : 0.016608

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.3062		
8-DEC-2007 08:07	chk		0.2951		

-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 7.291080 Std Deviation : 0.568846

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		8.1667		
8-DEC-2007 08:07	chk		8.1667		

-- Multi-Test Full Report --

Description : Centroid, Am-241

Parameter Units : channels Parameter Type : Peak



Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 348.553131      Std Deviation : 2.827286

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		348.0005	
8-DEC-2007 08:07	chk		347.5306	

17-NOV-2007 12:53	chk		348.0005	
8-DEC-2007 08:07	chk		347.5306	

## -- Multi-Test Full Report --

Description : Average Efficiency

Parameter Units : %      Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 0.500000

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.298650      Std Deviation : 0.016415

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)      Page : 2				
17-NOV-2007 12:53	chk		0.3015	
8-DEC-2007 08:07	chk		0.2980	

Quality Assurance Multi-Test Full Report (continued)      Page : 2				
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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.3015	
8-DEC-2007 08:07	chk		0.2980	

17-NOV-2007 12:53	chk		0.3015	
8-DEC-2007 08:07	chk		0.2980	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope

Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 6.040092 Std Deviation : 0.023078

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		6.0171	
8-DEC-2007 08:07	chk		6.0371	

Quality Assurance Report. Generated 24-DEC-2007 11:30:19.07

QA Filename : \$DISK1:[ALP171.QA]GROUP\_6\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000532 Std Deviation : 0.000772

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
20-NOV-2007 12:43	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000455 Std Deviation : 0.000704

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	

20-NOV-2007 12:43 bkg 0.0020 |In| |  
 9-DEC-2007 07:20 bkg 0.0020 |In| |

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000471 Std Deviation : 0.000787

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
20-NOV-2007 12:43	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000720 Std Deviation : 0.000906

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
Quality Assurance Multi-Test Full Report (continued)					Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0040	Ac	
20-NOV-2007 12:43	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000537 Std Deviation : 0.000703

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0020	In	
20-NOV-2007 12:43	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000546 Std Deviation : 0.000706

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0020	In	
20-NOV-2007 12:43	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000527 Std Deviation : 0.000704

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
20-NOV-2007 12:43	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000504 Std Deviation : 0.000790

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
20-NOV-2007 12:43	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000469 Std Deviation : 0.000766

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
20-NOV-2007 12:43	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000832 Std Deviation : 0.000975

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
20-NOV-2007 12:43	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000859 Std Deviation : 0.000856

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0020		
20-NOV-2007 12:43	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0020		

## -- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000960 Std Deviation : 0.000839

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26	bkg		0.0020		
20-NOV-2007 12:43	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0020		

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001039 Std Deviation : 0.000962

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26	bkg		0.0010		
20-NOV-2007 12:43	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0030	In	

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001686 Std Deviation : 0.001727

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26 bkg	0.0040	
20-NOV-2007 12:43 bkg	0.0030	
9-DEC-2007 07:20 bkg	0.0040	

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001941      Std Deviation : 0.001926

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26 bkg			0.0040	
20-NOV-2007 12:43 bkg			0.0040	
9-DEC-2007 07:20 bkg			0.0020	

## -- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001935      Std Deviation : 0.002086

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26 bkg			0.0040	
20-NOV-2007 12:43 bkg			0.0040	
9-DEC-2007 07:20 bkg			0.0010	

## -- Multi-Test Full Report --

Quality Assurance Multi-Test Full Report (continued)      Page : 5



Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.008198 Std Deviation : 0.015411

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0140		
20-NOV-2007 12:43	bkg		0.0110		
9-DEC-2007 07:20	bkg		0.0210		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.009844 Std Deviation : 0.018682

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0130		
20-NOV-2007 12:43	bkg		0.0060		
9-DEC-2007 07:20	bkg		0.0160		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002060 Std Deviation : 0.003974

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0030	
20-NOV-2007 12:43	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0080	

Quality Assurance Report. Generated 24-DEC-2007 11:30:06.13

QA Filename : \$DISK1:[ALP171.QA]GROUP\_2\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Pu-239  
Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.297027 Std Deviation : 0.021517

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.2888		
8-DEC-2007 08:07	chk		0.2678		

-- Multi-Test Full Report --

Description : Constant FWHM  
Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 9.482587 Std Deviation : 0.689101

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		9.5000		
8-DEC-2007 08:07	chk		9.3333		

-- Multi-Test Full Report --

Description : Centroid, Am-241  
Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 347.996307      Std Deviation : 5.321332

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		347.7343	
8-DEC-2007 08:07	chk		347.5657	

-- Multi-Test Full Report --

Description : Average Efficiency  
 Parameter Units : %      Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 0.500000

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.297009      Std Deviation : 0.023991

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.2890	
8-DEC-2007 08:07	chk		0.2789	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.2890	
8-DEC-2007 08:07	chk		0.2789	

-- Multi-Test Full Report --

Description : Energy Calibration Slope  
 Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 5.623127 Std Deviation : 0.101736

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		5.6346	
8-DEC-2007 08:07	chk		5.6543	

Quality Assurance Report. Generated 24-DEC-2007 11:30:06.82

QA Filename : \$DISK1:[ALP171.QA]GROUP\_2\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001802 Std Deviation : 0.010916

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.065107 Std Deviation : 0.658005

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.003234 Std Deviation : 0.026387

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0040	

## -- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.010143 Std Deviation : 0.092866

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.063845 Std Deviation : 0.642767

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.062984 Std Deviation : 0.634031

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.040611 Std Deviation : 0.406009

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.004790 Std Deviation : 0.039580

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
Quality Assurance Multi-Test Full Report (continued)			Page : 3	
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002193 Std Deviation : 0.013104

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
Quality Assurance Multi-Test Full Report (continued)			Page : 3	
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----



Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.066189 Std Deviation : 0.661070

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.003923 Std Deviation : 0.027905

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002645 Std Deviation : 0.013039

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002751 Std Deviation : 0.013996

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.011535 Std Deviation : 0.098185

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.058222 Std Deviation : 0.570677

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.064097      Std Deviation : 0.631346

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued)      Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.059685      Std Deviation : 0.535649

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

19-NOV-2007 05:26	bkg		0.0130	
9-DEC-2007 07:20	bkg		0.0180	

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.106312 Std Deviation : 1.004065

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0100	
9-DEC-2007 07:20	bkg		0.0060	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.067270 Std Deviation : 0.656122

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0180	
9-DEC-2007 07:20	bkg		0.0120	

Quality Assurance Report. Generated 24-DEC-2007 11:30:02.84

QA Filename : \$DISK1:[ALP171.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Pu-239

Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.296103 Std Deviation : 0.037123

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.2916		
8-DEC-2007 08:07	chk		0.2864		

-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 8.412935 Std Deviation : 0.575421

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		9.0000		
8-DEC-2007 08:07	chk		8.6667		

-- Multi-Test Full Report --

Description : Centroid, Am-241

Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 345.090668      Std Deviation : 8.566362

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		343.4313	
8-DEC-2007 08:07	chk		343.0358	

## -- Multi-Test Full Report --

Description : Average Efficiency

Parameter Units : %      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.298554      Std Deviation : 0.018716

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.2896	
8-DEC-2007 08:07	chk		0.2840	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

## -- Multi-Test Full Report --

Description : Energy Calibration Slope

Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 5.755757      Std Deviation : 0.226677

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

```
-----
17-NOV-2007 12:53  chk                5.7578  | | |
8-DEC-2007 08:07  chk                5.8186  | | |
```

Quality Assurance Report.                      Generated 24-DEC-2007 11:30:03.44

QA Filename        : \$DISK1:[ALP171.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description        : 4010, Th-232 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 1-JAN-2002 00:00 End Date        : -----  
Mean               : 0.000590            Std Deviation   : 0.000851

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

```
-----
19-NOV-2007 05:26  bkg                0.0000  | | |
9-DEC-2007 07:20  bkg                0.0010  | | |
```

-- Multi-Test Full Report --

Description        : 4196, U-238 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 1-JAN-2002 00:00 End Date        : -----  
Mean               : 0.000705            Std Deviation   : 0.001205

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

```
-----
19-NOV-2007 05:26  bkg                0.0020  | | |
9-DEC-2007 07:20  bkg                0.0000  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000534 Std Deviation : 0.000851

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000841 Std Deviation : 0.001372

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
Quality Assurance Multi-Test Full Report (continued)					Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0030		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----



Mean : 0.000698 Std Deviation : 0.000935

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----

Mean : 0.000689 Std Deviation : 0.000899

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----

Mean : 0.000832 Std Deviation : 0.001154

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000989      Std Deviation : 0.001211

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001093      Std Deviation : 0.001257

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0000		

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001445      Std Deviation : 0.001603

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001203 Std Deviation : 0.001413

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001384 Std Deviation : 0.001597

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001351 Std Deviation : 0.001703

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001856 Std Deviation : 0.001803

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0020		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002622 Std Deviation : 0.002356

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26 bkg 0.0020 | | |  
 9-DEC-2007 07:20 bkg 0.0020 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002547 Std Deviation : 0.002238

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26 bkg			0.0020		
9-DEC-2007 07:20 bkg			0.0030		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.010611 Std Deviation : 0.017995

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26 bkg			0.0070		
9-DEC-2007 07:20 bkg			0.0170		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.010602      Std Deviation : 0.017958

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0080		
9-DEC-2007 07:20	bkg		0.0050		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002415      Std Deviation : 0.004199

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0050		
9-DEC-2007 07:20	bkg		0.0090		

Quality Assurance Report. Generated 24-DEC-2007 11:30:21.80

QA Filename : \$DISK1:[ALP171.QA]GROUP\_7\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Pu-239

Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.267350 Std Deviation : 0.004271

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.2545	Ac	
8-DEC-2007 08:07	chk		0.2702		

-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 5.951691 Std Deviation : 0.397193

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		5.3333		
8-DEC-2007 08:07	chk		6.5000		

-- Multi-Test Full Report --

Description : Centroid, Am-241

Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 337.652405      Std Deviation : 2.839149

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		337.4452	
8-DEC-2007 08:07	chk		337.4210	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 0.500000

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.267955      Std Deviation : 0.002938

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.2651	
8-DEC-2007 08:07	chk		0.2698	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.2651	
8-DEC-2007 08:07	chk		0.2698	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00



Mean : 5.649283 Std Deviation : 0.022881

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		5.6629	
8-DEC-2007 08:07	chk		5.6332	

Quality Assurance Report. Generated 24-DEC-2007 11:30:22.50

QA Filename : \$DISK1:[ALP171.QA]GROUP\_7\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000313 Std Deviation : 0.000565

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000225 Std Deviation : 0.000528

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000225 Std Deviation : 0.000450

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000325 Std Deviation : 0.000612

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
Quality Assurance Multi-Test Full Report (continued)					
					Page : 2
19-NOV-2007 05:26	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000263 Std Deviation : 0.000546

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000225 Std Deviation : 0.000477

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000188 Std Deviation : 0.000393

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000213 Std Deviation : 0.000442

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
Quality Assurance Multi-Test Full Report (continued)				Page : 3
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000263 Std Deviation : 0.000497

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
Quality Assurance Multi-Test Full Report (continued)				Page : 3
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000488 Std Deviation : 0.000901

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000250 Std Deviation : 0.000607

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000313 Std Deviation : 0.000687

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000338 Std Deviation : 0.000763

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000300 Std Deviation : 0.000645

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000651 Std Deviation : 0.000888

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000651      Std Deviation : 0.000916

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued)      Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004480      Std Deviation : 0.007680

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

19-NOV-2007 05:26	bkg		0.0090	
9-DEC-2007 07:20	bkg		0.0180	

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.006532 Std Deviation : 0.011497

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0090	
9-DEC-2007 07:20	bkg		0.0110	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001376 Std Deviation : 0.002681

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0030	
9-DEC-2007 07:20	bkg		0.0010	



URANIUM ISOTOPIC  
SAMPLE AND QC DATA

Lot No., Due Date: F7K190152; 12/18/2007  
 Client, Site: 445691; Phs2 Smplng Tronox Prcl CDFG  
 QC Batch No., Method Test: 7327115; RUIISO Ulso by ALP  
 SDG, Matrix: TRNC/D-6RD; .....

**PRIORITY**

**1.0 COC**

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A

**2.0 QC Batch**

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A

2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A

**3.0 QC & Samples**

3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A

3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A

3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A

**4.0 Raw Data**

4.1 Were results calculated in the correct units?  Yes  No  N/A

4.2 Were analysis volumes entered correctly?  Yes  No  N/A

4.3 Were Yields entered correctly?  Yes  No  N/A

4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A

4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A

**5.0 Other**

5.1 Are all nonconformances included and noted?  Yes  No  N/A

5.2 Are all required forms filled out?  Yes  No  N/A

5.3 Was the correct methodology used?  Yes  No  N/A

5.4 Was transcription checked?  Yes  No  N/A

5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A

5.6 Are worksheet entries complete and correct?  Yes  No  N/A

6.0 Comments on any No response:

First Level Review *John Harton* Date 12-18-07

## Data Review Checklist RADIOCHEMISTRY Second Level Review

Batch Number: 7327115

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Second Level Review: Erika Ford Date: 12/20/07

12/5/2007 8:47:50 PM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
 AnalyzeDate: 12/12/2007  
 Batch: 7327115  
 SEQ Batch, Test: None  
 pCi/g  
 PM, Quote: JAE, 77571  
 Prep Tech: , WoodT  
 Balance Id:1120373922  
 Pipet #:   
 7U Uiso PpRC5013, SepRC5079(5039)  
 SR Uranium-234,235,238 by Alpha Spec  
 01 STANDARD TEST SET  
 P  
 3p1 DT/Tm Tech:  
 Sep2 DT/Tm Tech:

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 KCKD6-1-AD	2.00g.in	2.00g	2.00g	UITC18967	11/27/07.pd 05/05/87.r	200				
F7K190152-1-SAMP 11/16/2007 06:40	AmtRec: 500SL #Containers: 1						Scr:	Alpha:		Beta:
2 KCKD8-1-AD	2.01g.in	2.01g	2.01g	UITC18968	11/27/07.pd 05/05/87.r					
F7K190152-2-SAMP 11/16/2007 07:05	AmtRec: 500SL #Containers: 1						Scr:	Alpha:		Beta:
3 KCKD9-1-AD	2.01g.in	2.01g	2.01g	UITC18969	11/27/07.pd 05/05/87.r					
F7K190152-3-SAMP 11/16/2007 07:35	AmtRec: 500SL #Containers: 1						Scr:	Alpha:		Beta:
4 KCKEA-1-AD	2.04g.in	2.04g	2.04g	UITC18970	11/27/07.pd 05/05/87.r					
F7K190152-4-SAMP 11/16/2007 07:50	AmtRec: 500SL #Containers: 1						Scr:	Alpha:		Beta:
5 KCKEA-1-AE-X	2.02g.in	2.02g	2.02g	UITC18971	11/27/07.pd 05/05/87.r					
F7K190152-4-DUP 11/16/2007 07:50	AmtRec: 500SL #Containers: 1						Scr:	Alpha:		Beta:
6 KCKEC-1-AD	2.00g.in	2.00g	2.00g	UITC18972	11/27/07.pd 05/05/87.r					
F7K190152-5-SAMP 11/16/2007 08:15	AmtRec: 500SL #Containers: 1						Scr:	Alpha:		Beta:
7 KCKED-1-AD	2.01g.in	2.01g	2.01g	UITC18973	11/27/07.pd 05/05/87.r					
F7K190152-6-SAMP 11/16/2007 08:15	AmtRec: 500SL #Containers: 1						Scr:	Alpha:		Beta:

12/5/2007 8:47:54 PM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
**AnalyteDueDate: 12/12/2007**  
 Balance Id: 1120373922  
 Pipet #: \_\_\_\_\_  
 Sep1 DT/Tm Tech: \_\_\_\_\_  
 Sep2 DT/Tm Tech: \_\_\_\_\_  
 Prep Tech: ,Barcott

7U Uiso PpRC5013, SepRC5079(5039)  
 SR Uranium-234,235,238 by Alpha Spec  
 01 STANDARD TEST SET  
 PM, Quote: JAE, 77571

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 KCKEE-1-AD	2.02g.in	2.02g	2.02g.in	2.02g	UITS18974	200				
F7K190152-7-SAMP					11/27/07.pd					
11/16/2007 08:50					05/05/87.r					
9 KCKEG-1-AD	2.03g.in	2.03g	2.03g.in	2.03g	UITS18975					
F7K190152-8-SAMP					11/27/07.pd					
11/16/2007 10:20					05/05/87.r					
10 KCKEJ-1-AD	2.01g.in	2.01g	2.01g.in	2.01g	UITS18976					
F7K190152-9-SAMP					11/27/07.pd					
11/16/2007 10:40					05/05/87.r					
11 KCKEK-1-AD	2.01g.in	2.01g	2.01g.in	2.01g	UITS18977					
F7K190152-10-SAMP					11/27/07.pd					
11/16/2007 11:15					05/05/87.r					
12 KCKEL-1-AD	2.02g.in	2.02g	2.02g.in	2.02g	UITS18978					
F7K190152-11-SAMP					11/27/07.pd					
11/16/2007 11:25					05/05/87.r					
13 KCKEM-1-AD	2.01g.in	2.01g	2.01g.in	2.01g	UITS18979					
F7K190152-12-SAMP					11/27/07.pd					
11/16/2007 09:16					05/05/87.r					
14 KCKEM-1-AG-X	2.03g.in	2.03g	2.03g.in	2.03g	UITS18980					
F7K190152-12-DUP					11/27/07.pd					
11/16/2007 09:16					05/05/87.r					

12/5/2007 8:47:57 PM  
 445691, Basic Remediation Company  
 Basic Remediation Company

Sample Preparation/Analysis  
 7U Uiso PrpRC5013, SepRC5079(5039)  
 SR Uranium-234,235,238 by Alpha Spec  
 01 STANDARD TEST SET

Balance Id:1120373922  
 Pipet #:  
 Sep1 DT/Tm Tech:

PM, Quote: JAE, 77571

Batch: 7327115  
 SEQ Batch, Test: None

Prep Tech: , WoodT

Count On | Off  
 (24hr) Circle

CR Analyst,  
 Int/Date

Comments:

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Alpha	Beta
15 KCKET-1-AD	2.01g.in	2.01g	UITC18981	11/27/07.pd 05/05/87.r	200				
F7K190152-13-SAMP	2.03g.in	2.03g	UITC18982	11/27/07.pd 05/05/87.r					
16 KCKE1-1-AD	2.03g.in	2.03g	UITC18983	11/27/07.pd 05/05/87.r					
F7K190152-14-SAMP	2.03g.in	2.03g	UITC18984	11/27/07.pd 05/05/87.r					
17 KCKE2-1-AD	2.03g.in	2.03g	UISG1545	11/27/07.pd 05/05/87.r					
F7K190152-15-SAMP	2.01g.in	2.01g	UISG1545	11/27/07.pd 05/05/87.r					
18 KCR6K-1-AA-B	2.03g.in	2.03g							
F7K230000-115-BLK	2.01g.in	2.01g							
19 KCR6K-1-AC-C	2.01g.in	2.01g							
F7K230000-115-LCS	2.01g.in	2.01g							

Comments: Samples have been crushed 12/5/07 JMW

All Clients for Batch:  
 445691, Basic Remediation Company  
 Basic Remediation Company , JAE, 77571

KCKD61AD-SAMP Constituent List:

TA Richland Key: In - Initial Amt. fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 3  
 Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

WO Cnt: 19  
 Prep\_SamplePrep v4.8.29

# ICOC Fraction Transfer/Status Report

ByDate: 12/18/2006, 12/23/2007, Batch: '7327115', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>7327115</b>				
AC	CalcC	WoodT	12/5/2007 8:47:53 PM	
SC		antonsonl	IsBatched	11/23/2007 10:46:18 AM
SC		WoodT	InPrep	12/5/2007 8:47:53 PM
SC		WoodT	Prep1C	12/5/2007 8:48:02 PM
SC		WoodT	InPrep2	12/5/2007 8:48:13 PM
SC		WoodT	Prep2C	12/5/2007 8:48:50 PM
SC		AshworthA	Sep1C	12/11/2007 10:21:08 AM
SC		AshworthA	Sep2C	12/17/2007 11:16:29 AM
SC		DAWKINSO	CalcC	12/17/2007 10:05:42 PM
AC		WoodT	12/5/2007 8:48:02 PM	ICOC_RADCALC v4.8.29
AC		WoodT	12/5/2007 8:48:13 PM	RICH-RC-5013 REVISION 7
AC		WoodT	12/5/2007 8:48:50 PM	RICH-RC-5013 REVISION 7
AC		AshworthA	12/11/2007 10:21:08	RICH-RC-5086 REVISION 3
AC		AshworthA	12/17/2007 11:16:29	RICH-RC-5086 REVISION 3
AC		DAWKINSO	12/17/2007 10:05:42	RICH-RC-5067 REV8
				RICH-RC-5039 REV5
				RICH-RD-0008 REVISION 4

AC: Accepting Entry; SC: Status Change

STL Richland  
Richland Wa.

# Rpt DB Transfer log (Batch Results)

SDG or Batch	Rpt Db Id	LotSample	Client Id	Matrix	Received Date	Sample Date			Volumes	
Isotope	Method	RTst Qc	Analysis Date	Result	Cnt Uncert	Tot Uncert	mgg	Unrs	Expected Yield	
<b>TRNC/D-6RD</b>	<b>9KCKD610</b>	<b>F7K1901521</b>	TSB-FJ-08-0'	SOLID	11/19/2007 8:45:00	11/16/2007 6:40:00 AM				
TH-228	D2S1	0	12/10/2007 10:33:09	1.7833E+00	1.267E-01	1.903E-01	6.149E-02	pCi/g	0.963	1.01E+0
TH-230	D2S1	0	12/10/2007 10:33:09	9.2475E-01	9.001E-02	1.163E-01	4.186E-02	pCi/g	0.963	1.01E+0
TH-232	D2S1	0	12/10/2007 10:33:09	1.8932E+00	1.288E-01	1.983E-01	4.939E-02	pCi/g	0.963	1.01E+0
U-234	7USR	0	12/17/2007 2:24:43	PM2.506E-01	2.725E-02	3.396E-02	1.416E-02	pCi/g	0.999	2.0E+0
U-235	7USR	0	12/17/2007 2:24:43	PM-5.9142E-04	3.014E-03	3.014E-03	1.416E-02	pCi/g	0.999	2.0E+0
U-238	7USR	0	12/17/2007 2:24:43	PM2.4469E-01	2.693E-02	3.341E-02	1.416E-02	pCi/g	0.999	2.0E+0
<b>TRNC/D-6RD</b>	<b>9KCKD810</b>	<b>F7K1901522</b>	TSB-FJ-08-10'	SOLID	11/19/2007 8:45:00	11/16/2007 7:05:00 AM				
TH-228	D2S1	0	12/10/2007 2:17:09	PM1.6249E+00	1.354E-01	1.875E-01	6.35E-02	pCi/g	0.803	1.0E+0
TH-230	D2S1	0	12/10/2007 2:17:09	PM1.1826E+00	1.14E-01	1.48E-01	5.254E-02	pCi/g	0.803	1.0E+0
TH-232	D2S1	0	12/10/2007 2:17:09	PM1.6543E+00	1.348E-01	1.887E-01	5.254E-02	pCi/g	0.803	1.0E+0
U-234	7USR	0	12/17/2007 2:24:48	PM1.177E+00	6.29E-02	1.152E-01	1.897E-02	pCi/g	0.927	2.01E+0
U-235	7USR	0	12/17/2007 2:24:48	PM3.5586E-02	1.117E-02	1.155E-02	1.897E-02	pCi/g	0.927	2.01E+0
U-238	7USR	0	12/17/2007 2:24:48	PM7.1977E-01	4.924E-02	7.684E-02	2.119E-02	pCi/g	0.927	2.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKD910</b>	<b>F7K1901523</b>	TSB-FR-05-0'	SOLID	11/19/2007 8:45:00	11/16/2007 7:35:00 AM				
TH-228	D2S1	0	12/10/2007 2:17:09	PM1.5819E+00	1.199E-01	1.738E-01	4.354E-02	pCi/g	0.959	1.02E+0
TH-230	D2S1	0	12/10/2007 2:17:09	PM1.1342E+00	1.004E-01	1.35E-01	4.251E-02	pCi/g	0.959	1.02E+0
TH-232	D2S1	0	12/10/2007 2:17:09	PM1.4626E+00	1.14E-01	1.629E-01	4.251E-02	pCi/g	0.959	1.02E+0
U-234	7USR	0	12/17/2007 6:20:07	PM2.9746E-01	3.057E-02	3.898E-02	1.968E-02	pCi/g	0.956	2.01E+0
U-235	7USR	0	12/17/2007 6:20:07	PM7.483E-03	5.508E-03	5.541E-03	1.968E-02	pCi/g	0.956	2.01E+0
U-238	7USR	0	12/17/2007 6:20:07	PM1.7087E-01	2.338E-02	2.72E-02	2.433E-02	pCi/g	0.956	2.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKE110</b>	<b>F7K19015214</b>	TSB-GJ-01-0'	SOLID	11/19/2007 8:45:00	11/16/2007 11:50:00 AM				
TH-228	D2S1	0	12/11/2007 7:13:27	PM1.4668E+00	1.214E-01	1.685E-01	4.812E-02	pCi/g	0.878	1.01E+0
TH-230	D2S1	0	12/11/2007 7:13:27	PM1.1247E+00	1.051E-01	1.381E-01	4.692E-02	pCi/g	0.878	1.01E+0
TH-232	D2S1	0	12/11/2007 7:13:27	PM1.4383E+00	1.188E-01	1.65E-01	4.692E-02	pCi/g	0.878	1.01E+0
U-234	7USR	0	12/17/2007 6:05:40	PM4.3885E-01	3.839E-02	5.263E-02	2.108E-02	pCi/g	0.923	2.03E+0
U-235	7USR	0	12/17/2007 6:05:40	PM8.6833E-03	5.861E-03	5.904E-03	1.887E-02	pCi/g	0.923	2.03E+0
U-238	7USR	0	12/17/2007 6:05:40	PM2.959E-01	3.152E-02	3.979E-02	1.887E-02	pCi/g	0.923	2.03E+0
<b>TRNC/D-6RD</b>	<b>9KCKE210</b>	<b>F7K19015215</b>	TSB-GJ-01-5'	SOLID	11/19/2007 8:45:00	11/16/2007 12:10:00 PM				
TH-228	D2S1	0	12/11/2007 7:13:27	PM1.8648E+00	1.289E-01	1.965E-01	6.094E-02	pCi/g	0.954	1.03E+0
TH-230	D2S1	0	12/11/2007 7:13:27	PM1.1922E+00	1.016E-01	1.39E-01	4.144E-02	pCi/g	0.954	1.03E+0
TH-232	D2S1	0	12/11/2007 7:13:27	PM1.7286E+00	1.224E-01	1.84E-01	4.144E-02	pCi/g	0.954	1.03E+0
U-234	7USR	0	12/17/2007 6:21:21	PM5.4504E-01	4.207E-02	6.126E-02	2.374E-02	pCi/g	0.833	2.03E+0
U-235	7USR	0	12/17/2007 6:21:21	PM2.5156E-02	9.145E-03	9.373E-03	1.545E-02	pCi/g	0.833	2.03E+0
U-238	7USR	0	12/17/2007 6:21:21	PM2.3543E-01	2.778E-02	3.379E-02	2.374E-02	pCi/g	0.833	2.03E+0
<b>TRNC/D-6RD</b>	<b>9KCKEA10</b>	<b>F7K1901524</b>	TSB-FR-05-10'	SOLID	11/19/2007 8:45:00	11/16/2007 7:50:00 AM				
TH-228	D2S1	0	12/10/2007 2:17:09	PM1.6255E+00	1.221E-01	1.778E-01	6.266E-02	pCi/g	0.927	1.03E+0
TH-230	D2S1	0	12/10/2007 2:17:09	PM1.138E+00	1.008E-01	1.354E-01	4.265E-02	pCi/g	0.927	1.03E+0
TH-232	D2S1	0	12/10/2007 2:17:09	PM1.5192E+00	1.165E-01	1.678E-01	5.032E-02	pCi/g	0.927	1.03E+0
U-234	7USR	0	12/17/2007 6:21:01	PM8.7355E-01	5.439E-02	9.001E-02	2.763E-02	pCi/g	0.872	2.04E+0
U-235	7USR	0	12/17/2007 6:21:01	PM2.6247E-02	9.541E-03	9.782E-03	1.612E-02	pCi/g	0.872	2.04E+0
U-238	7USR	0	12/17/2007 6:21:01	PM5.5926E-01	4.351E-02	6.325E-02	2.312E-02	pCi/g	0.872	2.04E+0
<b>TRNC/D-6RD</b>	<b>9KCKEC10</b>	<b>F7K1901525</b>	TSB-FR-04-0'	SOLID	11/19/2007 8:45:00	11/16/2007 8:15:00 AM				
TH-228	D2S1	0	12/10/2007 2:17:09	PM1.5965E+00	1.323E-01	1.834E-01	5.244E-02	pCi/g	0.985	1.01E+0
TH-230	D2S1	0	12/10/2007 2:17:09	PM1.1117E+00	1.09E-01	1.404E-01	5.12E-02	pCi/g	0.985	1.01E+0
TH-232	D2S1	0	12/10/2007 2:17:09	PM1.6889E+00	1.344E-01	1.9E-01	5.12E-02	pCi/g	0.985	1.01E+0
U-234	7USR	0	12/17/2007 2:25:09	PM5.2651E-01	4.073E-02	5.908E-02	1.775E-02	pCi/g	0.936	2.0E+0
U-235	7USR	0	12/17/2007 2:25:09	PM5.6544E-03	4.487E-03	4.51E-03	1.505E-02	pCi/g	0.936	2.0E+0
U-238	7USR	0	12/17/2007 2:25:09	PM2.821E-01	2.981E-02	3.761E-02	1.505E-02	pCi/g	0.936	2.0E+0
<b>TRNC/D-6RD</b>	<b>9KCKED10</b>	<b>F7K1901526</b>	TSB-FR-04-0'-FD	SOLID	11/19/2007 8:45:00	11/16/2007 8:15:00 AM				
TH-228	D2S1	0	12/10/2007 6:11:09	PM1.5166E+00	1.398E-01	1.849E-01	8.085E-02	pCi/g	0.684	1.03E+0
TH-230	D2S1	0	12/10/2007 6:11:09	PM9.7021E-01	1.105E-01	1.349E-01	7.065E-02	pCi/g	0.684	1.03E+0

7327115, \*\*Samples Inserted | Updated | NotUpdated => 4 | 0 | 15,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 56 | 0 | 0 | 0.  
 \*\*Diff RptDb | Qtimes => .



SDG or Batch	Rpt Db Id	LotSample	Client Id	Matrix	Received Date	Sample Date	Yield	Volumes		
Isotope	Method	RTst Qc	Analysis Date	Result	Cnt Uncert	Tot Uncert	mgg	Unirs	Expected	
TH-232	D2S1	0	12/10/2007 6:11:09 PM	1.5478E+00	1.392E-01	1.861E-01	5.988E-02	pCi/g	0.684	1.03E+0
U-234	7USR	0	12/17/2007 2:25:13 PM	6.622E-01	4.743E-02	7.215E-02	1.626E-02	pCi/g	0.884	2.01E+0
U-235	7USR	0	12/17/2007 2:25:13 PM	1.3584E-02	6.826E-03	6.916E-03	1.626E-02	pCi/g	0.884	2.01E+0
U-238	7USR	0	12/17/2007 2:25:13 PM	3.7694E-01	3.578E-02	4.731E-02	1.626E-02	pCi/g	0.884	2.01E+0
<b>TRNC/D-6RD 9KCKEE10</b>			<b>F7K1901527</b>	TSB-FR-04-10'	SOLID		11/19/2007 8:45:00		11/16/2007 8:50:00 AM	
TH-228	D2S1	0	12/10/2007 6:11:09 PM	1.8915E+00	1.78E-01	2.34E-01	8.017E-02	pCi/g	0.532	1.0E+0
TH-230	D2S1	0	12/10/2007 6:11:09 PM	1.0424E+00	1.308E-01	1.552E-01	7.825E-02	pCi/g	0.532	1.0E+0
TH-232	D2S1	0	12/10/2007 6:11:09 PM	1.3202E+00	1.471E-01	1.813E-01	7.825E-02	pCi/g	0.532	1.0E+0
U-234	7USR	0	12/17/2007 2:25:21 PM	5.501E-01	4.207E-02	6.152E-02	1.541E-02	pCi/g	0.892	2.02E+0
U-235	7USR	0	12/17/2007 2:25:21 PM	6.434E-03	4.595E-03	4.625E-03	1.541E-02	pCi/g	0.892	2.02E+0
U-238	7USR	0	12/17/2007 2:25:21 PM	2.9596E-01	3.086E-02	3.919E-02	1.541E-02	pCi/g	0.892	2.02E+0
<b>TRNC/D-6RD 9KCKEG10</b>			<b>F7K1901528</b>	TSB-GR-01-0'	SOLID		11/19/2007 8:45:00		11/16/2007 10:20:00 AM	
TH-228	D2S1	0	12/10/2007 6:11:09 PM	2.2258E+00	1.644E-01	2.421E-01	8.3E-02	pCi/g	0.7	1.03E+0
TH-230	D2S1	0	12/10/2007 6:11:09 PM	1.2834E+00	1.232E-01	1.602E-01	5.649E-02	pCi/g	0.7	1.03E+0
TH-232	D2S1	0	12/10/2007 6:11:09 PM	1.9651E+00	1.525E-01	2.187E-01	6.665E-02	pCi/g	0.7	1.03E+0
U-234	7USR	0	12/17/2007 2:25:24 PM	4.5721E-01	4.264E-02	5.73E-02	1.904E-02	pCi/g	0.738	2.03E+0
U-235	7USR	0	12/17/2007 2:25:24 PM	7.9515E-04	4.054E-03	4.055E-03	1.904E-02	pCi/g	0.738	2.03E+0
U-238	7USR	0	12/17/2007 2:25:24 PM	3.4191E-01	3.688E-02	4.668E-02	1.904E-02	pCi/g	0.738	2.03E+0
<b>TRNC/D-6RD 9KCKEJ10</b>			<b>F7K1901529</b>	TSB-GR-01-5'	SOLID		11/19/2007 8:45:00		11/16/2007 10:40:00 AM	
TH-228	D2S1	0	12/10/2007 6:11:09 PM	1.6707E+00	1.446E-01	1.965E-01	5.981E-02	pCi/g	0.855	1.02E+0
TH-230	D2S1	0	12/10/2007 6:11:09 PM	1.158E+00	1.188E-01	1.504E-01	5.838E-02	pCi/g	0.855	1.02E+0
TH-232	D2S1	0	12/10/2007 6:11:09 PM	1.4627E+00	1.335E-01	1.772E-01	5.838E-02	pCi/g	0.855	1.02E+0
U-234	7USR	0	12/17/2007 2:25:40 PM	2.4435E-01	2.875E-02	3.503E-02	2.293E-02	pCi/g	0.932	2.01E+0
U-235	7USR	0	12/17/2007 2:25:40 PM	1.6691E-02	7.494E-03	7.618E-03	1.599E-02	pCi/g	0.932	2.01E+0
U-238	7USR	0	12/17/2007 2:25:40 PM	1.629E-01	2.338E-02	2.692E-02	1.599E-02	pCi/g	0.932	2.01E+0
<b>TRNC/D-6RD 9KCKEK10</b>			<b>F7K19015210</b>	TSB-GJ-06-0'	SOLID		11/19/2007 8:45:00		11/16/2007 11:15:00 AM	
TH-228	D2S1	0	12/11/2007 3:25:19 PM	2.3259E+00	1.506E-01	2.386E-01	6.132E-02	pCi/g	0.92	1.01E+0
TH-230	D2S1	0	12/11/2007 3:25:19 PM	1.3797E+00	1.145E-01	1.587E-01	5.355E-02	pCi/g	0.92	1.01E+0
TH-232	D2S1	0	12/11/2007 3:25:19 PM	1.8649E+00	1.33E-01	1.993E-01	4.539E-02	pCi/g	0.92	1.01E+0
U-234	7USR	0	12/17/2007 2:25:59 PM	5.5858E-01	4.123E-02	6.126E-02	1.456E-02	pCi/g	0.904	2.01E+0
U-235	7USR	0	12/17/2007 2:25:59 PM	2.7351E-02	9.137E-03	9.403E-03	1.456E-02	pCi/g	0.904	2.01E+0
U-238	7USR	0	12/17/2007 2:25:59 PM	3.1788E-01	3.115E-02	4.044E-02	1.717E-02	pCi/g	0.904	2.01E+0
<b>TRNC/D-6RD 9KCKEL10</b>			<b>F7K19015211</b>	TSB-GJ-06-5'	SOLID		11/19/2007 8:45:00		11/16/2007 11:25:00 AM	
TH-228	D2S1	0	12/11/2007 3:25:19 PM	1.7488E+00	1.473E-01	2.03E-01	5.94E-02	pCi/g	0.704	1.02E+0
TH-230	D2S1	0	12/11/2007 3:25:19 PM	1.1226E+00	1.167E-01	1.471E-01	5.794E-02	pCi/g	0.704	1.02E+0
TH-232	D2S1	0	12/11/2007 3:25:19 PM	1.546E+00	1.369E-01	1.843E-01	5.794E-02	pCi/g	0.704	1.02E+0
U-234	7USR	0	12/17/2007 2:26:02 PM	3.2565E-01	3.512E-02	4.436E-02	1.814E-02	pCi/g	0.768	2.02E+0
U-235	7USR	0	12/17/2007 2:26:02 PM	3.0293E-03	3.862E-03	3.87E-03	1.814E-02	pCi/g	0.768	2.02E+0
U-238	7USR	0	12/17/2007 2:26:02 PM	2.84E-01	3.28E-02	4.043E-02	1.814E-02	pCi/g	0.768	2.02E+0
<b>TRNC/D-6RD 9KCKEM10</b>			<b>F7K19015212</b>	TSB-FJ-01-0'	SOLID		11/19/2007 8:45:00		11/16/2007 9:16:00 AM	
TH-228	D2S1	0	12/11/2007 3:25:19 PM	2.1224E+00	1.45E-01	2.226E-01	6.774E-02	pCi/g	0.858	1.03E+0
TH-230	D2S1	0	12/11/2007 3:25:19 PM	1.3543E+00	1.142E-01	1.571E-01	4.607E-02	pCi/g	0.858	1.03E+0
TH-232	D2S1	0	12/11/2007 3:25:19 PM	1.8333E+00	1.33E-01	1.974E-01	5.435E-02	pCi/g	0.858	1.03E+0
U-234	7USR	0	12/17/2007 2:26:40 PM	6.1002E-01	4.431E-02	6.665E-02	1.604E-02	pCi/g	0.961	2.01E+0
U-235	7USR	0	12/17/2007 2:26:40 PM	1.8516E-02	7.887E-03	8.03E-03	1.604E-02	pCi/g	0.961	2.01E+0
U-238	7USR	0	12/17/2007 2:26:40 PM	4.6137E-01	3.858E-02	5.391E-02	1.907E-02	pCi/g	0.961	2.01E+0
<b>TRNC/D-6RD 9KCKET10</b>			<b>F7K19015213</b>	TSB-FJ-01-10'	SOLID		11/19/2007 8:45:00		11/16/2007 9:50:00 AM	
TH-228	D2S1	0	12/11/2007 7:13:27 PM	1.4771E+00	1.224E-01	1.697E-01	6.368E-02	pCi/g	0.887	1.01E+0
TH-230	D2S1	0	12/11/2007 7:13:27 PM	1.159E+00	1.069E-01	1.412E-01	4.712E-02	pCi/g	0.887	1.01E+0
TH-232	D2S1	0	12/11/2007 7:13:27 PM	1.8673E+00	1.356E-01	2.012E-01	4.712E-02	pCi/g	0.887	1.01E+0
U-234	7USR	0	12/17/2007 6:05:31 PM	3.4355E-01	3.552E-02	4.552E-02	1.754E-02	pCi/g	0.802	2.01E+0
U-235	7USR	0	12/17/2007 6:05:31 PM	1.3918E-02	7.362E-03	7.452E-03	1.754E-02	pCi/g	0.802	2.01E+0
U-238	7USR	0	12/17/2007 6:05:31 PM	1.8606E-01	2.617E-02	3.037E-02	1.754E-02	pCi/g	0.802	2.01E+0
<b>TRNC/D-6RD KCKEA1ER</b>			<b>F7K1901524</b>	TSB-FR-05-10' DUP	SOLID		11/19/2007 8:45:00		11/16/2007 7:50:00 AM	

7327115, \*\*Samples Inserted | Updated | NotUpdated => 4 | 0 | 15,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 56 | 0 | 0 | 0.  
 \*\*Diff RptDb | Qtims => .

SDG or Batch	Rpt Db Id	LotSample	Client Id	Matrix	Received Date	Sample Date					
Isotope	Method	RTst Qc	Analysis Date	Result	Cnt Uncert	Tot uncert	mga	Unrs	Expected	Yield	Volumes
U-234	7USR	0 R	12/17/2007 2:25:05 PM	7.7866E-01	5.437E-02	8.453E-02	2.14E-02	pCi/g		0.712	2.02E+0
U-235	7USR	0 R	12/17/2007 2:25:05 PM	1.8179E-02	8.502E-03	8.636E-03	1.814E-02	pCi/g		0.712	2.02E+0
U-238	7USR	0 R	12/17/2007 2:25:05 PM	4.7113E-01	4.257E-02	5.784E-02	3.254E-02	pCi/g		0.712	2.02E+0
<b>TRNC/D-6RD</b>	<b>KCKEM1GR</b>		<b>F7K19015212</b>	TSB-FJ-01-0' DUP	SOLID		11/19/2007 8:45:00		11/16/2007 9:16:00 AM		
U-234	7USR	0 R	12/17/2007 2:26:55 PM	7.7863E-01	5.954E-02	8.928E-02	1.833E-02	pCi/g		0.947	2.03E+0
U-235	7USR	0 R	12/17/2007 2:26:55 PM	3.0415E-02	1.207E-02	1.235E-02	2.432E-02	pCi/g		0.947	2.03E+0
U-238	7USR	0 R	12/17/2007 2:26:55 PM	4.7774E-01	4.666E-02	6.199E-02	1.833E-02	pCi/g		0.947	2.03E+0
<b>TRNC/D-6RD</b>	<b>KCR6K1AB</b>		<b>J7K230000115</b>	INTRA-LAB BLANK	SOLID		11/19/2007 8:45:00		11/16/2007 7:50:00 AM		
U-234	7USR	0 B	12/17/2007 6:21:33 PM	2.2156E-03	3.908E-03	3.912E-03	2.331E-02	pCi/g		0.785	2.03E+0
U-235	7USR	0 B	12/17/2007 6:21:33 PM	7.3853E-04	3.766E-03	3.766E-03	1.769E-02	pCi/g		0.785	2.03E+0
U-238	7USR	0 B	12/17/2007 6:21:33 PM	7.3853E-04	3.766E-03	3.766E-03	1.769E-02	pCi/g		0.785	2.03E+0
<b>TRNC/D-6RD</b>	<b>KCR6K1CS</b>		<b>J7K230000115</b>	INTRA-LAB CHECK	SOLID		11/19/2007 8:45:00		11/16/2007 7:50:00 AM		
U-234	7USR	0 S	12/17/2007 6:21:46 PM	8.0875E-01	4.954E-02	8.216E-02	1.452E-02	pCi/g	8.6262E-01	0.99	2.01E+0
U-238	7USR	0 S	12/17/2007 6:21:46 PM	8.9726E-01	5.216E-02	8.949E-02	1.452E-02	pCi/g	9.0342E-01	0.99	2.01E+0

7327115, \*\*Samples Inserted | Updated | NotUpdated => 4 | 0 | 15,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 56 | 0 | 0 | 0.  
 \*\*Diff RptDb | Qtimes => .

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	*MLcC	MDC	QC Trc	Yld	LCS Yld
Ulso by ALP														
Richland Standard Alplso Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71														
Calc	SR	SOLID	KCKD61AD	U-234	2.51E-01	(3.40E-02)		pCi/g	R	3.08E-03	1.42E-02		100%	
Calc	SR	SOLID	KCKD61AD	U-235	-5.91E-04	(3.01E-03)	U4	pCi/g	R	3.08E-03	1.42E-02		100%	
Calc	SR	SOLID	KCKD61AD	U-238	2.45E-01	(3.34E-02)		pCi/g	R	3.08E-03	1.42E-02		100%	
Calc	SR	SOLID	KCKD81AD	U-234	1.18E+00	(1.15E-01)		pCi/g	R	4.94E-03	1.90E-02		93%	
Calc	SR	SOLID	KCKD81AD	U-235	3.56E-02	(1.15E-02)		pCi/g	R	4.94E-03	1.90E-02		93%	
Calc	SR	SOLID	KCKD81AD	U-238	7.20E-01	(7.68E-02)		pCi/g	R	6.05E-03	2.12E-02		93%	
Calc	SR	SOLID	KCKD91AD	U-234	2.97E-01	(3.90E-02)		pCi/g	R	5.62E-03	1.97E-02		96%	
Calc	SR	SOLID	KCKD91AD	U-235	7.48E-03	(5.54E-03)	U4	pCi/g	R	5.62E-03	1.97E-02		96%	
Calc	SR	SOLID	KCKD91AD	U-238	1.71E-01	(2.72E-02)		pCi/g	R	7.95E-03	2.43E-02		96%	
Calc	SR	SOLID	KCKEA1AD	U-234	8.74E-01	(9.00E-02)		pCi/g	R	9.26E-03	2.76E-02		87%	
Calc	SR	SOLID	KCKEA1AD	U-235	2.62E-02	(9.78E-03)		pCi/g	R	3.50E-03	1.61E-02		87%	
Calc	SR	SOLID	KCKEA1AD	U-238	5.59E-01	(6.33E-02)		pCi/g	R	7.00E-03	2.31E-02		87%	
Calc	SR	SOLID	KCKEA1AE	U-234	7.79E-01	(8.45E-02)		pCi/g	R	5.57E-03	2.14E-02	R	71%	
Calc	SR	SOLID	KCKEA1AE	U-235	1.82E-02	(8.64E-03)		pCi/g	R	3.94E-03	1.81E-02	R	71%	
Calc	SR	SOLID	KCKEA1AE	U-238	4.71E-01	(5.78E-02)		pCi/g	R	1.11E-02	3.25E-02	R	71%	
Calc	SR	SOLID	KCKEC1AD	U-234	5.27E-01	(5.91E-02)		pCi/g	R	4.62E-03	1.78E-02		94%	
Calc	SR	SOLID	KCKEC1AD	U-235	5.65E-03	(4.51E-03)	U4	pCi/g	R	3.27E-03	1.50E-02		94%	
Calc	SR	SOLID	KCKEC1AD	U-238	2.82E-01	(3.76E-02)		pCi/g	R	3.27E-03	1.50E-02		94%	
Calc	SR	SOLID	KCKED1AD	U-234	6.62E-01	(7.22E-02)		pCi/g	R	3.53E-03	1.63E-02		88%	
Calc	SR	SOLID	KCKED1AD	U-235	1.36E-02	(6.92E-03)		pCi/g	R	3.53E-03	1.63E-02		88%	
Calc	SR	SOLID	KCKED1AD	U-238	3.77E-01	(4.73E-02)		pCi/g	R	3.53E-03	1.63E-02		88%	
Calc	SR	SOLID	KCKEE1AD	U-234	5.50E-01	(6.15E-02)		pCi/g	R	3.35E-03	1.54E-02		89%	
Calc	SR	SOLID	KCKEE1AD	U-235	6.43E-03	(4.62E-03)	U4	pCi/g	R	3.35E-03	1.54E-02		89%	
Calc	SR	SOLID	KCKEE1AD	U-238	2.96E-01	(3.92E-02)		pCi/g	R	3.35E-03	1.54E-02		89%	
Calc	SR	SOLID	KCKEG1AD	U-234	4.57E-01	(5.73E-02)		pCi/g	R	4.14E-03	1.90E-02		74%	
Calc	SR	SOLID	KCKEG1AD	U-235	-7.95E-04	(4.06E-03)	U4	pCi/g	R	4.14E-03	1.90E-02		74%	
Calc	SR	SOLID	KCKEG1AD	U-238	3.42E-01	(4.67E-02)		pCi/g	R	4.14E-03	1.90E-02		74%	
Calc	SR	SOLID	KCKEJ1AD	U-234	2.44E-01	(3.50E-02)		pCi/g	R	6.95E-03	2.29E-02		93%	
Calc	SR	SOLID	KCKEJ1AD	U-235	1.67E-02	(7.62E-03)		pCi/g	R	3.47E-03	1.60E-02		93%	
Calc	SR	SOLID	KCKEJ1AD	U-238	1.63E-01	(2.69E-02)		pCi/g	R	3.47E-03	1.60E-02		93%	
Calc	SR	SOLID	KCKEK1AD	U-234	5.59E-01	(6.13E-02)		pCi/g	R	3.16E-03	1.46E-02		90%	
Calc	SR	SOLID	KCKEK1AD	U-235	2.74E-02	(9.40E-03)		pCi/g	R	3.16E-03	1.46E-02		90%	
Calc	SR	SOLID	KCKEK1AD	U-238	3.18E-01	(4.04E-02)		pCi/g	R	4.47E-03	1.72E-02		90%	
Calc	SR	SOLID	KCKEL1AD	U-234	3.26E-01	(4.44E-02)		pCi/g	R	3.94E-03	1.81E-02		77%	
Calc	SR	SOLID	KCKEL1AD	U-235	3.03E-03	(3.87E-03)	U4	pCi/g	R	3.94E-03	1.81E-02		77%	

REF=0.8  
 8.74E-01  
 2.62E-02  
 5.59E-01  
 7.79E-01  
 1.82E-02  
 4.71E-01  
 <CRDL

() - (1s Uncertainties)  
 IDC - Instrument Detection Level in Conc Units  
 MLcC - Method Decision Level in Conc Units  
 MDC - Minimum Detectable Concentration  
 \*Std - Lc, MDC using StdDev for Set of Blanks

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	IDC	QC	Trc	Yld	LCS	Yld
Calc	SR	SOLID	KCKEL1AD	U-238	2.84E-01	(4.04E-02)		pCi/g	R	3.94E-03	1.81E-02			77%		
Calc	SR	SOLID	KCKEM1AD	U-234	6.10E-01	(6.67E-02)		pCi/g	R	3.67E-03	1.60E-02			96%		
Calc	SR	SOLID	KCKEM1AD	U-235	1.85E-02	(8.03E-03)		pCi/g	R	3.67E-03	1.60E-02			96%		
Calc	SR	SOLID	KCKEM1AD	U-238	4.61E-01	(5.39E-02)		pCi/g	R	5.18E-03	1.91E-02			96%		
Calc	SR	SOLID	KCKEM1AG	U-234	7.79E-01	(8.93E-02)		pCi/g	R	3.00E-03	1.83E-02	R		95%		
Calc	SR	SOLID	KCKEM1AG	U-235	3.04E-02	(1.23E-02)		pCi/g	R	5.99E-03	2.43E-02	R		95%		
Calc	SR	SOLID	KCKEM1AG	U-238	4.78E-01	(6.20E-02)		pCi/g	R	3.00E-03	1.83E-02	R		95%		
Calc	SR	SOLID	KCKET1AD	U-234	3.44E-01	(4.55E-02)		pCi/g	R	3.81E-03	1.75E-02			80%		
Calc	SR	SOLID	KCKET1AD	U-235	1.39E-02	(7.45E-03)		pCi/g	R	3.81E-03	1.75E-02			80%		
Calc	SR	SOLID	KCKET1AD	U-238	1.86E-01	(3.04E-02)		pCi/g	R	3.81E-03	1.75E-02			80%		
Calc	SR	SOLID	KCKE11AD	U-234	4.39E-01	(5.26E-02)		pCi/g	R	6.02E-03	2.11E-02			92%		
Calc	SR	SOLID	KCKE11AD	U-235	8.68E-03	(5.90E-03)	U4	pCi/g	R	4.91E-03	1.89E-02			92%		
Calc	SR	SOLID	KCKE11AD	U-238	2.96E-01	(3.98E-02)		pCi/g	R	4.91E-03	1.89E-02			92%		
Calc	SR	SOLID	KCKE21AD	U-234	5.45E-01	(6.13E-02)		pCi/g	R	7.50E-03	2.37E-02			83%		
Calc	SR	SOLID	KCKE21AD	U-235	2.52E-02	(9.37E-03)		pCi/g	R	3.36E-03	1.54E-02			83%		
Calc	SR	SOLID	KCKE21AD	U-238	2.35E-01	(3.38E-02)		pCi/g	R	7.50E-03	2.37E-02			83%		
Calc	SR	SOLID	KCR6K1AA	U-234	-2.22E-03	(3.91E-03)	U4	pCi/g	R	6.65E-03	2.33E-02	B		79%		
Calc	SR	SOLID	KCR6K1AA	U-235	-7.39E-04	(3.77E-03)	U4	pCi/g	R	3.84E-03	1.77E-02	B		79%		
Calc	SR	SOLID	KCR6K1AA	U-238	-7.39E-04	(3.77E-03)	U4	pCi/g	R	3.84E-03	1.77E-02	B		79%		
Calc	SR	SOLID	KCR6K1AC	U-234	8.09E-01	(8.22E-02)		pCi/g	R	3.15E-03	1.45E-02	S		99%	94%	
Calc	SR	SOLID	KCR6K1AC	U-235	3.94E-02	(1.14E-02)		pCi/g	R	3.15E-03	1.45E-02	S		99%	100%	
Calc	SR	SOLID	KCR6K1AC	U-238	8.97E-01	(8.95E-02)		pCi/g	R	3.15E-03	1.45E-02	S		99%	99%	

( ) - (1s Uncertainties)  
 IDC - Instrument Detection Level in Conc Units  
 MLcC- Method Decision Level in Conc Units  
 MDC - Minimum Detectable Concentration  
 \*Std - Lc, MDC using StdDev for Set of Blanks

Batch Nbr: 7327115

# Alpha Spec, Uiso by ALP , Calculated Results Detailed Report

12/17/2007 10:00:19 PM

Sq	Calc	SR	SOLID	STLE	AlpisoWoBS	KCKD61AD	pCi/g	Units/Matrix	QC/BB	Sa/On Date	11/16/07 06:40	12/17/07 14:24	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol																																																																																																																																							
1	445691	TSB-FJ-08-0'	SOLID	*STLE	AlpisoWoBS	KCKD61AD	pCi/g	.F7K190152-1 v4.8.29	SOLID	11/16/07 06:40	12/17/07 14:24	UJTC18967 Alq	1	9	2.00 g																																																																																																																																											
0	12/17/07	12:44	U-232	763	7	ALP1	ED	Y	N	3.8124E-01	(1.144E-02)	N	100%	N	1.0000E+00	(0.0000E+00)	4.5045E-01	1.0000E+00	Abn																																																																																																																																							
1	12/17/07	12:44	U-234	85	1	ALP1	ED	Y	N	3.8124E-01	(1.144E-02)	N	100%	N	1.0000E+00	(0.0000E+00)	4.5045E-01	1.0000E+00	Abn																																																																																																																																							
2	12/17/07	12:44	U-235	0	1	ALP1	ED	Y	N	3.8124E-01	(1.144E-02)	N	100%	N	1.0000E+00	(0.0000E+00)	4.5045E-01	1.0000E+00	Abn																																																																																																																																							
3	12/17/07	12:44	U-238	83	1	ALP1	ED	Y	N	3.8124E-01	(1.144E-02)	N	100%	N	1.0000E+00	(0.0000E+00)	4.5045E-01	1.0000E+00	Abn																																																																																																																																							
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Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLc/MDC	StdDvMdc/LcC																																																																																																																																												
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1	12/17/07	12:44	U-234	351	2	ALP2	ED	Y	N	3.5984E-01	(1.080E-02)	N	93%	N	1.0000E+00	(0.0000E+00)	4.5045E-01	1.0000E+00	Abn																																																																																																																																							
2	12/17/07	12:44	U-235	11	2	ALP2	ED	Y	N	3.5984E-01	(1.080E-02)	N	93%	N	1.0000E+00	(0.0000E+00)	4.5045E-01	1.0000E+00	Abn																																																																																																																																							
3	12/17/07	12:44	U-238	215	3	ALP2	ED	Y	N	3.5984E-01	(1.080E-02)	N	93%	N	1.0000E+00	(0.0000E+00)	4.5045E-01	1.0000E+00	Abn																																																																																																																																							

U - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Alpha Spec, Uiso by ALP

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
12/17/07	U-232	R	2.087406	3.35172E+00	9.314432	9.314432	93%	2.01 G						
2.251E+00			(0.147201)	(1.2975E-01)	(0.456178)	(0.456178)		(0.017321)						
12/17/07	U-234	R	1.177013	1.75285E+00	5.252069	5.252069	93%	2.01 G						
2.251E+00			(0.115166)	(9.3678E-02)	(0.439407)	(0.439407)		(0.017321)						
12/17/07	U-235	R	0.035586	5.29956E-02	0.15879	0.15879	93%	2.01 G						
2.251E+00			(0.011549)	(1.6642E-02)	(0.050901)	(0.050901)		(0.017321)						
12/17/07	U-238	R	0.71977	1.07191E+00	3.211762	3.211762	93%	2.01 G						
2.251E+00			(0.076842)	(7.3329E-02)	(0.301688)	(0.301688)		(0.017321)						

Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/BB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial Mult/EntYld Total/Analy Vol Final/Count Vol

Sq	Calc	SR	SOLID	*STLE	AlpisoWoBS	KCKD91AD	pCi/g	SOLID	11/16/07 07:35	12/17/07 18:20	UITC:18969	Alq	2.01 g								
445691,TSB-FR-05-0																					
0	12/17/07	16:40	U-232	724	11	ALP3	ED	Y	N	3.7580E-01	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.05	1000.05			Y	N	(1.127E-02)				100%	N		1.0000E+00	0.0000E+00	4.5045E-01	1.0000E+00	
1	12/17/07	16:40	U-234	96	3	ALP3	ED	N	N	3.7580E-01				96%	N		1.0000E+00	0.0000E+00	4.5045E-01	1.0000E+00	
				200.05	1000.05			Y	N	(1.127E-02)				5%	N		1.0000E+00	0.0000E+00	4.5045E-01	1.0000E+00	
2	12/17/07	16:40	U-235	3	3	ALP3	ED	N	N	3.7580E-01				96%	N		1.0000E+00	0.0000E+00	4.5045E-01	1.0000E+00	
				200.05	1000.05			Y	N	(1.127E-02)				5%	N		1.0000E+00	0.0000E+00	4.5045E-01	1.0000E+00	
3	12/17/07	16:40	U-238	56	6	ALP3	ED	N	N	3.7580E-01				96%	N		1.0000E+00	0.0000E+00	4.5045E-01	1.0000E+00	
				200.05	1000.05			Y	N	(1.127E-02)				5%	N		1.0000E+00	0.0000E+00	4.5045E-01	1.0000E+00	

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
12/17/07	U-232	R	2.151659	3.60810E+00	9.601143	9.601143	96%	2.01 G						
2.251E+00			(0.150073)	(1.3454E-01)	(0.459502)	(0.459502)		(0.017321)						
12/17/07	U-234	R	0.297463	4.76880E-01	1.327339	1.327339	96%	2.01 G						
2.251E+00			(0.038979)	(4.9008E-02)	(0.160365)	(0.160365)		(0.017321)						
12/17/07	U-235	R	0.007483	1.19964E-02	0.033391	0.033391	96%	2.01 G						
2.251E+00			(0.005541)	(8.8296E-03)	(0.024668)	(0.024668)		(0.017321)						
12/17/07	U-238	R	0.170869	2.73930E-01	0.762452	0.762452	96%	2.01 G						
2.251E+00			(0.027199)	(3.7487E-02)	(0.115035)	(0.115035)		(0.017321)						

Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/BB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial Mult/EntYld Total/Analy Vol Final/Count Vol

4	Calc	SR	SOLID	*STLE	AlpisoWoBS	KCKEAT1AD	pCi/g	SOLID	11/16/07 07:50	12/17/07 18:21	UITC:18970	Alq	2.04 g								
445691,TSB-FR-05-10																					
0	12/17/07	16:40	U-232	661	10	ALP4	ED	Y	N	3.7608E-01	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.0833333	1000.2166			Y	N	(1.128E-02)				100%	N		1.0000E+00	0.0000E+00	4.5045E-01	1.0000E+00	

0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh.mm, 24hr Time  
 RecCnt:4  
 RADCALC v4.8.29  
 TA Richland

Sq	Calc	SR	Method	Matrix	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Trc Yld Fct	Ent	Trc Yld Fct	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdMdc/LcC
1	12/17/07	16:40	U-234	SOLID	261	7	ALP4	ED	N	N	3.7608E-01	N	87%	N	5%	2.04 G	1.0000E+00	4.5045E-01	(0.000E+00)	0.490196	1.0000E+00
					200.0833333	1000.2166			Y	Y	(1.128E-02)	(0.431089)	(0.017321)								
2	12/17/07	16:40	U-235	SOLID	8	1	ALP4	ED	N	N	3.7608E-01	N	87%	N	5%	2.04 G	1.0000E+00	4.5045E-01	(0.000E+00)	0.490196	1.0000E+00
					200.0833333	1000.2166			Y	Y	(1.128E-02)	(0.354837)	(0.017321)								
3	12/17/07	16:40	U-238	SOLID	167	4	ALP4	ED	N	N	3.7608E-01	N	87%	N	5%	2.04 G	1.0000E+00	4.5045E-01	(0.000E+00)	0.490196	1.0000E+00
					200.0833333	1000.2166			Y	Y	(1.128E-02)	(0.043887)	(0.017321)								

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi	EnYld	Total/Analy	Vol	Final/Count	Vol	
5	Calc	SR	SOLID	*STLE	AlpisoWoBS	KCKE1A1E	pc/g	SOLID	R	11/16/07 07:50	12/17/07 14:25		UITC18971	Alq	1		2.02 g				
					445691,TSB-FR-05-10'	DUP															

Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Trc Yld Fct	Ent	Trc Yld Fct	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdMdc/LcC	
0	12/17/07	12:45	U-232	593	4	ALP5	ED	Y	N	4.1305E-01	N	100%	N	2.02 G	1.0000E+00	4.5045E-01	(0.000E+00)	0.49505	1.0000E+00	
				200.1	1000.1166			Y	Y	(1.239E-02)	(0.364737)	(0.017321)								
1	12/17/07	12:45	U-234	206	2	ALP5	ED	N	N	4.1305E-01	N	71%	N	2.02 G	1.0000E+00	4.5045E-01	(0.000E+00)	0.49505	1.0000E+00	
				200.1	1000.1166			Y	Y	(1.239E-02)	(0.335132)	(0.017321)								
2	12/17/07	12:45	U-235	5	1	ALP5	ED	N	N	4.1305E-01	N	71%	N	2.02 G	1.0000E+00	4.5045E-01	(0.000E+00)	0.49505	1.0000E+00	
				200.1	1000.1166			Y	Y	(1.239E-02)	(0.08152)	(0.017321)								
3	12/17/07	12:45	U-238	126	8	ALP5	ED	N	N	4.1305E-01	N	71%	N	2.02 G	1.0000E+00	4.5045E-01	(0.000E+00)	0.49505	1.0000E+00	
				200.1	1000.1166			Y	Y	(1.239E-02)	(0.038504)	(0.017321)								

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Bik	Dpm-Bik	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdMdc/LcC
0	12/17/07	U-232	R	1.597758	2.95952E+00	7.164995	7.164995	(0.364737)	2.02 G	71%				
				(0.114826)	(1.2171E-01)	(0.364737)	(0.364737)	(0.017321)						
1	12/17/07	U-234	R	0.778662	1.02749E+00	3.491834	3.491834	(0.335132)	2.02 G	71%				
				(0.08453)	(7.1742E-02)	(0.335132)	(0.335132)	(0.017321)						
2	12/17/07	U-235	R	0.018179	2.39876E-02	0.08152	0.08152	(0.038504)	2.02 G	71%				
				(0.008636)	(1.1219E-02)	(0.038504)	(0.038504)	(0.017321)						
3	12/17/07	U-238	R	0.471134	6.21686E-01	2.112754	2.112754	(0.236203)	2.02 G	71%				
				(0.057841)	(5.6168E-02)	(0.236203)	(0.236203)	(0.017321)						

Alpha Spec, Also by ALP, Calculated Results

Sq	Calc	SR	SOLID	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	
6	Calc	SR	SOLID	*STLE	AlpIsoWoBS	KCKE1AD	pCi/g		11/16/07 08:15	12/17/07 14:25				1	9		
445691	TSB-FR-04-0				F7K190152-5		SOLID							UJTC18972	Alq	2.00 g	
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 12:45	U-232	723	6	ALP6	ED	Y	N	3.8270E-01	N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.05			Y		(1.148E-02)				(0.000E+00)	0.50			
1	12/17/07 12:45	U-234	168	2	ALP6	ED	N	N	3.8270E-01	N	94%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.05			Y		(1.148E-02)		5%		(0.000E+00)	0.50			
2	12/17/07 12:45	U-235	2	1	ALP6	ED	N	N	3.8270E-01	N	94%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.05			Y		(1.148E-02)		5%		(0.000E+00)	0.50			
3	12/17/07 12:45	U-238	90	1	ALP6	ED	N	N	3.8270E-01	N	94%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.05			Y		(1.148E-02)		5%		(0.000E+00)	0.50			
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BkLcC/MDC	StdWmDc/LcC			
12/17/07	U-232	R	2.123057	3.60749E+00		9.426384	9.426384	2.00 G	94%								
2.267E+00			(0.148055)	(1.3441E-01)		(0.450911)	(0.450911)	(0.017321)									
12/17/07	U-234	R	0.526506	8.37650E-01		2.337687	2.337687	2.00 G	94%								
2.267E+00			(0.059081)	(6.4798E-02)		(0.233964)	(0.233964)	(0.017321)									
12/17/07	U-235	R	0.005654	8.99589E-03	U4	0.025105	0.025105	2.00 G	94%								
2.267E+00			(0.00451)	(7.1385E-03)		(0.019986)	(0.019986)	(0.017321)									
12/17/07	U-238	R	0.282101	4.48813E-01		1.252532	1.252532	2.00 G	94%								
2.267E+00			(0.037609)	(4.7425E-02)		(0.154416)	(0.154416)	(0.017321)									

Sq	Calc	SR	SOLID	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	
7	Calc	SR	SOLID	*STLE	AlpIsoWoBS	KCKE1AD	pCi/g		11/16/07 08:15	12/17/07 14:25				1	9		
445691	TSB-FR-04-0-FD				F7K190152-6		SOLID							UJTC18973	Alq	2.01 g	
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 12:45	U-232	661	11	ALP7	ED	Y	N	3.7341E-01	N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200	1000.2333			Y		(1.120E-02)				(0.000E+00)	0.497512			
1	12/17/07 12:45	U-234	195	0	ALP7	ED	N	N	3.7341E-01	N	88%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200	1000.2333			Y		(1.120E-02)		5%		(0.000E+00)	0.497512			
2	12/17/07 12:45	U-235	4	0	ALP7	ED	N	N	3.7341E-01	N	88%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200	1000.2333			Y		(1.120E-02)		5%		(0.000E+00)	0.497512			
3	12/17/07 12:45	U-238	111	0	ALP7	ED	N	N	3.7341E-01	N	88%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200	1000.2333			Y		(1.120E-02)		5%		(0.000E+00)	0.497512			

0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU																
IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration																
Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time																
Page 4																
RecCnt:7																
RADCALC v4.8.29																
TA Richland																



Alpha Spec, Uiso by ALP , Calculated Results

Batch Nbr: 7327115

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Trc Yld,EnFct	LCSYld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
12/17/07	U-232	R	1.976902	3.29400E+00		8.821339	8.821339	8.821339	2.01 G	88%				
2.237E+00			(0.139764)	(1.2859E-01)		(0.43431)	(0.43431)	(0.43431)	(0.017321)					
12/17/07	U-234	R	0.662199	9.75000E-01		2.954866	2.954866	2.954866	2.01 G	88%		0.016264		
2.237E+00			(0.072153)	(6.9828E-02)		(0.284928)	(0.284928)	(0.284928)	(0.017321)			0.003533		
12/17/07	U-235	R	0.013584	2.00000E-02		0.060613	0.060613	0.060613	2.01 G	88%		0.016264		
2.237E+00			(0.006916)	(1.0050E-02)		(0.030708)	(0.030708)	(0.030708)	(0.017321)			0.003533		
12/17/07	U-238	R	0.376944	5.55000E-01		1.682001	1.682001	1.682001	2.01 G	88%		0.016264		
2.237E+00			(0.047314)	(5.2688E-02)		(0.193109)	(0.193109)	(0.193109)	(0.017321)			0.003533		

Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/BB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial Mult/EntYld Total/Analy Vol Final/Count Vol

Sq	Calc	SR	SOLID	*STLE AlpisoWoBS	KCKEEIAD	pCi/g	Geom	ED	ALP8	6	1000.15	697	200.1166666	1000.15	171	200.1166666	1000.15	2	200.1166666	1000.15	92	200.1166666	1000.15
0	12/17/07	12:45	U-232				ED	ALP8	6	1000.15	697	200.1166666	1000.15	171	200.1166666	1000.15	2	200.1166666	1000.15	92	200.1166666	1000.15	
1	12/17/07	12:45	U-234				ED	ALP8	0	0	0	200.1166666	1000.15	171	200.1166666	1000.15	2	200.1166666	1000.15	92	200.1166666	1000.15	
2	12/17/07	12:45	U-235				ED	ALP8	0	0	0	200.1166666	1000.15	171	200.1166666	1000.15	2	200.1166666	1000.15	92	200.1166666	1000.15	
3	12/17/07	12:45	U-238				ED	ALP8	0	0	0	200.1166666	1000.15	171	200.1166666	1000.15	2	200.1166666	1000.15	92	200.1166666	1000.15	

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Trc Yld,EnFct	LCSYld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
12/17/07	U-232	R	1.997294	3.47697E+00		8.956673	8.956673	8.956673	2.02 G	89%				
2.238E+00			(0.140006)	(1.3195E-01)		(0.433282)	(0.433282)	(0.433282)	(0.017321)					
12/17/07	U-234	R	0.550103	8.54502E-01		2.466885	2.466885	2.466885	2.02 G	89%		0.015409		
2.238E+00			(0.061523)	(6.5353E-02)		(0.245877)	(0.245877)	(0.245877)	(0.017321)			0.003348		
12/17/07	U-235	R	0.006434	9.99417E-03	U4	0.028852	0.028852	0.028852	2.02 G	89%		0.015409		
2.238E+00			(0.004625)	(7.1373E-03)		(0.020687)	(0.020687)	(0.020687)	(0.017321)			0.003348		
12/17/07	U-238	R	0.295962	4.59732E-01		1.327213	1.327213	1.327213	2.02 G	89%		0.015409		
2.238E+00			(0.039189)	(4.7941E-02)		(0.162329)	(0.162329)	(0.162329)	(0.017321)			0.003348		

Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/BB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial Mult/EntYld Total/Analy Vol Final/Count Vol

Sq	Calc	SR	SOLID	*STLE AlpisoWoBS	KCKEEIAD	pCi/g	Geom	ED	ALP9	3	1000.0833	560	200.0166666	1000.0833
0	12/17/07	12:45	U-232				ED	ALP9	3	1000.0833	560	200.0166666	1000.0833	
1	12/17/07	10:20	U-232				ED	ALP9	3	1000.0833	560	200.0166666	1000.0833	
2	12/17/07	10:20	U-238				ED	ALP9	3	1000.0833	560	200.0166666	1000.0833	

Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/BB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial Mult/EntYld Total/Analy Vol Final/Count Vol

Alpha Spec, Uiso by ALP, Calculated Results

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BkLcC/MDC	StdMvMdc/LcC	
1	12/17/07 12:45	U-234	115	0	ALP9	ED	N	N	3.7821E-01	N	74%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.0166666	1000.0833			Y	(1.135E-02)	(0.017321)	4%			(0.0000E+00)	0.492611	
2	12/17/07 12:45	U-235	0	1	ALP9	ED	N	N	3.7821E-01	N	74%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.0166666	1000.0833			Y	(1.135E-02)	(0.017321)	4%			(0.0000E+00)	0.492611	
3	12/17/07 12:45	U-238	86	0	ALP9	ED	N	N	3.7821E-01	N	74%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.0166666	1000.0833			Y	(1.135E-02)	(0.017321)	4%			(0.0000E+00)	0.492611	

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BkLcC/MDC	StdMvMdc/LcC
12/17/07	U-232		R	1.640848		2.79677E+00	7.394652	7.394652	2.03 G	74%				
				(0.119035)		(1.1832E-01)	(0.38352)	(0.38352)	(0.017321)					
12/17/07	U-234		R	0.457209		5.74952E-01	2.060461	2.060461	2.03 G	74%				
				(0.0573)		(5.3624E-02)	(0.236132)	(0.236132)	(0.017321)					
12/17/07	U-235		R	-0.000795	U4	-9.99917E-04	-0.003583	-0.003583	2.03 G	74%				
				(0.004055)		(5.0986E-03)	(0.018273)	(0.018273)	(0.017321)					
12/17/07	U-238		R	0.341913		4.29964E-01	1.540867	1.540867	2.03 G	74%				
				(0.046682)		(4.6375E-02)	(0.19532)	(0.19532)	(0.017321)					

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	SR	SOLID	*STLE	AlpisoWoBS	KCKEJ1AD	pCl/g			11/16/07 10:40	12/17/07 14:25						
445691,TSB-GR-01-5								SOLID									

Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 12:45	U-232	674	4	ALP10	ED	Y	N	3.5997E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.0166			Y	(1.080E-02)						(0.0000E+00)	0.497512			
1	12/17/07 12:45	U-234	74	4	ALP10	ED	N	N	3.5997E-01		N	93%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.0166			Y	(1.080E-02)				5%		(0.0000E+00)	0.497512			
2	12/17/07 12:45	U-235	5	0	ALP10	ED	N	N	3.5997E-01		N	93%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.0166			Y	(1.080E-02)				5%		(0.0000E+00)	0.497512			
3	12/17/07 12:45	U-238	49	1	ALP10	ED	N	N	3.5997E-01		N	93%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.0166			Y	(1.080E-02)				5%		(0.0000E+00)	0.497512			

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BkLcC/MDC	StdMvMdc/LcC
12/17/07	U-232		R	2.094671		3.36460E+00	9.346849	9.346849	2.01 G	93%				
				(0.147549)		(1.2977E-01)	(0.456712)	(0.456712)	(0.017321)					
12/17/07	U-234		R	0.244355		3.65846E-01	1.090361	1.090361	2.01 G	93%				
				(0.035027)		(4.3040E-02)	(0.146177)	(0.146177)	(0.017321)					
12/17/07	U-235		R	0.016691		2.49896E-02	0.074479	0.074479	2.01 G	93%				
				(0.007618)		(1.1220E-02)	(0.033782)	(0.033782)	(0.017321)					
12/17/07	U-238		R	0.162904		2.43898E-01	0.726909	0.726909	2.01 G	93%				
				(0.026916)		(3.5000E-02)	(0.114301)	(0.114301)	(0.017321)					

( ) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Direction Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:11 RADCALC v4.8.29  
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Sq	Calc	SR	Matrix	Method	Equation Set	Wk Ord	Units/Matrix	QC/IBB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
11	445691	TSB-GJ-06-0'	SOLID		*STLE AlpIsoWoBS KCCKELIAD	19	F7K190152-10	SOLID	11/16/07 11:15	12/17/07 14:25		UIC:18977	Alq	1	g				
Sq	CalcDate,TrcAct	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
0	12/17/07 12:45	U-232	744	200.0166666	1000.1333	ALP11	ED	Y	N	4.0783E-01	N	100%	N	1.0000E+00	0.497512	4.5045E-01	1.0000E+00		
1	12/17/07 12:45	U-234	184	200.0166666	1000.1333	ALP11	ED	Y	N	4.0783E-01	N	90%	N	1.0000E+00	0.497512	4.5045E-01	1.0000E+00		
2	12/17/07 12:45	U-235	9	200.0166666	1000.1333	ALP11	ED	Y	N	4.0783E-01	N	90%	N	1.0000E+00	0.497512	4.5045E-01	1.0000E+00		
3	12/17/07 12:45	U-238	105	200.0166666	1000.1333	ALP11	ED	Y	N	4.0783E-01	N	90%	N	1.0000E+00	0.497512	4.5045E-01	1.0000E+00		
Sq	CalcDate,TrcAct	Parameter	Avg Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC						
12/17/07	2.250E+00	U-232	2.033546	0.14138	3.70069E+00	9.074098	9.074098	2.01 G	90%										
12/17/07	2.250E+00	U-234	0.558578	0.061256	9.18923E-01	2.492489	2.492489	2.01 G	90%										
12/17/07	2.250E+00	U-235	0.027351	0.009403	4.49963E-02	0.122048	0.122048	2.01 G	90%										
12/17/07	2.250E+00	U-238	0.317885	0.040438	5.22957E-01	1.418468	1.418468	2.01 G	90%										

Sq	Calc	SR	Matrix	Method	Equation Set	Wk Ord	Units/Matrix	QC/IBB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
12	445691	TSB-GJ-06-5	SOLID		*STLE AlpIsoWoBS KCCKELIAD	7	F7K190152-11	SOLID	11/16/07 11:25	12/17/07 14:26		UIC:18978	Alq	1	g				
Sq	CalcDate,TrcAct	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
0	12/17/07 12:46	U-232	589	200.0166666	1000.0666	ALP12	ED	Y	N	3.8329E-01	N	100%	N	1.0000E+00	0.49505	4.5045E-01	1.0000E+00		
1	12/17/07 12:46	U-234	86	200.0166666	1000.0666	ALP12	ED	Y	N	3.8329E-01	N	77%	N	1.0000E+00	0.49505	4.5045E-01	1.0000E+00		
2	12/17/07 12:46	U-235	1	200.0166666	1000.0666	ALP12	ED	Y	N	3.8329E-01	N	77%	N	1.0000E+00	0.49505	4.5045E-01	1.0000E+00		
3	12/17/07 12:46	U-238	75	200.0166666	1000.0666	ALP12	ED	Y	N	3.8329E-01	N	77%	N	1.0000E+00	0.49505	4.5045E-01	1.0000E+00		

(1 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rf	Dpm Wb Blk	Dpm-Blk	Vol Used	TrcYld,EntFct	LCSYld,EFctU	IDC/ILcC	BklcC/MDC	StdV/MdC/LcC
13	12/17/07	U-232	R	1.709169 (0.123015)		2.93776E+00 (1.2137E-01)	7.664603 (0.391323)	7.664603 (0.391323)	2.02 G (0.017321)	77%				
	12/17/07	U-234	R	0.325651 (0.044363)		4.29964E-01 (4.6375E-02)	1.46035 (0.184634)	1.46035 (0.184634)	2.02 G (0.017321)	77%		0.018136 0.00394		
	12/17/07	U-235	R	0.003029 (0.00387)	U4	3.99965E-03 (5.0986E-03)	0.013585 (0.01734)	0.013585 (0.01734)	2.02 G (0.017321)	77%		0.018136 0.00394		
	12/17/07	U-238	R	0.283998 (0.040429)		3.74969E-01 (4.3309E-02)	1.273561 (0.169398)	1.273561 (0.169398)	2.02 G (0.017321)	77%		0.018136 0.00394		

Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/BB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial Mult/EntYld Total/Anly Vol Final/Count Vol

13 Calc SR SOLID \*STLE AlpisoWoBS KCKEMTAG pCi/g 11/16/07 09:16 12/17/07 14:26 UIC:18979 Alq 2.01 g

445691,TSB-FJ-01-0' ,F7K190152-12 SOLID

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 12:46	U-232	697	22	ALP71	ED	Y	N	3.6258E-01		N	100%	N	1.0000E+00 (0.000E+00)	4.5045E-01	1.0000E+00		
			200.15	2500.1			Y	N	(1.088E-02)						0.497512			
1	12/17/07 12:46	U-234	190	3	ALP71	ED	N	N	3.6258E-01		N	96%	N	1.0000E+00 (0.000E+00)	4.5045E-01	1.0000E+00		
			200.15	2500.1			Y	N	(1.088E-02)			5%			0.497512			
2	12/17/07 12:46	U-235	6	3	ALP71	ED	N	N	3.6258E-01		N	96%	N	1.0000E+00 (0.000E+00)	4.5045E-01	1.0000E+00		
			200.15	2500.1			Y	N	(1.088E-02)			5%			0.497512			
3	12/17/07 12:46	U-238	144	6	ALP71	ED	N	N	3.6258E-01		N	96%	N	1.0000E+00 (0.000E+00)	4.5045E-01	1.0000E+00		
			200.15	2500.1			Y	N	(1.088E-02)			5%			0.497512			

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rf	Dpm Wb Blk	Dpm-Blk	Vol Used	TrcYld,EntFct	LCSYld,EFctU	IDC/ILcC	BklcC/MDC	StdV/MdC/LcC
	12/17/07	U-232	R	2.146956 (0.15054)		3.47359E+00 (1.3192E-01)	9.580157 (0.463653)	9.580157 (0.463653)	2.01 G (0.017321)	96%				
	12/17/07	U-234	R	0.61002 (0.066653)		9.48088E-01 (6.8872E-02)	2.722033 (0.263408)	2.722033 (0.263408)	2.01 G (0.017321)	96%		0.016038 0.003665		
	12/17/07	U-235	R	0.018516 (0.00803)		2.87776E-02 (1.2258E-02)	0.082623 (0.035587)	0.082623 (0.035587)	2.01 G (0.017321)	96%		0.016038 0.003665		
	12/17/07	U-238	R	0.461372 (0.053912)		7.17061E-01 (5.9963E-02)	2.058735 (0.216706)	2.058735 (0.216706)	2.01 G (0.017321)	96%		0.019072 0.005183		

Sq	Calc	SR	Matrix	Protocol Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Anly Vol	Final/Count Vol
14	Calc	SR	SOLID	*STLE AlpisoWoBS KCKEMTAG pCi/g	R	11/16/07 09:16		12/17/07 14:26						
	445691,TSB-FJ-01-0' DUP					F7K190152-12					UIC:18980 Alq		2.03 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 12:46	U-232	490	59	ALP85	ED	Y	N	2.5700E-01		N	100%	N	1.0000E+00 (0.000E+00)	4.5045E-01	1.0000E+00		
			200.15	2500.1333			Y	N	(7.710E-03)						0.492611			

Alpha Spec, Uiso by ALP, Calculated Results

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
1	12/17/07 12:46	U-234	171	0	2500.1333	2.42457E+00	9.433983	9.433983	2.03 G	95%			1.0000E+00	1.0000E+00
			200.15			(1.1064E-01)	(0.515198)	(0.515198)	(0.017321)	6%			(0.000E+00)	0.492611
2	12/17/07 12:46	U-235	7	4	2500.1333	8.54359E-01	3.508955	3.508955	2.03 G	95%			1.0000E+00	1.0000E+00
			200.15			(6.5336E-02)	(0.360849)	(0.360849)	(0.017321)	6%			(0.000E+00)	0.492611
3	12/17/07 12:46	U-238	105	1	2500.1333	5.24207E-01	2.152979	2.152979	2.03 G	95%			1.0000E+00	1.0000E+00
			200.15			(5.1198E-02)	(0.257154)	(0.257154)	(0.017321)	6%			(0.000E+00)	0.492611

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol	
15	Calc	SR	SOLID	*STLE	AlpisoWoBS	KCKET1AD	pCi/g	SOLID		11/16/07 09:50	12/17/07 18:05						g	
																		2.01 g

Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	BLK Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 16:25	U-232	611	7	ALP1	ED	Y	N	3.8124E-01		N	100%	N			1.0000E+00	4.5045E-01	1.0000E+00
			200.0666666	1000.1833			Y		(1.144E-02)							(0.000E+00)	0.497512	
1	12/17/07 16:25	U-234	94	1	ALP1	ED	N	N	3.8124E-01		N	80%	N			1.0000E+00	4.5045E-01	1.0000E+00
			200.0666666	1000.1833			Y		(1.144E-02)			5%				(0.000E+00)	0.497512	
2	12/17/07 16:25	U-235	4	1	ALP1	ED	N	N	3.8124E-01		N	80%	N			1.0000E+00	4.5045E-01	1.0000E+00
			200.0666666	1000.1833			Y		(1.144E-02)			5%				(0.000E+00)	0.497512	
3	12/17/07 16:25	U-238	51	1	ALP1	ED	N	N	3.8124E-01		N	80%	N			1.0000E+00	4.5045E-01	1.0000E+00
			200.0666666	1000.1833			Y		(1.144E-02)			5%				(0.000E+00)	0.497512	

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
12/17/07	U-232		R	1.791096		3.04698E+00	7.992237	7.992237	2.01 G	80%				
				(0.12815)		(1.2358E-01)	(0.403188)	(0.403188)	(0.017321)					
12/17/07	U-234		R	0.343554		4.68844E-01	1.533009	1.533009	2.01 G	80%				
				(0.045516)		(4.8471E-02)	(0.187617)	(0.187617)	(0.017321)					
12/17/07	U-235		R	0.013918		1.89935E-02	0.062104	0.062104	2.01 G	80%				
				(0.007452)		(1.0047E-02)	(0.033101)	(0.033101)	(0.017321)					
12/17/07	U-238		R	0.186061		2.53915E-01	0.830243	0.830243	2.01 G	80%				
				(0.03037)		(3.5709E-02)	(0.128802)	(0.128802)	(0.017321)					

RecCnt:16 RADCALC v4.8.29  
 TA Richland  
 Page 9  
 (1 - 1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TP  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Batch Nbr: 7327115

# Alpha Spec, Also by ALP , Calculated Results

12/17/2007 10:00:21 FM

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk	Ord	Units/Matrix	QC/BB	Sa/On	Date	Analysis	Date/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol			
16	Calc	SR	SOLID	*STLE	AlpisoWoBS	KCKE11AD			pCi/g			11/16/07	11:50	12/17/07	18:05											
445691	TSB-GJ-01-0'																									
Sq	Cnt	Date	Parameter	Sample	Cnt	Bkgrnd	Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc	Yld	Fct	Ent	Blk	Value	Ingr	Fct	Conv	Fct/VolAdj	Decay	Abn
0	12/17/07	16:25	U-232	666	12	ALP2	12	ALP2	ED	Y	N	3.5984E-01	(1.080E-02)	N	100%	N						1.0000E+00	(0.000E+00)	4.5045E-01	1.0000E+00	
1	12/17/07	16:25	U-234	192	3	ALP2	3	ALP2	ED	Y	N	3.5984E-01	(1.080E-02)	N	92%	N						1.0000E+00	(0.000E+00)	4.5045E-01	1.0000E+00	
2	12/17/07	16:25	U-235	3	2	ALP2	2	ALP2	ED	Y	N	3.5984E-01	(1.080E-02)	N	92%	N						1.0000E+00	(0.000E+00)	4.5045E-01	1.0000E+00	
3	12/17/07	16:25	U-238	89	2	ALP2	2	ALP2	ED	Y	N	3.5984E-01	(1.080E-02)	N	92%	N						1.0000E+00	(0.000E+00)	4.5045E-01	1.0000E+00	
Sq	CalcDate,TrcAct	Parameter	Avg	Sa	Act, Total	U	Q	Net	Cnt	Rt	Dpm	Wo	Blk	Dpm	Blk	Vol	Used	TrcYld	EntFct	LCSYld	EntFctU	IDC/ILcC	BlkLcC/MDC	StdDV	MdC/LcC	
	12/17/07	U-232	R	2.045705	3.31745E+00	9.219183	9.219183	9.219183	2.03G	92%																
	2.216E+00			(0.144454)	(1.2906E-01)	(0.452912)	(0.452912)	(0.452912)	(0.017321)																	
	12/17/07	U-234	R	0.438846	6.56890E-01	1.977703	1.977703	1.977703	2.03G	92%																
	2.216E+00			(0.052631)	(5.7462E-02)	(0.214928)	(0.214928)	(0.214928)	(0.017321)																	
	12/17/07	U-235	R	0.008683	1.29977E-02	0.039132	0.039132	0.039132	2.03G	92%																
	2.216E+00			(0.005904)	(8.7735E-03)	(0.026535)	(0.026535)	(0.026535)	(0.017321)																	
	12/17/07	U-238	R	0.295903	4.42926E-01	1.33352	1.33352	1.33352	2.03G	92%																
	2.216E+00			(0.039787)	(4.7183E-02)	(0.166055)	(0.166055)	(0.166055)	(0.017321)																	
Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk	Ord	Units/Matrix	QC/BB	Sa/On	Date <td>Analysis</td> <td>Date/PptWt</td> <td>Sep1/Sep2</td> <td>Date</td> <td>QC/Tracer</td> <td>Vial</td> <td>Multi/EntYld</td> <td>Total/Analy <td>Vol</td> <td>Final/Count <td>Vol</td> </td></td>	Analysis	Date/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy <td>Vol</td> <td>Final/Count <td>Vol</td> </td>	Vol	Final/Count <td>Vol</td>	Vol			
17	Calc	SR	SOLID	*STLE	AlpisoWoBS	KCKE21AD			pCi/g			11/16/07	12:10	12/17/07	18:21											
445691	TSB-GJ-01-5'																									
Sq	Cnt	Date	Parameter	Sample	Cnt	Bkgrnd	Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc	Yld	Fct	Ent	Blk	Value	Ingr	Fct	Conv	Fct/VolAdj	Decay	Abn
0	12/17/07	16:41	U-232	688	4	ALP5	4	ALP5	ED	Y	N	4.1305E-01	(1.239E-02)	N	100%	N						1.0000E+00	(0.000E+00)	4.5045E-01	1.0000E+00	
1	12/17/07	16:41	U-234	170	5	ALP5	5	ALP5	ED	Y	N	4.1305E-01	(1.239E-02)	N	83%	N						1.0000E+00	(0.000E+00)	4.5045E-01	1.0000E+00	
2	12/17/07	16:41	U-235	8	1	ALP5	1	ALP5	ED	Y	N	4.1305E-01	(1.239E-02)	N	83%	N						1.0000E+00	(0.000E+00)	4.5045E-01	1.0000E+00	
3	12/17/07	16:41	U-238	74	5	ALP5	5	ALP5	ED	Y	N	4.1305E-01	(1.239E-02)	N	83%	N						1.0000E+00	(0.000E+00)	4.5045E-01	1.0000E+00	
				200.0333333	1000.1166																					
				200.0333333	1000.1166																					
				200.0333333	1000.1166																					
				200.0333333	1000.1166																					

0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count. All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Trc Yld,EntFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdVnMdc/LcC
12/17/07	U-232		R	1.845551		3.43543E+00	8.317169	8.317169	2.03G	83%				
	2.216E+00			(0.129584)		(1.3114E-01)	(0.403808)	(0.403808)	(0.017321)					
12/17/07	U-234		R	0.545037		8.44859E-01	2.456267	2.456267	2.03G	83%		0.023737		
	2.216E+00			(0.061263)		(6.5219E-02)	(0.246378)	(0.246378)	(0.017321)			0.007503		
12/17/07	U-235		R	0.025156		3.89935E-02	0.113366	0.113366	2.03G	83%		0.015447		
	2.216E+00			(0.009373)		(1.4175E-02)	(0.041846)	(0.041846)	(0.017321)			0.003355		
12/17/07	U-238		R	0.23543		3.64939E-01	1.06099	1.06099	2.03G	83%		0.023737		
	2.216E+00			(0.03379)		(4.3063E-02)	(0.142449)	(0.142449)	(0.017321)			0.007503		

QC/Tracer Vial Mult/EntYld Total/Analy Vol Final/Count Vol  
 AnalysisDate/PptWt Sep1/Sep2 Date  
 12/17/07 18:21  
 UIC:18984 Alg 2.03g

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 16:41	U-232	604	7	ALP6	ED	Y	N	3.8270E-01		N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			200.0166666	1000.05			Y		(1.148E-02)					(0.000E+00)	0.492611			
1	12/17/07 16:41	U-234	0	3	ALP6	ED	N	N	3.8270E-01		N	79%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			200.0166666	1000.05			Y		(1.148E-02)					(0.000E+00)	0.492611			
2	12/17/07 16:41	U-235	0	1	ALP6	ED	N	N	3.8270E-01		N	79%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			200.0166666	1000.05			Y		(1.148E-02)					(0.000E+00)	0.492611			
3	12/17/07 16:41	U-238	0	1	ALP6	ED	N	N	3.8270E-01		N	79%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			200.0166666	1000.05			Y		(1.148E-02)					(0.000E+00)	0.492611			

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Trc Yld,EntFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdVnMdc/LcC
12/17/07	U-232		R	1.746839		3.01275E+00	7.872312	7.872312	2.03G	79%				
	2.225E+00			(0.1252)		(1.2290E-01)	(0.39863)	(0.39863)	(0.017321)					
12/17/07	U-234		R	-0.002216	U4	-2.99985E-03	-0.009985	-0.009985	2.03G	79%		0.023307		
	2.225E+00			(0.003912)		(5.2911E-03)	(0.017623)	(0.017623)	(0.017321)			0.006654		
12/17/07	U-235		R	-0.000739	U4	-9.99950E-04	-0.003328	-0.003328	2.03G	79%		0.017686		
	2.225E+00			(0.003766)		(5.0986E-03)	(0.016972)	(0.016972)	(0.017321)			0.003842		
12/17/07	U-238		R	-0.000739	U4	-9.99950E-04	-0.003328	-0.003328	2.03G	79%		0.017686		
	2.225E+00			(0.003766)		(5.0986E-03)	(0.016972)	(0.016972)	(0.017321)			0.003842		

QC/Tracer Vial Mult/EntYld Total/Analy Vol Final/Count Vol  
 AnalysisDate/PptWt Sep1/Sep2 Date  
 12/17/07 18:21  
 UISG1545 1 9  
 UISG1545 Alg 2.01g

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 16:41	U-232	745	9	ALP7	ED	Y	N	3.7341E-01		N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			200.0333333	1000.2333			Y		(1.120E-02)					(0.000E+00)	0.497512			

QC/Tracer Vial Mult/EntYld Total/Analy Vol Final/Count Vol  
 AnalysisDate/PptWt Sep1/Sep2 Date  
 12/17/07 18:21  
 UIC:18984 Alg 2.03g

Batch Nbr: 7327115 Alpha Spec, Uiso by ALP, Calculated Results 12/17/2007 10:00:21 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdVMDc/LcC
1	12/17/07 16:41	U-234	267	1	ALP7	ED	N	N	3.7341E-01	99%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.0333333	1000.2333			Y	(1.120E-02)		6%		(0.000E+00)	0.497512	
2	12/17/07 16:41	U-235	13	0	ALP7	ED	N	N	3.7341E-01	99%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.0333333	1000.2333			Y	(1.120E-02)		6%		(0.000E+00)	0.497512	
3	12/17/07 16:41	U-238	296	0	ALP7	ED	N	N	3.7341E-01	99%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.0333333	1000.2333			Y	(1.120E-02)		6%		(0.000E+00)	0.497512	
	12/17/07	U-232	R	2.229793		3.71538E+00	9.949791		2.01 G	99%				
	2.253E+00			(0.154865)		(1.3648E-01)	(0.471902)		(0.017321)					
	12/17/07	U-234	R	0.808746		1.33378E+00	3.608791		2.01 G	99%		0.014518		
	2.253E+00			(0.082159)		(8.1693E-02)	(0.317611)		(0.017321)			0.003154		
	12/17/07	U-235	R	0.039407		6.49892E-02	0.175841		2.01 G	99%		0.014518		
	2.253E+00			(0.011403)		(1.8052E-02)	(0.050093)		(0.017321)			0.003154		
	12/17/07	U-238	R	0.89726		1.47975E+00	4.003756		2.01 G	99%		0.014518		
	2.253E+00			(0.08949)		(8.6015E-02)	(0.34379)		(0.017321)			0.003154		

Page 12 RADCALC v4.8.29  
 RecCnt:19 TA Richland  
 ( ) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time



# URANIUM ISOTOPIIC COUNTING REQUEST

1605

C.R. Technician Co

Counting Time 20 Minutes

SOP's

Operating: RICHRD008

Background See Alpha Regions Report

Becc 11/16

Review: 730715

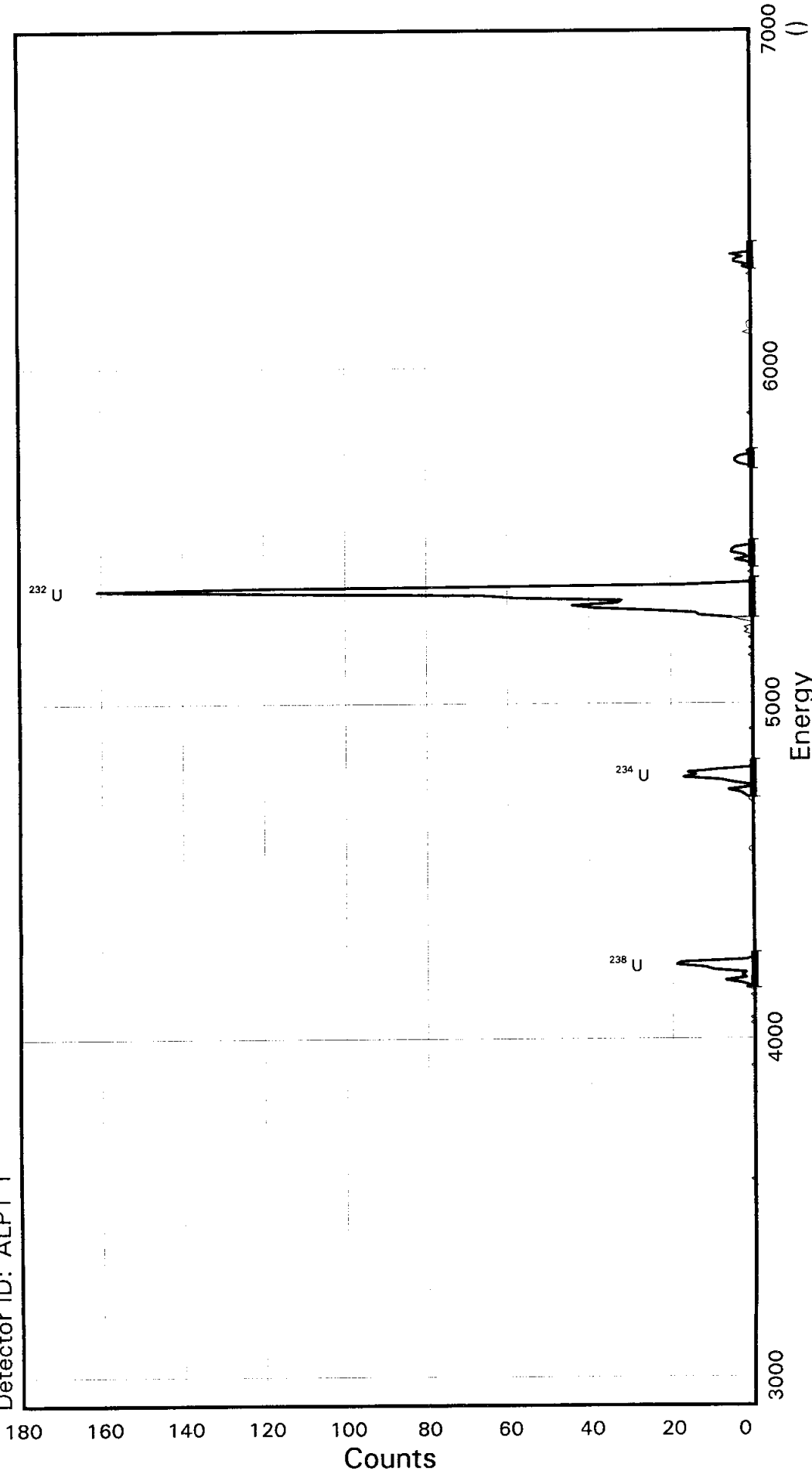
Date Counted 12/17/07

WorkOrder #	U-232 (5320 KeV) Tracer	TOTAL COUNTS				Det #	Comments/Edits
		U-238 (4196 KeV)	U-235 (4396 KeV)	U-234 (4776 KeV)			
<u>KCDG1AD</u>	See Counting Room Printout for ROI information				<u>1</u>		
<u>KCKD81AD</u>	See Counting Room Printout for ROI information				<u>2</u>		
<u>KCKD91AD</u>	See Counting Room Printout for ROI information				<u>3</u>		
<u>KCKEA1AD</u>	See Counting Room Printout for ROI information				<u>4</u>		
<u>KCKEA1AE</u>	See Counting Room Printout for ROI information				<u>5</u>		
<u>KCKEC1AD</u>	See Counting Room Printout for ROI information				<u>6</u>		
<u>KCKED1AD</u>	See Counting Room Printout for ROI information				<u>7</u>		
<u>KCKEE1AD</u>	See Counting Room Printout for ROI information				<u>8</u>		
Comments:							

STL Richland WA.  
U BRCO

Batch ID: 7327115

Sample ID: KCKD61AD  
Detector ID: ALP1 1



Energy Coefficients:  
Offset: 2.89248E + 03  
Slope: 7.48523E + 00  
Quadrature: 3.51425E-05

Acquisition Start: 17-DEC-2007 12:44:37.76  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:10.00

SAMPLE IDENTIITY: KCKD61AD

TITLE : U BRCO

DETECTOR : ALP1 1  
CONFIGURATION NAME : \$DISK1:[ALP1.SAMPLE]KCKD61AD\_171271244.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:20

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 12:44:37 CALIB DATE : 02-DEC-2007 08:32:25

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:10

OFFSET : 2892.48 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 7.48523 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 3.514250E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKD61AD

Flags Key

Detector: ALP1 1  
 Report Date: 17-Dec-07 04:05 PM P: Peak Identified  
 Acquire Date: 17-DEC-2007 12:44:37.76 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgrnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
					Energy keV	Width keV					
U-232	763	7	0	3.805	5333.1	120.1	315	331	0.00	0.00	P
U-234	85	1	0	0.424	4787.5	112.5	244	259	0.00	0.00	P
U-235	0	1	0	-0.001	4410.7	120.0	192	208	0.00	0.00	
U-238	83	1	0	0.414	4210.9	105.0	168	182	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:05:09

Configuration : \$DISK1:[ALP1.SAMPLE]KCKD61AD\_171271244.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:44:37  
 Sample ID : KCKD61AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP1 Detector geometry:  
 Elapsed live time: 0 03:20:10.00 Elapsed real time: 0 03:20:10.00 0.0%  
 Start energy : 2914.94 End energy : 6734.13  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4215.64	83	0	29.94	176.62	168	14	6.91E-03	11.0	
2	0	4785.95	85	0	29.94	252.66	244	15	7.08E-03	10.8	
3	0	5333.10	763	0	29.94	325.56	315	16	6.35E-02	3.6	
4	0	5447.78	21	0	44.91	340.83	335	11	1.75E-03	21.8	
5	0	5724.03	15	0	29.94	377.62	374	8	1.25E-03	25.8	
6	0	6318.84	18	0	29.94	456.77	453	11	1.50E-03	23.6	

Alpha Spectrum Listing  
 (Version: 1-Apr-07)

Sample Identity: KCKD61AD

Flags Key

Detector: ALP1 1

Report Date: 17-Dec-07 04:05 PM

Intersect Region: -

Acquire Date: 17-DEC-2007 12:44:37.76

Non-Intersect Region: -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0+		201	8+		251	0		301	0		351	0		401	1		451	0		501
0		2	0		52	0		102	0		152	0+		202	17+		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0+		203	14+		253	1		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	1		154	0+		204	16+		254	0		304	0		354	0		404	2		454	0		504
0		5	0		55	0		105	0		155	0+		205	9+		255	0		305	0		355	0		405	1		455	0		505
0		6	0		56	0		106	1		156	0+		206	0+		256	0		306	0		356	0		406	4		456	0		506
0		7	0		57	0		107	0		157	0+		207	0+		257	1		307	0		357	0		407	4		457	0		507
0		8	0		58	0		108	0		158	0+		208	0+		258	0		308	0		358	0		408	2		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	2		309	0		359	0		409	5		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	1		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	2		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	3		314	0		364	0		414	0		464			
0		15	0		65	0		115	1		165	0		215	0		265	5+		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	13+		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	14+		317	0		367	0		417	0		467			
0		18	0		68	0		118	2+		168	0		218	0		268	25+		318	0		368	0		418	0		468			
0		19	0		69	0		119	1+		169	0		219	0		269	39+		319	0		369	0		419	0		469			
0		20	0		70	0		120	3+		170	0		220	0		270	44+		320	0		370	0		420	0		470			
0		21	0		71	0		121	7+		171	0		221	1		271	33+		321	0		371	0		421	0		471			
0		22	0		72	0		122	2+		172	0		222	0		272	32+		322	0		372	0		422	0		472			
0		23	0		73	0		123	3+		173	1		223	0		273	58+		323	0		373	0		423	0		473			
0		24	0		74	0		124	2+		174	1		224	0		274	66+		324	0		374	0		424	0		474			
0		25	0		75	0		125	10+		175	0		225	0		275	120+		325	0		375	0		425	0		475			
0		26	0		76	0		126	12+		176	0		226	0		276	161+		326	3		376	0		426	0		476			
0		27	0		77	0		127	19+		177	0		227	0		277	122+		327	4		377	0		427	0		477			
0		28	0		78	0		128	18+		178	0		228	0		278	18+		328	4		378	2		428	0		478			
0		29	0		79	0		129	2+		179	0		229	0		279	1+		329	3		379	0		429	0		479			
0		30	0		80	0		130	0+		180	0		230	0		280	0+		330	0		380	1		430	0		480			
0		31	0		81	0		131	0+		181	0		231	0		281	0		331	1		381	1		431	0		481			
0		32	0		82	0		132	0		182	0		232	0		282	0		332	0		382	1		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	1		333	0		383	0		433	0		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	1		137	0		187	0		237	0		287	1		337	0		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	4		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	1		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	2		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	5		341	0		391	0		441	0		491			
0		42	1		92	0		142	0+		192	0		242	0		292	5		342	0		392	0		442	0		492			
0		43	0		93	0		143	0+		193	1		243	0		293	4		343	0		393	0		443	0		493			
0		44	0		94	0		144	0+		194	1+		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	0+		195	2+		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	0+		196	3+		246	0		296	0		346	1		396	0		446	0		496			
0		47	0		97	0		147	0+		197	6+		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0+		198	1+		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0+		199	1+		249	0		299	0		349	0		399	0		449	0		499			
0		50	0		100	0		150	0+		200	5+		250	1		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP1.SAMPLE]KCKD61AD\_171271244.CNF;1

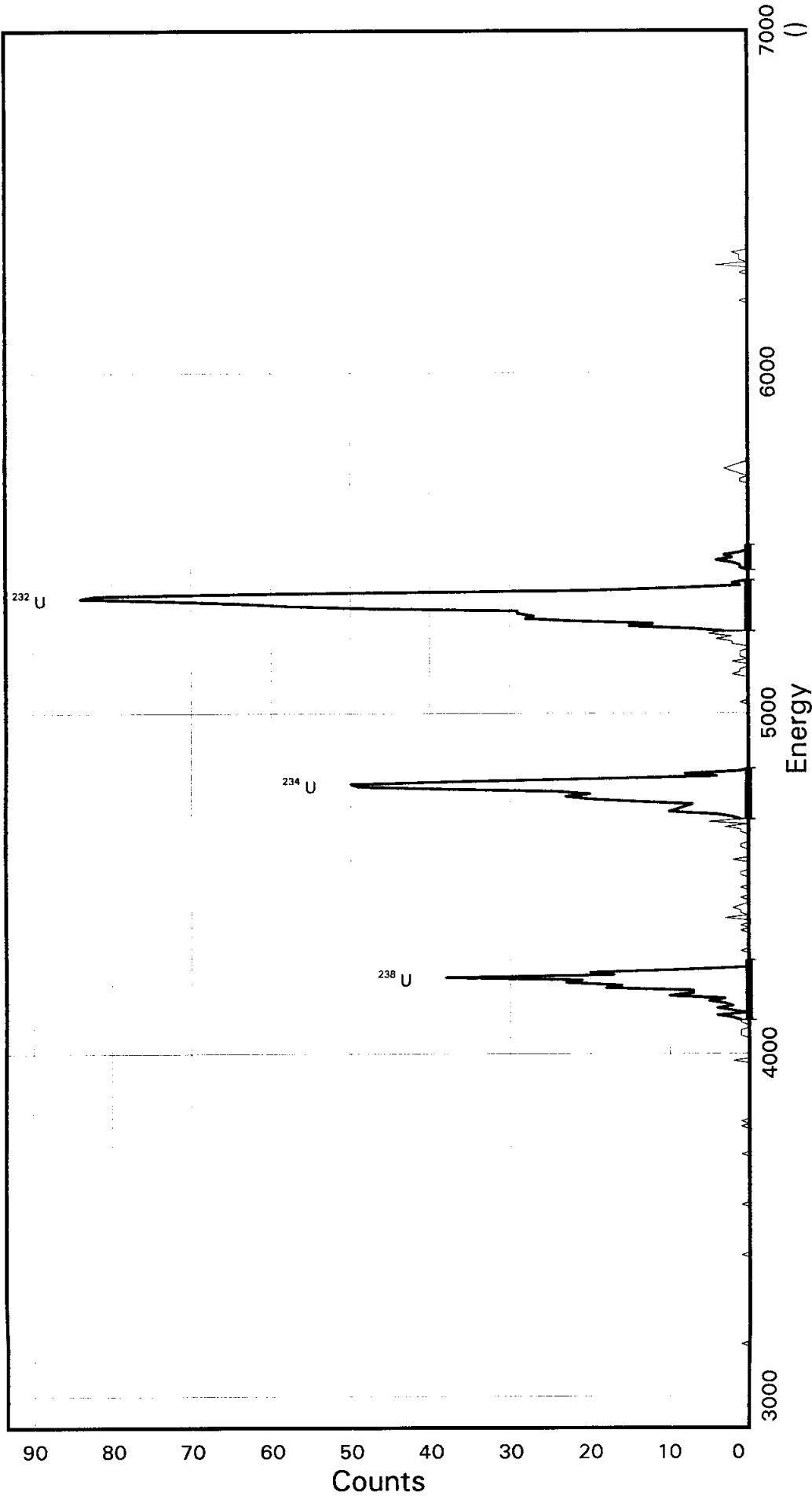
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4215.63	168	182	83	81	0.22		
4785.94	244	259	85	83	0.22		
5333.10	315	331	763	751	0.43		
5447.77	335	346	21	22	-0.22		
5724.03	374	382	15	15	0.00		
6318.83	453	464	18	18	0.00		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7327115

Sample ID: KCKD81AD  
Detector ID: ALP2 1



Energy Coefficients:  
Offset: 2.88584E+03  
Slope: 7.36165E+00  
Quadrature: 1.28252E-04

Acquisition Start: 17-DEC-2007 12:44:47.03  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

SAMPLE IDENTIITY: KCKD81AD

TITLE : U BRCO

DETECTOR : ALP2 1  
CONFIGURATION NAME : \$DISK1:[ALP2.SAMPLE]KCKD81AD\_171271244.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:25

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 12:44:47 CALIB DATE : 02-DEC-2007 09:13:03

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

OFFSET : 2885.84 keV CONSTANT FWHM : 9.00000 Channels  
SLOPE : 7.36165 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 1.282520E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %



Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKD81AD

Flags Key

Detector: ALP2 1  
 Report Date: 17-Dec-07 04:05 PM  
 Acquire Date: 17-DEC-2007 12:44:47.03  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 200 minutes  
 Bkgnd Live Time: 1000 minutes

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
U-232	673	13	0	3.352	5330.2	148.9	318	338	0.00	0.00	P
U-234	351	2	0	1.753	4784.7	148.5	244	264	0.00	0.00	P
U-235	11	2	0	0.053	4407.9	148.3	194	214	0.00	0.00	
U-238	215	3	0	1.072	4208.1	177.8	164	188	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:05:03

Configuration : \$DISK1:[ALP2.SAMPLE]KCKD81AD\_171271244.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:44:47  
 Sample ID : KCKD81AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP2 Detector geometry:  
 Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 0.0%  
 Start energy : 2907.93 End energy : 6688.63  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4216.26	215	0	51.53	180.16	164	24	1.79E-02	6.8	
2	0	4786.41	351	0	51.53	257.02	244	20	2.92E-02	5.3	
3	0	5330.24	673	0	51.53	330.15	318	20	5.61E-02	3.9	
4	0	5452.05	13	0	29.45	346.50	342	10	1.08E-03	27.7	

Alpha Spectrum Listing  
(Version: 1 Apr-07)

Sample Identity: KCKDBIAD

Flags Key

Detector: ALP2 J

Report Date: 17 Dec 07 04:05 PM

Intersect Region: 0

Acquire Date: 17 DEC 2007 12:44:47.03

Non-Intersect Region: 0

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0+		201	14+		251	2		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	1+		202	20+		252	1		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0+		203	23+		253	1		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0+		204	20+		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	3+		205	24+		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0+		206	38+		256	2		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	1+		207	49+		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	1		158	1+		208	50+		258	1		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	1		159	2+		209	36+		259	1		309	0		359	0		409	1		459	0		509
0		10	0		60	0		110	1		160	1+		210	19+		260	1		310	0		360	0		410	0		460	0		510
0		11	0		61	1		111	0		161	0+		211	4+		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0+		212	8+		262	0		312	0		362	0		412	4		462	0		512
0		13	0		63	0		113	1		163	1+		213	1+		263	2		313	0		363	0		413	0		463			
0		14	0		64	0		114	1+		164	0+		214	0		264	2		314	0		364	0		414	1		464			
0		15	0		65	0		115	2+		165	0		215	0		265	4		315	0		365	0		415	1		465			
0		16	0		66	0		116	4+		166	0		216	0		266	2		316	0		366	0		416	1		466			
0		17	0		67	0		117	0+		167	1		217	0		267	5		317	0		367	0		417	2		467			
0		18	0		68	0		118	2+		168	0		218	0		268	3+		318	0		368	0		418	0		468			
0		19	0		69	0		119	4+		169	0		219	0		269	7+		319	0		369	0		419	0		469			
0		20	0		70	0		120	2+		170	0		220	0		270	15+		320	0		370	0		420	0		470			
0		21	1		71	0		121	3+		171	0		221	0		271	12+		321	0		371	0		421	0		471			
0		22	0		72	1		122	5+		172	1		222	0		272	22+		322	0		372	0		422	0		472			
0		23	0		73	0		123	3+		173	1		223	0		273	28+		323	0		373	0		423	0		473			
0		24	0		74	1		124	10+		174	0		224	0		274	27+		324	0		374	0		424	0		474			
0		25	0		75	0		125	7+		175	0		225	0		275	29+		325	0		375	0		425	0		475			
0		26	0		76	0		126	7+		176	0		226	0		276	29+		326	0		376	0		426	0		476			
0		27	0		77	0		127	18+		177	0		227	0		277	47+		327	1		377	0		427	0		477			
0		28	0		78	0		128	16+		178	2		228	0		278	58+		328	1		378	0		428	0		478			
0		29	0		79	0		129	23+		179	0		229	0		279	64+		329	0		379	0		429	0		479			
0		30	0		80	0		130	21+		180	0		230	0		280	73+		330	1		380	0		430	0		480			
0		31	0		81	0		131	38+		181	0		231	0		281	84+		331	2		381	0		431	0		481			
0		32	0		82	0		132	17+		182	0		232	0		282	82+		332	3		382	0		432	0		482			
0		33	0		83	0		133	20+		183	1		233	0		283	58+		333	2		383	0		433	0		483			
0		34	0		84	0		134	8+		184	1		234	0		284	20+		334	1		384	0		434	0		484			
0		35	0		85	0		135	0+		185	0		235	0		285	9+		335	0		385	0		435	0		485			
1		36	0		86	0		136	0+		186	0		236	0		286	1+		336	0		386	0		436	0		486			
0		37	0		87	0		137	0+		187	0		237	0		287	2+		337	0		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	1		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	1		240	1		290	0		340	0		390	0		440	0		490			
0		41	1		91	0		141	0		191	3		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	1		192	0		242	0		292	0		342	0		392	0		442	0		492			
0		43	0		93	0		143	0		193	5		243	0		293	1		343	0		393	0		443	0		493			
0		44	0		94	0		144	0+		194	1+		244	0		294	1		344	0		394	0		444	0		494			
0		45	0		95	0		145	0+		195	2+		245	0		295	2		345	0		395	0		445	0		495			
0		46	0		96	0		146	0+		196	4+		246	0		296	4		346	0		396	0		446	0		496			
0		47	0		97	0		147	0+		197	10+		247	0		297	2		347	0		397	0		447	0		497			
0		48	0		98	2		148	0+		198	9+		248	0		298	3		348	0		398	1		448	0		498			
0		49	0		99	0		149	0+		199	8+		249	0		299	1		349	0		399	0		449	0		499			
0		50	0		100	0		150	1+		200	7+		250	0		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP2.SAMPLE]KCKD81AD\_171271244.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4216.25	164	188	215	211	0.27		
4786.41	244	264	351	347	0.21		
5330.24	318	338	673	670	0.12		
5452.05	342	352	13	14	-0.28		

End of Report

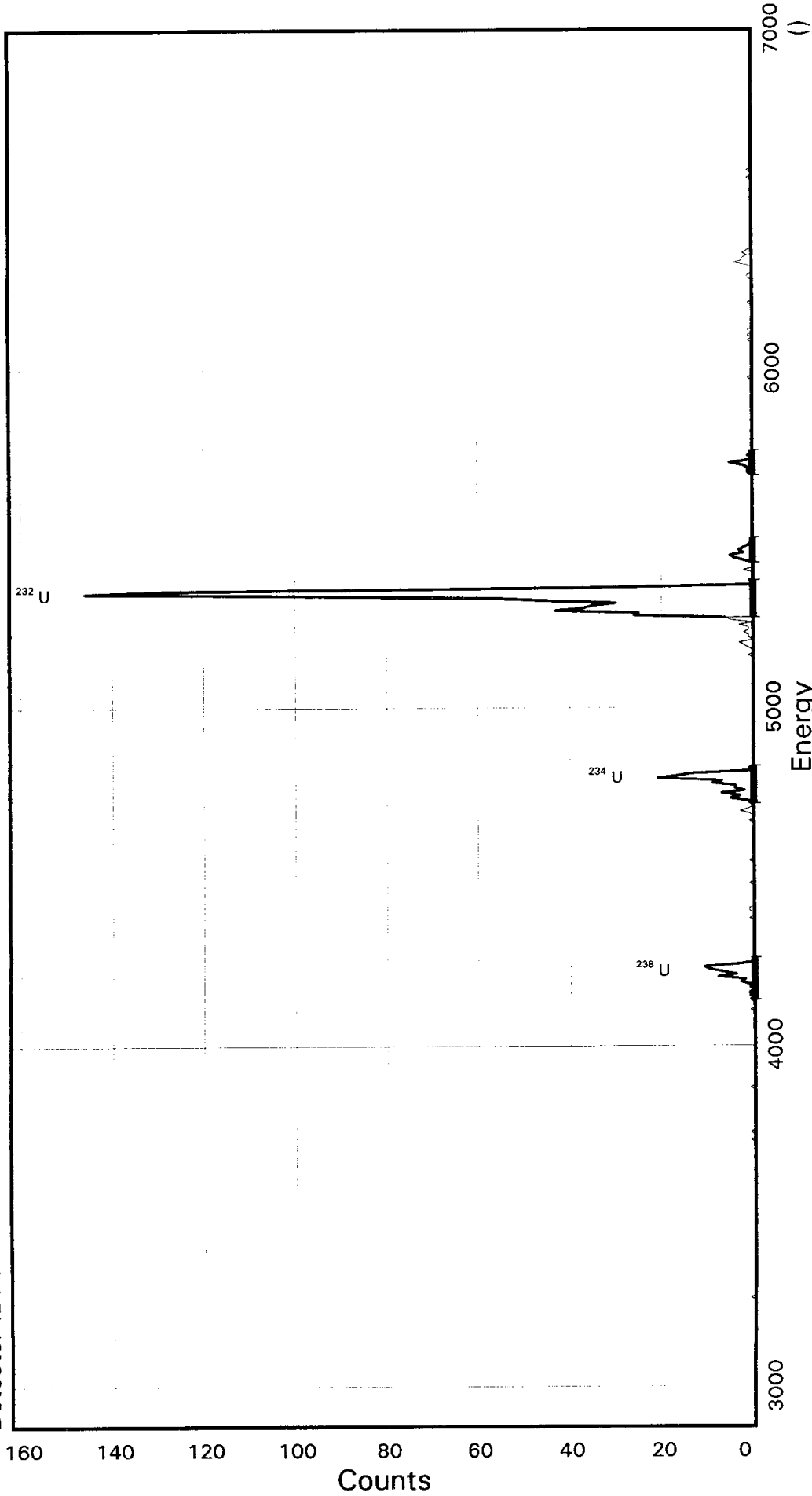
STL Richland WA.

U BRCO

Batch ID: 7327115

Sample ID: KCKD91AD

Detector ID: ALP3 1



Energy Coefficients:  
Offset: 2.86025E+03  
Slope: 7.36921E+00  
Quadrature: 1.47559E-05

Acquisition Start: 17-DEC-2007 16:40:05.99

Preset Live Time: 0 03:20:00.00

Elapsed Live Time: 0 03:20:03.00

SAMPLE IDENTIITY: KCKD91AD

TITLE : U BRCO

DETECTOR : ALP3 1  
CONFIGURATION NAME : \$DISK1:[ALP3.SAMPLE]KCKD91AD\_171271640.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:27

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 16:40:05 CALIB DATE : 02-DEC-2007 08:33:11

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:03

OFFSET : 2860.25 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 7.36921 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 1.475590E-05 keV/C<sup>2</sup> SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKD91AD

Flags Key

Detector: ALP3 1  
 Report Date: 17-Dec-07 08:00 PM  
 Acquire Date: 17-DEC-2007 16:40:05.99  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 200 minutes  
 Bkgnd Live Time: 1000 minutes

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrstct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	724	11	0	3.608	5335.4	110.7	326	341	0.00	0.00	P
U-234	96	3	0	0.477	4789.8	110.7	252	267	0.00	0.00	P
U-235	3	3	0	0.012	4413.0	110.6	201	216	0.00	0.00	
U-238	56	6	0	0.274	4213.2	125.4	173	190	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 20:00:25

Configuration : \$DISK1:[ALP3.SAMPLE]KCKD91AD\_171271640.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 16:40:05  
 Sample ID : KCKD91AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP3 Detector geometry:  
 Elapsed live time: 0 03:20:03.00 Elapsed real time: 0 03:20:03.00 0.0%  
 Start energy : 2882.35 End energy : 6637.15  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4221.00	56	0	44.22	184.59	173	17	4.67E-03	13.4	
2	0	4795.55	96	0	29.48	262.48	252	15	8.00E-03	10.2	
3	0	5335.37	724	0	29.48	335.65	326	15	6.03E-02	3.7	
4	0	5450.04	19	0	36.85	351.19	348	10	1.58E-03	22.9	
5	0	5717.62	12	0	29.48	387.44	383	10	1.00E-03	28.9	

Alpha Spectrum Listing

(Version: 1 Apr 07)

Sample Identity: KCKD91AD

Flags Key

Detector: ALP3 1

Report Date: 17 Dec 07 08:00 PM

Intersect Region: 0

Acquire Date: 17 DEC 2007 16:40:05.99

Non Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0+		201	0		251	0		301	5		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0+		202	1+		252	0		302	2		352	0		402	0		452	1		502
0		3	0		53	0		103	0		153	0+		203	1+		253	0		303	3		353	0		403	0		453	0		503
0		4	1		54	0		104	0		154	0+		204	5+		254	0		304	2		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0+		205	3+		255	0		305	1		355	0		405	0		455	1		505
0		6	0		56	0		106	0		156	1+		206	7+		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0+		207	2+		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0+		208	4+		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	1+		209	4+		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	1+		210	9+		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0+		211	7+		261	1		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0+		212	21+		262	0		312	0		362	0		412	1		462	0		512
0		13	0		63	0		113	0		163	0+		213	17+		263	0		313	0		363	0		413	1		463			
0		14	0		64	0		114	0		164	0+		214	13+		264	1		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0+		215	0+		265	2		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0+		216	1+		266	3		316	0		366	0		416	0		466			
0		17	0		67	1		117	0		167	0		217	0		267	0		317	0		367	0		417	1		467			
0		18	0		68	0		118	0		168	0		218	0		268	1		318	0		368	0		418	4		468			
0		19	0		69	0		119	1		169	0		219	0		269	1		319	0		369	0		419	2		469			
0		20	0		70	1		120	0		170	1		220	0		270	2		320	0		370	0		420	2		470			
0		21	0		71	0		121	0		171	0		221	0		271	1		321	0		371	0		421	1		471			
0		22	0		72	0		122	0		172	0		222	0		272	1		322	0		372	1		422	2		472			
0		23	0		73	0		123	1+		173	0		223	0		273	3		323	0		373	0		423	1		473			
0		24	0		74	0		124	0+		174	0		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	1+		175	0		225	0		275	5		325	0		375	0		425	0		475			
0		26	0		76	0		126	1+		176	0		226	0		276	6+		326	0		376	0		426	0		476			
0		27	0		77	0		127	0+		177	0		227	0		277	26+		327	0		377	0		427	0		477			
0		28	0		78	0		128	1+		178	0		228	0		278	25+		328	0		378	0		428	0		478			
0		29	0		79	0		129	1+		179	1		229	0		279	43+		329	0		379	0		429	0		479			
0		30	0		80	0		130	3+		180	0		230	0		280	37+		330	0		380	0		430	0		480			
0		31	0		81	0		131	2+		181	0		231	0		281	35+		331	0		381	0		431	0		481			
0		32	0		82	0		132	8+		182	0		232	0		282	30+		332	0		382	0		432	0		482			
0		33	0		83	0		133	4+		183	0		233	0		283	45+		333	0		383	0		433	0		483			
0		34	0		84	0		134	7+		184	0		234	0		284	56+		334	1		384	0		434	0		484			
0		35	0		85	0		135	10+		185	0		235	0		285	96+		335	1		385	0		435	0		485			
0		36	0		86	0		136	11+		186	0		236	0		286	146+		336	1		386	0		436	0		486			
0		37	0		87	0		137	4+		187	0		237	0		287	127+		337	2		387	1		437	0		487			
0		38	0		88	1		138	0+		188	0		238	0		288	39+		338	5		388	0		438	0		488			
0		39	0		89	0		139	0+		189	0		239	0		289	0+		339	1		389	1		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	0+		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	1		341	1		391	1		441	0		491			
0		42	0		92	0		142	0		192	0		242	0		292	0		342	0		392	0		442	0		492			
0		43	0		93	0		143	0		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	1		245	0		295	2		345	0		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	1		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	3		249	0		299	2		349	0		399	0		449	0		499			
0		50	0		100	0		150	0		200	1		250	0		300	4		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP3.SAMPLE]KCKD91AD\_171271640.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4220.99	173	190	56	54	0.27		
4795.55	252	267	96	95	0.10		
5335.36	326	341	724	712	0.45		
5450.04	348	358	19	19	0.00		
5717.62	383	393	12	12	0.00		

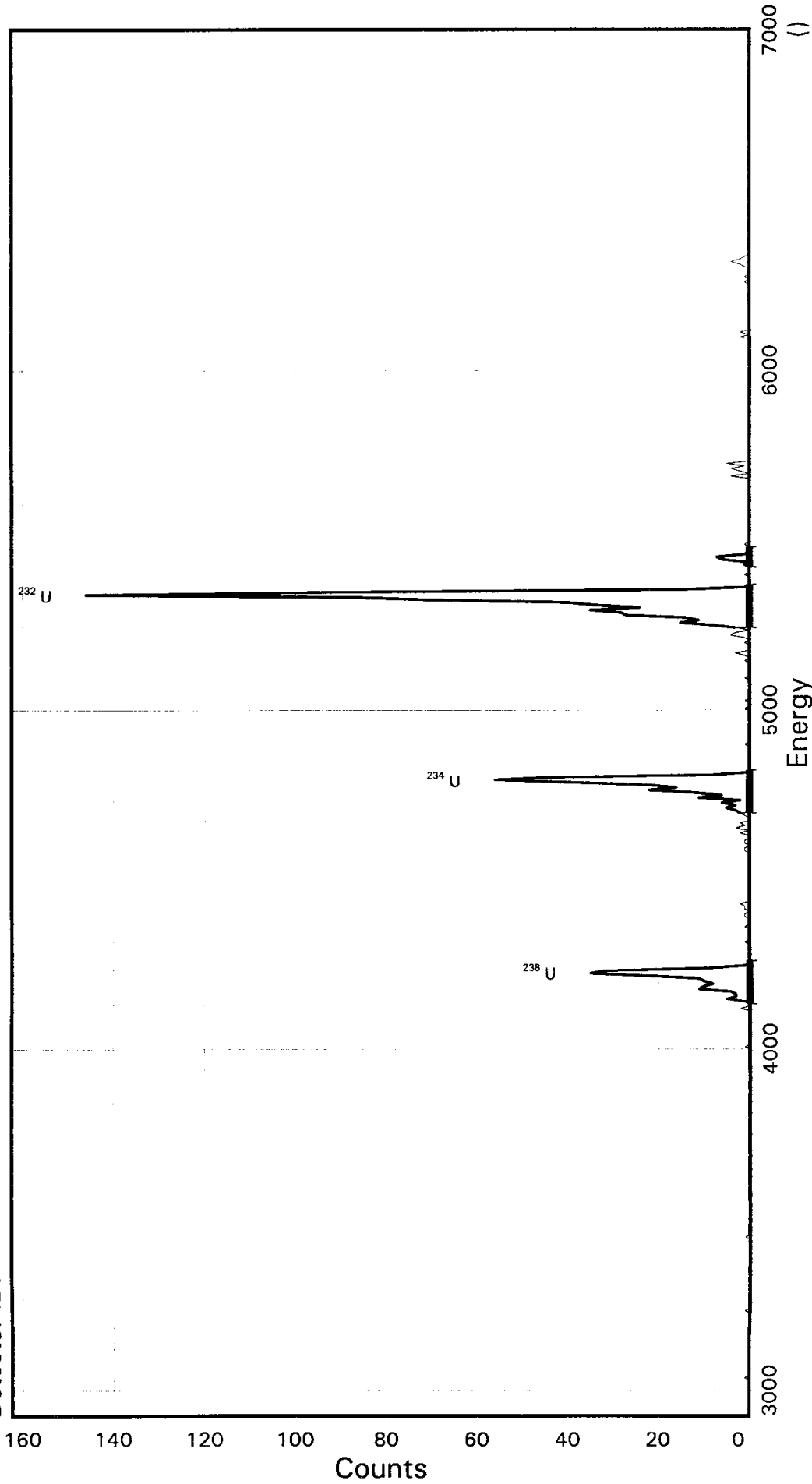
End of Report



STL Richland WA.  
U BRCO

Batch ID: 7327115

Sample ID: KCKEA1AD  
Detector ID: ALP4 1



Energy Coefficients:  
Offset: 2.90291E+03  
Slope: 7.46125E+00  
Quadrature: -3.23275E-05

Acquisition Start: 17-DEC-2007 16:40:58.48  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:05.00

SAMPLE IDENTIITY: KCKEA1AD

TITLE : U BRCO

DETECTOR : ALP4 1  
CONFIGURATION NAME : \$DISK1:[ALP4.SAMPLE] KCKEA1AD\_171271640.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:32

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 16:40:58 CALIB DATE : 02-DEC-2007 08:33:03

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:05

OFFSET : 2902.91 keV CONSTANT FWHM : 7.33333 Channels  
SLOPE : 7.46125 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : -.323275E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEA1AD

Flags Key

Detector: ALP4 1	P: Peak Identified
Report Date: 17-Dec-07 08:01 PM	I: Peak Intersect
Acquire Date: 17-DEC-2007 16:40:58.48	S: Single Non-peak Intersect
Tracer Nuclide: U-232	M: Multiple Non-peak Intersect
High Counts Limit: 36	H: High Non-peak Sample Count
Sample Live Time: 200 minutes	A: Altered via ALP-RGN-EDIT
Bkgrnd Live Time: 1000 minutes	

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region			Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
					Energy keV	Width keV	Region					
U-232	661	10	0	3.294	5335.9	126.5	314	331	0.00	0.00	P	
U-234	261	7	0	1.297	4790.3	126.6	241	258	0.00	0.00	P	
U-235	8	1	0	0.039	4413.5	126.6	190	207	0.00	0.00		
U-238	167	4	0	0.831	4213.7	126.7	165	182	0.00	0.00	P	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 20:01:20

Configuration : \$DISK1:[ALP4.SAMPLE]KCKEA1AD\_171271640.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : U BRCO  
Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 16:40:58  
Sample ID : KCKEA1AD Sample quantity : 0.00000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP4 Detector geometry:  
Elapsed live time: 0 03:20:05.00 Elapsed real time: 0 03:20:05.00 0.0%  
Start energy : 2925.30 End energy : 6714.60  
Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4222.54	167	0	37.31	177.00	165	17	1.39E-02	7.7	
2	0	4793.03	261	0	29.85	253.60	241	17	2.17E-02	6.2	
3	0	5335.87	661	0	29.85	326.54	314	17	5.51E-02	3.9	
4	0	5446.91	17	0	29.85	341.47	338	8	1.42E-03	24.3	

Alpha Spectrum Listing  
(Version: 1 Apr-07)

Sample Identity: KCKEA1AD

Flags Key

Detector: ALP4 1

Report Date: 17 Dec 07 08:01 PM

Intersect Region: 0

Acquire Date: 17 DEC 2007 16:40:58.48

Non Intersect Region: 4,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	0	51	0	101	0	151	1+	201	16+	251	1	301	0	351	0	401	1	451	0	501									
0	0	52	0	102	0	152	0+	202	22+	252	0	302	0	352	0	402	0	452	0	502									
0	0	53	0	103	0	153	1+	203	32+	253	1	303	0	353	0	403	1	453	0	503									
0	0	54	0	104	0	154	1+	204	56+	254	3	304	0	354	0	404	0	454	0	504									
0	0	55	0	105	0	155	2+	205	45+	255	0	305	0	355	0	405	0	455	0	505									
0	0	56	0	106	0	156	0+	206	8+	256	0	306	0	356	0	406	0	456	0	506									
0	0	57	0	107	0	157	0+	207	0+	257	0	307	0	357	0	407	1	457	0	507									
0	0	58	0	108	0	158	0	208	0	258	1	308	0	358	0	408	2	458	0	508									
0	0	59	0	109	0	159	0	209	0	259	0	309	0	359	0	409	4	459	0	509									
0	0	60	0	110	0	160	0	210	0	260	1	310	0	360	0	410	2	460	0	510									
0	0	61	0	111	0	161	0	211	0	261	4	311	0	361	0	411	1	461	0	511									
0	0	62	0	112	0	162	0	212	0	262	3	312	0	362	0	412	0	462	0	512									
0	0	63	0	113	2	163	0	213	0	263	0	313	0	363	0	413	0	463											
0	0	64	0	114	0	164	0	214	0	264	3+	314	0	364	0	414	0	464											
0	0	65	0	115	0+	165	0	215	0	265	8+	315	0	365	0	415	0	465											
0	0	66	0	116	1+	166	0	216	0	266	15+	316	0	366	0	416	0	466											
0	0	67	0	117	5+	167	0	217	0	267	11+	317	0	367	0	417	0	467											
1	0	68	0	118	3+	168	0	218	1	268	14+	318	0	368	0	418	0	468											
0	0	69	0	119	3+	169	0	219	0	269	27+	319	0	369	0	419	0	469											
0	0	70	0	120	4+	170	0	220	0	270	28+	320	0	370	0	420	0	470											
0	0	71	0	121	11+	171	0	221	0	271	35+	321	0	371	0	421	0	471											
0	0	72	0	122	10+	172	0	222	0	272	24+	322	0	372	0	422	0	472											
0	0	73	1	123	8+	173	0	223	0	273	34+	323	0	373	0	423	0	473											
0	0	74	0	124	10+	174	0	224	0	274	40+	324	4	374	0	424	0	474											
0	0	75	0	125	11+	175	0	225	0	275	71+	325	0	375	0	425	0	475											
0	0	76	0	126	22+	176	1	226	0	276	87+	326	2	376	0	426	0	476											
0	0	77	0	127	35+	177	1	227	0	277	146+	327	4	377	0	427	0	477											
0	0	78	0	128	32+	178	0	228	0	278	95+	328	1	378	0	428	0	478											
0	0	79	0	129	9+	179	1	229	0	279	15+	329	5	379	2	429	0	479											
0	0	80	0	130	1+	180	1	230	0	280	0+	330	0	380	0	430	0	480											
0	0	81	0	131	0+	181	0	231	0	281	0	331	0	381	2	431	0	481											
0	0	82	0	132	0	182	0	232	1	282	0	332	0	382	0	432	0	482											
0	0	83	0	133	0	183	2	233	0	283	0	333	0	383	0	433	0	483											
0	0	84	0	134	0	184	0	234	0	284	0	334	0	384	0	434	0	484											
0	0	85	0	135	0	185	3	235	1	285	1	335	0	385	0	435	0	485											
0	0	86	0	136	0	186	1	236	0	286	0	336	0	386	0	436	0	486											
0	0	87	0	137	0	187	2	237	0	287	0	337	0	387	0	437	0	487											
0	0	88	0	138	0	188	0	238	0	288	0	338	0	388	0	438	0	488											
0	0	89	0	139	0	189	0	239	0	289	1	339	0	389	0	439	0	489											
0	0	90	0	140	1+	190	1	240	0	290	1	340	0	390	0	440	0	490											
0	0	91	0	141	0+	191	2+	241	0	291	6	341	0	391	0	441	0	491											
0	0	92	0	142	0+	192	3+	242	0	292	7	342	0	392	0	442	0	492											
0	0	93	0	143	0+	193	5+	243	0	293	1	343	0	393	0	443	0	493											
1	0	94	0	144	0+	194	3+	244	1	294	0	344	0	394	0	444	0	494											
0	0	95	0	145	0+	195	6+	245	0	295	0	345	0	395	0	445	0	495											
0	0	96	0	146	1+	196	2+	246	0	296	0	346	0	396	0	446	0	496											
0	0	97	0	147	0+	197	11+	247	0	297	1	347	0	397	0	447	0	497											
0	0	98	1	148	0+	198	6+	248	0	298	0	348	0	398	0	448	0	498											
0	0	99	0	149	0+	199	12+	249	0	299	0	349	0	399	0	449	0	499											
0	0	100	0	150	1+	200	22+	250	0	300	0	350	0	400	0	450	0	500											

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP4.SAMPLE]KCKEA1AD\_171271640.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4222.54	165	182	167	165	0.15		
4793.02	241	258	261	257	0.25		
5335.86	314	331	661	653	0.31		
5446.91	338	346	17	16	0.24		

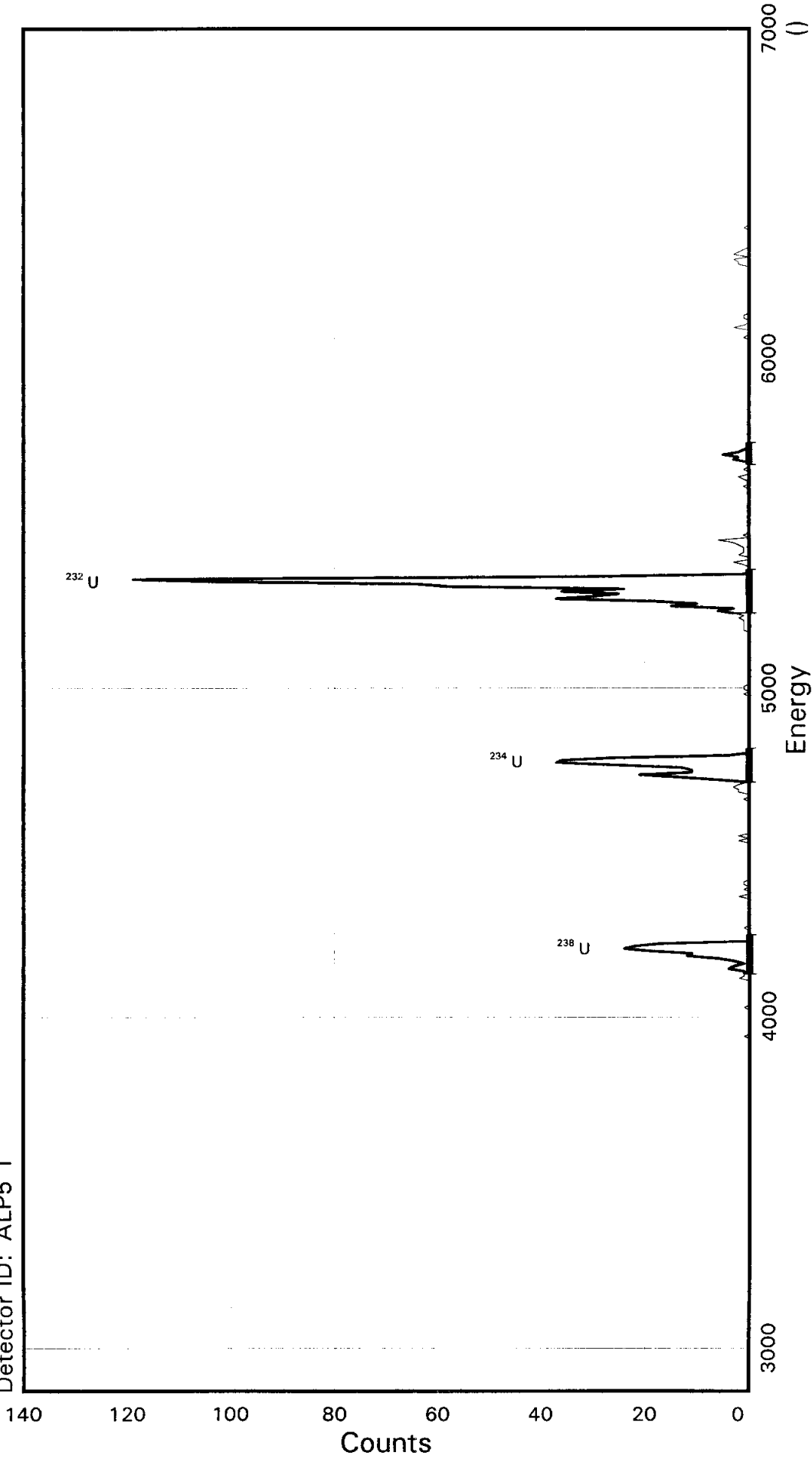
End of Report

STL Richland WA.

U BRCO

Sample ID: KCKEA1AE  
Detector ID: ALP5 1

Batch ID: 7327115



Acquisition Start: 17-DEC-2007 12:45:01.64  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:06.00

Energy Coefficients:  
Offset: 2.84800E+03  
Slope: 7.37036E+00  
Quadrature: 5.27821E-05

SAMPLE IDENTIITY: KCKEA1AE

TITLE : U BRCO

DETECTOR : ALP5 1  
CONFIGURATION NAME : \$DISK1:[ALP5.SAMPLE] KCKEA1AE\_171271245.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:37

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 12:45:01 CALIB DATE : 02-DEC-2007 08:33:21

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:06

OFFSET : 2848.00 keV CONSTANT FWHM : 7.66667 Channels  
SLOPE : 7.37036 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 5.278210E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEA1AE

Flags Key

Detector: ALP5 1  
 Report Date: 17-Dec-07 04:05 PM  
 Acquire Date: 17-DEC-2007 12:45:01.64  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 200 minutes  
 Bkgrnd Live Time: 1000 minutes

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
					Energy keV	Width keV					
U-232	593	4	0	2.960	5323.1	133.3	322	340	0.00	0.00	P
U-234	206	2	0	1.027	4777.6	103.6	253	267	0.00	0.00	P
U-235	5	1	0	0.024	4400.8	133.1	197	215	0.00	0.00	
U-238	126	8	0	0.622	4201.0	118.2	174	190	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:05:39

Configuration : \$DISK1:[ALP5.SAMPLE]KCKEA1AE\_171271245.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:45:01  
 Sample ID : KCKEA1AE Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP5 Detector geometry:  
 Elapsed live time: 0 03:20:06.00 Elapsed real time: 0 03:20:06.00 0.0%  
 Start energy : 2870.11 End energy : 6635.46  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4206.09	126	0	36.85	184.02	174	16	1.05E-02	8.9	
2	0	4778.64	206	0	29.48	261.46	253	14	1.72E-02	7.0	
3	0	5323.14	593	0	36.85	335.02	322	18	4.94E-02	4.1	
4	0	5704.53	12	0	29.48	386.50	383	9	1.00E-03	28.9	



Alpha Spectrum Listing  
(Version: 1-Apr-07)

Sample Identity: KCKEAIAE

Flags Key

Detector: ALP5 1

Report Date: 17 Dec 07 04:05 PM

Intersect Region: \*

Acquire Date: 17 DEC 2007 12:45:01.64

Non Intersect Region: \*

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0+		201	3		251	0		301	3		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0+		202	2		252	0		302	6		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0+		203	0+		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0+		204	6+		254	0		304	1		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0+		205	13+		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	2+		206	21+		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0+		207	11+		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0+		208	11+		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	1+		209	13+		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	1		160	0+		210	25+		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	1+		211	37+		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	1+		212	36+		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0+		213	26+		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0+		214	4+		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0+		215	0+		265	1		315	0		365	0		415	2		465			
0		16	0		66	0		116	0		166	0		216	0+		266	1		316	0		366	0		416	2		466			
0		17	0		67	0		117	0		167	0		217	0		267	1		317	0		367	0		417	3		467			
0		18	0		68	0		118	0		168	0		218	0		268	1		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	1		319	0		369	0		419	3		469			
0		20	0		70	0		120	0		170	0		220	0		270	2		320	0		370	0		420	2		470			
0		21	0		71	0		121	0		171	0		221	0		271	1		321	0		371	0		421	1		471			
0		22	0		72	0		122	2		172	0		222	0		272	3+		322	0		372	0		422	0		472			
0		23	0		73	0		123	1		173	0		223	0		273	6+		323	0		373	0		423	0		473			
0		24	0		74	0		124	1+		174	0		224	0		274	3+		324	1		374	0		424	0		474			
0		25	0		75	0		125	1+		175	0		225	0		275	15+		325	0		375	0		425	0		475			
0		26	0		76	0		126	4+		176	0		226	0		276	10+		326	0		376	0		426	0		476			
0		27	0		77	0		127	3+		177	0		227	0		277	18+		327	1		377	0		427	0		477			
0		28	0		78	0		128	1+		178	0		228	0		278	37+		328	2		378	0		428	0		478			
0		29	0		79	0		129	3+		179	2		229	0		279	30+		329	0		379	0		429	0		479			
0		30	0		80	0		130	6+		180	0		230	0		280	25+		330	0		380	0		430	1		480			
0		31	0		81	0		131	12+		181	2		231	0		281	36+		331	1		381	0		431	0		481			
0		32	0		82	0		132	11+		182	0		232	0		282	24+		332	0		382	0		432	0		482			
0		33	0		83	0		133	19+		183	0		233	0		283	58+		333	0		383	0		433	0		483			
0		34	0		84	0		134	24+		184	0		234	0		284	64+		334	0		384	0		434	0		484			
0		35	0		85	0		135	22+		185	0		235	0		285	103+		335	3		385	1		435	0		485			
0		36	0		86	0		136	17+		186	0		236	0		286	119+		336	2		386	0		436	0		486			
0		37	0		87	0		137	0+		187	0		237	0		287	32+		337	5		387	0		437	0		487			
0		38	0		88	0		138	0+		188	0		238	0		288	1+		338	2		388	0		438	0		488			
0		39	0		89	0		139	0+		189	0		239	1		289	0+		339	1		389	3		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	1		440	0		490			
0		41	0		91	0		141	0		191	0		241	1		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0		242	1		292	1		342	0		392	0		442	0		492			
0		43	0		93	0		143	1		193	0		243	0		293	3		343	0		393	1		443	0		493			
0		44	0		94	0		144	0		194	0		244	0		294	0		344	0		394	1		444	0		494			
0		45	0		95	0		145	0		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	0		196	1		246	0		296	2		346	0		396	0		446	0		496			
0		47	0		97	0		147	0+		197	0		247	0		297	1		347	0		397	0		447	0		497			
0		48	0		98	1		148	0+		198	0		248	0		298	1		348	0		398	0		448	0		498			
0		49	0		99	0		149	0+		199	2		249	0		299	1		349	0		399	0		449	0		499			
0		50	0		100	0		150	0+		200	2		250	0		300	2		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP5.SAMPLE]KCKEA1AE\_171271245.CNF;1

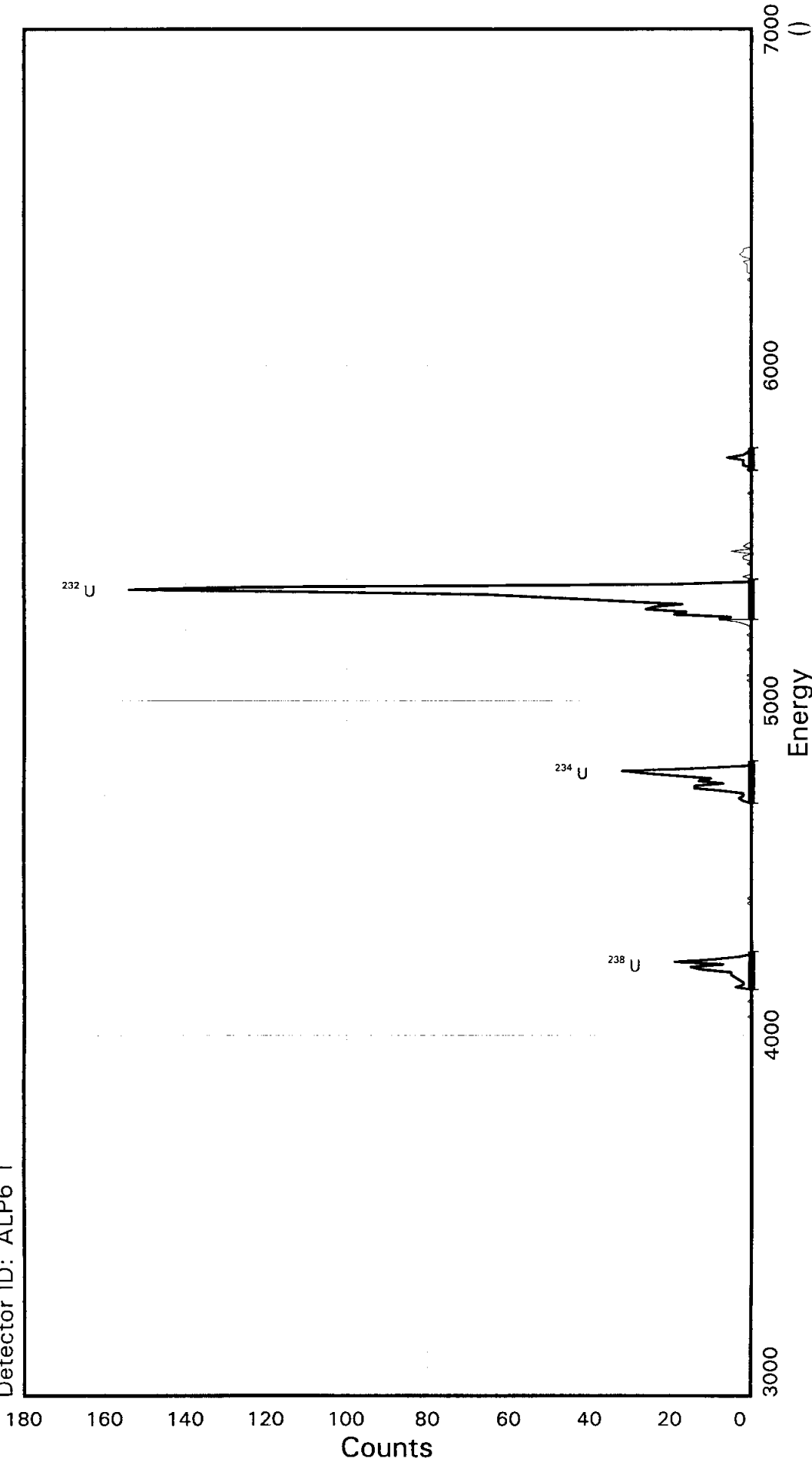
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4206.09	174	190	126	124	0.18		
4778.63	253	267	206	203	0.21		
5323.13	322	340	593	584	0.37		
5704.52	383	392	12	13	-0.29		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7327115

Sample ID: KCKEC1AD  
Detector ID: ALP6 1



Acquisition Start: 17-DEC-2007 12:45:06.48  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:05.00

Energy Coefficients:  
Offset: 2.90724E + 03  
Slope: 7.29933E + 00  
Quadrature: 3.48723E-04

SAMPLE IDENTIITY: KCKEC1AD

TITLE : U BRCO

DETECTOR : ALP6 1  
CONFIGURATION NAME : \$DISK1:[ALP6.SAMPLE] KCKEC1AD\_171271245.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:41

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 12:45:06 CALIB DATE : 02-DEC-2007 08:33:28

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:05

OFFSET : 2907.24 keV CONSTANT FWHM : 6.83333 Channels  
SLOPE : 7.29933 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 3.487230E-04 keV/C<sup>2</sup> SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEC1AD

Flags Key

Detector: ALP6 1 Report Date: 17-Dec-07 04:05 PM Acquire Date: 17-DEC-2007 12:45:06.48 Tracer Nuclide: U-232 High Counts Limit: 36 Sample Live Time: 200 minutes Bkgrnd Live Time: 1000 minutes	P: Peak Identified I: Peak Intersect S: Single Non-peak Intersect M: Multiple Non-peak Intersect H: High Non-peak Sample Count A: Altered via ALP-RGN-EDIT
---	---

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
					Energy keV	Width keV					
U-232	723	6	0	3.607	5328.2	120.4	315	331	0.00	0.00	P
U-234	168	2	0	0.838	4782.6	127.1	242	259	0.00	0.00	P
U-235	2	1	0	0.009	4405.8	119.0	192	208	0.00	0.00	
U-238	90	1	0	0.449	4206.0	111.3	167	182	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:05:51

```

Configuration      : $DISK1: [ALP6.SAMPLE] KCKEC1AD_171271245.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : U BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:45:06
Sample ID        : KCKEC1AD Sample quantity : 0.00000E+00 GRAMS
Sample type       : disk Sample geometry :
Detector name    : ALP6 Detector geometry:
Elapsed live time: 0 03:20:05.00 Elapsed real time: 0 03:20:05.00 0.0%
Start energy     : 2929.15 End energy : 6735.92
Sensitivity      : 4.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4207.30	90	0	43.80	176.62	167	15	7.50E-03	10.5	
2	0	4784.45	168	0	36.50	254.09	242	17	1.40E-02	7.7	
3	0	5328.22	723	0	29.20	326.58	315	16	6.02E-02	3.7	
4	0	5723.78	15	0	36.50	379.00	374	9	1.25E-03	25.8	

## Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCKECLAD

Flags Key

Detector: ALP6 1

Report Date: 17 Dec 07 04:05 PM

Intersect Region: \*

Acquire Date: 17 DEC 2007 12:45:06.48

Non Intersect Region: \*

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0+		201	13+		251	0		301	0		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	1+		202	10+		252	0		302	0		352	0		402			452	0		502
0		3	0		53	0		103	0		153	0+		203	18+		253	1		303	0		353	0		403	1		453	0		503
0		4	0		54	0		104	0		154	1+		204	26+		254	0		304	0		354	0		404	1		454	0		504
0		5	0		55	0		105	0		155	0+		205	32+		255	0		305	0		355	0		405	1		455	0		505
0		6	0		56	0		106	1		156	0+		206	13+		256	0		306	0		356	0		406	2		456	0		506
0		7	0		57	0		107	0		157	0+		207	1+		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0+		208	0+		258	0		308	0		358	0		408	2		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	1		309	0		359	0		409	3		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	2		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	2		461	0		511
0		12	0		62	0		112	1		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	1		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	3		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	8+		315	1		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	5+		316	0		366	0		416	0		466			
0		17	0		67	0		117	0+		167	0		217	0		267	19+		317	0		367	0		417	0		467			
0		18	0		68	0		118	4+		168	0		218	0		268	16+		318	0		368	0		418	0		468			
0		19	0		69	0		119	2+		169	0		219	0		269	26+		319	0		369	0		419	0		469			
0		20	0		70	0		120	2+		170	0		220	0		270	24+		320	0		370	0		420	0		470			
0		21	0		71	0		121	3+		171	0		221	0		271	17+		321	0		371	0		421	0		471			
0		22	0		72	0		122	4+		172	0		222	0		272	30+		322	0		372	0		422	0		472			
0		23	0		73	0		123	5+		173	0		223	0		273	41+		323	0		373	0		423	0		473			
0		24	0		74	0		124	5+		174	0		224	0		274	54+		324	1		374	0		424	0		474			
0		25	0		75	0		125	12+		175	0		225	0		275	66+		325	0		375	0		425	0		475			
0		26	0		76	0		126	15+		176	0		226	0		276	108+		326	2		376	0		426	0		476			
0		27	0		77	0		127	7+		177	0		227	0		277	154+		327	2		377	0		427	0		477			
0		28	0		78	0		128	19+		178	0		228	0		278	124+		328	2		378	0		428	0		478			
0		29	0		79	0		129	9+		179	0		229	0		279	20+		329	6		379	0		429	0		479			
0		30	0		80	0		130	3+		180	0		230	0		280	0+		330	2		380	0		430	0		480			
0		31	0		81	0		131	0+		181	0		231	0		281	0		331	1		381	0		431	0		481			
0		32	0		82	0		132	0		182	0		232	0		282	2		332	0		382	0		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	0		137	0		187	0		237	0		287	1		337	0		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	2		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	2		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	1		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	0+		192	0+		242	0		292	5		342	0		392	0		442	0		492			
0		43	0		93	0		143	0+		193	2+		243	1		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0+		194	3+		244	0		294	2		344	0		394	0		444	0		494			
0		45	0		95	0		145	0+		195	2+		245	0		295	1		345	0		395	0		445	0		495			
0		46	0		96	0		146	0+		196	2+		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0+		197	7+		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0+		198	14+		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0+		199	14+		249	0		299	0		349	0		399	1		449	0		499			
0		50	0		100	0		150	0+		200	7+		250	0		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP6.SAMPLE]KCKEC1AD\_171271245.CNF;1

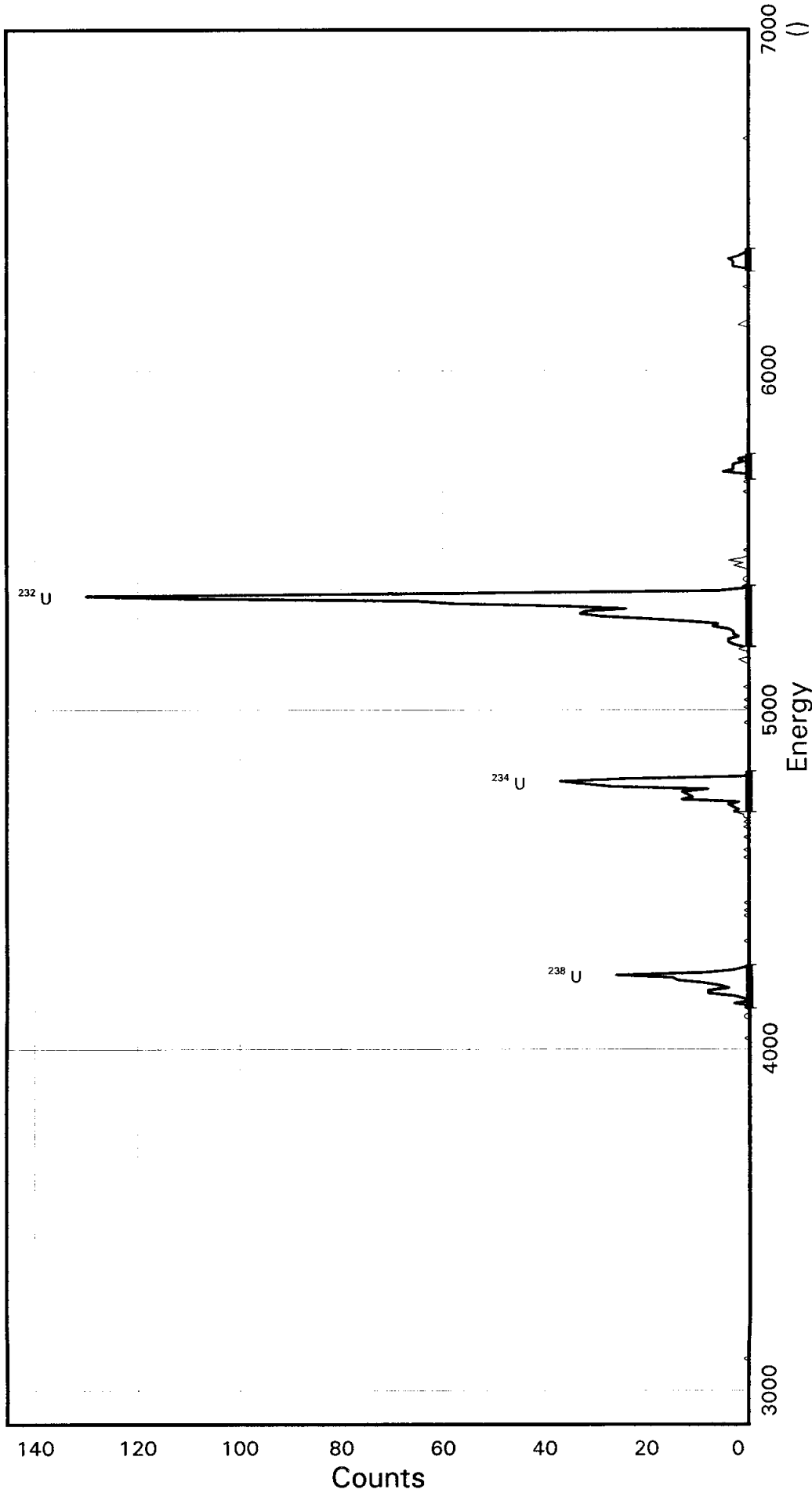
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4207.29	167	182	90	90	0.00		
4784.45	242	259	168	164	0.31		
5328.21	315	331	723	712	0.41		
5723.78	374	383	15	16	-0.26		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7327115

Sample ID: KCKED1AD  
Detector ID: ALP7 1



Energy Coefficients:  
Offset: 2.87851E+03  
Slope: 7.43174E+00  
Quadrature: 4.56151E-05

Acquisition Start: 17-DEC-2007 12:45:12.77  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:00.00



SAMPLE IDENTIITY: KCKED1AD

TITLE : U BRCO

DETECTOR : ALP7 1  
CONFIGURATION NAME : \$DISK1:[ALP7.SAMPLE]KCKED1AD\_171271245.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:45

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 12:45:12 CALIB DATE : 02-DEC-2007 08:33:36

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:00

OFFSET : 2878.51 keV CONSTANT FWHM : 6.66667 Channels  
SLOPE : 7.43174 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 4.561510E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKED1AD

Flags Key

Detector: ALP7 1  
 Report Date: 17-Dec-07 04:06 PM P: Peak Identified  
 Acquire Date: 17-DEC-2007 12:45:12.77 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide	Smpl	Bkg	Intrsc	Count	Centrd	Region	Left	Right	Left	Right	Flags
Name	Count	Count	Count	Rate	Energy	Width	Chnl	Chnl	Wdth	Wdth	
U-232	661	11	0	3.294	5331.6	179.1	310	334	0.00	0.00	P
U-234	195	0	0	0.975	4786.1	119.3	245	261	0.00	0.00	P
U-235	4	0	0	0.020	4409.3	178.8	186	210	0.00	0.00	
U-238	111	0	0	0.555	4209.5	126.6	167	184	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:05:57

Configuration : \$DISK1:[ALP7.SAMPLE]KCKED1AD\_171271245.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:45:12  
 Sample ID : KCKED1AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP7 Detector geometry:  
 Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:00.00 0.0%  
 Start energy : 2900.81 End energy : 6695.52  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4213.38	111	0	29.73	179.42	167	17	9.25E-03	9.5	
2	0	4785.10	195	0	37.16	256.14	245	16	1.62E-02	7.2	
3	0	5331.64	661	0	29.73	329.42	310	24	5.51E-02	3.9	
4	0	5709.16	17	0	22.30	380.00	376	10	1.42E-03	24.3	
5	0	6319.22	16	0	29.73	461.67	458	9	1.33E-03	25.0	

Alpha Spectrum Listing

(Version: 1 Apr-07)

Sample Identity: KCKED1AD

Flags Key

Detector: ALP7 1

Report Date: 17 Dec 07 04:06 PM

Intersect Region: X

Acquire Date: 17 DEC 2007 12:45:12.77

Non-Intersect Region: Y

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	1	0	51	0	101	0	151	0+	201	11+	251	0	301	0	351	0	401	0	451	0	501		
0	2	0	52	0	102	0	152	0+	202	12+	252	0	302	0	352	0	402	0	452	0	502		
0	3	0	53	0	103	0	153	0+	203	13+	253	0	303	0	353	0	403	0	453	0	503		
0	4	0	54	0	104	0	154	1+	204	8+	254	1	304	0	354	0	404	0	454	0	504		
0	5	0	55	0	105	1	155	0+	205	27+	255	2	305	0	355	0	405	0	455	0	505		
0	6	0	56	0	106	0	156	1+	206	32+	256	0	306	0	356	0	406	0	456	0	506		
0	7	0	57	0	107	0	157	0+	207	37+	257	0	307	0	357	0	407	0	457	0	507		
0	8	0	58	0	108	0	158	0+	208	25+	258	0	308	0	358	0	408	0	458	0	508		
0	9	0	59	0	109	0	159	1+	209	1+	259	2	309	0	359	0	409	0	459	0	509		
0	10	0	60	0	110	0	160	0+	210	0+	260	1+	310	0	360	0	410	3	460	1	510		
0	11	0	61	0	111	0	161	0	211	0	261	3+	311	0	361	0	411	3	461	0	511		
0	12	0	62	0	112	0	162	0	212	0	262	4+	312	0	362	0	412	3	462	0	512		
0	13	0	63	0	113	1	163	0	213	0	263	4+	313	0	363	0	413	4	463				
0	14	0	64	0	114	1	164	0	214	0	264	2+	314	0	364	0	414	2	464				
0	15	0	65	0	115	0	165	0	215	0	265	3+	315	0	365	0	415	1	465				
0	16	0	66	0	116	0	166	0	216	0	266	3+	316	0	366	0	416	0	466				
0	17	0	67	0	117	1+	167	0	217	0	267	4+	317	0	367	0	417	0	467				
0	18	0	68	0	118	0+	168	0	218	0	268	7+	318	0	368	0	418	0	468				
0	19	0	69	0	119	3+	169	0	219	0	269	6+	319	0	369	0	419	0	469				
0	20	0	70	0	120	0+	170	0	220	0	270	12+	320	0	370	0	420	0	470				
0	21	0	71	0	121	1+	171	0	221	0	271	20+	321	1	371	0	421	0	471				
0	22	0	72	0	122	3+	172	0	222	0	272	29+	322	0	372	0	422	0	472				
0	23	0	73	0	123	8+	173	0	223	0	273	33+	323	0	373	0	423	0	473				
0	24	0	74	0	124	8+	174	0	224	0	274	32+	324	0	374	0	424	0	474				
0	25	0	75	0	125	4+	175	0	225	0	275	24+	325	1	375	0	425	0	475				
0	26	0	76	0	126	6+	176	0	226	0	276	36+	326	0	376	0	426	0	476				
0	27	0	77	0	127	9+	177	1	227	0	277	58+	327	0	377	0	427	0	477				
0	28	0	78	0	128	14+	178	0	228	0	278	65+	328	0	378	0	428	0	478				
1	29	0	79	0	129	15+	179	0	229	0	279	110+	329	5	379	0	429	0	479				
0	30	0	80	0	130	26+	180	1	230	1	280	130+	330	3	380	0	430	0	480				
0	31	0	81	0	131	8+	181	0	231	0	281	61+	331	3	381	0	431	0	481				
0	32	0	82	0	132	3+	182	0	232	0	282	6+	332	3	382	0	432	0	482				
0	33	0	83	0	133	1+	183	0	233	0	283	1+	333	1	383	0	433	0	483				
0	34	0	84	0	134	0	184	0	234	0	284	1	334	2	384	0	434	0	484				
0	35	0	85	0	135	0	185	1	235	0	285	0	335	0	385	0	435	0	485				
0	36	0	86	0	136	0+	186	0	236	1	286	1	336	0	386	0	436	0	486				
0	37	0	87	0	137	0+	187	0	237	0	287	1	337	0	387	2	437	0	487				
0	38	0	88	0	138	0+	188	0	238	0	288	0	338	0	388	1	438	0	488				
0	39	0	89	0	139	0+	189	1	239	1	289	0	339	0	389	0	439	0	489				
0	40	0	90	0	140	0+	190	0	240	0	290	0	340	0	390	0	440	0	490				
0	41	0	91	0	141	0+	191	1	241	0	291	1	341	0	391	0	441	0	491				
0	42	0	92	0	142	0+	192	0	242	0	292	3	342	0	392	0	442	0	492				
0	43	0	93	0	143	0+	193	1	243	0	293	1	343	0	393	0	443	0	493				
0	44	0	94	0	144	1+	194	1	244	1	294	4	344	0	394	0	444	0	494				
0	45	0	95	0	145	0+	195	3+	245	0	295	1	345	0	395	0	445	0	495				
0	46	0	96	0	146	0+	196	2+	246	0	296	0	346	0	396	0	446	0	496				
0	47	0	97	0	147	0+	197	3+	247	0	297	0	347	0	397	0	447	0	497				
0	48	0	98	0	148	0+	198	4+	248	0	298	1	348	0	398	0	448	0	498				
0	49	0	99	0	149	0+	199	2+	249	0	299	0	349	0	399	0	449	0	499				
0	50	0	100	0	150	0+	200	13+	250	0	300	0	350	0	400	0	450	0	500				

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP7.SAMPLE]KCKED1AD\_171271245.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4213.37	167	184	111	110	0.09		
4785.10	245	261	195	193	0.14		
5331.63	310	334	661	655	0.23		
5709.16	376	386	17	17	0.00		
6319.22	458	467	16	16	0.00		

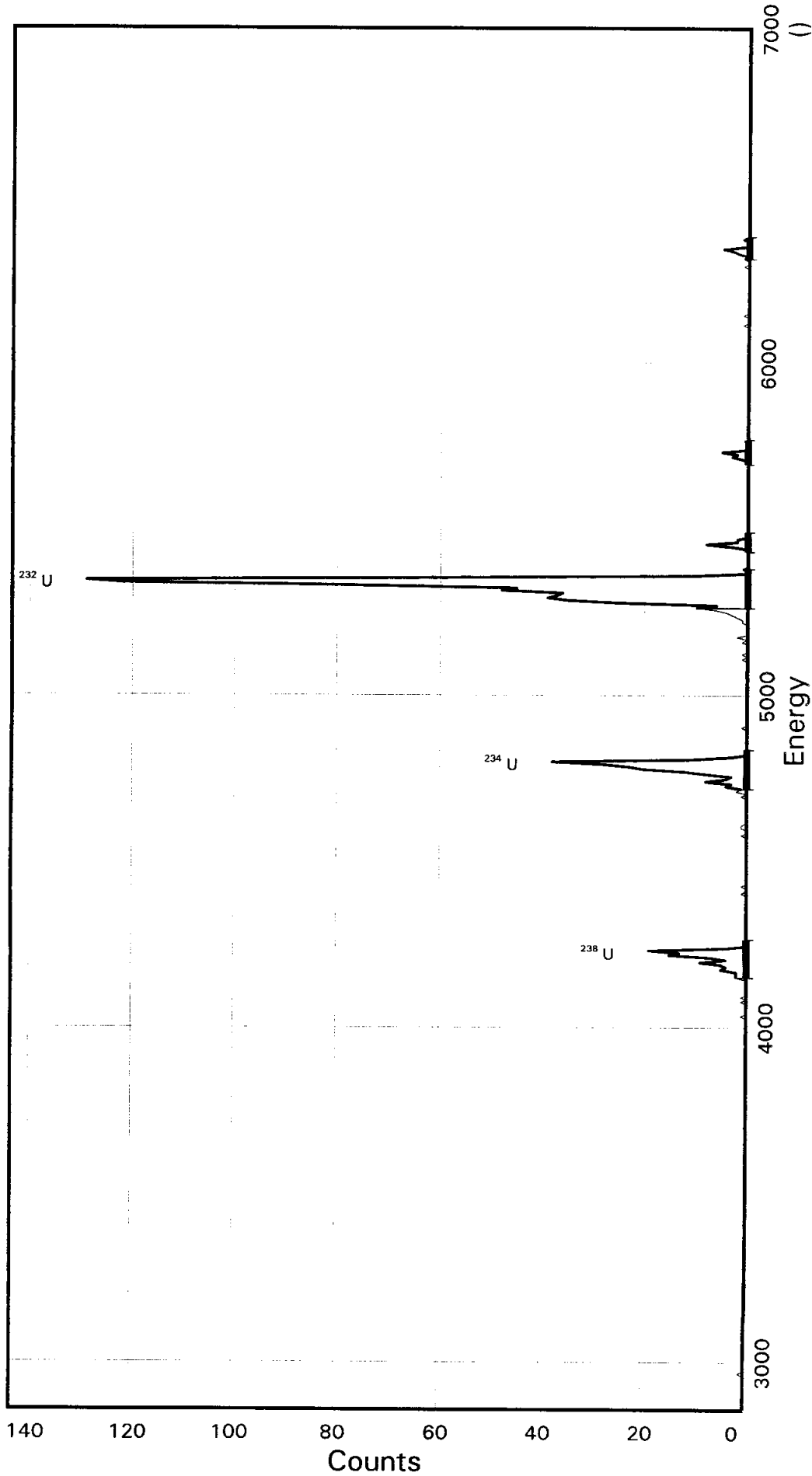
End of Report

STL Richland WA.

U BRCO

Sample ID: KCKEE1AD  
Detector ID: ALP8 1

Batch ID: 7327115



Acquisition Start: 17-DEC-2007 12:45:17.76  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:07.00

Energy Coefficients:  
Offset: 2.83606E+03  
Slope: 7.30051E+00  
Quadrature: 3.06587E-05

SAMPLE IDENTIITY: KCKEE1AD

TITLE : U BRCO

DETECTOR : ALP8 1  
CONFIGURATION NAME : \$DISK1:[ALP8.SAMPLE]KCKEE1AD\_171271245.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:49

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 12:45:17 CALIB DATE : 02-DEC-2007 08:33:42

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:07

OFFSET : 2836.06 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 7.30051 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 3.065870E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEE1AD

Flags Key

Detector: ALP8 1 Report Date: 17-Dec-07 04:06 PM Acquire Date: 17-DEC-2007 12:45:17.76 Tracer Nuclide: U-232 High Counts Limit: 36 Sample Live Time: 200 minutes Bkgnd Live Time: 1000 minutes	P: Peak Identified I: Peak Intersect S: Single Non-peak Intersect M: Multiple Non-peak Intersect H: High Non-peak Sample Count A: Altered via ALP-RGN-EDIT
--	---

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
					Energy keV	Width keV					
U-232	697	6	0	3.477	5337.2	117.1	332	348	0.00	0.00	P
U-234	171	0	0	0.855	4791.6	117.1	258	274	0.00	0.00	P
U-235	2	0	0	0.010	4414.8	117.0	206	222	0.00	0.00	
U-238	92	0	0	0.460	4215.0	117.0	180	196	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:06:10

```

Configuration      : $DISK1:[ALP8.SAMPLE]KCKEE1AD_171271245.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : U BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:45:17
Sample ID         : KCKEE1AD Sample quantity : 0.00000E+00 GRAMS
Sample type       : disk Sample geometry :
Detector name     : ALP8 Detector geometry:
Elapsed live time : 0 03:20:07.00 Elapsed real time: 0 03:20:07.00 0.0%
Start energy      : 2857.97 End energy : 6581.96
Sensitivity       : 4.00 Sum Sensitivity : 1.00
  
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4221.63	92	0	29.20	189.64	180	16	7.66E-03	10.4	
2	0	4794.61	171	0	36.50	267.97	258	16	1.42E-02	7.6	
3	0	5337.21	697	0	36.50	342.11	332	16	5.80E-02	3.8	
4	0	5451.88	15	0	29.20	357.77	355	8	1.25E-03	25.8	
5	0	5724.55	13	0	21.90	395.00	391	10	1.08E-03	27.7	
6	0	6336.38	12	0	29.20	478.50	475	9	9.99E-04	28.9	

Alpha Spectrum Listing

(Version: 1 Apr-07)

Sample Identity: KCKEFLAD

Flags Key

Detector: ALP8 1

Report Date: 17 Dec 07 04:06 PM

Intersect Region: 7

Acquire Date: 17 DEC 2007 12:45:17.76

Non Intersect Region: 4

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	1	0	51	0	101	0	151	0	201	0	251	0	301	0	351	0	401	0	451	0	501	0	501
0	2	0	52	0	102	0	152	0	202	0	252	0	302	0	352	0	402	0	452	0	502	0	502
0	3	0	53	0	103	0	153	0	203	0	253	0	303	0	353	0	403	0	453	0	503	0	503
0	4	0	54	0	104	0	154	0	204	0	254	0	304	0	354	0	404	0	454	0	504	0	504
0	5	0	55	0	105	0	155	0	205	1	255	0	305	0	355	0	405	0	455	0	505	0	505
0	6	0	56	0	106	0	156	0+	206	0	256	0	306	0	356	0	406	0	456	0	506	0	506
0	7	0	57	0	107	0	157	0+	207	2	257	0	307	3	357	0	407	0	457	0	507	0	507
0	8	0	58	0	108	0	158	0+	208	1+	258	0	308	8	358	0	408	0	458	0	508	0	508
0	9	0	59	0	109	0	159	0+	209	4+	259	0	309	2	359	0	409	0	459	0	509	0	509
0	10	0	60	0	110	0	160	0+	210	3+	260	0	310	2	360	0	410	0	460	0	510	0	510
0	11	0	61	0	111	0	161	0+	211	8+	261	1	311	0	361	0	411	0	461	0	511	0	511
0	12	0	62	0	112	0	162	0+	212	4+	262	0	312	0	362	0	412	0	462	0	512	0	512
0	13	0	63	0	113	0	163	0+	213	3+	263	1	313	0	363	0	413	0	463	0	513	0	513
0	14	0	64	0	114	1	164	0+	214	8+	264	0	314	0	364	0	414	0	464	0	514	0	514
0	15	0	65	0	115	0	165	1+	215	12+	265	0	315	0	365	0	415	0	465	0	515	0	515
0	16	0	66	0	116	0	166	0+	216	20+	266	0	316	0	366	0	416	0	466	0	516	0	516
0	17	0	67	0	117	0	167	0+	217	23+	267	0	317	0	367	0	417	0	467	0	517	0	517
1	18	0	68	0	118	0	168	1+	218	28+	268	1	318	0	368	0	418	0	468	0	518	0	518
0	19	0	69	0	119	0	169	0+	219	38+	269	0	319	0	369	0	419	0	469	0	519	0	519
0	20	0	70	0	120	1	170	0+	220	11+	270	2	320	0	370	0	420	0	470	0	520	0	520
0	21	0	71	0	121	0	171	0+	221	3+	271	0	321	0	371	0	421	0	471	0	521	0	521
0	22	0	72	0	122	1	172	0+	222	0+	272	0	322	0	372	0	422	1	472	0	522	0	522
0	23	0	73	0	123	0	173	0	223	0+	273	0	323	0	373	0	423	0	473	0	523	0	523
0	24	0	74	0	124	0	174	0	224	0	274	0	324	0	374	0	424	0	474	0	524	0	524
0	25	0	75	0	125	0	175	0	225	0	275	0	325	0	375	0	425	1	475	0	525	0	525
0	26	0	76	0	126	0	176	0	226	0	276	1	326	0	376	0	426	0	476	0	526	0	526
0	27	0	77	0	127	0	177	0	227	0	277	1	327	0	377	0	427	2	477	0	527	0	527
0	28	0	78	0	128	0	178	0	228	0	278	2	328	0	378	0	428	3	478	0	528	0	528
0	29	0	79	0	129	0	179	0	229	0	279	3	329	0	379	0	429	5	479	0	529	0	529
0	30	0	80	0	130	2+	180	0	230	0	280	4	330	0	380	0	430	0	480	0	530	0	530
0	31	0	81	0	131	2+	181	0	231	0	281	6	331	0	381	0	431	0	481	0	531	0	531
0	32	0	82	0	132	2+	182	0	232	0	282	10+	332	0	382	0	432	0	482	0	532	0	532
0	33	0	83	0	133	5+	183	0	233	1	283	6+	333	0	383	0	433	1	483	0	533	0	533
0	34	0	84	0	134	4+	184	0	234	0	284	25+	334	0	384	0	434	0	484	0	534	0	534
0	35	0	85	0	135	5+	185	0	235	0	285	35+	335	0	385	0	435	0	485	0	535	0	535
0	36	0	86	0	136	9+	186	0	236	0	286	39+	336	0	386	0	436	0	486	0	536	0	536
0	37	0	87	0	137	4+	187	0	237	0	287	37+	337	0	387	0	437	0	487	0	537	0	537
0	38	0	88	0	138	7+	188	0	238	0	288	36+	338	0	388	0	438	0	488	0	538	0	538
0	39	0	89	0	139	15+	189	1	239	0	289	48+	339	0	389	0	439	0	489	0	539	0	539
0	40	0	90	0	140	13+	190	0	240	0	290	45+	340	0	390	0	440	0	490	0	540	0	540
0	41	0	91	0	141	19+	191	0	241	0	291	78+	341	0	391	0	441	0	491	0	541	0	541
0	42	0	92	0	142	4+	192	1	242	0	292	122+	342	0	392	0	442	0	492	0	542	0	542
0	43	0	93	0	143	0+	193	1	243	0	293	129+	343	1	393	0	443	0	493	0	543	0	543
0	44	0	94	0	144	0+	194	0	244	0	294	68+	344	3	394	0	444	0	494	0	544	0	544
0	45	0	95	0	145	0+	195	0	245	0	295	11+	345	2	395	0	445	0	495	0	545	0	545
0	46	0	96	0	146	0	196	0	246	0	296	0+	346	5	396	0	446	0	496	0	546	0	546
0	47	0	97	0	147	0	197	0	247	0	297	0+	347	0	397	0	447	0	497	0	547	0	547
0	48	0	98	0	148	0	198	0	248	0	298	1	348	0	398	1	448	0	498	0	548	0	548
0	49	0	99	0	149	0	199	0	249	0	299	0	349	0	399	0	449	0	499	0	549	0	549
0	50	0	100	0	150	0	200	0	250	0	300	0	350	0	400	0	450	0	500	0	550	0	550



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP8.SAMPLE]KCKEE1AD\_171271245.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4221.63	180	196	92	91	0.10		
4794.61	258	274	171	166	0.38		
5337.21	332	348	697	690	0.27		
5451.88	355	363	15	15	0.00		
5724.54	391	401	13	11	0.55		
6336.37	475	484	12	12	0.00		

End of Report

# URANIUM ISOTOPIIC COUNTING REQUEST

1606

C.R. Technician CS  
Date Counted 10/17/05

Counting Time 200 Minutes  
Sample BRW  
Background See Alpha Regions Report

SOP's  
Operating: RICHRD008  
Review: RICHRD0016

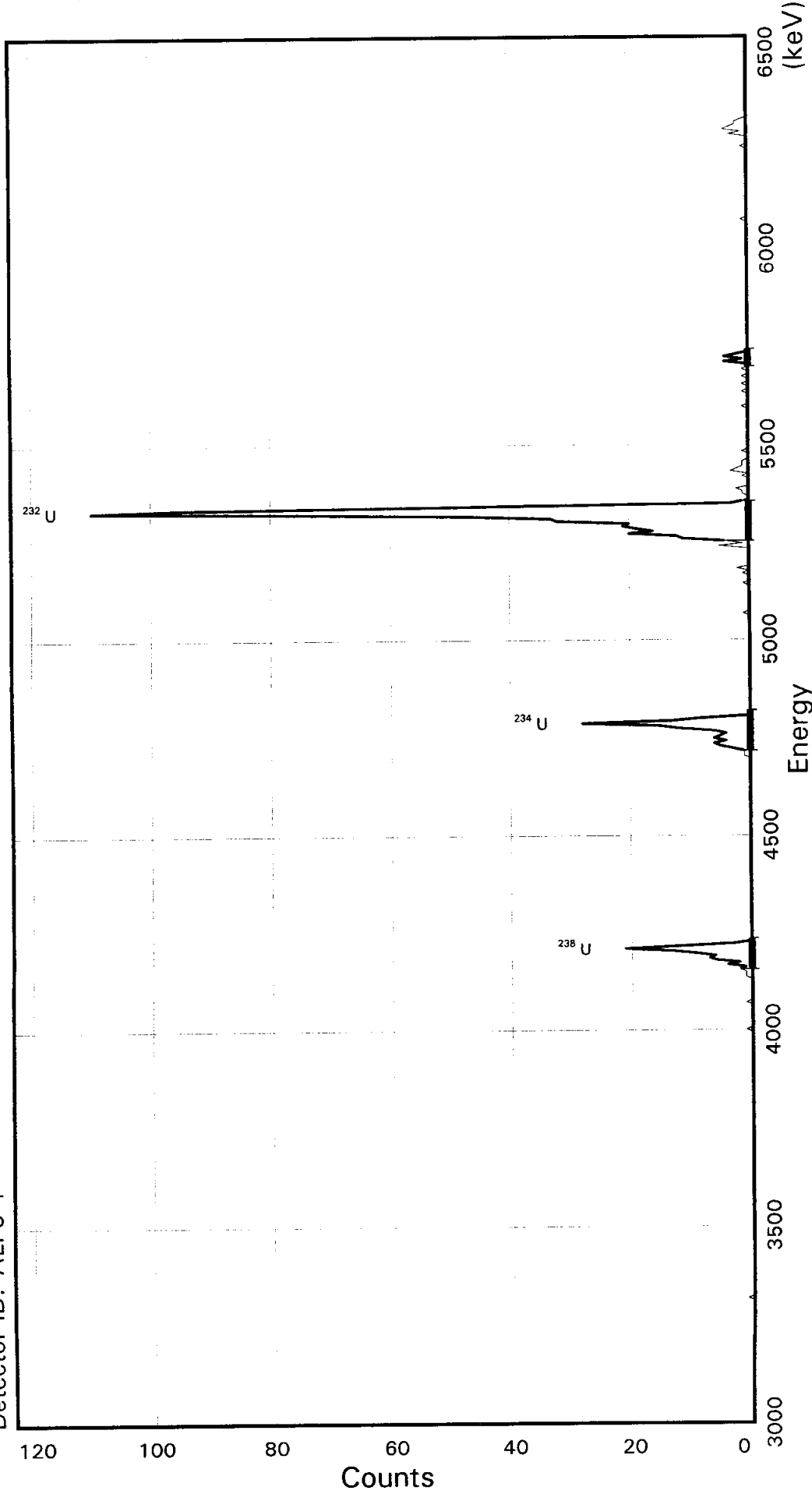
WorkOrder #	U-232 (5320 KeV) Tracer	TOTAL COUNTS			Det #	Comments/Edits
		U-238 (4196 KeV)	U-235 (4396 KeV)	U-234 (4776 KeV)		
<u>RCKE61AD</u>	See Counting Room Printout for ROI information				<u>9</u>	
<u>RCKE61AD</u>	See Counting Room Printout for ROI information				<u>10</u>	
<u>RCKE61AD</u>	See Counting Room Printout for ROI information				<u>11</u>	
<u>RCKE61AD</u>	See Counting Room Printout for ROI information				<u>12</u>	
<u>RCKEM1AD</u>	See Counting Room Printout for ROI information				<u>71</u>	
<u>RCKEM1AG</u>	See Counting Room Printout for ROI information				<u>85</u>	
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
Comments:						

Approved by: CS Date: 12/17/01

STL Richland WA.  
U BRCO

Batch ID: 7327115

Sample ID: KCKEG1AD  
Detector ID: ALP9 1



Acquisition Start: 17-DEC-2007 12:45:23.31  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

Energy Coefficients:  
Offset: 3.27151E+03  
Slope: 6.40326E+00  
Quadrature: -3.43291E-05

SAMPLE IDENTIITY: KCKEG1AD

TITLE : U BRCO

DETECTOR : ALP9 1  
CONFIGURATION NAME : \$DISK1:[ALP9.SAMPLE]KCKEG1AD\_171271245.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:56

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 12:45:23 CALIB DATE : 02-DEC-2007 08:33:48

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

OFFSET : 3271.51 keV CONSTANT FWHM : 6.00000 Channels  
SLOPE : 6.40326 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : -.343291E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEG1AD

Flags Key

Detector: ALP9 1	P: Peak Identified
Report Date: 17-Dec-07 04:05 PM	I: Peak Intersect
Acquire Date: 17-DEC-2007 12:45:23.31	S: Single Non-peak Intersect
Tracer Nuclide: U-232	M: Multiple Non-peak Intersect
High Counts Limit: 36	H: High Non-peak Sample Count
Sample Live Time: 200 minutes	A: Altered via ALP-RGN-EDIT
Bkgrnd Live Time: 1000 minutes	

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
					Energy keV	Width keV					
U-232	560	3	0	2.797	5330.2	102.1	310	326	0.00	0.00	P
U-234	115	0	0	0.575	4784.6	102.2	226	242	0.00	0.00	P
U-235	0	1	0	-0.001	4407.8	102.3	166	182	0.00	0.00	
U-238	86	0	0	0.430	4208.0	83.1	138	151	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:05:46

Configuration : \$DISK1:[ALP9.SAMPLE]KCKEG1AD\_171271245.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : U BRCO  
Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:45:23  
Sample ID : KCKEG1AD Sample quantity : 0.00000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP9 Detector geometry:  
Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 0.0%  
Start energy : 3290.72 keV End energy : 6540.98 keV  
Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4211.77	86	0	19.21	146.96	138	13	7.17E-03	10.8	
2	0	4786.93	115	0	19.21	236.96	226	16	9.58E-03	9.3	
3	0	5330.17	560	0	19.21	322.06	310	16	4.67E-02	4.2	
4	0	5722.11	11	0	25.61	383.50	380	7	9.17E-04	30.2	

## Alpha Spectrum Listing

(Version: 1-Apr 07)

Sample Identity: KCKEGLAD

Flags Key

Detector: ALP9 1

Report Date: 17 Dec 07 04:05 PM

Intersect Region: #

Acquire Date: 17 DEC 2007 12:45:23.31

Non Intersect Region: +.

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	0		501
0		2	0		62	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
1		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0		208	0		258	5		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	1		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	4+		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	11+		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	12+		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	20+		313	0		363	0		413	0		463			
0		14	0		64	1		114	0		164	0		214	0		264	16+		314	1		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	19+		315	0		365	0		415	0		465			
0		16	0		66	0		116	0+		166	0		216	0		266	21+		316	0		366	0		416	0		466			
0		17	0		67	0		117	0+		167	0		217	0		267	20+		317	0		367	0		417	0		467			
0		18	0		68	0		118	0+		168	0		218	0		268	32+		318	0		368	0		418	1		468			
0		19	0		69	0		119	0+		169	0		219	0		269	33+		319	0		369	0		419	0		469			
0		20	0		70	0		120	0+		170	0		220	0		270	46+		320	1		370	0		420	0		470			
0		21	0		71	0		121	0+		171	0		221	0		271	71+		321	0		371	0		421	0		471			
0		22	0		72	0		122	0+		172	0		222	0		272	110+		322	0		372	0		422	0		472			
0		23	0		73	0		123	0+		173	0		223	0		273	95+		323	1		373	0		423	3		473			
0		24	0		74	0		124	0+		174	1		224	0		274	46+		324	0		374	0		424	1		474			
0		25	0		75	1		125	0+		175	1		225	0		275	3+		325	0		375	0		425	4		475			
0		26	0		76	0		126	0+		176	1+		226	0		276	1		326	1		376	0		426	3		476			
0		27	0		77	0		127	0+		177	3+		227	0		277	0		327	0		377	0		427	2		477			
0		28	0		78	0		128	0+		178	5+		228	0		278	0		328	0		378	0		428	2		478			
0		29	0		79	0		129	0+		179	6+		229	0		279	1		329	1		379	0		429	1		479			
0		30	0		80	0		130	0+		180	4+		230	0		280	1		330	0		380	0		430	0		480			
0		31	0		81	0		131	0+		181	6+		231	1		281	2		331	0		381	0		431	0		481			
0		32	0		82	0		132	0+		182	5+		232	0		282	0		332	4		382	0		432	0		482			
0		33	0		83	0		133	0		183	4+		233	0		283	0		333	1		383	0		433	0		483			
0		34	0		84	0		134	0		184	6+		234	0		284	0		334	4		384	0		434	0		484			
0		35	0		85	1		135	0		185	12+		235	0		285	0		335	2		385	0		435	0		485			
0		36	0		86	1		136	0		186	15+		236	0		286	1		336	0		386	0		436	0		486			
0		37	0		87	1		137	0		187	28+		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	2+		138	0		188	13+		238	0		288	3		338	0		388	0		438	0		488			
0		39	0		89	1+		139	0		189	8+		239	0		289	2		339	0		389	1		439	0		489			
0		40	0		90	4+		140	0		190	0+		240	0		290	1		340	0		390	0		440	0		490			
0		41	0		91	2+		141	0		191	0+		241	0		291	1		341	0		391	0		441	0		491			
0		42	0		92	6+		142	0		192	0		242	0		292	1		342	0		392	0		442	0		492			
0		43	0		93	7+		143	0		193	0		243	1		293	0		343	0		393	0		443	0		493			
0		44	0		94	6+		144	0		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	9+		145	0		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	13+		146	0		196	0		246	0		296	1		346	0		396	0		446	0		496			
0		47	0		97	21+		147	0		197	0		247	1		297	0		347	0		397	0		447	0		497			
0		48	0		98	12+		148	0		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	3+		149	0		199	0		249	2		299	0		349	0		399	0		449	0		499			
0		50	0		100	0+		150	0		200	0		250	0		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP9.SAMPLE]KCKEG1AD\_171271245.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4211.76	138	151	86	86	0.00		
4786.92	226	242	115	116	-0.09		
5330.17	310	326	560	560	0.00		
5722.10	380	387	11	11	0.00		

End of Report

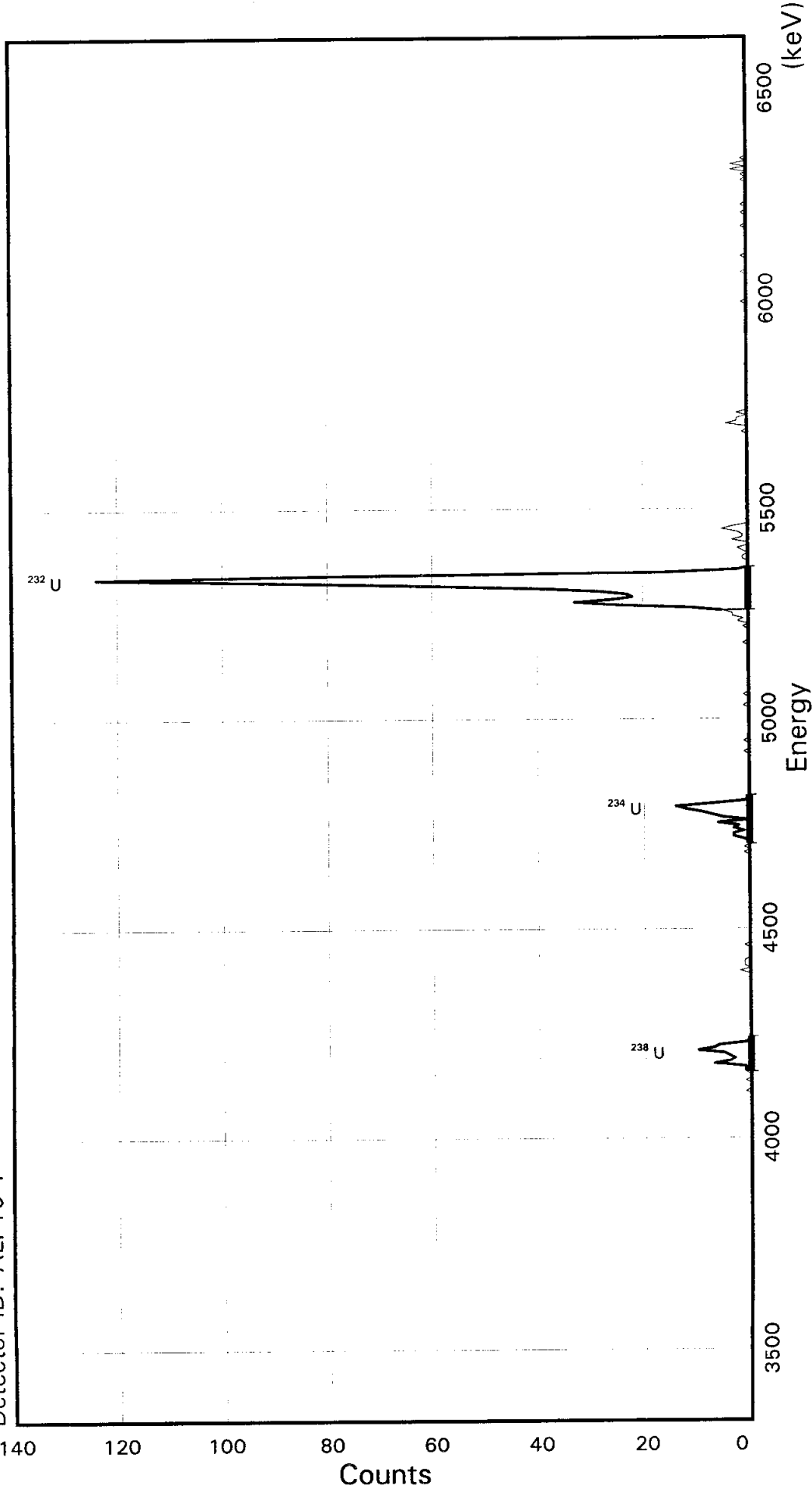
STL Richland WA.

U BRCO

Batch ID: 7327115

Sample ID: KCKEJ1AD

Detector ID: ALP10 1



Energy Coefficients:  
Offset: 3.31165E +03  
Slope: 6.51407E +00  
Quadrature: -9.02777E-05

Acquisition Start: 17-DEC-2007 12:45:37.75

Preset Live Time: 0 03:20:00.00

Elapsed Live Time: 0 03:20:05.00



SAMPLE IDENTIITY: KCKEJ1AD

TITLE : U BRCO

DETECTOR : ALP10 1

CONFIGURATION NAME : \$DISK1:[ALP10.SAMPLE] KCKEJ1AD\_171271245.CNF;  
1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:52:00

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00

ACQUIRE DATE: 17-DEC-2007 12:45:37 CALIB DATE : 02-DEC-2007 08:33:54

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:05

OFFSET : 3311.65 keV CONSTANT FWHM : 6.83333 Channels  
SLOPE : 6.51407 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : -.902777E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEJ1AD

Flags Key

Detector: ALP10 1  
 Report Date: 17-Dec-07 04:06 PM P: Peak Identified  
 Acquire Date: 17-DEC-2007 12:45:37.75 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgrnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
U-232	674	4	0	3.365	5329.7	103.3	300	316	0.00	0.00	P
U-234	74	4	0	0.366	4784.2	116.5	214	232	0.00	0.00	P
U-235	5	0	0	0.025	4407.4	103.7	157	173	0.00	0.00	
U-238	49	1	0	0.244	4207.6	84.4	130	143	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:06:50

Configuration : \$DISK1:[ALP10.SAMPLE]KCKEJ1AD\_171271245.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:45:37  
 Sample ID : KCKEJ1AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP10 Detector geometry:  
 Elapsed live time: 0 03:20:05.00 Elapsed real time: 0 03:20:05.00 0.0%  
 Start energy : 3331.19 keV End energy : 6623.19 keV  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4201.92	49	0	52.11	136.93	130	13	4.08E-03	14.3	
2	0	4786.12	74	0	32.57	227.07	214	18	6.16E-03	11.6	
3	0	5329.72	674	0	32.57	311.14	300	16	5.61E-02	3.9	

Alpha Spectrum Listing

(Version: 1 Apr-07)

Sample Identity: KCKEJ1AD

Flags Key

Detector: ALP10 1

Report Date: 17 Dec 07 04:06 PM

Intersect Region: \*

Acquire Date: 17 DEC 2007 12:45:37.75

Non Intersect Region: \*

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0		201	0		251	11+		301	0		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0		202	1		252	25+		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	33+		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	26+		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	22+		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	23+		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0+		157	0		207	0		257	28+		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0+		158	0		208	0		258	38+		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0+		159	0		209	0		259	55+		309	0		359	0		409	1		459	0		509
0		10	0		60	0		110	0+		160	0		210	0		260	75+		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0+		161	1		211	0		261	99+		311	0		361	0		411	1		461	0		511
0		12	0		62	0		112	0+		162	0		212	0		262	124+		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0+		163	1		213	0		263	84+		313	0		363	0		413	3		463			
0		14	0		64	0		114	0+		164	0+		214	0		264	16+		314	0		364	1		414	0		464			
0		15	0		65	0		115	0+		165	0+		215	1		265	2+		315	0		365	0		415	3		465			
0		16	0		66	0		116	0+		166	1+		216	0		266	0		316	1		366	0		416	0		466			
0		17	0		67	0		117	2+		167	3+		217	0		267	0		317	0		367	0		417	1		467			
0		18	0		68	0		118	0+		168	3+		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	1+		169	1+		219	1		269	1		319	4		369	0		419	0		469			
0		20	0		70	0		120	1+		170	3+		220	0		270	1		320	2		370	0		420	0		470			
0		21	0		71	0		121	1+		171	2+		221	0		271	0		321	2		371	0		421	0		471			
0		22	0		72	0		122	0+		172	6+		222	0		272	1		322	0		372	0		422	0		472			
0		23	0		73	1		123	0+		173	0+		223	0		273	2		323	2		373	0		423	0		473			
0		24	0		74	0		124	0		174	5+		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	7+		225	0		275	0		325	0		375	1		425	0		475			
0		26	0		76	0		126	0		176	9+		226	0		276	3		326	0		376	0		426	0		476			
0		27	0		77	1		127	1		177	12+		227	0		277	1		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	14+		228	0		278	1		328	0		378	0		428	0		478			
0		29	0		79	0		129	0		179	7+		229	0		279	2		329	0		379	0		429	0		479			
0		30	0		80	1+		130	0		180	1+		230	0		280	5		330	0		380	0		430	0		480			
0		31	0		81	1+		131	0		181	0+		231	0		281	3		331	0		381	1		431	0		481			
0		32	0		82	1+		132	0		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	7+		133	0		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	4+		134	0		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	3+		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	4+		136	0		186	0		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	5+		137	0		187	0		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	10+		138	0		188	0		238	1		288	0		338	0		388	0		438	0		488			
0		39	0		89	7+		139	0		189	0		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	6+		140	0		190	0		240	0		290	0		340	0		390	0		440	0		490			
0		41	0		91	1+		141	0		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0+		142	0		192	0		242	0		292	0		342	0		392	1		442	0		492			
0		43	0		93	0		143	0		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	1		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	2		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	1		297	0		347	0		397	1		447	0		497			
0		48	0		98	0		148	0		198	1		248	3		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	3		299	0		349	0		399	0		449	0		499			
0		50	0		100	0		150	0		200	0		250	5+		300	0		350	0		400	1		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP10.SAMPLE]KCKEJ1AD\_171271245.CNF;1

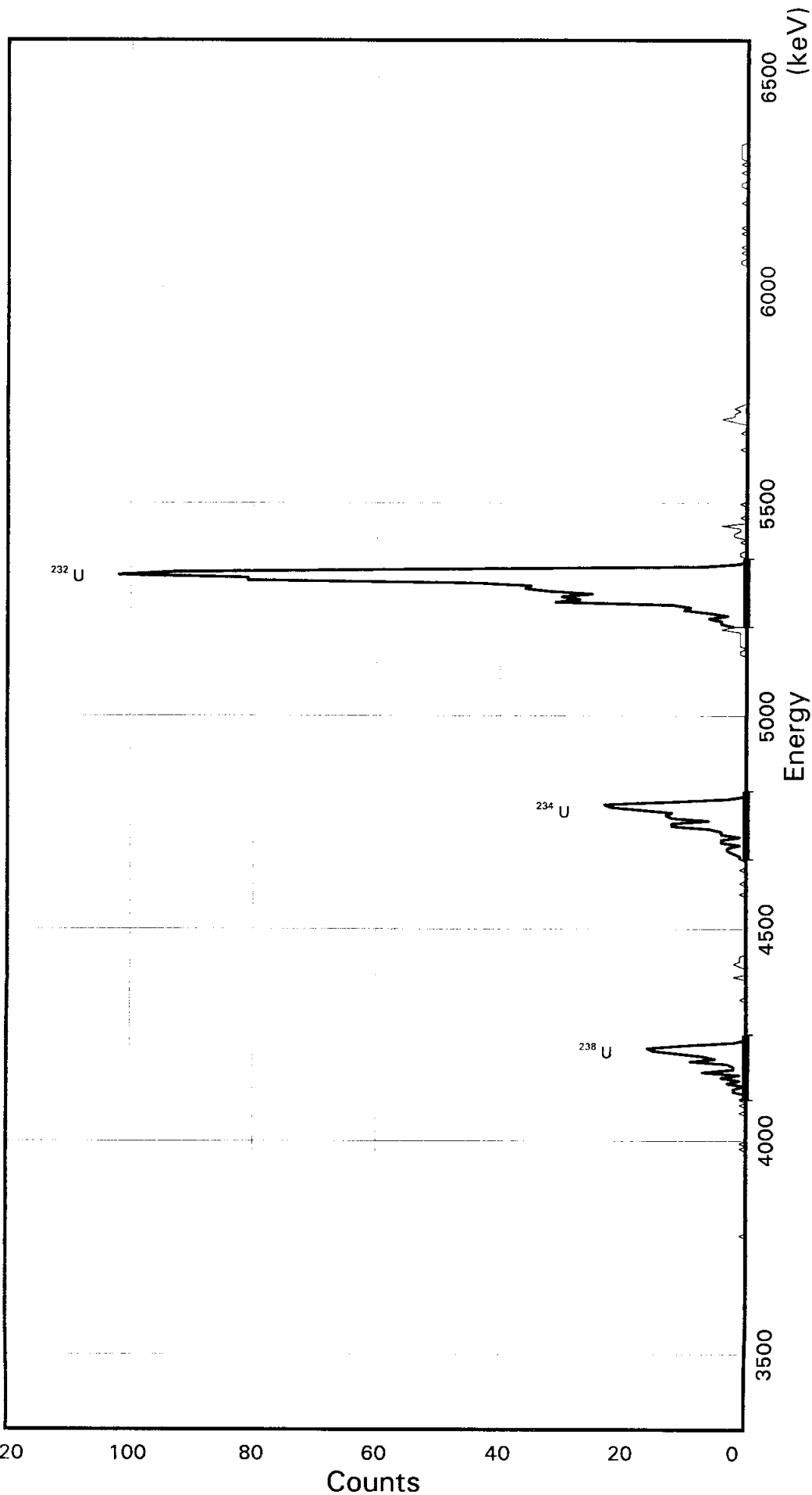
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4201.92	130	143	49	50	-0.14		
4786.11	214	232	74	74	0.00		
5329.72	300	316	674	666	0.31		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7327115

Sample ID: KCKEK1AD  
Detector ID: ALP11 1



Acquisition Start: 17-DEC-2007 12:45:58.24  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

Energy Coefficients:  
Offset: 3.30505E+03  
Slope: 6.36413E+00  
Quadrature: 8.47967E-05

SAMPLE IDENTIITY: KCCEK1AD

TITLE : U BRCO

DETECTOR : ALP11 1

CONFIGURATION NAME : \$DISK1:[ALP11.SAMPLE] KCCEK1AD\_171271245.CNF;  
1

ACQUIRE DATE of BACKGROUND: 08-DEC-2007 07:30:59

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00

ACQUIRE DATE: 17-DEC-2007 12:45:58 CALIB DATE : 02-DEC-2007 08:34:00

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

OFFSET : 3305.05 keV CONSTANT FWHM : 8.66667 Channels

SLOPE : 6.36413 keV/C SENSITIVITY : 4.00000 Std Dev's

QUAD COEFF : 8.479670E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEK1AD

Flags Key

Detector: ALP11 1	P: Peak Identified
Report Date: 17-Dec-07 04:07 PM	I: Peak Intersect
Acquire Date: 17-DEC-2007 12:45:58.24	S: Single Non-peak Intersect
Tracer Nuclide: U-232	M: Multiple Non-peak Intersect
High Counts Limit: 36	H: High Non-peak Sample Count
Sample Live Time: 200 minutes	A: Altered via ALP-RGN-EDIT
Bkgrnd Live Time: 1000 minutes	

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
					Energy keV	Width keV					
U-232	744	19	0	3.701	5327.7	160.4	298	323	0.00	0.00	P
U-234	184	1	0	0.919	4782.2	160.1	213	238	0.00	0.00	P
U-235	9	0	0	0.045	4405.4	159.8	154	179	0.00	0.00	
U-238	105	2	0	0.523	4205.6	153.3	124	148	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:07:26

Configuration : \$DISK1:[ALP11.SAMPLE]KCCEK1AD\_171271245.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : U BRCO  
Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:45:58  
Sample ID : KCCEK1AD Sample quantity : 0.000000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP11 Detector geometry:  
Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 0.0%  
Start energy : 3324.14 keV End energy : 6585.71 keV  
Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4208.13	105	0	38.18	141.63	124	24	8.75E-03	9.8	
2	0	4775.96	184	0	57.28	230.42	213	25	1.53E-02	7.4	
3	0	5327.72	744	0	38.18	316.49	298	25	6.20E-02	3.7	

Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCKEK1AD

Flags Key

Detector: ALP11 1

Report Date: 17 Dec 07 04:07 PM

Intersect Region: 0

Acquire Date: 17 DEC 2007 12:45:58.24

Non Intersect Region: 1

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
0		1	0		51	0		101	0		151	0		201	0		251	6+		301	0		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0		202	0		252	8+		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	6+		303	0		353	0		403	1		453	0		503
0		4	0		54	0		104	0+		154	1		204	0		254	10+		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0+		155	0		205	0		255	9+		305	0		355	0		405	0		455	0		505
0		6	0		56	1		106	0+		156	0		206	0		256	12+		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0+		157	0		207	0		257	31+		307	0		357	0		407	0		457	0		507
0		8	0		58	1		108	0+		158	0		208	0		258	27+		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0+		159	1		209	0		259	30+		309	0		359	0		409	1		459	0		509
0		10	0		60	0		110	0+		160	0		210	0		260	25+		310	0		360	0		410	1		460	0		510
0		11	0		61	0		111	1+		161	0		211	0		261	32+		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0+		162	0		212	0		262	36+		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0+		163	1+		213	0		263	35+		313	1		363	0		413	0		463			
0		14	0		64	0		114	0+		164	1+		214	0		264	44+		314	0		364	0		414	1		464			
0		15	0		65	0		115	0+		165	2+		215	0		265	81+		315	0		365	0		415	0		465			
0		16	0		66	0		116	0+		166	3+		216	0		266	81+		316	0		366	0		416	0		466			
0		17	0		67	0		117	0+		167	3+		217	0		267	102+		317	0		367	0		417	1		467			
0		18	0		68	0		118	0+		168	1+		218	0		268	93+		318	0		368	0		418	0		468			
0		19	0		69	1		119	2+		169	4+		219	0		269	55+		319	1		369	0		419	1		469			
0		20	0		70	0		120	0+		170	4+		220	0		270	7+		320	0		370	0		420	1		470			
0		21	0		71	0		121	0+		171	1+		221	0		271	1+		321	0		371	0		421	1		471			
0		22	0		72	1		122	0+		172	4+		222	0		272	0+		322	0		372	0		422	1		472			
0		23	0		73	0		123	1+		173	4+		223	0		273	0		323	2		373	0		423	1		473			
0		24	1		74	1+		124	2+		174	6+		224	0		274	1		324	4		374	0		424	1		474			
0		25	0		75	0+		125	1+		175	12+		225	0		275	1		325	2		375	0		425	0		475			
0		26	0		76	0+		126	1+		176	12+		226	0		276	0		326	2		376	0		426	0		476			
0		27	0		77	2+		127	1+		177	6+		227	0		277	0		327	1		377	0		427	0		477			
0		28	0		78	2+		128	0+		178	12+		228	0		278	0		328	2		378	0		428	0		478			
0		29	0		79	0+		129	0+		179	13+		229	0		279	1		329	1		379	0		429	0		479			
0		30	0		80	3+		130	0		180	12+		230	0		280	0		330	0		380	0		430	0		480			
0		31	0		81	1+		131	0		181	17+		231	0		281	2		331	0		381	1		431	0		481			
0		32	0		82	4+		132	0		182	22+		232	0		282	2		332	0		382	1		432	0		482			
0		33	0		83	1+		133	0		183	23+		233	0		283	1		333	0		383	0		433	0		483			
C		34	0		84	7+		134	0		184	12+		234	0		284	1		334	0		384	0		434	0		484			
C		35	0		85	2+		135	0		185	3+		235	0		285	4		335	0		385	1		435	0		485			
C		36	0		86	2+		136	0		186	0+		236	0		286	0		336	0		386	0		436	0		486			
C		37	0		87	3+		137	0		187	0+		237	0		287	0		337	0		387	1		437	0		487			
C		38	0		88	9+		138	0		188	0		238	1		288	1		338	0		388	0		438	0		488			
C		39	0		89	5+		139	0		189	0		239	1		289	0		339	0		389	0		439	0		489			
C		40	0		90	7+		140	0		190	0		240	0		290	0		340	0		390	0		440	0		490			
C		41	0		91	11+		141	0		191	0		241	1		291	0		341	0		391	0		441	0		491			
C		42	0		92	15+		142	0		192	0		242	1		292	0		342	0		392	1		442	0		492			
0		43	0		93	16+		143	0		193	0		243	1		293	1		343	0		393	0		443	0		493			
0		44	0		94	10+		144	0		194	0		244	1		294	0		344	0		394	1		444	0		494			
0		45	0		95	2+		145	0		195	0		245	1		295	0		345	0		395	0		445	0		495			
0		46	0		96	0+		146	0		196	0		246	1		296	0		346	0		396	0		446	0		496			
0		47	0		97	0+		147	0		197	0		247	4		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	2+		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	4+		299	0		349	0		399	0		449	0		499			
0		50	0		100	0		150	1		200	0		250	4+		300	0		350	0		400	0		450	0		500			



I TRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP11.SAMPLE]KCKEK1AD\_171271245.CNF;1

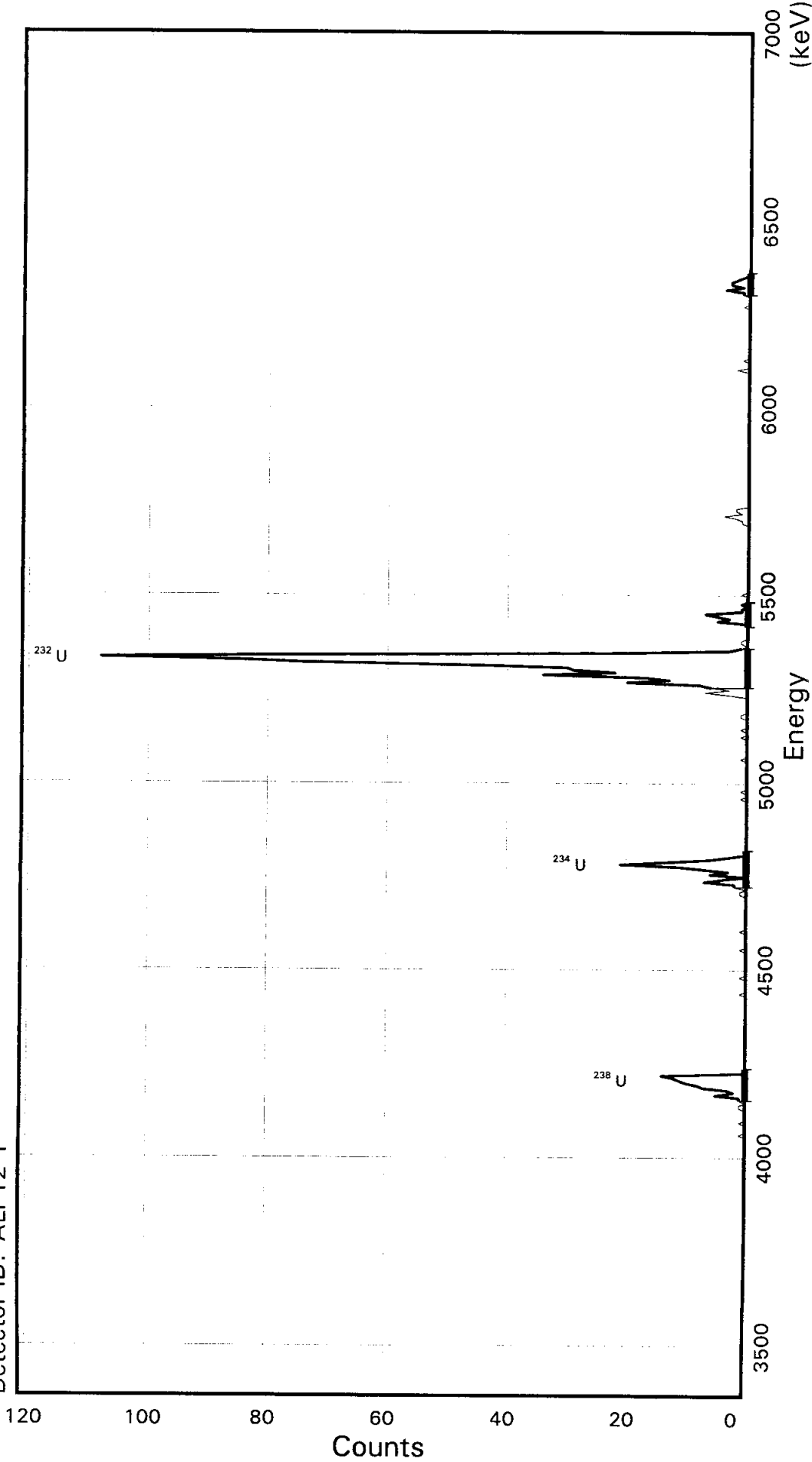
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4208.13	124	148	105	103	0.20		
4775.95	213	238	184	178	0.44		
5327.72	298	323	744	736	0.29		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCKEL1AD  
Detector ID: ALP12 1

Batch ID: 7327115



Acquisition Start: 17-DEC-2007 12:46:01.33  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

Energy Coefficients:  
Offset: 3.34773E+03  
Slope: 6.61137E+00  
Quadrature: -1.24415E-04

SAMPLE IDENTIITY: KCKEL1AD

TITLE : U BRCO

DETECTOR : ALP12 1  
CONFIGURATION NAME : \$DISK1:[ALP12.SAMPLE] KCKEL1AD\_171271246.CNF;  
1

ACQUIRE DATE of BACKGROUND: 07-DEC-2007 14:26:42

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 12:46:01 CALIB DATE : 02-DEC-2007 08:34:06

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

OFFSET : 3347.73 keV CONSTANT FWHM : 5.83333 Channels  
SLOPE : 6.61137 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : -.124415E-03 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEL1AD

Flags Key

Detector: ALP12 1 Report Date: 17-Dec-07 04:07 PM Acquire Date: 17-DEC-2007 12:46:01.33 Tracer Nuclide: U-232 High Counts Limit: 36 Sample Live Time: 200 minutes Bkgnd Live Time: 1000 minutes	P: Peak Identified I: Peak Intersect S: Single Non-peak Intersect M: Multiple Non-peak Intersect H: High Non-peak Sample Count A: Altered via ALP-RGN-EDIT
---	---

Nuclide	Smpl	Bkg	Intrsc	Count	Centrd	Region	Left	Rght	Wdth	Wdth	Flags
Name	Count	Count	Count	Rate	Energy	Width	Chnl	Chnl	Mult	Mult	
U-232	589	7	0	2.938	5329.9	104.6	290	306	0.00	0.00	P
U-234	86	0	0	0.430	4784.4	98.4	209	224	0.00	0.00	P
U-235	1	1	0	0.004	4407.6	105.2	149	165	0.00	0.00	
U-238	75	0	0	0.375	4207.8	85.5	122	135	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:07:32

```

Configuration      : $DISK1:[ALP12.SAMPLE]KCKEL1AD_171271246.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : U BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:46:01
Sample ID         : KCKEL1AD Sample quantity : 0.000000E+00 GRAMS
Sample type       : disk Sample geometry :
Detector name     : ALP12 Detector geometry:
Elapsed live time : 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 0.0%
Start energy      : 3367.57 keV End energy : 6700.14 keV
Sensitivity       : 4.00 Sum Sensitivity : 1.00
  
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4205.84	75	0	33.06	130.11	122	13	6.25E-03	11.5	
2	0	4783.10	86	0	19.83	218.00	209	15	7.17E-03	10.8	
3	0	5329.93	589	0	26.45	301.53	290	16	4.91E-02	4.1	
4	0	5444.42	22	0	33.06	319.05	315	10	1.83E-03	21.3	
5	0	6327.36	15	0	39.67	454.57	451	9	1.25E-03	25.8	

Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCKELIAD

Flags Key

Detector: ALP12 L

Report Date: 17 Dec 07 04:07 PM

Intersect Region: B

Acquire Date: 17 DEC 2007 12:46:01.33

Non Intersect Region: +

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	0	51	0	101	0+	151	0	201	0	251	85+	301	0	351	0	401	1	451	0	501						
0	0	52	0	102	0+	152	0	202	0	252	10+	302	0	352	0	402	1	452	0	502						
0	0	53	0	103	0+	153	0	203	0	253	7+	303	0	353	0	403	4	453	0	503						
0	0	54	0	104	0+	154	0	204	0	254	21+	304	0	354	0	404	1	454	0	504						
0	0	55	0	105	0+	155	0	205	0	255	3+	305	0	355	0	405	3	455	0	505						
0	0	56	0	106	0+	156	1	206	0	256	1	306	0	356	0	406	3	456	0	506						
0	0	57	0	107	0+	157	1	207	0	257	0	307	1	357	0	407	2	457	0	507						
0	0	58	1	108	0+	158	0	208	0	258	1	308	1	358	0	408	1	458	0	508						
0	0	59	0	109	0+	159	2+	209	0	259	1	309	2	359	0	409	0	459	0	509						
0	0	60	0	110	0+	160	2+	210	0	260	0	310	4	360	0	410	0	460	0	510						
0	0	61	0	111	0+	161	7+	211	1	261	0	311	1	361	0	411	0	461	0	511						
0	0	62	0	112	0+	162	4+	212	0	262	0	312	2	362	0	412	0	462	0	512						
0	0	63	1	113	0+	163	0+	213	0	263	0	313	2	363	0	413	0	463								
0	0	64	0	114	0+	164	6+	214	0	264	0	314	0	364	0	414	0	464								
0	0	65	0	115	1+	165	3+	215	0	265	0	315	0	365	0	415	0	465								
0	0	66	0	116	0	166	7+	216	0	266	0	316	0	366	0	416	0	466								
0	0	67	0	117	0	167	11+	217	0	267	5	317	0	367	0	417	0	467								
0	0	68	0	118	0	168	21+	218	0	268	3	318	0	368	0	418	0	468								
0	0	69	1	119	0	169	13+	219	0	269	5	319	0	369	0	419	0	469								
0	0	70	1	120	0	170	6+	220	1	270	7	320	0	370	2	420	0	470								
0	0	71	0	121	0	171	3+	221	0	271	1	321	0	371	0	421	0	471								
0	0	72	1+	122	1	172	0+	222	0	272	1	322	0	372	0	422	0	472								
0	0	73	1+	123	0	173	0+	223	1	273	0	323	0	373	0	423	0	473								
0	0	74	5+	124	0	174	0	224	0	274	1	324	0	374	1	424	0	474								
0	0	75	2+	125	0	175	0	225	0	275	0	325	0	375	0	425	0	475								
0	0	76	3+	126	0	176	0	226	0	276	0	326	0	376	0	426	0	476								
0	0	77	7+	127	0	177	0	227	0	277	0	327	0	377	0	427	0	477								
0	0	78	8+	128	0	178	0	228	1	278	1	328	0	378	0	428	0	478								
0	0	79	10+	129	0	179	0	229	1	279	0	329	0	379	0	429	0	479								
0	0	80	11+	130	0	180	0	230	0	280	0	330	0	380	0	430	0	480								
0	0	81	12+	131	0	181	0	231	0	281	0	331	0	381	0	431	0	481								
0	0	82	14+	132	0	182	0	232	0	282	0	332	0	382	0	432	0	482								
0	0	83	0+	133	1	183	0	233	0	283	0	333	0	383	0	433	0	483								
0	0	84	0+	134	0	184	0	234	0	284	0	334	0	384	0	434	0	484								
0	0	85	0	135	0	185	0	235	0	285	0	335	0	385	0	435	0	485								
0	0	86	0	136	0	186	0	236	0	286	0	336	0	386	0	436	0	486								
0	0	87	0	137	0	187	0	237	3	287	0	337	0	387	0	437	0	487								
0	0	88	0	138	0	188	0	238	7	288	0	338	0	388	0	438	0	488								
0	0	89	0	139	0	189	0	239	3	289	0	339	0	389	0	439	0	489								
0	0	90	0	140	0	190	0	240	6+	290	0	340	0	390	0	440	0	490								
0	0	91	0	141	1	191	0	241	8+	291	0	341	0	391	0	441	0	491								
0	0	92	0	142	0	192	0	242	20+	292	0	342	0	392	0	442	0	492								
0	0	93	0	143	0	193	0	243	13+	293	0	343	0	393	0	443	0	493								
0	0	94	0	144	0	194	0	244	17+	294	0	344	0	394	0	444	0	494								
0	0	95	0	145	0	195	1	245	34+	295	0	345	0	395	0	445	0	495								
0	0	96	0	146	0	196	0	246	22+	296	0	346	0	396	1	446	0	496								
0	0	97	0	147	0	197	0	247	29+	297	0	347	0	397	0	447	0	497								
0	0	98	0	148	0	198	1	248	30+	298	0	348	0	398	0	448	0	498								
0	0	99	0+	149	0	199	0	249	46+	299	0	349	0	399	0	449	0	499								
0	0	100	0+	150	0	200	0	250	74+	300	0	350	0	400	0	450	0	500								

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP12.SAMPLE]KCKEL1AD\_171271246.CNF;1

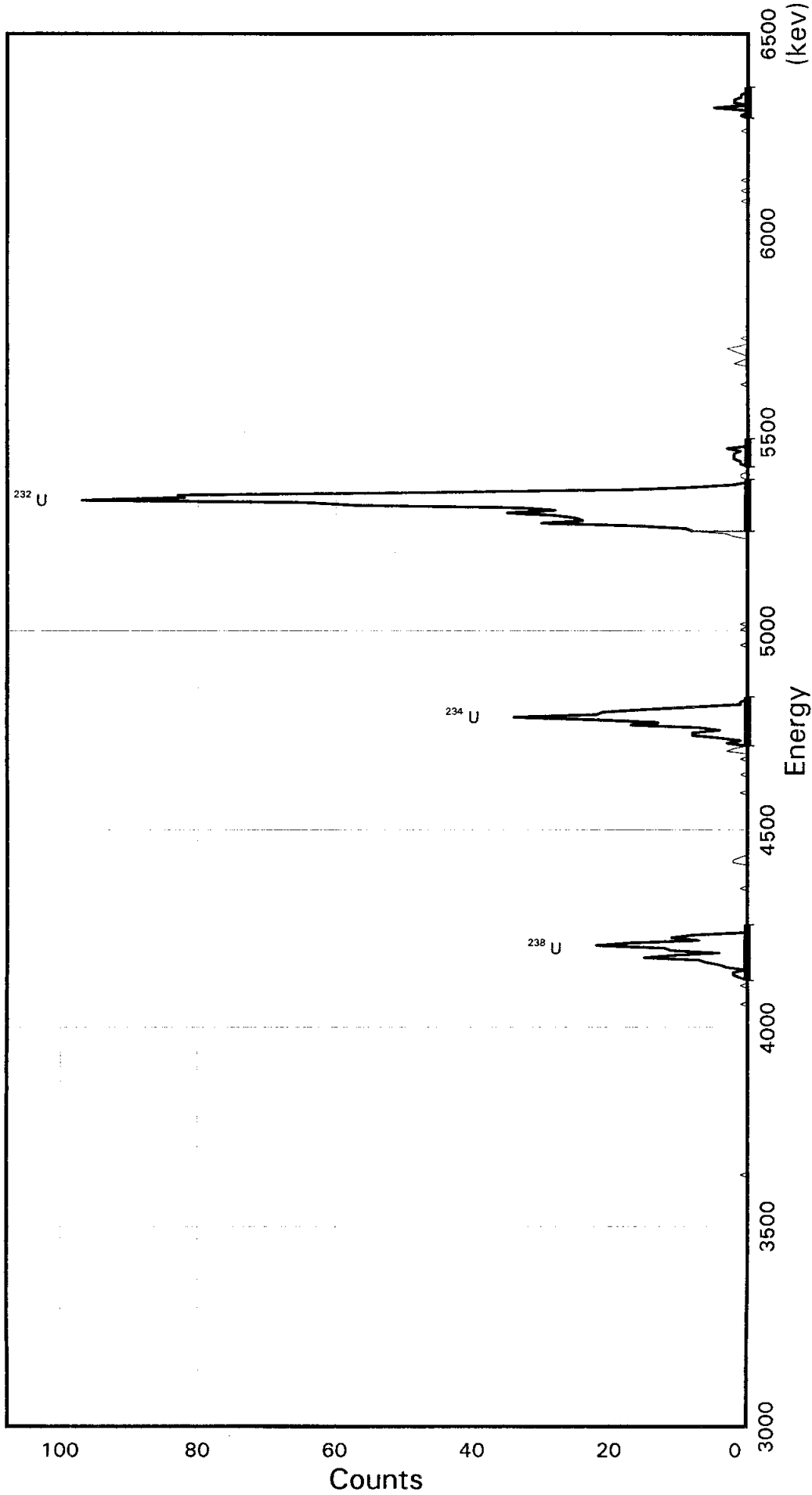
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4205.83	122	135	75	74	0.12		
4783.09	209	224	86	85	0.11		
5329.92	290	306	589	591	-0.08		
5444.42	315	325	22	23	-0.21		
6327.36	451	460	15	16	-0.26		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7327115

Sample ID: KCKEM1AD  
Detector ID: ALP71 1



Acquisition Start: 17-DEC-2007 12:46:35.42  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:09.00

Energy Coefficients:  
Offset: 3.13977E+03  
Slope: 6.53498E+00  
Quadrature: -6.11607E-05

SAMPLE IDENTIITY: KCKEM1AD

TITLE : U BRCO

DETECTOR : ALP71 1

CONFIGURATION NAME : RDND06\$DKA100: [ALP71.SAMPLE] KCKEM1AD\_1712712  
46.CNF;1

ACQUIRE DATE of BACKGROUND: 15-DEC-2007 08:31:32

REPORT DATE : 17-Dec-07

SAMPLE DATE: 16-NOV-2007 12:00:00

ACQUIRE DATE: 17-DEC-2007 12:46:35

CALIB DATE : 14-DEC-2007 23:33:09

PRESET LIVE TIME: 0 03:20:00

ELAPSED LIVE TIME: 0 03:20:09

OFFSET : 3139.77 keV

CONSTANT FWHM : 9.16667 Channels

SLOPE : 6.53498 keV/C

SENSITIVITY : 3.00000 Std Dev's

QUAD COEFF : -.611607E-04 keV/C^2

SUM SENSITIVITY: 1.00000 %



Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEM1AD

Flags Key

Detector: ALP71 1	
Report Date: 17-Dec-07 04:07 PM	P: Peak Identified
Acquire Date: 17-DEC-2007 12:46:35.42	I: Peak Intersect
Tracer Nuclide: U-232	S: Single Non-peak Intersect
High Counts Limit: 36	M: Multiple Non-peak Intersect
Sample Live Time: 200 minutes	H: High Non-peak Sample Count
Bkgnd Live Time: 2500 minutes	A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
U-232	697	22	0	3.474	5329.5	129.9	324	344	0.00	0.00	P
U-234	190	3	0	0.948	4784.0	123.6	241	260	0.00	0.00	P
U-235	6	3	0	0.029	4407.2	130.2	182	202	0.00	0.00	
U-238	144	6	0	0.717	4207.4	143.3	150	172	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:07:00

Configuration : RDND06\$DKA100: [ALP71.SAMPLE]KCKEM1AD\_171271246.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : U BRCO  
Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:46:35  
Sample ID : KCKEM1AD Sample quantity : 0.000000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP71 Detector geometry:  
Elapsed live time: 0 03:20:09.00 Elapsed real time: 0 03:20:09.00 0.0%  
Start energy : 3159.37 kev End energy : 6469.64 kev  
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4202.28	144	0	65.35	162.84	150	22	1.20E-02	8.3	
2	0	4783.30	190	0	45.74	252.09	241	19	1.58E-02	7.3	
3	0	5329.54	697	0	45.74	336.14	324	20	5.80E-02	3.8	
4	0	5438.34	12	0	39.21	352.90	349	11	9.99E-04	28.9	
5	0	6317.80	13	0	45.74	488.55	484	12	1.08E-03	27.7	

## Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCKEMLAD

Flags Key

Detector: ALP71 1

Report Date: 17 Dec 07 04:07 PM

Intersect Region: -

Acquire Date: 17 Dec 2007 12:46:35.42

Non-Intersect Region: -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	1+		151	0+		201	22+		251	0		301	1		351	0		401	0		451	0		501
0		2	0		52	0		102	2+		152	0+		202	34+		252	0		302	2		352	0		402	1		452	0		502
0		3	0		53	0		103	2+		153	0		203	22+		253	0		303	2		353	0		403	0		453	0		503
0		4	0		54	0		104	0+		154	0		204	21+		254	0		304	2		354	0		404	0		454	0		504
0		5	0		55	0		105	3+		155	0		205	15+		255	0		305	1		355	0		405	0		455	0		505
0		6	0		56	0		106	4+		156	0		206	8+		256	0		306	3		356	0		406	1		456	0		506
0		7	0		57	0		107	6+		157	0		207	1+		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	7+		158	0		208	1+		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	15+		159	0		209	0+		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	11+		160	0		210	0		260	0		310	0		360	0		410	1		460	0		510
0		11	0		61	0		111	4+		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	11+		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	12+		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	22+		164	0		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	17+		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	7+		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	11+		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	8+		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	0+		169	0		219	0		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	0+		170	0		220	0		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	0+		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	2		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	1		223	0		273	3		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	8+		324	0		374	0		424	0		474			
0		25	1		75	0		125	0		175	0		225	0		275	9+		325	0		375	0		425	0		475			
0		26	0		76	0		126	0		176	0		226	0		276	16+		326	0		376	0		426	0		476			
0		27	0		77	0		127	0		177	0		227	0		277	30+		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	24+		328	0		378	0		428	0		478			
0		29	0		79	0		129	0		179	0		229	0		279	25+		329	0		379	0		429	1		479			
0		30	0		80	0		130	0		180	1		230	1		280	28+		330	0		380	0		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	35+		331	1		381	0		431	0		481			
0		32	0		82	0		132	0+		182	0		232	0		282	28+		332	0		382	0		432	0		482			
0		33	0		83	0		133	0+		183	0		233	0		283	33+		333	0		383	0		433	0		483			
0		34	0		84	0		134	0+		184	0		234	0		284	57+		334	0		384	0		434	0		484			
0		35	0		85	0		135	0+		185	0		235	0		285	64+		335	0		385	0		435	1		485			
0		36	0		86	0		136	1+		186	1		236	1		286	97+		336	0		386	0		436	0		486			
0		37	0		87	0		137	0+		187	0		237	0		287	82+		337	0		387	0		437	0		487			
0		38	0		88	0		138	0+		188	0		238	1		288	83+		338	0		388	0		438	5		488			
0		39	0		89	0		139	0+		189	3		239	0		289	46+		339	2		389	0		439	0		489			
0		40	0		90	0		140	0+		190	2		240	0		290	18+		340	1		390	0		440	2		490			
0		41	0		91	1		141	0+		191	0+		241	0		291	8+		341	0		391	0		441	2		491			
0		42	0		92	0		142	0+		192	3+		242	0		292	2+		342	0		392	0		442	1		492			
0		43	0		93	0		143	0+		193	1+		243	0		293	0+		343	1		393	0		443	1		493			
0		44	0		94	0		144	0+		194	4+		244	0		294	0		344	2		394	0		444	0		494			
0		45	0		95	0		145	0+		195	8+		245	0		295	1		345	3		395	0		445	0		495			
0		46	0		96	0		146	2+		196	8+		246	0		296	1		346	1		396	0		446	0		496			
0		47	0		97	0		147	2+		197	4+		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	1		148	1+		198	7+		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0+		199	17+		249	0		299	0		349	1		399	0		449	0		499			
0		50	0		100	0+		150	0+		200	13+		250	0		300	1		350	0		400	0		450	0		500			



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: RDND06\$DKA100:[ALP71.SAMPLE]KCKEM1AD\_171271246.CNF;1

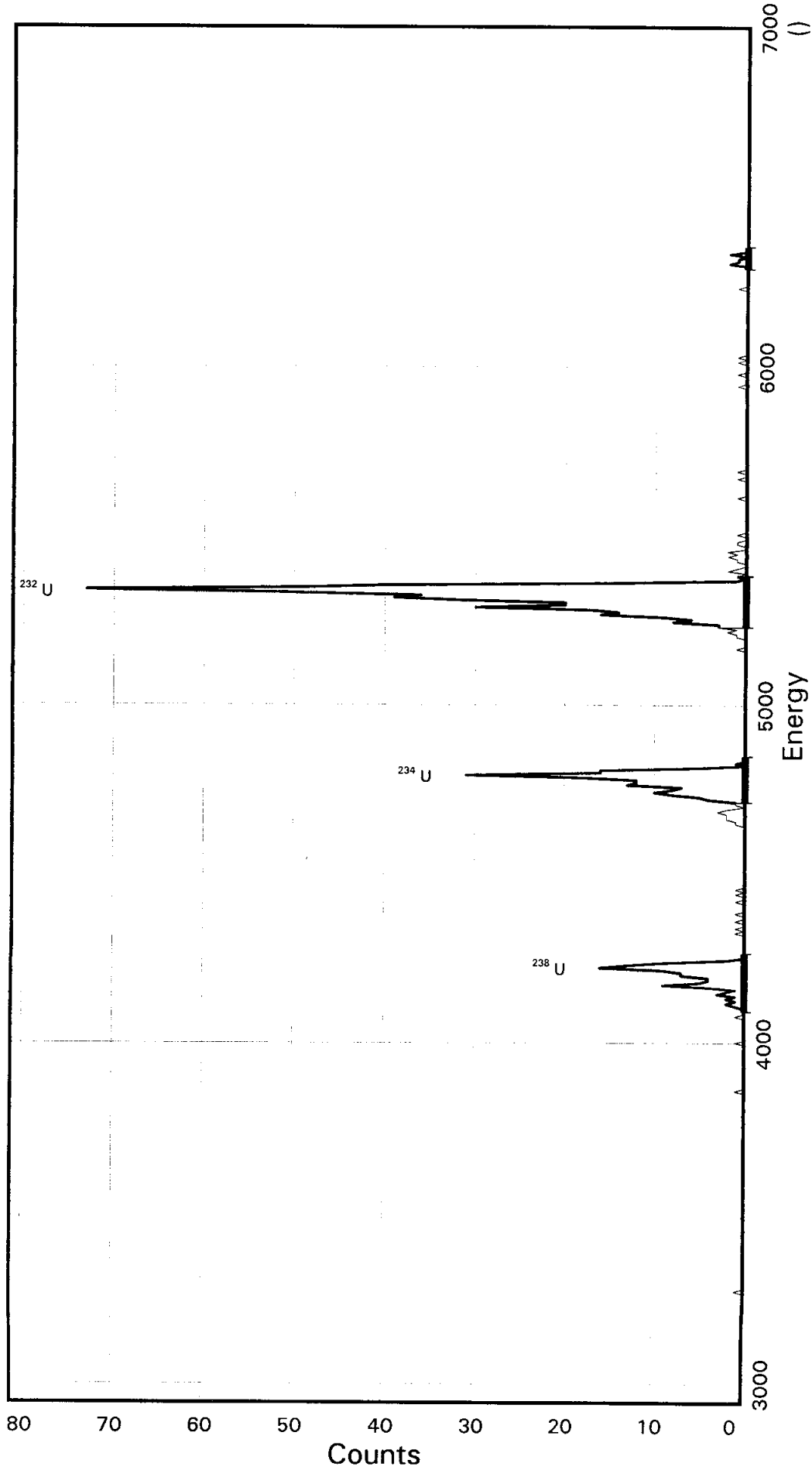
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4202.27	150	172	144	143	0.08		
4783.30	241	260	190	189	0.07		
5329.54	324	344	697	693	0.15		
5438.34	349	360	12	12	0.00		
6317.80	484	496	13	12	0.28		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCKEM1AG  
Detector ID: ALP85 1

Batch ID: 7327115



Acquisition Start: 17-DEC-2007 12:46:50.51  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:09.00

Energy Coefficients:  
Offset: 2.92311E + 03  
Slope: 7.06468E + 00  
Quadrature: 1.74838E-04

SAMPLE IDENTIITY: KCKEM1AG

TITLE : U BRCO

DETECTOR : ALP85 1

CONFIGURATION NAME : RDND06\$DKA100: [ALP85.SAMPLE] KCKEM1AG\_1712712  
46.CNF;1

ACQUIRE DATE of BACKGROUND: 15-DEC-2007 08:32:35

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00

ACQUIRE DATE: 17-DEC-2007 12:46:50 CALIB DATE : 14-DEC-2007 23:32:26

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:09

OFFSET : 2923.11 keV CONSTANT FWHM : 10.33330 Channels

SLOPE : 7.06468 keV/C SENSITIVITY : 3.00000 Std Dev's

QUAD COEFF : 1.748380E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKEM1AG

Flags Key

Detector: ALP85 1  
 Report Date: 17-Dec-07 04:07 PM  
 Acquire Date: 17-DEC-2007 12:46:50.51  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 200 minutes  
 Bkgrnd Live Time: 2500 minutes

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
					Energy keV	Width keV					
U-232	490	59	0	2.425	5332.4	150.8	324	345	0.00	0.00	P
U-234	171	0	0	0.854	4786.8	136.0	252	271	0.00	0.00	P
U-235	7	4	0	0.033	4410.0	149.9	195	216	0.00	0.00	
U-238	105	1	0	0.524	4210.2	171.0	165	189	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 16:07:05

Configuration : RDND06\$DKA100: [ALP85.SAMPLE] KCKEM1AG\_171271246.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 12:46:50  
 Sample ID : KCKEM1AG Sample quantity : 0.000000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP85 Detector geometry:  
 Elapsed live time: 0 03:20:09.00 Elapsed real time: 0 03:20:09.00 0.0%  
 Start energy : 2944.30 End energy : 6586.06  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4219.30	105	0	42.39	182.65	165	24	8.74E-03	9.8	
2	0	4790.21	171	0	42.39	262.58	252	19	1.42E-02	7.6	
3	0	5332.41	490	0	49.45	338.20	324	21	4.08E-02	4.5	
4	0	6314.67	6	0	42.39	474.50	471	9	5.00E-04	40.8	

Alpha Spectrum Listing

(Version: 1 Apr 07)

Sample Identity: KCKEMLAG

Flags Key

Detector: ALPBF 1

Report Date: 17 Dec 07 04:07 PM

Intersect Region: -

Acquire Date: 17 DEC 2007 12:46:50.51

Non Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0+		201	1		251	0		301	1		351	0		401	0		451	0		501
0		2	0		52	0		102	1		152	0+		202	1		252	0		302	1		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	1+		203	4+		253	0		303	2		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0+		204	5+		254	0		304	1		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0+		205	8+		255	0		305	2		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	1+		206	10+		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0+		207	8+		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0+		208	7+		258	0		308	1		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0+		209	13+		259	0		309	1		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0+		210	12+		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	1+		211	12+		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0+		212	18+		262	0		312	1		362	0		412	0		462	0		512
0		13	0		63	0		113	1		163	0+		213	31+		263	0		313	0		363	0		413	1		463			
0		14	0		64	0		114	0		164	1+		214	16+		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0+		165	0+		215	16+		265	1		315	0		365	0		415	0		465			
0		16	0		66	0		116	0+		166	1+		216	6+		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	1+		167	0		217	0+		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	2+		168	0		218	1+		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	1+		169	0		219	0+		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	2+		170	0		220	0+		270	1		320	0		370	0		420	0		470			
0		21	0		71	0		121	1+		171	0		221	0		271	1		321	0		371	0		421	0		471			
0		22	0		72	0		122	3+		172	0		222	0		272	2		322	0		372	0		422	0		472			
0		23	0		73	0		123	2+		173	0		223	0		273	1		323	0		373	1		423	2		473			
0		24	0		74	0		124	1+		174	0		224	0		274	3+		324	0		374	0		424	1		474			
0		25	0		75	0		125	4+		175	0		225	0		275	3+		325	0		375	0		425	1		475			
0		26	0		76	0		126	9+		176	0		226	0		276	8+		326	0		376	0		426	0		476			
0		27	0		77	0		127	5+		177	0		227	0		277	6+		327	1		377	0		427	2		477			
0		28	0		78	0		128	4+		178	0		228	0		278	9+		328	0		378	1		428	0		478			
0		29	0		79	0		129	4+		179	0		229	0		279	16+		329	0		379	0		429	0		479			
0		30	0		80	0		130	7+		180	0		230	0		280	14+		330	0		380	0		430	0		480			
0		31	0		81	0		131	7+		181	0		231	0		281	17+		331	0		381	0		431	0		481			
0		32	0		82	1		132	9+		182	0		232	0		282	30+		332	0		382	0		432	0		482			
0		33	0		83	0		133	16+		183	0		233	0		283	20+		333	0		383	1		433	0		483			
0		34	0		84	0		134	13+		184	0		234	0		284	20+		334	0		384	0		434	0		484			
0		35	0		85	0		135	9+		185	0		235	0		285	32+		335	1		385	1		435	0		485			
0		36	0		86	0		136	2+		186	0		236	0		286	39+		336	0		386	0		436	0		486			
0		37	0		87	0		137	0+		187	0		237	0		287	36+		337	0		387	0		437	0		487			
0		38	0		88	0		138	0+		188	0		238	0		288	53+		338	1		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	73+		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	49+		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	40+		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0		242	0		292	15+		342	0		392	0		442	0		492			
0		43	0		93	0		143	0		193	1		243	0		293	1+		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	1		244	0		294	0+		344	0		394	0		444	0		494			
0		45	0		95	0		145	0+		195	2		245	0		295	1		345	0		395	0		445	0		495			
0		46	0		96	0		146	0+		196	2		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0+		197	2		247	0		297	2		347	0		397	0		447	0		497			
0		48	0		98	0		148	1+		198	3		248	0		298	1		348	0		398	0		448	0		498			
1		49	0		99	0		149	0+		199	2		249	0		299	0		349	0		399	0		449	0		499			
0		50	0		100	0		150	1+		200	0		250	0		300	0		350	0		400	0		450	0		500			





ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: RDND06\$DKA100:[ALP85.SAMPLE]KCKEM1AG\_171271246.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4219.29	165	189	105	102	0.29		
4790.21	252	271	171	168	0.23		
5332.40	324	345	490	485	0.23		
6314.66	471	480	6	6	0.00		

End of Report

# URANIUM ISOTOPIC COUNTING REQUEST

2001

C.R. Technician AD  
Date Counted 12/17/07

Counting Time 200 Minutes  
Sample BPLCO  
Background See Alpha Regions Report

SOP's Operating: RICHRD008  
Review: RICHRD0016

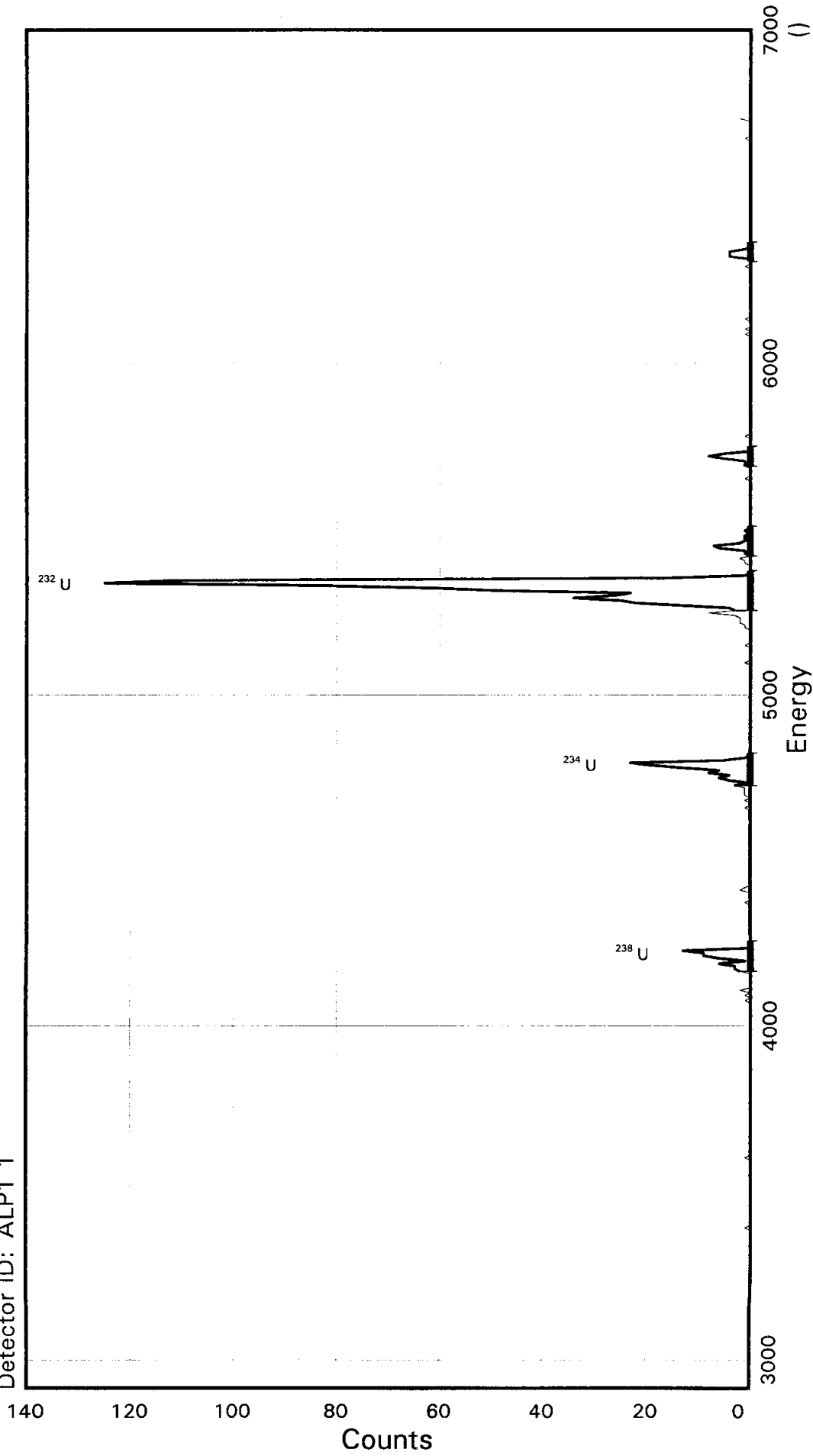
11/16/07  
7327115

WorkOrder #	U-232 (5320 KeV) Tracer	TOTAL COUNTS			Det #	Comments/Edits
		U-238 (4196 KeV)	U-235 (4396 KeV)	U-234 (4776 KeV)		
<u>KCKE21AD</u>	See Counting Room Printout for ROI information				<u>1</u>	
<u>KCKE11AD</u>	See Counting Room Printout for ROI information				<u>2</u>	
<u>KCKE21AD</u>	See Counting Room Printout for ROI information				<u>5</u>	
<u>KCR6K1AA</u>	See Counting Room Printout for ROI information				<u>6</u>	
<u>KCR6K1AC</u>	See Counting Room Printout for ROI information				<u>7</u>	
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
Comments:						

STL Richland WA.  
U BRCO

Sample ID: KCKET1AD  
Detector ID: ALP1 1

Batch ID: 7327115



Acquisition Start: 17-DEC-2007 16:25:28.84  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:04.00

Energy Coefficients:  
Offset: 2.89248E+03  
Slope: 7.48523E+00  
Quadrature: 3.51425E-05

SAMPLE IDENTIITY: KCKET1AD

TITLE : U BRCO

DETECTOR : ALP1 1  
CONFIGURATION NAME : \$DISK1:[ALP1.SAMPLE]KCKET1AD\_171271625.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:20

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 16:25:28 CALIB DATE : 02-DEC-2007 08:32:25

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:04

OFFSET : 2892.48 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 7.48523 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 3.514250E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKET1AD

Flags Key

Detector: ALP1 1  
 Report Date: 17-Dec-07 07:45 PM P: Peak Identified  
 Acquire Date: 17-DEC-2007 16:25:28.84 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgrnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide	Smpl	Bkg	Intrst	Count	Centrd	Region	Left	Rght	Left	Rght	Flags
Name	Count	Count	Count	Rate	Energy	Width	Chnl	Chnl	Wdth	Wdth	
U-232	611	7	0	3.047	5333.2	120.1	315	331	0.00	0.00	P
U-234	94	1	0	0.469	4787.6	97.5	245	258	0.00	0.00	P
U-235	4	1	0	0.019	4410.8	120.0	192	208	0.00	0.00	
U-238	51	1	0	0.254	4211.0	90.0	170	182	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 19:45:48

Configuration : \$DISK1:[ALP1.SAMPLE]KCKET1AD\_171271625.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 16:25:28  
 Sample ID : KCKET1AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP1 Detector geometry:  
 Elapsed live time: 0 03:20:04.00 Elapsed real time: 0 03:20:04.00 0.0%  
 Start energy : 2914.94 End energy : 6734.13  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4215.89	51	0	29.94	176.66	170	12	4.25E-03	14.0	
2	0	4788.83	94	0	37.43	253.04	245	13	7.83E-03	10.3	
3	0	5333.22	611	0	29.94	325.58	315	16	5.09E-02	4.0	
4	0	5445.94	22	0	29.94	340.59	337	12	1.83E-03	21.3	
5	0	5717.04	22	0	29.94	376.68	373	8	1.83E-03	21.3	
6	0	6328.09	13	0	22.46	458.00	455	8	1.08E-03	27.7	

## Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCKETLAD

Flags Key

Detector: ALP1 L

Report Date: 17-Dec-07 07:45 PM

Intersect Region: 0

Acquire Date: 17-DEC-2007 16:25:28.84

Non Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
0		1	0		51	0		101	0		151	0+		201	6+		251	1		301	0		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0-		202	13+		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	2+		203	19+		253	0		303	0		353	0		403	1		453	0		503
0		4	0		54	0		104	0		154	1+		204	23+		254	0		304	0		354	0		404	0		454	1		504
0		5	0		55	0		105	0		155	0+		205	5+		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0+		206	1+		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0+		207	0+		257	0		307	0		357	0		407	4		457	0		507
0		8	0		58	0		108	1		158	0+		208	0		258	1		308	0		358	0		408	4		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	1		309	0		359	0		409	4		459	0		509
0		10	0		60	0		110	1		160	0		210	0		260	2		310	0		360	0		410	1		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	2		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	2		162	0		212	0		262	2		312	0		362	0		412	0		462	2		512
0		13	0		63	0		113	0		163	0		213	0		263	3		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	8		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	3+		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	4+		316	0		366	0		416	0		466			
0		17	1		67	0		117	0		167	0		217	0		267	13+		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	22+		318	1		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	25+		319	0		369	0		419	0		469			
0		20	0		70	0		120	2+		170	0		220	0		270	34+		320	0		370	0		420	0		470			
0		21	0		71	0		121	3+		171	0		221	0		271	26+		321	0		371	0		421	0		471			
0		22	0		72	0		122	3+		172	0		222	0		272	23+		322	0		372	0		422	0		472			
0		23	0		73	0		123	6+		173	0		223	0		273	49+		323	1		373	0		423	0		473			
0		24	0		74	0		124	1+		174	0		224	0		274	62+		324	1		374	0		424	0		474			
0		25	0		75	0		125	6+		175	0		225	0		275	85+		325	1		375	0		425	0		475			
0		26	0		76	0		126	9+		176	0		226	0		276	125+		326	5		376	1		426	0		476			
0		27	0		77	0		127	9+		177	0		227	0		277	112+		327	8		377	0		427	0		477			
0		28	0		78	0		128	13+		178	0		228	0		278	16+		328	5		378	1		428	0		478			
0		29	0		79	0		129	0+		179	0		229	0		279	1+		329	0		379	0		429	0		479			
0		30	0		80	0		130	0+		180	0		230	0		280	0+		330	0		380	0		430	0		480			
0		31	0		81	0		131	0+		181	0		231	0		281	0		331	0		381	0		431	0		481			
0		32	0		82	0		132	0		182	0		232	0		282	0		332	0		382	1		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	0		134	0		184	0		234	0		284	1		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	1		335	1		385	0		435	0		485			
0		36	0		86	0		136	0		186	1		236	0		286	2		336	0		386	0		436	0		486			
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	1		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	1		239	0		289	1		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	6		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	1		241	0		291	7		341	0		391	0		441	0		491			
0		42	0		92	0		142	0+		192	1		242	0		292	2		342	0		392	0		442	0		492			
0		43	0		93	0		143	0+		193	1		243	0		293	1		343	0		393	0		443	0		493			
0		44	0		94	0		144	0+		194	1		244	1		294	1		344	0		394	0		444	0		494			
0		45	1		95	0		145	0+		195	3+		245	0		295	1		345	0		395	0		445	0		495			
0		46	0		96	0		146	0+		196	0+		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0+		197	4+		247	0		297	1		347	0		397	0		447	0		497			
0		48	0		98	0		148	1+		198	6+		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0+		199	4+		249	0		299	0		349	0		399	0		449	0		499			
0		50	0		100	0		150	0+		200	8+		250	0		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP1.SAMPLE]KCKET1AD\_171271625.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4215.88	170	182	51	52	-0.14		
4788.82	245	258	94	92	0.21		
5333.21	315	331	611	600	0.45		
5445.93	337	349	22	21	0.21		
5717.03	373	381	22	21	0.21		
6328.08	455	463	13	13	0.00		

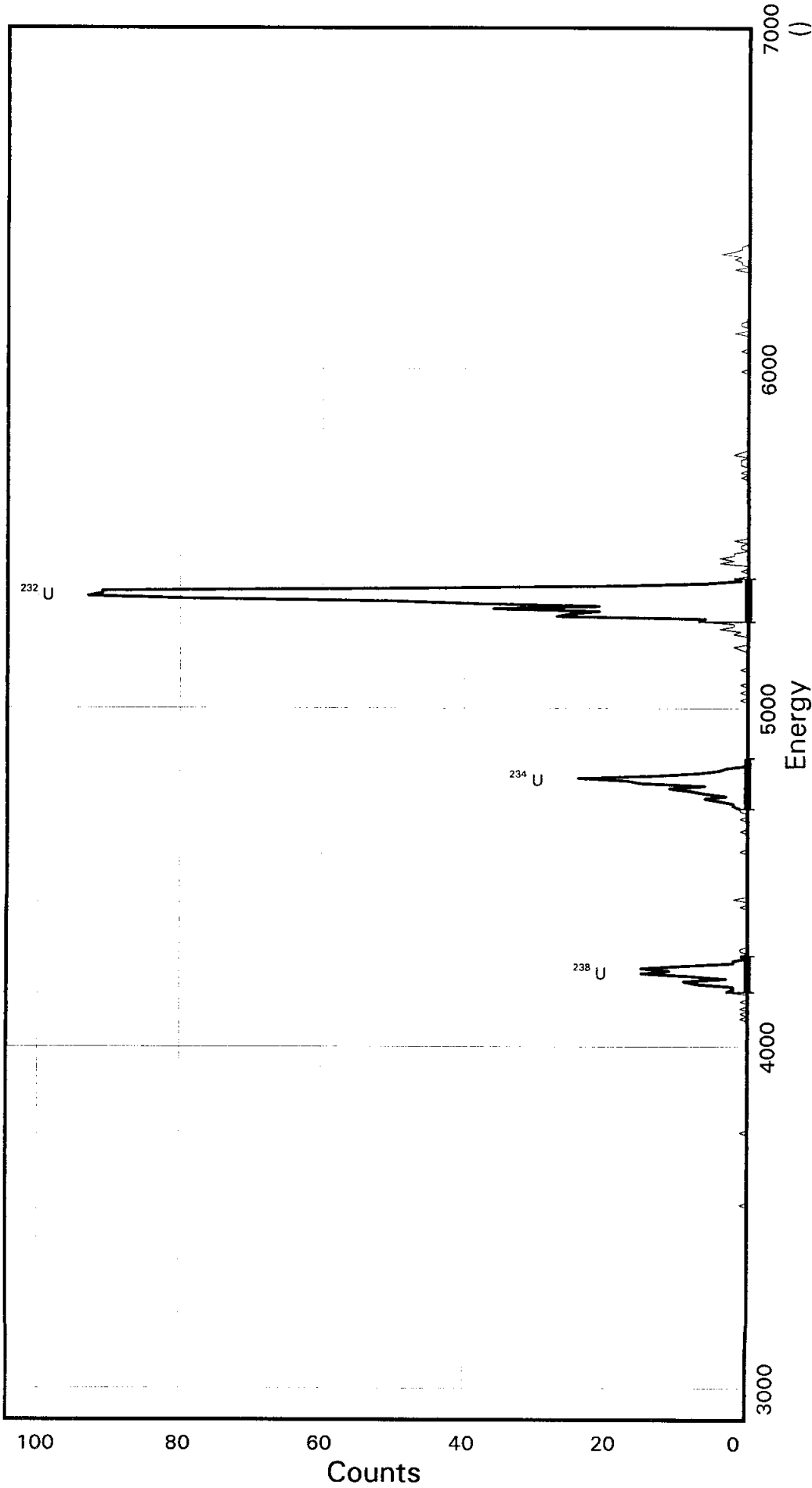
End of Report



STL Richland WA.  
U BRCO

Sample ID: KCKE11AD  
Detector ID: ALP2 1

Batch ID: 7327115



Acquisition Start: 17-DEC-2007 16:25:38.99  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:02.00

Energy Coefficients:  
Offset: 2.88584E + 03  
Slope: 7.36165E + 00  
Quadrature: 1.28252E-04

SAMPLE IDENTIITY: KCKE11AD

TITLE : U BRCO

DETECTOR : ALP2 1  
CONFIGURATION NAME : \$DISK1:[ALP2.SAMPLE]KCKE11AD\_171271625.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:25

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 16:25:38 CALIB DATE : 02-DEC-2007 09:13:03

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:02

OFFSET : 2885.84 keV CONSTANT FWHM : 9.00000 Channels  
SLOPE : 7.36165 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 1.282520E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKE11AD

Flags Key

Detector: ALP2 1  
 Report Date: 17-Dec-07 07:46 PM P: Peak Identified  
 Acquire Date: 17-DEC-2007 16:25:38.99 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgrnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide	Smpl	Bkg	Intrsc	Count	Centrd	Region	Left	Rght	Left	Rght	Flags
Name	Count	Count	Count	Rate	Energy	Width	Chnl	Chnl	Wdth	Wdth	
U-232	666	12	0	3.317	5332.8	126.6	320	337	0.00	0.00	P
U-234	132	3	0	0.657	4787.2	148.5	246	266	0.00	0.00	P
U-235	3	2	0	0.013	4410.4	126.0	196	213	0.00	0.00	
U-238	89	2	0	0.443	4210.6	103.7	173	187	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 19:45:57

Configuration : \$DISK1:[ALP2.SAMPLE] KCKE11AD\_171271625.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 16:25:38  
 Sample ID : KCKE11AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP2 Detector geometry:  
 Elapsed live time: 0 03:20:02.00 Elapsed real time: 0 03:20:02.00 0.0%  
 Start energy : 2907.93 End energy : 6688.63  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4217.14	89	0	51.53	180.28	173	14	7.42E-03	10.6	
2	0	4789.49	132	0	44.17	257.44	246	20	1.10E-02	8.7	
3	0	5332.76	666	0	44.17	330.48	320	17	5.55E-02	3.9	

Alpha Spectrum Listing

(Version: 1 Apr 07)

Sample Identity: KCKR11AD

Flags Key

Detector: ALP2 1

Report Date: 17 Dec 07 07:46 PM

Intersect Region: 0

Acquire Date: 17 DEC 2007 16:25:38.99

Non Intersect Region: 0

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn			
0		1	0		51	0		101	0		151	0+		201	3+		251	1		301	0		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0+		202	6+		252	0		302	2		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0+		203	8+		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0+		204	11+		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0+		205	6+		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0+		206	15+		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	1+		207	17+		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0+		208	24+		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0+		209	13+		259	1		309	0		359	0		409	2		459	0		509
0		10	0		60	0		110	0		160	2+		210	7+		260	2		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0+		211	4+		261	0		311	0		361	0		411	1		461	0		511
0		12	0		62	0		112	1		162	0+		212	3+		262	0		312	0		362	0		412	1		462	0		512
0		13	0		63	0		113	0		163	0+		213	0+		263	0		313	0		363	0		413	2		463			
0		14	0		64	0		114	1		164	0		214	0+		264	0		314	0		364	0		414	1		464			
0		15	0		65	0		115	0		165	0		215	0+		265	2		315	0		365	0		415	4		465			
0		16	0		66	0		116	1		166	0		216	0		266	1		316	0		366	0		416	2		466			
0		17	0		67	1		117	0		167	0		217	0		267	4		317	0		367	0		417	1		467			
0		18	0		68	0		118	0		168	0		218	0		268	2		318	0		368	0		418	1		468			
0		19	0		69	0		119	1		169	0		219	0		269	2		319	0		369	1		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	7+		320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	6+		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	27+		322	0		372	0		422	0		472			
0		23	0		73	0		123	3+		173	0		223	0		273	25+		323	0		373	0		423	0		473			
0		24	0		74	0		124	2+		174	0		224	0		274	21+		324	0		374	0		424	0		474			
0		25	0		75	0		125	2+		175	0		225	0		275	36+		325	0		375	0		425	0		475			
0		26	0		76	0		126	7+		176	0		226	0		276	21+		326	0		376	0		426	0		476			
0		27	0		77	0		127	9+		177	0		227	0		277	38+		327	1		377	1		427	0		477			
0		28	0		78	0		128	3+		178	0		228	0		278	50+		328	0		378	0		428	0		478			
0		29	0		79	0		129	8+		179	1		229	0		279	80+		329	1		379	0		429	0		479			
0		30	0		80	0		130	15+		180	0		230	0		280	93+		330	0		380	0		430	0		480			
0		31	0		81	0		131	11+		181	0		231	0		281	91+		331	0		381	0		431	0		481			
0		32	0		82	0		132	15+		182	0		232	0		282	91+		332	1		382	0		432	0		482			
0		33	0		83	0		133	9+		183	0		233	0		283	52+		333	1		383	0		433	0		483			
0		34	0		84	0		134	2+		184	0		234	0		284	18+		334	1		384	2		434	0		484			
0		35	0		85	0		135	2+		185	0		235	0		285	6+		335	0		385	0		435	0		485			
0		36	0		86	0		136	0+		186	0		236	0		286	1+		336	2		386	0		436	0		486			
0		37	0		87	0		137	1		187	1		237	0		287	2		337	1		387	1		437	0		487			
0		38	1		88	0		138	0		188	0		238	0		288	0		338	0		388	1		438	0		488			
0		39	0		89	0		139	1		189	0		239	1		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	1		190	0		240	0		290	1		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	1		242	1		292	0		342	0		392	0		442	0		492			
0		43	0		93	0		143	0		193	0		243	0		293	4		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	0		294	2		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	1		245	1		295	4		345	0		395	0		445	0		495			
0		46	0		96	0		146	0+		196	1+		246	0		296	2		346	0		396	0		446	0		496			
0		47	0		97	0		147	0+		197	2+		247	0		297	2		347	0		397	0		447	0		497			
0		48	0		98	0		148	0+		198	2+		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0+		199	4+		249	0		299	1		349	0		399	0		449	0		499			
0		50	0		100	0		150	0+		200	6+		250	0		300	1		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP2.SAMPLE]KCKE11AD\_171271625.CNF;1

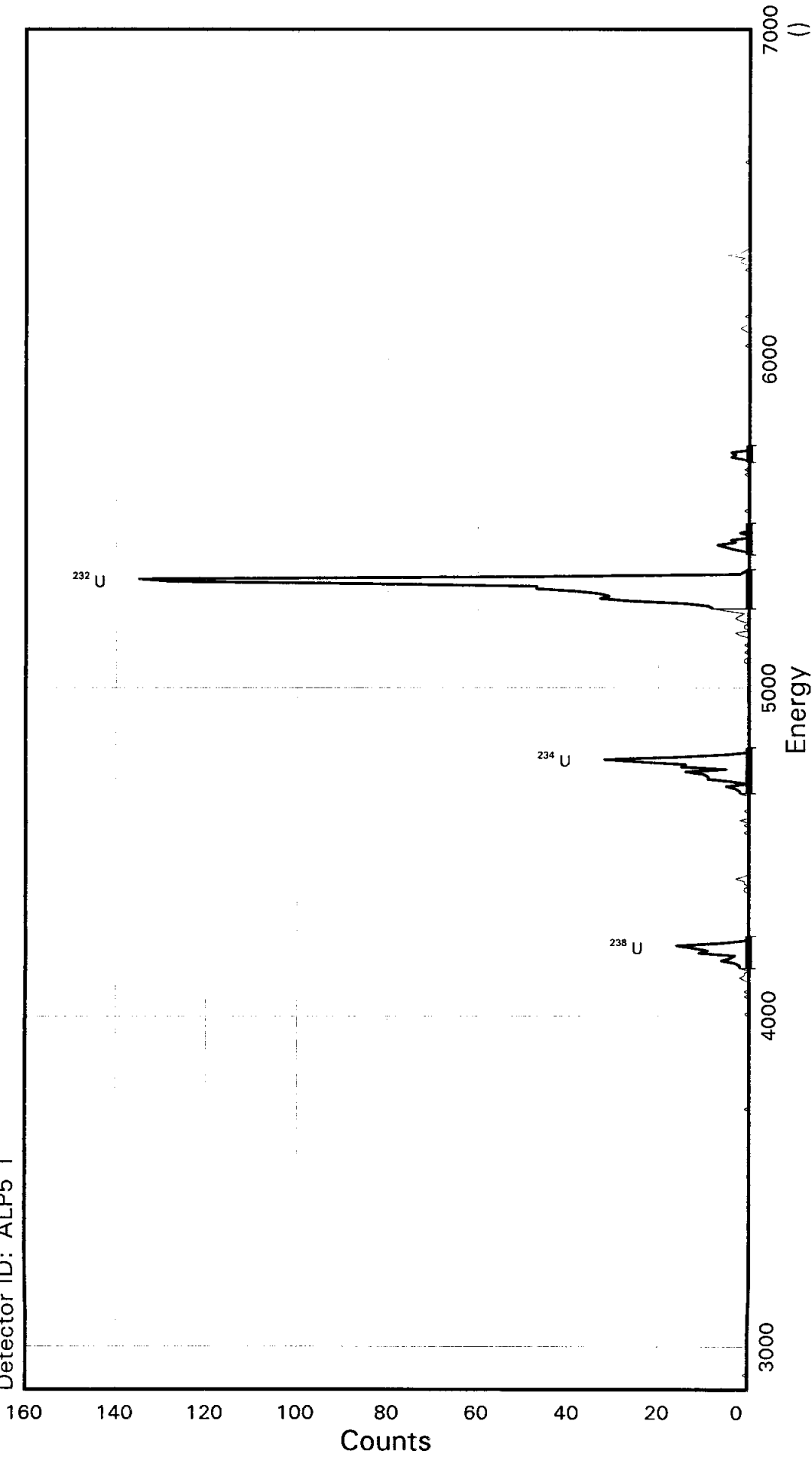
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4217.13	173	187	89	89	0.00		
4789.49	246	266	132	132	0.00		
5332.75	320	337	666	665	0.04		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7327115

Sample ID: KCKE21AD  
Detector ID: ALP5 1



Acquisition Start: 17-DEC-2007 16:41:19.57  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:02.00

Energy Coefficients:  
Offset: 2.84800E+03  
Slope: 7.37036E+00  
Quadrature: 5.27821E-05

SAMPLE IDENTIITY: KCKE21AD

TITLE : U BRCO

DETECTOR : ALP5 1  
CONFIGURATION NAME : \$DISK1:[ALP5.SAMPLE]KCKE21AD\_171271641.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:37

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 16:41:19 CALIB DATE : 02-DEC-2007 08:33:21

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:02

OFFSET : 2848.00 keV CONSTANT FWHM : 7.66667 Channels  
SLOPE : 7.37036 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 5.278210E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKE21AD

Flags Key

Detector: ALP5 1  
 Report Date: 17-Dec-07 08:01 PM P: Peak Identified  
 Acquire Date: 17-DEC-2007 16:41:19.57 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgrnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	688	4	0	3.435	5323.3	118.5	324	340	0.00	0.00	P
U-234	170	5	0	0.845	4777.7	140.6	248	267	0.00	0.00	P
U-235	8	1	0	0.039	4400.9	118.3	199	215	0.00	0.00	
U-238	74	5	0	0.365	4201.1	96.1	176	189	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 20:01:36

Configuration : \$DISK1:[ALP5.SAMPLE]KCKE21AD\_171271641.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 16:41:19  
 Sample ID : KCKE21AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP5 Detector geometry:  
 Elapsed live time: 0 03:20:02.00 Elapsed real time: 0 03:20:02.00 0.0%  
 Start energy : 2870.11 End energy : 6635.46  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4206.23	74	0	36.85	184.04	176	13	6.17E-03	11.6	
2	0	4778.87	170	0	29.48	261.49	248	19	1.42E-02	7.7	
3	0	5323.28	688	0	36.85	335.04	324	16	5.73E-02	3.8	
4	0	5431.75	26	0	29.48	349.68	346	13	2.17E-03	19.6	
5	0	5705.54	12	0	29.48	386.64	384	7	1.00E-03	28.9	



Alpha Spectrum Listing  
(Version: 1-Apr-07)

Sample Identity: KCKE21AD

Flags Key

Detector: ALP5 1

Report Date: 17 Dec-07 08:01 PM

Intersect Region: \*

Acquire Date: 17 DEC 2007 16:41:19.57

Non-Intersect Region: \*

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn			
0		1	0		51	0		101	0		151	0+		201	5+		251	0		301	3		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0+		202	0+		252	1		302	4		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0+		203	4+		253	1		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0+		204	9+		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0+		205	9+		255	0		305	2		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0+		206	10+		256	1		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	1		157	0+		207	14+		257	0		307	0		357	0		407	0		457	1		507
0		8	0		58	0		108	0		158	1+		208	5+		258	0		308	0		358	0		408	0		458	0		508
1		9	0		59	0		109	0		159	1+		209	15+		259	1		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0+		210	14+		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	1+		211	24+		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	1+		212	32+		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	3+		213	16+		263	2		313	0		363	0		413	1		463			
0		14	0		64	0		114	1		164	1+		214	5+		264	3		314	1		364	0		414	0		464			
0		15	0		65	0		115	0		165	0+		215	0+		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	1		166	0		216	0+		266	1		316	0		366	0		416	2		466			
0		17	0		67	0		117	0		167	0		217	0		267	1		317	0		367	0		417	2		467			
0		18	0		68	1		118	0		168	0		218	0		268	0		318	0		368	0		418	1		468			
0		19	0		69	0		119	0		169	0		219	0		269	2		319	0		369	0		419	5		469			
0		20	0		70	0		120	0		170	0		220	0		270	3		320	0		370	0		420	2		470			
0		21	0		71	0		121	1		171	0		221	0		271	2		321	0		371	0		421	1		471			
0		22	0		72	0		122	2		172	0		222	0		272	1		322	0		372	0		422	0		472			
0		23	0		73	0		123	1		173	0		223	0		273	5		323	0		373	0		423	0		473			
0		24	0		74	0		124	1		174	0		224	0		274	8+		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	9+		325	0		375	0		425	0		475			
0		26	0		76	0		126	2+		176	0		226	0		276	14+		326	0		376	0		426	0		476			
0		27	0		77	0		127	2+		177	0		227	0		277	26+		327	0		377	0		427	0		477			
0		28	0		78	0		128	3+		178	0		228	0		278	33+		328	0		378	0		428	0		478			
0		29	0		79	0		129	6+		179	0		229	0		279	31+		329	1		379	0		429	0		479			
0		30	0		80	0		130	4+		180	0		230	0		280	33+		330	0		380	0		430	0		480			
0		31	0		81	0		131	3+		181	0		231	0		281	38+		331	1		381	0		431	0		481			
0		32	0		82	0		132	11+		182	1		232	0		282	47+		332	0		382	1		432	0		482			
0		33	0		83	0		133	9+		183	0		233	0		283	47+		333	0		383	0		433	0		483			
0		34	0		84	0		134	12+		184	0		234	0		284	82+		334	0		384	0		434	0		484			
0		35	0		85	0		135	16+		185	1		235	0		285	128+		335	1		385	0		435	0		485			
0		36	0		86	0		136	6+		186	0		236	0		286	135+		336	4		386	0		436	0		486			
0		37	0		87	0		137	1+		187	2		237	0		287	45+		337	3		387	0		437	0		487			
0		38	0		88	0		138	0+		188	0		238	0		288	2+		338	4		388	1		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	1+		339	0		389	2		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	1		440	0		490			
0		41	0		91	0		141	0		191	1		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0		242	0		292	0		342	0		392	0		442	0		492			
0		43	0		93	0		143	0		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	0		294	0		344	0		394	1		444	0		494			
0		45	0		95	0		145	0		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	2+		248	0		298	3		348	0		398	0		448	0		498			
0		49	0		99	0		149	0+		199	2+		249	0		299	5		349	0		399	0		449	0		499			
0		50	0		100	0		150	0+		200	3+		250	0		300	7		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP5.SAMPLE]KCKE21AD\_171271641.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4206.22	176	189	74	75	-0.12		
4778.87	248	267	170	169	0.08		
5323.28	324	340	688	679	0.34		
5431.75	346	359	26	24	0.39		
5705.53	384	391	12	12	0.00		

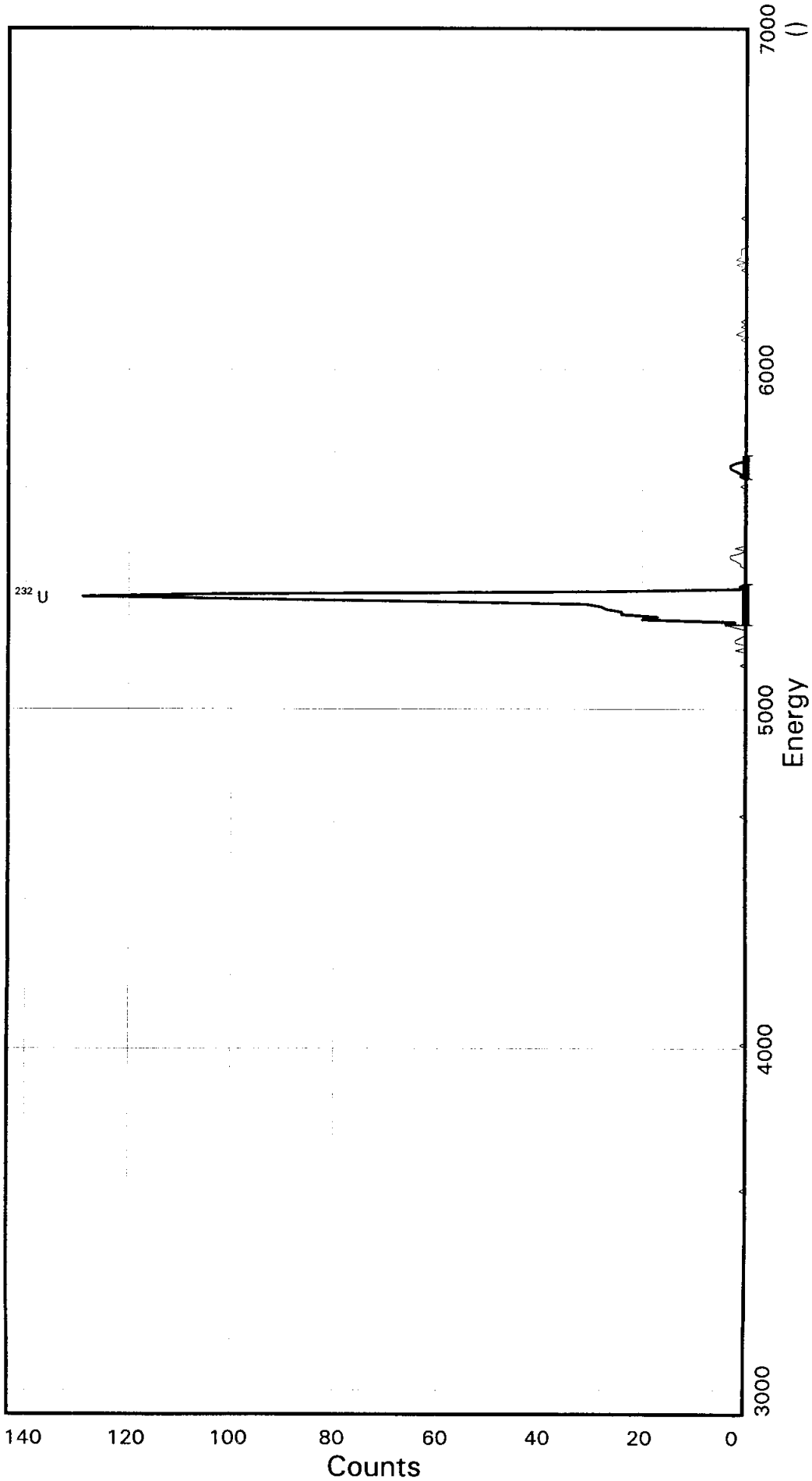
End of Report

STL Richland WA.

U BRCO

Batch ID: 7327115

Sample ID: KCR6K1AA  
Detector ID: ALP6 1



Acquisition Start: 17-DEC-2007 16:41:32.84  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

Energy Coefficients:  
Offset: 2.90724E + 03  
Slope: 7.29933E + 00  
Quadrature: 3.48723E-04

SAMPLE IDENTIITY: KCR6K1AA

TITLE : U BRCO

DETECTOR : ALP6 1  
CONFIGURATION NAME : \$DISK1:[ALP6.SAMPLE]KCR6K1AA\_171271641.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:41

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 16:41:32 CALIB DATE : 02-DEC-2007 08:33:28

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

OFFSET : 2907.24 keV CONSTANT FWHM : 6.83333 Channels  
SLOPE : 7.29933 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 3.487230E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCR6K1AA

Flags Key

Detector: ALP6 1  
 Report Date: 17-Dec-07 08:01 PM P: Peak Identified  
 Acquire Date: 17-DEC-2007 16:41:32.84 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide	Smpl	Bkg	Intrsc	Count	Centrd	Region	Left	Rght	Left	Rght	Flags
Name	Count	Count	Count	Rate	Energy	Width	Chnl	Chnl	Wdth	Wdth	
U-232	604	7	0	3.013	5328.4	120.4	316	332	0.00	0.00	P
U-234	0	3	0	-0.003	4782.8	119.6	243	259	0.00	0.00	
U-235	0	1	0	-0.001	4406.0	119.0	193	209	0.00	0.00	
U-238	0	1	0	-0.001	4206.2	118.7	166	182	0.00	0.00	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 20:01:52

Configuration : \$DISK1:[ALP6.SAMPLE]KCR6K1AA\_171271641.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 16:41:32  
 Sample ID : KCR6K1AA Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP6 Detector geometry:  
 Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 0.0%  
 Start energy : 2929.15 End energy : 6735.92  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5328.37	604	0	29.20	326.60	316	16	5.03E-02	4.1	
2	0	5712.44	13	0	29.20	377.50	373	9	1.08E-03	27.7	

Alpha Spectrum Listing

(Version: 1 Apr 07)

Sample Identity: KCR6K1AA

Flags Key

Detector: ALP6 1

Report Date: 17 Dec 07 08:01 PM

Intersect Region: +

Acquire Date: 17 DEC 2007 16:41:32.84

Non Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0+		201	0+		251	0		301	0		351	0	401	0	451	0	501
0		2	0		52	0		102	0		152	0+		202	0+		252	0		302	0		352	0	402	0	452	0	502
0		3	0		53	0		103	0		153	0+		203	0+		253	0		303	0		353	0	403	0	453	0	503
0		4	0		54	0		104	0		154	0+		204	0+		254	0		304	0		354	0	404	1	454	0	504
0		5	0		55	0		105	0		155	0+		205	0+		255	0		305	0		355	0	405	0	455	0	505
0		6	0		56	0		106	0		156	0+		206	0+		256	2		306	0		356	0	406	2	456	0	506
0		7	0		57	0		107	0		157	0+		207	0+		257	0		307	0		357	0	407	0	457	0	507
0		8	0		58	0		108	0		158	0+		208	0+		258	0		308	0		358	0	408	2	458	0	508
0		9	0		59	0		109	0		159	0+		209	0+		259	2		309	0		359	0	409	1	459	0	509
0		10	0		60	0		110	0		160	0		210	0		260	2		310	0		360	0	410	1	460	0	510
0		11	0		61	0		111	0		161	0		211	0		261	1		311	0		361	0	411	1	461	0	511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0	412	1	462	0	512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0	413	0	463	0	513
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0	414	0	464	0	514
0		15	0		65	0		115	0		165	0		215	0		265	2		315	0		365	0	415	0	465	0	515
0		16	0		66	0		116	0+		166	0		216	0		266	4+		316	0		366	0	416	0	466	0	516
0		17	0		67	0		117	0+		167	0		217	0		267	2+		317	0		367	0	417	0	467	0	517
0		18	0		68	0		118	0+		168	0		218	0		268	20+		318	0		368	0	418	0	468	0	518
0		19	0		69	0		119	0+		169	0		219	0		269	17+		319	0		369	0	419	0	469	0	519
0		20	0		70	0		120	0+		170	0		220	0		270	24+		320	1		370	0	420	0	470	0	520
0		21	0		71	0		121	0+		171	0		221	0		271	24+		321	0		371	0	421	0	471	0	521
0		22	0		72	0		122	0+		172	0		222	0		272	27+		322	0		372	0	422	0	472	0	522
0		23	0		73	0		123	0+		173	0		223	0		273	28+		323	0		373	0	423	0	473	0	523
0		24	0		74	0		124	0+		174	0		224	0		274	31+		324	1		374	0	424	1	474	0	524
0		25	0		75	0		125	0+		175	0		225	0		275	60+		325	1		375	0	425	0	475	0	525
0		26	0		76	0		126	0+		176	0		226	0		276	97+		326	2		376	0	426	0	476	0	526
0		27	0		77	0		127	0+		177	0		227	0		277	129+		327	3		377	1	427	0	477	0	527
0		28	0		78	0		128	0+		178	0		228	0		278	102+		328	3		378	0	428	0	478	0	528
0		29	0		79	0		129	0+		179	0		229	0		279	27+		329	2		379	2	429	0	479	0	529
0		30	0		80	0		130	0+		180	0		230	0		280	1+		330	0		380	1	430	0	480	0	530
0		31	0		81	0		131	0+		181	0		231	0		281	1+		331	0		381	0	431	0	481	0	531
0		32	0		82	0		132	0+		182	0		232	0		282	0		332	0		382	1	432	0	482	0	532
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0	433	0	483	0	533
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	1	434	0	484	0	534
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0	435	0	485	0	535
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0	436	0	486	0	536
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	0	437	0	487	0	537
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0	438	0	488	0	538
0		39	0		89	0		139	0		189	0		239	0		289	1		339	0		389	0	439	0	489	0	539
0		40	0		90	0		140	0		190	0		240	0		290	1		340	0		390	0	440	0	490	0	540
0		41	0		91	0		141	0		191	1		241	0		291	2		341	0		391	0	441	0	491	0	541
0		42	1		92	0		142	0		192	0		242	0		292	3		342	0		392	0	442	0	492	0	542
0		43	0		93	0		143	0+		193	0+		243	0		293	3		343	0		393	0	443	0	493	0	543
0		44	0		94	0		144	0+		194	0+		244	0		294	1		344	0		394	0	444	0	494	0	544
0		45	0		95	0		145	0+		195	0+		245	0		295	0		345	0		395	0	445	0	495	0	545
0		46	0		96	0		146	0+		196	0+		246	0		296	2		346	0		396	0	446	0	496	0	546
0		47	0		97	0		147	0+		197	0+		247	0		297	0		347	0		397	0	447	0	497	0	547
0		48	0		98	0		148	0+		198	0+		248	0		298	0		348	0		398	0	448	0	498	0	548
0		49	0		99	0		149	0+		199	0+		249	0		299	0		349	0		399	0	449	0	499	0	549
0		50	0		100	1		150	0+		200	0+		250	1		300	0		350	0		400	0	450	0	500	0	550

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP6.SAMPLE]KCR6K1AA\_171271641.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5328.36	316	332	604	594	0.41		
5712.43	373	382	13	12	0.28		

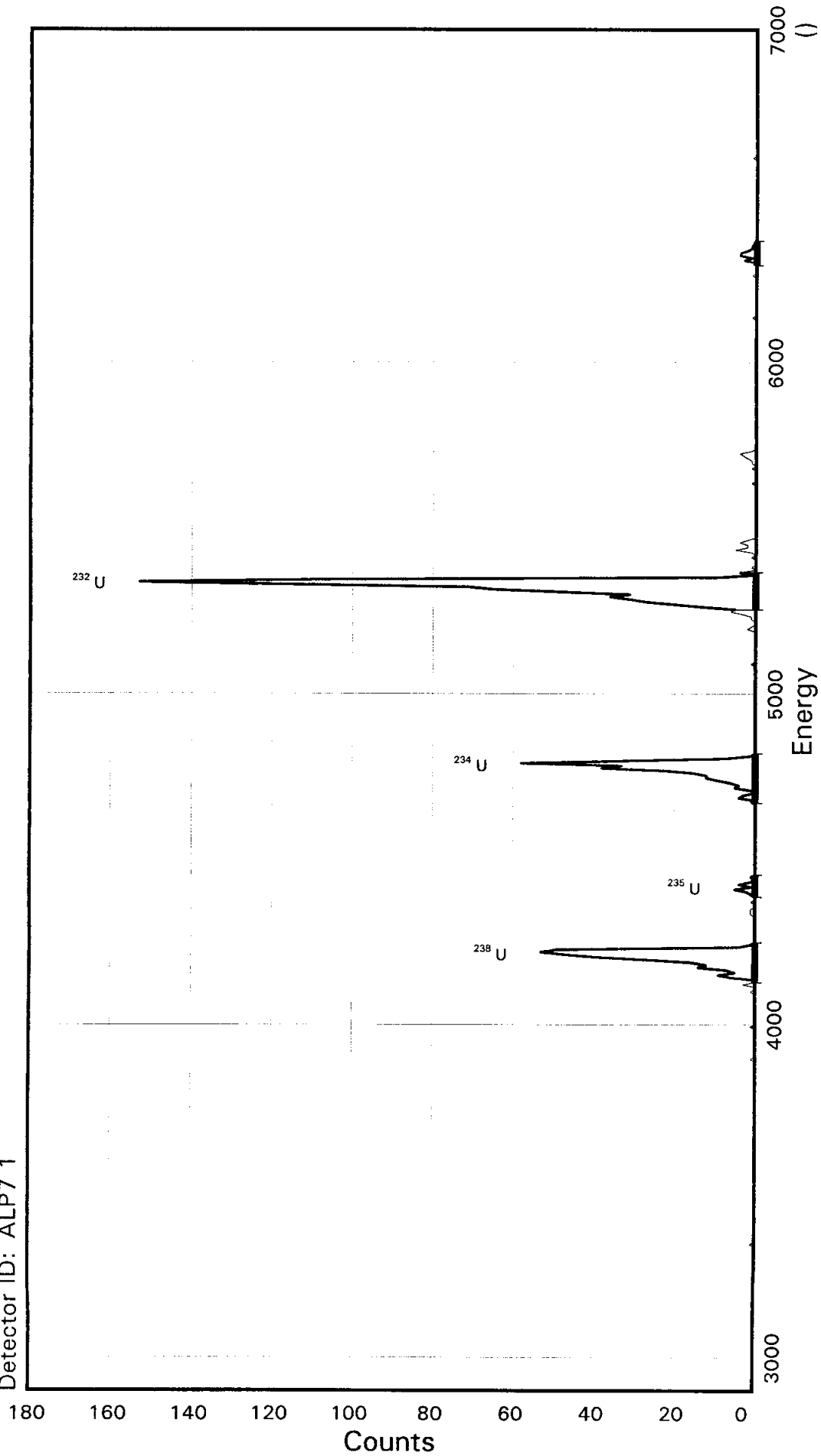
End of Report

STL Richland WA.

U BRCO

Sample ID: KCR6K1AC  
Detector ID: ALP7 1

Batch ID: 7327115



Acquisition Start: 17-DEC-2007 16:41:45.49  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:02.00

Energy Coefficients:  
Offset: 2.87851E+03  
Slope: 7.43174E+00  
Quadrature: 4.56151E-05



SAMPLE IDENTIITY: KCR6K1AC

TITLE : U BRCO

DETECTOR : ALP7 1  
CONFIGURATION NAME : \$DISK1:[ALP7.SAMPLE]KCR6K1AC\_171271641.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:45

REPORT DATE : 17-Dec-07 SAMPLE DATE: 16-NOV-2007 12:00:00  
ACQUIRE DATE: 17-DEC-2007 16:41:45 CALIB DATE : 02-DEC-2007 08:33:36

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:02

OFFSET : 2878.51 keV CONSTANT FWHM : 6.66667 Channels  
SLOPE : 7.43174 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 4.561510E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCR6K1AC

Flags Key

Detector: ALP7 1 Report Date: 17-Dec-07 08:02 PM Acquire Date: 17-DEC-2007 16:41:45.49 Tracer Nuclide: U-232 High Counts Limit: 36 Sample Live Time: 200 minutes Bkgnd Live Time: 1000 minutes	P: Peak Identified I: Peak Intersect S: Single Non-peak Intersect M: Multiple Non-peak Intersect H: High Non-peak Sample Count A: Altered via ALP-RGN-EDIT
--	---

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
					Energy keV	Width keV					
U-232	745	9	0	3.715	5332.2	111.9	319	334	0.00	0.00	P
U-234	267	1	0	1.334	4786.6	149.1	241	261	0.00	0.00	P
U-235	13	0	0	0.065	4409.8	67.1	203	212	0.00	0.00	P
U-238	296	0	0	1.480	4210.0	119.2	168	184	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 17-DEC-2007 20:02:03

```

Configuration      : $DISK1:[ALP7.SAMPLE]KCR6K1AC_171271641.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : U BRCO
Sample date       : 16-NOV-2007 12:00:00 Acquisition date : 17-DEC-2007 16:41:45
Sample ID        : KCR6K1AC Sample quantity : 0.00000E+00 GRAMS
Sample type       : disk Sample geometry :
Detector name    : ALP7 Detector geometry:
Elapsed live time: 0 03:20:02.00 Elapsed real time: 0 03:20:02.00 0.0%
Start energy     : 2900.81 End energy : 6695.52
Sensitivity      : 4.00 Sum Sensitivity : 1.00
  
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4211.33	296	0	37.16	179.14	168	16	2.47E-02	5.8	
2	0	4415.11	13	0	29.73	206.50	203	9	1.08E-03	27.7	
3	0	4785.02	267	0	37.16	256.13	241	20	2.22E-02	6.1	
4	0	5332.18	745	0	29.73	329.49	319	15	6.21E-02	3.7	
5	0	6325.45	16	0	29.73	462.50	458	10	1.33E-03	25.0	

Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCR6K1AC

Flags Key

Detector: ALP7 1

Report Date: 17 Dec 07 08:02 PM

Intersect Region: 0

Acquire Date: 17 Dec 2007 16:41:45.49

Non Intersect Region: 0

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn												
0		1	0		51	0		101	0		151	1		201	12+		251	0		301	0		351	0		401	0		451	1		501
0		2	0		52	0		102	0		152	0		202	12+		252	0		302	0		352	0		402	0		452	1		502
0		3	0		53	0		103	0		153	0+		203	15+		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	1+		204	22+		254	0		304	0		354	0		404	1		454	0		504
0		5	0		55	0		105	0		155	2+		205	38+		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	5+		206	33+		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	1+		207	58+		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	4+		208	32+		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	1+		209	7+		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0+		210	1+		260	0		310	0		360	0		410	3		460	0		510
0		11	0		61	0		111	0		161	1+		211	0		261	2		311	0		361	0		411	1		461	0		511
0		12	1		62	0		112	0		162	0		212	0		262	1		312	0		362	0		412	4		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	4		463			
0		14	0		64	0		114	1		164	0		214	0		264	0		314	0		364	0		414	2		464			
0		15	0		65	0		115	0		165	0		215	0		265	1		315	0		365	0		415	1		465			
0		16	0		66	0		116	0		166	0		216	0		266	1		316	0		366	0		416	1		466			
0		17	0		67	0		117	3		167	0		217	0		267	3		317	0		367	0		417	0		467			
0		18	0		68	0		118	0+		168	0		218	0		268	6		318	0		368	0		418	0		468			
0		19	0		69	0		119	0+		169	0		219	0		269	5+		319	0		369	0		419	0		469			
0		20	0		70	0		120	6+		170	0		220	0		270	13+		320	1		370	0		420	0		470			
0		21	0		71	0		121	9+		171	0		221	0		271	20+		321	0		371	0		421	0		471			
0		22	0		72	0		122	5+		172	0		222	0		272	27+		322	0		372	0		422	0		472			
0		23	0		73	0		123	7+		173	0		223	0		273	31+		323	0		373	0		423	0		473			
0		24	0		74	0		124	14+		174	0		224	0		274	36+		324	0		374	0		424	0		474			
0		25	0		75	0		125	12+		175	0		225	0		275	31+		325	0		375	0		425	0		475			
0		26	0		76	0		126	16+		176	0		226	0		276	48+		326	1		376	0		426	0		476			
0		27	0		77	0		127	27+		177	0		227	0		277	65+		327	0		377	0		427	0		477			
0		28	0		78	0		128	39+		178	0		228	0		278	71+		328	1		378	0		428	0		478			
0		29	0		79	0		129	47+		179	0		229	0		279	118+		329	1		379	0		429	0		479			
0		30	0		80	0		130	53+		180	0		230	0		280	153+		330	2		380	0		430	0		480			
0		31	0		81	0		131	49+		181	0		231	0		281	106+		331	3		381	0		431	0		481			
0		32	0		82	0		132	4+		182	0		232	0		282	9+		332	4		382	0		432	0		482			
0		33	0		83	0		133	1+		183	0		233	0		283	0+		333	1		383	0		433	0		483			
0		34	0		84	0		134	0		184	0		234	0		284	4		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	1		336	0		386	0		436	0		486			
0		37	0		87	1		137	0		187	0		237	0		287	0		337	0		387	1		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	1		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	1+		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0+		242	0		292	1		342	0		392	0		442	0		492			
0		43	0		93	0		143	0		193	4+		243	0		293	5		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	3+		244	0		294	2		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	0+		245	0		295	2		345	0		395	0		445	0		495			
0		46	0		96	0		146	1		196	1+		246	0		296	4		346	0		396	0		446	0		496			
0		47	0		97	0		147	1		197	5+		247	1		297	2		347	0		397	0		447	0		497			
0		48	0		98	0		148	1		198	4+		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	6+		249	0		299	0		349	0		399	0		449	0		499			
0		50	0		100	1		150	0		200	9+		250	0		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP7.SAMPLE]KCR6K1AC\_171271641.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4211.33	168	184	296	289	0.41		
4415.11	203	212	13	15	-0.55		
4785.01	241	261	267	263	0.24		
5332.18	319	334	745	737	0.29		
6325.45	458	468	16	16	0.00		

End of Report

URANIUM ISOTOPIC  
STANDARDS AND TRACEABILITY

## Standard Material Fractions (Vials)

Vial Prep:12/25/06 to 12/27/07,SMFractionIdentifier Between UITC18967 and UITC18984, Order by SMIdentifier,ConstituentCode,SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: U23283D190		Ref: 5/5/1987	6.1360E+01	± 1.783E+00	DPM/G	
UITC18967	U-232	9.9984E+00 ± 2.906E-01 DPM	0.2004 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18968	U-232	1.0048E+01 ± 2.921E-01 DPM	0.2014 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18969	U-232	1.0048E+01 ± 2.921E-01 DPM	0.2014 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18970	U-232	1.0048E+01 ± 2.921E-01 DPM	0.2014 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18971	U-232	1.0063E+01 ± 2.925E-01 DPM	0.2017 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18972	U-232	1.0073E+01 ± 2.928E-01 DPM	0.2019 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18973	U-232	9.9885E+00 ± 2.903E-01 DPM	0.2002 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18974	U-232	1.0043E+01 ± 2.919E-01 DPM	0.2013 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18975	U-232	1.0028E+01 ± 2.915E-01 DPM	0.201 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18976	U-232	1.0033E+01 ± 2.916E-01 DPM	0.2011 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18977	U-232	1.0043E+01 ± 2.919E-01 DPM	0.2013 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18978	U-232	9.9835E+00 ± 2.902E-01 DPM	0.2001 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18979	U-232	9.9785E+00 ± 2.900E-01 DPM	0.2 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18980	U-232	9.9635E+00 ± 2.896E-01 DPM	0.1997 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18981	U-232	9.9685E+00 ± 2.898E-01 DPM	0.1998 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18982	U-232	9.9935E+00 ± 2.905E-01 DPM	0.2003 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18983	U-232	9.9935E+00 ± 2.905E-01 DPM	0.2003 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18984	U-232	1.0033E+01 ± 2.916E-01 DPM	0.2011 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G

1.0018E+001 ± 3.461E-002 ( 18) 0.345% 9.9635E+000 , 1.0073E+001

# Standard Material Fractions (Vials)

Vial Prep: 12/25/06 to 12/27/07, SMFractionIdentifier Like: UISG1545%, Order by SMIdentifier, ConstituentCode, SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep, Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard:		U23283D190	Ref: 5/5/1987	6.1360E+01	± 1.783E+00	DPM/G
<b>UISG1545</b>	U-232	<b>1.0058E+01 ± 2.924E-01</b> DPM	0.2016 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G

1.0058E+001 ± 1.006E+001 ( 1)

1.0058E+001 , 1.0058E+001

**U23283D**

U23283D100  
Ref. 1091  
4.59E4 ± 1327  
dpm/g  
9/12/89  
*Link*



U23283D180  
Ref. 6120  
20.51 ± 0.94  
dpm/g  
DVF 7/28/2006



**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>7/28/2006</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U23283D100</u></b>	<b><u>1091</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>3.8870E+04</u>	±	<u>1.123E+03</u>
5) Percent error of Source Activity	<u>2.89</u>	%	
6) Weight of Source Material used (g)	<u>0.1346</u>		
7) (% Error) of Weight of Source Material used	<u>3.5661</u>	%	
8) Diluent	<u>2M HNO3</u>		
9) Total Weight of the Dilution (g)	<u>255.01</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.1176</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.0516E+01</u></b>	<b>±</b>	<b><u>9.420E-01</u></b>
12) Total Uncertainty	<u>4.592</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D180</u></b>	<b><u>6120</u></b>	
14) Calibration Reference Date	<u>5/5/1987</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>7/28/2006</u>
16) Reviewed by/date	<u>J.C</u>		<u>8/7/06</u>
17) Location	<u>qclab</u>	18) Exhausted	

This standard has no certificate, used for a test.

\*\*\*\*\*  
**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>7/28/2006</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U23283D100</u></b>	<b><u>1091</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>3.8870E+04</u>	±	<u>1.123E+03</u>
5) Percent error of Source Activity	<u>2.89</u>	%	
6) Weight of Source Material used (g)	<u>0.1346</u>		
7) (% Error) of Weight of Source Material used	<u>3.5661</u>	%	
8) Diluent	<u>2M HNO3</u>		
9) Total Weight of the Dilution (g)	<u>255.01</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.1176</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.0516E+01</u></b>	<b>±</b>	<b><u>9.420E-01</u></b>
12) Total Uncertainty	<u>4.592</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D180</u></b>	<b><u>6120</u></b>	
14) Calibration Reference Date	<u>5/5/1987</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>7/28/2006</u>
16) Reviewed by/date	<u>J.C.</u>		<u>8/7/2006</u>
17) Location	<u>qclab</u>	18) Exhausted	<u></u>

This standard has no certificate, used for a test.

**CALCULATIONS**

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100)$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100)$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>4/23/2001</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U23283D170</u></b>		<b><u>4886</u></b>
4) Source Activity (dpm ± dpm/g)	<u>2.9709E+02</u>	±	<u>1.366E+01</u>
5) Percent error of Source Activity	<u>4.596</u>	%	
6) Weight of Source Material used (g)	<u>3.5636</u>		
7) (% Error) of Weight of Source Material used	<u>0.1347</u>	%	
8) Diluent	<u>2M HNO3-P0100141</u>		
9) Total Weight of the Dilution (g)	<u>105.12</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2854</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.0071E+01</u></b>	±	<b><u>4.640E-01</u></b>
12) Total Uncertainty	<u>4.607</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D171</u></b>		<b><u>4887</u></b>
14) Calibration Reference Date	<u>4/23/2001</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>4/23/2001</u>
16) Reviewed by/date	<u></u>		<u></u>
17) Location <u>QCLAB/STWT0388</u>		18) Exhausted	<u></u>

This standard has no certificate, used for a test.

**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>4/23/2001</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U23283D100</u></b>		<b><u>1091</u></b>
4) Source Activity (dpm ± dpm/g)	<u>4.0945E+04</u>	±	<u>1.183E+03</u>
5) Percent error of Source Activity	<u>2.9</u>	%	
6) Weight of Source Material used (g)	<u>0.1478</u>		
7) (% Error) of Weight of Source Material used	<u>3.2476</u>	%	
8) Diluent	<u>2M HN03-P0100141</u>		
9) Total Weight of the Dilution (g)	<u>20.37</u>		
10) (% Error) of Total Weight of the Dilution	<u>1.4728</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.9709E+02</u></b>	±	<b><u>1.366E+01</u></b>
12) Total Uncertainty	<u>4.596</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D170</u></b>		<b><u>4886</u></b>
14) Calibration Reference Date	<u>4/23/2001</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>4/23/2001</u>
16) Reviewed by/date	<u></u>		<u></u>
17) Location <u>QCLAB/STWT0387</u>		18) Exhausted	<u></u>

This standard has no certificate, used for a test .

**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$

Form: CC-006, 7/15/99, Rev 3

U-232 Calibration Check

10/22/93  
D.S.

ITAS in house U-232 source is not traceable to NIST. U23283D100 was calibrated against a NIST traceable dilution of U30886A000. The attached data demonstrates a recent calibration check verifying the original calibration.

Source

U23283D141  
30.823 ± .896 dpm/g

Source

U30886A149  
19.054 ± .081 dpm/g

Calculation

$(U-232 \text{ cts}) (U\text{-Nat, dpm}) / U\text{-Nat cts} = U\text{-232 dpm found} / U\text{-232 dpm expected} =$

CAL626

$(5464.4) (20.005) / 5363 = 20.4291 / 20.630 = 98.80$

CAL627

$(5065.6) (20.110) / 5001.2 = 20.3690 / 20.670 = 98.54$

CAL628

$(5058.4) (20.098) / 5041.4 = 20.1658 / 20.648 = 97.66$

CAL629

$(5243.2) (20.0157) / 5175.2 = 20.2787 / 20.642 = 98.23$

Average =  $98.31 \pm .491 (1\sigma)$

**Q.C. VIAL TRANSMITTAL RECORD**

**PURPOSE: Issuance of:**

Spikes	<u>UNAT 20dpm</u>
Yield Monitor(s)	<u>232U 20dpm</u>
Quench Monitor(s)	_____
Carrier(s)	_____
Internal Audit Sample(s)	_____
Sealed Source(s)	_____
Other	_____

If "Other," explain:

CALCK.CGG- Alpha Spec Traceability  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**DESCRIPTION OF ITEM:**

ITAS #	Vial Code #	Quantity	Matrix
	<u>Cal 626-629</u>	<u>4</u>	

Prepared By: WA

Reviewed By: DS

Date Prepared: 10/18/93

Date Reviewed: 10/21/93

Form: CC-002, 11/90, Rev: 1

SPIKE PREPARATION RECORD  
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Prepared By: WG      Preparation Date: 18OCT93      Reference date 12AUG93

Source Identification: U23283D141      Isotope: U-232

Source Activity (dpm +- dpm per wt/vol unit): 3.0823E+01 +- 8.9637E-01

VIAL ID	WT/VOL	ACTIVITY*	TOTAL ERROR
CAL626	0.6693 G	2.0630E+01	5.9994E-01
CAL627	0.6706 G	2.0670E+01	6.0111E-01
CAL628	0.6699 G	2.0648E+01	6.0048E-01
CAL629	0.6697 G	* 2.0642E+01	6.0030E-01

\* Activity decay corrected to Preparation Date, 12:00, except SR-85

SPIKE PREPARATION RECORD  
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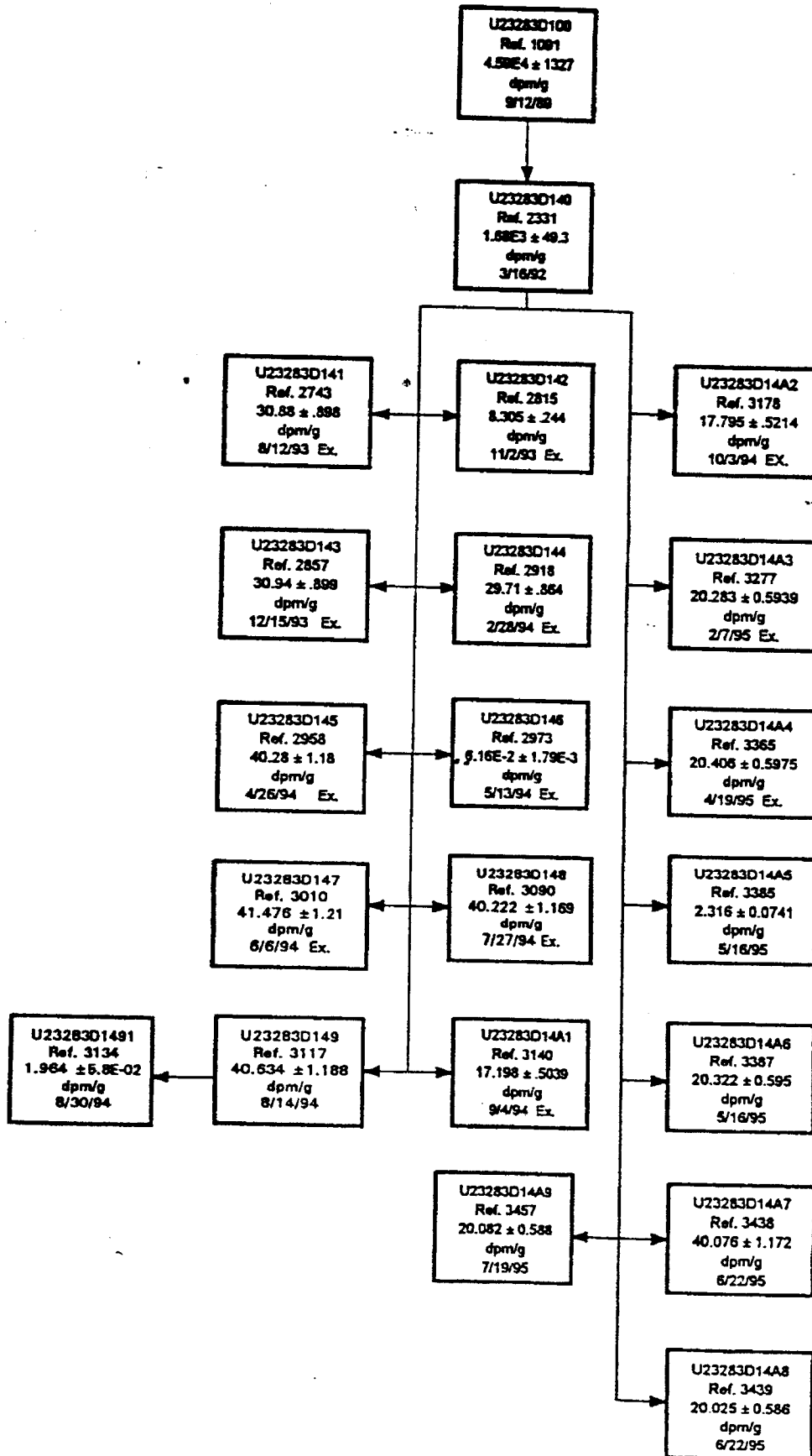
Prepared By: WG      Preparation Date: 18OCT93      Reference date 01FEB86  
 Source Identification: U30886A149      Isotope: UN-AT  
 Source Activity (dpm +- dpm per wt/vol unit): 1.9054E+01 +- 8.1000E-02

VIAL ID	WT/VOL	ACTIVITY*	TOTAL ERROR
-----	-----	-----	-----
CAL626	1.0499 G	2.0005E+01	8.5042E-02
CAL627	1.0554 G	2.0110E+01	8.5487E-02
CAL628	1.0548 G	2.0098E+01	8.5439E-02
CAL629	1.0579 G	+ 2.0157E+01	8.5690E-02

\* Activity decay corrected to Preparation Date, 12:00, except SR-85



U23283D140



## ISOTOPE DILUTION RECORD

1) Prepared by	<u>W.G.</u>	2) Date Prepared	<u>8/12/93</u>
3) Source Identification Number / Ref. Number	<u>U23283D140</u>		<u>2331</u>
4) Source Activity (dpm ± dpm/g)	<u>1.6659E+03</u>	±	<u>4.861E+01</u>
5) Percent error of Source Activity	<u>2.9</u>	%	
6) Weight of Source Material used (g)	<u>3.7227</u>		
7) (% Error) of Weight of Source Material used	<u>0.0166</u>	%	
8) Diluent	<u>2M HNO<sub>3</sub></u>		
9) Total Weight of the Dilution (g)	<u>200.84</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.0223</u>	%	
11) Specific Activity of Diluted Solution dpm/g	<u>3.0879E+01</u>	±	<u>8.976E-01</u>
12) Total Uncertainty	<u>2.907</u>	%	
13) Dilution Identification Number / Ref. Number	<u>U23283D141</u>		<u>2743</u>
14) Calibration Reference Date	<u>8/12/93</u>		
15) Isotope Inventory File update by/date	<u>P.J.</u>		<u>8/13/93</u>
16) Reviewed by/date	<u>D.S.</u>		<u>6/6/94</u>
17) Location	<u>K-5</u>	18) Exhausted	<u>12/16/93</u>

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})$

Form: CC-006, 5/5/94, Rev 2

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G.</u>	2) Date Prepared	<u>3/16/92</u>
<b>3) Source Identification Number / Ref. Number</b>	<u>U23283D100</u>		<u>1091</u>
4) Source Activity (dpm ± dpm/g)	<u>4.4808E+04</u>	±	<u>1.294E+03</u>
5) Percent error of Source Activity	<u>2.9</u>	%	
6) Weight of Source Material used (g)	<u>3.8189</u>		
7) (% Error) of Weight of Source Material used	<u>0.0158</u>	%	
8) Diluent	<u>2M HNO3</u>		
9) Total Weight of the Dilution (g)	<u>101.3</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.0877</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<u>1.6892E+03</u>	±	<u>4.929E+01</u>
12) Total Uncertainty	<u>2.918</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<u>U23283D140</u>		<u>2331</u>
14) Calibration Reference Date	<u>3/16/92</u>		
15) Isotope Inventory File update by/date	<u>W.G.</u>		<u>3/16/92</u>
16) Reviewed by/date	<u>D.S.</u>		<u>6/6/94</u>
17) Location	<u>K-1</u>	18) Exhausted	<u></u>

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**CALCULATIONS**

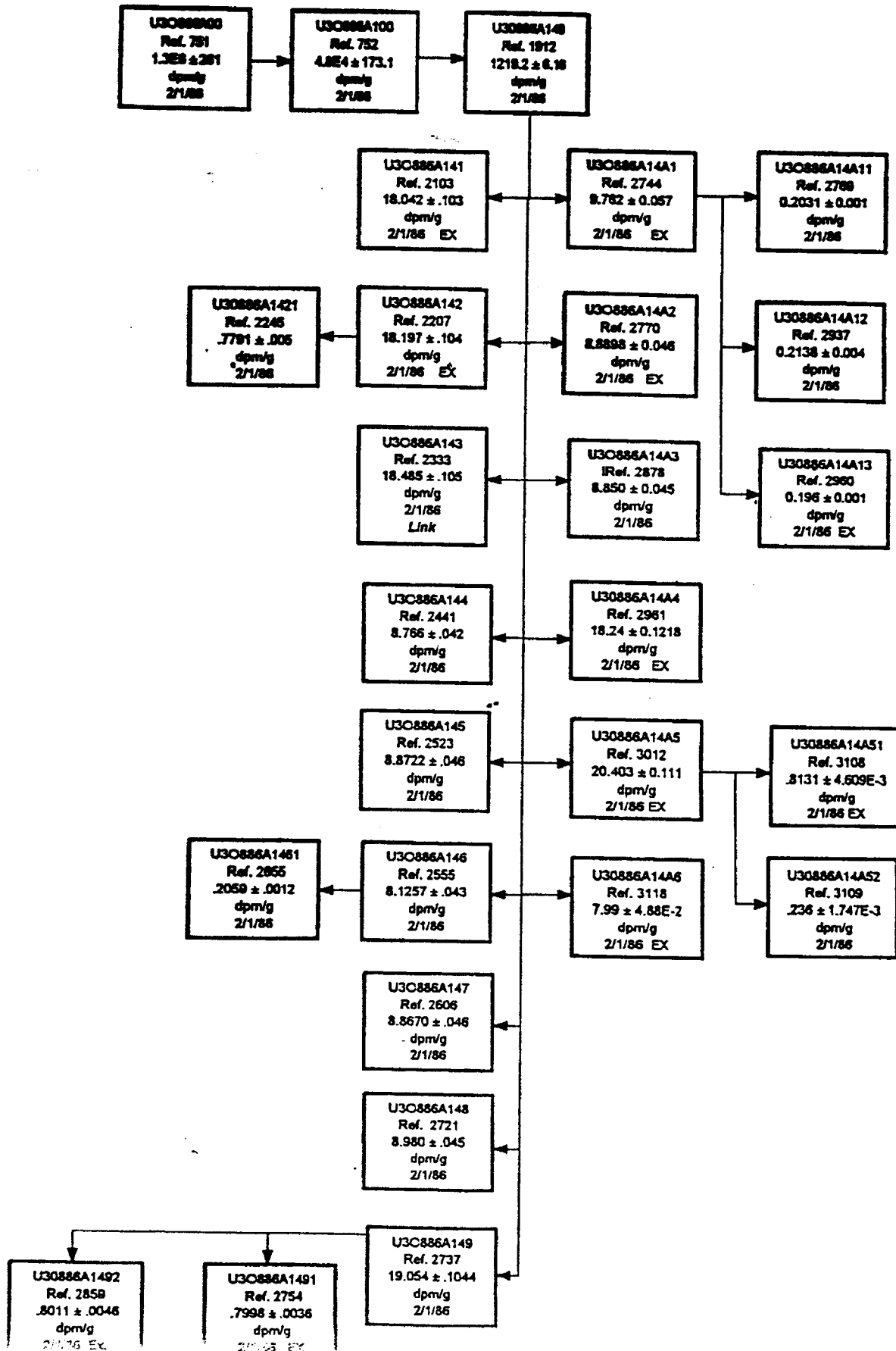
7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

**U308140  
Link**



## ISOTOPE DILUTION RECORD

1) Prepared by	<u>D.S.</u>	2) Date Prepared	<u>8/17/90</u>
3) Source Identification Number / Ref. Number	<u>U30886A140</u>		<u>1912</u>
4) Source Activity (dpm ± dpm/g)	<u>1.2192E+03</u>	±	<u>6.156E+00</u>
5) Source Activity (ug ± ug/g)	<u>7.9274E+02</u>		<u>4.0026E+00</u>
6) Percent error of Source Activity	<u>0.505</u>	%	
7) Weight of Source Material used (g)	<u>3.1482</u>		
8) (% Error) of Weight of Source Material used	<u>0.0232</u>	%	
9) Diluent	<u>2M HNO3</u>		
10) Total Weight of the Dilution (g)	<u>201.45</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.0222</u>	%	
12) Specific Activity of Diluted Solution dpm/g	<u>1.9054E+01</u>	±	<u>1.044E-01</u>
13) Specific Activity of Diluted Solution ug/g	<u>1.2389E+01</u>	±	<u>6.791E-02</u>
14) Total Uncertainty	<u>0.548</u>	%	
15) Dilution Identification Number / Ref. Number	<u>U30886A149</u>		<u>2737</u>
16) Calibration Reference Date	<u>2/1/86</u>		
17) Isotope Inventory File update by/date	<u>W.G.</u>		<u>8/5/93</u>
18) Reviewed by/date	<u>D.S.</u>		<u>6/2/94</u>
19) Location	<u>LAB</u>	20) Exhausted	<u></u>

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**CALCULATIONS**

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100) ^2$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100) ^2$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$$

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G.</u>	2) Date Prepared	<u>12/5/90</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U30886A100</u></b>		<b><u>752</u></b>
4) Source Activity (dpm ± dpm/g)	<u>4.7985E+04</u>	±	<u>1.731E+02</u>
5) Source Activity (ug ± ug/g)	<u>3.1200E+04</u>		<u>1.1255E+02</u>
6) Percent error of Source Activity	<u>0.361</u>	%	
7) Weight of Source Material used (g)	<u>2.5515</u>		
8) (% Error) of Weight of Source Material used	<u>0.0354</u>	%	
9) Diluent	<u>2M HNO3</u>		
10) Total Weight of the Dilution (g)	<u>100.42</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.0892</u>	%	
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.2192E+03</u></b>	±	<b><u>6.156E+00</u></b>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<b><u>7.9273E+02</u></b>	±	<b><u>4.003E+00</u></b>
14) Total Uncertainty	<u>0.505</u>	%	
<b>15) Dilution Identification Number / Ref. Number</b>	<b><u>U30886A140</u></b>		<b><u>1912</u></b>
16) Calibration Reference Date	<u>2/1/86</u>		
17) Isotope Inventory File update by/date	<u>W.G.</u>		<u>12/5/90</u>
18) Reviewed by/date	<u>D.S.</u>		<u>6/6/94</u>
19) Location	<u>L-10</u>	20) Exhausted	<u></u>

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>C.S.</u>	2) Date Prepared	<u>3/24/86</u>
<b>3) Source Identification Number / Ref. Number</b>	<u>U30886A000</u>		<u>751</u>
4) Source Activity (dpm ± dpm/g)	<u>1.3045E+06</u>	±	<u>2.610E+02</u>
5) Source Activity (ug ± ug/g)	<u>8.4818E+05</u>		<u>1.6970E+02</u>
6) Percent error of Source Activity	<u>0.02</u>	%	
7) Weight of Source Material used (g)	<u>3.3411</u>		
8) (% Error) of Weight of Source Material used	<u>0.0206</u>	%	
9) Diluent	<u>8M HNO3</u>		
10) Total Weight of the Dilution (g)	<u>90.83</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.1091</u>	%	
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<u>4.7985E+04</u>	±	<u>1.731E+02</u>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<u>3.1200E+04</u>	±	<u>1.125E+02</u>
14) Total Uncertainty	<u>0.361</u>	%	
<b>15) Dilution Identification Number / Ref. Number</b>	<u>U30886A100</u>		<u>752</u>
16) Calibration Reference Date	<u>2/1/86</u>		
17) Isotope Inventory File update by/date	<u>D.D.</u>		<u>5/7/86</u>
18) Reviewed by/date	<u>D.M.</u>		<u>6/15/94</u>
19) Location	<u>PF-8</u>	20) Exhausted	<u>11/8/93</u>

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

## ISOTOPE RECORD FORM

1) Isotope U-NAT 2) Reference Number #751  
 3) Half Life Negligible Decay 4) Storage Location STD LAB  
 5) Source Identification Number U3O886A000

### CALIBRATION DATA

6) Activity as Received Units 1.304E+06 dpm/g  
 7) Overall Uncertainty Percent 0.02%  
 8) Reference Date / Time 1-Feb-86  
 9) Activity dpm/g 1.304E+06 ± 2.61E+02 (0.02%) dpm/g  
 10) Volume or Mass (ml/g) 10 g  
 11) Calibrated by NBS  
 12) Certificate Solution Number SRM 950B Uranium Oxide

### SURVEY DATA

13) Date Received 2/1/86  
 14) Surveyed by D.D. & A.V.R.  
 15) Survey Reading (Beta/Gamma) cpm 100,000 cpm at Contact  
 16) Survey Reading (Alpha) cpm Background

17) Activity Conversion (0.8481g U-nat / g U3O8) (0.99968) (1.538E+06 dpm / g U-nat) =  
1.304E+06 ± 2.61E+02 (0.02%) dpm/g U3O8

18) Remarks MW U3O8 = (3 \* 238.0289) + (8 \* 15.9994) = 842.0819 g / mole U3O8  
Material was ignited at 800°C in a crucible for 1 hr and cooled to room temperature in a sealed dessicator.

19) Isotope File Updated by D.D.  
 20) QC Approved D.B.



# National Bureau of Standards

## Certificate

751

### Standard Reference Material 950b

#### Uranium Oxide ( $U_3O_8$ )

(In Cooperation with the Department of Energy, New Brunswick Laboratory, Argonne, Illinois)

This material consists of normal uranium in the form of oxide,  $U_3O_8$ . It is intended to provide a reference material of known uranium content.

#### CERTIFIED VALUE

Uranium Oxide ( $U_3O_8$ ) . . . 99.968  $\pm$  0.020 percent

The stated uncertainty of  $\pm 0.020$  percent associated with the certified value is the linear sum of 0.0076 percent, which is the limit of the random error of the assay measurements at the 99 percent confidence level ( $2.807 S_m$ , where  $S_m$  is the standard error of the mean with  $n = 24$ ), and 0.012 percent, the estimated upper limit of conceivable systematic errors including material variability. The above certified value is based on material heated at 800 °C for one hour in an open crucible in a muffle furnace and cooled in a desiccator. *It is important that the material be freshly ignited in this manner to obtain accurate results.*

The total impurities as determined by spectrochemical analysis are estimated to be less than 50  $\mu\text{g/g}$ . The determined iron content is  $\sim 3 \mu\text{g/g}$  and the determined vanadium content is  $\sim 1 \mu\text{g/g}$ . The assay of this material is based on the use of NBS Potassium Dichromate (SRM 136c), as the oxidizing agent as described in the NBL titrimetric method for the precise assay of uranium metal.<sup>1,2</sup> The assay values obtained are compatible with those obtained from the assay of NBS Uranium Metal (SRM 960) and NBS Uranium Oxide (SRM 950a). The certified value for this lot of uranium oxide has also been confirmed using a coulometric procedure.

The atomic weights used in the calculations are: uranium, 238.029, and oxygen, 15.9994.

This material was prepared under contract with the National Lead Company of Ohio, Cincinnati, Ohio. Assay of the material was performed by N. M. Trahey of the New Brunswick Laboratory, Argonne, Illinois and J. R. Moody and W. Koch of the NBS Analytical Chemistry Division. Iron and vanadium were measured by B. I. Diamondstone and S. A. Wicks of the NBS Analytical Chemistry Division.

Overall direction and coordination of the technical measurements leading to the certification were performed under the chairmanship of I. L. Barnes.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by W. P. Reed.

Washington, D.C. 20234  
March 1, 1978

J. Paul Cali, Chief  
Office of Standard Reference Materials

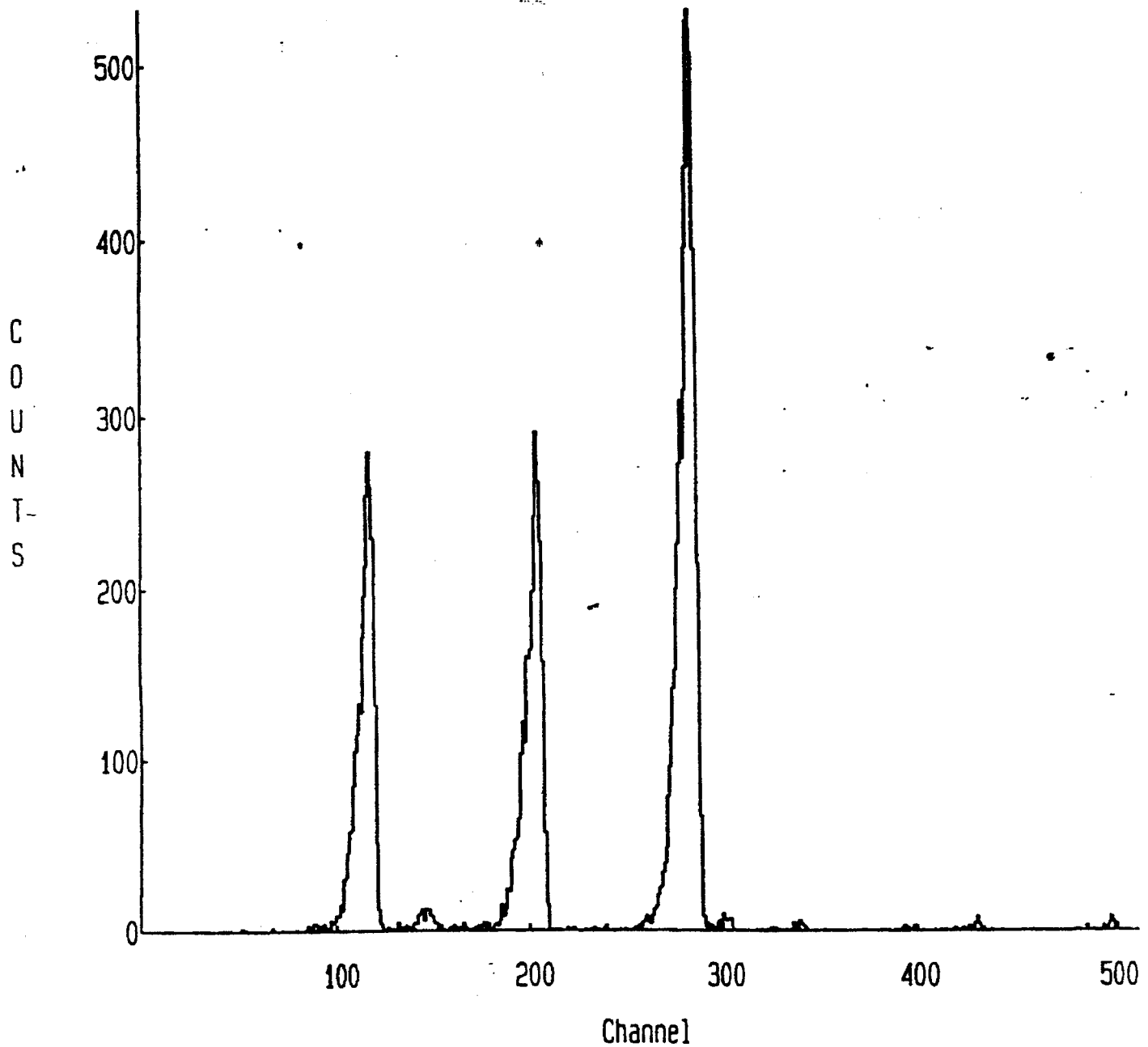
(over)

IT-NO # <i>Cal 626</i>	ISO	CUSTOMER ID <i>IT</i>	RECEIVE DATE	DUE DATE
SA TYPE:	RPT UNITS: PCI <u>DEH</u> 6 L CH <u>SA</u>		STORAGE	
PROC	VIAL			
GA	GB	CO	CS	
<i>U-232</i>				
REQUESTED COUNTING TIME	REQ'D BY	SAMPLE DATE/ON DATE	SAMPLE DATE/OFF TIME	COUNTING DATE DAY MON YR TIME
<i>1000</i>	<i>CCG</i>	<i>10-18-73</i>		
TOTAL SAMPLE WEIGHT OR VOLUME	UNIT	SUGGESTED ALIQUOT	SAMPLE ANALYZED WEIGHT OR VOLUME	UNIT
				<i>SA</i>
GEOMETRY CIRCLE ONE				25 50 100 200 300 400 500 MA MB
TRACER ISOTOPE	TRACER UST NUMBER	TRACER VOLUME/WEIGHT	TRACER CONCENTRATE	TRACER REF DATE DAY MON YR
COUNTING INSTRUMENT CHECK ONE				OTHER
NAI	3	5	9	GER
				ASPEC LEPD AGC BGC
SPIKE #		TECH COMMENTS		
BLANK #		<i>WJ</i> <i>CCG Data Cal C.K</i> <i>232/L</i>		

Spectrum: DUB1: [ALP5.SAMPLE] CAL626\_201031223.CNF; 1

Title:

Sample Title: U IT



Start Time: 20-OCT-93 12:23

Real Time: 0 16: 40: 05.00

Live Time: 0 16: 40: 02.00

Sample Time: 19-OCT-93 12:00

Sample ID: CAL626

Sample Type: disk

FWHM Parameters:

Offset: 8.06E+01

Slope: 0.00E+00

SAMPLE IDENTIITY: CAL626

TITLE : U IT

DETECTOR : ALP5 1  
CONFIGURATION NAME : DUB1:[ALP5.SAMPLE]CAL626\_201031223.CNF;1

ACQUIRE DATE of BACKGROUND: 25-SEP-1993 10:03:03

REPORT DATE : 21-Oct-93 SAMPLE DATE: 19-OCT-1993 12:00:00  
ACQUIRE DATE: 20-OCT-1993 12:23:27 CALIB DATE : 27-SEP-1993 08:15:47

PRESET REAL TIME: ELAPSED REAL TIME:

OFFSET : 3448.80 keV CONSTANT FWHM : 8.00000 Channels  
SLOPE : 6.53520 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 2.798980E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha-Regions Report  
(Version: 8-Oct-91)

Sample Identity: CAL626

Flags Key

Detector: ALP5 1  
 Report Date: 21-Oct-93 05:06 AM  
 Acquire Date: 20-OCT-1993 12:23:27.50  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 1000 minutes  
 Bkgrnd Live Time: 2500 minutes

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsc Count	Count Rate C/Min	Centrd Region		Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags	
					Energy keV	Width keV						
U-232	5488	89	23.6	0	5.464	5327.6	174.0	266	292	0.00	0.00	P
U-234	2631	3	1.2	0	2.630	4783.1	159.5	186	210	0.00	0.00	P
U-235	123	3	1.2	0	0.122	4403.3	198.4	127	157	0.00	0.00	P
U-238	2614	3	1.2	0	2.612	4203.3	138.6	103	124	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

--Alpha Spectrum Listing  
(Version: 29-Jun-92)

Sample Identity: COL626  
Detector: ALPS 1  
Report Date: 21-Oct-93 05:06 AM  
Acquire Date: 20-OCT-1993 12:23:27.50

Flags Key  
Intersect Region: 0  
Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn		
		1	0	51	9	101	5+	151	165+	201	1	251	10	301	0	351	3	401	0	451	4	501
		2	2	52	15	102	4+	152	199+	202	0	252	7	302	0	352	0	402	0	452	4	502
0		3	1	53	12+	103	1+	153	243+	203	1	253	6	303	0	353	0	403	0	453	0	503
0		4	1	54	30+	104	3+	154	291+	204	2	254	7	304	1	354	1	404	1	454	0	504
0		5	0	55	31+	105	1+	155	263+	205	0	255	7	305	0	355	0	405	0	455	0	505
0		6	0	56	45+	106	0+	156	228+	206	3	256	2	306	0	356	0	406	0	456	0	506
0		7	0	57	58+	107	0+	157	158+	207	2	257	0	307	0	357	0	407	0	457	0	507
0		8	0	58	59+	108	0	158	58+	208	5	258	0	308	0	358	0	408	1	458	0	508
0		9	0	59	85+	109	2	159	15+	209	6	259	0	309	0	359	0	409	0	459	0	509
0		10	0	60	105+	110	0	160	1+	210	8	260	0	310	0	360	1	410	0	460	0	510
0		11	0	61	115+	111	3	161	1	211	5	261	0	311	0	361	0	411	0	461	0	511
0		12	0	62	133+	112	2	162	0	212	4	262	0	312	0	362	0	412	0	462	0	512
0		13	0	63	128+	113	1	163	1	213	9	263	0	313	0	363	1	413	0	463		
0		14	0	64	172+	114	2	164	0	214	12	264	0	314	0	364	0	414	0	464		
0		15	0	65	196+	115	0	165	1	215	14	265	0	315	0	365	1	415	0	465		
0		16	0	66	214+	116	4	166	0	216	21+	266	0	316	0	366	1	416	0	466		
0		17	2	67	255+	117	2	167	0	217	25+	267	0	317	0	367	0	417	0	467		
0		18	0	68	288+	118	1	168	0	218	26+	268	1	318	0	368	0	418	0	468		
0		19	0	69	260+	119	0	169	2	219	34+	269	1	319	0	369	0	419	0	469		
0		20	0	70	230+	120	1	170	0	220	39+	270	0	320	0	370	2	420	0	470		
0		21	0	71	132+	121	1	171	0	221	48+	271	1	321	0	371	1	421	0	471		
0		22	1	72	51+	122	2	172	2	222	79+	272	0	322	0	372	1	422	0	472		
0		23	0	73	12+	123	0	173	1	223	96+	273	0	323	0	373	0	423	0	473		
0		24	0	74	4+	124	3	174	0	224	120+	274	1	324	1	374	2	424	0	474		
0		25	0	75	2	125	2	175	0	225	142+	275	0	325	0	375	1	425	0	475		
0		26	0	76	0	126	3	176	0	226	153+	276	2	326	0	376	1	426	0	476		
0		27	0	77	0+	127	5	177	0	227	201+	277	1	327	0	377	3	427	0	477		
0		28	0	78	2+	128	2	178	1	228	227+	278	2	328	0	378	2	428	0	478		
0		29	1	79	1+	129	4	179	0	229	273+	279	0	329	0	379	0	429	0	479		
0		30	0	80	8+	130	1	180	0	230	309+	280	1	330	0	380	5	430	1	480		
0		31	0	81	1+	131	0	181	1	231	276+	281	0	331	0	381	8	431	0	481		
0		32	0	82	1+	132	3	182	0	232	315+	282	0	332	0	382	4	432	1	482		
0		33	1	83	5+	133	4	183	2	233	396+	283	1	333	1	383	2	433	0	483		
0		34	0	84	0+	134	3	184	0	234	442+	284	1	334	0	384	2	434	0	484		
0		35	3	85	2+	135	6	185	1	235	527+	285	0	335	1	385	0	435	0	485		
0		36	0	86	0+	136	15+	186	0	236	533+	286	1	336	0	386	0	436	3	486		
0		37	0	87	3+	137	9+	187	0	237	508+	287	1	337	0	387	0	437	0	487		
0		38	4	88	2+	138	13+	188	2	238	395+	288	5	338	0	388	1	438	0	488		
0		39	4	89	2+	139	24+	189	3	239	215+	289	2	339	0	389	0	439	1	489		
0		40	0	90	1+	140	23+	190	0	240	67+	290	1	340	1	390	0	440	1	490		
1		41	3	91	4+	141	42+	191	0	241	8+	291	6	341	0	391	0	441	0	491		
0		42	2	92	4+	142	47+	192	0	242	2+	292	4	342	0	392	0	442	0	492		
1		43	4	93	9+	143	53+	193	0	243	4	293	3	343	1	393	1	443	1	493		
0		44	2	94	10+	144	55+	194	0	244	0	294	2	344	2	394	0	444	1	494		
0		45	2	95	12+	145	66+	195	0	245	3	295	0	345	3	395	0	445	3	495		
1		46	2	96	6+	146	104+	196	1	246	2	296	0	346	0	396	0	446	2	496		
0		47	6	97	13+	147	122+	197	0	247	1	297	0	347	2	397	0	447	2	497		
0		48	5	98	12+	148	111+	198	1	248	5	298	0	348	1	398	0	448	4	498		
0		49	6	99	9+	149	161+	199	1	249	6	299	0	349	1	399	0	449	8	499		
0		50	9	100	8+	150	160+	200	0	250	1	300	0	350	3	400	0	450	6	500		

Configuration : DUB1:[ALPS.SAMPLE]CAL626\_201031223.CNF:1  
 Analyses by : ALPHA V1.5  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:23:27  
 Sample ID : CAL626 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:02.00 Elapsed real time: 0 16:40:05.00 0.0%  
 Start energy : 3468.41 End energy : 6868.19  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	ZErr	Fit
1	0	4216.30	2614	0	52.28	116.86	103	21	4.36E-02	2.0	
2	0	4412.25	123	0	52.28	146.51	127	30	2.05E-03	9.0	
3	0	4788.64	2631	0	58.82	203.25	186	24	4.38E-02	1.9	
4	0	5327.62	5488	0	65.35	284.04	266	26	9.15E-02	1.3	
5	0	5448.75	59	0	45.75	302.12	293	16	9.83E-04	13.0	
6	0	6317.80	33	0	32.68	431.05	418	18	5.50E-04	17.4	
7	0	6780.92	36	0	32.68	499.20	492	13	6.00E-04	16.7	

Configuration : DUB1:[ALP5.SAMPLE]CAL626\_201031223.CNF;1  
 Analyses by : ALPHA V1.5,PEAKEFF V2.2,NID V2.4  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:23:27  
 Sample ID : CAL626 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:02.00 Elapsed real time: 0 16:40:05.00 0.0%  
 Energy tolerance : 80.00 Half life ratio : 1.00  
 Errors propagated: No Systematic Error : 0.00 %  
 Efficiency type : Spline Efficiencies at : Peak Energy  
 Abundance limit : 60.00

Summary of Nuclide Activity

Total number of lines in spectrum 7  
 Number of unidentified lines 3  
 Number of lines tentatively identified by NID 4 57.14%

Nuclide Type : ap

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr O-Sigma Error	O-Sigma %Error	Flags
U-232	72.00Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : np

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr O-Sigma Error	O-Sigma %Error	Flags
U-234	2.45E+05Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-235	7.04E+08Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-238	4.47E+09Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found "M" = Manually accepted  
 "E" = Manually edited "A" = Nuclide specific abn. limit



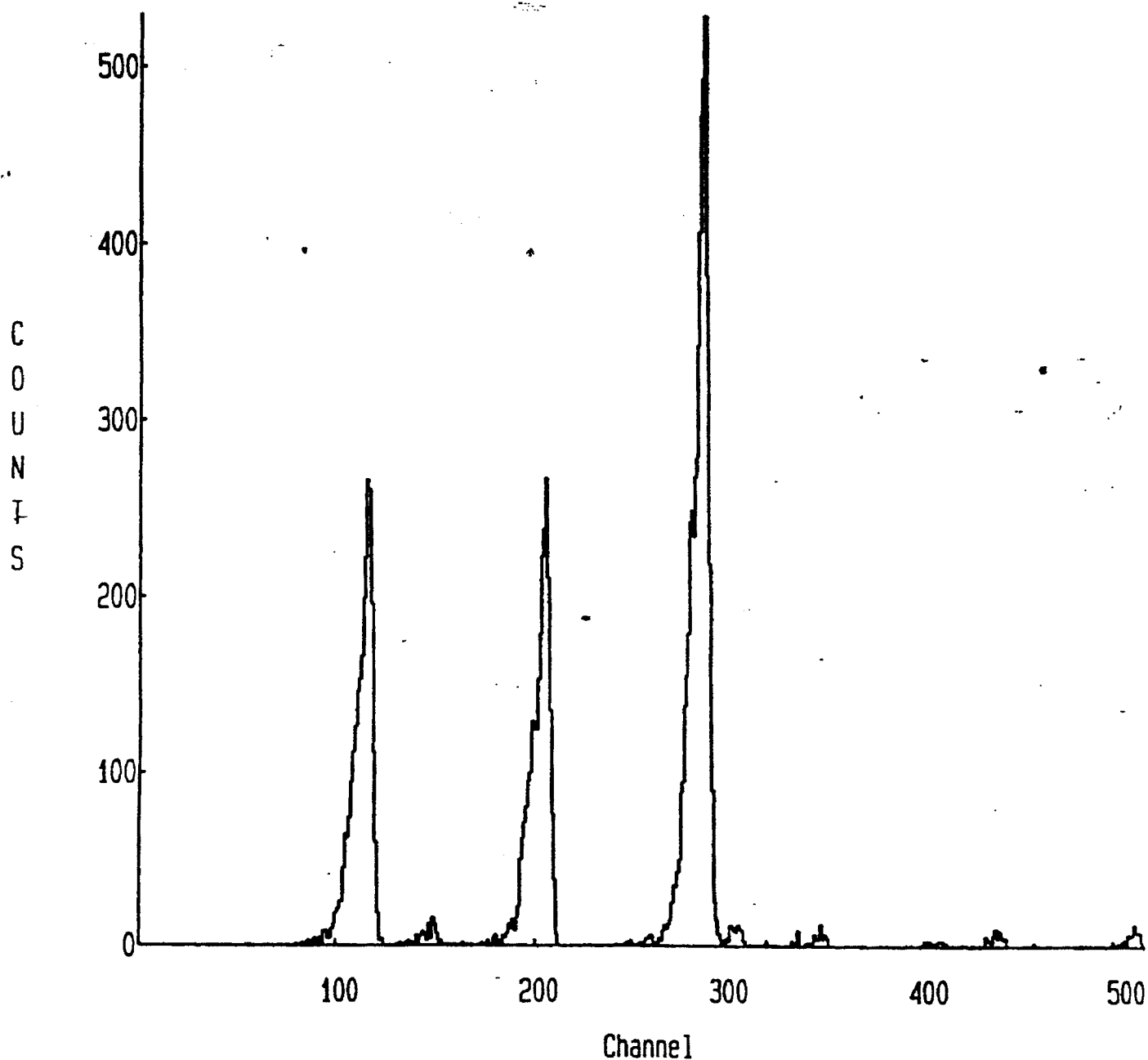
IT-RD # <i>Cal 627</i>	ISO	CUSTOMER ID <i>IT</i>	RECEIVE DATE	DUE DATE
SA TYPE:	RPT UNITS: PCI <i>(OPM)</i> 6 L CM <i>(SA)</i>		STORAGE	
PROC	VIAL			
GA	GB	CO	CS	
REQUESTED COUNTING TIME <i>1000</i>	REQ'D BY <i>CCG</i>	SAMPLE DATE/ON DATE <i>10-18-93</i>	SAMPLE DATE/OFF TIME	COUNTING DATE DAY MON YR 
TOTAL SAMPLE WEIGHT OR VOLUME	UNIT	SUGGESTED ALIQUOT	SAMPLE ANALYZED WEIGHT OR VOLUME	UNIT <i>SA</i>
				SECURITY CIRCLE ONE 25 50 100 200 300 400 500 MA MB
TRACER ISOTOPE	TRACER UST NUMBER	TRACER VOLUME/WEIGHT	TRACER CONCENTRATE	TRACER DAY MON YR
				REF DATE MON YR
				CUST CODE CIRCLE ONE 14 44 64 83 108 208
COUNTING INSTRUMENT CHECK ONE			OTHER	DETECTOR NUMBER
NAI	3	5	9	GER
				ASPEC LEPD AGC BGC
SPIKE #		TECH COMMENTS		
BLANK #		<i>CCG-Data Cal CK 2326</i>		

*U-232*

Spectrum: DUB1: [ALP6.SAMPLE]CAL627\_201031224.CNF; 1

Title:

Sample Title: U IT



Start Time: 20-OCT-93 12:24

Sample Time: 19-OCT-93 12:00

FWHM Parameters:

Real Time: 0 16:40:04.00

Sample ID: CAL627

Offset: 7.43E+01

Live Time: 0 16:40:03.00

Sample Type: disk

Slope: 0.00E+00

SAMPLE IDENTIITY: CAL627

TITLE : U IT

DETECTOR : ALP6 1  
CONFIGURATION NAME : DUB1:[ALP6. SAMPLE]CAL627\_201031224. CNF; 1

ACQUIRE DATE of BACKGROUND: 25-SEP-1993 10:05:46

REPORT DATE : 21-Oct-93 SAMPLE DATE: 19-OCT-1993 12:00:00  
ACQUIRE DATE: 20-OCT-1993 12:24:15 CALIB DATE : 27-SEP-1993 08:17:50

PRESET REAL TIME: ELAPSED REAL TIME:

OFFSET : 3500.37 keV CONSTANT FWHM : 8.00000 Channels  
SLOPE : 6.19229 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 5.066170E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 8-Oct-91)

Sample Identity: CAL627

Flags Key

Detector: ALP6 1	
Report Date: 21-Oct-93 05:08 AM	P: Peak Identified
Acquire Date: 20-OCT-1993 12:24:15.00	I: Peak Intersect
Tracer Nuclide: U-232	S: Single Non-peak Intersect
High Counts Limit: 36	M: Multiple Non-peak Intersect
Sample Live Time: 1000 minutes	H: High Non-peak Sample Count
Bkgrnd Live Time: 2500 minutes	A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsect Count	Count Rate C/Min	Centrd Region		Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
					Energy keV	Width keV					
U-232	5106	101	0	5.065	5331.4	162.0	272	297	0.00	0.00	P
U-234	2412	5	0	2.410	4786.9	140.7	191	213	0.00	0.00	P
U-235	103	4	0	0.101	4407.1	164.8	130	156	0.00	0.00	P
U-238	2491	3	0	2.490	4207.1	151.3	99	123	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

Alpha Spectrum Listing  
(Version: 29-Jun-92)

Sample Identity: CAL627  
 Detector: MLP6 1  
 Report Date: 21-Oct-93 05:00 AM  
 Acquire Date: 20-OCT-1993 12:24:15.00

Flags Key  
 Intersect Region: 0  
 Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0		1	0	51	21+	101	2+	151	125+	201	1	251	5	301	5	351	1	401	0	451	1	501				
0		2	0	52	26+	102	3+	152	154+	202	1	252	3	302	1	352	3	402	0	452	4	502				
0		3	0	53	26+	103	1+	153	188+	203	1	253	12	303	0	353	3	403	0	453	1	503				
0		4	1	54	45+	104	1+	154	223+	204	1	254	11	304	0	354	0	404	0	454	7	504				
0		5	0	55	64+	105	1+	155	238+	205	2	255	9	305	0	355	2	405	0	455	6	505				
0		6	1	56	62+	106	1+	156	267+	206	1	256	8	306	0	356	1	406	2	456	7	506				
0		7	0	57	74+	107	0	157	211+	207	2	257	12	307	0	357	3	407	0	457	13	507				
0		8	0	58	94+	108	1	158	136+	208	4	258	18	308	0	358	3	408	0	458	9	508				
0		9	0	59	111+	109	1	159	76+	209	4	259	9	309	0	359	3	409	0	459	8	509				
0		10	0	60	127+	110	1	160	38+	210	6	260	3	310	0	360	2	410	0	460	8	510				
0		11	0	61	147+	111	0	161	7+	211	6	261	0	311	1	361	2	411	0	461	3	511				
0		12	0	62	154+	112	1	162	1+	212	2	262	0	312	0	362	0	412	0	462	1	512				
0		13	0	63	167+	113	2	163	0+	213	2	263	1	313	0	363	0	413	0	463						
0		14	0	64	199+	114	0	164	0	214	2	264	0	314	0	364	1	414	1	464						
0		15	1	65	222+	115	1	165	0	215	5	265	1	315	0	365	0	415	0	465						
0		16	0	66	266+	116	1	166	0	216	3	266	0	316	0	366	0	416	0	466						
0		17	0	67	268+	117	1	167	0	217	9	267	1	317	0	367	0	417	0	467						
0		18	0	68	196+	118	1	168	0	218	12	268	1	318	0	368	1	418	0	468						
0		19	0	69	111+	119	0	169	1	219	10	269	1	319	1	369	1	419	0	469						
0		20	0	70	60+	120	0	170	1	220	13	270	0	320	0	370	1	420	0	470						
0		21	1	71	19+	121	1	171	0	221	15	271	3	321	0	371	0	421	0	471						
0		22	0	72	3+	122	0	172	1	222	25+	272	0	322	0	372	0	422	0	472						
0		23	0	73	4+	123	2	173	0	223	35+	273	1	323	0	373	0	423	1	473						
0		24	0	74	1	124	0	174	0	224	34+	274	1	324	0	374	1	424	0	474						
0		25	1	75	0	125	1	175	1	225	43+	275	1	325	0	375	0	425	0	475						
0		26	0	76	0	126	3	176	0	226	50+	276	1	326	0	376	0	426	0	476						
0		27	0	77	1	127	0	177	0	227	88+	277	1	327	0	377	0	427	0	477						
0		28	0	78	0	128	1	178	1	228	~94+	278	0	328	1	378	1	428	0	478						
0		29	1	79	0	129	5	179	1	229	139+	279	0	329	0	379	0	429	1	479						
0		30	1	80	1+	130	6	180	0	230	156+	280	0	330	0	380	0	430	1	480						
0		31	1	81	0+	131	1	181	0	231	180+	281	1	331	1	381	6	431	0	481						
0		32	0	82	2+	132	3	182	0	232	242+	282	0	332	0	382	4	432	1	482						
0		33	2	83	1+	133	1	183	0	233	249+	283	0	333	0	383	3	433	0	483						
0		34	1	84	0+	134	6	184	0	234	234+	284	3	334	0	384	2	434	1	484						
0		35	0	85	2+	135	5	185	0	235	268+	285	1	335	0	385	7	435	0	485						
0		36	3	86	3+	136	7	186	0	236	279+	286	1	336	0	386	10	436	0	486						
0		37	0	87	1+	137	12	187	0	237	343+	287	9	337	0	387	5	437	1	487						
0		38	2	88	2+	138	10	188	0	238	408+	288	0	338	0	388	9	438	0	488						
0		39	4	89	1+	139	15	189	0	239	475+	289	0	339	0	389	6	439	1	489						
0		40	4	90	6+	140	9	190	0	240	495+	290	1	340	0	390	4	440	1	490						
0		41	1	91	2+	141	16+	191	0	241	530+	291	2	341	1	391	5	441	1	491						
0		42	5	92	6+	142	23+	192	1	242	383+	292	2	342	0	392	1	442	0	492						
0		43	2	93	8+	143	50+	193	1	243	219+	293	2	343	1	393	0	443	0	493						
0		44	8	94	7+	144	62+	194	0	244	89+	294	2	344	1	394	0	444	1	494						
0		45	9	95	3+	145	71+	195	0	245	26+	295	7	345	0	395	0	445	0	495						
0		46	4	96	13+	146	80+	196	1	246	15+	296	4	346	0	396	0	446	3	496						
0		47	5	97	4+	147	95+	197	0	247	7+	297	4	347	0	397	0	447	0	497						
0		48	10	98	16+	148	100+	198	2	248	4	298	13	348	1	398	0	448	1	498						
0		49	13+	99	12+	149	130+	199	0	249	0	299	4	349	1	399	0	449	2	499						
0		50	19+	100	7+	150	125+	200	3	250	1	300	7	350	2	400	0	450	2	500						

Configuration : DUB1:[ALP6.SAMPLE]CAL627\_201031224.CNF;1  
 Analyses by : ALPHA V1.5  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:24:15  
 Sample ID : CAL627 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:03.00 Elapsed real time: 0 16:40:04.00 0.0%  
 Start energy : 3518.95 End energy : 6803.62  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	ZErr	Fit
1	0	4215.91	2491	0	55.73	114.48	99	24	4.15E-02	2.0	
2	0	4423.09	103	0	43.35	147.24	130	26	1.72E-03	9.9	
3	0	4786.79	2412	0	55.73	204.33	191	22	4.02E-02	2.0	
4	0	5331.42	5106	0	49.54	288.87	272	25	8.51E-02	1.4	
5	0	5439.87	82	0	49.54	305.57	300	12	1.37E-03	11.0	
6	0	5717.20	69	0	30.96	348.09	334	20	1.15E-03	12.0	

VAX/VMS Nuclide Identification Report V2.8 Generated 21-OCT-1993 05:08:21

Configuration : DUB1:[ALP6.SAMPLE]CAL627\_201031224.CNF:1  
 Analyses by : ALPHA V1.5,PEAKEFF V2.2,NID V2.4  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:24:15  
 Sample ID : CAL627 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:03.00 Elapsed real time: 0 16:40:04.00 0.0%  
 Energy tolerance : 80.00 Half life ratio : 1.00  
 Errors propagated: No Systematic Error : 0.00 %  
 Efficiency type : Spline Efficiencies at : Peak Energy  
 Abundance limit : 60.00

Summary of Nuclide Activity

Total number of lines in spectrum 6  
 Number of unidentified lines 2  
 Number of lines tentatively identified by NID 4 66.67%

Nuclide Type : ap

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-232	72.00Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : np

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-234	2.45E+05Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-235	7.04E+08Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-238	4.47E+09Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

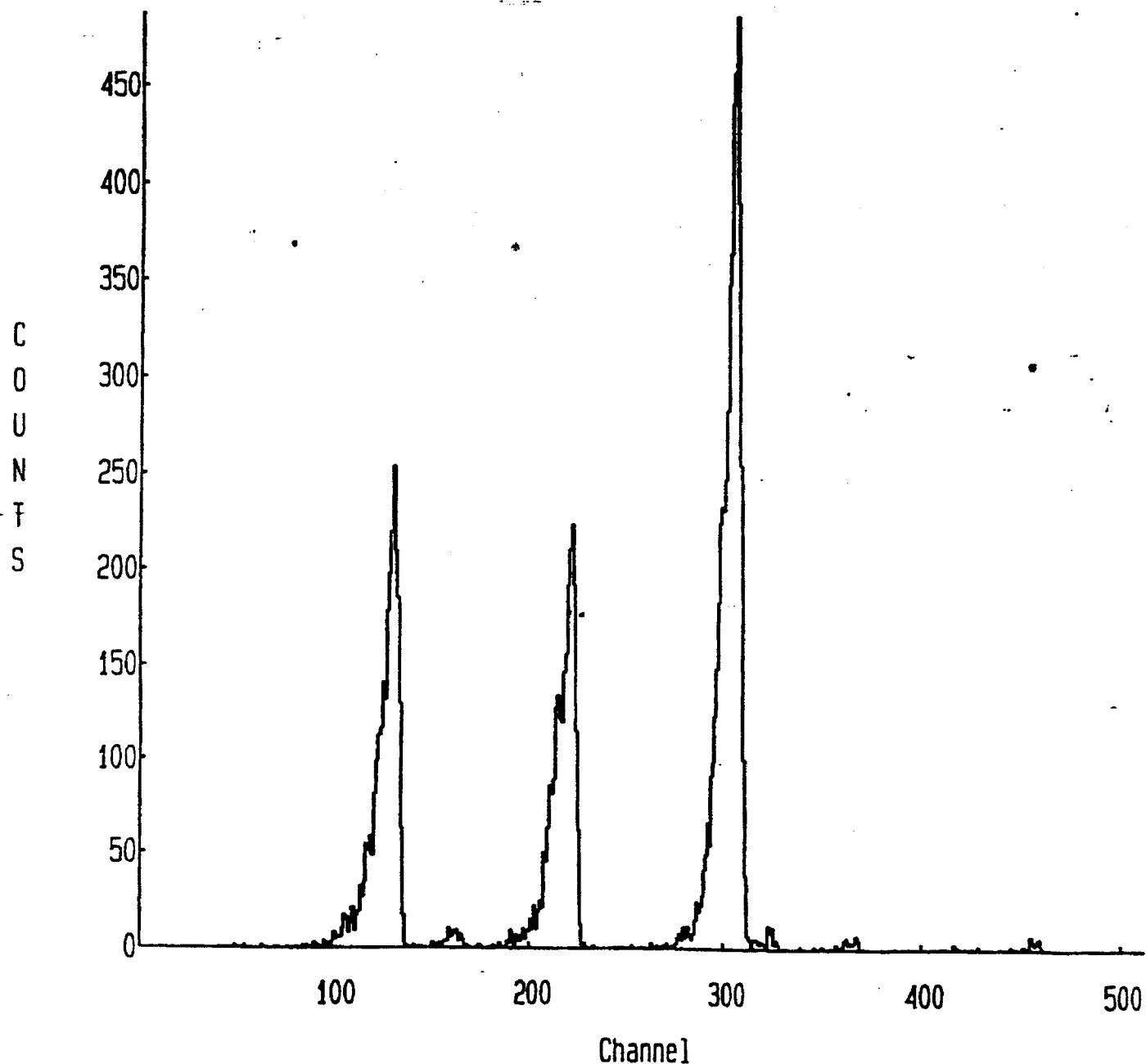
IT-RO # <i>Cal 628</i>	ISU	CUSTOMER ID <i>IT</i>	RECEIVE DATE	DUE DATE
SA TYPE:	RPT UNITS: PCI <input checked="" type="radio"/> <i>OPM</i> <input type="radio"/> <i>G L CM</i> <input checked="" type="radio"/> <i>SA</i>		STORAGE	
PROC	VIAL			
GA	GB	CO	CS	
REQUESTED COUNTING TIME	REQ'D BY	SAMPLE DATE/ON DATE	SAMPLE DATE/OFF TIME	COUNTING DATE DAY MON YR TIME
<i>1000</i>	<i>CCG</i>	<i>10-18-93</i>		<i>U-232</i>
TOTAL SAMPLE WEIGHT OR VOLUME	UNIT	SUGGESTED ALIQUOT	SAMPLE ANALYZED WEIGHT OR VOLUME	UNIT
				<i>SA</i>
TRACER ISOTOPE	TRACER LIST NUMBER	TRACER VOLUME/WEIGHT	TRACER CONCENTRATE	TRACER REF DATE DAY MON YR
COUNTING INSTRUMENT CHECK ONE				OTHER
NAI	3	5	9	GER
				<input checked="" type="checkbox"/> <i>ASPEC</i>
				<input type="checkbox"/> <i>LEPD</i>
				<input type="checkbox"/> <i>ASC</i>
				<input type="checkbox"/> <i>BGC</i>
SPIKE #		TECH	COMMENTS	
BLANK #		<i>WA</i>	<i>CCG-Data Cal CK 23266</i>	



Spectrum: DUB1: [ALP7.SAMPLE] CAL628\_201031225.CNF; 1

Title:

Sample Title: U IT



Start Time: 20-OCT-93 12:25

Sample Time: 19-OCT-93 12:00

FWHM Parameters:

Real Time: 0 16:40:01.00

Sample ID: CAL628

Offset: 7.30E+01

Live Time: 0 16:40:01.00

Sample Type: disk

Slope: 0.00E+00

SAMPLE IDENTIITY: CAL628

TITLE : U IT

DETECTOR : ALP7 1  
CONFIGURATION NAME : DUB1:[ALP7. SAMPLE]CAL628\_201031225. CNF; 1

ACQUIRE DATE of BACKGROUND: 25-SEP-1993 10:08:55

REPORT DATE : 21-Oct-93 SAMPLE DATE: 19-OCT-1993 12:00:00  
ACQUIRE DATE: 20-OCT-1993 12:25:05 CALIB DATE : 27-SEP-1993 08:19:51

PRESET REAL TIME: ELAPSED REAL TIME:

OFFSET : 3432.88 keV CONSTANT FWHM : 8.00000 Channels  
SLOPE : 6.00798 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 6.174230E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 8-Oct-91)

Sample Identity: CAL628

Flags Key

Detector: ALP7 1  
 Report Date: 21-Oct-93 05:09 AM  
 Acquire Date: 20-OCT-1993 12:25:05.04  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 1000 minutes  
 Bkgrnd Live Time: 2500 minutes

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsect Count	Count	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
				Rate C/Min	Energy keV	Width keV					
U-232	5086	69	0	5.058	5328.1	185.0	285	314	0.00	0.00	P
U-234	2366	2	0	2.365	4783.6	175.6	200	228	0.00	0.00	P
U-235	94	5	0	0.092	4403.8	179.7	138	167	0.00	0.00	H
U-238	2584	2	0	2.583	4203.8	203.2	104	137	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

Alpha Spectrum Listing  
(Version: 29-Jun-92)

Sample Identity: CAL628  
 Detector: MLP7 1  
 Report Date: 21-Oct-93 05:05 AM  
 Acquire Date: 20-OCT-1993 12:25:05.04

Flags Key

Intersect Region: e  
 Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	1	1	1	51	8	101	2-	151	15+	201	1	251	232+	301	0	351	0	401	2	451	1	501				
0	2	1	52	5	102	2-	152	18+	202	2	252	248+	302	0	352	0	402	2	452	0	502					
0	3	0	53	6	103	3-	153	22+	203	0	253	284+	303	0	353	0	403	1	453	0	503					
0	4	2	54	6+	104	1-	154	10+	204	0	254	349+	304	1	354	0	404	1	454	0	504					
0	5	0	55	10+	105	3-	155	19+	205	0	255	365+	305	1	355	0	405	7	455	0	505					
0	6	0	56	17+	106	4-	156	25+	206	1	256	443+	306	0	356	0	406	5	456	0	506					
0	7	0	57	16+	107	4-	157	21+	207	1	257	459+	307	3	357	1	407	3	457	1	507					
0	8	0	58	8+	108	10-	158	50+	208	1	258	488+	308	0	358	1	408	4	458	1	508					
0	9	0	59	13+	109	6-	159	45+	209	1	259	392+	309	1	359	1	409	6	459	0	509					
0	10	0	60	21+	110	7-	160	63+	210	0	260	255+	310	2	360	1	410	2	460	1	510					
0	11	0	61	9+	111	9-	161	85+	211	0	261	100+	311	5	361	1	411	1	461	0	511					
0	12	0	62	17+	112	9-	162	81+	212	3	262	38+	312	6	362	0	412	0	462	0	512					
0	13	2	63	19+	113	4-	163	89+	213	1	263	7+	313	3	363	1	413	1	463	0	512					
0	14	0	64	32+	114	7-	164	128+	214	0	264	5+	314	4	364	0	414	0	464	0	512					
0	15	0	65	27+	115	5-	165	134+	215	2	265	1	315	3	365	0	415	0	465	0	512					
0	16	0	66	34+	116	2-	166	122+	216	1	266	5	316	4	366	0	416	0	466	0	512					
0	17	0	67	54+	117	2-	167	120+	217	1	267	5	317	7	367	3	417	0	467	0	512					
0	18	0	68	51+	118	0	168	147+	218	2	268	5	318	5	368	2	418	0	468	0	512					
0	19	0	69	58+	119	1	169	156+	219	1	269	3	319	1	369	1	419	0	469	0	512					
0	20	1	70	48+	120	0	170	192+	220	3	270	4	320	0	370	1	420	0	470	0	512					
0	21	1	71	81+	121	0	171	211+	221	1	271	3	321	1	371	0	421	0	471	0	512					
0	22	1	72	99+	122	1	172	224+	222	0	272	2	322	0	372	1	422	0	472	0	512					
0	23	0	73	113+	123	2	173	192+	223	2	273	12	323	0	373	1	423	0	473	0	512					
0	24	0	74	117+	124	2	174	115+	224	2	274	9	324	0	374	0	424	0	474	0	512					
0	25	0	75	141+	125	1	175	62+	225	3	275	11	325	0	375	0	425	0	475	0	512					
0	26	1	76	132+	126	0	176	13+	226	6	276	3	326	0	376	1	426	0	476	0	512					
0	27	1	77	178+	127	0	177	2+	227	8	277	5	327	0	377	0	427	0	477	0	512					
0	28	1	78	198+	128	1	178	3+	228	5	278	3	328	0	378	0	428	0	478	0	512					
0	29	0	79	220+	129	1	179	0	229	11	279	0	329	0	379	2	429	0	479	0	512					
0	30	1	80	254+	130	1	180	1	230	6	280	0	330	0	380	0	430	0	480	0	512					
0	31	1	81	210+	131	2	181	0	231	11	281	1	331	0	381	0	431	0	481	0	512					
0	32	1	82	185+	132	0	182	0	232	7	282	1	332	0	382	0	432	0	482	0	512					
0	33	0	83	130+	133	0	183	2	233	5	283	0	333	0	383	0	433	0	483	0	512					
0	34	0	84	63+	134	3	184	0	234	8	284	0	334	0	384	0	434	0	484	0	512					
0	35	2	85	17+	135	0	185	0	235	15+	285	0	335	0	385	0	435	0	485	0	512					
0	36	0	86	2+	136	1	186	0	236	24+	286	0	336	0	386	0	436	0	486	0	512					
0	37	2	87	0+	137	0	187	0	237	19+	287	0	337	1	387	0	437	0	487	0	512					
0	38	1	88	1-	138	4	188	1	238	22+	288	1	338	0	388	0	438	0	488	0	512					
0	39	1	89	0-	139	3	189	0	239	28+	289	2	339	0	389	0	439	0	489	0	512					
0	40	0	90	2-	140	9	190	0	240	41+	290	1	340	0	390	1	440	0	490	0	512					
1	41	3	91	0-	141	4	191	0	241	49+	291	0	341	0	391	0	441	0	491	0	512					
0	42	2	92	1-	142	0	192	0	242	66+	292	0	342	0	392	0	442	0	492	0	512					
0	43	2	93	1-	143	7	193	1	243	54+	293	0	343	0	393	0	443	0	493	0	512					
0	44	1	94	1-	144	4	194	1	244	91+	294	0	344	1	394	1	444	0	494	0	512					
0	45	1	95	1-	145	4	195	1	245	99+	295	0	345	0	395	2	445	0	495	0	512					
1	46	4	96	1-	146	7	196	1	246	124+	296	2	346	0	396	0	446	0	496	0	512					
0	47	0	97	0-	147	10	197	0	247	149+	297	1	347	0	397	1	447	1	497	0	512					
0	48	3	98	0-	148	5	198	1	248	183+	298	0	348	0	398	1	448	0	498	0	512					
2	49	2	99	3-	149	9	199	0	249	225+	299	0	349	0	399	0	449	0	499	0	512					
0	50	4	100	3-	150	9+	200	0	250	234+	300	2	350	0	400	0	450	0	500	0	512					

```

Configuration      : DUB1: [ALP7. SAMPLE]CAL628_201031225. CNF: 1
Analyses by       : ALPHA V1.5
Sample title      : U IT
Sample date       : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:25:05
Sample ID        : CAL628 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry  :
Elapsed live time: 0 16:40:01.00 Elapsed real time: 0 16:40:01.00 0.0%
Start energy     : 3450.91 End energy   : 6670.82
Sensitivity      : 4.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4216.78	2584	0	60.08	128.77	104	33	4.31E-02	2.0	
2	0	4780.94	2366	0	66.09	219.43	200	28	3.94E-02	2.1	
3	0	5328.08	5086	0	60.08	305.83	285	29	8.48E-02	1.4	
4	0	5444.79	69	0	30.04	324.08	315	15	1.15E-03	12.0	

Configuration : DUB1: [ALP7. SAMPLE]CAL628\_201031225. CNF; 1  
 Analyses by : ALPHA V1. 5. PEAKEFF V2. 2. NID V2. 4  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:25:05  
 Sample ID : CAL628 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:01.00 Elapsed real time: 0 16:40:01.00 0.0%  
 Energy tolerance : 80.00 Half life ratio : 1.00  
 Errors propagated: No Systematic Error : 0.00 %  
 Efficiency type : Spline Efficiencies at : Peak Energy  
 Abundance limit : 60.00

Summary of Nuclide Activity

Total number of lines in spectrum 4  
 Number of unidentified lines 1  
 Number of lines tentatively identified by NID 3 75.00%

Nuclide Type : ap

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-232	72.00Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : np

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-234	2.45E+05Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-238	4.47E+09Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

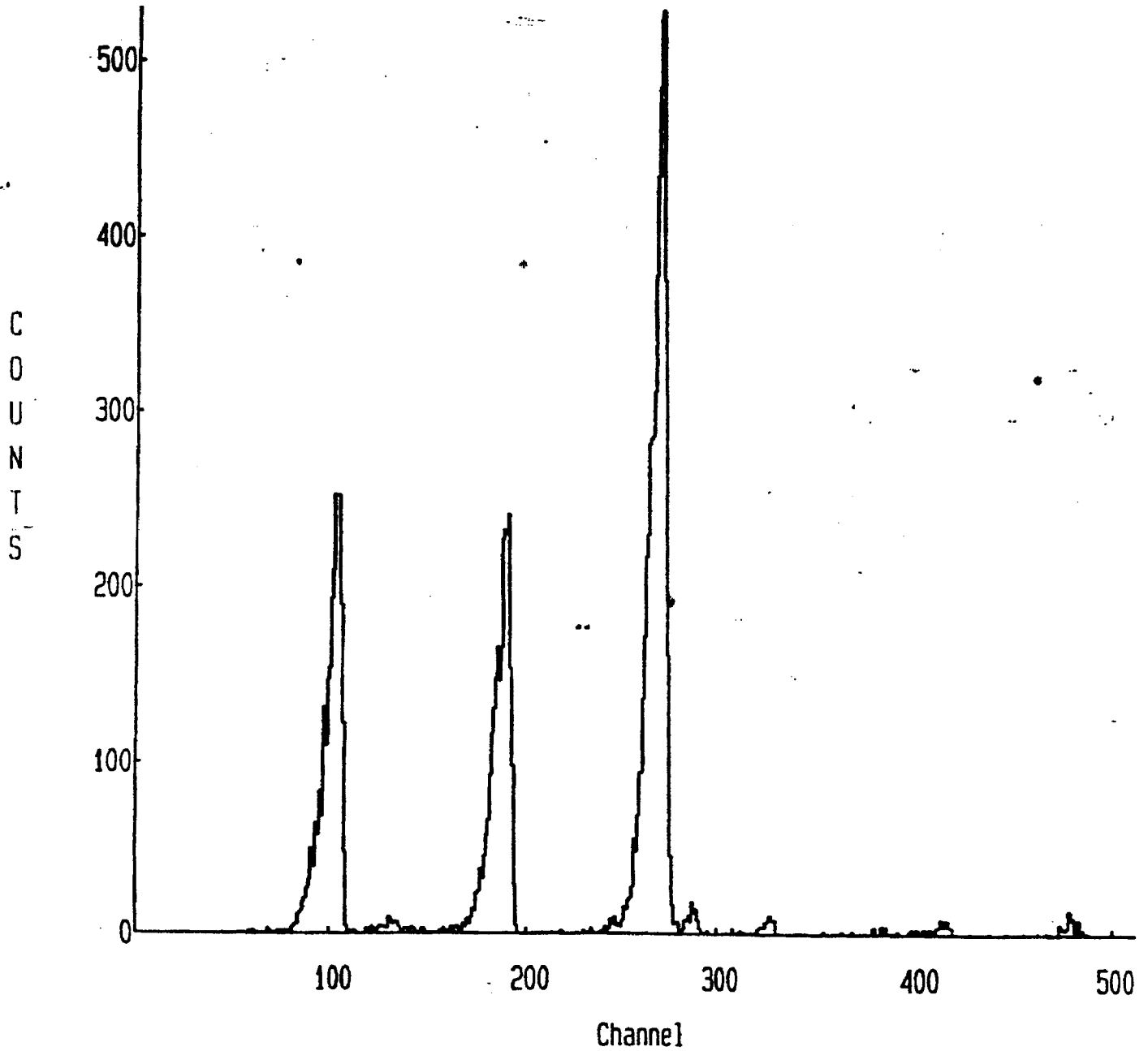
Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

IT-RD # <i>Cal 629</i>		ISU	CUSTOMER ID <i>IT</i>		RECEIVE DATE	DUE DATE
SA TYPE:		RPT UNITS: PCI <i>(DPH)</i> 6 L CH <i>(SA)</i>			STORAGE	
PROC		VIAL				
GA	GB	CO	CS			
REQUESTED COUNTING TIME	REQ'D BY	SAMPLE DATE/ON DATE TIME		SAMPLE DATE/OFF DATE TIME		COUNTING DATE DAY MON YR TIME
<i>1000</i>	<i>CCG</i>	<i>10-18-93</i>				<i>U-232</i>
TOTAL SAMPLE WEIGHT OR VOLUME	UNIT	SUGGESTED ALIQUOT	SAMPLE ANALYZED WEIGHT OR VOLUME	UNIT	GEOMETRY CIRCLE ONE	
				<i>ISA</i>	25 50 100 200 300 400 500 MA MB	
TRACER ISOTOPE	TRACER UST NUMBER	TRACER VOLUME/WEIGHT	TRACER CONCENTRATE	TRACER REF DATE DAY MON YR	LUST CODE CIRCLE ONE	
					14 44 64 83 108 208	
COUNTING INSTRUMENT CHECK ONE				OTHER	DETECTOR NUMBER	ACTUAL COUNT TIME
NAI	3	5	9	GER	ASPEC	LEPD
					ASC	BGC
Spike #		TECH		COMMENTS		
Blank #		<i>WA</i>		<i>CCG Data Cal Ch 232LL</i>		

Spectrum: DUB1: [ALP10.SAMPLE] CAL629\_201031225.CNF; 1  
Title:  
Sample Title: U IT



Start Time: 20-OCT-93 12:25  
Real Time: 0 16: 40: 01.00  
Live Time: 0 16: 40: 01.00

Sample Time: 19-OCT-93 12:00  
Sample ID: CAL629  
Sample Type: disk

FWHM Parameters:  
Offset: 5.91E+01  
Slope: 0.00E+00



SAMPLE IDENTIITY:

CAL629

TITLE : U IT

DETECTOR : ALP10 1  
CONFIGURATION NAME : DUB1: [ALP10. SAMPLE]CAL629\_201031225. CNF; 1

ACQUIRE DATE of BACKGROUND: 02-OCT-1993 09:38:01

REPORT DATE : 21-Oct-93 SAMPLE DATE: 19-OCT-1993 12:00:00  
ACQUIRE DATE: 20-OCT-1993 12:25:55 CALIB DATE : 05-OCT-1993 08:52:11

PRESET REAL TIME:

ELAPSED REAL TIME:

OFFSET : 3525.60 keV CONSTANT FWHM : 8.00000 Channels  
SLOPE : 6.56733 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 3.217460E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

alpha regions report  
(Version: 8-Oct-91)

Sample Identity: CAL629

Detector: ALP10 1  
 Report Date: 21-Oct-93 05:10 AM  
 Acquire Date: 20-OCT-1993 12:25:55.87  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 1000 minutes  
 Bkgrnd Live Time: 2500 minutes

Flags Key

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smp1 Count	Bkg Count	Intrsc Count	Count Rate C/Min	Centrd Region		Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
					Energy keV	Width keV					
U-232	5276	82	0	5.243	5315.6	155.0	254	277	0.00	0.00	P
U-234	2522	6	0	2.520	4771.1	160.5	172	196	0.00	0.00	P
U-235	87	3	0	0.086	4391.3	152.9	116	139	0.00	0.00	H
U-238	2571	2	0	2.570	4191.3	165.8	85	110	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

Sample Identity: CAL629  
Detector: ALP10 1  
Report Date: 21-Oct-93 05:11 AM  
Acquire Date: 20-OCT-1993 12:25:55.87

Flags Key  
Intersect Region: e  
Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	1	0	51	194+	101	0	151	0	201	15	251	0	301	0	351	3	401	0	451	0	501								
0	2	0	52	210+	102	1	152	0	202	20	252	0	302	0	352	1	402	0	452	0	502								
0	3	1	53	253+	103	0	153	1	203	22	253	0	303	1	353	0	403	0	453	0	503								
0	4	0	54	252+	104	0	154	0	204	28+	254	0	304	2	354	3	404	0	454	0	504								
0	5	1	55	252+	105	2	155	1	205	56+	255	0	305	0	355	3	405	1	455	0	505								
0	6	1	56	190+	106	0	156	0	206	49+	256	1	306	0	356	0	406	0	456	0	506								
0	7	0	57	124+	107	3	157	1	207	70+	257	0	307	0	357	3	407	0	457	0	507								
0	8	0	58	48+	108	1	158	1	208	94+	258	0	308	0	358	3	408	0	458	0	508								
0	9	2	59	5+	109	2	159	0	209	95+	259	3	309	1	359	2	409	0	459	0	509								
0	10	0	60	1+	110	2	160	1	210	130+	260	0	310	0	360	1	410	0	460	0	510								
0	11	2	61	2	111	4	161	0	211	173+	261	1	311	1	361	4	411	0	461	0	511								
0	12	0	62	1	112	1	162	0	212	210+	262	1	312	0	362	5	412	1	462	0	512								
0	13	1	63	2	113	4	163	1	213	251+	263	2	313	2	363	9	413	0	463										
0	14	0	64	0	114	4	164	1	214	282+	264	0	314	0	364	5	414	0	464										
0	15	0	65	0	115	2	165	0	215	285+	265	1	315	0	365	8	415	0	465										
0	16	1	66	0+	116	2	166	1	216	287+	266	1	316	0	366	8	416	1	466										
0	17	0	67	0+	117	6	167	0	217	312+	267	1	317	0	367	5	417	1	467										
0	18	0	68	0+	118	4	168	2	218	379+	268	1	318	2	368	4	418	0	468										
0	19	3	69	3+	119	9	169	1	219	436+	269	1	319	1	369	0	419	0	469										
0	20	2	70	3+	120	6	170	0	220	487+	270	1	320	0	370	0	420	0	470										
0	21	1	71	1+	121	10	171	0	221	525+	271	0	321	0	371	0	421	0	471										
0	22	1	72	4+	122	15+	172	0	222	530+	272	3	322	1	372	0	422	1	472										
0	23	1	73	3+	123	14+	173	0	223	376+	273	4	323	0	373	0	423	0	473										
0	24	2	74	2+	124	24+	174	0	224	162+	274	4	324	1	374	0	424	0	474										
0	25	2	75	3+	125	26+	175	1	225	46+	275	4	325	1	375	0	425	0	475										
0	26	2	76	5+	126	39+	176	1	226	17+	276	7	326	0	376	0	426	0	476										
0	27	2	77	4+	127	33+	177	0	227	6+	277	8	327	1	377	0	427	0	477										
0	28	2	78	4+	128	46+	178	0	228	7	278	11	328	0	378	1	428	0	478										
0	29	1	79	3+	129	58+	179	2	229	7	279	8	329	4	379	0	429	0	479										
0	30	2	80	10+	130	67+	180	0	230	2	280	8	330	0	380	0	430	0	480										
0	31	2	81	8+	131	93+	181	1	231	2	281	1	331	0	381	0	431	0	481										
0	32	4	82	6+	132	118+	182	1	232	3	282	0	332	1	382	0	432	0	482										
0	33	6	83	7+	133	132+	183	3	233	8	283	0	333	5	383	0	433	0	483										
0	34	6	84	7+	134	149+	184	1	234	8	284	0	334	0	384	0	434	0	484										
0	35	12+	85	4+	135	167+	185	1	235	11	285	0	335	5	385	0	435	0	485										
0	36	14+	86	2+	136	148+	186	0	236	7	286	0	336	1	386	0	436	0	486										
0	37	19+	87	2+	137	167+	187	1	237	19	287	0	337	1	387	1	437	1	487										
0	38	21+	88	3+	138	228+	188	2	238	13	288	0	338	0	388	0	438	1	488										
0	39	27+	89	3+	139	233+	189	1	239	15	289	0	339	1	389	0	439	0	489										
0	40	32+	90	1	140	231+	190	4	240	8	290	1	340	0	390	0	440	0	490										
0	41	50+	91	4	141	242+	191	2	241	3	291	1	341	2	391	0	441	0	491										
0	42	40+	92	3	142	155+	192	3	242	1	292	0	342	0	392	0	442	0	492										
0	43	65+	93	0	143	98+	193	9	243	1	293	1	343	0	393	0	443	0	493										
0	44	58+	94	1	144	29+	194	6	244	1	294	0	344	0	394	0	444	0	494										
0	45	83+	95	1	145	5+	195	10	245	2	295	1	345	0	395	0	445	0	495										
1	46	69+	96	3	146	0+	196	5	246	1	296	0	346	0	396	1	446	0	496										
0	47	133+	97	3	147	0	197	6	247	0	297	0	347	2	397	0	447	0	497										
0	48	110+	98	1	148	0	198	4	248	0	298	0	348	3	398	0	448	0	498										
0	49	148+	99	0	149	1	199	8	249	0	299	0	349	0	399	0	449	0	499										
0	50	155+	100	1	150	0	200	16	250	1	300	0	350	0	400	0	450	0	500										

Configuration : DUB1: [ALP10. SAMPLE]CAL629\_201031225. CNF: 1  
 Analyses by : ALPHA V1.5  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:25:55  
 Sample ID : CAL629 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:01.00 Elapsed real time: 0 16:40:01.00 0.0%  
 Start energy : 3545.31 keV End energy : 6972.42 keV  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	ZErr	Fit
1	0	4204.02	2571	0	52.54	102.78	85	25	4.28E-02	2.0	
2	0	4770.82	2522	0	65.67	187.88	172	24	4.20E-02	2.0	
3	0	5315.62	5276	0	65.67	269.02	254	23	8.79E-02	1.4	
4	0	5437.69	122	0	45.97	287.11	273	22	2.03E-03	9.1	
5	0	5711.89	73	0	39.40	327.64	306	28	1.22E-03	11.7	
6	0	6301.29	72	0	45.97	414.24	395	26	1.20E-03	11.8	
7	0	6747.47	78	0	39.40	479.33	471	18	1.30E-03	11.3	

```

Configuration      : DUB1:[ALP10.SAMPLE]CAL629_201031225.CNF;1
Analyses by       : ALPHA V1.5,PEAKEFF V2.2,NID V2.4
Sample title      : U IT
Sample date       : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:25:55
Sample ID        : CAL629 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry :
Elapsed live time: 0 16:40:01.00 Elapsed real time: 0 16:40:01.00 0.0%
Energy tolerance : 80.00 keV Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type  : Spline Efficiencies at : Peak Energy
Abundance limit  : 60.00
    
```

Summary of Nuclide Activity

```

Total number of lines in spectrum      7
Number of unidentified lines           4
Number of lines tentatively identified by NID 3      42.86%
    
```

Nuclide Type : ap

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 1-Sigma Error	1-Sigma ZError	Flags
U-232	72.00Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : np

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 1-Sigma Error	1-Sigma ZError	Flags
U-234	2.45E+05Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-232	4.47E+09Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

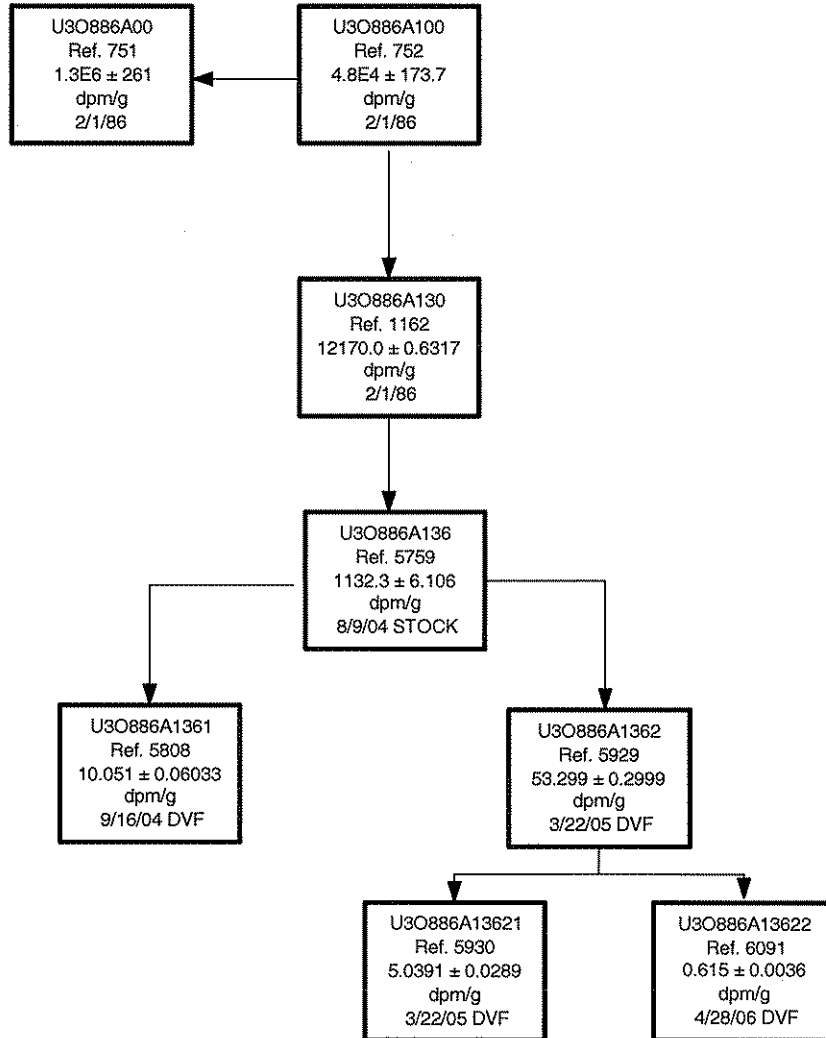
Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found "M" = Manually accepted  
 "E" = Manually edited "A" = Nuclide specific abn. limit

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard:		U3O886A1362	Ref: 3/22/2005	3.5107E+01 ± 1.950E-01	UG/G	
UISG1545	U	5.2380E+00 ± 2.951E-02 UG	0.1492 g	11/27/2007 11/27/2007	Armstron	3.5107E+01 ± 1.950E-01 UG/G
		5.2380E+000 ± 5.238E+000 ( 1)		5.2380E+000 , 5.2380E+000		

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard:		U3O886A1362	Ref: 3/22/2005	5.3995E+01 ± 2.999E-01	DPM/G	
UISG1545	UIISO	8.0561E+00 ± 4.539E-02 DPM	0.1492 g	11/27/2007 11/27/2007	Armstron	5.3995E+01 ± 2.999E-01 DPM/G
		8.0561E+000 ± 8.056E+000 ( 1)		8.0561E+000 , 8.0561E+000		

**U3088A136**  
**Link**





## ISOTOPE DILUTION RECORD

1) Prepared by <u>tda</u>	2) Date Prepared	<u>5/8/2006</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U30886A1362</u></b>	<b><u>5929</u></b>
4) Source Activity (dpm ± dpm/g)	<u>5.3995E+01</u>	± <u>2.999E-01</u>
5) Source Activity (ug ± ug/g)	<u>3.5107E+01</u>	<u>1.9499E-01</u>
6) Percent error of Source Activity	<u>0.555</u>	%
7) Weight of Source Material used (g)	<u>14.4649</u>	
8) (% Error) of Weight of Source Material used	<u>0.0011</u>	%
9) Diluent	<u>2M HNO3</u>	
10) Total Weight of the Dilution (g)	<u>250</u>	
11) (% Error) of Total Weight of the Dilution	<u>0.0144</u>	%
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<b><u>3.1241E+00</u></b>	± <b><u>1.777E-02</u></b>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<b><u>2.0313E+00</u></b>	± <b><u>1.155E-02</u></b>
<b>14) Specific Activity of Diluted Solution ug/ml</b>	<b><u>2.1654E+00</u></b>	± <b><u>1.232E-02</u></b>
15) Total Uncertainty	<u>0.569</u>	%
<b>16) Dilution Identification Number / Ref. Number</b>	<b><u>U30886A13623</u></b>	<b><u>6103</u></b>
17) Calibration Reference Date	<u>3/22/2005</u>	
18) Isotope Inventory File update by/date	<u>tda</u>	<u>6/8/2006</u>
19) Reviewed by/date	<u>J.C.</u>	<u>8/7/2006</u>
20) Location <u>QCLAB</u>	21) Exhausted	

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### CALCULATIONS

8) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

11) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

12-13) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

15) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

Form: CC-006, 5/5/94, Rev 2

**ISOTOPE DILUTION RECORD**

1) Prepared by tda 2) Date Prepared 4/28/2006

**3) Source Identification Number / Ref. Number** U30886A1362 5929

4) Source Activity (dpm ± dpm/g) 5.3995E+01 ± 2.999E-01

5) Source Activity (ng ± ng/g) 3.5107E+04 ± 1.950E+03

6) Percent error of Source Activity 0.555 %

7) Weight of Source Material used (g) 3.008

8) (% Error) of Weight of Source Material used 0.1596 %

9) Diluent 2 M HNO3

10) Total Weight of the Dilution (g) 263.98

11) (% Error) of Total Weight of the Dilution 0.1136 %

**12) Specific Activity of Diluted Solution dpm/g** 6.1526E-01 ± 3.621E-03

**13) Specific Activity of Diluted Solution ng/g** 400.0405516 ± 2.354483147

**14) Specific Activity of Diluted Solution ng/mL** 4.0880E+02 ± 2.406E+00

15) Total Uncertainty 0.589 %

**16) Dilution Identification Number / Ref. Number** U30886A13622 6091

17) Calibration Reference Date 4/28/2006

18) Isotope Inventory File update by/date tda tda

19) Reviewed by/date \_\_\_\_\_

20) Location QCLAB 21) Exhausted \_\_\_\_\_

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**CALCULATIONS**

8) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

11) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

12) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

15) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$

Form: CC-006a, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by W.G 2) Date Prepared 9/16/2004

**3) Source Identification Number / Ref. Number** U30886A136 5759

4) Source Activity (dpm ± dpm/g) 1.1323E+03 ± 6.106E+00

5) Source Activity (ug ± ug/g) 7.3622E+02 3.9701E+00

6) Percent error of Source Activity 0.539 %

7) Weight of Source Material used (g) 2.0783

8) (% Error) of Weight of Source Material used 0.2310 %

9) Diluent 2M HNO3-P0400528

10) Total Weight of the Dilution (g) 234.14

11) (% Error) of Total Weight of the Dilution 0.1281 %

**12) Specific Activity of Diluted Solution dpm/g** 1.0051E+01 ± 6.033E-02

**13) Specific Activity of Diluted Solution ug/g** 6.5349E+00 ± 3.922E-02

14) Total Uncertainty 0.600 %

**15) Dilution Identification Number / Ref. Number** U30886A1361 5808

16) Calibration Reference Date 9/16/2004

17) Isotope Inventory File update by/date W.G 9/16/2004

18) Reviewed by/date sew 9/21/2004

19) Location QCLB/STWT1049 20) Exhausted \_\_\_\_\_

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**CALCULATIONS**

8) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

11) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

12) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

14) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>8/9/2004</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U30886A130</u></b>	<b><u>1162</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>1.2170E+04</u>	±	<u>6.317E-01</u>
5) Source Activity (ug ± ug/g)	<u>7.9129E+03</u>		<u>4.1073E-01</u>
6) Percent error of Source Activity	<u>0.519</u>	%	
7) Weight of Source Material used (g)	<u>19.3584</u>		
8) (% Error) of Weight of Source Material used	<u>0.0248</u>	%	
9) Diluent	<u>2M HNO3-P0400528</u>		
10) Total Weight of the Dilution (g)	<u>208.06</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.1442</u>	%	
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.1323E+03</u></b>	±	<b><u>6.106E+00</u></b>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<b><u>7.3623E+02</u></b>	±	<b><u>3.970E+00</u></b>
14) Total Uncertainty	<u>0.539</u>	%	
<b>15) Dilution Identification Number / Ref. Number</b>	<b><u>U30886A136</u></b>	<b><u>5759</u></b>	
16) Calibration Reference Date	<u>8/9/2004</u>		
17) Isotope Inventory File update by/date	<u>W.G</u>		<u>8/9/2004</u>
18) Reviewed by/date	<u>sew</u>		<u>8/11/2004</u>
19) Location <u>QCLB/STWT1026</u>	20) Exhausted		

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**CALCULATIONS**

8) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

11) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

12) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

14) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity } ^2 + \% \text{ error of Wt. Used } ^2 + \% \text{ error of Dilution Wt. } ^2)}$ Form: CC-006a, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by    S.S    2) Date Prepared    9/14/1987   

**3) Source Identification Number / Ref. Num**    U30886A100       752   

4) Source Activity (dpm  $\pm$  dpm/g)    4.7985E+04     $\pm$     1.731E+02   

5) Source Activity (ug  $\pm$  ug/g)    3.1200E+04       1.1255E+02   

6) Percent error of Source Activity    0.361    %

7) Weight of Source Material used (g)    20.4345   

8) (% Error) of Weight of Source Material used    0.0005    %

9) Diluent    2M HNO3   

10) Total Weight of the Dilution (g)    80.57   

11) (% Error) of Total Weight of the Dilution    0.1386    %

**12) Specific Activity of Diluted Solution dpm**    1.2170E+04     $\pm$     6.317E+01   

**13) Specific Activity of Diluted Solution ug/l**    7.9130E+03     $\pm$     4.107E+01   

14) Total Uncertainty    0.519    %

**15) Dilution Identification Number / Ref. Num**    U30886A130       1162   

16) Calibration Reference Date    2/1/1986   

17) Isotope Inventory File update by/date    S.S.       9/14/1987   

18) Reviewed by/date    D.M.       6/14/1994   

19) Location    PF-9    20) Exhausted    12/13/1990   

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**CALCULATIONS**

7) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100) <sup>2</sup>

10) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100) <sup>2</sup>

11) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity } ^2 + \% \text{ error of Wt. used } + \% \text{ error of Dilution Wt.})}$

Form:    CC-006, 5/5/94, Rev 2

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>C.S.</u>	2) Date Prepared	<u>3/24/86</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U3O886A000</u></b>	<b><u>751</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>1.3045E+06</u>	±	<u>2.610E+02</u>
5) Source Activity (ug ± ug/g)	<u>8.4818E+05</u>		<u>1.6970E+02</u>
6) Percent error of Source Activity	<u>0.02</u>	%	
7) Weight of Source Material used (g)	<u>3.3411</u>		
8) (% Error) of Weight of Source Material used	<u>0.0206</u>	%	
9) Diluent	<u>8M HNO3</u>		
10) Total Weight of the Dilution (g)	<u>90.83</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.1091</u>	%	
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<b><u>4.7985E+04</u></b>	±	<b><u>1.731E+02</u></b>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<b><u>3.1200E+04</u></b>	±	<b><u>1.125E+02</u></b>
14) Total Uncertainty	<u>0.361</u>	%	
<b>15) Dilution Identification Number / Ref. Number</b>	<b><u>U3O886A100</u></b>	<b><u>752</u></b>	
16) Calibration Reference Date	<u>2/1/86</u>		
17) Isotope Inventory File update by/date	<u>D.D.</u>		<u>5/7/86</u>
18) Reviewed by/date	<u>D.M.</u>		<u>6/15/94</u>
19) Location	<u>PF-8</u>	20) Exhausted	<u>11/8/93</u>

**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})$

**ISOTOPE RECORD FORM**

1) Isotope U-NAT 2) Reference Number #751  
 3) Half Life Negligible Decay 4) Storage Location STD LAB  
 5) Source Identification Number U3O886A000

CALIBRATION DATA

6) Activity as Received Units 1.304E+06 dpm/g  
 7) Overall Uncertainty Percent 0.02%  
 8) Reference Date / Time 1-Feb-86  
 9) Activity dpm/g 1.304E+06 ± 2.61E+02 (0.02%) dpm/g  
 10) Volume or Mass (ml/g) 10 g  
 11) Calibrated by NBS  
 12) Certificate Solution Number SRM 950B Uranium Oxide

SURVEY DATA

13) Date Received 2/1/86  
 14) Surveyed by D.D. & A.V.R.  
 15) Survey Reading (Beta/Gamma) cpm 100,000 cpm at Contact  
 16) Survey Reading (Alpha) cpm Background

17) Activity Conversion (0.8481g U-nat / g U3O8) (0.99968) (1.538E+06 dpm / g U-nat) =  
1.304E+06 ± 2.61E+02 (0.02%) dpm/g U3O8

18) Remarks MW U3O8 = (3 \* 238.0289) + (8 \* 15.9994) = 842.0819 g / mole U3O8

Material was ignited at 800°C in a crucible for 1 hr and cooled to room temperature in a sealed dessicator.

19) Isotope File Updated by D.D.

20) QC Approved D.B.

# National Bureau of Standards

751

## Certificate

### Standard Reference Material 950b

#### Uranium Oxide ( $U_3O_8$ )

(In Cooperation with the Department of Energy, New Brunswick Laboratory, Argonne, Illinois)

This material consists of normal uranium in the form of oxide,  $U_3O_8$ . It is intended to provide a reference material of known uranium content.

#### CERTIFIED VALUE

Uranium Oxide ( $U_3O_8$ ) . . . 99.968 ± 0.020 percent

The stated uncertainty of ±0.020 percent associated with the certified value is the linear sum of 0.0076 percent, which is the limit of the random error of the assay measurements at the 99 percent confidence level ( $2.307 S_m$ , where  $S_m$  is the standard error of the mean with  $n = 24$ ), and 0.312 percent, the estimated upper limit of conceivable systematic errors including material variability. The above certified value is based on material heated at 800 °C for one hour in an open crucible in a muffle furnace and cooled in a desiccator. It is recommended that the material be freshly ignited in this manner to obtain accurate results.

The total impurities as determined by spectrochemical analysis are estimated to be less than 50 µg/g. The determined iron content is ~3 µg/g and the determined vanadium content is ~1 µg/g. The assay of this material is based on the use of NBS Potassium Dichromate (SRM 136c) as the oxidizing agent as described in the NBS titrimetric method for the precise assay of uranium metal. The assay values obtained are comparable with those obtained from the assay of NBS Uranium Metal (SRM 950) and NBS Uranium Oxide (SRM 950a). The certified value for this lot of uranium oxide has also been confirmed using a coulometric procedure.

The atomic weights used in the calculations were uranium, 238.029, and oxygen, 15.9994.

This material was prepared under contract with the National Lead Company of Ohio, Cincinnati, Ohio. Assay of the material was performed by N. M. Trahey of the New Brunswick Laboratory, Argonne, Illinois and J. R. Moody and W. Kocz of the NBS Analytical Chemistry Division. Iron and vanadium were measured by B. I. Diamondstone and S. A. Weiss of the NBS Analytical Chemistry Division.

Overall direction and coordination of the technical measurements leading to the certification were performed under the chairmanship of J. L. Barnum.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by W. P. Reed.

Washington, D.C. 20234  
March 1, 1973

J. Paul Cali, Chief  
Office of Standard Reference Materials

(over)



URANIUM ISOTOPIC  
CONTINUING CALIBRATION

Quality Assurance Report. Generated 21-DEC-2007 18:49:54.04

QA Filename : \$DISK1:[ALP11.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Am-241  
Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.426453 Std Deviation : 0.004667

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		0.4257	
1-DEC-2007 15:52	chk		0.4257	

-- Multi-Test Full Report --

Description : Constant FWHM  
Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 8.177778 Std Deviation : 0.296017

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		8.6667	
1-DEC-2007 15:52	chk		8.6667	

-- Multi-Test Full Report --

Description : Centroid, Am-241  
Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 341.399261      Std Deviation : 1.161037

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:14	chk		342.0876		
1-DEC-2007 15:52	chk		342.1385		

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.429027      Std Deviation : 0.002765

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:14	chk		0.4234	In	
1-DEC-2007 15:52	chk		0.4330		

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:14	chk		0.4234	In	
1-DEC-2007 15:52	chk		0.4330		

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:14	chk		0.4234	In	
1-DEC-2007 15:52	chk		0.4330		

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.418356      Std Deviation : 0.044161

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
2-NOV-2007 08:14  chk          6.3401  | | |
1-DEC-2007 15:52  chk          6.3641  | | |
```

Quality Assurance Report.                      Generated 21-DEC-2007 18:49:54.71

QA Filename       : \$DISK1:[ALP11.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description       : 4010, Th-232 bkg (cnts/min)  
Parameter Units   : cnts/min           Parameter Type : Nuclide

Investigate Level : 2.000000           Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date       : 31-JAN-2005 00:00 End Date       : 30-MAY-2030 00:00  
Mean             : 0.000860           Std Deviation  : 0.000948

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0000  | | |
2-DEC-2007 09:52  bkg          0.0000  | | |
7-DEC-2007 14:26  bkg          0.0010  | | |
8-DEC-2007 07:30  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description       : 4196, U-238 bkg (cnts/min)  
Parameter Units   : cnts/min           Parameter Type : Nuclide

Investigate Level : 2.000000           Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date       : 31-JAN-2005 00:00 End Date       : 30-MAY-2030 00:00  
Mean             : 0.001300           Std Deviation  : 0.001147

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
3-NOV-2007 10:30  bkg          0.0010  | | |
2-DEC-2007 09:52  bkg          0.0010  | | |
7-DEC-2007 14:26  bkg          0.0000  | | |
```

8-DEC-2007 07:30 bkg 0.0020 | | |

## -- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000640 Std Deviation : 0.000802

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:52	bkg		0.0000	
7-DEC-2007 14:26	bkg		0.0010	
8-DEC-2007 07:30	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001160 Std Deviation : 0.001095

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0030	
2-DEC-2007 09:52	bkg		0.0010	
7-DEC-2007 14:26	bkg		0.0000	
8-DEC-2007 07:30	bkg		0.0020	

## -- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001440 Std Deviation : 0.001431

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0030	
2-DEC-2007 09:52	bkg		0.0010	
7-DEC-2007 14:26	bkg		0.0060	Ac
8-DEC-2007 07:30	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001420 Std Deviation : 0.001430

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0020	
2-DEC-2007 09:52	bkg		0.0020	
7-DEC-2007 14:26	bkg		0.0060	Ac
8-DEC-2007 07:30	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001300 Std Deviation : 0.001344

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0020		
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Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-DEC-2007 09:52	bkg		0.0010		
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7-DEC-2007 14:26	bkg		0.0040	In	
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8-DEC-2007 07:30	bkg		0.0000		
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-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001200 Std Deviation : 0.001385

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
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2-DEC-2007 09:52	bkg		0.0030		
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7-DEC-2007 14:26	bkg		0.0050	In	
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8-DEC-2007 07:30	bkg		0.0000		
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-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001020 Std Deviation : 0.001269

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:52	bkg		0.0030	
7-DEC-2007 14:26	bkg		0.0040	In
8-DEC-2007 07:30	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002040 Std Deviation : 0.001616

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:52	bkg		0.0010	

Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
7-DEC-2007 14:26	bkg		0.0010	
8-DEC-2007 07:30	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004979 Std Deviation : 0.003431

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0090	



2-DEC-2007 09:52 bkg	0.0030	
7-DEC-2007 14:26 bkg	0.0080	
8-DEC-2007 07:30 bkg	0.0060	

## -- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.006039      Std Deviation : 0.003963

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30 bkg			0.0110	
2-DEC-2007 09:52 bkg			0.0040	
7-DEC-2007 14:26 bkg			0.0080	
8-DEC-2007 07:30 bkg			0.0120	

## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.006659      Std Deviation : 0.004240

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30 bkg			0.0130	
2-DEC-2007 09:52 bkg			0.0050	
7-DEC-2007 14:26 bkg			0.0080	

Quality Assurance Multi-Test Full Report (continued)      Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
8-DEC-2007 07:30 bkg			0.0130	

## -- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.031396 Std Deviation : 0.020844

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0590		
2-DEC-2007 09:52	bkg		0.0490		
7-DEC-2007 14:26	bkg		0.0740	In	
8-DEC-2007 07:30	bkg		0.0500		

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.031456 Std Deviation : 0.021129

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0610		
2-DEC-2007 09:52	bkg		0.0460		
7-DEC-2007 14:26	bkg		0.0760	In	
8-DEC-2007 07:30	bkg		0.0500		

## -- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.030017 Std Deviation : 0.020234

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0560	
2-DEC-2007 09:52	bkg		0.0440	
7-DEC-2007 14:26	bkg		0.0710	In
8-DEC-2007 07:30	bkg		0.0450	

## -- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.025377 Std Deviation : 0.017431

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 6

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0560	
2-DEC-2007 09:52	bkg		0.0440	
7-DEC-2007 14:26	bkg		0.0460	
8-DEC-2007 07:30	bkg		0.0480	

## -- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.017098 Std Deviation : 0.011564

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0430	In
2-DEC-2007 09:52	bkg		0.0260	
7-DEC-2007 14:26	bkg		0.0320	
8-DEC-2007 07:30	bkg		0.0270	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.009079 Std Deviation : 0.006874

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0130	
2-DEC-2007 09:52	bkg		0.0150	
7-DEC-2007 14:26	bkg		0.0200	
8-DEC-2007 07:30	bkg		0.0220	

Quality Assurance Report.                      Generated 21-DEC-2007 18:48:10.81

QA Filename        : \$DISK1:[ALP10.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description        : Efficiency, Am-241  
 Parameter Units    :                      Parameter Type : Generic

Investigate Level : 2.000000              Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 31-JAN-2005 00:00 End Date        : 30-MAY-2030 00:00  
 Mean             : 0.309354              Std Deviation   : 0.004224

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		0.3087	
1-DEC-2007 15:52	chk		0.3106	

-- Multi-Test Full Report --

Description        : Constant FWHM  
 Parameter Units    : channels              Parameter Type : Generic

Investigate Level : 2.000000              Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 31-JAN-2005 00:00 End Date        : 30-MAY-2030 00:00  
 Mean             : 6.877778              Std Deviation   : 0.282932

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		6.6667	
1-DEC-2007 15:52	chk		6.8333	

-- Multi-Test Full Report --

Description        : Centroid, Am-241  
 Parameter Units    : channels              Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 336.973267      Std Deviation : 0.881383

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		336.5861	
1-DEC-2007 15:52	chk		336.0824	

2-NOV-2007 08:14	chk		336.5861	
1-DEC-2007 15:52	chk		336.0824	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.393932      Std Deviation : 0.003683

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		0.3913	
1-DEC-2007 15:52	chk		0.3932	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		0.3913	
1-DEC-2007 15:52	chk		0.3932	

2-NOV-2007 08:14	chk		0.3913	
1-DEC-2007 15:52	chk		0.3932	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.461465      Std Deviation : 0.032722

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-NOV-2007 08:14  chk          6.4480  | | |
1-DEC-2007 15:52  chk          6.5141  | | |
```

Quality Assurance Report.                   Generated 21-DEC-2007 18:48:11.43

QA Filename     : \$DISK1:[ALP10.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description     : 4010, Th-232 bkg (cnts/min)  
Parameter Units : cnts/min       Parameter Type : Nuclide

Investigate Level : 2.000000       Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 31-JAN-2005 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.000723       Std Deviation : 0.000852

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0000  | | |
2-DEC-2007 09:52  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description     : 4196, U-238 bkg (cnts/min)  
Parameter Units : cnts/min       Parameter Type : Nuclide

Investigate Level : 2.000000       Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 31-JAN-2005 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.001106       Std Deviation : 0.001068

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
3-NOV-2007 10:30  bkg          0.0040  |In| |
2-DEC-2007 09:52  bkg          0.0010  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000489 Std Deviation : 0.000953

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30	bkg		0.0010		
2-DEC-2007 09:52	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001000 Std Deviation : 0.001142

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0010		
2-DEC-2007 09:52	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00



Mean : 0.001404 Std Deviation : 0.001279

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:52	bkg		0.0040	In

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001319 Std Deviation : 0.001144

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:52	bkg		0.0040	In

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000893 Std Deviation : 0.000914

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0020	
2-DEC-2007 09:52	bkg		0.0030	In

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000745      Std Deviation : 0.000988

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0020	
2-DEC-2007 09:52	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000638      Std Deviation : 0.000845

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:52	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001510      Std Deviation : 0.001213

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0040	In
2-DEC-2007 09:52	bkg		0.0040	In

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002425 Std Deviation : 0.001766

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0060	In
2-DEC-2007 09:52	bkg		0.0040	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003148 Std Deviation : 0.002216

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0070	
2-DEC-2007 09:52	bkg		0.0050	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003850 Std Deviation : 0.002637

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0060		
2-DEC-2007 09:52	bkg		0.0050		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.029103 Std Deviation : 0.020505

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0520		
2-DEC-2007 09:52	bkg		0.0660		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.027018 Std Deviation : 0.019151

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg 0.0590 | | |  
 2-DEC-2007 09:52 bkg 0.0540 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.025763 Std Deviation : 0.018299

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30 bkg			0.0580		
2-DEC-2007 09:52 bkg			0.0510		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.024465 Std Deviation : 0.019082

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0580		
2-DEC-2007 09:52 bkg			0.0480		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.015934      Std Deviation : 0.013141

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0400		
2-DEC-2007 09:52	bkg		0.0370		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.007254      Std Deviation : 0.005768

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0140		
2-DEC-2007 09:52	bkg		0.0150		

Quality Assurance Report.                      Generated 21-DEC-2007 18:28:41.60

QA Filename     : \$DISK1:[ALP9.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description     : Efficiency, Am-241  
 Parameter Units : %                      Parameter Type : Generic

Investigate Level : 2.000000              Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 26-AUG-2005 00:00 End Date     : 30-MAY-2030 00:00  
 Mean           : 0.375384              Std Deviation   : 0.004785

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3716	
1-DEC-2007 15:52	chk		0.3786	

-- Multi-Test Full Report --

Description     : Constant FWHM  
 Parameter Units : channels              Parameter Type : Generic

Investigate Level : 2.000000              Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 26-AUG-2005 00:00 End Date     : 30-MAY-2030 00:00  
 Mean           : 6.013889              Std Deviation   : 0.312123

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		5.8333	
1-DEC-2007 15:52	chk		6.0000	

-- Multi-Test Full Report --

Description     : Centroid, Am-241  
 Parameter Units : channels              Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 348.763672      Std Deviation : 1.259647

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		347.5442	
1-DEC-2007 15:52	chk		347.1144	

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2-NOV-2007 08:13	chk		347.5442	
1-DEC-2007 15:52	chk		347.1144	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.399104      Std Deviation : 0.002688

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.4007	
1-DEC-2007 15:52	chk		0.4013	

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Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.4007	
1-DEC-2007 15:52	chk		0.4013	

---

2-NOV-2007 08:13	chk		0.4007	
1-DEC-2007 15:52	chk		0.4013	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.388638      Std Deviation : 0.034185

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-NOV-2007 08:13  chk          6.4085  | | |
1-DEC-2007 15:52  chk          6.4033  | | |
```

Quality Assurance Report.                      Generated 21-DEC-2007 18:28:42.22

QA Filename        : \$DISK1:[ALP9.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description        : 4010, Th-232 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 26-AUG-2005 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.000838            Std Deviation   : 0.000986

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0040  |Ac| |
2-DEC-2007 09:51  bkg          0.0030  |In| |
```

-- Multi-Test Full Report --

Description        : 4196, U-238 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 26-AUG-2005 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.001054            Std Deviation   : 0.000911

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0010  | | |
2-DEC-2007 09:51  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000432 Std Deviation : 0.000603

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001405 Std Deviation : 0.001212

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001351 Std Deviation : 0.001183

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001351 Std Deviation : 0.001230

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001162 Std Deviation : 0.001280

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0050	In
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001351      Std Deviation : 0.001295

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0050	In
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001243      Std Deviation : 0.001256

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0040	In
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000540      Std Deviation : 0.001016

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001729 Std Deviation : 0.001557

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0050	In

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002216 Std Deviation : 0.001734

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0060	In
2-DEC-2007 09:51	bkg		0.0040	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002540 Std Deviation : 0.001994

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0080	In	
2-DEC-2007 09:51	bkg		0.0050		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.026780 Std Deviation : 0.019025

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0580		
2-DEC-2007 09:51	bkg		0.0480		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.025375 Std Deviation : 0.017986

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg 0.0520 | | |  
 2-DEC-2007 09:51 bkg 0.0440 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.024213 Std Deviation : 0.017307

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0500		
2-DEC-2007 09:51 bkg			0.0420		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.023159 Std Deviation : 0.016592

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0450		
2-DEC-2007 09:51 bkg			0.0460		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.013728      Std Deviation : 0.010747

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0300		
2-DEC-2007 09:51	bkg		0.0320		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.007242      Std Deviation : 0.005969

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0130		
2-DEC-2007 09:51	bkg		0.0050		



Quality Assurance Report. Generated 21-DEC-2007 18:27:10.64

QA Filename : \$DISK1:[ALP8.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Am-241  
Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.375323 Std Deviation : 0.005930

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		0.3743		
1-DEC-2007 15:52	chk		0.3764		

-- Multi-Test Full Report --

Description : Constant FWHM  
Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 8.565360 Std Deviation : 0.216226

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		8.3333		
1-DEC-2007 15:52	chk		8.1667		

-- Multi-Test Full Report --

Description : Centroid, Am-241  
Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 363.803101      Std Deviation : 1.419025

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		364.0074	
1-DEC-2007 15:52	chk		363.2375	

2-NOV-2007 08:13	chk		364.0074	
1-DEC-2007 15:52	chk		363.2375	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.388185      Std Deviation : 0.003727

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3880	
1-DEC-2007 15:52	chk		0.3873	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3880	
1-DEC-2007 15:52	chk		0.3873	

2-NOV-2007 08:13	chk		0.3880	
1-DEC-2007 15:52	chk		0.3873	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.335943      Std Deviation : 0.060957

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-NOV-2007 08:13  chk          7.3318  | | |
1-DEC-2007 15:52  chk          7.3005  | | |
```

Quality Assurance Report.                      Generated 21-DEC-2007 18:27:11.27

QA Filename        : \$DISK1:[ALP8.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description        : 4010, Th-232 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 13-SEP-2004 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.000231            Std Deviation   : 0.000469

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0000  | | |
2-DEC-2007 09:51  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description        : 4196, U-238 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 13-SEP-2004 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.000577            Std Deviation   : 0.000801

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0010  | | |
2-DEC-2007 09:51  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000269 Std Deviation : 0.000490

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0010		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000596 Std Deviation : 0.000748

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30	bkg		0.0010		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000711 Std Deviation : 0.000871

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000711 Std Deviation : 0.000871

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000558 Std Deviation : 0.000850

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000481      Std Deviation : 0.000804

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000461      Std Deviation : 0.000699

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000923      Std Deviation : 0.001082

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001904 Std Deviation : 0.001752

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0050	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002250 Std Deviation : 0.002066

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0050	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002788 Std Deviation : 0.002476

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0070		
2-DEC-2007 09:51	bkg		0.0030		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.027554 Std Deviation : 0.020167

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0560		
2-DEC-2007 09:51	bkg		0.0520		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.032668 Std Deviation : 0.023983

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg 0.0710 | | |  
 2-DEC-2007 09:51 bkg 0.0600 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.031246 Std Deviation : 0.022972

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0680		
2-DEC-2007 09:51 bkg			0.0560		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.027054 Std Deviation : 0.021144

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0620		
2-DEC-2007 09:51 bkg			0.0590		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.024727      Std Deviation : 0.019226

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0560		
2-DEC-2007 09:51	bkg		0.0550		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.008153      Std Deviation : 0.006123

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0160		
2-DEC-2007 09:51	bkg		0.0140		

Quality Assurance Report. Generated 21-DEC-2007 18:21:29.67

QA Filename : \$DISK1:[ALP7.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Am-241  
Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.352458 Std Deviation : 0.005693

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		0.3543		
1-DEC-2007 15:52	chk		0.3545		

-- Multi-Test Full Report --

Description : Constant FWHM  
Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.816092 Std Deviation : 0.294010

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		6.6667		
1-DEC-2007 15:52	chk		6.6667		

-- Multi-Test Full Report --

Description : Centroid, Am-241  
Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 352.585449      Std Deviation : 1.196152

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		351.0688	
1-DEC-2007 15:52	chk		351.0363	

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2-NOV-2007 08:13	chk		351.0688	
1-DEC-2007 15:52	chk		351.0363	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.366631      Std Deviation : 0.003429

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3672	
1-DEC-2007 15:52	chk		0.3668	

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Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3672	
1-DEC-2007 15:52	chk		0.3668	

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2-NOV-2007 08:13	chk		0.3672	
1-DEC-2007 15:52	chk		0.3668	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.468233      Std Deviation : 0.054330

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
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2-NOV-2007 08:13  chk          7.4639  | | |
1-DEC-2007 15:52  chk          7.4317  | | |
```

Quality Assurance Report.                   Generated 21-DEC-2007 18:21:30.32

QA Filename     : \$DISK1:[ALP7.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description     : 4010, Th-232 bkg (cnts/min)  
Parameter Units : cnts/min        Parameter Type : Nuclide

Investigate Level : 2.000000        Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 9-AUG-2004 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.000797        Std Deviation : 0.000979

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0040  |Ac| |
2-DEC-2007 09:51  bkg          0.0010  | | |
```

-- Multi-Test Full Report --

Description     : 4196, U-238 bkg (cnts/min)  
Parameter Units : cnts/min        Parameter Type : Nuclide

Investigate Level : 2.000000        Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 9-AUG-2004 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.001781        Std Deviation : 0.001955

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0020  | | |
2-DEC-2007 09:51  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000328 Std Deviation : 0.000565

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
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2-DEC-2007 09:51	bkg		0.0000		
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-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001828 Std Deviation : 0.002082

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0020		
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2-DEC-2007 09:51	bkg		0.0010		
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-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001797 Std Deviation : 0.002337

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001547 Std Deviation : 0.002246

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000922 Std Deviation : 0.001058

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000750      Std Deviation : 0.000908

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000578      Std Deviation : 0.000832

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000953      Std Deviation : 0.001075



Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002062 Std Deviation : 0.002092

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0060	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002656 Std Deviation : 0.002398

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0060	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004109 Std Deviation : 0.003418

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0060		
2-DEC-2007 09:51	bkg		0.0110	In	

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.030230 Std Deviation : 0.022942

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0650		
2-DEC-2007 09:51	bkg		0.0730		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.029762 Std Deviation : 0.022817

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg 0.0680 | | |  
 2-DEC-2007 09:51 bkg 0.0700 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.028090 Std Deviation : 0.021670

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0630		
2-DEC-2007 09:51 bkg			0.0670		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.028418 Std Deviation : 0.024194

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0650		
2-DEC-2007 09:51 bkg			0.0550		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.025247      Std Deviation : 0.022106

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0590		
2-DEC-2007 09:51	bkg		0.0500		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.008843      Std Deviation : 0.007017

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0220		
2-DEC-2007 09:51	bkg		0.0180		

Quality Assurance Report. Generated 21-DEC-2007 18:17:09.83

QA Filename : \$DISK1:[ALP6.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Am-241  
Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.325628 Std Deviation : 0.006368

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		0.3216		
1-DEC-2007 15:51	chk		0.3233		

-- Multi-Test Full Report --

Description : Constant FWHM  
Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 6.672840 Std Deviation : 0.450651

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		6.5000		
1-DEC-2007 15:51	chk		6.8333		

-- Multi-Test Full Report --

Description : Centroid, Am-241  
Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 347.814911      Std Deviation : 1.381465

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		346.6339	
1-DEC-2007 15:51	chk		348.1482	

2-NOV-2007 08:13	chk		346.6339	
1-DEC-2007 15:51	chk		348.1482	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.333046      Std Deviation : 0.003617

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3328	
1-DEC-2007 15:51	chk		0.3346	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3328	
1-DEC-2007 15:51	chk		0.3346	

2-NOV-2007 08:13	chk		0.3328	
1-DEC-2007 15:51	chk		0.3346	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.488449      Std Deviation : 0.067200

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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2-NOV-2007 08:13  chk          7.5271  | | |
1-DEC-2007 15:51  chk          7.2993  |In| |
```

Quality Assurance Report.                      Generated 21-DEC-2007 18:17:10.53

QA Filename        : \$DISK1:[ALP6.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description        : 4010, Th-232 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 3-SEP-2002 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.000750            Std Deviation   : 0.000985

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
3-NOV-2007 10:30  bkg          0.0010  | | |
2-DEC-2007 09:51  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description        : 4196, U-238 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 3-SEP-2002 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.001148            Std Deviation   : 0.001088

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
3-NOV-2007 10:30  bkg          0.0030  | | |
2-DEC-2007 09:51  bkg          0.0010  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000557 Std Deviation : 0.000828

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30	bkg		0.0000		
------------------	-----	--	--------	--	--

2-DEC-2007 09:51	bkg		0.0010		
------------------	-----	--	--------	--	--

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000966 Std Deviation : 0.001033

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30	bkg		0.0010		
------------------	-----	--	--------	--	--

2-DEC-2007 09:51	bkg		0.0010		
------------------	-----	--	--------	--	--

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00



Mean : 0.000954 Std Deviation : 0.001005

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000966 Std Deviation : 0.001011

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0030	In

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000704 Std Deviation : 0.000899

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0030	In

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000568      Std Deviation : 0.000827

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

-----  
 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0030	In

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000500      Std Deviation : 0.000773

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001227      Std Deviation : 0.001275

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide  
 Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002261      Std Deviation : 0.002346

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide  
 Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003079      Std Deviation : 0.003059

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0050	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.004454 Std Deviation : 0.004497

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0060		
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2-DEC-2007 09:51	bkg		0.0070		
------------------	-----	--	--------	--	--

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.043289 Std Deviation : 0.021234

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30	bkg		0.0870	In	
------------------	-----	--	--------	----	--

2-DEC-2007 09:51	bkg		0.0600		
------------------	-----	--	--------	--	--

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.043198 Std Deviation : 0.021210

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30 bkg 0.0830 | | |  
 2-DEC-2007 09:51 bkg 0.0610 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.040709 Std Deviation : 0.020082

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30 bkg			0.0790		
2-DEC-2007 09:51 bkg			0.0590		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.036835 Std Deviation : 0.022561

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30 bkg			0.0680		
2-DEC-2007 09:51 bkg			0.0590		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

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3-NOV-2007 10:30	bkg		0.0650		
2-DEC-2007 09:51	bkg		0.0550		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.011316      Std Deviation : 0.007042

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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---

3-NOV-2007 10:30	bkg		0.0180		
2-DEC-2007 09:51	bkg		0.0140		

Quality Assurance Report.                      Generated 21-DEC-2007 18:14:41.54

QA Filename     : \$DISK1:[ALP5.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description     : Efficiency, Am-241  
 Parameter Units :                      Parameter Type : Generic

Investigate Level : 2.000000              Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 7-FEB-2005 00:00 End Date     : 30-MAY-2030 00:00  
 Mean           : 0.387215              Std Deviation : 0.005761

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		0.3899		
1-DEC-2007 15:51	chk		0.3919		

-- Multi-Test Full Report --

Description     : Constant FWHM  
 Parameter Units : channels              Parameter Type : Generic

Investigate Level : 2.000000              Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 7-FEB-2005 00:00 End Date     : 30-MAY-2030 00:00  
 Mean           : 7.311111              Std Deviation : 0.242566

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		7.1667		
1-DEC-2007 15:51	chk		7.6667		

-- Multi-Test Full Report --

Description     : Centroid, Am-241  
 Parameter Units : channels              Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 357.578064      Std Deviation : 2.001828

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		356.1382	
1-DEC-2007 15:51	chk		357.6948	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.396914      Std Deviation : 0.002300

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3979	
1-DEC-2007 15:51	chk		0.3958	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3979	
1-DEC-2007 15:51	chk		0.3958	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.406080      Std Deviation : 0.058435

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------



```
-----
2-NOV-2007 08:13  chk          7.4077  | | |
1-DEC-2007 15:51  chk          7.3704  | | |
```

Quality Assurance Report.                   Generated 21-DEC-2007 18:14:42.17

QA Filename     : \$DISK1:[ALP5.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description     : 4010, Th-232 bkg (cnts/min)  
Parameter Units : cnts/min       Parameter Type : Nuclide

Investigate Level : 2.000000       Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 7-FEB-2005 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.006680       Std Deviation : 0.003029

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
3-NOV-2007 10:29  bkg          0.0100  | | |
2-DEC-2007 09:51  bkg          0.0000  |In| |
```

-- Multi-Test Full Report --

Description     : 4196, U-238 bkg (cnts/min)  
Parameter Units : cnts/min       Parameter Type : Nuclide

Investigate Level : 2.000000       Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 7-FEB-2005 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.011084       Std Deviation : 0.004776

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
3-NOV-2007 10:29  bkg          0.0060  | | |
2-DEC-2007 09:51  bkg          0.0120  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002191 Std Deviation : 0.001513

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:29	bkg		0.0020		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.010211 Std Deviation : 0.003531

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:29	bkg		0.0110		
2-DEC-2007 09:51	bkg		0.0080		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.010233 Std Deviation : 0.003935

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0120	
2-DEC-2007 09:51	bkg		0.0070	

-----

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.009318 Std Deviation : 0.003671

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0110	
2-DEC-2007 09:51	bkg		0.0050	

-----

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.004787 Std Deviation : 0.002881

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0020	

-----

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002000      Std Deviation : 0.001414

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
Quality Assurance Multi-Test Full Report (continued)				Page : 3
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0010	

-----

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0010	

-----

-----

## -- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0000	

-----

-----

## -- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0010	

-----

-----

## -- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				

-----

3-NOV-2007 10:29 bkg 0.0010 | | |  
 2-DEC-2007 09:51 bkg 0.0030 | | |

## -- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004106 Std Deviation : 0.002538

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0070	
2-DEC-2007 09:51	bkg		0.0040	

-----  
 3-NOV-2007 10:29 bkg 0.0070 | | |  
 2-DEC-2007 09:51 bkg 0.0040 | | |

## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.005425 Std Deviation : 0.003194

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0100	
2-DEC-2007 09:51	bkg		0.0050	

-----  
 Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0100	
2-DEC-2007 09:51	bkg		0.0050	

-----  
 3-NOV-2007 10:29 bkg 0.0100 | | |  
 2-DEC-2007 09:51 bkg 0.0050 | | |

## -- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.038186      Std Deviation : 0.026908

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0680		
2-DEC-2007 09:51	bkg		0.0730		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.037271      Std Deviation : 0.026234

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0590		
2-DEC-2007 09:51	bkg		0.0830		

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.035421      Std Deviation : 0.025075

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0580		
2-DEC-2007 09:51	bkg		0.0790		

## -- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.035825 Std Deviation : 0.025271

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0630		
2-DEC-2007 09:51	bkg		0.0740		

## -- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.031932 Std Deviation : 0.022816

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0580		
2-DEC-2007 09:51	bkg		0.0690		

## -- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.010509 Std Deviation : 0.008420

Measurement Time Sample ID Sample Analyst Value LU|SD|UD|BS Rej

-----  
3-NOV-2007 10:29 bkg 0.0160 | | |  
2-DEC-2007 09:51 bkg 0.0140 | | |



Quality Assurance Report. Generated 21-DEC-2007 18:12:30.87

QA Filename : \$DISK1:[ALP4.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Am-241  
Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.236790 Std Deviation : 0.004405

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		0.2397		
1-DEC-2007 15:51	chk		0.2378		

-- Multi-Test Full Report --

Description : Constant FWHM  
Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.483660 Std Deviation : 0.238642

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		7.3333		
1-DEC-2007 15:51	chk		7.3333		

-- Multi-Test Full Report --

Description : Centroid, Am-241  
Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 348.364319      Std Deviation : 0.948947

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		348.0878	
1-DEC-2007 15:51	chk		347.9476	

2-NOV-2007 08:13	chk		348.0878	
1-DEC-2007 15:51	chk		347.9476	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.296204      Std Deviation : 0.002756

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3003	
1-DEC-2007 15:51	chk		0.3009	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3003	
1-DEC-2007 15:51	chk		0.3009	

2-NOV-2007 08:13	chk		0.3003	
1-DEC-2007 15:51	chk		0.3009	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 10.000000

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 7.456697 Std Deviation : 0.053097

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		7.4553	
1-DEC-2007 15:51	chk		7.4613	

Quality Assurance Report. Generated 21-DEC-2007 18:12:31.51

QA Filename : \$DISK1:[ALP4.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004272 Std Deviation : 0.003708

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0070	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.008217 Std Deviation : 0.010599

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0070	
2-DEC-2007 09:51	bkg		0.0050	

## -- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002272 Std Deviation : 0.002296

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0010		
2-DEC-2007 09:51	bkg		0.0010		

## -- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.007417 Std Deviation : 0.007776

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0060		
2-DEC-2007 09:51	bkg		0.0090		

Quality Assurance Multi-Test Full Report (continued) Page : 2

## -- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.007762 Std Deviation : 0.009214

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0080	

## -- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.007217 Std Deviation : 0.008853

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0080	

## -- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004254 Std Deviation : 0.005069

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0040	

## -- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002291 Std Deviation : 0.002369

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:29	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001509 Std Deviation : 0.001514

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:29	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002236 Std Deviation : 0.002285

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002945 Std Deviation : 0.002407

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0060	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003563 Std Deviation : 0.002865

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0110	In

## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004254 Std Deviation : 0.003367

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0060		
2-DEC-2007 09:51	bkg		0.0110	In	

## -- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.037850 Std Deviation : 0.029517

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0770		
2-DEC-2007 09:51	bkg		0.0790		

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.039668 Std Deviation : 0.030888



Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:29	bkg		0.0810	
2-DEC-2007 09:51	bkg		0.0910	

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.037468 Std Deviation : 0.029294

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:29	bkg		0.0760	
2-DEC-2007 09:51	bkg		0.0880	

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.036032 Std Deviation : 0.031993

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:29	bkg		0.0670	
2-DEC-2007 09:51	bkg		0.0740	

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.032469 Std Deviation : 0.029225

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0610		
2-DEC-2007 09:51	bkg		0.0660		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.011417 Std Deviation : 0.010558

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0260		
2-DEC-2007 09:51	bkg		0.0220		

Quality Assurance Report.                      Generated 21-DEC-2007 18:08:00.06

QA Filename     : \$DISK1:[ALP3.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description     : Efficiency, Am-241  
Parameter Units :                      Parameter Type : Generic

Investigate Level : 2.000000              Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 9-AUG-2004 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.366023              Std Deviation : 0.005234

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		0.3634		
1-DEC-2007 15:51	chk		0.3745		

-- Multi-Test Full Report --

Description     : Constant FWHM  
Parameter Units : channels              Parameter Type : Generic

Investigate Level : 2.000000              Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 9-AUG-2004 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 7.990000              Std Deviation : 0.226904

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		8.0000		
1-DEC-2007 15:51	chk		8.1667		

-- Multi-Test Full Report --

Description     : Centroid, Am-241  
Parameter Units : channels              Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 357.505859      Std Deviation : 1.007402

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		357.6695	
1-DEC-2007 15:51	chk		356.8181	

2-NOV-2007 08:13	chk		357.6695	
1-DEC-2007 15:51	chk		356.8181	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.371737      Std Deviation : 0.002510

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3710	
1-DEC-2007 15:51	chk		0.3743	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3710	
1-DEC-2007 15:51	chk		0.3743	

2-NOV-2007 08:13	chk		0.3710	
1-DEC-2007 15:51	chk		0.3743	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.393154      Std Deviation : 0.059423

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-NOV-2007 08:13  chk          7.3805  | | |
1-DEC-2007 15:51  chk          7.3692  | | |
```

Quality Assurance Report.                      Generated 21-DEC-2007 18:08:00.79

QA Filename       : \$DISK1:[ALP3.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description       : 4010, Th-232 bkg (cnts/min)  
Parameter Units   : cnts/min           Parameter Type : Nuclide

Investigate Level : 2.000000           Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date       : 9-AUG-2004 00:00 End Date       : 30-MAY-2030 00:00  
Mean             : 0.005425           Std Deviation  : 0.003888

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:29  bkg          0.0080  | | |
2-DEC-2007 09:51  bkg          0.0020  | | |
```

-- Multi-Test Full Report --

Description       : 4196, U-238 bkg (cnts/min)  
Parameter Units   : cnts/min           Parameter Type : Nuclide

Investigate Level : 2.000000           Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date       : 9-AUG-2004 00:00 End Date       : 30-MAY-2030 00:00  
Mean             : 0.007092           Std Deviation  : 0.004980

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:29  bkg          0.0030  | | |
2-DEC-2007 09:51  bkg          0.0090  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002463 Std Deviation : 0.001900

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0020		
2-DEC-2007 09:51	bkg		0.0040		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.007481 Std Deviation : 0.005049

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0100		
2-DEC-2007 09:51	bkg		0.0100		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.006703 Std Deviation : 0.004017

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0060	
2-DEC-2007 09:51	bkg		0.0070	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.005981 Std Deviation : 0.003683

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0050	
2-DEC-2007 09:51	bkg		0.0070	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003611 Std Deviation : 0.002729

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002666      Std Deviation : 0.002371

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0050		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002074      Std Deviation : 0.001970

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0050		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002852      Std Deviation : 0.002302





Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.006166 Std Deviation : 0.004142

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0180	In	
2-DEC-2007 09:51	bkg		0.0100		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.039958 Std Deviation : 0.029501

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0860		
2-DEC-2007 09:51	bkg		0.0770		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.041643 Std Deviation : 0.031156

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29 bkg 0.0860 | | |  
 2-DEC-2007 09:51 bkg 0.0840 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.039218 Std Deviation : 0.029161

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29 bkg			0.0780		
2-DEC-2007 09:51 bkg			0.0800		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.035866 Std Deviation : 0.029765

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29 bkg			0.0800		
2-DEC-2007 09:51 bkg			0.0970	In	

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.032200      Std Deviation : 0.026731

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0690	
2-DEC-2007 09:51	bkg		0.0920	In

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.010573      Std Deviation : 0.008228

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0160	
2-DEC-2007 09:51	bkg		0.0220	

Quality Assurance Report. Generated 21-DEC-2007 18:00:30.36

QA Filename : \$DISK1:[ALP2.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Am-241  
Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.171822 Std Deviation : 0.002870

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.1689	
1-DEC-2007 15:51	chk		0.1729	

-- Multi-Test Full Report --

Description : Constant FWHM  
Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
Mean : 9.586274 Std Deviation : 0.255783

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		9.6667	
1-DEC-2007 15:51	chk		9.0000	In

-- Multi-Test Full Report --

Description : Centroid, Am-241  
Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
Mean : 353.296387      Std Deviation : 0.887765

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		353.1186	
1-DEC-2007 15:51	chk		352.1436	

2-NOV-2007 08:13	chk		353.1186	
1-DEC-2007 15:51	chk		352.1436	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units :              Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 0.500000

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.175293      Std Deviation : 0.001137

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.1754	
1-DEC-2007 15:51	chk		0.1748	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.1754	
1-DEC-2007 15:51	chk		0.1748	

2-NOV-2007 08:13	chk		0.1754	
1-DEC-2007 15:51	chk		0.1748	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 10.000000

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 7.312215 Std Deviation : 0.119847

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		7.2008		
1-DEC-2007 15:51	chk		7.3617		

Quality Assurance Report. Generated 21-DEC-2007 18:00:30.98

QA Filename : \$DISK1:[ALP2.QA]GROUP\_1\_BKG.QAF;1

## -- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003353 Std Deviation : 0.002060

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0020		
2-DEC-2007 09:51	bkg		0.0010		

## -- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.009293 Std Deviation : 0.003996

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:29 bkg          0.0020  | | |
2-DEC-2007 09:51 bkg          0.0030  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001882      Std Deviation : 0.001615

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
3-NOV-2007 10:29 bkg          0.0020  | | |
2-DEC-2007 09:51 bkg          0.0030  | | |
```

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.005882      Std Deviation : 0.002826

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

```
-----
3-NOV-2007 10:29 bkg          0.0010  | | |
2-DEC-2007 09:51 bkg          0.0010  | | |
```

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)



Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.007822      Std Deviation : 0.003956

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.007470      Std Deviation : 0.003825

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.004823      Std Deviation : 0.002505

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0000	

2-DEC-2007 09:51 bkg 0.0030 | | |

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002941 Std Deviation : 0.001560

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
Quality Assurance Multi-Test Full Report (continued)				Page : 3
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002176 Std Deviation : 0.001334

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
Quality Assurance Multi-Test Full Report (continued)				Page : 3
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.004705      Std Deviation : 0.002640

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0020		
2-DEC-2007 09:51	bkg		0.0010		

## -- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.005176      Std Deviation : 0.003046

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0010		
2-DEC-2007 09:51	bkg		0.0030		

## -- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.006117      Std Deviation : 0.002595

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued)      Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:29 bkg          0.0030  | | |
2-DEC-2007 09:51 bkg          0.0040  | | |
```

## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.008117      Std Deviation : 0.002472

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0060	
2-DEC-2007 09:51	bkg		0.0050	

```
-----
3-NOV-2007 10:29 bkg          0.0060  | | |
2-DEC-2007 09:51 bkg          0.0050  | | |
```

## -- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.064579      Std Deviation : 0.009462

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0670	
2-DEC-2007 09:51	bkg		0.0690	

```
-----
3-NOV-2007 10:29 bkg          0.0670  | | |
2-DEC-2007 09:51 bkg          0.0690  | | |
```

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.072814 Std Deviation : 0.008736

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0690		
2-DEC-2007 09:51	bkg		0.0780		

## -- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.069637 Std Deviation : 0.008346

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
Quality Assurance Multi-Test Full Report (continued)					Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0660		
2-DEC-2007 09:51	bkg		0.0730		

## -- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.061403 Std Deviation : 0.009364

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:29	bkg		0.0770		

2-DEC-2007 09:51 bkg 0.0590 | | |

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.054874 Std Deviation : 0.009093

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0700	
2-DEC-2007 09:51	bkg		0.0480	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-JAN-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.018292 Std Deviation : 0.004312

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0150	
2-DEC-2007 09:51	bkg		0.0200	

Quality Assurance Report.                      Generated 21-DEC-2007 17:58:22.16

QA Filename     : \$DISK1:[ALP1.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description     : Efficiency, Am-241  
Parameter Units :                      Parameter Type : Generic

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 3-SEP-2002 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.209967              Std Deviation : 0.003809

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.2171	
1-DEC-2007 15:51	chk		0.2101	

-- Multi-Test Full Report --

Description     : Constant FWHM  
Parameter Units : channels              Parameter Type : Generic

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 3-SEP-2002 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 8.076132              Std Deviation : 0.361372

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		7.8333	
1-DEC-2007 15:51	chk		8.1667	

-- Multi-Test Full Report --

Description     : Centroid, Am-241  
Parameter Units : channels              Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 347.806427      Std Deviation : 0.832074

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		347.1415	
1-DEC-2007 15:51	chk		346.3242	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units :              Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.178176      Std Deviation : 0.002087

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.1759	
1-DEC-2007 15:51	chk		0.1769	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.474441      Std Deviation : 0.072168

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------



```
-----
2-NOV-2007 08:13  chk          7.4846  | | |
1-DEC-2007 15:51  chk          7.4852  | | |
```

Quality Assurance Report.                      Generated 21-DEC-2007 17:58:23.26

QA Filename        : \$DISK1:[ALP1.QA]GROUP\_1\_BKG.QAF;4

-- Multi-Test Full Report --

Description        : 4010, Th-232 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 3-SEP-2002 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.004223            Std Deviation   : 0.003355

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

```
-----
3-NOV-2007 10:29  bkg          0.0000  | | |
2-DEC-2007 09:51  bkg          0.0020  | | |
```

-- Multi-Test Full Report --

Description        : 4196, U-238 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 3-SEP-2002 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.005274            Std Deviation   : 0.004406

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

```
-----
3-NOV-2007 10:29  bkg          0.0020  | | |
2-DEC-2007 09:51  bkg          0.0020  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002053 Std Deviation : 0.001939

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:29	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.005832 Std Deviation : 0.004719

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:29	bkg		0.0030		
2-DEC-2007 09:51	bkg		0.0030		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.005448 Std Deviation : 0.004122

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:29	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004995 Std Deviation : 0.003667

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:29	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002832 Std Deviation : 0.002145

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:29	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001274      Std Deviation : 0.001244

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
Quality Assurance Multi-Test Full Report (continued)				Page : 3
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-----

-----

-----

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000937      Std Deviation : 0.001089

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
Quality Assurance Multi-Test Full Report (continued)				Page : 3
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
3-NOV-2007 10:29	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-----

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001651      Std Deviation : 0.001585

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003023 Std Deviation : 0.002396

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0050	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003697 Std Deviation : 0.002782

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0050	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.005394 Std Deviation : 0.003835

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:29	bkg		0.0070		
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2-DEC-2007 09:51	bkg		0.0060		
------------------	-----	--	--------	--	--

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.055456 Std Deviation : 0.032568

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:29	bkg		0.1030		
------------------	-----	--	--------	--	--

2-DEC-2007 09:51	bkg		0.0980		
------------------	-----	--	--------	--	--

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.055638 Std Deviation : 0.032628

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:29 bkg 0.1100 | | |  
 2-DEC-2007 09:51 bkg 0.1010 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.052522 Std Deviation : 0.030550

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

-----  
 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:29 bkg			0.1070		
2-DEC-2007 09:51 bkg			0.0950		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.046499 Std Deviation : 0.029060

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:29 bkg			0.0910		
2-DEC-2007 09:51 bkg			0.0770		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.042042      Std Deviation : 0.026354

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0780	
2-DEC-2007 09:51	bkg		0.0730	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.014649      Std Deviation : 0.009401

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0240	
2-DEC-2007 09:51	bkg		0.0260	



Quality Assurance Report.                      Generated 21-DEC-2007 18:51:48.48

QA Filename     : \$DISK1:[ALP12.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description     : Efficiency, Am-241  
 Parameter Units :                      Parameter Type : Generic

Investigate Level : 2.000000            Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 8-MAY-2003 00:00 End Date     : 30-MAY-2030 00:00  
 Mean           : 0.472410            Std Deviation : 0.027139

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:14	chk		0.4773		
1-DEC-2007 15:52	chk		0.4740		

-- Multi-Test Full Report --

Description     : Constant FWHM  
 Parameter Units : channels            Parameter Type : Generic

Investigate Level : 2.000000            Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 8-MAY-2003 00:00 End Date     : 30-MAY-2030 00:00  
 Mean           : 6.411765            Std Deviation : 0.769156

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:14	chk		6.3333		
1-DEC-2007 15:52	chk		5.8333		

-- Multi-Test Full Report --

Description     : Centroid, Am-241  
 Parameter Units : channels            Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 325.826172      Std Deviation : 2.541021

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		328.0702	
1-DEC-2007 15:52	chk		326.1092	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.365258      Std Deviation : 0.021298

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		0.3703	
1-DEC-2007 15:52	chk		0.3687	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		0.3703	
1-DEC-2007 15:52	chk		0.3687	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.563352      Std Deviation : 0.047086

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

```
-----
2-NOV-2007 08:14  chk          6.5553  | | |
1-DEC-2007 15:52  chk          6.6114  | | |
```

Quality Assurance Report.                      Generated 21-DEC-2007 18:51:49.16

QA Filename        : \$DISK1:[ALP12.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description        : 4010, Th-232 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 8-MAY-2003 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.000480            Std Deviation   : 0.000704

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
3-NOV-2007 10:30  bkg          0.0010  | | |
2-DEC-2007 09:52  bkg          0.0000  | | |
7-DEC-2007 14:26  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description        : 4196, U-238 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 8-MAY-2003 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.000640            Std Deviation   : 0.000816

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
3-NOV-2007 10:30  bkg          0.0000  | | |
2-DEC-2007 09:52  bkg          0.0000  | | |
7-DEC-2007 14:26  bkg          0.0000  | | |
```

## -- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000373 Std Deviation : 0.000564

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:52	bkg		0.0000		
7-DEC-2007 14:26	bkg		0.0020	In	

## -- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000587 Std Deviation : 0.000790

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
Quality Assurance Multi-Test Full Report (continued)					Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0010		
2-DEC-2007 09:52	bkg		0.0010		
7-DEC-2007 14:26	bkg		0.0030	Ac	

## -- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.000787      Std Deviation : 0.001030

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:52	bkg		0.0020		
7-DEC-2007 14:26	bkg		0.0020		

---

3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:52	bkg		0.0020		
7-DEC-2007 14:26	bkg		0.0020		

## -- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.000773      Std Deviation : 0.001060

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:52	bkg		0.0020		
7-DEC-2007 14:26	bkg		0.0010		

---

3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:52	bkg		0.0020		
7-DEC-2007 14:26	bkg		0.0010		

## -- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.000640      Std Deviation : 0.000864

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0000		

---

3-NOV-2007 10:30	bkg		0.0000		
------------------	-----	--	--------	--	--

2-DEC-2007 09:52 bkg 0.0020 | | |  
 7-DEC-2007 14:26 bkg 0.0000 | | |

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000480 Std Deviation : 0.000685

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0000		
2-DEC-2007 09:52 bkg			0.0010		
7-DEC-2007 14:26 bkg			0.0000		

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000493 Std Deviation : 0.000742

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30 bkg			0.0000		
2-DEC-2007 09:52 bkg			0.0010		
7-DEC-2007 14:26 bkg			0.0000		

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001133 Std Deviation : 0.001107

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30	bkg		0.0040	In	
2-DEC-2007 09:52	bkg		0.0020		
7-DEC-2007 14:26	bkg		0.0020		

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002520 Std Deviation : 0.002177

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30	bkg		0.0040		
2-DEC-2007 09:52	bkg		0.0070	In	
7-DEC-2007 14:26	bkg		0.0020		

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003253 Std Deviation : 0.002377

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0050	
2-DEC-2007 09:52	bkg		0.0080	
7-DEC-2007 14:26	bkg		0.0060	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.004373      Std Deviation : 0.003191

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0070	
2-DEC-2007 09:52	bkg		0.0080	
7-DEC-2007 14:26	bkg		0.0080	

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.036729      Std Deviation : 0.024203

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0620	
2-DEC-2007 09:52	bkg		0.0570	
7-DEC-2007 14:26	bkg		0.0740	



## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.035862 Std Deviation : 0.023670

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0620		
2-DEC-2007 09:52	bkg		0.0570		
7-DEC-2007 14:26	bkg		0.0740		

## -- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.034316 Std Deviation : 0.022640

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0580		
2-DEC-2007 09:52	bkg		0.0550		
7-DEC-2007 14:26	bkg		0.0710		

## -- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.030450      Std Deviation : 0.020281

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0550		
2-DEC-2007 09:52	bkg		0.0720	In	
7-DEC-2007 14:26	bkg		0.0620		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.019398      Std Deviation : 0.013761

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0370		
2-DEC-2007 09:52	bkg		0.0500	In	
7-DEC-2007 14:26	bkg		0.0490	In	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.009119      Std Deviation : 0.006305

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg	0.0210			
2-DEC-2007 09:52 bkg	0.0110			
7-DEC-2007 14:26 bkg	0.0120			

## Quality Assurance Report.

Generated 24-DEC-2007 12:07:32.51

QA Filename : RDND06::RDND06\$DKA100:[ALP71.QA]GROUP\_1\_CHK.QAF;2

## -- Multi-Test Full Report --

Description : Efficiency, Pu-239

Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.367871 Std Deviation : 0.042939

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
10-NOV-2007 11:33	chk		0.3656		
13-NOV-2007 10:06	chk		0.3660		
14-DEC-2007 06:51	chk		0.3663		

## -- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00

Mean : 8.631001 Std Deviation : 0.479250

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
10-NOV-2007 11:33	chk		9.3333		
13-NOV-2007 10:06	chk		9.1667		
14-DEC-2007 06:51	chk		9.1667		

## -- Multi-Test Full Report --

Description : Centroid, Pu-239

Parameter Units : channels      Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00

Mean : 309.574280      Std Deviation : 0.447614

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
10-NOV-2007 11:33	chk		309.1238	
13-NOV-2007 10:06	chk		309.0924	
14-DEC-2007 06:51	chk		309.1596	

-- Multi-Test Full Report --

Description : Average Efficiency

Parameter Units :      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.350227      Std Deviation : 0.040592

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
10-NOV-2007 11:33	chk		0.3539	
13-NOV-2007 10:06	chk		0.3506	
14-DEC-2007 06:51	chk		0.3515	

-- Multi-Test Full Report --

Description : Energy Calibration Slope

Parameter Units : keV/chan      Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 10.000000

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.504272      Std Deviation : 0.036697

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
10-NOV-2007 11:33	chk		6.5311	
13-NOV-2007 10:06	chk		6.5291	
14-DEC-2007 06:51	chk		6.5350	

Quality Assurance Report.      Generated 24-DEC-2007 12:07:35.65

QA Filename : RDND06::RDND06\$DKA100:[ALP71.QA]GROUP\_1\_BKG.QAF;1

## -- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.001231      Std Deviation : 0.004626

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0000	
14-NOV-2007 09:46	bkg		0.0012	
7-DEC-2007 14:27	bkg		0.0016	
15-DEC-2007 08:31	bkg		0.0012	

## -- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001778 Std Deviation : 0.004556

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0010	
14-NOV-2007 09:46	bkg		0.0008	
7-DEC-2007 14:27	bkg		0.0020	
15-DEC-2007 08:31	bkg		0.0028	

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000642 Std Deviation : 0.001202

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0000	
14-NOV-2007 09:46	bkg		0.0008	
7-DEC-2007 14:27	bkg		0.0000	
15-DEC-2007 08:31	bkg		0.0012	

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001195 Std Deviation : 0.001922

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued)

Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0030	
14-NOV-2007 09:46	bkg		0.0016	
7-DEC-2007 14:27	bkg		0.0004	
15-DEC-2007 08:31	bkg		0.0004	

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001549 Std Deviation : 0.001766

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0030	
14-NOV-2007 09:46	bkg		0.0012	
7-DEC-2007 14:27	bkg		0.0012	
15-DEC-2007 08:31	bkg		0.0012	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001516 Std Deviation : 0.001650

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0030	
14-NOV-2007 09:46	bkg		0.0008	
7-DEC-2007 14:27	bkg		0.0012	
15-DEC-2007 08:31	bkg		0.0012	



## -- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001128 Std Deviation : 0.001000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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11-NOV-2007 06:50	bkg		0.0010		
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Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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14-NOV-2007 09:46	bkg		0.0008		
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7-DEC-2007 14:27	bkg		0.0012		
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15-DEC-2007 08:31	bkg		0.0012		
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## -- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000938 Std Deviation : 0.000873

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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11-NOV-2007 06:50	bkg		0.0010		
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14-NOV-2007 09:46	bkg		0.0012		
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7-DEC-2007 14:27	bkg		0.0012		
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15-DEC-2007 08:31	bkg		0.0012		
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## -- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000854      Std Deviation : 0.000859

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0010	
14-NOV-2007 09:46	bkg		0.0008	
7-DEC-2007 14:27	bkg		0.0012	
15-DEC-2007 08:31	bkg		0.0012	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001507      Std Deviation : 0.000770

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0020	
14-NOV-2007 09:46	bkg		0.0008	

Quality Assurance Multi-Test Full Report (continued)      Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
7-DEC-2007 14:27	bkg		0.0008	
15-DEC-2007 08:31	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002451 Std Deviation : 0.001506

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
11-NOV-2007 06:50	bkg		0.0030		
14-NOV-2007 09:46	bkg		0.0044		
7-DEC-2007 14:27	bkg		0.0024		
15-DEC-2007 08:31	bkg		0.0020		

## -- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003331 Std Deviation : 0.001992

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
11-NOV-2007 06:50	bkg		0.0070		
14-NOV-2007 09:46	bkg		0.0072		
7-DEC-2007 14:27	bkg		0.0044		
15-DEC-2007 08:31	bkg		0.0040		

## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004139 Std Deviation : 0.002451

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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11-NOV-2007 06:50 bkg 0.0090 | | |  
 14-NOV-2007 09:46 bkg 0.0080 | | |  
 7-DEC-2007 14:27 bkg 0.0052 | | |

Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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15-DEC-2007 08:31	bkg		0.0052		
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-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.032239 Std Deviation : 0.015940

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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11-NOV-2007 06:50	bkg		0.0540		
14-NOV-2007 09:46	bkg		0.0468		
7-DEC-2007 14:27	bkg		0.0440		
15-DEC-2007 08:31	bkg		0.0492		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.033003 Std Deviation : 0.016065

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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11-NOV-2007 06:50	bkg		0.0600		
14-NOV-2007 09:46	bkg		0.0468		
7-DEC-2007 14:27	bkg		0.0492		

15-DEC-2007 08:31 bkg 0.0508 | | |

## -- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.031638 Std Deviation : 0.015368

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0560	
14-NOV-2007 09:46	bkg		0.0436	
7-DEC-2007 14:27	bkg		0.0452	
15-DEC-2007 08:31	bkg		0.0492	

## -- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.028596 Std Deviation : 0.013547

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 6

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0410	
14-NOV-2007 09:46	bkg		0.0400	
7-DEC-2007 14:27	bkg		0.0416	
15-DEC-2007 08:31	bkg		0.0428	

## -- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.018971 Std Deviation : 0.008968

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0310	
14-NOV-2007 09:46	bkg		0.0284	
7-DEC-2007 14:27	bkg		0.0292	
15-DEC-2007 08:31	bkg		0.0264	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 27-NOV-2000 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.009097 Std Deviation : 0.004473

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0140	
14-NOV-2007 09:46	bkg		0.0176	
7-DEC-2007 14:27	bkg		0.0164	
15-DEC-2007 08:31	bkg		0.0112	

Quality Assurance Report.

Generated 24-DEC-2007 12:18:52.76

QA Filename : RDND06::RDND06\$DKA100:[ALP85.QA]GROUP\_1\_CHK.QAF;2

-- Multi-Test Full Report --

Description : Centroid, U-238

Parameter Units : channel Parameter Type : Peak

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00

Mean : 178.969635 Std Deviation : 0.549142

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:23	chk		179.8070		
14-DEC-2007 06:51	chk		179.7246		

-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00

Mean : 9.988542 Std Deviation : 0.407872

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:23	chk		10.0000		
14-DEC-2007 06:51	chk		10.3333		

-- Multi-Test Full Report --

Description : Average Efficiency

Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.259833      Std Deviation : 0.020900

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:23	chk		0.2572	
14-DEC-2007 06:51	chk		0.2559	

## -- Multi-Test Full Report --

Description : Efficiency, Am-241  
Parameter Units : %      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.248863      Std Deviation : 0.020263

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:23	chk		0.2447	
14-DEC-2007 06:51	chk		0.2446	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.161623      Std Deviation : 0.077643

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:23  chk          7.2214  | | |
14-DEC-2007 06:51  chk          7.0647  | | |
```

Quality Assurance Report.                      Generated 24-DEC-2007 12:18:57.31

QA Filename        : RDND06::RDND06\$DKA100:[ALP85.QA]GROUP\_1\_BKG.QAF;2

-- Multi-Test Full Report --

Description        : 4901, Pu-242 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 5-APR-1996 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.001909            Std Deviation   : 0.001052

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
4-NOV-2007 11:25  bkg          0.0020  | | |
15-DEC-2007 08:32  bkg          0.0008  | | |
```

-- Multi-Test Full Report --

Description        : 5155, Pu-239 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 5-APR-1996 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.004716            Std Deviation   : 0.002133

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

```
-----
4-NOV-2007 11:25  bkg          0.0052  | | |
15-DEC-2007 08:32  bkg          0.0048  | | |
```

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.010473 Std Deviation : 0.004226

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

4-NOV-2007 11:25	bkg		0.0096		
15-DEC-2007 08:32	bkg		0.0080		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.054339 Std Deviation : 0.019817

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 11:25	bkg		0.0496		
15-DEC-2007 08:32	bkg		0.0456		

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.050467 Std Deviation : 0.018397

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0476	
15-DEC-2007 08:32	bkg		0.0432	

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.044011 Std Deviation : 0.016568

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0484	
15-DEC-2007 08:32	bkg		0.0416	

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.032498 Std Deviation : 0.012705

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0372	
15-DEC-2007 08:32	bkg		0.0324	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.016758      Std Deviation : 0.006769

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 11:25	bkg		0.0172		
15-DEC-2007 08:32	bkg		0.0184		

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cpm      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000619      Std Deviation : 0.000675

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 11:25	bkg		0.0004		
15-DEC-2007 08:32	bkg		0.0012		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cpm      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001282      Std Deviation : 0.001100

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0016	
15-DEC-2007 08:32	bkg		0.0004	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001738              Std Deviation : 0.001094

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0020	
15-DEC-2007 08:32	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.059155              Std Deviation : 0.021311

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0536	
15-DEC-2007 08:32	bkg		0.0588	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000792 Std Deviation : 0.000854

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 11:25	bkg		0.0012		
15-DEC-2007 08:32	bkg		0.0004		

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000773 Std Deviation : 0.000739

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 11:25	bkg		0.0004		
15-DEC-2007 08:32	bkg		0.0016		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001476 Std Deviation : 0.000909

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 11:25 bkg 0.0024 | | |  
 15-DEC-2007 08:32 bkg 0.0000 | | |

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.016611 Std Deviation : 0.006397

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 11:25 bkg			0.0120		
15-DEC-2007 08:32 bkg			0.0200		

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001567 Std Deviation : 0.000992

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 11:25 bkg			0.0024		
15-DEC-2007 08:32 bkg			0.0000		

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001874      Std Deviation : 0.001039

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 11:25	bkg		0.0020		
15-DEC-2007 08:32	bkg		0.0008		

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cpm      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-APR-1996 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.013744      Std Deviation : 0.005317

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 11:25	bkg		0.0112		
15-DEC-2007 08:32	bkg		0.0148		



GAMMA  
SAMPLE AND QC DATA

Lot No., Due Date: F7K190152; 12/18/2007  
Client, Site: 445691; Phs2 Smpling Tronox Prcl CDFG  
QC Batch No., Method Test: 7327117; RGAMMA10 Gamma by GER 10D  
SDG, Matrix: TRNC/D-6RD; .....

1.0 COC

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? Yes No N/A

2.0 QC Batch

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Yes No N/A

2.2 Are the QC appropriate for the analysis included in the batch? Yes No N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? Yes No N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample? Yes No N/A

3.0 QC & Samples

3.1 Is the blank results, yield, and MDA within contract limits? Yes No N/A

3.2 Is the LCS result, yield, and MDA within contract limits? Yes No N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits? Yes No N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits? Yes No N/A

3.5 Are the sample yields and MDAs within contract limits? Yes No N/A

4.0 Raw Data

4.1 Were results calculated in the correct units? Yes No N/A

4.2 Were analysis volumes entered correctly? Yes No N/A

4.3 Were Yields entered correctly? Yes No N/A

4.4 Were spectra reviewed/meet contractual requirements? Yes No N/A

4.5 Were raw counts reviewed for anomalies? Yes No N/A

5.0 Other

5.1 Are all nonconformances included and noted? Yes No N/A

5.2 Are all required forms filled out? Yes No N/A

5.3 Was the correct methodology used? Yes No N/A

5.4 Was transcription checked? Yes No N/A

5.5 Were all calculations checked at a minimum frequency? Yes No N/A

5.6 Are worksheet entries complete and correct? Yes No N/A

6.0 Comments on any No response:

First Level Review Kira Gustafson

Date 12/19/07

**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 7327117

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			✓
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			✓
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Second Level Review: Erika Jobe Date: 12/26/07

11/28/2007 2:20:01 PM

### Sample Preparation/Analysis

Balance Id: 1120421763

445691, Basic Remediation Company  
Basic Remediation Company

AX Gamma PrpRC5013/5017  
T9 Gamma by HPGE 10 day ingrowth  
01 STANDARD TEST SET

Pipet #:

AnalytDueDate: 12/12/2007

Sep1 DT/Tm Tech:

PM, Quote: JAE, 77571

Sep2 DT/Tm Tech:

pCi/g

Batch: 7327117

SEO Batch, Test: None

Prep Tech: ,Barcott

Work Order, Lot, Sample Date Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
<del>8</del> KCKEE-1-AA F7K190152-7-SAMP 11/16/2007 08:50		53.20g.in				1000	G13	0336		12/15/070P
<del>9</del> KCKEG-1-AA F7K190152-8-SAMP 11/16/2007 10:20		53.90g.in					G14	0337		
<del>10</del> KCKEJ-1-AA F7K190152-9-SAMP 11/16/2007 10:40		48.40g.in					G5	0339		
<del>11</del> KCKEK-1-AA F7K190152-10-SAMP 11/16/2007 11:15		51.00g.in					G4	0317		12/17/07PC
<del>12</del> KCKEL-1-AA F7K190152-11-SAMP 11/16/2007 11:25		51.50g.in					G5	0319		
<del>13</del> KCKEM-1-AA F7K190152-12-SAMP 11/16/2007 09:16		48.70g.in					G6	0320		
<del>14</del> KCKEM-1-AE-X F7K190152-12-DUP 11/16/2007 09:16		48.50g.in					G7	0321		

TAL RICHLAND

754

11/28/2007 2:19:59 PM

445691, Basic Remediation Company  
Basic Remediation Company

# Sample Preparation

AX Gamma PrpRC5013/5017  
T9 Gamma by HPGE 10 day ingrowth  
01 STANDARD TEST SET

Balance Id: 1120421763

Pipet #:

AnalytDueDate: 12/12/2007

Sep1 DT/Tm Tech:

Batch: 7327117

PM, Quote: JAE, 77571

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,Barcolt

Count On | Off

Work Order, Lot, Sample Date Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count (24hr) Circle	CR Analyst, Int/Date	Comments:
-----------------------------------	----------------	--------------------------	---------------------	-----------	-----------------	----------------	-------------	---------------------	----------------------	-----------

<del>1</del> KCKD6-1-AA		52.30g.in				1000	34	0332	12/14/03	
F7K190152-1-SAMP										
11/16/2007 06:40										
2 KCKD8-1-AA		51.90g.in								
F7K190152-2-SAMP										
11/16/2007 07:05										
3 KCKD9-1-AA		50.60g.in								
F7K190152-3-SAMP										
11/16/2007 07:35										
4 KCKEA-1-AA		51.10g.in								
F7K190152-4-SAMP										
11/16/2007 07:50										
5 KCKEC-1-AA		51.60g.in								
F7K190152-5-SAMP										
11/16/2007 08:15										
6 KCKEC-1-AE-X		51.70g.in								
F7K190152-5-DUP										
11/16/2007 08:15										
7 KCKED-1-AA		50.70g.in								
F7K190152-6-SAMP										
11/16/2007 08:15										

11/28/2007 2:20:01 PM

445691, Basic Remediation Company  
Basic Remediation Company

### Sample Preparation/Analysis

Balance Id: 1120421763

Pipet #:

AX Gamma PrpRC5013/5017  
T9 Gamma by HPGE 10 day ingrowth  
01 STANDARD TEST SET

Analyte Due Date: 12/12/2007

Sep1 DT/Tm Tech:

PM, Quote: JAE, 77571

Sep2 DT/Tm Tech:

pCi/g

Batch: 732717

SEQ Batch, Test: None

Prep Tech: ,Barcotl

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
15 KCKET-1-AA F7K190152-13-SAMP 11/16/2007 09:50		51.00g.in			S25	1000	68	0322		12/17/07/2
16 KCKE1-1-AA F7K190152-14-SAMP 11/16/2007 11:50		50.70g.in					610	0323		
17 KCKE2-1-AA F7K190152-15-SAMP 11/16/2007 12:10		52.50g.in					613	0324		
18 KCR6V-1-AA-B J7K230000-117-BLK 11/16/2007 08:15		25.16g.in			25		615	0340		12/15/07/2
19 KCR6V-1-AC-C J7K230000-117-LCS 11/16/2007 08:15		25.30g.in	GSE1219 11/12/07.pd 06/08/05				615	0326		12/17/07/2

Comments: 16 Day ingrowth started on 11-28-07

All Clients for Batch:

445691, Basic Remediation Company

Basic Remediation Company, JAE, 77571

KCKD61AA - SAMP Constituent List:

TA Richland

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 3

Richland Wa.

pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

ISV - Insufficient Volume for Analysis

WO Cnt: 19

Prep\_SamplePrep v4.8.29

11/28/2007 2:20:01 PM

### Sample Preparation/Analysis

Balance Id:1120373922

AX Gamma PrpRC5013/5017

T9 Gamma by HPGE 10 day ingro

01 STANDARD TEST SET

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

AnalyDueDate: 12/12/2007

Batch: 7327117 pCi/g

SEQ Batch, Test: None

Prep Tech: ,WoodT



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
KCR6V1AA-BLK:										
Ra-226 RDL:--	pCi/g	LCL:	UCL:	RPD:	RA-228	RDL:--		pCi/g	UCL:	RPD:
RA-228DA RDL:--	pCi/g	LCL:	UCL:	RPD:						
KCR6V1AC-LCS:					Cs-137DA	RDL:0.2		pCi/g	UCL:130	RPD:35
Cs-137 RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35						
KCKD61AA-SAMP Calc Info:										
Uncert Level (#s): 4	Decay to SaDt: N	Blk Subt.: N	Blk Subt.: N	Sci.Not.: N	ODRs: B					
KCR6V1AA-BLK:										
Uncert Level (#s): 4	Decay to SaDt: N	Blk Subt.: N	Blk Subt.: N	Sci.Not.: N	ODRs: B					
KCR6V1AC-LCS:										
Uncert Level (#s): 4	Decay to SaDt: N	Blk Subt.: N	Blk Subt.: N	Sci.Not.: N	ODRs: B					

Approved By

Date:

# ICOC Fraction Transfer/Status Report

ByDate: 12/19/2006, 12/24/2007, Batch: '7327117', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
7327117				
AC	CalcC	Barcotl	11/28/2007 2:26:27	
SC		antonsonl	IsBatched	11/23/2007 10:46:18 AM ICOC_RADCALC v4.8.29
SC		Barcotl	InPrep	11/28/2007 2:26:27 PM RICH-RC-5013 REVISION 7
SC		Barcotl	Prep1C	11/28/2007 2:26:45 PM RICH-RC-5013 REVISION 7
SC		Barcotl	InPrep2	11/28/2007 2:27:04 PM RICH-RC-5017 REVISION 6
SC		Barcotl	Prep2C	11/28/2007 2:27:20 PM RICH-RC-5017 REVISION 6
SC		BlackCL	InCnt1	11/29/2007 6:47:06 AM RICH-RD-0007 REVISION 6
SC		BlackCL	CalcC	12/18/2007 7:52:00 AM RICH-RD-0007 REVISION 6
AC		Barcotl	11/28/2007 2:26:45	
AC		Barcotl	11/28/2007 2:27:04	
AC		Barcotl	11/28/2007 2:27:20	
AC		BlackCL	11/29/2007 6:47:06	
AC		BlackCL	12/18/2007 7:52:00	

AC: Accepting Entry; SC: Status Change

STL Richland  
Richland Wa.



# Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix Cnt Uncert	Received Date Tot Uncert	Sample Date Units	Expected Yield	Volumes
<b>TRNC/D-6RD</b>	<b>9KCKD610</b>		<b>F7K1901521</b>	TSB-FJ-08-0'	Solid	11/19/2007 8:45:00	11/16/2007 6:40:00 AM		
RA-226DA	AXT9	0	12/14/2007 12:52:23	<b>9.0307E-01</b>	8.212E-02	8.212E-02	7.255E-02	PCI/GRAM	5.23E+1
RA-228DA	AXT9	0	12/14/2007 12:52:23	<b>1.7546E+00</b>	1.674E-01	1.674E-01	1.447E-01	PCI/GRAM	5.23E+1
TH-228	D2S1	0	12/10/2007 10:33:09	<b>1.7833E+00</b>	1.267E-01	1.903E-01	6.149E-02	pCi/g	1.01E+0
TH-230	D2S1	0	12/10/2007 10:33:09	<b>9.2475E-01</b>	9.001E-02	1.163E-01	4.186E-02	pCi/g	0.963
TH-232	D2S1	0	12/10/2007 10:33:09	<b>1.8932E+00</b>	1.288E-01	1.983E-01	4.939E-02	pCi/g	0.963
U-234	7USR	0	12/17/2007 2:24:43 PM	<b>2.506E-01</b>	2.725E-02	3.396E-02	1.416E-02	pCi/g	0.999
U-235	7USR	0	12/17/2007 2:24:43 PM	<b>5.9142E-04</b>	3.014E-03	3.014E-03	1.416E-02	pCi/g	0.999
U-238	7USR	0	12/17/2007 2:24:43 PM	<b>2.4469E-01</b>	2.693E-02	3.341E-02	1.416E-02	pCi/g	0.999
<b>TRNC/D-6RD</b>	<b>9KCKD810</b>		<b>F7K1901522</b>	TSB-FJ-08-10'	Solid	11/19/2007 8:45:00	11/16/2007 7:05:00 AM		
RA-226DA	AXT9	0	12/15/2007 10:51:04	<b>9.724E-01</b>	8.395E-02	8.395E-02	7.195E-02	PCI/GRAM	5.19E+1
RA-228DA	AXT9	0	12/15/2007 10:51:04	<b>1.8992E+00</b>	1.779E-01	1.779E-01	1.361E-01	PCI/GRAM	5.19E+1
TH-228	D2S1	0	12/10/2007 2:17:09 PM	<b>1.6249E+00</b>	1.354E-01	1.875E-01	6.35E-02	pCi/g	0.803
TH-230	D2S1	0	12/10/2007 2:17:09 PM	<b>1.1826E+00</b>	1.14E-01	1.48E-01	5.254E-02	pCi/g	0.803
TH-232	D2S1	0	12/10/2007 2:17:09 PM	<b>1.6543E+00</b>	1.348E-01	1.887E-01	5.254E-02	pCi/g	0.803
U-234	7USR	0	12/17/2007 2:24:48 PM	<b>1.177E+00</b>	6.29E-02	1.152E-01	1.897E-02	pCi/g	0.927
U-235	7USR	0	12/17/2007 2:24:48 PM	<b>3.5586E-02</b>	1.117E-02	1.155E-02	1.897E-02	pCi/g	0.927
U-238	7USR	0	12/17/2007 2:24:48 PM	<b>7.1977E-01</b>	4.924E-02	7.684E-02	2.119E-02	pCi/g	0.927
<b>TRNC/D-6RD</b>	<b>9KCKD910</b>		<b>F7K1901523</b>	TSB-FR-05-0'	Solid	11/19/2007 8:45:00	11/16/2007 7:35:00 AM		
RA-226DA	AXT9	0	12/15/2007 10:51:54	<b>8.706E-01</b>	8.02E-02	8.02E-02	7.243E-02	PCI/GRAM	5.06E+1
RA-228DA	AXT9	0	12/15/2007 10:51:54	<b>1.766E+00</b>	1.545E-01	1.545E-01	1.472E-01	PCI/GRAM	5.06E+1
TH-228	D2S1	0	12/10/2007 2:17:09 PM	<b>1.5819E+00</b>	1.199E-01	1.738E-01	4.354E-02	pCi/g	0.959
TH-230	D2S1	0	12/10/2007 2:17:09 PM	<b>1.1342E+00</b>	1.004E-01	1.35E-01	4.251E-02	pCi/g	0.959
TH-232	D2S1	0	12/10/2007 2:17:09 PM	<b>1.4626E+00</b>	1.14E-01	1.629E-01	4.251E-02	pCi/g	0.959
U-234	7USR	0	12/17/2007 6:20:07 PM	<b>2.9746E-01</b>	3.057E-02	3.898E-02	1.968E-02	pCi/g	0.956
U-235	7USR	0	12/17/2007 6:20:07 PM	<b>7.483E-03</b>	5.508E-03	5.541E-03	1.968E-02	pCi/g	0.956
U-238	7USR	0	12/17/2007 6:20:07 PM	<b>1.7087E-01</b>	2.338E-02	2.72E-02	2.433E-02	pCi/g	0.956
<b>TRNC/D-6RD</b>	<b>9KCKE110</b>		<b>F7K19015214</b>	TSB-GJ-01-0'	Solid	11/19/2007 8:45:00	11/16/2007 11:50:00 AM		
RA-226DA	AXT9	0	12/17/2007 10:43:38	<b>1.0092E+00</b>	7.41E-02	7.41E-02	6.289E-02	PCI/GRAM	5.07E+1
RA-228DA	AXT9	0	12/17/2007 10:43:38	<b>1.8672E+00</b>	1.498E-01	1.498E-01	1.135E-01	PCI/GRAM	5.07E+1
TH-228	D2S1	0	12/11/2007 7:13:27 PM	<b>1.4668E+00</b>	1.214E-01	1.685E-01	4.812E-02	pCi/g	0.878
TH-230	D2S1	0	12/11/2007 7:13:27 PM	<b>1.1247E+00</b>	1.051E-01	1.381E-01	4.692E-02	pCi/g	0.878
TH-232	D2S1	0	12/11/2007 7:13:27 PM	<b>1.4383E+00</b>	1.188E-01	1.65E-01	4.692E-02	pCi/g	0.878
U-234	7USR	0	12/17/2007 6:05:40 PM	<b>4.3885E-01</b>	3.839E-02	5.263E-02	2.108E-02	pCi/g	0.923
U-235	7USR	0	12/17/2007 6:05:40 PM	<b>8.6833E-03</b>	5.861E-03	5.904E-03	1.887E-02	pCi/g	0.923
U-238	7USR	0	12/17/2007 6:05:40 PM	<b>2.959E-01</b>	3.152E-02	3.979E-02	1.887E-02	pCi/g	0.923
<b>TRNC/D-6RD</b>	<b>9KCKE210</b>		<b>F7K19015215</b>	TSB-GJ-01-5'	Solid	11/19/2007 8:45:00	11/16/2007 12:10:00 PM		
RA-226DA	AXT9	0	12/17/2007 10:44:42	<b>9.1352E-01</b>	7.756E-02	7.756E-02	6.628E-02	PCI/GRAM	5.25E+1
RA-228DA	AXT9	0	12/17/2007 10:44:42	<b>1.5775E+00</b>	1.737E-01	1.737E-01	1.389E-01	PCI/GRAM	5.25E+1
TH-228	D2S1	0	12/11/2007 7:13:27 PM	<b>1.8648E+00</b>	1.289E-01	1.965E-01	6.094E-02	pCi/g	0.954
TH-230	D2S1	0	12/11/2007 7:13:27 PM	<b>1.1922E+00</b>	1.016E-01	1.39E-01	4.144E-02	pCi/g	0.954
TH-232	D2S1	0	12/11/2007 7:13:27 PM	<b>1.7286E+00</b>	1.224E-01	1.84E-01	4.144E-02	pCi/g	0.954
U-234	7USR	0	12/17/2007 6:21:21 PM	<b>5.4504E-01</b>	4.207E-02	6.126E-02	2.374E-02	pCi/g	0.833
U-235	7USR	0	12/17/2007 6:21:21 PM	<b>2.5156E-02</b>	9.145E-03	9.373E-03	1.545E-02	pCi/g	0.833
U-238	7USR	0	12/17/2007 6:21:21 PM	<b>2.3543E-01</b>	2.778E-02	3.379E-02	2.374E-02	pCi/g	0.833
<b>TRNC/D-6RD</b>	<b>9KCKEA10</b>		<b>F7K1901524</b>	TSB-FR-05-10'	Solid	11/19/2007 8:45:00	11/16/2007 7:50:00 AM		
RA-226DA	AXT9	0	12/14/2007 12:52:55	<b>1.0698E+00</b>	8.976E-02	8.976E-02	6.979E-02	PCI/GRAM	5.11E+1
RA-228DA	AXT9	0	12/14/2007 12:52:55	<b>1.7395E+00</b>	1.475E-01	1.475E-01	1.44E-01	PCI/GRAM	5.11E+1
TH-228	D2S1	0	12/10/2007 2:17:09 PM	<b>1.6255E+00</b>	1.221E-01	1.778E-01	6.266E-02	pCi/g	0.927
TH-230	D2S1	0	12/10/2007 2:17:09 PM	<b>1.138E+00</b>	1.008E-01	1.354E-01	4.265E-02	pCi/g	0.927
TH-232	D2S1	0	12/10/2007 2:17:09 PM	<b>1.5192E+00</b>	1.165E-01	1.678E-01	5.032E-02	pCi/g	0.927
U-234	7USR	0	12/17/2007 6:21:01 PM	<b>8.7355E-01</b>	5.439E-02	9.001E-02	2.763E-02	pCi/g	0.872

7327117,7327117, \*\*Samples Inserted | Updated | NotUpdated => 0 | 0 | 19,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 2 | 0 | 35.  
 \*\*Diff RptDb | Qtimes => .

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix Cnt Uncert	Received Date Tot Uncert	Sample Date mga	Units	Expected	Yield	Volumes
U-235	7USR	0	12/17/2007 6:21:01	PM2.6247E-02	9.541E-03	9.782E-03	1.612E-02	pCi/g		0.872	2.04E+0
U-238	7USR	0	12/17/2007 6:21:01	PM5.5926E-01	4.351E-02	6.325E-02	2.312E-02	pCi/g		0.872	2.04E+0
<b>TRNC/D-6RD</b>	<b>9KCKEC10</b>		<b>F7K1901525</b>	TSB-FR-04-0'	Solid	11/19/2007 8:45:00	11/16/2007 8:15:00 AM				
RA-226DA	AXT9	0	12/15/2007 10:53:31	1.025E+00	7.852E-02	7.852E-02	7.622E-02	PCI/GRAM			5.16E+1
RA-228DA	AXT9	0	12/15/2007 10:53:31	2.0197E+00	1.733E-01	1.733E-01	1.563E-01	PCI/GRAM			5.16E+1
TH-228	D2S1	0	12/10/2007 2:17:09	PM1.5965E+00	1.323E-01	1.834E-01	5.244E-02	pCi/g		0.985	1.01E+0
TH-230	D2S1	0	12/10/2007 2:17:09	PM1.1117E+00	1.09E-01	1.404E-01	5.12E-02	pCi/g		0.985	1.01E+0
TH-232	D2S1	0	12/10/2007 2:17:09	PM1.6889E+00	1.344E-01	1.9E-01	5.12E-02	pCi/g		0.985	1.01E+0
U-234	7USR	0	12/17/2007 2:25:09	PM5.2651E-01	4.073E-02	5.908E-02	1.775E-02	pCi/g		0.936	2.0E+0
U-235	7USR	0	12/17/2007 2:25:09	PM5.6544E-03	4.487E-03	4.51E-03	1.505E-02	pCi/g		0.936	2.0E+0
U-238	7USR	0	12/17/2007 2:25:09	PM2.821E-01	2.981E-02	3.761E-02	1.505E-02	pCi/g		0.936	2.0E+0
<b>TRNC/D-6RD</b>	<b>9KCKED10</b>		<b>F7K1901526</b>	TSB-FR-04-0'-FD	Solid	11/19/2007 8:45:00	11/16/2007 8:15:00 AM				
RA-226DA	AXT9	0	12/15/2007 10:55:15	8.1417E-01	6.833E-02	6.833E-02	6.009E-02	PCI/GRAM			5.07E+1
RA-228DA	AXT9	0	12/15/2007 10:55:15	1.7318E+00	1.44E-01	1.44E-01	1.117E-01	PCI/GRAM			5.07E+1
TH-228	D2S1	0	12/10/2007 6:11:09	PM1.5166E+00	1.398E-01	1.849E-01	8.085E-02	pCi/g		0.684	1.03E+0
TH-230	D2S1	0	12/10/2007 6:11:09	PM9.7021E-01	1.105E-01	1.349E-01	7.065E-02	pCi/g		0.684	1.03E+0
TH-232	D2S1	0	12/10/2007 6:11:09	PM1.5478E+00	1.392E-01	1.861E-01	5.988E-02	pCi/g		0.684	1.03E+0
U-234	7USR	0	12/17/2007 2:25:13	PM6.622E-01	4.743E-02	7.215E-02	1.626E-02	pCi/g		0.884	2.01E+0
U-235	7USR	0	12/17/2007 2:25:13	PM1.3584E-02	6.826E-03	6.916E-03	1.626E-02	pCi/g		0.884	2.01E+0
U-238	7USR	0	12/17/2007 2:25:13	PM3.7694E-01	3.578E-02	4.731E-02	1.626E-02	pCi/g		0.884	2.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKEE10</b>		<b>F7K1901527</b>	TSB-FR-04-10'	Solid	11/19/2007 8:45:00	11/16/2007 8:50:00 AM				
RA-226DA	AXT9	0	12/15/2007 10:56:28	7.9761E-01	7.471E-02	7.471E-02	6.034E-02	PCI/GRAM			5.32E+1
RA-228DA	AXT9	0	12/15/2007 10:56:28	1.4835E+00	1.638E-01	1.638E-01	1.327E-01	PCI/GRAM			5.32E+1
TH-228	D2S1	0	12/10/2007 6:11:09	PM1.8915E+00	1.78E-01	2.34E-01	8.017E-02	pCi/g		0.532	1.0E+0
TH-230	D2S1	0	12/10/2007 6:11:09	PM1.0424E+00	1.308E-01	1.552E-01	7.825E-02	pCi/g		0.532	1.0E+0
TH-232	D2S1	0	12/10/2007 6:11:09	PM1.3202E+00	1.471E-01	1.813E-01	7.825E-02	pCi/g		0.532	1.0E+0
U-234	7USR	0	12/17/2007 2:25:21	PM5.501E-01	4.207E-02	6.152E-02	1.541E-02	pCi/g		0.892	2.02E+0
U-235	7USR	0	12/17/2007 2:25:21	PM6.434E-03	4.595E-03	4.625E-03	1.541E-02	pCi/g		0.892	2.02E+0
U-238	7USR	0	12/17/2007 2:25:21	PM2.9596E-01	3.086E-02	3.919E-02	1.541E-02	pCi/g		0.892	2.02E+0
<b>TRNC/D-6RD</b>	<b>9KCKEG10</b>		<b>F7K1901528</b>	TSB-GR-01-0'	Solid	11/19/2007 8:45:00	11/16/2007 10:20:00 AM				
RA-226DA	AXT9	0	12/15/2007 10:57:19	1.0503E+00	9.069E-02	9.069E-02	8.202E-02	PCI/GRAM			5.39E+1
RA-228DA	AXT9	0	12/15/2007 10:57:19	1.6987E+00	1.659E-01	1.659E-01	1.586E-01	PCI/GRAM			5.39E+1
TH-228	D2S1	0	12/10/2007 6:11:09	PM2.2258E+00	1.644E-01	2.421E-01	8.3E-02	pCi/g		0.7	1.03E+0
TH-230	D2S1	0	12/10/2007 6:11:09	PM1.2834E+00	1.232E-01	1.602E-01	5.649E-02	pCi/g		0.7	1.03E+0
TH-232	D2S1	0	12/10/2007 6:11:09	PM1.9651E+00	1.525E-01	2.187E-01	6.665E-02	pCi/g		0.7	1.03E+0
U-234	7USR	0	12/17/2007 2:25:24	PM4.5721E-01	4.264E-02	5.73E-02	1.904E-02	pCi/g		0.738	2.03E+0
U-235	7USR	0	12/17/2007 2:25:24	PM-7.9515E-04	4.054E-03	4.055E-03	1.904E-02	pCi/g		0.738	2.03E+0
U-238	7USR	0	12/17/2007 2:25:24	PM3.4191E-01	3.688E-02	4.668E-02	1.904E-02	pCi/g		0.738	2.03E+0
<b>TRNC/D-6RD</b>	<b>9KCKEJ10</b>		<b>F7K1901529</b>	TSB-GR-01-5'	Solid	11/19/2007 8:45:00	11/16/2007 10:40:00 AM				
RA-226DA	AXT9	0	12/15/2007 10:59:26	8.6449E-01	7.51E-02	7.51E-02	7.298E-02	PCI/GRAM			4.84E+1
RA-228DA	AXT9	0	12/15/2007 10:59:26	1.682E+00	1.505E-01	1.505E-01	1.406E-01	PCI/GRAM			4.84E+1
TH-228	D2S1	0	12/10/2007 6:11:09	PM1.6707E+00	1.446E-01	1.965E-01	5.981E-02	pCi/g		0.855	1.02E+0
TH-230	D2S1	0	12/10/2007 6:11:09	PM1.158E+00	1.188E-01	1.504E-01	5.838E-02	pCi/g		0.855	1.02E+0
TH-232	D2S1	0	12/10/2007 6:11:09	PM1.4627E+00	1.335E-01	1.772E-01	5.838E-02	pCi/g		0.855	1.02E+0
U-234	7USR	0	12/17/2007 2:25:40	PM2.4435E-01	2.875E-02	3.503E-02	2.293E-02	pCi/g		0.932	2.01E+0
U-235	7USR	0	12/17/2007 2:25:40	PM1.6691E-02	7.494E-03	7.618E-03	1.599E-02	pCi/g		0.932	2.01E+0
U-238	7USR	0	12/17/2007 2:25:40	PM1.629E-01	2.338E-02	2.692E-02	1.599E-02	pCi/g		0.932	2.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKEK10</b>		<b>F7K19015210</b>	TSB-GJ-06-0'	Solid	11/19/2007 8:45:00	11/16/2007 11:15:00 AM				
RA-226DA	AXT9	0	12/17/2007 10:37:58	9.9109E-01	8.488E-02	8.488E-02	7.38E-02	PCI/GRAM			5.1E+1
RA-228DA	AXT9	0	12/17/2007 10:37:58	1.9285E+00	1.745E-01	1.745E-01	1.493E-01	PCI/GRAM			5.1E+1
TH-228	D2S1	0	12/11/2007 3:25:19	PM2.3259E+00	1.506E-01	2.386E-01	6.132E-02	pCi/g		0.92	1.01E+0
TH-230	D2S1	0	12/11/2007 3:25:19	PM1.3797E+00	1.145E-01	1.587E-01	5.355E-02	pCi/g		0.92	1.01E+0
TH-232	D2S1	0	12/11/2007 3:25:19	PM1.8649E+00	1.33E-01	1.993E-01	4.539E-02	pCi/g		0.92	1.01E+0
U-234	7USR	0	12/17/2007 2:25:59	PM5.5858E-01	4.123E-02	6.126E-02	1.456E-02	pCi/g		0.904	2.01E+0

7327117,7327117, \*\*Samples Inserted | Updated | NotUpdated => 0 | 0 | 19,  
\*\*Results Inserted | ReTestInserted | Updated | NotInserted => 2 | 0 | 0 | 35.  
\*\*Diff RptDb | Qtimes => .

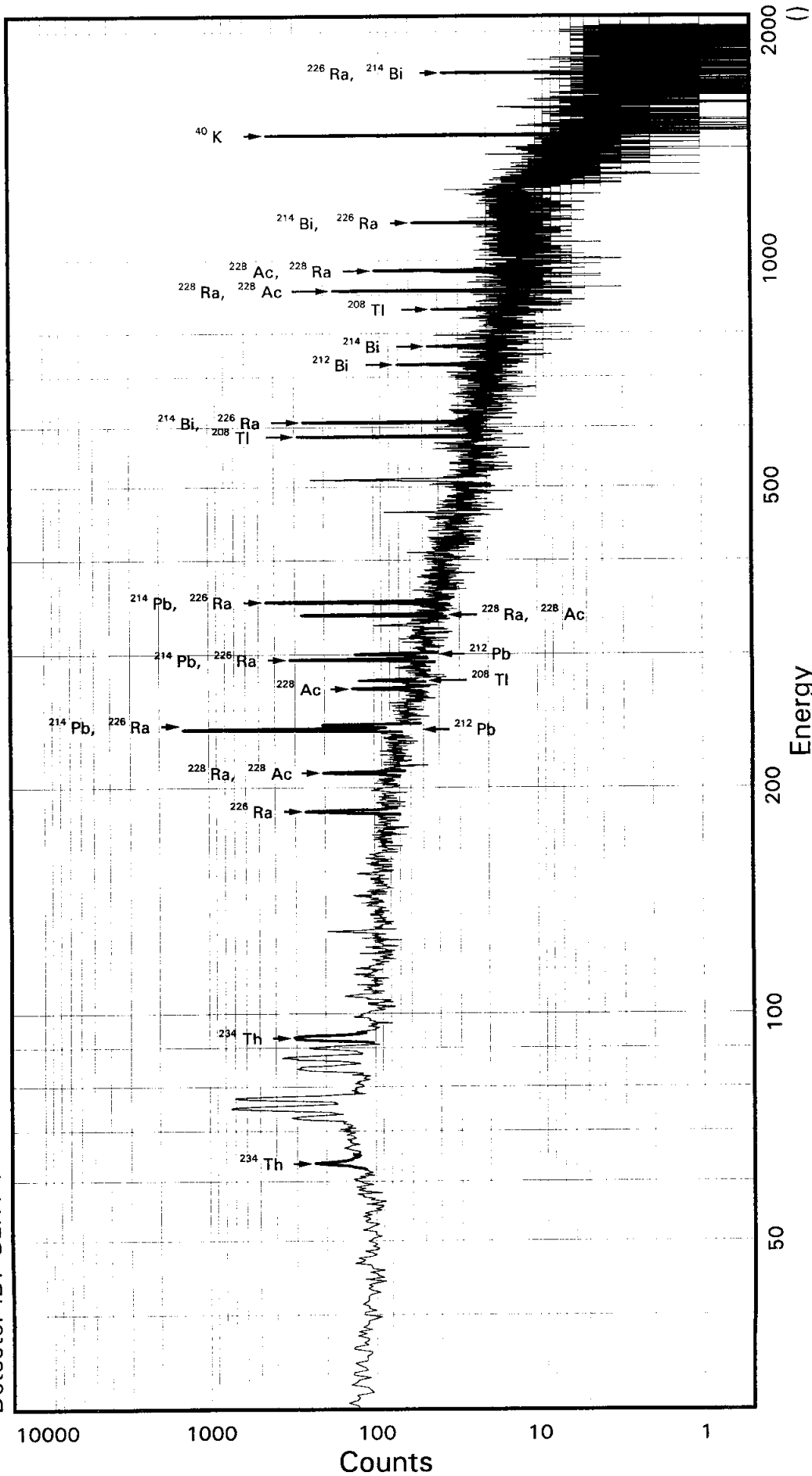
SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix Cnt Uncert	Received Date Tot uncert	Sample Date ivga	Units	Expected	Yield	Volumes
U-235	7USR	0	12/17/2007 2:25:59 PM	2.7351E-02	9.137E-03	9.403E-03	1.456E-02	pCi/g		0.904	2.01E+0
U-238	7USR	0	12/17/2007 2:25:59 PM	3.1788E-01	3.115E-02	4.044E-02	1.717E-02	pCi/g		0.904	2.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKEL10</b>		<b>F7K19015211</b>	TSB-GJ-06-5'	Solid	11/19/2007 8:45:00	11/16/2007 11:25:00 AM				
RA-226DA	AXT9	0	12/17/2007 10:39:31	1.003E+00	7.555E-02	7.555E-02	6.957E-02	PCI/GRAM			5.15E+1
RA-228DA	AXT9	0	12/17/2007 10:39:31	1.6801E+00	1.494E-01	1.494E-01	1.365E-01	PCI/GRAM			5.15E+1
TH-228	D2S1	0	12/11/2007 3:25:19 PM	1.7488E+00	1.473E-01	2.03E-01	5.94E-02	pCi/g		0.704	1.02E+0
TH-230	D2S1	0	12/11/2007 3:25:19 PM	1.1226E+00	1.167E-01	1.471E-01	5.794E-02	pCi/g		0.704	1.02E+0
TH-232	D2S1	0	12/11/2007 3:25:19 PM	1.546E+00	1.369E-01	1.843E-01	5.794E-02	pCi/g		0.704	1.02E+0
U-234	7USR	0	12/17/2007 2:26:02 PM	3.2565E-01	3.512E-02	4.436E-02	1.814E-02	pCi/g		0.768	2.02E+0
U-235	7USR	0	12/17/2007 2:26:02 PM	3.0293E-03	3.862E-03	3.87E-03	1.814E-02	pCi/g		0.768	2.02E+0
U-238	7USR	0	12/17/2007 2:26:02 PM	2.84E-01	3.28E-02	4.043E-02	1.814E-02	pCi/g		0.768	2.02E+0
<b>TRNC/D-6RD</b>	<b>9KCKEM10</b>		<b>F7K19015212</b>	TSB-FJ-01-0'	Solid	11/19/2007 8:45:00	11/16/2007 9:16:00 AM				
RA-226DA	AXT9	0	12/17/2007 10:40:18	1.0426E+00	7.817E-02	7.817E-02	7.687E-02	PCI/GRAM			4.87E+1
RA-228DA	AXT9	0	12/17/2007 10:40:18	1.8364E+00	1.569E-01	1.569E-01	1.65E-01	PCI/GRAM			4.87E+1
TH-228	D2S1	0	12/11/2007 3:25:19 PM	2.1224E+00	1.45E-01	2.226E-01	6.774E-02	pCi/g		0.858	1.03E+0
TH-230	D2S1	0	12/11/2007 3:25:19 PM	1.3543E+00	1.142E-01	1.571E-01	4.607E-02	pCi/g		0.858	1.03E+0
TH-232	D2S1	0	12/11/2007 3:25:19 PM	1.8333E+00	1.33E-01	1.974E-01	5.435E-02	pCi/g		0.858	1.03E+0
U-234	7USR	0	12/17/2007 2:26:40 PM	6.1002E-01	4.431E-02	6.665E-02	1.604E-02	pCi/g		0.961	2.01E+0
U-235	7USR	0	12/17/2007 2:26:40 PM	1.8516E-02	7.887E-03	8.03E-03	1.604E-02	pCi/g		0.961	2.01E+0
U-238	7USR	0	12/17/2007 2:26:40 PM	4.6137E-01	3.858E-02	5.391E-02	1.907E-02	pCi/g		0.961	2.01E+0
<b>TRNC/D-6RD</b>	<b>9KCKET10</b>		<b>F7K19015213</b>	TSB-FJ-01-10'	Solid	11/19/2007 8:45:00	11/16/2007 9:50:00 AM				
RA-226DA	AXT9	0	12/17/2007 10:42:37	9.0054E-01	7.498E-02	7.498E-02	6.517E-02	PCI/GRAM			5.1E+1
RA-228DA	AXT9	0	12/17/2007 10:42:37	1.7935E+00	1.397E-01	1.397E-01	1.226E-01	PCI/GRAM			5.1E+1
TH-228	D2S1	0	12/11/2007 7:13:27 PM	1.4771E+00	1.224E-01	1.697E-01	6.368E-02	pCi/g		0.887	1.01E+0
TH-230	D2S1	0	12/11/2007 7:13:27 PM	1.159E+00	1.069E-01	1.412E-01	4.712E-02	pCi/g		0.887	1.01E+0
TH-232	D2S1	0	12/11/2007 7:13:27 PM	1.8673E+00	1.356E-01	2.012E-01	4.712E-02	pCi/g		0.887	1.01E+0
U-234	7USR	0	12/17/2007 6:05:31 PM	3.4355E-01	3.552E-02	4.552E-02	1.754E-02	pCi/g		0.802	2.01E+0
U-235	7USR	0	12/17/2007 6:05:31 PM	1.3918E-02	7.362E-03	7.452E-03	1.754E-02	pCi/g		0.802	2.01E+0
U-238	7USR	0	12/17/2007 6:05:31 PM	1.8606E-01	2.617E-02	3.037E-02	1.754E-02	pCi/g		0.802	2.01E+0
<b>TRNC/D-6RD</b>	<b>KCKEC1ER</b>		<b>F7K1901525</b>	TSB-FR-04-0' DUP	Solid	11/19/2007 8:45:00	11/16/2007 8:15:00 AM				
RA-226DA	AXT9	0 R	12/15/2007 10:54:26	7.4339E-01	6.423E-02	6.423E-02	6.044E-02	PCI/GRAM			5.17E+1
RA-228DA	AXT9	0 R	12/15/2007 10:54:26	1.7543E+00	1.393E-01	1.393E-01	1.212E-01	PCI/GRAM			5.17E+1
<b>TRNC/D-6RD</b>	<b>KCKEM1ER</b>		<b>F7K19015212</b>	TSB-FJ-01-0' DUP	Solid	11/19/2007 8:45:00	11/16/2007 9:16:00 AM				
RA-226DA	AXT9	0 R	12/17/2007 10:41:22	9.8409E-01	8.478E-02	8.478E-02	7.285E-02	PCI/GRAM			4.85E+1
RA-228DA	AXT9	0 R	12/17/2007 10:41:22	1.9288E+00	1.608E-01	1.608E-01	1.484E-01	PCI/GRAM			4.85E+1
<b>TRNC/D-6RD</b>	<b>KCR6V1AB</b>		<b>J7K230000117</b>	INTRA-LAB BLANK	Solid	11/19/2007 8:45:00	11/16/2007 8:15:00 AM				
RA-226DA	AXT9	0 B	12/15/2007 11:00:45	-1.3949E-01	7.615E-02	7.615E-02	1.711E-01	PCI/GRAM			2.516E+1
RA-228DA	AXT9	0 B	12/15/2007 11:00:45	3.0961E-01	1.419E-01	1.419E-01	3.098E-01	PCI/GRAM			2.516E+1
<b>TRNC/D-6RD</b>	<b>KCR6V1CS</b>		<b>J7K230000117</b>	INTRA-LAB CHECK	Solid	11/19/2007 8:45:00	11/16/2007 8:15:00 AM				
CS-137	AXT9	0 S	12/17/2007 10:46:23	8.3173E+00	5.673E-01	5.673E-01	6.426E-02	PCI/GRAM	7.9847E+00		2.53E+1

7327117,7327117, \*\*Samples Inserted | Updated | NotUpdated => 0 | 0 | 19,  
\*\*Results Inserted | ReTestInserted | Updated | NotInserted => 2 | 0 | 0 | 35.  
\*\*Diff RptDb | Qtims => .

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKD61AA  
Detector ID: GER4 1



Energy Coefficients:  
Offset: -3.17665E-02  
Slope: 2.48772E-01  
Quadrature: 1.53505E-08

Acquisition Start: 14-DEC-2007 12:52:23.03  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCKD61AA

CONFIGURATION ID: GER4:KCKD61AA\_141271252  
TITLE : BRCO SOLID  
SAMPLE ID : KCKD61AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 14-DEC-07 12:52:23  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 06:40:00.00  
CALIB DATE: 14-DEC-2007 06:03:54.11  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:17

SAMPLE QUANTITY: 5.2300E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.3177E-01 keV  
ENERGY SLOPE: 2.4877E-01 keV/C  
ENERGY Q COEFF: 1.5351E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.0383E-01 keV  
FWHM SLOPE: 4.4742E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 30.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:40:06

Configuration : \$DISK1:[GER4.SAMPLE]KCKD61AA\_141271252.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 06:40:00 Acquisition date : 14-DEC-2007 12:52:23  
 Sample ID : KCKD61AA Sample quantity : 52.300 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.45 0.0%  
 Start energy : 19.87 End energy : 2038.94  
 Sensitivity : 5.00 Gaussian : 30.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.35*	229	1477	0.58	254.78	250	12	3.82E-03	37.5	
2	2	72.88*	48	1412	0.83	293.08	286	30	7.96E-04	185.2	3.16E+00
3	2	74.96*	1214	1361	0.84	301.44	286	30	2.02E-02	8.1	
4	2	77.20	2124	1292	0.84	310.46	286	30	3.54E-02	3.9	
5	5	84.61*	448	1594	1.15	340.25	333	24	7.46E-03	23.1	2.14E+00
6	5	87.24*	876	1447	1.02	350.81	333	24	1.46E-02	10.4	
7	0	89.97	578	1113	0.94	361.76	357	10	9.64E-03	11.6	
8	0	92.85*	842	1424	1.50	373.35	367	13	1.40E-02	11.4	
9	0	105.39	241	1130	0.90	423.76	418	12	4.02E-03	28.6	
10	0	129.07	323	795	0.71	518.92	515	9	5.39E-03	16.7	
11	0	186.01*	625	1178	1.24	747.80	741	15	1.04E-02	16.0	
12	0	209.22	514	1014	0.99	841.11	834	13	8.57E-03	13.5	
13	6	238.61*	5366	787	1.01	959.23	953	25	8.94E-02	1.9	4.24E+00
14	6	241.61	1183	738	1.77	971.28	953	25	1.97E-02	5.7	
15	0	270.13	427	969	1.16	1085.92	1079	18	7.11E-03	17.7	
16	0	277.16	204	561	0.81	1114.17	1110	10	3.40E-03	22.7	
17	0	295.13*	1175	780	1.08	1186.38	1178	16	1.96E-02	7.0	
18	0	300.21	360	634	0.97	1206.82	1201	13	6.00E-03	15.4	
19	0	327.91	221	636	1.03	1318.14	1313	12	3.69E-03	23.7	
20	0	338.28	1084	569	1.09	1359.83	1353	13	1.81E-02	5.5	
21	0	351.89	2302	837	1.28	1414.51	1406	22	3.84E-02	3.8	
22	0	409.73	137	402	0.95	1646.95	1641	12	2.28E-03	30.8	
23	0	462.54	275	656	1.25	1859.20	1849	22	4.58E-03	24.5	
24	0	510.97*	778	878	1.49	2053.82	2040	30	1.30E-02	13.9	
25	0	583.08*	1414	460	1.39	2343.63	2333	20	2.36E-02	5.4	
26	0	609.30*	1259	605	1.35	2448.98	2435	25	2.10E-02	6.7	
27	0	726.92	324	399	1.30	2921.64	2911	21	5.41E-03	14.2	
28	0	768.42	141	346	0.88	3088.41	3078	21	2.36E-03	29.2	
29	0	794.95	200	306	1.36	3194.98	3184	23	3.33E-03	20.5	
30	0	860.48	223	213	1.24	3458.29	3449	19	3.72E-03	14.9	
31	0	911.10*	987	324	1.49	3661.68	3649	25	1.64E-02	6.4	
32	0	968.13	747	455	1.77	3890.82	3872	33	1.24E-02	8.1	
33	0	1120.22*	261	336	1.79	4501.87	4490	24	4.35E-03	18.3	
34	0	1460.66*	3403	163	2.18	5869.46	5851	36	5.67E-02	2.2	
35	3	1764.36*	164	67	2.38	7089.30	7072	29	2.74E-03	17.0	1.06E+01
36	3	1765.78	200	24	2.18	7095.00	7072	29	3.34E-03	8.3	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER4.SAMPLE]KCKD61AA\_141271252.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 06:40:00 Acquisition date : 14-DEC-2007 12:52:23  
 Sample ID : KCKD61AA Sample quantity : 52.300 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.45 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	3403	10.67*	1.116E+00	2.462E+01	2.462E+01	6.45
TL-208	277.28	204	6.31	5.101E+00	5.461E-01	5.619E-01	23.54
	583.02	1414	84.50*	2.700E+00	5.339E-01	5.493E-01	8.16
	860.30	223	12.42	1.867E+00	8.301E-01	8.540E-01	16.43
PB-212	238.58	5366	43.30*	5.714E+00	1.868E+00	1.922E+00	6.37
	300.03	360	3.28	4.787E+00	1.973E+00	2.030E+00	16.60
BI-214	609.31	1259	46.09*	2.593E+00	9.072E-01	9.072E-01	9.09
	768.35	141	4.94	2.084E+00	1.183E+00	1.183E+00	29.90
	1120.27	261	15.10	1.438E+00	1.036E+00	1.036E+00	19.40
PB-214	1764.49	164	15.40	9.527E-01	9.638E-01	9.638E-01	18.01
	241.92	1183	7.43	5.662E+00	2.423E+00	2.423E+00	8.36
	295.09	1175	19.30	4.853E+00	1.081E+00	1.081E+00	9.30
RA-226DA	351.87	2302	37.60*	4.201E+00	1.255E+00	1.255E+00	7.16
	186.21	625	3.50	6.712E+00	2.292E+00	2.292E+00	17.12
	241.98	1183	7.49	5.662E+00	2.403E+00	2.403E+00	8.36
	295.22	1175	19.20	4.853E+00	1.086E+00	1.087E+00	9.30
	351.92	2302	37.20	4.201E+00	1.269E+00	1.269E+00	7.16
	609.32	1259	46.30*	2.593E+00	9.030E-01	9.031E-01	9.09
AC-228	1120.28	261	15.10	1.438E+00	1.036E+00	1.036E+00	19.40
	1238.11	-----	5.94	1.304E+00	-----	Line Not Found	-----
	1764.49	164	15.80	9.527E-01	9.394E-01	9.394E-01	18.01
	209.39	514	3.89	6.255E+00	1.819E+00	1.837E+00	14.79
	270.26	427	3.46	5.204E+00	2.040E+00	2.059E+00	18.77
	338.42	1084	11.27	4.341E+00	1.909E+00	1.927E+00	8.19
RA-228DA	911.16	987	25.80*	1.765E+00	1.866E+00	1.884E+00	9.54
	968.97	747	15.80	1.662E+00	2.450E+00	2.473E+00	10.66
	209.28	514	4.40	6.255E+00	1.609E+00	1.624E+00	14.79
	338.32	1084	11.40	4.341E+00	1.887E+00	1.905E+00	8.19
	911.07	987	27.70*	1.765E+00	1.738E+00	1.755E+00	9.54
TH-234	964.60	-----	5.20	1.668E+00	-----	Line Not Found	-----
	969.11	747	16.60	1.662E+00	2.332E+00	2.354E+00	10.66
	63.29	229	4.82*	2.758E+00	1.484E+00	1.484E+00	38.03
	92.59	842	6.08	6.293E+00	1.896E+00	1.896E+00	13.03

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.88	48	1412	0.83	293.08	286	30	7.96E-04	****	4.14E+00	
2	74.96	1214	1361	0.84	301.44	286	30	2.02E-02	8.1	4.42E+00	
2	77.20	2124	1292	0.84	310.46	286	30	3.54E-02	3.9	4.71E+00	
5	84.61	448	1594	1.15	340.25	333	24	7.46E-03	23.1	5.56E+00	
5	87.24	876	1447	1.02	350.81	333	24	1.46E-02	10.4	5.82E+00	
0	89.97	578	1113	0.94	361.76	357	10	9.64E-03	11.6	6.06E+00	
0	105.39	241	1130	0.90	423.76	418	12	4.02E-03	28.6	7.02E+00	
0	129.07	323	795	0.71	518.92	515	9	5.39E-03	16.7	7.48E+00	
0	327.91	221	636	1.03	1318.14	1313	12	3.69E-03	23.7	4.45E+00	
0	409.73	137	402	0.95	1646.95	1641	12	2.28E-03	30.8	3.69E+00	
0	462.54	275	656	1.25	1859.20	1849	22	4.58E-03	24.5	3.32E+00	
0	510.97	778	878	1.49	2053.82	2040	30	1.30E-02	13.9	3.04E+00	
0	726.92	324	399	1.30	2921.64	2911	21	5.41E-03	14.2	2.20E+00	T
0	794.95	200	306	1.36	3194.98	3184	23	3.33E-03	20.5	2.02E+00	
3	1765.78	200	24	2.18	7095.00	7072	29	3.34E-03	8.3	9.52E-01	

Flags: "T" = Tentatively associated



Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	1.988E+00	15.60	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =			71.76				

Flag: "\*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 18-DEC-2007 07:40:08

Configuration : \$DISK1:[GER4.SAMPLE]KCKD61AA\_141271252.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 06:40:00 Acquisition date : 14-DEC-2007 12:52:23  
 Sample ID : KCKD61AA Sample quantity : 52.300 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.45 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.462E+01	1.589E+00	3.680E-01	1.256E-02	66.906
TL-208	5.493E-01	4.481E-02	3.701E-02	1.294E-03	14.840
PB-212	1.922E+00	1.224E-01	5.095E-02	1.757E-03	37.724
BI-214	9.072E-01	8.249E-02	7.288E-02	2.619E-03	12.447
PB-214	1.255E+00	8.995E-02	6.392E-02	2.179E-03	19.640
RA-226DA	9.031E-01	8.212E-02	7.255E-02	2.607E-03	12.447
AC-228	1.884E+00	1.797E-01	1.554E-01	7.706E-03	12.121
RA-228DA	1.755E+00	1.674E-01	1.447E-01	7.177E-03	12.123
TH-234	1.484E+00	5.645E-01	9.510E-01	3.341E-02	1.561

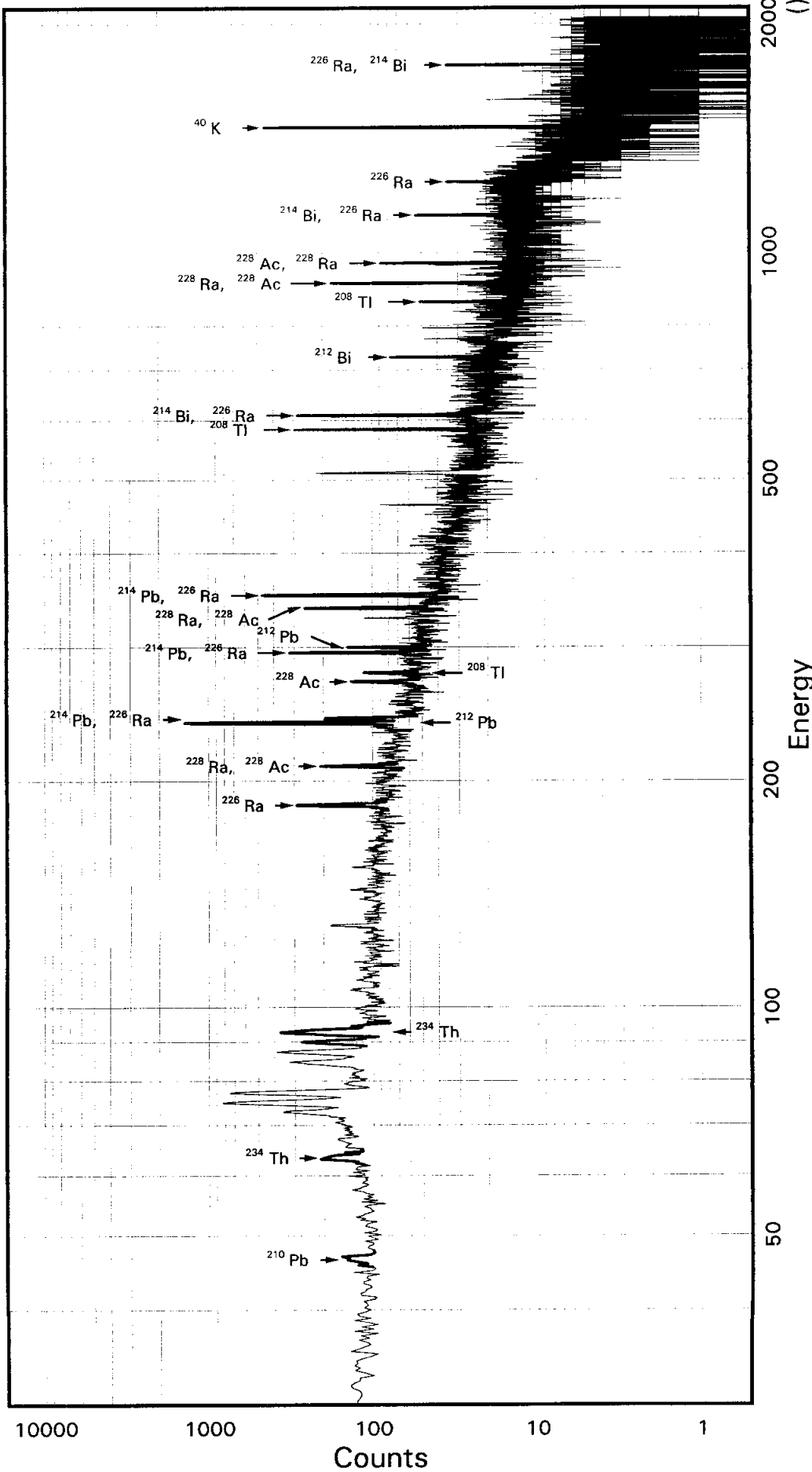
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	5.533E-02		5.039E-02	1.707E-01	5.835E-03	0.324
CO-60	-2.158E-03		1.322E-02	4.552E-02	1.546E-03	-0.047
CS-137	-8.758E-03		1.151E-02	3.866E-02	1.459E-03	-0.227
PB-210	-1.187E+00		1.630E+00	4.471E+00	5.396E-01	-0.265
BI-212	1.988E+00	+	3.101E-01	7.536E-01	3.099E-02	2.638
TH-227	9.320E-02		6.068E-02	1.785E-01	6.142E-03	0.522
AM-241	5.275E-02		4.711E-02	1.603E-01	5.479E-03	0.329

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKD81AA  
Detector ID: GER4 1



Energy Coefficients:  
Offset: -4.12644E-02  
Slope: 2.48806E-01  
Quadrature: 1.34332E-08

Acquisition Start: 15-DEC-2007 10:51:03.54  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCKD81AA

CONFIGURATION ID: GER4:KCKD81AA\_151271051  
TITLE : BRCO SOLID  
SAMPLE ID : KCKD81AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 15-DEC-07 10:51:03  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 07:05:00.00  
CALIB DATE: 15-DEC-2007 08:35:12.38  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:17

SAMPLE QUANTITY: 5.1900E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.4126E-01 keV  
ENERGY SLOPE: 2.4881E-01 keV/C  
ENERGY Q COEFF: 1.3433E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.8329E-01 keV  
FWHM SLOPE: 4.1583E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 50.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:40:39

Configuration : \$DISK1:[GER4.SAMPLE]KCKD81AA\_151271051.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 07:05:00 Acquisition date : 15-DEC-2007 10:51:03  
 Sample ID : KCKD81AA Sample quantity : 51.900 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.46 0.0%  
 Start energy : 19.86 End energy : 2039.08  
 Sensitivity : 5.00 Gaussian : 50.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.54*	114	1001	0.84	187.21	183	10	1.90E-03	59.7	
2	0	63.41*	325	1258	0.98	255.01	250	11	5.41E-03	24.5	
3	3	72.89*	244	1758	0.98	293.12	286	37	4.06E-03	40.6	1.99E+00
4	3	74.94*	1608	1506	0.90	301.37	286	37	2.68E-02	6.5	
5	3	77.19	2417	1376	0.90	310.40	286	37	4.03E-02	3.7	
6	5	84.69*	431	1738	1.23	340.54	333	24	7.18E-03	24.9	1.04E+00
7	5	87.28*	865	1387	0.99	350.94	333	24	1.44E-02	10.5	
8	5	89.99	593	1008	0.90	361.83	357	28	9.89E-03	10.3	1.82E+00
9	5	92.87*	984	1534	1.26	373.42	357	28	1.64E-02	10.6	
10	0	129.03	351	1057	0.92	518.76	513	11	5.85E-03	18.7	
11	0	185.89*	703	1316	1.14	747.27	739	16	1.17E-02	15.0	
12	0	209.22	566	966	1.02	841.01	835	13	9.43E-03	12.1	
13	5	238.62*	5108	828	1.00	959.18	952	27	8.51E-02	2.0	2.53E+00
14	5	241.44	1032	961	1.66	970.52	952	27	1.72E-02	7.8	
15	0	270.22	445	821	1.14	1086.16	1079	15	7.42E-03	14.8	
16	0	277.34	192	718	0.86	1114.80	1110	13	3.20E-03	29.6	
17	0	295.24*	1077	819	1.03	1186.73	1179	16	1.80E-02	7.7	
18	0	300.16	388	764	0.85	1206.51	1199	16	6.47E-03	16.7	
19	0	328.07	286	589	0.94	1318.66	1312	13	4.77E-03	18.5	
20	0	338.29	1024	628	1.16	1359.73	1353	14	1.71E-02	6.1	
21	0	351.83	2248	686	1.14	1414.12	1404	19	3.75E-02	3.5	
22	0	462.83	335	404	1.26	1860.18	1852	16	5.58E-03	14.5	
23	0	511.03*	736	852	1.69	2053.87	2044	27	1.23E-02	14.3	
24	0	583.21*	1375	456	1.30	2343.92	2334	19	2.29E-02	5.5	
25	0	609.26*	1345	562	1.37	2448.57	2438	23	2.24E-02	6.1	
26	0	727.34	368	436	1.17	2923.03	2910	26	6.14E-03	14.1	
27	0	794.95	175	226	1.45	3194.66	3187	15	2.91E-03	17.8	
28	0	860.55	194	283	1.68	3458.24	3449	20	3.23E-03	19.4	
29	0	911.22*	1059	327	1.72	3661.83	3648	28	1.77E-02	6.2	
30	0	968.77	517	582	1.50	3893.04	3875	31	8.62E-03	12.4	
31	0	1120.41*	285	299	2.02	4502.23	4489	25	4.75E-03	16.4	
32	0	1238.33	92	274	1.50	4975.94	4965	19	1.54E-03	38.1	
33	0	1377.97	81	92	1.44	5536.86	5528	19	1.34E-03	27.0	
34	0	1460.74*	3391	222	2.24	5869.30	5851	36	5.65E-02	2.4	
35	0	1764.40*	267	43	2.10	7088.94	7071	38	4.44E-03	10.6	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER4.SAMPLE]KCKD81AA\_151271051.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 07:05:00 Acquisition date : 15-DEC-2007 10:51:03  
 Sample ID : KCKD81AA Sample quantity : 51.900 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.46 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	3391	10.67*	1.116E+00	2.472E+01	2.472E+01	6.51
TL-208	277.28	192	6.31	5.099E+00	5.174E-01	5.328E-01	30.23
	583.02	1375	84.50*	2.699E+00	5.233E-01	5.389E-01	8.20
	860.30	194	12.42	1.867E+00	7.258E-01	7.474E-01	20.65
	46.52	114	4.25*	6.217E-01	3.742E+00	3.752E+00	61.14
PB-210	238.58	5108	43.30*	5.713E+00	1.792E+00	1.846E+00	6.40
	300.03	388	3.28	4.788E+00	2.147E+00	2.211E+00	17.82
BI-214	609.31	1345	46.09*	2.593E+00	9.768E-01	9.768E-01	8.63
	768.35	-----	4.94	2.084E+00	-----	Line Not Found	-----
	1120.27	285	15.10	1.438E+00	1.140E+00	1.140E+00	17.59
	1764.49	267	15.40	9.527E-01	1.577E+00	1.577E+00	12.16
PB-214	241.92	1032	7.43	5.665E+00	2.127E+00	2.127E+00	9.86
	295.09	1077	19.30	4.852E+00	9.987E-01	9.987E-01	9.83
RA-226DA	351.87	2248	37.60*	4.201E+00	1.235E+00	1.235E+00	6.99
	186.21	703	3.50	6.714E+00	2.596E+00	2.596E+00	16.13
	241.98	1032	7.49	5.665E+00	2.110E+00	2.110E+00	9.86
	295.22	1077	19.20	4.852E+00	1.004E+00	1.004E+00	9.83
	351.92	2248	37.20	4.201E+00	1.249E+00	1.249E+00	6.99
	609.32	1345	46.30*	2.593E+00	9.724E-01	9.724E-01	8.63
AC-228	1120.28	285	15.10	1.438E+00	1.140E+00	1.140E+00	17.59
	1238.11	92	5.94	1.304E+00	1.034E+00	1.034E+00	38.62
	1764.49	267	15.80	9.527E-01	1.537E+00	1.537E+00	12.16
	209.39	566	3.89	6.255E+00	2.019E+00	2.039E+00	13.49
	270.26	445	3.46	5.203E+00	2.145E+00	2.166E+00	16.03
RA-228DA	338.42	1024	11.27	4.341E+00	1.816E+00	1.834E+00	8.60
	911.16	1059	25.80*	1.765E+00	2.019E+00	2.039E+00	9.36
	968.97	517	15.80	1.661E+00	1.711E+00	1.727E+00	14.23
	209.28	566	4.40	6.255E+00	1.785E+00	1.802E+00	13.49
	338.32	1024	11.40	4.341E+00	1.796E+00	1.813E+00	8.60
TH-234	911.07	1059	27.70*	1.765E+00	1.881E+00	1.899E+00	9.36
	964.60	-----	5.20	1.668E+00	-----	Line Not Found	-----
	969.11	517	16.60	1.661E+00	1.628E+00	1.644E+00	14.23
TH-234	63.29	325	4.82*	2.766E+00	2.114E+00	2.114E+00	25.24
	92.59	984	6.08	6.294E+00	2.231E+00	2.231E+00	12.32

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.89	244	1758	0.98	293.12	286	37	4.06E-03	40.6	4.14E+00	
3	74.94	1608	1506	0.90	301.37	286	37	2.68E-02	6.5	4.42E+00	
3	77.19	2417	1376	0.90	310.40	286	37	4.03E-02	3.7	4.71E+00	
5	84.69	431	1738	1.23	340.54	333	24	7.18E-03	24.9	5.57E+00	
5	87.28	865	1387	0.99	350.94	333	24	1.44E-02	10.5	5.82E+00	
5	89.99	593	1008	0.90	361.83	357	28	9.89E-03	10.3	6.06E+00	
0	129.03	351	1057	0.92	518.76	513	11	5.85E-03	18.7	7.48E+00	
0	328.07	286	589	0.94	1318.66	1312	13	4.77E-03	18.5	4.45E+00	
0	462.83	335	404	1.26	1860.18	1852	16	5.58E-03	14.5	3.32E+00	
0	511.03	736	852	1.69	2053.87	2044	27	1.23E-02	14.3	3.04E+00	
0	727.34	368	436	1.17	2923.03	2910	26	6.14E-03	14.1	2.20E+00	T
0	794.95	175	226	1.45	3194.66	3187	15	2.91E-03	17.8	2.02E+00	
0	1377.97	81	92	1.44	5536.86	5528	19	1.34E-03	27.0	1.18E+00	

Flags: "T" = Tentatively associated

Rejected Report  
Sample ID : KCKD81AA

Page : 3  
Acquisition date : 15-DEC-2007 10:51:03

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	2.278E+00	15.52	Abun.
			785.51	1.10	---	---	Not Found
			1620.66	1.49	---	---	Not Found
% Abundances Found =				71.76			

Flag: "\*" = Keyline



Configuration : \$DISK1:[GER4.SAMPLE]KCKD81AA\_151271051.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 07:05:00 Acquisition date : 15-DEC-2007 10:51:03  
 Sample ID : KCKD81AA Sample quantity : 51.900 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.46 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.472E+01	1.608E+00	3.941E-01	1.344E-02	62.742
TL-208	5.389E-01	4.421E-02	3.684E-02	1.288E-03	14.628
PB-210	3.752E+00	2.294E+00	4.569E+00	5.513E-01	0.821
PB-212	1.846E+00	1.180E-01	5.176E-02	1.785E-03	35.656
BI-214	9.768E-01	8.433E-02	7.228E-02	2.597E-03	13.514
PB-214	1.235E+00	8.638E-02	6.141E-02	2.094E-03	20.114
RA-226DA	9.724E-01	8.395E-02	7.195E-02	2.586E-03	13.514
AC-228	2.039E+00	1.910E-01	1.461E-01	7.246E-03	13.952
RA-228DA	1.899E+00	1.779E-01	1.361E-01	6.749E-03	13.954
TH-234	2.114E+00	5.334E-01	1.025E+00	3.601E-02	2.062

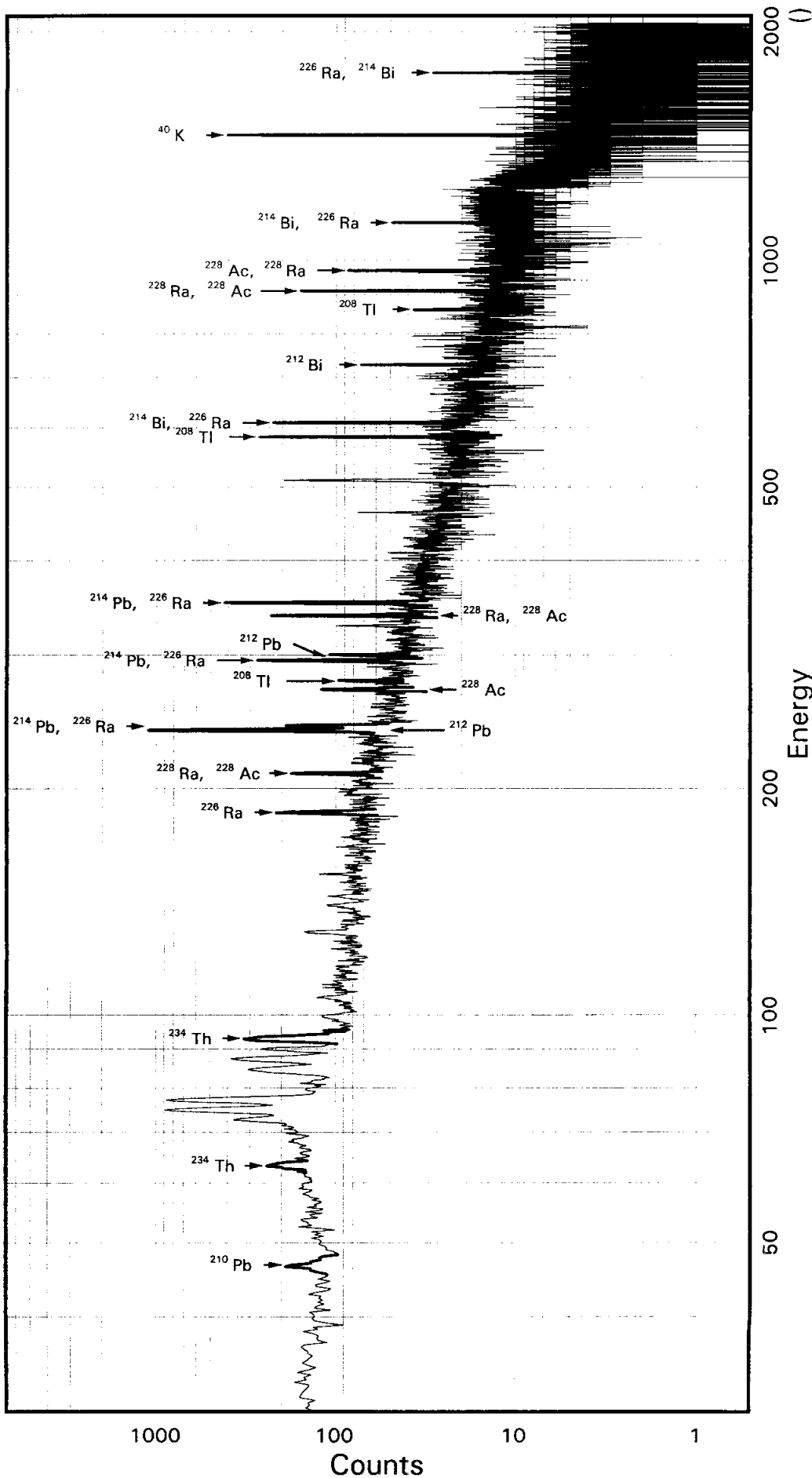
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-9.352E-03		5.277E-02	1.743E-01	5.958E-03	-0.054
CO-60	-7.180E-03		1.279E-02	4.286E-02	1.455E-03	-0.168
CS-137	-3.079E-02		1.170E-02	3.749E-02	1.415E-03	-0.821
BI-212	2.278E+00	+	3.536E-01	7.600E-01	3.125E-02	2.998
TH-227	1.611E-01		6.391E-02	1.876E-01	6.455E-03	0.858
AM-241	-4.872E-02		5.038E-02	1.640E-01	5.606E-03	-0.297

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKD91AA  
Detector ID: GER7 1



Energy Coefficients:  
Offset: 6.66495E-01  
Slope: 2.49228E-01  
Quadrature: 1.62076E-07

Acquisition Start: 15-DEC-2007 10:51:53.92  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCKD91AA

CONFIGURATION ID: GER7:KCKD91AA\_151271051  
TITLE : BRCO SOLID  
SAMPLE ID : KCKD91AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 15-DEC-07 10:51:53  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 07:35:00.00  
CALIB DATE: 15-DEC-2007 08:35:45.93  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:09

SAMPLE QUANTITY: 5.0600E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 6.6649E-01 keV  
ENERGY SLOPE: 2.4923E-01 keV/C  
ENERGY Q COEFF: 1.6208E-07 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.7611E-01 keV  
FWHM SLOPE: 3.5556E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 40.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:41:07

Configuration : \$DISK1:[GER7.SAMPLE]KCKD91AA\_151271051.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 07:35:00 Acquisition date : 15-DEC-2007 10:51:53  
 Sample ID : KCKD91AA Sample quantity : 50.600 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.51 0.0%  
 Start energy : 20.61 End energy : 2053.22  
 Sensitivity : 5.00 Gaussian : 40.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.80*	219	1363	0.62	185.09	179	13	3.66E-03	40.6	
2	0	63.31*	265	1486	1.11	251.29	246	10	4.42E-03	32.7	
3	2	72.83*	271	2094	1.06	289.50	280	36	4.51E-03	41.8	1.37E+00
4	2	74.91*	2164	2000	1.06	297.83	280	36	3.61E-02	5.7	
5	2	77.15*	3201	1867	1.08	306.81	280	36	5.34E-02	3.6	
6	6	84.64*	486	1839	1.50	336.87	329	25	8.10E-03	24.2	4.41E-01
7	6	87.28*	1089	1524	1.23	347.45	329	25	1.82E-02	9.2	
8	0	89.96	654	1100	1.01	358.19	354	10	1.09E-02	10.3	
9	0	93.10*	1164	1886	1.59	370.78	364	20	1.94E-02	10.7	
10	0	129.08	364	986	1.35	515.05	510	12	6.07E-03	18.0	
11	0	154.09	180	901	0.63	615.33	610	12	3.01E-03	34.1	
12	0	185.91*	481	1047	1.16	742.90	736	16	8.02E-03	18.8	
13	0	209.29	428	738	0.98	836.64	831	12	7.13E-03	13.6	
14	4	238.59*	4962	802	1.09	954.07	946	28	8.27E-02	2.0	2.28E+00
15	4	241.50	964	879	1.65	965.73	946	28	1.61E-02	8.0	
16	0	270.07	448	632	1.37	1080.21	1074	15	7.47E-03	13.1	
17	0	277.01	227	729	1.11	1108.01	1100	16	3.78E-03	27.4	
18	0	295.12*	1040	648	1.14	1180.54	1173	17	1.73E-02	7.3	
19	0	300.14	245	544	1.00	1200.66	1195	12	4.09E-03	20.0	
20	0	327.84	407	805	1.25	1311.62	1303	23	6.78E-03	18.7	
21	0	338.27	973	589	1.15	1353.42	1345	15	1.62E-02	6.3	
22	0	351.75*	1878	670	1.10	1407.41	1396	20	3.13E-02	4.6	
23	0	462.93	247	360	1.02	1852.55	1846	16	4.12E-03	18.3	
24	0	510.82*	232	679	2.01	2044.20	2032	26	3.87E-03	43.9	
25	0	583.07*	1396	489	1.40	2333.28	2319	28	2.33E-02	5.7	
26	0	609.20*	1120	497	1.52	2437.82	2427	24	1.87E-02	6.8	
27	0	727.08	326	345	1.23	2909.15	2898	23	5.43E-03	13.7	
28	0	794.78	192	197	2.40	3179.74	3171	16	3.19E-03	15.8	
29	0	861.45	267	342	2.18	3446.08	3432	35	4.45E-03	19.1	
30	0	911.08	920	374	1.59	3644.30	3631	27	1.53E-02	5.9	
31	0	969.06	447	621	1.60	3875.83	3856	32	7.45E-03	14.8	
32	0	1120.25	251	239	1.44	4479.15	4469	22	4.18E-03	14.7	
33	0	1460.73*	3299	184	2.12	5836.20	5817	41	5.50E-02	2.3	
34	0	1765.02	200	108	2.13	7046.99	7028	38	3.33E-03	14.4	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER7.SAMPLE]KCKD91AA_151271051.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 07:35:00 Acquisition date : 15-DEC-2007 10:51:53
Sample ID         : KCKD91AA           Sample quantity  : 50.600 GRAMS
Sample type      :                     Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:09.51   0.0%
Energy tolerance  : 1.50               Half life ratio   : 8.00
Errors propagated: Yes                 Systematic Error  : 5.00 %
Efficiency type   : Empirical           Efficiencies at   : Peak Energy
Abundance limit   : 80.00
    
```

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	3299	10.67*	1.071E+00	2.570E+01	2.570E+01	6.55
TL-208	277.28	227	6.31	4.817E+00	6.636E-01	6.833E-01	28.23
	583.02	1396	84.50*	2.572E+00	5.718E-01	5.888E-01	8.47
	860.30	267	12.42	1.786E+00	1.072E+00	1.104E+00	20.19
	46.52	219	4.25*	1.912E+00	2.403E+00	2.409E+00	41.62
PB-210	238.58	4962	43.30*	5.432E+00	1.878E+00	1.934E+00	6.95
	300.03	245	3.28	4.512E+00	1.476E+00	1.520E+00	21.09
BI-214	609.31	1120	46.09*	2.473E+00	8.745E-01	8.746E-01	9.21
	768.35	-----	4.94	1.994E+00	-----	Line Not Found	-----
	1120.27	251	15.10	1.379E+00	1.074E+00	1.074E+00	15.90
PB-214	1764.49	200	15.40	9.186E-01	1.257E+00	1.257E+00	15.58
	241.92	964	7.43	5.380E+00	2.147E+00	2.147E+00	10.36
	295.09	1040	19.30	4.575E+00	1.048E+00	1.048E+00	9.85
	351.87	1878	37.60*	3.960E+00	1.123E+00	1.123E+00	7.76
RA-226DA	186.21	481	3.50	6.565E+00	1.863E+00	1.863E+00	19.94
	241.98	964	7.49	5.380E+00	2.130E+00	2.130E+00	10.36
	295.22	1040	19.20	4.575E+00	1.054E+00	1.054E+00	9.85
	351.92	1878	37.20	3.960E+00	1.135E+00	1.135E+00	7.76
	609.32	1120	46.30*	2.473E+00	8.706E-01	8.706E-01	9.21
	1120.28	251	15.10	1.379E+00	1.074E+00	1.074E+00	15.90
AC-228	1238.11	-----	5.94	1.250E+00	-----	Line Not Found	-----
	1764.49	200	15.80	9.186E-01	1.225E+00	1.225E+00	15.58
	209.39	428	3.89	6.015E+00	1.628E+00	1.644E+00	15.15
	270.26	448	3.46	4.918E+00	2.345E+00	2.368E+00	14.65
	338.42	973	11.27	4.090E+00	1.880E+00	1.899E+00	8.96
	911.16	920	25.80*	1.691E+00	1.878E+00	1.896E+00	8.75
RA-228DA	968.97	447	15.80	1.591E+00	1.582E+00	1.597E+00	16.14
	209.28	428	4.40	6.015E+00	1.439E+00	1.453E+00	15.15
	338.32	973	11.40	4.090E+00	1.859E+00	1.877E+00	8.96
	911.07	920	27.70*	1.691E+00	1.749E+00	1.766E+00	8.75
TH-234	964.60	-----	5.20	1.599E+00	-----	Line Not Found	-----
	969.11	447	16.60	1.591E+00	1.506E+00	1.520E+00	16.14
	63.29	265	4.82*	5.160E+00	9.483E-01	9.483E-01	33.26
	92.59	1164	6.08	8.151E+00	2.091E+00	2.091E+00	12.28

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	72.83	271	2094	1.06	289.50	280	36	4.51E-03	41.8	6.61E+00	
2	74.91	2164	2000	1.06	297.83	280	36	3.61E-02	5.7	6.86E+00	
2	77.15	3201	1867	1.08	306.81	280	36	5.34E-02	3.6	7.10E+00	
6	84.64	486	1839	1.50	336.87	329	25	8.10E-03	24.2	7.73E+00	
6	87.28	1089	1524	1.23	347.45	329	25	1.82E-02	9.2	7.89E+00	
0	89.96	654	1100	1.01	358.19	354	10	1.09E-02	10.3	8.03E+00	
0	129.08	364	986	1.35	515.05	510	12	6.07E-03	18.0	8.08E+00	
0	154.09	180	901	0.63	615.33	610	12	3.01E-03	34.1	7.42E+00	
0	327.84	407	805	1.25	1311.62	1303	23	6.78E-03	18.7	4.20E+00	
0	462.93	247	360	1.02	1852.55	1846	16	4.12E-03	18.3	3.14E+00	
0	510.82	232	679	2.01	2044.20	2032	26	3.87E-03	43.9	2.89E+00	
0	727.08	326	345	1.23	2909.15	2898	23	5.43E-03	13.7	2.10E+00	T
0	794.78	192	197	2.40	3179.74	3171	16	3.19E-03	15.8	1.93E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	2.159E+00	15.07	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =			71.76				

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER7.SAMPLE]KCKD91AA_151271051.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
Analyses by       : MINACT V2.8
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 07:35:00 Acquisition date : 15-DEC-2007 10:51:53
Sample ID        : KCKD91AA Sample quantity : 50.600 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.51 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00 WTM error limit : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.570E+01	1.682E+00	3.971E-01	1.412E-02	64.719
TL-208	5.888E-01	4.985E-02	3.588E-02	1.345E-03	16.412
PB-210	2.409E+00	1.003E+00	1.784E+00	1.384E-01	1.351
PB-212	1.934E+00	1.344E-01	5.247E-02	2.293E-03	36.859
BI-214	8.746E-01	8.056E-02	7.276E-02	2.700E-03	12.020
PB-214	1.123E+00	8.716E-02	6.559E-02	2.465E-03	17.125
RA-226DA	8.706E-01	8.020E-02	7.243E-02	2.688E-03	12.020
AC-228	1.896E+00	1.659E-01	1.580E-01	6.400E-03	12.000
RA-228DA	1.766E+00	1.545E-01	1.472E-01	5.961E-03	12.001
TH-234	9.483E-01	3.154E-01	6.627E-01	2.077E-02	1.431

---- Non-Identified Nuclides ----

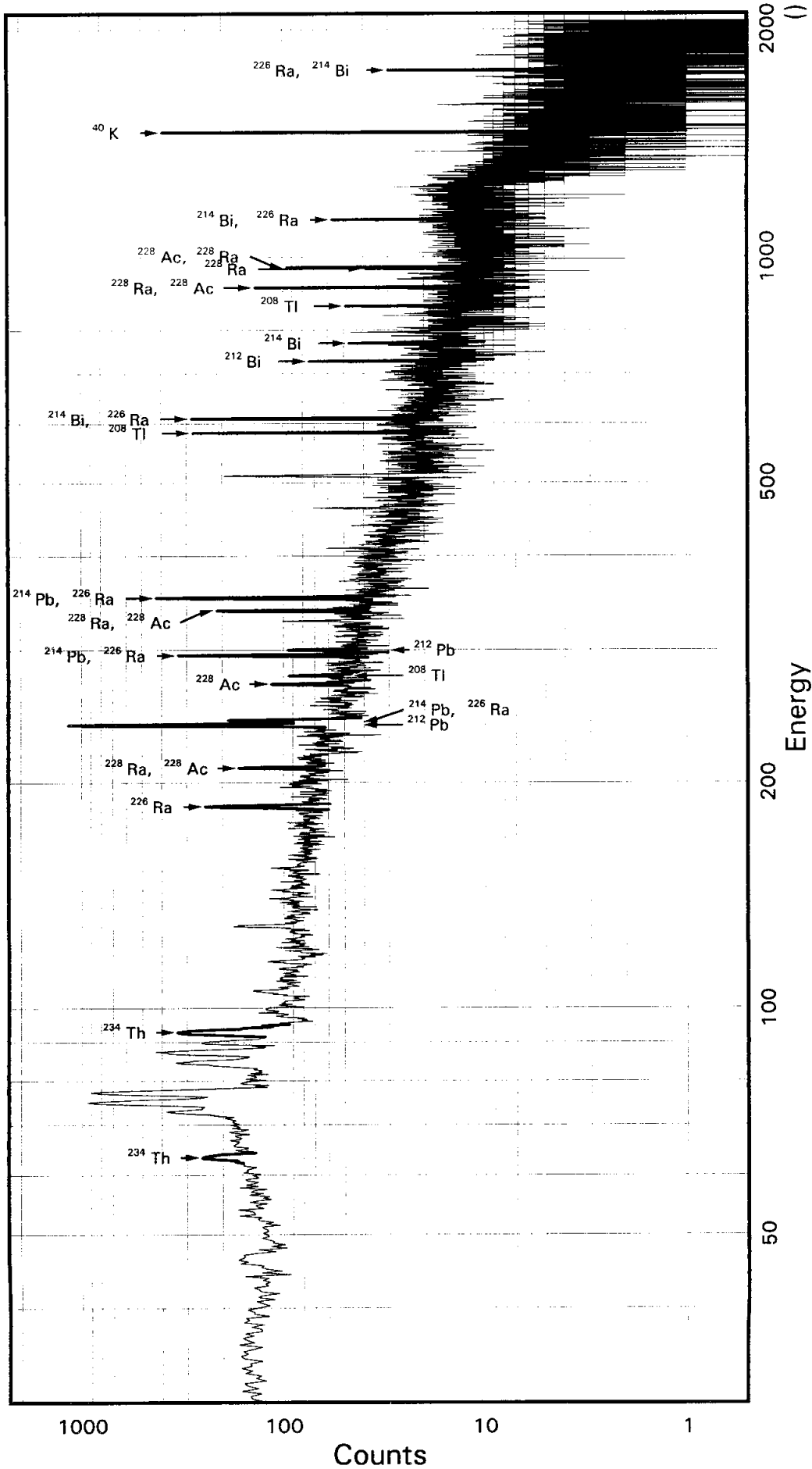
Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-8.460E-02		5.009E-02	1.639E-01	5.720E-03	-0.516
CO-60	6.992E-03		1.227E-02	4.288E-02	1.532E-03	0.163
CS-137	-1.098E-02		1.175E-02	3.912E-02	1.406E-03	-0.281
BI-212	2.159E+00	+	3.254E-01	7.796E-01	2.929E-02	2.769
TH-227	1.613E-01		6.577E-02	1.953E-01	8.532E-03	0.826
AM-241	1.927E-02		3.114E-02	1.011E-01	3.276E-03	0.191



**STL Richland WA.  
BRCO SOLID**

Batch ID: 7327117

Sample ID: KCKEA1AA  
Detector ID: GER7 1



Energy Coefficients:  
Offset: 6.45827E-01  
Slope: 2.49243E-01  
Quadrature: 1.55750E-07

Acquisition Start: 14-DEC-2007 12:52:54.52  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION:

KCKEA1AA

CONFIGURATION ID: GER7:KCKEA1AA\_141271252  
TITLE : BRCO SOLID  
SAMPLE ID : KCKEA1AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 14-DEC-07 12:52:54  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 07:50:00.00  
CALIB DATE: 14-DEC-2007 06:04:43.92  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:09

SAMPLE QUANTITY: 5.1100E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 6.4583E-01 keV  
ENERGY SLOPE: 2.4924E-01 keV/C  
ENERGY Q COEFF: 1.5575E-07 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.1926E-01 keV  
FWHM SLOPE: 3.8302E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 20.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:41:57

Configuration : \$DISK1:[GER7.SAMPLE] KCKEA1AA\_141271252.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 07:50:00 Acquisition date : 14-DEC-2007 12:52:54  
 Sample ID : KCKEA1AA Sample quantity : 51.100 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.74 0.0%  
 Start energy : 20.59 End energy : 2052.90  
 Sensitivity : 5.00 Gaussian : 20.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.35*	308	1361	1.05	251.55	247	9	5.13E-03	26.8	
2	5	72.85*	207	2060	0.97	289.63	281	34	3.46E-03	52.7	3.16E+00
3	5	74.89*	2430	2100	1.11	297.83	281	34	4.05E-02	5.2	
4	5	77.18*	3328	1888	1.07	307.02	281	34	5.55E-02	3.5	
5	4	84.62*	337	1970	1.28	336.85	329	25	5.62E-03	34.9	1.53E+00
6	4	87.23*	1056	1726	1.06	347.30	329	25	1.76E-02	9.8	
7	0	89.98	556	1296	1.14	358.36	354	10	9.27E-03	12.8	
8	0	93.02*	1069	1778	1.50	370.55	364	16	1.78E-02	10.7	
9	0	105.02	228	1100	1.41	418.65	413	12	3.79E-03	29.9	
10	0	129.17	418	1158	0.97	515.49	510	14	6.97E-03	18.0	
11	0	186.00*	517	1164	1.21	743.31	735	15	8.62E-03	17.9	
12	0	209.11	489	770	1.03	835.94	830	13	8.14E-03	12.5	
13	6	238.59*	4948	790	1.11	954.09	945	30	8.25E-02	2.0	9.15E-01
14	6	241.52	1198	918	1.94	965.83	945	30	2.00E-02	7.7	
15	0	270.48	450	839	1.21	1081.88	1075	19	7.51E-03	16.2	
16	0	277.34	160	564	1.02	1109.36	1104	11	2.67E-03	29.7	
17	0	295.12*	1236	697	1.16	1180.59	1172	16	2.06E-02	6.3	
18	0	299.79	318	587	1.26	1199.30	1192	15	5.31E-03	17.5	
19	0	328.15	374	530	1.10	1312.94	1305	16	6.23E-03	14.8	
20	0	338.15	913	589	1.30	1352.97	1346	15	1.52E-02	6.7	
21	0	351.83*	1919	596	1.30	1407.76	1400	16	3.20E-02	4.2	
22	0	463.12	373	613	1.69	1853.37	1840	30	6.22E-03	20.0	
23	0	510.79*	448	536	2.08	2044.18	2032	30	7.47E-03	22.3	
24	0	582.99*	1338	494	1.33	2333.05	2324	23	2.23E-02	5.6	
25	0	609.10*	1390	494	1.37	2437.51	2425	25	2.32E-02	5.6	
26	0	727.10	377	333	1.50	2909.33	2899	24	6.28E-03	12.0	
27	0	768.26	188	254	1.17	3073.87	3063	19	3.14E-03	18.7	
28	0	794.78	195	252	1.01	3179.87	3170	20	3.25E-03	18.4	
29	0	835.58	70	213	0.77	3342.89	3337	15	1.16E-03	40.9	
30	0	860.46	214	236	1.14	3442.30	3433	21	3.57E-03	16.7	
31	0	911.01	916	307	1.58	3644.23	3631	26	1.53E-02	5.5	
32	0	964.74	137	247	1.52	3858.77	3847	19	2.29E-03	24.9	
33	0	968.83	552	235	1.47	3875.10	3866	20	9.21E-03	7.2	
34	0	1120.21	389	198	1.79	4479.32	4468	23	6.48E-03	9.5	
35	0	1281.41	90	108	2.06	5122.21	5113	18	1.51E-03	25.3	
36	0	1377.91	143	54	1.16	5506.85	5497	22	2.39E-03	13.9	
37	0	1460.62*	3291	132	2.13	5836.33	5817	36	5.48E-02	2.2	
38	0	1588.02	85	55	1.97	6343.65	6333	19	1.41E-03	19.6	
39	0	1764.39	255	81	2.38	7045.38	7026	34	4.25E-03	10.2	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER7.SAMPLE] KCKEA1AA\_141271252.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 07:50:00 Acquisition date : 14-DEC-2007 12:52:54  
 Sample ID : KCKEA1AA Sample quantity : 51.100 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.74 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	3291	10.67*	1.071E+00	2.539E+01	2.539E+01	6.51
TL-208	277.28	160	6.31	4.813E+00	4.658E-01	4.792E-01	30.45
	583.02	1338	84.50*	2.572E+00	5.425E-01	5.581E-01	8.40
	860.30	214	12.42	1.788E+00	8.497E-01	8.741E-01	17.84
PB-212	238.58	4948	43.30*	5.432E+00	1.854E+00	1.908E+00	6.95
	300.03	318	3.28	4.517E+00	1.894E+00	1.949E+00	18.67
BI-214	609.31	1390	46.09*	2.473E+00	1.075E+00	1.075E+00	8.39
	768.35	188	4.94	1.994E+00	1.686E+00	1.686E+00	19.76
	1120.27	389	15.10	1.379E+00	1.646E+00	1.646E+00	11.22
PB-214	1764.49	255	15.40	9.188E-01	1.588E+00	1.588E+00	11.83
	241.92	1198	7.43	5.379E+00	2.643E+00	2.643E+00	10.15
	295.09	1236	19.30	4.575E+00	1.234E+00	1.234E+00	9.11
RA-226DA	351.87	1919	37.60*	3.959E+00	1.137E+00	1.137E+00	7.53
	186.21	517	3.50	6.563E+00	1.986E+00	1.986E+00	19.02
	241.98	1198	7.49	5.379E+00	2.622E+00	2.622E+00	10.15
AC-228	295.22	1236	19.20	4.575E+00	1.240E+00	1.241E+00	9.11
	351.92	1919	37.20	3.959E+00	1.149E+00	1.149E+00	7.53
	609.32	1390	46.30*	2.473E+00	1.070E+00	1.070E+00	8.39
	1120.28	389	15.10	1.379E+00	1.646E+00	1.646E+00	11.22
	1238.11	-----	5.94	1.250E+00	-----	Line Not Found	-----
RA-228DA	1764.49	255	15.80	9.188E-01	1.548E+00	1.548E+00	11.83
	209.39	489	3.89	6.019E+00	1.840E+00	1.857E+00	14.17
	270.26	450	3.46	4.912E+00	2.336E+00	2.358E+00	17.48
	338.42	913	11.27	4.091E+00	1.746E+00	1.762E+00	9.21
	911.16	916	25.80*	1.691E+00	1.850E+00	1.868E+00	8.48
TH-234	968.97	552	15.80	1.592E+00	1.936E+00	1.955E+00	9.60
	209.28	489	4.40	6.019E+00	1.626E+00	1.642E+00	14.17
	338.32	913	11.40	4.091E+00	1.726E+00	1.742E+00	9.21
	911.07	916	27.70*	1.691E+00	1.723E+00	1.740E+00	8.48
	964.60	137	5.20	1.598E+00	1.457E+00	1.471E+00	25.66
TH-234	969.11	552	16.60	1.592E+00	1.843E+00	1.860E+00	9.60
	63.29	308	4.82*	5.168E+00	1.089E+00	1.089E+00	27.44
	92.59	1069	6.08	8.148E+00	1.903E+00	1.903E+00	12.24

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	72.85	207	2060	0.97	289.63	281	34	3.46E-03	52.7	6.61E+00	
5	74.89	2430	2100	1.11	297.83	281	34	4.05E-02	5.2	6.86E+00	
5	77.18	3328	1888	1.07	307.02	281	34	5.55E-02	3.5	7.11E+00	
4	84.62	337	1970	1.28	336.85	329	25	5.62E-03	34.9	7.73E+00	
4	87.23	1056	1726	1.06	347.30	329	25	1.76E-02	9.8	7.89E+00	
0	89.98	556	1296	1.14	358.36	354	10	9.27E-03	12.8	8.03E+00	
0	105.02	228	1100	1.41	418.65	413	12	3.79E-03	29.9	8.36E+00	
0	129.17	418	1158	0.97	515.49	510	14	6.97E-03	18.0	8.07E+00	
0	328.15	374	530	1.10	1312.94	1305	16	6.23E-03	14.8	4.19E+00	
0	463.12	373	613	1.69	1853.37	1840	30	6.22E-03	20.0	3.14E+00	
0	510.79	448	536	2.08	2044.18	2032	30	7.47E-03	22.3	2.89E+00	
0	727.10	377	333	1.50	2909.33	2899	24	6.28E-03	12.0	2.10E+00	T
0	794.78	195	252	1.01	3179.87	3170	20	3.25E-03	18.4	1.93E+00	
0	835.58	70	213	0.77	3342.89	3337	15	1.16E-03	40.9	1.84E+00	
0	1281.41	90	108	2.06	5122.21	5113	18	1.51E-03	25.3	1.21E+00	
0	1377.91	143	54	1.16	5506.85	5497	22	2.39E-03	13.9	1.13E+00	
0	1588.02	85	55	1.97	6343.65	6333	19	1.41E-03	19.6	9.96E-01	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	2.473E+00	13.51	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER7.SAMPLE]KCKEA1AA\_141271252.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 07:50:00 Acquisition date : 14-DEC-2007 12:52:54  
 Sample ID : KCKEA1AA Sample quantity : 51.100 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.74 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.539E+01	1.652E+00	3.678E-01	1.308E-02	69.034
TL-208	5.581E-01	4.691E-02	3.864E-02	1.449E-03	14.446
PB-212	1.908E+00	1.325E-01	5.010E-02	2.190E-03	38.076
BI-214	1.075E+00	9.017E-02	7.011E-02	2.602E-03	15.329
PB-214	1.137E+00	8.556E-02	6.871E-02	2.583E-03	16.543
RA-226DA	1.070E+00	8.976E-02	6.979E-02	2.590E-03	15.329
AC-228	1.868E+00	1.584E-01	1.546E-01	6.262E-03	12.081
RA-228DA	1.740E+00	1.475E-01	1.440E-01	5.832E-03	12.083
TH-234	1.089E+00	2.987E-01	6.607E-01	2.071E-02	1.648

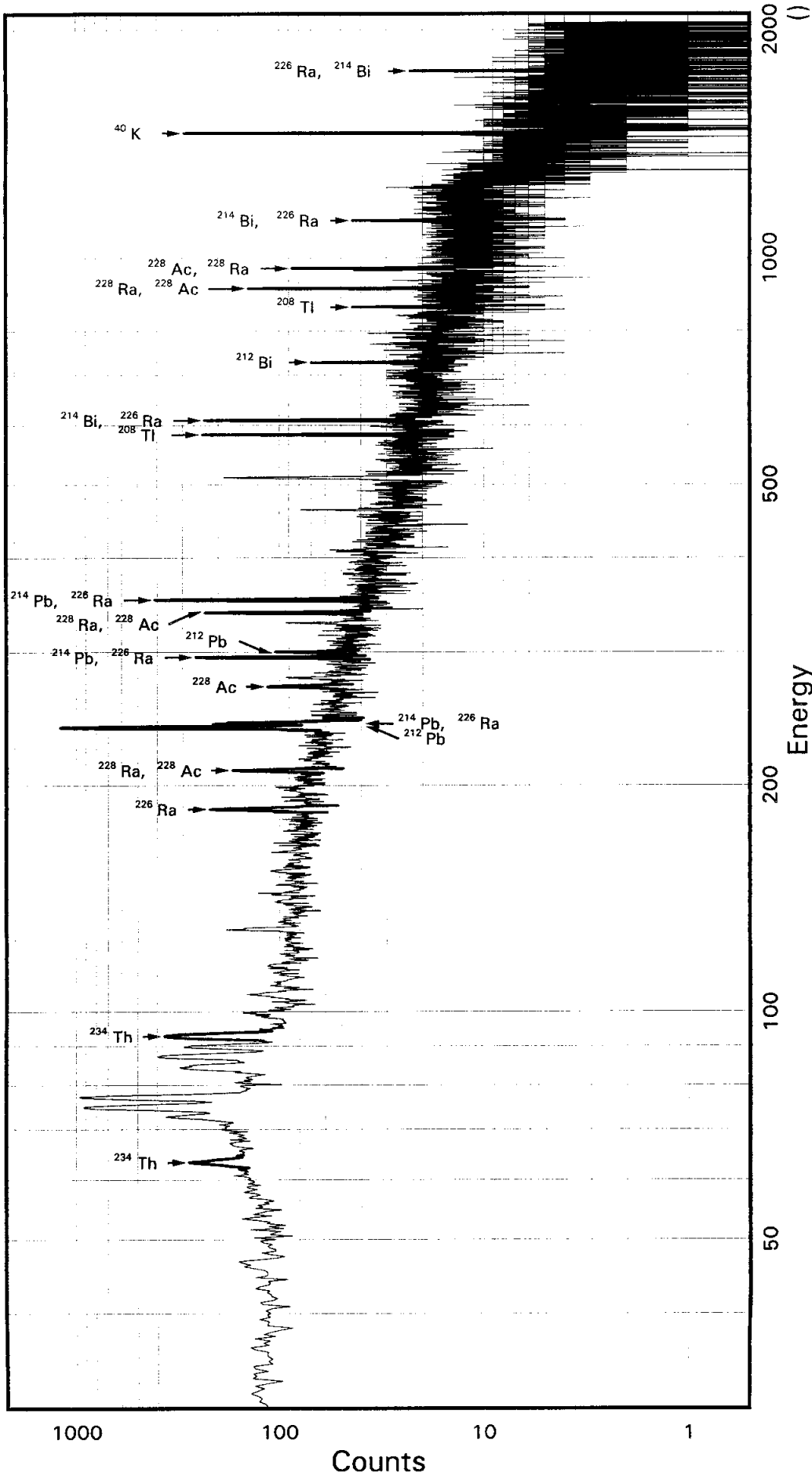
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-2.116E-02		4.990E-02	1.676E-01	5.846E-03	-0.126
CO-60	-4.495E-03		1.332E-02	4.587E-02	1.638E-03	-0.098
CS-137	-3.476E-02		1.194E-02	3.750E-02	1.348E-03	-0.927
PB-210	1.875E+00		7.408E-01	1.963E+00	1.523E-01	0.956
BI-212	2.473E+00	+	3.341E-01	7.801E-01	2.931E-02	3.170
TH-227	1.640E-01		6.626E-02	1.973E-01	8.619E-03	0.831
AM-241	-1.333E-02		2.920E-02	9.751E-02	3.159E-03	-0.137

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKEC1AA  
Detector ID: GER6 1



Acquisition Start: 15-DEC-2007 10:53:30.84  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: 4.51986E-01  
Slope: 2.49294E-01  
Quadrature: 3.89380E-08



SAMPLE IDENTIFICATION: KCKEC1AA

CONFIGURATION ID: GER6:KCKEC1AA\_151271053  
TITLE : BRCO SOLID  
SAMPLE ID : KCKEC1AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 15-DEC-07 10:53:30  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 08:15:00.00  
CALIB DATE: 15-DEC-2007 08:35:30.01  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:11

SAMPLE QUANTITY: 5.1600E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 4.5199E-01 keV  
ENERGY SLOPE: 2.4929E-01 keV/C  
ENERGY Q COEFF: 3.8938E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.6787E-02 keV  
FWHM SLOPE: 7.2645E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 80.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:42:34

Configuration : \$DISK1:[GER6.SAMPLE] KCKEC1AA\_151271053.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 10:53:30  
 Sample ID : KCKEC1AA Sample quantity : 51.600 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:11.05 0.0%  
 Start energy : 20.40 End energy : 2045.29  
 Sensitivity : 5.00 Gaussian : 80.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.25*	250	1810	0.79	251.89	246	12	4.17E-03	38.8	
2	7	74.81*	2267	2244	1.06	298.25	284	30	3.78E-02	5.6	2.02E+00
3	7	77.10	3531	1898	1.01	307.46	284	30	5.89E-02	3.1	
4	8	84.52*	622	1811	1.55	337.21	330	35	1.04E-02	18.2	8.96E-01
5	8	87.22*	1184	1650	1.16	348.04	330	35	1.97E-02	8.9	
6	8	89.89	861	1498	1.04	358.74	330	35	1.44E-02	10.0	
7	0	92.88*	1018	1662	1.49	370.75	365	14	1.70E-02	10.6	
8	0	99.24	273	1326	1.13	396.25	389	14	4.55E-03	28.9	
9	0	129.08	394	1014	1.14	515.92	510	12	6.57E-03	16.9	
10	0	185.99*	654	1123	1.33	744.15	737	17	1.09E-02	14.2	
11	0	209.37	542	939	1.27	837.92	830	14	9.03E-03	12.8	
12	3	238.63*	5846	982	1.18	955.25	945	40	9.74E-02	1.9	2.01E+00
13	3	241.45	1017	1060	1.58	966.57	945	40	1.70E-02	9.7	
14	0	270.10	472	792	1.53	1081.48	1073	17	7.87E-03	14.4	
15	0	295.19	1272	722	1.47	1182.06	1175	17	2.12E-02	5.6	
16	0	300.13	321	691	0.99	1201.88	1194	16	5.35E-03	19.1	
17	0	328.13	356	704	1.41	1314.17	1305	18	5.93E-03	18.3	
18	0	338.28	1038	644	1.41	1354.85	1347	16	1.73E-02	6.3	
19	0	351.85	2222	713	1.32	1409.26	1400	20	3.70E-02	3.6	
20	0	462.96	293	605	1.22	1854.73	1843	22	4.89E-03	19.0	
21	0	510.97*	554	834	2.32	2047.21	2031	38	9.24E-03	18.9	
22	0	582.98	1626	470	1.61	2335.86	2323	25	2.71E-02	3.9	
23	0	609.15	1456	603	1.44	2440.76	2429	27	2.43E-02	4.7	
24	0	727.63	403	465	1.56	2915.63	2904	28	6.71E-03	12.5	
25	0	794.83	173	324	1.61	3184.90	3173	24	2.88E-03	22.2	
26	0	860.34	266	318	1.48	3447.44	3431	31	4.44E-03	16.0	
27	0	911.20	1161	367	2.21	3651.20	3634	33	1.93E-02	4.8	
28	0	968.31	632	522	1.56	3880.03	3862	33	1.05E-02	9.1	
29	0	1120.52	242	370	2.14	4489.80	4475	27	4.03E-03	17.9	
30	9	1460.60*	2367	176	2.96	5851.78	5832	41	3.94E-02	3.1	1.98E+00
31	9	1462.08	946	84	1.66	5857.68	5832	41	1.58E-02	6.3	
32	0	1765.02	247	80	3.75	7070.44	7053	35	4.11E-03	10.0	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER6.SAMPLE]KCKEC1AA_151271053.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 10:53:30
Sample ID        : KCKEC1AA           Sample quantity  : 51.600 GRAMS
Sample type      :                     Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:11.05    0.0%
Energy tolerance : 1.50                Half life ratio   : 8.00
Errors propagated: Yes                  Systematic Error  : 5.00 %
Efficiency type  : Empirical            Efficiencies at   : Peak Energy
Abundance limit  : 80.00
    
```

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma %Error
					PCI/GRAM	PCI/GRAM	
K-40	1460.83	2367	10.67*	1.165E+00	1.662E+01	1.662E+01	8.48
TL-208	277.28	-----	6.31	5.503E+00	-----	Line Not Found	-----
	583.02	1626	84.50*	2.791E+00	6.017E-01	6.196E-01	7.16
	860.30	266	12.42	1.932E+00	9.686E-01	9.974E-01	17.45
PB-212	238.58	5846	43.30*	6.247E+00	1.887E+00	1.943E+00	6.62
	300.03	321	3.28	5.135E+00	1.664E+00	1.714E+00	20.12
BI-214	609.31	1456	46.09*	2.678E+00	1.030E+00	1.030E+00	7.66
	768.35	-----	4.94	2.151E+00	-----	Line Not Found	-----
	1120.27	242	15.10	1.500E+00	9.318E-01	9.319E-01	18.99
	1764.49	247	15.40	9.775E-01	1.430E+00	1.430E+00	11.86
PB-214	241.92	1017	7.43	6.187E+00	1.932E+00	1.932E+00	11.56
	295.09	1272	19.30	5.211E+00	1.104E+00	1.104E+00	8.34
	351.87	2222	37.60*	4.453E+00	1.158E+00	1.159E+00	7.02
RA-226DA	186.21	654	3.50	7.546E+00	2.163E+00	2.163E+00	15.57
	241.98	1017	7.49	6.187E+00	1.917E+00	1.917E+00	11.56
	295.22	1272	19.20	5.211E+00	1.110E+00	1.110E+00	8.34
	351.92	2222	37.20	4.453E+00	1.171E+00	1.171E+00	7.02
	609.32	1456	46.30*	2.678E+00	1.025E+00	1.025E+00	7.66
	1120.28	242	15.10	1.500E+00	9.318E-01	9.319E-01	18.99
	1238.11	-----	5.94	1.363E+00	-----	Line Not Found	-----
	1764.49	247	15.80	9.775E-01	1.394E+00	1.394E+00	11.86
AC-228	209.39	542	3.89	6.927E+00	1.755E+00	1.773E+00	14.25
	270.26	472	3.46	5.629E+00	2.117E+00	2.137E+00	15.71
	338.42	1038	11.27	4.614E+00	1.743E+00	1.760E+00	8.72
	911.16	1161	25.80*	1.829E+00	2.147E+00	2.168E+00	8.58
	968.97	632	15.80	1.725E+00	2.022E+00	2.042E+00	11.50
RA-228DA	209.28	542	4.40	6.927E+00	1.552E+00	1.567E+00	14.25
	338.32	1038	11.40	4.614E+00	1.723E+00	1.740E+00	8.72
	911.07	1161	27.70*	1.829E+00	2.000E+00	2.020E+00	8.58
	964.60	-----	5.20	1.732E+00	-----	Line Not Found	-----
	969.11	632	16.60	1.725E+00	1.925E+00	1.944E+00	11.50
TH-234	63.29	250	4.82*	6.091E+00	7.439E-01	7.439E-01	39.27
	92.59	1018	6.08	9.006E+00	1.623E+00	1.623E+00	12.25

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
7	74.81	2267	2244	1.06	298.25	284	30	3.78E-02	5.6	7.71E+00	
7	77.10	3531	1898	1.01	307.46	284	30	5.89E-02	3.1	7.95E+00	
8	84.52	622	1811	1.55	337.21	330	35	1.04E-02	18.2	8.57E+00	
8	87.22	1184	1650	1.16	348.04	330	35	1.97E-02	8.9	8.74E+00	
8	89.89	861	1498	1.04	358.74	330	35	1.44E-02	10.0	8.88E+00	
0	99.24	273	1326	1.13	396.25	389	14	4.55E-03	28.9	9.19E+00	
0	129.08	394	1014	1.14	515.92	510	12	6.57E-03	16.9	9.08E+00	
0	328.13	356	704	1.41	1314.17	1305	18	5.93E-03	18.3	4.74E+00	
0	462.96	293	605	1.22	1854.73	1843	22	4.89E-03	19.0	3.46E+00	
0	510.97	554	834	2.32	2047.21	2031	38	9.24E-03	18.9	3.16E+00	
0	727.63	403	465	1.56	2915.63	2904	28	6.71E-03	12.5	2.27E+00	T
0	794.83	173	324	1.61	3184.90	3173	24	2.88E-03	22.2	2.08E+00	
9	1462.08	946	84	1.66	5857.68	5832	41	1.58E-02	6.3	1.16E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	2.430E+00	13.98	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER6.SAMPLE]KCKEC1AA\_151271053.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 10:53:30  
 Sample ID : KCKEC1AA Sample quantity : 51.600 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:11.05 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	1.662E+01	1.410E+00	4.651E-01	2.844E-02	35.738
TL-208	6.196E-01	4.433E-02	3.915E-02	1.289E-03	15.825
PB-212	1.943E+00	1.286E-01	4.675E-02	1.828E-03	41.563
BI-214	1.030E+00	7.888E-02	7.656E-02	2.559E-03	13.449
PB-214	1.159E+00	8.135E-02	6.363E-02	2.126E-03	18.206
RA-226DA	1.025E+00	7.852E-02	7.622E-02	2.547E-03	13.449
AC-228	2.168E+00	1.860E-01	1.678E-01	8.560E-03	12.923
RA-228DA	2.020E+00	1.733E-01	1.563E-01	7.973E-03	12.924
TH-234	7.439E-01	2.921E-01	4.788E-01	1.508E-02	1.553

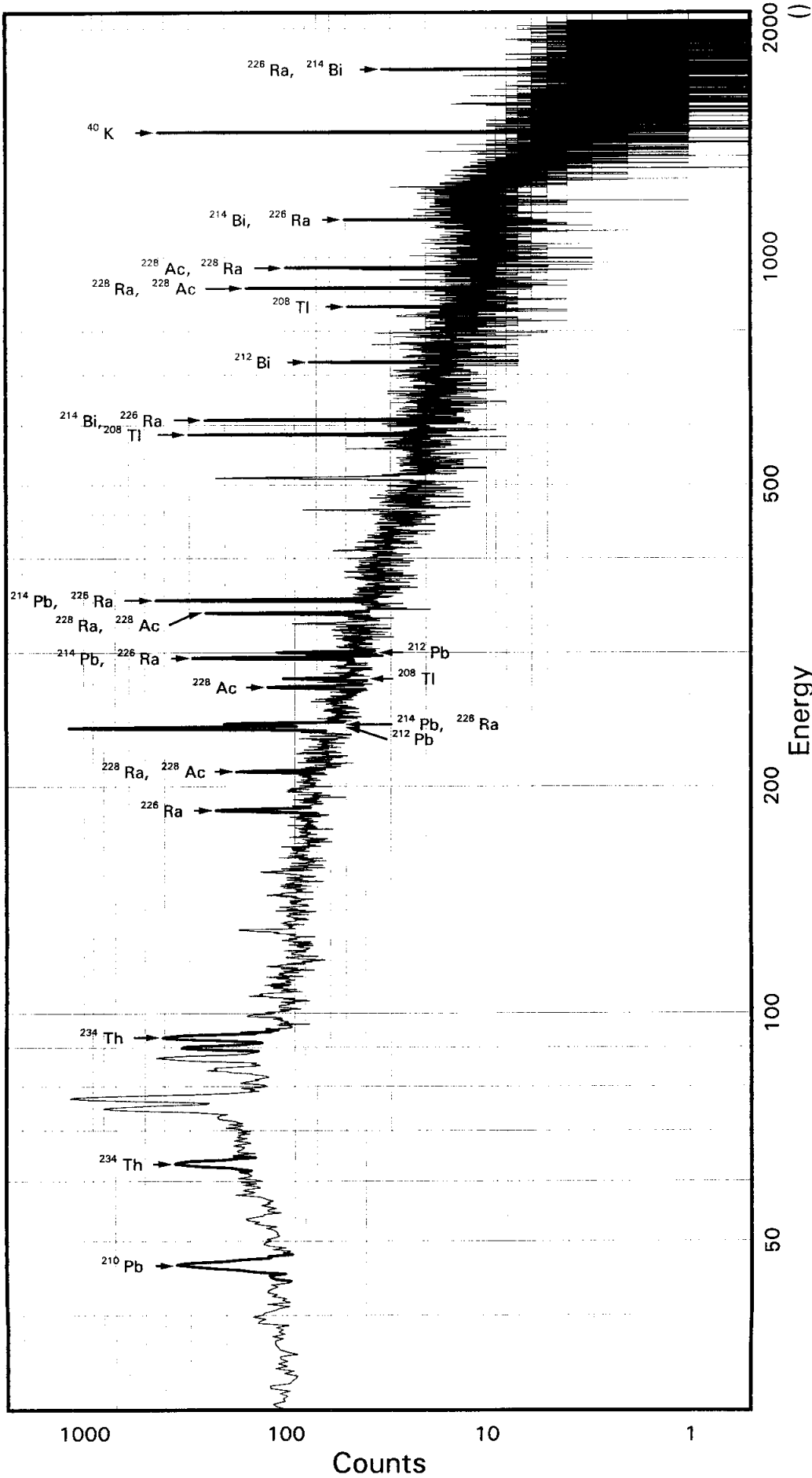
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-1.912E-02		4.245E-02	1.384E-01	4.621E-03	-0.138
CO-60	2.137E-02		1.511E-02	5.259E-02	3.516E-03	0.406
CS-137	-6.396E-03		1.244E-02	4.203E-02	1.436E-03	-0.152
PB-210	1.326E-01		4.196E-01	1.074E+00	6.683E-02	0.123
BI-212	2.430E+00	+	3.396E-01	8.133E-01	3.144E-02	2.987
TH-227	3.221E-01		6.334E-02	1.851E-01	7.243E-03	1.741
AM-241	-2.103E-02		2.019E-02	6.795E-02	2.164E-03	-0.309

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKEC1AE  
Detector ID: GER8 1



Energy Coefficients:  
Offset: 5.39683E-02  
Slope: 2.49980E-01  
Quadrature: 1.92487E-08

Acquisition Start: 15-DEC-2007 10:54:26.21  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCKECLAE

CONFIGURATION ID: GER8:KCKECLAE\_151271054  
TITLE : BRCO SOLID  
SAMPLE ID : KCKECLAE

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 15-DEC-07 10:54:26  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 08:15:00.00  
CALIB DATE: 15-DEC-2007 08:36:03.56  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:09

SAMPLE QUANTITY: 5.1700E+01  
SAMPLE GEOMETRY: ES25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 5.3968E-02 keV  
ENERGY SLOPE: 2.4998E-01 keV/C  
ENERGY Q COEFF: 1.9249E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.6920E-01 keV  
FWHM SLOPE: 2.1382E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 50.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB



VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:43:03

```

Configuration      : $DISK1:[GER8.SAMPLE]KCKEC1AE_151271054.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 10:54:26
Sample ID         : KCKEC1AE Sample quantity : 51.700 GRAMS
Sample type       : Sample geometry : ES25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.86 0.0%
Start energy      : 20.05 End energy : 2049.18
Sensitivity       : 5.00 Gaussian : 50.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.44*	508	1552	0.98	185.57	177	16	8.46E-03	21.7	
2	0	63.29*	425	2059	1.13	252.95	246	13	7.09E-03	25.7	
3	2	74.86*	2443	2388	1.04	299.23	293	23	4.07E-02	4.9	8.76E-01
4	2	77.15*	4293	2140	1.06	308.39	293	23	7.15E-02	3.1	
5	2	84.24	646	1926	1.38	336.77	330	25	1.08E-02	15.6	1.14E+00
6	2	87.19	1473	1677	1.13	348.55	330	25	2.45E-02	6.1	
7	2	89.99	856	1266	0.95	359.75	355	26	1.43E-02	8.1	1.53E+00
8	2	92.94*	1135	2157	1.39	371.58	355	26	1.89E-02	11.1	
9	0	99.55	331	1612	1.46	398.02	389	17	5.52E-03	28.4	
10	0	129.12	377	1544	0.96	516.29	510	17	6.28E-03	24.5	
11	0	154.01	276	838	0.99	615.84	610	11	4.61E-03	21.2	
12	0	185.96*	559	1182	1.28	743.66	736	15	9.31E-03	16.0	
13	0	209.32	540	845	1.05	837.07	831	13	9.00E-03	11.9	
14	4	238.66*	5614	918	1.19	954.43	946	29	9.36E-02	1.9	1.92E+00
15	4	241.52	1114	1002	1.73	965.86	946	29	1.86E-02	7.5	
16	0	270.10	525	771	1.63	1080.17	1072	17	8.75E-03	12.9	
17	0	277.33	251	678	0.91	1109.12	1103	14	4.19E-03	22.8	
18	0	295.30*	1192	711	1.33	1180.95	1173	17	1.99E-02	7.1	
19	0	300.14	425	548	1.37	1200.33	1193	15	7.08E-03	13.0	
20	0	328.09	250	608	1.11	1312.12	1306	14	4.16E-03	21.9	
21	0	338.18	1090	747	1.12	1352.49	1341	19	1.82E-02	6.7	
22	0	351.91*	1791	724	1.29	1407.40	1399	20	2.98E-02	5.4	
23	0	463.07	338	381	1.05	1851.95	1844	18	5.64E-03	14.7	
24	0	511.02*	327	693	1.96	2043.70	2032	28	5.45E-03	32.2	
25	0	583.22	1534	552	1.31	2332.43	2320	26	2.56E-02	4.9	
26	0	609.26*	1107	335	1.41	2436.57	2426	20	1.84E-02	6.1	
27	0	727.19	335	300	1.04	2908.12	2899	20	5.58E-03	12.1	
28	0	795.04	136	204	1.47	3179.42	3170	17	2.27E-03	22.3	
29	0	860.56	216	222	1.35	3441.38	3432	20	3.61E-03	15.9	
30	0	911.13	1037	279	1.59	3643.56	3631	25	1.73E-02	4.8	
31	0	934.56	95	268	1.51	3737.27	3722	27	1.58E-03	41.9	
32	0	967.96	936	334	1.86	3870.77	3851	40	1.56E-02	6.3	
33	0	1120.18	350	255	1.81	4479.33	4464	30	5.83E-03	12.4	
34	0	1377.14	151	79	1.49	5506.46	5492	28	2.52E-03	16.2	
35	0	1460.85*	3367	96	1.82	5841.02	5825	32	5.61E-02	2.0	
36	0	1590.49	226	63	7.45	6359.15	6339	42	3.77E-03	11.9	
37	0	1764.67	284	46	2.47	7055.20	7042	29	4.73E-03	8.4	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER8.SAMPLE]KCKECLAE_151271054.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 10:54:26
Sample ID        : KCKECLAE           Sample quantity  : 51.700 GRAMS
Sample type      :                   Sample geometry   : ES25
Elapsed live time: 0 16:40:00.00     Elapsed real time: 0 16:40:09.86   0.0%
Energy tolerance : 1.50              Half life ratio   : 8.00
Errors propagated: Yes               Systematic Error  : 5.00 %
Efficiency type  : Empirical         Efficiencies at   : Peak Energy
Abundance limit  : 80.00
    
```

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	3367	10.67*	1.185E+00	2.321E+01	2.321E+01	6.35
TL-208	277.28	251	6.31	5.758E+00	6.023E-01	6.202E-01	23.66
	583.02	1534	84.50*	2.923E+00	5.410E-01	5.571E-01	7.85
	860.30	216	12.42	1.988E+00	7.638E-01	7.864E-01	17.11
PB-210	46.52	508	4.25*	9.014E+00	1.155E+00	1.158E+00	22.61
PB-212	238.58	5614	43.30*	6.523E+00	1.732E+00	1.783E+00	6.44
	300.03	425	3.28	5.382E+00	2.095E+00	2.157E+00	14.32
BI-214	609.31	1107	46.09*	2.801E+00	7.468E-01	7.468E-01	8.64
	768.35	-----	4.94	2.227E+00	-----	Line Not Found	-----
	1120.27	350	15.10	1.527E+00	1.322E+00	1.322E+00	13.77
	1764.49	284	15.40	1.007E+00	1.596E+00	1.596E+00	10.24
PB-214	241.92	1114	7.43	6.460E+00	2.022E+00	2.022E+00	9.73
	295.09	1192	19.30	5.458E+00	9.862E-01	9.862E-01	9.35
RA-226DA	351.87	1791	37.60*	4.681E+00	8.865E-01	8.865E-01	8.06
	186.21	559	3.50	7.921E+00	1.756E+00	1.756E+00	17.09
	241.98	1114	7.49	6.460E+00	2.006E+00	2.006E+00	9.73
	295.22	1192	19.20	5.458E+00	9.913E-01	9.913E-01	9.35
	351.92	1791	37.20	4.681E+00	8.960E-01	8.961E-01	8.06
AC-228	609.32	1107	46.30*	2.801E+00	7.434E-01	7.434E-01	8.64
	1120.28	350	15.10	1.527E+00	1.322E+00	1.322E+00	13.77
	1238.11	-----	5.94	1.385E+00	-----	Line Not Found	-----
	1764.49	284	15.80	1.007E+00	1.555E+00	1.555E+00	10.24
	209.39	540	3.89	7.240E+00	1.670E+00	1.687E+00	13.39
RA-228DA	270.26	525	3.46	5.888E+00	2.245E+00	2.267E+00	14.26
	338.42	1090	11.27	4.849E+00	1.737E+00	1.754E+00	9.03
	911.16	1037	25.80*	1.877E+00	1.865E+00	1.884E+00	7.94
	968.97	936	15.80	1.767E+00	2.923E+00	2.951E+00	8.89
TH-234	209.28	540	4.40	7.240E+00	1.477E+00	1.491E+00	13.39
	338.32	1090	11.40	4.849E+00	1.717E+00	1.734E+00	9.03
	911.07	1037	27.70*	1.877E+00	1.737E+00	1.754E+00	7.94
TH-234	964.60	-----	5.20	1.773E+00	-----	Line Not Found	-----
	969.11	936	16.60	1.767E+00	2.782E+00	2.809E+00	8.89
TH-234	63.29	425	4.82*	1.141E+01	6.736E-01	6.736E-01	26.40
	92.59	1135	6.08	1.155E+01	1.407E+00	1.407E+00	12.59

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.86	2443	2388	1.04	299.23	293	23	4.07E-02	4.9	1.18E+01	
2	77.15	4293	2140	1.06	308.39	293	23	7.15E-02	3.1	1.18E+01	
2	84.24	646	1926	1.38	336.77	330	25	1.08E-02	15.6	1.18E+01	
2	87.19	1473	1677	1.13	348.55	330	25	2.45E-02	6.1	1.17E+01	
2	89.99	856	1266	0.95	359.75	355	26	1.43E-02	8.1	1.16E+01	
0	99.55	331	1612	1.46	398.02	389	17	5.52E-03	28.4	1.13E+01	
0	129.12	377	1544	0.96	516.29	510	17	6.28E-03	24.5	1.01E+01	
0	154.01	276	838	0.99	615.84	610	11	4.61E-03	21.2	9.04E+00	
0	328.09	250	608	1.11	1312.12	1306	14	4.16E-03	21.9	4.98E+00	
0	463.07	338	381	1.05	1851.95	1844	18	5.64E-03	14.7	3.64E+00	
0	511.02	327	693	1.96	2043.70	2032	28	5.45E-03	32.2	3.32E+00	
0	727.19	335	300	1.04	2908.12	2899	20	5.58E-03	12.1	2.35E+00	T
0	795.04	136	204	1.47	3179.42	3170	17	2.27E-03	22.3	2.15E+00	
0	934.56	95	268	1.51	3737.27	3722	27	1.58E-03	41.9	1.83E+00	
0	1377.14	151	79	1.49	5506.46	5492	28	2.52E-03	16.2	1.25E+00	
0	1590.49	226	63	7.45	6359.15	6339	42	3.77E-03	11.9	1.10E+00	

Flags: "T" = Tentatively associated

Rejected Report  
Sample ID : KCKEC1AE

Page : 3  
Acquisition date : 15-DEC-2007 10:54:26

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	1.942E+00	13.65	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER8.SAMPLE]KCKEClAE\_151271054.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 10:54:26  
 Sample ID : KCKEClAE Sample quantity : 51.700 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.86 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.321E+01	1.474E+00	3.171E-01	1.074E-02	73.178
TL-208	5.571E-01	4.371E-02	3.326E-02	1.163E-03	16.750
PB-210	1.158E+00	2.618E-01	4.197E-01	1.606E-02	2.759
PB-212	1.783E+00	1.148E-01	4.664E-02	1.673E-03	38.239
BI-214	7.468E-01	6.452E-02	6.071E-02	2.173E-03	12.301
PB-214	8.865E-01	7.145E-02	5.816E-02	1.904E-03	15.242
RA-226DA	7.434E-01	6.423E-02	6.044E-02	2.163E-03	12.300
AC-228	1.884E+00	1.496E-01	1.302E-01	5.045E-03	14.470
RA-228DA	1.754E+00	1.393E-01	1.212E-01	4.698E-03	14.471
TH-234	6.736E-01	1.778E-01	3.487E-01	1.069E-02	1.932

*Handwritten notes:*  
 240 = 2.7759  
 242 = 1.1903  
 OK LMA 12/19/07

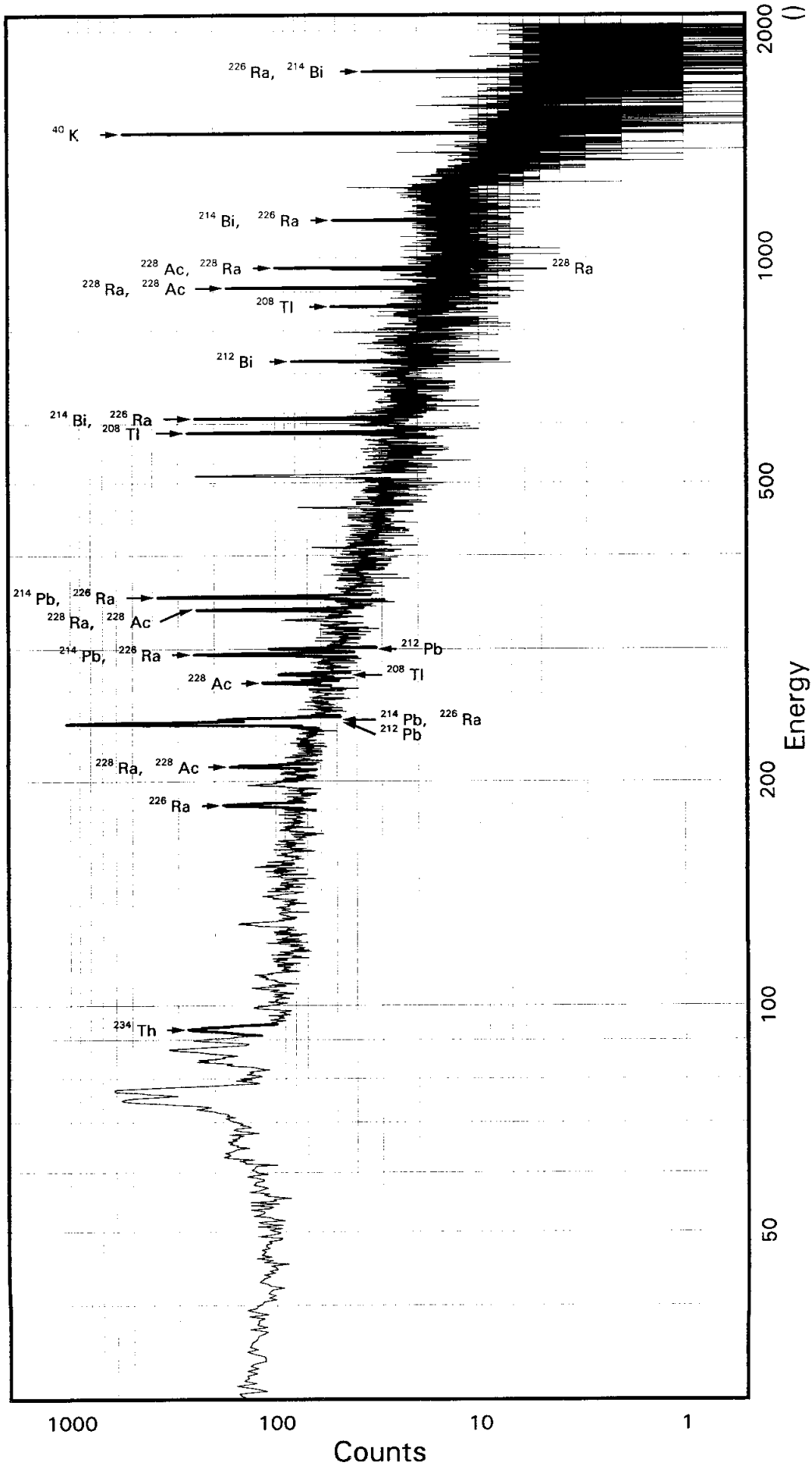
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	3.386E-02		4.673E-02	1.554E-01	4.990E-03	0.218
CO-60	5.296E-03		1.140E-02	3.940E-02	1.333E-03	0.134
CS-137	4.284E-03		1.055E-02	3.591E-02	1.338E-03	0.119
BI-212	1.942E+00	+	2.650E-01	6.870E-01	2.631E-02	2.826
TH-227	5.820E-01		6.926E-02	1.938E-01	6.950E-03	3.003
AM-241	4.541E-02		1.598E-02	4.667E-02	1.452E-03	0.973

**STL Richland WA.  
BRCO SOLID**

Batch ID: 7327117

Sample ID: KCKED1AA  
Detector ID: GER10 1



Energy Coefficients:  
Offset: 1.46852E+01  
Slope: 2.47281E-01  
Quadrature: -8.93649E-11

Acquisition Start: 15-DEC-2007 10:55:14.71  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION:

KCKED1AA

CONFIGURATION ID: GER10:KCKED1AA\_151271055

TITLE : BRCO SOLID

SAMPLE ID : KCKED1AA

REPORT DATE: 16-DEC-07

ACQUIRE DATE: 15-DEC-07 10:55:14

ELAPSED LIVE TIME: 60000.0 Sec

PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 08:15:00.00

CALIB DATE: 15-DEC-2007 09:11:44.72

ELAPSED LIVE TIME: 0 16:40:00

ELAPSED REAL TIME: 0 16:40:11

SAMPLE QUANTITY: 5.0700E+01

SAMPLE GEOMETRY: S25

UNITS: GRAMS

SAMPLE TYPE:

ENERGY OFFSET: 1.4685E+01 keV

ENERGY SLOPE: 2.4728E-01 keV/C

ENERGY Q COEFF: -.8936E-10 keV/C<sup>2</sup>

PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.1185E+00 keV

FWHM SLOPE: 2.4088E-02 sqr keV

ITERATIONS: 10

GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %

ENERGY TOLERANCE: 1.500 keV

VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00

ACTIVITY MULTIPLIER: 1.0000E+06

LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 16-DEC-2007 03:35:36

Configuration : \$DISK1:[GER10.SAMPLE]KCKED1AA\_151271055.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 10:55:14  
 Sample ID : KCKED1AA Sample quantity : 50.700 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:11.97 0.0%  
 Start energy : 17.16 End energy : 2040.41  
 Sensitivity : 5.00 Gaussian : 10.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	74.82*	1728	2877	1.31	243.17	236	38	2.88E-02	8.4	1.41E+00
2	2	77.05	2806	2592	1.36	252.22	236	38	4.68E-02	4.7	
3	2	84.38*	314	1918	1.62	281.84	274	26	5.23E-03	43.3	1.66E+00
4	2	87.17	1072	1699	1.25	293.11	274	26	1.79E-02	8.4	
5	0	89.91	523	1458	1.03	304.21	300	11	8.72E-03	14.8	
6	0	93.02	952	1700	1.37	316.78	310	15	1.59E-02	10.0	
7	0	185.86	756	1651	1.61	692.23	681	22	1.26E-02	14.2	
8	0	197.48*	34	1389	1.24	739.24	731	18	5.69E-04	303.8	
9	0	209.19	527	1335	1.42	786.57	778	18	8.79E-03	16.8	
10	4	238.64	6170	1110	1.50	905.67	892	35	1.03E-01	1.7	1.05E+00
11	4	241.43	1250	1132	2.16	916.93	892	35	2.08E-02	7.5	
12	0	270.22	414	951	1.46	1033.37	1025	17	6.89E-03	15.4	
13	0	277.13	299	878	1.91	1061.33	1052	17	4.98E-03	20.3	
14	0	295.24	1341	1064	1.63	1134.55	1124	22	2.24E-02	5.9	
15	0	300.08	417	748	1.14	1154.13	1145	17	6.95E-03	13.7	
16	0	327.79	321	1075	1.43	1266.21	1255	23	5.35E-03	23.1	
17	0	338.37	1133	937	1.47	1308.96	1299	19	1.89E-02	6.3	
18	0	351.90*	2053	939	1.54	1363.68	1351	24	3.42E-02	4.5	
19	0	463.11	296	640	1.22	1813.40	1803	21	4.94E-03	19.0	
20	0	510.92*	657	944	2.36	2006.77	1990	36	1.09E-02	17.4	
21	0	583.21	1827	673	1.68	2299.11	2286	28	3.04E-02	4.1	
22	0	609.35*	1511	684	1.71	2404.81	2391	28	2.52E-02	5.6	
23	0	727.26	607	349	1.86	2881.64	2870	27	1.01E-02	8.3	
24	0	794.69	219	353	1.20	3154.32	3143	23	3.65E-03	20.0	
25	0	860.56	180	385	1.11	3420.69	3409	22	3.00E-03	24.7	
26	0	911.19	1325	365	1.85	3625.45	3613	32	2.21E-02	4.5	
27	0	964.71	174	326	0.75	3841.86	3831	19	2.90E-03	22.5	
28	0	968.99	708	279	2.08	3859.18	3850	19	1.18E-02	6.1	
29	0	1120.42	359	385	2.05	4471.56	4456	30	5.98E-03	14.4	
30	0	1460.80*	4776	138	2.12	5848.06	5831	35	7.96E-02	1.7	
31	0	1764.38	287	94	1.85	7075.73	7059	35	4.79E-03	9.9	

Flag: "\*" = Peak area was modified by background subtraction



Configuration : \$DISK1:[GER10.SAMPLE]KCKED1AA\_151271055.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 10:55:14  
 Sample ID : KCKED1AA Sample quantity : 50.700 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:11.97 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	4776	10.67*	1.619E+00	2.457E+01	2.457E+01	6.38
TL-208	277.28	299	6.31	6.601E+00	6.376E-01	6.565E-01	21.16
	583.02	1827	84.50*	3.698E+00	5.194E-01	5.348E-01	7.41
	860.30	180	12.42	2.612E+00	4.933E-01	5.080E-01	25.63
PB-212	238.58	6170	43.30*	7.318E+00	1.730E+00	1.781E+00	6.40
	300.03	417	3.28	6.235E+00	1.812E+00	1.866E+00	15.03
BI-214	609.31	1511	46.09*	3.561E+00	8.179E-01	8.179E-01	8.39
	768.35	-----	4.94	2.899E+00	-----	Line Not Found	-----
	1120.27	359	15.10	2.043E+00	1.034E+00	1.034E+00	15.65
PB-214	1764.49	287	15.40	1.413E+00	1.173E+00	1.173E+00	11.52
	241.92	1250	7.43	7.261E+00	2.059E+00	2.059E+00	9.68
	295.09	1341	19.30	6.308E+00	9.788E-01	9.788E-01	8.50
RA-226DA	351.87	2053	37.60*	5.542E+00	8.753E-01	8.753E-01	7.49
	186.21	756	3.50	8.544E+00	2.247E+00	2.247E+00	15.45
	241.98	1250	7.49	7.261E+00	2.042E+00	2.042E+00	9.68
	295.22	1341	19.20	6.308E+00	9.839E-01	9.839E-01	8.50
	351.92	2053	37.20	5.542E+00	8.847E-01	8.847E-01	7.49
AC-228	609.32	1511	46.30*	3.561E+00	8.141E-01	8.142E-01	8.39
	1120.28	359	15.10	2.043E+00	1.034E+00	1.034E+00	15.65
	1238.11	-----	5.94	1.865E+00	-----	Line Not Found	-----
	1764.49	287	15.80	1.413E+00	1.143E+00	1.143E+00	11.52
	209.39	527	3.89	7.968E+00	1.511E+00	1.526E+00	17.91
RA-228DA	270.26	414	3.46	6.719E+00	1.580E+00	1.596E+00	16.59
	338.42	1133	11.27	5.707E+00	1.565E+00	1.580E+00	8.67
	911.16	1325	25.80*	2.477E+00	1.841E+00	1.859E+00	8.31
	968.97	708	15.80	2.339E+00	1.702E+00	1.719E+00	9.14
RA-228DA	209.28	527	4.40	7.968E+00	1.336E+00	1.349E+00	17.91
	338.32	1133	11.40	5.707E+00	1.547E+00	1.562E+00	8.67
	911.07	1325	27.70*	2.477E+00	1.715E+00	1.732E+00	8.31
	964.60	174	5.20	2.349E+00	1.264E+00	1.277E+00	23.53
	969.11	708	16.60	2.339E+00	1.620E+00	1.636E+00	9.14

Flag: "\*" = Keyline

Unidentified Energy Lines  
Sample ID : KCKED1AA

Page : 2  
Acquisition date : 15-DEC-2007 10:55:14

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.82	1728	2877	1.31	243.17	236	38	2.88E-02	8.4	7.79E+00	
2	77.05	2806	2592	1.36	252.22	236	38	4.68E-02	4.7	8.08E+00	
2	84.38	314	1918	1.62	281.84	274	26	5.23E-03	43.3	8.86E+00	
2	87.17	1072	1699	1.25	293.11	274	26	1.79E-02	8.4	9.09E+00	
0	89.91	523	1458	1.03	304.21	300	11	8.72E-03	14.8	9.28E+00	
0	93.02	952	1700	1.37	316.78	310	15	1.59E-02	10.0	9.47E+00	T
0	197.48	34	1389	1.24	739.24	731	18	5.69E-04	****	8.25E+00	
0	327.79	321	1075	1.43	1266.21	1255	23	5.35E-03	23.1	5.84E+00	
0	463.11	296	640	1.22	1813.40	1803	21	4.94E-03	19.0	4.48E+00	
0	510.92	657	944	2.36	2006.77	1990	36	1.09E-02	17.4	4.13E+00	
0	727.26	607	349	1.86	2881.64	2870	27	1.01E-02	8.3	3.05E+00	T
0	794.69	219	353	1.20	3154.32	3143	23	3.65E-03	20.0	2.81E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	2.772E+00	10.58	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
		% Abundances	Found =	71.76			
TH-234	4.47E+09Y	0.00	63.29*	4.82	---	Not Found	---
			92.59	6.08	1.469E+00	11.63	Abun.
		% Abundances	Found =	55.78			

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER10.SAMPLE]KCKED1AA\_151271055.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 10:55:14  
 Sample ID : KCKED1AA Sample quantity : 50.700 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:11.97 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.457E+01	1.568E+00	2.854E-01	1.029E-02	86.068
TL-208	5.348E-01	3.965E-02	3.182E-02	1.147E-03	16.807
PB-212	1.781E+00	1.139E-01	4.634E-02	1.674E-03	38.440
BI-214	8.179E-01	6.864E-02	6.036E-02	2.273E-03	13.549
PB-214	8.753E-01	6.557E-02	5.656E-02	1.842E-03	15.474
RA-226DA	8.142E-01	6.833E-02	6.009E-02	2.263E-03	13.549
AC-228	1.859E+00	1.546E-01	1.199E-01	5.830E-03	15.505
RA-228DA	1.732E+00	1.440E-01	1.117E-01	5.430E-03	15.506

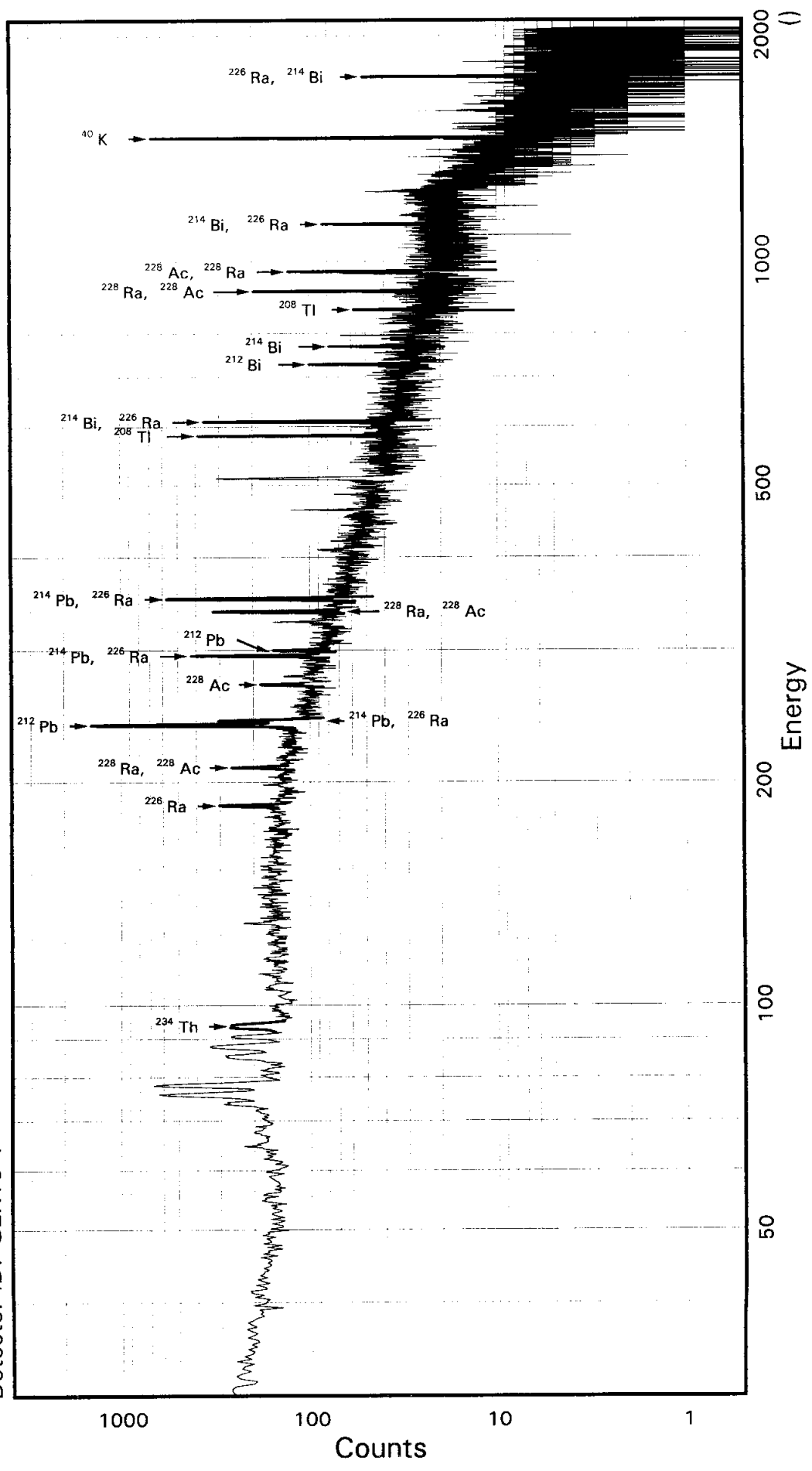
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-1.069E-01		5.233E-02	1.674E-01	5.558E-03	-0.639
CO-60	4.444E-03		1.012E-02	3.496E-02	1.275E-03	0.127
CS-137	1.177E-03		9.754E-03	3.332E-02	1.365E-03	0.035
PB-210	3.577E-01		5.458E-01	1.839E+00	1.342E-01	0.194
BI-212	2.772E+00	+	2.934E-01	6.303E-01	2.738E-02	4.397
TH-227	1.561E+00		1.183E-01	2.430E-01	8.780E-03	6.421
TH-234	5.792E-01		2.188E-01	7.339E-01	2.256E-02	0.789
AM-241	-8.196E-02		3.149E-02	1.018E-01	3.251E-03	-0.805

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKEE1AA  
Detector ID: GER13 1



Energy Coefficients:  
Offset: -4.80725E-01  
Slope: 2.50789E-01  
Quadrature: -9.90402E-08

Acquisition Start: 15-DEC-2007 10:56:27.78  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCKEE1AA

CONFIGURATION ID: GER13:KCKEE1AA\_151271056  
TITLE : BRCO SOLID  
SAMPLE ID : KCKEE1AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 15-DEC-07 10:56:27  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 08:50:00.00  
CALIB DATE: 15-DEC-2007 08:36:19.56  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:17

SAMPLE QUANTITY: 5.3200E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.4807E+00 keV  
ENERGY SLOPE: 2.5079E-01 keV/C  
ENERGY Q COEFF: -.9904E-07 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.4614E-01 keV  
FWHM SLOPE: 4.3208E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 40.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:43:31

Configuration : \$DISK1:[GER13.SAMPLE]KCKEE1AA\_151271056.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:50:00 Acquisition date : 15-DEC-2007 10:56:27  
 Sample ID : KCKEE1AA Sample quantity : 53.200 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.19 0.0%  
 Start energy : 19.58 End energy : 2047.34  
 Sensitivity : 5.00 Gaussian : 40.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	73.99*	118	1792	1.03	296.98	292	28	1.97E-03	86.3	1.52E+00
2	3	75.90*	1155	2066	0.97	304.61	292	28	1.92E-02	10.1	
3	3	78.05	1897	1636	0.85	313.16	292	28	3.16E-02	4.7	
4	6	85.41*	377	2303	1.40	342.51	335	24	6.29E-03	32.9	5.54E-01
5	6	87.97	996	1842	1.15	352.72	335	24	1.66E-02	9.2	
6	0	90.67	539	1505	1.13	363.51	359	10	8.99E-03	14.1	
7	0	93.71	841	2016	1.61	375.62	369	14	1.40E-02	11.8	
8	0	129.55	318	1888	0.73	518.61	512	13	5.29E-03	28.8	
9	0	185.98	831	1952	1.24	743.71	737	14	1.38E-02	11.8	
10	0	209.19	589	1839	1.03	836.32	830	14	9.82E-03	16.0	
11	5	238.48*	6062	1524	1.13	953.19	942	32	1.01E-01	2.1	1.58E+00
12	5	241.40	1457	1854	1.80	964.84	942	32	2.43E-02	7.9	
13	0	270.04	302	1482	0.95	1079.13	1071	14	5.04E-03	27.6	
14	0	295.03*	1342	1490	1.12	1178.85	1171	16	2.24E-02	8.6	
15	0	300.00	363	1156	1.14	1198.71	1191	14	6.05E-03	20.6	
16	0	327.81	334	924	0.97	1309.69	1304	12	5.56E-03	19.0	
17	0	338.11	1350	1148	1.36	1350.83	1344	15	2.25E-02	6.1	
18	0	351.64*	2751	1292	1.29	1404.84	1394	21	4.58E-02	4.4	
19	0	462.52	312	723	1.05	1847.53	1841	15	5.20E-03	19.6	
20	0	510.73*	733	1280	1.92	2040.04	2026	28	1.22E-02	20.5	
21	0	583.02*	1768	1051	1.35	2328.81	2316	26	2.95E-02	6.1	
22	0	609.13*	1531	882	1.48	2433.10	2418	25	2.55E-02	7.0	
23	0	726.97	447	682	1.65	2903.98	2892	23	7.45E-03	13.7	
24	0	767.87	290	528	1.58	3067.44	3056	22	4.83E-03	18.1	
25	0	794.83	255	519	2.10	3175.20	3165	21	4.25E-03	19.9	
26	0	860.51	361	454	2.61	3437.81	3427	24	6.01E-03	14.2	
27	0	911.11*	1183	541	1.79	3640.10	3624	30	1.97E-02	6.5	
28	0	968.14*	986	806	1.82	3868.18	3848	36	1.64E-02	8.9	
29	0	1120.37*	319	442	2.14	4477.23	4466	24	5.32E-03	20.6	
30	0	1378.15	117	268	1.61	5509.14	5496	25	1.95E-03	30.0	
31	0	1460.57*	4376	478	2.15	5839.27	5821	39	7.29E-02	2.6	
32	0	1763.81*	293	99	2.39	7054.60	7036	38	4.89E-03	14.0	
33	0	1847.97	48	104	1.47	7392.11	7379	25	7.97E-04	46.0	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER13.SAMPLE]KCKEE1AA\_151271056.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:50:00 Acquisition date : 15-DEC-2007 10:56:27  
 Sample ID : KCKEE1AA Sample quantity : 53.200 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.19 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	4376	10.67*	1.575E+00	2.205E+01	2.205E+01	10.49
TL-208	277.28	-----	6.31	6.635E+00	-----	Line Not Found	-----
	583.02	1768	84.50*	3.644E+00	4.864E-01	5.008E-01	8.66
	860.30	361	12.42	2.593E+00	9.480E-01	9.761E-01	16.55
PB-212	238.58	6062	43.30*	7.395E+00	1.603E+00	1.650E+00	6.59
	300.03	363	3.28	6.249E+00	1.500E+00	1.545E+00	21.44
BI-214	609.31	1531	46.09*	3.511E+00	8.012E-01	8.012E-01	9.37
	768.35	290	4.94	2.873E+00	1.730E+00	1.730E+00	19.53
	1120.27	319	15.10	2.028E+00	8.824E-01	8.824E-01	21.84
	1764.49	293	15.40	1.327E+00	1.216E+00	1.216E+00	15.60
PB-214	241.92	1457	7.43	7.334E+00	2.264E+00	2.264E+00	10.05
	295.09	1342	19.30	6.330E+00	9.303E-01	9.303E-01	10.56
	351.87	2751	37.60*	5.515E+00	1.123E+00	1.123E+00	7.47
RA-226DA	186.21	831	3.50	8.556E+00	2.350E+00	2.350E+00	13.38
	241.98	1457	7.49	7.334E+00	2.246E+00	2.246E+00	10.05
	295.22	1342	19.20	6.330E+00	9.351E-01	9.352E-01	10.56
	351.92	2751	37.20	5.515E+00	1.135E+00	1.135E+00	7.47
	609.32	1531	46.30*	3.511E+00	7.976E-01	7.976E-01	9.37
	1120.28	319	15.10	2.028E+00	8.824E-01	8.824E-01	21.84
	1238.11	-----	5.94	1.843E+00	-----	Line Not Found	-----
	1764.49	293	15.80	1.327E+00	1.185E+00	1.185E+00	15.60
AC-228	209.39	589	3.89	8.040E+00	1.595E+00	1.611E+00	17.14
	270.26	302	3.46	6.767E+00	1.093E+00	1.104E+00	28.29
	338.42	1350	11.27	5.690E+00	1.783E+00	1.800E+00	8.57
	911.16	1183	25.80*	2.461E+00	1.577E+00	1.593E+00	11.04
	968.97	986	15.80	2.327E+00	2.271E+00	2.293E+00	12.38
RA-228DA	209.28	589	4.40	8.040E+00	1.410E+00	1.424E+00	17.14
	338.32	1350	11.40	5.690E+00	1.763E+00	1.780E+00	8.57
	911.07	1183	27.70*	2.461E+00	1.469E+00	1.483E+00	11.04
	964.60	-----	5.20	2.335E+00	-----	Line Not Found	-----
	969.11	986	16.60	2.327E+00	2.161E+00	2.183E+00	12.38

Flag: "\*" = Keyline



It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	73.99	118	1792	1.03	296.98	292	28	1.97E-03	86.3	3.95E+00	
3	75.90	1155	2066	0.97	304.61	292	28	1.92E-02	10.1	4.27E+00	
3	78.05	1897	1636	0.85	313.16	292	28	3.16E-02	4.7	4.62E+00	
6	85.41	377	2303	1.40	342.51	335	24	6.29E-03	32.9	5.75E+00	
6	87.97	996	1842	1.15	352.72	335	24	1.66E-02	9.2	6.10E+00	
0	90.67	539	1505	1.13	363.51	359	10	8.99E-03	14.1	6.46E+00	
0	93.71	841	2016	1.61	375.62	369	14	1.40E-02	11.8	6.82E+00	T
0	129.55	318	1888	0.73	518.61	512	13	5.29E-03	28.8	9.03E+00	
0	327.81	334	924	0.97	1309.69	1304	12	5.56E-03	19.0	5.83E+00	
0	462.52	312	723	1.05	1847.53	1841	15	5.20E-03	19.6	4.42E+00	
0	510.73	733	1280	1.92	2040.04	2026	28	1.22E-02	20.5	4.07E+00	
0	726.97	447	682	1.65	2903.98	2892	23	7.45E-03	13.7	3.01E+00	T
0	794.83	255	519	2.10	3175.20	3165	21	4.25E-03	19.9	2.79E+00	
0	1378.15	117	268	1.61	5509.14	5496	25	1.95E-03	30.0	1.66E+00	
0	1847.97	48	104	1.47	7392.11	7379	25	7.97E-04	46.0	1.28E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	1.964E+00	15.34	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
		% Abundances	Found =	71.76			
TH-234	4.47E+09Y	0.00	63.29*	4.82	---	Not Found	---
			92.59	6.08	1.717E+00	13.53	Abun.
		% Abundances	Found =	55.78			

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER13.SAMPLE]KCKEE1AA\_151271056.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:50:00 Acquisition date : 15-DEC-2007 10:56:27  
 Sample ID : KCKEE1AA Sample quantity : 53.200 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.19 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.205E+01	2.313E+00	3.658E-01	3.237E-02	60.275
TL-208	5.008E-01	4.339E-02	3.599E-02	1.272E-03	13.914
PB-212	1.650E+00	1.087E-01	5.076E-02	1.884E-03	32.512
BI-214	8.012E-01	7.505E-02	6.061E-02	2.214E-03	13.219
PB-214	1.123E+00	8.395E-02	6.314E-02	2.121E-03	17.790
RA-226DA	7.976E-01	7.471E-02	6.034E-02	2.204E-03	13.218
AC-228	1.593E+00	1.759E-01	1.425E-01	1.060E-02	11.175
RA-228DA	1.483E+00	1.638E-01	1.327E-01	9.869E-03	11.177

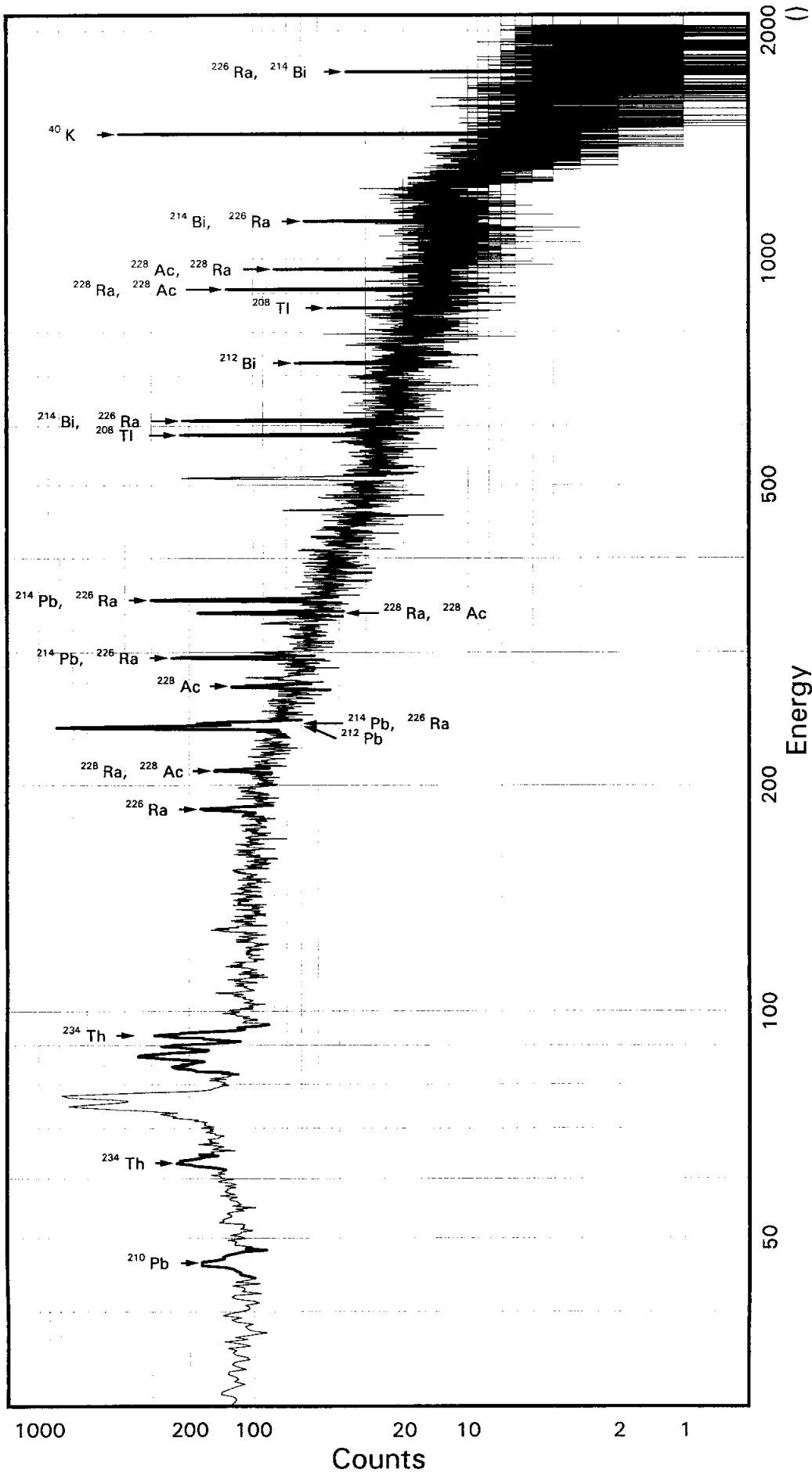
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	2.226E-02		5.525E-02	1.872E-01	6.463E-03	0.119
CO-60	1.778E-02		1.200E-02	4.140E-02	4.119E-03	0.429
CS-137	-1.995E-02		1.090E-02	3.517E-02	1.366E-03	-0.567
PB-210	-2.609E+00		3.540E+00	1.129E+01	2.230E+00	-0.231
BI-212	1.964E+00	+	3.013E-01	6.661E-01	3.181E-02	2.948
TH-227	3.559E-01		6.745E-02	1.960E-01	7.287E-03	1.815
TH-234	-1.882E-02		4.476E-01	1.514E+00	6.455E-02	-0.012
AM-241	1.011E-01		7.632E-02	2.613E-01	1.022E-02	0.387

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKEG1AA  
Detector ID: GER14 1



Energy Coefficients:  
Offset: -6.77777E-01  
Slope: 2.48271E-01  
Quadrature: -8.06859E-10

Acquisition Start: 15-DEC-2007 10:57:18.99  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION:

KCKEG1AA

CONFIGURATION ID: GER14:KCKEG1AA\_151271057

TITLE : BRCO SOLID

SAMPLE ID : KCKEG1AA

REPORT DATE: 16-DEC-07

ACQUIRE DATE: 15-DEC-07 10:57:18

ELAPSED LIVE TIME: 60000.0 Sec

PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 10:20:00.00

CALIB DATE: 15-DEC-2007 08:36:33.93

ELAPSED LIVE TIME: 0 16:40:00

ELAPSED REAL TIME: 0 16:40:17

SAMPLE QUANTITY: 5.3900E+04

SAMPLE GEOMETRY: S25

UNITS: GRAMS

SAMPLE TYPE:

ENERGY OFFSET: -.6778E+00 keV

ENERGY SLOPE: 2.4827E-01 keV/C

ENERGY Q COEFF: -.8069E-09 keV/C<sup>2</sup>

PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.0590E+00 keV

FWHM SLOPE: 2.8721E-02 sqr keV

ITERATIONS: 10

GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %

ENERGY TOLERANCE: 1.500 keV

VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00

ACTIVITY MULTIPLIER: 1.0000E+06

LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 16-DEC-2007 03:37:46

```

Configuration      : $DISK1:[GER14.SAMPLE]KCKEG1AA_151271057.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 10:20:00 Acquisition date : 15-DEC-2007 10:57:18
Sample ID        : KCKEG1AA Sample quantity : 53.900 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.51 0.0%
Start energy     : 19.18 End energy : 2033.10
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.40	515	1703	1.49	189.62	181	17	8.59E-03	18.9	
2	0	62.98	369	1810	1.24	256.41	251	12	6.15E-03	23.6	
3	1	74.67*	2383	2651	1.44	303.47	290	46	3.97E-02	6.4	4.81E+00
4	1	77.12	3993	2415	1.44	313.35	290	46	6.65E-02	3.4	
5	6	84.66*	329	2113	2.34	343.73	335	55	5.48E-03	45.1	2.44E+00
6	6	87.21	1323	1748	1.33	354.00	335	55	2.21E-02	7.7	
7	6	89.83	826	1408	1.16	364.56	335	55	1.38E-02	10.6	
8	6	92.99	1502	2226	2.02	377.26	335	55	2.50E-02	9.2	
9	0	186.06	598	1811	1.49	752.16	743	19	9.97E-03	17.6	
10	0	209.03	373	1686	1.15	844.66	837	19	6.22E-03	26.9	
11	3	238.63	4867	1407	1.52	963.90	952	35	8.11E-02	2.1	8.57E-01
12	3	241.53	875	1728	2.00	975.57	952	35	1.46E-02	13.2	
13	0	270.75	398	1590	1.82	1093.29	1076	25	6.63E-03	23.3	
14	0	295.22	1214	994	1.43	1191.85	1182	18	2.02E-02	5.9	
15	0	338.25	1030	1248	1.63	1365.15	1352	28	1.72E-02	8.7	
16	0	351.97*	1702	1291	1.64	1420.42	1407	27	2.84E-02	6.1	
17	0	462.97	273	847	1.51	1867.51	1855	27	4.55E-03	25.7	
18	0	510.83*	563	1052	2.66	2060.31	2044	39	9.38E-03	21.4	
19	0	583.17	1354	656	1.64	2351.69	2338	27	2.26E-02	5.2	
20	0	609.20*	1401	616	1.90	2456.54	2442	32	2.33E-02	6.1	
21	0	727.35	280	475	1.69	2932.44	2918	25	4.66E-03	18.7	
22	0	794.72	151	319	1.21	3203.79	3196	19	2.52E-03	25.4	
23	0	860.66	158	285	1.27	3469.40	3460	19	2.63E-03	23.2	
24	0	911.32*	921	419	1.98	3673.46	3661	32	1.53E-02	7.1	
25	0	969.03	570	342	1.97	3905.90	3895	27	9.49E-03	8.8	
26	0	1120.07	315	282	1.56	4514.26	4502	21	5.25E-03	11.6	
27	0	1460.71*	3095	139	2.28	5886.36	5868	37	5.16E-02	2.5	
28	0	1764.40	282	80	1.86	7109.66	7096	28	4.69E-03	9.0	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER14.SAMPLE]KCKEG1AA\_151271057.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 10:20:00 Acquisition date : 15-DEC-2007 10:57:18  
 Sample ID : KCKEG1AA Sample quantity : 53.900 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.51 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	3095	10.67*	1.072E+00	2.261E+01	2.261E+01	6.90
TL-208	277.28	-----	6.31	4.893E+00	-----	Line Not Found	-----
	583.02	1354	84.50*	2.508E+00	5.339E-01	5.497E-01	8.02
	860.30	158	12.42	1.742E+00	6.096E-01	6.276E-01	24.18
PB-210	46.52	515	4.25*	8.476E+00	1.195E+00	1.198E+00	19.84
PB-212	238.58	4867	43.30*	5.530E+00	1.699E+00	1.749E+00	6.71
	300.03	-----	3.28	4.578E+00	-----	Line Not Found	-----
BI-214	609.31	1401	46.09*	2.408E+00	1.055E+00	1.055E+00	8.63
	768.35	-----	4.94	1.937E+00	-----	Line Not Found	-----
	1120.27	315	15.10	1.364E+00	1.278E+00	1.278E+00	13.09
PB-214	1764.49	282	15.40	9.069E-01	1.685E+00	1.685E+00	10.83
	241.92	875	7.43	5.477E+00	1.797E+00	1.797E+00	14.68
	295.09	1214	19.30	4.641E+00	1.133E+00	1.133E+00	8.52
	351.87	1702	37.60*	3.984E+00	9.497E-01	9.497E-01	8.53
RA-226DA	186.21	598	3.50	6.659E+00	2.146E+00	2.146E+00	18.70
	241.98	875	7.49	5.477E+00	1.783E+00	1.783E+00	14.68
	295.22	1214	19.20	4.641E+00	1.139E+00	1.139E+00	8.52
	351.92	1702	37.20	3.984E+00	9.599E-01	9.599E-01	8.53
	609.32	1401	46.30*	2.408E+00	1.050E+00	1.050E+00	8.63
AC-228	1120.28	315	15.10	1.364E+00	1.278E+00	1.278E+00	13.09
	1238.11	-----	5.94	1.245E+00	-----	Line Not Found	-----
	1764.49	282	15.80	9.069E-01	1.643E+00	1.643E+00	10.83
	209.39	373	3.89	6.123E+00	1.309E+00	1.322E+00	27.62
	270.26	398	3.46	4.991E+00	1.925E+00	1.944E+00	24.14
RA-228DA	338.42	1030	11.27	4.126E+00	1.851E+00	1.869E+00	10.57
	911.16	921	25.80*	1.651E+00	1.806E+00	1.824E+00	9.76
	968.97	570	15.80	1.560E+00	1.931E+00	1.950E+00	10.94
	209.28	373	4.40	6.123E+00	1.157E+00	1.169E+00	27.62
	338.32	1030	11.40	4.126E+00	1.830E+00	1.848E+00	10.57
TH-234	911.07	921	27.70*	1.651E+00	1.682E+00	1.699E+00	9.76
	964.60	-----	5.20	1.566E+00	-----	Line Not Found	-----
	969.11	570	16.60	1.560E+00	1.838E+00	1.856E+00	10.94
TH-234	63.29	369	4.82*	9.548E+00	6.704E-01	6.704E-01	24.31
	92.59	1502	6.08	9.393E+00	2.198E+00	2.198E+00	10.99

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	74.67	2383	2651	1.44	303.47	290	46	3.97E-02	6.4	9.67E+00	
1	77.12	3993	2415	1.44	313.35	290	46	6.65E-02	3.4	9.66E+00	
6	84.66	329	2113	2.34	343.73	335	55	5.48E-03	45.1	9.57E+00	
6	87.21	1323	1748	1.33	354.00	335	55	2.21E-02	7.7	9.52E+00	
6	89.83	826	1408	1.16	364.56	335	55	1.38E-02	10.6	9.47E+00	
0	462.97	273	847	1.51	1867.51	1855	27	4.55E-03	25.7	3.11E+00	
0	510.83	563	1052	2.66	2060.31	2044	39	9.38E-03	21.4	2.84E+00	
0	727.35	280	475	1.69	2932.44	2918	25	4.66E-03	18.7	2.04E+00	T
0	794.72	151	319	1.21	3203.79	3196	19	2.52E-03	25.4	1.88E+00	

Flags: "T" = Tentatively associated



Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (PCI/GRAM)	%Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	1.793E+00	19.77	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
		% Abundances Found =		71.76			

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER14.SAMPLE]KCKEG1AA\_151271057.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 10:20:00 Acquisition date : 15-DEC-2007 10:57:18  
 Sample ID : KCKEG1AA Sample quantity : 53.900 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.51 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.261E+01	1.559E+00	4.251E-01	1.712E-02	53.191
TL-208	5.497E-01	4.407E-02	4.480E-02	1.562E-03	12.271
PB-210	1.198E+00	2.377E-01	4.630E-01	1.612E-02	2.588
PB-212	1.749E+00	1.173E-01	6.358E-02	2.506E-03	27.509
BI-214	1.055E+00	9.110E-02	8.239E-02	2.964E-03	12.806
PB-214	9.497E-01	8.103E-02	7.960E-02	2.564E-03	11.930
RA-226DA	1.050E+00	9.069E-02	8.202E-02	2.950E-03	12.805
AC-228	1.824E+00	1.781E-01	1.703E-01	7.525E-03	10.708
RA-228DA	1.699E+00	1.659E-01	1.586E-01	7.009E-03	10.709
TH-234	6.704E-01	1.629E-01	4.079E-01	1.266E-02	1.644

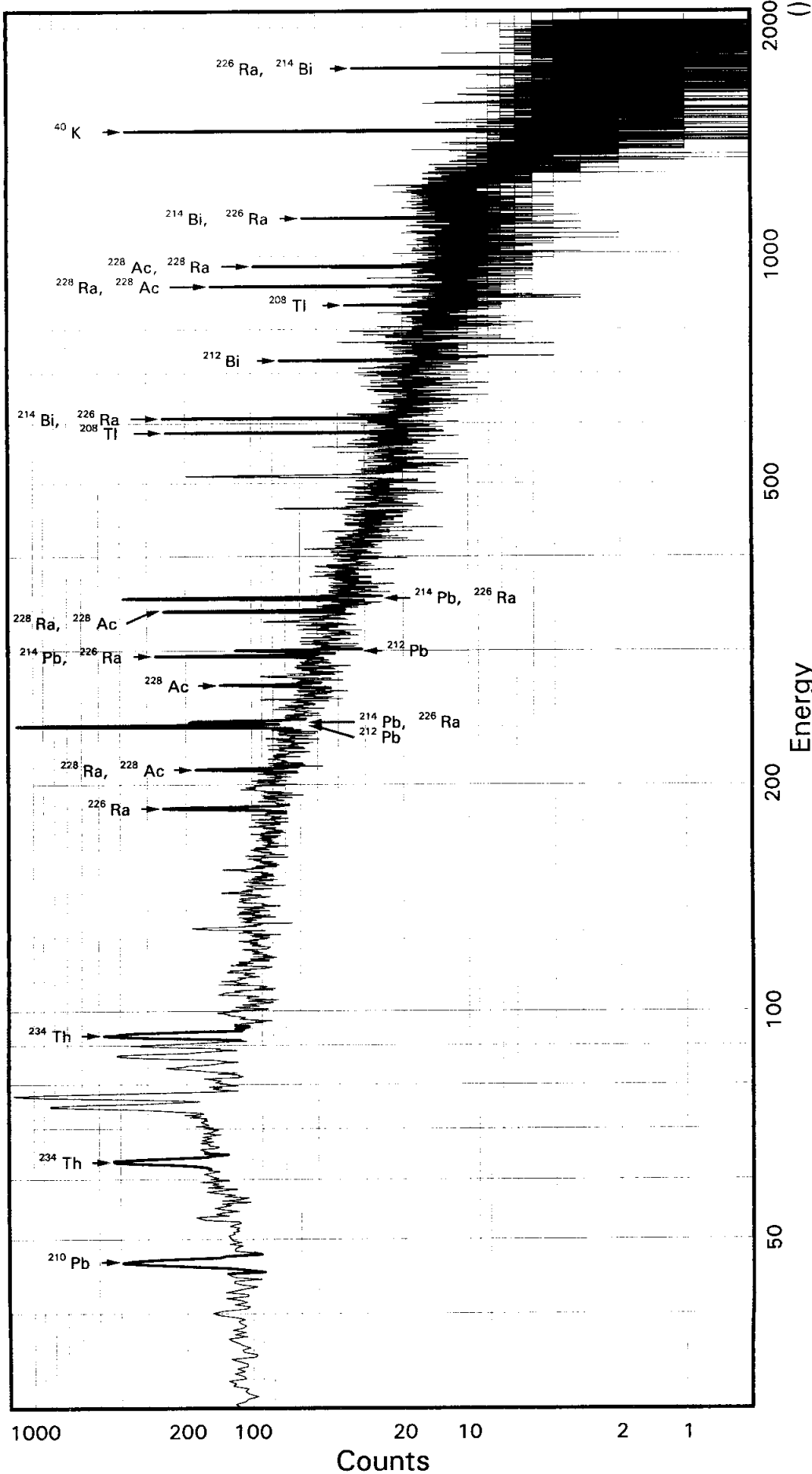
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-2.129E-01		6.468E-02	2.020E-01	7.779E-03	-1.054
CO-60	6.740E-04		1.379E-02	4.761E-02	1.988E-03	0.014
CS-137	-5.134E-03		1.378E-02	4.636E-02	1.765E-03	-0.111
BI-212	1.793E+00	+	3.545E-01	8.055E-01	3.238E-02	2.226
TH-227	1.737E+00		1.416E-01	3.023E-01	1.195E-02	5.747
AM-241	3.563E-02		1.843E-02	5.345E-02	1.675E-03	0.667

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKEJ1AA  
Detector ID: GER5 1



Energy Coefficients:  
Offset: -3.40243E-01  
Slope: 2.49393E-01  
Quadrature: -1.79132E-09

Acquisition Start: 15-DEC-2007 10:59:25.60  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCKEJ1AA

CONFIGURATION ID: GER5:KCKEJ1AA\_151271059  
TITLE : BRCO SOLID  
SAMPLE ID : KCKEJ1AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 15-DEC-07 10:59:25  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 10:40:00.00  
CALIB DATE: 15-DEC-2007 08:36:22.10  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:09

SAMPLE QUANTITY: 4.8400E+01  
SAMPLE GEOMETRY: ES25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.3402E+00 keV  
ENERGY SLOPE: 2.4939E-01 keV/C  
ENERGY Q COEFF: -.1791E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.9345E-01 keV  
FWHM SLOPE: 3.0375E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 20.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:44:09

Configuration : RDND06\$DKA100:[GER5.SAMPLE] KCKEJ1AA\_151271059.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 10:40:00 Acquisition date : 15-DEC-2007 10:59:25  
 Sample ID : KCKEJ1AA Sample quantity : 48.400 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.52 0.0%  
 Start energy : 19.61 End energy : 2042.57  
 Sensitivity : 5.00 Gaussian : 20.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.73*	321	1338	0.86	188.75	182	12	5.34E-03	28.7	
2	0	53.61*	99	1125	0.66	216.32	211	9	1.65E-03	74.0	
3	0	63.31*	470	1933	0.95	255.22	249	13	7.83E-03	23.4	
4	3	74.84*	2392	1886	0.91	301.47	295	22	3.99E-02	4.6	1.70E+00
5	3	77.14*	3939	1599	0.91	310.69	295	22	6.56E-02	2.8	
6	0	84.14	630	1818	1.18	338.76	330	15	1.05E-02	15.3	
7	0	87.21	1396	1546	1.17	351.05	346	12	2.33E-02	6.2	
8	0	89.99	884	1186	0.83	362.20	358	10	1.47E-02	8.1	
9	0	92.82*	1122	2000	1.44	373.55	368	18	1.87E-02	11.3	
10	0	129.14	491	1241	1.11	519.20	513	14	8.18E-03	16.0	
11	0	144.05	150	1130	0.68	578.96	574	12	2.50E-03	45.8	
12	0	185.91*	539	1120	1.26	746.80	739	16	8.98E-03	18.0	
13	0	209.12	525	922	1.07	839.88	834	14	8.76E-03	13.0	
14	4	238.61*	4630	844	1.04	958.12	950	30	7.72E-02	2.2	6.90E-01
15	4	241.50	1064	1178	1.69	969.72	950	30	1.77E-02	9.2	
16	0	269.96	453	860	1.01	1083.85	1076	18	7.56E-03	15.8	
17	0	295.23	1063	964	1.13	1185.18	1176	19	1.77E-02	7.7	
18	0	299.88	371	656	0.82	1203.83	1196	16	6.19E-03	16.3	
19	0	338.25	1083	679	1.14	1357.68	1350	18	1.81E-02	6.4	
20	0	351.88	1915	626	1.23	1412.32	1403	19	3.19E-02	3.8	
21	0	463.04	279	564	1.27	1858.06	1847	23	4.65E-03	22.9	
22	0	510.72*	336	744	1.97	2049.26	2035	26	5.61E-03	33.0	
23	0	583.17*	1249	432	1.42	2339.75	2326	24	2.08E-02	5.8	
24	0	609.31*	1114	403	1.21	2444.57	2435	19	1.86E-02	6.2	
25	0	727.39	283	346	1.02	2918.08	2908	21	4.71E-03	15.2	
26	0	794.68	198	391	2.48	3187.89	3174	31	3.30E-03	25.9	
27	0	860.48	144	216	1.91	3451.75	3443	18	2.41E-03	22.0	
28	0	911.27*	866	286	1.57	3655.43	3642	26	1.44E-02	6.3	
29	0	934.44	59	180	1.23	3748.34	3741	16	9.86E-04	45.4	
30	0	969.17	497	495	1.46	3887.61	3869	30	8.29E-03	11.8	
31	0	1120.41*	213	209	1.64	4494.07	4482	22	3.55E-03	18.9	
32	0	1460.76*	2834	75	2.11	5858.89	5841	31	4.72E-02	2.4	
33	0	1764.35*	160	56	1.50	7076.29	7062	28	2.66E-03	17.8	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : RDND06\$DKA100:[GER5.SAMPLE]KCKEJ1AA\_151271059.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 10:40:00 Acquisition date : 15-DEC-2007 10:59:25  
 Sample ID : KCKEJ1AA Sample quantity : 48.400 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.52 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	2834	10.67*	1.107E+00	2.232E+01	2.232E+01	6.45
TL-208	277.28	-----	6.31	5.326E+00	-----	Line Not Found	-----
	583.02	1249	84.50*	2.702E+00	5.092E-01	5.243E-01	8.34
	860.30	144	12.42	1.849E+00	5.849E-01	6.022E-01	22.90
PB-210	46.52	321	4.25*	8.622E+00	8.145E-01	8.165E-01	29.39
PB-212	238.58	4630	43.30*	6.039E+00	1.648E+00	1.697E+00	6.50
	300.03	371	3.28	4.978E+00	2.117E+00	2.180E+00	17.34
BI-214	609.31	1114	46.09*	2.590E+00	8.684E-01	8.684E-01	8.69
	768.35	-----	4.94	2.067E+00	-----	Line Not Found	-----
	1120.27	213	15.10	1.427E+00	9.198E-01	9.198E-01	19.86
	1764.49	160	15.40	9.357E-01	1.031E+00	1.031E+00	18.76
PB-214	241.92	1064	7.43	5.979E+00	2.230E+00	2.230E+00	11.08
	295.09	1063	19.30	5.046E+00	1.016E+00	1.016E+00	9.74
	351.87	1915	37.60*	4.323E+00	1.097E+00	1.097E+00	7.03
RA-226DA	186.21	539	3.50	7.339E+00	1.953E+00	1.953E+00	18.95
	241.98	1064	7.49	5.979E+00	2.212E+00	2.212E+00	11.08
	295.22	1063	19.20	5.046E+00	1.021E+00	1.021E+00	9.74
	351.92	1915	37.20	4.323E+00	1.108E+00	1.108E+00	7.03
	609.32	1114	46.30*	2.590E+00	8.645E-01	8.645E-01	8.69
	1120.28	213	15.10	1.427E+00	9.198E-01	9.198E-01	19.86
	1238.11	-----	5.94	1.295E+00	-----	Line Not Found	-----
	1764.49	160	15.80	9.357E-01	1.005E+00	1.005E+00	18.76
AC-228	209.39	525	3.89	6.711E+00	1.873E+00	1.892E+00	14.36
	270.26	453	3.46	5.448E+00	2.238E+00	2.260E+00	16.97
	338.42	1083	11.27	4.478E+00	1.998E+00	2.017E+00	8.72
	911.16	866	25.80*	1.747E+00	1.788E+00	1.806E+00	8.95
	968.97	497	15.80	1.644E+00	1.782E+00	1.799E+00	13.41
RA-228DA	209.28	525	4.40	6.711E+00	1.656E+00	1.672E+00	14.36
	338.32	1083	11.40	4.478E+00	1.975E+00	1.994E+00	8.72
	911.07	866	27.70*	1.747E+00	1.666E+00	1.682E+00	8.95
	964.60	-----	5.20	1.652E+00	-----	Line Not Found	-----
	969.11	497	16.60	1.644E+00	1.696E+00	1.713E+00	13.41
TH-234	63.29	470	4.82*	1.059E+01	8.563E-01	8.563E-01	24.12
	92.59	1122	6.08	1.067E+01	1.610E+00	1.610E+00	12.78

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	53.61	99	1125	0.66	216.32	211	9	1.65E-03	74.0	9.73E+00	
3	74.84	2392	1886	0.91	301.47	295	22	3.99E-02	4.6	1.09E+01	
3	77.14	3939	1599	0.91	310.69	295	22	6.56E-02	2.8	1.09E+01	
0	84.14	630	1818	1.18	338.76	330	15	1.05E-02	15.3	1.09E+01	
0	87.21	1396	1546	1.17	351.05	346	12	2.33E-02	6.2	1.08E+01	
0	89.99	884	1186	0.83	362.20	358	10	1.47E-02	8.1	1.07E+01	
0	129.14	491	1241	1.11	519.20	513	14	8.18E-03	16.0	9.31E+00	
0	144.05	150	1130	0.68	578.96	574	12	2.50E-03	45.8	8.74E+00	
0	463.04	279	564	1.27	1858.06	1847	23	4.65E-03	22.9	3.36E+00	
0	510.72	336	744	1.97	2049.26	2035	26	5.61E-03	33.0	3.07E+00	
0	727.39	283	346	1.02	2918.08	2908	21	4.71E-03	15.2	2.18E+00	T
0	794.68	198	391	2.48	3187.89	3174	31	3.30E-03	25.9	2.00E+00	
0	934.44	59	180	1.23	3748.34	3741	16	9.86E-04	45.4	1.70E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	1.888E+00	16.46	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline



Configuration : RDND06\$DKA100:[GER5.SAMPLE] KCKEJ1AA\_151271059.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 10:40:00 Acquisition date : 15-DEC-2007 10:59:25  
 Sample ID : KCKEJ1AA Sample quantity : 48.400 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.52 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.232E+01	1.439E+00	3.633E-01	1.204E-02	61.443
TL-208	5.243E-01	4.371E-02	3.867E-02	1.304E-03	13.558
PB-210	8.165E-01	2.399E-01	4.273E-01	1.602E-02	1.911
PB-212	1.697E+00	1.102E-01	5.220E-02	1.831E-03	32.510
BI-214	8.684E-01	7.544E-02	7.332E-02	2.528E-03	11.845
PB-214	1.097E+00	7.706E-02	6.584E-02	2.083E-03	16.656
RA-226DA	8.645E-01	7.510E-02	7.298E-02	2.517E-03	11.845
AC-228	1.806E+00	1.616E-01	1.509E-01	5.924E-03	11.965
RA-228DA	1.682E+00	1.505E-01	1.406E-01	5.518E-03	11.967
TH-234	8.563E-01	2.065E-01	3.595E-01	1.102E-02	2.382

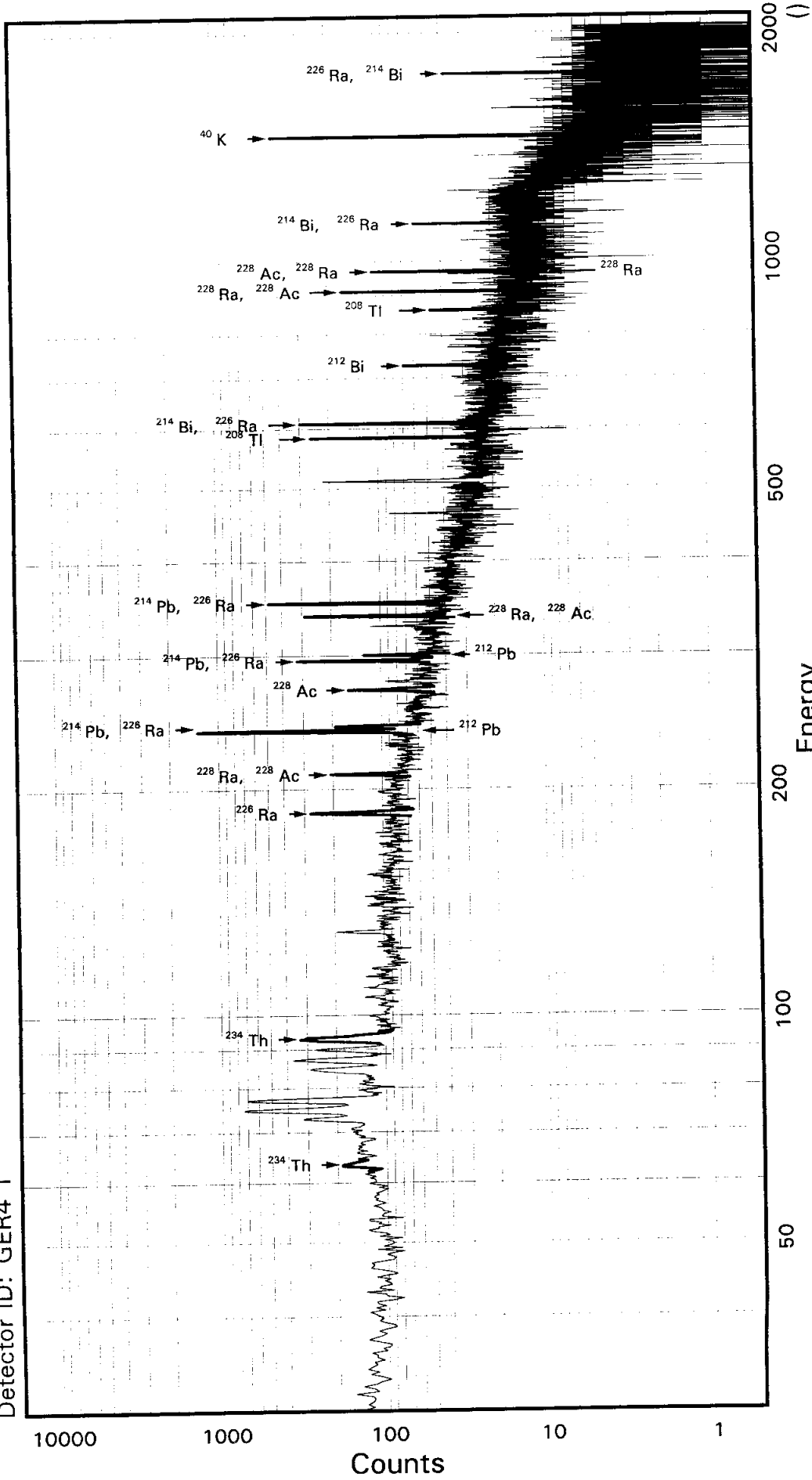
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	4.548E-02		5.243E-02	1.744E-01	5.708E-03	0.261
CO-60	1.495E-02		1.292E-02	4.609E-02	1.520E-03	0.324
CS-137	1.616E-02		1.215E-02	4.218E-02	1.510E-03	0.383
BI-212	1.888E+00	+	3.107E-01	7.680E-01	2.861E-02	2.458
TH-227	1.316E-01		6.524E-02	1.912E-01	6.710E-03	0.688
AM-241	2.815E-02		1.551E-02	4.797E-02	1.493E-03	0.587

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKEK1AA  
Detector ID: GER4 1



Energy Coefficients:  
Offset: -4.50620E-02  
Slope: 2.48818E-01  
Quadrature: 1.13127E-08

Acquisition Start: 17-DEC-2007 10:37:58.34  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION:

KCKEK1AA

CONFIGURATION ID: GER4:KCKEK1AA 171271037  
TITLE : BRCO SOLID  
SAMPLE ID : KCKEK1AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 17-DEC-07 10:37:58  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 11:15:00.00  
CALIB DATE: 17-DEC-2007 05:48:04.41  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:17

SAMPLE QUANTITY: 5.1000E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.4506E-01 keV  
ENERGY SLOPE: 2.4882E-01 keV/C  
ENERGY Q COEFF: 1.1313E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.5327E-01 keV  
FWHM SLOPE: 4.9332E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 03:18:25

```

Configuration      : $DISK1:[GER4.SAMPLE]KCCEK1AA_171271037.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 11:15:00 Acquisition date : 17-DEC-2007 10:37:58
Sample ID         : KCCEK1AA           Sample quantity  : 51.000 GRAMS
Sample type       :                   Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:17.51   0.0%
Start energy      : 19.86              End energy        : 2039.03
Sensitivity       : 5.00               Gaussian          : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.52*	5	1338	0.69	255.48	250	10	8.86E-05	*****	
2	7	72.97*	165	1209	0.92	293.45	289	28	2.76E-03	49.7	2.27E+00
3	7	74.95*	1309	1527	0.95	301.40	289	28	2.18E-02	8.3	
4	7	77.16	2296	1308	0.90	310.29	289	28	3.83E-02	3.8	
5	0	84.66*	200	1461	1.19	340.42	334	12	3.33E-03	48.0	
6	0	87.27*	875	1233	1.05	350.90	346	11	1.46E-02	9.8	
7	0	89.97	601	1061	0.84	361.76	357	10	1.00E-02	10.9	
8	0	93.00*	1032	1748	1.36	373.93	367	18	1.72E-02	11.1	
9	0	129.09	372	1038	0.98	518.99	514	11	6.19E-03	17.6	
10	0	185.90*	669	1239	1.14	747.27	740	16	1.11E-02	13.9	
11	0	209.19	508	972	0.86	840.88	835	13	8.47E-03	13.4	
12	6	238.62*	5158	755	1.00	959.16	948	32	8.60E-02	2.0	1.53E+00
13	6	241.46	1088	1119	1.80	970.55	948	32	1.81E-02	8.1	
14	0	270.24	610	916	0.94	1086.23	1077	19	1.02E-02	12.6	
15	0	295.23	1275	911	1.04	1186.66	1179	18	2.13E-02	6.2	
16	0	300.05	385	705	1.06	1206.02	1198	15	6.42E-03	15.9	
17	0	328.07	366	565	1.04	1318.62	1311	14	6.10E-03	14.8	
18	0	338.26*	985	649	0.91	1359.56	1352	15	1.64E-02	7.4	
19	0	351.87*	1848	895	1.07	1414.27	1405	20	3.08E-02	5.1	
20	0	462.89	341	502	1.38	1860.39	1849	19	5.68E-03	16.7	
21	8	508.45	92	195	0.88	2043.46	2040	26	1.53E-03	27.3	2.92E+00
22	8	510.93*	334	702	2.31	2053.42	2040	26	5.57E-03	32.8	
23	0	583.13*	1325	423	1.43	2343.53	2334	19	2.21E-02	5.1	
24	0	609.17*	1347	560	1.30	2448.18	2437	24	2.25E-02	6.0	
25	0	727.04	364	359	1.62	2921.77	2910	21	6.07E-03	12.2	
26	0	795.00	170	273	0.95	3194.82	3186	18	2.83E-03	21.0	
27	0	860.70	225	264	1.34	3458.78	3449	20	3.76E-03	16.4	
28	0	911.20*	1056	308	1.64	3661.69	3650	28	1.76E-02	5.7	
29	0	964.77	102	212	2.31	3876.89	3871	13	1.69E-03	27.5	
30	0	968.96	592	343	1.28	3893.75	3884	24	9.86E-03	8.2	
31	0	1120.30	293	309	1.54	4501.75	4491	23	4.88E-03	14.5	
32	0	1378.57	92	190	0.69	5539.26	5520	32	1.53E-03	35.2	
33	0	1460.71*	3102	215	2.18	5869.22	5852	33	5.17E-02	2.5	
34	0	1764.58*	214	58	1.98	7089.73	7075	31	3.57E-03	12.8	

Flag: "\*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 18-DEC-2007 03:18:26

Configuration : \$DISK1:[GER4.SAMPLE]KCKEK1AA\_171271037.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 11:15:00 Acquisition date : 17-DEC-2007 10:37:58  
 Sample ID : KCKEK1AA Sample quantity : 51.000 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.51 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma %Error
					PCI/GRAM	PCI/GRAM	
K-40	1460.83	3102	10.67*	1.116E+00	2.302E+01	2.302E+01	6.54
TL-208	277.28	-----	6.31	5.099E+00	-----	Line Not Found	-----
	583.02	1325	84.50*	2.699E+00	5.131E-01	5.294E-01	7.97
	860.30	225	12.42	1.866E+00	8.588E-01	8.859E-01	17.81
PB-212	238.58	5158	43.30*	5.713E+00	1.842E+00	1.900E+00	6.39
	300.03	385	3.28	4.789E+00	2.167E+00	2.235E+00	17.01
BI-214	609.31	1347	46.09*	2.593E+00	9.956E-01	9.956E-01	8.56
	768.35	-----	4.94	2.084E+00	-----	Line Not Found	-----
	1120.27	293	15.10	1.438E+00	1.191E+00	1.191E+00	15.79
PB-214	1764.49	214	15.40	9.526E-01	1.290E+00	1.290E+00	14.09
	241.92	1088	7.43	5.664E+00	2.284E+00	2.284E+00	10.09
	295.09	1275	19.30	4.852E+00	1.203E+00	1.203E+00	8.75
RA-226DA	351.87	1848	37.60*	4.201E+00	1.033E+00	1.033E+00	7.91
	186.21	669	3.50	6.714E+00	2.514E+00	2.514E+00	15.12
	241.98	1088	7.49	5.664E+00	2.265E+00	2.265E+00	10.09
	295.22	1275	19.20	4.852E+00	1.209E+00	1.209E+00	8.75
	351.92	1848	37.20	4.201E+00	1.044E+00	1.044E+00	7.91
	609.32	1347	46.30*	2.593E+00	9.911E-01	9.911E-01	8.56
AC-228	1120.28	293	15.10	1.438E+00	1.191E+00	1.191E+00	15.79
	1238.11	-----	5.94	1.304E+00	-----	Line Not Found	-----
	1764.49	214	15.80	9.526E-01	1.258E+00	1.258E+00	14.09
	209.39	508	3.89	6.255E+00	1.844E+00	1.863E+00	14.69
	270.26	610	3.46	5.203E+00	2.993E+00	3.024E+00	13.99
	338.42	985	11.27	4.341E+00	1.778E+00	1.797E+00	9.55
RA-228DA	911.16	1056	25.80*	1.765E+00	2.049E+00	2.071E+00	9.05
	968.97	592	15.80	1.661E+00	1.992E+00	2.012E+00	10.72
	209.28	508	4.40	6.255E+00	1.630E+00	1.647E+00	14.69
	338.32	985	11.40	4.341E+00	1.758E+00	1.776E+00	9.55
	911.07	1056	27.70*	1.765E+00	1.909E+00	1.928E+00	9.05
	964.60	102	5.20	1.668E+00	1.034E+00	1.045E+00	28.33
TH-234	969.11	592	16.60	1.661E+00	1.896E+00	1.915E+00	10.72
	63.29	5	4.82*	2.784E+00	3.501E-02	3.501E-02	1512.64
	92.59	1032	6.08	6.304E+00	2.379E+00	2.379E+00	12.77

Flag: "\*" = Keyline

## Unidentified Energy Lines

Page : 2

Sample ID : KCKEK1AA

Acquisition date : 17-DEC-2007 10:37:58

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
7	72.97	165	1209	0.92	293.45	289	28	2.76E-03	49.7	4.15E+00	
7	74.95	1309	1527	0.95	301.40	289	28	2.18E-02	8.3	4.42E+00	
7	77.16	2296	1308	0.90	310.29	289	28	3.83E-02	3.8	4.71E+00	
0	84.66	200	1461	1.19	340.42	334	12	3.33E-03	48.0	5.56E+00	
0	87.27	875	1233	1.05	350.90	346	11	1.46E-02	9.8	5.82E+00	
0	89.97	601	1061	0.84	361.76	357	10	1.00E-02	10.9	6.06E+00	
0	129.09	372	1038	0.98	518.99	514	11	6.19E-03	17.6	7.48E+00	
0	328.07	366	565	1.04	1318.62	1311	14	6.10E-03	14.8	4.45E+00	
0	462.89	341	502	1.38	1860.39	1849	19	5.68E-03	16.7	3.32E+00	
8	508.45	92	195	0.88	2043.46	2040	26	1.53E-03	27.3	3.05E+00	
8	510.93	334	702	2.31	2053.42	2040	26	5.57E-03	32.8	3.04E+00	
0	727.04	364	359	1.62	2921.77	2910	21	6.07E-03	12.2	2.20E+00	T
0	795.00	170	273	0.95	3194.82	3186	18	2.83E-03	21.0	2.02E+00	
0	1378.57	92	190	0.69	5539.26	5520	32	1.53E-03	35.2	1.18E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	2.296E+00	13.84	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER4.SAMPLE]KCCEK1AA_171271037.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
Analyses by       : MINACT V2.8
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 11:15:00 Acquisition date : 17-DEC-2007 10:37:58
Sample ID         : KCCEK1AA_ Sample quantity : 51.000 GRAMS
Sample type       : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.51 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00 WTM error limit : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.302E+01	1.505E+00	4.409E-01	1.504E-02	52.198
TL-208	5.294E-01	4.217E-02	3.820E-02	1.336E-03	13.856
PB-212	1.900E+00	1.214E-01	5.007E-02	1.727E-03	37.945
BI-214	9.956E-01	8.527E-02	7.413E-02	2.664E-03	13.430
PB-214	1.033E+00	8.178E-02	6.379E-02	2.175E-03	16.201
RA-226DA	9.911E-01	8.488E-02	7.380E-02	2.652E-03	13.430
AC-228	2.071E+00	1.873E-01	1.603E-01	7.950E-03	12.914
RA-228DA	1.928E+00	1.745E-01	1.493E-01	7.404E-03	12.916
TH-234	3.501E-02	5.295E-01	1.000E+00	3.514E-02	0.035

---- Non-Identified Nuclides ----

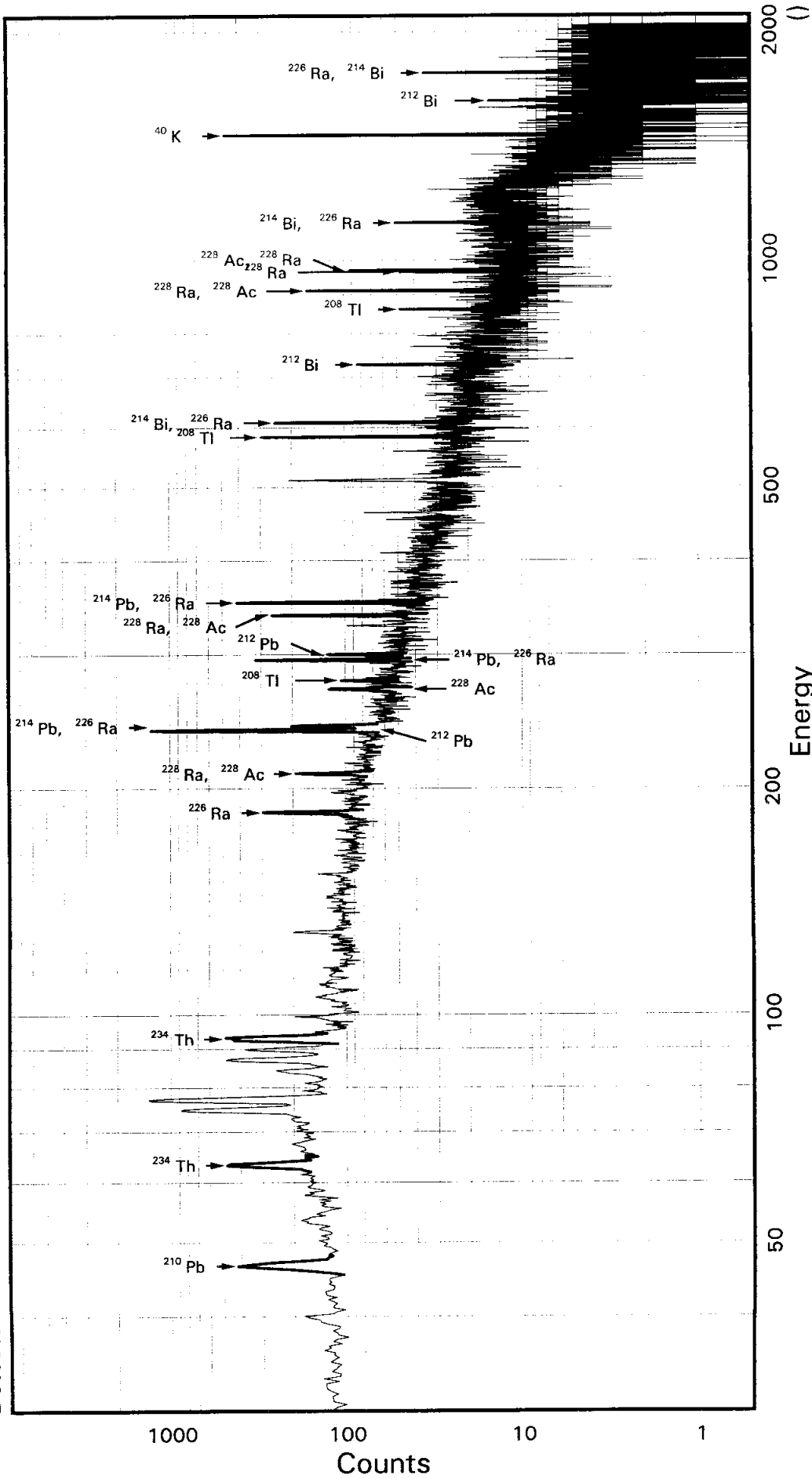
Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	7.182E-02		5.081E-02	1.725E-01	5.896E-03	0.416
CO-60	5.073E-03		1.378E-02	4.737E-02	1.608E-03	0.107
CS-137	1.207E-02		1.215E-02	4.155E-02	1.568E-03	0.290
PB-210	4.186E+00		1.389E+00	4.574E+00	5.519E-01	0.915
BI-212	2.296E+00	+	3.177E-01	7.844E-01	3.225E-02	2.926
TH-227	7.394E-02		6.127E-02	1.786E-01	6.146E-03	0.414
AM-241	-5.688E-02		4.668E-02	1.556E-01	5.319E-03	-0.365



STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKEL1AA  
Detector ID: GER5 1



Energy Coefficients:  
Offset: -3.28118E-01  
Slope: 2.49374E-01  
Quadrature: 9.69723E-10

Acquisition Start: 17-DEC-2007 10:39:30.71  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION:

KCKEL1AA

CONFIGURATION ID: GER5:KCKEL1AA\_171271039  
TITLE : BRCO SOLID  
SAMPLE ID : KCKEL1AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 17-DEC-07 10:39:30  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 11:25:00.00  
CALIB DATE: 17-DEC-2007 05:49:10.07  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:10

SAMPLE QUANTITY: 5.1500E+01  
SAMPLE GEOMETRY: ES25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.3281E+00 keV  
ENERGY SLOPE: 2.4937E-01 keV/C  
ENERGY Q COEFF: 9.6972E-10 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.2845E-01 keV  
FWHM SLOPE: 2.9218E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 03:19:48

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]KCKEL1AA_171271039.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 11:25:00 Acquisition date : 17-DEC-2007 10:39:30
Sample ID        : KCKEL1AA Sample quantity : 51.500 GRAMS
Sample type      : Sample geometry : ES25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.24 0.0%
Start energy     : 19.62 End energy : 2042.61
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	39.72	202	1006	0.61	160.59	157	9	3.37E-03	29.2	
2	0	46.59*	396	1413	0.84	188.14	183	12	6.60E-03	24.8	
3	0	63.32*	617	2090	0.81	255.23	250	13	1.03E-02	18.5	
4	3	74.87	2944	1978	0.94	301.56	295	22	4.91E-02	3.4	1.14E+00
5	3	77.14*	4554	1675	0.91	310.67	295	22	7.59E-02	2.5	
6	0	84.10	573	1902	1.19	338.54	331	14	9.56E-03	16.7	
7	1	87.26	1678	1736	1.10	351.22	345	23	2.80E-02	5.6	1.07E+00
8	1	89.89	1049	1653	1.05	361.79	345	23	1.75E-02	8.7	
9	0	92.85*	1053	1722	1.46	373.66	368	13	1.75E-02	11.2	
10	0	99.36	409	1137	0.49	399.77	394	12	6.81E-03	17.3	
11	0	129.09	325	1234	0.95	518.98	514	11	5.42E-03	21.6	
12	0	185.79*	688	1457	1.20	746.32	737	17	1.15E-02	16.0	
13	0	209.22	571	1178	1.09	840.31	833	16	9.52E-03	14.1	
14	4	238.59*	5110	885	1.05	958.05	951	27	8.52E-02	2.1	8.86E-01
15	4	241.44	1049	1130	1.60	969.49	951	27	1.75E-02	8.3	
16	0	270.09	429	1020	1.24	1084.39	1075	19	7.16E-03	18.5	
17	0	277.55	166	884	1.02	1114.31	1107	15	2.77E-03	39.8	
18	0	295.23	1258	668	1.07	1185.18	1178	14	2.10E-02	5.2	
19	0	300.13	328	715	0.86	1204.83	1198	14	5.47E-03	18.2	
20	0	327.92	294	573	1.31	1316.29	1310	13	4.90E-03	17.8	
21	0	338.34	1129	600	1.15	1358.08	1351	15	1.88E-02	5.6	
22	0	351.90	2008	765	1.22	1412.45	1404	21	3.35E-02	4.1	
23	0	462.99	285	442	1.15	1857.90	1850	17	4.75E-03	18.0	
24	0	510.87*	354	843	1.85	2049.92	2037	32	5.89E-03	34.1	
25	0	583.12*	1394	460	1.28	2339.64	2329	21	2.32E-02	5.4	
26	0	609.33	1375	413	1.51	2444.72	2436	19	2.29E-02	4.5	
27	0	727.51	369	390	1.18	2918.62	2907	24	6.14E-03	13.2	
28	0	860.40	135	280	0.50	3451.50	3442	20	2.26E-03	27.1	
29	0	911.08*	920	233	1.54	3654.72	3643	23	1.53E-02	6.2	
30	0	964.54	211	259	1.30	3869.08	3857	21	3.52E-03	17.6	
31	0	969.10*	485	259	1.67	3887.39	3878	23	8.08E-03	9.7	
32	0	1120.06	346	221	1.71	4492.71	4479	25	5.77E-03	11.2	
33	0	1460.74*	3299	135	1.84	5858.81	5842	36	5.50E-02	2.3	
34	0	1620.99	83	34	2.37	6501.39	6491	22	1.39E-03	18.5	
35	0	1764.46	277	51	1.75	7076.66	7062	32	4.61E-03	8.9	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]KCKEL1AA_171271039.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 11:25:00 Acquisition date : 17-DEC-2007 10:39:30
Sample ID        : KCKEL1AA           Sample quantity  : 51.500 GRAMS
Sample type      :                    Sample geometry   : ES25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:10.24    0.0%
Energy tolerance  : 1.50              Half life ratio   : 8.00
Errors propagated: Yes                Systematic Error  : 5.00 %
Efficiency type   : Empirical         Efficiencies at   : Peak Energy
Abundance limit  : 80.00
    
```

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	3299	10.67*	1.108E+00	2.442E+01	2.442E+01	6.41
TL-208	277.28	166	6.31	5.321E+00	4.336E-01	4.473E-01	40.23
	583.02	1394	84.50*	2.702E+00	5.342E-01	5.510E-01	8.12
	860.30	135	12.42	1.849E+00	5.156E-01	5.319E-01	27.86
PB-210	46.52	396	4.25*	8.593E+00	9.485E-01	9.510E-01	25.53
BI-212	727.25	369	6.58*	2.180E+00	2.247E+00	2.318E+00	14.58
	785.51	-----	1.10	2.022E+00	-----	Line Not Found	-----
	1620.66	83	1.49	1.008E+00	4.854E+00	5.008E+00	19.46
PB-212	238.58	5110	43.30*	6.039E+00	1.709E+00	1.763E+00	6.46
	300.03	328	3.28	4.975E+00	1.759E+00	1.815E+00	19.13
BI-214	609.31	1375	46.09*	2.590E+00	1.008E+00	1.008E+00	7.53
	768.35	-----	4.94	2.067E+00	-----	Line Not Found	-----
	1120.27	346	15.10	1.427E+00	1.404E+00	1.404E+00	12.73
PB-214	1764.49	277	15.40	9.357E-01	1.681E+00	1.681E+00	10.71
	241.92	1049	7.43	5.980E+00	2.065E+00	2.065E+00	10.27
	295.09	1258	19.30	5.046E+00	1.130E+00	1.130E+00	7.94
RA-226DA	351.87	2008	37.60*	4.323E+00	1.081E+00	1.081E+00	7.20
	186.21	688	3.50	7.343E+00	2.341E+00	2.341E+00	17.07
	241.98	1049	7.49	5.980E+00	2.048E+00	2.048E+00	10.27
AC-228	295.22	1258	19.20	5.046E+00	1.136E+00	1.136E+00	7.94
	351.92	2008	37.20	4.323E+00	1.092E+00	1.092E+00	7.20
	609.32	1375	46.30*	2.590E+00	1.003E+00	1.003E+00	7.53
RA-228DA	1120.28	346	15.10	1.427E+00	1.404E+00	1.404E+00	12.73
	1238.11	-----	5.94	1.295E+00	-----	Line Not Found	-----
	1764.49	277	15.80	9.357E-01	1.638E+00	1.638E+00	10.71
TH-234	209.39	571	3.89	6.708E+00	1.914E+00	1.934E+00	15.35
	270.26	429	3.46	5.446E+00	1.993E+00	2.014E+00	19.46
	338.42	1129	11.27	4.477E+00	1.957E+00	1.977E+00	8.16
RA-228DA	911.16	920	25.80*	1.748E+00	1.785E+00	1.804E+00	8.89
	968.97	485	15.80	1.645E+00	1.632E+00	1.649E+00	11.56
	209.28	571	4.40	6.708E+00	1.692E+00	1.710E+00	15.35
TH-234	338.32	1129	11.40	4.477E+00	1.934E+00	1.955E+00	8.16
	911.07	920	27.70*	1.748E+00	1.663E+00	1.680E+00	8.89
	964.60	211	5.20	1.652E+00	2.151E+00	2.174E+00	18.65
TH-234	969.11	485	16.60	1.645E+00	1.553E+00	1.569E+00	11.56
	63.29	617	4.82*	1.059E+01	1.058E+00	1.058E+00	19.39

Sample ID : KCKEL1AA

Acquisition date : 17-DEC-2007 10:39:30

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
	92.59	1053	6.08	1.067E+01	1.419E+00	1.419E+00	12.69

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	39.72	202	1006	0.61	160.59	157	9	3.37E-03	29.2	6.97E+00	
3	74.87	2944	1978	0.94	301.56	295	22	4.91E-02	3.4	1.09E+01	
3	77.14	4554	1675	0.91	310.67	295	22	7.59E-02	2.5	1.09E+01	
0	84.10	573	1902	1.19	338.54	331	14	9.56E-03	16.7	1.09E+01	
1	87.26	1678	1736	1.10	351.22	345	23	2.80E-02	5.6	1.08E+01	
1	89.89	1049	1653	1.05	361.79	345	23	1.75E-02	8.7	1.07E+01	
0	99.36	409	1137	0.49	399.77	394	12	6.81E-03	17.3	1.05E+01	
0	129.09	325	1234	0.95	518.98	514	11	5.42E-03	21.6	9.32E+00	
0	327.92	294	573	1.31	1316.29	1310	13	4.90E-03	17.8	4.60E+00	
0	462.99	285	442	1.15	1857.90	1850	17	4.75E-03	18.0	3.36E+00	
0	510.87	354	843	1.85	2049.92	2037	32	5.89E-03	34.1	3.06E+00	

Flags: "T" = Tentatively associated

Rejected Report  
Sample ID : KCKEL1AA

Page : 4  
Acquisition date : 17-DEC-2007 10:39:30

Flag: "\*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 18-DEC-2007 03:19:49

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]KCKEL1AA_171271039.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8
Analyses by       : MINACT V2.8
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 11:25:00 Acquisition date : 17-DEC-2007 10:39:30
Sample ID        : KCKEL1AA Sample quantity : 51.500 GRAMS
Sample type      : Sample geometry : ES25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.24 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00 WTM error limit : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.442E+01	1.565E+00	3.570E-01	1.184E-02	68.394
TL-208	5.510E-01	4.474E-02	3.771E-02	1.272E-03	14.612
PB-210	9.510E-01	2.428E-01	4.204E-01	1.576E-02	2.262
BI-212	2.318E+00	3.380E-01	5.217E-01	1.943E-02	4.443
PB-212	1.763E+00	1.139E-01	5.202E-02	1.825E-03	33.896
BI-214	1.008E+00	7.589E-02	6.989E-02	2.410E-03	14.418
PB-214	1.081E+00	7.783E-02	6.477E-02	2.049E-03	16.686
RA-226DA	1.003E+00	7.555E-02	6.957E-02	2.399E-03	14.417
AC-228	1.804E+00	1.604E-01	1.466E-01	5.754E-03	12.307
RA-228DA	1.680E+00	1.494E-01	1.365E-01	5.358E-03	12.308
TH-234	1.058E+00	2.051E-01	3.501E-01	1.073E-02	3.020

---- Non-Identified Nuclides ----

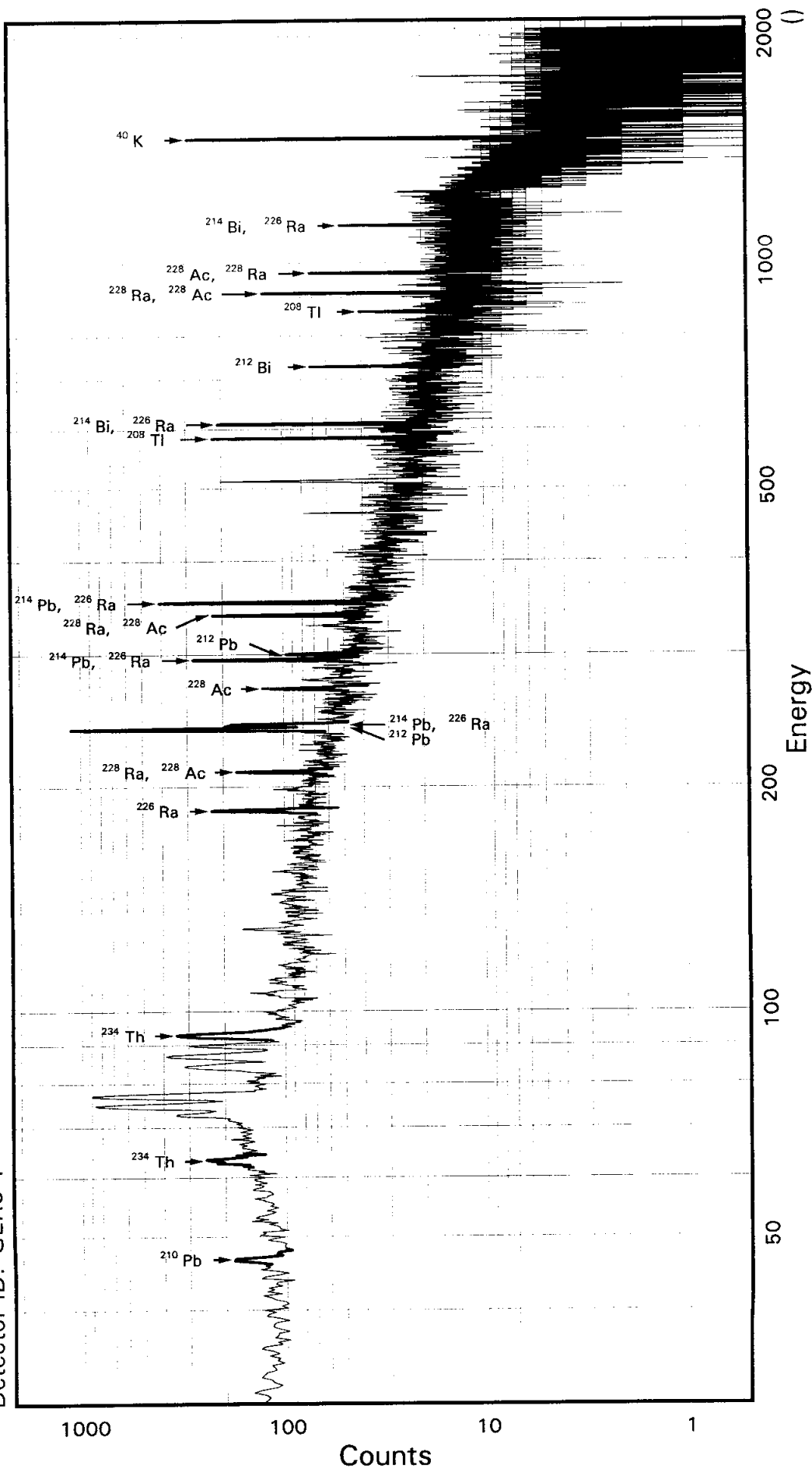
Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-9.779E-04		5.195E-02	1.704E-01	5.579E-03	-0.006
CO-60	-2.434E-02		1.231E-02	3.991E-02	1.316E-03	-0.610
CS-137	-1.703E-02		1.174E-02	3.869E-02	1.385E-03	-0.440
TH-227	1.908E-01		6.424E-02	1.882E-01	6.604E-03	1.014
AM-241	1.889E-02		1.491E-02	4.707E-02	1.465E-03	0.401



STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKEM1AA  
Detector ID: GER6 1



Energy Coefficients:  
Offset: 3.37941E-01  
Slope: 2.49455E-01  
Quadrature: 7.81047E-09

Acquisition Start: 17-DEC-2007 10:40:18.15  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION:

KCKEM1AA

CONFIGURATION ID: GER6:KCKEM1AA\_171271040  
TITLE : BRCO SOLID  
SAMPLE ID : KCKEM1AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 17-DEC-07 10:40:18  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 09:16:00.00  
CALIB DATE: 17-DEC-2007 05:48:21.48  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:10

SAMPLE QUANTITY: 4.8700E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 3.3794E-01 keV  
ENERGY SLOPE: 2.4945E-01 keV/C  
ENERGY Q COEFF: 7.8105E-09 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.7562E-01 keV  
FWHM SLOPE: 6.6433E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 03:20:34

```

Configuration      : $DISK1:[GER6.SAMPLE]KCKEM1AA_171271040.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 09:16:00 Acquisition date : 17-DEC-2007 10:40:18
Sample ID        : KCKEM1AA Sample quantity : 48.700 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.88 0.0%
Start energy     : 20.29 End energy : 2044.39
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.66*	64	1091	0.61	185.69	182	10	1.07E-03	114.3	
2	0	63.21*	219	1626	1.03	252.02	247	11	3.64E-03	40.5	
3	5	72.83*	141	2238	1.19	290.61	281	34	2.35E-03	83.1	1.33E+00
4	5	74.80*	1887	1799	1.00	298.50	281	34	3.15E-02	6.3	
5	5	77.03	3539	1791	1.05	307.44	281	34	5.90E-02	3.1	
6	8	84.38*	628	1708	1.56	336.89	330	34	1.05E-02	17.8	7.33E-01
7	8	87.13*	1315	1693	1.27	347.94	330	34	2.19E-02	8.1	
8	8	89.82	809	1119	1.02	358.71	330	34	1.35E-02	8.5	
9	0	92.83*	1110	1717	1.46	370.79	364	16	1.85E-02	9.7	
10	0	129.09	362	997	0.95	516.13	511	12	6.04E-03	18.2	
11	0	185.84*	616	1124	1.23	743.61	735	16	1.03E-02	15.3	
12	0	209.43	508	926	1.02	838.17	831	15	8.46E-03	13.8	
13	6	238.67*	5353	895	1.19	955.37	947	29	8.92E-02	1.9	1.34E+00
14	6	241.54	1165	927	1.87	966.87	947	29	1.94E-02	7.6	
15	0	270.28	400	879	1.08	1082.09	1074	18	6.66E-03	18.1	
16	0	295.25	1262	795	1.21	1182.19	1174	17	2.10E-02	5.8	
17	0	300.07	327	502	1.44	1201.49	1196	12	5.45E-03	14.8	
18	0	338.30	967	863	1.33	1354.74	1346	19	1.61E-02	8.0	
19	0	351.91*	2048	700	1.35	1409.32	1401	19	3.41E-02	4.5	
20	0	463.09	321	490	1.65	1854.94	1844	20	5.34E-03	15.5	
21	0	511.28*	557	802	2.02	2048.12	2033	36	9.29E-03	18.8	
22	0	583.18	1543	576	1.68	2336.30	2321	29	2.57E-02	4.5	
23	0	609.28	1397	520	1.73	2440.91	2430	23	2.33E-02	4.5	
24	0	727.38	360	359	1.35	2914.28	2902	24	6.01E-03	12.9	
25	0	795.08	186	367	1.28	3185.60	3172	27	3.09E-03	22.8	
26	0	860.57	167	249	1.62	3448.08	3438	20	2.78E-03	19.3	
27	0	911.14	995	286	1.95	3650.74	3637	25	1.66E-02	4.7	
28	0	969.21	492	323	2.03	3883.49	3873	23	8.20E-03	8.6	
29	0	1119.88	323	376	1.70	4487.33	4469	34	5.38E-03	14.9	
30	0	1460.85*	3315	208	3.18	5853.75	5832	45	5.53E-02	2.3	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER6.SAMPLE]KCKEM1AA\_171271040.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 09:16:00 Acquisition date : 17-DEC-2007 10:40:18  
 Sample ID : KCKEM1AA Sample quantity : 48.700 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.88 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	3315	10.67*	1.165E+00	2.468E+01	2.468E+01	8.23
TL-208	277.28	-----	6.31	5.503E+00	-----	Line Not Found	-----
	583.02	1543	84.50*	2.790E+00	6.054E-01	6.246E-01	7.51
	860.30	167	12.42	1.931E+00	6.436E-01	6.640E-01	20.55
PB-210	46.52	64	4.25*	2.804E+00	4.994E-01	5.008E-01	114.57
PB-212	238.58	5353	43.30*	6.246E+00	1.831E+00	1.889E+00	6.63
	300.03	327	3.28	5.136E+00	1.797E+00	1.854E+00	16.00
PB-214	241.92	1165	7.43	6.185E+00	2.344E+00	2.344E+00	9.89
	295.09	1262	19.30	5.210E+00	1.161E+00	1.161E+00	8.51
	351.87	2048	37.60*	4.452E+00	1.132E+00	1.132E+00	7.50
RA-226DA	186.21	616	3.50	7.550E+00	2.156E+00	2.156E+00	16.54
	241.98	1165	7.49	6.185E+00	2.325E+00	2.325E+00	9.89
	295.22	1262	19.20	5.210E+00	1.167E+00	1.167E+00	8.51
	351.92	2048	37.20	4.452E+00	1.144E+00	1.144E+00	7.50
	609.32	1397	46.30*	2.678E+00	1.043E+00	1.043E+00	7.50
	1120.28	323	15.10	1.501E+00	1.318E+00	1.318E+00	16.22
	1238.11	-----	5.94	1.363E+00	-----	Line Not Found	-----
	1764.49	-----	15.80	9.778E-01	-----	Line Not Found	-----
AC-228	209.39	508	3.89	6.926E+00	1.743E+00	1.762E+00	15.21
	270.26	400	3.46	5.626E+00	1.900E+00	1.920E+00	19.18
	338.42	967	11.27	4.614E+00	1.720E+00	1.738E+00	9.99
	911.16	995	25.80*	1.829E+00	1.951E+00	1.972E+00	8.55
	968.97	492	15.80	1.724E+00	1.670E+00	1.688E+00	11.09
RA-228DA	209.28	508	4.40	6.926E+00	1.541E+00	1.557E+00	15.21
	338.32	967	11.40	4.614E+00	1.700E+00	1.718E+00	9.99
	911.07	995	27.70*	1.829E+00	1.817E+00	1.836E+00	8.55
	964.60	-----	5.20	1.732E+00	-----	Line Not Found	-----
	969.11	492	16.60	1.724E+00	1.590E+00	1.606E+00	11.09
TH-234	63.29	219	4.82*	6.083E+00	6.893E-01	6.893E-01	40.96
	92.59	1110	6.08	9.005E+00	1.876E+00	1.876E+00	11.50

Flag: "\*" = Keyline

Unidentified Energy Lines  
Sample ID : KCKEM1AA

Page : 2  
Acquisition date : 17-DEC-2007 10:40:18

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	72.83	141	2238	1.19	290.61	281	34	2.35E-03	83.1	7.48E+00	
5	74.80	1887	1799	1.00	298.50	281	34	3.15E-02	6.3	7.71E+00	
5	77.03	3539	1791	1.05	307.44	281	34	5.90E-02	3.1	7.94E+00	
8	84.38	628	1708	1.56	336.89	330	34	1.05E-02	17.8	8.56E+00	
8	87.13	1315	1693	1.27	347.94	330	34	2.19E-02	8.1	8.73E+00	
8	89.82	809	1119	1.02	358.71	330	34	1.35E-02	8.5	8.87E+00	
0	129.09	362	997	0.95	516.13	511	12	6.04E-03	18.2	9.08E+00	
0	463.09	321	490	1.65	1854.94	1844	20	5.34E-03	15.5	3.46E+00	
0	511.28	557	802	2.02	2048.12	2033	36	9.29E-03	18.8	3.16E+00	
0	727.38	360	359	1.35	2914.28	2902	24	6.01E-03	12.9	2.27E+00	T
0	795.08	186	367	1.28	3185.60	3172	27	3.09E-03	22.8	2.08E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.05	727.25*	6.58	2.307E+00	14.40	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
		% Abundances	Found =	71.76			
BI-214	1600.00Y	0.00	609.31*	46.09	1.047E+00	7.50	Abun.
			768.35	4.94	---	Not Found	---
			1120.27	15.10	1.318E+00	16.22	
			1764.49	15.40	---	Not Found	---
		% Abundances	Found =	75.05			

Flag: "\*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 18-DEC-2007 03:20:35

```

Configuration      : $DISK1:[GER6.SAMPLE]KCKEM1AA_171271040.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
Analyses by       : MINACT V2.8
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 09:16:00 Acquisition date : 17-DEC-2007 10:40:18
Sample ID        : KCKEM1AA ✓ Sample quantity   : 48.700 GRAMS
Sample type      : ✓ Sample geometry      : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.88 0.0% ✓
Peak Width (FWHM): 3.00 Confidence level  : 5.00 %
Energy tolerance : 1.50 Half life ratio    : 8.00
Errors propagated: Yes Systematic Error   : 5.00 %
Efficiency type  : Empirical Efficiencies at  : Peak Energy
Abundance limit  : 80.00 WTM error limit  : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.468E+01	2.030E+00	4.664E-01	2.852E-02	52.902
TL-208	6.246E-01	4.692E-02	4.068E-02	1.340E-03	15.354
PB-210	5.008E-01	5.738E-01	1.101E+00	6.849E-02	0.455
PB-212	1.889E+00	1.252E-01	4.844E-02	1.894E-03	38.992
PB-214	1.132E+00	8.482E-02	6.664E-02	2.227E-03	16.980
RA-226DA	1.043E+00	7.817E-02	7.687E-02	2.569E-03	13.563
AC-228	1.972E+00	1.685E-01	1.809E-01	9.231E-03	10.896
RA-228DA	1.836E+00	1.569E-01	1.650E-01	8.418E-03	11.129
TH-234	6.893E-01	2.823E-01	5.277E-01	1.662E-02	1.306

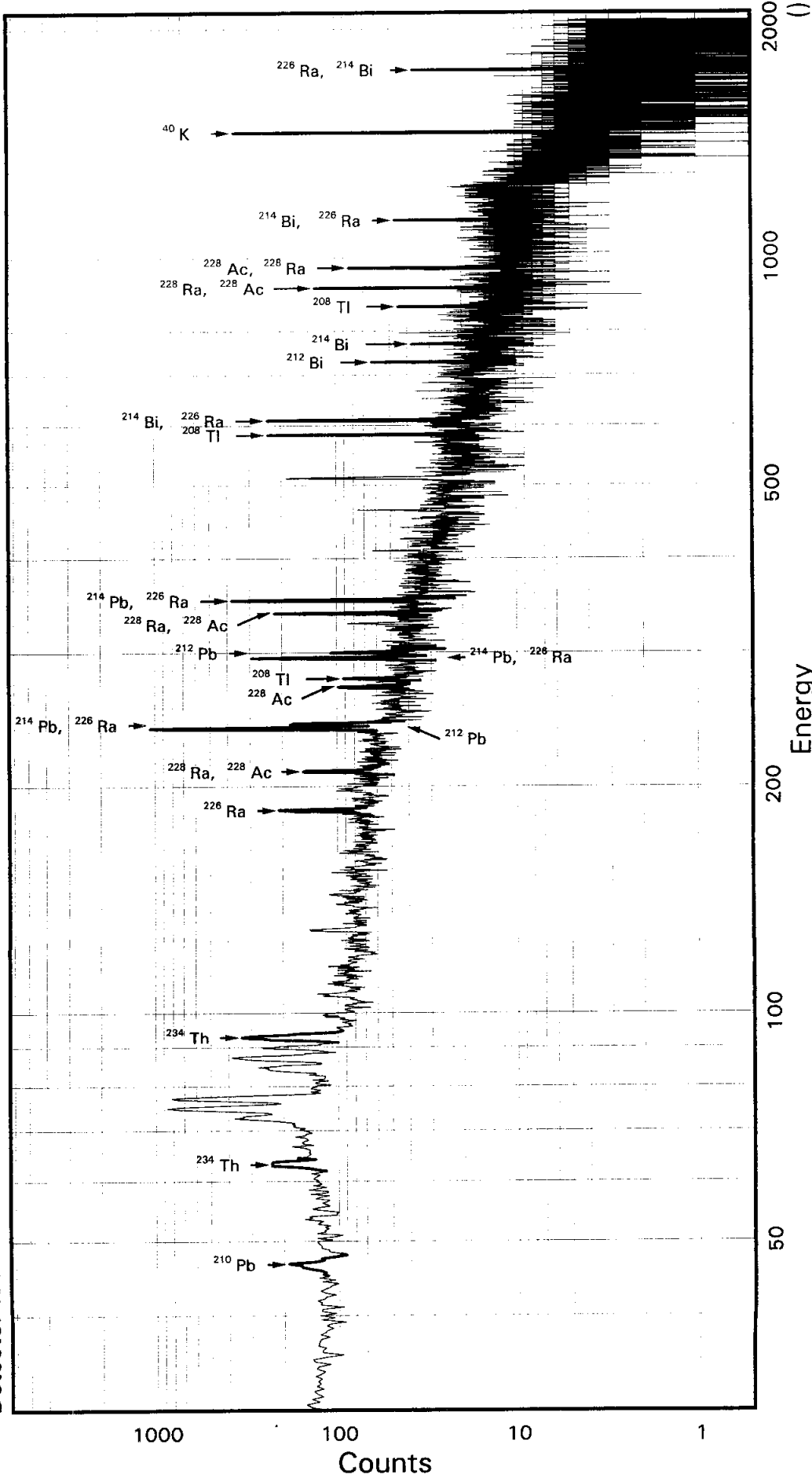
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-5.121E-02		4.633E-02	1.548E-01	5.169E-03	-0.331
CO-60	1.665E-03		1.519E-02	5.234E-02	3.499E-03	0.032
CS-137	-7.061E-03		1.310E-02	4.352E-02	1.487E-03	-0.162
BI-212	2.307E+00	+	3.322E-01	8.113E-01	3.136E-02	2.843
BI-214	1.047E+00	+	7.853E-02	1.538E-01	5.139E-03	6.811
TH-227	3.158E-01		6.546E-02	1.910E-01	7.475E-03	1.653
AM-241	1.326E-02		2.274E-02	7.584E-02	2.415E-03	0.175

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKEM1AE  
Detector ID: GER7 1



Energy Coefficients:  
Offset: 5.87639E-01  
Slope: 2.49339E-01  
Quadrature: 1.44721E-07

Acquisition Start: 17-DEC-2007 10:41:21.72  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00



SAMPLE IDENTIFICATION: KCKEM1AE

CONFIGURATION ID: GER7:KCKEM1AE\_171271041  
TITLE : BRCO SOLID  
SAMPLE ID : KCKEM1AE

REPORT DATE: 18-DEC-07 SAMPLE DATE: 16-NOV-2007 09:16:00.00  
ACQUIRE DATE: 17-DEC-07 10:41:21 CALIB DATE: 17-DEC-2007 05:48:39.18  
ELAPSED LIVE TIME: 60000.0 Sec ELAPSED LIVE TIME: 0 16:40:00  
PRESET LIVE TIME: 0 16:40:00 ELAPSED REAL TIME: 0 16:40:09

SAMPLE QUANTITY: 4.8500E+01 UNITS: GRAMS  
SAMPLE GEOMETRY: S25 SAMPLE TYPE:

ENERGY OFFSET: 5.8764E-01 keV FWHM OFFSET: 4.2468E-01 keV  
ENERGY SLOPE: 2.4934E-01 keV/C FWHM SLOPE: 4.2135E-02 sqr keV  
ENERGY Q COEFF: 1.4472E-07 keV/C^2 ITERATIONS: 10  
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 40.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00  
ENERGY TOLERANCE: 1.500 keV ACTIVITY MULTIPLIER: 1.0000E+06  
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:44:28

```

Configuration      : $DISK1:[GER7.SAMPLE]KCKEM1AE_171271041.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 09:16:00 Acquisition date : 17-DEC-2007 10:41:21
Sample ID         : KCKEM1AE Sample quantity : 48.500 GRAMS
Sample type       : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.22 0.0%
Start energy     : 20.54 End energy : 2052.89
Sensitivity      : 5.00 Gaussian : 40.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.64*	151	1388	0.80	184.66	178	13	2.52E-03	59.4	
2	0	63.18*	278	1365	1.08	250.99	246	10	4.63E-03	29.7	
3	5	72.89*	453	2364	1.19	289.92	283	30	7.55E-03	26.3	1.09E+00
4	5	74.91*	1846	1885	1.00	298.02	283	30	3.08E-02	6.5	
5	5	77.10	2883	1695	0.99	306.79	283	30	4.80E-02	3.5	
6	6	84.60*	191	1978	1.44	336.89	328	26	3.18E-03	62.4	1.88E+00
7	6	87.25*	1186	1574	1.20	347.48	328	26	1.98E-02	8.6	
8	0	89.96	601	1061	0.95	358.36	354	10	1.00E-02	10.9	
9	0	92.91*	1033	1486	1.44	370.17	364	15	1.72E-02	10.1	
10	0	129.22	350	937	1.23	515.75	510	13	5.84E-03	18.8	
11	0	185.90*	453	921	1.14	742.88	737	13	7.55E-03	18.2	
12	0	209.33	612	1254	1.22	836.78	828	22	1.02E-02	15.3	
13	5	238.60*	4530	760	1.11	954.06	946	29	7.55E-02	2.1	1.22E+00
14	5	241.50	1000	954	1.74	965.67	946	29	1.67E-02	9.0	
15	0	270.33	370	778	1.60	1081.15	1073	18	6.16E-03	18.5	
16	0	277.18	240	544	1.25	1108.60	1102	13	4.01E-03	21.0	
17	4	295.17	1295	488	1.29	1180.65	1171	53	2.16E-02	4.6	2.44E+00
18	4	300.11	432	622	1.69	1200.43	1171	53	7.20E-03	15.2	
19	0	327.85	278	459	1.41	1311.51	1306	13	4.63E-03	17.0	
20	0	338.30	1002	735	1.12	1353.35	1343	22	1.67E-02	7.6	
21	0	351.89*	1685	580	1.23	1407.78	1399	17	2.81E-02	4.6	
22	0	409.36	159	298	0.78	1637.84	1632	12	2.65E-03	23.1	
23	0	463.06	200	327	0.61	1852.80	1847	14	3.33E-03	20.6	
24	0	510.83*	228	689	1.99	2043.96	2030	27	3.81E-03	45.4	
25	0	583.13	1404	378	1.48	2333.18	2324	22	2.34E-02	4.4	
26	0	609.21*	1213	433	1.44	2437.49	2426	21	2.02E-02	6.0	
27	0	727.18	249	309	1.54	2909.14	2901	18	4.15E-03	15.5	
28	0	768.28	91	269	1.45	3073.42	3066	17	1.52E-03	37.0	
29	0	795.07	120	187	0.86	3180.47	3174	15	2.00E-03	23.3	
30	0	860.43	231	220	1.00	3441.59	3431	22	3.84E-03	15.4	
31	0	911.20	963	289	1.97	3644.37	3631	28	1.60E-02	5.3	
32	0	969.94	274	551	1.10	3878.95	3860	25	4.57E-03	20.3	
33	0	1120.05	325	229	1.91	4478.05	4463	27	5.42E-03	12.3	
34	0	1460.66*	2865	147	2.04	5835.99	5817	35	4.77E-02	2.3	
35	0	1764.63	231	73	1.41	7046.04	7031	28	3.84E-03	10.3	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER7.SAMPLE]KCKEM1AE_171271041.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 09:16:00 Acquisition date : 17-DEC-2007 10:41:21
Sample ID        : KCKEM1AE Sample quantity : 48.500 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.22 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00
    
```

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	2865	10.67*	1.071E+00	2.329E+01	2.329E+01	6.57
TL-208	277.28	240	6.31	4.815E+00	7.348E-01	7.581E-01	22.02
	583.02	1404	84.50*	2.572E+00	5.999E-01	6.189E-01	7.65
	860.30	231	12.42	1.788E+00	9.644E-01	9.950E-01	16.66
PB-210	46.52	151	4.25*	1.881E+00	1.755E+00	1.760E+00	60.15
PB-212	238.58	4530	43.30*	5.432E+00	1.789E+00	1.846E+00	6.97
	300.03	432	3.28	4.513E+00	2.711E+00	2.797E+00	16.57
BI-214	609.31	1213	46.09*	2.473E+00	9.885E-01	9.886E-01	8.62
	768.35	91	4.94	1.994E+00	8.575E-01	8.575E-01	37.50
	1120.27	325	15.10	1.379E+00	1.450E+00	1.450E+00	13.66
	1764.49	231	15.40	9.187E-01	1.514E+00	1.514E+00	11.87
PB-214	241.92	1000	7.43	5.380E+00	2.322E+00	2.323E+00	11.18
	295.09	1295	19.30	4.574E+00	1.362E+00	1.362E+00	8.03
	351.87	1685	37.60*	3.958E+00	1.052E+00	1.052E+00	7.75
RA-226DA	186.21	453	3.50	6.566E+00	1.832E+00	1.832E+00	19.35
	241.98	1000	7.49	5.380E+00	2.304E+00	2.304E+00	11.18
	295.22	1295	19.20	4.574E+00	1.369E+00	1.369E+00	8.03
	351.92	1685	37.20	3.958E+00	1.063E+00	1.063E+00	7.75
	609.32	1213	46.30*	2.473E+00	9.841E-01	9.841E-01	8.62
	1120.28	325	15.10	1.379E+00	1.450E+00	1.450E+00	13.66
	1238.11	-----	5.94	1.250E+00	-----	Line Not Found	-----
	1764.49	231	15.80	9.187E-01	1.476E+00	1.476E+00	11.87
AC-228	209.39	612	3.89	6.014E+00	2.428E+00	2.453E+00	16.65
	270.26	370	3.46	4.914E+00	2.019E+00	2.040E+00	19.64
	338.42	1002	11.27	4.089E+00	2.019E+00	2.040E+00	9.90
	911.16	963	25.80*	1.691E+00	2.050E+00	2.071E+00	8.34
	968.97	274	15.80	1.590E+00	1.014E+00	1.025E+00	21.26
RA-228DA	209.28	612	4.40	6.014E+00	2.146E+00	2.169E+00	16.65
	338.32	1002	11.40	4.089E+00	1.996E+00	2.017E+00	9.90
	911.07	963	27.70*	1.691E+00	1.909E+00	1.929E+00	8.34
	964.60	-----	5.20	1.599E+00	-----	Line Not Found	-----
	969.11	274	16.60	1.590E+00	9.654E-01	9.755E-01	21.26
TH-234	63.29	278	4.82*	5.137E+00	1.043E+00	1.043E+00	30.27
	92.59	1033	6.08	8.144E+00	1.938E+00	1.938E+00	11.77

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	72.89	453	2364	1.19	289.92	283	30	7.55E-03	26.3	6.62E+00	
5	74.91	1846	1885	1.00	298.02	283	30	3.08E-02	6.5	6.86E+00	
5	77.10	2883	1695	0.99	306.79	283	30	4.80E-02	3.5	7.10E+00	
6	84.60	191	1978	1.44	336.89	328	26	3.18E-03	62.4	7.73E+00	
6	87.25	1186	1574	1.20	347.48	328	26	1.98E-02	8.6	7.89E+00	
0	89.96	601	1061	0.95	358.36	354	10	1.00E-02	10.9	8.03E+00	
0	129.22	350	937	1.23	515.75	510	13	5.84E-03	18.8	8.07E+00	
0	327.85	278	459	1.41	1311.51	1306	13	4.63E-03	17.0	4.20E+00	
0	409.36	159	298	0.78	1637.84	1632	12	2.65E-03	23.1	3.49E+00	
0	463.06	200	327	0.61	1852.80	1847	14	3.33E-03	20.6	3.14E+00	
0	510.83	228	689	1.99	2043.96	2030	27	3.81E-03	45.4	2.89E+00	
0	727.18	249	309	1.54	2909.14	2901	18	4.15E-03	15.5	2.10E+00	T
0	795.07	120	187	0.86	3180.47	3174	15	2.00E-03	23.3	1.93E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.05	727.25*	6.58	1.724E+00	16.70	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 18-DEC-2007 07:44:29

Configuration : \$DISK1:[GER7.SAMPLE]KCKEM1AE\_171271041.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 09:16:00 Acquisition date : 17-DEC-2007 10:41:21  
 Sample ID : KCKEM1AE Sample quantity : 48.500 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.22 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.329E+01	1.530E+00	3.980E-01	1.415E-02	58.505
TL-208	6.189E-01	4.736E-02	3.949E-02	1.481E-03	15.674
PB-210	1.760E+00	1.059E+00	1.741E+00	1.351E-01	1.011
PB-212	1.846E+00	1.287E-01	5.348E-02	2.337E-03	34.509
BI-214	9.886E-01	8.517E-02	7.318E-02	2.716E-03	13.508
PB-214	1.052E+00	8.152E-02	6.865E-02	2.581E-03	15.318
RA-226DA	9.841E-01	8.479E-02	7.285E-02	2.704E-03	13.508
AC-228	2.071E+00	1.726E-01	1.594E-01	6.457E-03	12.992
RA-228DA	1.929E+00	1.608E-01	1.484E-01	6.013E-03	12.993
TH-234	1.043E+00	3.158E-01	6.528E-01	2.046E-02	1.598

*Rec = 0.51073  
 292 = 0.41305  
 OK jma 12/19/07*

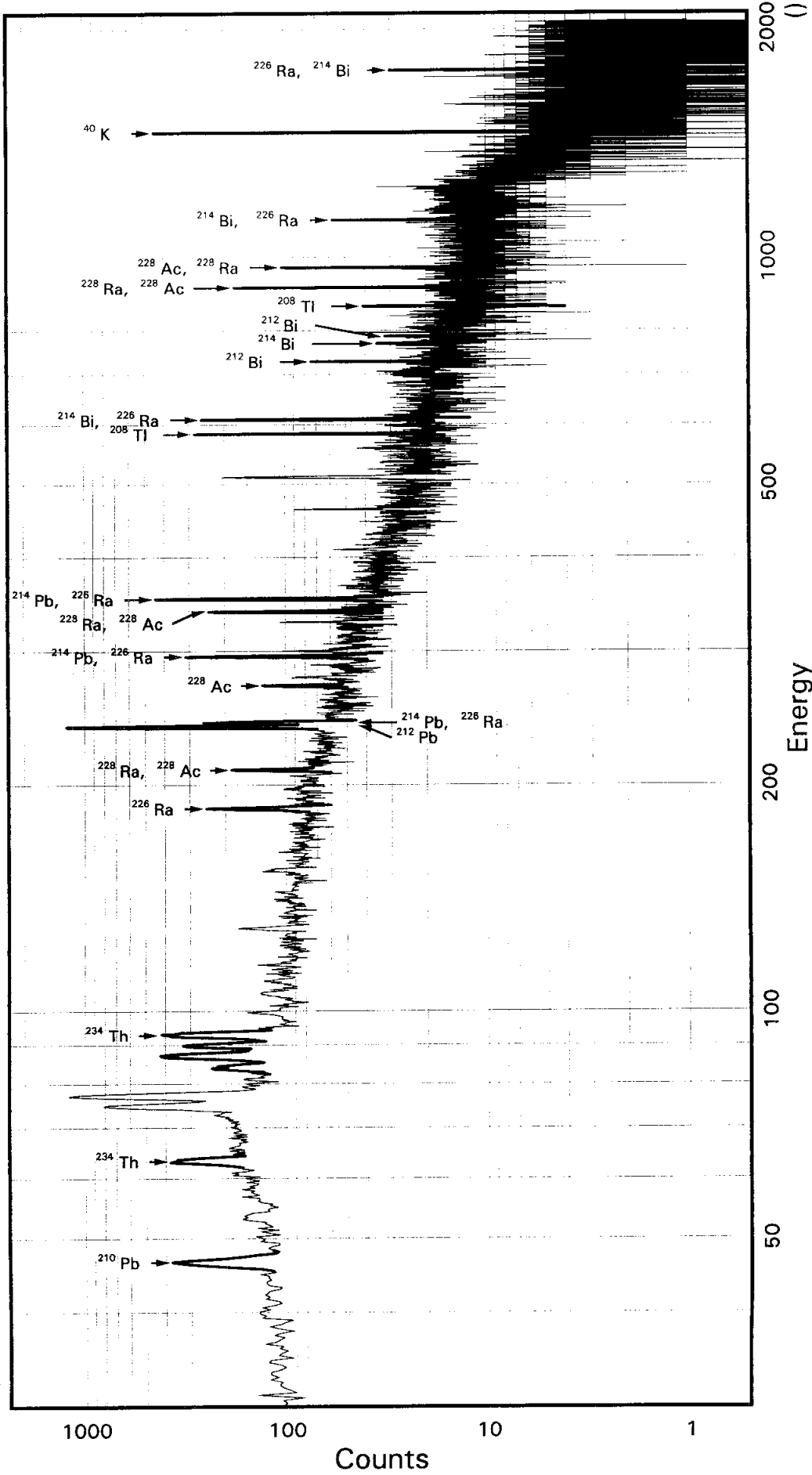
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	3.225E-02		4.884E-02	1.682E-01	5.870E-03	0.192
CO-60	3.118E-02		1.419E-02	5.142E-02	1.837E-03	0.606
CS-137	-1.057E-02		1.219E-02	4.055E-02	1.457E-03	-0.261
BI-212	1.724E+00	+	2.881E-01	7.881E-01	2.961E-02	2.188
TH-227	1.430E-01		6.721E-02	1.947E-01	8.503E-03	0.735
AM-241	2.581E-02		2.801E-02	9.436E-02	3.057E-03	0.274

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKET1AA  
Detector ID: GER8 1



Energy Coefficients:  
Offset: 6.34668E-02  
Slope: 2.49980E-01  
Quadrature: 2.18889E-08

Acquisition Start: 17-DEC-2007 10:42:37.18  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCKET1AA

CONFIGURATION ID: GER8:KCKET1AA\_171271042  
TITLE : BRCO SOLID  
SAMPLE ID : KCKET1AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 17-DEC-07 10:42:37  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 09:50:00.00  
CALIB DATE: 17-DEC-2007 05:48:56.01  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:10

SAMPLE QUANTITY: 5.1000E+01  
SAMPLE GEOMETRY: ES25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 6.3467E-02 keV  
ENERGY SLOPE: 2.4998E-01 keV/C  
ENERGY Q COEFF: 2.1889E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.3409E-01 keV  
FWHM SLOPE: 2.2011E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 50.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB



VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:44:58

```

Configuration      : $DISK1:[GER8.SAMPLE]KCKET1AA_171271042.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 09:50:00 Acquisition date : 17-DEC-2007 10:42:37
Sample ID        : KCKET1AA           Sample quantity  : 51.000 GRAMS
Sample type      :                   Sample geometry   : ES25
Elapsed live time: 0 16:40:00.00     Elapsed real time: 0 16:40:10.11   0.0%
Start energy     :      20.06         End energy       :      2049.37
Sensitivity      :      5.00         Gaussian        :      50.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.54*	355	1557	0.91	185.91	180	13	5.91E-03	28.9	
2	0	63.28*	613	2094	1.08	252.89	247	13	1.02E-02	18.2	
3	2	74.86*	2467	2637	1.07	299.19	292	24	4.11E-02	5.2	1.13E+00
4	2	77.15*	4311	2232	1.05	308.35	292	24	7.19E-02	3.1	
5	3	87.23	1720	2060	1.35	348.70	329	50	2.87E-02	6.4	6.45E+00
6	3	89.86	925	1701	1.09	359.19	329	50	1.54E-02	9.8	
7	3	92.90*	980	2128	1.36	371.35	329	50	1.63E-02	12.9	
8	0	129.16	424	1114	0.97	516.42	510	13	7.06E-03	17.0	
9	0	186.10*	688	1224	1.35	744.15	736	17	1.15E-02	14.8	
10	0	209.21	535	1010	0.99	836.60	829	15	8.92E-03	13.6	
11	3	238.67*	5603	889	1.17	954.43	946	28	9.34E-02	1.9	2.12E+00
12	3	241.57	1295	814	1.70	966.04	946	28	2.16E-02	6.1	
13	0	270.30	363	659	1.16	1080.93	1075	12	6.05E-03	15.1	
14	0	295.26*	1164	839	1.15	1180.78	1172	21	1.94E-02	7.7	
15	0	327.99	233	560	0.62	1311.66	1305	13	3.88E-03	22.0	
16	0	338.29	1086	584	1.29	1352.86	1346	15	1.81E-02	5.7	
17	0	351.88*	1932	744	1.26	1407.18	1397	20	3.22E-02	4.7	
18	0	462.89	322	443	1.17	1851.14	1842	19	5.37E-03	16.6	
19	0	510.96*	428	741	2.26	2043.36	2031	29	7.14E-03	27.0	
20	0	583.18	1536	429	1.33	2332.16	2321	22	2.56E-02	4.3	
21	0	609.27*	1322	420	1.48	2436.50	2424	24	2.20E-02	5.6	
22	0	726.96	320	376	1.31	2907.09	2894	24	5.33E-03	14.7	
23	0	768.13	128	235	1.67	3071.68	3063	17	2.14E-03	25.0	
24	0	785.46	68	217	0.86	3140.95	3134	16	1.14E-03	42.9	
25	0	794.65	203	234	1.04	3177.71	3168	21	3.38E-03	17.5	
26	0	860.58	198	170	1.70	3441.29	3432	17	3.30E-03	14.7	
27	0	911.17	1045	236	1.27	3643.55	3632	25	1.74E-02	4.5	
28	0	969.60	390	465	1.18	3877.14	3861	23	6.50E-03	13.1	
29	0	1120.48*	224	310	1.50	4480.27	4467	26	3.73E-03	21.2	
30	0	1460.85*	3541	117	1.98	5840.62	5826	27	5.90E-02	2.0	
31	0	1593.22	73	50	1.02	6369.56	6360	20	1.21E-03	23.9	
32	0	1764.79	245	54	2.33	7055.10	7041	29	4.09E-03	9.6	
33	0	1849.14	52	56	2.47	7392.09	7377	32	8.63E-04	39.6	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER8.SAMPLE]KCKET1AA\_171271042.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 09:50:00 Acquisition date : 17-DEC-2007 10:42:37  
 Sample ID : KCKET1AA Sample quantity : 51.000 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.11 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	3541	10.67*	1.185E+00	2.475E+01	2.475E+01	6.35
TL-208	277.28	-----	6.31	5.759E+00	-----	Line Not Found	-----
	583.02	1536	84.50*	2.923E+00	5.492E-01	5.666E-01	7.45
	860.30	198	12.42	1.988E+00	7.088E-01	7.312E-01	16.02
PB-210	46.52	355	4.25*	9.036E+00	8.155E-01	8.177E-01	29.56
BI-212	727.25	320	6.58*	2.354E+00	1.825E+00	1.882E+00	16.00
	785.51	68	1.10	2.179E+00	2.523E+00	2.602E+00	43.33
	1620.66	-----	1.49	1.080E+00	-----	Line Not Found	-----
PB-212	238.58	5603	43.30*	6.522E+00	1.752E+00	1.808E+00	6.45
	300.03	-----	3.28	5.384E+00	-----	Line Not Found	-----
BI-214	609.31	1322	46.09*	2.801E+00	9.046E-01	9.046E-01	8.33
	768.35	128	4.94	2.228E+00	1.031E+00	1.031E+00	25.76
	1120.27	224	15.10	1.527E+00	8.580E-01	8.580E-01	22.00
	1764.49	245	15.40	1.007E+00	1.398E+00	1.398E+00	11.28
PB-214	241.92	1295	7.43	6.458E+00	2.384E+00	2.384E+00	8.68
	295.09	1164	19.30	5.458E+00	9.761E-01	9.761E-01	9.86
	351.87	1932	37.60*	4.681E+00	9.694E-01	9.694E-01	7.63
RA-226DA	186.21	688	3.50	7.917E+00	2.194E+00	2.194E+00	16.01
	241.98	1295	7.49	6.458E+00	2.365E+00	2.365E+00	8.68
	295.22	1164	19.20	5.458E+00	9.812E-01	9.812E-01	9.86
	351.92	1932	37.20	4.681E+00	9.798E-01	9.798E-01	7.63
	609.32	1322	46.30*	2.801E+00	9.005E-01	9.005E-01	8.33
	1120.28	224	15.10	1.527E+00	8.580E-01	8.580E-01	22.00
	1238.11	-----	5.94	1.385E+00	-----	Line Not Found	-----
	1764.49	245	15.80	1.007E+00	1.363E+00	1.363E+00	11.28
AC-228	209.39	535	3.89	7.243E+00	1.678E+00	1.695E+00	14.95
	270.26	363	3.46	5.884E+00	1.576E+00	1.592E+00	16.29
	338.42	1086	11.27	4.848E+00	1.756E+00	1.774E+00	8.29
	911.16	1045	25.80*	1.877E+00	1.906E+00	1.926E+00	7.79
	968.97	390	15.80	1.764E+00	1.236E+00	1.248E+00	14.48
RA-228DA	209.28	535	4.40	7.243E+00	1.483E+00	1.499E+00	14.95
	338.32	1086	11.40	4.848E+00	1.735E+00	1.754E+00	8.29
	911.07	1045	27.70*	1.877E+00	1.775E+00	1.794E+00	7.79
	964.60	-----	5.20	1.773E+00	-----	Line Not Found	-----
	969.11	390	16.60	1.764E+00	1.176E+00	1.188E+00	14.48
TH-234	63.29	613	4.82*	1.141E+01	9.850E-01	9.850E-01	19.15

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
	92.59	980	6.08	1.155E+01	1.233E+00	1.233E+00	14.20

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.86	2467	2637	1.07	299.19	292	24	4.11E-02	5.2	1.18E+01	
2	77.15	4311	2232	1.05	308.35	292	24	7.19E-02	3.1	1.18E+01	
3	87.23	1720	2060	1.35	348.70	329	50	2.87E-02	6.4	1.17E+01	
3	89.86	925	1701	1.09	359.19	329	50	1.54E-02	9.8	1.16E+01	
0	129.16	424	1114	0.97	516.42	510	13	7.06E-03	17.0	1.01E+01	
0	327.99	233	560	0.62	1311.66	1305	13	3.88E-03	22.0	4.98E+00	
0	462.89	322	443	1.17	1851.14	1842	19	5.37E-03	16.6	3.64E+00	
0	510.96	428	741	2.26	2043.36	2031	29	7.14E-03	27.0	3.32E+00	
0	794.65	203	234	1.04	3177.71	3168	21	3.38E-03	17.5	2.15E+00	
0	1593.22	73	50	1.02	6369.56	6360	20	1.21E-03	23.9	1.10E+00	
0	1849.14	52	56	2.47	7392.09	7377	32	8.63E-04	39.6	9.70E-01	

Flags: "T" = Tentatively associated

Rejected Report  
Sample ID : KCKET1AA

Page : 4  
Acquisition date : 17-DEC-2007 10:42:37

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER8.SAMPLE]KCKET1AA\_171271042.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 09:50:00 Acquisition date : 17-DEC-2007 10:42:37  
 Sample ID : KCKET1AA Sample quantity : 51.000 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.11 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.475E+01	1.571E+00	3.239E-01	1.097E-02	76.399
TL-208	5.666E-01	4.224E-02	3.280E-02	1.147E-03	17.275
PB-210	8.177E-01	2.417E-01	4.323E-01	1.654E-02	1.892
BI-212	1.882E+00	3.013E-01	4.698E-01	1.799E-02	4.007
PB-212	1.808E+00	1.165E-01	4.763E-02	1.709E-03	37.954
BI-214	9.046E-01	7.532E-02	6.547E-02	2.343E-03	13.818
PB-214	9.694E-01	7.395E-02	5.885E-02	1.927E-03	16.472
RA-226DA	9.005E-01	7.498E-02	6.517E-02	2.333E-03	13.818
AC-228	1.926E+00	1.500E-01	1.317E-01	5.103E-03	14.623
RA-228DA	1.794E+00	1.397E-01	1.226E-01	4.753E-03	14.625
TH-234	9.850E-01	1.886E-01	3.610E-01	1.106E-02	2.728

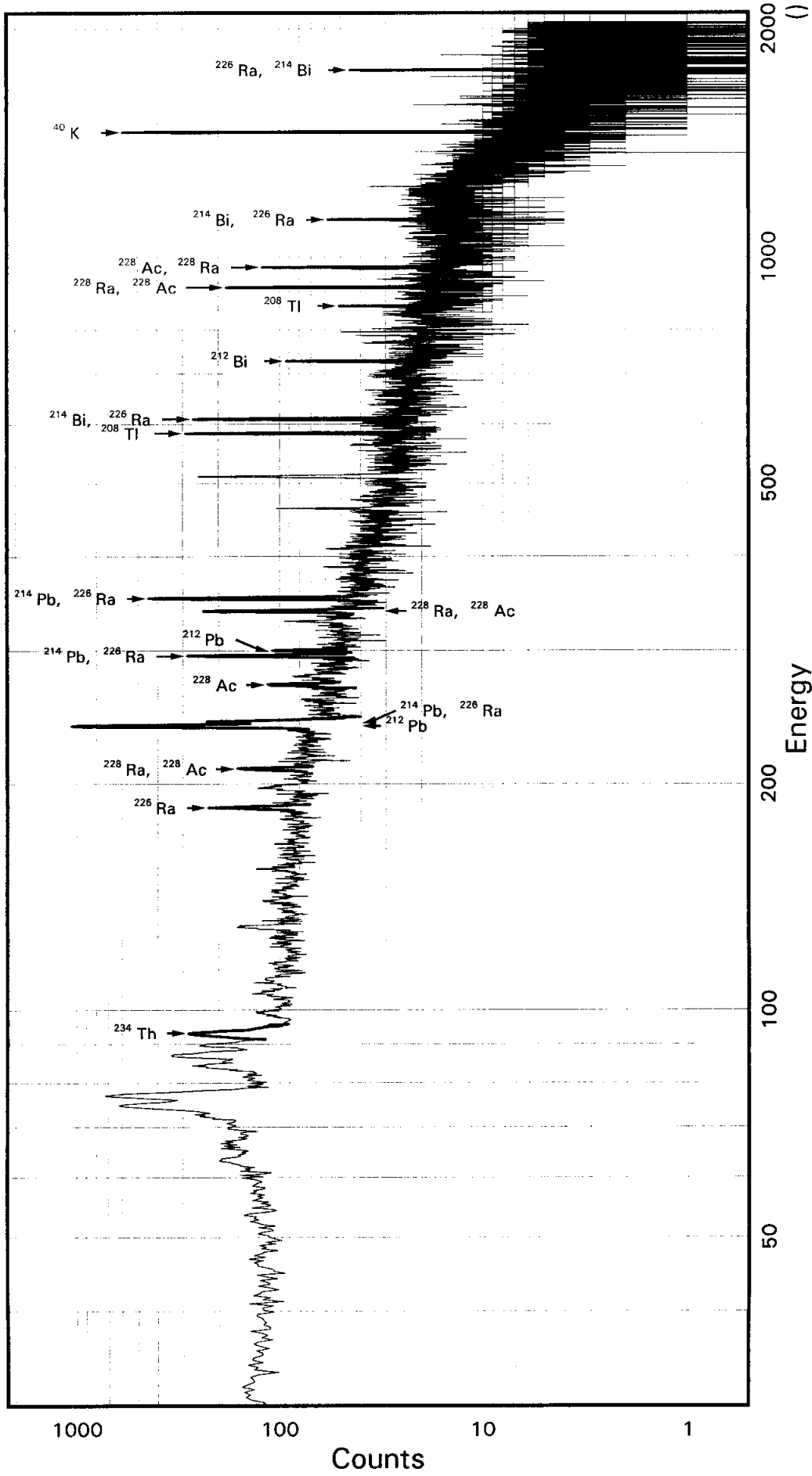
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	2.827E-02		4.724E-02	1.578E-01	5.069E-03	0.179
CO-60	-9.173E-03		1.152E-02	3.837E-02	1.298E-03	-0.239
CS-137	-2.239E-02		1.052E-02	3.391E-02	1.263E-03	-0.660
TH-227	3.817E-01		6.567E-02	1.923E-01	6.895E-03	1.985
AM-241	3.464E-02		1.618E-02	4.750E-02	1.478E-03	0.729

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCKE11AA  
Detector ID: GER10 1



Acquisition Start: 17-DEC-2007 10:43:38.50  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: 1.46794E+01  
Slope: 2.47300E-01  
Quadrature: -7.47955E-10

SAMPLE IDENTIFICATION: KCKE11AA

CONFIGURATION ID: GER10:KCKE11AA\_171271043  
TITLE : BRCO SOLID  
SAMPLE ID : KCKE11AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 17-DEC-07 10:43:38  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 11:50:00.00  
CALIB DATE: 17-DEC-2007 06:14:31.24  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:12

SAMPLE QUANTITY: 5.0700E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 1.4679E+01 keV  
ENERGY SLOPE: 2.4730E-01 keV/C  
ENERGY Q COEFF: -.7480E-09 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.0936E+00 keV  
FWHM SLOPE: 2.3512E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 40.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB



VMS Peak Search Report V1.9 Generated 18-DEC-2007 07:45:24

```

Configuration      : $DISK1:[GER10.SAMPLE]KCKE11AA_171271043.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 11:50:00 Acquisition date : 17-DEC-2007 10:43:38
Sample ID         : KCKE11AA Sample quantity : 50.700 GRAMS
Sample type       : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.55 0.0%
Start energy     : 17.15 End energy : 2040.51
Sensitivity      : 5.00 Gaussian : 40.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	74.82*	1607	3113	1.27	243.19	236	25	2.68E-02	9.1	9.45E-01
2	2	77.06	3225	2736	1.40	252.24	236	25	5.38E-02	4.4	
3	2	84.45*	424	2549	1.54	282.11	272	38	7.06E-03	32.2	1.58E+00
4	2	87.17	1255	2119	1.34	293.13	272	38	2.09E-02	8.8	
5	2	89.85	706	1700	1.59	303.95	272	38	1.18E-02	12.7	
6	0	93.20	1226	2049	1.61	317.51	310	19	2.04E-02	9.4	
7	0	129.00	430	1465	1.57	462.29	455	16	7.17E-03	20.4	
8	0	186.03	640	1374	1.00	692.89	685	16	1.07E-02	13.3	
9	0	209.32	453	1269	1.60	787.05	779	16	7.56E-03	18.2	
10	5	238.66	6418	1128	1.47	905.70	892	42	1.07E-01	1.8	1.37E+00
11	5	241.51	1547	1483	2.35	917.25	892	42	2.58E-02	9.5	
12	0	270.31	516	1026	2.06	1033.68	1024	20	8.60E-03	15.8	
13	0	295.08	1542	1075	1.47	1133.86	1121	22	2.57E-02	5.3	
14	0	300.04	255	1023	1.85	1153.92	1146	18	4.25E-03	25.8	
15	0	328.21	307	932	1.45	1267.84	1258	19	5.11E-03	21.1	
16	0	338.43	1252	1164	1.46	1309.13	1297	25	2.09E-02	6.8	
17	0	351.97	2658	1073	1.43	1363.91	1351	27	4.43E-02	3.5	
18	0	463.20	403	717	1.29	1813.68	1803	23	6.71E-03	15.5	
19	0	511.08*	749	940	2.59	2007.28	1992	36	1.25E-02	16.3	
20	0	583.34	1970	598	1.82	2299.48	2286	26	3.28E-02	3.6	
21	0	609.33	1873	636	1.87	2404.59	2393	25	3.12E-02	3.8	
22	0	727.20	467	502	1.70	2881.24	2869	23	7.78E-03	11.5	
23	0	794.69	270	347	1.78	3154.13	3141	24	4.51E-03	16.6	
24	0	860.68	262	369	1.36	3420.97	3409	25	4.36E-03	17.8	
25	0	911.17	1427	324	1.95	3625.15	3612	27	2.38E-02	4.0	
26	0	969.09	647	782	1.43	3859.36	3840	32	1.08E-02	11.5	
27	0	1120.15	456	352	2.36	4470.22	4459	29	7.61E-03	10.9	
28	0	1460.81*	5286	184	2.14	5847.77	5830	35	8.81E-02	1.6	
29	0	1588.48	84	105	1.01	6364.05	6353	20	1.40E-03	25.3	
30	0	1729.78	104	102	1.09	6935.47	6913	36	1.74E-03	24.8	
31	0	1764.46	388	105	1.99	7075.70	7056	38	6.46E-03	8.1	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER10.SAMPLE]KCKE11AA\_171271043.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 11:50:00 Acquisition date : 17-DEC-2007 10:43:38  
 Sample ID : KCKE11AA Sample quantity : 50.700 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.55 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	5286	10.67*	1.619E+00	2.719E+01	2.719E+01	6.36
TL-208	277.28	-----	6.31	6.598E+00	-----	Line Not Found	-----
	583.02	1970	84.50*	3.697E+00	5.604E-01	5.781E-01	7.16
	860.30	262	12.42	2.612E+00	7.172E-01	7.398E-01	19.11
PB-212	238.58	6418	43.30*	7.318E+00	1.800E+00	1.856E+00	6.41
	300.03	255	3.28	6.235E+00	1.108E+00	1.143E+00	26.52
BI-214	609.31	1873	46.09*	3.561E+00	1.014E+00	1.014E+00	7.34
	768.35	-----	4.94	2.899E+00	-----	Line Not Found	-----
	1120.27	456	15.10	2.044E+00	1.314E+00	1.314E+00	12.51
	1764.49	388	15.40	1.413E+00	1.583E+00	1.583E+00	10.06
PB-214	241.92	1547	7.43	7.259E+00	2.548E+00	2.548E+00	11.32
	295.09	1542	19.30	6.311E+00	1.125E+00	1.125E+00	8.05
	351.87	2658	37.60*	5.541E+00	1.133E+00	1.134E+00	6.91
RA-226DA	186.21	640	3.50	8.539E+00	1.903E+00	1.903E+00	14.69
	241.98	1547	7.49	7.259E+00	2.528E+00	2.528E+00	11.32
	295.22	1542	19.20	6.311E+00	1.131E+00	1.131E+00	8.05
	351.92	2658	37.20	5.541E+00	1.146E+00	1.146E+00	6.91
	609.32	1873	46.30*	3.561E+00	1.009E+00	1.009E+00	7.34
	1120.28	456	15.10	2.044E+00	1.314E+00	1.314E+00	12.51
	1238.11	-----	5.94	1.865E+00	-----	Line Not Found	-----
	1764.49	388	15.80	1.413E+00	1.542E+00	1.543E+00	10.06
AC-228	209.39	453	3.89	7.965E+00	1.300E+00	1.314E+00	19.19
	270.26	516	3.46	6.718E+00	1.973E+00	1.993E+00	16.97
	338.42	1252	11.27	5.706E+00	1.730E+00	1.747E+00	9.07
	911.16	1427	25.80*	2.477E+00	1.984E+00	2.005E+00	8.02
	968.97	647	15.80	2.339E+00	1.556E+00	1.573E+00	13.39
RA-228DA	209.28	453	4.40	7.965E+00	1.150E+00	1.162E+00	19.19
	338.32	1252	11.40	5.706E+00	1.710E+00	1.728E+00	9.07
	911.07	1427	27.70*	2.477E+00	1.848E+00	1.867E+00	8.02
	964.60	-----	5.20	2.349E+00	-----	Line Not Found	-----
	969.11	647	16.60	2.339E+00	1.481E+00	1.497E+00	13.39

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.82	1607	3113	1.27	243.19	236	25	2.68E-02	9.1	7.79E+00	
2	77.06	3225	2736	1.40	252.24	236	25	5.38E-02	4.4	8.08E+00	
2	84.45	424	2549	1.54	282.11	272	38	7.06E-03	32.2	8.86E+00	
2	87.17	1255	2119	1.34	293.13	272	38	2.09E-02	8.8	9.09E+00	
2	89.85	706	1700	1.59	303.95	272	38	1.18E-02	12.7	9.28E+00	
0	93.20	1226	2049	1.61	317.51	310	19	2.04E-02	9.4	9.48E+00	T
0	129.00	430	1465	1.57	462.29	455	16	7.17E-03	20.4	9.88E+00	
0	328.21	307	932	1.45	1267.84	1258	19	5.11E-03	21.1	5.84E+00	
0	463.20	403	717	1.29	1813.68	1803	23	6.71E-03	15.5	4.47E+00	
0	511.08	749	940	2.59	2007.28	1992	36	1.25E-02	16.3	4.13E+00	
0	727.20	467	502	1.70	2881.24	2869	23	7.78E-03	11.5	3.05E+00	T
0	794.69	270	347	1.78	3154.13	3141	24	4.51E-03	16.6	2.81E+00	
0	1588.48	84	105	1.01	6364.05	6353	20	1.40E-03	25.3	1.52E+00	
0	1729.78	104	102	1.09	6935.47	6913	36	1.74E-03	24.8	1.43E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	2.135E+00	13.29	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
		% Abundances Found =		71.76			
TH-234	4.47E+09Y	0.00	63.29*	4.82	---	Not Found	---
			92.59	6.08	1.891E+00	11.10	Abun.
		% Abundances Found =		55.78			

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER10.SAMPLE]KCKE11AA\_171271043.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 11:50:00 Acquisition date : 17-DEC-2007 10:43:38  
 Sample ID : KCKE11AA ✓ Sample quantity : 50.700 GRAMS ✓  
 Sample type : Sample geometry : S25 ✓  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.55 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.719E+01	1.730E+00	3.049E-01	1.099E-02	89.169
TL-208	5.781E-01	4.140E-02	3.189E-02	1.149E-03	18.130
PB-212	1.856E+00	1.191E-01	4.659E-02	1.682E-03	39.845
BI-214	1.014E+00	7.444E-02	6.317E-02	2.379E-03	16.048
PB-214	1.134E+00	7.831E-02	5.537E-02	1.803E-03	20.471
RA-226DA	1.009E+00	7.410E-02	6.289E-02	2.369E-03	16.048
AC-228	2.005E+00	1.609E-01	1.219E-01	5.927E-03	16.442
RA-228DA	1.867E+00	1.498E-01	1.136E-01 ✓	5.521E-03	16.443

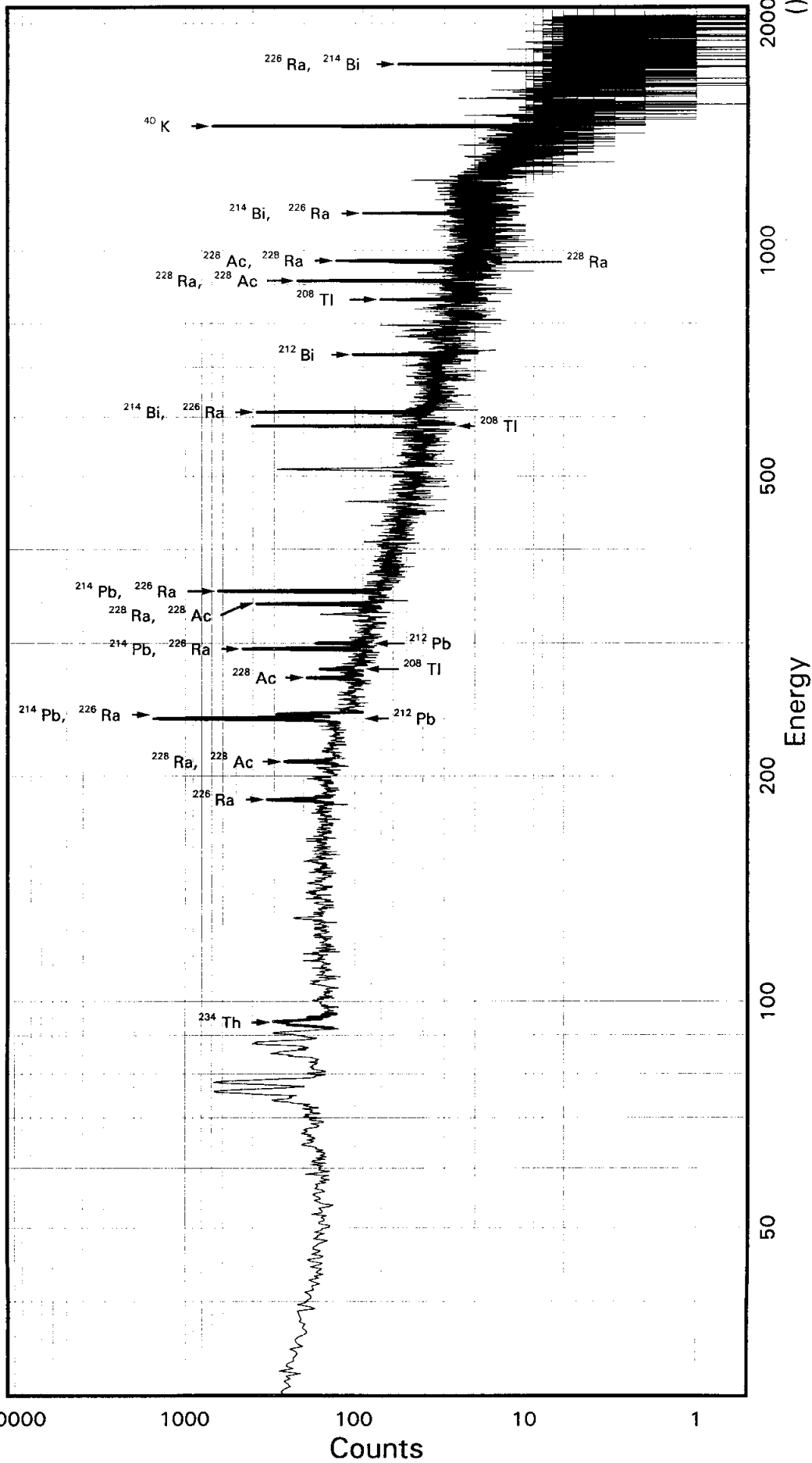
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-1.128E-01		5.267E-02	1.693E-01	5.619E-03	-0.666
CO-60	-1.158E-02		1.097E-02	3.662E-02	1.335E-03	-0.316
CS-137	-1.380E-02		1.017E-02	3.320E-02	1.360E-03	-0.416
PB-210	1.059E+00		5.646E-01	1.907E+00	1.392E-01	0.555
BI-212	2.135E+00	+	2.836E-01	6.612E-01	2.872E-02	3.228
TH-227	1.436E+00		1.120E-01	2.395E-01	8.653E-03	5.997
TH-234	3.310E-01		2.212E-01	7.458E-01	2.293E-02	0.444
AM-241	-1.122E-01		3.248E-02	1.039E-01	3.320E-03	-1.079

**STL Richland WA.  
BRCO SOLID**

Batch ID: 7327117

Sample ID: KCKE21AA  
Detector ID: GER13 1



Energy Coefficients:  
Offset: -5.12795E-01  
Slope: 2.50804E-01  
Quadrature: -9.81336E-08

Acquisition Start: 17-DEC-2007 10:44:42.22  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION:

KCKE21AA

CONFIGURATION ID: GER13:KCKE21AA\_171271044  
TITLE : BRCO SOLID  
SAMPLE ID : KCKE21AA

REPORT DATE: 18-DEC-07  
ACQUIRE DATE: 17-DEC-07 10:44:42  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 12:10:00.00  
CALIB DATE: 17-DEC-2007 05:49:23.72  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:17

SAMPLE QUANTITY: 5.2500E+01/  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.5128E+00 keV  
ENERGY SLOPE: 2.5080E-01 keV/C  
ENERGY Q COEFF: -.9813E-07 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.0441E-01 keV  
FWHM SLOPE: 4.5631E-02 sqr keV  
ITERATIONS: 10  
GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %  
ENERGY TOLERANCE: 1.500 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 1.0000E+06  
LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 03:25:09

```

Configuration      : $DISK1:[GER13.SAMPLE]KCKE21AA_171271044.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 12:10:00 Acquisition date : 17-DEC-2007 10:44:42
Sample ID         : KCKE21AA           Sample quantity  : 52.500 GRAMS
Sample type       :                     Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:17.63    0.0%
Start energy      :      19.55          End energy        :      2047.48
Sensitivity       :      5.00           Gaussian           :      10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	73.88*	45	2145	0.96	296.67	290	30	7.50E-04	248.0	1.56E+00
2	2	75.85*	1404	2069	0.97	304.53	290	30	2.34E-02	8.6	
3	2	78.03	2057	1809	0.95	313.20	290	30	3.43E-02	4.6	
4	4	85.39*	230	1904	1.21	342.56	336	33	3.84E-03	49.1	2.97E+00
5	4	87.93*	1141	2188	1.22	352.67	336	33	1.90E-02	10.5	
6	4	90.68	799	1463	1.23	363.67	336	33	1.33E-02	10.3	
7	0	93.75	1086	2398	1.46	375.91	369	18	1.81E-02	11.0	
8	0	129.28	239	1440	0.93	517.63	514	9	3.98E-03	29.4	
9	0	186.04	967	2199	1.12	744.05	737	16	1.61E-02	11.3	
10	0	208.96	559	2030	1.06	835.47	828	15	9.32E-03	18.0	
11	5	238.46*	6426	1585	1.15	953.20	941	32	1.07E-01	2.1	2.51E+00
12	5	241.34	1524	1725	1.75	964.69	941	32	2.54E-02	7.2	
13	0	270.15	417	1746	1.17	1079.64	1072	17	6.95E-03	23.5	
14	0	277.35	242	1305	1.10	1108.35	1103	13	4.04E-03	31.3	
15	0	294.95*	1393	1467	1.06	1178.62	1171	16	2.32E-02	7.6	
16	0	299.84	438	1156	1.08	1198.11	1191	14	7.31E-03	17.1	
17	0	327.92	373	1081	1.42	1310.21	1305	13	6.21E-03	19.0	
18	0	338.02	1476	1518	1.03	1350.52	1340	21	2.46E-02	7.1	
19	0	351.73*	2580	1679	1.18	1405.23	1393	22	4.30E-02	5.1	
20	0	462.79	363	859	1.27	1848.60	1841	17	6.04E-03	19.3	
21	0	510.69*	278	1419	1.96	2039.89	2027	25	4.64E-03	51.6	
22	0	583.11*	1645	946	1.27	2329.12	2319	22	2.74E-02	5.9	
23	0	609.13*	1731	1041	1.53	2433.07	2419	26	2.88E-02	5.8	
24	0	727.21	594	560	1.41	2904.87	2894	22	9.90E-03	9.5	
25	0	794.83	300	435	1.67	3175.14	3165	18	5.00E-03	15.1	
26	0	860.71	216	451	1.39	3438.47	3429	18	3.60E-03	20.9	
27	0	911.25*	1240	627	1.78	3640.55	3627	26	2.07E-02	6.4	
28	0	964.92	190	495	1.57	3855.17	3844	18	3.16E-03	24.6	
29	0	969.12*	715	516	1.85	3871.99	3862	25	1.19E-02	9.3	
30	0	1120.36*	457	497	1.82	4476.97	4460	29	7.62E-03	15.3	
31	0	1408.55	63	113	1.40	5630.59	5623	15	1.05E-03	31.4	
32	0	1460.60*	4655	429	2.20	5839.05	5820	40	7.76E-02	2.4	
33	0	1764.07*	250	134	2.16	7055.20	7038	30	4.16E-03	17.3	

Flag: "\*" = Peak area was modified by background subtraction



Configuration : \$DISK1:[GER13.SAMPLE]KCKE21AA\_171271044.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 12:10:00 Acquisition date : 17-DEC-2007 10:44:42  
 Sample ID : KCKE21AA Sample quantity : 52.500 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.63 0.0%  
 Energy tolerance : 1.50 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	4655	10.67*	1.575E+00	2.377E+01	2.377E+01	10.43
TL-208	277.28	242	6.31	6.634E+00	4.968E-01	5.124E-01	31.94
	583.02	1645	84.50*	3.643E+00	4.586E-01	4.731E-01	8.48
	860.30	216	12.42	2.593E+00	5.757E-01	5.939E-01	22.54
PB-212	238.58	6426	43.30*	7.395E+00	1.722E+00	1.776E+00	6.58
	300.03	438	3.28	6.252E+00	1.834E+00	1.892E+00	18.17
BI-214	609.31	1731	46.09*	3.511E+00	9.176E-01	9.177E-01	8.49
	768.35	-----	4.94	2.871E+00	-----	Line Not Found	-----
	1120.27	457	15.10	2.028E+00	1.282E+00	1.282E+00	16.92
	1764.49	250	15.40	1.327E+00	1.049E+00	1.049E+00	18.63
PB-214	241.92	1524	7.43	7.335E+00	2.399E+00	2.399E+00	9.49
	295.09	1393	19.30	6.331E+00	9.783E-01	9.783E-01	9.74
	351.87	2580	37.60*	5.514E+00	1.068E+00	1.068E+00	7.86
RA-226DA	186.21	967	3.50	8.554E+00	2.772E+00	2.772E+00	12.93
	241.98	1524	7.49	7.335E+00	2.380E+00	2.380E+00	9.49
	295.22	1393	19.20	6.331E+00	9.834E-01	9.834E-01	9.74
	351.92	2580	37.20	5.514E+00	1.079E+00	1.079E+00	7.86
	609.32	1731	46.30*	3.511E+00	9.135E-01	9.135E-01	8.49
	1120.28	457	15.10	2.028E+00	1.282E+00	1.282E+00	16.92
	1238.11	-----	5.94	1.843E+00	-----	Line Not Found	-----
	1764.49	250	15.80	1.327E+00	1.022E+00	1.022E+00	18.63
AC-228	209.39	559	3.89	8.045E+00	1.533E+00	1.549E+00	19.10
	270.26	417	3.46	6.765E+00	1.528E+00	1.543E+00	24.33
	338.42	1476	11.27	5.691E+00	1.975E+00	1.995E+00	9.30
	911.16	1240	25.80*	2.461E+00	1.676E+00	1.694E+00	11.01
	968.97	715	15.80	2.325E+00	1.670E+00	1.687E+00	12.61
RA-228DA	209.28	559	4.40	8.045E+00	1.355E+00	1.369E+00	19.10
	338.32	1476	11.40	5.691E+00	1.952E+00	1.972E+00	9.30
	911.07	1240	27.70*	2.461E+00	1.561E+00	1.578E+00	11.01
	964.60	190	5.20	2.334E+00	1.341E+00	1.355E+00	26.01
	969.11	715	16.60	2.325E+00	1.589E+00	1.606E+00	12.61

Flag: "\*" = Keyline

Sample ID : KCKE21AA

Acquisition date : 17-DEC-2007 10:44:42

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	73.88	45	2145	0.96	296.67	290	30	7.50E-04	****	3.93E+00	
2	75.85	1404	2069	0.97	304.53	290	30	2.34E-02	8.6	4.26E+00	
2	78.03	2057	1809	0.95	313.20	290	30	3.43E-02	4.6	4.62E+00	
4	85.39	230	1904	1.21	342.56	336	33	3.84E-03	49.1	5.74E+00	
4	87.93	1141	2188	1.22	352.67	336	33	1.90E-02	10.5	6.10E+00	
4	90.68	799	1463	1.23	363.67	336	33	1.33E-02	10.3	6.46E+00	
0	93.75	1086	2398	1.46	375.91	369	18	1.81E-02	11.0	6.83E+00	T
0	129.28	239	1440	0.93	517.63	514	9	3.98E-03	29.4	9.02E+00	
0	327.92	373	1081	1.42	1310.21	1305	13	6.21E-03	19.0	5.83E+00	
0	462.79	363	859	1.27	1848.60	1841	17	6.04E-03	19.3	4.41E+00	
0	510.69	278	1419	1.96	2039.89	2027	25	4.64E-03	51.6	4.07E+00	
0	727.21	594	560	1.41	2904.87	2894	22	9.90E-03	9.5	3.01E+00	T
0	794.83	300	435	1.67	3175.14	3165	18	5.00E-03	15.1	2.79E+00	
0	1408.55	63	113	1.40	5630.59	5623	15	1.05E-03	31.4	1.63E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by
BI-212	1.91Y	0.04	727.25*	6.58	2.651E+00	11.78	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
		% Abundances Found =		71.76			
TH-234	4.47E+09Y	0.00	63.29*	4.82	---	Not Found	---
			92.59	6.08	2.244E+00	12.79	Abun.
		% Abundances Found =		55.78			

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER13.SAMPLE]KCKE21AA 171271044.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
Analyses by       : MINACT V2.8
Sample title      : BRCO SOLID
Sample date       : 16-NOV-2007 12:10:00 Acquisition date : 17-DEC-2007 10:44:42
Sample ID        : KCKE21AA Sample quantity : 52.500 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.63 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00 WTM error limit : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	2.377E+01	2.481E+00	3.796E-01	3.359E-02	62.627
TL-208	4.731E-01	4.013E-02	3.789E-02	1.339E-03	12.486
PB-212	1.776E+00	1.170E-01	5.200E-02	1.930E-03	34.153
BI-214	9.177E-01	7.791E-02	6.658E-02	2.432E-03	13.783
PB-214	1.068E+00	8.396E-02	6.391E-02	2.146E-03	16.705
RA-226DA	9.135E-01	7.756E-02	6.628E-02	2.421E-03	13.783
AC-228	1.694E+00	1.864E-01	1.492E-01	1.109E-02	11.355
RA-228DA	1.578E+00	1.737E-01	1.389E-01	1.033E-02	11.356

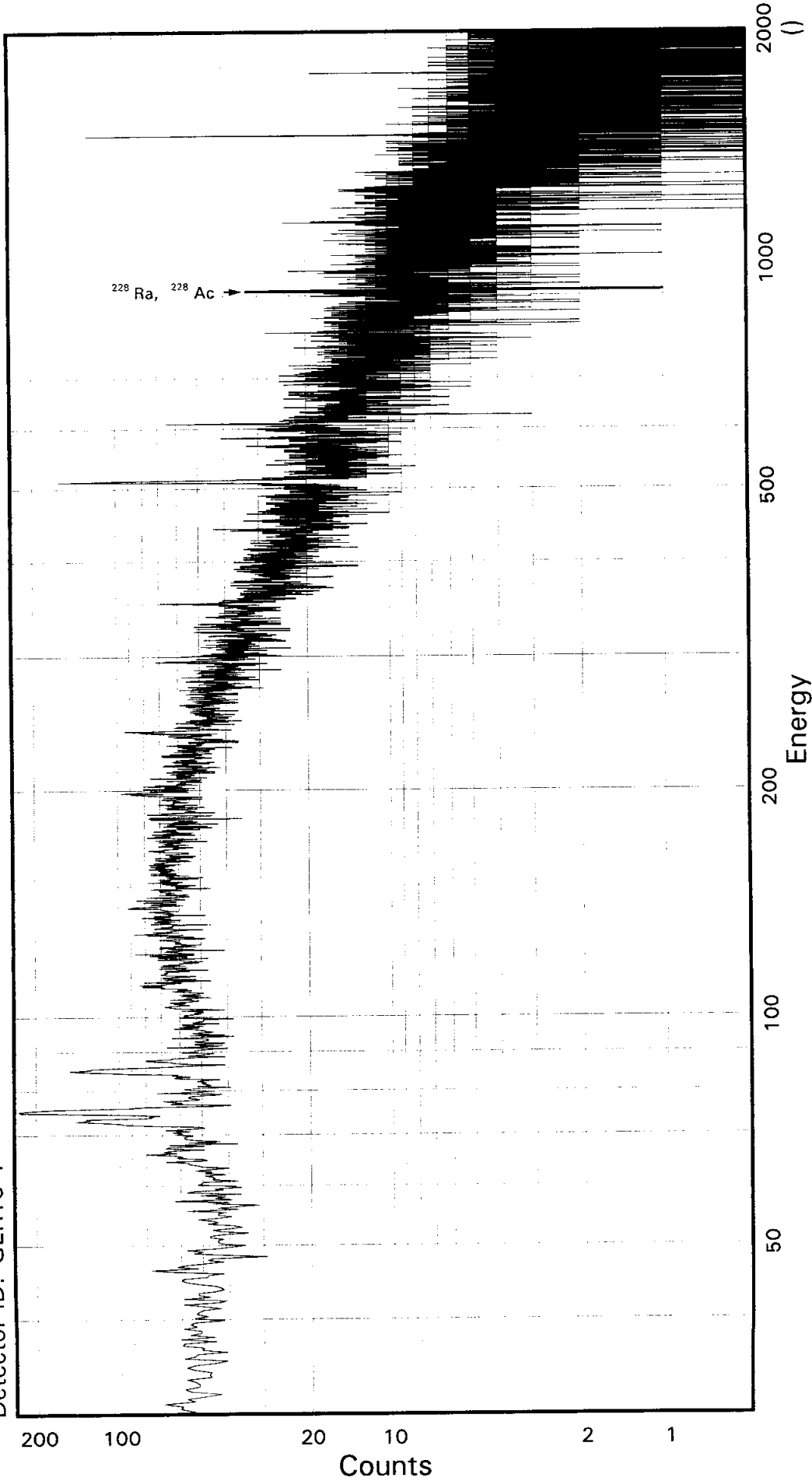
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	2.646E-02		5.567E-02	1.893E-01	6.538E-03	0.140
CO-60	1.732E-02		1.268E-02	4.339E-02	4.317E-03	0.399
CS-137	7.432E-04		1.147E-02	3.813E-02	1.481E-03	0.019
PB-210	1.417E+00		3.436E+00	1.128E+01	2.228E+00	0.126
BI-212	2.651E+00	+	3.123E-01	6.968E-01	3.328E-02	3.804
TH-227	3.260E-01		6.960E-02	2.032E-01	7.552E-03	1.605
TH-234	-7.455E-01		4.466E-01	1.491E+00	6.359E-02	-0.500
AM-241	2.058E-02		7.720E-02	2.646E-01	1.035E-02	0.078

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCR6V1AA  
Detector ID: GER15 1



Energy Coefficients:  
Offset: 1.18776E+01  
Slope: 2.41233E-01  
Quadrature: 1.95249E-08

Acquisition Start: 15-DEC-2007 11:00:45.43  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION:

KCR6V1AA ✓

CONFIGURATION ID: GER15:KCR6V1AA\_151271100

TITLE : BRCO SOLID ✓

SAMPLE ID : KCR6V1AA

REPORT DATE: 16-DEC-07

ACQUIRE DATE: 15-DEC-07 11:00:45

ELAPSED LIVE TIME: 60000.0 Sec ✓

PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 16-NOV-2007 08:15:00.00 ✓

CALIB DATE: 15-DEC-2007 08:36:36.19

ELAPSED LIVE TIME: 0 16:40:00

ELAPSED REAL TIME: 0 16:40:23

SAMPLE QUANTITY: 2.5160E+01 ✓

SAMPLE GEOMETRY: 25ML ✓

UNITS: GRAMS ✓

SAMPLE TYPE:

ENERGY OFFSET: 1.1878E+01 keV

ENERGY SLOPE: 2.4123E-01 keV/C

ENERGY Q COEFF: 1.9525E-08 keV/C<sup>2</sup>

PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.3581E-01 keV

FWHM SLOPE: 3.7186E-02 sqr keV

ITERATIONS: 10

GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %

ENERGY TOLERANCE: 2.000 keV

VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00

ACTIVITY MULTIPLIER: 1.0000E+06 ✓

LIBRARY: [NUC\_LIBR]BRC.NLB ✓

VMS Peak Search Report V1.9 Generated 16-DEC-2007 03:41:25

Configuration : RDND06\$DKA100: [GER15.SAMPLE] KCR6V1AA\_151271100.CNF;1  
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
Sample title : BRCO SOLID  
Sample date : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 11:00:45  
Sample ID : KCR6V1AA Sample quantity : 25.160 GRAMS  
Sample type : Sample geometry : 25ML  
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:23.29 0.0%  
Start energy : 12.12 End energy : 1989.37  
Sensitivity : 5.00 Gaussian : 10.00  
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	910.87*	85	139	2.04	3725.55	3712	27	1.41E-03	45.3	0.00E+00

Flag: "\*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 16-DEC-2007 03:41:25

Configuration : RDND06\$DKA100:[GER15.SAMPLE]KCR6V1AA\_151271100.CNF;1  
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4  
Sample title : BRCO SOLID  
Sample date : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 11:00:45  
Sample ID : KCR6V1AA Sample quantity : 25.160 GRAMS  
Sample type : Sample geometry : 25ML  
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:23.29 0.0%  
Energy tolerance : 2.00 Half life ratio : 8.00  
Errors propagated: Yes Systematic Error : 5.00 %  
Efficiency type : Empirical Efficiencies at : Peak Energy  
Abundance limit : 80.00

Nuclide Line Activity Report

Flag: "\*" = Keyline



Unidentified Energy Lines  
Sample ID : KCR6V1AA

Page : 2  
Acquisition date : 15-DEC-2007 11:00:45

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	910.87	85	139	2.04	3725.55	3712	27	1.41E-03	45.3	1.78E+00	T

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/GRAM)	1-Sigma %Error	Rejected by	
AC-228	5.75Y	0.01	209.39	3.89	---	Not Found	---	Abun.
			270.26	3.46	---	Not Found	---	
			338.42	11.27	---	Not Found	---	
			911.16*	25.80	3.324E-01	45.83		
			968.97	15.80	---	Not Found	---	
% Abundances Found =			42.84					
RA-228DA	5.75Y	0.01	209.28	4.40	---	Not Found	---	Abun.
			338.32	11.40	---	Not Found	---	
			911.07*	27.70	3.096E-01	45.83		
			964.60	5.20	---	Not Found	---	
			969.11	16.60	---	Not Found	---	
% Abundances Found =			42.42					

Flag: "\*" = Keyline

Configuration : RDND06\$DKA100:[GER15.SAMPLE]KCR6V1AA\_151271100.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8  
 Analyses by : MINACT V2.8  
 Sample title : BRCO SOLID  
 Sample date : 16-NOV-2007 08:15:00 Acquisition date : 15-DEC-2007 11:00:45  
 Sample ID : KCR6V1AA ✓ Sample quantity : 25.160 GRAMS  
 Sample type : ✓ Sample geometry : 25ML ✓  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:23.29 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 2.00 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

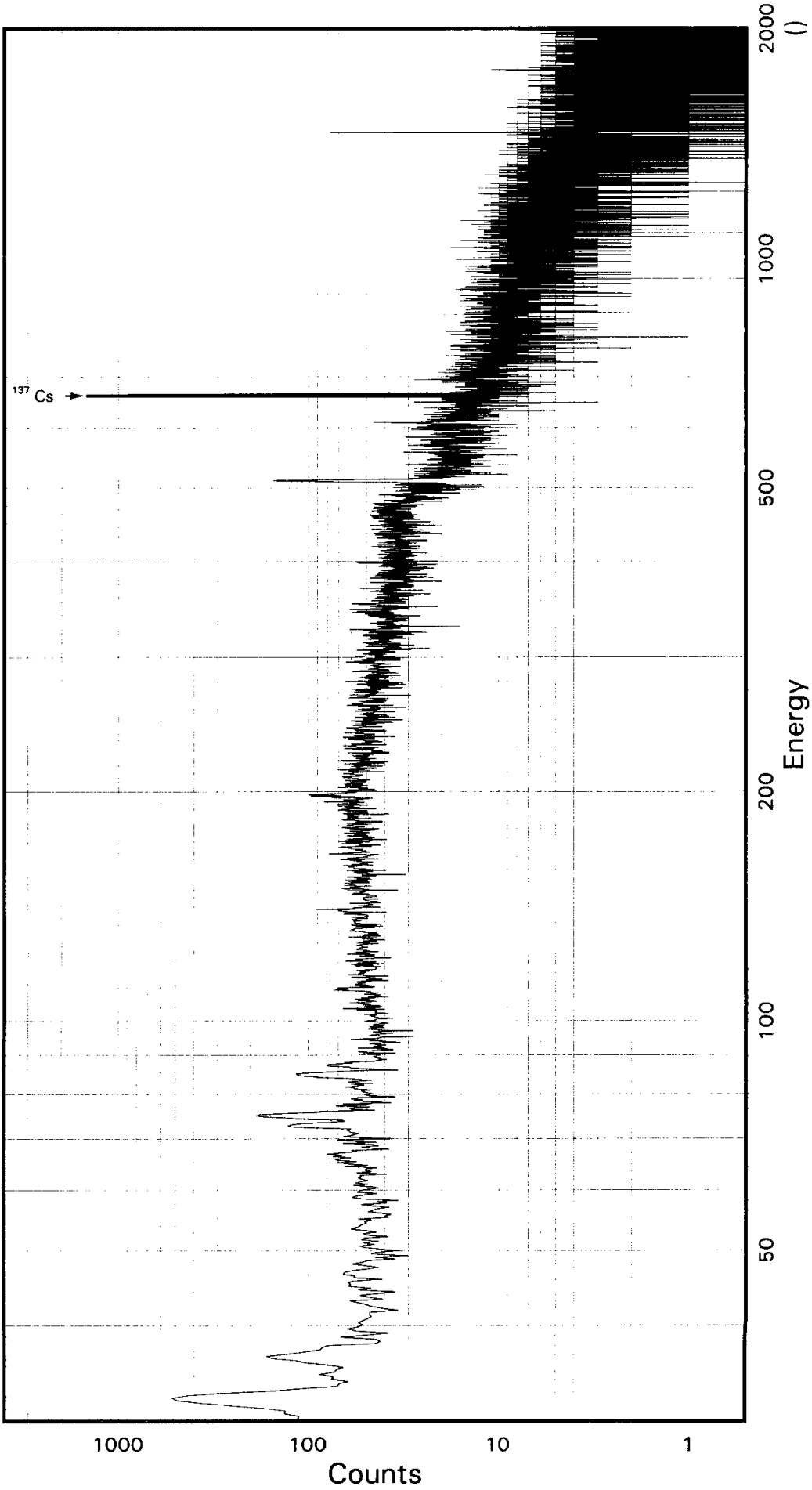
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	-1.004E+00		7.446E-01	2.283E+00	9.831E-02	-0.440
CO-57	-3.941E-02		9.040E-02	3.011E-01	1.153E-02	-0.131
CO-60	1.394E-03		2.180E-02	7.610E-02	3.397E-03	0.018
CS-137	-5.379E-02		2.103E-02	6.601E-02	2.968E-03	-0.815
TL-208	-2.381E-02		3.448E-02	8.060E-02	3.879E-03	-0.295
PB-210	2.452E-01		1.620E-01	5.588E-01	2.159E-02	0.439
BI-212	4.493E-01		2.793E-01	9.897E-01	4.673E-02	0.454
PB-212	1.787E-02		5.567E-02	1.128E-01	5.074E-03	0.158
BI-214	-1.395E-01		7.650E-02	1.719E-01	8.129E-03	-0.811
PB-214	-1.802E-01		8.987E-02	1.452E-01	5.740E-03	-1.241
RA-226DA	-1.395E-01		7.615E-02	1.711E-01 ✓	8.089E-03	-0.815
TH-227	-2.550E-01		1.062E-01	3.427E-01	1.547E-02	-0.744
AC-228	3.324E-01	+	1.523E-01	3.311E-01	1.700E-02	1.004
RA-228DA	3.096E-01	+	1.419E-01	3.098E-01 ✓	1.590E-02	1.000
TH-234	1.181E-02		1.222E-01	4.093E-01	1.347E-02	0.029
AM-241	2.867E-03		1.578E-02	5.312E-02	1.753E-03	0.054

STL Richland WA.  
BRCO SOLID

Batch ID: 7327117

Sample ID: KCR6V1AC  
Detector ID: GER15 1



Acquisition Start: 17-DEC-2007 10:46:22.92  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: 1.18540E+01  
Slope: 2.41237E-01  
Quadrature: 1.84879E-08

SAMPLE IDENTIFICATION:

KCR6V1AC

CONFIGURATION ID: GER15:KCR6V1AC\_171271046

TITLE : BRCO SOLID

SAMPLE ID : KCR6V1AC

REPORT DATE: 18-DEC-07

ACQUIRE DATE: 17-DEC-07 10:46:22

ELAPSED LIVE TIME: 60000.0 Sec

PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 17-DEC-2007 12:00:00.00

CALIB DATE: 17-DEC-2007 05:49:23.37

ELAPSED LIVE TIME: 0 16:40:00

ELAPSED REAL TIME: 0 16:40:23

SAMPLE QUANTITY: 2.5300E+01

SAMPLE GEOMETRY: 25ML

UNITS: GRAMS

SAMPLE TYPE:

ENERGY OFFSET: 1.1854E+01 keV

ENERGY SLOPE: 2.4124E-01 keV/C

ENERGY Q COEFF: 1.8488E-08 keV/C<sup>2</sup>

PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.3993E-01 keV

FWHM SLOPE: 3.1352E-02 sqr keV

ITERATIONS: 10

GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %

ENERGY TOLERANCE: 2.000 keV

VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00

ACTIVITY MULTIPLIER: 1.0000E+06

LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 18-DEC-2007 03:27:03

```

Configuration      : RDND06$DKA100:[GER15.SAMPLE]KCR6V1AC_171271046.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 17-DEC-2007 12:00:00 Acquisition date : 17-DEC-2007 10:46:22
Sample ID        : KCR6V1AC Sample quantity : 25.300 GRAMS
Sample type      : Sample geometry : 25ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:23.87 0.0%
Start energy     : 12.10 End energy : 1989.31
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	31.97	2206	1389	1.09	83.39	75	17	3.68E-02	4.4	
2	0	36.67	509	850	0.92	102.85	95	14	8.49E-03	13.0	
3	0	84.97*	25	565	1.42	303.10	297	12	4.24E-04	330.7	0.00E+00
4	0	87.34	200	457	1.29	312.92	309	11	3.33E-03	21.9	
5	0	661.69	9454	284	1.47	2693.21	2680	27	1.58E-01	1.1	

Flag: "\*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 18-DEC-2007 03:27:03

Configuration : RDND06\$DKA100:[GER15.SAMPLE]KCR6V1AC\_171271046.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4  
 Sample title : BRCO SOLID  
 Sample date : 17-DEC-2007 12:00:00 Acquisition date : 17-DEC-2007 10:46:22  
 Sample ID : KCR6V1AC Sample quantity : 25.300 GRAMS  
 Sample type : Sample geometry : 25ML  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:23.87 0.0%  
 Energy tolerance : 2.00 Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 5.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
CS-137	661.65	9454	85.10*	2.378E+00	8.317E+00	8.317E+00	6.82

Flag: "\*" = Keyline

Unidentified Energy Lines  
Sample ID : KCR6V1AC

Page : 2  
Acquisition date : 17-DEC-2007 10:46:22

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	31.97	2206	1389	1.09	83.39	75	17	3.68E-02	4.4	4.60E+00	
0	36.67	509	850	0.92	102.85	95	14	8.49E-03	13.0	6.06E+00	
0	84.97	25	565	1.42	303.10	297	12	4.24E-04	****	9.91E+00	
0	87.34	200	457	1.29	312.92	309	11	3.33E-03	21.9	9.85E+00	

Flags: "T" = Tentatively associated



Rejected Report  
Sample ID : KCR6V1AC

Page : 3  
Acquisition date : 17-DEC-2007 10:46:22

Flag: "\*" = Keyline

```

Configuration      : RDND06$DKA100:[GER15.SAMPLE]KCR6V1AC_171271046.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8
Analyses by       : MINACT V2.8
Sample title      : BRCO SOLID
Sample date       : 17-DEC-2007 12:00:00 Acquisition date : 17-DEC-2007 10:46:22
Sample ID        : KCR6V1AC Sample quantity : 25.300 GRAMS
Sample type      : Sample geometry : 25ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:23.87 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 2.00 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00 WTM error limit : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (PCI/GRAM)	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CS-137	8.317E+00	5.673E-01	6.426E-02	2.889E-03	129.438

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	-1.048E+00		6.096E-01	1.822E+00	7.844E-02	-0.575
CO-57	-1.210E-02		7.703E-02	2.556E-01	9.788E-03	-0.047
CO-60	-2.640E-02		2.046E-02	6.760E-02	3.018E-03	-0.391
TL-208	5.534E-02		1.967E-02	6.970E-02	3.355E-03	0.794
PB-210	4.043E-01		1.720E-01	5.848E-01	2.260E-02	0.691
BI-212	-2.122E-01		2.601E-01	8.647E-01	4.083E-02	-0.245
PB-212	-1.694E-02		2.855E-02	9.511E-02	4.278E-03	-0.178
BI-214	-8.512E-02		6.729E-02	1.505E-01	7.116E-03	-0.565
PB-214	2.287E-02		6.439E-02	1.426E-01	5.635E-03	0.160
RA-226DA	-8.511E-02		6.699E-02	1.498E-01	7.082E-03	-0.568
TH-227	-8.054E-02		9.992E-02	3.320E-01	1.498E-02	-0.243
AC-228	2.748E-01		7.711E-02	2.786E-01	1.431E-02	0.986
RA-228DA	2.291E-01		7.173E-02	2.586E-01	1.328E-02	0.886
TH-234	-2.969E-01		1.286E-01	4.236E-01	1.394E-02	-0.701
AM-241	1.684E-02		1.723E-02	5.749E-02	1.897E-03	0.293

GAMMA  
STANDARDS AND TRACEABILITY

# Standard Material Fractions (Vials)

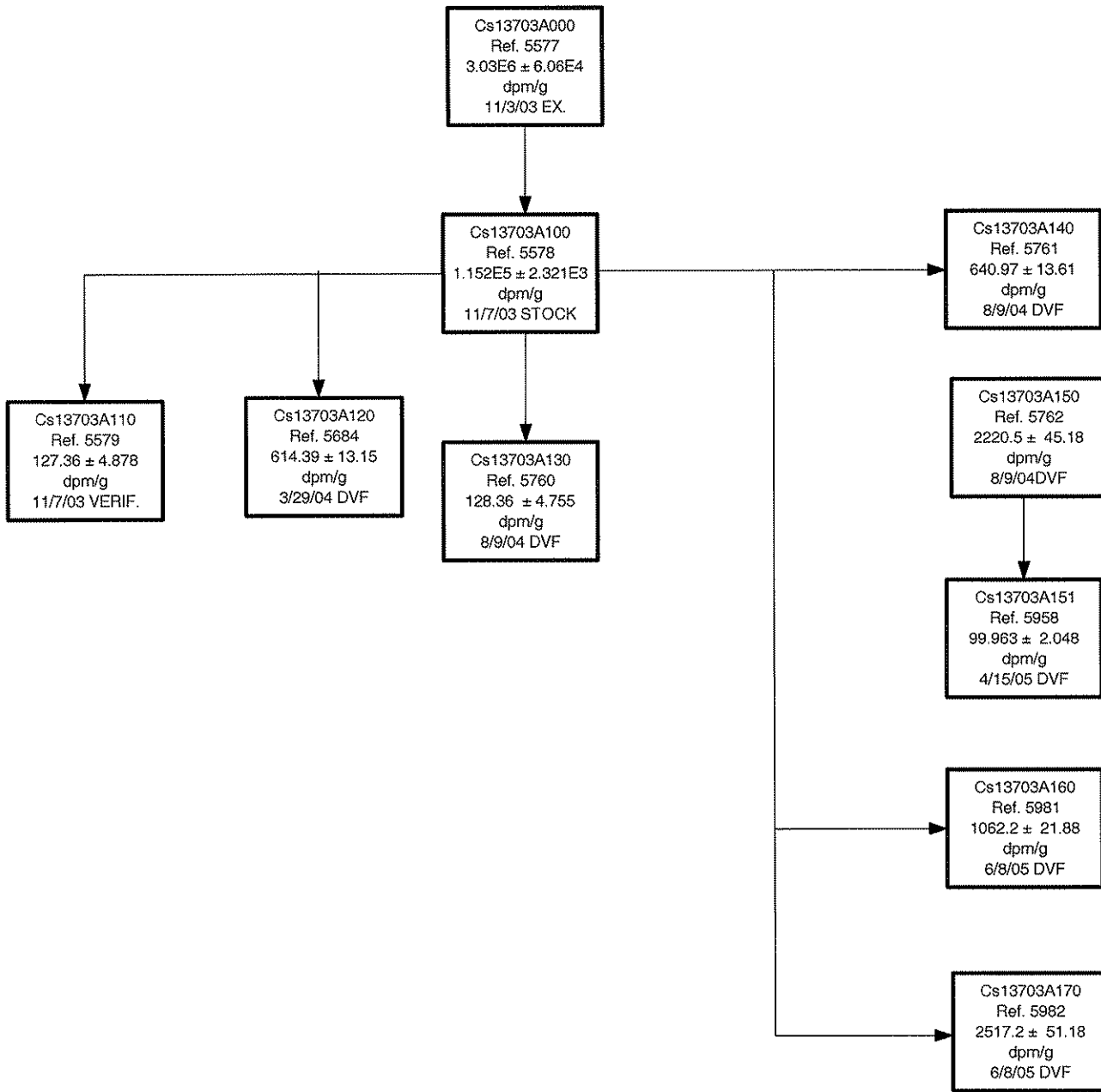
Vial Prep: 12/25/06 to 12/27/07, SMFractionIdentifier Like: GSE1219%, Order by SMIdentifier, ConstituentCode, SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep, Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard:		CS13703A170	Ref: 6/8/2005	2.5172E+03	± 5.982E+03	DPM/G
<b>GSE1219</b>	CS-137	<b>4.4946E+02 ± 1.068E+03</b> DPM	0.1888 g	11/12/2007 11/12/2007	Armstron	2.3806E+03 ± 5.657E+03 DPM/G

4.4946E+002 ± 4.495E+002 ( 1)

4.4946E+002 , 4.4946E+002

**Cs13703A000**



**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>6/8/2005</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>CS13703A100</u></b>	<b><u>5578</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>1.1107E+05</u>	±	<u>2.238E+03</u>
5) Percent error of Source Activity	<u>2.015</u>	%	
6) Weight of Source Material used (g)	<u>1.3034</u>		
7) (% Error) of Weight of Source Material used	<u>0.3683</u>	%	
8) Diluent	<u>2M HNO3-P0500352</u>		
9) Total Weight of the Dilution (g)	<u>136.29</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2201</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.0622E+03</u></b>	<b>±</b>	<b><u>2.188E+01</u></b>
12) Total Uncertainty	<u>2.060</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>CS13703A160</u></b>	<b><u>5981</u></b>	
14) Calibration Reference Date	<u>6/8/2005</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>6/8/2005</u>
16) Reviewed by/date	<u>SEW</u>		<u>6/9/2005</u>
17) Location <u>QCLAB/STWT1165</u>	18) Exhausted		

\*\*\*\*\*  
**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>6/8/2005</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>CS13703A100</u></b>	<b><u>5578</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>1.1107E+05</u>	±	<u>2.238E+03</u>
5) Percent error of Source Activity	<u>2.015</u>	%	
6) Weight of Source Material used (g)	<u>3.0806</u>		
7) (% Error) of Weight of Source Material used	<u>0.1558</u>	%	
8) Diluent	<u>2M HNO3-P0500352</u>		
9) Total Weight of the Dilution (g)	<u>135.93</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2207</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.5172E+03</u></b>	±	<b><u>5.118E+01</u></b>
12) Total Uncertainty	<u>2.033</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>CS13703A170</u></b>	<b><u>5982</u></b>	
14) Calibration Reference Date	<u>6/8/2005</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>6/8/2005</u>
16) Reviewed by/date	<u>sew</u>		<u>6/9/2005</u>
17) Location <u>QCLAB/STWT1166</u>	18) Exhausted		

\*\*\*\*\*  
**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>8/9/2004</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>CS13703A100</u></b>	<b><u>5578</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>1.1321E+05</u>	±	<u>2.281E+03</u>
5) Percent error of Source Activity	<u>2.015</u>		%
6) Weight of Source Material used (g)	<u>0.7589</u>		
7) (% Error) of Weight of Source Material used	<u>0.6325</u>		%
8) Diluent	<u>2M HNO3-P0400528</u>		
9) Total Weight of the Dilution (g)	<u>134.04</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2238</u>		%
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>6.4097E+02</u></b>	<b>±</b>	<b><u>1.361E+01</u></b>
12) Total Uncertainty	<u>2.124</u>		%
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>CS13703A140</u></b>	<b><u>5761</u></b>	
14) Calibration Reference Date	<u>8/9/2004</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>8/9/2004</u>
16) Reviewed by/date	<u>SEW</u>		<u>8/11/2004</u>
17) Location	<u>QCLAB/STWT1028</u>	18) Exhausted	<u></u>

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$

Form: CC-006, 7/15/99, Rev 3



**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>8/9/2004</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>CS13703A100</u></b>		<b><u>5578</u></b>
4) Source Activity (dpm ± dpm/g)	<u>1.1321E+05</u>	±	<u>2.281E+03</u>
5) Percent error of Source Activity	<u>2.015</u>	%	
6) Weight of Source Material used (g)	<u>0.1548</u>		
7) (% Error) of Weight of Source Material used	<u>3.1008</u>	%	
8) Diluent	<u>2M HNO3-P0400528</u>		
9) Total Weight of the Dilution (g)	<u>136.53</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2197</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.2836E+02</u></b>	±	<b><u>4.755E+00</u></b>
12) Total Uncertainty	<u>3.704</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>CS13703A130</u></b>		<b><u>5760</u></b>
14) Calibration Reference Date	<u>8/9/2004</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>8/9/2004</u>
16) Reviewed by/date	<u>SEW</u>		<u>8/11/2004</u>
17) Location <u>QCLAB/STWT1027</u>	18) Exhausted		

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>3/29/2004</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>CS13703A100</u></b>	<b><u>5578</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>1.1416E+05</u>	±	<u>2.300E+03</u>
5) Percent error of Source Activity	<u>2.015</u>	%	
6) Weight of Source Material used (g)	<u>0.7012</u>		
7) (% Error) of Weight of Source Material used	<u>0.6845</u>	%	
8) Diluent	<u>2M HNO3-P0400085</u>		
9) Total Weight of the Dilution (g)	<u>130.29</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2303</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>6.1439E+02</u></b>	±	<b><u>1.315E+01</u></b>
12) Total Uncertainty	<u>2.141</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>CS13703A120</u></b>	<b><u>5684</u></b>	
14) Calibration Reference Date	<u>3/29/2004</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>3/29/2004</u>
16) Reviewed by/date	<u>SEW</u>		<u>4/1/2004</u>
17) Location <u>QCLAB/STWT0946</u>	18) Exhausted		

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>11/7/2003</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>CS13703A100</u></b>	<b><u>5578</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>1.1519E+05</u>	±	<u>2.321E+03</u>
5) Percent error of Source Activity	<u>2.015</u>	%	
6) Weight of Source Material used (g)	<u>0.1477</u>		
7) (% Error) of Weight of Source Material used	<u>3.2498</u>	%	
8) Diluent	<u>2M HNO3-P0200629</u>		
9) Total Weight of the Dilution (g)	<u>133.59</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2246</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.2736E+02</u></b>	±	<b><u>4.878E+00</u></b>
12) Total Uncertainty	<u>3.830</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>CS13703A110</u></b>	<b><u>5579</u></b>	
14) Calibration Reference Date	<u>11/7/2003</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>11/7/2003</u>
16) Reviewed by/date	<u>SEW</u>		<u>11/13/2003</u>
17) Location <u>QCLAB/STWT0872</u>	18) Exhausted		<u></u>

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**CALCULATIONS**

7) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

10) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

11) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>11/7/2003</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>CS13703A000</u></b>	<b><u>5577</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>3.0310E+06</u>	±	<u>6.062E+04</u>
5) Percent error of Source Activity	<u>2</u>	%	
6) Weight of Source Material used (g)	<u>5.0442</u>		
7) (% Error) of Weight of Source Material used	<u>0.0952</u>	%	
8) Diluent	<u>2M HNO3-P0200629</u>		
9) Total Weight of the Dilution (g)	<u>132.73</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2260</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.1519E+05</u></b>	<b>±</b>	<b><u>2.321E+03</u></b>
12) Total Uncertainty	<u>2.015</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>CS13703A100</u></b>	<b><u>5578</u></b>	
14) Calibration Reference Date	<u>11/7/2003</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>11/7/2003</u>
16) Reviewed by/date	<u>SEW</u>		<u>11/13/2003</u>
17) Location <u>QCLAB/STWT0871</u>	18) Exhausted		<u></u>

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**CALCULATIONS**

7) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

10) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

11) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

ISOTOPE RECORD FORM

1) Isotope Cs-137 2) Reference Number 5577

3) Half Life 30.17 yrs. 4) Storage Location Std. Lab (D-9)

5) Source Identification Number Cs13703A000

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CALIBRATION DATA

6) Activity as Received Units 2.571E5 dps

7) Overall Uncertainty Percent 2.0%

8) Reference Date / Time 11-3-03 12:00 EST (9:00AM)

9) Activity dpm/g 3.0318E+6 ± 6.0635 E+4

10) Volume or Mass (ml/g) 5.08815g

11) Calibrated by ANALYTICS

12) Certificate Solution Number 67125-310

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SURVEY DATA

13) Date Received 11/6/2003

14) Surveyed by W.G

15) Survey Reading (Beta/Gamma) cpm <10,000K

16) Survey Reading (Alpha) cpm <BKG

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17) Activity Conversion 2.571E+6dpsx60s/m/5.08815g=3.03E+06 ± 6.06E+4 dpm/g

18) Remarks Used all to make first dilution 11/7/03 w.g

19) Isotope File Updated by W.G 11/7/03

20) QC Approved SEW 11/13/03



Recd 11/6/03  
# 5577

1380 Seaboard Industrial Blvd.  
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677  
Fax (404) 352-2837

## CERTIFICATE OF CALIBRATION

### Standard Radionuclide Source

67125-310

Cs-137 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated in an ionization chamber that was calibrated by the National Physical Laboratory, Teddington, U.K., and is directly traceable to national standards.

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:	Cs-137
ACTIVITY (dps):	2.571 E5
HALF-LIFE:	3.007E1 years
CALIBRATION DATE:	November 3, 2003 12:00 EST
RELATIVE EXPANDED UNCERTAINTY (k=2):	2.0%

Impurities:  $\gamma$ -impurities <0.1%

5.08815 grams 0.1M HCl solution with 30  $\mu$ g/g Cs carrier.

Master Solution ID: P271V90

P O NUMBER: 1992574-0000P, Item 2

SOURCE PREPARED BY:

M. Taskeava  
M. Taskeava, Radiochemist

Q A APPROVED:

M. M. [Signature] 11-5-03

GAMMA  
CONTINUING CALIBRATION

Quality Assurance Report.

Generated 26-DEC-2007 16:05:52.06

QA Filename : \$DISK1:[GER14.QA]CHECK.QAF;3

-- Multi-Test Full Report --

Description : 121.78 KeV Efficiency

Parameter Units : Parameter Type : Peak

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00

Mean : 0.006158 Std Deviation : 0.000062

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	chk		0.0061		
2-NOV-2007 04:49	chk		0.0061		
5-NOV-2007 06:03	chk		0.0061		
6-NOV-2007 05:34	chk		0.0062		
7-NOV-2007 04:56	chk		0.0062		
8-NOV-2007 06:29	chk		0.0061		
9-NOV-2007 04:40	chk		0.0061		
10-NOV-2007 05:34	chk		0.0060	In	
12-NOV-2007 06:24	chk		0.0062		
13-NOV-2007 05:39	chk		0.0061		
14-NOV-2007 05:37	chk		0.0062		
15-NOV-2007 05:02	chk		0.0061		
16-NOV-2007 05:35	chk		0.0061		
19-NOV-2007 05:41	chk		0.0062		
20-NOV-2007 05:47	chk		0.0061		
21-NOV-2007 05:28	chk		0.0061		
23-NOV-2007 08:40	chk		0.0061		
26-NOV-2007 05:37	chk		0.0061		
27-NOV-2007 05:37	chk		0.0061		
28-NOV-2007 05:47	chk		0.0062		
29-NOV-2007 05:23	chk		0.0061		
30-NOV-2007 05:22	chk		0.0062		
1-DEC-2007 10:47	chk		0.0062		
3-DEC-2007 05:40	chk		0.0060		



4-DEC-2007 05:30	chk	0.0061	
5-DEC-2007 06:06	chk	0.0061	
6-DEC-2007 05:46	chk	0.0061	
7-DEC-2007 05:19	chk	0.0062	
8-DEC-2007 06:12	chk	0.0062	
10-DEC-2007 05:35	chk	0.0061	
11-DEC-2007 05:18	chk	0.0062	
12-DEC-2007 05:14	chk	0.0062	
13-DEC-2007 03:48	chk	0.0061	
14-DEC-2007 05:53	chk	0.0061	
15-DEC-2007 08:25	chk	0.0060	
18-DEC-2007 05:48	chk	0.0061	
19-DEC-2007 05:33	chk	0.0060	In
20-DEC-2007 03:05	chk	0.0061	
21-DEC-2007 04:16	chk	0.0061	
22-DEC-2007 07:36	chk	0.0061	
24-DEC-2007 05:27	chk	0.0061	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
25-DEC-2007 09:30	chk		0.0062	

-- Multi-Test Full Report --

Description : 121.78 KeV Centroid

Parameter Units : channel Parameter Type : Peak

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
1-NOV-2007 04:49	chk		493.2320	
2-NOV-2007 04:49	chk		493.1608	
5-NOV-2007 06:03	chk		493.2205	
6-NOV-2007 05:34	chk		493.1553	
7-NOV-2007 04:56	chk		493.2126	
8-NOV-2007 06:29	chk		493.1773	
9-NOV-2007 04:40	chk		493.1523	
10-NOV-2007 05:34	chk		493.1889	
12-NOV-2007 06:24	chk		493.1219	
13-NOV-2007 05:39	chk		493.1619	
14-NOV-2007 05:37	chk		493.2153	
15-NOV-2007 05:02	chk		493.1092	
16-NOV-2007 05:35	chk		493.1596	

19-NOV-2007 05:41	chk	493.1441			
20-NOV-2007 05:47	chk	493.2021			
21-NOV-2007 05:28	chk	493.0834			
23-NOV-2007 08:40	chk	493.0809			
26-NOV-2007 05:37	chk	493.0548			
27-NOV-2007 05:37	chk	493.0186			
28-NOV-2007 05:47	chk	493.0914			
29-NOV-2007 05:23	chk	493.1496			
30-NOV-2007 05:22	chk	493.0680			
1-DEC-2007 10:47	chk	493.0071			
3-DEC-2007 05:40	chk	493.1132			
4-DEC-2007 05:30	chk	493.0464			
5-DEC-2007 06:06	chk	493.0840			
6-DEC-2007 05:46	chk	493.1001			
7-DEC-2007 05:19	chk	493.0872			
8-DEC-2007 06:12	chk	493.0222			
10-DEC-2007 05:35	chk	493.0129			
11-DEC-2007 05:18	chk	493.0002			
12-DEC-2007 05:14	chk	492.9793			
13-DEC-2007 03:48	chk	492.9874			
14-DEC-2007 05:53	chk	492.9897			
15-DEC-2007 08:25	chk	493.0527			
18-DEC-2007 05:48	chk	493.0478			
19-DEC-2007 05:33	chk	493.0227			
20-DEC-2007 03:05	chk	493.0344			
21-DEC-2007 04:16	chk	493.0001			
22-DEC-2007 07:36	chk	493.0632			
24-DEC-2007 05:27	chk	493.0129			
25-DEC-2007 09:30	chk	492.9465			

-- Multi-Test Full Report --

Description : 121.78 KeV FWHM Resolution  
 Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00  
 Mean : 1.442194              Std Deviation : 0.060090

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 04:49	chk		1.4467		
2-NOV-2007 04:49	chk		1.4163		
5-NOV-2007 06:03	chk		1.4322		
6-NOV-2007 05:34	chk		1.4425		
7-NOV-2007 04:56	chk		1.3916		
8-NOV-2007 06:29	chk		1.4253		
9-NOV-2007 04:40	chk		1.4460		
10-NOV-2007 05:34	chk		1.4050		
12-NOV-2007 06:24	chk		1.3929		
13-NOV-2007 05:39	chk		1.4035		
14-NOV-2007 05:37	chk		1.4385		
15-NOV-2007 05:02	chk		1.4356		
16-NOV-2007 05:35	chk		1.4823		
19-NOV-2007 05:41	chk		1.4200		
20-NOV-2007 05:47	chk		1.4408		
21-NOV-2007 05:28	chk		1.4322		
23-NOV-2007 08:40	chk		1.4529		
26-NOV-2007 05:37	chk		1.4471		
27-NOV-2007 05:37	chk		1.4164		
28-NOV-2007 05:47	chk		1.4554		
29-NOV-2007 05:23	chk		1.4548		
30-NOV-2007 05:22	chk		1.4267		
1-DEC-2007 10:47	chk		1.4400		
3-DEC-2007 05:40	chk		1.4758		
4-DEC-2007 05:30	chk		1.4514		
5-DEC-2007 06:06	chk		1.4407		
6-DEC-2007 05:46	chk		1.4133		
7-DEC-2007 05:19	chk		1.4563		
8-DEC-2007 06:12	chk		1.4361		
10-DEC-2007 05:35	chk		1.4753		
11-DEC-2007 05:18	chk		1.4478		
12-DEC-2007 05:14	chk		1.4674		
13-DEC-2007 03:48	chk		1.4531		
14-DEC-2007 05:53	chk		1.4288		
15-DEC-2007 08:25	chk		1.4278		
18-DEC-2007 05:48	chk		1.4432		
19-DEC-2007 05:33	chk		1.3854		
20-DEC-2007 03:05	chk		1.3977		
21-DEC-2007 04:16	chk		1.4814		

22-DEC-2007 07:36	chk	1.4463	
24-DEC-2007 05:27	chk	1.4127	
25-DEC-2007 09:30	chk	1.4582	

## -- Multi-Test Full Report --

Description : 1407.95 KeV Efficiency  
 Parameter Units : Parameter Type : Peak

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00  
 Mean : 0.001010 Std Deviation : 0.000021

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 04:49	chk	0.0010	
2-NOV-2007 04:49	chk	0.0010	In
5-NOV-2007 06:03	chk	0.0010	
6-NOV-2007 05:34	chk	0.0010	
7-NOV-2007 04:56	chk	0.0010	
8-NOV-2007 06:29	chk	0.0010	
9-NOV-2007 04:40	chk	0.0010	
10-NOV-2007 05:34	chk	0.0010	
12-NOV-2007 06:24	chk	0.0010	
13-NOV-2007 05:39	chk	0.0010	
14-NOV-2007 05:37	chk	0.0010	
15-NOV-2007 05:02	chk	0.0010	
16-NOV-2007 05:35	chk	0.0010	
19-NOV-2007 05:41	chk	0.0010	
20-NOV-2007 05:47	chk	0.0010	
21-NOV-2007 05:28	chk	0.0010	
23-NOV-2007 08:40	chk	0.0010	
26-NOV-2007 05:37	chk	0.0010	
27-NOV-2007 05:37	chk	0.0010	
28-NOV-2007 05:47	chk	0.0010	
29-NOV-2007 05:23	chk	0.0010	
30-NOV-2007 05:22	chk	0.0010	In

1-DEC-2007 10:47	chk	0.0010	
3-DEC-2007 05:40	chk	0.0010	
4-DEC-2007 05:30	chk	0.0010	
5-DEC-2007 06:06	chk	0.0010	
6-DEC-2007 05:46	chk	0.0010	
7-DEC-2007 05:19	chk	0.0010	
8-DEC-2007 06:12	chk	0.0010	
10-DEC-2007 05:35	chk	0.0010	In
11-DEC-2007 05:18	chk	0.0010	
12-DEC-2007 05:14	chk	0.0010	In
13-DEC-2007 03:48	chk	0.0010	In
14-DEC-2007 05:53	chk	0.0010	
15-DEC-2007 08:25	chk	0.0010	
18-DEC-2007 05:48	chk	0.0010	
19-DEC-2007 05:33	chk	0.0010	
20-DEC-2007 03:05	chk	0.0010	
21-DEC-2007 04:16	chk	0.0010	
22-DEC-2007 07:36	chk	0.0010	
24-DEC-2007 05:27	chk	0.0010	
25-DEC-2007 09:30	chk	0.0010	

-- Multi-Test Full Report --

Description : 1407.95 KeV Centroid

Parameter Units : channel      Parameter Type : Peak

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 04:49	chk	5674.4019	
2-NOV-2007 04:49	chk	5674.7813	
5-NOV-2007 06:03	chk	5674.5366	
6-NOV-2007 05:34	chk	5674.3999	
7-NOV-2007 04:56	chk	5674.2715	

Quality Assurance Multi-Test Full Report (continued)      Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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8-NOV-2007 06:29	chk	5674.1606	
9-NOV-2007 04:40	chk	5674.0562	
10-NOV-2007 05:34	chk	5673.8096	
12-NOV-2007 06:24	chk	5673.9990	
13-NOV-2007 05:39	chk	5674.3198	
14-NOV-2007 05:37	chk	5674.8193	

15-NOV-2007 05:02	chk	5674.0513			
16-NOV-2007 05:35	chk	5673.9805			
19-NOV-2007 05:41	chk	5674.0088			
20-NOV-2007 05:47	chk	5674.3315			
21-NOV-2007 05:28	chk	5674.6787			
23-NOV-2007 08:40	chk	5674.6479			
26-NOV-2007 05:37	chk	5674.2031			
27-NOV-2007 05:37	chk	5674.2617			
28-NOV-2007 05:47	chk	5674.4341			
29-NOV-2007 05:23	chk	5674.2031			
30-NOV-2007 05:22	chk	5674.1206			
1-DEC-2007 10:47	chk	5673.9629			
3-DEC-2007 05:40	chk	5673.9448			
4-DEC-2007 05:30	chk	5673.7759			
5-DEC-2007 06:06	chk	5674.2275			
6-DEC-2007 05:46	chk	5674.1563			
7-DEC-2007 05:19	chk	5673.7788			
8-DEC-2007 06:12	chk	5674.3032			
10-DEC-2007 05:35	chk	5674.0122			
11-DEC-2007 05:18	chk	5673.9756			
12-DEC-2007 05:14	chk	5673.8335			
13-DEC-2007 03:48	chk	5674.1050			
14-DEC-2007 05:53	chk	5674.0757			
15-DEC-2007 08:25	chk	5673.8105			
18-DEC-2007 05:48	chk	5673.5498			
19-DEC-2007 05:33	chk	5673.7080			
20-DEC-2007 03:05	chk	5673.6582			
21-DEC-2007 04:16	chk	5674.1973			
22-DEC-2007 07:36	chk	5674.1885			
24-DEC-2007 05:27	chk	5673.9575			
25-DEC-2007 09:30	chk	5674.2222			

-- Multi-Test Full Report --

Description : 1407.95 KeV FWHM Resolution  
Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00  
Mean : 2.117797              Std Deviation : 0.107560

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 04:49	chk		1.9431	
2-NOV-2007 04:49	chk		2.1538	
5-NOV-2007 06:03	chk		2.1006	
6-NOV-2007 05:34	chk		2.0399	

Quality Assurance Multi-Test Full Report (continued) Page : 6

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
7-NOV-2007 04:56	chk		2.2369	
8-NOV-2007 06:29	chk		1.9131	
9-NOV-2007 04:40	chk		1.9054	
10-NOV-2007 05:34	chk		2.0851	
12-NOV-2007 06:24	chk		2.1203	
13-NOV-2007 05:39	chk		1.9153	
14-NOV-2007 05:37	chk		2.1205	
15-NOV-2007 05:02	chk		2.0108	
16-NOV-2007 05:35	chk		1.9698	
19-NOV-2007 05:41	chk		2.2239	
20-NOV-2007 05:47	chk		2.1388	
21-NOV-2007 05:28	chk		1.9408	
23-NOV-2007 08:40	chk		2.0074	
26-NOV-2007 05:37	chk		2.1935	
27-NOV-2007 05:37	chk		2.1151	
28-NOV-2007 05:47	chk		2.1976	
29-NOV-2007 05:23	chk		2.0745	
30-NOV-2007 05:22	chk		1.9424	
1-DEC-2007 10:47	chk		2.0065	
3-DEC-2007 05:40	chk		1.9926	
4-DEC-2007 05:30	chk		1.9721	
5-DEC-2007 06:06	chk		1.9809	
6-DEC-2007 05:46	chk		2.1617	
7-DEC-2007 05:19	chk		2.1927	
8-DEC-2007 06:12	chk		1.8309	In
10-DEC-2007 05:35	chk		2.0780	
11-DEC-2007 05:18	chk		2.2909	
12-DEC-2007 05:14	chk		2.0989	
13-DEC-2007 03:48	chk		1.9500	
14-DEC-2007 05:53	chk		2.0492	
15-DEC-2007 08:25	chk		2.1422	
18-DEC-2007 05:48	chk		2.0657	
19-DEC-2007 05:33	chk		2.0368	

20-DEC-2007 03:05	chk	2.2318	
21-DEC-2007 04:16	chk	2.0970	
22-DEC-2007 07:36	chk	2.1845	
24-DEC-2007 05:27	chk	2.2192	
25-DEC-2007 09:30	chk	2.2953	

## -- Multi-Test Full Report --

Description : 778.89 KeV Efficiency

Parameter Units : Parameter Type : Peak

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00

Mean : 0.001644 Std Deviation : 0.000041

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	chk	0.0016			
2-NOV-2007 04:49	chk	0.0017			
5-NOV-2007 06:03	chk	0.0016			

Quality Assurance Multi-Test Full Report (continued) Page : 7

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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6-NOV-2007 05:34	chk	0.0016			
7-NOV-2007 04:56	chk	0.0016			
8-NOV-2007 06:29	chk	0.0016			
9-NOV-2007 04:40	chk	0.0016	[In]		
10-NOV-2007 05:34	chk	0.0017			
12-NOV-2007 06:24	chk	0.0017			
13-NOV-2007 05:39	chk	0.0017			
14-NOV-2007 05:37	chk	0.0016			
15-NOV-2007 05:02	chk	0.0016			
16-NOV-2007 05:35	chk	0.0016			
19-NOV-2007 05:41	chk	0.0017			
20-NOV-2007 05:47	chk	0.0016			
21-NOV-2007 05:28	chk	0.0017			
23-NOV-2007 08:40	chk	0.0017			
26-NOV-2007 05:37	chk	0.0017			
27-NOV-2007 05:37	chk	0.0016			
28-NOV-2007 05:47	chk	0.0016			



29-NOV-2007 05:23	chk	0.0016	In	
30-NOV-2007 05:22	chk	0.0016		
1-DEC-2007 10:47	chk	0.0016		
3-DEC-2007 05:40	chk	0.0017		
4-DEC-2007 05:30	chk	0.0016		
5-DEC-2007 06:06	chk	0.0016		
6-DEC-2007 05:46	chk	0.0017		
7-DEC-2007 05:19	chk	0.0017		
8-DEC-2007 06:12	chk	0.0017		
10-DEC-2007 05:35	chk	0.0016		
11-DEC-2007 05:18	chk	0.0016		
12-DEC-2007 05:14	chk	0.0016		
13-DEC-2007 03:48	chk	0.0016		
14-DEC-2007 05:53	chk	0.0016		
15-DEC-2007 08:25	chk	0.0016		
18-DEC-2007 05:48	chk	0.0016		
19-DEC-2007 05:33	chk	0.0016		
20-DEC-2007 03:05	chk	0.0016		
21-DEC-2007 04:16	chk	0.0016		
22-DEC-2007 07:36	chk	0.0016		
24-DEC-2007 05:27	chk	0.0017		
25-DEC-2007 09:30	chk	0.0016		

-- Multi-Test Full Report --

Description : 778.89 KeV Centroid

Parameter Units : channels Parameter Type : Peak

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 04:49	chk		3140.1802	
2-NOV-2007 04:49	chk		3140.7275	
5-NOV-2007 06:03	chk		3140.0708	
6-NOV-2007 05:34	chk		3140.3362	
7-NOV-2007 04:56	chk		3140.0037	
8-NOV-2007 06:29	chk		3140.1560	
9-NOV-2007 04:40	chk		3140.2581	
10-NOV-2007 05:34	chk		3140.0381	

Quality Assurance Multi-Test Full Report (continued) Page : 8

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
12-NOV-2007 06:24	chk		3140.1333	

13-NOV-2007 05:39	chk	3140.3906			
14-NOV-2007 05:37	chk	3140.4092			
15-NOV-2007 05:02	chk	3140.1567			
16-NOV-2007 05:35	chk	3140.1428			
19-NOV-2007 05:41	chk	3140.2544			
20-NOV-2007 05:47	chk	3140.2861			
21-NOV-2007 05:28	chk	3140.3662			
23-NOV-2007 08:40	chk	3140.4468			
26-NOV-2007 05:37	chk	3140.1460			
27-NOV-2007 05:37	chk	3140.1409			
28-NOV-2007 05:47	chk	3140.1396			
29-NOV-2007 05:23	chk	3140.1951			
30-NOV-2007 05:22	chk	3140.4390			
1-DEC-2007 10:47	chk	3139.6689			
3-DEC-2007 05:40	chk	3139.9575			
4-DEC-2007 05:30	chk	3140.0574			
5-DEC-2007 06:06	chk	3140.2488			
6-DEC-2007 05:46	chk	3139.9912			
7-DEC-2007 05:19	chk	3140.1658			
8-DEC-2007 06:12	chk	3140.1047			
10-DEC-2007 05:35	chk	3139.9036			
11-DEC-2007 05:18	chk	3140.2144			
12-DEC-2007 05:14	chk	3139.7817			
13-DEC-2007 03:48	chk	3140.4692			
14-DEC-2007 05:53	chk	3140.1311			
15-DEC-2007 08:25	chk	3139.8447			
18-DEC-2007 05:48	chk	3139.8379			
19-DEC-2007 05:33	chk	3140.2014			
20-DEC-2007 03:05	chk	3139.9380			
21-DEC-2007 04:16	chk	3140.0051			
22-DEC-2007 07:36	chk	3140.0923			
24-DEC-2007 05:27	chk	3140.4866			
25-DEC-2007 09:30	chk	3139.9319			

-- Multi-Test Full Report --

Description : 778.89 KeV FWHM Resolution  
Parameter Units : keV                    Parameter Type : Peak

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00

Mean : 1.799400 Std Deviation : 0.107164

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	chk		1.7546		
2-NOV-2007 04:49	chk		1.6863		
5-NOV-2007 06:03	chk		1.6940		
6-NOV-2007 05:34	chk		1.9183		
7-NOV-2007 04:56	chk		1.8523		
8-NOV-2007 06:29	chk		1.6708		
9-NOV-2007 04:40	chk		1.8736		

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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10-NOV-2007 05:34	chk		1.7618		
12-NOV-2007 06:24	chk		1.7564		
13-NOV-2007 05:39	chk		1.7517		
14-NOV-2007 05:37	chk		1.8361		
15-NOV-2007 05:02	chk		1.6683		
16-NOV-2007 05:35	chk		1.8799		
19-NOV-2007 05:41	chk		1.8161		
20-NOV-2007 05:47	chk		1.6994		
21-NOV-2007 05:28	chk		1.6963		
23-NOV-2007 08:40	chk		1.8532		
26-NOV-2007 05:37	chk		1.7225		
27-NOV-2007 05:37	chk		1.7648		
28-NOV-2007 05:47	chk		1.7729		
29-NOV-2007 05:23	chk		1.7716		
30-NOV-2007 05:22	chk		1.6459		
1-DEC-2007 10:47	chk		1.7201		
3-DEC-2007 05:40	chk		1.7953		
4-DEC-2007 05:30	chk		1.7840		
5-DEC-2007 06:06	chk		1.7833		
6-DEC-2007 05:46	chk		1.6041		
7-DEC-2007 05:19	chk		1.8432		
8-DEC-2007 06:12	chk		1.8177		
10-DEC-2007 05:35	chk		1.7241		
11-DEC-2007 05:18	chk		1.9053		
12-DEC-2007 05:14	chk		1.7580		
13-DEC-2007 03:48	chk		1.7044		
14-DEC-2007 05:53	chk		1.6652		
15-DEC-2007 08:25	chk		1.8957		

18-DEC-2007 05:48	chk	1.6841			
19-DEC-2007 05:33	chk	1.7515			
20-DEC-2007 03:05	chk	1.9791			
21-DEC-2007 04:16	chk	1.8872			
22-DEC-2007 07:36	chk	1.8175			
24-DEC-2007 05:27	chk	1.8057			
25-DEC-2007 09:30	chk	1.9377			

Quality Assurance Report. Generated 26-DEC-2007 16:05:53.98

QA Filename : \$DISK1:[GER14.QA]BKG.QAF;3

-- Multi-Test Full Report --

Description : MDA K-40 CPM  
 Parameter Units : uCi Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Trend Test Test Parameters ----

N Mean Samples : 0 M Slope Samples: 0

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00  
 Mean : 0.121741 Std Deviation : 0.029401

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
4-NOV-2007 09:29	bkg		0.1392					
11-NOV-2007 05:32	bkg		0.1375					
18-NOV-2007 08:51	bkg		0.1381					
19-NOV-2007 07:46	bkg		0.1368					
25-NOV-2007 05:41	bkg		0.1344					
2-DEC-2007 07:12	bkg		0.1355					
9-DEC-2007 06:00	bkg		0.1354					
16-DEC-2007 07:52	bkg		0.1360					
17-DEC-2007 05:15	bkg		0.1352					
19-DEC-2007 05:52	bkg		0.1376					
23-DEC-2007 08:57	bkg		0.1391					

-- Multi-Test Full Report --

Description : MDA Cr-51 CPM

Parameter Units : uCi Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00

Mean : 0.116893 Std Deviation : 0.011792

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:29	bkg		0.1125		
11-NOV-2007 05:32	bkg		0.1148		
18-NOV-2007 08:51	bkg		0.1171		
19-NOV-2007 07:46	bkg		0.1124		
25-NOV-2007 05:41	bkg		0.1112		
2-DEC-2007 07:12	bkg		0.1126		
9-DEC-2007 06:00	bkg		0.1119		
16-DEC-2007 07:52	bkg		0.1148		
17-DEC-2007 05:15	bkg		0.1166		
19-DEC-2007 05:52	bkg		0.1138		
23-DEC-2007 08:57	bkg		0.1174		

## -- Multi-Test Full Report --

Description : MDA Co-60 CPM

Parameter Units : uCi Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00

Mean : 0.049356 Std Deviation : 0.002607

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:29	bkg		0.0526		
11-NOV-2007 05:32	bkg		0.0485		
18-NOV-2007 08:51	bkg		0.0481		

19-NOV-2007 07:46 bkg	0.0463	
25-NOV-2007 05:41 bkg	0.0498	
2-DEC-2007 07:12 bkg	0.0486	
9-DEC-2007 06:00 bkg	0.0488	
16-DEC-2007 07:52 bkg	0.0492	
17-DEC-2007 05:15 bkg	0.0499	
19-DEC-2007 05:52 bkg	0.0533	
23-DEC-2007 08:57 bkg	0.0475	

-- Multi-Test Full Report --

Description : MDA Zn-65 CPM  
 Parameter Units : uCi            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00  
 Mean : 0.060011            Std Deviation : 0.003166

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:29 bkg			0.0617		
11-NOV-2007 05:32 bkg			0.0580		
18-NOV-2007 08:51 bkg			0.0614		
19-NOV-2007 07:46 bkg			0.0610		
25-NOV-2007 05:41 bkg			0.0595		
2-DEC-2007 07:12 bkg			0.0633		
9-DEC-2007 06:00 bkg			0.0576		
16-DEC-2007 07:52 bkg			0.0619		
17-DEC-2007 05:15 bkg			0.0599		
19-DEC-2007 05:52 bkg			0.0605		
23-DEC-2007 08:57 bkg			0.0585		

-- Multi-Test Full Report --

Description : MDA Ru106da CPM  
 Parameter Units : uCi            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00

Mean : 0.081265 Std Deviation : 0.005879

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:29	bkg		0.0787		
11-NOV-2007 05:32	bkg		0.0793		
18-NOV-2007 08:51	bkg		0.0801		
19-NOV-2007 07:46	bkg		0.0771		
25-NOV-2007 05:41	bkg		0.0812		

Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-DEC-2007 07:12	bkg		0.0808		
9-DEC-2007 06:00	bkg		0.0783		
16-DEC-2007 07:52	bkg		0.0832		
17-DEC-2007 05:15	bkg		0.0809		
19-DEC-2007 05:52	bkg		0.0821		
23-DEC-2007 08:57	bkg		0.0798		

-- Multi-Test Full Report --

Description : MDA Cs-134 CPM  
 Parameter Units : uCi Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00  
 Mean : 0.090750 Std Deviation : 0.010128

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:29	bkg		0.0875		
11-NOV-2007 05:32	bkg		0.0889		
18-NOV-2007 08:51	bkg		0.0893		
19-NOV-2007 07:46	bkg		0.0878		
25-NOV-2007 05:41	bkg		0.0882		
2-DEC-2007 07:12	bkg		0.0909		
9-DEC-2007 06:00	bkg		0.0861		
16-DEC-2007 07:52	bkg		0.0884		
17-DEC-2007 05:15	bkg		0.0876		
19-DEC-2007 05:52	bkg		0.0873		

23-DEC-2007 08:57 bkg 0.0884 | | |

-- Multi-Test Full Report --

Description : MDA Cs-137da CPM

Parameter Units : uCi Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00

Mean : 0.076672 Std Deviation : 0.006037

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:29	bkg		0.0762		
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11-NOV-2007 05:32	bkg		0.0769		
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18-NOV-2007 08:51	bkg		0.0752		
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19-NOV-2007 07:46	bkg		0.0745		
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25-NOV-2007 05:41	bkg		0.0749		
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2-DEC-2007 07:12	bkg		0.0811		
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9-DEC-2007 06:00	bkg		0.0724		
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16-DEC-2007 07:52	bkg		0.0768		
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17-DEC-2007 05:15	bkg		0.0795		
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19-DEC-2007 05:52	bkg		0.0783		
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Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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23-DEC-2007 08:57	bkg		0.0736		
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-- Multi-Test Full Report --

Description : MDA Pb-212 CPM

Parameter Units : uCi Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00

Mean : 0.137072 Std Deviation : 0.013763

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:29 bkg          0.1332  | | |
11-NOV-2007 05:32 bkg          0.1351  | | |
18-NOV-2007 08:51 bkg          0.1378  | | |
19-NOV-2007 07:46 bkg          0.1314  | | |
25-NOV-2007 05:41 bkg          0.1346  | | |
 2-DEC-2007 07:12 bkg          0.1358  | | |
 9-DEC-2007 06:00 bkg          0.1364  | | |
16-DEC-2007 07:52 bkg          0.1391  | | |
17-DEC-2007 05:15 bkg          0.1354  | | |
19-DEC-2007 05:52 bkg          0.1338  | | |
23-DEC-2007 08:57 bkg          0.1371  | | |

```

-- Multi-Test Full Report --

Description : MDA Ra-226da CPM  
Parameter Units : uCi            Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000            Upper Bound : 0.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:29 bkg          0.1052 Ab| | |
11-NOV-2007 05:32 bkg          0.1041 Ab| | |
18-NOV-2007 08:51 bkg          0.1068 Ab| | |
19-NOV-2007 07:46 bkg          0.1069 Ab| | |
25-NOV-2007 05:41 bkg          0.1082 Ab| | |
 2-DEC-2007 07:12 bkg          0.1041 Ab| | |
 9-DEC-2007 06:00 bkg          0.1061 Ab| | |
16-DEC-2007 07:52 bkg          0.1075 Ab| | |
17-DEC-2007 05:15 bkg          0.1100 Ab| | |
19-DEC-2007 05:52 bkg          0.1060 Ab| | |
23-DEC-2007 08:57 bkg          0.1080 Ab| | |

```

-- Multi-Test Full Report --

Description : MDA Ra-228 CPM  
Parameter Units : uCi            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00  
 Mean : 0.074837 Std Deviation : 0.001926

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:29	bkg		0.0754	
11-NOV-2007 05:32	bkg		0.0776	
18-NOV-2007 08:51	bkg		0.0810	Ac
19-NOV-2007 07:46	bkg		0.0770	
25-NOV-2007 05:41	bkg		0.0758	
2-DEC-2007 07:12	bkg		0.0800	In
9-DEC-2007 06:00	bkg		0.0782	
16-DEC-2007 07:52	bkg		0.0810	Ac
17-DEC-2007 05:15	bkg		0.0814	Ac
19-DEC-2007 05:52	bkg		0.0771	
23-DEC-2007 08:57	bkg		0.0755	

-- Multi-Test Full Report --

Description : MDA U-235 CPM  
 Parameter Units : uCi Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-OCT-2006 00:00 End Date : 1-JAN-2007 00:00  
 Mean : 0.135773 Std Deviation : 0.015997

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:29	bkg		0.1338	
11-NOV-2007 05:32	bkg		0.1319	
18-NOV-2007 08:51	bkg		0.1382	
19-NOV-2007 07:46	bkg		0.1301	
25-NOV-2007 05:41	bkg		0.1340	
2-DEC-2007 07:12	bkg		0.1345	
9-DEC-2007 06:00	bkg		0.1362	
16-DEC-2007 07:52	bkg		0.1304	
17-DEC-2007 05:15	bkg		0.1340	

19-DEC-2007 05:52	bkg	0.1352			
23-DEC-2007 08:57	bkg	0.1336			

## -- Multi-Test Full Report --

Description : MDA TH-232 CPM

Parameter Units : CPM Parameter Type : Nuclide

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
4-NOV-2007 09:29	bkg		0.8722		
11-NOV-2007 05:32	bkg		0.8810		
18-NOV-2007 08:51	bkg		0.9328		
19-NOV-2007 07:46	bkg		0.8915		
25-NOV-2007 05:41	bkg		0.8815		
2-DEC-2007 07:12	bkg		0.9279		
9-DEC-2007 06:00	bkg		0.9310		
16-DEC-2007 07:52	bkg		0.9127		
17-DEC-2007 05:15	bkg		0.8896		
19-DEC-2007 05:52	bkg		0.9166		
23-DEC-2007 08:57	bkg		0.9143		

Quality Assurance Report.

Generated 26-DEC-2007 16:03:48.85

QA Filename : \$DISK1:[GER13.QA]CHECK.QAF;5

-- Multi-Test Full Report --

Description : 121.78 KeV Efficiency

Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.004500 Upper Bound : 0.004800

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.004655 Std Deviation : 0.000050

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 04:49	chk		0.0047		
2-NOV-2007 04:49	chk		0.0047		
5-NOV-2007 06:03	chk		0.0046		
6-NOV-2007 05:34	chk		0.0046		
7-NOV-2007 04:56	chk		0.0046		
8-NOV-2007 06:29	chk		0.0046		
9-NOV-2007 04:40	chk		0.0046		
10-NOV-2007 05:27	chk		0.0046		
12-NOV-2007 06:05	chk		0.0048		
13-NOV-2007 05:39	chk		0.0046		
14-NOV-2007 05:52	chk		0.0047		
15-NOV-2007 05:02	chk		0.0046		
16-NOV-2007 05:38	chk		0.0046		
19-NOV-2007 05:40	chk		0.0046		
20-NOV-2007 05:47	chk		0.0047		
21-NOV-2007 05:28	chk		0.0046		
23-NOV-2007 09:07	chk		0.0047		
26-NOV-2007 05:37	chk		0.0046		
27-NOV-2007 05:37	chk		0.0046		
28-NOV-2007 05:58	chk		0.0047		
29-NOV-2007 05:23	chk		0.0047		

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 04:49	chk		0.0047		
2-NOV-2007 04:49	chk		0.0047		
5-NOV-2007 06:03	chk		0.0046		
6-NOV-2007 05:34	chk		0.0046		
7-NOV-2007 04:56	chk		0.0046		
8-NOV-2007 06:29	chk		0.0046		
9-NOV-2007 04:40	chk		0.0046		
10-NOV-2007 05:27	chk		0.0046		
12-NOV-2007 06:05	chk		0.0048		
13-NOV-2007 05:39	chk		0.0046		
14-NOV-2007 05:52	chk		0.0047		
15-NOV-2007 05:02	chk		0.0046		
16-NOV-2007 05:38	chk		0.0046		
19-NOV-2007 05:40	chk		0.0046		
20-NOV-2007 05:47	chk		0.0047		
21-NOV-2007 05:28	chk		0.0046		
23-NOV-2007 09:07	chk		0.0047		
26-NOV-2007 05:37	chk		0.0046		
27-NOV-2007 05:37	chk		0.0046		
28-NOV-2007 05:58	chk		0.0047		
29-NOV-2007 05:23	chk		0.0047		

30-NOV-2007 05:22	chk	0.0046	
1-DEC-2007 10:47	chk	0.0047	
3-DEC-2007 05:40	chk	0.0047	
4-DEC-2007 05:30	chk	0.0048	In
5-DEC-2007 06:06	chk	0.0047	
6-DEC-2007 05:46	chk	0.0047	
7-DEC-2007 05:19	chk	0.0047	
8-DEC-2007 06:12	chk	0.0047	
10-DEC-2007 05:35	chk	0.0047	
11-DEC-2007 05:18	chk	0.0046	
12-DEC-2007 05:14	chk	0.0047	
13-DEC-2007 03:48	chk	0.0046	
14-DEC-2007 05:53	chk	0.0046	
15-DEC-2007 08:25	chk	0.0046	
17-DEC-2007 05:38	chk	0.0046	
18-DEC-2007 05:48	chk	0.0046	
19-DEC-2007 05:33	chk	0.0046	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-DEC-2007 03:05	chk		0.0047	
21-DEC-2007 04:16	chk		0.0046	
22-DEC-2007 07:30	chk		0.0047	
24-DEC-2007 05:27	chk		0.0046	
25-DEC-2007 09:30	chk		0.0047	

-- Multi-Test Full Report --

Description : 121.78 KeV Centroid

Parameter Units : channel Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 388.000000 Upper Bound : 588.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 04:49	chk		489.0318	
2-NOV-2007 04:49	chk		489.0060	
5-NOV-2007 06:03	chk		489.0394	
6-NOV-2007 05:34	chk		489.0530	
7-NOV-2007 04:56	chk		489.0797	
8-NOV-2007 06:29	chk		489.0478	

9-NOV-2007 04:40	chk	489.0198			
10-NOV-2007 05:27	chk	489.0606			
12-NOV-2007 06:05	chk	489.0053			
13-NOV-2007 05:39	chk	489.0239			
14-NOV-2007 05:52	chk	488.9113			
15-NOV-2007 05:02	chk	488.9545			
16-NOV-2007 05:38	chk	488.9983			
19-NOV-2007 05:40	chk	489.0115			
20-NOV-2007 05:47	chk	488.9607			
21-NOV-2007 05:28	chk	488.9478			
23-NOV-2007 09:07	chk	488.8803			
26-NOV-2007 05:37	chk	488.8675			
27-NOV-2007 05:37	chk	488.8770			
28-NOV-2007 05:58	chk	488.8376			
29-NOV-2007 05:23	chk	488.8214			
30-NOV-2007 05:22	chk	488.8517			
1-DEC-2007 10:47	chk	488.7323			
3-DEC-2007 05:40	chk	488.9235			
4-DEC-2007 05:30	chk	488.8913			
5-DEC-2007 06:06	chk	488.9011			
6-DEC-2007 05:46	chk	488.8979			
7-DEC-2007 05:19	chk	488.8893			
8-DEC-2007 06:12	chk	488.8073			
10-DEC-2007 05:35	chk	488.7608			
11-DEC-2007 05:18	chk	488.7695			
12-DEC-2007 05:14	chk	488.7905			
13-DEC-2007 03:48	chk	488.8176			
14-DEC-2007 05:53	chk	488.7917			
15-DEC-2007 08:25	chk	488.7910			
17-DEC-2007 05:38	chk	488.8063			
18-DEC-2007 05:48	chk	488.8302			
19-DEC-2007 05:33	chk	488.8076			
20-DEC-2007 03:05	chk	488.7838			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-DEC-2007 04:16	chk	488.7781			
22-DEC-2007 07:30	chk	488.7442			
24-DEC-2007 05:27	chk	488.7550			
25-DEC-2007 09:30	chk	488.7018			

-- Multi-Test Full Report --

Description : 121.78 KeV FWHM Resolution  
 Parameter Units : keV                    Parameter Type : Peak

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 0.951647            Std Deviation : 0.015026

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 04:49	chk		0.9882	In
2-NOV-2007 04:49	chk		0.9534	
5-NOV-2007 06:03	chk		0.9484	
6-NOV-2007 05:34	chk		0.9354	
7-NOV-2007 04:56	chk		0.9487	
8-NOV-2007 06:29	chk		0.9226	
9-NOV-2007 04:40	chk		0.9487	
10-NOV-2007 05:27	chk		0.9582	
12-NOV-2007 06:05	chk		0.9201	In
13-NOV-2007 05:39	chk		0.9344	
14-NOV-2007 05:52	chk		0.9406	
15-NOV-2007 05:02	chk		0.9523	
16-NOV-2007 05:38	chk		0.9323	
19-NOV-2007 05:40	chk		0.9675	
20-NOV-2007 05:47	chk		0.9455	
21-NOV-2007 05:28	chk		0.9562	
23-NOV-2007 09:07	chk		0.9506	
26-NOV-2007 05:37	chk		0.9145	In
27-NOV-2007 05:37	chk		0.9603	
28-NOV-2007 05:58	chk		0.9572	
29-NOV-2007 05:23	chk		0.9464	
30-NOV-2007 05:22	chk		0.9608	
1-DEC-2007 10:47	chk		0.9633	
3-DEC-2007 05:40	chk		0.9440	
4-DEC-2007 05:30	chk		0.9502	
5-DEC-2007 06:06	chk		0.9338	
6-DEC-2007 05:46	chk		0.9618	
7-DEC-2007 05:19	chk		0.9568	
8-DEC-2007 06:12	chk		0.9554	
10-DEC-2007 05:35	chk		0.9523	
11-DEC-2007 05:18	chk		0.9608	

12-DEC-2007 05:14	chk	0.9374	
13-DEC-2007 03:48	chk	0.9328	
14-DEC-2007 05:53	chk	0.9607	
15-DEC-2007 08:25	chk	0.9643	
17-DEC-2007 05:38	chk	0.9551	
18-DEC-2007 05:48	chk	0.9313	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-DEC-2007 05:33	chk		0.9587	
20-DEC-2007 03:05	chk		0.9397	
21-DEC-2007 04:16	chk		0.9603	
22-DEC-2007 07:30	chk		0.9491	
24-DEC-2007 05:27	chk		0.9611	
25-DEC-2007 09:30	chk		0.9817	

-- Multi-Test Full Report --

Description : 1407.95 KeV Efficiency  
 Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000857 Upper Bound : 0.001100

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.000971 Std Deviation : 0.000038

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 04:49	chk		0.0010	
2-NOV-2007 04:49	chk		0.0010	
5-NOV-2007 06:03	chk		0.0010	
6-NOV-2007 05:34	chk		0.0010	
7-NOV-2007 04:56	chk		0.0010	
8-NOV-2007 06:29	chk		0.0010	
9-NOV-2007 04:40	chk		0.0010	
10-NOV-2007 05:27	chk		0.0010	
12-NOV-2007 06:05	chk		0.0010	
13-NOV-2007 05:39	chk		0.0010	



14-NOV-2007 05:52	chk	0.0010	
15-NOV-2007 05:02	chk	0.0010	
16-NOV-2007 05:38	chk	0.0010	
19-NOV-2007 05:40	chk	0.0010	
20-NOV-2007 05:47	chk	0.0010	
21-NOV-2007 05:28	chk	0.0010	
23-NOV-2007 09:07	chk	0.0010	
26-NOV-2007 05:37	chk	0.0010	
27-NOV-2007 05:37	chk	0.0010	
28-NOV-2007 05:58	chk	0.0010	
29-NOV-2007 05:23	chk	0.0010	
30-NOV-2007 05:22	chk	0.0010	
1-DEC-2007 10:47	chk	0.0010	
3-DEC-2007 05:40	chk	0.0010	
4-DEC-2007 05:30	chk	0.0010	
5-DEC-2007 06:06	chk	0.0010	
6-DEC-2007 05:46	chk	0.0010	
7-DEC-2007 05:19	chk	0.0010	
8-DEC-2007 06:12	chk	0.0010	
10-DEC-2007 05:35	chk	0.0010	
11-DEC-2007 05:18	chk	0.0010	
12-DEC-2007 05:14	chk	0.0010	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
13-DEC-2007 03:48	chk		0.0010	
14-DEC-2007 05:53	chk		0.0010	
15-DEC-2007 08:25	chk		0.0010	
17-DEC-2007 05:38	chk		0.0010	
18-DEC-2007 05:48	chk		0.0010	
19-DEC-2007 05:33	chk		0.0009	
20-DEC-2007 03:05	chk		0.0010	
21-DEC-2007 04:16	chk		0.0010	
22-DEC-2007 07:30	chk		0.0010	
24-DEC-2007 05:27	chk		0.0010	
25-DEC-2007 09:30	chk		0.0009	

-- Multi-Test Full Report --

Description : 1407.95 KeV Centroid

Parameter Units : channel Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 5526.000000 Upper Bound : 5726.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 04:49	chk		5629.1675	
2-NOV-2007 04:49	chk		5628.9771	
5-NOV-2007 06:03	chk		5629.0737	
6-NOV-2007 05:34	chk		5628.8970	
7-NOV-2007 04:56	chk		5629.1572	
8-NOV-2007 06:29	chk		5628.9004	
9-NOV-2007 04:40	chk		5629.1411	
10-NOV-2007 05:27	chk		5628.9600	
12-NOV-2007 06:05	chk		5628.9756	
13-NOV-2007 05:39	chk		5628.8164	
14-NOV-2007 05:52	chk		5628.8906	
15-NOV-2007 05:02	chk		5628.6270	
16-NOV-2007 05:38	chk		5628.8374	
19-NOV-2007 05:40	chk		5628.8550	
20-NOV-2007 05:47	chk		5628.8975	
21-NOV-2007 05:28	chk		5628.9102	
23-NOV-2007 09:07	chk		5628.4883	
26-NOV-2007 05:37	chk		5628.3691	
27-NOV-2007 05:37	chk		5628.5356	
28-NOV-2007 05:58	chk		5628.4302	
29-NOV-2007 05:23	chk		5628.3906	
30-NOV-2007 05:22	chk		5628.2852	
1-DEC-2007 10:47	chk		5628.1279	
3-DEC-2007 05:40	chk		5628.3950	
4-DEC-2007 05:30	chk		5628.4336	
5-DEC-2007 06:06	chk		5628.5381	
6-DEC-2007 05:46	chk		5628.1597	
7-DEC-2007 05:19	chk		5628.0195	
8-DEC-2007 06:12	chk		5628.1064	
10-DEC-2007 05:35	chk		5628.0293	
11-DEC-2007 05:18	chk		5627.9561	
12-DEC-2007 05:14	chk		5628.0752	
13-DEC-2007 03:48	chk		5628.0811	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
14-DEC-2007 05:53	chk		5627.9839	

15-DEC-2007 08:25	chk	5627.8496			
17-DEC-2007 05:38	chk	5627.7153			
18-DEC-2007 05:48	chk	5627.9189			
19-DEC-2007 05:33	chk	5628.0747			
20-DEC-2007 03:05	chk	5627.9023			
21-DEC-2007 04:16	chk	5627.7129			
22-DEC-2007 07:30	chk	5627.7266			
24-DEC-2007 05:27	chk	5627.9419			
25-DEC-2007 09:30	chk	5627.9785			

## -- Multi-Test Full Report --

Description : 1407.95 KeV FWHM Resolution  
Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 2.020263              Std Deviation : 0.114163

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
1-NOV-2007 04:49	chk		1.9701		
2-NOV-2007 04:49	chk		1.8644		
5-NOV-2007 06:03	chk		2.1505		
6-NOV-2007 05:34	chk		1.8458		
7-NOV-2007 04:56	chk		1.9686		
8-NOV-2007 06:29	chk		2.2722	In	
9-NOV-2007 04:40	chk		2.0498		
10-NOV-2007 05:27	chk		1.9917		
12-NOV-2007 06:05	chk		1.7871	In	
13-NOV-2007 05:39	chk		2.1476		
14-NOV-2007 05:52	chk		1.9135		
15-NOV-2007 05:02	chk		2.2934	In	
16-NOV-2007 05:38	chk		1.7888	In	
19-NOV-2007 05:40	chk		1.9948		
20-NOV-2007 05:47	chk		2.1484		
21-NOV-2007 05:28	chk		2.2155		
23-NOV-2007 09:07	chk		2.0325		
26-NOV-2007 05:37	chk		1.9065		
27-NOV-2007 05:37	chk		1.9005		
28-NOV-2007 05:58	chk		2.0068		

29-NOV-2007 05:23	chk	1.9974	
30-NOV-2007 05:22	chk	1.9188	
1-DEC-2007 10:47	chk	1.8336	
3-DEC-2007 05:40	chk	1.9610	
4-DEC-2007 05:30	chk	1.9333	
5-DEC-2007 06:06	chk	1.9638	
6-DEC-2007 05:46	chk	1.6983	In
7-DEC-2007 05:19	chk	2.0763	
8-DEC-2007 06:12	chk	1.9105	
10-DEC-2007 05:35	chk	2.1011	
11-DEC-2007 05:18	chk	1.8634	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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12-DEC-2007 05:14	chk	1.9921	
13-DEC-2007 03:48	chk	1.7799	In
14-DEC-2007 05:53	chk	2.0468	
15-DEC-2007 08:25	chk	1.9050	
17-DEC-2007 05:38	chk	2.1605	
18-DEC-2007 05:48	chk	1.8321	
19-DEC-2007 05:33	chk	2.1608	
20-DEC-2007 03:05	chk	1.8955	
21-DEC-2007 04:16	chk	2.0820	
22-DEC-2007 07:30	chk	2.1469	
24-DEC-2007 05:27	chk	1.8163	
25-DEC-2007 09:30	chk	1.9098	

-- Multi-Test Full Report --

Description : 778.87 KeV Efficiency

Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.001447 Upper Bound : 0.001693

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.001574 Std Deviation : 0.000041

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 04:49	chk	0.0016	
2-NOV-2007 04:49	chk	0.0016	
5-NOV-2007 06:03	chk	0.0016	
6-NOV-2007 05:34	chk	0.0016	
7-NOV-2007 04:56	chk	0.0016	
8-NOV-2007 06:29	chk	0.0016	
9-NOV-2007 04:40	chk	0.0015	
10-NOV-2007 05:27	chk	0.0016	
12-NOV-2007 06:05	chk	0.0016	
13-NOV-2007 05:39	chk	0.0017	In
14-NOV-2007 05:52	chk	0.0016	
15-NOV-2007 05:02	chk	0.0015	
16-NOV-2007 05:38	chk	0.0016	
19-NOV-2007 05:40	chk	0.0016	
20-NOV-2007 05:47	chk	0.0015	
21-NOV-2007 05:28	chk	0.0016	
23-NOV-2007 09:07	chk	0.0017	
26-NOV-2007 05:37	chk	0.0015	
27-NOV-2007 05:37	chk	0.0015	
28-NOV-2007 05:58	chk	0.0016	
29-NOV-2007 05:23	chk	0.0016	
30-NOV-2007 05:22	chk	0.0016	
1-DEC-2007 10:47	chk	0.0016	
3-DEC-2007 05:40	chk	0.0015	
4-DEC-2007 05:30	chk	0.0017	In
5-DEC-2007 06:06	chk	0.0016	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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6-DEC-2007 05:46	chk	0.0015	
7-DEC-2007 05:19	chk	0.0016	
8-DEC-2007 06:12	chk	0.0015	
10-DEC-2007 05:35	chk	0.0016	
11-DEC-2007 05:18	chk	0.0016	
12-DEC-2007 05:14	chk	0.0016	
13-DEC-2007 03:48	chk	0.0016	
14-DEC-2007 05:53	chk	0.0015	
15-DEC-2007 08:25	chk	0.0016	
17-DEC-2007 05:38	chk	0.0016	
18-DEC-2007 05:48	chk	0.0016	
19-DEC-2007 05:33	chk	0.0016	

20-DEC-2007 03:05	chk	0.0016			
21-DEC-2007 04:16	chk	0.0016			
22-DEC-2007 07:30	chk	0.0016			
24-DEC-2007 05:27	chk	0.0015			
25-DEC-2007 09:30	chk	0.0016			

## -- Multi-Test Full Report --

Description : 778.89 KeV Centroid

Parameter Units : channles Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 3010.000000 Upper Bound : 3210.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
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1-NOV-2007 04:49	chk		3112.0649					
2-NOV-2007 04:49	chk		3111.8274					
5-NOV-2007 06:03	chk		3112.1682					
6-NOV-2007 05:34	chk		3111.8445					
7-NOV-2007 04:56	chk		3111.9512					
8-NOV-2007 06:29	chk		3111.8740					
9-NOV-2007 04:40	chk		3112.1394					
10-NOV-2007 05:27	chk		3112.2527					
12-NOV-2007 06:05	chk		3111.8892					
13-NOV-2007 05:39	chk		3111.9688					
14-NOV-2007 05:52	chk		3112.0210					
15-NOV-2007 05:02	chk		3111.8042					
16-NOV-2007 05:38	chk		3111.9895					
19-NOV-2007 05:40	chk		3111.9324					
20-NOV-2007 05:47	chk		3112.1780					
21-NOV-2007 05:28	chk		3111.7905					
23-NOV-2007 09:07	chk		3111.7578					
26-NOV-2007 05:37	chk		3111.7322					
27-NOV-2007 05:37	chk		3111.5986					
28-NOV-2007 05:58	chk		3111.6123					
29-NOV-2007 05:23	chk		3111.7310					
30-NOV-2007 05:22	chk		3111.5483					
1-DEC-2007 10:47	chk		3111.3237					
3-DEC-2007 05:40	chk		3111.6702					
4-DEC-2007 05:30	chk		3111.7937					
5-DEC-2007 06:06	chk		3111.7651					
6-DEC-2007 05:46	chk		3111.8489					

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
7-DEC-2007 05:19	chk		3111.5610		
8-DEC-2007 06:12	chk		3111.6155		
10-DEC-2007 05:35	chk		3111.3887		
11-DEC-2007 05:18	chk		3111.4214		
12-DEC-2007 05:14	chk		3111.2979		
13-DEC-2007 03:48	chk		3111.2053		
14-DEC-2007 05:53	chk		3111.5115		
15-DEC-2007 08:25	chk		3111.2754		
17-DEC-2007 05:38	chk		3111.3572		
18-DEC-2007 05:48	chk		3111.1594		
19-DEC-2007 05:33	chk		3111.1814		
20-DEC-2007 03:05	chk		3111.1606		
21-DEC-2007 04:16	chk		3111.2827		
22-DEC-2007 07:30	chk		3111.2542		
24-DEC-2007 05:27	chk		3111.4790		
25-DEC-2007 09:30	chk		3111.3450		

-- Multi-Test Full Report --

Description : 778.89 KeV FWHM Resolution  
 Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 1.575877              Std Deviation : 0.072096

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 04:49	chk		1.5451		
2-NOV-2007 04:49	chk		1.6375		
5-NOV-2007 06:03	chk		1.5461		
6-NOV-2007 05:34	chk		1.5911		
7-NOV-2007 04:56	chk		1.6686		
8-NOV-2007 06:29	chk		1.7327	In	
9-NOV-2007 04:40	chk		1.6093		
10-NOV-2007 05:27	chk		1.4407		
12-NOV-2007 06:05	chk		1.5696		

13-NOV-2007 05:39	chk	1.6574	
14-NOV-2007 05:52	chk	1.5422	
15-NOV-2007 05:02	chk	1.6498	
16-NOV-2007 05:38	chk	1.5826	
19-NOV-2007 05:40	chk	1.5934	
20-NOV-2007 05:47	chk	1.7018	
21-NOV-2007 05:28	chk	1.4651	
23-NOV-2007 09:07	chk	1.6274	
26-NOV-2007 05:37	chk	1.5783	
27-NOV-2007 05:37	chk	1.7146	
28-NOV-2007 05:58	chk	1.4450	
29-NOV-2007 05:23	chk	1.5755	
30-NOV-2007 05:22	chk	1.5855	
1-DEC-2007 10:47	chk	1.5800	
3-DEC-2007 05:40	chk	1.7484	In
4-DEC-2007 05:30	chk	1.5415	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
5-DEC-2007 06:06	chk	1.7090		
6-DEC-2007 05:46	chk	1.4511		
7-DEC-2007 05:19	chk	1.5011		
8-DEC-2007 06:12	chk	1.5261		
10-DEC-2007 05:35	chk	1.6858		
11-DEC-2007 05:18	chk	1.5597		
12-DEC-2007 05:14	chk	1.6651		
13-DEC-2007 03:48	chk	1.6801		
14-DEC-2007 05:53	chk	1.4832		
15-DEC-2007 08:25	chk	1.6283		
17-DEC-2007 05:38	chk	1.4839		
18-DEC-2007 05:48	chk	1.5829		
19-DEC-2007 05:33	chk	1.5350		
20-DEC-2007 03:05	chk	1.4205	In	
21-DEC-2007 04:16	chk	1.5814		
22-DEC-2007 07:30	chk	1.5314		
24-DEC-2007 05:27	chk	1.5039		
25-DEC-2007 09:30	chk	1.6339		

Quality Assurance Report.

Generated 26-DEC-2007 16:03:50.48

QA Filename : \$DISK1:[GER13.QA]BKG.QAF;3



## -- Multi-Test Full Report --

Description : MDA K-40 CPM

Parameter Units : CPM Parameter Type : Nuclide

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:29	bkg		0.0000	
11-NOV-2007 05:32	bkg		0.0000	
18-NOV-2007 08:51	bkg		0.0000	
25-NOV-2007 05:41	bkg		0.0000	
2-DEC-2007 07:12	bkg		0.0000	
9-DEC-2007 06:00	bkg		0.0000	
16-DEC-2007 07:52	bkg		0.0000	
23-DEC-2007 08:57	bkg		0.0000	

## -- Multi-Test Full Report --

Description : MDA Cr-51 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 14.485443 Std Deviation : 7.333001

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:29	bkg		15.1441	
11-NOV-2007 05:32	bkg		15.2095	
18-NOV-2007 08:51	bkg		15.1291	
25-NOV-2007 05:41	bkg		15.0772	
2-DEC-2007 07:12	bkg		15.5196	
9-DEC-2007 06:00	bkg		14.9364	
16-DEC-2007 07:52	bkg		15.0864	
23-DEC-2007 08:57	bkg		14.7280	

## -- Multi-Test Full Report --

Description : MDA Co-60 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 25.827467      Std Deviation : 3.733058

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:29	bkg		27.1374		
11-NOV-2007 05:32	bkg		25.8285		
18-NOV-2007 08:51	bkg		28.2813		

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
25-NOV-2007 05:41	bkg		29.1046		
2-DEC-2007 07:12	bkg		27.5814		
9-DEC-2007 06:00	bkg		25.1238		
16-DEC-2007 07:52	bkg		26.4264		
23-DEC-2007 08:57	bkg		27.5862		

## -- Multi-Test Full Report --

Description : MDA Zn-65 CPM

Parameter Units : CPM      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 27.446987      Std Deviation : 4.560129

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:29	bkg		28.3807		
11-NOV-2007 05:32	bkg		28.9866		
18-NOV-2007 08:51	bkg		28.5634		
25-NOV-2007 05:41	bkg		29.6891		
2-DEC-2007 07:12	bkg		27.4117		
9-DEC-2007 06:00	bkg		28.4167		
16-DEC-2007 07:52	bkg		28.7651		
23-DEC-2007 08:57	bkg		29.6855		

## -- Multi-Test Full Report --

Description : MDA Ru106da CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 20.127506 Std Deviation : 11.011560

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:29	bkg		20.0378		
11-NOV-2007 05:32	bkg		21.2767		
18-NOV-2007 08:51	bkg		20.4303		
25-NOV-2007 05:41	bkg		21.1500		
2-DEC-2007 07:12	bkg		20.2162		
9-DEC-2007 06:00	bkg		19.9758		
16-DEC-2007 07:52	bkg		21.0699		
23-DEC-2007 08:57	bkg		20.3861		

## -- Multi-Test Full Report --

Description : MDA Cs-134 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 20.542068 Std Deviation : 2.902101

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:29	bkg		21.7892		
11-NOV-2007 05:32	bkg		21.3044		
18-NOV-2007 08:51	bkg		21.3945		

Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:29	bkg		21.7892		
11-NOV-2007 05:32	bkg		21.3044		
18-NOV-2007 08:51	bkg		21.3945		

25-NOV-2007 05:41 bkg	21.7366	
2-DEC-2007 07:12 bkg	20.7394	
9-DEC-2007 06:00 bkg	22.4530	
16-DEC-2007 07:52 bkg	22.2518	
23-DEC-2007 08:57 bkg	21.8155	

## -- Multi-Test Full Report --

Description : MDA Cs-137da CPM  
 Parameter Units : CPM                      Parameter Type : Nuclide  
 Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 20.005926              Std Deviation : 2.935261

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
4-NOV-2007 09:29 bkg			21.1022	
11-NOV-2007 05:32 bkg			21.2115	
18-NOV-2007 08:51 bkg			20.4613	
25-NOV-2007 05:41 bkg			21.8926	
2-DEC-2007 07:12 bkg			21.6417	
9-DEC-2007 06:00 bkg			22.0162	
16-DEC-2007 07:52 bkg			21.9071	
23-DEC-2007 08:57 bkg			22.1945	

## -- Multi-Test Full Report --

Description : MDA Pb-212 CPM  
 Parameter Units : CPM                      Parameter Type : Nuclide  
 Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 14.008847              Std Deviation : 2.428843

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
4-NOV-2007 09:29 bkg			15.7880	
11-NOV-2007 05:32 bkg			15.3669	

18-NOV-2007 08:51	bkg	15.6942			
25-NOV-2007 05:41	bkg	15.5346			
2-DEC-2007 07:12	bkg	15.2825			
9-DEC-2007 06:00	bkg	15.3228			
16-DEC-2007 07:52	bkg	15.8417			
23-DEC-2007 08:57	bkg	15.2865			

-- Multi-Test Full Report --

Description : MDA Ra-226da CPM  
 Parameter Units : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 27.705032              Std Deviation : 4.854012

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued)              Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:29	bkg	29.9010			
11-NOV-2007 05:32	bkg	30.7284			
18-NOV-2007 08:51	bkg	31.1974			
25-NOV-2007 05:41	bkg	30.7051			
2-DEC-2007 07:12	bkg	29.6459			
9-DEC-2007 06:00	bkg	30.9629			
16-DEC-2007 07:52	bkg	31.2524			
23-DEC-2007 08:57	bkg	30.9654			

-- Multi-Test Full Report --

Description : MDA Ra-228 CPM  
 Parameter Units : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 31.304369              Std Deviation : 6.327501

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:29	bkg		34.3252	
11-NOV-2007 05:32	bkg		34.9829	
18-NOV-2007 08:51	bkg		34.6271	
25-NOV-2007 05:41	bkg		34.3328	
2-DEC-2007 07:12	bkg		34.0392	
9-DEC-2007 06:00	bkg		34.1160	
16-DEC-2007 07:52	bkg		34.4153	
23-DEC-2007 08:57	bkg		33.1411	

-- Multi-Test Full Report --

Description : MDA U-235 CPM  
Parameter Units : CPM                      Parameter Type : Nuclide  
Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
Mean : 8.631876              Std Deviation : 1.382096

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:29	bkg		9.6247	
11-NOV-2007 05:32	bkg		9.2520	
18-NOV-2007 08:51	bkg		9.6294	
25-NOV-2007 05:41	bkg		9.5282	
2-DEC-2007 07:12	bkg		9.7302	
9-DEC-2007 06:00	bkg		9.4630	
16-DEC-2007 07:52	bkg		9.7626	
23-DEC-2007 08:57	bkg		9.2997	

-- Multi-Test Full Report --

Description : MDA TH-232 CPM  
Parameter Units : CPM                      Parameter Type : Nuclide  
Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 119.070732 Std Deviation : 18.543655

Measurement Time Sample ID Sample Analyst Value LU|SD|UD|BS Rej

-----  
Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time Sample ID Sample Analyst Value LU|SD|UD|BS Rej

-----  
4-NOV-2007 09:29 bkg 127.8696 | | |  
11-NOV-2007 05:32 bkg 129.9810 | | |  
18-NOV-2007 08:51 bkg 127.0262 | | |  
25-NOV-2007 05:41 bkg 128.9898 | | |  
2-DEC-2007 07:12 bkg 132.6415 | | |  
9-DEC-2007 06:00 bkg 127.3571 | | |  
16-DEC-2007 07:52 bkg 129.9060 | | |  
23-DEC-2007 08:57 bkg 129.0749 | | |

Quality Assurance Report.

Generated 26-DEC-2007 15:59:18.60

QA Filename : \$DISK1:[GER10.QA]CHECK.QAF;4

-- Multi-Test Full Report --

Description : 121.78 KeV Efficiency

Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.005400 Upper Bound : 0.005800

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 10-MAY-2007 00:00 End Date : 10-OCT-2007 00:00

Mean : 0.005564 Std Deviation : 0.000058

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 05:03	chk		0.0056		
2-NOV-2007 05:05	chk		0.0057	In	
2-NOV-2007 05:16	chk		0.0055		
2-NOV-2007 05:29	chk		0.0056		
5-NOV-2007 06:21	chk		0.0056		
6-NOV-2007 05:57	chk		0.0055		
7-NOV-2007 05:21	chk		0.0055		
8-NOV-2007 06:56	chk		0.0057		
9-NOV-2007 04:55	chk		0.0056		
10-NOV-2007 05:40	chk		0.0056		
12-NOV-2007 05:40	chk		0.0056		
13-NOV-2007 05:55	chk		0.0056		
14-NOV-2007 05:36	chk		0.0056		
15-NOV-2007 05:29	chk		0.0056		
16-NOV-2007 05:51	chk		0.0056		
19-NOV-2007 06:02	chk		0.0056		
20-NOV-2007 06:01	chk		0.0056		
21-NOV-2007 05:45	chk		0.0055		
23-NOV-2007 08:40	chk		0.0056		
26-NOV-2007 05:56	chk		0.0056		
27-NOV-2007 06:13	chk		0.0056		



28-NOV-2007 06:11	chk	0.0056	
29-NOV-2007 05:54	chk	0.0056	
30-NOV-2007 05:56	chk	0.0055	
1-DEC-2007 11:12	chk	0.0055	
3-DEC-2007 06:00	chk	0.0056	
4-DEC-2007 05:51	chk	0.0056	
5-DEC-2007 06:22	chk	0.0056	
6-DEC-2007 06:02	chk	0.0055	
7-DEC-2007 05:43	chk	0.0057	
8-DEC-2007 06:27	chk	0.0056	
10-DEC-2007 05:51	chk	0.0056	
11-DEC-2007 05:39	chk	0.0056	
12-DEC-2007 05:33	chk	0.0056	
13-DEC-2007 04:01	chk	0.0055	
14-DEC-2007 06:16	chk	0.0056	
15-DEC-2007 09:01	chk	0.0055	
17-DEC-2007 06:04	chk	0.0056	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
18-DEC-2007 06:07	chk		0.0056	
19-DEC-2007 05:53	chk		0.0057	
20-DEC-2007 03:20	chk		0.0056	
21-DEC-2007 04:35	chk		0.0056	
22-DEC-2007 07:43	chk		0.0055	
24-DEC-2007 05:43	chk		0.0055	
25-DEC-2007 09:54	chk		0.0056	

-- Multi-Test Full Report --

Description : 121.78 KeV Centroid

Parameter Units : channel      Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 329.000000      Upper Bound : 529.000000

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 10-MAY-2007 00:00 End Date : 10-OCT-2007 00:00

Mean : 433.171204      Std Deviation : 0.084863

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 05:03	chk		433.1208	
2-NOV-2007 05:05	chk		433.1439	
2-NOV-2007 05:16	chk		433.0728	
2-NOV-2007 05:29	chk		433.1273	
5-NOV-2007 06:21	chk		433.1227	
6-NOV-2007 05:57	chk		433.1482	
7-NOV-2007 05:21	chk		433.1649	
8-NOV-2007 06:56	chk		433.2540	
9-NOV-2007 04:55	chk		433.1515	
10-NOV-2007 05:40	chk		433.1589	
12-NOV-2007 05:40	chk		433.1729	
13-NOV-2007 05:55	chk		433.0997	
14-NOV-2007 05:36	chk		433.0997	
15-NOV-2007 05:29	chk		433.1467	
16-NOV-2007 05:51	chk		433.0802	
19-NOV-2007 06:02	chk		433.0303	
20-NOV-2007 06:01	chk		433.0909	
21-NOV-2007 05:45	chk		433.1707	
23-NOV-2007 08:40	chk		433.0888	
26-NOV-2007 05:56	chk		433.0792	
27-NOV-2007 06:13	chk		433.0993	
28-NOV-2007 06:11	chk		433.0423	
29-NOV-2007 05:54	chk		432.9916	In
30-NOV-2007 05:56	chk		433.0167	
1-DEC-2007 11:12	chk		433.0959	
3-DEC-2007 06:00	chk		433.0887	
4-DEC-2007 05:51	chk		433.0283	
5-DEC-2007 06:22	chk		432.9977	In
6-DEC-2007 06:02	chk		433.0390	
7-DEC-2007 05:43	chk		432.9858	In
8-DEC-2007 06:27	chk		433.0132	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
10-DEC-2007 05:51	chk		432.9890	In
11-DEC-2007 05:39	chk		433.0401	
12-DEC-2007 05:33	chk		433.0013	In
13-DEC-2007 04:01	chk		432.9951	In
14-DEC-2007 06:16	chk		432.9365	In
15-DEC-2007 09:01	chk		432.9918	In

17-DEC-2007 06:04	chk	432.8883	Ac
18-DEC-2007 06:07	chk	432.9387	In
19-DEC-2007 05:53	chk	432.9720	In
20-DEC-2007 03:20	chk	433.0141	
21-DEC-2007 04:35	chk	432.8817	Ac
22-DEC-2007 07:43	chk	432.9569	In
24-DEC-2007 05:43	chk	433.0424	
25-DEC-2007 09:54	chk	432.9377	In

## -- Multi-Test Full Report --

Description : 121.78 KeV FWHM Resolution  
 Parameter Units : keV                    Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 1.200000            Upper Bound : 1.450000

Investigate Level : 2.000000            Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 10-MAY-2007 00:00 End Date : 10-OCT-2007 00:00

Mean : 1.410266            Std Deviation : 0.040643

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 05:03	chk		1.4888	Ab	
2-NOV-2007 05:05	chk		1.5282	Ab In	
2-NOV-2007 05:16	chk		1.5419	Ab Ac	
2-NOV-2007 05:29	chk		1.4610	Ab	
5-NOV-2007 06:21	chk		1.4730	Ab	
6-NOV-2007 05:57	chk		1.4750	Ab	
7-NOV-2007 05:21	chk		1.4499		
8-NOV-2007 06:56	chk		1.4537	Ab	
9-NOV-2007 04:55	chk		1.4833	Ab	
10-NOV-2007 05:40	chk		1.4476		
12-NOV-2007 05:40	chk		1.4165		
13-NOV-2007 05:55	chk		1.4504	Ab	
14-NOV-2007 05:36	chk		1.5067	Ab In	
15-NOV-2007 05:29	chk		1.4152		
16-NOV-2007 05:51	chk		1.4641	Ab	
19-NOV-2007 06:02	chk		1.4029		
20-NOV-2007 06:01	chk		1.4560	Ab	
21-NOV-2007 05:45	chk		1.4578	Ab	

23-NOV-2007 08:40	chk	1.4468	
26-NOV-2007 05:56	chk	1.4917	Ab In
27-NOV-2007 06:13	chk	1.4579	Ab
28-NOV-2007 06:11	chk	1.5200	Ab In
29-NOV-2007 05:54	chk	1.4411	
30-NOV-2007 05:56	chk	1.4387	

Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-DEC-2007 11:12	chk		1.4448	
3-DEC-2007 06:00	chk		1.3802	
4-DEC-2007 05:51	chk		1.5066	Ab In
5-DEC-2007 06:22	chk		1.4995	Ab In
6-DEC-2007 06:02	chk		1.4661	Ab
7-DEC-2007 05:43	chk		1.4170	
8-DEC-2007 06:27	chk		1.4574	Ab
10-DEC-2007 05:51	chk		1.5017	Ab In
11-DEC-2007 05:39	chk		1.4466	
12-DEC-2007 05:33	chk		1.5018	Ab In
13-DEC-2007 04:01	chk		1.4757	Ab
14-DEC-2007 06:16	chk		1.4502	Ab
15-DEC-2007 09:01	chk		1.4192	
17-DEC-2007 06:04	chk		1.3962	
18-DEC-2007 06:07	chk		1.4351	
19-DEC-2007 05:53	chk		1.4472	
20-DEC-2007 03:20	chk		1.3860	
21-DEC-2007 04:35	chk		1.4749	Ab
22-DEC-2007 07:43	chk		1.4263	
24-DEC-2007 05:43	chk		1.4507	Ab
25-DEC-2007 09:54	chk		1.4413	

-- Multi-Test Full Report --

Description : 1407.95 KeV Efficiency  
 Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.001250 Upper Bound : 0.001410

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 10-MAY-2007 00:00 End Date : 10-OCT-2007 00:00  
 Mean : 0.001335 Std Deviation : 0.000024

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 05:03	chk		0.0013	
2-NOV-2007 05:05	chk		0.0013	Ac
2-NOV-2007 05:16	chk		0.0014	
2-NOV-2007 05:29	chk		0.0013	
5-NOV-2007 06:21	chk		0.0014	
6-NOV-2007 05:57	chk		0.0013	
7-NOV-2007 05:21	chk		0.0013	
8-NOV-2007 06:56	chk		0.0013	
9-NOV-2007 04:55	chk		0.0014	
10-NOV-2007 05:40	chk		0.0013	
12-NOV-2007 05:40	chk		0.0013	
13-NOV-2007 05:55	chk		0.0014	
14-NOV-2007 05:36	chk		0.0013	
15-NOV-2007 05:29	chk		0.0013	In
16-NOV-2007 05:51	chk		0.0013	
19-NOV-2007 06:02	chk		0.0013	
20-NOV-2007 06:01	chk		0.0013	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-NOV-2007 05:45	chk		0.0013	
23-NOV-2007 08:40	chk		0.0013	
26-NOV-2007 05:56	chk		0.0014	
27-NOV-2007 06:13	chk		0.0013	In
28-NOV-2007 06:11	chk		0.0013	
29-NOV-2007 05:54	chk		0.0014	
30-NOV-2007 05:56	chk		0.0014	
1-DEC-2007 11:12	chk		0.0014	
3-DEC-2007 06:00	chk		0.0013	
4-DEC-2007 05:51	chk		0.0014	In
5-DEC-2007 06:22	chk		0.0013	
6-DEC-2007 06:02	chk		0.0013	
7-DEC-2007 05:43	chk		0.0013	
8-DEC-2007 06:27	chk		0.0013	
10-DEC-2007 05:51	chk		0.0013	
11-DEC-2007 05:39	chk		0.0013	
12-DEC-2007 05:33	chk		0.0013	

13-DEC-2007 04:01	chk	0.0013	
14-DEC-2007 06:16	chk	0.0014	
15-DEC-2007 09:01	chk	0.0013	
17-DEC-2007 06:04	chk	0.0013	
18-DEC-2007 06:07	chk	0.0013	
19-DEC-2007 05:53	chk	0.0013	
20-DEC-2007 03:20	chk	0.0013	
21-DEC-2007 04:35	chk	0.0013	
22-DEC-2007 07:43	chk	0.0014	In
24-DEC-2007 05:43	chk	0.0013	
25-DEC-2007 09:54	chk	0.0013	

## -- Multi-Test Full Report --

Description : 1407.95 KeV Centroid

Parameter Units : channel Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 5536.000000 Upper Bound : 5737.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 05:03	chk	5634.7695		
2-NOV-2007 05:05	chk	5634.7441		
2-NOV-2007 05:16	chk	5634.8018		
2-NOV-2007 05:29	chk	5634.8926		
5-NOV-2007 06:21	chk	5634.6763		
6-NOV-2007 05:57	chk	5634.5684		
7-NOV-2007 05:21	chk	5634.7559		
8-NOV-2007 06:56	chk	5634.5454		
9-NOV-2007 04:55	chk	5634.4590		
10-NOV-2007 05:40	chk	5634.4473		
12-NOV-2007 05:40	chk	5634.5820		
13-NOV-2007 05:55	chk	5634.4282		
14-NOV-2007 05:36	chk	5634.6465		
15-NOV-2007 05:29	chk	5634.7007		
16-NOV-2007 05:51	chk	5634.7456		
19-NOV-2007 06:02	chk	5634.5884		

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-NOV-2007 06:01	chk	5634.6646		

21-NOV-2007 05:45	chk	5634.7656			
23-NOV-2007 08:40	chk	5634.7783			
26-NOV-2007 05:56	chk	5634.7988			
27-NOV-2007 06:13	chk	5634.9014			
28-NOV-2007 06:11	chk	5634.6816			
29-NOV-2007 05:54	chk	5634.6382			
30-NOV-2007 05:56	chk	5634.3735			
1-DEC-2007 11:12	chk	5634.4395			
3-DEC-2007 06:00	chk	5634.4468			
4-DEC-2007 05:51	chk	5634.5313			
5-DEC-2007 06:22	chk	5634.3789			
6-DEC-2007 06:02	chk	5634.1328			
7-DEC-2007 05:43	chk	5634.1782			
8-DEC-2007 06:27	chk	5634.2856			
10-DEC-2007 05:51	chk	5634.3311			
11-DEC-2007 05:39	chk	5634.4302			
12-DEC-2007 05:33	chk	5634.3296			
13-DEC-2007 04:01	chk	5634.3384			
14-DEC-2007 06:16	chk	5634.3789			
15-DEC-2007 09:01	chk	5634.3672			
17-DEC-2007 06:04	chk	5634.0801			
18-DEC-2007 06:07	chk	5634.0107			
19-DEC-2007 05:53	chk	5634.1172			
20-DEC-2007 03:20	chk	5634.0474			
21-DEC-2007 04:35	chk	5634.2632			
22-DEC-2007 07:43	chk	5634.2852			
24-DEC-2007 05:43	chk	5634.3926			
25-DEC-2007 09:54	chk	5634.4053			

-- Multi-Test Full Report --

Description : 1407.95 KeV FWHM Resolution  
Parameter Units : keV                    Parameter Type : Peak

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 10-MAY-2007 00:00 End Date : 10-OCT-2007 00:00  
Mean : 2.037837            Std Deviation : 0.096840

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 05:03	chk		2.0861		

2-NOV-2007 05:05	chk	2.2179	
2-NOV-2007 05:16	chk	2.0151	
2-NOV-2007 05:29	chk	2.0240	
5-NOV-2007 06:21	chk	2.1023	
6-NOV-2007 05:57	chk	2.1191	
7-NOV-2007 05:21	chk	2.0152	
8-NOV-2007 06:56	chk	2.1520	
9-NOV-2007 04:55	chk	2.1568	
10-NOV-2007 05:40	chk	2.1010	
12-NOV-2007 05:40	chk	1.8373	In
13-NOV-2007 05:55	chk	2.0716	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
14-NOV-2007 05:36	chk		2.0052	
15-NOV-2007 05:29	chk		2.0262	
16-NOV-2007 05:51	chk		2.0189	
19-NOV-2007 06:02	chk		2.1968	
20-NOV-2007 06:01	chk		2.2757	In
21-NOV-2007 05:45	chk		2.0361	
23-NOV-2007 08:40	chk		2.0357	
26-NOV-2007 05:56	chk		2.1295	
27-NOV-2007 06:13	chk		2.1117	
28-NOV-2007 06:11	chk		2.0745	
29-NOV-2007 05:54	chk		2.0979	
30-NOV-2007 05:56	chk		2.0015	
1-DEC-2007 11:12	chk		2.1135	
3-DEC-2007 06:00	chk		2.0576	
4-DEC-2007 05:51	chk		2.1335	
5-DEC-2007 06:22	chk		2.2983	In
6-DEC-2007 06:02	chk		2.1238	
7-DEC-2007 05:43	chk		1.9869	
8-DEC-2007 06:27	chk		2.1240	
10-DEC-2007 05:51	chk		1.8537	
11-DEC-2007 05:39	chk		2.0494	
12-DEC-2007 05:33	chk		1.8843	
13-DEC-2007 04:01	chk		1.9204	
14-DEC-2007 06:16	chk		2.2779	In
15-DEC-2007 09:01	chk		2.0393	
17-DEC-2007 06:04	chk		2.0166	
18-DEC-2007 06:07	chk		2.0558	
19-DEC-2007 05:53	chk		2.1005	



20-DEC-2007 03:20	chk	2.0386			
21-DEC-2007 04:35	chk	2.1834			
22-DEC-2007 07:43	chk	2.0262			
24-DEC-2007 05:43	chk	2.2081			
25-DEC-2007 09:54	chk	2.1501			

## -- Multi-Test Full Report --

Description : 778.89 KeV Efficiency  
 Parameter Units : Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.001870 Upper Bound : 0.002150

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 10-MAY-2007 00:00 End Date : 10-OCT-2007 00:00  
 Mean : 0.002017 Std Deviation : 0.000048

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 05:03	chk	0.0020			
2-NOV-2007 05:05	chk	0.0021			
2-NOV-2007 05:16	chk	0.0020			
2-NOV-2007 05:29	chk	0.0020			
5-NOV-2007 06:21	chk	0.0020			

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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6-NOV-2007 05:57	chk	0.0020			
7-NOV-2007 05:21	chk	0.0020			
8-NOV-2007 06:56	chk	0.0019			
9-NOV-2007 04:55	chk	0.0021			
10-NOV-2007 05:40	chk	0.0021			
12-NOV-2007 05:40	chk	0.0020			
13-NOV-2007 05:55	chk	0.0021			
14-NOV-2007 05:36	chk	0.0019			
15-NOV-2007 05:29	chk	0.0020			
16-NOV-2007 05:51	chk	0.0019			
19-NOV-2007 06:02	chk	0.0020			
20-NOV-2007 06:01	chk	0.0020			

21-NOV-2007 05:45	chk	0.0021	In	
23-NOV-2007 08:40	chk	0.0021		
26-NOV-2007 05:56	chk	0.0020		
27-NOV-2007 06:13	chk	0.0020		
28-NOV-2007 06:11	chk	0.0019		
29-NOV-2007 05:54	chk	0.0020		
30-NOV-2007 05:56	chk	0.0020		
1-DEC-2007 11:12	chk	0.0020		
3-DEC-2007 06:00	chk	0.0021		
4-DEC-2007 05:51	chk	0.0020		
5-DEC-2007 06:22	chk	0.0019	In	
6-DEC-2007 06:02	chk	0.0020		
7-DEC-2007 05:43	chk	0.0020		
8-DEC-2007 06:27	chk	0.0021	In	
10-DEC-2007 05:51	chk	0.0020		
11-DEC-2007 05:39	chk	0.0020		
12-DEC-2007 05:33	chk	0.0019		
13-DEC-2007 04:01	chk	0.0021		
14-DEC-2007 06:16	chk	0.0020		
15-DEC-2007 09:01	chk	0.0021		
17-DEC-2007 06:04	chk	0.0020		
18-DEC-2007 06:07	chk	0.0020		
19-DEC-2007 05:53	chk	0.0020		
20-DEC-2007 03:20	chk	0.0020		
21-DEC-2007 04:35	chk	0.0020		
22-DEC-2007 07:43	chk	0.0020		
24-DEC-2007 05:43	chk	0.0020		
25-DEC-2007 09:54	chk	0.0020		

-- Multi-Test Full Report --

Description : 778.89 KeV Centroid

Parameter Units : channels Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 2990.000000 Upper Bound : 3190.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 05:03	chk		3090.8320		
2-NOV-2007 05:05	chk		3090.8809		
2-NOV-2007 05:16	chk		3090.8464		
2-NOV-2007 05:29	chk		3090.5842		

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
5-NOV-2007 06:21	chk		3090.7185		
6-NOV-2007 05:57	chk		3090.7092		
7-NOV-2007 05:21	chk		3090.7329		
8-NOV-2007 06:56	chk		3090.7637		
9-NOV-2007 04:55	chk		3090.9412		
10-NOV-2007 05:40	chk		3090.5928		
12-NOV-2007 05:40	chk		3090.5886		
13-NOV-2007 05:55	chk		3090.7175		
14-NOV-2007 05:36	chk		3090.6245		
15-NOV-2007 05:29	chk		3090.6765		
16-NOV-2007 05:51	chk		3090.5947		
19-NOV-2007 06:02	chk		3090.4985		
20-NOV-2007 06:01	chk		3090.7297		
21-NOV-2007 05:45	chk		3090.7241		
23-NOV-2007 08:40	chk		3090.5364		
26-NOV-2007 05:56	chk		3090.6982		
27-NOV-2007 06:13	chk		3091.0022		
28-NOV-2007 06:11	chk		3090.7341		
29-NOV-2007 05:54	chk		3090.2490		
30-NOV-2007 05:56	chk		3090.7305		
1-DEC-2007 11:12	chk		3090.7554		
3-DEC-2007 06:00	chk		3090.5291		
4-DEC-2007 05:51	chk		3090.8242		
5-DEC-2007 06:22	chk		3090.2834		
6-DEC-2007 06:02	chk		3090.2832		
7-DEC-2007 05:43	chk		3090.6265		
8-DEC-2007 06:27	chk		3090.4934		
10-DEC-2007 05:51	chk		3090.2146		
11-DEC-2007 05:39	chk		3090.4106		
12-DEC-2007 05:33	chk		3090.5105		
13-DEC-2007 04:01	chk		3090.5088		
14-DEC-2007 06:16	chk		3090.4890		
15-DEC-2007 09:01	chk		3090.4338		
17-DEC-2007 06:04	chk		3090.0803		
18-DEC-2007 06:07	chk		3090.3164		
19-DEC-2007 05:53	chk		3090.4133		
20-DEC-2007 03:20	chk		3090.3315		
21-DEC-2007 04:35	chk		3090.5420		
22-DEC-2007 07:43	chk		3090.3411		

24-DEC-2007 05:43 chk 3090.4028 | | |  
 25-DEC-2007 09:54 chk 3090.3218 | | |

-- Multi-Test Full Report --

Description : 778.89 KeV FWHM Resolution  
 Parameter Units : keV Parameter Type : Peak

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 10-MAY-2007 00:00 End Date : 10-OCT-2007 00:00  
 Mean : 1.745076 Std Deviation : 0.088812

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 05:03	chk		1.8542		
2-NOV-2007 05:05	chk		1.7670		
2-NOV-2007 05:16	chk		1.8249		
2-NOV-2007 05:29	chk		1.9744	In	
5-NOV-2007 06:21	chk		1.9354	In	
6-NOV-2007 05:57	chk		1.8005		
7-NOV-2007 05:21	chk		1.8126		
8-NOV-2007 06:56	chk		1.8043		
9-NOV-2007 04:55	chk		1.7795		
10-NOV-2007 05:40	chk		1.8232		
12-NOV-2007 05:40	chk		1.9176		
13-NOV-2007 05:55	chk		1.7584		
14-NOV-2007 05:36	chk		1.7609		
15-NOV-2007 05:29	chk		1.8087		
16-NOV-2007 05:51	chk		1.8215		
19-NOV-2007 06:02	chk		1.7369		
20-NOV-2007 06:01	chk		1.9010		
21-NOV-2007 05:45	chk		1.8580		
23-NOV-2007 08:40	chk		1.7444		
26-NOV-2007 05:56	chk		1.8085		
27-NOV-2007 06:13	chk		1.7163		
28-NOV-2007 06:11	chk		1.6221		
29-NOV-2007 05:54	chk		1.6265		

30-NOV-2007 05:56	chk	1.8096	
1-DEC-2007 11:12	chk	1.7477	
3-DEC-2007 06:00	chk	1.7568	
4-DEC-2007 05:51	chk	1.8635	
5-DEC-2007 06:22	chk	1.8181	
6-DEC-2007 06:02	chk	1.8226	
7-DEC-2007 05:43	chk	1.8516	
8-DEC-2007 06:27	chk	1.8753	
10-DEC-2007 05:51	chk	1.9003	
11-DEC-2007 05:39	chk	1.9479	In
12-DEC-2007 05:33	chk	1.7094	
13-DEC-2007 04:01	chk	1.7391	
14-DEC-2007 06:16	chk	1.9900	In
15-DEC-2007 09:01	chk	1.7783	
17-DEC-2007 06:04	chk	1.8098	
18-DEC-2007 06:07	chk	1.6979	
19-DEC-2007 05:53	chk	1.7578	
20-DEC-2007 03:20	chk	1.7527	
21-DEC-2007 04:35	chk	1.5862	
22-DEC-2007 07:43	chk	1.7027	
24-DEC-2007 05:43	chk	1.5896	
25-DEC-2007 09:54	chk	1.6925	

Quality Assurance Report.                      Generated 26-DEC-2007 15:59:20.45

QA Filename        : \$DISK1:[GER10.QA]BKG.QAF;4

-- Multi-Test Full Report --

Description        : MDA K-40 CPM

Parameter Units    : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000                  Action Level    : 3.000000

---- Trend Test Test Parameters ----

N Mean Samples    : 0                          M Slope Samples: 0

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 1-JAN-2007 00:00 End Date        : 1-JUL-2007 00:00

Mean              : 0.000000                  Std Deviation   : 0.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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-----
4-NOV-2007 09:29 bkg          0.0000  | | |
11-NOV-2007 05:32 bkg          0.0000  | | |
18-NOV-2007 08:51 bkg          0.0000  | | |
25-NOV-2007 05:41 bkg          0.0000  | | |
 2-DEC-2007 07:12 bkg          0.0000  | | |
 9-DEC-2007 06:00 bkg          0.0000  | | |
16-DEC-2007 07:51 bkg          0.0000  | | |
23-DEC-2007 08:56 bkg          0.0000  | | |

```

-- Multi-Test Full Report --

Description : MDA Cr-51 CPM

Parameter Units : CPM            Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 9.645209      Std Deviation : 2.430990

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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-----
4-NOV-2007 09:29 bkg          11.9323  | | |
11-NOV-2007 05:32 bkg          11.4337  | | |
18-NOV-2007 08:51 bkg          11.6825  | | |
25-NOV-2007 05:41 bkg          11.6001  | | |
 2-DEC-2007 07:12 bkg          11.5133  | | |
 9-DEC-2007 06:00 bkg          12.0100  | | |
16-DEC-2007 07:51 bkg          11.7862  | | |
23-DEC-2007 08:56 bkg          11.7788  | | |

```

-- Multi-Test Full Report --

Description : MDA Co-60 CPM

Parameter Units : CPM            Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 18.328323      Std Deviation : 4.716222

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:29	bkg		22.3450	
11-NOV-2007 05:32	bkg		23.1141	
18-NOV-2007 08:51	bkg		22.5104	
25-NOV-2007 05:41	bkg		21.8666	
2-DEC-2007 07:12	bkg		21.9686	
9-DEC-2007 06:00	bkg		22.0424	
16-DEC-2007 07:51	bkg		23.3922	
23-DEC-2007 08:56	bkg		23.4996	

-- Multi-Test Full Report --

Description : MDA Zn-65 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 18.297325 Std Deviation : 4.720364

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:29	bkg		22.8919	
11-NOV-2007 05:32	bkg		22.6338	
18-NOV-2007 08:51	bkg		23.3476	
25-NOV-2007 05:41	bkg		21.7372	
2-DEC-2007 07:12	bkg		22.2567	
9-DEC-2007 06:00	bkg		21.8216	
16-DEC-2007 07:51	bkg		24.3045	
23-DEC-2007 08:56	bkg		22.7349	

-- Multi-Test Full Report --

Description : MDA Ru106da CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 14.296664 Std Deviation : 3.669813

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:29	bkg		17.2318	
11-NOV-2007 05:32	bkg		17.6389	
18-NOV-2007 08:51	bkg		18.4127	
25-NOV-2007 05:41	bkg		17.5923	
2-DEC-2007 07:12	bkg		17.3855	
9-DEC-2007 06:00	bkg		17.1431	
16-DEC-2007 07:51	bkg		17.4808	
23-DEC-2007 08:56	bkg		16.6669	

## -- Multi-Test Full Report --

Description : MDA Cs-134 CPM  
 Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 16.289078 Std Deviation : 4.193914

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:29	bkg		19.2403	
11-NOV-2007 05:32	bkg		19.9557	
18-NOV-2007 08:51	bkg		19.1001	
25-NOV-2007 05:41	bkg		19.2098	
2-DEC-2007 07:12	bkg		20.8386	
9-DEC-2007 06:00	bkg		19.1113	
16-DEC-2007 07:51	bkg		20.4884	
23-DEC-2007 08:56	bkg		19.3306	

## -- Multi-Test Full Report --



Description : MDA Cs-137da CPM  
 Parameter Units : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 14.048932              Std Deviation : 3.637539

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:29	bkg		17.8134	
11-NOV-2007 05:32	bkg		17.0872	
18-NOV-2007 08:51	bkg		17.9794	
25-NOV-2007 05:41	bkg		16.7269	
2-DEC-2007 07:12	bkg		17.5231	
9-DEC-2007 06:00	bkg		16.7186	
16-DEC-2007 07:51	bkg		16.9957	
23-DEC-2007 08:56	bkg		16.9541	

-- Multi-Test Full Report --

Description : MDA Pb-212 CPM  
 Parameter Units : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 8.292564              Std Deviation : 2.162731

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:29	bkg		10.5711	
11-NOV-2007 05:32	bkg		10.3841	
18-NOV-2007 08:51	bkg		10.3407	
25-NOV-2007 05:41	bkg		10.0608	
2-DEC-2007 07:12	bkg		10.3007	
9-DEC-2007 06:00	bkg		10.5278	
16-DEC-2007 07:51	bkg		10.4169	
23-DEC-2007 08:56	bkg		10.2709	

## -- Multi-Test Full Report --

Description : MDA Ra-226da CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 17.908802 Std Deviation : 4.258226

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:29	bkg		22.5431		
11-NOV-2007 05:32	bkg		23.1256		
18-NOV-2007 08:51	bkg		22.1654		
25-NOV-2007 05:41	bkg		20.7415		
2-DEC-2007 07:12	bkg		21.7434		
9-DEC-2007 06:00	bkg		22.7245		
16-DEC-2007 07:51	bkg		22.3648		
23-DEC-2007 08:56	bkg		22.6594		

## -- Multi-Test Full Report --

Description : MDA Ra-228 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 16.695755 Std Deviation : 4.287898

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:29	bkg		19.1333		
11-NOV-2007 05:32	bkg		20.1698		
18-NOV-2007 08:51	bkg		20.1439		
25-NOV-2007 05:41	bkg		20.0260		

2-DEC-2007 07:12 bkg	20.4688	
9-DEC-2007 06:00 bkg	19.4030	
16-DEC-2007 07:51 bkg	19.4279	
23-DEC-2007 08:56 bkg	20.0596	

-- Multi-Test Full Report --

Description : MDA U-235 CPM  
 Parameter Units : CPM            Parameter Type : Nuclide  
 Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 5.493475            Std Deviation : 1.424055

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
4-NOV-2007 09:29 bkg			6.7908	
11-NOV-2007 05:32 bkg			6.7907	
18-NOV-2007 08:51 bkg			6.9845	
25-NOV-2007 05:41 bkg			6.7082	
2-DEC-2007 07:12 bkg			6.7971	
9-DEC-2007 06:00 bkg			6.9881	
16-DEC-2007 07:51 bkg			6.9580	
23-DEC-2007 08:56 bkg			6.9351	

-- Multi-Test Full Report --

Description : MDA TH-232 CPM  
 Parameter Units : CPM            Parameter Type : Nuclide  
 Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 79.690552            Std Deviation : 20.539301

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)            Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:29 bkg	99.7749			
11-NOV-2007 05:32 bkg	97.1256			
18-NOV-2007 08:51 bkg	99.7360			
25-NOV-2007 05:41 bkg	92.8795			
2-DEC-2007 07:12 bkg	97.1322			
9-DEC-2007 06:00 bkg	97.1950			
16-DEC-2007 07:51 bkg	99.9018			
23-DEC-2007 08:56 bkg	96.5546			

Quality Assurance Report.

Generated 26-DEC-2007 15:57:00.23

QA Filename : \$DISK1:[GER8.QA]CHECK.QAF;3

-- Multi-Test Full Report --

Description : 121.78 KeV Efficiency

Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.005600 Upper Bound : 0.005900

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.005744 Std Deviation : 0.000046

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 07:06	chk		0.0057		
1-NOV-2007 07:18	chk		0.0057		
2-NOV-2007 04:49	chk		0.0058		
2-NOV-2007 05:03	chk		0.0058		
2-NOV-2007 05:15	chk		0.0058		
5-NOV-2007 06:02	chk		0.0057		
5-NOV-2007 06:17	chk		0.0057		
6-NOV-2007 05:34	chk		0.0057		
7-NOV-2007 04:56	chk		0.0058	In	
8-NOV-2007 06:29	chk		0.0058		
9-NOV-2007 04:40	chk		0.0057		
10-NOV-2007 05:27	chk		0.0057		
10-NOV-2007 05:39	chk		0.0058		
10-NOV-2007 05:51	chk		0.0057		
12-NOV-2007 05:45	chk		0.0057		
13-NOV-2007 05:38	chk		0.0056	Be Ac	
13-NOV-2007 05:51	chk		0.0057		
14-NOV-2007 05:36	chk		0.0057		
15-NOV-2007 05:02	chk		0.0057		
16-NOV-2007 05:34	chk		0.0056	In	
17-NOV-2007 09:54	chk		0.0058		

19-NOV-2007 05:40	chk	0.0058	
20-NOV-2007 05:46	chk	0.0058	
21-NOV-2007 05:27	chk	0.0057	
22-NOV-2007 05:26	chk	0.0057	
23-NOV-2007 04:23	chk	0.0057	
24-NOV-2007 06:13	chk	0.0056	In
26-NOV-2007 05:35	chk	0.0057	
26-NOV-2007 05:51	chk	0.0057	
27-NOV-2007 05:37	chk	0.0057	
28-NOV-2007 05:46	chk	0.0058	
29-NOV-2007 05:22	chk	0.0058	
30-NOV-2007 05:22	chk	0.0056	In
30-NOV-2007 05:53	chk	0.0057	
1-DEC-2007 10:47	chk	0.0057	
3-DEC-2007 05:40	chk	0.0057	
3-DEC-2007 05:55	chk	0.0058	
4-DEC-2007 05:30	chk	0.0058	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
5-DEC-2007 06:05	chk	0.0057		
6-DEC-2007 05:46	chk	0.0058		
7-DEC-2007 05:19	chk	0.0058		
8-DEC-2007 06:12	chk	0.0058		
8-DEC-2007 06:26	chk	0.0057		
10-DEC-2007 05:35	chk	0.0058		
11-DEC-2007 05:24	chk	0.0057		
12-DEC-2007 05:14	chk	0.0057		
12-DEC-2007 05:27	chk	0.0057		
13-DEC-2007 03:48	chk	0.0057		
14-DEC-2007 05:53	chk	0.0057		
15-DEC-2007 08:25	chk	0.0058		
17-DEC-2007 05:37	chk	0.0057		
18-DEC-2007 05:48	chk	0.0058		
19-DEC-2007 05:33	chk	0.0058		
20-DEC-2007 03:05	chk	0.0058		
21-DEC-2007 04:16	chk	0.0057		
22-DEC-2007 07:30	chk	0.0057		
24-DEC-2007 05:27	chk	0.0057		
25-DEC-2007 09:30	chk	0.0058		

-- Multi-Test Full Report --

Description : 121.78 KeV Centroid

Parameter Units : channels Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 386.000000 Upper Bound : 586.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 07:06	chk		487.4514		
1-NOV-2007 07:18	chk		487.4483		
2-NOV-2007 04:49	chk		487.4157		
2-NOV-2007 05:03	chk		487.3735		
2-NOV-2007 05:15	chk		487.4743		
5-NOV-2007 06:02	chk		487.2497		
5-NOV-2007 06:17	chk		487.3507		
6-NOV-2007 05:34	chk		487.2634		
7-NOV-2007 04:56	chk		487.2467		
8-NOV-2007 06:29	chk		487.2760		
9-NOV-2007 04:40	chk		487.2281		
10-NOV-2007 05:27	chk		487.2995		
10-NOV-2007 05:39	chk		487.2458		
10-NOV-2007 05:51	chk		487.2986		
12-NOV-2007 05:45	chk		487.1924		
13-NOV-2007 05:38	chk		487.2900		
13-NOV-2007 05:51	chk		487.2517		
14-NOV-2007 05:36	chk		487.2747		
15-NOV-2007 05:02	chk		487.3041		
16-NOV-2007 05:34	chk		487.1702		
17-NOV-2007 09:54	chk		487.2090		
19-NOV-2007 05:40	chk		487.2062		
20-NOV-2007 05:46	chk		487.1216		
21-NOV-2007 05:27	chk		487.1398		

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
22-NOV-2007 05:26	chk		487.1841		
23-NOV-2007 04:23	chk		487.2018		
24-NOV-2007 06:13	chk		487.1696		
26-NOV-2007 05:35	chk		487.2248		
26-NOV-2007 05:51	chk		487.2175		
27-NOV-2007 05:37	chk		487.1626		

28-NOV-2007 05:46	chk	487.2185			
29-NOV-2007 05:22	chk	487.2073			
30-NOV-2007 05:22	chk	487.2146			
30-NOV-2007 05:53	chk	487.1815			
1-DEC-2007 10:47	chk	487.0962			
3-DEC-2007 05:40	chk	487.1554			
3-DEC-2007 05:55	chk	487.1832			
4-DEC-2007 05:30	chk	487.1828			
5-DEC-2007 06:05	chk	487.1895			
6-DEC-2007 05:46	chk	487.2002			
7-DEC-2007 05:19	chk	487.1327			
8-DEC-2007 06:12	chk	487.0927			
8-DEC-2007 06:26	chk	487.0876			
10-DEC-2007 05:35	chk	487.1341			
11-DEC-2007 05:24	chk	487.0918			
12-DEC-2007 05:14	chk	487.0483			
12-DEC-2007 05:27	chk	487.0807			
13-DEC-2007 03:48	chk	487.1379			
14-DEC-2007 05:53	chk	487.1983			
15-DEC-2007 08:25	chk	487.1192			
17-DEC-2007 05:37	chk	487.1187			
18-DEC-2007 05:48	chk	487.1086			
19-DEC-2007 05:33	chk	487.1082			
20-DEC-2007 03:05	chk	487.1469			
21-DEC-2007 04:16	chk	487.1050			
22-DEC-2007 07:30	chk	487.0436			
24-DEC-2007 05:27	chk	487.0896			
25-DEC-2007 09:30	chk	487.0982			

-- Multi-Test Full Report --

Description : 121.78 KeV FWHM Resolution  
Parameter Units : keV                    Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 1.020000            Upper Bound : 1.130000

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 1.078783            Std Deviation : 0.017153



Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 07:06	chk		1.1399	Ab Ac
1-NOV-2007 07:18	chk		1.0986	
2-NOV-2007 04:49	chk		1.1316	Ab Ac
2-NOV-2007 05:03	chk		1.1419	Ab Ac

Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 05:15	chk		1.1275	In
5-NOV-2007 06:02	chk		1.1308	Ab Ac
5-NOV-2007 06:17	chk		1.1230	In
6-NOV-2007 05:34	chk		1.1035	
7-NOV-2007 04:56	chk		1.1080	
8-NOV-2007 06:29	chk		1.1284	In
9-NOV-2007 04:40	chk		1.1236	In
10-NOV-2007 05:27	chk		1.1318	Ab Ac
10-NOV-2007 05:39	chk		1.1355	Ab Ac
10-NOV-2007 05:51	chk		1.0849	
12-NOV-2007 05:45	chk		1.1020	
13-NOV-2007 05:38	chk		1.1214	In
13-NOV-2007 05:51	chk		1.1072	
14-NOV-2007 05:36	chk		1.0977	
15-NOV-2007 05:02	chk		1.1160	In
16-NOV-2007 05:34	chk		1.1096	
17-NOV-2007 09:54	chk		1.1248	In
19-NOV-2007 05:40	chk		1.1232	In
20-NOV-2007 05:46	chk		1.1152	In
21-NOV-2007 05:27	chk		1.1158	In
22-NOV-2007 05:26	chk		1.0991	
23-NOV-2007 04:23	chk		1.1252	In
24-NOV-2007 06:13	chk		1.1140	In
26-NOV-2007 05:35	chk		1.1317	Ab Ac
26-NOV-2007 05:51	chk		1.0857	
27-NOV-2007 05:37	chk		1.0843	
28-NOV-2007 05:46	chk		1.1051	
29-NOV-2007 05:22	chk		1.1185	In
30-NOV-2007 05:22	chk		1.1452	Ab Ac
30-NOV-2007 05:53	chk		1.1208	In
1-DEC-2007 10:47	chk		1.0819	
3-DEC-2007 05:40	chk		1.1103	
3-DEC-2007 05:55	chk		1.0908	

4-DEC-2007 05:30	chk	1.1241	In	
5-DEC-2007 06:05	chk	1.1158	In	
6-DEC-2007 05:46	chk	1.1127		
7-DEC-2007 05:19	chk	1.1161	In	
8-DEC-2007 06:12	chk	1.1405	Ab Ac	
8-DEC-2007 06:26	chk	1.1241	In	
10-DEC-2007 05:35	chk	1.1156	In	
11-DEC-2007 05:24	chk	1.1227	In	
12-DEC-2007 05:14	chk	1.1389	Ab Ac	
12-DEC-2007 05:27	chk	1.1119		
13-DEC-2007 03:48	chk	1.1054		
14-DEC-2007 05:53	chk	1.1267	In	
15-DEC-2007 08:25	chk	1.1115		
17-DEC-2007 05:37	chk	1.1179	In	
18-DEC-2007 05:48	chk	1.1047		
19-DEC-2007 05:33	chk	1.0754		
20-DEC-2007 03:05	chk	1.0830		
21-DEC-2007 04:16	chk	1.0913		
22-DEC-2007 07:30	chk	1.1255	In	
24-DEC-2007 05:27	chk	1.0977		
25-DEC-2007 09:30	chk	1.1054		

## -- Multi-Test Full Report --

Description : 778.89 KeV Efficiency  
Parameter Units : Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.001230 Upper Bound : 0.001460

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 0.001345 Std Deviation : 0.000038

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 07:06	chk		0.0013	
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1-NOV-2007 07:18	chk	0.0014			
2-NOV-2007 04:49	chk	0.0013			
2-NOV-2007 05:03	chk	0.0013			
2-NOV-2007 05:15	chk	0.0013			
5-NOV-2007 06:02	chk	0.0012	In		
5-NOV-2007 06:17	chk	0.0014			
6-NOV-2007 05:34	chk	0.0013			
7-NOV-2007 04:56	chk	0.0013			
8-NOV-2007 06:29	chk	0.0013			
9-NOV-2007 04:40	chk	0.0013			
10-NOV-2007 05:27	chk	0.0014			
10-NOV-2007 05:39	chk	0.0014			
10-NOV-2007 05:51	chk	0.0014			
12-NOV-2007 05:45	chk	0.0013			
13-NOV-2007 05:38	chk	0.0013			
13-NOV-2007 05:51	chk	0.0013			
14-NOV-2007 05:36	chk	0.0014			
15-NOV-2007 05:02	chk	0.0014			
16-NOV-2007 05:34	chk	0.0013			
17-NOV-2007 09:54	chk	0.0014			
19-NOV-2007 05:40	chk	0.0013			
20-NOV-2007 05:46	chk	0.0013			
21-NOV-2007 05:27	chk	0.0014	In		
22-NOV-2007 05:26	chk	0.0013			
23-NOV-2007 04:23	chk	0.0014			
24-NOV-2007 06:13	chk	0.0013			
26-NOV-2007 05:35	chk	0.0014	In		
26-NOV-2007 05:51	chk	0.0014			
27-NOV-2007 05:37	chk	0.0013			
28-NOV-2007 05:46	chk	0.0014			
29-NOV-2007 05:22	chk	0.0013			
30-NOV-2007 05:22	chk	0.0013	In		
30-NOV-2007 05:53	chk	0.0013			
1-DEC-2007 10:47	chk	0.0014			
3-DEC-2007 05:40	chk	0.0013			
3-DEC-2007 05:55	chk	0.0013			
4-DEC-2007 05:30	chk	0.0014			
5-DEC-2007 06:05	chk	0.0014			
6-DEC-2007 05:46	chk	0.0014			
7-DEC-2007 05:19	chk	0.0014	In		
8-DEC-2007 06:12	chk	0.0014			
8-DEC-2007 06:26	chk	0.0013			
10-DEC-2007 05:35	chk	0.0013			

11-DEC-2007 05:24	chk	0.0014	
12-DEC-2007 05:14	chk	0.0014	
12-DEC-2007 05:27	chk	0.0014	
13-DEC-2007 03:48	chk	0.0013	
14-DEC-2007 05:53	chk	0.0013	
15-DEC-2007 08:25	chk	0.0013	
17-DEC-2007 05:37	chk	0.0013	
18-DEC-2007 05:48	chk	0.0013	
19-DEC-2007 05:33	chk	0.0013	
20-DEC-2007 03:05	chk	0.0013	
21-DEC-2007 04:16	chk	0.0013	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
22-DEC-2007 07:30	chk		0.0013	
24-DEC-2007 05:27	chk		0.0013	
25-DEC-2007 09:30	chk		0.0014	

-- Multi-Test Full Report --

Description : 778.89 KeV Centroid

Parameter Units : channels Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 3012.000000 Upper Bound : 3212.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 07:06	chk		3115.7576	
1-NOV-2007 07:18	chk		3115.8679	
2-NOV-2007 04:49	chk		3115.4341	
2-NOV-2007 05:03	chk		3115.3701	
2-NOV-2007 05:15	chk		3115.7712	
5-NOV-2007 06:02	chk		3115.2019	
5-NOV-2007 06:17	chk		3115.2695	
6-NOV-2007 05:34	chk		3115.0669	
7-NOV-2007 04:56	chk		3114.9058	
8-NOV-2007 06:29	chk		3115.0754	
9-NOV-2007 04:40	chk		3114.8264	
10-NOV-2007 05:27	chk		3114.9646	
10-NOV-2007 05:39	chk		3114.8555	
10-NOV-2007 05:51	chk		3114.8298	

12-NOV-2007 05:45	chk	3114.7842			
13-NOV-2007 05:38	chk	3115.0950			
13-NOV-2007 05:51	chk	3115.0542			
14-NOV-2007 05:36	chk	3114.9490			
15-NOV-2007 05:02	chk	3114.8606			
16-NOV-2007 05:34	chk	3114.7249			
17-NOV-2007 09:54	chk	3114.8989			
19-NOV-2007 05:40	chk	3114.9177			
20-NOV-2007 05:46	chk	3115.0032			
21-NOV-2007 05:27	chk	3115.0823			
22-NOV-2007 05:26	chk	3115.0015			
23-NOV-2007 04:23	chk	3115.2358			
24-NOV-2007 06:13	chk	3115.0830			
26-NOV-2007 05:35	chk	3115.2388			
26-NOV-2007 05:51	chk	3114.9521			
27-NOV-2007 05:37	chk	3114.8210			
28-NOV-2007 05:46	chk	3115.1499			
29-NOV-2007 05:22	chk	3114.9680			
30-NOV-2007 05:22	chk	3115.0806			
30-NOV-2007 05:53	chk	3114.9590			
1-DEC-2007 10:47	chk	3114.5554			
3-DEC-2007 05:40	chk	3114.6609			
3-DEC-2007 05:55	chk	3114.9177			
4-DEC-2007 05:30	chk	3114.9543			
5-DEC-2007 06:05	chk	3115.0894			
6-DEC-2007 05:46	chk	3114.8564			
7-DEC-2007 05:19	chk	3114.6062			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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8-DEC-2007 06:12	chk	3114.5518			
8-DEC-2007 06:26	chk	3114.6902			
10-DEC-2007 05:35	chk	3114.8711			
11-DEC-2007 05:24	chk	3114.5986			
12-DEC-2007 05:14	chk	3114.4663			
12-DEC-2007 05:27	chk	3114.5415			
13-DEC-2007 03:48	chk	3114.8406			
14-DEC-2007 05:53	chk	3115.0754			
15-DEC-2007 08:25	chk	3114.7427			
17-DEC-2007 05:37	chk	3114.5408			
18-DEC-2007 05:48	chk	3114.5789			
19-DEC-2007 05:33	chk	3114.6472			

20-DEC-2007 03:05	chk	3114.5603			
21-DEC-2007 04:16	chk	3114.8430			
22-DEC-2007 07:30	chk	3114.7986			
24-DEC-2007 05:27	chk	3114.6716			
25-DEC-2007 09:30	chk	3114.7693			

## -- Multi-Test Full Report --

Description : 778.89 KeV FWHM Resolution  
 Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 1.500686              Std Deviation : 0.081807

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
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1-NOV-2007 07:06	chk		1.4930					
1-NOV-2007 07:18	chk		1.3867					
2-NOV-2007 04:49	chk		1.5227					
2-NOV-2007 05:03	chk		1.6196					
2-NOV-2007 05:15	chk		1.4613					
5-NOV-2007 06:02	chk		1.5985					
5-NOV-2007 06:17	chk		1.4725					
6-NOV-2007 05:34	chk		1.5173					
7-NOV-2007 04:56	chk		1.4741					
8-NOV-2007 06:29	chk		1.5823					
9-NOV-2007 04:40	chk		1.4851					
10-NOV-2007 05:27	chk		1.4549					
10-NOV-2007 05:39	chk		1.5398					
10-NOV-2007 05:51	chk		1.4225					
12-NOV-2007 05:45	chk		1.4995					
13-NOV-2007 05:38	chk		1.6573					
13-NOV-2007 05:51	chk		1.5138					
14-NOV-2007 05:36	chk		1.4236					
15-NOV-2007 05:02	chk		1.5533					
16-NOV-2007 05:34	chk		1.5052					
17-NOV-2007 09:54	chk		1.6539					
19-NOV-2007 05:40	chk		1.6082					
20-NOV-2007 05:46	chk		1.3714					
21-NOV-2007 05:27	chk		1.5520					

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
22-NOV-2007 05:26	chk		1.5622		
23-NOV-2007 04:23	chk		1.5030		
24-NOV-2007 06:13	chk		1.3142	In	
26-NOV-2007 05:35	chk		1.5684		
26-NOV-2007 05:51	chk		1.4824		
27-NOV-2007 05:37	chk		1.5559		
28-NOV-2007 05:46	chk		1.6953	In	
29-NOV-2007 05:22	chk		1.5961		
30-NOV-2007 05:22	chk		1.5561		
30-NOV-2007 05:53	chk		1.5788		
1-DEC-2007 10:47	chk		1.5258		
3-DEC-2007 05:40	chk		1.5296		
3-DEC-2007 05:55	chk		1.5403		
4-DEC-2007 05:30	chk		1.6630		
5-DEC-2007 06:05	chk		1.4419		
6-DEC-2007 05:46	chk		1.5738		
7-DEC-2007 05:19	chk		1.5608		
8-DEC-2007 06:12	chk		1.4413		
8-DEC-2007 06:26	chk		1.6270		
10-DEC-2007 05:35	chk		1.4780		
11-DEC-2007 05:24	chk		1.5106		
12-DEC-2007 05:14	chk		1.6338		
12-DEC-2007 05:27	chk		1.5373		
13-DEC-2007 03:48	chk		1.3613		
14-DEC-2007 05:53	chk		1.4189		
15-DEC-2007 08:25	chk		1.5638		
17-DEC-2007 05:37	chk		1.5776		
18-DEC-2007 05:48	chk		1.5046		
19-DEC-2007 05:33	chk		1.5253		
20-DEC-2007 03:05	chk		1.6006		
21-DEC-2007 04:16	chk		1.5002		
22-DEC-2007 07:30	chk		1.5545		
24-DEC-2007 05:27	chk		1.3176	In	
25-DEC-2007 09:30	chk		1.6176		

-- Multi-Test Full Report --

Description : 1407.95 KeV Efficiency

Parameter Units : Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000740 Upper Bound : 0.000860

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.000805 Std Deviation : 0.000019

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 07:06	chk		0.0008	
1-NOV-2007 07:18	chk		0.0008	
2-NOV-2007 04:49	chk		0.0008	
2-NOV-2007 05:03	chk		0.0008	

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 05:15	chk		0.0008	
5-NOV-2007 06:02	chk		0.0008	
5-NOV-2007 06:17	chk		0.0008	
6-NOV-2007 05:34	chk		0.0008	
7-NOV-2007 04:56	chk		0.0008	
8-NOV-2007 06:29	chk		0.0008	
9-NOV-2007 04:40	chk		0.0008	
10-NOV-2007 05:27	chk		0.0008	[In]
10-NOV-2007 05:39	chk		0.0008	
10-NOV-2007 05:51	chk		0.0008	
12-NOV-2007 05:45	chk		0.0008	
13-NOV-2007 05:38	chk		0.0008	
13-NOV-2007 05:51	chk		0.0008	
14-NOV-2007 05:36	chk		0.0008	
15-NOV-2007 05:02	chk		0.0008	
16-NOV-2007 05:34	chk		0.0008	
17-NOV-2007 09:54	chk		0.0008	
19-NOV-2007 05:40	chk		0.0008	
20-NOV-2007 05:46	chk		0.0008	
21-NOV-2007 05:27	chk		0.0008	
22-NOV-2007 05:26	chk		0.0008	
23-NOV-2007 04:23	chk		0.0008	
24-NOV-2007 06:13	chk		0.0008	



26-NOV-2007 05:35	chk	0.0008	
26-NOV-2007 05:51	chk	0.0009	In
27-NOV-2007 05:37	chk	0.0008	
28-NOV-2007 05:46	chk	0.0008	
29-NOV-2007 05:22	chk	0.0008	
30-NOV-2007 05:22	chk	0.0008	In
30-NOV-2007 05:53	chk	0.0008	
1-DEC-2007 10:47	chk	0.0008	
3-DEC-2007 05:40	chk	0.0007	Ac
3-DEC-2007 05:55	chk	0.0008	
4-DEC-2007 05:30	chk	0.0008	
5-DEC-2007 06:05	chk	0.0008	
6-DEC-2007 05:46	chk	0.0008	
7-DEC-2007 05:19	chk	0.0008	
8-DEC-2007 06:12	chk	0.0008	
8-DEC-2007 06:26	chk	0.0008	
10-DEC-2007 05:35	chk	0.0008	
11-DEC-2007 05:24	chk	0.0008	In
12-DEC-2007 05:14	chk	0.0008	
12-DEC-2007 05:27	chk	0.0008	
13-DEC-2007 03:48	chk	0.0008	
14-DEC-2007 05:53	chk	0.0008	
15-DEC-2007 08:25	chk	0.0008	
17-DEC-2007 05:37	chk	0.0008	
18-DEC-2007 05:48	chk	0.0008	In
19-DEC-2007 05:33	chk	0.0008	
20-DEC-2007 03:05	chk	0.0008	
21-DEC-2007 04:16	chk	0.0008	
22-DEC-2007 07:30	chk	0.0008	
24-DEC-2007 05:27	chk	0.0008	
25-DEC-2007 09:30	chk	0.0008	

-- Multi-Test Full Report --

Description : 1407.95 KeV Centroid  
 Parameter Units : channels      Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 5526.000000      Upper Bound : 5726.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 07:06	chk		5631.1479		
1-NOV-2007 07:18	chk		5631.1606		
2-NOV-2007 04:49	chk		5631.1733		
2-NOV-2007 05:03	chk		5630.9858		
2-NOV-2007 05:15	chk		5631.2295		
5-NOV-2007 06:02	chk		5630.5630		
5-NOV-2007 06:17	chk		5630.4155		
6-NOV-2007 05:34	chk		5630.2188		
7-NOV-2007 04:56	chk		5629.8926		
8-NOV-2007 06:29	chk		5630.2544		
9-NOV-2007 04:40	chk		5629.7744		
10-NOV-2007 05:27	chk		5629.9429		
10-NOV-2007 05:39	chk		5629.7852		
10-NOV-2007 05:51	chk		5629.8765		
12-NOV-2007 05:45	chk		5629.6001		
13-NOV-2007 05:38	chk		5629.9023		
13-NOV-2007 05:51	chk		5629.9146		
14-NOV-2007 05:36	chk		5630.4795		
15-NOV-2007 05:02	chk		5629.8276		
16-NOV-2007 05:34	chk		5630.0444		
17-NOV-2007 09:54	chk		5630.0938		
19-NOV-2007 05:40	chk		5629.6235		
20-NOV-2007 05:46	chk		5630.1094		
21-NOV-2007 05:27	chk		5630.1860		
22-NOV-2007 05:26	chk		5630.3296		
23-NOV-2007 04:23	chk		5630.4009		
24-NOV-2007 06:13	chk		5630.0752		
26-NOV-2007 05:35	chk		5630.4175		
26-NOV-2007 05:51	chk		5630.3311		
27-NOV-2007 05:37	chk		5629.6221		
28-NOV-2007 05:46	chk		5630.4678		
29-NOV-2007 05:22	chk		5630.0488		
30-NOV-2007 05:22	chk		5630.1738		
30-NOV-2007 05:53	chk		5630.1436		
1-DEC-2007 10:47	chk		5629.3481		
3-DEC-2007 05:40	chk		5629.5532		
3-DEC-2007 05:55	chk		5629.5874		
4-DEC-2007 05:30	chk		5630.3350		
5-DEC-2007 06:05	chk		5630.3477		
6-DEC-2007 05:46	chk		5630.0640		

7-DEC-2007 05:19	chk	5629.6279	
8-DEC-2007 06:12	chk	5629.6387	
8-DEC-2007 06:26	chk	5629.7520	
10-DEC-2007 05:35	chk	5629.6758	
11-DEC-2007 05:24	chk	5629.7231	
12-DEC-2007 05:14	chk	5629.4268	
12-DEC-2007 05:27	chk	5629.5166	
13-DEC-2007 03:48	chk	5630.0400	
14-DEC-2007 05:53	chk	5630.2603	
15-DEC-2007 08:25	chk	5629.6372	
17-DEC-2007 05:37	chk	5629.2217	
18-DEC-2007 05:48	chk	5629.3027	
19-DEC-2007 05:33	chk	5629.4443	
20-DEC-2007 03:05	chk	5629.1460	
21-DEC-2007 04:16	chk	5630.1118	

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
22-DEC-2007 07:30	chk	5630.1064			
24-DEC-2007 05:27	chk	5629.6592			
25-DEC-2007 09:30	chk	5629.8042			

-- Multi-Test Full Report --

Description : 1407.95 KeV FWHM Resolution  
Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000                      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 1.832282                      Std Deviation : 0.100594

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 07:06	chk	1.6819			
1-NOV-2007 07:18	chk	1.8647			
2-NOV-2007 04:49	chk	2.0663	In		
2-NOV-2007 05:03	chk	1.8553			
2-NOV-2007 05:15	chk	1.7819			
5-NOV-2007 06:02	chk	1.8220			
5-NOV-2007 06:17	chk	1.9056			

6-NOV-2007 05:34	chk	1.8498	
7-NOV-2007 04:56	chk	1.9469	
8-NOV-2007 06:29	chk	1.9215	
9-NOV-2007 04:40	chk	1.7028	
10-NOV-2007 05:27	chk	1.9193	
10-NOV-2007 05:39	chk	1.6830	
10-NOV-2007 05:51	chk	1.9110	
12-NOV-2007 05:45	chk	1.8055	
13-NOV-2007 05:38	chk	1.8298	
13-NOV-2007 05:51	chk	1.9766	
14-NOV-2007 05:36	chk	1.9091	
15-NOV-2007 05:02	chk	1.9206	
16-NOV-2007 05:34	chk	2.0118	
17-NOV-2007 09:54	chk	1.9331	
19-NOV-2007 05:40	chk	1.6018	In
20-NOV-2007 05:46	chk	1.8044	
21-NOV-2007 05:27	chk	1.7829	
22-NOV-2007 05:26	chk	1.9053	
23-NOV-2007 04:23	chk	1.7746	
24-NOV-2007 06:13	chk	1.9561	
26-NOV-2007 05:35	chk	2.0274	
26-NOV-2007 05:51	chk	1.9844	
27-NOV-2007 05:37	chk	1.9170	
28-NOV-2007 05:46	chk	1.8196	
29-NOV-2007 05:22	chk	1.8642	
30-NOV-2007 05:22	chk	1.7577	
30-NOV-2007 05:53	chk	1.8592	
1-DEC-2007 10:47	chk	1.6604	
3-DEC-2007 05:40	chk	1.8113	
3-DEC-2007 05:55	chk	1.8933	
4-DEC-2007 05:30	chk	1.8170	

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
5-DEC-2007 06:05	chk	1.7640		
6-DEC-2007 05:46	chk	1.8255		
7-DEC-2007 05:19	chk	1.7651		
8-DEC-2007 06:12	chk	1.6970		
8-DEC-2007 06:26	chk	1.9851		
10-DEC-2007 05:35	chk	1.8600		
11-DEC-2007 05:24	chk	1.9478		
12-DEC-2007 05:14	chk	1.8731		

12-DEC-2007 05:27	chk	1.8254	
13-DEC-2007 03:48	chk	1.9020	
14-DEC-2007 05:53	chk	1.9204	
15-DEC-2007 08:25	chk	1.8327	
17-DEC-2007 05:37	chk	1.8049	
18-DEC-2007 05:48	chk	2.0818	In
19-DEC-2007 05:33	chk	1.8417	
20-DEC-2007 03:05	chk	1.9199	
21-DEC-2007 04:16	chk	2.0797	In
22-DEC-2007 07:30	chk	1.9273	
24-DEC-2007 05:27	chk	1.9680	
25-DEC-2007 09:30	chk	1.8985	

Quality Assurance Report.                      Generated 26-DEC-2007 15:57:02.34

QA Filename        : \$DISK1:[GER8.QA]BKG.QAF;4

-- Multi-Test Full Report --

Description        : MDA K-40 CPM

Parameter Units    : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000                  Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 1-JUL-2005 00:00 End Date        : 1-JAN-2006 00:00

Mean             : 0.061405                  Std Deviation   : 0.001976

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28	bkg		0.0576	
11-NOV-2007 05:32	bkg		0.0597	
18-NOV-2007 08:51	bkg		0.0566	In
25-NOV-2007 05:40	bkg		0.0586	
2-DEC-2007 07:11	bkg		0.0573	In
9-DEC-2007 06:00	bkg		0.0616	
10-DEC-2007 07:29	bkg		0.0589	
16-DEC-2007 07:51	bkg		0.0643	
23-DEC-2007 08:54	bkg		0.0571	In

-- Multi-Test Full Report --

Description : MDA Cr-51 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.082875 Std Deviation : 0.002281

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:28	bkg		0.0858		
11-NOV-2007 05:32	bkg		0.0808		
18-NOV-2007 08:51	bkg		0.0861		
25-NOV-2007 05:40	bkg		0.0851		
2-DEC-2007 07:11	bkg		0.0859		
9-DEC-2007 06:00	bkg		0.0875	In	
10-DEC-2007 07:29	bkg		0.0819		
16-DEC-2007 07:51	bkg		0.0831		
23-DEC-2007 08:54	bkg		0.0844		

## -- Multi-Test Full Report --

Description : MDA Co-60 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.035360 Std Deviation : 0.001783

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:28	bkg		0.0365		
11-NOV-2007 05:32	bkg		0.0393	In	
18-NOV-2007 08:51	bkg		0.0365		
25-NOV-2007 05:40	bkg		0.0342		
2-DEC-2007 07:11	bkg		0.0354		

9-DEC-2007 06:00 bkg	0.0354	
10-DEC-2007 07:29 bkg	0.0319	
16-DEC-2007 07:51 bkg	0.0380	
23-DEC-2007 08:54 bkg	0.0399	In

-- Multi-Test Full Report --

Description : MDA Zn-65 CPM

Parameter Units : CPM           Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.042463      Std Deviation : 0.001348

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28 bkg			0.0429	
11-NOV-2007 05:32 bkg			0.0430	
18-NOV-2007 08:51 bkg			0.0432	
25-NOV-2007 05:40 bkg			0.0419	
2-DEC-2007 07:11 bkg			0.0431	
9-DEC-2007 06:00 bkg			0.0467	Ac
10-DEC-2007 07:29 bkg			0.0408	
16-DEC-2007 07:51 bkg			0.0446	
23-DEC-2007 08:54 bkg			0.0430	

-- Multi-Test Full Report --

Description : MDA Ru106da CPM

Parameter Units : CPM           Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.058281      Std Deviation : 0.002126

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28 bkg			0.0607	
11-NOV-2007 05:32 bkg			0.0573	

18-NOV-2007 08:51 bkg	0.0580	
25-NOV-2007 05:40 bkg	0.0567	
2-DEC-2007 07:11 bkg	0.0609	
9-DEC-2007 06:00 bkg	0.0617	
10-DEC-2007 07:29 bkg	0.0597	
16-DEC-2007 07:51 bkg	0.0587	
23-DEC-2007 08:54 bkg	0.0597	

-- Multi-Test Full Report --

Description : MDA Cs-134 CPM  
 Parameter Units : CPM            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 0.063800            Std Deviation : 0.001741

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)            Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28 bkg	0.0631	
11-NOV-2007 05:32 bkg	0.0658	
18-NOV-2007 08:51 bkg	0.0662	
25-NOV-2007 05:40 bkg	0.0643	
2-DEC-2007 07:11 bkg	0.0662	
9-DEC-2007 06:00 bkg	0.0658	
10-DEC-2007 07:29 bkg	0.0637	
16-DEC-2007 07:51 bkg	0.0646	
23-DEC-2007 08:54 bkg	0.0658	

-- Multi-Test Full Report --

Description : MDA Cs-137da CPM  
 Parameter Units : CPM            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----



Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 0.054773 Std Deviation : 0.002161

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	bkg		0.0547	
11-NOV-2007 05:32	bkg		0.0576	
18-NOV-2007 08:51	bkg		0.0578	
25-NOV-2007 05:40	bkg		0.0564	
2-DEC-2007 07:11	bkg		0.0527	
9-DEC-2007 06:00	bkg		0.0558	
10-DEC-2007 07:29	bkg		0.0538	
16-DEC-2007 07:51	bkg		0.0532	
23-DEC-2007 08:54	bkg		0.0585	

-- Multi-Test Full Report --

Description : MDA Pb-212 CPM  
 Parameter Units : CPM Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 0.106784 Std Deviation : 0.002268

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	bkg		0.1060	
11-NOV-2007 05:32	bkg		0.1073	
18-NOV-2007 08:51	bkg		0.1120	In
25-NOV-2007 05:40	bkg		0.1077	
2-DEC-2007 07:11	bkg		0.1084	
9-DEC-2007 06:00	bkg		0.1080	
10-DEC-2007 07:29	bkg		0.1048	
16-DEC-2007 07:51	bkg		0.1130	In
23-DEC-2007 08:54	bkg		0.1113	In

-- Multi-Test Full Report --

Description : MDA Ra-226da CPM  
 Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.081278      Std Deviation : 0.010898

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued)      Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28	bkg		0.0858	
11-NOV-2007 05:32	bkg		0.0816	
18-NOV-2007 08:51	bkg		0.0959	
25-NOV-2007 05:40	bkg		0.1018	
2-DEC-2007 07:11	bkg		0.0774	
9-DEC-2007 06:00	bkg		0.0884	
10-DEC-2007 07:29	bkg		0.0965	
16-DEC-2007 07:51	bkg		0.0926	
23-DEC-2007 08:54	bkg		0.1039	In

## -- Multi-Test Full Report --

Description : MDA Ra-228 CPM

Parameter Units : CPM      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.051167      Std Deviation : 0.001783

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28	bkg		0.0523	
11-NOV-2007 05:32	bkg		0.0510	
18-NOV-2007 08:51	bkg		0.0556	In
25-NOV-2007 05:40	bkg		0.0537	
2-DEC-2007 07:11	bkg		0.0510	
9-DEC-2007 06:00	bkg		0.0543	
10-DEC-2007 07:29	bkg		0.0532	
16-DEC-2007 07:51	bkg		0.0531	

23-DEC-2007 08:54 bkg 0.0532 | | |

-- Multi-Test Full Report --

Description : MDA U-235 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.102046 Std Deviation : 0.002221

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	bkg		0.0987	
11-NOV-2007 05:32	bkg		0.1052	
18-NOV-2007 08:51	bkg		0.1021	
25-NOV-2007 05:40	bkg		0.1030	
2-DEC-2007 07:11	bkg		0.1056	
9-DEC-2007 06:00	bkg		0.1036	
10-DEC-2007 07:29	bkg		0.1027	
16-DEC-2007 07:51	bkg		0.1032	
23-DEC-2007 08:54	bkg		0.1053	

-- Multi-Test Full Report --

Description : MDA TH-232 CPM

Parameter Units : CPM Parameter Type : Nuclide

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	bkg		0.6802	
11-NOV-2007 05:32	bkg		0.6610	
18-NOV-2007 08:51	bkg		0.7053	
25-NOV-2007 05:40	bkg		0.6884	
2-DEC-2007 07:11	bkg		0.6910	
9-DEC-2007 06:00	bkg		0.6571	
10-DEC-2007 07:29	bkg		0.7023	

16-DEC-2007 07:51 bkg	0.6846			
23-DEC-2007 08:54 bkg	0.6895			

Quality Assurance Report.

Generated 26-DEC-2007 15:55:00.29

QA Filename : \$DISK1:[GER7.QA]CHECK.QAF;3

-- Multi-Test Full Report --

Description : 121.78 KeV Efficiency

Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.005842 Upper Bound : 0.006184

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.006013 Std Deviation : 0.000057

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 04:49	CHK		0.0060		
2-NOV-2007 04:49	CHK		0.0062	In	
5-NOV-2007 06:02	CHK		0.0060		
6-NOV-2007 05:34	CHK		0.0059		
7-NOV-2007 04:56	CHK		0.0059		
8-NOV-2007 06:29	CHK		0.0060		
9-NOV-2007 04:40	CHK		0.0060		
10-NOV-2007 05:27	CHK		0.0060		
12-NOV-2007 05:40	CHK		0.0060		
13-NOV-2007 05:38	CHK		0.0059		
14-NOV-2007 05:35	CHK		0.0060		
15-NOV-2007 05:02	CHK		0.0060		
16-NOV-2007 05:33	CHK		0.0060		
17-NOV-2007 09:54	CHK		0.0060		
19-NOV-2007 05:40	CHK		0.0060		
20-NOV-2007 05:46	CHK		0.0061		
21-NOV-2007 05:27	CHK		0.0059	In	
22-NOV-2007 05:33	CHK		0.0060		
23-NOV-2007 04:23	CHK		0.0060		
24-NOV-2007 06:05	CHK		0.0059		
26-NOV-2007 05:36	CHK		0.0061		

27-NOV-2007 05:37	CHK	0.0060	
28-NOV-2007 05:46	CHK	0.0060	
29-NOV-2007 05:22	CHK	0.0060	
30-NOV-2007 05:22	CHK	0.0060	
1-DEC-2007 10:47	CHK	0.0059	
3-DEC-2007 05:40	CHK	0.0060	
4-DEC-2007 05:30	CHK	0.0060	
5-DEC-2007 06:05	CHK	0.0061	
6-DEC-2007 05:46	CHK	0.0060	
7-DEC-2007 05:19	CHK	0.0060	
8-DEC-2007 06:12	CHK	0.0060	
10-DEC-2007 05:35	CHK	0.0059	
11-DEC-2007 05:18	CHK	0.0059	
12-DEC-2007 05:14	CHK	0.0060	
13-DEC-2007 03:48	CHK	0.0060	
14-DEC-2007 05:53	CHK	0.0060	
15-DEC-2007 08:25	CHK	0.0060	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-DEC-2007 05:37	CHK		0.0061	
18-DEC-2007 05:48	CHK		0.0059	
19-DEC-2007 05:33	CHK		0.0060	
20-DEC-2007 03:05	CHK		0.0060	
21-DEC-2007 04:16	CHK		0.0060	
22-DEC-2007 07:30	CHK		0.0061	
24-DEC-2007 05:27	CHK		0.0059	
24-DEC-2007 05:40	CHK		0.0059	In
25-DEC-2007 09:30	CHK		0.0061	

-- Multi-Test Full Report --

Description : 121.78 KeV Centroid

Parameter Units : channel      Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 386.500000      Upper Bound : 586.500000

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 486.536133 Std Deviation : 0.719594

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	CHK		486.0951			
2-NOV-2007 04:49	CHK		486.1390			
5-NOV-2007 06:02	CHK		486.1295			
6-NOV-2007 05:34	CHK		486.0939			
7-NOV-2007 04:56	CHK		486.0905			
8-NOV-2007 06:29	CHK		486.1494			
9-NOV-2007 04:40	CHK		486.1206			
10-NOV-2007 05:27	CHK		486.1533			
12-NOV-2007 05:40	CHK		486.1367			
13-NOV-2007 05:38	CHK		486.1540			
14-NOV-2007 05:35	CHK		486.1067			
15-NOV-2007 05:02	CHK		486.1054			
16-NOV-2007 05:33	CHK		486.1207			
17-NOV-2007 09:54	CHK		486.1588			
19-NOV-2007 05:40	CHK		486.1385			
20-NOV-2007 05:46	CHK		486.1332			
21-NOV-2007 05:27	CHK		486.1416			
22-NOV-2007 05:33	CHK		486.1042			
23-NOV-2007 04:23	CHK		486.0833			
24-NOV-2007 06:05	CHK		486.1108			
26-NOV-2007 05:36	CHK		486.0996			
27-NOV-2007 05:37	CHK		486.0233			
28-NOV-2007 05:46	CHK		486.0707			
29-NOV-2007 05:22	CHK		486.0288			
30-NOV-2007 05:22	CHK		486.0257			
1-DEC-2007 10:47	CHK		485.9409			
3-DEC-2007 05:40	CHK		486.0125			
4-DEC-2007 05:30	CHK		486.0967			
5-DEC-2007 06:05	CHK		486.1376			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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6-DEC-2007 05:46	CHK		486.1207			
7-DEC-2007 05:19	CHK		486.0815			
8-DEC-2007 06:12	CHK		486.0079			
10-DEC-2007 05:35	CHK		486.0553			
11-DEC-2007 05:18	CHK		486.0367			
12-DEC-2007 05:14	CHK		486.0028			

13-DEC-2007 03:48	CHK	485.9977			
14-DEC-2007 05:53	CHK	486.0297			
15-DEC-2007 08:25	CHK	485.9946			
17-DEC-2007 05:37	CHK	485.9980			
18-DEC-2007 05:48	CHK	486.0224			
19-DEC-2007 05:33	CHK	486.0047			
20-DEC-2007 03:05	CHK	485.9742			
21-DEC-2007 04:16	CHK	486.0149			
22-DEC-2007 07:30	CHK	486.0304			
24-DEC-2007 05:27	CHK	485.9754			
24-DEC-2007 05:40	CHK	486.0095			
25-DEC-2007 09:30	CHK	486.0264			

-- Multi-Test Full Report --

Description : 121.78 KeV FWHM Resolution  
 Parameter Units : keV                    Parameter Type : Peak

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 1.025977            Std Deviation : 0.025441

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
-----								
1-NOV-2007 04:49	CHK		1.0177					
2-NOV-2007 04:49	CHK		1.0156					
5-NOV-2007 06:02	CHK		0.9913					
6-NOV-2007 05:34	CHK		1.0400					
7-NOV-2007 04:56	CHK		1.0161					
8-NOV-2007 06:29	CHK		1.0081					
9-NOV-2007 04:40	CHK		1.0338					
10-NOV-2007 05:27	CHK		1.0112					
12-NOV-2007 05:40	CHK		1.0239					
13-NOV-2007 05:38	CHK		1.0062					
14-NOV-2007 05:35	CHK		1.0540					
15-NOV-2007 05:02	CHK		1.0128					
16-NOV-2007 05:33	CHK		1.0059					
17-NOV-2007 09:54	CHK		1.0335					
19-NOV-2007 05:40	CHK		1.0068					
20-NOV-2007 05:46	CHK		0.9829					
21-NOV-2007 05:27	CHK		1.0583					



22-NOV-2007 05:33	CHK	1.0247	
23-NOV-2007 04:23	CHK	1.0188	
24-NOV-2007 06:05	CHK	1.0091	
26-NOV-2007 05:36	CHK	0.9864	
27-NOV-2007 05:37	CHK	0.9668	In
28-NOV-2007 05:46	CHK	0.9644	In

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
29-NOV-2007 05:22	CHK		0.9730	In
30-NOV-2007 05:22	CHK		0.9833	
1-DEC-2007 10:47	CHK		1.0284	
3-DEC-2007 05:40	CHK		0.9976	
4-DEC-2007 05:30	CHK		1.0405	
5-DEC-2007 06:05	CHK		0.9951	
6-DEC-2007 05:46	CHK		1.0105	
7-DEC-2007 05:19	CHK		0.9855	
8-DEC-2007 06:12	CHK		0.9971	
10-DEC-2007 05:35	CHK		1.0278	
11-DEC-2007 05:18	CHK		0.9686	In
12-DEC-2007 05:14	CHK		0.9634	In
13-DEC-2007 03:48	CHK		1.0128	
14-DEC-2007 05:53	CHK		0.9767	
15-DEC-2007 08:25	CHK		1.0090	
17-DEC-2007 05:37	CHK		0.9836	
18-DEC-2007 05:48	CHK		1.0058	
19-DEC-2007 05:33	CHK		1.0097	
20-DEC-2007 03:05	CHK		1.0270	
21-DEC-2007 04:16	CHK		1.0054	
22-DEC-2007 07:30	CHK		1.0179	
24-DEC-2007 05:27	CHK		1.0024	
24-DEC-2007 05:40	CHK		0.9959	
25-DEC-2007 09:30	CHK		1.0715	

-- Multi-Test Full Report --

Description : 1407.95 KeV Efficiency  
 Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000876 Upper Bound : 0.001030

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.000951      Std Deviation : 0.000025

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	CHK		0.0009		
2-NOV-2007 04:49	CHK		0.0009		
5-NOV-2007 06:02	CHK		0.0010		
6-NOV-2007 05:34	CHK		0.0009		
7-NOV-2007 04:56	CHK		0.0009		
8-NOV-2007 06:29	CHK		0.0009		
9-NOV-2007 04:40	CHK		0.0010		
10-NOV-2007 05:27	CHK		0.0009		
12-NOV-2007 05:40	CHK		0.0010		
13-NOV-2007 05:38	CHK		0.0009		
14-NOV-2007 05:35	CHK		0.0010		
15-NOV-2007 05:02	CHK		0.0009		
16-NOV-2007 05:33	CHK		0.0010		
17-NOV-2007 09:54	CHK		0.0010		

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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19-NOV-2007 05:40	CHK		0.0009		
20-NOV-2007 05:46	CHK		0.0010		
21-NOV-2007 05:27	CHK		0.0009		
22-NOV-2007 05:33	CHK		0.0009		
23-NOV-2007 04:23	CHK		0.0010		
24-NOV-2007 06:05	CHK		0.0009		
26-NOV-2007 05:36	CHK		0.0010		
27-NOV-2007 05:37	CHK		0.0009		
28-NOV-2007 05:46	CHK		0.0009		
29-NOV-2007 05:22	CHK		0.0010		
30-NOV-2007 05:22	CHK		0.0009		
1-DEC-2007 10:47	CHK		0.0009		
3-DEC-2007 05:40	CHK		0.0010		
4-DEC-2007 05:30	CHK		0.0010		
5-DEC-2007 06:05	CHK		0.0009		
6-DEC-2007 05:46	CHK		0.0009		
7-DEC-2007 05:19	CHK		0.0010		

8-DEC-2007 06:12	CHK	0.0010	
10-DEC-2007 05:35	CHK	0.0009	
11-DEC-2007 05:18	CHK	0.0010	
12-DEC-2007 05:14	CHK	0.0009	
13-DEC-2007 03:48	CHK	0.0009	
14-DEC-2007 05:53	CHK	0.0010	
15-DEC-2007 08:25	CHK	0.0010	
17-DEC-2007 05:37	CHK	0.0010	
18-DEC-2007 05:48	CHK	0.0010	
19-DEC-2007 05:33	CHK	0.0010	
20-DEC-2007 03:05	CHK	0.0009	
21-DEC-2007 04:16	CHK	0.0010	
22-DEC-2007 07:30	CHK	0.0009	
24-DEC-2007 05:27	CHK	0.0009	
24-DEC-2007 05:40	CHK	0.0010	
25-DEC-2007 09:30	CHK	0.0009	

## -- Multi-Test Full Report --

Description : 1407.95 KeV Centroid

Parameter Units : channel      Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 5528.299805      Upper Bound : 5728.299805

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 5628.259766      Std Deviation : 4.183611

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 04:49	CHK	5626.6753	
2-NOV-2007 04:49	CHK	5627.3252	
5-NOV-2007 06:02	CHK	5627.0640	
6-NOV-2007 05:34	CHK	5626.8037	
7-NOV-2007 04:56	CHK	5627.0508	

Quality Assurance Multi-Test Full Report (continued)      Page : 6

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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8-NOV-2007 06:29	CHK	5626.9824	
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9-NOV-2007 04:40	CHK	5627.0190			
10-NOV-2007 05:27	CHK	5627.0728			
12-NOV-2007 05:40	CHK	5626.8125			
13-NOV-2007 05:38	CHK	5627.1494			
14-NOV-2007 05:35	CHK	5627.1602			
15-NOV-2007 05:02	CHK	5626.5830			
16-NOV-2007 05:33	CHK	5626.3486			
17-NOV-2007 09:54	CHK	5626.9355			
19-NOV-2007 05:40	CHK	5626.9624			
20-NOV-2007 05:46	CHK	5626.8701			
21-NOV-2007 05:27	CHK	5627.2827			
22-NOV-2007 05:33	CHK	5627.0820			
23-NOV-2007 04:23	CHK	5626.7739			
24-NOV-2007 06:05	CHK	5626.6968			
26-NOV-2007 05:36	CHK	5626.4917			
27-NOV-2007 05:37	CHK	5625.8564			
28-NOV-2007 05:46	CHK	5626.5098			
29-NOV-2007 05:22	CHK	5626.3550			
30-NOV-2007 05:22	CHK	5626.1348			
1-DEC-2007 10:47	CHK	5626.1050			
3-DEC-2007 05:40	CHK	5625.8242			
4-DEC-2007 05:30	CHK	5626.3491			
5-DEC-2007 06:05	CHK	5626.9897			
6-DEC-2007 05:46	CHK	5626.9038			
7-DEC-2007 05:19	CHK	5626.4082			
8-DEC-2007 06:12	CHK	5626.5933			
10-DEC-2007 05:35	CHK	5626.0269			
11-DEC-2007 05:18	CHK	5626.2378			
12-DEC-2007 05:14	CHK	5625.9907			
13-DEC-2007 03:48	CHK	5626.3247			
14-DEC-2007 05:53	CHK	5626.2666			
15-DEC-2007 08:25	CHK	5625.8218			
17-DEC-2007 05:37	CHK	5625.8423			
18-DEC-2007 05:48	CHK	5625.6499			
19-DEC-2007 05:33	CHK	5625.9766			
20-DEC-2007 03:05	CHK	5625.6372			
21-DEC-2007 04:16	CHK	5626.1411			
22-DEC-2007 07:30	CHK	5626.1973			
24-DEC-2007 05:27	CHK	5625.7017			
24-DEC-2007 05:40	CHK	5625.6934			
25-DEC-2007 09:30	CHK	5626.0537			

-- Multi-Test Full Report --

Description : 1407.95 KeV FWHM Resolution  
 Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 1.955873              Std Deviation : 0.112134

Measurement Time    Sample ID    Sample Analyst    Value    LU|SD|UD|BS Rej

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 Quality Assurance Multi-Test Full Report (continued)              Page : 7

Measurement Time    Sample ID    Sample Analyst    Value    LU|SD|UD|BS Rej

-----  
 1-NOV-2007 04:49    CHK                      1.9186    | | |  
 2-NOV-2007 04:49    CHK                      2.0203    | | |  
 5-NOV-2007 06:02    CHK                      2.0231    | | |  
 6-NOV-2007 05:34    CHK                      1.9786    | | |  
 7-NOV-2007 04:56    CHK                      2.0123    | | |  
 8-NOV-2007 06:29    CHK                      1.7296    |In| |  
 9-NOV-2007 04:40    CHK                      1.9890    | | |  
 10-NOV-2007 05:27    CHK                      2.2022    |In| |  
 12-NOV-2007 05:40    CHK                      2.0420    | | |  
 13-NOV-2007 05:38    CHK                      1.9087    | | |  
 14-NOV-2007 05:35    CHK                      1.8590    | | |  
 15-NOV-2007 05:02    CHK                      2.0245    | | |  
 16-NOV-2007 05:33    CHK                      2.1251    | | |  
 17-NOV-2007 09:54    CHK                      2.0113    | | |  
 19-NOV-2007 05:40    CHK                      2.0563    | | |  
 20-NOV-2007 05:46    CHK                      2.0252    | | |  
 21-NOV-2007 05:27    CHK                      2.0505    | | |  
 22-NOV-2007 05:33    CHK                      1.8213    | | |  
 23-NOV-2007 04:23    CHK                      2.0162    | | |  
 24-NOV-2007 06:05    CHK                      2.0158    | | |  
 26-NOV-2007 05:36    CHK                      2.0239    | | |  
 27-NOV-2007 05:37    CHK                      2.0658    | | |  
 28-NOV-2007 05:46    CHK                      2.0316    | | |  
 29-NOV-2007 05:22    CHK                      2.1986    |In| |  
 30-NOV-2007 05:22    CHK                      2.0785    | | |  
 1-DEC-2007 10:47    CHK                      1.8445    | | |  
 3-DEC-2007 05:40    CHK                      1.9582    | | |

4-DEC-2007 05:30	CHK	2.0065	
5-DEC-2007 06:05	CHK	2.0956	
6-DEC-2007 05:46	CHK	1.8984	
7-DEC-2007 05:19	CHK	1.8894	
8-DEC-2007 06:12	CHK	2.0432	
10-DEC-2007 05:35	CHK	2.0373	
11-DEC-2007 05:18	CHK	2.0905	
12-DEC-2007 05:14	CHK	2.0296	
13-DEC-2007 03:48	CHK	2.1826	In
14-DEC-2007 05:53	CHK	2.0314	
15-DEC-2007 08:25	CHK	1.9582	
17-DEC-2007 05:37	CHK	2.1521	
18-DEC-2007 05:48	CHK	2.0811	
19-DEC-2007 05:33	CHK	2.0825	
20-DEC-2007 03:05	CHK	2.0060	
21-DEC-2007 04:16	CHK	2.0095	
22-DEC-2007 07:30	CHK	2.1219	
24-DEC-2007 05:27	CHK	1.8897	
24-DEC-2007 05:40	CHK	2.0582	
25-DEC-2007 09:30	CHK	1.9773	

-- Multi-Test Full Report --

Description : 778.89 KeV Efficiency  
 Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.001424 Upper Bound : 0.001700

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 0.001563 Std Deviation : 0.000047

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 8

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 04:49	CHK	0.0016	
2-NOV-2007 04:49	CHK	0.0016	

5-NOV-2007 06:02	CHK	0.0016			
6-NOV-2007 05:34	CHK	0.0016			
7-NOV-2007 04:56	CHK	0.0016			
8-NOV-2007 06:29	CHK	0.0015			
9-NOV-2007 04:40	CHK	0.0016			
10-NOV-2007 05:27	CHK	0.0015			
12-NOV-2007 05:40	CHK	0.0016			
13-NOV-2007 05:38	CHK	0.0016			
14-NOV-2007 05:35	CHK	0.0015			
15-NOV-2007 05:02	CHK	0.0015			
16-NOV-2007 05:33	CHK	0.0016			
17-NOV-2007 09:54	CHK	0.0016			
19-NOV-2007 05:40	CHK	0.0015			
20-NOV-2007 05:46	CHK	0.0015			
21-NOV-2007 05:27	CHK	0.0015			
22-NOV-2007 05:33	CHK	0.0016			
23-NOV-2007 04:23	CHK	0.0015			
24-NOV-2007 06:05	CHK	0.0014	In		
26-NOV-2007 05:36	CHK	0.0016			
27-NOV-2007 05:37	CHK	0.0016			
28-NOV-2007 05:46	CHK	0.0016			
29-NOV-2007 05:22	CHK	0.0017			
30-NOV-2007 05:22	CHK	0.0016			
1-DEC-2007 10:47	CHK	0.0015			
3-DEC-2007 05:40	CHK	0.0016			
4-DEC-2007 05:30	CHK	0.0017	In		
5-DEC-2007 06:05	CHK	0.0016			
6-DEC-2007 05:46	CHK	0.0016			
7-DEC-2007 05:19	CHK	0.0015			
8-DEC-2007 06:12	CHK	0.0016			
10-DEC-2007 05:35	CHK	0.0015			
11-DEC-2007 05:18	CHK	0.0016			
12-DEC-2007 05:14	CHK	0.0015			
13-DEC-2007 03:48	CHK	0.0016			
14-DEC-2007 05:53	CHK	0.0015			
15-DEC-2007 08:25	CHK	0.0015			
17-DEC-2007 05:37	CHK	0.0016			
18-DEC-2007 05:48	CHK	0.0016			
19-DEC-2007 05:33	CHK	0.0015			
20-DEC-2007 03:05	CHK	0.0016			
21-DEC-2007 04:16	CHK	0.0015			
22-DEC-2007 07:30	CHK	0.0015			
24-DEC-2007 05:27	CHK	0.0015			

24-DEC-2007 05:40 CHK 0.0015 | | |  
 25-DEC-2007 09:30 CHK 0.0016 | | |

-- Multi-Test Full Report --

Description : 778.89 KeV Centroid  
 Parameter Units : channels Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 3016.000000 Upper Bound : 3216.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 3115.895020 Std Deviation : 2.002718

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 9

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	CHK		3116.3657		
2-NOV-2007 04:49	CHK		3116.5076		
5-NOV-2007 06:02	CHK		3116.6978		
6-NOV-2007 05:34	CHK		3116.2915		
7-NOV-2007 04:56	CHK		3116.6462		
8-NOV-2007 06:29	CHK		3116.5327		
9-NOV-2007 04:40	CHK		3116.3926		
10-NOV-2007 05:27	CHK		3116.6428		
12-NOV-2007 05:40	CHK		3116.6836		
13-NOV-2007 05:38	CHK		3116.5217		
14-NOV-2007 05:35	CHK		3116.5381		
15-NOV-2007 05:02	CHK		3116.2700		
16-NOV-2007 05:33	CHK		3116.3037		
17-NOV-2007 09:54	CHK		3116.4470		
19-NOV-2007 05:40	CHK		3116.6541		
20-NOV-2007 05:46	CHK		3116.4238		
21-NOV-2007 05:27	CHK		3116.5979		
22-NOV-2007 05:33	CHK		3116.2954		
23-NOV-2007 04:23	CHK		3116.4075		
24-NOV-2007 06:05	CHK		3116.4209		



26-NOV-2007 05:36	CHK	3116.0916			
27-NOV-2007 05:37	CHK	3115.8533			
28-NOV-2007 05:46	CHK	3116.2393			
29-NOV-2007 05:22	CHK	3116.0356			
30-NOV-2007 05:22	CHK	3116.1992			
1-DEC-2007 10:47	CHK	3116.0967			
3-DEC-2007 05:40	CHK	3115.9353			
4-DEC-2007 05:30	CHK	3116.0439			
5-DEC-2007 06:05	CHK	3116.5479			
6-DEC-2007 05:46	CHK	3116.3630			
7-DEC-2007 05:19	CHK	3116.3821			
8-DEC-2007 06:12	CHK	3116.4058			
10-DEC-2007 05:35	CHK	3115.9294			
11-DEC-2007 05:18	CHK	3115.9548			
12-DEC-2007 05:14	CHK	3116.0874			
13-DEC-2007 03:48	CHK	3115.8962			
14-DEC-2007 05:53	CHK	3116.0161			
15-DEC-2007 08:25	CHK	3116.1523			
17-DEC-2007 05:37	CHK	3115.8020			
18-DEC-2007 05:48	CHK	3115.7097			
19-DEC-2007 05:33	CHK	3115.9287			
20-DEC-2007 03:05	CHK	3115.6094			
21-DEC-2007 04:16	CHK	3116.1780			
22-DEC-2007 07:30	CHK	3116.1313			
24-DEC-2007 05:27	CHK	3116.0635			
24-DEC-2007 05:40	CHK	3115.9001			
25-DEC-2007 09:30	CHK	3116.0554			

-- Multi-Test Full Report --

Description : 778.89 KeV FWHM Resolution  
Parameter Units : keV                    Parameter Type : Peak

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 1.537797            Std Deviation : 0.093511

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 04:49	CHK		1.5603	
2-NOV-2007 04:49	CHK		1.5862	
5-NOV-2007 06:02	CHK		1.5755	
6-NOV-2007 05:34	CHK		1.5945	
7-NOV-2007 04:56	CHK		1.6107	
8-NOV-2007 06:29	CHK		1.5258	
9-NOV-2007 04:40	CHK		1.5171	
10-NOV-2007 05:27	CHK		1.5160	
12-NOV-2007 05:40	CHK		1.6080	
13-NOV-2007 05:38	CHK		1.5165	
14-NOV-2007 05:35	CHK		1.7372	In
15-NOV-2007 05:02	CHK		1.6518	
16-NOV-2007 05:33	CHK		1.6312	
17-NOV-2007 09:54	CHK		1.5754	
19-NOV-2007 05:40	CHK		1.5235	
20-NOV-2007 05:46	CHK		1.5186	
21-NOV-2007 05:27	CHK		1.6735	
22-NOV-2007 05:33	CHK		1.5916	
23-NOV-2007 04:23	CHK		1.5264	
24-NOV-2007 06:05	CHK		1.4843	
26-NOV-2007 05:36	CHK		1.4662	
27-NOV-2007 05:37	CHK		1.5397	
28-NOV-2007 05:46	CHK		1.4448	
29-NOV-2007 05:22	CHK		1.5523	
30-NOV-2007 05:22	CHK		1.4464	
1-DEC-2007 10:47	CHK		1.4539	
3-DEC-2007 05:40	CHK		1.5352	
4-DEC-2007 05:30	CHK		1.3440	In
5-DEC-2007 06:05	CHK		1.4981	
6-DEC-2007 05:46	CHK		1.5633	
7-DEC-2007 05:19	CHK		1.6303	
8-DEC-2007 06:12	CHK		1.5927	
10-DEC-2007 05:35	CHK		1.6118	
11-DEC-2007 05:18	CHK		1.4411	
12-DEC-2007 05:14	CHK		1.4247	
13-DEC-2007 03:48	CHK		1.5399	
14-DEC-2007 05:53	CHK		1.5493	
15-DEC-2007 08:25	CHK		1.6812	
17-DEC-2007 05:37	CHK		1.4221	
18-DEC-2007 05:48	CHK		1.4921	
19-DEC-2007 05:33	CHK		1.4428	

20-DEC-2007 03:05	CHK	1.5563	
21-DEC-2007 04:16	CHK	1.6017	
22-DEC-2007 07:30	CHK	1.4993	
24-DEC-2007 05:27	CHK	1.2391	Ac
24-DEC-2007 05:40	CHK	1.5524	
25-DEC-2007 09:30	CHK	1.5937	

Quality Assurance Report.                      Generated 26-DEC-2007 15:55:03.40

QA Filename        : \$DISK1:[GER7.QA]BKG.QAF;2

-- Multi-Test Full Report --

Description        : MDA K-40 CPM  
Parameter Units    : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000                  Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : ----- End Date        : -----  
Mean                : 0.089745                  Std Deviation   : 0.015603

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	bkg		0.0881	
11-NOV-2007 05:32	bkg		0.0940	
18-NOV-2007 08:51	bkg		0.0842	
25-NOV-2007 05:40	bkg		0.0796	
2-DEC-2007 07:11	bkg		0.0799	
9-DEC-2007 06:00	bkg		0.0871	
16-DEC-2007 07:51	bkg		0.0802	
23-DEC-2007 08:54	bkg		0.0832	

-- Multi-Test Full Report --

Description        : MDA Cr-51 CPM  
Parameter Units    : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000                  Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : ----- End Date        : -----

Mean : 0.081896 Std Deviation : 0.035216

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:28	bkg		0.0781		
11-NOV-2007 05:32	bkg		0.0825		
18-NOV-2007 08:51	bkg		0.0791		
25-NOV-2007 05:40	bkg		0.0757		
2-DEC-2007 07:11	bkg		0.0761		
9-DEC-2007 06:00	bkg		0.0809		
16-DEC-2007 07:51	bkg		0.0816		
23-DEC-2007 08:54	bkg		0.0786		

-- Multi-Test Full Report --

Description : MDA Co-60 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.038874 Std Deviation : 0.002264

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
Quality Assurance Multi-Test Full Report (continued)					Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:28	bkg		0.0381		
11-NOV-2007 05:32	bkg		0.0390		
18-NOV-2007 08:51	bkg		0.0374		
25-NOV-2007 05:40	bkg		0.0376		
2-DEC-2007 07:11	bkg		0.0386		
9-DEC-2007 06:00	bkg		0.0370		
16-DEC-2007 07:51	bkg		0.0404		
23-DEC-2007 08:54	bkg		0.0399		

-- Multi-Test Full Report --

Description : MDA Zn-65 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.044535      Std Deviation : 0.003261

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:28	bkg		0.0445		
11-NOV-2007 05:32	bkg		0.0457		
18-NOV-2007 08:51	bkg		0.0451		
25-NOV-2007 05:40	bkg		0.0475		
2-DEC-2007 07:11	bkg		0.0414		
9-DEC-2007 06:00	bkg		0.0484		
16-DEC-2007 07:51	bkg		0.0459		
23-DEC-2007 08:54	bkg		0.0456		

-- Multi-Test Full Report --

Description : MDA Ru106da CPM  
 Parameter Units : CPM      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.061105      Std Deviation : 0.027637

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:28	bkg		0.0613		
11-NOV-2007 05:32	bkg		0.0642		
18-NOV-2007 08:51	bkg		0.0562		
25-NOV-2007 05:40	bkg		0.0612		
2-DEC-2007 07:11	bkg		0.0619		
9-DEC-2007 06:00	bkg		0.0593		
16-DEC-2007 07:51	bkg		0.0579		
23-DEC-2007 08:54	bkg		0.0589		

-- Multi-Test Full Report --

Description : MDA Cs-134 CPM

Parameter Units : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.066727              Std Deviation : 0.002969

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
Quality Assurance Multi-Test Full Report (continued)					
Page : 3					
-----					
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
4-NOV-2007 09:28	bkg		0.0656		
11-NOV-2007 05:32	bkg		0.0675		
18-NOV-2007 08:51	bkg		0.0636		
25-NOV-2007 05:40	bkg		0.0674		
2-DEC-2007 07:11	bkg		0.0712		
9-DEC-2007 06:00	bkg		0.0675		
16-DEC-2007 07:51	bkg		0.0699		
23-DEC-2007 08:54	bkg		0.0663		

Quality Assurance Multi-Test Full Report (continued)              Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
4-NOV-2007 09:28	bkg		0.0656		
11-NOV-2007 05:32	bkg		0.0675		
18-NOV-2007 08:51	bkg		0.0636		
25-NOV-2007 05:40	bkg		0.0674		
2-DEC-2007 07:11	bkg		0.0712		
9-DEC-2007 06:00	bkg		0.0675		
16-DEC-2007 07:51	bkg		0.0699		
23-DEC-2007 08:54	bkg		0.0663		

4-NOV-2007 09:28 bkg                      0.0656    | | |

11-NOV-2007 05:32 bkg                      0.0675    | | |

18-NOV-2007 08:51 bkg                      0.0636    | | |

25-NOV-2007 05:40 bkg                      0.0674    | | |

2-DEC-2007 07:11 bkg                      0.0712    | | |

9-DEC-2007 06:00 bkg                      0.0675    | | |

16-DEC-2007 07:51 bkg                      0.0699    | | |

23-DEC-2007 08:54 bkg                      0.0663    | | |

## -- Multi-Test Full Report --

Description : MDA Cs-137da CPM

Parameter Units : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.056555              Std Deviation : 0.002743

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
4-NOV-2007 09:28	bkg		0.0550		
11-NOV-2007 05:32	bkg		0.0601		
18-NOV-2007 08:51	bkg		0.0532		
25-NOV-2007 05:40	bkg		0.0542		
2-DEC-2007 07:11	bkg		0.0548		
9-DEC-2007 06:00	bkg		0.0567		
16-DEC-2007 07:51	bkg		0.0570		

4-NOV-2007 09:28 bkg                      0.0550    | | |

11-NOV-2007 05:32 bkg                      0.0601    | | |

18-NOV-2007 08:51 bkg                      0.0532    | | |

25-NOV-2007 05:40 bkg                      0.0542    | | |

2-DEC-2007 07:11 bkg                      0.0548    | | |

9-DEC-2007 06:00 bkg                      0.0567    | | |

16-DEC-2007 07:51 bkg                      0.0570    | | |

23-DEC-2007 08:54 bkg 0.0522 | | |

## -- Multi-Test Full Report --

Description : MDA Pb-212 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.110889 Std Deviation : 0.007749

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	bkg		0.1089	
11-NOV-2007 05:32	bkg		0.1125	
18-NOV-2007 08:51	bkg		0.1083	
25-NOV-2007 05:40	bkg		0.1052	
2-DEC-2007 07:11	bkg		0.1084	
9-DEC-2007 06:00	bkg		0.1101	
16-DEC-2007 07:51	bkg		0.1083	
23-DEC-2007 08:54	bkg		0.1053	

## -- Multi-Test Full Report --

Description : MDA Ra-226da CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.082496 Std Deviation : 0.008031

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	bkg		0.0834	
11-NOV-2007 05:32	bkg		0.0829	

Quality Assurance Multi-Test Full Report (continued) Page : 4

18-NOV-2007 08:51 bkg	0.0805	
25-NOV-2007 05:40 bkg	0.0806	
2-DEC-2007 07:11 bkg	0.0769	
9-DEC-2007 06:00 bkg	0.0821	
16-DEC-2007 07:51 bkg	0.0862	
23-DEC-2007 08:54 bkg	0.0843	

-- Multi-Test Full Report --

Description : MDA Ra-228 CPM  
 Parameter Units : CPM           Parameter Type : Nuclide  
 Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.061583      Std Deviation : 0.008688

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28 bkg			0.0632	
11-NOV-2007 05:32 bkg			0.0673	
18-NOV-2007 08:51 bkg			0.0596	
25-NOV-2007 05:40 bkg			0.0561	
2-DEC-2007 07:11 bkg			0.0607	
9-DEC-2007 06:00 bkg			0.0614	
16-DEC-2007 07:51 bkg			0.0616	
23-DEC-2007 08:54 bkg			0.0591	

-- Multi-Test Full Report --

Description : MDA U-235 CPM  
 Parameter Units : CPM           Parameter Type : Nuclide  
 Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.095254      Std Deviation : 0.007210

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28 bkg			0.0926	



11-NOV-2007 05:32	bkg	0.0937	
18-NOV-2007 08:51	bkg	0.0891	
25-NOV-2007 05:40	bkg	0.0882	
2-DEC-2007 07:11	bkg	0.0926	
9-DEC-2007 06:00	bkg	0.0910	
16-DEC-2007 07:51	bkg	0.0948	
23-DEC-2007 08:54	bkg	0.0893	

-- Multi-Test Full Report --

Description : MDA TH-232 CPM  
 Parameter Units : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.677857              Std Deviation : 0.033036

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)              Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28	bkg	0.6630	
11-NOV-2007 05:32	bkg	0.6815	
18-NOV-2007 08:51	bkg	0.6546	
25-NOV-2007 05:40	bkg	0.6410	
2-DEC-2007 07:11	bkg	0.6687	
9-DEC-2007 06:00	bkg	0.6733	
16-DEC-2007 07:51	bkg	0.6791	
23-DEC-2007 08:54	bkg	0.7004	

Quality Assurance Report.

Generated 26-DEC-2007 15:51:04.80

QA Filename : \$DISK1:[GER6.QA]CHECK.QAF;3

-- Multi-Test Full Report --

Description : 121.78 KeV Efficiency

Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.005600 Upper Bound : 0.006100

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.005903 Std Deviation : 0.000059

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 07:06	chk		0.0059		
2-NOV-2007 04:49	chk		0.0059		
2-NOV-2007 05:02	chk		0.0061	In	
2-NOV-2007 05:14	chk		0.0059		
5-NOV-2007 06:02	chk		0.0059		
6-NOV-2007 05:33	chk		0.0060		
6-NOV-2007 05:50	chk		0.0059		
7-NOV-2007 04:56	chk		0.0059		
8-NOV-2007 06:29	chk		0.0059		
9-NOV-2007 04:40	chk		0.0059		
10-NOV-2007 05:34	chk		0.0059		
10-NOV-2007 05:45	chk		0.0059		
10-NOV-2007 05:56	chk		0.0061	In	
12-NOV-2007 05:40	chk		0.0059		
12-NOV-2007 06:01	chk		0.0059		
13-NOV-2007 05:38	chk		0.0059		
13-NOV-2007 05:50	chk		0.0059		
14-NOV-2007 05:35	chk		0.0059		
15-NOV-2007 05:02	chk		0.0059		
16-NOV-2007 05:33	chk		0.0059		
17-NOV-2007 08:35	chk		0.0059		

19-NOV-2007 05:40	chk	0.0059	
19-NOV-2007 05:58	chk	0.0058	
20-NOV-2007 05:46	chk	0.0060	
21-NOV-2007 05:27	chk	0.0059	
22-NOV-2007 05:25	chk	0.0058	
22-NOV-2007 05:50	chk	0.0060	
23-NOV-2007 04:23	chk	0.0058	
24-NOV-2007 06:05	chk	0.0059	
26-NOV-2007 05:35	chk	0.0058	
26-NOV-2007 05:50	chk	0.0060	
27-NOV-2007 05:37	chk	0.0059	
27-NOV-2007 06:09	chk	0.0059	
27-NOV-2007 06:24	chk	0.0059	
28-NOV-2007 05:46	chk	0.0060	
28-NOV-2007 05:59	chk	0.0059	
29-NOV-2007 05:22	chk	0.0058	
30-NOV-2007 05:22	chk	0.0059	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-DEC-2007 10:37	chk	0.0059	
3-DEC-2007 05:40	chk	0.0060	
3-DEC-2007 05:54	chk	0.0059	
3-DEC-2007 06:21	chk	0.0059	
4-DEC-2007 05:30	chk	0.0059	
5-DEC-2007 06:05	chk	0.0059	
6-DEC-2007 05:46	chk	0.0060	
7-DEC-2007 05:19	chk	0.0059	
7-DEC-2007 05:36	chk	0.0058	
8-DEC-2007 06:12	chk	0.0058	
8-DEC-2007 06:25	chk	0.0059	
10-DEC-2007 05:35	chk	0.0059	
11-DEC-2007 05:18	chk	0.0059	
12-DEC-2007 05:14	chk	0.0059	
12-DEC-2007 05:26	chk	0.0059	
13-DEC-2007 03:48	chk	0.0059	
14-DEC-2007 05:53	chk	0.0058	
15-DEC-2007 08:24	chk	0.0059	
17-DEC-2007 05:37	chk	0.0060	
18-DEC-2007 05:48	chk	0.0059	
18-DEC-2007 06:02	chk	0.0059	
19-DEC-2007 05:33	chk	0.0059	

20-DEC-2007 03:05	chk	0.0060	
20-DEC-2007 03:19	chk	0.0059	
21-DEC-2007 04:16	chk	0.0058	
22-DEC-2007 07:30	chk	0.0059	
24-DEC-2007 05:27	chk	0.0059	
24-DEC-2007 05:40	chk	0.0060	
24-DEC-2007 05:53	chk	0.0059	
25-DEC-2007 09:30	chk	0.0059	

## -- Multi-Test Full Report --

Description : 121.78 KeV Centroid

Parameter Units : channel Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 386.000000 Upper Bound : 586.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 07:06	chk	487.8682	
2-NOV-2007 04:49	chk	487.9161	
2-NOV-2007 05:02	chk	487.9455	
2-NOV-2007 05:14	chk	487.9153	
5-NOV-2007 06:02	chk	487.8779	
6-NOV-2007 05:33	chk	487.8619	
6-NOV-2007 05:50	chk	487.9247	
7-NOV-2007 04:56	chk	487.8609	
8-NOV-2007 06:29	chk	487.9615	
9-NOV-2007 04:40	chk	487.8900	
10-NOV-2007 05:34	chk	487.9477	
10-NOV-2007 05:45	chk	487.9902	
10-NOV-2007 05:56	chk	487.9901	
12-NOV-2007 05:40	chk	487.8470	

Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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12-NOV-2007 06:01	chk	487.8826	
13-NOV-2007 05:38	chk	487.8871	
13-NOV-2007 05:50	chk	487.9292	
14-NOV-2007 05:35	chk	487.7306	
15-NOV-2007 05:02	chk	487.7929	
16-NOV-2007 05:33	chk	487.8393	

17-NOV-2007 08:35	chk	487.8851			
19-NOV-2007 05:40	chk	487.7774			
19-NOV-2007 05:58	chk	487.7773			
20-NOV-2007 05:46	chk	487.7937			
21-NOV-2007 05:27	chk	487.8623			
22-NOV-2007 05:25	chk	487.7643			
22-NOV-2007 05:50	chk	487.7997			
23-NOV-2007 04:23	chk	487.6861			
24-NOV-2007 06:05	chk	487.6831			
26-NOV-2007 05:35	chk	487.6677			
26-NOV-2007 05:50	chk	487.6414			
27-NOV-2007 05:37	chk	487.7008			
27-NOV-2007 06:09	chk	487.7161			
27-NOV-2007 06:24	chk	487.6886			
28-NOV-2007 05:46	chk	487.7368			
28-NOV-2007 05:59	chk	487.7251			
29-NOV-2007 05:22	chk	487.6815			
30-NOV-2007 05:22	chk	487.8357			
1-DEC-2007 10:37	chk	487.6549			
3-DEC-2007 05:40	chk	487.8400			
3-DEC-2007 05:54	chk	487.8396			
3-DEC-2007 06:21	chk	487.8441			
4-DEC-2007 05:30	chk	487.8123			
5-DEC-2007 06:05	chk	487.8087			
6-DEC-2007 05:46	chk	487.7409			
7-DEC-2007 05:19	chk	487.7124			
7-DEC-2007 05:36	chk	487.7462			
8-DEC-2007 06:12	chk	487.6461			
8-DEC-2007 06:25	chk	487.6766			
10-DEC-2007 05:35	chk	487.5521			
11-DEC-2007 05:18	chk	485.3309			
12-DEC-2007 05:14	chk	485.4532			
12-DEC-2007 05:26	chk	485.4864			
13-DEC-2007 03:48	chk	485.4721			
14-DEC-2007 05:53	chk	486.5057			
15-DEC-2007 08:24	chk	486.5672			
17-DEC-2007 05:37	chk	486.6801			
18-DEC-2007 05:48	chk	486.7766			
18-DEC-2007 06:02	chk	486.7758			
19-DEC-2007 05:33	chk	486.7819			
20-DEC-2007 03:05	chk	486.9194			
20-DEC-2007 03:19	chk	486.9761			
21-DEC-2007 04:16	chk	486.9822			

22-DEC-2007 07:30	chk	486.7113			
24-DEC-2007 05:27	chk	486.6121			
24-DEC-2007 05:40	chk	486.9800			
24-DEC-2007 05:53	chk	486.9696			
25-DEC-2007 09:30	chk	486.9623			

## -- Multi-Test Full Report --

Description : 121.78 KeV FWHM Resolution  
 Parameter Units : keV                      Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.960000              Upper Bound : 1.080000

Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 1.021169              Std Deviation : 0.019690

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued)              Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 07:06	chk	1.0129			
2-NOV-2007 04:49	chk	1.0162			
2-NOV-2007 05:02	chk	1.0108			
2-NOV-2007 05:14	chk	1.0283			
5-NOV-2007 06:02	chk	1.0002			
6-NOV-2007 05:33	chk	1.0091			
6-NOV-2007 05:50	chk	0.9946			
7-NOV-2007 04:56	chk	1.0033			
8-NOV-2007 06:29	chk	0.9885			
9-NOV-2007 04:40	chk	1.0043			
10-NOV-2007 05:34	chk	1.0257			
10-NOV-2007 05:45	chk	1.0155			
10-NOV-2007 05:56	chk	0.9986			
12-NOV-2007 05:40	chk	1.0261			
12-NOV-2007 06:01	chk	1.0359			
13-NOV-2007 05:38	chk	1.0410			
13-NOV-2007 05:50	chk	1.0333			

14-NOV-2007 05:35	chk	1.0557	
15-NOV-2007 05:02	chk	1.0308	
16-NOV-2007 05:33	chk	1.0017	
17-NOV-2007 08:35	chk	1.0328	
19-NOV-2007 05:40	chk	1.0135	
19-NOV-2007 05:58	chk	1.0170	
20-NOV-2007 05:46	chk	1.0424	
21-NOV-2007 05:27	chk	1.0294	
22-NOV-2007 05:25	chk	1.0309	
22-NOV-2007 05:50	chk	0.9886	
23-NOV-2007 04:23	chk	1.0205	
24-NOV-2007 06:05	chk	1.0127	
26-NOV-2007 05:35	chk	1.0230	
26-NOV-2007 05:50	chk	1.0468	
27-NOV-2007 05:37	chk	1.0131	
27-NOV-2007 06:09	chk	1.0241	
27-NOV-2007 06:24	chk	1.0026	
28-NOV-2007 05:46	chk	1.0206	
28-NOV-2007 05:59	chk	1.0208	
29-NOV-2007 05:22	chk	1.0435	
30-NOV-2007 05:22	chk	1.0005	
1-DEC-2007 10:37	chk	1.0236	
3-DEC-2007 05:40	chk	1.0115	
3-DEC-2007 05:54	chk	1.0253	
3-DEC-2007 06:21	chk	1.0323	
4-DEC-2007 05:30	chk	1.0303	
5-DEC-2007 06:05	chk	1.0167	
6-DEC-2007 05:46	chk	1.0284	
7-DEC-2007 05:19	chk	1.0353	
7-DEC-2007 05:36	chk	1.0137	
8-DEC-2007 06:12	chk	1.0137	
8-DEC-2007 06:25	chk	1.0427	
10-DEC-2007 05:35	chk	1.0275	
11-DEC-2007 05:18	chk	1.0153	
12-DEC-2007 05:14	chk	1.0366	
12-DEC-2007 05:26	chk	1.0398	
13-DEC-2007 03:48	chk	1.0079	
14-DEC-2007 05:53	chk	1.0185	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
15-DEC-2007 08:24	chk		1.0115	

17-DEC-2007 05:37	chk	1.0266	
18-DEC-2007 05:48	chk	1.0199	
18-DEC-2007 06:02	chk	1.0329	
19-DEC-2007 05:33	chk	1.0474	
20-DEC-2007 03:05	chk	1.0396	
20-DEC-2007 03:19	chk	1.0485	
21-DEC-2007 04:16	chk	0.9831	
22-DEC-2007 07:30	chk	1.0280	
24-DEC-2007 05:27	chk	1.0321	
24-DEC-2007 05:40	chk	1.0245	
24-DEC-2007 05:53	chk	1.0313	
25-DEC-2007 09:30	chk	1.0134	

## -- Multi-Test Full Report --

Description : 1407.95 KeV Efficiency  
Parameter Units : Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000710 Upper Bound : 0.001100

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 0.000875 Std Deviation : 0.000056

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 07:06	chk		0.0009	
2-NOV-2007 04:49	chk		0.0005	Be Ac
2-NOV-2007 05:02	chk		0.0006	Be Ac
2-NOV-2007 05:14	chk		0.0009	
5-NOV-2007 06:02	chk		0.0009	
6-NOV-2007 05:33	chk		0.0009	
6-NOV-2007 05:50	chk		0.0009	
7-NOV-2007 04:56	chk		0.0008	In
8-NOV-2007 06:29	chk		0.0009	
9-NOV-2007 04:40	chk		0.0009	
10-NOV-2007 05:34	chk		0.0007	Be Ac
10-NOV-2007 05:45	chk		0.0009	
10-NOV-2007 05:56	chk		0.0009	
12-NOV-2007 05:40	chk		0.0006	Be Ac



12-NOV-2007 06:01	chk	0.0009	
13-NOV-2007 05:38	chk	0.0009	
13-NOV-2007 05:50	chk	0.0009	
14-NOV-2007 05:35	chk	0.0009	
15-NOV-2007 05:02	chk	0.0008	
16-NOV-2007 05:33	chk	0.0009	
17-NOV-2007 08:35	chk	0.0009	
19-NOV-2007 05:40	chk	0.0009	
19-NOV-2007 05:58	chk	0.0009	
20-NOV-2007 05:46	chk	0.0009	
21-NOV-2007 05:27	chk	0.0009	

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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22-NOV-2007 05:25	chk	0.0005	Be Ac
22-NOV-2007 05:50	chk	0.0009	
23-NOV-2007 04:23	chk	0.0008	In
24-NOV-2007 06:05	chk	0.0009	
26-NOV-2007 05:35	chk	0.0007	Be Ac
26-NOV-2007 05:50	chk	0.0009	
27-NOV-2007 05:37	chk	0.0006	Be Ac
27-NOV-2007 06:09	chk	0.0004	Be Ac
27-NOV-2007 06:24	chk	0.0009	
28-NOV-2007 05:46	chk	0.0006	Be Ac
28-NOV-2007 05:59	chk	0.0009	
29-NOV-2007 05:22	chk	0.0009	
30-NOV-2007 05:22	chk	0.0009	
1-DEC-2007 10:37	chk	0.0009	
3-DEC-2007 05:40	chk	0.0005	Be Ac
3-DEC-2007 05:54	chk	0.0004	Be Ac
3-DEC-2007 06:21	chk	0.0001	Be Ac
4-DEC-2007 05:30	chk	0.0009	
5-DEC-2007 06:05	chk	0.0009	
6-DEC-2007 05:46	chk	0.0009	
7-DEC-2007 05:19	chk	0.0008	
7-DEC-2007 05:36	chk	0.0009	
8-DEC-2007 06:12	chk	0.0009	
8-DEC-2007 06:25	chk	0.0008	
10-DEC-2007 05:35	chk	0.0009	
11-DEC-2007 05:18	chk	0.0009	
12-DEC-2007 05:14	chk	0.0005	Be Ac
12-DEC-2007 05:26	chk	0.0009	

13-DEC-2007 03:48	chk	0.0009	
14-DEC-2007 05:53	chk	0.0009	
15-DEC-2007 08:24	chk	0.0007	In
17-DEC-2007 05:37	chk	0.0009	
18-DEC-2007 05:48	chk	0.0003	Be Ac
18-DEC-2007 06:02	chk	0.0009	
19-DEC-2007 05:33	chk	0.0009	
20-DEC-2007 03:05	chk	0.0006	Be Ac
20-DEC-2007 03:19	chk	0.0009	
21-DEC-2007 04:16	chk	0.0009	
22-DEC-2007 07:30	chk	0.0009	
24-DEC-2007 05:27	chk	0.0009	
24-DEC-2007 05:40	chk	0.0006	Be Ac
24-DEC-2007 05:53	chk	0.0009	
25-DEC-2007 09:30	chk	0.0009	

-- Multi-Test Full Report --

Description : 1407.95 KeV Centroid

Parameter Units : channel      Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 5541.000000      Upper Bound : 5741.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 07:06	chk		5644.9785		
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Quality Assurance Multi-Test Full Report (continued)      Page : 7

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-NOV-2007 04:49	chk		5647.5029		
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2-NOV-2007 05:02	chk		5647.0400		
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2-NOV-2007 05:14	chk		5645.4170		
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5-NOV-2007 06:02	chk		5645.4204		
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6-NOV-2007 05:33	chk		5645.9106		
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6-NOV-2007 05:50	chk		5646.0503		
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7-NOV-2007 04:56	chk		5645.0000		
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8-NOV-2007 06:29	chk		5645.3164		
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9-NOV-2007 04:40	chk		5644.6299		
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10-NOV-2007 05:34	chk		5645.0801		
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10-NOV-2007 05:45	chk		5644.8994		
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10-NOV-2007 05:56	chk		5644.9502		
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12-NOV-2007 05:40	chk	5643.7856			
12-NOV-2007 06:01	chk	5645.2627			
13-NOV-2007 05:38	chk	5645.9639			
13-NOV-2007 05:50	chk	5646.0615			
14-NOV-2007 05:35	chk	5644.4814			
15-NOV-2007 05:02	chk	5644.2734			
16-NOV-2007 05:33	chk	5645.1470			
17-NOV-2007 08:35	chk	5644.9473			
19-NOV-2007 05:40	chk	5644.3159			
19-NOV-2007 05:58	chk	5644.6851			
20-NOV-2007 05:46	chk	5645.1504			
21-NOV-2007 05:27	chk	5645.6938			
22-NOV-2007 05:25	chk	5642.9883			
22-NOV-2007 05:50	chk	5645.6079			
23-NOV-2007 04:23	chk	5647.3857			
24-NOV-2007 06:05	chk	5644.6382			
26-NOV-2007 05:35	chk	5646.8872			
26-NOV-2007 05:50	chk	5645.3223			
27-NOV-2007 05:37	chk	5646.8682			
27-NOV-2007 06:09	chk	5646.9990			
27-NOV-2007 06:24	chk	5644.9282			
28-NOV-2007 05:46	chk	5646.9243			
28-NOV-2007 05:59	chk	5645.1846			
29-NOV-2007 05:22	chk	5644.8921			
30-NOV-2007 05:22	chk	5645.4253			
1-DEC-2007 10:37	chk	5644.0015			
3-DEC-2007 05:40	chk	5643.0923			
3-DEC-2007 05:54	chk	5641.1880			
3-DEC-2007 06:21	chk	5640.0000			
4-DEC-2007 05:30	chk	5644.9751			
5-DEC-2007 06:05	chk	5644.9907			
6-DEC-2007 05:46	chk	5644.4424			
7-DEC-2007 05:19	chk	5644.2583			
7-DEC-2007 05:36	chk	5644.3979			
8-DEC-2007 06:12	chk	5644.4058			
8-DEC-2007 06:25	chk	5645.0928			
10-DEC-2007 05:35	chk	5644.7681			
11-DEC-2007 05:18	chk	5641.0210			
12-DEC-2007 05:14	chk	5642.8540			
12-DEC-2007 05:26	chk	5641.0352			
13-DEC-2007 03:48	chk	5640.3428			
14-DEC-2007 05:53	chk	5642.0928			
15-DEC-2007 08:24	chk	5640.8291			

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-DEC-2007 05:37	chk		5641.7598		
18-DEC-2007 05:48	chk		5638.6504		
18-DEC-2007 06:02	chk		5642.5400		
19-DEC-2007 05:33	chk		5642.1606		
20-DEC-2007 03:05	chk		5644.5649		
20-DEC-2007 03:19	chk		5642.4355		
21-DEC-2007 04:16	chk		5643.2441		
22-DEC-2007 07:30	chk		5642.5444		
24-DEC-2007 05:27	chk		5642.1870		
24-DEC-2007 05:40	chk		5646.2832		
24-DEC-2007 05:53	chk		5643.3101		
25-DEC-2007 09:30	chk		5642.7422		

-- Multi-Test Full Report --

Description : 1407.95 KeV FWHM Resolution  
 Parameter Units : keV                      Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 1.950000                      Upper Bound : 3.110000

Investigate Level : 2.000000                      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 2.532997                      Std Deviation : 0.192958

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 07:06	chk		2.8883		
2-NOV-2007 04:49	chk		2.1713		
2-NOV-2007 05:02	chk		2.4464		
2-NOV-2007 05:14	chk		2.9650	In	
5-NOV-2007 06:02	chk		2.8467		
6-NOV-2007 05:33	chk		2.7561		
6-NOV-2007 05:50	chk		2.7243		
7-NOV-2007 04:56	chk		2.2928		
8-NOV-2007 06:29	chk		2.7474		
9-NOV-2007 04:40	chk		2.7562		

10-NOV-2007 05:34	chk	2.4581	
10-NOV-2007 05:45	chk	2.8649	
10-NOV-2007 05:56	chk	2.6311	
12-NOV-2007 05:40	chk	3.0149	In
12-NOV-2007 06:01	chk	3.0393	In
13-NOV-2007 05:38	chk	3.1735	Ab Ac
13-NOV-2007 05:50	chk	2.6351	
14-NOV-2007 05:35	chk	2.9513	In
15-NOV-2007 05:02	chk	2.4828	
16-NOV-2007 05:33	chk	2.4817	
17-NOV-2007 08:35	chk	2.9132	
19-NOV-2007 05:40	chk	3.2256	Ab Ac
19-NOV-2007 05:58	chk	2.6623	
20-NOV-2007 05:46	chk	2.2865	
21-NOV-2007 05:27	chk	2.9275	In
22-NOV-2007 05:25	chk	2.5700	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
22-NOV-2007 05:50	chk	3.1013	In	
23-NOV-2007 04:23	chk	2.2740		
24-NOV-2007 06:05	chk	2.6331		
26-NOV-2007 05:35	chk	2.2975		
26-NOV-2007 05:50	chk	2.6198		
27-NOV-2007 05:37	chk	2.3053		
27-NOV-2007 06:09	chk	2.2854		
27-NOV-2007 06:24	chk	2.8060		
28-NOV-2007 05:46	chk	2.2729		
28-NOV-2007 05:59	chk	2.7049		
29-NOV-2007 05:22	chk	2.5985		
30-NOV-2007 05:22	chk	2.9639	In	
1-DEC-2007 10:37	chk	2.7031		
3-DEC-2007 05:40	chk	2.9950	In	
3-DEC-2007 05:54	chk	2.5699		
3-DEC-2007 06:21	chk	2.9101		
4-DEC-2007 05:30	chk	2.8630		
5-DEC-2007 06:05	chk	2.4706		
6-DEC-2007 05:46	chk	2.8843		
7-DEC-2007 05:19	chk	3.3413	Ab Ac	
7-DEC-2007 05:36	chk	2.5805		
8-DEC-2007 06:12	chk	3.0539	In	
8-DEC-2007 06:25	chk	2.5786		

10-DEC-2007 05:35	chk	2.8473	
11-DEC-2007 05:18	chk	2.7415	
12-DEC-2007 05:14	chk	1.9795	In
12-DEC-2007 05:26	chk	2.6160	
13-DEC-2007 03:48	chk	2.8647	
14-DEC-2007 05:53	chk	3.0595	In
15-DEC-2007 08:24	chk	2.8855	
17-DEC-2007 05:37	chk	2.8502	
18-DEC-2007 05:48	chk	2.5177	
18-DEC-2007 06:02	chk	2.5561	
19-DEC-2007 05:33	chk	2.7389	
20-DEC-2007 03:05	chk	2.2592	
20-DEC-2007 03:19	chk	2.8493	
21-DEC-2007 04:16	chk	2.5255	
22-DEC-2007 07:30	chk	2.7591	
24-DEC-2007 05:27	chk	3.2909	Ab Ac
24-DEC-2007 05:40	chk	1.9190	Be Ac
24-DEC-2007 05:53	chk	2.8651	
25-DEC-2007 09:30	chk	3.0774	In

-- Multi-Test Full Report --

Description : 778.89 KeV Efficiency  
 Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.001300 Upper Bound : 0.016000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 0.001477 Std Deviation : 0.000044

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 10

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 07:06	chk	0.0015	
2-NOV-2007 04:49	chk	0.0015	
2-NOV-2007 05:02	chk	0.0014	

2-NOV-2007 05:14	chk	0.0014	
5-NOV-2007 06:02	chk	0.0014	
6-NOV-2007 05:33	chk	0.0013	Ac
6-NOV-2007 05:50	chk	0.0014	
7-NOV-2007 04:56	chk	0.0014	
8-NOV-2007 06:29	chk	0.0016	In
9-NOV-2007 04:40	chk	0.0015	
10-NOV-2007 05:34	chk	0.0015	
10-NOV-2007 05:45	chk	0.0014	
10-NOV-2007 05:56	chk	0.0015	
12-NOV-2007 05:40	chk	0.0015	
12-NOV-2007 06:01	chk	0.0015	
13-NOV-2007 05:38	chk	0.0016	In
13-NOV-2007 05:50	chk	0.0014	
14-NOV-2007 05:35	chk	0.0014	
15-NOV-2007 05:02	chk	0.0015	
16-NOV-2007 05:33	chk	0.0014	In
17-NOV-2007 08:35	chk	0.0014	
19-NOV-2007 05:40	chk	0.0016	
19-NOV-2007 05:58	chk	0.0015	
20-NOV-2007 05:46	chk	0.0014	
21-NOV-2007 05:27	chk	0.0015	
22-NOV-2007 05:25	chk	0.0014	
22-NOV-2007 05:50	chk	0.0014	
23-NOV-2007 04:23	chk	0.0014	
24-NOV-2007 06:05	chk	0.0014	
26-NOV-2007 05:35	chk	0.0014	
26-NOV-2007 05:50	chk	0.0015	
27-NOV-2007 05:37	chk	0.0016	
27-NOV-2007 06:09	chk	0.0015	
27-NOV-2007 06:24	chk	0.0014	
28-NOV-2007 05:46	chk	0.0014	
28-NOV-2007 05:59	chk	0.0015	
29-NOV-2007 05:22	chk	0.0015	
30-NOV-2007 05:22	chk	0.0015	
1-DEC-2007 10:37	chk	0.0015	
3-DEC-2007 05:40	chk	0.0014	
3-DEC-2007 05:54	chk	0.0014	
3-DEC-2007 06:21	chk	0.0015	
4-DEC-2007 05:30	chk	0.0015	
5-DEC-2007 06:05	chk	0.0015	
6-DEC-2007 05:46	chk	0.0015	
7-DEC-2007 05:19	chk	0.0015	

7-DEC-2007 05:36	chk	0.0015	
8-DEC-2007 06:12	chk	0.0016	In
8-DEC-2007 06:25	chk	0.0015	
10-DEC-2007 05:35	chk	0.0015	
11-DEC-2007 05:18	chk	0.0015	
12-DEC-2007 05:14	chk	0.0015	
12-DEC-2007 05:26	chk	0.0014	
13-DEC-2007 03:48	chk	0.0016	
14-DEC-2007 05:53	chk	0.0015	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
15-DEC-2007 08:24	chk	0.0014		
17-DEC-2007 05:37	chk	0.0015		
18-DEC-2007 05:48	chk	0.0014	In	
18-DEC-2007 06:02	chk	0.0015		
19-DEC-2007 05:33	chk	0.0015		
20-DEC-2007 03:05	chk	0.0015		
20-DEC-2007 03:19	chk	0.0015		
21-DEC-2007 04:16	chk	0.0014		
22-DEC-2007 07:30	chk	0.0015		
24-DEC-2007 05:27	chk	0.0015		
24-DEC-2007 05:40	chk	0.0015		
24-DEC-2007 05:53	chk	0.0015		
25-DEC-2007 09:30	chk	0.0015		

-- Multi-Test Full Report --

Description : 778.89 KeV Centroid

Parameter Units : channels Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 3020.000000 Upper Bound : 3220.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 07:06	chk	3122.8760		
2-NOV-2007 04:49	chk	3123.2454		
2-NOV-2007 05:02	chk	3123.1609		
2-NOV-2007 05:14	chk	3123.1626		
5-NOV-2007 06:02	chk	3123.2627		
6-NOV-2007 05:33	chk	3123.3596		



6-NOV-2007 05:50	chk	3123.1870			
7-NOV-2007 04:56	chk	3122.6365			
8-NOV-2007 06:29	chk	3122.9604			
9-NOV-2007 04:40	chk	3122.4448			
10-NOV-2007 05:34	chk	3122.9016			
10-NOV-2007 05:45	chk	3122.9800			
10-NOV-2007 05:56	chk	3122.7417			
12-NOV-2007 05:40	chk	3122.9131			
12-NOV-2007 06:01	chk	3123.0398			
13-NOV-2007 05:38	chk	3123.0903			
13-NOV-2007 05:50	chk	3123.3301			
14-NOV-2007 05:35	chk	3122.4092			
15-NOV-2007 05:02	chk	3122.6973			
16-NOV-2007 05:33	chk	3122.9858			
17-NOV-2007 08:35	chk	3123.0549			
19-NOV-2007 05:40	chk	3122.5942			
19-NOV-2007 05:58	chk	3122.7771			
20-NOV-2007 05:46	chk	3123.0808			
21-NOV-2007 05:27	chk	3122.9021			
22-NOV-2007 05:25	chk	3123.3103			
22-NOV-2007 05:50	chk	3122.8677			
23-NOV-2007 04:23	chk	3123.0774			
24-NOV-2007 06:05	chk	3122.4714			
26-NOV-2007 05:35	chk	3122.7747			
26-NOV-2007 05:50	chk	3122.7468			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
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27-NOV-2007 05:37	chk	3122.4634			
27-NOV-2007 06:09	chk	3123.0090			
27-NOV-2007 06:24	chk	3122.8328			
28-NOV-2007 05:46	chk	3122.9768			
28-NOV-2007 05:59	chk	3122.9211			
29-NOV-2007 05:22	chk	3122.8083			
30-NOV-2007 05:22	chk	3123.2698			
1-DEC-2007 10:37	chk	3121.9768			
3-DEC-2007 05:40	chk	3122.6003			
3-DEC-2007 05:54	chk	3122.7488			
3-DEC-2007 06:21	chk	3122.8325			
4-DEC-2007 05:30	chk	3122.9673			
5-DEC-2007 06:05	chk	3122.7854			
6-DEC-2007 05:46	chk	3122.3459			

7-DEC-2007 05:19	chk	3122.6865			
7-DEC-2007 05:36	chk	3122.5732			
8-DEC-2007 06:12	chk	3122.6340			
8-DEC-2007 06:25	chk	3122.5562			
10-DEC-2007 05:35	chk	3122.5256			
11-DEC-2007 05:18	chk	3119.1836			
12-DEC-2007 05:14	chk	3119.2366			
12-DEC-2007 05:26	chk	3119.3640			
13-DEC-2007 03:48	chk	3119.2974			
14-DEC-2007 05:53	chk	3120.5686			
15-DEC-2007 08:24	chk	3120.8750			
17-DEC-2007 05:37	chk	3120.6196			
18-DEC-2007 05:48	chk	3121.1621			
18-DEC-2007 06:02	chk	3120.8076			
19-DEC-2007 05:33	chk	3120.9395			
20-DEC-2007 03:05	chk	3121.1196			
20-DEC-2007 03:19	chk	3121.1160			
21-DEC-2007 04:16	chk	3121.7192			
22-DEC-2007 07:30	chk	3121.4702			
24-DEC-2007 05:27	chk	3120.7861			
24-DEC-2007 05:40	chk	3121.3738			
24-DEC-2007 05:53	chk	3121.1780			
25-DEC-2007 09:30	chk	3121.6135			

## -- Multi-Test Full Report --

Description : 778.89 KeV FWHM Resolution  
Parameter Units : keV                      Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 1.495000              Upper Bound : 2.030000

Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 1.766911              Std Deviation : 0.090562

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 07:06	chk		1.9615	In
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Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 04:49	chk		1.9147	
2-NOV-2007 05:02	chk		1.8744	
2-NOV-2007 05:14	chk		1.7802	
5-NOV-2007 06:02	chk		1.9242	
6-NOV-2007 05:33	chk		1.8774	
6-NOV-2007 05:50	chk		1.6687	
7-NOV-2007 04:56	chk		2.0010	In
8-NOV-2007 06:29	chk		1.8488	
9-NOV-2007 04:40	chk		1.9315	
10-NOV-2007 05:34	chk		1.6685	
10-NOV-2007 05:45	chk		2.0393	Ab Ac
10-NOV-2007 05:56	chk		1.9340	
12-NOV-2007 05:40	chk		2.1305	Ab Ac
12-NOV-2007 06:01	chk		1.7258	
13-NOV-2007 05:38	chk		1.5865	
13-NOV-2007 05:50	chk		1.6843	
14-NOV-2007 05:35	chk		1.6824	
15-NOV-2007 05:02	chk		1.8175	
16-NOV-2007 05:33	chk		1.8467	
17-NOV-2007 08:35	chk		1.6469	
19-NOV-2007 05:40	chk		1.7412	
19-NOV-2007 05:58	chk		1.8518	
20-NOV-2007 05:46	chk		1.9036	
21-NOV-2007 05:27	chk		1.8405	
22-NOV-2007 05:25	chk		1.9019	
22-NOV-2007 05:50	chk		1.7372	
23-NOV-2007 04:23	chk		1.9686	In
24-NOV-2007 06:05	chk		1.9519	In
26-NOV-2007 05:35	chk		1.6107	
26-NOV-2007 05:50	chk		1.8523	
27-NOV-2007 05:37	chk		1.9852	In
27-NOV-2007 06:09	chk		1.9304	
27-NOV-2007 06:24	chk		1.6816	
28-NOV-2007 05:46	chk		1.9480	
28-NOV-2007 05:59	chk		1.9032	
29-NOV-2007 05:22	chk		2.0013	In
30-NOV-2007 05:22	chk		1.7818	
1-DEC-2007 10:37	chk		1.8766	
3-DEC-2007 05:40	chk		1.8365	
3-DEC-2007 05:54	chk		2.1318	Ab Ac
3-DEC-2007 06:21	chk		2.0364	Ab In

4-DEC-2007 05:30	chk	1.8890	
5-DEC-2007 06:05	chk	1.9803	In
6-DEC-2007 05:46	chk	1.7068	
7-DEC-2007 05:19	chk	1.6820	
7-DEC-2007 05:36	chk	1.7954	
8-DEC-2007 06:12	chk	2.0860	Ab Ac
8-DEC-2007 06:25	chk	1.9194	
10-DEC-2007 05:35	chk	1.8358	
11-DEC-2007 05:18	chk	1.7720	
12-DEC-2007 05:14	chk	1.9464	
12-DEC-2007 05:26	chk	2.0175	In
13-DEC-2007 03:48	chk	2.0024	In
14-DEC-2007 05:53	chk	1.9057	
15-DEC-2007 08:24	chk	1.7827	

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-DEC-2007 05:37	chk		1.7895	
18-DEC-2007 05:48	chk		1.7850	
18-DEC-2007 06:02	chk		1.8545	
19-DEC-2007 05:33	chk		1.9636	In
20-DEC-2007 03:05	chk		1.6967	
20-DEC-2007 03:19	chk		1.8286	
21-DEC-2007 04:16	chk		1.8891	
22-DEC-2007 07:30	chk		1.8447	
24-DEC-2007 05:27	chk		1.6043	
24-DEC-2007 05:40	chk		2.0461	Ab Ac
24-DEC-2007 05:53	chk		1.7559	
25-DEC-2007 09:30	chk		1.9642	In

Quality Assurance Report. Generated 26-DEC-2007 15:51:07.30

QA Filename : \$DISK1:[GER6.QA]BKG.QAF;3

-- Multi-Test Full Report --

Description : MDA K-40 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.125988 Std Deviation : 0.016519

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:28	bkg		0.1054		
11-NOV-2007 05:32	bkg		0.1101		
18-NOV-2007 08:50	bkg		0.1089		
25-NOV-2007 05:40	bkg		0.1095		
2-DEC-2007 07:11	bkg		0.1112		
9-DEC-2007 06:00	bkg		0.1046		
16-DEC-2007 07:50	bkg		0.1044		
23-DEC-2007 08:54	bkg		0.1038		

## -- Multi-Test Full Report --

Description : MDA Cr-51 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.093463 Std Deviation : 0.044131

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:28	bkg		0.0814		
11-NOV-2007 05:32	bkg		0.0840		
18-NOV-2007 08:50	bkg		0.0888		
25-NOV-2007 05:40	bkg		0.0870		
2-DEC-2007 07:11	bkg		0.0870		
9-DEC-2007 06:00	bkg		0.0843		
16-DEC-2007 07:50	bkg		0.0850		
23-DEC-2007 08:54	bkg		0.0809		

## -- Multi-Test Full Report --

Description : MDA Co-60 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.045457 Std Deviation : 0.002487

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

4-NOV-2007 09:28	bkg		0.0468	
11-NOV-2007 05:32	bkg		0.0453	
18-NOV-2007 08:50	bkg		0.0463	
25-NOV-2007 05:40	bkg		0.0480	
2-DEC-2007 07:11	bkg		0.0497	
9-DEC-2007 06:00	bkg		0.0471	
16-DEC-2007 07:50	bkg		0.0476	
23-DEC-2007 08:54	bkg		0.0441	

## -- Multi-Test Full Report --

Description : MDA Zn-65 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.054729 Std Deviation : 0.004192

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28	bkg		0.0553	
11-NOV-2007 05:32	bkg		0.0519	
18-NOV-2007 08:50	bkg		0.0566	
25-NOV-2007 05:40	bkg		0.0531	
2-DEC-2007 07:11	bkg		0.0597	
9-DEC-2007 06:00	bkg		0.0560	
16-DEC-2007 07:50	bkg		0.0541	
23-DEC-2007 08:54	bkg		0.0560	

## -- Multi-Test Full Report --

Description : MDA Ru106da CPM  
 Parameter Units : CPM Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.070416 Std Deviation : 0.032262

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	bkg		0.0663	
11-NOV-2007 05:32	bkg		0.0657	
18-NOV-2007 08:50	bkg		0.0684	
25-NOV-2007 05:40	bkg		0.0668	
2-DEC-2007 07:11	bkg		0.0696	
9-DEC-2007 06:00	bkg		0.0670	
16-DEC-2007 07:50	bkg		0.0720	
23-DEC-2007 08:54	bkg		0.0644	

-- Multi-Test Full Report --

Description : MDA Cs-134 CPM  
 Parameter Units : CPM Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----  
 Mean : 0.074695 Std Deviation : 0.003645

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	bkg		0.0732	
11-NOV-2007 05:32	bkg		0.0729	
18-NOV-2007 08:50	bkg		0.0769	
25-NOV-2007 05:40	bkg		0.0768	
2-DEC-2007 07:11	bkg		0.0814	

Quality Assurance Multi-Test Full Report (continued) Page : 3

9-DEC-2007 06:00 bkg	0.0745	
16-DEC-2007 07:50 bkg	0.0768	
23-DEC-2007 08:54 bkg	0.0769	

## -- Multi-Test Full Report --

Description : MDA Cs-137da CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.065926 Std Deviation : 0.003170

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28 bkg			0.0642	
11-NOV-2007 05:32 bkg			0.0633	
18-NOV-2007 08:50 bkg			0.0610	
25-NOV-2007 05:40 bkg			0.0660	
2-DEC-2007 07:11 bkg			0.0678	
9-DEC-2007 06:00 bkg			0.0645	
16-DEC-2007 07:50 bkg			0.0657	
23-DEC-2007 08:54 bkg			0.0630	

## -- Multi-Test Full Report --

Description : MDA Pb-212 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.119675 Std Deviation : 0.011817

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

4-NOV-2007 09:28 bkg			0.1063	
11-NOV-2007 05:32 bkg			0.1106	
18-NOV-2007 08:50 bkg			0.1061	
25-NOV-2007 05:40 bkg			0.1131	



2-DEC-2007 07:11 bkg	0.1132	
9-DEC-2007 06:00 bkg	0.0998	
16-DEC-2007 07:50 bkg	0.1050	
23-DEC-2007 08:54 bkg	0.1007	

## -- Multi-Test Full Report --

Description : MDA Ra-226da CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.091888 Std Deviation : 0.009111

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28 bkg			0.0831	
11-NOV-2007 05:32 bkg			0.0886	
18-NOV-2007 08:50 bkg			0.0896	
25-NOV-2007 05:40 bkg			0.0880	
2-DEC-2007 07:11 bkg			0.0881	
9-DEC-2007 06:00 bkg			0.0846	
16-DEC-2007 07:50 bkg			0.0865	
23-DEC-2007 08:54 bkg			0.0823	

## -- Multi-Test Full Report --

Description : MDA Ra-228 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.072856 Std Deviation : 0.010509

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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-----
4-NOV-2007 09:28 bkg          0.0700  | | |
11-NOV-2007 05:32 bkg          0.0706  | | |
18-NOV-2007 08:50 bkg          0.0695  | | |
25-NOV-2007 05:40 bkg          0.0692  | | |
 2-DEC-2007 07:11 bkg          0.0689  | | |
 9-DEC-2007 06:00 bkg          0.0667  | | |
16-DEC-2007 07:50 bkg          0.0652  | | |
23-DEC-2007 08:54 bkg          0.0634  | | |

```

-- Multi-Test Full Report --

Description : MDA U-235 CPM

Parameter Units : CPM           Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.108008      Std Deviation : 0.010589

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```

-----
4-NOV-2007 09:28 bkg          0.0933  | | |
11-NOV-2007 05:32 bkg          0.0950  | | |
18-NOV-2007 08:50 bkg          0.0936  | | |
25-NOV-2007 05:40 bkg          0.0998  | | |
 2-DEC-2007 07:11 bkg          0.0902  | | |
 9-DEC-2007 06:00 bkg          0.0927  | | |
16-DEC-2007 07:50 bkg          0.0866  |In| |
23-DEC-2007 08:54 bkg          0.0868  |In| |

```

-- Multi-Test Full Report --

Description : MDA TH-232 CPM

Parameter Units : CPM           Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.758076      Std Deviation : 0.047599

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:28	bkg		0.7128		
11-NOV-2007 05:32	bkg		0.6888		
18-NOV-2007 08:50	bkg		0.7193		
25-NOV-2007 05:40	bkg		0.7259		
2-DEC-2007 07:11	bkg		0.7072		
9-DEC-2007 06:00	bkg		0.6902		
16-DEC-2007 07:50	bkg		0.7075		
23-DEC-2007 08:54	bkg		0.7090		

## Quality Assurance Report.

Generated 26-DEC-2007 15:43:16.23

QA Filename : RDND06::RDND06\$DKA100:[GER5.QA]CHECK.QAF;3

## -- Multi-Test Full Report --

Description : 121.78 KeV Efficiency

Parameter Units : Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.004930 Upper Bound : 0.005230

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Trend Test Test Parameters ----

N Mean Samples : 7 M Slope Samples: 7

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.005084 Std Deviation : 0.000051

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 07:20	chk		0.0051		
2-NOV-2007 04:50	chk		0.0051		
5-NOV-2007 06:03	chk		0.0050		
6-NOV-2007 05:35	chk		0.0051		
7-NOV-2007 04:57	chk		0.0051		
8-NOV-2007 06:30	chk		0.0051		
9-NOV-2007 04:41	chk		0.0050		
10-NOV-2007 05:27	chk		0.0051		
12-NOV-2007 05:39	chk		0.0050		
13-NOV-2007 05:40	chk		0.0051		
14-NOV-2007 05:38	chk		0.0051		
15-NOV-2007 05:02	chk		0.0050	In	
16-NOV-2007 05:36	chk		0.0050	In	
17-NOV-2007 08:35	chk		0.0051		
19-NOV-2007 05:42	chk		0.0050		
20-NOV-2007 05:47	chk		0.0051		
21-NOV-2007 05:27	chk		0.0051		
22-NOV-2007 05:26	chk		0.0052	In	

23-NOV-2007 04:23	chk	0.0051	
24-NOV-2007 06:06	chk	0.0051	
26-NOV-2007 05:38	chk	0.0051	
27-NOV-2007 05:37	chk	0.0051	
28-NOV-2007 05:47	chk	0.0051	
29-NOV-2007 05:23	chk	0.0052	In
30-NOV-2007 05:23	chk	0.0051	
1-DEC-2007 10:37	chk	0.0051	
3-DEC-2007 05:41	chk	0.0051	
4-DEC-2007 05:30	chk	0.0051	
5-DEC-2007 06:05	chk	0.0051	
6-DEC-2007 05:46	chk	0.0051	
7-DEC-2007 05:19	chk	0.0051	
8-DEC-2007 06:13	chk	0.0050	
10-DEC-2007 05:36	chk	0.0051	
11-DEC-2007 05:18	chk	0.0051	
12-DEC-2007 05:14	chk	0.0051	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
13-DEC-2007 04:48	chk		0.0051	
14-DEC-2007 05:53	chk		0.0051	
15-DEC-2007 08:26	chk		0.0051	
17-DEC-2007 05:38	chk		0.0051	
18-DEC-2007 05:48	chk		0.0051	
19-DEC-2007 05:34	chk		0.0051	
20-DEC-2007 03:06	chk		0.0051	
21-DEC-2007 04:16	chk		0.0051	
22-DEC-2007 07:30	chk		0.0050	
24-DEC-2007 05:27	chk		0.0051	
25-DEC-2007 09:29	chk		0.0051	

-- Multi-Test Full Report --

Description : 121.78 KeV Centroid

Parameter Units : channel Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 389.500000 Upper Bound : 590.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 07:20	chk	489.7702			
2-NOV-2007 04:50	chk	489.7336			
5-NOV-2007 06:03	chk	489.7270			
6-NOV-2007 05:35	chk	489.7285			
7-NOV-2007 04:57	chk	489.7043			
8-NOV-2007 06:30	chk	489.7346			
9-NOV-2007 04:41	chk	489.7122			
10-NOV-2007 05:27	chk	489.7341			
12-NOV-2007 05:39	chk	489.6765			
13-NOV-2007 05:40	chk	489.7058			
14-NOV-2007 05:38	chk	489.6868			
15-NOV-2007 05:02	chk	489.7299			
16-NOV-2007 05:36	chk	489.6687			
17-NOV-2007 08:35	chk	489.7808			
19-NOV-2007 05:42	chk	489.7666			
20-NOV-2007 05:47	chk	489.7814			
21-NOV-2007 05:27	chk	489.7306			
22-NOV-2007 05:26	chk	489.6822			
23-NOV-2007 04:23	chk	489.7075			
24-NOV-2007 06:06	chk	489.7030			
26-NOV-2007 05:38	chk	489.7071			
27-NOV-2007 05:37	chk	489.6504			
28-NOV-2007 05:47	chk	489.7030			
29-NOV-2007 05:23	chk	489.7075			
30-NOV-2007 05:23	chk	489.6661			
1-DEC-2007 10:37	chk	489.6417			
3-DEC-2007 05:41	chk	489.6685			
4-DEC-2007 05:30	chk	489.7523			
5-DEC-2007 06:05	chk	489.7578			
6-DEC-2007 05:46	chk	489.6870			
7-DEC-2007 05:19	chk	489.6960			
8-DEC-2007 06:13	chk	489.6908			
10-DEC-2007 05:36	chk	489.6487			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
11-DEC-2007 05:18	chk	489.6884			
12-DEC-2007 05:14	chk	489.6416			
13-DEC-2007 04:48	chk	489.6410			
14-DEC-2007 05:53	chk	489.6131			
15-DEC-2007 08:26	chk	489.5688			
17-DEC-2007 05:38	chk	489.6369			

18-DEC-2007 05:48	chk	489.6376			
19-DEC-2007 05:34	chk	489.7015			
20-DEC-2007 03:06	chk	489.6508			
21-DEC-2007 04:16	chk	489.6364			
22-DEC-2007 07:30	chk	489.6448			
24-DEC-2007 05:27	chk	489.6614			
25-DEC-2007 09:29	chk	489.6715			

-- Multi-Test Full Report --

Description : 121.78 KeV FWHM Resolution  
 Parameter Units : keV                    Parameter Type : Peak

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 0.945850            Std Deviation : 0.015596

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
1-NOV-2007 07:20	chk		0.9470		
2-NOV-2007 04:50	chk		0.9228		
5-NOV-2007 06:03	chk		0.9271		
6-NOV-2007 05:35	chk		0.9296		
7-NOV-2007 04:57	chk		0.9648		
8-NOV-2007 06:30	chk		0.9351		
9-NOV-2007 04:41	chk		0.9468		
10-NOV-2007 05:27	chk		0.9682		
12-NOV-2007 05:39	chk		0.9760		
13-NOV-2007 05:40	chk		0.9377		
14-NOV-2007 05:38	chk		0.9412		
15-NOV-2007 05:02	chk		0.9603		
16-NOV-2007 05:36	chk		0.9473		
17-NOV-2007 08:35	chk		0.9501		
19-NOV-2007 05:42	chk		0.9535		
20-NOV-2007 05:47	chk		0.9240		
21-NOV-2007 05:27	chk		0.9129	In	
22-NOV-2007 05:26	chk		0.9522		
23-NOV-2007 04:23	chk		0.9460		
24-NOV-2007 06:06	chk		0.9509		
26-NOV-2007 05:38	chk		0.9449		
27-NOV-2007 05:37	chk		0.9337		

28-NOV-2007 05:47	chk	0.9653	
29-NOV-2007 05:23	chk	0.9120	In
30-NOV-2007 05:23	chk	0.9268	
1-DEC-2007 10:37	chk	0.9436	
3-DEC-2007 05:41	chk	0.9462	
4-DEC-2007 05:30	chk	0.9171	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
5-DEC-2007 06:05	chk		0.9328	
6-DEC-2007 05:46	chk		0.9552	
7-DEC-2007 05:19	chk		0.9477	
8-DEC-2007 06:13	chk		0.9425	
10-DEC-2007 05:36	chk		0.9407	
11-DEC-2007 05:18	chk		0.9265	
12-DEC-2007 05:14	chk		0.9681	
13-DEC-2007 04:48	chk		0.9615	
14-DEC-2007 05:53	chk		0.9430	
15-DEC-2007 08:26	chk		0.9451	
17-DEC-2007 05:38	chk		0.9413	
18-DEC-2007 05:48	chk		0.9558	
19-DEC-2007 05:34	chk		0.9593	
20-DEC-2007 03:06	chk		0.9683	
21-DEC-2007 04:16	chk		0.9598	
22-DEC-2007 07:30	chk		0.9352	
24-DEC-2007 05:27	chk		0.9442	
25-DEC-2007 09:29	chk		0.9615	

-- Multi-Test Full Report --

Description : 1407.95 KeV Efficiency  
Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000681 Upper Bound : 0.000781

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 0.000731 Std Deviation : 0.000017



Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 07:20	chk		0.0007	
2-NOV-2007 04:50	chk		0.0007	
5-NOV-2007 06:03	chk		0.0007	In
6-NOV-2007 05:35	chk		0.0007	
7-NOV-2007 04:57	chk		0.0008	
8-NOV-2007 06:30	chk		0.0007	
9-NOV-2007 04:41	chk		0.0008	
10-NOV-2007 05:27	chk		0.0008	
12-NOV-2007 05:39	chk		0.0007	
13-NOV-2007 05:40	chk		0.0007	
14-NOV-2007 05:38	chk		0.0007	
15-NOV-2007 05:02	chk		0.0007	
16-NOV-2007 05:36	chk		0.0008	In
17-NOV-2007 08:35	chk		0.0007	
19-NOV-2007 05:42	chk		0.0007	In
20-NOV-2007 05:47	chk		0.0007	
21-NOV-2007 05:27	chk		0.0007	
22-NOV-2007 05:26	chk		0.0007	
23-NOV-2007 04:23	chk		0.0007	In
24-NOV-2007 06:06	chk		0.0007	

Quality Assurance Multi-Test Full Report (continued)

Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
26-NOV-2007 05:38	chk		0.0007	
27-NOV-2007 05:37	chk		0.0008	
28-NOV-2007 05:47	chk		0.0007	
29-NOV-2007 05:23	chk		0.0007	
30-NOV-2007 05:23	chk		0.0007	
1-DEC-2007 10:37	chk		0.0007	
3-DEC-2007 05:41	chk		0.0007	
4-DEC-2007 05:30	chk		0.0007	
5-DEC-2007 06:05	chk		0.0007	
6-DEC-2007 05:46	chk		0.0007	
7-DEC-2007 05:19	chk		0.0007	
8-DEC-2007 06:13	chk		0.0007	
10-DEC-2007 05:36	chk		0.0007	
11-DEC-2007 05:18	chk		0.0007	
12-DEC-2007 05:14	chk		0.0007	
13-DEC-2007 04:48	chk		0.0007	
14-DEC-2007 05:53	chk		0.0007	

15-DEC-2007 08:26	chk	0.0008	
17-DEC-2007 05:38	chk	0.0007	
18-DEC-2007 05:48	chk	0.0007	
19-DEC-2007 05:34	chk	0.0007	In
20-DEC-2007 03:06	chk	0.0007	
21-DEC-2007 04:16	chk	0.0007	
22-DEC-2007 07:30	chk	0.0007	
24-DEC-2007 05:27	chk	0.0007	In
25-DEC-2007 09:29	chk	0.0007	

## -- Multi-Test Full Report --

Description : 1407.95 KeV Centroid

Parameter Units : channel      Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 5544.399902      Upper Bound : 5744.399902

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 07:20	chk	5648.1851	
2-NOV-2007 04:50	chk	5647.9229	
5-NOV-2007 06:03	chk	5648.2432	
6-NOV-2007 05:35	chk	5647.6719	
7-NOV-2007 04:57	chk	5647.4609	
8-NOV-2007 06:30	chk	5647.5479	
9-NOV-2007 04:41	chk	5647.5107	
10-NOV-2007 05:27	chk	5647.5405	
12-NOV-2007 05:39	chk	5647.5684	
13-NOV-2007 05:40	chk	5647.5552	
14-NOV-2007 05:38	chk	5647.6587	
15-NOV-2007 05:02	chk	5647.3462	
16-NOV-2007 05:36	chk	5647.5127	
17-NOV-2007 08:35	chk	5647.9233	
19-NOV-2007 05:42	chk	5647.8335	
20-NOV-2007 05:47	chk	5648.2271	
21-NOV-2007 05:27	chk	5647.9434	
22-NOV-2007 05:26	chk	5647.5737	

Quality Assurance Multi-Test Full Report (continued)      Page : 6

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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23-NOV-2007 04:23	chk	5647.6680	
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24-NOV-2007 06:06	chk	5647.6221			
26-NOV-2007 05:38	chk	5648.0151			
27-NOV-2007 05:37	chk	5647.4746			
28-NOV-2007 05:47	chk	5647.7651			
29-NOV-2007 05:23	chk	5647.5737			
30-NOV-2007 05:23	chk	5647.6660			
1-DEC-2007 10:37	chk	5646.9390			
3-DEC-2007 05:41	chk	5647.0098			
4-DEC-2007 05:30	chk	5647.6816			
5-DEC-2007 06:05	chk	5647.8076			
6-DEC-2007 05:46	chk	5647.3984			
7-DEC-2007 05:19	chk	5647.4673			
8-DEC-2007 06:13	chk	5647.3940			
10-DEC-2007 05:36	chk	5647.4722			
11-DEC-2007 05:18	chk	5647.4692			
12-DEC-2007 05:14	chk	5647.2368			
13-DEC-2007 04:48	chk	5647.2798			
14-DEC-2007 05:53	chk	5647.0347			
15-DEC-2007 08:26	chk	5646.9346			
17-DEC-2007 05:38	chk	5646.8799			
18-DEC-2007 05:48	chk	5646.8032			
19-DEC-2007 05:34	chk	5647.2861			
20-DEC-2007 03:06	chk	5647.1206			
21-DEC-2007 04:16	chk	5647.3716			
22-DEC-2007 07:30	chk	5647.3540			
24-DEC-2007 05:27	chk	5647.3613			
25-DEC-2007 09:29	chk	5647.5469			

-- Multi-Test Full Report --

Description : 1407.95 KeV FWHM Resolution  
Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 1.887466              Std Deviation : 0.118246

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 07:20	chk		1.9033			
2-NOV-2007 04:50	chk		1.9643			

5-NOV-2007 06:03	chk	1.8230	
6-NOV-2007 05:35	chk	2.0193	
7-NOV-2007 04:57	chk	1.8568	
8-NOV-2007 06:30	chk	1.9392	
9-NOV-2007 04:41	chk	1.7935	
10-NOV-2007 05:27	chk	1.8276	
12-NOV-2007 05:39	chk	1.6549	
13-NOV-2007 05:40	chk	1.8484	
14-NOV-2007 05:38	chk	1.9589	
15-NOV-2007 05:02	chk	1.9512	
16-NOV-2007 05:36	chk	1.8391	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 08:35	chk	2.0257		
19-NOV-2007 05:42	chk	1.8528		
20-NOV-2007 05:47	chk	1.9120		
21-NOV-2007 05:27	chk	1.8284		
22-NOV-2007 05:26	chk	1.7900		
23-NOV-2007 04:23	chk	1.7023		
24-NOV-2007 06:06	chk	1.8724		
26-NOV-2007 05:38	chk	1.9788		
27-NOV-2007 05:37	chk	1.9532		
28-NOV-2007 05:47	chk	1.7655		
29-NOV-2007 05:23	chk	1.8352		
30-NOV-2007 05:23	chk	1.7908		
1-DEC-2007 10:37	chk	1.9334		
3-DEC-2007 05:41	chk	1.8944		
4-DEC-2007 05:30	chk	2.0697		
5-DEC-2007 06:05	chk	1.7817		
6-DEC-2007 05:46	chk	2.0139		
7-DEC-2007 05:19	chk	1.9225		
8-DEC-2007 06:13	chk	1.7830		
10-DEC-2007 05:36	chk	1.8447		
11-DEC-2007 05:18	chk	2.0518		
12-DEC-2007 05:14	chk	1.7299		
13-DEC-2007 04:48	chk	2.0823		
14-DEC-2007 05:53	chk	1.9452		
15-DEC-2007 08:26	chk	1.9032		
17-DEC-2007 05:38	chk	1.9697		
18-DEC-2007 05:48	chk	1.9032		
19-DEC-2007 05:34	chk	1.6322	In	

20-DEC-2007 03:06	chk	2.0376	
21-DEC-2007 04:16	chk	1.7179	
22-DEC-2007 07:30	chk	1.6081	In
24-DEC-2007 05:27	chk	1.9306	
25-DEC-2007 09:29	chk	2.0461	

## -- Multi-Test Full Report --

Description : 778.89 KeV Efficiency  
 Parameter Units : Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.001110 Upper Bound : 0.001330

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 0.001220 Std Deviation : 0.000036

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 07:20	chk	0.0012	
2-NOV-2007 04:50	chk	0.0013	
5-NOV-2007 06:03	chk	0.0013	In
6-NOV-2007 05:35	chk	0.0012	
7-NOV-2007 04:57	chk	0.0013	

Quality Assurance Multi-Test Full Report (continued) Page : 8

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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8-NOV-2007 06:30	chk	0.0013	
9-NOV-2007 04:41	chk	0.0013	
10-NOV-2007 05:27	chk	0.0013	
12-NOV-2007 05:39	chk	0.0013	
13-NOV-2007 05:40	chk	0.0012	
14-NOV-2007 05:38	chk	0.0012	
15-NOV-2007 05:02	chk	0.0012	
16-NOV-2007 05:36	chk	0.0012	
17-NOV-2007 08:35	chk	0.0012	
19-NOV-2007 05:42	chk	0.0012	
20-NOV-2007 05:47	chk	0.0012	
21-NOV-2007 05:27	chk	0.0013	

22-NOV-2007 05:26	chk	0.0012			
23-NOV-2007 04:23	chk	0.0012			
24-NOV-2007 06:06	chk	0.0013			
26-NOV-2007 05:38	chk	0.0012			
27-NOV-2007 05:37	chk	0.0012			
28-NOV-2007 05:47	chk	0.0012			
29-NOV-2007 05:23	chk	0.0012			
30-NOV-2007 05:23	chk	0.0013			
1-DEC-2007 10:37	chk	0.0012			
3-DEC-2007 05:41	chk	0.0012			
4-DEC-2007 05:30	chk	0.0012			
5-DEC-2007 06:05	chk	0.0012			
6-DEC-2007 05:46	chk	0.0012			
7-DEC-2007 05:19	chk	0.0012			
8-DEC-2007 06:13	chk	0.0012			
10-DEC-2007 05:36	chk	0.0012			
11-DEC-2007 05:18	chk	0.0012			
12-DEC-2007 05:14	chk	0.0012			
13-DEC-2007 04:48	chk	0.0013			
14-DEC-2007 05:53	chk	0.0012			
15-DEC-2007 08:26	chk	0.0012			
17-DEC-2007 05:38	chk	0.0012			
18-DEC-2007 05:48	chk	0.0012			
19-DEC-2007 05:34	chk	0.0012			
20-DEC-2007 03:06	chk	0.0012			
21-DEC-2007 04:16	chk	0.0012			
22-DEC-2007 07:30	chk	0.0012			
24-DEC-2007 05:27	chk	0.0012			
25-DEC-2007 09:29	chk	0.0013			

-- Multi-Test Full Report --

Description : 778.89 KeV Centroid

Parameter Units : channels      Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 3023.000000      Upper Bound : 3223.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 07:20	chk		3125.2117			
2-NOV-2007 04:50	chk		3124.9219			
5-NOV-2007 06:03	chk		3125.3118			

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
6-NOV-2007 05:35	chk		3125.1238		
7-NOV-2007 04:57	chk		3124.7561		
8-NOV-2007 06:30	chk		3124.9570		
9-NOV-2007 04:41	chk		3124.9668		
10-NOV-2007 05:27	chk		3125.0005		
12-NOV-2007 05:39	chk		3124.8125		
13-NOV-2007 05:40	chk		3125.0979		
14-NOV-2007 05:38	chk		3125.0437		
15-NOV-2007 05:02	chk		3124.8569		
16-NOV-2007 05:36	chk		3124.7800		
17-NOV-2007 08:35	chk		3125.3506		
19-NOV-2007 05:42	chk		3125.1294		
20-NOV-2007 05:47	chk		3125.4873		
21-NOV-2007 05:27	chk		3125.2983		
22-NOV-2007 05:26	chk		3125.1638		
23-NOV-2007 04:23	chk		3125.1328		
24-NOV-2007 06:06	chk		3125.1125		
26-NOV-2007 05:38	chk		3125.4072		
27-NOV-2007 05:37	chk		3124.8726		
28-NOV-2007 05:47	chk		3125.1311		
29-NOV-2007 05:23	chk		3124.8071		
30-NOV-2007 05:23	chk		3124.6152		
1-DEC-2007 10:37	chk		3124.8044		
3-DEC-2007 05:41	chk		3125.0630		
4-DEC-2007 05:30	chk		3124.8584		
5-DEC-2007 06:05	chk		3125.3950		
6-DEC-2007 05:46	chk		3125.0464		
7-DEC-2007 05:19	chk		3125.0513		
8-DEC-2007 06:13	chk		3124.9087		
10-DEC-2007 05:36	chk		3124.6726		
11-DEC-2007 05:18	chk		3124.7222		
12-DEC-2007 05:14	chk		3124.7104		
13-DEC-2007 04:48	chk		3124.6206		
14-DEC-2007 05:53	chk		3124.7026		
15-DEC-2007 08:26	chk		3124.5444		
17-DEC-2007 05:38	chk		3124.5938		
18-DEC-2007 05:48	chk		3124.6294		
19-DEC-2007 05:34	chk		3124.9063		
20-DEC-2007 03:06	chk		3124.6750		

21-DEC-2007 04:16	chk	3124.7837	
22-DEC-2007 07:30	chk	3125.0867	
24-DEC-2007 05:27	chk	3124.6575	
25-DEC-2007 09:29	chk	3125.0503	

## -- Multi-Test Full Report --

Description : 778.89 KeV FWHM Resolution  
 Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 1.469521              Std Deviation : 0.081560

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)              Page : 10

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 07:20	chk	1.6240	
2-NOV-2007 04:50	chk	1.3714	
5-NOV-2007 06:03	chk	1.5113	
6-NOV-2007 05:35	chk	1.4293	
7-NOV-2007 04:57	chk	1.5190	
8-NOV-2007 06:30	chk	1.2766	In
9-NOV-2007 04:41	chk	1.4639	
10-NOV-2007 05:27	chk	1.4194	
12-NOV-2007 05:39	chk	1.4344	
13-NOV-2007 05:40	chk	1.3683	
14-NOV-2007 05:38	chk	1.5067	
15-NOV-2007 05:02	chk	1.5034	
16-NOV-2007 05:36	chk	1.3896	
17-NOV-2007 08:35	chk	1.6184	
19-NOV-2007 05:42	chk	1.3810	
20-NOV-2007 05:47	chk	1.4186	
21-NOV-2007 05:27	chk	1.4041	
22-NOV-2007 05:26	chk	1.5292	
23-NOV-2007 04:23	chk	1.4390	
24-NOV-2007 06:06	chk	1.5112	
26-NOV-2007 05:38	chk	1.4082	



27-NOV-2007 05:37	chk	1.4657			
28-NOV-2007 05:47	chk	1.4473			
29-NOV-2007 05:23	chk	1.5380			
30-NOV-2007 05:23	chk	1.4111			
1-DEC-2007 10:37	chk	1.4090			
3-DEC-2007 05:41	chk	1.3549			
4-DEC-2007 05:30	chk	1.5042			
5-DEC-2007 06:05	chk	1.4914			
6-DEC-2007 05:46	chk	1.4793			
7-DEC-2007 05:19	chk	1.6287			
8-DEC-2007 06:13	chk	1.6249			
10-DEC-2007 05:36	chk	1.5015			
11-DEC-2007 05:18	chk	1.4693			
12-DEC-2007 05:14	chk	1.4860			
13-DEC-2007 04:48	chk	1.4397			
14-DEC-2007 05:53	chk	1.4139			
15-DEC-2007 08:26	chk	1.3931			
17-DEC-2007 05:38	chk	1.4144			
18-DEC-2007 05:48	chk	1.5346			
19-DEC-2007 05:34	chk	1.5226			
20-DEC-2007 03:06	chk	1.5006			
21-DEC-2007 04:16	chk	1.4104			
22-DEC-2007 07:30	chk	1.3816			
24-DEC-2007 05:27	chk	1.6000			
25-DEC-2007 09:29	chk	1.5347			

Quality Assurance Report.

Generated 26-DEC-2007 15:43:24.64

QA Filename : RDND06::RDND06\$DKA100:[GER5.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : MDA K-40 CPM

Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.093447 Std Deviation : 0.006895

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:20 BKG          0.0896  | | |
11-NOV-2007 05:32 BKG          0.0885  | | |
18-NOV-2007 08:50 BKG          0.0897  | | |
25-NOV-2007 05:41 BKG          0.0974  | | |
 2-DEC-2007 07:11 BKG          0.1009  | | |
 9-DEC-2007 06:01 BKG          0.1006  | | |
16-DEC-2007 07:50 BKG          0.0988  | | |
23-DEC-2007 08:55 BKG          0.0991  | | |

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-- Multi-Test Full Report --

Description : MDA Cr-51 CPM

Parameter Units : cpm           Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.089402      Std Deviation : 0.002846

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:20 BKG          0.0897  | | |
11-NOV-2007 05:32 BKG          0.0893  | | |
18-NOV-2007 08:50 BKG          0.0879  | | |
25-NOV-2007 05:41 BKG          0.0911  | | |
 2-DEC-2007 07:11 BKG          0.0877  | | |
 9-DEC-2007 06:01 BKG          0.0918  | | |
16-DEC-2007 07:50 BKG          0.0900  | | |
23-DEC-2007 08:55 BKG          0.0909  | | |

```

-- Multi-Test Full Report --

Description : MDA Co-60 CPM

Parameter Units : cpm           Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.038932      Std Deviation : 0.001917

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:20	BKG		0.0386	
11-NOV-2007 05:32	BKG		0.0373	
18-NOV-2007 08:50	BKG		0.0363	
25-NOV-2007 05:41	BKG		0.0399	
2-DEC-2007 07:11	BKG		0.0400	
9-DEC-2007 06:01	BKG		0.0430	In
16-DEC-2007 07:50	BKG		0.0427	
23-DEC-2007 08:55	BKG		0.0376	

-- Multi-Test Full Report --

Description : MDA Zn-65 CPM

Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.045529 Std Deviation : 0.001757

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:20	BKG		0.0418	In
11-NOV-2007 05:32	BKG		0.0467	
18-NOV-2007 08:50	BKG		0.0468	
25-NOV-2007 05:41	BKG		0.0425	
2-DEC-2007 07:11	BKG		0.0440	
9-DEC-2007 06:01	BKG		0.0450	
16-DEC-2007 07:50	BKG		0.0495	In
23-DEC-2007 08:55	BKG		0.0435	

-- Multi-Test Full Report --

Description : MDA Ru106da CPM

Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00  
 Mean : 0.062721 Std Deviation : 0.002375

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:20	BKG		0.0638	
11-NOV-2007 05:32	BKG		0.0644	
18-NOV-2007 08:50	BKG		0.0675	In
25-NOV-2007 05:41	BKG		0.0620	
2-DEC-2007 07:11	BKG		0.0641	
9-DEC-2007 06:01	BKG		0.0638	
16-DEC-2007 07:50	BKG		0.0644	
23-DEC-2007 08:55	BKG		0.0617	

## -- Multi-Test Full Report --

Description : MDA Cs-134 CPM  
 Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00  
 Mean : 0.069156 Std Deviation : 0.001803

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:20	BKG		0.0667	
11-NOV-2007 05:32	BKG		0.0701	
18-NOV-2007 08:50	BKG		0.0700	
25-NOV-2007 05:41	BKG		0.0666	
2-DEC-2007 07:11	BKG		0.0723	
9-DEC-2007 06:01	BKG		0.0715	
16-DEC-2007 07:50	BKG		0.0741	In
23-DEC-2007 08:55	BKG		0.0699	

## -- Multi-Test Full Report --

Description : MDA Cs-137da CPM

Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.061022 Std Deviation : 0.002350

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:20	BKG		0.0615	
11-NOV-2007 05:32	BKG		0.0602	
18-NOV-2007 08:50	BKG		0.0652	
25-NOV-2007 05:41	BKG		0.0599	
2-DEC-2007 07:11	BKG		0.0615	
9-DEC-2007 06:01	BKG		0.0606	
16-DEC-2007 07:50	BKG		0.0630	
23-DEC-2007 08:55	BKG		0.0559	[In]

## -- Multi-Test Full Report --

Description : MDA Pb-212 CPM

Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.127906 Std Deviation : 0.004372

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:20	BKG		0.1226	
11-NOV-2007 05:32	BKG		0.1283	
18-NOV-2007 08:50	BKG		0.1262	
25-NOV-2007 05:41	BKG		0.1280	
2-DEC-2007 07:11	BKG		0.1290	
9-DEC-2007 06:01	BKG		0.1287	
16-DEC-2007 07:50	BKG		0.1295	
23-DEC-2007 08:55	BKG		0.1311	

## -- Multi-Test Full Report --

Description : MDA Ra-226da CPM

Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.078132 Std Deviation : 0.004366

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
Quality Assurance Multi-Test Full Report (continued)				Page : 4	
-----					
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
4-NOV-2007 09:20	BKG		0.0763		
11-NOV-2007 05:32	BKG		0.0782		
18-NOV-2007 08:50	BKG		0.0828		
25-NOV-2007 05:41	BKG		0.0819		
2-DEC-2007 07:11	BKG		0.0813		
9-DEC-2007 06:01	BKG		0.0838		
16-DEC-2007 07:50	BKG		0.0854		
23-DEC-2007 08:55	BKG		0.0834		

## -- Multi-Test Full Report --

Description : MDA Ra-228 CPM

Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.063901 Std Deviation : 0.003079

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
4-NOV-2007 09:20	BKG		0.0606		
11-NOV-2007 05:32	BKG		0.0624		
18-NOV-2007 08:50	BKG		0.0620		
25-NOV-2007 05:41	BKG		0.0657		

2-DEC-2007 07:11 BKG	0.0630	
9-DEC-2007 06:01 BKG	0.0645	
16-DEC-2007 07:50 BKG	0.0683	
23-DEC-2007 08:55 BKG	0.0637	

-- Multi-Test Full Report --

Description : MDA U-235 CPM

Parameter Units : cpm Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.115846 Std Deviation : 0.005027

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:20 BKG			0.1125	
11-NOV-2007 05:32 BKG			0.1132	
18-NOV-2007 08:50 BKG			0.1195	
25-NOV-2007 05:41 BKG			0.1134	
2-DEC-2007 07:11 BKG			0.1214	
9-DEC-2007 06:01 BKG			0.1125	
16-DEC-2007 07:50 BKG			0.1170	
23-DEC-2007 08:55 BKG			0.1192	

-- Multi-Test Full Report --

Description : MDA TH-232 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2006 00:00 End Date : 1-JUL-2006 00:00

Mean : 0.747467 Std Deviation : 0.022446

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:20 BKG	0.7140			
11-NOV-2007 05:32 BKG	0.7218			
18-NOV-2007 08:50 BKG	0.7642			
25-NOV-2007 05:41 BKG	0.7588			
2-DEC-2007 07:11 BKG	0.7534			
9-DEC-2007 06:01 BKG	0.7528			
16-DEC-2007 07:50 BKG	0.7724			
23-DEC-2007 08:55 BKG	0.7830			



Quality Assurance Report.

Generated 26-DEC-2007 15:52:34.84

QA Filename : \$DISK1:[GER4.QA]CHECK.QAF;3

-- Multi-Test Full Report --

Description : 121.78 KeV Efficiency

Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.004450 Upper Bound : 0.004740

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.004590 Std Deviation : 0.000048

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	CHK		0.0047		
2-NOV-2007 04:49	CHK		0.0046		
5-NOV-2007 06:11	CHK		0.0046		
6-NOV-2007 05:33	CHK		0.0046		
7-NOV-2007 04:56	CHK		0.0046		
8-NOV-2007 06:28	CHK		0.0046		
9-NOV-2007 04:40	CHK		0.0046		
10-NOV-2007 05:27	CHK		0.0046		
12-NOV-2007 05:39	CHK		0.0045		
13-NOV-2007 05:37	CHK		0.0046		
13-NOV-2007 05:50	CHK		0.0045		
14-NOV-2007 05:35	CHK		0.0046		
15-NOV-2007 05:01	CHK		0.0046		
16-NOV-2007 05:33	CHK		0.0046		
17-NOV-2007 09:54	CHK		0.0046		
19-NOV-2007 05:39	CHK		0.0046		
20-NOV-2007 05:46	CHK		0.0045		
21-NOV-2007 05:27	CHK		0.0046		
22-NOV-2007 05:25	CHK		0.0045	In	
23-NOV-2007 04:23	CHK		0.0046		
23-NOV-2007 07:35	CHK		0.0046		

24-NOV-2007 06:05	CHK	0.0046	
26-NOV-2007 05:35	CHK	0.0046	
26-NOV-2007 05:50	CHK	0.0046	
27-NOV-2007 05:37	CHK	0.0046	
28-NOV-2007 05:46	CHK	0.0045	
29-NOV-2007 05:21	CHK	0.0046	
29-NOV-2007 05:50	CHK	0.0046	
30-NOV-2007 05:22	CHK	0.0046	
1-DEC-2007 10:50	CHK	0.0046	
3-DEC-2007 05:40	CHK	0.0047	
4-DEC-2007 05:30	CHK	0.0046	
5-DEC-2007 06:05	CHK	0.0046	
6-DEC-2007 05:45	CHK	0.0046	
7-DEC-2007 05:19	CHK	0.0045	
7-DEC-2007 05:35	CHK	0.0046	
8-DEC-2007 06:12	CHK	0.0046	
10-DEC-2007 05:35	CHK	0.0046	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-DEC-2007 05:18	CHK		0.0046	
12-DEC-2007 05:14	CHK		0.0045	In
12-DEC-2007 05:27	CHK		0.0046	
12-DEC-2007 05:41	CHK		0.0046	
13-DEC-2007 03:48	CHK		0.0046	
14-DEC-2007 05:53	CHK		0.0046	
15-DEC-2007 08:24	CHK		0.0046	
17-DEC-2007 05:37	CHK		0.0046	
18-DEC-2007 05:47	CHK		0.0045	
19-DEC-2007 05:33	CHK		0.0047	
20-DEC-2007 03:25	CHK		0.0047	In
21-DEC-2007 04:16	CHK		0.0045	
21-DEC-2007 04:30	CHK		0.0046	
22-DEC-2007 07:36	CHK		0.0046	
24-DEC-2007 05:27	CHK		0.0046	
25-DEC-2007 09:30	CHK		0.0046	

-- Multi-Test Full Report --

Description : 121.78 KeV Centroid

Parameter Units : channel Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 389.000000 Upper Bound : 590.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 04:49	CHK		489.8965		
2-NOV-2007 04:49	CHK		489.8696		
5-NOV-2007 06:11	CHK		489.9366		
6-NOV-2007 05:33	CHK		489.8864		
7-NOV-2007 04:56	CHK		489.8571		
8-NOV-2007 06:28	CHK		489.8455		
9-NOV-2007 04:40	CHK		489.8697		
10-NOV-2007 05:27	CHK		489.9301		
12-NOV-2007 05:39	CHK		489.8741		
13-NOV-2007 05:37	CHK		489.8682		
13-NOV-2007 05:50	CHK		489.9214		
14-NOV-2007 05:35	CHK		489.9393		
15-NOV-2007 05:01	CHK		489.8260		
16-NOV-2007 05:33	CHK		489.8770		
17-NOV-2007 09:54	CHK		489.8750		
19-NOV-2007 05:39	CHK		489.8786		
20-NOV-2007 05:46	CHK		489.9293		
21-NOV-2007 05:27	CHK		489.9345		
22-NOV-2007 05:25	CHK		489.8650		
23-NOV-2007 04:23	CHK		489.8813		
23-NOV-2007 07:35	CHK		489.8687		
24-NOV-2007 06:05	CHK		489.8172		
26-NOV-2007 05:35	CHK		489.8481		
26-NOV-2007 05:50	CHK		489.7178		
27-NOV-2007 05:37	CHK		489.7253		
28-NOV-2007 05:46	CHK		489.7597		
29-NOV-2007 05:21	CHK		489.7256		
29-NOV-2007 05:50	CHK		489.7544		

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
30-NOV-2007 05:22	CHK		489.6647		
1-DEC-2007 10:50	CHK		489.6869		
3-DEC-2007 05:40	CHK		489.7570		
4-DEC-2007 05:30	CHK		489.8311		
5-DEC-2007 06:05	CHK		489.8458		
6-DEC-2007 05:45	CHK		489.8078		

7-DEC-2007 05:19	CHK	489.7970			
7-DEC-2007 05:35	CHK	489.8397			
8-DEC-2007 06:12	CHK	489.7401			
10-DEC-2007 05:35	CHK	489.7586			
11-DEC-2007 05:18	CHK	489.7386			
12-DEC-2007 05:14	CHK	489.7240			
12-DEC-2007 05:27	CHK	489.6826			
12-DEC-2007 05:41	CHK	489.7146			
13-DEC-2007 03:48	CHK	489.7689			
14-DEC-2007 05:53	CHK	489.6933			
15-DEC-2007 08:24	CHK	489.6734			
17-DEC-2007 05:37	CHK	489.7029			
18-DEC-2007 05:47	CHK	489.7174			
19-DEC-2007 05:33	CHK	489.7550			
20-DEC-2007 03:25	CHK	489.7278			
21-DEC-2007 04:16	CHK	489.7371			
21-DEC-2007 04:30	CHK	489.7239			
22-DEC-2007 07:36	CHK	489.7424			
24-DEC-2007 05:27	CHK	489.7147			
25-DEC-2007 09:30	CHK	489.7198			

-- Multi-Test Full Report --

Description : 121.78 KeV FWHM Resolution  
Parameter Units : keV                    Parameter Type : Peak

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 0.893128            Std Deviation : 0.015385

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	CHK		0.8856			
2-NOV-2007 04:49	CHK		0.8833			
5-NOV-2007 06:11	CHK		0.8911			
6-NOV-2007 05:33	CHK		0.8681			
7-NOV-2007 04:56	CHK		0.8641			
8-NOV-2007 06:28	CHK		0.8731			
9-NOV-2007 04:40	CHK		0.8832			
10-NOV-2007 05:27	CHK		0.8663			
12-NOV-2007 05:39	CHK		0.8743			

13-NOV-2007 05:37	CHK	0.8331	Ac
13-NOV-2007 05:50	CHK	0.8597	In
14-NOV-2007 05:35	CHK	0.8831	
15-NOV-2007 05:01	CHK	0.9007	
16-NOV-2007 05:33	CHK	0.8650	
17-NOV-2007 09:54	CHK	0.8799	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:39	CHK	0.8828	
20-NOV-2007 05:46	CHK	0.8665	
21-NOV-2007 05:27	CHK	0.8557	In
22-NOV-2007 05:25	CHK	0.8672	
23-NOV-2007 04:23	CHK	0.8770	
23-NOV-2007 07:35	CHK	0.8694	
24-NOV-2007 06:05	CHK	0.8492	In
26-NOV-2007 05:35	CHK	0.9011	
26-NOV-2007 05:50	CHK	0.8518	In
27-NOV-2007 05:37	CHK	0.8593	In
28-NOV-2007 05:46	CHK	0.8907	
29-NOV-2007 05:21	CHK	0.8661	
29-NOV-2007 05:50	CHK	0.8527	In
30-NOV-2007 05:22	CHK	0.8726	
1-DEC-2007 10:50	CHK	0.8895	
3-DEC-2007 05:40	CHK	0.8492	In
4-DEC-2007 05:30	CHK	0.8607	In
5-DEC-2007 06:05	CHK	0.8606	In
6-DEC-2007 05:45	CHK	0.8777	
7-DEC-2007 05:19	CHK	0.8581	In
7-DEC-2007 05:35	CHK	0.8980	
8-DEC-2007 06:12	CHK	0.8487	In
10-DEC-2007 05:35	CHK	0.8659	
11-DEC-2007 05:18	CHK	0.8677	
12-DEC-2007 05:14	CHK	0.8468	Ac
12-DEC-2007 05:27	CHK	0.8831	
12-DEC-2007 05:41	CHK	0.8909	
13-DEC-2007 03:48	CHK	0.8946	
14-DEC-2007 05:53	CHK	0.8601	In
15-DEC-2007 08:24	CHK	0.8695	
17-DEC-2007 05:37	CHK	0.8633	
18-DEC-2007 05:47	CHK	0.8616	In
19-DEC-2007 05:33	CHK	0.8726	

20-DEC-2007 03:25	CHK	0.8763	
21-DEC-2007 04:16	CHK	0.8781	
21-DEC-2007 04:30	CHK	0.8960	
22-DEC-2007 07:36	CHK	0.8597	[In]
24-DEC-2007 05:27	CHK	0.8582	[In]
25-DEC-2007 09:30	CHK	0.8700	

## -- Multi-Test Full Report --

Description : 1407.95 KeV Efficiency  
 Parameter Units : Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000777 Upper Bound : 0.000911

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
 Mean : 0.000844 Std Deviation : 0.000022

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 04:49	CHK	0.0008	
2-NOV-2007 04:49	CHK	0.0009	
5-NOV-2007 06:11	CHK	0.0008	
6-NOV-2007 05:33	CHK	0.0008	
7-NOV-2007 04:56	CHK	0.0009	
8-NOV-2007 06:28	CHK	0.0008	
9-NOV-2007 04:40	CHK	0.0008	
10-NOV-2007 05:27	CHK	0.0008	
12-NOV-2007 05:39	CHK	0.0008	
13-NOV-2007 05:37	CHK	0.0008	
13-NOV-2007 05:50	CHK	0.0008	
14-NOV-2007 05:35	CHK	0.0009	
15-NOV-2007 05:01	CHK	0.0009	
16-NOV-2007 05:33	CHK	0.0008	
17-NOV-2007 09:54	CHK	0.0008	
19-NOV-2007 05:39	CHK	0.0009	

20-NOV-2007 05:46	CHK	0.0008	
21-NOV-2007 05:27	CHK	0.0008	
22-NOV-2007 05:25	CHK	0.0008	
23-NOV-2007 04:23	CHK	0.0008	
23-NOV-2007 07:35	CHK	0.0009	
24-NOV-2007 06:05	CHK	0.0008	
26-NOV-2007 05:35	CHK	0.0008	
26-NOV-2007 05:50	CHK	0.0009	
27-NOV-2007 05:37	CHK	0.0008	
28-NOV-2007 05:46	CHK	0.0008	
29-NOV-2007 05:21	CHK	0.0009	
29-NOV-2007 05:50	CHK	0.0009	
30-NOV-2007 05:22	CHK	0.0008	In
1-DEC-2007 10:50	CHK	0.0008	
3-DEC-2007 05:40	CHK	0.0008	
4-DEC-2007 05:30	CHK	0.0008	
5-DEC-2007 06:05	CHK	0.0009	
6-DEC-2007 05:45	CHK	0.0008	In
7-DEC-2007 05:19	CHK	0.0009	
7-DEC-2007 05:35	CHK	0.0008	
8-DEC-2007 06:12	CHK	0.0009	
10-DEC-2007 05:35	CHK	0.0009	
11-DEC-2007 05:18	CHK	0.0008	
12-DEC-2007 05:14	CHK	0.0008	
12-DEC-2007 05:27	CHK	0.0009	
12-DEC-2007 05:41	CHK	0.0009	
13-DEC-2007 03:48	CHK	0.0008	
14-DEC-2007 05:53	CHK	0.0009	
15-DEC-2007 08:24	CHK	0.0009	
17-DEC-2007 05:37	CHK	0.0008	
18-DEC-2007 05:47	CHK	0.0008	
19-DEC-2007 05:33	CHK	0.0009	
20-DEC-2007 03:25	CHK	0.0008	
21-DEC-2007 04:16	CHK	0.0008	
21-DEC-2007 04:30	CHK	0.0008	
22-DEC-2007 07:36	CHK	0.0009	
24-DEC-2007 05:27	CHK	0.0009	
25-DEC-2007 09:30	CHK	0.0009	

-- Multi-Test Full Report --

Description : 1407.95 KeV Centroid

Parameter Units : channel           Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 5552.000000 Upper Bound : 5752.000000

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 5652.350098 Std Deviation : 4.773609

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 6

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 04:49	CHK		5659.1377	
2-NOV-2007 04:49	CHK		5659.2227	
5-NOV-2007 06:11	CHK		5659.5303	
6-NOV-2007 05:33	CHK		5659.1914	
7-NOV-2007 04:56	CHK		5659.1353	
8-NOV-2007 06:28	CHK		5659.0596	
9-NOV-2007 04:40	CHK		5658.9702	
10-NOV-2007 05:27	CHK		5659.1880	
12-NOV-2007 05:39	CHK		5659.0410	
13-NOV-2007 05:37	CHK		5659.3164	
13-NOV-2007 05:50	CHK		5659.1377	
14-NOV-2007 05:35	CHK		5659.3208	
15-NOV-2007 05:01	CHK		5658.6729	
16-NOV-2007 05:33	CHK		5659.0010	
17-NOV-2007 09:54	CHK		5659.1953	
19-NOV-2007 05:39	CHK		5659.2080	
20-NOV-2007 05:46	CHK		5659.4453	
21-NOV-2007 05:27	CHK		5659.6221	
22-NOV-2007 05:25	CHK		5659.3262	
23-NOV-2007 04:23	CHK		5658.8325	
23-NOV-2007 07:35	CHK		5659.4790	
24-NOV-2007 06:05	CHK		5658.5654	
26-NOV-2007 05:35	CHK		5658.6333	
26-NOV-2007 05:50	CHK		5658.6362	
27-NOV-2007 05:37	CHK		5658.2407	
28-NOV-2007 05:46	CHK		5658.1675	
29-NOV-2007 05:21	CHK		5658.2529	



29-NOV-2007 05:50	CHK	5658.1426			
30-NOV-2007 05:22	CHK	5658.1172			
1-DEC-2007 10:50	CHK	5657.8408			
3-DEC-2007 05:40	CHK	5657.8140			
4-DEC-2007 05:30	CHK	5658.4722			
5-DEC-2007 06:05	CHK	5659.0674			
6-DEC-2007 05:45	CHK	5658.5767			
7-DEC-2007 05:19	CHK	5658.3647			
7-DEC-2007 05:35	CHK	5658.4312			
8-DEC-2007 06:12	CHK	5658.5962			
10-DEC-2007 05:35	CHK	5658.1626			
11-DEC-2007 05:18	CHK	5658.1870			
12-DEC-2007 05:14	CHK	5657.9736			
12-DEC-2007 05:27	CHK	5657.7959			
12-DEC-2007 05:41	CHK	5657.7153			
13-DEC-2007 03:48	CHK	5658.1050			
14-DEC-2007 05:53	CHK	5657.6099			
15-DEC-2007 08:24	CHK	5657.1987			
17-DEC-2007 05:37	CHK	5657.2178			
18-DEC-2007 05:47	CHK	5657.7344			
19-DEC-2007 05:33	CHK	5657.3770			
20-DEC-2007 03:25	CHK	5657.8013			
21-DEC-2007 04:16	CHK	5658.0762			
21-DEC-2007 04:30	CHK	5657.9409			
22-DEC-2007 07:36	CHK	5658.1270			
24-DEC-2007 05:27	CHK	5657.7500			
25-DEC-2007 09:30	CHK	5658.0527			

-- Multi-Test Full Report --

Description : 1407.95 KeV FWHM Resolution  
Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 1.907706              Std Deviation : 0.111036

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-NOV-2007 04:49	CHK		2.0824	
2-NOV-2007 04:49	CHK		2.1581	In
5-NOV-2007 06:11	CHK		2.0946	
6-NOV-2007 05:33	CHK		1.9881	
7-NOV-2007 04:56	CHK		2.0712	
8-NOV-2007 06:28	CHK		2.1564	In
9-NOV-2007 04:40	CHK		2.0049	
10-NOV-2007 05:27	CHK		2.1557	In
12-NOV-2007 05:39	CHK		1.9681	
13-NOV-2007 05:37	CHK		1.9708	
13-NOV-2007 05:50	CHK		2.1529	In
14-NOV-2007 05:35	CHK		1.9478	
15-NOV-2007 05:01	CHK		2.0846	
16-NOV-2007 05:33	CHK		1.9545	
17-NOV-2007 09:54	CHK		2.0047	
19-NOV-2007 05:39	CHK		1.8965	
20-NOV-2007 05:46	CHK		2.1034	
21-NOV-2007 05:27	CHK		1.8950	
22-NOV-2007 05:25	CHK		1.9608	
23-NOV-2007 04:23	CHK		2.3428	Ac
23-NOV-2007 07:35	CHK		2.0302	
24-NOV-2007 06:05	CHK		2.1055	
26-NOV-2007 05:35	CHK		2.0884	
26-NOV-2007 05:50	CHK		2.0872	
27-NOV-2007 05:37	CHK		2.0534	
28-NOV-2007 05:46	CHK		1.9084	
29-NOV-2007 05:21	CHK		2.2651	Ac
29-NOV-2007 05:50	CHK		2.0623	
30-NOV-2007 05:22	CHK		1.9912	
1-DEC-2007 10:50	CHK		1.8780	
3-DEC-2007 05:40	CHK		2.2125	In
4-DEC-2007 05:30	CHK		2.0172	
5-DEC-2007 06:05	CHK		2.0732	
6-DEC-2007 05:45	CHK		1.9896	
7-DEC-2007 05:19	CHK		2.1693	In
7-DEC-2007 05:35	CHK		1.9447	
8-DEC-2007 06:12	CHK		2.1579	In
10-DEC-2007 05:35	CHK		1.9585	
11-DEC-2007 05:18	CHK		2.1005	
12-DEC-2007 05:14	CHK		1.9418	
12-DEC-2007 05:27	CHK		2.0163	

12-DEC-2007 05:41	CHK	2.1611	In	
13-DEC-2007 03:48	CHK	2.0786		
14-DEC-2007 05:53	CHK	2.1882	In	
15-DEC-2007 08:24	CHK	2.1366	In	
17-DEC-2007 05:37	CHK	1.9779		
18-DEC-2007 05:47	CHK	1.9071		
19-DEC-2007 05:33	CHK	2.1573	In	
20-DEC-2007 03:25	CHK	2.0408		
21-DEC-2007 04:16	CHK	2.1022		
21-DEC-2007 04:30	CHK	2.0341		
22-DEC-2007 07:36	CHK	2.0908		
24-DEC-2007 05:27	CHK	2.1562	In	
25-DEC-2007 09:30	CHK	2.0444		

## -- Multi-Test Full Report --

Description : 778.89 KeV Efficiency

Parameter Units : Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.001247 Upper Bound : 0.001497

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 0.001372 Std Deviation : 0.000042

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 8

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 04:49	CHK	0.0014		
2-NOV-2007 04:49	CHK	0.0014		
5-NOV-2007 06:11	CHK	0.0013	In	
6-NOV-2007 05:33	CHK	0.0013	In	
7-NOV-2007 04:56	CHK	0.0014		
8-NOV-2007 06:28	CHK	0.0013	In	
9-NOV-2007 04:40	CHK	0.0014		
10-NOV-2007 05:27	CHK	0.0014		
12-NOV-2007 05:39	CHK	0.0015	In	

13-NOV-2007 05:37	CHK	0.0014			
13-NOV-2007 05:50	CHK	0.0014			
14-NOV-2007 05:35	CHK	0.0014			
15-NOV-2007 05:01	CHK	0.0013			
16-NOV-2007 05:33	CHK	0.0014			
17-NOV-2007 09:54	CHK	0.0013			
19-NOV-2007 05:39	CHK	0.0014			
20-NOV-2007 05:46	CHK	0.0014			
21-NOV-2007 05:27	CHK	0.0014			
22-NOV-2007 05:25	CHK	0.0014			
23-NOV-2007 04:23	CHK	0.0014			
23-NOV-2007 07:35	CHK	0.0014			
24-NOV-2007 06:05	CHK	0.0014			
26-NOV-2007 05:35	CHK	0.0012	Be Ac		
26-NOV-2007 05:50	CHK	0.0014			
27-NOV-2007 05:37	CHK	0.0014			
28-NOV-2007 05:46	CHK	0.0014			
29-NOV-2007 05:21	CHK	0.0013			
29-NOV-2007 05:50	CHK	0.0013			
30-NOV-2007 05:22	CHK	0.0015	In		
1-DEC-2007 10:50	CHK	0.0014			
3-DEC-2007 05:40	CHK	0.0014			
4-DEC-2007 05:30	CHK	0.0014			
5-DEC-2007 06:05	CHK	0.0014			
6-DEC-2007 05:45	CHK	0.0014			
7-DEC-2007 05:19	CHK	0.0014			
7-DEC-2007 05:35	CHK	0.0014			
8-DEC-2007 06:12	CHK	0.0013			
10-DEC-2007 05:35	CHK	0.0013			
11-DEC-2007 05:18	CHK	0.0013			
12-DEC-2007 05:14	CHK	0.0014			
12-DEC-2007 05:27	CHK	0.0014			
12-DEC-2007 05:41	CHK	0.0014			
13-DEC-2007 03:48	CHK	0.0013			
14-DEC-2007 05:53	CHK	0.0014			
15-DEC-2007 08:24	CHK	0.0014			
17-DEC-2007 05:37	CHK	0.0014			
18-DEC-2007 05:47	CHK	0.0014			
19-DEC-2007 05:33	CHK	0.0014			
20-DEC-2007 03:25	CHK	0.0014			
21-DEC-2007 04:16	CHK	0.0014			
21-DEC-2007 04:30	CHK	0.0014			
22-DEC-2007 07:36	CHK	0.0014			

24-DEC-2007 05:27 CHK 0.0014 | | |  
 25-DEC-2007 09:30 CHK 0.0014 | | |

-- Multi-Test Full Report --

Description : 778.89 KeV Centroid

Parameter Units : channels Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 3027.000000 Upper Bound : 3227.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 9

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	CHK		3131.2229		
2-NOV-2007 04:49	CHK		3131.3713		
5-NOV-2007 06:11	CHK		3131.3035		
6-NOV-2007 05:33	CHK		3130.9956		
7-NOV-2007 04:56	CHK		3131.0713		
8-NOV-2007 06:28	CHK		3131.2236		
9-NOV-2007 04:40	CHK		3130.8918		
10-NOV-2007 05:27	CHK		3131.1238		
12-NOV-2007 05:39	CHK		3130.9873		
13-NOV-2007 05:37	CHK		3131.0381		
13-NOV-2007 05:50	CHK		3131.3850		
14-NOV-2007 05:35	CHK		3131.2314		
15-NOV-2007 05:01	CHK		3130.7319		
16-NOV-2007 05:33	CHK		3131.3062		
17-NOV-2007 09:54	CHK		3131.3020		
19-NOV-2007 05:39	CHK		3130.9651		
20-NOV-2007 05:46	CHK		3131.3877		
21-NOV-2007 05:27	CHK		3131.5535		
22-NOV-2007 05:25	CHK		3131.1370		
23-NOV-2007 04:23	CHK		3131.0410		
23-NOV-2007 07:35	CHK		3131.3149		
24-NOV-2007 06:05	CHK		3130.9480		
26-NOV-2007 05:35	CHK		3130.7419		
26-NOV-2007 05:50	CHK		3130.6558		
27-NOV-2007 05:37	CHK		3130.4971		
28-NOV-2007 05:46	CHK		3130.5994		

29-NOV-2007 05:21	CHK	3130.7590			
29-NOV-2007 05:50	CHK	3130.4548			
30-NOV-2007 05:22	CHK	3130.5403			
1-DEC-2007 10:50	CHK	3130.2017			
3-DEC-2007 05:40	CHK	3130.3372			
4-DEC-2007 05:30	CHK	3130.8147			
5-DEC-2007 06:05	CHK	3130.9797			
6-DEC-2007 05:45	CHK	3130.6465			
7-DEC-2007 05:19	CHK	3130.6062			
7-DEC-2007 05:35	CHK	3130.6421			
8-DEC-2007 06:12	CHK	3130.8567			
10-DEC-2007 05:35	CHK	3130.5925			
11-DEC-2007 05:18	CHK	3130.6833			
12-DEC-2007 05:14	CHK	3130.4424			
12-DEC-2007 05:27	CHK	3130.1873			
12-DEC-2007 05:41	CHK	3130.3892			
13-DEC-2007 03:48	CHK	3130.7041			
14-DEC-2007 05:53	CHK	3130.3147			
15-DEC-2007 08:24	CHK	3130.1211			
17-DEC-2007 05:37	CHK	3130.0251			
18-DEC-2007 05:47	CHK	3130.4521			
19-DEC-2007 05:33	CHK	3130.3416			
20-DEC-2007 03:25	CHK	3130.2100			
21-DEC-2007 04:16	CHK	3130.4575			
21-DEC-2007 04:30	CHK	3130.6526			
22-DEC-2007 07:36	CHK	3130.5437			
24-DEC-2007 05:27	CHK	3130.3142			
25-DEC-2007 09:30	CHK	3130.5391			

-- Multi-Test Full Report --

Description : 778.89 KeV FWHM Resolution  
Parameter Units : keV                      Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 1.229000              Upper Bound : 1.682500

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUL-2005 00:00 End Date : 1-JAN-2006 00:00  
Mean : 1.459200              Std Deviation : 0.076591

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 04:49	CHK		1.3627		
2-NOV-2007 04:49	CHK		1.4672		
5-NOV-2007 06:11	CHK		1.5211		
6-NOV-2007 05:33	CHK		1.4604		
7-NOV-2007 04:56	CHK		1.6001		
8-NOV-2007 06:28	CHK		1.4920		
9-NOV-2007 04:40	CHK		1.3517		
10-NOV-2007 05:27	CHK		1.5519		
12-NOV-2007 05:39	CHK		1.5059		
13-NOV-2007 05:37	CHK		1.4181		
13-NOV-2007 05:50	CHK		1.5976		
14-NOV-2007 05:35	CHK		1.4676		
15-NOV-2007 05:01	CHK		1.5009		
16-NOV-2007 05:33	CHK		1.4669		
17-NOV-2007 09:54	CHK		1.5256		
19-NOV-2007 05:39	CHK		1.6250	In	
20-NOV-2007 05:46	CHK		1.2952	In	
21-NOV-2007 05:27	CHK		1.3992		
22-NOV-2007 05:25	CHK		1.4982		
23-NOV-2007 04:23	CHK		1.5723		
23-NOV-2007 07:35	CHK		1.5789		
24-NOV-2007 06:05	CHK		1.5100		
26-NOV-2007 05:35	CHK		1.6328	In	
26-NOV-2007 05:50	CHK		1.5293		
27-NOV-2007 05:37	CHK		1.5402		
28-NOV-2007 05:46	CHK		1.4799		
29-NOV-2007 05:21	CHK		1.5135		
29-NOV-2007 05:50	CHK		1.3832		
30-NOV-2007 05:22	CHK		1.4402		
1-DEC-2007 10:50	CHK		1.5489		
3-DEC-2007 05:40	CHK		1.5809		
4-DEC-2007 05:30	CHK		1.4771		
5-DEC-2007 06:05	CHK		1.4931		
6-DEC-2007 05:45	CHK		1.3256		
7-DEC-2007 05:19	CHK		1.7218	Ab Ac	
7-DEC-2007 05:35	CHK		1.5531		
8-DEC-2007 06:12	CHK		1.3586		

10-DEC-2007 05:35	CHK	1.3729	
11-DEC-2007 05:18	CHK	1.5736	
12-DEC-2007 05:14	CHK	1.5114	
12-DEC-2007 05:27	CHK	1.7716	Ab Ac
12-DEC-2007 05:41	CHK	1.5601	
13-DEC-2007 03:48	CHK	1.5061	
14-DEC-2007 05:53	CHK	1.5414	
15-DEC-2007 08:24	CHK	1.5677	
17-DEC-2007 05:37	CHK	1.5968	
18-DEC-2007 05:47	CHK	1.5297	
19-DEC-2007 05:33	CHK	1.3778	
20-DEC-2007 03:25	CHK	1.5520	
21-DEC-2007 04:16	CHK	1.7132	Ab Ac
21-DEC-2007 04:30	CHK	1.5206	
22-DEC-2007 07:36	CHK	1.6132	In
24-DEC-2007 05:27	CHK	1.5385	
25-DEC-2007 09:30	CHK	1.2596	In

Quality Assurance Report.

Generated 26-DEC-2007 15:52:36.96

QA Filename : \$DISK1:[GER4.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : MDA K-40 CPM

Parameter Units : CPM Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.150000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 0.122391 Std Deviation : 0.002587

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28	BKG		0.1194	
11-NOV-2007 05:32	BKG		0.1209	
12-NOV-2007 06:30	BKG		0.1156	In
18-NOV-2007 08:50	BKG		0.1156	In



25-NOV-2007 05:40 BKG	0.1207	
2-DEC-2007 07:11 BKG	0.1202	
9-DEC-2007 06:00 BKG	0.1189	
16-DEC-2007 07:50 BKG	0.1215	
23-DEC-2007 08:54 BKG	0.1226	

## -- Multi-Test Full Report --

Description : MDA Cr-51 CPM

Parameter Units : CPM Parameter Type : Nuclide

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.100000

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 0.084948 Std Deviation : 0.002180

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28 BKG			0.0866	
11-NOV-2007 05:32 BKG			0.0823	
12-NOV-2007 06:30 BKG			0.0820	
18-NOV-2007 08:50 BKG			0.0851	
25-NOV-2007 05:40 BKG			0.0793	In
2-DEC-2007 07:11 BKG			0.0864	
9-DEC-2007 06:00 BKG			0.0819	
16-DEC-2007 07:50 BKG			0.0853	
23-DEC-2007 08:54 BKG			0.0822	

## -- Multi-Test Full Report --

Description : MDA Co-60 CPM

Parameter Units : CPM Parameter Type : Nuclide

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.040000

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 0.041480 Std Deviation : 0.002252

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:28	BKG		0.0430	Ab	
11-NOV-2007 05:32	BKG		0.0443	Ab	
12-NOV-2007 06:30	BKG		0.0415	Ab	
18-NOV-2007 08:50	BKG		0.0455	Ab	
25-NOV-2007 05:40	BKG		0.0430	Ab	
2-DEC-2007 07:11	BKG		0.0414	Ab	
9-DEC-2007 06:00	BKG		0.0430	Ab	
16-DEC-2007 07:50	BKG		0.0413	Ab	
23-DEC-2007 08:54	BKG		0.0416	Ab	

-- Multi-Test Full Report --

Description : MDA Zn-65 CPM

Parameter Units : CPM Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.048930

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 0.049604 Std Deviation : 0.002263

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:28	BKG		0.0489	Ab	
11-NOV-2007 05:32	BKG		0.0500	Ab	
12-NOV-2007 06:30	BKG		0.0465		
18-NOV-2007 08:50	BKG		0.0490	Ab	
25-NOV-2007 05:40	BKG		0.0477		
2-DEC-2007 07:11	BKG		0.0550	Ab In	
9-DEC-2007 06:00	BKG		0.0462		
16-DEC-2007 07:50	BKG		0.0469		

23-DEC-2007 08:54 BKG

0.0529 Ab| | |

-- Multi-Test Full Report --

Description : MDA Ru106da CPM

Parameter Units : CPM Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.063160

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 0.064123 Std Deviation : 0.001975

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:28	BKG		0.0649	Ab	
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11-NOV-2007 05:32	BKG		0.0624		
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12-NOV-2007 06:30	BKG		0.0674	Ab	
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Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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18-NOV-2007 08:50	BKG		0.0646	Ab	
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25-NOV-2007 05:40	BKG		0.0675	Ab	
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2-DEC-2007 07:11	BKG		0.0654	Ab	
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9-DEC-2007 06:00	BKG		0.0621		
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16-DEC-2007 07:50	BKG		0.0667	Ab	
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23-DEC-2007 08:54	BKG		0.0659	Ab	
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-- Multi-Test Full Report --

Description : MDA Cs-134 CPM

Parameter Units : CPM Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.069915

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 0.071118 Std Deviation : 0.002091

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	BKG		0.0689	
11-NOV-2007 05:32	BKG		0.0728	Ab
12-NOV-2007 06:30	BKG		0.0679	
18-NOV-2007 08:50	BKG		0.0772	Ab In
25-NOV-2007 05:40	BKG		0.0695	
2-DEC-2007 07:11	BKG		0.0726	Ab
9-DEC-2007 06:00	BKG		0.0722	Ab
16-DEC-2007 07:50	BKG		0.0715	Ab
23-DEC-2007 08:54	BKG		0.0743	Ab

-- Multi-Test Full Report --

Description : MDA Cs-137da CPM  
 Parameter Units : CPM Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.061075

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 0.061972 Std Deviation : 0.002045

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:28	BKG		0.0632	Ab
11-NOV-2007 05:32	BKG		0.0591	
12-NOV-2007 06:30	BKG		0.0608	
18-NOV-2007 08:50	BKG		0.0620	Ab
25-NOV-2007 05:40	BKG		0.0588	
2-DEC-2007 07:11	BKG		0.0617	Ab

Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
9-DEC-2007 06:00	BKG		0.0592	
16-DEC-2007 07:50	BKG		0.0613	Ab

23-DEC-2007 08:54 BKG

0.0626 Ab| | |

-- Multi-Test Full Report --

Description : MDA Pb-212 CPM

Parameter Units : CPM Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.117970

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 0.121248 Std Deviation : 0.002298

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:28	BKG		0.1183	Ab	
11-NOV-2007 05:32	BKG		0.1175		
12-NOV-2007 06:30	BKG		0.1202	Ab	
18-NOV-2007 08:50	BKG		0.1208	Ab	
25-NOV-2007 05:40	BKG		0.1227	Ab	
2-DEC-2007 07:11	BKG		0.1200	Ab	
9-DEC-2007 06:00	BKG		0.1201	Ab	
16-DEC-2007 07:50	BKG		0.1216	Ab	
23-DEC-2007 08:54	BKG		0.1236	Ab	

-- Multi-Test Full Report --

Description : MDA Ra-226da CPM

Parameter Units : CPM Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.082060

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 0.090999 Std Deviation : 0.002667

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:28 BKG          0.0881 Ab| | |
11-NOV-2007 05:32 BKG          0.0912 Ab| | |
12-NOV-2007 06:30 BKG          0.0908 Ab| | |
18-NOV-2007 08:50 BKG          0.0927 Ab| | |
25-NOV-2007 05:40 BKG          0.0901 Ab| | |
 2-DEC-2007 07:11 BKG          0.0880 Ab| | |
 9-DEC-2007 06:00 BKG          0.0890 Ab| | |
16-DEC-2007 07:50 BKG          0.0913 Ab| | |
23-DEC-2007 08:54 BKG          0.0922 Ab| | |

```

-- Multi-Test Full Report --

Description : MDA Ra-228 CPM

Parameter Units : CPM            Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000            Upper Bound : 0.068095

Investigate Level : 2.000000            Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 0.072553            Std Deviation : 0.002424

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued)            Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:28 BKG          0.0738 Ab| | |
11-NOV-2007 05:32 BKG          0.0686 Ab| | |
12-NOV-2007 06:30 BKG          0.0670 |In| |
18-NOV-2007 08:50 BKG          0.0721 Ab| | |
25-NOV-2007 05:40 BKG          0.0724 Ab| | |
 2-DEC-2007 07:11 BKG          0.0696 Ab| | |
 9-DEC-2007 06:00 BKG          0.0740 Ab| | |
16-DEC-2007 07:50 BKG          0.0718 Ab| | |
23-DEC-2007 08:54 BKG          0.0719 Ab| | |

```

-- Multi-Test Full Report --

Description : MDA U-235 CPM

Parameter Units : CPM Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.097155

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 0.098581 Std Deviation : 0.002421

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:28	BKG		0.0955		
11-NOV-2007 05:32	BKG		0.0912	Ac	
12-NOV-2007 06:30	BKG		0.0944		
18-NOV-2007 08:50	BKG		0.0949		
25-NOV-2007 05:40	BKG		0.0975	Ab	
2-DEC-2007 07:11	BKG		0.0957		
9-DEC-2007 06:00	BKG		0.0936	In	
16-DEC-2007 07:50	BKG		0.1013	Ab	
23-DEC-2007 08:54	BKG		0.1006	Ab	

-- Multi-Test Full Report --

Description : MDA TH-232 CPM

Parameter Units : CPM Parameter Type : Nuclide

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.699390

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 0.714551 Std Deviation : 0.030294

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:28	BKG		0.7133	Ab	
11-NOV-2007 05:32	BKG		0.7128	Ab	
12-NOV-2007 06:30	BKG		0.6882		

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
18-NOV-2007 08:50	BKG		0.7388	Ab	
25-NOV-2007 05:40	BKG		0.7021	Ab	
2-DEC-2007 07:11	BKG		0.7150	Ab	
9-DEC-2007 06:00	BKG		0.7166	Ab	
16-DEC-2007 07:50	BKG		0.6565		
23-DEC-2007 08:54	BKG		0.7400	Ab	



Quality Assurance Report.

Generated 26-DEC-2007 15:47:10.47

QA Filename : RDND06::RDND06\$DKA100:[GER15.QA]CHECK.QAF;2

-- Multi-Test Full Report --

Description : 121.78 KeV Efficiency

Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.007300 Upper Bound : 0.007800

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 0.007598 Std Deviation : 0.000061

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
5-NOV-2007 06:21	CHK		0.0076		
6-NOV-2007 05:58	CHK		0.0076		
7-NOV-2007 04:57	CHK		0.0076		
8-NOV-2007 06:30	CHK		0.0075		
9-NOV-2007 04:50	CHK		0.0075		
10-NOV-2007 05:27	CHK		0.0075		
12-NOV-2007 05:39	CHK		0.0077		
13-NOV-2007 05:40	CHK		0.0076		
14-NOV-2007 05:53	CHK		0.0077		
15-NOV-2007 05:02	CHK		0.0076		
16-NOV-2007 05:39	CHK		0.0076		
19-NOV-2007 05:42	CHK		0.0075		
20-NOV-2007 05:47	CHK		0.0075		
20-NOV-2007 06:00	CHK		0.0076		
21-NOV-2007 05:27	CHK		0.0077	In	
23-NOV-2007 08:21	CHK		0.0075		
26-NOV-2007 05:38	CHK		0.0076		
27-NOV-2007 05:37	CHK		0.0075		
28-NOV-2007 05:58	CHK		0.0076		
29-NOV-2007 05:24	CHK		0.0077		
29-NOV-2007 05:53	CHK		0.0075		

30-NOV-2007 05:23	CHK	0.0077	In
1-DEC-2007 10:37	CHK	0.0077	
3-DEC-2007 05:41	CHK	0.0077	
4-DEC-2007 05:30	CHK	0.0076	
5-DEC-2007 06:05	CHK	0.0075	In
6-DEC-2007 05:46	CHK	0.0076	
7-DEC-2007 05:19	CHK	0.0076	
8-DEC-2007 06:13	CHK	0.0076	
10-DEC-2007 05:36	CHK	0.0076	
11-DEC-2007 05:36	CHK	0.0076	
12-DEC-2007 05:14	CHK	0.0076	
13-DEC-2007 03:53	CHK	0.0077	
14-DEC-2007 05:53	CHK	0.0077	
15-DEC-2007 08:26	CHK	0.0077	
17-DEC-2007 05:38	CHK	0.0076	
18-DEC-2007 05:48	CHK	0.0076	
19-DEC-2007 05:34	CHK	0.0075	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-DEC-2007 03:06	CHK		0.0076	
21-DEC-2007 04:16	CHK		0.0076	
22-DEC-2007 07:30	CHK		0.0075	
24-DEC-2007 05:27	CHK		0.0075	In
25-DEC-2007 09:29	CHK		0.0076	

-- Multi-Test Full Report --

Description : 121.78 KeV Centroid

Parameter Units : channel Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 356.000000 Upper Bound : 556.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
5-NOV-2007 06:21	CHK		455.6640	
6-NOV-2007 05:58	CHK		455.7812	
7-NOV-2007 04:57	CHK		455.7178	
8-NOV-2007 06:30	CHK		455.8085	
9-NOV-2007 04:50	CHK		455.8421	
10-NOV-2007 05:27	CHK		455.9167	

12-NOV-2007 05:39	CHK	455.7274			
13-NOV-2007 05:40	CHK	455.7569			
14-NOV-2007 05:53	CHK	455.7249			
15-NOV-2007 05:02	CHK	455.7657			
16-NOV-2007 05:39	CHK	455.7896			
19-NOV-2007 05:42	CHK	455.6946			
20-NOV-2007 05:47	CHK	455.6674			
20-NOV-2007 06:00	CHK	455.6789			
21-NOV-2007 05:27	CHK	455.6359			
23-NOV-2007 08:21	CHK	455.6376			
26-NOV-2007 05:38	CHK	455.5326			
27-NOV-2007 05:37	CHK	455.5674			
28-NOV-2007 05:58	CHK	455.4717			
29-NOV-2007 05:24	CHK	455.4562			
29-NOV-2007 05:53	CHK	455.5187			
30-NOV-2007 05:23	CHK	455.5524			
1-DEC-2007 10:37	CHK	455.4432			
3-DEC-2007 05:41	CHK	455.5679			
4-DEC-2007 05:30	CHK	455.6063			
5-DEC-2007 06:05	CHK	455.5720			
6-DEC-2007 05:46	CHK	455.5889			
7-DEC-2007 05:19	CHK	455.5591			
8-DEC-2007 06:13	CHK	455.4879			
10-DEC-2007 05:36	CHK	455.5008			
11-DEC-2007 05:36	CHK	455.3993			
12-DEC-2007 05:14	CHK	455.3865			
13-DEC-2007 03:53	CHK	455.3892			
14-DEC-2007 05:53	CHK	455.3951			
15-DEC-2007 08:26	CHK	455.4665			
17-DEC-2007 05:38	CHK	455.4669			
18-DEC-2007 05:48	CHK	455.4349			
19-DEC-2007 05:34	CHK	455.4152			
20-DEC-2007 03:06	CHK	455.4290			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-DEC-2007 04:16	CHK		455.4123		
22-DEC-2007 07:30	CHK		455.3680		
24-DEC-2007 05:27	CHK		455.2732		
25-DEC-2007 09:29	CHK		455.2703		

-- Multi-Test Full Report --

Description : 121.78 KeV FWHM Resolution  
 Parameter Units : keV                      Parameter Type : Peak

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00  
 Mean : 1.043033              Std Deviation : 0.015700

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
5-NOV-2007 06:21	CHK		1.0210		
6-NOV-2007 05:58	CHK		1.0688		
7-NOV-2007 04:57	CHK		1.0446		
8-NOV-2007 06:30	CHK		1.0190		
9-NOV-2007 04:50	CHK		1.0468		
10-NOV-2007 05:27	CHK		1.0200		
12-NOV-2007 05:39	CHK		1.0679		
13-NOV-2007 05:40	CHK		1.0402		
14-NOV-2007 05:53	CHK		1.0459		
15-NOV-2007 05:02	CHK		1.0312		
16-NOV-2007 05:39	CHK		1.0094	In	
19-NOV-2007 05:42	CHK		1.0279		
20-NOV-2007 05:47	CHK		1.0511		
20-NOV-2007 06:00	CHK		1.0427		
21-NOV-2007 05:27	CHK		1.0568		
23-NOV-2007 08:21	CHK		1.0292		
26-NOV-2007 05:38	CHK		1.0452		
27-NOV-2007 05:37	CHK		1.0436		
28-NOV-2007 05:58	CHK		1.0349		
29-NOV-2007 05:24	CHK		1.0348		
29-NOV-2007 05:53	CHK		1.0269		
30-NOV-2007 05:23	CHK		1.0403		
1-DEC-2007 10:37	CHK		1.0510		
3-DEC-2007 05:41	CHK		1.0168		
4-DEC-2007 05:30	CHK		1.0553		
5-DEC-2007 06:05	CHK		1.0414		
6-DEC-2007 05:46	CHK		1.0351		
7-DEC-2007 05:19	CHK		1.0232		
8-DEC-2007 06:13	CHK		1.0204		
10-DEC-2007 05:36	CHK		1.0338		
11-DEC-2007 05:36	CHK		1.0506		

12-DEC-2007 05:14	CHK	1.0352	
13-DEC-2007 03:53	CHK	1.0554	
14-DEC-2007 05:53	CHK	1.0507	
15-DEC-2007 08:26	CHK	1.0393	
17-DEC-2007 05:38	CHK	1.0388	
18-DEC-2007 05:48	CHK	1.0345	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-DEC-2007 05:34	CHK		1.0298	
20-DEC-2007 03:06	CHK		1.0466	
21-DEC-2007 04:16	CHK		1.0301	
22-DEC-2007 07:30	CHK		1.0405	
24-DEC-2007 05:27	CHK		1.0508	
25-DEC-2007 09:29	CHK		1.0529	

-- Multi-Test Full Report --

Description : 1407.95 KeV Efficiency  
Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 0.002320

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00  
Mean : 0.001218 Std Deviation : 0.000151

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
5-NOV-2007 06:21	CHK		0.0012	
6-NOV-2007 05:58	CHK		0.0013	
7-NOV-2007 04:57	CHK		0.0013	
8-NOV-2007 06:30	CHK		0.0012	
9-NOV-2007 04:50	CHK		0.0012	
10-NOV-2007 05:27	CHK		0.0013	
12-NOV-2007 05:39	CHK		0.0012	
13-NOV-2007 05:40	CHK		0.0012	
14-NOV-2007 05:53	CHK		0.0012	
15-NOV-2007 05:02	CHK		0.0012	

16-NOV-2007 05:39	CHK	0.0012	
19-NOV-2007 05:42	CHK	0.0013	
20-NOV-2007 05:47	CHK	0.0013	
20-NOV-2007 06:00	CHK	0.0012	
21-NOV-2007 05:27	CHK	0.0012	
23-NOV-2007 08:21	CHK	0.0013	
26-NOV-2007 05:38	CHK	0.0012	
27-NOV-2007 05:37	CHK	0.0013	
28-NOV-2007 05:58	CHK	0.0012	
29-NOV-2007 05:24	CHK	0.0012	
29-NOV-2007 05:53	CHK	0.0013	
30-NOV-2007 05:23	CHK	0.0013	
1-DEC-2007 10:37	CHK	0.0012	
3-DEC-2007 05:41	CHK	0.0013	
4-DEC-2007 05:30	CHK	0.0012	
5-DEC-2007 06:05	CHK	0.0012	
6-DEC-2007 05:46	CHK	0.0012	
7-DEC-2007 05:19	CHK	0.0012	
8-DEC-2007 06:13	CHK	0.0012	
10-DEC-2007 05:36	CHK	0.0013	
11-DEC-2007 05:36	CHK	0.0012	
12-DEC-2007 05:14	CHK	0.0012	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
13-DEC-2007 03:53	CHK		0.0012	
14-DEC-2007 05:53	CHK		0.0013	
15-DEC-2007 08:26	CHK		0.0012	
17-DEC-2007 05:38	CHK		0.0013	
18-DEC-2007 05:48	CHK		0.0012	
19-DEC-2007 05:34	CHK		0.0012	
20-DEC-2007 03:06	CHK		0.0012	
21-DEC-2007 04:16	CHK		0.0013	
22-DEC-2007 07:30	CHK		0.0013	
24-DEC-2007 05:27	CHK		0.0012	
25-DEC-2007 09:29	CHK		0.0012	

-- Multi-Test Full Report --

Description : 1407.95 KeV Centroid

Parameter Units : channel Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 5681.000000 Upper Bound : 5881.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
5-NOV-2007 06:21	CHK		5785.8472	
6-NOV-2007 05:58	CHK		5786.1836	
7-NOV-2007 04:57	CHK		5786.0308	
8-NOV-2007 06:30	CHK		5786.4204	
9-NOV-2007 04:50	CHK		5786.7451	
10-NOV-2007 05:27	CHK		5786.9331	
12-NOV-2007 05:39	CHK		5786.3813	
13-NOV-2007 05:40	CHK		5787.1294	
14-NOV-2007 05:53	CHK		5787.7148	
15-NOV-2007 05:02	CHK		5787.1440	
16-NOV-2007 05:39	CHK		5786.9883	
19-NOV-2007 05:42	CHK		5787.4888	
20-NOV-2007 05:47	CHK		5787.5908	
20-NOV-2007 06:00	CHK		5787.9263	
21-NOV-2007 05:27	CHK		5787.8262	
23-NOV-2007 08:21	CHK		5787.3892	
26-NOV-2007 05:38	CHK		5786.5762	
27-NOV-2007 05:37	CHK		5785.8232	
28-NOV-2007 05:58	CHK		5785.7065	
29-NOV-2007 05:24	CHK		5785.5723	
29-NOV-2007 05:53	CHK		5785.7290	
30-NOV-2007 05:23	CHK		5786.2227	
1-DEC-2007 10:37	CHK		5785.4404	
3-DEC-2007 05:41	CHK		5785.5469	
4-DEC-2007 05:30	CHK		5785.7837	
5-DEC-2007 06:05	CHK		5786.0879	
6-DEC-2007 05:46	CHK		5785.9907	
7-DEC-2007 05:19	CHK		5785.8018	
8-DEC-2007 06:13	CHK		5785.9614	
10-DEC-2007 05:36	CHK		5785.9272	
11-DEC-2007 05:36	CHK		5785.8174	
12-DEC-2007 05:14	CHK		5785.2300	
13-DEC-2007 03:53	CHK		5785.0713	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
14-DEC-2007 05:53	CHK		5785.2324	

15-DEC-2007 08:26	CHK	5784.4834			
17-DEC-2007 05:38	CHK	5784.7114			
18-DEC-2007 05:48	CHK	5784.1270			
19-DEC-2007 05:34	CHK	5784.6436			
20-DEC-2007 03:06	CHK	5784.4863			
21-DEC-2007 04:16	CHK	5784.9214			
22-DEC-2007 07:30	CHK	5784.7148			
24-DEC-2007 05:27	CHK	5784.5908			
25-DEC-2007 09:29	CHK	5784.1812			

## -- Multi-Test Full Report --

Description : 1407.95 KeV FWHM Resolution  
Parameter Units : keV                      Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 1.511000              Upper Bound : 2.222000

Investigate Level : 2.000000              Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00  
Mean : 1.878284              Std Deviation : 0.102260

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
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5-NOV-2007 06:21	CHK		1.7600					
6-NOV-2007 05:58	CHK		1.7112					
7-NOV-2007 04:57	CHK		1.7959					
8-NOV-2007 06:30	CHK		1.8800					
9-NOV-2007 04:50	CHK		1.9630					
10-NOV-2007 05:27	CHK		1.7660					
12-NOV-2007 05:39	CHK		1.6569	In				
13-NOV-2007 05:40	CHK		2.0100					
14-NOV-2007 05:53	CHK		1.7304					
15-NOV-2007 05:02	CHK		1.8481					
16-NOV-2007 05:39	CHK		1.9034					
19-NOV-2007 05:42	CHK		1.8691					
20-NOV-2007 05:47	CHK		1.9089					
20-NOV-2007 06:00	CHK		1.8003					
21-NOV-2007 05:27	CHK		2.0043					
23-NOV-2007 08:21	CHK		1.8809					
26-NOV-2007 05:38	CHK		1.8865					



27-NOV-2007 05:37	CHK	1.8285	
28-NOV-2007 05:58	CHK	1.8359	
29-NOV-2007 05:24	CHK	1.9212	
29-NOV-2007 05:53	CHK	1.7127	
30-NOV-2007 05:23	CHK	1.8250	
1-DEC-2007 10:37	CHK	1.9063	
3-DEC-2007 05:41	CHK	1.7737	
4-DEC-2007 05:30	CHK	1.8937	
5-DEC-2007 06:05	CHK	1.8770	
6-DEC-2007 05:46	CHK	1.9299	
7-DEC-2007 05:19	CHK	2.0060	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
8-DEC-2007 06:13	CHK		1.7817	
10-DEC-2007 05:36	CHK		1.8796	
11-DEC-2007 05:36	CHK		1.8334	
12-DEC-2007 05:14	CHK		1.8166	
13-DEC-2007 03:53	CHK		1.6831	
14-DEC-2007 05:53	CHK		1.8813	
15-DEC-2007 08:26	CHK		1.9848	
17-DEC-2007 05:38	CHK		1.7790	
18-DEC-2007 05:48	CHK		1.7855	
19-DEC-2007 05:34	CHK		1.7412	
20-DEC-2007 03:06	CHK		1.6820	
21-DEC-2007 04:16	CHK		1.8365	
22-DEC-2007 07:30	CHK		1.7125	
24-DEC-2007 05:27	CHK		1.8476	
25-DEC-2007 09:29	CHK		1.9214	

-- Multi-Test Full Report --

Description : 778.89 KeV Efficiency

Parameter Units : Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.001800 Upper Bound : 0.002100

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 0.001969 Std Deviation : 0.000276

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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5-NOV-2007 06:21	CHK		0.0021		
6-NOV-2007 05:58	CHK		0.0021		
7-NOV-2007 04:57	CHK		0.0020		
8-NOV-2007 06:30	CHK		0.0020		
9-NOV-2007 04:50	CHK		0.0020		
10-NOV-2007 05:27	CHK		0.0019		
12-NOV-2007 05:39	CHK		0.0021		
13-NOV-2007 05:40	CHK		0.0020		
14-NOV-2007 05:53	CHK		0.0019		
15-NOV-2007 05:02	CHK		0.0021		
16-NOV-2007 05:39	CHK		0.0020		
19-NOV-2007 05:42	CHK		0.0020		
20-NOV-2007 05:47	CHK		0.0021	Ab	
20-NOV-2007 06:00	CHK		0.0019		
21-NOV-2007 05:27	CHK		0.0020		
23-NOV-2007 08:21	CHK		0.0020		
26-NOV-2007 05:38	CHK		0.0021		
27-NOV-2007 05:37	CHK		0.0019		
28-NOV-2007 05:58	CHK		0.0020		
29-NOV-2007 05:24	CHK		0.0021	Ab	
29-NOV-2007 05:53	CHK		0.0019		
30-NOV-2007 05:23	CHK		0.0020		
1-DEC-2007 10:37	CHK		0.0021		

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-DEC-2007 05:41	CHK		0.0020		
4-DEC-2007 05:30	CHK		0.0020		
5-DEC-2007 06:05	CHK		0.0020		
6-DEC-2007 05:46	CHK		0.0020		
7-DEC-2007 05:19	CHK		0.0020		
8-DEC-2007 06:13	CHK		0.0021		
10-DEC-2007 05:36	CHK		0.0020		
11-DEC-2007 05:36	CHK		0.0020		
12-DEC-2007 05:14	CHK		0.0019		
13-DEC-2007 03:53	CHK		0.0021		
14-DEC-2007 05:53	CHK		0.0020		
15-DEC-2007 08:26	CHK		0.0020		

17-DEC-2007 05:38	CHK	0.0020			
18-DEC-2007 05:48	CHK	0.0020			
19-DEC-2007 05:34	CHK	0.0020			
20-DEC-2007 03:06	CHK	0.0019			
21-DEC-2007 04:16	CHK	0.0021			
22-DEC-2007 07:30	CHK	0.0021			
24-DEC-2007 05:27	CHK	0.0020			
25-DEC-2007 09:29	CHK	0.0019			

## -- Multi-Test Full Report --

Description : 778.89 KeV Centroid

Parameter Units : channels Parameter Type : Peak

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 3077.000000 Upper Bound : 3277.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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5-NOV-2007 06:21	CHK		3179.4053			
6-NOV-2007 05:58	CHK		3179.6858			
7-NOV-2007 04:57	CHK		3179.7244			
8-NOV-2007 06:30	CHK		3179.9089			
9-NOV-2007 04:50	CHK		3179.7002			
10-NOV-2007 05:27	CHK		3180.1514			
12-NOV-2007 05:39	CHK		3179.7063			
13-NOV-2007 05:40	CHK		3179.8696			
14-NOV-2007 05:53	CHK		3180.2817			
15-NOV-2007 05:02	CHK		3179.9946			
16-NOV-2007 05:39	CHK		3180.1699			
19-NOV-2007 05:42	CHK		3180.0083			
20-NOV-2007 05:47	CHK		3180.2559			
20-NOV-2007 06:00	CHK		3180.1809			
21-NOV-2007 05:27	CHK		3180.2258			
23-NOV-2007 08:21	CHK		3180.2842			
26-NOV-2007 05:38	CHK		3179.6936			
27-NOV-2007 05:37	CHK		3179.2437			
28-NOV-2007 05:58	CHK		3179.3428			
29-NOV-2007 05:24	CHK		3179.2278			
29-NOV-2007 05:53	CHK		3179.1138			
30-NOV-2007 05:23	CHK		3179.3789			
1-DEC-2007 10:37	CHK		3178.9075			
3-DEC-2007 05:41	CHK		3179.1255			

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-DEC-2007 05:30	CHK		3179.1963		
5-DEC-2007 06:05	CHK		3179.4048		
6-DEC-2007 05:46	CHK		3179.2671		
7-DEC-2007 05:19	CHK		3179.1726		
8-DEC-2007 06:13	CHK		3179.2698		
10-DEC-2007 05:36	CHK		3179.3525		
11-DEC-2007 05:36	CHK		3179.0452		
12-DEC-2007 05:14	CHK		3178.9604		
13-DEC-2007 03:53	CHK		3178.8357		
14-DEC-2007 05:53	CHK		3178.8445		
15-DEC-2007 08:26	CHK		3178.5449		
17-DEC-2007 05:38	CHK		3178.6599		
18-DEC-2007 05:48	CHK		3178.3994		
19-DEC-2007 05:34	CHK		3178.7063		
20-DEC-2007 03:06	CHK		3178.4932		
21-DEC-2007 04:16	CHK		3178.6931		
22-DEC-2007 07:30	CHK		3178.6812		
24-DEC-2007 05:27	CHK		3178.4683		
25-DEC-2007 09:29	CHK		3178.3401		

-- Multi-Test Full Report --

Description : 778.89 KeV FWHM Resolution  
 Parameter Units : keV                      Parameter Type : Peak

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 1.280000                      Upper Bound : 1.720000

Investigate Level : 2.000000                      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00                      End Date : 1-NOV-2007 00:00

Mean : 1.517138                      Std Deviation : 0.076650

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
5-NOV-2007 06:21	CHK		1.5162		
6-NOV-2007 05:58	CHK		1.5171		
7-NOV-2007 04:57	CHK		1.5636		

8-NOV-2007 06:30	CHK	1.5627	
9-NOV-2007 04:50	CHK	1.4162	
10-NOV-2007 05:27	CHK	1.5891	
12-NOV-2007 05:39	CHK	1.5272	
13-NOV-2007 05:40	CHK	1.5092	
14-NOV-2007 05:53	CHK	1.4806	
15-NOV-2007 05:02	CHK	1.4663	
16-NOV-2007 05:39	CHK	1.5262	
19-NOV-2007 05:42	CHK	1.5915	
20-NOV-2007 05:47	CHK	1.5010	
20-NOV-2007 06:00	CHK	1.5383	
21-NOV-2007 05:27	CHK	1.5219	
23-NOV-2007 08:21	CHK	1.4875	
26-NOV-2007 05:38	CHK	1.4838	
27-NOV-2007 05:37	CHK	1.4634	
28-NOV-2007 05:58	CHK	1.4097	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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29-NOV-2007 05:24	CHK	1.5567	
29-NOV-2007 05:53	CHK	1.5610	
30-NOV-2007 05:23	CHK	1.4538	
1-DEC-2007 10:37	CHK	1.4170	
3-DEC-2007 05:41	CHK	1.4772	
4-DEC-2007 05:30	CHK	1.4816	
5-DEC-2007 06:05	CHK	1.4619	
6-DEC-2007 05:46	CHK	1.5831	
7-DEC-2007 05:19	CHK	1.5432	
8-DEC-2007 06:13	CHK	1.6348	
10-DEC-2007 05:36	CHK	1.4571	
11-DEC-2007 05:36	CHK	1.4665	
12-DEC-2007 05:14	CHK	1.4260	
13-DEC-2007 03:53	CHK	1.6022	
14-DEC-2007 05:53	CHK	1.4504	
15-DEC-2007 08:26	CHK	1.5634	
17-DEC-2007 05:38	CHK	1.4148	
18-DEC-2007 05:48	CHK	1.4514	
19-DEC-2007 05:34	CHK	1.4599	
20-DEC-2007 03:06	CHK	1.3555	[In]
21-DEC-2007 04:16	CHK	1.7084	[In]
22-DEC-2007 07:30	CHK	1.5308	
24-DEC-2007 05:27	CHK	1.5929	

25-DEC-2007 09:29 CHK

1.5113 | | |

Quality Assurance Report.

Generated 26-DEC-2007 15:47:17.66

QA Filename : RDND06::RDND06\$DKA100:[GER15.QA]BKG.QAF;2

-- Multi-Test Full Report --

Description : MDA K-40 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Trend Test Test Parameters ----

N Mean Samples : 0 M Slope Samples: 0

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 0.000000 Std Deviation : 0.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-NOV-2007 09:27	bkg		0.0000		
11-NOV-2007 05:32	bkg		0.0000		
18-NOV-2007 08:51	bkg		0.0000		
25-NOV-2007 05:41	bkg		0.0000		
2-DEC-2007 07:11	bkg		0.0000		
9-DEC-2007 06:01	bkg		0.0000		
16-DEC-2007 07:50	bkg		0.0000		
23-DEC-2007 08:55	bkg		0.0000		

-- Multi-Test Full Report --

Description : MDA Cr-51 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 17.966257 Std Deviation : 1.033941

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:27	bkg		19.2159	
11-NOV-2007 05:32	bkg		18.9877	
18-NOV-2007 08:51	bkg		19.5133	
25-NOV-2007 05:41	bkg		19.0499	
2-DEC-2007 07:11	bkg		19.1122	
9-DEC-2007 06:01	bkg		18.5376	
16-DEC-2007 07:50	bkg		16.8720	
23-DEC-2007 08:55	bkg		16.4010	

-- Multi-Test Full Report --

Description : MDA Co-60 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 25.590942 Std Deviation : 1.273566

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:27	bkg		26.5719	
11-NOV-2007 05:32	bkg		27.5445	
18-NOV-2007 08:51	bkg		27.5888	
25-NOV-2007 05:41	bkg		25.9262	
2-DEC-2007 07:11	bkg		28.0017	
9-DEC-2007 06:01	bkg		26.0912	
16-DEC-2007 07:50	bkg		26.5430	
23-DEC-2007 08:55	bkg		26.5832	

Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:27	bkg		26.5719	
11-NOV-2007 05:32	bkg		27.5445	
18-NOV-2007 08:51	bkg		27.5888	
25-NOV-2007 05:41	bkg		25.9262	
2-DEC-2007 07:11	bkg		28.0017	
9-DEC-2007 06:01	bkg		26.0912	
16-DEC-2007 07:50	bkg		26.5430	
23-DEC-2007 08:55	bkg		26.5832	

-- Multi-Test Full Report --

Description : MDA Zn-65 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00  
 Mean : 27.068600 Std Deviation : 1.508994

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:27	bkg		26.8188	
11-NOV-2007 05:32	bkg		26.5207	
18-NOV-2007 08:51	bkg		26.3167	
25-NOV-2007 05:41	bkg		26.5772	
2-DEC-2007 07:11	bkg		26.6031	
9-DEC-2007 06:01	bkg		27.0428	
16-DEC-2007 07:50	bkg		25.2656	
23-DEC-2007 08:55	bkg		22.9194	In

## -- Multi-Test Full Report --

Description : MDA Ru106da CPM  
 Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00  
 Mean : 21.609482 Std Deviation : 0.656417

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:27	bkg		23.1869	In
11-NOV-2007 05:32	bkg		21.8816	
18-NOV-2007 08:51	bkg		22.8928	
25-NOV-2007 05:41	bkg		21.6339	
2-DEC-2007 07:11	bkg		22.3538	
9-DEC-2007 06:01	bkg		21.3067	
16-DEC-2007 07:50	bkg		21.7563	
23-DEC-2007 08:55	bkg		20.8654	

## -- Multi-Test Full Report --

Description : MDA Cs-134 CPM  
 Parameter Units : CPM Parameter Type : Nuclide



Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00  
 Mean : 24.158144      Std Deviation : 1.382339

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:27	bkg		24.6870		
11-NOV-2007 05:32	bkg		25.0126		
18-NOV-2007 08:51	bkg		23.9395		
25-NOV-2007 05:41	bkg		22.7878		
2-DEC-2007 07:11	bkg		24.6585		
9-DEC-2007 06:01	bkg		23.8078		
16-DEC-2007 07:50	bkg		23.9428		
23-DEC-2007 08:55	bkg		22.5860		

-- Multi-Test Full Report --

Description : MDA Cs-137da CPM  
 Parameter Units : CPM      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00  
 Mean : 21.430811      Std Deviation : 0.873067

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:27	bkg		21.1205		
11-NOV-2007 05:32	bkg		22.3522		
18-NOV-2007 08:51	bkg		22.6779		
25-NOV-2007 05:41	bkg		22.3349		
2-DEC-2007 07:11	bkg		22.6496		
9-DEC-2007 06:01	bkg		21.5245		
16-DEC-2007 07:50	bkg		20.2967		
23-DEC-2007 08:55	bkg		19.4296	In	

## -- Multi-Test Full Report --

Description : MDA Pb-212 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 18.645613 Std Deviation : 1.771863

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:27	bkg		20.1763	
11-NOV-2007 05:32	bkg		20.0440	
18-NOV-2007 08:51	bkg		20.8038	
25-NOV-2007 05:41	bkg		20.6492	
2-DEC-2007 07:11	bkg		19.5974	
9-DEC-2007 06:01	bkg		19.7172	
16-DEC-2007 07:50	bkg		14.8306	In
23-DEC-2007 08:55	bkg		16.0456	

## -- Multi-Test Full Report --

Description : MDA Ra-226da CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 29.863125 Std Deviation : 2.992940

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 09:27	bkg		31.7732	
11-NOV-2007 05:32	bkg		32.3660	
18-NOV-2007 08:51	bkg		33.0122	
25-NOV-2007 05:41	bkg		31.7597	

Quality Assurance Multi-Test Full Report (continued) Page : 4

2-DEC-2007 07:11 bkg	33.0882	
9-DEC-2007 06:01 bkg	32.5281	
16-DEC-2007 07:50 bkg	28.0811	
23-DEC-2007 08:55 bkg	27.1471	

## -- Multi-Test Full Report --

Description : MDA Ra-228 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 30.298569 Std Deviation : 2.400785

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:27 bkg			33.2556		
11-NOV-2007 05:32 bkg			32.7951		
18-NOV-2007 08:51 bkg			32.8179		
25-NOV-2007 05:41 bkg			32.6700		
2-DEC-2007 07:11 bkg			32.3560		
9-DEC-2007 06:01 bkg			32.1789		
16-DEC-2007 07:50 bkg			28.8175		
23-DEC-2007 08:55 bkg			28.5089		

## -- Multi-Test Full Report --

Description : MDA U-235 CPM

Parameter Units : CPM Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 13.995915 Std Deviation : 1.302628

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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4-NOV-2007 09:27 bkg			14.4427		
11-NOV-2007 05:32 bkg			15.1581		
18-NOV-2007 08:51 bkg			15.2579		

25-NOV-2007 05:41 bkg	15.1141	
2-DEC-2007 07:11 bkg	15.2594	
9-DEC-2007 06:01 bkg	14.8916	
16-DEC-2007 07:50 bkg	11.3906	In
23-DEC-2007 08:55 bkg	12.0377	

-- Multi-Test Full Report --

Description : MDA TH-232 CPM

Parameter Units : CPM                      Parameter Type : Nuclide

Investigate Level : 2.000000              Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-MAY-2007 00:00 End Date : 1-NOV-2007 00:00

Mean : 151.356918              Std Deviation : 8.698930

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued)              Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 09:27 bkg			163.9611	
11-NOV-2007 05:32 bkg			158.3813	
18-NOV-2007 08:51 bkg			161.8173	
25-NOV-2007 05:41 bkg			163.0661	
2-DEC-2007 07:11 bkg			163.3892	
9-DEC-2007 06:01 bkg			165.0165	
16-DEC-2007 07:50 bkg			133.6568	In
23-DEC-2007 08:55 bkg			136.1531	

THORIUM  
SAMPLE AND QC DATA

Lot No., Due Date: F7K160242,F7K190152,F7K200219; 12/14/2007,12/18/2007,12/20/2007  
Client, Site: 445691; Phs2 Smpling Tronox Prcl CDFG  
QC Batch No., Method Test: 7327118; RTHISO Thiso by ALP  
SDG, Matrix: TRNC/D-5RD,TRNC/D-6RD,TRNC/D-7RD; ,,

**1.0 COC**

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A

**2.0 QC Batch**

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A

2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A

**3.0 QC & Samples**

3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A

3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A

3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A

**4.0 Raw Data**

4.1 Were results calculated in the correct units?  Yes  No  N/A

4.2 Were analysis volumes entered correctly?  Yes  No  N/A

4.3 Were Yields entered correctly?  Yes  No  N/A

4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A

4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A

**5.0 Other**

5.1 Are all nonconformances included and noted?  Yes  No  N/A

5.2 Are all required forms filled out?  Yes  No  N/A

5.3 Was the correct methodology used?  Yes  No  N/A

5.4 Was transcription checked?  Yes  No  N/A

5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A

5.6 Are worksheet entries complete and correct?  Yes  No  N/A

6.0 Comments on any No response:

First Level Review *John [Signature]*

Date 12-12-7

**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 7327118

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Second Level Review: Eula Ordo Date: 12/26/17

12/5/2007 11:34:57 AM

445691, Basic Remediation Company  
Basic Remediation Company

### Sample Preparation/Analysis

9N Thiso PrpRc5016, SepRC5084(5003)  
S1 Thorium-228,230,232 by Alpha Spec  
01 STANDARD TEST SET

Balance Id:1120482733

Pipet #:  
Sep1 DT/Tm Tech:  
Sep2 DT/Tm Tech:

pCi/L

PM, Quote: JAE, 77571

Batch: 7327118

SEQ Batch, Test: None

Prep Tech: ,HarrisD

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 KCFM8-1-AD F7K160242-17-SAMP 11/15/2007 13:15	199.90g,in	199.90g	199.90g	199.90g	THTC12141 11/30/07,pd 11/29/07,r	200				
2 KCFM8-1-AF-X F7K160242-17-DUP 11/15/2007 13:15	199.90g,in	199.90g	199.90g	199.90g	THTC12142 11/30/07,pd 11/29/07,r					
3 KCKE9-1-AD F7K190152-16-SAMP 11/16/2007 14:00	200.10g,in	200.10g	200.10g	200.10g	THTC12143 11/30/07,pd 11/29/07,r					
4 KCMQL-1-AD F7K200219-15-SAMP 11/19/2007 12:40	200.10g,in	200.10g	200.10g	200.10g	THTC12144 11/30/07,pd 11/29/07,r					
5 KCR64-1-AA-B J7K230000-118-BLK 11/15/2007 13:15	200.30g,in	200.30g	200.30g	200.30g	THTC12145 11/30/07,pd 11/29/07,r					
6 KCR64-1-AC-C J7K230000-118-LCS 11/15/2007 13:15	200.30g,in	200.30g	200.30g	200.30g	THS11109 11/26/07,pd 09/24/07,r					

TAL RICHLAND



12/5/2007 11:34:58 AM

### Sample Preparation/Analysis

Balance Id:1120482733

9N Thiso PrpRc5016, SepRC5084(5003)  
S1 Thorium-228,230,232 by Alpha Spec  
01 STANDARD TEST SET

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

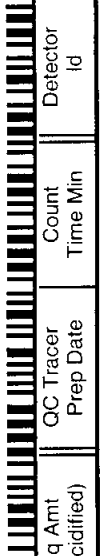
pci/L

Prep Tech: ,HarrisD

AnalyDueDate: 12/10/2007

Batch: 7327118

SEQ Batch, Test: None



Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
------------------------------	-----------------	----------------------	--------------------------	-----------------------------	---------------------	----------------	-------------	------------------------------	-----------------------	-----------

Comments: *OK 42.0 out 10/5/07*

All Clients for Batch: 445691, Basic Remediation Company Basic Remediation Company , JAE, 77571

#### KCFM81AD-SAMP Constituent List:

KCR641AA-BLK:	RDL:1	pci/L	LCL:	UCL:	RPD:	Th-230	RDL:1	pci/L	LCL:	UCL:	RPD:
Th-228	RDL:1	pci/L	LCL:	UCL:	RPD:	Th-234	RDL:	pci/L	LCL:20	UCL:115	RPD:20
KCR641AC-LCS:	RDL:1	pci/L	LCL:70	UCL:130	RPD:20	Th-234	RDL:	pci/L	LCL:20	UCL:115	RPD:20

#### KCFM81AD-SAMP Calc Info:

Uncert Level (#s):	4	Decay to SaDt:	N	Blk Subst.:	N	Sci.Not.:	N	ODRs:	B
KCR641AA-BLK:		Decay to SaDt:	N	Blk Subst.:	N	Sci.Not.:	N	ODRs:	B
Uncert Level (#s):	4	Decay to SaDt:	N	Blk Subst.:	N	Sci.Not.:	N	ODRs:	B
KCR641AC-LCS:		Decay to SaDt:	N	Blk Subst.:	N	Sci.Not.:	N	ODRs:	B

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

# ICOC Fraction Transfer/Status Report

ByDate: 12/12/2006, 12/17/2007, Batch: '7327118', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>7327118</b>				
AC	CalcC	HarrisD	12/5/2007 11:26:46	
SC		antonsonl	IsBatched	11/23/2007 10:43:22 AM
SC		HarrisD	InPrep	12/5/2007 11:26:46 AM
SC		HarrisD	Prep1C	12/5/2007 11:35:04 AM
SC		FABREM	Sep2C	12/8/2007 12:50:28 PM
SC		BlackCL	InCnt1	12/8/2007 1:19:40 PM
SC		AshworthA	Sep1C	12/9/2007 1:27:06 PM
SC		BlackCL	CalcC	12/10/2007 1:52:21 PM
AC		HarrisD	12/5/2007 11:35:04	ICOC_RADCALC v4.8.29
AC		FABREM	12/8/2007 12:50:28	RICH-RC-5014 Revision 7
AC		BlackCL	12/8/2007 1:19:40 PM	RICH-RC-5016 REVISION 7
AC		AshworthA	12/9/2007 1:27:06 PM	RICH-RC-5003 REVISION 7
AC		BlackCL	12/10/2007 1:52:21	RICH-RD-0008 REVISION 4

AC: Accepting Entry; SC: Status Change

STL Richland  
Richland Wa.

# Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix	Received Date	Sample Date	Expected Yield	Volumes
					Cnt Uncert	Tot uncer	maa	Unrs	
<b>TRNC/D-5RD</b>	<b>9KCFM810</b>		<b>F7K16024217</b>	RINSATE 3	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM		
TH-228	9NS1	0	12/10/2007 6:45:38	-1.9194E-02	4.987E-02	4.989E-02	2.712E-01	pCi/L	0.941 1.999E-1
TH-230	9NS1	0	12/10/2007 6:45:38	-9.3646E-03	4.775E-02	4.776E-02	2.243E-01	pCi/L	0.941 1.999E-1
TH-232	9NS1	0	12/10/2007 6:45:38	-9.3646E-03	4.775E-02	4.776E-02	2.243E-01	pCi/L	0.941 1.999E-1
U-234	7YSR	0	12/10/2007 2:47:40 PM	5.2904E-02	4.77E-02	4.789E-02	1.869E-01	pCi/L	0.889 2.0E-1
U-235	7YSR	0	12/10/2007 2:47:40 PM	6.6195E-03	3.373E-02	3.373E-02	1.584E-01	pCi/L	0.889 2.0E-1
U-238	7YSR	0	12/10/2007 2:47:40 PM	6.6195E-03	3.373E-02	3.373E-02	1.584E-01	pCi/L	0.889 2.0E-1
<b>TRNC/D-6RD</b>	<b>9KCKE910</b>		<b>F7K19015216</b>	RINSATE4	WATER	11/19/2007 8:45:00	11/16/2007 2:00:00 PM		
TH-228	9NS1	0	12/10/2007 6:45:38	9.2252E-03	4.967E-02	4.968E-02	3.168E-01	pCi/L	0.943 2.001E-1
TH-230	9NS1	0	12/10/2007 6:45:38	3.6039E-02	4.594E-02	4.603E-02	2.158E-01	pCi/L	0.943 2.001E-1
TH-232	9NS1	0	12/10/2007 6:45:38	-9.0094E-03	4.594E-02	4.595E-02	2.158E-01	pCi/L	0.943 2.001E-1
U-234	7YSR	0	12/10/2007 2:47:56 PM	3.2826E-02	3.348E-02	3.358E-02	1.572E-01	pCi/L	0.882 2.002E-1
U-235	7YSR	0	12/10/2007 2:47:56 PM	0.0E+00	0.0E+00	3.348E-02	1.572E-01	pCi/L	0.882 2.002E-1
U-238	7YSR	0	12/10/2007 2:47:56 PM	3.2826E-02	3.348E-02	3.358E-02	1.572E-01	pCi/L	0.882 2.002E-1
<b>TRNC/D-7RD</b>	<b>9KCMQL10</b>		<b>F7K20021915</b>	RINSATE 5	WATER	11/20/2007 9:30:00	11/19/2007 12:40:00 PM		
TH-228	9NS1	0	12/10/2007 6:45:38	4.6749E-02	5.959E-02	5.97E-02	2.799E-01	pCi/L	0.928 2.001E-1
TH-230	9NS1	0	12/10/2007 6:45:38	0.0E+00	0.0E+00	5.838E-02	2.742E-01	pCi/L	0.928 2.001E-1
TH-232	9NS1	0	12/10/2007 6:45:38	0.0E+00	0.0E+00	5.838E-02	2.742E-01	pCi/L	0.928 2.001E-1
U-234	7YSR	0	12/10/2007 2:47:59 PM	0.0E+00	0.0E+00	3.647E-02	1.713E-01	pCi/L	0.832 2.001E-1
U-235	7YSR	0	12/10/2007 2:47:59 PM	7.1539E-03	3.647E-02	3.648E-02	1.713E-01	pCi/L	0.832 2.001E-1
U-238	7YSR	0	12/10/2007 2:47:59 PM	0.0E+00	0.0E+00	3.647E-02	1.713E-01	pCi/L	0.832 2.001E-1
<b>TRNC/D-5RD</b>	<b>KCFM81FR</b>		<b>F7K16024217</b>	RINSATE 3 DUP	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM		
TH-228	9NS1	0 R	12/10/2007 6:45:38	4.8096E-02	4.905E-02	4.919E-02	2.304E-01	pCi/L	0.926 1.999E-1
TH-230	9NS1	0 R	12/10/2007 6:45:38	3.7545E-02	4.786E-02	4.795E-02	2.248E-01	pCi/L	0.926 1.999E-1
TH-232	9NS1	0 R	12/10/2007 6:45:38	-9.3858E-03	4.786E-02	4.787E-02	2.248E-01	pCi/L	0.926 1.999E-1
<b>TRNC/D-7RD</b>	<b>KCR641AB</b>		<b>J7K230000118</b>	INTRA-LAB BLANK	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM		
TH-228	9NS1	0 B	12/10/2007 10:33:09	-1.8969E-02	4.928E-02	4.931E-02	2.68E-01	pCi/L	0.951 2.003E-1
TH-230	9NS1	0 B	12/10/2007 10:33:09	3.7014E-02	4.718E-02	4.727E-02	2.216E-01	pCi/L	0.951 2.003E-1
TH-232	9NS1	0 B	12/10/2007 10:33:09	-9.2532E-03	4.718E-02	4.719E-02	2.216E-01	pCi/L	0.951 2.003E-1
<b>TRNC/D-7RD</b>	<b>KCR641CS</b>		<b>J7K230000118</b>	INTRA-LAB CHECK	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM		
TH-230	9NS1	0 S	12/10/2007 10:33:09	1.2119E+01	7.493E-01	1.205E+00	2.217E-01	pCi/L	1.1433E+01 0.937 2.003E-1

7327118, \*\*Samples Inserted | Updated | NotUpdated => 3 | 0 | 3,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 16 | 0 | 0 | 0.  
 \*\*Diff RptDb | Qtims => .

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	IDC	QC Trc	Yld	LCS Yld
Thiso by ALP														
Richland Standard Alplso Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71														
Calc	S1	WATER	KCFM81AD	TH-228	-1.92E-02	(4.99E-02)	U4	pCi/L	R	7.06E-02	2.71E-01		94%	
Calc	S1	WATER	KCFM81AD	TH-230	-9.36E-03	(4.78E-02)	U4	pCi/L	R	4.87E-02	2.24E-01		94%	
Calc	S1	WATER	KCFM81AD	TH-232	-9.36E-03	(4.78E-02)	U4	pCi/L	R	4.87E-02	2.24E-01		94%	
Calc	S1	WATER	KCFM81AF	TH-228	4.81E-02	(4.92E-02)	U4	pCi/L	R	5.00E-02	2.30E-01	R	93%	
Calc	S1	WATER	KCFM81AF	TH-230	3.75E-02	(4.79E-02)	U4	pCi/L	R	4.88E-02	2.25E-01	R	93%	
Calc	S1	WATER	KCFM81AF	TH-232	-9.39E-03	(4.79E-02)	U4	pCi/L	R	4.88E-02	2.25E-01	R	93%	
Calc	S1	WATER	KCKE91AD	TH-228	9.23E-03	(4.97E-02)	U4	pCi/L	R	9.60E-02	3.17E-01		94%	
Calc	S1	WATER	KCKE91AD	TH-230	3.60E-02	(4.60E-02)	U4	pCi/L	R	4.69E-02	2.16E-01		94%	
Calc	S1	WATER	KCKE91AD	TH-232	-9.01E-03	(4.59E-02)	U4	pCi/L	R	4.69E-02	2.16E-01		94%	
Calc	S1	WATER	KCMQL1AD	TH-228	4.67E-02	(5.97E-02)	U4	pCi/L	R	6.08E-02	2.80E-01		93%	
Calc	S1	WATER	KCMQL1AD	TH-230	0.00E+00	(5.84E-02)	U4	pCi/L	R	5.96E-02	2.74E-01		93%	
Calc	S1	WATER	KCMQL1AD	TH-232	0.00E+00	(5.84E-02)	U4	pCi/L	R	5.96E-02	2.74E-01		93%	
Calc	S1	WATER	KCR641AA	TH-228	-1.90E-02	(4.93E-02)	U4	pCi/L	R	6.98E-02	2.68E-01	B	95%	
Calc	S1	WATER	KCR641AA	TH-230	3.70E-02	(4.73E-02)	U4	pCi/L	R	4.81E-02	2.22E-01	B	95%	
Calc	S1	WATER	KCR641AA	TH-232	-9.25E-03	(4.72E-02)	U4	pCi/L	R	4.81E-02	2.22E-01	B	95%	
Calc	S1	WATER	KCR641AC	TH-228	0.00E+00	(4.84E-02)	U4	pCi/L	R	4.94E-02	2.27E-01	S	94%	
Calc	S1	WATER	KCR641AC	TH-230	1.21E+01	(1.20E+00)		pCi/L	R	4.82E-02	2.22E-01	S	94%	106%
Calc	S1	WATER	KCR641AC	TH-232	-9.26E-03	(4.72E-02)	U4	pCi/L	R	4.82E-02	2.22E-01	S	94%	

< CRDL

( ) - (1s Uncertainties)  
 IDC - Instrument Detection Level in Conc Units  
 MLcC - Method Decision Level in Conc Units  
 MDC - Minimum Detectable Concentration  
 \*Std - Lc, MDC using StdDev for Set of Blanks

Q - Qualifier, U is Less Than Lc = 1.645\*TPU  
 All Results Displayed to Three Digits Regardless of Significant  
 Date/Time - mm/dd/yy hh:mm, 24hr Time

Alpha Spec, Thlso by ALP , Calculated Results

Batch Nbr: 7327118

12/10/2007 1:48:13 PM

Detailed Report

Sq	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol		
1	Calc	S1	WATER	*STLE	AlpIsoWoBS	KCFM81AD	pCi/L		11/15/07 13:15	12/10/07 06:45		1	882.57	Alq	199.90	g		
445691	RINSATE	3					WATER											
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/10/07 05:05	TH-228	0	199.7833333	ALP171	COP	N	N	2.5595E-01	(7.679E-03)	N	94%	N	1.0000E+00	(0.000E+00)	4.5045E+02	1.0248E+00	
1	12/10/07 05:05	TH-230	0	199.7833333	ALP171	COP	N	N	2.5595E-01	(7.679E-03)	N	94%	N	1.0000E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
2	12/10/07 05:05	TH-232	0	199.7833333	ALP171	COP	N	N	2.5595E-01	(7.679E-03)	N	94%	N	1.0000E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
3	12/10/07 11:12	Th-234	7301	743	GPC30B	COP	Y	N	4.3771E-01	(1.751E-02)	N	100%	N	1.0000E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
			20	500			Y											
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Trc Yld,EnFct	LCSYld,EFctU	IDC/LcC	BIKLC/MDC	StdDvMdc/LcC				
12/10/07	1.989E+03	TH-228	R	-0.019194	U4	-2.00210E-03	-0.008312	-0.008312	0.1999 L	94%	0.27117	0.27117						
				(0.049892)		(5.2018E-03)	(0.021601)	(0.021601)	(0.173205)		0.070604	0.070604						
12/10/07	1.989E+03	TH-230	R	-0.009365	U4	-1.00105E-03	-0.004156	-0.004156	0.1999 L	94%	0.224267	0.224267						
				(0.047757)		(5.1045E-03)	(0.021193)	(0.021193)	(0.173205)		0.048715	0.048715						
12/10/07	1.989E+03	TH-232	R	-0.009365	U4	-1.00105E-03	-0.004156	-0.004156	0.1999 L	94%	0.224267	0.224267						
				(0.047757)		(5.1045E-03)	(0.021193)	(0.021193)	(0.173205)		0.048715	0.048715						
12/10/07	1.989E+03	Th-234	R	1871.661078		3.63564E+02	830.602841	830.602841	0.1999 L	94%	0.224267	0.224267						
				(121.857394)		(4.2726E+00)	(34.628389)	(34.628389)	(0.173205)		0.048715	0.048715						
Sq	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol		
2	Calc	S1	WATER	*STLE	AlpIsoWoBS	KCFM81AF	pCi/L		11/15/07 13:15	12/10/07 06:45		1	880.49	Alq	199.90	g		
445691	RINSATE	3	DUP				WATER											
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/10/07 05:05	TH-228	1	199.7833333	ALP172	COP	N	N	2.5961E-01	(7.788E-03)	N	93%	N	1.0000E+00	(0.000E+00)	4.5045E+02	1.0248E+00	
1	12/10/07 05:05	TH-230	1	199.7833333	ALP172	COP	N	N	2.5961E-01	(7.788E-03)	N	93%	N	1.0000E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
2	12/10/07 05:05	TH-232	0	199.7833333	ALP172	COP	N	N	2.5961E-01	(7.788E-03)	N	93%	N	1.0000E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
3	12/10/07 11:12	Th-234	7181	685	GPC30C	COP	Y	N	4.3880E-01	(1.755E-02)	N	100%	N	1.0000E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
			20	500			Y											

0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:2  
 RADCALC v4.8.29  
 TA Richland

# Alpha Spec, Thlso by ALP , Calculated Results

Batch Nbr: 7327118

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIkLcC/MDC	StdDvMdc/LcC
12/10/07	1.984E+03	TH-228	R	0.048096 (0.049191)	U4	5.00542E-03 (5.1045E-03)	0.020827 (0.021275)	0.020827 (0.021275)	0.1999 L (0.173205)	93%		0.230357 0.050038		
12/10/07	1.984E+03	TH-230	R	0.037545 (0.047949)	U4	4.00437E-03 (5.1045E-03)	0.016662 (0.021262)	0.016662 (0.021262)	0.1999 L (0.173205)	93%		0.224775 0.048825		
12/10/07	1.984E+03	TH-232	R	-0.009386 (0.047866)	U4	-1.00105E-03 (5.1045E-03)	-0.004165 (0.021241)	-0.004165 (0.021241)	0.1999 L (0.173205)	93%		0.224775 0.048825		
12/10/07	1.984E+03	Th-234	R	1836.799849 (119.619217)		3.57680E+02 (4.2374E+00)	815.132179 (34.005245)	815.132179 (34.005245)	0.1999 L (0.173205)	93%				

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	S1	WATER	*STLE	AlpIsoWoBS	KCKE91AD	pCi/L	WATER		11/16/07 14:00	12/10/07 06:45		877.71	Alq	1	200.10 g	g
445691	RINSATE4																

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	12/10/07 05:05	TH-228	1	4	ALP176	COP	N	N	2.6518E-01		N	94%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004998	1.0238E+00		
1	12/10/07 05:05	TH-230	1	1	ALP176	COP	N	N	2.6518E-01		N	94%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004998	1.0000E+00		
2	12/10/07 05:05	TH-232	0	1	ALP176	COP	N	N	2.6518E-01		N	94%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004998	1.0000E+00		
3	12/10/07 11:25	Th-234	7313	517	GPC30D	COP	Y	N	4.4042E-01		N	100%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004998	1.0000E+00		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIkLcC/MDC	StdDvMdc/LcC
12/10/07	1.976E+03	TH-228	R	0.009225 (0.049678)	U4	1.00122E-03 (5.3910E-03)	0.004003 (0.021554)	0.004003 (0.021554)	0.2001 L (0.173205)	94%		0.316798 0.095964		
12/10/07	1.976E+03	TH-230	R	0.036039 (0.046026)	U4	4.00437E-03 (5.1045E-03)	0.016009 (0.02043)	0.016009 (0.02043)	0.2001 L (0.173205)	94%		0.21576 0.046867		
12/10/07	1.976E+03	TH-232	R	-0.009009 (0.045946)	U4	-1.00105E-03 (5.1045E-03)	-0.004002 (0.020409)	-0.004002 (0.020409)	0.2001 L (0.173205)	94%		0.21576 0.046867		
12/10/07	1.976E+03	Th-234	R	1863.666473 (121.328613)		3.64616E+02 (4.2760E+00)	827.882476 (34.509246)	827.882476 (34.509246)	0.2001 L (0.173205)	94%				

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
4	Calc	S1	WATER	*STLE	AlpIsoWoBS	KCMQL1AD	pCi/L	WATER		11/19/07 12:40	12/10/07 06:45		879.79	Alq	1	200.10 g	g
445691	RINSATE 5																

RecCnt:4  
 RADCALC v4:8.29  
 TA Richland  
 Page 2  
 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Alpha Spec, Thisso by ALP, Calculated Results

Batch Nbr: 7327118

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIkLcC/MDC	StdDvMdc/LcC
1	12/10/07 05:05	TH-230	0	0	0	ALP177 COP	N N 2.1204E-01 (6.361E-03)	N N 93% 5%	N	93%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004998	1.0000E+00 (0.000E+00)
2	12/10/07 05:05	TH-232	0	0	0	ALP177 COP	N N 2.1204E-01 (6.361E-03)	N N 93% 5%	N	93%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004998	1.0000E+00 (0.000E+00)
3	12/10/07 11:50	Th-234	7386	691	500	GPC30A COP	Y N 4.5050E-01 (1.802E-02)	N N 100%	N	100%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004998	1.0000E+00 (0.000E+00)

Sq	Status Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	S1	WATER	*STLE	AlpIsoWoBS	KCR641AA	pCi/L	B	11/15/07 13:15	12/10/07 10:33		874.94	Alq	1	200.30	g
0																

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/10/07 08:53	TH-228	0	2	ALP171	COP	N N 2.5595E-01 (7.679E-03)	N	95%	N	95%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004993	1.0000E+00 (0.000E+00)	4.5045E+02 0.004993	1.0250E+00	
1	12/10/07 08:53	TH-230	1	1	ALP171	COP	N N 2.5595E-01 (7.679E-03)	N	95%	N	95%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004993	1.0000E+00 (0.000E+00)	4.5045E+02 0.004993	1.0000E+00	
2	12/10/07 08:53	TH-232	0	1	ALP171	COP	N N 2.5595E-01 (7.679E-03)	N	95%	N	95%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004993	1.0000E+00 (0.000E+00)	4.5045E+02 0.004993	1.0000E+00	
3	12/10/07 07:59	Th-234	7521	691	GPC30A	COP	Y N 4.5050E-01 (1.802E-02)	N	100%	N	100%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.004993	1.0000E+00 (0.000E+00)	4.5045E+02 0.004993	1.0000E+00	

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIkLcC/MDC	StdDvMdc/LcC
1	12/10/07 05:05	TH-228	R	-0.018969	0	-2.00210E-03	-0.008229	-0.008229	0.2003 L	95%	0.267986			
2	12/10/07 05:05	TH-230	R	0.037014	0	4.00437E-03	0.016459	0.016459	0.2003 L	95%	0.221599			
3	12/10/07 11:50	Th-234	R	1870.326592	500	3.74668E+02	831.671476	831.671476	0.2003 L	95%	0.048135			

# Alpha Spec, Thlso by ALP , Calculated Results

Batch Nbr: 7327118

Sq	Calc	S1	WATER	STLE	AlpIsoWoBS	KCR641AC	pC/L	S	11/15/07	13:15	12/10/07	10:33	5.0837	1	9	200.30	g
Sq	Calc	S1	WATER	STLE	AlpIsoWoBS	KCR641AC	pC/L	S	11/15/07	13:15	12/10/07	10:33	5.0837	1	9	200.30	g
Sq	Calc	S1	WATER	STLE	AlpIsoWoBS	KCR641AC	pC/L	S	11/15/07	13:15	12/10/07	10:33	5.0837	1	9	200.30	g
0	12/10/07	08:53	TH-228	0	0	ALP172	COP	N	N	2.5961E-01	N	94%	N	1.0000E+00	4.5045E+02	1.0250E+00	
				199.7833333	998.95			Y		(7.788E-03)		5%		(0.000E+00)	0.004993		
1	12/10/07	08:53	TH-230	262	1	ALP172	COP	N	N	2.5961E-01	N	94%	N	1.0000E+00	4.5045E+02	1.0000E+00	
				199.7833333	998.95			Y		(7.788E-03)		5%		(0.000E+00)	0.004993		
2	12/10/07	08:53	TH-232	0	1	ALP172	COP	N	N	2.5961E-01	N	94%	N	1.0000E+00	4.5045E+02	1.0000E+00	
				199.7833333	998.95			Y		(7.788E-03)		5%		(0.000E+00)	0.004993		
3	12/10/07	07:59	Th-234	6292	743	GPC30B	COP	Y	N	4.3771E-01	N	100%	N	1.0000E+00	4.5045E+02	1.0000E+00	
				20	500			Y		(1.751E-02)				(0.000E+00)	0.004993		

Sq	CalcDate	TrcAct	Parameter	Avg	Sa Act	Total U	Q	Net Cnt	Rt	Dpm	Wo Blk	Dpm	Blk	Vol Used	Trc Yld Fct	Ent	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct	VolAdj	Decay	Abn	
	12/10/07	TH-228	R	0.00E00	U4	0.00000E+00	0.00E00	(5.1045E-03)	(0.020991)	0.00E00	(0.020991)	0.00E00	(0.020991)	0.2003 L	94%	N			0.2003 L	N		0.227246					
	1.717E+03			(0.048386)										(0.173205)					(0.173205)			0.049362					
	12/10/07	TH-230	R	12.118623	U4	1.31042E+00	5.388742	(8.1026E-02)	(0.463046)	5.388742	(0.463046)	5.388742	(0.463046)	0.2003 L	94%	N			0.2003 L	N	106%	0.221705					
	1.717E+03			(1.204839)										(0.173205)					(0.173205)			0.048158					
	12/10/07	TH-232	R	-0.009258	U4	-1.00105E-03	-0.004117	(5.1045E-03)	(0.020992)	-0.004117	(0.020992)	-0.004117	(0.020992)	0.2003 L	94%	N			0.2003 L	N		0.221704					
	1.717E+03			(0.047212)										(0.173205)					(0.173205)			0.048158					
	12/10/07	Th-234	R	1608.720764	U4	3.13114E+02	715.344143	(3.9665E+00)	(30.014415)	715.344143	(30.014415)	715.344143	(30.014415)	0.2003 L	94%	N			0.2003 L	N							
	1.717E+03			(105.014134)										(0.173205)					(0.173205)								



TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 07:06:10.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6452	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:06:10.00	11081	20.00	691	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
9	24	651	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 07:06:10.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6453	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:06:10.00	10841	20.00	743	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	9	651	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 07:06:10.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6454	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:06:10.00	11194	20.00	685	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	11	651	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 07:06:10.00

LBPRINT - Rev#: 2.5

Sample ID	Isotope	Geometry
CAL6455	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
10-DEC-2007 07:06:10.00	10939	20.00	517	500.00	30D

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
3	12	651	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 07:29:55.00

LBPRINT - Rev#: 2.5

Sample ID	Isotope	Geometry
CAL6537	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
10-DEC-2007 07:29:55.00	70804	20.00	691	500.00	30A

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
2	24	667	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 07:29:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6538	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:29:55.00	70740	20.00	743	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	9	667	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 07:29:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6539	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:29:55.00	72745	20.00	685	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	11	667	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 07:29:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6540	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:29:55.00	66721	20.00	517	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	12	667	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**  
10-DEC-2007 11:12:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCFM81AD	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 11:12:55.00	7301	20.00	743	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	9	654	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 11:12:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCFM81AF	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 11:12:55.00	7181	20.00	685	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	11	654	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 11:12:55.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCFM91AD	COP	COP

*12/10/07*

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 11:12:55.00	7313	20.00	517	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	12	654	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 11:50:12.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMQL1AD	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 11:50:12.00	7386	20.00	691	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
5	24	658	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

10-DEC-2007 07:59:23.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCR641AA	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
10-DEC-2007 07:59:23.00	7521	20.00	691	500.00	30A

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
8	24	657	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

10-DEC-2007 07:59:23.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCR641AC	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
10-DEC-2007 07:59:23.00	6292	20.00	743	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
6	9	657	1492	09-DEC-2007 17:26:28.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

# THORIUM ISOTOPIIC COUNTING REQUEST

C.R. Technician SPH  
 Date Counted 1/15  
 C.R. Analyst SPH  
 Date Analyzed 1/15

Counting Time 200 Minutes  
 Sample 200  
 Background See Alpha Analysis Report  
 See Alpha Analysis Report

SOP's 6805  
 Operating: RICHRD008  
 Review: 1/15  
7307118

WorkOrder #	Th-229 (4845 KeV) Tracer		TOTAL COUNTS				Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)	Th-230 (4688 KeV) (8)		
KCFM81AD		10		0			171	
KCFM81AF		10		0			172	
KCRE91AD		10		0			176	
KCMQ21AD		10		0			177	
		10		0				
		10		0				
		10		0				
		10		0				
		10		0				
		10		0				

Comments:

Approved by: S Date: 12/16/02

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCFM81AD

Detector: ALP171 1

Report Date: 10-Dec-07 10:02 AM

Acquire Date: 10-DEC-2007 05:05:44.46

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	0	2	-0.002	5423.2	116.5	316	336
TH-230	0	1	-0.001	4687.7	116.4	190	210
TH-232	0	1	-0.001	4013.0	116.4	74	94

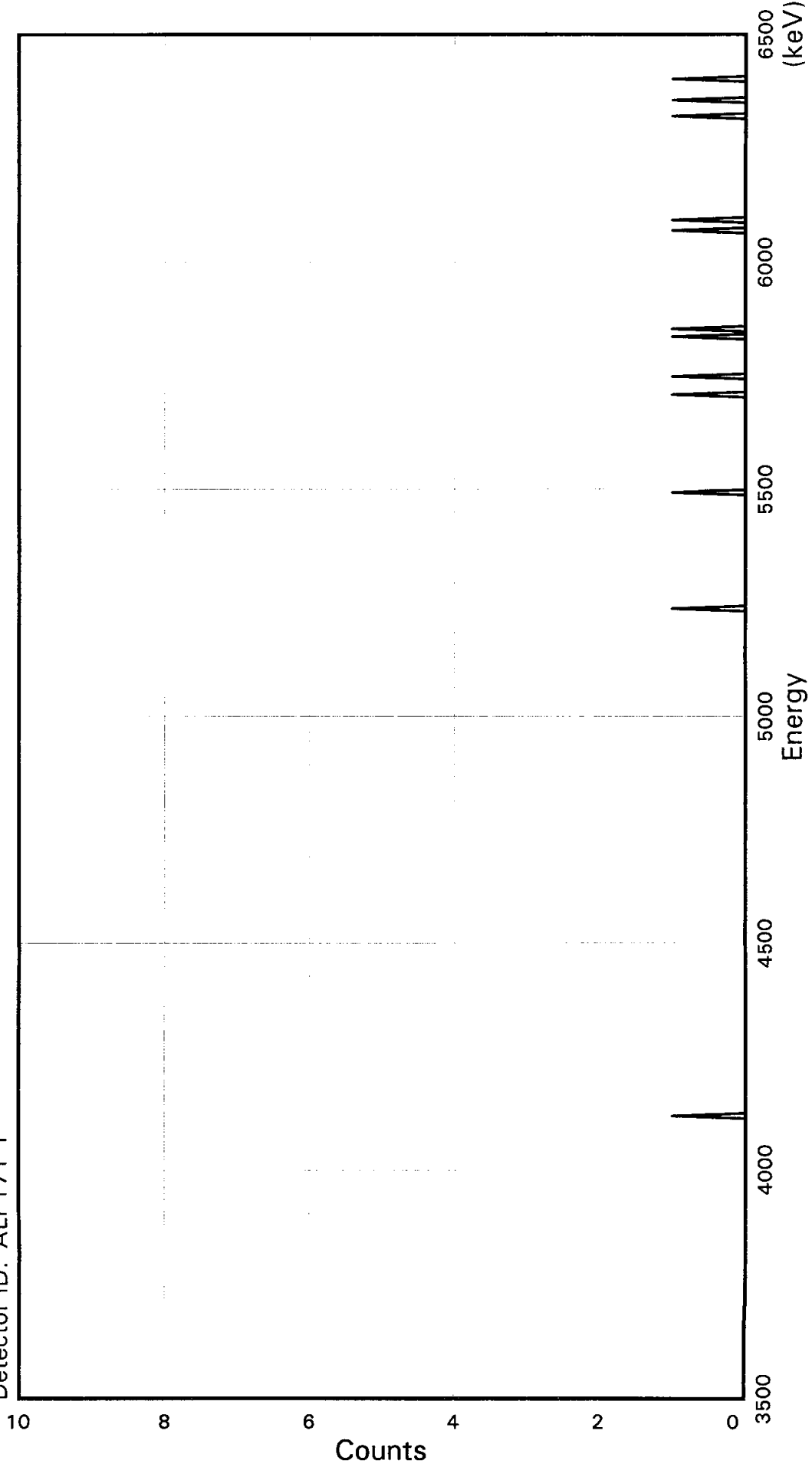
End of Alpha Region Report  
(Produced by ANAL Report)



STL Richland WA.  
TH BRCO

Sample ID: KCFM81AD  
Detector ID: ALP171 1

Batch ID: 7327118



Acquisition Start: 10-DEC-2007 05:05:44.46  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.49623E + 03  
Slope: 5.81865E + 00  
Quadrature: 7.22650E - 06

SAMPLE IDENTIITY: KCFM81AD

TITLE : TH BRCO

DETECTOR : ALP171 1  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCFM81AD\_101270505A.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 05:05:44 CALIB DATE : 09-DEC-2007 00:48:55

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3496.23 keV CONSTANT FWHM : 8.66667 Channels  
SLOPE : 5.81865 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 7.226500E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCFM81AD

Flags Key

Detector: ALP171 1

Report Date: 10-Dec-07 08:26 AM

Intersect Region: @

Acquire Date: 10-DEC 2007 05:05:44.46

Non Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	1		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	0		355	1		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	1		107	0		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	0		375	0		425	0		475			
0		26	0		76	0		126	0		176	0		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	0		127	0		177	0		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	0		328	0		378	0		428	0		478			
0		29	0		79	0		129	0		179	0		229	0		279	0		329	0		379	0		429	0		479			
0		30	0		80	0		130	0		180	0		230	0		280	0		330	1		380	0		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	0		381	0		431	0		481			
0		32	0		82	0		132	0		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	1		485			
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	0		137	0		187	0		237	0		287	0		337	1		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	0		341	0		391	0		441	1		491			
0		42	0		92	0		142	0		192	0		242	0		292	0		342	0		392	1		442	0		492			
0		43	0		93	0		143	0		193	0		243	0		293	1		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	0		296	0		346	0		396	1		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	1		299	0		349	0		399	0		449	1		499			

0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 08:26:00

Configuration : \$DISK1:[ALP171.SAMPLE]KCFM81AD\_101270505A.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH BRCO  
Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 05:05:44  
Sample ID : KCFM81AD Sample quantity : 0.00000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP171 1 Detector geometry:  
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%  
Start energy : 3513.69 keV End energy : 6477.28 keV  
Sensitivity : 3.00 Sum Sensitivity : 1.00  
No peaks were found

Error Report (Date: 10-Dec-07 08:26 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCFM81AF

Detector: ALP171 2

Report Date: 10-Dec-07 10:02 AM

Acquire Date: 10-DEC-2007 05:05:44.46

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

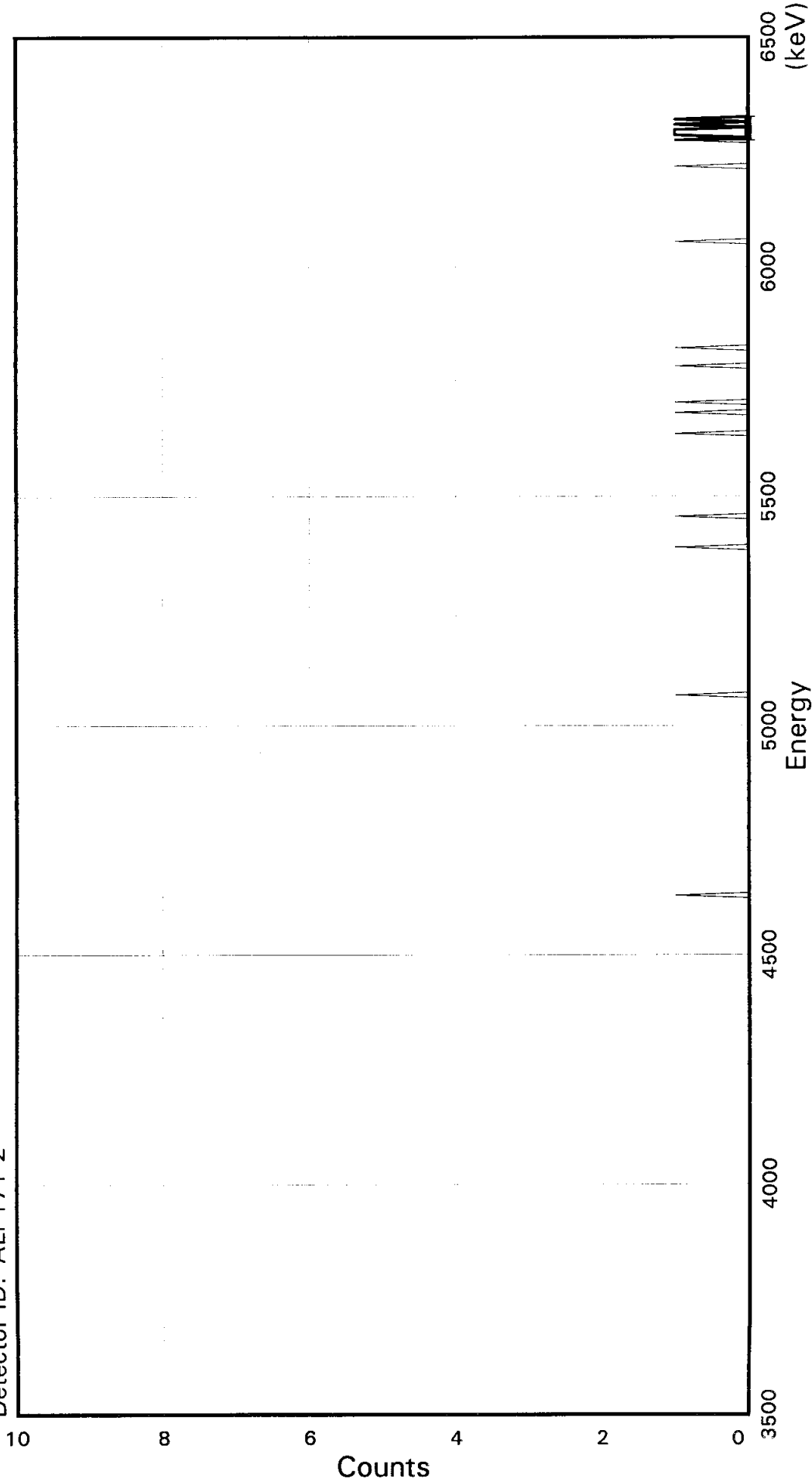
Nuclide	Smpl	Bkg	Count	Centrd	Region			
Name	Count	Count	Rate	Energy	Width	Left	Right	
			C/Min	keV	keV	Chnl	Chnl	
TH-228	1	0	0.005	5423.2	113.0	320	340	
TH-230	1	1	0.004	4687.7	113.0	190	210	
TH-232	0	1	-0.001	4013.0	113.1	71	91	

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCFM81AF  
Detector ID: ALP171 2

Batch ID: 7327118



Energy Coefficients:  
Offset: 3.52881E + 03  
Slope: 5.65426E + 00  
Quadrature: -4.50688E - 06

Acquisition Start: 10-DEC-2007 05:05:44.46  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00



SAMPLE IDENTIITY: KCFM81AF

TITLE : TH BRCO

DETECTOR : ALP171 2  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCFM81AF\_101270505B.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 05:05:44 CALIB DATE : 09-DEC-2007 00:49:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3528.81 keV CONSTANT FWHM : 9.33333 Channels  
SLOPE : 5.65426 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.450688E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCFM81AF

Flags Key

Detector: ALP171.2

Report Date: 10 Dec-07 08:26 AM

Intersect Region: @

Acquire Date: 10-DEC-2007 05:05:44.46

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	0		356	1		406	0		456	0		506
0		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	1		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	1		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	0		375	0		425	0		475			
0		26	0		76	0		126	0		176	0		226	0		276	0		326	0		376	0		426	1		476			
0		27	0		77	0		127	0		177	0		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	0		328	0		378	0		428	0		478			
0		29	0		79	0		129	0		179	0		229	0		279	1		329	0		379	0		429	0		479			
0		30	0		80	0		130	0		180	0		230	0		280	0		330	0		380	0		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	1		381	0		431	0		481			
0		32	0		82	0		132	0		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	1		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	1		486			
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	1		488			
0		39	0		89	0		139	0		189	0		239	0		289	0		339	0		389	0		439	1		489			
0		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	0		440	1		490			
0		41	0		91	0		141	0		191	0		241	0		291	1		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0		242	0		292	0		342	0		392	0		442	1		492			
0		43	0		93	0		143	0		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	0		294	0		344	0		394	0		444	1		494			
0		45	0		95	0		145	1		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	1		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	0		299	0		349	1		399	0		449	0		499			

0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 08:26:05

Configuration : \$DISK1:[ALP171.SAMPLE]KCFM81AF\_101270505B.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : TH BRCO  
 Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 05:05:44  
 Sample ID : KCFM81AF Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP171 1 Detector geometry:  
 Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%  
 Start energy : 3545.77 keV End energy : 6422.61 keV  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	6295.49	6	0	33.93	489.50	486	9	5.01E-04	40.8	

Error Report (Date: 10-Dec-07 08:26 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCKE91AD

Detector: ALP171 6

Report Date: 10-Dec-07 10:02 AM

Acquire Date: 10-DEC-2007 05:05:44.46

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

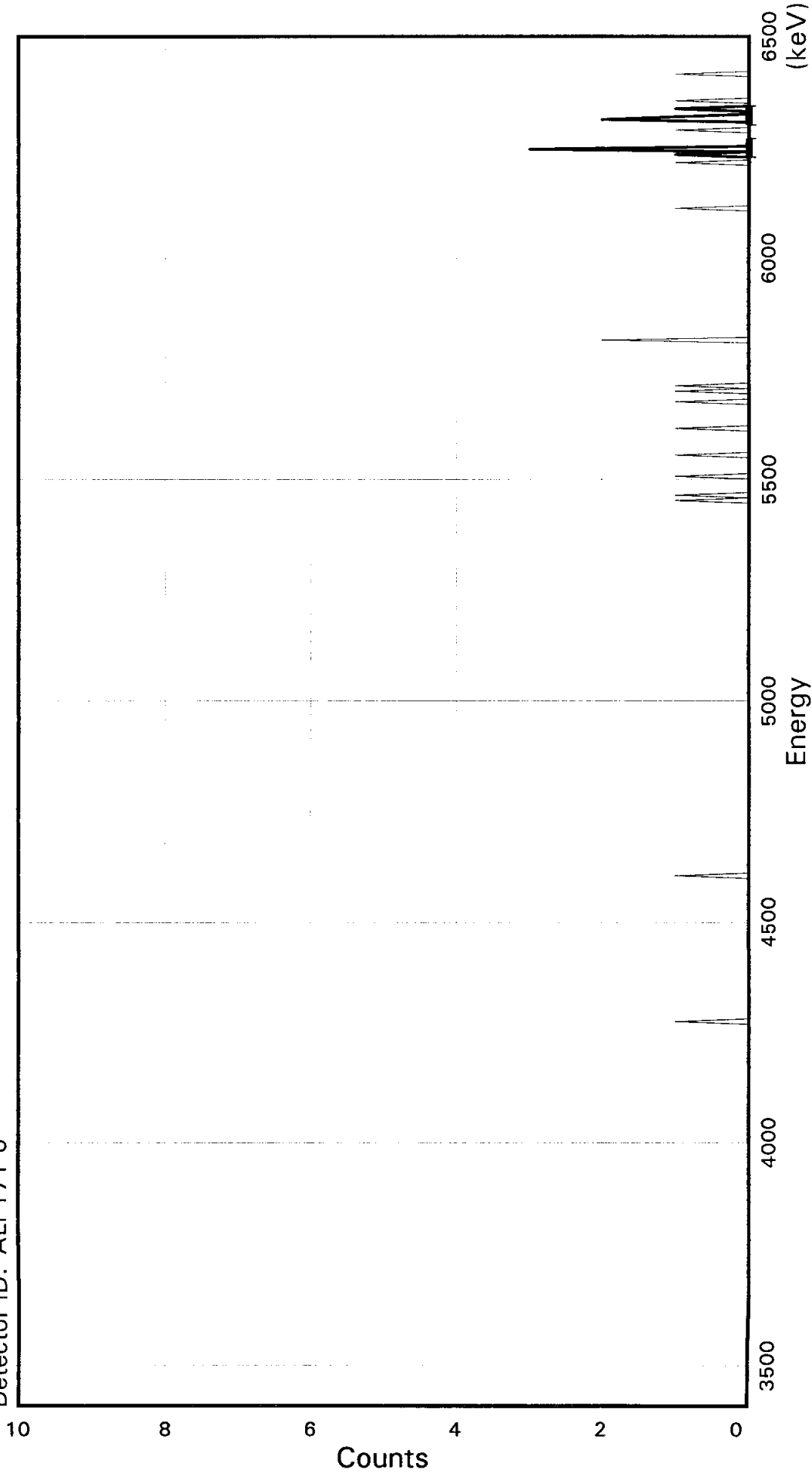
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	1	4	0.001	5423.2	121.0	321	341
TH-230	1	1	0.004	4687.7	120.9	200	220
TH-232	0	1	-0.001	4013.0	120.8	88	108

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCKE91AD  
Detector ID: ALP171 6

Batch ID: 7327118



Acquisition Start: 10-DEC-2007 05:05:44.46  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.39107E + 03  
Slope: 6.03714E + 00  
Quadrature: 2.23735E - 05

SAMPLE IDENTIITY: KCKE91AD

TITLE : TH BRCO

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCKE91AD\_101270505F.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 05:05:44 CALIB DATE : 09-DEC-2007 06:08:13

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3391.07 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 6.03714 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 2.237350E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %



Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCKE91AD

Flags Key

Detector: ALP171 6

Report Date: 10 Dec 07 08:26 AM

Intersect Region: \*

Acquire Date: 10-DEC-2007 05:05:44.46

Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
		1	0		51	0		101	0		151	1		201	0		251	0		301	0		351	2		401	0		451	0		501
		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0		208	0		258	0		308	1		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	1		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	1		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	0		320	0		370	0		420	1		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	0		322	0		372	0		422	3		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	0		375	0		425	0		475			
0		26	0		76	0		126	0		176	0		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	0		127	0		177	0		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	0		328	1		378	0		428	0		478			
0		29	0		79	0		129	0		179	0		229	0		279	0		329	0		379	0		429	1		479			
0		30	0		80	0		130	0		180	0		230	0		280	0		330	0		380	0		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	0		381	0		431	0		481			
0		32	0		82	0		132	0		182	0		232	0		282	0		332	1		382	0		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0		433	2		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	1		384	0		434	1		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	0		437	1		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	0		440	1		490			
0		41	0		91	0		141	0		191	0		241	0		291	1		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0		242	0		292	0		342	0		392	0		442	0		492			
0		43	0		93	0		143	0		193	0		243	0		293	1		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	1		146	0		196	0		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	0		299	0		349	0		399	0		449	0		499			

0 50 0 100 0 150 0 200 0 250 0 300 1 350 0 400 1 450 1 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 08:26:10

Configuration : \$DISK1:[ALP171.SAMPLE]KCKE91AD\_101270505F.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : TH BRCO  
 Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 05:05:44  
 Sample ID : KCKE91AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP171 1 Detector geometry:  
 Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%  
 Start energy : 3409.18 keV End energy : 6487.95 keV  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	6242.56	4	0	24.15	471.50	469	7	3.34E-04	50.0	
2	0	6315.26	4	0	24.15	483.50	481	7	3.34E-04	50.0	

Error Report (Date: 10-Dec-07 08:26 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCMQL1AD

Detector: ALP171 7

Report Date: 10-Dec-07 10:03 AM

Acquire Date: 10-DEC-2007 05:05:44.46

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

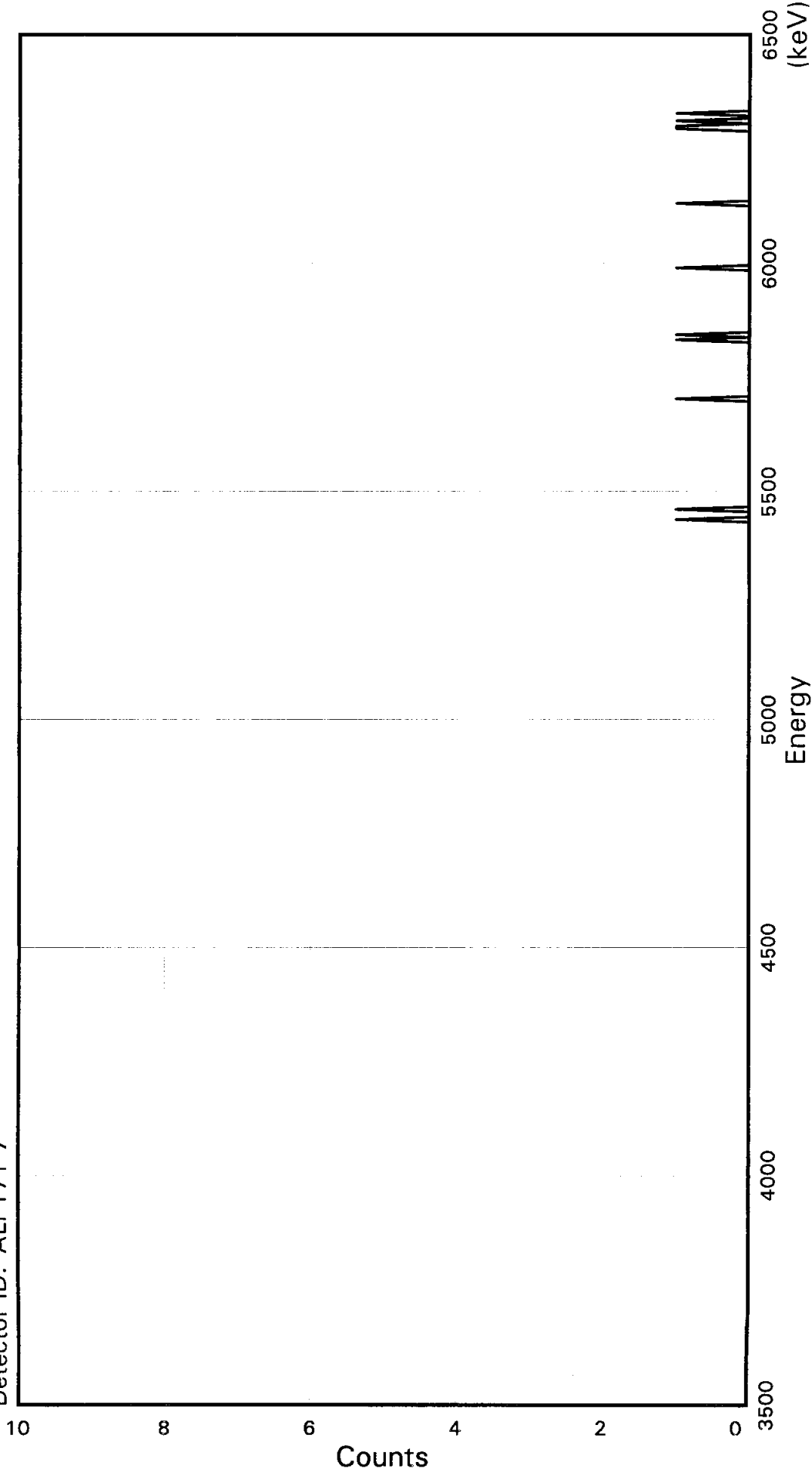
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	1	1	0.004	5423.2	112.6	310	330
TH-230	0	0	0.000	4687.7	112.7	180	200
TH-232	0	0	0.000	4013.0	112.7	60	80

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCMQL1AD  
Detector ID: ALP171 7

Batch ID: 7327118



Acquisition Start: 10-DEC-2007 05:05:44.46  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.59067E +03  
Slope: 5.63322E +00  
Quadrature: -1.34904E-06

SAMPLE IDENTIITY: KCMQL1AD

TITLE : TH BRCO

DETECTOR : ALP171 7  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCMQL1AD\_101270505G.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 05:05:44 CALIB DATE : 09-DEC-2007 00:50:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3590.67 keV CONSTANT FWHM : 6.50000 Channels  
SLOPE : 5.63322 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.134904E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: KCMQLIAD  
 Detector: ALP171 7  
 Report Date: 10-Dec-07 08:26 AM  
 Acquire Date: 10 DEC 2007 05:05:44.46

Flags Key  
 Intersect Region: @  
 Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	1		451	0		501
		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	1		375	0		425	0		475			
0		26	0		76	0		126	0		176	0		226	0		276	0		326	0		376	1		426	0		476			
0		27	0		77	0		127	0		177	0		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	1		328	0		378	0		428	0		478			
0		29	0		79	0		129	0		179	0		229	0		279	0		329	0		379	0		429	0		479			
0		30	0		80	0		130	0		180	0		230	0		280	0		330	0		380	0		430	1		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	0		381	0		431	1		481			
0		32	0		82	0		132	0		182	0		232	0		282	1		332	0		382	0		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0		433	1		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	1		486			
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0		242	0		292	0		342	0		392	0		442	0		492			
0		43	0		93	0		143	0		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	0		348	1		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	0		299	0		349	0		399	0		449	0		499			



0 50 0 100 0 150 0 200 0 250 0 300 0 350 1 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 08:26:14

Configuration : \$DISK1:[ALP171.SAMPLE]KCMQL1AD\_101270505G.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH BRCO  
Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 05:05:44  
Sample ID : KCMQL1AD Sample quantity : 0.00000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP171 1 Detector geometry:  
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%  
Start energy : 3607.57 keV End energy : 6474.53 keV  
Sensitivity : 3.00 Sum Sensitivity : 1.00  
No peaks were found

Error Report (Date: 10-Dec-07 08:26 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

# THORIUM ISOTOPIIC COUNTING REQUEST

1013

C.R. Technician CR  
Date Counted 12/10/05  
C.R. Analyst CR  
Date Analyzed 12/10/05

Counting Time 200 Minutes  
SOP's RICHRD008  
Sample 200 Operating: RICHRD008  
Background See Alpha Analysis Report Review: RICHRD0016

7327118

WorkOrder #	Th-229 (4845 KeV) Tracer			TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)	Th-230 (4688 KeV) (8)		
<u>KCR641AA</u>		10		0			<u>171</u>	
<u>KCR641AC</u>		10		0			<u>172</u>	
		10		0				
		10		0				
		10		0				
		10		0				
		10		0				
		10		0				
		10		0				

Comments:

Approved by: S

Date: 10/10/05

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCR641AA

Detector: ALP171 1

Report Date: 10-Dec-07 01:11 PM

Acquire Date: 10-DEC-2007 08:53:15.13

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgnd Live Time: 999 minutes

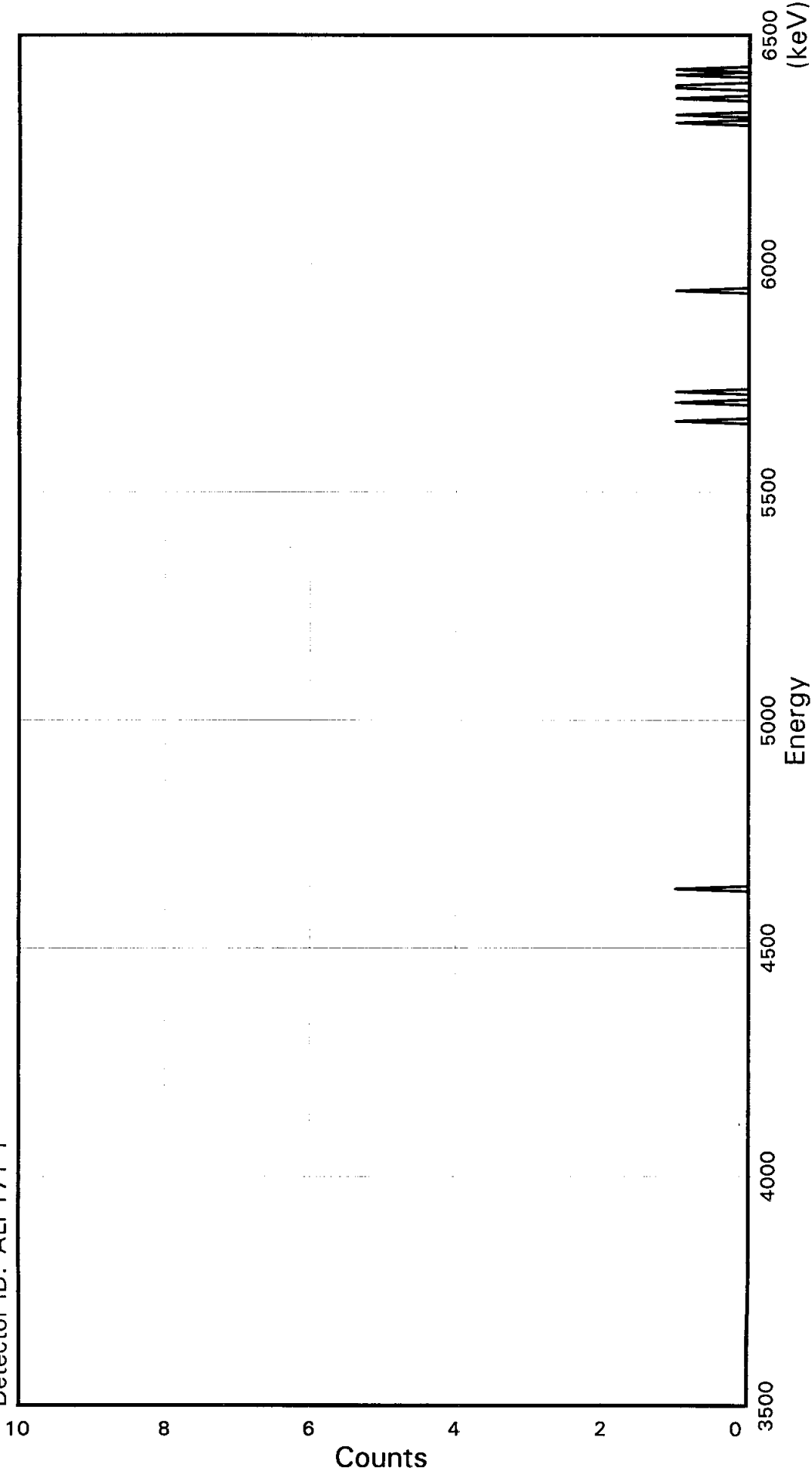
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	0	2	-0.002	5423.2	116.5	316	336
TH-230	1	1	0.004	4687.7	116.4	190	210
TH-232	0	1	-0.001	4013.0	116.4	74	94

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7327118

Sample ID: KCR641AA  
Detector ID: ALP171 1



Acquisition Start: 10-DEC-2007 08:53:15.13  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.49623E + 03  
Slope: 5.81865E + 00  
Quadrature: 7.22650E - 06

SAMPLE IDENTIITY: KCR641AA

TITLE : TH BRCO

DETECTOR : ALP171 1  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCR641AA\_101270853A.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 08:53:15 CALIB DATE : 09-DEC-2007 00:48:55

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3496.23 keV CONSTANT FWHM : 8.66667 Channels  
SLOPE : 5.81865 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 7.226500E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: KCR641AA

Flags Key

Detector: ALP171 1

Report Date: 10-Dec 07 12:13 PM

Intersect Region: @

Acquire Date: 10-DEC-2007 08:53:15.13

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn										
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	1		501	
		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502	
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	1		503	
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504	
0		5	0		55	0		105	0		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505	
0		6	0		56	0		106	0		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506	
0		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507	
0		8	0		58	0		108	0		158	0		208	0		258	0		308	0		358	0		408	0		458	0		508	
0		9	0		59	0		109	0		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509	
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510	
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511	
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512	
0		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	0		463				
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	0		464				
0		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465				
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466				
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467				
0		18	0		68	0		118	0		168	0		218	0		268	0		318	0		368	0		418	0		468				
0		19	0		69	0		119	0		169	0		219	0		269	0		319	0		369	0		419	0		469				
0		20	0		70	0		120	0		170	0		220	0		270	0		320	0		370	1		420	0		470				
0		21	0		71	0		121	0		171	0		221	0		271	0		321	1		371	0		421	0		471				
0		22	0		72	0		122	0		172	0		222	0		272	0		322	0		372	0		422	0		472				
0		23	0		73	0		123	0		173	0		223	0		273	0		323	0		373	0		423	0		473				
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	0		424	0		474				
0		25	0		75	0		125	0		175	0		225	0		275	0		325	0		375	0		425	0		475				
0		26	0		76	0		126	0		176	0		226	0		276	0		326	0		376	0		426	0		476				
0		27	0		77	0		127	0		177	0		227	0		277	0		327	0		377	0		427	0		477				
0		28	0		78	0		128	0		178	0		228	0		278	0		328	1		378	0		428	0		478				
0		29	0		79	0		129	0		179	0		229	0		279	0		329	0		379	0		429	0		479				
0		30	0		80	0		130	0		180	0		230	0		280	0		330	0		380	0		430	0		480				
0		31	0		81	0		131	0		181	0		231	0		281	0		331	0		381	0		431	0		481				
0		32	0		82	0		132	0		182	0		232	0		282	0		332	1		382	0		432	0		482				
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0		433	1		483				
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	0		484				
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485				
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	1		486				
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	0		437	0		487				
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488				
0		39	0		89	0		139	0		189	0		239	0		289	0		339	0		389	0		439	0		489				
0		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	0		440	0		490				
0		41	0		91	0		141	0		191	0		241	0		291	0		341	0		391	0		441	0		491				
0		42	0		92	0		142	0		192	0		242	0		292	0		342	0		392	0		442	1		492				
0		43	0		93	0		143	0		193	0		243	0		293	0		343	0		393	0		443	0		493				
0		44	0		94	0		144	0		194	0		244	0		294	0		344	0		394	0		444	0		494				
0		45	0		95	0		145	1		195	0		245	0		295	0		345	0		395	0		445	0		495				
0		46	0		96	0		146	0		196	0		246	0		296	0		346	0		396	0		446	1		496				
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	1		497				
0		48	0		98	0		148	0		198	0		248	0		298	0		348	0		398	0		448	0		498				
0		49	0		99	0		149	0		199	0		249	0		299	0		349	0		399	0		449	0		499				



0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 10-DEC-2007 12:13:29

Configuration : \$DISK1:[ALP171.SAMPLE]KCR641AA\_101270853A.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH BRCO  
Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 08:53:15  
Sample ID : KCR641AA Sample quantity : 0.00000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP171 1 Detector geometry:  
Elapsed live time: 0 03:19:47.00 Elapsed real time: 0 03:19:47.00 0.0%  
Start energy : 3513.69 keV End energy : 6477.28 keV  
Sensitivity : 3.00 Sum Sensitivity : 1.00  
No peaks were found

Error Report (Date: 10-Dec-07 12:13 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: KCR641AC

Detector: ALP171 2

Report Date: 10-Dec-07 01:12 PM

Acquire Date: 10-DEC-2007 08:53:15.13

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

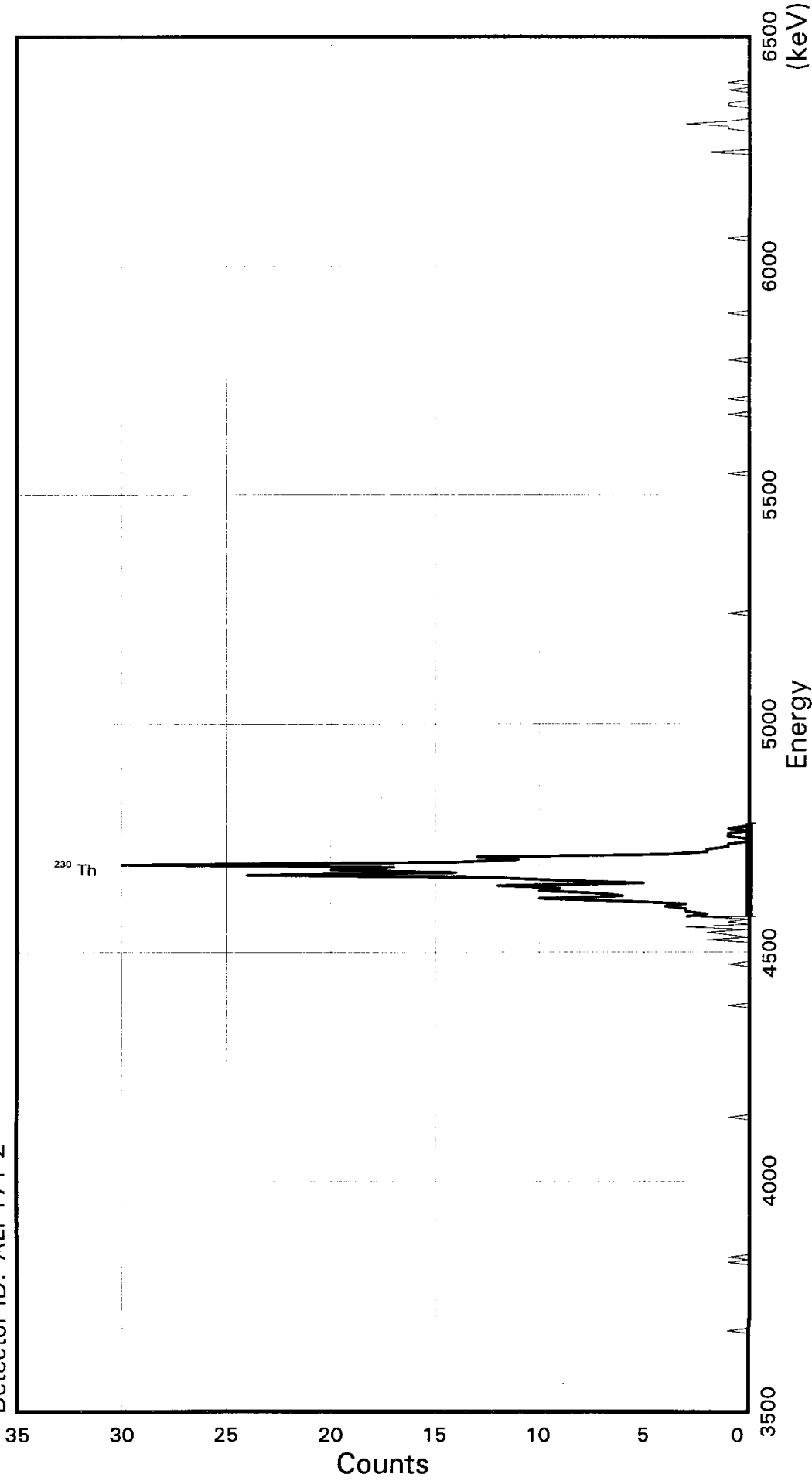
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Right
			C/Min	keV	keV	Chnl	Chnl
TH-228	0	0	0.000	5423.2	113.0	320	340
TH-230	262	1	1.310	4687.7	203.5	181	217
TH-232	0	1	-0.001	4013.0	113.1	71	91

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCR641AC  
Detector ID: ALP171 2

Batch ID: 7327118



Acquisition Start: 10-DEC-2007 08:53:15.13  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

Energy Coefficients:  
Offset: 3.52881E+03  
Slope: 5.65426E+00  
Quadrature: -4.50688E-06

SAMPLE IDENTIITY: KCR641AC

TITLE : TH BRCO

DETECTOR : ALP171 2  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCR641AC\_101270853B.CN  
F;1

ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 08:53:15 CALIB DATE : 09-DEC-2007 00:49:05

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:19:47

OFFSET : 3528.81 keV CONSTANT FWHM : 9.33333 Channels  
SLOPE : 5.65426 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.450688E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr 07)

Sample Identity: KCR641AC  
Detector: ALP171 2  
Report Date: 10-Dec-07 12:23 PM  
Acquire Date: 10-DEC-2007 08:53:15.13

Flags Key  
Intersect Region: @  
Non Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	1		151	12		201	0		251	0		301	0		351	1		401	0		451	0		501
0		2	1		52	0		102	0		152	24		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	14		203	0		253	1		303	0		353	0		403	0		453	0		503
0		4	1		54	0		104	0		154	20		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	17		205	0		255	0		305	0		355	0		405	0		455	1		505
0		6	0		56	0		106	0		156	30		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	14		207	0		257	0		307	1		357	0		407	0		457	0		507
0		8	0		58	1		108	0		158	11		208	0		258	0		308	0		358	0		408	0		458	1		508
0		9	0		59	0		109	0		159	13		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	4		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	2		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	2		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	1		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	1		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	1		167	1		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	1		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	0		369	1		419	0		469			
0		20	0		70	0		120	0		170	1		220	0		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	0		375	0		425	0		475			
1		26	0		76	0		126	0		176	0		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	0		127	2		177	0		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	0		328	0		378	0		428	0		478			
0		29	0		79	0		129	1		179	0		229	0		279	0		329	0		379	0		429	0		479			
0		30	0		80	0		130	2		180	0		230	0		280	0		330	1		380	0		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	0		381	0		431	2		481			
0		32	0		82	0		132	3		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	0		134	1		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	3		186	0		236	0		286	0		336	1		386	0		436	0		486			
0		37	0		87	0		137	2		187	0		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	0		138	3		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	3		189	0		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	4		190	0		240	0		290	0		340	0		390	0		440	1		490			
0		41	0		91	0		141	3		191	0		241	0		291	0		341	0		391	0		441	1		491			
0		42	0		92	0		142	6		192	0		242	0		292	0		342	0		392	0		442	3		492			
0		43	0		93	0		143	10		193	0		243	0		293	0		343	0		393	0		443	1		493			
0		44	0		94	0		144	6		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	7		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	10		196	0		246	0		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	9		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	12		198	0		248	0		298	0		348	0		398	1		448	0		498			
0		49	0		99	0		149	5		199	0		249	0		299	0		349	0		399	0		449	1		499			

0 50 0 100 0 150 9 200 0 250 0 300 0 350 0 400 0 450 1 500



VMS Peak Search Report V1.9 Generated 10-DEC-2007 12:23:43

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCR641AC_101270853B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 08:53:15
Sample ID         : KCR641AC           Sample quantity  : 0.00000E+00 GRAMS
Sample type       : disk               Sample geometry   :
Detector name     : ALP171 1          Detector geometry:
Elapsed live time: 0 03:19:47.00      Elapsed real time: 0 03:19:47.00   0.0%
Start energy      : 3545.77 keV        End energy        : 6422.61 keV
Sensitivity       : 3.00                Sum Sensitivity   : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4683.35	260	0	50.89	204.22	186	36	2.17E-02	6.2	

Error Report (Date: 10-Dec-07 12:23 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

THORIUM  
STANDARDS AND TRACEABILITY

# Standard Material Fractions (Vials)

Vial Prep: 12/ 9/06 to 12/11/07, SMFractionIdentifier Between THTC12141 and THTC12145, Order by

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23407B300		Ref: 11/29/2007	4.1439E+03	± 2.999E+02	CPM/G	
THTC12141	Th-234	5.0750E+02 ± 3.674E+01 CPM	0.1273 g	11/30/2007 11/30/2007	Armstron	3.9867E+03 ± 2.886E+02 CPM/G
THTC12142	Th-234	5.0631E+02 ± 3.665E+01 CPM	0.127 g	11/30/2007 11/30/2007	Armstron	3.9867E+03 ± 2.886E+02 CPM/G
THTC12143	Th-234	5.0471E+02 ± 3.653E+01 CPM	0.1266 g	11/30/2007 11/30/2007	Armstron	3.9867E+03 ± 2.885E+02 CPM/G
THTC12144	Th-234	5.0591E+02 ± 3.662E+01 CPM	0.1269 g	11/30/2007 11/30/2007	Armstron	3.9867E+03 ± 2.885E+02 CPM/G
THTC12145	Th-234	5.0311E+02 ± 3.642E+01 CPM	0.1262 g	11/30/2007 11/30/2007	Armstron	3.9866E+03 ± 2.885E+02 CPM/G

5.0551E+002 ± 1.670E+000 ( 5) 0.330% 5.0311E+002 , 5.0750E+002

\* Isotope is an Impurity

# Standard Material Fractions (Vials)

Vial Prep:12/ 9/06 to 12/11/07,SMFractionIdentifier Like: THSI1109%, Order by SMIdentifier,ConstituentCode,SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
	Parent Standard:	TH23006A100	Ref: 1/28/2004	2.1698E+01 ± 7.160E-01	DPM/G	
<b>THSI1109</b>	TH-230	<b>5.0837E+00 ± 1.678E-01</b>	DPM 0.2343 g	11/26/2007 11/26/2007	Armstron	2.1697E+01 ± 7.160E-01 DPM/G

5.0837E+000 ± 5.084E+000 ( 1)                      5.0837E+000 , 5.0837E+000

**Th23006**

Th23006A100  
Ref. 6096  
21.698 ± 0.716  
dpm/g  
5/24/2006 DVF

Th-230 Calibration Check

5/24/2006  
tda

Source  
Th23006A100 #6096

Source  
TH23406A100 #4857

Calculation for Th230 Radiochemical Yield  
(Th230 cpm \* d/c) / (Th230 dpm expected \* Tracer Yield) =

	Th230 cpm	d/c	Th230 dpm found	Th230 dpm expected	Tracer Yield	RCHEM Yield
DVF2601	6.485	3.406	22.088	22.123	1.128	0.998414
DVF2602	6.112	3.431	20.970	22.115	1.075	0.948237
DVF2604	6.338	3.191	20.225	22.069	1.081	0.916424
					Avg.	0.954
					Std. Dev.	0.04
					rsd<10%	8.66

Calculation for Th234Tracer Yield

	COUNTS TIME	SAMPLE COUNTS	BKGRD	BKGRD CT TIME	SAMPLE CPM	SAMPLE WT (g)	REF COUNTS	REF CPM	REF WT (g)	SAMPLE CPM/G
DVF2601	20	10658	667	500	531.566	0.265	138526	6926.300	3.891	2008.183
DVF2602	20	10138	795	500	505.310	0.266	137549	6877.450	3.894	1898.948
DVF2604	20	9951	562	500	496.426	0.265	135033	6751.650	3.898	1873.306

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>9/15/2004</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>FROM STL DENVER</u></b>		
4) Source Activity (dpm ± dpm/g)	<u>                    </u>	±	<u>                    </u>
5) Percent error of Source Activity	<u>                    </u>	%	
6) Weight of Source Material used (g)	<u>                    </u>		
7) (% Error) of Weight of Source Material used	<u>#DIV/0!</u>	%	
8) Diluent	<u>                    </u>		
9) Total Weight of the Dilution (g)	<u>                    </u>		
10) (% Error) of Total Weight of the Dilution	<u>3.3000</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.1698E+01</u></b>	±	<b><u>7.160E-01</u></b>
12) Total Uncertainty	<u>#DIV/0!</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>Th23006A100</u></b>		<b><u>6096</u></b>
14) Calibration Reference Date	<u>1/28/2004</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>6/8/2006</u>
16) Reviewed by/date	<u>                    </u>		<u>                    </u>
17) Location	<u>qclab</u>	18) Exhausted	<u>                    </u>

\*\*\*\*\*

**CALCULATIONS**

7) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

10) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

11) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity } ^2 + \% \text{ error of Wt. Used } ^2 + \% \text{ error of Dilution Wt. } ^2)}$

Form: CC-006, 7/15/99, Rev 3



COUNTING REQUEST

Type of count:    Alpha: \_\_\_\_\_ count time: \_\_\_\_\_ units: \_\_\_\_\_  
                           Beta: \_\_\_\_\_ count time: \_\_\_\_\_ units: \_\_\_\_\_  
                           Gamma: \_\_\_\_\_ count time: \_\_\_\_\_ Geom.: \_\_\_\_\_ units: \_\_\_\_\_  
                           Alpha Spec: 30 count time: 1000 units: dpm/Sa

Requested by: TDA Date submitted: 5/24/06

	Sample ID	Isotopes of interest	Sample Date
175	DW 2601	Th 230 06 A 100	
		# 6096	
176	2602		
177	2603		
178	2604		

ADDITIONAL INSTRUCTIONS:

T060089                      Cpdt                      Th 23006A100 #6096

DM 5/24/06                      Th 23406A100 #6094

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:43:12.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2601	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:43:12.00	9187	20.00	662	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	15	647	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:43:12.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2602	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:43:12.00	8717	20.00	740	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	10	647	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:43:12.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2603	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:43:12.00	8688	20.00	711	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	13	647	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:43:12.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2604	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:43:12.00	8500	20.00	608	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	28	647	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:17:29.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5799	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:17:29.00	116642	20.00	662	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	15	645	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:17:29.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5800	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
30-MAY-2006 09:17:29.00	115697	20.00	740	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	10	645	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:17:29.00

LBPRINT - Rev#: 2.4

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
CAL5801	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
30-MAY-2006 09:17:29.00	114775	20.00	711	500.00	30C

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
2	13	645	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



STL RICHLAND  
Richland, WA

**GPC Report**

30-MAY-2006 09:17:29.00

LBPRINT - Rev#: 2.4

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
CAL5802	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
30-MAY-2006 09:17:29.00	115181	20.00	608	500.00	30D

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
0	28	645	1492	29-MAY-2006 21:45:35.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

7060089

THORIUM BETA DATA FORM

SEVERN TRENT SERVICES		Requested by: TDA			BETA				
Sample ID	Vial Code	TH-234 WT.	Date-time Counted	Lab Tech:	Set ID	Gross Counts	Counting Time	Bkg. Counts	Count Room Tech
DVF2601							20 min		TH 234
2602							↓		
2603									
2604									

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 17:14:03.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2601	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 17:14:03.00	10658	20.00	667	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	18	653	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 17:14:03.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2602	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 17:14:03.00	10138	20.00	795	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	15	653	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 17:14:03.00

LBPRINT - Rev#: 2.4

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
DVF2603	COP	COP

<b>Sample Count Date/Time</b>	<b>Beta Counts</b>	<b>Count Duration*</b>	<b>Beta Bkg Counts</b>	<b>Bkg Count Duration*</b>	<b>Instr ID</b>
24-MAY-2006 17:14:03.00	10593	20.00	704	500.00	30C

<b>Alpha Counts</b>	<b>Alpha Bkg Counts</b>	<b>Guard Counts</b>	<b>HV</b>	<b>Bkg Count Date/Time</b>
1	17	653	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 17:14:03.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
DVF2604	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 17:14:03.00	9951	20.00	562	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	14	653	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

Sample ID	Isotope	Geometry
CAL5734	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
24-MAY-2006 10:00:42.00	535	20.00	667	500.00	30A

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
2	18	646	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5735	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	431	20.00	795	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	15	646	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5736	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	478	20.00	704	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	17	646	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

GPC Report

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5737	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	440	20.00	562	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	14	646	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23406A100		Ref: 5/18/2006	2.3166E+03 ± 3.168E+02	CPM/G		
DVF2601	TH-234	5.1029E+02 ± 6.979E+01 CPM	0.2647 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2602	TH-234	5.1298E+02 ± 7.016E+01 CPM	0.2661 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2603	TH-234	5.1143E+02 ± 6.994E+01 CPM	0.2653 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2604	TH-234	5.1085E+02 ± 6.987E+01 CPM	0.265 g	5/24/2006 5/24/2006	Armstron	1.9277E+03 ± 2.636E+02 CPM/G

5.1139E+002 ± 1.160E+000 ( 4) 0.227% 5.1029E+002 , 5.1298E+002

5/24/2006 5:38:39 PM

# Standard Material Fractions (Vials)

Vial Prep: 5/23/05 to 5/25/06, SMFractionIdentifier Between DVF2601 and DVF2604, Order by SMIdentifier, ConstituentCode, SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23006A100		Ref: 9/15/2004	2.1698E+01	± 7.160E-01	DPM/G	
DVF2601	TH-230	2.2123E+01 ± 7.300E-01 DPM	1.0196 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2602	TH-230	2.2115E+01 ± 7.298E-01 DPM	1.0192 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2603	TH-230	2.2106E+01 ± 7.295E-01 DPM	1.0188 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2604	TH-230	2.2069E+01 ± 7.283E-01 DPM	1.0171 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G

2.2103E+001 ± 2.386E-002 ( 4) 0.108% 2.2069E+001 , 2.2123E+001

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:23:54.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5799	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:23:54.00	138526	20.00	667	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	18	660	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:23:54.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5800	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:23:54.00	137549	20.00	795	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	15	660	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

STL RICHLAND  
Richland, WA

**GPC Report**

24-MAY-2006 10:23:54.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5801	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:23:54.00	137829	20.00	704	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	17	660	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



STL RICHLAND  
Richland, WA

GPC Report

24-MAY-2006 10:23:54.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5802	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:23:54.00	135033	20.00	562	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	14	660	1492	24-MAY-2006 05:49:57.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

# THORIUM ISOTOPICTIC COUNTING REQUEST

C.R. Technician RD  
 Date Counted 5/24/06  
 C.R. Analyst D  
 Date Analyzed 6/28/06

Counting Time 1000 Minutes  
 Sample 1041  
 Background See Alpha Analysis Report  
 Review: 5/24/06  
 Operating: RICHRD008  
 Review: RICHRD0016  
STR TO 60089

WorkOrder #	Th-229 (4845 keV) Tracer		TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)		
DVF2601		10		0			175 3.406
DVF2602		10		0			176 3.431
DVF2603		10		0			177 3.827
DVF2604		10		0			178 3.191
		10		0			
		10		0			
		10		0			
		10		0			
		10		0			
		10		0			

Comments:

Approved by: S Date: 5/28/06

Alpha Analysis Report  
(Version: 7-Feb-98)

Sample Identity: DVF2601

Detector: ALP171 5

Report Date: 25-May-06 10:48 AM

Acquire Date: 24-MAY-2006 18:01:30.57

Tracer Nuclide: TH-229

Sample Live Time: 999 minutes

Bkgrnd Live Time: 999 minutes

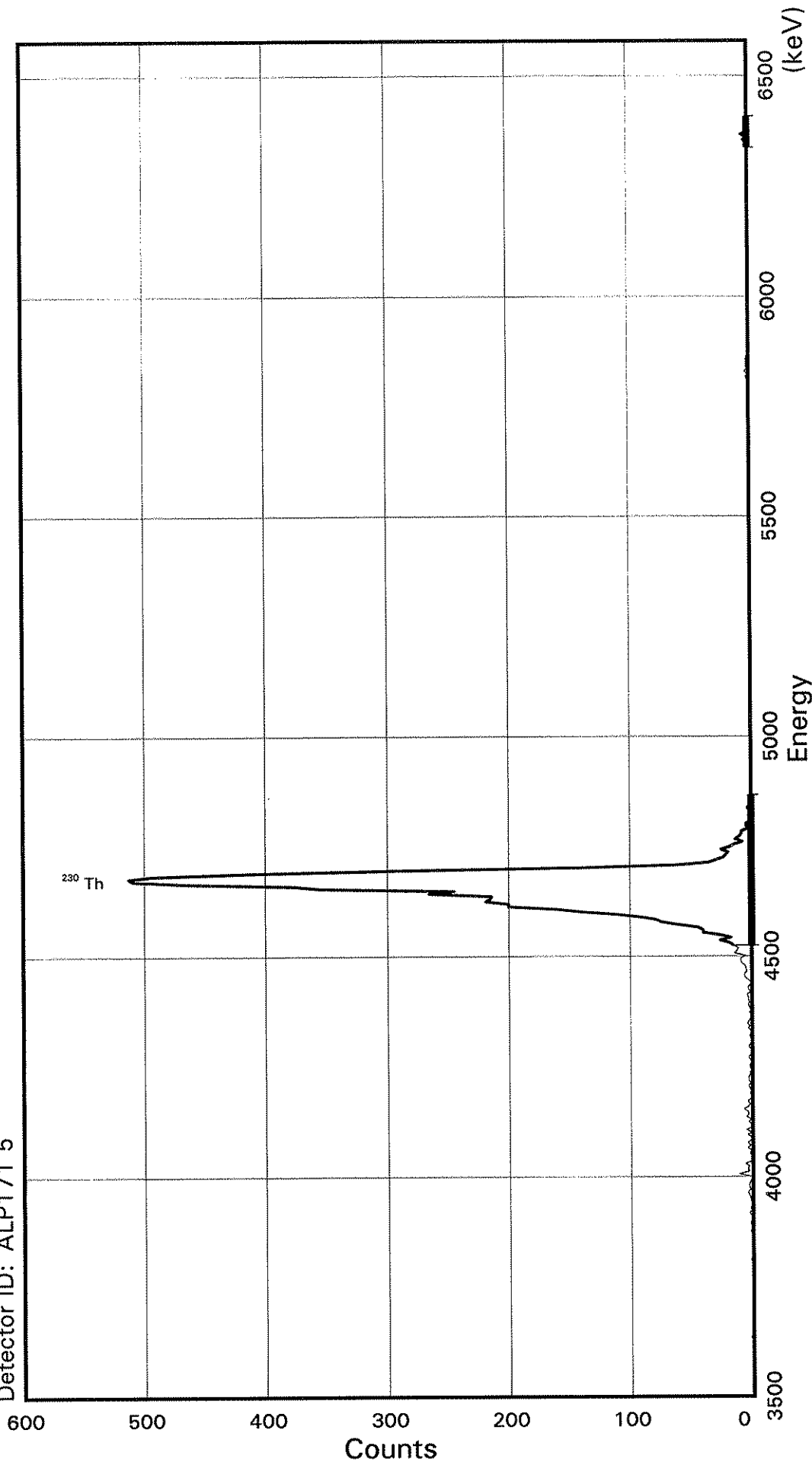
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	2	1	0.001	5423.2	118.1	301	321
TH-230	6479	1	6.485	4687.7	436.6	146	220
TH-232	55	1	0.054	4013.0	117.9	62	82

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH STLR

Batch ID: T060089

Sample ID: DVF2601  
Detector ID: ALP171 5



Energy Coefficients:  
Offset: 3.55777E+03  
Slope: 5.89519E+00  
Quadrature: 1.39841E-05

Acquisition Start: 24-MAY-2006 18:01:30.57  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

SAMPLE IDENTIITY: DVF2601

TITLE : TH STL

DETECTOR : ALP171 5  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]DVF2601\_240561801E.CNF  
;1  
ACQUIRE DATE of BACKGROUND: 06-MAY-2006 14:12:16

REPORT DATE : 25-May-06 SAMPLE DATE: 24-MAY-2006 12:00:00  
ACQUIRE DATE: 24-MAY-2006 18:01:30 CALIB DATE : 06-MAY-2006 11:43:55

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3557.77 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 5.89519 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 1.398410E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 29-Jun-92)

Sample Identity: DVF2601  
 Detector: ALP171 5  
 Report Date: 25-May-06 10:46 AM  
 Acquire Date: 24-MAY-2006 18:01:30.57

Flags Key  
 Intersect Region: @  
 Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
		1	0		51	7		101	4		151	25		201	0		251	0		301	0		351	0		401	1		451	0		501
		2	1		52	3		102	6		152	18		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	2		103	6		153	14		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	2		54	4		104	4		154	7		204	0		254	1		304	0		354	0		404	0		454	0		504
1		5	0		55	1		105	5		155	13		205	0		255	0		305	0		355	1		405	0		455	0		505
1		6	1		56	0		106	5		156	10		206	0		256	1		306	0		356	1		406	0		456	0		506
0		7	2		57	2		107	8		157	8		207	0		257	0		307	0		357	0		407	0		457	0		507
1		8	1		58	1		108	9		158	8		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	2		109	9		159	3		209	0		259	0		309	0		359	0		409	0		459	0		509
1		10	1		60	3		110	5		160	4		210	0		260	0		310	0		360	0		410	1		460	0		510
0		11	3		61	1		111	14		161	4		211	0		261	0		311	0		361	0		411	1		461	0		511
0		12	1		62	3		112	12		162	1		212	0		262	0		312	0		362	0		412	0		462	0		512
2		13	2		63	3		113	11		163	1		213	0		263	0		313	1		363	0		413	1		463			
1		14	0		64	2		114	15		164	2		214	0		264	0		314	1		364	0		414	1		464			
0		15	1		65	2		115	18		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	2		66	0		116	26		166	0		216	0		266	0		316	1		366	0		416	1		466			
0		17	2		67	2		117	17		167	3		217	0		267	0		317	0		367	0		417	0		467			
0		18	3		68	2		118	26		168	1		218	0		268	0		318	0		368	0		418	0		468			
0		19	4		69	0		119	40		169	0		219	0		269	0		319	0		369	0		419	0		469			
0		20	2		70	2		120	40		170	0		220	0		270	0		320	0		370	0		420	0		470			
0		21	3		71	3		121	44		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	3		72	0		122	60		172	1		222	0		272	0		322	0		372	0		422	0		472			
0		23	2		73	1		123	74		173	0		223	0		273	0		323	0		373	0		423	1		473			
0		24	1		74	1		124	79		174	0		224	0		274	1		324	0		374	0		424	3		474			
0		25	1		75	3		125	92		175	0		225	0		275	0		325	0		375	0		425	1		475			
0		26	11		76	1		126	111		176	0		226	1		276	1		326	1		376	0		426	5		476			
0		27	3		77	1		127	140		177	0		227	1		277	0		327	0		377	0		427	0		477			
0		28	4		78	0		128	160		178	0		228	0		278	0		328	0		378	0		428	1		478			
0		29	3		79	2		129	200		179	0		229	0		279	0		329	0		379	1		429	2		479			
1		30	6		80	1		130	200		180	0		230	0		280	0		330	1		380	0		430	0		480			
0		31	0		81	1		131	219		181	0		231	0		281	0		331	1		381	0		431	0		481			
0		32	1		82	3		132	215		182	0		232	0		282	0		332	1		382	0		432	1		482			
0		33	1		83	2		133	214		183	0		233	1		283	0		333	2		383	0		433	0		483			
0		34	2		84	4		134	266		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	1		85	2		135	245		185	0		235	0		285	0		335	3		385	0		435	0		485			
0		36	4		86	1		136	355		186	0		236	0		286	0		336	1		386	0		436	0		486			
0		37	2		87	0		137	377		187	0		237	0		287	0		337	2		387	0		437	0		487			
0		38	4		88	2		138	465		188	0		238	0		288	0		338	2		388	0		438	0		488			
0		39	1		89	1		139	509		189	0		239	0		289	0		339	2		389	0		439	0		489			
0		40	0		90	2		140	513		190	0		240	0		290	0		340	2		390	0		440	0		490			
0		41	4		91	3		141	493		191	0		241	0		291	0		341	1		391	0		441	0		491			
0		42	1		92	2		142	415		192	0		242	0		292	1		342	0		392	0		442	1		492			
2		43	5		93	3		143	293		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	3		144	141		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	4		145	61		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	3		96	1		146	35		196	0		246	0		296	0		346	0		396	0		446	0		496			
0		47	1		97	3		147	29		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	5		98	3		148	23		198	1		248	0		298	0		348	0		398	0		448	0		498			
0		49	3		99	1		149	21		199	0		249	0		299	0		349	0		399	0		449	0		499			

1 50 4 100 1 150 19 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 25-MAY-2006 10:46:23

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2601_240561801E.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID         : DVF2601 Sample quantity : 1.0000 SAMPLE
Sample type       : disk Sample geometry :
Detector name     : ALP171 1 Detector geometry:
Elapsed live time : 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy      : 3575.46 keV End energy : 6579.77 keV
Sensitivity       : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4673.22	6370	0	53.06	189.13	164	58	1.06E-01	1.3	
2	0	6366.51	14	0	29.48	475.91	471	12	2.34E-04	26.7	



VMS Nuclide Identification Report V3.0 Generated 25-MAY-2006 10:46:25

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2601_240561801E.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID         : DVF2601 Sample quantity : 1.0000 SAMPLE
Sample type       : disk Sample geometry :
Detector name     : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Energy tolerance : 80.00 keV Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type  : Spline Efficiencies at : Peak Energy
Abundance limit  : 70.00
    
```

Summary of Nuclide Activity

```

Total number of lines in spectrum          2
Number of unidentified lines              1
Number of lines tentatively identified by NID 1      50.00%
    
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

```

Flags: "K" = Keyline not found      "M" = Manually accepted
       "E" = Manually edited         "A" = Nuclide specific abn. limit
    
```

Error Report (Date: 25-May-06 10:46 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 7-Feb-98)

Sample Identity: DVF2602

Detector: ALP171 6  
Report Date: 25-May-06 10:49 AM  
Acquire Date: 24-MAY-2006 18:01:30.57  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

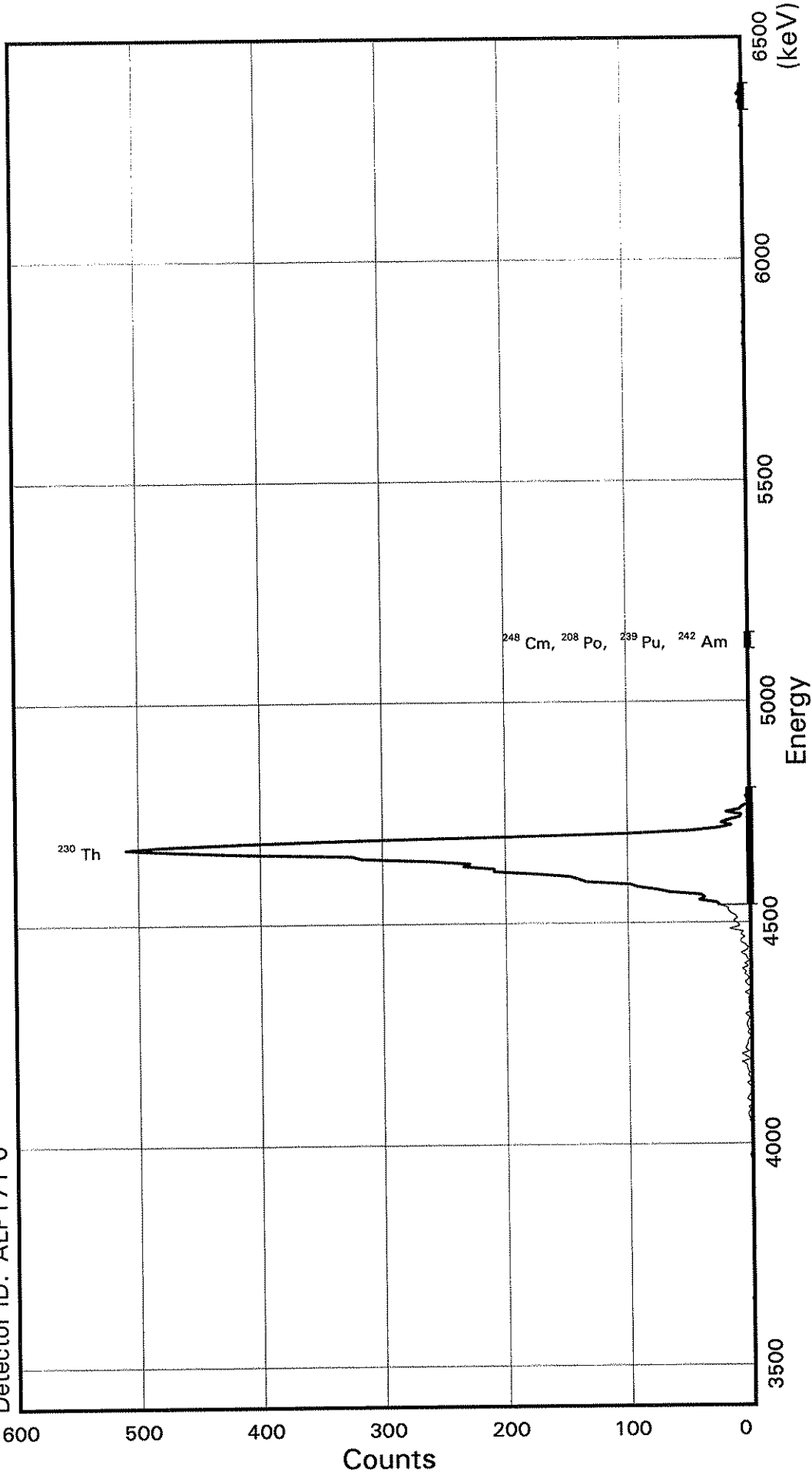
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Rght
			C/Min	keV	keV	Chnl	Chnl
TH-228	1	2	-0.001	5423.2	120.9	322	342
TH-230	6112	2	6.116	4687.7	325.6	179	233
TH-232	12	0	0.012	4013.0	120.3	89	109

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH STLR

Batch ID: T060089

Sample ID: DVF2602  
Detector ID: ALP171 6



Energy Coefficients:  
Offset: 3.39036E + 03  
Slope: 6.00329E + 00  
Quadrature: 6.37184E-05

Acquisition Start: 24-MAY-2006 18:01:30.57  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

SAMPLE IDENTIITY: DVF2602

TITLE : TH STL

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]DVF2602\_240561801F.CNF  
;1  
ACQUIRE DATE of BACKGROUND: 08-MAY-2006 04:40:02

REPORT DATE : 25-May-06 SAMPLE DATE: 24-MAY-2006 12:00:00  
ACQUIRE DATE: 24-MAY-2006 18:01:30 CALIB DATE : 07-MAY-2006 06:53:51

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3390.36 keV CONSTANT FWHM : 7.33333 Channels  
SLOPE : 6.00329 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 6.371840E-05 keV/C<sup>2</sup> SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 29-Jun-92)

Sample Identity: DVF2602

Flags Key

Detector: ALP171 6

Report Date: 25-May-06 10:46 AM

Intersect Region: @

Acquire Date: 24-MAY-2006 18:01:30.57

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
0		1	0		51	0		101	0		151	140		201	0		251	0		301	0		351	2		401	0		451	0		501
		2	0		52	1		102	2		152	147		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	1		153	174		203	1		253	0		303	0		353	1		403	0		453	0		503
0		4	0		54	1		104	2		154	209		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	1		55	1		105	2		155	209		205	0		255	0		305	0		355	2		405	0		455	0		505
0		6	0		56	0		106	2		156	234		206	0		256	0		306	0		356	1		406	0		456	0		506
0		7	0		57	1		107	1		157	229		207	0		257	0		307	0		357	0		407	0		457	0		507
1		8	0		58	0		108	5		158	261		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	1		59	1		109	1		159	317		209	0		259	0		309	0		359	2		409	0		459	0		509
0		10	0		60	2		110	0		160	325		210	0		260	0		310	0		360	0		410	2		460	1		510
0		11	0		61	2		111	3		161	414		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	3		112	5		162	468		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	3		113	2		163	510		213	0		263	0		313	0		363	0		413	0		463			
1		14	0		64	1		114	2		164	478		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	3		115	5		165	411		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	4		166	321		216	0		266	0		316	1		366	0		416	0		466			
0		17	0		67	0		117	7		167	200		217	0		267	0		317	0		367	1		417	0		467			
0		18	0		68	4		118	2		168	101		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	3		119	5		169	48		219	0		269	1		319	0		369	2		419	0		469			
0		20	1		70	1		120	1		170	26		220	0		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	3		171	15		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	1		122	4		172	23		222	0		272	0		322	0		372	0		422	0		472			
0		23	1		73	1		123	8		173	17		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	4		124	3		174	8		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	1		125	2		175	7		225	0		275	0		325	0		375	0		425	0		475			
0		26	0		76	1		126	4		176	19		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	3		127	8		177	8		227	0		277	0		327	0		377	0		427	0		477			
1		28	0		78	2		128	8		178	6		228	0		278	0		328	0		378	0		428	0		478			
0		29	0		79	3		129	5		179	1		229	0		279	0		329	1		379	0		429	0		479			
0		30	1		80	4		130	8		180	1		230	0		280	0		330	0		380	0		430	0		480			
0		31	0		81	4		131	6		181	2		231	0		281	1		331	1		381	0		431	0		481			
0		32	1		82	8		132	17		182	3		232	0		282	0		332	0		382	0		432	2		482			
0		33	0		83	1		133	9		183	0		233	0		283	0		333	0		383	0		433	1		483			
0		34	0		84	4		134	10		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	8		135	14		185	0		235	0		285	0		335	0		385	1		435	1		485			
0		36	0		86	2		136	11		186	1		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	5		137	12		187	0		237	1		287	0		337	0		387	0		437	0		487			
0		38	0		88	4		138	16		188	1		238	0		288	0		338	0		388	0		438	1		488			
0		39	0		89	3		139	18		189	1		239	1		289	0		339	0		389	0		439	0		489			
0		40	0		90	3		140	18		190	0		240	1		290	0		340	1		390	0		440	0		490			
1		41	1		91	1		141	25		191	0		241	1		291	0		341	0		391	0		441	3		491			
0		42	1		92	1		142	27		192	0		242	0		292	0		342	1		392	0		442	2		492			
2		43	0		93	3		143	41		193	1		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	2		144	37		194	1		244	1		294	0		344	1		394	0		444	4		494			
0		45	0		95	3		145	40		195	0		245	0		295	0		345	0		395	0		445	2		495			
0		46	1		96	4		146	66		196	0		246	0		296	0		346	0		396	0		446	1		496			
0		47	2		97	3		147	76		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	1		98	2		148	92		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	1		99	2		149	98		199	1		249	0		299	0		349	0		399	1		449	0		499			

0 50 0 100 5 150 134 200 0 250 1 300 0 350 1 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 25-MAY-2006 10:46:39

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2602_240561801F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID        : DVF2602 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3408.37 keV End energy : 6480.74 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4667.42	5969	0	54.03	212.25	191	44	9.96E-02	1.3	
2	0	5133.65	4	0	24.01	289.50	287	6	6.67E-05	50.0	
3	0	6362.71	12	0	42.02	492.55	488	10	2.00E-04	28.9	



```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2602_240561801F.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID        : DVF2602 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Energy tolerance : 80.00 keV Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type  : Spline Efficiencies at : Peak Energy
Abundance limit  : 70.00
    
```

Summary of Nuclide Activity

```

Total number of lines in spectrum      3
Number of unidentified lines           1
Number of lines tentatively identified by NID 2        66.67%
    
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PU-239	24110.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
AM-242M	141.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

```

Flags: "K" = Keyline not found      "M" = Manually accepted
       "E" = Manually edited         "A" = Nuclide specific abn. limit
    
```

Error Report (Date: 25-May-06 10:46 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 7-Feb-98)

Sample Identity: DVF2603

Detector: ALP171 7  
Report Date: 25-May-06 10:49 AM  
Acquire Date: 24-MAY-2006 18:01:30.57  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

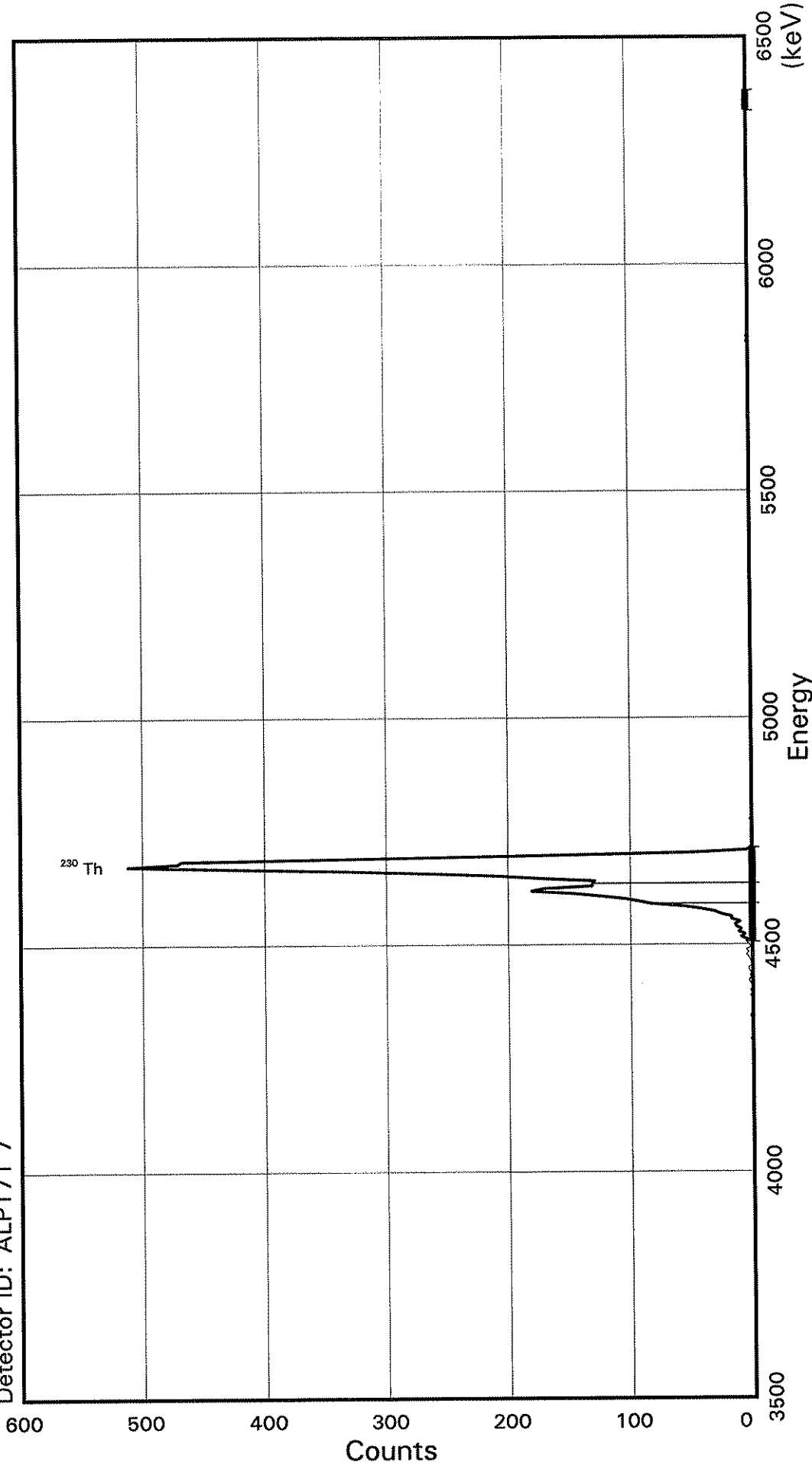
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Right
			C/Min	keV	keV	Chnl	Chnl
TH-228	0	0	0.000	5423.2	112.7	311	331
TH-230	4956	3	4.958	4687.7	220.0	161	200
TH-232	2	0	0.002	4013.0	112.9	61	81

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH STLR

Batch ID: T060089

Sample ID: DVF2603  
Detector ID: ALP171 7



Energy Coefficients:  
Offset: 3.58497E + 03  
Slope: 5.64847E + 00  
Quadrature: -1.76165E-05

Acquisition Start: 24-MAY-2006 18:01:30.57  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

SAMPLE IDENTIITY: DVF2603

TITLE : TH STL

DETECTOR : ALP171 7  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]DVF2603\_240561801G.CNF  
;1  
ACQUIRE DATE of BACKGROUND: 06-MAY-2006 14:12:16

REPORT DATE : 25-May-06 SAMPLE DATE: 24-MAY-2006 12:00:00  
ACQUIRE DATE: 24-MAY-2006 18:01:30 CALIB DATE : 06-MAY-2006 00:06:10

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3584.97 keV CONSTANT FWHM : 6.33333 Channels  
SLOPE : 5.64847 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.176165E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 29-Jun-92)

Sample Identity: DVF2603  
 Detector: ALP171 7  
 Report Date: 25-May-06 10:47 AM  
 Acquire Date: 24-MAY-2006 18:01:30.57

Flags Key  
 Intersect Region: @  
 Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	1		101	1		151	0		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	3		152	1		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	3		153	1		203	0		253	0		303	0		353	1		403	1		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	1		105	1		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	2		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
1		7	0		57	0		107	3		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	5		158	0		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	3		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	1		60	0		110	5		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	1		111	1		161	2		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	1		112	3		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	5		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	4		164	0		214	0		264	0		314	0		364	0		414	0		464			
0		15	0		65	0		115	9		165	0		215	0		265	0		315	0		365	1		415	0		465			
0		16	1		66	0		116	6		166	0		216	0		266	0		316	0		366	0		416	0		466			
1		17	0		67	0		117	11		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	9		168	0		218	0		268	0		318	0		368	0		418	0		468			
1		19	0		69	0		119	13		169	0		219	0		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	14		170	0		220	0		270	0		320	0		370	1		420	0		470			
0		21	0		71	0		121	10		171	0		221	0		271	0		321	0		371	1		421	0		471			
0		22	0		72	0		122	17		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	1		123	17		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	1		74	0		124	26		174	0		224	0		274	0		324	0		374	0		424	1		474			
0		25	0		75	2		125	31		175	0		225	0		275	0		325	0		375	0		425	0		475			
0		26	0		76	0		126	42		176	0		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	1		127	56		177	0		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	0		128	83		178	0		228	0		278	0		328	0		378	0		428	0		478			
0		29	0		79	0		129	93		179	0		229	0		279	0		329	0		379	0		429	0		479			
0		30	0		80	1		130	105		180	0		230	0		280	0		330	0		380	0		430	0		480			
0		31	0		81	0		131	124		181	0		231	0		281	0		331	0		381	0		431	0		481			
0		32	0		82	0		132	145		182	0		232	1		282	1		332	0		382	0		432	0		482			
0		33	1		83	1		133	181		183	0		233	1		283	0		333	0		383	0		433	0		483			
0		34	0		84	2		134	171		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	1		135	131		185	0		235	0		285	0		335	1		385	0		435	0		485			
0		36	0		86	1		136	131		186	0		236	0		286	0		336	1		386	0		436	0		486			
0		37	0		87	0		137	129		187	0		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	0		138	174		188	0		238	0		288	1		338	0		388	0		438	0		488			
0		39	0		89	0		139	207		189	0		239	0		289	0		339	0		389	0		439	1		489			
0		40	0		90	0		140	262		190	0		240	0		290	1		340	0		390	0		440	2		490			
0		41	1		91	0		141	332		191	0		241	0		291	0		341	0		391	0		441	1		491			
0		42	0		92	2		142	426		192	1		242	0		292	0		342	0		392	0		442	2		492			
0		43	0		93	0		143	512		193	0		243	0		293	0		343	1		393	0		443	1		493			
1		44	1		94	2		144	471		194	0		244	0		294	0		344	0		394	0		444	1		494			
0		45	1		95	0		145	468		195	0		245	0		295	0		345	1		395	0		445	0		495			
0		46	0		96	0		146	314		196	0		246	0		296	0		346	0		396	0		446	0		496			
1		47	0		97	2		147	169		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	3		148	49		198	0		248	0		298	1		348	2		398	0		448	0		498			
0		49	1		99	1		149	4		199	0		249	0		299	0		349	1		399	0		449	0		499			

0 50 0 100 2 150 1 200 0 250 0 300 0 350 2 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 25-MAY-2006 10:47:40

```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2603_240561801G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID        : DVF2603 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3601.91 keV End energy : 6472.36 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4605.53	912	0	45.19	180.78	163	23	1.52E-02	3.3	
2	0	4675.41	4040	0	39.54	193.17	178	22	6.74E-02	1.6	
3	0	6349.89	7	0	16.95	490.25	488	8	1.17E-04	37.8	



```

Configuration      : $DISK1:[ALP171.SAMPLE]DVF2603_240561801G.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH STLR
Sample date       : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30
Sample ID         : DVF2603 Sample quantity : 1.0000 SAMPLE
Sample type       : disk Sample geometry :
Detector name     : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Energy tolerance : 80.00 keV Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type  : Spline Efficiencies at : Peak Energy
Abundance limit  : 70.00
    
```

Summary of Nuclide Activity

```

Total number of lines in spectrum          3
Number of unidentified lines                2
Number of lines tentatively identified by NID 1      33.33%
    
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found "M" = Manually accepted  
 "E" = Manually edited "A" = Nuclide specific abn. limit

Error Report (Date: 25-May-06 10:47 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 7-Feb-98)

Sample Identity: DVF2604

Detector: ALP171 8  
Report Date: 25-May-06 10:49 AM  
Acquire Date: 24-MAY-2006 18:01:30.57  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

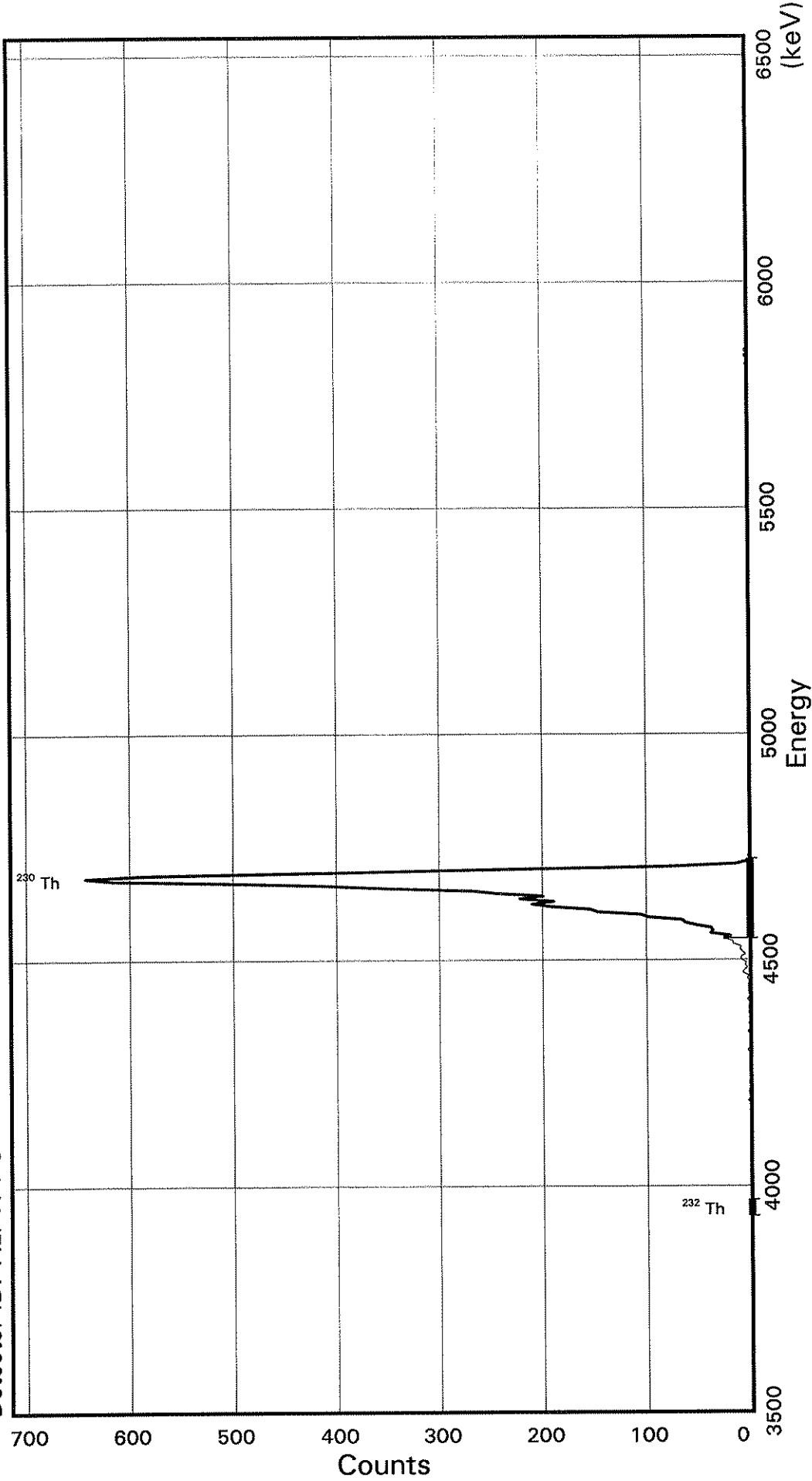
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	0	2	-0.002	5423.2	117.7	307	327
TH-230	6331	0	6.338	4687.7	282.7	157	205
TH-232	4	0	0.004	4013.0	117.9	67	87

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH STLR

Batch ID: T060089

Sample ID: DVF2604  
Detector ID: ALP171 8



Energy Coefficients:  
Offset: 3.52756E + 03  
Slope: 5.89937E + 00  
Quadrature: -2.58312E-05

Acquisition Start: 24-MAY-2006 18:01:30.57  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

SAMPLE IDENTIITY: DVF2604

TITLE : TH STLR

DETECTOR : ALP171 8  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]DVF2604\_240561801H.CNF  
;1  
ACQUIRE DATE of BACKGROUND: 06-MAY-2006 14:12:16

REPORT DATE : 25-May-06 SAMPLE DATE: 24-MAY-2006 12:00:00  
ACQUIRE DATE: 24-MAY-2006 18:01:30 CALIB DATE : 06-MAY-2006 00:06:38

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3527.56 keV CONSTANT FWHM : 7.33333 Channels  
SLOPE : 5.89937 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.258312E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 29-Jun-92)

Sample Identity: DVF2604

Flags Key

Detector: ALP171 8

Report Date: 25-May-06 10:42 AM

Intersect Region: @

Acquire Date: 24-MAY-2006 18:01:30.57

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
		1	0		51	0		101	1		151	14		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	1		152	3		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	2		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	1		54	0		104	2		154	2		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	2		155	0		205	0		255	0		305	1		355	0		405	0		455	0		505
0		6	0		56	0		106	2		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
1		7	0		57	1		107	1		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	3		158	0		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	2		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
1		10	0		60	1		110	7		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
1		11	0		61	0		111	6		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	3		112	3		162	0		212	0		262	0		312	1		362	0		412	0		462	0		512
0		13	0		63	1		113	5		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	1		114	4		164	0		214	0		264	0		314	0		364	0		414	1		464			
0		15	0		65	2		115	9		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	2		116	9		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	1		67	0		117	5		167	0		217	0		267	0		317	1		367	0		417	0		467			
0		18	0		68	0		118	8		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	2		119	10		169	0		219	0		269	0		319	0		369	1		419	0		469			
0		20	0		70	0		120	9		170	0		220	0		270	0		320	0		370	0		420	0		470			
0		21	2		71	0		121	17		171	1		221	0		271	0		321	0		371	0		421	1		471			
0		22	1		72	0		122	17		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	26		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	19		174	0		224	0		274	0		324	0		374	0		424	0		474			
1		25	0		75	0		125	38		175	0		225	0		275	0		325	0		375	0		425	0		475			
1		26	0		76	0		126	36		176	0		226	1		276	0		326	0		376	0		426	1		476			
0		27	0		77	0		127	38		177	0		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	1		128	52		178	0		228	0		278	1		328	0		378	1		428	1		478			
0		29	0		79	1		129	63		179	0		229	0		279	0		329	0		379	0		429	0		479			
0		30	0		80	1		130	66		180	0		230	0		280	0		330	1		380	0		430	2		480			
0		31	0		81	3		131	98		181	0		231	0		281	0		331	1		381	0		431	0		481			
0		32	0		82	1		132	105		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0		133	147		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	1		134	154		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0		135	191		185	0		235	0		285	0		335	1		385	0		435	2		485			
0		36	0		86	1		136	210		186	0		236	0		286	0		336	0		386	0		436	0		486			
0		37	0		87	1		137	189		187	0		237	0		287	0		337	1		387	0		437	0		487			
1		38	0		88	3		138	222		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	199		189	0		239	0		289	0		339	2		389	0		439	0		489			
0		40	1		90	0		140	244		190	0		240	0		290	0		340	1		390	0		440	0		490			
0		41	0		91	2		141	268		191	0		241	1		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	350		192	0		242	0		292	0		342	3		392	0		442	0		492			
0		43	0		93	1		143	407		193	0		243	0		293	0		343	1		393	0		443	0		493			
0		44	0		94	0		144	496		194	0		244	0		294	0		344	3		394	0		444	0		494			
0		45	0		95	2		145	616		195	0		245	0		295	0		345	1		395	0		445	0		495			
0		46	0		96	1		146	643		196	0		246	0		296	0		346	0		396	1		446	0		496			
0		47	0		97	2		147	585		197	0		247	0		297	0		347	1		397	0		447	0		497			
0		48	0		98	1		148	407		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	1		99	0		149	248		199	0		249	0		299	0		349	1		399	0		449	0		499			

0 50 1 100 3 150 80 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 25-MAY-2006 10:42:58

Configuration : \$DISK1:[ALP171.SAMPLE]DVF2604\_240561801H.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : TH STLR  
 Sample date : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30  
 Sample ID : DVF2604 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Detector name : ALP171 1 Detector geometry:  
 Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%  
 Start energy : 3545.25 keV End energy : 6541.26 keV  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3949.23	4	0	23.60	71.50	69	6	6.67E-05	50.0	
2	0	4678.02	6227	0	41.30	195.18	173	30	1.04E-01	1.3	



VMS Nuclide Identification Report V3.0 Generated 25-MAY-2006 10:43:00

Configuration : \$DISK1:[ALP171.SAMPLE]DVF2604\_240561801H.CNF;1  
 Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.3  
 Sample title : TH STLR  
 Sample date : 24-MAY-2006 12:00:00 Acquisition date : 24-MAY-2006 18:01:30  
 Sample ID : DVF2604 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Detector name : ALP171 1 Detector geometry:  
 Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%  
 Energy tolerance : 80.00 keV Half life ratio : 1.00  
 Errors propagated: No Systematic Error : 0.00 %  
 Efficiency type : Spline Efficiencies at : Peak Energy  
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	2	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	2	100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-232	1.41E+10Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found "M" = Manually accepted  
 "E" = Manually edited "A" = Nuclide specific abn. limit

Error Report (Date: 25-May-06 10:43 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23406A100			Ref: 5/18/2006	2.3166E+03 ± 3.168E+02	CPM/G	
DVF2601	TH-234	5.1029E+02 ± 6.979E+01 CPM	0.2647 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2602	TH-234	5.1298E+02 ± 7.016E+01 CPM	0.2661 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2603	TH-234	5.1143E+02 ± 6.994E+01 CPM	0.2653 g	5/24/2006 5/24/2006	Armstron	1.9278E+03 ± 2.636E+02 CPM/G
DVF2604	TH-234	5.1085E+02 ± 6.987E+01 CPM	0.265 g	5/24/2006 5/24/2006	Armstron	1.9277E+03 ± 2.636E+02 CPM/G

5.1139E+002 ± 1.160E+000 ( 4) 0.227% 5.1029E+002 , 5.1298E+002

## Standard Material Fractions (Vials)

Vial Prep: 5/23/05 to 5/25/06, SMFractionIdentifier Between dvf2601 and dvf2604, Order by SMIdentifier, ConstituentCode, SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep, Decayed To Date	Prep by	Std Decayed Activity/Concentration
	Parent Standard: TH23006A100		Ref: 9/15/2004	2.1698E+01 ± 7.160E-01	DPM/G	
DVF2601	TH-230	2.2123E+01 ± 7.300E-01 DPM	1.0196 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2602	TH-230	2.2115E+01 ± 7.298E-01 DPM	1.0192 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2603	TH-230	2.2106E+01 ± 7.295E-01 DPM	1.0188 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G
DVF2604	TH-230	2.2069E+01 ± 7.283E-01 DPM	1.0171 g	5/24/2006 5/24/2006	Armstron	2.1698E+01 ± 7.160E-01 DPM/G

2.2103E+001 ± 2.386E-002 ( 4) 0.108% 2.2069E+001 , 2.2123E+001

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23407A200		Ref: 9/24/2007	2.2542E+03	± 1.709E+02	CPM/G	
<b>THS11109</b>	Th-234	<b>5.0196E+02 ± 3.806E+01</b> CPM	1.3735 g	11/26/2007 11/26/2007	Armstron	3.6546E+02 ± 2.771E+01 CPM/G
		5.0196E+002 ± 5.020E+002 ( 1)	5.0196E+002 , 5.0196E+002			
<p>STL Richland, SMFractions v4.8.29</p> <p>* - Isotope is an Impurity</p>						

## Memorandum

**Date:** 1 October 2007  
**To:** Count Room & Team Leaders  
**From:** Tim Armstrong  
**Subject:** New Th-234 Source {Th23407A200 #6254}

There is a new Th-234 source **Th23407A200 #6254**

With a reference date of **24 Sep 2007**

CAL ID	GRAMS FOUND	REFERENCE DATE
CAL6452	2.3043	24 Sep 2007
CAL6453	2.2203	24 Sep 2007
CAL6454	2.3707	24 Sep 2007
CAL6455	2.0704	24 Sep 2007

J.C.  
10/2/07

TH-234 CALIBRATION CALCULATIONS

Std ID: TH23407A200 #6254  
 Date: 27-Sep-07

Tracer Yield Calculations

Vial	Th-230		Background		Expected		
	Counts	Min	Counts	Min	Net cpm	Det. Eff	Yield
CAL6452	6768	999	3	999	6.772	0.2847	25.062
CAL6453	6547	999	6	999	6.548	0.2878	24.933
CAL6454	7115	999	2	999	7.120	0.2926	24.938
CAL6455	5543	999	1	999	5.548	0.2616	24.946

24-Sep-07 = Source Reference Date      10:33 = Source Reference Time

SET 30A-30D Reference Data

Thorium Beta Data

Date	Time	Th-234	Background			Net cpm	Decay	Th234 wt. grams	Th230 Yield	Th234
			Cts	Min	Max					
27-Sep-07	16:06	93821	20	630	500	4689.79	1.0974	2.4276	0.9492	2233.46
27-Sep-07	16:06	89844	20	839	500	4490.52	1.0974	2.4330	0.9126	2219.43
27-Sep-07	16:06	92844	20	718	500	4640.76	1.0974	2.4295	0.9758	2148.24
27-Sep-07	16:06	91175	20	577	500	4557.60	1.0974	2.4355	0.8501	2415.72

Th234 YIELD CORRECTION FOR DATA HANDLERS

Th234 wt. g \* Th230 YIELD

CAL6452	2.3043
CAL6453	2.2203
CAL6454	2.3707
CAL6455	2.0704

2254.21	Average
5.06%	%RSD
-4.70%	Min Bias
7.16%	Max Bias

2.2542E+03	= Rad Calc. expected value, cpm/g
1.7093E+02	= Total Error of Rad Calc. expected value
24-Sep-07	= Reference Date of Rad Calc. expected value
10:33	= Reference Time of Rad Calc. expected value

## COUNTING REQUEST

Type of count:    Alpha: \_\_\_\_\_    count time: \_\_\_\_\_    units: \_\_\_\_\_  
                         Beta: \_\_\_\_\_    count time: \_\_\_\_\_    units: \_\_\_\_\_  
                         Gamma: \_\_\_\_\_    count time: \_\_\_\_\_    units: \_\_\_\_\_  
                         Alpha Spec: X    count time: 1000    units: dpm/Sa    Geom.: \_\_\_\_\_

Requested by: TDA

Date submitted: 9/25/07

	Sample ID	Isotopes of interest	Sample Date
171	CAL6452	Th2340.7A200 #6254	9/25/07
		Th23002B160 #6031	
172	CAL6453	...	
176	CAL6454		
177	CAL6455		
178	CAL6456	Th 234 only	
116	CAL6457	Purity check	

ADDITIONAL INSTRUCTIONS:

#T070164      PRECIPITATE

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Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23407A200		Ref: 9/24/2007	2.1514E+03	± 1.050E+02	CPM/G	
CAL6452	Th-234	5.0219E+03 ± 2.451E+02 CPM	2.4276 g	9/25/2007 9/25/2007	Armstron	2.0687E+03 ± 1.010E+02 CPM/G
CAL6453	Th-234	5.0329E+03 ± 2.456E+02 CPM	2.433 g	9/25/2007 9/25/2007	Armstron	2.0686E+03 ± 1.010E+02 CPM/G
CAL6454	Th-234	5.0256E+03 ± 2.453E+02 CPM	2.4295 g	9/25/2007 9/25/2007	Armstron	2.0686E+03 ± 1.010E+02 CPM/G
CAL6455	Th-234	5.0379E+03 ± 2.459E+02 CPM	2.4355 g	9/25/2007 9/25/2007	Armstron	2.0685E+03 ± 1.010E+02 CPM/G
CAL6456	Th-234	5.0349E+03 ± 2.457E+02 CPM	2.4341 g	9/25/2007 9/25/2007	Armstron	2.0685E+03 ± 1.010E+02 CPM/G
CAL6457	Th-234	5.0264E+03 ± 2.453E+02 CPM	2.43 g	9/25/2007 9/25/2007	Armstron	2.0685E+03 ± 1.010E+02 CPM/G

5.0300E+003 ± 6.237E+000 ( 6) 0.124% 5.0219E+003 , 5.0379E+003

9/27/2007 4:35:27 PM

# Standard Material Fractions (Vials)

Vial Prep: 9/26/06 to 9/28/07, SMFractionIdentifier Between CAL6452 and CAL6457, Order by SMIdentifier, ConstituentCode, SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: TH23002B160		Ref: 5/31/2002	4.2976E+01 ± 1.503E+00	DPM/G		
CAL6452	TH-230	2.5062E+01 ± 8.765E-01 DPM	0.5832 g	9/25/2007 9/25/2007	Armstron	4.2974E+01 ± 1.503E+00 DPM/G
CAL6453	TH-230	2.4933E+01 ± 8.720E-01 DPM	0.5802 g	9/25/2007 9/25/2007	Armstron	4.2974E+01 ± 1.503E+00 DPM/G
CAL6454	TH-230	2.4938E+01 ± 8.722E-01 DPM	0.5803 g	9/25/2007 9/25/2007	Armstron	4.2974E+01 ± 1.503E+00 DPM/G
CAL6455	TH-230	2.4946E+01 ± 8.725E-01 DPM	0.5805 g	9/25/2007 9/25/2007	Armstron	4.2974E+01 ± 1.503E+00 DPM/G

2.4970E+001 ± 6.183E-002 ( 4) 0.248% 2.4933E+001 , 2.5062E+001

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 12:30:33.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6386	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 12:30:33.00	8889	20.00	630	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	18	658	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 12:30:33.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6387	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 12:30:33.00	8924	20.00	839	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	28	658	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 12:30:33.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6388	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 12:30:33.00	8561	20.00	718	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	36	658	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 12:30:33.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6389	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 12:30:33.00	9150	20.00	577	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	11	658	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:06:58.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6452	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:06:58.00	93821	20.00	630	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	18	672	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:06:58.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6453	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:06:58.00	89844	20.00	839	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	28	672	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:06:58.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6454	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:06:58.00	92844	20.00	718	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	36	672	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:06:58.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6455	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:06:58.00	91175	20.00	577	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	11	672	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
 Richland, WA

**GPC Report**

27-SEP-2007 16:32:18.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6456	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:32:18.00	91710	20.00	630	500.00	30A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	18	676	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

27-SEP-2007 16:32:18.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL6457	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
27-SEP-2007 16:32:18.00	90263	20.00	839	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
3	28	676	1492	27-SEP-2007 05:19:01.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

# THORIUM ISOTOPIC COUNTING REQUEST

C.R. Technician BP  
Date Counted 9/27/07  
C.R. Analyst CS  
Date Analyzed 9/28/07

Counting Time 1000 Minutes  
Sample 1000  
Background See Alpha Analysis Report  
TA-RLD

SOP's RICHRD008  
Operating: RICHRD0016  
Review: 1070164

9/28/07 1028  
1209

WorkOrder #	Th-229 (4845 KeV) Tracer		TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-230 (4688 KeV) (6)		
<u>CAL6452</u>		10		0			171 3.513
<u>CAL6453</u>		10		0			172 3.475
<u>CAL6454</u>		10		0			176 3.418
<u>CAL6455</u>		10		0			177 3.822
<u>CAL6456</u>		10		0			178 3.228
<u>CAL6457</u>		10		0			116 3.814
		10		0			
		10		0			
		10		0			
		10		0			

Comments:

Approved by: S Date: 9/28/07

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6452

Detector: ALP171 1

Report Date: 28-Sep-07 10:51 AM

Acquire Date: 27-SEP-2007 17:48:01.26

Tracer Nuclide: TH-229

Sample Live Time: 999 minutes

Bkgrnd Live Time: 999 minutes

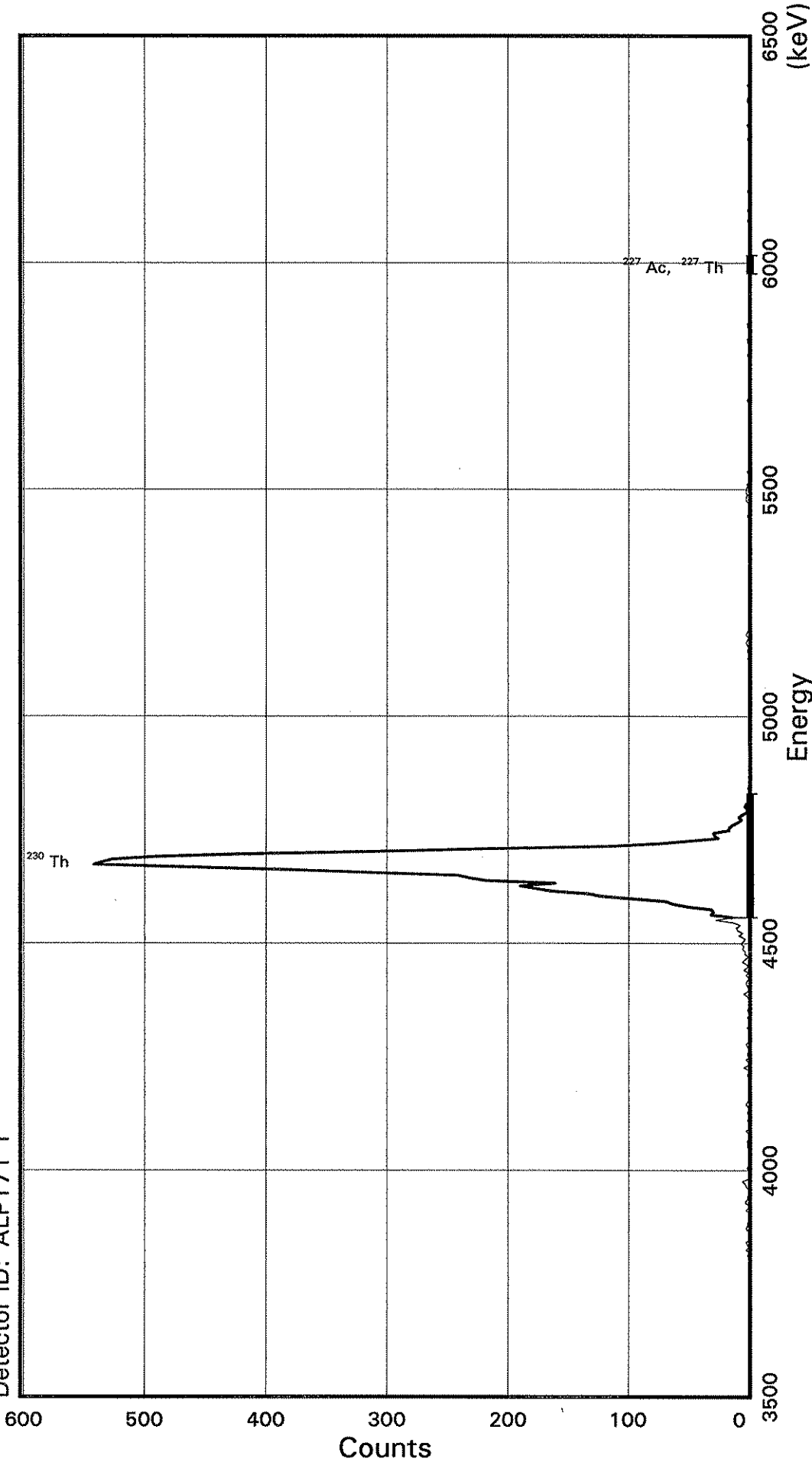
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	4	5	-0.001	5423.2	116.4	316	336
TH-230	6768	3	6.772	4687.7	366.3	167	230
TH-232	31	0	0.031	4013.0	116.2	73	93

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Batch ID: T070164

Sample ID: CAL6452  
Detector ID: ALP171 1



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.49940E+03  
Slope: 5.80758E+00  
Quadrature: 1.85842E-05



SAMPLE IDENTIITY: CAL6452

TITLE : TH TA-RLD

DETECTOR : ALP171 1

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]CAL6452\_270971748A.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 07:10:00

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3499.40 keV CONSTANT FWHM : 9.00000 Channels  
SLOPE : 5.80758 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 1.858420E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: CAL6452

Flags Key

Detector: ALP171 1

Report Date: 28-Sep-07 10:29 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	1	51	3	101	1	151	460	201	0	251	0	301	2	351	2	401	0	451	1	501				
		2	1	52	0	102	2	152	542	202	0	252	0	302	0	352	1	402	0	452	0	502				
0		3	0	53	1	103	5	153	535	203	0	253	0	303	1	353	1	403	1	453	0	503				
0		4	2	54	0	104	1	154	527	204	0	254	0	304	0	354	0	404	0	454	1	504				
0		5	0	55	2	105	1	155	491	205	0	255	0	305	0	355	0	405	0	455	0	505				
0		6	3	56	0	106	2	156	419	206	0	256	0	306	0	356	2	406	0	456	0	506				
0		7	1	57	0	107	3	157	309	207	0	257	0	307	0	357	2	407	2	457	0	507				
0		8	2	58	2	108	2	158	223	208	0	258	0	308	0	358	0	408	0	458	0	508				
0		9	3	59	0	109	0	159	116	209	0	259	0	309	0	359	0	409	0	459	0	509				
0		10	0	60	1	110	3	160	74	210	0	260	0	310	0	360	0	410	0	460	0	510				
0		11	1	61	3	111	1	161	50	211	0	261	1	311	0	361	0	411	0	461	0	511				
1		12	1	62	2	112	5	162	26	212	0	262	0	312	0	362	0	412	0	462	0	512				
0		13	1	63	0	113	2	163	29	213	0	263	0	313	0	363	1	413	0	463						
0		14	3	64	0	114	2	164	30	214	0	264	0	314	1	364	0	414	0	464						
0		15	2	65	0	115	6	165	17	215	0	265	0	315	0	365	0	415	0	465						
0		16	2	66	0	116	4	166	17	216	0	266	1	316	0	366	0	416	0	466						
0		17	0	67	1	117	1	167	14	217	0	267	0	317	0	367	0	417	1	467						
0		18	0	68	1	118	4	168	10	218	0	268	0	318	0	368	0	418	1	468						
0		19	1	69	0	119	4	169	7	219	0	269	0	319	0	369	0	419	0	469						
0		20	0	70	1	120	6	170	9	220	0	270	0	320	0	370	0	420	0	470						
0		21	3	71	0	121	5	171	6	221	0	271	0	321	0	371	0	421	0	471						
0		22	1	72	2	122	7	172	2	222	0	272	0	322	0	372	0	422	0	472						
0		23	1	73	1	123	5	173	2	223	0	273	0	323	1	373	0	423	1	473						
0		24	4	74	0	124	4	174	4	224	0	274	0	324	1	374	0	424	0	474						
1		25	2	75	5	125	9	175	3	225	0	275	0	325	1	375	0	425	0	475						
1		26	2	76	1	126	6	176	1	226	1	276	0	326	0	376	0	426	1	476						
0		27	0	77	0	127	10	177	1	227	0	277	0	327	1	377	1	427	2	477						
0		28	1	78	3	128	11	178	0	228	1	278	0	328	2	378	1	428	0	478						
0		29	1	79	0	129	8	179	1	229	0	279	0	329	1	379	0	429	1	479						
0		30	3	80	2	130	13	180	0	230	2	280	0	330	0	380	1	430	1	480						
0		31	4	81	1	131	28	181	2	231	0	281	0	331	0	381	0	431	1	481						
0		32	6	82	0	132	14	182	0	232	1	282	0	332	0	382	1	432	2	482						
0		33	0	83	2	133	32	183	1	233	2	283	0	333	1	383	0	433	1	483						
1		34	1	84	3	134	30	184	1	234	1	284	2	334	0	384	0	434	0	484						
0		35	0	85	0	135	32	185	0	235	2	285	1	335	0	385	0	435	1	485						
0		36	1	86	1	136	51	186	0	236	3	286	0	336	1	386	0	436	1	486						
0		37	2	87	0	137	63	187	0	237	2	287	1	337	0	387	0	437	1	487						
0		38	1	88	0	138	69	188	1	238	1	288	1	338	1	388	0	438	0	488						
0		39	0	89	0	139	96	189	1	239	3	289	1	339	0	389	1	439	0	489						
0		40	1	90	2	140	122	190	0	240	2	290	3	340	0	390	0	440	0	490						
0		41	0	91	1	141	134	191	0	241	1	291	3	341	0	391	0	441	2	491						
1		42	0	92	0	142	164	192	1	242	0	292	2	342	1	392	0	442	2	492						
0		43	1	93	0	143	177	193	0	243	1	293	3	343	0	393	1	443	0	493						
0		44	0	94	2	144	190	194	0	244	0	294	3	344	0	394	0	444	0	494						
0		45	2	95	0	145	161	195	0	245	1	295	2	345	2	395	0	445	0	495						
0		46	2	96	1	146	219	196	0	246	0	296	2	346	1	396	2	446	0	496						
0		47	2	97	2	147	232	197	0	247	0	297	1	347	0	397	0	447	2	497						
1		48	1	98	0	148	242	198	0	248	0	298	1	348	0	398	0	448	1	498						
0		49	0	99	1	149	315	199	0	249	0	299	1	349	0	399	0	449	0	499						

0 50 0 100 1 150 379 200 0 250 0 300 1 350 2 400 2 450 0 500

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6452_270971748A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID        : CAL6452 Sample quantity : 0.00000E+00 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3516.82 keV End energy : 6477.75 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4679.21	6652	0	52.27	203.02	182	47	1.11E-01	1.2	
2	0	5991.36	4	0	23.23	428.50	426	7	6.67E-05	50.0	

Error Report (Date: 28-Sep-07 10:29 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6453

Detector: ALP171 2  
Report Date: 28-Sep-07 10:52 AM  
Acquire Date: 27-SEP-2007 17:48:01.26  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

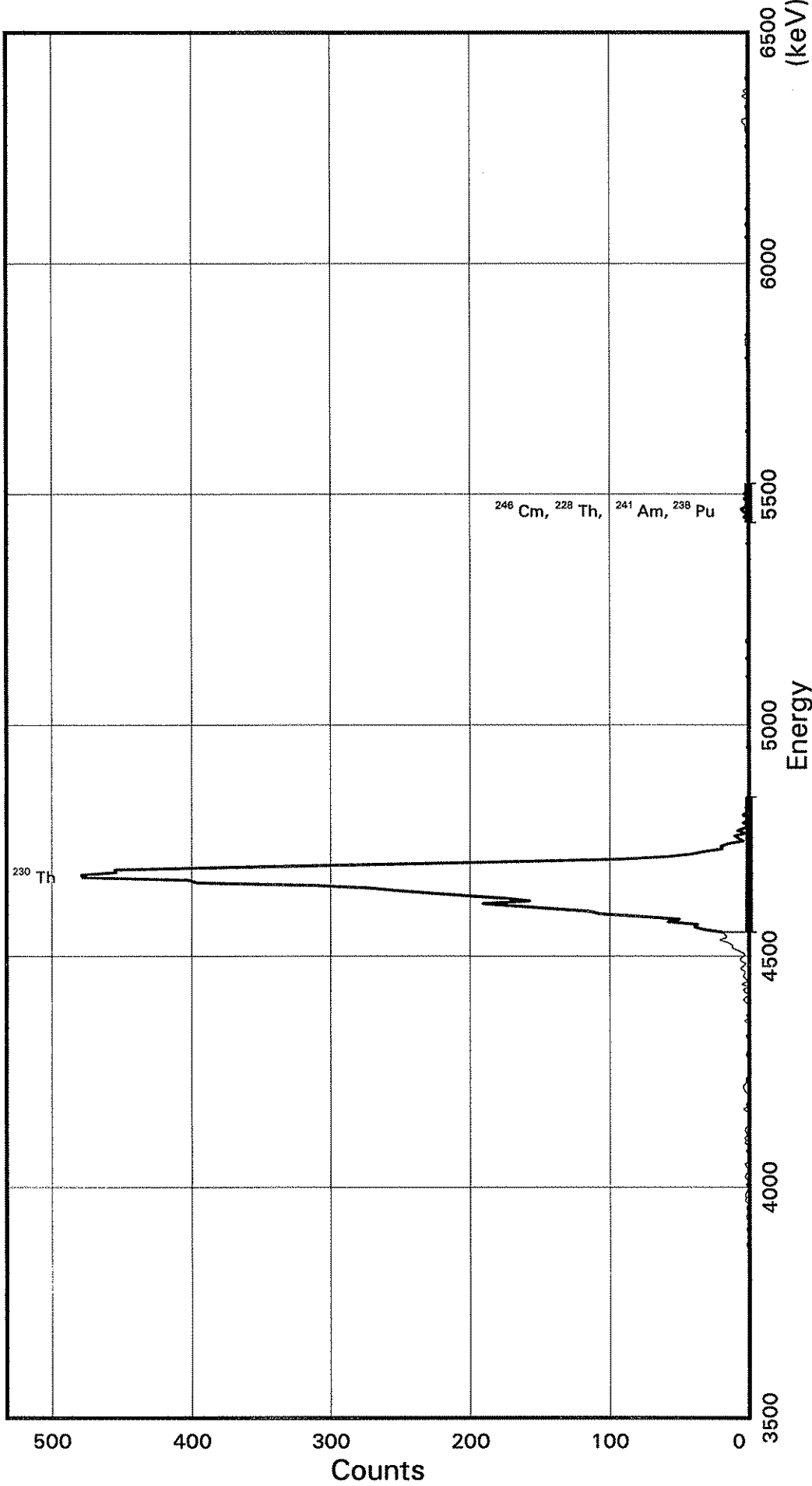
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	7	3	0.004	5423.2	113.1	320	340
TH-230	6547	6	6.548	4687.7	299.0	169	222
TH-232	32	2	0.030	4013.0	112.6	70	90

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Sample ID: CAL6453  
Detector ID: ALP171 2

Batch ID: T070164



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.53257E+03  
Slope: 5.62320E+00  
Quadrature: 4.79026E-05

SAMPLE IDENTIITY: CAL6453

TITLE : TH TA-RLD

DETECTOR : ALP171 2

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] CAL6453\_270971748B.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 04:52:07

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3532.57 keV CONSTANT FWHM : 9.83333 Channels  
SLOPE : 5.62320 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 4.790260E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %



Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: CAL6453

Flags Key

Detector: ALP171 2

Report Date: 28-Sep-07 10:36 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	2	101	0	151	402	201	0	251	0	301	0	351	2	401	1	451	4	501
		2	1		52	3	102	1	152	478	202	2	252	0	302	0	352	1	402	2	452	1	502
0		3	0		53	1	103	0	153	479	203	0	253	0	303	0	353	0	403	1	453	3	503
0		4	1		54	2	104	2	154	454	204	0	254	0	304	1	354	1	404	0	454	1	504
0		5	0		55	3	105	4	155	455	205	0	255	0	305	0	355	0	405	0	455	0	505
0		6	0		56	2	106	2	156	368	206	0	256	1	306	0	356	2	406	1	456	0	506
0		7	0		57	0	107	0	157	271	207	0	257	0	307	0	357	2	407	0	457	1	507
1		8	1		58	1	108	3	158	177	208	0	258	0	308	0	358	2	408	2	458	2	508
0		9	0		59	0	109	4	159	93	209	1	259	0	309	0	359	1	409	0	459	0	509
0		10	1		60	1	110	0	160	58	210	1	260	1	310	1	360	2	410	0	460	1	510
0		11	2		61	1	111	5	161	41	211	1	261	0	311	0	361	0	411	0	461	0	511
0		12	1		62	1	112	1	162	32	212	0	262	0	312	0	362	0	412	1	462	1	512
0		13	0		63	4	113	2	163	19	213	0	263	0	313	1	363	0	413	1	463		
0		14	1		64	1	114	4	164	20	214	1	264	0	314	0	364	1	414	0	464		
0		15	0		65	2	115	3	165	15	215	0	265	0	315	0	365	1	415	0	465		
0		16	1		66	0	116	3	166	4	216	0	266	0	316	0	366	0	416	0	466		
0		17	2		67	1	117	6	167	7	217	0	267	0	317	0	367	0	417	0	467		
0		18	0		68	0	118	4	168	10	218	0	268	0	318	0	368	0	418	1	468		
0		19	0		69	1	119	2	169	2	219	0	269	0	319	0	369	0	419	0	469		
0		20	0		70	3	120	6	170	8	220	0	270	0	320	1	370	0	420	0	470		
0		21	2		71	4	121	6	171	3	221	0	271	0	321	0	371	0	421	0	471		
0		22	2		72	4	122	3	172	0	222	0	272	0	322	0	372	0	422	1	472		
0		23	1		73	2	123	4	173	4	223	0	273	0	323	2	373	0	423	0	473		
0		24	1		74	2	124	8	174	0	224	0	274	0	324	0	374	0	424	0	474		
0		25	2		75	2	125	12	175	0	225	0	275	0	325	0	375	0	425	0	475		
0		26	1		76	0	126	12	176	4	226	0	276	0	326	0	376	0	426	1	476		
0		27	1		77	0	127	15	177	1	227	1	277	0	327	0	377	0	427	0	477		
0		28	3		78	1	128	21	178	0	228	0	278	0	328	1	378	0	428	0	478		
0		29	2		79	0	129	16	179	2	229	2	279	0	329	0	379	0	429	0	479		
0		30	3		80	1	130	17	180	1	230	0	280	2	330	0	380	0	430	0	480		
0		31	2		81	0	131	19	181	0	231	0	281	0	331	0	381	0	431	1	481		
0		32	1		82	1	132	32	182	1	232	0	282	0	332	0	382	0	432	2	482		
0		33	1		83	1	133	39	183	0	233	1	283	0	333	0	383	0	433	0	483		
0		34	2		84	2	134	37	184	0	234	0	284	1	334	1	384	0	434	1	484		
0		35	1		85	1	135	58	185	0	235	1	285	0	335	0	385	0	435	1	485		
1		36	1		86	0	136	50	186	1	236	2	286	0	336	0	386	0	436	0	486		
0		37	3		87	0	137	78	187	1	237	0	287	0	337	0	387	0	437	1	487		
0		38	2		88	1	138	107	188	1	238	1	288	1	338	1	388	0	438	2	488		
0		39	1		89	0	139	115	189	1	239	0	289	0	339	0	389	0	439	2	489		
0		40	0		90	1	140	141	190	0	240	0	290	3	340	0	390	0	440	2	490		
1		41	2		91	2	141	167	191	0	241	0	291	1	341	1	391	0	441	4	491		
0		42	3		92	1	142	191	192	0	242	2	292	3	342	1	392	0	442	4	492		
1		43	0		93	1	143	158	193	0	243	2	293	5	343	1	393	0	443	0	493		
0		44	1		94	1	144	175	194	0	244	0	294	2	344	1	394	1	444	1	494		
0		45	1		95	0	145	202	195	0	245	0	295	0	345	0	395	0	445	0	495		
0		46	1		96	1	146	228	196	0	246	1	296	0	346	0	396	0	446	1	496		
0		47	2		97	3	147	252	197	0	247	0	297	3	347	0	397	2	447	2	497		
0		48	0		98	0	148	272	198	1	248	0	298	0	348	1	398	1	448	0	498		
1		49	0		99	2	149	312	199	0	249	0	299	3	349	0	399	1	449	1	499		

0 50 3 100 0 150 396 200 1 250 1 300 0 350 0 400 1 450 1 500

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6453_270971748B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID        : CAL6453 Sample quantity : 0.00000E+00 SAMPLE
Sample type      : disk Sample geometry :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3549.44 keV End energy : 6424.21 keV
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4671.69	6438	0	61.86	202.23	181	52	1.07E-01	1.2	
2	0	5463.57	21	0	33.74	342.40	338	15	3.50E-04	21.8	

Error Report (Date: 28-Sep-07 10:36 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6454

Detector: ALP171 6

Report Date: 28-Sep-07 10:52 AM

Acquire Date: 27-SEP-2007 17:48:01.26

Tracer Nuclide: TH-229

Sample Live Time: 999 minutes

Bkgrnd Live Time: 999 minutes

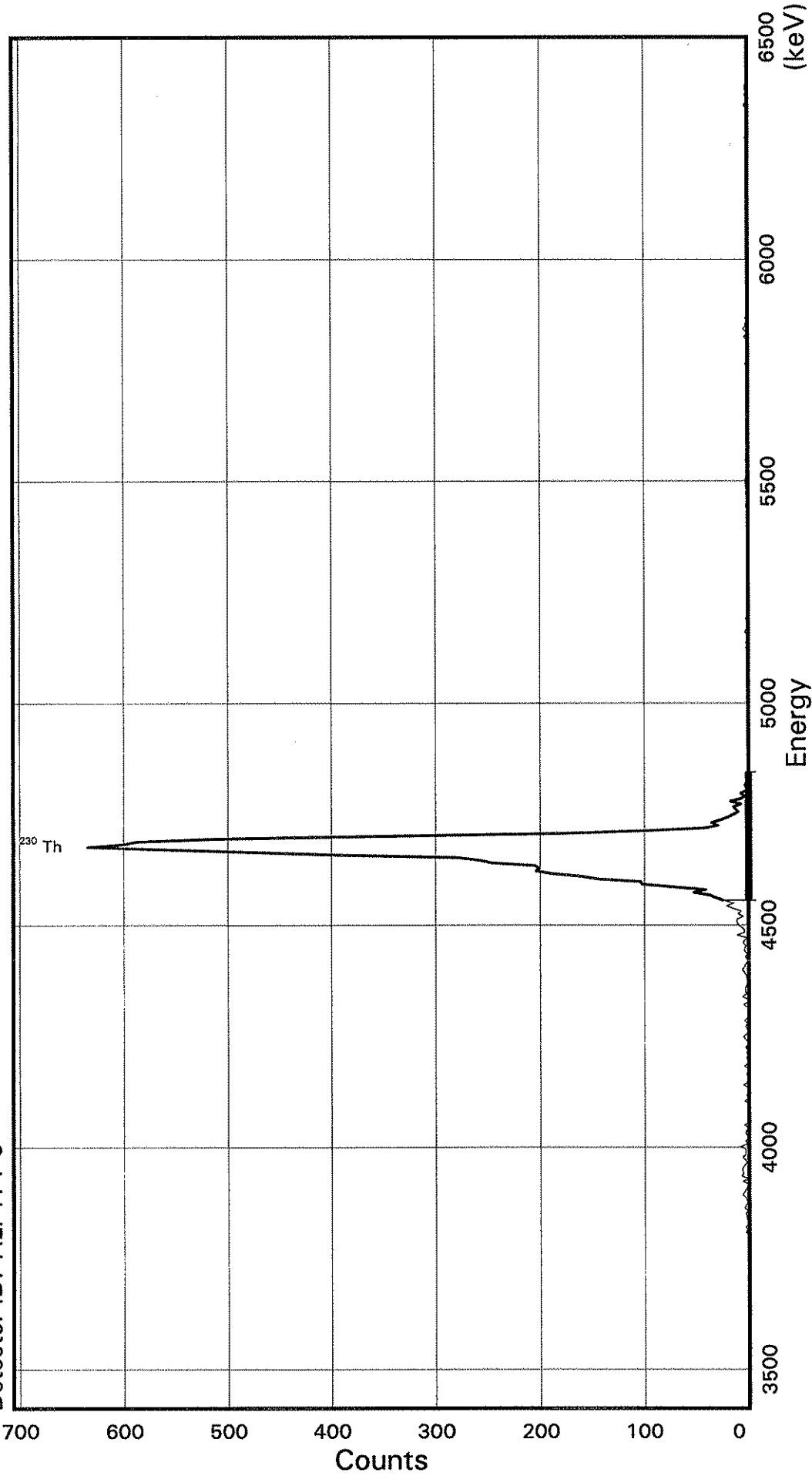
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Rght
			C/Min	keV	keV	Chnl	Chnl
TH-228	6	2	0.004	5423.2	120.9	322	342
TH-230	7115	2	7.120	4687.7	343.9	181	238
TH-232	73	0	0.073	4013.0	120.4	88	108

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Sample ID: CAL6454  
Detector ID: ALP171 6

Batch ID: T070164



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.39423E+03  
Slope: 6.00981E+00  
Quadrature: 5.58806E-05

SAMPLE IDENTIITY: CAL6454

TITLE : TH TA-RLD

DETECTOR : ALP171 6

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]CAL6454\_270971748F.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 04:52:41

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3394.23 keV CONSTANT FWHM : 7.83333 Channels  
SLOPE : 6.00981 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 5.588060E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: CAL6454

Flags Key

Detector: ALP171 6

Report Date: 28-Sep-07 10:29 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0	51	8	101	1	151	145	201	1	251	0	301	1	351	1	401	1	451	0	501				
		2	0	52	1	102	1	152	161	202	0	252	0	302	0	352	1	402	0	452	0	502				
0		3	0	53	3	103	1	153	188	203	0	253	0	303	1	353	3	403	0	453	0	503				
0		4	0	54	1	104	5	154	204	204	1	254	0	304	0	354	1	404	0	454	0	504				
0		5	0	55	1	105	0	155	201	205	1	255	0	305	0	355	1	405	1	455	1	505				
0		6	0	56	3	106	1	156	205	206	1	256	0	306	0	356	4	406	0	456	0	506				
0		7	1	57	2	107	6	157	246	207	1	257	0	307	2	357	2	407	0	457	0	507				
0		8	0	58	0	108	2	158	258	208	1	258	0	308	1	358	2	408	0	458	0	508				
0		9	0	59	4	109	3	159	279	209	0	259	0	309	0	359	0	409	0	459	0	509				
0		10	0	60	1	110	3	160	396	210	0	260	0	310	0	360	2	410	0	460	0	510				
0		11	1	61	0	111	2	161	475	211	0	261	0	311	0	361	1	411	0	461	0	511				
0		12	0	62	1	112	1	162	554	212	0	262	1	312	0	362	0	412	0	462	0	512				
0		13	0	63	1	113	1	163	635	213	0	263	0	313	0	363	0	413	0	463						
1		14	0	64	0	114	2	164	600	214	1	264	0	314	0	364	0	414	0	464						
0		15	1	65	1	115	2	165	588	215	0	265	0	315	0	365	0	415	1	465						
0		16	0	66	0	116	4	166	516	216	0	266	0	316	0	366	0	416	0	466						
0		17	0	67	0	117	6	167	350	217	0	267	0	317	1	367	0	417	0	467						
0		18	0	68	4	118	4	168	182	218	0	268	0	318	0	368	0	418	0	468						
0		19	3	69	0	119	3	169	98	219	0	269	0	319	0	369	0	419	0	469						
0		20	1	70	2	120	1	170	42	220	0	270	1	320	0	370	0	420	0	470						
0		21	3	71	1	121	1	171	29	221	0	271	0	321	0	371	0	421	0	471						
0		22	0	72	1	122	3	172	35	222	0	272	0	322	0	372	0	422	1	472						
0		23	0	73	0	123	1	173	27	223	0	273	0	323	0	373	0	423	0	473						
0		24	2	74	5	124	4	174	20	224	0	274	0	324	0	374	0	424	0	474						
0		25	2	75	1	125	4	175	15	225	0	275	0	325	0	375	0	425	0	475						
0		26	3	76	1	126	2	176	10	226	0	276	1	326	0	376	0	426	1	476						
1		27	1	77	1	127	5	177	12	227	0	277	0	327	0	377	1	427	2	477						
0		28	4	78	2	128	4	178	14	228	0	278	0	328	1	378	0	428	0	478						
0		29	3	79	1	129	1	179	7	229	0	279	0	329	0	379	0	429	0	479						
0		30	1	80	0	130	11	180	17	230	1	280	0	330	1	380	0	430	0	480						
0		31	2	81	4	131	4	181	7	231	0	281	0	331	0	381	0	431	1	481						
0		32	3	82	1	132	4	182	3	232	0	282	0	332	0	382	0	432	0	482						
0		33	6	83	0	133	7	183	7	233	0	283	0	333	1	383	0	433	1	483						
0		34	4	84	2	134	10	184	2	234	0	284	0	334	1	384	0	434	1	484						
0		35	3	85	1	135	11	185	1	235	0	285	0	335	1	385	0	435	0	485						
0		36	1	86	2	136	11	186	3	236	0	286	0	336	0	386	0	436	0	486						
1		37	0	87	1	137	5	187	2	237	2	287	0	337	0	387	0	437	0	487						
0		38	6	88	3	138	10	188	0	238	0	288	1	338	1	388	0	438	1	488						
0		39	0	89	0	139	7	189	0	239	2	289	1	339	0	389	0	439	3	489						
0		40	7	90	1	140	15	190	0	240	0	290	2	340	0	390	0	440	1	490						
1		41	5	91	3	141	21	191	0	241	0	291	1	341	0	391	0	441	1	491						
0		42	6	92	5	142	14	192	0	242	1	292	0	342	0	392	0	442	1	492						
0		43	6	93	2	143	24	193	1	243	3	293	0	343	2	393	0	443	2	493						
0		44	4	94	0	144	31	194	0	244	1	294	1	344	0	394	0	444	0	494						
0		45	2	95	2	145	37	195	1	245	1	295	2	345	0	395	1	445	2	495						
0		46	3	96	3	146	52	196	1	246	1	296	0	346	0	396	0	446	2	496						
0		47	6	97	1	147	41	197	0	247	1	297	2	347	0	397	1	447	1	497						
0		48	3	98	4	148	71	198	0	248	2	298	2	348	0	398	0	448	1	498						
1		49	3	99	1	149	102	199	0	249	0	299	2	349	0	399	0	449	1	499						



0 50 3 100 1 150 104 200 0 250 0 300 2 350 1 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 28-SEP-2007 10:29:14

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6454_270971748F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID         : CAL6454 Sample quantity : 0.00000E+00 SAMPLE
Sample type       : disk Sample geometry :
Detector name     : ALP171 1 Detector geometry:
Elapsed live time : 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy      : 3412.26 keV End energy : 6485.90 keV
Sensitivity       : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4679.80	6994	0	48.08	213.49	193	48	1.17E-01	1.2	

Error Report (Date: 28-Sep-07 10:29 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6455

Detector: ALP171 7

Report Date: 28-Sep-07 10:53 AM

Acquire Date: 27-SEP-2007 17:48:01.26

Tracer Nuclide: TH-229

Sample Live Time: 999 minutes

Bkgrnd Live Time: 999 minutes

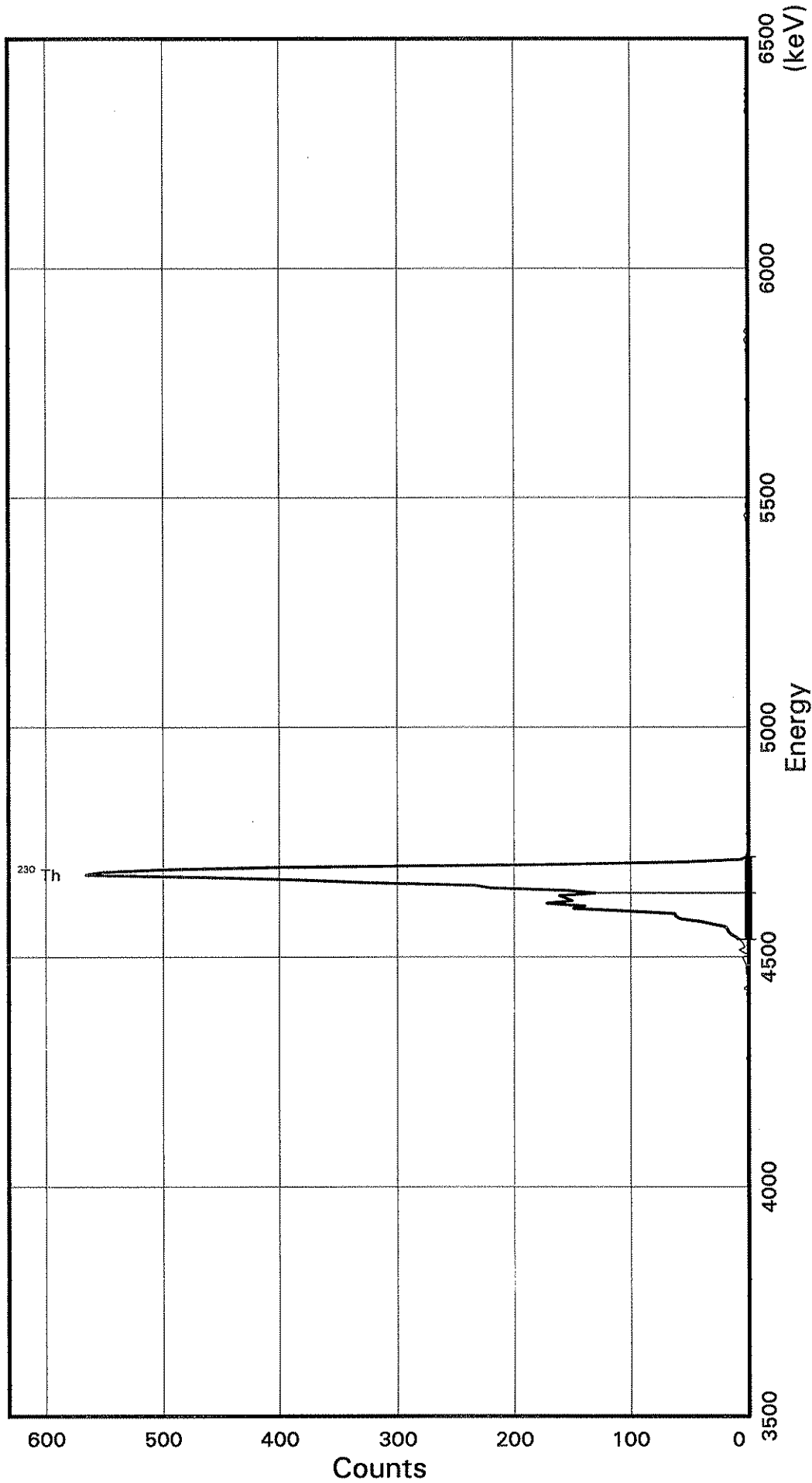
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	6	0	0.006	5423.2	112.6	310	330
TH-230	5543	1	5.548	4687.7	225.5	165	205
TH-232	2	0	0.002	4013.0	112.8	60	80

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Sample ID: CAL6455  
Detector ID: ALP171 7

Batch ID: T070164



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.59022E + 03  
Slope: 5.64599E + 00  
Quadrature: -2.53203E - 05

SAMPLE IDENTIITY: CAL6455

TITLE : TH TA-RLD

DETECTOR : ALP171 7

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]CAL6455\_270971748G.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 04:52:50

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3590.22 keV CONSTANT FWHM : 6.16667 Channels  
SLOPE : 5.64599 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.253203E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: CAL6455

Flags Key

Detector: ALP171 7

Report Date: 28-Sep-07 10:29 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	0		101	1		151	2		201	0		251	0		301	0		351	1		401	0		451	0		501
		2	0		52	0		102	1		152	0		202	0		252	1		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	3		403	0		453	0		503
0		4	0		54	0		104	1		154	0		204	0		254	0		304	0		354	2		404	0		454	0		504
0		5	0		55	1		105	2		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	2		156	1		206	0		256	0		306	0		356	0		406	0		456	0		506
1		7	0		57	1		107	2		157	0		207	0		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	2		158	1		208	0		258	0		308	0		358	0		408	0		458	0		508
0		9	1		59	0		109	3		159	2		209	0		259	1		309	0		359	0		409	0		459	0		509
0		10	0		60	1		110	4		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	5		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	1		212	1		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	4		163	1		213	0		263	0		313	0		363	0		413	0		463			
1		14	0		64	0		114	8		164	1		214	0		264	1		314	0		364	0		414	0		464			
0		15	0		65	0		115	3		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	1		116	4		166	0		216	0		266	0		316	1		366	0		416	0		466			
0		17	0		67	0		117	5		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	1		68	0		118	8		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	1		119	11		169	0		219	0		269	0		319	0		369	1		419	0		469			
0		20	0		70	0		120	15		170	0		220	1		270	0		320	0		370	0		420	0		470			
0		21	0		71	0		121	17		171	0		221	0		271	1		321	1		371	0		421	0		471			
0		22	0		72	2		122	18		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	1		73	0		123	20		173	0		223	1		273	0		323	1		373	0		423	0		473			
0		24	0		74	0		124	31		174	0		224	1		274	1		324	0		374	0		424	1		474			
0		25	0		75	1		125	41		175	0		225	1		275	0		325	1		375	0		425	0		475			
0		26	0		76	0		126	58		176	0		226	0		276	1		326	0		376	1		426	0		476			
0		27	0		77	0		127	62		177	0		227	1		277	0		327	2		377	0		427	0		477			
0		28	0		78	0		128	63		178	0		228	1		278	0		328	0		378	1		428	0		478			
0		29	0		79	0		129	102		179	0		229	1		279	0		329	0		379	0		429	0		479			
0		30	0		80	0		130	149		180	0		230	0		280	2		330	0		380	0		430	1		480			
0		31	0		81	0		131	139		181	0		231	1		281	2		331	0		381	0		431	1		481			
0		32	0		82	0		132	172		182	0		232	1		282	3		332	1		382	0		432	0		482			
0		33	0		83	0		133	150		183	0		233	0		283	1		333	1		383	0		433	0		483			
0		34	0		84	0		134	155		184	0		234	1		284	0		334	0		384	0		434	0		484			
0		35	1		85	0		135	161		185	0		235	0		285	2		335	0		385	0		435	0		485			
0		36	0		86	1		136	130		186	0		236	0		286	2		336	0		386	0		436	0		486			
0		37	0		87	0		137	154		187	0		237	0		287	1		337	1		387	0		437	0		487			
0		38	0		88	1		138	220		188	0		238	0		288	1		338	0		388	0		438	2		488			
0		39	0		89	0		139	234		189	0		239	0		289	2		339	1		389	0		439	2		489			
0		40	0		90	1		140	324		190	0		240	1		290	0		340	0		390	0		440	0		490			
0		41	0		91	1		141	378		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	1		142	461		192	0		242	0		292	0		342	0		392	0		442	2		492			
0		43	1		93	0		143	566		193	0		243	1		293	0		343	0		393	1		443	1		493			
0		44	0		94	0		144	554		194	0		244	0		294	0		344	0		394	0		444	1		494			
0		45	0		95	1		145	504		195	0		245	0		295	0		345	1		395	0		445	2		495			
0		46	0		96	1		146	398		196	0		246	0		296	0		346	2		396	0		446	0		496			
0		47	0		97	2		147	171		197	0		247	0		297	0		347	0		397	0		447	2		497			
0		48	0		98	0		148	55		198	0		248	0		298	0		348	1		398	0		448	0		498			
0		49	0		99	4		149	6		199	0		249	0		299	0		349	2		399	0		449	0		499			

0 50 0 100 1 150 2 200 0 250 0 300 0 350 3 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 28-SEP-2007 10:29:17

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6455_270971748G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID         : CAL6455 Sample quantity : 0.00000E+00 SAMPLE
Sample type       : disk Sample geometry :
Detector name     : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy      : 3607.16 keV End energy : 6474.33 keV
Sensitivity       : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4620.54	1563	0	45.17	182.64	168	18	2.61E-02	2.5	
2	0	4679.90	3967	0	39.52	193.17	186	14	6.62E-02	1.6	

Error Report (Date: 28-Sep-07 10:29 AM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6456

Detector: ALP171 8  
Report Date: 28-Sep-07 10:53 AM  
Acquire Date: 27-SEP-2007 17:48:01.26  
Tracer Nuclide: TH-229  
Sample Live Time: 999 minutes  
Bkgrnd Live Time: 999 minutes

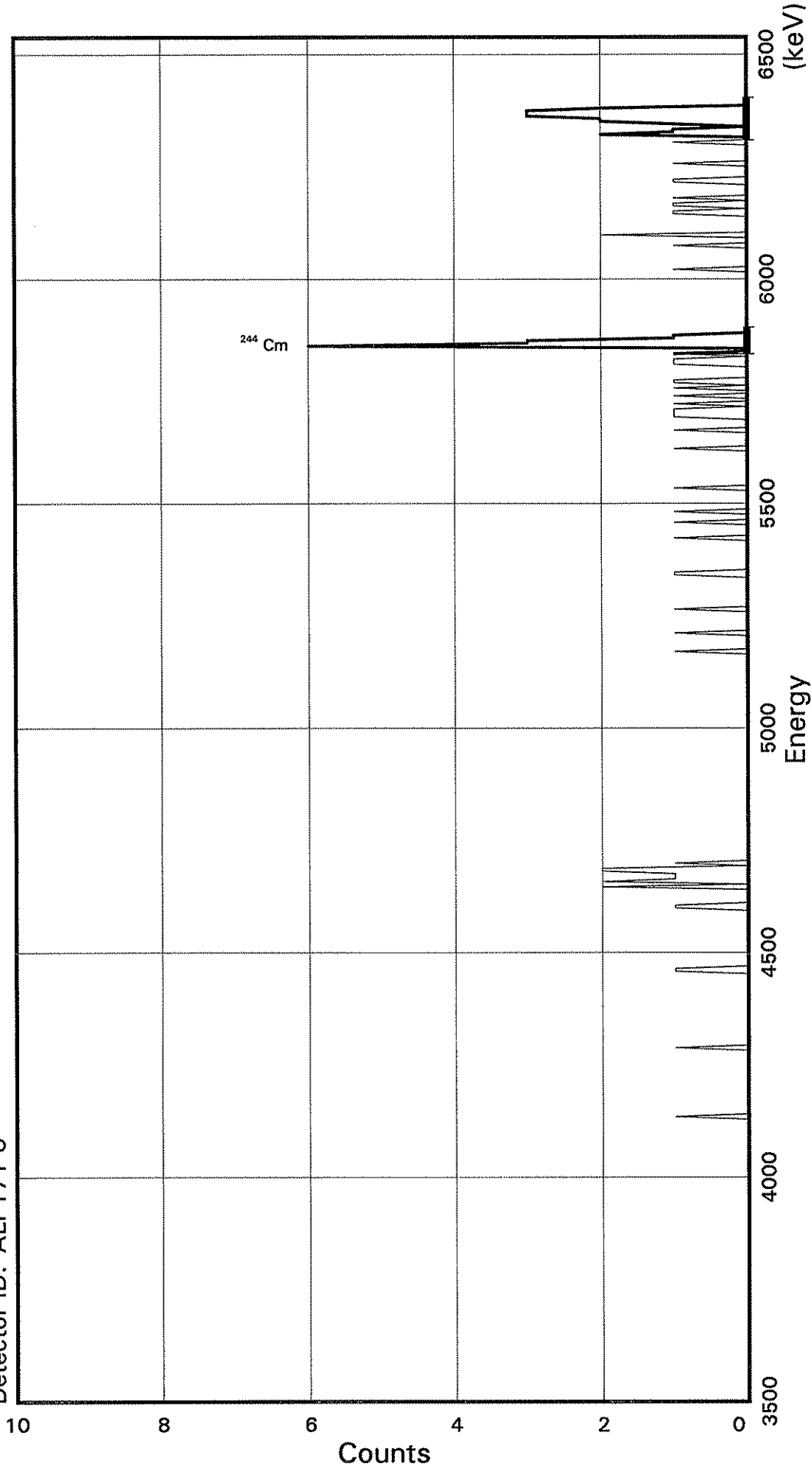
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Rght
			C/Min	keV	keV	Chnl	Chnl
TH-228	3	1	0.002	5423.2	117.6	307	327
TH-230	14	0	0.014	4687.7	117.6	182	202
TH-232	0	1	-0.001	4013.0	117.7	67	87

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Sample ID: CAL6456  
Detector ID: ALP171 8

Batch ID: T070164



Acquisition Start: 27-SEP-2007 17:48:01.26  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:38:57.00

Energy Coefficients:  
Offset: 3.52860E+03  
Slope: 5.88630E+00  
Quadrature: -1.37458E-05

SAMPLE IDENTIITY: CAL6456

TITLE : TH TA-RLD

DETECTOR : ALP171 8

CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]CAL6456\_270971748H.CNF  
;1

ACQUIRE DATE of BACKGROUND: 09-SEP-2007 09:17:27

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00

ACQUIRE DATE: 27-SEP-2007 17:48:01 CALIB DATE : 09-SEP-2007 04:53:04

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:38:57

OFFSET : 3528.60 keV CONSTANT FWHM : 7.50000 Channels  
SLOPE : 5.88630 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.137458E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing  
 for Spectra Not Processed by Alp\_rgn\_cnts  
 (Version: 1-Apr-07)

Sample Identity: . CAL6456

Flags Key

Detector: ALP171 8

Report Date: 28-Sep-07 10:29 AM

Intersect Region: @

Acquire Date: 27-SEP-2007 17:48:01.26

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	1		451	0		501
		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	1		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	1		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	0		407	1		457	0		507
0		8	0		58	0		108	1		158	0		208	0		258	1		308	0		358	0		408	1		458	0		508
0		9	0		59	0		109	1		159	0		209	0		259	1		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	1		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	1		464			
0		15	0		65	0		115	0		165	0		215	0		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	1		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	1		369	0		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	0		320	1		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	1		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	1		322	0		372	0		422	1		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	1		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	1		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	0		375	0		425	2		475			
0		26	0		76	0		126	0		176	0		226	0		276	0		326	1		376	0		426	1		476			
0		27	0		77	0		127	0		177	0		227	0		277	0		327	0		377	0		427	1		477			
0		28	0		78	0		128	0		178	0		228	0		278	1		328	0		378	0		428	0		478			
0		29	0		79	1		129	0		179	0		229	1		279	0		329	1		379	0		429	1		479			
0		30	0		80	0		130	0		180	0		230	0		280	0		330	0		380	0		430	2		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	1		381	0		431	2		481			
0		32	0		82	0		132	1		182	0		232	0		282	1		332	1		382	0		432	3		482			
0		33	0		83	0		133	1		183	0		233	0		283	0		333	0		383	1		433	3		483			
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	0		434	3		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	0		435	2		485			
0		36	0		86	0		136	0		186	0		236	1		286	0		336	0		386	0		436	0		486			
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	2		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	1		388	0		438	0		488			
0		39	0		89	0		139	0		189	0		239	0		289	0		339	1		389	0		439	0		489			
0		40	0		90	0		140	2		190	0		240	0		290	0		340	1		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	1		341	0		391	0		441	0		491			
0		42	0		92	0		142	2		192	0		242	0		292	0		342	1		392	0		442	0		492			
0		43	0		93	0		143	1		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	1		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	1		195	0		245	1		295	0		345	6		395	1		445	0		495			
0		46	0		96	0		146	2		196	0		246	0		296	0		346	3		396	1		446	0		496			
0		47	0		97	0		147	2		197	0		247	0		297	0		347	3		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	0		348	1		398	1		448	0		498			
0		49	0		99	0		149	1		199	0		249	0		299	0		349	1		399	1		449	0		499			

0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 28-SEP-2007 10:29:22

```

Configuration      : $DISK1:[ALP171.SAMPLE]CAL6456_270971748H.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH TA-RLD
Sample date       : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 17:48:01
Sample ID        : CAL6456 Sample quantity : 0.00000E+00 SAMPLE
Sample type      : disk Sample geometry  :
Detector name    : ALP171 1 Detector geometry:
Elapsed live time: 0 16:38:57.00 Elapsed real time: 0 16:38:57.00 0.0%
Start energy     : 3546.26 keV End energy   : 6538.78 keV
Sensitivity      : 3.00 Sum Sensitivity  : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5855.46	15	0	23.55	395.67	392	10	2.50E-04	25.8	
2	0	6366.12	22	0	35.32	482.60	473	16	3.67E-04	21.3	



Error Report (Date: 28-Sep-07 10:29 AM)

Program: Alp\_rgn\_cnts

subroutine: Main

Message: No trace pk or nucl

Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report  
(Version: 1-Apr-07)

Sample Identity: CAL6457

Detector: ALP116 1

Report Date: 28-Sep-07 12:16 PM

Acquire Date: 27-SEP-2007 19:29:49.88

Tracer Nuclide: TH-229

Sample Live Time: 1000 minutes

Bkgrnd Live Time: 1000 minutes

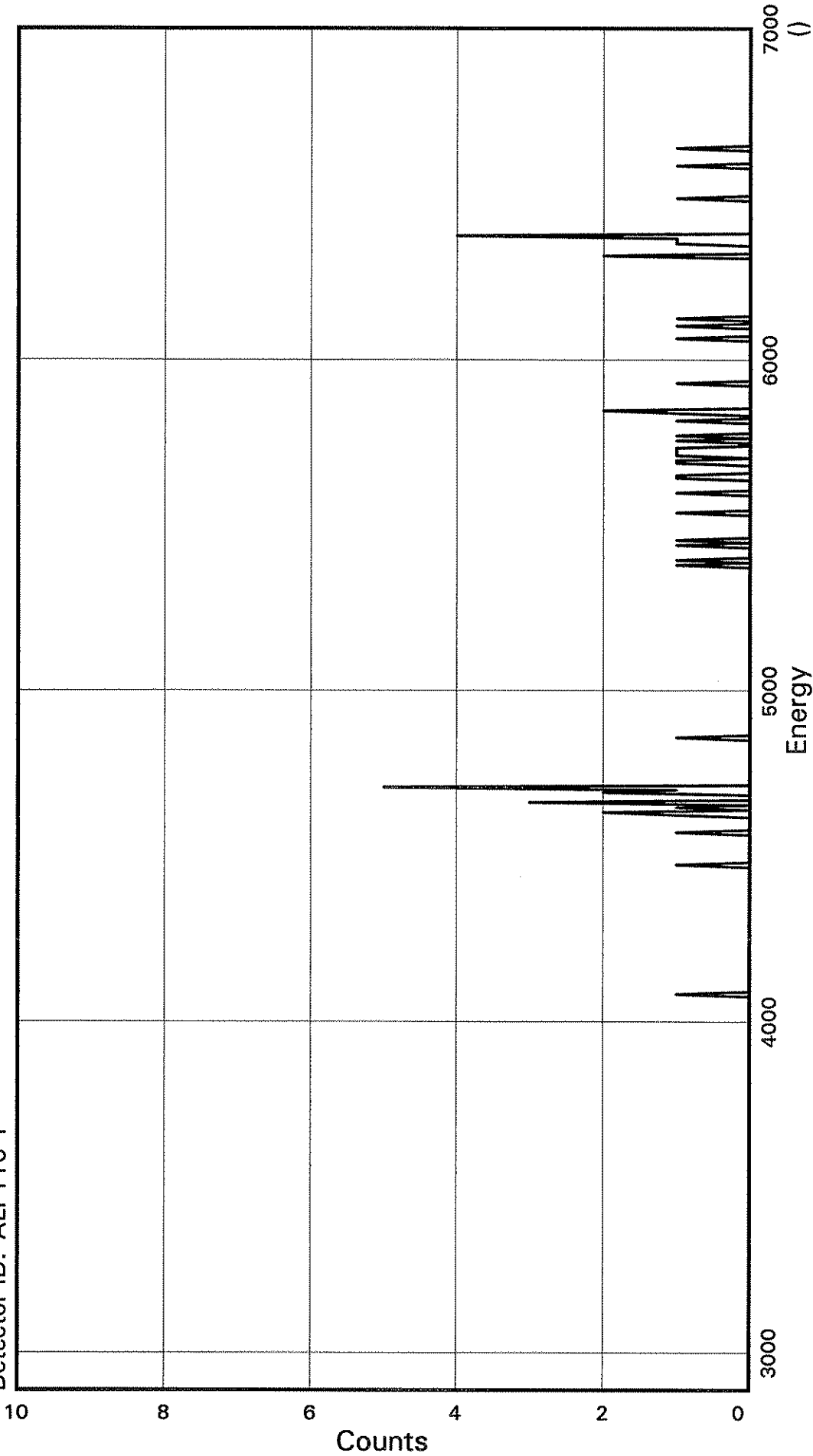
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	4	3	0.001	5423.2	150.8	325	345
TH-230	16	0	0.016	4687.7	150.6	227	247
TH-232	0	1	-0.001	4013.0	150.5	138	158

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

Sample ID: CAL6457  
Detector ID: ALP116 1

Batch ID: T070164



Acquisition Start: 27-SEP-2007 19:29:49.88  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:03.00

Energy Coefficients:  
Offset: 2.86423E+03  
Slope: 7.51618E+00  
Quadrature: 3.30272E-05

SAMPLE IDENTIITY: CAL6457

TITLE : TH TA-RLD

DETECTOR : ALP116 1  
CONFIGURATION NAME : RDND06\$DKA100:[ALP116.SAMPLE]CAL6457\_2709719  
29.CNF;1  
ACQUIRE DATE of BACKGROUND: 17-SEP-2007 06:47:28

REPORT DATE : 28-Sep-07 SAMPLE DATE: 25-SEP-2007 12:00:00  
ACQUIRE DATE: 27-SEP-2007 19:29:49 CALIB DATE : 17-SEP-2007 03:35:06

PRESET LIVE TIME: 0 16:40:00 ELAPSED LIVE TIME: 0 16:40:03

OFFSET : 2864.23 keV CONSTANT FWHM : 8.50000 Channels  
SLOPE : 7.51618 keV/C SENSITIVITY : 6.00000 Std Dev's  
QUAD COEFF : 3.302720E-05 keV/C^2 SUM SENSITIVITY: 0.10000 %

Alpha Spectrum Listing  
for Spectra Not Processed by Alp\_rgn\_cnts  
(Version: 1-Apr-07)

Sample Identity: CAL6457

Flags Key

Detector: ALP116 1

Report Date: 28-Sep-07 12:09 PM

Intersect Region: @

Acquire Date: 27-SEP-2007 19:29:49.88

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	1		501
0		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	0		305	1		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0		207	0		257	0		307	0		357	1		407	0		457	0		507
0		8	0		58	0		108	0		158	0		208	0		258	0		308	0		358	0		408	2		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	1		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	0		313	1		363	0		413	1		463			
0		14	0		64	0		114	0		164	1		214	0		264	0		314	0		364	0		414	1		464			
0		15	0		65	0		115	0		165	0		215	1		265	0		315	0		365	0		415	1		465			
0		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	4		466			
0		17	0		67	0		117	0		167	0		217	0		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	0		219	0		269	0		319	1		369	0		419	0		469			
0		20	0		70	0		120	0		170	0		220	0		270	0		320	1		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	0		273	0		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	0		325	1		375	1		425	0		475			
0		26	0		76	0		126	0		176	0		226	0		276	0		326	1		376	0		426	0		476			
0		27	0		77	0		127	0		177	1		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	0		328	1		378	0		428	0		478			
0		29	0		79	0		129	0		179	0		229	0		279	0		329	1		379	0		429	0		479			
0		30	0		80	0		130	0		180	0		230	0		280	0		330	1		380	1		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	0		331	1		381	0		431	1		481			
0		32	0		82	0		132	0		182	0		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0		133	0		183	0		233	0		283	0		333	0		383	1		433	0		483			
0		34	0		84	0		134	0		184	1		234	0		284	1		334	1		384	0		434	0		484			
0		35	0		85	0		135	0		185	2		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	1		336	1		386	0		436	0		486			
0		37	0		87	0		137	0		187	1		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
0		39	0		89	0		139	0		189	3		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	0		440	0		490			
0		41	0		91	0		141	0		191	0		241	0		291	0		341	0		391	0		441	0		491			
0		42	0		92	0		142	0		192	0		242	0		292	1		342	1		392	0		442	0		492			
0		43	0		93	0		143	0		193	2		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	1		244	0		294	1		344	0		394	0		444	1		494			
0		45	0		95	0		145	0		195	5		245	0		295	0		345	1		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	0		296	0		346	2		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	0		299	0		349	0		399	0		449	0		499			

0 50 0 100 0 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 28-SEP-2007 12:09:56

Configuration : RDND06\$DKA100:[ALP116.SAMPLE]CAL6457\_270971929.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH TA-RLD  
Sample date : 25-SEP-2007 12:00:00 Acquisition date : 27-SEP-2007 19:29:49  
Sample ID : CAL6457 Sample quantity : 0.00000E+00 SAMPLE  
Sample type : disk Sample geometry :  
Detector name : ALP116 Detector geometry:  
Elapsed live time: 0 16:40:03.00 Elapsed real time: 0 16:40:03.00 0.0%  
Start energy : 2886.78 End energy : 6721.17  
Sensitivity : 6.00 Sum Sensitivity : 0.10  
No peaks were found



Error Report (Date: 28-Sep-07 12:09 PM)

Program: Alp\_rgn\_cnts  
subroutine: Main  
Message: No trace pk or nucl  
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Th23407A200 #6254  
 24-Sep-07 = Source Reference Date 10:33 = Source Reference Time

SET 31A-31D Reference Data

Thorium Beta Data

ID	Date	Time	Th-234		Background		Decay	Th234 wt.		
			Cts	Min	Cts	Min		grams	Th234 cpm/g	
RDQC8978	24-Sep-07	10:33	4691	20	686	500	233.18	1.0000	0.1045	2231.37
RDQC8979	24-Sep-07	10:33	4408	20	611	500	219.18	1.0000	0.1055	2077.52
RDQC8980	24-Sep-07	10:33	4429	20	546	500	220.36	1.0000	0.1044	2110.71
RDQC8981	24-Sep-07	10:33	4623	20	596	500	229.96	1.0000	0.1052	2185.91
Average			225.67		Average		2151.38			
					%RSD		3.25%			
					Min Bias		-3.43%			
					Max Bias		3.72%			

Th23407A200 #6254

2.1514E+03	= VAX expected value, cpm/g (entered as dpm in Vax)
1.0500E+02	= Total Error of VAX expected value
24-Sep-07	= Reference Date of VAX expected value
10:33	= Reference Time of VAX expected value

TH-234 INITIAL DILUTION CALCULATION

- (A) INITIAL BETA COUNT ACTIVITY 2151.38 cpm/g
  - (B) INITIAL VOLUME 500.00 mL
  - (C) INITIAL ACTIVITY DESIRED 5000 cpm/g
  - (D) PROPOSED TOTAL VOLUME 215.14 mL
  - (E) PROPOSED VOLUME TO ADD  
NOT NECESSARY TO BE EXACT -284.86 mL
  - (F) ACTUAL VOLUME ADDED 0.00 mL
  - (G) ACTIVITY 2151.38 cpm/g
- $A * B / C = D$        $D - B = E$   
 $B / (B + F) * A = G$
- lda 9/25/07

TO CALCULATE THE NET CPM BETA AND ALPHA FOR TH234 EVALUATION

TH234 Std. ID: TH23407A200 #6254

DATE: 9/24/2007

SAMPLE ID	total cts. Beta	beta ct. time	Bkg. Cts. beta	beta Bkg. ct. time	total cts. alpha	alpha ct. time	Bkg. Cts. alpha	alpha Bkg. ct. time	Net beta CPM	Net Alpha CPM	1% net beta
RDQC8978	4691	20	686	500	2	50	17	500	233.178	0.006	2.33
RDQC8979	4408	20	611	500	4	50	10	500	219.178	0.06	2.19
RDQC8980	4429	20	546	500	0	50	17	500	220.358	-0.034	2.20
RDQC8981	4623	20	596	500	0	50	20	500	229.958	-0.04	2.30



TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

24-SEP-2007 10:33:59.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
RDQC8978	111	15

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-SEP-2007 10:33:59.00	4691	20.00	686	500.00	26A

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	27	654	1500	24-SEP-2007 01:23:34.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

24-SEP-2007 10:33:59.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
RDQC8979	111	15

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-SEP-2007 10:33:59.00	4408	20.00	611	500.00	26B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	26	654	1500	24-SEP-2007 01:23:34.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

24-SEP-2007 10:33:59.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
RDQC8980	111	15

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-SEP-2007 10:33:59.00	4429	20.00	546	500.00	26C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	27	654	1500	24-SEP-2007 01:23:34.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

24-SEP-2007 10:33:59.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
RCQD8981	111	15

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-SEP-2007 10:33:59.00	4623	20.00	596	500.00	26D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
4	6	654	1500	24-SEP-2007 01:23:34.00

Count Date/Times are the Count Completion Date and Time.

\* Count Durations in Minutes.



**SEVERN  
TRENT  
SERVICES**

**ALPHA/BETA COUNT SHEET**

Sa Num	Alq(g)	Ppt. Wt.	Date	Time	Counts	Count time	Bkgd.	Bkgd. Time	Set	Initials
Doc 8918	0.1056	0	9/24/07	0952		50MIN			10A	
Doc 8919	0.0993								10B	
Doc 8980	0.1030								10C	
Doc 8981	0.1059	↓							10F	

Client: TAR

Date: 9/24/07

Analyst: ADA

Comments: #123407 A200 #6259

Requested Count Time: 50MIN

#1070163

USI Number: RDQC8978 Isotope: 112 (QRRPORT Rev 11-OCT-98)

Detector: 10-A  
File: [quad10.sample.A]RDQC8978.112  
Dish Size: 15 Bkg File: [QUAD10.BKGRND]CURRENT.A\_15;4716

Cycle Alpha 1 Beta 00000 Min Guard 00000 Volts 1000 Finish Date/Time 24-SEP-2007 09:58:22.51

Bkg File: [quad10.bkggrnd]2007-09-24\_0127.A\_15 (QRRPORT Rev 11-OCT-98)

Cycle Count 00017 Min 0500 CPM 0.03 Guard 00000 Volts 1000 Date/Time 24-SEP-2007 01:27:24.11

USt Number: RDQC8979 Isotope: 112 (QRREPORT Rev 11-OCT-98)

Detector: 10-B  
File: [quad10.sample.B] RDQC8979.112  
Bkg File: \$DISK1:[QUAD10.BKGRND] CURRENT.B\_15;4711

Cycle Alpha 1  
Beta 00004  
Min 0050  
Guard 00000  
Volts 1000  
Finish Date/Time 24-SEP-2007 09:58:22.51

Bkg File: [quad10.bkgnd] 2007-09-24\_0127.B\_15 (QRREPORT Rev 11-OCT-98)

Cycle Count 00010  
Min 0500  
CPM 0.02  
Guard 00000  
Volts 1000  
Date/Time 24-SEP-2007 01:27:24.11

UFT Number: RDQC8980 Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C

Dish size: 15

File: [quad10.sample.c]RDQC8980.112

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.C 15;4722

Cycle Alpha Beta Min Guard Volts Finish Date/Time

1 00000 00000 0050 00000 1000 24-SEP-2007 09:58:22.51

Bkg File: [quad10.bkgnd]2007-09-24\_0127.C\_15

(QREPORT Rev 11-OCT-98)

Cycle Count Min CPM Guard Volts Date/Time

Bkg 00017 0500 0.03 00000 1000 24-SEP-2007 01:27:24.11

UST Number: RDQC8981 Isotope: 112 (REPORT Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]RDQC8981.112  
Dish size: 15 Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.F\_15;4707

Cycle Alpha Beta Min Guard Volts Finish Date/Time  
1 00000 00000 0050 00000 1000 24-SEP-2007 09:58:22.51

Bkg File: [quad10.bkgnd]2007-09-24\_0127.F\_15 (REPORT Rev 11-OCT-98)

Cycle Count Min CPM Guard Volts Date/Time  
Bkg 00020 0500 0.04 00000 1000 24-SEP-2007 01:27:24.11

THORIUM  
CONTINUING CALIBRATION

Quality Assurance Report. Generated 24-DEC-2007 11:30:18.38

QA Filename : \$DISK1:[ALP171.QA]GROUP\_6\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Pu-239

Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.296080 Std Deviation : 0.016608

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.3062		
8-DEC-2007 08:07	chk		0.2951		

-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 7.291080 Std Deviation : 0.568846

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		8.1667		
8-DEC-2007 08:07	chk		8.1667		

-- Multi-Test Full Report --

Description : Centroid, Am-241

Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 348.553131      Std Deviation : 2.827286

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		348.0005	
8-DEC-2007 08:07	chk		347.5306	

## -- Multi-Test Full Report --

Description : Average Efficiency

Parameter Units : %      Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 0.500000

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.298650      Std Deviation : 0.016415

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.3015	
8-DEC-2007 08:07	chk		0.2980	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.3015	
8-DEC-2007 08:07	chk		0.2980	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope

Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00



Mean : 6.040092 Std Deviation : 0.023078

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		6.0171	
8-DEC-2007 08:07	chk		6.0371	

Quality Assurance Report. Generated 24-DEC-2007 11:30:19.07

QA Filename : \$DISK1:[ALP171.QA]GROUP\_6\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000532 Std Deviation : 0.000772

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
20-NOV-2007 12:43	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000455 Std Deviation : 0.000704

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	

20-NOV-2007 12:43 bkg 0.0020 |In| |  
 9-DEC-2007 07:20 bkg 0.0020 |In| |

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000471 Std Deviation : 0.000787

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
20-NOV-2007 12:43	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000720 Std Deviation : 0.000906

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
Quality Assurance Multi-Test Full Report (continued)					Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0040	Ac	
20-NOV-2007 12:43	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000537 Std Deviation : 0.000703

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0020	In	
20-NOV-2007 12:43	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000546 Std Deviation : 0.000706

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0020	In	
20-NOV-2007 12:43	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000527 Std Deviation : 0.000704

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
20-NOV-2007 12:43	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000504 Std Deviation : 0.000790

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
20-NOV-2007 12:43	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000469 Std Deviation : 0.000766

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
20-NOV-2007 12:43	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000832 Std Deviation : 0.000975

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
20-NOV-2007 12:43	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000859 Std Deviation : 0.000856

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0020		
20-NOV-2007 12:43	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0020		

## -- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000960 Std Deviation : 0.000839

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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19-NOV-2007 05:26	bkg		0.0020		
20-NOV-2007 12:43	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0020		

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001039 Std Deviation : 0.000962

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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19-NOV-2007 05:26	bkg		0.0010		
20-NOV-2007 12:43	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0030	In	

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001686 Std Deviation : 0.001727

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26 bkg	0.0040	
20-NOV-2007 12:43 bkg	0.0030	
9-DEC-2007 07:20 bkg	0.0040	

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001941      Std Deviation : 0.001926

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26 bkg			0.0040	
20-NOV-2007 12:43 bkg			0.0040	
9-DEC-2007 07:20 bkg			0.0020	

## -- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001935      Std Deviation : 0.002086

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26 bkg			0.0040	
20-NOV-2007 12:43 bkg			0.0040	
9-DEC-2007 07:20 bkg			0.0010	

## -- Multi-Test Full Report --

Quality Assurance Multi-Test Full Report (continued)      Page : 5

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.008198 Std Deviation : 0.015411

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0140		
20-NOV-2007 12:43	bkg		0.0110		
9-DEC-2007 07:20	bkg		0.0210		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.009844 Std Deviation : 0.018682

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0130		
20-NOV-2007 12:43	bkg		0.0060		
9-DEC-2007 07:20	bkg		0.0160		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002060 Std Deviation : 0.003974



Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0030	
20-NOV-2007 12:43	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0080	

Quality Assurance Report. Generated 24-DEC-2007 11:30:06.13

QA Filename : \$DISK1:[ALP171.QA]GROUP\_2\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Pu-239

Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.297027 Std Deviation : 0.021517

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.2888		
8-DEC-2007 08:07	chk		0.2678		

-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 9.482587 Std Deviation : 0.689101

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		9.5000		
8-DEC-2007 08:07	chk		9.3333		

-- Multi-Test Full Report --

Description : Centroid, Am-241

Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 347.996307      Std Deviation : 5.321332

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		347.7343	
8-DEC-2007 08:07	chk		347.5657	

17-NOV-2007 12:53	chk		347.7343	
8-DEC-2007 08:07	chk		347.5657	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 0.500000

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.297009      Std Deviation : 0.023991

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)      Page : 2				
17-NOV-2007 12:53	chk		0.2890	
8-DEC-2007 08:07	chk		0.2789	

Quality Assurance Multi-Test Full Report (continued)      Page : 2				
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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.2890	
8-DEC-2007 08:07	chk		0.2789	

17-NOV-2007 12:53	chk		0.2890	
8-DEC-2007 08:07	chk		0.2789	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 5.623127 Std Deviation : 0.101736

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		5.6346	
8-DEC-2007 08:07	chk		5.6543	

Quality Assurance Report. Generated 24-DEC-2007 11:30:06.82

QA Filename : \$DISK1:[ALP171.QA]GROUP\_2\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001802 Std Deviation : 0.010916

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.065107 Std Deviation : 0.658005

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.003234 Std Deviation : 0.026387

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0040	

## -- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.010143 Std Deviation : 0.092866

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.063845 Std Deviation : 0.642767

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.062984 Std Deviation : 0.634031

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.040611 Std Deviation : 0.406009

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.004790 Std Deviation : 0.039580

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002193 Std Deviation : 0.013104

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.066189 Std Deviation : 0.661070

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0010	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.003923 Std Deviation : 0.027905

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002645 Std Deviation : 0.013039

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	



## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002751 Std Deviation : 0.013996

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.011535 Std Deviation : 0.098185

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.058222 Std Deviation : 0.570677

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.064097      Std Deviation : 0.631346

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued)      Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.059685      Std Deviation : 0.535649

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0130	
9-DEC-2007 07:20	bkg		0.0180	

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.106312 Std Deviation : 1.004065

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0100	
9-DEC-2007 07:20	bkg		0.0060	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.067270 Std Deviation : 0.656122

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0180	
9-DEC-2007 07:20	bkg		0.0120	

Quality Assurance Report. Generated 24-DEC-2007 11:30:02.84

QA Filename : \$DISK1:[ALP171.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Pu-239

Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.296103 Std Deviation : 0.037123

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.2916		
8-DEC-2007 08:07	chk		0.2864		

-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 8.412935 Std Deviation : 0.575421

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		9.0000		
8-DEC-2007 08:07	chk		8.6667		

-- Multi-Test Full Report --

Description : Centroid, Am-241

Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 345.090668      Std Deviation : 8.566362

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		343.4313		
8-DEC-2007 08:07	chk		343.0358		

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.298554      Std Deviation : 0.018716

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.2896		
8-DEC-2007 08:07	chk		0.2840		

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.2896		
8-DEC-2007 08:07	chk		0.2840		

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.2896		
8-DEC-2007 08:07	chk		0.2840		

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 5.755757      Std Deviation : 0.226677

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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-----  
 17-NOV-2007 12:53 chk 5.7578 | | |  
 8-DEC-2007 08:07 chk 5.8186 | | |

Quality Assurance Report. Generated 24-DEC-2007 11:30:03.44

QA Filename : \$DISK1:[ALP171.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000590 Std Deviation : 0.000851

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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-----  
 19-NOV-2007 05:26 bkg 0.0000 | | |  
 9-DEC-2007 07:20 bkg 0.0010 | | |

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000705 Std Deviation : 0.001205

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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-----  
 19-NOV-2007 05:26 bkg 0.0020 | | |  
 9-DEC-2007 07:20 bkg 0.0000 | | |

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000534 Std Deviation : 0.000851

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000841 Std Deviation : 0.001372

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
Quality Assurance Multi-Test Full Report (continued)					Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0030		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----

Mean : 0.000698 Std Deviation : 0.000935

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----

Mean : 0.000689 Std Deviation : 0.000899

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----

Mean : 0.000832 Std Deviation : 0.001154

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide



Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.000989      Std Deviation : 0.001211

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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19-NOV-2007 05:26	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001093      Std Deviation : 0.001257

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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19-NOV-2007 05:26	bkg		0.0020		
9-DEC-2007 07:20	bkg		0.0000		

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001445      Std Deviation : 0.001603

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001203 Std Deviation : 0.001413

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0020	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001384 Std Deviation : 0.001597

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001351 Std Deviation : 0.001703

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001856 Std Deviation : 0.001803

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0020		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002622 Std Deviation : 0.002356

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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19-NOV-2007 05:26 bkg 0.0020 | | |  
 9-DEC-2007 07:20 bkg 0.0020 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002547 Std Deviation : 0.002238

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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19-NOV-2007 05:26 bkg			0.0020		
9-DEC-2007 07:20 bkg			0.0030		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.010611 Std Deviation : 0.017995

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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19-NOV-2007 05:26 bkg			0.0070		
9-DEC-2007 07:20 bkg			0.0170		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.010602      Std Deviation : 0.017958

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0080		
9-DEC-2007 07:20	bkg		0.0050		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002415      Std Deviation : 0.004199

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0050		
9-DEC-2007 07:20	bkg		0.0090		

Quality Assurance Report. Generated 24-DEC-2007 11:30:21.80

QA Filename : \$DISK1:[ALP171.QA]GROUP\_7\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Pu-239

Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.267350 Std Deviation : 0.004271

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		0.2545	Ac	
8-DEC-2007 08:07	chk		0.2702		

-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 5.951691 Std Deviation : 0.397193

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
17-NOV-2007 12:53	chk		5.3333		
8-DEC-2007 08:07	chk		6.5000		

-- Multi-Test Full Report --

Description : Centroid, Am-241

Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 337.652405      Std Deviation : 2.839149

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		337.4452	
8-DEC-2007 08:07	chk		337.4210	

17-NOV-2007 12:53	chk		337.4452	
8-DEC-2007 08:07	chk		337.4210	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 0.500000

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.267955      Std Deviation : 0.002938

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				
				Page : 2
17-NOV-2007 12:53	chk		0.2651	
8-DEC-2007 08:07	chk		0.2698	

Quality Assurance Multi-Test Full Report (continued)				
				Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		0.2651	
8-DEC-2007 08:07	chk		0.2698	

17-NOV-2007 12:53	chk		0.2651	
8-DEC-2007 08:07	chk		0.2698	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00

Mean : 5.649283 Std Deviation : 0.022881

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
17-NOV-2007 12:53	chk		5.6629	
8-DEC-2007 08:07	chk		5.6332	

Quality Assurance Report. Generated 24-DEC-2007 11:30:22.50

QA Filename : \$DISK1:[ALP171.QA]GROUP\_7\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000313 Std Deviation : 0.000565

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000225 Std Deviation : 0.000528

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	



## -- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000225 Std Deviation : 0.000450

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000325 Std Deviation : 0.000612

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0000		

Quality Assurance Multi-Test Full Report (continued) Page : 2

## -- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000263 Std Deviation : 0.000546

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000225 Std Deviation : 0.000477

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000188 Std Deviation : 0.000393

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000213 Std Deviation : 0.000442

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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19-NOV-2007 05:26	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000263 Std Deviation : 0.000497

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

19-NOV-2007 05:26	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0000		

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000488 Std Deviation : 0.000901

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000250 Std Deviation : 0.000607

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000313 Std Deviation : 0.000687

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000338 Std Deviation : 0.000763

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000300 Std Deviation : 0.000645

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
19-NOV-2007 05:26	bkg		0.0000		
9-DEC-2007 07:20	bkg		0.0010		

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000651 Std Deviation : 0.000888

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000651      Std Deviation : 0.000916

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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Quality Assurance Multi-Test Full Report (continued)      Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0000	
9-DEC-2007 07:20	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004480      Std Deviation : 0.007680

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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19-NOV-2007 05:26	bkg		0.0090	
9-DEC-2007 07:20	bkg		0.0180	

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.006532 Std Deviation : 0.011497

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0090	
9-DEC-2007 07:20	bkg		0.0110	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 5-MAY-2003 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001376 Std Deviation : 0.002681

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
19-NOV-2007 05:26	bkg		0.0030	
9-DEC-2007 07:20	bkg		0.0010	

URANIUM ISOTOPIC  
SAMPLE AND QC DATA



Lot No., Due Date: F7K160242,F7K190152,F7K200219; 12/14/2007,12/18/2007,12/20/2007

Client, Site: 445691; Phs2 Smpling Tronox Prcl CDFG

QC Batch No., Method Test: 7327123; RUIISO Uiso by ALP

SDG, Matrix: TRNC/D-5RD,TRNC/D-6RD,TRNC/D-7RD; ,,

- 1.0 COC**
- 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? Yes No N/A  
 Yes  No  N/A
- 2.0 QC Batch**
- 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Yes No N/A  
 Yes  No  N/A
- 2.2 Are the QC appropriate for the analysis included in the batch? Yes No N/A  
 Yes  No  N/A
- 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? Yes No N/A  
 Yes  No  N/A
- 2.4 Does the Worksheets include a Tracer Vial label for each sample? Yes No N/A  
 Yes  No  N/A
- 3.0 QC & Samples**
- 3.1 Is the blank results, yield, and MDA within contract limits? Yes No N/A  
 Yes  No  N/A
- 3.2 Is the LCS result, yield, and MDA within contract limits? Yes No N/A  
 Yes  No  N/A
- 3.3 Are the MS/MSD results, yields, and MDA within contract limits? Yes No N/A  
 Yes  No  N/A
- 3.4 Are the duplicate result, yields, and MDAs within contract limits? Yes No N/A  
 Yes  No  N/A
- 3.5 Are the sample yields and MDAs within contract limits? Yes No N/A  
 Yes  No  N/A
- 4.0 Raw Data**
- 4.1 Were results calculated in the correct units? Yes No N/A  
 Yes  No  N/A
- 4.2 Were analysis volumes entered correctly? Yes No N/A  
 Yes  No  N/A
- 4.3 Were Yields entered correctly? Yes No N/A  
 Yes  No  N/A
- 4.4 Were spectra reviewed/meet contractual requirements? Yes No N/A  
 Yes  No  N/A
- 4.5 Were raw counts reviewed for anomalies? Yes No N/A  
 Yes  No  N/A
- 5.0 Other**
- 5.1 Are all nonconformances included and noted? Yes No N/A  
 Yes  No  N/A
- 5.2 Are all required forms filled out? Yes No N/A  
 Yes  No  N/A
- 5.3 Was the correct methodology used? Yes No N/A  
 Yes  No  N/A
- 5.4 Was transcription checked? Yes No N/A  
 Yes  No  N/A
- 5.5 Were all calculations checked at a minimum frequency? Yes No N/A  
 Yes  No  N/A
- 5.6 Are worksheet entries complete and correct? Yes No N/A  
 Yes  No  N/A
- 6.0 Comments on any No response:

First Level Review

*J. Horton*

Date

12-12-7

**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 7327123

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?			
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Second Level Review: *Eirbe O'Neil* Date: 2/21/17

12/5/2007 10:16:20 AM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
 Analyze Date: 12/10/2007  
 Batch: 7327123  
 SEQ Batch, Test: None

Sample Preparation/Analysis  
 Balance Id: 1120482733  
 Pipet #:   
 Sep1 DT/Tm Tech:   
 Sep2 DT/Tm Tech:   
 Prep Tech: Harris D

7Y Uiso PpRC5016/5086, SepRC5067(5039)  
 SR Uranium-234,235,238 by Alpha Spec  
 01 STANDARD TEST SET  
 PM, Quote: JAE, 77571

Work Order, Lot, Sample Date  
 Total Amt /Unit  
 Total Acidified/Unit  
 Initial Aliquot Amt/Unit  
 Adj Aliq Amt (Un-Acidified)  
 QC Tracer Prep Date  
 Count Time Min  
 Detector Id  
 Count On | Off (24hr) Circle  
 CR Analyst, Init/Date  
 Comments:

1 KCFM8-1-AE  
 F7K160242-17-SAMP  
 11/15/2007 13:15  
 200.00g,in  
 200.00g  
 UITC19008  
 11/27/07,pd  
 05/05/87,r  
 200  
 Scr: Alpha: Beta:

2 KCFM8-1-AG-X  
 F7K160242-17-DUP  
 11/15/2007 13:15  
 200.10g,in  
 200.10g  
 UITC19009  
 11/27/07,pd  
 05/05/87,r  
 Scr: Alpha: Beta:

3 KCKE9-1-AE  
 F7K190152-16-SAMP  
 11/16/2007 14:00  
 200.20g,in  
 200.20g  
 UITC19010  
 11/27/07,pd  
 05/05/87,r  
 Scr: Alpha: Beta:

4 KCMQL-1-AE  
 F7K200219-15-SAMP  
 11/19/2007 12:40  
 200.10g,in  
 200.10g  
 UITC19011  
 11/27/07,pd  
 05/05/87,r  
 Scr: Alpha: Beta:

5 KCR7M-1-AA-B  
 J7K230000-123-BLK  
 11/15/2007 13:15  
 200.00g,in  
 200.00g  
 UITC19012  
 11/27/07,pd  
 05/05/87,r  
 Scr: Alpha: Beta:

6 KCR7M-1-AC-C  
 J7K230000-123-LCS  
 11/15/2007 13:15  
 200.10g,in  
 200.10g  
 UISG1543  
 11/20/07,pd  
 05/05/87,r  
 Scr: Alpha: Beta:

12/5/2007 10:16:21 AM

### Sample Preparation/Analysis

Balance Id:1120482733

7Y Uiso PrpRC5016/5086, SepRC5067(5039)  
SR Uranium-234,235,238 by Alpha Spec  
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 12/10/2007

Sep1 DT/Tm Tech:

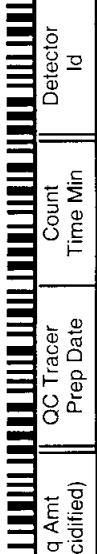
Batch: 7327123

pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: HarrisD



Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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Comments: *PH 2.0 OUT ~~10/10/07~~ 10/15/07*

All Clients for Batch: 445691, Basic Remediation Company Basic Remediation Company, JAE, 77571

#### KCFM81AE-SAMP Constituent List:

KCR7M1AA-BLK:	RDL:	pCi/L	LCL:20	UCL:115	RPD:20	U-234	RDL:1	pCi/L	LCL:	UCL:	RPD:
U-232	RDL:0.1	pCi/L	LCL:	UCL:	RPD:	U-238	RDL:1	pCi/L	LCL:	UCL:	RPD:
KCR7M1AC-LCS:	RDL:	pCi/L	LCL:20	UCL:115	RPD:20	Uranium	RDL:	pCi/L	LCL:70	UCL:130	RPD:20
U-232	RDL:	pCi/L	LCL:20	UCL:115	RPD:20	Uranium	RDL:	pCi/L	LCL:70	UCL:130	RPD:20

#### KCFM81AE-SAMP Calc Info:

Uncert Level (#s):	4	Decay to SaDt:	N	Blk Subt.:	N	Sci.Not.:	N	ODRs:	B
KCR7M1AA-BLK:		Decay to SaDt:	N	Blk Subt.:	N	Sci.Not.:	N	ODRs:	B
Uncert Level (#s):	4	Decay to SaDt:	N	Blk Subt.:	N	Sci.Not.:	N	ODRs:	B
KCR7M1AC-LCS:		Decay to SaDt:	N	Blk Subt.:	N	Sci.Not.:	N	ODRs:	B
Uncert Level (#s):	4	Decay to SaDt:	N	Blk Subt.:	N	Sci.Not.:	N	ODRs:	B

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

# ICOC Fraction Transfer/Status Report

ByDate: 12/12/2006, 12/17/2007, Batch: '7327123', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>7327123</b>				
AC	<b>CalcC</b>	<b>HarrisD</b>	12/5/2007 9:27:49	
SC		antonsonl	IsBatched	11/23/2007 10:43:22 AM
SC		HarrisD	InPrep	12/5/2007 9:27:49 AM
SC		HarrisD	Prep1C	12/5/2007 10:16:44 AM
SC		AshworthA	Prep2C	12/6/2007 12:09:30 PM
SC		AshworthA	Sep1C	12/9/2007 1:26:33 PM
SC		AshworthA	Sep2C	12/10/2007 12:39:00 PM
SC		BlackCL	InCnt1	12/10/2007 12:48:19 PM
SC		DAWKINSO	CalcC	12/10/2007 9:47:03 PM
AC		<b>HarrisD</b>	12/5/2007 10:16:44	
AC		<b>AshworthA</b>	12/6/2007 12:09:30	REV3
AC		<b>AshworthA</b>	12/9/2007 1:26:33 PM	
AC		<b>AshworthA</b>	12/10/2007 12:39:00	
AC		<b>BlackCL</b>	12/10/2007 12:48:19	
AC		<b>DAWKINSO</b>	12/10/2007 9:47:03	

AC: Accepting Entry; SC: Status Change

12/12/2007 2:49:22 PM

# Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix	Received Date	Sample Date	Units	Expected Yield	Volumes
<b>TRNC/D-5RD</b>	<b>9KCFM810</b>		<b>F7K16024217</b>	RINSATE 3	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM			
U-234	7YSR	0	12/10/2007 2:47:40 PM	<b>5.2904E-02</b>	4.77E-02	4.789E-02	1.869E-01	pCi/L	0.889	2.0E-1
U-235	7YSR	0	12/10/2007 2:47:40 PM	<b>-6.6195E-03</b>	3.373E-02	3.373E-02	1.584E-01	pCi/L	0.889	2.0E-1
U-238	7YSR	0	12/10/2007 2:47:40 PM	<b>-6.6195E-03</b>	3.373E-02	3.373E-02	1.584E-01	pCi/L	0.889	2.0E-1
<b>TRNC/D-6RD</b>	<b>9KCKE910</b>		<b>F7K19015216</b>	RINSATE4	WATER	11/19/2007 8:45:00	11/16/2007 2:00:00 PM			
U-234	7YSR	0	12/10/2007 2:47:56 PM	<b>3.2826E-02</b>	3.348E-02	3.358E-02	1.572E-01	pCi/L	0.882	2.002E-1
U-235	7YSR	0	12/10/2007 2:47:56 PM	<b>0.0E+00</b>	0.0E+00	3.348E-02	1.572E-01	pCi/L	0.882	2.002E-1
U-238	7YSR	0	12/10/2007 2:47:56 PM	<b>3.2826E-02</b>	3.348E-02	3.358E-02	1.572E-01	pCi/L	0.882	2.002E-1
<b>TRNC/D-7RD</b>	<b>9KCMQL10</b>		<b>F7K20021915</b>	RINSATE 5	WATER	11/20/2007 9:30:00	11/19/2007 12:40:00 PM			
U-234	7YSR	0	12/10/2007 2:47:59 PM	<b>0.0E+00</b>	0.0E+00	3.647E-02	1.713E-01	pCi/L	0.832	2.001E-1
U-235	7YSR	0	12/10/2007 2:47:59 PM	<b>-7.1539E-03</b>	3.647E-02	3.648E-02	1.713E-01	pCi/L	0.832	2.001E-1
U-238	7YSR	0	12/10/2007 2:47:59 PM	<b>0.0E+00</b>	0.0E+00	3.647E-02	1.713E-01	pCi/L	0.832	2.001E-1
<b>TRNC/D-5RD</b>	<b>KCFM81GR</b>		<b>F7K16024217</b>	RINSATE 3 DUP	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM			
U-234	7YSR	0 R	12/10/2007 2:47:53 PM	<b>3.8304E-02</b>	3.906E-02	3.919E-02	1.835E-01	pCi/L	0.786	2.001E-1
U-235	7YSR	0 R	12/10/2007 2:47:53 PM	<b>3.8304E-02</b>	3.906E-02	3.919E-02	1.835E-01	pCi/L	0.786	2.001E-1
U-238	7YSR	0 R	12/10/2007 2:47:53 PM	<b>0.0E+00</b>	0.0E+00	3.906E-02	1.835E-01	pCi/L	0.786	2.001E-1
<b>TRNC/D-7RD</b>	<b>KCR7M1AB</b>		<b>J7K230000123</b>	INTRA-LAB BLANK	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM			
U-234	7YSR	0 B	12/10/2007 2:48:07 PM	<b>-2.8319E-02</b>	3.81E-02	3.817E-02	2.43E-01	pCi/L	0.884	2.0E-1
U-235	7YSR	0 B	12/10/2007 2:48:07 PM	<b>0.0E+00</b>	0.0E+00	3.607E-02	1.694E-01	pCi/L	0.884	2.0E-1
U-238	7YSR	0 B	12/10/2007 2:48:07 PM	<b>-7.0798E-03</b>	3.607E-02	3.608E-02	1.694E-01	pCi/L	0.884	2.0E-1
<b>TRNC/D-7RD</b>	<b>KCR7M1CS</b>		<b>J7K230000123</b>	INTRA-LAB CHECK	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM			
U-234	7YSR	0 S	12/10/2007 2:48:11 PM	<b>8.6286E+00</b>	5.377E-01	8.855E-01	1.603E-01	pCi/L	8.7695E+00	0.824
U-238	7YSR	0 S	12/10/2007 2:48:11 PM	<b>1.0188E+01</b>	5.846E-01	1.016E+00	2.113E-01	pCi/L	9.1843E+00	0.824

7327123, \*\*Samples Inserted | Updated | NotUpdated => 6 | 0 | 0,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 17 | 0 | 0 | 0.  
 \*\*Diff RptDb | Qtims => .

# Alpha Spec, Ulso by ALP , Results

## Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	*MLcC	MDC	QC	Trc	Yld	LCS	Yld
Ulso by ALP																
Richland Standard Alplso Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71																
Calc	SR	WATER	KCFM81AE	U-234	5.29E-02	(4.79E-02)	U4	pCi/L	R	4.87E-02	1.87E-01			89%		
Calc	SR	WATER	KCFM81AE	U-235	-6.62E-03	(3.37E-02)	U4	pCi/L	R	3.44E-02	1.58E-01			89%		
Calc	SR	WATER	KCFM81AE	U-238	-6.62E-03	(3.37E-02)	U4	pCi/L	R	3.44E-02	1.58E-01			89%		
Calc	SR	WATER	KCFM81AG	U-234	3.83E-02	(3.92E-02)	U4	pCi/L	R	3.99E-02	1.83E-01	R		79%		
Calc	SR	WATER	KCFM81AG	U-235	3.83E-02	(3.92E-02)	U4	pCi/L	R	3.99E-02	1.83E-01	R		79%		
Calc	SR	WATER	KCFM81AG	U-238	0.00E+00	(3.91E-02)	U4	pCi/L	R	3.99E-02	1.83E-01	R		79%		
Calc	SR	WATER	KCKE91AE	U-234	3.28E-02	(3.36E-02)	U4	pCi/L	R	3.42E-02	1.57E-01			88%		
Calc	SR	WATER	KCKE91AE	U-235	0.00E+00	(3.35E-02)	U4	pCi/L	R	3.42E-02	1.57E-01			88%		
Calc	SR	WATER	KCKE91AE	U-238	3.28E-02	(3.36E-02)	U4	pCi/L	R	3.42E-02	1.57E-01			88%		
Calc	SR	WATER	KCMQL1AE	U-234	0.00E+00	(3.65E-02)	U4	pCi/L	R	3.72E-02	1.71E-01			83%		
Calc	SR	WATER	KCMQL1AE	U-235	-7.15E-03	(3.65E-02)	U4	pCi/L	R	3.72E-02	1.71E-01			83%		
Calc	SR	WATER	KCMQL1AE	U-238	0.00E+00	(3.65E-02)	U4	pCi/L	R	3.72E-02	1.71E-01			83%		
Calc	SR	WATER	KCR7M1AA	U-234	-2.83E-02	(3.82E-02)	U4	pCi/L	R	7.36E-02	2.43E-01	B		88%		
Calc	SR	WATER	KCR7M1AA	U-235	0.00E+00	(3.61E-02)	U4	pCi/L	R	3.68E-02	1.69E-01	B		88%		
Calc	SR	WATER	KCR7M1AA	U-238	-7.08E-03	(3.61E-02)	U4	pCi/L	R	3.68E-02	1.69E-01	B		88%		
Calc	SR	WATER	KCR7M1AC	U-234	8.63E+00	(8.86E-01)		pCi/L	R	3.48E-02	1.60E-01	S		82%	98%	
Calc	SR	WATER	KCR7M1AC	U-235	6.69E-01	(1.59E-01)		pCi/L	R	3.48E-02	1.60E-01	S		82%	167%	
Calc	SR	WATER	KCR7M1AC	U-238	1.02E+01	(1.02E+00)		pCi/L	R	6.03E-02	2.11E-01	S		82%	111%	

( ) - (1s Uncertainties)  
 IDC - Instrument Detection Level in Conc Units  
 MLcC - Method Decision Level in Conc Units  
 MDC - Minimum Detectable Concentration  
 \*Std - Lc, MDC using StdDev for Set of Blanks

Batch Nbr: 7327123

Alpha Spec, Uiso by ALP, Calculated Results

12/10/2007 9:41:30 PM

Detailed Report

Sq	Calc SR	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol		
1	445691	RINSATE 3	WATER	*STLE	AlpisoWoBS	KCFM81AE	pCi/L	WATER	11/15/07 13:15	12/10/07 14:47		UIC19008	Alq	1	200.00 g			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/10/07 13:07	U-232	689	6	ALP6	ED	Y	N	3.8270E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.05			Y		(1.148E-02)					(0.000E+00)	0.005			
1	12/10/07 13:07	U-234	2	2	ALP6	ED	N	N	3.8270E-01		N	89%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.05			Y		(1.148E-02)					(0.000E+00)	0.005			
2	12/10/07 13:07	U-235	0	1	ALP6	ED	N	N	3.8270E-01		N	89%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.05			Y		(1.148E-02)					(0.000E+00)	0.005			
3	12/10/07 13:07	U-238	0	1	ALP6	ED	N	N	3.8270E-01		N	89%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.05			Y		(1.148E-02)					(0.000E+00)	0.005			
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total	U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILCc	BlkLcC/MDC	StdDvMdc/LcC			
	12/10/07	U-232	R	20.22208			3.43613E+00	8.978613	8.978613	0.20 L	89%							
	2.275E+01			(1.409424)			(1.3116E-01)	(0.435898)	(0.435898)	(0.173205)								
	12/10/07	U-234	R	0.052904		U4	7.99177E-03	0.02349	0.02349	0.20 L	89%							
	2.275E+01			(0.047891)			(7.2053E-03)	(0.021231)	(0.021231)	(0.173205)								
	12/10/07	U-235	R	-0.00662		U4	-9.99950E-04	-0.002939	-0.002939	0.20 L	89%							
	2.275E+01			(0.033732)			(5.0949E-03)	(0.014976)	(0.014976)	(0.173205)								
	12/10/07	U-238	R	-0.00662		U4	-9.99950E-04	-0.002939	-0.002939	0.20 L	89%							
	2.275E+01			(0.033732)			(5.0949E-03)	(0.014976)	(0.014976)	(0.173205)								
Sq	Calc SR	Matrix	Protocol <td>Equation <td>Set <td>Wrk Ord <td>Units/Matrix <td>QC/BB <td>Sa/On Date <td>AnalysisDate/PptWt <td>Sep1/Sep2 Date <td>QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td></td></td></td></td></td></td></td></td></td>	Equation <td>Set <td>Wrk Ord <td>Units/Matrix <td>QC/BB <td>Sa/On Date <td>AnalysisDate/PptWt <td>Sep1/Sep2 Date <td>QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td></td></td></td></td></td></td></td></td>	Set <td>Wrk Ord <td>Units/Matrix <td>QC/BB <td>Sa/On Date <td>AnalysisDate/PptWt <td>Sep1/Sep2 Date <td>QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td></td></td></td></td></td></td></td>	Wrk Ord <td>Units/Matrix <td>QC/BB <td>Sa/On Date <td>AnalysisDate/PptWt <td>Sep1/Sep2 Date <td>QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td></td></td></td></td></td></td>	Units/Matrix <td>QC/BB <td>Sa/On Date <td>AnalysisDate/PptWt <td>Sep1/Sep2 Date <td>QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td></td></td></td></td></td>	QC/BB <td>Sa/On Date <td>AnalysisDate/PptWt <td>Sep1/Sep2 Date <td>QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td></td></td></td></td>	Sa/On Date <td>AnalysisDate/PptWt <td>Sep1/Sep2 Date <td>QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td></td></td></td>	AnalysisDate/PptWt <td>Sep1/Sep2 Date <td>QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td></td></td>	Sep1/Sep2 Date <td>QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td></td>	QC/Tracer <td>Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td></td>	Vial <td>Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td></td>	Multi/EntYld <td>Total/Analy Vol <td>Final/Count Vol</td> </td>	Total/Analy Vol <td>Final/Count Vol</td>	Final/Count Vol		
2	445691	RINSATE 3 DUP	WATER	*STLE	AlpisoWoBS	KCFM81AG	pCi/L	WATER	11/15/07 13:15	12/10/07 14:47		UIC19009	Alq	1	200.10 g			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/10/07 13:07	U-232	593	9	ALP7	ED	Y	N	3.7341E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.2333			Y		(1.120E-02)					(0.000E+00)	0.004998			
1	12/10/07 13:07	U-234	1	0	ALP7	ED	N	N	3.7341E-01		N	79%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.2333			Y		(1.120E-02)					(0.000E+00)	0.004998			
2	12/10/07 13:07	U-235	1	0	ALP7	ED	N	N	3.7341E-01		N	79%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.2333			Y		(1.120E-02)					(0.000E+00)	0.004998			
3	12/10/07 13:07	U-238	0	0	ALP7	ED	N	N	3.7341E-01		N	79%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.2333			Y		(1.120E-02)					(0.000E+00)	0.004998			

( ) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time



Batch Nbr: 7327123

Alpha Spec, Uiso by ALP, Calculated Results

12/10/2007 9:41:31 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Trc Yld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
12/10/07	U-232	R	17.805409	2.95353E+00	7.909562	7.909562	0.2001 L	79%	0.2001 L	0.183484	0.183484	0.039863	0.183484	0.039863
2.265E+01			(1.271363)	(1.2169E-01)	(0.403129)	(0.403129)	(0.173205)							
12/10/07	U-234	R	0.038304	U4	4.99584E-03	0.017016	0.017016	79%	0.2001 L	0.183484	0.183484	0.039863	0.183484	0.039863
2.265E+01			(0.039192)	(5.0949E-03)	(0.017389)	(0.017389)	(0.173205)							
12/10/07	U-235	R	0.038304	U4	4.99584E-03	0.017016	0.017016	79%	0.2001 L	0.183484	0.183484	0.039863	0.183484	0.039863
2.265E+01			(0.039192)	(5.0949E-03)	(0.017389)	(0.017389)	(0.173205)							
12/10/07	U-238	R	0.00E00	U4	0.00000E+00	0.00E00	0.2001 L	79%	0.2001 L	0.183484	0.183484	0.039863	0.183484	0.039863
2.265E+01			(0.039064)	(5.0949E-03)	(0.017353)	(0.017353)	(0.173205)							

Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	SR	WATER	*STLE	AlpisoWoBS	KCKE91AE	pC/L	11/16/07 14:00	12/10/07 14:47		UIC19010	Alq	1	200.20 g	
445691	RINSATE4														
0	12/10/07	13:07	U-232	4	ALP8	ED	Y	N	3.8820E-01	100%	N	1.0000E+00	4.5045E+02	1.0000E+00	
									(1.165E-02)			(0.000E+00)	0.004995		
1	12/10/07	13:07	U-234	0	ALP8	ED	N	N	3.8820E-01	88%	N	1.0000E+00	4.5045E+02	1.0000E+00	
									(1.165E-02)			(0.000E+00)	0.004995		
2	12/10/07	13:07	U-235	0	ALP8	ED	N	N	3.8820E-01	88%	N	1.0000E+00	4.5045E+02	1.0000E+00	
									(1.165E-02)			(0.000E+00)	0.004995		
3	12/10/07	13:07	U-238	0	ALP8	ED	N	N	3.8820E-01	88%	N	1.0000E+00	4.5045E+02	1.0000E+00	
									(1.165E-02)			(0.000E+00)	0.004995		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Trc Yld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
12/10/07	U-232	R	19.993659	3.44956E+00	8.86071	8.86071	0.2002 L	88%	0.2002 L	0.157232	0.157232	0.034157	0.157232	0.034157
2.266E+01			(1.39263)	(1.3139E-01)	(0.430848)	(0.430848)	(0.173205)							
12/10/07	U-234	R	0.032826	U4	4.99792E-03	0.014589	0.014589	88%	0.2002 L	0.157232	0.157232	0.034157	0.157232	0.034157
2.266E+01			(0.033583)	(5.0969E-03)	(0.014908)	(0.014908)	(0.173205)							
12/10/07	U-235	R	0.00E00	U4	0.00000E+00	0.00E00	0.2002 L	88%	0.2002 L	0.157232	0.157232	0.034157	0.157232	0.034157
2.266E+01			(0.033477)	(5.0969E-03)	(0.014879)	(0.014879)	(0.173205)							
12/10/07	U-238	R	0.032826	U4	4.99792E-03	0.014589	0.014589	88%	0.2002 L	0.157232	0.157232	0.034157	0.157232	0.034157
2.266E+01			(0.033583)	(5.0969E-03)	(0.014908)	(0.014908)	(0.173205)							

Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
4	Calc	SR	WATER	*STLE	AlpisoWoBS	KCMQL1AE	pC/L	11/19/07 12:40	12/10/07 14:47		UIC19011	Alq	1	200.10 g	
445691	RINSATE 5														
0	12/10/07	13:07	U-232	4	ALP9	ED	Y	N	3.7821E-01	100%	N	1.0000E+00	4.5045E+02	1.0000E+00	
									(1.135E-02)			(0.000E+00)	0.004998		

0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Batch Nbr: 7327123

Alpha Spec, Uiso by ALP , Calculated Results

12/10/2007 9:41:31 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIKLCc/MDC	StdDvMdc/LcC
1	12/10/07 13:07	U-234	0	1000.0833		ED	N	N	0.2001 L	83%			4.5045E+02	1.0000E+00
			200.05			ALP9	N	N	(0.173205)	5%			0.004998	0.0000E+00
2	12/10/07 13:07	U-235	0	1000.0833		ED	N	N	0.2001 L	83%			4.5045E+02	1.0000E+00
			200.05			ALP9	N	N	(0.173205)	5%			0.004998	0.0000E+00
3	12/10/07 13:07	U-238	0	1000.0833		ED	N	N	0.2001 L	83%			4.5045E+02	1.0000E+00
			200.05			ALP9	N	N	(0.173205)	5%			0.004998	0.0000E+00

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	SR	WATER	*STLE	AlpisoWoBS	KCR7M1AA	pCi/L		B	11/15/07 13:15	12/10/07 14:48				1	g	
																200.00	g

Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/10/07 13:08	U-232	642	4	ALP10	ED	Y	N	3.5997E-01		N	100%	N		1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.0166			Y		(1.080E-02)						(0.000E+00)	0.005		
1	12/10/07 13:08	U-234	0	4	ALP10	ED	N	N	3.5997E-01		N	88%	N		1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.0166			Y		(1.080E-02)						(0.000E+00)	0.005		
2	12/10/07 13:08	U-235	0	0	ALP10	ED	N	N	3.5997E-01		N	88%	N		1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.0166			Y		(1.080E-02)						(0.000E+00)	0.005		
3	12/10/07 13:08	U-238	0	1	ALP10	ED	N	N	3.5997E-01		N	88%	N		1.0000E+00	4.5045E+02	1.0000E+00	
			200.1666666	1000.0166			Y		(1.080E-02)						(0.000E+00)	0.005		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIKLCc/MDC	StdDvMdc/LcC
12/10/07	U-232	R	20.04242			3.20333E+00	8.898843		0.20 L	88%				
			(1.411912)			(1.2660E-01)	(0.44154)		(0.173205)					
12/10/07	U-234	R	-0.028319			-3.99993E-03	-0.012574		0.20 L	88%				
			(0.03817)			(5.3813E-03)	(0.016936)		(0.173205)					
12/10/07	U-235	R	0.00E00			0.00000E+00	0.00E00		0.20 L	88%				
			(0.036072)			(5.0949E-03)	(0.016016)		(0.173205)					
12/10/07	U-238	R	-0.00708			-9.99983E-04	-0.003143		0.20 L	88%				
			(0.036076)			(5.0949E-03)	(0.016017)		(0.173205)					

( ) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Page 3  
 RecCnt:6  
 RADCALC v4.8.29  
 TA Richland

Sq	Calc	SR	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/IBB	Sa/On Date	AnalysisDate/PptWt	Sep17/Sept2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	
6	Calc	SR	WATER	*STLE	AlpIsoWoBS	KCR7MIAC	pCi/L	S	11/15/07	13:15	12/10/07	14:48	UISG1543	1	g			
0	INTRA-LAB	CHECK					WATER						UISG1543	Alq	200.10	g		
Sq	Cnt.Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/10/07 13:08	U-232	671	14	ALP11	ED	Y	N	4.0783E-01		N	100%	N		1.0000E+00	4.5045E+02	1.0000E+00	
			200.0833333	1000.1333			Y		(1.223E-02)						(0.000E+00)	0.004998		
1	12/10/07 13:08	U-234	258	1	ALP11	ED	N	N	4.0783E-01		N	82%	N		1.0000E+00	4.5045E+02	1.0000E+00	
			200.0833333	1000.1333			Y		(1.223E-02)			5%			(0.000E+00)	0.004998		
2	12/10/07 13:08	U-235	20	0	ALP11	ED	N	N	4.0783E-01		N	82%	N		1.0000E+00	4.5045E+02	1.0000E+00	
			200.0833333	1000.1333			Y		(1.223E-02)			5%			(0.000E+00)	0.004998		
3	12/10/07 13:08	U-238	305	3	ALP11	ED	N	N	4.0783E-01		N	82%	N		1.0000E+00	4.5045E+02	1.0000E+00	
			200.0833333	1000.1333			Y		(1.223E-02)			5%			(0.000E+00)	0.004998		
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Trc Yld,EnFct	LCS Yld,EFctU	IDC/ILcC	BlkLc/MDC	StdvMdc/LcC				
	12/10/07	U-232	R	18.433806		3.33960E+00	8.18871	8.18871	0.2001 L	82%								
	2.236E+01			(1.291003)		(1.2952E-01)	(0.401505)	(0.401505)	(0.173205)									
	12/10/07	U-234	R	8.628641		1.28846E+00	3.833035	3.833035	0.2001 L	82%	98%	0.160317						
	2.236E+01			(0.885531)		(8.0285E-02)	(0.343512)	(0.343512)	(0.173205)			0.034827						
	12/10/07	U-235	R	0.669406		9.99584E-02	0.297365	0.297365	0.2001 L	82%	167%	0.160317						
	2.236E+01			(0.159467)		(2.2374E-02)	(0.069261)	(0.069261)	(0.173205)			0.034827						
	12/10/07	U-238	R	10.188351		1.52137E+00	4.525894	4.525894	0.2001 L	82%	111%	0.211277						
	2.236E+01			(1.015909)		(8.7302E-02)	(0.390432)	(0.390432)	(0.173205)			0.060322						

# URANIUM ISOTOPIC COUNTING REQUEST

1608

C.R. Technician S

Counting Time 200 Minutes

SOP's Operating: RICHRD008

Date Counted 12/1/02

Background See Alpha Regions Report

Review: RICHRD0016

BRCU 11/15 730103

WorkOrder #	U-232 (5320 KeV) Tracer	TOTAL COUNTS			Det #	Comments/Edits
		U-238 (4196 KeV)	U-235 (4396 KeV)	U-234 (4776 KeV)		
KCFM8IAE	See Counting Room Printout for ROI information				6	
KCFM8IAG	See Counting Room Printout for ROI information				7	
KCKE9IAE	See Counting Room Printout for ROI information				8	
KCMQLIAE	See Counting Room Printout for ROI information				9	
KCR7MIAA	See Counting Room Printout for ROI information				10	
KCK7MIAA	See Counting Room Printout for ROI information				11	
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					

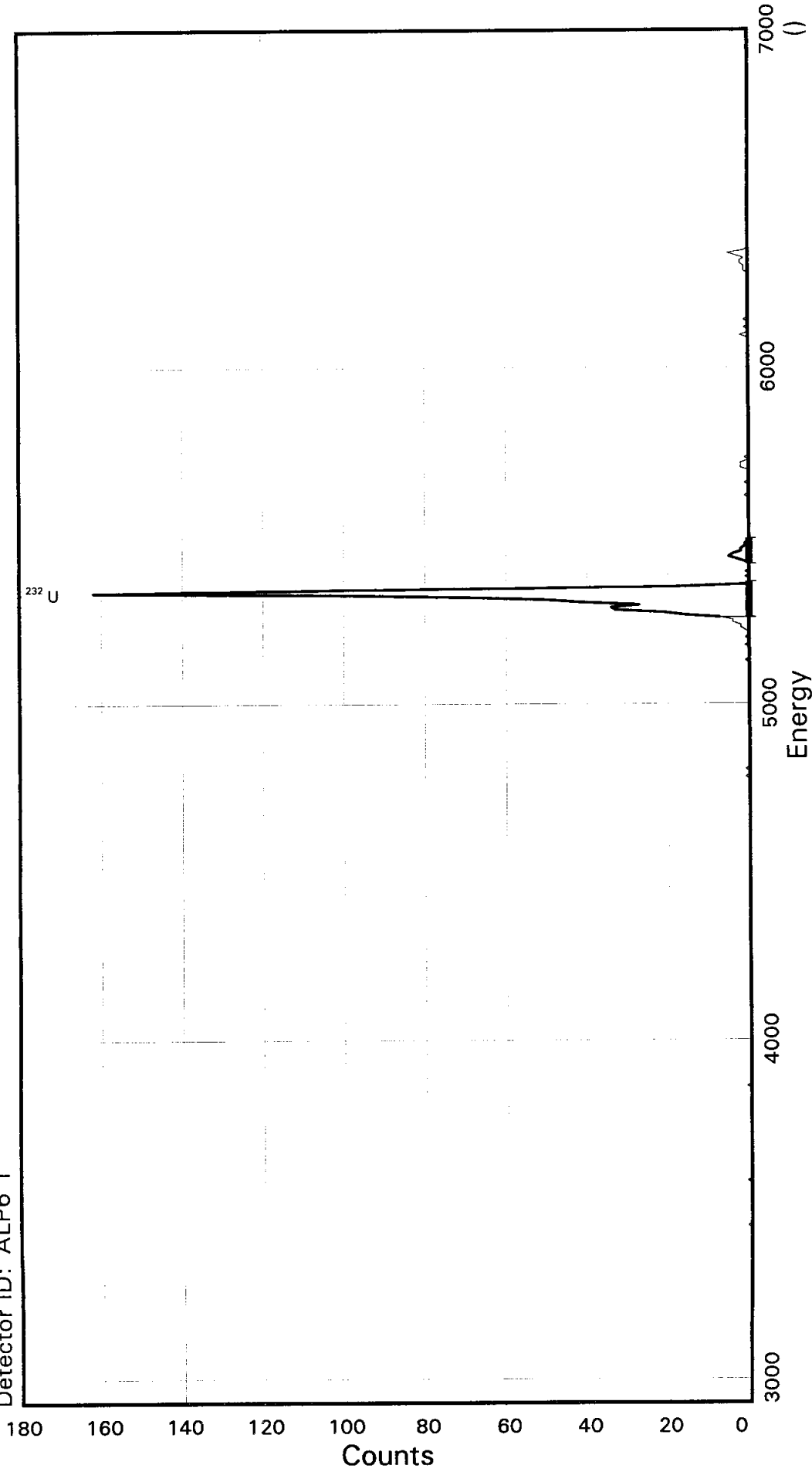
Comments:

Approved by: [Signature] Date: 12/10/02

STL Richland WA.  
U BRCO

Batch ID: 7327123

Sample ID: KCFM81AE  
Detector ID: ALP6 1



Energy Coefficients:  
Offset:  $2.90724\text{E} + 03$   
Slope:  $7.29933\text{E} + 00$   
Quadrature:  $3.48723\text{E} - 04$

Acquisition Start: 10-DEC-2007 13:07:35.18  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:10.00

SAMPLE IDENTIITY: KCFM81AE

TITLE : U BRCO

DETECTOR : ALP6 1  
CONFIGURATION NAME : \$DISK1:[ALP6.SAMPLE]KCFM81AE\_101271307.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:41

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 13:07:35 CALIB DATE : 02-DEC-2007 08:33:28

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:10

OFFSET : 2907.24 keV CONSTANT FWHM : 6.83333 Channels  
SLOPE : 7.29933 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 3.487230E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCFM81AE

Flags Key

Detector: ALP6 1  
 Report Date: 10-Dec-07 04:28 PM  
 Acquire Date: 10-DEC-2007 13:07:35.18  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 200 minutes  
 Bkgrnd Live Time: 1000 minutes

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
U-232	689	6	0	3.436	5327.9	105.4	317	331	0.00	0.00	P
U-234	2	2	0	0.008	4782.4	104.6	244	258	0.00	0.00	
U-235	0	1	0	-0.001	4405.6	104.2	194	208	0.00	0.00	
U-238	0	1	0	-0.001	4205.8	103.9	167	181	0.00	0.00	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 10-DEC-2007 16:28:00

Configuration : \$DISK1:[ALP6.SAMPLE]KCFM81AE\_101271307.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 13:07:35  
 Sample ID : KCFM81AE Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP6 Detector geometry:  
 Elapsed live time: 0 03:20:10.00 Elapsed real time: 0 03:20:10.00 0.0%  
 Start energy : 2929.15 End energy : 6735.92  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5327.92	689	0	29.20	326.54	317	14	5.74E-02	3.8	
2	0	5438.28	20	0	36.50	341.19	338	10	1.67E-03	22.4	

Alpha Spectrum Listing

{Version: 1-Apr-07}

Sample Identity: KCFM81AE

Flags Key

Detector: ALP6 1

Report Date: 10-Dec-07 04:28 PM

Intersect Region: @

Acquire Date: 10 DEC-2007 13:07:35.18

Non Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn										
		1	0		51	0		101	0		151	0+		201	0+		251	0		301	0		351	0		401	0		451	0		501	
		2	0		52	0		102	0		152	0+		202	0+		252	0		302	0		352	0		402	0		452	0		502	
0		3	0		53	0		103	0		153	0+		203	0+		253	0		303	0		353	0		403	1		453	0		503	
0		4	0		54	0		104	0		154	0+		204	1+		254	0		304	0		354	0		404	1		454	0		504	
0		5	0		55	0		105	0		155	0+		205	0+		255	0		305	0		355	0		405	1		455	0		505	
0		6	0		56	0		106	0		156	0+		206	0+		256	1		306	0		356	0		406	2		456	0		506	
0		7	0		57	0		107	0		157	0+		207	1+		257	0		307	0		357	0		407	2		457	0		507	
0		8	0		58	0		108	0		158	0+		208	0+		258	0		308	0		358	0		408	1		458	0		508	
0		9	0		59	0		109	0		159	0		209	0		259	1		309	0		359	0		409	3		459	0		509	
C		10	0		60	0		110	0		160	0		210	0		260	0		310	0		360	0		410	5		460	0		510	
C		11	0		61	0		111	0		161	0		211	0		261	0		311	0		361	0		411	1		461	0		511	
0		12	0		62	0		112	0		162	0		212	0		262	1		312	0		362	0		412	0		462	0		512	
0		13	0		63	0		113	0		163	0		213	0		263	2		313	0		363	0		413	0		463				
0		14	0		64	0		114	0		164	0		214	0		264	2		314	0		364	0		414	0		464				
0		15	0		65	0		115	0		165	0		215	0		265	4		315	1		365	0		415	0		465				
0		16	0		66	0		116	0		166	0		216	0		266	4		316	0		366	0		416	0		466				
0		17	0		67	0		117	0+		167	0		217	0		267	7+		317	0		367	0		417	0		467				
0		18	0		68	0		118	0+		168	0		218	0		268	16+		318	0		368	0		418	0		468				
0		19	0		69	0		119	0+		169	0		219	0		269	21+		319	0		369	0		419	0		469				
0		20	0		70	0		120	0+		170	0		220	0		270	33+		320	1		370	0		420	0		470				
0		21	0		71	0		121	0+		171	0		221	0		271	34+		321	0		371	0		421	0		471				
0		22	0		72	0		122	0+		172	0		222	0		272	27+		322	0		372	0		422	0		472				
0		23	0		73	0		123	0+		173	0		223	0		273	41+		323	0		373	0		423	0		473				
0		24	1		74	0		124	0+		174	0		224	0		274	50+		324	0		374	0		424	0		474				
0		25	0		75	0		125	0+		175	0		225	0		275	69+		325	0		375	0		425	0		475				
0		26	0		76	0		126	0+		176	0		226	0		276	103+		326	2		376	0		426	0		476				
0		27	0		77	0		127	0+		177	0		227	0		277	162+		327	2		377	0		427	0		477				
0		28	0		78	0		128	0+		178	0		228	0		278	99+		328	2		378	2		428	0		478				
0		29	0		79	0		129	0+		179	0		229	0		279	18+		329	0		379	0		429	0		479				
0		30	0		80	1		130	0+		180	0		230	0		280	0+		330	1		380	0		430	0		480				
0		31	0		81	0		131	0+		181	0		231	0		281	0		331	0		381	1		431	0		481				
0		32	0		82	0		132	0		182	0		232	0		282	0		332	0		382	0		432	0		482				
0		33	0		83	0		133	0		183	0		233	0		283	1		333	0		383	0		433	0		483				
0		34	0		84	0		134	0		184	0		234	0		284	0		334	0		384	1		434	0		484				
0		35	0		85	0		135	0		185	0		235	0		285	1		335	0		385	0		435	0		485				
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	0		436	0		486				
0		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	0		437	0		487				
0		38	0		88	0		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488				
0		39	0		89	0		139	0		189	0		239	0		289	1		339	0		389	0		439	0		489				
0		40	0		90	0		140	0		190	0		240	0		290	3		340	0		390	0		440	0		490				
0		41	0		91	0		141	0		191	0		241	0		291	5		341	0		391	0		441	0		491				
0		42	1		92	0		142	0		192	0		242	0		292	4		342	0		392	0		442	0		492				
0		43	0		93	0		143	0		193	0		243	0		293	2		343	0		393	0		443	0		493				
0		44	0		94	0		144	0+		194	0+		244	0		294	2		344	0		394	0		444	0		494				
0		45	0		95	0		145	0+		195	0+		245	0		295	1		345	0		395	0		445	0		495				
0		46	0		96	0		146	0+		196	0+		246	0		296	1		346	0		396	0		446	0		496				
0		47	0		97	0		147	0+		197	0+		247	0		297	0		347	0		397	0		447	0		497				
0		48	0		98	0		148	0+		198	0+		248	0		298	0		348	0		398	0		448	0		498				
0		49	0		99	0		149	0+		199	0+		249	0		299	0		349	0		399	0		449	0		499				
0		50	0		100	0		150	0+		200	0+		250	1		300	0		350	0		400	0		450	0		500				



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP6.SAMPLE]KCFM81AE\_101271307.CNF;1

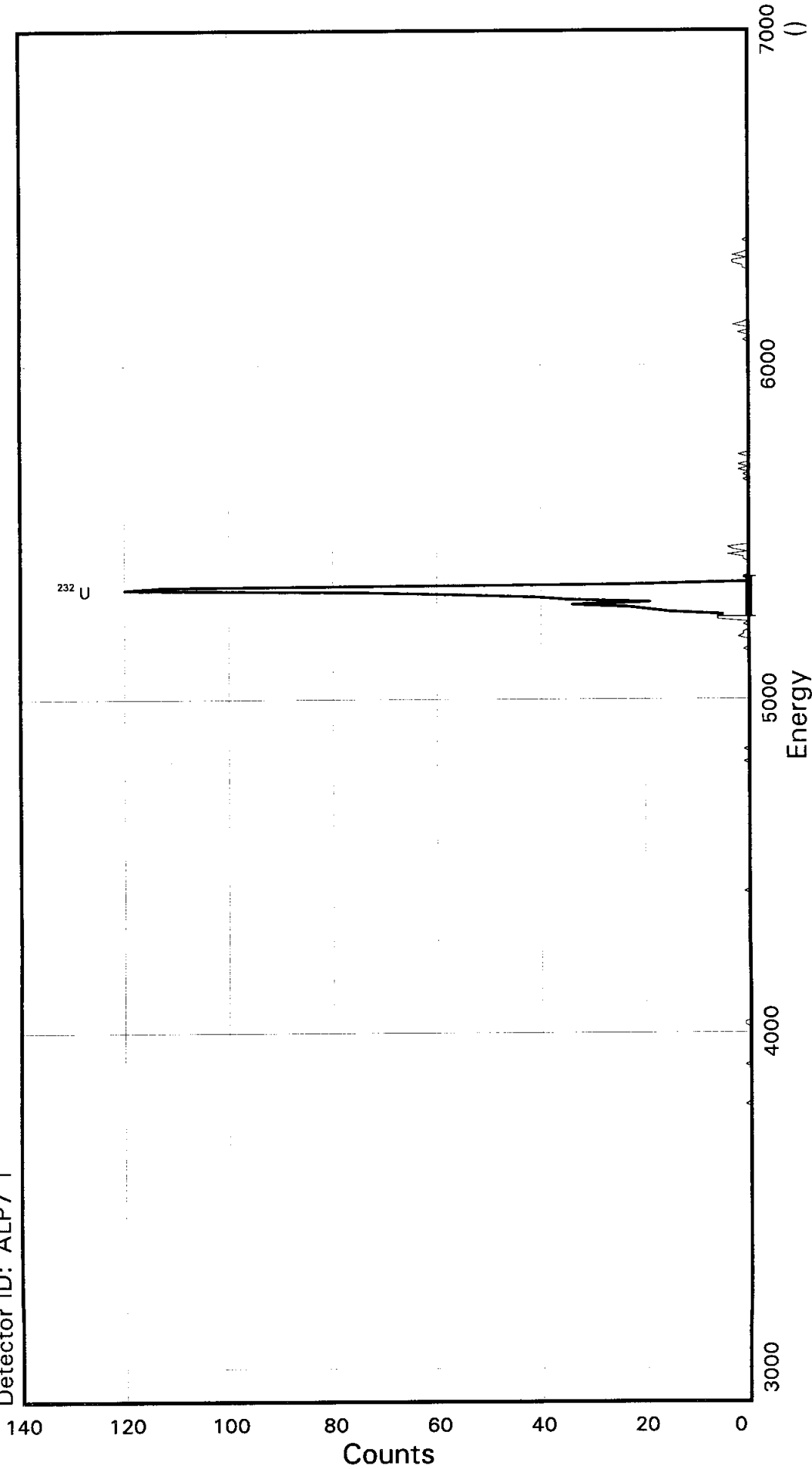
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5327.92	317	331	689	680	0.34		
5438.27	338	348	20	19	0.22		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7327123

Sample ID: KCFM81AG  
Detector ID: ALP7 1



Energy Coefficients:  
Offset: 2.87851E + 03  
Slope: 7.43174E + 00  
Quadrature: 4.56151E-05

Acquisition Start: 10-DEC-2007 13:07:48.46  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:10.00

SAMPLE IDENTIITY: KCFM81AG

TITLE : U BRCO

DETECTOR : ALP7 1  
CONFIGURATION NAME : \$DISK1:[ALP7.SAMPLE]KCFM81AG\_101271307.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:45

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 13:07:48 CALIB DATE : 02-DEC-2007 08:33:36

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:10

OFFSET : 2878.51 keV CONSTANT FWHM : 6.66667 Channels  
SLOPE : 7.43174 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 4.561510E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCFM81AG

Flags Key

Detector: ALP7 1	
Report Date: 10-Dec-07 04:28 PM	P: Peak Identified
Acquire Date: 10-DEC-2007 13:07:48.46	I: Peak Intersect
Tracer Nuclide: U-232	S: Single Non-peak Intersect
High Counts Limit: 36	M: Multiple Non-peak Intersect
Sample Live Time: 200 minutes	H: High Non-peak Sample Count
Bkgrnd Live Time: 1000 minutes	A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
					Energy keV	Width keV					
U-232	593	9	0	2.954	5325.6	119.4	318	334	0.00	0.00	P
U-234	1	0	0	0.005	4780.1	119.3	245	261	0.00	0.00	
U-235	1	0	0	0.005	4403.3	119.2	194	210	0.00	0.00	
U-238	0	0	0	0.000	4203.5	119.2	167	183	0.00	0.00	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 10-DEC-2007 16:28:19

Configuration : \$DISK1:[ALP7.SAMPLE]KCFM81AG\_101271307.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : U BRCO  
Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 13:07:48  
Sample ID : KCFM81AG Sample quantity : 0.000000E+00 GRAMS  
Sample type : disk Sample geometry :  
Detector name : ALP7 Detector geometry:  
Elapsed live time: 0 03:20:10.00 Elapsed real time: 0 03:20:10.00 0.0%  
Start energy : 2900.81 End energy : 6695.52  
Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5325.62	593	0	29.73	328.62	318	16	4.94E-02	4.1	

Alpha Spectrum Listing

(Version: 1-Apr 07)

Sample Identity: KCFM81AG

Flags Key

Detector: ALP7 1

Report Date: 10 Dec-07 04:28 PM

Intersect Region: ☺

Acquire Date: 10 DEC 2007 13:07:48.46

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
		1	0		51	0		101	0		151	0+		201	0+		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	0+		202	0+		252	0		302	0		352	0		402	0		452	0		502
C		3	0		53	0		103	0		153	0+		203	0+		253	0		303	0		353	0		403	0		453	0		503
C		4	0		54	0		104	1		154	0+		204	0+		254	0		304	0		354	0		404	0		454	0		504
C		5	0		55	0		105	1		155	0+		205	0+		255	1		305	0		355	0		405	0		455	0		505
C		6	0		56	0		106	0		156	0+		206	0+		256	0		306	0		356	0		406	0		456	0		506
C		7	0		57	0		107	0		157	0+		207	0+		257	0		307	0		357	0		407	0		457	0		507
C		8	0		58	0		108	0		158	1+		208	0+		258	0		308	0		358	0		408	1		458	0		508
C		9	0		59	0		109	0		159	0+		209	0+		259	0		309	0		359	0		409	1		459	0		509
C		10	0		60	0		110	0		160	0+		210	1+		260	2		310	0		360	0		410	3		460	0		510
C		11	0		61	0		111	0		161	0		211	0+		261	1		311	0		361	0		411	3		461	0		511
C		12	0		62	0		112	0		162	0		212	0		262	1		312	0		362	0		412	0		462	0		512
C		13	0		63	0		113	0		163	0		213	0		263	0		313	0		363	0		413	3		463			
C		14	0		64	0		114	0		164	0		214	0		264	0		314	0		364	0		414	1		464			
C		15	0		65	0		115	0		165	0		215	1		265	1		315	0		365	0		415	0		465			
C		16	0		66	0		116	0		166	0		216	0		266	0		316	0		366	0		416	0		466			
C		17	0		67	0		117	0+		167	0		217	0		267	6		317	0		367	0		417	0		467			
C		18	0		68	0		118	0+		168	0		218	0		268	6+		318	0		368	0		418	0		468			
C		19	0		69	0		119	0+		169	0		219	0		269	5+		319	0		369	0		419	1		469			
C		20	0		70	0		120	0+		170	0		220	0		270	15+		320	0		370	0		420	0		470			
C		21	0		71	0		121	0+		171	0		221	0		271	19+		321	0		371	0		421	0		471			
C		22	0		72	1		122	0+		172	0		222	0		272	23+		322	0		372	0		422	0		472			
C		23	0		73	0		123	0+		173	0		223	0		273	34+		323	1		373	0		423	0		473			
C		24	0		74	0		124	0+		174	0		224	0		274	19+		324	0		374	0		424	0		474			
C		25	0		75	0		125	0+		175	0		225	0		275	35+		325	1		375	0		425	0		475			
C		26	0		76	0		126	0+		176	0		226	0		276	41+		326	0		376	0		426	0		476			
C		27	0		77	0		127	0+		177	0		227	0		277	56+		327	2		377	0		427	0		477			
C		28	0		78	0		128	0+		178	0		228	0		278	75+		328	0		378	0		428	0		478			
C		29	0		79	0		129	0+		179	0		229	0		279	120+		329	2		379	1		429	0		479			
C		30	0		80	0		130	0+		180	0		230	0		280	113+		330	0		380	0		430	0		480			
C		31	0		81	0		131	0+		181	0		231	0		281	23+		331	0		381	0		431	0		481			
C		32	0		82	0		132	0+		182	0		232	0		282	0+		332	0		382	2		432	0		482			
C		33	0		83	0		133	0+		183	0		233	0		283	0+		333	2		383	0		433	0		483			
C		34	0		84	0		134	0		184	0		234	0		284	1		334	0		384	0		434	0		484			
C		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	3		435	0		485			
C		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	1		436	0		486			
C		37	0		87	0		137	0		187	0		237	0		287	0		337	0		387	0		437	0		487			
C		38	0		88	1		138	0		188	0		238	0		288	0		338	0		388	0		438	0		488			
C		39	0		89	0		139	0		189	0		239	0		289	0		339	0		389	0		439	0		489			
C		40	0		90	0		140	0		190	0		240	0		290	0		340	0		390	0		440	0		490			
C		41	0		91	0		141	0		191	0		241	0		291	1		341	0		391	0		441	0		491			
C		42	0		92	0		142	0		192	0		242	0		292	1		342	0		392	0		442	0		492			
C		43	0		93	0		143	0		193	0		243	0		293	4		343	0		393	0		443	0		493			
C		44	0		94	0		144	0+		194	0		244	0		294	0		344	0		394	0		444	0		494			
C		45	0		95	0		145	0+		195	0+		245	0		295	3		345	0		395	0		445	0		495			
C		46	0		96	0		146	0+		196	0+		246	0		296	4		346	0		396	0		446	0		496			
C		47	0		97	0		147	0+		197	0+		247	0		297	0		347	0		397	0		447	0		497			
C		48	0		98	0		148	0+		198	0+		248	0		298	0		348	0		398	0		448	0		498			
C		49	0		99	0		149	0+		199	0+		249	0		299	0		349	0		399	0		449	0		499			
C		50	0		100	0		150	0+		200	0+		250	0		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP7.SAMPLE]KCFM81AG\_101271307.CNF;1

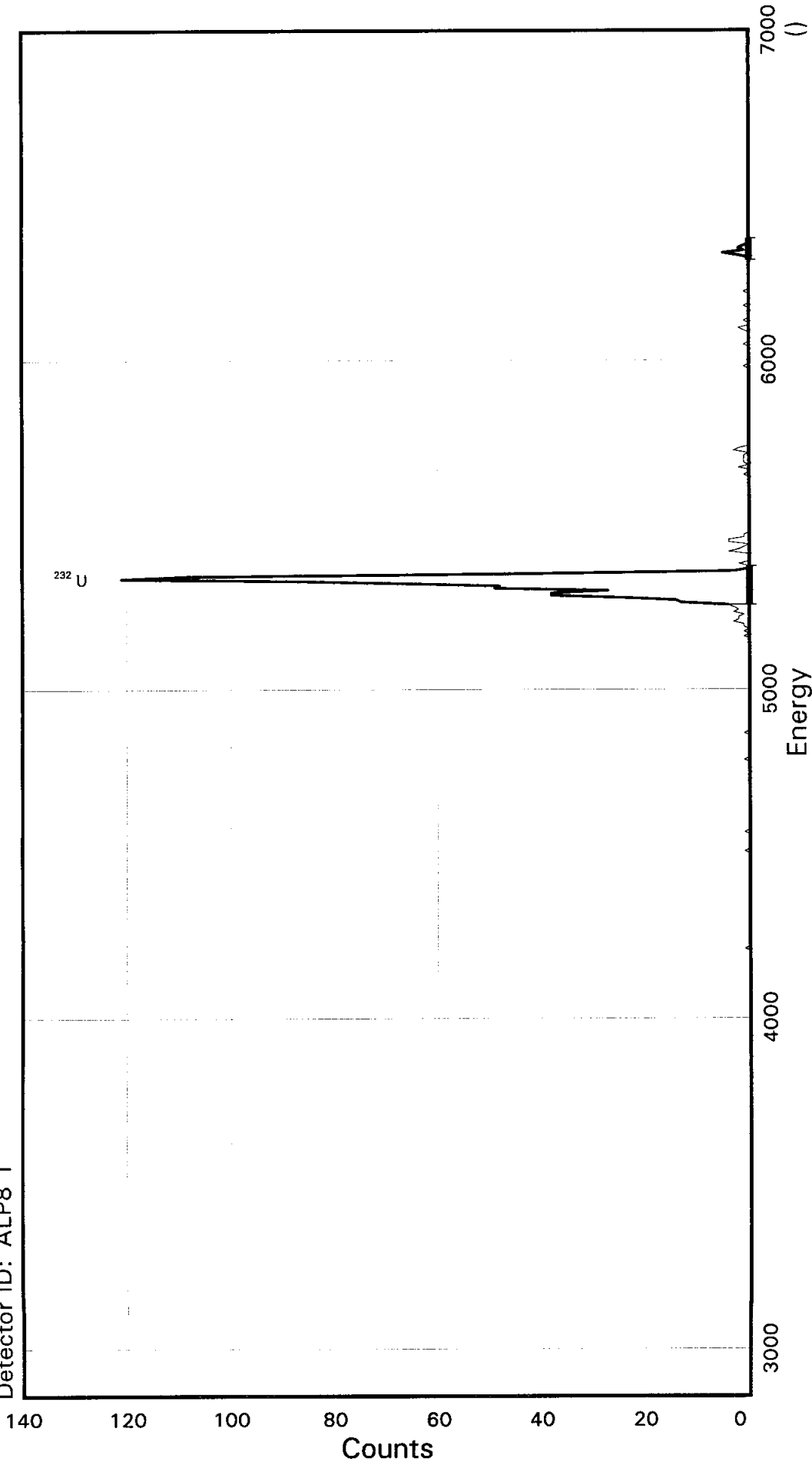
Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5325.62	318	334	593	585	0.33		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCKE91AE  
Detector ID: ALP8 1

Batch ID: 7327123



Acquisition Start: 10-DEC-2007 13:07:53.60  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:05.00

Energy Coefficients:  
Offset: 2.83606E + 03  
Slope: 7.30051E + 00  
Quadrature: 3.06587E - 05

SAMPLE IDENTIITY: KCKE91AE

TITLE : U BRCO

DETECTOR : ALP8 1  
CONFIGURATION NAME : \$DISK1:[ALP8.SAMPLE]KCKE91AE\_101271307.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:49

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 13:07:53 CALIB DATE : 02-DEC-2007 08:33:42

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:05

OFFSET : 2836.06 keV CONSTANT FWHM : 8.16667 Channels  
SLOPE : 7.30051 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 3.065870E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %



Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCKE91AE

Flags Key

Detector: ALP8 1  
 Report Date: 10-Dec-07 04:28 PM P: Peak Identified  
 Acquire Date: 10-DEC-2007 13:07:53.60 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgrnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsrct Count	Count Rate C/Min	Centrd Region Energy keV	Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	691	4	0	3.450	5335.7	117.1	331	347	0.00	0.00	P
U-234	1	0	0	0.005	4790.1	117.1	256	272	0.00	0.00	
U-235	0	0	0	0.000	4413.3	117.0	205	221	0.00	0.00	
U-238	1	0	0	0.005	4213.5	117.0	178	194	0.00	0.00	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 10-DEC-2007 16:28:13

Configuration : \$DISK1:[ALP8.SAMPLE]KCCKE91AE\_101271307.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 13:07:53  
 Sample ID : KCCKE91AE Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP8 Detector geometry:  
 Elapsed live time: 0 03:20:05.00 Elapsed real time: 0 03:20:05.00 0.0%  
 Start energy : 2857.97 End energy : 6581.96  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5335.71	691	0	36.50	341.90	331	16	5.76E-02	3.8	
2	0	6329.05	12	0	29.20	477.50	474	9	1.00E-03	28.9	

Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCKE91AE

Flags Key

Detector: ALP8 1

Report Date: 10-Dec-07 04:28 PM

Intersect Region: ☒

Acquire Date: 10 DEC-2007 13:07:53.60

Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
		1	0		51	0		101	0		151	0		201	0		251	0		301	0		351	0		401	0		451	0		501
		2	0		52	0		102	0		152	0		202	0		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	0		303	4		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	0		304	2		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0+		205	0		255	0		305	1		355	0		405	1		455	0		505
0		6	0		56	0		106	0		156	0+		206	0+		256	0		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0+		207	0+		257	0		307	4		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0+		208	0+		258	0		308	4		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0+		209	0+		259	0		309	1		359	0		409	0		459	0		509
C		10	0		60	0		110	0		160	0+		210	0+		260	0		310	1		360	0		410	0		460	0		510
C		11	0		61	0		111	0		161	0+		211	0+		261	0		311	0		361	0		411	1		461	0		511
C		12	0		62	0		112	0		162	0+		212	0+		262	0		312	0		362	0		412	0		462	0		512
C		13	0		63	0		113	0		163	0+		213	0+		263	0		313	0		363	0		413	0		463			
C		14	0		64	0		114	0		164	0+		214	0+		264	0		314	0		364	0		414	0		464			
C		15	0		65	0		115	0		165	0+		215	0+		265	0		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0+		216	0+		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	0+		217	1+		267	0		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0+		218	0+		268	1		318	0		368	0		418	0		468			
0		19	0		69	0		119	0		169	0+		219	0+		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	0		170	0+		220	0+		270	1		320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	0+		221	0+		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	0		222	0+		272	1		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	0		273	1		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	3		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0		225	0		275	2		325	0		375	0		425	0		475			
0		26	0		76	0		126	0		176	0		226	0		276	2		326	0		376	0		426	2		476			
0		27	0		77	0		127	0		177	0		227	0		277	1		327	0		377	0		427	5		477			
0		28	0		78	0		128	0+		178	0		228	1		278	3		328	0		378	0		428	1		478			
0		29	0		79	0		129	0+		179	1		229	0		279	2		329	0		379	0		429	2		479			
0		30	0		80	0		130	0+		180	0		230	0		280	3		330	0		380	1		430	1		480			
0		31	0		81	0		131	0+		181	0		231	0		281	4+		331	0		381	0		431	0		481			
0		32	0		82	0		132	0+		182	0		232	0		282	13+		332	0		382	0		432	0		482			
0		33	0		83	0		133	0+		183	0		233	0		283	14+		333	0		383	0		433	0		483			
0		34	0		84	0		134	0+		184	0		234	0		284	24+		334	0		384	0		434	0		484			
0		35	0		85	0		135	0+		185	0		235	0		285	38+		335	1		385	0		435	0		485			
0		36	0		86	0		136	0+		186	0		236	0		286	38+		336	0		386	0		436	0		486			
0		37	0		87	0		137	0+		187	1		237	0		287	27+		337	0		387	0		437	0		487			
0		38	0		88	0		138	1+		188	0		238	0		288	49+		338	2		388	0		438	0		488			
0		39	0		89	0		139	0+		189	0		239	0		289	48+		339	0		389	1		439	0		489			
0		40	0		90	0		140	0+		190	0		240	0		290	66+		340	1		390	0		440	0		490			
0		41	0		91	0		141	0+		191	0		241	0		291	87+		341	1		391	0		441	0		491			
0		42	0		92	0		142	0+		192	0		242	0		292	121+		342	1		392	0		442	0		492			
0		43	0		93	0		143	0+		193	0		243	0		293	109+		343	1		393	0		443	0		493			
0		44	0		94	0		144	0+		194	0		244	0		294	42+		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	0		245	0		295	3+		345	3		395	1		445	0		495			
0		46	0		96	0		146	0		196	0		246	0		296	0+		346	2		396	2		446	0		496			
0		47	0		97	0		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	0		298	2		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	0		299	0		349	0		399	1		449	0		499			
0		50	0		100	0		150	0		200	0		250	0		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP8.SAMPLE]KCKE91AE\_101271307.CNF;1

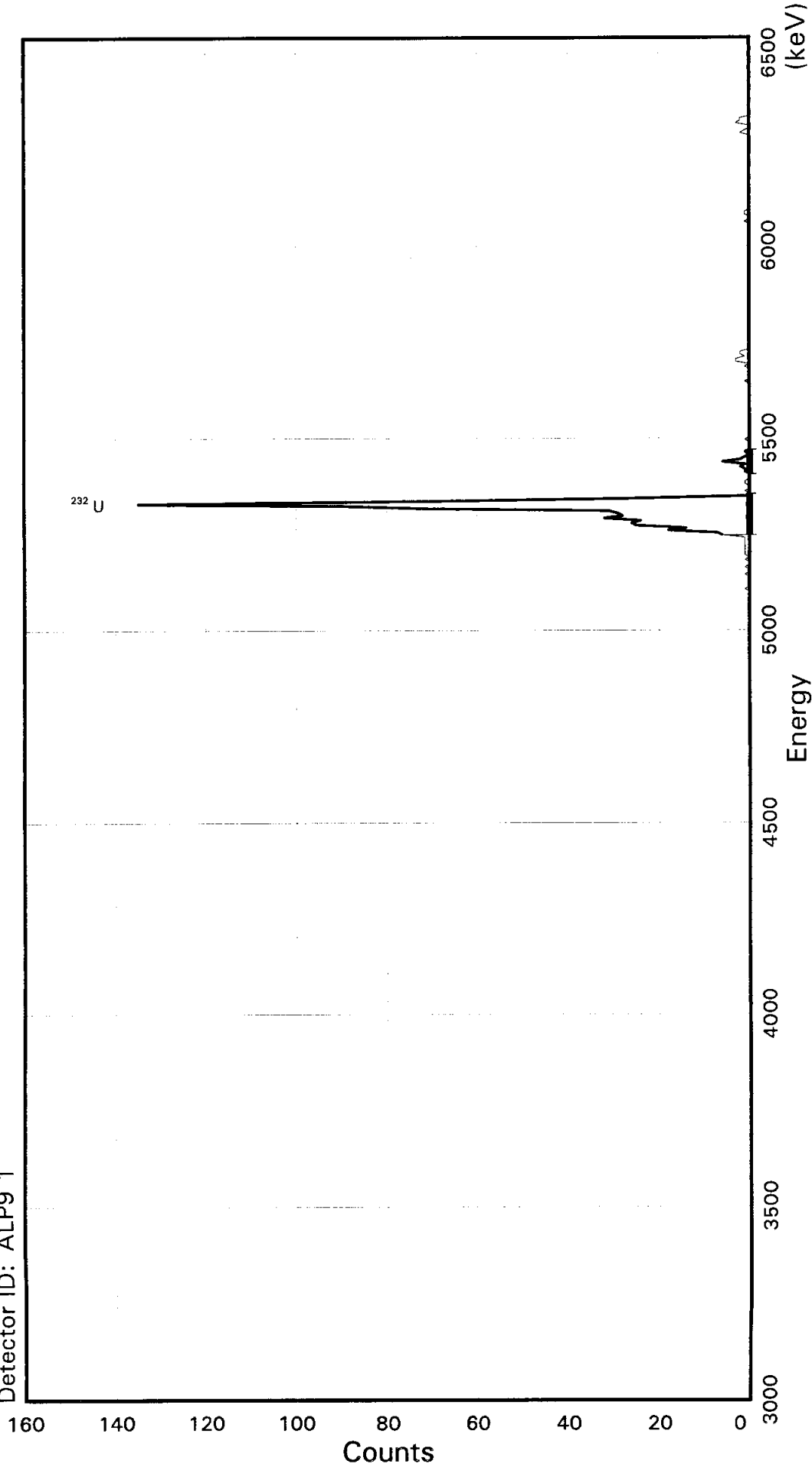
Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5335.70	331	347	691	683	0.30		
6329.04	474	483	12	11	0.29		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7327123

Sample ID: KCMQL1AE  
Detector ID: ALP9 1



Acquisition Start: 10-DEC-2007 13:07:57.72  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:03.00

Energy Coefficients:  
Offset: 3.27151E+03  
Slope: 6.40326E+00  
Quadrature: -3.43291E-05

SAMPLE IDENTIITY: KCMQL1AE

TITLE : U BRCO

DETECTOR : ALP9 1  
CONFIGURATION NAME : \$DISK1:[ALP9.SAMPLE]KCMQL1AE\_101271307.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:56

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 13:07:57 CALIB DATE : 02-DEC-2007 08:33:48

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:03

OFFSET : 3271.51 keV CONSTANT FWHM : 6.00000 Channels  
SLOPE : 6.40326 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : -.343291E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCMQL1AE

Flags Key

Detector: ALP9 1  
 Report Date: 10-Dec-07 04:28 PM P: Peak Identified  
 Acquire Date: 10-DEC-2007 13:07:57.72 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgrnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide	Smpl	Bkg	Intrsc	Count	Centrd	Region	Left	Right	Left	Right	Flags
Name	Count	Count	Count	Rate	Energy	Width	Chnl	Chnl	Wdth	Wdth	
U-232	634	4	0	3.165	5327.2	108.5	309	326	0.00	0.00	P
U-234	0	0	0	0.000	4781.6	108.6	224	241	0.00	0.00	
U-235	0	1	0	-0.001	4404.8	108.7	165	182	0.00	0.00	
U-238	0	0	0	0.000	4205.0	108.7	133	150	0.00	0.00	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 10-DEC-2007 16:28:25

Configuration : \$DISK1:[ALP9.SAMPLE]KCMQL1AE\_101271307.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 13:07:57  
 Sample ID : KCMQL1AE Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP9 Detector geometry:  
 Elapsed live time: 0 03:20:03.00 Elapsed real time: 0 03:20:03.00 0.0%  
 Start energy : 3290.72 keV End energy : 6540.98 keV  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5327.20	634	0	25.61	321.59	309	17	5.28E-02	4.0	
2	0	5438.27	15	0	19.21	339.00	334	10	1.25E-03	25.8	

Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCMQL1AE

Flags Key

Detector: ALP9 1

Report Date: 10 Dec 07 04:28 PM

Intersect Region: @

Acquire Date: 10-DEC-2007 13:07:57.72

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	0		101	0		151	0		201	0		251	1		301	0		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0		202	0		252	1		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	1		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	1		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	1		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	1		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0		207	0		257	1		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0		208	0		258	1		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0		209	0		259	6+		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0		210	0		260	7+		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0		211	0		261	18+		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0		162	0		212	0		262	14+		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	0		163	0		213	0		263	25+		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	0		214	0		264	26+		314	0		364	0		414	0		464			
0		15	0		65	0		115	0+		165	0		215	0		265	24+		315	0		365	0		415	0		465			
0		16	0		66	0		116	0+		166	0		216	0		266	32+		316	0		366	0		416	0		466			
0		17	0		67	0		117	0+		167	0		217	0		267	28+		317	0		367	0		417	0		467			
0		18	0		68	0		118	0+		168	0		218	0		268	29+		318	0		368	0		418	0		468			
0		19	0		69	0		119	0+		169	0		219	0		269	31+		319	0		369	0		419	0		469			
0		20	0		70	0		120	0+		170	0		220	0		270	71+		320	0		370	0		420	0		470			
0		21	0		71	0		121	0+		171	0		221	0		271	89+		321	0		371	0		421	0		471			
0		22	0		72	0		122	0+		172	0		222	0		272	135+		322	1		372	0		422	0		472			
0		23	0		73	0		123	0+		173	0		223	0		273	70+		323	0		373	0		423	2		473			
0		24	0		74	0		124	0+		174	0+		224	0		274	28+		324	0		374	0		424	1		474			
0		25	0		75	0		125	0+		175	0+		225	0		275	0+		325	0		375	0		425	0		475			
0		26	0		76	0		126	0+		176	0+		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	0		127	0+		177	0+		227	0		277	1		327	0		377	0		427	3		477			
0		28	0		78	0		128	0+		178	0+		228	0		278	0		328	1		378	0		428	2		478			
0		29	0		79	0		129	0+		179	0+		229	0		279	0		329	0		379	0		429	2		479			
0		30	0		80	0		130	0+		180	0+		230	0		280	1		330	3		380	0		430	0		480			
0		31	0		81	0		131	0+		181	0+		231	0		281	1		331	3		381	0		431	0		481			
0		32	0		82	0		132	0+		182	0+		232	0		282	0		332	1		382	0		432	0		482			
0		33	0		83	0+		133	0		183	0+		233	0		283	0		333	2		383	0		433	0		483			
0		34	0		84	0+		134	0		184	0+		234	0		284	0		334	2		384	0		434	0		484			
0		35	0		85	0+		135	0		185	0+		235	0		285	1		335	0		385	0		435	0		485			
0		36	0		86	0+		136	0		186	0+		236	0		286	1		336	0		386	0		436	0		486			
0		37	0		87	0+		137	0		187	0+		237	1		287	2		337	0		387	1		437	0		487			
0		38	0		88	0+		138	0		188	0+		238	0		288	1		338	0		388	0		438	0		488			
0		39	0		89	0+		139	0		189	0+		239	0		289	6		339	0		389	0		439	0		489			
0		40	0		90	0+		140	0		190	0+		240	0		290	2		340	0		390	1		440	0		490			
0		41	0		91	0+		141	0		191	0+		241	0		291	1		341	0		391	1		441	0		491			
0		42	0		92	0+		142	0		192	0		242	0		292	0		342	0		392	0		442	0		492			
0		43	0		93	0+		143	0		193	0		243	1		293	1		343	0		393	0		443	0		493			
0		44	0		94	0+		144	0		194	0		244	0		294	0		344	0		394	0		444	0		494			
0		45	0		95	0+		145	0		195	0		245	0		295	0		345	0		395	0		445	0		495			
0		46	0		96	0+		146	0		196	0		246	1		296	0		346	0		396	0		446	0		496			
0		47	0		97	0+		147	0		197	0		247	0		297	0		347	0		397	0		447	0		497			
0		48	0		98	0+		148	0		198	0		248	0		298	1		348	0		398	0		448	0		498			
0		49	0		99	0+		149	0		199	0		249	1		299	0		349	0		399	0		449	0		499			
0		50	0		100	0+		150	0		200	0		250	0		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP9.SAMPLE]KCMQL1AE\_101271307.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5327.19	309	326	634	633	0.04		
5438.26	334	344	15	15	0.00		

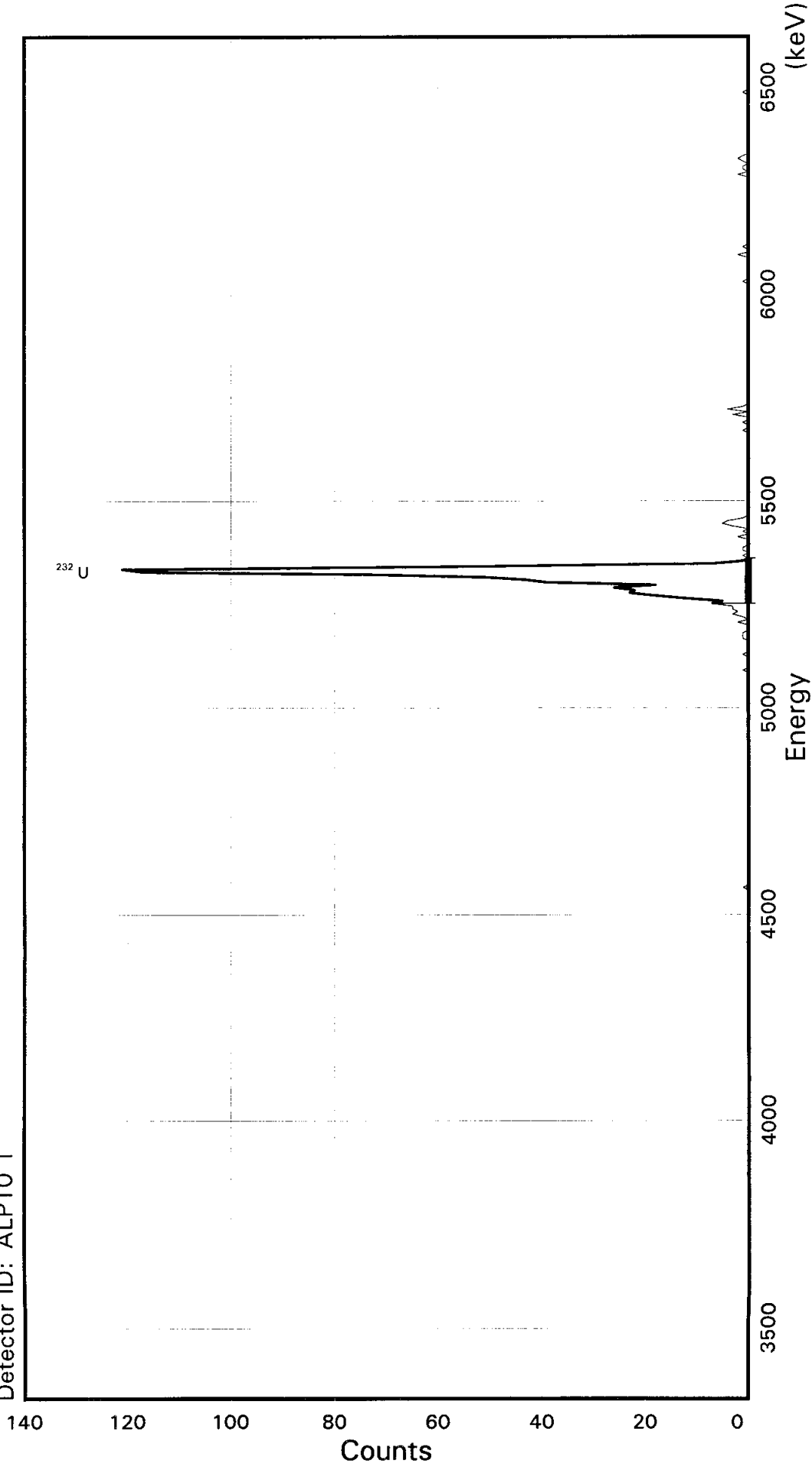
End of Report



STL Richland WA.  
U BRCO

Sample ID: KCR7M1AA  
Detector ID: ALP10 1

Batch ID: 7327123



Energy Coefficients:  
Offset: 3.31165E + 03  
Slope: 6.51407E + 00  
Quadrature: -9.02777E-05

Acquisition Start: 10-DEC-2007 13:08:02.50  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:10.00

SAMPLE IDENTITY: KCR7M1AA

TITLE : U BRCO

DETECTOR : ALP10 1  
CONFIGURATION NAME : \$DISK1:[ALP10.SAMPLE]KCR7M1AA\_101271308.CNF;  
1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:52:00

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 13:08:02 CALIB DATE : 02-DEC-2007 08:33:54

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:10

OFFSET : 3311.65 keV CONSTANT FWHM : 6.83333 Channels  
SLOPE : 6.51407 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : -.902777E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCR7M1AA

Flags Key

Detector: ALP10 1	
Report Date: 10-Dec-07 04:28 PM	P: Peak Identified
Acquire Date: 10-DEC-2007 13:08:02.50	I: Peak Intersect
Tracer Nuclide: U-232	S: Single Non-peak Intersect
High Counts Limit: 36	M: Multiple Non-peak Intersect
Sample Live Time: 200 minutes	H: High Non-peak Sample Count
Bkgrnd Live Time: 1000 minutes	A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
					Energy keV	Width keV					
U-232	642	4	0	3.203	5329.1	109.8	299	316	0.00	0.00	P
U-234	0	4	0	-0.004	4783.5	110.1	215	232	0.00	0.00	
U-235	0	0	0	0.000	4406.7	103.7	157	173	0.00	0.00	
U-238	0	1	0	-0.001	4206.9	110.3	126	143	0.00	0.00	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 10-DEC-2007 16:28:37

Configuration : \$DISK1:[ALP10.SAMPLE]KCR7M1AA\_101271308.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 13:08:02  
 Sample ID : KCR7M1AA Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP10 Detector geometry:  
 Elapsed live time: 0 03:20:10.00 Elapsed real time: 0 03:20:10.00 0.0%  
 Start energy : 3331.19 keV End energy : 6623.19 keV  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5329.09	642	0	32.57	311.05	299	17	5.35E-02	3.9	

Alpha Spectrum Listing

{Version: 1-Apr 07}

Sample Identity: KCR7M1AA

Flags Key

Detector: ALP10 1

Report Date: 10-Dec-07 04:28 PM

Intersect Region: X

Acquire Date: 10-DEC-2007 13:08:02.50

Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn									
0		1	0		51	0		101	0		151	0		201	0		251	12+		301	0		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0		202	0		252	18+		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	23+		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	0		254	22+		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	0		255	26+		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	18+		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0+		157	0		207	0		257	39+		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0+		158	0		208	0		258	43+		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0+		159	0		209	0		259	51+		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0+		160	0		210	0		260	73+		310	0		360	0		410	2		460	0		510
0		11	0		61	0		111	0+		161	0		211	0		261	117+		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0+		162	0		212	0		262	121+		312	0		362	0		412	1		462	0		512
0		13	0		63	0		113	0+		163	0		213	0		263	54+		313	0		363	0		413	1		463			
0		14	0		64	0		114	0+		164	0		214	0		264	7+		314	1		364	0		414	0		464			
0		15	0		65	0		115	0+		165	0+		215	0		265	1+		315	0		365	0		415	1		465			
0		16	0		66	0		116	0+		166	0+		216	0		266	0		316	0		366	0		416	2		466			
0		17	0		67	0		117	0+		167	0+		217	0		267	1		317	1		367	0		417	1		467			
0		18	0		68	0		118	0+		168	0+		218	0		268	0		318	0		368	0		418	0		468			
0		19	0		69	0		119	0+		169	0+		219	0		269	1		319	0		369	0		419	0		469			
0		20	0		70	0		120	0+		170	0+		220	0		270	1		320	3		370	1		420	0		470			
0		21	0		71	0		121	0+		171	0+		221	0		271	0		321	0		371	0		421	0		471			
0		22	0		72	0		122	0+		172	0+		222	0		272	0		322	4		372	0		422	0		472			
0		23	0		73	0		123	0+		173	0+		223	0		273	0		323	1		373	0		423	0		473			
0		24	0		74	0		124	0		174	0+		224	1		274	2		324	0		374	0		424	0		474			
0		25	0		75	0		125	0		175	0+		225	0		275	0		325	0		375	0		425	0		475			
0		26	0		76	0+		126	0		176	0+		226	0		276	1		326	0		376	0		426	0		476			
0		27	0		77	0+		127	0		177	0+		227	0		277	0		327	0		377	0		427	0		477			
0		28	0		78	0+		128	0		178	0+		228	0		278	3		328	0		378	0		428	0		478			
0		29	0		79	0+		129	0		179	0+		229	0		279	5		329	0		379	0		429	0		479			
0		30	0		80	0+		130	0		180	0+		230	1		280	4		330	0		380	2		430	0		480			
0		31	0		81	0+		131	0		181	0+		231	0		281	1		331	0		381	0		431	0		481			
0		32	0		82	0+		132	0		182	0+		232	0		282	0		332	0		382	0		432	0		482			
0		33	0		83	0+		133	0		183	0		233	0		283	0		333	0		383	1		433	0		483			
0		34	0		84	0+		134	0		184	0		234	0		284	0		334	0		384	0		434	0		484			
0		35	0		85	0+		135	0		185	0		235	0		285	0		335	0		385	0		435	0		485			
0		36	0		86	0+		136	0		186	0		236	1		286	0		336	0		386	0		436	0		486			
0		37	0		87	0+		137	0		187	0		237	1		287	0		337	0		387	0		437	0		487			
0		38	0		88	0+		138	0		188	0		238	1		288	0		338	0		388	0		438	0		488			
0		39	0		89	0+		139	0		189	0		239	0		289	0		339	0		389	0		439	0		489			
0		40	0		90	0+		140	0		190	0		240	0		290	0		340	0		390	0		440	0		490			
0		41	0		91	0+		141	0		191	0		241	0		291	0		341	0		391	0		441	1		491			
0		42	0		92	0+		142	0		192	0		242	2		292	0		342	0		392	0		442	0		492			
0		43	0		93	0+		143	1		193	0		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0		194	0		244	1		294	0		344	0		394	0		444	0		494			
0		45	0		95	0		145	0		195	0		245	3		295	0		345	0		395	0		445	0		495			
0		46	0		96	0		146	0		196	0		246	2		296	0		346	0		396	0		446	0		496			
0		47	0		97	0		147	0		197	0		247	3		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	3		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0		199	0		249	7+		299	0		349	0		399	0		449	0		499			
0		50	0		100	0		150	0		200	0		250	5+		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP10.SAMPLE]KCR7M1AA\_101271308.CNF;1

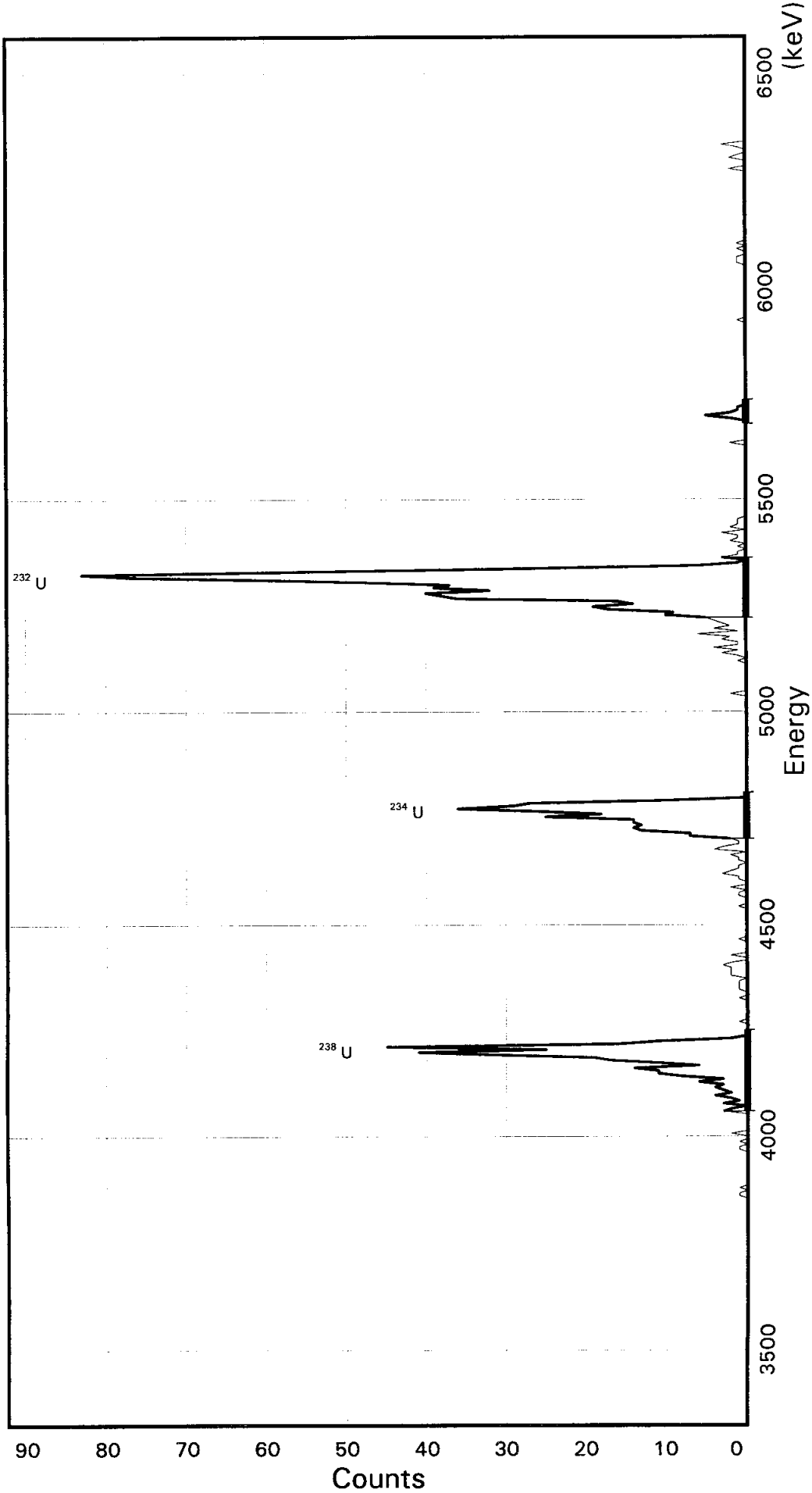
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5329.09	299	316	642	637	0.20		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7327123

Sample ID: KCR7M1AC  
Detector ID: ALP11 1



Acquisition Start: 10-DEC-2007 13:08:08.79  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:05.00

Energy Coefficients:  
Offset: 3.30505E +03  
Slope: 6.36413E +00  
Quadrature: 8.47967E-05

SAMPLE IDENTIITY: KCR7M1AC

TITLE : U BRCO

DETECTOR : ALP11 1  
CONFIGURATION NAME : \$DISK1:[ALP11.SAMPLE]KCR7M1AC\_101271308.CNF;  
1  
ACQUIRE DATE of BACKGROUND: 08-DEC-2007 07:30:59

REPORT DATE : 10-Dec-07 SAMPLE DATE: 15-NOV-2007 12:00:00  
ACQUIRE DATE: 10-DEC-2007 13:08:08 CALIB DATE : 02-DEC-2007 08:34:00

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:05

OFFSET : 3305.05 keV CONSTANT FWHM : 8.66667 Channels  
SLOPE : 6.36413 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 8.479670E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 1-Apr-07)

Sample Identity: KCR7M1AC

Flags Key

Detector: ALP11 1  
 Report Date: 10-Dec-07 04:28 PM P: Peak Identified  
 Acquire Date: 10-DEC-2007 13:08:08.79 I: Peak Intersect  
 Tracer Nuclide: U-232 S: Single Non-peak Intersect  
 High Counts Limit: 36 M: Multiple Non-peak Intersect  
 Sample Live Time: 200 minutes H: High Non-peak Sample Count  
 Bkgrnd Live Time: 1000 minutes A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrscnt Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	671	14	0	3.340	5308.6	141.2	300	322	0.00	0.00	P
U-234	258	1	0	1.288	4763.1	108.8	219	236	0.00	0.00	P
U-235	20	0	0	0.100	4386.3	140.6	156	178	0.00	0.00	
U-238	305	3	0	1.521	4186.5	191.6	118	148	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 10-DEC-2007 16:28:32

Configuration : \$DISK1:[ALP11.SAMPLE]KCR7M1AC\_101271308.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 15-NOV-2007 12:00:00 Acquisition date : 10-DEC-2007 13:08:08  
 Sample ID : KCR7M1AC Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP11 Detector geometry:  
 Elapsed live time: 0 03:20:05.00 Elapsed real time: 0 03:20:05.00 0.0%  
 Start energy : 3324.14 keV End energy : 6585.71 keV  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4198.77	305	0	44.55	140.17	118	30	2.54E-02	5.7	
2	0	4766.11	258	0	50.91	228.88	219	17	2.15E-02	6.2	
3	0	5308.63	671	0	57.28	313.51	300	22	5.59E-02	3.9	
4	0	5698.52	10	0	31.82	374.22	371	9	8.33E-04	31.6	





ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP11.SAMPLE]KCR7M1AC\_101271308.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4198.77	118	148	305	304	0.06		
4766.11	219	236	258	255	0.19		
5308.62	300	322	671	670	0.04		
5698.52	371	380	10	11	-0.32		

End of Report

URANIUM ISOTOPIC  
STANDARDS AND TRACEABILITY

# Standard Material Fractions (Vials)

Vial Prep:12/25/06 to 12/27/07,SMFractionIdentifier Between UITC19008 and UITC19012, Order by SMIdentifier,ConstituentCode,SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: U23283D190		Ref: 5/5/1987	6.1360E+01	± 1.783E+00	DPM/G	
UITC19008	U-232	1.0103E+01 ± 2.937E-01 DPM	0.2025 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC19009	U-232	1.0063E+01 ± 2.925E-01 DPM	0.2017 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC19010	U-232	1.0073E+01 ± 2.928E-01 DPM	0.2019 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC19011	U-232	1.0063E+01 ± 2.925E-01 DPM	0.2017 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC19012	U-232	1.0073E+01 ± 2.928E-01 DPM	0.2019 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G

1.0075E+001 ± 1.640E-002 ( 5) 0.163% 1.0063E+001 , 1.0103E+001

12/26/2007 4:59:02 PM

# Standard Material Fractions (Vials)

Vial Prep:12/25/06 to 12/27/07,SMFractionIdentifier Like: UISG1543%, Order by SMIdentifier,ConstituentCode,SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
	Parent Standard:	U23283D190	Ref: 5/5/1987	6.1360E+01	± 1.783E+00	DPM/G
<b>UISG1543</b>	U-232	<b>9.9405E+00</b> ± <b>2.889E-01</b> DPM	0.1992 g	11/20/2007 11/20/2007	Armstron	4.9902E+01 ± 1.450E+00 DPM/G

9.9405E+000 ± 9.941E+000 ( 1)

9.9405E+000 , 9.9405E+000

**U23283D**

U23283D100  
Ref. 1091  
4.59E4 ± 1327  
dpm/g  
9/12/89  
*Link*



U23283D180  
Ref. 6120  
20.51 ± 0.94  
dpm/g  
DVF 7/28/2006

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>7/28/2006</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U23283D100</u></b>	<b><u>1091</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>3.8870E+04</u>	±	<u>1.123E+03</u>
5) Percent error of Source Activity	<u>2.89</u>	%	
6) Weight of Source Material used (g)	<u>0.1346</u>		
7) (% Error) of Weight of Source Material used	<u>3.5661</u>	%	
8) Diluent	<u>2M HNO3</u>		
9) Total Weight of the Dilution (g)	<u>255.01</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.1176</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.0516E+01</u></b>	<b>±</b>	<b><u>9.420E-01</u></b>
12) Total Uncertainty	<u>4.592</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D180</u></b>	<b><u>6120</u></b>	
14) Calibration Reference Date	<u>5/5/1987</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>7/28/2006</u>
16) Reviewed by/date	<u>J.C</u>		<u>8/7/06</u>
17) Location	<u>qclab</u>	18) Exhausted	

This standard has no certificate, used for a test.

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>7/28/2006</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U23283D100</u></b>	<b><u>1091</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>3.8870E+04</u>	±	<u>1.123E+03</u>
5) Percent error of Source Activity	<u>2.89</u>	%	
6) Weight of Source Material used (g)	<u>0.1346</u>		
7) (% Error) of Weight of Source Material used	<u>3.5661</u>	%	
8) Diluent	<u>2M HNO3</u>		
9) Total Weight of the Dilution (g)	<u>255.01</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.1176</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.0516E+01</u></b>	<b>±</b>	<b><u>9.420E-01</u></b>
12) Total Uncertainty	<u>4.592</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D180</u></b>	<b><u>6120</u></b>	
14) Calibration Reference Date	<u>5/5/1987</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>7/28/2006</u>
16) Reviewed by/date	<u>J.C.</u>		<u>8/7/2006</u>
17) Location	<u>qclab</u>	18) Exhausted	<u></u>

This standard has no certificate, used for a test.

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$

Form: CC-006, 7/15/99, Rev 3



**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>4/23/2001</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U23283D170</u></b>		<b><u>4886</u></b>
4) Source Activity (dpm ± dpm/g)	<u>2.9709E+02</u>	±	<u>1.366E+01</u>
5) Percent error of Source Activity	<u>4.596</u>	%	
6) Weight of Source Material used (g)	<u>3.5636</u>		
7) (% Error) of Weight of Source Material used	<u>0.1347</u>	%	
8) Diluent	<u>2M HNO3-P0100141</u>		
9) Total Weight of the Dilution (g)	<u>105.12</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2854</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.0071E+01</u></b>	±	<b><u>4.640E-01</u></b>
12) Total Uncertainty	<u>4.607</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D171</u></b>		<b><u>4887</u></b>
14) Calibration Reference Date	<u>4/23/2001</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>4/23/2001</u>
16) Reviewed by/date	<u></u>		<u></u>
17) Location <u>QCLAB/STWT0388</u>		18) Exhausted	<u></u>

This standard has no certificate, used for a test.

**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>4/23/2001</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U23283D100</u></b>		<b><u>1091</u></b>
4) Source Activity (dpm ± dpm/g)	<u>4.0945E+04</u>	±	<u>1.183E+03</u>
5) Percent error of Source Activity	<u>2.9</u>	%	
6) Weight of Source Material used (g)	<u>0.1478</u>		
7) (% Error) of Weight of Source Material used	<u>3.2476</u>	%	
8) Diluent	<u>2M HN03-P0100141</u>		
9) Total Weight of the Dilution (g)	<u>20.37</u>		
10) (% Error) of Total Weight of the Dilution	<u>1.4728</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.9709E+02</u></b>	±	<b><u>1.366E+01</u></b>
12) Total Uncertainty	<u>4.596</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D170</u></b>		<b><u>4886</u></b>
14) Calibration Reference Date	<u>4/23/2001</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>4/23/2001</u>
16) Reviewed by/date	<u></u>		<u></u>
17) Location <u>QCLAB/STWT0387</u>		18) Exhausted	<u></u>

This standard has no certificate, used for a test .

**CALCULATIONS**

7) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

10) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

11) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity } ^2 + \% \text{ error of Wt. Used} ^2 + \% \text{ error of Dilution Wt. } ^2)}$

Form: CC-006, 7/15/99, Rev 3

U-232 Calibration Check

10/22/93  
D.S.

ITAS in house U-232 source is not traceable to NIST. U23283D100 was calibrated against a NIST traceable dilution of U30886A000. The attached data demonstrates a recent calibration check verifying the original calibration.

Source

U23283D141  
30.823 ± .896 dpm/g

Source

U30886A149  
19.054 ± .081 dpm/g

Calculation

$(U-232 \text{ cts}) (U\text{-Nat, dpm}) / U\text{-Nat cts} = U\text{-232 dpm found} / U\text{-232 dpm expected} =$

CAL626

$(5464.4) (20.005) / 5363 = 20.4291 / 20.630 = 98.80$

CAL627

$(5065.6) (20.110) / 5001.2 = 20.3690 / 20.670 = 98.54$

CAL628

$(5058.4) (20.098) / 5041.4 = 20.1658 / 20.648 = 97.66$

CAL629

$(5243.2) (20.0157) / 5175.2 = 20.2787 / 20.642 = 98.23$

Average =  $98.31 \pm .491 (1\sigma)$

**Q.C. VIAL TRANSMITTAL RECORD**

**PURPOSE: Issuance of:**

Spikes	<u>UNAT 20dpm</u>
Yield Monitor(s)	<u>232U 20dpm</u>
Quench Monitor(s)	_____
Carrier(s)	_____
Internal Audit Sample(s)	_____
Sealed Source(s)	_____
Other	_____

If "Other," explain:

CALCK.CGG- Alpha Spec Traceability  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**DESCRIPTION OF ITEM:**

ITAS #	Vial Code #	Quantity	Matrix
	<u>Cal 626-629</u>	<u>4</u>	

Prepared By: WA

Reviewed By: DS

Date Prepared: 10/18/93

Date Reviewed: 10/21/93

Form: CC-002, 11/90, Rev 1

SPIKE PREPARATION RECORD  
-----

Prepared By: WG      Preparation Date: 18OCT93      Reference date 12AUG93

Source Identification: U23283D141      Isotope: U-232

Source Activity (dpm +- dpm per wt/vol unit): 3.0823E+01 +- 8.9637E-01

VIAL ID	WT/VOL	ACTIVITY*	TOTAL ERROR
CAL626	0.6693 G	2.0630E+01	5.9994E-01
CAL627	0.6706 G	2.0670E+01	6.0111E-01
CAL628	0.6699 G	2.0648E+01	6.0048E-01
CAL629	0.6697 G	* 2.0642E+01	6.0030E-01

\* Activity decay corrected to Preparation Date, 12:00, except SR-85

SPIKE PREPARATION RECORD  
-----

Prepared By: WG      Preparation Date: 18OCT93      Reference date 01FEB86

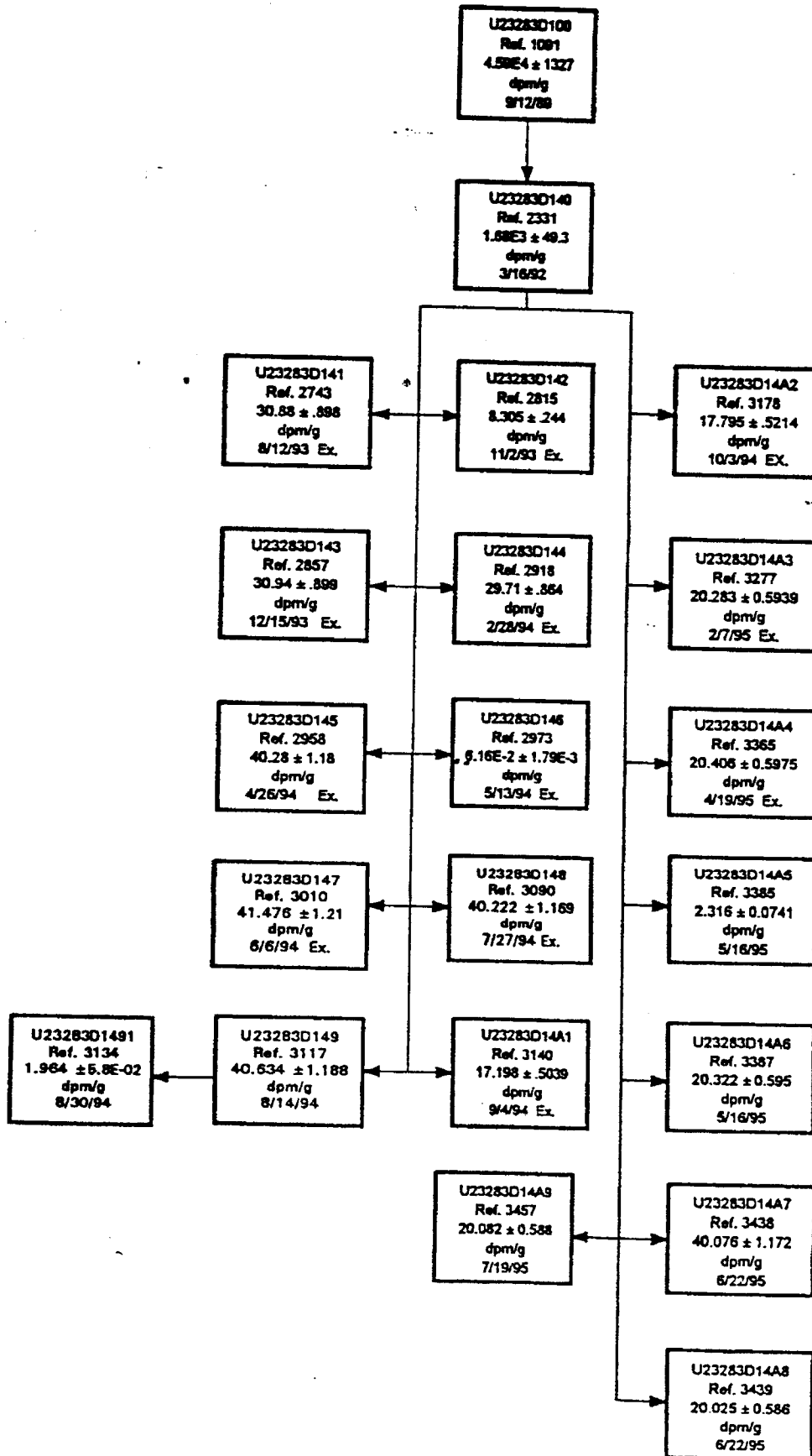
Source Identification: U30886A149      Isotope: UN-AT

Source Activity (dpm +- dpm per wt/vol unit): 1.9054E+01 +- 8.1000E-02

VIAL ID	WT/VOL	ACTIVITY*	TOTAL ERROR
-----	-----	-----	-----
CAL626	1.0499 G	2.0005E+01	8.5042E-02
CAL627	1.0554 G	2.0110E+01	8.5487E-02
CAL628	1.0548 G	2.0098E+01	8.5439E-02
CAL629	1.0579 G	+ 2.0157E+01	8.5690E-02

\* Activity decay corrected to Preparation Date, 12:00, except SR-85

U23283D140



**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G.</u>	2) Date Prepared	<u>8/12/93</u>
3) Source Identification Number / Ref. Number	<u>U23283D140</u>		<u>2331</u>
4) Source Activity (dpm ± dpm/g)	<u>1.6659E+03</u>	±	<u>4.861E+01</u>
5) Percent error of Source Activity	<u>2.9</u>	%	
6) Weight of Source Material used (g)	<u>3.7227</u>		
7) (% Error) of Weight of Source Material used	<u>0.0166</u>	%	
8) Diluent	<u>2M HNO<sub>3</sub></u>		
9) Total Weight of the Dilution (g)	<u>200.84</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.0223</u>	%	
11) Specific Activity of Diluted Solution dpm/g	<u>3.0879E+01</u>	±	<u>8.976E-01</u>
12) Total Uncertainty	<u>2.907</u>	%	
13) Dilution Identification Number / Ref. Number	<u>U23283D141</u>		<u>2743</u>
14) Calibration Reference Date	<u>8/12/93</u>		
15) Isotope Inventory File update by/date	<u>P.J.</u>		<u>8/13/93</u>
16) Reviewed by/date	<u>D.S.</u>		<u>6/6/94</u>
17) Location	<u>K-5</u>	18) Exhausted	<u>12/16/93</u>

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**CALCULATIONS**

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100) ^2$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100) ^2$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \frac{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}{2}$$

Form: CC-006, 5/5/94, Rev 2



**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G.</u>	2) Date Prepared	<u>3/16/92</u>
<b>3) Source Identification Number / Ref. Number</b>	<u>U23283D100</u>		<u>1091</u>
4) Source Activity (dpm ± dpm/g)	<u>4.4808E+04</u>	±	<u>1.294E+03</u>
5) Percent error of Source Activity	<u>2.9</u>	%	
6) Weight of Source Material used (g)	<u>3.8189</u>		
7) (% Error) of Weight of Source Material used	<u>0.0158</u>	%	
8) Diluent	<u>2M HNO3</u>		
9) Total Weight of the Dilution (g)	<u>101.3</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.0877</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<u>1.6892E+03</u>	±	<u>4.929E+01</u>
12) Total Uncertainty	<u>2.918</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<u>U23283D140</u>		<u>2331</u>
14) Calibration Reference Date	<u>3/16/92</u>		
15) Isotope Inventory File update by/date	<u>W.G.</u>		<u>3/16/92</u>
16) Reviewed by/date	<u>D.S.</u>		<u>6/6/94</u>
17) Location	<u>K-1</u>	18) Exhausted	<u></u>

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**CALCULATIONS**

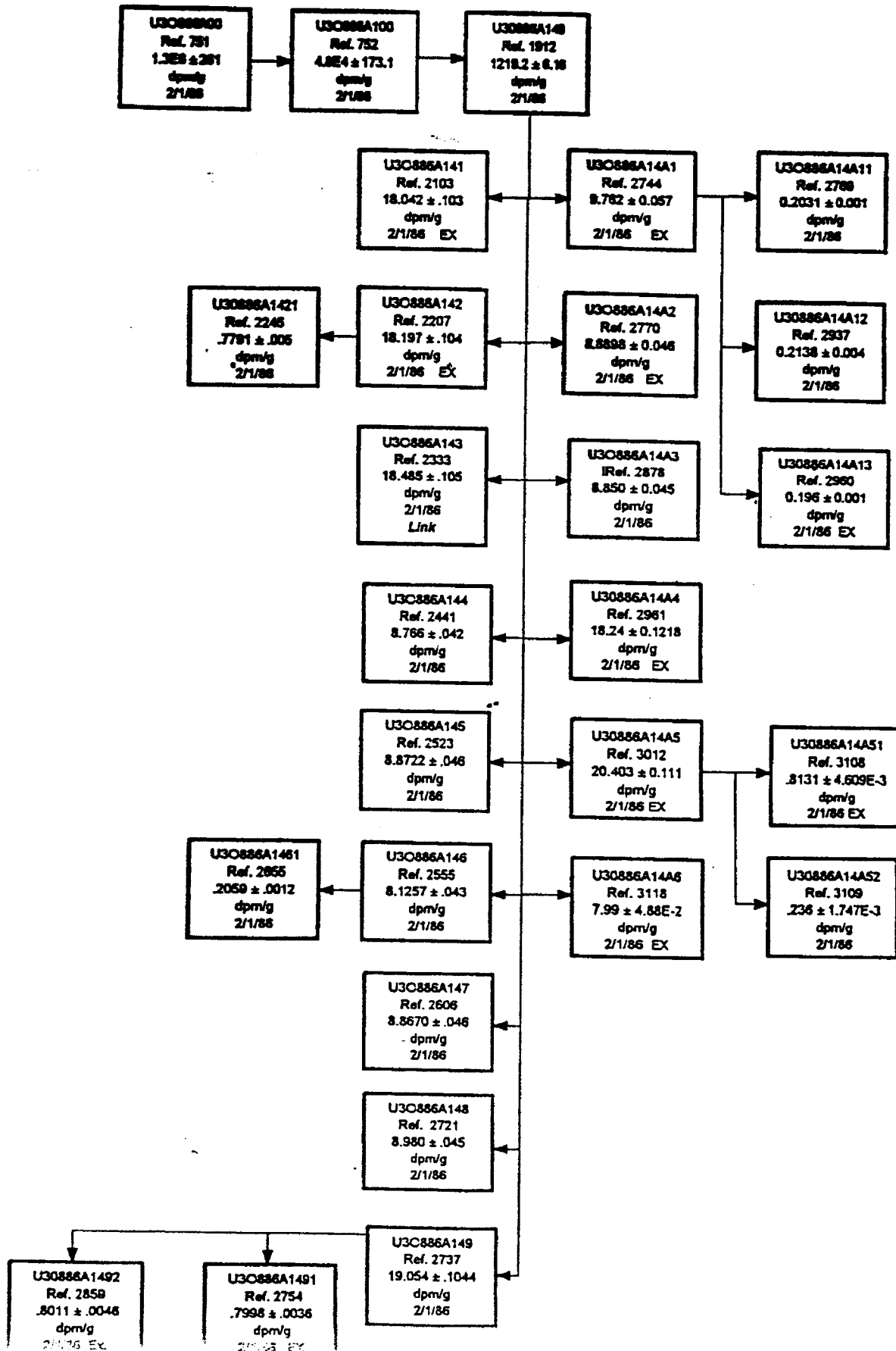
7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

**U308140  
Link**



**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>D.S.</u>	2) Date Prepared	<u>8/17/90</u>
3) Source Identification Number / Ref. Number	<u>U30886A140</u>		<u>1912</u>
4) Source Activity (dpm ± dpm/g)	<u>1.2192E+03</u>	±	<u>6.156E+00</u>
5) Source Activity (ug ± ug/g)	<u>7.9274E+02</u>		<u>4.0026E+00</u>
6) Percent error of Source Activity	<u>0.505</u>	%	
7) Weight of Source Material used (g)	<u>3.1482</u>		
8) (% Error) of Weight of Source Material used	<u>0.0232</u>	%	
9) Diluent	<u>2M HNO3</u>		
10) Total Weight of the Dilution (g)	<u>201.45</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.0222</u>	%	
12) Specific Activity of Diluted Solution dpm/g	<u>1.9054E+01</u>	±	<u>1.044E-01</u>
13) Specific Activity of Diluted Solution ug/g	<u>1.2389E+01</u>	±	<u>6.791E-02</u>
14) Total Uncertainty	<u>0.548</u>	%	
15) Dilution Identification Number / Ref. Number	<u>U30886A149</u>		<u>2737</u>
16) Calibration Reference Date	<u>2/1/86</u>		
17) Isotope Inventory File update by/date	<u>W.G.</u>		<u>8/5/93</u>
18) Reviewed by/date	<u>D.S.</u>		<u>6/2/94</u>
19) Location	<u>LAB</u>	20) Exhausted	<u></u>

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**CALCULATIONS**

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100) ^2$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100) ^2$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$$

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G.</u>	2) Date Prepared	<u>12/5/90</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U30886A100</u></b>		<b><u>752</u></b>
4) Source Activity (dpm ± dpm/g)	<u>4.7985E+04</u>	±	<u>1.731E+02</u>
5) Source Activity (ug ± ug/g)	<u>3.1200E+04</u>		<u>1.1255E+02</u>
6) Percent error of Source Activity	<u>0.361</u>	%	
7) Weight of Source Material used (g)	<u>2.5515</u>		
8) (% Error) of Weight of Source Material used	<u>0.0354</u>	%	
9) Diluent	<u>2M HNO3</u>		
10) Total Weight of the Dilution (g)	<u>100.42</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.0892</u>	%	
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.2192E+03</u></b>	±	<b><u>6.156E+00</u></b>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<b><u>7.9273E+02</u></b>	±	<b><u>4.003E+00</u></b>
14) Total Uncertainty	<u>0.505</u>	%	
<b>15) Dilution Identification Number / Ref. Number</b>	<b><u>U30886A140</u></b>		<b><u>1912</u></b>
16) Calibration Reference Date	<u>2/1/86</u>		
17) Isotope Inventory File update by/date	<u>W.G.</u>		<u>12/5/90</u>
18) Reviewed by/date	<u>D.S.</u>		<u>6/6/94</u>
19) Location	<u>L-10</u>	20) Exhausted	<u></u>

.....  
**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>C.S.</u>	2) Date Prepared	<u>3/24/86</u>
<b>3) Source Identification Number / Ref. Number</b>	<u>U30886A000</u>		<u>751</u>
4) Source Activity (dpm ± dpm/g)	<u>1.3045E+06</u>	±	<u>2.610E+02</u>
5) Source Activity (ug ± ug/g)	<u>8.4818E+05</u>		<u>1.6970E+02</u>
6) Percent error of Source Activity	<u>0.02</u>	%	
7) Weight of Source Material used (g)	<u>3.3411</u>		
8) (% Error) of Weight of Source Material used	<u>0.0206</u>	%	
9) Diluent	<u>8M HNO3</u>		
10) Total Weight of the Dilution (g)	<u>90.83</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.1091</u>	%	
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<u>4.7985E+04</u>	±	<u>1.731E+02</u>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<u>3.1200E+04</u>	±	<u>1.125E+02</u>
14) Total Uncertainty	<u>0.361</u>	%	
<b>15) Dilution Identification Number / Ref. Number</b>	<u>U30886A100</u>		<u>752</u>
16) Calibration Reference Date	<u>2/1/86</u>		
17) Isotope Inventory File update by/date	<u>D.D.</u>		<u>5/7/86</u>
18) Reviewed by/date	<u>D.M.</u>		<u>6/15/94</u>
19) Location	<u>PF-8</u>	20) Exhausted	<u>11/8/93</u>

.....  
**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

## ISOTOPE RECORD FORM

1) Isotope U-NAT                      2) Reference Number #751  
 3) Half Life Negligible Decay      4) Storage Location STD LAB  
 5) Source Identification Number U3O886A000

### CALIBRATION DATA

6) Activity as Received Units 1.304E+06 dpm/g  
 7) Overall Uncertainty Percent 0.02%  
 8) Reference Date / Time 1-Feb-86  
 9) Activity dpm/g 1.304E+06 ± 2.61E+02 (0.02%) dpm/g  
 10) Volume or Mass (ml/g) 10 g  
 11) Calibrated by NBS  
 12) Certificate Solution Number SRM 950B Uranium Oxide

### SURVEY DATA

13) Date Received 2/1/86  
 14) Surveyed by D.D. & A.V.R.  
 15) Survey Reading (Beta/Gamma) cpm 100,000 cpm at Contact  
 16) Survey Reading (Alpha) cpm Background

17) Activity Conversion (0.8481g U-nat / g U3O8) (0.99968) (1.538E+06 dpm / g U-nat) =  
1.304E+06 ± 2.61E+02 (0.02%) dpm/g U3O8

18) Remarks MW U3O8 = (3 \* 238.0289) + (8 \* 15.9994) = 842.0819 g / mole U3O8  
Material was ignited at 800°C in a crucible for 1 hr and cooled to room temperature in a sealed dessicator.

19) Isotope File Updated by D.D.  
 20) QC Approved D.B.

# National Bureau of Standards

## Certificate

751

### Standard Reference Material 950b

#### Uranium Oxide ( $U_3O_8$ )

(In Cooperation with the Department of Energy, New Brunswick Laboratory, Argonne, Illinois)

This material consists of normal uranium in the form of oxide,  $U_3O_8$ . It is intended to provide a reference material of known uranium content.

#### CERTIFIED VALUE

Uranium Oxide ( $U_3O_8$ ) . . . 99.968  $\pm$  0.020 percent

The stated uncertainty of  $\pm 0.020$  percent associated with the certified value is the linear sum of 0.0076 percent, which is the limit of the random error of the assay measurements at the 99 percent confidence level ( $2.807 S_m$ , where  $S_m$  is the standard error of the mean with  $n = 24$ ), and 0.012 percent, the estimated upper limit of conceivable systematic errors including material variability. The above certified value is based on material heated at 800 °C for one hour in an open crucible in a muffle furnace and cooled in a desiccator. *It is important that the material be freshly ignited in this manner to obtain accurate results.*

The total impurities as determined by spectrochemical analysis are estimated to be less than 50  $\mu\text{g/g}$ . The determined iron content is  $\sim 3 \mu\text{g/g}$  and the determined vanadium content is  $\sim 1 \mu\text{g/g}$ . The assay of this material is based on the use of NBS Potassium Dichromate (SRM 136c), as the oxidizing agent as described in the NBL titrimetric method for the precise assay of uranium metal.<sup>1,2</sup> The assay values obtained are compatible with those obtained from the assay of NBS Uranium Metal (SRM 960) and NBS Uranium Oxide (SRM 950a). The certified value for this lot of uranium oxide has also been confirmed using a coulometric procedure.

The atomic weights used in the calculations are: uranium, 238.029, and oxygen, 15.9994.

This material was prepared under contract with the National Lead Company of Ohio, Cincinnati, Ohio. Assay of the material was performed by N. M. Trahey of the New Brunswick Laboratory, Argonne, Illinois and J. R. Moody and W. Koch of the NBS Analytical Chemistry Division. Iron and vanadium were measured by B. I. Diamondstone and S. A. Wicks of the NBS Analytical Chemistry Division.

Overall direction and coordination of the technical measurements leading to the certification were performed under the chairmanship of I. L. Barnes.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by W. P. Reed.

Washington, D.C. 20234  
March 1, 1978

J. Paul Cali, Chief  
Office of Standard Reference Materials

(over)

IT-NO # <i>Cal 626</i>	ISO	CUSTOMER ID <i>IT</i>	RECEIVE DATE	DUE DATE
SA TYPE:	RPT UNITS: PCI <i>DEH</i> 6 L CH <i>SA</i>		STORAGE	
PROC	VIAL			
GA	GB	CO	CS	
REQUESTED COUNTING TIME <i>1000</i>	REQ'D BY <i>CCG</i>	SAMPLE DATE/ON DATE <i>10-18-73</i>	SAMPLE DATE/OFF TIME	COUNTING DATE DAY MON YR TIME
TOTAL SAMPLE WEIGHT OR VOLUME	UNIT	SUGGESTED ALIQUOT	SAMPLE ANALYZED WEIGHT OR VOLUME	UNIT
				<i>SA</i>
GEOMETRY CIRCLE ONE				25 50 100 200 300 400 500 MA MB
TRACER ISOTOPE	TRACER UST NUMBER	TRACER VOLUME/WEIGHT	TRACER CONCENTRATE	TRACER REF DATE DAY MON YR
COUNTING INSTRUMENT CHECK ONE				OTHER
NAI	3	5	9	GER
				ASPEC LEPD AGC BGC
SPIKE #		TECH COMMENTS		
BLANK #		<i>WJ</i> CCG Data Cal C.K 232/L		

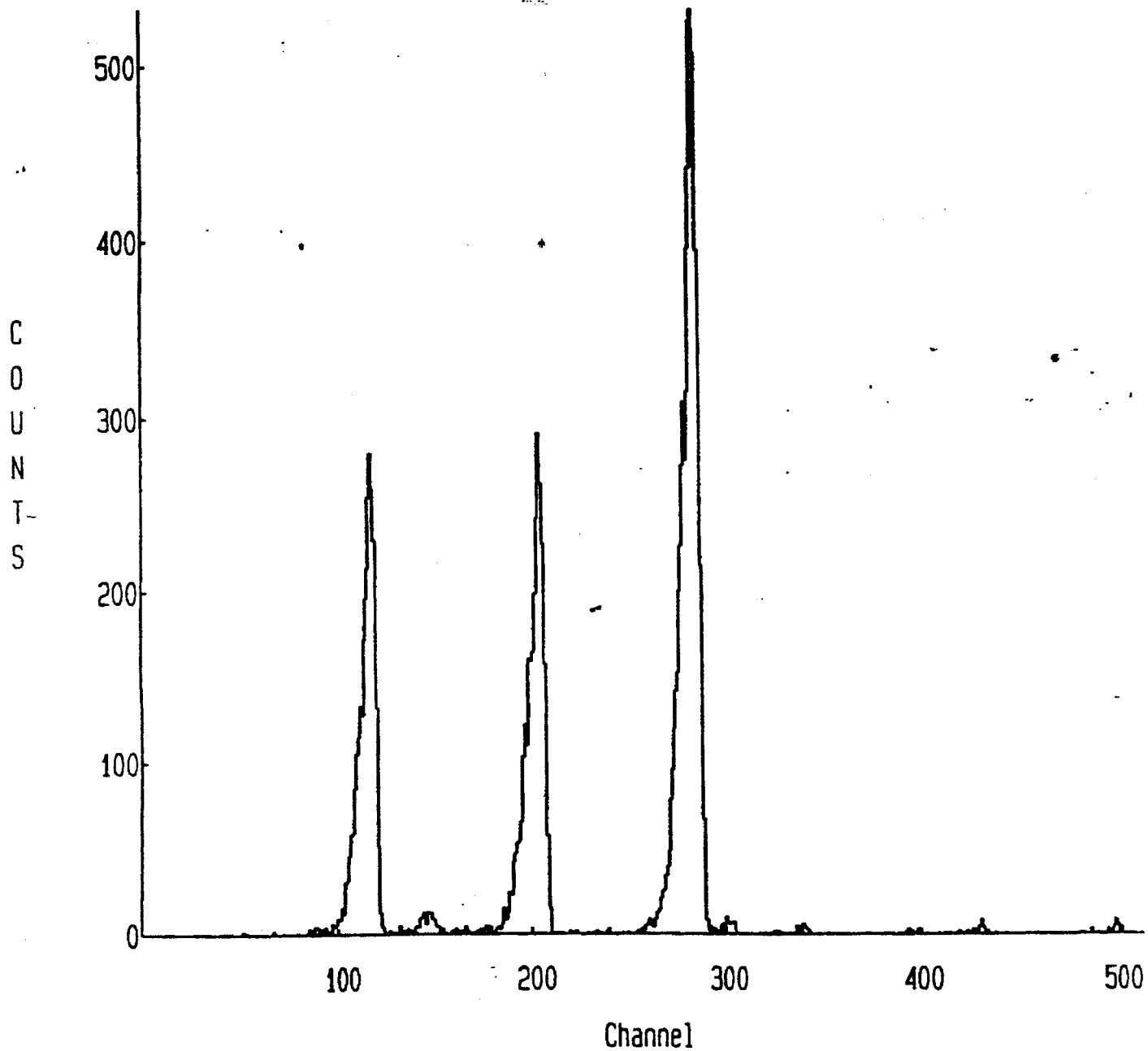
*U-232*



Spectrum: DUB1: [ALP5.SAMPLE] CAL626\_201031223.CNF; 1

Title:

Sample Title: U IT



Start Time: 20-OCT-93 12:23

Real Time: 0 16: 40: 05.00

Live Time: 0 16: 40: 02.00

Sample Time: 19-OCT-93 12:00

Sample ID: CAL626

Sample Type: disk

FWHM Parameters:

Offset: 8.06E+01

Slope: 0.00E+00

SAMPLE IDENTIITY:

CAL626

TITLE : U IT

DETECTOR : ALP5 1

CONFIGURATION NAME : DUB1:[ALP5.SAMPLE]CAL626\_201031223.CNF;1

ACQUIRE DATE of BACKGROUND: 25-SEP-1993 10:03:03

REPORT DATE : 21-Oct-93

SAMPLE DATE: 19-OCT-1993 12:00:00

ACQUIRE DATE: 20-OCT-1993 12:23:27

CALIB DATE : 27-SEP-1993 08:15:47

PRESET REAL TIME:

ELAPSED REAL TIME:

OFFSET : 3448.80 keV

CONSTANT FWHM : 8.00000 Channels

SLOPE : 6.53520 keV/C

SENSITIVITY : 4.00000 Std Dev's

QUAD COEFF : 2.798980E-04 keV/C^2

SUM SENSITIVITY: 1.00000 %

Alpha-Regions Report  
(Version: 8-Oct-91)

Sample Identity: CAL626

Flags Key

Detector: ALP5 1  
 Report Date: 21-Oct-93 05:06 AM  
 Acquire Date: 20-OCT-1993 12:23:27.50  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 1000 minutes  
 Bkgrnd Live Time: 2500 minutes

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsc Count	Count Rate C/Min	Centrd Region		Left		Right		Flags	
					Energy keV	Width keV	Chnl	Chnl	Wdth Mult	Wdth Mult		
U-232	5488	89	23.6	0	5.464	5327.6	174.0	266	292	0.00	0.00	P
U-234	2631	8	1.2	0	2.630	4783.1	159.5	186	210	0.00	0.00	P
U-235	123	8	1.2	0	0.122	4403.3	198.4	127	157	0.00	0.00	P
U-238	2614	8	1.2	0	2.612	4203.3	138.6	103	124	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

--Alpha Spectrum Listing  
(Version: 29-Jun-92)

Sample Identity: COL626  
 Detector: MLP5 1  
 Report Date: 21-Oct-93 05:06 AM  
 Acquire Date: 20-OCT-1993 12:23:27.50

Flags Key  
 Intersect Region: 0  
 Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn						
0		1	0		51	9		101	5+		151	165+		201	1		251	10		301	0		351	3		401	0		451	4		501
		2	2		52	15		102	4+		152	199+		202	0		252	7		302	0		352	0		402	0		452	4		502
0		3	1		53	12+		103	1+		153	243+		203	1		253	6		303	0		353	0		403	0		453	0		503
0		4	1		54	30+		104	3+		154	291+		204	2		254	7		304	1		354	1		404	1		454	0		504
0		5	0		55	31+		105	1+		155	263+		205	0		255	7		305	0		355	0		405	0		455	0		505
0		6	0		56	45+		106	0+		156	228+		206	3		256	2		306	0		356	0		406	0		456	0		506
0		7	0		57	58+		107	0+		157	158+		207	2		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	59+		108	0		158	58+		208	5		258	0		308	0		358	0		408	1		458	0		508
0		9	0		59	85+		109	2		159	15+		209	6		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	105+		110	0		160	1+		210	8		260	0		310	0		360	1		410	0		460	0		510
0		11	0		61	115+		111	3		161	1		211	5		261	0		311	0		361	0		411	0		461	0		511
0		12	0		62	133+		112	2		162	0		212	4		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	128+		113	1		163	1		213	9		263	0		313	0		363	1		413	0		463			
0		14	0		64	172+		114	2		164	0		214	12		264	0		314	0		364	0		414	0		464			
0		15	0		65	196+		115	0		165	1		215	14		265	0		315	0		365	1		415	0		465			
0		16	0		66	214+		116	4		166	0		216	21+		266	0		316	0		366	1		416	0		466			
0		17	2		67	255+		117	2		167	0		217	25+		267	0		317	0		367	0		417	0		467			
0		18	0		68	280+		118	1		168	0		218	26+		268	1		318	0		368	0		418	0		468			
0		19	0		69	260+		119	0		169	2		219	34+		269	1		319	0		369	0		419	0		469			
0		20	0		70	230+		120	1		170	0		220	39+		270	0		320	0		370	2		420	0		470			
0		21	0		71	132+		121	1		171	0		221	48+		271	1		321	0		371	1		421	0		471			
0		22	1		72	51+		122	2		172	2		222	79+		272	0		322	0		372	1		422	0		472			
0		23	0		73	12+		123	0		173	1		223	96+		273	0		323	0		373	0		423	0		473			
0		24	0		74	4+		124	3		174	0		224	120+		274	1		324	1		374	2		424	0		474			
0		25	0		75	2		125	2		175	0		225	142+		275	0		325	0		375	1		425	0		475			
0		26	0		76	0		126	3		176	0		226	153+		276	2		326	0		376	1		426	0		476			
0		27	0		77	0+		127	5		177	0		227	201+		277	1		327	0		377	3		427	0		477			
0		28	0		78	2+		128	2		178	1		228	227+		278	2		328	0		378	2		428	0		478			
0		29	1		79	1+		129	4		179	0		229	273+		279	0		329	0		379	0		429	0		479			
0		30	0		80	0+		130	1		180	0		230	309+		280	1		330	0		380	5		430	1		480			
0		31	0		81	1+		131	0		181	1		231	276+		281	0		331	0		381	8		431	0		481			
0		32	0		82	1+		132	3		182	0		232	315+		282	0		332	0		382	4		432	1		482			
0		33	1		83	5+		133	4		183	2		233	396+		283	1		333	1		383	2		433	0		483			
0		34	0		84	0+		134	3		184	0		234	442+		284	1		334	0		384	2		434	0		484			
0		35	3		85	2+		135	6		185	1		235	527+		285	0		335	1		385	0		435	0		485			
0		36	0		86	0+		136	15+		186	0		236	533+		286	1		336	0		386	0		436	3		486			
0		37	0		87	3+		137	9+		187	0		237	508+		287	1		337	0		387	0		437	0		487			
0		38	4		88	2+		138	13+		188	2		238	395+		288	5		338	0		388	1		438	0		488			
0		39	4		89	2+		139	24+		189	3		239	215+		289	2		339	0		389	0		439	1		489			
0		40	0		90	1+		140	23+		190	0		240	67+		290	1		340	1		390	0		440	1		490			
1		41	3		91	4+		141	42+		191	0		241	8+		291	6		341	0		391	0		441	0		491			
0		42	2		92	4+		142	47+		192	0		242	2+		292	4		342	0		392	0		442	0		492			
1		43	4		93	9+		143	53+		193	0		243	4		293	3		343	1		393	1		443	1		493			
0		44	2		94	10+		144	55+		194	0		244	0		294	2		344	2		394	0		444	1		494			
0		45	2		95	12+		145	66+		195	0		245	3		295	0		345	3		395	0		445	3		495			
1		46	2		96	6+		146	104+		196	1		246	2		296	0		346	0		396	0		446	2		496			
0		47	6		97	13+		147	122+		197	0		247	1		297	0		347	2		397	0		447	2		497			
0		48	5		98	12+		148	111+		198	1		248	5		298	0		348	1		398	0		448	4		498			
0		49	6		99	9+		149	161+		199	1		249	6		299	0		349	1		399	0		449	8		499			
0		50	9		100	8+		150	160+		200	0		250	1		300	0		350	3		400	0		450	6		500			

Configuration : DUB1:[ALPS.SAMPLE]CAL626\_201031223.CNF:1  
 Analyses by : ALPHA V1.5  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:23:27  
 Sample ID : CAL626 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:02.00 Elapsed real time: 0 16:40:05.00 0.0%  
 Start energy : 3468.41 End energy : 6868.19  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	ZErr	Fit
1	0	4216.30	2614	0	52.28	116.86	103	21	4.36E-02	2.0	
2	0	4412.25	123	0	52.28	146.51	127	30	2.05E-03	9.0	
3	0	4788.64	2631	0	58.82	203.25	186	24	4.38E-02	1.9	
4	0	5327.62	5488	0	65.35	284.04	266	26	9.15E-02	1.3	
5	0	5448.75	59	0	45.75	302.12	293	16	9.83E-04	13.0	
6	0	6317.80	33	0	32.68	431.05	418	18	5.50E-04	17.4	
7	0	6780.92	36	0	32.68	499.20	492	13	6.00E-04	16.7	

Configuration : DUB1:[ALP5.SAMPLE]CAL626\_201031223.CNF;1  
 Analyses by : ALPHA V1.5,PEAKEFF V2.2,NID V2.4  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:23:27  
 Sample ID : CAL626 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:02.00 Elapsed real time: 0 16:40:05.00 0.0%  
 Energy tolerance : 80.00 Half life ratio : 1.00  
 Errors propagated: No Systematic Error : 0.00 %  
 Efficiency type : Spline Efficiencies at : Peak Energy  
 Abundance limit : 60.00

Summary of Nuclide Activity

Total number of lines in spectrum 7  
 Number of unidentified lines 3  
 Number of lines tentatively identified by NID 4 57.14%

Nuclide Type : ap

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr O-Sigma Error	O-Sigma %Error	Flags
U-232	72.00Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : np

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr O-Sigma Error	O-Sigma %Error	Flags
U-234	2.45E+05Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-235	7.04E+08Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-238	4.47E+09Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

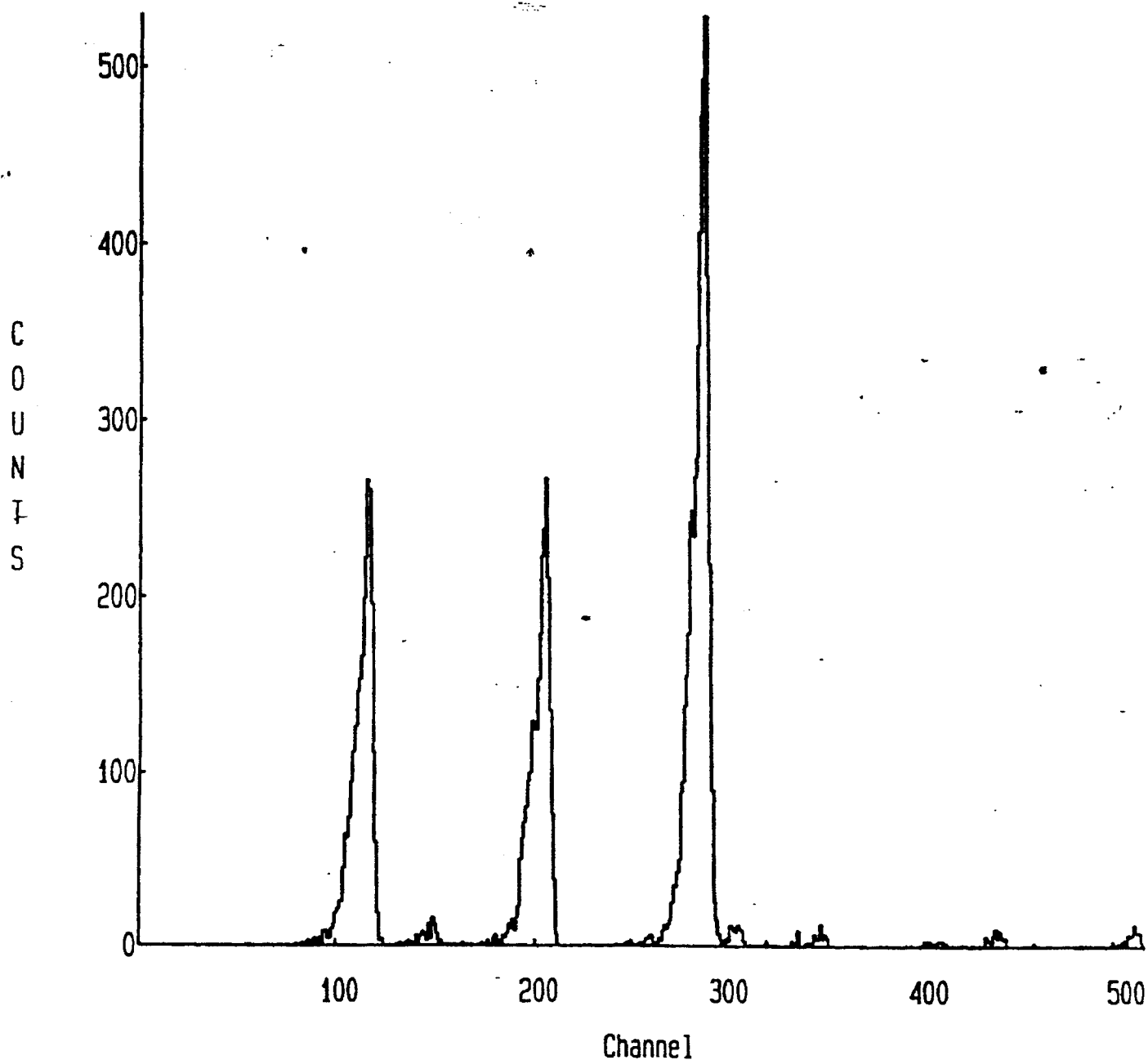
IT-RD # <i>Cal 627</i>	ISO	CUSTOMER ID <i>IT</i>	RECEIVE DATE	DUE DATE
SA TYPE:	RPT UNITS: PCI <i>(OPM)</i> 6 L CM <i>(SA)</i>		STORAGE	
PROC	VIAL			
GA	GB	CO	CS	
REQUESTED COUNTING TIME <i>1000</i>	REQ'D BY <i>CCG</i>	SAMPLE DATE/ON DATE <i>10-18-93</i>	SAMPLE DATE/OFF TIME	COUNTING DATE DAY MON YR 
TOTAL SAMPLE WEIGHT OR VOLUME	UNIT	SUGGESTED ALIQUOT	SAMPLE ANALYZED WEIGHT OR VOLUME	UNIT <i>SA</i>
				SECURETY CIRCLE ONE 25 50 100 200 300 400 500 MA MB
TRACER ISOTOPE	TRACER UST NUMBER	TRACER VOLUME/WEIGHT	TRACER CONCENTRATE	TRACER DAY MON YR
COUNTING INSTRUMENT CHECK ONE				OTHER
NAI	3	5	9	GER
				<del>ASPEC</del> LEPD AGC BGC
SPIKE #		TECH COMMENTS		
BLANK #		<i>MS</i> <i>CCG-Data Cal CK 2326</i>		

*U-232*

Spectrum: DUB1: [ALP6.SAMPLE]CAL627\_201031224.CNF; 1

Title:

Sample Title: U IT



Start Time: 20-OCT-93 12:24  
Real Time: 0 16:40:04.00  
Live Time: 0 16:40:03.00

Sample Time: 19-OCT-93 12:00  
Sample ID: CAL627  
Sample Type: disk

FWHM Parameters:  
Offset: 7.43E+01  
Slope: 0.00E+00



SAMPLE IDENTIITY: CAL627

TITLE : U IT

DETECTOR : ALP6 1  
CONFIGURATION NAME : DUB1:[ALP6. SAMPLE]CAL627\_201031224. CNF; 1

ACQUIRE DATE of BACKGROUND: 25-SEP-1993 10:05:46

REPORT DATE : 21-Oct-93 SAMPLE DATE: 19-OCT-1993 12:00:00  
ACQUIRE DATE: 20-OCT-1993 12:24:15 CALIB DATE : 27-SEP-1993 08:17:50

PRESET REAL TIME: ELAPSED REAL TIME:

OFFSET : 3500.37 keV CONSTANT FWHM : 8.00000 Channels  
SLOPE : 6.19229 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 5.066170E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report  
(Version: 8-Oct-91)

Sample Identity: CAL627

Flags Key

Detector: ALP6 1	
Report Date: 21-Oct-93 05:08 AM	P: Peak Identified
Acquire Date: 20-OCT-1993 12:24:15.00	I: Peak Intersect
Tracer Nuclide: U-232	S: Single Non-peak Intersect
High Counts Limit: 36	M: Multiple Non-peak Intersect
Sample Live Time: 1000 minutes	H: High Non-peak Sample Count
Bkgrnd Live Time: 2500 minutes	A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsect Count	Count Rate C/Min	Centrd Region		Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
					Energy keV	Width keV					
U-232	5106	101	0	5.065	5331.4	162.0	272	297	0.00	0.00	P
U-234	2412	5	0	2.410	4786.9	140.7	191	213	0.00	0.00	P
U-235	103	4	0	0.101	4407.1	164.8	130	156	0.00	0.00	P
U-238	2491	3	0	2.490	4207.1	151.3	99	123	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

Alpha Spectrum Listing  
(Version: 29-Jun-92)

Sample Identity: CML627  
 Detector: MLP6 1  
 Report Date: 21-Oct-93 05:00 AM  
 Acquire Date: 20-OCT-1993 12:24:15.00

Flags Key  
 Intersect Region: 0  
 Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn					
0		1	0		51	21+	101	2+		151	125+		201	1		251	5		301	5		351	1		401	0		451	1		501
		2	0		52	26+	102	3+		152	154+		202	1		252	3		302	1		352	3		402	0		452	4		502
0		3	0		53	26+	103	1+		153	188+		203	1		253	12		303	0		353	3		403	0		453	1		503
0		4	1		54	45+	104	1+		154	223+		204	1		254	11		304	0		354	0		404	0		454	7		504
0		5	0		55	64+	105	1+		155	238+		205	2		255	9		305	0		355	2		405	0		455	6		505
0		6	1		56	62+	106	1+		156	267+		206	1		256	8		306	0		356	1		406	2		456	7		506
0		7	0		57	74+	107	0		157	211+		207	2		257	12		307	0		357	3		407	0		457	13		507
0		8	0		58	94+	108	1		158	136+		208	4		258	18		308	0		358	3		408	0		458	9		508
0		9	0		59	111+	109	1		159	76+		209	4		259	9		309	0		359	3		409	0		459	8		509
0		10	0		60	127+	110	1		160	38+		210	6		260	3		310	0		360	2		410	0		460	8		510
0		11	0		61	147+	111	0		161	7+		211	6		261	0		311	1		361	2		411	0		461	3		511
0		12	0		62	154+	112	1		162	1+		212	2		262	0		312	0		362	0		412	0		462	1		512
0		13	0		63	167+	113	2		163	0+		213	2		263	1		313	0		363	0		413	0		463			
0		14	0		64	199+	114	0		164	0		214	2		264	0		314	0		364	1		414	1		464			
0		15	1		65	222+	115	1		165	0		215	5		265	1		315	0		365	0		415	0		465			
0		16	0		66	266+	116	1		166	0		216	3		266	0		316	0		366	0		416	0		466			
0		17	0		67	268+	117	1		167	0		217	9		267	1		317	0		367	0		417	0		467			
0		18	0		68	196+	118	1		168	0		218	12		268	1		318	0		368	1		418	0		468			
0		19	0		69	111+	119	0		169	1		219	10		269	1		319	1		369	1		419	0		469			
0		20	0		70	60+	120	0		170	1		220	13		270	0		320	0		370	1		420	0		470			
0		21	1		71	19+	121	1		171	0		221	15		271	3		321	0		371	0		421	0		471			
0		22	0		72	3+	122	0		172	1		222	25+		272	0		322	0		372	0		422	0		472			
0		23	0		73	4+	123	2		173	0		223	35+		273	1		323	0		373	0		423	1		473			
0		24	0		74	1	124	0		174	0		224	34+		274	1		324	0		374	1		424	0		474			
0		25	1		75	0	125	1		175	1		225	43+		275	1		325	0		375	0		425	0		475			
0		26	0		76	0	126	3		176	0		226	50+		276	1		326	0		376	0		426	0		476			
0		27	0		77	1	127	0		177	0		227	88+		277	1		327	0		377	0		427	0		477			
0		28	0		78	0	128	1		178	1		228	~94+		278	0		328	1		378	1		428	0		478			
0		29	1		79	0	129	5		179	1		229	139+		279	0		329	0		379	0		429	1		479			
0		30	1		80	1+	130	6		180	0		230	156+		280	0		330	0		380	0		430	1		480			
0		31	1		81	0+	131	1		181	0		231	180+		281	1		331	1		381	6		431	0		481			
0		32	0		82	2+	132	3		182	0		232	242+		282	0		332	0		382	4		432	1		482			
0		33	2		83	1+	133	1		183	0		233	249+		283	0		333	0		383	3		433	0		483			
0		34	1		84	0+	134	6		184	0		234	234+		284	3		334	0		384	2		434	1		484			
0		35	0		85	2+	135	5		185	0		235	268+		285	1		335	0		385	7		435	0		485			
0		36	3		86	3+	136	7		186	0		236	279+		286	1		336	0		386	10		436	0		486			
0		37	0		87	1+	137	12		187	0		237	343+		287	9		337	0		387	5		437	1		487			
0		38	2		88	2+	138	10		188	0		238	408+		288	0		338	0		388	9		438	0		488			
0		39	4		89	1+	139	15		189	0		239	475+		289	0		339	0		389	6		439	1		489			
0		40	4		90	6+	140	9		190	0		240	495+		290	1		340	0		390	4		440	1		490			
0		41	1		91	2+	141	16+		191	0		241	530+		291	2		341	1		391	5		441	1		491			
0		42	5		92	6+	142	23+		192	1		242	383+		292	2		342	0		392	1		442	0		492			
0		43	2		93	8+	143	50+		193	1		243	219+		293	2		343	1		393	0		443	0		493			
0		44	8		94	7+	144	62+		194	0		244	89+		294	2		344	1		394	0		444	1		494			
0		45	9		95	3+	145	71+		195	0		245	26+		295	7		345	0		395	0		445	0		495			
0		46	4		96	13+	146	80+		196	1		246	15+		296	4		346	0		396	0		446	3		496			
0		47	5		97	4+	147	95+		197	0		247	7+		297	4		347	0		397	0		447	0		497			
0		48	10		98	16+	148	100+		198	2		248	4		298	13		348	1		398	0		448	1		498			
0		49	13+		99	12+	149	130+		199	0		249	0		299	4		349	1		399	0		449	2		499			
0		50	19+		100	7+	150	125+		200	3		250	1		300	7		350	2		400	0		450	2		500			

Configuration : DUB1:[ALP6.SAMPLE]CAL627\_201031224.CNF;1  
 Analyses by : ALPHA V1.5  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:24:15  
 Sample ID : CAL627 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:03.00 Elapsed real time: 0 16:40:04.00 0.0%  
 Start energy : 3518.95 End energy : 6803.62  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	ZErr	Fit
1	0	4215.91	2491	0	55.73	114.48	99	24	4.15E-02	2.0	
2	0	4423.09	103	0	43.35	147.24	130	26	1.72E-03	9.9	
3	0	4786.79	2412	0	55.73	204.33	191	22	4.02E-02	2.0	
4	0	5331.42	5106	0	49.54	288.87	272	25	8.51E-02	1.4	
5	0	5439.87	82	0	49.54	305.57	300	12	1.37E-03	11.0	
6	0	5717.20	69	0	30.96	348.09	334	20	1.15E-03	12.0	

Configuration : DUB1:[ALP6.SAMPLE]CAL627\_201031224.CNF:1  
 Analyses by : ALPHA V1.5,PEAKEFF V2.2,NID V2.4  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:24:15  
 Sample ID : CAL627 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:03.00 Elapsed real time: 0 16:40:04.00 0.0%  
 Energy tolerance : 80.00 Half life ratio : 1.00  
 Errors propagated: No Systematic Error : 0.00 %  
 Efficiency type : Spline Efficiencies at : Peak Energy  
 Abundance limit : 60.00

Summary of Nuclide Activity

Total number of lines in spectrum 6  
 Number of unidentified lines 2  
 Number of lines tentatively identified by NID 4 66.67%

Nuclide Type : ap

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-232	72.00Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : np

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-234	2.45E+05Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-235	7.04E+08Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-238	4.47E+09Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found  
 "E" = Manually edited

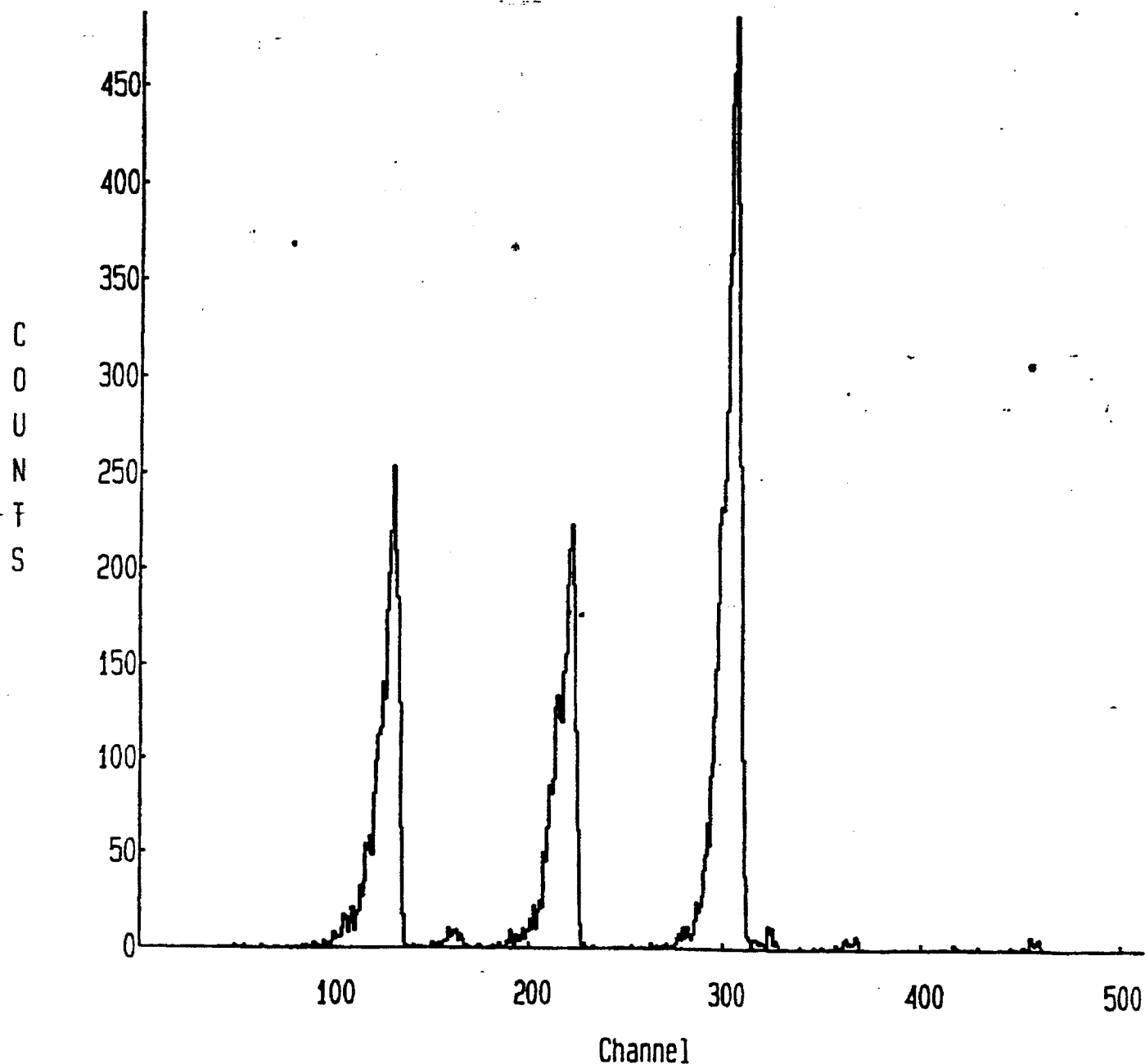
"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

LT-RO # <i>Cal 628</i>	ISU	CUSTOMER ID <i>IT</i>	RECEIVE DATE	DUE DATE
SA TYPE:	RPT UNITS: PCI <input checked="" type="radio"/> <i>OPM</i> <input type="radio"/> <i>G L CM</i> <input checked="" type="radio"/> <i>SA</i>		STORAGE	
PROC	VIAL			
GA	GB	CO	CS	
REQUESTED COUNTING TIME	REQ'D BY	SAMPLE DATE/ON DATE	SAMPLE DATE/OFF TIME	COUNTING DATE DAY MON YR TIME
<i>1000</i>	<i>CCG</i>	<i>10-18-93</i>		<i>U-232</i>
TOTAL SAMPLE WEIGHT OR VOLUME	UNIT	SUGGESTED ALIQUOT	SAMPLE ANALYZED WEIGHT OR VOLUME	UNIT
				<i>SA</i>
TRACER ISOTOPE	TRACER LIST NUMBER	TRACER VOLUME/WEIGHT	TRACER CONCENTRATE	TRACER REF DATE DAY MON YR
COUNTING INSTRUMENT CHECK ONE				OTHER
NAI	3	5	9	GER
				<input checked="" type="checkbox"/> <i>ASPEC</i>
				<input type="checkbox"/> <i>LEPD</i>
				<input type="checkbox"/> <i>ASC</i>
				<input type="checkbox"/> <i>BGC</i>
Spike #				TECH
Blank #				COMMENTS
				<i>CCG-Data Cal CK 23266</i>

Spectrum: DUB1: [ALP7.SAMPLE] CAL628\_201031225.CNF; 1

Title:

Sample Title: U IT



Start Time: 20-OCT-93 12:25

Real Time: 0 16:40:01.00

Live Time: 0 16:40:01.00

Sample Time: 19-OCT-93 12:00

Sample ID: CAL628

Sample Type: disk

FWHM Parameters:

Offset: 7.30E+01

Slope: 0.00E+00

SAMPLE IDENTIITY: CAL628

TITLE : U IT

DETECTOR : ALP7 1  
CONFIGURATION NAME : DUB1: [ALP7. SAMPLE]CAL628\_201031225. CNF; 1

ACQUIRE DATE of BACKGROUND: 25-SEP-1993 10:08:55

REPORT DATE : 21-Oct-93 SAMPLE DATE: 19-OCT-1993 12:00:00  
ACQUIRE DATE: 20-OCT-1993 12:25:05 CALIB DATE : 27-SEP-1993 08:19:51

PRESET REAL TIME:

ELAPSED REAL TIME:

OFFSET : 3432.88 keV CONSTANT FWHM : 8.00000 Channels  
SLOPE : 6.00798 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 6.174230E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %



Alpha Regions Report  
(Version: 8-Oct-91)

Sample Identity: CAL628

Flags Key

Detector: ALP7 1  
 Report Date: 21-Oct-93 05:09 AM  
 Acquire Date: 20-OCT-1993 12:25:05.04  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 1000 minutes  
 Bkgrnd Live Time: 2500 minutes

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsect Count	Count	Centrd Region		Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
				Rate C/Min	Energy keV	Width keV					
U-232	5086	69	0	5.058	5328.1	185.0	285	314	0.00	0.00	P
U-234	2366	2	0	2.365	4783.6	175.6	200	228	0.00	0.00	P
U-235	94	5	0	0.092	4403.8	179.7	138	167	0.00	0.00	H
U-238	2584	2	0	2.583	4203.8	203.2	104	137	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

Alpha Spectrum Listing  
(Version: 29-Jun-92)

Sample Identity: CAL628  
 Detector: MLP7 1  
 Report Date: 21-Oct-93 05:05 AM  
 Acquire Date: 20-OCT-1993 12:25:05.04

Flags Key

Intersect Region: e  
 Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	1	1	1	51	8	101	2-	151	15+	201	1	251	232+	301	0	351	0	401	2	451	1	501				
0	2	1	52	5	102	2-	152	18+	202	2	252	248+	302	0	352	0	402	2	452	0	502					
0	3	0	53	6	103	3-	153	22+	203	0	253	284+	303	0	353	0	403	1	453	0	503					
0	4	2	54	6+	104	1-	154	10+	204	0	254	349+	304	1	354	0	404	1	454	0	504					
0	5	0	55	10+	105	3-	155	19+	205	0	255	365+	305	1	355	0	405	7	455	0	505					
0	6	0	56	17+	106	4-	156	25+	206	1	256	443+	306	0	356	0	406	5	456	0	506					
0	7	0	57	16+	107	4-	157	21+	207	1	257	459+	307	3	357	1	407	3	457	1	507					
0	8	0	58	8+	108	10-	158	50+	208	1	258	488+	308	0	358	1	408	4	458	1	508					
0	9	0	59	13+	109	6-	159	45+	209	1	259	392+	309	1	359	1	409	6	459	0	509					
0	10	0	60	21+	110	7-	160	63+	210	0	260	255+	310	2	360	1	410	2	460	1	510					
0	11	0	61	9+	111	9-	161	85+	211	0	261	100+	311	5	361	1	411	1	461	0	511					
0	12	0	62	17+	112	9-	162	81+	212	3	262	38+	312	6	362	0	412	0	462	0	512					
0	13	2	63	19+	113	4-	163	89+	213	1	263	7+	313	3	363	1	413	1	463							
0	14	0	64	32+	114	7-	164	128+	214	0	264	5+	314	4	364	0	414	0	464							
0	15	0	65	27+	115	5-	165	134+	215	2	265	1	315	3	365	0	415	0	465							
0	16	0	66	34+	116	2-	166	122+	216	1	266	5	316	4	366	0	416	0	466							
0	17	0	67	54+	117	2-	167	120+	217	1	267	5	317	7	367	3	417	0	467							
0	18	0	68	51+	118	0	168	147+	218	2	268	5	318	5	368	2	418	0	468							
0	19	0	69	58+	119	1	169	156+	219	1	269	3	319	1	369	1	419	0	469							
0	20	1	70	48+	120	0	170	192+	220	3	270	4	320	0	370	1	420	0	470							
0	21	1	71	81+	121	0	171	211+	221	1	271	3	321	1	371	0	421	0	471							
0	22	1	72	99+	122	1	172	224+	222	0	272	2	322	0	372	1	422	0	472							
0	23	0	73	113+	123	2	173	192+	223	2	273	12	323	0	373	1	423	0	473							
0	24	0	74	117+	124	2	174	115+	224	2	274	9	324	0	374	0	424	0	474							
0	25	0	75	141+	125	1	175	62+	225	3	275	11	325	0	375	0	425	0	475							
0	26	1	76	132+	126	0	176	13+	226	6	276	3	326	0	376	1	426	0	476							
0	27	1	77	178+	127	0	177	2+	227	8	277	5	327	0	377	0	427	0	477							
0	28	1	78	198+	128	1	178	3+	228	5	278	3	328	0	378	0	428	0	478							
0	29	0	79	220+	129	1	179	0	229	11	279	0	329	0	379	2	429	0	479							
0	30	1	80	254+	130	1	180	1	230	6	280	0	330	0	380	0	430	0	480							
0	31	1	81	210+	131	2	181	0	231	11	281	1	331	0	381	0	431	0	481							
0	32	1	82	185+	132	0	182	0	232	7	282	1	332	0	382	0	432	0	482							
0	33	0	83	130+	133	0	183	2	233	5	283	0	333	0	383	0	433	0	483							
0	34	0	84	63+	134	3	184	0	234	8	284	0	334	0	384	0	434	0	484							
0	35	2	85	17+	135	0	185	0	235	15+	285	0	335	0	385	0	435	0	485							
0	36	0	86	2+	136	1	186	0	236	24+	286	0	336	0	386	0	436	0	486							
0	37	2	87	0+	137	0	187	0	237	19+	287	0	337	1	387	0	437	0	487							
0	38	1	88	1-	138	4	188	1	238	22+	288	1	338	0	388	0	438	0	488							
0	39	1	89	0-	139	3	189	0	239	28+	289	2	339	0	389	0	439	0	489							
0	40	0	90	2-	140	9	190	0	240	41+	290	1	340	0	390	1	440	0	490							
1	41	3	91	0-	141	4	191	0	241	49+	291	0	341	0	391	0	441	0	491							
0	42	2	92	1-	142	0	192	0	242	66+	292	0	342	0	392	0	442	0	492							
0	43	2	93	1-	143	7	193	1	243	54+	293	0	343	0	393	0	443	0	493							
0	44	1	94	1-	144	4	194	1	244	91+	294	0	344	1	394	1	444	0	494							
0	45	1	95	1-	145	4	195	1	245	99+	295	0	345	0	395	2	445	0	495							
1	46	4	96	1-	146	7	196	1	246	124+	296	2	346	0	396	0	446	0	496							
0	47	0	97	0-	147	10	197	0	247	149+	297	1	347	0	397	1	447	1	497							
0	48	3	98	0-	148	5	198	1	248	183+	298	0	348	0	398	1	448	0	498							
2	49	2	99	3-	149	9	199	0	249	225+	299	0	349	0	399	0	449	0	499							
0	50	4	100	3-	150	9+	200	0	250	234+	300	2	350	0	400	0	450	0	500							

```

Configuration      : DUB1: [ALP7. SAMPLE]CAL628_201031225. CNF: 1
Analyses by       : ALPHA V1.5
Sample title      : U IT
Sample date       : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:25:05
Sample ID        : CAL628 Sample quantity : 1.0000 SAMPLE
Sample type      : disk Sample geometry  :
Elapsed live time: 0 16:40:01.00 Elapsed real time: 0 16:40:01.00 0.0%
Start energy     : 3450.91 End energy   : 6670.82
Sensitivity      : 4.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4216.78	2584	0	60.08	128.77	104	33	4.31E-02	2.0	
2	0	4780.94	2366	0	66.09	219.43	200	28	3.94E-02	2.1	
3	0	5328.08	5086	0	60.08	305.83	285	29	8.48E-02	1.4	
4	0	5444.79	69	0	30.04	324.08	315	15	1.15E-03	12.0	

VAX/VMS Nuclide Identification Report V2.8 Generated 21-OCT-1993 05:09:42

Configuration : DUB1: [ALP7. SAMPLE]CAL628\_201031225. CNF; 1  
 Analyses by : ALPHA V1. 5. PEAKEFF V2. 2. NID V2. 4  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:25:05  
 Sample ID : CAL628 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:01.00 Elapsed real time: 0 16:40:01.00 0.0%  
 Energy tolerance : 80.00 Half life ratio : 1.00  
 Errors propagated: No Systematic Error : 0.00 %  
 Efficiency type : Spline Efficiencies at : Peak Energy  
 Abundance limit : 60.00

Summary of Nuclide Activity

Total number of lines in spectrum 4  
 Number of unidentified lines 1  
 Number of lines tentatively identified by NID 3 75.00%

Nuclide Type : ap

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-232	72.00Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : np

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-234	2.45E+05Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-238	4.47E+09Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

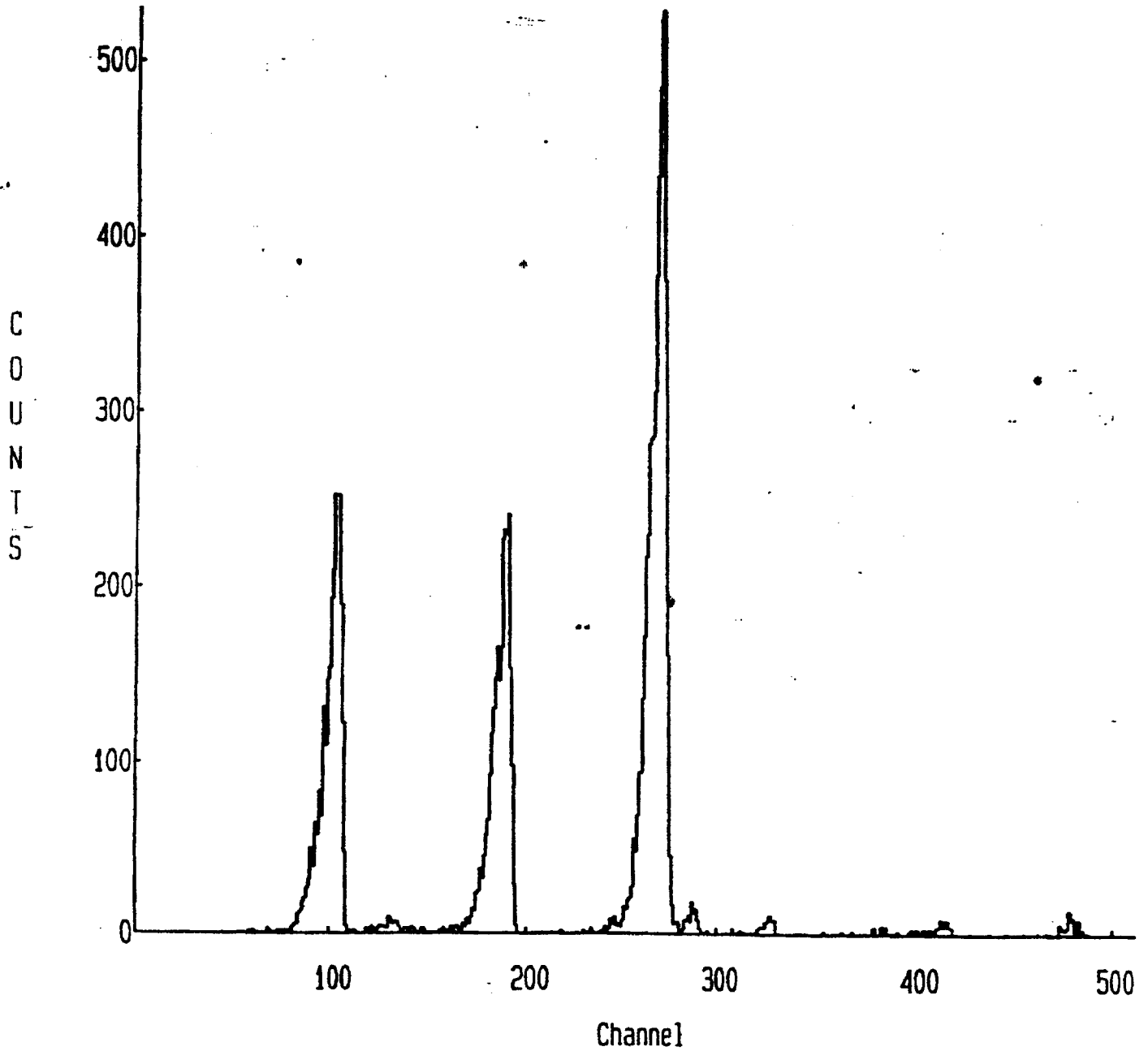
Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

IT-RD # <i>Cal 629</i>		ISO	CUSTOMER ID <i>IT</i>		RECEIVE DATE	DUE DATE
SA TYPE:		RPT UNITS: PCI <i>(DPH)</i> 6 L CH <i>(SA)</i>			STORAGE	
PROC		VIAL				
GA	GB	CO	CS			
REQUESTED COUNTING TIME	REQ'D BY	SAMPLE DATE/ON DATE TIME		SAMPLE DATE/OFF DATE TIME		COUNTING DATE DAY MON YR TIME
<i>1000</i>	<i>CCG</i>	<i>10-18-93</i>				<i>U-232</i>
TOTAL SAMPLE WEIGHT OR VOLUME	UNIT	SUGGESTED ALIQUOT	SAMPLE ANALYZED WEIGHT OR VOLUME	UNIT	GEOMETRY CIRCLE ONE	
					<input type="checkbox"/> 25 <input type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> 200 <input type="checkbox"/> 300 <input type="checkbox"/> 400 <input type="checkbox"/> 500   MA MB	
TRACER ISOTOPE	TRACER UST NUMBER	TRACER VOLUME/WEIGHT	TRACER CONCENTRATE	TRACER REP DATE DAY MON YR	LUST CIDS CIRCLE ONE	
					<input type="checkbox"/> 14 <input type="checkbox"/> 44 <input type="checkbox"/> 64 <input type="checkbox"/> 83 <input type="checkbox"/> 108 <input type="checkbox"/> 208   OTHER	
COUNTING INSTRUMENT CHECK ONE				OTHER		DETECTOR NUMBER
NAI	<input type="checkbox"/> 3	<input type="checkbox"/> 5	<input type="checkbox"/> 9	GER	<input checked="" type="checkbox"/> ASPEC	LEPD
					ASC	BGC
Spike #		TECH		COMMENTS		
Blank #		<i>WA</i>		<i>CCG Data Cal Ch 232LL</i>		

Spectrum: DUB1: [ALP10.SAMPLE] CAL629\_201031225.CNF; 1  
Title:  
Sample Title: U IT



Start Time: 20-OCT-93 12:25  
Real Time: 0 16: 40: 01.00  
Live Time: 0 16: 40: 01.00

Sample Time: 19-OCT-93 12:00  
Sample ID: CAL629  
Sample Type: disk

FWHM Parameters:  
Offset: 5.91E+01  
Slope: 0.00E+00

SAMPLE IDENTIITY:

CAL629

TITLE : U IT

DETECTOR : ALP10 1  
CONFIGURATION NAME : DUB1: [ALP10. SAMPLE]CAL629\_201031225. CNF; 1

ACQUIRE DATE of BACKGROUND: 02-OCT-1993 09:38:01

REPORT DATE : 21-Oct-93 SAMPLE DATE: 19-OCT-1993 12:00:00  
ACQUIRE DATE: 20-OCT-1993 12:25:55 CALIB DATE : 05-OCT-1993 08:52:11

PRESET REAL TIME:

ELAPSED REAL TIME:

OFFSET : 3525.60 keV CONSTANT FWHM : 8.00000 Channels  
SLOPE : 6.56733 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : 3.217460E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

alpha regions report  
(Version: 8-Oct-91)

Sample Identity: CAL629

Detector: ALP10 1  
 Report Date: 21-Oct-93 05:10 AM  
 Acquire Date: 20-OCT-1993 12:25:55.87  
 Tracer Nuclide: U-232  
 High Counts Limit: 36  
 Sample Live Time: 1000 minutes  
 Bkgrnd Live Time: 2500 minutes

Flags Key

P: Peak Identified  
 I: Peak Intersect  
 S: Single Non-peak Intersect  
 M: Multiple Non-peak Intersect  
 H: High Non-peak Sample Count  
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smp1 Count	Bkg Count	Intrsc Count	Count Rate C/Min	Centrd Region		Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
					Energy keV	Width keV					
U-232	5276	82	0	5.243	5315.6	155.0	254	277	0.00	0.00	P
U-234	2522	6	0	2.520	4771.1	160.5	172	196	0.00	0.00	P
U-235	87	3	0	0.086	4391.3	152.9	116	139	0.00	0.00	H
U-238	2571	2	0	2.570	4191.3	165.8	85	110	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)



Sample Identity: CAL629

Detector: ALP10 1

Report Date: 21-Oct-93 05:11 AM

Acquire Date: 20-OCT-1993 12:25:55.87

Flags Key

Intersect Region: e

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	1	0	51	194+	101	0	151	0	201	15	251	0	301	0	351	3	401	0	451	0	501					
0	2	0	52	210+	102	1	152	0	202	20	252	0	302	0	352	1	402	0	452	0	502					
0	3	1	53	253+	103	0	153	1	203	22	253	0	303	1	353	0	403	0	453	0	503					
0	4	0	54	252+	104	0	154	0	204	28+	254	0	304	2	354	3	404	0	454	0	504					
0	5	1	55	252+	105	2	155	1	205	56+	255	0	305	0	355	3	405	1	455	0	505					
0	6	1	56	190+	106	0	156	0	206	49+	256	1	306	0	356	0	406	0	456	0	506					
0	7	0	57	124+	107	3	157	1	207	70+	257	0	307	0	357	3	407	0	457	0	507					
0	8	0	58	48+	108	1	158	1	208	94+	258	0	308	0	358	3	408	0	458	0	508					
0	9	2	59	5+	109	2	159	0	209	95+	259	3	309	1	359	2	409	0	459	0	509					
0	10	0	60	1+	110	2	160	1	210	130+	260	0	310	0	360	1	410	0	460	0	510					
0	11	2	61	2	111	4	161	0	211	173+	261	1	311	1	361	4	411	0	461	0	511					
0	12	0	62	1	112	1	162	0	212	210+	262	1	312	0	362	5	412	1	462	0	512					
0	13	1	63	2	113	4	163	1	213	251+	263	2	313	2	363	9	413	0	463							
0	14	0	64	0	114	4	164	1	214	282+	264	0	314	0	364	5	414	0	464							
0	15	0	65	0	115	2	165	0	215	285+	265	1	315	0	365	8	415	0	465							
0	16	1	66	0+	116	2	166	1	216	287+	266	1	316	0	366	8	416	1	466							
0	17	0	67	0+	117	6	167	0	217	312+	267	1	317	0	367	5	417	1	467							
0	18	0	68	0+	118	4	168	2	218	379+	268	1	318	2	368	4	418	0	468							
0	19	3	69	3+	119	9	169	1	219	436+	269	1	319	1	369	0	419	0	469							
0	20	2	70	3+	120	6	170	0	220	487+	270	1	320	0	370	0	420	0	470							
0	21	1	71	1+	121	10	171	0	221	525+	271	0	321	0	371	0	421	0	471							
0	22	1	72	4+	122	15+	172	0	222	530+	272	3	322	1	372	0	422	1	472							
0	23	1	73	3+	123	14+	173	0	223	376+	273	4	323	0	373	0	423	0	473							
0	24	2	74	2+	124	24+	174	0	224	162+	274	4	324	1	374	0	424	0	474							
0	25	2	75	3+	125	26+	175	1	225	46+	275	4	325	1	375	0	425	0	475							
0	26	2	76	5+	126	39+	176	1	226	17+	276	7	326	0	376	0	426	0	476							
0	27	2	77	4+	127	33+	177	0	227	6+	277	8	327	1	377	0	427	0	477							
0	28	2	78	4+	128	46+	178	0	228	7	278	11	328	0	378	1	428	0	478							
0	29	1	79	3+	129	58+	179	2	229	7	279	8	329	4	379	0	429	0	479							
0	30	2	80	10+	130	67+	180	0	230	2	280	8	330	0	380	0	430	0	480							
0	31	2	81	8+	131	93+	181	1	231	2	281	1	331	0	381	0	431	0	481							
0	32	4	82	6+	132	118+	182	1	232	3	282	0	332	1	382	0	432	0	482							
0	33	6	83	7+	133	132+	183	3	233	8	283	0	333	5	383	0	433	0	483							
0	34	6	84	7+	134	149+	184	1	234	8	284	0	334	0	384	0	434	0	484							
0	35	12+	85	4+	135	167+	185	1	235	11	285	0	335	5	385	0	435	0	485							
0	36	14+	86	2+	136	148+	186	0	236	7	286	0	336	1	386	0	436	0	486							
0	37	19+	87	2+	137	167+	187	1	237	19	287	0	337	1	387	1	437	1	487							
0	38	21+	88	3+	138	228+	188	2	238	13	288	0	338	0	388	0	438	1	488							
0	39	27+	89	3+	139	233+	189	1	239	15	289	0	339	1	389	0	439	0	489							
0	40	32+	90	1	140	231+	190	4	240	8	290	1	340	0	390	0	440	0	490							
0	41	50+	91	4	141	242+	191	2	241	3	291	1	341	2	391	0	441	0	491							
0	42	40+	92	3	142	155+	192	3	242	1	292	0	342	0	392	0	442	0	492							
0	43	65+	93	0	143	98+	193	9	243	1	293	1	343	0	393	0	443	0	493							
0	44	58+	94	1	144	29+	194	6	244	1	294	0	344	0	394	0	444	0	494							
0	45	83+	95	1	145	5+	195	10	245	2	295	1	345	0	395	0	445	0	495							
1	46	69+	96	3	146	0+	196	5	246	1	296	0	346	0	396	1	446	0	496							
0	47	133+	97	3	147	0	197	6	247	0	297	0	347	2	397	0	447	0	497							
0	48	110+	98	1	148	0	198	4	248	0	298	0	348	3	398	0	448	0	498							
0	49	148+	99	0	149	1	199	8	249	0	299	0	349	0	399	0	449	0	499							
0	50	155+	100	1	150	0	200	16	250	1	300	0	350	0	400	0	450	0	500							

Configuration : DUB1: [ALP10. SAMPLE]CAL629\_201031225. CNF: 1  
 Analyses by : ALPHA V1.5  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:25:55  
 Sample ID : CAL629 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:01.00 Elapsed real time: 0 16:40:01.00 0.0%  
 Start energy : 3545.31 keV End energy : 6972.42 keV  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	ZErr	Fit
1	0	4204.02	2571	0	52.54	102.78	85	25	4.28E-02	2.0	
2	0	4770.82	2522	0	65.67	187.88	172	24	4.20E-02	2.0	
3	0	5315.62	5276	0	65.67	269.02	254	23	8.79E-02	1.4	
4	0	5437.69	122	0	45.97	287.11	273	22	2.03E-03	9.1	
5	0	5711.89	73	0	39.40	327.64	306	28	1.22E-03	11.7	
6	0	6301.29	72	0	45.97	414.24	395	26	1.20E-03	11.8	
7	0	6747.47	78	0	39.40	479.33	471	18	1.30E-03	11.3	

Configuration : DUB1:[ALP10.SAMPLE]CAL629\_201031225.CNF;1  
 Analyses by : ALPHA V1.5,PEAKEFF V2.2,NID V2.4  
 Sample title : U IT  
 Sample date : 19-OCT-1993 12:00:00 Acquisition date : 20-OCT-1993 12:25:55  
 Sample ID : CAL629 Sample quantity : 1.0000 SAMPLE  
 Sample type : disk Sample geometry :  
 Elapsed live time: 0 16:40:01.00 Elapsed real time: 0 16:40:01.00 0.0%  
 Energy tolerance : 80.00 keV Half life ratio : 1.00  
 Errors propagated: No Systematic Error : 0.00 %  
 Efficiency type : Spline Efficiencies at : Peak Energy  
 Abundance limit : 60.00

Summary of Nuclide Activity

Total number of lines in spectrum 7  
 Number of unidentified lines 4  
 Number of lines tentatively identified by NID 3 42.86%

Nuclide Type : ap

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 1-Sigma Error	1-Sigma ZError	Flags
U-232	72.00Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : np

Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 1-Sigma Error	1-Sigma ZError	Flags
U-234	2.45E+05Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-232	4.47E+09Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

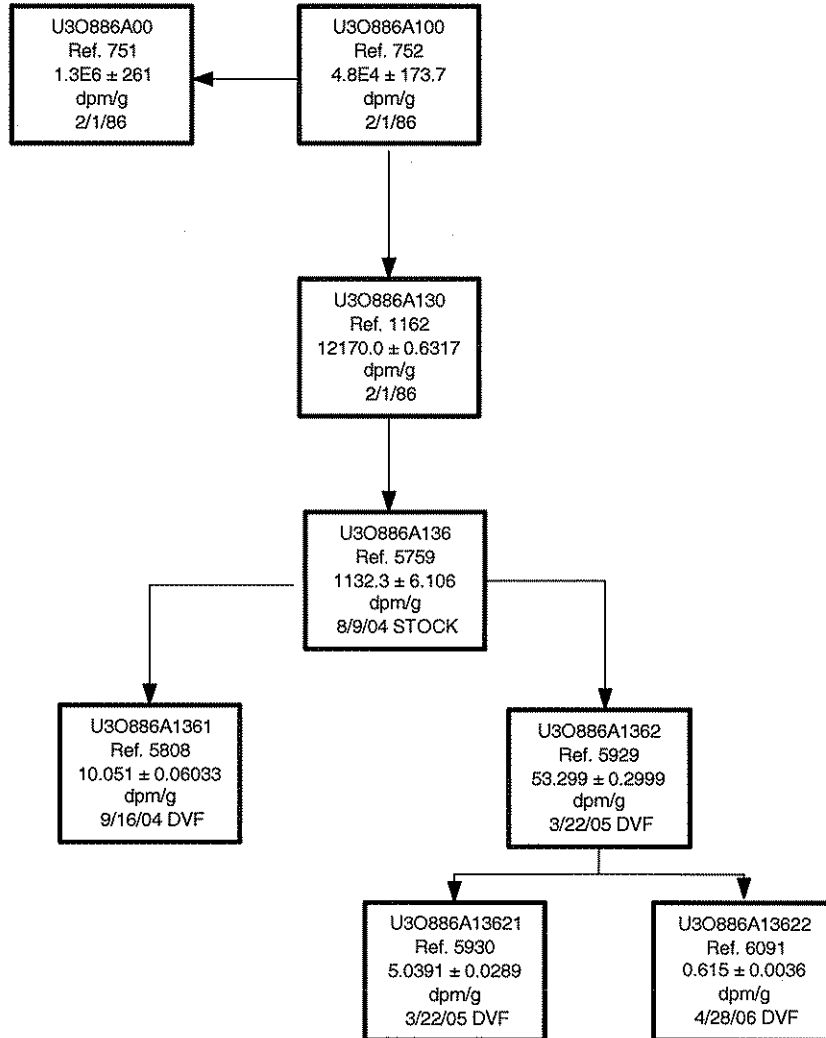
Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found "M" = Manually accepted  
 "E" = Manually edited "A" = Nuclide specific abn. limit

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
		Parent Standard: U3O886A1362	Ref: 3/22/2005	3.5107E+01 ± 1.950E-01	UG/G	
UISG1543	U	5.3012E+00 ± 2.986E-02 UG	0.151 g	11/20/2007 11/20/2007	Armstron	3.5107E+01 ± 1.950E-01 UG/G
		5.3012E+000 ± 5.301E+000 ( 1)		5.3012E+000 , 5.3012E+000		

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: U3O886A1362		Ref: 3/22/2005	5.3995E+01	± 2.999E-01	DPM/G	
<b>UISG1543</b>	UIO	<b>8.1532E+00 ± 4.592E-02</b> DPM	0.151 g	11/20/2007 11/20/2007	Armstron	5.3995E+01 ± 2.999E-01 DPM/G
		8.1532E+000 ± 8.153E+000 ( 1)	8.1532E+000 , 8.1532E+000			

**U3088A136**  
**Link**



## ISOTOPE DILUTION RECORD

1) Prepared by <u>tda</u>	2) Date Prepared	<u>5/8/2006</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U30886A1362</u></b>	<b><u>5929</u></b>
4) Source Activity (dpm ± dpm/g)	<u>5.3995E+01</u>	± <u>2.999E-01</u>
5) Source Activity (ug ± ug/g)	<u>3.5107E+01</u>	<u>1.9499E-01</u>
6) Percent error of Source Activity	<u>0.555</u>	%
7) Weight of Source Material used (g)	<u>14.4649</u>	
8) (% Error) of Weight of Source Material used	<u>0.0011</u>	%
9) Diluent	<u>2M HNO3</u>	
10) Total Weight of the Dilution (g)	<u>250</u>	
11) (% Error) of Total Weight of the Dilution	<u>0.0144</u>	%
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<b><u>3.1241E+00</u></b>	± <b><u>1.777E-02</u></b>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<b><u>2.0313E+00</u></b>	± <b><u>1.155E-02</u></b>
<b>14) Specific Activity of Diluted Solution ug/ml</b>	<b><u>2.1654E+00</u></b>	± <b><u>1.232E-02</u></b>
15) Total Uncertainty	<u>0.569</u>	%
<b>16) Dilution Identification Number / Ref. Number</b>	<b><u>U30886A13623</u></b>	<b><u>6103</u></b>
17) Calibration Reference Date	<u>3/22/2005</u>	
18) Isotope Inventory File update by/date	<u>tda</u>	<u>6/8/2006</u>
19) Reviewed by/date	<u>J.C.</u>	<u>8/7/2006</u>
20) Location <u>QCLAB</u>	21) Exhausted	

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### CALCULATIONS

8) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

11) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

12-13) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

15) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

Form: CC-006, 5/5/94, Rev 2

**ISOTOPE DILUTION RECORD**

1) Prepared by tda 2) Date Prepared 4/28/2006

**3) Source Identification Number / Ref. Number** U30886A1362 5929

4) Source Activity (dpm ± dpm/g) 5.3995E+01 ± 2.999E-01

5) Source Activity (ng ± ng/g) 3.5107E+04 ± 1.950E+03

6) Percent error of Source Activity 0.555 %

7) Weight of Source Material used (g) 3.008

8) (% Error) of Weight of Source Material used 0.1596 %

9) Diluent 2 M HNO3

10) Total Weight of the Dilution (g) 263.98

11) (% Error) of Total Weight of the Dilution 0.1136 %

**12) Specific Activity of Diluted Solution dpm/g** 6.1526E-01 ± 3.621E-03

**13) Specific Activity of Diluted Solution ng/g** 400.0405516 ± 2.354483147

**14) Specific Activity of Diluted Solution ng/mL** 4.0880E+02 ± 2.406E+00

15) Total Uncertainty 0.589 %

**16) Dilution Identification Number / Ref. Number** U30886A13622 6091

17) Calibration Reference Date 4/28/2006

18) Isotope Inventory File update by/date tda tda

19) Reviewed by/date \_\_\_\_\_

20) Location QCLAB 21) Exhausted \_\_\_\_\_

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**CALCULATIONS**

8) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

11) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

12) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

15) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$



**ISOTOPE DILUTION RECORD**

1) Prepared by W.G 2) Date Prepared 9/16/2004

**3) Source Identification Number / Ref. Number** U30886A136 5759

4) Source Activity (dpm ± dpm/g) 1.1323E+03 ± 6.106E+00

5) Source Activity (ug ± ug/g) 7.3622E+02 3.9701E+00

6) Percent error of Source Activity 0.539 %

7) Weight of Source Material used (g) 2.0783

8) (% Error) of Weight of Source Material used 0.2310 %

9) Diluent 2M HNO3-P0400528

10) Total Weight of the Dilution (g) 234.14

11) (% Error) of Total Weight of the Dilution 0.1281 %

**12) Specific Activity of Diluted Solution dpm/g** 1.0051E+01 ± 6.033E-02

**13) Specific Activity of Diluted Solution ug/g** 6.5349E+00 ± 3.922E-02

14) Total Uncertainty 0.600 %

**15) Dilution Identification Number / Ref. Number** U30886A1361 5808

16) Calibration Reference Date 9/16/2004

17) Isotope Inventory File update by/date W.G 9/16/2004

18) Reviewed by/date sew 9/21/2004

19) Location QCLB/STWT1049 20) Exhausted \_\_\_\_\_

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**CALCULATIONS**

8) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

11) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

12) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

14) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G</u>	2) Date Prepared	<u>8/9/2004</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U30886A130</u></b>	<b><u>1162</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>1.2170E+04</u>	±	<u>6.317E-01</u>
5) Source Activity (ug ± ug/g)	<u>7.9129E+03</u>		<u>4.1073E-01</u>
6) Percent error of Source Activity	<u>0.519</u>	%	
7) Weight of Source Material used (g)	<u>19.3584</u>		
8) (% Error) of Weight of Source Material used	<u>0.0248</u>	%	
9) Diluent	<u>2M HNO3-P0400528</u>		
10) Total Weight of the Dilution (g)	<u>208.06</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.1442</u>	%	
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<b><u>1.1323E+03</u></b>	±	<b><u>6.106E+00</u></b>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<b><u>7.3623E+02</u></b>	±	<b><u>3.970E+00</u></b>
14) Total Uncertainty	<u>0.539</u>	%	
<b>15) Dilution Identification Number / Ref. Number</b>	<b><u>U30886A136</u></b>	<b><u>5759</u></b>	
16) Calibration Reference Date	<u>8/9/2004</u>		
17) Isotope Inventory File update by/date	<u>W.G</u>		<u>8/9/2004</u>
18) Reviewed by/date	<u>sew</u>		<u>8/11/2004</u>
19) Location <u>QCLB/STWT1026</u>	20) Exhausted		

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**CALCULATIONS**

8) % Error of Wt. used = (0.0048 / Weight of Source Material used \* 100)

11) % error of Dilution Wt. = (0.3 / Total Weight of Dilution \* 100)

12) Specific Activity = Source Activity \* Wt. of Source Material used / Total Wt. of the Dilution

14) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity } ^2 + \% \text{ error of Wt. Used } ^2 + \% \text{ error of Dilution Wt. } ^2)}$ Form: CC-006a, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by S.S 2) Date Prepared 9/14/1987

**3) Source Identification Number / Ref. Num** U30886A100 **752**

4) Source Activity (dpm ± dpm/g) 4.7985E+04 ± 1.731E+02

5) Source Activity (ug ± ug/g) 3.1200E+04 1.1255E+02

6) Percent error of Source Activity 0.361 %

7) Weight of Source Material used (g) 20.4345

8) (% Error) of Weight of Source Material used 0.0005 %

9) Diluent 2M HNO3

10) Total Weight of the Dilution (g) 80.57

11) (% Error) of Total Weight of the Dilution 0.1386 %

**12) Specific Activity of Diluted Solution dpm** 1.2170E+04 ± 6.317E+01

**13) Specific Activity of Diluted Solution ug/g** 7.9130E+03 ± 4.107E+01

14) Total Uncertainty 0.519 %

**15) Dilution Identification Number / Ref. Num** U30886A130 **1162**

16) Calibration Reference Date 2/1/1986

17) Isotope Inventory File update by/date S.S. 9/14/1987

18) Reviewed by/date D.M. 6/14/1994

19) Location PF-9 20) Exhausted 12/13/1990

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100) ^2$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>C.S.</u>	2) Date Prepared	<u>3/24/86</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>U3O886A000</u></b>	<b><u>751</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>1.3045E+06</u>	±	<u>2.610E+02</u>
5) Source Activity (ug ± ug/g)	<u>8.4818E+05</u>		<u>1.6970E+02</u>
6) Percent error of Source Activity	<u>0.02</u>	%	
7) Weight of Source Material used (g)	<u>3.3411</u>		
8) (% Error) of Weight of Source Material used	<u>0.0206</u>	%	
9) Diluent	<u>8M HNO3</u>		
10) Total Weight of the Dilution (g)	<u>90.83</u>		
11) (% Error) of Total Weight of the Dilution	<u>0.1091</u>	%	
<b>12) Specific Activity of Diluted Solution dpm/g</b>	<b><u>4.7985E+04</u></b>	±	<b><u>1.731E+02</u></b>
<b>13) Specific Activity of Diluted Solution ug/g</b>	<b><u>3.1200E+04</u></b>	±	<b><u>1.125E+02</u></b>
14) Total Uncertainty	<u>0.361</u>	%	
<b>15) Dilution Identification Number / Ref. Number</b>	<b><u>U3O886A100</u></b>	<b><u>752</u></b>	
16) Calibration Reference Date	<u>2/1/86</u>		
17) Isotope Inventory File update by/date	<u>D.D.</u>		<u>5/7/86</u>
18) Reviewed by/date	<u>D.M.</u>		<u>6/15/94</u>
19) Location <u>PF-8</u>	20) Exhausted		<u>11/8/93</u>

**CALCULATIONS**

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100) ^2$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100) ^2$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$$

**ISOTOPE RECORD FORM**

1) Isotope U-NAT 2) Reference Number #751  
 3) Half Life Negligible Decay 4) Storage Location STD LAB  
 5) Source Identification Number U3O886A000

\*\*\*\*\*  
 CALIBRATION DATA

6) Activity as Received Units 1.304E+06 dpm/g  
 7) Overall Uncertainty Percent 0.02%  
 8) Reference Date / Time 1-Feb-86  
 9) Activity dpm/g 1.304E+06 ± 2.61E+02 (0.02%) dpm/g  
 10) Volume or Mass (ml/g) 10 g  
 11) Calibrated by NBS  
 12) Certificate Solution Number SRM 950B Uranium Oxide

\*\*\*\*\*  
 SURVEY DATA

13) Date Received 2/1/86  
 14) Surveyed by D.D. & A.V.R.  
 15) Survey Reading (Beta/Gamma) cpm 100,000 cpm at Contact  
 16) Survey Reading (Alpha) cpm Background

\*\*\*\*\*  
 17) Activity Conversion (0.8481g U-nat / g U3O8) (0.99968) (1.538E+06 dpm / g U-nat) =  
1.304E+06 ± 2.61E+02 (0.02%) dpm/g U3O8

18) Remarks MW U3O8 = (3 \* 238.0289) + (8 \* 15.9994) = 842.0819 g / mole U3O8

Material was ignited at 800°C in a crucible for 1 hr and cooled to room temperature in a sealed dessicator.

19) Isotope File Updated by D.D.

20) QC Approved D.B.

# National Bureau of Standards

751

## Certificate

### Standard Reference Material 950b

#### Uranium Oxide ( $U_3O_8$ )

(In Cooperation with the Department of Energy, New Brunswick Laboratory, Argonne, Illinois)

This material consists of normal uranium in the form of oxide,  $U_3O_8$ . It is intended to provide a reference material of known uranium content.

#### CERTIFIED VALUE

Uranium Oxide ( $U_3O_8$ ) . . . 99.968 ± 0.020 percent

The stated uncertainty of ±0.020 percent associated with the certified value is the linear sum of 0.0076 percent, which is the limit of the random error of the assay measurements at the 99 percent confidence level ( $2.307 S_m$ , where  $S_m$  is the standard error of the mean with  $n = 24$ ), and 0.012 percent, the estimated upper limit of conceivable systematic errors including material variability. The above certified value is based on material heated at 800 °C for one hour in an open crucible in a muffle furnace and cooled in a desiccator. It is recommended that the material be freshly ignited in this manner to obtain accurate results.

The total impurities as determined by spectrochemical analysis are estimated to be less than 50 µg/g. The determined iron content is ~3 µg/g and the determined vanadium content is ~1 µg/g. The assay of this material is based on the use of NBS Potassium Dichromate (SRM 136c) as the oxidizing agent as described in the NBS titrimetric method for the precise assay of uranium metal. The assay values obtained are comparable with those obtained from the assay of NBS Uranium Metal (SRM 950) and NBS Uranium Oxide (SRM 950a). The certified value for this lot of uranium oxide has also been confirmed using a coulometric procedure.

The atomic weights used in the calculations were uranium, 238.029, and oxygen, 15.9994.

This material was prepared under contract with the National Lead Company of Ohio, Cincinnati, Ohio. Assay of the material was performed by N. M. Trahey of the New Brunswick Laboratory, Argonne, Illinois and J. R. Moody and W. Kocz of the NBS Analytical Chemistry Division. Iron and vanadium were measured by B. I. Diamondstone and S. A. Weiss of the NBS Analytical Chemistry Division.

Overall direction and coordination of the technical measurements leading to the certification were performed under the chairmanship of J. L. Barnum.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by W. P. Reed.

Washington, D.C. 20234  
March 1, 1973

J. Paul Cali, Chief  
Office of Standard Reference Materials

(over)

URANIUM ISOTOPIC  
CONTINUING CALIBRATION

Quality Assurance Report. Generated 21-DEC-2007 18:28:41.60

QA Filename : \$DISK1:[ALP9.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Am-241  
Parameter Units : % Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.375384 Std Deviation : 0.004785

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3716	
1-DEC-2007 15:52	chk		0.3786	

-- Multi-Test Full Report --

Description : Constant FWHM  
Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.013889 Std Deviation : 0.312123

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		5.8333	
1-DEC-2007 15:52	chk		6.0000	

-- Multi-Test Full Report --

Description : Centroid, Am-241  
Parameter Units : channels Parameter Type : Peak



Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 348.763672      Std Deviation : 1.259647

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		347.5442	
1-DEC-2007 15:52	chk		347.1144	

2-NOV-2007 08:13	chk		347.5442	
1-DEC-2007 15:52	chk		347.1144	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.399104      Std Deviation : 0.002688

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.4007	
1-DEC-2007 15:52	chk		0.4013	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.4007	
1-DEC-2007 15:52	chk		0.4013	

2-NOV-2007 08:13	chk		0.4007	
1-DEC-2007 15:52	chk		0.4013	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.388638      Std Deviation : 0.034185

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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2-NOV-2007 08:13  chk          6.4085  | | |
1-DEC-2007 15:52  chk          6.4033  | | |
```

Quality Assurance Report.                      Generated 21-DEC-2007 18:28:42.22

QA Filename        : \$DISK1:[ALP9.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description        : 4010, Th-232 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 26-AUG-2005 00:00 End Date        : 30-MAY-2030 00:00  
Mean              : 0.000838            Std Deviation   : 0.000986

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30  bkg          0.0040  |Ac| |
2-DEC-2007 09:51  bkg          0.0030  |In| |
```

-- Multi-Test Full Report --

Description        : 4196, U-238 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 26-AUG-2005 00:00 End Date        : 30-MAY-2030 00:00  
Mean              : 0.001054            Std Deviation   : 0.000911

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0010  | | |
2-DEC-2007 09:51  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000432 Std Deviation : 0.000603

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001405 Std Deviation : 0.001212

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001351 Std Deviation : 0.001183

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0010	

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-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001351 Std Deviation : 0.001230

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0010	

-----

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001162 Std Deviation : 0.001280

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0050	In
2-DEC-2007 09:51	bkg		0.0020	

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-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001351      Std Deviation : 0.001295

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0050	In
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001243      Std Deviation : 0.001256

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0040	In
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000540      Std Deviation : 0.001016

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001729 Std Deviation : 0.001557

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0050	In

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002216 Std Deviation : 0.001734

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0060	In
2-DEC-2007 09:51	bkg		0.0040	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002540 Std Deviation : 0.001994

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0080	In	
2-DEC-2007 09:51	bkg		0.0050		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.026780 Std Deviation : 0.019025

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0580		
2-DEC-2007 09:51	bkg		0.0480		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.025375 Std Deviation : 0.017986

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg 0.0520 | | |  
 2-DEC-2007 09:51 bkg 0.0440 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.024213 Std Deviation : 0.017307

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0500		
2-DEC-2007 09:51 bkg			0.0420		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.023159 Std Deviation : 0.016592

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0450		
2-DEC-2007 09:51 bkg			0.0460		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide



Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.013728      Std Deviation : 0.010747

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0300		
2-DEC-2007 09:51	bkg		0.0320		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 26-AUG-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.007242      Std Deviation : 0.005969

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0130		
2-DEC-2007 09:51	bkg		0.0050		

Quality Assurance Report.                      Generated 21-DEC-2007 18:27:10.64

QA Filename       : \$DISK1:[ALP8.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description       : Efficiency, Am-241  
Parameter Units   :                      Parameter Type : Generic

Investigate Level : 2.000000              Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date       : 13-SEP-2004 00:00 End Date       : 30-MAY-2030 00:00  
Mean             : 0.375323              Std Deviation   : 0.005930

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3743	
1-DEC-2007 15:52	chk		0.3764	

-- Multi-Test Full Report --

Description       : Constant FWHM  
Parameter Units   : channels              Parameter Type : Generic

Investigate Level : 2.000000              Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date       : 13-SEP-2004 00:00 End Date       : 30-MAY-2030 00:00  
Mean             : 8.565360              Std Deviation   : 0.216226

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		8.3333	
1-DEC-2007 15:52	chk		8.1667	

-- Multi-Test Full Report --

Description       : Centroid, Am-241  
Parameter Units   : channels              Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 363.803101      Std Deviation : 1.419025

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		364.0074	
1-DEC-2007 15:52	chk		363.2375	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.388185      Std Deviation : 0.003727

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3880	
1-DEC-2007 15:52	chk		0.3873	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3880	
1-DEC-2007 15:52	chk		0.3873	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.335943      Std Deviation : 0.060957

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-NOV-2007 08:13  chk          7.3318  | | |
1-DEC-2007 15:52  chk          7.3005  | | |
```

Quality Assurance Report.                      Generated 21-DEC-2007 18:27:11.27

QA Filename        : \$DISK1:[ALP8.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description        : 4010, Th-232 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 13-SEP-2004 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.000231            Std Deviation   : 0.000469

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0000  | | |
2-DEC-2007 09:51  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description        : 4196, U-238 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 13-SEP-2004 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.000577            Std Deviation   : 0.000801

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0010  | | |
2-DEC-2007 09:51  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000269 Std Deviation : 0.000490

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0010		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000596 Std Deviation : 0.000748

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0010		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000711 Std Deviation : 0.000871

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000711 Std Deviation : 0.000871

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000558 Std Deviation : 0.000850

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000481      Std Deviation : 0.000804

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000461      Std Deviation : 0.000699

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000923      Std Deviation : 0.001082

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001904 Std Deviation : 0.001752

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0050	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002250 Std Deviation : 0.002066

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0050	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --



Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002788 Std Deviation : 0.002476

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0070		
2-DEC-2007 09:51	bkg		0.0030		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.027554 Std Deviation : 0.020167

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0560		
2-DEC-2007 09:51	bkg		0.0520		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.032668 Std Deviation : 0.023983

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg 0.0710 | | |  
 2-DEC-2007 09:51 bkg 0.0600 | | |

## -- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.031246 Std Deviation : 0.022972

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0680		
2-DEC-2007 09:51 bkg			0.0560		

## -- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.027054 Std Deviation : 0.021144

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0620		
2-DEC-2007 09:51 bkg			0.0590		

## -- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.024727      Std Deviation : 0.019226

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0560		
2-DEC-2007 09:51	bkg		0.0550		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 13-SEP-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.008153      Std Deviation : 0.006123

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0160		
2-DEC-2007 09:51	bkg		0.0140		

Quality Assurance Report.                      Generated 21-DEC-2007 18:21:29.67

QA Filename     : \$DISK1:[ALP7.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description     : Efficiency, Am-241  
Parameter Units :                      Parameter Type : Generic

Investigate Level : 2.000000              Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 9-AUG-2004 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.352458              Std Deviation : 0.005693

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3543	
1-DEC-2007 15:52	chk		0.3545	

-- Multi-Test Full Report --

Description     : Constant FWHM  
Parameter Units : channels              Parameter Type : Generic

Investigate Level : 2.000000              Action Level   : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 9-AUG-2004 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 6.816092              Std Deviation : 0.294010

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		6.6667	
1-DEC-2007 15:52	chk		6.6667	

-- Multi-Test Full Report --

Description     : Centroid, Am-241  
Parameter Units : channels              Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 352.585449      Std Deviation : 1.196152

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		351.0688	
1-DEC-2007 15:52	chk		351.0363	

2-NOV-2007 08:13	chk		351.0688	
1-DEC-2007 15:52	chk		351.0363	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.366631      Std Deviation : 0.003429

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3672	
1-DEC-2007 15:52	chk		0.3668	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:13	chk		0.3672	
1-DEC-2007 15:52	chk		0.3668	

2-NOV-2007 08:13	chk		0.3672	
1-DEC-2007 15:52	chk		0.3668	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.468233      Std Deviation : 0.054330

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-NOV-2007 08:13  chk          7.4639  | | |
1-DEC-2007 15:52  chk          7.4317  | | |
```

Quality Assurance Report.                   Generated 21-DEC-2007 18:21:30.32

QA Filename     : \$DISK1:[ALP7.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description     : 4010, Th-232 bkg (cnts/min)  
Parameter Units : cnts/min       Parameter Type : Nuclide

Investigate Level : 2.000000       Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 9-AUG-2004 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.000797       Std Deviation : 0.000979

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30 bkg          0.0040  |Ac| |
2-DEC-2007 09:51 bkg          0.0010  | | |
```

-- Multi-Test Full Report --

Description     : 4196, U-238 bkg (cnts/min)  
Parameter Units : cnts/min       Parameter Type : Nuclide

Investigate Level : 2.000000       Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 9-AUG-2004 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.001781       Std Deviation : 0.001955

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30 bkg          0.0020  | | |
2-DEC-2007 09:51 bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000328 Std Deviation : 0.000565

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001828 Std Deviation : 0.002082

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0020		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001797 Std Deviation : 0.002337

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001547 Std Deviation : 0.002246

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000922 Std Deviation : 0.001058

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide



Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000750      Std Deviation : 0.000908

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000578      Std Deviation : 0.000832

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000953      Std Deviation : 0.001075

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0030	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002062 Std Deviation : 0.002092

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0060	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002656 Std Deviation : 0.002398

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0040	
2-DEC-2007 09:51	bkg		0.0060	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004109 Std Deviation : 0.003418

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0060		
2-DEC-2007 09:51	bkg		0.0110	In	

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.030230 Std Deviation : 0.022942

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0650		
2-DEC-2007 09:51	bkg		0.0730		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.029762 Std Deviation : 0.022817

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg 0.0680 | | |  
 2-DEC-2007 09:51 bkg 0.0700 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.028090 Std Deviation : 0.021670

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0630		
2-DEC-2007 09:51 bkg			0.0670		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.028418 Std Deviation : 0.024194

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0650		
2-DEC-2007 09:51 bkg			0.0550		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.025247      Std Deviation : 0.022106

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0590		
2-DEC-2007 09:51	bkg		0.0500		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.008843      Std Deviation : 0.007017

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0220		
2-DEC-2007 09:51	bkg		0.0180		

Quality Assurance Report. Generated 21-DEC-2007 18:17:09.83

QA Filename : \$DISK1:[ALP6.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Am-241  
Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.325628 Std Deviation : 0.006368

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		0.3216		
1-DEC-2007 15:51	chk		0.3233		

-- Multi-Test Full Report --

Description : Constant FWHM  
Parameter Units : channels Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.672840 Std Deviation : 0.450651

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		6.5000		
1-DEC-2007 15:51	chk		6.8333		

-- Multi-Test Full Report --

Description : Centroid, Am-241  
Parameter Units : channels Parameter Type : Peak

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 347.814911      Std Deviation : 1.381465

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		346.6339		
1-DEC-2007 15:51	chk		348.1482		

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.333046      Std Deviation : 0.003617

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		0.3328		
1-DEC-2007 15:51	chk		0.3346		

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:13	chk		0.3328		
1-DEC-2007 15:51	chk		0.3346		

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
Mean : 7.488449      Std Deviation : 0.067200

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
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2-NOV-2007 08:13  chk          7.5271  | | |
1-DEC-2007 15:51  chk          7.2993  |In| |
```

Quality Assurance Report.                      Generated 21-DEC-2007 18:17:10.53

QA Filename        : \$DISK1:[ALP6.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description        : 4010, Th-232 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 3-SEP-2002 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.000750            Std Deviation   : 0.000985

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0010  | | |
2-DEC-2007 09:51  bkg          0.0000  | | |
```

-- Multi-Test Full Report --

Description        : 4196, U-238 bkg (cnts/min)  
Parameter Units    : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 3-SEP-2002 00:00 End Date        : 30-MAY-2030 00:00  
Mean               : 0.001148            Std Deviation   : 0.001088

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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```
-----
3-NOV-2007 10:30  bkg          0.0030  | | |
2-DEC-2007 09:51  bkg          0.0010  | | |
```

-- Multi-Test Full Report --



Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000557 Std Deviation : 0.000828

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0000		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000966 Std Deviation : 0.001033

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0010		
2-DEC-2007 09:51	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000954 Std Deviation : 0.001005

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000966 Std Deviation : 0.001011

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0030	In

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000704 Std Deviation : 0.000899

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0030	In

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000568      Std Deviation : 0.000827

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0030	In

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000500      Std Deviation : 0.000773

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001227      Std Deviation : 0.001275

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002261 Std Deviation : 0.002346

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:51	bkg		0.0030	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003079 Std Deviation : 0.003059

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0020	
2-DEC-2007 09:51	bkg		0.0050	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.004454 Std Deviation : 0.004497

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0060		
2-DEC-2007 09:51	bkg		0.0070		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.043289 Std Deviation : 0.021234

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0870	In	
2-DEC-2007 09:51	bkg		0.0600		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.043198 Std Deviation : 0.021210

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg 0.0830 | | |  
 2-DEC-2007 09:51 bkg 0.0610 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.040709 Std Deviation : 0.020082

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0790		
2-DEC-2007 09:51 bkg			0.0590		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.036835 Std Deviation : 0.022561

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0680		
2-DEC-2007 09:51 bkg			0.0590		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0650		
2-DEC-2007 09:51	bkg		0.0550		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00      End Date : 30-MAY-2030 00:00

Mean : 0.011316      Std Deviation : 0.007042

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0180		
2-DEC-2007 09:51	bkg		0.0140		

Quality Assurance Report.                      Generated 21-DEC-2007 18:48:10.81

QA Filename        : \$DISK1:[ALP10.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description        : Efficiency, Am-241  
 Parameter Units    :                      Parameter Type : Generic

Investigate Level : 2.000000              Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 31-JAN-2005 00:00 End Date        : 30-MAY-2030 00:00  
 Mean             : 0.309354              Std Deviation   : 0.004224

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:14	chk		0.3087		
1-DEC-2007 15:52	chk		0.3106		

-- Multi-Test Full Report --

Description        : Constant FWHM  
 Parameter Units    : channels              Parameter Type : Generic

Investigate Level : 2.000000              Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date        : 31-JAN-2005 00:00 End Date        : 30-MAY-2030 00:00  
 Mean             : 6.877778              Std Deviation   : 0.282932

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-NOV-2007 08:14	chk		6.6667		
1-DEC-2007 15:52	chk		6.8333		

-- Multi-Test Full Report --

Description        : Centroid, Am-241  
 Parameter Units    : channels              Parameter Type : Peak



Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 336.973267      Std Deviation : 0.881383

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		336.5861	
1-DEC-2007 15:52	chk		336.0824	

2-NOV-2007 08:14	chk		336.5861	
1-DEC-2007 15:52	chk		336.0824	

## -- Multi-Test Full Report --

Description : Average Efficiency  
Parameter Units : %      Parameter Type :

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 0.393932      Std Deviation : 0.003683

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		0.3913	
1-DEC-2007 15:52	chk		0.3932	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-NOV-2007 08:14	chk		0.3913	
1-DEC-2007 15:52	chk		0.3932	

2-NOV-2007 08:14	chk		0.3913	
1-DEC-2007 15:52	chk		0.3932	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
Parameter Units : keV/chan      Parameter Type : Generic

Investigate Level : 2.000000      Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
Mean : 6.461465      Std Deviation : 0.032722

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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2-NOV-2007 08:14	chk	6.4480	
1-DEC-2007 15:52	chk	6.5141	

Quality Assurance Report.                      Generated 21-DEC-2007 18:48:11.43

QA Filename     : \$DISK1:[ALP10.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description     : 4010, Th-232 bkg (cnts/min)  
Parameter Units : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 31-JAN-2005 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.000723            Std Deviation : 0.000852

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0000	
2-DEC-2007 09:52	bkg		0.0000	

-- Multi-Test Full Report --

Description     : 4196, U-238 bkg (cnts/min)  
Parameter Units : cnts/min            Parameter Type : Nuclide

Investigate Level : 2.000000            Action Level    : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date     : 31-JAN-2005 00:00 End Date     : 30-MAY-2030 00:00  
Mean           : 0.001106            Std Deviation : 0.001068

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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3-NOV-2007 10:30	bkg		0.0040	In
2-DEC-2007 09:52	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000489 Std Deviation : 0.000953

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0010		
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2-DEC-2007 09:52	bkg		0.0000		
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-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001000 Std Deviation : 0.001142

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0010		
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2-DEC-2007 09:52	bkg		0.0010		
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-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001404 Std Deviation : 0.001279

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:52	bkg		0.0040	In

-----

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.001319 Std Deviation : 0.001144

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:52	bkg		0.0040	In

-----

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000893 Std Deviation : 0.000914

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0020	
2-DEC-2007 09:52	bkg		0.0030	In

-----

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000745      Std Deviation : 0.000988

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0020		
2-DEC-2007 09:52	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4901, Pu-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.000638      Std Deviation : 0.000845

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0010		
2-DEC-2007 09:52	bkg		0.0010		

-- Multi-Test Full Report --

Description : 5155, Pu-239 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.001510      Std Deviation : 0.001213

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0040	In
2-DEC-2007 09:52	bkg		0.0040	In

-- Multi-Test Full Report --

Description : 5275, Am-243 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.002425 Std Deviation : 0.001766

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0060	In
2-DEC-2007 09:52	bkg		0.0040	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide  
 Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.003148 Std Deviation : 0.002216

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:30	bkg		0.0070	
2-DEC-2007 09:52	bkg		0.0050	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.003850 Std Deviation : 0.002637

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0060		
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2-DEC-2007 09:52	bkg		0.0050		
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-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.029103 Std Deviation : 0.020505

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30	bkg		0.0520		
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2-DEC-2007 09:52	bkg		0.0660		
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-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.027018 Std Deviation : 0.019151

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg 0.0590 | | |  
 2-DEC-2007 09:52 bkg 0.0540 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.025763 Std Deviation : 0.018299

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:30 bkg			0.0580		
2-DEC-2007 09:52 bkg			0.0510		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.024465 Std Deviation : 0.019082

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

3-NOV-2007 10:30 bkg			0.0580		
2-DEC-2007 09:52 bkg			0.0480		

-- Multi-Test Full Report --

Description : 5805, Cm-244 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type : Nuclide



Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.015934      Std Deviation : 0.013141

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0400		
2-DEC-2007 09:52	bkg		0.0370		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type : Nuclide

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 31-JAN-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.007254      Std Deviation : 0.005768

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:30	bkg		0.0140		
2-DEC-2007 09:52	bkg		0.0150		

RADIUM 228  
SAMPLE AND QC DATA

Lot No., Due Date: F7K160242,F7K190152,F7K200219; 12/14/2007,12/18/2007,12/20/2007  
Client, Site: 445691; Phs2 Smplng Tronox Prcl CDFG  
QC Batch No., Method Test: 7327122; RRA228 Ra-228 by GPC  
SDG, Matrix: TRNC/D-5RD,TRNC/D-6RD,TRNC/D-7RD; ,,

- 1.0 COC**  
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A
- 2.0 QC Batch**  
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A  
2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A  
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A  
2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A
- 3.0 QC & Samples**  
3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A  
3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A  
3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A  
3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A  
3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A
- 4.0 Raw Data**  
4.1 Were results calculated in the correct units?  Yes  No  N/A  
4.2 Were analysis volumes entered correctly?  Yes  No  N/A  
4.3 Were Yields entered correctly?  Yes  No  N/A  
4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A  
4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A
- 5.0 Other**  
5.1 Are all nonconformances included and noted?  Yes  No  N/A  
5.2 Are all required forms filled out?  Yes  No  N/A  
5.3 Was the correct methodology used?  Yes  No  N/A  
5.4 Was transcription checked?  Yes  No  N/A  
5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A  
5.6 Are worksheet entries complete and correct?  Yes  No  N/A
- 6.0 Comments on any No response:  
Please see NCM # 10-11511

First Level Review *[Signature]*

Date 12-19-7

**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 7327122

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Non-conformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: See num

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Second Level Review: Ericha Jord Date: 12/26/17

# Clouseau Nonconformance Memo



NCM #: <b>10-11511</b>	Classification: <b>Anomaly</b>
NCM Initiated By: John Norton	Status: <b>GLREVIEW</b>
Date Opened: 12/19/2007	Production Area: Environmental - Prep
Date Closed:	Tests: Ra-228 by GPC
	Lot #'s (Sample #'s): J7K230000 (122),
	QC Batches: 7327122,
Nonconformance: Analysis Not Performed	
Subcategory: Insufficient sample volume to prepare MS/MSD or duplicate	

### Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
John Norton	12/19/2007	The sample volume received was not sufficient for the creation of a duplicate sample.

### Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
John Norton	12/19/2007	NA

### Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

### Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

### Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>
----------------------	--------------------	-----------------

12/5/2007 9:05:52 AM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
 Analyze Date: 12/10/2007  
 Batch: 7327122  
 SEQ Batch, Test: 7327119, BUTE

Sample Preparation/Analysis  
 BU Ra-226/228 Pp/SepRC5005  
 TF Radium-228 by GPC  
 01 STANDARD TEST SET  
 PM, Quote: JAE, 77571

Balance Id: 1120403183  
 Pipet #: **E**  
 Sep1 DT/Tm Tech: 12/7/07 10:50 DL  
 Sep2 DT/Tm Tech: 12/18/07 10:50 DL  
 Prep Tech: LucasD

Work Order, Lot, Sample Date Time  
 Total Amt/Unit  
 Initial Aliquot Amt/Unit  
 QC Tracer Prep Date  
 Tracer Yield  
 Dish Size  
 Ppt or Geometry  
 Count Time Min  
 Detector Id  
 Count On | Off (24hr) Circle  
 CR Analyst, Init/Date  
 Comments

1 KCFM8-1-AC	990.10g.in	RATA29454	11/15/07	1.0000	1.5"	30.3	3x50	SK	1602	12/18/07	
F7K160242-17-SAMP								GD	6534	12/19/07	

11/15/2007 13:15		AmtRec: 2XLP	#Containers: 2					Scr:	Alpha:	Beta:	
2 KCKE9-1-AC	994.20g.in	RATA29455	11/15/07	1.0000		30.9		SB	1602	12/18/07	
F7K190152-16-SAMP								GA	0632	12/19/07	

11/16/2007 14:00		AmtRec: 2XLP	#Containers: 2					Scr:	Alpha:	Beta:
3 KCKE9-1-AG-X										
F7K190152-16-DUP										

11/16/2007 14:00		AmtRec: 2XLP	#Containers: 2					Scr:	Alpha:	Beta:	
4 KCMQL-1-AC	1000.90g.in	RATA29456	11/15/07	1.0000		30.9		SC	1602	12/18/07	
F7K200219-15-SAMP								GD	0632	12/19/07	

11/19/2007 12:40		AmtRec: 2XLP	#Containers: 2					Scr:	Alpha:	Beta:
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12/5/2007 9:05:52 AM Balance Id: 1120403183

**Sample Preparation/Analysis**

BU Ra-226/228 Prp/SepRC5005 Pipet #:

TF Radium-228 by GPC Sep1 DT/Tm Tech:

01 STANDARD TEST SET Sep2 DT/Tm Tech:

**PRIORITY**

Prep Tech: LucasD

AnalytDueDate: 12/10/2007

Batch: 7327122 pCi/L

SEQ Batch, Test: None

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
5 KCR7G-1-AA-B	1001.00g.in	1001.00g.in	RATA29457 11/15/07	1.0000	1.5"	31.4	3x50	SD	1622	10/18/05	
J7K230000-122-BLK								6C	0632	12/19/05	
11/16/2007 14:00											Beta:
6 KCR7G-1-AC-C	1000.40g.in	1000.40g.in	RASC4640 11/05/07	1.0000		30.8		6K	1622	10/18/05	
J7K230000-122-LCS								6D	0632	12/19/05	
11/16/2007 14:00											Beta:

**Comments:** ISV for Dup-DL 12/5/07

All Clients for Batch: 445691, Basic Remediation Company, Basic Remediation Company, JAE, 77571

KCFM81AC-SAMP Constituent List:

Constituent	RDL	UCL	LCL	RA	RPD	PCi/L	RDL	UCL	LCL	RPD
Ba-133	RDL	UCL:20	LCL:20	RA-228	RPD:20	PCi/L	RDL:3	UCL:115	LCL:3	RPD:
RA-228DA	RDL:3	UCL:	LCL:							
KCR7G1AC-LCS:										
Ba-133	RDL:	UCL:20	LCL:20	Ra-226	RPD:20	PCi/L	RDL:	UCL:130	LCL:70	RPD:20
RA-228	RDL:3	UCL:70	LCL:70	RA-228DA	RPD:20	PCi/L	RDL:3	UCL:130	LCL:70	RPD:20

KCFM81AC-SAMP Calc Info:  
Uncert Level (#s): 4    Decay to SaDt: N    Blk Subst.: N    Sci.Not.: N    ODRs: B

KCR7G1AA-BLK:

TA Recharge    Key: In    Final Amt.    ii - Final Amt. di - Diluted Amt. s1 - Sep1, s2 - Sep2    Page 2    ISV - Insufficient Volume for Analysis    W/O On: 6

Glenn Wa.    Prep Dt.    i - Reference Dt.    Prep Dt.    Date of Collection    Prep Sample No.    445691

12/5/2007 9:05:52 AM

### Sample Preparation/Analysis

Balance Id:1120403183

BU Ra-226/228 Prp/SepRC5005  
TF Radium-228 by GPC  
01 STANDARD TEST SET

# PRIORITY

Pipet #:

AnalytDueDate: 12/10/2007

Sep1 DT/Tm Tech:

Batch: 7327122

pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,LucasD



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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Uncert Level (#s):: 4    Decay to SaDt: N    Blk Subt.: N    Sci.Not.: N    ODRs: B

Uncert Level (#s):: 4    Decay to SaDt: N    Blk Subt.: N    Sci.Not.: N    ODRs: B

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



# ICOC Fraction Transfer/Status Report

ByDate: 12/19/2006, 12/24/2007, Batch: '7327122', User: \*ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
	7327122				
	AC		CalcC	LucasD	11/30/2007 4:58:09
	SC		antonsonf	IsBatched	11/23/2007 10:43:22 AM
	SC		LucasD	InPrep	11/30/2007 4:58:09 PM
	SC		LucasD	Sep1C	12/7/2007 11:14:05 AM
	SC		McGinnisT	Sep2C	12/18/2007 12:10:31 PM
	SC		BlackCL	InCnt2	12/18/2007 1:53:56 PM
	SC		ClarkR	CalcC	12/19/2007 8:01:32 AM
	AC		LucasD		12/7/2007 11:14:05
	AC		McGinnisT		12/18/2007 12:10:31
	AC		BlackCL		12/18/2007 1:53:56
	AC		ClarkR		12/19/2007 8:01:32
					ICOC_RADCALC v4.8.29
					RICH-RC-5005 REVISION 6
					RICH-RC-5005 REVISION 6
					RICH-RC-5005 REVISION 6
					RICH-RD-0003 REVISION 5
					RICH-RD-0003 REVISION 5

AC: Accepting Entry, SC: Status Change

## Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix	Received Date	Sample Date	Units	Expected Yield	Volumes
<b>TRNC/D-5RD</b>	<b>9KCFM810</b>		<b>F7K16024217</b>	RINSATE 3	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM			
RA-228	BUTF	0	12/19/2007 5:34:05	2.0064E-02	7.046E-02	1.009E-01	4.796E-01	pCi/L	0.881	9.901E-1
RA-228	TBD	0	12/19/2007 5:34:05	2.0064E-02	7.046E-02	1.009E-01	4.796E-01	pCi/L	0.881	9.901E-1
TH-228	9NS1	0	12/10/2007 6:45:38	-1.9194E-02	4.987E-02	4.989E-02	2.712E-01	pCi/L	0.941	1.999E-1
TH-230	9NS1	0	12/10/2007 6:45:38	-9.3646E-03	4.775E-02	4.776E-02	2.243E-01	pCi/L	0.941	1.999E-1
TH-232	9NS1	0	12/10/2007 6:45:38	-9.3646E-03	4.775E-02	4.776E-02	2.243E-01	pCi/L	0.941	1.999E-1
U-234	7YSR	0	12/10/2007 2:47:40	PM5.2904E-02	4.77E-02	4.789E-02	1.869E-01	pCi/L	0.889	2.0E-1
U-235	7YSR	0	12/10/2007 2:47:40	PM-6.6195E-03	3.373E-02	3.373E-02	1.584E-01	pCi/L	0.889	2.0E-1
U-238	7YSR	0	12/10/2007 2:47:40	PM-6.6195E-03	3.373E-02	3.373E-02	1.584E-01	pCi/L	0.889	2.0E-1
<b>TRNC/D-6RD</b>	<b>9KCKE910</b>		<b>F7K19015216</b>	RINSATE4	WATER	11/19/2007 8:45:00	11/16/2007 2:00:00 PM			
RA-228	BUTF	0	12/19/2007 6:37:40	2.7781E-01	1.077E-01	1.127E-01	4.78E-01	pCi/L	0.898	9.942E-1
TH-228	9NS1	0	12/10/2007 6:45:38	9.2252E-03	4.967E-02	4.968E-02	3.168E-01	pCi/L	0.943	2.001E-1
TH-230	9NS1	0	12/10/2007 6:45:38	3.6039E-02	4.594E-02	4.603E-02	2.158E-01	pCi/L	0.943	2.001E-1
TH-232	9NS1	0	12/10/2007 6:45:38	-9.0094E-03	4.594E-02	4.595E-02	2.158E-01	pCi/L	0.943	2.001E-1
U-234	7YSR	0	12/10/2007 2:47:56	PM3.2826E-02	3.348E-02	3.358E-02	1.572E-01	pCi/L	0.882	2.002E-1
U-235	7YSR	0	12/10/2007 2:47:56	PM0.0E+00	0.0E+00	3.348E-02	1.572E-01	pCi/L	0.882	2.002E-1
U-238	7YSR	0	12/10/2007 2:47:56	PM3.2826E-02	3.348E-02	3.358E-02	1.572E-01	pCi/L	0.882	2.002E-1
<b>TRNC/D-7RD</b>	<b>9KCMQL10</b>		<b>F7K20021915</b>	RINSATE 5	WATER	11/20/2007 9:30:00	11/19/2007 12:40:00 PM			
RA-228	BUTF	0	12/19/2007 6:37:40	1.138E-01	8.752E-02	1.082E-01	4.915E-01	pCi/L	0.898	1.001E+0
TH-228	9NS1	0	12/10/2007 6:45:38	4.6749E-02	5.959E-02	5.97E-02	2.799E-01	pCi/L	0.928	2.001E-1
TH-230	9NS1	0	12/10/2007 6:45:38	0.0E+00	0.0E+00	5.838E-02	2.742E-01	pCi/L	0.928	2.001E-1
TH-232	9NS1	0	12/10/2007 6:45:38	0.0E+00	0.0E+00	5.838E-02	2.742E-01	pCi/L	0.928	2.001E-1
U-234	7YSR	0	12/10/2007 2:47:59	PM0.0E+00	0.0E+00	3.647E-02	1.713E-01	pCi/L	0.832	2.001E-1
U-235	7YSR	0	12/10/2007 2:47:59	PM-7.1539E-03	3.647E-02	3.648E-02	1.713E-01	pCi/L	0.832	2.001E-1
U-238	7YSR	0	12/10/2007 2:47:59	PM0.0E+00	0.0E+00	3.647E-02	1.713E-01	pCi/L	0.832	2.001E-1
<b>TRNC/D-7RD</b>	<b>KCR7G1AB</b>		<b>J7K230000122</b>	INTRA-LAB BLANK	Unk	11/19/2007 8:45:00	11/16/2007 2:00:00 PM			
RA-228	BUTF	0 B	12/19/2007 6:37:40	1.848E-01	1.103E-01	1.103E-01	4.866E-01	pCi/L	0.913	1.001E+0
<b>TRNC/D-7RD</b>	<b>KCR7G1CS</b>		<b>J7K230000122</b>	INTRA-LAB CHECK	Unk	11/19/2007 8:45:00	11/16/2007 2:00:00 PM			
RA-228	BUTF	0 S	12/19/2007 6:37:40	4.3401E+00	2.326E-01	3.374E-01	5.275E-01	pCi/L	4.9567E+00	0.895

7327122, \*\*Samples Inserted | Updated | NotUpdated =&gt; 2 | 0 | 3,

\*\*Results Inserted | ReTestInserted | Updated | NotInserted =&gt; 5 | 0 | 0 | 0.

\*\*Diff RptDb | Qtimes =&gt; \*wo:KCR7G1AA=&gt; , mat:Unk | Water \*wo:KCR7G1AC=&gt; , mat:Unk | Water.

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	IDC	QC	Trc	Yld	LCS	Yld	
Ra-228 by GPC Ra-226/Ra-228 Deem With Out Blk Subt. *CntU: 0+1, + *SystU, *MDCConst:2.71																	
Calc	TF	Unk	KCFM81AC	RA-228	2.85E-01	(1.80E-01)	U4	pCi/L	R	3.41E-01	7.51E-01					88%	
Calc	TF	Unk	KCFM81AC	RA-228	-2.56E-01	(1.50E-01)	U4	pCi/L	R	3.74E-01	8.25E-01					88%	
Calc	TF	Unk	KCFM81AC	RA-228	3.16E-02	(1.92E-01)	U4	pCi/L	R	4.15E-01	9.16E-01					88%	
Calc	TF	Unk	KCFM81AC	RA-228	2.01E-02	(1.01E-01)	U4	pCi/L	A	2.18E-01	4.80E-01					88%	
Calc	TF	Unk	KCFM81AC	RA-228	7.89E-01	(1.02E+00)	U4	pCi/L	R	2.10E+00	4.58E+00					88%	
Calc	TF	Unk	KCKE91AC	RA-228	4.94E-01	(1.97E-01)		pCi/L	R	3.40E-01	7.48E-01					90%	
Calc	TF	Unk	KCKE91AC	RA-228	1.03E-01	(1.79E-01)	U4	pCi/L	R	3.74E-01	8.23E-01					90%	
Calc	TF	Unk	KCKE91AC	RA-228	2.36E-01	(2.09E-01)	U4	pCi/L	R	4.15E-01	9.13E-01					90%	
Calc	TF	Unk	KCKE91AC	RA-228	2.78E-01	(1.13E-01)		pCi/L	A	2.17E-01	4.78E-01					90%	
Calc	TF	Unk	KCKE91AC	RA-228	3.78E-01	(1.12E+00)	U4	pCi/L	R	2.39E+00	5.21E+00					90%	
Calc	TF	Unk	KCMQL1AC	RA-228	5.25E-01	(2.03E-01)		pCi/L	R	3.51E-01	7.69E-01					90%	
Calc	TF	Unk	KCMQL1AC	RA-228	8.54E-02	(1.83E-01)	U4	pCi/L	R	3.86E-01	8.46E-01					90%	
Calc	TF	Unk	KCMQL1AC	RA-228	-2.69E-01	(1.75E-01)	U4	pCi/L	R	4.28E-01	9.39E-01					90%	
Calc	TF	Unk	KCMQL1AC	RA-228	1.14E-01	(1.08E-01)	U4	pCi/L	A	2.24E-01	4.91E-01					90%	
Calc	TF	Unk	KCMQL1AC	RA-228	-5.89E-02	(9.72E-01)	U4	pCi/L	R	2.14E+00	4.71E+00					90%	
Calc	TF	Unk	KCR7G1AA	RA-228	6.34E-02	(1.63E-01)	U4	pCi/L	R	3.47E-01	7.62E-01	B				91%	
Calc	TF	Unk	KCR7G1AA	RA-228	3.21E-01	(2.00E-01)	U4	pCi/L	R	3.81E-01	8.37E-01	B				91%	
Calc	TF	Unk	KCR7G1AA	RA-228	1.70E-01	(2.07E-01)	U4	pCi/L	R	4.23E-01	9.29E-01	B				91%	
Calc	TF	Unk	KCR7G1AA	RA-228	1.85E-01	(1.10E-01)		pCi/L	A	2.21E-01	4.87E-01	B				91%	
Calc	TF	Unk	KCR7G1AA	RA-228	2.33E+00	(1.13E+00)		pCi/L	R	2.05E+00	4.52E+00	B				91%	
Calc	TF	Unk	KCR7G1AC	RA-228	3.80E+00	(5.14E-01)		pCi/L	R	3.78E-01	8.26E-01	S				90%	77%
Calc	TF	Unk	KCR7G1AC	RA-228	4.49E+00	(5.96E-01)		pCi/L	R	4.15E-01	9.08E-01	S				90%	91%
Calc	TF	Unk	KCR7G1AC	RA-228	4.73E+00	(6.37E-01)		pCi/L	R	4.61E-01	1.01E+00	S				90%	95%
Calc	TF	Unk	KCR7G1AC	RA-228	4.34E+00	(3.37E-01)		pCi/L	A	2.41E-01	5.27E-01	S				90%	88%
Calc	TF	Unk	KCR7G1AC	RA-228	5.12E+00	(1.47E+00)		pCi/L	R	2.30E+00	5.03E+00	S				90%	103%

( ) (1s Uncertainties)  
 IDC - Instrument Detection Level in Conc Units  
 MLCc - Method Decision Level in Conc Units  
 MDC - Minimum Detectable Concentration  
 \*Std - Lc, MDC using StdDev for Set of Blanks

Sq	Calc TF	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol		
1	445691	TF	Unk	*STLE Ra228WoBS KCFM81AC	F7K160242-17		pCi/L		11/15/07 13:15	12/19/07 05:34	12/07/07 10:50	RATA29454	1	100%	990.10 g	9		
0	12/18/07 14:42	RA-228	43	256	GPC5A	1.5	N	N	5.9416E-01	1.0000E+00	N	88%	1.4776E+00	4.5045E+02	1.0073E+00			
	50		400				Y		(1.559E-02)	(0.000E+00)	7%		(0.000E+00)	0.00101				
1	12/18/07 15:32	RA-228	23	256	GPC5A	1.5	N	N	5.9416E-01	1.0000E+00	N	88%	1.6244E+00	4.5045E+02	1.0073E+00			
	50		400				Y		(1.559E-02)	(0.000E+00)	7%		(0.000E+00)	0.00101				
2	12/18/07 16:27	RA-228	33	256	GPC5A	1.5	N	N	5.9416E-01	1.0000E+00	N	88%	1.8027E+00	4.5045E+02	1.0073E+00			
	50		400				Y		(1.559E-02)	(0.000E+00)	7%		(0.000E+00)	0.00101				
3	12/19/07 05:34	RA-228	45	316	GPC6D	1.5	N	N	5.7561E-01	1.0000E+00	N	88%	7.9322E+00	4.5045E+02	1.0073E+00			
	50		400				N		(1.350E-02)	(0.000E+00)	7%		(0.000E+00)	0.00101				
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Bk	Dpm-Bk	Vol Used	Trc Yld Fct	Ent	Trc Yld Fct	Ent	Bk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
12/19/07	RA-228	R	0.284645	(0.179579)	U4	2.20000E-01	0.621152	(0.390644)	0.9901 L	88%	0.9901 L	88%	0.750801		0.340539			
12/19/07	RA-228	R	-0.256025	(0.149927)	U4	-1.80000E-01	-0.558696	(0.325975)	0.9901 L	88%	0.9901 L	88%	0.825377		0.374365			
12/19/07	RA-228	R	0.03157	(0.192057)	U4	2.00000E-02	0.068892	(0.419091)	0.9901 L	88%	0.9901 L	88%	0.91598		0.415459			
12/19/07	RA-228	A	0.020064	(0.100892)	U4	2.00000E-02	0.043783	(0.219722)	0.9901 L	88%	0.9901 L	88%	0.479616		0.217539			
12/19/07	RA-228	R	0.788645	(1.016183)	U4	1.10000E-01	1.720978	(2.21584)	0.9901 L	88%	0.9901 L	88%	4.579133		2.096518			
Sq	Calc TF	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol		
2	445691	TF	Unk	*STLE Ra228WoBS KCKE91AC	F7K190152-16		pCi/L		11/16/07 14:00	12/19/07 06:37	12/07/07 10:50	RATA29455	Alq	100%	994.20 g	9		
0	12/18/07 14:42	RA-228	54	274	GPC5B	1.5	N	N	6.0020E-01	1.0000E+00	N	90%	1.4776E+00	4.5045E+02	1.0069E+00			
	50		400				Y		(1.340E-02)	(0.000E+00)	7%		(0.000E+00)	0.001006				
1	12/18/07 15:32	RA-228	38	274	GPC5B	1.5	N	N	6.0020E-01	1.0000E+00	N	90%	1.6244E+00	4.5045E+02	1.0069E+00			
	50		400				Y		(1.340E-02)	(0.000E+00)	7%		(0.000E+00)	0.001006				
2	12/18/07 16:27	RA-228	42	274	GPC5B	1.5	N	N	6.0020E-01	1.0000E+00	N	90%	1.8027E+00	4.5045E+02	1.0069E+00			
	50		400				Y		(1.340E-02)	(0.000E+00)	7%		(0.000E+00)	0.001006				

Alpha Beta, Ra-228 by GPC, Calculated Results

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Bik	Dpm-Bik	Vol Used	TrcYld,EnrFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC	
3	12/19/07 06:37	RA-228	44	333	GPC6A	1.5	N	N	5.7050E-01	1.0000E+00	N	90%	8.9420E+00	4.5045E+02	1.0069E+00
			50	400			N	N	(1.253E-02)	(0.0000E+00)	7%		(0.0000E+00)	0.001006	
	12/19/07	RA-228	R	0.493887		3.95000E-01	1.082589	1.082589	0.9942 L	90%		0.748293			
				(0.196821)		(1.5268E-01)	(0.428018)	(0.428018)	(0.173205)			0.340464			
	12/19/07	RA-228	R	0.103091	U4	7.50000E-02	0.225972	0.225972	0.9942 L	90%		0.822621			
				(0.179036)		(1.3005E-01)	(0.39228)	(0.39228)	(0.173205)			0.374282			
	12/19/07	RA-228	R	0.236441	U4	1.55000E-01	0.518274	0.518274	0.9942 L	90%		0.912921			
				(0.208813)		(1.3606E-01)	(0.456978)	(0.456978)	(0.173205)			0.415368			
	12/19/07	RA-228	A	0.277806		2.08333E-01	0.608945	0.608945	0.9942 L	90%		0.478014			
				(0.112741)		(8.0786E-02)	(0.246286)	(0.246286)	(0.10)			0.217491			
	12/19/07	RA-228	R	0.378127	U4	4.75000E-02	0.828847	0.828847	0.9942 L	90%		5.207907			
				(1.117389)		(1.4029E-01)	(2.448941)	(2.448941)	(0.173205)			2.389641			

Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	
3	Calc	TF	Unk	*STLE	Ra228WoBS	KCMQLIAC	pc/IL	11/19/07 12:40	12/19/07 06:37	12/07/07 10:50					
							Unk		30.9	12/18/07 10:50	RATA29456	Alq	100%	1000.90 g	
0	12/18/07 14:42	RA-228	58	295	GPC5C	1.5	N	N	5.9913E-01	1.0000E+00	N	90%	1.4776E+00	4.5045E+02	1.0059E+00
			50	400			Y	Y	(1.374E-02)	(0.0000E+00)	7%		(0.0000E+00)	0.000999	
1	12/18/07 15:32	RA-228	40	295	GPC5C	1.5	N	N	5.9913E-01	1.0000E+00	N	90%	1.6244E+00	4.5045E+02	1.0059E+00
			50	400			Y	Y	(1.374E-02)	(0.0000E+00)	7%		(0.0000E+00)	0.000999	
2	12/18/07 16:27	RA-228	28	295	GPC5C	1.5	N	N	5.9913E-01	1.0000E+00	N	90%	1.8027E+00	4.5045E+02	1.0059E+00
			50	400			Y	Y	(1.374E-02)	(0.0000E+00)	7%		(0.0000E+00)	0.000999	
3	12/19/07 06:37	RA-228	34	275	GPC6B	1.5	N	N	5.7373E-01	1.0000E+00	N	90%	8.9420E+00	4.5045E+02	1.0059E+00
			50	400			N	N	(1.360E-02)	(0.0000E+00)	7%		(0.0000E+00)	0.000999	

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Bik	Dpm-Bik	Vol Used	TrcYld,EnrFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
	12/19/07	RA-228	R	0.525156		4.22500E-01	1.160014	1.160014	1.0009 L	90%		0.769326		
				(0.203203)		(1.5825E-01)	(0.445092)	(0.445092)	(0.173205)			0.351187		
	12/19/07	RA-228	R	0.085402	U4	6.25000E-02	0.188645	0.188645	1.0009 L	90%		0.845743		
				(0.182717)		(1.3358E-01)	(0.403493)	(0.403493)	(0.173205)			0.38607		
	12/19/07	RA-228	R	-0.269167	U4	-1.77500E-01	-0.594561	-0.594561	1.0009 L	90%		0.938581		
				(0.175151)		(1.1421E-01)	(0.385746)	(0.385746)	(0.173205)			0.42845		
	12/19/07	RA-228	A	0.113797	U4	1.02500E-01	0.251366	0.251366	1.0009 L	90%		0.49145		
				(0.108195)		(7.8833E-02)	(0.237981)	(0.237981)	(0.10)			0.22434		
	12/19/07	RA-228	R	-0.058914	U4	-7.50000E-03	-0.130134	-0.130134	1.0009 L	90%		4.708864		
				(0.972242)		(1.2377E-01)	(2.147571)	(2.147571)	(0.173205)			2.142829		

Batch Nbr: 7327122

Alpha Beta, Ra-228 by GPC, Calculated Results

12/19/2007 7:38:17 AM

Sq	Calc	TF	Unk	Matrix	Protocol	Equation	Set	Wrk	Ord	Units/Matrix	QC/BB	Sa/On	Date	Analysis	Date/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol	Final/Count		
4				Unk	*STLE	Ra228WoBS	KCR7G1A	B		pCi/L			11/16/07 14:00	12/19/07 06:37	31.4	12/07/07 10:50	12/18/07 10:50	RATA29457	Alq	100%	1001.00	g					
0				Unk																							
				Unk																							
Sq	Cnt	Date	Parameter	Sample	Cnt	Bkgrnd	Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc	Yld	Fct	Ent	Blk	Value	Ingr	Fct	Conv	Fct/Vol	Adj	Decay	Abn
0	37	12/18/07 14:42	RA-228	37	276	400		GPC5D	1.5	N	N	5.7822E-01	1.0000E+00	N	91%	N	91%	N		1.4776E+00	(0.0000E+00)	0.0000999	4.5045E+02	1.0069E+00			
1	50	12/18/07 15:32	RA-228	50	276	400		GPC5D	1.5	Y	N	(1.332E-02)	(0.0000E+00)	N	7%	N	7%	N		1.6244E+00	(0.0000E+00)	0.0000999	4.5045E+02	1.0069E+00			
2	40	12/18/07 16:27	RA-228	40	276	400		GPC5D	1.5	N	N	5.7822E-01	1.0000E+00	N	91%	N	91%	N		1.8027E+00	(0.0000E+00)	0.0000999	4.5045E+02	1.0069E+00			
3	50	12/19/07 06:37	RA-228	50	263	400		GPC6C	1.5	Y	N	(1.332E-02)	(0.0000E+00)	N	7%	N	7%	N		8.9420E+00	(0.0000E+00)	0.0000999	4.5045E+02	1.0069E+00			
0	50	12/19/07 06:37	RA-228	50	400	400		GPC6C	1.5	N	N	(1.578E-02)	(0.0000E+00)	N	7%	N	7%	N		0.0000E+00	(0.0000E+00)	0.0000999	4.5045E+02	1.0069E+00			
Sq	CalcDate,TrcAct	Parameter	Avg	Sa	Act, Total	U	Q	Net	Cnt	Rt	Dpm	Wo	Blk	Dpm-Blk	Vol	Used	Trc	Yld,EnFct	LCS	Yld,EFctU	IDC/ILcC	BlkLcC/MDC	Std	DvMdc/LcC			
	12/19/07	RA-228	R	0.063426	0.163185	U4	5.00000E-02	0.13998	0.13998	1.001 L	91%			0.76169													
	12/19/07	RA-228	R	0.320742	0.200269	U4	2.30000E-01	0.707868	0.707868	1.001 L	91%			0.346674													
	12/19/07	RA-228	R	0.170237	0.206704	U4	1.10000E-01	0.375708	0.375708	1.001 L	91%			0.837348													
	12/19/07	RA-228	A	0.184802	0.110284		1.30000E-01	0.407852	0.407852	1.001 L	91%			0.381108													
	12/19/07	RA-228	R	2.32698	1.13387		3.02500E-01	5.135573	5.135573	1.001 L	91%			0.929265													
							(1.4437E-01)	(2.489207)	(2.489207)	(0.173205)				0.422943													
														0.486572													
														0.221457													
														4.518814													
														2.052159													
Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk	Ord	Units/Matrix	QC/BB	Sa/On	Date	Analysis	Date/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol	Final/Count			
5	Calc	TF	Unk	Matrix	*STLE	Ra228WoBS	KCR7G1AC	S		pCi/L			11/16/07 14:00	12/19/07 06:37	30.8	12/07/07 10:50	12/18/07 10:50	RASC4640	Alq	100%	1000.40	g					
0				Unk																							
				Unk																							
Sq	Cnt	Date	Parameter	Sample	Cnt	Bkgrnd	Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc	Yld	Fct	Ent	Blk	Value	Ingr	Fct	Conv	Fct/Vol	Adj	Decay	Abn
0	183	12/18/07 14:42	RA-228	183	306	400		GPC6A	1.5	N	N	5.7043E-01	1.0000E+00	N	90%	N	90%	N		1.4779E+00	(0.0000E+00)	0.001	4.5045E+02	1.0069E+00			
1	50	12/18/07 15:32	RA-228	50	306	400		GPC6A	1.5	Y	N	(1.253E-02)	(0.0000E+00)	N	7%	N	7%	N		1.6247E+00	(0.0000E+00)	0.001	4.5045E+02	1.0069E+00			
2	194	12/18/07 16:27	RA-228	194	306	400		GPC6A	1.5	N	N	5.7043E-01	1.0000E+00	N	90%	N	90%	N		1.8030E+00	(0.0000E+00)	0.001	4.5045E+02	1.0069E+00			
3	50	12/19/07 06:37	RA-228	50	316	400		GPC6D	1.5	Y	N	(1.253E-02)	(0.0000E+00)	N	7%	N	7%	N		8.9420E+00	(0.0000E+00)	0.001	4.5045E+02	1.0069E+00			
0	186	12/18/07 16:27	RA-228	186	306	400		GPC6A	1.5	N	N	5.7043E-01	1.0000E+00	N	90%	N	90%	N		0.0000E+00	(0.0000E+00)	0.001	4.5045E+02	1.0069E+00			
1	50	12/19/07 06:37	RA-228	50	400	400		GPC6D	1.5	Y	N	(1.253E-02)	(0.0000E+00)	N	7%	N	7%	N		0.0000E+00	(0.0000E+00)	0.001	4.5045E+02	1.0069E+00			
2	72	12/19/07 06:37	RA-228	72	316	400		GPC6D	1.5	N	N	5.7539E-01	1.0000E+00	N	90%	N	90%	N		8.9420E+00	(0.0000E+00)	0.001	4.5045E+02	1.0069E+00			
3	50	12/19/07 06:37	RA-228	50	400	400		GPC6D	1.5	N	N	(1.350E-02)	(0.0000E+00)	N	7%	N	7%	N		0.0000E+00	(0.0000E+00)	0.001	4.5045E+02	1.0069E+00			

( ) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh.mm, 24hr Time

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 RecCnt:5  
 RADCALC v4.8.29  
 TA Richland

Alpha Beta, Ra-228 by GPC, Calculated Results

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/LcC	BkLcC/MDC	StdDVMdC/LcC
12/19/07	RA-228	R	3.798069 (0.514417)	2.89500E+00 (2.7407E-01)	8.377199 (1.054478)	8.377199 (1.054478)	8.377199 (1.054478)	1.0004 L (0.173205)	90%	77%	0.825701			
12/19/07	RA-228	R	4.492623 (0.595619)	3.11500E+00 (2.8198E-01)	9.909141 (1.216715)	9.909141 (1.216715)	9.909141 (1.216715)	1.0004 L (0.173205)	90%	91%	0.907717			
12/19/07	RA-228	R	4.729694 (0.636696)	2.95500E+00 (2.7625E-01)	10.432035 (1.303863)	10.432035 (1.303863)	10.432035 (1.303863)	1.0004 L (0.173205)	90%	95%	1.007358			
12/19/07	RA-228	A	4.340129 (0.337436)	2.98833E+00 (1.6019E-01)	9.572792 (0.690602)	9.572792 (0.690602)	9.572792 (0.690602)	1.0004 L (0.10)	90%	88%	0.527462			
12/19/07	RA-228	R	5.115151 (1.46735)	6.50000E-01 (1.7543E-01)	11.282215 (3.186914)	11.282215 (3.186914)	11.282215 (3.186914)	1.0004 L (0.173205)	90%	103%	5.026194			

UST Number: KCFM81AC      Isotope: 180      (QREPORT Rev 11-OCT-98)

Detector: 5-A      File: [quad5.sample.A]KCFM81AC.180  
Dish Size: 15      Bkg File: \$DISK1:[QUAD5.BKGRND]CURRENT.A\_15;6045

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00043	0050	01321	1800	18-DEC-2007 14:42:22.07
2	00000	00023	0050	01342	1800	18-DEC-2007 15:32:37.23
3	00000	00033	0050	01336	1800	18-DEC-2007 16:27:53.05

Bkg File: [quad5.bkgrnd]2007-12-18\_0330.A\_15      (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00256	0400	0.64	10493	1800	18-DEC-2007 03:30:53.52



UST Number: KCFM81AC      Isotope: 430      (QREPORT Rev 11-OCT-98)

Detector: 6-D      File: [quad6.sample.D]KCFM81AC.430  
Dish Size: 15      Bkg File: \$DISK1:[QUAD6.BKGRND]CURRENT.D\_15;6064

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00045	0050	01334	1800	19-DEC-2007 05:34:05.80

Bkg File: [quad6.bkgrnd]2007-12-19\_0358.D\_15      (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00316	0400	0.79	10649	1800	19-DEC-2007 03:58:13.37

UST Number: KCCKE91AC      Isotope: 180      (QREPORT Rev 11-OCT-98)

Detector: 5-B      File: [quad5.sample.B]KCCKE91AC.180  
Dish Size: 15      Bkg File: \$DISK1:[QUAD5.BKGRND]CURRENT.B\_15;6038

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00054	0050	01321	1800	18-DEC-2007 14:42:22.07
2	00000	00038	0050	01342	1800	18-DEC-2007 15:32:37.23
3	00000	00042	0050	01336	1800	18-DEC-2007 16:27:53.05

Bkg File: [quad5.bkgrnd]2007-12-18\_0330.B\_15      (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00274	0400	0.69	10493	1800	18-DEC-2007 03:30:53.52

UST Number: KCCE91AC      Isotope: 430      (QREPORT Rev 11-OCT-98)

Detector: 6-A      File: [quad6.sample.A]KCCE91AC.430  
Dish Size: 15      Bkg File: \$DISK1:[QUAD6.BKGRND]CURRENT.A\_15;6062

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00044	0050	01314	1800	19-DEC-2007 06:37:40.30

Bkg File: [quad6.bkgrnd]2007-12-19\_0358.A\_15      (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00333	0400	0.83	10649	1800	19-DEC-2007 03:58:13.37

UST Number: KCMQL1AC      Isotope: 180      (QREPORT Rev 11-OCT-98)

Detector: 5-C      File: [quad5.sample.C]KCMQL1AC.180  
Dish Size: 15      Bkg File: \$DISK1:[QUAD5.BKGRND]CURRENT.C\_15;6058

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00058	0050	01321	1800	18-DEC-2007 14:42:22.07
2	00000	00040	0050	01342	1800	18-DEC-2007 15:32:37.23
3	00000	00028	0050	01336	1800	18-DEC-2007 16:27:53.05

Bkg File: [quad5.bkgrnd]2007-12-18\_0330.C\_15      (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00295	0400	0.74	10493	1800	18-DEC-2007 03:30:53.52

UST Number: KCMQL1AC      Isotope: 430      (QREPORT Rev 11-OCT-98)

Detector: 6-B      File: [quad6.sample.B]KCMQL1AC.430  
Dish Size: 15      Bkg File: \$DISK1:[QUAD6.BKGRND]CURRENT.B\_15;6103

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00034	0050	01314	1800	19-DEC-2007 06:37:40.30

Bkg File: [quad6.bkgrnd]2007-12-19\_0358.B\_15      (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00275	0400	0.69	10649	1800	19-DEC-2007 03:58:13.37

UST Number: KCR7G1AA      Isotope: 180      (QREPORT Rev 11-OCT-98)

Detector: 5-D      File: [quad5.sample.D]KCR7G1AA.180  
Dish Size: 15      Bkg File: \$DISK1:[QUAD5.BKGRND]CURRENT.D\_15;6111

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00037	0050	01321	1800	18-DEC-2007 14:42:22.07
2	00000	00046	0050	01342	1800	18-DEC-2007 15:32:37.23
3	00000	00040	0050	01336	1800	18-DEC-2007 16:27:53.05

Bkg File: [quad5.bkgrnd]2007-12-18\_0330.D\_15      (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00276	0400	0.69	10493	1800	18-DEC-2007 03:30:53.52

UST Number: KCR7G1AA    Isotope: 430    (QREPORT Rev 11-OCT-98)

Detector: 6-C    File: [quad6.sample.C]KCR7G1AA.430  
Dish Size: 15    Bkg File: \$DISK1:[QUAD6.BKGRND]CURRENT.C\_15;6065

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00048	0050	01314	1800	19-DEC-2007 06:37:40.30

Bkg File: [quad6.bkgrnd]2007-12-19\_0358.C\_15    (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00263	0400	0.66	10649	1800	19-DEC-2007 03:58:13.37

UST Number: KCR7G1AC      Isotope: 180      (QREPORT Rev 11-OCT-98)

Detector: 6-A      File: [quad6.sample.A]KCR7G1AC.180  
Dish Size: 15      Bkg File: \$DISK1:[QUAD6.BKGRND]CURRENT.A\_15;6061

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00183	0050	01344	1800	18-DEC-2007 14:42:28.75
2	00000	00194	0050	01333	1800	18-DEC-2007 15:32:43.88
3	00000	00186	0050	01350	1800	18-DEC-2007 16:27:59.56

Bkg File: [quad6.bkgrnd]2007-12-18\_0330.A\_15      (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00306	0400	0.77	10659	1800	18-DEC-2007 03:30:59.70



UST Number: KCR7G1AC      Isotope: 430      (QREPORT Rev 11-OCT-98)

Detector: 6-D      File: [quad6.sample.D]KCR7G1AC.430  
Dish Size: 15      Bkg File: \$DISK1:[QUAD6.BKGRND]CURRENT.D\_15;6064

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00072	0050	01314	1800	19-DEC-2007 06:37:40.30

Bkg File: [quad6.bkgrnd]2007-12-19\_0358.D\_15      (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00316	0400	0.79	10649	1800	19-DEC-2007 03:58:13.37

# RADIUM 228

## STANDARDS AND TRACEABILITY

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
	Parent Standard: Ra22606A100		Ref: 11/1/2001	2.1060E+01 ± 3.234E-01	DPM/G	
RASC4640	RA-226	3.0836E+00 ± 4.744E-02 DPM	0.1468 g	11/5/2007 11/5/2007	Armstron	2.1005E+01 ± 3.226E-01 DPM/G
		3.0836E+000 ± 3.084E+000 ( 1)				3.0836E+000 , 3.0836E+000

RA22606A

RA22606A000  
Ref. 6068  
422.23 ± 13.93  
dpm/g  
REF. 11/1/2001



RA22606A100  
Ref. 6069  
21.12 ± 0.697  
dpm/g  
DVF 3/21/06

**ISOTOPE DILUTION RECORD**

1) Prepared by tda 2) Date Prepared 10/14/2005

**3) Source Identification Number / Ref. Number** RA22606A000 6068

4) Source Activity (dpm ± dpm/g) 4.2223E+02 ± 1.393E+01

5) Percent error of Source Activity 3.3 %

6) Weight of Source Material used (g) 50

7) (% Error) of Weight of Source Material used 0.0096 %

8) Diluent 1 M HNO3

9) Total Weight of the Dilution (g) approx. 750 g

10) (% Error) of Total Weight of the Dilution 0.0400 %

**11) Specific Activity of Diluted Solution dpm/g** 2.1120E+01 ± 6.970E-01

12) Total Uncertainty 3.300 %

**13) Dilution Identification Number / Ref. Number** RA22606A100 6069

14) Calibration Reference Date 11/1/2001

15) Isotope Inventory File update by/date tda 3/21/2006

16) Reviewed by/date \_\_\_\_\_

17) Location QCLAB 18) Exhausted \_\_\_\_\_

\*\*\*\*\*  
**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3



Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: RA22806A000		Ref: 12/15/2003	4.4881E+02 ±	DPM/G		
RASC4640	RA-228	1.1090E+01 ± 3.970E-02 DPM	0.0395 g	11/5/2007 11/5/2007	Armstron	2.8075E+02 ± 0.000E+00 DPM/G

1.1090E+001 ± 1.109E+001 ( 1)                      1.1090E+001 , 1.1090E+001

**Ra22806A000**

Ra22806A000  
Ref. 6076  
448.81 ± 14.82  
dpm/g  
4/11/2007 DVF



**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>7/7/2004</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>new source</u></b>		
4) Source Activity (dpm ± dpm/g)	<u>4.5507E+04</u>	±	<u>1.502E+03</u>
5) Percent error of Source Activity	<u>3.3</u>	%	
6) Weight of Source Material used (g)	<u>5.0063</u>		
7) (% Error) of Weight of Source Material used	<u>0.0959</u>	%	
8) Diluent	<u>1M HCL</u>		
9) Total Weight of the Dilution (g)	<u>507.61</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.0591</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>4.4881E+02</u></b>	±	<b><u>1.482E+01</u></b>
12) Total Uncertainty	<u>3.302</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>RA22806A000</u></b>		<b><u>6076</u></b>
14) Calibration Reference Date	<u>12/15/2003</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>3/30/2006</u>
16) Reviewed by/date	<u></u>		<u></u>
17) Location	<u>QCLAB</u>	18) Exhausted	<u></u>

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**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

ISOTOPE RECORD FORM

1) Isotope RA-228 2) Reference Number 6076  
 3) Half Life 5.75 yrs 4) Storage Location QCLAB  
 5) Source Identification Number RA22806A000

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CALIBRATION DATA

6) Activity as Received Units 3797  
 7) Overall Uncertainty Percent 3.30%  
 8) Reference Date / Time 15-Dec-03  
 9) Activity dpm/g 45507 ± 1502  
 10) Volume or Mass (ml/g) 5.0063  
 11) Calibrated by Analytix  
 12) Certificate Solution Number 67328-288

\*\*\*\*\*

SURVEY DATA

13) Date Received 3/30/2006  
 14) Surveyed by tda  
 15) Survey Reading (Beta/Gamma) cpm >200 cpm  
 16) Survey Reading (Alpha) cpm background

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17) Activity Conversion 3797 dps \* 60 s/m / 5.0063g =  
45507 ± 1501 dpm/g

18) Remarks From STL Denver

19) Isotope File Updated by tda

20) QC Approved \_\_\_\_\_

RADIUM 228  
CONTINUING CALIBRATION

Quality Assurance Report.

Generated 20-DEC-2007 20:16:46.81

QA Filename : \$DISK1:[QUAD5.QA]CHK.QAF;2

-- Multi-Test Full Report --

Description : quad 5a 1.5" beta %eff

Parameter Units : percent Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 46.000000 Upper Bound : 50.500000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 48.478981 Std Deviation : 0.707291

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-OCT-2007 05:42	CHK		48.8000		
2-OCT-2007 05:48	CHK		48.9000		
3-OCT-2007 05:38	CHK		48.8000		
4-OCT-2007 04:48	CHK		49.1000		
5-OCT-2007 04:41	CHK		47.6000		
6-OCT-2007 08:49	CHK		48.4000		
8-OCT-2007 05:00	CHK		48.5000		
9-OCT-2007 04:53	CHK		48.6000		
10-OCT-2007 05:41	CHK		49.0000		
11-OCT-2007 04:55	CHK		48.7000		
12-OCT-2007 04:47	CHK		48.3000		
13-OCT-2007 08:02	CHK		49.2000		
15-OCT-2007 04:54	CHK		49.7000		
16-OCT-2007 05:20	CHK		48.8000		
17-OCT-2007 04:43	CHK		49.4000		
18-OCT-2007 04:53	CHK		48.1000		
19-OCT-2007 04:45	CHK		48.2000		
20-OCT-2007 07:17	CHK		48.3000		
22-OCT-2007 05:02	CHK		48.3000		
23-OCT-2007 04:43	CHK		48.4000		
24-OCT-2007 04:52	CHK		49.2000		

25-OCT-2007 04:56	CHK	48.3000	
26-OCT-2007 04:59	CHK	48.2000	
27-OCT-2007 06:03	CHK	48.7000	
29-OCT-2007 05:10	CHK	48.3000	
30-OCT-2007 04:49	CHK	47.6000	
31-OCT-2007 05:04	CHK	47.7000	
1-NOV-2007 04:46	CHK	48.1000	
2-NOV-2007 04:50	CHK	49.2000	
3-NOV-2007 07:50	CHK	48.0000	
5-NOV-2007 05:38	CHK	48.6000	
6-NOV-2007 05:30	CHK	47.9000	
7-NOV-2007 05:33	CHK	48.8000	
8-NOV-2007 05:29	CHK	48.8000	
9-NOV-2007 05:29	CHK	47.8000	
10-NOV-2007 05:01	CHK	48.8000	
12-NOV-2007 04:58	CHK	50.2000	In
13-NOV-2007 05:01	CHK	48.6000	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
14-NOV-2007 04:54	CHK	47.9000		
15-NOV-2007 04:15	CHK	49.8000		
16-NOV-2007 04:47	CHK	48.4000		
17-NOV-2007 07:14	CHK	48.5000		
19-NOV-2007 05:46	CHK	48.8000		
20-NOV-2007 05:28	CHK	48.1000		
21-NOV-2007 05:36	CHK	48.4000		
22-NOV-2007 05:33	CHK	49.9000	In	
23-NOV-2007 04:35	CHK	49.0000		
24-NOV-2007 06:10	CHK	47.9000		
25-NOV-2007 05:55	CHK	47.7000		
26-NOV-2007 05:42	CHK	48.4000		
27-NOV-2007 05:35	CHK	48.9000		
28-NOV-2007 05:15	CHK	48.4000		
29-NOV-2007 05:28	CHK	49.4000		
30-NOV-2007 05:29	CHK	48.1000		
3-DEC-2007 05:39	CHK	48.1000		
4-DEC-2007 05:26	CHK	48.5000		
5-DEC-2007 05:34	CHK	49.0000		
6-DEC-2007 05:24	CHK	49.2000		
7-DEC-2007 05:25	CHK	47.9000		
8-DEC-2007 06:10	CHK	48.3000		

10-DEC-2007 05:33	CHK	48.7000			
11-DEC-2007 05:40	CHK	47.6000			
12-DEC-2007 04:57	CHK	48.6000			
13-DEC-2007 02:29	CHK	48.9000			
14-DEC-2007 05:04	CHK	47.6000			
15-DEC-2007 07:44	CHK	48.9000			
17-DEC-2007 04:45	CHK	49.0000			
18-DEC-2007 04:53	CHK	47.9000			

## -- Multi-Test Full Report --

Description : quad 5b 1.5" beta %eff  
 Parameter Units : percent          Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 50.000000          Upper Bound : 54.000000

Investigate Level : 2.000000          Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 51.994267          Std Deviation : 0.690247

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-OCT-2007 05:42	CHK		51.8000		
2-OCT-2007 05:48	CHK		51.9000		
3-OCT-2007 05:38	CHK		51.3000		
4-OCT-2007 04:48	CHK		51.8000		
5-OCT-2007 04:41	CHK		52.4000		
6-OCT-2007 08:49	CHK		52.8000		
8-OCT-2007 05:00	CHK		51.2000		
9-OCT-2007 04:53	CHK		52.2000		

Quality Assurance Multi-Test Full Report (continued)          Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
10-OCT-2007 05:41	CHK		51.5000		
11-OCT-2007 04:55	CHK		51.5000		
12-OCT-2007 04:47	CHK		52.0000		
13-OCT-2007 08:02	CHK		52.7000		
15-OCT-2007 04:54	CHK		53.2000		
16-OCT-2007 05:20	CHK		51.6000		

17-OCT-2007 04:43	CHK	52.1000			
18-OCT-2007 04:53	CHK	51.6000			
19-OCT-2007 04:45	CHK	52.3000			
20-OCT-2007 07:17	CHK	51.7000			
22-OCT-2007 05:02	CHK	52.1000			
23-OCT-2007 04:43	CHK	52.1000			
24-OCT-2007 04:52	CHK	52.7000			
25-OCT-2007 04:56	CHK	51.5000			
26-OCT-2007 04:59	CHK	51.8000			
27-OCT-2007 06:03	CHK	52.0000			
29-OCT-2007 05:10	CHK	51.9000			
30-OCT-2007 04:49	CHK	52.2000			
31-OCT-2007 05:04	CHK	51.5000			
1-NOV-2007 04:46	CHK	51.5000			
2-NOV-2007 04:50	CHK	51.3000			
3-NOV-2007 07:50	CHK	51.5000			
5-NOV-2007 05:38	CHK	51.4000			
6-NOV-2007 05:30	CHK	52.1000			
7-NOV-2007 05:33	CHK	52.6000			
8-NOV-2007 05:29	CHK	52.3000			
9-NOV-2007 05:29	CHK	52.0000			
10-NOV-2007 05:01	CHK	52.3000			
12-NOV-2007 04:58	CHK	52.1000			
13-NOV-2007 05:01	CHK	52.3000			
14-NOV-2007 04:54	CHK	52.4000			
15-NOV-2007 04:15	CHK	51.4000			
16-NOV-2007 04:47	CHK	52.7000			
17-NOV-2007 07:14	CHK	52.6000			
19-NOV-2007 05:46	CHK	52.6000			
20-NOV-2007 05:28	CHK	52.0000			
21-NOV-2007 05:36	CHK	52.3000			
22-NOV-2007 05:33	CHK	52.0000			
23-NOV-2007 04:35	CHK	51.4000			
24-NOV-2007 06:10	CHK	52.0000			
25-NOV-2007 05:55	CHK	50.9000			
26-NOV-2007 05:42	CHK	50.2000	[In]		
27-NOV-2007 05:35	CHK	52.4000			
28-NOV-2007 05:15	CHK	51.5000			
29-NOV-2007 05:28	CHK	51.8000			
30-NOV-2007 05:29	CHK	51.8000			
3-DEC-2007 05:39	CHK	52.0000			
4-DEC-2007 05:26	CHK	51.4000			
5-DEC-2007 05:34	CHK	53.0000			

6-DEC-2007 05:24	CHK	52.6000	
7-DEC-2007 05:25	CHK	52.0000	
8-DEC-2007 06:10	CHK	52.7000	
10-DEC-2007 05:33	CHK	51.2000	
11-DEC-2007 05:40	CHK	52.3000	
12-DEC-2007 04:57	CHK	51.9000	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
13-DEC-2007 02:29	CHK		51.1000	
14-DEC-2007 05:04	CHK		50.9000	
15-DEC-2007 07:44	CHK		52.0000	
17-DEC-2007 04:45	CHK		53.6000	In
18-DEC-2007 04:53	CHK		51.9000	

-- Multi-Test Full Report --

Description : quad 5c 1.5" beta %eff

Parameter Units : percent Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 49.000000 Upper Bound : 53.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 51.110191 Std Deviation : 0.711642

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-OCT-2007 05:42	CHK		52.4000	
2-OCT-2007 05:48	CHK		50.8000	
3-OCT-2007 05:38	CHK		51.5000	
4-OCT-2007 04:48	CHK		50.9000	
5-OCT-2007 04:41	CHK		50.6000	
6-OCT-2007 08:49	CHK		50.9000	
8-OCT-2007 05:00	CHK		50.3000	
9-OCT-2007 04:53	CHK		51.3000	
10-OCT-2007 05:41	CHK		51.7000	
11-OCT-2007 04:55	CHK		51.3000	
12-OCT-2007 04:47	CHK		51.7000	



13-OCT-2007 08:02	CHK	51.4000			
15-OCT-2007 04:54	CHK	51.4000			
16-OCT-2007 05:20	CHK	50.6000			
17-OCT-2007 04:43	CHK	50.8000			
18-OCT-2007 04:53	CHK	51.5000			
19-OCT-2007 04:45	CHK	51.2000			
20-OCT-2007 07:17	CHK	52.2000			
22-OCT-2007 05:02	CHK	50.9000			
23-OCT-2007 04:43	CHK	50.7000			
24-OCT-2007 04:52	CHK	51.0000			
25-OCT-2007 04:56	CHK	51.5000			
26-OCT-2007 04:59	CHK	49.9000			
27-OCT-2007 06:03	CHK	50.5000			
29-OCT-2007 05:10	CHK	50.9000			
30-OCT-2007 04:49	CHK	50.9000			
31-OCT-2007 05:04	CHK	50.7000			
1-NOV-2007 04:46	CHK	50.5000			
2-NOV-2007 04:50	CHK	51.8000			
3-NOV-2007 07:50	CHK	50.2000			
5-NOV-2007 05:38	CHK	51.0000			
6-NOV-2007 05:30	CHK	50.8000			
7-NOV-2007 05:33	CHK	50.7000			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
8-NOV-2007 05:29	CHK	52.4000			
9-NOV-2007 05:29	CHK	52.0000			
10-NOV-2007 05:01	CHK	50.9000			
12-NOV-2007 04:58	CHK	50.6000			
13-NOV-2007 05:01	CHK	51.4000			
14-NOV-2007 04:54	CHK	49.8000			
15-NOV-2007 04:15	CHK	50.7000			
16-NOV-2007 04:47	CHK	51.0000			
17-NOV-2007 07:14	CHK	50.3000			
19-NOV-2007 05:46	CHK	50.8000			
20-NOV-2007 05:28	CHK	50.6000			
21-NOV-2007 05:36	CHK	51.7000			
22-NOV-2007 05:33	CHK	51.0000			
23-NOV-2007 04:35	CHK	51.3000			
24-NOV-2007 06:10	CHK	50.5000			
25-NOV-2007 05:55	CHK	50.6000			
26-NOV-2007 05:42	CHK	50.6000			

27-NOV-2007 05:35	CHK	49.7000	
28-NOV-2007 05:15	CHK	49.6000	In
29-NOV-2007 05:28	CHK	51.3000	
30-NOV-2007 05:29	CHK	50.5000	
3-DEC-2007 05:39	CHK	51.3000	
4-DEC-2007 05:26	CHK	50.5000	
5-DEC-2007 05:34	CHK	51.6000	
6-DEC-2007 05:24	CHK	50.6000	
7-DEC-2007 05:25	CHK	50.1000	
8-DEC-2007 06:10	CHK	51.1000	
10-DEC-2007 05:33	CHK	50.1000	
11-DEC-2007 05:40	CHK	50.7000	
12-DEC-2007 04:57	CHK	51.0000	
13-DEC-2007 02:29	CHK	50.2000	
14-DEC-2007 05:04	CHK	50.1000	
15-DEC-2007 07:44	CHK	50.7000	
17-DEC-2007 04:45	CHK	50.9000	
18-DEC-2007 04:53	CHK	50.0000	

-- Multi-Test Full Report --

Description : quad 5d 1.5" beta %eff

Parameter Units : percent Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 46.250000 Upper Bound : 52.250000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 49.508228 Std Deviation : 1.110400

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-OCT-2007 05:42	CHK		51.0000	
2-OCT-2007 05:48	CHK		50.2000	
3-OCT-2007 05:38	CHK		50.8000	

Quality Assurance Multi-Test Full Report (continued) Page : 6

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-OCT-2007 04:48	CHK		49.0000	

5-OCT-2007 04:41	CHK	50.3000			
6-OCT-2007 08:49	CHK	50.6000			
8-OCT-2007 05:00	CHK	49.8000			
9-OCT-2007 04:53	CHK	50.1000			
10-OCT-2007 05:41	CHK	49.3000			
11-OCT-2007 04:55	CHK	50.5000			
12-OCT-2007 04:47	CHK	50.0000			
13-OCT-2007 08:02	CHK	49.3000			
15-OCT-2007 04:54	CHK	47.8000			
16-OCT-2007 05:20	CHK	47.0000		In	
17-OCT-2007 04:43	CHK	50.2000			
18-OCT-2007 04:53	CHK	49.6000			
19-OCT-2007 04:45	CHK	50.8000			
20-OCT-2007 07:17	CHK	47.1000		In	
22-OCT-2007 05:02	CHK	49.2000			
23-OCT-2007 04:43	CHK	49.8000			
24-OCT-2007 04:52	CHK	50.8000			
25-OCT-2007 04:56	CHK	50.4000			
26-OCT-2007 04:59	CHK	49.9000			
27-OCT-2007 06:03	CHK	49.3000			
29-OCT-2007 05:10	CHK	49.3000			
30-OCT-2007 04:49	CHK	46.6000		In	
31-OCT-2007 05:04	CHK	51.3000			
1-NOV-2007 04:46	CHK	49.2000			
2-NOV-2007 04:50	CHK	49.9000			
3-NOV-2007 07:50	CHK	47.0000		In	
5-NOV-2007 05:38	CHK	49.3000			
6-NOV-2007 05:30	CHK	50.3000			
7-NOV-2007 05:33	CHK	49.8000			
8-NOV-2007 05:29	CHK	49.7000			
9-NOV-2007 05:29	CHK	50.3000			
10-NOV-2007 05:01	CHK	50.1000			
12-NOV-2007 04:58	CHK	49.4000			
13-NOV-2007 05:01	CHK	50.2000			
14-NOV-2007 04:54	CHK	49.0000			
15-NOV-2007 04:15	CHK	49.8000			
16-NOV-2007 04:47	CHK	49.7000			
17-NOV-2007 07:14	CHK	48.1000			
19-NOV-2007 05:46	CHK	48.8000			
20-NOV-2007 05:28	CHK	50.0000			
21-NOV-2007 05:36	CHK	50.2000			
22-NOV-2007 05:33	CHK	50.2000			
23-NOV-2007 04:35	CHK	47.8000			

24-NOV-2007 06:10	CHK	49.4000	
25-NOV-2007 05:55	CHK	50.2000	
26-NOV-2007 05:42	CHK	49.7000	
27-NOV-2007 05:35	CHK	49.4000	
28-NOV-2007 05:15	CHK	47.4000	
29-NOV-2007 05:28	CHK	48.3000	
30-NOV-2007 05:29	CHK	45.8000	Be Ac
3-DEC-2007 05:39	CHK	46.8000	In
4-DEC-2007 05:26	CHK	47.1000	In
5-DEC-2007 05:34	CHK	50.1000	
6-DEC-2007 05:24	CHK	50.2000	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
7-DEC-2007 05:25	CHK		48.8000	
8-DEC-2007 06:10	CHK		49.6000	
10-DEC-2007 05:33	CHK		49.9000	
11-DEC-2007 05:40	CHK		48.9000	
12-DEC-2007 04:57	CHK		50.0000	
13-DEC-2007 02:29	CHK		49.5000	
14-DEC-2007 05:04	CHK		50.3000	
15-DEC-2007 07:44	CHK		48.3000	
17-DEC-2007 04:45	CHK		50.6000	
18-DEC-2007 04:53	CHK		50.1000	

Quality Assurance Report.

Generated 20-DEC-2007 20:18:24.17

QA Filename : \$DISK1:[QUAD6.QA]CHK.QAF;2

-- Multi-Test Full Report --

Description : quad 6a 1.5" beta %eff

Parameter Units : percent Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 44.000000 Upper Bound : 49.250000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 46.656689 Std Deviation : 0.904850

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-OCT-2007 05:42	CHK		48.0000		
2-OCT-2007 05:48	CHK		45.7000		
3-OCT-2007 05:38	CHK		46.2000		
4-OCT-2007 04:48	CHK		46.2000		
5-OCT-2007 04:46	CHK		46.6000		
6-OCT-2007 08:44	CHK		46.0000		
8-OCT-2007 05:00	CHK		47.5000		
9-OCT-2007 04:48	CHK		45.8000		
10-OCT-2007 05:41	CHK		47.7000		
11-OCT-2007 04:50	CHK		46.0000		
12-OCT-2007 04:42	CHK		46.8000		
13-OCT-2007 08:03	CHK		46.1000		
15-OCT-2007 04:54	CHK		46.1000		
16-OCT-2007 05:20	CHK		46.9000		
17-OCT-2007 04:43	CHK		47.0000		
18-OCT-2007 04:53	CHK		46.0000		
19-OCT-2007 04:45	CHK		45.9000		
20-OCT-2007 07:17	CHK		47.0000		
22-OCT-2007 04:58	CHK		46.6000		
23-OCT-2007 04:38	CHK		45.8000		
24-OCT-2007 04:47	CHK		46.4000		

25-OCT-2007 04:56	CHK	45.4000	
26-OCT-2007 05:00	CHK	45.9000	
29-OCT-2007 05:10	CHK	46.2000	
30-OCT-2007 04:49	CHK	46.5000	
31-OCT-2007 04:38	CHK	45.9000	
1-NOV-2007 04:41	CHK	45.7000	
2-NOV-2007 04:45	CHK	45.8000	
3-NOV-2007 07:50	CHK	46.9000	
5-NOV-2007 05:38	CHK	47.0000	
6-NOV-2007 05:30	CHK	47.3000	
7-NOV-2007 05:33	CHK	46.9000	
8-NOV-2007 05:25	CHK	44.8000	In
9-NOV-2007 05:29	CHK	45.2000	
10-NOV-2007 05:01	CHK	45.8000	
12-NOV-2007 05:03	CHK	46.2000	
13-NOV-2007 05:06	CHK	44.8000	In
14-NOV-2007 04:54	CHK	45.5000	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
15-NOV-2007 04:10	CHK	46.0000		
16-NOV-2007 04:47	CHK	46.1000		
17-NOV-2007 07:14	CHK	46.8000		
19-NOV-2007 05:46	CHK	48.6000	In	
20-NOV-2007 05:28	CHK	45.2000		
21-NOV-2007 05:36	CHK	45.6000		
22-NOV-2007 05:28	CHK	43.8000	Be Ac	
23-NOV-2007 04:35	CHK	46.5000		
24-NOV-2007 06:10	CHK	45.9000		
25-NOV-2007 05:55	CHK	46.0000		
26-NOV-2007 05:42	CHK	47.6000		
27-NOV-2007 05:35	CHK	46.6000		
28-NOV-2007 05:16	CHK	47.2000		
29-NOV-2007 05:28	CHK	48.3000		
30-NOV-2007 05:29	CHK	47.7000		
3-DEC-2007 05:39	CHK	47.9000		
4-DEC-2007 05:26	CHK	47.8000		
5-DEC-2007 05:34	CHK	47.9000		
6-DEC-2007 05:24	CHK	45.5000		
7-DEC-2007 05:25	CHK	46.3000		
8-DEC-2007 06:05	CHK	45.8000		
10-DEC-2007 05:34	CHK	46.7000		

11-DEC-2007 05:52	CHK	46.1000	
12-DEC-2007 04:57	CHK	46.6000	
13-DEC-2007 02:25	CHK	44.5000	In
14-DEC-2007 05:04	CHK	46.6000	
15-DEC-2007 07:44	CHK	47.4000	
17-DEC-2007 04:45	CHK	45.0000	
18-DEC-2007 04:58	CHK	46.0000	

## -- Multi-Test Full Report --

Description : quad 6b 1.5" beta %eff  
 Parameter Units : percent Parameter Type : Generic

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 50.000000 Upper Bound : 54.000000

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 52.041027 Std Deviation : 0.696986

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-OCT-2007 05:42	CHK		52.2000	
2-OCT-2007 05:48	CHK		51.7000	
3-OCT-2007 05:38	CHK		52.2000	
4-OCT-2007 04:48	CHK		52.3000	
5-OCT-2007 04:46	CHK		51.5000	
6-OCT-2007 08:44	CHK		51.9000	
8-OCT-2007 05:00	CHK		50.9000	
9-OCT-2007 04:48	CHK		51.9000	
10-OCT-2007 05:41	CHK		52.6000	

Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-OCT-2007 04:50	CHK		51.9000	
12-OCT-2007 04:42	CHK		51.8000	
13-OCT-2007 08:03	CHK		52.2000	
15-OCT-2007 04:54	CHK		52.8000	
16-OCT-2007 05:20	CHK		51.6000	
17-OCT-2007 04:43	CHK		53.1000	

18-OCT-2007 04:53	CHK	51.7000	
19-OCT-2007 04:45	CHK	53.1000	
20-OCT-2007 07:17	CHK	51.9000	
22-OCT-2007 04:58	CHK	51.9000	
23-OCT-2007 04:38	CHK	52.2000	
24-OCT-2007 04:47	CHK	50.9000	
25-OCT-2007 04:56	CHK	51.4000	
26-OCT-2007 05:00	CHK	51.1000	
29-OCT-2007 05:10	CHK	53.1000	
30-OCT-2007 04:49	CHK	52.4000	
31-OCT-2007 04:38	CHK	51.7000	
1-NOV-2007 04:41	CHK	51.5000	
2-NOV-2007 04:45	CHK	51.8000	
3-NOV-2007 07:50	CHK	51.0000	
5-NOV-2007 05:38	CHK	51.8000	
6-NOV-2007 05:30	CHK	52.4000	
7-NOV-2007 05:33	CHK	52.0000	
8-NOV-2007 05:25	CHK	52.5000	
9-NOV-2007 05:29	CHK	52.0000	
10-NOV-2007 05:01	CHK	52.2000	
12-NOV-2007 05:03	CHK	53.3000	
13-NOV-2007 05:06	CHK	51.8000	
14-NOV-2007 04:54	CHK	51.4000	
15-NOV-2007 04:10	CHK	50.8000	
16-NOV-2007 04:47	CHK	51.4000	
17-NOV-2007 07:14	CHK	52.0000	
19-NOV-2007 05:46	CHK	52.5000	
20-NOV-2007 05:28	CHK	50.5000	[In]
21-NOV-2007 05:36	CHK	51.2000	
22-NOV-2007 05:28	CHK	51.8000	
23-NOV-2007 04:35	CHK	52.5000	
24-NOV-2007 06:10	CHK	51.1000	
25-NOV-2007 05:55	CHK	51.2000	
26-NOV-2007 05:42	CHK	53.0000	
27-NOV-2007 05:35	CHK	51.4000	
28-NOV-2007 05:16	CHK	51.6000	
29-NOV-2007 05:28	CHK	53.1000	
30-NOV-2007 05:29	CHK	52.4000	
3-DEC-2007 05:39	CHK	51.6000	
4-DEC-2007 05:26	CHK	52.2000	
5-DEC-2007 05:34	CHK	51.8000	
6-DEC-2007 05:24	CHK	51.0000	
7-DEC-2007 05:25	CHK	51.6000	



8-DEC-2007 06:05	CHK	51.3000	
10-DEC-2007 05:34	CHK	51.9000	
11-DEC-2007 05:52	CHK	51.7000	
12-DEC-2007 04:57	CHK	51.6000	
13-DEC-2007 02:25	CHK	51.8000	
14-DEC-2007 05:04	CHK	50.7000	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
15-DEC-2007 07:44	CHK		51.9000	
17-DEC-2007 04:45	CHK		51.7000	
18-DEC-2007 04:58	CHK		52.0000	

-- Multi-Test Full Report --

Description : quad 6c 1.5" beta %eff

Parameter Units : percent Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 50.000000 Upper Bound : 54.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 51.875000 Std Deviation : 0.608396

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-OCT-2007 05:42	CHK		52.2000	
2-OCT-2007 05:48	CHK		51.7000	
3-OCT-2007 05:38	CHK		51.3000	
4-OCT-2007 04:48	CHK		52.0000	
5-OCT-2007 04:46	CHK		51.2000	
6-OCT-2007 08:44	CHK		52.8000	
8-OCT-2007 05:00	CHK		53.0000	
9-OCT-2007 04:48	CHK		52.6000	
10-OCT-2007 05:41	CHK		51.1000	
11-OCT-2007 04:50	CHK		51.6000	
12-OCT-2007 04:42	CHK		52.2000	
13-OCT-2007 08:03	CHK		52.5000	
15-OCT-2007 04:54	CHK		53.5000	In

16-OCT-2007 05:20	CHK	52.0000	
17-OCT-2007 04:43	CHK	52.1000	
18-OCT-2007 04:53	CHK	51.0000	
19-OCT-2007 04:45	CHK	52.3000	
20-OCT-2007 07:17	CHK	51.7000	
22-OCT-2007 04:58	CHK	51.1000	
23-OCT-2007 04:38	CHK	51.2000	
24-OCT-2007 04:47	CHK	51.6000	
25-OCT-2007 04:56	CHK	51.1000	
26-OCT-2007 05:00	CHK	51.5000	
29-OCT-2007 05:10	CHK	52.5000	
30-OCT-2007 04:49	CHK	51.7000	
31-OCT-2007 04:38	CHK	52.3000	
1-NOV-2007 04:41	CHK	50.6000	In
2-NOV-2007 04:45	CHK	51.5000	
3-NOV-2007 07:50	CHK	52.3000	
5-NOV-2007 05:38	CHK	50.8000	
6-NOV-2007 05:30	CHK	51.8000	
7-NOV-2007 05:33	CHK	50.9000	
8-NOV-2007 05:25	CHK	51.9000	
9-NOV-2007 05:29	CHK	50.8000	
10-NOV-2007 05:01	CHK	51.5000	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
12-NOV-2007 05:03	CHK		51.4000	
13-NOV-2007 05:06	CHK		52.4000	
14-NOV-2007 04:54	CHK		51.3000	
15-NOV-2007 04:10	CHK		51.4000	
16-NOV-2007 04:47	CHK		52.1000	
17-NOV-2007 07:14	CHK		51.3000	
19-NOV-2007 05:46	CHK		51.0000	
20-NOV-2007 05:28	CHK		51.6000	
21-NOV-2007 05:36	CHK		51.1000	
22-NOV-2007 05:28	CHK		50.5000	In
23-NOV-2007 04:35	CHK		51.6000	
24-NOV-2007 06:10	CHK		52.7000	
25-NOV-2007 05:55	CHK		51.1000	
26-NOV-2007 05:42	CHK		51.3000	
27-NOV-2007 05:35	CHK		51.8000	
28-NOV-2007 05:16	CHK		52.1000	
29-NOV-2007 05:28	CHK		51.4000	

30-NOV-2007 05:29	CHK	50.9000	
3-DEC-2007 05:39	CHK	53.1000	In
4-DEC-2007 05:26	CHK	51.9000	
5-DEC-2007 05:34	CHK	52.1000	
6-DEC-2007 05:24	CHK	51.5000	
7-DEC-2007 05:25	CHK	52.2000	
8-DEC-2007 06:05	CHK	51.8000	
10-DEC-2007 05:34	CHK	51.0000	
11-DEC-2007 05:52	CHK	52.0000	
12-DEC-2007 04:57	CHK	51.6000	
13-DEC-2007 02:25	CHK	50.7000	
14-DEC-2007 05:04	CHK	51.4000	
15-DEC-2007 07:44	CHK	52.0000	
17-DEC-2007 04:45	CHK	50.9000	
18-DEC-2007 04:58	CHK	52.3000	

-- Multi-Test Full Report --

Description : quad 6d 1.5" beta %eff  
 Parameter Units : percent Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 49.000000 Upper Bound : 53.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00  
 Mean : 51.031212 Std Deviation : 0.623766

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-OCT-2007 05:42	CHK		51.4000	
2-OCT-2007 05:48	CHK		50.7000	
3-OCT-2007 05:38	CHK		51.1000	
4-OCT-2007 04:48	CHK		50.4000	
5-OCT-2007 04:46	CHK		52.3000	In
6-OCT-2007 08:44	CHK		50.7000	

Quality Assurance Multi-Test Full Report (continued) Page : 6

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
8-OCT-2007 05:00	CHK		50.9000	

9-OCT-2007 04:48	CHK	51.9000			
10-OCT-2007 05:41	CHK	50.7000			
11-OCT-2007 04:50	CHK	51.4000			
12-OCT-2007 04:42	CHK	50.9000			
13-OCT-2007 08:03	CHK	51.2000			
15-OCT-2007 04:54	CHK	51.7000			
16-OCT-2007 05:20	CHK	50.7000			
17-OCT-2007 04:43	CHK	51.5000			
18-OCT-2007 04:53	CHK	50.1000			
19-OCT-2007 04:45	CHK	50.2000			
20-OCT-2007 07:17	CHK	50.9000			
22-OCT-2007 04:58	CHK	50.8000			
23-OCT-2007 04:38	CHK	49.9000			
24-OCT-2007 04:47	CHK	50.4000			
25-OCT-2007 04:56	CHK	51.7000			
26-OCT-2007 05:00	CHK	50.6000			
29-OCT-2007 05:10	CHK	50.5000			
30-OCT-2007 04:49	CHK	50.5000			
31-OCT-2007 04:38	CHK	50.9000			
1-NOV-2007 04:41	CHK	50.4000			
2-NOV-2007 04:45	CHK	50.8000			
3-NOV-2007 07:50	CHK	49.9000			
5-NOV-2007 05:38	CHK	49.9000			
6-NOV-2007 05:30	CHK	51.3000			
7-NOV-2007 05:33	CHK	51.0000			
8-NOV-2007 05:25	CHK	50.9000			
9-NOV-2007 05:29	CHK	51.1000			
10-NOV-2007 05:01	CHK	51.5000			
12-NOV-2007 05:03	CHK	51.6000			
13-NOV-2007 05:06	CHK	51.3000			
14-NOV-2007 04:54	CHK	50.6000			
15-NOV-2007 04:10	CHK	51.0000			
16-NOV-2007 04:47	CHK	51.2000			
17-NOV-2007 07:14	CHK	50.3000			
19-NOV-2007 05:46	CHK	50.0000			
20-NOV-2007 05:28	CHK	51.6000			
21-NOV-2007 05:36	CHK	50.0000			
22-NOV-2007 05:28	CHK	50.1000			
23-NOV-2007 04:35	CHK	50.0000			
24-NOV-2007 06:10	CHK	50.5000			
25-NOV-2007 05:55	CHK	50.6000			
26-NOV-2007 05:42	CHK	50.4000			
27-NOV-2007 05:35	CHK	51.9000			

28-NOV-2007 05:16	CHK	49.9000	
29-NOV-2007 05:28	CHK	50.2000	
30-NOV-2007 05:29	CHK	50.8000	
3-DEC-2007 05:39	CHK	51.4000	
4-DEC-2007 05:26	CHK	51.3000	
5-DEC-2007 05:34	CHK	51.1000	
6-DEC-2007 05:24	CHK	50.9000	
7-DEC-2007 05:25	CHK	51.6000	
8-DEC-2007 06:05	CHK	50.1000	
10-DEC-2007 05:34	CHK	51.3000	
11-DEC-2007 05:52	CHK	51.3000	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
12-DEC-2007 04:57	CHK		50.2000	
13-DEC-2007 02:25	CHK		50.4000	
14-DEC-2007 05:04	CHK		51.7000	
15-DEC-2007 07:44	CHK		49.7000	In
17-DEC-2007 04:45	CHK		50.8000	
18-DEC-2007 04:58	CHK		51.4000	

RADIUM 226  
SAMPLE AND QC DATA

**Lot No., Due Date:** F7K160242,F7K190152,F7K200219; 12/14/2007,12/18/2007,12/20/2007  
**Client, Site:** 445691; Phs2 Smpling Tronox Prcl CDFG  
**QC Batch No., Method Test:** 7327119; RRA2267 Ra-226 by ASC-7  
**SDG, Matrix:** TRNC/D-5RD,TRNC/D-6RD,TRNC/D-7RD; ,,

**1.0 COC**

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? Yes No N/A

Yes  No  N/A

**2.0 QC Batch**

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Yes No N/A

Yes  No  N/A

2.2 Are the QC appropriate for the analysis included in the batch? Yes No N/A

Yes  No  N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? Yes No N/A

Yes  No  N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample? Yes No N/A

Yes  No  N/A

**3.0 QC & Samples**

3.1 Is the blank results, yield, and MDA within contract limits? Yes No N/A

Yes  No  N/A

3.2 Is the LCS result, yield, and MDA within contract limits? Yes No N/A

Yes  No  N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits? Yes No N/A

Yes  No  N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits? Yes No N/A

Yes  No  N/A

3.5 Are the sample yields and MDAs within contract limits? Yes No N/A

Yes  No  N/A

**4.0 Raw Data**

4.1 Were results calculated in the correct units? Yes No N/A

Yes  No  N/A

4.2 Were analysis volumes entered correctly? Yes No N/A

Yes  No  N/A

4.3 Were Yields entered correctly? Yes No N/A

Yes  No  N/A

4.4 Were spectra reviewed/meet contractual requirements? Yes No N/A

Yes  No  N/A

4.5 Were raw counts reviewed for anomalies? Yes No N/A

Yes  No  N/A

**5.0 Other**

5.1 Are all nonconformances included and noted? Yes No N/A

Yes  No  N/A

5.2 Are all required forms filled out? Yes No N/A

Yes  No  N/A

5.3 Was the correct methodology used? Yes No N/A

Yes  No  N/A

5.4 Was transcription checked? Yes No N/A

Yes  No  N/A

5.5 Were all calculations checked at a minimum frequency? Yes No N/A

Yes  No  N/A

5.6 Are worksheet entries complete and correct? Yes No N/A

Yes  No  N/A

6.0 Comments on any No response:

NCM 10-11516

First Level Review

*Thomas D. H. G.*

Date

12/20/07

**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 7327119

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?		✓	
<b>C. Other</b>			
1. Are all Non-conformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: See notes

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Second Level Review: Erika Jrd Date: 12/21/07



# Clouseau Nonconformance Memo



NCM #: <b>10-11516</b> NCM Initiated By: Tom McGinnis Date Opened: 12/20/2007 Date Closed:	Classification: <b>Deficiency</b> Status: <b>GLREVIEW</b> Production Area: Environmental - Prep Tests: Ra-226 by ASC-7 Lot #'s (Sample #'s): J7K230000 (119), QC Batches: 7327119,
Nonconformance: Other (describe in detail) Subcategory: Other (explanation required)	

### Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Tom McGinnis	12/20/2007	Insufficient sample volume for duplicate analysis.

### Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Tom McGinnis	12/20/2007	N/A

### Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

### Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

### Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>
----------------------	--------------------	-----------------



12/5/2007 9:05:51 AM

### Sample Preparation/Analysis

Balance Id: 1120403183

E

BU Ra-226/228 Prp/SepRC5005

Pipet #:

TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow **PRIORITY** Sep1 DT/Tm Tech: 01 STANDARD TEST SET

Analysis Due Date: 12/10/2007

Batch: 7327119 pCi/L

Sep2 DT/Tm Tech:

SEO Batch, Test: None

Prep Tech: LucasD

Work Order, Lot, Sample Date Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On/Off (24hr) Circle	CR Analyst, Init/Date	Comments:
-----------------------------------	----------------	--------------------------	---------------------	--------------	-----------	-----------------	----------------	-------------	----------------------------	-----------------------	-----------

5 KCR7F-1-AA-B 1001.00g.in RATA29457 11/15/07  
 7.5519 - 1.0000  
 782  
 9" 2110 12-10-07 14:44 SB  
 12-17-07 11:06 SB

11/15/2007 13:15 AmtRec: #Containers: 1  
 6 KCR7F-1-AC-C 1000.40g.in RASC4640 11/05/07  
 7.4845 - 1.0000  
 772  
 9" 2150 12-10-07 14:44 SB  
 12-17-07 11:07 SB

11/15/2007 13:15 AmtRec: #Containers: 1  
 Comments: ISV for Dup - DL 12/5/07

All Clients for Batch: 445691, Basic Remediation Company, JAE, 77571

KCFM81AA-SAMP Constituent List:

Constituent	RDL	pCi/L	LCL:20	UCL:115	RPD:20	Ra-226	RDL:1	pCi/L	LCL:70	UCL:130	RPD:20
KCR7F1AA-BLK: Ba-133											
KCR7F1AC-LCS: Ba-133											

KCFM81AA-SAMP Calc Info:  
 Decay to SaDt: N Blk Subt.: N Sci. Not.: N ODRs: B  
 Uncert Level (#s): 4  
 KCR7F1AA-BLK: Decay to SaDt: N Blk Subt.: N Sci. Not.: N ODRs: B  
 Uncert Level (#s): 4

IA Facility: Prep Dt: Final Amt: Diluted Amt: 12-10-07 14:44 SB  
 Richard Wal: Prep Dt: Final Amt: Diluted Amt: 12-17-07 11:06 SB

12/5/2007 9:05:52 AM

### Sample Preparation/Analysis

Balance Id:1120403183

BU Ra-226/228 Prp/SepRC:5005

TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow

01 STANDARD TEST SET

Pipet #:

# PRIORITY

DT/Tm Tech:

AnalytDueDate: 12/10/2007

pCi/L

Sep2 DT/Tm Tech:

Batch: 7327119  
SEQ Batch Test: None

Prep Tech: LucasD



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:

KCR7FIAC-LCS:

Uncert Level (#s) : 4    Decay to SaDt: N    Blk Subt.: N    Sci.Not.: N    ODRs: B

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

# ICOC Fraction Transfer/Status Report

ByDate: 12/20/2006, 12/25/2007, Batch: '7327119', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
7327119				
AC	CalcC	LucasD	12/7/2007 11:13:44	
SC		antonsonl	IsBatched 11/23/2007 10:43:22 AM	ICOC_RADCALC v4.8.29
SC		LucasD	Sep1C 12/7/2007 11:13:44 AM	RICH-RC-5005 REVISION 6
SC		ClarkR	InCnt1 12/7/2007 12:33:06 PM	RICH-RD-0007 REVISION 6
SC		DAWKINSO	Cnt1C 12/7/2007 9:38:52 PM	RICH-RD-0007 REVISION 6
SC		BairdS	InSep2 12/10/2007 4:40:59 PM	RICH-RC-5005 REVISION 6
SC		BairdS	CalcC 12/17/2007 4:54:03 PM	RICH-RC-5005 REVISION 6
AC		ClarkR	12/7/2007 12:33:06	
AC		DAWKINSO	12/7/2007 9:38:52 PM	
AC		BairdS	12/10/2007 4:40:59	
AC		BairdS	12/17/2007 4:54:03	

AC: Accepting Entry; SC: Status Change

# Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix Cnt Uncert	Received Date Tot uncert	Sample Date Units	Expected Yield	Volumes	
<b>TRNC/D-5RD</b>	<b>9KCFM810</b>		<b>F7K16024217</b>	RINSATE 3	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM			
RA-226	BUTE	0	12/17/2007 3:09:00	PM1.6667E-02	3.068E-02	3.073E-02	1.151E-01	pCi/L	1.0	9.901E-1
RA-228	BUTF	0	12/19/2007 5:34:05	2.0064E-02	7.046E-02	1.009E-01	4.796E-01	pCi/L	0.881	9.901E-1
RA-228	TBD	0	12/19/2007 5:34:05	2.0064E-02	7.046E-02	1.009E-01	4.796E-01	pCi/L	0.881	9.901E-1
TH-228	9NS1	0	12/10/2007 6:45:38	-1.9194E-02	4.987E-02	4.989E-02	2.712E-01	pCi/L	0.941	1.999E-1
TH-230	9NS1	0	12/10/2007 6:45:38	-9.3646E-03	4.775E-02	4.776E-02	2.243E-01	pCi/L	0.941	1.999E-1
TH-232	9NS1	0	12/10/2007 6:45:38	-9.3646E-03	4.775E-02	4.776E-02	2.243E-01	pCi/L	0.941	1.999E-1
U-234	7YSR	0	12/10/2007 2:47:40	PM5.2904E-02	4.77E-02	4.789E-02	1.869E-01	pCi/L	0.889	2.0E-1
U-235	7YSR	0	12/10/2007 2:47:40	PM-6.6195E-03	3.373E-02	3.373E-02	1.584E-01	pCi/L	0.889	2.0E-1
U-238	7YSR	0	12/10/2007 2:47:40	PM-6.6195E-03	3.373E-02	3.373E-02	1.584E-01	pCi/L	0.889	2.0E-1
<b>TRNC/D-6RD</b>	<b>9KCKE910</b>		<b>F7K19015216</b>	RINSATE4	WATER	11/19/2007 8:45:00	11/16/2007 2:00:00 PM			
RA-226	BUTE	0	12/17/2007 2:58:00	PM1.2977E-02	3.205E-02	3.208E-02	1.256E-01	pCi/L	1.0	9.942E-1
RA-228	BUTF	0	12/19/2007 6:37:40	2.7781E-01	1.077E-01	1.127E-01	4.78E-01	pCi/L	0.898	9.942E-1
TH-228	9NS1	0	12/10/2007 6:45:38	9.2252E-03	4.967E-02	4.968E-02	3.168E-01	pCi/L	0.943	2.001E-1
TH-230	9NS1	0	12/10/2007 6:45:38	3.6039E-02	4.594E-02	4.603E-02	2.158E-01	pCi/L	0.943	2.001E-1
TH-232	9NS1	0	12/10/2007 6:45:38	-9.0094E-03	4.594E-02	4.595E-02	2.158E-01	pCi/L	0.943	2.001E-1
U-234	7YSR	0	12/10/2007 2:47:56	PM3.2826E-02	3.348E-02	3.358E-02	1.572E-01	pCi/L	0.882	2.002E-1
U-235	7YSR	0	12/10/2007 2:47:56	PM0.0E+00	0.0E+00	3.348E-02	1.572E-01	pCi/L	0.882	2.002E-1
U-238	7YSR	0	12/10/2007 2:47:56	PM3.2826E-02	3.348E-02	3.358E-02	1.572E-01	pCi/L	0.882	2.002E-1
<b>TRNC/D-7RD</b>	<b>9KCMQL10</b>		<b>F7K20021915</b>	RINSATE 5	WATER	11/20/2007 9:30:00	11/19/2007 12:40:00 PM			
RA-226	BUTE	0	12/17/2007 3:06:01	PM1.6227E-02	2.421E-02	2.426E-02	9.051E-02	pCi/L	1.0	1.001E+0
RA-228	BUTF	0	12/19/2007 6:37:40	1.138E-01	8.752E-02	1.082E-01	4.915E-01	pCi/L	0.898	1.001E+0
TH-228	9NS1	0	12/10/2007 6:45:38	4.6749E-02	5.959E-02	5.97E-02	2.799E-01	pCi/L	0.928	2.001E-1
TH-230	9NS1	0	12/10/2007 6:45:38	0.0E+00	0.0E+00	5.838E-02	2.742E-01	pCi/L	0.928	2.001E-1
TH-232	9NS1	0	12/10/2007 6:45:38	0.0E+00	0.0E+00	5.838E-02	2.742E-01	pCi/L	0.928	2.001E-1
U-234	7YSR	0	12/10/2007 2:47:59	PM0.0E+00	0.0E+00	3.647E-02	1.713E-01	pCi/L	0.832	2.001E-1
U-235	7YSR	0	12/10/2007 2:47:59	PM-7.1539E-03	3.647E-02	3.648E-02	1.713E-01	pCi/L	0.832	2.001E-1
U-238	7YSR	0	12/10/2007 2:47:59	PM0.0E+00	0.0E+00	3.647E-02	1.713E-01	pCi/L	0.832	2.001E-1
<b>TRNC/D-7RD</b>	<b>KCR7F1AB</b>		<b>J7K230000119</b>	INTRA-LAB BLANK	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM			
RA-226	BUTE	0 B	12/17/2007 3:06:01	PM-5.1388E-03	2.139E-02	2.14E-02	8.949E-02	pCi/L	1.0	1.001E+0
<b>TRNC/D-7RD</b>	<b>KCR7F1CS</b>		<b>J7K230000119</b>	INTRA-LAB CHECK	WATER	11/16/2007 9:15:00	11/15/2007 1:15:00 PM			
RA-226	BUTE	0 S	12/17/2007 3:07:00	PM1.2938E+00	8.642E-02	1.55E-01	9.057E-02	pCi/L	1.3884E+00	1.0E+0

7327119, \*\*Samples Inserted | Updated | NotUpdated => 2 | 0 | 3,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 5 | 0 | 0 | 0.  
 \*\*Diff RptDb | Qtims => .

# Alpha Beta, Ra-226 by ASC-7 , Results Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	IDC	QC Trc	Yld	LCS Yld
Ra-226 by ASC-7			Richland Standard Ra-226/Ra-228 Deem Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71											
Calc	TE	WATER	KCFM81AA	RA-226	1.67E-02	(3.07E-02)	U4	pCi/L	R	5.01E-02	1.15E-01		100%	
Calc	TE	WATER	KCKE91AA	RA-226	1.30E-02	(3.21E-02)	U4	pCi/L	R	5.23E-02	1.26E-01		100%	
Calc	TE	WATER	KCMQL1AA	RA-226	1.62E-02	(2.43E-02)	U4	pCi/L	R	3.87E-02	9.05E-02		100%	
Calc	TE	WATER	KCR7F1AA	RA-226	-5.14E-03	(2.14E-02)	U4	pCi/L	R	3.78E-02	8.95E-02	B	100%	
Calc	TE	WATER	KCR7F1AC	RA-226	1.29E+00	(1.55E-01)		pCi/L	R	3.80E-02	9.06E-02	S	100%	93%

*TM*  
12/20/07  
JK

( ) - (1s Uncertainties)  
 IDC - Instrument Detection Level in Conc Units  
 MLcC - Method Decision Level in Conc Units  
 MDC - Minimum Detectable Concentration  
 \*Std - Lc. MDC using StdDev for Set of Blanks

Q - Qualifier, U is Less Than Lc = 1.645\*TPU  
 All Results Displayed to Three Digits Regardless of Significants  
 Date/Time - mm/dd/yy hh:mm, 24hr Time

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	TE	WATER	*STLE	Ra226WoBS	KCFM81AA	pCi/L		11/15/07 13:15	12/17/07 15:09	12/10/07 14:44	RATA29454	1		990.10 g	
							WATER				12/17/07 11:09	RATA29454	Alq	100%		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	ASCEHA	ASC	N	N	2.3774E+00	1.0000E+00	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 15:09	RA-226	18	50	60	Y	(1.182E-01)	(0.000E+00)	8%	100%	N	1.4515E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC			
	12/17/07	RA-226	R	0.016667	U4	6.00000E-02	0.036633	0.9901 L	100%	0.11511						
				(0.030734)		(1.1045E-01)	(0.067526)	(0.173205)		0.050057						
2	Calc	TE	WATER	*STLE	Ra226WoBS	KCKE91AA	pCi/L		11/16/07 14:00	12/17/07 14:58	12/10/07 14:44	RATA29455	1		994.20 g	
							WATER				12/17/07 10:58	RATA29455	Alq	100%		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	ASGSA	ASC	N	N	1.6903E+00	1.0000E+00	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 14:58	RA-226	10	50	60	Y	(8.671E-02)	(0.000E+00)	8%	100%	N	1.4523E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC			
	12/17/07	RA-226	R	0.012977	U4	3.33333E-02	0.028641	0.9942 L	100%	0.125617						
				(0.032081)		(8.2327E-02)	(0.07079)	(0.009942)		0.052289						
3	Calc	TE	WATER	*STLE	Ra226WoBS	KCMQL1AA	pCi/L		11/19/07 12:40	12/17/07 15:06	12/10/07 14:44	RATA29456	1		1000.90 g	
							WATER				12/17/07 11:06	RATA29456	Alq	100%		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	ASCHAC	ASC	N	N	2.6843E+00	1.0000E+00	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 15:06	RA-226	15	50	60	Y	(4.483E-02)	(0.000E+00)	8%	100%	N	1.4518E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC			
	12/17/07	RA-226	R	0.016227	U4	6.66667E-02	0.036056	1.0009 L	100%	0.090512						
				(0.024255)		(9.9443E-02)	(0.053863)	(0.010009)		0.038683						
4	Calc	TE	WATER	*STLE	Ra226WoBS	KCR7F1AA	pCi/L		11/15/07 13:15	12/17/07 15:06	12/10/07 14:44	RATA29457	1		1001.00 g	
							WATER				12/17/07 11:06	RATA29457	Alq	100%		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	ASCJUA	ASC	N	N	2.5427E+00	1.0000E+00	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/17/07 15:06	RA-226	9	50	60	Y	(3.636E-02)	(0.000E+00)	8%	100%	N	1.4518E+00	(0.000E+00)	4.5045E+02	1.0000E+00	
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC			
	12/17/07	RA-226	R	0.016227	U4	6.66667E-02	0.036056	1.0009 L	100%	0.090512						
				(0.024255)		(9.9443E-02)	(0.053863)	(0.010009)		0.038683						

(0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration  
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time



Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Trc Yld,EnFct	LCSYld,EFctU	IDC/ILcC	BIkLcC/MDC	StdDvMdc/LcC				
12/17/07	RA-226	R	-0.005139 (0.0214)	U4	-2.00000E-02 (8.3267E-02)	-0.011419 (0.047551)	-0.011419 (0.047551)	1.001 L (0.01001)	100%	100%	0.08949 0.037804							
<b>Sq Status Method Matrix</b> Protocol Equation Set <b>Wrk Ord</b> Units/Matrix <b>QC/BB</b> Sa/On Date <b>AnalysisDate/PptWt</b> <b>Sep1/Sep2 Date</b> <b>QC/Tracer Vial</b> <b>Mult/EntYld</b> <b>Total/Analy Vol</b> <b>Final/Count Vol</b>																		
5	Calc	TE WATER	*STLE Ra226WoBS	KCR7F1AC	pCi/L	S	11/15/07 13:15	12/17/07 15:07	12/10/07 14:44	RASC4640	1							
0,INTRA-LAB CHECK ,J7K230000-119 WATER																		
<b>Sq</b>	<b>Cnt Date</b>	<b>Parameter</b>	<b>Sample Cnt</b>	<b>Bkgrnd Cnt</b>	<b>Instr</b>	<b>Geom</b>	<b>Trc/Av</b>	<b>Ent</b>	<b>Efficiency1</b>	<b>Efficiency2</b>	<b>Ent</b>	<b>Trc Yld Fct</b>	<b>Ent</b>	<b>Blk Value</b>	<b>Ingr Fct</b>	<b>Conv Fc/VolAdj</b>	<b>Decay</b>	<b>Abn</b>
0	12/17/07 15:07	RA-226	249	11	ASCKME ASC	N	N	N	2.4235E+00	1.0000E+00	N	100%	N	1.4517E+00	4.5045E+02	1.0000E+00		
			50	60		Y	Y	Y	(7.270E-02)	(0.0000E+00)		8%		(0.0000E+00)	0.001			
<b>Sq</b>	<b>CalcDate,TrcAct</b>	<b>Parameter</b>	<b>Avg</b>	<b>Sa Act, Total U</b>	<b>Q</b>	<b>Net Cnt Rt</b>	<b>Dpm Wo Blk</b>	<b>Dpm-Blk</b>	<b>Vol Used</b>	<b>Trc Yld,EnFct</b>	<b>LCSYld,EFctU</b>	<b>IDC/ILcC</b>	<b>BIkLcC/MDC</b>	<b>StdDvMdc/LcC</b>				
	12/17/07	RA-226	R	1.293768 (0.155046)		4.79667E+00 (3.2040E-01)	2.873232 (0.311606)	2.873232 (0.311606)	1.0004 L (0.0100004)	100%	93%	0.090565 0.037996						

ALPHA SCINTILLATION REPORT  
(Version: 17-Oct-1998)

Sample ID: KCFM81AA                      Isotope: RA-226  
Client: STL                                  Matrix Code: 103  
Batch Nbr: 7327119                      Activity Unit: PCI/L                      Multiplier: 1.0  
Technician: SB  
Analysis Size: 990.1                      Analysis Unit: G  
    Report Date: 17-DEC-2007 15:59:00.65  
    First Separation Date: 10-DEC-2007 14:44:00.00  
    Second Separation Date: 17-DEC-2007 11:09:00.00  
Detector ID: 14                              Cell ID: EHA  
Bkg Date: 11-DEC-2007 09:20:33.18  
    Bkg Counts: 000018                      Bkg Duration: 000060.0  
Count Date: 17-DEC-2007 15:09:00.27  
    Counts: 000018                      Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT  
(Version: 17-Oct-1998)

Sample ID: KCKE91AA                      Isotope: RA-226  
Client: STL                                  Matrix Code: 103  
Batch Nbr: 7327119                      Activity Unit: PCI/L                      Multiplier: 1.0  
Technician: SB  
Analysis Size: 994.2                      Analysis Unit: G  
    Report Date: 17-DEC-2007 15:48:00.79  
    First Separation Date: 10-DEC-2007 14:44:00.00  
    Second Separation Date: 17-DEC-2007 10:58:00.00  
Detector ID: 16                              Cell ID: GSA  
Bkg Date: 12-DEC-2007 09:24:23.41  
    Bkg Counts: 000010                      Bkg Duration: 000060.0  
Count Date: 17-DEC-2007 14:58:00.38  
    Counts: 000010                      Count Duration: 000050.0

End of Report ✓



ALPHA SCINTILLATION REPORT  
(Version: 17-Oct-1998)

Sample ID: KCR7F1AA                      Isotope: RA-226  
Client: STL                                  Matrix Code: 103  
Batch Nbr: 7327119                      Activity Unit: PCI/L                      Multiplier: 1.0  
Technician: SB  
Analysis Size: 1001.0                      Analysis Unit: G  
    Report Date: 17-DEC-2007 15:56:01.15  
    First Separation Date: 10-DEC-2007 14:44:00.00  
    Second Separation Date: 17-DEC-2007 11:06:00.00  
Detector ID: 18                              Cell ID: JUA  
Bkg Date: 11-DEC-2007 09:21:16.81  
    Bkg Counts: 000012                              Bkg Duration: 000060.0  
Count Date: 17-DEC-2007 15:06:00.56  
    Counts: 000009                                      Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT  
(Version: 17-Oct-1998)

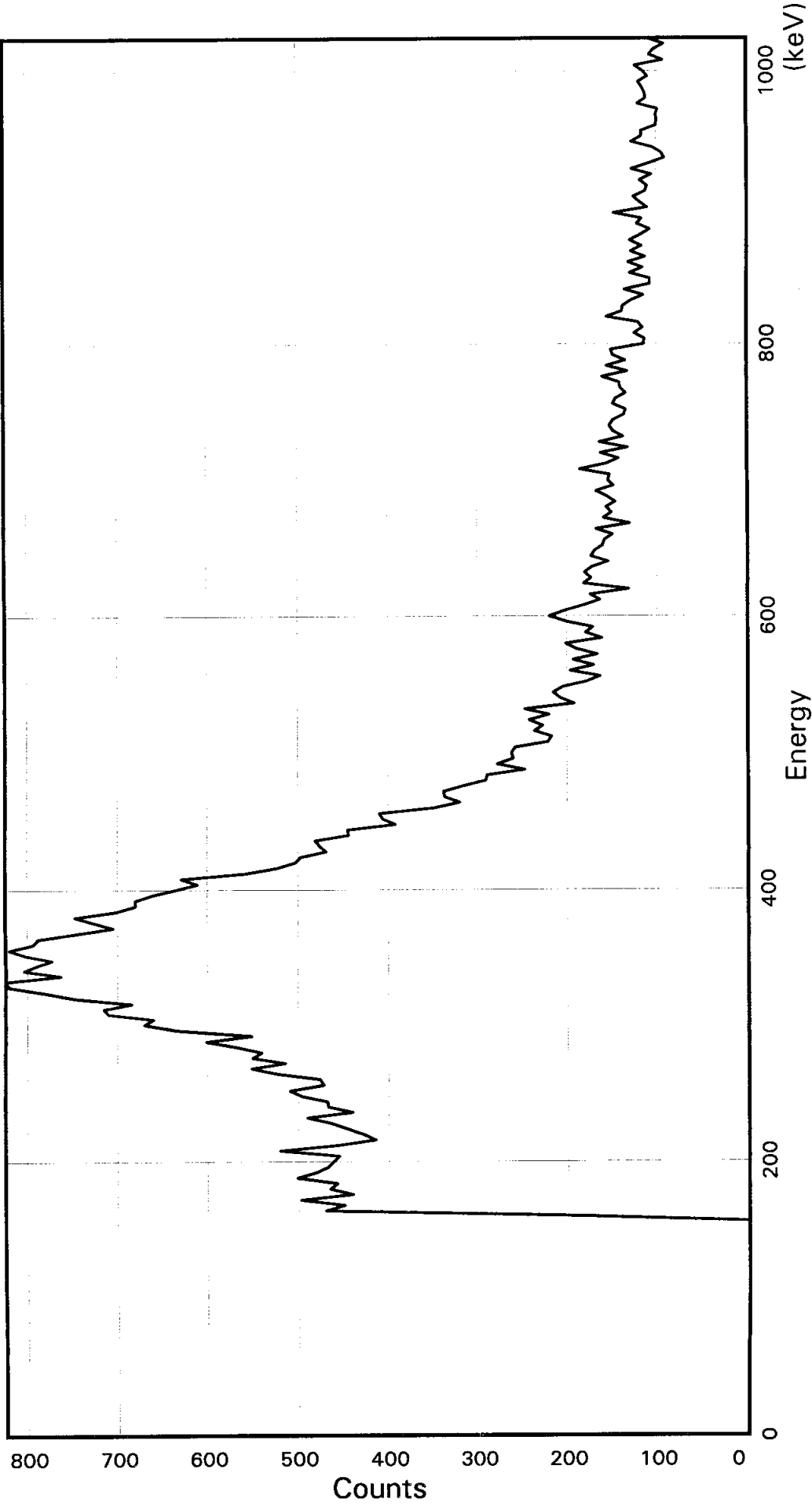
Sample ID: KCR7F1AC                      Isotope: RA-226  
Client: STL                                Matrix Code: 103  
Batch Nbr: 7327119                      Activity Unit: PCI/L                      Multiplier: 1.0  
Technician: SB  
Analysis Size: 1000.4                      Analysis Unit: G  
    Report Date: 17-DEC-2007 15:57:00.60  
    First Separation Date: 10-DEC-2007 14:44:00.00  
    Second Separation Date: 17-DEC-2007 11:07:00.00  
Detector ID: 19                              Cell ID: KME  
Bkg Date: 6-DEC-2007 11:42:42.25  
    Bkg Counts: 000011                      Bkg Duration: 000060.0  
Count Date: 17-DEC-2007 15:07:00.26  
    Counts: 000249                      Count Duration: 000050.0

End of Report /

STL Richland WA.

BA 133

Sample ID: KCFM81AA  
Detector ID: NAI1 1  
BatchID: 7327119  
Library: [NUC\_LIBR]BA133.NLB



Acquisition Start: 7-DEC-2007 18:55:30.25  
Preset Live Time: 0 00:30:00  
Elapsed Live Time: 0 00:30:00  
Weighting: DERIVED

Start Channel: 80  
End Channel: 113  
Iterations: 5  
Gain shift: Iter

SAMPLE IDENTIFICATION: KCFM81AA

CONFIGURATION ID: NAI1:KCFM81AA\_071271855  
TITLE : BA133  
SAMPLE ID : KCFM81AA

REPORT DATE: 07-DEC-07  
ACQUIRE DATE: 07-DEC-07 18:55:30  
ELAPSED LIVE TIME: 1800.0 Sec  
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2007 12:00:00.00  
CALIB DATE: 17-NOV-1993 10:39:59.60  
ELAPSED LIVE TIME: 0 00:30:00  
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00  
SAMPLE GEOMETRY:

UNITS: SAMPL  
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV  
ENERGY SLOPE: 4.0000E+00 keV/C  
ENERGY Q COEFF: 0.0000E+00 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: -.2302E+02 keV  
FWHM SLOPE: 5.7163E+00 sqr keV  
ITERATIONS: 5  
GAUSSIAN SENSITIVITY: 35.00 %

ABUNDANCE LIMIT: 75.00 %  
ENERGY TOLERANCE: 20.000 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 2.2200E+06  
LIBRARY: [NUC\_LIBR]BA133.NLB



Configuration : RDND06\$DKA100:[NAI1.SAMPLE]KCFM81AA\_071271855.CNF;1  
Analyses by : NAI V3.0  
Sample title : BA133  
Sample date : 15-NOV-2007 12:00:00 Acquisition date : 7-DEC-2007 18:55:30  
Sample ID : KCFM81AA Sample quantity : 1.0000 sampl  
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.69 0.0%  
Sample Multiplier: 1.00 Rejection Coeff. : 0.00  
Gain shift type : ITER Threshold Shift : No  
Weighting type : DERIVED Calculated counts: No  
Iterations : 5

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	6.0	7.2	7.5	6.8	4.2	4.8	3.3	1.4
88:	2.4	2.9	1.4	0.6	-0.3	-3.3	-0.6	0.6
96:	-1.4	-2.8	-1.9	-1.7	-4.5	-3.4	-2.6	-4.2
104:	-6.1	-6.4	-5.4	-5.4	-4.4	-3.5	-5.1	-4.3
112:	-5.1	-4.0						

List of Suspicious Channels

81 82 83 84 85

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.62E+01	0.00E+00	1.02E+00
2	7.26E+00	0.00E+00	1.05E+00
3	2.96E+00	0.00E+00	1.07E+00
4	1.21E+00	0.00E+00	1.08E+00
5	6.26E-01	0.00E+00	1.09E+00

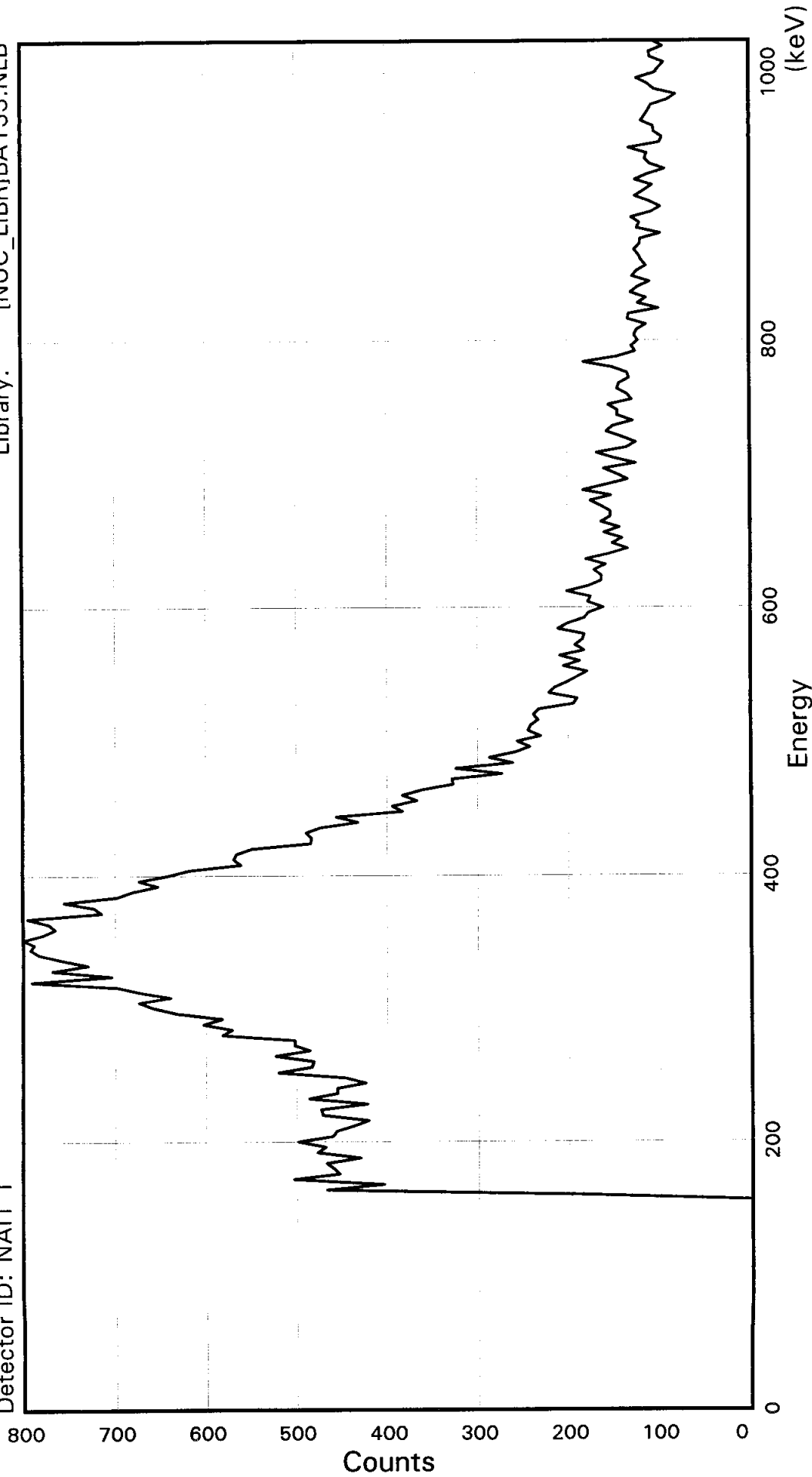
Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	805.	7.58
-----		
Total Activity :	805.	

STL Richland WA.

BA133

Sample ID: KCKE91AA  
Detector ID: NAI1 1  
BatchID: 7327119  
Library: [NUC\_LIBR]BA133.NLB



Acquisition Start: 7-DEC-2007 19:28:33.82  
Preset Live Time: 0 00:30:00  
Elapsed Live Time: 0 00:30:00  
Weighting: DERIVED

Start Channel: 80  
End Channel: 113  
Iterations: 5  
Gain shift: lter

SAMPLE IDENTIFICATION: KCKE91AA

CONFIGURATION ID: NAI1:KCKE91AA\_071271928  
TITLE : BA133  
SAMPLE ID : KCKE91AA

REPORT DATE: 07-DEC-07  
ACQUIRE DATE: 07-DEC-07 19:28:33  
ELAPSED LIVE TIME: 1800.0 Sec  
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2007 12:00:00.00  
CALIB DATE: 17-NOV-1993 10:39:59.60  
ELAPSED LIVE TIME: 0 00:30:00  
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00  
SAMPLE GEOMETRY:

UNITS: SAMPL  
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV  
ENERGY SLOPE: 4.0000E+00 keV/C  
ENERGY Q COEFF: 0.0000E+00 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: -.2302E+02 keV  
FWHM SLOPE: 5.7163E+00 sqr keV  
ITERATIONS: 5  
GAUSSIAN SENSITIVITY: 35.00 %

ABUNDANCE LIMIT: 75.00 %  
ENERGY TOLERANCE: 20.000 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 2.2200E+06  
LIBRARY: [NUC\_LIBR]BA133.NLB

Configuration : RDND06\$DKA100:[NAI1.SAMPLE]KCKE91AA\_071271928.CNF;1  
Analyses by : NAI V3.0  
Sample title : BA133  
Sample date : 15-NOV-2007 12:00:00 Acquisition date : 7-DEC-2007 19:28:33  
Sample ID : KCKE91AA Sample quantity : 1.0000 sampl  
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.69 0.0%  
Sample Multiplier: 1.00 Rejection Coeff. : 0.00  
Gain shift type : ITER Threshold Shift : No  
Weighting type : DERIVED Calculated counts: No  
Iterations : 5

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	8.7	5.0	6.1	3.4	3.9	4.3	4.6	3.2
88:	3.3	1.6	0.2	0.4	1.9	-2.6	-0.1	1.8
96:	-1.1	-2.6	-2.6	-1.1	-4.3	-2.5	-4.2	-3.3
104:	-4.4	-4.5	-5.4	-4.3	-3.5	-3.8	-5.8	-4.0
112:	-5.3	-4.3						

List of Suspicious Channels

81 82 83 84 85 86 87

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.22E+01	0.00E+00	1.03E+00
2	3.93E+00	0.00E+00	1.05E+00
3	1.32E+00	0.00E+00	1.06E+00
4	1.00E+00	0.00E+00	1.07E+00

Brief Report

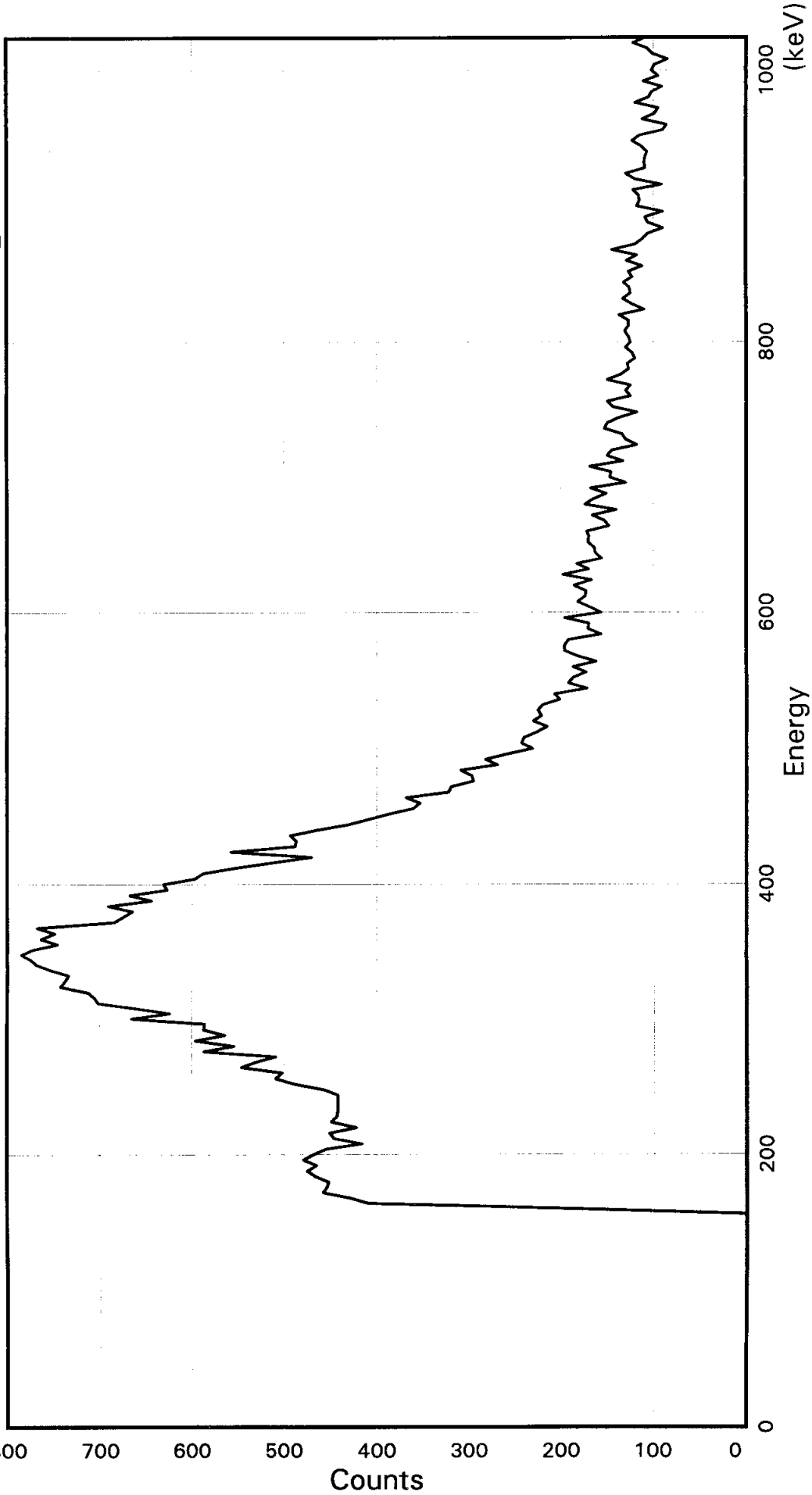
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	785.	9.34
	-----	
Total Activity :	785.	



# STL Richland WA.

BA133

Sample ID: KCMQL1AA  
Detector ID: NAI1 1  
BatchID: 7327119  
Library: [NUC\_LIBR]BA133.NLB



Acquisition Start: 7-DEC-2007 20:08:23.09  
Preset Live Time: 0 00:30:00  
Elapsed Live Time: 0 00:30:00  
Weighting: DERIVED  
Start Channel: 80  
End Channel: 113  
Iterations: 5  
Gain shift: Iter

SAMPLE IDENTIFICATION: KCMQL1AA

CONFIGURATION ID: NAI1:KCMQL1AA\_071272008  
TITLE : BA133  
SAMPLE ID : KCMQL1AA

REPORT DATE: 07-DEC-07  
ACQUIRE DATE: 07-DEC-07 20:08:23  
ELAPSED LIVE TIME: 1800.0 Sec  
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2007 12:00:00.00  
CALIB DATE: 17-NOV-1993 10:39:59.60  
ELAPSED LIVE TIME: 0 00:30:00  
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00  
SAMPLE GEOMETRY:

UNITS: SAMPL  
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV  
ENERGY SLOPE: 4.0000E+00 keV/C  
ENERGY Q COEFF: 0.0000E+00 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: -.2302E+02 keV  
FWHM SLOPE: 5.7163E+00 sqr keV  
ITERATIONS: 5  
GAUSSIAN SENSITIVITY: 35.00 %

ABUNDANCE LIMIT: 75.00 %  
ENERGY TOLERANCE: 20.000 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 2.2200E+06  
LIBRARY: [NUC\_LIBR]BA133.NLB

Configuration : RDND06\$DKA100:[NAI1.SAMPLE]KCMQL1AA\_071272008.CNF;1  
Analyses by : NAI V3.0  
Sample title : BA133  
Sample date : 15-NOV-2007 12:00:00 Acquisition date : 7-DEC-2007 20:08:23  
Sample ID : KCMQL1AA Sample quantity : 1.0000 sampl  
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.68 0.0%  
Sample Multiplier: 1.00 Rejection Coeff. : 0.00  
Gain shift type : ITER Threshold Shift : No  
Weighting type : DERIVED Calculated counts: No  
Iterations : 5

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	5.4	6.7	4.8	3.6	4.4	4.1	3.8	3.5
88:	2.9	0.8	0.5	0.0	1.5	-3.0	-0.9	-1.0
96:	-0.8	-3.2	-0.9	-1.3	-3.5	-3.0	-2.9	-3.3
104:	-5.8	-6.7	-1.7	-3.5	-2.8	-1.6	-2.7	-4.2
112:	-4.7	-4.9						

List of Suspicious Channels

81 82 83 84 85 86 87

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.13E+01	0.00E+00	1.02E+00
2	5.43E+00	0.00E+00	1.05E+00
3	1.93E+00	0.00E+00	1.07E+00
4	7.91E-01	0.00E+00	1.08E+00

Brief Report

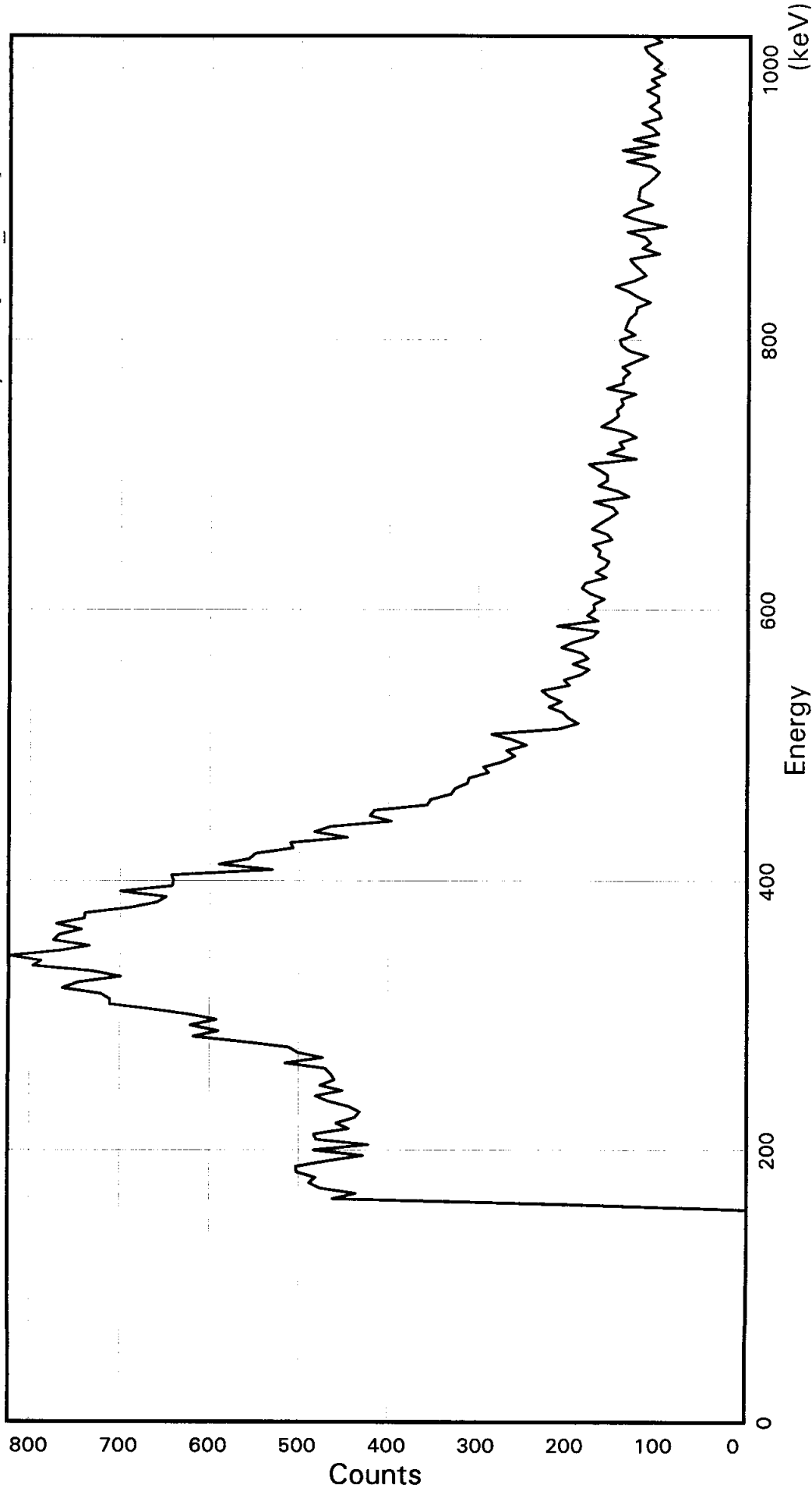
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	756.	8.32
-----		
Total Activity :	756.	

STL Richland WA.

BA133

Sample ID: KCR7F1AA  
Detector ID: NAI1 1

BatchID: 7327119  
Library: [NUC\_LIBR]BA133.NLB



Acquisition Start: 7-DEC-2007 20:40:19.84  
Preset Live Time: 0 00:30:00  
Elapsed Live Time: 0 00:30:00  
Weighting: DERIVED

Start Channel: 80  
End Channel: 113  
Iterations: 5  
Gain shift: Iter

SAMPLE IDENTIFICATION: KCR7F1AA

CONFIGURATION ID: NAI1:KCR7F1AA\_071272040  
TITLE : BA133  
SAMPLE ID : KCR7F1AA

REPORT DATE: 07-DEC-07  
ACQUIRE DATE: 07-DEC-07 20:40:19  
ELAPSED LIVE TIME: 1800.0 Sec  
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2007 12:00:00.00  
CALIB DATE: 17-NOV-1993 10:39:59.60  
ELAPSED LIVE TIME: 0 00:30:00  
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00  
SAMPLE GEOMETRY:

UNITS: SAMPL  
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV  
ENERGY SLOPE: 4.0000E+00 keV/C  
ENERGY Q COEFF: 0.0000E+00 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: -.2302E+02 keV  
FWHM SLOPE: 5.7163E+00 sqr keV  
ITERATIONS: 5  
GAUSSIAN SENSITIVITY: 35.00 %

ABUNDANCE LIMIT: 75.00 %  
ENERGY TOLERANCE: 20.000 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 2.2200E+06  
LIBRARY: [NUC\_LIBR]BA133.NLB

Configuration : RDND06\$DKA100:[NAI1.SAMPLE]KCR7F1AA\_071272040.CNF;1  
Analyses by : NAI V3.0  
Sample title : BA133  
Sample date : 15-NOV-2007 12:00:00 Acquisition date : 7-DEC-2007 20:40:19  
Sample ID : KCR7F1AA Sample quantity : 1.0000 sampl  
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.69 0.0%  
Sample Multiplier: 1.00 Rejection Coeff. : 0.00  
Gain shift type : ITER Threshold Shift : No  
Weighting type : DERIVED Calculated counts: No  
Iterations : 5

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	6.9	5.6	2.8	3.7	5.5	4.3	6.3	2.8
88:	0.2	0.7	0.1	-0.5	1.8	-1.2	0.4	-0.9
96:	-2.3	-3.6	-1.0	-2.3	-3.6	-0.7	-5.3	-2.8
104:	-4.9	-4.2	-4.3	-2.9	-4.8	-3.0	-4.3	-6.4
112:	-3.5	-2.9						

List of Suspicious Channels

81	82	83	84	85	86
----	----	----	----	----	----



Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.48E+01	0.00E+00	1.02E+00
2	8.03E+00	0.00E+00	1.04E+00
3	2.69E+00	0.00E+00	1.06E+00
4	9.16E-01	0.00E+00	1.07E+00

Brief Report

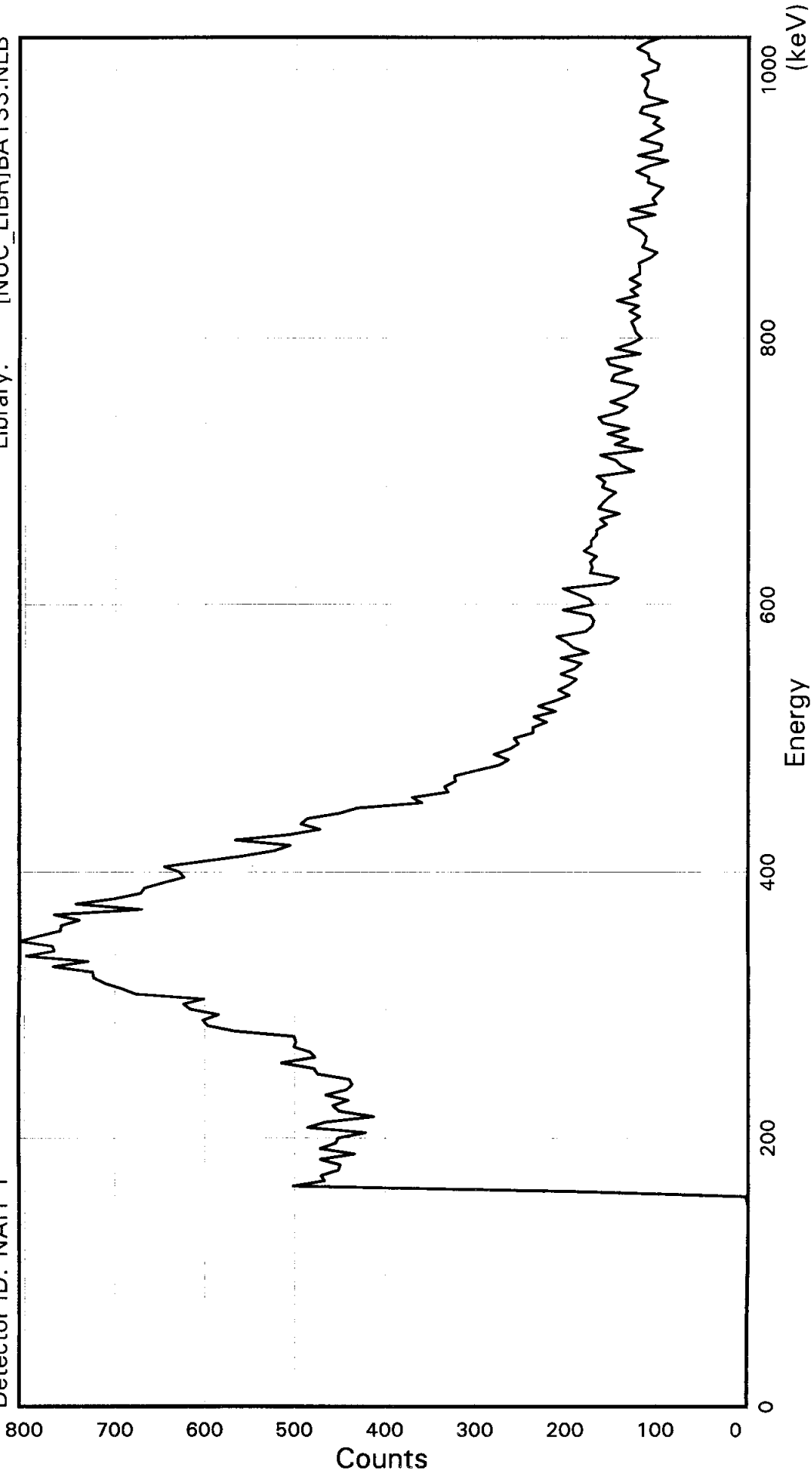
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	782.	8.62
	-----	
Total Activity :	782.	

STL Richland WA.

BA133

Sample ID: KCR7F1AC  
Detector ID: NAI1 1

BatchID: 7327119  
Library: [NUC\_LIBR]BA133.NLB



Acquisition Start: 7-DEC-2007 21:20:36.98  
Preset Live Time: 0 00:30:00  
Elapsed Live Time: 0 00:30:00  
Weighting: DERIVED

Start Channel: 80  
End Channel: 113  
Iterations: 5  
Gain shift: Iter

SAMPLE IDENTIFICATION: KCR7F1AC

CONFIGURATION ID: NAI1:KCR7F1AC\_071272120  
TITLE : BA133  
SAMPLE ID : KCR7F1AC

REPORT DATE: 07-DEC-07  
ACQUIRE DATE: 07-DEC-07 21:20:36  
ELAPSED LIVE TIME: 1800.0 Sec  
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 5-NOV-2007 12:00:00.00  
CALIB DATE: 17-NOV-1993 10:39:59.60  
ELAPSED LIVE TIME: 0 00:30:00  
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00  
SAMPLE GEOMETRY:

UNITS: SAMPL  
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV  
ENERGY SLOPE: 4.0000E+00 keV/C  
ENERGY Q COEFF: 0.0000E+00 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: -.2302E+02 keV  
FWHM SLOPE: 5.7163E+00 sqr keV  
ITERATIONS: 5  
GAUSSIAN SENSITIVITY: 35.00 %

ABUNDANCE LIMIT: 75.00 %  
ENERGY TOLERANCE: 20.000 keV  
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00  
ACTIVITY MULTIPLIER: 2.2200E+06  
LIBRARY: [NUC\_LIBR]BA133.NLB

Configuration : RDND06\$DKA100:[NAI1.SAMPLE]KCR7F1AC\_071272120.CNF;1  
Analyses by : NAI V3.0  
Sample title : BA133  
Sample date : 5-NOV-2007 12:00:00 Acquisition date : 7-DEC-2007 21:20:36  
Sample ID : KCR7F1AC Sample quantity : 1.0000 sampl  
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.68 0.0%  
Sample Multiplier: 1.00 Rejection Coeff. : 0.00  
Gain shift type : ITER Threshold Shift : No  
Weighting type : DERIVED Calculated counts: No  
Iterations : 5

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	6.0	5.0	5.5	3.5	5.9	3.7	3.5	3.9
88:	2.7	1.0	0.6	-0.5	1.0	-3.6	1.4	0.2
96:	-1.5	-2.3	-2.3	-3.2	-4.3	-0.3	-2.2	-3.4
104:	-5.5	-5.8	-2.2	-3.2	-3.2	-1.4	-2.5	-4.6
112:	-3.8	-5.2						

List of Suspicious Channels

81	82	83	84	85	86	87
----	----	----	----	----	----	----

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.20E+01	0.00E+00	1.02E+00
2	5.54E+00	0.00E+00	1.04E+00
3	2.30E+00	0.00E+00	1.06E+00
4	9.40E-01	0.00E+00	1.07E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	772.	9.26
-----		
Total Activity :	772.	

RADIUM 226

STANDARDS AND TRACEABILITY



Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: Ra22606A100		Ref: 11/1/2001	2.1060E+01 ± 3.234E-01	DPM/G		
RASC4640	RA-226	3.0836E+00 ± 4.744E-02	DPM	0.1468 g	11/5/2007 11/5/2007	Armstron 2.1005E+01 ± 3.226E-01
		3.0836E+000 ± 3.084E+000 ( 1)		3.0836E+000 , 3.0836E+000		

RA22606A

RA22606A000  
Ref. 6068  
422.23 ± 13.93  
dpm/g  
REF. 11/1/2001



RA22606A100  
Ref. 6069  
21.12 ± 0.697  
dpm/g  
DVF 3/21/06

**ISOTOPE DILUTION RECORD**

1) Prepared by tda 2) Date Prepared 10/14/2005

**3) Source Identification Number / Ref. Number** RA22606A000 6068

4) Source Activity (dpm ± dpm/g) 4.2223E+02 ± 1.393E+01

5) Percent error of Source Activity 3.3 %

6) Weight of Source Material used (g) 50

7) (% Error) of Weight of Source Material used 0.0096 %

8) Diluent 1 M HNO3

9) Total Weight of the Dilution (g) approx. 750 g

10) (% Error) of Total Weight of the Dilution 0.0400 %

**11) Specific Activity of Diluted Solution dpm/g** 2.1120E+01 ± 6.970E-01

12) Total Uncertainty 3.300 %

**13) Dilution Identification Number / Ref. Number** RA22606A100 6069

14) Calibration Reference Date 11/1/2001

15) Isotope Inventory File update by/date tda 3/21/2006

16) Reviewed by/date \_\_\_\_\_

17) Location QCLAB 18) Exhausted \_\_\_\_\_

\*\*\*\*\*  
**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3



Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: RA22806A000		Ref: 12/15/2003	4.4881E+02 ±	DPM/G		
RASC4640	RA-228	1.1090E+01 ± 3.970E-02 DPM	0.0395 g	11/5/2007 11/5/2007	Armstron	2.8075E+02 ± 0.000E+00
		1.1090E+001 ± 1.109E+001 ( 1)	1.1090E+001 , 1.1090E+001			

**Ra22806A000**

Ra22806A000  
Ref. 6076  
448.81 ± 14.82  
dpm/g  
4/11/2007 DVF

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>7/7/2004</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>new source</u></b>		
4) Source Activity (dpm ± dpm/g)	<u>4.5507E+04</u>	±	<u>1.502E+03</u>
5) Percent error of Source Activity	<u>3.3</u>	%	
6) Weight of Source Material used (g)	<u>5.0063</u>		
7) (% Error) of Weight of Source Material used	<u>0.0959</u>	%	
8) Diluent	<u>1M HCL</u>		
9) Total Weight of the Dilution (g)	<u>507.61</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.0591</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>4.4881E+02</u></b>	±	<b><u>1.482E+01</u></b>
12) Total Uncertainty	<u>3.302</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>RA22806A000</u></b>		<b><u>6076</u></b>
14) Calibration Reference Date	<u>12/15/2003</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>3/30/2006</u>
16) Reviewed by/date	<u></u>		<u></u>
17) Location	<u>QCLAB</u>	18) Exhausted	<u></u>

\*\*\*\*\*

**CALCULATIONS**

7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. =  $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity =  $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty =  $\sqrt{(\% \text{ error of Source Activity})^2 + (\% \text{ error of Wt. Used})^2 + (\% \text{ error of Dilution Wt.})^2}$

Form: CC-006, 7/15/99, Rev 3

ISOTOPE RECORD FORM

1) Isotope RA-228 2) Reference Number 6076  
 3) Half Life 5.75 yrs 4) Storage Location QCLAB  
 5) Source Identification Number RA22806A000

\*\*\*\*\*

CALIBRATION DATA

6) Activity as Received Units 3797  
 7) Overall Uncertainty Percent 3.30%  
 8) Reference Date / Time 15-Dec-03  
 9) Activity dpm/g 45507 ± 1502  
 10) Volume or Mass (ml/g) 5.0063  
 11) Calibrated by Analytix  
 12) Certificate Solution Number 67328-288

\*\*\*\*\*

SURVEY DATA

13) Date Received 3/30/2006  
 14) Surveyed by tda  
 15) Survey Reading (Beta/Gamma) cpm >200 cpm  
 16) Survey Reading (Alpha) cpm background

\*\*\*\*\*

17) Activity Conversion 3797 dps \* 60 s/m / 5.0063g =  
45507 ± 1501 dpm/g

18) Remarks From STL Denver

19) Isotope File Updated by tda

20) QC Approved \_\_\_\_\_



RADIUM 226  
CONTINUING CALIBRATION

## Quality Assurance Report.

Generated 26-DEC-2007 17:08:59.91

QA Filename : \$DISK1:[SCINT18.QA]CHK.QAF;1

## -- Multi-Test Full Report --

Description : 10 min check, ascint-18

Parameter Units : counts Parameter Type : Manual

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 19590.000000 Upper Bound : 21654.000000

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 20622.431641 Std Deviation : 344.169220

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 06:18	count		20416.0000		
5-NOV-2007 05:59	count		20698.0000		
6-NOV-2007 05:49	count		20294.0000		
7-NOV-2007 06:16	count		20596.0000		
8-NOV-2007 06:19	count		20327.0000		
9-NOV-2007 09:01	count		20376.0000		
10-NOV-2007 09:27	count		20325.0000		
11-NOV-2007 09:14	count		20565.0000		
12-NOV-2007 08:57	count		20482.0000		
13-NOV-2007 09:08	count		20763.0000		
14-NOV-2007 07:33	count		20537.0000		
15-NOV-2007 06:33	count		20816.0000		
16-NOV-2007 06:31	count		20653.0000		
19-NOV-2007 06:28	count		20527.0000		
20-NOV-2007 05:37	count		20775.0000		
21-NOV-2007 07:06	count		20687.0000		
23-NOV-2007 06:35	count		20565.0000		
26-NOV-2007 06:22	count		20562.0000		
27-NOV-2007 06:36	count		20694.0000		
28-NOV-2007 06:45	count		20478.0000		
29-NOV-2007 06:29	count		20729.0000		

30-NOV-2007 06:39	count	20659.0000			
3-DEC-2007 06:37	count	20514.0000			
4-DEC-2007 06:32	count	20673.0000			
5-DEC-2007 06:34	count	20812.0000			
6-DEC-2007 09:56	count	20884.0000			
7-DEC-2007 06:41	count	20483.0000			
10-DEC-2007 07:04	count	20843.0000			
11-DEC-2007 06:40	count	20306.0000			
12-DEC-2007 06:44	count	20704.0000			
13-DEC-2007 06:59	count	20684.0000			
17-DEC-2007 06:20	count	20832.0000			
18-DEC-2007 06:58	count	20606.0000			
19-DEC-2007 08:33	count	20279.0000			
20-DEC-2007 06:48	count	20867.0000			
21-DEC-2007 06:37	count	20351.0000			
24-DEC-2007 06:02	count	20771.0000			

Quality Assurance Report.                      Generated 26-DEC-2007 17:09:00.34

QA Filename        : \$DISK1:[SCINT18.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description        : 1000 min bkg, ascint-18  
Parameter Units    : counts                      Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound        : 0.000000                      Upper Bound        : 5.000000

Investigate Level : 2.000000                      Action Level        : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date         : 1-JUN-2005 00:00      End Date         : 1-JAN-2006 00:00  
Mean                : 0.428571                      Std Deviation     : 0.786796

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

-----					
1-NOV-2007 17:51	count		0.0000		
8-DEC-2007 12:44	count		0.0000		

Quality Assurance Report.

Generated 26-DEC-2007 17:13:42.14

QA Filename : \$DISK1:[SCINT17.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-17

Parameter Units : counts Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 23099.000000 Upper Bound : 24152.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 23626.392578 Std Deviation : 175.488617

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

1-NOV-2007 06:02	count		23660.0000		
5-NOV-2007 05:33	count		23760.0000		
6-NOV-2007 05:37	count		23866.0000		
7-NOV-2007 05:53	count		24110.0000	In	
8-NOV-2007 06:03	count		23924.0000		
9-NOV-2007 08:47	count		23960.0000		
10-NOV-2007 09:13	count		23923.0000		
11-NOV-2007 08:53	count		23589.0000		
12-NOV-2007 08:43	count		23798.0000		
13-NOV-2007 08:55	count		23920.0000		
14-NOV-2007 07:13	count		23834.0000		
15-NOV-2007 06:12	count		24001.0000	In	
16-NOV-2007 06:03	count		23706.0000		
19-NOV-2007 06:16	count		23936.0000		
20-NOV-2007 05:23	count		23999.0000	In	
21-NOV-2007 05:36	count		24077.0000	In	
23-NOV-2007 06:22	count		23916.0000		
26-NOV-2007 06:06	count		23923.0000		
27-NOV-2007 06:21	count		24113.0000	In	
28-NOV-2007 06:30	count		24157.0000	Ab Ac	
28-NOV-2007 06:58	count		23696.0000		

29-NOV-2007 06:13	count	23877.0000	
30-NOV-2007 06:24	count	23613.0000	
3-DEC-2007 06:26	count	23648.0000	
4-DEC-2007 06:18	count	24000.0000	In
5-DEC-2007 06:21	count	23840.0000	
6-DEC-2007 09:40	count	23479.0000	
7-DEC-2007 06:25	count	23671.0000	
10-DEC-2007 06:49	count	23794.0000	
11-DEC-2007 06:28	count	24051.0000	In
12-DEC-2007 06:26	count	24058.0000	In
13-DEC-2007 06:40	count	23790.0000	
17-DEC-2007 06:07	count	24233.0000	Ab Ac
17-DEC-2007 06:41	count	23904.0000	
18-DEC-2007 06:46	count	24237.0000	Ab Ac
18-DEC-2007 07:17	count	23788.0000	
19-DEC-2007 06:48	count	23742.0000	
20-DEC-2007 06:30	count	24204.0000	Ab Ac

Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
20-DEC-2007 07:00	count		24039.0000	In
21-DEC-2007 06:19	count		24070.0000	In
24-DEC-2007 05:49	count		24225.0000	Ab Ac
24-DEC-2007 06:21	count		23811.0000	

Quality Assurance Report. Generated 26-DEC-2007 17:13:42.54

QA Filename : \$DISK1:[SCINT17.QA]BKG.QAF;2

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-17  
 Parameter Units : counts Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000 Upper Bound : 5.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JUN-2005 00:00 End Date : 1-JAN-2006 00:00

Mean : 5.250000 Std Deviation : 1.544786

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-NOV-2007 17:51	count		4.0000		
8-DEC-2007 12:44	count		3.0000		

## Quality Assurance Report.

Generated 26-DEC-2007 17:19:29.99

QA Filename : \$DISK1:[SCINT16.QA]CHK.QAF;1

## -- Multi-Test Full Report --

Description : 10 min check, ascint-16

Parameter Units : counts Parameter Type : Manual

## ---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 22600.000000 Upper Bound : 23976.000000

Investigate Level : 2.000000 Action Level : 3.000000

## ---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 23288.384766 Std Deviation : 229.251007

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 05:47	count		22844.0000		
5-NOV-2007 05:17	count		22874.0000		
6-NOV-2007 05:20	count		23126.0000		
7-NOV-2007 05:14	count		22708.0000	In	
8-NOV-2007 05:44	count		23197.0000		
9-NOV-2007 08:29	count		23285.0000		
10-NOV-2007 09:46	count		23261.0000		
11-NOV-2007 08:36	count		23110.0000		
12-NOV-2007 08:29	count		23176.0000		
13-NOV-2007 08:24	count		23157.0000		
14-NOV-2007 07:00	count		23255.0000		
15-NOV-2007 05:42	count		22927.0000		
16-NOV-2007 05:35	count		23101.0000		
19-NOV-2007 06:04	count		22786.0000	In	
20-NOV-2007 05:11	count		23467.0000		
21-NOV-2007 05:21	count		23365.0000		
23-NOV-2007 06:00	count		22735.0000	In	
26-NOV-2007 05:52	count		23404.0000		
27-NOV-2007 06:04	count		23063.0000		
28-NOV-2007 06:18	count		23004.0000		
29-NOV-2007 05:59	count		23318.0000		

30-NOV-2007 06:11	count	23117.0000			
3-DEC-2007 06:13	count	23220.0000			
4-DEC-2007 06:05	count	22900.0000			
5-DEC-2007 05:55	count	23120.0000			
6-DEC-2007 09:15	count	23400.0000			
7-DEC-2007 06:10	count	23076.0000			
10-DEC-2007 06:31	count	23037.0000			
11-DEC-2007 06:13	count	23176.0000			
12-DEC-2007 06:07	count	23202.0000			
13-DEC-2007 06:10	count	23233.0000			
17-DEC-2007 05:55	count	23321.0000			
18-DEC-2007 06:02	count	23148.0000			
19-DEC-2007 06:00	count	23364.0000			
20-DEC-2007 06:09	count	23330.0000			
21-DEC-2007 06:06	count	23627.0000			
24-DEC-2007 05:37	count	23397.0000			

Quality Assurance Report.                      Generated 26-DEC-2007 17:19:30.39

QA Filename        : \$DISK1:[SCINT16.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description        : 1000 min bkg, ascint-16  
Parameter Units    : counts                      Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound        : 0.000000                      Upper Bound        : 5.000000

Investigate Level : 2.000000                      Action Level        : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date         : 1-JUN-2005 00:00              End Date            : 1-JAN-2006 00:00  
Mean                : 2.250000                      Std Deviation       : 1.035098

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 17:51	count		1.0000			
8-DEC-2007 12:44	count		1.0000			



Quality Assurance Report.

Generated 26-DEC-2007 17:20:57.75

QA Filename : \$DISK1:[SCINT14.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-14

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 17718.000000 Upper Bound : 18641.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 18179.703125 Std Deviation : 153.883514

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 06:02	count		18309.0000		
5-NOV-2007 05:33	count		17929.0000		
6-NOV-2007 05:36	count		18232.0000		
7-NOV-2007 05:53	count		18013.0000		
8-NOV-2007 06:03	count		18055.0000		
9-NOV-2007 08:46	count		18237.0000		
10-NOV-2007 09:13	count		18219.0000		
11-NOV-2007 08:53	count		17993.0000		
12-NOV-2007 08:43	count		18230.0000		
13-NOV-2007 08:55	count		18078.0000		
14-NOV-2007 07:13	count		17997.0000		
15-NOV-2007 06:12	count		17979.0000		
16-NOV-2007 06:03	count		17674.0000	Be Ac	
16-NOV-2007 06:48	count		17935.0000		
19-NOV-2007 06:16	count		18035.0000		
20-NOV-2007 05:23	count		17997.0000		
21-NOV-2007 05:36	count		18012.0000		
23-NOV-2007 06:22	count		18073.0000		
26-NOV-2007 06:06	count		18220.0000		
27-NOV-2007 06:21	count		18106.0000		
28-NOV-2007 06:30	count		18132.0000		

29-NOV-2007 06:13	count	18043.0000	
30-NOV-2007 06:24	count	18055.0000	
3-DEC-2007 06:26	count	17900.0000	
4-DEC-2007 06:18	count	17994.0000	
5-DEC-2007 06:21	count	18549.0000	In
6-DEC-2007 09:40	count	18069.0000	
7-DEC-2007 06:25	count	17995.0000	
10-DEC-2007 06:49	count	18251.0000	
11-DEC-2007 06:28	count	17995.0000	
12-DEC-2007 06:25	count	18194.0000	
13-DEC-2007 06:40	count	18561.0000	In
17-DEC-2007 06:07	count	18068.0000	
18-DEC-2007 06:46	count	18276.0000	
19-DEC-2007 06:47	count	18162.0000	
20-DEC-2007 06:30	count	18144.0000	
21-DEC-2007 06:18	count	18322.0000	
24-DEC-2007 05:49	count	18211.0000	

Quality Assurance Report.                      Generated 26-DEC-2007 17:20:58.12

QA Filename        : \$DISK1:[SCINT14.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description        : 1000 min bkg, ascint-14  
Parameter Units    : counts                      Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound        : 0.000000                      Upper Bound        : 5.000000

Investigate Level : 2.000000                      Action Level        : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date         : 1-JUN-2005 00:00              End Date            : 1-JAN-2006 00:00  
Mean                : 0.000000                      Std Deviation       : 0.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-NOV-2007 17:51	count		0.0000	
8-DEC-2007 12:44	count		0.0000	

Quality Assurance Report.

Generated 26-DEC-2007 17:07:23.20

QA Filename : \$DISK1:[SCINT19.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-19

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 17475.000000 Upper Bound : 18849.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 18162.419922 Std Deviation : 229.134201

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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1-NOV-2007 05:47	count		19054.0000	Ab Ac	
1-NOV-2007 06:03	count		19180.0000	Ab Ac	
5-NOV-2007 05:17	count		18832.0000	In	
6-NOV-2007 05:20	count		18863.0000	Ab Ac	
6-NOV-2007 05:39	count		18934.0000	Ab Ac	
7-NOV-2007 05:14	count		18832.0000	In	
8-NOV-2007 05:44	count		18947.0000	Ab Ac	
8-NOV-2007 06:03	count		18744.0000	In	
9-NOV-2007 08:30	count		18879.0000	Ab Ac	
9-NOV-2007 08:47	count		18678.0000	In	
10-NOV-2007 08:58	count		18894.0000	Ab Ac	
10-NOV-2007 09:13	count		18813.0000	In	
11-NOV-2007 08:37	count		18821.0000	In	
12-NOV-2007 08:29	count		18768.0000	In	
13-NOV-2007 08:24	count		18808.0000	In	
14-NOV-2007 07:00	count		18841.0000	In	
15-NOV-2007 05:43	count		18789.0000	In	
16-NOV-2007 05:35	count		19085.0000	Ab Ac	
16-NOV-2007 06:04	count		19033.0000	Ab Ac	
19-NOV-2007 06:04	count		18582.0000		
20-NOV-2007 05:11	count		18728.0000	In	

21-NOV-2007 05:21	count	18873.0000	Ab Ac
21-NOV-2007 05:38	count	18348.0000	
23-NOV-2007 06:00	count	18952.0000	Ab Ac
23-NOV-2007 06:37	count	18897.0000	Ab Ac
26-NOV-2007 05:52	count	18809.0000	In
27-NOV-2007 06:04	count	18439.0000	
28-NOV-2007 06:18	count	18811.0000	In
29-NOV-2007 05:59	count	18976.0000	Ab Ac
29-NOV-2007 06:14	count	18507.0000	
30-NOV-2007 06:11	count	18711.0000	In
3-DEC-2007 06:13	count	0.0000	Be Ac
3-DEC-2007 06:53	count	18525.0000	
4-DEC-2007 06:05	count	18965.0000	Ab Ac
4-DEC-2007 07:13	count	18657.0000	In
5-DEC-2007 05:55	count	18740.0000	In
6-DEC-2007 09:15	count	18645.0000	In
7-DEC-2007 06:10	count	18396.0000	

Quality Assurance Multi-Test Full Report (continued)

Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
10-DEC-2007 06:31	count	18687.0000	In		
11-DEC-2007 06:13	count	18717.0000	In		
12-DEC-2007 06:07	count	18959.0000	Ab Ac		
12-DEC-2007 06:28	count	18870.0000	Ab Ac		
13-DEC-2007 06:10	count	18812.0000	In		
17-DEC-2007 05:55	count	18789.0000	In		
18-DEC-2007 06:02	count	18701.0000	In		
19-DEC-2007 06:00	count	19068.0000	Ab Ac		
19-DEC-2007 06:50	count	19203.0000	Ab Ac		
20-DEC-2007 06:09	count	18924.0000	Ab Ac		
20-DEC-2007 06:28	count	18791.0000	In		
21-DEC-2007 06:06	count	18970.0000	Ab Ac		
21-DEC-2007 06:38	count	19051.0000	Ab Ac		
24-DEC-2007 05:37	count	19159.0000	Ab Ac		
24-DEC-2007 05:51	count	19110.0000	Ab Ac		

Quality Assurance Report.

Generated 26-DEC-2007 17:07:23.89

QA Filename : \$DISK1:[SCINT19.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-19  
Parameter Units : counts      Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 0.000000      Upper Bound : 5.000000

Investigate Level : 2.000000      Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : ----- End Date : -----

Mean : 0.426230      Std Deviation : 1.087183

Measurement Time    Sample ID    Sample Analyst    Value    LU|SD|UD|BS Rej

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1-NOV-2007 17:51 count                    0.0000    | | |

8-DEC-2007 12:44 count                    0.0000    | | |

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